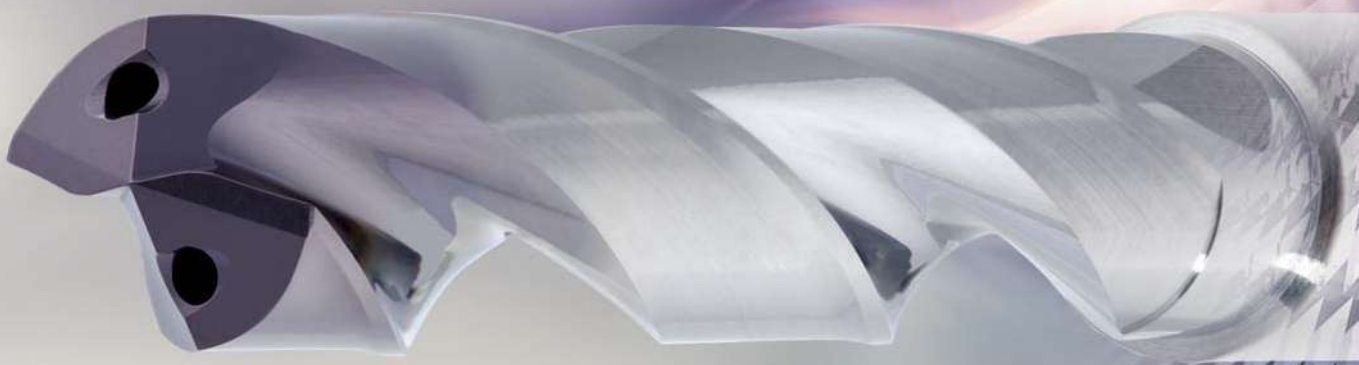
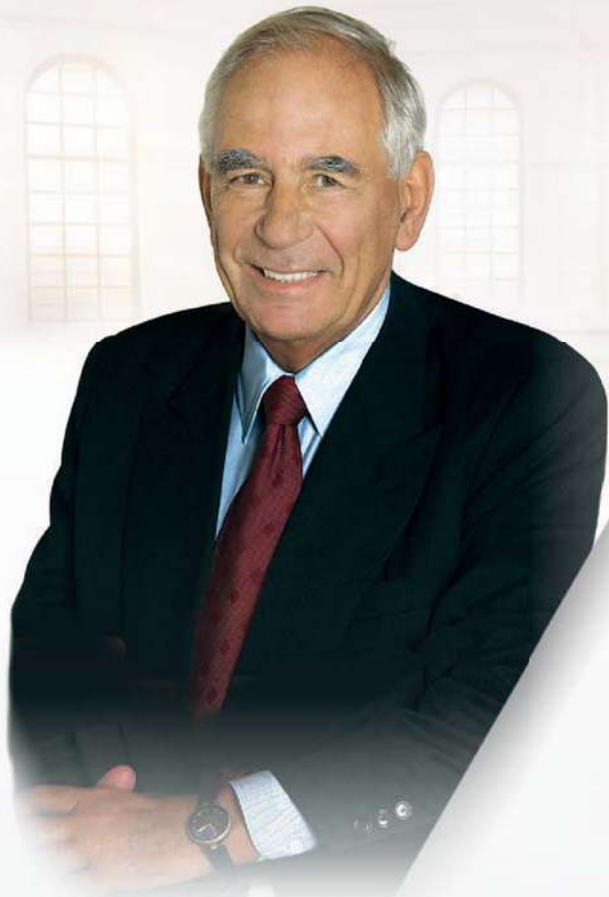


# GÜHRING

## OUTILS DE PERÇAGE



# PRÉCISION



Dr. Jörg Gühring

Président de la Direction  
Commerciale



Oliver Gühring

Directeur des Ventes et  
Marketing

7000

Collaborateurs dans  
le monde entier



3500

Collaborateurs  
en Allemagne



Centre d'apprentissage et  
programme de formation  
continue



Echanges internationaux de savoir  
– faire grâce aux programmes  
d'échanges, pour tous nos  
collaborateurs, dans le monde entier.



## Dietmar Pfränger

Directeur des Centres R & D et  
Centres logistiques,  
Directeur Technique et  
Directeur de la Production



## Bernd Schatz

Directeur Administratif et Financier



Segment essentiel  
« Outillage »

# 90000

Articles standards

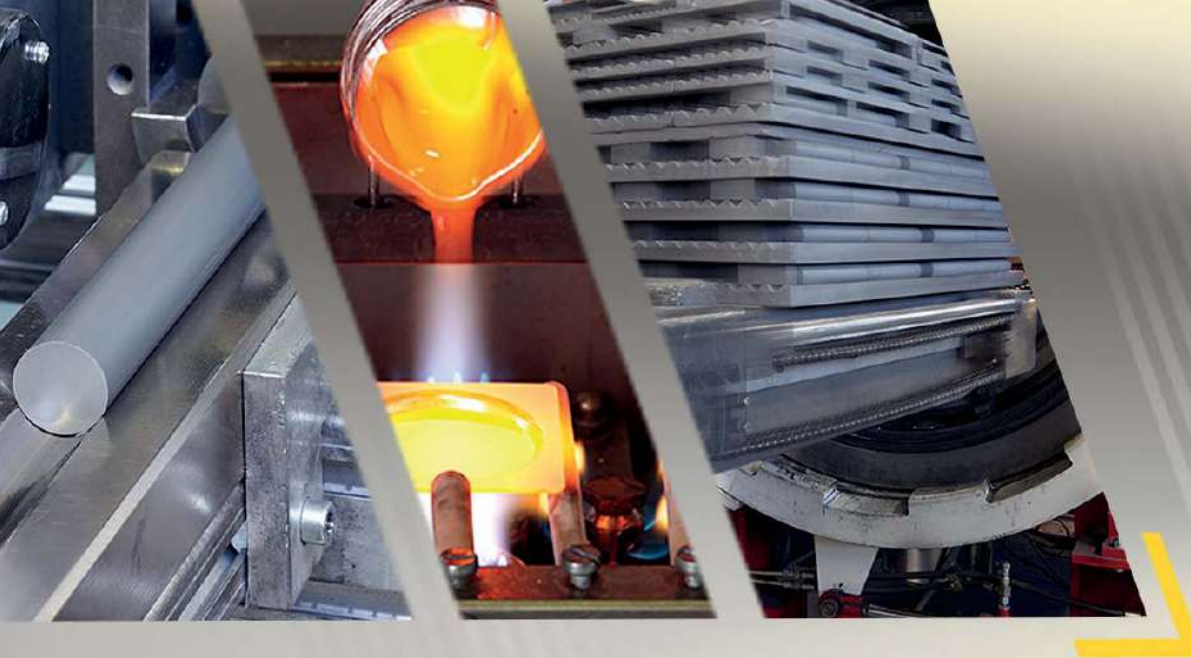
# 4000

Types d'outils

55%  
45%



■ Outils standards  
■ Outils spéciaux



## MATERIAUX DE COUPE

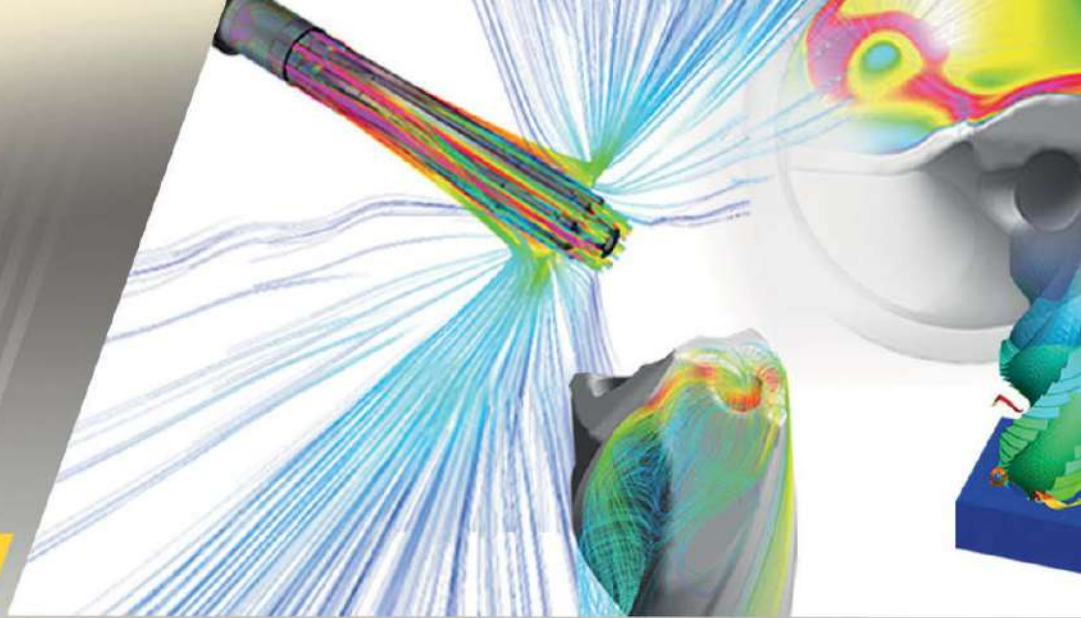
Provenance de notre propre fabrication  
de Carbures Métalliques (CW)

Grâce à notre propre Centre de  
Recherche et Développement,  
coordination optimale de tous les  
paramètres de coupe des outils

## CONSTRUCTION D'EQUIPEMENTS ET DE MACHINES

De notre propre département de construction  
machines et de développement d'équipement





## GEOMETRIES

Innovées de notre propre centre R&D pour la conception d'outils



## REVETEMENTS

Développement de nos propres revêtements avec réalisation dans nos propres équipements de revêtements



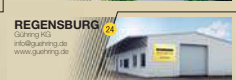
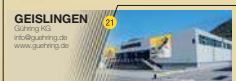
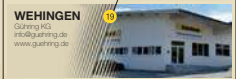
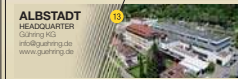
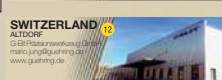
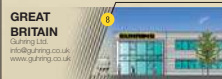
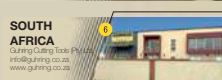
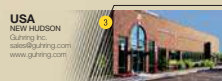
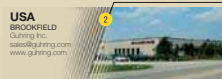
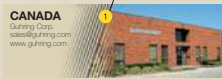
L'ensemble, en provenance d'une seule source,  
 – complet, détaillé, global

Avec un réseau mondial de centres de production, la Société Gühring développe et fabrique ses outils de précision pour tous les marchés importants. Les utilisateurs de l'industrie automobile, aéronautique, spatiale ou fabricants de machines prêtent attention aux outils novateurs qui, dans le monde entier, sont réalisés selon un standard de qualité uniforme du plus haut niveau.

48

CENTRES DE PRESTATIONS

PLUS DE 70  
 SITES DE PRODUCTION ET  
 FILIALES MONDIALES



Grâce aux technologies innovantes, Gühring réalise des outils de précision spécifiques selon les besoins de ses clients à partir de l'étude des procédés jusqu'à la perfection du produit fini réalisé en série – flexible, moderne, global. Pour cela, il est nécessaire d'avoir des spécialistes internationaux qui assistent notre clientèle sur les lieux de production. Nos sites de production, prestations de service et personnes à contacter disponibles dans le monde entier proviennent d'une même source.

Propre fabrication de  
Carbures Métalliques

Propres revêtements

Propre construction de machines

Le plus haut standard de qualité  
dans le monde entier



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www.guhring.dk

**RUSSIA** 48  
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info@guhring.ru  
www.guhring.ru

# Tout un ensemble issu D'UNE MEME SOURCE

Notre grande diversité d'outils de perçage vous offre une multitude de microforets et forets avec des diamètres à partir de 0,05 mm jusqu'aux outils spécifiques avec des diamètres jusqu'à 180 mm, que ce soit en HSS ou en CW monobloc, environ 50 000 articles sont disponibles afin de solutionner toutes les applications d'usinages possible.




## FORETS RATIO EN CW MONOBLOC

à partir de page 3



## SYSTEME DE PERÇAGE A PLAQUETTES DE COUPE INTERCHANGEABLES HT 800

à partir de page 123



## FORETS HELICOÏDAUX EN HSS / HSCO

- 🌀 avec attachement cylindrique
- 🌀 avec attachement conique « Cône Morse »

à partir de page 175, 435

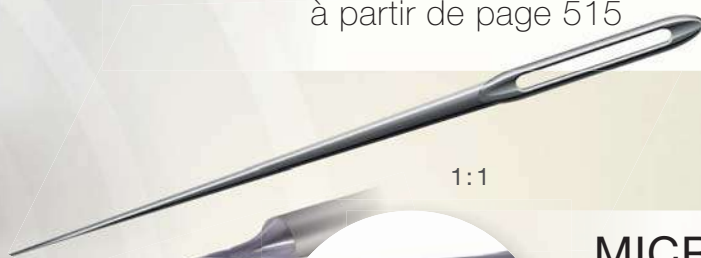




## OUTILS DE FORAGE

▬ à une lèvre de coupe ou à deux lèvres de coupe  
▬ hélicoïdaux

à partir de page 515



1:1



**MICROFORETS**  
CW MONOBLOC +  
HSSE

à partir de page 645



**FORETS NC &  
FORETS A CENTRER**

à partir de page 665



**FORETS ETAGES &  
FORETS ALESEURS**

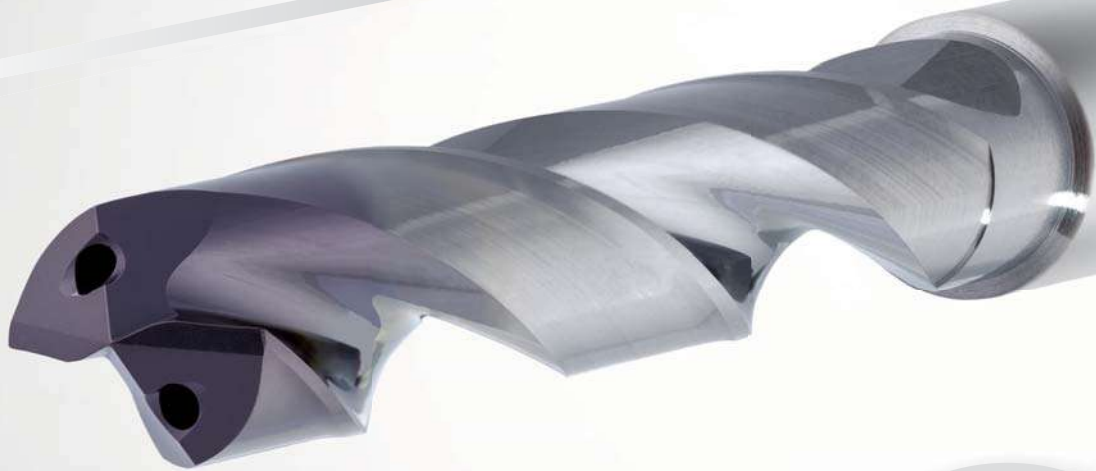
à partir de page 711

# Nouveautés

Avec chacune de ses nouveautés, Gühring établit de nouveaux critères concernant la qualité et les performances. Tout d'abord, la perfection lors des recherches et développements, mais aussi lors de la fabrication des outils, car tous nos buts sont d'atteindre les plus Hautes Performances d'usinages possible.

QUALITE SUPERIEURE  
POUR L'USINAGE DES ACIERS

NEW



//RATIO//

## RT 100 S

- // Microtechnique de la géométrie optimisée pour l'usinage des aciers
- // Valeurs des paramètres de coupe très élevées
- // Constance assurée de l'excellente tenue de coupe des outils

→ à partir de page 59, 96



NEW

## AeroX

- // Foret hélicoïdal en acier rapide HSCO à 8% de cobalt, pour les travaux de montage sur les aciers en général ou aciers hautement alliés, les titanes et alliages d'aluminium
- // Perçages rapides grâce à l'affûtage en croix, optimisé, à 135°

→ à partir de page 313

### GEOMETRIE DE L'ÂME, AMELIOREE

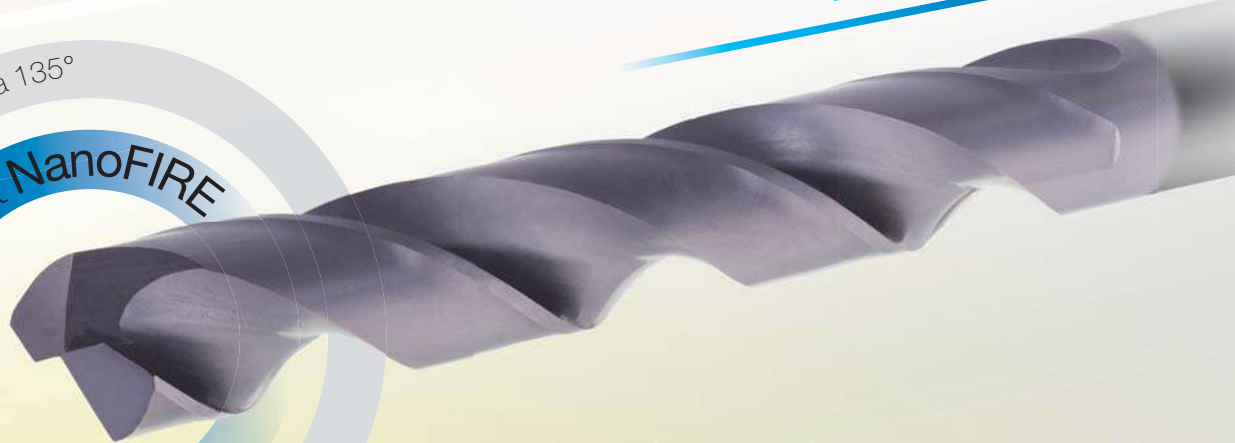
Epaisseur de l'âme au sommet, amoindrie pour diminuer les efforts de perçages axiaux mais fortement conique, augmentée vers l'arrière, afin d'obtenir la rigidité nécessaire de l'outil



NEW

Affûtage en croix à 135°

Revêtement NanoFIRE



Assurant la plus haute résistance à l'usure et aux températures élevées

## M42 revêtu nanoFire

- // Très hauts rendements surtout sur les aciers hautement alliés, aciers tenaces et alliages spéciaux
- // Version très rigide grâce à la géométrie spéciale de l'âme, à l'affûtage à 135° et à l'aminçissement de l'âme

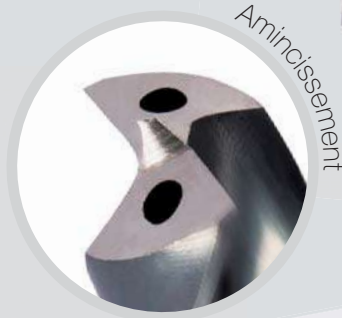
→ à partir de page 317

NEW

## Forets HSS avec canaux de lubrification

- // Pour l'usinage des poutrelles en acier, même lorsque les conditions d'usinages sont instables
- // Adduction optimale, axiale ou radiale
- // Formation insignifiante de bavures

→ à partir de page 499



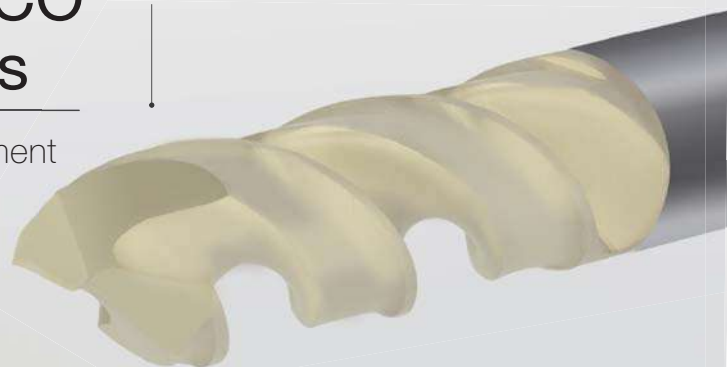
NEW

## Forets hélicoïdaux VA, en HSCO et avec revêtement Sirius

- // Excellente tenue de coupe grâce au revêtement Sirius, extrêmement résistant à l'usure, mais aussi grâce à l'affûtage en croix optimisé, à 130°

→ à partir de page 231

Revêtement **SIRIUS**  
assurant de hauts rendements  
d'usinages en particulier sur les  
aciers inoxydables



**Revêtement NanoFIRE**  
Extrêmement résistant à l'usure et  
aux températures très élevées

**NEW**

## FORETS NC EN HSCO

avec revêtement NanoFire

- // Pour la réalisation de l'amorçage et du centrage précis avec des paramètres de coupe élevés et une excellente tenue de coupe
- // Haute Performance grâce au revêtement NanoFire

→ à partir de page 705

Revêtement NanoFIRE



**NEW**

## Plaquettes de coupe et de guidage EB 800

pourvues de nouveaux revêtements

- // Grâce à la multitude de nos différents revêtements, adaptation optimale du revêtement approprié en fonction de la matière à usiner

→ à partir de page 556



**GÜHRING**

# Innovations

Les matériaux modernes exigent des procédés d'usinages selon les méthodes les plus avancées. Avec ses perspectives au niveau des recherches et développements et ses projets enrichis d'excellentes idées, Gühring est le leader de la nouvelle technologie d'usinage avec outils rotatifs.

**STYLIQUE INNOVANTE**  
assurant un refroidissement efficient

NEW

NEW



## RT 100 Trigon®

- // Vitesse d'écoulement des flux optimisée
- // Particulièrement bien approprié à l'usinage des aciers inoxydables, des titanes, alliages de titanes et alliages spéciaux
- // Volume du liquide de refroidissement plus élevé

→ à partir de page 813



NEW

RENTABILITE D'USINAGE LORS DU  
PERÇAGE des matériaux à base d'aluminium



## RT 100 AL

- // Pour toute la diversité des matériaux mous, alliages corroyés et tenaces jusqu'aux alliages d'aluminium de fonderie
- // Forets spéciaux pour les diamètres de 3,00 mm à 20,00 mm avec des profondeurs jusqu'à 12 x D
- // Usinages à lubrification conventionnelle ou à lubrification MQL possible

→ à partir de page 815

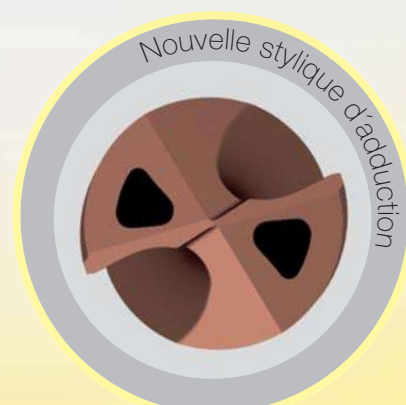
NEW

NEW



## RT 100 type C

- // Particulièrement bien approprié à l'usinage des aciers à copeaux longs
- // Excellente évacuation des copeaux, aussi à basse vitesse de coupe
- // Forme optimale des goujures et de la géométrie de coupe, absolument bien appropriée à ce type d'usinage



→ à partir de page 814

# R&D

## MATERIAUX SYNTHETIQUES RENFORCES PAR DES FIBRES

Solutions d'outils pour toutes les différentes fibres  
extrêmement abrasives

### USINAGE DES FVK

Outils optimisés pour l'usinage des matériaux renforcés de fibres de verre (GFK) et renforcés de fibres de carbone (CFK) ainsi que pour les matériaux « Stack »

- // Pièces sans encorbellement de fibres
- // Sans délaminage de l'état de surface sur les pièces
- // Aucun endommagement des pièces par « Peelup » ou par « Pushout »
- // Empêchement de l'arrachement des fibres « Pullouts » sur les pièces
- // Minimisation de la formation de bavures
- // Empêchement d'endommagements thermiques

→ à partir de page 816

Usinage des perçages sur **FVK**  
avec une qualité optimale de perçage



**GÜHRING**



## SURFACE DE DEPOUILLE STRUCTUREE AU LASER

Optimisation des tenues de coupe par adduction maîtrisée et bien ciblée du produit de lubrification et de refroidissement

EW

- // Réduction de trop hautes sollicitations thermiques par exemple sur les becs des arêtes de coupe et listels de guidage
- // Efficacité améliorée de la lubrification et du refroidissement
- // Qualité de perçage considérablement améliorée
- // Grâce à l'usinage par laser, maintes possibilités de réalisation de la structure de la surface de dépouille

→ à partir de page 819



Simulation avec CFD  
« Computational Fluid Dynamics »

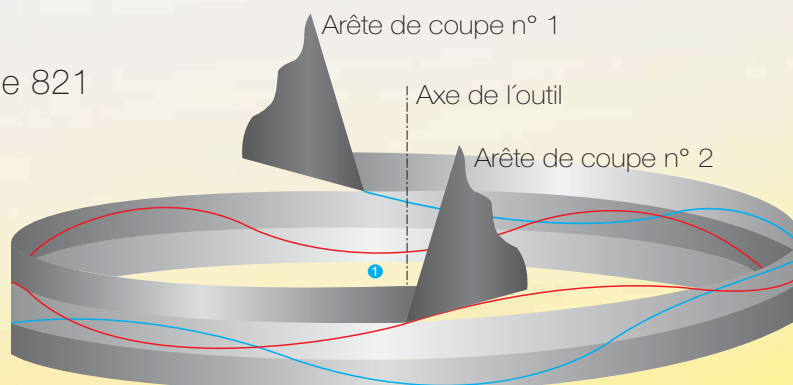
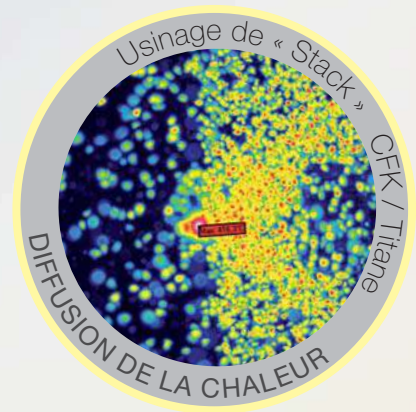
## USINAGE SOUTENU PAR OSCILLATIONS SUPERPOSEES

Optimisation du procédé d'usinage par mouvements superposés

NEW

- // Formation des copeaux plus favorable / amélioration de la rupture des copeaux
- // Evacuation copeaux améliorée
- // Réalisation de points de rupture sur les copeaux
- // Amoindrissement de la formation d'arêtes rapportées
- // Températures d'usinages et efforts de coupe amoindris

→ à partir de page 821



REAFFÛTER, REVÊTIR, ELIMINER LES REVÊTEMENTS,  
MODIFIER DES OUTILS, REALISER DE PETITES SERIES

POUR VOUS, A PROXIMITE,  
SUR LES LIEUX



Service de réaffûtage  
et de revêtement



# Outils spéciaux selon les besoins individuels du client – est l'une des recettes Gühring couronnée de succès

Nous répondons au besoin et souhaits de notre clientèle avec « **la perfection en usinage** » ! Depuis la sélection du procédé du projet jusqu'au démarrage spécifique de la fabrication en série avec ses outils de précision, Gühring vous assiste avec les **spécialistes** de son service technique et vous aide avec **d'excellentes idées** assurant une **technologie innovante**.



**GUHRING**

Site de production Gühring  
à Treuen



**GUHRING**



SITE DE PRODUCTION

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# TREUEN



**GÜHRING**



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# **PICTOGRAMMES**

UN COUP D'OEIL

---



# Code ISO

<b>P</b>	Aciers communs, aciers hautement alliés
<b>M</b>	Aciers inoxydables
<b>K</b>	Fontes grises, fontes à graphite sphéroïdal et fontes malléables
<b>N</b>	Aluminium et ses alliages ainsi que d'autres métaux non ferreux
<b>S</b>	Alliages de titane, spéciaux et superalliages
<b>H</b>	Aciers trempés et fontes dures

Sur les pages des produits vous trouvez, pour chacun des outils, des recommandations d'aptitudes en fonction des groupes d'applications mais aussi des indications en ce qui concerne les valeurs des duretés et des résistances maximales des matériaux à usiner:

- particulièrement adapté
- sous réserve

## Pictogrammes

Matériaux de coupe	<b>HSS</b>	<b>HSS-E</b>	<b>HSCO</b>	<b>M42</b>	<b>HSS-E-PM</b>				
	Aciers rapides								
	<b>HM</b>		<b>VHM</b>						
	CW monobloc granulométrie ultrafine (HM-UF)								
Profondeur de coupe	<b>1xD</b>	<b>1,5xD</b>	<b>3xD</b>	<b>4xD</b>	<b>5xD</b>	<b>7xD</b>	<b>8xD</b>	<b>10xD</b>	....
Ø-Tolérance	<b>m7</b>	<b>h5</b>	<b>h6</b>	<b>h7</b>	<b>h8</b>	<b>0/-0,004</b>			....
Forme d'attachement	<b>HA</b>	<b>HB</b>	<b>HE</b>		<b>Cyl</b>		<b>MK</b>		
	selon DIN 6535				cylindrique		Cône Morse		
Sens de coupe	<b>R</b>			<b>L</b>			<b>N</b>		
	à droite			à gauche			neutre		
Lubrification intérieure									
	avec LI			sans LI					
Forme	<b>A</b>	<b>B</b>	<b>R</b>						....
Angle d'affûtage	<b>90°</b>	<b>118°</b>	<b>120°</b>	<b>130°</b>	<b>135°</b>	<b>140°</b>	<b>150°</b>		....
Amin. de l'âme									
Norme	<b>DIN 333</b>	<b>DIN 338</b>	<b>DIN 340</b>	<b>DIN 345</b>	<b>DIN 1869</b>	<b>DIN 6537K</b>	<b>DIN 6537L</b>	<b>DIN 6539</b>	....
	selon DIN								
	<b>WN</b>								
	selon norme Gühring								
Type	<b>EB 100</b>	<b>GT 100</b>	<b>HT 800 WP</b>	<b>H</b>	<b>N</b>	<b>RT 100 T</b>	<b>RT 100 U</b>	<b>W</b>	....

## Revêtements

	poli		brun doré		FIRE/nanoFIRE		Signum
	traité vapeur		TiAlN		TiCN		nickelé
	nituré		TiAlN SuperA		TiN		MolyGlide
	listels nitrurés		TiAlN nanoA		Sirius		Carbo

# C'EST SI FACILE DE CHOISIR UN OUTIL!

## QUICKFINDER

En fonction du cas d'usinage, trouvez rapidement l'outil optimal!

FORETS RATIO
FORETS RATIO

**P** ACIERS

**H** ACIERS TREMPÉS

### QUICKFINDER

**3xD**

**4xD**

**5xD**

**7xD**

**8xD**

**12xD**

**No 1** Outil idéal en général pour l'usinage des aciers

**No 1** Outil idéal pour l'usinage des aciers et aciers haute résistance jusqu'à 1800 N/mm<sup>2</sup>

≤ 1400 N/mm<sup>2</sup>

≤ 1400 N/mm<sup>2</sup>

≤ 1600 N/mm<sup>2</sup>

≤ 1400 N/mm<sup>2</sup>

Matériau	3xD	4xD	5xD	7xD	8xD	12xD
≤ 1400 N/mm <sup>2</sup>	<p><b>No 1</b></p> <p>Ø 3,00 - 20,00 mm N° d'article 2477 à partir de p. 39</p>	<p><b>No 1</b></p> <p>Ø 3,00 - 20,00 mm N° d'article 2479 à partir de p. 61</p>	<p><b>No 1</b></p> <p>Ø 3,00 - 20,00 mm N° d'article 4044 à partir de p. 85</p>	<p><b>No 1</b></p> <p>Ø 3,00 - 20,00 mm N° d'article 5759 à partir de p. 99</p>	<p><b>No 1</b></p> <p>Ø 3,00 - 20,00 mm N° d'article 5750 à partir de p. 96</p>	<p><b>No 1</b></p> <p>Ø 3,00 - 20,00 mm N° d'article 5525 à partir de p. 100</p>
≤ 1400 N/mm <sup>2</sup>	<p>Ø 3,00 - 20,00 mm N° d'article 2480 à partir de p. 16</p>	<p>Ø 3,00 - 20,00 mm N° d'article 2996 à partir de p. 30</p>	<p>Type H pour les aciers trempés jusqu'à 62 HRC N° d'article 1346, p. 389</p>			<p>Ø 3,00 - 20,00 mm N° d'article 5525 à partir de p. 100</p>
≤ 1600 N/mm <sup>2</sup>	<p><b>No 1</b></p> <p>Ø 3,00 - 20,00 mm N° d'article 8520 à partir de p. 44</p>	<p><b>No 1</b></p> <p>Ø 3,00 - 20,00 mm N° d'article 8521 à partir de p. 68</p>				<p><b>No 1</b></p> <p>Ø 3,00 - 16,00 mm N° d'article 8522 à partir de p. 90</p>
≤ 1400 N/mm <sup>2</sup>	<p>Ø 3,00 - 20,00 mm N° d'article 8520 à partir de p. 44</p>	<p>Ø 3,00 - 20,00 mm N° d'article 8521 à partir de p. 68</p>	<p>Ø 1,40 - 3,00 mm N° d'article 8521 à partir de p. 110</p>	<p>Ø 3,00 - 20,00 mm N° d'article 5401 à partir de p. 109</p>	<p>Ø 1,40 - 3,00 mm N° d'article 5408 à partir de p. 111</p>	<p>Ø 0,50 - 3,00 mm N° d'article 6400 à partir de p. 108</p>

RT100 S avec canaux de lubrification

RT100 U avec canaux de lubrification

RT100 U sans canaux de lubrification

RT100 HF avec canaux de lubrification

Microforets ExclusivLine avec canaux de lubrification

Microforets ExclusivLine sans canaux de lubrification

## NAVIGATOR

Résumé du programme complet y compris conseils d'utilisation et paramètres de coupe!

FORETS RATIO
FORETS RATIO

### GÜHRING NAVIGATOR

Il est conseillé de choisir des outils dont les avancées sont en caractères gras.  
Pour le choix optimal de l'outil et de ses paramètres d'utilisation, sous [www.guehring.de](http://www.guehring.de) vous disposez du logiciel „Navigator Gühring“.

N° d'article	Norme DIN
1171	6502K, 6503TK, 6507K
1650	6502K, 6503TK, 6507K
1181	6502K, 6503TK, 6507K
2468	6502K, 6503TK, 6507K
2477	6502K, 6503TK, 6507K
2469	6502K, 6503TK, 6507K
8510	6502K, 6503TK, 6507K
8511	6502K, 6503TK, 6507K
8520	6502K, 6503TK, 6507K
8521	6502K, 6503TK, 6507K

Matériau	3xD	4xD	5xD	7xD	8xD	12xD
Acier	1171	1650	1181	2468	2477	2469
Acier trempé	1650	1181	2468	2477	2469	8510
Acier haute résistance	1181	2468	2477	2469	8510	8511
Acier inoxydable	8510	8511	8520	8521	8520	8521
Aluminium	8520	8521	8520	8521	8520	8521

Ø outil (mm)	Gamme d'avance n°								
	1	2	3	4	5	6	7	8	9
0,50	0,004	0,006	0,008	0,008	0,010	0,012	0,014	0,016	0,019
1,00	0,008	0,012	0,016	0,016	0,020	0,022	0,024	0,028	0,032
2,00	0,012	0,018	0,024	0,024	0,030	0,032	0,036	0,040	0,045
3,15	0,015	0,022	0,030	0,030	0,036	0,038	0,042	0,045	0,050
4,00	0,020	0,028	0,036	0,036	0,042	0,045	0,048	0,052	0,055
5,00	0,025	0,034	0,044	0,044	0,050	0,052	0,055	0,058	0,062
6,30	0,030	0,040	0,050	0,050	0,056	0,058	0,062	0,065	0,068
8,00	0,036	0,048	0,060	0,060	0,066	0,068	0,072	0,075	0,078
10,00	0,042	0,056	0,070	0,070	0,076	0,078	0,082	0,085	0,088
12,50	0,048	0,064	0,080	0,080	0,086	0,088	0,092	0,095	0,098
16,00	0,120	0,160	0,200	0,200	0,210	0,215	0,220	0,225	0,230
20,00	0,120	0,160	0,200	0,200	0,210	0,215	0,220	0,225	0,230
25,00	0,120	0,160	0,200	0,200	0,210	0,215	0,220	0,225	0,230
31,50	0,180	0,240	0,300	0,300	0,315	0,320	0,325	0,330	0,335
40,00	0,240	0,320	0,400	0,400	0,420	0,425	0,430	0,435	0,440
50,00	0,300	0,400	0,500	0,500	0,520	0,525	0,530	0,535	0,540
63,00	0,315	0,420	0,520	0,520	0,540	0,545	0,550	0,555	0,560
80,00	0,400	0,500	0,600	0,600	0,620	0,625	0,630	0,635	0,640

Matériau	3xD	4xD	5xD	7xD	8xD	12xD
Acier	1171	1650	1181	2468	2477	2469
Acier trempé	1650	1181	2468	2477	2469	8510
Acier haute résistance	1181	2468	2477	2469	8510	8511
Acier inoxydable	8510	8511	8520	8521	8520	8521
Aluminium	8520	8521	8520	8521	8520	8521

Matériau	3xD	4xD	5xD	7xD	8xD	12xD
Acier	1171	1650	1181	2468	2477	2469
Acier trempé	1650	1181	2468	2477	2469	8510
Acier haute résistance	1181	2468	2477	2469	8510	8511
Acier inoxydable	8510	8511	8520	8521	8520	8521
Aluminium	8520	8521	8520	8521	8520	8521

Matériau	3xD	4xD	5xD	7xD	8xD	12xD
Acier	1171	1650	1181	2468	2477	2469
Acier trempé	1650	1181	2468	2477	2469	8510
Acier haute résistance	1181	2468	2477	2469	8510	8511
Acier inoxydable	8510	8511	8520	8521	8520	8521
Aluminium	8520	8521	8520	8521	8520	8521



# CHOISIR ET COMMANDER

## PAGE PRODUIT

Toutes les caractéristiques en un clin d'œil!

**Forets Ratio à canaux de lubrification**

3xD RT100 U DIN 6537K 140° m7

Matière de coupe **CW monobloc**

Surface **S**

Forme d'attachement HE

**P** • Amin. de l'âme  $\geq \varnothing 3,300$  • affûtage en pente • arête de coupe principale rectiligne • géométrie de coupe optimisée

**M** ○

**K** •

**N** ○ aciers de construction et de cémentation • aciers de décolletage, aciers d'amélioration • aciers alliés jusqu'à 1200 N/mm<sup>2</sup> • fontes • bronze, laiton

**S** ○

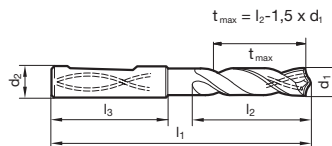
**H** ○

**allages Al haut % en Si**

**GUHRING NAVIGATOR**  
Paramètres de coupe, page 750

Recommandations des domaines d'applications:

- particulièrement adapté
- sous réserve



**2**  
Diamètre nominal

N° d'article 1181						N° d'article 1					
d1		d2 h6	l1	l2	l3	d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm	mm	inch	mm	mm	mm	mm
3,300		6,000	62,000	20,000	36,000	10,500		12,000	102,000	55,000	45,000
3,400		6,000	62,000	20,000	36,000	10,600		12,000	102,000	55,000	45,000
4,000		6,000	66,000	24,000	36,000	10,700		12,000	102,000	55,000	45,000
5,000		6,000	66,000	28,000	36,000	10,800		12,000	102,000	55,000	45,000
5,500		6,000	66,000	28,000	36,000	11,000		12,000	102,000	55,000	45,000
5,600		6,000	66,000	28,000	36,000	11,300		12,000	102,000	55,000	45,000
5,800		6,000	66,000	28,000	36,000	11,500		12,000	102,000	55,000	45,000
6,000		6,000	66,000	28,000	36,000	11,510	29/64	12,000	102,000	55,000	45,000
6,100		8,000	79,000	34,000	36,000	11,910	15/32	12,000	102,000	55,000	45,000
6,200		8,000	79,000	34,000	36,000	12,000		12,000	102,000	55,000	45,000
6,300		8,000	79,000	34,000	36,000	12,100		14,000	107,000	60,000	45,000
6,400		8,000	79,000	34,000	36,000	12,300	31/64	14,000	107,000	60,000	45,000
6,600		8,000	79,000	34,000	36,000	12,500		14,000	107,000	60,000	45,000
6,800		8,000	79,000	34,000	36,000	12,700	1/2	14,000	107,000	60,000	45,000
7,000		8,000	79,000	34,000	36,000	12,900		14,000	107,000	60,000	45,000
7,100		8,000	79,000	41,000	36,000	13,000		14,000	107,000	60,000	45,000
7,140	9/32	8,000	79,000	41,000	36,000	13,500		14,000	107,000	60,000	45,000
7,400		8,000	79,000	41,000	36,000	13,890	35/64	14,000	107,000	60,000	45,000
7,500		8,000	79,000	41,000	36,000	14,000		14,000	107,000	60,000	45,000
7,540	19/64	8,000	79,000	41,000	36,000	14,500		16,000	115,000	65,000	48,000
7,800		8,000	79,000	41,000	36,000	14,680	37/64	16,000	115,000	65,000	48,000

Lorsque vous rédigez une commande, il faut toujours mentionner **le N° d'article et le Diamètre nominal** par exemple: Forets Ratio à canaux de lubrification diamètre nominal 5,5 = **1181 5,500**

**Nous vous demandons de bien vouloir appliquer les prix mentionnés sur la liste des prix séparée.**

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## Système d'outils à plaquettes interchangeables T 800

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## Forets hélicoïdaux à queue cylindrique

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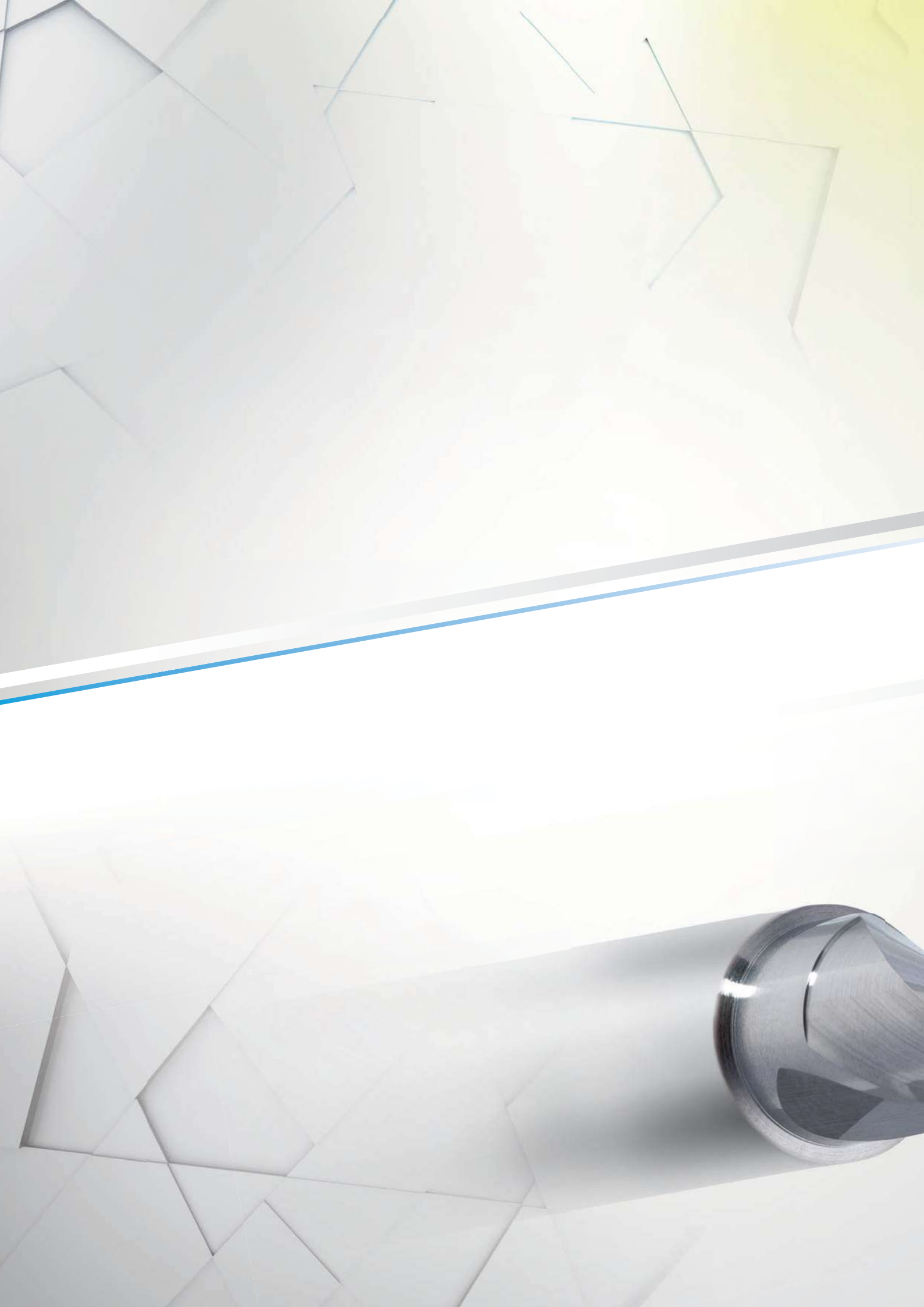
## Forets étagés / Forets aléseurs

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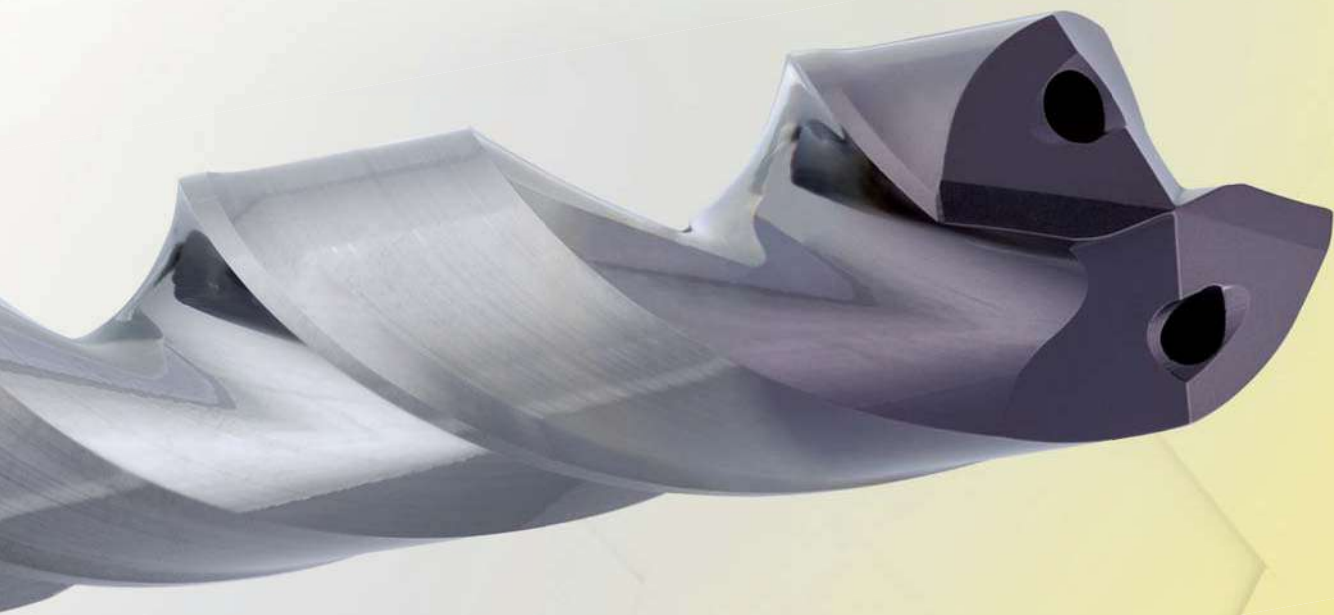
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# FORETS RATIO

//Ratio®//





ACIERS



ACIERS  
TREMPÉS

3xD

4xD

5xD

7xD

≤ 1400  
N/mm<sup>2</sup>

No 1

Ø 3,00 - 20,00 mm  
N° d'article 2477  
à partir de p. 39

No 1

Ø 3,00 - 20,00 mm  
N° d'article 5759  
à partir de p. 59

No 1

Ø 3,00 - 20,00 mm  
N° d'article 2479  
à partir de p. 61

No 1

Ø 3,00 - 20,00 mm  
N° d'article 4044  
à partir de p. 85

≤ 1400  
N/mm<sup>2</sup>

Ø 3,00 - 20,00 mm  
N° d'article 2480  
à partir de p. 16

No 1

Ø 3,00 - 20,00 mm  
N° d'article 2996  
à partir de p. 30

≤ 1600  
N/mm<sup>2</sup>

No 1

Ø 3,00 - 20,00 mm  
N° d'article 8520  
à partir de p. 44

No 1

Ø 3,00 - 20,00 mm  
N° d'article 8521  
à partir de p. 68

No 1

Ø 3,00 - 16,00 mm  
N° d'article 8522  
à partir de p. 90

≤ 1400  
N/mm<sup>2</sup>

No 1

Ø 1,40 - 3,00 mm  
N° d'article 6405  
à partir de p. 110

Ø 0,50 - 3,00 mm  
N° d'article 6400  
à partir de p. 108

Ø 0,50 - 3,00 mm  
N° d'article 6401  
à partir de p. 109

15xD

20xD

25xD

30xD

No 1

Ø 1,40 - 3,00 mm  
N° d'article 6412  
à partir de p. 112

No 1

Ø 3,00 - 14,00 mm  
N° d'article 6509  
à partir de p. 102

No 1

Ø 3,00 - 14,00 mm  
N° d'article 6511  
à partir de p. 104

No 1

Ø 3,00 - 12,00 mm  
N° d'article 6512  
à partir de p. 105

No 1

Ø 3,00 - 10,00 mm  
N° d'article 6513  
à partir de p. 106

≤ 1400  
N/mm<sup>2</sup>



# QUICKFINDER

## 8xD

## 12xD

**No 1** Outil idéal en général pour l'usinage des aciers

**No 1** Outil idéal pour l'usinage des aciers et aciers haute résistance jusqu'à 1600 N/mm<sup>2</sup>

**No 1**

Ø 3,00 - 20,00 mm  
N° d'article 5760  
à partir de p. 96



RT100 S avec canaux de lubrification

**No 1**

Ø 3,00 - 20,00 mm  
N° d'article 5525  
à partir de p. 100



RT100 U avec canaux de lubrification

Type H pour les aciers trempés  
jusqu'à 62 HRC  
N° d'article 1946, p. 389



RT100 U sans canaux de lubrification



RT100 HF avec canaux de lubrification

**No 1**

Ø 1,40 - 3,00 mm  
N° d'article 6408  
à partir de p. 111



Microforets ExclusiveLine avec canaux de lubrification



Microforets ExclusiveLine sans canaux de lubrification

## 40xD



Microforets ExclusiveLine avec canaux de lubrification

**No 1**

Ø 3,00 - 8,00 mm  
N° d'article 6514  
à partir de p. 107



RT 100 T



ACIERS  
INOXYDABLES



TITANE &  
ALLIAGES SPÉCIAUX

3xD

4xD

5xD

7xD

No 1 No 1  
Ø 3,00 - 20,00 mm  
N° d'article 8510  
à partir de p. 48



No 1 No 1  
Ø 3,00 - 20,00 mm  
N° d'article 8511  
à partir de p. 72



No 1  
Ø 3,00 - 20,00 mm  
N° d'article 8520  
à partir de p. 44



No 1  
Ø 3,00 - 20,00 mm  
N° d'article 8521  
à partir de p. 68

No 1  
Ø 3,00 - 16,00 mm  
N° d'article 8522  
à partir de p. 90

S  
Ø 3,50 - 20,00 mm  
N° d'article 2468  
à partir de p. 52



S  
Ø 3,00 - 20,00 mm  
N° d'article 2478  
à partir de p. 76



No 1 No 1  
Ø 1,40 - 3,00 mm  
N° d'article 6405  
à partir de p. 110



15xD

20xD

25xD

30xD

No 1 No 1  
Ø 1,40 - 3,00 mm  
N° d'article 6412  
à partir de p. 112



No 1 No 1  
Ø 3,00 - 14,00 mm  
N° d'article 6509  
à partir de p. 102

No 1 No 1  
Ø 3,00 - 14,00 mm  
N° d'article 6511  
à partir de p. 104

No 1 No 1  
Ø 3,00 - 12,00 mm  
N° d'article 6512  
à partir de p. 105

No 1 No 1  
Ø 3,00 - 10,00 mm  
N° d'article 6513  
à partir de p. 106





# QUICKFINDER

## 8xD

**No 1** Outil idéal pour l'acier inoxydable

**No 1** Outil idéal pour les alliages spéciaux et les alliages de titane



RT100 VA



RT100 HF avec canaux de lubrification



RT100 F avec canaux de lubrification

**No 1** **No 1**

Ø 1,40 - 3,00 mm  
N° d'article 6408  
à partir de p. 111



Microforets ExclusiveLine avec canaux de lubrification

## 40xD



Microforets ExclusiveLine avec canaux de lubrification

**No 1** **No 1**

Ø 3,00 - 8,00 mm  
N° d'article 6514  
à partir de p. 107



RT 100 T



# K FONTE

3xD	4xD	5xD	7xD
-----	-----	-----	-----

		<b>No 1</b> Ø 3,00 - 20,00 mm N° d'article 6501 à partir de p. 82	<b>No 1</b> Ø 4,00 - 20,00 mm N° d'article 6502 à partir de p. 91
--	--	--	--

<b>No 1</b> Ø 3,00 - 20,00 mm N° d'article 2477 à partir de p. 39		Ø 3,00 - 20,00 mm N° d'article 2479 à partir de p. 61	Ø 3,00 - 20,00 mm N° d'article 4044 à partir de p. 85
--	--	---	---

Ø 3,00 - 20,00 mm N° d'article 2480 à partir de p. 16		Ø 3,00 - 20,00 mm N° d'article 2996 à partir de p. 30	
---	--	---	--

	<b>No 1</b> Ø 3,00 - 20,00 mm N° d'article 768 à partir de p. 56		Ø 3,00 - 20,00 mm N° d'article 769 à partir de p. 93
--	---	--	--

		<b>No 1</b> Ø 1,40 - 3,00 mm N° d'article 6405 à partir de p. 110	
--	--	--	--

	Ø 0,50 - 3,00 mm N° d'article 6400 à partir de p. 108		Ø 0,50 - 3,00 mm N° d'article 6401 à partir de p. 109
--	---	--	---

15xD	20xD	25xD	30xD
------	------	------	------

<b>No 1</b> Ø 1,40 - 3,00 mm N° d'article 6412 à partir de p. 112			
--	--	--	--

<b>No 1</b> Ø 3,00 - 14,00 mm N° d'article 6509 à partir de p. 102	<b>No 1</b> Ø 3,00 - 14,00 mm N° d'article 6511 à partir de p. 104	<b>No 1</b> Ø 3,00 - 12,00 mm N° d'article 6512 à partir de p. 105	<b>No 1</b> Ø 3,00 - 10,00 mm N° d'article 6513 à partir de p. 106
---	---	---	---

Ø 5,00 - 14,00 mm N° d'article 773 à partir de p. 103			
---	--	--	--



# QUICKFINDER

8xD

10xD

12xD

**No 1** Outil idéal


RT 100 R

**No 1**

Ø 3,00 - 20,00 mm  
N° d'article 5525  
à partir de p. 100



RT100 U avec canaux de lubrification



RT100 U sans canaux de lubrification

**No 1**

Ø 3,00 - 20,00 mm  
N° d'article 770  
à partir de p. 98



RT100 GG Fonte

**No 1**

Ø 1,40 - 3,00 mm  
N° d'article 6408  
à partir de p. 111



Microforets ExclusiveLine avec canaux de lubrification



Microforets ExclusiveLine sans canaux de lubrification

40xD



Microforets ExclusiveLine avec canaux de lubrification

**No 1**

Ø 3,00 - 8,00 mm  
N° d'article 6514  
à partir de p. 107



RT 100 T



RT 150 GN



**N**

ALUMINIUM, N-F, MAT. SYNTHETIQUES

4xD

5xD

7xD

8xD

**No 1**

Ø 3,00 - 20,00 mm  
N° d'article 6068  
à partir de p. 58

**No 1**

Ø 3,00 - 19,50 mm  
N° d'article 6069  
à partir de p. 94

Ø 3,00 - 20,00 mm  
N° d'article 2713  
à partir de p. 113

**No 1**

Ø 3,00 - 20,00 mm\*

**No 1**

Ø 1,40 - 3,00 mm  
N° d'article 6405  
à partir de p. 110

**No 1**

Ø 1,40 - 3,00 mm  
N° d'article 6408  
à partir de p. 111

15xD

20xD

25xD

30xD

**No 1**

Ø 5,00 - 14,00 mm  
N° d'article 773  
à partir de p. 103

**No 1**

Ø 3,00 - max. 14,00 mm\*

**No 1**

Ø 1,40 - 3,00 mm  
N° d'article 6412  
à partir de p. 112

\* Outils spéciaux sur demande



# QUICKFINDER

10xD

No 1 Outil idéal

No 1

Ø 3,00 - 19,50 mm  
N° d'article 6070  
à partir de p. 99



RT150 GG



FT 200 G avec canaux de lubrification



RT100 AL



Microforets ExclusiveLine avec canaux de lubrification



RT 150 GN

Forets pour les matériaux synthétiques renforcés de fibres  
N° d'article 1149 p. 431



RT 100 T Aluminium

Type N pour les aluminiums et matériaux synthétiques



Microforets ExclusiveLine avec canaux de lubrification



P	M	K	N	S	H	Présentation	Profondeur	Forme d'attachement	Type	Norme	Matière de coupe	Surface	d1/mm	N° d'article	Param. de coupe, page	Page
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### Forets Ratio sans canaux de lubrification

●	○	●	○	○	○		3xD	HA	RT100 U	DIN 6537K	VHM	F	3,000 - 20,000	2480	752	16
●	○	●	○	○	○		3xD	HE	RT100 U	DIN 6537K	VHM	F	3,100 - 20,000	2472	752	18
●	○	●	○	○	○		3xD	Cyl	RT100 U	DIN 6539	VHM	F	3,000 - 15,500	2473	752	20
●	○	●	○	○	○		3xD	HE	RT100 U	DIN 6537K	VHM	S	3,000 - 20,000	1184	752	21
●	○	●	○	○	○		3xD	Cyl	RT100 U	DIN 6539	VHM	S	3,000 - 16,000	1242	752	23
●	○	●	○	○	○		3xD	HA	RT100 HF	DIN 6537K	VHM	Y	3,000 - 20,000	8524	752	25
○	○	○	○	●	○		3xD	HA	RT100 F	DIN 6537K	VHM	F	3,700 - 12,000	2475	752	27
○	●	○	○	○	○		3xD	Cyl	RT100 F	DIN 6539	VHM	S	3,000 - 14,000	1702	752	28
●	○	●	○	○	○		5xD	HA	RT100 U	DIN 6537L	VHM	F	3,000 - 20,000	2996	756	30
●	○	●	○	○	○		5xD	HE	RT100 U	DIN 6537L	VHM	F	3,100 - 20,000	2719	756	32
●	○	●	○	○	○		5xD	Cyl	RT100 U	WN	VHM	F	5,000 - 14,000	2474	756	34
●	○	●	○	○	○		5xD	HA	RT100 U	DIN 6537L	VHM	S	3,300 - 12,000	2717	756	35
●	○	●	○	○	○		5xD	Cyl	RT100 U	WN	VHM	S	5,000 - 16,000	1243	756	36
○	○	○	○	○	●		5xD	HA	RT100 F	DIN 6537L	VHM	F	3,000 - 15,000	2712	756	38

### Forets Ratio à canaux de lubrification

●	○	●	○	○	○		3xD	HA	RT100 U	DIN 6537K	VHM	F	3,000 - 20,000	2477	750	39
●	○	●	○	○	○		3xD	HE	RT100 U	DIN 6537K	VHM	F	3,000 - 20,000	2469	750	41
●	○	●	○	○	○		3xD	HE	RT100 U	DIN 6537K	VHM	S	3,300 - 19,500	1181	750	43
●	○	●	○	○	○		3xD	HA	RT100 HF	DIN 6537K	VHM	Y	3,000 - 20,000	8520	750	44
●	○	●	○	○	○		3xD	HE	RT100 HF	DIN 6537K	VHM	Y	3,000 - 20,000	8620	750	46
●	○	●	○	○	○		3xD	HA	RT100 VA	DIN 6537K	VHM	a	3,000 - 20,000	8510	750	48
●	○	●	○	○	○		3xD	HE	RT100 VA	DIN 6537K	VHM	a	3,000 - 20,000	8610	750	50
○	○	○	○	○	●		3xD	HE	RT100 F	DIN 6537K	VHM	F	3,500 - 20,000	2468	750	52
○	○	○	○	○	●		3xD	HA	RT100 F	DIN 6537K	VHM	S	3,100 - 22,000	1660	750	53



P	M	K	N	S	H	Présentation	Profondeur	Forme d'attachement	Type	Norme	Matière de coupe	Surface	d1/mm	N° d'article	Param. de coupe, page	Page
○	○	○	○	●	○		3xD	HE	RT 100 F	DIN 6537 K	VHM	S	4,000 - 25,000	1180	750	54
●	○	○	○	○	○		3xD	HE	RT 80 U	DIN 6538 K	HM	S	9,500 - 25,500	1171	750	55
○	○	○	○	○	○		4xD	HA	RT 150 GG	WN	VHM	○	3,000 - 20,000	768	752	56
○	○	○	○	○	○		4xD	HA	RT 150 GG	WN	VHM	○	3,000 - 20,000	6068	752	58
●	○	○	○	○	○		5xD	HA	RT 100 S	DIN 6537 L	VHM	F	3,000 - 20,000	5759	754	59
●	○	○	○	○	○		5xD	HA	RT 100 U	DIN 6537 L	VHM	F	3,000 - 20,000	2479	754	61
●	○	○	○	○	○		5xD	HE	RT 100 U	DIN 6537 L	VHM	F	3,300 - 20,000	2471	754	63
●	○	○	○	○	○		5xD	HA	RT 100 U	DIN 6537 L	VHM	S	3,000 - 19,500	1663	754	65
●	○	○	○	○	○		5xD	HE	RT 100 U	DIN 6537 L	VHM	S	3,300 - 20,000	1183	754	66
●	○	○	○	○	○		5xD	HA	RT 100 HF	DIN 6537 L	VHM	Y	3,000 - 20,000	8521	756	68
●	○	○	○	○	○		5xD	HE	RT 100 HF	DIN 6537 L	VHM	Y	3,000 - 20,000	8621	756	70
○	○	○	○	○	○		5xD	HA	RT 100 VA	DIN 6537 L	VHM	a	3,000 - 20,000	8511	756	72
○	○	○	○	○	○		5xD	HE	RT 100 VA	DIN 6537 L	VHM	a	3,000 - 20,000	8611	756	74
○	○	○	○	○	○		5xD	HA	RT 100 F	DIN 6537 L	VHM	F	3,000 - 20,000	2478	754	76
○	○	○	○	○	○		5xD	HE	RT 100 F	DIN 6537 L	VHM	F	3,000 - 20,000	2470	754	77
○	○	○	○	○	○		5xD	HA	RT 100 F	DIN 6537 L	VHM	S	3,000 - 23,500	1662	754	78
○	○	○	○	○	○		5xD	HE	RT 100 F	DIN 6537 L	VHM	S	3,000 - 25,000	1182	754	80
○	○	○	○	○	○		5xD	HA	RT 100 R	DIN 6537 L	VHM	F	3,000 - 20,000	6501	754	82
●	○	○	○	○	○		5xD	HE	RT 80 U	DIN 6538 M	HM	S	9,800 - 25,500	1172	754	84
●	○	○	○	○	○		7xD	HA	RT 100 U	WN	VHM	F	3,000 - 20,000	4044	758	85
●	○	○	○	○	○		7xD	HE	RT 100 U	WN	VHM	F	3,000 - 19,500	4045	758	87
●	○	○	○	○	○		7xD	HA	RT 100 U	WN	VHM	S	3,000 - 19,500	2711	758	89
●	○	○	○	○	○		7xD	HA	RT 100 HF	WN	VHM	Y	3,000 - 16,000	8522	758	90
○	○	○	○	○	○		7xD	HA	RT 100 R	WN	VHM	F	4,000 - 20,000	6502	758	91



P	M	K	N	S	H	Présentation	Profondeur	Forme d'attachement	Type	Norme	Matière de coupe	Surface	d1/mm	N° d'article	Param. de coupe, page	Page
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### Forets Ratio à canaux de lubrification

			•	○			7xD	HA	RT 150 GG	WN	VHM	○	3,000 - 20,000	769	758	93
			○	•			7xD	HA	RT 150 GG	WN	VHM	○	3,000 - 19,500	6069	758	94
•	○	○	○	○			7xD	HE	RT 80U	DIN 6538L	HM	Ⓢ	9,600 - 25,000	1173	758	95
•	○	○	○	○	○		8xD	HA	RT 100 S	WN	VHM	Ⓡ	3,000 - 20,000	5760	758	96
			•	○			10xD	HA	RT 150 GG	WN	VHM	○	3,000 - 20,000	770	758	98
			○	•			10xD	HA	RT 150 GG	WN	VHM	○	3,000 - 19,500	6070	758	99
•	○	•	○	○	○		12xD	HA	RT 100 U	WN	VHM	Ⓡ	3,000 - 20,000	5525	758	100
•	•	•	○	○	○		15xD	HA	RT 100 T	WN	VHM	Ⓡ	3,000 - 14,000	6509	760	102
			•	•			15xD	HA	RT 150 GN	WN	VHM	○	5,000 - 14,000	773	760	103
•	•	•	○	○	○		20xD	HA	RT 100 T	WN	VHM	Ⓡ	3,000 - 14,000	6511	760	104
•	•	•	○	○	○		25xD	HA	RT 100 T	WN	VHM	Ⓡ	3,000 - 12,000	6512	760	105
•	•	•	○	○	○		30xD	HA	RT 100 T	WN	VHM	Ⓡ	3,000 - 10,000	6513	760	106
•	•	•	○	○	○		40xD	HA	RT 100 T	WN	VHM	Ⓡ	3,000 - 8,000	6514	760	107

### Microforets ExclusiveLine sans canaux de lubrification

•	•	•	○	○			4xD	Cyl	N	WN	VHM	Ⓡ	0,500 - 3,000	6400	796	108
•	•	•	○	○			7xD	Cyl	N	WN	VHM	Ⓡ	0,500 - 3,000	6401	796	109

### Microforets ExclusiveLine avec canaux de lubrification

•	•	•	○	○			5xD	Cyl	N	WN	VHM	Ⓡ	1,400 - 3,000	6405	796	110
•	•	•	○	○			8xD	Cyl	N	WN	VHM	Ⓡ	1,400 - 3,000	6408	796	111
•	•	•	○	○			15xD	Cyl	N	WN	VHM	Ⓡ	1,400 - 3,000	6412	796	112

### Forets Ratio à 3 lèvres

			•	•			5xD	HA	FT 200 G	DIN 6537L	VHM	○	3,000 - 20,000	2713	762	113
○	○	○	○	○			5xD	Cyl	GS 200 U	DIN 6539	VHM	Ⓢ	3,000 - 14,400	611	762	114
○	○	○	○	○			5xD	Cyl	GS 200 U	DIN 6539	VHM	○	3,000 - 20,000	731	762	115
			○	○			5xD	Cyl	GS 200 G	DIN 6539	VHM	○	3,570 - 12,500	745	762	116





P	M	K	N	S	H	Présentation	Profondeur	Forme d'attachement	Type	Norme	Matière de coupe	Surface	d1/mm	N° d'article	Param. de coupe, page	Page
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### Forets Ratio à 3 lèbres

		○	○				5xD	Cyl	GS 200 G	DIN 6539	VHM	○	3,000 - 20,000	1025	762	117
○		○	○				5xD	Cyl	GS 200 F	DIN 6539	VHM	Ⓢ	3,000 - 11,000	1027	762	119

### Forets étagés Ratio, 3 lèbres

		○	○				3xD	Cyl	GS 200 G	WN	VHM	○	3,400 - 20,000	1032		120
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**Forets Ratio sans canaux de lubrification**



**P** • Amin. de l'âme  $\geq \varnothing 3,000$  • affûtage en pente • arête de coupe principale rectiligne • géométrie de coupe optimisée

**M** ○

**K** •

**N** ○ aciers de construction et de cémentation • aciers de décolletage, aciers d'amélioration • aciers alliés jusqu'à 1200 N/mm<sup>2</sup> • fontes • bronze, laiton

**S** ○ • alliages Al haut % en Si

**H** ○

Matière de coupe

**CW monobloc**

Surface

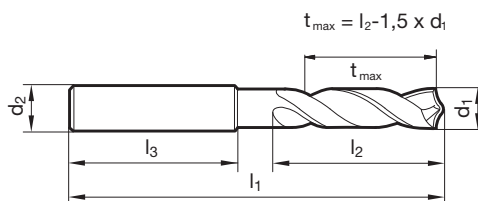
**F**

Forme d'attachement

HA

**GÜHRING NAVIGATOR**

Paramètres de coupe, page 752



N° d'article

**2480**

d1		d2 h6	l1	l2	l3	d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm	mm	inch	mm	mm	mm	mm
3,000		6,000	62,000	20,000	36,000	6,500		8,000	79,000	34,000	36,000
3,100		6,000	62,000	20,000	36,000	6,600		8,000	79,000	34,000	36,000
3,200		6,000	62,000	20,000	36,000	6,700		8,000	79,000	34,000	36,000
3,250		6,000	62,000	20,000	36,000	6,750	17/64	8,000	79,000	34,000	36,000
3,300		6,000	62,000	20,000	36,000	6,800		8,000	79,000	34,000	36,000
3,400		6,000	62,000	20,000	36,000	6,900		8,000	79,000	34,000	36,000
3,500		6,000	62,000	20,000	36,000	7,000		8,000	79,000	34,000	36,000
3,570	9/64	6,000	62,000	20,000	36,000	7,200		8,000	79,000	41,000	36,000
3,600		6,000	62,000	20,000	36,000	7,300		8,000	79,000	41,000	36,000
3,700		6,000	62,000	20,000	36,000	7,500		8,000	79,000	41,000	36,000
3,800		6,000	66,000	24,000	36,000	7,700		8,000	79,000	41,000	36,000
3,900		6,000	66,000	24,000	36,000	7,900		8,000	79,000	41,000	36,000
4,000		6,000	66,000	24,000	36,000	7,940	5/16	8,000	79,000	41,000	36,000
4,100		6,000	66,000	24,000	36,000	8,000		8,000	79,000	41,000	36,000
4,200		6,000	66,000	24,000	36,000	8,100		10,000	89,000	47,000	40,000
4,300		6,000	66,000	24,000	36,000	8,200		10,000	89,000	47,000	40,000
4,400		6,000	66,000	24,000	36,000	8,330	21/64	10,000	89,000	47,000	40,000
4,500		6,000	66,000	24,000	36,000	8,400		10,000	89,000	47,000	40,000
4,600		6,000	66,000	24,000	36,000	8,500		10,000	89,000	47,000	40,000
4,650		6,000	66,000	24,000	36,000	8,700		10,000	89,000	47,000	40,000
4,760	3/16	6,000	66,000	28,000	36,000	8,800		10,000	89,000	47,000	40,000
4,800		6,000	66,000	28,000	36,000	8,900		10,000	89,000	47,000	40,000
4,900		6,000	66,000	28,000	36,000	9,250		10,000	89,000	47,000	40,000
5,000		6,000	66,000	28,000	36,000	9,400		10,000	89,000	47,000	40,000
5,100		6,000	66,000	28,000	36,000	9,500		10,000	89,000	47,000	40,000
5,160	13/64	6,000	66,000	28,000	36,000	9,700		10,000	89,000	47,000	40,000
5,200		6,000	66,000	28,000	36,000	9,800		10,000	89,000	47,000	40,000
5,300		6,000	66,000	28,000	36,000	9,900		10,000	89,000	47,000	40,000
5,400		6,000	66,000	28,000	36,000	10,000		10,000	89,000	47,000	40,000
5,500		6,000	66,000	28,000	36,000	10,100		12,000	102,000	55,000	45,000
5,550		6,000	66,000	28,000	36,000	10,200		12,000	102,000	55,000	45,000
5,560	7/32	6,000	66,000	28,000	36,000	10,320	13/32	12,000	102,000	55,000	45,000
5,600		6,000	66,000	28,000	36,000	10,400		12,000	102,000	55,000	45,000
5,650		6,000	66,000	28,000	36,000	10,500		12,000	102,000	55,000	45,000
5,700		6,000	66,000	28,000	36,000	10,700		12,000	102,000	55,000	45,000
5,800		6,000	66,000	28,000	36,000	10,800		12,000	102,000	55,000	45,000
5,900		6,000	66,000	28,000	36,000	10,900		12,000	102,000	55,000	45,000
6,000		6,000	66,000	28,000	36,000	11,000		12,000	102,000	55,000	45,000
6,100		8,000	79,000	34,000	36,000	11,110	7/16	12,000	102,000	55,000	45,000
6,200		8,000	79,000	34,000	36,000	11,500		12,000	102,000	55,000	45,000
6,350	1/4	8,000	79,000	34,000	36,000	11,600		12,000	102,000	55,000	45,000
6,400		8,000	79,000	34,000	36,000	11,800		12,000	102,000	55,000	45,000



d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm
11,910	15/32	12,000	102,000	55,000	45,000
12,000		12,000	102,000	55,000	45,000
12,100		14,000	107,000	60,000	45,000
12,200		14,000	107,000	60,000	45,000
12,500		14,000	107,000	60,000	45,000
12,700	1/2	14,000	107,000	60,000	45,000
12,800		14,000	107,000	60,000	45,000
13,000		14,000	107,000	60,000	45,000
13,100	33/64	14,000	107,000	60,000	45,000
13,500		14,000	107,000	60,000	45,000
14,000		14,000	107,000	60,000	45,000
14,200		16,000	115,000	65,000	48,000
14,290	9/16	16,000	115,000	65,000	48,000
14,400		16,000	115,000	65,000	48,000
14,500		16,000	115,000	65,000	48,000
14,700		16,000	115,000	65,000	48,000
14,800		16,000	115,000	65,000	48,000
15,000		16,000	115,000	65,000	48,000

d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm
15,100		16,000	115,000	65,000	48,000
15,200		16,000	115,000	65,000	48,000
15,300		16,000	115,000	65,000	48,000
15,500		16,000	115,000	65,000	48,000
15,600		16,000	115,000	65,000	48,000
15,700		16,000	115,000	65,000	48,000
16,000		16,000	115,000	65,000	48,000
16,500		18,000	123,000	73,000	48,000
17,000		18,000	123,000	73,000	48,000
17,500		18,000	123,000	73,000	48,000
18,000		18,000	123,000	73,000	48,000
18,500		20,000	131,000	79,000	50,000
19,000		20,000	131,000	79,000	50,000
19,500		20,000	131,000	79,000	50,000
20,000		20,000	131,000	79,000	50,000



**Forets Ratio sans canaux de lubrification**

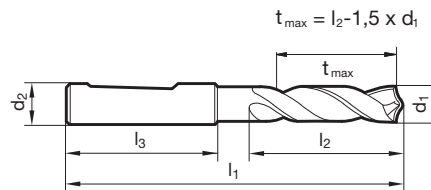


- P** • Amin. de l'âme  $\geq \varnothing 3,100$  • affûtage en pente • arête de coupe principale rectiligne • géométrie de coupe optimisée
- M** ○
- K** •
- N** ○ aciers de construction et de cémentation • aciers de décolletage, aciers d'amélioration • aciers alliés jusqu'à 1200 N/mm<sup>2</sup> • fontes • bronze, laiton
- S** ○ • alliages Al haut % en Si
- H** ○

**GÜHRING NAVIGATOR**

Paramètres de coupe, page 752

Matière de coupe	<b>CW monobloc</b>
Surface	<b>F</b>
Forme d'attachement	HE



N° d'article **2472**

d1		d2 h6	l1	l2	l3	d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm	mm	inch	mm	mm	mm	mm
3,100		6,000	62,000	20,000	36,000	9,250		10,000	89,000	47,000	40,000
3,200		6,000	62,000	20,000	36,000	9,400		10,000	89,000	47,000	40,000
3,500		6,000	62,000	20,000	36,000	9,500		10,000	89,000	47,000	40,000
3,600		6,000	62,000	20,000	36,000	9,800		10,000	89,000	47,000	40,000
3,700		6,000	62,000	20,000	36,000	10,000		10,000	89,000	47,000	40,000
3,900		6,000	66,000	24,000	36,000	10,100		12,000	102,000	55,000	45,000
4,000		6,000	66,000	24,000	36,000	10,200		12,000	102,000	55,000	45,000
4,200		6,000	66,000	24,000	36,000	10,300		12,000	102,000	55,000	45,000
4,500		6,000	66,000	24,000	36,000	10,320	13/32	12,000	102,000	55,000	45,000
4,600		6,000	66,000	24,000	36,000	10,400		12,000	102,000	55,000	45,000
4,900		6,000	66,000	28,000	36,000	10,500		12,000	102,000	55,000	45,000
5,000		6,000	66,000	28,000	36,000	10,600		12,000	102,000	55,000	45,000
5,100		6,000	66,000	28,000	36,000	10,700		12,000	102,000	55,000	45,000
5,200		6,000	66,000	28,000	36,000	10,800		12,000	102,000	55,000	45,000
5,300		6,000	66,000	28,000	36,000	10,900		12,000	102,000	55,000	45,000
5,400		6,000	66,000	28,000	36,000	11,000		12,000	102,000	55,000	45,000
5,500		6,000	66,000	28,000	36,000	11,110	7/16	12,000	102,000	55,000	45,000
5,800		6,000	66,000	28,000	36,000	11,200		12,000	102,000	55,000	45,000
5,900		6,000	66,000	28,000	36,000	11,300		12,000	102,000	55,000	45,000
6,000		6,000	66,000	28,000	36,000	11,500		12,000	102,000	55,000	45,000
6,100		8,000	79,000	34,000	36,000	11,800		12,000	102,000	55,000	45,000
6,500		8,000	79,000	34,000	36,000	11,910	15/32	12,000	102,000	55,000	45,000
6,600		8,000	79,000	34,000	36,000	12,000		12,000	102,000	55,000	45,000
6,800		8,000	79,000	34,000	36,000	12,100		14,000	107,000	60,000	45,000
7,000		8,000	79,000	34,000	36,000	12,200		14,000	107,000	60,000	45,000
7,100		8,000	79,000	41,000	36,000	12,500		14,000	107,000	60,000	45,000
7,200		8,000	79,000	41,000	36,000	12,600		14,000	107,000	60,000	45,000
7,300		8,000	79,000	41,000	36,000	12,700	1/2	14,000	107,000	60,000	45,000
7,500		8,000	79,000	41,000	36,000	13,000		14,000	107,000	60,000	45,000
7,700		8,000	79,000	41,000	36,000	13,300		14,000	107,000	60,000	45,000
7,900		8,000	79,000	41,000	36,000	13,500		14,000	107,000	60,000	45,000
8,000		8,000	79,000	41,000	36,000	14,000		14,000	107,000	60,000	45,000
8,100		10,000	89,000	47,000	40,000	14,200		16,000	115,000	65,000	48,000
8,200		10,000	89,000	47,000	40,000	14,290	9/16	16,000	115,000	65,000	48,000
8,300		10,000	89,000	47,000	40,000	14,500		16,000	115,000	65,000	48,000
8,500		10,000	89,000	47,000	40,000	14,700		16,000	115,000	65,000	48,000
8,600		10,000	89,000	47,000	40,000	15,000		16,000	115,000	65,000	48,000
8,700		10,000	89,000	47,000	40,000	15,200		16,000	115,000	65,000	48,000
8,900		10,000	89,000	47,000	40,000	15,500		16,000	115,000	65,000	48,000
9,000		10,000	89,000	47,000	40,000	15,700		16,000	115,000	65,000	48,000
9,100		10,000	89,000	47,000	40,000	15,800		16,000	115,000	65,000	48,000
9,200		10,000	89,000	47,000	40,000	16,200		18,000	123,000	73,000	48,000



d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm
16,300		18,000	123,000	73,000	48,000
16,500		18,000	123,000	73,000	48,000
17,000		18,000	123,000	73,000	48,000
17,500		18,000	123,000	73,000	48,000
18,000		18,000	123,000	73,000	48,000
18,300		20,000	131,000	79,000	50,000

d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm
18,500		20,000	131,000	79,000	50,000
19,000		20,000	131,000	79,000	50,000
19,500		20,000	131,000	79,000	50,000
20,000		20,000	131,000	79,000	50,000



**Forets Ratio sans canaux de lubrification**

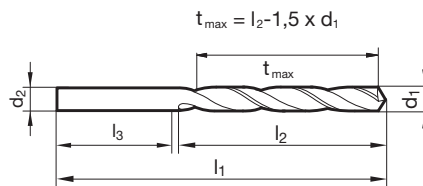


- P** • Amin. de l'âme  $\geq \varnothing 3,000$  • affûtage en pente • arête de coupe principale rectiligne • géométrie de coupe optimisée
- M** ○
- K** •
- N** ○ aciers de construction et de cémentation • aciers de décolletage, aciers d'amélioration • aciers alliés jusqu'à 1200 N/mm<sup>2</sup> • fontes • bronze, laiton
- S** ○ • alliages Al haut % en Si
- H** ○

**GÜHRING NAVIGATOR**

Paramètres de coupe, page 752

Matière de coupe	<b>CW monobloc</b>
Surface	<b>F</b>
Forme d'attachement	cyl.



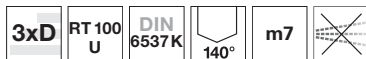
N° d'article **2473**

d1		d2	l1	l2	l3
mm	inch	mm	mm	mm	mm
3,000		3,000	46,000	16,000	30,000
3,200		3,200	49,000	18,000	31,000
3,300		3,300	49,000	18,000	31,000
3,500		3,500	52,000	20,000	32,000
3,800		3,800	55,000	22,000	33,000
3,900		3,900	55,000	22,000	33,000
4,000		4,000	55,000	22,000	33,000
4,200		4,200	55,000	22,000	33,000
4,500		4,500	58,000	24,000	34,000
4,600		4,600	58,000	24,000	34,000
4,900		4,900	62,000	26,000	36,000
5,000		5,000	62,000	26,000	36,000
5,200		5,200	62,000	26,000	36,000
5,500		5,500	66,000	28,000	38,000
5,800		5,800	66,000	28,000	38,000
6,000		6,000	66,000	28,000	38,000
6,100		6,100	70,000	31,000	39,000
6,200		6,200	70,000	31,000	39,000

d1		d2	l1	l2	l3
mm	inch	mm	mm	mm	mm
6,400		6,400	70,000	31,000	39,000
7,000		7,000	74,000	34,000	40,000
7,400		7,400	74,000	34,000	40,000
8,100		8,100	79,000	37,000	42,000
8,500		8,500	79,000	37,000	42,000
8,800		8,800	84,000	40,000	44,000
9,100		9,100	84,000	40,000	44,000
9,400		9,400	84,000	40,000	44,000
10,000		10,000	89,000	43,000	46,000
10,200		10,200	89,000	43,000	46,000
10,500		10,500	89,000	43,000	46,000
11,500		11,500	95,000	47,000	48,000
11,800		11,800	95,000	47,000	48,000
12,000		12,000	102,000	51,000	51,000
12,500		12,500	102,000	51,000	51,000
14,000		14,000	107,000	54,000	53,000
15,500		15,500	115,000	58,000	57,000



Forets Ratio sans canaux de lubrification



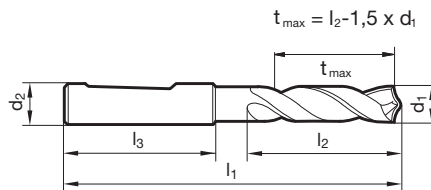
- P** • Amin. de l'âme ≥ Ø 3,000 • affûtage en pente • arête de coupe principale rectiligne • géométrie de coupe optimisée
- M** ○
- K** •
- N** ○ aciers de construction et de cémentation • aciers de décolletage, aciers d'amélioration • aciers alliés jusqu'à 1200 N/mm<sup>2</sup> • fontes • bronze, laiton
- S** ○ • alliages Al haut % en Si
- H** ○

**GÜHRING** NAVIGATOR

Paramètres de coupe, page 752

Matière de coupe	<b>CW monobloc</b>
Surface	<b>S</b>
Forme d'attachement	HE

Forets Ratio



N° d'article **1184**

d1		d2 h6	l1	l2	l3	d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm	mm	inch	mm	mm	mm	mm
3,000		6,000	62,000	20,000	36,000	6,700		8,000	79,000	34,000	36,000
3,100		6,000	62,000	20,000	36,000	6,750	17/64	8,000	79,000	34,000	36,000
3,200		6,000	62,000	20,000	36,000	6,800		8,000	79,000	34,000	36,000
3,300		6,000	62,000	20,000	36,000	7,000		8,000	79,000	34,000	36,000
3,400		6,000	62,000	20,000	36,000	7,140	9/32	8,000	79,000	41,000	36,000
3,500		6,000	62,000	20,000	36,000	7,200		8,000	79,000	41,000	36,000
3,570	9/64	6,000	62,000	20,000	36,000	7,300		8,000	79,000	41,000	36,000
3,600		6,000	62,000	20,000	36,000	7,400		8,000	79,000	41,000	36,000
3,700		6,000	62,000	20,000	36,000	7,500		8,000	79,000	41,000	36,000
3,800		6,000	66,000	24,000	36,000	7,540	19/64	8,000	79,000	41,000	36,000
3,900		6,000	66,000	24,000	36,000	7,600		8,000	79,000	41,000	36,000
3,970	5/32	6,000	66,000	24,000	36,000	7,700		8,000	79,000	41,000	36,000
4,000		6,000	66,000	24,000	36,000	7,900		8,000	79,000	41,000	36,000
4,100		6,000	66,000	24,000	36,000	7,940	5/16	8,000	79,000	41,000	36,000
4,200		6,000	66,000	24,000	36,000	8,000		8,000	79,000	41,000	36,000
4,400		6,000	66,000	24,000	36,000	8,100		10,000	89,000	47,000	40,000
4,500		6,000	66,000	24,000	36,000	8,200		10,000	89,000	47,000	40,000
4,600		6,000	66,000	24,000	36,000	8,300		10,000	89,000	47,000	40,000
4,700		6,000	66,000	24,000	36,000	8,330	21/64	10,000	89,000	47,000	40,000
4,760	3/16	6,000	66,000	28,000	36,000	8,400		10,000	89,000	47,000	40,000
4,800		6,000	66,000	28,000	36,000	8,500		10,000	89,000	47,000	40,000
4,900		6,000	66,000	28,000	36,000	8,700		10,000	89,000	47,000	40,000
5,000		6,000	66,000	28,000	36,000	8,800		10,000	89,000	47,000	40,000
5,100		6,000	66,000	28,000	36,000	8,900		10,000	89,000	47,000	40,000
5,160	13/64	6,000	66,000	28,000	36,000	9,000		10,000	89,000	47,000	40,000
5,200		6,000	66,000	28,000	36,000	9,100		10,000	89,000	47,000	40,000
5,300		6,000	66,000	28,000	36,000	9,200		10,000	89,000	47,000	40,000
5,400		6,000	66,000	28,000	36,000	9,300		10,000	89,000	47,000	40,000
5,500		6,000	66,000	28,000	36,000	9,400		10,000	89,000	47,000	40,000
5,560	7/32	6,000	66,000	28,000	36,000	9,500		10,000	89,000	47,000	40,000
5,600		6,000	66,000	28,000	36,000	9,520	3/8	10,000	89,000	47,000	40,000
5,700		6,000	66,000	28,000	36,000	9,600		10,000	89,000	47,000	40,000
5,900		6,000	66,000	28,000	36,000	9,700		10,000	89,000	47,000	40,000
5,950	15/64	6,000	66,000	28,000	36,000	9,800		10,000	89,000	47,000	40,000
6,000		6,000	66,000	28,000	36,000	9,900		10,000	89,000	47,000	40,000
6,100		8,000	79,000	34,000	36,000	9,920	25/64	10,000	89,000	47,000	40,000
6,200		8,000	79,000	34,000	36,000	10,000		10,000	89,000	47,000	40,000
6,300		8,000	79,000	34,000	36,000	10,100		12,000	102,000	55,000	45,000
6,350	1/4	8,000	79,000	34,000	36,000	10,200		12,000	102,000	55,000	45,000
6,400		8,000	79,000	34,000	36,000	10,300		12,000	102,000	55,000	45,000
6,500		8,000	79,000	34,000	36,000	10,320	13/32	12,000	102,000	55,000	45,000
6,600		8,000	79,000	34,000	36,000	10,500		12,000	102,000	55,000	45,000



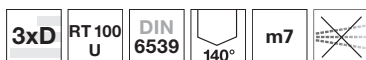
d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm
10,600		12,000	102,000	55,000	45,000
10,720	27/64	12,000	102,000	55,000	45,000
10,800		12,000	102,000	55,000	45,000
11,000		12,000	102,000	55,000	45,000
11,100		12,000	102,000	55,000	45,000
11,110	7/16	12,000	102,000	55,000	45,000
11,200		12,000	102,000	55,000	45,000
11,400		12,000	102,000	55,000	45,000
11,500		12,000	102,000	55,000	45,000
11,600		12,000	102,000	55,000	45,000
11,700		12,000	102,000	55,000	45,000
11,800		12,000	102,000	55,000	45,000
11,910	15/32	12,000	102,000	55,000	45,000
12,000		12,000	102,000	55,000	45,000
12,100		14,000	107,000	60,000	45,000
12,200		14,000	107,000	60,000	45,000
12,300	31/64	14,000	107,000	60,000	45,000
12,400		14,000	107,000	60,000	45,000
12,700	1/2	14,000	107,000	60,000	45,000
13,000		14,000	107,000	60,000	45,000
13,100	33/64	14,000	107,000	60,000	45,000
13,200		14,000	107,000	60,000	45,000
13,300		14,000	107,000	60,000	45,000
13,400		14,000	107,000	60,000	45,000
13,500		14,000	107,000	60,000	45,000
13,800		14,000	107,000	60,000	45,000
13,890	35/64	14,000	107,000	60,000	45,000
14,000		14,000	107,000	60,000	45,000
14,200		16,000	115,000	65,000	48,000
14,290	9/16	16,000	115,000	65,000	48,000
14,300		16,000	115,000	65,000	48,000
14,400		16,000	115,000	65,000	48,000
14,700		16,000	115,000	65,000	48,000
14,800		16,000	115,000	65,000	48,000
15,000		16,000	115,000	65,000	48,000
15,100		16,000	115,000	65,000	48,000

d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm
15,200		16,000	115,000	65,000	48,000
15,480	39/64	16,000	115,000	65,000	48,000
15,700		16,000	115,000	65,000	48,000
15,800		16,000	115,000	65,000	48,000
15,870	5/8	16,000	115,000	65,000	48,000
15,900		16,000	115,000	65,000	48,000
16,000		16,000	115,000	65,000	48,000
16,100		18,000	123,000	73,000	48,000
16,270	41/64	18,000	123,000	73,000	48,000
16,300		18,000	123,000	73,000	48,000
16,500		18,000	123,000	73,000	48,000
16,800		18,000	123,000	73,000	48,000
17,000		18,000	123,000	73,000	48,000
17,300		18,000	123,000	73,000	48,000
17,460	11/16	18,000	123,000	73,000	48,000
17,500		18,000	123,000	73,000	48,000
17,700		18,000	123,000	73,000	48,000
17,860	45/64	18,000	123,000	73,000	48,000
18,000		18,000	123,000	73,000	48,000
18,100		20,000	131,000	79,000	50,000
18,300		20,000	131,000	79,000	50,000
18,500		20,000	131,000	79,000	50,000
18,650	47/64	20,000	131,000	79,000	50,000
19,000		20,000	131,000	79,000	50,000
19,050	3/4	20,000	131,000	79,000	50,000
19,200		20,000	131,000	79,000	50,000
19,500		20,000	131,000	79,000	50,000
19,600		20,000	131,000	79,000	50,000
20,000		20,000	131,000	79,000	50,000





Forets Ratio sans canaux de lubrification



Matière de coupe **CW monobloc**

Surface **S**

Forme d'attachement cyl.

**P** • Amin. de l'âme ≥ Ø 3,000 • affûtage en pente • arête de coupe principale rectiligne • géométrie de coupe optimisée

**M** ○

**K** •

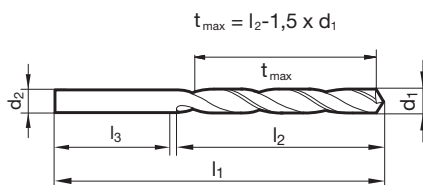
**N** ○ aciers de construction et de cémentation • aciers de décolletage, aciers d'amélioration • aciers alliés jusqu'à 1200 N/mm<sup>2</sup> • fontes • bronze, laiton

**S** ○ • alliages Al haut % en Si

**H** ○

**GÜHRING** NAVIGATOR

Paramètres de coupe, page 752



N° d'article **1242**

d1		d2	l1	l2	l3	d1		d2	l1	l2	l3
mm	inch	mm	mm	mm	mm	mm	inch	mm	mm	mm	mm
3,000		3,000	46,000	16,000	30,000	6,350	1/4	6,350	70,000	31,000	39,000
3,100		3,100	49,000	18,000	31,000	6,400		6,400	70,000	31,000	39,000
3,170	1/8	3,170	49,000	18,000	31,000	6,500		6,500	70,000	31,000	39,000
3,200		3,200	49,000	18,000	31,000	6,600		6,600	70,000	31,000	39,000
3,300		3,300	49,000	18,000	31,000	6,700		6,700	70,000	31,000	39,000
3,400		3,400	52,000	20,000	32,000	6,750	17/64	6,750	74,000	34,000	40,000
3,500		3,500	52,000	20,000	32,000	6,800		6,800	74,000	34,000	40,000
3,570	9/64	3,570	52,000	20,000	32,000	6,900		6,900	74,000	34,000	40,000
3,600		3,600	52,000	20,000	32,000	7,000		7,000	74,000	34,000	40,000
3,700		3,700	52,000	20,000	32,000	7,100		7,100	74,000	34,000	40,000
3,800		3,800	55,000	22,000	33,000	7,140	9/32	7,140	74,000	34,000	40,000
3,900		3,900	55,000	22,000	33,000	7,200		7,200	74,000	34,000	40,000
3,970	5/32	3,970	55,000	22,000	33,000	7,300		7,300	74,000	34,000	40,000
4,000		4,000	55,000	22,000	33,000	7,400		7,400	74,000	34,000	40,000
4,100		4,100	55,000	22,000	33,000	7,500		7,500	74,000	34,000	40,000
4,200		4,200	55,000	22,000	33,000	7,540	19/64	7,540	79,000	37,000	42,000
4,300		4,300	58,000	24,000	34,000	7,600		7,600	79,000	37,000	42,000
4,370	11/64	4,370	58,000	24,000	34,000	7,700		7,700	79,000	37,000	42,000
4,400		4,400	58,000	24,000	34,000	7,800		7,800	79,000	37,000	42,000
4,500		4,500	58,000	24,000	34,000	7,900		7,900	79,000	37,000	42,000
4,600		4,600	58,000	24,000	34,000	7,940	5/16	7,940	79,000	37,000	42,000
4,700		4,700	58,000	24,000	34,000	8,000		8,000	79,000	37,000	42,000
4,760	3/16	4,760	62,000	26,000	36,000	8,100		8,100	79,000	37,000	42,000
4,800		4,800	62,000	26,000	36,000	8,200		8,200	79,000	37,000	42,000
4,900		4,900	62,000	26,000	36,000	8,300		8,300	79,000	37,000	42,000
5,000		5,000	62,000	26,000	36,000	8,330	21/64	8,330	79,000	37,000	42,000
5,100		5,100	62,000	26,000	36,000	8,400		8,400	79,000	37,000	42,000
5,160	13/64	5,160	62,000	26,000	36,000	8,500		8,500	79,000	37,000	42,000
5,200		5,200	62,000	26,000	36,000	8,600		8,600	84,000	40,000	44,000
5,300		5,300	62,000	26,000	36,000	8,700		8,700	84,000	40,000	44,000
5,400		5,400	66,000	28,000	38,000	8,730	11/32	8,730	84,000	40,000	44,000
5,500		5,500	66,000	28,000	38,000	8,800		8,800	84,000	40,000	44,000
5,560	7/32	5,560	66,000	28,000	38,000	8,900		8,900	84,000	40,000	44,000
5,600		5,600	66,000	28,000	38,000	9,000		9,000	84,000	40,000	44,000
5,700		5,700	66,000	28,000	38,000	9,100		9,100	84,000	40,000	44,000
5,800		5,800	66,000	28,000	38,000	9,130	23/64	9,130	84,000	40,000	44,000
5,900		5,900	66,000	28,000	38,000	9,200		9,200	84,000	40,000	44,000
5,950	15/64	5,950	66,000	28,000	38,000	9,300		9,300	84,000	40,000	44,000
6,000		6,000	66,000	28,000	38,000	9,400		9,400	84,000	40,000	44,000
6,100		6,100	70,000	31,000	39,000	9,500		9,500	84,000	40,000	44,000
6,200		6,200	70,000	31,000	39,000	9,520	3/8	9,520	89,000	43,000	46,000
6,300		6,300	70,000	31,000	39,000	9,600		9,600	89,000	43,000	46,000



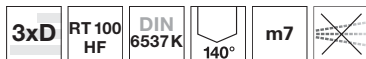
Forets Ratio

d1		d2	l1	l2	l3
mm	inch	mm	mm	mm	mm
9,700		9,700	89,000	43,000	46,000
9,800		9,800	89,000	43,000	46,000
9,900		9,900	89,000	43,000	46,000
9,920	25/64	9,920	89,000	43,000	46,000
10,000		10,000	89,000	43,000	46,000
10,100		10,100	89,000	43,000	46,000
10,200		10,200	89,000	43,000	46,000
10,300		10,300	89,000	43,000	46,000
10,320	13/32	10,320	89,000	43,000	46,000
10,400		10,400	89,000	43,000	46,000
10,500		10,500	89,000	43,000	46,000
10,600		10,600	89,000	43,000	46,000
10,700		10,700	95,000	47,000	48,000
10,720	27/64	10,720	95,000	47,000	48,000
10,800		10,800	95,000	47,000	48,000
10,900		10,900	95,000	47,000	48,000
11,000		11,000	95,000	47,000	48,000
11,100		11,100	95,000	47,000	48,000
11,110	7/16	11,110	95,000	47,000	48,000
11,200		11,200	95,000	47,000	48,000
11,300		11,300	95,000	47,000	48,000
11,400		11,400	95,000	47,000	48,000
11,500		11,500	95,000	47,000	48,000
11,510	29/64	11,510	95,000	47,000	48,000

d1		d2	l1	l2	l3
mm	inch	mm	mm	mm	mm
11,600		11,600	95,000	47,000	48,000
11,800		11,800	95,000	47,000	48,000
11,900		11,900	102,000	51,000	51,000
11,910	15/32	11,910	102,000	51,000	51,000
12,000		12,000	102,000	51,000	51,000
12,500		12,500	102,000	51,000	51,000
12,700	1/2	12,700	102,000	51,000	51,000
13,000		13,000	102,000	51,000	51,000
13,500		13,500	107,000	54,000	53,000
14,000		14,000	107,000	54,000	53,000
14,500		14,500	111,000	56,000	55,000
15,000		15,000	111,000	56,000	55,000
15,500		15,500	115,000	58,000	57,000
16,000		16,000	115,000	58,000	57,000



Forets Ratio sans canaux de lubrification



Matière de coupe

CW monobloc

Surface



Forme d'attachement

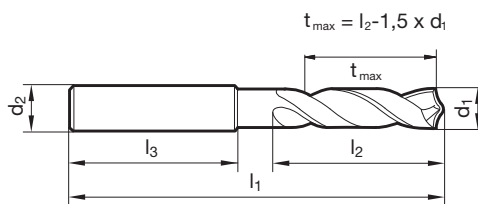
HA

**P** • Amin. de l'âme  $\geq \varnothing 3,000$  • affûtage à dépouille conique • forme de l'arête de coupe principale légèrement concave • géométrie de coupe optimisée

- M**
- K**
- N** aciers alliés et à haute résistance jusqu'à 1600 N/mm<sup>2</sup> • Inconel, Hastelloy, Monel • Titane et ses alliages
- S** •
- H** ○

**GÜHRING** NAVIGATOR

Paramètres de coupe, page 752



N° d'article

8524

d1		d2 h6	l1	l2	l3	d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm	mm	inch	mm	mm	mm	mm
3,000		6,000	62,000	20,000	36,000	6,100		8,000	79,000	34,000	36,000
3,100		6,000	62,000	20,000	36,000	6,200		8,000	79,000	34,000	36,000
3,170	1/8	6,000	62,000	20,000	36,000	6,300		8,000	79,000	34,000	36,000
3,200		6,000	62,000	20,000	36,000	6,350	1/4	8,000	79,000	34,000	36,000
3,250		6,000	62,000	20,000	36,000	6,400		8,000	79,000	34,000	36,000
3,300		6,000	62,000	20,000	36,000	6,500		8,000	79,000	34,000	36,000
3,400		6,000	62,000	20,000	36,000	6,600		8,000	79,000	34,000	36,000
3,500		6,000	62,000	20,000	36,000	6,700		8,000	79,000	34,000	36,000
3,570	9/64	6,000	62,000	20,000	36,000	6,750	17/64	8,000	79,000	34,000	36,000
3,600		6,000	62,000	20,000	36,000	6,800		8,000	79,000	34,000	36,000
3,700		6,000	62,000	20,000	36,000	6,900		8,000	79,000	34,000	36,000
3,800		6,000	66,000	24,000	36,000	7,000		8,000	79,000	34,000	36,000
3,900		6,000	66,000	24,000	36,000	7,100		8,000	79,000	41,000	36,000
3,970	5/32	6,000	66,000	24,000	36,000	7,140	9/32	8,000	79,000	41,000	36,000
4,000		6,000	66,000	24,000	36,000	7,200		8,000	79,000	41,000	36,000
4,100		6,000	66,000	24,000	36,000	7,300		8,000	79,000	41,000	36,000
4,200		6,000	66,000	24,000	36,000	7,400		8,000	79,000	41,000	36,000
4,300		6,000	66,000	24,000	36,000	7,500		8,000	79,000	41,000	36,000
4,370	11/64	6,000	66,000	24,000	36,000	7,540	19/64	8,000	79,000	41,000	36,000
4,400		6,000	66,000	24,000	36,000	7,600		8,000	79,000	41,000	36,000
4,500		6,000	66,000	24,000	36,000	7,700		8,000	79,000	41,000	36,000
4,600		6,000	66,000	24,000	36,000	7,800		8,000	79,000	41,000	36,000
4,650		6,000	66,000	24,000	36,000	7,900		8,000	79,000	41,000	36,000
4,700		6,000	66,000	24,000	36,000	7,940	5/16	8,000	79,000	41,000	36,000
4,760	3/16	6,000	66,000	28,000	36,000	8,000		8,000	79,000	41,000	36,000
4,800		6,000	66,000	28,000	36,000	8,100		10,000	89,000	47,000	40,000
4,900		6,000	66,000	28,000	36,000	8,200		10,000	89,000	47,000	40,000
5,000		6,000	66,000	28,000	36,000	8,300		10,000	89,000	47,000	40,000
5,100		6,000	66,000	28,000	36,000	8,330	21/64	10,000	89,000	47,000	40,000
5,160	13/64	6,000	66,000	28,000	36,000	8,400		10,000	89,000	47,000	40,000
5,200		6,000	66,000	28,000	36,000	8,500		10,000	89,000	47,000	40,000
5,300		6,000	66,000	28,000	36,000	8,600		10,000	89,000	47,000	40,000
5,400		6,000	66,000	28,000	36,000	8,700		10,000	89,000	47,000	40,000
5,500		6,000	66,000	28,000	36,000	8,730	11/32	10,000	89,000	47,000	40,000
5,550		6,000	66,000	28,000	36,000	8,800		10,000	89,000	47,000	40,000
5,560	7/32	6,000	66,000	28,000	36,000	8,900		10,000	89,000	47,000	40,000
5,600		6,000	66,000	28,000	36,000	9,000		10,000	89,000	47,000	40,000
5,700		6,000	66,000	28,000	36,000	9,100		10,000	89,000	47,000	40,000
5,800		6,000	66,000	28,000	36,000	9,130	23/64	10,000	89,000	47,000	40,000
5,900		6,000	66,000	28,000	36,000	9,200		10,000	89,000	47,000	40,000
5,950	15/64	6,000	66,000	28,000	36,000	9,250		10,000	89,000	47,000	40,000
6,000		6,000	66,000	28,000	36,000	9,300		10,000	89,000	47,000	40,000



Forets Ratio

d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm
9,400		10,000	89,000	47,000	40,000
9,500		10,000	89,000	47,000	40,000
9,520	3/8	10,000	89,000	47,000	40,000
9,600		10,000	89,000	47,000	40,000
9,700		10,000	89,000	47,000	40,000
9,800		10,000	89,000	47,000	40,000
9,900		10,000	89,000	47,000	40,000
9,920	25/64	10,000	89,000	47,000	40,000
10,000		10,000	89,000	47,000	40,000
10,100		12,000	102,000	55,000	45,000
10,200		12,000	102,000	55,000	45,000
10,300		12,000	102,000	55,000	45,000
10,320	13/32	12,000	102,000	55,000	45,000
10,400		12,000	102,000	55,000	45,000
10,500		12,000	102,000	55,000	45,000
10,600		12,000	102,000	55,000	45,000
10,700		12,000	102,000	55,000	45,000
10,800		12,000	102,000	55,000	45,000
10,900		12,000	102,000	55,000	45,000
11,000		12,000	102,000	55,000	45,000
11,100		12,000	102,000	55,000	45,000
11,110	7/16	12,000	102,000	55,000	45,000
11,200		12,000	102,000	55,000	45,000
11,300		12,000	102,000	55,000	45,000
11,400		12,000	102,000	55,000	45,000
11,500		12,000	102,000	55,000	45,000
11,600		12,000	102,000	55,000	45,000
11,700		12,000	102,000	55,000	45,000
11,800		12,000	102,000	55,000	45,000
11,900		12,000	102,000	55,000	45,000
11,910	15/32	12,000	102,000	55,000	45,000
12,000		12,000	102,000	55,000	45,000
12,200		14,000	107,000	60,000	45,000
12,500		14,000	107,000	60,000	45,000
12,700	1/2	14,000	107,000	60,000	45,000
12,800		14,000	107,000	60,000	45,000

d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm
13,000		14,000	107,000	60,000	45,000
13,300		14,000	107,000	60,000	45,000
13,500		14,000	107,000	60,000	45,000
13,700		14,000	107,000	60,000	45,000
14,000		14,000	107,000	60,000	45,000
14,200		16,000	115,000	65,000	48,000
14,290	9/16	16,000	115,000	65,000	48,000
14,300		16,000	115,000	65,000	48,000
14,500		16,000	115,000	65,000	48,000
14,700		16,000	115,000	65,000	48,000
15,000		16,000	115,000	65,000	48,000
15,200		16,000	115,000	65,000	48,000
15,300		16,000	115,000	65,000	48,000
15,500		16,000	115,000	65,000	48,000
15,700		16,000	115,000	65,000	48,000
16,000		16,000	115,000	65,000	48,000
16,300		18,000	123,000	73,000	48,000
16,500		18,000	123,000	73,000	48,000
16,900		18,000	123,000	73,000	48,000
17,000		18,000	123,000	73,000	48,000
17,300		18,000	123,000	73,000	48,000
17,500		18,000	123,000	73,000	48,000
18,000		18,000	123,000	73,000	48,000
18,500		20,000	131,000	79,000	50,000
18,900		20,000	131,000	79,000	50,000
19,000		20,000	131,000	79,000	50,000
19,050	3/4	20,000	131,000	79,000	50,000
19,300		20,000	131,000	79,000	50,000
19,500		20,000	131,000	79,000	50,000
20,000		20,000	131,000	79,000	50,000



Forets Ratio sans canaux de lubrification



Matière de coupe **CW monobloc**

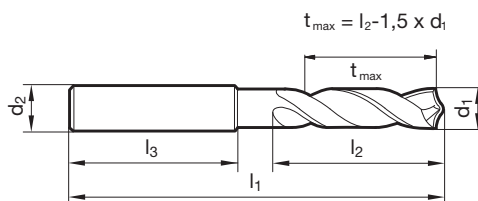
Surface **F**

Forme d'attachement HA

- P** ○ Amin. de l'âme ≥ Ø 5,000 • affûtage à dépouille conique • forme concave de l'arête de coupe principale • géométrie de coupe optimisée • paramètres de coupe extrêmes
- M** ○
- K** ○
- N** ○ aciers hautement alliés • aciers inox., inaltérables aux acides et réfractaires
- S** • Inconel, Hastelloy, Monel • laitons, bronzes • aluminium et alliages d'aluminium • magnésium, alliages de magnésium • Titane et ses alliages
- H** ○ métal fritté

**GUHRING** NAVIGATOR

Paramètres de coupe, page 752



N° d'article **2475**

d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm
3,700		6,000	62,000	20,000	36,000
4,650		6,000	66,000	24,000	36,000
5,000		6,000	66,000	28,000	36,000
5,500		6,000	66,000	28,000	36,000
6,000		6,000	66,000	28,000	36,000
6,500		8,000	79,000	34,000	36,000
6,800		8,000	79,000	34,000	36,000
7,000		8,000	79,000	34,000	36,000
8,000		8,000	79,000	41,000	36,000
8,500		10,000	89,000	47,000	40,000
9,000		10,000	89,000	47,000	40,000
9,300		10,000	89,000	47,000	40,000

d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm
10,000		10,000	89,000	47,000	40,000
10,500		12,000	102,000	55,000	45,000
11,200		12,000	102,000	55,000	45,000
12,000		12,000	102,000	55,000	45,000



**Forets Ratio sans canaux de lubrification**

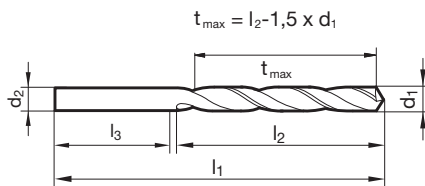


- P** ○ Amin. de l'âme ≥ Ø 3,000 • affûtage à dépouille conique • forme concave de l'arête de coupe principale • géométrie de coupe optimisée • paramètres de coupe extrêmes
- M** ●
- K** ○
- N** ○ aciers inox., inaltérables aux acides et réfractaires • Inconel, Hastelloy, Monel • laiton, bronzes • aluminium et alliages d'aluminium • magnésium, alliages de magnésium • Titane et ses alliages • métal fritté • aciers hautement alliés
- S** ○
- H** ○

**GÜHRING NAVIGATOR**

Paramètres de coupe, page 752

Matière de coupe	<b>CW monobloc</b>
Surface	<b>S</b>
Forme d'attachement	cyl.



N° d'article **1702**

d1		d2	l1	l2	l3	d1		d2	l1	l2	l3
mm	inch	mm	mm	mm	mm	mm	inch	mm	mm	mm	mm
3,000		3,000	46,000	16,000	30,000	6,400		6,400	70,000	31,000	39,000
3,100		3,100	49,000	18,000	31,000	6,500		6,500	70,000	31,000	39,000
3,170	1/8	3,170	49,000	18,000	31,000	6,600		6,600	70,000	31,000	39,000
3,200		3,200	49,000	18,000	31,000	6,700		6,700	70,000	31,000	39,000
3,300		3,300	49,000	18,000	31,000	6,750	17/64	6,750	74,000	34,000	40,000
3,400		3,400	52,000	20,000	32,000	6,800		6,800	74,000	34,000	40,000
3,500		3,500	52,000	20,000	32,000	6,900		6,900	74,000	34,000	40,000
3,570	9/64	3,570	52,000	20,000	32,000	7,000		7,000	74,000	34,000	40,000
3,600		3,600	52,000	20,000	32,000	7,100		7,100	74,000	34,000	40,000
3,700		3,700	52,000	20,000	32,000	7,140	9/32	7,140	74,000	34,000	40,000
3,800		3,800	55,000	22,000	33,000	7,200		7,200	74,000	34,000	40,000
3,900		3,900	55,000	22,000	33,000	7,300		7,300	74,000	34,000	40,000
3,970	5/32	3,970	55,000	22,000	33,000	7,400		7,400	74,000	34,000	40,000
4,000		4,000	55,000	22,000	33,000	7,540	19/64	7,540	79,000	37,000	42,000
4,100		4,100	55,000	22,000	33,000	7,600		7,600	79,000	37,000	42,000
4,200		4,200	55,000	22,000	33,000	7,700		7,700	79,000	37,000	42,000
4,300		4,300	58,000	24,000	34,000	7,800		7,800	79,000	37,000	42,000
4,370	11/64	4,370	58,000	24,000	34,000	7,900		7,900	79,000	37,000	42,000
4,400		4,400	58,000	24,000	34,000	7,940	5/16	7,940	79,000	37,000	42,000
4,500		4,500	58,000	24,000	34,000	8,000		8,000	79,000	37,000	42,000
4,600		4,600	58,000	24,000	34,000	8,100		8,100	79,000	37,000	42,000
4,700		4,700	58,000	24,000	34,000	8,200		8,200	79,000	37,000	42,000
4,760	3/16	4,760	62,000	26,000	36,000	8,300		8,300	79,000	37,000	42,000
4,800		4,800	62,000	26,000	36,000	8,330	21/64	8,330	79,000	37,000	42,000
4,900		4,900	62,000	26,000	36,000	8,400		8,400	79,000	37,000	42,000
5,000		5,000	62,000	26,000	36,000	8,500		8,500	79,000	37,000	42,000
5,100		5,100	62,000	26,000	36,000	8,600		8,600	84,000	40,000	44,000
5,160	13/64	5,160	62,000	26,000	36,000	8,700		8,700	84,000	40,000	44,000
5,200		5,200	62,000	26,000	36,000	8,730	11/32	8,730	84,000	40,000	44,000
5,300		5,300	62,000	26,000	36,000	8,800		8,800	84,000	40,000	44,000
5,400		5,400	66,000	28,000	38,000	8,900		8,900	84,000	40,000	44,000
5,500		5,500	66,000	28,000	38,000	9,000		9,000	84,000	40,000	44,000
5,560	7/32	5,560	66,000	28,000	38,000	9,100		9,100	84,000	40,000	44,000
5,600		5,600	66,000	28,000	38,000	9,130	23/64	9,130	84,000	40,000	44,000
5,700		5,700	66,000	28,000	38,000	9,400		9,400	84,000	40,000	44,000
5,800		5,800	66,000	28,000	38,000	9,500		9,500	84,000	40,000	44,000
5,950	15/64	5,950	66,000	28,000	38,000	9,520	3/8	9,520	89,000	43,000	46,000
6,000		6,000	66,000	28,000	38,000	9,600		9,600	89,000	43,000	46,000
6,100		6,100	70,000	31,000	39,000	9,700		9,700	89,000	43,000	46,000
6,200		6,200	70,000	31,000	39,000	9,800		9,800	89,000	43,000	46,000
6,300		6,300	70,000	31,000	39,000	9,900		9,900	89,000	43,000	46,000
6,350	1/4	6,350	70,000	31,000	39,000	9,920	25/64	9,920	89,000	43,000	46,000

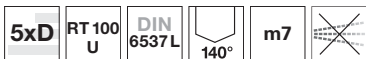


d1		d2	l1	l2	l3
mm	inch	mm	mm	mm	mm
10,000		10,000	89,000	43,000	46,000
10,200		10,200	89,000	43,000	46,000
10,300		10,300	89,000	43,000	46,000
10,320	13/32	10,320	89,000	43,000	46,000
10,720	27/64	10,720	95,000	47,000	48,000
11,000		11,000	95,000	47,000	48,000
11,110	7/16	11,110	95,000	47,000	48,000
11,300		11,300	95,000	47,000	48,000
11,500		11,500	95,000	47,000	48,000
11,510	29/64	11,510	95,000	47,000	48,000
11,910	15/32	11,910	102,000	51,000	51,000
12,000		12,000	102,000	51,000	51,000

d1		d2	l1	l2	l3
mm	inch	mm	mm	mm	mm
12,300	31/64	12,300	102,000	51,000	51,000
12,500		12,500	102,000	51,000	51,000
12,700	1/2	12,700	102,000	51,000	51,000
13,000		13,000	102,000	51,000	51,000
13,500		13,500	107,000	54,000	53,000
14,000		14,000	107,000	54,000	53,000



**Forets Ratio sans canaux de lubrification**



**P** • Amin. de l'âme  $\geq \varnothing 3,000$  • affûtage en pente • arête de coupe principale rectiligne • géométrie de coupe optimisée

**M** ○

**K** •

**N** ○ aciers de construction et de cémentation • aciers de décolletage, aciers d'amélioration • aciers alliés jusqu'à 1200 N/mm<sup>2</sup> • fontes • bronze, laiton

**S** ○ • alliages Al haut % en Si

**H** ○

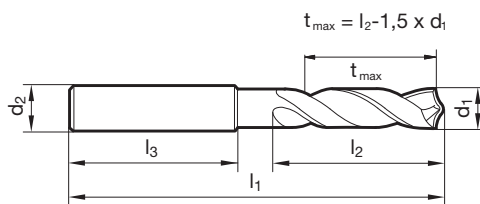
Matière de coupe **CW monobloc**

Surface **F**

Forme d'attachement **HA**

**GÜHRING NAVIGATOR**

Paramètres de coupe, page 756



N° d'article **2996**

d1		d2 h6	l1	l2	l3	d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm	mm	inch	mm	mm	mm	mm
3,000		6,000	66,000	28,000	36,000	7,000		8,000	91,000	53,000	36,000
3,100		6,000	66,000	28,000	36,000	7,100		8,000	91,000	53,000	36,000
3,200		6,000	66,000	28,000	36,000	7,140	9/32	8,000	91,000	53,000	36,000
3,250		6,000	66,000	28,000	36,000	7,200		8,000	91,000	53,000	36,000
3,300		6,000	66,000	28,000	36,000	7,300		8,000	91,000	53,000	36,000
3,400		6,000	66,000	28,000	36,000	7,500		8,000	91,000	53,000	36,000
3,500		6,000	66,000	28,000	36,000	7,600		8,000	91,000	53,000	36,000
3,570	9/64	6,000	66,000	28,000	36,000	7,700		8,000	91,000	53,000	36,000
3,600		6,000	66,000	28,000	36,000	7,800		8,000	91,000	53,000	36,000
3,700		6,000	66,000	28,000	36,000	7,900		8,000	91,000	53,000	36,000
3,800		6,000	74,000	36,000	36,000	7,940	5/16	8,000	91,000	53,000	36,000
3,900		6,000	74,000	36,000	36,000	8,000		8,000	91,000	53,000	36,000
4,000		6,000	74,000	36,000	36,000	8,100		10,000	103,000	61,000	40,000
4,100		6,000	74,000	36,000	36,000	8,200		10,000	103,000	61,000	40,000
4,200		6,000	74,000	36,000	36,000	8,400		10,000	103,000	61,000	40,000
4,300		6,000	74,000	36,000	36,000	8,500		10,000	103,000	61,000	40,000
4,400		6,000	74,000	36,000	36,000	8,700		10,000	103,000	61,000	40,000
4,500		6,000	74,000	36,000	36,000	8,800		10,000	103,000	61,000	40,000
4,650		6,000	74,000	36,000	36,000	9,000		10,000	103,000	61,000	40,000
4,700		6,000	74,000	36,000	36,000	9,200		10,000	103,000	61,000	40,000
4,800		6,000	82,000	44,000	36,000	9,250		10,000	103,000	61,000	40,000
4,900		6,000	82,000	44,000	36,000	9,500		10,000	103,000	61,000	40,000
5,000		6,000	82,000	44,000	36,000	9,520	3/8	10,000	103,000	61,000	40,000
5,100		6,000	82,000	44,000	36,000	9,700		10,000	103,000	61,000	40,000
5,200		6,000	82,000	44,000	36,000	9,800		10,000	103,000	61,000	40,000
5,300		6,000	82,000	44,000	36,000	10,000		10,000	103,000	61,000	40,000
5,400		6,000	82,000	44,000	36,000	10,100		12,000	118,000	71,000	45,000
5,500		6,000	82,000	44,000	36,000	10,200		12,000	118,000	71,000	45,000
5,600		6,000	82,000	44,000	36,000	10,300		12,000	118,000	71,000	45,000
5,800		6,000	82,000	44,000	36,000	10,320	13/32	12,000	118,000	71,000	45,000
5,900		6,000	82,000	44,000	36,000	10,500		12,000	118,000	71,000	45,000
6,000		6,000	82,000	44,000	36,000	10,700		12,000	118,000	71,000	45,000
6,100		8,000	91,000	53,000	36,000	10,800		12,000	118,000	71,000	45,000
6,200		8,000	91,000	53,000	36,000	10,900		12,000	118,000	71,000	45,000
6,300		8,000	91,000	53,000	36,000	11,000		12,000	118,000	71,000	45,000
6,350	1/4	8,000	91,000	53,000	36,000	11,100		12,000	118,000	71,000	45,000
6,400		8,000	91,000	53,000	36,000	11,110	7/16	12,000	118,000	71,000	45,000
6,500		8,000	91,000	53,000	36,000	11,500		12,000	118,000	71,000	45,000
6,600		8,000	91,000	53,000	36,000	11,600		12,000	118,000	71,000	45,000
6,700		8,000	91,000	53,000	36,000	11,700		12,000	118,000	71,000	45,000
6,800		8,000	91,000	53,000	36,000	11,800		12,000	118,000	71,000	45,000
6,900		8,000	91,000	53,000	36,000	11,910	15/32	12,000	118,000	71,000	45,000



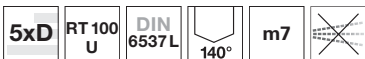


d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm
12,000		12,000	118,000	71,000	45,000
12,100		14,000	124,000	77,000	45,000
12,200		14,000	124,000	77,000	45,000
12,400		14,000	124,000	77,000	45,000
12,500		14,000	124,000	77,000	45,000
12,600		14,000	124,000	77,000	45,000
12,700	1/2	14,000	124,000	77,000	45,000
12,800		14,000	124,000	77,000	45,000
13,100	33/64	14,000	124,000	77,000	45,000
13,300		14,000	124,000	77,000	45,000
13,500		14,000	124,000	77,000	45,000
13,700		14,000	124,000	77,000	45,000
14,000		14,000	124,000	77,000	45,000
14,200		16,000	133,000	83,000	48,000
14,290	9/16	16,000	133,000	83,000	48,000
14,300		16,000	133,000	83,000	48,000
14,400		16,000	133,000	83,000	48,000
14,500		16,000	133,000	83,000	48,000

d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm
14,700		16,000	133,000	83,000	48,000
14,800		16,000	133,000	83,000	48,000
15,100		16,000	133,000	83,000	48,000
15,200		16,000	133,000	83,000	48,000
15,300		16,000	133,000	83,000	48,000
15,500		16,000	133,000	83,000	48,000
15,600		16,000	133,000	83,000	48,000
15,700		16,000	133,000	83,000	48,000
15,800		16,000	133,000	83,000	48,000
16,000		16,000	133,000	83,000	48,000
16,500		18,000	143,000	93,000	48,000
17,000		18,000	143,000	93,000	48,000
17,500		18,000	143,000	93,000	48,000
18,000		18,000	143,000	93,000	48,000
18,500		20,000	153,000	101,000	50,000
19,000		20,000	153,000	101,000	50,000
19,500		20,000	153,000	101,000	50,000
20,000		20,000	153,000	101,000	50,000



**Forets Ratio sans canaux de lubrification**



**P** • Amin. de l'âme  $\geq \varnothing 3,100$  • affûtage en pente • arête de coupe principale rectiligne • géométrie de coupe optimisée

**M** ○

**K** •

**N** ○ aciers de construction et de cémentation • aciers de décolletage, aciers d'amélioration • aciers alliés jusqu'à 1200 N/mm<sup>2</sup> • fontes • bronze, laiton

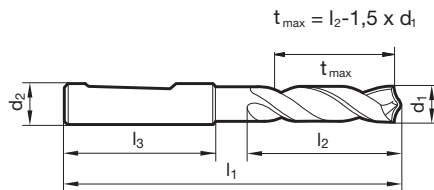
**S** ○ • alliages Al haut % en Si

**H** ○

**GÜHRING NAVIGATOR**

Paramètres de coupe, page 756

Matière de coupe	<b>CW monobloc</b>
Surface	<b>F</b>
Forme d'attachement	HE



N° d'article **2719**

d1		d2 h6	l1	l2	l3	d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm	mm	inch	mm	mm	mm	mm
3,100		6,000	66,000	28,000	36,000	7,800		8,000	91,000	53,000	36,000
3,200		6,000	66,000	28,000	36,000	7,900		8,000	91,000	53,000	36,000
3,500		6,000	66,000	28,000	36,000	8,000		8,000	91,000	53,000	36,000
3,600		6,000	66,000	28,000	36,000	8,100		10,000	103,000	61,000	40,000
3,700		6,000	66,000	28,000	36,000	8,200		10,000	103,000	61,000	40,000
3,800		6,000	74,000	36,000	36,000	8,300		10,000	103,000	61,000	40,000
3,900		6,000	74,000	36,000	36,000	8,400		10,000	103,000	61,000	40,000
4,000		6,000	74,000	36,000	36,000	8,500		10,000	103,000	61,000	40,000
4,100		6,000	74,000	36,000	36,000	8,600		10,000	103,000	61,000	40,000
4,200		6,000	74,000	36,000	36,000	8,700		10,000	103,000	61,000	40,000
4,400		6,000	74,000	36,000	36,000	8,900		10,000	103,000	61,000	40,000
4,500		6,000	74,000	36,000	36,000	9,000		10,000	103,000	61,000	40,000
4,600		6,000	74,000	36,000	36,000	9,100		10,000	103,000	61,000	40,000
4,700		6,000	74,000	36,000	36,000	9,200		10,000	103,000	61,000	40,000
4,800		6,000	82,000	44,000	36,000	9,250		10,000	103,000	61,000	40,000
4,900		6,000	82,000	44,000	36,000	9,400		10,000	103,000	61,000	40,000
5,000		6,000	82,000	44,000	36,000	9,500		10,000	103,000	61,000	40,000
5,160	13/64	6,000	82,000	44,000	36,000	9,600		10,000	103,000	61,000	40,000
5,200		6,000	82,000	44,000	36,000	9,700		10,000	103,000	61,000	40,000
5,300		6,000	82,000	44,000	36,000	9,900		10,000	103,000	61,000	40,000
5,400		6,000	82,000	44,000	36,000	10,100		12,000	118,000	71,000	45,000
5,500		6,000	82,000	44,000	36,000	10,320	13/32	12,000	118,000	71,000	45,000
5,550		6,000	82,000	44,000	36,000	10,400		12,000	118,000	71,000	45,000
5,600		6,000	82,000	44,000	36,000	10,500		12,000	118,000	71,000	45,000
5,700		6,000	82,000	44,000	36,000	10,600		12,000	118,000	71,000	45,000
5,900		6,000	82,000	44,000	36,000	10,700		12,000	118,000	71,000	45,000
6,000		6,000	82,000	44,000	36,000	10,800		12,000	118,000	71,000	45,000
6,100		8,000	91,000	53,000	36,000	10,900		12,000	118,000	71,000	45,000
6,200		8,000	91,000	53,000	36,000	11,100		12,000	118,000	71,000	45,000
6,300		8,000	91,000	53,000	36,000	11,110	7/16	12,000	118,000	71,000	45,000
6,400		8,000	91,000	53,000	36,000	11,200		12,000	118,000	71,000	45,000
6,500		8,000	91,000	53,000	36,000	11,300		12,000	118,000	71,000	45,000
6,600		8,000	91,000	53,000	36,000	11,400		12,000	118,000	71,000	45,000
6,700		8,000	91,000	53,000	36,000	11,500		12,000	118,000	71,000	45,000
6,800		8,000	91,000	53,000	36,000	11,600		12,000	118,000	71,000	45,000
7,000		8,000	91,000	53,000	36,000	11,700		12,000	118,000	71,000	45,000
7,100		8,000	91,000	53,000	36,000	11,800		12,000	118,000	71,000	45,000
7,200		8,000	91,000	53,000	36,000	11,900		12,000	118,000	71,000	45,000
7,300		8,000	91,000	53,000	36,000	11,910	15/32	12,000	118,000	71,000	45,000
7,500		8,000	91,000	53,000	36,000	12,200		14,000	124,000	77,000	45,000
7,600		8,000	91,000	53,000	36,000	12,500		14,000	124,000	77,000	45,000
7,700		8,000	91,000	53,000	36,000	12,700	1/2	14,000	124,000	77,000	45,000



d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm
13,500		14,000	124,000	77,000	45,000
13,700		14,000	124,000	77,000	45,000
14,000		14,000	124,000	77,000	45,000
14,200		16,000	133,000	83,000	48,000
14,290	9/16	16,000	133,000	83,000	48,000
14,500		16,000	133,000	83,000	48,000
14,700		16,000	133,000	83,000	48,000
15,200		16,000	133,000	83,000	48,000
15,500		16,000	133,000	83,000	48,000
15,700		16,000	133,000	83,000	48,000
16,500		18,000	143,000	93,000	48,000
17,000		18,000	143,000	93,000	48,000

d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm
17,500		18,000	143,000	93,000	48,000
18,000		18,000	143,000	93,000	48,000
18,500		20,000	153,000	101,000	50,000
19,000		20,000	153,000	101,000	50,000
19,500		20,000	153,000	101,000	50,000
20,000		20,000	153,000	101,000	50,000



**Forets Ratio sans canaux de lubrification**



**P** • Amin. de l'âme  $\geq \varnothing 5,000$  • affûtage en pente • arête de coupe principale rectiligne • géométrie de coupe optimisée

**M** ○

**K** •

**N** ○

**S** ○

**H** ○

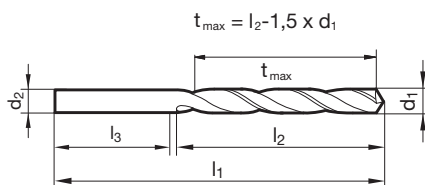
aciers de construction et de cémentation • aciers de décolletage, aciers d'amélioration • aciers alliés jusqu'à 1200 N/mm<sup>2</sup> • fontes • bronze, laiton

• alliages Al haut % en Si

**GÜHRING NAVIGATOR**

Paramètres de coupe, page 756

Matière de coupe	<b>CW monobloc</b>
Surface	<b>F</b>
Forme d'attachement	cyl.



N° d'article **2474**

d1		d2	l1	l2	l3
mm	inch	mm	mm	mm	mm
5,000		5,000	73,000	34,000	39,000
5,400		5,400	76,000	38,000	38,000
5,500		5,500	76,000	38,000	38,000
5,600		5,600	81,000	41,000	40,000
5,700		5,700	81,000	41,000	40,000
6,200		6,200	81,000	41,000	40,000
6,400		6,400	81,000	41,000	40,000
6,500		6,500	81,000	41,000	40,000
6,600		6,600	83,000	43,000	40,000
6,800		6,800	83,000	43,000	40,000
7,100		7,100	87,000	45,000	42,000
7,200		7,200	87,000	45,000	42,000
7,400		7,400	87,000	45,000	42,000
7,700		7,700	90,000	48,000	42,000
8,000		8,000	90,000	48,000	42,000
8,100		8,100	96,000	53,000	43,000
8,500		8,500	96,000	53,000	43,000
8,700		8,700	98,000	55,000	43,000

d1		d2	l1	l2	l3
mm	inch	mm	mm	mm	mm
9,000		9,000	98,000	55,000	43,000
9,200		9,200	102,000	58,000	44,000
9,300		9,300	102,000	58,000	44,000
9,700		9,700	105,000	60,000	45,000
9,800		9,800	105,000	60,000	45,000
10,200		10,200	112,000	66,000	46,000
10,300		10,300	112,000	66,000	46,000
10,400		10,400	112,000	66,000	46,000
10,500		10,500	112,000	66,000	46,000
10,600		10,600	114,000	68,000	46,000
10,800		10,800	114,000	68,000	46,000
10,900		10,900	114,000	68,000	46,000
11,000		11,000	114,000	68,000	46,000
11,600		11,600	121,000	73,000	48,000
11,800		11,800	121,000	73,000	48,000
13,000		13,000	137,000	78,000	59,000
14,000		14,000	147,000	86,000	61,000



Forets Ratio sans canaux de lubrification



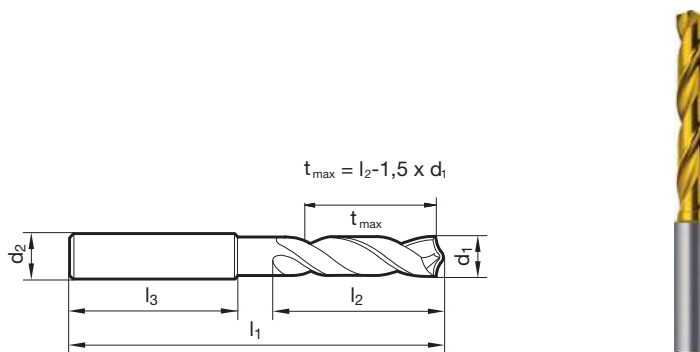
<b>P</b>	•	Amin. de l'âme $\geq \varnothing 3,300$ • affûtage en pente • arête de coupe principale rectiligne • géométrie de coupe optimisée
<b>M</b>	○	
<b>K</b>	•	
<b>N</b>	○	aciers de construction et de cémentation • aciers de décolletage, aciers d'amélioration • aciers alliés jusqu'à 1200 N/mm <sup>2</sup> • fontes • bronze, laiton
<b>S</b>	○	• alliages Al haut % en Si
<b>H</b>	○	

**GÜHRING** NAVIGATOR

Paramètres de coupe, page 756

Matière de coupe	<b>CW monobloc</b>
Surface	<b>S</b>
Forme d'attachement	HA

Forets Ratio



N° d'article **2717**

d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm
3,300		6,000	66,000	28,000	36,000
3,500		6,000	66,000	28,000	36,000
5,000		6,000	82,000	44,000	36,000
5,500		6,000	82,000	44,000	36,000
6,800		8,000	91,000	53,000	36,000
7,500		8,000	91,000	53,000	36,000

d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm
8,000		8,000	91,000	53,000	36,000
8,500		10,000	103,000	61,000	40,000
10,200		12,000	118,000	71,000	45,000
11,000		12,000	118,000	71,000	45,000
11,200		12,000	118,000	71,000	45,000
12,000		12,000	118,000	71,000	45,000



**Forets Ratio sans canaux de lubrification**

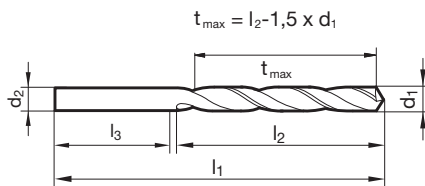


- P** • Amin. de l'âme  $\geq \varnothing 5,000$  • affûtage en pente • arête de coupe principale rectiligne • géométrie de coupe optimisée
- M** ○
- K** •
- N** ○ aciers de construction et de cémentation • aciers de décolletage, aciers d'amélioration • aciers alliés jusqu'à 1200 N/mm<sup>2</sup> • fontes • bronze, laiton
- S** ○ • alliages Al haut % en Si
- H** ○

**GÜHRING NAVIGATOR**

Paramètres de coupe, page 756

Matière de coupe	<b>CW monobloc</b>
Surface	<b>S</b>
Forme d'attachement	cyl.



N° d'article **1243**

d1		d2	l1	l2	l3	d1		d2	l1	l2	l3
mm	inch	mm	mm	mm	mm	mm	inch	mm	mm	mm	mm
5,000		5,000	73,000	34,000	39,000	8,330	21/64	8,330	96,000	53,000	43,000
5,100		5,100	76,000	38,000	38,000	8,400		8,400	96,000	53,000	43,000
5,160	13/64	5,160	76,000	38,000	38,000	8,500		8,500	96,000	53,000	43,000
5,200		5,200	76,000	38,000	38,000	8,600		8,600	98,000	55,000	43,000
5,300		5,300	76,000	38,000	38,000	8,700		8,700	98,000	55,000	43,000
5,400		5,400	76,000	38,000	38,000	8,730	11/32	8,730	98,000	55,000	43,000
5,500		5,500	76,000	38,000	38,000	8,800		8,800	98,000	55,000	43,000
5,560	7/32	5,560	81,000	41,000	40,000	8,900		8,900	98,000	55,000	43,000
5,600		5,600	81,000	41,000	40,000	9,000		9,000	98,000	55,000	43,000
5,700		5,700	81,000	41,000	40,000	9,100		9,100	102,000	58,000	44,000
5,800		5,800	81,000	41,000	40,000	9,130	23/64	9,130	102,000	58,000	44,000
5,900		5,900	81,000	41,000	40,000	9,200		9,200	102,000	58,000	44,000
5,950	15/64	5,950	81,000	41,000	40,000	9,300		9,300	102,000	58,000	44,000
6,000		6,000	81,000	41,000	40,000	9,500		9,500	102,000	58,000	44,000
6,100		6,100	81,000	41,000	40,000	9,520	3/8	9,520	105,000	60,000	45,000
6,200		6,200	81,000	41,000	40,000	9,600		9,600	105,000	60,000	45,000
6,300		6,300	81,000	41,000	40,000	9,700		9,700	105,000	60,000	45,000
6,350	1/4	6,350	81,000	41,000	40,000	9,800		9,800	105,000	60,000	45,000
6,400		6,400	81,000	41,000	40,000	9,900		9,900	105,000	60,000	45,000
6,500		6,500	81,000	41,000	40,000	9,920	25/64	9,920	105,000	60,000	45,000
6,600		6,600	83,000	43,000	40,000	10,000		10,000	105,000	60,000	45,000
6,700		6,700	83,000	43,000	40,000	10,100		10,100	112,000	66,000	46,000
6,750	17/64	6,750	83,000	43,000	40,000	10,200		10,200	112,000	66,000	46,000
6,800		6,800	83,000	43,000	40,000	10,300		10,300	112,000	66,000	46,000
6,900		6,900	83,000	43,000	40,000	10,320	13/32	10,320	112,000	66,000	46,000
7,000		7,000	83,000	43,000	40,000	10,400		10,400	112,000	66,000	46,000
7,100		7,100	87,000	45,000	42,000	10,500		10,500	112,000	66,000	46,000
7,140	9/32	7,140	87,000	45,000	42,000	10,600		10,600	114,000	68,000	46,000
7,200		7,200	87,000	45,000	42,000	10,700		10,700	114,000	68,000	46,000
7,300		7,300	87,000	45,000	42,000	10,720	27/64	10,720	114,000	68,000	46,000
7,400		7,400	87,000	45,000	42,000	10,800		10,800	114,000	68,000	46,000
7,500		7,500	87,000	45,000	42,000	10,900		10,900	114,000	68,000	46,000
7,540	19/64	7,540	90,000	48,000	42,000	11,000		11,000	114,000	68,000	46,000
7,600		7,600	90,000	48,000	42,000	11,100		11,100	118,000	71,000	47,000
7,700		7,700	90,000	48,000	42,000	11,110	7/16	11,110	118,000	71,000	47,000
7,800		7,800	90,000	48,000	42,000	11,400		11,400	118,000	71,000	47,000
7,900		7,900	90,000	48,000	42,000	11,500		11,500	118,000	71,000	47,000
7,940	5/16	7,940	90,000	48,000	42,000	11,600		11,600	121,000	73,000	48,000
8,000		8,000	90,000	48,000	42,000	11,700		11,700	121,000	73,000	48,000
8,100		8,100	96,000	53,000	43,000	11,800		11,800	121,000	73,000	48,000
8,200		8,200	96,000	53,000	43,000	11,900		11,900	121,000	73,000	48,000
8,300		8,300	96,000	53,000	43,000	11,910	15/32	11,910	121,000	73,000	48,000



d1		d2	l1	l2	l3
mm	inch	mm	mm	mm	mm
12,000		12,000	121,000	73,000	48,000
12,500		12,500	135,000	76,000	59,000
12,700	1/2	12,700	137,000	78,000	59,000
13,000		13,000	137,000	78,000	59,000
13,500		13,500	144,000	84,000	60,000
14,000		14,000	147,000	86,000	61,000

d1		d2	l1	l2	l3
mm	inch	mm	mm	mm	mm
14,500		14,500	151,000	89,000	62,000
15,000		15,000	153,000	91,000	62,000
15,500		15,500	157,000	94,000	63,000
16,000		16,000	160,000	96,000	64,000



**Forets Ratio sans canaux de lubrification**



Matière de coupe **CW monobloc**

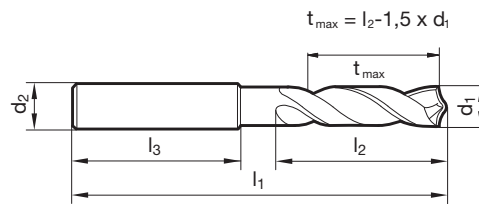
Surface **F**

Forme d'attachement **HA**

- P** ○ Amin. de l'âme  $\geq \varnothing 3,000$  • affûtage à dépouille conique • forme concave de l'arête de coupe principale • géométrie de coupe optimisée • paramètres de coupe extrêmes
- M** ○
- K** ○
- N** ○ aciers hautement alliés • aciers inox., inaltérables aux acides et réfractaires
- S** • Inconel, Hastelloy, Monel • laitons, bronzes • aluminium et alliages d'aluminium • magnésium, alliages de magnésium • Titane et ses alliages
- H** ○ métal fritté

**GÜHRING NAVIGATOR**

Paramètres de coupe, page 756



N° d'article **2712**

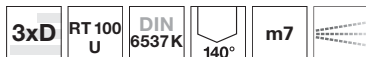
d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm
3,000		6,000	66,000	28,000	36,000
3,300		6,000	66,000	28,000	36,000
3,500		6,000	66,000	28,000	36,000
4,000		6,000	74,000	36,000	36,000
4,500		6,000	74,000	36,000	36,000
5,000		6,000	82,000	44,000	36,000
6,800		8,000	91,000	53,000	36,000
7,000		8,000	91,000	53,000	36,000
7,500		8,000	91,000	53,000	36,000
8,000		8,000	91,000	53,000	36,000
10,000		10,000	103,000	61,000	40,000
10,200		12,000	118,000	71,000	45,000

d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm
10,500		12,000	118,000	71,000	45,000
12,000		12,000	118,000	71,000	45,000
15,000		16,000	133,000	83,000	48,000





Forets Ratio à canaux de lubrification



Matière de coupe **CW monobloc**

Surface **F**

Forme d'attachement **HA**

**P** • Amin. de l'âme ≥ Ø 3,000 • affûtage en pente • arête de coupe principale rectiligne • géométrie de coupe optimisée

**M** ○

**K** •

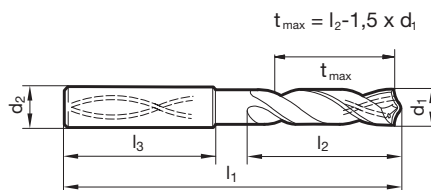
**N** ○ aciers de construction et de cémentation • aciers de décolletage, aciers d'amélioration • aciers alliés jusqu'à 1200 N/mm<sup>2</sup> • fontes • bronze, laiton

**S** ○ • alliages Al haut % en Si

**H** ○

**GÜHRING** NAVIGATOR

Paramètres de coupe, page 750



N° d'article **2477**

d1		d2 h6	l1	l2	l3	d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm	mm	inch	mm	mm	mm	mm
3,000		6,000	62,000	20,000	36,000	5,700		6,000	66,000	28,000	36,000
3,100		6,000	62,000	20,000	36,000	5,750		6,000	66,000	28,000	36,000
3,170	1/8	6,000	62,000	20,000	36,000	5,800		6,000	66,000	28,000	36,000
3,200		6,000	62,000	20,000	36,000	5,900		6,000	66,000	28,000	36,000
3,250		6,000	62,000	20,000	36,000	5,950	15/64	6,000	66,000	28,000	36,000
3,300		6,000	62,000	20,000	36,000	6,000		6,000	66,000	28,000	36,000
3,400		6,000	62,000	20,000	36,000	6,100		8,000	79,000	34,000	36,000
3,500		6,000	62,000	20,000	36,000	6,200		8,000	79,000	34,000	36,000
3,570	9/64	6,000	62,000	20,000	36,000	6,300		8,000	79,000	34,000	36,000
3,600		6,000	62,000	20,000	36,000	6,350	1/4	8,000	79,000	34,000	36,000
3,700		6,000	62,000	20,000	36,000	6,400		8,000	79,000	34,000	36,000
3,800		6,000	66,000	24,000	36,000	6,500		8,000	79,000	34,000	36,000
3,900		6,000	66,000	24,000	36,000	6,530		8,000	79,000	34,000	36,000
3,970	5/32	6,000	66,000	24,000	36,000	6,600		8,000	79,000	34,000	36,000
4,000		6,000	66,000	24,000	36,000	6,700		8,000	79,000	34,000	36,000
4,040		6,000	66,000	24,000	36,000	6,750	17/64	8,000	79,000	34,000	36,000
4,100		6,000	66,000	24,000	36,000	6,800		8,000	79,000	34,000	36,000
4,200		6,000	66,000	24,000	36,000	6,900		8,000	79,000	34,000	36,000
4,300		6,000	66,000	24,000	36,000	7,000		8,000	79,000	34,000	36,000
4,370	11/64	6,000	66,000	24,000	36,000	7,100		8,000	79,000	41,000	36,000
4,400		6,000	66,000	24,000	36,000	7,140	9/32	8,000	79,000	41,000	36,000
4,450		6,000	66,000	24,000	36,000	7,200		8,000	79,000	41,000	36,000
4,500		6,000	66,000	24,000	36,000	7,300		8,000	79,000	41,000	36,000
4,600		6,000	66,000	24,000	36,000	7,400		8,000	79,000	41,000	36,000
4,650		6,000	66,000	24,000	36,000	7,450		8,000	79,000	41,000	36,000
4,700		6,000	66,000	24,000	36,000	7,500		8,000	79,000	41,000	36,000
4,760	3/16	6,000	66,000	28,000	36,000	7,540	19/64	8,000	79,000	41,000	36,000
4,800		6,000	66,000	28,000	36,000	7,550		8,000	79,000	41,000	36,000
4,900		6,000	66,000	28,000	36,000	7,600		8,000	79,000	41,000	36,000
5,000		6,000	66,000	28,000	36,000	7,650		8,000	79,000	41,000	36,000
5,100		6,000	66,000	28,000	36,000	7,700		8,000	79,000	41,000	36,000
5,110		6,000	66,000	28,000	36,000	7,800		8,000	79,000	41,000	36,000
5,160	13/64	6,000	66,000	28,000	36,000	7,900		8,000	79,000	41,000	36,000
5,200		6,000	66,000	28,000	36,000	7,940	5/16	8,000	79,000	41,000	36,000
5,300		6,000	66,000	28,000	36,000	8,000		8,000	79,000	41,000	36,000
5,400		6,000	66,000	28,000	36,000	8,100		10,000	89,000	47,000	40,000
5,410		6,000	66,000	28,000	36,000	8,200		10,000	89,000	47,000	40,000
5,500		6,000	66,000	28,000	36,000	8,300		10,000	89,000	47,000	40,000
5,550		6,000	66,000	28,000	36,000	8,330	21/64	10,000	89,000	47,000	40,000
5,560	7/32	6,000	66,000	28,000	36,000	8,400		10,000	89,000	47,000	40,000
5,600		6,000	66,000	28,000	36,000	8,500		10,000	89,000	47,000	40,000
5,650		6,000	66,000	28,000	36,000	8,550		10,000	89,000	47,000	40,000



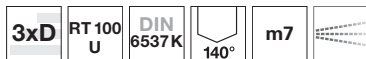
Forets Ratio

d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm
8,600		10,000	89,000	47,000	40,000
8,700		10,000	89,000	47,000	40,000
8,730	11/32	10,000	89,000	47,000	40,000
8,800		10,000	89,000	47,000	40,000
8,900		10,000	89,000	47,000	40,000
9,000		10,000	89,000	47,000	40,000
9,050		10,000	89,000	47,000	40,000
9,100		10,000	89,000	47,000	40,000
9,130	23/64	10,000	89,000	47,000	40,000
9,200		10,000	89,000	47,000	40,000
9,250		10,000	89,000	47,000	40,000
9,300		10,000	89,000	47,000	40,000
9,340		10,000	89,000	47,000	40,000
9,400		10,000	89,000	47,000	40,000
9,500		10,000	89,000	47,000	40,000
9,520	3/8	10,000	89,000	47,000	40,000
9,550		10,000	89,000	47,000	40,000
9,600		10,000	89,000	47,000	40,000
9,700		10,000	89,000	47,000	40,000
9,800		10,000	89,000	47,000	40,000
9,900		10,000	89,000	47,000	40,000
9,920	25/64	10,000	89,000	47,000	40,000
10,000		10,000	89,000	15,000	40,000
10,100		12,000	102,000	55,000	45,000
10,200		12,000	102,000	55,000	45,000
10,300		12,000	102,000	55,000	45,000
10,320	13/32	12,000	102,000	55,000	45,000
10,400		12,000	102,000	55,000	45,000
10,500		12,000	102,000	55,000	45,000
10,600		12,000	102,000	55,000	45,000
10,700		12,000	102,000	55,000	45,000
10,720	27/64	12,000	102,000	55,000	45,000
10,800		12,000	102,000	55,000	45,000
10,900		12,000	102,000	55,000	45,000
11,000		12,000	102,000	55,000	45,000
11,100		12,000	102,000	55,000	45,000
11,110	7/16	12,000	102,000	55,000	45,000
11,200		12,000	102,000	55,000	45,000
11,300		12,000	102,000	55,000	45,000
11,400		12,000	102,000	55,000	45,000
11,500		12,000	102,000	55,000	45,000
11,510	29/64	12,000	102,000	55,000	45,000
11,600		12,000	102,000	55,000	45,000
11,700		12,000	102,000	55,000	45,000
11,800		12,000	102,000	55,000	45,000
11,900		12,000	102,000	55,000	45,000
11,910	15/32	12,000	102,000	55,000	45,000
12,000		12,000	102,000	55,000	45,000
12,100		14,000	107,000	60,000	45,000
12,200		14,000	107,000	60,000	45,000
12,300	31/64	14,000	107,000	60,000	45,000
12,400		14,000	107,000	60,000	45,000
12,500		14,000	107,000	60,000	45,000
12,600		14,000	107,000	60,000	45,000
12,700	1/2	14,000	107,000	60,000	45,000
12,800		14,000	107,000	60,000	45,000
12,900		14,000	107,000	60,000	45,000
13,000		14,000	107,000	60,000	45,000
13,200		14,000	107,000	60,000	45,000
13,300		14,000	107,000	60,000	45,000

d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm
13,490	17/32	14,000	107,000	60,000	45,000
13,500		14,000	107,000	60,000	45,000
13,550		14,000	107,000	60,000	45,000
13,700		14,000	107,000	60,000	45,000
13,890	35/64	14,000	107,000	60,000	45,000
13,900		14,000	107,000	60,000	45,000
14,000		14,000	107,000	60,000	45,000
14,200		16,000	115,000	65,000	48,000
14,290	9/16	16,000	115,000	65,000	48,000
14,300		16,000	115,000	65,000	48,000
14,500		16,000	115,000	65,000	48,000
14,680	37/64	16,000	115,000	65,000	48,000
14,700		16,000	115,000	65,000	48,000
14,900		16,000	115,000	65,000	48,000
15,000		16,000	115,000	65,000	48,000
15,080	19/32	16,000	115,000	65,000	48,000
15,100		16,000	115,000	65,000	48,000
15,300		16,000	115,000	65,000	48,000
15,480	39/64	16,000	115,000	65,000	48,000
15,500		16,000	115,000	65,000	48,000
15,700		16,000	115,000	65,000	48,000
15,800		16,000	115,000	65,000	48,000
15,870	5/8	16,000	115,000	65,000	48,000
15,900		16,000	115,000	65,000	48,000
16,000		16,000	115,000	65,000	48,000
16,270	41/64	18,000	123,000	73,000	48,000
16,500		18,000	123,000	73,000	48,000
16,670	21/32	18,000	123,000	73,000	48,000
16,700		18,000	123,000	73,000	48,000
16,900		18,000	123,000	73,000	48,000
17,000		18,000	123,000	73,000	48,000
17,070	43/64	18,000	123,000	73,000	48,000
17,300		18,000	123,000	73,000	48,000
17,460	11/16	18,000	123,000	73,000	48,000
17,500		18,000	123,000	73,000	48,000
17,700		18,000	123,000	73,000	48,000
17,860	45/64	18,000	123,000	73,000	48,000
17,900		18,000	123,000	73,000	48,000
18,000		18,000	123,000	73,000	48,000
18,260	23/32	20,000	131,000	79,000	50,000
18,300		20,000	131,000	79,000	50,000
18,500		20,000	131,000	79,000	50,000
18,700		20,000	131,000	79,000	50,000
19,000		20,000	131,000	79,000	50,000
19,050	3/4	20,000	131,000	79,000	50,000
19,250		20,000	131,000	79,000	50,000
19,446		20,000	131,000	79,000	50,000
19,500		20,000	131,000	79,000	50,000
19,700		20,000	131,000	79,000	50,000
19,840	25/32	20,000	131,000	79,000	50,000
19,900		20,000	131,000	79,000	50,000
20,000		20,000	131,000	79,000	50,000



Forets Ratio à canaux de lubrification



Matière de coupe **CW monobloc**

Surface **F**

Forme d'attachement **HE**

**P** • Amin. de l'âme ≥ Ø 3,000 • affûtage en pente • arête de coupe principale rectiligne • géométrie de coupe optimisée

**M** ○

**K** •

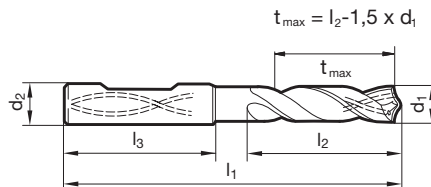
**N** ○ aciers de construction et de cémentation • aciers de décolletage, aciers d'amélioration • aciers alliés jusqu'à 1200 N/mm<sup>2</sup> • fontes • bronze, laiton

**S** ○ • alliages Al haut % en Si

**H** ○

**GÜHRING** NAVIGATOR

Paramètres de coupe, page 750



N° d'article **2469**

d1		d2 h6	l1	l2	l3	d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm	mm	inch	mm	mm	mm	mm
3,000		6,000	62,000	20,000	36,000	8,550		10,000	89,000	47,000	40,000
3,200		6,000	62,000	20,000	36,000	8,600		10,000	89,000	47,000	40,000
3,250		6,000	62,000	20,000	36,000	8,700		10,000	89,000	47,000	40,000
3,300		6,000	62,000	20,000	36,000	8,800		10,000	89,000	47,000	40,000
3,400		6,000	62,000	20,000	36,000	9,000		10,000	89,000	47,000	40,000
3,500		6,000	62,000	20,000	36,000	9,050		10,000	89,000	47,000	40,000
3,800		6,000	66,000	24,000	36,000	9,200		10,000	89,000	47,000	40,000
3,970	5/32	6,000	66,000	24,000	36,000	9,250		10,000	89,000	47,000	40,000
4,000		6,000	66,000	24,000	36,000	9,300		10,000	89,000	47,000	40,000
4,100		6,000	66,000	24,000	36,000	9,500		10,000	89,000	47,000	40,000
4,200		6,000	66,000	24,000	36,000	9,550		10,000	89,000	47,000	40,000
4,300		6,000	66,000	24,000	36,000	9,600		10,000	89,000	47,000	40,000
4,370	11/64	6,000	66,000	24,000	36,000	9,800		10,000	89,000	47,000	40,000
4,400		6,000	66,000	24,000	36,000	10,100		12,000	102,000	55,000	45,000
4,450		6,000	66,000	24,000	36,000	10,200		12,000	102,000	55,000	45,000
4,500		6,000	66,000	24,000	36,000	10,300		12,000	102,000	55,000	45,000
4,700		6,000	66,000	24,000	36,000	10,400		12,000	102,000	55,000	45,000
4,800		6,000	66,000	28,000	36,000	10,500		12,000	102,000	55,000	45,000
5,000		6,000	66,000	28,000	36,000	10,700		12,000	102,000	55,000	45,000
5,100		6,000	66,000	28,000	36,000	10,900		12,000	102,000	55,000	45,000
5,300		6,000	66,000	28,000	36,000	11,000		12,000	102,000	55,000	45,000
5,500		6,000	66,000	28,000	36,000	11,110	7/16	12,000	102,000	55,000	45,000
5,600		6,000	66,000	28,000	36,000	11,300		12,000	102,000	55,000	45,000
5,650		6,000	66,000	28,000	36,000	11,400		12,000	102,000	55,000	45,000
5,750		6,000	66,000	28,000	36,000	11,500		12,000	102,000	55,000	45,000
5,800		6,000	66,000	28,000	36,000	11,550		12,000	102,000	55,000	45,000
6,100		8,000	79,000	34,000	36,000	11,600		12,000	102,000	55,000	45,000
6,200		8,000	79,000	34,000	36,000	11,700		12,000	102,000	55,000	45,000
6,500		8,000	79,000	34,000	36,000	11,800		12,000	102,000	55,000	45,000
6,600		8,000	79,000	34,000	36,000	11,900		12,000	102,000	55,000	45,000
6,700		8,000	79,000	34,000	36,000	11,910	15/32	12,000	102,000	55,000	45,000
6,800		8,000	79,000	34,000	36,000	12,000		12,000	102,000	55,000	45,000
7,000		8,000	79,000	34,000	36,000	12,100		14,000	107,000	60,000	45,000
7,100		8,000	79,000	41,000	36,000	12,200		14,000	107,000	60,000	45,000
7,200		8,000	79,000	41,000	36,000	12,500		14,000	107,000	60,000	45,000
7,450		8,000	79,000	41,000	36,000	12,700	1/2	14,000	107,000	60,000	45,000
7,500		8,000	79,000	41,000	36,000	13,000		14,000	107,000	60,000	45,000
7,650		8,000	79,000	41,000	36,000	13,100	33/64	14,000	107,000	60,000	45,000
8,000		8,000	79,000	41,000	36,000	13,300		14,000	107,000	60,000	45,000
8,200		10,000	89,000	47,000	40,000	13,400		14,000	107,000	60,000	45,000
8,400		10,000	89,000	47,000	40,000	13,500		14,000	107,000	60,000	45,000
8,500		10,000	89,000	47,000	40,000	13,550		14,000	107,000	60,000	45,000

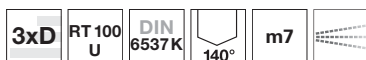


d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm
13,700		14,000	107,000	60,000	45,000
14,200		16,000	115,000	65,000	48,000
14,290	9/16	16,000	115,000	65,000	48,000
14,500		16,000	115,000	65,000	48,000
14,800		16,000	115,000	65,000	48,000
15,000		16,000	115,000	65,000	48,000
15,100		16,000	115,000	65,000	48,000
15,200		16,000	115,000	65,000	48,000
15,300		16,000	115,000	65,000	48,000
15,500		16,000	115,000	65,000	48,000
15,550		16,000	115,000	65,000	48,000
15,600		16,000	115,000	65,000	48,000
15,700		16,000	115,000	65,000	48,000
15,900		16,000	115,000	65,000	48,000
16,000		16,000	115,000	65,000	48,000
16,100		18,000	123,000	73,000	48,000
16,200		18,000	123,000	73,000	48,000
16,500		18,000	123,000	73,000	48,000

d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm
16,900		18,000	123,000	73,000	48,000
17,000		18,000	123,000	73,000	48,000
17,300		18,000	123,000	73,000	48,000
17,500		18,000	123,000	73,000	48,000
17,550		18,000	123,000	73,000	48,000
17,900		18,000	123,000	73,000	48,000
18,000		18,000	123,000	73,000	48,000
18,300		20,000	131,000	79,000	50,000
18,500		20,000	131,000	79,000	50,000
18,900		20,000	131,000	79,000	50,000
19,000		20,000	131,000	79,000	50,000
19,300		20,000	131,000	79,000	50,000
19,500		20,000	131,000	79,000	50,000
19,550		20,000	131,000	79,000	50,000
19,900		20,000	131,000	79,000	50,000
20,000		20,000	131,000	79,000	50,000



Forets Ratio à canaux de lubrification



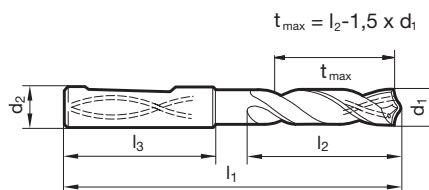
- P** • Amin. de l'âme ≥ Ø 3,300 • affûtage en pente • arête de coupe principale rectiligne • géométrie de coupe optimisée
- M** ○
- K** •
- N** ○ aciers de construction et de cémentation • aciers de décolletage, aciers d'amélioration • aciers alliés jusqu'à 1200 N/mm<sup>2</sup> • fontes • bronze, laiton
- S** ○ • alliages Al haut % en Si
- H** ○

Matière de coupe	<b>CW monobloc</b>
Surface	<b>S</b>
Forme d'attachement	HE

Forets Ratio

**GÜHRING NAVIGATOR**

Paramètres de coupe, page 750



N° d'article **1181**

d1		d2 h6	l1	l2	l3	d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm	mm	inch	mm	mm	mm	mm
3,300		6,000	62,000	20,000	36,000	10,500		12,000	102,000	55,000	45,000
3,400		6,000	62,000	20,000	36,000	10,600		12,000	102,000	55,000	45,000
4,000		6,000	66,000	24,000	36,000	10,700		12,000	102,000	55,000	45,000
5,000		6,000	66,000	28,000	36,000	10,800		12,000	102,000	55,000	45,000
5,500		6,000	66,000	28,000	36,000	11,000		12,000	102,000	55,000	45,000
5,600		6,000	66,000	28,000	36,000	11,300		12,000	102,000	55,000	45,000
5,800		6,000	66,000	28,000	36,000	11,500		12,000	102,000	55,000	45,000
6,000		6,000	66,000	28,000	36,000	11,510	29/64	12,000	102,000	55,000	45,000
6,100		8,000	79,000	34,000	36,000	11,910	15/32	12,000	102,000	55,000	45,000
6,200		8,000	79,000	34,000	36,000	12,000		12,000	102,000	55,000	45,000
6,300		8,000	79,000	34,000	36,000	12,100		14,000	107,000	60,000	45,000
6,400		8,000	79,000	34,000	36,000	12,300	31/64	14,000	107,000	60,000	45,000
6,600		8,000	79,000	34,000	36,000	12,500		14,000	107,000	60,000	45,000
6,800		8,000	79,000	34,000	36,000	12,700	1/2	14,000	107,000	60,000	45,000
7,000		8,000	79,000	34,000	36,000	12,900		14,000	107,000	60,000	45,000
7,100		8,000	79,000	41,000	36,000	13,000		14,000	107,000	60,000	45,000
7,140	9/32	8,000	79,000	41,000	36,000	13,500		14,000	107,000	60,000	45,000
7,400		8,000	79,000	41,000	36,000	13,890	35/64	14,000	107,000	60,000	45,000
7,500		8,000	79,000	41,000	36,000	14,000		14,000	107,000	60,000	45,000
7,540	19/64	8,000	79,000	41,000	36,000	14,500		16,000	115,000	65,000	48,000
7,800		8,000	79,000	41,000	36,000	14,680	37/64	16,000	115,000	65,000	48,000
7,940	5/16	8,000	79,000	41,000	36,000	14,900		16,000	115,000	65,000	48,000
8,000		8,000	79,000	41,000	36,000	15,000		16,000	115,000	65,000	48,000
8,100		10,000	89,000	47,000	40,000	15,480	39/64	16,000	115,000	65,000	48,000
8,200		10,000	89,000	47,000	40,000	15,500		16,000	115,000	65,000	48,000
8,400		10,000	89,000	47,000	40,000	16,100		18,000	123,000	73,000	48,000
8,500		10,000	89,000	47,000	40,000	16,200		18,000	123,000	73,000	48,000
8,700		10,000	89,000	47,000	40,000	16,500		18,000	123,000	73,000	48,000
8,800		10,000	89,000	47,000	40,000	17,000		18,000	123,000	73,000	48,000
9,000		10,000	89,000	47,000	40,000	17,500		18,000	123,000	73,000	48,000
9,200		10,000	89,000	47,000	40,000	17,700		18,000	123,000	73,000	48,000
9,700		10,000	89,000	47,000	40,000	18,000		18,000	123,000	73,000	48,000
9,800		10,000	89,000	47,000	40,000	18,700		20,000	131,000	79,000	50,000
10,000		10,000	89,000	47,000	40,000	19,000		20,000	131,000	79,000	50,000
10,200		12,000	102,000	55,000	45,000	19,500		20,000	131,000	79,000	50,000
10,300		12,000	102,000	55,000	45,000						



**Forets Ratio à canaux de lubrification**

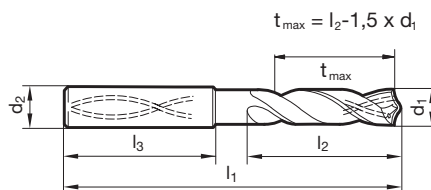


- P** • Amin. de l'âme  $\geq \varnothing 3,000$  • affûtage à dépouille conique • forme de l'arête de coupe principale légèrement concave • géométrie de coupe optimisée
- M**
- K**
- N** aciers alliés et à haute résistance jusqu'à 1600 N/mm<sup>2</sup> • Inconel, Hastelloy, Monel • Titane et ses alliages
- S** •
- H** ○

Matière de coupe	<b>CW monobloc</b>
Surface	<b>Y</b>
Forme d'attachement	HA

**GÜHRING NAVIGATOR**

Paramètres de coupe, page 750



N° d'article **8520**

d1		d2 h6	l1	l2	l3	d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm	mm	inch	mm	mm	mm	mm
3,000		6,000	62,000	20,000	36,000	6,100		8,000	79,000	34,000	36,000
3,100		6,000	62,000	20,000	36,000	6,200		8,000	79,000	34,000	36,000
3,170	1/8	6,000	62,000	20,000	36,000	6,300		8,000	79,000	34,000	36,000
3,200		6,000	62,000	20,000	36,000	6,350	1/4	8,000	79,000	34,000	36,000
3,250		6,000	62,000	20,000	36,000	6,400		8,000	79,000	34,000	36,000
3,300		6,000	62,000	20,000	36,000	6,500		8,000	79,000	34,000	36,000
3,400		6,000	62,000	20,000	36,000	6,600		8,000	79,000	34,000	36,000
3,500		6,000	62,000	20,000	36,000	6,700		8,000	79,000	34,000	36,000
3,570	9/64	6,000	62,000	20,000	36,000	6,750	17/64	8,000	79,000	34,000	36,000
3,600		6,000	62,000	20,000	36,000	6,800		8,000	79,000	34,000	36,000
3,700		6,000	62,000	20,000	36,000	6,900		8,000	79,000	34,000	36,000
3,800		6,000	66,000	24,000	36,000	7,000		8,000	79,000	34,000	36,000
3,900		6,000	66,000	24,000	36,000	7,100		8,000	79,000	41,000	36,000
3,970	5/32	6,000	66,000	24,000	36,000	7,140	9/32	8,000	79,000	41,000	36,000
4,000		6,000	66,000	24,000	36,000	7,200		8,000	79,000	41,000	36,000
4,100		6,000	66,000	24,000	36,000	7,300		8,000	79,000	41,000	36,000
4,200		6,000	66,000	24,000	36,000	7,400		8,000	79,000	41,000	36,000
4,300		6,000	66,000	24,000	36,000	7,500		8,000	79,000	41,000	36,000
4,370	11/64	6,000	66,000	24,000	36,000	7,540	19/64	8,000	79,000	41,000	36,000
4,400		6,000	66,000	24,000	36,000	7,600		8,000	79,000	41,000	36,000
4,500		6,000	66,000	24,000	36,000	7,700		8,000	79,000	41,000	36,000
4,600		6,000	66,000	24,000	36,000	7,800		8,000	79,000	41,000	36,000
4,650		6,000	66,000	24,000	36,000	7,900		8,000	79,000	41,000	36,000
4,700		6,000	66,000	24,000	36,000	7,940	5/16	8,000	79,000	41,000	36,000
4,760	3/16	6,000	66,000	28,000	36,000	8,000		8,000	79,000	41,000	36,000
4,800		6,000	66,000	28,000	36,000	8,100		10,000	89,000	47,000	40,000
4,900		6,000	66,000	28,000	36,000	8,200		10,000	89,000	47,000	40,000
5,000		6,000	66,000	28,000	36,000	8,300		10,000	89,000	47,000	40,000
5,100		6,000	66,000	28,000	36,000	8,330	21/64	10,000	89,000	47,000	40,000
5,160	13/64	6,000	66,000	28,000	36,000	8,400		10,000	89,000	47,000	40,000
5,200		6,000	66,000	28,000	36,000	8,500		10,000	89,000	47,000	40,000
5,300		6,000	66,000	28,000	36,000	8,600		10,000	89,000	47,000	40,000
5,400		6,000	66,000	28,000	36,000	8,700		10,000	89,000	47,000	40,000
5,500		6,000	66,000	28,000	36,000	8,730	11/32	10,000	89,000	47,000	40,000
5,550		6,000	66,000	28,000	36,000	8,800		10,000	89,000	47,000	40,000
5,560	7/32	6,000	66,000	28,000	36,000	8,900		10,000	89,000	47,000	40,000
5,600		6,000	66,000	28,000	36,000	9,000		10,000	89,000	47,000	40,000
5,700		6,000	66,000	28,000	36,000	9,100		10,000	89,000	47,000	40,000
5,800		6,000	66,000	28,000	36,000	9,130	23/64	10,000	89,000	47,000	40,000
5,900		6,000	66,000	28,000	36,000	9,200		10,000	89,000	47,000	40,000
5,950	15/64	6,000	66,000	28,000	36,000	9,250		10,000	89,000	47,000	40,000
6,000		6,000	66,000	28,000	36,000	9,300		10,000	89,000	47,000	40,000



d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm
9,400		10,000	89,000	47,000	40,000
9,500		10,000	89,000	47,000	40,000
9,520	3/8	10,000	89,000	47,000	40,000
9,600		10,000	89,000	47,000	40,000
9,700		10,000	89,000	47,000	40,000
9,800		10,000	89,000	47,000	40,000
9,900		10,000	89,000	47,000	40,000
9,920	25/64	10,000	89,000	47,000	40,000
10,000		10,000	89,000	47,000	40,000
10,100		12,000	102,000	55,000	45,000
10,200		12,000	102,000	55,000	45,000
10,300		12,000	102,000	55,000	45,000
10,320	13/32	12,000	102,000	55,000	45,000
10,400		12,000	102,000	55,000	45,000
10,500		12,000	102,000	55,000	45,000
10,600		12,000	102,000	55,000	45,000
10,700		12,000	102,000	55,000	45,000
10,720	27/64	12,000	102,000	55,000	45,000
10,800		12,000	102,000	55,000	45,000
10,900		12,000	102,000	55,000	45,000
11,000		12,000	102,000	55,000	45,000
11,100		12,000	102,000	55,000	45,000
11,110	7/16	12,000	102,000	55,000	45,000
11,200		12,000	102,000	55,000	45,000
11,300		12,000	102,000	55,000	45,000
11,400		12,000	102,000	55,000	45,000
11,500		12,000	102,000	55,000	45,000
11,600		12,000	102,000	55,000	45,000
11,700		12,000	102,000	55,000	45,000
11,800		12,000	102,000	55,000	45,000
11,900		12,000	102,000	55,000	45,000
11,910	15/32	12,000	102,000	55,000	45,000
12,000		12,000	102,000	55,000	45,000
12,200		14,000	107,000	60,000	45,000
12,300	31/64	14,000	107,000	60,000	45,000
12,500		14,000	107,000	60,000	45,000

d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm
12,700	1/2	14,000	107,000	60,000	45,000
12,800		14,000	107,000	60,000	45,000
13,000		14,000	107,000	60,000	45,000
13,300		14,000	107,000	60,000	45,000
13,490	17/32	14,000	107,000	60,000	45,000
13,500		14,000	107,000	60,000	45,000
13,700		14,000	107,000	60,000	45,000
14,000		14,000	107,000	60,000	45,000
14,200		16,000	115,000	65,000	48,000
14,290	9/16	16,000	115,000	65,000	48,000
14,300		16,000	115,000	65,000	48,000
14,500		16,000	115,000	65,000	48,000
14,700		16,000	115,000	65,000	48,000
15,000		16,000	115,000	65,000	48,000
15,200		16,000	115,000	65,000	48,000
15,300		16,000	115,000	65,000	48,000
15,500		16,000	115,000	65,000	48,000
15,700		16,000	115,000	65,000	48,000
16,000		16,000	115,000	65,000	48,000
16,300		18,000	123,000	73,000	48,000
16,500		18,000	123,000	73,000	48,000
16,900		18,000	123,000	73,000	48,000
17,000		18,000	123,000	73,000	48,000
17,300		18,000	123,000	73,000	48,000
17,500		18,000	123,000	73,000	48,000
18,000		18,000	123,000	73,000	48,000
18,500		20,000	131,000	79,000	50,000
18,900		20,000	131,000	79,000	50,000
19,000		20,000	131,000	79,000	50,000
19,050	3/4	20,000	131,000	79,000	50,000
19,300		20,000	131,000	79,000	50,000
19,500		20,000	131,000	79,000	50,000
20,000		20,000	131,000	79,000	50,000



**Forets Ratio à canaux de lubrification**



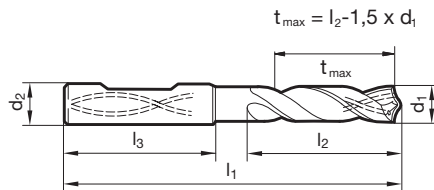
**P** • Amin. de l'âme  $\geq \varnothing 3,000$  • affûtage à dépouille conique • forme de l'arête de coupe principale légèrement concave • géométrie de coupe optimisée

- M**
- K**
- N** aciers alliés et à haute résistance jusqu'à 1600 N/mm<sup>2</sup> • Inconel, Hastelloy, Monel • Titane et ses alliages
- S** •
- H** ○

Matière de coupe	<b>CW monobloc</b>
Surface	<b>Y</b>
Forme d'attachement	HE

**GÜHRING NAVIGATOR**

Paramètres de coupe, page 750



N° d'article **8620**

d1		d2 h6	l1	l2	l3	d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm	mm	inch	mm	mm	mm	mm
3,000		6,000	62,000	20,000	36,000	6,100		8,000	79,000	34,000	36,000
3,100		6,000	62,000	20,000	36,000	6,200		8,000	79,000	34,000	36,000
3,170	1/8	6,000	62,000	20,000	36,000	6,300		8,000	79,000	34,000	36,000
3,200		6,000	62,000	20,000	36,000	6,350	1/4	8,000	79,000	34,000	36,000
3,250		6,000	62,000	20,000	36,000	6,400		8,000	79,000	34,000	36,000
3,300		6,000	62,000	20,000	36,000	6,500		8,000	79,000	34,000	36,000
3,400		6,000	62,000	20,000	36,000	6,600		8,000	79,000	34,000	36,000
3,500		6,000	62,000	20,000	36,000	6,700		8,000	79,000	34,000	36,000
3,570	9/64	6,000	62,000	20,000	36,000	6,750	17/64	8,000	79,000	34,000	36,000
3,600		6,000	62,000	20,000	36,000	6,800		8,000	79,000	34,000	36,000
3,700		6,000	62,000	20,000	36,000	6,900		8,000	79,000	34,000	36,000
3,800		6,000	66,000	24,000	36,000	7,000		8,000	79,000	34,000	36,000
3,900		6,000	66,000	24,000	36,000	7,100		8,000	79,000	41,000	36,000
3,970	5/32	6,000	66,000	24,000	36,000	7,140	9/32	8,000	79,000	41,000	36,000
4,000		6,000	66,000	24,000	36,000	7,200		8,000	79,000	41,000	36,000
4,100		6,000	66,000	24,000	36,000	7,300		8,000	79,000	41,000	36,000
4,200		6,000	66,000	24,000	36,000	7,400		8,000	79,000	41,000	36,000
4,300		6,000	66,000	24,000	36,000	7,500		8,000	79,000	41,000	36,000
4,370	11/64	6,000	66,000	24,000	36,000	7,540	19/64	8,000	79,000	41,000	36,000
4,400		6,000	66,000	24,000	36,000	7,600		8,000	79,000	41,000	36,000
4,500		6,000	66,000	24,000	36,000	7,700		8,000	79,000	41,000	36,000
4,600		6,000	66,000	24,000	36,000	7,800		8,000	79,000	41,000	36,000
4,650		6,000	66,000	24,000	36,000	7,900		8,000	79,000	41,000	36,000
4,700		6,000	66,000	24,000	36,000	7,940	5/16	8,000	79,000	41,000	36,000
4,760	3/16	6,000	66,000	28,000	36,000	8,000		8,000	79,000	41,000	36,000
4,800		6,000	66,000	28,000	36,000	8,100		10,000	89,000	47,000	40,000
4,900		6,000	66,000	28,000	36,000	8,200		10,000	89,000	47,000	40,000
5,000		6,000	66,000	28,000	36,000	8,300		10,000	89,000	47,000	40,000
5,100		6,000	66,000	28,000	36,000	8,330	21/64	10,000	89,000	47,000	40,000
5,160	13/64	6,000	66,000	28,000	36,000	8,400		10,000	89,000	47,000	40,000
5,200		6,000	66,000	28,000	36,000	8,500		10,000	89,000	47,000	40,000
5,300		6,000	66,000	28,000	36,000	8,600		10,000	89,000	47,000	40,000
5,400		6,000	66,000	28,000	36,000	8,700		10,000	89,000	47,000	40,000
5,500		6,000	66,000	28,000	36,000	8,730	11/32	10,000	89,000	47,000	40,000
5,550		6,000	66,000	28,000	36,000	8,800		10,000	89,000	47,000	40,000
5,560	7/32	6,000	66,000	28,000	36,000	8,900		10,000	89,000	47,000	40,000
5,600		6,000	66,000	28,000	36,000	9,000		10,000	89,000	47,000	40,000
5,700		6,000	66,000	28,000	36,000	9,100		10,000	89,000	47,000	40,000
5,800		6,000	66,000	28,000	36,000	9,130	23/64	10,000	89,000	47,000	40,000
5,900		6,000	66,000	28,000	36,000	9,200		10,000	89,000	47,000	40,000
5,950	15/64	6,000	66,000	28,000	36,000	9,250		10,000	89,000	47,000	40,000
6,000		6,000	66,000	28,000	36,000	9,300		10,000	89,000	47,000	40,000





d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm
9,400		10,000	89,000	47,000	40,000
9,500		10,000	89,000	47,000	40,000
9,520	3/8	10,000	89,000	47,000	40,000
9,600		10,000	89,000	47,000	40,000
9,700		10,000	89,000	47,000	40,000
9,800		10,000	89,000	47,000	40,000
9,900		10,000	89,000	47,000	40,000
9,920	25/64	10,000	89,000	47,000	40,000
10,000		10,000	89,000	47,000	40,000
10,100		12,000	102,000	55,000	45,000
10,200		12,000	102,000	55,000	45,000
10,300		12,000	102,000	55,000	45,000
10,320	13/32	12,000	102,000	55,000	45,000
10,400		12,000	102,000	55,000	45,000
10,500		12,000	102,000	55,000	45,000
10,600		12,000	102,000	55,000	45,000
10,700		12,000	102,000	55,000	45,000
10,800		12,000	102,000	55,000	45,000
10,900		12,000	102,000	55,000	45,000
11,000		12,000	102,000	55,000	45,000
11,100		12,000	102,000	55,000	45,000
11,110	7/16	12,000	102,000	55,000	45,000
11,200		12,000	102,000	55,000	45,000
11,300		12,000	102,000	55,000	45,000
11,400		12,000	102,000	55,000	45,000
11,500		12,000	102,000	55,000	45,000
11,600		12,000	102,000	55,000	45,000
11,700		12,000	102,000	55,000	45,000
11,800		12,000	102,000	55,000	45,000
11,900		12,000	102,000	55,000	45,000
11,910	15/32	12,000	102,000	55,000	45,000
12,000		12,000	102,000	55,000	45,000
12,200		14,000	107,000	60,000	45,000
12,500		14,000	107,000	60,000	45,000
12,700	1/2	14,000	107,000	60,000	45,000
12,800		14,000	107,000	60,000	45,000

d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm
13,000		14,000	107,000	60,000	45,000
13,300		14,000	107,000	60,000	45,000
13,500		14,000	107,000	60,000	45,000
13,700		14,000	107,000	60,000	45,000
14,000		14,000	107,000	60,000	45,000
14,200		16,000	115,000	65,000	48,000
14,290	9/16	16,000	115,000	65,000	48,000
14,300		16,000	115,000	65,000	48,000
14,500		16,000	115,000	65,000	48,000
14,700		16,000	115,000	65,000	48,000
15,000		16,000	115,000	65,000	48,000
15,200		16,000	115,000	65,000	48,000
15,300		16,000	115,000	65,000	48,000
15,500		16,000	115,000	65,000	48,000
15,700		16,000	115,000	65,000	48,000
16,000		16,000	115,000	65,000	48,000
16,300		18,000	123,000	73,000	48,000
16,500		18,000	123,000	73,000	48,000
16,900		18,000	123,000	73,000	48,000
17,000		18,000	123,000	73,000	48,000
17,300		18,000	123,000	73,000	48,000
17,500		18,000	123,000	73,000	48,000
18,000		18,000	123,000	73,000	48,000
18,500		20,000	131,000	79,000	50,000
18,900		20,000	131,000	79,000	50,000
19,000		20,000	131,000	79,000	50,000
19,050	3/4	20,000	131,000	79,000	50,000
19,300		20,000	131,000	79,000	50,000
19,500		20,000	131,000	79,000	50,000
20,000		20,000	131,000	79,000	50,000



**Forets Ratio à canaux de lubrification**

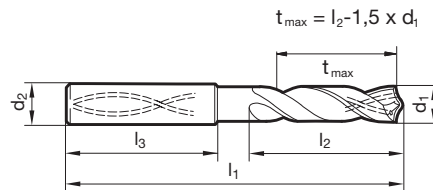


- P** Amin. de l'âme ≥ Ø 3,000 • affûtage en pente • arête de coupe principale rectiligne • géométrie de coupe optimisée
- M** •
- K** •
- N** aciers inox., inaltérables aux acides et réfractaires • Titane et ses alliages
- S** • Inconel, Hastelloy, Monel
- H** •

**GÜHRING NAVIGATOR**

Paramètres de coupe, page 750

Matière de coupe	<b>CW monobloc</b>
Surface	
Forme d'attachement	HA



N° d'article **8510**

d1		d2 h6	l1	l2	l3	d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm	mm	inch	mm	mm	mm	mm
3,000		6,000	62,000	20,000	36,000	6,100		8,000	79,000	34,000	36,000
3,100		6,000	62,000	20,000	36,000	6,200		8,000	79,000	34,000	36,000
3,170	1/8	6,000	62,000	20,000	36,000	6,300		8,000	79,000	34,000	36,000
3,200		6,000	62,000	20,000	36,000	6,350	1/4	8,000	79,000	34,000	36,000
3,250		6,000	62,000	20,000	36,000	6,400		8,000	79,000	34,000	36,000
3,300		6,000	62,000	20,000	36,000	6,500		8,000	79,000	34,000	36,000
3,400		6,000	62,000	20,000	36,000	6,600		8,000	79,000	34,000	36,000
3,500		6,000	62,000	20,000	36,000	6,700		8,000	79,000	34,000	36,000
3,570	9/64	6,000	62,000	20,000	36,000	6,750	17/64	8,000	79,000	34,000	36,000
3,600		6,000	62,000	20,000	36,000	6,800		8,000	79,000	34,000	36,000
3,700		6,000	62,000	20,000	36,000	6,900		8,000	79,000	34,000	36,000
3,800		6,000	66,000	24,000	36,000	7,000		8,000	79,000	34,000	36,000
3,900		6,000	66,000	24,000	36,000	7,100		8,000	79,000	41,000	36,000
3,970	5/32	6,000	66,000	24,000	36,000	7,140	9/32	8,000	79,000	41,000	36,000
4,000		6,000	66,000	24,000	36,000	7,200		8,000	79,000	41,000	36,000
4,100		6,000	66,000	24,000	36,000	7,300		8,000	79,000	41,000	36,000
4,200		6,000	66,000	24,000	36,000	7,400		8,000	79,000	41,000	36,000
4,300		6,000	66,000	24,000	36,000	7,500		8,000	79,000	41,000	36,000
4,370	11/64	6,000	66,000	24,000	36,000	7,540	19/64	8,000	79,000	41,000	36,000
4,400		6,000	66,000	24,000	36,000	7,600		8,000	79,000	41,000	36,000
4,500		6,000	66,000	24,000	36,000	7,700		8,000	79,000	41,000	36,000
4,600		6,000	66,000	24,000	36,000	7,800		8,000	79,000	41,000	36,000
4,650		6,000	66,000	24,000	36,000	7,900		8,000	79,000	41,000	36,000
4,700		6,000	66,000	24,000	36,000	7,940	5/16	8,000	79,000	41,000	36,000
4,760	3/16	6,000	66,000	28,000	36,000	8,000		8,000	79,000	41,000	36,000
4,800		6,000	66,000	28,000	36,000	8,100		10,000	89,000	47,000	40,000
4,900		6,000	66,000	28,000	36,000	8,200		10,000	89,000	47,000	40,000
5,000		6,000	66,000	28,000	36,000	8,300		10,000	89,000	47,000	40,000
5,100		6,000	66,000	28,000	36,000	8,330	21/64	10,000	89,000	47,000	40,000
5,160	13/64	6,000	66,000	28,000	36,000	8,400		10,000	89,000	47,000	40,000
5,200		6,000	66,000	28,000	36,000	8,500		10,000	89,000	47,000	40,000
5,300		6,000	66,000	28,000	36,000	8,600		10,000	89,000	47,000	40,000
5,400		6,000	66,000	28,000	36,000	8,700		10,000	89,000	47,000	40,000
5,500		6,000	66,000	28,000	36,000	8,730	11/32	10,000	89,000	47,000	40,000
5,550		6,000	66,000	28,000	36,000	8,800		10,000	89,000	47,000	40,000
5,560	7/32	6,000	66,000	28,000	36,000	8,900		10,000	89,000	47,000	40,000
5,600		6,000	66,000	28,000	36,000	9,000		10,000	89,000	47,000	40,000
5,700		6,000	66,000	28,000	36,000	9,100		10,000	89,000	47,000	40,000
5,800		6,000	66,000	28,000	36,000	9,130	23/64	10,000	89,000	47,000	40,000
5,900		6,000	66,000	28,000	36,000	9,200		10,000	89,000	47,000	40,000
5,950	15/64	6,000	66,000	28,000	36,000	9,250		10,000	89,000	47,000	40,000
6,000		6,000	66,000	28,000	36,000	9,300		10,000	89,000	47,000	40,000



d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm
9,400		10,000	89,000	47,000	40,000
9,500		10,000	89,000	47,000	40,000
9,520	3/8	10,000	89,000	47,000	40,000
9,600		10,000	89,000	47,000	40,000
9,700		10,000	89,000	47,000	40,000
9,800		10,000	89,000	47,000	40,000
9,900		10,000	89,000	47,000	40,000
9,920	25/64	10,000	89,000	47,000	40,000
10,000		10,000	89,000	47,000	40,000
10,100		12,000	102,000	55,000	45,000
10,200		12,000	102,000	55,000	45,000
10,300		12,000	102,000	55,000	45,000
10,320	13/32	12,000	102,000	55,000	45,000
10,400		12,000	102,000	55,000	45,000
10,500		12,000	102,000	55,000	45,000
10,600		12,000	102,000	55,000	45,000
10,700		12,000	102,000	55,000	45,000
10,800		12,000	102,000	55,000	45,000
10,900		12,000	102,000	55,000	45,000
11,000		12,000	102,000	55,000	45,000
11,100		12,000	102,000	55,000	45,000
11,110	7/16	12,000	102,000	55,000	45,000
11,200		12,000	102,000	55,000	45,000
11,300		12,000	102,000	55,000	45,000
11,400		12,000	102,000	55,000	45,000
11,500		12,000	102,000	55,000	45,000
11,600		12,000	102,000	55,000	45,000
11,700		12,000	102,000	55,000	45,000
11,800		12,000	102,000	55,000	45,000
11,900		12,000	102,000	55,000	45,000
11,910	15/32	12,000	102,000	55,000	45,000
12,000		12,000	102,000	55,000	45,000
12,200		14,000	107,000	60,000	45,000
12,500		14,000	107,000	60,000	45,000
12,700	1/2	14,000	107,000	60,000	45,000
12,800		14,000	107,000	60,000	45,000

d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm
13,000		14,000	107,000	60,000	45,000
13,300		14,000	107,000	60,000	45,000
13,500		14,000	107,000	60,000	45,000
13,700		14,000	107,000	60,000	45,000
14,000		14,000	107,000	60,000	45,000
14,200		16,000	115,000	65,000	48,000
14,290	9/16	16,000	115,000	65,000	48,000
14,300		16,000	115,000	65,000	48,000
14,500		16,000	115,000	65,000	48,000
14,700		16,000	115,000	65,000	48,000
15,000		16,000	115,000	65,000	48,000
15,200		16,000	115,000	65,000	48,000
15,300		16,000	115,000	65,000	48,000
15,500		16,000	115,000	65,000	48,000
15,700		16,000	115,000	65,000	48,000
16,000		16,000	115,000	65,000	48,000
16,300		18,000	123,000	73,000	48,000
16,500		18,000	123,000	73,000	48,000
16,900		18,000	123,000	73,000	48,000
17,000		18,000	123,000	73,000	48,000
17,300		18,000	123,000	73,000	48,000
17,500		18,000	123,000	73,000	48,000
18,000		18,000	123,000	73,000	48,000
18,500		20,000	131,000	79,000	50,000
18,900		20,000	131,000	79,000	50,000
19,000		20,000	131,000	79,000	50,000
19,050	3/4	20,000	131,000	79,000	50,000
19,300		20,000	131,000	79,000	50,000
19,500		20,000	131,000	79,000	50,000
20,000		20,000	131,000	79,000	50,000



**Forets Ratio à canaux de lubrification**



**P** Amin. de l'âme  $\geq \varnothing 3,000$  • affûtage en pente • arête de coupe principale rectiligne • géométrie de coupe optimisée

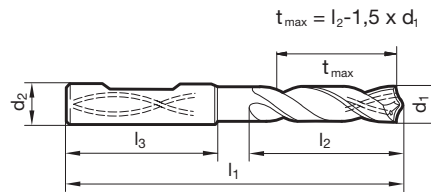
- M** •
- K**
- N** aciers inox., inaltérables aux acides et réfractaires • Titane et ses alliages
- S** •
- H**

aciers inox., inaltérables aux acides et réfractaires • Titane et ses alliages  
• Inconel, Hastelloy, Monel

**GÜHRING NAVIGATOR**

Paramètres de coupe, page 750

Matière de coupe	<b>CW monobloc</b>
Surface	
Forme d'attachement	HE



N° d'article **8610**

d1		d2 h6	l1	l2	l3	d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm	mm	inch	mm	mm	mm	mm
3,000		6,000	62,000	20,000	36,000	6,100		8,000	79,000	34,000	36,000
3,100		6,000	62,000	20,000	36,000	6,200		8,000	79,000	34,000	36,000
3,170	1/8	6,000	62,000	20,000	36,000	6,300		8,000	79,000	34,000	36,000
3,200		6,000	62,000	20,000	36,000	6,350	1/4	8,000	79,000	34,000	36,000
3,250		6,000	62,000	20,000	36,000	6,400		8,000	79,000	34,000	36,000
3,300		6,000	62,000	20,000	36,000	6,500		8,000	79,000	34,000	36,000
3,400		6,000	62,000	20,000	36,000	6,600		8,000	79,000	34,000	36,000
3,500		6,000	62,000	20,000	36,000	6,700		8,000	79,000	34,000	36,000
3,570	9/64	6,000	62,000	20,000	36,000	6,750	17/64	8,000	79,000	34,000	36,000
3,600		6,000	62,000	20,000	36,000	6,800		8,000	79,000	34,000	36,000
3,700		6,000	62,000	20,000	36,000	6,900		8,000	79,000	34,000	36,000
3,800		6,000	66,000	24,000	36,000	7,000		8,000	79,000	34,000	36,000
3,900		6,000	66,000	24,000	36,000	7,100		8,000	79,000	41,000	36,000
3,970	5/32	6,000	66,000	24,000	36,000	7,140	9/32	8,000	79,000	41,000	36,000
4,000		6,000	66,000	24,000	36,000	7,200		8,000	79,000	41,000	36,000
4,100		6,000	66,000	24,000	36,000	7,300		8,000	79,000	41,000	36,000
4,200		6,000	66,000	24,000	36,000	7,400		8,000	79,000	41,000	36,000
4,300		6,000	66,000	24,000	36,000	7,500		8,000	79,000	41,000	36,000
4,370	11/64	6,000	66,000	24,000	36,000	7,540	19/64	8,000	79,000	41,000	36,000
4,400		6,000	66,000	24,000	36,000	7,600		8,000	79,000	41,000	36,000
4,500		6,000	66,000	24,000	36,000	7,700		8,000	79,000	41,000	36,000
4,600		6,000	66,000	24,000	36,000	7,800		8,000	79,000	41,000	36,000
4,650		6,000	66,000	24,000	36,000	7,900		8,000	79,000	41,000	36,000
4,700		6,000	66,000	24,000	36,000	7,940	5/16	8,000	79,000	41,000	36,000
4,760	3/16	6,000	66,000	28,000	36,000	8,000		8,000	79,000	41,000	36,000
4,800		6,000	66,000	28,000	36,000	8,100		10,000	89,000	47,000	40,000
4,900		6,000	66,000	28,000	36,000	8,200		10,000	89,000	47,000	40,000
5,000		6,000	66,000	28,000	36,000	8,300		10,000	89,000	47,000	40,000
5,100		6,000	66,000	28,000	36,000	8,330	21/64	10,000	89,000	47,000	40,000
5,160	13/64	6,000	66,000	28,000	36,000	8,400		10,000	89,000	47,000	40,000
5,200		6,000	66,000	28,000	36,000	8,500		10,000	89,000	47,000	40,000
5,300		6,000	66,000	28,000	36,000	8,600		10,000	89,000	47,000	40,000
5,400		6,000	66,000	28,000	36,000	8,700		10,000	89,000	47,000	40,000
5,500		6,000	66,000	28,000	36,000	8,730	11/32	10,000	89,000	47,000	40,000
5,550		6,000	66,000	28,000	36,000	8,800		10,000	89,000	47,000	40,000
5,560	7/32	6,000	66,000	28,000	36,000	8,900		10,000	89,000	47,000	40,000
5,600		6,000	66,000	28,000	36,000	9,000		10,000	89,000	47,000	40,000
5,700		6,000	66,000	28,000	36,000	9,100		10,000	89,000	47,000	40,000
5,800		6,000	66,000	28,000	36,000	9,130	23/64	10,000	89,000	47,000	40,000
5,900		6,000	66,000	28,000	36,000	9,200		10,000	89,000	47,000	40,000
5,950	15/64	6,000	66,000	28,000	36,000	9,250		10,000	89,000	47,000	40,000
6,000		6,000	66,000	28,000	36,000	9,300		10,000	89,000	47,000	40,000



d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm
9,400		10,000	89,000	47,000	40,000
9,500		10,000	89,000	47,000	40,000
9,520	3/8	10,000	89,000	47,000	40,000
9,600		10,000	89,000	47,000	40,000
9,700		10,000	89,000	47,000	40,000
9,800		10,000	89,000	47,000	40,000
9,900		10,000	89,000	47,000	40,000
9,920	25/64	10,000	89,000	47,000	40,000
10,000		10,000	89,000	47,000	40,000
10,100		12,000	102,000	55,000	45,000
10,200		12,000	102,000	55,000	45,000
10,300		12,000	102,000	55,000	45,000
10,320	13/32	12,000	102,000	55,000	45,000
10,400		12,000	102,000	55,000	45,000
10,500		12,000	102,000	55,000	45,000
10,600		12,000	102,000	55,000	45,000
10,700		12,000	102,000	55,000	45,000
10,800		12,000	102,000	55,000	45,000
10,900		12,000	102,000	55,000	45,000
11,000		12,000	102,000	55,000	45,000
11,100		12,000	102,000	55,000	45,000
11,110	7/16	12,000	102,000	55,000	45,000
11,200		12,000	102,000	55,000	45,000
11,300		12,000	102,000	55,000	45,000
11,400		12,000	102,000	55,000	45,000
11,500		12,000	102,000	55,000	45,000
11,600		12,000	102,000	55,000	45,000
11,700		12,000	102,000	55,000	45,000
11,800		12,000	102,000	55,000	45,000
11,900		12,000	102,000	55,000	45,000
11,910	15/32	12,000	102,000	55,000	45,000
12,000		12,000	102,000	55,000	45,000
12,200		14,000	107,000	60,000	45,000
12,500		14,000	107,000	60,000	45,000
12,700	1/2	14,000	107,000	60,000	45,000
12,800		14,000	107,000	60,000	45,000

d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm
13,000		14,000	107,000	60,000	45,000
13,300		14,000	107,000	60,000	45,000
13,500		14,000	107,000	60,000	45,000
13,700		14,000	107,000	60,000	45,000
14,000		14,000	107,000	60,000	45,000
14,200		16,000	115,000	65,000	48,000
14,290	9/16	16,000	115,000	65,000	48,000
14,300		16,000	115,000	65,000	48,000
14,500		16,000	115,000	65,000	48,000
14,700		16,000	115,000	65,000	48,000
15,000		16,000	115,000	65,000	48,000
15,200		16,000	115,000	65,000	48,000
15,300		16,000	115,000	65,000	48,000
15,500		16,000	115,000	65,000	48,000
15,700		16,000	115,000	65,000	48,000
16,000		16,000	115,000	65,000	48,000
16,300		18,000	123,000	73,000	48,000
16,500		18,000	123,000	73,000	48,000
16,900		18,000	123,000	73,000	48,000
17,000		18,000	123,000	73,000	48,000
17,300		18,000	123,000	73,000	48,000
17,500		18,000	123,000	73,000	48,000
18,000		18,000	123,000	73,000	48,000
18,500		20,000	131,000	79,000	50,000
18,900		20,000	131,000	79,000	50,000
19,000		20,000	131,000	79,000	50,000
19,050	3/4	20,000	131,000	79,000	50,000
19,300		20,000	131,000	79,000	50,000
19,500		20,000	131,000	79,000	50,000
20,000		20,000	131,000	79,000	50,000



**Forets Ratio à canaux de lubrification**

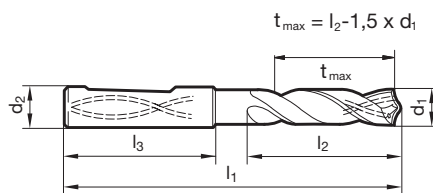


- P**  Amin. de l'âme  $\geq \varnothing 3,000$  • affûtage à dépouille conique • forme concave de l'arête de coupe principale • géométrie de coupe optimisée • paramètres de coupe extrêmes
- M**  Amin. de l'âme  $\geq \varnothing 3,000$  • affûtage à dépouille conique • forme concave de l'arête de coupe principale • géométrie de coupe optimisée • paramètres de coupe extrêmes
- K**  Amin. de l'âme  $\geq \varnothing 3,000$  • affûtage à dépouille conique • forme concave de l'arête de coupe principale • géométrie de coupe optimisée • paramètres de coupe extrêmes
- N**  aciers hautement alliés • aciers inox., inaltérables aux acides et réfractaires
- S**  Inconel, Hastelloy, Monel • laitons, bronzes • aluminium et alliages d'aluminium • magnésium, alliages de magnésium • Titane et ses alliages
- H**  métal fritté

**GÜHRING NAVIGATOR**

Paramètres de coupe, page 750

Matière de coupe	<b>CW monobloc</b>
Surface	<b>F</b>
Forme d'attachement	HE

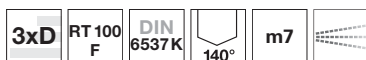


N° d'article **2468**

d1		d2 h6	l1	l2	l3	d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm	mm	inch	mm	mm	mm	mm
3,500		6,000	62,000	20,000	36,000	10,800		12,000	102,000	55,000	45,000
3,700		6,000	62,000	20,000	36,000	11,000		12,000	102,000	55,000	45,000
3,800		6,000	66,000	24,000	36,000	11,300		12,000	102,000	55,000	45,000
4,000		6,000	66,000	24,000	36,000	11,500		12,000	102,000	55,000	45,000
4,200		6,000	66,000	24,000	36,000	11,800		12,000	102,000	55,000	45,000
4,500		6,000	66,000	24,000	36,000	12,000		12,000	102,000	55,000	45,000
5,000		6,000	66,000	28,000	36,000	12,200		14,000	107,000	60,000	45,000
5,200		6,000	66,000	28,000	36,000	12,300	31/64	14,000	107,000	60,000	45,000
5,500		6,000	66,000	28,000	36,000	12,500		14,000	107,000	60,000	45,000
5,800		6,000	66,000	28,000	36,000	12,700	1/2	14,000	107,000	60,000	45,000
6,000		6,000	66,000	28,000	36,000	13,000		14,000	107,000	60,000	45,000
6,300		8,000	79,000	34,000	36,000	13,500		14,000	107,000	60,000	45,000
6,800		8,000	79,000	34,000	36,000	14,000		14,000	107,000	60,000	45,000
6,900		8,000	79,000	34,000	36,000	14,500		16,000	115,000	65,000	48,000
7,000		8,000	79,000	34,000	36,000	15,000		16,000	115,000	65,000	48,000
7,500		8,000	79,000	41,000	36,000	15,500		16,000	115,000	65,000	48,000
8,000		8,000	79,000	41,000	36,000	16,000		16,000	115,000	65,000	48,000
8,100		10,000	89,000	47,000	40,000	16,500		18,000	123,000	73,000	48,000
8,200		10,000	89,000	47,000	40,000	17,000		18,000	123,000	73,000	48,000
8,300		10,000	89,000	47,000	40,000	17,500		18,000	123,000	73,000	48,000
8,500		10,000	89,000	47,000	40,000	18,000		18,000	123,000	73,000	48,000
8,600		10,000	89,000	47,000	40,000	20,000		20,000	131,000	79,000	50,000
9,000		10,000	89,000	47,000	40,000						
9,500		10,000	89,000	47,000	40,000						
10,000		10,000	89,000	47,000	40,000						
10,100		12,000	102,000	55,000	45,000						
10,200		12,000	102,000	55,000	45,000						
10,300		12,000	102,000	55,000	45,000						
10,400		12,000	102,000	55,000	45,000						
10,500		12,000	102,000	55,000	45,000						



Forets Ratio à canaux de lubrification



Matière de coupe **CW monobloc**

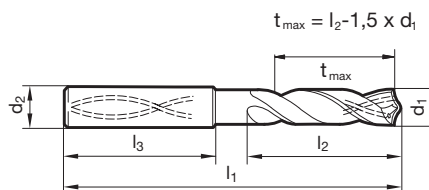
Surface **S**

Forme d'attachement HA

- P** ○ Amin. de l'âme ≥ Ø 3,000 • affûtage à dépouille conique • forme concave de l'arête de coupe principale • géométrie de coupe optimisée • paramètres de coupe extrêmes
- M** ○
- K** ○
- N** ○ aciers hautement alliés • aciers inox., inaltérables aux acides et réfractaires
- S** • Inconel, Hastelloy, Monel • laitons, bronzes • aluminium et alliages d'aluminium • magnésium, alliages de magnésium • Titane et ses alliages
- H** ○ • métal fritté

**GÜHRING** NAVIGATOR

Paramètres de coupe, page 750



N° d'article **1660**

d1		d2 h6	l1	l2	l3	d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm	mm	inch	mm	mm	mm	mm
3,100		6,000	62,000	20,000	36,000	9,500		10,000	89,000	47,000	40,000
4,000		6,000	66,000	24,000	36,000	9,700		10,000	89,000	47,000	40,000
4,100		6,000	66,000	24,000	36,000	9,800		10,000	89,000	47,000	40,000
4,200		6,000	66,000	24,000	36,000	10,000		10,000	89,000	47,000	40,000
4,300		6,000	66,000	24,000	36,000	10,200		12,000	102,000	55,000	45,000
4,700		6,000	66,000	24,000	36,000	10,320	13/32	12,000	102,000	55,000	45,000
5,000		6,000	66,000	28,000	36,000	10,500		12,000	102,000	55,000	45,000
5,300		6,000	66,000	28,000	36,000	10,700		12,000	102,000	55,000	45,000
5,400		6,000	66,000	28,000	36,000	11,000		12,000	102,000	55,000	45,000
5,500		6,000	66,000	28,000	36,000	11,200		12,000	102,000	55,000	45,000
5,600		6,000	66,000	28,000	36,000	11,500		12,000	102,000	55,000	45,000
6,000		6,000	66,000	28,000	36,000	11,800		12,000	102,000	55,000	45,000
6,100		8,000	79,000	34,000	36,000	12,000		12,000	102,000	55,000	45,000
6,200		8,000	79,000	34,000	36,000	12,500		14,000	107,000	60,000	45,000
6,500		8,000	79,000	34,000	36,000	13,000		14,000	107,000	60,000	45,000
6,700		8,000	79,000	34,000	36,000	13,100	33/64	14,000	107,000	60,000	45,000
6,800		8,000	79,000	34,000	36,000	13,200		14,000	107,000	60,000	45,000
7,000		8,000	79,000	34,000	36,000	13,500		14,000	107,000	60,000	45,000
7,400		8,000	79,000	41,000	36,000	14,000		14,000	107,000	60,000	45,000
7,500		8,000	79,000	41,000	36,000	15,000		16,000	115,000	65,000	48,000
7,600		8,000	79,000	41,000	36,000	15,500		16,000	115,000	65,000	48,000
7,800		8,000	79,000	41,000	36,000	16,500		18,000	123,000	73,000	48,000
8,000		8,000	79,000	41,000	36,000	19,600		20,000	131,000	79,000	50,000
8,100		10,000	89,000	47,000	40,000	20,500		25,000	146,000	84,000	56,000
8,300		10,000	89,000	47,000	40,000	21,500		25,000	146,000	84,000	56,000
8,400		10,000	89,000	47,000	40,000	22,000		25,000	146,000	84,000	56,000
8,500		10,000	89,000	47,000	40,000						
8,800		10,000	89,000	47,000	40,000						
9,000		10,000	89,000	47,000	40,000						
9,200		10,000	89,000	47,000	40,000						



**Forets Ratio à canaux de lubrification**

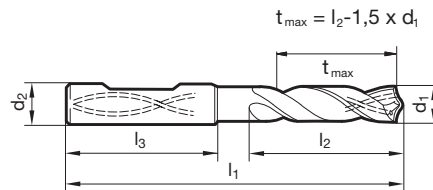


- P** ○ Amin. de l'âme ≥ Ø 3,000 • affûtage à dépouille conique • forme concave de l'arête de coupe principale • géométrie de coupe optimisée • paramètres de coupe extrêmes
- M** ○
- K** ○
- N** ○ aciers hautement alliés • aciers inox., inaltérables aux acides et réfractaires
- S** • Inconel, Hastelloy, Monel • laitons, bronzes • aluminium et alliages d'aluminium • magnésium, alliages de magnésium • Titane et ses alliages
- H** ○ • métal fritté

**GÜHRING NAVIGATOR**

Paramètres de coupe, page 750

Matière de coupe	<b>CW monobloc</b>
Surface	<b>S</b>
Forme d'attachement	HE



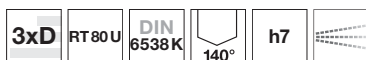
N° d'article **1180**

d1		d2 h6	l1	l2	l3	d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm	mm	inch	mm	mm	mm	mm
4,000		6,000	66,000	24,000	36,000	10,720	27/64	12,000	102,000	55,000	45,000
4,100		6,000	66,000	24,000	36,000	10,800		12,000	102,000	55,000	45,000
4,200		6,000	66,000	24,000	36,000	11,000		12,000	102,000	55,000	45,000
4,300		6,000	66,000	24,000	36,000	11,100		12,000	102,000	55,000	45,000
4,500		6,000	66,000	24,000	36,000	11,200		12,000	102,000	55,000	45,000
5,000		6,000	66,000	28,000	36,000	11,400		12,000	102,000	55,000	45,000
5,200		6,000	66,000	28,000	36,000	11,500		12,000	102,000	55,000	45,000
5,300		6,000	66,000	28,000	36,000	11,510	29/64	12,000	102,000	55,000	45,000
5,400		6,000	66,000	28,000	36,000	11,800		12,000	102,000	55,000	45,000
5,500		6,000	66,000	28,000	36,000	11,910	15/32	12,000	102,000	55,000	45,000
5,800		6,000	66,000	28,000	36,000	12,000		12,000	102,000	55,000	45,000
5,950	15/64	6,000	66,000	28,000	36,000	12,200		14,000	107,000	60,000	45,000
6,000		6,000	66,000	28,000	36,000	12,300	31/64	14,000	107,000	60,000	45,000
6,200		8,000	79,000	34,000	36,000	12,600		14,000	107,000	60,000	45,000
6,300		8,000	79,000	34,000	36,000	13,000		14,000	107,000	60,000	45,000
6,500		8,000	79,000	34,000	36,000	13,500		14,000	107,000	60,000	45,000
6,600		8,000	79,000	34,000	36,000	14,000		14,000	107,000	60,000	45,000
6,800		8,000	79,000	34,000	36,000	14,290	9/16	16,000	115,000	65,000	48,000
7,000		8,000	79,000	34,000	36,000	14,500		16,000	115,000	65,000	48,000
7,140	9/32	8,000	79,000	41,000	36,000	15,000		16,000	115,000	65,000	48,000
7,300		8,000	79,000	41,000	36,000	15,500		16,000	115,000	65,000	48,000
7,600		8,000	79,000	41,000	36,000	16,000		16,000	115,000	65,000	48,000
7,800		8,000	79,000	41,000	36,000	16,500		18,000	123,000	73,000	48,000
8,000		8,000	79,000	41,000	36,000	17,500		18,000	123,000	73,000	48,000
8,100		10,000	89,000	47,000	40,000	18,000		18,000	123,000	73,000	48,000
8,200		10,000	89,000	47,000	40,000	18,500		20,000	131,000	79,000	50,000
8,330	21/64	10,000	89,000	47,000	40,000	19,000		20,000	131,000	79,000	50,000
8,400		10,000	89,000	47,000	40,000	19,450	49/64	20,000	131,000	79,000	50,000
8,500		10,000	89,000	47,000	40,000	20,000		20,000	131,000	79,000	50,000
8,800		10,000	89,000	47,000	40,000	20,500		25,000	146,000	84,000	56,000
9,200		10,000	89,000	47,000	40,000	21,000		25,000	146,000	84,000	56,000
9,500		10,000	89,000	47,000	40,000	22,000		25,000	146,000	84,000	56,000
9,600		10,000	89,000	47,000	40,000	22,500		25,000	153,000	91,000	56,000
9,700		10,000	89,000	47,000	40,000	23,000		25,000	153,000	91,000	56,000
9,800		10,000	89,000	47,000	40,000	24,000		25,000	153,000	91,000	56,000
10,000		10,000	89,000	47,000	40,000	25,000	63/64	25,000	153,000	91,000	56,000
10,100		12,000	102,000	55,000	45,000						
10,200		12,000	102,000	55,000	45,000						
10,300		12,000	102,000	55,000	45,000						
10,320	13/32	12,000	102,000	55,000	45,000						
10,400		12,000	102,000	55,000	45,000						
10,500		12,000	102,000	55,000	45,000						





Forets Ratio à canaux de lubrification



Matière de coupe	<b>CW</b>
Surface	<b>S</b>
Forme d'attachement	HE

Forets Ratio

**P** • Amin. de l'âme ≥ Ø 9,500 • affûtage à dépouille conique • support HSS avec plaquette CW brasée • amortit vibrations et chocs

**M** ○

**K** ○

**N** ○

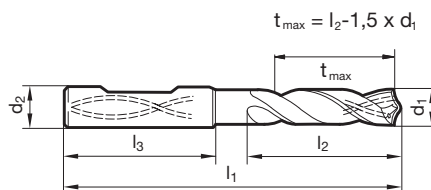
**S** ○

**H** ○

aciers non alliés ou faiblement alliés • fontes grises, fontes à graphite sphéroïdal • laitons, bronzes, matières plastiques, graphite

**GÜHRING** NAVIGATOR

Paramètres de coupe, page 750



N° d'article **1171**

d1		d2 h6	l1	l2	l3	d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm	mm	inch	mm	mm	mm	mm
9,500		16,000	103,000	51,000	48,000	15,100		20,000	122,000	68,000	50,000
9,700		16,000	103,000	51,000	48,000	15,500		20,000	122,000	68,000	50,000
9,800		16,000	103,000	51,000	48,000	15,600		20,000	122,000	68,000	50,000
9,900		16,000	103,000	51,000	48,000	15,700		20,000	122,000	68,000	50,000
10,000		16,000	103,000	51,000	48,000	15,800		20,000	122,000	68,000	50,000
10,100		16,000	103,000	51,000	48,000	16,000		20,000	122,000	68,000	50,000
10,200		16,000	103,000	51,000	48,000	16,200		20,000	130,000	76,000	50,000
10,400		16,000	103,000	51,000	48,000	16,500		20,000	130,000	76,000	50,000
10,500		16,000	103,000	51,000	48,000	16,700		20,000	130,000	76,000	50,000
10,600		16,000	103,000	51,000	48,000	17,000		20,000	130,000	76,000	50,000
10,700		16,000	103,000	51,000	48,000	17,300		20,000	130,000	76,000	50,000
10,800		16,000	103,000	51,000	48,000	17,500		20,000	130,000	76,000	50,000
10,900		16,000	103,000	51,000	48,000	17,700		20,000	130,000	76,000	50,000
11,000		16,000	103,000	51,000	48,000	17,800		20,000	130,000	76,000	50,000
11,200		16,000	103,000	51,000	48,000	17,860	45/64	20,000	130,000	76,000	50,000
11,500		16,000	103,000	51,000	48,000	18,000		20,000	130,000	76,000	50,000
11,600		16,000	103,000	51,000	48,000	18,500		25,000	144,000	84,000	56,000
11,700		16,000	103,000	51,000	48,000	19,000		25,000	144,000	84,000	56,000
12,000		16,000	103,000	51,000	48,000	19,500		25,000	144,000	84,000	56,000
12,100		16,000	111,000	59,000	48,000	19,600		25,000	144,000	84,000	56,000
12,200		16,000	111,000	59,000	48,000	19,700		25,000	144,000	84,000	56,000
12,300	31/64	16,000	111,000	59,000	48,000	20,000		25,000	144,000	84,000	56,000
12,400		16,000	111,000	59,000	48,000	20,500		25,000	153,000	93,000	56,000
12,500		16,000	111,000	59,000	48,000	21,000		25,000	153,000	93,000	56,000
12,600		16,000	111,000	59,000	48,000	21,500		25,000	153,000	93,000	56,000
12,700	1/2	16,000	111,000	59,000	48,000	22,000		25,000	153,000	93,000	56,000
13,000		16,000	111,000	59,000	48,000	22,220	7/8	25,000	161,000	101,000	56,000
13,500		16,000	111,000	59,000	48,000	22,500		25,000	161,000	101,000	56,000
13,700		16,000	111,000	59,000	48,000	23,000		25,000	161,000	101,000	56,000
13,800		16,000	111,000	59,000	48,000	23,500		25,000	161,000	101,000	56,000
14,000		16,000	111,000	59,000	48,000	24,000		25,000	161,000	101,000	56,000
14,200		20,000	122,000	68,000	50,000	24,500		32,000	174,000	110,000	60,000
14,400		20,000	122,000	68,000	50,000	25,000	63/64	32,000	174,000	110,000	60,000
14,600		20,000	122,000	68,000	50,000	25,500		32,000	174,000	110,000	60,000
14,700		20,000	122,000	68,000	50,000						
15,000		20,000	122,000	68,000	50,000						



**Forets Ratio à canaux de lubrification**



**P** Amin. de l'âme  $\geq \varnothing 3,000$  • affûtage à dépouille conique • tolérances serrées des diamètres • état de surface d.perçages de qualité supérieure • respecter la pression du liquide de refroid.

- M**
- K** •
- N** ○ fontes grises, fontes malléables, fontes à graphite sphéroïdal
- S**
- H**

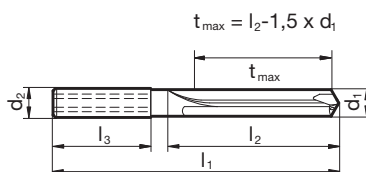
Matière de coupe **CW monobloc**

Surface ○

Forme d'attachement HA

**GÜHRING NAVIGATOR**

Paramètres de coupe, page 752



N° d'article **768**

d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm
3,000		6,000	66,000	24,000	36,000
3,100		6,000	66,000	24,000	36,000
3,200		6,000	66,000	24,000	36,000
3,300		6,000	66,000	24,000	36,000
3,400		6,000	66,000	24,000	36,000
3,500		6,000	66,000	24,000	36,000
3,600		6,000	66,000	24,000	36,000
3,700		6,000	66,000	24,000	36,000
3,800		6,000	74,000	30,000	36,000
3,900		6,000	74,000	30,000	36,000
4,000		6,000	74,000	30,000	36,000
4,100		6,000	74,000	30,000	36,000
4,200		6,000	74,000	30,000	36,000
4,300		6,000	74,000	30,000	36,000
4,400		6,000	74,000	30,000	36,000
4,500		6,000	74,000	30,000	36,000
4,600		6,000	74,000	30,000	36,000
4,700		6,000	74,000	30,000	36,000
4,800		6,000	74,000	36,000	36,000
4,900		6,000	74,000	36,000	36,000
5,000		6,000	74,000	36,000	36,000
5,100		6,000	74,000	36,000	36,000
5,160	13/64	6,000	74,000	36,000	36,000
5,200		6,000	74,000	36,000	36,000
5,300		6,000	74,000	36,000	36,000
5,400		6,000	74,000	36,000	36,000
5,500		6,000	74,000	36,000	36,000
5,560	7/32	6,000	74,000	36,000	36,000
5,600		6,000	74,000	36,000	36,000
5,700		6,000	74,000	36,000	36,000
5,800		6,000	74,000	36,000	36,000
5,900		6,000	74,000	36,000	36,000
5,950	15/64	6,000	74,000	36,000	36,000
6,000		6,000	74,000	36,000	36,000
6,100		8,000	91,000	53,000	36,000
6,200		8,000	91,000	53,000	36,000
6,300		8,000	91,000	53,000	36,000
6,350	1/4	8,000	91,000	53,000	36,000
6,400		8,000	91,000	53,000	36,000
6,500		8,000	91,000	53,000	36,000
6,600		8,000	91,000	53,000	36,000
6,700		8,000	91,000	53,000	36,000

d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm
6,750	17/64	8,000	91,000	53,000	36,000
6,800		8,000	91,000	53,000	36,000
6,900		8,000	91,000	53,000	36,000
7,000		8,000	91,000	53,000	36,000
7,100		8,000	91,000	53,000	36,000
7,140	9/32	8,000	91,000	53,000	36,000
7,200		8,000	91,000	53,000	36,000
7,300		8,000	91,000	53,000	36,000
7,400		8,000	91,000	53,000	36,000
7,500		8,000	91,000	53,000	36,000
7,540	19/64	8,000	91,000	53,000	36,000
7,600		8,000	91,000	53,000	36,000
7,700		8,000	91,000	53,000	36,000
7,800		8,000	91,000	53,000	36,000
7,900		8,000	91,000	53,000	36,000
7,940	5/16	8,000	91,000	53,000	36,000
8,000		8,000	91,000	53,000	36,000
8,100		10,000	103,000	61,000	40,000
8,200		10,000	103,000	61,000	40,000
8,300		10,000	103,000	61,000	40,000
8,330	21/64	10,000	103,000	61,000	40,000
8,400		10,000	103,000	61,000	40,000
8,500		10,000	103,000	61,000	40,000
8,600		10,000	103,000	61,000	40,000
8,700		10,000	103,000	61,000	40,000
8,730	11/32	10,000	103,000	61,000	40,000
8,800		10,000	103,000	61,000	40,000
8,900		10,000	103,000	61,000	40,000
9,000		10,000	103,000	61,000	40,000
9,100		10,000	103,000	61,000	40,000
9,130	23/64	10,000	103,000	61,000	40,000
9,200		10,000	103,000	61,000	40,000
9,300		10,000	103,000	61,000	40,000
9,400		10,000	103,000	61,000	40,000
9,500		10,000	103,000	61,000	40,000
9,520	3/8	10,000	103,000	61,000	40,000
9,600		10,000	103,000	61,000	40,000
9,700		10,000	103,000	61,000	40,000
9,800		10,000	103,000	61,000	40,000
9,900		10,000	103,000	61,000	40,000
9,920	25/64	10,000	103,000	61,000	40,000
10,000		10,000	103,000	61,000	40,000



d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm
10,200		12,000	118,000	71,000	45,000
10,320	13/32	12,000	118,000	71,000	45,000
10,500		12,000	118,000	71,000	45,000
10,720	27/64	12,000	118,000	71,000	45,000
11,000		12,000	118,000	71,000	45,000
11,110	7/16	12,000	118,000	71,000	45,000
11,200		12,000	118,000	71,000	45,000
11,500		12,000	118,000	71,000	45,000
11,510	29/64	12,000	118,000	71,000	45,000
11,910	15/32	12,000	118,000	71,000	45,000
12,000		12,000	118,000	71,000	45,000
12,300	31/64	14,000	124,000	74,000	45,000
12,500		14,000	124,000	74,000	45,000
12,700	1/2	14,000	124,000	74,000	45,000
13,000		14,000	124,000	74,000	45,000
13,500		14,000	124,000	74,000	45,000
14,000		14,000	124,000	74,000	45,000
14,500		16,000	133,000	83,000	48,000

d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm
15,000		16,000	133,000	83,000	48,000
15,500		16,000	133,000	83,000	48,000
16,000		16,000	133,000	83,000	48,000
16,500		18,000	143,000	93,000	48,000
17,000		18,000	143,000	93,000	48,000
17,500		18,000	143,000	93,000	48,000
18,000		18,000	143,000	93,000	48,000
18,500		20,000	153,000	101,000	50,000
19,000		20,000	153,000	101,000	50,000
20,000		20,000	153,000	101,000	50,000



**Forets Ratio à canaux de lubrification**

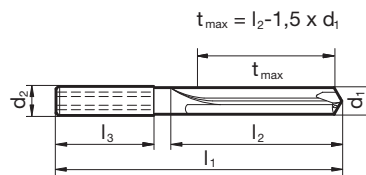


<b>P</b>	Amin. de l'âme $\geq \varnothing 3,000$ • affûtage en pente • tolérances serrées des diamètres • état de surface d.perçages de qualité supérieure • respecter la pression optimale du liq.de refroid.
<b>M</b>	
<b>K</b>	○
<b>N</b>	• aluminium et alliages d'aluminium • alliages d'aluminium avec haut % de Si
<b>S</b>	
<b>H</b>	

Matière de coupe	<b>CW monobloc</b>
Surface	○
Forme d'attachement	HA

**GÜHRING NAVIGATOR**

Paramètres de coupe, page 752



N° d'article **6068**

d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm
3,000		6,000	66,000	24,000	36,000
3,200		6,000	66,000	24,000	36,000
3,300		6,000	66,000	24,000	36,000
3,500		6,000	66,000	24,000	36,000
3,800		6,000	74,000	30,000	36,000
3,900		6,000	74,000	30,000	36,000
4,000		6,000	74,000	30,000	36,000
4,200		6,000	74,000	30,000	36,000
5,000		6,000	74,000	36,000	36,000
5,300		6,000	74,000	36,000	36,000
5,400		6,000	74,000	36,000	36,000
5,500		6,000	74,000	36,000	36,000
5,800		6,000	74,000	36,000	36,000
6,000		6,000	74,000	36,000	36,000
6,100		8,000	91,000	53,000	36,000
6,350	1/4	8,000	91,000	53,000	36,000
6,400		8,000	91,000	53,000	36,000
6,800		8,000	91,000	53,000	36,000
7,000		8,000	91,000	53,000	36,000
7,100		8,000	91,000	53,000	36,000
7,300		8,000	91,000	53,000	36,000
7,800		8,000	91,000	53,000	36,000
8,100		10,000	103,000	61,000	40,000
8,300		10,000	103,000	61,000	40,000
8,500		10,000	103,000	61,000	40,000
8,700		10,000	103,000	61,000	40,000
8,730	11/32	10,000	103,000	61,000	40,000
9,000		10,000	103,000	61,000	40,000
9,200		10,000	103,000	61,000	40,000
9,700		10,000	103,000	61,000	40,000

d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm
10,000		10,000	103,000	61,000	40,000
10,200		12,000	118,000	71,000	45,000
10,500		12,000	118,000	71,000	45,000
10,720	27/64	12,000	118,000	71,000	45,000
11,000		12,000	118,000	71,000	45,000
11,110	7/16	12,000	118,000	71,000	45,000
11,500		12,000	118,000	71,000	45,000
12,000		12,000	118,000	71,000	45,000
12,300	31/64	14,000	124,000	74,000	45,000
12,500		14,000	124,000	74,000	45,000
12,700	1/2	14,000	124,000	74,000	45,000
13,000		14,000	124,000	74,000	45,000
13,500		14,000	124,000	74,000	45,000
14,000		14,000	124,000	74,000	45,000
15,000		16,000	133,000	83,000	48,000
16,000		16,000	133,000	83,000	48,000
16,500		18,000	143,000	93,000	48,000
17,000		18,000	143,000	93,000	48,000
17,500		18,000	143,000	93,000	48,000
18,000		18,000	143,000	93,000	48,000
18,500		20,000	153,000	101,000	50,000
19,500		20,000	153,000	101,000	50,000
20,000		20,000	153,000	101,000	50,000



Forets Ratio à canaux de lubrification



- P** ● affûtage en pente • arête de coupe principale rectiligne • géométrie de coupe optimisée • performance maximale
- M** ○
- K** ○
- N** ○ aciers de construction et de cémentation • aciers de décolletage, aciers d'amélioration • aciers (alliés / non alliés) jusqu'à 1400 N/mm<sup>2</sup>
- S** ○
- H** ○

Matière de coupe **CW monobloc**

Surface **F**

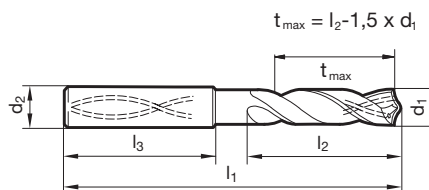
Forme d'attachement **HA**



Forets Ratio

**GÜHRING** NAVIGATOR

Paramètres de coupe, page 754



N° d'article **5759**

d1		d2 h6	l1	l2	l3	d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm	mm	inch	mm	mm	mm	mm
3,000		6,000	66,000	28,000	36,000	5,800		6,000	82,000	44,000	36,000
3,100		6,000	66,000	28,000	36,000	5,900		6,000	82,000	44,000	36,000
3,170	1/8	6,000	66,000	28,000	36,000	5,950	15/64	6,000	82,000	44,000	36,000
3,200		6,000	66,000	28,000	36,000	6,000		6,000	82,000	44,000	36,000
3,250		6,000	66,000	28,000	36,000	6,100		8,000	91,000	53,000	36,000
3,300		6,000	66,000	28,000	36,000	6,200		8,000	91,000	53,000	36,000
3,400		6,000	66,000	28,000	36,000	6,300		8,000	91,000	53,000	36,000
3,500		6,000	66,000	28,000	36,000	6,350	1/4	8,000	91,000	53,000	36,000
3,570	9/64	6,000	66,000	28,000	36,000	6,400		8,000	91,000	53,000	36,000
3,600		6,000	66,000	28,000	36,000	6,500		8,000	91,000	53,000	36,000
3,700		6,000	66,000	28,000	36,000	6,530		8,000	91,000	53,000	36,000
3,800		6,000	74,000	36,000	36,000	6,600		8,000	91,000	53,000	36,000
3,900		6,000	74,000	36,000	36,000	6,700		8,000	91,000	53,000	36,000
3,970	5/32	6,000	74,000	36,000	36,000	6,750	17/64	8,000	91,000	53,000	36,000
4,000		6,000	74,000	36,000	36,000	6,800		8,000	91,000	53,000	36,000
4,040		6,000	74,000	36,000	36,000	6,900		8,000	91,000	53,000	36,000
4,100		6,000	74,000	36,000	36,000	7,000		8,000	91,000	53,000	36,000
4,200		6,000	74,000	36,000	36,000	7,100		8,000	91,000	53,000	36,000
4,300		6,000	74,000	36,000	36,000	7,140	9/32	8,000	91,000	53,000	36,000
4,370	11/64	6,000	74,000	36,000	36,000	7,200		8,000	91,000	53,000	36,000
4,400		6,000	74,000	36,000	36,000	7,300		8,000	91,000	53,000	36,000
4,500		6,000	74,000	36,000	36,000	7,400		8,000	91,000	53,000	36,000
4,600		6,000	74,000	36,000	36,000	7,500		8,000	91,000	53,000	36,000
4,650		6,000	74,000	36,000	36,000	7,540	19/64	8,000	91,000	53,000	36,000
4,700		6,000	74,000	36,000	36,000	7,550		8,000	91,000	53,000	36,000
4,760	3/16	6,000	82,000	44,000	36,000	7,600		8,000	91,000	53,000	36,000
4,800		6,000	82,000	44,000	36,000	7,650		8,000	91,000	53,000	36,000
4,900		6,000	82,000	44,000	36,000	7,700		8,000	91,000	53,000	36,000
5,000		6,000	82,000	44,000	36,000	7,800		8,000	91,000	53,000	36,000
5,100		6,000	82,000	44,000	36,000	7,900		8,000	91,000	53,000	36,000
5,110		6,000	82,000	44,000	36,000	7,940	5/16	8,000	91,000	53,000	36,000
5,160	13/64	6,000	82,000	44,000	36,000	8,000		8,000	91,000	53,000	36,000
5,200		6,000	82,000	44,000	36,000	8,100		10,000	103,000	61,000	40,000
5,300		6,000	82,000	44,000	36,000	8,200		10,000	103,000	61,000	40,000
5,400		6,000	82,000	44,000	36,000	8,300		10,000	103,000	61,000	40,000
5,410		6,000	82,000	44,000	36,000	8,330	21/64	10,000	103,000	61,000	40,000
5,500		6,000	82,000	44,000	36,000	8,400		10,000	103,000	61,000	40,000
5,550		6,000	82,000	44,000	36,000	8,500		10,000	103,000	61,000	40,000
5,560	7/32	6,000	82,000	44,000	36,000	8,600		10,000	103,000	61,000	40,000
5,600		6,000	82,000	44,000	36,000	8,700		10,000	103,000	61,000	40,000
5,650		6,000	82,000	44,000	36,000	8,730	11/32	10,000	103,000	61,000	40,000
5,700		6,000	82,000	44,000	36,000	8,800		10,000	103,000	61,000	40,000



d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm
8,900		10,000	103,000	61,000	40,000
9,000		10,000	103,000	61,000	40,000
9,100		10,000	103,000	61,000	40,000
9,130	23/64	10,000	103,000	61,000	40,000
9,200		10,000	103,000	61,000	40,000
9,250		10,000	103,000	61,000	40,000
9,300		10,000	103,000	61,000	40,000
9,340		10,000	103,000	61,000	40,000
9,400		10,000	103,000	61,000	40,000
9,500		10,000	103,000	61,000	40,000
9,520	3/8	10,000	103,000	61,000	40,000
9,550		10,000	103,000	61,000	40,000
9,600		10,000	103,000	61,000	40,000
9,700		10,000	103,000	61,000	40,000
9,800		10,000	103,000	61,000	40,000
9,900		10,000	103,000	61,000	40,000
9,920	25/64	10,000	103,000	61,000	40,000
10,000		10,000	103,000	61,000	40,000
10,100		12,000	118,000	71,000	45,000
10,200		12,000	118,000	71,000	45,000
10,300		12,000	118,000	71,000	45,000
10,320	13/32	12,000	118,000	71,000	45,000
10,400		12,000	118,000	71,000	45,000
10,500		12,000	118,000	71,000	45,000
10,600		12,000	118,000	71,000	45,000
10,700		12,000	118,000	71,000	45,000
10,720		12,000	118,000	71,000	45,000
10,800		12,000	118,000	71,000	45,000
10,900		12,000	118,000	71,000	45,000
11,000		12,000	118,000	71,000	45,000
11,100		12,000	118,000	71,000	45,000
11,110	7/16	12,000	118,000	71,000	45,000
11,200		12,000	118,000	71,000	45,000
11,300		12,000	118,000	71,000	45,000
11,400		12,000	118,000	71,000	45,000
11,500		12,000	118,000	71,000	45,000
11,510		12,000	118,000	71,000	45,000
11,550		12,000	118,000	71,000	45,000
11,600		12,000	118,000	71,000	45,000
11,700		12,000	118,000	71,000	45,000
11,800		12,000	118,000	71,000	45,000
11,900		12,000	118,000	71,000	45,000
11,910	15/32	12,000	118,000	71,000	45,000
12,000		12,000	118,000	71,000	45,000
12,100		14,000	124,000	77,000	45,000
12,200		14,000	124,000	77,000	45,000
12,300		14,000	124,000	77,000	45,000
12,400		14,000	124,000	77,000	45,000
12,500		14,000	124,000	77,000	45,000
12,600		14,000	124,000	77,000	45,000
12,700	1/2	14,000	124,000	77,000	45,000
12,800		14,000	124,000	77,000	45,000
12,900		14,000	124,000	77,000	45,000
13,000		14,000	124,000	77,000	45,000
13,100		14,000	124,000	77,000	45,000
13,200		14,000	124,000	77,000	45,000
13,300		14,000	124,000	77,000	45,000
13,400		14,000	124,000	77,000	45,000
13,490		14,000	124,000	77,000	45,000
13,500		14,000	124,000	77,000	45,000

d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm
13,600		14,000	124,000	77,000	45,000
13,700		14,000	124,000	77,000	45,000
13,800		14,000	124,000	77,000	45,000
13,890		14,000	124,000	77,000	45,000
13,900		14,000	124,000	77,000	45,000
14,000		14,000	124,000	77,000	45,000
14,100		16,000	133,000	83,000	48,000
14,200		16,000	133,000	83,000	48,000
14,290	9/16	16,000	133,000	83,000	48,000
14,400		16,000	133,000	83,000	48,000
14,500		16,000	133,000	83,000	48,000
14,600		16,000	133,000	83,000	48,000
14,680		16,000	133,000	83,000	48,000
14,700		16,000	133,000	83,000	48,000
14,800		16,000	133,000	83,000	48,000
14,900		16,000	133,000	83,000	48,000
15,000		16,000	133,000	83,000	48,000
15,080		16,000	133,000	83,000	48,000
15,100		16,000	133,000	83,000	48,000
15,200		16,000	133,000	83,000	48,000
15,300		16,000	133,000	83,000	48,000
15,400		16,000	133,000	83,000	48,000
15,480		16,000	133,000	83,000	48,000
15,500		16,000	133,000	83,000	48,000
15,550		16,000	133,000	83,000	48,000
15,600		16,000	133,000	83,000	48,000
15,700		16,000	133,000	83,000	48,000
15,800		16,000	133,000	83,000	48,000
15,870		16,000	133,000	83,000	48,000
15,900		16,000	133,000	83,000	48,000
16,000		16,000	133,000	83,000	48,000
16,270		18,000	143,000	93,000	48,000
16,500		18,000	143,000	93,000	48,000
16,670		18,000	143,000	93,000	48,000
16,700		18,000	143,000	93,000	48,000
16,900		18,000	143,000	93,000	48,000
17,000		18,000	143,000	93,000	48,000
17,070		18,000	143,000	93,000	48,000
17,460		18,000	143,000	93,000	48,000
17,500		18,000	143,000	93,000	48,000
17,550		18,000	143,000	93,000	48,000
17,700		18,000	143,000	93,000	48,000
17,860		18,000	143,000	93,000	48,000
18,000		18,000	143,000	93,000	48,000
18,260		20,000	153,000	101,000	50,000
18,500		20,000	153,000	101,000	50,000
18,700		20,000	153,000	101,000	50,000
18,900		20,000	153,000	101,000	50,000
19,000		20,000	153,000	101,000	50,000
19,050	3/4	20,000	153,000	101,000	50,000
19,250		20,000	153,000	101,000	50,000
19,300		20,000	153,000	101,000	50,000
19,446		20,000	153,000	101,000	50,000
19,500		20,000	153,000	101,000	50,000
19,550		20,000	153,000	101,000	50,000
19,700		20,000	153,000	101,000	50,000
19,840		20,000	153,000	101,000	50,000
20,000		20,000	153,000	101,000	50,000



Forets Ratio à canaux de lubrification



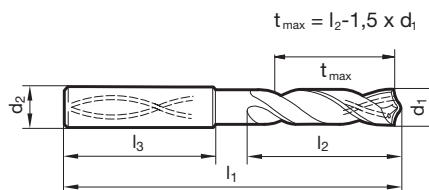
- P** • Amin. de l'âme ≥ Ø 3,000 • affûtage en pente • arête de coupe principale rectiligne • géométrie de coupe optimisée
- M** ○
- K** •
- N** ○ aciers de construction et de cémentation • aciers de décolletage, aciers d'amélioration • aciers alliés jusqu'à 1200 N/mm<sup>2</sup> • fontes • bronze, laiton
- S** ○ • alliages Al haut % en Si
- H** ○

**GUHRING** NAVIGATOR

Paramètres de coupe, page 754

Matière de coupe	<b>CW monobloc</b>
Surface	<b>F</b>
Forme d'attachement	HA

Forets Ratio



N° d'article **2479**

d1		d2 h6	l1	l2	l3	d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm	mm	inch	mm	mm	mm	mm
3,000		6,000	66,000	28,000	36,000	5,800		6,000	82,000	44,000	36,000
3,100		6,000	66,000	28,000	36,000	5,900		6,000	82,000	44,000	36,000
3,170	1/8	6,000	66,000	28,000	36,000	5,950	15/64	6,000	82,000	44,000	36,000
3,200		6,000	66,000	28,000	36,000	6,000		6,000	82,000	44,000	36,000
3,250		6,000	66,000	28,000	36,000	6,100		8,000	91,000	53,000	36,000
3,300		6,000	66,000	28,000	36,000	6,200		8,000	91,000	53,000	36,000
3,400		6,000	66,000	28,000	36,000	6,300		8,000	91,000	53,000	36,000
3,500		6,000	66,000	28,000	36,000	6,350	1/4	8,000	91,000	53,000	36,000
3,570	9/64	6,000	66,000	28,000	36,000	6,400		8,000	91,000	53,000	36,000
3,600		6,000	66,000	28,000	36,000	6,500		8,000	91,000	53,000	36,000
3,700		6,000	66,000	28,000	36,000	6,530		8,000	91,000	53,000	36,000
3,800		6,000	74,000	36,000	36,000	6,600		8,000	91,000	53,000	36,000
3,900		6,000	74,000	36,000	36,000	6,700		8,000	91,000	53,000	36,000
3,970	5/32	6,000	74,000	36,000	36,000	6,750	17/64	8,000	91,000	53,000	36,000
4,000		6,000	74,000	36,000	36,000	6,800		8,000	91,000	53,000	36,000
4,040		6,000	74,000	36,000	36,000	6,900		8,000	91,000	53,000	36,000
4,100		6,000	74,000	36,000	36,000	7,000		8,000	91,000	53,000	36,000
4,200		6,000	74,000	36,000	36,000	7,100		8,000	91,000	53,000	36,000
4,300		6,000	74,000	36,000	36,000	7,140	9/32	8,000	91,000	53,000	36,000
4,370	11/64	6,000	74,000	36,000	36,000	7,200		8,000	91,000	53,000	36,000
4,400		6,000	74,000	36,000	36,000	7,300		8,000	91,000	53,000	36,000
4,500		6,000	74,000	36,000	36,000	7,400		8,000	91,000	53,000	36,000
4,600		6,000	74,000	36,000	36,000	7,500		8,000	91,000	53,000	36,000
4,650		6,000	74,000	36,000	36,000	7,540	19/64	8,000	91,000	53,000	36,000
4,700		6,000	74,000	36,000	36,000	7,550		8,000	91,000	53,000	36,000
4,760	3/16	6,000	82,000	44,000	36,000	7,600		8,000	91,000	53,000	36,000
4,800		6,000	82,000	44,000	36,000	7,650		8,000	91,000	53,000	36,000
4,900		6,000	82,000	44,000	36,000	7,700		8,000	91,000	53,000	36,000
5,000		6,000	82,000	44,000	36,000	7,800		8,000	91,000	53,000	36,000
5,100		6,000	82,000	44,000	36,000	7,900		8,000	91,000	53,000	36,000
5,110		6,000	82,000	44,000	36,000	7,940	5/16	8,000	91,000	53,000	36,000
5,160	13/64	6,000	82,000	44,000	36,000	8,000		8,000	91,000	53,000	36,000
5,200		6,000	82,000	44,000	36,000	8,100		10,000	103,000	61,000	40,000
5,300		6,000	82,000	44,000	36,000	8,200		10,000	103,000	61,000	40,000
5,400		6,000	82,000	44,000	36,000	8,300		10,000	103,000	61,000	40,000
5,410		6,000	82,000	44,000	36,000	8,330	21/64	10,000	103,000	61,000	40,000
5,500		6,000	82,000	44,000	36,000	8,400		10,000	103,000	61,000	40,000
5,550		6,000	82,000	44,000	36,000	8,500		10,000	103,000	61,000	40,000
5,560	7/32	6,000	82,000	44,000	36,000	8,600		10,000	103,000	61,000	40,000
5,600		6,000	82,000	44,000	36,000	8,700		10,000	103,000	61,000	40,000
5,650		6,000	82,000	44,000	36,000	8,730	11/32	10,000	103,000	61,000	40,000
5,700		6,000	82,000	44,000	36,000	8,800		10,000	103,000	61,000	40,000

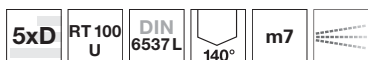
d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm
8,900		10,000	103,000	61,000	40,000
9,000		10,000	103,000	61,000	40,000
9,100		10,000	103,000	61,000	40,000
9,130	23/64	10,000	103,000	61,000	40,000
9,200		10,000	103,000	61,000	40,000
9,250		10,000	103,000	61,000	40,000
9,300		10,000	103,000	61,000	40,000
9,340		10,000	103,000	61,000	40,000
9,400		10,000	103,000	61,000	40,000
9,500		10,000	103,000	61,000	40,000
9,520	3/8	10,000	103,000	61,000	40,000
9,550		10,000	103,000	61,000	40,000
9,600		10,000	103,000	61,000	40,000
9,700		10,000	103,000	61,000	40,000
9,800		10,000	103,000	61,000	40,000
9,900		10,000	103,000	61,000	40,000
9,920	25/64	10,000	103,000	61,000	40,000
10,000		10,000	103,000	61,000	40,000
10,100		12,000	118,000	71,000	45,000
10,200		12,000	118,000	71,000	45,000
10,300		12,000	118,000	71,000	45,000
10,320	13/32	12,000	118,000	71,000	45,000
10,400		12,000	118,000	71,000	45,000
10,500		12,000	118,000	71,000	45,000
10,600		12,000	118,000	71,000	45,000
10,700		12,000	118,000	71,000	45,000
10,720	27/64	12,000	118,000	71,000	45,000
10,800		12,000	118,000	71,000	45,000
10,900		12,000	118,000	71,000	45,000
11,000		12,000	118,000	71,000	45,000
11,100		12,000	118,000	71,000	45,000
11,110	7/16	12,000	118,000	71,000	45,000
11,200		12,000	118,000	71,000	45,000
11,300		12,000	118,000	71,000	45,000
11,400		12,000	118,000	71,000	45,000
11,500		12,000	118,000	71,000	45,000
11,510	29/64	12,000	118,000	71,000	45,000
11,550		12,000	118,000	71,000	45,000
11,600		12,000	118,000	71,000	45,000
11,700		12,000	118,000	71,000	45,000
11,800		12,000	118,000	71,000	45,000
11,900		12,000	118,000	71,000	45,000
11,910	15/32	12,000	118,000	71,000	45,000
12,000		12,000	118,000	71,000	45,000
12,100		14,000	124,000	77,000	45,000
12,200		14,000	124,000	77,000	45,000
12,300	31/64	14,000	124,000	77,000	45,000
12,400		14,000	124,000	77,000	45,000
12,500		14,000	124,000	77,000	45,000
12,600		14,000	124,000	77,000	45,000
12,700	1/2	14,000	124,000	77,000	45,000
12,800		14,000	124,000	77,000	45,000
13,000		14,000	124,000	77,000	45,000
13,100	33/64	14,000	124,000	77,000	45,000

d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm
13,200		14,000	124,000	77,000	45,000
13,490	17/32	14,000	124,000	77,000	45,000
13,500		14,000	124,000	77,000	45,000
13,600		14,000	124,000	77,000	45,000
13,700		14,000	124,000	77,000	45,000
13,800		14,000	124,000	77,000	45,000
13,890	35/64	14,000	124,000	77,000	45,000
13,900		14,000	124,000	77,000	45,000
14,000		14,000	124,000	77,000	45,000
14,100		16,000	133,000	83,000	48,000
14,200		16,000	133,000	83,000	48,000
14,290	9/16	16,000	133,000	83,000	48,000
14,500		16,000	133,000	83,000	48,000
14,680	37/64	16,000	133,000	83,000	48,000
14,700		16,000	133,000	83,000	48,000
14,800		16,000	133,000	83,000	48,000
15,000		16,000	133,000	83,000	48,000
15,080	19/32	16,000	133,000	83,000	48,000
15,100		16,000	133,000	83,000	48,000
15,200		16,000	133,000	83,000	48,000
15,480	39/64	16,000	133,000	83,000	48,000
15,500		16,000	133,000	83,000	48,000
15,600		16,000	133,000	83,000	48,000
15,700		16,000	133,000	83,000	48,000
15,800		16,000	133,000	83,000	48,000
15,870	5/8	16,000	133,000	83,000	48,000
15,900		16,000	133,000	83,000	48,000
16,000		16,000	133,000	83,000	48,000
16,270	41/64	18,000	143,000	93,000	48,000
16,500		18,000	143,000	93,000	48,000
16,670	21/32	18,000	143,000	93,000	48,000
16,700		18,000	143,000	93,000	48,000
17,000		18,000	143,000	93,000	48,000
17,070	43/64	18,000	143,000	93,000	48,000
17,460	11/16	18,000	143,000	93,000	48,000
17,500		18,000	143,000	93,000	48,000
17,700		18,000	143,000	93,000	48,000
17,860	45/64	18,000	143,000	93,000	48,000
18,000		18,000	143,000	93,000	48,000
18,260	23/32	20,000	153,000	101,000	50,000
18,500		20,000	153,000	101,000	50,000
18,700		20,000	153,000	101,000	50,000
18,900		20,000	153,000	101,000	50,000
19,000		20,000	153,000	101,000	50,000
19,050	3/4	20,000	153,000	101,000	50,000
19,250		20,000	153,000	101,000	50,000
19,300		20,000	153,000	101,000	50,000
19,446		20,000	153,000	101,000	50,000
19,500		20,000	153,000	101,000	50,000
19,700		20,000	153,000	101,000	50,000
19,840	25/32	20,000	153,000	101,000	50,000
20,000		20,000	153,000	101,000	50,000





Forets Ratio à canaux de lubrification



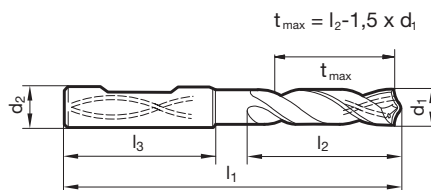
- P** • Amin. de l'âme ≥ Ø 3,300 • affûtage en pente • arête de coupe principale rectiligne • géométrie de coupe optimisée
- M** ○
- K** •
- N** ○ aciers de construction et de cémentation • aciers de décolletage, aciers d'amélioration • aciers alliés jusqu'à 1200 N/mm<sup>2</sup> • fontes • bronze, laiton
- S** ○ • alliages Al haut % en Si
- H** ○

**GÜHRING** NAVIGATOR

Paramètres de coupe, page 754

Matière de coupe	<b>CW monobloc</b>
Surface	<b>F</b>
Forme d'attachement	HE

Forets Ratio



N° d'article **2471**

d1		d2 h6	l1	l2	l3	d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm	mm	inch	mm	mm	mm	mm
3,300		6,000	66,000	28,000	36,000	8,600		10,000	103,000	61,000	40,000
3,500		6,000	66,000	28,000	36,000	8,900		10,000	103,000	61,000	40,000
3,700		6,000	66,000	28,000	36,000	9,000		10,000	103,000	61,000	40,000
4,000		6,000	74,000	36,000	36,000	9,130	23/64	10,000	103,000	61,000	40,000
4,100		6,000	74,000	36,000	36,000	9,200		10,000	103,000	61,000	40,000
4,200		6,000	74,000	36,000	36,000	9,250		10,000	103,000	61,000	40,000
4,300		6,000	74,000	36,000	36,000	9,500		10,000	103,000	61,000	40,000
4,400		6,000	74,000	36,000	36,000	9,700		10,000	103,000	61,000	40,000
4,500		6,000	74,000	36,000	36,000	9,800		10,000	103,000	61,000	40,000
4,650		6,000	74,000	36,000	36,000	9,900		10,000	103,000	61,000	40,000
4,700		6,000	74,000	36,000	36,000	10,000		10,000	103,000	61,000	40,000
4,900		6,000	82,000	44,000	36,000	10,100		12,000	118,000	71,000	45,000
5,000		6,000	82,000	44,000	36,000	10,200		12,000	118,000	71,000	45,000
5,100		6,000	82,000	44,000	36,000	10,300		12,000	118,000	71,000	45,000
5,200		6,000	82,000	44,000	36,000	10,400		12,000	118,000	71,000	45,000
5,300		6,000	82,000	44,000	36,000	10,500		12,000	118,000	71,000	45,000
5,400		6,000	82,000	44,000	36,000	10,600		12,000	118,000	71,000	45,000
5,500		6,000	82,000	44,000	36,000	10,800		12,000	118,000	71,000	45,000
5,550		6,000	82,000	44,000	36,000	11,000		12,000	118,000	71,000	45,000
5,700		6,000	82,000	44,000	36,000	11,100		12,000	118,000	71,000	45,000
6,000		6,000	82,000	44,000	36,000	11,300		12,000	118,000	71,000	45,000
6,100		8,000	91,000	53,000	36,000	11,400		12,000	118,000	71,000	45,000
6,200		8,000	91,000	53,000	36,000	11,500		12,000	118,000	71,000	45,000
6,300		8,000	91,000	53,000	36,000	11,600		12,000	118,000	71,000	45,000
6,350	1/4	8,000	91,000	53,000	36,000	11,700		12,000	118,000	71,000	45,000
6,400		8,000	91,000	53,000	36,000	11,800		12,000	118,000	71,000	45,000
6,500		8,000	91,000	53,000	36,000	11,900		12,000	118,000	71,000	45,000
6,600		8,000	91,000	53,000	36,000	12,000		12,000	118,000	71,000	45,000
6,800		8,000	91,000	53,000	36,000	12,100		14,000	124,000	77,000	45,000
6,900		8,000	91,000	53,000	36,000	12,200		14,000	124,000	77,000	45,000
7,000		8,000	91,000	53,000	36,000	12,300	31/64	14,000	124,000	77,000	45,000
7,100		8,000	91,000	53,000	36,000	12,400		14,000	124,000	77,000	45,000
7,200		8,000	91,000	53,000	36,000	12,500		14,000	124,000	77,000	45,000
7,300		8,000	91,000	53,000	36,000	12,700	1/2	14,000	124,000	77,000	45,000
7,500		8,000	91,000	53,000	36,000	13,000		14,000	124,000	77,000	45,000
7,700		8,000	91,000	53,000	36,000	13,500		14,000	124,000	77,000	45,000
7,800		8,000	91,000	53,000	36,000	13,800		14,000	124,000	77,000	45,000
8,000		8,000	91,000	53,000	36,000	14,000		14,000	124,000	77,000	45,000
8,100		10,000	103,000	61,000	40,000	14,100		16,000	133,000	83,000	48,000
8,200		10,000	103,000	61,000	40,000	14,200		16,000	133,000	83,000	48,000
8,300		10,000	103,000	61,000	40,000	14,500		16,000	133,000	83,000	48,000
8,500		10,000	103,000	61,000	40,000	14,700		16,000	133,000	83,000	48,000



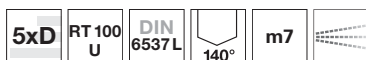
Forets Ratio

d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm
15,000		16,000	133,000	83,000	48,000
15,200		16,000	133,000	83,000	48,000
15,500		16,000	133,000	83,000	48,000
15,800		16,000	133,000	83,000	48,000
16,500		18,000	143,000	93,000	48,000
17,000		18,000	143,000	93,000	48,000
17,300		18,000	143,000	93,000	48,000
17,500		18,000	143,000	93,000	48,000
18,000		18,000	143,000	93,000	48,000
18,200		20,000	153,000	101,000	50,000
18,500		20,000	153,000	101,000	50,000
18,600		20,000	153,000	101,000	50,000

d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm
19,000		20,000	153,000	101,000	50,000
19,050	3/4	20,000	153,000	101,000	50,000
19,500		20,000	153,000	101,000	50,000
20,000		20,000	153,000	101,000	50,000



Forets Ratio à canaux de lubrification



Matière de coupe **CW monobloc**

Surface **S**

Forme d'attachement HA

**P** • Amin. de l'âme ≥ Ø 3,000 • affûtage en pente • arête de coupe principale rectiligne • géométrie de coupe optimisée

**M** ○

**K** •

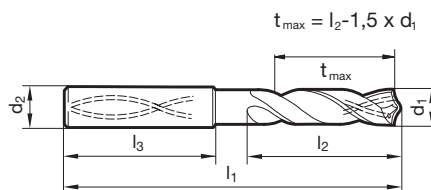
**N** ○ aciers de construction et de cémentation • aciers de décolletage, aciers d'amélioration • aciers alliés jusqu'à 1200 N/mm<sup>2</sup> • fontes • bronze, laiton

**S** ○ • alliages Al haut % en Si

**H** ○

**GUHRING NAVIGATOR**

Paramètres de coupe, page 754



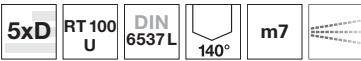
N° d'article **1663**

d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm
3,000		6,000	66,000	28,000	36,000
3,700		6,000	66,000	28,000	36,000
4,000		6,000	74,000	36,000	36,000
4,500		6,000	74,000	36,000	36,000
4,650		6,000	74,000	36,000	36,000
4,700		6,000	74,000	36,000	36,000
4,800		6,000	82,000	44,000	36,000
5,000		6,000	82,000	44,000	36,000
5,400		6,000	82,000	44,000	36,000
5,800		6,000	82,000	44,000	36,000
6,000		6,000	82,000	44,000	36,000
6,100		8,000	91,000	53,000	36,000
6,200		8,000	91,000	53,000	36,000
6,300		8,000	91,000	53,000	36,000
6,350	1/4	8,000	91,000	53,000	36,000
6,400		8,000	91,000	53,000	36,000
6,500		8,000	91,000	53,000	36,000
6,700		8,000	91,000	53,000	36,000
6,800		8,000	91,000	53,000	36,000
7,000		8,000	91,000	53,000	36,000
7,100		8,000	91,000	53,000	36,000
7,500		8,000	91,000	53,000	36,000
7,800		8,000	91,000	53,000	36,000
8,000		8,000	91,000	53,000	36,000

d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm
8,200		10,000	103,000	61,000	40,000
8,400		10,000	103,000	61,000	40,000
8,500		10,000	103,000	61,000	40,000
8,800		10,000	103,000	61,000	40,000
9,000		10,000	103,000	61,000	40,000
9,200		10,000	103,000	61,000	40,000
9,400		10,000	103,000	61,000	40,000
9,500		10,000	103,000	61,000	40,000
10,500		12,000	118,000	71,000	45,000
11,000		12,000	118,000	71,000	45,000
11,500		12,000	118,000	71,000	45,000
11,800		12,000	118,000	71,000	45,000
12,000		12,000	118,000	71,000	45,000
13,000		14,000	124,000	77,000	45,000
14,000		14,000	124,000	77,000	45,000
14,200		16,000	133,000	83,000	48,000
14,500		16,000	133,000	83,000	48,000
15,000		16,000	133,000	83,000	48,000
15,500		16,000	133,000	83,000	48,000
16,000		16,000	133,000	83,000	48,000
17,000		18,000	143,000	93,000	48,000
17,500		18,000	143,000	93,000	48,000
19,000		20,000	153,000	101,000	50,000
19,500		20,000	153,000	101,000	50,000



**Forets Ratio à canaux de lubrification**

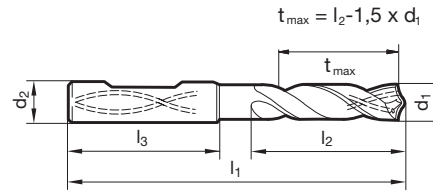


- P** • Amin. de l'âme ≥ Ø 3,300 • affûtage en pente • arête de coupe principale rectiligne • géométrie de coupe optimisée
- M** ○
- K** •
- N** ○ aciers de construction et de cémentation • aciers de décolletage, aciers d'amélioration • aciers alliés jusqu'à 1200 N/mm<sup>2</sup> • fontes • bronze, laiton
- S** ○ • alliages Al haut % en Si
- H** ○

**GÜHRING NAVIGATOR**

Paramètres de coupe, page 754

Matière de coupe	<b>CW monobloc</b>
Surface	<b>S</b>
Forme d'attachement	HE



N° d'article **1183**

d1		d2 h6	l1	l2	l3	d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm	mm	inch	mm	mm	mm	mm
3,300		6,000	66,000	28,000	36,000	7,200		8,000	91,000	53,000	36,000
4,000		6,000	74,000	36,000	36,000	7,300		8,000	91,000	53,000	36,000
4,100		6,000	74,000	36,000	36,000	7,400		8,000	91,000	53,000	36,000
4,200		6,000	74,000	36,000	36,000	7,500		8,000	91,000	53,000	36,000
4,300		6,000	74,000	36,000	36,000	7,540	19/64	8,000	91,000	53,000	36,000
4,370	11/64	6,000	74,000	36,000	36,000	7,600		8,000	91,000	53,000	36,000
4,400		6,000	74,000	36,000	36,000	7,700		8,000	91,000	53,000	36,000
4,500		6,000	74,000	36,000	36,000	7,800		8,000	91,000	53,000	36,000
4,600		6,000	74,000	36,000	36,000	7,900		8,000	91,000	53,000	36,000
4,650		6,000	74,000	36,000	36,000	7,940	5/16	8,000	91,000	53,000	36,000
4,700		6,000	74,000	36,000	36,000	8,000		8,000	91,000	53,000	36,000
4,760	3/16	6,000	82,000	44,000	36,000	8,100		10,000	103,000	61,000	40,000
4,800		6,000	82,000	44,000	36,000	8,200		10,000	103,000	61,000	40,000
4,900		6,000	82,000	44,000	36,000	8,300		10,000	103,000	61,000	40,000
5,000		6,000	82,000	44,000	36,000	8,330	21/64	10,000	103,000	61,000	40,000
5,100		6,000	82,000	44,000	36,000	8,400		10,000	103,000	61,000	40,000
5,160	13/64	6,000	82,000	44,000	36,000	8,500		10,000	103,000	61,000	40,000
5,200		6,000	82,000	44,000	36,000	8,600		10,000	103,000	61,000	40,000
5,300		6,000	82,000	44,000	36,000	8,700		10,000	103,000	61,000	40,000
5,400		6,000	82,000	44,000	36,000	8,730	11/32	10,000	103,000	61,000	40,000
5,500		6,000	82,000	44,000	36,000	8,800		10,000	103,000	61,000	40,000
5,560	7/32	6,000	82,000	44,000	36,000	8,900		10,000	103,000	61,000	40,000
5,600		6,000	82,000	44,000	36,000	9,000		10,000	103,000	61,000	40,000
5,700		6,000	82,000	44,000	36,000	9,100		10,000	103,000	61,000	40,000
5,800		6,000	82,000	44,000	36,000	9,130	23/64	10,000	103,000	61,000	40,000
5,900		6,000	82,000	44,000	36,000	9,200		10,000	103,000	61,000	40,000
5,950	15/64	6,000	82,000	44,000	36,000	9,300		10,000	103,000	61,000	40,000
6,000		6,000	82,000	44,000	36,000	9,400		10,000	103,000	61,000	40,000
6,100		8,000	91,000	53,000	36,000	9,500		10,000	103,000	61,000	40,000
6,200		8,000	91,000	53,000	36,000	9,520	3/8	10,000	103,000	61,000	40,000
6,300		8,000	91,000	53,000	36,000	9,600		10,000	103,000	61,000	40,000
6,350	1/4	8,000	91,000	53,000	36,000	9,700		10,000	103,000	61,000	40,000
6,400		8,000	91,000	53,000	36,000	9,800		10,000	103,000	61,000	40,000
6,500		8,000	91,000	53,000	36,000	9,900		10,000	103,000	61,000	40,000
6,600		8,000	91,000	53,000	36,000	9,920	25/64	10,000	103,000	61,000	40,000
6,700		8,000	91,000	53,000	36,000	10,000		10,000	103,000	61,000	40,000
6,750	17/64	8,000	91,000	53,000	36,000	10,100		12,000	118,000	71,000	45,000
6,800		8,000	91,000	53,000	36,000	10,200		12,000	118,000	71,000	45,000
6,900		8,000	91,000	53,000	36,000	10,300		12,000	118,000	71,000	45,000
7,000		8,000	91,000	53,000	36,000	10,320	13/32	12,000	118,000	71,000	45,000
7,100		8,000	91,000	53,000	36,000	10,400		12,000	118,000	71,000	45,000
7,140	9/32	8,000	91,000	53,000	36,000	10,500		12,000	118,000	71,000	45,000

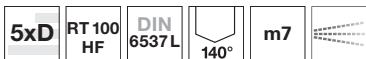


d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm
10,600		12,000	118,000	71,000	45,000
10,700		12,000	118,000	71,000	45,000
10,720	27/64	12,000	118,000	71,000	45,000
10,800		12,000	118,000	71,000	45,000
10,900		12,000	118,000	71,000	45,000
11,000		12,000	118,000	71,000	45,000
11,100		12,000	118,000	71,000	45,000
11,110	7/16	12,000	118,000	71,000	45,000
11,200		12,000	118,000	71,000	45,000
11,300		12,000	118,000	71,000	45,000
11,400		12,000	118,000	71,000	45,000
11,500		12,000	118,000	71,000	45,000
11,510	29/64	12,000	118,000	71,000	45,000
11,600		12,000	118,000	71,000	45,000
11,700		12,000	118,000	71,000	45,000
11,800		12,000	118,000	71,000	45,000
11,900		12,000	118,000	71,000	45,000
11,910	15/32	12,000	118,000	71,000	45,000
12,000		12,000	118,000	71,000	45,000
12,100		14,000	124,000	77,000	45,000
12,200		14,000	124,000	77,000	45,000
12,300	31/64	14,000	124,000	77,000	45,000
12,400		14,000	124,000	77,000	45,000
12,500		14,000	124,000	77,000	45,000
12,600		14,000	124,000	77,000	45,000
12,700	1/2	14,000	124,000	77,000	45,000
12,800		14,000	124,000	77,000	45,000
12,900		14,000	124,000	77,000	45,000
13,000		14,000	124,000	77,000	45,000
13,100	33/64	14,000	124,000	77,000	45,000
13,200		14,000	124,000	77,000	45,000
13,300		14,000	124,000	77,000	45,000
13,400		14,000	124,000	77,000	45,000
13,500		14,000	124,000	77,000	45,000
13,600		14,000	124,000	77,000	45,000
13,700		14,000	124,000	77,000	45,000
13,800		14,000	124,000	77,000	45,000
13,890	35/64	14,000	124,000	77,000	45,000
13,900		14,000	124,000	77,000	45,000
14,000		14,000	124,000	77,000	45,000
14,100		16,000	133,000	83,000	48,000
14,200		16,000	133,000	83,000	48,000
14,290	9/16	16,000	133,000	83,000	48,000
14,300		16,000	133,000	83,000	48,000
14,400		16,000	133,000	83,000	48,000
14,500		16,000	133,000	83,000	48,000
14,600		16,000	133,000	83,000	48,000
14,680	37/64	16,000	133,000	83,000	48,000
14,700		16,000	133,000	83,000	48,000
14,800		16,000	133,000	83,000	48,000
14,900		16,000	133,000	83,000	48,000
15,000		16,000	133,000	83,000	48,000
15,100		16,000	133,000	83,000	48,000
15,200		16,000	133,000	83,000	48,000

d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm
15,300		16,000	133,000	83,000	48,000
15,400		16,000	133,000	83,000	48,000
15,480	39/64	16,000	133,000	83,000	48,000
15,500		16,000	133,000	83,000	48,000
15,800		16,000	133,000	83,000	48,000
15,870	5/8	16,000	133,000	83,000	48,000
16,000		16,000	133,000	83,000	48,000
16,100		18,000	143,000	93,000	48,000
16,200		18,000	143,000	93,000	48,000
16,270	41/64	18,000	143,000	93,000	48,000
16,400		18,000	143,000	93,000	48,000
16,500		18,000	143,000	93,000	48,000
16,600		18,000	143,000	93,000	48,000
16,700		18,000	143,000	93,000	48,000
16,800		18,000	143,000	93,000	48,000
16,900		18,000	143,000	93,000	48,000
17,000		18,000	143,000	93,000	48,000
17,070	43/64	18,000	143,000	93,000	48,000
17,200		18,000	143,000	93,000	48,000
17,300		18,000	143,000	93,000	48,000
17,400		18,000	143,000	93,000	48,000
17,500		18,000	143,000	93,000	48,000
17,600		18,000	143,000	93,000	48,000
17,700		18,000	143,000	93,000	48,000
17,800		18,000	143,000	93,000	48,000
18,000		18,000	143,000	93,000	48,000
18,100		20,000	153,000	101,000	50,000
18,200		20,000	153,000	101,000	50,000
18,300		20,000	153,000	101,000	50,000
18,400		20,000	153,000	101,000	50,000
18,500		20,000	153,000	101,000	50,000
18,600		20,000	153,000	101,000	50,000
18,650	47/64	20,000	153,000	101,000	50,000
18,700		20,000	153,000	101,000	50,000
18,800		20,000	153,000	101,000	50,000
18,900		20,000	153,000	101,000	50,000
19,000		20,000	153,000	101,000	50,000
19,050	3/4	20,000	153,000	101,000	50,000
19,300		20,000	153,000	101,000	50,000
19,500		20,000	153,000	101,000	50,000
19,700		20,000	153,000	101,000	50,000
19,800		20,000	153,000	101,000	50,000
19,900		20,000	153,000	101,000	50,000
20,000		20,000	153,000	101,000	50,000



**Forets Ratio à canaux de lubrification**



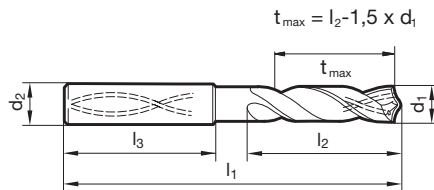
**P** • Amin. de l'âme  $\geq \varnothing 3,000$  • affûtage à dépouille conique • forme de l'arête de coupe principale légèrement concave • géométrie de coupe optimisée

- M**
- K**
- N** aciers alliés et à haute résistance jusqu'à 1600 N/mm<sup>2</sup> • Inconel, Hastelloy, Monel • Titane et ses alliages
- S** •
- H** ○

Matière de coupe	<b>CW monobloc</b>
Surface	<b>Y</b>
Forme d'attachement	HA

**GÜHRING NAVIGATOR**

Paramètres de coupe, page 756



N° d'article **8521**

d1		d2 h6	l1	l2	l3	d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm	mm	inch	mm	mm	mm	mm
3,000		6,000	66,000	28,000	36,000	6,100		8,000	91,000	53,000	36,000
3,100		6,000	66,000	28,000	36,000	6,200		8,000	91,000	53,000	36,000
3,170	1/8	6,000	66,000	28,000	36,000	6,300		8,000	91,000	53,000	36,000
3,200		6,000	66,000	28,000	36,000	6,350	1/4	8,000	91,000	53,000	36,000
3,250		6,000	66,000	28,000	36,000	6,400		8,000	91,000	53,000	36,000
3,300		6,000	66,000	28,000	36,000	6,500		8,000	91,000	53,000	36,000
3,400		6,000	66,000	28,000	36,000	6,600		8,000	91,000	53,000	36,000
3,500		6,000	66,000	28,000	36,000	6,700		8,000	91,000	53,000	36,000
3,570	9/64	6,000	66,000	28,000	36,000	6,750	17/64	8,000	91,000	53,000	36,000
3,600		6,000	66,000	28,000	36,000	6,800		8,000	91,000	53,000	36,000
3,700		6,000	66,000	28,000	36,000	6,900		8,000	91,000	53,000	36,000
3,800		6,000	74,000	36,000	36,000	7,000		8,000	91,000	53,000	36,000
3,900		6,000	74,000	36,000	36,000	7,100		8,000	91,000	53,000	36,000
3,970	5/32	6,000	74,000	36,000	36,000	7,140	9/32	8,000	91,000	53,000	36,000
4,000		6,000	74,000	36,000	36,000	7,200		8,000	91,000	53,000	36,000
4,100		6,000	74,000	36,000	36,000	7,300		8,000	91,000	53,000	36,000
4,200		6,000	74,000	36,000	36,000	7,400		8,000	91,000	53,000	36,000
4,300		6,000	74,000	36,000	36,000	7,500		8,000	91,000	53,000	36,000
4,370	11/64	6,000	74,000	36,000	36,000	7,540	19/64	8,000	91,000	53,000	36,000
4,400		6,000	74,000	36,000	36,000	7,600		8,000	91,000	53,000	36,000
4,500		6,000	74,000	36,000	36,000	7,700		8,000	91,000	53,000	36,000
4,600		6,000	74,000	36,000	36,000	7,800		8,000	91,000	53,000	36,000
4,650		6,000	74,000	36,000	36,000	7,900		8,000	91,000	53,000	36,000
4,700		6,000	74,000	36,000	36,000	7,940	5/16	8,000	91,000	53,000	36,000
4,760	3/16	6,000	82,000	44,000	36,000	8,000		8,000	91,000	53,000	36,000
4,800		6,000	82,000	44,000	36,000	8,100		10,000	103,000	61,000	40,000
4,900		6,000	82,000	44,000	36,000	8,200		10,000	103,000	61,000	40,000
5,000		6,000	82,000	44,000	36,000	8,300		10,000	103,000	61,000	40,000
5,100		6,000	82,000	44,000	36,000	8,330	21/64	10,000	103,000	61,000	40,000
5,160	13/64	6,000	82,000	44,000	36,000	8,400		10,000	103,000	61,000	40,000
5,200		6,000	82,000	44,000	36,000	8,500		10,000	103,000	61,000	40,000
5,300		6,000	82,000	44,000	36,000	8,600		10,000	103,000	61,000	40,000
5,400		6,000	82,000	44,000	36,000	8,700		10,000	103,000	61,000	40,000
5,500		6,000	82,000	44,000	36,000	8,730	11/32	10,000	103,000	61,000	40,000
5,550		6,000	82,000	44,000	36,000	8,800		10,000	103,000	61,000	40,000
5,560	7/32	6,000	82,000	44,000	36,000	8,900		10,000	103,000	61,000	40,000
5,600		6,000	82,000	44,000	36,000	9,000		10,000	103,000	61,000	40,000
5,700		6,000	82,000	44,000	36,000	9,100		10,000	103,000	61,000	40,000
5,800		6,000	82,000	44,000	36,000	9,130	23/64	10,000	103,000	61,000	40,000
5,900		6,000	82,000	44,000	36,000	9,200		10,000	103,000	61,000	40,000
5,950	15/64	6,000	82,000	44,000	36,000	9,250		10,000	103,000	61,000	40,000
6,000		6,000	82,000	44,000	36,000	9,300		10,000	103,000	61,000	40,000



d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm
9,400		10,000	103,000	61,000	40,000
9,500		10,000	103,000	61,000	40,000
9,520	3/8	10,000	103,000	61,000	40,000
9,600		10,000	103,000	61,000	40,000
9,700		10,000	103,000	61,000	40,000
9,800		10,000	103,000	61,000	40,000
9,900		10,000	103,000	61,000	40,000
9,920	25/64	10,000	103,000	61,000	40,000
10,000		10,000	103,000	61,000	40,000
10,100		12,000	118,000	71,000	45,000
10,200		12,000	118,000	71,000	45,000
10,300		12,000	118,000	71,000	45,000
10,320	13/32	12,000	118,000	71,000	45,000
10,400		12,000	118,000	71,000	45,000
10,500		12,000	118,000	71,000	45,000
10,600		12,000	118,000	71,000	45,000
10,700		12,000	118,000	71,000	45,000
10,720	27/64	12,000	118,000	71,000	45,000
10,800		12,000	118,000	71,000	45,000
10,900		12,000	118,000	71,000	45,000
11,000		12,000	118,000	71,000	45,000
11,100		12,000	118,000	71,000	45,000
11,110	7/16	12,000	118,000	71,000	45,000
11,200		12,000	118,000	71,000	45,000
11,300		12,000	118,000	71,000	45,000
11,400		12,000	118,000	71,000	45,000
11,500		12,000	118,000	71,000	45,000
11,510	29/64	12,000	118,000	71,000	45,000
11,600		12,000	118,000	71,000	45,000
11,700		12,000	118,000	71,000	45,000
11,800		12,000	118,000	71,000	45,000
11,900		12,000	118,000	71,000	45,000
11,910	15/32	12,000	118,000	71,000	45,000
12,000		12,000	118,000	71,000	45,000
12,200		14,000	124,000	77,000	45,000
12,500		14,000	124,000	77,000	45,000

d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm
12,700	1/2	14,000	124,000	77,000	45,000
12,800		14,000	124,000	77,000	45,000
13,000		14,000	124,000	77,000	45,000
13,300		14,000	124,000	77,000	45,000
13,500		14,000	124,000	77,000	45,000
13,700		14,000	124,000	77,000	45,000
14,000		14,000	124,000	77,000	45,000
14,200		16,000	133,000	83,000	48,000
14,290	9/16	16,000	133,000	83,000	48,000
14,300		16,000	133,000	83,000	48,000
14,500		16,000	133,000	83,000	48,000
14,700		16,000	133,000	83,000	48,000
15,000		16,000	133,000	83,000	48,000
15,200		16,000	133,000	83,000	48,000
15,300		16,000	133,000	83,000	48,000
15,500		16,000	133,000	83,000	48,000
15,700		16,000	133,000	83,000	48,000
15,870	5/8	16,000	133,000	83,000	48,000
16,000		16,000	133,000	83,000	48,000
16,300		18,000	143,000	93,000	48,000
16,500		18,000	143,000	93,000	48,000
16,900		18,000	143,000	93,000	48,000
17,000		18,000	143,000	93,000	48,000
17,300		18,000	143,000	93,000	48,000
17,500		18,000	143,000	93,000	48,000
18,000		18,000	143,000	93,000	48,000
18,500		20,000	153,000	101,000	50,000
18,900		20,000	153,000	101,000	50,000
19,000		20,000	153,000	101,000	50,000
19,050	3/4	20,000	153,000	101,000	50,000
19,300		20,000	153,000	101,000	50,000
19,500		20,000	153,000	101,000	50,000
20,000		20,000	153,000	101,000	50,000

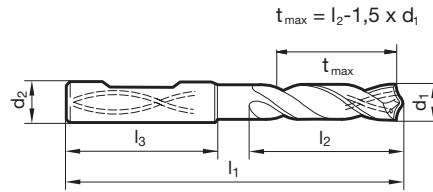
**Forets Ratio à canaux de lubrification**


- P** • Amin. de l'âme  $\geq \varnothing 3,000$  • affûtage à dépouille conique • forme de l'arête de coupe principale légèrement concave • géométrie de coupe optimisée
- M**
- K**
- N** aciers alliés et à haute résistance jusqu'à 1600 N/mm<sup>2</sup> • Inconel, Hastelloy, Monel • Titane et ses alliages
- S** •
- H** ○

**GÜHRING NAVIGATOR**

Paramètres de coupe, page 756

Matière de coupe	<b>CW monobloc</b>
Surface	<b>Y</b>
Forme d'attachement	HE


 N° d'article **8621**

d1		d2 h6	l1	l2	l3	d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm	mm	inch	mm	mm	mm	mm
3,000		6,000	66,000	28,000	36,000	6,100		8,000	91,000	53,000	36,000
3,100		6,000	66,000	28,000	36,000	6,200		8,000	91,000	53,000	36,000
3,170	1/8	6,000	66,000	28,000	36,000	6,300		8,000	91,000	53,000	36,000
3,200		6,000	66,000	28,000	36,000	6,350	1/4	8,000	91,000	53,000	36,000
3,250		6,000	66,000	28,000	36,000	6,400		8,000	91,000	53,000	36,000
3,300		6,000	66,000	28,000	36,000	6,500		8,000	91,000	53,000	36,000
3,400		6,000	66,000	28,000	36,000	6,600		8,000	91,000	53,000	36,000
3,500		6,000	66,000	28,000	36,000	6,700		8,000	91,000	53,000	36,000
3,570	9/64	6,000	66,000	28,000	36,000	6,750	17/64	8,000	91,000	53,000	36,000
3,600		6,000	66,000	28,000	36,000	6,800		8,000	91,000	53,000	36,000
3,700		6,000	66,000	28,000	36,000	6,900		8,000	91,000	53,000	36,000
3,800		6,000	74,000	36,000	36,000	7,000		8,000	91,000	53,000	36,000
3,900		6,000	74,000	36,000	36,000	7,100		8,000	91,000	53,000	36,000
3,970	5/32	6,000	74,000	36,000	36,000	7,140	9/32	8,000	91,000	53,000	36,000
4,000		6,000	74,000	36,000	36,000	7,200		8,000	91,000	53,000	36,000
4,100		6,000	74,000	36,000	36,000	7,300		8,000	91,000	53,000	36,000
4,200		6,000	74,000	36,000	36,000	7,400		8,000	91,000	53,000	36,000
4,300		6,000	74,000	36,000	36,000	7,500		8,000	91,000	53,000	36,000
4,370	11/64	6,000	74,000	36,000	36,000	7,540	19/64	8,000	91,000	53,000	36,000
4,400		6,000	74,000	36,000	36,000	7,600		8,000	91,000	53,000	36,000
4,500		6,000	74,000	36,000	36,000	7,700		8,000	91,000	53,000	36,000
4,600		6,000	74,000	36,000	36,000	7,800		8,000	91,000	53,000	36,000
4,650		6,000	74,000	36,000	36,000	7,900		8,000	91,000	53,000	36,000
4,700		6,000	74,000	36,000	36,000	7,940	5/16	8,000	91,000	53,000	36,000
4,760	3/16	6,000	82,000	44,000	36,000	8,000		8,000	91,000	53,000	36,000
4,800		6,000	82,000	44,000	36,000	8,100		10,000	103,000	61,000	40,000
4,900		6,000	82,000	44,000	36,000	8,200		10,000	103,000	61,000	40,000
5,000		6,000	82,000	44,000	36,000	8,300		10,000	103,000	61,000	40,000
5,100		6,000	82,000	44,000	36,000	8,330	21/64	10,000	103,000	61,000	40,000
5,160	13/64	6,000	82,000	44,000	36,000	8,400		10,000	103,000	61,000	40,000
5,200		6,000	82,000	44,000	36,000	8,500		10,000	103,000	61,000	40,000
5,300		6,000	82,000	44,000	36,000	8,600		10,000	103,000	61,000	40,000
5,400		6,000	82,000	44,000	36,000	8,700		10,000	103,000	61,000	40,000
5,500		6,000	82,000	44,000	36,000	8,730	11/32	10,000	103,000	61,000	40,000
5,550		6,000	82,000	44,000	36,000	8,800		10,000	103,000	61,000	40,000
5,560	7/32	6,000	82,000	44,000	36,000	8,900		10,000	103,000	61,000	40,000
5,600		6,000	82,000	44,000	36,000	9,000		10,000	103,000	61,000	40,000
5,700		6,000	82,000	44,000	36,000	9,100		10,000	103,000	61,000	40,000
5,800		6,000	82,000	44,000	36,000	9,130	23/64	10,000	103,000	61,000	40,000
5,900		6,000	82,000	44,000	36,000	9,200		10,000	103,000	61,000	40,000
5,950	15/64	6,000	82,000	44,000	36,000	9,250		10,000	103,000	61,000	40,000
6,000		6,000	82,000	44,000	36,000	9,300		10,000	103,000	61,000	40,000



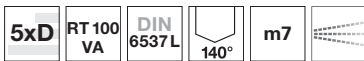


d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm
9,400		10,000	103,000	61,000	40,000
9,500		10,000	103,000	61,000	40,000
9,520	3/8	10,000	103,000	61,000	40,000
9,600		10,000	103,000	61,000	40,000
9,700		10,000	103,000	61,000	40,000
9,800		10,000	103,000	61,000	40,000
9,900		10,000	103,000	61,000	40,000
9,920	25/64	10,000	103,000	61,000	40,000
10,000		10,000	103,000	61,000	40,000
10,100		12,000	118,000	71,000	45,000
10,200		12,000	118,000	71,000	45,000
10,300		12,000	118,000	71,000	45,000
10,320	13/32	12,000	118,000	71,000	45,000
10,400		12,000	118,000	71,000	45,000
10,500		12,000	118,000	71,000	45,000
10,600		12,000	118,000	71,000	45,000
10,700		12,000	118,000	71,000	45,000
10,800		12,000	118,000	71,000	45,000
10,900		12,000	118,000	71,000	45,000
11,000		12,000	118,000	71,000	45,000
11,100		12,000	118,000	71,000	45,000
11,110	7/16	12,000	118,000	71,000	45,000
11,200		12,000	118,000	71,000	45,000
11,300		12,000	118,000	71,000	45,000
11,400		12,000	118,000	71,000	45,000
11,500		12,000	118,000	71,000	45,000
11,600		12,000	118,000	71,000	45,000
11,700		12,000	118,000	71,000	45,000
11,800		12,000	118,000	71,000	45,000
11,900		12,000	118,000	71,000	45,000
11,910	15/32	12,000	118,000	71,000	45,000
12,000		12,000	118,000	71,000	45,000
12,200		14,000	124,000	77,000	45,000
12,500		14,000	124,000	77,000	45,000
12,700	1/2	14,000	124,000	77,000	45,000
12,800		14,000	124,000	77,000	45,000

d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm
13,000		14,000	124,000	77,000	45,000
13,300		14,000	124,000	77,000	45,000
13,500		14,000	124,000	77,000	45,000
13,700		14,000	124,000	77,000	45,000
14,000		14,000	124,000	77,000	45,000
14,200		16,000	133,000	83,000	48,000
14,290	9/16	16,000	133,000	83,000	48,000
14,300		16,000	133,000	83,000	48,000
14,500		16,000	133,000	83,000	48,000
14,700		16,000	133,000	83,000	48,000
15,000		16,000	133,000	83,000	48,000
15,200		16,000	133,000	83,000	48,000
15,300		16,000	133,000	83,000	48,000
15,500		16,000	133,000	83,000	48,000
15,700		16,000	133,000	83,000	48,000
16,000		16,000	133,000	83,000	48,000
16,300		18,000	143,000	93,000	48,000
16,500		18,000	143,000	93,000	48,000
16,900		18,000	143,000	93,000	48,000
17,000		18,000	143,000	93,000	48,000
17,300		18,000	143,000	93,000	48,000
17,500		18,000	143,000	93,000	48,000
18,000		18,000	143,000	93,000	48,000
18,500		20,000	153,000	101,000	50,000
18,900		20,000	153,000	101,000	50,000
19,000		20,000	153,000	101,000	50,000
19,050	3/4	20,000	153,000	101,000	50,000
19,300		20,000	153,000	101,000	50,000
19,500		20,000	153,000	101,000	50,000
20,000		20,000	153,000	101,000	50,000



**Forets Ratio à canaux de lubrification**

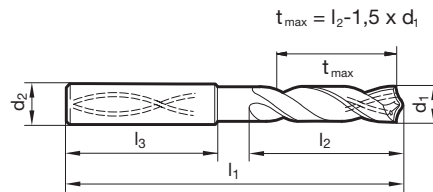


<b>P</b>	Amin. de l'âme $\geq \varnothing 3,000$ • affûtage en pente • arête de coupe principale rectiligne • géométrie de coupe optimisée
<b>M</b>	•
<b>K</b>	
<b>N</b>	aciers inox., inaltérables aux acides et réfractaires • Titane et ses alliages
<b>S</b>	• Inconel, Hastelloy, Monel
<b>H</b>	

**GÜHRING NAVIGATOR**

Paramètres de coupe, page 756

Matière de coupe	<b>CW monobloc</b>
Surface	
Forme d'attachement	HA



N° d'article **8511**

d1		d2 h6	l1	l2	l3	d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm	mm	inch	mm	mm	mm	mm
3,000		6,000	66,000	28,000	36,000	6,100		8,000	91,000	53,000	36,000
3,100		6,000	66,000	28,000	36,000	6,200		8,000	91,000	53,000	36,000
3,170	1/8	6,000	66,000	28,000	36,000	6,300		8,000	91,000	53,000	36,000
3,200		6,000	66,000	28,000	36,000	6,350	1/4	8,000	91,000	53,000	36,000
3,250		6,000	66,000	28,000	36,000	6,400		8,000	91,000	53,000	36,000
3,300		6,000	66,000	28,000	36,000	6,500		8,000	91,000	53,000	36,000
3,400		6,000	66,000	28,000	36,000	6,600		8,000	91,000	53,000	36,000
3,500		6,000	66,000	28,000	36,000	6,700		8,000	91,000	53,000	36,000
3,570	9/64	6,000	66,000	28,000	36,000	6,750	17/64	8,000	91,000	53,000	36,000
3,600		6,000	66,000	28,000	36,000	6,800		8,000	91,000	53,000	36,000
3,700		6,000	66,000	28,000	36,000	6,900		8,000	91,000	53,000	36,000
3,800		6,000	74,000	36,000	36,000	7,000		8,000	91,000	53,000	36,000
3,900		6,000	74,000	36,000	36,000	7,100		8,000	91,000	53,000	36,000
3,970	5/32	6,000	74,000	36,000	36,000	7,140	9/32	8,000	91,000	53,000	36,000
4,000		6,000	74,000	36,000	36,000	7,200		8,000	91,000	53,000	36,000
4,100		6,000	74,000	36,000	36,000	7,300		8,000	91,000	53,000	36,000
4,200		6,000	74,000	36,000	36,000	7,400		8,000	91,000	53,000	36,000
4,300		6,000	74,000	36,000	36,000	7,500		8,000	91,000	53,000	36,000
4,370	11/64	6,000	74,000	36,000	36,000	7,540	19/64	8,000	91,000	53,000	36,000
4,400		6,000	74,000	36,000	36,000	7,600		8,000	91,000	53,000	36,000
4,500		6,000	74,000	36,000	36,000	7,700		8,000	91,000	53,000	36,000
4,600		6,000	74,000	36,000	36,000	7,800		8,000	91,000	53,000	36,000
4,650		6,000	74,000	36,000	36,000	7,900		8,000	91,000	53,000	36,000
4,700		6,000	74,000	36,000	36,000	7,940	5/16	8,000	91,000	53,000	36,000
4,760	3/16	6,000	82,000	44,000	36,000	8,000		8,000	91,000	53,000	36,000
4,800		6,000	82,000	44,000	36,000	8,100		10,000	103,000	61,000	40,000
4,900		6,000	82,000	44,000	36,000	8,200		10,000	103,000	61,000	40,000
5,000		6,000	82,000	44,000	36,000	8,300		10,000	103,000	61,000	40,000
5,100		6,000	82,000	44,000	36,000	8,330	21/64	10,000	103,000	61,000	40,000
5,160	13/64	6,000	82,000	44,000	36,000	8,400		10,000	103,000	61,000	40,000
5,200		6,000	82,000	44,000	36,000	8,500		10,000	103,000	61,000	40,000
5,300		6,000	82,000	44,000	36,000	8,600		10,000	103,000	61,000	40,000
5,400		6,000	82,000	44,000	36,000	8,700		10,000	103,000	61,000	40,000
5,500		6,000	82,000	44,000	36,000	8,730	11/32	10,000	103,000	61,000	40,000
5,550		6,000	82,000	44,000	36,000	8,800		10,000	103,000	61,000	40,000
5,560	7/32	6,000	82,000	44,000	36,000	8,900		10,000	103,000	61,000	40,000
5,600		6,000	82,000	44,000	36,000	9,000		10,000	103,000	61,000	40,000
5,700		6,000	82,000	44,000	36,000	9,100		10,000	103,000	61,000	40,000
5,800		6,000	82,000	44,000	36,000	9,130	23/64	10,000	103,000	61,000	40,000
5,900		6,000	82,000	44,000	36,000	9,200		10,000	103,000	61,000	40,000
5,950	15/64	6,000	82,000	44,000	36,000	9,250		10,000	103,000	61,000	40,000
6,000		6,000	82,000	44,000	36,000	9,300		10,000	103,000	61,000	40,000

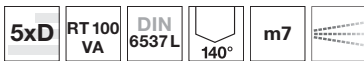


d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm
9,400		10,000	103,000	61,000	40,000
9,500		10,000	103,000	61,000	40,000
9,520	3/8	10,000	103,000	61,000	40,000
9,600		10,000	103,000	61,000	40,000
9,700		10,000	103,000	61,000	40,000
9,800		10,000	103,000	61,000	40,000
9,900		10,000	103,000	61,000	40,000
9,920	25/64	10,000	103,000	61,000	40,000
10,000		10,000	103,000	61,000	40,000
10,100		12,000	118,000	71,000	45,000
10,200		12,000	118,000	71,000	45,000
10,300		12,000	118,000	71,000	45,000
10,320	13/32	12,000	118,000	71,000	45,000
10,400		12,000	118,000	71,000	45,000
10,500		12,000	118,000	71,000	45,000
10,600		12,000	118,000	71,000	45,000
10,700		12,000	118,000	71,000	45,000
10,800		12,000	118,000	71,000	45,000
10,900		12,000	118,000	71,000	45,000
11,000		12,000	118,000	71,000	45,000
11,100		12,000	118,000	71,000	45,000
11,110	7/16	12,000	118,000	71,000	45,000
11,200		12,000	118,000	71,000	45,000
11,300		12,000	118,000	71,000	45,000
11,400		12,000	118,000	71,000	45,000
11,500		12,000	118,000	71,000	45,000
11,600		12,000	118,000	71,000	45,000
11,700		12,000	118,000	71,000	45,000
11,800		12,000	118,000	71,000	45,000
11,900		12,000	118,000	71,000	45,000
11,910	15/32	12,000	118,000	71,000	45,000
12,000		12,000	118,000	71,000	45,000
12,200		14,000	124,000	77,000	45,000
12,500		14,000	124,000	77,000	45,000
12,700	1/2	14,000	124,000	77,000	45,000
12,800		14,000	124,000	77,000	45,000

d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm
13,000		14,000	124,000	77,000	45,000
13,300		14,000	124,000	77,000	45,000
13,500		14,000	124,000	77,000	45,000
13,700		14,000	124,000	77,000	45,000
14,000		14,000	124,000	77,000	45,000
14,200		16,000	133,000	83,000	48,000
14,290	9/16	16,000	133,000	83,000	48,000
14,300		16,000	133,000	83,000	48,000
14,500		16,000	133,000	83,000	48,000
14,700		16,000	133,000	83,000	48,000
15,000		16,000	133,000	83,000	48,000
15,200		16,000	133,000	83,000	48,000
15,300		16,000	133,000	83,000	48,000
15,500		16,000	133,000	83,000	48,000
15,700		16,000	133,000	83,000	48,000
16,000		16,000	133,000	83,000	48,000
16,300		18,000	143,000	93,000	48,000
16,500		18,000	143,000	93,000	48,000
16,900		18,000	143,000	93,000	48,000
17,000		18,000	143,000	93,000	48,000
17,300		18,000	143,000	93,000	48,000
17,500		18,000	143,000	93,000	48,000
18,000		18,000	143,000	93,000	48,000
18,500		20,000	153,000	101,000	50,000
18,900		20,000	153,000	101,000	50,000
19,000		20,000	153,000	101,000	50,000
19,050	3/4	20,000	153,000	101,000	50,000
19,300		20,000	153,000	101,000	50,000
19,500		20,000	153,000	101,000	50,000
20,000		20,000	153,000	101,000	50,000



**Forets Ratio à canaux de lubrification**



**P** Amin. de l'âme  $\geq \varnothing 3,000$  • affûtage en pente • arête de coupe principale rectiligne • géométrie de coupe optimisée

**M** •

**K**

**N** aciers inox., inaltérables aux acides et réfractaires • Titane et ses alliages  
**S** • Inconel, Hastelloy, Monel

**H**

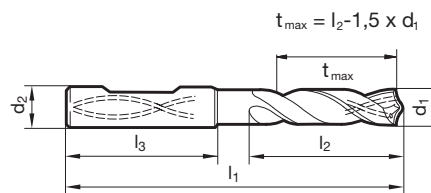
Matière de coupe **CW monobloc**

Surface

Forme d'attachement HE

**GÜHRING NAVIGATOR**

Paramètres de coupe, page 756



N° d'article **8611**

d1		d2 h6	l1	l2	l3	d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm	mm	inch	mm	mm	mm	mm
3,000		6,000	66,000	28,000	36,000	6,100		8,000	91,000	53,000	36,000
3,100		6,000	66,000	28,000	36,000	6,200		8,000	91,000	53,000	36,000
3,170	1/8	6,000	66,000	28,000	36,000	6,300		8,000	91,000	53,000	36,000
3,200		6,000	66,000	28,000	36,000	6,350	1/4	8,000	91,000	53,000	36,000
3,250		6,000	66,000	28,000	36,000	6,400		8,000	91,000	53,000	36,000
3,300		6,000	66,000	28,000	36,000	6,500		8,000	91,000	53,000	36,000
3,400		6,000	66,000	28,000	36,000	6,600		8,000	91,000	53,000	36,000
3,500		6,000	66,000	28,000	36,000	6,700		8,000	91,000	53,000	36,000
3,570	9/64	6,000	66,000	28,000	36,000	6,750	17/64	8,000	91,000	53,000	36,000
3,600		6,000	66,000	28,000	36,000	6,800		8,000	91,000	53,000	36,000
3,700		6,000	66,000	28,000	36,000	6,900		8,000	91,000	53,000	36,000
3,800		6,000	74,000	36,000	36,000	7,000		8,000	91,000	53,000	36,000
3,900		6,000	74,000	36,000	36,000	7,100		8,000	91,000	53,000	36,000
3,970	5/32	6,000	74,000	36,000	36,000	7,140	9/32	8,000	91,000	53,000	36,000
4,000		6,000	74,000	36,000	36,000	7,200		8,000	91,000	53,000	36,000
4,100		6,000	74,000	36,000	36,000	7,300		8,000	91,000	53,000	36,000
4,200		6,000	74,000	36,000	36,000	7,400		8,000	91,000	53,000	36,000
4,300		6,000	74,000	36,000	36,000	7,500		8,000	91,000	53,000	36,000
4,370	11/64	6,000	74,000	36,000	36,000	7,540	19/64	8,000	91,000	53,000	36,000
4,400		6,000	74,000	36,000	36,000	7,600		8,000	91,000	53,000	36,000
4,500		6,000	74,000	36,000	36,000	7,700		8,000	91,000	53,000	36,000
4,600		6,000	74,000	36,000	36,000	7,800		8,000	91,000	53,000	36,000
4,650		6,000	74,000	36,000	36,000	7,900		8,000	91,000	53,000	36,000
4,700		6,000	74,000	36,000	36,000	7,940	5/16	8,000	91,000	53,000	36,000
4,760	3/16	6,000	82,000	44,000	36,000	8,000		8,000	91,000	53,000	36,000
4,800		6,000	82,000	44,000	36,000	8,100		10,000	103,000	61,000	40,000
4,900		6,000	82,000	44,000	36,000	8,200		10,000	103,000	61,000	40,000
5,000		6,000	82,000	44,000	36,000	8,300		10,000	103,000	61,000	40,000
5,100		6,000	82,000	44,000	36,000	8,330	21/64	10,000	103,000	61,000	40,000
5,160	13/64	6,000	82,000	44,000	36,000	8,400		10,000	103,000	61,000	40,000
5,200		6,000	82,000	44,000	36,000	8,500		10,000	103,000	61,000	40,000
5,300		6,000	82,000	44,000	36,000	8,600		10,000	103,000	61,000	40,000
5,400		6,000	82,000	44,000	36,000	8,700		10,000	103,000	61,000	40,000
5,500		6,000	82,000	44,000	36,000	8,730	11/32	10,000	103,000	61,000	40,000
5,550		6,000	82,000	44,000	36,000	8,800		10,000	103,000	61,000	40,000
5,560	7/32	6,000	82,000	44,000	36,000	8,900		10,000	103,000	61,000	40,000
5,600		6,000	82,000	44,000	36,000	9,000		10,000	103,000	61,000	40,000
5,700		6,000	82,000	44,000	36,000	9,100		10,000	103,000	61,000	40,000
5,800		6,000	82,000	44,000	36,000	9,130	23/64	10,000	103,000	61,000	40,000
5,900		6,000	82,000	44,000	36,000	9,200		10,000	103,000	61,000	40,000
5,950	15/64	6,000	82,000	44,000	36,000	9,250		10,000	103,000	61,000	40,000
6,000		6,000	82,000	44,000	36,000	9,300		10,000	103,000	61,000	40,000

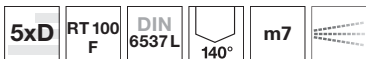


d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm
9,400		10,000	103,000	61,000	40,000
9,500		10,000	103,000	61,000	40,000
9,520	3/8	10,000	103,000	61,000	40,000
9,600		10,000	103,000	61,000	40,000
9,700		10,000	103,000	61,000	40,000
9,800		10,000	103,000	61,000	40,000
9,900		10,000	103,000	61,000	40,000
9,920	25/64	10,000	103,000	61,000	40,000
10,000		10,000	103,000	61,000	40,000
10,100		12,000	118,000	71,000	45,000
10,200		12,000	118,000	71,000	45,000
10,300		12,000	118,000	71,000	45,000
10,320	13/32	12,000	118,000	71,000	45,000
10,400		12,000	118,000	71,000	45,000
10,500		12,000	118,000	71,000	45,000
10,600		12,000	118,000	71,000	45,000
10,700		12,000	118,000	71,000	45,000
10,800		12,000	118,000	71,000	45,000
10,900		12,000	118,000	71,000	45,000
11,000		12,000	118,000	71,000	45,000
11,100		12,000	118,000	71,000	45,000
11,110	7/16	12,000	118,000	71,000	45,000
11,200		12,000	118,000	71,000	45,000
11,300		12,000	118,000	71,000	45,000
11,400		12,000	118,000	71,000	45,000
11,500		12,000	118,000	71,000	45,000
11,600		12,000	118,000	71,000	45,000
11,700		12,000	118,000	71,000	45,000
11,800		12,000	118,000	71,000	45,000
11,900		12,000	118,000	71,000	45,000
11,910	15/32	12,000	118,000	71,000	45,000
12,000		12,000	118,000	71,000	45,000
12,200		14,000	124,000	77,000	45,000
12,500		14,000	124,000	77,000	45,000
12,700	1/2	14,000	124,000	77,000	45,000
12,800		14,000	124,000	77,000	45,000

d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm
13,000		14,000	124,000	77,000	45,000
13,300		14,000	124,000	77,000	45,000
13,500		14,000	124,000	77,000	45,000
13,700		14,000	124,000	77,000	45,000
14,000		14,000	124,000	77,000	45,000
14,200		16,000	133,000	83,000	48,000
14,290	9/16	16,000	133,000	83,000	48,000
14,300		16,000	133,000	83,000	48,000
14,500		16,000	133,000	83,000	48,000
14,700		16,000	133,000	83,000	48,000
15,000		16,000	133,000	83,000	48,000
15,200		16,000	133,000	83,000	48,000
15,300		16,000	133,000	83,000	48,000
15,500		16,000	133,000	83,000	48,000
15,700		16,000	133,000	83,000	48,000
16,000		16,000	133,000	83,000	48,000
16,300		18,000	143,000	93,000	48,000
16,500		18,000	143,000	93,000	48,000
16,900		18,000	143,000	93,000	48,000
17,000		18,000	143,000	93,000	48,000
17,300		18,000	143,000	93,000	48,000
17,500		18,000	143,000	93,000	48,000
18,000		18,000	143,000	93,000	48,000
18,500		20,000	153,000	101,000	50,000
18,900		20,000	153,000	101,000	50,000
19,000		20,000	153,000	101,000	50,000
19,050	3/4	20,000	153,000	101,000	50,000
19,300		20,000	153,000	101,000	50,000
19,500		20,000	153,000	101,000	50,000
20,000		20,000	153,000	101,000	50,000



**Forets Ratio à canaux de lubrification**

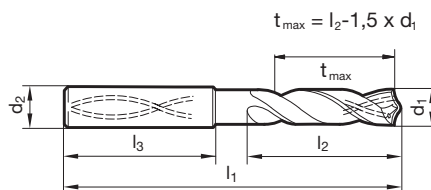


- P** ○ Amin. de l'âme ≥ Ø 3,000 • affûtage à dépouille conique • forme concave de l'arête de coupe principale • géométrie de coupe optimisée • paramètres de coupe extrêmes
- M** ○
- K** ○
- N** ○ aciers hautement alliés • aciers inox., inaltérables aux acides et réfractaires
- S** • Inconel, Hastelloy, Monel • laitons, bronzes • aluminium et alliages d'aluminium • magnésium, alliages de magnésium • Titane et ses alliages
- H** ○ • métal fritté

**GÜHRING NAVIGATOR**

Paramètres de coupe, page 754

Matière de coupe	<b>CW monobloc</b>
Surface	<b>F</b>
Forme d'attachement	HA



N° d'article **2478**

d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm
3,000		6,000	66,000	28,000	36,000
3,300		6,000	66,000	28,000	36,000
3,500		6,000	66,000	28,000	36,000
4,000		6,000	74,000	36,000	36,000
4,200		6,000	74,000	36,000	36,000
4,800		6,000	82,000	44,000	36,000
5,000		6,000	82,000	44,000	36,000
5,500		6,000	82,000	44,000	36,000
6,000		6,000	82,000	44,000	36,000
6,500		8,000	91,000	53,000	36,000
6,800		8,000	91,000	53,000	36,000
7,000		8,000	91,000	53,000	36,000
7,400		8,000	91,000	53,000	36,000
7,500		8,000	91,000	53,000	36,000
7,550		8,000	91,000	53,000	36,000
7,700		8,000	91,000	53,000	36,000
8,000		8,000	91,000	53,000	36,000
8,500		10,000	103,000	61,000	40,000

d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm
9,000		10,000	103,000	61,000	40,000
9,500		10,000	103,000	61,000	40,000
10,000		10,000	103,000	61,000	40,000
10,200		12,000	118,000	71,000	45,000
11,000		12,000	118,000	71,000	45,000
11,200		12,000	118,000	71,000	45,000
11,300		12,000	118,000	71,000	45,000
12,000		12,000	118,000	71,000	45,000
13,000		14,000	124,000	77,000	45,000
13,500		14,000	124,000	77,000	45,000
14,000		14,000	124,000	77,000	45,000
14,500		16,000	133,000	83,000	48,000
16,000		16,000	133,000	83,000	48,000
17,000		18,000	143,000	93,000	48,000
17,500		18,000	143,000	93,000	48,000
20,000		20,000	153,000	101,000	50,000



Forets Ratio à canaux de lubrification



Matière de coupe **CW monobloc**

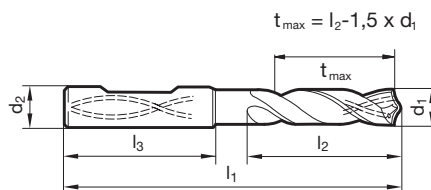
Surface **F**

Forme d'attachement **HE**

- P** ○ Amin. de l'âme ≥ Ø 3,000 • affûtage à dépouille conique • forme concave de l'arête de coupe principale • géométrie de coupe optimisée • paramètres de coupe extrêmes
- M** ○
- K** ○
- N** ○ aciers hautement alliés • aciers inox., inaltérables aux acides et réfractaires
- S** • Inconel, Hastelloy, Monel • laitons, bronzes • aluminium et alliages d'aluminium • magnésium, alliages de magnésium • Titane et ses alliages
- H** ○ • métal fritté

**GUHRING** NAVIGATOR

Paramètres de coupe, page 754



N° d'article **2470**

d1		d2 h6	l1	l2	l3	d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm	mm	inch	mm	mm	mm	mm
3,000		6,000	66,000	28,000	36,000	9,000		10,000	103,000	61,000	40,000
3,500		6,000	66,000	28,000	36,000	9,200		10,000	103,000	61,000	40,000
4,000		6,000	74,000	36,000	36,000	9,300		10,000	103,000	61,000	40,000
4,200		6,000	74,000	36,000	36,000	9,500		10,000	103,000	61,000	40,000
5,000		6,000	82,000	44,000	36,000	9,700		10,000	103,000	61,000	40,000
5,100		6,000	82,000	44,000	36,000	10,000		10,000	103,000	61,000	40,000
5,200		6,000	82,000	44,000	36,000	10,100		12,000	118,000	71,000	45,000
5,300		6,000	82,000	44,000	36,000	10,200		12,000	118,000	71,000	45,000
5,400		6,000	82,000	44,000	36,000	10,500		12,000	118,000	71,000	45,000
5,500		6,000	82,000	44,000	36,000	11,000		12,000	118,000	71,000	45,000
5,600		6,000	82,000	44,000	36,000	11,100		12,000	118,000	71,000	45,000
5,800		6,000	82,000	44,000	36,000	11,400		12,000	118,000	71,000	45,000
6,000		6,000	82,000	44,000	36,000	11,500		12,000	118,000	71,000	45,000
6,100		8,000	91,000	53,000	36,000	11,700		12,000	118,000	71,000	45,000
6,200		8,000	91,000	53,000	36,000	11,800		12,000	118,000	71,000	45,000
6,500		8,000	91,000	53,000	36,000	12,000		12,000	118,000	71,000	45,000
6,600		8,000	91,000	53,000	36,000	12,200		14,000	124,000	77,000	45,000
6,700		8,000	91,000	53,000	36,000	12,500		14,000	124,000	77,000	45,000
6,800		8,000	91,000	53,000	36,000	13,000		14,000	124,000	77,000	45,000
7,000		8,000	91,000	53,000	36,000	13,500		14,000	124,000	77,000	45,000
7,100		8,000	91,000	53,000	36,000	14,000		14,000	124,000	77,000	45,000
7,200		8,000	91,000	53,000	36,000	14,100		16,000	133,000	83,000	48,000
7,600		8,000	91,000	53,000	36,000	14,500		16,000	133,000	83,000	48,000
7,700		8,000	91,000	53,000	36,000	15,000		16,000	133,000	83,000	48,000
8,000		8,000	91,000	53,000	36,000	16,000		16,000	133,000	83,000	48,000
8,100		10,000	103,000	61,000	40,000	16,500		18,000	143,000	93,000	48,000
8,500		10,000	103,000	61,000	40,000	17,000		18,000	143,000	93,000	48,000
8,600		10,000	103,000	61,000	40,000	17,500		18,000	143,000	93,000	48,000
8,700		10,000	103,000	61,000	40,000	18,000		18,000	143,000	93,000	48,000
8,800		10,000	103,000	61,000	40,000	20,000		20,000	153,000	101,000	50,000



**Forets Ratio à canaux de lubrification**

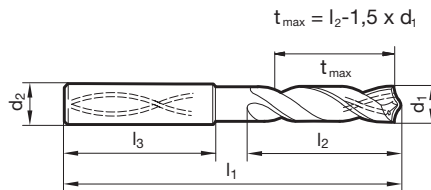


- P** ○ Amin. de l'âme  $\geq \varnothing 3,000$  • affûtage à dépouille conique • forme concave de l'arête de coupe principale • géométrie de coupe optimisée • paramètres de coupe extrêmes
- M** ○
- K** ○
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- H** ○ • métal fritté

**GÜHRING NAVIGATOR**

Paramètres de coupe, page 754

Matière de coupe	<b>CW monobloc</b>
Surface	<b>S</b>
Forme d'attachement	HA



N° d'article **1662**

d1		d2 h6	l1	l2	l3	d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm	mm	inch	mm	mm	mm	mm
3,000		6,000	66,000	28,000	36,000	6,200		8,000	91,000	53,000	36,000
3,100		6,000	66,000	28,000	36,000	6,300		8,000	91,000	53,000	36,000
3,170	1/8	6,000	66,000	28,000	36,000	6,350	1/4	8,000	91,000	53,000	36,000
3,200		6,000	66,000	28,000	36,000	6,400		8,000	91,000	53,000	36,000
3,300		6,000	66,000	28,000	36,000	6,500		8,000	91,000	53,000	36,000
3,400		6,000	66,000	28,000	36,000	6,600		8,000	91,000	53,000	36,000
3,500		6,000	66,000	28,000	36,000	6,700		8,000	91,000	53,000	36,000
3,570	9/64	6,000	66,000	28,000	36,000	6,750	17/64	8,000	91,000	53,000	36,000
3,600		6,000	66,000	28,000	36,000	6,800		8,000	91,000	53,000	36,000
3,700		6,000	66,000	28,000	36,000	6,900		8,000	91,000	53,000	36,000
3,800		6,000	74,000	36,000	36,000	7,000		8,000	91,000	53,000	36,000
3,900		6,000	74,000	36,000	36,000	7,100		8,000	91,000	53,000	36,000
3,970	5/32	6,000	74,000	36,000	36,000	7,140	9/32	8,000	91,000	53,000	36,000
4,000		6,000	74,000	36,000	36,000	7,200		8,000	91,000	53,000	36,000
4,100		6,000	74,000	36,000	36,000	7,300		8,000	91,000	53,000	36,000
4,200		6,000	74,000	36,000	36,000	7,400		8,000	91,000	53,000	36,000
4,300		6,000	74,000	36,000	36,000	7,500		8,000	91,000	53,000	36,000
4,370	11/64	6,000	74,000	36,000	36,000	7,540	19/64	8,000	91,000	53,000	36,000
4,400		6,000	74,000	36,000	36,000	7,550		8,000	91,000	53,000	36,000
4,500		6,000	74,000	36,000	36,000	7,600		8,000	91,000	53,000	36,000
4,600		6,000	74,000	36,000	36,000	7,700		8,000	91,000	53,000	36,000
4,650		6,000	74,000	36,000	36,000	7,800		8,000	91,000	53,000	36,000
4,700		6,000	74,000	36,000	36,000	7,900		8,000	91,000	53,000	36,000
4,760	3/16	6,000	82,000	44,000	36,000	7,940	5/16	8,000	91,000	53,000	36,000
4,800		6,000	82,000	44,000	36,000	8,000		8,000	91,000	53,000	36,000
4,900		6,000	82,000	44,000	36,000	8,100		10,000	103,000	61,000	40,000
5,000		6,000	82,000	44,000	36,000	8,200		10,000	103,000	61,000	40,000
5,100		6,000	82,000	44,000	36,000	8,300		10,000	103,000	61,000	40,000
5,160	13/64	6,000	82,000	44,000	36,000	8,330	21/64	10,000	103,000	61,000	40,000
5,200		6,000	82,000	44,000	36,000	8,500		10,000	103,000	61,000	40,000
5,300		6,000	82,000	44,000	36,000	8,600		10,000	103,000	61,000	40,000
5,400		6,000	82,000	44,000	36,000	8,700		10,000	103,000	61,000	40,000
5,500		6,000	82,000	44,000	36,000	8,730	11/32	10,000	103,000	61,000	40,000
5,550		6,000	82,000	44,000	36,000	8,800		10,000	103,000	61,000	40,000
5,560	7/32	6,000	82,000	44,000	36,000	8,900		10,000	103,000	61,000	40,000
5,600		6,000	82,000	44,000	36,000	9,000		10,000	103,000	61,000	40,000
5,700		6,000	82,000	44,000	36,000	9,100		10,000	103,000	61,000	40,000
5,800		6,000	82,000	44,000	36,000	9,130	23/64	10,000	103,000	61,000	40,000
5,900		6,000	82,000	44,000	36,000	9,200		10,000	103,000	61,000	40,000
5,950	15/64	6,000	82,000	44,000	36,000	9,250		10,000	103,000	61,000	40,000
6,000		6,000	82,000	44,000	36,000	9,300		10,000	103,000	61,000	40,000
6,100		8,000	91,000	53,000	36,000	9,400		10,000	103,000	61,000	40,000





d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm
9,500		10,000	103,000	61,000	40,000
9,520	3/8	10,000	103,000	61,000	40,000
9,600		10,000	103,000	61,000	40,000
9,800		10,000	103,000	61,000	40,000
9,900		10,000	103,000	61,000	40,000
9,920	25/64	10,000	103,000	61,000	40,000
10,000		10,000	103,000	61,000	40,000
10,100		12,000	118,000	71,000	45,000
10,200		12,000	118,000	71,000	45,000
10,300		12,000	118,000	71,000	45,000
10,320	13/32	12,000	118,000	71,000	45,000
10,500		12,000	118,000	71,000	45,000
10,700		12,000	118,000	71,000	45,000
10,720	27/64	12,000	118,000	71,000	45,000
10,800		12,000	118,000	71,000	45,000
11,000		12,000	118,000	71,000	45,000
11,100		12,000	118,000	71,000	45,000
11,110	7/16	12,000	118,000	71,000	45,000
11,200		12,000	118,000	71,000	45,000
11,300		12,000	118,000	71,000	45,000
11,400		12,000	118,000	71,000	45,000
11,500		12,000	118,000	71,000	45,000
11,510	29/64	12,000	118,000	71,000	45,000
11,700		12,000	118,000	71,000	45,000
11,910	15/32	12,000	118,000	71,000	45,000
12,000		12,000	118,000	71,000	45,000
12,100		14,000	124,000	77,000	45,000
12,200		14,000	124,000	77,000	45,000
12,300	31/64	14,000	124,000	77,000	45,000
12,500		14,000	124,000	77,000	45,000

d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm
12,700	1/2	14,000	124,000	77,000	45,000
12,800		14,000	124,000	77,000	45,000
13,000		14,000	124,000	77,000	45,000
13,200		14,000	124,000	77,000	45,000
13,500		14,000	124,000	77,000	45,000
14,000		14,000	124,000	77,000	45,000
14,500		16,000	133,000	83,000	48,000
15,000		16,000	133,000	83,000	48,000
15,500		16,000	133,000	83,000	48,000
16,000		16,000	133,000	83,000	48,000
16,500		18,000	143,000	93,000	48,000
17,000		18,000	143,000	93,000	48,000
17,500		18,000	143,000	93,000	48,000
18,000		18,000	143,000	93,000	48,000
19,000		20,000	153,000	101,000	50,000
20,000		20,000	153,000	101,000	50,000
20,500		25,000	165,000	105,000	56,000
21,000		25,000	165,000	105,000	56,000
22,500		25,000	180,000	117,000	56,000
23,500		25,000	180,000	117,000	56,000



**Forets Ratio à canaux de lubrification**

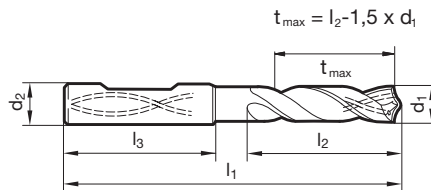


- P** ○ Amin. de l'âme ≥ Ø 10,100 • affûtage à dépouille conique • forme concave de l'arête de coupe principale • géométrie de coupe optimisée • paramètres de coupe extrêmes
- M** ○
- K** ○
- N** ○ aciers hautement alliés • aciers inox., inaltérables aux acides et réfractaires
- S** • Inconel, Hastelloy, Monel • laitons, bronzes • aluminium et alliages d'aluminium • magnésium, alliages de magnésium • Titane et ses alliages
- H** ○ • métal fritté

**GÜHRING NAVIGATOR**

Paramètres de coupe, page 754

Matière de coupe	<b>CW monobloc</b>
Surface	<b>S</b>
Forme d'attache	HE



N° d'article **1182**

d1		d2 h6	l1	l2	l3	d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm	mm	inch	mm	mm	mm	mm
3,000		6,000	66,000	28,000	36,000	9,000		10,000	103,000	61,000	40,000
4,000		6,000	74,000	36,000	36,000	9,130	23/64	10,000	103,000	61,000	40,000
4,200		6,000	74,000	36,000	36,000	9,200		10,000	103,000	61,000	40,000
4,300		6,000	74,000	36,000	36,000	9,300		10,000	103,000	61,000	40,000
4,400		6,000	74,000	36,000	36,000	9,400		10,000	103,000	61,000	40,000
4,500		6,000	74,000	36,000	36,000	9,500		10,000	103,000	61,000	40,000
4,600		6,000	74,000	36,000	36,000	9,600		10,000	103,000	61,000	40,000
4,800		6,000	82,000	44,000	36,000	9,700		10,000	103,000	61,000	40,000
4,900		6,000	82,000	44,000	36,000	9,800		10,000	103,000	61,000	40,000
5,000		6,000	82,000	44,000	36,000	9,920	25/64	10,000	103,000	61,000	40,000
5,100		6,000	82,000	44,000	36,000	10,000		10,000	103,000	61,000	40,000
5,200		6,000	82,000	44,000	36,000	10,100		12,000	118,000	71,000	45,000
5,300		6,000	82,000	44,000	36,000	10,200		12,000	118,000	71,000	45,000
5,400		6,000	82,000	44,000	36,000	10,300		12,000	118,000	71,000	45,000
5,500		6,000	82,000	44,000	36,000	10,500		12,000	118,000	71,000	45,000
5,600		6,000	82,000	44,000	36,000	10,700		12,000	118,000	71,000	45,000
5,800		6,000	82,000	44,000	36,000	10,800		12,000	118,000	71,000	45,000
6,000		6,000	82,000	44,000	36,000	11,000		12,000	118,000	71,000	45,000
6,100		8,000	91,000	53,000	36,000	11,100		12,000	118,000	71,000	45,000
6,200		8,000	91,000	53,000	36,000	11,200		12,000	118,000	71,000	45,000
6,300		8,000	91,000	53,000	36,000	11,500		12,000	118,000	71,000	45,000
6,500		8,000	91,000	53,000	36,000	11,800		12,000	118,000	71,000	45,000
6,600		8,000	91,000	53,000	36,000	12,000		12,000	118,000	71,000	45,000
6,700		8,000	91,000	53,000	36,000	12,500		14,000	124,000	77,000	45,000
6,800		8,000	91,000	53,000	36,000	12,800		14,000	124,000	77,000	45,000
6,900		8,000	91,000	53,000	36,000	12,900		14,000	124,000	77,000	45,000
7,000		8,000	91,000	53,000	36,000	13,000		14,000	124,000	77,000	45,000
7,140	9/32	8,000	91,000	53,000	36,000	13,200		14,000	124,000	77,000	45,000
7,200		8,000	91,000	53,000	36,000	13,500		14,000	124,000	77,000	45,000
7,400		8,000	91,000	53,000	36,000	13,890	35/64	14,000	124,000	77,000	45,000
7,500		8,000	91,000	53,000	36,000	14,000		14,000	124,000	77,000	45,000
7,600		8,000	91,000	53,000	36,000	14,100		16,000	133,000	83,000	48,000
7,800		8,000	91,000	53,000	36,000	14,500		16,000	133,000	83,000	48,000
7,900		8,000	91,000	53,000	36,000	14,600		16,000	133,000	83,000	48,000
8,000		8,000	91,000	53,000	36,000	15,000		16,000	133,000	83,000	48,000
8,100		10,000	103,000	61,000	40,000	15,500		16,000	133,000	83,000	48,000
8,200		10,000	103,000	61,000	40,000	16,000		16,000	133,000	83,000	48,000
8,300		10,000	103,000	61,000	40,000	16,500		18,000	143,000	93,000	48,000
8,500		10,000	103,000	61,000	40,000	16,600		18,000	143,000	93,000	48,000
8,600		10,000	103,000	61,000	40,000	17,000		18,000	143,000	93,000	48,000
8,700		10,000	103,000	61,000	40,000	17,500		18,000	143,000	93,000	48,000
8,800		10,000	103,000	61,000	40,000	18,000		18,000	143,000	93,000	48,000



d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm
20,000		20,000	153,000	101,000	50,000
20,500		25,000	165,000	105,000	56,000
21,000		25,000	165,000	105,000	56,000
21,500		25,000	165,000	105,000	56,000
22,000		25,000	165,000	105,000	56,000
22,500		25,000	180,000	117,000	56,000

d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm
24,000		25,000	180,000	117,000	56,000
24,500		25,000	180,000	117,000	56,000
25,000	63/64	25,000	180,000	117,000	56,000



**Forets Ratio à canaux de lubrification**

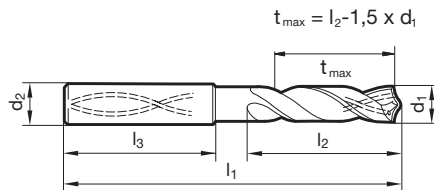


- P** Amin. de l'âme  $\geq \varnothing 3,000$  • affûtage des rayons, breveté • forme de l'arête de coupe principale, rectiligne, (obtenue par correction)
- M**
- K** •
- N** fontes vermiculaires GGV et ADI, CDI • fontes grises, fontes malléables, fontes à graphite sphéroïdal
- S**
- H**

**GÜHRING NAVIGATOR**

Paramètres de coupe, page 754

Matière de coupe	<b>CW monobloc</b>
Surface	<b>F</b>
Forme d'attachement	HA



N° d'article **6501**

d1		d2 h6	l1	l2	l3	d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm	mm	inch	mm	mm	mm	mm
3,000		6,000	66,000	28,000	36,000	7,940	5/16	8,000	91,000	53,000	36,000
3,170	1/8	6,000	66,000	28,000	36,000	8,000		8,000	91,000	53,000	36,000
3,200		6,000	66,000	28,000	36,000	8,100		10,000	103,000	61,000	40,000
3,300		6,000	66,000	28,000	36,000	8,200		10,000	103,000	61,000	40,000
3,400		6,000	66,000	28,000	36,000	8,300		10,000	103,000	61,000	40,000
3,500		6,000	66,000	28,000	36,000	8,330	21/64	10,000	103,000	61,000	40,000
3,600		6,000	66,000	28,000	36,000	8,500		10,000	103,000	61,000	40,000
3,800		6,000	74,000	36,000	36,000	8,600		10,000	103,000	61,000	40,000
4,000		6,000	74,000	36,000	36,000	8,700		10,000	103,000	61,000	40,000
4,100		6,000	74,000	36,000	36,000	8,800		10,000	103,000	61,000	40,000
4,200		6,000	74,000	36,000	36,000	8,900		10,000	103,000	61,000	40,000
4,300		6,000	74,000	36,000	36,000	9,000		10,000	103,000	61,000	40,000
4,400		6,000	74,000	36,000	36,000	9,100		10,000	103,000	61,000	40,000
4,500		6,000	74,000	36,000	36,000	9,200		10,000	103,000	61,000	40,000
4,600		6,000	74,000	36,000	36,000	9,250		10,000	103,000	61,000	40,000
4,650		6,000	74,000	36,000	36,000	9,300		10,000	103,000	61,000	40,000
4,800		6,000	82,000	44,000	36,000	9,400		10,000	103,000	61,000	40,000
5,000		6,000	82,000	44,000	36,000	9,500		10,000	103,000	61,000	40,000
5,100		6,000	82,000	44,000	36,000	9,520	3/8	10,000	103,000	61,000	40,000
5,160	13/64	6,000	82,000	44,000	36,000	9,600		10,000	103,000	61,000	40,000
5,300		6,000	82,000	44,000	36,000	9,700		10,000	103,000	61,000	40,000
5,500		6,000	82,000	44,000	36,000	9,800		10,000	103,000	61,000	40,000
5,550		6,000	82,000	44,000	36,000	9,900		10,000	103,000	61,000	40,000
5,560	7/32	6,000	82,000	44,000	36,000	9,920	25/64	10,000	103,000	61,000	40,000
5,600		6,000	82,000	44,000	36,000	10,000		10,000	103,000	61,000	40,000
5,700		6,000	82,000	44,000	36,000	10,100		12,000	118,000	71,000	45,000
5,800		6,000	82,000	44,000	36,000	10,200		12,000	118,000	71,000	45,000
5,900		6,000	82,000	44,000	36,000	10,400		12,000	118,000	71,000	45,000
6,000		6,000	82,000	44,000	36,000	10,500		12,000	118,000	71,000	45,000
6,350	1/4	8,000	91,000	53,000	36,000	10,600		12,000	118,000	71,000	45,000
6,500		8,000	91,000	53,000	36,000	10,700		12,000	118,000	71,000	45,000
6,600		8,000	91,000	53,000	36,000	10,720	27/64	12,000	118,000	71,000	45,000
6,750	17/64	8,000	91,000	53,000	36,000	10,800		12,000	118,000	71,000	45,000
6,800		8,000	91,000	53,000	36,000	10,900		12,000	118,000	71,000	45,000
6,900		8,000	91,000	53,000	36,000	11,000		12,000	118,000	71,000	45,000
7,000		8,000	91,000	53,000	36,000	11,100		12,000	118,000	71,000	45,000
7,200		8,000	91,000	53,000	36,000	11,110	7/16	12,000	118,000	71,000	45,000
7,300		8,000	91,000	53,000	36,000	11,200		12,000	118,000	71,000	45,000
7,400		8,000	91,000	53,000	36,000	11,300		12,000	118,000	71,000	45,000
7,500		8,000	91,000	53,000	36,000	11,500		12,000	118,000	71,000	45,000
7,800		8,000	91,000	53,000	36,000	11,600		12,000	118,000	71,000	45,000
7,900		8,000	91,000	53,000	36,000	11,700		12,000	118,000	71,000	45,000



d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm
11,800		12,000	118,000	71,000	45,000
11,900		12,000	118,000	71,000	45,000
12,000		12,000	118,000	71,000	45,000
12,100		14,000	124,000	77,000	45,000
12,200		14,000	124,000	77,000	45,000
12,500		14,000	124,000	77,000	45,000
12,700	1/2	14,000	124,000	77,000	45,000
12,800		14,000	124,000	77,000	45,000
13,000		14,000	124,000	77,000	45,000
13,100	33/64	14,000	124,000	77,000	45,000
13,300		14,000	124,000	77,000	45,000
13,400		14,000	124,000	77,000	45,000
13,500		14,000	124,000	77,000	45,000
13,700		14,000	124,000	77,000	45,000
13,900		14,000	124,000	77,000	45,000
14,000		14,000	124,000	77,000	45,000
14,200		16,000	133,000	83,000	48,000
14,290	9/16	16,000	133,000	83,000	48,000
14,300		16,000	133,000	83,000	48,000
14,400		16,000	133,000	83,000	48,000
14,500		16,000	133,000	83,000	48,000
14,600		16,000	133,000	83,000	48,000
14,700		16,000	133,000	83,000	48,000
15,000		16,000	133,000	83,000	48,000

d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm
15,100		16,000	133,000	83,000	48,000
15,300		16,000	133,000	83,000	48,000
15,400		16,000	133,000	83,000	48,000
15,500		16,000	133,000	83,000	48,000
15,600		16,000	133,000	83,000	48,000
15,700		16,000	133,000	83,000	48,000
15,800		16,000	133,000	83,000	48,000
15,870	5/8	16,000	133,000	83,000	48,000
15,900		16,000	133,000	83,000	48,000
16,000		16,000	133,000	83,000	48,000
16,500		18,000	143,000	93,000	48,000
16,670	21/32	18,000	143,000	93,000	48,000
17,000		18,000	143,000	93,000	48,000
17,500		18,000	143,000	93,000	48,000
18,000		18,000	143,000	93,000	48,000
18,500		20,000	153,000	101,000	50,000
19,000		20,000	153,000	101,000	50,000
19,500		20,000	153,000	101,000	50,000
20,000		20,000	153,000	101,000	50,000



**Forets Ratio à canaux de lubrification**



**P** • Amin. de l'âme  $\geq \varnothing 9,800$  • affûtage à dépouille conique • support HSS avec plaquette CW brasée • amortit vibrations et chocs

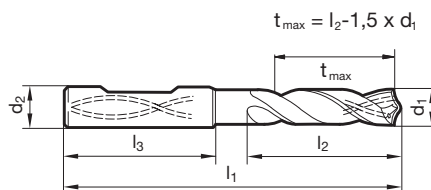
- M** ○
- K** ○
- N** ○
- S** ○
- H** ○

aciers non alliés ou faiblement alliés • fontes grises, fontes à graphite sphéroïdal • laitons, bronzes, matières plastiques, graphite

**GÜHRING NAVIGATOR**

Paramètres de coupe, page 754

Matière de coupe	<b>CW</b>
Surface	<b>S</b>
Forme d'attachement	HE



N° d'article **1172**

d1		d2 h6	l1	l2	l3	d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm	mm	inch	mm	mm	mm	mm
9,800	W	16,000	127,000	75,000	48,000	16,700		20,000	166,000	112,000	50,000
10,000		16,000	127,000	75,000	48,000	16,800		20,000	166,000	112,000	50,000
10,200		16,000	127,000	75,000	48,000	17,000		20,000	166,000	112,000	50,000
10,500		16,000	127,000	75,000	48,000	17,200		20,000	166,000	112,000	50,000
10,600		16,000	127,000	75,000	48,000	17,300		20,000	166,000	112,000	50,000
10,700		16,000	127,000	75,000	48,000	17,500		20,000	166,000	112,000	50,000
10,800		16,000	127,000	75,000	48,000	18,000		20,000	166,000	112,000	50,000
11,000		16,000	127,000	75,000	48,000	18,500		25,000	184,000	124,000	56,000
11,500		16,000	127,000	75,000	48,000	19,000		25,000	184,000	124,000	56,000
11,900		16,000	127,000	75,000	48,000	19,500		25,000	184,000	124,000	56,000
12,000		16,000	127,000	75,000	48,000	19,600		25,000	184,000	124,000	56,000
12,300	31/64	16,000	139,000	87,000	48,000	19,700		25,000	184,000	124,000	56,000
12,500		16,000	139,000	87,000	48,000	20,000		25,000	184,000	124,000	56,000
12,700	1/2	16,000	139,000	87,000	48,000	20,500		25,000	197,000	137,000	56,000
12,900		16,000	139,000	87,000	48,000	21,000		25,000	197,000	137,000	56,000
13,000		16,000	139,000	87,000	48,000	21,500		25,000	197,000	137,000	56,000
13,100	33/64	16,000	139,000	87,000	48,000	22,000		25,000	197,000	137,000	56,000
13,500		16,000	139,000	87,000	48,000	22,220	7/8	25,000	209,000	149,000	56,000
13,700		16,000	139,000	87,000	48,000	22,500		25,000	209,000	149,000	56,000
13,900		16,000	139,000	87,000	48,000	23,000		25,000	209,000	149,000	56,000
14,000		16,000	139,000	87,000	48,000	23,500		25,000	209,000	149,000	56,000
14,500		20,000	154,000	100,000	50,000	24,000		25,000	209,000	149,000	56,000
14,600		20,000	154,000	100,000	50,000	24,500		32,000	226,000	162,000	60,000
15,000		20,000	154,000	100,000	50,000	25,000	63/64	32,000	226,000	162,000	60,000
15,200		20,000	154,000	100,000	50,000	25,500		32,000	226,000	162,000	60,000
15,500		20,000	154,000	100,000	50,000						
15,700		20,000	154,000	100,000	50,000						
16,000		20,000	154,000	100,000	50,000						
16,200		20,000	166,000	112,000	50,000						
16,500		20,000	166,000	112,000	50,000						



Forets Ratio à canaux de lubrification



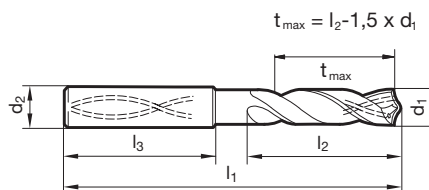
- P** • Amin. de l'âme ≥ Ø 3,000 • affûtage en pente • arête de coupe principale rectiligne • géométrie de coupe optimisée
- M** ○
- K** •
- N** ○ aciers de construction et de cémentation • aciers de décolletage, aciers d'amélioration • aciers alliés jusqu'à 1200 N/mm<sup>2</sup> • fontes • bronze, laiton
- S** ○
- H** ○

**GÜHRING** NAVIGATOR

Paramètres de coupe, page 758

Matière de coupe	<b>CW monobloc</b>
Surface	<b>F</b>
Forme d'attachement	HA

Forets Ratio



N° d'article **4044**

d1		d2 h6	l1	l2	l3	d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm	mm	inch	mm	mm	mm	mm
3,000		6,000	70,000	30,000	36,000	5,900		6,000	97,000	57,000	36,000
3,100		6,000	70,000	30,000	36,000	5,950	15/64	6,000	97,000	57,000	36,000
3,170	1/8	6,000	70,000	30,000	36,000	6,000		6,000	97,000	57,000	36,000
3,200		6,000	70,000	30,000	36,000	6,100		8,000	106,000	66,000	36,000
3,250		6,000	70,000	30,000	36,000	6,200		8,000	106,000	66,000	36,000
3,300		6,000	70,000	30,000	36,000	6,300		8,000	106,000	66,000	36,000
3,400		6,000	75,000	35,500	36,000	6,350	1/4	8,000	106,000	66,000	36,000
3,500		6,000	75,000	35,500	36,000	6,400		8,000	106,000	66,000	36,000
3,570	9/64	6,000	75,000	35,500	36,000	6,500		8,000	106,000	66,000	36,000
3,600		6,000	75,000	35,500	36,000	6,530		8,000	106,000	66,000	36,000
3,700		6,000	75,000	35,500	36,000	6,600		8,000	106,000	66,000	36,000
3,800		6,000	75,000	37,500	36,000	6,700		8,000	106,000	66,000	36,000
3,900		6,000	75,000	37,500	36,000	6,750	17/64	8,000	106,000	66,000	36,000
3,970	5/32	6,000	75,000	37,500	36,000	6,800		8,000	106,000	66,000	36,000
4,000		6,000	75,000	37,500	36,000	6,900		8,000	116,000	76,000	36,000
4,040		6,000	75,000	37,500	36,000	7,000		8,000	116,000	76,000	36,000
4,100		6,000	75,000	37,500	36,000	7,100		8,000	116,000	76,000	36,000
4,200		6,000	75,000	37,500	36,000	7,140	9/32	8,000	116,000	76,000	36,000
4,300		6,000	85,000	45,000	36,000	7,200		8,000	116,000	76,000	36,000
4,370	11/64	6,000	85,000	45,000	36,000	7,300		8,000	116,000	76,000	36,000
4,400		6,000	85,000	45,000	36,000	7,400		8,000	116,000	76,000	36,000
4,500		6,000	85,000	45,000	36,000	7,500		8,000	116,000	76,000	36,000
4,600		6,000	85,000	45,000	36,000	7,540	19/64	8,000	116,000	76,000	36,000
4,650		6,000	85,000	45,000	36,000	7,600		8,000	116,000	76,000	36,000
4,700		6,000	85,000	45,000	36,000	7,700		8,000	116,000	76,000	36,000
4,760	3/16	6,000	90,000	50,000	36,000	7,800		8,000	116,000	76,000	36,000
4,800		6,000	90,000	50,000	36,000	7,900		8,000	116,000	76,000	36,000
4,900		6,000	90,000	50,000	36,000	7,940	5/16	8,000	116,000	76,000	36,000
5,000		6,000	90,000	50,000	36,000	8,000		8,000	116,000	76,000	36,000
5,100		6,000	90,000	50,000	36,000	8,100		10,000	131,000	87,000	40,000
5,110		6,000	90,000	50,000	36,000	8,200		10,000	131,000	87,000	40,000
5,160	13/64	6,000	90,000	50,000	36,000	8,300		10,000	131,000	87,000	40,000
5,200		6,000	90,000	50,000	36,000	8,330	21/64	10,000	131,000	87,000	40,000
5,300		6,000	90,000	50,000	36,000	8,400		10,000	131,000	87,000	40,000
5,400		6,000	97,000	57,000	36,000	8,500		10,000	131,000	87,000	40,000
5,410		6,000	97,000	57,000	36,000	8,600		10,000	131,000	87,000	40,000
5,500		6,000	97,000	57,000	36,000	8,700		10,000	131,000	87,000	40,000
5,550		6,000	97,000	57,000	36,000	8,730	11/32	10,000	131,000	87,000	40,000
5,560	7/32	6,000	97,000	57,000	36,000	8,800		10,000	131,000	87,000	40,000
5,600		6,000	97,000	57,000	36,000	8,900		10,000	131,000	87,000	40,000
5,700		6,000	97,000	57,000	36,000	9,000		10,000	131,000	87,000	40,000
5,800		6,000	97,000	57,000	36,000	9,100		10,000	139,000	95,000	40,000



Forets Ratio

d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm
9,130	23/64	10,000	139,000	95,000	40,000
9,200		10,000	139,000	95,000	40,000
9,250		10,000	139,000	95,000	40,000
9,300		10,000	139,000	95,000	40,000
9,340		10,000	139,000	95,000	40,000
9,400		10,000	139,000	95,000	40,000
9,500		10,000	139,000	95,000	40,000
9,520	3/8	10,000	139,000	95,000	40,000
9,600		10,000	139,000	95,000	40,000
9,700		10,000	139,000	95,000	40,000
9,800		10,000	139,000	95,000	40,000
9,900		10,000	139,000	95,000	40,000
9,920	25/64	10,000	139,000	95,000	40,000
10,000		10,000	139,000	95,000	40,000
10,100		12,000	155,000	106,000	45,000
10,200		12,000	155,000	106,000	45,000
10,300		12,000	155,000	106,000	45,000
10,320	13/32	12,000	155,000	106,000	45,000
10,400		12,000	155,000	106,000	45,000
10,500		12,000	155,000	106,000	45,000
10,600		12,000	155,000	106,000	45,000
10,700		12,000	155,000	106,000	45,000
10,720	27/64	12,000	155,000	106,000	45,000
10,800		12,000	155,000	106,000	45,000
10,900		12,000	155,000	106,000	45,000
11,000		12,000	155,000	106,000	45,000
11,100		12,000	163,000	114,000	45,000
11,110	7/16	12,000	163,000	114,000	45,000
11,200		12,000	163,000	114,000	45,000
11,300		12,000	163,000	114,000	45,000
11,400		12,000	163,000	114,000	45,000
11,500		12,000	163,000	114,000	45,000
11,510	29/64	12,000	163,000	114,000	45,000
11,600		12,000	163,000	114,000	45,000
11,700		12,000	163,000	114,000	45,000
11,800		12,000	163,000	114,000	45,000

d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm
11,900		12,000	163,000	114,000	45,000
11,910	15/32	12,000	163,000	114,000	45,000
12,000		12,000	163,000	114,000	45,000
12,100		14,000	182,000	133,000	45,000
12,200		14,000	182,000	133,000	45,000
12,300	31/64	14,000	182,000	133,000	45,000
12,500		14,000	182,000	133,000	45,000
12,700	1/2	14,000	182,000	133,000	45,000
13,000		14,000	182,000	133,000	45,000
13,100	33/64	14,000	182,000	133,000	45,000
13,490	17/32	14,000	182,000	133,000	45,000
13,500		14,000	182,000	133,000	45,000
13,890	35/64	14,000	182,000	133,000	45,000
14,000		14,000	182,000	133,000	45,000
14,100		16,000	204,000	152,000	48,000
14,200		16,000	204,000	152,000	48,000
14,290	9/16	16,000	204,000	152,000	48,000
14,500		16,000	204,000	152,000	48,000
15,000		16,000	204,000	152,000	48,000
15,100		16,000	204,000	152,000	48,000
15,480	39/64	16,000	204,000	152,000	48,000
15,500		16,000	204,000	152,000	48,000
15,870	5/8	16,000	204,000	152,000	48,000
16,000		16,000	204,000	152,000	48,000
16,500		18,000	223,000	171,000	48,000
16,900		18,000	223,000	171,000	48,000
17,000		18,000	223,000	171,000	48,000
17,500		18,000	223,000	171,000	48,000
18,000		18,000	223,000	171,000	48,000
18,500		20,000	244,000	190,000	50,000
18,900		20,000	244,000	190,000	50,000
19,000		20,000	244,000	190,000	50,000
19,050	3/4	20,000	244,000	190,000	50,000
19,500		20,000	244,000	190,000	50,000
20,000		20,000	244,000	190,000	50,000





Forets Ratio à canaux de lubrification



Matière de coupe **CW monobloc**

Surface **F**

Forme d'attachement **HE**

**P** • Amin. de l'âme ≥ Ø 3,000 • affûtage en pente • arête de coupe principale rectiligne • géométrie de coupe optimisée

**M** ○

**K** •

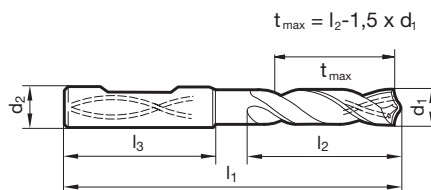
**N** ○ aciers de construction et de cémentation • aciers de décolletage, aciers d'amélioration • aciers alliés jusqu'à 1200 N/mm<sup>2</sup> • fontes • bronze, laiton

**S** ○ • alliages Al haut % en Si

**H** ○

**GÜHRING** NAVIGATOR

Paramètres de coupe, page 758



N° d'article **4045**

d1		d2 h6	l1	l2	l3	d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm	mm	inch	mm	mm	mm	mm
3,000		6,000	70,000	30,000	36,000	7,100		8,000	116,000	76,000	36,000
3,100		6,000	70,000	30,000	36,000	7,200		8,000	116,000	76,000	36,000
3,170	1/8	6,000	70,000	30,000	36,000	7,400		8,000	116,000	76,000	36,000
3,200		6,000	70,000	30,000	36,000	7,500		8,000	116,000	76,000	36,000
3,250		6,000	70,000	30,000	36,000	7,600		8,000	116,000	76,000	36,000
3,300		6,000	70,000	30,000	36,000	7,700		8,000	116,000	76,000	36,000
3,400		6,000	75,000	35,500	36,000	8,000		8,000	116,000	76,000	36,000
3,500		6,000	75,000	35,500	36,000	8,100		10,000	131,000	87,000	40,000
3,570	9/64	6,000	75,000	35,500	36,000	8,200		10,000	131,000	87,000	40,000
3,600		6,000	75,000	35,500	36,000	8,400		10,000	131,000	87,000	40,000
3,700		6,000	75,000	35,500	36,000	8,500		10,000	131,000	87,000	40,000
3,800		6,000	75,000	37,500	36,000	8,600		10,000	131,000	87,000	40,000
3,900		6,000	75,000	37,500	36,000	8,700		10,000	131,000	87,000	40,000
3,970	5/32	6,000	75,000	37,500	36,000	9,000		10,000	131,000	87,000	40,000
4,000		6,000	75,000	37,500	36,000	9,100		10,000	139,000	95,000	40,000
4,100		6,000	75,000	37,500	36,000	9,300		10,000	139,000	95,000	40,000
4,300		6,000	85,000	45,000	36,000	9,400		10,000	139,000	95,000	40,000
4,400		6,000	85,000	45,000	36,000	9,500		10,000	139,000	95,000	40,000
4,500		6,000	85,000	45,000	36,000	9,700		10,000	139,000	95,000	40,000
4,650		6,000	85,000	45,000	36,000	9,800		10,000	139,000	95,000	40,000
4,700		6,000	85,000	45,000	36,000	9,900		10,000	139,000	95,000	40,000
4,900		6,000	90,000	50,000	36,000	10,000		10,000	139,000	95,000	40,000
5,000		6,000	90,000	50,000	36,000	10,200		12,000	155,000	106,000	45,000
5,100		6,000	90,000	50,000	36,000	10,300		12,000	155,000	106,000	45,000
5,160	13/64	6,000	90,000	50,000	36,000	10,500		12,000	155,000	106,000	45,000
5,200		6,000	90,000	50,000	36,000	10,800		12,000	155,000	106,000	45,000
5,300		6,000	90,000	50,000	36,000	11,000		12,000	155,000	106,000	45,000
5,400		6,000	97,000	57,000	36,000	11,200		12,000	163,000	114,000	45,000
5,500		6,000	97,000	57,000	36,000	11,500		12,000	163,000	114,000	45,000
5,700		6,000	97,000	57,000	36,000	11,800		12,000	163,000	114,000	45,000
5,800		6,000	97,000	57,000	36,000	12,000		12,000	163,000	114,000	45,000
5,900		6,000	97,000	57,000	36,000	12,200		14,000	182,000	133,000	45,000
6,000		6,000	97,000	57,000	36,000	12,500		14,000	182,000	133,000	45,000
6,200		8,000	106,000	66,000	36,000	13,500		14,000	182,000	133,000	45,000
6,300		8,000	106,000	66,000	36,000	14,000		14,000	182,000	133,000	45,000
6,350	1/4	8,000	106,000	66,000	36,000	14,200		16,000	204,000	152,000	48,000
6,500		8,000	106,000	66,000	36,000	14,500		16,000	204,000	152,000	48,000
6,600		8,000	106,000	66,000	36,000	15,000		16,000	204,000	152,000	48,000
6,700		8,000	106,000	66,000	36,000	15,500		16,000	204,000	152,000	48,000
6,800		8,000	106,000	66,000	36,000	16,000		16,000	204,000	152,000	48,000
6,900		8,000	116,000	76,000	36,000	16,500		18,000	223,000	171,000	48,000
7,000		8,000	116,000	76,000	36,000	17,000		18,000	223,000	171,000	48,000



Forets Ratio

d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm
17,500		18,000	223,000	171,000	48,000
18,000		18,000	223,000	171,000	48,000
18,500		20,000	244,000	190,000	50,000
19,050	3/4	20,000	244,000	190,000	50,000
19,500		20,000	244,000	190,000	50,000

d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm



Forets Ratio à canaux de lubrification



Matière de coupe **CW monobloc**

Surface **S**

Forme d'attachement HA

**P** • Amin. de l'âme ≥ Ø 3,000 • affûtage en pente • arête de coupe principale rectiligne • géométrie de coupe optimisée

**M** ○

**K** •

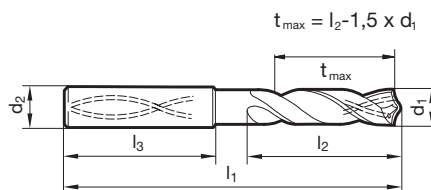
**N** ○ aciers de construction et de cémentation • aciers de décolletage, aciers d'amélioration • aciers alliés jusqu'à 1200 N/mm<sup>2</sup> • fontes • bronze, laiton

**S** ○ • alliages Al haut % en Si

**H** ○

**GÜHRING** NAVIGATOR

Paramètres de coupe, page 758



N° d'article **2711**

d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm
3,000		6,000	70,000	30,000	36,000
3,100		6,000	70,000	30,000	36,000
3,170	1/8	6,000	70,000	30,000	36,000
3,200		6,000	70,000	30,000	36,000
3,250		6,000	70,000	30,000	36,000
3,300		6,000	70,000	30,000	36,000
3,400		6,000	75,000	35,500	36,000
3,500		6,000	75,000	35,500	36,000
3,570	9/64	6,000	75,000	35,500	36,000
3,600		6,000	75,000	35,500	36,000
3,700		6,000	75,000	35,500	36,000
3,800		6,000	75,000	37,500	36,000
3,900		6,000	75,000	37,500	36,000
3,970	5/32	6,000	75,000	37,500	36,000
4,300		6,000	85,000	45,000	36,000
4,400		6,000	85,000	45,000	36,000
5,000		6,000	90,000	50,000	36,000
5,200		6,000	90,000	50,000	36,000
5,500		6,000	97,000	57,000	36,000
6,000		6,000	97,000	57,000	36,000
6,100		8,000	106,000	66,000	36,000
6,200		8,000	106,000	66,000	36,000
6,500		8,000	106,000	66,000	36,000
6,600		8,000	106,000	66,000	36,000
6,800		8,000	106,000	66,000	36,000
7,000		8,000	116,000	76,000	36,000
7,100		8,000	116,000	76,000	36,000
7,300		8,000	116,000	76,000	36,000
7,500		8,000	116,000	76,000	36,000
8,000		8,000	116,000	76,000	36,000
8,500		10,000	131,000	87,000	40,000
8,600		10,000	131,000	87,000	40,000
8,700		10,000	131,000	87,000	40,000
9,000		10,000	131,000	87,000	40,000
9,100		10,000	139,000	95,000	40,000
9,200		10,000	139,000	95,000	40,000

d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm
9,300		10,000	139,000	95,000	40,000
9,500		10,000	139,000	95,000	40,000
9,700		10,000	139,000	95,000	40,000
9,800		10,000	139,000	95,000	40,000
10,000		10,000	139,000	95,000	40,000
10,200		12,000	155,000	106,000	45,000
10,500		12,000	155,000	106,000	45,000
11,000		12,000	155,000	106,000	45,000
11,500		12,000	163,000	114,000	45,000
12,000		12,000	163,000	114,000	45,000
12,200		14,000	182,000	133,000	45,000
12,500		14,000	182,000	133,000	45,000
13,000		14,000	182,000	133,000	45,000
13,500		14,000	182,000	133,000	45,000
13,800		14,000	182,000	133,000	45,000
14,000		14,000	182,000	133,000	45,000
15,000		16,000	204,000	152,000	48,000
15,200		16,000	204,000	152,000	48,000
15,500		16,000	204,000	152,000	48,000
15,800		16,000	204,000	152,000	48,000
16,000		16,000	204,000	152,000	48,000
16,500		18,000	223,000	171,000	48,000
17,500		18,000	223,000	171,000	48,000
18,500		20,000	244,000	190,000	50,000
19,500		20,000	244,000	190,000	50,000



**Forets Ratio à canaux de lubrification**



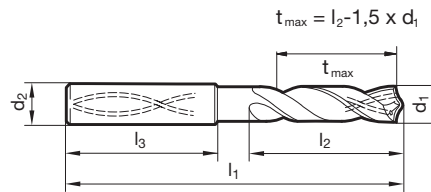
**P** • Amin. de l'âme  $\geq \varnothing 3,000$  • affûtage à dépouille conique • forme de l'arête de coupe principale légèrement concave • géométrie de coupe optimisée

- M**
- K**
- N** aciers alliés et à haute résistance jusqu'à 1600 N/mm<sup>2</sup> • Inconel, Hastelloy, Monel • Titane et ses alliages
- S** •
- H** ○

**GÜHRING NAVIGATOR**

Paramètres de coupe, page 758

Matière de coupe	<b>CW monobloc</b>
Surface	<b>Y</b>
Forme d'attachement	HA



N° d'article **8522**

d1		d2 h6	l1	l2	l3	d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm	mm	inch	mm	mm	mm	mm
3,000		6,000	70,000	30,000	36,000	8,730	11/32	10,000	131,000	87,000	40,000
3,170	1/8	6,000	70,000	30,000	36,000	8,800		10,000	131,000	87,000	40,000
3,250		6,000	70,000	30,000	36,000	9,000		10,000	131,000	87,000	40,000
3,300		6,000	70,000	30,000	36,000	9,130	23/64	10,000	139,000	95,000	40,000
3,400		6,000	75,000	35,500	36,000	9,250		10,000	139,000	95,000	40,000
3,500		6,000	75,000	35,500	36,000	9,340		10,000	139,000	95,000	40,000
3,570	9/64	6,000	75,000	35,500	36,000	9,400		10,000	139,000	95,000	40,000
3,700		6,000	75,000	35,500	36,000	9,500		10,000	139,000	95,000	40,000
3,970	5/32	6,000	75,000	37,500	36,000	9,520	3/8	10,000	139,000	95,000	40,000
4,000		6,000	75,000	37,500	36,000	9,920	25/64	10,000	139,000	95,000	40,000
4,200		6,000	75,000	37,500	36,000	10,000		10,000	139,000	95,000	40,000
4,300		6,000	85,000	45,000	36,000	10,200		12,000	155,000	106,000	45,000
4,370	11/64	6,000	85,000	45,000	36,000	10,320	13/32	12,000	155,000	106,000	45,000
4,500		6,000	85,000	45,000	36,000	10,400		12,000	155,000	106,000	45,000
4,650		6,000	85,000	45,000	36,000	10,500		12,000	155,000	106,000	45,000
4,760	3/16	6,000	90,000	50,000	36,000	10,720	27/64	12,000	155,000	106,000	45,000
5,000		6,000	90,000	50,000	36,000	10,800		12,000	155,000	106,000	45,000
5,100		6,000	90,000	50,000	36,000	11,000		12,000	155,000	106,000	45,000
5,160	13/64	6,000	90,000	50,000	36,000	11,110	7/16	12,000	163,000	114,000	45,000
5,200		6,000	90,000	50,000	36,000	11,300		12,000	163,000	114,000	45,000
5,500		6,000	97,000	57,000	36,000	11,400		12,000	163,000	114,000	45,000
5,550		6,000	97,000	57,000	36,000	11,500		12,000	163,000	114,000	45,000
5,560	7/32	6,000	97,000	57,000	36,000	11,510	29/64	12,000	163,000	114,000	45,000
5,950	15/64	6,000	97,000	57,000	36,000	11,910	15/32	12,000	163,000	114,000	45,000
6,000		6,000	97,000	57,000	36,000	12,000		12,000	163,000	114,000	45,000
6,350	1/4	8,000	106,000	66,000	36,000	12,300	31/64	14,000	182,000	133,000	45,000
6,500		8,000	106,000	66,000	36,000	12,500		14,000	182,000	133,000	45,000
6,530		8,000	106,000	66,000	36,000	12,700	1/2	14,000	182,000	133,000	45,000
6,750	17/64	8,000	106,000	66,000	36,000	13,000		14,000	182,000	133,000	45,000
6,800		8,000	106,000	66,000	36,000	13,100	33/64	14,000	182,000	133,000	45,000
6,900		8,000	116,000	76,000	36,000	13,490	17/32	14,000	182,000	133,000	45,000
7,000		8,000	116,000	76,000	36,000	13,500		14,000	182,000	133,000	45,000
7,140	9/32	8,000	116,000	76,000	36,000	14,000		14,000	182,000	133,000	45,000
7,400		8,000	116,000	76,000	36,000	14,290	9/16	16,000	204,000	152,000	48,000
7,500		8,000	116,000	76,000	36,000	14,500		16,000	204,000	152,000	48,000
7,540	19/64	8,000	116,000	76,000	36,000	15,000		16,000	204,000	152,000	48,000
7,800		8,000	116,000	76,000	36,000	15,100		16,000	204,000	152,000	48,000
7,940	5/16	8,000	116,000	76,000	36,000	15,500		16,000	204,000	152,000	48,000
8,000		8,000	116,000	76,000	36,000	15,870	5/8	16,000	204,000	152,000	48,000
8,330	21/64	10,000	131,000	87,000	40,000	16,000		16,000	204,000	152,000	48,000
8,500		10,000	131,000	87,000	40,000						
8,600		10,000	131,000	87,000	40,000						



Forets Ratio à canaux de lubrification



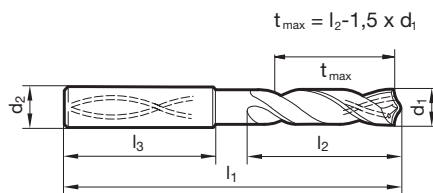
- P** Amin. de l'âme  $\geq \varnothing 4,000$  • affûtage des rayons, breveté • forme de l'arête de coupe principale, rectiligne, (obtenue par correction)
- M**
- K** •
- N** fontes vermiculaires GGV et ADI, CDI • fontes grises, fontes malléables, fontes à graphite sphéroïdal
- S**
- H**

**GÜHRING** NAVIGATOR

Paramètres de coupe, page 758

Matière de coupe	<b>CW monobloc</b>
Surface	<b>F</b>
Forme d'attachement	HA

Forets Ratio



N° d'article **6502**

d1		d2 h6	l1	l2	l3	d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm	mm	inch	mm	mm	mm	mm
4,000		6,000	75,000	37,500	36,000	8,800		10,000	131,000	87,000	40,000
4,300		6,000	85,000	45,000	36,000	8,900		10,000	131,000	87,000	40,000
4,370	11/64	6,000	85,000	45,000	36,000	9,000		10,000	131,000	87,000	40,000
4,400		6,000	85,000	45,000	36,000	9,100		10,000	139,000	95,000	40,000
4,500		6,000	85,000	45,000	36,000	9,250		10,000	139,000	95,000	40,000
4,600		6,000	85,000	45,000	36,000	9,300		10,000	139,000	95,000	40,000
4,700		6,000	85,000	45,000	36,000	9,400		10,000	139,000	95,000	40,000
4,760	3/16	6,000	90,000	50,000	36,000	9,500		10,000	139,000	95,000	40,000
4,900		6,000	90,000	50,000	36,000	9,600		10,000	139,000	95,000	40,000
5,000		6,000	90,000	50,000	36,000	9,700		10,000	139,000	95,000	40,000
5,160	13/64	6,000	90,000	50,000	36,000	9,800		10,000	139,000	95,000	40,000
5,300		6,000	90,000	50,000	36,000	9,900		10,000	139,000	95,000	40,000
5,500		6,000	97,000	57,000	36,000	10,000		10,000	139,000	95,000	40,000
5,550		6,000	97,000	57,000	36,000	10,100		12,000	155,000	106,000	45,000
5,560	7/32	6,000	97,000	57,000	36,000	10,200		12,000	155,000	106,000	45,000
5,600		6,000	97,000	57,000	36,000	10,300		12,000	155,000	106,000	45,000
5,700		6,000	97,000	57,000	36,000	10,320	13/32	12,000	155,000	106,000	45,000
5,800		6,000	97,000	57,000	36,000	10,400		12,000	155,000	106,000	45,000
5,900		6,000	97,000	57,000	36,000	10,500		12,000	155,000	106,000	45,000
6,000		6,000	97,000	57,000	36,000	10,700		12,000	155,000	106,000	45,000
6,100		8,000	106,000	66,000	36,000	10,800		12,000	155,000	106,000	45,000
6,200		8,000	106,000	66,000	36,000	10,900		12,000	155,000	106,000	45,000
6,300		8,000	106,000	66,000	36,000	11,000		12,000	155,000	106,000	45,000
6,400		8,000	106,000	66,000	36,000	11,100		12,000	163,000	114,000	45,000
6,500		8,000	106,000	66,000	36,000	11,200		12,000	163,000	114,000	45,000
6,700		8,000	106,000	66,000	36,000	11,300		12,000	163,000	114,000	45,000
6,800		8,000	106,000	66,000	36,000	11,500		12,000	163,000	114,000	45,000
6,900		8,000	116,000	76,000	36,000	11,600		12,000	163,000	114,000	45,000
7,000		8,000	116,000	76,000	36,000	11,700		12,000	163,000	114,000	45,000
7,140	9/32	8,000	116,000	76,000	36,000	11,800		12,000	163,000	114,000	45,000
7,200		8,000	116,000	76,000	36,000	12,000		12,000	163,000	114,000	45,000
7,500		8,000	116,000	76,000	36,000	12,100		14,000	182,000	133,000	45,000
7,600		8,000	116,000	76,000	36,000	12,300	31/64	14,000	182,000	133,000	45,000
7,700		8,000	116,000	76,000	36,000	12,400		14,000	182,000	133,000	45,000
8,000		8,000	116,000	76,000	36,000	12,500		14,000	182,000	133,000	45,000
8,100		10,000	131,000	87,000	40,000	12,600		14,000	182,000	133,000	45,000
8,200		10,000	131,000	87,000	40,000	12,700	1/2	14,000	182,000	133,000	45,000
8,300		10,000	131,000	87,000	40,000	12,800		14,000	182,000	133,000	45,000
8,330	21/64	10,000	131,000	87,000	40,000	13,000		14,000	182,000	133,000	45,000
8,400		10,000	131,000	87,000	40,000	13,100	33/64	14,000	182,000	133,000	45,000
8,500		10,000	131,000	87,000	40,000	13,300		14,000	182,000	133,000	45,000
8,600		10,000	131,000	87,000	40,000	13,500		14,000	182,000	133,000	45,000



d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm
13,700		14,000	182,000	133,000	45,000
13,900		14,000	182,000	133,000	45,000
14,000		14,000	182,000	133,000	45,000
14,100		16,000	204,000	152,000	48,000
14,290	9/16	16,000	204,000	152,000	48,000
14,400		16,000	204,000	152,000	48,000
14,500		16,000	204,000	152,000	48,000
14,600		16,000	204,000	152,000	48,000
14,700		16,000	204,000	152,000	48,000
15,000		16,000	204,000	152,000	48,000
15,100		16,000	204,000	152,000	48,000
15,200		16,000	204,000	152,000	48,000
15,500		16,000	204,000	152,000	48,000
15,600		16,000	204,000	152,000	48,000
15,800		16,000	204,000	152,000	48,000
15,900		16,000	204,000	152,000	48,000
16,000		16,000	204,000	152,000	48,000
16,500		18,000	223,000	171,000	48,000

d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm
16,670	21/32	18,000	223,000	171,000	48,000
17,000		18,000	223,000	171,000	48,000
17,500		18,000	223,000	171,000	48,000
18,000		18,000	223,000	171,000	48,000
18,500		20,000	244,000	190,000	50,000
19,000		20,000	244,000	190,000	50,000
19,500		20,000	244,000	190,000	50,000
20,000		20,000	244,000	190,000	50,000



Forets Ratio à canaux de lubrification



Matière de coupe **CW monobloc**

Surface ○

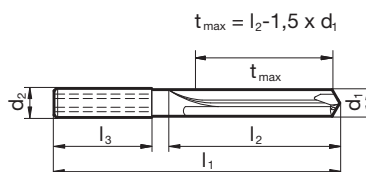
Forme d'attachement HA

**P** Amin. de l'âme ≥ Ø 3,000 • affûtage à dépouille conique • tolérances serrées des diamètres • état de surface d.perçages de qualité supérieure • respecter la pression du liquide de refroid.

- M**
- K** •
- N** ○ fontes grises, fontes malléables, fontes à graphite sphéroïdal
- S**
- H**

**GÜHRING** NAVIGATOR

Paramètres de coupe, page 758



N° d'article **769**

d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm
3,000		6,000	74,000	32,000	36,000
3,100		6,000	74,000	32,000	36,000
3,200		6,000	74,000	32,000	36,000
3,300		6,000	74,000	32,000	36,000
3,500		6,000	74,000	34,000	36,000
3,600		6,000	74,000	34,000	36,000
3,700		6,000	74,000	34,000	36,000
3,800		6,000	97,000	45,000	36,000
3,900		6,000	97,000	45,000	36,000
4,000		6,000	97,000	45,000	36,000
4,100		6,000	97,000	45,000	36,000
4,200		6,000	97,000	45,000	36,000
4,300		6,000	97,000	45,000	36,000
4,400		6,000	97,000	45,000	36,000
4,500		6,000	97,000	45,000	36,000
4,700		6,000	97,000	45,000	36,000
4,800		6,000	97,000	57,000	36,000
4,900		6,000	97,000	57,000	36,000
5,000		6,000	97,000	57,000	36,000
5,160	13/64	6,000	97,000	57,000	36,000
5,500		6,000	97,000	57,000	36,000
6,000		6,000	97,000	57,000	36,000
6,350	1/4	8,000	116,000	76,000	36,000
6,500		8,000	116,000	76,000	36,000
6,800		8,000	116,000	76,000	36,000
7,000		8,000	116,000	76,000	36,000
7,140	9/32	8,000	116,000	76,000	36,000
7,500		8,000	116,000	76,000	36,000
7,800		8,000	116,000	76,000	36,000
7,940	5/16	8,000	116,000	76,000	36,000
8,000		8,000	116,000	76,000	36,000
8,330	21/64	10,000	139,000	95,000	40,000
8,500		10,000	139,000	95,000	40,000
8,730	11/32	10,000	139,000	95,000	40,000
9,000		10,000	139,000	95,000	40,000
9,130	23/64	10,000	139,000	95,000	40,000

d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm
9,500		10,000	139,000	95,000	40,000
9,520	3/8	10,000	139,000	95,000	40,000
10,000		10,000	139,000	95,000	40,000
10,200		12,000	163,000	114,000	45,000
10,320	13/32	12,000	163,000	114,000	45,000
10,500		12,000	163,000	114,000	45,000
10,720	27/64	12,000	163,000	114,000	45,000
11,000		12,000	163,000	114,000	45,000
11,110	7/16	12,000	163,000	114,000	45,000
11,500		12,000	163,000	114,000	45,000
11,510	29/64	12,000	163,000	114,000	45,000
12,000		12,000	163,000	114,000	45,000
12,300	31/64	14,000	182,000	133,000	45,000
12,500		14,000	182,000	133,000	45,000
12,700	1/2	14,000	182,000	133,000	45,000
13,000		14,000	182,000	133,000	45,000
13,500		14,000	182,000	133,000	45,000
14,000		14,000	182,000	133,000	45,000
14,500		16,000	204,000	152,000	48,000
15,000		16,000	204,000	152,000	48,000
15,500		16,000	204,000	152,000	48,000
16,000		16,000	204,000	152,000	48,000
16,500		18,000	223,000	171,000	48,000
17,000		18,000	223,000	171,000	48,000
17,500		18,000	223,000	171,000	48,000
18,000		18,000	223,000	171,000	48,000
18,500		20,000	244,000	190,000	50,000
19,000		20,000	244,000	190,000	50,000
20,000		20,000	244,000	190,000	50,000



**Forets Ratio à canaux de lubrification**



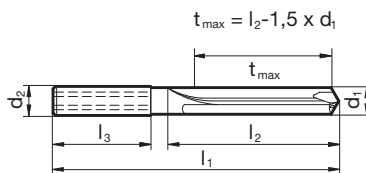
**P** Amin. de l'âme  $\geq \varnothing 3,000$  • affûtage en pente • tolérances serrées des diamètres • état de surface d.perçages de qualité supérieure • respecter la pression optimale du liq.de refroid.

- M**
- K** ○
- N** • aluminium et alliages d'aluminium • alliages d'aluminium avec haut % de Si
- S**
- H**

**GÜHRING NAVIGATOR**

Paramètres de coupe, page 758

Matière de coupe	<b>CW monobloc</b>
Surface	○
Forme d'attachement	HA



N° d'article **6069**

d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm
3,000		6,000	74,000	32,000	36,000
3,200		6,000	74,000	32,000	36,000
3,300		6,000	74,000	32,000	36,000
3,500		6,000	74,000	34,000	36,000
3,600		6,000	74,000	34,000	36,000
4,000		6,000	97,000	45,000	36,000
4,200		6,000	97,000	45,000	36,000
4,300		6,000	97,000	45,000	36,000
4,500		6,000	97,000	45,000	36,000
5,000		6,000	97,000	57,000	36,000
6,000		6,000	97,000	57,000	36,000
6,350	1/4	8,000	116,000	76,000	36,000
6,500		8,000	116,000	76,000	36,000
6,800		8,000	116,000	76,000	36,000
7,000		8,000	116,000	76,000	36,000
7,800		8,000	116,000	76,000	36,000
8,000		8,000	116,000	76,000	36,000
8,500		10,000	139,000	95,000	40,000
8,730	11/32	10,000	139,000	95,000	40,000
9,000		10,000	139,000	95,000	40,000
9,500		10,000	139,000	95,000	40,000
9,520	3/8	10,000	139,000	95,000	40,000
10,000		10,000	139,000	95,000	40,000
10,200		12,000	163,000	114,000	45,000

d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm
10,320	13/32	12,000	163,000	114,000	45,000
10,500		12,000	163,000	114,000	45,000
10,720	27/64	12,000	163,000	114,000	45,000
11,000		12,000	163,000	114,000	45,000
12,000		12,000	163,000	114,000	45,000
12,300	31/64	14,000	182,000	133,000	45,000
12,500		14,000	182,000	133,000	45,000
12,700	1/2	14,000	182,000	133,000	45,000
13,000		14,000	182,000	133,000	45,000
13,500		14,000	182,000	133,000	45,000
14,000		14,000	182,000	133,000	45,000
14,500		16,000	204,000	152,000	48,000
15,000		16,000	204,000	152,000	48,000
15,500		16,000	204,000	152,000	48,000
16,000		16,000	204,000	152,000	48,000
16,500		18,000	223,000	171,000	48,000
17,000		18,000	223,000	171,000	48,000
18,000		18,000	223,000	171,000	48,000
18,500		20,000	244,000	190,000	50,000
19,000		20,000	244,000	190,000	50,000
19,500		20,000	244,000	190,000	50,000





Forets Ratio à canaux de lubrification



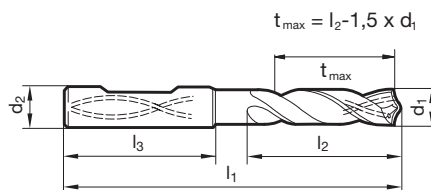
Matière de coupe	<b>CW</b>
Surface	<b>S</b>
Forme d'attachement	HE

Forets Ratio

- P** • Amin. de l'âme ≥ Ø 9,600 • affûtage à dépouille conique • support HSS avec plaquette CW brasée • amortit vibrations et chocs
- M** ○
- K** ○
- N** ○ aciers non alliés ou faiblement alliés • fontes grises, fontes à graphite sphéroïdal • laitons, bronzes, matières plastiques, graphite
- S** ○
- H** ○

**GUHRING NAVIGATOR**

Paramètres de coupe, page 758



N° d'article **1173**

d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm
9,600		16,000	151,000	99,000	48,000
9,700		16,000	151,000	99,000	48,000
10,000		16,000	151,000	99,000	48,000
10,200		16,000	151,000	99,000	48,000
10,400		16,000	151,000	99,000	48,000
11,000		16,000	151,000	99,000	48,000
11,500		16,000	151,000	99,000	48,000
11,700		16,000	151,000	99,000	48,000
12,000		16,000	151,000	99,000	48,000
12,200		16,000	167,000	115,000	48,000
12,400		16,000	167,000	115,000	48,000
12,500		16,000	167,000	115,000	48,000
12,700	1/2	16,000	167,000	115,000	48,000
13,000		16,000	167,000	115,000	48,000
13,500		16,000	167,000	115,000	48,000
14,000		16,000	167,000	115,000	48,000
14,500		20,000	186,000	132,000	50,000
15,000		20,000	186,000	132,000	50,000

d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm
15,700		20,000	186,000	132,000	50,000
15,800		20,000	186,000	132,000	50,000
16,000		20,000	186,000	132,000	50,000
16,500		20,000	202,000	148,000	50,000
17,000		20,000	202,000	148,000	50,000
17,200		20,000	202,000	148,000	50,000
17,460	11/16	20,000	202,000	148,000	50,000
17,500		20,000	202,000	148,000	50,000
18,000		20,000	202,000	148,000	50,000
18,500		25,000	224,000	164,000	56,000
19,000		25,000	224,000	164,000	56,000
20,000		25,000	224,000	164,000	56,000
21,000		25,000	241,000	181,000	56,000
22,000		25,000	241,000	181,000	56,000
22,500		25,000	257,000	197,000	56,000
25,000	63/64	32,000	278,000	214,000	60,000



**Forets Ratio à canaux de lubrification**



**P** • affûtage en pente • arête de coupe principale rectiligne • géométrie de coupe optimisée • performance maximale

**M** ○

**K** ○

**N** ○ aciers de construction et de cémentation • aciers de décolletage, aciers d'amélioration • aciers (alliés / non alliés) jusqu'à 1400 N/mm<sup>2</sup>

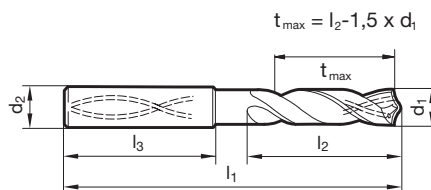
**S** ○

**H** ○

**GÜHRING NAVIGATOR**

Paramètres de coupe, page 758

Matière de coupe	<b>CW monobloc</b>
Surface	<b>F</b>
Forme d'attachement	HA



N° d'article **5760**

d1		d2 h6	l1	l2	l3	d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm	mm	inch	mm	mm	mm	mm
3,000		6,000	70,000	30,000	36,000	5,900		6,000	97,000	57,000	36,000
3,100		6,000	70,000	30,000	36,000	5,950		6,000	97,000	57,000	36,000
3,170	1/8	6,000	70,000	30,000	36,000	6,000		6,000	97,000	57,000	36,000
3,200		6,000	70,000	30,000	36,000	6,100		8,000	106,000	66,000	36,000
3,250		6,000	70,000	30,000	36,000	6,200		8,000	106,000	66,000	36,000
3,300		6,000	70,000	30,000	36,000	6,300		8,000	106,000	66,000	36,000
3,400		6,000	75,000	35,500	36,000	6,350	1/4	8,000	106,000	66,000	36,000
3,500		6,000	75,000	35,500	36,000	6,400		8,000	106,000	66,000	36,000
3,570	9/64	6,000	75,000	35,500	36,000	6,500		8,000	106,000	66,000	36,000
3,600		6,000	75,000	35,500	36,000	6,530		8,000	106,000	66,000	36,000
3,700		6,000	75,000	35,500	36,000	6,600		8,000	106,000	66,000	36,000
3,800		6,000	75,000	37,500	36,000	6,700		8,000	106,000	66,000	36,000
3,900		6,000	75,000	37,500	36,000	6,750		8,000	106,000	66,000	36,000
3,970	5/32	6,000	75,000	37,500	36,000	6,800		8,000	106,000	66,000	36,000
4,000		6,000	75,000	37,500	36,000	6,900		8,000	116,000	76,000	36,000
4,040		6,000	75,000	37,500	36,000	7,000		8,000	116,000	76,000	36,000
4,100		6,000	75,000	37,500	36,000	7,100		8,000	116,000	76,000	36,000
4,200		6,000	75,000	37,500	36,000	7,140		8,000	116,000	76,000	36,000
4,300		6,000	85,000	45,000	36,000	7,200		8,000	116,000	76,000	36,000
4,370	11/64	6,000	85,000	45,000	36,000	7,300		8,000	116,000	76,000	36,000
4,400		6,000	85,000	45,000	36,000	7,400		8,000	116,000	76,000	36,000
4,500		6,000	85,000	45,000	36,000	7,500		8,000	116,000	76,000	36,000
4,600		6,000	85,000	45,000	36,000	7,540		8,000	116,000	76,000	36,000
4,650		6,000	85,000	45,000	36,000	7,600		8,000	116,000	76,000	36,000
4,700		6,000	85,000	45,000	36,000	7,700		8,000	116,000	76,000	36,000
4,760	3/16	6,000	90,000	50,000	36,000	7,800		8,000	116,000	76,000	36,000
4,800		6,000	90,000	50,000	36,000	7,900		8,000	116,000	76,000	36,000
4,900		6,000	90,000	50,000	36,000	7,940		8,000	116,000	76,000	36,000
5,000		6,000	90,000	50,000	36,000	8,000		8,000	116,000	76,000	36,000
5,100		6,000	90,000	50,000	36,000	8,100		10,000	131,000	87,000	40,000
5,110		6,000	90,000	50,000	36,000	8,200		10,000	131,000	87,000	40,000
5,160	13/64	6,000	90,000	50,000	36,000	8,300		10,000	131,000	87,000	40,000
5,200		6,000	90,000	50,000	36,000	8,330		10,000	131,000	87,000	40,000
5,300		6,000	90,000	50,000	36,000	8,400		10,000	131,000	87,000	40,000
5,400		6,000	97,000	57,000	36,000	8,500		10,000	131,000	87,000	40,000
5,410		6,000	97,000	57,000	36,000	8,600		10,000	131,000	87,000	40,000
5,500		6,000	97,000	57,000	36,000	8,700		10,000	131,000	87,000	40,000
5,550		6,000	97,000	57,000	36,000	8,730		10,000	131,000	87,000	40,000
5,560		6,000	97,000	57,000	36,000	8,800		10,000	131,000	87,000	40,000
5,600		6,000	97,000	57,000	36,000	8,900		10,000	131,000	87,000	40,000
5,700		6,000	97,000	57,000	36,000	9,000		10,000	131,000	87,000	40,000
5,800		6,000	97,000	57,000	36,000	9,100		10,000	139,000	95,000	40,000



d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm
9,130		10,000	139,000	95,000	40,000
9,200		10,000	139,000	95,000	40,000
9,250		10,000	139,000	95,000	40,000
9,300		10,000	139,000	95,000	40,000
9,340		10,000	139,000	95,000	40,000
9,400		10,000	139,000	95,000	40,000
9,500		10,000	139,000	95,000	40,000
9,520	3/8	10,000	139,000	95,000	40,000
9,600		10,000	139,000	95,000	40,000
9,700		10,000	139,000	95,000	40,000
9,800		10,000	139,000	95,000	40,000
9,900		10,000	139,000	95,000	40,000
9,920		10,000	139,000	95,000	40,000
10,000		10,000	139,000	95,000	40,000
10,100		12,000	155,000	106,000	45,000
10,200		12,000	155,000	106,000	45,000
10,300		12,000	155,000	106,000	45,000
10,320		12,000	155,000	106,000	45,000
10,400		12,000	155,000	106,000	45,000
10,500		12,000	155,000	106,000	45,000
10,600		12,000	155,000	106,000	45,000
10,700		12,000	155,000	106,000	45,000
10,720		12,000	155,000	106,000	45,000
10,800		12,000	155,000	106,000	45,000
10,900		12,000	155,000	106,000	45,000
11,000		12,000	155,000	106,000	45,000
11,100		12,000	163,000	114,000	45,000
11,110		12,000	163,000	114,000	45,000
11,200		12,000	163,000	114,000	45,000
11,300		12,000	163,000	114,000	45,000
11,400		12,000	163,000	114,000	45,000
11,500		12,000	163,000	114,000	45,000
11,510		12,000	163,000	114,000	45,000
11,600		12,000	163,000	114,000	45,000
11,700		12,000	163,000	114,000	45,000
11,800		12,000	163,000	114,000	45,000
11,900		12,000	163,000	114,000	45,000
11,910		12,000	163,000	114,000	45,000
12,000		12,000	163,000	114,000	45,000
12,100		14,000	182,000	133,000	45,000
12,200		14,000	182,000	133,000	45,000
12,300		14,000	182,000	133,000	45,000

d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm
12,500		14,000	182,000	133,000	45,000
12,700	1/2	14,000	182,000	133,000	45,000
13,000		14,000	182,000	133,000	45,000
13,100		14,000	182,000	133,000	45,000
13,490		14,000	182,000	133,000	45,000
13,500		14,000	182,000	133,000	45,000
13,700		14,000	182,000	133,000	45,000
13,890		14,000	182,000	133,000	45,000
14,000		14,000	182,000	133,000	45,000
14,100		16,000	204,000	152,000	48,000
14,200		16,000	204,000	152,000	48,000
14,290		16,000	204,000	152,000	48,000
14,500		16,000	204,000	152,000	48,000
14,700		16,000	204,000	152,000	48,000
15,000		16,000	204,000	152,000	48,000
15,100		16,000	204,000	152,000	48,000
15,480		16,000	204,000	152,000	48,000
15,500		16,000	204,000	152,000	48,000
15,700		16,000	204,000	152,000	48,000
15,870		16,000	204,000	152,000	48,000
16,000		16,000	204,000	152,000	48,000
16,500		18,000	223,000	171,000	48,000
16,900		18,000	223,000	171,000	48,000
17,000		18,000	223,000	171,000	48,000
17,500		18,000	223,000	171,000	48,000
17,700		18,000	223,000	171,000	48,000
18,000		18,000	223,000	171,000	48,000
18,500		20,000	244,000	190,000	50,000
18,900		20,000	244,000	190,000	50,000
19,000		20,000	244,000	190,000	50,000
19,050	3/4	20,000	244,000	190,000	50,000
19,500		20,000	244,000	190,000	50,000
20,000		20,000	244,000	190,000	50,000



**Forets Ratio à canaux de lubrification**



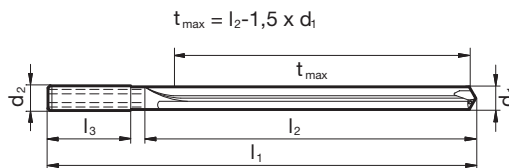
**P** Amin. de l'âme  $\geq \varnothing 3,000$  • affûtage à dépouille conique • tolérances serrées des diamètres • état de surface d.perçages de qualité supérieure • respecter la pression du liquide de refroid.

- M**
- K** •
- N** ○ fontes grises, fontes malléables, fontes à graphite sphéroïdal
- S**
- H**

**GÜHRING NAVIGATOR**

Paramètres de coupe, page 758

Matière de coupe	<b>CW monobloc</b>
Surface	○
Forme d'attachement	HA



N° d'article **770**

d1		d2 h6	l1	l2	l3	d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm	mm	inch	mm	mm	mm	mm
3,000		6,000	91,000	42,000	36,000	10,000		10,000	175,000	130,000	40,000
3,100		6,000	91,000	42,000	36,000	10,200		12,000	209,000	159,000	45,000
3,300		6,000	91,000	42,000	36,000	10,500		12,000	209,000	159,000	45,000
3,800		6,000	121,000	77,000	36,000	10,720	27/64	12,000	209,000	159,000	45,000
4,000		6,000	121,000	77,000	36,000	11,000		12,000	209,000	159,000	45,000
4,100		6,000	121,000	77,000	36,000	11,500		12,000	209,000	159,000	45,000
4,200		6,000	121,000	77,000	36,000	11,510	29/64	12,000	209,000	159,000	45,000
4,300		6,000	121,000	77,000	36,000	12,000		12,000	209,000	159,000	45,000
4,400		6,000	121,000	77,000	36,000	12,300	31/64	14,000	233,000	183,000	45,000
4,500		6,000	121,000	77,000	36,000	12,500		14,000	233,000	183,000	45,000
4,800		6,000	121,000	82,000	36,000	12,700	1/2	14,000	233,000	183,000	45,000
4,900		6,000	121,000	82,000	36,000	13,000		14,000	233,000	183,000	45,000
5,000		6,000	121,000	82,000	36,000	13,500		14,000	233,000	183,000	45,000
5,160	13/64	6,000	121,000	82,000	36,000	14,000		14,000	233,000	183,000	45,000
5,500		6,000	121,000	82,000	36,000	14,500		16,000	260,000	207,000	48,000
5,560	7/32	6,000	121,000	82,000	36,000	15,000		16,000	260,000	207,000	48,000
6,000		6,000	121,000	82,000	36,000	15,500		16,000	260,000	207,000	48,000
6,500		8,000	146,000	106,000	36,000	16,500		18,000	284,000	231,000	48,000
6,750	17/64	8,000	146,000	106,000	36,000	17,000		18,000	284,000	231,000	48,000
6,800		8,000	146,000	106,000	36,000	17,500		18,000	284,000	231,000	48,000
7,000		8,000	146,000	106,000	36,000	18,000		18,000	284,000	231,000	48,000
7,140	9/32	8,000	146,000	106,000	36,000	19,000		20,000	308,000	255,000	50,000
7,500		8,000	146,000	106,000	36,000	20,000		20,000	308,000	255,000	50,000
7,800		8,000	146,000	106,000	36,000						
7,940	5/16	8,000	146,000	106,000	36,000						
8,000		8,000	146,000	106,000	36,000						
8,500		10,000	175,000	130,000	40,000						
8,730	11/32	10,000	175,000	130,000	40,000						
9,000		10,000	175,000	130,000	40,000						
9,500		10,000	175,000	130,000	40,000						



Forets Ratio à canaux de lubrification



Matière de coupe **CW monobloc**

Surface ○

Forme d'attachement HA

**P** Amin. de l'âme ≥ Ø 3,000 • affûtage en pente • tolérances serrées des diamètres • état de surface d.perçages de qualité supérieure • respecter la pression optimale du liq.de refroid.

**M**

**K** ○

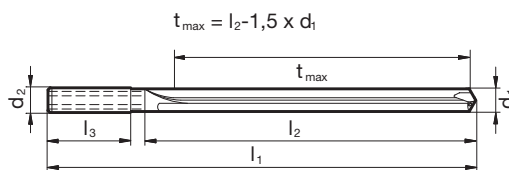
**N** • aluminium et alliages d'aluminium • alliages d'aluminium avec haut % de Si

**S**

**H**

**GUHRING** NAVIGATOR

Paramètres de coupe, page 758



N° d'article **6070**

d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm
3,000		6,000	91,000	42,000	36,000
3,100		6,000	91,000	42,000	36,000
3,300		6,000	91,000	42,000	36,000
3,500		6,000	91,000	48,000	36,000
3,800		6,000	121,000	77,000	36,000
4,000		6,000	121,000	77,000	36,000
4,700		6,000	121,000	77,000	36,000
4,800		6,000	121,000	82,000	36,000
5,000		6,000	121,000	82,000	36,000
5,500		6,000	121,000	82,000	36,000
6,000		6,000	121,000	82,000	36,000
6,350	1/4	8,000	146,000	106,000	36,000
6,500		8,000	146,000	106,000	36,000
6,800		8,000	146,000	106,000	36,000
7,500		8,000	146,000	106,000	36,000
7,800		8,000	146,000	106,000	36,000
7,940	5/16	8,000	146,000	106,000	36,000
8,000		8,000	146,000	106,000	36,000
8,500		10,000	175,000	130,000	40,000
8,730	11/32	10,000	175,000	130,000	40,000
9,000		10,000	175,000	130,000	40,000
9,500		10,000	175,000	130,000	40,000
9,520	3/8	10,000	175,000	130,000	40,000
10,000		10,000	175,000	130,000	40,000

d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm
10,500		12,000	209,000	159,000	45,000
11,000		12,000	209,000	159,000	45,000
11,110	7/16	12,000	209,000	159,000	45,000
12,000		12,000	209,000	159,000	45,000
12,700	1/2	14,000	233,000	183,000	45,000
13,000		14,000	233,000	183,000	45,000
14,000		14,000	233,000	183,000	45,000
15,000		16,000	260,000	207,000	48,000
16,000		16,000	260,000	207,000	48,000
17,000		18,000	284,000	231,000	48,000
17,500		18,000	284,000	231,000	48,000
18,000		18,000	284,000	231,000	48,000
18,500		20,000	308,000	255,000	50,000
19,500		20,000	308,000	255,000	50,000



**Forets Ratio à canaux de lubrification**

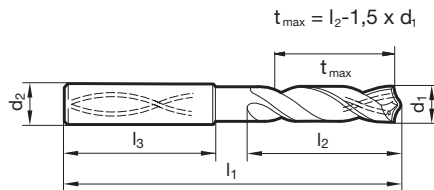


- P** • Amin. de l'âme  $\geq \varnothing 3,000$  • affûtage en pente • arête de coupe principale rectiligne • géométrie de coupe optimisée
- M** ○
- K** •
- N** ○ aciers de construction et de cémentation • aciers de décolletage, aciers d'amélioration • aciers alliés jusqu'à 1200 N/mm<sup>2</sup> • fontes • bronze, laiton
- S** ○ • alliages Al haut % en Si
- H** ○

**GÜHRING NAVIGATOR**

Paramètres de coupe, page 758

Matière de coupe	<b>CW monobloc</b>
Surface	<b>F</b>
Forme d'attachement	HA



N° d'article **5525**

d1		d2 h6	l1	l2	l3	d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm	mm	inch	mm	mm	mm	mm
3,000		6,000	90,000	50,000	36,000	7,000		8,000	146,000	108,000	36,000
3,100		6,000	90,000	50,000	36,000	7,100		8,000	146,000	108,000	36,000
3,170	1/8	6,000	90,000	50,000	36,000	7,200		8,000	146,000	108,000	36,000
3,200		6,000	90,000	50,000	36,000	7,300		8,000	146,000	108,000	36,000
3,300		6,000	90,000	50,000	36,000	7,400		8,000	146,000	108,000	36,000
3,400		6,000	90,000	50,000	36,000	7,500		8,000	146,000	108,000	36,000
3,500		6,000	90,000	50,000	36,000	7,600		8,000	146,000	108,000	36,000
3,600		6,000	90,000	50,000	36,000	7,700		8,000	146,000	108,000	36,000
3,700		6,000	90,000	50,000	36,000	7,800		8,000	146,000	108,000	36,000
3,800		6,000	102,000	64,000	36,000	7,900		8,000	146,000	108,000	36,000
3,900		6,000	102,000	64,000	36,000	8,000		8,000	146,000	108,000	36,000
4,000		6,000	102,000	64,000	36,000	8,100		10,000	162,000	120,000	40,000
4,100		6,000	102,000	64,000	36,000	8,200		10,000	162,000	120,000	40,000
4,200		6,000	102,000	64,000	36,000	8,300		10,000	162,000	120,000	40,000
4,300		6,000	102,000	64,000	36,000	8,400		10,000	162,000	120,000	40,000
4,400		6,000	102,000	64,000	36,000	8,500		10,000	162,000	120,000	40,000
4,500		6,000	102,000	64,000	36,000	8,600		10,000	162,000	120,000	40,000
4,600		6,000	102,000	64,000	36,000	8,700		10,000	162,000	120,000	40,000
4,700		6,000	102,000	64,000	36,000	8,800		10,000	162,000	120,000	40,000
4,800		6,000	116,000	78,000	36,000	8,900		10,000	162,000	120,000	40,000
4,900		6,000	116,000	78,000	36,000	9,000		10,000	162,000	120,000	40,000
5,000		6,000	116,000	78,000	36,000	9,100		10,000	162,000	120,000	40,000
5,100		6,000	116,000	78,000	36,000	9,200		10,000	162,000	120,000	40,000
5,200		6,000	116,000	78,000	36,000	9,300		10,000	162,000	120,000	40,000
5,300		6,000	116,000	78,000	36,000	9,400		10,000	162,000	120,000	40,000
5,400		6,000	116,000	78,000	36,000	9,500		10,000	162,000	120,000	40,000
5,500		6,000	116,000	78,000	36,000	9,520	3/8	10,000	162,000	120,000	40,000
5,600		6,000	116,000	78,000	36,000	9,600		10,000	162,000	120,000	40,000
5,700		6,000	116,000	78,000	36,000	9,700		10,000	162,000	120,000	40,000
5,800		6,000	116,000	78,000	36,000	9,800		10,000	162,000	120,000	40,000
5,900		6,000	116,000	78,000	36,000	9,900		10,000	162,000	120,000	40,000
6,000		6,000	116,000	78,000	36,000	10,000		10,000	162,000	120,000	40,000
6,100		8,000	146,000	108,000	36,000	10,200		12,000	204,000	156,000	45,000
6,200		8,000	146,000	108,000	36,000	10,500		12,000	204,000	156,000	45,000
6,300		8,000	146,000	108,000	36,000	11,000		12,000	204,000	156,000	45,000
6,350	1/4	8,000	146,000	108,000	36,000	11,500		12,000	204,000	156,000	45,000
6,400		8,000	146,000	108,000	36,000	12,000		12,000	204,000	156,000	45,000
6,500		8,000	146,000	108,000	36,000	12,500		14,000	230,000	182,000	45,000
6,600		8,000	146,000	108,000	36,000	12,700	1/2	14,000	230,000	182,000	45,000
6,700		8,000	146,000	108,000	36,000	13,000		14,000	230,000	182,000	45,000
6,800		8,000	146,000	108,000	36,000	13,500		14,000	230,000	182,000	45,000
6,900		8,000	146,000	108,000	36,000	14,000		14,000	230,000	182,000	45,000





**Forets Ratio à canaux de lubrification**

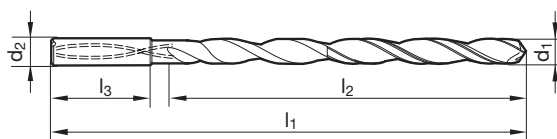


- P** • Amin. de l'âme  $\geq \varnothing 3,000$  • affûtage à dépouille conique • forme concave de l'arête de coupe principale • section des goujures optimisée • section maximale des canaux de lubrification • respecter la pression du liquide de refroid.
- M** •
- K** •
- N** ○ aciers de construction et de cémentation • aciers de décolletage, aciers d'amélioration • aciers alliés jusqu'à 1200 N/mm<sup>2</sup> • aciers inoxydables
- S** ○
- H** ○

**GÜHRING NAVIGATOR**

Paramètres de coupe, page 760

Matière de coupe	<b>CW monobloc</b>
Surface	<b>A</b>
Forme d'attachement	HA



N° d'article **6509**

d1		d2 h6	l1	l2	l3	d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm	mm	inch	mm	mm	mm	mm
3,000		6,000	95,000	55,000	36,000	7,940	5/16	8,000	183,000	143,000	36,000
3,170	1/8	6,000	106,000	67,000	36,000	8,000		8,000	183,000	143,000	36,000
3,500		6,000	116,000	76,000	36,000	8,330	21/64	10,000	204,000	160,000	40,000
3,570	9/64	6,000	116,000	76,000	36,000	8,500		10,000	204,000	160,000	40,000
3,970	5/32	6,000	116,000	76,000	36,000	8,730	11/32	10,000	204,000	160,000	40,000
4,000		6,000	116,000	76,000	36,000	9,000		10,000	204,000	160,000	40,000
4,370	11/64	6,000	133,000	93,000	36,000	9,130	23/64	10,000	221,000	177,000	40,000
4,500		6,000	133,000	93,000	36,000	9,520	3/8	10,000	221,000	177,000	40,000
4,760	3/16	6,000	133,000	93,000	36,000	9,920	25/64	10,000	221,000	177,000	40,000
5,000		6,000	133,000	93,000	36,000	10,000		10,000	221,000	177,000	40,000
5,100		6,000	150,000	110,000	36,000	10,320	13/32	12,000	247,000	198,000	45,000
5,160	13/64	6,000	150,000	110,000	36,000	10,720	27/64	12,000	247,000	198,000	45,000
5,410		6,000	150,000	110,000	36,000	11,000		12,000	247,000	198,000	45,000
5,500		6,000	150,000	110,000	36,000	11,110	7/16	12,000	263,000	214,000	45,000
5,560	7/32	6,000	150,000	110,000	36,000	11,510	29/64	12,000	263,000	214,000	45,000
5,950	15/64	6,000	150,000	110,000	36,000	11,910	15/32	12,000	263,000	214,000	45,000
6,000		6,000	150,000	110,000	36,000	12,000		12,000	263,000	214,000	45,000
6,350	1/4	8,000	167,000	127,000	36,000	12,300	31/64	14,000	297,000	248,000	45,000
6,500		8,000	167,000	127,000	36,000	12,700	1/2	14,000	297,000	248,000	45,000
6,750	17/64	8,000	167,000	127,000	36,000	13,100	33/64	14,000	297,000	248,000	45,000
7,000		8,000	167,000	127,000	36,000	13,490	17/32	14,000	297,000	248,000	45,000
7,140	9/32	8,000	183,000	143,000	36,000	13,890	35/64	14,000	297,000	248,000	45,000
7,500		8,000	183,000	143,000	36,000	14,000		14,000	297,000	248,000	45,000
7,540	19/64	8,000	183,000	143,000	36,000						





Forets Ratio à canaux de lubrification



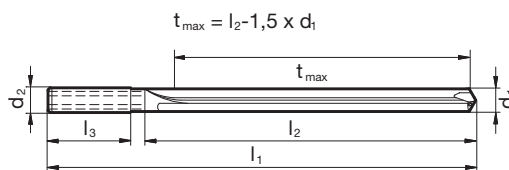
- P** Amin. de l'âme  $\geq \varnothing 5,000$  • affûtage à dépouille conique • à hélice descendante (angle négatif) • pour les perçages de grande précision • état de surface d.perçages de qualité supérieure • respecter la pression du liquide de refroid.
- M**
- K** •
- N** • aluminium et alliages d'aluminium • alliages d'aluminium avec haut % de Si
- S** • fontes grises, fontes malléables, fontes à graphite sphéroïdal
- H**

**GÜHRING** NAVIGATOR

Paramètres de coupe, page 760

Matière de coupe	<b>CW monobloc</b>
Surface	○
Forme d'attachement	HA

Forets Ratio



N° d'article **773**

d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm
5,000		6,000	145,000	105,000	36,000
6,000		6,000	145,000	105,000	36,000
8,000		8,000	180,000	137,000	36,000
9,000		10,000	217,000	170,000	40,000
10,000		10,000	217,000	170,000	40,000
11,000		12,000	258,000	205,000	45,000

d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm
12,000		12,000	258,000	205,000	45,000
14,000		14,000	290,000	236,000	45,000



**Forets Ratio à canaux de lubrification**

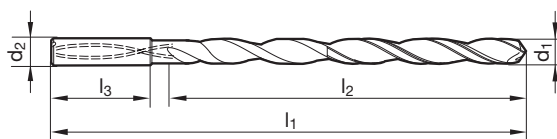


- P** • Amin. de l'âme  $\geq \varnothing 3,000$  • affûtage à dépouille conique • forme concave de l'arête de coupe principale • section des goujures optimisée • section maximale des canaux de lubrification • respecter la pression du liquide de refroid.
- M** •
- K** •
- N** ○ aciers de construction et de cémentation • aciers de décolletage, aciers d'amélioration • aciers alliés jusqu'à 1200 N/mm<sup>2</sup> • aciers inoxydables
- S** ○ • fontes
- H** ○

**GÜHRING NAVIGATOR**

Paramètres de coupe, page 760

Matière de coupe	<b>CW monobloc</b>
Surface	<b>A</b>
Forme d'attachement	HA



N° d'article **6511**

d1		d2 h6	l1	l2	l3	d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm	mm	inch	mm	mm	mm	mm
3,000		6,000	110,000	70,000	36,000	8,730	11/32	10,000	249,000	205,000	40,000
3,100		6,000	123,000	83,000	36,000	9,000		10,000	249,000	205,000	40,000
3,170	1/8	6,000	123,000	83,000	36,000	9,130	23/64	10,000	271,000	227,000	40,000
3,500		6,000	136,000	96,000	36,000	9,520	3/8	10,000	271,000	227,000	40,000
3,570	9/64	6,000	136,000	96,000	36,000	9,920	25/64	10,000	271,000	227,000	40,000
3,970	5/32	6,000	136,000	96,000	36,000	10,000		10,000	271,000	227,000	40,000
4,000		6,000	136,000	96,000	36,000	10,320	13/32	12,000	302,000	253,000	45,000
4,200		6,000	158,000	118,000	36,000	10,720	27/64	12,000	302,000	253,000	45,000
4,370	11/64	6,000	158,000	118,000	36,000	11,000		12,000	302,000	253,000	45,000
4,500		6,000	158,000	118,000	36,000	11,110	7/16	12,000	323,000	274,000	45,000
4,760	3/16	6,000	158,000	118,000	36,000	11,510	29/64	12,000	323,000	274,000	45,000
5,000		6,000	158,000	118,000	36,000	11,910	15/32	12,000	323,000	274,000	45,000
5,100		6,000	180,000	140,000	36,000	12,000		12,000	323,000	274,000	45,000
5,160	13/64	6,000	180,000	140,000	36,000	12,300	31/64	14,000	367,000	318,000	45,000
5,410		6,000	180,000	140,000	36,000	12,700	1/2	14,000	367,000	318,000	45,000
5,500		6,000	180,000	140,000	36,000	13,100	33/64	14,000	367,000	318,000	45,000
5,560	7/32	6,000	180,000	140,000	36,000	13,490	17/32	14,000	367,000	318,000	45,000
5,950	15/64	6,000	180,000	140,000	36,000	13,890	35/64	14,000	367,000	318,000	45,000
6,000		6,000	180,000	140,000	36,000	14,000		14,000	367,000	318,000	45,000
6,350	1/4	8,000	202,000	162,000	36,000						
6,500		8,000	202,000	162,000	36,000						
6,750	17/64	8,000	202,000	162,000	36,000						
7,000		8,000	202,000	162,000	36,000						
7,140	9/32	8,000	223,000	183,000	36,000						
7,500		8,000	223,000	183,000	36,000						
7,540	19/64	8,000	223,000	183,000	36,000						
7,940	5/16	8,000	223,000	183,000	36,000						
8,000		8,000	223,000	183,000	36,000						
8,330	21/64	10,000	249,000	205,000	40,000						
8,500		10,000	249,000	205,000	40,000						



Forets Ratio à canaux de lubrification



- P** • Amin. de l'âme  $\geq \varnothing 3,000$  • affûtage à dépouille conique • forme concave de l'arête de coupe principale • section des goujures optimisée • section maximale des canaux de lubrification • respecter la pression du liquide de refroid.
- M** •
- K** •
- N** ○ aciers de construction et de cémentation • aciers de décolletage, aciers d'amélioration • aciers alliés jusqu'à 1200 N/mm<sup>2</sup> • aciers inoxydables
- S** ○ • fontes
- H** ○

Matière de coupe **CW monobloc**

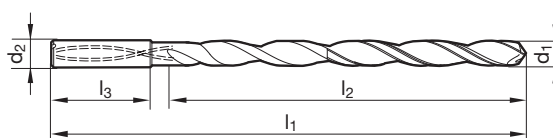
Surface **A**

Forme d'attachement **HA**

Forets Ratio

**GUHRING NAVIGATOR**

Paramètres de coupe, page 760



N° d'article **6512**

d1		d2 h6	l1	l2	l3	d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm	mm	inch	mm	mm	mm	mm
3,000		6,000	125,000	85,000	36,000	7,000		8,000	237,000	197,000	36,000
3,100		6,000	141,000	101,000	36,000	7,140	9/32	8,000	263,000	223,000	36,000
3,170	1/8	6,000	141,000	101,000	36,000	7,500		8,000	263,000	223,000	36,000
3,500		6,000	156,000	116,000	36,000	7,540	19/64	8,000	263,000	223,000	36,000
3,570	9/64	6,000	156,000	116,000	36,000	7,940	5/16	8,000	263,000	223,000	36,000
3,800		6,000	156,000	116,000	36,000	8,000		8,000	263,000	223,000	36,000
3,970	5/32	6,000	156,000	116,000	36,000	8,330	21/64	10,000	294,000	250,000	40,000
4,000		6,000	156,000	116,000	36,000	8,500		10,000	294,000	250,000	40,000
4,200		6,000	183,000	143,000	36,000	8,730	11/32	10,000	294,000	250,000	40,000
4,370	11/64	6,000	183,000	143,000	36,000	8,800		10,000	294,000	250,000	40,000
4,500		6,000	183,000	143,000	36,000	9,000		10,000	294,000	250,000	40,000
4,760	3/16	6,000	183,000	143,000	36,000	9,130	23/64	10,000	321,000	277,000	40,000
5,000		6,000	183,000	143,000	36,000	9,520	3/8	10,000	321,000	277,000	40,000
5,100		6,000	210,000	170,000	36,000	9,920	25/64	10,000	321,000	277,000	40,000
5,160	13/64	6,000	210,000	170,000	36,000	10,000		10,000	321,000	277,000	40,000
5,410		6,000	210,000	170,000	36,000	10,320	13/32	12,000	359,000	310,000	45,000
5,500		6,000	210,000	170,000	36,000	10,720	27/64	12,000	359,000	310,000	45,000
5,560	7/32	6,000	210,000	170,000	36,000	11,000		12,000	359,000	310,000	45,000
5,950	15/64	6,000	210,000	170,000	36,000	11,110	7/16	12,000	386,000	337,000	45,000
6,000		6,000	210,000	170,000	36,000	11,510	29/64	12,000	386,000	337,000	45,000
6,300		8,000	237,000	197,000	36,000	11,910	15/32	12,000	386,000	337,000	45,000
6,350	1/4	8,000	237,000	197,000	36,000	12,000		12,000	386,000	337,000	45,000
6,500		8,000	237,000	197,000	36,000						
6,750	17/64	8,000	237,000	197,000	36,000						



**Forets Ratio à canaux de lubrification**

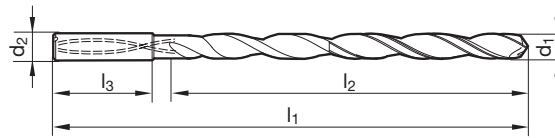


- P** • Amin. de l'âme  $\geq \varnothing 3,000$  • affûtage à dépouille conique • forme concave de l'arête de coupe principale • section des goujures optimisée • section maximale des canaux de lubrification • respecter la pression du liquide de refroid.
- M** •
- K** •
- N** ○ aciers de construction et de cémentation • aciers de décolletage, aciers d'amélioration • aciers alliés jusqu'à 1200 N/mm<sup>2</sup> • aciers inoxydables
- S** ○ • fontes
- H** ○

**GÜHRING NAVIGATOR**

Paramètres de coupe, page 760

Matière de coupe	<b>CW monobloc</b>
Surface	<b>A</b>
Forme d'attachement	HA



N° d'article **6513**

d1		d2 h6	l1	l2	l3	d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm	mm	inch	mm	mm	mm	mm
3,000		6,000	140,000	100,000	36,000	7,000		8,000	272,000	232,000	36,000
3,100		6,000	158,000	118,000	36,000	7,140	9/32	8,000	303,000	263,000	36,000
3,170	1/8	6,000	158,000	118,000	36,000	7,500		8,000	303,000	263,000	36,000
3,500		6,000	176,000	136,000	36,000	7,540	19/64	8,000	303,000	263,000	36,000
3,570	9/64	6,000	176,000	136,000	36,000	7,940	5/16	8,000	303,000	263,000	36,000
3,800		6,000	176,000	136,000	36,000	8,000		8,000	303,000	263,000	36,000
3,970	5/32	6,000	176,000	136,000	36,000	8,330	21/64	10,000	339,000	295,000	40,000
4,000		6,000	176,000	136,000	36,000	8,500		10,000	339,000	295,000	40,000
4,200		6,000	208,000	168,000	36,000	8,730	11/32	10,000	339,000	295,000	40,000
4,370	11/64	6,000	208,000	168,000	36,000	8,800		10,000	339,000	295,000	40,000
4,500		6,000	208,000	168,000	36,000	9,000		10,000	339,000	295,000	40,000
4,760	3/16	6,000	208,000	168,000	36,000	9,130	23/64	10,000	371,000	327,000	40,000
5,000		6,000	208,000	168,000	36,000	9,520	3/8	10,000	371,000	327,000	40,000
5,100		6,000	240,000	200,000	36,000	9,920	25/64	10,000	371,000	327,000	40,000
5,160	13/64	6,000	240,000	200,000	36,000	10,000		10,000	371,000	327,000	40,000
5,410		6,000	240,000	200,000	36,000						
5,500		6,000	240,000	200,000	36,000						
5,560	7/32	6,000	240,000	200,000	36,000						
5,950	15/64	6,000	240,000	200,000	36,000						
6,000		6,000	240,000	200,000	36,000						
6,300		8,000	272,000	232,000	36,000						
6,350	1/4	8,000	272,000	232,000	36,000						
6,500		8,000	272,000	232,000	36,000						
6,750	17/64	8,000	272,000	232,000	36,000						



Forets Ratio à canaux de lubrification



Matière de coupe **CW monobloc**

Surface **A**

Forme d'attachement HA

Forets Ratio

**P** • Amin. de l'âme  $\geq \varnothing 3,000$  • affûtage à dépouille conique • forme concave de l'arête de coupe principale • section des goujures optimisée • section maximale des canaux de lubrification • respecter la pression du liquide de refroid.

**M** •

**K** •

**N** ○

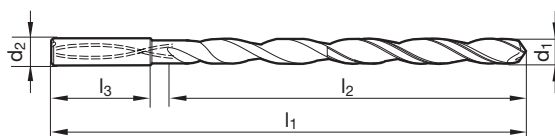
**S** ○

**H** ○

aciers de construction et de cémentation • aciers de décolletage, aciers d'amélioration • aciers alliés jusqu'à 1200 N/mm<sup>2</sup> • aciers inoxydables • fontes

**GÜHRING NAVIGATOR**

Paramètres de coupe, page 760



N° d'article **6514**

d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm
3,000		6,000	170,000	130,000	36,000
3,100		6,000	193,000	153,000	36,000
3,170	1/8	6,000	193,000	153,000	36,000
3,500		6,000	193,000	153,000	36,000
3,570	9/64	6,000	216,000	176,000	36,000
3,800		6,000	216,000	176,000	36,000
3,970	5/32	6,000	216,000	176,000	36,000
4,000		6,000	216,000	176,000	36,000
4,200		6,000	238,000	198,000	36,000
4,370	11/64	6,000	238,000	198,000	36,000
4,500		6,000	238,000	198,000	36,000
4,760	3/16	6,000	258,000	218,000	36,000
5,000		6,000	258,000	218,000	36,000
5,100		6,000	280,000	240,000	36,000
5,160	13/64	6,000	280,000	240,000	36,000
5,410		6,000	280,000	240,000	36,000
5,500		6,000	280,000	240,000	36,000
5,560	7/32	6,000	300,000	260,000	36,000

d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm
5,950	15/64	6,000	300,000	260,000	36,000
6,000		6,000	300,000	260,000	36,000
6,300		8,000	322,000	282,000	36,000
6,350	1/4	8,000	322,000	282,000	36,000
6,500		8,000	322,000	282,000	36,000
6,750	17/64	8,000	342,000	302,000	36,000
7,000		8,000	342,000	302,000	36,000
7,140	9/32	8,000	363,000	323,000	36,000
7,500		8,000	363,000	323,000	36,000
7,540	19/64	8,000	383,000	343,000	36,000
7,940	5/16	8,000	383,000	343,000	36,000
8,000		8,000	383,000	343,000	36,000

**Microforets ExclusiveLine sans canaux de lubrification**

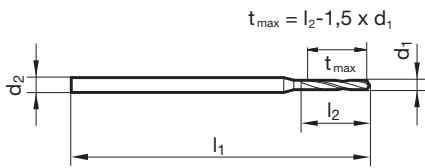


Matière de coupe	<b>CW monobloc</b>
Surface	<b>A</b>
Sens de coupe	<b>R</b>

- P** • Amin. de l'âme ≥ Ø 0,500 • affûtage en pente • arête de coupe principale rectiligne • affilage de l'arête de coupe automatisé
- M** •
- K** •
- N** ○ aciers de construction et de cémentation • aciers de décolletage, aciers d'amélioration • aciers alliés jusqu'à 1200 N/mm<sup>2</sup> • aciers inoxydables
- S** ○ fontes
- H**

**GUHRING NAVIGATOR**

Paramètres de coupe, page 796



N° d'article **6400**

d1	d2 h6	l1	l2
mm	mm	mm	mm
0,500	3,000	47,000	3,000
0,550	3,000	47,000	3,300
0,600	3,000	47,000	3,600
0,650	3,000	47,000	3,900
0,700	3,000	47,000	4,200
0,750	3,000	47,000	4,500
0,800	3,000	47,000	4,800
0,850	3,000	47,000	5,100
0,900	3,000	47,000	5,400
0,950	3,000	47,000	5,700
1,000	3,000	47,000	6,000
1,050	3,000	47,000	6,300
1,100	3,000	47,000	6,600
1,150	3,000	47,000	6,900
1,200	3,000	47,000	7,200
1,250	3,000	47,000	7,500
1,300	3,000	47,000	7,800
1,350	3,000	47,000	8,100
1,400	3,000	47,000	8,400
1,450	3,000	47,000	8,700
1,500	3,000	47,000	9,000
1,550	3,000	47,000	9,300
1,590	3,000	47,000	9,600
1,600	3,000	47,000	9,600
1,650	3,000	47,000	9,900
1,700	3,000	47,000	10,200
1,750	3,000	47,000	10,500
1,800	3,000	52,000	10,800
1,850	3,000	52,000	11,100
1,900	3,000	52,000	11,400

d1	d2 h6	l1	l2
mm	mm	mm	mm
1,950	3,000	52,000	11,700
1,980	4,000	59,000	12,000
2,000	4,000	59,000	12,000
2,050	4,000	59,000	12,300
2,100	4,000	59,000	12,600
2,150	4,000	59,000	12,900
2,200	4,000	59,000	13,200
2,250	4,000	59,000	13,500
2,300	4,000	59,000	13,800
2,350	4,000	59,000	14,100
2,380	4,000	59,000	14,400
2,400	4,000	59,000	14,400
2,450	4,000	59,000	14,700
2,500	4,000	59,000	15,000
2,550	4,000	59,000	15,300
2,600	4,000	59,000	15,600
2,650	4,000	59,000	15,900
2,700	4,000	59,000	16,200
2,750	4,000	59,000	16,500
2,780	4,000	59,000	16,800
2,800	4,000	59,000	16,800
2,850	4,000	59,000	17,100
2,900	4,000	59,000	17,400
2,950	4,000	59,000	17,700
3,000	4,000	59,000	18,000



**Microforets ExclusiveLine sans canaux de lubrification**



Matière de coupe **CW monobloc**

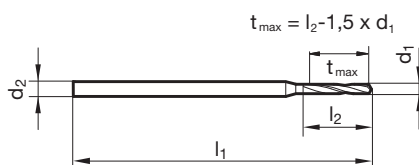
Surface **A**

Sens de coupe **R**

- P** • Amin. de l'âme  $\geq \varnothing 0,500$  • affûtage en pente • arête de coupe principale rectiligne • affilage de l'arête de coupe automatisé
- M** •
- K** •
- N** ○ aciers de construction et de cémentation • aciers de décolletage, aciers d'amélioration • aciers alliés jusqu'à 1200 N/mm<sup>2</sup> • aciers inoxydables
- S** ○ fontes
- H**

**GUHRING NAVIGATOR**

Paramètres de coupe, page 796



N° d'article **6401**

d1	d2 h6	l1	l2
mm	mm	mm	mm
0,500	3,000	47,000	4,000
0,550	3,000	47,000	4,400
0,600	3,000	47,000	4,800
0,650	3,000	47,000	5,200
0,700	3,000	47,000	5,600
0,750	3,000	47,000	6,000
0,800	3,000	47,000	6,400
0,850	3,000	47,000	6,800
0,900	3,000	47,000	7,200
0,950	3,000	47,000	7,600
1,000	3,000	47,000	8,000
1,050	3,000	47,000	8,400
1,100	3,000	47,000	8,800
1,150	3,000	47,000	9,200
1,200	3,000	52,000	10,800
1,250	3,000	52,000	11,300
1,300	3,000	52,000	11,700
1,350	3,000	52,000	12,200
1,400	3,000	52,000	12,600
1,450	3,000	52,000	13,100
1,500	3,000	52,000	13,500
1,550	3,000	52,000	14,000
1,590	3,000	52,000	14,400
1,600	3,000	52,000	14,400
1,650	3,000	52,000	14,900
1,700	3,000	52,000	15,300
1,750	3,000	52,000	15,800
1,800	3,000	52,000	16,200
1,850	3,000	52,000	16,700
1,900	3,000	52,000	17,100

d1	d2 h6	l1	l2
mm	mm	mm	mm
1,950	3,000	52,000	17,600
1,980	4,000	63,000	18,000
2,000	4,000	63,000	18,000
2,050	4,000	63,000	18,500
2,100	4,000	63,000	18,900
2,150	4,000	63,000	19,400
2,200	4,000	63,000	19,800
2,250	4,000	63,000	20,300
2,300	4,000	63,000	20,700
2,350	4,000	63,000	21,200
2,380	4,000	63,000	21,600
2,400	4,000	63,000	21,600
2,450	4,000	63,000	22,100
2,500	4,000	63,000	22,500
2,550	4,000	63,000	23,000
2,600	4,000	67,000	23,400
2,650	4,000	67,000	23,900
2,700	4,000	67,000	24,300
2,750	4,000	67,000	24,800
2,780	4,000	67,000	25,200
2,800	4,000	67,000	25,200
2,850	4,000	67,000	25,700
2,900	4,000	67,000	26,100
2,950	4,000	67,000	26,600
3,000	4,000	67,000	27,000



**Microforets ExclusiveLine avec canaux de lubrification**



Matière de coupe **CW monobloc**

Surface **A**

Sens de coupe **R**



**P** • Amin. de l'âme  $\geq \varnothing 1,400$  • affûtage en pente • arête de coupe principale rectiligne • affilage de l'arête de coupe automatisé

**M** •

**K** •

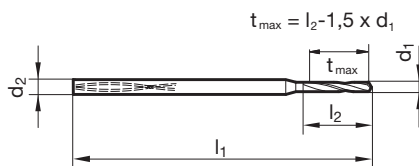
**N** ○ aciers de construction et de cémentation • aciers de décolletage, aciers d'amélioration • aciers alliés jusqu'à 1200 N/mm<sup>2</sup> • aciers inoxydables

**S** ○ fontes

**H**

**GÜHRING NAVIGATOR**

Paramètres de coupe, page 796



N° d'article **6405**

d1	d2 h6	l1	l2
mm	mm	mm	mm
1,400	4,000	52,000	11,000
1,450	4,000	52,000	12,000
1,500	4,000	52,000	12,000
1,550	4,000	52,000	12,000
1,590	4,000	52,000	13,000
1,600	4,000	52,000	13,000
1,650	4,000	52,000	13,000
1,700	4,000	56,000	14,000
1,750	4,000	56,000	14,000
1,800	4,000	56,000	14,000
1,850	4,000	56,000	15,000
1,900	4,000	56,000	15,000
1,950	4,000	56,000	16,000
1,980	4,000	56,000	16,000
2,000	4,000	56,000	16,000
2,050	4,000	56,000	16,000
2,100	4,000	62,000	17,000
2,150	4,000	62,000	17,000
2,200	4,000	62,000	18,000
2,250	4,000	62,000	18,000
2,300	4,000	62,000	18,000
2,350	4,000	62,000	19,000
2,380	4,000	62,000	19,000
2,400	4,000	62,000	19,000

d1	d2 h6	l1	l2
mm	mm	mm	mm
2,450	4,000	62,000	20,000
2,500	4,000	62,000	20,000
2,550	4,000	62,000	20,000
2,600	4,000	66,000	21,000
2,650	4,000	66,000	21,000
2,700	4,000	66,000	22,000
2,750	4,000	66,000	22,000
2,780	4,000	66,000	22,000
2,800	4,000	66,000	22,000
2,850	4,000	66,000	23,000
2,900	4,000	66,000	23,000
2,950	4,000	66,000	24,000
3,000	4,000	66,000	24,000





**Microforets ExclusiveLine avec canaux de lubrification**



Matière de coupe **CW monobloc**

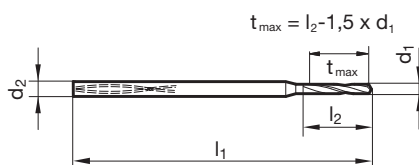
Surface **A**

Sens de coupe **R**

- P** • Amin. de l'âme ≥ Ø 1,400 • affûtage en pente • arête de coupe principale rectiligne • affilage de l'arête de coupe automatisé
- M** •
- K** •
- N** ○ aciers de construction et de cémentation • aciers de décolletage, aciers d'amélioration • aciers alliés jusqu'à 1200 N/mm<sup>2</sup> • aciers inoxydables
- S** ○ fontes
- H**

**GÜHRING NAVIGATOR**

Paramètres de coupe, page 796



N° d'article **6408**

d1	d2 h6	l1	l2
mm	mm	mm	mm
1,400	4,000	52,000	15,000
1,450	4,000	52,000	16,000
1,500	4,000	52,000	17,000
1,550	4,000	52,000	17,000
1,590	4,000	52,000	18,000
1,600	4,000	52,000	18,000
1,650	4,000	52,000	18,000
1,700	4,000	56,000	19,000
1,750	4,000	56,000	19,000
1,800	4,000	56,000	20,000
1,850	4,000	56,000	20,000
1,900	4,000	56,000	21,000
1,950	4,000	56,000	21,000
1,980	4,000	56,000	22,000
2,000	4,000	56,000	22,000
2,050	4,000	56,000	23,000
2,100	4,000	62,000	23,000
2,150	4,000	62,000	24,000
2,200	4,000	62,000	24,000
2,250	4,000	62,000	25,000
2,300	4,000	62,000	25,000
2,320	4,000	62,000	26,000
2,350	4,000	62,000	26,000
2,380	4,000	62,000	26,000

d1	d2 h6	l1	l2
mm	mm	mm	mm
2,400	4,000	62,000	26,000
2,450	4,000	62,000	27,000
2,500	4,000	62,000	28,000
2,550	4,000	62,000	28,000
2,600	4,000	66,000	29,000
2,650	4,000	66,000	29,000
2,700	4,000	66,000	30,000
2,750	4,000	66,000	30,000
2,780	4,000	66,000	31,000
2,800	4,000	66,000	31,000
2,850	4,000	66,000	31,000
2,900	4,000	66,000	32,000
2,950	4,000	66,000	32,000
3,000	4,000	66,000	33,000



**Microforets ExclusiveLine avec canaux de lubrification**



Matière de coupe **CW monobloc**

Surface **A**

Sens de coupe **R**

**P** • Amin. de l'âme  $\geq \varnothing 1,400$  • affûtage en pente • arête de coupe principale rectiligne • affilage de l'arête de coupe automatisé

**M** •

**K** •

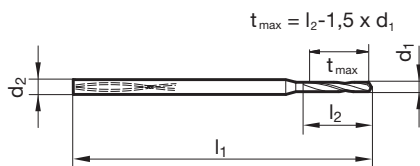
**N** ○ aciers de construction et de cémentation • aciers de décolletage, aciers d'amélioration • aciers alliés jusqu'à 1200 N/mm<sup>2</sup> • aciers inoxydables

**S** ○ fontes

**H**

**GÜHRING NAVIGATOR**

Paramètres de coupe, page 796



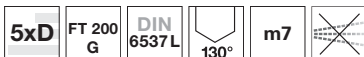
N° d'article **6412**

d1	d2 h6	l1	l2
mm	mm	mm	mm
1,400	4,000	62,000	25,000
1,500	4,000	62,000	27,000
1,590	4,000	62,000	29,000
1,600	4,000	62,000	29,000
1,700	4,000	70,000	31,000
1,800	4,000	70,000	32,000
1,900	4,000	70,000	34,000
1,980	4,000	70,000	36,000
2,000	4,000	70,000	36,000
2,100	4,000	78,000	38,000
2,200	4,000	78,000	40,000
2,300	4,000	78,000	42,000

d1	d2 h6	l1	l2
mm	mm	mm	mm
2,380	4,000	78,000	44,000
2,400	4,000	78,000	44,000
2,500	4,000	78,000	45,000
2,600	4,000	87,000	47,000
2,700	4,000	87,000	48,000
2,780	4,000	87,000	50,000
2,800	4,000	87,000	50,000
2,900	4,000	87,000	52,000
3,000	4,000	87,000	54,000



Forets Ratio à 3 lèvres



Matière de coupe **CW monobloc**

Surface ○

Forme d'attachement HA

**P** Amin. de l'âme ≥ Ø 3,000 • affûtage Spiropoint • goujures larges • centrage optimal • pour une coupe interrompue

**M**

**K** •

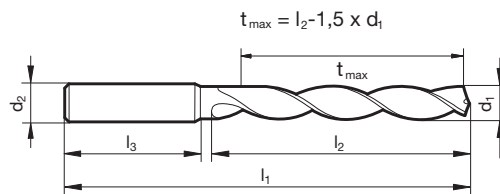
**N** • fonte • alliages Al à copeaux longs • laiton, bronzes

**S**

**H**

**GUHRING** NAVIGATOR

Paramètres de coupe, page 762



N° d'article **2713**

d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm
3,000		6,000	66,000	28,000	36,000
3,100		6,000	66,000	28,000	36,000
3,200		6,000	66,000	28,000	36,000
3,300		6,000	66,000	28,000	36,000
3,500		6,000	66,000	28,000	36,000
3,700		6,000	66,000	28,000	36,000
3,800		6,000	74,000	36,000	36,000
4,000		6,000	74,000	36,000	36,000
4,100		6,000	74,000	36,000	36,000
4,200		6,000	74,000	36,000	36,000
4,500		6,000	74,000	36,000	36,000
4,800		6,000	82,000	44,000	36,000
5,000		6,000	82,000	44,000	36,000
5,100		6,000	82,000	44,000	36,000
5,200		6,000	82,000	44,000	36,000
5,300		6,000	82,000	44,000	36,000
5,500		6,000	82,000	44,000	36,000
5,800		6,000	82,000	44,000	36,000
6,000		6,000	82,000	44,000	36,000
6,100		8,000	91,000	53,000	36,000
6,200		8,000	91,000	53,000	36,000
6,400		8,000	91,000	53,000	36,000
6,500		8,000	91,000	53,000	36,000
6,700		8,000	91,000	53,000	36,000
6,800		8,000	91,000	53,000	36,000
7,000		8,000	91,000	53,000	36,000
7,100		8,000	91,000	53,000	36,000
7,400		8,000	91,000	53,000	36,000
7,500		8,000	91,000	53,000	36,000
7,800		8,000	91,000	53,000	36,000
8,000		8,000	91,000	53,000	36,000
8,100		10,000	103,000	61,000	40,000
8,200		10,000	103,000	61,000	40,000
8,400		10,000	103,000	61,000	40,000
8,500		10,000	103,000	61,000	40,000
8,600		10,000	103,000	61,000	40,000

d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm
8,700		10,000	103,000	61,000	40,000
8,800		10,000	103,000	61,000	40,000
9,000		10,000	103,000	61,000	40,000
9,100		10,000	103,000	61,000	40,000
9,500		10,000	103,000	61,000	40,000
9,800		10,000	103,000	61,000	40,000
10,000		10,000	103,000	61,000	40,000
10,100		12,000	118,000	71,000	45,000
10,200		12,000	118,000	71,000	45,000
10,300		12,000	118,000	71,000	45,000
10,500		12,000	118,000	71,000	45,000
11,000		12,000	118,000	71,000	45,000
11,200		12,000	118,000	71,000	45,000
11,500		12,000	118,000	71,000	45,000
11,800		12,000	118,000	71,000	45,000
12,000		12,000	118,000	71,000	45,000
12,100		14,000	124,000	77,000	45,000
12,500		14,000	124,000	77,000	45,000
13,000		14,000	124,000	77,000	45,000
13,500		14,000	124,000	77,000	45,000
14,000		14,000	124,000	77,000	45,000
14,500		16,000	133,000	83,000	48,000
15,000		16,000	133,000	83,000	48,000
15,500		16,000	133,000	83,000	48,000
16,000		16,000	133,000	83,000	48,000
16,500		18,000	143,000	93,000	48,000
17,000		18,000	143,000	93,000	48,000
17,500		18,000	143,000	93,000	48,000
18,000		18,000	143,000	93,000	48,000
18,500		20,000	153,000	101,000	50,000
19,000		20,000	153,000	101,000	50,000
19,500		20,000	153,000	101,000	50,000
20,000		20,000	153,000	101,000	50,000



**Forets Ratio à 3 lèbres**



**P** ◦ Amin. de l'âme  $\geq \varnothing 3,000$  • affûtage en pente • pour les perçages de grande précision • état de surface d.perçages de qualité supérieure • pour une coupe interrompue

**M** ◦

**K** ◦

**N** ◦ fontes aciérées • aciers alliés ou non alliés  $< 1000 \text{ N/mm}^2$

**S** ◦

**H** ◦

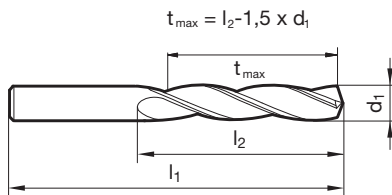
Matière de coupe **CW monobloc**

Surface **S**

Forme d'attachement cyl.

**GÜHRING NAVIGATOR**

Paramètres de coupe, page 762



N° d'article **611**

d1		l1	l2
mm	inch	mm	mm
3,000		46,000	22,000
3,100		49,000	24,000
3,900		55,000	30,000
4,000		55,000	30,000
4,100		55,000	30,000
4,200		55,000	30,000
5,000		62,000	35,000
6,000		66,000	39,000
6,200		70,000	42,000
6,800		74,000	45,000
7,000		74,000	45,000
8,000		79,000	48,000

d1		l1	l2
mm	inch	mm	mm
8,500		79,000	48,000
10,000		89,000	55,000
10,200		89,000	55,000
12,000		102,000	65,000
14,000		107,000	66,000
14,400		111,000	70,000



Forets Ratio à 3 lèbres



Matière de coupe **CW monobloc**

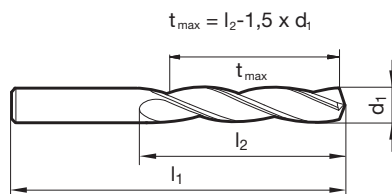
Surface ○

Forme d'attache cyl.

- P** ○ Amin. de l'âme ≥ Ø 3,000 • affûtage en pente • pour les perçages de grande précision • état de surface d.perçages de qualité supérieure • pour une coupe interrompue
- M** ○
- K** ○
- N** ○ fontes acérées • aciers alliés ou non alliés < 1000 N/mm<sup>2</sup>
- S** ○
- H** ○

**GÜHRING** NAVIGATOR

Paramètres de coupe, page 762



N° d'article **731**

d1		l1	l2
mm	inch	mm	mm
3,000		46,000	22,000
3,100		49,000	24,000
3,200		49,000	24,000
3,300		49,000	24,000
3,400		52,000	27,000
3,500		52,000	27,000
3,600		52,000	27,000
3,700		52,000	27,000
3,800		55,000	30,000
3,900		55,000	30,000
3,970	5/32	55,000	30,000
4,000		55,000	30,000
4,200		55,000	30,000
4,300		58,000	32,000
4,500		58,000	32,000
4,700		58,000	32,000
4,760	3/16	62,000	35,000
4,800		62,000	35,000
5,000		62,000	35,000
5,100		62,000	35,000
5,200		62,000	35,000
5,300		62,000	35,000
5,400		66,000	39,000
5,500		66,000	39,000
5,600		66,000	39,000
5,800		66,000	39,000
6,000		66,000	39,000
6,100		70,000	42,000
6,400		70,000	42,000
6,500		70,000	42,000
6,700		70,000	42,000
6,750	17/64	74,000	45,000
6,800		74,000	45,000
7,000		74,000	45,000
7,500		74,000	45,000
7,700		79,000	48,000

d1		l1	l2
mm	inch	mm	mm
7,800		79,000	48,000
8,000		79,000	48,000
8,100		79,000	48,000
8,300		79,000	48,000
8,400		79,000	48,000
8,500		79,000	48,000
9,000		84,000	52,000
9,600		89,000	55,000
9,700		89,000	55,000
9,800		89,000	55,000
9,900		89,000	55,000
10,000		89,000	55,000
10,200		89,000	55,000
10,320	13/32	89,000	55,000
10,400		89,000	55,000
10,500		89,000	55,000
10,800		95,000	60,000
11,000		95,000	60,000
11,300		95,000	60,000
11,500		95,000	60,000
11,600		95,000	60,000
11,700		95,000	60,000
12,000		102,000	65,000
12,100		102,000	65,000
12,500		102,000	65,000
13,000		102,000	65,000
13,200		102,000	65,000
13,500		107,000	66,000
14,000		107,000	66,000
14,300		111,000	70,000
16,000		115,000	73,000
17,500		123,000	76,000
20,000		131,000	79,000



**Forets Ratio à 3 lèvres**

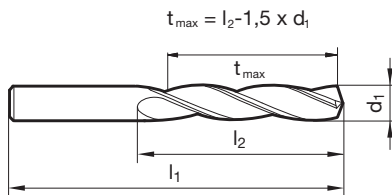


<b>P</b>	Amin. de l'âme $\geq \varnothing 3,570$ • affûtage en pente • pour les perçages de grande précision • état de surface d.perçages de qualité supérieure • pour une coupe interrompue
<b>M</b>	
<b>K</b>	○
<b>N</b>	○ fontes • alliages de fontes d'aluminium
<b>S</b>	
<b>H</b>	

Matière de coupe	<b>CW monobloc</b>
Surface	○
Forme d'attachement	cyl.

**GÜHRING NAVIGATOR**

Paramètres de coupe, page 762



N° d'article **745**

d1		l1	l2
mm	inch		
3,570	9/64	52,000	27,000
4,370	11/64	58,000	32,000
6,900		74,000	45,000
7,300		74,000	45,000
7,940	5/16	79,000	48,000
8,330	21/64	79,000	48,000

d1		l1	l2
mm	inch		
8,800		84,000	52,000
9,700		89,000	55,000
10,720	27/64	95,000	60,000
12,500		102,000	65,000



Forets Ratio à 3 lèbres



Matière de coupe **CW monobloc**

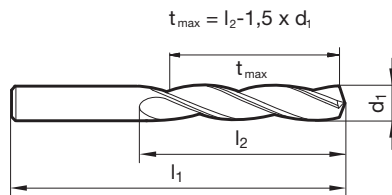
Surface ○

Forme d'attachement cyl.

- P** Amin. de l'âme ≥ Ø 3,000 • affûtage en pente • pour les perçages de grande précision • état de surface d.perçages de qualité supérieure • pour une coupe interrompue
- M**
- K** ○
- N** ○ fontes • alliages de fontes d'aluminium
- S**
- H**

**GUHRING** NAVIGATOR

Paramètres de coupe, page 762



N° d'article **1025**

d1		l1	l2
mm	inch	mm	mm
3,000		46,000	22,000
3,100		49,000	24,000
3,200		49,000	24,000
3,300		49,000	24,000
3,400		52,000	27,000
3,500		52,000	27,000
3,570	9/64	52,000	27,000
3,600		52,000	27,000
3,700		52,000	27,000
3,800		55,000	30,000
3,900		55,000	30,000
3,970	5/32	55,000	30,000
4,000		55,000	30,000
4,100		55,000	30,000
4,200		55,000	30,000
4,300		58,000	32,000
4,370	11/64	58,000	32,000
4,500		58,000	32,000
4,600		58,000	32,000
4,700		58,000	32,000
4,800		62,000	35,000
4,900		62,000	35,000
5,000		62,000	35,000
5,100		62,000	35,000
5,200		62,000	35,000
5,300		62,000	35,000
5,400		66,000	39,000
5,500		66,000	39,000
5,600		66,000	39,000
5,700		66,000	39,000
5,800		66,000	39,000
5,900		66,000	39,000
6,000		66,000	39,000
6,100		70,000	42,000
6,200		70,000	42,000
6,300		70,000	42,000
6,400		70,000	42,000
6,500		70,000	42,000
6,600		70,000	42,000
6,700		70,000	42,000
6,800		74,000	45,000
7,000		74,000	45,000

d1		l1	l2
mm	inch	mm	mm
7,100		74,000	45,000
7,200		74,000	45,000
7,300		74,000	45,000
7,400		74,000	45,000
7,500		74,000	45,000
7,600		79,000	48,000
7,700		79,000	48,000
7,800		79,000	48,000
7,900		79,000	48,000
8,000		79,000	48,000
8,100		79,000	48,000
8,200		79,000	48,000
8,400		79,000	48,000
8,500		79,000	48,000
8,600		84,000	52,000
8,700		84,000	52,000
8,800		84,000	52,000
9,000		84,000	52,000
9,100		84,000	52,000
9,300		84,000	52,000
9,500		84,000	52,000
9,520	3/8	89,000	55,000
9,600		89,000	55,000
9,700		89,000	55,000
9,800		89,000	55,000
10,000		89,000	55,000
10,100		89,000	55,000
10,200		89,000	55,000
10,300		89,000	55,000
10,500		89,000	55,000
10,700		95,000	60,000
11,000		95,000	60,000
11,110	7/16	95,000	60,000
11,200		95,000	60,000
11,500		95,000	60,000
11,510	29/64	95,000	60,000
11,700		95,000	60,000
11,800		95,000	60,000
11,910	15/32	102,000	65,000
12,000		102,000	65,000
12,200		102,000	65,000
12,500		102,000	65,000



Forets Ratio

d1		l1	l2
mm	inch	mm	mm
12,700	1/2	102,000	65,000
13,000		102,000	65,000
13,500		107,000	66,000
13,800		107,000	66,000
14,000		107,000	66,000
14,300		111,000	70,000
14,500		111,000	70,000
15,000		111,000	70,000
15,870	5/8	115,000	73,000
16,000		115,000	73,000
17,000		119,000	73,000
18,500		127,000	76,000

d1		l1	l2
mm	inch	mm	mm
19,000		127,000	76,000
20,000		131,000	79,000





Forets Ratio à 3 lèbres



Matière de coupe **CW monobloc**

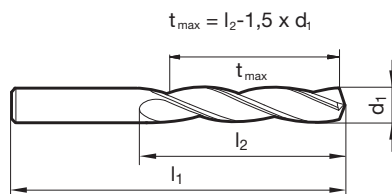
Surface **S**

Forme d'attachement cyl.

- P** ○ Amin. de l'âme ≥ Ø 3,000 • affûtage en pente • pour les perçages de grande précision • état de surface d.perçages de qualité supérieure • pour une coupe interrompue
- M** ○
- K** ○
- N** ○ aciers de décolletage, aciers de construction • aciers alliés ou non alliés < 1000 N/mm<sup>2</sup>
- S** ○
- H** ○

**GÜHRING** NAVIGATOR

Paramètres de coupe, page 762



N° d'article **1027**

d1		l1	l2
mm	inch	mm	mm
3,000		46,000	22,000
3,200		49,000	24,000
3,900		55,000	30,000
4,000		55,000	30,000
4,900		62,000	35,000
5,000		62,000	35,000
5,300		62,000	35,000
5,500		66,000	39,000
6,000		66,000	39,000
6,200		70,000	42,000
7,000		74,000	45,000
9,000		84,000	52,000

d1		l1	l2
mm	inch	mm	mm
10,000		89,000	55,000
11,000		95,000	60,000



## Forets étagés Ratio, 3 lèvres

Matière de coupe **CW monobloc**

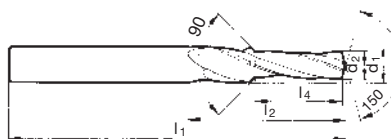
Surface ○

Forme d'attachement cyl.

**P** Amin. de l'âme  $\geq \varnothing 3,400$  • affûtage en pente • pour les perçages de grande précision • état de surface d.perçages de qualité supérieure • pour une coupe interrompue

**M****K** ○**N** ○**S****H**

fontes • alliages de fontes d'aluminium

N° d'article **1032**

d1	d2	l1	l2	l4	pour filetage
mm	mm	mm	mm	mm	
3,400	2,500	52,000	27,000	9,000	M 3
4,500	3,300	58,000	32,000	11,000	M 4
5,500	4,200	66,000	39,000	14,000	M 5
5,500	4,700	66,000	39,000	14,000	
6,600	5,000	70,000	42,000	16,000	M 6
9,000	6,800	84,000	52,000	22,000	M 8
11,000	8,500	95,000	60,000	28,000	M10
11,000	8,800	95,000	60,000	28,000	M10X1,25
13,500	10,200	107,000	66,000	33,000	M12
15,500	13,200	115,000	73,000	38,000	
17,500	15,000	123,000	76,000	41,000	M16 X1
20,000	16,000	131,000	79,000	43,000	M18X2



# GM 300

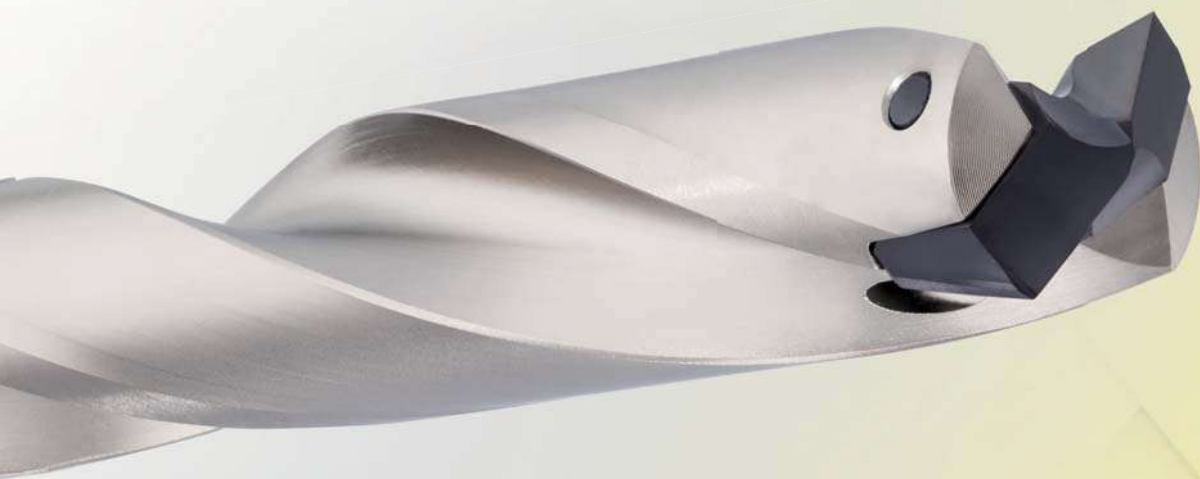
Attachements d'outils  
et éléments de serrage  
pour chaque application

Vous trouverez toutes les caractéristiques techniques  
complémentaires dans notre catalogue GM 300.





# SYSTÈME D'OUTILS À PLAQUETTES INTERCHANG. T 800





# Système modulaire HT 800 WP

Avec le nouveau système de perçage HT 800 WP à plaquettes de coupe interchangeables, Gühring vous offre un produit très performant à prix inégalable pour les diamètres de perçages entre 11,00 et 40,00 mm.

Le système modulaire HT 800 WP est idéal pour l'usinage de gros perçages de précision de différents matériaux de l'industrie énergétique, automobile, de construction métallique et construction de machines.

## EXCELLENTE TENUE DE COUPE

- Matière de coupe, géométrie et état de surface des plaquettes toujours bien adapté aux applications d'usinages en fonction des matériaux à usiner
- Résultat d'usinage optimal sur les aciers, aciers inoxydables, fontes et aluminiums

## EVACUATION OPTIMALE DES COPEAUX

- Section spéciale des goujures
- Etat de surface de qualité supérieure

## SUPPORT RIGIDE

- Echelonnement très serré des différents diamètres des supports afin d'amoindrir l'usure
- Qualité supérieure de l'état de la surface usinée
- Guidage amélioré de l'outil assurant la rigidité d'usinage
- Durée de vie des outils, augmentée

## SIÈGE DE LA PLAQUETTE DE COUPE RIGIDE ET DE HAUTE PRÉCISION

- Echange de la plaquette de coupe sur la machine
- Support restant serré
- Echange de l'outil complet ou ajustage et réglage sont superflus
- Assure la fiabilité du procédé d'usinage et raccourci les temps de préparation

## OPTIMALE LUBRIFICATION ET REFROIDISSEMENT PARFAIT

- Section maximale des canaux de lubrification
- Avec sortie dans les goujures





Pour l'usinage de chacun des matériaux et différentes applications, existe avec un numéro d'article de plaquette de coupe appropriée

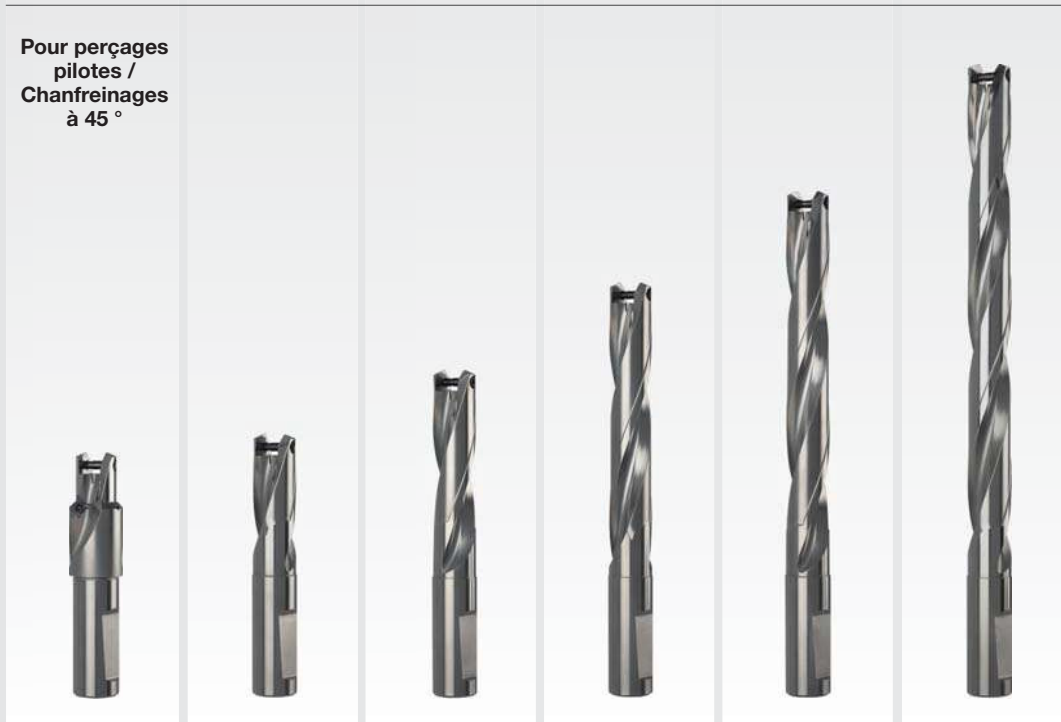


Système d'outils à plaquettes interchangeables T 800

# HT 800 WP

Pour chaque profondeur et application, existe un numéro d'article de support approprié

N° d'article	4105	4106	4107	4108	4109	4110
Profondeur	1 x D	1,5 x D	3 x D	5 x D	7 x D	10 x D
Diamètres	11,0 - 40,00	11,0 - 40,00	11,0 - 40,00	11,0 - 40,00	11,0 - 31,99	11,0 - 31,99
Forme d'attachem.	DIN 6535-HE	DIN 6535-HE	DIN 6535-HE	DIN 6535-HE	DIN 6535-HE	DIN 6535-HE



Le support de plaquette pour le perçage pilote, numéro d'article 4105, est prévu pour le montage d'une plaquette de chanfreinage. Ainsi, le perçage pilote et chanfreinage à 45° peuvent être réalisés en une seule opération.

Système d'outils à plaquettes interchangeables T 800

P	M	K	N	S	H	Présentation	Profondeur	Forme d'attachement	Type	Norme	Matière de coupe	Surface	d1/mm	N° d'article	Param. de coupe, page	Page
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### Porte-outil HT 800

	1xD	HE	HT 800 WP	WN	Ni	4105	764	138
	1,5xD	HE	HT 800 WP	WN	Ni	4106	764	128
	3xD	HE	HT 800 WP	WN	Ni	4107	764	130
	5xD	HE	HT 800 WP	WN	Ni	4108	766	132
	7xD	HE	HT 800 WP	WN	Ni	4109	766	134
	10xD	HE	HT 800 WP	WN	Ni	4110	768	136

### Plaquettes interchangeables HT 800

	HT 800 WP	WN	VHM	F	11,000 - 40,000	4113	764	142
	HT 800 WP	WN	VHM		11,000 - 40,000	4114	764	148
	HT 800 WP	WN	VHM	F	11,000 - 40,000	4112	764	139
	HT 800 WP	WN	VHM	a	11,000 - 40,000	4115	764	145
	HT 800 WP	WN	VHM	a	11,000 - 40,000	4111	768	151

### Plaquettes de lamage HT 800

	WN	VHM			7635	156
	WN	VHM	S		7645	154
	WN	VHM	A		7632	155

### Vis de fixation

	WN	6128	157
	WN	4071	158

### Porte-outil RT 800

	3xD	HE	RT 800 WP	WN	Ni	5242	770	159
	5xD	HE	RT 800 WP	WN	Ni	5243	770	160
	7xD	HE	RT 800 WP	WN	Ni	5248	770	161

### Plaquettes interchangeables RT 800

	RT 800 WP	WN	VHM	F	16,000 - 40,500	2485	770	164
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P	M	K	N	S	H	Présentation	Profondeur	Forme d'attachement	Type	Norme	Matière de coupe	Surface	d1/mm	N° d'article	Param. de coupe, page	Page
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## Plaquettes interchangeables RT 800

		RT 800 WP		VHM	○	16,000 - 40,000	<b>2747</b>	770	166
		RT 800 WP		VHM	Ⓢ	16,000 - 40,500	<b>1047</b>	770	162

## Vis de fixation pour RT 800



**1071**

168

## Clé dynamométrique



**4915**

169

## Embouts pour Vis Torx



**4917**

170

## Tournevis Torx



**1612**

171

Système d'outils à plaquettes interchangeable T 800

Porte-outil HT 800



Matière de coupe

Surface



Forme d'attachement

HE

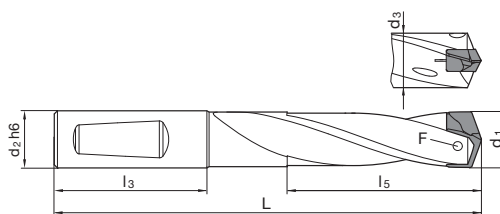
**P** nickelé • résistance à l'usure particulièrement élevée • section des goujures optimisée • sortie optimisée des can.de refroid. • Y compris vis de blocage n° d'article 4071 • Y compris tournevis n° d'article 1612



Système d'outils à plaquettes interchangeables T 800

**GÜHRING** NAVIGATOR

Paramètres de coupe, page 764-768



N° d'article **4106**

d1	d2 h6	d3	L	l3	l5	F	N° de code
mm	mm	mm	mm	mm	mm		
11,00-11,49	12,000	10,700	84,000	45,000	19,300	4071 2.200	11,000
11,00-11,49	12,700	10,700	84,000	45,000	19,300	4071 2.200	11,005
11,50-11,99	12,000	11,200	85,000	45,000	20,100	4071 2.200	11,500
11,50-11,99	12,700	11,200	85,000	45,000	20,100	4071 2.200	11,505
12,00-12,49	12,000	11,700	87,000	45,000	21,000	4071 2.201	12,000
12,00-12,49	12,700	11,700	87,000	45,000	21,000	4071 2.201	12,005
12,50-12,99	14,000	12,200	89,000	45,000	21,900	4071 2.201	12,500
12,50-12,99	15,875	12,200	89,000	45,000	21,900	4071 2.201	12,505
13,00-13,49	14,000	12,700	90,000	45,000	22,600	4071 2.500	13,000
13,00-13,49	15,875	12,700	90,000	45,000	22,600	4071 2.500	13,005
13,50-13,99	14,000	13,200	92,000	45,000	23,600	4071 2.500	13,500
13,50-13,99	15,875	13,200	92,000	45,000	23,600	4071 2.500	13,505
14,00-14,49	14,000	13,700	93,000	45,000	24,500	4071 3.000	14,000
14,00-14,49	15,875	13,700	93,000	45,000	24,500	4071 3.000	14,005
14,50-14,99	16,000	14,200	98,000	48,000	25,300	4071 3.000	14,500
14,50-14,99	15,875	14,200	98,000	48,000	25,300	4071 3.000	14,505
15,00-15,49	16,000	14,700	100,000	48,000	26,100	4071 3.001	15,000
15,00-15,49	15,875	14,700	100,000	48,000	26,100	4071 3.001	15,005
15,50-15,99	16,000	15,200	101,000	48,000	27,000	4071 3.001	15,500
15,50-15,99	15,875	15,200	101,000	48,000	27,000	4071 3.001	15,505
16,00-16,49	16,000	15,700	102,000	48,000	27,800	4071 3.500	16,000
16,00-16,49	15,875	15,700	102,000	48,000	27,800	4071 3.500	16,005
16,50-16,99	18,000	16,200	105,000	48,000	28,700	4071 3.500	16,500
16,50-16,99	19,050	16,200	105,000	48,000	28,700	4071 3.500	16,505
17,00-17,49	18,000	16,700	106,000	48,000	29,600	4071 3.500	17,000
17,00-17,49	19,050	16,700	106,000	48,000	29,600	4071 3.500	17,005
17,50-17,99	18,000	17,200	107,000	48,000	30,400	4071 3.500	17,500
17,50-17,99	19,050	17,200	107,000	48,000	30,400	4071 3.500	17,505
18,00-18,49	18,000	17,700	109,000	48,000	31,200	4071 4.000	18,000
18,00-18,49	19,050	17,700	109,000	48,000	31,200	4071 4.000	18,005
18,50-18,99	20,000	18,200	113,000	50,000	32,100	4071 4.000	18,500
18,50-18,99	19,050	18,200	113,000	50,000	32,100	4071 4.000	18,505
19,00-19,49	20,000	18,700	114,000	50,000	32,900	4071 4.000	19,000
19,00-19,49	19,050	18,700	114,000	50,000	32,900	4071 4.000	19,005
19,50-19,99	20,000	19,200	116,000	50,000	33,700	4071 4.000	19,500
19,50-19,99	19,050	19,200	116,000	50,000	33,700	4071 4.000	19,505
20,00-20,49	20,000	19,700	117,000	50,000	34,600	4071 4.500	20,000
20,00-20,49	19,050	19,700	117,000	50,000	34,600	4071 4.500	20,005
20,50-20,99	25,000	20,200	128,000	56,000	35,500	4071 4.500	20,500
20,50-20,99	25,400	20,200	128,000	56,000	35,500	4071 4.500	20,505
21,00-21,49	25,000	20,700	129,000	56,000	36,400	4071 4.500	21,000
21,00-21,49	25,400	20,700	129,000	56,000	36,400	4071 4.500	21,005



d1	d2 h6	d3	L	l3	l5	F	N° de code
mm	mm	mm	mm	mm	mm		
21,50-21,99	25,000	21,200	130,000	56,000	37,200	4071 4.500	21,500
21,50-21,99	25,400	21,200	130,000	56,000	37,200	4071 4.500	21,505
22,00-22,49	25,000	21,700	131,000	56,000	38,000	4071 5.000	22,000
22,00-22,49	25,400	21,700	131,000	56,000	38,000	4071 5.000	22,005
22,50-22,99	25,000	22,200	134,000	56,000	38,900	4071 5.000	22,500
22,50-22,99	25,400	22,200	134,000	56,000	38,900	4071 5.000	22,505
23,00-23,49	25,000	22,700	135,000	56,000	39,800	4071 5.000	23,000
23,00-23,49	25,400	22,700	135,000	56,000	39,800	4071 5.000	23,005
23,50-23,99	25,000	23,200	137,000	56,000	40,600	4071 5.000	23,500
23,50-23,99	25,400	23,200	137,000	56,000	40,600	4071 5.000	23,505
24,00-24,49	25,000	23,700	138,000	56,000	41,500	4071 5.001	24,000
24,00-24,49	25,400	23,700	138,000	56,000	41,500	4071 5.001	24,005
24,50-24,99	25,000	24,200	140,000	56,000	42,300	4071 5.001	24,500
24,50-24,99	25,400	24,200	140,000	56,000	42,300	4071 5.001	24,505
25,00-25,49	25,000	24,700	142,000	56,000	43,200	4071 5.001	25,000
25,00-25,49	25,400	24,700	142,000	56,000	43,200	4071 5.001	25,005
25,50-25,99	32,000	25,200	148,000	60,000	44,000	4071 5.001	25,500
25,50-25,99	31,750	25,200	148,000	60,000	44,000	4071 5.001	25,505
26,00-26,49	32,000	25,700	151,000	60,000	44,300	4071 5.003	26,000
26,00-26,49	31,750	25,700	151,000	60,000	44,300	4071 5.003	26,005
26,50-26,99	32,000	26,200	153,000	60,000	45,100	4071 5.003	26,500
26,50-26,99	31,750	26,200	153,000	60,000	45,100	4071 5.003	26,505
27,00-27,49	32,000	26,700	155,000	60,000	46,000	4071 5.003	27,000
27,00-27,49	31,750	26,700	155,000	60,000	46,000	4071 5.003	27,005
27,50-27,99	32,000	27,200	156,000	60,000	46,800	4071 5.003	27,500
27,50-27,99	31,750	27,200	156,000	60,000	46,800	4071 5.003	27,505
28,00-28,49	32,000	27,700	157,000	60,000	47,700	4071 5.003	28,000
28,00-28,49	31,750	27,700	157,000	60,000	47,700	4071 5.003	28,005
28,50-28,99	32,000	28,200	159,000	60,000	48,500	4071 5.003	28,500
28,50-28,99	31,750	28,200	159,000	60,000	48,500	4071 5.003	28,505
29,00-29,49	32,000	28,700	161,000	60,000	49,400	4071 5.003	29,000
29,00-29,49	31,750	28,700	161,000	60,000	49,400	4071 5.003	29,005
29,50-29,99	32,000	29,200	162,000	60,000	50,200	4071 5.003	29,500
29,50-29,99	31,750	29,200	162,000	60,000	50,200	4071 5.003	29,505
30,00-30,49	32,000	29,700	164,000	60,000	50,900	4071 6.000	30,000
30,00-30,49	31,750	29,700	164,000	60,000	50,900	4071 6.000	30,005
30,50-30,99	32,000	30,200	166,000	60,000	51,700	4071 6.000	30,500
30,50-30,99	31,750	30,200	166,000	60,000	51,700	4071 6.000	30,505
31,00-31,49	32,000	30,700	167,000	60,000	52,600	4071 6.000	31,000
31,00-31,49	31,750	30,700	167,000	60,000	52,600	4071 6.000	31,005
31,50-31,99	32,000	31,200	168,000	60,000	53,400	4071 6.000	31,500
31,50-31,99	31,750	31,200	168,000	60,000	53,400	4071 6.000	31,505
32,00-32,99	32,000	31,700	172,000	60,000	55,100	4071 6.001	32,000
32,00-32,99	31,750	31,700	172,000	60,000	55,100	4071 6.001	32,005
33,00-33,99	32,000	32,700	175,000	60,000	56,800	4071 6.001	33,000
33,00-33,99	31,750	32,700	175,000	60,000	56,800	4071 6.001	33,005
34,00-34,99	32,000	33,700	178,000	60,000	58,500	4071 6.001	34,000
34,00-34,99	31,750	33,700	178,000	60,000	58,500	4071 6.001	34,005
35,00-35,99	32,000	34,700	181,000	60,000	60,200	4071 6.001	35,000
35,00-35,99	31,750	34,700	181,000	60,000	60,200	4071 6.001	35,005
36,00-36,99	32,000	35,700	184,000	60,000	61,800	4071 6.002	36,000
36,00-36,99	31,750	35,700	184,000	60,000	61,800	4071 6.002	36,005
37,00-37,99	32,000	36,700	188,000	60,000	63,500	4071 6.002	37,000
37,00-37,99	31,750	36,700	188,000	60,000	63,500	4071 6.002	37,005
38,00-38,99	32,000	37,700	191,000	60,000	65,200	4071 6.002	38,000
38,00-38,99	31,750	37,700	191,000	60,000	65,200	4071 6.002	38,005
39,00-40,00	32,000	38,700	194,000	60,000	66,900	4071 6.002	39,000
39,00-40,00	31,750	38,700	194,000	60,000	66,900	4071 6.002	39,005

Systeme d'outils  
à plaquettes  
interchang.T 800

Porte-outil HT 800



Matière de coupe

Surface



Forme d'attachement

HE

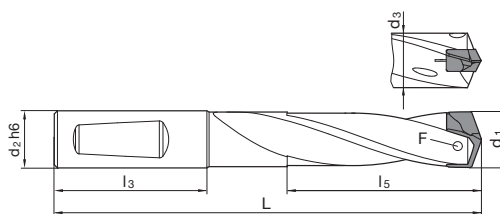
**P** nickelé • résistance à l'usure particulièrement élevée • section des goujures optimisée • sortie optimisée des can.de refroid. • Y compris vis de blocage n° d'article 4071 • Y compris tournevis n° d'article 1612



Système d'outils à plaquettes interchangeables T 800

**GÜHRING** NAVIGATOR

Paramètres de coupe, page 764-768



N° d'article **4107**

d1	d2 h6	d3	L	l3	l5	F	N° de code
mm	mm	mm	mm	mm	mm		
11,00-11,49	12,000	10,700	101,000	45,000	36,600	4071 2.200	11,000
11,00-11,49	12,700	10,700	101,000	45,000	36,600	4071 2.200	11,005
11,50-11,99	12,000	11,200	103,000	45,000	38,100	4071 2.200	11,500
11,50-11,99	12,700	11,200	103,000	45,000	38,100	4071 2.200	11,505
12,00-12,49	12,000	11,700	106,000	45,000	39,700	4071 2.201	12,000
12,00-12,49	12,700	11,700	106,000	45,000	39,700	4071 2.201	12,005
12,50-12,99	14,000	12,200	108,000	45,000	41,300	4071 2.201	12,500
12,50-12,99	15,875	12,200	108,000	45,000	41,300	4071 2.201	12,505
13,00-13,49	14,000	12,700	110,000	45,000	42,900	4071 2.500	13,000
13,00-13,49	15,875	12,700	110,000	45,000	42,900	4071 2.500	13,005
13,50-13,99	14,000	13,200	113,000	45,000	44,600	4071 2.500	13,500
13,50-13,99	15,875	13,200	113,000	45,000	44,600	4071 2.500	13,505
14,00-14,49	14,000	13,700	115,000	45,000	46,200	4071 3.000	14,000
14,00-14,49	15,875	13,700	115,000	45,000	46,200	4071 3.000	14,005
14,50-14,99	16,000	14,200	120,000	48,000	47,800	4071 3.000	14,500
14,50-14,99	15,875	14,200	120,000	48,000	47,800	4071 3.000	14,505
15,00-15,49	16,000	14,700	123,000	48,000	49,300	4071 3.001	15,000
15,00-15,49	15,875	14,700	123,000	48,000	49,300	4071 3.001	15,005
15,50-15,99	16,000	15,200	125,000	48,000	50,900	4071 3.001	15,500
15,50-15,99	15,875	15,200	125,000	48,000	50,900	4071 3.001	15,505
16,00-16,49	16,000	15,700	127,000	48,000	52,900	4071 3.500	16,000
16,00-16,49	15,875	15,700	127,000	48,000	52,900	4071 3.500	16,005
16,50-16,99	18,000	16,200	130,000	48,000	54,100	4071 3.500	16,500
16,50-16,99	19,050	16,200	130,000	48,000	54,100	4071 3.500	16,505
17,00-17,49	18,000	16,700	132,000	48,000	55,800	4071 3.500	17,000
17,00-17,49	19,050	16,700	132,000	48,000	55,800	4071 3.500	17,005
17,50-17,99	18,000	17,200	134,000	48,000	57,400	4071 3.500	17,500
17,50-17,99	19,050	17,200	134,000	48,000	57,400	4071 3.500	17,505
18,00-18,49	18,000	17,700	137,000	48,000	58,900	4071 4.000	18,000
18,00-18,49	19,050	17,700	137,000	48,000	58,900	4071 4.000	18,005
18,50-18,99	20,000	18,200	141,000	50,000	60,500	4071 4.000	18,500
18,50-18,99	19,050	18,200	141,000	50,000	60,500	4071 4.000	18,505
19,00-19,49	20,000	18,700	143,000	50,000	62,100	4071 4.000	19,000
19,00-19,49	19,050	18,700	143,000	50,000	62,100	4071 4.000	19,005
19,50-19,99	20,000	19,200	146,000	50,000	63,700	4071 4.000	19,500
19,50-19,99	19,050	19,200	146,000	50,000	63,700	4071 4.000	19,505
20,00-20,49	20,000	19,700	148,000	50,000	65,300	4071 4.500	20,000
20,00-20,49	19,050	19,700	148,000	50,000	65,300	4071 4.500	20,005
20,50-20,99	25,000	20,200	159,000	56,000	67,000	4071 4.500	20,500
20,50-20,99	25,400	20,200	159,000	56,000	67,000	4071 4.500	20,505
21,00-21,49	25,000	20,700	161,000	56,000	68,600	4071 4.500	21,000
21,00-21,49	25,400	20,700	161,000	56,000	68,600	4071 4.500	21,005



d1	d2 h6	d3	L	l3	l5	F	N° de code
mm	mm	mm	mm	mm	mm		
21,50-21,99	25,000	21,200	163,000	56,000	70,100	4071 4.500	21,500
21,50-21,99	25,400	21,200	163,000	56,000	70,100	4071 4.500	21,505
22,00-22,49	25,000	21,700	165,000	56,000	71,700	4071 5.000	22,000
22,00-22,49	25,400	21,700	165,000	56,000	71,700	4071 5.000	22,005
22,50-22,99	25,000	22,200	168,000	56,000	73,300	4071 5.000	22,500
22,50-22,99	25,400	22,200	168,000	56,000	73,300	4071 5.000	22,505
23,00-23,49	25,000	22,700	170,000	56,000	74,900	4071 5.000	23,000
23,00-23,49	25,400	22,700	170,000	56,000	74,900	4071 5.000	23,005
23,50-23,99	25,000	23,200	173,000	56,000	76,500	4071 5.000	23,500
23,50-23,99	25,400	23,200	173,000	56,000	76,500	4071 5.000	23,505
24,00-24,49	25,000	23,700	175,000	56,000	78,100	4071 5.001	24,000
24,00-24,49	25,400	23,700	175,000	56,000	78,100	4071 5.001	24,005
24,50-24,99	25,000	24,200	177,000	56,000	79,700	4071 5.001	24,500
24,50-24,99	25,400	24,200	177,000	56,000	79,700	4071 5.001	24,505
25,00-25,49	25,000	24,700	180,000	56,000	81,300	4071 5.001	25,000
25,00-25,49	25,400	24,700	180,000	56,000	81,300	4071 5.001	25,005
25,50-25,99	32,000	25,200	187,000	60,000	82,900	4071 5.001	25,500
25,50-25,99	31,750	25,200	187,000	60,000	82,900	4071 5.001	25,505
26,00-26,49	32,000	25,700	191,000	60,000	84,000	4071 5.003	26,000
26,00-26,49	31,750	25,700	191,000	60,000	84,000	4071 5.003	26,005
26,50-26,99	32,000	26,200	193,000	60,000	86,100	4071 5.003	26,500
26,50-26,99	31,750	26,200	193,000	60,000	86,100	4071 5.003	26,505
27,00-27,49	32,000	26,700	196,000	60,000	87,200	4071 5.003	27,000
27,00-27,49	31,750	26,700	196,000	60,000	87,200	4071 5.003	27,005
27,50-27,99	32,000	27,200	198,000	60,000	88,900	4071 5.003	27,500
27,50-27,99	31,750	27,200	198,000	60,000	88,900	4071 5.003	27,505
28,00-28,49	32,000	27,700	200,000	60,000	90,400	4071 5.003	28,000
28,00-28,49	31,750	27,700	200,000	60,000	90,400	4071 5.003	28,005
28,50-28,99	32,000	28,200	202,000	60,000	92,500	4071 5.003	28,500
28,50-28,99	31,750	28,200	202,000	60,000	92,500	4071 5.003	28,505
29,00-29,49	32,000	28,700	205,000	60,000	94,600	4071 5.003	29,000
29,00-29,49	31,750	28,700	205,000	60,000	94,600	4071 5.003	29,005
29,50-29,99	32,000	29,200	207,000	60,000	95,100	4071 5.003	29,500
29,50-29,99	31,750	29,200	207,000	60,000	95,100	4071 5.003	29,505
30,00-30,49	32,000	29,700	210,000	60,000	96,700	4071 6.000	30,000
30,00-30,49	31,750	29,700	210,000	60,000	96,700	4071 6.000	30,005
30,50-30,99	32,000	30,200	212,000	60,000	98,300	4071 6.000	30,500
30,50-30,99	31,750	30,200	212,000	60,000	98,300	4071 6.000	30,505
31,00-31,49	32,000	30,700	214,000	60,000	99,800	4071 6.000	31,000
31,00-31,49	31,750	30,700	214,000	60,000	99,800	4071 6.000	31,005
31,50-31,99	32,000	31,200	216,000	60,000	101,400	4071 6.000	31,500
31,50-31,99	31,750	31,200	216,000	60,000	101,400	4071 6.000	31,505
32,00-32,99	32,000	31,700	221,000	60,000	104,600	4071 6.001	32,000
32,00-32,99	31,750	31,700	221,000	60,000	104,600	4071 6.001	32,005
33,00-33,99	32,000	32,700	226,000	60,000	107,800	4071 6.001	33,000
33,00-33,99	31,750	32,700	226,000	60,000	107,800	4071 6.001	33,005
34,00-34,99	32,000	33,700	230,000	60,000	111,000	4071 6.001	34,000
34,00-34,99	31,750	33,700	230,000	60,000	111,000	4071 6.001	34,005
35,00-35,99	32,000	34,700	235,000	60,000	114,200	4071 6.001	35,000
35,00-35,99	31,750	34,700	235,000	60,000	114,200	4071 6.001	35,005
36,00-36,99	32,000	35,700	240,000	60,000	117,300	4071 6.002	36,000
36,00-36,99	31,750	35,700	240,000	60,000	117,300	4071 6.002	36,005
37,00-37,99	32,000	36,700	245,000	60,000	120,500	4071 6.002	37,000
37,00-37,99	31,750	36,700	245,000	60,000	120,500	4071 6.002	37,005
38,00-38,99	32,000	37,700	249,000	60,000	123,700	4071 6.002	38,000
38,00-38,99	31,750	37,700	249,000	60,000	123,700	4071 6.002	38,005
39,00-40,00	32,000	38,700	254,000	60,000	126,900	4071 6.002	39,000
39,00-40,00	31,750	38,700	254,000	60,000	126,900	4071 6.002	39,005

Système d'outils  
à plaquettes  
interchang.T 800

Porte-outil HT 800



Matière de coupe

Surface



Forme d'attachement

HE

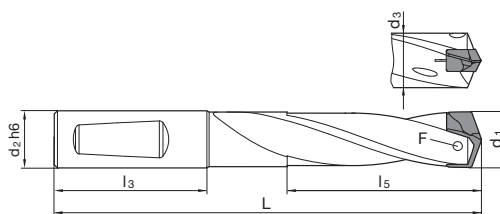
**P** nickelé • résistance à l'usure particulièrement élevée • section des goujures optimisée • sortie optimisée des can.de refroid. • Y compris vis de blocage n° d'article 4071 • Y compris tournevis n° d'article 1612



Système d'outils à plaquettes interchangeable T 800

**GÜHRING**NAVIGATOR

Paramètres de coupe, page 764-768



N° d'article **4108**

d1	d2 h6	d3	L	l3	l5	F	N° de code
mm	mm	mm	mm	mm	mm		
11,00-11,49	12,000	10,700	124,000	45,000	59,600	4071 2.200	11,000
11,00-11,49	12,700	10,700	124,000	45,000	59,600	4071 2.200	11,005
11,50-11,99	12,000	11,200	127,000	45,000	62,100	4071 2.200	11,500
11,50-11,99	12,700	11,200	127,000	45,000	62,100	4071 2.200	11,505
12,00-12,49	12,000	11,700	131,000	45,000	64,700	4071 2.201	12,000
12,00-12,49	12,700	11,700	131,000	45,000	64,700	4071 2.201	12,005
12,50-12,99	14,000	12,200	134,000	45,000	67,300	4071 2.201	12,500
12,50-12,99	15,875	12,200	134,000	45,000	67,300	4071 2.201	12,505
13,00-13,49	14,000	12,700	137,000	45,000	69,900	4071 2.500	13,000
13,00-13,49	15,875	12,700	137,000	45,000	69,900	4071 2.500	13,005
13,50-13,99	14,000	13,200	141,000	45,000	72,600	4071 2.500	13,500
13,50-13,99	15,875	13,200	141,000	45,000	72,600	4071 2.500	13,505
14,00-14,49	14,000	13,700	144,000	45,000	75,200	4071 3.000	14,000
14,00-14,49	15,875	13,700	144,000	45,000	75,200	4071 3.000	14,005
14,50-14,99	16,000	14,200	150,000	48,000	77,800	4071 3.000	14,500
14,50-14,99	15,875	14,200	150,000	48,000	77,800	4071 3.000	14,505
15,00-15,49	16,000	14,700	154,000	48,000	80,300	4071 3.001	15,000
15,00-15,49	15,875	14,700	154,000	48,000	80,300	4071 3.001	15,005
15,50-15,99	16,000	15,200	157,000	48,000	82,900	4071 3.001	15,500
15,50-15,99	15,875	15,200	157,000	48,000	82,900	4071 3.001	15,505
16,00-16,49	16,000	15,700	160,000	48,000	85,900	4071 3.500	16,000
16,00-16,49	15,875	15,700	160,000	48,000	85,900	4071 3.500	16,005
16,50-16,99	18,000	16,200	164,000	48,000	88,100	4071 3.500	16,500
16,50-16,99	19,050	16,200	164,000	48,000	88,100	4071 3.500	16,505
17,00-17,49	18,000	16,700	167,000	48,000	90,800	4071 3.500	17,000
17,00-17,49	19,050	16,700	167,000	48,000	90,800	4071 3.500	17,005
17,50-17,99	18,000	17,200	170,000	48,000	93,400	4071 3.500	17,500
17,50-17,99	19,050	17,200	170,000	48,000	93,400	4071 3.500	17,505
18,00-18,49	18,000	17,700	174,000	48,000	95,900	4071 4.000	18,000
18,00-18,49	19,050	17,700	174,000	48,000	95,900	4071 4.000	18,005
18,50-18,99	20,000	18,200	179,000	50,000	98,500	4071 4.000	18,500
18,50-18,99	19,050	18,200	179,000	50,000	98,500	4071 4.000	18,505
19,00-19,49	20,000	18,700	182,000	50,000	101,100	4071 4.000	19,000
19,00-19,49	19,050	18,700	182,000	50,000	101,100	4071 4.000	19,005
19,50-19,99	20,000	19,200	186,000	50,000	103,700	4071 4.000	19,500
19,50-19,99	19,050	19,200	186,000	50,000	103,700	4071 4.000	19,505
20,00-20,49	20,000	19,700	189,000	50,000	106,300	4071 4.500	20,000
20,00-20,49	19,050	19,700	189,000	50,000	106,300	4071 4.500	20,005
20,50-20,99	25,000	20,200	201,000	56,000	109,000	4071 4.500	20,500
20,50-20,99	25,400	20,200	201,000	56,000	109,000	4071 4.500	20,505
21,00-21,49	25,000	20,700	204,000	56,000	111,600	4071 4.500	21,000
21,00-21,49	25,400	20,700	204,000	56,000	111,600	4071 4.500	21,005



d1	d2 h6	d3	L	l3	l5	F	N° de code
mm	mm	mm	mm	mm	mm		
21,50-21,99	25,000	21,200	207,000	56,000	114,100	4071 4.500	21,500
21,50-21,99	25,400	21,200	207,000	56,000	114,100	4071 4.500	21,505
22,00-22,49	25,000	21,700	210,000	56,000	116,700	4071 5.000	22,000
22,00-22,49	25,400	21,700	210,000	56,000	116,700	4071 5.000	22,005
22,50-22,99	25,000	22,200	214,000	56,000	119,300	4071 5.000	22,500
22,50-22,99	25,400	22,200	214,000	56,000	119,300	4071 5.000	22,505
23,00-23,49	25,000	22,700	217,000	56,000	121,900	4071 5.000	23,000
23,00-23,49	25,400	22,700	217,000	56,000	121,900	4071 5.000	23,005
23,50-23,99	25,000	23,200	221,000	56,000	124,500	4071 5.000	23,500
23,50-23,99	25,400	23,200	221,000	56,000	124,500	4071 5.000	23,505
24,00-24,49	25,000	23,700	224,000	56,000	127,100	4071 5.001	24,000
24,00-24,49	25,400	23,700	224,000	56,000	127,100	4071 5.001	24,005
24,50-24,99	25,000	24,200	227,000	56,000	129,700	4071 5.001	24,500
24,50-24,99	25,400	24,200	227,000	56,000	129,700	4071 5.001	24,505
25,00-25,49	25,000	24,700	231,000	56,000	132,300	4071 5.001	25,000
25,00-25,49	25,400	24,700	231,000	56,000	132,300	4071 5.001	25,005
25,50-25,99	32,000	25,200	239,000	60,000	134,900	4071 5.001	25,500
25,50-25,99	31,750	25,200	239,000	60,000	134,900	4071 5.001	25,505
26,00-26,49	32,000	25,700	244,000	60,000	137,000	4071 5.003	26,000
26,00-26,49	31,750	25,700	244,000	60,000	137,000	4071 5.003	26,005
26,50-26,99	32,000	26,200	247,000	60,000	140,000	4071 5.003	26,500
26,50-26,99	31,750	26,200	247,000	60,000	140,000	4071 5.003	26,505
27,00-27,49	32,000	26,700	251,000	60,000	142,200	4071 5.003	27,000
27,00-27,49	31,750	26,700	251,000	60,000	142,200	4071 5.003	27,005
27,50-27,99	32,000	27,200	254,000	60,000	144,800	4071 5.003	27,500
28,00-28,49	32,000	27,700	257,000	60,000	147,400	4071 5.003	28,000
28,00-28,49	31,750	27,700	257,000	60,000	147,400	4071 5.003	28,005
28,50-28,99	32,000	28,200	260,000	60,000	150,400	4071 5.003	28,500
28,50-28,99	31,750	28,200	260,000	60,000	150,400	4071 5.003	28,505
29,00-29,49	32,000	28,700	264,000	60,000	153,500	4071 5.003	29,000
29,00-29,49	31,750	28,700	264,000	60,000	153,500	4071 5.003	29,005
29,50-29,99	32,000	29,200	267,000	60,000	155,100	4071 5.003	29,500
30,00-30,49	32,000	29,700	271,000	60,000	157,600	4071 6.000	30,000
30,00-30,49	31,750	29,700	271,000	60,000	157,600	4071 6.000	30,005
30,50-30,99	32,000	30,200	274,000	60,000	160,200	4071 6.000	30,500
31,00-31,49	32,000	30,700	277,000	60,000	162,800	4071 6.000	31,000
31,50-31,99	32,000	31,200	280,000	60,000	165,400	4071 6.000	31,500
32,00-32,99	32,000	31,700	287,000	60,000	170,600	4071 6.001	32,000
32,00-32,99	31,750	31,700	287,000	60,000	170,600	4071 6.001	32,005
33,00-33,99	32,000	32,700	294,000	60,000	175,800	4071 6.001	33,000
33,00-33,99	31,750	32,700	294,000	60,000	175,800	4071 6.001	33,005
34,00-34,99	32,000	33,700	300,000	60,000	181,000	4071 6.001	34,000
34,00-34,99	31,750	33,700	300,000	60,000	181,000	4071 6.001	34,005
35,00-35,99	32,000	34,700	307,000	60,000	186,200	4071 6.001	35,000
35,00-35,99	31,750	34,700	307,000	60,000	186,200	4071 6.001	35,005
36,00-36,99	32,000	35,700	314,000	60,000	191,300	4071 6.002	36,000
37,00-37,99	32,000	36,700	321,000	60,000	196,500	4071 6.002	37,000
37,00-37,99	31,750	36,700	321,000	60,000	196,500	4071 6.002	37,005
38,00-38,99	32,000	37,700	327,000	60,000	201,700	4071 6.002	38,000
38,00-38,99	31,750	37,700	327,000	60,000	201,700	4071 6.002	38,005
39,00-40,00	32,000	38,700	334,000	60,000	206,900	4071 6.002	39,000

Système d'outils  
à plaquettes  
interchang.T 800

Porte-outil HT 800



**P** nickelé • résistance à l'usure particulièrement élevée • section des goujures optimisée • sortie optimisée des can.de refroid. • Y compris vis de blocage n° d'article 4071 • Y compris tournevis n° d'article 1612



Système d'outils à plaquettes interchangeables T 800

Matière de coupe

Surface

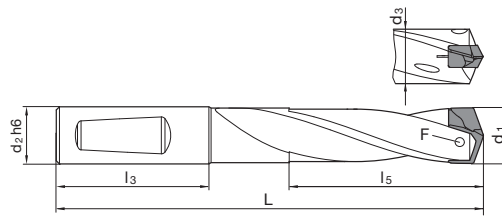


Forme d'attachement

HE

**GÜHRING**NAVIGATOR

Paramètres de coupe, page 764-768



N° d'article **4109**

d1	d2 h6	d3	L	l3	l5	F	N° de code
mm	mm	mm	mm	mm	mm		
11,00-11,49	12,000	10,700	147,000	45,000	82,600	4071 2.200	11,000
11,00-11,49	12,700	10,700	147,000	45,000	82,600	4071 2.200	11,005
11,50-11,99	12,000	11,200	151,000	45,000	86,100	4071 2.200	11,500
11,50-11,99	12,700	11,200	151,000	45,000	86,100	4071 2.200	11,505
12,00-12,49	12,000	11,700	156,000	45,000	89,700	4071 2.201	12,000
12,00-12,49	12,700	11,700	156,000	45,000	89,700	4071 2.201	12,005
12,50-12,99	14,000	12,200	160,000	45,000	93,300	4071 2.201	12,500
12,50-12,99	15,875	12,200	160,000	45,000	93,300	4071 2.201	12,505
13,00-13,49	14,000	12,700	164,000	45,000	96,900	4071 2.500	13,000
13,00-13,49	15,875	12,700	164,000	45,000	96,900	4071 2.500	13,005
13,50-13,99	14,000	13,200	169,000	45,000	100,600	4071 2.500	13,500
13,50-13,99	15,875	13,200	169,000	45,000	100,600	4071 2.500	13,505
14,00-14,49	14,000	13,700	173,000	45,000	104,200	4071 3.000	14,000
14,00-14,49	15,875	13,700	173,000	45,000	104,200	4071 3.000	14,005
14,50-14,99	16,000	14,200	180,000	48,000	107,800	4071 3.000	14,500
14,50-14,99	15,875	14,200	180,000	48,000	107,800	4071 3.000	14,505
15,00-15,49	16,000	14,700	185,000	48,000	111,300	4071 3.001	15,000
15,00-15,49	15,875	14,700	185,000	48,000	111,300	4071 3.001	15,005
15,50-15,99	16,000	15,200	189,000	48,000	114,900	4071 3.001	15,500
15,50-15,99	15,875	15,200	189,000	48,000	114,900	4071 3.001	15,505
16,00-16,49	16,000	15,700	193,000	48,000	118,900	4071 3.500	16,000
16,00-16,49	15,875	15,700	193,000	48,000	118,900	4071 3.500	16,005
16,50-16,99	18,000	16,200	198,000	48,000	122,100	4071 3.500	16,500
16,50-16,99	19,050	16,200	198,000	48,000	122,100	4071 3.500	16,505
17,00-17,49	18,000	16,700	202,000	48,000	125,800	4071 3.500	17,000
17,00-17,49	19,050	16,700	202,000	48,000	125,800	4071 3.500	17,005
17,50-17,99	18,000	17,200	206,000	48,000	129,400	4071 3.500	17,500
17,50-17,99	19,050	17,200	206,000	48,000	129,400	4071 3.500	17,505
18,00-18,49	18,000	17,700	211,000	48,000	132,900	4071 4.000	18,000
18,00-18,49	19,050	17,700	211,000	48,000	132,900	4071 4.000	18,005
18,50-18,99	20,000	18,200	217,000	50,000	136,500	4071 4.000	18,500
18,50-18,99	19,050	18,200	217,000	50,000	136,500	4071 4.000	18,505
19,00-19,49	20,000	18,700	221,000	50,000	140,100	4071 4.000	19,000
19,00-19,49	19,050	18,700	221,000	50,000	140,100	4071 4.000	19,005
19,50-19,99	20,000	19,200	226,000	50,000	143,700	4071 4.000	19,500
19,50-19,99	19,050	19,200	226,000	50,000	143,700	4071 4.000	19,505
20,00-20,49	20,000	19,700	230,000	50,000	147,300	4071 4.500	20,000
20,00-20,49	19,050	19,700	230,000	50,000	147,300	4071 4.500	20,005
20,50-20,99	25,000	20,200	243,000	56,000	151,000	4071 4.500	20,500
20,50-20,99	25,400	20,200	243,000	56,000	151,000	4071 4.500	20,505
21,00-21,49	25,000	20,700	247,000	56,000	154,600	4071 4.500	21,000
21,00-21,49	25,400	20,700	247,000	56,000	154,600	4071 4.500	21,005





d1	d2 h6	d3	L	l3	l5	F	N° de code
mm	mm	mm	mm	mm	mm		
21,50-21,99	25,000	21,200	251,000	56,000	158,100	4071 4.500	21,500
21,50-21,99	25,400	21,200	251,000	56,000	158,100	4071 4.500	21,505
22,00-22,49	25,000	21,700	255,000	56,000	161,700	4071 5.000	22,000
22,00-22,49	25,400	21,700	255,000	56,000	161,700	4071 5.000	22,005
22,50-22,99	25,000	22,200	260,000	56,000	165,300	4071 5.000	22,500
22,50-22,99	25,400	22,200	260,000	56,000	165,300	4071 5.000	22,505
23,00-23,49	25,000	22,700	264,000	56,000	168,900	4071 5.000	23,000
23,00-23,49	25,400	22,700	264,000	56,000	168,900	4071 5.000	23,005
23,50-23,99	25,000	23,200	269,000	56,000	172,500	4071 5.000	23,500
23,50-23,99	25,400	23,200	269,000	56,000	172,500	4071 5.000	23,505
24,00-24,49	25,000	23,700	273,000	56,000	176,100	4071 5.001	24,000
24,00-24,49	25,400	23,700	273,000	56,000	176,100	4071 5.001	24,005
24,50-24,99	25,000	24,200	277,000	56,000	179,700	4071 5.001	24,500
24,50-24,99	25,400	24,200	277,000	56,000	179,700	4071 5.001	24,505
25,00-25,49	25,000	24,700	282,000	56,000	183,300	4071 5.001	25,000
25,00-25,49	25,400	24,700	282,000	56,000	183,300	4071 5.001	25,005
25,50-25,99	32,000	25,200	291,000	60,000	186,900	4071 5.001	25,500
25,50-25,99	31,750	25,200	291,000	60,000	186,900	4071 5.001	25,505
26,00-26,49	32,000	25,700	297,000	60,000	190,000	4071 5.003	26,000
26,00-26,49	31,750	25,700	297,000	60,000	190,000	4071 5.003	26,005
26,50-26,99	32,000	26,200	301,000	60,000	194,000	4071 5.003	26,500
26,50-26,99	31,750	26,200	301,000	60,000	194,000	4071 5.003	26,505
27,00-27,49	32,000	26,700	306,000	60,000	197,200	4071 5.003	27,000
27,00-27,49	31,750	26,700	306,000	60,000	197,200	4071 5.003	27,005
27,50-27,99	32,000	27,200	310,000	60,000	200,800	4071 5.003	27,500
27,50-27,99	31,750	27,200	310,000	60,000	200,800	4071 5.003	27,505
28,00-28,49	32,000	27,700	314,000	60,000	204,400	4071 5.003	28,000
28,00-28,49	31,750	27,700	314,000	60,000	204,400	4071 5.003	28,005
28,50-28,99	32,000	28,200	318,000	60,000	208,400	4071 5.003	28,500
28,50-28,99	31,750	28,200	318,000	60,000	208,400	4071 5.003	28,505
29,00-29,49	32,000	28,700	323,000	60,000	212,500	4071 5.003	29,000
29,00-29,49	31,750	28,700	323,000	60,000	212,500	4071 5.003	29,005
29,50-29,99	32,000	29,200	327,000	60,000	215,100	4071 5.003	29,500
29,50-29,99	31,750	29,200	327,000	60,000	215,100	4071 5.003	29,505
30,00-30,49	32,000	29,700	332,000	60,000	218,600	4071 6.000	30,000
30,00-30,49	31,750	29,700	332,000	60,000	218,600	4071 6.000	30,005
30,50-30,99	32,000	30,200	336,000	60,000	222,200	4071 6.000	30,500
30,50-30,99	31,750	30,200	336,000	60,000	222,200	4071 6.000	30,505
31,00-31,49	32,000	30,700	340,000	60,000	225,800	4071 6.000	31,000
31,00-31,49	31,750	30,700	340,000	60,000	225,800	4071 6.000	31,005
31,50-31,99	32,000	31,200	344,000	60,000	229,400	4071 6.000	31,500
31,50-31,99	31,750	31,200	344,000	60,000	229,400	4071 6.000	31,505
33,00-33,99	32,000	32,700	362,000	60,000	244,600	4071 6.001	33,000
39,00-40,00	32,000	38,700	413,000	60,000	287,400	4071 6.002	39,000

Systeme d'outils  
à plaquettes  
interchang.T 800

Porte-outil HT 800



**P** nickelé • résistance à l'usure particulièrement élevée • section des goujures optimisée • sortie optimisée des can.de refroid. • Y compris vis de blocage n° d'article 4071 • Y compris tournevis n° d'article 1612

- M**
- K**
- N**
- S**
- H**

Système d'outils à plaquettes interchangeables T 800

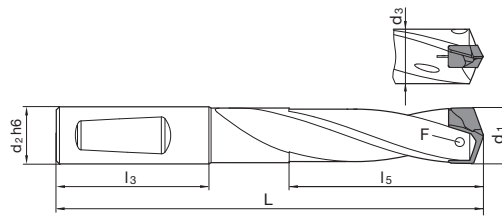
Matière de coupe

Surface



Forme d'attachement

HE



N° d'article **4110**

d1	d2 h6	d3	L	l3	l5	F	N° de code
mm	mm	mm	mm	mm	mm		
11,00-11,49	12,000	10,700	182,000	45,000	117,100	4071 2.200	11,000
11,00-11,49	12,700	10,700	182,000	45,000	117,100	4071 2.200	11,005
11,50-11,99	12,000	11,200	187,000	45,000	122,100	4071 2.200	11,500
11,50-11,99	12,700	11,200	187,000	45,000	122,100	4071 2.200	11,505
12,00-12,49	12,000	11,700	194,000	45,000	127,200	4071 2.201	12,000
12,00-12,49	12,700	11,700	194,000	45,000	127,200	4071 2.201	12,005
12,50-12,99	14,000	12,200	199,000	45,000	132,300	4071 2.201	12,500
12,50-12,99	15,875	12,200	199,000	45,000	132,300	4071 2.201	12,505
13,00-13,49	14,000	12,700	205,000	45,000	137,500	4071 2.500	13,000
13,00-13,49	15,875	12,700	205,000	45,000	137,500	4071 2.500	13,005
13,50-13,99	14,000	13,200	211,000	45,000	142,500	4071 2.500	13,500
13,50-13,99	15,875	13,200	211,000	45,000	142,500	4071 2.500	13,505
14,00-14,49	14,000	13,700	217,000	45,000	147,700	4071 3.000	14,000
14,00-14,49	15,875	13,700	217,000	45,000	147,700	4071 3.000	14,005
14,50-14,99	16,000	14,200	225,000	48,000	152,800	4071 3.000	14,500
14,50-14,99	15,875	14,200	225,000	48,000	152,800	4071 3.000	14,505
15,00-15,49	16,000	14,700	232,000	48,000	157,800	4071 3.001	15,000
15,00-15,49	15,875	14,700	232,000	48,000	157,800	4071 3.001	15,005
15,50-15,99	16,000	15,200	237,000	48,000	162,900	4071 3.001	15,500
15,50-15,99	15,875	15,200	237,000	48,000	162,900	4071 3.001	15,505
16,00-16,49	16,000	15,700	243,000	48,000	168,000	4071 3.500	16,000
16,00-16,49	15,875	15,700	243,000	48,000	168,000	4071 3.500	16,005
16,50-16,99	18,000	16,200	249,000	48,000	170,000	4071 3.500	16,500
16,50-16,99	19,050	16,200	249,000	48,000	170,000	4071 3.500	16,505
17,00-17,49	18,000	16,700	255,000	48,000	178,300	4071 3.500	17,000
17,00-17,49	19,050	16,700	255,000	48,000	178,300	4071 3.500	17,005
17,50-17,99	18,000	17,200	260,000	48,000	183,500	4071 3.500	17,500
17,50-17,99	19,050	17,200	260,000	48,000	183,500	4071 3.500	17,505
18,00-18,49	18,000	17,700	267,000	48,000	188,400	4071 4.000	18,000
18,00-18,49	19,050	17,700	267,000	48,000	188,400	4071 4.000	18,005
18,50-18,99	20,000	18,200	274,000	50,000	193,500	4071 4.000	18,500
18,50-18,99	19,050	18,200	274,000	50,000	193,500	4071 4.000	18,505
19,00-19,49	20,000	18,700	280,000	50,000	198,700	4071 4.000	19,000
19,00-19,49	19,050	18,700	280,000	50,000	198,700	4071 4.000	19,005
19,50-19,99	20,000	19,200	286,000	50,000	203,700	4071 4.000	19,500
19,50-19,99	19,050	19,200	286,000	50,000	203,700	4071 4.000	19,505
20,00-20,49	20,000	19,700	292,000	50,000	208,900	4071 4.500	20,000
20,00-20,49	19,050	19,700	292,000	50,000	208,900	4071 4.500	20,005
20,50-20,99	25,000	20,200	306,000	56,000	214,000	4071 4.500	20,500
20,50-20,99	25,400	20,200	306,000	56,000	214,000	4071 4.500	20,505
21,00-21,49	25,000	20,700	312,000	56,000	219,100	4071 4.500	21,000
21,00-21,49	25,400	20,700	312,000	56,000	219,100	4071 4.500	21,005



d1	d2 h6	d3	L	l3	l5	F	N° de code
mm	mm	mm	mm	mm	mm		
21,50-21,99	25,000	21,200	317,000	56,000	224,200	4071 4.500	21,500
21,50-21,99	25,400	21,200	317,000	56,000	224,200	4071 4.500	21,505
22,00-22,49	25,000	21,700	323,000	56,000	229,300	4071 5.000	22,000
22,00-22,49	25,400	21,700	323,000	56,000	229,300	4071 5.000	22,005
22,50-22,99	25,000	22,200	329,000	56,000	234,400	4071 5.000	22,500
22,50-22,99	25,400	22,200	329,000	56,000	234,400	4071 5.000	22,505
23,00-23,49	25,000	22,700	335,000	56,000	239,500	4071 5.000	23,000
23,00-23,49	25,400	22,700	335,000	56,000	239,500	4071 5.000	23,005
23,50-23,99	25,000	23,200	341,000	56,000	244,600	4071 5.000	23,500
23,50-23,99	25,400	23,200	341,000	56,000	244,600	4071 5.000	23,505
24,00-24,49	25,000	23,700	347,000	56,000	249,700	4071 5.001	24,000
24,00-24,49	25,400	23,700	347,000	56,000	249,700	4071 5.001	24,005
24,50-24,99	25,000	24,200	352,000	56,000	254,800	4071 5.001	24,500
24,50-24,99	25,400	24,200	352,000	56,000	254,800	4071 5.001	24,505
25,00-25,49	25,000	24,700	359,000	56,000	259,900	4071 5.001	25,000
25,00-25,49	25,400	24,700	359,000	56,000	259,900	4071 5.001	25,005
25,50-25,99	32,000	25,200	369,000	60,000	265,000	4071 5.001	25,500
25,50-25,99	31,750	25,200	369,000	60,000	265,000	4071 5.001	25,505
26,00-26,49	32,000	25,700	377,000	60,000	270,000	4071 5.003	26,000
26,00-26,49	31,750	25,700	377,000	60,000	270,000	4071 5.003	26,005
26,50-26,99	32,000	26,200	382,000	60,000	275,000	4071 5.003	26,500
26,50-26,99	31,750	26,200	382,000	60,000	275,000	4071 5.003	26,505
27,00-27,49	32,000	26,700	388,000	60,000	280,100	4071 5.003	27,000
27,00-27,49	31,750	26,700	388,000	60,000	280,100	4071 5.003	27,005
27,50-27,99	32,000	27,200	394,000	60,000	285,200	4071 5.003	27,500
27,50-27,99	31,750	27,200	394,000	60,000	285,200	4071 5.003	27,505
28,00-28,49	32,000	27,700	400,000	60,000	290,300	4071 5.003	28,000
28,00-28,49	31,750	27,700	400,000	60,000	290,300	4071 5.003	28,005
28,50-28,99	32,000	28,200	405,000	60,000	295,400	4071 5.003	28,500
28,50-28,99	31,750	28,200	405,000	60,000	295,400	4071 5.003	28,505
29,00-29,49	32,000	28,700	412,000	60,000	300,500	4071 5.003	29,000
29,00-29,49	31,750	28,700	412,000	60,000	300,500	4071 5.003	29,005
29,50-29,99	32,000	29,200	418,000	60,000	305,600	4071 5.003	29,500
29,50-29,99	31,750	29,200	418,000	60,000	305,600	4071 5.003	29,505
30,00-30,49	32,000	29,700	424,000	60,000	310,600	4071 6.000	30,000
30,00-30,49	31,750	29,700	424,000	60,000	310,600	4071 6.000	30,005
30,50-30,99	32,000	30,200	429,000	60,000	315,700	4071 6.000	30,500
30,50-30,99	31,750	30,200	429,000	60,000	315,700	4071 6.000	30,505
31,00-31,49	32,000	30,700	435,000	60,000	320,800	4071 6.000	31,000
31,00-31,49	31,750	30,700	435,000	60,000	320,800	4071 6.000	31,005
31,50-31,99	32,000	31,200	441,000	60,000	325,900	4071 6.000	31,500
31,50-31,99	31,750	31,200	441,000	60,000	325,900	4071 6.000	31,505

Systeme d'outils  
à plaquettes  
interchang.T 800

Porte-outil HT 800



- P** nickelé • résistance à l'usure particulièrement élevée • section des goujures optimisée • sortie optimisée des can.de refroid.
- M** • Y compris vis de blocage n° d'article 4071 et 6128 • Y compris tournevis n° d'article 1612
- K**
- N**
- S** p. pilotes de guid.et chanfr. 45°
- H**

Système d'outils à plaquettes interchangeable T 800

Matière de coupe

Surface

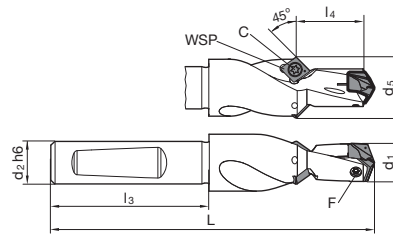


Forme d'attachement

HE

**GÜHRING**NAVIGATOR

Paramètres de coupe, page 764-768



N° d'article **4105**

d1	d2 h6	d5	L	l3	l4	WSP	C	F	N° de code
mm	mm	mm	mm	mm	mm				
11,00-11,99	12,000	17,000	81,000	45,000	12,000	CP..0502..	6128 2.000	4071 2.200	11,000
11,00-11,99	12,700	17,000	81,000	45,000	12,000	CP..0502..	6128 2.000	4071 2.200	11,005
12,00-12,99	12,000	18,000	84,000	45,000	13,000	CP..0502..	6128 2.000	4071 2.201	12,000
12,00-12,99	12,700	18,000	84,000	45,000	13,000	CP..0502..	6128 2.000	4071 2.201	12,005
13,00-13,99	14,000	18,000	86,000	45,000	14,000	CP..0502..	6128 2.000	4071 2.500	13,000
13,00-13,99	15,875	18,000	86,000	45,000	14,000	CP..0502..	6128 2.000	4071 2.500	13,005
14,00-15,99	16,000	18,000	93,000	48,000	16,000	CP..0502..	6128 2.000	4071 3.000	14,000
14,00-15,99	15,875	18,000	93,000	48,000	16,000	CP..0502..	6128 2.000	4071 3.000	14,005
16,00-17,99	18,000	20,000	99,000	48,000	18,000	CP..0602..	6128 2.500	4071 3.500	16,000
16,00-17,99	19,050	20,000	99,000	48,000	18,000	CP..0602..	6128 2.500	4071 3.500	16,005
18,00-19,99	20,000	22,000	106,000	50,000	20,000	CP..0602..	6128 2.500	4071 4.000	18,000
18,00-19,99	19,050	22,000	106,000	50,000	20,000	CP..0602..	6128 2.500	4071 4.000	18,005
20,00-21,99	25,000	25,000	117,000	56,000	22,000	CP..0602..	6128 2.500	4071 4.500	20,000
20,00-21,99	25,400	25,400	117,000	56,000	22,000	CP..0602..	6128 2.500	4071 4.500	20,005
22,00-23,99	25,000	26,000	122,000	56,000	24,000	CP..0602..	6128 2.500	4071 5.000	22,000
22,00-23,99	25,400	26,000	122,000	56,000	24,000	CP..0602..	6128 2.500	4071 5.000	22,005
24,00-25,99	25,000	28,000	128,000	56,000	26,000	CP..0602..	6128 2.500	4071 5.001	24,000
24,00-25,99	25,400	28,000	128,000	56,000	26,000	CP..0602..	6128 2.500	4071 5.001	24,005
26,00-27,99	32,000	32,000	142,000	60,000	28,000	CP..0602..	6128 2.500	4071 5.003	26,000
26,00-27,99	31,750	32,000	142,000	60,000	28,000	CP..0602..	6128 2.500	4071 5.003	26,005
28,00-29,99	32,000	34,000	147,000	60,000	30,000	CP..0602..	6128 2.500	4071 5.003	28,000
28,00-29,99	31,750	34,000	147,000	60,000	30,000	CP..09T3..	6128 2.500	4071 5.003	28,005
30,00-31,99	32,000	38,000	152,000	60,000	32,000	CP..09T3..	6128 4.006	4071 6.000	30,000
30,00-31,99	31,750	38,000	152,000	60,000	32,000	CP..09T3..	6128 4.006	4071 6.000	30,005
32,00-35,99	32,000	42,000	163,000	60,000	36,000	CP..09T3..	6128 4.006	4071 6.001	32,000
32,00-35,99	31,750	42,000	163,000	60,000	36,000	CP..09T3..	6128 4.006	4071 6.001	32,005
36,00-40,00	32,000	46,000	173,000	60,000	40,000	CP..09T3..	6128 4.006	4071 6.002	36,000
36,00-40,00	31,750	46,000	173,000	60,000	40,000	CP..09T3..	6128 4.006	4071 6.002	36,005



**Plaquettes interchangeables HT 800**

Matière de coupe **CW monobloc**

Surface **F**

Forme d'attachement



**P** • Amin. de l'âme  $\geq \varnothing 11,000$  • affûtage en pente • forme de l'arête de coupe principale, rectiligne, (obtenue par correction) • Y compris vis de blocage n° d'article 4071

**M** ○

**K** ○

**N** ○

**S** ○

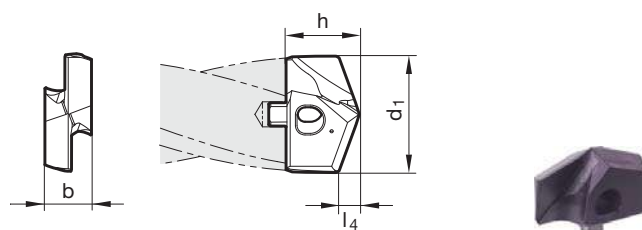
**H** ○

aciers de construction et de cémentation • aciers de décolletage, aciers d'amélioration • aciers alliés jusqu'à 1200 N/mm<sup>2</sup>

**GUHRING NAVIGATOR**

Paramètres de coupe, page 764-768

Systeme d'outils à plaquettes interchangeables T 800



N° d'article **4112**

d1		l4	b	h	N° de code
mm	inch				
11,000		2,100	4,500	7,500	11,000
11,200		2,100	4,500	7,500	11,200
11,500		2,100	4,500	7,500	11,500
11,510	29/64	2,100	4,500	7,500	11,510
11,700		2,200	4,500	7,500	11,700
11,800		2,200	4,500	7,500	11,800
11,910	15/32	2,200	4,500	7,500	11,910
12,000		2,200	5,000	7,700	12,000
12,100		2,300	5,000	7,700	12,100
12,200		2,300	5,000	7,700	12,200
12,300	31/64	2,300	5,000	7,700	12,300
12,500		2,300	5,000	7,700	12,500
12,600		2,300	5,000	7,700	12,600
12,700	1/2	2,400	5,000	7,700	12,700
12,800		2,400	5,000	7,700	12,800
12,900		2,400	5,000	7,700	12,900
13,000		2,400	5,500	8,500	13,000
13,100	33/64	2,400	5,500	8,500	13,100
13,300		2,500	5,500	8,500	13,300
13,490	17/32	2,500	5,500	8,500	13,490
13,500		2,500	5,500	8,500	13,500
13,600		2,500	5,500	8,500	13,600
13,700		2,500	5,500	8,500	13,700
13,800		2,600	5,500	8,500	13,800
13,890	35/64	2,600	5,500	8,500	13,890
14,000		2,600	6,000	9,600	14,000
14,100		2,600	6,000	9,600	14,100
14,290	9/16	2,700	6,000	9,600	14,290
14,400		2,700	6,000	9,600	14,400
14,500		2,700	6,000	9,600	14,500
14,600		2,700	6,000	9,600	14,600
14,680	37/64	2,700	6,000	9,600	14,680
14,700		2,700	6,000	9,600	14,700
14,800		2,700	6,000	9,600	14,800
15,000		2,800	6,000	9,800	15,000
15,080	19/32	2,800	6,000	9,800	15,080
15,100		2,800	6,000	9,800	15,100
15,200		2,800	6,000	9,800	15,200
15,300		2,800	6,000	9,800	15,300
15,480	39/64	2,900	6,000	9,800	15,480
15,500		2,900	6,000	9,800	15,500
15,600		2,900	6,000	9,800	15,600



Système d'outils  
à plaquettes  
interchang. T 800

d1		l4	b	h	N° de code
mm	inch	mm	mm	mm	
15,700		2,900	6,000	9,800	15,700
15,800		2,900	6,000	9,800	15,800
15,870	5/8	2,900	6,000	9,800	15,870
16,000		3,000	7,000	11,000	16,000
16,270	41/64	3,000	7,000	11,000	16,270
16,500		3,100	7,000	11,000	16,500
16,670	21/32	3,100	7,000	11,000	16,670
17,000		3,100	7,000	11,000	17,000
17,070	43/64	3,200	7,000	11,000	17,070
17,300		3,200	7,000	11,000	17,300
17,460	11/16	3,200	7,000	11,000	17,460
17,500		3,200	7,000	11,000	17,500
17,600		3,300	7,000	11,000	17,600
17,860	45/64	3,300	7,000	11,000	17,860
18,000		3,300	8,000	12,600	18,000
18,260	23/32	3,400	8,000	12,600	18,260
18,500		3,400	8,000	12,600	18,500
18,650	47/64	3,400	8,000	12,600	18,650
18,900		3,500	8,000	12,600	18,900
19,000		3,500	8,000	12,600	19,000
19,050	3/4	3,500	8,000	12,600	19,050
19,250		3,600	8,000	12,600	19,250
19,300		3,600	8,000	12,600	19,300
19,450	49/64	3,600	8,000	12,600	19,450
19,500		3,600	8,000	12,600	19,500
19,600		3,600	8,000	12,600	19,600
19,840	25/32	3,700	8,000	12,600	19,840
20,000		3,700	9,000	13,900	20,000
20,240	51/64	3,700	9,000	13,900	20,240
20,500		3,800	9,000	13,900	20,500
20,640	13/16	3,800	9,000	13,900	20,640
20,900		3,900	9,000	13,900	20,900
21,000		3,900	9,000	13,900	21,000
21,030	53/64	3,900	9,000	13,900	21,030
21,100		3,900	9,000	13,900	21,100
21,430	27/32	3,900	9,000	13,900	21,430
21,500		4,000	9,000	13,900	21,500
21,700		4,000	9,000	13,900	21,700
21,830	55/64	4,000	9,000	13,900	21,830
22,000		4,100	10,000	15,300	22,000
22,220	7/8	4,100	10,000	15,300	22,220
22,500		4,100	10,000	15,300	22,500
22,620	57/64	4,200	10,000	15,300	22,620
22,700		4,200	10,000	15,300	22,700
23,000		4,200	10,000	15,300	23,000
23,020	29/32	4,200	10,000	15,300	23,020
23,420	59/64	4,300	10,000	15,300	23,420
23,500		4,300	10,000	15,300	23,500
23,700		4,400	10,000	15,300	23,700
23,810	15/16	4,400	10,000	15,300	23,810
24,000		4,400	11,000	15,800	24,000
24,100		4,400	11,000	15,800	24,100
24,210	61/64	4,500	11,000	15,800	24,210
24,500		4,500	11,000	15,800	24,500
24,610	31/32	4,500	11,000	15,800	24,610
25,000	63/64	4,600	11,000	15,800	25,000
25,400	1	4,700	11,000	15,800	25,400
25,500		4,700	11,000	15,800	25,500
25,670		4,700	11,000	15,800	25,670
25,700		4,700	11,000	15,800	25,700
25,810		4,700	11,000	15,800	25,810
26,000		4,800	12,000	20,000	26,000
26,190	1 1/32	4,800	12,000	20,000	26,190
26,500		4,900	12,000	20,000	26,500
26,590	1 3/64	4,900	12,000	20,000	26,590
27,000		5,000	12,000	20,000	27,000
27,500		5,100	12,000	20,000	27,500
27,700		5,100	12,000	20,000	27,700
27,780	1 3/32	5,100	12,000	20,000	27,780
28,000		5,100	13,000	20,700	28,000
28,180	1 7/64	5,200	13,000	20,700	28,180
28,500		5,200	13,000	20,700	28,500



d1		l4	b	h	N° de code
mm	inch	mm	mm	mm	
28,580		5,300	13,000	20,700	28,580
29,000		5,300	13,000	20,700	29,000
29,370	1 5/32	5,400	13,000	20,700	29,370
29,500		5,400	13,000	20,700	29,500
29,600		5,400	13,000	20,700	29,600
29,770	1 11/64	5,500	13,000	20,700	29,770
30,000		5,500	14,000	22,300	30,000
30,160	1 3/16	5,500	14,000	22,300	30,160
30,500		5,600	14,000	22,300	30,500
30,960	1 7/32	5,700	14,000	22,300	30,960
31,000		5,700	14,000	22,300	31,000
31,500		5,800	14,000	22,300	31,500
31,750	1 1/4	5,800	14,000	22,300	31,750
32,000		5,900	15,000	23,100	32,000
32,500		6,000	15,000	23,100	32,500
32,540	1 9/32	6,000	15,000	23,100	32,540
32,940	1 19/64	6,000	15,000	23,100	32,940
33,000		6,100	15,000	23,100	33,000
33,340	1 5/16	6,100	15,000	23,100	33,340
33,500		6,100	15,000	23,100	33,500
34,000		6,200	15,000	23,100	34,000
34,130	1 11/32	6,300	15,000	23,100	34,130
34,500		6,300	15,000	23,100	34,500
34,930		6,400	15,000	23,100	34,930
35,000		6,400	15,000	23,100	35,000
35,500		6,500	15,000	23,100	35,500
35,720	1 13/32	6,600	15,000	23,100	35,720
36,000		6,600	16,000	23,900	36,000
36,500		6,700	16,000	23,900	36,500
36,510	1 7/16	6,700	16,000	23,900	36,510
37,000		6,800	16,000	23,900	37,000
37,310	1 15/32	6,800	16,000	23,900	37,310
37,500		6,900	16,000	23,900	37,500
38,000		7,000	16,000	23,900	38,000
38,100	1 1/2	7,000	16,000	23,900	38,100
38,500	1 33/64	7,100	16,000	23,900	38,500
39,000		7,100	16,000	23,900	39,000
39,500		7,200	16,000	23,900	39,500
40,000		7,300	16,000	23,900	40,000

Plaquettes interchangeables HT 800



Matière de coupe **CW monobloc**

Surface **F**

Forme d'attachement

**P** ○ Amin. de l'âme  $\geq \varnothing 11,000$  • affûtage en pente • forme de l'arête de coupe principale, rectiligne, (obtenue par correction) • Y compris vis de blocage n° d'article 4071

**M**

**K** •

**N**

**S**

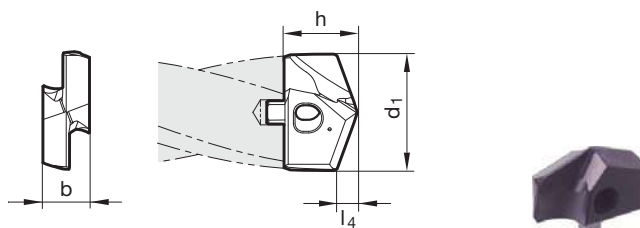
**H**

fontes vermiculaires GGV • fontes grises, fontes malléables, fontes à graphite sphéroïdal

Système d'outils à plaquettes interchangeables T 800

**GÜHRING** NAVIGATOR

Paramètres de coupe, page 764-768



N° d'article **4113**

d1		l4	b	h	N° de code
mm	inch	mm	mm	mm	
11,000		2,700	4,500	7,500	11,000
11,200		2,700	4,500	7,500	11,200
11,500		2,800	4,500	7,500	11,500
11,510	29/64	2,800	4,500	7,500	11,510
11,700		2,800	4,500	7,500	11,700
11,800		2,800	4,500	7,500	11,800
11,910	15/32	2,800	4,500	7,500	11,910
12,000		2,900	5,000	7,700	12,000
12,100		2,900	5,000	7,700	12,100
12,200		2,900	5,000	7,700	12,200
12,300	31/64	2,900	5,000	7,700	12,300
12,500		3,100	5,000	7,700	12,500
12,600		3,100	5,000	7,700	12,600
12,700	1/2	3,100	5,000	7,700	12,700
12,800		3,100	5,000	7,700	12,800
12,900		3,100	5,000	7,700	12,900
13,000		3,200	5,500	8,500	13,000
13,100	33/64	3,200	5,500	8,500	13,100
13,300		3,200	5,500	8,500	13,300
13,490	17/32	3,200	5,500	8,500	13,490
13,500		3,300	5,500	8,500	13,500
13,600		3,300	5,500	8,500	13,600
13,700		3,300	5,500	8,500	13,700
13,800		3,300	5,500	8,500	13,800
13,890	35/64	3,300	5,500	8,500	13,890
14,000		3,400	6,000	9,600	14,000
14,100		3,400	6,000	9,600	14,100
14,290	9/16	3,400	6,000	9,600	14,290
14,400		3,400	6,000	9,600	14,400
14,500		3,600	6,000	9,600	14,500
14,600		3,600	6,000	9,600	14,600
14,680	37/64	3,600	6,000	9,600	14,680
14,700		3,600	6,000	9,600	14,700
14,800		3,600	6,000	9,600	14,800
15,000		3,700	6,000	9,800	15,000
15,080	19/32	3,700	6,000	9,800	15,080
15,100		3,700	6,000	9,800	15,100
15,200		3,700	6,000	9,800	15,200
15,300		3,700	6,000	9,800	15,300
15,480	39/64	3,700	6,000	9,800	15,480
15,500		3,800	6,000	9,800	15,500
15,600		3,800	6,000	9,800	15,600





d1		l4	b	h	N° de code
mm	inch	mm	mm	mm	
15,700		3,800	6,000	9,800	15,700
15,800		3,800	6,000	9,800	15,800
15,870	5/8	3,800	6,000	9,800	15,870
16,000		3,900	7,000	11,000	16,000
16,270	41/64	3,900	7,000	11,000	16,270
16,500		4,100	7,000	11,000	16,500
16,670	21/32	4,100	7,000	11,000	16,670
17,000		4,200	7,000	11,000	17,000
17,070	43/64	4,200	7,000	11,000	17,070
17,300		4,200	7,000	11,000	17,300
17,460	11/16	4,200	7,000	11,000	17,460
17,500		4,300	7,000	11,000	17,500
17,600		4,300	7,000	11,000	17,600
17,860	45/64	4,300	7,000	11,000	17,860
18,000		4,400	8,000	12,600	18,000
18,260	23/32	4,400	8,000	12,600	18,260
18,500		4,500	8,000	12,600	18,500
18,650	47/64	4,500	8,000	12,600	18,650
18,900		4,500	8,000	12,600	18,900
19,000		4,700	8,000	12,600	19,000
19,050	3/4	4,700	8,000	12,600	19,050
19,250		4,700	8,000	12,600	19,250
19,300		4,700	8,000	12,600	19,300
19,450	49/64	4,700	8,000	12,600	19,450
19,500		4,800	8,000	12,600	19,500
19,600		4,800	8,000	12,600	19,600
19,840	25/32	4,800	8,000	12,600	19,840
20,000		4,900	9,000	13,900	20,000
20,240	51/64	4,900	9,000	13,900	20,240
20,500		5,100	9,000	13,900	20,500
20,640	13/16	5,100	9,000	13,900	20,640
20,900		5,100	9,000	13,900	20,900
21,000		5,200	9,000	13,900	21,000
21,030	53/64	5,200	9,000	13,900	21,030
21,100		5,200	9,000	13,900	21,100
21,430	27/32	5,200	9,000	13,900	21,430
21,500		5,300	9,000	13,900	21,500
21,700		5,300	9,000	13,900	21,700
21,830	55/64	5,300	9,000	13,900	21,830
22,000		5,400	10,000	15,300	22,000
22,220	7/8	5,400	10,000	15,300	22,220
22,500		5,600	10,000	15,300	22,500
22,620	57/64	5,600	10,000	15,300	22,620
22,700		5,600	10,000	15,300	22,700
23,000		5,700	10,000	15,300	23,000
23,020	29/32	5,700	10,000	15,300	23,020
23,420	59/64	5,700	10,000	15,300	23,420
23,500		5,800	10,000	15,300	23,500
23,700		5,800	10,000	15,300	23,700
23,810	15/16	5,800	10,000	15,300	23,810
24,000		6,000	11,000	15,800	24,000
24,100		6,000	11,000	15,800	24,100
24,210	61/64	6,000	11,000	15,800	24,210
24,500		6,100	11,000	15,800	24,500
24,610	31/32	6,100	11,000	15,800	24,610
25,000	63/64	6,200	11,000	15,800	25,000
25,400	1	6,200	11,000	15,800	25,400
25,500		6,300	11,000	15,800	25,500
25,670		6,300	11,000	15,800	25,670
25,700		6,300	11,000	15,800	25,700
25,810		6,300	11,000	15,800	25,810
26,000		6,400	12,000	20,000	26,000
26,190	1 1/32	6,400	12,000	20,000	26,190
26,500		6,500	12,000	20,000	26,500
26,590	1 3/64	6,500	12,000	20,000	26,590
27,000		6,600	12,000	20,000	27,000
27,500		6,700	12,000	20,000	27,500
27,700		6,700	12,000	20,000	27,700
27,780	1 3/32	6,700	12,000	20,000	27,780
28,000		6,800	13,000	20,700	28,000
28,180	1 7/64	6,800	13,000	20,700	28,180
28,500		6,900	13,000	20,700	28,500



Système d'outils  
à plaquettes  
interchang. T 800

d1		l4	b	h	N° de code
mm	inch	mm	mm	mm	
28,580		6,900	13,000	20,700	28,580
29,000		7,100	13,000	20,700	29,000
29,370	1 5/32	7,100	13,000	20,700	29,370
29,500		7,200	13,000	20,700	29,500
29,770	1 11/64	7,200	13,000	20,700	29,770
30,000		7,300	14,000	22,300	30,000
30,160	1 3/16	7,300	14,000	22,300	30,160
30,500		7,400	14,000	22,300	30,500
30,960	1 7/32	7,400	14,000	22,300	30,960
31,000		7,500	14,000	22,300	31,000
31,500		7,600	14,000	22,300	31,500
31,750	1 1/4	7,600	14,000	22,300	31,750
32,000		7,700	15,000	23,100	32,000
32,500		7,800	15,000	23,100	32,500
32,540	1 9/32	7,800	15,000	23,100	32,540
32,940	1 19/64	7,800	15,000	23,100	32,940
33,000		7,900	15,000	23,100	33,000
33,340	1 5/16	7,900	15,000	23,100	33,340
33,500		8,100	15,000	23,100	33,500
34,000		8,200	15,000	23,100	34,000
34,130	1 11/32	8,200	15,000	23,100	34,130
34,500		8,400	15,000	23,100	34,500
34,930		8,400	15,000	23,100	34,930
35,000		8,500	15,000	23,100	35,000
35,500		8,600	15,000	23,100	35,500
35,720	1 13/32	8,600	15,000	23,100	35,720
36,000		8,700	16,000	23,900	36,000
36,500		8,800	16,000	23,900	36,500
36,510	1 7/16	8,800	16,000	23,900	36,510
37,000		9,000	16,000	23,900	37,000
37,310	1 15/32	9,000	16,000	23,900	37,310
37,500		9,100	16,000	23,900	37,500
38,000		9,200	16,000	23,900	38,000
38,100	1 1/2	9,200	16,000	23,900	38,100
38,500	1 33/64	9,400	16,000	23,900	38,500
39,000		9,500	16,000	23,900	39,000
39,500		9,700	16,000	23,900	39,500
40,000		9,700	16,000	23,900	40,000



Plaquettes interchangeables HT 800

Matière de coupe **CW monobloc**

Surface **a**

Forme d'attachement

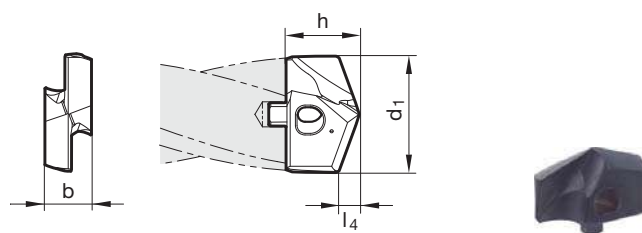


- P** ○ Amin. de l'âme  $\geq \varnothing 11,000$  • affûtage à dépouille conique • forme de l'arête de coupe principale, rectiligne, (obtenue par correction)
- M** ● • Y compris vis de blocage n° d'article 4071
- K** ○
- N** ○
- S** ○ aciers inoxydables
- H** ○

**GUHRING** NAVIGATOR

Paramètres de coupe, page 764-768

Système d'outils à plaquettes interchangeables T 800



N° d'article **4115**

d1		l4	b	h	N° de code
mm	inch	mm	mm	mm	
11,000		2,100	4,500	7,500	11,000
11,200		2,100	4,500	7,500	11,200
11,500		2,100	4,500	7,500	11,500
11,510	29/64	2,100	4,500	7,500	11,510
11,700		2,200	4,500	7,500	11,700
11,800		2,200	4,500	7,500	11,800
11,910	15/32	2,200	4,500	7,500	11,910
12,000		2,200	5,000	7,700	12,000
12,100		2,300	5,000	7,700	12,100
12,200		2,300	5,000	7,700	12,200
12,300	31/64	2,300	5,000	7,700	12,300
12,500		2,300	5,000	7,700	12,500
12,600		2,300	5,000	7,700	12,600
12,700	1/2	2,400	5,000	7,700	12,700
12,800		2,400	5,000	7,700	12,800
12,900		2,400	5,000	7,700	12,900
13,000		2,400	5,500	8,500	13,000
13,100	33/64	2,400	5,500	8,500	13,100
13,490	17/32	2,500	5,500	8,500	13,490
13,500		2,500	5,500	8,500	13,500
13,600		2,500	5,500	8,500	13,600
13,700		2,500	5,500	8,500	13,700
13,800		2,600	5,500	8,500	13,800
13,890	35/64	2,600	5,500	8,500	13,890
14,000		2,600	6,000	9,600	14,000
14,100		2,600	6,000	9,600	14,100
14,290	9/16	2,700	6,000	9,600	14,290
14,400		2,700	6,000	9,600	14,400
14,500		2,700	6,000	9,600	14,500
14,600		2,700	6,000	9,600	14,600
14,700		2,700	6,000	9,600	14,700
14,800		2,700	6,000	9,600	14,800
15,000		2,800	6,000	9,800	15,000
15,080	19/32	2,800	6,000	9,800	15,080
15,100		2,800	6,000	9,800	15,100
15,200		2,800	6,000	9,800	15,200
15,300		2,800	6,000	9,800	15,300
15,500		2,900	6,000	9,800	15,500
15,600		2,900	6,000	9,800	15,600
15,700		2,900	6,000	9,800	15,700
15,800		2,900	6,000	9,800	15,800
15,870	5/8	2,900	6,000	9,800	15,870



Système d'outils  
à plaquettes  
interchang. T 800

d1		l4	b	h	N° de code
mm	inch	mm	mm	mm	
16,000		3,000	7,000	11,000	16,000
16,270	41/64	3,000	7,000	11,000	16,270
16,500		3,100	7,000	11,000	16,500
16,670	21/32	3,100	7,000	11,000	16,670
17,000		3,100	7,000	11,000	17,000
17,070	43/64	3,200	7,000	11,000	17,070
17,460	11/16	3,200	7,000	11,000	17,460
17,500		3,200	7,000	11,000	17,500
17,600		3,300	7,000	11,000	17,600
17,860	45/64	3,300	7,000	11,000	17,860
18,000		3,300	8,000	12,600	18,000
18,260	23/32	3,400	8,000	12,600	18,260
18,500		3,400	8,000	12,600	18,500
18,650	47/64	3,400	8,000	12,600	18,650
19,000		3,500	8,000	12,600	19,000
19,050	3/4	3,500	8,000	12,600	19,050
19,250		3,600	8,000	12,600	19,250
19,450	49/64	3,600	8,000	12,600	19,450
19,500		3,600	8,000	12,600	19,500
19,600		3,600	8,000	12,600	19,600
19,840	25/32	3,700	8,000	12,600	19,840
20,000		3,700	9,000	13,900	20,000
20,240	51/64	3,700	9,000	13,900	20,240
20,500		3,800	9,000	13,900	20,500
20,640	13/16	3,800	9,000	13,900	20,640
21,000		3,900	9,000	13,900	21,000
21,030	53/64	3,900	9,000	13,900	21,030
21,100		3,900	9,000	13,900	21,100
21,430	27/32	3,900	9,000	13,900	21,430
21,500		4,000	9,000	13,900	21,500
21,830	55/64	4,000	9,000	13,900	21,830
22,000		4,100	10,000	15,300	22,000
22,220	7/8	4,100	10,000	15,300	22,220
22,500		4,100	10,000	15,300	22,500
22,620	57/64	4,200	10,000	15,300	22,620
23,000		4,200	10,000	15,300	23,000
23,020	29/32	4,200	10,000	15,300	23,020
23,420	59/64	4,300	10,000	15,300	23,420
23,500		4,300	10,000	15,300	23,500
23,810	15/16	4,400	10,000	15,300	23,810
24,000		4,400	11,000	15,800	24,000
24,100		4,400	11,000	15,800	24,100
24,210	61/64	4,500	11,000	15,800	24,210
24,500		4,500	11,000	15,800	24,500
24,610	31/32	4,500	11,000	15,800	24,610
25,000	63/64	4,600	11,000	15,800	25,000
25,400	1	4,700	11,000	15,800	25,400
25,500		4,700	11,000	15,800	25,500
25,700		4,700	11,000	15,800	25,700
26,000		4,800	12,000	20,000	26,000
26,190	1 1/32	4,800	12,000	20,000	26,190
26,500		4,900	12,000	20,000	26,500
26,590	1 3/64	4,900	12,000	20,000	26,590
27,000		5,000	12,000	20,000	27,000
27,500		5,100	12,000	20,000	27,500
27,700		5,100	12,000	20,000	27,700
27,780	1 3/32	5,100	12,000	20,000	27,780
28,000		5,100	13,000	20,700	28,000
28,180	1 7/64	5,200	13,000	20,700	28,180
28,500		5,200	13,000	20,700	28,500
28,580		5,300	13,000	20,700	28,580
29,000		5,300	13,000	20,700	29,000
29,370	1 5/32	5,400	13,000	20,700	29,370
29,500		5,400	13,000	20,700	29,500
29,770	1 11/64	5,500	13,000	20,700	29,770
30,000		5,500	14,000	22,300	30,000
30,160	1 3/16	5,500	14,000	22,300	30,160
30,500		5,600	14,000	22,300	30,500
30,960	1 7/32	5,700	14,000	22,300	30,960
31,000		5,700	14,000	22,300	31,000
31,500		5,800	14,000	22,300	31,500
31,750	1 1/4	5,800	14,000	22,300	31,750



d1		l4	b	h	N° de code
mm	inch	mm	mm	mm	
32,000		5,900	15,000	23,100	32,000
32,500		6,000	15,000	23,100	32,500
32,540	1 9/32	6,000	15,000	23,100	32,540
33,000		6,100	15,000	23,100	33,000
33,340	1 5/16	6,100	15,000	23,100	33,340
33,500		6,100	15,000	23,100	33,500
34,000		6,200	15,000	23,100	34,000
34,130	1 11/32	6,300	15,000	23,100	34,130
34,500		6,300	15,000	23,100	34,500
34,930		6,400	15,000	23,100	34,930
35,000		6,400	15,000	23,100	35,000
35,500		6,500	15,000	23,100	35,500
35,720	1 13/32	6,600	15,000	23,100	35,720
36,000		6,600	16,000	23,900	36,000
36,500		6,700	16,000	23,900	36,500
36,510	1 7/16	6,700	16,000	23,900	36,510
37,000		6,800	16,000	23,900	37,000
37,310	1 15/32	6,800	16,000	23,900	37,310
37,500		6,900	16,000	23,900	37,500
38,000		7,000	16,000	23,900	38,000
38,100	1 1/2	7,000	16,000	23,900	38,100
38,500	1 33/64	7,100	16,000	23,900	38,500
39,000		7,100	16,000	23,900	39,000
39,500		7,200	16,000	23,900	39,500
40,000		7,300	16,000	23,900	40,000

 Système d'outils  
à plaquettes  
interchang.T 800

Plaquettes interchangeables HT 800



Matière de coupe **CW monobloc**

Surface ○

Forme d'attachement

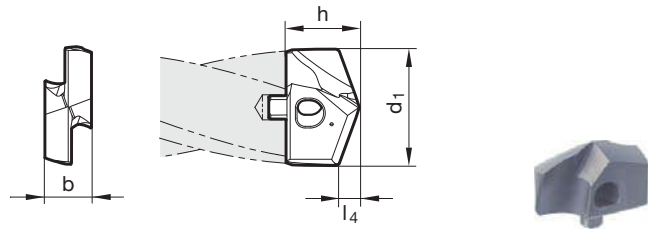
**P** Amin. de l'âme  $\geq \varnothing 11,000$  • affûtage à dépouille conique • forme concave de l'arête de coupe principale • Y compris vis de blocage n° d'article 4071

- M**
- K**
- N** •
- S** aluminium et alliages d'aluminium • métaux non ferreux
- H**

Système d'outils à plaquettes interchangeables T 800

**GÜHRING** NAVIGATOR

Paramètres de coupe, page 764-768



N° d'article **4114**

d1		l4	b	h	N° de code
mm	inch	mm	mm	mm	
11,000		2,100	4,500	7,500	11,000
11,200		2,100	4,500	7,500	11,200
11,500		2,100	4,500	7,500	11,500
11,510	29/64	2,100	4,500	7,500	11,510
11,700		2,200	4,500	7,500	11,700
11,800		2,200	4,500	7,500	11,800
11,910	15/32	2,200	4,500	7,500	11,910
12,000		2,200	5,000	7,700	12,000
12,100		2,300	5,000	7,700	12,100
12,200		2,300	5,000	7,700	12,200
12,300	31/64	2,300	5,000	7,700	12,300
12,500		2,300	5,000	7,700	12,500
12,600		2,300	5,000	7,700	12,600
12,700	1/2	2,400	5,000	7,700	12,700
12,800		2,400	5,000	7,700	12,800
12,900		2,400	5,000	7,700	12,900
13,000		2,400	5,500	8,500	13,000
13,100	33/64	2,400	5,500	8,500	13,100
13,490	17/32	2,500	5,500	8,500	13,490
13,500		2,500	5,500	8,500	13,500
13,600		2,500	5,500	8,500	13,600
13,700		2,500	5,500	8,500	13,700
13,800		2,600	5,500	8,500	13,800
13,890	35/64	2,600	5,500	8,500	13,890
14,000		2,600	6,000	9,600	14,000
14,100		2,600	6,000	9,600	14,100
14,290	9/16	2,700	6,000	9,600	14,290
14,400		2,700	6,000	9,600	14,400
14,500		2,700	6,000	9,600	14,500
14,600		2,700	6,000	9,600	14,600
14,680	37/64	2,700	6,000	9,600	14,680
14,700		2,700	6,000	9,600	14,700
14,800		2,700	6,000	9,600	14,800
15,000		2,800	6,000	9,800	15,000
15,080	19/32	2,800	6,000	9,800	15,080
15,100		2,800	6,000	9,800	15,100
15,200		2,800	6,000	9,800	15,200
15,300		2,800	6,000	9,800	15,300
15,480	39/64	2,900	6,000	9,800	15,480
15,500		2,900	6,000	9,800	15,500
15,600		2,900	6,000	9,800	15,600
15,700		2,900	6,000	9,800	15,700



d1		l4	b	h	N° de code
mm	inch	mm	mm	mm	
15,800		2,900	6,000	9,800	15,800
15,870	5/8	2,900	6,000	9,800	15,870
16,000		3,000	7,000	11,000	16,000
16,270	41/64	3,000	7,000	11,000	16,270
16,500		3,100	7,000	11,000	16,500
16,670	21/32	3,100	7,000	11,000	16,670
17,000		3,100	7,000	11,000	17,000
17,070	43/64	3,200	7,000	11,000	17,070
17,460	11/16	3,200	7,000	11,000	17,460
17,500		3,200	7,000	11,000	17,500
17,600		3,300	7,000	11,000	17,600
17,860	45/64	3,300	7,000	11,000	17,860
18,000		3,300	8,000	12,600	18,000
18,260	23/32	3,400	8,000	12,600	18,260
18,500		3,400	8,000	12,600	18,500
18,650	47/64	3,400	8,000	12,600	18,650
19,000		3,500	8,000	12,600	19,000
19,050	3/4	3,500	8,000	12,600	19,050
19,250		3,600	8,000	12,600	19,250
19,450	49/64	3,600	8,000	12,600	19,450
19,500		3,600	8,000	12,600	19,500
19,600		3,600	8,000	12,600	19,600
19,840	25/32	3,700	8,000	12,600	19,840
20,000		3,700	9,000	13,900	20,000
20,240	51/64	3,700	9,000	13,900	20,240
20,500		3,800	9,000	13,900	20,500
20,640	13/16	3,800	9,000	13,900	20,640
21,000		3,900	9,000	13,900	21,000
21,030	53/64	3,900	9,000	13,900	21,030
21,100		3,900	9,000	13,900	21,100
21,430	27/32	3,900	9,000	13,900	21,430
21,500		4,000	9,000	13,900	21,500
21,830	55/64	4,000	9,000	13,900	21,830
22,000		4,100	10,000	15,300	22,000
22,220	7/8	4,100	10,000	15,300	22,220
22,500		4,100	10,000	15,300	22,500
22,620	57/64	4,200	10,000	15,300	22,620
23,000		4,200	10,000	15,300	23,000
23,020	29/32	4,200	10,000	15,300	23,020
23,420	59/64	4,300	10,000	15,300	23,420
23,500		4,300	10,000	15,300	23,500
23,810	15/16	4,400	10,000	15,300	23,810
24,000		4,400	11,000	15,800	24,000
24,100		4,400	11,000	15,800	24,100
24,210	61/64	4,500	11,000	15,800	24,210
24,500		4,500	11,000	15,800	24,500
24,610	31/32	4,500	11,000	15,800	24,610
25,000	63/64	4,600	11,000	15,800	25,000
25,400	1	4,700	11,000	15,800	25,400
25,500		4,700	11,000	15,800	25,500
25,670		4,700	11,000	15,800	25,670
25,700		4,700	11,000	15,800	25,700
25,810		4,700	11,000	15,800	25,810
26,000		4,800	12,000	20,000	26,000
26,190	1 1/32	4,800	12,000	20,000	26,190
26,500		4,900	12,000	20,000	26,500
26,590	1 3/64	4,900	12,000	20,000	26,590
27,000		5,000	12,000	20,000	27,000
27,500		5,100	12,000	20,000	27,500
27,700		5,100	12,000	20,000	27,700
27,780	1 3/32	5,100	12,000	20,000	27,780
28,000		5,100	13,000	20,700	28,000
28,180	1 7/64	5,200	13,000	20,700	28,180
28,500		5,200	13,000	20,700	28,500
28,580		5,300	13,000	20,700	28,580
29,000		5,300	13,000	20,700	29,000
29,370	1 5/32	5,400	13,000	20,700	29,370
29,500		5,400	13,000	20,700	29,500
29,770	1 11/64	5,500	13,000	20,700	29,770
30,000		5,500	14,000	22,300	30,000
30,160	1 3/16	5,500	14,000	22,300	30,160
30,500		5,600	14,000	22,300	30,500



Système d'outils  
à plaquettes  
interchang. T 800

d1		l4	b	h	N° de code
mm	inch	mm	mm	mm	
30,960	1 7/32	5,700	14,000	22,300	30,960
31,000		5,700	14,000	22,300	31,000
31,500		5,800	14,000	22,300	31,500
31,750	1 1/4	5,800	14,000	22,300	31,750
32,000		5,900	15,000	23,100	32,000
32,500		6,000	15,000	23,100	32,500
32,540	1 9/32	6,000	15,000	23,100	32,540
32,940	1 19/64	6,000	15,000	23,100	32,940
33,000		6,100	15,000	23,100	33,000
33,340	1 5/16	6,100	15,000	23,100	33,340
33,500		6,100	15,000	23,100	33,500
34,000		6,200	15,000	23,100	34,000
34,130	1 11/32	6,300	15,000	23,100	34,130
34,500		6,300	15,000	23,100	34,500
34,930		6,400	15,000	23,100	34,930
35,000		6,400	15,000	23,100	35,000
35,500		6,500	15,000	23,100	35,500
35,720	1 13/32	6,600	15,000	23,100	35,720
36,000		6,600	16,000	23,900	36,000
36,500		6,700	16,000	23,900	36,500
36,510	1 7/16	6,700	16,000	23,900	36,510
37,000		6,800	16,000	23,900	37,000
37,310	1 15/32	6,800	16,000	23,900	37,310
37,500		6,900	16,000	23,900	37,500
38,000		7,000	16,000	23,900	38,000
38,100	1 1/2	7,000	16,000	23,900	38,100
38,500	1 33/64	7,100	16,000	23,900	38,500
39,000		7,100	16,000	23,900	39,000
39,500		7,200	16,000	23,900	39,500
40,000		7,300	16,000	23,900	40,000





Plaquettes interchangeables HT 800

Matière de coupe **CW monobloc**

Surface **a**

Forme d'attachement

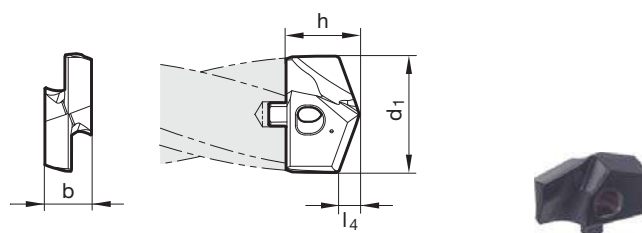


- P** ○ Amin. de l'âme  $\geq \varnothing 11,000$  • affûtage en pente • forme de l'arête de coupe principale, rectiligne, (obtenue par correction) • Y compris vis de blocage n° d'article 4071
- M** ○
- K** ○
- N** ○
- S** ○ Pilote de guidage dans tous les matériaux
- H** ○

**GUHRING**NAVIGATOR

Paramètres de coupe, page 768

Système d'outils à plaquettes interchangeables T 800



N° d'article **4111**

d1		l4	b	h	N° de code
mm	inch				
11,000		1,800	4,500	7,200	11,000
11,200		1,800	4,500	7,200	11,200
11,500		1,900	4,500	7,200	11,500
11,510	29/64	1,900	4,500	7,200	11,510
11,700		1,900	4,500	7,200	11,700
11,800		1,900	4,500	7,200	11,800
11,910	15/32	1,900	4,500	7,200	11,910
12,000		1,900	5,000	7,400	12,000
12,100		2,000	5,000	7,400	12,100
12,200		2,000	5,000	7,400	12,200
12,300	31/64	2,000	5,000	7,400	12,300
12,500		2,000	5,000	7,400	12,500
12,600		2,000	5,000	7,400	12,600
12,700	1/2	2,100	5,000	7,400	12,700
12,800		2,100	5,000	7,400	12,800
12,900		2,100	5,000	7,400	12,900
13,000		2,100	5,500	8,200	13,000
13,100	33/64	2,100	5,500	8,200	13,100
13,490	17/32	2,200	5,500	8,200	13,490
13,500		2,200	5,500	8,200	13,500
13,600		2,200	5,500	8,200	13,600
13,700		2,200	5,500	8,200	13,700
13,800		2,200	5,500	8,200	13,800
13,890	35/64	2,200	5,500	8,200	13,890
14,000		2,300	6,000	9,400	14,000
14,100		2,300	6,000	9,400	14,100
14,290	9/16	2,300	6,000	9,400	14,290
14,400		2,300	6,000	9,400	14,400
14,500		2,300	6,000	9,400	14,500
14,600		2,400	6,000	9,400	14,600
14,680	37/64	2,400	6,000	9,400	14,680
14,700		2,400	6,000	9,400	14,700
14,800		2,400	6,000	9,400	14,800
15,000		2,400	6,000	9,400	15,000
15,080	19/32	2,400	6,000	9,400	15,080
15,100		2,400	6,000	9,400	15,100
15,200		2,400	6,000	9,400	15,200
15,300		2,500	6,000	9,400	15,300
15,480	39/64	2,500	6,000	9,400	15,480
15,500		2,500	6,000	9,400	15,500
15,600		2,500	6,000	9,400	15,600
15,700		2,500	6,000	9,400	15,700



Système d'outils  
à plaquettes  
interchang. T 800

d1		l4	b	h	N° de code
mm	inch	mm	mm	mm	
15,800		2,500	6,000	9,400	15,800
15,870	5/8	2,600	6,000	9,400	15,870
16,000		2,600	7,000	10,600	16,000
16,270	41/64	2,600	7,000	10,600	16,270
16,500		2,700	7,000	10,600	16,500
16,670	21/32	2,700	7,000	10,600	16,670
17,000		2,700	7,000	10,600	17,000
17,070	43/64	2,700	7,000	10,600	17,070
17,460	11/16	2,800	7,000	10,600	17,460
17,500		2,800	7,000	10,600	17,500
17,600		2,800	7,000	10,600	17,600
17,860	45/64	2,900	7,000	10,600	17,860
18,000		2,900	8,000	12,100	18,000
18,260	23/32	2,900	8,000	12,100	18,260
18,500		3,000	8,000	12,100	18,500
18,650	47/64	3,000	8,000	12,100	18,650
19,000		3,000	8,000	12,100	19,000
19,050	3/4	3,100	8,000	12,100	19,050
19,450	49/64	3,100	8,000	12,100	19,450
19,500		3,100	8,000	12,100	19,500
19,600		3,100	8,000	12,100	19,600
19,840	25/32	3,200	8,000	12,100	19,840
20,000		3,200	9,000	13,300	20,000
20,240	51/64	3,200	9,000	13,300	20,240
20,500		3,300	9,000	13,300	20,500
20,640	13/16	3,300	9,000	13,300	20,640
21,000		3,400	9,000	13,300	21,000
21,030	53/64	3,400	9,000	13,300	21,030
21,100		3,400	9,000	13,300	21,100
21,430	27/32	3,400	9,000	13,300	21,430
21,500		3,400	9,000	13,300	21,500
21,830	55/64	3,500	9,000	13,300	21,830
22,000		3,500	10,000	14,800	22,000
22,220	7/8	3,600	10,000	14,800	22,220
22,500		3,600	10,000	14,800	22,500
22,620	57/64	3,600	10,000	14,800	22,620
23,000		3,700	10,000	14,800	23,000
23,020	29/32	3,700	10,000	14,800	23,020
23,420	59/64	3,700	10,000	14,800	23,420
23,500		3,800	10,000	14,800	23,500
23,810	15/16	3,800	10,000	14,800	23,810
24,000		3,800	11,000	15,300	24,000
24,100		3,800	11,000	15,300	24,100
24,210	61/64	3,900	11,000	15,300	24,210
24,500		3,900	11,000	15,300	24,500
24,610	31/32	3,900	11,000	15,300	24,610
25,000	63/64	4,000	11,000	15,300	25,000
25,400	1	4,100	11,000	15,300	25,400
25,500		4,100	11,000	15,300	25,500
25,700		4,100	11,000	15,300	25,700
26,000		4,100	12,000	19,400	26,000
26,190	1 1/32	4,200	12,000	19,400	26,190
26,500		4,200	12,000	19,400	26,500
26,590	1 3/64	4,200	12,000	19,400	26,590
27,000		4,300	12,000	19,400	27,000
27,500		4,400	12,000	19,400	27,500
27,700		4,400	12,000	19,400	27,700
27,780	1 3/32	4,400	12,000	19,400	27,780
28,000		4,500	13,000	20,100	28,000
28,180	1 7/64	4,500	13,000	20,100	28,180
28,500		4,500	13,000	20,100	28,500
28,580		4,600	13,000	20,100	28,580
29,000		4,600	13,000	20,100	29,000
29,370	1 5/32	4,700	13,000	20,100	29,370
29,500		4,700	13,000	20,100	29,500
30,000		4,800	14,000	21,700	30,000
30,160	1 3/16	4,800	14,000	21,700	30,160
30,500		4,900	14,000	21,700	30,500
30,960	1 7/32	4,900	14,000	21,700	30,960
31,000		4,900	14,000	21,700	31,000
31,500		5,000	14,000	21,700	31,500
31,750	1 1/4	5,100	14,000	21,700	31,750



d1		l4	b	h	N° de code
mm	inch	mm	mm	mm	
32,000		5,100	15,000	22,400	32,000
32,500		5,200	15,000	22,400	32,500
32,540	1 9/32	5,200	15,000	22,400	32,540
33,000		5,300	15,000	22,400	33,000
33,340	1 5/16	5,300	15,000	22,400	33,340
33,500		5,300	15,000	22,400	33,500
34,000		5,400	15,000	22,400	34,000
34,130	1 11/32	5,400	15,000	22,400	34,130
34,500		5,500	15,000	22,400	34,500
34,930		5,600	15,000	22,400	34,930
35,000		5,600	15,000	22,400	35,000
35,500		5,600	15,000	22,400	35,500
35,720	1 13/32	5,700	15,000	22,400	35,720
36,000		5,700	16,000	23,200	36,000
36,500		5,800	16,000	23,200	36,500
36,510	1 7/16	5,800	16,000	23,200	36,510
37,000		5,900	16,000	23,200	37,000
37,310	1 15/32	5,900	16,000	23,200	37,310
37,500		6,000	16,000	23,200	37,500
38,000		6,000	16,000	23,200	38,000
38,100	1 1/2	6,100	16,000	23,200	38,100
38,500	1 33/64	6,100	16,000	23,200	38,500
39,000		6,200	16,000	23,200	39,000
39,500		6,300	16,000	23,200	39,500
40,000		6,400	16,000	23,200	40,000

 Système d'outils  
à plaquettes  
interchang.T 800

Plaquettes de lamage HT 800



Matière de coupe **CW monobloc**

Surface **S**

Forme d'attachement

**P** • vis de blocage n° d'article 6128 non comprise

**M** ○

**K** ○

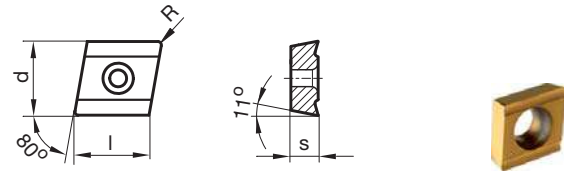
**N** ○

**S** ○

**H** ○

acier, fonte aciérée (alliée / non alliée)

Système d'outils à plaquettes interchangeables T 800



N° d'article **7645**

ISO	d	s	R	l	N° de code
	mm	mm	mm	mm	
CPGT050202FR-P	5,560	2,380	0,200	5,640	52,020
CPGT050204FR-P	5,560	2,380	0,400	5,640	52,040
CPGT060202FR-P	6,350	2,380	0,200	6,450	62,020
CPGT060204FR-P	6,350	2,380	0,400	6,450	62,040
CPGT09T308FR-P	9,525	3,970	0,800	9,670	93,080


**Plaquettes de lamage HT 800**

 Matière de coupe **CW monobloc**

 Surface **A**

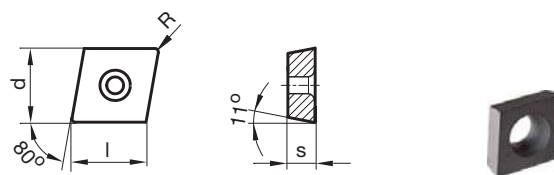
Forme d'attachement

**P** ○ vis de blocage n° d'article 6128 non comprise

**M**
**K** ●

**N**
**S**
**H**

fontes grises, fontes malléables, fontes à graphite sphéroïdal

 Système d'outils  
à plaquettes  
interchang.T 800

 N° d'article **7632**

ISO	d	s	R	l	N° de code
	mm	mm	mm	mm	
CPGW050202FN-K	5,560	2,380	0,200	5,640	52,020
CPGW050204FN-K	5,560	2,380	0,400	5,640	52,040
CPGW060202FN-K	6,350	2,380	0,200	6,450	62,020
CPGW060204FN-K	6,350	2,380	0,400	6,450	62,040
CPGW09T308FN-K	9,525	3,970	0,800	9,670	93,080

Plaquettes de lamage HT 800



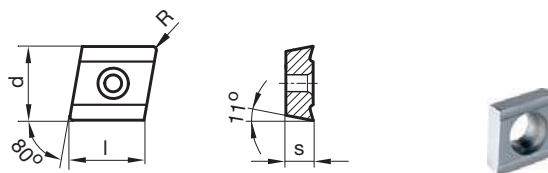
Matière de coupe **CW monobloc**

Surface ○

Forme d'attachement

- P** vis de blocage n° d'article 6128 non comprise
- M**
- K**
- N** •
- S** aluminium et alliages d'aluminium • métaux non ferreux
- H**

Système d'outils à plaquettes interchangeables T 800

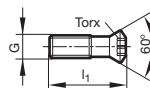


N° d'article **7635**

ISO	d	s	R	l	N° de code
	mm	mm	mm	mm	
CPGT050202FR-AL	5,560	2,380	0,200	5,640	52,020
CPGT050204FR-AL	5,560	2,380	0,400	5,640	52,040
CPGT060202FR-AL	6,350	2,380	0,200	6,450	62,020
CPGT060204FR-AL	6,350	2,380	0,400	6,450	62,040
CPGT09T308FR-AL	9,525	3,970	0,800	9,670	93,080



## Vis de fixation



N° d'article

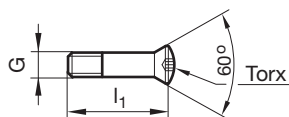
6128

G	l1 mm	Torx	N° de code
M2 x 5,5	5,500	T6	2,000
M2,2 x 5	5,000	T6	2,200
M2 x 5,3	5,300	T7	2,500
M2,5 x 6,5	6,500	T7	2,501
M2,5 x 5,7	5,700	T7	2,502
M3,5 x 10	10,000	T15	3,500
M3,5 x 12	12,000	T15	3,501
M3,5 x 8,5	8,500	T15	3,502
M3,5 x 8	8,000	T15	3,503
M4 x 13,5	13,500	T15	4,000
M4 x 8,4	8,400	T15	4,001
M4 x 10,8	10,800	T15	4,002
M4 x 0,5	11,000	T15	4,003
M4 x 9,5	9,500	T20	4,004
M4 x 0,5	9,000	T15	4,005
M4 x 9,5	9,500	T15	4,006
M4,5 x 11	11,000	T15	4,500
M4,5 x 7,5	7,500	T15	4,501
M4,5 x 11	11,000	T20	4,502
M5 x 17	17,000	T20	5,000
M5 x 11	11,000	T20	5,001

Vis de fixation



Systeme d'outils  
à plaquettes  
interchang.T 800



N° d'article 4071

G	l1 mm	Torx	N° de code
M1,6	4,000	T5	1,600
M1,6	4,400	T5	1,601
M2,2	9,500	T7	2,200
M2,2	10,500	T7	2,201
M2,2	5,600	T7	2,202
M2,2	4,600	T7	2,203
M2,5	11,400	T8	2,500
M2,5	6,400	T8	2,501
M2,5	5,200	T8	2,502
M3	13,100	T9	3,001
M3	6,400	T9	3,002
M3	8,000	T9	3,003
M3,5	14,250	T10	3,500
M4	16,000	T15	4,000
M4	7,700	T15	4,001
M4	10,600	T15	4,002
M4,5	18,000	T15	4,500
M5	19,750	T20	5,000
M5	21,750	T20	5,001
M5	14,200	T20	5,002
M5	23,400	T20	5,003
M6	27,000	T25	6,000
M6	28,500	T25	6,001
M6	32,500	T25	6,002





## Porte-outil RT 800



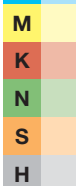
Matière de coupe

Surface

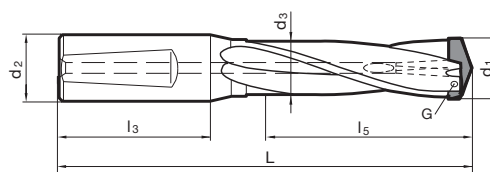
Forme d'attachement

HE

**P** Amin. de l'âme  $\geq \varnothing 17,000$  • construction compacte • serrage de plaqu.amovible assuré sur le support • y compris vis de blocage n° d'article 1071 • Y compris tournevis n° d'article 1612


**GUHRING**NAVIGATOR

Paramètres de coupe, page 770


 N° d'article **5242**

d1	d2	d3	L	l3	l5	G	N° de code
mm	mm	mm	mm	mm	mm		
16,00-17,00	20,000	15,700	130,000	50,000	54,000	1071 3.006	17,000
16,00-17,00	19,050	15,700	130,000	50,000	54,000	1071 3.006	17,005
17,01-17,99	20,000	16,700	130,000	50,000	54,000	1071 3.006	17,990
17,01-17,99	19,050	16,700	130,000	50,000	54,000	1071 3.006	17,995
18,00-19,00	20,000	17,700	138,000	50,000	60,000	1071 3.000	19,000
18,00-19,00	19,050	17,700	138,000	50,000	60,000	1071 3.000	19,005
19,01-20,00	20,000	18,700	138,000	50,000	60,000	1071 3.000	20,000
19,01-20,00	19,050	18,700	138,000	50,000	60,000	1071 3.000	20,005
20,01-21,00	25,000	19,700	153,000	56,000	66,000	1071 3.000	21,000
20,01-21,00	25,400	19,700	153,000	56,000	66,000	1071 3.000	21,005
21,01-22,50	25,000	20,700	153,000	56,000	66,000	1071 3.000	22,500
21,01-22,50	25,400	21,200	153,000	56,000	66,000	1071 3.000	22,505
22,51-24,00	25,000	22,200	161,000	56,000	72,000	1071 3.500	24,000
22,51-24,00	25,400	22,700	161,000	56,000	72,000	1071 3.500	24,005
24,01-25,50	25,000	23,700	170,000	56,000	78,000	1071 3.500	25,500
24,01-25,50	25,400	24,200	170,000	56,000	78,000	1071 3.500	25,505
25,51-27,50	32,000	25,200	182,000	60,000	84,000	1071 4.000	27,500
25,51-27,50	31,750	26,200	182,000	60,000	84,000	1071 4.000	27,505
27,51-29,50	32,000	27,200	190,000	60,000	90,000	1071 4.000	29,500
27,51-29,50	31,750	28,200	190,000	60,000	90,000	1071 4.000	29,505
29,51-32,00	32,000	29,200	198,000	60,000	96,000	1071 4.500	32,000
29,51-32,00	31,750	30,700	198,000	60,000	96,000	1071 4.500	32,005
32,01-34,50	32,000	31,700	206,000	60,000	102,000	1071 4.500	34,500
32,01-34,50	31,750	33,200	206,000	60,000	102,000	1071 4.500	34,505
34,51-37,50	32,000	34,000	218,000	60,000	114,000	1071 5.000	37,500
34,51-37,50	31,750	36,200	218,000	60,000	114,000	1071 5.000	37,505
37,51-40,50	32,000	37,000	231,000	60,000	120,000	1071 5.000	40,500
37,51-40,50	31,750	39,200	231,000	60,000	120,000	1071 5.000	40,505

Porte-outil RT 800



**P** Amin. de l'âme  $\geq \varnothing 17,000$  • construction compacte • serrage de plaqu.amovible assuré sur le support • y compris vis de blocage n° d'article 1071 • Y compris tournevis n° d'article 1612

- M**
- K**
- N**
- S**
- H**

Matière de coupe

Surface



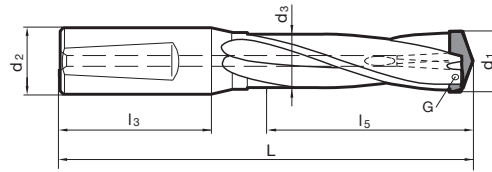
Forme d'attachement

HE

Système d'outils à plaquettes interchangeables T 800

**GÜHRING** NAVIGATOR

Paramètres de coupe, page 770



N° d'article **5243**

d1	d2	d3	L	l3	l5	G	N° de code
mm	mm	mm	mm	mm	mm		
16,00-17,00	20,000	15,700	166,000	50,000	90,000	1071 3.006	17,000
16,00-17,00	19,050	15,700	166,000	50,000	90,000	1071 3.006	17,005
17,01-17,99	20,000	16,700	166,000	50,000	90,000	1071 3.006	17,990
17,01-17,99	19,050	16,700	166,000	50,000	90,000	1071 3.006	17,995
18,00-19,00	20,000	17,700	178,000	50,000	100,000	1071 3.000	19,000
18,00-19,00	19,050	17,700	178,000	50,000	100,000	1071 3.000	19,005
19,01-20,00	20,000	18,700	178,000	50,000	100,000	1071 3.000	20,000
19,01-20,00	19,050	18,700	178,000	50,000	100,000	1071 3.000	20,005
20,01-21,00	25,000	19,700	197,000	56,000	110,000	1071 3.000	21,000
20,01-21,00	25,400	19,700	197,000	56,000	110,000	1071 3.000	21,005
21,01-22,50	25,000	20,700	197,000	56,000	110,000	1071 3.000	22,500
21,01-22,50	25,400	21,200	197,000	56,000	110,000	1071 3.000	22,505
22,51-24,00	25,000	22,200	209,000	56,000	120,000	1071 3.500	24,000
22,51-24,00	25,400	22,700	209,000	56,000	120,000	1071 3.500	24,005
24,01-25,50	25,000	23,700	222,000	56,000	130,000	1071 3.500	25,500
24,01-25,50	25,400	24,200	222,000	56,000	130,000	1071 3.500	25,505
25,51-27,50	32,000	25,200	238,000	60,000	140,000	1071 4.000	27,500
25,51-27,50	31,750	26,200	238,000	60,000	140,000	1071 4.000	27,505
27,51-29,50	32,000	27,200	250,000	60,000	150,000	1071 4.000	29,500
27,51-29,50	31,750	28,200	250,000	60,000	150,000	1071 4.000	29,505
29,51-32,00	32,000	29,200	262,000	60,000	160,000	1071 4.500	32,000
29,51-32,00	31,750	30,700	262,000	60,000	160,000	1071 4.500	32,005
32,01-34,50	32,000	31,700	274,000	60,000	170,000	1071 4.500	34,500
32,01-34,50	31,750	33,200	274,000	60,000	170,000	1071 4.500	34,505
34,51-37,50	32,000	34,000	292,000	60,000	190,000	1071 5.000	37,500
34,51-37,50	31,750	36,200	292,000	60,000	190,000	1071 5.000	37,505
37,51-40,50	32,000	37,000	311,000	60,000	200,000	1071 5.000	40,500
37,51-40,50	31,750	39,200	311,000	60,000	200,000	1071 5.000	40,505



## Porte-outil RT 800



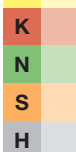
Matière de coupe

Surface

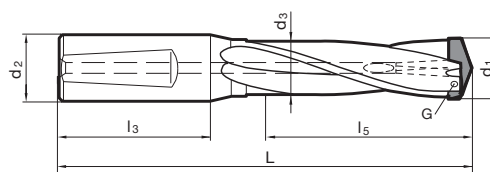
Forme d'attachement

HE

**P** Amin. de l'âme  $\geq \varnothing 17,000$  • construction compacte • serrage de plaqu.amovible assuré sur le support • y compris vis de blocage n° d'article 1071 • Y compris tournevis n° d'article 1612


**GUHRING**NAVIGATOR

Paramètres de coupe, page 770


 Système d'outils  
à plaquettes  
interchang.T 800

 N° d'article **5248**

d1	d2	d3	L	l3	l5	G	N° de code
mm	mm	mm	mm	mm	mm		
16,00-17,00	20,000	15,700	202,000	50,000	126,000	1071 3.006	17,000
16,00-17,00	19,050	15,700	202,000	50,000	126,000	1071 3.006	17,005
17,01-17,99	20,000	16,700	202,000	50,000	126,000	1071 3.006	17,990
17,01-17,99	19,050	16,700	202,000	50,000	126,000	1071 3.006	17,995
18,00-19,00	20,000	17,700	218,000	50,000	140,000	1071 3.000	19,000
18,00-19,00	19,050	17,700	218,000	50,000	140,000	1071 3.000	19,005
19,01-20,00	20,000	18,700	218,000	50,000	140,000	1071 3.000	20,000
19,01-20,00	19,050	18,700	218,000	50,000	140,000	1071 3.000	20,005
20,01-21,00	25,000	19,700	241,000	56,000	154,000	1071 3.000	21,000
20,01-21,00	25,400	19,700	241,000	56,000	154,000	1071 3.000	21,005
21,01-22,50	25,000	20,700	241,000	56,000	154,000	1071 3.000	22,500
21,01-22,50	25,400	21,200	241,000	56,000	154,000	1071 3.000	22,505
22,51-24,00	25,000	22,200	257,000	56,000	168,000	1071 3.500	24,000
22,51-24,00	25,400	22,700	257,000	56,000	168,000	1071 3.500	24,005
24,01-25,50	25,000	23,700	274,000	56,000	182,000	1071 3.500	25,500
24,01-25,50	25,400	24,200	274,000	56,000	182,000	1071 3.500	25,505
25,51-27,50	32,000	25,200	294,000	60,000	196,000	1071 4.000	27,500
25,51-27,50	31,750	26,200	294,000	60,000	196,000	1071 4.000	27,505
27,51-29,50	32,000	27,200	310,000	60,000	210,000	1071 4.000	29,500
27,51-29,50	31,750	28,200	310,000	60,000	210,000	1071 4.000	29,505
29,51-32,00	32,000	29,200	326,000	60,000	224,000	1071 4.500	32,000
29,51-32,00	31,750	30,700	326,000	60,000	224,000	1071 4.500	32,005
32,01-34,50	32,000	31,700	342,000	60,000	238,000	1071 4.500	34,500
32,01-34,50	31,750	33,200	342,000	60,000	238,000	1071 4.500	34,505
34,51-37,50	32,000	34,000	366,000	60,000	266,000	1071 5.000	37,500
34,51-37,50	31,750	36,200	366,000	60,000	266,000	1071 5.000	37,505
37,51-40,50	32,000	37,000	391,000	60,000	280,000	1071 5.000	40,500
37,51-40,50	31,750	39,200	391,000	60,000	280,000	1071 5.000	40,505

Plaquettes interchangeables RT 800



Matière de coupe **CW monobloc**

Surface **S**

Forme d'attachement

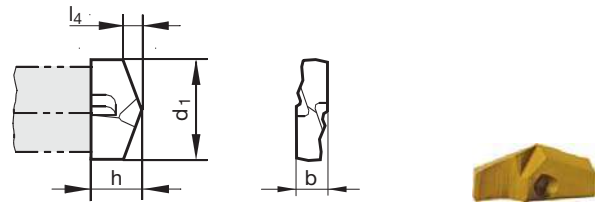
**P** • Amin. de l'âme  $\geq \varnothing 16,000$  • affûtage à dépouille conique • forme concave de l'arête de coupe principale • y compris vis de blocage n° d'article 1071

- M** ○
- K** •
- N** ○
- S** aciers jusqu'à 1000 N/mm<sup>2</sup>
- H**

Système d'outils à plaquettes interchangeables T 800

**GÜHRING** NAVIGATOR

Paramètres de coupe, page 770



N° d'article **1047**

d1		l4		b		h		N° de code
mm	inch	mm	mm	mm	mm	mm	mm	
16,000		3,000	4,500	8,000	16,000			
16,270	41/64	3,000	4,500	8,000	16,270			
16,500		3,100	4,500	8,000	16,500			
16,670	21/32	3,100	4,500	8,000	16,670			
17,000		3,100	4,500	8,000	17,000			
17,070	43/64	3,200	4,500	8,000	17,070			
17,460	11/16	3,200	4,500	8,000	17,460			
17,500		3,200	4,500	8,000	17,500			
17,860	45/64	3,300	4,500	8,000	17,860			
18,000		3,300	5,000	8,000	18,000			
18,260	23/32	3,400	5,000	8,000	18,260			
18,500		3,400	5,000	8,000	18,500			
18,650	47/64	3,400	5,000	8,000	18,650			
19,000		3,500	5,000	8,000	19,000			
19,050	3/4	3,500	5,000	8,000	19,050			
19,250		3,600	5,000	8,000	19,250			
19,450	49/64	3,600	5,000	8,000	19,450			
19,500		3,600	5,000	8,000	19,500			
19,840	25/32	3,700	5,000	8,000	19,840			
20,000		3,700	5,000	8,000	20,000			
20,240	51/64	3,700	5,500	8,800	20,240			
20,500		3,800	5,500	8,800	20,500			
20,640	13/16	3,800	5,500	8,800	20,640			
21,000		3,900	5,500	8,800	21,000			
21,030	53/64	3,900	5,500	8,800	21,030			
21,430	27/32	3,900	5,500	8,800	21,430			
21,500		4,000	5,500	8,800	21,500			
21,830	55/64	4,000	5,500	8,800	21,830			
22,000		4,100	5,500	8,800	22,000			
22,220	7/8	4,100	5,500	8,800	22,220			
22,500		4,100	5,500	8,800	22,500			
22,620	57/64	4,200	6,300	10,000	22,620			
23,000		4,200	6,300	10,000	23,000			
23,020	29/32	4,200	6,300	10,000	23,020			
23,420	59/64	4,300	6,300	10,000	23,420			
23,500		4,300	6,300	10,000	23,500			
23,810	15/16	4,400	6,300	10,000	23,810			
24,000		4,400	6,300	10,000	24,000			
24,210	61/64	4,500	6,300	10,000	24,210			
24,500		4,500	6,300	10,000	24,500			
24,610	31/32	4,500	6,300	10,000	24,610			
25,000	63/64	4,600	6,300	10,000	25,000			



d1		l4	b	h	N° de code
mm	inch	mm	mm	mm	
25,400	1	4,700	6,300	10,000	25,400
25,500		4,700	6,300	10,000	25,500
26,000		4,800	7,300	11,600	26,000
26,500		4,900	7,300	11,600	26,500
27,000		5,000	7,300	11,600	27,000
27,500		5,100	7,300	11,600	27,500
28,000		5,100	7,300	11,600	28,000
28,500		5,200	7,300	11,600	28,500
29,000		5,300	7,300	11,600	29,000
29,500		5,400	7,300	11,600	29,500
30,000		5,500	8,500	13,600	30,000
30,500		5,600	8,500	13,600	30,500
31,000		5,700	8,500	13,600	31,000
31,500		5,800	8,500	13,600	31,500
32,000		5,900	8,500	13,600	32,000
32,500		6,000	8,500	13,600	32,500
33,000		6,100	8,500	13,600	33,000
33,500		6,100	8,500	13,600	33,500
34,000		6,200	8,500	13,600	34,000
34,500		6,300	8,500	13,600	34,500
35,000		6,400	10,000	16,000	35,000
36,000		6,600	10,000	16,000	36,000
37,000		6,800	10,000	16,000	37,000
37,500		6,900	10,000	16,000	37,500
38,000		7,000	10,000	16,000	38,000
39,000		7,100	10,000	16,000	39,000
40,000		7,300	10,000	16,000	40,000
40,500		7,400	10,000	16,000	40,500

Système d'outils à  
plaquettes inter-  
chang.T 800

Plaquettes interchangeables RT 800



Matière de coupe **CW monobloc**

Surface **F**

Forme d'attachement

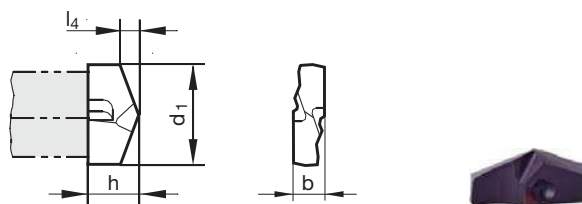
**P** • Amin. de l'âme  $\geq \varnothing 16,000$  • affûtage à dépouille conique • forme concave de l'arête de coupe principale • y compris vis de blocage n° d'article 1071

**M** ○  
**K** •  
**N** ○  
**S** aciers jusqu'à 1000 N/mm<sup>2</sup>  
**H**

Système d'outils à plaquettes interchangeables T 800

**GÜHRING** NAVIGATOR

Paramètres de coupe, page 770



N° d'article **2485**

d1		l4	b	h	N° de code
mm	inch	mm	mm	mm	
16,000		3,000	4,500	8,000	16,000
16,270	41/64	3,000	4,500	8,000	16,270
16,500		3,100	4,500	8,000	16,500
16,670	21/32	3,100	4,500	8,000	16,670
17,000		3,100	4,500	8,000	17,000
17,070	43/64	3,200	4,500	8,000	17,070
17,460	11/16	3,200	4,500	8,000	17,460
17,500		3,200	4,500	8,000	17,500
17,860	45/64	3,300	4,500	8,000	17,860
18,000		3,300	5,000	8,000	18,000
18,260	23/32	3,400	5,000	8,000	18,260
18,500		3,400	5,000	8,000	18,500
18,650	47/64	3,400	5,000	8,000	18,650
19,000		3,500	5,000	8,000	19,000
19,050	3/4	3,500	5,000	8,000	19,050
19,250		3,600	5,000	8,000	19,250
19,450	49/64	3,600	5,000	8,000	19,450
19,500		3,600	5,000	8,000	19,500
19,840	25/32	3,700	5,000	8,000	19,840
20,000		3,700	5,000	8,000	20,000
20,240	51/64	3,700	5,500	8,800	20,240
20,500		3,800	5,500	8,800	20,500
20,640	13/16	3,800	5,500	8,800	20,640
21,000		3,900	5,500	8,800	21,000
21,030	53/64	3,900	5,500	8,800	21,030
21,430	27/32	3,900	5,500	8,800	21,430
21,500		4,000	5,500	8,800	21,500
21,830	55/64	4,000	5,500	8,800	21,830
22,000		4,100	5,500	8,800	22,000
22,220	7/8	4,100	5,500	8,800	22,220
22,500		4,100	5,500	8,800	22,500
22,620	57/64	4,200	6,300	10,000	22,620
23,000		4,200	6,300	10,000	23,000
23,020	29/32	4,200	6,300	10,000	23,020
23,420	59/64	4,300	6,300	10,000	23,420
23,500		4,300	6,300	10,000	23,500
23,810	15/16	4,400	6,300	10,000	23,810
24,000		4,400	6,300	10,000	24,000
24,210	61/64	4,500	6,300	10,000	24,210
24,500		4,500	6,300	10,000	24,500
24,610	31/32	4,500	6,300	10,000	24,610
25,000	63/64	4,600	6,300	10,000	25,000



d1		l4	b	h	N° de code
mm	inch	mm	mm	mm	
25,400	1	4,700	6,300	10,000	25,400
25,500		4,700	6,300	10,000	25,500
26,000		4,800	7,300	11,600	26,000
26,500		4,900	7,300	11,600	26,500
27,000		5,000	7,300	11,600	27,000
27,500		5,100	7,300	11,600	27,500
28,000		5,100	7,300	11,600	28,000
28,500		5,200	7,300	11,600	28,500
29,000		5,300	7,300	11,600	29,000
29,500		5,400	7,300	11,600	29,500
30,000		5,500	8,500	13,600	30,000
30,500		5,600	8,500	13,600	30,500
31,000		5,700	8,500	13,600	31,000
31,500		5,800	8,500	13,600	31,500
32,000		5,900	8,500	13,600	32,000
32,500		6,000	8,500	13,600	32,500
33,000		6,100	8,500	13,600	33,000
33,500		6,100	8,500	13,600	33,500
34,000		6,200	8,500	13,600	34,000
34,500		6,300	8,500	13,600	34,500
35,000		6,400	10,000	16,000	35,000
36,000		6,600	10,000	16,000	36,000
37,000		6,800	10,000	16,000	37,000
37,500		6,900	10,000	16,000	37,500
38,000		7,000	10,000	16,000	38,000
39,000		7,100	10,000	16,000	39,000
40,000		7,300	10,000	16,000	40,000
40,500		7,400	10,000	16,000	40,500

Système d'outils à  
plaquettes inter-  
chang.T 800

Plaquettes interchangeables RT 800



Matière de coupe **CW monobloc**

Surface ○

Forme d'attachement

**P** Amin. de l'âme  $\geq \varnothing 16,000$  • affûtage à dépouille conique • forme concave de l'arête de coupe principale • y compris vis de blocage n° d'article 1071

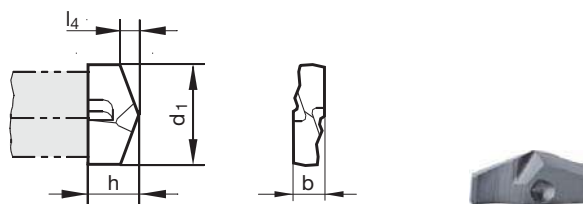
- M**
- K** ○
- N** •
- S**
- H**

fontes et alliages Al Si

Système d'outils à plaquettes interchangeables T 800

**GÜHRING** NAVIGATOR

Paramètres de coupe, page 770



N° d'article **2747**

d1		l4	b	h	N° de code
mm	inch	mm	mm	mm	
16,000		3,000	4,500	8,000	16,000
16,500		3,100	4,500	8,000	16,500
17,000		3,100	4,500	8,000	17,000
17,070	43/64	3,200	4,500	8,000	17,070
17,500		3,200	4,500	8,000	17,500
18,000		3,300	5,000	8,000	18,000
18,260	23/32	3,400	5,000	8,000	18,260
18,650	47/64	3,400	5,000	8,000	18,650
19,000		3,500	5,000	8,000	19,000
19,050	3/4	3,500	5,000	8,000	19,050
19,250		3,600	5,000	8,000	19,250
19,450	49/64	3,600	5,000	8,000	19,450
19,500		3,600	5,000	8,000	19,500
19,840	25/32	3,700	5,000	8,000	19,840
20,000		3,700	5,000	8,000	20,000
20,500		3,800	5,500	8,800	20,500
20,640	13/16	3,800	5,500	8,800	20,640
21,000		3,900	5,500	8,800	21,000
21,030	53/64	3,900	5,500	8,800	21,030
21,430	27/32	3,900	5,500	8,800	21,430
21,830	55/64	4,000	5,500	8,800	21,830
22,000		4,100	5,500	8,800	22,000
23,000		4,200	6,300	10,000	23,000
23,420	59/64	4,300	6,300	10,000	23,420
23,500		4,300	6,300	10,000	23,500
24,000		4,400	6,300	10,000	24,000
24,210	61/64	4,500	6,300	10,000	24,210
24,500		4,500	6,300	10,000	24,500
25,000	63/64	4,600	6,300	10,000	25,000
25,500		4,700	6,300	10,000	25,500
26,000		4,800	7,300	11,600	26,000
26,500		4,900	7,300	11,600	26,500
27,000		5,000	7,300	11,600	27,000
27,500		5,100	7,300	11,600	27,500
28,000		5,100	7,300	11,600	28,000
29,500		5,400	7,300	11,600	29,500
30,000		5,500	8,500	13,600	30,000
30,500		5,600	8,500	13,600	30,500
31,000		5,700	8,500	13,600	31,000
31,500		5,800	8,500	13,600	31,500
32,000		5,900	8,500	13,600	32,000
32,500		6,000	8,500	13,600	32,500





d1		l4	b	h	N° de code
mm	inch	mm	mm	mm	
33,000		6,100	8,500	13,600	33,000
33,500		6,100	8,500	13,600	33,500
34,000		6,200	8,500	13,600	34,000
34,500		6,300	8,500	13,600	34,500
35,000		6,400	10,000	16,000	35,000
36,000		6,600	10,000	16,000	36,000
37,000		6,800	10,000	16,000	37,000
39,000		7,100	10,000	16,000	39,000
40,000		7,300	10,000	16,000	40,000

Système d'outils à  
plaquettes inter-  
chang.T 800



Vis de fixation pour RT 800



Système d'outils à  
plaquettes inter-  
chang. T 800

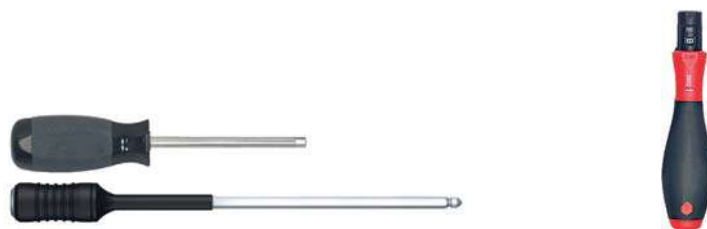


N° d'article **1071**

G	l1 mm	Torx	N° de code
M3 x 0,35	7,000	T6	3,000
M3 x 0,35	6,000	T6	3,006
M3,5 x 0,35	8,000	T7	3,500
M4 x 0,5	9,000	T8	4,000
M4 x 0,5	10,000	T8	4,500
M5 x 0,5	11,000	T10	5,000



Clé dynamométrique



N° d'article **4915**

Système d'outils  
à plaquettes  
interchang.T 800

Entraînement		Nm	Type	N° de code
1/4»	hexagonal	0,4-1	A	1,001
1/4»	hexagonal	0,8-2	A	2,000
1/4»	hexagonal	1-5	A	5,001
1/4»	hexagonal	2-8	A	8,000
1/4»	hexagonal	12	D	12,000
1/4»	hexagonal	5-14	D	14,000
3/8»	square	5-50	B	50,000
1/2»	square	20-200	C	200,000

**Embouts pour Vis Torx**



Système d'outils à  
plaquettes inter-  
chang. T 800

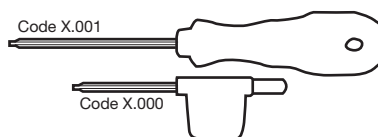


N° d'article **4917**

Entraînement		Torx	L mm	N° de code
1/4	hexagonal	T5	25,000	5,000
1/4	hexagonal	T6	25,000	6,000
1/4	hexagonal	T7	25,000	7,000
1/4	hexagonal	T8	25,000	8,000
1/4	hexagonal	T9	25,000	9,000
1/4	hexagonal	T10	25,000	10,000
1/4	hexagonal	T15	25,000	15,000
1/4	hexagonal	T20	25,000	20,000
1/2	square	T25	25,000	25,000



Tournevis Torx



Systeme d'outils a  
plaquettes inter-  
chang.T 800

N° d'article **1612**

Torx	N° de code
T5	5,001
T6	6,000
T6	6,001
T7	7,001
T8	8,000
T8	8,001
T9	9,001
T10	10,001
T15	15,000
T15	15,001
T20	20,001
T25	25,001
T30	30,001



## HT 800 WP

### Remarques et recommandations lors de l'utilisation des outils du système de perçage Gühring HT 800 WP:

Nous recommandons l'échange de la vis de fixation lorsque vous échangez la plaquette de coupe! C'est pourquoi nous livrons chacun des supports de plaquette avec une vis de fixation n° d'article 4071 et avec un tournevis n° d'article 1612.

Nous livrons aussi chacune des plaquettes de coupe interchangeables avec une vis de fixation n° d'article 4071. Lors de l'échange d'une plaquette de coupe, il faut absolument bien respecter le couple de serrage prescrit qui assure d'excellents résultats d'usinage!

Champ de diamètres	11,0 - 12,99	13,0 - 13,99	14,0 - 15,99	16,0 - 17,99	18,0 - 19,99	20,0 - 21,99	22,0 - 29,99	30,0 - 40,00
Filetage	M2,2	M2,5	M3	M3,5	M4	M4,5	M5	M6
Taille de Torx	T7	T8	T9	T10	T15	T15	T20	T25
Couple de serrage (Nm)	0,8	1,0	1,7	2,7	4,0	6,0	8,0	14,0

Données valables pour la sécurisation des filetages (Loctite)

- Lorsqu'il s'agit d'usiner des perçages débouchants, il faut veiller à ce que les listels périphériques de guidage restent toujours en prise. En outre, avant le débouchage, nous recommandons de réduire l'avance.
- En général, pour les profondeurs à partir de  $5 \times \varnothing$ , avec le support n° d'article 4105 et plaquette de coupe n° d'article 4111 pour le perçage pilote, nous recommandons de réaliser un centrage ou un perçage pilote. Vous pouvez aussi, en fonction des matériaux à usiner, utiliser des forets Ratio type RT 100 U ou RT 100 VA.
- Lors de perçages sans le centrage auparavant, à l'amorçage, nous recommandons de réduire l'avance.
- Lorsqu'il s'agit de perçages avec coupe interrompue (rainures, perçages transversaux), il faut absolument réaliser des essais de perçages auparavant afin de confirmer le processus. Lors d'interruptions d'une valeur de maximum  $0,2 \times D$ , nous recommandons de réduire la valeur de l'avance.
- Contrairement aux forets à plaquettes interchangeables classiques, le système HT 800 WP est approprié pour le perçage des tôles superposées.
- Lorsqu'il s'agit de percer sur un tour, où l'outil est fixe, il faut s'assurer d'un centrage très précis de l'outil.
- Afin d'obtenir un usinage optimal, il faut aussi s'assurer d'une alimentation abondante en produit de lubrification et de refroidissement, huile de coupe ou huile soluble.
- Cet outil n'est pas vraiment recommandé en usinage MQL. S'il est absolument nécessaire d'usiner en MQL, nous recommandons de choisir l'extrémité conique spéciale MQL de Gühring sur l'attachement de l'outil ainsi que tous les éléments d'adduction MQL de Gühring. Notre service technique clientèle est en mesure de vous conseiller gracieusement.

## RT 800 WP

### Remarques et recommandations lors de l'utilisation des outils Gühring RT 800 WP:

- Lors de l'usinage des perçages débouchants, veiller à ce que les listels périphériques de guidage restent toujours en prise.
- Lors de l'utilisation de la version en  $7 \times D$ , nous recommandons de réaliser un centrage avec un angle de pointe identique de  $140^\circ$ , ou plus, sur une profondeur équivalente aux  $2/3$  du diamètre de coupe.
- Lorsqu'il s'agit de perçages avec coupe interrompue (rainures, perçages transversaux), il faut absolument réaliser des essais de perçages auparavant afin de confirmer le processus. Lors d'interruptions d'une valeur maximale de  $0,2 \times D$ , nous recommandons de réduire la valeur de l'avance.
- Contrairement aux outils à plaquettes interchangeables classiques, le système HT 800 WP est approprié pour le perçage des tôles superposées.
- Lors de l'échange des plaquettes de coupe, nous recommandons aussi d'échanger la vis de fixation usagée contre la vis de fixation (pourvue d'un fil spécial de sécurisation) livrée avec la plaquette de coupe.

# HR 500 T

Alésoir « Haute Performance » en cw monobloc, pourvu d'un attachement HA afin d'augmenter les possibilités de serrage.

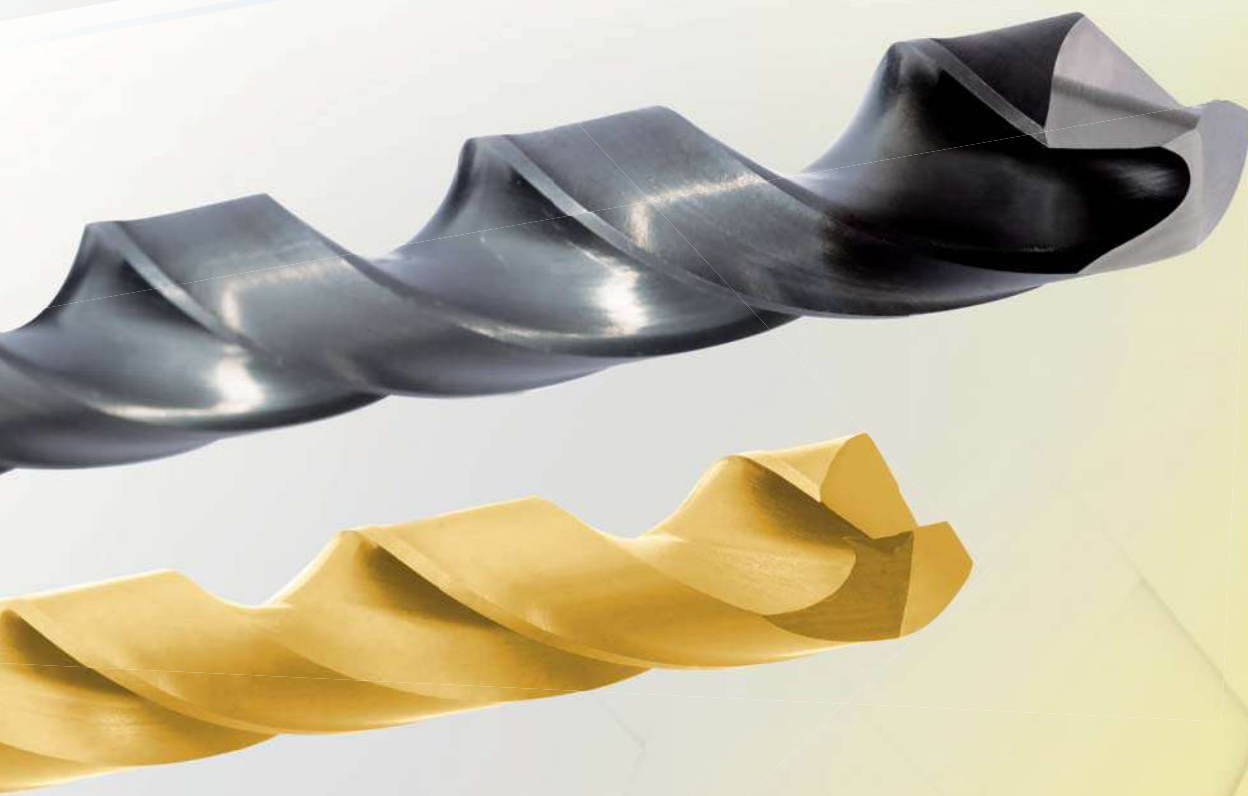


Vous trouverez toutes les caractéristiques techniques complémentaires dans notre catalogue « Alésoirs ».





# FORETS HÉLICOÏDAUX À QUEUE CYLINDRIQUE





P M K N S H						Présentation	Profondeur	Norme	Type	Sens de coupe	Matière de coupe	Surface	d1/mm	N° d'article	Param. de coupe, page	Page
•	•	•	•	•	•		~3xD	DIN 1897	N	R	HSS		0,350 - 44,000	223	772	192
•	•	•	•	•	•		~3xD	DIN 1897	N	R	HSS		0,500 - 30,160	653	772	196
•	•	•	•	•	•		~3xD	DIN 1897	N	R	HSS		1,000 - 15,000	2460	772	199
•	•	•	•	•	•		~3xD	DIN 1897	N	L	HSS		0,320 - 50,000	226	772	200
•	•	•	•	•	•		~3xD	DIN 1897	N	L	HSS		0,900 - 13,000	672	772	203
•	•	•	•	•	•		~3xD	DIN 1897	H	R	HSS		0,690 - 21,000	224	772	204
•	•	•	•	•	•		~3xD	DIN 1897	H	L	HSS		0,750 - 24,000	227	772	206
•	•	•	•	•	•		~3xD	DIN 1897	W	R	HSS		1,000 - 20,000	225	772	208
•	•	•	•	•	•		~3xD	DIN 1897	W	L	HSS		1,000 - 20,000	228	772	210
•	•	•	•	•	•		~3xD	DIN 1897	GT 80	R	HSS		1,000 - 20,000	552	772	212
•	•	•	•	•	•		~3xD	DIN 1897	GT 80	L	HSS		1,000 - 19,840	553	772	215
•	•	•	•	•	•		~3xD	DIN 1897	GV 120	R	HSCO		0,400 - 48,000	329	772	218
•	•	•	•	•	•		~3xD	DIN 1897	GV 120	R	HSCO		0,500 - 15,500	659	774	222
•	•	•	•	•	•		~3xD	DIN 1897	GV 120	R	HSCO		1,000 - 13,000	2461	774	224
•	•	•	•	•	•		~3xD	DIN 1897	GV 120	L	HSCO		0,450 - 32,000	330	772	225
•	•	•	•	•	•		~3xD	DIN 1897	GT 80	R	HSCO		1,000 - 20,000	1228	774	227
•	•	•	•	•	•		~3xD	DIN 1897	GT 80	R	HSCO		1,000 - 16,000	2498	774	229
•	•	•	•	•	•		~3xD	DIN 1897	VA	R	HSCO		1,000 - 12,000	1261	772	230
•	•	•	•	•	•		~3xD	DIN 1897	VA	R	HSCO		1,000 - 13,000	572	774	231
•	•	•	•	•	•		~3xD	DIN 1897	P2000	R	HSCO		1,000 - 13,000	2048	774	233
•	•	•	•	•	•		~3xD	DIN 1897	N	R	M42		1,000 - 15,870	1259	772	235
•	•	•	•	•	•		~3xD	DIN 1897	GT 500	R	HSS-E-PM		1,000 - 14,290	515	774	237
•	•	•	•	•	•		3xD	DIN 6539	N	R	VHM		0,500 - 16,000	730	776	239
•	•	•	•	•	•		~3xD	DIN 6539	N	R	VHM		1,000 - 16,000	2463	776	241

Forets hélicoïdaux à queue cylindrique



P	M	K	N	S	H	Présentation	Profondeur	Norme	Type	Sens de coupe	Matière de coupe	Surface	d1/mm	N° d'article	Param. de coupe, page	Page
							~3xD	WN	N	R	VHM	○	0,500 - 6,500	702	776	243
Forets hélicoïdaux courts																
•	•	•	•	•	•		~5xD	DIN 338	N	R	HSS	○ <sub>2,36</sub> <sup>&gt;0</sup>	0,200 - 20,000	205	778	244
•	•	•	•	•	•		~5xD	DIN 338	N	R	HSS	Ⓢ	0,200 - 19,000	651	780	250
•	•	•	•	•	•		~5xD	DIN 338	N	R	HSS	ⓕ	1,000 - 14,500	2456	780	254
•	•	•	•	•	•		~5xD	DIN 338	N	R	HSS	○	2,400 - 5,610	560	778	256
•	•	•	•	•	•		~5xD	DIN 338	N	R	HSS	●	3,000 - 16,000	240	778	257
•	•	•	•	•	•		~5xD	DIN 338	N	L	HSS	○ <sub>6,00</sub> <sup>&gt;0</sup>	0,200 - 20,000	208	778	258
•	•	•	•	•	•		~5xD	DIN 338	N	L	HSS	Ⓢ	0,250 - 14,250	664	780	261
•	•	•	•	•	•		~5xD	DIN 338	H	R	HSS	○	0,200 - 20,000	206	778	263
•	•	•	•	•	•		~5xD	DIN 338	H	L	HSS	○	0,300 - 20,000	209	778	266
•	•	•	•	•	•		~5xD	DIN 338	W	R	HSS	○	0,200 - 20,000	207	778	269
•	•	•	•	•	•		~5xD	DIN 338	W	L	HSS	○	0,250 - 20,000	210	778	272
•	•	•	•	•	•		~5xD	DIN 338	GT 100	R	HSS	○ <sub>2,36</sub> <sup>&gt;0</sup>	0,600 - 16,000	549	778	274
•	•	•	•	•	•		~5xD	DIN 338	GT 100	R	HSS	Ⓢ	1,000 - 15,000	652	780	277
•	•	•	•	•	•		~5xD	DIN 338	GT 100	R	HSS	ⓕ	1,000 - 15,000	2457	780	280
•	•	•	•	•	•		~5xD	DIN 338	GT 100	L	HSS	○ <sub>2,36</sub> <sup>&gt;0</sup>	1,000 - 15,500	550	778	281
•	•	•	•	•	•		~5xD	DIN 338	GT 100	L	HSS	Ⓢ	1,300 - 9,800	665	780	283
•	•	•	•	•	•		~5xD	DIN 338	N	R	HSCO	○ <sub>2,36</sub> <sup>&gt;0</sup>	0,200 - 20,000	305	780	284
•	•	•	•	•	•		~5xD	DIN 338	N	R	HSCO	Ⓢ	1,200 - 13,000	2997	782	288
•	•	•	•	•	•		~5xD	DIN 338	N	L	HSCO	○ <sub>6,00</sub> <sup>&gt;0</sup>	0,360 - 18,500	308	780	289
•	•	•	•	•	•		~5xD	DIN 338	GT 100	R	HSCO	○ <sub>2,36</sub> <sup>&gt;0</sup>	1,000 - 16,000	622	780	291
•	•	•	•	•	•		~5xD	DIN 338	GT 100	R	HSCO	Ⓢ	1,000 - 15,000	658	782	294
•	•	•	•	•	•		~5xD	DIN 338	GT 100	R	HSCO	ⓕ	1,000 - 14,000	2459	782	296

Forets hélicoïdaux à queue cylindrique



P	M	K	N	S	H	Présentation	Profondeur	Norme	Type	Sens de coupe	Matière de coupe	Surface	d1/mm	N° d'article	Param. de coupe, page	Page
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### Forets hélicoïdaux courts

Forets hélicoïdaux à queue cylindrique

•	○						~5xD	DIN 338	GT 100	(R)	HSCO	C	3,000 - 11,910	1221	782	298
○	•	○					~5xD	DIN 338	GT 100	(R)	HSCO	A	3,000 - 12,000	1223	782	299
○	•		•				~5xD	DIN 338	Ti	(R)	HSCO	○	0,200 - 19,000	605	780	301
○	•		•				~5xD	DIN 338	Ti	(R)	HSCO	S	0,500 - 14,500	657	782	304
○	•		•				~5xD	DIN 338	Ti	(R)	HSCO	F	0,400 - 15,000	2458	782	306
○	•		•				~5xD	DIN 338	Ti	(L)	HSCO	○	1,300 - 9,500	608	780	308
○	•	○	○				~5xD	DIN 338	VA	(R)	HSCO	○	1,000 - 13,000	1260	780	309
•	○	○	○				~5xD	DIN 338	P2000	(R)	HSCO	○	1,000 - 13,000	2047	784	311
•	•	•	•	○			~5xD	DIN 338	AeroX	(R)	M42	○	1,000 - 13,000	1018	784	313
•	○	○	•	•	○		~5xD	DIN 338	N	(R)	M42	○	0,400 - 16,000	1146	780	315
•	•	•	○	•			~5xD	DIN 338	N	(R)	M42	F	1,000 - 16,000	1199	784	317
○	○	○	•	○			~5xD	WN	N	(R)	VHM	○	1,000 - 12,700	732	784	319
○	○	○	•	○			~5xD	WN	N	(R)	VHM	F	1,000 - 12,700	2464	784	321
○	○	○	•				~5xD	WN	Duro 150	(R)	HM	○	3,000 - 14,000	710	776	323

### Forets pour perçage par canon

•	•	○					~10xD	DIN 339	N	(R)	HSS		0,800 - 20,000	211	786	325
•	•	○					~10xD	DIN 339	N	(R)	HSS	○	2,400 - 5,000	561	786	327
•	•	•					~10xD	DIN 339	N	(R)	HSS	S	1,000 - 13,000	666	786	328
•	○	•	•	○			~10xD	DIN 339	N	(R)	HSCO		1,100 - 19,000	311	792	330

### Forets hélicoïdaux longs

•	•	○					~10xD	DIN 340	N	(R)	HSS		0,400 - 36,510	217	786	331
•	•	○					~10xD	DIN 340	N	(R)	HSS	S	0,500 - 22,220	667	786	334
•	•	○					~10xD	DIN 340	N	(L)	HSS		0,450 - 29,000	220	786	336
•	•	○					~10xD	DIN 340	N	(R)	HSS	○	2,950 - 25,250	204	786	338
•	•	•					~10xD	DIN 340	H	(R)	HSS	○	0,500 - 16,000	218	786	339



P	M	K	N	S	H	Présentation	Profondeur	Norme	Type	Sens de coupe	Matière de coupe	Surface	d1/mm	N° d'article	Param. de coupe, page	Page
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### Forets hélicoïdaux longs

			•				~10xD	DIN 340	H	L	HSS	○	0,450 - 15,000	221	786	341
			•				~10xD	DIN 340	W	R	HSS	○	0,500 - 20,640	219	786	342
•		•	•				~10xD	DIN 340	GT 100	R	HSS	○	1,000 - 14,000	535	786	344
•		•	•				~10xD	DIN 340	GT 100	R	HSS	Ⓢ	1,000 - 14,000	668	786	347
•		•	•				~10xD	DIN 340	GT 100	R	HSS	F	1,000 - 10,000	2462	786	349
•		•	•				~10xD	DIN 340	GT 100	L	HSS	○	1,400 - 13,000	506	786	350
○			•				~10xD	DIN 340	GT 50	R	HSS	○	1,000 - 32,600	501	786	351
•	○	•	•	○			~10xD	DIN 340	N	R	HSCO	○	0,500 - 22,000	317	792	353
•	•	•	•	○			~10xD	DIN 340	GT 100	R	HSCO	○	1,000 - 16,000	336	792	355
•	•	•	•	○			~10xD	DIN 340	GT 100	R	HSCO	F	1,000 - 12,000	396	792	357
○	•		•				~10xD	DIN 340	Ti	R	HSCO	○	1,000 - 15,000	617	792	358
○	•		•				~10xD	DIN 340	Ti	R	HSCO	Ⓢ	1,000 - 10,200	669	792	360
							~10xD	WN	N	R	VHM	○	0,500 - 1,450	706	792	362

Forets hélicoïdaux à queue cylindrique

### Forets hélicoïdaux extra-longs, série 1

•		•	○				~15xD	DIN 1869	N	R	HSS	○	1,600 - 13,000	235	788	363
•		•	•				~15xD	DIN 1869	GT 100	R	HSS	○	1,950 - 13,000	502	790	365
•		•	•	○			~15xD	DIN 1869	GT 100	R	HSS	Ⓢ	2,000 - 12,700	670	790	367
○			•				~15xD	DIN 1869	GT 50	R	HSS	○	2,000 - 12,700	524	788	368
•	•	•	•	○			~15xD	DIN 1869	GT 100	R	HSCO	○	2,700 - 10,000	618	794	370

### Forets hélicoïdaux extra-longs, série 2

•		•	○				~20xD	DIN 1869	N	R	HSS	○	2,700 - 13,000	236	788	371
•		•	•				~20xD	DIN 1869	GT 100	R	HSS	○	2,000 - 13,000	503	790	372
•		•	•	○			~20xD	DIN 1869	GT 100	R	HSS	Ⓢ	2,700 - 8,500	671	790	374
○			•				~20xD	DIN 1869	GT 50	R	HSS	○	3,000 - 13,000	528	788	375
•	•	•	•	○			~20xD	DIN 1869	GT 100	R	HSCO	○	3,000 - 10,000	619	794	376



P	M	K	N	S	H	Présentation	Profondeur	Norme	Type	Sens de coupe	Matière de coupe	Surface	d1/mm	N° d'article	Param. de coupe, page	Page
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### Forets hélicoïdaux extra-longs, série 3

•	•	•	•	•	•		~25xD	DIN 1869	N		HSS	○	3,500 - 13,000	237	788	377
•	•	•	•	•	•		~25xD	DIN 1869	GT 100		HSS	◐	2,500 - 13,000	504	790	378
○	•	•	•	•	•		~25xD	DIN 1869	GT 50		HSS	○	2,500 - 10,000	529	788	379
•	•	•	•	•	•		~25xD	DIN 1869	GT 100		HSCO	◐	2,500 - 13,000	571	794	380

### Forets hélicoïdaux extra-longs

•	•	•	•	•	•		>25xD	WN	GT 100		HSS	◐	6,000 - 12,000	242	790	381
•	•	•	•	•	•		>25xD	WN	GT 100		HSS	○	8,000 - 12,000	243	790	382
•	•	•	•	•	•		>25xD	WN	GT 100		HSS	○	10,000 - 12,000	244	790	383

### Forets hélicoïd. à queue cylind. renforcée

•	•	•	•	•	•		~3xD	WN	GU500		HSCO	Ⓢ	2,000 - 20,000	512	774	384
•	•	•	•	•	•		~5xD	WN	GU500		HSCO	Ⓢ	2,000 - 20,000	511	784	386
•	○	○	○	○	○		~5xD	WN	GT 500		HSS-E-PM	Ⓡ	2,000 - 12,900	513	784	388
○	○	•	•	•	•		~3xD	DIN 6537 K	H		VHM	Ⓡ	2,600 - 14,100	1946	776	389

### Forets aviation, longueur 6 pouces

•	•	•	•	•	•		NAS 907	N		HSS	○	1,500 - 8,000	577		390
•	•	•	•	•	•		NAS 907	N		HSS	◐	1,500 - 8,000	579		391

### Forets aviation, longueur 12 pouces

•	•	•	•	•	•		NAS 907	N		HSS	○	1,500 - 8,000	578		392
•	•	•	•	•	•		NAS 907	N		HSS	◐	1,500 - 8,000	580		393

### Forets à canaux de lubrification

•	○	•	•	•	•		~10xD	WN	N		HSS	○	3,000 - 13,000	390	788	394
•	•	•	•	•	•		~5xD	WN	GT80 IK		HSCO	○	5,000 - 20,000	1131	784	395
•	•	•	•	•	•		~5xD	WN	GT80 IK		HSCO	Ⓢ	5,000 - 20,000	1132	784	396

### Microforets en HSS-E PM fritté, sans canaux de lubrification

•	•	•	•	•	•		~5xD	DIN 1899	N		HSS-E-PM	○	0,050 - 1,920	301	796	397
•	•	•	•	•	•		~5xD	DIN 1899	N		HSS-E-PM	Ⓢ	0,160 - 1,900	660	796	400

Forets hélicoïdaux à queue cylindrique



P	M	K	N	S	H	Présentation	Profondeur	Norme	Type	Sens de coupe	Matière de coupe	Surface	d1/mm	N° d'article	Param. de coupe, page	Page
•	•	•	•	•	•	Microforets en HSS-E PM fritté, sans canaux de lubrification	~5xD	DIN 1899	N	L	HSS-E-PM	○	0,130 - 1,850	303	796	402
•	•	•	•	•	•	Microforets en CW monobloc, sans canaux de lubrification	~5xD	WN	N	R	VHM	○	0,200 - 1,400	701	796	404
•	•	•	•	•	•			WN	N	R	VHM	ⓐ	0,100 - 3,000	3899	796	405
•	•	•	•	•	•	Microforets ExclusiveLine sans canaux de lubrification	4xD	WN	N	R	VHM	ⓐ	0,500 - 3,000	6400	796	407
•	•	•	•	•	•		7xD	WN	N	R	VHM	ⓐ	0,500 - 3,000	6401	796	408
•	•	•	•	•	•	Microforets ExclusiveLine avec canaux de lubrification	5xD	WN	N	R	VHM	ⓐ	1,400 - 3,000	6405	796	409
•	•	•	•	•	•		8xD	WN	N	R	VHM	ⓐ	1,400 - 3,000	6408	796	410
•	•	•	•	•	•		15xD	WN	N	R	VHM	ⓐ	1,400 - 3,000	6412	796	411
•	•	•	•	•	•	Forets hél. courts, queue cyl. Ø 12,7 mm	WN	N	R	HSS	●	13,000 - 28,570	268	778	412	
•	•	•	•	•	•	Forets hél. courts, queue cyl. Ø 16,0 mm	WN	V72	R	HSCO	○	16,000 - 40,000	128	772	413	
•	•	•	•	•	•	Forets hél. courts, queue cyl. Ø 25,4 mm	WN	V72	R	HSCO	○	25,000 - 40,000	129	772	414	
•	•	•	•	•	•		WN	V72	L	HSCO	○	25,000 - 39,000	136	772	415	
•	•	•	•	•	•	Forets de chaudronnerie	DIN 1898	N	R	HSS	● <sup>&gt;0</sup> <sub>2,36</sub>	2,000 - 12,000	531		416	
•	•	•	•	•	•	Jeux de forets hélicoïdaux	~5xD	DIN 338	N	R	HSS	● <sup>&gt;0</sup> <sub>2,36</sub>		201		417

Forets hélicoïdaux à queue cylindrique



P	M	K	N	S	H	Présentation	Profondeur	Norme	Type	Sens de coupe	Matière de coupe	Surface	d1/mm	N° d'article	Param. de coupe, page	Page
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## Jeux de forets hélicoïdaux

Forets hélicoïdaux à queue cylindrique

•	•	○					~5xD	DIN 338	N	R	HSS			200		418
•	•	○					~5xD	DIN 338	N	R	HSS			17		419
•	○	•	○				~5xD	DIN 338	N	R	HSCO			16		420
○	•		•				~5xD	DIN 338	Ti	R	HSCO			18		421
○	•	○	○				~5xD	DIN 338	VA	R	HSCO			195		422
•	○	○	○				~5xD	DIN 338	P2000	R	HSCO			2049		423
•	○	○	○				~3xD	DIN 1897	P2000	R	HSCO			2050		424
•	•	•	•	○			~5xD	DIN 338	AeroX	R	M42			1083		425





P	M	K	N	S	H	Présentation	Profondeur	Norme	Type	Sens de coupe	Matière de coupe	Surface	d1/mm	N° d'article	Param. de coupe, page	Page
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## Jeux de forets hélicoïdaux

																	36	426	
																		73	427
																		11	428

Forets hélicoïdaux à queue cylindrique

## Forets spéciaux avec arêtes de coupe CW

○	○	○						DIN 8037	N		HM	○	1,700 - 24,000	703	776	429
								DIN 8038	N		HM	○	1,900 - 24,000	704	776	430

## Forets hélicoïdaux FK

									FK		VHM	○	2,500 - 10,000	1149	776	431
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## Forets à pointe rapportée

○	○	○							H		HM	○	3,000 - 12,000	707	776	432
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## Forets béton

									N		HM	○	4,000 - 12,000	716		433
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ACIERS

~ 3xD  
DIN 1897

~ 5xD  
DIN 338

~ 10xD  
DIN 340

~ 15xD  
DIN 1869  
R1

No 1

Ø 1,00 - 14,00 mm  
N° d'article 2459  
à partir de p. 296



No 1

Ø 1,00 - 12,00 mm  
N° d'article 396  
à partir de p. 357



No 1

Ø 2,70 - 10,00 mm  
N° d'article 618  
à partir de p. 370



Ø 1,00 - 15,00 mm  
N° d'article 2457  
à partir de p. 280



Ø 1,00 - 10,00 mm  
N° d'article 2462  
à partir de p. 349



Ø 2,00 - 12,70 mm  
N° d'article 670  
à partir de p. 367



No 1

Ø 1,00 - 13,00 mm  
N° d'article 2461  
à partir de p. 224



Ø 1,00 - 15,00 mm  
N° d'article 2460  
à partir de p. 199



Ø 1,00 - 14,50 mm  
N° d'article 2456  
à partir de p. 254



Ø 0,50 - 22,22 mm  
N° d'article 667  
à partir de p. 334



Ø 1,60 - 13,00 mm  
N° d'article 235  
à partir de p. 363



Ø 1,20 - 13,00 mm  
N° d'article 2997  
à partir de p. 288



Ø 0,50 - 22,00 mm  
N° d'article 317  
à partir de p. 353



No 1

Ø 2,00 - 20,00 mm  
N° d'article 512  
à partir de p. 384



No 1

Ø 2,00 - 20,00 mm  
N° d'article 511  
à partir de p. 386



Ø 2,00 - 12,90 mm  
N° d'article 513  
à partir de p. 388



No 1

Ø 5,00 - 20,00 mm  
N° d'article 1132  
à partir de p. 396



AFIN DAMOINDRIR  
L'EFFORT DE SERRAGE  
LORS DU SERRAGE

POUR L'UTILISATION  
AVEC LA LUBRIFICATION  
INTÉRIEURE

Forets hélicoïdaux à queue cylindrique

Attachement cylindrique de bout en bout

Attachement standard

avec lubrification intérieure



# QUICKFINDER

~20xD  
DIN 1869  
R2

~25xD  
DIN 1869  
R3

>25xD  
norme usine  
extra long

No 1 Outil idéal

No 1

Ø 3,00 - 10,00 mm  
N° d'article 619  
à partir de p. 376



No 1

Ø 2,50 - 13,00 mm  
N° d'article 571  
à partir de p. 380



GT100, HSCO

No 1

Ø 2,70 - 8,50 mm  
N° d'article 671  
à partir de p. 374



Ø 2,50 - 13,00 mm  
N° d'article 504  
à partir de p. 378



Ø 6,00 - 12,00 mm  
N° d'article 242  
à partir de p. 381



GT100, HSS



GV120, HSCO

Ø 2,70 - 13,00 mm  
N° d'article 236  
à partir de p. 371



Ø 3,50 - 13,00 mm  
N° d'article 237  
à partir de p. 377



Type N, HSS



Type N, HSCO



GU500, HSCO



GT500, HSS-E-PM



GT80IK, HSCO

Forets hélicoïdaux à queue cylindrique



ACIERS  
INOXYDABLES



TITANE &  
ALLIAGES SPÉCIAUX

~ 3xD  
DIN 1897

~ 5xD  
DIN 338

~ 10xD  
DIN 340

~ 15xD  
DIN 1869  
R1

Forets hélicoïdaux à  
queue cylindrique

Attachement cylindrique de bout en bout

No 1 No 1

Ø 0,40 - 15,00 mm  
N° d'article 2458  
à partir de p. 306

F S ○

No 1 No 1

Ø 1,00 - 10,2 mm  
N° d'article 669  
à partir de p. 360

S ○

No 1 No 1

Ø 1,00 - 13,00 mm  
N° d'article 572  
à partir de p. 231

S ○

Ø 1,00 - 13,00 mm  
N° d'article 1260  
à partir de p. 309

○

Ø 1,00 - 14,00 mm  
N° d'article 2459  
à partir de p. 296

F S ○

Ø 1,00 - 12,00 mm  
N° d'article 396  
à partir de p. 357

F ○

No 1 No 1

Ø 2,70 - 10,00 mm  
N° d'article 618  
à partir de p. 370

○

Ø 1,00 - 13,00 mm  
N° d'article 2461  
à partir de p. 224

F S ○

Ø 1,00 - 15,87 mm  
N° d'article 1259  
à partir de p. 235

○

Ø 1,00 - 16,00 mm  
N° d'article 1199  
à partir de p. 317

F ○

No 1

Ø 2,00 - 20,00 mm  
N° d'article 512  
à partir de p. 384

S

No 1

Ø 2,00 - 20,00 mm  
N° d'article 511  
à partir de p. 386

S

Ø 2,00 - 12,900 mm  
N° d'article 513  
à partir de p. 388

F

AFIN D'AMOINDRIR  
LEFFORT DE SERRAGE  
LORS DU SERRAGE

No 1 No 1

Ø 5,00 - 20,00 mm  
N° d'article 1132  
à partir de p. 396

S ○

POUR L'UTILISATION  
AVEC LA LUBRIFICATION  
INTÉRIEURE

avec  
lubrification  
intérieure



# QUICKFINDER

~20xD  
DIN 1869  
R2

~25xD  
DIN 1869  
R3

>25xD  
norme usine  
extra long

**No 1** Outil idéal pour les aciers inoxydables

**No 1** Outil idéal pour les alliages spéciaux et alliages de titane



Type Ti, HSCO



Type VA, HSCO

**No 1** **No 1**

Ø 3,00 - 10,00 mm  
N° d'article 619  
à partir de p. 376



**No 1** **No 1**

Ø 2,50 - 13,00 mm  
N° d'article 571  
à partir de p. 380



GT100, HSCO



GV120, HSCO



Type N, M42



GU500, HSCO



GT500, HSS-E-PM



GT801K, HSCO

Forets hélicoïdaux à queue cylindrique



FONTE

~ 3xD  
DIN 1897

~ 5xD  
DIN 338

~ 10xD  
DIN 340

~ 15xD  
DIN 1869  
R1

Forets hélicoïdaux à queue cylindrique

Attachement cylindrique de bout en bout

Attachement standard

avec lubrification intérieure

No 1

Ø 1,00 - 14,00 mm  
N° d'article 2459  
à partir de p. 296



No 1

Ø 1,00 - 12,00 mm  
N° d'article 396  
à partir de p. 357



No 1

Ø 2,70 - 10,00 mm  
N° d'article 618  
à partir de p. 370



No 1

Ø 1,00 - 15,00 mm  
N° d'article 2457  
à partir de p. 280



No 1

Ø 1,00 - 10,00 mm  
N° d'article 2462  
à partir de p. 349



No 1

Ø 2,00 - 12,70 mm  
N° d'article 670  
à partir de p. 367



No 1

Ø 1,00 - 15,00 mm  
N° d'article 2460  
à partir de p. 199



No 1

Ø 1,00 - 14,50 mm  
N° d'article 2456  
à partir de p. 254



No 1

Ø 0,50 - 22,22 mm  
N° d'article 667  
à partir de p. 334



No 1

Ø 1,60 - 13,00 mm  
N° d'article 235  
à partir de p. 363



No 1

Ø 1,20 - 13,00 mm  
N° d'article 2997  
à partir de p. 288



No 1

Ø 0,50 - 22,00 mm  
N° d'article 317  
à partir de p. 353



No 1

Ø 2,00 - 20,00 mm  
N° d'article 512  
à partir de p. 384



No 1

Ø 2,00 - 20,00 mm  
N° d'article 511  
à partir de p. 386



AFIN D'AMOINDRIR L'EFFORT DE SERRAGE LORS DU SERRAGE

No 1

Ø 2,00 - 12,90 mm  
N° d'article 513  
à partir de p. 388



No 1

Ø 5,00 - 20,00 mm  
N° d'article 1132  
à partir de p. 396



POUR L'UTILISATION AVEC LA LUBRIFICATION INTÉRIEURE



# QUICKFINDER

~20xD  
DIN 1869  
R2

~25xD  
DIN 1869  
R3

>25xD  
norme usine  
extra long

**No 1** Outil idéal

**No 1**

Ø 3,00 - 10,00 mm  
N° d'article 619  
à partir de p. 376



**No 1**

Ø 2,50 - 13,00 mm  
N° d'article 571  
à partir de p. 380



GT100, HSCO

**No 1**

Ø 2,70 - 8,50 mm  
N° d'article 671  
à partir de p. 374



Ø 2,50 - 13,00 mm  
N° d'article 504  
à partir de p. 378



Ø 6,00 - 12,00 mm  
N° d'article 242  
à partir de p. 381



GT100, HSS

Ø 2,70 - 13,00 mm  
N° d'article 236  
à partir de p. 371



Ø 3,50 - 13,00 mm  
N° d'article 237  
à partir de p. 377



Type N, HSS



Type N, HSCO



GU500, HSCO



GT500, HSS-E-PM



GT80IK, HSCO

Forets hélicoïdaux à queue cylindrique



**N** ALUMINIUM, N-F, MAT. SYNTHÉTIQUES

~ 3xD  
DIN 1897

~ 5xD  
DIN 338

~ 10xD  
DIN 340

~ 15xD  
DIN 1869  
R1

No 1

Ø 1,00 - 20,00 mm  
N° d'article 225  
à partir de p. 208



No 1

Ø 0,20 - 20,00 mm  
N° d'article 207  
à partir de p. 269



No 1

Ø 0,50 - 20,64 mm  
N° d'article 219  
à partir de p. 342



Type W pour les matériaux  
doux, à copeaux longs

No 1

Ø 0,69 - 21,00 mm  
N° d'article 224  
à partir de p. 204



No 1

Ø 0,20 - 20,00 mm  
N° d'article 206  
à partir de p. 263



No 1

Ø 0,50 - 16,00 mm  
N° d'article 218  
à partir de p. 339



Type H pour les matériaux  
durs et cassants

No 1

Ø 1,00 - 32,60 mm  
N° d'article 501  
à partir de p. 351



Ø 2,00 - 12,70 mm  
N° d'article 524  
à partir de p. 368



Type GT 50 pour les  
matériaux doux,  
à copeaux longs

Ø 1,00 - 15,50 mm  
N° d'article 550  
à partir de p. 281



Ø 1,00 - 14,00 mm  
N° d'article 535  
à partir de p. 344



Ø 1,95 - 13,00 mm  
N° d'article 502  
à partir de p. 365



Ø 1,00 - 16,00 mm  
N° d'article 622  
à partir de p. 291



Ø 1,00 - 16,00 mm  
N° d'article 336  
à partir de p. 355



Ø 2,70 - 10,00 mm  
N° d'article 618  
à partir de p. 370



No 1

Ø 2,00 - 20,00 mm  
N° d'article 512  
à partir de p. 384



No 1

Ø 2,00 - 20,00 mm  
N° d'article 511  
à partir de p. 386



AFIN D'AMOINDRIR  
L'EFFORT DE SERRAGE  
LORS DU SERRAGE

No 1

Ø 5,00 - 20,00 mm  
N° d'article 1131  
à partir de p. 395



POUR L'UTILISATION  
AVEC LA LUBRIFICATION  
INTÉRIEURE

Forets hélicoïdaux à  
queue cylindrique

Attachement cylindrique de bout en bout

Attachement  
standard

avec  
lubrification  
intérieure





# QUICKFINDER

~20xD  
DIN 1869  
R2

~25xD  
DIN 1869  
R3

>25xD  
norme usine  
extra long

**No 1** Outil idéal



Type W, HSS



Type H, HSS

**No 1**

Ø 3,00 - 13,00 mm  
N° d'article 528  
à partir de p. 375



**No 1**

Ø 2,50 - 10,00 mm  
N° d'article 529  
à partir de p. 379



GT50, HSS

**No 1**

Ø 2,70 - 8,50 mm  
N° d'article 671  
à partir de p. 374



Ø 2,50 - 13,00 mm  
N° d'article 504  
à partir de p. 378



Ø 6,00 - 12,00 mm  
N° d'article 242  
à partir de p. 381



GT100, HSS

Ø 3,00 - 10,00 mm  
N° d'article 619  
à partir de p. 376



Ø 2,50 - 13,00 mm  
N° d'article 571  
à partir de p. 380



GT100, HSCO



GU500, HSCO

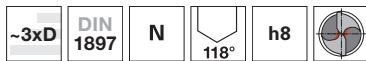


GT80IK, HSCO

Forets hélicoïdaux à queue cylindrique



Forets hélicoïdaux extra-courts



Matière de coupe	<b>HSS</b>
Surface	
Sens de coupe	

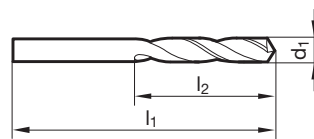
**P** • Amin. de l'âme ≥ Ø 1,000 • affûtage à dépouille conique • pour tours automatiques/révolvers • aussi pour machines portatives

- M**
- K** •
- N** ○ matériaux minces
- S**
- H**

**GUHRING NAVIGATOR**

Paramètres de coupe, page 772

Forets hélicoïdaux à queue cylindrique



N° d'article **223**

d1		l1	l2
mm	inch	mm	mm
0,350		19,000	2,000
0,400	1/64	19,000	2,500
0,480		19,000	2,500
0,500		20,000	3,000
0,550		21,000	3,500
0,575		21,000	3,500
0,600		21,000	3,500
0,650		22,000	4,000
0,660		22,000	4,000
0,700		23,000	4,500
0,720		23,000	4,500
0,750		23,000	4,500
0,790	1/32	24,000	5,000
0,800		24,000	5,000
0,820		24,000	5,000
0,850		24,000	5,000
0,890		25,000	5,500
0,900		25,000	5,500
0,930		25,000	5,500
0,950		25,000	5,500
0,980		26,000	6,000
1,000		26,000	6,000
1,020		26,000	6,000
1,030		26,000	6,000
1,040		26,000	6,000
1,050		26,000	6,000
1,070		28,000	7,000
1,090		28,000	7,000
1,100		28,000	7,000
1,110		28,000	7,000
1,120		28,000	7,000
1,150		28,000	7,000
1,180		28,000	7,000
1,190	3/64	30,000	8,000
1,200		30,000	8,000
1,220		30,000	8,000
1,250		30,000	8,000
1,260		30,000	8,000
1,280		30,000	8,000
1,300		30,000	8,000
1,320		30,000	8,000
1,350		32,000	9,000

d1		l1	l2
mm	inch	mm	mm
1,400		32,000	9,000
1,430		32,000	9,000
1,450		32,000	9,000
1,480		32,000	9,000
1,500		32,000	9,000
1,510		34,000	10,000
1,520		34,000	10,000
1,550		34,000	10,000
1,570		34,000	10,000
1,590	1/16	34,000	10,000
1,600		34,000	10,000
1,610		34,000	10,000
1,650		34,000	10,000
1,700		34,000	10,000
1,720		36,000	11,000
1,730		36,000	11,000
1,740		36,000	11,000
1,750		36,000	11,000
1,770		36,000	11,000
1,780		36,000	11,000
1,800		36,000	11,000
1,850		36,000	11,000
1,900		36,000	11,000
1,930		38,000	12,000
1,950		38,000	12,000
1,970		38,000	12,000
1,980	5/64	38,000	12,000
1,990		38,000	12,000
2,000		38,000	12,000
2,020		38,000	12,000
2,050		38,000	12,000
2,060		38,000	12,000
2,080		38,000	12,000
2,100		38,000	12,000
2,120		38,000	12,000
2,150		40,000	13,000
2,180		40,000	13,000
2,200		40,000	13,000
2,220		40,000	13,000
2,250		40,000	13,000
2,260		40,000	13,000
2,300		40,000	13,000



d1		l1	l2
mm	inch	mm	mm
2,350		40,000	13,000
2,370		43,000	14,000
2,380	3/32	43,000	14,000
2,400		43,000	14,000
2,420		43,000	14,000
2,440		43,000	14,000
2,450		43,000	14,000
2,480		43,000	14,000
2,490		43,000	14,000
2,500		43,000	14,000
2,520		43,000	14,000
2,530		43,000	14,000
2,550		43,000	14,000
2,580		43,000	14,000
2,600		43,000	14,000
2,640		43,000	14,000
2,650		43,000	14,000
2,700		46,000	16,000
2,710		46,000	16,000
2,750		46,000	16,000
2,780	7/64	46,000	16,000
2,790		46,000	16,000
2,800		46,000	16,000
2,820		46,000	16,000
2,850		46,000	16,000
2,870		46,000	16,000
2,900		46,000	16,000
2,920		46,000	16,000
2,950		46,000	16,000
2,970		46,000	16,000
3,000		46,000	16,000
3,020		49,000	18,000
3,050		49,000	18,000
3,100		49,000	18,000
3,150		49,000	18,000
3,170	1/8	49,000	18,000
3,200		49,000	18,000
3,220		49,000	18,000
3,250		49,000	18,000
3,260		49,000	18,000
3,300		49,000	18,000
3,350		49,000	18,000
3,400		52,000	20,000
3,450		52,000	20,000
3,500		52,000	20,000
3,550		52,000	20,000
3,570	9/64	52,000	20,000
3,580		52,000	20,000
3,600		52,000	20,000
3,650		52,000	20,000
3,660		52,000	20,000
3,700		52,000	20,000
3,730		52,000	20,000
3,750		52,000	20,000
3,800		55,000	22,000
3,850		55,000	22,000
3,860		55,000	22,000
3,900		55,000	22,000
3,910		55,000	22,000
3,950		55,000	22,000
3,960		55,000	22,000
3,970	5/32	55,000	22,000
3,990		55,000	22,000
4,000		55,000	22,000
4,020		55,000	22,000
4,040		55,000	22,000
4,050		55,000	22,000
4,080		55,000	22,000
4,090		55,000	22,000
4,100		55,000	22,000
4,150		55,000	22,000
4,200		55,000	22,000

d1		l1	l2
mm	inch	mm	mm
4,220		55,000	22,000
4,250		55,000	22,000
4,300		58,000	24,000
4,370	11/64	58,000	24,000
4,380		58,000	24,000
4,390		58,000	24,000
4,400		58,000	24,000
4,450		58,000	24,000
4,500		58,000	24,000
4,550		58,000	24,000
4,570		58,000	24,000
4,600		58,000	24,000
4,620		58,000	24,000
4,650		58,000	24,000
4,700		58,000	24,000
4,750		58,000	24,000
4,760	3/16	62,000	26,000
4,800		62,000	26,000
4,850		62,000	26,000
4,900		62,000	26,000
4,920		62,000	26,000
4,950		62,000	26,000
4,980		62,000	26,000
5,000		62,000	26,000
5,020		62,000	26,000
5,050		62,000	26,000
5,060		62,000	26,000
5,100		62,000	26,000
5,110		62,000	26,000
5,150		62,000	26,000
5,160	13/64	62,000	26,000
5,180		62,000	26,000
5,200		62,000	26,000
5,220		62,000	26,000
5,250		62,000	26,000
5,300		62,000	26,000
5,310		66,000	28,000
5,350		66,000	28,000
5,400		66,000	28,000
5,410		66,000	28,000
5,450		66,000	28,000
5,500		66,000	28,000
5,550	7/32	66,000	28,000
5,560		66,000	28,000
5,600		66,000	28,000
5,610		66,000	28,000
5,700		66,000	28,000
5,750		66,000	28,000
5,790		66,000	28,000
5,800		66,000	28,000
5,900		66,000	28,000
5,940	15/64	66,000	28,000
5,950		66,000	28,000
6,000		66,000	28,000
6,040		70,000	31,000
6,050		70,000	31,000
6,100		70,000	31,000
6,150		70,000	31,000
6,200		70,000	31,000
6,250		70,000	31,000
6,300		70,000	31,000
6,350	1/4	70,000	31,000
6,400		70,000	31,000
6,450		70,000	31,000
6,500		70,000	31,000
6,530		70,000	31,000
6,550		70,000	31,000
6,600		70,000	31,000
6,630		70,000	31,000
6,700		70,000	31,000
6,750	17/64	74,000	34,000
6,760		74,000	34,000

Forets hélicoïdaux à queue cylindrique



Forets hélicoïdaux à queue cylindrique

d1		l1	l2
mm	inch	mm	mm
6,800		74,000	34,000
6,850		74,000	34,000
6,900		74,000	34,000
6,950		74,000	34,000
7,000		74,000	34,000
7,030		74,000	34,000
7,050		74,000	34,000
7,100		74,000	34,000
7,140	9/32	74,000	34,000
7,150		74,000	34,000
7,200		74,000	34,000
7,250		74,000	34,000
7,300		74,000	34,000
7,370		74,000	34,000
7,400		74,000	34,000
7,450		74,000	34,000
7,490		74,000	34,000
7,500		74,000	34,000
7,540	19/64	79,000	37,000
7,550		79,000	37,000
7,600		79,000	37,000
7,670		79,000	37,000
7,700		79,000	37,000
7,750		79,000	37,000
7,800		79,000	37,000
7,850		79,000	37,000
7,900		79,000	37,000
7,940	5/16	79,000	37,000
8,000		79,000	37,000
8,030		79,000	37,000
8,050		79,000	37,000
8,100		79,000	37,000
8,150		79,000	37,000
8,200		79,000	37,000
8,250		79,000	37,000
8,300		79,000	37,000
8,330	21/64	79,000	37,000
8,400		79,000	37,000
8,430		79,000	37,000
8,450		79,000	37,000
8,500		79,000	37,000
8,550		84,000	40,000
8,600		84,000	40,000
8,610		84,000	40,000
8,650		84,000	40,000
8,700		84,000	40,000
8,730	11/32	84,000	40,000
8,750		84,000	40,000
8,800		84,000	40,000
8,840		84,000	40,000
8,900		84,000	40,000
8,950		84,000	40,000
9,000		84,000	40,000
9,050		84,000	40,000
9,090		84,000	40,000
9,100		84,000	40,000
9,130	23/64	84,000	40,000
9,150		84,000	40,000
9,200		84,000	40,000
9,250		84,000	40,000
9,270		84,000	40,000
9,300		84,000	40,000
9,340		84,000	40,000
9,350		84,000	40,000
9,400		84,000	40,000
9,500		84,000	40,000
9,520	3/8	89,000	43,000
9,580		89,000	43,000
9,600		89,000	43,000
9,650		89,000	43,000
9,700		89,000	43,000
9,750		89,000	43,000

d1		l1	l2
mm	inch	mm	mm
9,800		89,000	43,000
9,850		89,000	43,000
9,900		89,000	43,000
9,920	25/64	89,000	43,000
10,000		89,000	43,000
10,050		89,000	43,000
10,080		89,000	43,000
10,100		89,000	43,000
10,150		89,000	43,000
10,200		89,000	43,000
10,250		89,000	43,000
10,260		89,000	43,000
10,300		89,000	43,000
10,320	13/32	89,000	43,000
10,400		89,000	43,000
10,490		89,000	43,000
10,500		89,000	43,000
10,600		89,000	43,000
10,700		95,000	47,000
10,720	27/64	95,000	47,000
10,750		95,000	47,000
10,800		95,000	47,000
10,900		95,000	47,000
11,000		95,000	47,000
11,100		95,000	47,000
11,110	7/16	95,000	47,000
11,200		95,000	47,000
11,250		95,000	47,000
11,300		95,000	47,000
11,400		95,000	47,000
11,500		95,000	47,000
11,510	29/64	95,000	47,000
11,600		95,000	47,000
11,700		95,000	47,000
11,750		95,000	47,000
11,800		95,000	47,000
11,900		102,000	51,000
11,910	15/32	102,000	51,000
12,000		102,000	51,000
12,050		102,000	51,000
12,100		102,000	51,000
12,150		102,000	51,000
12,200		102,000	51,000
12,250		102,000	51,000
12,300	31/64	102,000	51,000
12,400		102,000	51,000
12,500		102,000	51,000
12,600		102,000	51,000
12,700	1/2	102,000	51,000
12,750		102,000	51,000
12,800		102,000	51,000
12,900		102,000	51,000
13,000		102,000	51,000
13,100	33/64	102,000	51,000
13,200		102,000	51,000
13,250		107,000	54,000
13,300		107,000	54,000
13,400		107,000	54,000
13,490	17/32	107,000	54,000
13,500		107,000	54,000
13,600		107,000	54,000
13,700		107,000	54,000
13,750		107,000	54,000
13,800		107,000	54,000
13,890	35/64	107,000	54,000
14,000		107,000	54,000
14,100		111,000	56,000
14,200		111,000	56,000
14,290	9/16	111,000	56,000
14,300		111,000	56,000
14,400		111,000	56,000
14,500		111,000	56,000



d1		l1	l2
mm	inch	mm	mm
14,600		111,000	56,000
14,680	37/64	111,000	56,000
14,700		111,000	56,000
14,750		111,000	56,000
14,800		111,000	56,000
14,900		111,000	56,000
15,000		111,000	56,000
15,080	19/32	115,000	58,000
15,100		115,000	58,000
15,200		115,000	58,000
15,250		115,000	58,000
15,400		115,000	58,000
15,480	39/64	115,000	58,000
15,500		115,000	58,000
15,600		115,000	58,000
15,700		115,000	58,000
15,750		115,000	58,000
15,800		115,000	58,000
15,870	5/8	115,000	58,000
16,000		115,000	58,000
16,100		119,000	60,000
16,150		119,000	60,000
16,200		119,000	60,000
16,250		119,000	60,000
16,270	41/64	119,000	60,000
16,300		119,000	60,000
16,500		119,000	60,000
16,670	21/32	119,000	60,000
16,750		119,000	60,000
17,000		119,000	60,000
17,070	43/64	123,000	62,000
17,100		123,000	62,000
17,200		123,000	62,000
17,250		123,000	62,000
17,460	11/16	123,000	62,000
17,500		123,000	62,000
17,600		123,000	62,000
17,750		123,000	62,000
17,860	45/64	123,000	62,000
18,000		123,000	62,000
18,100		127,000	64,000
18,200		127,000	64,000
18,250		127,000	64,000
18,260	23/32	127,000	64,000
18,500		127,000	64,000
18,650	47/64	127,000	64,000
18,750		127,000	64,000
19,000		127,000	64,000

d1		l1	l2
mm	inch	mm	mm
19,050	3/4	131,000	66,000
19,100		131,000	66,000
19,250		131,000	66,000
19,500		131,000	66,000
19,840	25/32	131,000	66,000
20,000		131,000	66,000
20,100		136,000	68,000
20,240	51/64	136,000	68,000
20,250		136,000	68,000
20,500		136,000	68,000
20,640	13/16	136,000	68,000
20,750		136,000	68,000
20,800		136,000	68,000
21,000		136,000	68,000
21,030	53/64	136,000	68,000
21,430	27/32	141,000	70,000
21,500		141,000	70,000
21,830	55/64	141,000	70,000
22,000		141,000	70,000
22,220	7/8	141,000	70,000
22,500		146,000	72,000
23,000		146,000	72,000
23,020	29/32	146,000	72,000
23,420	59/64	146,000	72,000
23,500		146,000	72,000
23,810	15/16	151,000	75,000
24,000		151,000	75,000
24,210	61/64	151,000	75,000
24,500		151,000	75,000
24,610	31/32	151,000	75,000
25,000	63/64	151,000	75,000
25,400	1	156,000	78,000
26,000		156,000	78,000
26,500		156,000	78,000
27,000		162,000	81,000
27,500		162,000	81,000
28,000		162,000	81,000
28,570	1 1/8	168,000	84,000
29,000		168,000	84,000
29,370	1 5/32	168,000	84,000
30,000		168,000	84,000
31,000		174,000	87,000
32,000		180,000	90,000
33,000		180,000	90,000
40,000		200,000	100,000
44,000		214,000	108,000

Forets hélicoïdaux  
à queue cylindrique



## Forets hélicoïdaux extra-courts



Matière de coupe **HSS**

Surface **S**

Sens de coupe **R**

**P** • Amin. de l'âme  $\geq \varnothing 1,000$  • affûtage à dépouille conique • aussi pour machines portatives • pour tours automatiques/révolvers

**M**

**K** •

**N** ○ matériaux minces

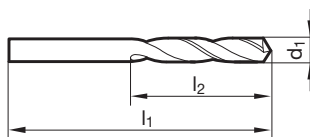
**S**

**H**

## GUHRING NAVIGATOR

Paramètres de coupe, page 772

Forets hélicoïdaux à queue cylindrique



N° d'article **653**

d1		l1	l2
mm	inch	mm	mm
0,500		20,000	3,000
0,600		21,000	3,500
0,700		23,000	4,500
0,750		23,000	4,500
0,790	1/32	24,000	5,000
0,800		24,000	5,000
0,900		25,000	5,500
1,000		26,000	6,000
1,020		26,000	6,000
1,050		26,000	6,000
1,070		28,000	7,000
1,090		28,000	7,000
1,100		28,000	7,000
1,110		28,000	7,000
1,120		28,000	7,000
1,150		28,000	7,000
1,180		28,000	7,000
1,190	3/64	30,000	8,000
1,200		30,000	8,000
1,250		30,000	8,000
1,300		30,000	8,000
1,320		30,000	8,000
1,350		32,000	9,000
1,400		32,000	9,000
1,450		32,000	9,000
1,500		32,000	9,000
1,510		34,000	10,000
1,550		34,000	10,000
1,590	1/16	34,000	10,000
1,600		34,000	10,000
1,610		34,000	10,000
1,650		34,000	10,000
1,700		34,000	10,000
1,750		36,000	11,000
1,780		36,000	11,000
1,800		36,000	11,000
1,850		36,000	11,000
1,900		36,000	11,000
1,930		38,000	12,000
1,950		38,000	12,000
1,980	5/64	38,000	12,000
1,990		38,000	12,000

d1		l1	l2
mm	inch	mm	mm
2,000		38,000	12,000
2,050		38,000	12,000
2,060		38,000	12,000
2,080		38,000	12,000
2,100		38,000	12,000
2,150		40,000	13,000
2,180		40,000	13,000
2,200		40,000	13,000
2,250		40,000	13,000
2,260		40,000	13,000
2,300		40,000	13,000
2,350		40,000	13,000
2,370		43,000	14,000
2,380	3/32	43,000	14,000
2,400		43,000	14,000
2,440		43,000	14,000
2,450		43,000	14,000
2,500		43,000	14,000
2,530		43,000	14,000
2,550		43,000	14,000
2,580		43,000	14,000
2,600		43,000	14,000
2,640		43,000	14,000
2,650		43,000	14,000
2,700		46,000	16,000
2,710		46,000	16,000
2,750		46,000	16,000
2,780	7/64	46,000	16,000
2,790		46,000	16,000
2,800		46,000	16,000
2,850		46,000	16,000
2,870		46,000	16,000
2,900		46,000	16,000
2,950		46,000	16,000
3,000		46,000	16,000
3,050		49,000	18,000
3,100		49,000	18,000
3,170	1/8	49,000	18,000
3,200		49,000	18,000
3,250		49,000	18,000
3,260		49,000	18,000
3,300		49,000	18,000



d1		l1	l2
mm	inch	mm	mm
3,400		52,000	20,000
3,450		52,000	20,000
3,500		52,000	20,000
3,550		52,000	20,000
3,570	9/64	52,000	20,000
3,600		52,000	20,000
3,650		52,000	20,000
3,660		52,000	20,000
3,700		52,000	20,000
3,730		52,000	20,000
3,750		52,000	20,000
3,800		55,000	22,000
3,860		55,000	22,000
3,900		55,000	22,000
3,970	5/32	55,000	22,000
3,990		55,000	22,000
4,000		55,000	22,000
4,040		55,000	22,000
4,050		55,000	22,000
4,090		55,000	22,000
4,100		55,000	22,000
4,150		55,000	22,000
4,200		55,000	22,000
4,250		55,000	22,000
4,300		58,000	24,000
4,370	11/64	58,000	24,000
4,390		58,000	24,000
4,400		58,000	24,000
4,500		58,000	24,000
4,570		58,000	24,000
4,600		58,000	24,000
4,620		58,000	24,000
4,650		58,000	24,000
4,700		58,000	24,000
4,750		58,000	24,000
4,760	3/16	62,000	26,000
4,800		62,000	26,000
4,850		62,000	26,000
4,900		62,000	26,000
4,920		62,000	26,000
4,950		62,000	26,000
4,980		62,000	26,000
5,000		62,000	26,000
5,050		62,000	26,000
5,060		62,000	26,000
5,100		62,000	26,000
5,110		62,000	26,000
5,160	13/64	62,000	26,000
5,180		62,000	26,000
5,200		62,000	26,000
5,250		62,000	26,000
5,300		62,000	26,000
5,310		66,000	28,000
5,400		66,000	28,000
5,410		66,000	28,000
5,450		66,000	28,000
5,500		66,000	28,000
5,520		66,000	28,000
5,560	7/32	66,000	28,000
5,600		66,000	28,000
5,610		66,000	28,000
5,700		66,000	28,000
5,750		66,000	28,000
5,800		66,000	28,000
5,900		66,000	28,000
5,950	15/64	66,000	28,000
6,000		66,000	28,000
6,040		70,000	31,000
6,050		70,000	31,000
6,100		70,000	31,000
6,150		70,000	31,000
6,200		70,000	31,000

d1		l1	l2
mm	inch	mm	mm
6,250		70,000	31,000
6,300		70,000	31,000
6,350	1/4	70,000	31,000
6,400		70,000	31,000
6,450		70,000	31,000
6,500		70,000	31,000
6,530		70,000	31,000
6,600		70,000	31,000
6,700		70,000	31,000
6,750	17/64	74,000	34,000
6,800		74,000	34,000
6,900		74,000	34,000
7,000		74,000	34,000
7,100		74,000	34,000
7,140	9/32	74,000	34,000
7,200		74,000	34,000
7,250		74,000	34,000
7,300		74,000	34,000
7,370		74,000	34,000
7,400		74,000	34,000
7,500		74,000	34,000
7,540	19/64	79,000	37,000
7,600		79,000	37,000
7,670		79,000	37,000
7,700		79,000	37,000
7,800		79,000	37,000
7,900		79,000	37,000
7,940	5/16	79,000	37,000
8,000		79,000	37,000
8,030		79,000	37,000
8,100		79,000	37,000
8,200		79,000	37,000
8,250		79,000	37,000
8,300		79,000	37,000
8,330	21/64	79,000	37,000
8,400		79,000	37,000
8,430		79,000	37,000
8,500		79,000	37,000
8,550		84,000	40,000
8,600		84,000	40,000
8,610		84,000	40,000
8,700		84,000	40,000
8,730	11/32	84,000	40,000
8,750		84,000	40,000
8,800		84,000	40,000
8,900		84,000	40,000
9,000		84,000	40,000
9,090		84,000	40,000
9,100		84,000	40,000
9,130	23/64	84,000	40,000
9,200		84,000	40,000
9,250		84,000	40,000
9,300		84,000	40,000
9,400		84,000	40,000
9,500		84,000	40,000
9,520	3/8	89,000	43,000
9,580		89,000	43,000
9,700		89,000	43,000
9,800		89,000	43,000
9,900		89,000	43,000
9,920	25/64	89,000	43,000
10,000		89,000	43,000
10,100		89,000	43,000
10,200		89,000	43,000
10,300		89,000	43,000
10,320	13/32	89,000	43,000
10,400		89,000	43,000
10,490		89,000	43,000
10,500		89,000	43,000
10,600		89,000	43,000
10,720	27/64	95,000	47,000
10,750		95,000	47,000

Forets hélicoïdaux à queue cylindrique



Forets hélicoïdaux à queue cylindrique

d1		l1	l2
mm	inch	mm	mm
10,800		95,000	47,000
11,000		95,000	47,000
11,110	7/16	95,000	47,000
11,200		95,000	47,000
11,300		95,000	47,000
11,400		95,000	47,000
11,500		95,000	47,000
11,510	29/64	95,000	47,000
11,750		95,000	47,000
11,800		95,000	47,000
11,900		102,000	51,000
11,910	15/32	102,000	51,000
12,000		102,000	51,000
12,100		102,000	51,000
12,200		102,000	51,000
12,300	31/64	102,000	51,000
12,500		102,000	51,000
12,700	1/2	102,000	51,000
12,800		102,000	51,000
13,000		102,000	51,000
13,100	33/64	102,000	51,000
13,490	17/32	107,000	54,000
13,500		107,000	54,000
13,700		107,000	54,000
13,800		107,000	54,000
13,890	35/64	107,000	54,000
14,000		107,000	54,000
14,200		111,000	56,000
14,290	9/16	111,000	56,000
14,500		111,000	56,000
14,800		111,000	56,000
14,900		111,000	56,000
15,000		111,000	56,000
15,080	19/32	115,000	58,000
15,250		115,000	58,000
15,500		115,000	58,000
15,800		115,000	58,000
15,870	5/8	115,000	58,000
16,000		115,000	58,000
16,250		119,000	60,000
16,270	41/64	119,000	60,000
16,500		119,000	60,000

d1		l1	l2
mm	inch	mm	mm
16,670	21/32	119,000	60,000
17,000		119,000	60,000
17,460	11/16	123,000	62,000
17,500		123,000	62,000
17,860	45/64	123,000	62,000
18,000		123,000	62,000
18,250		127,000	64,000
18,260	23/32	127,000	64,000
18,500		127,000	64,000
18,650	47/64	127,000	64,000
19,000		127,000	64,000
19,050	3/4	131,000	66,000
19,500		131,000	66,000
20,000		131,000	66,000
20,500		136,000	68,000
20,640	13/16	136,000	68,000
21,000		136,000	68,000
21,500		141,000	70,000
22,000		141,000	70,000
22,500		146,000	72,000
22,620	57/64	146,000	72,000
23,000		146,000	72,000
23,420	59/64	146,000	72,000
24,000		151,000	75,000
24,500		151,000	75,000
25,000	63/64	151,000	75,000
25,400	1	156,000	78,000
27,500		162,000	81,000
28,500		168,000	84,000
29,370	1 5/32	168,000	84,000
29,500		168,000	84,000
30,000		168,000	84,000
30,160	1 3/16	174,000	87,000





Forets hélicoïdaux extra-courts



Matière de coupe **HSS**

Surface **F**

Sens de coupe **R**

**P** • Amin. de l'âme  $\geq \varnothing 1,000$  • affûtage à dépouille conique • pour tours automatiques/révolvers • aussi pour machines portatives

**M**

**K** •

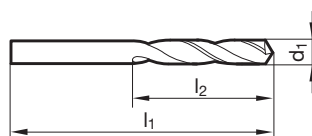
**N** • matériaux minces

**S**

**H**

**GUHRING** NAVIGATOR

Paramètres de coupe, page 772



N° d'article **2460**

d1		l1	l2
mm	inch	mm	mm
1,000		26,000	6,000
1,100		28,000	7,000
1,200		30,000	8,000
1,300		30,000	8,000
2,000		38,000	12,000
2,200		40,000	13,000
2,500		43,000	14,000
2,600		43,000	14,000
2,700		46,000	16,000
2,800		46,000	16,000
2,900		46,000	16,000
3,000		46,000	16,000
3,100		49,000	18,000
3,300		49,000	18,000
3,400		52,000	20,000
3,600		52,000	20,000
3,700		52,000	20,000
3,900		55,000	22,000
4,000		55,000	22,000
4,100		55,000	22,000
4,200		55,000	22,000
4,300		58,000	24,000
4,500		58,000	24,000
4,600		58,000	24,000
4,700		58,000	24,000
4,800		62,000	26,000
4,900		62,000	26,000
5,000		62,000	26,000
5,200		62,000	26,000
5,300		62,000	26,000
5,400		66,000	28,000
5,500		66,000	28,000
5,700		66,000	28,000
5,900		66,000	28,000
6,000		66,000	28,000
6,100		70,000	31,000

d1		l1	l2
mm	inch	mm	mm
6,200		70,000	31,000
6,300		70,000	31,000
6,600		70,000	31,000
6,700		70,000	31,000
6,800		74,000	34,000
7,100		74,000	34,000
7,300		74,000	34,000
7,500		74,000	34,000
7,800		79,000	37,000
8,300		79,000	37,000
8,500		79,000	37,000
8,700		84,000	40,000
8,800		84,000	40,000
8,900		84,000	40,000
9,000		84,000	40,000
9,100		84,000	40,000
9,300		84,000	40,000
9,600		89,000	43,000
9,800		89,000	43,000
9,900		89,000	43,000
10,000		89,000	43,000
10,100		89,000	43,000
10,500		89,000	43,000
11,200		95,000	47,000
12,200		102,000	51,000
12,300	31/64	102,000	51,000
12,700	1/2	102,000	51,000
12,800		102,000	51,000
13,500		107,000	54,000
14,500		111,000	56,000
15,000		111,000	56,000

Forets hélicoïdaux à queue cylindrique



## Forets hélicoïdaux extra-courts



Matière de coupe **HSS**

Surface

Sens de coupe

**P** • Amin. de l'âme  $\geq \varnothing 14,050$  • affûtage à dépouille conique • pour tours automatiques/révolvers

**M**

**K** •

**N** ○ matériaux minces

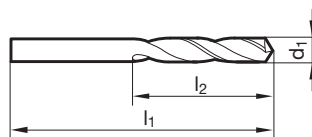
**S**

**H**

## GÜHRING NAVIGATOR

Paramètres de coupe, page 772

Forets hélicoïdaux à queue cylindrique



N° d'article **226**

d1		l1	l2
mm	inch	mm	mm
0,320		19,000	2,000
0,500		20,000	3,000
0,550		21,000	3,500
0,580		21,000	3,500
0,620		22,000	4,000
0,650		22,000	4,000
0,700		23,000	4,500
0,740		23,000	4,500
0,750		23,000	4,500
0,800		24,000	5,000
0,810		24,000	5,000
0,850		24,000	5,000
0,875		25,000	5,500
0,890		25,000	5,500
0,900		25,000	5,500
0,950		25,000	5,500
0,970		26,000	6,000
0,975		26,000	6,000
1,000		26,000	6,000
1,020		26,000	6,000
1,030		26,000	6,000
1,040		26,000	6,000
1,050		26,000	6,000
1,060		26,000	6,000
1,070		28,000	7,000
1,090		28,000	7,000
1,100		28,000	7,000
1,150		28,000	7,000
1,190	3/64	30,000	8,000
1,200		30,000	8,000
1,220		30,000	8,000
1,250		30,000	8,000
1,320		30,000	8,000
1,330		32,000	9,000
1,350		32,000	9,000
1,450		32,000	9,000
1,500		32,000	9,000
1,510		34,000	10,000
1,550		34,000	10,000
1,580		34,000	10,000
1,590	1/16	34,000	10,000
1,600		34,000	10,000

d1		l1	l2
mm	inch	mm	mm
1,610		34,000	10,000
1,650		34,000	10,000
1,670		34,000	10,000
1,700		34,000	10,000
1,720		36,000	11,000
1,750		36,000	11,000
1,780		36,000	11,000
1,800		36,000	11,000
1,810		36,000	11,000
1,850		36,000	11,000
1,900		36,000	11,000
1,930		38,000	12,000
1,940		38,000	12,000
1,950		38,000	12,000
1,980	5/64	38,000	12,000
1,990		38,000	12,000
2,000		38,000	12,000
2,010		38,000	12,000
2,050		38,000	12,000
2,060		38,000	12,000
2,080		38,000	12,000
2,100		38,000	12,000
2,180		40,000	13,000
2,200		40,000	13,000
2,220		40,000	13,000
2,260		40,000	13,000
2,300		40,000	13,000
2,350		40,000	13,000
2,360		40,000	13,000
2,370		43,000	14,000
2,380	3/32	43,000	14,000
2,400		43,000	14,000
2,440		43,000	14,000
2,450		43,000	14,000
2,490		43,000	14,000
2,500		43,000	14,000
2,520		43,000	14,000
2,530		43,000	14,000
2,550		43,000	14,000
2,580		43,000	14,000
2,600		43,000	14,000
2,640		43,000	14,000



d1		l1	l2
mm	inch	mm	mm
2,650		43,000	14,000
2,700		46,000	16,000
2,710		46,000	16,000
2,720		46,000	16,000
2,800		46,000	16,000
2,820		46,000	16,000
2,870		46,000	16,000
2,880		46,000	16,000
2,900		46,000	16,000
3,000		46,000	16,000
3,020		49,000	18,000
3,050		49,000	18,000
3,100		49,000	18,000
3,150		49,000	18,000
3,170	1/8	49,000	18,000
3,200		49,000	18,000
3,230		49,000	18,000
3,250		49,000	18,000
3,300		49,000	18,000
3,330		49,000	18,000
3,400		52,000	20,000
3,420		52,000	20,000
3,450		52,000	20,000
3,480		52,000	20,000
3,500		52,000	20,000
3,530		52,000	20,000
3,700		52,000	20,000
3,710		52,000	20,000
3,720		52,000	20,000
3,730		52,000	20,000
3,750		52,000	20,000
3,770		55,000	22,000
3,800		55,000	22,000
3,840		55,000	22,000
3,850		55,000	22,000
3,860		55,000	22,000
3,910		55,000	22,000
3,950		55,000	22,000
3,970	5/32	55,000	22,000
3,990		55,000	22,000
4,000		55,000	22,000
4,020		55,000	22,000
4,030		55,000	22,000
4,033		55,000	22,000
4,100		55,000	22,000
4,200		55,000	22,000
4,220		55,000	22,000
4,230		55,000	22,000
4,250		55,000	22,000
4,290		58,000	24,000
4,300		58,000	24,000
4,350		58,000	24,000
4,370	11/64	58,000	24,000
4,400		58,000	24,000
4,450		58,000	24,000
4,500		58,000	24,000
4,520		58,000	24,000
4,560		58,000	24,000
4,570		58,000	24,000
4,600		58,000	24,000
4,620		58,000	24,000
4,700		58,000	24,000
4,750		58,000	24,000
4,760	3/16	62,000	26,000
4,800		62,000	26,000
4,850		62,000	26,000
4,920		62,000	26,000
4,930		62,000	26,000
4,950		62,000	26,000
4,970		62,000	26,000
4,980		62,000	26,000
5,000		62,000	26,000

d1		l1	l2
mm	inch	mm	mm
5,050		62,000	26,000
5,100		62,000	26,000
5,110		62,000	26,000
5,150		62,000	26,000
5,160	13/64	62,000	26,000
5,180		62,000	26,000
5,200		62,000	26,000
5,220		62,000	26,000
5,250		62,000	26,000
5,300		62,000	26,000
5,310		66,000	28,000
5,400		66,000	28,000
5,410		66,000	28,000
5,450		66,000	28,000
5,500		66,000	28,000
5,560	7/32	66,000	28,000
5,600		66,000	28,000
5,610		66,000	28,000
5,620		66,000	28,000
5,700		66,000	28,000
5,750		66,000	28,000
5,790		66,000	28,000
5,800		66,000	28,000
5,900		66,000	28,000
5,940		66,000	28,000
5,950	15/64	66,000	28,000
6,000		66,000	28,000
6,040		70,000	31,000
6,150		70,000	31,000
6,170		70,000	31,000
6,200		70,000	31,000
6,250		70,000	31,000
6,300		70,000	31,000
6,350	1/4	70,000	31,000
6,400		70,000	31,000
6,500		70,000	31,000
6,530		70,000	31,000
6,540		70,000	31,000
6,550		70,000	31,000
6,570		70,000	31,000
6,600		70,000	31,000
6,630		70,000	31,000
6,700		70,000	31,000
6,750	17/64	74,000	34,000
6,800		74,000	34,000
6,900		74,000	34,000
6,920		74,000	34,000
7,000		74,000	34,000
7,030		74,000	34,000
7,100		74,000	34,000
7,140	9/32	74,000	34,000
7,200		74,000	34,000
7,250		74,000	34,000
7,350		74,000	34,000
7,370		74,000	34,000
7,400		74,000	34,000
7,450		74,000	34,000
7,490		74,000	34,000
7,500		74,000	34,000
7,540	19/64	79,000	37,000
7,550		79,000	37,000
7,700		79,000	37,000
7,750		79,000	37,000
7,800		79,000	37,000
7,900		79,000	37,000
7,940	5/16	79,000	37,000
8,000		79,000	37,000
8,030		79,000	37,000
8,100		79,000	37,000
8,200		79,000	37,000
8,300		79,000	37,000
8,330	21/64	79,000	37,000

Forets hélicoïdaux  
à queue cylindrique



Forets hélicoïdaux à queue cylindrique

d1		l1	l2
mm	inch	mm	mm
8,500		79,000	37,000
8,600		84,000	40,000
8,700		84,000	40,000
8,730	11/32	84,000	40,000
8,800		84,000	40,000
8,840		84,000	40,000
8,850		84,000	40,000
8,900		84,000	40,000
9,000		84,000	40,000
9,090		84,000	40,000
9,130	23/64	84,000	40,000
9,150		84,000	40,000
9,300		84,000	40,000
9,340		84,000	40,000
9,350		84,000	40,000
9,500		84,000	40,000
9,520	3/8	89,000	43,000
9,580		89,000	43,000
9,700		89,000	43,000
9,750		89,000	43,000
9,900		89,000	43,000
10,000		89,000	43,000
10,050		89,000	43,000
10,080		89,000	43,000
10,100		89,000	43,000
10,200		89,000	43,000
10,300		89,000	43,000
10,320	13/32	89,000	43,000
10,490		89,000	43,000
10,500		89,000	43,000
10,600		89,000	43,000
10,800		95,000	47,000
11,000		95,000	47,000
11,110	7/16	95,000	47,000
11,200		95,000	47,000
11,250		95,000	47,000
11,500		95,000	47,000
11,510	29/64	95,000	47,000
11,750		95,000	47,000
11,800		95,000	47,000
12,000		102,000	51,000
12,200		102,000	51,000
12,450		102,000	51,000
12,500		102,000	51,000
12,700	1/2	102,000	51,000
12,900		102,000	51,000
13,000		102,000	51,000
13,200		102,000	51,000
13,250		107,000	54,000
13,750		107,000	54,000
13,890	35/64	107,000	54,000
14,000		107,000	54,000
14,050		111,000	56,000
14,200		111,000	56,000

d1		l1	l2
mm	inch	mm	mm
14,250		111,000	56,000
14,290	9/16	111,000	56,000
14,500		111,000	56,000
14,700		111,000	56,000
15,000		111,000	56,000
15,200		115,000	58,000
15,480	39/64	115,000	58,000
15,600		115,000	58,000
15,750		115,000	58,000
15,870	5/8	115,000	58,000
16,000		115,000	58,000
16,200		119,000	60,000
16,500		119,000	60,000
16,670	21/32	119,000	60,000
17,000		119,000	60,000
17,070	43/64	123,000	62,000
17,750		123,000	62,000
18,000		123,000	62,000
18,500		127,000	64,000
19,050	3/4	131,000	66,000
19,840	25/32	131,000	66,000
20,000		131,000	66,000
20,640	13/16	136,000	68,000
21,000		136,000	68,000
21,250		141,000	70,000
21,750		141,000	70,000
21,830	55/64	141,000	70,000
22,000		141,000	70,000
22,400		141,000	70,000
23,000		146,000	72,000
24,000		151,000	75,000
25,500		156,000	78,000
26,190	1 1/32	156,000	78,000
26,590	1 3/64	162,000	81,000
26,990	1 1/16	162,000	81,000
27,380	1 5/64	162,000	81,000
29,000		168,000	84,000
30,960	1 7/32	174,000	87,000
31,500		174,000	87,000
32,150	1 17/64	180,000	90,000
32,940	1 19/64	180,000	90,000
33,000		180,000	90,000
34,500		186,000	93,000
34,920	1 3/8	186,000	93,000
36,000		193,000	96,000
37,000		193,000	96,000
40,000		200,000	100,000
45,000		214,000	108,000
48,000		228,000	116,000
50,000		228,000	116,000



Forets hélicoïdaux extra-courts



Matière de coupe **HSS**

Surface **S**

Sens de coupe **L**

**P** • Amin. de l'âme  $\geq \varnothing 2,400$  • affûtage à dépouille conique • pour tours automatiques/révolvers

**M**

**K** •

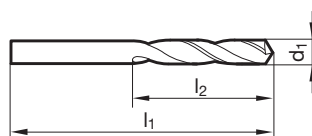
**N** ○ matériaux minces

**S**

**H**

**GUHRING** NAVIGATOR

Paramètres de coupe, page 772



N° d'article **672**

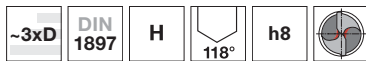
d1		l1	l2
mm	inch	mm	mm
0,900		25,000	5,500
0,950		25,000	5,500
1,000		26,000	6,000
1,100		28,000	7,000
1,400		32,000	9,000
1,500		32,000	9,000
1,600		34,000	10,000
1,800		36,000	11,000
2,000		38,000	12,000
2,100		38,000	12,000
2,200		40,000	13,000
2,300		40,000	13,000
2,350		40,000	13,000
2,400		43,000	14,000
2,500		43,000	14,000
2,550		43,000	14,000
2,700		46,000	16,000
2,800		46,000	16,000
2,920		46,000	16,000
3,000		46,000	16,000
3,100		49,000	18,000
3,150		49,000	18,000
3,200		49,000	18,000
3,300		49,000	18,000
3,400		52,000	20,000
3,500		52,000	20,000
3,800		55,000	22,000
3,900		55,000	22,000
4,000		55,000	22,000
4,200		55,000	22,000
4,250		55,000	22,000
4,300		58,000	24,000
4,400		58,000	24,000
4,600		58,000	24,000
4,700		58,000	24,000
4,800		62,000	26,000

d1		l1	l2
mm	inch	mm	mm
4,900		62,000	26,000
5,000		62,000	26,000
5,200		62,000	26,000
5,600		66,000	28,000
5,700		66,000	28,000
5,900		66,000	28,000
6,000		66,000	28,000
6,100		70,000	31,000
6,200		70,000	31,000
6,500		70,000	31,000
6,800		74,000	34,000
6,900		74,000	34,000
7,500		74,000	34,000
7,900		79,000	37,000
8,000		79,000	37,000
8,500		79,000	37,000
8,700		84,000	40,000
8,800		84,000	40,000
9,000		84,000	40,000
9,500		84,000	40,000
9,800		89,000	43,000
10,000		89,000	43,000
11,000		95,000	47,000
11,500		95,000	47,000
12,500		102,000	51,000
12,700	1/2	102,000	51,000
13,000		102,000	51,000

Forets hélicoïdaux à queue cylindrique



Forets hélicoïdaux extra-courts



- P** Amin. de l'âme  $\geq \varnothing 14,500$  • affûtage à dépouille conique
- M**
- K**
- N** • matières dures et friables • laitons, alliages de magnésium • bronze, bronze phosphoreux • ardoise, mica, pertinax
- S**
- H**

Matière de coupe **HSS**

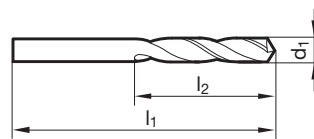
Surface

Sens de coupe

Forets hélicoïdaux à queue cylindrique

**GÜHRING** NAVIGATOR

Paramètres de coupe, page 772



N° d'article **224**

d1		l1	l2
mm	inch	mm	mm
0,690		23,000	4,500
0,900		25,000	5,500
0,950		25,000	5,500
1,000		26,000	6,000
1,100		28,000	7,000
1,190	3/64	30,000	8,000
1,200		30,000	8,000
1,300		30,000	8,000
1,400		32,000	9,000
1,500		32,000	9,000
1,550		34,000	10,000
1,590	1/16	34,000	10,000
1,600		34,000	10,000
1,620		34,000	10,000
1,700		34,000	10,000
1,780		36,000	11,000
1,800		36,000	11,000
1,850		36,000	11,000
1,900		36,000	11,000
1,950		38,000	12,000
1,980	5/64	38,000	12,000
2,000		38,000	12,000
2,020		38,000	12,000
2,050		38,000	12,000
2,100		38,000	12,000
2,200		40,000	13,000
2,250		40,000	13,000
2,300		40,000	13,000
2,350		40,000	13,000
2,370		43,000	14,000
2,380	3/32	43,000	14,000
2,400		43,000	14,000
2,450		43,000	14,000
2,500		43,000	14,000
2,550		43,000	14,000
2,600		43,000	14,000
2,650		43,000	14,000
2,700		46,000	16,000
2,780	7/64	46,000	16,000
2,800		46,000	16,000
2,900		46,000	16,000
2,950		46,000	16,000

d1		l1	l2
mm	inch	mm	mm
3,000		46,000	16,000
3,100		49,000	18,000
3,170	1/8	49,000	18,000
3,200		49,000	18,000
3,250		49,000	18,000
3,300		49,000	18,000
3,350		49,000	18,000
3,400		52,000	20,000
3,500		52,000	20,000
3,570	9/64	52,000	20,000
3,600		52,000	20,000
3,650		52,000	20,000
3,700		52,000	20,000
3,800		55,000	22,000
3,850		55,000	22,000
3,900		55,000	22,000
3,970	5/32	55,000	22,000
4,000		55,000	22,000
4,050		55,000	22,000
4,100		55,000	22,000
4,200		55,000	22,000
4,250		55,000	22,000
4,300		58,000	24,000
4,370	11/64	58,000	24,000
4,400		58,000	24,000
4,450		58,000	24,000
4,500		58,000	24,000
4,600		58,000	24,000
4,700		58,000	24,000
4,760	3/16	62,000	26,000
4,800		62,000	26,000
4,900		62,000	26,000
5,000		62,000	26,000
5,100		62,000	26,000
5,200		62,000	26,000
5,300		62,000	26,000
5,400		66,000	28,000
5,500		66,000	28,000
5,560	7/32	66,000	28,000
5,600		66,000	28,000
5,700		66,000	28,000
5,800		66,000	28,000



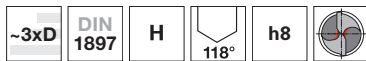
d1		l1	l2
mm	inch	mm	mm
5,900		66,000	28,000
5,950	15/64	66,000	28,000
6,000		66,000	28,000
6,100		70,000	31,000
6,200		70,000	31,000
6,350	1/4	70,000	31,000
6,400		70,000	31,000
6,500		70,000	31,000
6,600		70,000	31,000
6,800		74,000	34,000
6,900		74,000	34,000
7,000		74,000	34,000
7,140	9/32	74,000	34,000
7,500		74,000	34,000
7,540	19/64	79,000	37,000
7,750		79,000	37,000
7,940	5/16	79,000	37,000
8,000		79,000	37,000
8,030		79,000	37,000
8,100		79,000	37,000
8,330	21/64	79,000	37,000
8,400		79,000	37,000
8,500		79,000	37,000
9,000		84,000	40,000

d1		l1	l2
mm	inch	mm	mm
9,200		84,000	40,000
9,500		84,000	40,000
9,920	25/64	89,000	43,000
10,000		89,000	43,000
10,320	13/32	89,000	43,000
10,500		89,000	43,000
10,720	27/64	95,000	47,000
11,000		95,000	47,000
11,110	7/16	95,000	47,000
11,500		95,000	47,000
11,910	15/32	102,000	51,000
12,000		102,000	51,000
12,500		102,000	51,000
13,000		102,000	51,000
14,000		107,000	54,000
14,500		111,000	56,000
15,000		111,000	56,000
16,000		115,000	58,000
17,000		119,000	60,000
18,000		123,000	62,000
19,000		127,000	64,000
20,000		131,000	66,000
21,000		136,000	68,000

Forets hélicoïdaux  
à queue cylindrique



Forets hélicoïdaux extra-courts



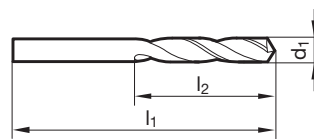
- P** Amin. de l'âme  $\geq \varnothing 15,000$  • affûtage à dépouille conique
- M**
- K**
- N** • pour les matières dures et friables • laitons, alliages de magnésium
- S** • bronze, bronze phosphoreux • ardoise, mica, pertinax
- H**

Matière de coupe	<b>HSS</b>
Surface	○
Sens de coupe	Ⓛ

Forets hélicoïdaux à queue cylindrique

**GÜHRING** NAVIGATOR

Paramètres de coupe, page 772



N° d'article **227**

d1		l1	l2
mm	inch	mm	mm
0,750		23,000	4,500
1,040		26,000	6,000
1,150		28,000	7,000
1,190	3/64	30,000	8,000
1,200		30,000	8,000
1,350		32,000	9,000
1,540		34,000	10,000
1,590	1/16	34,000	10,000
1,700		34,000	10,000
1,800		36,000	11,000
1,900		36,000	11,000
1,950		38,000	12,000
1,980	5/64	38,000	12,000
2,100		38,000	12,000
2,150		40,000	13,000
2,200		40,000	13,000
2,370		43,000	14,000
2,380	3/32	43,000	14,000
2,480		43,000	14,000
2,500		43,000	14,000
2,580		43,000	14,000
2,600		43,000	14,000
2,700		46,000	16,000
2,780	7/64	46,000	16,000
2,800		46,000	16,000
2,900		46,000	16,000
3,000		46,000	16,000
3,100		49,000	18,000
3,170	1/8	49,000	18,000
3,200		49,000	18,000
3,350		49,000	18,000
3,400		52,000	20,000
3,500		52,000	20,000
3,570	9/64	52,000	20,000
3,600		52,000	20,000
3,700		52,000	20,000
3,970	5/32	55,000	22,000
4,100		55,000	22,000
4,250		55,000	22,000
4,300		58,000	24,000
4,370	11/64	58,000	24,000
4,600		58,000	24,000

d1		l1	l2
mm	inch	mm	mm
4,700		58,000	24,000
4,760	3/16	62,000	26,000
4,800		62,000	26,000
4,900		62,000	26,000
5,000		62,000	26,000
5,100		62,000	26,000
5,150		62,000	26,000
5,160	13/64	62,000	26,000
5,300		62,000	26,000
5,400		66,000	28,000
5,500		66,000	28,000
5,560	7/32	66,000	28,000
5,600		66,000	28,000
5,700		66,000	28,000
5,800		66,000	28,000
5,900		66,000	28,000
5,950	15/64	66,000	28,000
6,350	1/4	70,000	31,000
6,400		70,000	31,000
6,600		70,000	31,000
6,750	17/64	74,000	34,000
7,000		74,000	34,000
7,140	9/32	74,000	34,000
7,200		74,000	34,000
7,300		74,000	34,000
7,500		74,000	34,000
7,540	19/64	79,000	37,000
7,750		79,000	37,000
7,900		79,000	37,000
7,940	5/16	79,000	37,000
8,300		79,000	37,000
8,330	21/64	79,000	37,000
8,500		79,000	37,000
8,730	11/32	84,000	40,000
8,800		84,000	40,000
9,130	23/64	84,000	40,000
9,500		84,000	40,000
9,520	3/8	89,000	43,000
9,920	25/64	89,000	43,000
10,000		89,000	43,000
10,320	13/32	89,000	43,000
10,720	27/64	95,000	47,000



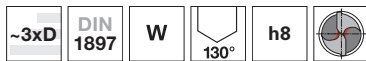


d1		l1	l2
mm	inch	mm	mm
11,000		95,000	47,000
11,110	7/16	95,000	47,000
11,510	29/64	95,000	47,000
11,910	15/32	102,000	51,000
13,500		107,000	54,000
15,000		111,000	56,000

d1		l1	l2
mm	inch	mm	mm
22,200		141,000	70,000
24,000		151,000	75,000



Forets hélicoïdaux extra-courts



- P** Amin. de l'âme  $\geq \varnothing 2,380$  • affûtage à dépouille conique
- M**
- K**
- N** • matières tendres et à copeaux longs • aluminium/alliages d'aluminium à copeaux longs • zinc, cuivre de 1ère fusion, Alpax, électrode
- S** • thermoplastiques, bois
- H**

Matière de coupe **HSS**

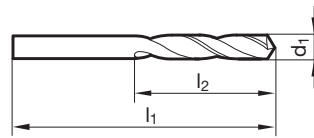
Surface

Sens de coupe

Forets hélicoïdaux à queue cylindrique

**GÜHRING** NAVIGATOR

Paramètres de coupe, page 772



N° d'article **225**

d1		l1	l2
mm	inch	mm	mm
1,000		26,000	6,000
1,100		28,000	7,000
1,190	3/64	30,000	8,000
1,200		30,000	8,000
1,300		30,000	8,000
1,400		32,000	9,000
1,500		32,000	9,000
1,590	1/16	34,000	10,000
1,600		34,000	10,000
1,700		34,000	10,000
1,800		36,000	11,000
1,900		36,000	11,000
1,980	5/64	38,000	12,000
2,000		38,000	12,000
2,100		38,000	12,000
2,200		40,000	13,000
2,250		40,000	13,000
2,300		40,000	13,000
2,380	3/32	43,000	14,000
2,400		43,000	14,000
2,500		43,000	14,000
2,550		43,000	14,000
2,600		43,000	14,000
2,700		46,000	16,000
2,710		46,000	16,000
2,750		46,000	16,000
2,780	7/64	46,000	16,000
2,800		46,000	16,000
2,900		46,000	16,000
3,000		46,000	16,000
3,050		49,000	18,000
3,100		49,000	18,000
3,170	1/8	49,000	18,000
3,200		49,000	18,000
3,300		49,000	18,000
3,400		52,000	20,000
3,500		52,000	20,000
3,570	9/64	52,000	20,000
3,700		52,000	20,000
3,800		55,000	22,000
3,900		55,000	22,000
3,970	5/32	55,000	22,000

d1		l1	l2
mm	inch	mm	mm
4,000		55,000	22,000
4,100		55,000	22,000
4,200		55,000	22,000
4,300		58,000	24,000
4,370	11/64	58,000	24,000
4,400		58,000	24,000
4,500		58,000	24,000
4,600		58,000	24,000
4,760	3/16	62,000	26,000
4,800		62,000	26,000
4,900		62,000	26,000
5,000		62,000	26,000
5,100		62,000	26,000
5,200		62,000	26,000
5,250		62,000	26,000
5,300		62,000	26,000
5,560	7/32	66,000	28,000
5,700		66,000	28,000
5,900		66,000	28,000
5,950	15/64	66,000	28,000
6,000		66,000	28,000
6,100		70,000	31,000
6,200		70,000	31,000
6,300		70,000	31,000
6,350	1/4	70,000	31,000
6,400		70,000	31,000
6,500		70,000	31,000
6,530		70,000	31,000
6,600		70,000	31,000
6,800		74,000	34,000
6,900		74,000	34,000
7,000		74,000	34,000
7,100		74,000	34,000
7,140	9/32	74,000	34,000
7,300		74,000	34,000
7,500		74,000	34,000
7,540	19/64	79,000	37,000
7,600		79,000	37,000
7,800		79,000	37,000
7,940	5/16	79,000	37,000
8,000		79,000	37,000
8,200		79,000	37,000



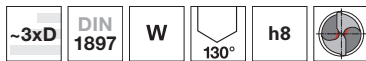
d1		l1	l2
mm	inch	mm	mm
8,330	21/64	79,000	37,000
8,400		79,000	37,000
8,430		79,000	37,000
8,500		79,000	37,000
8,600		84,000	40,000
8,700		84,000	40,000
8,730		84,000	40,000
8,900	11/32	84,000	40,000
9,000		84,000	40,000
9,200		84,000	40,000
9,130	23/64	84,000	40,000
9,200		84,000	40,000
9,400		84,000	40,000
9,520	3/8	89,000	43,000
9,800		89,000	43,000
9,920	25/64	89,000	43,000
10,000		89,000	43,000
10,200		89,000	43,000
10,500		89,000	43,000

d1		l1	l2
mm	inch	mm	mm
10,720	27/64	95,000	47,000
11,000		95,000	47,000
11,110	7/16	95,000	47,000
12,000		102,000	51,000
12,100		102,000	51,000
12,500		102,000	51,000
12,700	1/2	102,000	51,000
12,800		102,000	51,000
13,000		102,000	51,000
14,500		111,000	56,000
15,000		111,000	56,000
16,000		115,000	58,000
17,500		123,000	62,000
18,000	3/4	123,000	62,000
19,050		131,000	66,000
19,750		131,000	66,000
20,000		131,000	66,000

Forets hélicoïdaux à queue cylindrique



## Forets hélicoïdaux extra-courts



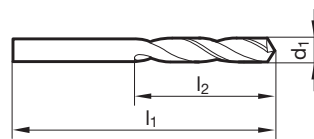
- P** Amin. de l'âme  $\geq \varnothing 2,380$  • affûtage à dépouille conique
- M**
- K**
- N** • matières tendres et à copeaux longs • aluminium/alliages d'aluminium à copeaux longs • zinc, cuivre de 1ère fusion, Alpax, électrode
- S** • thermoplastiques, bois
- H**

Matière de coupe	<b>HSS</b>
Surface	○
Sens de coupe	Ⓛ

## GUHRING NAVIGATOR

Paramètres de coupe, page 772

Forets hélicoïdaux à queue cylindrique



N° d'article **228**

d1		l1	l2
mm	inch	mm	mm
1,000		26,000	6,000
1,100		28,000	7,000
1,150		28,000	7,000
1,190	3/64	30,000	8,000
1,200		30,000	8,000
1,300		30,000	8,000
1,400		32,000	9,000
1,450		32,000	9,000
1,500		32,000	9,000
1,590	1/16	34,000	10,000
1,600		34,000	10,000
1,700		34,000	10,000
1,800		36,000	11,000
1,900		36,000	11,000
1,980	5/64	38,000	12,000
2,000		38,000	12,000
2,100		38,000	12,000
2,200		40,000	13,000
2,300		40,000	13,000
2,350		40,000	13,000
2,380	3/32	43,000	14,000
2,400		43,000	14,000
2,420		43,000	14,000
2,500		43,000	14,000
2,570		43,000	14,000
2,600		43,000	14,000
2,700		46,000	16,000
2,780	7/64	46,000	16,000
2,800		46,000	16,000
2,900		46,000	16,000
2,920		46,000	16,000
3,100		49,000	18,000
3,170	1/8	49,000	18,000
3,200		49,000	18,000
3,570	9/64	52,000	20,000
3,600		52,000	20,000
3,650		52,000	20,000
3,700		52,000	20,000
3,800		55,000	22,000
3,970	5/32	55,000	22,000
4,000		55,000	22,000
4,100		55,000	22,000

d1		l1	l2
mm	inch	mm	mm
4,200		55,000	22,000
4,300		58,000	24,000
4,370	11/64	58,000	24,000
4,390		58,000	24,000
4,400		58,000	24,000
4,500		58,000	24,000
4,600		58,000	24,000
4,760	3/16	62,000	26,000
4,800		62,000	26,000
4,900		62,000	26,000
5,100		62,000	26,000
5,160	13/64	62,000	26,000
5,200		62,000	26,000
5,400		66,000	28,000
5,600		66,000	28,000
5,700		66,000	28,000
5,800		66,000	28,000
5,900		66,000	28,000
5,950	15/64	66,000	28,000
6,100		70,000	31,000
6,150		70,000	31,000
6,350	1/4	70,000	31,000
6,500		70,000	31,000
6,700		70,000	31,000
6,750	17/64	74,000	34,000
6,800		74,000	34,000
6,900		74,000	34,000
7,000		74,000	34,000
7,140	9/32	74,000	34,000
7,400		74,000	34,000
7,500		74,000	34,000
7,540	19/64	79,000	37,000
7,800		79,000	37,000
7,940	5/16	79,000	37,000
8,330	21/64	79,000	37,000
8,400		79,000	37,000
8,730	11/32	84,000	40,000
9,000		84,000	40,000
9,130	23/64	84,000	40,000
9,500		84,000	40,000
9,920	25/64	89,000	43,000
10,320	13/32	89,000	43,000

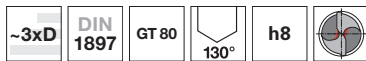


d1		l1	l2
mm	inch	mm	mm
10,500		89,000	43,000
10,720	27/64	95,000	47,000
11,110	7/16	95,000	47,000
11,500		95,000	47,000
11,910	15/32	102,000	51,000
12,300	31/64	102,000	51,000
12,500		102,000	51,000
12,700	1/2	102,000	51,000
12,800		102,000	51,000
13,000		102,000	51,000
13,500		107,000	54,000
14,000		107,000	54,000

d1		l1	l2
mm	inch	mm	mm
14,500		111,000	56,000
14,700		111,000	56,000
15,000		111,000	56,000
15,500		115,000	58,000
16,500		119,000	60,000
18,000		123,000	62,000
20,000		131,000	66,000



## Forets hélicoïdaux extra-courts



Matière de coupe **HSS**

Surface

Sens de coupe

**P** • Amin. de l'âme  $\geq \varnothing 1,000$  • affûtage à dépouille conique • pour les aciers durs • poli  $< 2,36$  mm

**M** ○

**K** ○

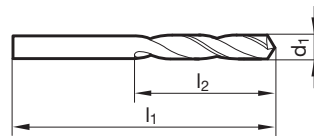
**N** • aciers de décolletage • aciers inoxydables, inaltérables aux acides  
**S** • aciers de cémentation et d'amélioration jusqu'à 800 N/mm<sup>2</sup> • Al, alliages Cu, à copeaux courts, assez courts

**H**

## GUHRING NAVIGATOR

Paramètres de coupe, page 772

Forets hélicoïdaux à queue cylindrique



N° d'article **552**

d1		l1	l2
mm	inch	mm	mm
1,000		26,000	6,000
1,020		26,000	6,000
1,040		26,000	6,000
1,050		26,000	6,000
1,070		28,000	7,000
1,090		28,000	7,000
1,100		28,000	7,000
1,150		28,000	7,000
1,180		28,000	7,000
1,190	3/64	30,000	8,000
1,200		30,000	8,000
1,250		30,000	8,000
1,300		30,000	8,000
1,320		30,000	8,000
1,350		32,000	9,000
1,400		32,000	9,000
1,450		32,000	9,000
1,500		32,000	9,000
1,510		34,000	10,000
1,530		34,000	10,000
1,550		34,000	10,000
1,590	1/16	34,000	10,000
1,600		34,000	10,000
1,610		34,000	10,000
1,650		34,000	10,000
1,700		34,000	10,000
1,750		36,000	11,000
1,780		36,000	11,000
1,800		36,000	11,000
1,820		36,000	11,000
1,850		36,000	11,000
1,900		36,000	11,000
1,930		38,000	12,000
1,950		38,000	12,000
1,980	5/64	38,000	12,000
1,990		38,000	12,000
2,000		38,000	12,000
2,050		38,000	12,000
2,060		38,000	12,000
2,080		38,000	12,000
2,100		38,000	12,000
2,130		40,000	13,000

d1		l1	l2
mm	inch	mm	mm
2,150		40,000	13,000
2,180		40,000	13,000
2,200		40,000	13,000
2,250		40,000	13,000
2,260		40,000	13,000
2,300		40,000	13,000
2,320		40,000	13,000
2,350		40,000	13,000
2,370		43,000	14,000
2,380	3/32	43,000	14,000
2,400		43,000	14,000
2,440		43,000	14,000
2,450		43,000	14,000
2,490		43,000	14,000
2,500		43,000	14,000
2,530		43,000	14,000
2,550		43,000	14,000
2,580		43,000	14,000
2,600		43,000	14,000
2,640		43,000	14,000
2,650		43,000	14,000
2,700		46,000	16,000
2,710		46,000	16,000
2,750		46,000	16,000
2,780	7/64	46,000	16,000
2,790		46,000	16,000
2,800		46,000	16,000
2,820		46,000	16,000
2,850		46,000	16,000
2,870		46,000	16,000
2,900		46,000	16,000
2,950		46,000	16,000
3,000		46,000	16,000
3,050		49,000	18,000
3,100		49,000	18,000
3,150		49,000	18,000
3,170	1/8	49,000	18,000
3,200		49,000	18,000
3,250		49,000	18,000
3,260		49,000	18,000
3,300		49,000	18,000
3,350		49,000	18,000



d1		l1	l2
mm	inch	mm	mm
3,400		52,000	20,000
3,450		52,000	20,000
3,500		52,000	20,000
3,550		52,000	20,000
3,570	9/64	52,000	20,000
3,600		52,000	20,000
3,650		52,000	20,000
3,660		52,000	20,000
3,700		52,000	20,000
3,730		52,000	20,000
3,750		52,000	20,000
3,800		55,000	22,000
3,850		55,000	22,000
3,860		55,000	22,000
3,900		55,000	22,000
3,910		55,000	22,000
3,950		55,000	22,000
3,970	5/32	55,000	22,000
3,990		55,000	22,000
4,000		55,000	22,000
4,040		55,000	22,000
4,050		55,000	22,000
4,090		55,000	22,000
4,100		55,000	22,000
4,150		55,000	22,000
4,200		55,000	22,000
4,220		55,000	22,000
4,250		55,000	22,000
4,300		58,000	24,000
4,350		58,000	24,000
4,370	11/64	58,000	24,000
4,390		58,000	24,000
4,400		58,000	24,000
4,450		58,000	24,000
4,500		58,000	24,000
4,550		58,000	24,000
4,570		58,000	24,000
4,600		58,000	24,000
4,620		58,000	24,000
4,650		58,000	24,000
4,700		58,000	24,000
4,750		58,000	24,000
4,760	3/16	62,000	26,000
4,800		62,000	26,000
4,850		62,000	26,000
4,900		62,000	26,000
4,920		62,000	26,000
4,950		62,000	26,000
4,980		62,000	26,000
5,000		62,000	26,000
5,050		62,000	26,000
5,060		62,000	26,000
5,100		62,000	26,000
5,110		62,000	26,000
5,160	13/64	62,000	26,000
5,180		62,000	26,000
5,200		62,000	26,000
5,220		62,000	26,000
5,300		62,000	26,000
5,310		66,000	28,000
5,400		66,000	28,000
5,410		66,000	28,000
5,500		66,000	28,000
5,560	7/32	66,000	28,000
5,600		66,000	28,000
5,610		66,000	28,000
5,700		66,000	28,000
5,790		66,000	28,000
5,800		66,000	28,000
5,900		66,000	28,000
5,940		66,000	28,000
5,950	15/64	66,000	28,000

d1		l1	l2
mm	inch	mm	mm
6,000		66,000	28,000
6,040		70,000	31,000
6,100		70,000	31,000
6,150		70,000	31,000
6,200		70,000	31,000
6,250		70,000	31,000
6,300		70,000	31,000
6,350	1/4	70,000	31,000
6,400		70,000	31,000
6,500		70,000	31,000
6,530		70,000	31,000
6,600		70,000	31,000
6,630		70,000	31,000
6,700		70,000	31,000
6,750	17/64	74,000	34,000
6,800		74,000	34,000
6,900		74,000	34,000
7,000		74,000	34,000
7,030		74,000	34,000
7,100		74,000	34,000
7,140	9/32	74,000	34,000
7,200		74,000	34,000
7,300		74,000	34,000
7,370		74,000	34,000
7,400		74,000	34,000
7,490		74,000	34,000
7,500		74,000	34,000
7,540	19/64	79,000	37,000
7,600		79,000	37,000
7,670		79,000	37,000
7,700		79,000	37,000
7,800		79,000	37,000
7,900		79,000	37,000
7,940	5/16	79,000	37,000
8,000		79,000	37,000
8,030		79,000	37,000
8,100		79,000	37,000
8,200		79,000	37,000
8,300		79,000	37,000
8,330	21/64	79,000	37,000
8,400		79,000	37,000
8,430		79,000	37,000
8,500		79,000	37,000
8,600		84,000	40,000
8,610		84,000	40,000
8,700		84,000	40,000
8,730	11/32	84,000	40,000
8,800		84,000	40,000
8,840		84,000	40,000
8,900		84,000	40,000
9,000		84,000	40,000
9,090		84,000	40,000
9,100		84,000	40,000
9,130	23/64	84,000	40,000
9,200		84,000	40,000
9,300		84,000	40,000
9,340		84,000	40,000
9,400		84,000	40,000
9,500		84,000	40,000
9,520	3/8	89,000	43,000
9,580		89,000	43,000
9,600		89,000	43,000
9,700		89,000	43,000
9,800		89,000	43,000
9,900		89,000	43,000
9,920	25/64	89,000	43,000
10,000		89,000	43,000
10,080		89,000	43,000
10,200		89,000	43,000
10,260		89,000	43,000
10,320	13/32	89,000	43,000
10,490		89,000	43,000

Forets hélicoïdaux  
à queue cylindrique



Forets hélicoïdaux à queue cylindrique

d1		l1	l2
mm	inch	mm	mm
10,500		89,000	43,000
10,600		89,000	43,000
10,720	27/64	95,000	47,000
10,800		95,000	47,000
11,000		95,000	47,000
11,110	7/16	95,000	47,000
11,200		95,000	47,000
11,300		95,000	47,000
11,400		95,000	47,000
11,500		95,000	47,000
11,510	29/64	95,000	47,000
11,800		95,000	47,000
11,910	15/32	102,000	51,000
12,000		102,000	51,000
12,300	31/64	102,000	51,000
12,400		102,000	51,000
12,500		102,000	51,000
12,700	1/2	102,000	51,000
12,900		102,000	51,000
13,000		102,000	51,000
13,100	33/64	102,000	51,000
13,490	17/32	107,000	54,000
13,500		107,000	54,000
13,890	35/64	107,000	54,000

d1		l1	l2
mm	inch	mm	mm
14,000		107,000	54,000
14,290	9/16	111,000	56,000
14,500		111,000	56,000
14,680	37/64	111,000	56,000
15,000		111,000	56,000
15,080	19/32	115,000	58,000
15,480	39/64	115,000	58,000
15,500		115,000	58,000
15,870	5/8	115,000	58,000
16,000		115,000	58,000
16,270	41/64	119,000	60,000
16,500		119,000	60,000
17,000		119,000	60,000
17,070	43/64	123,000	62,000
17,460	11/16	123,000	62,000
17,860	45/64	123,000	62,000
18,000		123,000	62,000
18,260	23/32	127,000	64,000
19,000		127,000	64,000
19,050	3/4	131,000	66,000
19,840	25/32	131,000	66,000
20,000		131,000	66,000





Forets hélicoïdaux extra-courts

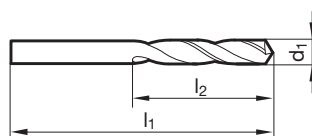


Matière de coupe	<b>HSS</b>
Surface	$\geq \frac{\sigma}{16,0}$
Sens de coupe	

- P** • Amin. de l'âme  $\geq \varnothing 1,000$  • affûtage à dépouille conique • pour les aciers durs • poli < 2,36 mm
- M** ○
- K** ○
- N** • aciers de décolletage • aciers inoxydables, inaltérables aux acides • aciers de cémentation et d'amélioration jusqu'à 800 N/mm<sup>2</sup> • Al, alliages Cu, à copeaux courts, assez courts
- S**
- H**

**GUHRING**NAVIGATOR

Paramètres de coupe, page 772



N° d'article **553**

d1		l1	l2
mm	inch	mm	mm
1,000		26,000	6,000
1,020		26,000	6,000
1,070		28,000	7,000
1,090		28,000	7,000
1,100		28,000	7,000
1,150		28,000	7,000
1,180		28,000	7,000
1,190	3/64	30,000	8,000
1,200		30,000	8,000
1,250		30,000	8,000
1,300		30,000	8,000
1,320		30,000	8,000
1,350		32,000	9,000
1,400		32,000	9,000
1,450		32,000	9,000
1,500		32,000	9,000
1,510		34,000	10,000
1,550		34,000	10,000
1,590	1/16	34,000	10,000
1,600		34,000	10,000
1,610		34,000	10,000
1,650		34,000	10,000
1,700		34,000	10,000
1,750		36,000	11,000
1,780		36,000	11,000
1,800		36,000	11,000
1,850		36,000	11,000
1,900		36,000	11,000
1,930		38,000	12,000
1,950		38,000	12,000
1,980	5/64	38,000	12,000
1,990		38,000	12,000
2,000		38,000	12,000
2,050		38,000	12,000
2,060		38,000	12,000
2,080		38,000	12,000
2,100		38,000	12,000
2,180		40,000	13,000
2,200		40,000	13,000
2,250		40,000	13,000
2,260		40,000	13,000
2,300		40,000	13,000

d1		l1	l2
mm	inch	mm	mm
2,350		40,000	13,000
2,380	3/32	43,000	14,000
2,400		43,000	14,000
2,440		43,000	14,000
2,490		43,000	14,000
2,500		43,000	14,000
2,530		43,000	14,000
2,550		43,000	14,000
2,580		43,000	14,000
2,600		43,000	14,000
2,640		43,000	14,000
2,700		46,000	16,000
2,710		46,000	16,000
2,750		46,000	16,000
2,780	7/64	46,000	16,000
2,790		46,000	16,000
2,800		46,000	16,000
2,820		46,000	16,000
2,850		46,000	16,000
2,870		46,000	16,000
2,900		46,000	16,000
2,950		46,000	16,000
3,000		46,000	16,000
3,050		49,000	18,000
3,100		49,000	18,000
3,150		49,000	18,000
3,170	1/8	49,000	18,000
3,200		49,000	18,000
3,250		49,000	18,000
3,260		49,000	18,000
3,300		49,000	18,000
3,350		49,000	18,000
3,400		52,000	20,000
3,450		52,000	20,000
3,500		52,000	20,000
3,570	9/64	52,000	20,000
3,600		52,000	20,000
3,650		52,000	20,000
3,660		52,000	20,000
3,680		52,000	20,000
3,700		52,000	20,000
3,750		52,000	20,000

Forets hélicoïdaux à queue cylindrique



Forets hélicoïdaux à queue cylindrique

d1		l1	l2
mm	inch	mm	mm
3,800		55,000	22,000
3,850		55,000	22,000
3,860		55,000	22,000
3,900		55,000	22,000
3,910		55,000	22,000
3,950		55,000	22,000
3,970	5/32	55,000	22,000
3,990		55,000	22,000
4,000		55,000	22,000
4,040		55,000	22,000
4,050		55,000	22,000
4,090		55,000	22,000
4,100		55,000	22,000
4,150		55,000	22,000
4,200		55,000	22,000
4,220		55,000	22,000
4,250		55,000	22,000
4,300		58,000	24,000
4,370	11/64	58,000	24,000
4,390		58,000	24,000
4,400		58,000	24,000
4,450		58,000	24,000
4,500		58,000	24,000
4,550		58,000	24,000
4,570		58,000	24,000
4,600		58,000	24,000
4,620		58,000	24,000
4,650		58,000	24,000
4,700		58,000	24,000
4,760	3/16	62,000	26,000
4,800		62,000	26,000
4,850		62,000	26,000
4,900		62,000	26,000
4,920		62,000	26,000
4,950		62,000	26,000
4,980		62,000	26,000
5,000		62,000	26,000
5,060		62,000	26,000
5,100		62,000	26,000
5,110		62,000	26,000
5,160	13/64	62,000	26,000
5,180		62,000	26,000
5,200		62,000	26,000
5,220		62,000	26,000
5,300		62,000	26,000
5,500		66,000	28,000
5,560	7/32	66,000	28,000
5,600		66,000	28,000
5,610		66,000	28,000
5,700		66,000	28,000
5,790		66,000	28,000
5,800		66,000	28,000
5,900		66,000	28,000
5,940		66,000	28,000
5,950	15/64	66,000	28,000
6,000		66,000	28,000
6,050		70,000	31,000
6,100		70,000	31,000
6,150		70,000	31,000
6,200		70,000	31,000
6,250		70,000	31,000
6,350	1/4	70,000	31,000
6,400		70,000	31,000
6,500		70,000	31,000
6,530		70,000	31,000
6,600		70,000	31,000
6,630		70,000	31,000
6,700		70,000	31,000
6,750	17/64	74,000	34,000
6,800		74,000	34,000
6,900		74,000	34,000
7,000		74,000	34,000

d1		l1	l2
mm	inch	mm	mm
7,030		74,000	34,000
7,140	9/32	74,000	34,000
7,300		74,000	34,000
7,370		74,000	34,000
7,400		74,000	34,000
7,490		74,000	34,000
7,500		74,000	34,000
7,540	19/64	79,000	37,000
7,600		79,000	37,000
7,670		79,000	37,000
7,700		79,000	37,000
7,940	5/16	79,000	37,000
8,000		79,000	37,000
8,200		79,000	37,000
8,330	21/64	79,000	37,000
8,430		79,000	37,000
8,500		79,000	37,000
8,600		84,000	40,000
8,610		84,000	40,000
8,730	11/32	84,000	40,000
8,840		84,000	40,000
9,000		84,000	40,000
9,090		84,000	40,000
9,130	23/64	84,000	40,000
9,340		84,000	40,000
9,400		84,000	40,000
9,500		84,000	40,000
9,520	3/8	89,000	43,000
9,580		89,000	43,000
9,600		89,000	43,000
9,700		89,000	43,000
9,800		89,000	43,000
9,900		89,000	43,000
9,920	25/64	89,000	43,000
10,000		89,000	43,000
10,200		89,000	43,000
10,260		89,000	43,000
10,320	13/32	89,000	43,000
10,490		89,000	43,000
10,500		89,000	43,000
10,700		95,000	47,000
10,720	27/64	95,000	47,000
10,900		95,000	47,000
11,000		95,000	47,000
11,100		95,000	47,000
11,110	7/16	95,000	47,000
11,500		95,000	47,000
11,510	29/64	95,000	47,000
11,800		95,000	47,000
11,910	15/32	102,000	51,000
12,000		102,000	51,000
12,300	31/64	102,000	51,000
12,500		102,000	51,000
12,700	1/2	102,000	51,000
12,800		102,000	51,000
13,000		102,000	51,000
13,100	33/64	102,000	51,000
13,490	17/32	107,000	54,000
13,500		107,000	54,000
13,890	35/64	107,000	54,000
14,000		107,000	54,000
14,250		111,000	56,000
14,290	9/16	111,000	56,000
14,500		111,000	56,000
14,680	37/64	111,000	56,000
15,000		111,000	56,000
15,080	19/32	115,000	58,000
15,480	39/64	115,000	58,000
15,500		115,000	58,000
15,870	5/8	115,000	58,000
16,000		115,000	58,000
16,270	41/64	119,000	60,000

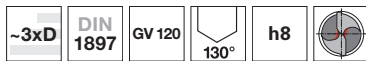


d1		l1	l2
mm	inch	mm	mm
17,070	43/64	123,000	62,000
17,460	11/16	123,000	62,000
17,860	45/64	123,000	62,000
18,000		123,000	62,000
18,260	23/32	127,000	64,000
18,500		127,000	64,000

d1		l1	l2
mm	inch	mm	mm
18,650	47/64	127,000	64,000
19,000		127,000	64,000
19,500		131,000	66,000
19,840	25/32	131,000	66,000



Forets hélicoïdaux extra-courts



Matière de coupe **HSCO**

Surface

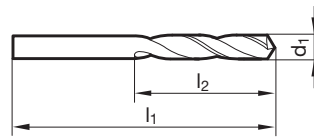
Sens de coupe

- P** • Amin. de l'âme  $\geq \varnothing 1,000$  • affûtage à dépouille conique • acier rapide au Co • meilleure résistance à l'usure
- M** •
- K** •
- N** ○ aciers inoxydables, inaltérables aux acides • aciers à ressorts • aciers austénitiques • Hastelloy, Inconel, Nimonic
- S** •
- H** ○

**GÜHRING** NAVIGATOR

Paramètres de coupe, page 772

Forets hélicoïdaux à queue cylindrique



N° d'article **329**

d1		l1	l2
mm	inch	mm	mm
0,400	1/64	19,000	2,500
0,500		20,000	3,000
0,510		20,000	3,000
0,520		20,000	3,000
0,550		21,000	3,500
0,570		21,000	3,500
0,580		21,000	3,500
0,590		21,000	3,500
0,600		21,000	3,500
0,610		22,000	4,000
0,640		22,000	4,000
0,650		22,000	4,000
0,700		23,000	4,500
0,730		23,000	4,500
0,740		23,000	4,500
0,750		23,000	4,500
0,790	1/32	24,000	5,000
0,800		24,000	5,000
0,810		24,000	5,000
0,820		24,000	5,000
0,840		24,000	5,000
0,850		24,000	5,000
0,860		25,000	5,500
0,870		25,000	5,500
0,900		25,000	5,500
0,910		25,000	5,500
0,940		25,000	5,500
0,950		25,000	5,500
0,960		26,000	6,000
0,970		26,000	6,000
0,990		26,000	6,000
1,000		26,000	6,000
1,020		26,000	6,000
1,030		26,000	6,000
1,050		26,000	6,000
1,070		28,000	7,000
1,090		28,000	7,000
1,100		28,000	7,000
1,150		28,000	7,000
1,170		28,000	7,000
1,180		28,000	7,000
1,190	3/64	30,000	8,000

d1		l1	l2
mm	inch	mm	mm
1,200		30,000	8,000
1,210		30,000	8,000
1,230		30,000	8,000
1,250		30,000	8,000
1,280		30,000	8,000
1,300		30,000	8,000
1,320		30,000	8,000
1,330		32,000	9,000
1,350		32,000	9,000
1,370		32,000	9,000
1,400		32,000	9,000
1,450		32,000	9,000
1,470		32,000	9,000
1,500		32,000	9,000
1,510		34,000	10,000
1,550		34,000	10,000
1,570		34,000	10,000
1,590	1/16	34,000	10,000
1,600		34,000	10,000
1,610		34,000	10,000
1,630		34,000	10,000
1,650		34,000	10,000
1,680		34,000	10,000
1,700		34,000	10,000
1,730		36,000	11,000
1,750		36,000	11,000
1,780		36,000	11,000
1,800		36,000	11,000
1,820		36,000	11,000
1,830		36,000	11,000
1,850		36,000	11,000
1,900		36,000	11,000
1,930		38,000	12,000
1,950		38,000	12,000
1,970		38,000	12,000
1,980	5/64	38,000	12,000
1,990		38,000	12,000
2,000		38,000	12,000
2,030		38,000	12,000
2,050		38,000	12,000
2,060		38,000	12,000
2,080		38,000	12,000



d1		l1	l2
mm	inch	mm	mm
2,100		38,000	12,000
2,150		40,000	13,000
2,180		40,000	13,000
2,200		40,000	13,000
2,250		40,000	13,000
2,260		40,000	13,000
2,300		40,000	13,000
2,320		40,000	13,000
2,350		40,000	13,000
2,360		40,000	13,000
2,370		43,000	14,000
2,380	3/32	43,000	14,000
2,400		43,000	14,000
2,420		43,000	14,000
2,440		43,000	14,000
2,450		43,000	14,000
2,470		43,000	14,000
2,490		43,000	14,000
2,500		43,000	14,000
2,520		43,000	14,000
2,530		43,000	14,000
2,550		43,000	14,000
2,580		43,000	14,000
2,600		43,000	14,000
2,640		43,000	14,000
2,650		43,000	14,000
2,700		46,000	16,000
2,710		46,000	16,000
2,750		46,000	16,000
2,780	7/64	46,000	16,000
2,790		46,000	16,000
2,800		46,000	16,000
2,820		46,000	16,000
2,830		46,000	16,000
2,850		46,000	16,000
2,870		46,000	16,000
2,900		46,000	16,000
2,950		46,000	16,000
3,000		46,000	16,000
3,020		49,000	18,000
3,050		49,000	18,000
3,100		49,000	18,000
3,150		49,000	18,000
3,170	1/8	49,000	18,000
3,200		49,000	18,000
3,250		49,000	18,000
3,260		49,000	18,000
3,300		49,000	18,000
3,350		49,000	18,000
3,400		52,000	20,000
3,450		52,000	20,000
3,500		52,000	20,000
3,520		52,000	20,000
3,550		52,000	20,000
3,570	9/64	52,000	20,000
3,600		52,000	20,000
3,660		52,000	20,000
3,700		52,000	20,000
3,730		52,000	20,000
3,750		52,000	20,000
3,800		55,000	22,000
3,850		55,000	22,000
3,860		55,000	22,000
3,900		55,000	22,000
3,910		55,000	22,000
3,950		55,000	22,000
3,970	5/32	55,000	22,000
3,990		55,000	22,000
4,000		55,000	22,000
4,040		55,000	22,000
4,050		55,000	22,000
4,090		55,000	22,000

d1		l1	l2
mm	inch	mm	mm
4,100		55,000	22,000
4,150		55,000	22,000
4,200		55,000	22,000
4,220		55,000	22,000
4,250		55,000	22,000
4,300		58,000	24,000
4,350		58,000	24,000
4,370	11/64	58,000	24,000
4,390		58,000	24,000
4,400		58,000	24,000
4,450		58,000	24,000
4,500		58,000	24,000
4,550		58,000	24,000
4,570		58,000	24,000
4,600		58,000	24,000
4,620		58,000	24,000
4,650		58,000	24,000
4,700		58,000	24,000
4,750		58,000	24,000
4,760	3/16	62,000	26,000
4,800		62,000	26,000
4,850		62,000	26,000
4,900		62,000	26,000
4,920		62,000	26,000
4,950		62,000	26,000
4,980		62,000	26,000
5,000		62,000	26,000
5,020		62,000	26,000
5,050		62,000	26,000
5,060		62,000	26,000
5,100		62,000	26,000
5,110		62,000	26,000
5,150		62,000	26,000
5,160	13/64	62,000	26,000
5,180		62,000	26,000
5,200		62,000	26,000
5,220		62,000	26,000
5,250		62,000	26,000
5,300		62,000	26,000
5,310		66,000	28,000
5,350		66,000	28,000
5,400		66,000	28,000
5,410		66,000	28,000
5,450		66,000	28,000
5,500		66,000	28,000
5,550		66,000	28,000
5,560	7/32	66,000	28,000
5,600		66,000	28,000
5,610		66,000	28,000
5,700		66,000	28,000
5,750		66,000	28,000
5,790		66,000	28,000
5,800		66,000	28,000
5,850		66,000	28,000
5,900		66,000	28,000
5,940		66,000	28,000
5,950	15/64	66,000	28,000
6,000		66,000	28,000
6,040		70,000	31,000
6,050		70,000	31,000
6,100		70,000	31,000
6,150		70,000	31,000
6,200		70,000	31,000
6,250		70,000	31,000
6,300		70,000	31,000
6,320		70,000	31,000
6,350	1/4	70,000	31,000
6,400		70,000	31,000
6,450		70,000	31,000
6,500		70,000	31,000
6,530		70,000	31,000
6,550		70,000	31,000

Forets hélicoïdaux  
à queue cylindrique



Forets hélicoïdaux à queue cylindrique

d1		l1	l2
mm	inch	mm	mm
6,600		70,000	31,000
6,630		70,000	31,000
6,700		70,000	31,000
6,750	17/64	74,000	34,000
6,800		74,000	34,000
6,850		74,000	34,000
6,900		74,000	34,000
7,000		74,000	34,000
7,030		74,000	34,000
7,050		74,000	34,000
7,100		74,000	34,000
7,140	9/32	74,000	34,000
7,200		74,000	34,000
7,250		74,000	34,000
7,300		74,000	34,000
7,350		74,000	34,000
7,370		74,000	34,000
7,400		74,000	34,000
7,490		74,000	34,000
7,500		74,000	34,000
7,540	19/64	79,000	37,000
7,550		79,000	37,000
7,600		79,000	37,000
7,670		79,000	37,000
7,700		79,000	37,000
7,750		79,000	37,000
7,800		79,000	37,000
7,900		79,000	37,000
7,940	5/16	79,000	37,000
8,000		79,000	37,000
8,030		79,000	37,000
8,050		79,000	37,000
8,100		79,000	37,000
8,150		79,000	37,000
8,200		79,000	37,000
8,250		79,000	37,000
8,300		79,000	37,000
8,330	21/64	79,000	37,000
8,400		79,000	37,000
8,430		79,000	37,000
8,500		79,000	37,000
8,520		84,000	40,000
8,550		84,000	40,000
8,600		84,000	40,000
8,610		84,000	40,000
8,700		84,000	40,000
8,730	11/32	84,000	40,000
8,750		84,000	40,000
8,800		84,000	40,000
8,840		84,000	40,000
8,900		84,000	40,000
9,000		84,000	40,000
9,050		84,000	40,000
9,090		84,000	40,000
9,100		84,000	40,000
9,130	23/64	84,000	40,000
9,200		84,000	40,000
9,250		84,000	40,000
9,300		84,000	40,000
9,340		84,000	40,000
9,400		84,000	40,000
9,500		84,000	40,000
9,520	3/8	89,000	43,000
9,580		89,000	43,000
9,600		89,000	43,000
9,700		89,000	43,000
9,750		89,000	43,000
9,800		89,000	43,000
9,900		89,000	43,000
9,920	25/64	89,000	43,000
10,000		89,000	43,000
10,050		89,000	43,000

d1		l1	l2
mm	inch	mm	mm
10,080		89,000	43,000
10,100		89,000	43,000
10,200		89,000	43,000
10,300		89,000	43,000
10,320	13/32	89,000	43,000
10,400		89,000	43,000
10,490		89,000	43,000
10,500		89,000	43,000
10,600		89,000	43,000
10,700		95,000	47,000
10,720	27/64	95,000	47,000
10,800		95,000	47,000
10,900		95,000	47,000
11,000		95,000	47,000
11,100		95,000	47,000
11,110	7/16	95,000	47,000
11,200		95,000	47,000
11,250		95,000	47,000
11,300		95,000	47,000
11,400		95,000	47,000
11,500		95,000	47,000
11,510	29/64	95,000	47,000
11,600		95,000	47,000
11,700		95,000	47,000
11,800		95,000	47,000
11,910	15/32	102,000	51,000
12,000		102,000	51,000
12,100		102,000	51,000
12,200		102,000	51,000
12,300	31/64	102,000	51,000
12,500		102,000	51,000
12,600		102,000	51,000
12,700	1/2	102,000	51,000
12,800		102,000	51,000
12,900		102,000	51,000
13,000		102,000	51,000
13,100	33/64	102,000	51,000
13,200		102,000	51,000
13,490	17/32	107,000	54,000
13,500		107,000	54,000
13,600		107,000	54,000
13,750		107,000	54,000
13,800		107,000	54,000
13,890	35/64	107,000	54,000
14,000		107,000	54,000
14,200		111,000	56,000
14,290	9/16	111,000	56,000
14,500		111,000	56,000
14,680	37/64	111,000	56,000
14,750		111,000	56,000
15,000		111,000	56,000
15,080	19/32	115,000	58,000
15,480	39/64	115,000	58,000
15,500		115,000	58,000
15,870	5/8	115,000	58,000
16,000		115,000	58,000
16,200		119,000	60,000
16,270	41/64	119,000	60,000
16,500		119,000	60,000
16,670	21/32	119,000	60,000
17,000		119,000	60,000
17,070	43/64	123,000	62,000
17,460	11/16	123,000	62,000
17,500		123,000	62,000
17,860	45/64	123,000	62,000
18,000		123,000	62,000
18,500		127,000	64,000
18,650	47/64	127,000	64,000
19,000		127,000	64,000
19,050	3/4	131,000	66,000
19,450	49/64	131,000	66,000
19,500		131,000	66,000

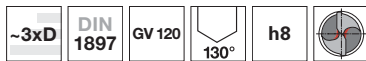


d1		l1	l2
mm	inch	mm	mm
19,840	25/32	131,000	66,000
20,000		131,000	66,000
20,250		136,000	68,000
20,500	13/16	136,000	68,000
20,640		136,000	68,000
21,000		136,000	68,000
22,000		141,000	70,000
22,200	63/64	141,000	70,000
23,000		146,000	72,000
24,000		151,000	75,000
24,500		151,000	75,000
25,000		151,000	75,000

d1		l1	l2
mm	inch	mm	mm
25,400	1	156,000	78,000
25,500		156,000	78,000
26,000		156,000	78,000
28,000		162,000	81,000
48,000		228,000	116,000



Forets hélicoïdaux extra-courts



Matière de coupe **HSCO**

Surface **S**

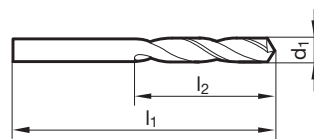
Sens de coupe **R**

- P** • Amin. de l'âme  $\geq \varnothing 1,000$  • affûtage à dépouille conique • acier rapide au Co • meilleure résistance à l'usure
- M** •
- K** •
- N** ○ aciers inoxydables, inaltérables aux acides • aciers à ressorts • aciers austénitiques • Hastelloy, Inconel, Nimonic
- S** •
- H** ○

**GÜHRING** NAVIGATOR

Paramètres de coupe, page 774

Forets hélicoïdaux à queue cylindrique



N° d'article **659**

d1		l1	l2
mm	inch	mm	mm
0,500		20,000	3,000
0,600		21,000	3,500
0,650		22,000	4,000
0,700		23,000	4,500
0,740		23,000	4,500
0,750		23,000	4,500
0,780		24,000	5,000
0,790	1/32	24,000	5,000
0,800		24,000	5,000
0,850		24,000	5,000
0,900		25,000	5,500
0,950		25,000	5,500
1,000		26,000	6,000
1,020		26,000	6,000
1,070		28,000	7,000
1,090		28,000	7,000
1,100		28,000	7,000
1,150		28,000	7,000
1,190	3/64	30,000	8,000
1,200		30,000	8,000
1,250		30,000	8,000
1,300		30,000	8,000
1,320		30,000	8,000
1,400		32,000	9,000
1,450		32,000	9,000
1,500		32,000	9,000
1,510		34,000	10,000
1,530		34,000	10,000
1,550		34,000	10,000
1,570		34,000	10,000
1,590	1/16	34,000	10,000
1,600		34,000	10,000
1,610		34,000	10,000
1,700		34,000	10,000
1,780		36,000	11,000
1,800		36,000	11,000
1,850		36,000	11,000
1,900		36,000	11,000
1,930		38,000	12,000
1,970		38,000	12,000
1,980	5/64	38,000	12,000
1,990		38,000	12,000

d1		l1	l2
mm	inch	mm	mm
2,000		38,000	12,000
2,050		38,000	12,000
2,080		38,000	12,000
2,100		38,000	12,000
2,180		40,000	13,000
2,200		40,000	13,000
2,250		40,000	13,000
2,260		40,000	13,000
2,300		40,000	13,000
2,350		40,000	13,000
2,370		43,000	14,000
2,380	3/32	43,000	14,000
2,400		43,000	14,000
2,440		43,000	14,000
2,450		43,000	14,000
2,490		43,000	14,000
2,500		43,000	14,000
2,530		43,000	14,000
2,550		43,000	14,000
2,580		43,000	14,000
2,600		43,000	14,000
2,640		43,000	14,000
2,700		46,000	16,000
2,710		46,000	16,000
2,780	7/64	46,000	16,000
2,800		46,000	16,000
2,820		46,000	16,000
2,850		46,000	16,000
2,900		46,000	16,000
2,950		46,000	16,000
3,000		46,000	16,000
3,030		49,000	18,000
3,050		49,000	18,000
3,100		49,000	18,000
3,170	1/8	49,000	18,000
3,200		49,000	18,000
3,250		49,000	18,000
3,260		49,000	18,000
3,300		49,000	18,000
3,350		49,000	18,000
3,400		52,000	20,000
3,450		52,000	20,000





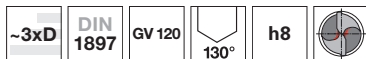
d1		l1	l2
mm	inch	mm	mm
3,500		52,000	20,000
3,570	9/64	52,000	20,000
3,600		52,000	20,000
3,660		52,000	20,000
3,700		52,000	20,000
3,730		52,000	20,000
3,800		55,000	22,000
3,860		55,000	22,000
3,900		55,000	22,000
3,910		55,000	22,000
3,970	5/32	55,000	22,000
3,990		55,000	22,000
4,000		55,000	22,000
4,040		55,000	22,000
4,050		55,000	22,000
4,090		55,000	22,000
4,100		55,000	22,000
4,150		55,000	22,000
4,200		55,000	22,000
4,250		55,000	22,000
4,300		58,000	24,000
4,370	11/64	58,000	24,000
4,390		58,000	24,000
4,400		58,000	24,000
4,500		58,000	24,000
4,600		58,000	24,000
4,620		58,000	24,000
4,700		58,000	24,000
4,760	3/16	62,000	26,000
4,800		62,000	26,000
4,850		62,000	26,000
4,900		62,000	26,000
4,920		62,000	26,000
5,000		62,000	26,000
5,060		62,000	26,000
5,100		62,000	26,000
5,160	13/64	62,000	26,000
5,200		62,000	26,000
5,220		62,000	26,000
5,300		62,000	26,000
5,310		66,000	28,000
5,400		66,000	28,000
5,500		66,000	28,000
5,560	7/32	66,000	28,000
5,600		66,000	28,000
5,610		66,000	28,000
5,700		66,000	28,000
5,800		66,000	28,000
5,900		66,000	28,000
5,940		66,000	28,000
6,000		66,000	28,000
6,040		70,000	31,000
6,050		70,000	31,000
6,100		70,000	31,000
6,150		70,000	31,000
6,200		70,000	31,000
6,300		70,000	31,000
6,350	1/4	70,000	31,000
6,400		70,000	31,000
6,500		70,000	31,000
6,530		70,000	31,000
6,600		70,000	31,000
6,700		70,000	31,000
6,750	17/64	74,000	34,000
6,800		74,000	34,000
6,900		74,000	34,000
7,000		74,000	34,000
7,100		74,000	34,000
7,140	9/32	74,000	34,000
7,200		74,000	34,000
7,300		74,000	34,000
7,370		74,000	34,000

d1		l1	l2
mm	inch	mm	mm
7,400		74,000	34,000
7,490		74,000	34,000
7,500		74,000	34,000
7,540	19/64	79,000	37,000
7,600		79,000	37,000
7,700		79,000	37,000
7,800		79,000	37,000
7,900		79,000	37,000
7,940	5/16	79,000	37,000
8,000		79,000	37,000
8,100		79,000	37,000
8,200		79,000	37,000
8,300		79,000	37,000
8,400		79,000	37,000
8,500		79,000	37,000
8,600		84,000	40,000
8,610		84,000	40,000
8,700		84,000	40,000
8,730	11/32	84,000	40,000
8,800		84,000	40,000
8,840		84,000	40,000
9,000		84,000	40,000
9,100		84,000	40,000
9,130	23/64	84,000	40,000
9,200		84,000	40,000
9,300		84,000	40,000
9,400		84,000	40,000
9,500		84,000	40,000
9,520	3/8	89,000	43,000
9,600		89,000	43,000
9,700		89,000	43,000
9,800		89,000	43,000
9,920	25/64	89,000	43,000
10,000		89,000	43,000
10,100		89,000	43,000
10,200		89,000	43,000
10,250		89,000	43,000
10,320	13/32	89,000	43,000
10,500		89,000	43,000
10,720	27/64	95,000	47,000
10,800		95,000	47,000
10,900		95,000	47,000
11,000		95,000	47,000
11,110	7/16	95,000	47,000
11,500		95,000	47,000
12,000		102,000	51,000
12,100		102,000	51,000
12,200		102,000	51,000
12,300	31/64	102,000	51,000
12,500		102,000	51,000
12,700	1/2	102,000	51,000
12,800		102,000	51,000
13,000		102,000	51,000
13,300		107,000	54,000
13,490	17/32	107,000	54,000
13,500		107,000	54,000
14,000		107,000	54,000
14,290	9/16	111,000	56,000
14,500		111,000	56,000
15,000		111,000	56,000
15,500		115,000	58,000

Forets hélicoïdaux  
à queue cylindrique



Forets hélicoïdaux extra-courts



Matière de coupe **HSC0**

Surface **F**

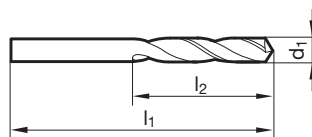
Sens de coupe **R**

- P** • Amin. de l'âme ≥ Ø 1,000 • affûtage à dépouille conique • acier rapide au Co • meilleure résistance à l'usure
- M** •
- K** •
- N** ○ aciers inoxydables, inaltérables aux acides • aciers à ressorts • aciers austénitiques • Hastelloy, Inconel, Nimonic
- S** •
- H** ○

**GÜHRING** NAVIGATOR

Paramètres de coupe, page 774

Forets hélicoïdaux à queue cylindrique



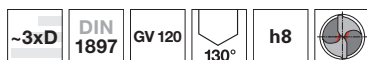
N° d'article **2461**

d1		l1	l2
mm	inch	mm	mm
1,000		26,000	6,000
1,100		28,000	7,000
1,200		30,000	8,000
1,300		30,000	8,000
1,400		32,000	9,000
1,500		32,000	9,000
1,600		34,000	10,000
1,700		34,000	10,000
1,800		36,000	11,000
1,900		36,000	11,000
2,000		38,000	12,000
2,100		38,000	12,000
2,200		40,000	13,000
2,300		40,000	13,000
2,400		43,000	14,000
2,500		43,000	14,000
2,600		43,000	14,000
2,700		46,000	16,000
2,800		46,000	16,000
2,900		46,000	16,000
3,000		46,000	16,000
3,100		49,000	18,000
3,200		49,000	18,000
3,300		49,000	18,000
3,400		52,000	20,000
3,500		52,000	20,000
3,600		52,000	20,000
3,700		52,000	20,000
3,800		55,000	22,000
3,900		55,000	22,000
4,000		55,000	22,000
4,200		55,000	22,000
4,300		58,000	24,000
4,400		58,000	24,000
4,500		58,000	24,000
4,600		58,000	24,000
4,700		58,000	24,000
4,800		62,000	26,000
4,900		62,000	26,000
5,000		62,000	26,000
5,100		62,000	26,000
5,200		62,000	26,000

d1		l1	l2
mm	inch	mm	mm
5,300		62,000	26,000
5,400		66,000	28,000
5,500		66,000	28,000
5,600		66,000	28,000
5,800		66,000	28,000
6,000		66,000	28,000
6,100		70,000	31,000
6,200		70,000	31,000
6,300		70,000	31,000
6,400		70,000	31,000
6,500		70,000	31,000
6,600		70,000	31,000
6,800		74,000	34,000
6,900		74,000	34,000
7,000		74,000	34,000
7,200		74,000	34,000
7,300		74,000	34,000
7,400		74,000	34,000
7,500		74,000	34,000
7,600		79,000	37,000
7,800		79,000	37,000
8,000		79,000	37,000
8,100		79,000	37,000
8,200		79,000	37,000
8,300		79,000	37,000
8,500		79,000	37,000
8,600		84,000	40,000
8,700		84,000	40,000
8,800		84,000	40,000
9,000		84,000	40,000
9,200		84,000	40,000
9,300		84,000	40,000
9,500		84,000	40,000
9,800		89,000	43,000
10,000		89,000	43,000
10,200		89,000	43,000
10,500		89,000	43,000
11,000		95,000	47,000
11,500		95,000	47,000
12,000		102,000	51,000
13,000		102,000	51,000



Forets hélicoïdaux extra-courts



Matière de coupe **HSCO**

Surface

Sens de coupe

**P** • Amin. de l'âme  $\geq \varnothing 2,370$  • affûtage à dépouille conique • acier rapide au Co • meilleure résistance à l'usure

**M** •

**K** •

**N** ○ aciers inoxydables, inaltérables aux acides • aciers à ressorts • aciers austénitiques • Hastelloy, Inconel, Nimonic

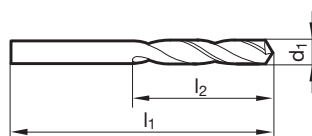
**S** •

**H** ○

**GUHRING NAVIGATOR**

Paramètres de coupe, page 772

Forets hélicoïdaux à queue cylindrique



N° d'article **330**

d1		l1	l2
mm	inch	mm	mm
0,450		19,000	2,500
0,500		20,000	3,000
0,620		22,000	4,000
0,700		23,000	4,500
0,710		23,000	4,500
0,750		23,000	4,500
0,800		24,000	5,000
0,900		25,000	5,500
1,000		26,000	6,000
1,030		26,000	6,000
1,040		26,000	6,000
1,050		26,000	6,000
1,060		26,000	6,000
1,090		28,000	7,000
1,150		28,000	7,000
1,170		28,000	7,000
1,180		28,000	7,000
1,190	3/64	30,000	8,000
1,200		30,000	8,000
1,210		30,000	8,000
1,220		30,000	8,000
1,230		30,000	8,000
1,300		30,000	8,000
1,320		30,000	8,000
1,350		32,000	9,000
1,420		32,000	9,000
1,450		32,000	9,000
1,470		32,000	9,000
1,500		32,000	9,000
1,510		34,000	10,000
1,530		34,000	10,000
1,550		34,000	10,000
1,590	1/16	34,000	10,000
1,600		34,000	10,000
1,610		34,000	10,000
1,650		34,000	10,000
1,700		34,000	10,000
1,780		36,000	11,000
1,800		36,000	11,000
1,930		38,000	12,000
1,980	5/64	38,000	12,000
1,990		38,000	12,000

d1		l1	l2
mm	inch	mm	mm
2,000		38,000	12,000
2,020		38,000	12,000
2,080		38,000	12,000
2,100		38,000	12,000
2,180		40,000	13,000
2,200		40,000	13,000
2,260		40,000	13,000
2,300		40,000	13,000
2,370		43,000	14,000
2,380	3/32	43,000	14,000
2,440		43,000	14,000
2,500		43,000	14,000
2,550		43,000	14,000
2,600		43,000	14,000
2,640		43,000	14,000
2,750		46,000	16,000
2,770		46,000	16,000
2,780	7/64	46,000	16,000
2,820		46,000	16,000
2,950		46,000	16,000
3,000		46,000	16,000
3,150		49,000	18,000
3,170	1/8	49,000	18,000
3,200		49,000	18,000
3,400		52,000	20,000
3,450		52,000	20,000
3,500		52,000	20,000
3,600		52,000	20,000
3,700		52,000	20,000
3,860		55,000	22,000
3,970	5/32	55,000	22,000
3,990		55,000	22,000
4,000		55,000	22,000
4,040		55,000	22,000
4,090		55,000	22,000
4,100		55,000	22,000
4,200		55,000	22,000
4,300		58,000	24,000
4,370	11/64	58,000	24,000
4,390		58,000	24,000
4,400		58,000	24,000
4,500		58,000	24,000



Forets hélicoïdaux à queue cylindrique

d1		l1	l2
mm	inch	mm	mm
4,570		58,000	24,000
4,620		58,000	24,000
4,760	3/16	62,000	26,000
4,850		62,000	26,000
4,920		62,000	26,000
4,980		62,000	26,000
5,000		62,000	26,000
5,100		62,000	26,000
5,110		62,000	26,000
5,160	13/64	62,000	26,000
5,200		62,000	26,000
5,220		62,000	26,000
5,310		66,000	28,000
5,400		66,000	28,000
5,410		66,000	28,000
5,500		66,000	28,000
5,560	7/32	66,000	28,000
5,600		66,000	28,000
5,610		66,000	28,000
5,700		66,000	28,000
5,750		66,000	28,000
5,800		66,000	28,000
5,900		66,000	28,000
6,000		66,000	28,000
6,040		70,000	31,000
6,300		70,000	31,000
6,400		70,000	31,000
6,500		70,000	31,000
6,600		70,000	31,000
6,750	17/64	74,000	34,000
6,800		74,000	34,000
7,000		74,000	34,000
7,030		74,000	34,000
7,050		74,000	34,000
7,100		74,000	34,000
7,140	9/32	74,000	34,000
7,370		74,000	34,000
7,490		74,000	34,000
7,540	19/64	79,000	37,000
7,600		79,000	37,000
7,700		79,000	37,000
7,900		79,000	37,000
8,000		79,000	37,000
8,030		79,000	37,000
8,330	21/64	79,000	37,000
8,430		79,000	37,000
8,500		79,000	37,000
8,610		84,000	40,000

d1		l1	l2
mm	inch	mm	mm
8,700		84,000	40,000
8,730	11/32	84,000	40,000
8,800		84,000	40,000
9,000		84,000	40,000
9,090		84,000	40,000
9,100		84,000	40,000
9,130	23/64	84,000	40,000
9,200		84,000	40,000
9,340		84,000	40,000
9,400		84,000	40,000
9,520	3/8	89,000	43,000
9,580		89,000	43,000
9,700		89,000	43,000
9,900		89,000	43,000
9,920	25/64	89,000	43,000
10,000		89,000	43,000
10,080		89,000	43,000
10,260		89,000	43,000
10,490		89,000	43,000
10,720	27/64	95,000	47,000
10,900		95,000	47,000
11,000		95,000	47,000
11,100		95,000	47,000
11,200		95,000	47,000
11,300		95,000	47,000
11,510	29/64	95,000	47,000
11,910	15/32	102,000	51,000
12,000		102,000	51,000
12,300	31/64	102,000	51,000
12,400		102,000	51,000
13,000		102,000	51,000
13,500		107,000	54,000
14,000		107,000	54,000
14,700		111,000	56,000
15,100		115,000	58,000
15,500		115,000	58,000
16,000		115,000	58,000
19,500		131,000	66,000
19,750		131,000	66,000
22,500		146,000	72,000
23,500		146,000	72,000
24,000		151,000	75,000
25,000	63/64	151,000	75,000
25,500		156,000	78,000
26,000		156,000	78,000
27,000		162,000	81,000
32,000		180,000	90,000



Forets hélicoïdaux extra-courts



Matière de coupe **HSC0**

Surface **S**

Sens de coupe **R**

**P** • Amin. de l'âme  $\geq \varnothing 1,000$  • affûtage à dépouille conique • acier rapide au Co • résistance à l'usure, améliorée

**M** ○

**K** ○

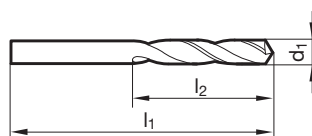
**N** ○ pour les aciers durs • matières à copeaux longs  $< 1000 \text{ N/mm}^2$  • alliages d'aluminium et de cuivre • bronzes tendres • cuivre électrolytique

**S** • laitons tenaces

**H**

**GUHRING** NAVIGATOR

Paramètres de coupe, page 774



N° d'article **1228**

d1		l1	l2
mm	inch	mm	mm
1,000		26,000	6,000
1,100		28,000	7,000
1,190	3/64	30,000	8,000
1,200		30,000	8,000
1,300		30,000	8,000
1,400		32,000	9,000
1,500		32,000	9,000
1,600		34,000	10,000
1,700		34,000	10,000
1,800		36,000	11,000
1,900		36,000	11,000
2,000		38,000	12,000
2,100		38,000	12,000
2,200		40,000	13,000
2,300		40,000	13,000
2,400		43,000	14,000
2,500		43,000	14,000
2,580		43,000	14,000
2,600		43,000	14,000
2,800		46,000	16,000
2,900		46,000	16,000
3,000		46,000	16,000
3,100		49,000	18,000
3,170	1/8	49,000	18,000
3,200		49,000	18,000
3,300		49,000	18,000
3,400		52,000	20,000
3,500		52,000	20,000
3,570	9/64	52,000	20,000
3,600		52,000	20,000
3,700		52,000	20,000
3,800		55,000	22,000
3,900		55,000	22,000
3,970	5/32	55,000	22,000
4,000		55,000	22,000
4,100		55,000	22,000
4,200		55,000	22,000
4,300		58,000	24,000
4,370	11/64	58,000	24,000
4,400		58,000	24,000
4,500		58,000	24,000
4,600		58,000	24,000

d1		l1	l2
mm	inch	mm	mm
4,700		58,000	24,000
4,760	3/16	62,000	26,000
4,800		62,000	26,000
4,900		62,000	26,000
5,000		62,000	26,000
5,100		62,000	26,000
5,160	13/64	62,000	26,000
5,200		62,000	26,000
5,300		62,000	26,000
5,400		66,000	28,000
5,500		66,000	28,000
5,560	7/32	66,000	28,000
5,600		66,000	28,000
5,700		66,000	28,000
5,800		66,000	28,000
5,900		66,000	28,000
6,000		66,000	28,000
6,100		70,000	31,000
6,200		70,000	31,000
6,350	1/4	70,000	31,000
6,400		70,000	31,000
6,500		70,000	31,000
6,600		70,000	31,000
6,700		70,000	31,000
6,750	17/64	74,000	34,000
6,800		74,000	34,000
6,900		74,000	34,000
7,000		74,000	34,000
7,140	9/32	74,000	34,000
7,200		74,000	34,000
7,300		74,000	34,000
7,400		74,000	34,000
7,500		74,000	34,000
7,540	19/64	79,000	37,000
7,800		79,000	37,000
7,940	5/16	79,000	37,000
8,000		79,000	37,000
8,100		79,000	37,000
8,200		79,000	37,000
8,300		79,000	37,000
8,330	21/64	79,000	37,000
8,500		79,000	37,000

Forets hélicoïdaux à queue cylindrique



Forets hélicoïdaux à queue cylindrique

d1		l1	l2
mm	inch		
8,600		84,000	40,000
8,700		84,000	40,000
9,000		84,000	40,000
9,100		84,000	40,000
9,130	23/64	84,000	40,000
9,200		84,000	40,000
9,300		84,000	40,000
9,400		84,000	40,000
9,600		89,000	43,000
9,700		89,000	43,000
9,800		89,000	43,000
9,920	25/64	89,000	43,000
10,000		89,000	43,000
10,200		89,000	43,000
10,320	13/32	89,000	43,000
10,500		89,000	43,000
11,000		95,000	47,000
11,500		95,000	47,000
11,510	29/64	95,000	47,000
11,800		95,000	47,000
12,000		102,000	51,000
12,300	31/64	102,000	51,000
12,500		102,000	51,000
12,700	1/2	102,000	51,000

d1		l1	l2
mm	inch		
12,800		102,000	51,000
13,000		102,000	51,000
13,100	33/64	102,000	51,000
13,490	17/32	107,000	54,000
13,500		107,000	54,000
14,000		107,000	54,000
14,500		111,000	56,000
15,000		111,000	56,000
15,500		115,000	58,000
16,000		115,000	58,000
16,500		119,000	60,000
17,000		119,000	60,000
17,500		123,000	62,000
18,000		123,000	62,000
18,500		127,000	64,000
19,000		127,000	64,000
20,000		131,000	66,000



Forets hélicoïdaux extra-courts



Matière de coupe **HSCO**

Surface **F**

Sens de coupe **R**

**P** • Amin. de l'âme  $\geq \varnothing 1,000$  • affûtage à dépouille conique • acier rapide au Co • meilleure résistance à l'usure

**M** ○

**K** ○

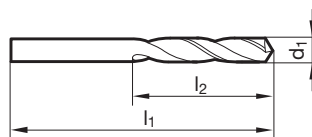
**N** ○ matières à copeaux longs  $< 1000 \text{ N/mm}^2$  • alliages d'aluminium et de cuivre • bronzes tendres • cuivre électrolytique • laitons tenaces

**S** ○

**H** ○

**GUHRING** NAVIGATOR

Paramètres de coupe, page 774



N° d'article **2498**

d1		l1	l2
mm	inch	mm	mm
1,000		26,000	6,000
1,200		30,000	8,000
1,300		30,000	8,000
1,500		32,000	9,000
1,600		34,000	10,000
1,800		36,000	11,000
2,000		38,000	12,000
2,100		38,000	12,000
2,200		40,000	13,000
2,300		40,000	13,000
2,400		43,000	14,000
2,500		43,000	14,000
2,600		43,000	14,000
2,800		46,000	16,000
2,900		46,000	16,000
3,000		46,000	16,000
3,100		49,000	18,000
3,200		49,000	18,000
3,300		49,000	18,000
3,400		52,000	20,000
3,500		52,000	20,000
3,600		52,000	20,000
3,700		52,000	20,000
4,000		55,000	22,000
4,100		55,000	22,000
4,200		55,000	22,000
4,300		58,000	24,000
4,400		58,000	24,000
4,500		58,000	24,000
4,600		58,000	24,000
4,700		58,000	24,000
5,000		62,000	26,000
5,100		62,000	26,000
5,200		62,000	26,000
5,300		62,000	26,000
5,500		66,000	28,000

d1		l1	l2
mm	inch	mm	mm
5,600		66,000	28,000
6,000		66,000	28,000
6,200		70,000	31,000
6,500		70,000	31,000
6,600		70,000	31,000
6,800		74,000	34,000
6,900		74,000	34,000
7,000		74,000	34,000
7,500		74,000	34,000
7,600		79,000	37,000
7,700		79,000	37,000
7,800		79,000	37,000
8,000		79,000	37,000
8,500		79,000	37,000
8,600		84,000	40,000
9,000		84,000	40,000
9,300		84,000	40,000
9,500		84,000	40,000
10,000		89,000	43,000
10,200		89,000	43,000
10,500		89,000	43,000
10,800		95,000	47,000
11,000		95,000	47,000
11,800		95,000	47,000
12,000		102,000	51,000
12,500		102,000	51,000
13,000		102,000	51,000
13,500		107,000	54,000
14,000		107,000	54,000
14,500		111,000	56,000
15,000		111,000	56,000
16,000		115,000	58,000

Forets hélicoïdaux à queue cylindrique



Forets hélicoïdaux extra-courts



Matière de coupe **HSCO**

Surface

Sens de coupe

**P** ○ affûtage à dépouille conique • acier rapide au Co • meilleure résistance à l'usure

**M** ●

**K** ●

**N** ○ aciers austénit., inox., inaltérablesaux acides, réfractaires (V2A et V4A)

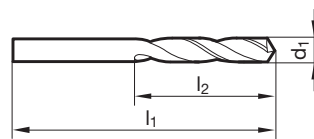
**S** ○

**H** ●

**GUHRING** NAVIGATOR

Paramètres de coupe, page 772

Forets hélicoïdaux à queue cylindrique



N° d'article **1261**

d1		l1	l2
mm	inch	mm	mm
1,000		26,000	6,000
1,100		28,000	7,000
1,200		30,000	8,000
1,300		30,000	8,000
1,500		32,000	9,000
1,590	1/16	34,000	10,000
1,600		34,000	10,000
1,700		34,000	10,000
1,900		36,000	11,000
2,000		38,000	12,000
2,200		40,000	13,000
2,300		40,000	13,000
2,400		43,000	14,000
2,500		43,000	14,000
2,600		43,000	14,000
2,700		46,000	16,000
2,800		46,000	16,000
2,900		46,000	16,000
3,000		46,000	16,000
3,100		49,000	18,000
3,200		49,000	18,000
3,300		49,000	18,000
3,400		52,000	20,000
3,500		52,000	20,000
3,600		52,000	20,000
3,700		52,000	20,000
3,800		55,000	22,000
4,000		55,000	22,000
4,100		55,000	22,000
4,200		55,000	22,000
4,300		58,000	24,000
4,500		58,000	24,000
4,700		58,000	24,000
4,800		62,000	26,000
5,000		62,000	26,000
5,100		62,000	26,000
5,200		62,000	26,000
5,500		66,000	28,000
5,600		66,000	28,000
5,800		66,000	28,000
5,900		66,000	28,000
6,000		66,000	28,000

d1		l1	l2
mm	inch	mm	mm
6,100		70,000	31,000
6,300		70,000	31,000
6,400		70,000	31,000
6,500		70,000	31,000
6,600		70,000	31,000
6,800		74,000	34,000
7,000		74,000	34,000
7,100		74,000	34,000
7,200		74,000	34,000
7,300		74,000	34,000
7,400		74,000	34,000
7,500		74,000	34,000
7,700		79,000	37,000
7,800		79,000	37,000
7,900		79,000	37,000
8,000		79,000	37,000
8,300		79,000	37,000
8,400		79,000	37,000
8,500		79,000	37,000
8,600		84,000	40,000
8,700		84,000	40,000
8,800		84,000	40,000
9,000		84,000	40,000
9,100		84,000	40,000
9,300		84,000	40,000
9,500		84,000	40,000
9,900		89,000	43,000
10,000		89,000	43,000
10,200		89,000	43,000
10,900		95,000	47,000
11,500		95,000	47,000
12,000		102,000	51,000





Forets hélicoïdaux extra-courts



Matière de coupe **HSC0**

Surface **S**

Sens de coupe **R**



**P** ○ Amin. de l'âme ≥ Ø 1,000 • affûtage en croix, optimisé • acier rapide au Co • meilleure résistance à l'usure

**M** ●

**K** ○

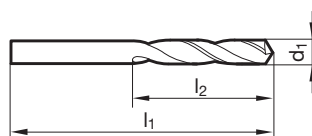
**N** ○ aciers austénit., inox., inaltérablesaux acides, réfractaires (V2A et V4A)  
• alliages spéciaux

**S** ●

**H**

**GUHRING** NAVIGATOR

Paramètres de coupe, page 774



N° d'article **572**

d1		l1	l2
mm	inch	mm	mm
1,000		26,000	6,000
1,100		28,000	7,000
1,200		30,000	8,000
1,300		30,000	8,000
1,400		32,000	9,000
1,500		32,000	9,000
1,600		34,000	10,000
1,700		34,000	10,000
1,800		36,000	11,000
1,900		36,000	11,000
2,000		38,000	12,000
2,100		38,000	12,000
2,200		40,000	13,000
2,300		40,000	13,000
2,400		43,000	14,000
2,500		43,000	14,000
2,600		43,000	14,000
2,700		46,000	16,000
2,800		46,000	16,000
2,900		46,000	16,000
3,000		46,000	16,000
3,100		49,000	18,000
3,200		49,000	18,000
3,300		49,000	18,000
3,400		52,000	20,000
3,500		52,000	20,000
3,600		52,000	20,000
3,700		52,000	20,000
3,800		55,000	22,000
3,900		55,000	22,000
4,000		55,000	22,000
4,100		55,000	22,000
4,200		55,000	22,000
4,300		58,000	24,000
4,400		58,000	24,000
4,500		58,000	24,000
4,600		58,000	24,000
4,650		58,000	24,000
4,700		58,000	24,000
4,800		62,000	26,000
4,900		62,000	26,000
5,000		62,000	26,000

d1		l1	l2
mm	inch	mm	mm
5,100		62,000	26,000
5,200		62,000	26,000
5,300		62,000	26,000
5,400		66,000	28,000
5,500		66,000	28,000
5,550		66,000	28,000
5,600		66,000	28,000
5,700		66,000	28,000
5,800		66,000	28,000
5,900		66,000	28,000
6,000		66,000	28,000
6,100		70,000	31,000
6,200		70,000	31,000
6,300		70,000	31,000
6,400		70,000	31,000
6,500		70,000	31,000
6,600		70,000	31,000
6,700		70,000	31,000
6,800		74,000	34,000
6,900		74,000	34,000
7,000		74,000	34,000
7,100		74,000	34,000
7,200		74,000	34,000
7,300		74,000	34,000
7,400		74,000	34,000
7,450		74,000	34,000
7,500		74,000	34,000
7,600		79,000	37,000
7,700		79,000	37,000
7,800		79,000	37,000
7,900		79,000	37,000
8,000		79,000	37,000
8,100		79,000	37,000
8,200		79,000	37,000
8,300		79,000	37,000
8,400		79,000	37,000
8,500		79,000	37,000
8,600		84,000	40,000
8,700		84,000	40,000
8,800		84,000	40,000
8,900		84,000	40,000
9,000		84,000	40,000

Forets hélicoïdaux à queue cylindrique



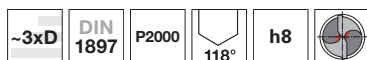
d1		l1	l2
mm	inch	mm	mm
9,100		84,000	40,000
9,200		84,000	40,000
9,250		84,000	40,000
9,300		84,000	40,000
9,400		84,000	40,000
9,500		84,000	40,000
9,600		89,000	43,000
9,700		89,000	43,000
9,800		89,000	43,000
9,900		89,000	43,000
10,000		89,000	43,000
10,200		89,000	43,000

d1		l1	l2
mm	inch	mm	mm
10,500		89,000	43,000
11,000		95,000	47,000
11,200		95,000	47,000
11,500		95,000	47,000
11,800		95,000	47,000
12,000		102,000	51,000
12,500		102,000	51,000
13,000		102,000	51,000

Forets hélicoïdaux à queue cylindrique



Forets hélicoïdaux extra-courts



Matière de coupe **HSCO**

Surface **M**

Sens de coupe **R**

**P** • Amin. de l'âme  $\geq \varnothing 1,000$  • affûtage à dépouille conique • utilisation universelle avec affûtage strié • acier rapide au Co • meilleure résistance à l'usure • pour le montage professionnel • aussi pour machines portatives

**K** ○ aciers à copeaux longs  $< 1000 \text{ N/mm}^2$  • fontes et alliages Al Si

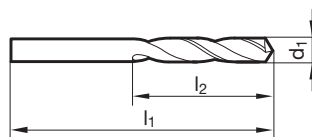
**N** ○

**S** ○

**H** ○

**GUHRING** NAVIGATOR

Paramètres de coupe, page 774



N° d'article **2048**

d1		l1	l2
mm	inch	mm	mm
1,000		26,000	6,000
1,100		28,000	7,000
1,200		30,000	8,000
1,300		30,000	8,000
1,400		32,000	9,000
1,500		32,000	9,000
1,600		34,000	10,000
1,700		34,000	10,000
1,800		36,000	11,000
1,900		36,000	11,000
2,000		38,000	12,000
2,100		38,000	12,000
2,200		40,000	13,000
2,300		40,000	13,000
2,400		43,000	14,000
2,700		46,000	16,000
2,800		46,000	16,000
2,900		46,000	16,000
3,000		46,000	16,000
3,100		49,000	18,000
3,300		49,000	18,000
3,400		52,000	20,000
3,500		52,000	20,000
3,600		52,000	20,000
3,700		52,000	20,000
3,800		55,000	22,000
4,000		55,000	22,000
4,100		55,000	22,000
4,200		55,000	22,000
4,400		58,000	24,000
4,500		58,000	24,000
4,600		58,000	24,000
4,700		58,000	24,000
4,800		62,000	26,000
4,900		62,000	26,000
5,000		62,000	26,000
5,200		62,000	26,000
5,300		62,000	26,000
5,400		66,000	28,000
5,500		66,000	28,000
5,600		66,000	28,000
5,700		66,000	28,000

d1		l1	l2
mm	inch	mm	mm
5,800		66,000	28,000
6,000		66,000	28,000
6,100		70,000	31,000
6,200		70,000	31,000
6,300		70,000	31,000
6,400		70,000	31,000
6,500		70,000	31,000
6,600		70,000	31,000
6,700		70,000	31,000
6,900		74,000	34,000
7,000		74,000	34,000
7,100		74,000	34,000
7,200		74,000	34,000
7,300		74,000	34,000
7,400		74,000	34,000
7,500		74,000	34,000
7,600		79,000	37,000
7,700		79,000	37,000
7,800		79,000	37,000
7,900		79,000	37,000
8,000		79,000	37,000
8,100		79,000	37,000
8,200		79,000	37,000
8,300		79,000	37,000
8,400		79,000	37,000
8,500		79,000	37,000
8,600		84,000	40,000
8,700		84,000	40,000
8,800		84,000	40,000
8,900		84,000	40,000
9,000		84,000	40,000
9,100		84,000	40,000
9,200		84,000	40,000
9,300		84,000	40,000
9,400		84,000	40,000
9,500		84,000	40,000
9,600		89,000	43,000
9,700		89,000	43,000
9,800		89,000	43,000
9,900		89,000	43,000
10,000		89,000	43,000
10,200		89,000	43,000

Forets hélicoïdaux à queue cylindrique



d1		l1	l2
mm	inch	mm	mm
10,500		89,000	43,000
11,500		95,000	47,000
12,000		102,000	51,000
12,500		102,000	51,000
13,000		102,000	51,000

d1		l1	l2
mm	inch	mm	mm

Forets hélicoïdaux à queue cylindrique



Forets hélicoïdaux extra-courts



Matière de coupe **M42**

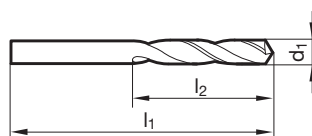
Surface

Sens de coupe

- P** • Amin. de l'âme ≥ Ø 1,000 • affûtage à dépouille conique • haut % de Co & Mo • résistance à l'usure particulièrement élevée
- M** ○
- K** ○
- N** • alliages durs/alliages à haute résistance à base de chrome-nickel • Hastelloy, Inconel, Nimonic • aciers inox., inaltérables aux acides et réfractaires • tôles résistantes à l'usure • aciers/bronzes < 1400 N/mm<sup>2</sup>
- S** •
- H** ○

**GUHRING** NAVIGATOR

Paramètres de coupe, page 772



N° d'article **1259**

d1		l1	l2
mm	inch	mm	mm
1,000		26,000	6,000
1,100		28,000	7,000
1,200		30,000	8,000
1,300		30,000	8,000
1,400		32,000	9,000
1,500		32,000	9,000
1,600		34,000	10,000
1,700		34,000	10,000
1,800		36,000	11,000
1,900		36,000	11,000
2,000		38,000	12,000
2,100		38,000	12,000
2,200		40,000	13,000
2,300		40,000	13,000
2,380	3/32	43,000	14,000
2,400		43,000	14,000
2,500		43,000	14,000
2,600		43,000	14,000
2,700		46,000	16,000
2,780	7/64	46,000	16,000
2,800		46,000	16,000
2,900		46,000	16,000
3,000		46,000	16,000
3,100		49,000	18,000
3,170	1/8	49,000	18,000
3,200		49,000	18,000
3,300		49,000	18,000
3,400		52,000	20,000
3,500		52,000	20,000
3,600		52,000	20,000
3,700		52,000	20,000
3,800		55,000	22,000
3,900		55,000	22,000
3,970	5/32	55,000	22,000
4,000		55,000	22,000
4,100		55,000	22,000
4,200		55,000	22,000
4,300		58,000	24,000
4,370	11/64	58,000	24,000
4,400		58,000	24,000
4,500		58,000	24,000
4,600		58,000	24,000

d1		l1	l2
mm	inch	mm	mm
4,700		58,000	24,000
4,760	3/16	62,000	26,000
4,800		62,000	26,000
4,900		62,000	26,000
5,000		62,000	26,000
5,100		62,000	26,000
5,200		62,000	26,000
5,300		62,000	26,000
5,400		66,000	28,000
5,500		66,000	28,000
5,560	7/32	66,000	28,000
5,600		66,000	28,000
5,700		66,000	28,000
5,800		66,000	28,000
5,950	15/64	66,000	28,000
6,000		66,000	28,000
6,100		70,000	31,000
6,200		70,000	31,000
6,300		70,000	31,000
6,350	1/4	70,000	31,000
6,400		70,000	31,000
6,500		70,000	31,000
6,600		70,000	31,000
6,800		74,000	34,000
7,000		74,000	34,000
7,100		74,000	34,000
7,140	9/32	74,000	34,000
7,200		74,000	34,000
7,300		74,000	34,000
7,400		74,000	34,000
7,500		74,000	34,000
7,540	19/64	79,000	37,000
7,600		79,000	37,000
7,700		79,000	37,000
7,800		79,000	37,000
7,900		79,000	37,000
7,940	5/16	79,000	37,000
8,000		79,000	37,000
8,100		79,000	37,000
8,200		79,000	37,000
8,300		79,000	37,000
8,330	21/64	79,000	37,000

Forets hélicoïdaux à queue cylindrique



d1		l1	l2
mm	inch	mm	mm
8,500		79,000	37,000
8,600		84,000	40,000
8,700		84,000	40,000
9,000		84,000	40,000
9,300		84,000	40,000
9,400		84,000	40,000
9,500		84,000	40,000
9,800		89,000	43,000
9,900		89,000	43,000
10,000		89,000	43,000
10,500		89,000	43,000
11,000		95,000	47,000

d1		l1	l2
mm	inch	mm	mm
11,500		95,000	47,000
12,000		102,000	51,000
12,500		102,000	51,000
12,700	1/2	102,000	51,000
13,000		102,000	51,000
14,000		107,000	54,000
15,000		111,000	56,000
15,870	5/8	115,000	58,000

Forets hélicoïdaux à queue cylindrique



Forets hélicoïdaux extra-courts



Matière de coupe **HSS-E-PM**

Surface **F**

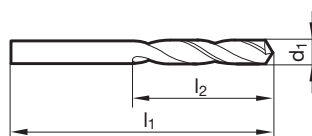
Sens de coupe **R**

**P** • Amin. de l'âme  $\geq \varnothing 1,000$  • affûtage à dép. conique av. aminciss. spécial de l'âme forme B • acier PM HSS fritté et allié au Co • particulièrement rigide • résistance à l'usure particulièrement élevée

**M** ○  
**K** •  
**N** ○ mat. haute résistance, aciers hautement alliés • aciers de cémentation et d'amélioration • fontes, laitons, bronzes  
**S** ○  
**H** ○

**GUHRING** NAVIGATOR

Paramètres de coupe, page 774



N° d'article **515**

d1		l1	l2
mm	inch	mm	mm
1,000		26,000	6,000
1,020		26,000	6,000
1,040		26,000	6,000
1,070		28,000	7,000
1,090		28,000	7,000
1,100		28,000	7,000
1,180		28,000	7,000
1,190	3/64	30,000	8,000
1,200		30,000	8,000
1,300		30,000	8,000
1,320		30,000	8,000
1,400		32,000	9,000
1,500		32,000	9,000
1,510		34,000	10,000
1,590	1/16	34,000	10,000
1,600		34,000	10,000
1,610		34,000	10,000
1,700		34,000	10,000
1,780		36,000	11,000
1,800		36,000	11,000
1,850		36,000	11,000
1,900		36,000	11,000
1,930		38,000	12,000
1,980	5/64	38,000	12,000
1,990		38,000	12,000
2,000		38,000	12,000
2,060		38,000	12,000
2,080		38,000	12,000
2,100		38,000	12,000
2,180		40,000	13,000
2,200		40,000	13,000
2,260		40,000	13,000
2,300		40,000	13,000
2,370		43,000	14,000
2,380	3/32	43,000	14,000
2,400		43,000	14,000
2,440		43,000	14,000
2,490		43,000	14,000
2,500		43,000	14,000
2,530		43,000	14,000
2,580		43,000	14,000
2,600		43,000	14,000

d1		l1	l2
mm	inch	mm	mm
2,640		43,000	14,000
2,700		46,000	16,000
2,710		46,000	16,000
2,780	7/64	46,000	16,000
2,790		46,000	16,000
2,800		46,000	16,000
2,820		46,000	16,000
2,870		46,000	16,000
2,900		46,000	16,000
2,950		46,000	16,000
3,000		46,000	16,000
3,050		49,000	18,000
3,100		49,000	18,000
3,170	1/8	49,000	18,000
3,200		49,000	18,000
3,260		49,000	18,000
3,300		49,000	18,000
3,400		52,000	20,000
3,450		52,000	20,000
3,500		52,000	20,000
3,570	9/64	52,000	20,000
3,600		52,000	20,000
3,660		52,000	20,000
3,700		52,000	20,000
3,730		52,000	20,000
3,800		55,000	22,000
3,860		55,000	22,000
3,900		55,000	22,000
3,910		55,000	22,000
3,970	5/32	55,000	22,000
3,990		55,000	22,000
4,000		55,000	22,000
4,040		55,000	22,000
4,090		55,000	22,000
4,100		55,000	22,000
4,200		55,000	22,000
4,220		55,000	22,000
4,300		58,000	24,000
4,370	11/64	58,000	24,000
4,390		58,000	24,000
4,400		58,000	24,000
4,500		58,000	24,000

Forets hélicoïdaux à queue cylindrique



Forets hélicoïdaux à queue cylindrique

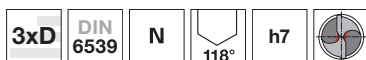
d1		l1	l2
mm	inch	mm	mm
4,570		58,000	24,000
4,600		58,000	24,000
4,620		58,000	24,000
4,650		58,000	24,000
4,700		58,000	24,000
4,760	3/16	62,000	26,000
4,800		62,000	26,000
4,850		62,000	26,000
4,900		62,000	26,000
4,920		62,000	26,000
4,980		62,000	26,000
5,000		62,000	26,000
5,060		62,000	26,000
5,100		62,000	26,000
5,110		62,000	26,000
5,160	13/64	62,000	26,000
5,180		62,000	26,000
5,200		62,000	26,000
5,220		62,000	26,000
5,300		62,000	26,000
5,310		66,000	28,000
5,400		66,000	28,000
5,410		66,000	28,000
5,500		66,000	28,000
5,560	7/32	66,000	28,000
5,600		66,000	28,000
5,610		66,000	28,000
5,700		66,000	28,000
5,790		66,000	28,000
5,800		66,000	28,000
5,900		66,000	28,000
5,940		66,000	28,000
5,950	15/64	66,000	28,000
6,000		66,000	28,000
6,040		70,000	31,000
6,100		70,000	31,000
6,150		70,000	31,000
6,200		70,000	31,000
6,250		70,000	31,000
6,300		70,000	31,000
6,350	1/4	70,000	31,000
6,400		70,000	31,000
6,500		70,000	31,000
6,530		70,000	31,000
6,600		70,000	31,000
6,630		70,000	31,000
6,700		70,000	31,000
6,750	17/64	74,000	34,000
6,800		74,000	34,000
6,900		74,000	34,000
7,000		74,000	34,000
7,030		74,000	34,000
7,100		74,000	34,000
7,140	9/32	74,000	34,000
7,200		74,000	34,000
7,300		74,000	34,000
7,370		74,000	34,000
7,400		74,000	34,000
7,490		74,000	34,000
7,500		74,000	34,000
7,540	19/64	79,000	37,000
7,600		79,000	37,000
7,670		79,000	37,000
7,700		79,000	37,000
7,800		79,000	37,000
7,900		79,000	37,000

d1		l1	l2
mm	inch	mm	mm
7,940	5/16	79,000	37,000
8,000		79,000	37,000
8,030		79,000	37,000
8,100		79,000	37,000
8,200		79,000	37,000
8,300		79,000	37,000
8,330	21/64	79,000	37,000
8,400		79,000	37,000
8,430		79,000	37,000
8,500		79,000	37,000
8,600		84,000	40,000
8,610		84,000	40,000
8,730	11/32	84,000	40,000
8,800		84,000	40,000
8,840		84,000	40,000
8,900		84,000	40,000
9,000		84,000	40,000
9,090		84,000	40,000
9,130	23/64	84,000	40,000
9,200		84,000	40,000
9,300		84,000	40,000
9,340		84,000	40,000
9,350		84,000	40,000
9,400		84,000	40,000
9,500		84,000	40,000
9,520	3/8	89,000	43,000
9,580		89,000	43,000
9,600		89,000	43,000
9,700		89,000	43,000
9,800		89,000	43,000
9,920	25/64	89,000	43,000
10,000		89,000	43,000
10,080		89,000	43,000
10,200		89,000	43,000
10,260		89,000	43,000
10,320	13/32	89,000	43,000
10,490		89,000	43,000
10,500		89,000	43,000
10,720	27/64	95,000	47,000
11,000		95,000	47,000
11,110	7/16	95,000	47,000
11,500		95,000	47,000
11,510	29/64	95,000	47,000
11,800		95,000	47,000
11,910	15/32	102,000	51,000
12,000		102,000	51,000
12,300	31/64	102,000	51,000
12,500		102,000	51,000
12,700	1/2	102,000	51,000
13,000		102,000	51,000
13,100	33/64	102,000	51,000
13,490	17/32	107,000	54,000
13,500		107,000	54,000
14,000		107,000	54,000
14,290	9/16	111,000	56,000





Forets hélicoïdaux extra-courts



Matière de coupe **CW monobloc**

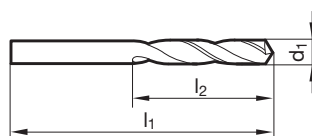
Surface

Sens de coupe

- P** ○ Amin. de l'âme ≥ Ø 2,060 • affûtage en pente • arête de coupe principale rectiligne
- M** ○
- K** ○
- N** ● aciers de construction et de cémentation • aciers de décolletage, aciers d'amélioration • fontes grises • bronze, laiton • aluminium et alliages d'aluminium • magnésium, alliages de magnésium • matières synthét. et mat.synthét.renforcées de fibres
- S** ○
- H** ○

**GUHRING** NAVIGATOR

Paramètres de coupe, page 776



N° d'article **730**

d1		l1	l2
mm	inch	mm	mm
0,500		20,000	3,000
0,600		21,000	3,500
0,700		23,000	4,500
0,800		24,000	5,000
0,900		25,000	5,500
1,000		26,000	6,000
1,020		26,000	6,000
1,040		26,000	6,000
1,070		28,000	7,000
1,090		28,000	7,000
1,100		28,000	7,000
1,180		28,000	7,000
1,190	3/64	30,000	8,000
1,200		30,000	8,000
1,300		30,000	8,000
1,320		30,000	8,000
1,400		32,000	9,000
1,500		32,000	9,000
1,510		34,000	10,000
1,590	1/16	34,000	10,000
1,600		34,000	10,000
1,610		34,000	10,000
1,700		34,000	10,000
1,780		36,000	11,000
1,800		36,000	11,000
1,850		36,000	11,000
1,900		36,000	11,000
1,930		38,000	12,000
1,980	5/64	38,000	12,000
1,990		38,000	12,000
2,000		38,000	12,000
2,060		38,000	12,000
2,080		38,000	12,000
2,100		38,000	12,000
2,180		40,000	13,000
2,200		40,000	13,000
2,250		40,000	13,000
2,260		40,000	13,000
2,300		40,000	13,000
2,370		43,000	14,000
2,380	3/32	43,000	14,000
2,400		43,000	14,000

d1		l1	l2
mm	inch	mm	mm
2,440		43,000	14,000
2,490		43,000	14,000
2,500		43,000	14,000
2,530		43,000	14,000
2,580		43,000	14,000
2,600		43,000	14,000
2,640		43,000	14,000
2,700		46,000	16,000
2,710		46,000	16,000
2,780	7/64	46,000	16,000
2,790		46,000	16,000
2,800		46,000	16,000
2,820		46,000	16,000
2,870		46,000	16,000
2,900		46,000	16,000
2,950		46,000	16,000
3,000		46,000	16,000
3,050		49,000	18,000
3,100		49,000	18,000
3,170	1/8	49,000	18,000
3,200		49,000	18,000
3,260		49,000	18,000
3,300		49,000	18,000
3,400		52,000	20,000
3,450		52,000	20,000
3,500		52,000	20,000
3,570	9/64	52,000	20,000
3,600		52,000	20,000
3,660		52,000	20,000
3,700		52,000	20,000
3,730		52,000	20,000
3,800		55,000	22,000
3,860		55,000	22,000
3,900		55,000	22,000
3,910		55,000	22,000
3,970	5/32	55,000	22,000
3,990		55,000	22,000
4,000		55,000	22,000
4,040		55,000	22,000
4,100		55,000	22,000
4,200		55,000	22,000
4,220		55,000	22,000

Forets hélicoïdaux à queue cylindrique



Forets hélicoïdaux à queue cylindrique

d1		l1	l2
mm	inch	mm	mm
4,300		58,000	24,000
4,370	11/64	58,000	24,000
4,390		58,000	24,000
4,400		58,000	24,000
4,500		58,000	24,000
4,570		58,000	24,000
4,600		58,000	24,000
4,620		58,000	24,000
4,700		58,000	24,000
4,760	3/16	62,000	26,000
4,800		62,000	26,000
4,850		62,000	26,000
4,900		62,000	26,000
4,920		62,000	26,000
4,980		62,000	26,000
5,000		62,000	26,000
5,060		62,000	26,000
5,100		62,000	26,000
5,110		62,000	26,000
5,160	13/64	62,000	26,000
5,180		62,000	26,000
5,200		62,000	26,000
5,220		62,000	26,000
5,300		62,000	26,000
5,310		66,000	28,000
5,400		66,000	28,000
5,410		66,000	28,000
5,500		66,000	28,000
5,560	7/32	66,000	28,000
5,600		66,000	28,000
5,700		66,000	28,000
5,790		66,000	28,000
5,800		66,000	28,000
5,900		66,000	28,000
5,940		66,000	28,000
5,950	15/64	66,000	28,000
6,000		66,000	28,000
6,040		70,000	31,000
6,100		70,000	31,000
6,150		70,000	31,000
6,200		70,000	31,000
6,250		70,000	31,000
6,300		70,000	31,000
6,350	1/4	70,000	31,000
6,400		70,000	31,000
6,500		70,000	31,000
6,530		70,000	31,000
6,600		70,000	31,000
6,630		70,000	31,000
6,700		70,000	31,000
6,750	17/64	74,000	34,000
6,800		74,000	34,000
6,900		74,000	34,000
7,000		74,000	34,000
7,030		74,000	34,000
7,100		74,000	34,000
7,140	9/32	74,000	34,000
7,200		74,000	34,000
7,300		74,000	34,000
7,370		74,000	34,000
7,400		74,000	34,000
7,490		74,000	34,000
7,500		74,000	34,000
7,540	19/64	79,000	37,000
7,600		79,000	37,000
7,670		79,000	37,000

d1		l1	l2
mm	inch	mm	mm
7,700		79,000	37,000
7,800		79,000	37,000
7,900		79,000	37,000
7,940	5/16	79,000	37,000
8,000		79,000	37,000
8,030		79,000	37,000
8,100		79,000	37,000
8,200		79,000	37,000
8,300		79,000	37,000
8,330	21/64	79,000	37,000
8,400		79,000	37,000
8,430		79,000	37,000
8,500		79,000	37,000
8,600		84,000	40,000
8,610		84,000	40,000
8,700		84,000	40,000
8,730	11/32	84,000	40,000
8,800		84,000	40,000
8,840		84,000	40,000
8,900		84,000	40,000
9,000		84,000	40,000
9,090		84,000	40,000
9,100		84,000	40,000
9,130	23/64	84,000	40,000
9,200		84,000	40,000
9,300		84,000	40,000
9,340		84,000	40,000
9,400		84,000	40,000
9,500		84,000	40,000
9,520	3/8	89,000	43,000
9,580		89,000	43,000
9,600		89,000	43,000
9,700		89,000	43,000
9,800		89,000	43,000
9,900		89,000	43,000
9,920	25/64	89,000	43,000
10,000		89,000	43,000
10,080		89,000	43,000
10,200		89,000	43,000
10,260		89,000	43,000
10,300		89,000	43,000
10,320	13/32	89,000	43,000
10,490		89,000	43,000
10,500		89,000	43,000
10,720	27/64	95,000	47,000
11,000		95,000	47,000
11,110	7/16	95,000	47,000
11,500		95,000	47,000
11,510	29/64	95,000	47,000
11,700		95,000	47,000
11,910	15/32	102,000	51,000
12,000		102,000	51,000
12,300	31/64	102,000	51,000
12,500		102,000	51,000
12,700	1/2	102,000	51,000
13,000		102,000	51,000
13,490	17/32	107,000	54,000
14,000		107,000	54,000
14,290	9/16	111,000	56,000
15,000		111,000	56,000
16,000		115,000	58,000



Forets hélicoïdaux extra-courts

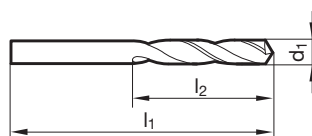


Matière de coupe	<b>CW monobloc</b>
Surface	<b>F</b>
Sens de coupe	<b>R</b>

- P** ○ Amin. de l'âme ≥ Ø 2,060 • affûtage en pente • arête de coupe principale rectiligne
- M** ○
- K** ○
- N** ● aciers de construction et de cémentation • aciers de décolletage, aciers d'amélioration • fontes • laitons • alliages d'aluminium avec haut % de Si
- S** ○ • magnésium, alliages de magnésium • matières synthét. et mat.synthét. renforcées de fibres
- H** ○

**GUHRING** NAVIGATOR

Paramètres de coupe, page 776



N° d'article **2463**

d1		l1	l2
mm	inch	mm	mm
1,000		26,000	6,000
1,020		26,000	6,000
1,040		26,000	6,000
1,070		28,000	7,000
1,090		28,000	7,000
1,100		28,000	7,000
1,180		28,000	7,000
1,190	3/64	30,000	8,000
1,200		30,000	8,000
1,300		30,000	8,000
1,320		30,000	8,000
1,400		32,000	9,000
1,500		32,000	9,000
1,510		34,000	10,000
1,590	1/16	34,000	10,000
1,600		34,000	10,000
1,610		34,000	10,000
1,700		34,000	10,000
1,780		36,000	11,000
1,800		36,000	11,000
1,850		36,000	11,000
1,900		36,000	11,000
1,930		38,000	12,000
1,980	5/64	38,000	12,000
1,990		38,000	12,000
2,000		38,000	12,000
2,060		38,000	12,000
2,080		38,000	12,000
2,100		38,000	12,000
2,180		40,000	13,000
2,200		40,000	13,000
2,250		40,000	13,000
2,260		40,000	13,000
2,300		40,000	13,000
2,370		43,000	14,000
2,380	3/32	43,000	14,000
2,400		43,000	14,000
2,440		43,000	14,000
2,490		43,000	14,000
2,500		43,000	14,000
2,530		43,000	14,000
2,580		43,000	14,000

d1		l1	l2
mm	inch	mm	mm
2,600		43,000	14,000
2,640		43,000	14,000
2,700		46,000	16,000
2,710		46,000	16,000
2,780	7/64	46,000	16,000
2,790		46,000	16,000
2,800		46,000	16,000
2,820		46,000	16,000
2,870		46,000	16,000
2,900		46,000	16,000
2,950		46,000	16,000
3,000		46,000	16,000
3,050		49,000	18,000
3,100		49,000	18,000
3,170	1/8	49,000	18,000
3,200		49,000	18,000
3,260		49,000	18,000
3,300		49,000	18,000
3,400		52,000	20,000
3,450		52,000	20,000
3,500		52,000	20,000
3,570	9/64	52,000	20,000
3,600		52,000	20,000
3,660		52,000	20,000
3,700		52,000	20,000
3,730		52,000	20,000
3,800		55,000	22,000
3,860		55,000	22,000
3,900		55,000	22,000
3,910		55,000	22,000
3,970	5/32	55,000	22,000
3,990		55,000	22,000
4,000		55,000	22,000
4,040		55,000	22,000
4,090		55,000	22,000
4,100		55,000	22,000
4,200		55,000	22,000
4,220		55,000	22,000
4,300		58,000	24,000
4,370	11/64	58,000	24,000
4,390		58,000	24,000
4,400		58,000	24,000

Forets hélicoïdaux à queue cylindrique



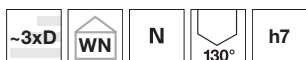
Forets hélicoïdaux à queue cylindrique

d1		l1	l2
mm	inch	mm	mm
4,500		58,000	24,000
4,570		58,000	24,000
4,600		58,000	24,000
4,620		58,000	24,000
4,700		58,000	24,000
4,760	3/16	62,000	26,000
4,800		62,000	26,000
4,850		62,000	26,000
4,900		62,000	26,000
4,920		62,000	26,000
4,980		62,000	26,000
5,000		62,000	26,000
5,060		62,000	26,000
5,100		62,000	26,000
5,110		62,000	26,000
5,160	13/64	62,000	26,000
5,180		62,000	26,000
5,200		62,000	26,000
5,220		62,000	26,000
5,300		62,000	26,000
5,310		66,000	28,000
5,400		66,000	28,000
5,410		66,000	28,000
5,500		66,000	28,000
5,560	7/32	66,000	28,000
5,600		66,000	28,000
5,610		66,000	28,000
5,700		66,000	28,000
5,790		66,000	28,000
5,800		66,000	28,000
5,900		66,000	28,000
5,940		66,000	28,000
5,950	15/64	66,000	28,000
6,000		66,000	28,000
6,040		70,000	31,000
6,100		70,000	31,000
6,150		70,000	31,000
6,200		70,000	31,000
6,250		70,000	31,000
6,300		70,000	31,000
6,350	1/4	70,000	31,000
6,400		70,000	31,000
6,500		70,000	31,000
6,530		70,000	31,000
6,600		70,000	31,000
6,630		70,000	31,000
6,700		70,000	31,000
6,750	17/64	74,000	34,000
6,800		74,000	34,000
6,900		74,000	34,000
7,000		74,000	34,000
7,030		74,000	34,000
7,100		74,000	34,000
7,140	9/32	74,000	34,000
7,200		74,000	34,000
7,300		74,000	34,000
7,370		74,000	34,000
7,400		74,000	34,000
7,500		74,000	34,000
7,540	19/64	79,000	37,000
7,600		79,000	37,000
7,670		79,000	37,000
7,700		79,000	37,000
7,800		79,000	37,000
7,900		79,000	37,000
7,940	5/16	79,000	37,000

d1		l1	l2
mm	inch	mm	mm
8,000		79,000	37,000
8,030		79,000	37,000
8,100		79,000	37,000
8,200		79,000	37,000
8,300		79,000	37,000
8,330	21/64	79,000	37,000
8,400		79,000	37,000
8,430		79,000	37,000
8,500		79,000	37,000
8,600		84,000	40,000
8,610		84,000	40,000
8,700		84,000	40,000
8,730	11/32	84,000	40,000
8,800		84,000	40,000
8,840		84,000	40,000
8,900		84,000	40,000
9,000		84,000	40,000
9,090		84,000	40,000
9,100		84,000	40,000
9,130	23/64	84,000	40,000
9,200		84,000	40,000
9,300		84,000	40,000
9,340		84,000	40,000
9,400		84,000	40,000
9,500		84,000	40,000
9,520	3/8	89,000	43,000
9,580		89,000	43,000
9,600		89,000	43,000
9,700		89,000	43,000
9,800		89,000	43,000
9,900		89,000	43,000
9,920	25/64	89,000	43,000
10,000		89,000	43,000
10,080		89,000	43,000
10,200		89,000	43,000
10,260		89,000	43,000
10,300		89,000	43,000
10,320	13/32	89,000	43,000
10,490		89,000	43,000
10,500		89,000	43,000
10,720	27/64	95,000	47,000
11,000		95,000	47,000
11,110	7/16	95,000	47,000
11,500		95,000	47,000
11,510	29/64	95,000	47,000
11,910	15/32	102,000	51,000
12,000		102,000	51,000
12,300	31/64	102,000	51,000
12,700	1/2	102,000	51,000
13,000		102,000	51,000
13,490	17/32	107,000	54,000
14,000		107,000	54,000
14,290	9/16	111,000	56,000
15,000		111,000	56,000
16,000		115,000	58,000



Forets hélicoïdaux extra-courts



Matière de coupe **CW monobloc**

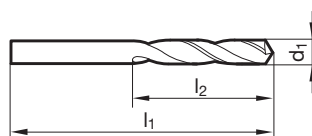
Surface

Sens de coupe

- P** affûtage en pente • arête de coupe principale rectiligne
- M**
- K**
- N** matières synthétiques renforcées de fibres de verre • thermodurcissables
- S** abrasifs avec effet abrasif sur arêtes de coupe et listels
- H**

**GUHRING** NAVIGATOR

Paramètres de coupe, page 776



N° d'article **702**

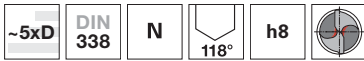
d1		l1	l2
mm	inch	mm	mm
0,500		30,000	6,500
0,550		30,000	6,500
0,600		30,000	6,500
0,650		30,000	6,500
0,700		30,000	6,500
0,750		30,000	8,500
0,800		30,000	8,500
0,900		30,000	9,500
1,000		30,000	11,000
1,050		30,000	11,000
1,100		30,000	11,000
1,200		30,000	13,000
1,350		30,000	13,000
1,400		30,000	13,000
1,450		30,000	13,000
1,500		30,000	13,000
1,600		40,000	17,500
1,650		40,000	17,500
1,700		40,000	17,500
1,800		40,000	17,500
1,850		40,000	17,500
1,900		40,000	17,500
2,000		40,000	17,500
2,010		40,000	17,500
2,050		40,000	17,500
2,100		40,000	17,500
2,200		40,000	17,500
2,260		40,000	17,500
2,300		40,000	17,500
2,400		40,000	17,500
2,490		40,000	17,500
2,500		40,000	17,500
2,530		45,000	20,000
2,600		45,000	20,000
2,700		45,000	20,000
2,800		45,000	20,000

d1		l1	l2
mm	inch	mm	mm
3,000		45,000	20,000
3,050		50,000	22,000
3,100		50,000	22,000
3,200		50,000	22,000
3,260		50,000	22,000
3,300		50,000	22,000
3,400		50,000	22,000
3,450		50,000	22,000
3,500		50,000	22,000
3,570	9/64	50,000	22,000
3,600		50,000	22,000
3,910		50,000	22,000
4,000		50,000	22,000
4,200		50,000	25,000
4,300		50,000	25,000
4,400		50,000	25,000
4,700		50,000	25,000
5,000		50,000	25,000
5,200		50,000	25,000
5,310		50,000	25,000
5,610		50,000	25,000
5,790		50,000	25,000
5,950	15/64	50,000	25,000
6,000		50,000	25,000
6,250		65,000	30,000
6,350	1/4	65,000	30,000
6,500		65,000	30,000

Forets hélicoïdaux à queue cylindrique



Forets hélicoïdaux courts



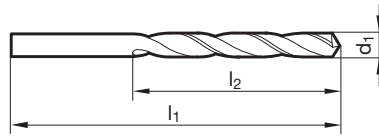
- P** • Amin. de l'âme  $\geq \varnothing 1,000$  • affûtage à dépouille conique
- M**
- K** •
- N** ○ acier, fonte aciérée (alliée / non alliée) • fontes grises, fontes malléables, fontes à graphite sphéroïdal • fer fritté, maillechort, graphite
- S**
- H**

Matière de coupe	<b>HSS</b>
Surface	
Sens de coupe	

Forets hélicoïdaux à queue cylindrique

**GÜHRING** NAVIGATOR

Paramètres de coupe, page 778



N° d'article **205**

d1		l1	l2	d1		l1	l2
mm	inch	mm	mm	mm	inch	mm	mm
0,200		19,000	2,500	0,620		26,000	8,000
0,210		19,000	2,500	0,630		26,000	8,000
0,220		19,000	2,500	0,640		26,000	8,000
0,230		19,000	2,500	0,650		26,000	8,000
0,240		19,000	2,500	0,660		26,000	8,000
0,250		19,000	3,000	0,670		26,000	8,000
0,260		19,000	3,000	0,680		28,000	9,000
0,270		19,000	3,000	0,690		28,000	9,000
0,280		19,000	3,000	0,700		28,000	9,000
0,290		19,000	3,000	0,710		28,000	9,000
0,300		19,000	3,000	0,720		28,000	9,000
0,310		19,000	4,000	0,730		28,000	9,000
0,320		19,000	4,000	0,740		28,000	9,000
0,330		19,000	4,000	0,750		28,000	9,000
0,340		19,000	4,000	0,760		30,000	10,000
0,350		19,000	4,000	0,770		30,000	10,000
0,360		19,000	4,000	0,780		30,000	10,000
0,370		19,000	4,000	0,790	1/32	30,000	10,000
0,380		19,000	4,000	0,800		30,000	10,000
0,390		20,000	5,000	0,810		30,000	10,000
0,400	1/64	20,000	5,000	0,820		30,000	10,000
0,410		20,000	5,000	0,830		30,000	10,000
0,420		20,000	5,000	0,840		30,000	10,000
0,430		20,000	5,000	0,850		30,000	10,000
0,440		20,000	5,000	0,860		32,000	11,000
0,450		20,000	5,000	0,870		32,000	11,000
0,460		20,000	5,000	0,880		32,000	11,000
0,470		20,000	5,000	0,890		32,000	11,000
0,480		20,000	5,000	0,900		32,000	11,000
0,490		22,000	6,000	0,910		32,000	11,000
0,500		22,000	6,000	0,920		32,000	11,000
0,510		22,000	6,000	0,930		32,000	11,000
0,520		22,000	6,000	0,940		32,000	11,000
0,530		22,000	6,000	0,950		32,000	11,000
0,540		24,000	7,000	0,960		34,000	12,000
0,550		24,000	7,000	0,970		34,000	12,000
0,560		24,000	7,000	0,980		34,000	12,000
0,570		24,000	7,000	0,990		34,000	12,000
0,580		24,000	7,000	1,000		34,000	12,000
0,590		24,000	7,000	1,010		34,000	12,000
0,600		24,000	7,000	1,020		34,000	12,000
0,610		26,000	8,000	1,030		34,000	12,000



d1		l1	l2
mm	inch	mm	mm
1,040		34,000	12,000
1,050		34,000	12,000
1,060		34,000	12,000
1,070		36,000	14,000
1,080		36,000	14,000
1,090		36,000	14,000
1,100		36,000	14,000
1,110		36,000	14,000
1,120		36,000	14,000
1,130		36,000	14,000
1,140		36,000	14,000
1,150		36,000	14,000
1,160		36,000	14,000
1,170		36,000	14,000
1,180		36,000	14,000
1,190	3/64	38,000	16,000
1,200		38,000	16,000
1,210		38,000	16,000
1,220		38,000	16,000
1,230		38,000	16,000
1,240		38,000	16,000
1,250		38,000	16,000
1,260		38,000	16,000
1,270		38,000	16,000
1,280		38,000	16,000
1,290		38,000	16,000
1,300		38,000	16,000
1,310		38,000	16,000
1,320		38,000	16,000
1,330		40,000	18,000
1,340		40,000	18,000
1,350		40,000	18,000
1,360		40,000	18,000
1,370		40,000	18,000
1,380		40,000	18,000
1,390		40,000	18,000
1,400		40,000	18,000
1,410		40,000	18,000
1,420		40,000	18,000
1,430		40,000	18,000
1,440		40,000	18,000
1,450		40,000	18,000
1,460		40,000	18,000
1,470		40,000	18,000
1,480		40,000	18,000
1,490		40,000	18,000
1,500		40,000	18,000
1,510		43,000	20,000
1,520		43,000	20,000
1,530		43,000	20,000
1,540		43,000	20,000
1,550		43,000	20,000
1,560		43,000	20,000
1,570		43,000	20,000
1,580		43,000	20,000
1,590	1/16	43,000	20,000
1,600		43,000	20,000
1,610		43,000	20,000
1,620		43,000	20,000
1,630		43,000	20,000
1,640		43,000	20,000
1,650		43,000	20,000
1,660		43,000	20,000
1,670		43,000	20,000
1,680		43,000	20,000
1,690		43,000	20,000
1,700		43,000	20,000
1,710		46,000	22,000
1,720		46,000	22,000
1,730		46,000	22,000
1,740		46,000	22,000
1,750		46,000	22,000

d1		l1	l2
mm	inch	mm	mm
1,760		46,000	22,000
1,770		46,000	22,000
1,780		46,000	22,000
1,790		46,000	22,000
1,800		46,000	22,000
1,810		46,000	22,000
1,820		46,000	22,000
1,830		46,000	22,000
1,840		46,000	22,000
1,850		46,000	22,000
1,860		46,000	22,000
1,870		46,000	22,000
1,880		46,000	22,000
1,890		46,000	22,000
1,900		46,000	22,000
1,910		49,000	24,000
1,920		49,000	24,000
1,930		49,000	24,000
1,940		49,000	24,000
1,950		49,000	24,000
1,960		49,000	24,000
1,970		49,000	24,000
1,980	5/64	49,000	24,000
1,990		49,000	24,000
2,000		49,000	24,000
2,010		49,000	24,000
2,020		49,000	24,000
2,030		49,000	24,000
2,040		49,000	24,000
2,050		49,000	24,000
2,060		49,000	24,000
2,070		49,000	24,000
2,080		49,000	24,000
2,090		49,000	24,000
2,100		49,000	24,000
2,110		49,000	24,000
2,120		49,000	24,000
2,130		53,000	27,000
2,140		53,000	27,000
2,150		53,000	27,000
2,170		53,000	27,000
2,180		53,000	27,000
2,200		53,000	27,000
2,210		53,000	27,000
2,220		53,000	27,000
2,230		53,000	27,000
2,240		53,000	27,000
2,250		53,000	27,000
2,260		53,000	27,000
2,270		53,000	27,000
2,280		53,000	27,000
2,290		53,000	27,000
2,300		53,000	27,000
2,320		53,000	27,000
2,330		53,000	27,000
2,340		53,000	27,000
2,350		53,000	27,000
2,360		53,000	27,000
2,370		57,000	30,000
2,380	3/32	57,000	30,000
2,390		57,000	30,000
2,400		57,000	30,000
2,420		57,000	30,000
2,430		57,000	30,000
2,440		57,000	30,000
2,450		57,000	30,000
2,460		57,000	30,000
2,470		57,000	30,000
2,480		57,000	30,000
2,490		57,000	30,000
2,500		57,000	30,000
2,510		57,000	30,000

Forets hélicoïdaux  
à queue cylindrique



Forets hélicoïdaux à queue cylindrique

d1		l1	l2
mm	inch	mm	mm
2,520		57,000	30,000
2,530		57,000	30,000
2,540		57,000	30,000
2,550		57,000	30,000
2,570		57,000	30,000
2,580		57,000	30,000
2,600		57,000	30,000
2,610		57,000	30,000
2,620		57,000	30,000
2,630		57,000	30,000
2,640		57,000	30,000
2,650		57,000	30,000
2,660		61,000	33,000
2,670		61,000	33,000
2,680		61,000	33,000
2,700		61,000	33,000
2,710		61,000	33,000
2,720		61,000	33,000
2,730		61,000	33,000
2,750		61,000	33,000
2,760		61,000	33,000
2,780	7/64	61,000	33,000
2,790		61,000	33,000
2,800		61,000	33,000
2,820		61,000	33,000
2,830		61,000	33,000
2,850		61,000	33,000
2,870		61,000	33,000
2,880		61,000	33,000
2,900		61,000	33,000
2,910		61,000	33,000
2,920		61,000	33,000
2,930		61,000	33,000
2,940		61,000	33,000
2,950		61,000	33,000
2,960		61,000	33,000
2,970		61,000	33,000
2,980		61,000	33,000
2,990		61,000	33,000
3,000		61,000	33,000
3,010		65,000	36,000
3,020		65,000	36,000
3,030		65,000	36,000
3,040		65,000	36,000
3,050		65,000	36,000
3,060		65,000	36,000
3,070		65,000	36,000
3,080		65,000	36,000
3,100		65,000	36,000
3,120		65,000	36,000
3,130		65,000	36,000
3,150		65,000	36,000
3,160		65,000	36,000
3,170	1/8	65,000	36,000
3,180		65,000	36,000
3,200		65,000	36,000
3,220		65,000	36,000
3,230		65,000	36,000
3,250		65,000	36,000
3,260		65,000	36,000
3,300		65,000	36,000
3,320		65,000	36,000
3,330		65,000	36,000
3,350		65,000	36,000
3,360		70,000	39,000
3,370		70,000	39,000
3,380		70,000	39,000
3,400		70,000	39,000
3,420		70,000	39,000
3,450		70,000	39,000
3,500		70,000	39,000
3,520		70,000	39,000

d1		l1	l2
mm	inch	mm	mm
3,550		70,000	39,000
3,570	9/64	70,000	39,000
3,600		70,000	39,000
3,610		70,000	39,000
3,620		70,000	39,000
3,650		70,000	39,000
3,660		70,000	39,000
3,680		70,000	39,000
3,700		70,000	39,000
3,725		70,000	39,000
3,730		70,000	39,000
3,750		70,000	39,000
3,800		75,000	43,000
3,820		75,000	43,000
3,830		75,000	43,000
3,850		75,000	43,000
3,860		75,000	43,000
3,870		75,000	43,000
3,900		75,000	43,000
3,910		75,000	43,000
3,920		75,000	43,000
3,930		75,000	43,000
3,940		75,000	43,000
3,950		75,000	43,000
3,970	5/32	75,000	43,000
3,980		75,000	43,000
3,990		75,000	43,000
4,000		75,000	43,000
4,010		75,000	43,000
4,020		75,000	43,000
4,030		75,000	43,000
4,040		75,000	43,000
4,050		75,000	43,000
4,060		75,000	43,000
4,070		75,000	43,000
4,080		75,000	43,000
4,090		75,000	43,000
4,100		75,000	43,000
4,120		75,000	43,000
4,150		75,000	43,000
4,200		75,000	43,000
4,220		75,000	43,000
4,250		75,000	43,000
4,270		80,000	47,000
4,300		80,000	47,000
4,320		80,000	47,000
4,350		80,000	47,000
4,370	11/64	80,000	47,000
4,380		80,000	47,000
4,390		80,000	47,000
4,400		80,000	47,000
4,420		80,000	47,000
4,450		80,000	47,000
4,500		80,000	47,000
4,520		80,000	47,000
4,530		80,000	47,000
4,550		80,000	47,000
4,570		80,000	47,000
4,600		80,000	47,000
4,620		80,000	47,000
4,650		80,000	47,000
4,700		80,000	47,000
4,730		80,000	47,000
4,750		80,000	47,000
4,760	3/16	86,000	52,000
4,770		86,000	52,000
4,800		86,000	52,000
4,830		86,000	52,000
4,850		86,000	52,000
4,860		86,000	52,000
4,900		86,000	52,000
4,920		86,000	52,000





d1		l1	l2
mm	inch	mm	mm
4,930		86,000	52,000
4,950		86,000	52,000
4,970		86,000	52,000
4,980		86,000	52,000
5,000		86,000	52,000
5,020		86,000	52,000
5,025		86,000	52,000
5,030		86,000	52,000
5,050		86,000	52,000
5,060		86,000	52,000
5,080		86,000	52,000
5,100		86,000	52,000
5,110		86,000	52,000
5,120		86,000	52,000
5,150		86,000	52,000
5,160	13/64	86,000	52,000
5,180		86,000	52,000
5,190		86,000	52,000
5,200		86,000	52,000
5,220		86,000	52,000
5,250		86,000	52,000
5,260		86,000	52,000
5,300		86,000	52,000
5,310		93,000	57,000
5,350		93,000	57,000
5,400		93,000	57,000
5,410		93,000	57,000
5,420		93,000	57,000
5,450		93,000	57,000
5,500		93,000	57,000
5,550		93,000	57,000
5,560	7/32	93,000	57,000
5,600		93,000	57,000
5,610		93,000	57,000
5,630		93,000	57,000
5,650		93,000	57,000
5,700		93,000	57,000
5,750		93,000	57,000
5,790		93,000	57,000
5,800		93,000	57,000
5,850		93,000	57,000
5,900		93,000	57,000
5,920		93,000	57,000
5,930		93,000	57,000
5,940		93,000	57,000
5,950	15/64	93,000	57,000
5,960		93,000	57,000
5,970		93,000	57,000
5,980		93,000	57,000
5,990		93,000	57,000
6,000		93,000	57,000
6,030		101,000	63,000
6,040		101,000	63,000
6,050		101,000	63,000
6,100		101,000	63,000
6,150		101,000	63,000
6,170		101,000	63,000
6,200		101,000	63,000
6,210		101,000	63,000
6,220		101,000	63,000
6,250		101,000	63,000
6,300		101,000	63,000
6,350	1/4	101,000	63,000
6,380		101,000	63,000
6,400		101,000	63,000
6,450		101,000	63,000
6,500		101,000	63,000
6,530		101,000	63,000
6,550		101,000	63,000
6,600		101,000	63,000
6,630		101,000	63,000
6,650		101,000	63,000

d1		l1	l2
mm	inch	mm	mm
6,700		101,000	63,000
6,750	17/64	109,000	69,000
6,760		109,000	69,000
6,800		109,000	69,000
6,850		109,000	69,000
6,900		109,000	69,000
6,950		109,000	69,000
7,000		109,000	69,000
7,030		109,000	69,000
7,040		109,000	69,000
7,050		109,000	69,000
7,070		109,000	69,000
7,100		109,000	69,000
7,130		109,000	69,000
7,140	9/32	109,000	69,000
7,150		109,000	69,000
7,200		109,000	69,000
7,250		109,000	69,000
7,300		109,000	69,000
7,320		109,000	69,000
7,350		109,000	69,000
7,370		109,000	69,000
7,400		109,000	69,000
7,450		109,000	69,000
7,490		109,000	69,000
7,500		109,000	69,000
7,540	19/64	117,000	75,000
7,550		117,000	75,000
7,600		117,000	75,000
7,650		117,000	75,000
7,670		117,000	75,000
7,700		117,000	75,000
7,750		117,000	75,000
7,800		117,000	75,000
7,850		117,000	75,000
7,900		117,000	75,000
7,940	5/16	117,000	75,000
7,950		117,000	75,000
7,980		117,000	75,000
8,000		117,000	75,000
8,030		117,000	75,000
8,050		117,000	75,000
8,100		117,000	75,000
8,130		117,000	75,000
8,150		117,000	75,000
8,200		117,000	75,000
8,250		117,000	75,000
8,300		117,000	75,000
8,330	21/64	117,000	75,000
8,350		117,000	75,000
8,400		117,000	75,000
8,430		117,000	75,000
8,450		117,000	75,000
8,500		117,000	75,000
8,550		125,000	81,000
8,600		125,000	81,000
8,610		125,000	81,000
8,650		125,000	81,000
8,700		125,000	81,000
8,730	11/32	125,000	81,000
8,750		125,000	81,000
8,800		125,000	81,000
8,840		125,000	81,000
8,850		125,000	81,000
8,900		125,000	81,000
8,950		125,000	81,000
9,000		125,000	81,000
9,050		125,000	81,000
9,090		125,000	81,000
9,100		125,000	81,000
9,130	23/64	125,000	81,000
9,150		125,000	81,000

Forets hélicoïdaux  
à queue cylindrique



Forets hélicoïdaux à queue cylindrique

d1		l1	l2
mm	inch	mm	mm
9,200		125,000	81,000
9,250		125,000	81,000
9,300		125,000	81,000
9,340		125,000	81,000
9,350		125,000	81,000
9,400		125,000	81,000
9,450		125,000	81,000
9,500		125,000	81,000
9,510		133,000	87,000
9,520	3/8	133,000	87,000
9,570		133,000	87,000
9,580		133,000	87,000
9,600		133,000	87,000
9,650		133,000	87,000
9,700		133,000	87,000
9,750		133,000	87,000
9,800		133,000	87,000
9,850		133,000	87,000
9,900		133,000	87,000
9,920	25/64	133,000	87,000
9,950		133,000	87,000
10,000		133,000	87,000
10,050		133,000	87,000
10,080		133,000	87,000
10,100		133,000	87,000
10,150		133,000	87,000
10,200		133,000	87,000
10,250		133,000	87,000
10,260		133,000	87,000
10,300		133,000	87,000
10,320	13/32	133,000	87,000
10,350		133,000	87,000
10,400		133,000	87,000
10,450		133,000	87,000
10,490		133,000	87,000
10,500		133,000	87,000
10,550		133,000	87,000
10,600		133,000	87,000
10,700		142,000	94,000
10,720	27/64	142,000	94,000
10,750		142,000	94,000
10,800		142,000	94,000
10,900		142,000	94,000
11,000		142,000	94,000
11,050		142,000	94,000
11,100		142,000	94,000
11,110	7/16	142,000	94,000
11,150		142,000	94,000
11,200		142,000	94,000
11,250		142,000	94,000
11,300		142,000	94,000
11,350		142,000	94,000
11,400		142,000	94,000
11,500		142,000	94,000
11,510	29/64	142,000	94,000
11,600		142,000	94,000
11,700		142,000	94,000
11,750		142,000	94,000
11,800		142,000	94,000
11,900		151,000	101,000
11,910	15/32	151,000	101,000
12,000		151,000	101,000
12,050		151,000	101,000
12,100		151,000	101,000
12,200		151,000	101,000
12,250		151,000	101,000
12,300	31/64	151,000	101,000
12,400		151,000	101,000
12,500		151,000	101,000
12,600		151,000	101,000
12,650		151,000	101,000
12,700	1/2	151,000	101,000

d1		l1	l2
mm	inch	mm	mm
12,750		151,000	101,000
12,800		151,000	101,000
12,850		151,000	101,000
12,900		151,000	101,000
13,000		151,000	101,000
13,100	33/64	151,000	101,000
13,200		151,000	101,000
13,250		160,000	108,000
13,300		160,000	108,000
13,400		160,000	108,000
13,490	17/32	160,000	108,000
13,500		160,000	108,000
13,530		160,000	108,000
13,600		160,000	108,000
13,700		160,000	108,000
13,750		160,000	108,000
13,800		160,000	108,000
13,890	35/64	160,000	108,000
13,900		160,000	108,000
14,000		160,000	108,000
14,100		169,000	114,000
14,200		169,000	114,000
14,250		169,000	114,000
14,290	9/16	169,000	114,000
14,300		169,000	114,000
14,400		169,000	114,000
14,450		169,000	114,000
14,500		169,000	114,000
14,600		169,000	114,000
14,680	37/64	169,000	114,000
14,700		169,000	114,000
14,750		169,000	114,000
14,800		169,000	114,000
14,900		169,000	114,000
15,000		169,000	114,000
15,080	19/32	178,000	120,000
15,100		178,000	120,000
15,200		178,000	120,000
15,250		178,000	120,000
15,300		178,000	120,000
15,400		178,000	120,000
15,480	39/64	178,000	120,000
15,500		178,000	120,000
15,600		178,000	120,000
15,700		178,000	120,000
15,750		178,000	120,000
15,800		178,000	120,000
15,870	5/8	178,000	120,000
15,900		178,000	120,000
16,000		178,000	120,000
16,100		184,000	125,000
16,200		184,000	125,000
16,250		184,000	125,000
16,270	41/64	184,000	125,000
16,300		184,000	125,000
16,400		184,000	125,000
16,500		184,000	125,000
16,600		184,000	125,000
16,670	21/32	184,000	125,000
16,700		184,000	125,000
16,750		184,000	125,000
16,800		184,000	125,000
16,900		184,000	125,000
17,000		184,000	125,000
17,070	43/64	191,000	130,000
17,200		191,000	130,000
17,250		191,000	130,000
17,300		191,000	130,000
17,400		191,000	130,000
17,460	11/16	191,000	130,000
17,500		191,000	130,000
17,600		191,000	130,000



d1		l1	l2
mm	inch	mm	mm
17,700		191,000	130,000
17,750		191,000	130,000
17,800		191,000	130,000
17,860	45/64	191,000	130,000
17,900		191,000	130,000
18,000		191,000	130,000
18,100		198,000	135,000
18,200		198,000	135,000
18,260	23/32	198,000	135,000
18,400		198,000	135,000
18,500		198,000	135,000
18,650	47/64	198,000	135,000

d1		l1	l2
mm	inch	mm	mm
18,750		198,000	135,000
18,800		198,000	135,000
19,000		198,000	135,000
19,050	3/4	205,000	140,000
19,100		205,000	140,000
19,200		205,000	140,000
19,250		205,000	140,000
19,500		205,000	140,000
19,600		205,000	140,000
19,750		205,000	140,000
19,840	25/32	205,000	140,000
20,000		205,000	140,000



## Forets hélicoïdaux courts



- P** • Amin. de l'âme  $\geq \varnothing 1,000$  • affûtage à dépouille conique
- M**
- K** •
- N** ○ acier, fonte aciérée (alliée / non alliée) • fontes grises, fontes malléables, fontes à graphite sphéroïdal • fer fritté, maillechort, graphite
- S**
- H**

Matière de coupe **HSS**

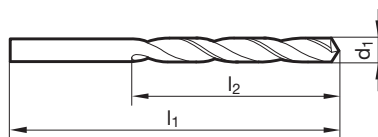
Surface **S**

Sens de coupe **R**

Forets hélicoïdaux à queue cylindrique

## GUHRING NAVIGATOR

Paramètres de coupe, page 780



N° d'article **651**

d1		l1	l2
mm	inch	mm	mm
0,200		19,000	2,500
0,250		19,000	3,000
0,280		19,000	3,000
0,300		19,000	3,000
0,310		19,000	4,000
0,320		19,000	4,000
0,330		19,000	4,000
0,340		19,000	4,000
0,360		19,000	4,000
0,370		19,000	4,000
0,380		19,000	4,000
0,390		20,000	5,000
0,400	1/64	20,000	5,000
0,410		20,000	5,000
0,420		20,000	5,000
0,430		20,000	5,000
0,440		20,000	5,000
0,450		20,000	5,000
0,460		20,000	5,000
0,470		20,000	5,000
0,480		20,000	5,000
0,490		22,000	6,000
0,500		22,000	6,000
0,510		22,000	6,000
0,520		22,000	6,000
0,530		22,000	6,000
0,540		24,000	7,000
0,550		24,000	7,000
0,570		24,000	7,000
0,580		24,000	7,000
0,590		24,000	7,000
0,600		24,000	7,000
0,610		26,000	8,000
0,620		26,000	8,000
0,630		26,000	8,000
0,640		26,000	8,000
0,650		26,000	8,000
0,660		26,000	8,000
0,680		28,000	9,000
0,690		28,000	9,000
0,700		28,000	9,000
0,710		28,000	9,000

d1		l1	l2
mm	inch	mm	mm
0,720		28,000	9,000
0,740		28,000	9,000
0,750		28,000	9,000
0,770		30,000	10,000
0,780		30,000	10,000
0,790	1/32	30,000	10,000
0,800		30,000	10,000
0,810		30,000	10,000
0,820		30,000	10,000
0,830		30,000	10,000
0,840		30,000	10,000
0,850		30,000	10,000
0,860		32,000	11,000
0,870		32,000	11,000
0,880		32,000	11,000
0,890		32,000	11,000
0,900		32,000	11,000
0,910		32,000	11,000
0,920		32,000	11,000
0,930		32,000	11,000
0,940		32,000	11,000
0,950		32,000	11,000
0,960		34,000	12,000
0,970		34,000	12,000
0,980		34,000	12,000
0,990		34,000	12,000
1,000		34,000	12,000
1,020		34,000	12,000
1,030		34,000	12,000
1,040		34,000	12,000
1,050		34,000	12,000
1,060		34,000	12,000
1,070		36,000	14,000
1,080		36,000	14,000
1,090		36,000	14,000
1,100		36,000	14,000
1,110		36,000	14,000
1,120		36,000	14,000
1,130		36,000	14,000
1,140		36,000	14,000
1,150		36,000	14,000
1,160		36,000	14,000



d1		l1	l2
mm	inch	mm	mm
1,170		36,000	14,000
1,180		36,000	14,000
1,190	3/64	38,000	16,000
1,200		38,000	16,000
1,210		38,000	16,000
1,220		38,000	16,000
1,240		38,000	16,000
1,250		38,000	16,000
1,260		38,000	16,000
1,270		38,000	16,000
1,280		38,000	16,000
1,300		38,000	16,000
1,320		38,000	16,000
1,330		40,000	18,000
1,340		40,000	18,000
1,350		40,000	18,000
1,400		40,000	18,000
1,420		40,000	18,000
1,430		40,000	18,000
1,450		40,000	18,000
1,460		40,000	18,000
1,470		40,000	18,000
1,480		40,000	18,000
1,490		40,000	18,000
1,500		40,000	18,000
1,510		43,000	20,000
1,520		43,000	20,000
1,530		43,000	20,000
1,540		43,000	20,000
1,550		43,000	20,000
1,560		43,000	20,000
1,570		43,000	20,000
1,590	1/16	43,000	20,000
1,600		43,000	20,000
1,610		43,000	20,000
1,620		43,000	20,000
1,640		43,000	20,000
1,650		43,000	20,000
1,660		43,000	20,000
1,680		43,000	20,000
1,700		43,000	20,000
1,710		46,000	22,000
1,720		46,000	22,000
1,730		46,000	22,000
1,750		46,000	22,000
1,770		46,000	22,000
1,780		46,000	22,000
1,800		46,000	22,000
1,820		46,000	22,000
1,830		46,000	22,000
1,850		46,000	22,000
1,870		46,000	22,000
1,900		46,000	22,000
1,910		49,000	24,000
1,930		49,000	24,000
1,950		49,000	24,000
1,960		49,000	24,000
1,970		49,000	24,000
1,980	5/64	49,000	24,000
1,990		49,000	24,000
2,000		49,000	24,000
2,020		49,000	24,000
2,030		49,000	24,000
2,050		49,000	24,000
2,060		49,000	24,000
2,080		49,000	24,000
2,100		49,000	24,000
2,150		53,000	27,000
2,180		53,000	27,000
2,200		53,000	27,000
2,250		53,000	27,000
2,260		53,000	27,000

d1		l1	l2
mm	inch	mm	mm
2,300		53,000	27,000
2,350		53,000	27,000
2,370		57,000	30,000
2,380	3/32	57,000	30,000
2,400		57,000	30,000
2,440		57,000	30,000
2,450		57,000	30,000
2,490		57,000	30,000
2,500		57,000	30,000
2,520		57,000	30,000
2,530		57,000	30,000
2,550		57,000	30,000
2,580		57,000	30,000
2,600		57,000	30,000
2,640		57,000	30,000
2,650		57,000	30,000
2,700		61,000	33,000
2,710		61,000	33,000
2,720		61,000	33,000
2,750		61,000	33,000
2,780	7/64	61,000	33,000
2,790		61,000	33,000
2,800		61,000	33,000
2,820		61,000	33,000
2,850		61,000	33,000
2,870		61,000	33,000
2,900		61,000	33,000
2,950		61,000	33,000
3,000		61,000	33,000
3,020		65,000	36,000
3,030		65,000	36,000
3,050		65,000	36,000
3,100		65,000	36,000
3,150		65,000	36,000
3,170	1/8	65,000	36,000
3,200		65,000	36,000
3,250		65,000	36,000
3,260		65,000	36,000
3,300		65,000	36,000
3,350		65,000	36,000
3,400		70,000	39,000
3,450		70,000	39,000
3,500		70,000	39,000
3,550		70,000	39,000
3,570	9/64	70,000	39,000
3,600		70,000	39,000
3,650		70,000	39,000
3,660		70,000	39,000
3,700		70,000	39,000
3,730		70,000	39,000
3,750		70,000	39,000
3,800		75,000	43,000
3,850		75,000	43,000
3,860		75,000	43,000
3,900		75,000	43,000
3,910		75,000	43,000
3,950		75,000	43,000
3,970	5/32	75,000	43,000
3,990		75,000	43,000
4,000		75,000	43,000
4,040		75,000	43,000
4,050		75,000	43,000
4,070		75,000	43,000
4,090		75,000	43,000
4,100		75,000	43,000
4,150		75,000	43,000
4,200		75,000	43,000
4,220		75,000	43,000
4,250		75,000	43,000
4,300		80,000	47,000
4,350		80,000	47,000
4,370	11/64	80,000	47,000

Forets hélicoïdaux  
à queue cylindrique



Forets hélicoïdaux à queue cylindrique

d1		l1	l2
mm	inch	mm	mm
4,390		80,000	47,000
4,400		80,000	47,000
4,450		80,000	47,000
4,500		80,000	47,000
4,550		80,000	47,000
4,570		80,000	47,000
4,600		80,000	47,000
4,620		80,000	47,000
4,650		80,000	47,000
4,700		80,000	47,000
4,750		80,000	47,000
4,760	3/16	86,000	52,000
4,800		86,000	52,000
4,850		86,000	52,000
4,900		86,000	52,000
4,920		86,000	52,000
4,950		86,000	52,000
4,980		86,000	52,000
5,000		86,000	52,000
5,020		86,000	52,000
5,050		86,000	52,000
5,060		86,000	52,000
5,100		86,000	52,000
5,110		86,000	52,000
5,150		86,000	52,000
5,160	13/64	86,000	52,000
5,180		86,000	52,000
5,200		86,000	52,000
5,220		86,000	52,000
5,250		86,000	52,000
5,300		86,000	52,000
5,310		93,000	57,000
5,400		93,000	57,000
5,410		93,000	57,000
5,450		93,000	57,000
5,500		93,000	57,000
5,550		93,000	57,000
5,560	7/32	93,000	57,000
5,600		93,000	57,000
5,610		93,000	57,000
5,650		93,000	57,000
5,700		93,000	57,000
5,750		93,000	57,000
5,790		93,000	57,000
5,800		93,000	57,000
5,850		93,000	57,000
5,900		93,000	57,000
5,940		93,000	57,000
5,950	15/64	93,000	57,000
6,000		93,000	57,000
6,040		101,000	63,000
6,050		101,000	63,000
6,100		101,000	63,000
6,150		101,000	63,000
6,200		101,000	63,000
6,250		101,000	63,000
6,300		101,000	63,000
6,350	1/4	101,000	63,000
6,400		101,000	63,000
6,500		101,000	63,000
6,530		101,000	63,000
6,550		101,000	63,000
6,600		101,000	63,000
6,630		101,000	63,000
6,650		101,000	63,000
6,700		101,000	63,000
6,750	17/64	109,000	69,000
6,800		109,000	69,000
6,850		109,000	69,000
6,900		109,000	69,000
7,000		109,000	69,000
7,020		109,000	69,000

d1		l1	l2
mm	inch	mm	mm
7,030		109,000	69,000
7,050		109,000	69,000
7,100		109,000	69,000
7,140	9/32	109,000	69,000
7,200		109,000	69,000
7,250		109,000	69,000
7,300		109,000	69,000
7,370		109,000	69,000
7,400		109,000	69,000
7,450		109,000	69,000
7,490		109,000	69,000
7,500		109,000	69,000
7,540	19/64	117,000	75,000
7,600		117,000	75,000
7,670		117,000	75,000
7,700		117,000	75,000
7,750		117,000	75,000
7,800		117,000	75,000
7,900		117,000	75,000
7,940	5/16	117,000	75,000
8,000		117,000	75,000
8,030		117,000	75,000
8,050		117,000	75,000
8,100		117,000	75,000
8,150		117,000	75,000
8,200		117,000	75,000
8,250		117,000	75,000
8,300		117,000	75,000
8,330	21/64	117,000	75,000
8,400		117,000	75,000
8,430		117,000	75,000
8,450		117,000	75,000
8,500		117,000	75,000
8,600		125,000	81,000
8,610		125,000	81,000
8,700		125,000	81,000
8,730	11/32	125,000	81,000
8,750		125,000	81,000
8,800		125,000	81,000
8,840		125,000	81,000
8,850		125,000	81,000
8,900		125,000	81,000
9,000		125,000	81,000
9,050		125,000	81,000
9,090		125,000	81,000
9,100		125,000	81,000
9,130	23/64	125,000	81,000
9,200		125,000	81,000
9,250		125,000	81,000
9,300		125,000	81,000
9,340		125,000	81,000
9,350		125,000	81,000
9,400		125,000	81,000
9,500		125,000	81,000
9,520	3/8	133,000	87,000
9,550		133,000	87,000
9,580		133,000	87,000
9,600		133,000	87,000
9,700		133,000	87,000
9,750		133,000	87,000
9,800		133,000	87,000
9,900		133,000	87,000
9,920	25/64	133,000	87,000
10,000		133,000	87,000
10,060		133,000	87,000
10,080		133,000	87,000
10,100		133,000	87,000
10,200		133,000	87,000
10,250		133,000	87,000
10,260		133,000	87,000
10,300		133,000	87,000
10,320	13/32	133,000	87,000



d1		l1	l2
mm	inch	mm	mm
10,400		133,000	87,000
10,490		133,000	87,000
10,500		133,000	87,000
10,550		133,000	87,000
10,600		133,000	87,000
10,700		142,000	94,000
10,720	27/64	142,000	94,000
10,750		142,000	94,000
10,800		142,000	94,000
10,900		142,000	94,000
11,000		142,000	94,000
11,100		142,000	94,000
11,110	7/16	142,000	94,000
11,200		142,000	94,000
11,250		142,000	94,000
11,300		142,000	94,000
11,400		142,000	94,000
11,500		142,000	94,000
11,510	29/64	142,000	94,000
11,600		142,000	94,000
11,650		142,000	94,000
11,700		142,000	94,000
11,750		142,000	94,000
11,800		142,000	94,000
11,900		151,000	101,000
11,910	15/32	151,000	101,000
12,000		151,000	101,000
12,100		151,000	101,000
12,200		151,000	101,000
12,250		151,000	101,000
12,300	31/64	151,000	101,000
12,400		151,000	101,000
12,500		151,000	101,000
12,600		151,000	101,000
12,700	1/2	151,000	101,000
12,800		151,000	101,000
12,900		151,000	101,000
13,000		151,000	101,000
13,100	33/64	151,000	101,000
13,200		151,000	101,000
13,490	17/32	160,000	108,000
13,500		160,000	108,000

d1		l1	l2
mm	inch	mm	mm
13,700		160,000	108,000
13,750		160,000	108,000
13,800		160,000	108,000
13,890	35/64	160,000	108,000
13,900		160,000	108,000
14,000		160,000	108,000
14,100		169,000	114,000
14,200		169,000	114,000
14,250		169,000	114,000
14,290	9/16	169,000	114,000
14,300		169,000	114,000
14,400		169,000	114,000
14,500		169,000	114,000
14,680	37/64	169,000	114,000
15,000		169,000	114,000
15,080	19/32	178,000	120,000
15,250		178,000	120,000
15,480	39/64	178,000	120,000
15,500		178,000	120,000
15,800		178,000	120,000
15,870	5/8	178,000	120,000
16,000		178,000	120,000
16,500		184,000	125,000
16,750		184,000	125,000
17,000		184,000	125,000
17,250		191,000	130,000
17,500		191,000	130,000
18,000		191,000	130,000
18,500		198,000	135,000
18,800		198,000	135,000
19,000		198,000	135,000

Forets hélicoïdaux à queue cylindrique



Forets hélicoïdaux courts



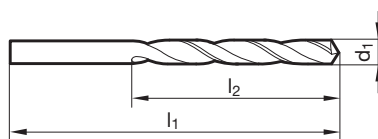
- P** • Amin. de l'âme  $\geq \varnothing 1,000$  • affûtage à dépouille conique
- M**
- K** •
- N** • acier, fonte aciérée (alliée / non alliée) • fontes grises, fontes malléables, fontes à graphite sphéroïdal • fer fritté, maillechort, graphite
- S**
- H**

Matière de coupe	<b>HSS</b>
Surface	<b>F</b>
Sens de coupe	<b>R</b>

Forets hélicoïdaux à queue cylindrique

**GÜHRING NAVIGATOR**

Paramètres de coupe, page 780



N° d'article **2456**

d1		l1	l2
mm	inch	mm	mm
1,000		34,000	12,000
1,100		36,000	14,000
1,200		38,000	16,000
1,300		38,000	16,000
1,400		40,000	18,000
1,500		40,000	18,000
1,600		43,000	20,000
1,700		43,000	20,000
1,800		46,000	22,000
1,900		46,000	22,000
2,000		49,000	24,000
2,100		49,000	24,000
2,200		53,000	27,000
2,300		53,000	27,000
2,400		57,000	30,000
2,500		57,000	30,000
2,600		57,000	30,000
2,700		61,000	33,000
2,800		61,000	33,000
2,900		61,000	33,000
3,000		61,000	33,000
3,100		65,000	36,000
3,200		65,000	36,000
3,300		65,000	36,000
3,400		70,000	39,000
3,500		70,000	39,000
3,600		70,000	39,000
3,700		70,000	39,000
3,800		75,000	43,000
3,900		75,000	43,000
4,000		75,000	43,000
4,100		75,000	43,000
4,200		75,000	43,000
4,300		80,000	47,000
4,400		80,000	47,000
4,500		80,000	47,000
4,600		80,000	47,000
4,800		86,000	52,000
5,000		86,000	52,000
5,100		86,000	52,000
5,200		86,000	52,000
5,500		93,000	57,000

d1		l1	l2
mm	inch	mm	mm
5,600		93,000	57,000
5,700		93,000	57,000
5,800		93,000	57,000
5,900		93,000	57,000
6,000		93,000	57,000
6,100		101,000	63,000
6,200		101,000	63,000
6,300		101,000	63,000
6,400		101,000	63,000
6,500		101,000	63,000
6,600		101,000	63,000
6,700		101,000	63,000
6,800		109,000	69,000
6,900		109,000	69,000
7,000		109,000	69,000
7,200		109,000	69,000
7,300		109,000	69,000
7,400		109,000	69,000
7,500		109,000	69,000
7,600		117,000	75,000
7,700		117,000	75,000
7,800		117,000	75,000
7,900		117,000	75,000
8,000		117,000	75,000
8,100		117,000	75,000
8,200		117,000	75,000
8,300		117,000	75,000
8,500		117,000	75,000
8,600		125,000	81,000
8,700		125,000	81,000
8,800		125,000	81,000
8,900		125,000	81,000
9,000		125,000	81,000
9,500		125,000	81,000
9,600		133,000	87,000
9,700		133,000	87,000
9,800		133,000	87,000
9,900		133,000	87,000
10,000		133,000	87,000
10,100		133,000	87,000
10,200		133,000	87,000
10,300		133,000	87,000





d1		l1	l2
mm	inch	mm	mm
10,400		133,000	87,000
10,700		142,000	94,000
11,000		142,000	94,000
11,100		142,000	94,000
11,400		142,000	94,000
11,700		142,000	94,000

d1		l1	l2
mm	inch	mm	mm
11,900		151,000	101,000
12,700	1/2	151,000	101,000
13,000		151,000	101,000
14,000		160,000	108,000
14,500		169,000	114,000



Forets hélicoïdaux courts



Matière de coupe **HSS**

Surface

Sens de coupe

**P** • Amin. de l'âme  $\geq \varnothing 2,370$  • affûtage à dépouille conique

**M**

**K** •

**N** ○ acier, fonte aciérée (alliée / non alliée) • fontes grises, fontes malléables, fontes à graphite sphéroïdal • fer fritté, mallechort, graphite

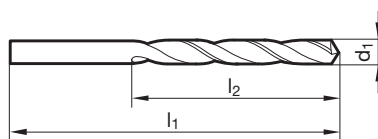
**S**

**H**

**GÜHRING** NAVIGATOR

Paramètres de coupe, page 778

Forets hélicoïdaux à queue cylindrique



N° d'article **560**

d1		l1	l2
mm	inch	mm	mm
2,400		57,000	30,000
2,500		57,000	30,000
2,580		57,000	30,000
2,600		57,000	30,000
2,640		57,000	30,000
2,700		61,000	33,000
2,710		61,000	33,000
2,750		61,000	33,000
2,790		61,000	33,000
2,800		61,000	33,000
2,820		61,000	33,000
2,850		61,000	33,000
2,870		61,000	33,000
2,950		61,000	33,000
3,000		61,000	33,000
3,050		65,000	36,000
3,200		65,000	36,000
3,240		65,000	36,000
3,260		65,000	36,000
3,300		65,000	36,000
3,400		70,000	39,000
3,450		70,000	39,000
3,500		70,000	39,000
3,570	9/64	70,000	39,000
3,600		70,000	39,000
3,650		70,000	39,000
3,660		70,000	39,000
3,700		70,000	39,000
3,730		70,000	39,000
3,800		75,000	43,000

d1		l1	l2
mm	inch	mm	mm
3,860		75,000	43,000
3,900		75,000	43,000
3,950		75,000	43,000
3,970	5/32	75,000	43,000
4,000		75,000	43,000
4,200		75,000	43,000
4,300		80,000	47,000
4,370	11/64	80,000	47,000
4,500		80,000	47,000
4,550		80,000	47,000
4,600		80,000	47,000
4,620		80,000	47,000
4,650		80,000	47,000
4,700		80,000	47,000
4,760	3/16	86,000	52,000
4,800		86,000	52,000
4,850		86,000	52,000
4,900		86,000	52,000
4,920		86,000	52,000
4,950		86,000	52,000
5,000		86,000	52,000
5,100		86,000	52,000
5,200		86,000	52,000
5,300		86,000	52,000
5,610		93,000	57,000



Forets hélicoïdaux courts



Matière de coupe **HSS**

Surface

Sens de coupe

**P** • Amin. de l'âme  $\geq \varnothing 3,000$  • affûtage à dépouille conique • avec tenon suiv. DIN 1809

**M**

**K** •

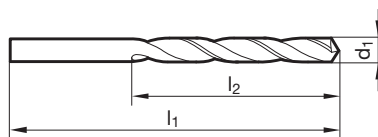
**N** ○ acier, fonte aciérée (alliée / non alliée) • fontes grises, fontes malléables, fontes à graphite sphéroïdal • fer fritté, maillechort, graphite

**S**

**H**

**GUHRING NAVIGATOR**

Paramètres de coupe, page 778



Forets hélicoïdaux à queue cylindrique

N° d'article **240**

d1		l1	l2
mm	inch	mm	mm
3,000		61,000	33,000
3,100		65,000	36,000
3,200		65,000	36,000
3,300		65,000	36,000
3,400		70,000	39,000
3,500		70,000	39,000
3,600		70,000	39,000
3,700		70,000	39,000
3,800		75,000	43,000
3,900		75,000	43,000
3,970	5/32	75,000	43,000
4,000		75,000	43,000
4,100		75,000	43,000
4,200		75,000	43,000
4,300		80,000	47,000
4,400		80,000	47,000
4,500		80,000	47,000
4,600		80,000	47,000
4,700		80,000	47,000
4,800		86,000	52,000
4,900		86,000	52,000
5,000		86,000	52,000
5,100		86,000	52,000
5,200		86,000	52,000
5,250		86,000	52,000
5,300		86,000	52,000
5,400		93,000	57,000
5,500		93,000	57,000
5,600		93,000	57,000
5,700		93,000	57,000
5,800		93,000	57,000
5,850		93,000	57,000
5,900		93,000	57,000
6,000		93,000	57,000
6,050		101,000	63,000
6,100		101,000	63,000
6,200		101,000	63,000
6,300		101,000	63,000
6,400		101,000	63,000
6,500		101,000	63,000
6,600		101,000	63,000
6,700		101,000	63,000

d1		l1	l2
mm	inch	mm	mm
6,800		109,000	69,000
6,900		109,000	69,000
7,000		109,000	69,000
7,100		109,000	69,000
7,200		109,000	69,000
7,500		109,000	69,000
7,600		117,000	75,000
7,700		117,000	75,000
7,800		117,000	75,000
8,000		117,000	75,000
8,100		117,000	75,000
8,200		117,000	75,000
8,300		117,000	75,000
8,400		117,000	75,000
8,500		117,000	75,000
8,600		125,000	81,000
8,700		125,000	81,000
8,800		125,000	81,000
9,000		125,000	81,000
9,100		125,000	81,000
9,250		125,000	81,000
9,300		125,000	81,000
9,400		125,000	81,000
9,500		125,000	81,000
9,600		133,000	87,000
9,800		133,000	87,000
10,000		133,000	87,000
10,100		133,000	87,000
10,200		133,000	87,000
10,500		133,000	87,000
11,000		142,000	94,000
11,500		142,000	94,000
12,000		151,000	101,000
13,000		151,000	101,000
13,490	17/32	160,000	108,000
15,000		169,000	114,000
16,000		178,000	120,000



Forets hélicoïdaux courts



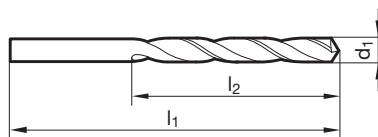
Matière de coupe	<b>HSS</b>
Surface	$\geq \frac{0}{6,00}$
Sens de coupe	

- P** • Amin. de l'âme  $\geq \varnothing 14,700$  • affûtage à dépouille conique
- M**
- K** •
- N** ○ acier, fonte aciérée (alliée / non alliée) • fontes grises, fontes malléables, fontes à graphite sphéroïdal • fer fritté, maillechort, graphite
- S**
- H**

Forets hélicoïdaux à queue cylindrique

**GÜHRING NAVIGATOR**

Paramètres de coupe, page 778



N° d'article **208**

d1		l1	l2
mm	inch	mm	mm
0,200		19,000	2,500
0,240		19,000	2,500
0,290		19,000	3,000
0,300		19,000	3,000
0,340		19,000	4,000
0,350		19,000	4,000
0,360		19,000	4,000
0,370		19,000	4,000
0,390		20,000	5,000
0,400	1/64	20,000	5,000
0,410		20,000	5,000
0,420		20,000	5,000
0,430		20,000	5,000
0,440		20,000	5,000
0,450		20,000	5,000
0,460		20,000	5,000
0,470		20,000	5,000
0,480		20,000	5,000
0,500		22,000	6,000
0,510		22,000	6,000
0,520		22,000	6,000
0,530		22,000	6,000
0,540		24,000	7,000
0,550		24,000	7,000
0,560		24,000	7,000
0,570		24,000	7,000
0,580		24,000	7,000
0,600		24,000	7,000
0,610		26,000	8,000
0,620		26,000	8,000
0,630		26,000	8,000
0,640		26,000	8,000
0,650		26,000	8,000
0,660		26,000	8,000
0,670		26,000	8,000
0,680		28,000	9,000
0,690		28,000	9,000
0,700		28,000	9,000
0,710		28,000	9,000
0,720		28,000	9,000
0,730		28,000	9,000
0,740		28,000	9,000

d1		l1	l2
mm	inch	mm	mm
0,750		28,000	9,000
0,770		30,000	10,000
0,775		30,000	10,000
0,780		30,000	10,000
0,790	1/32	30,000	10,000
0,800		30,000	10,000
0,810		30,000	10,000
0,820		30,000	10,000
0,830		30,000	10,000
0,840		30,000	10,000
0,850		30,000	10,000
0,860		32,000	11,000
0,870		32,000	11,000
0,880		32,000	11,000
0,890		32,000	11,000
0,900		32,000	11,000
0,910		32,000	11,000
0,930		32,000	11,000
0,950		32,000	11,000
0,960		34,000	12,000
0,970		34,000	12,000
0,980		34,000	12,000
0,990		34,000	12,000
1,000		34,000	12,000
1,020		34,000	12,000
1,040		34,000	12,000
1,050		34,000	12,000
1,070		36,000	14,000
1,080		36,000	14,000
1,090		36,000	14,000
1,100		36,000	14,000
1,110		36,000	14,000
1,120		36,000	14,000
1,130		36,000	14,000
1,150		36,000	14,000
1,170		36,000	14,000
1,180		36,000	14,000
1,190	3/64	38,000	16,000
1,200		38,000	16,000
1,210		38,000	16,000
1,220		38,000	16,000
1,250		38,000	16,000



d1		l1	l2
mm	inch	mm	mm
1,270		38,000	16,000
1,290		38,000	16,000
1,300		38,000	16,000
1,310		38,000	16,000
1,320		38,000	16,000
1,350		40,000	18,000
1,380		40,000	18,000
1,390		40,000	18,000
1,400		40,000	18,000
1,420		40,000	18,000
1,430		40,000	18,000
1,450		40,000	18,000
1,465		40,000	18,000
1,470		40,000	18,000
1,490		40,000	18,000
1,500		40,000	18,000
1,510		43,000	20,000
1,550		43,000	20,000
1,590	1/16	43,000	20,000
1,600		43,000	20,000
1,610		43,000	20,000
1,620		43,000	20,000
1,630		43,000	20,000
1,650		43,000	20,000
1,660		43,000	20,000
1,700		43,000	20,000
1,720		46,000	22,000
1,750		46,000	22,000
1,760		46,000	22,000
1,770		46,000	22,000
1,780		46,000	22,000
1,790		46,000	22,000
1,800		46,000	22,000
1,820		46,000	22,000
1,830		46,000	22,000
1,840		46,000	22,000
1,850		46,000	22,000
1,880		46,000	22,000
1,900		46,000	22,000
1,930		49,000	24,000
1,940		49,000	24,000
1,950		49,000	24,000
1,970		49,000	24,000
1,980	5/64	49,000	24,000
2,000		49,000	24,000
2,040		49,000	24,000
2,050		49,000	24,000
2,080		49,000	24,000
2,100		49,000	24,000
2,120		49,000	24,000
2,150		53,000	27,000
2,180		53,000	27,000
2,200		53,000	27,000
2,240		53,000	27,000
2,250		53,000	27,000
2,260		53,000	27,000
2,300		53,000	27,000
2,320		53,000	27,000
2,350		53,000	27,000
2,360		53,000	27,000
2,370		57,000	30,000
2,380	3/32	57,000	30,000
2,400		57,000	30,000
2,420		57,000	30,000
2,440		57,000	30,000
2,450		57,000	30,000
2,490		57,000	30,000
2,500		57,000	30,000
2,530		57,000	30,000
2,550		57,000	30,000
2,570		57,000	30,000
2,580		57,000	30,000

d1		l1	l2
mm	inch	mm	mm
2,600		57,000	30,000
2,640		57,000	30,000
2,650		57,000	30,000
2,660		61,000	33,000
2,670		61,000	33,000
2,700		61,000	33,000
2,710		61,000	33,000
2,730		61,000	33,000
2,750		61,000	33,000
2,780	7/64	61,000	33,000
2,800		61,000	33,000
2,870		61,000	33,000
2,880		61,000	33,000
2,900		61,000	33,000
2,910		61,000	33,000
2,950		61,000	33,000
2,970		61,000	33,000
3,000		61,000	33,000
3,020		65,000	36,000
3,030		65,000	36,000
3,050		65,000	36,000
3,100		65,000	36,000
3,150		65,000	36,000
3,170	1/8	65,000	36,000
3,200		65,000	36,000
3,220		65,000	36,000
3,250		65,000	36,000
3,260		65,000	36,000
3,280		65,000	36,000
3,300		65,000	36,000
3,320		65,000	36,000
3,330		65,000	36,000
3,340		65,000	36,000
3,370		70,000	39,000
3,380		70,000	39,000
3,400		70,000	39,000
3,450		70,000	39,000
3,470		70,000	39,000
3,500		70,000	39,000
3,530		70,000	39,000
3,570	9/64	70,000	39,000
3,600		70,000	39,000
3,650		70,000	39,000
3,700		70,000	39,000
3,750		70,000	39,000
3,800		75,000	43,000
3,850		75,000	43,000
3,870		75,000	43,000
3,900		75,000	43,000
3,910		75,000	43,000
3,950		75,000	43,000
3,970	5/32	75,000	43,000
4,000		75,000	43,000
4,050		75,000	43,000
4,090		75,000	43,000
4,100		75,000	43,000
4,130		75,000	43,000
4,150		75,000	43,000
4,200		75,000	43,000
4,250		75,000	43,000
4,300		80,000	47,000
4,350		80,000	47,000
4,370	11/64	80,000	47,000
4,390		80,000	47,000
4,400		80,000	47,000
4,450		80,000	47,000
4,500		80,000	47,000
4,520		80,000	47,000
4,530		80,000	47,000
4,550		80,000	47,000
4,570		80,000	47,000
4,600		80,000	47,000

Forets hélicoïdaux  
à queue cylindrique



Forets hélicoïdaux à queue cylindrique

d1		l1	l2
mm	inch	mm	mm
4,680		80,000	47,000
4,750		80,000	47,000
4,760	3/16	86,000	52,000
4,800		86,000	52,000
4,850		86,000	52,000
4,900		86,000	52,000
4,920		86,000	52,000
4,930		86,000	52,000
4,950		86,000	52,000
4,970		86,000	52,000
4,980		86,000	52,000
5,000		86,000	52,000
5,060		86,000	52,000
5,080		86,000	52,000
5,100		86,000	52,000
5,110		86,000	52,000
5,160	13/64	86,000	52,000
5,200		86,000	52,000
5,220		86,000	52,000
5,300		86,000	52,000
5,400		93,000	57,000
5,500		93,000	57,000
5,520		93,000	57,000
5,560	7/32	93,000	57,000
5,600		93,000	57,000
5,610		93,000	57,000
5,650		93,000	57,000
5,700		93,000	57,000
5,750		93,000	57,000
5,800		93,000	57,000
5,850		93,000	57,000
5,900		93,000	57,000
5,940		93,000	57,000
5,950	15/64	93,000	57,000
6,000		93,000	57,000
6,100		101,000	63,000
6,200		101,000	63,000
6,300		101,000	63,000
6,350	1/4	101,000	63,000
6,400		101,000	63,000
6,450		101,000	63,000
6,500		101,000	63,000
6,530		101,000	63,000
6,550		101,000	63,000
6,570		101,000	63,000
6,600		101,000	63,000
6,630		101,000	63,000
6,700		101,000	63,000
6,800		109,000	69,000
6,880		109,000	69,000
6,900		109,000	69,000
6,910		109,000	69,000
6,950		109,000	69,000
7,000		109,000	69,000
7,030		109,000	69,000
7,040		109,000	69,000
7,100		109,000	69,000
7,140	9/32	109,000	69,000
7,200		109,000	69,000
7,220		109,000	69,000
7,300		109,000	69,000
7,400		109,000	69,000
7,490		109,000	69,000
7,500		109,000	69,000
7,520		117,000	75,000
7,540	19/64	117,000	75,000
7,550		117,000	75,000
7,600		117,000	75,000
7,700		117,000	75,000
7,800		117,000	75,000
7,850		117,000	75,000
7,900		117,000	75,000

d1		l1	l2
mm	inch	mm	mm
7,940	5/16	117,000	75,000
8,000		117,000	75,000
8,100		117,000	75,000
8,200		117,000	75,000
8,330	21/64	117,000	75,000
8,500		117,000	75,000
8,600		125,000	81,000
8,610		125,000	81,000
8,650		125,000	81,000
8,700		125,000	81,000
8,800		125,000	81,000
9,000		125,000	81,000
9,100		125,000	81,000
9,130	23/64	125,000	81,000
9,200		125,000	81,000
9,300		125,000	81,000
9,400		125,000	81,000
9,500		125,000	81,000
9,520	3/8	133,000	87,000
9,600		133,000	87,000
9,700		133,000	87,000
9,750		133,000	87,000
9,900		133,000	87,000
9,920	25/64	133,000	87,000
10,000		133,000	87,000
10,080		133,000	87,000
10,100		133,000	87,000
10,200		133,000	87,000
10,300		133,000	87,000
10,500		133,000	87,000
10,750		142,000	94,000
11,000		142,000	94,000
11,110	7/16	142,000	94,000
11,250		142,000	94,000
11,500		142,000	94,000
11,510	29/64	142,000	94,000
11,800		142,000	94,000
11,900		151,000	101,000
11,910	15/32	151,000	101,000
12,000		151,000	101,000
12,300	31/64	151,000	101,000
12,500		151,000	101,000
12,600		151,000	101,000
12,700	1/2	151,000	101,000
12,750		151,000	101,000
12,800		151,000	101,000
13,000		160,000	108,000
13,250		160,000	108,000
13,400		160,000	108,000
13,600		160,000	108,000
13,750		160,000	108,000
13,800		160,000	108,000
14,000		160,000	108,000
14,700		169,000	114,000
14,800		169,000	114,000
14,900		169,000	114,000
15,000		169,000	114,000
15,050		178,000	120,000
15,500		178,000	120,000
15,600		178,000	120,000
15,700		178,000	120,000
15,750		178,000	120,000
15,800		178,000	120,000
15,870	5/8	178,000	120,000
16,000		178,000	120,000
17,250		191,000	130,000
17,500		191,000	130,000
19,000		198,000	135,000
19,050	3/4	205,000	140,000
19,500		205,000	140,000
20,000		205,000	140,000



Forets hélicoïdaux courts



Matière de coupe **HSS**

Surface **S**

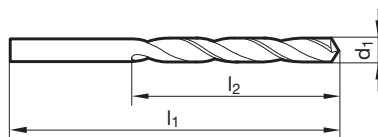
Sens de coupe **L**

**P** • Amin. de l'âme  $\geq \varnothing 2,380$  • affûtage à dépouille conique

- M**
- K** •
- N** ○ acier, fonte aciérée (alliée / non alliée) • fontes grises, fontes malléables, fontes à graphite sphéroïdal • fer fritté, maillechort, graphite
- S**
- H**

**GUHRING NAVIGATOR**

Paramètres de coupe, page 780



Forets hélicoïdaux à queue cylindrique

N° d'article **664**

d1		l1	l2
mm	inch	mm	mm
0,250		19,000	3,000
0,420		20,000	5,000
0,430		20,000	5,000
0,450		20,000	5,000
0,500		22,000	6,000
0,550		24,000	7,000
0,575		24,000	7,000
0,600		24,000	7,000
0,670		26,000	8,000
0,680		28,000	9,000
0,770		30,000	10,000
0,800		30,000	10,000
0,900		32,000	11,000
0,950		32,000	11,000
1,000		34,000	12,000
1,040		34,000	12,000
1,050		34,000	12,000
1,070		36,000	14,000
1,090		36,000	14,000
1,100		36,000	14,000
1,150		36,000	14,000
1,180		36,000	14,000
1,190	3/64	38,000	16,000
1,200		38,000	16,000
1,250		38,000	16,000
1,300		38,000	16,000
1,320		38,000	16,000
1,400		40,000	18,000
1,420		40,000	18,000
1,450		40,000	18,000
1,500		40,000	18,000
1,550		43,000	20,000
1,580		43,000	20,000
1,590	1/16	43,000	20,000
1,600		43,000	20,000
1,650		43,000	20,000
1,700		43,000	20,000
1,750		46,000	22,000
1,800		46,000	22,000
1,850		46,000	22,000
1,900		46,000	22,000
2,000		49,000	24,000

d1		l1	l2
mm	inch	mm	mm
2,050		49,000	24,000
2,100		49,000	24,000
2,150		53,000	27,000
2,300		53,000	27,000
2,360		53,000	27,000
2,380	3/32	57,000	30,000
2,400		57,000	30,000
2,450		57,000	30,000
2,500		57,000	30,000
2,580		57,000	30,000
2,600		57,000	30,000
2,650		57,000	30,000
2,700		61,000	33,000
2,710		61,000	33,000
2,750		61,000	33,000
2,780	7/64	61,000	33,000
2,800		61,000	33,000
2,850		61,000	33,000
2,870		61,000	33,000
2,900		61,000	33,000
2,950		61,000	33,000
3,000		61,000	33,000
3,050		65,000	36,000
3,100		65,000	36,000
3,170	1/8	65,000	36,000
3,200		65,000	36,000
3,300		65,000	36,000
3,400		70,000	39,000
3,500		70,000	39,000
3,570	9/64	70,000	39,000
3,700		70,000	39,000
3,750		70,000	39,000
3,800		75,000	43,000
3,970	5/32	75,000	43,000
4,000		75,000	43,000
4,100		75,000	43,000
4,200		75,000	43,000
4,300		80,000	47,000
4,370	11/64	80,000	47,000
4,400		80,000	47,000
4,500		80,000	47,000
4,700		80,000	47,000



Forets hélicoïdaux à queue cylindrique

d1		l1	l2
mm	inch	mm	mm
4,760	3/16	86,000	52,000
4,800		86,000	52,000
4,900		86,000	52,000
5,000		86,000	52,000
5,060	13/64	86,000	52,000
5,100		86,000	52,000
5,160		86,000	52,000
5,200		86,000	52,000
5,300	7/32	86,000	52,000
5,400		93,000	57,000
5,410		93,000	57,000
5,500		93,000	57,000
5,560	15/64	93,000	57,000
5,700		93,000	57,000
5,950		93,000	57,000
6,000		93,000	57,000
6,200	1/4	101,000	63,000
6,250		101,000	63,000
6,350		101,000	63,000
6,400		101,000	63,000
6,700	9/32	101,000	63,000
6,800		109,000	69,000
7,000		109,000	69,000
7,140		109,000	69,000
7,200	19/64	109,000	69,000
7,300		109,000	69,000
7,500		109,000	69,000
7,540		117,000	75,000
7,850	19/64	117,000	75,000
7,900		117,000	75,000

d1		l1	l2
mm	inch	mm	mm
8,000	11/32	117,000	75,000
8,500		117,000	75,000
8,730		125,000	81,000
8,800		125,000	81,000
9,100	23/64	125,000	81,000
9,130		125,000	81,000
9,400		125,000	81,000
9,500		125,000	81,000
9,600	25/64	133,000	87,000
9,800		133,000	87,000
9,920		133,000	87,000
10,000		133,000	87,000
10,200	13/32	133,000	87,000
10,320		133,000	87,000
10,900		142,000	94,000
11,000		142,000	94,000
12,000		151,000	101,000
12,400		151,000	101,000
12,500		151,000	101,000
13,500		160,000	108,000
14,250		169,000	114,000





Forets hélicoïdaux courts



Matière de coupe **HSS**

Surface

Sens de coupe

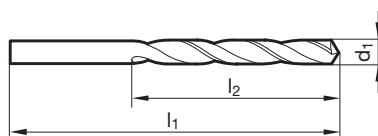
**P** Amin. de l'âme  $\geq \varnothing 14,500$  • affûtage à dépouille conique

- M**
- K**
- N** •
- S**
- H**

• matières dures et friables • laitons, alliages de magnésium • bronze, bronze phosphoreux • ardoise, mica, pertinax

**GUHRING** NAVIGATOR

Paramètres de coupe, page 778



Forets hélicoïdaux à queue cylindrique

N° d'article **206**

d1		l1	l2
mm	inch	mm	mm
0,200		19,000	2,500
0,210		19,000	2,500
0,220		19,000	2,500
0,240		19,000	2,500
0,250		19,000	3,000
0,280		19,000	3,000
0,290		19,000	3,000
0,300		19,000	3,000
0,310		19,000	4,000
0,320		19,000	4,000
0,340		19,000	4,000
0,350		19,000	4,000
0,400	1/64	20,000	5,000
0,410		20,000	5,000
0,420		20,000	5,000
0,440		20,000	5,000
0,450		20,000	5,000
0,460		20,000	5,000
0,480		20,000	5,000
0,500		22,000	6,000
0,520		22,000	6,000
0,530		22,000	6,000
0,550		24,000	7,000
0,560		24,000	7,000
0,570		24,000	7,000
0,600		24,000	7,000
0,620		26,000	8,000
0,640		26,000	8,000
0,650		26,000	8,000
0,660		26,000	8,000
0,670		26,000	8,000
0,680		28,000	9,000
0,690		28,000	9,000
0,700		28,000	9,000
0,710		28,000	9,000
0,720		28,000	9,000
0,730		28,000	9,000
0,740		28,000	9,000
0,750		28,000	9,000
0,760		30,000	10,000
0,770		30,000	10,000
0,780		30,000	10,000

d1		l1	l2
mm	inch	mm	mm
0,790	1/32	30,000	10,000
0,800		30,000	10,000
0,810		30,000	10,000
0,820		30,000	10,000
0,830		30,000	10,000
0,840		30,000	10,000
0,850		30,000	10,000
0,860		32,000	11,000
0,870		32,000	11,000
0,880		32,000	11,000
0,890		32,000	11,000
0,900		32,000	11,000
0,910		32,000	11,000
0,930		32,000	11,000
0,950		32,000	11,000
0,960		34,000	12,000
0,970		34,000	12,000
0,980		34,000	12,000
0,990		34,000	12,000
1,000		34,000	12,000
1,020		34,000	12,000
1,030		34,000	12,000
1,040		34,000	12,000
1,050		34,000	12,000
1,060		34,000	12,000
1,070		36,000	14,000
1,080		36,000	14,000
1,100		36,000	14,000
1,120		36,000	14,000
1,130		36,000	14,000
1,140		36,000	14,000
1,150		36,000	14,000
1,160		36,000	14,000
1,180		36,000	14,000
1,190	3/64	38,000	16,000
1,200		38,000	16,000
1,220		38,000	16,000
1,230		38,000	16,000
1,250		38,000	16,000
1,270		38,000	16,000
1,280		38,000	16,000
1,300		38,000	16,000



Forets hélicoïdaux à queue cylindrique

d1		l1	l2
mm	inch	mm	mm
1,320		38,000	16,000
1,330		40,000	18,000
1,350		40,000	18,000
1,370		40,000	18,000
1,380		40,000	18,000
1,400		40,000	18,000
1,420		40,000	18,000
1,430		40,000	18,000
1,440		40,000	18,000
1,450		40,000	18,000
1,470		40,000	18,000
1,480		40,000	18,000
1,490		40,000	18,000
1,500		40,000	18,000
1,520		43,000	20,000
1,530		43,000	20,000
1,540		43,000	20,000
1,550		43,000	20,000
1,590	1/16	43,000	20,000
1,600		43,000	20,000
1,620		43,000	20,000
1,650		43,000	20,000
1,670		43,000	20,000
1,700		43,000	20,000
1,720		46,000	22,000
1,730		46,000	22,000
1,750		46,000	22,000
1,780		46,000	22,000
1,800		46,000	22,000
1,820		46,000	22,000
1,850		46,000	22,000
1,870		46,000	22,000
1,900		46,000	22,000
1,920		49,000	24,000
1,950		49,000	24,000
1,960		49,000	24,000
1,980	5/64	49,000	24,000
2,000		49,000	24,000
2,010		49,000	24,000
2,020		49,000	24,000
2,030		49,000	24,000
2,040		49,000	24,000
2,050		49,000	24,000
2,060		49,000	24,000
2,070		49,000	24,000
2,080		49,000	24,000
2,100		49,000	24,000
2,120		49,000	24,000
2,150		53,000	27,000
2,180		53,000	27,000
2,200		53,000	27,000
2,220		53,000	27,000
2,230		53,000	27,000
2,250		53,000	27,000
2,270		53,000	27,000
2,300		53,000	27,000
2,320		53,000	27,000
2,350		53,000	27,000
2,380	3/32	57,000	30,000
2,400		57,000	30,000
2,450		57,000	30,000
2,470		57,000	30,000
2,480		57,000	30,000
2,500		57,000	30,000
2,520		57,000	30,000
2,530		57,000	30,000
2,550		57,000	30,000
2,570		57,000	30,000
2,600		57,000	30,000
2,640		57,000	30,000
2,650		57,000	30,000
2,700		61,000	33,000

d1		l1	l2
mm	inch	mm	mm
2,710		61,000	33,000
2,750		61,000	33,000
2,780	7/64	61,000	33,000
2,800		61,000	33,000
2,820		61,000	33,000
2,840		61,000	33,000
2,850		61,000	33,000
2,900		61,000	33,000
2,920		61,000	33,000
2,950		61,000	33,000
2,970		61,000	33,000
3,000		61,000	33,000
3,010		65,000	36,000
3,020		65,000	36,000
3,030		65,000	36,000
3,040		65,000	36,000
3,050		65,000	36,000
3,060		65,000	36,000
3,070		65,000	36,000
3,100		65,000	36,000
3,120		65,000	36,000
3,150		65,000	36,000
3,170	1/8	65,000	36,000
3,200		65,000	36,000
3,220		65,000	36,000
3,250		65,000	36,000
3,260		65,000	36,000
3,300		65,000	36,000
3,350		65,000	36,000
3,400		70,000	39,000
3,410		70,000	39,000
3,450		70,000	39,000
3,470		70,000	39,000
3,500		70,000	39,000
3,520		70,000	39,000
3,550		70,000	39,000
3,570	9/64	70,000	39,000
3,600		70,000	39,000
3,650		70,000	39,000
3,700		70,000	39,000
3,720		70,000	39,000
3,750		70,000	39,000
3,800		75,000	43,000
3,830		75,000	43,000
3,850		75,000	43,000
3,870		75,000	43,000
3,880		75,000	43,000
3,900		75,000	43,000
3,910		75,000	43,000
3,950		75,000	43,000
3,970	5/32	75,000	43,000
4,000		75,000	43,000
4,020		75,000	43,000
4,040		75,000	43,000
4,050		75,000	43,000
4,070		75,000	43,000
4,100		75,000	43,000
4,150		75,000	43,000
4,200		75,000	43,000
4,250		75,000	43,000
4,300		80,000	47,000
4,350		80,000	47,000
4,370	11/64	80,000	47,000
4,400		80,000	47,000
4,420		80,000	47,000
4,450		80,000	47,000
4,500		80,000	47,000
4,600		80,000	47,000
4,650		80,000	47,000
4,700		80,000	47,000
4,750		80,000	47,000
4,760	3/16	86,000	52,000



d1		l1	l2
mm	inch	mm	mm
4,800		86,000	52,000
4,850		86,000	52,000
4,900		86,000	52,000
4,950		86,000	52,000
5,000		86,000	52,000
5,050		86,000	52,000
5,100		86,000	52,000
5,150		86,000	52,000
5,160	13/64	86,000	52,000
5,200		86,000	52,000
5,250		86,000	52,000
5,300		86,000	52,000
5,310		93,000	57,000
5,400		93,000	57,000
5,450		93,000	57,000
5,500		93,000	57,000
5,560	7/32	93,000	57,000
5,600		93,000	57,000
5,700		93,000	57,000
5,750		93,000	57,000
5,800		93,000	57,000
5,850		93,000	57,000
5,900		93,000	57,000
5,950	15/64	93,000	57,000
6,000		93,000	57,000
6,050		101,000	63,000
6,100		101,000	63,000
6,150		101,000	63,000
6,200		101,000	63,000
6,250		101,000	63,000
6,300		101,000	63,000
6,350	1/4	101,000	63,000
6,400		101,000	63,000
6,450		101,000	63,000
6,500		101,000	63,000
6,530		101,000	63,000
6,550		101,000	63,000
6,600		101,000	63,000
6,700		101,000	63,000
6,750	17/64	109,000	69,000
6,800		109,000	69,000
6,900		109,000	69,000
7,000		109,000	69,000
7,050		109,000	69,000
7,100		109,000	69,000
7,140	9/32	109,000	69,000
7,200		109,000	69,000
7,250		109,000	69,000
7,300		109,000	69,000
7,350		109,000	69,000
7,400		109,000	69,000
7,500		109,000	69,000
7,540	19/64	117,000	75,000
7,600		117,000	75,000
7,700		117,000	75,000
7,800		117,000	75,000
7,850		117,000	75,000
7,900		117,000	75,000
7,940	5/16	117,000	75,000
8,000		117,000	75,000
8,050		117,000	75,000
8,100		117,000	75,000
8,200		117,000	75,000
8,250		117,000	75,000
8,300		117,000	75,000
8,330	21/64	117,000	75,000

d1		l1	l2
mm	inch	mm	mm
8,400		117,000	75,000
8,500		117,000	75,000
8,600		125,000	81,000
8,700		125,000	81,000
8,730	11/32	125,000	81,000
8,750		125,000	81,000
8,800		125,000	81,000
8,900		125,000	81,000
9,000		125,000	81,000
9,100		125,000	81,000
9,130	23/64	125,000	81,000
9,200		125,000	81,000
9,250		125,000	81,000
9,300		125,000	81,000
9,400		125,000	81,000
9,500		125,000	81,000
9,520	3/8	133,000	87,000
9,600		133,000	87,000
9,700		133,000	87,000
9,800		133,000	87,000
9,900		133,000	87,000
9,920	25/64	133,000	87,000
10,000		133,000	87,000
10,100		133,000	87,000
10,150		133,000	87,000
10,200		133,000	87,000
10,250		133,000	87,000
10,300		133,000	87,000
10,320	13/32	133,000	87,000
10,500		133,000	87,000
10,600		133,000	87,000
10,720	27/64	142,000	94,000
10,800		142,000	94,000
10,900		142,000	94,000
11,000		142,000	94,000
11,100		142,000	94,000
11,110	7/16	142,000	94,000
11,200		142,000	94,000
11,400		142,000	94,000
11,500		142,000	94,000
11,510	29/64	142,000	94,000
11,700		142,000	94,000
11,900		151,000	101,000
12,000		151,000	101,000
12,100		151,000	101,000
12,200		151,000	101,000
12,300	31/64	151,000	101,000
12,500		151,000	101,000
12,700	1/2	151,000	101,000
12,800		151,000	101,000
13,000		151,000	101,000
13,200		151,000	101,000
13,500		160,000	108,000
14,000		160,000	108,000
14,500		169,000	114,000
15,000		169,000	114,000
15,500		178,000	120,000
16,000		178,000	120,000
17,000		184,000	125,000
18,000		191,000	130,000
19,000		198,000	135,000
20,000		205,000	140,000

Forets hélicoïdaux  
à queue cylindrique



## Forets hélicoïdaux courts



Matière de coupe **HSS**

Surface

Sens de coupe

**P** Amin. de l'âme  $\geq \varnothing 14,200$  • affûtage à dépouille conique

**M**

**K**

**N** • matières dures et friables • laitons, alliages de magnésium • bronze, bronze phosphoreux • ardoise, mica, pertinax

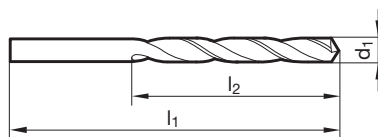
**S**

**H**

## GUHRING NAVIGATOR

Paramètres de coupe, page 778

Forets hélicoïdaux à queue cylindrique



N° d'article **209**

d1		l1	l2
mm	inch	mm	mm
0,300		19,000	3,000
0,400	1/64	20,000	5,000
0,450		20,000	5,000
0,480		20,000	5,000
0,490		22,000	6,000
0,500		22,000	6,000
0,530		22,000	6,000
0,540		24,000	7,000
0,550		24,000	7,000
0,580		24,000	7,000
0,590		24,000	7,000
0,600		24,000	7,000
0,620		26,000	8,000
0,640		26,000	8,000
0,660		26,000	8,000
0,670		26,000	8,000
0,680		28,000	9,000
0,700		28,000	9,000
0,710		28,000	9,000
0,720		28,000	9,000
0,730		28,000	9,000
0,740		28,000	9,000
0,750		28,000	9,000
0,780		30,000	10,000
0,800		30,000	10,000
0,810		30,000	10,000
0,860		32,000	11,000
0,880		32,000	11,000
0,900		32,000	11,000
0,910		32,000	11,000
0,920		32,000	11,000
0,940		32,000	11,000
0,950		32,000	11,000
0,960		34,000	12,000
0,970		34,000	12,000
1,000		34,000	12,000
1,020		34,000	12,000
1,030		34,000	12,000
1,060		34,000	12,000
1,080		36,000	14,000
1,100		36,000	14,000
1,120		36,000	14,000

d1		l1	l2
mm	inch	mm	mm
1,130		36,000	14,000
1,150		36,000	14,000
1,160		36,000	14,000
1,165		36,000	14,000
1,170		36,000	14,000
1,200		38,000	16,000
1,210		38,000	16,000
1,220		38,000	16,000
1,230		38,000	16,000
1,240		38,000	16,000
1,250		38,000	16,000
1,260		38,000	16,000
1,270		38,000	16,000
1,280		38,000	16,000
1,300		38,000	16,000
1,320		38,000	16,000
1,380		40,000	18,000
1,400		40,000	18,000
1,410		40,000	18,000
1,450		40,000	18,000
1,480		40,000	18,000
1,500		40,000	18,000
1,520		43,000	20,000
1,550		43,000	20,000
1,560		43,000	20,000
1,600		43,000	20,000
1,610		43,000	20,000
1,620		43,000	20,000
1,640		43,000	20,000
1,650		43,000	20,000
1,670		43,000	20,000
1,680		43,000	20,000
1,700		43,000	20,000
1,720		46,000	22,000
1,730		46,000	22,000
1,740		46,000	22,000
1,750		46,000	22,000
1,800		46,000	22,000
1,810		46,000	22,000
1,820		46,000	22,000
1,830		46,000	22,000
1,850		46,000	22,000



d1		l1	l2
mm	inch	mm	mm
1,860		46,000	22,000
1,870		46,000	22,000
1,890		46,000	22,000
1,900		46,000	22,000
1,930		49,000	24,000
1,980	5/64	49,000	24,000
2,000		49,000	24,000
2,030		49,000	24,000
2,050		49,000	24,000
2,060		49,000	24,000
2,100		49,000	24,000
2,140		53,000	27,000
2,150		53,000	27,000
2,200		53,000	27,000
2,220		53,000	27,000
2,230		53,000	27,000
2,240		53,000	27,000
2,250		53,000	27,000
2,280		53,000	27,000
2,290		53,000	27,000
2,300		53,000	27,000
2,350		53,000	27,000
2,380	3/32	57,000	30,000
2,390		57,000	30,000
2,400		57,000	30,000
2,420		57,000	30,000
2,450		57,000	30,000
2,470		57,000	30,000
2,500		57,000	30,000
2,520		57,000	30,000
2,530		57,000	30,000
2,550		57,000	30,000
2,570		57,000	30,000
2,600		57,000	30,000
2,650		57,000	30,000
2,700		61,000	33,000
2,750		61,000	33,000
2,800		61,000	33,000
2,820		61,000	33,000
2,830		61,000	33,000
2,850		61,000	33,000
2,900		61,000	33,000
2,930		61,000	33,000
3,000		61,000	33,000
3,030		65,000	36,000
3,050		65,000	36,000
3,070		65,000	36,000
3,080		65,000	36,000
3,100		65,000	36,000
3,150		65,000	36,000
3,160		65,000	36,000
3,170	1/8	65,000	36,000
3,175		65,000	36,000
3,200		65,000	36,000
3,250		65,000	36,000
3,270		65,000	36,000
3,300		65,000	36,000
3,340		65,000	36,000
3,350		65,000	36,000
3,380		70,000	39,000
3,400		70,000	39,000
3,450		70,000	39,000
3,470		70,000	39,000
3,500		70,000	39,000
3,550		70,000	39,000
3,580		70,000	39,000
3,650		70,000	39,000
3,700		70,000	39,000
3,710		70,000	39,000
3,730		70,000	39,000
3,830		75,000	43,000
3,900		75,000	43,000

d1		l1	l2
mm	inch	mm	mm
3,950		75,000	43,000
3,960		75,000	43,000
4,000		75,000	43,000
4,050		75,000	43,000
4,070		75,000	43,000
4,100		75,000	43,000
4,120		75,000	43,000
4,200		75,000	43,000
4,220		75,000	43,000
4,250		75,000	43,000
4,280		80,000	47,000
4,300		80,000	47,000
4,370	11/64	80,000	47,000
4,400		80,000	47,000
4,450		80,000	47,000
4,500		80,000	47,000
4,550		80,000	47,000
4,600		80,000	47,000
4,700		80,000	47,000
4,800		86,000	52,000
4,850		86,000	52,000
4,870		86,000	52,000
4,950		86,000	52,000
5,000		86,000	52,000
5,050		86,000	52,000
5,100		86,000	52,000
5,200		86,000	52,000
5,250		86,000	52,000
5,300		86,000	52,000
5,400		93,000	57,000
5,500		93,000	57,000
5,650		93,000	57,000
5,800		93,000	57,000
5,850		93,000	57,000
6,000		93,000	57,000
6,050		101,000	63,000
6,100		101,000	63,000
6,120		101,000	63,000
6,130		101,000	63,000
6,150		101,000	63,000
6,250		101,000	63,000
6,300		101,000	63,000
6,450		101,000	63,000
6,500		101,000	63,000
6,650		101,000	63,000
6,700		101,000	63,000
6,900		109,000	69,000
7,000		109,000	69,000
7,100		109,000	69,000
7,150		109,000	69,000
7,200		109,000	69,000
7,220		109,000	69,000
7,300		109,000	69,000
7,350		109,000	69,000
7,550		117,000	75,000
7,750		117,000	75,000
7,800		117,000	75,000
8,000		117,000	75,000
8,050		117,000	75,000
8,100		117,000	75,000
8,300		117,000	75,000
8,400		117,000	75,000
8,450		117,000	75,000
8,500		117,000	75,000
8,600		125,000	81,000
8,800		125,000	81,000
9,000		125,000	81,000
9,100		125,000	81,000
9,250		125,000	81,000
9,400		125,000	81,000
9,500		125,000	81,000
9,750		133,000	87,000

Forets hélicoïdaux  
à queue cylindrique



Forets hélicoïdaux à queue cylindrique

d1		l1	l2
mm	inch	mm	mm
9,800		133,000	87,000
9,850		133,000	87,000
10,000		133,000	87,000
10,500		133,000	87,000
11,100		142,000	94,000
11,400		142,000	94,000
11,500		142,000	94,000
12,050		151,000	101,000
12,100		151,000	101,000
12,150		151,000	101,000
12,200		151,000	101,000
12,300	31/64	151,000	101,000
12,800		151,000	101,000
13,100	33/64	151,000	101,000
13,300		160,000	108,000
13,500		160,000	108,000
13,800		160,000	108,000
14,200		169,000	114,000

d1		l1	l2
mm	inch	mm	mm
14,300		169,000	114,000
14,400		169,000	114,000
14,500		169,000	114,000
15,100		178,000	120,000
15,300		178,000	120,000
15,500		178,000	120,000
16,000		178,000	120,000
17,000		184,000	125,000
18,000		191,000	130,000
20,000		205,000	140,000



Forets hélicoïdaux courts



Matière de coupe **HSS**

Surface

Sens de coupe

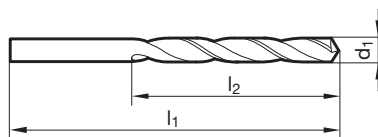
**P** Amin. de l'âme  $\geq \varnothing 14,500$  • affûtage à dépouille conique

- M**
- K**
- N** •
- S**
- H**

• matières tendres et à copeaux longs • aluminium/alliages d'aluminium à copeaux longs • zinc, cuivre de 1ère fusion, Alpax, électrode • matières plastiques souples • bois

**GUHRING NAVIGATOR**

Paramètres de coupe, page 778



Forets hélicoïdaux à queue cylindrique

N° d'article **207**

d1		l1	l2
mm	inch	mm	mm
0,200		19,000	2,500
0,250		19,000	3,000
0,300		19,000	3,000
0,340		19,000	4,000
0,350		19,000	4,000
0,400	1/64	20,000	5,000
0,410		20,000	5,000
0,450		20,000	5,000
0,460		20,000	5,000
0,500		22,000	6,000
0,520		22,000	6,000
0,550		24,000	7,000
0,570		24,000	7,000
0,600		24,000	7,000
0,610		26,000	8,000
0,620		26,000	8,000
0,650		26,000	8,000
0,660		26,000	8,000
0,700		28,000	9,000
0,720		28,000	9,000
0,750		28,000	9,000
0,790	1/32	30,000	10,000
0,800		30,000	10,000
0,810		30,000	10,000
0,840		30,000	10,000
0,850		30,000	10,000
0,860		32,000	11,000
0,870		32,000	11,000
0,900		32,000	11,000
0,950		32,000	11,000
0,970		34,000	12,000
0,990		34,000	12,000
1,000		34,000	12,000
1,010		34,000	12,000
1,020		34,000	12,000
1,050		34,000	12,000
1,100		36,000	14,000
1,110		36,000	14,000
1,120		36,000	14,000
1,140		36,000	14,000
1,150		36,000	14,000
1,180		36,000	14,000

d1		l1	l2
mm	inch	mm	mm
1,190	3/64	38,000	16,000
1,200		38,000	16,000
1,220		38,000	16,000
1,250		38,000	16,000
1,270		38,000	16,000
1,280		38,000	16,000
1,300		38,000	16,000
1,330		40,000	18,000
1,350		40,000	18,000
1,380		40,000	18,000
1,400		40,000	18,000
1,420		40,000	18,000
1,430		40,000	18,000
1,450		40,000	18,000
1,500		40,000	18,000
1,510		43,000	20,000
1,520		43,000	20,000
1,530		43,000	20,000
1,550		43,000	20,000
1,570		43,000	20,000
1,580		43,000	20,000
1,590	1/16	43,000	20,000
1,600		43,000	20,000
1,610		43,000	20,000
1,630		43,000	20,000
1,650		43,000	20,000
1,660		43,000	20,000
1,680		43,000	20,000
1,700		43,000	20,000
1,750		46,000	22,000
1,770		46,000	22,000
1,780		46,000	22,000
1,800		46,000	22,000
1,820		46,000	22,000
1,850		46,000	22,000
1,900		46,000	22,000
1,920		49,000	24,000
1,930		49,000	24,000
1,950		49,000	24,000
1,980	5/64	49,000	24,000
2,000		49,000	24,000
2,020		49,000	24,000



Forets hélicoïdaux à queue cylindrique

d1		l1	l2
mm	inch	mm	mm
2,030		49,000	24,000
2,050		49,000	24,000
2,060		49,000	24,000
2,080		49,000	24,000
2,100		49,000	24,000
2,150		53,000	27,000
2,200		53,000	27,000
2,250		53,000	27,000
2,270		53,000	27,000
2,300		53,000	27,000
2,320		53,000	27,000
2,350		53,000	27,000
2,380	3/32	57,000	30,000
2,400		57,000	30,000
2,450		57,000	30,000
2,500		57,000	30,000
2,530		57,000	30,000
2,550		57,000	30,000
2,600		57,000	30,000
2,650		57,000	30,000
2,700		61,000	33,000
2,730		61,000	33,000
2,750		61,000	33,000
2,780	7/64	61,000	33,000
2,800		61,000	33,000
2,820		61,000	33,000
2,830		61,000	33,000
2,850		61,000	33,000
2,900		61,000	33,000
2,930		61,000	33,000
2,950		61,000	33,000
3,000		61,000	33,000
3,030		65,000	36,000
3,050		65,000	36,000
3,100		65,000	36,000
3,150		65,000	36,000
3,170	1/8	65,000	36,000
3,200		65,000	36,000
3,250		65,000	36,000
3,260		65,000	36,000
3,300		65,000	36,000
3,350		65,000	36,000
3,380		70,000	39,000
3,400		70,000	39,000
3,450		70,000	39,000
3,500		70,000	39,000
3,550		70,000	39,000
3,570	9/64	70,000	39,000
3,600		70,000	39,000
3,650		70,000	39,000
3,700		70,000	39,000
3,730		70,000	39,000
3,750		70,000	39,000
3,800		75,000	43,000
3,850		75,000	43,000
3,900		75,000	43,000
3,950		75,000	43,000
3,970	5/32	75,000	43,000
4,000		75,000	43,000
4,030		75,000	43,000
4,040		75,000	43,000
4,050		75,000	43,000
4,100		75,000	43,000
4,150		75,000	43,000
4,200		75,000	43,000
4,220		75,000	43,000
4,250		75,000	43,000
4,300		80,000	47,000
4,350		80,000	47,000
4,370	11/64	80,000	47,000
4,390		80,000	47,000
4,400		80,000	47,000

d1		l1	l2
mm	inch	mm	mm
4,500		80,000	47,000
4,550		80,000	47,000
4,600		80,000	47,000
4,620		80,000	47,000
4,650		80,000	47,000
4,700		80,000	47,000
4,750		80,000	47,000
4,760	3/16	86,000	52,000
4,800		86,000	52,000
4,850		86,000	52,000
4,900		86,000	52,000
5,000		86,000	52,000
5,030		86,000	52,000
5,050		86,000	52,000
5,100		86,000	52,000
5,160	13/64	86,000	52,000
5,200		86,000	52,000
5,250		86,000	52,000
5,300		86,000	52,000
5,400		93,000	57,000
5,450		93,000	57,000
5,500		93,000	57,000
5,550		93,000	57,000
5,560	7/32	93,000	57,000
5,600		93,000	57,000
5,700		93,000	57,000
5,750		93,000	57,000
5,800		93,000	57,000
5,900		93,000	57,000
5,950	15/64	93,000	57,000
6,000		93,000	57,000
6,050		101,000	63,000
6,100		101,000	63,000
6,150		101,000	63,000
6,200		101,000	63,000
6,250		101,000	63,000
6,300		101,000	63,000
6,350	1/4	101,000	63,000
6,400		101,000	63,000
6,500		101,000	63,000
6,530		101,000	63,000
6,550		101,000	63,000
6,600		101,000	63,000
6,630		101,000	63,000
6,650		101,000	63,000
6,700		101,000	63,000
6,750	17/64	109,000	69,000
6,800		109,000	69,000
6,850		109,000	69,000
6,900		109,000	69,000
7,000		109,000	69,000
7,100		109,000	69,000
7,140	9/32	109,000	69,000
7,200		109,000	69,000
7,250		109,000	69,000
7,300		109,000	69,000
7,400		109,000	69,000
7,490		109,000	69,000
7,500		109,000	69,000
7,540	19/64	117,000	75,000
7,600		117,000	75,000
7,700		117,000	75,000
7,750		117,000	75,000
7,800		117,000	75,000
7,900		117,000	75,000
7,940	5/16	117,000	75,000
8,000		117,000	75,000
8,030		117,000	75,000
8,100		117,000	75,000
8,200		117,000	75,000
8,300		117,000	75,000
8,400		117,000	75,000





d1		l1	l2
mm	inch	mm	mm
8,450		117,000	75,000
8,500		117,000	75,000
8,600		125,000	81,000
8,700		125,000	81,000
8,730	11/32	125,000	81,000
8,750		125,000	81,000
8,800		125,000	81,000
8,840		125,000	81,000
8,900		125,000	81,000
9,000		125,000	81,000
9,090		125,000	81,000
9,100		125,000	81,000
9,130	23/64	125,000	81,000
9,200		125,000	81,000
9,250		125,000	81,000
9,300		125,000	81,000
9,340		125,000	81,000
9,400		125,000	81,000
9,500		125,000	81,000
9,520	3/8	133,000	87,000
9,600		133,000	87,000
9,700		133,000	87,000
9,800		133,000	87,000
9,900		133,000	87,000
9,920	25/64	133,000	87,000
10,000		133,000	87,000
10,080		133,000	87,000
10,100		133,000	87,000
10,200		133,000	87,000
10,250		133,000	87,000
10,260		133,000	87,000
10,400		133,000	87,000
10,500		133,000	87,000
10,700		142,000	94,000
10,800		142,000	94,000
10,900		142,000	94,000

d1		l1	l2
mm	inch	mm	mm
11,000		142,000	94,000
11,100		142,000	94,000
11,200		142,000	94,000
11,500		142,000	94,000
11,510	29/64	142,000	94,000
11,600		142,000	94,000
11,700		142,000	94,000
11,800		142,000	94,000
11,900		151,000	101,000
12,000		151,000	101,000
12,100		151,000	101,000
12,200		151,000	101,000
12,500		151,000	101,000
12,600		151,000	101,000
12,700	1/2	151,000	101,000
12,800		151,000	101,000
12,900		151,000	101,000
13,000		151,000	101,000
13,100	33/64	151,000	101,000
13,200		151,000	101,000
13,500		160,000	108,000
13,800		160,000	108,000
14,000		160,000	108,000
14,500		169,000	114,000
14,700		169,000	114,000
15,000		169,000	114,000
15,600		178,000	120,000
16,000		178,000	120,000
16,500		184,000	125,000
17,000		184,000	125,000
17,500		191,000	130,000
18,000		191,000	130,000
20,000		205,000	140,000

Forets hélicoïdaux  
à queue cylindrique



Forets hélicoïdaux courts



Matière de coupe **HSS**

Surface

Sens de coupe

**P** Amin. de l'âme  $\geq \varnothing 14,500$  • affûtage à dépouille conique

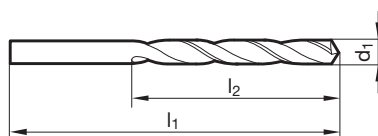
- M**
- K**
- N** •
- S**
- H**

• matières tendres et à copeaux longs • aluminium/alliages d'aluminium à copeaux longs • zinc, cuivre de 1ère fusion, Alpax, électrode • matières plastiques souples • bois

**GÜHRING** NAVIGATOR

Paramètres de coupe, page 778

Forets hélicoïdaux à queue cylindrique



N° d'article **210**

d1		l1	l2
mm	inch	mm	mm
0,250		19,000	3,000
0,270		19,000	3,000
0,280		19,000	3,000
0,320		19,000	4,000
0,330		19,000	4,000
0,340		19,000	4,000
0,360		19,000	4,000
0,390		20,000	5,000
0,400	1/64	20,000	5,000
0,410		20,000	5,000
0,420		20,000	5,000
0,430		20,000	5,000
0,450		20,000	5,000
0,470		20,000	5,000
0,490		22,000	6,000
0,500		22,000	6,000
0,525		22,000	6,000
0,530		22,000	6,000
0,560		24,000	7,000
0,590		24,000	7,000
0,600		24,000	7,000
0,610		26,000	8,000
0,660		26,000	8,000
0,710		28,000	9,000
0,720		28,000	9,000
0,730		28,000	9,000
0,740		28,000	9,000
0,750		28,000	9,000
0,760		30,000	10,000
0,770		30,000	10,000
0,790	1/32	30,000	10,000
0,800		30,000	10,000
0,810		30,000	10,000
0,825		30,000	10,000
0,840		30,000	10,000
0,850		30,000	10,000
0,860		32,000	11,000
0,880		32,000	11,000
0,890		32,000	11,000
0,900		32,000	11,000
0,950		32,000	11,000
0,970		34,000	12,000

d1		l1	l2
mm	inch	mm	mm
0,980		34,000	12,000
0,990		34,000	12,000
1,000		34,000	12,000
1,020		34,000	12,000
1,050		34,000	12,000
1,070		36,000	14,000
1,100		36,000	14,000
1,120		36,000	14,000
1,150		36,000	14,000
1,210		38,000	16,000
1,220		38,000	16,000
1,250		38,000	16,000
1,290		38,000	16,000
1,300		38,000	16,000
1,320		38,000	16,000
1,400		40,000	18,000
1,450		40,000	18,000
1,480		40,000	18,000
1,500		40,000	18,000
1,540		43,000	20,000
1,550		43,000	20,000
1,580		43,000	20,000
1,600		43,000	20,000
1,630		43,000	20,000
1,700		43,000	20,000
1,750		46,000	22,000
1,800		46,000	22,000
1,850		46,000	22,000
1,950		49,000	24,000
2,000		49,000	24,000
2,150		53,000	27,000
2,200		53,000	27,000
2,300		53,000	27,000
2,320		53,000	27,000
2,340		53,000	27,000
2,350		53,000	27,000
2,380	3/32	57,000	30,000
2,450		57,000	30,000
2,500		57,000	30,000
2,530		57,000	30,000
2,550		57,000	30,000
2,570		57,000	30,000



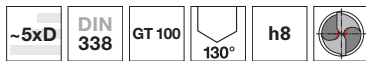
d1		l1	l2
mm	inch	mm	mm
2,600		57,000	30,000
2,650		57,000	30,000
2,700		61,000	33,000
2,750		61,000	33,000
2,800		61,000	33,000
2,900		61,000	33,000
2,950		61,000	33,000
2,970		61,000	33,000
3,000		61,000	33,000
3,130		65,000	36,000
3,170	1/8	65,000	36,000
3,200		65,000	36,000
3,250		65,000	36,000
3,280		65,000	36,000
3,300		65,000	36,000
3,380		70,000	39,000
3,400		70,000	39,000
3,450		70,000	39,000
3,500		70,000	39,000
3,550		70,000	39,000
3,600		70,000	39,000
3,650		70,000	39,000
3,700		70,000	39,000
3,750		70,000	39,000
3,800		75,000	43,000
3,820		75,000	43,000
3,860		75,000	43,000
3,900		75,000	43,000
3,910		75,000	43,000
3,920		75,000	43,000
4,000		75,000	43,000
4,030		75,000	43,000
4,050		75,000	43,000
4,100		75,000	43,000
4,200		75,000	43,000
4,400		80,000	47,000
4,500		80,000	47,000
4,520		80,000	47,000
4,550		80,000	47,000
4,600		80,000	47,000
4,700		80,000	47,000
4,720		80,000	47,000
4,750		80,000	47,000
4,850		86,000	52,000
4,900		86,000	52,000
4,950		86,000	52,000
5,000		86,000	52,000
5,020		86,000	52,000
5,100		86,000	52,000
5,150		86,000	52,000
5,200		86,000	52,000
5,400		93,000	57,000
5,450		93,000	57,000
5,500		93,000	57,000
5,560	7/32	93,000	57,000
5,600		93,000	57,000
5,620		93,000	57,000
5,800		93,000	57,000
5,850		93,000	57,000
5,900		93,000	57,000
5,950	15/64	93,000	57,000
6,000		93,000	57,000
6,030		101,000	63,000
6,050		101,000	63,000
6,080		101,000	63,000
6,100		101,000	63,000

d1		l1	l2
mm	inch	mm	mm
6,150		101,000	63,000
6,200		101,000	63,000
6,400		101,000	63,000
6,450		101,000	63,000
6,600		101,000	63,000
6,700		101,000	63,000
6,750	17/64	109,000	69,000
6,800		109,000	69,000
6,900		109,000	69,000
6,950		109,000	69,000
7,000		109,000	69,000
7,100		109,000	69,000
7,250		109,000	69,000
7,350		109,000	69,000
7,400		109,000	69,000
7,450		109,000	69,000
7,500		109,000	69,000
7,600		117,000	75,000
7,900		117,000	75,000
8,050		117,000	75,000
8,250		117,000	75,000
8,300		117,000	75,000
8,600		125,000	81,000
8,700		125,000	81,000
8,750		125,000	81,000
9,350		125,000	81,000
9,400		125,000	81,000
9,500		125,000	81,000
9,650		133,000	87,000
9,700		133,000	87,000
9,750		133,000	87,000
9,800		133,000	87,000
10,000		133,000	87,000
10,200		133,000	87,000
10,500		133,000	87,000
10,700		142,000	94,000
10,750		142,000	94,000
11,100		142,000	94,000
11,500		142,000	94,000
11,750		142,000	94,000
11,800		142,000	94,000
11,950		151,000	101,000
12,100		151,000	101,000
12,200		151,000	101,000
12,250		151,000	101,000
12,500		151,000	101,000
12,800		151,000	101,000
13,200		151,000	101,000
14,500		169,000	114,000
15,000		169,000	114,000
15,500		178,000	120,000
16,000		178,000	120,000
16,200		184,000	125,000
17,000		184,000	125,000
17,300		191,000	130,000
17,500		191,000	130,000
17,600		191,000	130,000
18,000		191,000	130,000
19,000		198,000	135,000
19,500		205,000	140,000
19,800		205,000	140,000
20,000		205,000	140,000

Forets hélicoïdaux  
à queue cylindrique



## Forets hélicoïdaux courts



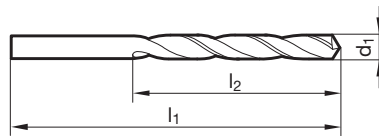
Matière de coupe	<b>HSS</b>
Surface	
Sens de coupe	

- P** • Amin. de l'âme  $\geq \varnothing 0,970$  • affûtage à dépouille conique • goujures larges • parfait pour les profondeurs  $> 3xD$
- M**
- K** •
- N** • fontes grises • aciers jusqu'à 1000 N/mm<sup>2</sup> • Ne pas utiliser pour les aciers CrNi et les aciers inox
- S**
- H**

## GÜHRING NAVIGATOR

Paramètres de coupe, page 778

Forets hélicoïdaux à queue cylindrique



N° d'article **549**

d1		l1	l2	d1		l1	l2
mm	inch	mm	mm	mm	inch	mm	mm
0,600		24,000	7,000	1,620		43,000	20,000
0,700		28,000	9,000	1,650		43,000	20,000
0,710		28,000	9,000	1,660		43,000	20,000
0,790	1/32	30,000	10,000	1,670		43,000	20,000
0,800		30,000	10,000	1,680		43,000	20,000
0,890		32,000	11,000	1,690		43,000	20,000
0,900		32,000	11,000	1,700		43,000	20,000
0,950		32,000	11,000	1,720		46,000	22,000
0,970		34,000	12,000	1,750		46,000	22,000
0,990		34,000	12,000	1,780		46,000	22,000
1,000		34,000	12,000	1,800		46,000	22,000
1,020		34,000	12,000	1,820		46,000	22,000
1,040		34,000	12,000	1,850		46,000	22,000
1,050		34,000	12,000	1,860		46,000	22,000
1,070		36,000	14,000	1,900		46,000	22,000
1,090		36,000	14,000	1,930		49,000	24,000
1,100		36,000	14,000	1,950		49,000	24,000
1,150		36,000	14,000	1,980	5/64	49,000	24,000
1,180		36,000	14,000	1,990		49,000	24,000
1,190	3/64	38,000	16,000	2,000		49,000	24,000
1,200		38,000	16,000	2,020		49,000	24,000
1,220		38,000	16,000	2,050		49,000	24,000
1,230		38,000	16,000	2,060		49,000	24,000
1,240		38,000	16,000	2,080		49,000	24,000
1,250		38,000	16,000	2,100		49,000	24,000
1,300		38,000	16,000	2,150		53,000	27,000
1,305		38,000	16,000	2,180		53,000	27,000
1,320		38,000	16,000	2,200		53,000	27,000
1,350		40,000	18,000	2,250		53,000	27,000
1,400		40,000	18,000	2,260		53,000	27,000
1,450		40,000	18,000	2,300		53,000	27,000
1,500		40,000	18,000	2,330		53,000	27,000
1,510		43,000	20,000	2,350		53,000	27,000
1,520		43,000	20,000	2,370		57,000	30,000
1,530		43,000	20,000	2,380	3/32	57,000	30,000
1,550		43,000	20,000	2,400		57,000	30,000
1,560		43,000	20,000	2,420		57,000	30,000
1,570		43,000	20,000	2,440		57,000	30,000
1,580		43,000	20,000	2,450		57,000	30,000
1,590	1/16	43,000	20,000	2,480		57,000	30,000
1,600		43,000	20,000	2,490		57,000	30,000
1,610		43,000	20,000	2,500		57,000	30,000



d1		l1	l2
mm	inch	mm	mm
2,530		57,000	30,000
2,550		57,000	30,000
2,580		57,000	30,000
2,600		57,000	30,000
2,640		57,000	30,000
2,650		57,000	30,000
2,700		61,000	33,000
2,710		61,000	33,000
2,750		61,000	33,000
2,780	7/64	61,000	33,000
2,790		61,000	33,000
2,800		61,000	33,000
2,820		61,000	33,000
2,850		61,000	33,000
2,870		61,000	33,000
2,900		61,000	33,000
2,950		61,000	33,000
2,980		61,000	33,000
3,000		61,000	33,000
3,030		65,000	36,000
3,050		65,000	36,000
3,080		65,000	36,000
3,100		65,000	36,000
3,150		65,000	36,000
3,170	1/8	65,000	36,000
3,200		65,000	36,000
3,220		65,000	36,000
3,230		65,000	36,000
3,250		65,000	36,000
3,260		65,000	36,000
3,300		65,000	36,000
3,350		65,000	36,000
3,400		70,000	39,000
3,450		70,000	39,000
3,500		70,000	39,000
3,550		70,000	39,000
3,570	9/64	70,000	39,000
3,580		70,000	39,000
3,600		70,000	39,000
3,660		70,000	39,000
3,680		70,000	39,000
3,700		70,000	39,000
3,730		70,000	39,000
3,750		70,000	39,000
3,800		75,000	43,000
3,860		75,000	43,000
3,870		75,000	43,000
3,900		75,000	43,000
3,910		75,000	43,000
3,950		75,000	43,000
3,970	5/32	75,000	43,000
3,990		75,000	43,000
4,000		75,000	43,000
4,040		75,000	43,000
4,050		75,000	43,000
4,090		75,000	43,000
4,100		75,000	43,000
4,150		75,000	43,000
4,200		75,000	43,000
4,210		75,000	43,000
4,220		75,000	43,000
4,250		75,000	43,000
4,300		80,000	47,000
4,370	11/64	80,000	47,000
4,390		80,000	47,000
4,400		80,000	47,000
4,450		80,000	47,000
4,500		80,000	47,000
4,550		80,000	47,000
4,570		80,000	47,000
4,600		80,000	47,000
4,620		80,000	47,000

d1		l1	l2
mm	inch	mm	mm
4,650		80,000	47,000
4,700		80,000	47,000
4,750		80,000	47,000
4,760	3/16	86,000	52,000
4,800		86,000	52,000
4,850		86,000	52,000
4,900		86,000	52,000
4,920		86,000	52,000
4,950		86,000	52,000
4,980		86,000	52,000
5,000		86,000	52,000
5,030		86,000	52,000
5,050		86,000	52,000
5,060		86,000	52,000
5,100		86,000	52,000
5,110		86,000	52,000
5,150		86,000	52,000
5,160	13/64	86,000	52,000
5,180		86,000	52,000
5,200		86,000	52,000
5,220		86,000	52,000
5,250		86,000	52,000
5,300		86,000	52,000
5,310		93,000	57,000
5,350		93,000	57,000
5,400		93,000	57,000
5,410		93,000	57,000
5,450		93,000	57,000
5,500		93,000	57,000
5,550		93,000	57,000
5,560	7/32	93,000	57,000
5,600		93,000	57,000
5,610		93,000	57,000
5,650		93,000	57,000
5,700		93,000	57,000
5,750		93,000	57,000
5,790		93,000	57,000
5,800		93,000	57,000
5,850		93,000	57,000
5,900		93,000	57,000
5,940		93,000	57,000
5,950	15/64	93,000	57,000
6,000		93,000	57,000
6,040		101,000	63,000
6,050		101,000	63,000
6,100		101,000	63,000
6,150		101,000	63,000
6,200		101,000	63,000
6,250		101,000	63,000
6,300		101,000	63,000
6,350	1/4	101,000	63,000
6,400		101,000	63,000
6,500		101,000	63,000
6,530		101,000	63,000
6,550		101,000	63,000
6,600		101,000	63,000
6,630		101,000	63,000
6,700		101,000	63,000
6,750	17/64	109,000	69,000
6,800		109,000	69,000
6,830		109,000	69,000
6,900		109,000	69,000
7,000		109,000	69,000
7,030		109,000	69,000
7,040		109,000	69,000
7,050		109,000	69,000
7,100		109,000	69,000
7,140	9/32	109,000	69,000
7,200		109,000	69,000
7,250		109,000	69,000
7,290		109,000	69,000
7,300		109,000	69,000

Forets hélicoïdaux  
à queue cylindrique



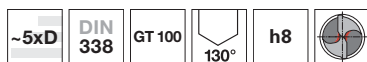
Forets hélicoïdaux à queue cylindrique

d1		l1	l2
mm	inch	mm	mm
7,370		109,000	69,000
7,400		109,000	69,000
7,490		109,000	69,000
7,500		109,000	69,000
7,540	19/64	117,000	75,000
7,580		117,000	75,000
7,600		117,000	75,000
7,670		117,000	75,000
7,700		117,000	75,000
7,750		117,000	75,000
7,800		117,000	75,000
7,900		117,000	75,000
7,940	5/16	117,000	75,000
8,000		117,000	75,000
8,030		117,000	75,000
8,100		117,000	75,000
8,200		117,000	75,000
8,250		117,000	75,000
8,300		117,000	75,000
8,330	21/64	117,000	75,000
8,400		117,000	75,000
8,430		117,000	75,000
8,500		117,000	75,000
8,600		125,000	81,000
8,610		125,000	81,000
8,700		125,000	81,000
8,730	11/32	125,000	81,000
8,750		125,000	81,000
8,800		125,000	81,000
8,840		125,000	81,000
8,900		125,000	81,000
9,000		125,000	81,000
9,090		125,000	81,000
9,100		125,000	81,000
9,130	23/64	125,000	81,000
9,200		125,000	81,000
9,250		125,000	81,000
9,300		125,000	81,000
9,340		125,000	81,000
9,350		125,000	81,000
9,400		125,000	81,000
9,500		125,000	81,000
9,520	3/8	133,000	87,000
9,580		133,000	87,000
9,600		133,000	87,000
9,700		133,000	87,000
9,750		133,000	87,000
9,800		133,000	87,000
9,900		133,000	87,000
9,920	25/64	133,000	87,000
10,000		133,000	87,000
10,080		133,000	87,000
10,100		133,000	87,000
10,200		133,000	87,000
10,260		133,000	87,000
10,300		133,000	87,000
10,320	13/32	133,000	87,000
10,400		133,000	87,000
10,490		133,000	87,000
10,500		133,000	87,000

d1		l1	l2
mm	inch	mm	mm
10,600		133,000	87,000
10,700		142,000	94,000
10,720	27/64	142,000	94,000
10,750		142,000	94,000
10,800		142,000	94,000
10,900		142,000	94,000
11,000		142,000	94,000
11,100		142,000	94,000
11,110	7/16	142,000	94,000
11,200		142,000	94,000
11,300		142,000	94,000
11,400		142,000	94,000
11,500		142,000	94,000
11,510	29/64	142,000	94,000
11,600		142,000	94,000
11,700		142,000	94,000
11,750		142,000	94,000
11,800		142,000	94,000
11,900		151,000	101,000
11,910	15/32	151,000	101,000
12,000		151,000	101,000
12,100		151,000	101,000
12,150		151,000	101,000
12,200		151,000	101,000
12,250		151,000	101,000
12,300	31/64	151,000	101,000
12,400		151,000	101,000
12,500		151,000	101,000
12,700	1/2	151,000	101,000
12,750		151,000	101,000
12,800		151,000	101,000
12,900		151,000	101,000
13,000		151,000	101,000
13,100	33/64	151,000	101,000
13,200		151,000	101,000
13,490	17/32	160,000	108,000
13,500		160,000	108,000
13,600		160,000	108,000
13,700		160,000	108,000
13,890	35/64	160,000	108,000
14,000		160,000	108,000
14,250		169,000	114,000
14,290	9/16	169,000	114,000
14,500		169,000	114,000
14,680	37/64	169,000	114,000
15,000		169,000	114,000
15,080	19/32	178,000	120,000
15,400		178,000	120,000
15,480	39/64	178,000	120,000
15,500		178,000	120,000
15,750		178,000	120,000
15,870	5/8	178,000	120,000
16,000		178,000	120,000



Forets hélicoïdaux courts



Matière de coupe **HSS**

Surface **S**

Sens de coupe **R**

**P** • Amin. de l'âme  $\geq \varnothing 1,000$  • affûtage à dépouille conique • goujures larges • parfait pour les profondeurs  $> 3xD$

**M**

**K** •

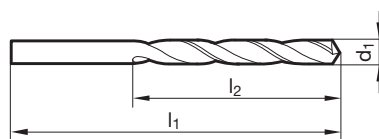
**N** • fontes grises • aciers jusqu'à  $1000 \text{ N/mm}^2$  • Ne pas utiliser pour les aciers CrNi et les aciers inox

**S**

**H**

**GUHRING NAVIGATOR**

Paramètres de coupe, page 780



Forets hélicoïdaux à queue cylindrique

N° d'article **652**

d1		l1	l2
mm	inch	mm	mm
1,000		34,000	12,000
1,020		34,000	12,000
1,040		34,000	12,000
1,070		36,000	14,000
1,090		36,000	14,000
1,100		36,000	14,000
1,180		36,000	14,000
1,190	3/64	38,000	16,000
1,200		38,000	16,000
1,220		38,000	16,000
1,250		38,000	16,000
1,300		38,000	16,000
1,320		38,000	16,000
1,350		40,000	18,000
1,400		40,000	18,000
1,450		40,000	18,000
1,500		40,000	18,000
1,510		43,000	20,000
1,530		43,000	20,000
1,550		43,000	20,000
1,590	1/16	43,000	20,000
1,600		43,000	20,000
1,610		43,000	20,000
1,650		43,000	20,000
1,700		43,000	20,000
1,720		46,000	22,000
1,750		46,000	22,000
1,780		46,000	22,000
1,800		46,000	22,000
1,850		46,000	22,000
1,900		46,000	22,000
1,930		49,000	24,000
1,950		49,000	24,000
1,980	5/64	49,000	24,000
1,990		49,000	24,000
2,000		49,000	24,000
2,060		49,000	24,000
2,080		49,000	24,000
2,100		49,000	24,000
2,150		53,000	27,000
2,180		53,000	27,000
2,200		53,000	27,000

d1		l1	l2
mm	inch	mm	mm
2,250		53,000	27,000
2,260		53,000	27,000
2,300		53,000	27,000
2,350		53,000	27,000
2,370		57,000	30,000
2,380	3/32	57,000	30,000
2,400		57,000	30,000
2,440		57,000	30,000
2,450		57,000	30,000
2,490		57,000	30,000
2,500		57,000	30,000
2,530		57,000	30,000
2,550		57,000	30,000
2,580		57,000	30,000
2,600		57,000	30,000
2,640		57,000	30,000
2,650		57,000	30,000
2,700		61,000	33,000
2,710		61,000	33,000
2,750		61,000	33,000
2,780	7/64	61,000	33,000
2,790		61,000	33,000
2,800		61,000	33,000
2,820		61,000	33,000
2,850		61,000	33,000
2,870		61,000	33,000
2,900		61,000	33,000
2,950		61,000	33,000
3,000		61,000	33,000
3,050		65,000	36,000
3,100		65,000	36,000
3,170	1/8	65,000	36,000
3,200		65,000	36,000
3,250		65,000	36,000
3,260		65,000	36,000
3,300		65,000	36,000
3,350		65,000	36,000
3,400		70,000	39,000
3,450		70,000	39,000
3,500		70,000	39,000
3,570	9/64	70,000	39,000
3,600		70,000	39,000



Forets hélicoïdaux à queue cylindrique

d1		l1	l2
mm	inch	mm	mm
3,650		70,000	39,000
3,660		70,000	39,000
3,700		70,000	39,000
3,730		70,000	39,000
3,750		70,000	39,000
3,800		75,000	43,000
3,860		75,000	43,000
3,900		75,000	43,000
3,910		75,000	43,000
3,970	5/32	75,000	43,000
3,990		75,000	43,000
4,000		75,000	43,000
4,040		75,000	43,000
4,050		75,000	43,000
4,090		75,000	43,000
4,100		75,000	43,000
4,200		75,000	43,000
4,220		75,000	43,000
4,250		75,000	43,000
4,300		80,000	47,000
4,370	11/64	80,000	47,000
4,390		80,000	47,000
4,400		80,000	47,000
4,450		80,000	47,000
4,500		80,000	47,000
4,570		80,000	47,000
4,600		80,000	47,000
4,620		80,000	47,000
4,700		80,000	47,000
4,760	3/16	86,000	52,000
4,800		86,000	52,000
4,850		86,000	52,000
4,900		86,000	52,000
4,920		86,000	52,000
4,980		86,000	52,000
5,000		86,000	52,000
5,060		86,000	52,000
5,100		86,000	52,000
5,110		86,000	52,000
5,160	13/64	86,000	52,000
5,180		86,000	52,000
5,200		86,000	52,000
5,220		86,000	52,000
5,300		86,000	52,000
5,310		93,000	57,000
5,400		93,000	57,000
5,410		93,000	57,000
5,500		93,000	57,000
5,560	7/32	93,000	57,000
5,600		93,000	57,000
5,610		93,000	57,000
5,700		93,000	57,000
5,750		93,000	57,000
5,790		93,000	57,000
5,800		93,000	57,000
5,900		93,000	57,000
5,940		93,000	57,000
5,950	15/64	93,000	57,000
6,000		93,000	57,000
6,040		101,000	63,000
6,100		101,000	63,000
6,150		101,000	63,000
6,200		101,000	63,000
6,250		101,000	63,000
6,300		101,000	63,000
6,350	1/4	101,000	63,000
6,400		101,000	63,000
6,500		101,000	63,000
6,530		101,000	63,000
6,600		101,000	63,000
6,630		101,000	63,000
6,700		101,000	63,000

d1		l1	l2
mm	inch	mm	mm
6,750	17/64	109,000	69,000
6,800		109,000	69,000
6,900		109,000	69,000
7,000		109,000	69,000
7,030		109,000	69,000
7,100		109,000	69,000
7,140	9/32	109,000	69,000
7,200		109,000	69,000
7,300		109,000	69,000
7,370		109,000	69,000
7,400		109,000	69,000
7,490		109,000	69,000
7,500		109,000	69,000
7,540	19/64	117,000	75,000
7,600		117,000	75,000
7,670		117,000	75,000
7,700		117,000	75,000
7,800		117,000	75,000
7,900		117,000	75,000
7,940	5/16	117,000	75,000
8,000		117,000	75,000
8,030		117,000	75,000
8,100		117,000	75,000
8,200		117,000	75,000
8,330	21/64	117,000	75,000
8,400		117,000	75,000
8,430		117,000	75,000
8,500		117,000	75,000
8,600		125,000	81,000
8,610		125,000	81,000
8,730	11/32	125,000	81,000
8,800		125,000	81,000
8,840		125,000	81,000
8,900		125,000	81,000
9,000		125,000	81,000
9,100		125,000	81,000
9,130	23/64	125,000	81,000
9,200		125,000	81,000
9,300		125,000	81,000
9,340		125,000	81,000
9,400		125,000	81,000
9,500		125,000	81,000
9,520	3/8	133,000	87,000
9,600		133,000	87,000
9,700		133,000	87,000
9,800		133,000	87,000
9,900		133,000	87,000
9,920	25/64	133,000	87,000
10,000		133,000	87,000
10,200		133,000	87,000
10,300		133,000	87,000
10,320	13/32	133,000	87,000
10,490		133,000	87,000
10,500		133,000	87,000
10,700		142,000	94,000
10,720	27/64	142,000	94,000
11,000		142,000	94,000
11,110	7/16	142,000	94,000
11,200		142,000	94,000
11,500		142,000	94,000
11,510	29/64	142,000	94,000
11,600		142,000	94,000
11,910	15/32	151,000	101,000
12,000		151,000	101,000
12,300	31/64	151,000	101,000
12,500		151,000	101,000
12,600		151,000	101,000
12,700	1/2	151,000	101,000
13,000		151,000	101,000
13,100	33/64	151,000	101,000
13,490	17/32	160,000	108,000
13,890	35/64	160,000	108,000



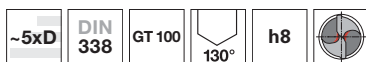


d1		l1	l2
mm	inch	mm	mm
14,000		160,000	108,000
14,290	9/16	169,000	114,000
15,000		169,000	114,000

d1		l1	l2
mm	inch	mm	mm



## Forets hélicoïdaux courts



**P** • Amin. de l'âme  $\geq \varnothing 1,000$  • affûtage à dépouille conique • goujures larges • parfait pour les profondeurs  $> 3xD$

**M**

**K** •

**N** • fontes grises • aciers jusqu'à  $1000 \text{ N/mm}^2$  • Ne pas utiliser pour les aciers CrNi et les aciers inox

**S**

**H**

## GÜHRING NAVIGATOR

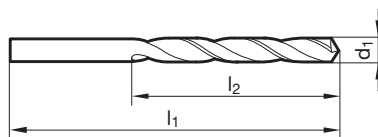
Paramètres de coupe, page 780

Forets hélicoïdaux à queue cylindrique

Matière de coupe **HSS**

Surface **F**

Sens de coupe **R**



N° d'article

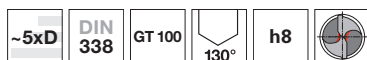
**2457**

d1		l1	l2
mm	inch	mm	mm
1,000		34,000	12,000
1,300		38,000	16,000
1,500		40,000	18,000
1,600		43,000	20,000
1,700		43,000	20,000
1,800		46,000	22,000
2,000		49,000	24,000
2,100		49,000	24,000
2,400		57,000	30,000
2,800		61,000	33,000
2,900		61,000	33,000
3,000		61,000	33,000
3,100		65,000	36,000
3,200		65,000	36,000
3,300		65,000	36,000
3,400		70,000	39,000
3,500		70,000	39,000
3,600		70,000	39,000
3,800		75,000	43,000
4,000		75,000	43,000
4,200		75,000	43,000
4,300		80,000	47,000
4,400		80,000	47,000
4,700		80,000	47,000
4,800		86,000	52,000
4,900		86,000	52,000
5,000		86,000	52,000
5,100		86,000	52,000
5,400		93,000	57,000
5,500		93,000	57,000

d1		l1	l2
mm	inch	mm	mm
5,600		93,000	57,000
5,700		93,000	57,000
6,000		93,000	57,000
6,100		101,000	63,000
6,200		101,000	63,000
6,600		101,000	63,000
6,800		109,000	69,000
7,000		109,000	69,000
7,100		109,000	69,000
7,200		109,000	69,000
7,300		109,000	69,000
7,400		109,000	69,000
7,900		117,000	75,000
8,000		117,000	75,000
8,100		117,000	75,000
8,400		117,000	75,000
8,500		117,000	75,000
8,700		125,000	81,000
8,800		125,000	81,000
8,900		125,000	81,000
9,100		125,000	81,000
9,400		125,000	81,000
9,600		133,000	87,000
9,700		133,000	87,000
10,300		133,000	87,000
10,700		142,000	94,000
11,400		142,000	94,000
11,700		142,000	94,000
11,800		142,000	94,000
15,000		169,000	114,000



Forets hélicoïdaux courts



Matière de coupe **HSS**

Surface

Sens de coupe

**P** • Amin. de l'âme ≥ Ø 1,000 • affûtage à dépouille conique • goujures larges • parfait pour les profondeurs > 3xD

**M**

**K** •

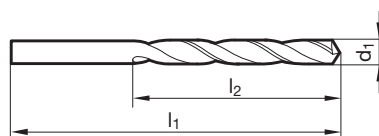
**N** • fontes grises • aciers jusqu'à 1000 N/mm<sup>2</sup> • Ne pas utiliser pour les aciers CrNi et les aciers inox

**S**

**H**

**GUHRING NAVIGATOR**

Paramètres de coupe, page 778



Forets hélicoïdaux à queue cylindrique

N° d'article **550**

d1		l1	l2
mm	inch	mm	mm
1,000		34,000	12,000
1,300		38,000	16,000
1,350		40,000	18,000
1,400		40,000	18,000
1,450		40,000	18,000
1,485		40,000	18,000
1,490		40,000	18,000
1,500		40,000	18,000
1,550		43,000	20,000
1,580		43,000	20,000
1,590	1/16	43,000	20,000
1,600		43,000	20,000
1,650		43,000	20,000
1,700		43,000	20,000
1,780		46,000	22,000
1,800		46,000	22,000
1,850		46,000	22,000
1,900		46,000	22,000
1,950		49,000	24,000
1,980	5/64	49,000	24,000
2,000		49,000	24,000
2,030		49,000	24,000
2,050		49,000	24,000
2,080		49,000	24,000
2,100		49,000	24,000
2,150		53,000	27,000
2,200		53,000	27,000
2,250		53,000	27,000
2,260		53,000	27,000
2,300		53,000	27,000
2,350		53,000	27,000
2,370		57,000	30,000
2,380	3/32	57,000	30,000
2,400		57,000	30,000
2,490		57,000	30,000
2,500		57,000	30,000
2,530		57,000	30,000
2,550		57,000	30,000
2,580		57,000	30,000
2,600		57,000	30,000
2,670		61,000	33,000
2,700		61,000	33,000

d1		l1	l2
mm	inch	mm	mm
2,750		61,000	33,000
2,780	7/64	61,000	33,000
2,790		61,000	33,000
2,800		61,000	33,000
2,870		61,000	33,000
2,900		61,000	33,000
2,950		61,000	33,000
3,000		61,000	33,000
3,020		65,000	36,000
3,050		65,000	36,000
3,100		65,000	36,000
3,150		65,000	36,000
3,170	1/8	65,000	36,000
3,175	1/8	65,000	36,000
3,200		65,000	36,000
3,250		65,000	36,000
3,260		65,000	36,000
3,300		65,000	36,000
3,350		65,000	36,000
3,400		70,000	39,000
3,450		70,000	39,000
3,500		70,000	39,000
3,550		70,000	39,000
3,570	9/64	70,000	39,000
3,600		70,000	39,000
3,650		70,000	39,000
3,660		70,000	39,000
3,700		70,000	39,000
3,750		70,000	39,000
3,800		75,000	43,000
3,860		75,000	43,000
3,900		75,000	43,000
3,990		75,000	43,000
4,000		75,000	43,000
4,040		75,000	43,000
4,100		75,000	43,000
4,200		75,000	43,000
4,300		80,000	47,000
4,370	11/64	80,000	47,000
4,450		80,000	47,000
4,500		80,000	47,000
4,600		80,000	47,000



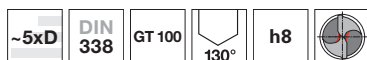
Forets hélicoïdaux à queue cylindrique

d1		l1	l2
mm	inch	mm	mm
4,620		80,000	47,000
4,760	3/16	86,000	52,000
4,900		86,000	52,000
5,000		86,000	52,000
5,100		86,000	52,000
5,200		86,000	52,000
5,300		86,000	52,000
5,400		93,000	57,000
5,500		93,000	57,000
5,560	7/32	93,000	57,000
5,600		93,000	57,000
5,700		93,000	57,000
5,750		93,000	57,000
5,790		93,000	57,000
5,800		93,000	57,000
5,850		93,000	57,000
5,900		93,000	57,000
5,950	15/64	93,000	57,000
6,000		93,000	57,000
6,100		101,000	63,000
6,200		101,000	63,000
6,350	1/4	101,000	63,000
6,400		101,000	63,000
6,500		101,000	63,000
6,600		101,000	63,000
6,750	17/64	109,000	69,000
6,800		109,000	69,000
6,900		109,000	69,000
7,000		109,000	69,000
7,140	9/32	109,000	69,000
7,200		109,000	69,000
7,300		109,000	69,000
7,400		109,000	69,000
7,500		109,000	69,000
7,540	19/64	117,000	75,000
7,600		117,000	75,000

d1		l1	l2
mm	inch	mm	mm
7,700		117,000	75,000
7,900		117,000	75,000
7,940	5/16	117,000	75,000
8,000		117,000	75,000
8,100		117,000	75,000
8,330	21/64	117,000	75,000
8,400		117,000	75,000
8,500		117,000	75,000
8,700		125,000	81,000
8,730	11/32	125,000	81,000
8,800		125,000	81,000
9,000		125,000	81,000
9,200		125,000	81,000
9,400		125,000	81,000
9,520	3/8	133,000	87,000
9,600		133,000	87,000
9,700		133,000	87,000
10,000		133,000	87,000
10,200		133,000	87,000
10,300		133,000	87,000
10,600		133,000	87,000
10,800		142,000	94,000
11,100		142,000	94,000
11,110	7/16	142,000	94,000
11,900		151,000	101,000
12,400		151,000	101,000
12,800		151,000	101,000
14,290	9/16	169,000	114,000
15,000		169,000	114,000
15,500		178,000	120,000



Forets hélicoïdaux courts



Matière de coupe **HSS**

Surface **S**

Sens de coupe **L**

**P** • Amin. de l'âme  $\geq \varnothing 1,300$  • affûtage à dépouille conique • goujures larges • parfait pour les profondeurs  $> 3xD$

**M**

**K** •

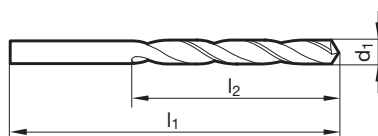
**N** • fontes grises • aciers jusqu'à  $1000 \text{ N/mm}^2$  • Ne pas utiliser pour les aciers CrNi et les aciers inox

**S**

**H**

**GUHRING NAVIGATOR**

Paramètres de coupe, page 780



N° d'article **665**

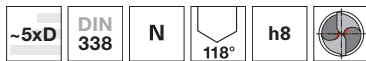
d1		l1	l2
mm	inch	mm	mm
1,300		38,000	16,000
1,400		40,000	18,000
1,500		40,000	18,000
1,550		43,000	20,000
1,590	1/16	43,000	20,000
1,600		43,000	20,000
1,650		43,000	20,000
1,700		43,000	20,000
1,800		46,000	22,000
1,900		46,000	22,000
1,980	5/64	49,000	24,000
2,000		49,000	24,000
2,100		49,000	24,000
2,200		53,000	27,000
2,260		53,000	27,000
2,300		53,000	27,000
2,380	3/32	57,000	30,000
2,400		57,000	30,000
2,500		57,000	30,000
2,530		57,000	30,000
2,580		57,000	30,000
2,600		57,000	30,000
2,700		61,000	33,000
2,780	7/64	61,000	33,000
2,800		61,000	33,000
2,950		61,000	33,000
3,000		61,000	33,000
3,100		65,000	36,000
3,170	1/8	65,000	36,000
3,200		65,000	36,000
3,300		65,000	36,000
3,400		70,000	39,000
3,450		70,000	39,000
3,570	9/64	70,000	39,000
3,700		70,000	39,000
3,800		75,000	43,000

d1		l1	l2
mm	inch	mm	mm
3,900		75,000	43,000
4,000		75,000	43,000
4,300		80,000	47,000
4,400		80,000	47,000
4,500		80,000	47,000
4,700		80,000	47,000
4,760	3/16	86,000	52,000
4,800		86,000	52,000
4,900		86,000	52,000
5,000		86,000	52,000
5,100		86,000	52,000
5,300		86,000	52,000
5,400		93,000	57,000
5,500		93,000	57,000
5,700		93,000	57,000
5,800		93,000	57,000
5,900		93,000	57,000
6,000		93,000	57,000
6,500		101,000	63,000
7,000		109,000	69,000
7,100		109,000	69,000
7,140	9/32	109,000	69,000
7,540	19/64	117,000	75,000
7,800		117,000	75,000
7,940	5/16	117,000	75,000
8,600		125,000	81,000
9,130	23/64	125,000	81,000
9,500		125,000	81,000
9,520	3/8	133,000	87,000
9,800		133,000	87,000

Forets hélicoïdaux à queue cylindrique



## Forets hélicoïdaux courts



Matière de coupe **HSC0**

Surface

Sens de coupe

**P** • Amin. de l'âme  $\geq \varnothing 1,000$  • affûtage à dépouille conique • acier rapide au Co • meilleure résistance à l'usure

**M** ○

**K** •

**N** ○ acier, fonte aciérée (alliée / non alliée) • fontes supérieure à 800 N/mm<sup>2</sup>

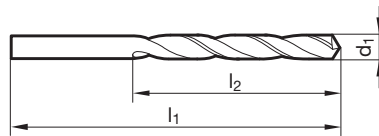
**S** • aciers à outils, travail à froid et à chaud • aciers à roulement • aciers hautement alliés • aciers de cémentation et d'amélioration

**H**

## GÜHRING NAVIGATOR

Paramètres de coupe, page 780

Forets hélicoïdaux à queue cylindrique



N° d'article **305**

d1		l1	l2
mm	inch	mm	mm
0,200		19,000	2,500
0,220		19,000	2,500
0,230		19,000	2,500
0,250		19,000	3,000
0,260		19,000	3,000
0,270		19,000	3,000
0,280		19,000	3,000
0,300		19,000	3,000
0,310		19,000	4,000
0,320		19,000	4,000
0,330		19,000	4,000
0,340		19,000	4,000
0,350		19,000	4,000
0,360		19,000	4,000
0,370		19,000	4,000
0,380		19,000	4,000
0,390		20,000	5,000
0,400	1/64	20,000	5,000
0,410		20,000	5,000
0,420		20,000	5,000
0,430		20,000	5,000
0,440		20,000	5,000
0,450		20,000	5,000
0,460		20,000	5,000
0,470		20,000	5,000
0,480		20,000	5,000
0,490		22,000	6,000
0,500		22,000	6,000
0,510		22,000	6,000
0,520		22,000	6,000
0,530		22,000	6,000
0,540		24,000	7,000
0,550		24,000	7,000
0,560		24,000	7,000
0,570		24,000	7,000
0,580		24,000	7,000
0,590		24,000	7,000
0,600		24,000	7,000
0,610		26,000	8,000
0,620		26,000	8,000
0,640		26,000	8,000
0,650		26,000	8,000

d1		l1	l2
mm	inch	mm	mm
0,660		26,000	8,000
0,670		26,000	8,000
0,680		28,000	9,000
0,700		28,000	9,000
0,710		28,000	9,000
0,720		28,000	9,000
0,730		28,000	9,000
0,740		28,000	9,000
0,750		28,000	9,000
0,760		30,000	10,000
0,770		30,000	10,000
0,780		30,000	10,000
0,790	1/32	30,000	10,000
0,800		30,000	10,000
0,810		30,000	10,000
0,820		30,000	10,000
0,830		30,000	10,000
0,840		30,000	10,000
0,850		30,000	10,000
0,860		32,000	11,000
0,870		32,000	11,000
0,880		32,000	11,000
0,890		32,000	11,000
0,900		32,000	11,000
0,910		32,000	11,000
0,920		32,000	11,000
0,930		32,000	11,000
0,940		32,000	11,000
0,950		32,000	11,000
0,960		34,000	12,000
0,970		34,000	12,000
0,980		34,000	12,000
0,990		34,000	12,000
1,000		34,000	12,000
1,010		34,000	12,000
1,020		34,000	12,000
1,030		34,000	12,000
1,040		34,000	12,000
1,050		34,000	12,000
1,070		36,000	14,000
1,080		36,000	14,000
1,090		36,000	14,000



d1		l1	l2
mm	inch	mm	mm
1,100		36,000	14,000
1,120		36,000	14,000
1,130		36,000	14,000
1,140		36,000	14,000
1,150		36,000	14,000
1,160		36,000	14,000
1,170		36,000	14,000
1,180		36,000	14,000
1,190	3/64	38,000	16,000
1,200		38,000	16,000
1,210		38,000	16,000
1,220		38,000	16,000
1,230		38,000	16,000
1,250		38,000	16,000
1,260		38,000	16,000
1,280		38,000	16,000
1,290		38,000	16,000
1,300		38,000	16,000
1,310		38,000	16,000
1,320		38,000	16,000
1,330		40,000	18,000
1,350		40,000	18,000
1,360		40,000	18,000
1,370		40,000	18,000
1,380		40,000	18,000
1,400		40,000	18,000
1,410		40,000	18,000
1,420		40,000	18,000
1,430		40,000	18,000
1,440		40,000	18,000
1,450		40,000	18,000
1,460		40,000	18,000
1,470		40,000	18,000
1,480		40,000	18,000
1,490		40,000	18,000
1,500		40,000	18,000
1,510		43,000	20,000
1,520		43,000	20,000
1,530		43,000	20,000
1,540		43,000	20,000
1,550		43,000	20,000
1,560		43,000	20,000
1,570		43,000	20,000
1,580		43,000	20,000
1,590	1/16	43,000	20,000
1,600		43,000	20,000
1,610		43,000	20,000
1,620		43,000	20,000
1,640		43,000	20,000
1,650		43,000	20,000
1,660		43,000	20,000
1,670		43,000	20,000
1,680		43,000	20,000
1,700		43,000	20,000
1,710		46,000	22,000
1,720		46,000	22,000
1,730		46,000	22,000
1,740		46,000	22,000
1,750		46,000	22,000
1,760		46,000	22,000
1,780		46,000	22,000
1,790		46,000	22,000
1,800		46,000	22,000
1,810		46,000	22,000
1,820		46,000	22,000
1,830		46,000	22,000
1,840		46,000	22,000
1,850		46,000	22,000
1,860		46,000	22,000
1,900		46,000	22,000
1,910		49,000	24,000
1,930		49,000	24,000

d1		l1	l2
mm	inch	mm	mm
1,950		49,000	24,000
1,960		49,000	24,000
1,970		49,000	24,000
1,980	5/64	49,000	24,000
1,990		49,000	24,000
2,000		49,000	24,000
2,010		49,000	24,000
2,020		49,000	24,000
2,030		49,000	24,000
2,040		49,000	24,000
2,050		49,000	24,000
2,060		49,000	24,000
2,070		49,000	24,000
2,080		49,000	24,000
2,100		49,000	24,000
2,120		49,000	24,000
2,150		53,000	27,000
2,180		53,000	27,000
2,200		53,000	27,000
2,230		53,000	27,000
2,250		53,000	27,000
2,260		53,000	27,000
2,300		53,000	27,000
2,320		53,000	27,000
2,350		53,000	27,000
2,370		57,000	30,000
2,380	3/32	57,000	30,000
2,400		57,000	30,000
2,440		57,000	30,000
2,450		57,000	30,000
2,470		57,000	30,000
2,490		57,000	30,000
2,500		57,000	30,000
2,510		57,000	30,000
2,520		57,000	30,000
2,530		57,000	30,000
2,550		57,000	30,000
2,580		57,000	30,000
2,600		57,000	30,000
2,640		57,000	30,000
2,650		57,000	30,000
2,700		61,000	33,000
2,710		61,000	33,000
2,750		61,000	33,000
2,780	7/64	61,000	33,000
2,790		61,000	33,000
2,800		61,000	33,000
2,820		61,000	33,000
2,850		61,000	33,000
2,870		61,000	33,000
2,900		61,000	33,000
2,920		61,000	33,000
2,950		61,000	33,000
3,000		61,000	33,000
3,020		65,000	36,000
3,030		65,000	36,000
3,050		65,000	36,000
3,100		65,000	36,000
3,150		65,000	36,000
3,170	1/8	65,000	36,000
3,200		65,000	36,000
3,250		65,000	36,000
3,260		65,000	36,000
3,300		65,000	36,000
3,330		65,000	36,000
3,350		65,000	36,000
3,400		70,000	39,000
3,450		70,000	39,000
3,500		70,000	39,000
3,550		70,000	39,000
3,570	9/64	70,000	39,000
3,600		70,000	39,000

Forets hélicoïdaux  
à queue cylindrique



Forets hélicoïdaux à queue cylindrique

d1		l1	l2
mm	inch	mm	mm
3,650		70,000	39,000
3,660		70,000	39,000
3,700		70,000	39,000
3,730		70,000	39,000
3,750		70,000	39,000
3,800		75,000	43,000
3,850		75,000	43,000
3,860		75,000	43,000
3,900		75,000	43,000
3,910		75,000	43,000
3,970	5/32	75,000	43,000
3,990		75,000	43,000
4,000		75,000	43,000
4,020		75,000	43,000
4,040		75,000	43,000
4,050		75,000	43,000
4,070		75,000	43,000
4,090		75,000	43,000
4,100		75,000	43,000
4,120		75,000	43,000
4,150		75,000	43,000
4,170		75,000	43,000
4,200		75,000	43,000
4,220		75,000	43,000
4,250		75,000	43,000
4,300		80,000	47,000
4,370	11/64	80,000	47,000
4,390		80,000	47,000
4,400		80,000	47,000
4,450		80,000	47,000
4,500		80,000	47,000
4,550		80,000	47,000
4,570		80,000	47,000
4,600		80,000	47,000
4,620		80,000	47,000
4,650		80,000	47,000
4,700		80,000	47,000
4,750		80,000	47,000
4,760	3/16	86,000	52,000
4,800		86,000	52,000
4,850		86,000	52,000
4,900		86,000	52,000
4,920		86,000	52,000
4,980		86,000	52,000
5,000		86,000	52,000
5,020		86,000	52,000
5,050		86,000	52,000
5,060		86,000	52,000
5,100		86,000	52,000
5,110		86,000	52,000
5,150		86,000	52,000
5,160	13/64	86,000	52,000
5,180		86,000	52,000
5,200		86,000	52,000
5,220		86,000	52,000
5,250		86,000	52,000
5,300		86,000	52,000
5,310		93,000	57,000
5,400		93,000	57,000
5,410		93,000	57,000
5,450		93,000	57,000
5,500		93,000	57,000
5,550		93,000	57,000
5,560	7/32	93,000	57,000
5,600		93,000	57,000
5,610		93,000	57,000
5,650		93,000	57,000
5,700		93,000	57,000
5,750		93,000	57,000
5,790		93,000	57,000
5,800		93,000	57,000
5,850		93,000	57,000

d1		l1	l2
mm	inch	mm	mm
5,900		93,000	57,000
5,940		93,000	57,000
5,950	15/64	93,000	57,000
6,000		93,000	57,000
6,040		101,000	63,000
6,050		101,000	63,000
6,100		101,000	63,000
6,150		101,000	63,000
6,200		101,000	63,000
6,250		101,000	63,000
6,300		101,000	63,000
6,350	1/4	101,000	63,000
6,400		101,000	63,000
6,450		101,000	63,000
6,500		101,000	63,000
6,530		101,000	63,000
6,600		101,000	63,000
6,630		101,000	63,000
6,700		101,000	63,000
6,750	17/64	109,000	69,000
6,760		109,000	69,000
6,800		109,000	69,000
6,850		109,000	69,000
6,900		109,000	69,000
6,950		109,000	69,000
7,000		109,000	69,000
7,030		109,000	69,000
7,050		109,000	69,000
7,100		109,000	69,000
7,140	9/32	109,000	69,000
7,200		109,000	69,000
7,250		109,000	69,000
7,300		109,000	69,000
7,370		109,000	69,000
7,400		109,000	69,000
7,490		109,000	69,000
7,500		109,000	69,000
7,540	19/64	117,000	75,000
7,600		117,000	75,000
7,670		117,000	75,000
7,700		117,000	75,000
7,750		117,000	75,000
7,800		117,000	75,000
7,900		117,000	75,000
7,940	5/16	117,000	75,000
8,000		117,000	75,000
8,030		117,000	75,000
8,050		117,000	75,000
8,100		117,000	75,000
8,150		117,000	75,000
8,200		117,000	75,000
8,250		117,000	75,000
8,300		117,000	75,000
8,330	21/64	117,000	75,000
8,400		117,000	75,000
8,430		117,000	75,000
8,500		117,000	75,000
8,600		125,000	81,000
8,610		125,000	81,000
8,700		125,000	81,000
8,730	11/32	125,000	81,000
8,750		125,000	81,000
8,800		125,000	81,000
8,840		125,000	81,000
8,900		125,000	81,000
9,000		125,000	81,000
9,090		125,000	81,000
9,100		125,000	81,000
9,130	23/64	125,000	81,000
9,200		125,000	81,000
9,250		125,000	81,000
9,300		125,000	81,000





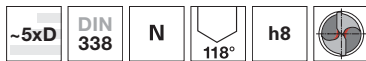
d1		l1	l2
mm	inch	mm	mm
9,340		125,000	81,000
9,400		125,000	81,000
9,500		125,000	81,000
9,520	3/8	133,000	87,000
9,580		133,000	87,000
9,600		133,000	87,000
9,700		133,000	87,000
9,750		133,000	87,000
9,800		133,000	87,000
9,900		133,000	87,000
9,920	25/64	133,000	87,000
10,000		133,000	87,000
10,050		133,000	87,000
10,080		133,000	87,000
10,100		133,000	87,000
10,200		133,000	87,000
10,250		133,000	87,000
10,260		133,000	87,000
10,300		133,000	87,000
10,320	13/32	133,000	87,000
10,400		133,000	87,000
10,490		133,000	87,000
10,500		133,000	87,000
10,600		133,000	87,000
10,700		142,000	94,000
10,720	27/64	142,000	94,000
10,750		142,000	94,000
10,800		142,000	94,000
10,900		142,000	94,000
11,000		142,000	94,000
11,100		142,000	94,000
11,110	7/16	142,000	94,000
11,200		142,000	94,000
11,250		142,000	94,000
11,300		142,000	94,000
11,400		142,000	94,000
11,500		142,000	94,000
11,510	29/64	142,000	94,000
11,600		142,000	94,000
11,700		142,000	94,000
11,750		142,000	94,000
11,800		142,000	94,000
11,900		151,000	101,000
11,910	15/32	151,000	101,000
12,000		151,000	101,000
12,100		151,000	101,000
12,200		151,000	101,000
12,250		151,000	101,000

d1		l1	l2
mm	inch	mm	mm
12,300	31/64	151,000	101,000
12,400		151,000	101,000
12,500		151,000	101,000
12,600		151,000	101,000
12,700	1/2	151,000	101,000
12,750		151,000	101,000
12,800		151,000	101,000
12,900		151,000	101,000
13,000		151,000	101,000
13,100	33/64	151,000	101,000
13,200		151,000	101,000
13,300		160,000	108,000
13,490	17/32	160,000	108,000
13,500		160,000	108,000
13,600		160,000	108,000
13,700		160,000	108,000
13,750		160,000	108,000
13,800		160,000	108,000
13,890	35/64	160,000	108,000
13,900		160,000	108,000
14,000		160,000	108,000
14,100		169,000	114,000
14,200		169,000	114,000
14,290	9/16	169,000	114,000
14,500		169,000	114,000
14,680	37/64	169,000	114,000
15,000		169,000	114,000
15,250		178,000	120,000
15,480	39/64	178,000	120,000
15,500		178,000	120,000
15,750		178,000	120,000
15,870	5/8	178,000	120,000
16,000		178,000	120,000
16,500		184,000	125,000
16,670	21/32	184,000	125,000
17,000		184,000	125,000
17,460	11/16	191,000	130,000
17,500		191,000	130,000
18,000		191,000	130,000
18,500		198,000	135,000
19,000		198,000	135,000
19,500		205,000	140,000
20,000		205,000	140,000

Forets hélicoïdaux  
à queue cylindrique



## Forets hélicoïdaux courts



Matière de coupe **HSCO**

Surface **S**

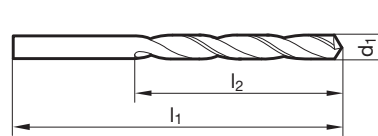
Sens de coupe **R**

- P** • Amin. de l'âme  $\geq \varnothing 1,200$  • affûtage à dépouille conique • acier rapide au Co • résistance à l'usure, améliorée
- M** ○
- K** •
- N** ○ aciers alliés ou non alliés • fontes  $> 800 \text{ N/mm}^2$  • aciers à outils, travail à froid et à chaud • aciers à roulement • aciers hautement alliés • aciers de cémentation et d'amélioration
- S** ○
- H** ○

## GÜHRING NAVIGATOR

Paramètres de coupe, page 782

Forets hélicoïdaux à queue cylindrique



N° d'article **2997**

d1		l1	l2	d1		l1	l2
mm	inch	mm	mm	mm	inch	mm	mm
1,200		38,000	16,000	6,300		101,000	63,000
1,300		38,000	16,000	6,400		101,000	63,000
1,400		40,000	18,000	6,500		101,000	63,000
1,500		40,000	18,000	6,600		101,000	63,000
1,600		43,000	20,000	6,700		101,000	63,000
1,700		43,000	20,000	6,800		109,000	69,000
1,800		46,000	22,000	6,900		109,000	69,000
1,900		46,000	22,000	7,000		109,000	69,000
2,000		49,000	24,000	7,100		109,000	69,000
2,100		49,000	24,000	7,300		109,000	69,000
2,200		53,000	27,000	7,400		109,000	69,000
2,300		53,000	27,000	7,500		109,000	69,000
2,500		57,000	30,000	7,600		117,000	75,000
2,700		61,000	33,000	7,700		117,000	75,000
2,800		61,000	33,000	7,800		117,000	75,000
2,900		61,000	33,000	7,900		117,000	75,000
3,000		61,000	33,000	8,000		117,000	75,000
3,100		65,000	36,000	8,200		117,000	75,000
3,300		65,000	36,000	8,400		117,000	75,000
3,400		70,000	39,000	8,500		117,000	75,000
3,500		70,000	39,000	8,800		125,000	81,000
3,600		70,000	39,000	8,900		125,000	81,000
3,700		70,000	39,000	9,000		125,000	81,000
3,800		75,000	43,000	9,300		125,000	81,000
3,900		75,000	43,000	9,400		125,000	81,000
4,000		75,000	43,000	9,500		125,000	81,000
4,100		75,000	43,000	9,600		133,000	87,000
4,200		75,000	43,000	9,700		133,000	87,000
4,300		80,000	47,000	9,800		133,000	87,000
4,500		80,000	47,000	9,900		133,000	87,000
4,700		80,000	47,000	10,000		133,000	87,000
4,800		86,000	52,000	10,300		133,000	87,000
4,900		86,000	52,000	10,500		133,000	87,000
5,000		86,000	52,000	10,800		142,000	94,000
5,200		86,000	52,000	11,000		142,000	94,000
5,300		86,000	52,000	11,200		142,000	94,000
5,400		93,000	57,000	11,500		142,000	94,000
5,500		93,000	57,000	12,000		151,000	101,000
5,600		93,000	57,000	12,500		151,000	101,000
5,800		93,000	57,000	12,700	1/2	151,000	101,000
6,000		93,000	57,000	13,000		151,000	101,000
6,100		101,000	63,000				



Forets hélicoïdaux courts



Matière de coupe **HSCO**

Surface  $\text{Ra} > 0,6,00$

Sens de coupe

**P** • Amin. de l'âme  $\geq \text{Ø } 2,370$  • affûtage à dépouille conique • acier rapide au Co • résistance à l'usure, améliorée

**M** ○

**K** •

**N** ○

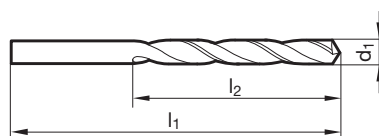
**S** ○

**H** ○

aciers alliés ou non alliés • fontes  $> 800 \text{ N/mm}^2$  • aciers à outils, travail à froid et à chaud • aciers à roulement • aciers hautement alliés • aciers de cémentation et d'amélioration

**GUHRING NAVIGATOR**

Paramètres de coupe, page 780



Forets hélicoïdaux à queue cylindrique

N° d'article **308**

d1		l1	l2
mm	inch	mm	mm
0,360		19,000	4,000
0,390		20,000	5,000
0,500		22,000	6,000
0,560		24,000	7,000
0,590		24,000	7,000
0,600		24,000	7,000
0,620		26,000	8,000
0,630		26,000	8,000
0,650		26,000	8,000
0,750		28,000	9,000
0,780		30,000	10,000
0,800		30,000	10,000
0,820		30,000	10,000
0,900		32,000	11,000
0,910		32,000	11,000
0,920		32,000	11,000
0,930		32,000	11,000
0,950		32,000	11,000
0,980		34,000	12,000
1,000		34,000	12,000
1,020		34,000	12,000
1,030		34,000	12,000
1,050		34,000	12,000
1,080		36,000	14,000
1,100		36,000	14,000
1,150		36,000	14,000
1,180		36,000	14,000
1,190	3/64	38,000	16,000
1,200		38,000	16,000
1,210		38,000	16,000
1,230		38,000	16,000
1,320		38,000	16,000
1,330		40,000	18,000
1,350		40,000	18,000
1,400		40,000	18,000
1,430		40,000	18,000
1,450		40,000	18,000
1,470		40,000	18,000
1,480		40,000	18,000
1,490		40,000	18,000
1,510		43,000	20,000
1,520		43,000	20,000

d1		l1	l2
mm	inch	mm	mm
1,600		43,000	20,000
1,610		43,000	20,000
1,620		43,000	20,000
1,700		43,000	20,000
1,720		46,000	22,000
1,750		46,000	22,000
1,780		46,000	22,000
1,800		46,000	22,000
1,830		46,000	22,000
1,850		46,000	22,000
1,900		46,000	22,000
1,930		49,000	24,000
1,950		49,000	24,000
1,980	5/64	49,000	24,000
2,000		49,000	24,000
2,050		49,000	24,000
2,060		49,000	24,000
2,080		49,000	24,000
2,100		49,000	24,000
2,180		53,000	27,000
2,200		53,000	27,000
2,250		53,000	27,000
2,260		53,000	27,000
2,350		53,000	27,000
2,370	3/32	57,000	30,000
2,380		57,000	30,000
2,400		57,000	30,000
2,500		57,000	30,000
2,520		57,000	30,000
2,530		57,000	30,000
2,600		57,000	30,000
2,640		57,000	30,000
2,750		61,000	33,000
2,780	7/64	61,000	33,000
2,790		61,000	33,000
2,800		61,000	33,000
2,820		61,000	33,000
2,950		61,000	33,000
3,000		61,000	33,000
3,030		65,000	36,000
3,050		65,000	36,000
3,100		65,000	36,000



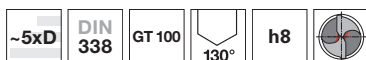
Forets hélicoïdaux à queue cylindrique

d1		l1	l2
mm	inch	mm	mm
3,150		65,000	36,000
3,170	1/8	65,000	36,000
3,200		65,000	36,000
3,300		65,000	36,000
3,400		70,000	39,000
3,420		70,000	39,000
3,450		70,000	39,000
3,500		70,000	39,000
3,530		70,000	39,000
3,650		70,000	39,000
3,660		70,000	39,000
3,700		70,000	39,000
3,800		75,000	43,000
3,860		75,000	43,000
3,900		75,000	43,000
3,910		75,000	43,000
3,970	5/32	75,000	43,000
3,990		75,000	43,000
4,000		75,000	43,000
4,040		75,000	43,000
4,050		75,000	43,000
4,090		75,000	43,000
4,150		75,000	43,000
4,200		75,000	43,000
4,220		75,000	43,000
4,300		80,000	47,000
4,350		80,000	47,000
4,370	11/64	80,000	47,000
4,390		80,000	47,000
4,400		80,000	47,000
4,500		80,000	47,000
4,620		80,000	47,000
4,650		80,000	47,000
4,700		80,000	47,000
4,760	3/16	86,000	52,000
4,800		86,000	52,000
4,830		86,000	52,000
4,900		86,000	52,000
5,000		86,000	52,000
5,060		86,000	52,000
5,110		86,000	52,000
5,160	13/64	86,000	52,000
5,180		86,000	52,000
5,200		86,000	52,000
5,220		86,000	52,000
5,300		86,000	52,000
5,310		93,000	57,000
5,400		93,000	57,000
5,410		93,000	57,000
5,550		93,000	57,000
5,560	7/32	93,000	57,000
5,570		93,000	57,000
5,610		93,000	57,000
5,700		93,000	57,000
5,800		93,000	57,000
5,900		93,000	57,000
5,940		93,000	57,000
5,950	15/64	93,000	57,000
6,000		93,000	57,000
6,100		101,000	63,000
6,250		101,000	63,000
6,300		101,000	63,000
6,350	1/4	101,000	63,000
6,400		101,000	63,000
6,530		101,000	63,000
6,700		101,000	63,000

d1		l1	l2
mm	inch	mm	mm
6,750	17/64	109,000	69,000
7,040		109,000	69,000
7,370		109,000	69,000
7,400		109,000	69,000
7,490		109,000	69,000
7,500		109,000	69,000
7,540	19/64	117,000	75,000
7,600		117,000	75,000
7,670		117,000	75,000
7,700		117,000	75,000
8,000		117,000	75,000
8,030		117,000	75,000
8,040		117,000	75,000
8,300		117,000	75,000
8,330	21/64	117,000	75,000
8,600		125,000	81,000
8,610		125,000	81,000
8,700		125,000	81,000
8,730	11/32	125,000	81,000
8,800		125,000	81,000
8,840		125,000	81,000
9,000		125,000	81,000
9,090		125,000	81,000
9,100		125,000	81,000
9,130	23/64	125,000	81,000
9,200		125,000	81,000
9,300		125,000	81,000
9,340		125,000	81,000
9,400		125,000	81,000
9,500		125,000	81,000
9,520	3/8	133,000	87,000
9,600		133,000	87,000
9,800		133,000	87,000
9,900		133,000	87,000
9,920	25/64	133,000	87,000
10,000		133,000	87,000
10,080		133,000	87,000
10,260		133,000	87,000
10,320	13/32	133,000	87,000
10,490		133,000	87,000
10,800		142,000	94,000
11,000		142,000	94,000
11,110	7/16	142,000	94,000
11,200		142,000	94,000
11,400		142,000	94,000
11,500		142,000	94,000
11,510	29/64	142,000	94,000
11,910	15/32	151,000	101,000
12,050		151,000	101,000
12,250		151,000	101,000
12,300	31/64	151,000	101,000
12,500		151,000	101,000
12,700	1/2	151,000	101,000
13,750		160,000	108,000
14,300		169,000	114,000
14,500		169,000	114,000
16,200		184,000	125,000
16,500		184,000	125,000
18,000		191,000	130,000
18,500		198,000	135,000



Forets hélicoïdaux courts



Matière de coupe **HSCO**

Surface

Sens de coupe

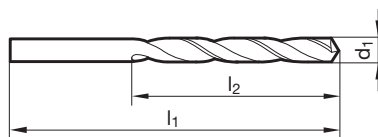
**P** • Amin. de l'âme  $\geq \varnothing 1,000$  • affûtage à dépouille conique • acier rapide au Co • goujures larges • meilleure résistance à l'usure • parfait pour les profondeurs  $> 3xD$

**K** •  
**N** • acier, allié / non allié • fontes supérieure à 800 N/mm<sup>2</sup> • aciers à outils, travail à froid et à chaud • aciers à roulement • aciers hautement alliés  
**S** • aciers de cémentation et d'amélioration

**H**

**GUHRING NAVIGATOR**

Paramètres de coupe, page 780



Forets hélicoïdaux à queue cylindrique

N° d'article **622**

d1		l1	l2
mm	inch	mm	mm
1,000		34,000	12,000
1,020		34,000	12,000
1,040		34,000	12,000
1,050		34,000	12,000
1,070		36,000	14,000
1,090		36,000	14,000
1,100		36,000	14,000
1,130		36,000	14,000
1,150		36,000	14,000
1,180		36,000	14,000
1,190	3/64	38,000	16,000
1,200		38,000	16,000
1,250		38,000	16,000
1,270		38,000	16,000
1,300		38,000	16,000
1,320		38,000	16,000
1,350		40,000	18,000
1,400		40,000	18,000
1,430		40,000	18,000
1,440		40,000	18,000
1,450		40,000	18,000
1,500		40,000	18,000
1,510		43,000	20,000
1,550		43,000	20,000
1,590	1/16	43,000	20,000
1,600		43,000	20,000
1,610		43,000	20,000
1,650		43,000	20,000
1,700		43,000	20,000
1,780		46,000	22,000
1,800		46,000	22,000
1,850		46,000	22,000
1,900		46,000	22,000
1,920		49,000	24,000
1,930		49,000	24,000
1,950		49,000	24,000
1,960		49,000	24,000
1,980	5/64	49,000	24,000
1,990		49,000	24,000
2,000		49,000	24,000
2,050		49,000	24,000
2,060		49,000	24,000

d1		l1	l2
mm	inch	mm	mm
2,080		49,000	24,000
2,100		49,000	24,000
2,150		53,000	27,000
2,180		53,000	27,000
2,200		53,000	27,000
2,250		53,000	27,000
2,260		53,000	27,000
2,300		53,000	27,000
2,350		53,000	27,000
2,370		57,000	30,000
2,380	3/32	57,000	30,000
2,400		57,000	30,000
2,420		57,000	30,000
2,440		57,000	30,000
2,450		57,000	30,000
2,490		57,000	30,000
2,500		57,000	30,000
2,530		57,000	30,000
2,550		57,000	30,000
2,580		57,000	30,000
2,600		57,000	30,000
2,640		57,000	30,000
2,650		57,000	30,000
2,700		61,000	33,000
2,710		61,000	33,000
2,750		61,000	33,000
2,780	7/64	61,000	33,000
2,790		61,000	33,000
2,800		61,000	33,000
2,820		61,000	33,000
2,850		61,000	33,000
2,870		61,000	33,000
2,900		61,000	33,000
2,950		61,000	33,000
3,000		61,000	33,000
3,050		65,000	36,000
3,100		65,000	36,000
3,150		65,000	36,000
3,170	1/8	65,000	36,000
3,200		65,000	36,000
3,250		65,000	36,000
3,260		65,000	36,000



Forets hélicoïdaux à queue cylindrique

d1		l1	l2
mm	inch	mm	mm
3,300		65,000	36,000
3,400		70,000	39,000
3,450		70,000	39,000
3,500		70,000	39,000
3,570	9/64	70,000	39,000
3,600		70,000	39,000
3,650		70,000	39,000
3,660		70,000	39,000
3,700		70,000	39,000
3,730		70,000	39,000
3,800		75,000	43,000
3,860		75,000	43,000
3,900		75,000	43,000
3,910		75,000	43,000
3,970	5/32	75,000	43,000
3,990		75,000	43,000
4,000		75,000	43,000
4,020		75,000	43,000
4,040		75,000	43,000
4,050		75,000	43,000
4,090		75,000	43,000
4,100		75,000	43,000
4,150		75,000	43,000
4,200		75,000	43,000
4,220		75,000	43,000
4,250		75,000	43,000
4,300		80,000	47,000
4,370	11/64	80,000	47,000
4,390		80,000	47,000
4,400		80,000	47,000
4,500		80,000	47,000
4,550		80,000	47,000
4,570		80,000	47,000
4,600		80,000	47,000
4,620		80,000	47,000
4,650		80,000	47,000
4,700		80,000	47,000
4,750		80,000	47,000
4,760	3/16	86,000	52,000
4,800		86,000	52,000
4,850		86,000	52,000
4,900		86,000	52,000
4,920		86,000	52,000
4,980		86,000	52,000
5,000		86,000	52,000
5,060		86,000	52,000
5,100		86,000	52,000
5,110		86,000	52,000
5,160	13/64	86,000	52,000
5,180		86,000	52,000
5,200		86,000	52,000
5,220		86,000	52,000
5,250		86,000	52,000
5,300		86,000	52,000
5,310		93,000	57,000
5,400		93,000	57,000
5,410		93,000	57,000
5,500		93,000	57,000
5,560	7/32	93,000	57,000
5,600		93,000	57,000
5,610		93,000	57,000
5,700		93,000	57,000
5,750		93,000	57,000
5,790		93,000	57,000
5,800		93,000	57,000
5,900		93,000	57,000
5,940		93,000	57,000
5,950	15/64	93,000	57,000
6,000		93,000	57,000
6,040		101,000	63,000
6,050		101,000	63,000
6,100		101,000	63,000

d1		l1	l2
mm	inch	mm	mm
6,150		101,000	63,000
6,200		101,000	63,000
6,250		101,000	63,000
6,300		101,000	63,000
6,350	1/4	101,000	63,000
6,400		101,000	63,000
6,500		101,000	63,000
6,530		101,000	63,000
6,600		101,000	63,000
6,630		101,000	63,000
6,650		101,000	63,000
6,700		101,000	63,000
6,750	17/64	109,000	69,000
6,800		109,000	69,000
6,900		109,000	69,000
7,000		109,000	69,000
7,030		109,000	69,000
7,100		109,000	69,000
7,140	9/32	109,000	69,000
7,200		109,000	69,000
7,300		109,000	69,000
7,370		109,000	69,000
7,400		109,000	69,000
7,450		109,000	69,000
7,490		109,000	69,000
7,500		109,000	69,000
7,540	19/64	117,000	75,000
7,600		117,000	75,000
7,670		117,000	75,000
7,700		117,000	75,000
7,750		117,000	75,000
7,800		117,000	75,000
7,900		117,000	75,000
7,940	5/16	117,000	75,000
8,000		117,000	75,000
8,030		117,000	75,000
8,100		117,000	75,000
8,200		117,000	75,000
8,300		117,000	75,000
8,330	21/64	117,000	75,000
8,400		117,000	75,000
8,430		117,000	75,000
8,500		117,000	75,000
8,600		125,000	81,000
8,610		125,000	81,000
8,700		125,000	81,000
8,730	11/32	125,000	81,000
8,800		125,000	81,000
8,840		125,000	81,000
8,900		125,000	81,000
9,000		125,000	81,000
9,090		125,000	81,000
9,100		125,000	81,000
9,130	23/64	125,000	81,000
9,200		125,000	81,000
9,300		125,000	81,000
9,340		125,000	81,000
9,400		125,000	81,000
9,500		125,000	81,000
9,520	3/8	133,000	87,000
9,580		133,000	87,000
9,600		133,000	87,000
9,700		133,000	87,000
9,800		133,000	87,000
9,900		133,000	87,000
9,920	25/64	133,000	87,000
10,000		133,000	87,000
10,080		133,000	87,000
10,100		133,000	87,000
10,200		133,000	87,000
10,250		133,000	87,000
10,260		133,000	87,000



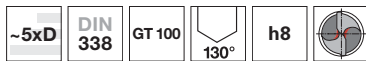
d1		l1	l2
mm	inch	mm	mm
10,300		133,000	87,000
10,320	13/32	133,000	87,000
10,400		133,000	87,000
10,500		133,000	87,000
10,600		133,000	87,000
10,700		142,000	94,000
10,720	27/64	142,000	94,000
10,800		142,000	94,000
10,900		142,000	94,000
11,000		142,000	94,000
11,100		142,000	94,000
11,110	7/16	142,000	94,000
11,200		142,000	94,000
11,300		142,000	94,000
11,400		142,000	94,000
11,500		142,000	94,000
11,510	29/64	142,000	94,000
11,600		142,000	94,000

d1		l1	l2
mm	inch	mm	mm
11,700		142,000	94,000
11,800		142,000	94,000
11,910	15/32	151,000	101,000
12,000		151,000	101,000
12,500		151,000	101,000
12,700	1/2	151,000	101,000
12,800		151,000	101,000
13,000		151,000	101,000
13,500		160,000	108,000
13,800		160,000	108,000
14,000		160,000	108,000
16,000		178,000	120,000

Forets hélicoïdaux  
à queue cylindrique



## Forets hélicoïdaux courts



Matière de coupe **HSCO**

Surface **S**

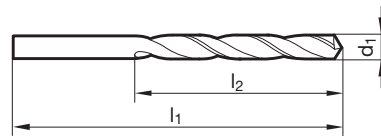
Sens de coupe **R**

- P** • Amin. de l'âme  $\geq \varnothing 1,000$  • affûtage à dépouille conique • acier rapide au Co • goujures larges • meilleure résistance à l'usure • parfait pour les profondeurs  $> 3x D$
- M** ○
- K** •
- N** ○ aciers alliés ou non alliés • fontes supérieure à 800 N/mm<sup>2</sup> • aciers à outils, travail à froid et à chaud • aciers à roulement • aciers hautement alliés • aciers de cémentation et d'amélioration
- S**
- H**

## GUHRING NAVIGATOR

Paramètres de coupe, page 782

Forets hélicoïdaux à queue cylindrique



N° d'article **658**

d1		l1	l2	d1		l1	l2
mm	inch	mm	mm	mm	inch	mm	mm
1,000		34,000	12,000	2,300		53,000	27,000
1,020		34,000	12,000	2,350		53,000	27,000
1,050		34,000	12,000	2,370		57,000	30,000
1,070		36,000	14,000	2,380	3/32	57,000	30,000
1,100		36,000	14,000	2,400		57,000	30,000
1,130		36,000	14,000	2,440		57,000	30,000
1,150		36,000	14,000	2,450		57,000	30,000
1,190	3/64	38,000	16,000	2,490		57,000	30,000
1,200		38,000	16,000	2,500		57,000	30,000
1,300		38,000	16,000	2,530		57,000	30,000
1,320		38,000	16,000	2,550		57,000	30,000
1,350		40,000	18,000	2,580		57,000	30,000
1,400		40,000	18,000	2,600		57,000	30,000
1,430		40,000	18,000	2,640		57,000	30,000
1,450		40,000	18,000	2,650		57,000	30,000
1,500		40,000	18,000	2,700		61,000	33,000
1,510		43,000	20,000	2,750		61,000	33,000
1,550		43,000	20,000	2,780	7/64	61,000	33,000
1,590	1/16	43,000	20,000	2,790		61,000	33,000
1,600		43,000	20,000	2,800		61,000	33,000
1,610		43,000	20,000	2,820		61,000	33,000
1,630		43,000	20,000	2,870		61,000	33,000
1,650		43,000	20,000	2,900		61,000	33,000
1,700		43,000	20,000	2,950		61,000	33,000
1,780		46,000	22,000	3,000		61,000	33,000
1,800		46,000	22,000	3,050		65,000	36,000
1,850		46,000	22,000	3,100		65,000	36,000
1,900		46,000	22,000	3,170	1/8	65,000	36,000
1,930		49,000	24,000	3,200		65,000	36,000
1,950		49,000	24,000	3,250		65,000	36,000
1,980	5/64	49,000	24,000	3,260		65,000	36,000
1,990		49,000	24,000	3,300		65,000	36,000
2,000		49,000	24,000	3,400		70,000	39,000
2,050		49,000	24,000	3,450		70,000	39,000
2,060		49,000	24,000	3,500		70,000	39,000
2,080		49,000	24,000	3,570	9/64	70,000	39,000
2,100		49,000	24,000	3,600		70,000	39,000
2,150		53,000	27,000	3,660		70,000	39,000
2,180		53,000	27,000	3,700		70,000	39,000
2,200		53,000	27,000	3,750		70,000	39,000
2,250		53,000	27,000	3,800		75,000	43,000
2,260		53,000	27,000	3,860		75,000	43,000





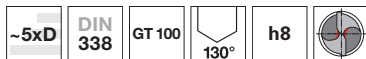
d1		l1	l2
mm	inch	mm	mm
3,900		75,000	43,000
3,970	5/32	75,000	43,000
4,000		75,000	43,000
4,030		75,000	43,000
4,040		75,000	43,000
4,050		75,000	43,000
4,090		75,000	43,000
4,100		75,000	43,000
4,200		75,000	43,000
4,220		75,000	43,000
4,250		75,000	43,000
4,300		80,000	47,000
4,370	11/64	80,000	47,000
4,400		80,000	47,000
4,500		80,000	47,000
4,570		80,000	47,000
4,600		80,000	47,000
4,620		80,000	47,000
4,700		80,000	47,000
4,760	3/16	86,000	52,000
4,800		86,000	52,000
4,850		86,000	52,000
4,900		86,000	52,000
4,920		86,000	52,000
4,980		86,000	52,000
5,000		86,000	52,000
5,060		86,000	52,000
5,100		86,000	52,000
5,160	13/64	86,000	52,000
5,200		86,000	52,000
5,300		86,000	52,000
5,400		93,000	57,000
5,500		93,000	57,000
5,560	7/32	93,000	57,000
5,600		93,000	57,000
5,610		93,000	57,000
5,700		93,000	57,000
5,790		93,000	57,000
5,800		93,000	57,000
5,850		93,000	57,000
5,900		93,000	57,000
5,950	15/64	93,000	57,000
6,000		93,000	57,000
6,100		101,000	63,000
6,150		101,000	63,000
6,200		101,000	63,000
6,300		101,000	63,000
6,350	1/4	101,000	63,000
6,400		101,000	63,000
6,500		101,000	63,000
6,530		101,000	63,000
6,600		101,000	63,000
6,700		101,000	63,000
6,750	17/64	109,000	69,000
6,800		109,000	69,000
6,900		109,000	69,000
7,000		109,000	69,000
7,100		109,000	69,000
7,140	9/32	109,000	69,000
7,200		109,000	69,000

d1		l1	l2
mm	inch	mm	mm
7,300		109,000	69,000
7,400		109,000	69,000
7,500		109,000	69,000
7,600		117,000	75,000
7,700		117,000	75,000
7,800		117,000	75,000
7,900		117,000	75,000
7,940	5/16	117,000	75,000
8,000		117,000	75,000
8,100		117,000	75,000
8,200		117,000	75,000
8,300		117,000	75,000
8,400		117,000	75,000
8,500		117,000	75,000
8,600		125,000	81,000
8,700		125,000	81,000
8,730	11/32	125,000	81,000
8,750		125,000	81,000
8,800		125,000	81,000
8,900		125,000	81,000
9,000		125,000	81,000
9,130	23/64	125,000	81,000
9,200		125,000	81,000
9,300		125,000	81,000
9,400		125,000	81,000
9,500		125,000	81,000
9,520	3/8	133,000	87,000
9,600		133,000	87,000
9,700		133,000	87,000
9,800		133,000	87,000
9,900		133,000	87,000
9,920	25/64	133,000	87,000
10,000		133,000	87,000
10,100		133,000	87,000
10,200		133,000	87,000
10,300		133,000	87,000
10,320	13/32	133,000	87,000
10,500		133,000	87,000
10,720	27/64	142,000	94,000
10,800		142,000	94,000
11,000		142,000	94,000
11,110	7/16	142,000	94,000
11,200		142,000	94,000
11,500		142,000	94,000
11,700		142,000	94,000
11,800		142,000	94,000
11,910	15/32	151,000	101,000
12,000		151,000	101,000
12,500		151,000	101,000
12,800		151,000	101,000
13,000		151,000	101,000
13,500		160,000	108,000
13,800		160,000	108,000
14,000		160,000	108,000
14,500		169,000	114,000
15,000		169,000	114,000

Forets hélicoïdaux à queue cylindrique



## Forets hélicoïdaux courts



- P** • Amin. de l'âme  $\geq \varnothing 1,000$  • affûtage à dépouille conique • acier rapide au Co • goujures larges • meilleure résistance à l'usure • parfait pour les profondeurs  $> 3xD$
- M** ○
- K** •
- N** • aciers alliés ou non alliés • fontes supérieure à  $800 \text{ N/mm}^2$  • aciers à outils, travail à froid et à chaud • aciers à roulement • aciers hautement alliés • aciers de cémentation et d'amélioration
- S** ○
- H** ○

Matière de coupe **HSCO**

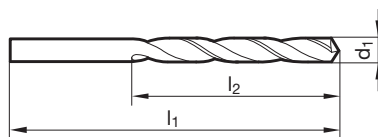
Surface **F**

Sens de coupe **R**

Forets hélicoïdaux à queue cylindrique

## GÜHRING NAVIGATOR

Paramètres de coupe, page 782



N° d'article **2459**

d1		l1	l2
mm	inch	mm	mm
1,000		34,000	12,000
1,100		36,000	14,000
1,200		38,000	16,000
1,300		38,000	16,000
1,400		40,000	18,000
1,500		40,000	18,000
1,600		43,000	20,000
1,700		43,000	20,000
1,800		46,000	22,000
1,900		46,000	22,000
2,000		49,000	24,000
2,100		49,000	24,000
2,200		53,000	27,000
2,300		53,000	27,000
2,400		57,000	30,000
2,500		57,000	30,000
2,600		57,000	30,000
2,700		61,000	33,000
2,800		61,000	33,000
2,900		61,000	33,000
3,000		61,000	33,000
3,100		65,000	36,000
3,200		65,000	36,000
3,300		65,000	36,000
3,400		70,000	39,000
3,500		70,000	39,000
3,600		70,000	39,000
3,700		70,000	39,000
3,800		75,000	43,000
3,900		75,000	43,000
4,000		75,000	43,000
4,100		75,000	43,000
4,200		75,000	43,000
4,300		80,000	47,000
4,400		80,000	47,000
4,500		80,000	47,000
4,600		80,000	47,000
4,700		80,000	47,000
4,800		86,000	52,000
4,900		86,000	52,000
5,000		86,000	52,000
5,100		86,000	52,000

d1		l1	l2
mm	inch	mm	mm
5,200		86,000	52,000
5,300		86,000	52,000
5,400		93,000	57,000
5,500		93,000	57,000
5,600		93,000	57,000
5,700		93,000	57,000
5,800		93,000	57,000
5,900		93,000	57,000
6,000		93,000	57,000
6,100		101,000	63,000
6,200		101,000	63,000
6,300		101,000	63,000
6,400		101,000	63,000
6,500		101,000	63,000
6,600		101,000	63,000
6,700		101,000	63,000
6,800		109,000	69,000
6,900		109,000	69,000
7,000		109,000	69,000
7,100		109,000	69,000
7,300		109,000	69,000
7,400		109,000	69,000
7,500		109,000	69,000
7,700		117,000	75,000
7,800		117,000	75,000
7,900		117,000	75,000
8,000		117,000	75,000
8,100		117,000	75,000
8,200		117,000	75,000
8,300		117,000	75,000
8,400		117,000	75,000
8,500		117,000	75,000
8,600		125,000	81,000
8,700		125,000	81,000
8,800		125,000	81,000
9,000		125,000	81,000
9,200		125,000	81,000
9,400		125,000	81,000
9,500		125,000	81,000
9,700		133,000	87,000
9,800		133,000	87,000
9,900		133,000	87,000

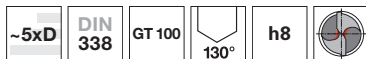


d1		l1	l2
mm	inch	mm	mm
10,000		133,000	87,000
10,200		133,000	87,000
10,300		133,000	87,000
10,400		133,000	87,000
10,500		133,000	87,000
11,000		142,000	94,000

d1		l1	l2
mm	inch	mm	mm
11,500		142,000	94,000
12,000		151,000	101,000
13,000		151,000	101,000
14,000		160,000	108,000



## Forets hélicoïdaux courts



- P** • Amin. de l'âme  $\geq \varnothing 3,000$  • affûtage à dépouille conique • acier rapide au Co • goujures larges • meilleure résistance à l'usure • parfait pour les profondeurs  $> 3xD$
- M**
- K** ○
- N** aciers alliés ou non alliés • fontes supérieure à  $800 \text{ N/mm}^2$  • aciers à outils, travail à froid et à chaud • aciers à roulement • aciers hautement alliés • aciers de cémentation et d'amélioration
- S**
- H**

Matière de coupe **HSCO**

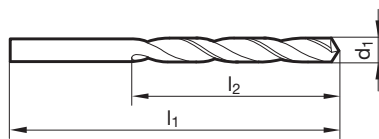
Surface

Sens de coupe

Forets hélicoïdaux à queue cylindrique

## GUHRING NAVIGATOR

Paramètres de coupe, page 782



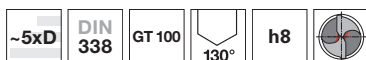
N° d'article **1221**

d1		l1	l2
mm	inch	mm	mm
3,000		61,000	33,000
3,050		65,000	36,000
3,100		65,000	36,000
3,170	1/8	65,000	36,000
3,200		65,000	36,000
3,300		65,000	36,000
3,400		70,000	39,000
3,450		70,000	39,000
3,500		70,000	39,000
3,570	9/64	70,000	39,000
3,600		70,000	39,000
3,660		70,000	39,000
3,700		70,000	39,000
3,750		70,000	39,000
3,800		75,000	43,000
3,900		75,000	43,000
3,970	5/32	75,000	43,000
4,000		75,000	43,000
4,050		75,000	43,000
4,100		75,000	43,000
4,200		75,000	43,000
4,300		80,000	47,000
4,370	11/64	80,000	47,000
4,500		80,000	47,000
4,700		80,000	47,000
4,760	3/16	86,000	52,000
4,800		86,000	52,000
4,900		86,000	52,000
4,920		86,000	52,000
4,980		86,000	52,000
5,000		86,000	52,000
5,100		86,000	52,000
5,200		86,000	52,000
5,400		93,000	57,000
5,500		93,000	57,000
5,560	7/32	93,000	57,000
5,700		93,000	57,000
5,900		93,000	57,000
6,000		93,000	57,000
6,100		101,000	63,000
6,200		101,000	63,000
6,300		101,000	63,000

d1		l1	l2
mm	inch	mm	mm
6,350	1/4	101,000	63,000
6,400		101,000	63,000
6,600		101,000	63,000
6,700		101,000	63,000
6,800		109,000	69,000
6,900		109,000	69,000
7,000		109,000	69,000
7,100		109,000	69,000
7,400		109,000	69,000
7,800		117,000	75,000
7,900		117,000	75,000
8,000		117,000	75,000
8,200		117,000	75,000
8,300		117,000	75,000
8,400		117,000	75,000
8,500		117,000	75,000
8,600		125,000	81,000
8,700		125,000	81,000
8,900		125,000	81,000
9,000		125,000	81,000
9,130	23/64	125,000	81,000
9,500		125,000	81,000
9,520	3/8	133,000	87,000
9,900		133,000	87,000
9,920	25/64	133,000	87,000
10,000		133,000	87,000
10,100		133,000	87,000
10,200		133,000	87,000
10,400		133,000	87,000
10,700		142,000	94,000
11,200		142,000	94,000
11,910	15/32	151,000	101,000



Forets hélicoïdaux courts



Matière de coupe **HSCO**

Surface **A**

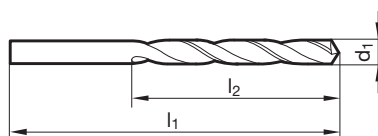
Sens de coupe **R**

**P** ○ Amin. de l'âme ≥ Ø 3,000 • affûtage à dépouille conique • acier rapide au Co • goujures larges • meilleure résistance à l'usure • parfait pour les profondeurs > 3xD

**M** ○  
**K** ●  
**N** ○ aciers alliés ou non alliés • fontes supérieure à 800 N/mm<sup>2</sup> • aciers à outils, travail à froid et à chaud • aciers à roulement • aciers hautement alliés • aciers de cémentation et d'amélioration  
**S** ○  
**H** ○

**GUHRING** NAVIGATOR

Paramètres de coupe, page 782



Forets hélicoïdaux à queue cylindrique

N° d'article **1223**

d1		l1	l2
mm	inch	mm	mm
3,000		61,000	33,000
3,050		65,000	36,000
3,100		65,000	36,000
3,170	1/8	65,000	36,000
3,200		65,000	36,000
3,300		65,000	36,000
3,500		70,000	39,000
3,600		70,000	39,000
3,700		70,000	39,000
3,800		75,000	43,000
3,860		75,000	43,000
3,900		75,000	43,000
3,970	5/32	75,000	43,000
4,000		75,000	43,000
4,040		75,000	43,000
4,100		75,000	43,000
4,200		75,000	43,000
4,300		80,000	47,000
4,370	11/64	80,000	47,000
4,400		80,000	47,000
4,500		80,000	47,000
4,600		80,000	47,000
4,700		80,000	47,000
4,760	3/16	86,000	52,000
4,800		86,000	52,000
4,900		86,000	52,000
4,920		86,000	52,000
4,980		86,000	52,000
5,000		86,000	52,000
5,100		86,000	52,000
5,160	13/64	86,000	52,000
5,200		86,000	52,000
5,300		86,000	52,000
5,400		93,000	57,000
5,500		93,000	57,000
5,600		93,000	57,000
5,700		93,000	57,000
5,800		93,000	57,000
5,900		93,000	57,000
5,950	15/64	93,000	57,000
6,000		93,000	57,000
6,100		101,000	63,000

d1		l1	l2
mm	inch	mm	mm
6,300		101,000	63,000
6,350	1/4	101,000	63,000
6,400		101,000	63,000
6,500		101,000	63,000
6,600		101,000	63,000
6,700		101,000	63,000
6,900		109,000	69,000
7,000		109,000	69,000
7,100		109,000	69,000
7,200		109,000	69,000
7,300		109,000	69,000
7,400		109,000	69,000
7,500		109,000	69,000
7,600		117,000	75,000
7,700		117,000	75,000
7,800		117,000	75,000
7,900		117,000	75,000
7,940	5/16	117,000	75,000
8,000		117,000	75,000
8,100		117,000	75,000
8,200		117,000	75,000
8,300		117,000	75,000
8,400		117,000	75,000
8,500		117,000	75,000
8,600		125,000	81,000
8,700		125,000	81,000
8,730	11/32	125,000	81,000
8,800		125,000	81,000
9,000		125,000	81,000
9,130	23/64	125,000	81,000
9,200		125,000	81,000
9,500		125,000	81,000
9,520	3/8	133,000	87,000
9,530		133,000	87,000
9,800		133,000	87,000
9,900		133,000	87,000
9,920	25/64	133,000	87,000
10,000		133,000	87,000
10,100		133,000	87,000
10,200		133,000	87,000
10,300		133,000	87,000
10,400		133,000	87,000



d1		l1	l2
mm	inch	mm	mm
10,500		133,000	87,000
10,700		142,000	94,000
10,720	27/64	142,000	94,000
10,800		142,000	94,000
11,000		142,000	94,000
11,110	7/16	142,000	94,000

d1		l1	l2
mm	inch	mm	mm
11,200		142,000	94,000
11,500		142,000	94,000
11,700		142,000	94,000
12,000		151,000	101,000

Forets hélicoïdaux à queue cylindrique



Forets hélicoïdaux courts



Matière de coupe **HSCO**

Surface

Sens de coupe

**P** ○ Amin. de l'âme ≥ Ø 0,970 • affûtage à dépouille conique • acier rapide au Co • meilleure résistance à l'usure

**M** ●

**K** ●

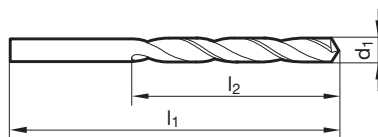
**N** ● Titane et ses alliages • aciers austénit., inox., inaltérables aux acides, réfractaires • aciers > 900 N/mm<sup>2</sup>, à copeaux courts • Hastelloy, Inconel, Nimonic

**S** ●

**H** ●

**GUHRING NAVIGATOR**

Paramètres de coupe, page 780



N° d'article **605**

d1		l1	l2
mm	inch	mm	mm
0,200		19,000	2,500
0,300		19,000	3,000
0,380		19,000	4,000
0,400	1/64	20,000	5,000
0,440		20,000	5,000
0,450		20,000	5,000
0,500		22,000	6,000
0,510		22,000	6,000
0,530		22,000	6,000
0,550		24,000	7,000
0,570		24,000	7,000
0,580		24,000	7,000
0,600		24,000	7,000
0,610		26,000	8,000
0,640		26,000	8,000
0,650		26,000	8,000
0,700		28,000	9,000
0,710		28,000	9,000
0,720		28,000	9,000
0,750		28,000	9,000
0,760		30,000	10,000
0,790	1/32	30,000	10,000
0,800		30,000	10,000
0,810		30,000	10,000
0,820		30,000	10,000
0,830		30,000	10,000
0,840		30,000	10,000
0,850		30,000	10,000
0,860		32,000	11,000
0,870		32,000	11,000
0,880		32,000	11,000
0,887		32,000	11,000
0,890		32,000	11,000
0,900		32,000	11,000
0,910		32,000	11,000
0,920		32,000	11,000
0,940		32,000	11,000
0,950		32,000	11,000
0,980		34,000	12,000
0,990		34,000	12,000
1,000		34,000	12,000
1,020		34,000	12,000

d1		l1	l2
mm	inch	mm	mm
1,040		34,000	12,000
1,050		34,000	12,000
1,070		36,000	14,000
1,080		36,000	14,000
1,090		36,000	14,000
1,100		36,000	14,000
1,140		36,000	14,000
1,150		36,000	14,000
1,160		36,000	14,000
1,180		36,000	14,000
1,190	3/64	38,000	16,000
1,200		38,000	16,000
1,210		38,000	16,000
1,220		38,000	16,000
1,230		38,000	16,000
1,250		38,000	16,000
1,290		38,000	16,000
1,300		38,000	16,000
1,320		38,000	16,000
1,350		40,000	18,000
1,400		40,000	18,000
1,450		40,000	18,000
1,460		40,000	18,000
1,500		40,000	18,000
1,510		43,000	20,000
1,520		43,000	20,000
1,530		43,000	20,000
1,550		43,000	20,000
1,570		43,000	20,000
1,590	1/16	43,000	20,000
1,600		43,000	20,000
1,610		43,000	20,000
1,620		43,000	20,000
1,650		43,000	20,000
1,680		43,000	20,000
1,700		43,000	20,000
1,730		46,000	22,000
1,750		46,000	22,000
1,780		46,000	22,000
1,800		46,000	22,000
1,820		46,000	22,000
1,850		46,000	22,000

Forets hélicoïdaux à queue cylindrique



Forets hélicoïdaux à queue cylindrique

d1		l1	l2
mm	inch	mm	mm
1,900		46,000	22,000
1,930		49,000	24,000
1,950		49,000	24,000
1,970		49,000	24,000
1,980	5/64	49,000	24,000
1,990		49,000	24,000
2,000		49,000	24,000
2,020		49,000	24,000
2,030		49,000	24,000
2,050		49,000	24,000
2,080		49,000	24,000
2,100		49,000	24,000
2,120		49,000	24,000
2,150		53,000	27,000
2,180		53,000	27,000
2,200		53,000	27,000
2,250		53,000	27,000
2,260		53,000	27,000
2,300		53,000	27,000
2,320		53,000	27,000
2,350		53,000	27,000
2,370		57,000	30,000
2,380	3/32	57,000	30,000
2,400		57,000	30,000
2,450		57,000	30,000
2,490		57,000	30,000
2,500		57,000	30,000
2,530		57,000	30,000
2,550		57,000	30,000
2,600		57,000	30,000
2,650		57,000	30,000
2,700		61,000	33,000
2,710		61,000	33,000
2,750		61,000	33,000
2,780	7/64	61,000	33,000
2,790		61,000	33,000
2,800		61,000	33,000
2,810		61,000	33,000
2,820		61,000	33,000
2,850		61,000	33,000
2,870		61,000	33,000
2,900		61,000	33,000
2,950		61,000	33,000
3,000		61,000	33,000
3,030		65,000	36,000
3,050		65,000	36,000
3,100		65,000	36,000
3,150		65,000	36,000
3,170	1/8	65,000	36,000
3,200		65,000	36,000
3,250		65,000	36,000
3,260		65,000	36,000
3,300		65,000	36,000
3,350		65,000	36,000
3,400		70,000	39,000
3,450		70,000	39,000
3,500		70,000	39,000
3,550		70,000	39,000
3,570	9/64	70,000	39,000
3,600		70,000	39,000
3,650		70,000	39,000
3,700		70,000	39,000
3,750		70,000	39,000
3,790		75,000	43,000
3,800		75,000	43,000
3,900		75,000	43,000
3,950		75,000	43,000
3,970	5/32	75,000	43,000
3,980		75,000	43,000
4,000		75,000	43,000
4,040		75,000	43,000
4,050		75,000	43,000

d1		l1	l2
mm	inch	mm	mm
4,100		75,000	43,000
4,150		75,000	43,000
4,200		75,000	43,000
4,220		75,000	43,000
4,250		75,000	43,000
4,300		80,000	47,000
4,350		80,000	47,000
4,370	11/64	80,000	47,000
4,400		80,000	47,000
4,450		80,000	47,000
4,500		80,000	47,000
4,570		80,000	47,000
4,600		80,000	47,000
4,650		80,000	47,000
4,700		80,000	47,000
4,750		80,000	47,000
4,760	3/16	86,000	52,000
4,790		86,000	52,000
4,800		86,000	52,000
4,850		86,000	52,000
4,900		86,000	52,000
5,000		86,000	52,000
5,050		86,000	52,000
5,100		86,000	52,000
5,110		86,000	52,000
5,160	13/64	86,000	52,000
5,200		86,000	52,000
5,250		86,000	52,000
5,300		86,000	52,000
5,400		93,000	57,000
5,410		93,000	57,000
5,500		93,000	57,000
5,550		93,000	57,000
5,560	7/32	93,000	57,000
5,600		93,000	57,000
5,610		93,000	57,000
5,700		93,000	57,000
5,750		93,000	57,000
5,800		93,000	57,000
5,900		93,000	57,000
5,950	15/64	93,000	57,000
6,000		93,000	57,000
6,050		101,000	63,000
6,080		101,000	63,000
6,100		101,000	63,000
6,200		101,000	63,000
6,300		101,000	63,000
6,350	1/4	101,000	63,000
6,400		101,000	63,000
6,500		101,000	63,000
6,600		101,000	63,000
6,700		101,000	63,000
6,750	17/64	109,000	69,000
6,800		109,000	69,000
6,900		109,000	69,000
7,000		109,000	69,000
7,100		109,000	69,000
7,140	9/32	109,000	69,000
7,200		109,000	69,000
7,300		109,000	69,000
7,400		109,000	69,000
7,500		109,000	69,000
7,540	19/64	117,000	75,000
7,600		117,000	75,000
7,700		117,000	75,000
7,800		117,000	75,000
7,900		117,000	75,000
7,940	5/16	117,000	75,000
8,000		117,000	75,000
8,100		117,000	75,000
8,200		117,000	75,000
8,300		117,000	75,000





d1		l1	l2
mm	inch	mm	mm
8,330	21/64	117,000	75,000
8,400		117,000	75,000
8,500		117,000	75,000
8,550		125,000	81,000
8,600		125,000	81,000
8,700		125,000	81,000
8,730	11/32	125,000	81,000
8,800		125,000	81,000
8,900		125,000	81,000
9,000		125,000	81,000
9,100		125,000	81,000
9,130	23/64	125,000	81,000
9,200		125,000	81,000
9,300		125,000	81,000
9,400		125,000	81,000
9,500		125,000	81,000
9,520	3/8	133,000	87,000
9,600		133,000	87,000
9,700		133,000	87,000
9,800		133,000	87,000
9,900		133,000	87,000
9,920	25/64	133,000	87,000
10,000		133,000	87,000
10,100		133,000	87,000
10,200		133,000	87,000
10,300		133,000	87,000
10,320	13/32	133,000	87,000
10,400		133,000	87,000
10,500		133,000	87,000
10,600		133,000	87,000
10,700		142,000	94,000
10,720	27/64	142,000	94,000
10,800		142,000	94,000
11,000		142,000	94,000
11,100		142,000	94,000
11,110	7/16	142,000	94,000

d1		l1	l2
mm	inch	mm	mm
11,200		142,000	94,000
11,300		142,000	94,000
11,500		142,000	94,000
11,510	29/64	142,000	94,000
11,600		142,000	94,000
11,700		142,000	94,000
11,750		142,000	94,000
11,800		142,000	94,000
11,900		151,000	101,000
11,910	15/32	151,000	101,000
12,000		151,000	101,000
12,100		151,000	101,000
12,200		151,000	101,000
12,300	31/64	151,000	101,000
12,500		151,000	101,000
12,700	1/2	151,000	101,000
12,800		151,000	101,000
13,000		151,000	101,000
13,100	33/64	151,000	101,000
13,500		160,000	108,000
13,800		160,000	108,000
13,890	35/64	160,000	108,000
13,970		160,000	108,000
14,000		160,000	108,000
14,290	9/16	169,000	114,000
14,500		169,000	114,000
14,680	37/64	169,000	114,000
15,000		169,000	114,000
15,500		178,000	120,000
16,000		178,000	120,000
16,500		184,000	125,000
17,000		184,000	125,000
17,500		191,000	130,000
18,000		191,000	130,000
19,000		198,000	135,000

Forets hélicoïdaux  
à queue cylindrique



## Forets hélicoïdaux courts



Matière de coupe **HSCO**

Surface **S**

Sens de coupe **R**

**P** ○ Amin. de l'âme ≥ Ø 1,000 • affûtage à dépouille conique • acier rapide au Co • meilleure résistance à l'usure

**M** ●

**K** ●

**N** ● Titane et ses alliages • aciers austénit., inox., inaltérables aux acides, réfractaires • aciers > 900 N/mm<sup>2</sup>, à copeaux courts • Hastelloy, Inconel, Nimonic

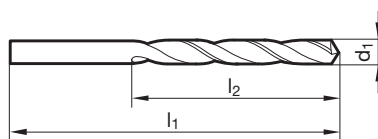
**S** ●

**H** ●

## GUHRING NAVIGATOR

Paramètres de coupe, page 782

Forets hélicoïdaux à queue cylindrique



N° d'article **657**

d1		l1	l2
mm	inch	mm	mm
0,500		22,000	6,000
0,530		22,000	6,000
0,600		24,000	7,000
0,650		26,000	8,000
0,700		28,000	9,000
0,750		28,000	9,000
0,800		30,000	10,000
0,850		30,000	10,000
0,880		32,000	11,000
0,900		32,000	11,000
0,920		32,000	11,000
0,940		32,000	11,000
0,950		32,000	11,000
1,000		34,000	12,000
1,050		34,000	12,000
1,100		36,000	14,000
1,150		36,000	14,000
1,180		36,000	14,000
1,190	3/64	38,000	16,000
1,200		38,000	16,000
1,210		38,000	16,000
1,250		38,000	16,000
1,300		38,000	16,000
1,320		38,000	16,000
1,350		40,000	18,000
1,390		40,000	18,000
1,400		40,000	18,000
1,450		40,000	18,000
1,500		40,000	18,000
1,510		43,000	20,000
1,520		43,000	20,000
1,550		43,000	20,000
1,590	1/16	43,000	20,000
1,600		43,000	20,000
1,610		43,000	20,000
1,620		43,000	20,000
1,650		43,000	20,000
1,700		43,000	20,000
1,750		46,000	22,000
1,780		46,000	22,000
1,800		46,000	22,000
1,850		46,000	22,000

d1		l1	l2
mm	inch	mm	mm
1,900		46,000	22,000
1,950		49,000	24,000
1,980	5/64	49,000	24,000
2,000		49,000	24,000
2,050		49,000	24,000
2,100		49,000	24,000
2,150		53,000	27,000
2,200		53,000	27,000
2,250		53,000	27,000
2,260		53,000	27,000
2,300		53,000	27,000
2,350		53,000	27,000
2,380	3/32	57,000	30,000
2,400		57,000	30,000
2,440		57,000	30,000
2,500		57,000	30,000
2,530		57,000	30,000
2,550		57,000	30,000
2,600		57,000	30,000
2,700		61,000	33,000
2,750		61,000	33,000
2,780	7/64	61,000	33,000
2,800		61,000	33,000
2,820		61,000	33,000
2,900		61,000	33,000
2,950		61,000	33,000
3,000		61,000	33,000
3,050		65,000	36,000
3,100		65,000	36,000
3,150		65,000	36,000
3,170	1/8	65,000	36,000
3,200		65,000	36,000
3,250		65,000	36,000
3,260		65,000	36,000
3,300		65,000	36,000
3,350		65,000	36,000
3,400		70,000	39,000
3,500		70,000	39,000
3,570	9/64	70,000	39,000
3,600		70,000	39,000
3,650		70,000	39,000
3,700		70,000	39,000



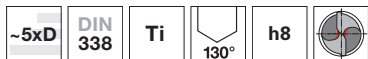
d1		l1	l2
mm	inch	mm	mm
3,750		70,000	39,000
3,800		75,000	43,000
3,900		75,000	43,000
3,970	5/32	75,000	43,000
4,000		75,000	43,000
4,050		75,000	43,000
4,100		75,000	43,000
4,200		75,000	43,000
4,250		75,000	43,000
4,300		80,000	47,000
4,350		80,000	47,000
4,370	11/64	80,000	47,000
4,400		80,000	47,000
4,500		80,000	47,000
4,600		80,000	47,000
4,700		80,000	47,000
4,760	3/16	86,000	52,000
4,800		86,000	52,000
4,900		86,000	52,000
5,000		86,000	52,000
5,050		86,000	52,000
5,100		86,000	52,000
5,110		86,000	52,000
5,160	13/64	86,000	52,000
5,200		86,000	52,000
5,300		86,000	52,000
5,400		93,000	57,000
5,500		93,000	57,000
5,560	7/32	93,000	57,000
5,600		93,000	57,000
5,610		93,000	57,000
5,700		93,000	57,000
5,800		93,000	57,000
5,900		93,000	57,000
5,950	15/64	93,000	57,000
6,000		93,000	57,000
6,100		101,000	63,000
6,200		101,000	63,000
6,300		101,000	63,000
6,350	1/4	101,000	63,000
6,400		101,000	63,000
6,500		101,000	63,000
6,600		101,000	63,000
6,700		101,000	63,000
6,750	17/64	109,000	69,000
6,800		109,000	69,000
6,900		109,000	69,000
7,000		109,000	69,000
7,100		109,000	69,000
7,140	9/32	109,000	69,000
7,200		109,000	69,000
7,300		109,000	69,000
7,400		109,000	69,000
7,500		109,000	69,000

d1		l1	l2
mm	inch	mm	mm
7,540	19/64	117,000	75,000
7,600		117,000	75,000
7,700		117,000	75,000
7,800		117,000	75,000
7,900		117,000	75,000
7,940	5/16	117,000	75,000
8,000		117,000	75,000
8,100		117,000	75,000
8,200		117,000	75,000
8,300		117,000	75,000
8,400		117,000	75,000
8,500		117,000	75,000
8,550		125,000	81,000
8,600		125,000	81,000
8,700		125,000	81,000
8,730	11/32	125,000	81,000
8,800		125,000	81,000
8,900		125,000	81,000
9,000		125,000	81,000
9,100		125,000	81,000
9,200		125,000	81,000
9,300		125,000	81,000
9,400		125,000	81,000
9,500		125,000	81,000
9,520	3/8	133,000	87,000
9,600		133,000	87,000
9,700		133,000	87,000
9,800		133,000	87,000
9,900		133,000	87,000
10,000		133,000	87,000
10,100		133,000	87,000
10,200		133,000	87,000
10,300		133,000	87,000
10,320	13/32	133,000	87,000
10,400		133,000	87,000
10,500		133,000	87,000
10,800		142,000	94,000
11,000		142,000	94,000
11,110	7/16	142,000	94,000
11,200		142,000	94,000
11,500		142,000	94,000
11,910	15/32	151,000	101,000
12,000		151,000	101,000
12,100		151,000	101,000
12,300	31/64	151,000	101,000
12,500		151,000	101,000
12,700	1/2	151,000	101,000
13,000		151,000	101,000
13,500		160,000	108,000
14,000		160,000	108,000
14,500		169,000	114,000

Forets hélicoïdaux à queue cylindrique



Forets hélicoïdaux courts



Matière de coupe **HSCO**

Surface **F**

Sens de coupe **R**

**P** ○ Amin. de l'âme ≥ Ø 1,000 • affûtage à dépouille conique • acier rapide au Co • meilleure résistance à l'usure

**M** ●

**K** ●

**N** ● Titane et ses alliages • aciers austénit., inox., inaltérables aux acides, réfractaires • aciers > 900 N/mm<sup>2</sup>, à copeaux courts • Hastelloy, Inconel, Nimonic

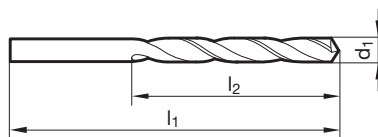
**S** ●

**H** ●

**GÜHRING** NAVIGATOR

Paramètres de coupe, page 782

Forets hélicoïdaux à queue cylindrique



N° d'article **2458**

d1		l1	l2
mm	inch	mm	mm
0,400	1/64	20,000	5,000
0,810		30,000	10,000
1,000		34,000	12,000
1,100		36,000	14,000
1,190	3/64	38,000	16,000
1,200		38,000	16,000
1,300		38,000	16,000
1,400		40,000	18,000
1,500		40,000	18,000
1,530		43,000	20,000
1,590	1/16	43,000	20,000
1,600		43,000	20,000
1,650		43,000	20,000
1,700		43,000	20,000
1,800		46,000	22,000
1,900		46,000	22,000
1,980	5/64	49,000	24,000
2,000		49,000	24,000
2,050		49,000	24,000
2,100		49,000	24,000
2,200		53,000	27,000
2,300		53,000	27,000
2,370		57,000	30,000
2,380	3/32	57,000	30,000
2,400		57,000	30,000
2,500		57,000	30,000
2,600		57,000	30,000
2,700		61,000	33,000
2,750		61,000	33,000
2,780	7/64	61,000	33,000
2,800		61,000	33,000
2,900		61,000	33,000
3,000		61,000	33,000
3,100		65,000	36,000
3,170	1/8	65,000	36,000
3,200		65,000	36,000
3,300		65,000	36,000
3,400		70,000	39,000
3,500		70,000	39,000
3,570	9/64	70,000	39,000
3,600		70,000	39,000
3,700		70,000	39,000

d1		l1	l2
mm	inch	mm	mm
3,800		75,000	43,000
3,900		75,000	43,000
3,970	5/32	75,000	43,000
4,000		75,000	43,000
4,100		75,000	43,000
4,150		75,000	43,000
4,200		75,000	43,000
4,220		75,000	43,000
4,300		80,000	47,000
4,370	11/64	80,000	47,000
4,400		80,000	47,000
4,500		80,000	47,000
4,600		80,000	47,000
4,700		80,000	47,000
4,760	3/16	86,000	52,000
4,800		86,000	52,000
4,900		86,000	52,000
5,000		86,000	52,000
5,050		86,000	52,000
5,100		86,000	52,000
5,160	13/64	86,000	52,000
5,200		86,000	52,000
5,300		86,000	52,000
5,400		93,000	57,000
5,500		93,000	57,000
5,560	7/32	93,000	57,000
5,600		93,000	57,000
5,700		93,000	57,000
5,800		93,000	57,000
5,900		93,000	57,000
5,950	15/64	93,000	57,000
6,000		93,000	57,000
6,100		101,000	63,000
6,200		101,000	63,000
6,300		101,000	63,000
6,350	1/4	101,000	63,000
6,400		101,000	63,000
6,500		101,000	63,000
6,600		101,000	63,000
6,700		101,000	63,000
6,750	17/64	109,000	69,000
6,800		109,000	69,000



d1		l1	l2
mm	inch	mm	mm
6,900		109,000	69,000
7,000		109,000	69,000
7,140	9/32	109,000	69,000
7,400		109,000	69,000
7,500		109,000	69,000
7,540	19/64	117,000	75,000
7,600		117,000	75,000
7,800		117,000	75,000
7,900		117,000	75,000
7,940	5/16	117,000	75,000
8,000		117,000	75,000
8,100		117,000	75,000
8,200		117,000	75,000
8,300		117,000	75,000
8,330	21/64	117,000	75,000
8,400		117,000	75,000
8,500		117,000	75,000
8,600		125,000	81,000
8,700		125,000	81,000
8,730	11/32	125,000	81,000
8,800		125,000	81,000
9,000		125,000	81,000
9,130	23/64	125,000	81,000
9,200		125,000	81,000
9,300		125,000	81,000
9,400		125,000	81,000
9,500		125,000	81,000
9,520	3/8	133,000	87,000
9,600		133,000	87,000
9,700		133,000	87,000

d1		l1	l2
mm	inch	mm	mm
9,800		133,000	87,000
9,920	25/64	133,000	87,000
10,000		133,000	87,000
10,100		133,000	87,000
10,200		133,000	87,000
10,300		133,000	87,000
10,320	13/32	133,000	87,000
10,400		133,000	87,000
10,500		133,000	87,000
10,720	27/64	142,000	94,000
11,000		142,000	94,000
11,110	7/16	142,000	94,000
11,500		142,000	94,000
11,510	29/64	142,000	94,000
11,910	15/32	151,000	101,000
12,000		151,000	101,000
12,300	31/64	151,000	101,000
12,500		151,000	101,000
12,700	1/2	151,000	101,000
13,000		151,000	101,000
13,100	33/64	151,000	101,000
13,490	17/32	160,000	108,000
14,000		160,000	108,000
14,290	9/16	169,000	114,000
14,500		169,000	114,000
15,000		169,000	114,000

 Forets hélicoïdaux  
à queue cylindrique



## Forets hélicoïdaux courts



Matière de coupe **HSCO**

Surface

Sens de coupe

**P** ○ Amin. de l'âme ≥ Ø 1,000 • affûtage à dépouille conique • acier rapide au Co • résistance à l'usure, améliorée

**M** ●

**K** ●

**N** ● Titane et ses alliages • aciers austénit., inox., inaltérables aux acides, réfractaires • aciers > 900 N/mm<sup>2</sup>, à copeaux courts • Hastelloy, Inconel, Nimonic

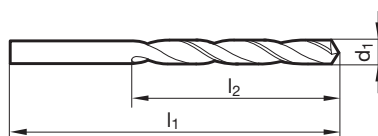
**S** ●

**H** ●

## GUHRING NAVIGATOR

Paramètres de coupe, page 780

Forets hélicoïdaux à queue cylindrique



N° d'article **608**

d1		l1	l2
mm	inch	mm	mm
1,300		38,000	16,000
1,320		38,000	16,000
1,350		40,000	18,000
1,400		40,000	18,000
1,600		43,000	20,000
1,620		43,000	20,000
1,640		43,000	20,000
1,700		43,000	20,000
1,800		46,000	22,000
1,900		46,000	22,000
1,950		49,000	24,000
2,000		49,000	24,000
2,150		53,000	27,000
2,400		57,000	30,000
2,500		57,000	30,000
2,600		57,000	30,000
2,750		61,000	33,000
2,800		61,000	33,000
3,000		61,000	33,000
3,300		65,000	36,000
3,320		65,000	36,000
3,400		70,000	39,000
3,500		70,000	39,000
3,550		70,000	39,000
3,600		70,000	39,000
3,650		70,000	39,000
3,700		70,000	39,000
3,900		75,000	43,000
4,000		75,000	43,000
4,250		75,000	43,000
4,300		80,000	47,000
4,400		80,000	47,000
4,500		80,000	47,000
4,700		80,000	47,000
4,800		86,000	52,000
4,900		86,000	52,000

d1		l1	l2
mm	inch	mm	mm
4,920		86,000	52,000
5,000		86,000	52,000
5,200		86,000	52,000
5,400		93,000	57,000
5,450		93,000	57,000
5,580		93,000	57,000
5,600		93,000	57,000
5,700		93,000	57,000
5,800		93,000	57,000
5,900		93,000	57,000
6,000		93,000	57,000
6,300		101,000	63,000
6,600		101,000	63,000
6,900		109,000	69,000
7,000		109,000	69,000
7,100		109,000	69,000
7,300		109,000	69,000
7,400		109,000	69,000
7,500		109,000	69,000
7,600		117,000	75,000
7,700		117,000	75,000
7,800		117,000	75,000
7,900		117,000	75,000
8,100		117,000	75,000
8,400		117,000	75,000
8,750		125,000	81,000
8,800		125,000	81,000
9,100		125,000	81,000
9,200		125,000	81,000
9,300		125,000	81,000
9,500		125,000	81,000



Forets hélicoïdaux courts



Matière de coupe **HSCO**

Surface ○

Sens de coupe (R)

**P** ○ affûtage à dépouille conique • acier rapide au Co • meilleure résistance à l'usure

**M** ●

**K** ●

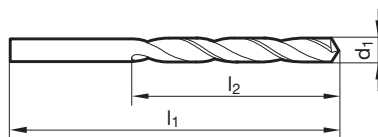
**N** ○ aciers austénit., inox., inaltérablesaux acides, réfractaires (V2A et V4A)

**S** ○

**H** ●

**GUHRING** NAVIGATOR

Paramètres de coupe, page 780



Forets hélicoïdaux à queue cylindrique

N° d'article **1260**

d1		l1	l2
mm	inch	mm	mm
1,000		34,000	12,000
1,100		36,000	14,000
1,200		38,000	16,000
1,300		38,000	16,000
1,400		40,000	18,000
1,500		40,000	18,000
1,600		43,000	20,000
1,700		43,000	20,000
1,800		46,000	22,000
1,900		46,000	22,000
2,000		49,000	24,000
2,100		49,000	24,000
2,200		53,000	27,000
2,300		53,000	27,000
2,400		57,000	30,000
2,500		57,000	30,000
2,600		57,000	30,000
2,700		61,000	33,000
2,800		61,000	33,000
2,900		61,000	33,000
3,000		61,000	33,000
3,100		65,000	36,000
3,200		65,000	36,000
3,300		65,000	36,000
3,400		70,000	39,000
3,500		70,000	39,000
3,570	9/64	70,000	39,000
3,600		70,000	39,000
3,700		70,000	39,000
3,800		75,000	43,000
3,900		75,000	43,000
4,000		75,000	43,000
4,100		75,000	43,000
4,200		75,000	43,000
4,300		80,000	47,000
4,400		80,000	47,000
4,500		80,000	47,000
4,600		80,000	47,000
4,700		80,000	47,000
4,800		86,000	52,000
4,900		86,000	52,000
5,000		86,000	52,000

d1		l1	l2
mm	inch	mm	mm
5,100		86,000	52,000
5,200		86,000	52,000
5,300		86,000	52,000
5,400		93,000	57,000
5,500		93,000	57,000
5,600		93,000	57,000
5,700		93,000	57,000
5,800		93,000	57,000
5,900		93,000	57,000
6,000		93,000	57,000
6,100		101,000	63,000
6,200		101,000	63,000
6,300		101,000	63,000
6,400		101,000	63,000
6,500		101,000	63,000
6,600		101,000	63,000
6,700		101,000	63,000
6,800		109,000	69,000
6,900		109,000	69,000
7,000		109,000	69,000
7,100		109,000	69,000
7,200		109,000	69,000
7,300		109,000	69,000
7,400		109,000	69,000
7,500		109,000	69,000
7,700		117,000	75,000
7,800		117,000	75,000
7,900		117,000	75,000
8,000		117,000	75,000
8,100		117,000	75,000
8,200		117,000	75,000
8,300		117,000	75,000
8,400		117,000	75,000
8,500		117,000	75,000
8,600		125,000	81,000
8,700		125,000	81,000
8,800		125,000	81,000
8,900		125,000	81,000
9,000		125,000	81,000
9,100		125,000	81,000
9,200		125,000	81,000
9,400		125,000	81,000



d1		l1	l2
mm	inch	mm	mm
9,500		125,000	81,000
9,600		133,000	87,000
9,700		133,000	87,000
9,800		133,000	87,000
9,920	25/64	133,000	87,000
10,000		133,000	87,000
10,100		133,000	87,000
10,200		133,000	87,000
10,300		133,000	87,000
10,500		133,000	87,000
10,600		133,000	87,000
10,800		142,000	94,000

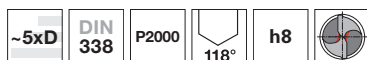
d1		l1	l2
mm	inch	mm	mm
11,000		142,000	94,000
11,200		142,000	94,000
11,500		142,000	94,000
11,800		142,000	94,000
11,900		151,000	101,000
12,000		151,000	101,000
12,500		151,000	101,000
13,000		151,000	101,000

Forets hélicoïdaux à queue cylindrique





Forets hélicoïdaux courts



Matière de coupe **HSCO**

Surface

Sens de coupe

**P** • Amin. de l'âme  $\geq \varnothing 1,000$  • affûtage à dépouille conique • utilisation universelle avec affûtage strié • acier rapide au Co • meilleure résistance à l'usure

**M** ○

**K** ○

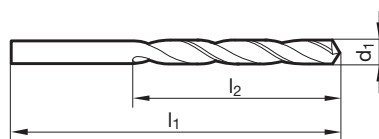
**N** ○ aciers jusqu'à 1000 N/mm<sup>2</sup> • alliages d'aluminium et silicium

**S** ○

**H** ○

**GUHRING** NAVIGATOR

Paramètres de coupe, page 784



Forets hélicoïdaux à queue cylindrique

N° d'article **2047**

d1		l1	l2
mm	inch	mm	mm
1,000		34,000	12,000
1,100		36,000	14,000
1,200		38,000	16,000
1,300		38,000	16,000
1,400		40,000	18,000
1,500		40,000	18,000
1,600		43,000	20,000
1,700		43,000	20,000
1,800		46,000	22,000
1,900		46,000	22,000
2,000		49,000	24,000
2,100		49,000	24,000
2,200		53,000	27,000
2,300		53,000	27,000
2,400		57,000	30,000
2,500		57,000	30,000
2,600		57,000	30,000
2,700		61,000	33,000
2,800		61,000	33,000
2,900		61,000	33,000
3,000		61,000	33,000
3,100		65,000	36,000
3,200		65,000	36,000
3,300		65,000	36,000
3,400		70,000	39,000
3,500		70,000	39,000
3,600		70,000	39,000
3,700		70,000	39,000
3,800		75,000	43,000
3,900		75,000	43,000
4,000		75,000	43,000
4,100		75,000	43,000
4,200		75,000	43,000
4,300		80,000	47,000
4,400		80,000	47,000
4,500		80,000	47,000
4,600		80,000	47,000
4,700		80,000	47,000
4,800		86,000	52,000
4,900		86,000	52,000
5,000		86,000	52,000
5,100		86,000	52,000

d1		l1	l2
mm	inch	mm	mm
5,200		86,000	52,000
5,300		86,000	52,000
5,400		93,000	57,000
5,500		93,000	57,000
5,600		93,000	57,000
5,700		93,000	57,000
5,800		93,000	57,000
5,900		93,000	57,000
6,000		93,000	57,000
6,100		101,000	63,000
6,200		101,000	63,000
6,300		101,000	63,000
6,400		101,000	63,000
6,500		101,000	63,000
6,600		101,000	63,000
6,700		101,000	63,000
6,800		109,000	69,000
6,900		109,000	69,000
7,000		109,000	69,000
7,100		109,000	69,000
7,200		109,000	69,000
7,300		109,000	69,000
7,400		109,000	69,000
7,500		109,000	69,000
7,600		117,000	75,000
7,700		117,000	75,000
7,800		117,000	75,000
7,900		117,000	75,000
8,000		117,000	75,000
8,100		117,000	75,000
8,200		117,000	75,000
8,300		117,000	75,000
8,400		117,000	75,000
8,500		117,000	75,000
8,600		125,000	81,000
8,700		125,000	81,000
8,800		125,000	81,000
8,900		125,000	81,000
9,000		125,000	81,000
9,100		125,000	81,000
9,200		125,000	81,000
9,300		125,000	81,000



d1		l1	l2
mm	inch	mm	mm
9,400		125,000	81,000
9,500		125,000	81,000
9,600		133,000	87,000
9,700		133,000	87,000
9,800		133,000	87,000
9,900		133,000	87,000
10,000		133,000	87,000
10,200		133,000	87,000
10,500		133,000	87,000
11,000		142,000	94,000
11,500		142,000	94,000
12,000		151,000	101,000

d1		l1	l2
mm	inch	mm	mm
12,500		151,000	101,000
13,000		151,000	101,000

Forets hélicoïdaux à queue cylindrique



Forets hélicoïdaux AeroX avec affûtage en croix



Matière de coupe **M42**

Surface

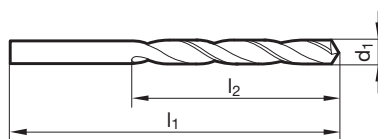
Sens de coupe



- P** • Amin. de l'âme  $\geq \varnothing 1,000$  • affûtage en croix, optimisé • acier rapide allié au cobalt, HSCO avec un pourcentage de 8% de cobalt, pour des tenues de coupe d'outils améliorées, beaucoup plus résistant aux températures et duretés très élevées
- M** •
- K** •
- N** • aciers non alliés et aciers hautement alliés • fontes • métaux non ferreux
- S** • • Titane et ses alliages
- H** ○

**GUHRING** NAVIGATOR

Paramètres de coupe, page 784



Forets hélicoïdaux à queue cylindrique

N° d'article **1018**

d1		l1	l2
mm	inch	mm	mm
1,000		34,000	12,000
1,100		36,000	14,000
1,200		38,000	16,000
1,300		38,000	16,000
1,400		40,000	18,000
1,500		40,000	18,000
1,590	1/16	43,000	20,000
1,600		43,000	20,000
1,700		43,000	20,000
1,800		46,000	22,000
1,900		46,000	22,000
1,980	5/64	49,000	24,000
2,000		49,000	24,000
2,100		49,000	24,000
2,200		53,000	27,000
2,300		53,000	27,000
2,380	3/32	57,000	30,000
2,400		57,000	30,000
2,500		57,000	30,000
2,600		57,000	30,000
2,700		61,000	33,000
2,780	7/64	61,000	33,000
2,800		61,000	33,000
2,900		61,000	33,000
3,000		61,000	33,000
3,100		65,000	36,000
3,170	1/8	65,000	36,000
3,200		65,000	36,000
3,250		65,000	36,000
3,300		65,000	36,000
3,400		70,000	39,000
3,500		70,000	39,000
3,570	9/64	70,000	39,000
3,600		70,000	39,000
3,700		70,000	39,000
3,800		75,000	43,000
3,900		75,000	43,000
3,970	5/32	75,000	43,000
4,000		75,000	43,000
4,100		75,000	43,000
4,200		75,000	43,000
4,300		80,000	47,000

d1		l1	l2
mm	inch	mm	mm
4,400		80,000	47,000
4,500		80,000	47,000
4,600		80,000	47,000
4,700		80,000	47,000
4,760	3/16	86,000	52,000
4,800		86,000	52,000
4,900		86,000	52,000
5,000		86,000	52,000
5,100		86,000	52,000
5,160	13/64	86,000	52,000
5,200		86,000	52,000
5,300		86,000	52,000
5,400		93,000	57,000
5,500		93,000	57,000
5,560	7/32	93,000	57,000
5,600		93,000	57,000
5,700		93,000	57,000
5,800		93,000	57,000
5,900		93,000	57,000
5,950	15/64	93,000	57,000
6,000		93,000	57,000
6,100		101,000	63,000
6,200		101,000	63,000
6,300		101,000	63,000
6,350	1/4	101,000	63,000
6,400		101,000	63,000
6,500		101,000	63,000
6,600		101,000	63,000
6,700		101,000	63,000
6,800		109,000	69,000
6,900		109,000	69,000
7,000		109,000	69,000
7,100		109,000	69,000
7,140	9/32	109,000	69,000
7,200		109,000	69,000
7,300		109,000	69,000
7,400		109,000	69,000
7,500		109,000	69,000
7,540	19/64	117,000	75,000
7,600		117,000	75,000
7,700		117,000	75,000
7,800		117,000	75,000



Forets hélicoïdaux à queue cylindrique

d1		l1	l2
mm	inch	mm	mm
7,900		117,000	75,000
7,940	5/16	117,000	75,000
8,000		117,000	75,000
8,100		117,000	75,000
8,200		117,000	75,000
8,300		117,000	75,000
8,330	21/64	117,000	75,000
8,400		117,000	75,000
8,500		117,000	75,000
8,600		125,000	81,000
8,700		125,000	81,000
8,730	11/32	125,000	81,000
8,800		125,000	81,000
8,900		125,000	81,000
9,000		125,000	81,000
9,100		125,000	81,000
9,130	23/64	125,000	81,000
9,200		125,000	81,000
9,300		125,000	81,000
9,500		125,000	81,000
9,520	3/8	133,000	87,000
9,600		133,000	87,000
9,700		133,000	87,000
9,800		133,000	87,000

d1		l1	l2
mm	inch	mm	mm
9,900		133,000	87,000
9,920	25/64	133,000	87,000
10,000		133,000	87,000
10,100		133,000	87,000
10,200		133,000	87,000
10,300		133,000	87,000
10,320	13/32	133,000	87,000
10,500		133,000	87,000
10,720	27/64	142,000	94,000
10,800		142,000	94,000
11,000		142,000	94,000
11,110	7/16	142,000	94,000
11,500		142,000	94,000
11,510	29/64	142,000	94,000
11,910	15/32	151,000	101,000
12,000		151,000	101,000
12,200		151,000	101,000
12,300	31/64	151,000	101,000
12,500		151,000	101,000
12,700	1/2	151,000	101,000
12,800		151,000	101,000
13,000		151,000	101,000



Forets hélicoïdaux courts



Matière de coupe **M42**

Surface ○

Sens de coupe

**P** • Amin. de l'âme ≥ Ø 1,000 • affûtage à dépouille conique • haut % de Co & Mo • résistance à l'usure particulièrement élevée

**M** ○

**K** ○

**N** • alliages durs/alliages à haute résistance à base de chrome-nickel

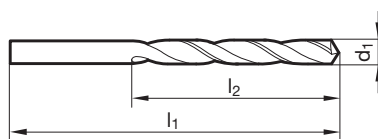
• Hastelloy, Inconel, Nimonic • aciers inox., inaltérables aux acides et

**S** • réfractaires • tôles résistantes à l'usure • aciers/bronzes < 1400 N/mm<sup>2</sup>

**H** ○

**GUHRING NAVIGATOR**

Paramètres de coupe, page 780



Forets hélicoïdaux à queue cylindrique

N° d'article **1146**

d1		l1	l2
mm	inch	mm	mm
0,400	1/64	20,000	5,000
0,500		22,000	6,000
0,800		30,000	10,000
0,900		32,000	11,000
1,000		34,000	12,000
1,100		36,000	14,000
1,200		38,000	16,000
1,300		38,000	16,000
1,400		40,000	18,000
1,500		40,000	18,000
1,590	1/16	43,000	20,000
1,600		43,000	20,000
1,700		43,000	20,000
1,800		46,000	22,000
1,900		46,000	22,000
1,980	5/64	49,000	24,000
2,000		49,000	24,000
2,100		49,000	24,000
2,200		53,000	27,000
2,300		53,000	27,000
2,380	3/32	57,000	30,000
2,400		57,000	30,000
2,500		57,000	30,000
2,600		57,000	30,000
2,700		61,000	33,000
2,780	7/64	61,000	33,000
2,800		61,000	33,000
2,900		61,000	33,000
3,000		61,000	33,000
3,100		65,000	36,000
3,170	1/8	65,000	36,000
3,200		65,000	36,000
3,300		65,000	36,000
3,400		70,000	39,000
3,500		70,000	39,000
3,600		70,000	39,000
3,700		70,000	39,000
3,800		75,000	43,000
3,900		75,000	43,000
3,970	5/32	75,000	43,000
4,000		75,000	43,000
4,100		75,000	43,000

d1		l1	l2
mm	inch	mm	mm
4,200		75,000	43,000
4,300		80,000	47,000
4,400		80,000	47,000
4,500		80,000	47,000
4,600		80,000	47,000
4,700		80,000	47,000
4,760	3/16	86,000	52,000
4,800		86,000	52,000
4,900		86,000	52,000
5,000		86,000	52,000
5,100		86,000	52,000
5,200		86,000	52,000
5,300		86,000	52,000
5,400		93,000	57,000
5,500		93,000	57,000
5,600		93,000	57,000
5,700		93,000	57,000
5,800		93,000	57,000
5,900		93,000	57,000
5,950	15/64	93,000	57,000
6,000		93,000	57,000
6,100		101,000	63,000
6,200		101,000	63,000
6,300		101,000	63,000
6,350	1/4	101,000	63,000
6,400		101,000	63,000
6,500		101,000	63,000
6,600		101,000	63,000
6,700		101,000	63,000
6,750	17/64	109,000	69,000
6,800		109,000	69,000
6,900		109,000	69,000
7,000		109,000	69,000
7,100		109,000	69,000
7,200		109,000	69,000
7,300		109,000	69,000
7,400		109,000	69,000
7,500		109,000	69,000
7,540	19/64	117,000	75,000
7,600		117,000	75,000
7,700		117,000	75,000
7,800		117,000	75,000



Forets hélicoïdaux à queue cylindrique

d1		l1	l2
mm	inch	mm	mm
7,900		117,000	75,000
8,000		117,000	75,000
8,100		117,000	75,000
8,200		117,000	75,000
8,300		117,000	75,000
8,330	21/64	117,000	75,000
8,400		117,000	75,000
8,500		117,000	75,000
8,600		125,000	81,000
8,700		125,000	81,000
8,730	11/32	125,000	81,000
8,800		125,000	81,000
8,900		125,000	81,000
9,000		125,000	81,000
9,100		125,000	81,000
9,130	23/64	125,000	81,000
9,200		125,000	81,000
9,300		125,000	81,000
9,400		125,000	81,000
9,500		125,000	81,000
9,600		133,000	87,000
9,700		133,000	87,000
9,800		133,000	87,000
9,900		133,000	87,000

d1		l1	l2
mm	inch	mm	mm
9,920	25/64	133,000	87,000
10,000		133,000	87,000
10,200		133,000	87,000
10,500		133,000	87,000
11,000		142,000	94,000
11,500		142,000	94,000
11,510	29/64	142,000	94,000
11,910	15/32	151,000	101,000
12,000		151,000	101,000
12,300	31/64	151,000	101,000
12,500		151,000	101,000
13,000		151,000	101,000
13,100	33/64	151,000	101,000
13,500		160,000	108,000
14,000		160,000	108,000
15,000		169,000	114,000
15,870	5/8	178,000	120,000
16,000		178,000	120,000



Forets hélicoïdaux courts

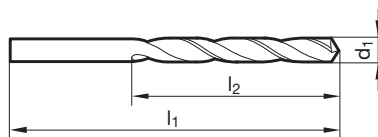


- P** • Amin. de l'âme  $\geq \varnothing 1,000$  • affûtage en croix, optimisé • acier rapide allié, HSCO, avec un taux de cobalt de 8% • résistance à l'usure particulièrement élevée
- M** •
- K** •
- N** ○ alliages durs/alliages à haute résistance à base de chrome-nickel • Hastelloy, Inconel, Nimonic • aciers inox., inaltérables aux acides et réfractaires • tôles résistantes à l'usure • aciers/bronzes  $< 1400 \text{ N/mm}^2$
- S** •
- H**

**GUHRING** NAVIGATOR

Paramètres de coupe, page 784

Matière de coupe	<b>M42</b>
Surface	<b>F</b>
Sens de coupe	<b>R</b>



N° d'article **1199**

d1		l1	l2
mm	inch	mm	mm
1,000		34,000	12,000
1,100		36,000	14,000
1,200		38,000	16,000
1,300		38,000	16,000
1,400		40,000	18,000
1,500		40,000	18,000
1,590	1/16	43,000	20,000
1,600		43,000	20,000
1,700		43,000	20,000
1,800		46,000	22,000
1,900		46,000	22,000
2,000		49,000	24,000
2,100		49,000	24,000
2,200		53,000	27,000
2,300		53,000	27,000
2,380	3/32	57,000	30,000
2,400		57,000	30,000
2,500		57,000	30,000
2,600		57,000	30,000
2,700		61,000	33,000
2,800		61,000	33,000
2,900		61,000	33,000
3,000		61,000	33,000
3,100		65,000	36,000
3,170	1/8	65,000	36,000
3,200		65,000	36,000
3,300		65,000	36,000
3,400		70,000	39,000
3,500		70,000	39,000
3,600		70,000	39,000
3,700		70,000	39,000
3,800		75,000	43,000
3,900		75,000	43,000
3,970	5/32	75,000	43,000
4,000		75,000	43,000
4,100		75,000	43,000
4,200		75,000	43,000
4,300		80,000	47,000
4,400		80,000	47,000
4,500		80,000	47,000
4,600		80,000	47,000
4,700		80,000	47,000

d1		l1	l2
mm	inch	mm	mm
4,760	3/16	86,000	52,000
4,800		86,000	52,000
4,900		86,000	52,000
5,000		86,000	52,000
5,100		86,000	52,000
5,160	13/64	86,000	52,000
5,200		86,000	52,000
5,300		86,000	52,000
5,400		93,000	57,000
5,500		93,000	57,000
5,600		93,000	57,000
5,700		93,000	57,000
5,800		93,000	57,000
5,900		93,000	57,000
5,950	15/64	93,000	57,000
6,000		93,000	57,000
6,100		101,000	63,000
6,200		101,000	63,000
6,300		101,000	63,000
6,350	1/4	101,000	63,000
6,400		101,000	63,000
6,500		101,000	63,000
6,600		101,000	63,000
6,700		101,000	63,000
6,750	17/64	109,000	69,000
6,800		109,000	69,000
6,900		109,000	69,000
7,000		109,000	69,000
7,100		109,000	69,000
7,200		109,000	69,000
7,300		109,000	69,000
7,400		109,000	69,000
7,500		109,000	69,000
7,600		117,000	75,000
7,700		117,000	75,000
7,800		117,000	75,000
7,900		117,000	75,000
8,000		117,000	75,000
8,100		117,000	75,000
8,200		117,000	75,000
8,300		117,000	75,000
8,400		117,000	75,000

Forets hélicoïdaux à queue cylindrique



Forets hélicoïdaux à queue cylindrique

d1		l1	l2
mm	inch	mm	mm
8,500		117,000	75,000
8,600		125,000	81,000
8,700		125,000	81,000
8,730		125,000	81,000
8,800		125,000	81,000
8,900		125,000	81,000
9,000		125,000	81,000
9,100		125,000	81,000
9,200		125,000	81,000
9,300		125,000	81,000
9,400		125,000	81,000
9,500		125,000	81,000
9,600		133,000	87,000
9,700		133,000	87,000
9,800		133,000	87,000
9,900		133,000	87,000
9,920	25/64	133,000	87,000
10,000		133,000	87,000

d1		l1	l2
mm	inch	mm	mm
10,100		133,000	87,000
10,200		133,000	87,000
10,500		133,000	87,000
10,800		142,000	94,000
11,000		142,000	94,000
11,200		142,000	94,000
11,500		142,000	94,000
11,800		142,000	94,000
11,910	15/32	151,000	101,000
12,000		151,000	101,000
12,200		151,000	101,000
12,500		151,000	101,000
13,000		151,000	101,000
14,000		160,000	108,000
15,000		169,000	114,000
16,000		178,000	120,000





Forets hélicoïdaux courts



Matière de coupe **CW monobloc**

Surface

Sens de coupe

**P** ○ Amin. de l'âme ≥ Ø 2,060 • affûtage en pente • arête de coupe principale rectiligne

**M** ○

**K** ○

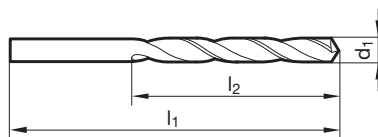
**N** ● aciers de construction et de cémentation • aciers de décolletage, aciers d'amélioration • fontes grises • bronze, laiton • aluminium et alliages

**S** ○ d'aluminium • magnésium, alliages de magnésium • matières synthét. et

**H** mat.synthét.renforcées de fibres

**GUHRING NAVIGATOR**

Paramètres de coupe, page 784



N° d'article **732**

d1		l1	l2
mm	inch	mm	mm
1,000		34,000	12,000
1,020		34,000	12,000
1,040		34,000	12,000
1,070		36,000	14,000
1,090		36,000	14,000
1,100		36,000	14,000
1,180		36,000	14,000
1,190	3/64	38,000	16,000
1,200		38,000	16,000
1,300		38,000	16,000
1,320		38,000	16,000
1,400		40,000	18,000
1,500		40,000	18,000
1,510		43,000	20,000
1,590	1/16	43,000	20,000
1,600		43,000	20,000
1,610		43,000	20,000
1,700		43,000	20,000
1,780		46,000	22,000
1,800		46,000	22,000
1,850		46,000	22,000
1,900		46,000	22,000
1,930		49,000	24,000
1,980	5/64	49,000	24,000
1,990		49,000	24,000
2,000		49,000	24,000
2,060		49,000	24,000
2,080		49,000	24,000
2,100		49,000	24,000
2,180		53,000	27,000
2,200		53,000	27,000
2,260		53,000	27,000
2,300		53,000	27,000
2,370		57,000	30,000
2,380	3/32	57,000	30,000
2,400		57,000	30,000
2,440		57,000	30,000
2,490		57,000	30,000
2,500		57,000	30,000
2,530		57,000	30,000
2,580		57,000	30,000
2,600		57,000	30,000

d1		l1	l2
mm	inch	mm	mm
2,640		57,000	30,000
2,700		61,000	33,000
2,710		61,000	33,000
2,780	7/64	61,000	33,000
2,790		61,000	33,000
2,800		61,000	33,000
2,820		61,000	33,000
2,870		61,000	33,000
2,900		61,000	33,000
2,950		61,000	33,000
3,000		61,000	33,000
3,050		65,000	36,000
3,100		65,000	36,000
3,170	1/8	65,000	36,000
3,200		65,000	36,000
3,260		65,000	36,000
3,300		65,000	36,000
3,400		70,000	39,000
3,450		70,000	39,000
3,500		70,000	39,000
3,570	9/64	70,000	39,000
3,600		70,000	39,000
3,660		70,000	39,000
3,700		70,000	39,000
3,730		70,000	39,000
3,800		75,000	43,000
3,860		75,000	43,000
3,900		75,000	43,000
3,910		75,000	43,000
3,970	5/32	75,000	43,000
3,990		75,000	43,000
4,000		75,000	43,000
4,040		75,000	43,000
4,090		75,000	43,000
4,100		75,000	43,000
4,200		75,000	43,000
4,220		75,000	43,000
4,300		80,000	47,000
4,370	11/64	80,000	47,000
4,390		80,000	47,000
4,400		80,000	47,000
4,500		80,000	47,000

Forets hélicoïdaux à queue cylindrique



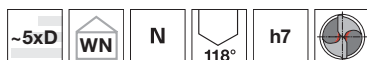
Forets hélicoïdaux à queue cylindrique

d1		l1	l2
mm	inch	mm	mm
4,570		80,000	47,000
4,600		80,000	47,000
4,620		80,000	47,000
4,700		80,000	47,000
4,760	3/16	86,000	52,000
4,800		86,000	52,000
4,850		86,000	52,000
4,900		86,000	52,000
4,920		86,000	52,000
4,980		86,000	52,000
5,000		86,000	52,000
5,060		86,000	52,000
5,100		86,000	52,000
5,110		86,000	52,000
5,160	13/64	86,000	52,000
5,180		86,000	52,000
5,200		86,000	52,000
5,220		86,000	52,000
5,300		86,000	52,000
5,310		93,000	57,000
5,400		93,000	57,000
5,410		93,000	57,000
5,500		93,000	57,000
5,560	7/32	93,000	57,000
5,600		93,000	57,000
5,610		93,000	57,000
5,700		93,000	57,000
5,790		93,000	57,000
5,800		93,000	57,000
5,900		93,000	57,000
5,940		93,000	57,000
5,950	15/64	93,000	57,000
6,000		93,000	57,000
6,040		101,000	63,000
6,100		101,000	63,000
6,150		101,000	63,000
6,200		101,000	63,000
6,250		101,000	63,000
6,300		101,000	63,000
6,350	1/4	101,000	63,000
6,400		101,000	63,000
6,500		101,000	63,000
6,530		101,000	63,000
6,600		101,000	63,000
6,630		101,000	63,000
6,700		101,000	63,000
6,750	17/64	109,000	69,000
6,800		109,000	69,000
6,900		109,000	69,000
7,000		109,000	69,000
7,030		109,000	69,000
7,100		109,000	69,000
7,140	9/32	109,000	69,000
7,200		109,000	69,000
7,300		109,000	69,000
7,370		109,000	69,000
7,400		109,000	69,000
7,490		109,000	69,000
7,500		109,000	69,000
7,540	19/64	117,000	75,000

d1		l1	l2
mm	inch	mm	mm
7,600		117,000	75,000
7,670		117,000	75,000
7,700		117,000	75,000
7,800		117,000	75,000
7,900		117,000	75,000
7,940	5/16	117,000	75,000
8,000		117,000	75,000
8,030		117,000	75,000
8,100		117,000	75,000
8,200		117,000	75,000
8,300		117,000	75,000
8,330	21/64	117,000	75,000
8,400		117,000	75,000
8,430		117,000	75,000
8,500		117,000	75,000
8,600		125,000	81,000
8,610		125,000	81,000
8,700		125,000	81,000
8,730	11/32	125,000	81,000
8,800		125,000	81,000
8,840		125,000	81,000
8,900		125,000	81,000
9,000		125,000	81,000
9,090		125,000	81,000
9,100		125,000	81,000
9,130	23/64	125,000	81,000
9,200		125,000	81,000
9,300		125,000	81,000
9,340		125,000	81,000
9,400		125,000	81,000
9,500		125,000	81,000
9,520	3/8	133,000	87,000
9,580		133,000	87,000
9,600		133,000	87,000
9,700		133,000	87,000
9,800		133,000	87,000
9,900		133,000	87,000
9,920	25/64	133,000	87,000
10,000		133,000	87,000
10,080		133,000	87,000
10,200		133,000	87,000
10,260		133,000	87,000
10,300		133,000	87,000
10,320	13/32	133,000	87,000
10,490		133,000	87,000
10,500		133,000	87,000
10,720	27/64	142,000	94,000
11,000		142,000	94,000
11,110	7/16	142,000	94,000
11,500		142,000	94,000
11,510	29/64	142,000	94,000
11,910	15/32	151,000	101,000
12,000		151,000	101,000
12,300	31/64	151,000	101,000
12,700	1/2	151,000	101,000



Forets hélicoïdaux courts

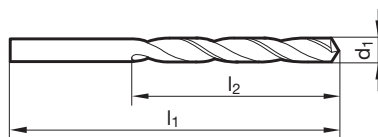


Matière de coupe	<b>CW monobloc</b>
Surface	<b>F</b>
Sens de coupe	<b>R</b>

- P** ○ Amin. de l'âme ≥ Ø 2,060 • affûtage en pente • arête de coupe principale rectiligne
- M** ○
- K** ○
- N** ● aciers de construction et de cémentation • aciers de décolletage, aciers d'amélioration • fontes • laitons • alliages d'aluminium avec haut % de Si
- S** ○ • magnésium, alliages de magnésium • matières synthét. et mat.synthét. renforcées de fibres
- H** ○

**GUHRING NAVIGATOR**

Paramètres de coupe, page 784



Forets hélicoïdaux à queue cylindrique

N° d'article **2464**

d1		l1	l2
mm	inch	mm	mm
1,000		34,000	12,000
1,020		34,000	12,000
1,040		34,000	12,000
1,070		36,000	14,000
1,090		36,000	14,000
1,100		36,000	14,000
1,180		36,000	14,000
1,190	3/64	38,000	16,000
1,200		38,000	16,000
1,300		38,000	16,000
1,320		38,000	16,000
1,400		40,000	18,000
1,500		40,000	18,000
1,510		43,000	20,000
1,590	1/16	43,000	20,000
1,600		43,000	20,000
1,610		43,000	20,000
1,700		43,000	20,000
1,780		46,000	22,000
1,800		46,000	22,000
1,850		46,000	22,000
1,900		46,000	22,000
1,930		49,000	24,000
1,980	5/64	49,000	24,000
1,990		49,000	24,000
2,000		49,000	24,000
2,060		49,000	24,000
2,080		49,000	24,000
2,100		49,000	24,000
2,180		53,000	27,000
2,200		53,000	27,000
2,260		53,000	27,000
2,300		53,000	27,000
2,370		57,000	30,000
2,380	3/32	57,000	30,000
2,400		57,000	30,000
2,440		57,000	30,000
2,490		57,000	30,000
2,500		57,000	30,000
2,530		57,000	30,000
2,580		57,000	30,000
2,600		57,000	30,000

d1		l1	l2
mm	inch	mm	mm
2,640		57,000	30,000
2,700		61,000	33,000
2,710		61,000	33,000
2,780	7/64	61,000	33,000
2,790		61,000	33,000
2,800		61,000	33,000
2,820		61,000	33,000
2,870		61,000	33,000
2,900		61,000	33,000
2,950		61,000	33,000
3,000		61,000	33,000
3,050		65,000	36,000
3,100		65,000	36,000
3,170	1/8	65,000	36,000
3,200		65,000	36,000
3,260		65,000	36,000
3,300		65,000	36,000
3,400		70,000	39,000
3,450		70,000	39,000
3,500		70,000	39,000
3,570	9/64	70,000	39,000
3,600		70,000	39,000
3,660		70,000	39,000
3,700		70,000	39,000
3,730		70,000	39,000
3,800		75,000	43,000
3,860		75,000	43,000
3,900		75,000	43,000
3,910		75,000	43,000
3,970	5/32	75,000	43,000
3,990		75,000	43,000
4,000		75,000	43,000
4,040		75,000	43,000
4,090		75,000	43,000
4,100		75,000	43,000
4,200		75,000	43,000
4,220		75,000	43,000
4,300		80,000	47,000
4,370	11/64	80,000	47,000
4,390		80,000	47,000
4,400		80,000	47,000
4,500		80,000	47,000



Forets hélicoïdaux à queue cylindrique

d1		l1	l2
mm	inch	mm	mm
4,570		80,000	47,000
4,600		80,000	47,000
4,620		80,000	47,000
4,700		80,000	47,000
4,760	3/16	86,000	52,000
4,800		86,000	52,000
4,850		86,000	52,000
4,900		86,000	52,000
4,920		86,000	52,000
4,980		86,000	52,000
5,000		86,000	52,000
5,060		86,000	52,000
5,100		86,000	52,000
5,110		86,000	52,000
5,160	13/64	86,000	52,000
5,180		86,000	52,000
5,200		86,000	52,000
5,220		86,000	52,000
5,300		86,000	52,000
5,310		93,000	57,000
5,400		93,000	57,000
5,410		93,000	57,000
5,500		93,000	57,000
5,560	7/32	93,000	57,000
5,600		93,000	57,000
5,610		93,000	57,000
5,700		93,000	57,000
5,790		93,000	57,000
5,800		93,000	57,000
5,900		93,000	57,000
5,940		93,000	57,000
5,950	15/64	93,000	57,000
6,000		93,000	57,000
6,040		101,000	63,000
6,100		101,000	63,000
6,150		101,000	63,000
6,200		101,000	63,000
6,250		101,000	63,000
6,300		101,000	63,000
6,350	1/4	101,000	63,000
6,400		101,000	63,000
6,500		101,000	63,000
6,530		101,000	63,000
6,600		101,000	63,000
6,630		101,000	63,000
6,700		101,000	63,000
6,750	17/64	109,000	69,000
6,800		109,000	69,000
6,900		109,000	69,000
7,000		109,000	69,000
7,030		109,000	69,000
7,100		109,000	69,000
7,140	9/32	109,000	69,000
7,200		109,000	69,000
7,300		109,000	69,000
7,370		109,000	69,000
7,400		109,000	69,000
7,490		109,000	69,000
7,500		109,000	69,000
7,540	19/64	117,000	75,000

d1		l1	l2
mm	inch	mm	mm
7,600		117,000	75,000
7,670		117,000	75,000
7,700		117,000	75,000
7,800		117,000	75,000
7,900		117,000	75,000
7,940	5/16	117,000	75,000
8,000		117,000	75,000
8,030		117,000	75,000
8,100		117,000	75,000
8,200		117,000	75,000
8,300		117,000	75,000
8,330	21/64	117,000	75,000
8,400		117,000	75,000
8,430		117,000	75,000
8,500		117,000	75,000
8,600		125,000	81,000
8,610		125,000	81,000
8,700		125,000	81,000
8,730	11/32	125,000	81,000
8,800		125,000	81,000
8,840		125,000	81,000
8,900		125,000	81,000
9,000		125,000	81,000
9,090		125,000	81,000
9,100		125,000	81,000
9,130	23/64	125,000	81,000
9,200		125,000	81,000
9,300		125,000	81,000
9,340		125,000	81,000
9,400		125,000	81,000
9,500		125,000	81,000
9,520	3/8	133,000	87,000
9,580		133,000	87,000
9,600		133,000	87,000
9,700		133,000	87,000
9,800		133,000	87,000
9,900		133,000	87,000
9,920	25/64	133,000	87,000
10,000		133,000	87,000
10,080		133,000	87,000
10,200		133,000	87,000
10,260		133,000	87,000
10,300		133,000	87,000
10,320	13/32	133,000	87,000
10,490		133,000	87,000
10,500		133,000	87,000
10,720	27/64	142,000	94,000
11,000		142,000	94,000
11,110	7/16	142,000	94,000
11,500		142,000	94,000
11,510	29/64	142,000	94,000
11,910	15/32	151,000	101,000
12,000		151,000	101,000
12,300	31/64	151,000	101,000
12,700	1/2	151,000	101,000



Forets hélicoïdaux courts



Matière de coupe **CW**

Surface ○

Sens de coupe (R)

**P** ○ Amin. de l'âme ≥ Ø 2,700 • affûtage en pente • forets spéciaux • à plaquette(s) cw rapportée(s)

**M**

**K** ○

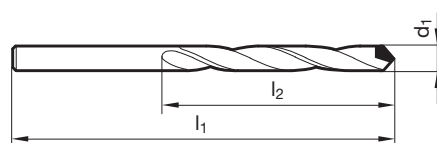
**N** matières très abrasives • aciers traités, aciers trempés • fontes dures, aciers au manganèse, bronzes durs

**S**

**H** •

**GÜHRING** NAVIGATOR

Paramètres de coupe, page 776



Forets hélicoïdaux à queue cylindrique

N° d'article **710**

d1		l1	l2
mm	inch	mm	mm
3,000		61,000	33,000
3,100		65,000	36,000
3,300		65,000	36,000
3,400		70,000	39,000
3,500		70,000	39,000
4,000		75,000	43,000
4,200		75,000	43,000
4,500		80,000	47,000
4,700		80,000	47,000
5,000		86,000	52,000
5,100		86,000	52,000
5,500		93,000	57,000
6,000		93,000	57,000
6,300		101,000	63,000
6,500		101,000	63,000
6,800		109,000	69,000
7,000		109,000	69,000
7,100		109,000	69,000

d1		l1	l2
mm	inch	mm	mm
7,200		109,000	69,000
7,400		109,000	69,000
7,500		109,000	69,000
8,000		117,000	75,000
8,500		117,000	75,000
9,000		125,000	81,000
9,500		125,000	81,000
10,000		133,000	87,000
10,200		133,000	87,000
11,000		142,000	94,000
12,000		151,000	101,000
12,500		151,000	101,000
13,000		151,000	101,000
14,000		160,000	108,000

# Spécialistes en HSS

Forets spéciaux en acier rapide pour les cas d'usinages spécifiques.

La Société Gühring profite de plus d'un siècle d'expérience en fabrication d'outils en acier rapide et possède une technologie de fabrication pourvue de moyens extrêmement modernes. Les atouts Gühring sont la réalisation rapide des outils spéciaux, pourvus de revêtements spécifiques bien appropriés aux cas d'usinages, avec un rapport « qualité : prix », inégalable.

Qu'il s'agisse de microforets, de forets étagés ou d'outils à plusieurs coupes, vous pouvez nous faire confiance et compter sur notre expérience en ce qui concerne le segment de fabrication des outils spéciaux HSS.





Forets pour perçage par canon



Matière de coupe **HSS**

Surface  $\text{Ra} > 2,36$

Sens de coupe

**P** • Amin. de l'âme  $\geq \text{Ø } 1,000$  • affûtage à dépouille conique • pour le perçage avec canons de perçage

**M**

**K** •

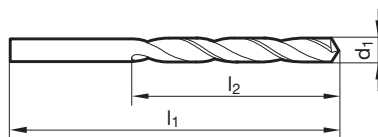
**N** ○ acier, fonte aciérée (alliée / non alliée) • fontes grises, fontes malléables, fontes à graphite sphéroïdal • fer fritté, maillechort, graphite

**S**

**H**

**GUHRING NAVIGATOR**

Paramètres de coupe, page 786



N° d'article **211**

d1		l1	l2
mm	inch	mm	mm
0,800		42,000	22,000
1,000		48,000	26,000
1,050		48,000	26,000
1,080		50,000	28,000
1,100		50,000	28,000
1,110		50,000	28,000
1,150		50,000	28,000
1,200		52,000	30,000
1,230		52,000	30,000
1,250		52,000	30,000
1,300		52,000	30,000
1,350		55,000	33,000
1,380		55,000	33,000
1,400		55,000	33,000
1,430		55,000	33,000
1,450		55,000	33,000
1,460		55,000	33,000
1,480		55,000	33,000
1,500		55,000	33,000
1,520		58,000	35,000
1,580		58,000	35,000
1,600		58,000	35,000
1,620		58,000	35,000
1,650		58,000	35,000
1,700		58,000	35,000
1,800		62,000	38,000
1,810		62,000	38,000
1,850		62,000	38,000
1,870		62,000	38,000
1,900		62,000	38,000
1,930		66,000	41,000
1,980	5/64	66,000	41,000
1,990		66,000	41,000
2,000		66,000	41,000
2,020		66,000	41,000
2,030		66,000	41,000
2,050		66,000	41,000
2,100		66,000	41,000
2,150		70,000	44,000
2,200		70,000	44,000
2,220		70,000	44,000
2,320		70,000	44,000

d1		l1	l2
mm	inch	mm	mm
2,350		70,000	44,000
2,360		70,000	44,000
2,400		74,000	47,000
2,450		74,000	47,000
2,470		74,000	47,000
2,500		74,000	47,000
2,550		74,000	47,000
2,600		74,000	47,000
2,620		74,000	47,000
2,650		74,000	47,000
2,680		79,000	51,000
2,700		79,000	51,000
2,730		79,000	51,000
2,800		79,000	51,000
2,900		79,000	51,000
2,950		79,000	51,000
2,960		79,000	51,000
3,000		79,000	51,000
3,050		84,000	55,000
3,070		84,000	55,000
3,100		84,000	55,000
3,150		84,000	55,000
3,170	1/8	84,000	55,000
3,200		84,000	55,000
3,250		84,000	55,000
3,300		84,000	55,000
3,400		91,000	60,000
3,480		91,000	60,000
3,500		91,000	60,000
3,600		91,000	60,000
3,700		91,000	60,000
3,730		91,000	60,000
3,800		96,000	64,000
3,900		96,000	64,000
3,950		96,000	64,000
4,000		96,000	64,000
4,100		96,000	64,000
4,200		96,000	64,000
4,300		102,000	69,000
4,400		102,000	69,000
4,500		102,000	69,000
4,580		102,000	69,000

Forets hélicoïdaux à queue cylindrique



Forets hélicoïdaux à queue cylindrique

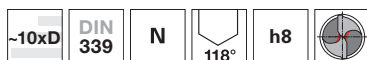
d1		l1	l2
mm	inch	mm	mm
4,600		102,000	69,000
4,700		102,000	69,000
4,750		102,000	69,000
4,800		108,000	74,000
4,900		108,000	74,000
4,950		108,000	74,000
5,000		108,000	74,000
5,100		108,000	74,000
5,200		108,000	74,000
5,300		108,000	74,000
5,330		116,000	80,000
5,350		116,000	80,000
5,400		116,000	80,000
5,500		116,000	80,000
5,550		116,000	80,000
5,600		116,000	80,000
5,700		116,000	80,000
5,800		116,000	80,000
5,900		116,000	80,000
6,000		116,000	80,000
6,100		124,000	86,000
6,150		124,000	86,000
6,200		124,000	86,000
6,350	1/4	124,000	86,000
6,400		124,000	86,000
6,500		124,000	86,000
6,600		124,000	86,000
6,700		124,000	86,000
6,800		133,000	93,000
6,900		133,000	93,000
7,000		133,000	93,000
7,050		133,000	93,000
7,100		133,000	93,000
7,150		133,000	93,000
7,200		133,000	93,000
7,300		133,000	93,000
7,400		133,000	93,000
7,600		142,000	100,000
7,750		142,000	100,000
7,800		142,000	100,000
7,950		142,000	100,000
8,000		142,000	100,000
8,100		142,000	100,000
8,120		142,000	100,000
8,200		142,000	100,000
8,300		142,000	100,000
8,500		142,000	100,000
8,600		151,000	107,000

d1		l1	l2
mm	inch	mm	mm
8,700		151,000	107,000
8,730	11/32	151,000	107,000
8,900		151,000	107,000
9,000		151,000	107,000
9,100		151,000	107,000
9,200		151,000	107,000
9,300		151,000	107,000
9,500		151,000	107,000
9,600		162,000	116,000
9,650		162,000	116,000
9,700		162,000	116,000
9,750		162,000	116,000
9,800		162,000	116,000
10,000		162,000	116,000
10,200		162,000	116,000
10,500		162,000	116,000
10,800		173,000	125,000
10,900		173,000	125,000
11,000		173,000	125,000
11,300		173,000	125,000
11,400		173,000	125,000
11,500		173,000	125,000
11,700		173,000	125,000
11,750		173,000	125,000
12,000		184,000	134,000
12,100		184,000	134,000
12,300	31/64	184,000	134,000
12,500		184,000	134,000
13,000		184,000	134,000
13,200		184,000	134,000
13,500		194,000	142,000
13,800		194,000	142,000
14,200		202,000	147,000
14,500		202,000	147,000
15,000		202,000	147,000
15,500		211,000	153,000
16,500		218,000	159,000
17,000		218,000	159,000
18,000		226,000	165,000
18,250		234,000	171,000
18,500		234,000	171,000
19,000		234,000	171,000
19,500		242,000	177,000
20,000		242,000	177,000





## Forets pour perçage par canon

Matière de coupe **HSS**

Surface ○

Sens de coupe (R)

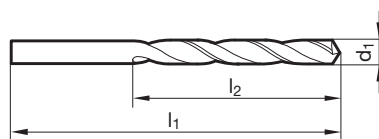
**P** • Amin. de l'âme  $\geq \varnothing 2,400$  • affûtage à dépouille conique • pour le perçage avec canons de perçage

**M****K** •

**N** ○ acier, fonte aciérée (alliée / non alliée) • fontes grises, fontes malléables, fontes à graphite sphéroïdal • fer fritté, maillechort, graphite

**S****H****GÜHRING** NAVIGATOR

Paramètres de coupe, page 786



N° d'article

**561**

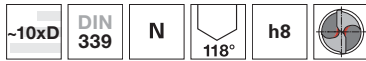
d1		l1	l2
mm	inch	mm	mm
2,400		74,000	47,000
2,500		74,000	47,000
2,600		74,000	47,000
3,000		79,000	51,000
3,100		84,000	55,000
3,120		84,000	55,000
3,200		84,000	55,000
3,300		84,000	55,000
4,000		96,000	64,000
4,250		96,000	64,000
4,400		102,000	69,000
4,800		108,000	74,000

d1		l1	l2
mm	inch	mm	mm
5,000		108,000	74,000

Forets hélicoïdaux à queue cylindrique



## Forets pour perçage par canon



- P** • Amin. de l'âme  $\geq \varnothing 1,000$  • affûtage à dépouille conique • pour le perçage avec canons de perçage
- M**
- K** •
- N** • acier, fonte aciérée (alliée / non alliée) • fontes grises, fontes malléables, fontes à graphite sphéroïdal • fer fritté, maillechort, graphite
- S**
- H**

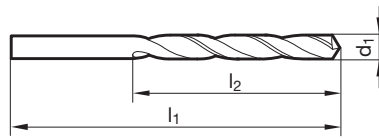
Matière de coupe	<b>HSS</b>
Surface	<b>S</b>
Sens de coupe	<b>R</b>



Forets hélicoïdaux à queue cylindrique

## GÜHRING NAVIGATOR

Paramètres de coupe, page 786



N° d'article **666**

d1		l1	l2	d1		l1	l2
mm	inch	mm	mm	mm	inch	mm	mm
1,000		48,000	26,000	4,100		96,000	64,000
1,100		50,000	28,000	4,200		96,000	64,000
1,200		52,000	30,000	4,300		102,000	69,000
1,280		52,000	30,000	4,400		102,000	69,000
1,300		52,000	30,000	4,500		102,000	69,000
1,350		55,000	33,000	4,600		102,000	69,000
1,400		55,000	33,000	4,800		108,000	74,000
1,450		55,000	33,000	5,000		108,000	74,000
1,500		55,000	33,000	5,100		108,000	74,000
1,510		58,000	35,000	5,150		108,000	74,000
1,550		58,000	35,000	5,300		108,000	74,000
1,600		58,000	35,000	5,400		116,000	80,000
1,700		58,000	35,000	5,500		116,000	80,000
1,800		62,000	38,000	5,600		116,000	80,000
1,900		62,000	38,000	5,700		116,000	80,000
1,980	5/64	66,000	41,000	5,800		116,000	80,000
1,990		66,000	41,000	6,000		116,000	80,000
2,000		66,000	41,000	6,100		124,000	86,000
2,020		66,000	41,000	6,200		124,000	86,000
2,100		66,000	41,000	6,350	1/4	124,000	86,000
2,200		70,000	44,000	6,400		124,000	86,000
2,300		70,000	44,000	6,500		124,000	86,000
2,400		74,000	47,000	6,600		124,000	86,000
2,450		74,000	47,000	6,700		124,000	86,000
2,500		74,000	47,000	6,800		133,000	93,000
2,550		74,000	47,000	6,900		133,000	93,000
2,600		74,000	47,000	7,000		133,000	93,000
2,800		79,000	51,000	7,100		133,000	93,000
2,900		79,000	51,000	7,200		133,000	93,000
3,000		79,000	51,000	7,300		133,000	93,000
3,100		84,000	55,000	7,500		133,000	93,000
3,150		84,000	55,000	7,600		142,000	100,000
3,200		84,000	55,000	7,700		142,000	100,000
3,300		84,000	55,000	7,800		142,000	100,000
3,400		91,000	60,000	7,900		142,000	100,000
3,500		91,000	60,000	7,940	5/16	142,000	100,000
3,570	9/64	91,000	60,000	8,000		142,000	100,000
3,600		91,000	60,000	8,200		142,000	100,000
3,700		91,000	60,000	8,500		142,000	100,000
3,800		96,000	64,000	8,600		151,000	107,000
3,900		96,000	64,000	9,000		151,000	107,000
4,000		96,000	64,000	9,600		162,000	116,000



d1		l1	l2
mm	inch	mm	mm
9,800		162,000	116,000
10,000		162,000	116,000
10,200		162,000	116,000
11,000		173,000	125,000
11,500		173,000	125,000
11,910	15/32	184,000	134,000

d1		l1	l2
mm	inch	mm	mm
12,500		184,000	134,000
13,000		184,000	134,000



## Forets pour perçage par canon



<b>P</b>	•	Amin. de l'âme $\geq \varnothing 1,100$ • affûtage à dépouille conique • acier rapide au Co • résistance à l'usure, améliorée • pour le perçage avec canons de perçage
<b>M</b>	○	
<b>K</b>	•	
<b>N</b>	•	aciers, alliés ou non alliés, et fontes > 800 N/mm <sup>2</sup> • aciers à outils, travail à froid et à chaud • aciers à roulement • aciers hautement alliés • aciers de cémentation et d'amélioration
<b>S</b>	○	
<b>H</b>		

Matière de coupe **HSCO**

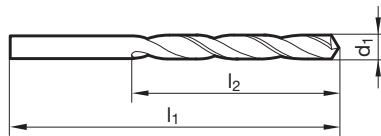
Surface

Sens de coupe

Forets hélicoïdaux à queue cylindrique

**GÜHRING** NAVIGATOR

Paramètres de coupe, page 792

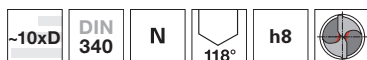
N° d'article **311**

d1		l1	l2
mm	inch	mm	mm
1,100		50,000	28,000
1,300		52,000	30,000
1,500		55,000	33,000
1,600		58,000	35,000
1,800		62,000	38,000
1,900		62,000	38,000
1,950		66,000	41,000
2,000		66,000	41,000
2,500		74,000	47,000
3,000		79,000	51,000
3,100		84,000	55,000
3,200		84,000	55,000
4,000		96,000	64,000
4,500		102,000	69,000
5,000		108,000	74,000
5,100		108,000	74,000
6,100		124,000	86,000
6,400		124,000	86,000

d1		l1	l2
mm	inch	mm	mm
6,800		133,000	93,000
7,000		133,000	93,000
8,200		142,000	100,000
8,500		142,000	100,000
10,000		162,000	116,000
10,800		173,000	125,000
17,500		226,000	165,000
19,000		234,000	171,000



Forets hélicoïdaux longs



Matière de coupe **HSS**

Surface  $\text{Ra} > 2,36$

Sens de coupe

**P** • Amin. de l'âme  $\geq \text{Ø } 1,000$  • affûtage à dépouille conique • pour les perçages profonds

**M**

**K** •

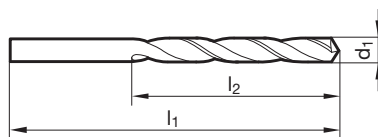
**N** ○ acier, fonte aciérée (alliée / non alliée) • fontes grises, fontes malléables, fontes à graphite sphéroïdal • fer fritté, maillechort, graphite

**S**

**H**

**GUHRING NAVIGATOR**

Paramètres de coupe, page 786



N° d'article **217**

d1		l1	l2
mm	inch	mm	mm
0,400	1/64	30,000	10,000
0,440		30,000	10,000
0,450		30,000	10,000
0,470		30,000	10,000
0,500		32,000	12,000
0,520		32,000	12,000
0,550		35,000	15,000
0,570		35,000	15,000
0,600		35,000	15,000
0,620		38,000	18,000
0,650		38,000	18,000
0,700		42,000	21,000
0,730		42,000	21,000
0,750		42,000	21,000
0,760		46,000	25,000
0,790	1/32	46,000	25,000
0,800		46,000	25,000
0,820		46,000	25,000
0,850		46,000	25,000
0,900		51,000	29,000
0,910		51,000	29,000
0,920		51,000	29,000
0,950		51,000	29,000
0,970		56,000	33,000
1,000		56,000	33,000
1,040		56,000	33,000
1,050		56,000	33,000
1,080		60,000	37,000
1,090		60,000	37,000
1,100		60,000	37,000
1,120		60,000	37,000
1,130		60,000	37,000
1,150		60,000	37,000
1,180		60,000	37,000
1,190	3/64	65,000	41,000
1,200		65,000	41,000
1,250		65,000	41,000
1,300		65,000	41,000
1,350		70,000	45,000
1,400		70,000	45,000
1,450		70,000	45,000
1,490		70,000	45,000

d1		l1	l2
mm	inch	mm	mm
1,500		70,000	45,000
1,510		76,000	50,000
1,550		76,000	50,000
1,590	1/16	76,000	50,000
1,600		76,000	50,000
1,610		76,000	50,000
1,650		76,000	50,000
1,700		76,000	50,000
1,750		80,000	53,000
1,780		80,000	53,000
1,800		80,000	53,000
1,850		80,000	53,000
1,900		80,000	53,000
1,930		85,000	56,000
1,950		85,000	56,000
1,980	5/64	85,000	56,000
2,000		85,000	56,000
2,030		85,000	56,000
2,050		85,000	56,000
2,060		85,000	56,000
2,080		85,000	56,000
2,100		85,000	56,000
2,150		90,000	59,000
2,200		90,000	59,000
2,250		90,000	59,000
2,260		90,000	59,000
2,300		90,000	59,000
2,350		90,000	59,000
2,370		95,000	62,000
2,380	3/32	95,000	62,000
2,400		95,000	62,000
2,420		95,000	62,000
2,440		95,000	62,000
2,450		95,000	62,000
2,490		95,000	62,000
2,500		95,000	62,000
2,550		95,000	62,000
2,580		95,000	62,000
2,600		95,000	62,000
2,620		95,000	62,000
2,640		95,000	62,000
2,650		95,000	62,000

Forets hélicoïdaux à queue cylindrique



Forets hélicoïdaux à queue cylindrique

d1		l1	l2
mm	inch		
2,700		100,000	66,000
2,710		100,000	66,000
2,750		100,000	66,000
2,780	7/64	100,000	66,000
2,790		100,000	66,000
2,800		100,000	66,000
2,820		100,000	66,000
2,850		100,000	66,000
2,870		100,000	66,000
2,900		100,000	66,000
2,950		100,000	66,000
3,000		100,000	66,000
3,030		106,000	69,000
3,050		106,000	69,000
3,100		106,000	69,000
3,150		106,000	69,000
3,170	1/8	106,000	69,000
3,200		106,000	69,000
3,250		106,000	69,000
3,260		106,000	69,000
3,300		106,000	69,000
3,350		106,000	69,000
3,400		112,000	73,000
3,450		112,000	73,000
3,500		112,000	73,000
3,550		112,000	73,000
3,570	9/64	112,000	73,000
3,600		112,000	73,000
3,650		112,000	73,000
3,660		112,000	73,000
3,700		112,000	73,000
3,750		112,000	73,000
3,800		119,000	78,000
3,850		119,000	78,000
3,860		119,000	78,000
3,900		119,000	78,000
3,910		119,000	78,000
3,950		119,000	78,000
3,970	5/32	119,000	78,000
3,990		119,000	78,000
4,000		119,000	78,000
4,030		119,000	78,000
4,040		119,000	78,000
4,050		119,000	78,000
4,090		119,000	78,000
4,100		119,000	78,000
4,150		119,000	78,000
4,200		119,000	78,000
4,220		119,000	78,000
4,250		119,000	78,000
4,300		126,000	82,000
4,350		126,000	82,000
4,370	11/64	126,000	82,000
4,390		126,000	82,000
4,400		126,000	82,000
4,450		126,000	82,000
4,500		126,000	82,000
4,570		126,000	82,000
4,600		126,000	82,000
4,650		126,000	82,000
4,700		126,000	82,000
4,750		126,000	82,000
4,760	3/16	132,000	87,000
4,800		132,000	87,000
4,850		132,000	87,000
4,900		132,000	87,000
4,920		132,000	87,000
4,950		132,000	87,000
4,980		132,000	87,000
5,000		132,000	87,000
5,030		132,000	87,000
5,050		132,000	87,000

d1		l1	l2
mm	inch		
5,060		132,000	87,000
5,100		132,000	87,000
5,110		132,000	87,000
5,150		132,000	87,000
5,160	13/64	132,000	87,000
5,180		132,000	87,000
5,200		132,000	87,000
5,220		132,000	87,000
5,250		132,000	87,000
5,300		132,000	87,000
5,310		139,000	91,000
5,350		139,000	91,000
5,400		139,000	91,000
5,410		139,000	91,000
5,450		139,000	91,000
5,500		139,000	91,000
5,550		139,000	91,000
5,560	7/32	139,000	91,000
5,600		139,000	91,000
5,650		139,000	91,000
5,700		139,000	91,000
5,750		139,000	91,000
5,790		139,000	91,000
5,800		139,000	91,000
5,900		139,000	91,000
5,950	15/64	139,000	91,000
6,000		139,000	91,000
6,060		148,000	97,000
6,100		148,000	97,000
6,200		148,000	97,000
6,250		148,000	97,000
6,300		148,000	97,000
6,350	1/4	148,000	97,000
6,400		148,000	97,000
6,500		148,000	97,000
6,600		148,000	97,000
6,700		148,000	97,000
6,750	17/64	156,000	102,000
6,800		156,000	102,000
6,900		156,000	102,000
7,000		156,000	102,000
7,100		156,000	102,000
7,140	9/32	156,000	102,000
7,200		156,000	102,000
7,250		156,000	102,000
7,300		156,000	102,000
7,400		156,000	102,000
7,500		156,000	102,000
7,540	19/64	165,000	109,000
7,600		165,000	109,000
7,700		165,000	109,000
7,750		165,000	109,000
7,800		165,000	109,000
7,900		165,000	109,000
7,940	5/16	165,000	109,000
8,000		165,000	109,000
8,100		165,000	109,000
8,200		165,000	109,000
8,250		165,000	109,000
8,300		165,000	109,000
8,330	21/64	165,000	109,000
8,400		165,000	109,000
8,500		165,000	109,000
8,600		175,000	115,000
8,700		175,000	115,000
8,730	11/32	175,000	115,000
8,750		175,000	115,000
8,800		175,000	115,000
8,900		175,000	115,000
9,000		175,000	115,000
9,100		175,000	115,000
9,130	23/64	175,000	115,000



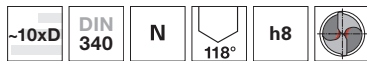
d1		l1	l2
mm	inch	mm	mm
9,200		175,000	115,000
9,300		175,000	115,000
9,400		175,000	115,000
9,500		175,000	115,000
9,520	3/8	184,000	121,000
9,600		184,000	121,000
9,700		184,000	121,000
9,750		184,000	121,000
9,800		184,000	121,000
9,900		184,000	121,000
9,920	25/64	184,000	121,000
10,000		184,000	121,000
10,100		184,000	121,000
10,200		184,000	121,000
10,250		184,000	121,000
10,300		184,000	121,000
10,320	13/32	184,000	121,000
10,400		184,000	121,000
10,500		184,000	121,000
10,700		195,000	128,000
10,720	27/64	195,000	128,000
10,750		195,000	128,000
10,800		195,000	128,000
11,000		195,000	128,000
11,110	7/16	195,000	128,000
11,200		195,000	128,000
11,400		195,000	128,000
11,500		195,000	128,000
11,510	29/64	195,000	128,000
11,600		195,000	128,000
11,700		195,000	128,000
11,750		195,000	128,000
11,800		195,000	128,000
11,910	15/32	205,000	134,000
12,000		205,000	134,000
12,100		205,000	134,000
12,200		205,000	134,000
12,300	31/64	205,000	134,000
12,500		205,000	134,000
12,700	1/2	205,000	134,000
12,800		205,000	134,000
13,000		205,000	134,000
13,200		205,000	134,000
13,490	17/32	214,000	140,000
13,500		214,000	140,000
13,800		214,000	140,000
13,890	35/64	214,000	140,000
14,000		214,000	140,000
14,200		220,000	144,000
14,250		220,000	144,000
14,290	9/16	220,000	144,000
14,490		220,000	144,000
14,500		220,000	144,000
14,900		220,000	144,000

d1		l1	l2
mm	inch	mm	mm
15,000		220,000	144,000
15,080	19/32	227,000	149,000
15,200		227,000	149,000
15,250		227,000	149,000
15,400		227,000	149,000
15,480	39/64	227,000	149,000
15,500		227,000	149,000
15,600		227,000	149,000
15,870	5/8	227,000	149,000
16,000		227,000	149,000
16,270	41/64	235,000	154,000
16,500		235,000	154,000
16,670	21/32	235,000	154,000
17,000		235,000	154,000
17,070	43/64	241,000	158,000
17,460	11/16	241,000	158,000
17,500		241,000	158,000
18,000		241,000	158,000
18,500		247,000	162,000
18,650	47/64	247,000	162,000
19,000		247,000	162,000
19,050	3/4	254,000	166,000
19,500		254,000	166,000
20,000		254,000	166,000
20,500		261,000	171,000
20,640	13/16	261,000	171,000
21,000		261,000	171,000
21,500		268,000	176,000
22,000		268,000	176,000
23,300		275,000	180,000
23,810	15/16	282,000	185,000
24,000		282,000	185,000
25,000	63/64	282,000	185,000
26,190	1 1/32	290,000	190,000
26,500		290,000	190,000
26,990	1 1/16	298,000	195,000
28,570	1 1/8	307,000	201,000
29,000		307,000	201,000
29,370	1 5/32	307,000	201,000
29,500		307,000	201,000
30,160	1 3/16	316,000	207,000
30,960	1 7/32	316,000	207,000
31,000		316,000	207,000
36,510	1 7/16	345,000	225,000

Forets hélicoïdaux à queue cylindrique



## Forets hélicoïdaux longs



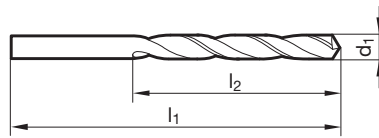
- P** • Amin. de l'âme  $\geq \varnothing 1,000$  • affûtage à dépouille conique • pour les perçages profonds • pour le perçage avec canons de perçage
- M**
- K** •
- N** ○ acier, fonte aciérée (alliée / non alliée) • fontes grises, fontes malléables, fontes à graphite sphéroïdal • fer fritté, maillechort, graphite
- S**
- H**

Matière de coupe	<b>HSS</b>
Surface	<b>S</b>
Sens de coupe	<b>R</b>



## GÜHRING NAVIGATOR

Paramètres de coupe, page 786



N° d'article **667**

d1		l1	l2	d1		l1	l2
mm	inch	mm	mm	mm	inch	mm	mm
0,500		32,000	12,000	2,800		100,000	66,000
0,600		35,000	15,000	2,850		100,000	66,000
0,700		42,000	21,000	2,870		100,000	66,000
0,750		42,000	21,000	2,900		100,000	66,000
0,800		46,000	25,000	3,000		100,000	66,000
0,900		51,000	29,000	3,030		106,000	69,000
0,950		51,000	29,000	3,050		106,000	69,000
1,000		56,000	33,000	3,100		106,000	69,000
1,100		60,000	37,000	3,170	1/8	106,000	69,000
1,150		60,000	37,000	3,200		106,000	69,000
1,200		65,000	41,000	3,250		106,000	69,000
1,250		65,000	41,000	3,260		106,000	69,000
1,300		65,000	41,000	3,300		106,000	69,000
1,350		70,000	45,000	3,350		106,000	69,000
1,400		70,000	45,000	3,400		112,000	73,000
1,450		70,000	45,000	3,500		112,000	73,000
1,500		70,000	45,000	3,570	9/64	112,000	73,000
1,550		76,000	50,000	3,600		112,000	73,000
1,590	1/16	76,000	50,000	3,650		112,000	73,000
1,600		76,000	50,000	3,700		112,000	73,000
1,650		76,000	50,000	3,730		112,000	73,000
1,700		76,000	50,000	3,750		112,000	73,000
1,800		80,000	53,000	3,800		119,000	78,000
1,850		80,000	53,000	3,850		119,000	78,000
1,900		80,000	53,000	3,900		119,000	78,000
1,950		85,000	56,000	3,950		119,000	78,000
1,980	5/64	85,000	56,000	3,970	5/32	119,000	78,000
2,000		85,000	56,000	4,000		119,000	78,000
2,100		85,000	56,000	4,050		119,000	78,000
2,200		90,000	59,000	4,100		119,000	78,000
2,300		90,000	59,000	4,200		119,000	78,000
2,350		90,000	59,000	4,250		119,000	78,000
2,370		95,000	62,000	4,300		126,000	82,000
2,380	3/32	95,000	62,000	4,370	11/64	126,000	82,000
2,440		95,000	62,000	4,400		126,000	82,000
2,450		95,000	62,000	4,500		126,000	82,000
2,500		95,000	62,000	4,570		126,000	82,000
2,530		95,000	62,000	4,600		126,000	82,000
2,650		95,000	62,000	4,620		126,000	82,000
2,700		100,000	66,000	4,650		126,000	82,000
2,750		100,000	66,000	4,700		126,000	82,000
2,780	7/64	100,000	66,000	4,750		126,000	82,000





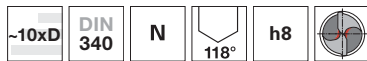
d1		l1	l2	
mm	inch	mm	mm	
4,760	3/16	132,000	87,000	
4,850		132,000	87,000	
4,900		132,000	87,000	
5,000	13/64	132,000	87,000	
5,100		132,000	87,000	
5,160		132,000	87,000	
5,200		132,000	87,000	
5,250		132,000	87,000	
5,300	7/32	132,000	87,000	
5,310		139,000	91,000	
5,400		139,000	91,000	
5,410		139,000	91,000	
5,500		139,000	91,000	
5,560		139,000	91,000	
5,600		139,000	91,000	
5,610		139,000	91,000	
5,700		139,000	91,000	
5,790		139,000	91,000	
5,900	1/4	139,000	91,000	
6,000		139,000	91,000	
6,100		148,000	97,000	
6,200		148,000	97,000	
6,250		148,000	97,000	
6,350		148,000	97,000	
6,400		148,000	97,000	
6,500		148,000	97,000	
6,600		148,000	97,000	
6,750		156,000	102,000	
6,800		156,000	102,000	
7,000		156,000	102,000	
7,100		9/32	156,000	102,000
7,140			156,000	102,000
7,200			156,000	102,000
7,250	156,000		102,000	
7,300	156,000		102,000	
7,370	19/64	156,000	102,000	
7,400		156,000	102,000	
7,500		156,000	102,000	
7,540		165,000	109,000	
7,700		165,000	109,000	
7,940		165,000	109,000	
8,000		165,000	109,000	
8,050		165,000	109,000	
8,100		165,000	109,000	
8,200		165,000	109,000	
8,250	5/16	165,000	109,000	
8,300		165,000	109,000	
8,400		165,000	109,000	
8,500		165,000	109,000	
8,700		175,000	115,000	
8,730		175,000	115,000	
8,800		175,000	115,000	
8,900		175,000	115,000	
9,000		175,000	115,000	

d1		l1	l2
mm	inch	mm	mm
9,100	3/8	175,000	115,000
9,300		175,000	115,000
9,400		175,000	115,000
9,500		175,000	115,000
9,520		184,000	121,000
9,700	25/64	184,000	121,000
9,900		184,000	121,000
9,920		184,000	121,000
10,000		184,000	121,000
10,200		184,000	121,000
10,320		184,000	121,000
10,500		184,000	121,000
10,720		195,000	128,000
10,800		195,000	128,000
10,900		195,000	128,000
11,000	7/16	195,000	128,000
11,110		195,000	128,000
11,500		195,000	128,000
11,750		195,000	128,000
11,910		205,000	134,000
12,000	1/2	205,000	134,000
12,500		205,000	134,000
12,700		205,000	134,000
13,000		205,000	134,000
13,490		214,000	140,000
13,500		214,000	140,000
13,800		214,000	140,000
13,890		214,000	140,000
14,000		214,000	140,000
14,290		220,000	144,000
14,500	9/16	220,000	144,000
14,750		220,000	144,000
14,800		220,000	144,000
14,900		220,000	144,000
15,000		220,000	144,000
15,080		227,000	149,000
16,000		227,000	149,000
16,500		235,000	154,000
16,670		235,000	154,000
16,750		235,000	154,000
17,000	19/32	235,000	154,000
17,460		241,000	158,000
18,000		241,000	158,000
18,250		247,000	162,000
22,220		268,000	176,000

Forets hélicoïdaux à queue cylindrique



## Forets hélicoïdaux longs



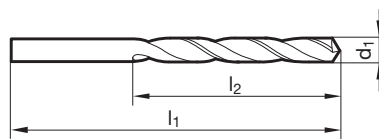
Matière de coupe	<b>HSS</b>
Surface	$\frac{0}{6,00}$
Sens de coupe	

- P** • Amin. de l'âme  $\geq \varnothing 14,750$  • affûtage à dépouille conique • pour les perçages profonds • pour le perçage avec canons de perçage
- M**
- K** •
- N** ○ acier, fonte aciérée (alliée / non alliée) • fontes grises, fontes malléables, fontes à graphite sphéroïdal • fer fritté, maillechort, graphite
- S**
- H**

## GÜHRING NAVIGATOR

Paramètres de coupe, page 786

Forets hélicoïdaux à queue cylindrique



N° d'article **220**

d1		l1	l2	d1		l1	l2
mm	inch	mm	mm	mm	inch	mm	mm
0,450		30,000	10,000	4,500		126,000	82,000
0,470		30,000	10,000	4,600		126,000	82,000
0,900		51,000	29,000	4,780		132,000	87,000
0,950		51,000	29,000	4,800		132,000	87,000
1,100		60,000	37,000	4,950		132,000	87,000
1,150		60,000	37,000	5,000		132,000	87,000
1,200		65,000	41,000	5,100		132,000	87,000
1,250		65,000	41,000	5,200		132,000	87,000
1,400		70,000	45,000	5,600		139,000	91,000
1,450		70,000	45,000	5,700		139,000	91,000
1,500		70,000	45,000	6,000		139,000	91,000
1,600		76,000	50,000	6,050		148,000	97,000
1,630		76,000	50,000	6,100		148,000	97,000
1,660		76,000	50,000	6,400		148,000	97,000
1,730		80,000	53,000	6,500		148,000	97,000
1,800		80,000	53,000	6,600		148,000	97,000
1,850		80,000	53,000	6,800		156,000	102,000
1,900		80,000	53,000	7,200		156,000	102,000
2,000		85,000	56,000	7,500		156,000	102,000
2,300		90,000	59,000	7,800		165,000	109,000
2,500		95,000	62,000	8,000		165,000	109,000
2,700		100,000	66,000	8,100		165,000	109,000
2,750		100,000	66,000	8,250		165,000	109,000
2,900		100,000	66,000	8,400		165,000	109,000
2,950		100,000	66,000	8,800		175,000	115,000
3,000		100,000	66,000	9,000		175,000	115,000
3,050		106,000	69,000	9,520	3/8	184,000	121,000
3,070		106,000	69,000	9,700		184,000	121,000
3,100		106,000	69,000	9,800		184,000	121,000
3,250		106,000	69,000	9,900		184,000	121,000
3,300		106,000	69,000	10,000		184,000	121,000
3,350		106,000	69,000	10,100		184,000	121,000
3,400		112,000	73,000	10,500		184,000	121,000
3,500		112,000	73,000	11,000		195,000	128,000
3,550		112,000	73,000	11,500		195,000	128,000
3,600		112,000	73,000	11,900		205,000	134,000
3,700		112,000	73,000	12,000		205,000	134,000
3,800		119,000	78,000	12,200		205,000	134,000
4,000		119,000	78,000	12,500		205,000	134,000
4,050		119,000	78,000	13,000		205,000	134,000
4,250		119,000	78,000	13,500		214,000	140,000
4,300		126,000	82,000	14,750		220,000	144,000



d1		l1	l2
mm	inch	mm	mm
19,000		247,000	162,000
20,000		254,000	166,000
22,000		268,000	176,000
25,000	63/64	282,000	185,000
25,500		290,000	190,000
29,000		307,000	201,000

d1		l1	l2
mm	inch	mm	mm



## Forets hélicoïdaux longs



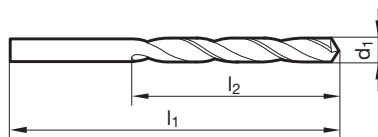
- P** • Amin. de l'âme  $\geq \varnothing 2,950$  • affûtage à dépouille conique • avec tenon d'entraînement
- M**
- K** •
- N** ○ acier, fonte aciérée (alliée / non alliée) • fontes grises, fontes malléables, fontes à graphite sphéroïdal • fer fritté, maillechort, graphite
- S**
- H**

Matière de coupe	<b>HSS</b>
Surface	●
Sens de coupe	Ⓜ



## GUHRING NAVIGATOR

Paramètres de coupe, page 786



N° d'article **204**

d1		l1	l2
mm	inch	mm	mm
2,950		100,000	66,000
3,000		100,000	66,000
3,100		106,000	69,000
3,170	1/8	106,000	69,000
3,200		106,000	69,000
3,300		106,000	69,000
3,400		112,000	73,000
3,500		112,000	73,000
3,600		112,000	73,000
3,800		119,000	78,000
3,900		119,000	78,000
4,000		119,000	78,000
4,050		119,000	78,000
4,100		119,000	78,000
4,200		119,000	78,000
4,250		119,000	78,000
4,300		126,000	82,000
4,400		126,000	82,000
4,500		126,000	82,000
4,760	3/16	132,000	87,000
4,800		132,000	87,000
5,000		132,000	87,000
5,080		132,000	87,000
5,100		132,000	87,000
5,200		132,000	87,000
5,500		139,000	91,000
5,600		139,000	91,000
5,800		139,000	91,000
5,850		139,000	91,000
5,900		139,000	91,000
6,000		139,000	91,000
6,100		148,000	97,000
6,200		148,000	97,000
6,300		148,000	97,000
6,350	1/4	148,000	97,000
6,400		148,000	97,000
6,500		148,000	97,000
6,600		148,000	97,000
6,700		148,000	97,000
6,750	17/64	156,000	102,000
6,800		156,000	102,000
6,900		156,000	102,000

d1		l1	l2
mm	inch	mm	mm
7,000		156,000	102,000
7,400		156,000	102,000
7,500		156,000	102,000
7,600		165,000	109,000
7,700		165,000	109,000
7,800		165,000	109,000
8,000		165,000	109,000
8,100		165,000	109,000
8,200		165,000	109,000
8,250		165,000	109,000
8,400		165,000	109,000
8,450		165,000	109,000
8,500		165,000	109,000
8,600		175,000	115,000
8,750		175,000	115,000
8,800		175,000	115,000
9,000		175,000	115,000
9,300		175,000	115,000
9,400		175,000	115,000
9,700		184,000	121,000
9,800		184,000	121,000
9,900		184,000	121,000
10,000		184,000	121,000
10,200		184,000	121,000
10,300		184,000	121,000
10,400		184,000	121,000
10,500		184,000	121,000
10,800		195,000	128,000
11,600		195,000	128,000
12,000		205,000	134,000
13,000		205,000	134,000
25,250		290,000	190,000



Forets hélicoïdaux longs



Matière de coupe **HSS**

Surface

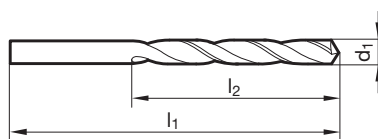
Sens de coupe

**P** Amin. de l'âme  $\geq \varnothing 15,000$  • affûtage à dépouille conique • pour les perçages profonds

- M**
- K**
- N** • matières dures et friables • laitons, alliages de magnésium • bronze, bronze phosphoreux • ardoise, mica, pertinax
- S**
- H**

**GUHRING** NAVIGATOR

Paramètres de coupe, page 786



Forets hélicoïdaux à queue cylindrique

N° d'article **218**

d1		l1	l2
mm	inch	mm	mm
0,500		32,000	12,000
0,520		32,000	12,000
0,550		35,000	15,000
0,600		35,000	15,000
0,650		38,000	18,000
0,700		42,000	21,000
0,750		42,000	21,000
0,800		46,000	25,000
0,820		46,000	25,000
0,840		46,000	25,000
0,850		46,000	25,000
0,900		51,000	29,000
0,950		51,000	29,000
0,970		56,000	33,000
1,000		56,000	33,000
1,050		56,000	33,000
1,100		60,000	37,000
1,150		60,000	37,000
1,200		65,000	41,000
1,250		65,000	41,000
1,300		65,000	41,000
1,400		70,000	45,000
1,500		70,000	45,000
1,550		76,000	50,000
1,560		76,000	50,000
1,570		76,000	50,000
1,580		76,000	50,000
1,600		76,000	50,000
1,650		76,000	50,000
1,700		76,000	50,000
1,750		80,000	53,000
1,800		80,000	53,000
1,820		80,000	53,000
1,850		80,000	53,000
1,900		80,000	53,000
1,950		85,000	56,000
2,000		85,000	56,000
2,050		85,000	56,000
2,100		85,000	56,000
2,180		90,000	59,000
2,200		90,000	59,000
2,250		90,000	59,000

d1		l1	l2
mm	inch	mm	mm
2,300		90,000	59,000
2,350		90,000	59,000
2,400		95,000	62,000
2,500		95,000	62,000
2,550		95,000	62,000
2,600		95,000	62,000
2,650		95,000	62,000
2,700		100,000	66,000
2,800		100,000	66,000
2,830		100,000	66,000
2,870		100,000	66,000
2,900		100,000	66,000
2,940		100,000	66,000
3,000		100,000	66,000
3,020		106,000	69,000
3,050		106,000	69,000
3,060		106,000	69,000
3,100		106,000	69,000
3,150		106,000	69,000
3,180		106,000	69,000
3,200		106,000	69,000
3,250		106,000	69,000
3,270		106,000	69,000
3,300		106,000	69,000
3,400		112,000	73,000
3,500		112,000	73,000
3,550		112,000	73,000
3,600		112,000	73,000
3,800		119,000	78,000
3,900		119,000	78,000
4,000		119,000	78,000
4,030		119,000	78,000
4,100		119,000	78,000
4,200		119,000	78,000
4,300		126,000	82,000
4,400		126,000	82,000
4,500		126,000	82,000
4,600		126,000	82,000
4,700		126,000	82,000
4,760	3/16	132,000	87,000
4,800		132,000	87,000
4,900		132,000	87,000



Forets hélicoïdaux à queue cylindrique

d1		l1	l2
mm	inch	mm	mm
5,000		132,000	87,000
5,100		132,000	87,000
5,200		132,000	87,000
5,300		132,000	87,000
5,400		139,000	91,000
5,450		139,000	91,000
5,500		139,000	91,000
5,600		139,000	91,000
5,900		139,000	91,000
5,950	15/64	139,000	91,000
6,000		139,000	91,000
6,100		148,000	97,000
6,200		148,000	97,000
6,300		148,000	97,000
6,420		148,000	97,000
6,500		148,000	97,000
6,600		148,000	97,000
6,700		148,000	97,000
6,800		156,000	102,000
6,900		156,000	102,000
7,000		156,000	102,000
7,200		156,000	102,000
7,350		156,000	102,000
7,500		156,000	102,000

d1		l1	l2
mm	inch	mm	mm
8,000		165,000	109,000
8,200		165,000	109,000
8,300		165,000	109,000
8,700		175,000	115,000
9,000		175,000	115,000
9,500		175,000	115,000
9,700		184,000	121,000
9,900		184,000	121,000
10,000		184,000	121,000
11,250		195,000	128,000
12,100		205,000	134,000
14,000		214,000	140,000
15,000		220,000	144,000
16,000		227,000	149,000



Forets hélicoïdaux longs



Matière de coupe **HSS**

Surface ○

Sens de coupe Ⓛ

**P** Amin. de l'âme ≥ Ø 15,000 • affûtage à dépouille conique • pour les perçages profonds

**M**

**K**

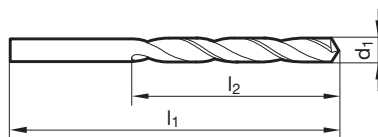
**N** • matières dures et friables • laitons, alliages de magnésium • bronze, bronze phosphoreux • ardoise, mica, pertinax

**S**

**H**

**GUHRING** NAVIGATOR

Paramètres de coupe, page 786



Forets hélicoïdaux à queue cylindrique

N° d'article **221**

d1		l1	l2
mm	inch	mm	mm
0,450		30,000	10,000
0,600		35,000	15,000
0,650		38,000	18,000
0,900		51,000	29,000
1,100		60,000	37,000
1,240		65,000	41,000
1,300		65,000	41,000
1,320		65,000	41,000
1,370		70,000	45,000
1,400		70,000	45,000
1,500		70,000	45,000
1,550		76,000	50,000
1,800		80,000	53,000
1,850		80,000	53,000
2,000		85,000	56,000
2,160		90,000	59,000
2,180		90,000	59,000
2,200		90,000	59,000
2,270		90,000	59,000
2,350		90,000	59,000
2,850		100,000	66,000
2,900		100,000	66,000
2,950		100,000	66,000
3,000		100,000	66,000
3,170	1/8	106,000	69,000
3,200		106,000	69,000
3,250		106,000	69,000
3,400		112,000	73,000
3,450		112,000	73,000
3,500		112,000	73,000

d1		l1	l2
mm	inch	mm	mm
3,510		112,000	73,000
3,700		112,000	73,000
4,100		119,000	78,000
4,200		119,000	78,000
4,400		126,000	82,000
4,500		126,000	82,000
4,900		132,000	87,000
5,000		132,000	87,000
5,050		132,000	87,000
5,100		132,000	87,000
5,400		139,000	91,000
5,600		139,000	91,000
5,900		139,000	91,000
6,000		139,000	91,000
6,800		156,000	102,000
8,000		165,000	109,000
9,000		175,000	115,000
12,800		205,000	134,000
15,000		220,000	144,000



## Forets hélicoïdaux longs



Matière de coupe **HSS**

Surface

Sens de coupe

**P** Amin. de l'âme  $\geq \varnothing 14,500$  • affûtage à dépouille conique • pour les perçages profonds

**M**

**K**

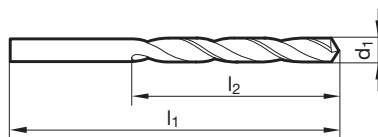
**N** • matières tendres et à copeaux longs • aluminium/alliages d'aluminium à copeaux longs • zinc, cuivre de 1ère fusion, Alpax, électrode

**S** • thermoplastiques, bois

**H**

## GÜHRING NAVIGATOR

Paramètres de coupe, page 786



N° d'article **219**

d1		l1	l2
mm	inch	mm	mm
0,500		32,000	12,000
0,600		35,000	15,000
0,650		38,000	18,000
0,700		42,000	21,000
0,740		42,000	21,000
0,750		42,000	21,000
0,800		46,000	25,000
0,850		46,000	25,000
0,900		51,000	29,000
0,950		51,000	29,000
0,970		56,000	33,000
0,980		56,000	33,000
1,000		56,000	33,000
1,100		60,000	37,000
1,180		60,000	37,000
1,190	3/64	65,000	41,000
1,200		65,000	41,000
1,220		65,000	41,000
1,250		65,000	41,000
1,300		65,000	41,000
1,350		70,000	45,000
1,370		70,000	45,000
1,400		70,000	45,000
1,440		70,000	45,000
1,500		70,000	45,000
1,520		76,000	50,000
1,600		76,000	50,000
1,610		76,000	50,000
1,650		76,000	50,000
1,700		76,000	50,000
1,750		80,000	53,000
1,760		80,000	53,000
1,770		80,000	53,000
1,780		80,000	53,000
1,800		80,000	53,000
1,850		80,000	53,000
1,900		80,000	53,000
1,950		85,000	56,000
1,970		85,000	56,000
2,000		85,000	56,000
2,050		85,000	56,000
2,070		85,000	56,000

d1		l1	l2
mm	inch	mm	mm
2,100		85,000	56,000
2,150		90,000	59,000
2,200		90,000	59,000
2,250		90,000	59,000
2,300		90,000	59,000
2,350		90,000	59,000
2,380	3/32	95,000	62,000
2,400		95,000	62,000
2,430		95,000	62,000
2,450		95,000	62,000
2,490		95,000	62,000
2,500		95,000	62,000
2,550		95,000	62,000
2,600		95,000	62,000
2,650		95,000	62,000
2,700		100,000	66,000
2,710		100,000	66,000
2,750		100,000	66,000
2,800		100,000	66,000
2,850		100,000	66,000
2,880		100,000	66,000
2,900		100,000	66,000
2,950		100,000	66,000
3,000		100,000	66,000
3,100		106,000	69,000
3,170	1/8	106,000	69,000
3,180		106,000	69,000
3,200		106,000	69,000
3,250		106,000	69,000
3,260		106,000	69,000
3,300		106,000	69,000
3,350		106,000	69,000
3,400		112,000	73,000
3,500		112,000	73,000
3,550		112,000	73,000
3,600		112,000	73,000
3,650		112,000	73,000
3,700		112,000	73,000
3,750		112,000	73,000
3,800		119,000	78,000
3,830		119,000	78,000
3,900		119,000	78,000





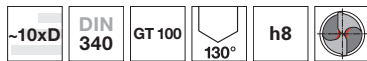
d1		l1	l2
mm	inch	mm	mm
3,920		119,000	78,000
3,990		119,000	78,000
4,000		119,000	78,000
4,100		119,000	78,000
4,150		119,000	78,000
4,200		119,000	78,000
4,250		119,000	78,000
4,300		126,000	82,000
4,400		126,000	82,000
4,500		126,000	82,000
4,700		126,000	82,000
4,800		132,000	87,000
4,830		132,000	87,000
4,870		132,000	87,000
4,900		132,000	87,000
4,950		132,000	87,000
5,000		132,000	87,000
5,100		132,000	87,000
5,200		132,000	87,000
5,300		132,000	87,000
5,400		139,000	91,000
5,430		139,000	91,000
5,500		139,000	91,000
5,650		139,000	91,000
5,700		139,000	91,000
5,800		139,000	91,000
5,900		139,000	91,000
5,980		139,000	91,000
6,000		139,000	91,000
6,100		148,000	97,000
6,250		148,000	97,000
6,300		148,000	97,000
6,400		148,000	97,000
6,500		148,000	97,000
6,600		148,000	97,000
6,700		148,000	97,000
6,800		156,000	102,000
6,900		156,000	102,000
7,000		156,000	102,000
7,100		156,000	102,000
7,300		156,000	102,000
7,400		156,000	102,000
7,450		156,000	102,000
7,500		156,000	102,000
7,540	19/64	165,000	109,000
7,550		165,000	109,000
7,670		165,000	109,000
7,700		165,000	109,000

d1		l1	l2
mm	inch	mm	mm
7,850		165,000	109,000
7,900		165,000	109,000
7,950		165,000	109,000
8,000		165,000	109,000
8,200		165,000	109,000
8,300		165,000	109,000
8,500		165,000	109,000
8,550		175,000	115,000
8,600		175,000	115,000
8,700		175,000	115,000
8,750		175,000	115,000
8,800		175,000	115,000
8,900		175,000	115,000
9,000		175,000	115,000
9,100		175,000	115,000
9,500		175,000	115,000
9,700		184,000	121,000
9,800		184,000	121,000
9,900		184,000	121,000
10,000		184,000	121,000
10,300		184,000	121,000
10,700		195,000	128,000
10,750		195,000	128,000
11,000		195,000	128,000
11,300		195,000	128,000
11,400		195,000	128,000
12,000		205,000	134,000
13,100	33/64	205,000	134,000
13,500		214,000	140,000
13,750		214,000	140,000
14,000		214,000	140,000
14,500		220,000	144,000
15,000		220,000	144,000
15,500		227,000	149,000
17,000		235,000	154,000
18,000		241,000	158,000
18,250		247,000	162,000
19,000		247,000	162,000
19,840	25/32	254,000	166,000
20,000		254,000	166,000
20,640	13/16	261,000	171,000

Forets hélicoïdaux  
à queue cylindrique



## Forets hélicoïdaux longs



**P** • Amin. de l'âme  $\geq \varnothing 1,000$  • affûtage à dépouille conique • goujures larges • en cas de mauvaise évacuation des copeaux

**M**

**K** •

**N** • fontes grises et aciers jusqu'à 1000 N/mm<sup>2</sup> • Ne pas utiliser pour les aciers CrNi et les aciers inox

**S**

**H**

Matière de coupe **HSS**

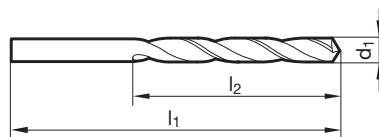
Surface

Sens de coupe

Forets hélicoïdaux à queue cylindrique

## GÜHRING NAVIGATOR

Paramètres de coupe, page 786



N° d'article **535**

d1		l1	l2
mm	inch	mm	mm
1,000		56,000	33,000
1,020		56,000	33,000
1,040		56,000	33,000
1,050		56,000	33,000
1,070		60,000	37,000
1,090		60,000	37,000
1,100		60,000	37,000
1,150		60,000	37,000
1,180		60,000	37,000
1,190	3/64	65,000	41,000
1,200		65,000	41,000
1,250		65,000	41,000
1,300		65,000	41,000
1,320		65,000	41,000
1,350		70,000	45,000
1,400		70,000	45,000
1,450		70,000	45,000
1,500		70,000	45,000
1,510		76,000	50,000
1,520		76,000	50,000
1,550		76,000	50,000
1,590	1/16	76,000	50,000
1,600		76,000	50,000
1,650		76,000	50,000
1,670		76,000	50,000
1,700		76,000	50,000
1,750		80,000	53,000
1,780		80,000	53,000
1,800		80,000	53,000
1,850		80,000	53,000
1,900		80,000	53,000
1,930		85,000	56,000
1,950		85,000	56,000
1,980	5/64	85,000	56,000
1,990		85,000	56,000
2,000		85,000	56,000
2,050		85,000	56,000
2,060		85,000	56,000
2,080		85,000	56,000
2,100		85,000	56,000
2,150		90,000	59,000
2,180		90,000	59,000

d1		l1	l2
mm	inch	mm	mm
2,200		90,000	59,000
2,250		90,000	59,000
2,260		90,000	59,000
2,300		90,000	59,000
2,350		90,000	59,000
2,370		95,000	62,000
2,380	3/32	95,000	62,000
2,400		95,000	62,000
2,440		95,000	62,000
2,450		95,000	62,000
2,480		95,000	62,000
2,490		95,000	62,000
2,500		95,000	62,000
2,530		95,000	62,000
2,550		95,000	62,000
2,580		95,000	62,000
2,600		95,000	62,000
2,640		95,000	62,000
2,650		95,000	62,000
2,700		100,000	66,000
2,710		100,000	66,000
2,750		100,000	66,000
2,780	7/64	100,000	66,000
2,790		100,000	66,000
2,800		100,000	66,000
2,820		100,000	66,000
2,830		100,000	66,000
2,850		100,000	66,000
2,870		100,000	66,000
2,900		100,000	66,000
2,940		100,000	66,000
2,950		100,000	66,000
3,000		100,000	66,000
3,050		106,000	69,000
3,100		106,000	69,000
3,150		106,000	69,000
3,170	1/8	106,000	69,000
3,200		106,000	69,000
3,250		106,000	69,000
3,260		106,000	69,000
3,270		106,000	69,000
3,300		106,000	69,000



d1		l1	l2
mm	inch	mm	mm
3,400		112,000	73,000
3,450		112,000	73,000
3,500		112,000	73,000
3,550		112,000	73,000
3,570	9/64	112,000	73,000
3,600		112,000	73,000
3,660		112,000	73,000
3,700		112,000	73,000
3,730		112,000	73,000
3,750		112,000	73,000
3,800		119,000	78,000
3,860		119,000	78,000
3,900		119,000	78,000
3,910		119,000	78,000
3,970	5/32	119,000	78,000
3,990		119,000	78,000
4,000		119,000	78,000
4,040		119,000	78,000
4,050		119,000	78,000
4,090		119,000	78,000
4,100		119,000	78,000
4,130		119,000	78,000
4,150		119,000	78,000
4,200		119,000	78,000
4,220		119,000	78,000
4,250		119,000	78,000
4,300		126,000	82,000
4,350		126,000	82,000
4,370	11/64	126,000	82,000
4,390		126,000	82,000
4,400		126,000	82,000
4,500		126,000	82,000
4,570		126,000	82,000
4,600		126,000	82,000
4,620		126,000	82,000
4,700		126,000	82,000
4,750		126,000	82,000
4,760	3/16	132,000	87,000
4,800		132,000	87,000
4,850		132,000	87,000
4,900		132,000	87,000
4,920		132,000	87,000
4,980		132,000	87,000
5,000		132,000	87,000
5,050		132,000	87,000
5,060		132,000	87,000
5,100		132,000	87,000
5,110		132,000	87,000
5,160	13/64	132,000	87,000
5,180		132,000	87,000
5,200		132,000	87,000
5,220		132,000	87,000
5,250		132,000	87,000
5,300		132,000	87,000
5,310		139,000	91,000
5,400		139,000	91,000
5,410		139,000	91,000
5,500		139,000	91,000
5,560	7/32	139,000	91,000
5,600		139,000	91,000
5,610		139,000	91,000
5,700		139,000	91,000
5,750		139,000	91,000
5,790		139,000	91,000
5,800		139,000	91,000
5,900		139,000	91,000
5,940		139,000	91,000
5,950	15/64	139,000	91,000
6,000		139,000	91,000
6,040		148,000	97,000
6,050		148,000	97,000
6,100		148,000	97,000

d1		l1	l2
mm	inch	mm	mm
6,150		148,000	97,000
6,200		148,000	97,000
6,250		148,000	97,000
6,300		148,000	97,000
6,350	1/4	148,000	97,000
6,400		148,000	97,000
6,500		148,000	97,000
6,530		148,000	97,000
6,600		148,000	97,000
6,630		148,000	97,000
6,700		148,000	97,000
6,750	17/64	156,000	102,000
6,800		156,000	102,000
6,900		156,000	102,000
6,910		156,000	102,000
7,000		156,000	102,000
7,030		156,000	102,000
7,040		156,000	102,000
7,100		156,000	102,000
7,140	9/32	156,000	102,000
7,200		156,000	102,000
7,300		156,000	102,000
7,370		156,000	102,000
7,400		156,000	102,000
7,490		156,000	102,000
7,500		156,000	102,000
7,540	19/64	165,000	109,000
7,600		165,000	109,000
7,670		165,000	109,000
7,700		165,000	109,000
7,750		165,000	109,000
7,800		165,000	109,000
7,850		165,000	109,000
7,900		165,000	109,000
7,940	5/16	165,000	109,000
8,000		165,000	109,000
8,030		165,000	109,000
8,100		165,000	109,000
8,200		165,000	109,000
8,250		165,000	109,000
8,300		165,000	109,000
8,330	21/64	165,000	109,000
8,400		165,000	109,000
8,430		165,000	109,000
8,500		165,000	109,000
8,600		175,000	115,000
8,610		175,000	115,000
8,700		175,000	115,000
8,730	11/32	175,000	115,000
8,800		175,000	115,000
8,840		175,000	115,000
8,900		175,000	115,000
9,000		175,000	115,000
9,090		175,000	115,000
9,100		175,000	115,000
9,130	23/64	175,000	115,000
9,200		175,000	115,000
9,300		175,000	115,000
9,340		175,000	115,000
9,350		175,000	115,000
9,400		175,000	115,000
9,500		175,000	115,000
9,520	3/8	184,000	121,000
9,600		184,000	121,000
9,700		184,000	121,000
9,800		184,000	121,000
9,900		184,000	121,000
9,920	25/64	184,000	121,000
10,000		184,000	121,000
10,080		184,000	121,000
10,100		184,000	121,000
10,200		184,000	121,000

Forets hélicoïdaux à queue cylindrique



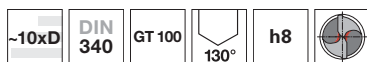
Forets hélicoïdaux à queue cylindrique

d1		l1	l2
mm	inch	mm	mm
10,300		184,000	121,000
10,320	13/32	184,000	121,000
10,400		184,000	121,000
10,490		184,000	121,000
10,500		184,000	121,000
10,600		184,000	121,000
10,720	27/64	195,000	128,000
10,800		195,000	128,000
10,900		195,000	128,000
11,000		195,000	128,000
11,100		195,000	128,000
11,110	7/16	195,000	128,000
11,300		195,000	128,000
11,400		195,000	128,000
11,500		195,000	128,000
11,800		195,000	128,000
11,900		205,000	134,000
11,910	15/32	205,000	134,000

d1		l1	l2
mm	inch	mm	mm
12,000		205,000	134,000
12,150		205,000	134,000
12,300	31/64	205,000	134,000
12,500		205,000	134,000
12,600		205,000	134,000
12,700	1/2	205,000	134,000
13,000		205,000	134,000
13,100	33/64	205,000	134,000
13,490	17/32	214,000	140,000
13,500		214,000	140,000
13,700		214,000	140,000
13,890	35/64	214,000	140,000
13,900		214,000	140,000
14,000		214,000	140,000



Forets hélicoïdaux longs



Matière de coupe **HSS**

Surface **S**

Sens de coupe **R**

**P** • Amin. de l'âme  $\geq \varnothing 1,000$  • affûtage à dépouille conique • goujures larges • en cas de mauvaise évacuation des copeaux

**M**

**K** •

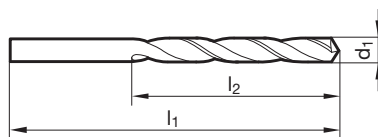
**N** • fontes grises et aciers jusqu'à 1000 N/mm<sup>2</sup> • Ne pas utiliser pour les aciers CrNi et les aciers inox

**S**

**H**

**GÜHRING** NAVIGATOR

Paramètres de coupe, page 786



N° d'article **668**

d1		l1	l2
mm	inch	mm	mm
1,000		56,000	33,000
1,090		60,000	37,000
1,100		60,000	37,000
1,180		60,000	37,000
1,190	3/64	65,000	41,000
1,200		65,000	41,000
1,300		65,000	41,000
1,320		65,000	41,000
1,400		70,000	45,000
1,500		70,000	45,000
1,510		76,000	50,000
1,590	1/16	76,000	50,000
1,600		76,000	50,000
1,650		76,000	50,000
1,700		76,000	50,000
1,800		80,000	53,000
1,850		80,000	53,000
1,900		80,000	53,000
1,930		85,000	56,000
1,950		85,000	56,000
1,980	5/64	85,000	56,000
1,990		85,000	56,000
2,000		85,000	56,000
2,060		85,000	56,000
2,080		85,000	56,000
2,100		85,000	56,000
2,180		90,000	59,000
2,200		90,000	59,000
2,260		90,000	59,000
2,300		90,000	59,000
2,380	3/32	95,000	62,000
2,400		95,000	62,000
2,490		95,000	62,000
2,500		95,000	62,000
2,530		95,000	62,000
2,550		95,000	62,000
2,580		95,000	62,000
2,600		95,000	62,000
2,640		95,000	62,000
2,700		100,000	66,000
2,710		100,000	66,000
2,780	7/64	100,000	66,000

d1		l1	l2
mm	inch	mm	mm
2,800		100,000	66,000
2,820		100,000	66,000
2,850		100,000	66,000
2,870		100,000	66,000
2,900		100,000	66,000
2,950		100,000	66,000
3,000		100,000	66,000
3,050		106,000	69,000
3,100		106,000	69,000
3,170	1/8	106,000	69,000
3,200		106,000	69,000
3,250		106,000	69,000
3,260		106,000	69,000
3,300		106,000	69,000
3,400		112,000	73,000
3,450		112,000	73,000
3,500		112,000	73,000
3,570	9/64	112,000	73,000
3,600		112,000	73,000
3,700		112,000	73,000
3,730		112,000	73,000
3,750		112,000	73,000
3,800		119,000	78,000
3,860		119,000	78,000
3,870		119,000	78,000
3,900		119,000	78,000
3,910		119,000	78,000
3,970	5/32	119,000	78,000
4,000		119,000	78,000
4,040		119,000	78,000
4,090		119,000	78,000
4,100		119,000	78,000
4,200		119,000	78,000
4,220		119,000	78,000
4,300		126,000	82,000
4,370	11/64	126,000	82,000
4,400		126,000	82,000
4,500		126,000	82,000
4,600		126,000	82,000
4,700		126,000	82,000
4,760	3/16	132,000	87,000
4,800		132,000	87,000

Forets hélicoïdaux à queue cylindrique



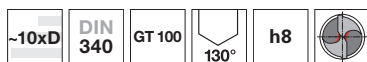
Forets hélicoïdaux à queue cylindrique

d1		l1	l2
mm	inch	mm	mm
4,850		132,000	87,000
4,900		132,000	87,000
4,910		132,000	87,000
4,920		132,000	87,000
5,000		132,000	87,000
5,060		132,000	87,000
5,100		132,000	87,000
5,160	13/64	132,000	87,000
5,200		132,000	87,000
5,300		132,000	87,000
5,400		139,000	91,000
5,500		139,000	91,000
5,560	7/32	139,000	91,000
5,600		139,000	91,000
5,700		139,000	91,000
5,800		139,000	91,000
5,900		139,000	91,000
5,950	15/64	139,000	91,000
6,000		139,000	91,000
6,040		148,000	97,000
6,100		148,000	97,000
6,150		148,000	97,000
6,200		148,000	97,000
6,250		148,000	97,000
6,300		148,000	97,000
6,350	1/4	148,000	97,000
6,400		148,000	97,000
6,500		148,000	97,000
6,530		148,000	97,000
6,600		148,000	97,000
6,630		148,000	97,000
6,700		148,000	97,000
6,750	17/64	156,000	102,000
6,760		156,000	102,000
6,800		156,000	102,000
6,900		156,000	102,000
7,000		156,000	102,000
7,100		156,000	102,000
7,140	9/32	156,000	102,000
7,250		156,000	102,000
7,300		156,000	102,000
7,370		156,000	102,000
7,490		156,000	102,000
7,500		156,000	102,000
7,600		165,000	109,000
7,700		165,000	109,000
7,800		165,000	109,000
7,900		165,000	109,000

d1		l1	l2
mm	inch	mm	mm
7,940	5/16	165,000	109,000
8,000		165,000	109,000
8,200		165,000	109,000
8,300		165,000	109,000
8,400		165,000	109,000
8,430		165,000	109,000
8,500		165,000	109,000
8,600		175,000	115,000
8,610		175,000	115,000
8,700		175,000	115,000
8,730	11/32	175,000	115,000
8,800		175,000	115,000
8,900		175,000	115,000
9,000		175,000	115,000
9,130	23/64	175,000	115,000
9,200		175,000	115,000
9,340		175,000	115,000
9,400		175,000	115,000
9,500		175,000	115,000
9,520	3/8	184,000	121,000
9,700		184,000	121,000
9,900		184,000	121,000
9,920	25/64	184,000	121,000
10,000		184,000	121,000
10,100		184,000	121,000
10,200		184,000	121,000
10,320	13/32	184,000	121,000
10,500		184,000	121,000
11,000		195,000	128,000
11,110	7/16	195,000	128,000
11,500		195,000	128,000
11,510	29/64	195,000	128,000
11,910	15/32	205,000	134,000
12,000		205,000	134,000
12,300	31/64	205,000	134,000
12,700	1/2	205,000	134,000
13,000		205,000	134,000
14,000		214,000	140,000



Forets hélicoïdaux longs



Matière de coupe **HSS**

Surface **F**

Sens de coupe **R**

**P** • Amin. de l'âme  $\geq \varnothing 1,000$  • affûtage à dépouille conique • goujures larges • en cas de mauvaise évacuation des copeaux

**M**

**K** •

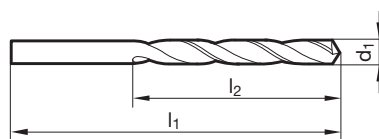
**N** • fontes grises et aciers jusqu'à 1000 N/mm<sup>2</sup> • Ne pas utiliser pour les aciers CrNi et les aciers inox

**S**

**H**

**GÜHRING** NAVIGATOR

Paramètres de coupe, page 786



Forets hélicoïdaux à queue cylindrique

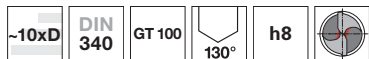
N° d'article **2462**

d1		l1	l2
mm	inch	mm	mm
1,000		56,000	33,000
1,100		60,000	37,000
1,200		65,000	41,000
1,300		65,000	41,000
1,500		70,000	45,000
1,600		76,000	50,000
1,700		76,000	50,000
1,800		80,000	53,000
1,900		80,000	53,000
2,000		85,000	56,000
2,100		85,000	56,000
2,200		90,000	59,000
2,300		90,000	59,000
2,400		95,000	62,000
2,500		95,000	62,000
2,600		95,000	62,000
2,800		100,000	66,000
2,900		100,000	66,000
3,000		100,000	66,000
3,100		106,000	69,000
3,200		106,000	69,000
3,300		106,000	69,000
3,400		112,000	73,000
3,500		112,000	73,000

d1		l1	l2
mm	inch	mm	mm
3,800		119,000	78,000
4,000		119,000	78,000
4,200		119,000	78,000
4,300		126,000	82,000
4,500		126,000	82,000
4,800		132,000	87,000
5,000		132,000	87,000
5,200		132,000	87,000
5,400		139,000	91,000
5,500		139,000	91,000
6,000		139,000	91,000
6,100		148,000	97,000
6,200		148,000	97,000
6,500		148,000	97,000
6,600		148,000	97,000
6,800		156,000	102,000
7,000		156,000	102,000
7,200		156,000	102,000
7,300		156,000	102,000
7,600		165,000	109,000
8,000		165,000	109,000
9,000		175,000	115,000
10,000		184,000	121,000



## Forets hélicoïdaux longs



**P** • Amin. de l'âme  $\geq \varnothing 1,400$  • affûtage à dépouille conique • goujures larges • en cas de mauvaise évacuation des copeaux

**M**

**K** •

**N** • fontes grises et aciers jusqu'à 1000 N/mm<sup>2</sup> • Ne pas utiliser pour les aciers CrNi et les aciers inox

**S**

**H**

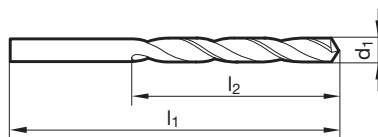
## GÜHRING NAVIGATOR

Paramètres de coupe, page 786

Matière de coupe **HSS**

Surface

Sens de coupe



N° d'article **506**

d1		l1	l2
mm	inch	mm	mm
1,400		70,000	45,000
1,500		70,000	45,000
1,600		76,000	50,000
1,680		76,000	50,000
1,800		80,000	53,000
1,850		80,000	53,000
2,000		85,000	56,000
2,200		90,000	59,000
2,300		90,000	59,000
2,350		90,000	59,000
2,500		95,000	62,000
2,800		100,000	66,000
3,000		100,000	66,000
3,050		106,000	69,000
3,200		106,000	69,000
3,300		106,000	69,000
3,400		112,000	73,000
3,500		112,000	73,000
3,550		112,000	73,000
3,800		119,000	78,000
3,950		119,000	78,000
4,000		119,000	78,000
4,400		126,000	82,000
4,500		126,000	82,000

d1		l1	l2
mm	inch	mm	mm
4,600		126,000	82,000
4,760	3/16	132,000	87,000
4,800		132,000	87,000
4,950		132,000	87,000
5,160	13/64	132,000	87,000
5,200		132,000	87,000
5,400		139,000	91,000
5,600		139,000	91,000
5,700		139,000	91,000
5,800		139,000	91,000
5,900		139,000	91,000
6,000		139,000	91,000
7,400		156,000	102,000
7,800		165,000	109,000
8,500		165,000	109,000
9,000		175,000	115,000
9,900		184,000	121,000
10,320	13/32	184,000	121,000
11,000		195,000	128,000
11,500		195,000	128,000
11,600		195,000	128,000
12,000		205,000	134,000
12,500		205,000	134,000
13,000		205,000	134,000

Forets hélicoïdaux à queue cylindrique





Forets hélicoïdaux longs



Matière de coupe **HSS**

Surface ○

Sens de coupe (R)

**P** ○ Amin. de l'âme ≥ Ø 2,370 • affûtage à dépouille conique • goujures particulièrement volumineuses

**M**

**K**

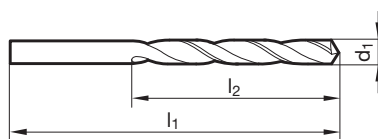
**N** • matières tendres et à copeaux longs < 500 N/mm<sup>2</sup> • aciers de décolletage, doux • aluminium/alliages d'aluminium à copeaux longs

**S** • zinc, cuivre de 1ère fusion, Alpax, électrode • zamak, thermoplastiques, bois

**H**

**GUHRING NAVIGATOR**

Paramètres de coupe, page 786



N° d'article **501**

d1		l1	l2
mm	inch	mm	mm
1,000		56,000	33,000
1,020		56,000	33,000
1,030		56,000	33,000
1,040		56,000	33,000
1,070		60,000	37,000
1,090		60,000	37,000
1,100		60,000	37,000
1,180		60,000	37,000
1,190	3/64	65,000	41,000
1,200		65,000	41,000
1,250		65,000	41,000
1,300		65,000	41,000
1,320		65,000	41,000
1,400		70,000	45,000
1,450		70,000	45,000
1,480		70,000	45,000
1,500		70,000	45,000
1,510		76,000	50,000
1,550		76,000	50,000
1,590	1/16	76,000	50,000
1,600		76,000	50,000
1,610		76,000	50,000
1,700		76,000	50,000
1,750		80,000	53,000
1,780		80,000	53,000
1,800		80,000	53,000
1,850		80,000	53,000
1,900		80,000	53,000
1,930		85,000	56,000
1,950		85,000	56,000
1,980	5/64	85,000	56,000
1,990		85,000	56,000
2,000		85,000	56,000
2,050		85,000	56,000
2,060		85,000	56,000
2,080		85,000	56,000
2,100		85,000	56,000
2,180		90,000	59,000
2,200		90,000	59,000
2,250		90,000	59,000
2,260		90,000	59,000
2,300		90,000	59,000

d1		l1	l2
mm	inch	mm	mm
2,350		90,000	59,000
2,370		95,000	62,000
2,380	3/32	95,000	62,000
2,400		95,000	62,000
2,440		95,000	62,000
2,450		95,000	62,000
2,490		95,000	62,000
2,500		95,000	62,000
2,520		95,000	62,000
2,530		95,000	62,000
2,550		95,000	62,000
2,580		95,000	62,000
2,600		95,000	62,000
2,640		95,000	62,000
2,650		95,000	62,000
2,700		100,000	66,000
2,710		100,000	66,000
2,750		100,000	66,000
2,780	7/64	100,000	66,000
2,790		100,000	66,000
2,800		100,000	66,000
2,820		100,000	66,000
2,850		100,000	66,000
2,870		100,000	66,000
2,900		100,000	66,000
2,950		100,000	66,000
3,000		100,000	66,000
3,050		106,000	69,000
3,100		106,000	69,000
3,170	1/8	106,000	69,000
3,200		106,000	69,000
3,250		106,000	69,000
3,260		106,000	69,000
3,300		106,000	69,000
3,350		106,000	69,000
3,400		112,000	73,000
3,450		112,000	73,000
3,500		112,000	73,000
3,570	9/64	112,000	73,000
3,600		112,000	73,000
3,650		112,000	73,000
3,660		112,000	73,000

Forets hélicoïdaux à queue cylindrique



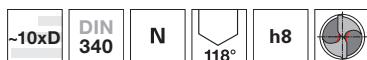
Forets hélicoïdaux à queue cylindrique

d1		l1	l2
mm	inch	mm	mm
3,700		112,000	73,000
3,800		119,000	78,000
3,860		119,000	78,000
3,900		119,000	78,000
3,910		119,000	78,000
3,970	5/32	119,000	78,000
3,990		119,000	78,000
4,000		119,000	78,000
4,040		119,000	78,000
4,050		119,000	78,000
4,090		119,000	78,000
4,100		119,000	78,000
4,200		119,000	78,000
4,220		119,000	78,000
4,250		119,000	78,000
4,300		126,000	82,000
4,350		126,000	82,000
4,370	11/64	126,000	82,000
4,400		126,000	82,000
4,500		126,000	82,000
4,570		126,000	82,000
4,600		126,000	82,000
4,620		126,000	82,000
4,700		126,000	82,000
4,750		126,000	82,000
4,760	3/16	132,000	87,000
4,800		132,000	87,000
4,850		132,000	87,000
4,900		132,000	87,000
4,920		132,000	87,000
4,980		132,000	87,000
5,000		132,000	87,000
5,060		132,000	87,000
5,100		132,000	87,000
5,110		132,000	87,000
5,160	13/64	132,000	87,000
5,180		132,000	87,000
5,200		132,000	87,000
5,300		132,000	87,000
5,310		139,000	91,000
5,400		139,000	91,000
5,410		139,000	91,000
5,500		139,000	91,000
5,560	7/32	139,000	91,000
5,600		139,000	91,000
5,610		139,000	91,000
5,650		139,000	91,000
5,700		139,000	91,000
5,790		139,000	91,000
5,800		139,000	91,000
5,900		139,000	91,000
5,940		139,000	91,000
5,950	15/64	139,000	91,000
6,000		139,000	91,000
6,030		148,000	97,000
6,040		148,000	97,000
6,150		148,000	97,000
6,200		148,000	97,000
6,250		148,000	97,000
6,300		148,000	97,000
6,350	1/4	148,000	97,000
6,400		148,000	97,000
6,500		148,000	97,000
6,530		148,000	97,000
6,600		148,000	97,000
6,630		148,000	97,000
6,700		148,000	97,000
6,750	17/64	156,000	102,000
6,800		156,000	102,000
6,900		156,000	102,000
7,000		156,000	102,000
7,040		156,000	102,000

d1		l1	l2
mm	inch	mm	mm
7,100		156,000	102,000
7,140	9/32	156,000	102,000
7,300		156,000	102,000
7,370		156,000	102,000
7,490		156,000	102,000
7,500		156,000	102,000
7,540	19/64	165,000	109,000
7,600		165,000	109,000
7,670		165,000	109,000
7,900		165,000	109,000
7,940	5/16	165,000	109,000
8,000		165,000	109,000
8,025		165,000	109,000
8,030		165,000	109,000
8,100		165,000	109,000
8,200		165,000	109,000
8,330	21/64	165,000	109,000
8,430		165,000	109,000
8,500		165,000	109,000
8,600		175,000	115,000
8,610		175,000	115,000
8,700		175,000	115,000
8,730	11/32	175,000	115,000
8,750		175,000	115,000
8,900		175,000	115,000
9,000		175,000	115,000
9,090		175,000	115,000
9,100		175,000	115,000
9,130	23/64	175,000	115,000
9,300		175,000	115,000
9,340		175,000	115,000
9,350		175,000	115,000
9,400		175,000	115,000
9,500		175,000	115,000
9,520	3/8	184,000	121,000
9,580		184,000	121,000
9,600		184,000	121,000
9,800		184,000	121,000
9,900		184,000	121,000
9,920	25/64	184,000	121,000
10,000		184,000	121,000
10,080		184,000	121,000
10,200		184,000	121,000
10,260		184,000	121,000
10,320	13/32	184,000	121,000
10,500		184,000	121,000
10,600		184,000	121,000
10,700		195,000	128,000
10,720	27/64	195,000	128,000
10,800		195,000	128,000
11,000		195,000	128,000
11,110	7/16	195,000	128,000
11,200		195,000	128,000
11,400		195,000	128,000
11,500		195,000	128,000
11,510	29/64	195,000	128,000
11,750		195,000	128,000
11,800		195,000	128,000
11,900		205,000	134,000
11,910	15/32	205,000	134,000
12,000		205,000	134,000
12,200		205,000	134,000
12,300	31/64	205,000	134,000
12,500		205,000	134,000
12,700	1/2	205,000	134,000
13,000		205,000	134,000
13,100	33/64	205,000	134,000
13,490	17/32	214,000	140,000
14,000		214,000	140,000
32,600		325,000	213,000



Forets hélicoïdaux longs



Matière de coupe **HSCO**

Surface  $\text{Ra} > 0,2,36$

Sens de coupe

**P** • Amin. de l'âme  $\geq \text{Ø } 1,000$  • affûtage à dépouille conique • acier rapide au Co • meilleure résistance à l'usure

**M** ○

**K** •

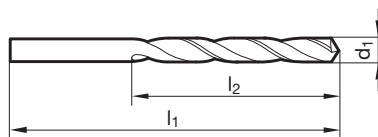
**N** • aciers, alliés ou non alliés, et fontes  $> 800 \text{ N/mm}^2$  • aciers à outils, travail à froid et à chaud • aciers à roulement • aciers hautement alliés • aciers de cémentation et d'amélioration

**S** ○

**H**

**GUHRING NAVIGATOR**

Paramètres de coupe, page 792



N° d'article **317**

d1		l1	l2
mm	inch	mm	mm
0,500		32,000	12,000
0,600		35,000	15,000
0,700		42,000	21,000
0,750		42,000	21,000
0,800		46,000	25,000
0,850		46,000	25,000
0,900		51,000	29,000
0,950		51,000	29,000
0,960		56,000	33,000
1,000		56,000	33,000
1,020		56,000	33,000
1,050		56,000	33,000
1,100		60,000	37,000
1,150		60,000	37,000
1,190	3/64	65,000	41,000
1,200		65,000	41,000
1,250		65,000	41,000
1,300		65,000	41,000
1,350		70,000	45,000
1,400		70,000	45,000
1,450		70,000	45,000
1,500		70,000	45,000
1,510		76,000	50,000
1,550		76,000	50,000
1,590	1/16	76,000	50,000
1,600		76,000	50,000
1,650		76,000	50,000
1,700		76,000	50,000
1,780		80,000	53,000
1,800		80,000	53,000
1,850		80,000	53,000
1,900		80,000	53,000
1,950		85,000	56,000
1,980	5/64	85,000	56,000
2,000		85,000	56,000
2,050		85,000	56,000
2,060		85,000	56,000
2,100		85,000	56,000
2,200		90,000	59,000
2,300		90,000	59,000
2,380	3/32	95,000	62,000
2,400		95,000	62,000

d1		l1	l2
mm	inch	mm	mm
2,500		95,000	62,000
2,600		95,000	62,000
2,700		100,000	66,000
2,780	7/64	100,000	66,000
2,800		100,000	66,000
2,900		100,000	66,000
3,000		100,000	66,000
3,050		106,000	69,000
3,100		106,000	69,000
3,170	1/8	106,000	69,000
3,200		106,000	69,000
3,250		106,000	69,000
3,300		106,000	69,000
3,400		112,000	73,000
3,500		112,000	73,000
3,550		112,000	73,000
3,570	9/64	112,000	73,000
3,600		112,000	73,000
3,700		112,000	73,000
3,800		119,000	78,000
3,900		119,000	78,000
3,970	5/32	119,000	78,000
4,000		119,000	78,000
4,040		119,000	78,000
4,100		119,000	78,000
4,200		119,000	78,000
4,300		126,000	82,000
4,370	11/64	126,000	82,000
4,400		126,000	82,000
4,500		126,000	82,000
4,600		126,000	82,000
4,700		126,000	82,000
4,760	3/16	132,000	87,000
4,800		132,000	87,000
4,850		132,000	87,000
4,900		132,000	87,000
5,000		132,000	87,000
5,050		132,000	87,000
5,100		132,000	87,000
5,160	13/64	132,000	87,000
5,200		132,000	87,000
5,300		132,000	87,000

Forets hélicoïdaux à queue cylindrique



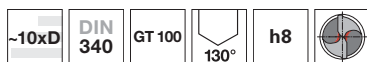
Forets hélicoïdaux à queue cylindrique

d1		l1	l2
mm	inch	mm	mm
5,400		139,000	91,000
5,500		139,000	91,000
5,560	7/32	139,000	91,000
5,600		139,000	91,000
5,700		139,000	91,000
5,800		139,000	91,000
5,900		139,000	91,000
5,950	15/64	139,000	91,000
6,000		139,000	91,000
6,100		148,000	97,000
6,200		148,000	97,000
6,300		148,000	97,000
6,350	1/4	148,000	97,000
6,400		148,000	97,000
6,500		148,000	97,000
6,600		148,000	97,000
6,630		148,000	97,000
6,750	17/64	156,000	102,000
6,800		156,000	102,000
6,900		156,000	102,000
7,000		156,000	102,000
7,140	9/32	156,000	102,000
7,200		156,000	102,000
7,500		156,000	102,000
7,540	19/64	165,000	109,000
7,600		165,000	109,000
7,700		165,000	109,000
7,800		165,000	109,000
7,940	5/16	165,000	109,000
8,000		165,000	109,000
8,200		165,000	109,000
8,330	21/64	165,000	109,000
8,430		165,000	109,000
8,500		165,000	109,000
8,600		175,000	115,000
8,730	11/32	175,000	115,000
8,800		175,000	115,000
9,000		175,000	115,000
9,130	23/64	175,000	115,000
9,200		175,000	115,000
9,300		175,000	115,000
9,500		175,000	115,000

d1		l1	l2
mm	inch	mm	mm
9,520	3/8	184,000	121,000
9,700		184,000	121,000
9,920	25/64	184,000	121,000
10,000		184,000	121,000
10,100		184,000	121,000
10,200		184,000	121,000
10,320	13/32	184,000	121,000
10,500		184,000	121,000
10,720	27/64	195,000	128,000
10,750		195,000	128,000
10,800		195,000	128,000
11,000		195,000	128,000
11,110	7/16	195,000	128,000
11,200		195,000	128,000
11,500		195,000	128,000
11,510	29/64	195,000	128,000
11,910	15/32	205,000	134,000
12,000		205,000	134,000
12,300	31/64	205,000	134,000
12,500		205,000	134,000
12,700	1/2	205,000	134,000
13,000		205,000	134,000
13,100	33/64	205,000	134,000
13,500		214,000	140,000
13,700		214,000	140,000
13,890	35/64	214,000	140,000
13,900		214,000	140,000
14,000		214,000	140,000
14,290	9/16	220,000	144,000
14,400		220,000	144,000
14,600		220,000	144,000
14,680	37/64	220,000	144,000
14,700		220,000	144,000
14,750		220,000	144,000
14,900		220,000	144,000
15,000		220,000	144,000
15,080	19/32	227,000	149,000
15,480	39/64	227,000	149,000
15,800		227,000	149,000
15,870	5/8	227,000	149,000
16,000		227,000	149,000
22,000		268,000	176,000



Forets hélicoïdaux longs



Matière de coupe **HSCO**

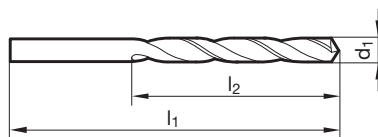
Surface

Sens de coupe

- P** • Amin. de l'âme  $\geq \varnothing 1,000$  • affûtage à dépouille conique • acier rapide au Co • goujures larges • meilleure résistance à l'usure • en cas de mauvaise évacuation des copeaux
- M** •
- K** •
- N** • aciers, alliés ou non alliés, et fontes  $> 800 \text{ N/mm}^2$  • aciers à outils, travail à froid et à chaud • aciers à roulement • aciers hautement alliés • aciers de cémentation et d'amélioration
- S** •
- H** ○

**GUHRING** NAVIGATOR

Paramètres de coupe, page 792



N° d'article **336**

d1		l1	l2
mm	inch	mm	mm
1,000		56,000	33,000
1,020		56,000	33,000
1,040		56,000	33,000
1,070		60,000	37,000
1,090		60,000	37,000
1,100		60,000	37,000
1,180		60,000	37,000
1,190	3/64	65,000	41,000
1,200		65,000	41,000
1,250		65,000	41,000
1,300		65,000	41,000
1,320		65,000	41,000
1,400		70,000	45,000
1,500		70,000	45,000
1,510		76,000	50,000
1,550		76,000	50,000
1,590	1/16	76,000	50,000
1,600		76,000	50,000
1,610		76,000	50,000
1,700		76,000	50,000
1,750		80,000	53,000
1,780		80,000	53,000
1,800		80,000	53,000
1,850		80,000	53,000
1,900		80,000	53,000
1,930		85,000	56,000
1,980	5/64	85,000	56,000
1,990		85,000	56,000
2,000		85,000	56,000
2,050		85,000	56,000
2,060		85,000	56,000
2,080		85,000	56,000
2,100		85,000	56,000
2,180		90,000	59,000
2,200		90,000	59,000
2,250		90,000	59,000
2,260		90,000	59,000
2,300		90,000	59,000
2,350		90,000	59,000
2,370		95,000	62,000
2,380	3/32	95,000	62,000
2,400		95,000	62,000

d1		l1	l2
mm	inch	mm	mm
2,440		95,000	62,000
2,450		95,000	62,000
2,490		95,000	62,000
2,500		95,000	62,000
2,530		95,000	62,000
2,550		95,000	62,000
2,580		95,000	62,000
2,600		95,000	62,000
2,640		95,000	62,000
2,700		100,000	66,000
2,710		100,000	66,000
2,750		100,000	66,000
2,780	7/64	100,000	66,000
2,790		100,000	66,000
2,800		100,000	66,000
2,820		100,000	66,000
2,850		100,000	66,000
2,870		100,000	66,000
2,900		100,000	66,000
2,950		100,000	66,000
3,000		100,000	66,000
3,050		106,000	69,000
3,100		106,000	69,000
3,170	1/8	106,000	69,000
3,200		106,000	69,000
3,260		106,000	69,000
3,300		106,000	69,000
3,400		112,000	73,000
3,440		112,000	73,000
3,450		112,000	73,000
3,500		112,000	73,000
3,570	9/64	112,000	73,000
3,600		112,000	73,000
3,660		112,000	73,000
3,700		112,000	73,000
3,730		112,000	73,000
3,750		112,000	73,000
3,800		119,000	78,000
3,860		119,000	78,000
3,900		119,000	78,000
3,910		119,000	78,000
3,970	5/32	119,000	78,000

Forets hélicoïdaux à queue cylindrique



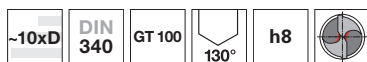
Forets hélicoïdaux à queue cylindrique

d1		l1	l2
mm	inch	mm	mm
3,990		119,000	78,000
4,000		119,000	78,000
4,040		119,000	78,000
4,090		119,000	78,000
4,100		119,000	78,000
4,200		119,000	78,000
4,220		119,000	78,000
4,300		126,000	82,000
4,370	11/64	126,000	82,000
4,390		126,000	82,000
4,400		126,000	82,000
4,500		126,000	82,000
4,570		126,000	82,000
4,600		126,000	82,000
4,620		126,000	82,000
4,700		126,000	82,000
4,760	3/16	132,000	87,000
4,800		132,000	87,000
4,850		132,000	87,000
4,900		132,000	87,000
4,920		132,000	87,000
4,980		132,000	87,000
5,000		132,000	87,000
5,060		132,000	87,000
5,100		132,000	87,000
5,110		132,000	87,000
5,160	13/64	132,000	87,000
5,180		132,000	87,000
5,200		132,000	87,000
5,220		132,000	87,000
5,300		132,000	87,000
5,310		139,000	91,000
5,400		139,000	91,000
5,410		139,000	91,000
5,500		139,000	91,000
5,560	7/32	139,000	91,000
5,600		139,000	91,000
5,610		139,000	91,000
5,700		139,000	91,000
5,790		139,000	91,000
5,800		139,000	91,000
5,900		139,000	91,000
5,940		139,000	91,000
5,950	15/64	139,000	91,000
6,000		139,000	91,000
6,040		148,000	97,000
6,100		148,000	97,000
6,150		148,000	97,000
6,200		148,000	97,000
6,250		148,000	97,000
6,300		148,000	97,000
6,350	1/4	148,000	97,000
6,400		148,000	97,000
6,500		148,000	97,000
6,530		148,000	97,000
6,600		148,000	97,000
6,630		148,000	97,000
6,700		148,000	97,000
6,750	17/64	156,000	102,000
6,800		156,000	102,000

d1		l1	l2
mm	inch	mm	mm
6,900		156,000	102,000
7,000		156,000	102,000
7,030		156,000	102,000
7,100		156,000	102,000
7,140	9/32	156,000	102,000
7,200		156,000	102,000
7,300		156,000	102,000
7,370		156,000	102,000
7,400		156,000	102,000
7,490		156,000	102,000
7,500		156,000	102,000
7,540	19/64	165,000	109,000
7,670		165,000	109,000
7,700		165,000	109,000
7,800		165,000	109,000
7,900		165,000	109,000
7,940	5/16	165,000	109,000
8,000		165,000	109,000
8,030		165,000	109,000
8,100		165,000	109,000
8,200		165,000	109,000
8,300		165,000	109,000
8,400		165,000	109,000
8,500		165,000	109,000
8,600		175,000	115,000
8,610		175,000	115,000
8,700		175,000	115,000
8,730	11/32	175,000	115,000
8,800		175,000	115,000
8,840		175,000	115,000
8,900		175,000	115,000
9,000		175,000	115,000
9,090		175,000	115,000
9,100		175,000	115,000
9,200		175,000	115,000
9,300		175,000	115,000
9,350		175,000	115,000
9,400		175,000	115,000
9,500		175,000	115,000
9,520	3/8	184,000	121,000
9,700		184,000	121,000
9,750		184,000	121,000
9,800		184,000	121,000
9,900		184,000	121,000
10,000		184,000	121,000
10,200		184,000	121,000
10,500		184,000	121,000
10,750		195,000	128,000
10,800		195,000	128,000
10,900		195,000	128,000
11,000		195,000	128,000
11,500		195,000	128,000
11,800		195,000	128,000
12,000		205,000	134,000
12,500		205,000	134,000
13,000		205,000	134,000
15,500		227,000	149,000
16,000		227,000	149,000



Forets hélicoïdaux longs



Matière de coupe **HSCO**

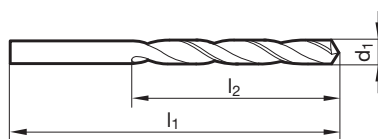
Surface **F**

Sens de coupe **R**

- P** • Amin. de l'âme  $\geq \varnothing 1,000$  • affûtage à dépouille conique • acier rapide au Co • goujures larges • résistance à l'usure particulièrement élevée • en cas de mauvaise évacuation des copeaux
- M** •
- K** •
- N** • aciers, alliés ou non alliés, et fontes  $> 800 \text{ N/mm}^2$  • aciers à outils, travail à froid et à chaud • aciers à roulement • aciers hautement alliés • aciers de cémentation et d'amélioration
- S** •
- H** ○

**GÜHRING** NAVIGATOR

Paramètres de coupe, page 792



N° d'article **396**

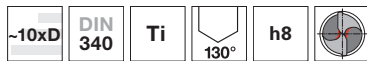
d1		l1	l2
mm	inch	mm	mm
1,000		56,000	33,000
1,100		60,000	37,000
1,200		65,000	41,000
1,300		65,000	41,000
1,500		70,000	45,000
1,600		76,000	50,000
1,800		80,000	53,000
1,900		80,000	53,000
2,000		85,000	56,000
2,100		85,000	56,000
2,200		90,000	59,000
2,300		90,000	59,000
2,400		95,000	62,000
2,500		95,000	62,000
2,700		100,000	66,000
2,800		100,000	66,000
2,900		100,000	66,000
3,000		100,000	66,000
3,100		106,000	69,000
3,200		106,000	69,000
3,300		106,000	69,000
3,400		112,000	73,000
3,500		112,000	73,000
3,600		112,000	73,000
3,800		119,000	78,000
3,900		119,000	78,000
4,000		119,000	78,000
4,100		119,000	78,000
4,200		119,000	78,000
4,500		126,000	82,000
4,800		132,000	87,000
5,000		132,000	87,000
5,100		132,000	87,000
5,200		132,000	87,000
5,400		139,000	91,000
5,500		139,000	91,000

d1		l1	l2
mm	inch	mm	mm
5,800		139,000	91,000
5,900		139,000	91,000
6,000		139,000	91,000
6,200		148,000	97,000
6,500		148,000	97,000
6,700		148,000	97,000
6,800		156,000	102,000
7,000		156,000	102,000
7,200		156,000	102,000
7,400		156,000	102,000
7,500		156,000	102,000
7,600		165,000	109,000
7,700		165,000	109,000
7,800		165,000	109,000
7,900		165,000	109,000
8,000		165,000	109,000
8,200		165,000	109,000
8,300		165,000	109,000
8,500		165,000	109,000
8,600		175,000	115,000
8,800		175,000	115,000
8,900		175,000	115,000
9,000		175,000	115,000
9,100		175,000	115,000
9,200		175,000	115,000
9,300		175,000	115,000
9,500		175,000	115,000
9,600		184,000	121,000
9,700		184,000	121,000
10,000		184,000	121,000
10,200		184,000	121,000
10,500		184,000	121,000
11,000		195,000	128,000
11,500		195,000	128,000
12,000		205,000	134,000

Forets hélicoïdaux à queue cylindrique



## Forets hélicoïdaux longs



Matière de coupe **HSCO**

Surface

Sens de coupe

**P** ○ Amin. de l'âme ≥ Ø 1,000 • affûtage à dépouille conique • acier rapide au Co • meilleure résistance à l'usure

**M** ●

**K** ●

**N** ● Titane et ses alliages • aciers austénit., inox., inaltérables aux acides, réfractaires • aciers > 900 N/mm<sup>2</sup>, à copeaux courts • aciers à roulement • Hastelloy, Inconel, Nimonic

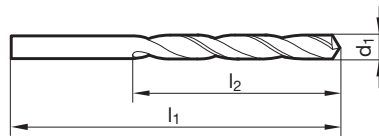
**S** ●

**H** ●

## GUHRING NAVIGATOR

Paramètres de coupe, page 792

Forets hélicoïdaux à queue cylindrique



N° d'article

**617**

d1		l1	l2
mm	inch	mm	mm
1,000		56,000	33,000
1,100		60,000	37,000
1,200		65,000	41,000
1,300		65,000	41,000
1,400		70,000	45,000
1,450		70,000	45,000
1,500		70,000	45,000
1,590	1/16	76,000	50,000
1,600		76,000	50,000
1,610		76,000	50,000
1,650		76,000	50,000
1,700		76,000	50,000
1,750		80,000	53,000
1,800		80,000	53,000
1,850		80,000	53,000
1,900		80,000	53,000
1,930		85,000	56,000
1,950		85,000	56,000
1,980	5/64	85,000	56,000
2,000		85,000	56,000
2,050		85,000	56,000
2,100		85,000	56,000
2,150		90,000	59,000
2,200		90,000	59,000
2,260		90,000	59,000
2,300		90,000	59,000
2,380	3/32	95,000	62,000
2,400		95,000	62,000
2,450		95,000	62,000
2,500		95,000	62,000
2,550		95,000	62,000
2,600		95,000	62,000
2,700		100,000	66,000
2,780	7/64	100,000	66,000
2,800		100,000	66,000
2,900		100,000	66,000
3,000		100,000	66,000
3,050		106,000	69,000
3,100		106,000	69,000
3,170	1/8	106,000	69,000
3,200		106,000	69,000
3,250		106,000	69,000

d1		l1	l2
mm	inch	mm	mm
3,300		106,000	69,000
3,400		112,000	73,000
3,450		112,000	73,000
3,500		112,000	73,000
3,570	9/64	112,000	73,000
3,600		112,000	73,000
3,700		112,000	73,000
3,800		119,000	78,000
3,900		119,000	78,000
3,970	5/32	119,000	78,000
4,000		119,000	78,000
4,050		119,000	78,000
4,100		119,000	78,000
4,200		119,000	78,000
4,300		126,000	82,000
4,400		126,000	82,000
4,500		126,000	82,000
4,600		126,000	82,000
4,700		126,000	82,000
4,760	3/16	132,000	87,000
4,800		132,000	87,000
4,900		132,000	87,000
4,950		132,000	87,000
5,000		132,000	87,000
5,100		132,000	87,000
5,160	13/64	132,000	87,000
5,200		132,000	87,000
5,300		132,000	87,000
5,400		139,000	91,000
5,500		139,000	91,000
5,600		139,000	91,000
5,700		139,000	91,000
5,800		139,000	91,000
6,000		139,000	91,000
6,100		148,000	97,000
6,200		148,000	97,000
6,300		148,000	97,000
6,350	1/4	148,000	97,000
6,400		148,000	97,000
6,500		148,000	97,000
6,600		148,000	97,000
6,700		148,000	97,000





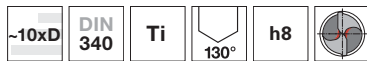
d1		l1	l2
mm	inch	mm	mm
6,750	17/64	156,000	102,000
6,800		156,000	102,000
6,900		156,000	102,000
7,000		156,000	102,000
7,100		156,000	102,000
7,140	9/32	156,000	102,000
7,250		156,000	102,000
7,400		156,000	102,000
7,500		156,000	102,000
7,540	19/64	165,000	109,000
7,700		165,000	109,000
7,800		165,000	109,000
7,940	5/16	165,000	109,000
8,000		165,000	109,000
8,100		165,000	109,000
8,200		165,000	109,000
8,300		165,000	109,000
8,330	21/64	165,000	109,000
8,400		165,000	109,000
8,500		165,000	109,000
8,600		175,000	115,000
8,700		175,000	115,000
8,730	11/32	175,000	115,000
8,800		175,000	115,000

d1		l1	l2
mm	inch	mm	mm
9,000		175,000	115,000
9,100		175,000	115,000
9,500		175,000	115,000
9,520	3/8	184,000	121,000
9,800		184,000	121,000
10,000		184,000	121,000
10,200		184,000	121,000
10,500		184,000	121,000
11,000		195,000	128,000
11,110	7/16	195,000	128,000
11,510	29/64	195,000	128,000
12,000		205,000	134,000
12,500		205,000	134,000
13,000		205,000	134,000
15,000		220,000	144,000

Forets hélicoïdaux  
à queue cylindrique



## Forets hélicoïdaux longs



Matière de coupe **HSCO**

Surface **S**

Sens de coupe **R**

**P** ○ Amin. de l'âme ≥ Ø 1,000 • affûtage à dépouille conique • acier rapide au Co • meilleure résistance à l'usure

**M** ●

**K** ●

**N** ● Titane et ses alliages • aciers austénit., inox., inaltérables aux acides, réfractaires • aciers > 900 N/mm<sup>2</sup>, à copeaux courts • aciers à roulement • Hastelloy, Inconel, Nimonic

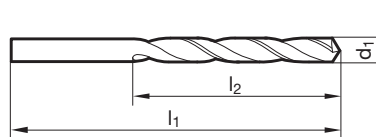
**S** ●

**H** ●

## GUHRING NAVIGATOR

Paramètres de coupe, page 792

Forets hélicoïdaux à queue cylindrique



N° d'article **669**

d1		l1	l2	d1		l1	l2
mm	inch	mm	mm	mm	inch	mm	mm
1,000		56,000	33,000	4,300		126,000	82,000
1,200		65,000	41,000	4,370	11/64	126,000	82,000
1,300		65,000	41,000	4,400		126,000	82,000
1,400		70,000	45,000	4,500		126,000	82,000
1,500		70,000	45,000	4,700		126,000	82,000
1,590	1/16	76,000	50,000	4,760	3/16	132,000	87,000
1,600		76,000	50,000	4,800		132,000	87,000
1,700		76,000	50,000	5,000		132,000	87,000
1,800		80,000	53,000	5,100		132,000	87,000
1,900		80,000	53,000	5,160	13/64	132,000	87,000
1,980	5/64	85,000	56,000	5,200		132,000	87,000
2,000		85,000	56,000	5,300		132,000	87,000
2,050		85,000	56,000	5,500		139,000	91,000
2,100		85,000	56,000	5,600		139,000	91,000
2,200		90,000	59,000	5,700		139,000	91,000
2,300		90,000	59,000	5,800		139,000	91,000
2,380	3/32	95,000	62,000	6,000		139,000	91,000
2,400		95,000	62,000	6,100		148,000	97,000
2,500		95,000	62,000	6,200		148,000	97,000
2,600		95,000	62,000	6,300		148,000	97,000
2,700		100,000	66,000	6,350	1/4	148,000	97,000
2,750		100,000	66,000	6,400		148,000	97,000
2,780	7/64	100,000	66,000	6,500		148,000	97,000
2,800		100,000	66,000	6,700		148,000	97,000
2,900		100,000	66,000	6,750	17/64	156,000	102,000
3,000		100,000	66,000	6,800		156,000	102,000
3,100		106,000	69,000	7,000		156,000	102,000
3,170	1/8	106,000	69,000	7,100		156,000	102,000
3,200		106,000	69,000	7,140	9/32	156,000	102,000
3,250		106,000	69,000	7,200		156,000	102,000
3,300		106,000	69,000	7,400		156,000	102,000
3,400		112,000	73,000	7,500		156,000	102,000
3,500		112,000	73,000	7,540	19/64	165,000	109,000
3,570	9/64	112,000	73,000	7,800		165,000	109,000
3,600		112,000	73,000	7,900		165,000	109,000
3,700		112,000	73,000	7,940	5/16	165,000	109,000
3,800		119,000	78,000	8,000		165,000	109,000
3,900		119,000	78,000	8,200		165,000	109,000
3,970	5/32	119,000	78,000	8,500		165,000	109,000
4,000		119,000	78,000	8,730	11/32	175,000	115,000
4,100		119,000	78,000	9,000		175,000	115,000
4,200		119,000	78,000	9,130	23/64	175,000	115,000

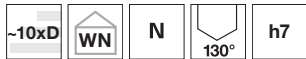


d1		l1	l2
mm	inch	mm	mm
9,300		175,000	115,000
9,500		175,000	115,000
9,520	3/8	184,000	121,000
10,000		184,000	121,000
10,200		184,000	121,000

d1		l1	l2
mm	inch	mm	mm



Forets hélicoïdaux longs



- P** affûtage en pente • arête de coupe principale rectiligne
- M**
- K**
- N** matières synthétiques renforcées de fibres de verre • thermodurcissables
- S** abrasifs avec effet abrasif sur arêtes de coupe et listels
- H**

Matière de coupe **CW monobloc**

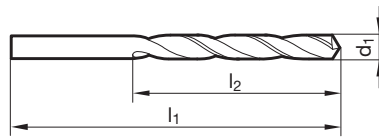
Surface

Sens de coupe

Forets hélicoïdaux à queue cylindrique

**GÜHRING** NAVIGATOR

Paramètres de coupe, page 792



N° d'article **706**

d1		l1	l2
mm	inch	mm	mm
0,500		38,000	8,500
0,600		38,000	9,500
0,650		38,000	10,500
0,700		38,000	10,500
0,750		38,000	12,500
0,800		38,000	12,500
0,850		38,000	14,500
0,900		38,000	14,500
1,000		38,000	17,000
1,050		38,000	17,000
1,100		38,000	17,000
1,400		38,000	17,000

d1		l1	l2
mm	inch	mm	mm
1,450		38,000	17,000



Forets hélicoïdaux extra-longs, série 1



Matière de coupe **HSS**

Surface

Sens de coupe

**P** • Amin. de l'âme  $\geq \varnothing 2,380$  • affûtage à dépouille conique • pour les perçages très profonds

**M**

**K** •

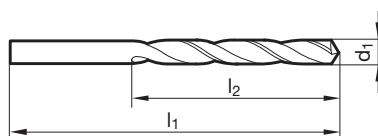
**N** ○ acier, fonte aciérée (alliée / non alliée) • fontes grises, fontes malléables, fontes à graphite sphéroïdal • fer fritté, maillechort, graphite

**S**

**H**

**GUHRING** NAVIGATOR

Paramètres de coupe, page 788



N° d'article **235**

d1		l1	l2
mm	inch	mm	mm
1,600		115,000	75,000
1,700		115,000	75,000
1,800		120,000	80,000
1,900		120,000	80,000
1,930		125,000	85,000
1,950		125,000	85,000
2,000		125,000	85,000
2,050		125,000	85,000
2,100		125,000	85,000
2,200		135,000	90,000
2,300		135,000	90,000
2,350		135,000	90,000
2,380	3/32	140,000	95,000
2,400		140,000	95,000
2,500		140,000	95,000
2,600		140,000	95,000
2,700		150,000	100,000
2,800		150,000	100,000
2,900		150,000	100,000
3,000		150,000	100,000
3,100		155,000	105,000
3,170	1/8	155,000	105,000
3,200		155,000	105,000
3,250		155,000	105,000
3,300		155,000	105,000
3,400		165,000	115,000
3,500		165,000	115,000
3,570	9/64	165,000	115,000
3,600		165,000	115,000
3,650		165,000	115,000
3,700		165,000	115,000
3,750		165,000	115,000
3,800		175,000	120,000
3,900		175,000	120,000
3,970	5/32	175,000	120,000
4,000		175,000	120,000
4,100		175,000	120,000
4,200		175,000	120,000
4,300		185,000	125,000
4,370	11/64	185,000	125,000
4,400		185,000	125,000
4,500		185,000	125,000

d1		l1	l2
mm	inch	mm	mm
4,600		185,000	125,000
4,700		185,000	125,000
4,760	3/16	195,000	135,000
4,800		195,000	135,000
4,900		195,000	135,000
5,000		195,000	135,000
5,100		195,000	135,000
5,200		195,000	135,000
5,300		195,000	135,000
5,340		205,000	140,000
5,400		205,000	140,000
5,500		205,000	140,000
5,560	7/32	205,000	140,000
5,600		205,000	140,000
5,700		205,000	140,000
5,800		205,000	140,000
5,900		205,000	140,000
6,000		205,000	140,000
6,100		215,000	150,000
6,200		215,000	150,000
6,250		215,000	150,000
6,300	1/4	215,000	150,000
6,350		215,000	150,000
6,400		215,000	150,000
6,500		215,000	150,000
6,600		215,000	150,000
6,700		215,000	150,000
6,750	17/64	225,000	155,000
6,800		225,000	155,000
7,000		225,000	155,000
7,200		225,000	155,000
7,400		225,000	155,000
7,500		225,000	155,000
7,700		240,000	165,000
7,800		240,000	165,000
7,900		240,000	165,000
7,940	5/16	240,000	165,000
8,000		240,000	165,000
8,100		240,000	165,000
8,200		240,000	165,000
8,330	21/64	240,000	165,000
8,400		240,000	165,000

Forets hélicoïdaux à queue cylindrique



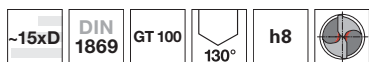
Forets hélicoïdaux à queue cylindrique

d1		l1	l2
mm	inch	mm	mm
8,500		240,000	165,000
8,700		250,000	175,000
8,730	11/32	250,000	175,000
8,800		250,000	175,000
8,900		250,000	175,000
9,000		250,000	175,000
9,130	23/64	250,000	175,000
9,500		250,000	175,000
9,520	3/8	265,000	185,000
9,600		265,000	185,000
9,700		265,000	185,000
9,800		265,000	185,000
9,900		265,000	185,000
9,920	25/64	265,000	185,000
10,000		265,000	185,000
10,100		265,000	185,000
10,200		265,000	185,000
10,250		265,000	185,000

d1		l1	l2
mm	inch	mm	mm
10,320	13/32	265,000	185,000
10,500		265,000	185,000
11,000		280,000	195,000
11,500		280,000	195,000
11,510	29/64	280,000	195,000
11,800		280,000	195,000
12,000		295,000	205,000
12,100		295,000	205,000
12,250		295,000	205,000
12,300	31/64	295,000	205,000
12,500		295,000	205,000
12,700	1/2	295,000	205,000
13,000		295,000	205,000



Forets hélicoïdaux extra-longs, série 1



Matière de coupe **HSS**

Surface

Sens de coupe

**P** • Amin. de l'âme  $\geq \varnothing 1,950$  • affûtage à dépouille conique • goujures larges • pour les perçages très profonds

**M** • en cas de mauvaise évacuation des copeaux

**K** •

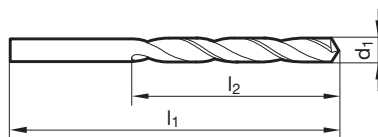
**N** • fontes grises et aciers jusqu'à 1000 N/mm<sup>2</sup> • Ne pas utiliser pour les aciers CrNi et les aciers inox

**S**

**H**

**GUHRING** NAVIGATOR

Paramètres de coupe, page 790



N° d'article **502**

d1		l1	l2
mm	inch	mm	mm
1,950		125,000	85,000
2,000		125,000	85,000
2,050		125,000	85,000
2,100		125,000	85,000
2,200		135,000	90,000
2,300		135,000	90,000
2,370		140,000	95,000
2,380	3/32	140,000	95,000
2,400		140,000	95,000
2,500		140,000	95,000
2,550		140,000	95,000
2,580		140,000	95,000
2,600		140,000	95,000
2,700		150,000	100,000
2,780	7/64	150,000	100,000
2,800		150,000	100,000
2,850		150,000	100,000
2,870		150,000	100,000
2,900		150,000	100,000
2,950		150,000	100,000
3,000		150,000	100,000
3,030		155,000	105,000
3,100		155,000	105,000
3,170	1/8	155,000	105,000
3,200		155,000	105,000
3,250		155,000	105,000
3,300		155,000	105,000
3,400		165,000	115,000
3,500		165,000	115,000
3,570	9/64	165,000	115,000
3,600		165,000	115,000
3,700		165,000	115,000
3,750		165,000	115,000
3,800		175,000	120,000
3,860		175,000	120,000
3,900		175,000	120,000
3,970	5/32	175,000	120,000
4,000		175,000	120,000
4,100		175,000	120,000
4,200		175,000	120,000
4,300		185,000	125,000
4,370	11/64	185,000	125,000

d1		l1	l2
mm	inch	mm	mm
4,400		185,000	125,000
4,500		185,000	125,000
4,570		185,000	125,000
4,600		185,000	125,000
4,700		185,000	125,000
4,760	3/16	195,000	135,000
4,800		195,000	135,000
4,900		195,000	135,000
5,000		195,000	135,000
5,100		195,000	135,000
5,110		195,000	135,000
5,160	13/64	195,000	135,000
5,200		195,000	135,000
5,300		195,000	135,000
5,400		205,000	140,000
5,500		205,000	140,000
5,560	7/32	205,000	140,000
5,600		205,000	140,000
5,700		205,000	140,000
5,750		205,000	140,000
5,800		205,000	140,000
5,900		205,000	140,000
5,950	15/64	205,000	140,000
6,000		205,000	140,000
6,100		215,000	150,000
6,200		215,000	150,000
6,250		215,000	150,000
6,300		215,000	150,000
6,350	1/4	215,000	150,000
6,400		215,000	150,000
6,500		215,000	150,000
6,600		215,000	150,000
6,700		215,000	150,000
6,750	17/64	225,000	155,000
6,800		225,000	155,000
6,900		225,000	155,000
7,000		225,000	155,000
7,100		225,000	155,000
7,200		225,000	155,000
7,300		225,000	155,000
7,500		225,000	155,000
7,540	19/64	240,000	165,000

Forets hélicoïdaux à queue cylindrique



Forets hélicoïdaux à queue cylindrique

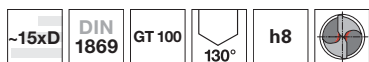
d1		l1	l2
mm	inch	mm	mm
7,700		240,000	165,000
7,750		240,000	165,000
7,800		240,000	165,000
7,900		240,000	165,000
7,940	5/16	240,000	165,000
8,000		240,000	165,000
8,100		240,000	165,000
8,200		240,000	165,000
8,300		240,000	165,000
8,330	21/64	240,000	165,000
8,400		240,000	165,000
8,430		240,000	165,000
8,500		240,000	165,000
8,600		250,000	175,000
8,700		250,000	175,000
8,730	11/32	250,000	175,000
8,800		250,000	175,000
9,000		250,000	175,000
9,200		250,000	175,000
9,300		250,000	175,000
9,400		250,000	175,000
9,500		250,000	175,000
9,520	3/8	265,000	185,000
9,600		265,000	185,000

d1		l1	l2
mm	inch	mm	mm
9,700		265,000	185,000
9,800		265,000	185,000
9,900		265,000	185,000
9,920	25/64	265,000	185,000
10,000		265,000	185,000
10,200		265,000	185,000
10,320	13/32	265,000	185,000
10,500		265,000	185,000
10,720	27/64	280,000	195,000
11,000		280,000	195,000
11,110	7/16	280,000	195,000
11,200		280,000	195,000
11,500		280,000	195,000
11,510	29/64	280,000	195,000
11,750		280,000	195,000
11,800		280,000	195,000
12,000		295,000	205,000
12,500		295,000	205,000
12,700	1/2	295,000	205,000
13,000		295,000	205,000





Forets hélicoïdaux extra-longs, série 1



Matière de coupe **HSS**

Surface **S**

Sens de coupe **R**

**P** • Amin. de l'âme  $\geq \varnothing 1,980$  • affûtage à dépouille conique • goujures larges • pour les perçages très profonds

**M** • en cas de mauvaise évacuation des copeaux

**K** •

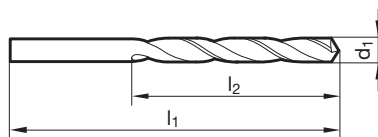
**N** • fontes grises et aciers jusqu'à 1000 N/mm<sup>2</sup> • Ne pas utiliser pour les aciers CrNi et les aciers inox

**S** ○

**H**

**GUHRING** NAVIGATOR

Paramètres de coupe, page 790



Forets hélicoïdaux à queue cylindrique

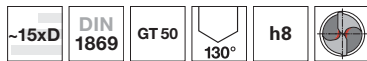
N° d'article **670**

d1		l1	l2
mm	inch	mm	mm
2,000		125,000	85,000
2,100		125,000	85,000
2,200		135,000	90,000
2,300		135,000	90,000
2,380	3/32	140,000	95,000
2,400		140,000	95,000
2,500		140,000	95,000
2,780	7/64	150,000	100,000
2,800		150,000	100,000
2,950		150,000	100,000
3,000		150,000	100,000
3,100		155,000	105,000
3,170	1/8	155,000	105,000
3,200		155,000	105,000
3,300		155,000	105,000
3,500		165,000	115,000
3,570	9/64	165,000	115,000
3,600		165,000	115,000
3,800		175,000	120,000
3,970	5/32	175,000	120,000
4,000		175,000	120,000
4,200		175,000	120,000
4,370	11/64	185,000	125,000
4,500		185,000	125,000
4,600		185,000	125,000
4,760	3/16	195,000	135,000
4,800		195,000	135,000
5,000		195,000	135,000
5,100		195,000	135,000
5,160	13/64	195,000	135,000
5,200		195,000	135,000
5,500		205,000	140,000
5,560	7/32	205,000	140,000
6,000		205,000	140,000
6,100		215,000	150,000
6,200		215,000	150,000

d1		l1	l2
mm	inch	mm	mm
6,350	1/4	215,000	150,000
6,500		215,000	150,000
6,600		215,000	150,000
6,800		225,000	155,000
7,000		225,000	155,000
7,140	9/32	225,000	155,000
7,500		225,000	155,000
7,540	19/64	240,000	165,000
7,940	5/16	240,000	165,000
8,000		240,000	165,000
8,200		240,000	165,000
8,500		240,000	165,000
8,730	11/32	250,000	175,000
9,000		250,000	175,000
9,520	3/8	265,000	185,000
9,600		265,000	185,000
9,920	25/64	265,000	185,000
10,000		265,000	185,000
10,900		280,000	195,000
11,000		280,000	195,000
11,900		295,000	205,000
11,910	15/32	295,000	205,000
12,000		295,000	205,000
12,500		295,000	205,000
12,700	1/2	295,000	205,000



## Forets hélicoïdaux extra-longs, série 1



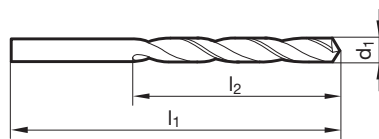
Matière de coupe	<b>HSS</b>
Surface	○
Sens de coupe	Ⓜ

- P** ○ Amin. de l'âme ≥ Ø 2,380 • affûtage à dépouille conique • pour les perçages très profonds
- M** □
- K** □
- N** ● matières tendres et à copeaux longs < 500 N/mm<sup>2</sup> • aciers de décolletage, doux • aluminium/alliages d'aluminium à copeaux longs
- S** □ • zinc, cuivre de 1ère fusion, Alpax, électrode • zamak, thermoplastiques, bois
- H** □

## GUHRING NAVIGATOR

Paramètres de coupe, page 788

Forets hélicoïdaux à queue cylindrique



N° d'article **524**

d1		l1	l2	d1		l1	l2
mm	inch	mm	mm	mm	inch	mm	mm
2,000		125,000	85,000	5,200		195,000	135,000
2,100		125,000	85,000	5,400		205,000	140,000
2,200		135,000	90,000	5,600		205,000	140,000
2,300		135,000	90,000	5,700		205,000	140,000
2,350		135,000	90,000	5,800		205,000	140,000
2,380	3/32	140,000	95,000	5,900		205,000	140,000
2,400		140,000	95,000	5,950	15/64	205,000	140,000
2,450		140,000	95,000	6,000		205,000	140,000
2,500		140,000	95,000	6,100		215,000	150,000
2,600		140,000	95,000	6,350	1/4	215,000	150,000
2,780	7/64	150,000	100,000	6,400		215,000	150,000
2,800		150,000	100,000	6,500		215,000	150,000
2,900		150,000	100,000	6,600		215,000	150,000
2,950		150,000	100,000	6,750	17/64	225,000	155,000
3,000		150,000	100,000	6,800		225,000	155,000
3,100		155,000	105,000	7,000		225,000	155,000
3,170	1/8	155,000	105,000	7,100		225,000	155,000
3,200		155,000	105,000	7,140	9/32	225,000	155,000
3,300		155,000	105,000	7,300		225,000	155,000
3,350		155,000	105,000	7,400		225,000	155,000
3,400		165,000	115,000	7,500		225,000	155,000
3,450		165,000	115,000	7,540	19/64	240,000	165,000
3,500		165,000	115,000	7,800		240,000	165,000
3,530		165,000	115,000	7,900		240,000	165,000
3,570	9/64	165,000	115,000	7,940	5/16	240,000	165,000
3,600		165,000	115,000	8,000		240,000	165,000
3,800		175,000	120,000	8,100		240,000	165,000
3,900		175,000	120,000	8,330	21/64	240,000	165,000
3,970	5/32	175,000	120,000	8,600		250,000	175,000
4,000		175,000	120,000	8,730	11/32	250,000	175,000
4,100		175,000	120,000	8,900		250,000	175,000
4,200		175,000	120,000	9,000		250,000	175,000
4,250		175,000	120,000	9,130	23/64	250,000	175,000
4,300		185,000	125,000	9,200		250,000	175,000
4,370	11/64	185,000	125,000	9,500		250,000	175,000
4,400		185,000	125,000	9,520	3/8	265,000	185,000
4,500		185,000	125,000	9,920	25/64	265,000	185,000
4,760	3/16	195,000	135,000	10,000		265,000	185,000
4,900		195,000	135,000	10,320	13/32	265,000	185,000
5,000		195,000	135,000	10,500		265,000	185,000
5,100		195,000	135,000	11,000		280,000	195,000
5,160	13/64	195,000	135,000	11,110	7/16	280,000	195,000

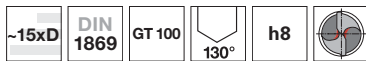


d1		l1	l2
mm	inch	mm	mm
11,500		280,000	195,000
11,910	15/32	295,000	205,000
12,000		295,000	205,000
12,700	1/2	295,000	205,000

d1		l1	l2
mm	inch	mm	mm



## Forets hélicoïdaux extra-longs, série 1



Matière de coupe **HSCo**

Surface

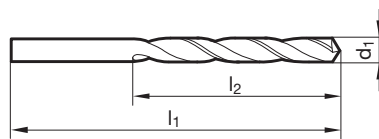
Sens de coupe

- P** • Amin. de l'âme  $\geq \varnothing 2,700$  • affûtage à dépouille conique • acier rapide au Co • goujures larges • meilleure résistance à l'usure • pour les perçages très profonds
- M** •
- K** • en cas de mauvaise évacuation des copeaux
- N** • aciers et fontes aciérées à haute résistance • fontes grises, fontes malléables, fontes à graphite sphéroïdal
- S** •
- H** ○

### GUHRING NAVIGATOR

Paramètres de coupe, page 794

Forets hélicoïdaux à queue cylindrique



N° d'article

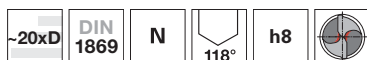
**618**

d1		l1	l2
mm	inch	mm	mm
2,700		150,000	100,000
2,900		150,000	100,000
3,000		150,000	100,000
3,100		155,000	105,000
3,170	1/8	155,000	105,000
3,200		155,000	105,000
3,300		155,000	105,000
3,400		165,000	115,000
3,500		165,000	115,000
3,570	9/64	165,000	115,000
3,600		165,000	115,000
3,700		165,000	115,000
3,750		165,000	115,000
3,800		175,000	120,000
3,970	5/32	175,000	120,000
4,000		175,000	120,000
4,100		175,000	120,000
4,200		175,000	120,000
4,300		185,000	125,000
4,370	11/64	185,000	125,000
4,400		185,000	125,000
4,500		185,000	125,000
4,600		185,000	125,000
4,760	3/16	195,000	135,000
4,800		195,000	135,000
4,850		195,000	135,000
5,000		195,000	135,000
5,100		195,000	135,000
5,160	13/64	195,000	135,000
5,200		195,000	135,000
5,300		195,000	135,000
5,400		205,000	140,000
5,500		205,000	140,000
5,560	7/32	205,000	140,000
5,600		205,000	140,000
5,700		205,000	140,000

d1		l1	l2
mm	inch	mm	mm
5,800		205,000	140,000
6,000		205,000	140,000
6,100		215,000	150,000
6,200		215,000	150,000
6,300		215,000	150,000
6,350	1/4	215,000	150,000
6,400		215,000	150,000
6,500		215,000	150,000
6,600		215,000	150,000
6,700		215,000	150,000
6,750	17/64	225,000	155,000
6,800		225,000	155,000
7,000		225,000	155,000
7,140	9/32	225,000	155,000
7,400		225,000	155,000
7,500		225,000	155,000
7,540	19/64	240,000	165,000
7,700		240,000	165,000
7,800		240,000	165,000
7,940	5/16	240,000	165,000
8,000		240,000	165,000
8,200		240,000	165,000
8,330	21/64	240,000	165,000
8,500		240,000	165,000
8,700		250,000	175,000
8,730	11/32	250,000	175,000
8,800		250,000	175,000
9,000		250,000	175,000
9,130	23/64	250,000	175,000
9,400		250,000	175,000
9,500		250,000	175,000
9,520	3/8	265,000	185,000
9,700		265,000	185,000
10,000		265,000	185,000



Forets hélicoïdaux extra-longs, série 2



Matière de coupe **HSS**

Surface

Sens de coupe

**P** • Amin. de l'âme  $\geq \varnothing 2,700$  • affûtage à dépouille conique • pour les perçages très profonds

**M**

**K** •

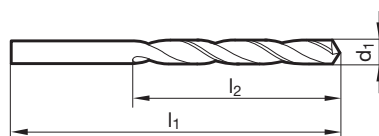
**N** ○ acier, fonte aciérée (alliée / non alliée) • fontes grises, fontes malléables, fontes à graphite sphéroïdal • fer fritté, maillechort, graphite

**S**

**H**

**GUHRING NAVIGATOR**

Paramètres de coupe, page 788



Forets hélicoïdaux à queue cylindrique

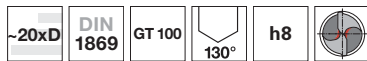
N° d'article **236**

d1		l1	l2
mm	inch	mm	mm
2,700		190,000	130,000
2,800		190,000	130,000
2,900		190,000	130,000
3,000		190,000	130,000
3,100		200,000	135,000
3,170	1/8	200,000	135,000
3,200		200,000	135,000
3,300		200,000	135,000
3,500		210,000	145,000
3,570	9/64	210,000	145,000
3,600		210,000	145,000
3,800		220,000	150,000
3,970	5/32	220,000	150,000
4,000		220,000	150,000
4,100		220,000	150,000
4,200		220,000	150,000
4,500		235,000	160,000
4,760	3/16	245,000	170,000
4,800		245,000	170,000
4,900		245,000	170,000
5,000		245,000	170,000
5,200		245,000	170,000
5,500		260,000	180,000
5,560	7/32	260,000	180,000
5,800		260,000	180,000
5,900		260,000	180,000
5,950	15/64	260,000	180,000
6,000		260,000	180,000
6,200		275,000	190,000
6,350	1/4	275,000	190,000

d1		l1	l2
mm	inch	mm	mm
6,500		275,000	190,000
6,700		275,000	190,000
6,800		290,000	200,000
7,000		290,000	200,000
7,140	9/32	290,000	200,000
7,500		290,000	200,000
7,540	19/64	305,000	210,000
7,800		305,000	210,000
7,940	5/16	305,000	210,000
8,000		305,000	210,000
8,100		305,000	210,000
8,500		305,000	210,000
8,700		320,000	220,000
8,730	11/32	320,000	220,000
8,800		320,000	220,000
8,900		320,000	220,000
9,000		320,000	220,000
9,130	23/64	320,000	220,000
9,500		320,000	220,000
9,800		340,000	235,000
10,000		340,000	235,000
10,200		340,000	235,000
10,500		340,000	235,000
11,000		365,000	250,000
11,110	7/16	365,000	250,000
11,500		365,000	250,000
11,510	29/64	365,000	250,000
11,750		365,000	250,000
12,000		375,000	260,000
13,000		375,000	260,000



## Forets hélicoïdaux extra-longs, série 2



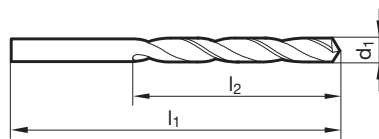
- P** • Amin. de l'âme  $\geq \varnothing 2,000$  • affûtage à dépouille conique • goujures larges • pour les perçages très profonds
- M** • en cas de mauvaise évacuation des copeaux
- K** •
- N** • fontes grises et aciers jusqu'à 1000 N/mm<sup>2</sup> • Ne pas utiliser pour les aciers CrNi et les aciers inox
- S**
- H**

Matière de coupe	<b>HSS</b>
Surface	
Sens de coupe	

Forets hélicoïdaux à queue cylindrique

### **GÜHRING** NAVIGATOR

Paramètres de coupe, page 790



N° d'article **503**

d1		l1	l2	d1		l1	l2
mm	inch	mm	mm	mm	inch	mm	mm
2,000		160,000	110,000	6,100		275,000	190,000
2,200		170,000	115,000	6,150		275,000	190,000
2,300		170,000	115,000	6,200		275,000	190,000
2,500		180,000	120,000	6,350	1/4	275,000	190,000
2,800		190,000	130,000	6,400		275,000	190,000
3,000		190,000	130,000	6,500		275,000	190,000
3,030		200,000	135,000	6,600		275,000	190,000
3,100		200,000	135,000	6,700		275,000	190,000
3,170	1/8	200,000	135,000	6,750	17/64	290,000	200,000
3,200		200,000	135,000	6,800		290,000	200,000
3,300		200,000	135,000	6,900		290,000	200,000
3,400		210,000	145,000	7,000		290,000	200,000
3,500		210,000	145,000	7,140	9/32	290,000	200,000
3,570	9/64	210,000	145,000	7,500		290,000	200,000
3,600		210,000	145,000	7,540	19/64	305,000	210,000
3,700		210,000	145,000	7,800		305,000	210,000
3,800		220,000	150,000	7,940	5/16	305,000	210,000
3,900		220,000	150,000	8,000		305,000	210,000
3,970	5/32	220,000	150,000	8,200		305,000	210,000
4,000		220,000	150,000	8,330	21/64	305,000	210,000
4,100		220,000	150,000	8,500		305,000	210,000
4,200		220,000	150,000	8,600		320,000	220,000
4,300		235,000	160,000	8,730	11/32	320,000	220,000
4,370	11/64	235,000	160,000	8,800		320,000	220,000
4,400		235,000	160,000	9,000		320,000	220,000
4,500		235,000	160,000	9,100		320,000	220,000
4,760	3/16	245,000	170,000	9,130	23/64	320,000	220,000
4,800		245,000	170,000	9,500		320,000	220,000
4,900		245,000	170,000	9,520	3/8	340,000	235,000
5,000		245,000	170,000	9,700		340,000	235,000
5,100		245,000	170,000	9,800		340,000	235,000
5,160	13/64	245,000	170,000	9,920	25/64	340,000	235,000
5,200		245,000	170,000	10,000		340,000	235,000
5,300		245,000	170,000	10,200		340,000	235,000
5,400		260,000	180,000	10,500		340,000	235,000
5,500		260,000	180,000	10,720	27/64	365,000	250,000
5,560	7/32	260,000	180,000	11,000		365,000	250,000
5,700		260,000	180,000	11,110	7/16	365,000	250,000
5,800		260,000	180,000	11,500		365,000	250,000
5,900		260,000	180,000	11,510	29/64	365,000	250,000
5,950	15/64	260,000	180,000	11,750		365,000	250,000
6,000		260,000	180,000	11,910	15/32	375,000	260,000

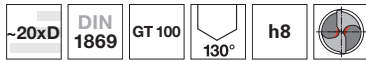


d1		l1	l2
mm	inch	mm	mm
12,000		375,000	260,000
12,300	31/64	375,000	260,000
12,500		375,000	260,000
12,700	1/2	375,000	260,000
13,000		375,000	260,000

d1		l1	l2
mm	inch	mm	mm



## Forets hélicoïdaux extra-longs, série 2



- P** • Amin. de l'âme  $\geq \varnothing 2,300$  • affûtage à dépouille conique • goujures larges • pour les perçages très profonds
- M** • en cas de mauvaise évacuation des copeaux
- K** •
- N** • fontes grises et aciers jusqu'à 1000 N/mm<sup>2</sup> • Ne pas utiliser pour les aciers CrNi et les aciers inox
- S** ○
- H**

Matière de coupe **HSS**

Surface **S**

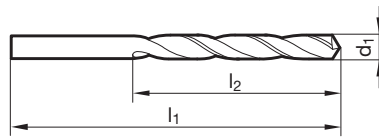
Sens de coupe **R**



Forets hélicoïdaux à queue cylindrique

### GUHRING NAVIGATOR

Paramètres de coupe, page 790



N° d'article **671**

d1		l1	l2
mm	inch	mm	mm
2,700		190,000	130,000
2,800		190,000	130,000
3,000		190,000	130,000
3,100		200,000	135,000
3,170	1/8	200,000	135,000
3,200		200,000	135,000
3,500		210,000	145,000
3,570	9/64	210,000	145,000
3,970	5/32	220,000	150,000
4,000		220,000	150,000
4,090		220,000	150,000
4,370	11/64	235,000	160,000
4,400		235,000	160,000
4,500		235,000	160,000
4,600		235,000	160,000
4,760	3/16	245,000	170,000
4,800		245,000	170,000
5,000		245,000	170,000

d1		l1	l2
mm	inch	mm	mm
5,300		245,000	170,000
5,500		260,000	180,000
5,560	7/32	260,000	180,000
6,000		260,000	180,000
6,350	1/4	275,000	190,000
6,500		275,000	190,000
6,750	17/64	290,000	200,000
6,800		290,000	200,000
7,000		290,000	200,000
7,140	9/32	290,000	200,000
7,500		290,000	200,000
7,940	5/16	305,000	210,000
8,000		305,000	210,000
8,500		305,000	210,000





Forets hélicoïdaux extra-longs, série 2



Matière de coupe **HSS**

Surface ○

Sens de coupe (R)

**P** ○ Amin. de l'âme ≥ Ø 2,800 • affûtage à dépouille conique • pour les perçages très profonds

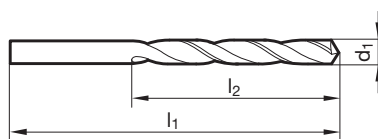
**M**

**K**

**N** • matières tendres et à copeaux longs < 500 N/mm<sup>2</sup> • aciers de décolletage, doux • aluminium/alliages d'aluminium à copeaux longs  
**S** • zinc, cuivre de 1ère fusion, Alpax, électrode • zamak, thermoplastiques, bois  
**H**

**GÜHRING** NAVIGATOR

Paramètres de coupe, page 788



Forets hélicoïdaux à queue cylindrique

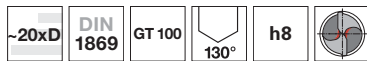
N° d'article **528**

d1		l1	l2
mm	inch	mm	mm
3,000		190,000	130,000
3,030		200,000	135,000
3,100		200,000	135,000
3,170	1/8	200,000	135,000
3,500		210,000	145,000
3,650		210,000	145,000
3,800		220,000	150,000
4,000		220,000	150,000
4,200		220,000	150,000
4,500		235,000	160,000
4,760	3/16	245,000	170,000
4,800		245,000	170,000
5,000		245,000	170,000
5,110		245,000	170,000
5,500		260,000	180,000
5,800		260,000	180,000
6,000		260,000	180,000
7,000		290,000	200,000

d1		l1	l2
mm	inch	mm	mm
7,500		290,000	200,000
8,000		305,000	210,000
8,500		305,000	210,000
9,000		320,000	220,000
10,000		340,000	235,000
10,500		340,000	235,000
11,500		365,000	250,000
13,000		375,000	260,000



Forets hélicoïdaux extra-longs, série 2



Matière de coupe **HSCO**

Surface

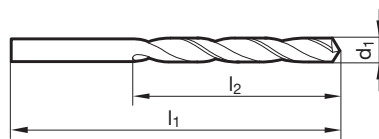
Sens de coupe

- P** • Amin. de l'âme  $\geq \varnothing 3,000$  • affûtage à dépouille conique • acier rapide au Co • goujures larges • meilleure résistance à l'usure • pour les perçages très profonds
- M** •
- K** • en cas de mauvaise évacuation des copeaux
- N** • aciers et fontes aciérées à haute résistance • fontes grises, fontes malléables, fontes à graphite sphéroïdal
- S** •
- H** ○

**GÜHRING** NAVIGATOR

Paramètres de coupe, page 794

Forets hélicoïdaux à queue cylindrique



N° d'article **619**

d1		l1	l2
mm	inch	mm	mm
3,000		190,000	130,000
3,170	1/8	200,000	135,000
3,200		200,000	135,000
3,300		200,000	135,000
3,500		210,000	145,000
3,570	9/64	210,000	145,000
3,970	5/32	220,000	150,000
4,000		220,000	150,000
4,100		220,000	150,000
4,200		220,000	150,000
4,370	11/64	235,000	160,000
4,500		235,000	160,000
4,760	3/16	245,000	170,000
4,800		245,000	170,000
4,900		245,000	170,000
5,000		245,000	170,000
5,200		245,000	170,000
5,500		260,000	180,000
5,560	7/32	260,000	180,000
5,950	15/64	260,000	180,000
6,000		260,000	180,000
6,100		275,000	190,000
6,200		275,000	190,000
6,350	1/4	275,000	190,000

d1		l1	l2
mm	inch	mm	mm
6,500		275,000	190,000
6,750	17/64	290,000	200,000
6,800		290,000	200,000
7,000		290,000	200,000
7,140	9/32	290,000	200,000
7,400		290,000	200,000
7,500		290,000	200,000
7,540	19/64	305,000	210,000
7,600		305,000	210,000
7,940	5/16	305,000	210,000
8,000		305,000	210,000
8,200		305,000	210,000
8,500		305,000	210,000
8,730	11/32	320,000	220,000
9,000		320,000	220,000
9,130	23/64	320,000	220,000
9,500		320,000	220,000
9,520	3/8	340,000	235,000
9,600		340,000	235,000
9,900		340,000	235,000
10,000		340,000	235,000



Forets hélicoïdaux extra-longs, série 3



Matière de coupe **HSS**

Surface

Sens de coupe

**P** • Amin. de l'âme  $\geq \varnothing 3,500$  • affûtage à dépouille conique • pour les perçages très profonds

**M**

**K** •

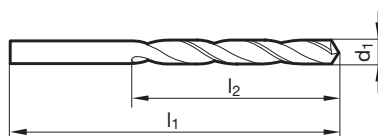
**N** ○ acier, fonte aciérée (alliée / non alliée) • fontes grises, fontes malléables, fontes à graphite sphéroïdal • fer fritté, maillechort, graphite

**S**

**H**

**GÜHRING** NAVIGATOR

Paramètres de coupe, page 788



Forets hélicoïdaux à queue cylindrique

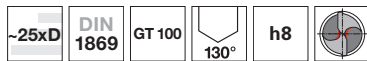
N° d'article **237**

d1		l1	l2
mm	inch	mm	mm
3,500		265,000	180,000
3,800		280,000	190,000
4,000		280,000	190,000
4,100		280,000	190,000
4,200		280,000	190,000
4,500		295,000	200,000
5,000		315,000	210,000
5,200		315,000	210,000
5,500		330,000	225,000
5,800		330,000	225,000
5,900		330,000	225,000
6,000		330,000	225,000
6,100		350,000	235,000
6,200		350,000	235,000
6,500		350,000	235,000
6,700		350,000	235,000
6,800		370,000	250,000
7,000		370,000	250,000

d1		l1	l2
mm	inch	mm	mm
7,500		370,000	250,000
7,800		390,000	265,000
8,000		390,000	265,000
8,500		390,000	265,000
9,000		410,000	280,000
9,500		410,000	280,000
9,800		430,000	295,000
10,000		430,000	295,000
10,300		430,000	295,000
10,500		430,000	295,000
11,000		455,000	310,000
11,500		455,000	310,000
11,750		455,000	310,000
12,000		480,000	330,000
12,500		480,000	330,000
13,000		480,000	330,000



## Forets hélicoïdaux extra-longs, série 3



**P** • Amin. de l'âme  $\geq \varnothing 2,500$  • affûtage à dépouille conique • goujures larges • en cas de mauvaise évacuation des copeaux • pour les perçages très profonds

**K** •

**N** • fontes grises et aciers jusqu'à  $1000 \text{ N/mm}^2$  • Ne pas utiliser pour les aciers CrNi et les aciers inox

**S**

**H**

Matière de coupe **HSS**

Surface

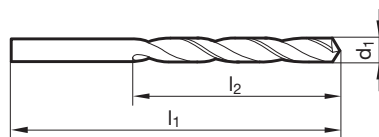
Sens de coupe



Forets hélicoïdaux à queue cylindrique

## GUHRING NAVIGATOR

Paramètres de coupe, page 790



N° d'article **504**

d1		l1	l2
mm	inch	mm	mm
2,500		225,000	150,000
3,000		240,000	160,000
3,100		250,000	170,000
3,170	1/8	250,000	170,000
3,200		250,000	170,000
3,300		250,000	170,000
3,400		265,000	180,000
3,500		265,000	180,000
3,570	9/64	265,000	180,000
3,600		265,000	180,000
3,700		265,000	180,000
3,800		280,000	190,000
3,900		280,000	190,000
3,970	5/32	280,000	190,000
4,000		280,000	190,000
4,100		280,000	190,000
4,200		280,000	190,000
4,300		295,000	200,000
4,370	11/64	295,000	200,000
4,400		295,000	200,000
4,500		295,000	200,000
4,600		295,000	200,000
4,760	3/16	315,000	210,000
4,800		315,000	210,000
4,900		315,000	210,000
5,000		315,000	210,000
5,100		315,000	210,000
5,200		315,000	210,000
5,500		330,000	225,000
5,560	7/32	330,000	225,000
5,800		330,000	225,000
5,950	15/64	330,000	225,000
6,000		330,000	225,000
6,100		350,000	235,000
6,200		350,000	235,000
6,300		350,000	235,000
6,350	1/4	350,000	235,000
6,400		350,000	235,000
6,500		350,000	235,000
6,700		350,000	235,000
6,750	17/64	370,000	250,000
6,800		370,000	250,000

d1		l1	l2
mm	inch	mm	mm
7,000		370,000	250,000
7,140	9/32	370,000	250,000
7,200		370,000	250,000
7,500		370,000	250,000
7,540	19/64	390,000	265,000
7,750		390,000	265,000
7,800		390,000	265,000
7,940	5/16	390,000	265,000
8,000		390,000	265,000
8,200		390,000	265,000
8,330	21/64	390,000	265,000
8,500		390,000	265,000
8,600		410,000	280,000
8,730	11/32	410,000	280,000
8,800		410,000	280,000
8,900		410,000	280,000
9,000		410,000	280,000
9,200		410,000	280,000
9,500		410,000	280,000
9,520	3/8	430,000	295,000
9,530		430,000	295,000
9,920	25/64	430,000	295,000
10,000		430,000	295,000
10,320	13/32	430,000	295,000
10,500		430,000	295,000
10,720	27/64	455,000	310,000
11,000		455,000	310,000
11,110	7/16	455,000	310,000
11,500		455,000	310,000
12,000		480,000	330,000
12,200		480,000	330,000
12,500		480,000	330,000
13,000		480,000	330,000



Forets hélicoïdaux extra-longs, série 3



Matière de coupe **HSS**

Surface ○

Sens de coupe (R)

**P** ○ Amin. de l'âme ≥ Ø 2,500 • affûtage à dépouille conique • pour les perçages très profonds

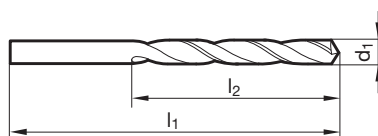
**M**

**K**

**N** • matières tendres et à copeaux longs < 500 N/mm<sup>2</sup> • aciers de décolletage, doux • aluminium/alliages d'aluminium à copeaux longs  
**S** • zinc, cuivre de 1ère fusion, Alpax, électrode • zamak, thermoplastiques, bois  
**H**

**GÜHRING** NAVIGATOR

Paramètres de coupe, page 788



Forets hélicoïdaux à queue cylindrique

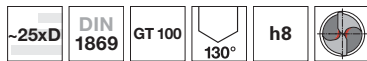
N° d'article **529**

d1		l1	l2
mm	inch	mm	mm
2,500		225,000	150,000
3,000		240,000	160,000
3,500		265,000	180,000
3,800		280,000	190,000
4,000		280,000	190,000
4,500		295,000	200,000
5,000		315,000	210,000
6,000		330,000	225,000
6,500		350,000	235,000
6,700		350,000	235,000
6,800		370,000	250,000
7,500		370,000	250,000

d1		l1	l2
mm	inch	mm	mm
8,000		390,000	265,000
9,500		410,000	280,000
10,000		430,000	295,000



Forets hélicoïdaux extra-longs, série 3



Matière de coupe **HSC0**

Surface

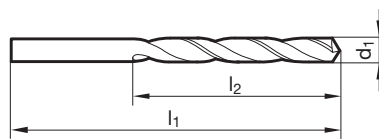
Sens de coupe

- P** • Amin. de l'âme  $\geq \varnothing 2,500$  • affûtage à dépouille conique • acier rapide au Co • goujures larges • résistance à l'usure, améliorée • pour les perçages très profonds
- M** •
- K** • en cas de mauvaise évacuation des copeaux
- N** • aciers et fontes aciérées à haute résistance • fontes grises, fontes malléables, fontes à graphite sphéroïdal
- S** •
- H** ○

**GÜHRING** NAVIGATOR

Paramètres de coupe, page 794

Forets hélicoïdaux à queue cylindrique



N° d'article

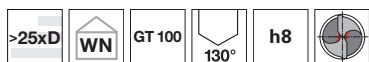
**571**

d1		l1	l2
mm	inch	mm	mm
2,500		225,000	150,000
3,000		240,000	160,000
3,100		250,000	170,000
3,170	1/8	250,000	170,000
3,200		250,000	170,000
3,300		250,000	170,000
3,400		265,000	180,000
3,500		265,000	180,000
3,700		265,000	180,000
3,800		280,000	190,000
3,900		280,000	190,000
3,970	5/32	280,000	190,000
4,000		280,000	190,000
4,100		280,000	190,000
4,200		280,000	190,000
4,300		295,000	200,000
4,500		295,000	200,000
4,600		295,000	200,000
4,760	3/16	315,000	210,000
4,800		315,000	210,000
4,900		315,000	210,000
5,000		315,000	210,000
5,100		315,000	210,000
5,200		315,000	210,000
5,500		330,000	225,000
5,560	7/32	330,000	225,000
5,800		330,000	225,000
5,950	15/64	330,000	225,000
6,000		330,000	225,000
6,100		350,000	235,000
6,200		350,000	235,000
6,300		350,000	235,000
6,350	1/4	350,000	235,000
6,400		350,000	235,000
6,500		350,000	235,000
6,700		350,000	235,000

d1		l1	l2
mm	inch	mm	mm
6,750	17/64	370,000	250,000
6,800		370,000	250,000
7,000		370,000	250,000
7,140	9/32	370,000	250,000
7,200		370,000	250,000
7,500		370,000	250,000
7,750		390,000	265,000
7,800		390,000	265,000
7,940	5/16	390,000	265,000
8,000		390,000	265,000
8,200		390,000	265,000
8,500		390,000	265,000
8,600		410,000	280,000
8,730	11/32	410,000	280,000
8,800		410,000	280,000
9,000		410,000	280,000
9,500		410,000	280,000
9,520	3/8	430,000	295,000
10,000		430,000	295,000
10,320	13/32	430,000	295,000
10,500		430,000	295,000
10,720	27/64	455,000	310,000
11,000		455,000	310,000
11,110	7/16	455,000	310,000
11,500		455,000	310,000
12,000		480,000	330,000
12,200		480,000	330,000
12,500		480,000	330,000
13,000		480,000	330,000



Forets hélicoïdaux extra-longs



Matière de coupe **HSS**

Surface

Sens de coupe

**P** • Amin. de l'âme  $\geq \varnothing 6,000$  • affûtage à dépouille conique • goujures larges • pour les perçages très profonds

**M** • en cas de mauvaise évacuation des copeaux

**K** •

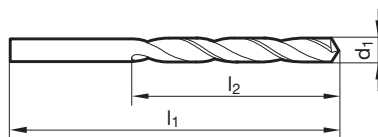
**N** • fontes grises et aciers jusqu'à 1000 N/mm<sup>2</sup> • Ne pas utiliser pour les aciers CrNi et les aciers inox

**S**

**H**

**GUHRING** NAVIGATOR

Paramètres de coupe, page 790



Forets hélicoïdaux à queue cylindrique

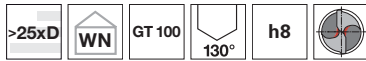
N° d'article **242**

d1		l1	l2
mm	inch		
6,000		500,000	400,000
8,000		500,000	400,000
10,000		600,000	500,000
11,000		600,000	500,000
12,000		600,000	500,000

d1		l1	l2
mm	inch		



Forets hélicoïdaux extra-longs



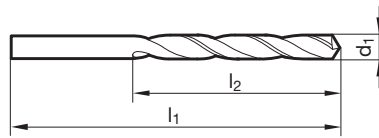
- P** • Amin. de l'âme  $\geq \text{Ø } 8,000$  • affûtage à dépouille conique • goujures larges • pour les perçages très profonds
- M** • en cas de mauvaise évacuation des copeaux
- K** •
- N** • fontes grises et aciers jusqu'à  $1000 \text{ N/mm}^2$  • Ne pas utiliser pour les aciers CrNi et les aciers inox
- S**
- H**

Matière de coupe	<b>HSS</b>
Surface	○
Sens de coupe	Ⓜ

Forets hélicoïdaux à queue cylindrique

**GÜHRING** NAVIGATOR

Paramètres de coupe, page 790



N° d'article **243**

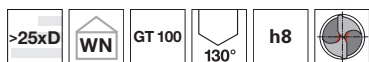
d1		l1	l2
mm	inch	mm	mm
8,000		750,000	650,000
10,000		750,000	650,000
11,000		750,000	650,000
12,000		750,000	650,000

d1		l1	l2
mm	inch	mm	mm





Forets hélicoïdaux extra-longs



Matière de coupe **HSS**

Surface ○

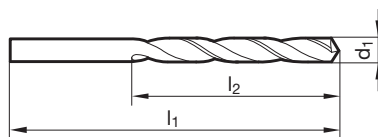
Sens de coupe (R)

**P** • Amin. de l'âme  $\geq \text{Ø } 10,000$  • affûtage à dépouille conique • goujures larges • pour les perçages très profonds  
**M** • en cas de mauvaise évacuation des copeaux

**K** •  
**N** • fontes grises et aciers jusqu'à  $1000 \text{ N/mm}^2$  • Ne pas utiliser pour les aciers CrNi et les aciers inox  
**S**  
**H**

**GÜHRING** NAVIGATOR

Paramètres de coupe, page 790



Forets hélicoïdaux à queue cylindrique

N° d'article **244**

d1		l1	l2
mm	inch		
10,000		1000,000	850,000
11,000		1000,000	850,000
12,000		1000,000	850,000

d1	inch	l1	l2
mm			
		mm	mm



## Forets hélicoïd. à queue cylind.renforcée



Matière de coupe **HSCO**

Surface **S**

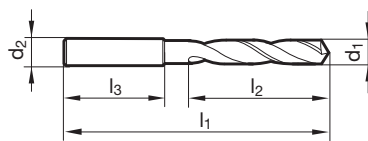
Sens de coupe **R**

- P** • Amin. de l'âme  $\geq \varnothing 2,000$  • affûtage en pente • acier rapide au Co
- M** • faible effort d'avance nécessaire • faible effort de couple nécessaire
- K** • meilleure résistance à l'usure • pour applications universelles
- N** • aciers alliés ou non alliés  $< 800 \text{ N/mm}^2$  • aciers à outils, travail à froid ou à chaud
- S** • aciers inoxydables • métaux non ferreux • fontes • matériaux synthétiques
- H**

## GUHRING NAVIGATOR

Paramètres de coupe, page 774

Forets hélicoïdaux à queue cylindrique



N° d'article **512**

d1	d2 h6	l1	l2	l3	d1	d2 h6	l1	l2	l3
mm	mm	mm	mm	mm	mm	mm	mm	mm	mm
2,000	3,000	44,000	12,000	28,000	5,800	6,000	72,000	28,000	36,000
2,100	3,000	44,000	12,000	28,000	5,900	6,000	72,000	28,000	36,000
2,200	3,000	45,000	13,000	28,000	5,950	6,000	72,000	28,000	36,000
2,300	3,000	45,000	13,000	28,000	6,000	6,000	72,000	28,000	36,000
2,400	3,000	46,000	14,000	28,000	6,100	8,000	75,000	31,000	36,000
2,500	3,000	46,000	14,000	28,000	6,200	8,000	75,000	31,000	36,000
2,600	3,000	46,000	14,000	28,000	6,300	8,000	75,000	31,000	36,000
2,700	3,000	48,000	16,000	28,000	6,350	8,000	75,000	31,000	36,000
2,780	3,000	48,000	16,000	28,000	6,400	8,000	75,000	31,000	36,000
2,800	3,000	48,000	16,000	28,000	6,500	8,000	75,000	31,000	36,000
2,900	3,000	48,000	16,000	28,000	6,600	8,000	75,000	31,000	36,000
3,000	3,000	48,000	16,000	28,000	6,750	8,000	78,000	34,000	36,000
3,100	4,000	50,000	18,000	28,000	6,800	8,000	78,000	34,000	36,000
3,170	4,000	50,000	18,000	28,000	6,900	8,000	78,000	34,000	36,000
3,200	4,000	50,000	18,000	28,000	7,000	8,000	78,000	34,000	36,000
3,300	4,000	50,000	18,000	28,000	7,100	8,000	78,000	34,000	36,000
3,400	4,000	52,000	20,000	28,000	7,140	8,000	78,000	34,000	36,000
3,500	4,000	52,000	20,000	28,000	7,200	8,000	78,000	34,000	36,000
3,570	4,000	52,000	20,000	28,000	7,300	8,000	78,000	34,000	36,000
3,600	4,000	52,000	20,000	28,000	7,500	8,000	78,000	34,000	36,000
3,700	4,000	52,000	20,000	28,000	7,600	8,000	81,000	37,000	36,000
3,800	4,000	54,000	22,000	28,000	7,800	8,000	81,000	37,000	36,000
3,900	4,000	54,000	22,000	28,000	7,900	8,000	81,000	37,000	36,000
4,000	4,000	54,000	22,000	28,000	7,940	8,000	81,000	37,000	36,000
4,100	6,000	66,000	22,000	36,000	8,000	8,000	81,000	37,000	36,000
4,200	6,000	66,000	22,000	36,000	8,100	10,000	87,000	37,000	40,000
4,300	6,000	68,000	24,000	36,000	8,200	10,000	87,000	37,000	40,000
4,370	6,000	68,000	24,000	36,000	8,300	10,000	87,000	37,000	40,000
4,400	6,000	68,000	24,000	36,000	8,330	10,000	87,000	37,000	40,000
4,500	6,000	68,000	24,000	36,000	8,500	10,000	87,000	37,000	40,000
4,700	6,000	68,000	24,000	36,000	8,600	10,000	91,000	40,000	40,000
4,760	6,000	70,000	26,000	36,000	8,730	10,000	91,000	40,000	40,000
4,800	6,000	70,000	26,000	36,000	8,800	10,000	91,000	40,000	40,000
4,900	6,000	70,000	26,000	36,000	8,900	10,000	91,000	40,000	40,000
5,000	6,000	70,000	26,000	36,000	9,000	10,000	91,000	40,000	40,000
5,100	6,000	70,000	26,000	36,000	9,100	10,000	91,000	40,000	40,000
5,200	6,000	70,000	26,000	36,000	9,130	10,000	91,000	40,000	40,000
5,300	6,000	70,000	26,000	36,000	9,200	10,000	91,000	40,000	40,000
5,400	6,000	72,000	28,000	36,000	9,300	10,000	91,000	40,000	40,000
5,500	6,000	72,000	28,000	36,000	9,400	10,000	91,000	40,000	40,000
5,560	6,000	72,000	28,000	36,000	9,500	10,000	91,000	40,000	40,000
5,600	6,000	72,000	28,000	36,000	9,520	10,000	93,000	43,000	40,000



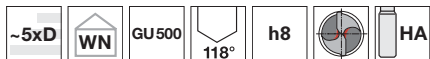
d1	d2 h6	l1	l2	l3
mm	mm	mm	mm	mm
9,800	10,000	93,000	43,000	40,000
9,900	10,000	93,000	43,000	40,000
9,920	10,000	93,000	43,000	40,000
10,000	10,000	93,000	43,000	40,000
10,100	12,000	100,000	43,000	45,000
10,200	12,000	100,000	43,000	45,000
10,300	12,000	100,000	43,000	45,000
10,320	12,000	100,000	43,000	45,000
10,500	12,000	100,000	43,000	45,000
10,800	12,000	104,000	47,000	45,000
11,000	12,000	104,000	47,000	45,000
11,100	12,000	104,000	47,000	45,000
11,110	12,000	104,000	47,000	45,000
11,200	12,000	104,000	47,000	45,000
11,300	12,000	104,000	47,000	45,000
11,400	12,000	104,000	47,000	45,000
11,500	12,000	104,000	47,000	45,000
11,510	12,000	104,000	47,000	45,000

d1	d2 h6	l1	l2	l3
mm	mm	mm	mm	mm
11,700	12,000	104,000	47,000	45,000
11,800	12,000	104,000	47,000	45,000
12,000	12,000	108,000	51,000	45,000
12,300	16,000	111,000	51,000	48,000
12,500	16,000	111,000	51,000	48,000
13,000	16,000	111,000	51,000	48,000
13,490	16,000	114,000	54,000	48,000
13,500	16,000	114,000	54,000	48,000
14,000	16,000	114,000	54,000	48,000
15,000	16,000	116,000	56,000	48,000
16,000	16,000	118,000	58,000	48,000
16,500	20,000	126,000	60,000	50,000
16,670	20,000	126,000	60,000	50,000
17,500	20,000	128,000	62,000	50,000
18,000	20,000	128,000	62,000	50,000
18,500	20,000	130,000	64,000	50,000
19,500	20,000	132,000	66,000	50,000
20,000	20,000	132,000	66,000	50,000

Forets hélicoïdaux  
à queue cylindrique



## Forets hélicoïd. à queue cylind.renforcée



Matière de coupe **HSCO**

Surface **S**

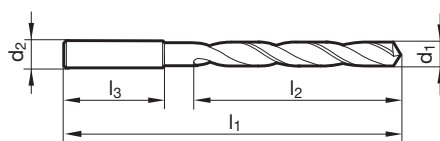
Sens de coupe **R**

- P** • Amin. de l'âme  $\geq \varnothing 2,000$  • affûtage en pente • acier rapide au Co
- M** • faible effort d'avance nécessaire • faible effort de couple nécessaire
- K** • meilleure résistance à l'usure • pour applications universelles
- N** • aciers alliés ou non alliés  $< 800 \text{ N/mm}^2$  • aciers à outils, travail à froid ou à chaud
- S** • aciers inoxydables • métaux non ferreux • fontes • matériaux synthétiques
- H**

## GUHRING NAVIGATOR

Paramètres de coupe, page 784

Forets hélicoïdaux à queue cylindrique



N° d'article **511**

d1	d2 h6	l1	l2	l3	d1	d2 h6	l1	l2	l3
mm	mm	mm	mm	mm	mm	mm	mm	mm	mm
2,000	3,000	56,000	24,000	28,000	6,300	8,000	107,000	63,000	36,000
2,100	3,000	56,000	24,000	28,000	6,350	8,000	107,000	63,000	36,000
2,300	3,000	59,000	27,000	28,000	6,400	8,000	107,000	63,000	36,000
2,380	3,000	62,000	30,000	28,000	6,500	8,000	107,000	63,000	36,000
2,400	3,000	62,000	30,000	28,000	6,600	8,000	107,000	63,000	36,000
2,500	3,000	62,000	30,000	28,000	6,750	8,000	113,000	69,000	36,000
2,600	3,000	62,000	30,000	28,000	6,800	8,000	113,000	69,000	36,000
2,780	3,000	65,000	33,000	28,000	6,900	8,000	113,000	69,000	36,000
2,800	3,000	65,000	33,000	28,000	7,000	8,000	113,000	69,000	36,000
2,900	3,000	65,000	33,000	28,000	7,100	8,000	113,000	69,000	36,000
3,000	3,000	65,000	33,000	28,000	7,140	8,000	113,000	69,000	36,000
3,100	4,000	68,000	36,000	28,000	7,200	8,000	113,000	69,000	36,000
3,200	4,000	68,000	36,000	28,000	7,300	8,000	113,000	69,000	36,000
3,300	4,000	68,000	36,000	28,000	7,400	8,000	113,000	69,000	36,000
3,400	4,000	71,000	39,000	28,000	7,500	8,000	113,000	69,000	36,000
3,500	4,000	71,000	39,000	28,000	7,540	8,000	119,000	75,000	36,000
3,570	4,000	71,000	39,000	28,000	7,550	8,000	119,000	75,000	36,000
3,900	4,000	75,000	43,000	28,000	7,600	8,000	119,000	75,000	36,000
3,970	4,000	75,000	43,000	28,000	7,700	8,000	119,000	75,000	36,000
4,000	4,000	75,000	43,000	28,000	7,800	8,000	119,000	75,000	36,000
4,200	6,000	87,000	43,000	36,000	7,900	8,000	119,000	75,000	36,000
4,300	6,000	91,000	47,000	36,000	8,000	8,000	119,000	75,000	36,000
4,370	6,000	91,000	47,000	36,000	8,100	10,000	125,000	75,000	40,000
4,400	6,000	91,000	47,000	36,000	8,200	10,000	125,000	75,000	40,000
4,500	6,000	91,000	47,000	36,000	8,300	10,000	125,000	75,000	40,000
4,650	6,000	91,000	47,000	36,000	8,330	10,000	125,000	75,000	40,000
4,700	6,000	91,000	47,000	36,000	8,500	10,000	125,000	75,000	40,000
4,760	6,000	96,000	52,000	36,000	8,600	10,000	131,000	81,000	40,000
4,800	6,000	96,000	52,000	36,000	8,730	10,000	131,000	81,000	40,000
4,900	6,000	96,000	52,000	36,000	8,800	10,000	131,000	81,000	40,000
5,000	6,000	96,000	52,000	36,000	8,900	10,000	131,000	81,000	40,000
5,100	6,000	96,000	52,000	36,000	9,000	10,000	131,000	81,000	40,000
5,160	6,000	96,000	52,000	36,000	9,100	10,000	131,000	81,000	40,000
5,200	6,000	96,000	52,000	36,000	9,130	10,000	131,000	81,000	40,000
5,300	6,000	96,000	52,000	36,000	9,400	10,000	131,000	81,000	40,000
5,400	6,000	101,000	57,000	36,000	9,500	10,000	131,000	81,000	40,000
5,500	6,000	101,000	57,000	36,000	9,520	10,000	137,000	87,000	40,000
5,600	6,000	101,000	57,000	36,000	9,550	10,000	137,000	87,000	40,000
5,800	6,000	101,000	57,000	36,000	9,600	10,000	137,000	87,000	40,000
5,900	6,000	101,000	57,000	36,000	9,900	10,000	137,000	87,000	40,000
6,000	6,000	101,000	57,000	36,000	9,920	10,000	137,000	87,000	40,000
6,100	8,000	107,000	63,000	36,000	10,000	10,000	137,000	87,000	40,000



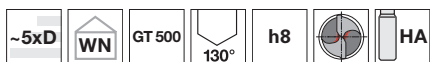
d1	d2 h6	l1	l2	l3
mm	mm	mm	mm	mm
10,100	12,000	144,000	87,000	45,000
10,200	12,000	144,000	87,000	45,000
10,400	12,000	144,000	87,000	45,000
10,500	12,000	144,000	87,000	45,000
10,600	12,000	144,000	87,000	45,000
10,800	12,000	151,000	94,000	45,000
11,000	12,000	151,000	94,000	45,000
11,110	12,000	151,000	94,000	45,000
11,200	12,000	151,000	94,000	45,000
11,300	12,000	151,000	94,000	45,000
11,510	12,000	151,000	94,000	45,000
11,800	12,000	151,000	94,000	45,000
11,910	12,000	158,000	101,000	45,000
12,000	12,000	158,000	101,000	45,000
12,200	16,000	161,000	101,000	48,000
12,500	16,000	161,000	101,000	48,000
12,700	16,000	161,000	101,000	48,000
13,000	16,000	161,000	101,000	48,000

d1	d2 h6	l1	l2	l3
mm	mm	mm	mm	mm
13,500	16,000	166,000	106,000	48,000
13,890	16,000	166,000	106,000	48,000
14,000	16,000	166,000	106,000	48,000
14,500	16,000	169,000	109,000	48,000
15,000	16,000	169,000	109,000	48,000
15,500	16,000	172,000	112,000	48,000
16,000	16,000	172,000	112,000	48,000
16,500	20,000	181,000	115,000	50,000
17,000	20,000	181,000	115,000	50,000
17,460	20,000	184,000	118,000	50,000
17,500	20,000	184,000	118,000	50,000
18,000	20,000	184,000	118,000	50,000
19,000	20,000	188,000	122,000	50,000
19,500	20,000	191,000	125,000	50,000
20,000	20,000	191,000	125,000	50,000

Forets hélicoïdaux  
à queue cylindrique



## Forets hélicoïd. à queue cylind.renforcée



Matière de coupe **HSS-E-PM**

Surface **F**

Sens de coupe **R**

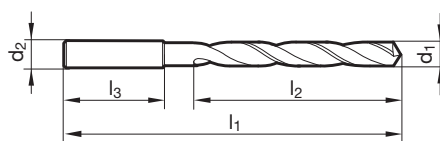
**P** • Amin. de l'âme  $\geq \varnothing 2,000$  • affûtage à dép. conique av. aminciss. spécial de l'âme forme B • acier PM HSS fritté et allié au Co • particulièrement rigide • résistance à l'usure particulièrement élevée

**K** • mat. haute résistance, aciers hautement alliés • aciers de cémentation et d'amélioration • fontes, laitons, bronzes

**H** ○

## GUHRING NAVIGATOR

Paramètres de coupe, page 784



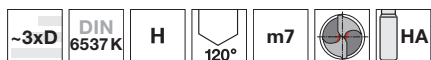
N° d'article **513**

d1	d2 h6	l1	l2	l3
mm	mm	mm	mm	mm
2,000	3,000	56,000	24,000	28,000
2,100	3,000	56,000	24,000	28,000
2,380	3,000	62,000	30,000	28,000
2,500	3,000	62,000	30,000	28,000
2,780	3,000	65,000	33,000	28,000
3,000	3,000	65,000	33,000	28,000
3,170	4,000	68,000	36,000	28,000
3,300	4,000	68,000	36,000	28,000
3,500	4,000	71,000	39,000	28,000
3,570	4,000	71,000	39,000	28,000
3,970	4,000	75,000	43,000	28,000
4,000	4,000	75,000	43,000	28,000
4,200	6,000	87,000	43,000	36,000
4,370	6,000	91,000	47,000	36,000
4,500	6,000	91,000	47,000	36,000
4,650	6,000	91,000	47,000	36,000
4,760	6,000	96,000	52,000	36,000
4,800	6,000	96,000	52,000	36,000
5,000	6,000	96,000	52,000	36,000
5,100	6,000	96,000	52,000	36,000
5,160	6,000	96,000	52,000	36,000
5,200	6,000	96,000	52,000	36,000
5,300	6,000	96,000	52,000	36,000
5,500	6,000	101,000	57,000	36,000
5,800	6,000	101,000	57,000	36,000
6,000	6,000	101,000	57,000	36,000
6,350	8,000	107,000	63,000	36,000
6,500	8,000	107,000	63,000	36,000
6,600	8,000	107,000	63,000	36,000
6,750	8,000	113,000	69,000	36,000
6,800	8,000	113,000	69,000	36,000
7,000	8,000	113,000	69,000	36,000
7,140	8,000	113,000	69,000	36,000
7,400	8,000	113,000	69,000	36,000
7,500	8,000	113,000	69,000	36,000
7,540	8,000	119,000	75,000	36,000

d1	d2 h6	l1	l2	l3
mm	mm	mm	mm	mm
7,800	8,000	119,000	75,000	36,000
7,940	8,000	119,000	75,000	36,000
8,000	8,000	119,000	75,000	36,000
8,330	10,000	125,000	75,000	40,000
8,500	10,000	125,000	75,000	40,000
8,730	10,000	131,000	81,000	40,000
8,800	10,000	131,000	81,000	40,000
9,000	10,000	131,000	81,000	40,000
9,130	10,000	131,000	81,000	40,000
9,300	10,000	131,000	81,000	40,000
9,500	10,000	131,000	81,000	40,000
9,520	10,000	137,000	87,000	40,000
9,600	10,000	137,000	87,000	40,000
9,800	10,000	137,000	87,000	40,000
9,920	10,000	137,000	87,000	40,000
10,000	10,000	137,000	87,000	40,000
10,200	12,000	144,000	87,000	45,000
10,500	12,000	144,000	87,000	45,000
10,600	12,000	144,000	87,000	45,000
10,700	12,000	151,000	94,000	45,000
10,900	12,000	151,000	94,000	45,000
11,000	12,000	151,000	94,000	45,000
11,100	12,000	151,000	94,000	45,000
11,300	12,000	151,000	94,000	45,000
11,400	12,000	151,000	94,000	45,000
11,500	12,000	151,000	94,000	45,000
11,900	12,000	158,000	101,000	45,000
12,000	12,000	158,000	101,000	45,000
12,200	14,000	161,000	101,000	45,000
12,300	14,000	161,000	101,000	45,000
12,400	14,000	161,000	101,000	45,000
12,500	14,000	161,000	101,000	45,000
12,600	14,000	161,000	101,000	45,000
12,700	14,000	161,000	101,000	45,000
12,900	14,000	161,000	101,000	45,000



Forets hélicoïd. à queue cylind.renforcée



Matière de coupe **CW monobloc**

Surface **A**

Sens de coupe **R**

**P** ○ Amin. de l'âme ≥ Ø 2,600 • affûtage en pente • forme de l'arête de coupe principale, rectiligne, (obtenue par correction)

**M**

**K** ○

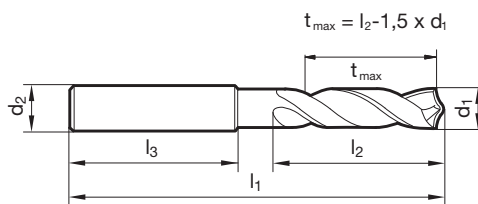
**N** aciers trempés jusqu'à environ 62 HRC

**S**

**H** •

**GÜHRING** NAVIGATOR

Paramètres de coupe, page 776



Forets hélicoïdaux à queue cylindrique

N° d'article **1946**

d1	d2 h6	l1	l2	l3
mm	mm	mm	mm	mm
2,600	6,000	62,000	20,000	36,000
3,000	6,000	62,000	20,000	36,000
3,400	6,000	62,000	20,000	36,000
4,000	6,000	66,000	24,000	36,000
4,300	6,000	66,000	24,000	36,000
5,000	6,000	66,000	28,000	36,000
5,100	6,000	66,000	28,000	36,000
5,600	6,000	66,000	28,000	36,000
6,000	6,000	66,000	28,000	36,000
6,900	8,000	79,000	34,000	36,000
7,100	8,000	79,000	41,000	36,000
8,000	8,000	79,000	41,000	36,000

d1	d2 h6	l1	l2	l3
mm	mm	mm	mm	mm
8,600	10,000	89,000	47,000	40,000
9,100	10,000	89,000	47,000	40,000
10,000	10,000	89,000	47,000	40,000
10,400	12,000	102,000	55,000	45,000
10,600	12,000	102,000	55,000	45,000
11,100	12,000	102,000	55,000	45,000
12,000	12,000	102,000	55,000	45,000
14,100	16,000	115,000	65,000	48,000



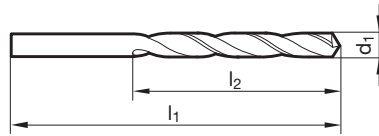
Forets aviation, longueur 6 pouces



- P** • Amin. de l'âme  $\geq \varnothing 1,500$  • affûtage à dépouille conique
- M**
- K** •
- N** • tôles en alliage d'aluminium • plaques superposées (en sandwich)
- S** • acier et fonte
- H**

Matière de coupe	<b>HSS</b>
Surface	○
Sens de coupe	Ⓜ

Forets hélicoïdaux à queue cylindrique



N° d'article **577**

d1		l1	l2
mm	inch	mm	mm
1,500		153,000	23,000
1,590	1/16	153,000	26,000
1,650		153,000	26,000
1,750		153,000	26,000
1,780		153,000	26,000
1,900		153,000	26,000
1,930		153,000	29,000
1,980	5/64	153,000	29,000
1,990		153,000	29,000
2,000		153,000	29,000
2,100		153,000	29,000
2,300		153,000	32,500
2,380	3/32	153,000	37,000
2,400		153,000	37,000
2,490		153,000	37,000
2,500		153,000	37,000
2,530		153,000	37,000
2,580		153,000	37,000
2,870		153,000	42,000
2,950		153,000	42,000
3,000		153,000	42,000
3,170	1/8	153,000	42,000
3,200		153,000	42,000
3,260		153,000	42,000
3,500		154,000	49,000
3,570	9/64	154,000	49,000
3,800		154,000	55,000
3,860		154,000	55,000
3,910		154,000	55,000
3,970	5/32	154,000	55,000
4,000		154,000	55,000
4,040		154,000	55,000
4,090		154,000	55,000
4,220		154,000	55,000
4,390		154,000	60,000
4,500		154,000	60,000

d1		l1	l2
mm	inch	mm	mm
4,570		154,000	60,000
4,700		154,000	60,000
4,760	3/16	154,000	63,500
4,800		154,000	63,500
4,850		154,000	63,500
4,920		154,000	63,500
4,980		154,000	63,500
5,000		154,000	63,500
5,160	13/64	154,000	63,500
5,500		154,000	68,500
5,560	7/32	154,000	68,500
5,800		154,000	68,500
5,940		154,000	68,500
5,950	15/64	154,000	68,500
6,040		154,000	75,000
6,150		154,000	75,000
6,200		154,000	75,000
6,250		154,000	75,000
6,350	1/4	154,000	75,000
6,530		154,000	75,000
6,800		155,000	80,000
7,000		155,000	80,000
7,700		155,000	90,000
7,940	5/16	155,000	90,000
8,000		155,000	90,000





Forets aviation, longueur 6 pouces

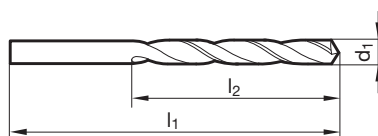


Matière de coupe **HSS**

Surface  $\text{Ra} > 0,2,36$

Sens de coupe

- P** • Amin. de l'âme  $\geq \text{Ø } 1,500$  • affûtage à dépouille conique
- M**
- K** •
- N** • tôles en alliage d'aluminium • plaques superposées (en sandwich)
- S** • acier et fonte
- H**



N° d'article **579**

d1		l1	l2
mm	inch	mm	mm
1,500		153,000	23,000
1,590	1/16	153,000	26,000
1,780		153,000	26,000
1,980	5/64	153,000	29,000
2,000		153,000	29,000
2,380	3/32	153,000	37,000
2,400		153,000	37,000
2,490		153,000	37,000
2,500		153,000	37,000
2,580		153,000	37,000
2,640		153,000	37,000
2,710		153,000	42,000
2,780	7/64	153,000	42,000
2,790		153,000	42,000
2,820		153,000	42,000
2,870		153,000	42,000
2,950		153,000	42,000
3,000		153,000	42,000
3,050		153,000	42,000
3,170	1/8	153,000	42,000
3,200		153,000	42,000
3,260		153,000	42,000
3,450		154,000	49,000
3,500		154,000	49,000
3,570	9/64	154,000	49,000
3,600		154,000	49,000
3,660		154,000	49,000
3,700		154,000	49,000
3,800		154,000	55,000
3,970	5/32	154,000	55,000

d1		l1	l2
mm	inch	mm	mm
3,990		154,000	55,000
4,000		154,000	55,000
4,040		154,000	55,000
4,090		154,000	55,000
4,370	11/64	154,000	60,000
4,390		154,000	60,000
4,500		154,000	60,000
4,570		154,000	60,000
4,620		154,000	60,000
4,760	3/16	154,000	63,500
4,800		154,000	63,500
4,850		154,000	63,500
4,920		154,000	63,500
4,980		154,000	63,500
5,000		154,000	63,500
5,160	13/64	154,000	63,500
5,560	7/32	154,000	68,500
5,800		154,000	68,500
5,940		154,000	68,500
5,950	15/64	154,000	68,500
6,040		154,000	75,000
6,250		154,000	75,000
6,350	1/4	154,000	75,000
6,450		154,000	75,000
6,530		154,000	75,000
6,750	17/64	155,000	80,000
7,940	5/16	155,000	90,000
8,000		155,000	90,000

Forets hélicoïdaux à queue cylindrique



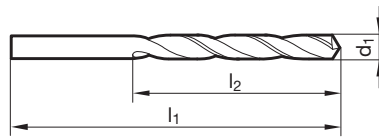
Forets aviation, longueur 12 pouces



- P** • Amin. de l'âme  $\geq \varnothing 1,500$  • affûtage à dépouille conique
- M**
- K** •
- N** • tôles en alliage d'aluminium • plaques superposées (en sandwich)
- S** • acier et fonte
- H**

Matière de coupe	<b>HSS</b>
Surface	○
Sens de coupe	Ⓜ

Forets hélicoïdaux à queue cylindrique



N° d'article **578**

d1		l1	l2
mm	inch	mm	mm
1,500		306,000	23,000
1,590	1/16	306,000	26,000
1,780		306,000	26,000
1,850		306,000	26,000
1,930		306,000	29,000
2,000		306,000	29,000
2,180		306,000	32,500
2,260		306,000	32,500
2,380	3/32	306,000	37,000
2,440		306,000	37,000
2,490		306,000	37,000
2,500		306,000	37,000
2,580		306,000	37,000
2,640		306,000	37,000
2,790		306,000	42,000
2,820		306,000	42,000
3,000		306,000	42,000
3,170	1/8	306,000	42,000
3,200		306,000	42,000
3,260		306,000	42,000
3,500		308,000	49,000
3,570	9/64	308,000	49,000
3,660		308,000	49,000
3,800		308,000	55,000
3,970	5/32	308,000	55,000
4,000		308,000	55,000
4,040		308,000	55,000
4,090		308,000	55,000
4,220		308,000	55,000
4,370	11/64	308,000	60,000

d1		l1	l2
mm	inch	mm	mm
4,390		308,000	60,000
4,500		308,000	60,000
4,570		308,000	60,000
4,620		308,000	60,000
4,700		308,000	60,000
4,760	3/16	308,000	63,500
4,800		308,000	63,500
4,850		308,000	63,500
4,920		308,000	63,500
4,980		308,000	63,500
5,000		308,000	63,500
5,160	13/64	308,000	63,500
5,500		308,000	68,500
5,800		308,000	68,500
5,950	15/64	308,000	68,500
6,000		308,000	68,500
6,040		308,000	75,000
6,350	1/4	308,000	75,000
6,530		308,000	75,000
7,000		310,000	80,000
8,000		310,000	90,000



Forets aviation, longueur 12 pouces

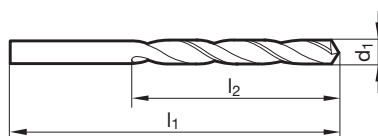


Matière de coupe **HSS**

Surface  $\text{Ra} > 0,2,36$

Sens de coupe

- P** • Amin. de l'âme  $\geq \text{Ø } 1,500$  • affûtage à dépouille conique
- M**
- K** •
- N** • tôles en alliage d'aluminium • plaques superposées (en sandwich)
- S** • acier et fonte
- H**



N° d'article **580**

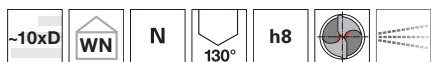
d1		l1	l2
mm	inch	mm	mm
1,500		306,000	23,000
1,590	1/16	306,000	26,000
1,780		306,000	26,000
1,980	5/64	306,000	29,000
2,000		306,000	29,000
2,380	3/32	306,000	37,000
2,490		306,000	37,000
2,500		306,000	37,000
2,580		306,000	37,000
2,640		306,000	37,000
2,710		306,000	42,000
2,780	7/64	306,000	42,000
2,790		306,000	42,000
2,820		306,000	42,000
2,870		306,000	42,000
2,950		306,000	42,000
3,000		306,000	42,000
3,170	1/8	306,000	42,000
3,260		306,000	42,000
3,450		308,000	49,000
3,500		308,000	49,000
3,660		308,000	49,000
3,730		308,000	49,000
3,800		308,000	55,000
3,970	5/32	308,000	55,000
3,990		308,000	55,000
4,000		308,000	55,000
4,040		308,000	55,000
4,300		308,000	60,000
4,370	11/64	308,000	60,000

d1		l1	l2
mm	inch	mm	mm
4,390		308,000	60,000
4,500		308,000	60,000
4,570		308,000	60,000
4,620		308,000	60,000
4,700		308,000	60,000
4,760	3/16	308,000	63,500
4,800		308,000	63,500
4,850		308,000	63,500
4,920		308,000	63,500
4,980		308,000	63,500
5,000		308,000	63,500
5,060		308,000	63,500
5,110		308,000	63,500
5,160	13/64	308,000	63,500
5,560	7/32	308,000	68,500
5,790		308,000	68,500
5,940		308,000	68,500
5,950	15/64	308,000	68,500
6,000		308,000	68,500
6,040		308,000	75,000
6,150		308,000	75,000
6,250		308,000	75,000
6,350	1/4	308,000	75,000
6,530		308,000	75,000
7,940	5/16	310,000	90,000
8,000		310,000	90,000

Forets hélicoïdaux à queue cylindrique



Forets à canaux de lubrification



Matière de coupe **HSS**

Surface ○

Sens de coupe (R)

**P** • Amin. de l'âme ≥ Ø 3,000 • affûtage à dépouille conique • aussi pour le perçage avec canons de perçage • parfait pour les profondeurs > 5xD

**M** ○

**K** •

**N** • tôles superposées • acier et fonte aciérée, fonte grise • aciers austénitiques jusqu'à 800 N/mm<sup>2</sup>

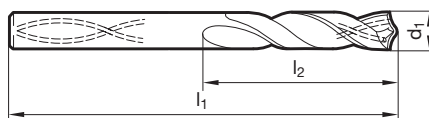
**S** ○

**H**

**GÜHRING** NAVIGATOR

Paramètres de coupe, page 788

Forets hélicoïdaux à queue cylindrique



N° d'article **390**

d1	l1	l2
mm	mm	mm
3,000	100,000	66,000
3,300	106,000	69,000
3,500	112,000	73,000
4,000	119,000	78,000
4,200	119,000	78,000
4,500	126,000	82,000
5,000	132,000	87,000
5,500	139,000	91,000
6,000	139,000	91,000
6,500	148,000	97,000
6,800	156,000	102,000
6,900	156,000	102,000
7,000	156,000	102,000
7,500	156,000	102,000
8,000	165,000	109,000
8,500	165,000	109,000
9,000	175,000	115,000
9,500	175,000	115,000

d1	l1	l2
mm	mm	mm
10,000	184,000	121,000
10,200	184,000	121,000
10,500	184,000	121,000
11,000	195,000	128,000
11,500	195,000	128,000
12,000	205,000	134,000
13,000	205,000	134,000



Forets à canaux de lubrification

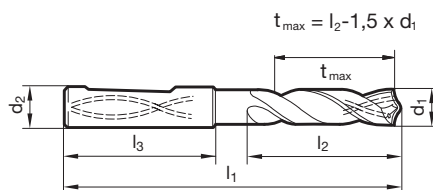


Matière de coupe	<b>HSCO</b>
Surface	○
Forme d'attachement	HE

- P** • Amin. de l'âme ≥ Ø 5,000 • affûtage à dépouille conique • acier rapide au Co
- M** •
- K** •
- N** • matières à copeaux longs < 1000 N/mm<sup>2</sup> • aciers inoxydables • fontes
- S** • métaux non ferreux
- H** ○

**GUHRING** NAVIGATOR

Paramètres de coupe, page 784



Forets hélicoïdaux à queue cylindrique

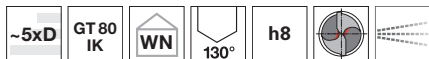
N° d'article **1131**

d1		d6 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm
5,000		6,000	82,000	44,000	36,000
5,500		6,000	82,000	44,000	36,000
6,000		6,000	82,000	44,000	36,000
6,350	1/4	8,000	91,000	53,000	36,000
6,800		8,000	91,000	53,000	36,000
7,140	9/32	8,000	91,000	53,000	36,000
7,800		8,000	91,000	53,000	36,000
8,000		8,000	91,000	53,000	36,000
9,000		10,000	103,000	61,000	40,000
9,500		10,000	103,000	61,000	40,000
10,000		10,000	103,000	61,000	40,000
10,200		12,000	118,000	71,000	45,000
10,320	13/32	12,000	118,000	71,000	45,000
10,500		12,000	118,000	71,000	45,000
11,000		12,000	118,000	71,000	45,000
11,500		12,000	118,000	71,000	45,000
12,000		12,000	118,000	71,000	45,000
12,500		14,000	124,000	77,000	45,000

d1		d6 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm
13,000		14,000	124,000	77,000	45,000
13,500		14,000	124,000	77,000	45,000
14,000		14,000	124,000	77,000	45,000
14,290	9/16	16,000	133,000	83,000	48,000
15,000		16,000	133,000	83,000	48,000
15,500		16,000	133,000	83,000	48,000
15,870	5/8	16,000	133,000	83,000	48,000
16,000		16,000	133,000	83,000	48,000
16,500		18,000	143,000	93,000	48,000
17,000		18,000	143,000	93,000	48,000
17,500		18,000	143,000	93,000	48,000
18,000		18,000	143,000	93,000	48,000
18,500		20,000	153,000	101,000	50,000
19,500		20,000	153,000	101,000	50,000
20,000		20,000	153,000	101,000	50,000



Forets à canaux de lubrification



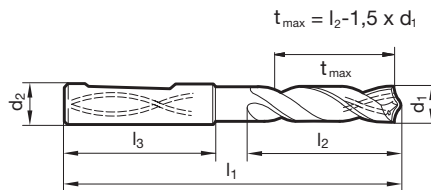
Matière de coupe	<b>HSCO</b>
Surface	<b>S</b>
Forme d'attachement	HE

- P** • Amin. de l'âme ≥ Ø 5,000 • affûtage à dépouille conique • acier rapide au Co
- meilleure résistance à l'usure
- M** •
- K** •
- N** • matières à copeaux longs < 1000 N/mm<sup>2</sup> • aciers inoxydables • fontes
- métaux non ferreux
- S** •
- H** ○

Forets hélicoïdaux à queue cylindrique

**GÜHRING** NAVIGATOR

Paramètres de coupe, page 784



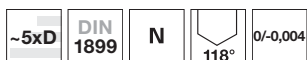
N° d'article **1132**

d1		d6 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm
5,000		6,000	82,000	44,000	36,000
5,500		6,000	82,000	44,000	36,000
6,000		6,000	82,000	44,000	36,000
6,500		8,000	91,000	53,000	36,000
6,800		8,000	91,000	53,000	36,000
7,000		8,000	91,000	53,000	36,000
7,500		8,000	91,000	53,000	36,000
7,800		8,000	91,000	53,000	36,000
8,000		8,000	91,000	53,000	36,000
8,500		10,000	103,000	61,000	40,000
9,000		10,000	103,000	61,000	40,000
9,500		10,000	103,000	61,000	40,000
10,000		10,000	103,000	61,000	40,000
10,200		12,000	118,000	71,000	45,000
10,320	13/32	12,000	118,000	71,000	45,000
10,500		12,000	118,000	71,000	45,000
11,000		12,000	118,000	71,000	45,000
11,500		12,000	118,000	71,000	45,000

d1		d6 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm
12,000		12,000	118,000	71,000	45,000
12,500		14,000	124,000	77,000	45,000
13,000		14,000	124,000	77,000	45,000
13,500		14,000	124,000	77,000	45,000
14,000		14,000	124,000	77,000	45,000
14,500		16,000	133,000	83,000	48,000
15,000		16,000	133,000	83,000	48,000
15,500		16,000	133,000	83,000	48,000
15,870	5/8	16,000	133,000	83,000	48,000
16,000		16,000	133,000	83,000	48,000
16,500		18,000	143,000	93,000	48,000
17,000		18,000	143,000	93,000	48,000
17,500		18,000	143,000	93,000	48,000
18,000		18,000	143,000	93,000	48,000
19,000		20,000	153,000	101,000	50,000
19,500		20,000	153,000	101,000	50,000
20,000		20,000	153,000	101,000	50,000



Microforets en HSS-E PM fritté, sans canaux de lubrification



Matière de coupe **HSS-E-PM**

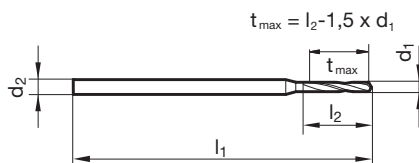
Surface

Sens de coupe

- P** • affûtage en pente • avec attachement renforcé • < Ø 0,15 mm acier rapide au Co
- M** •
- K** •
- N** • aciers hautement alliés
- S** ○
- H**

**GUHRING** NAVIGATOR

Paramètres de coupe, page 796



Forets hélicoïdaux à queue cylindrique

N° d'article **301**

d1	d2	l1	l2
mm	mm	mm	mm
0,050	1,000	25,000	0,400
0,060	1,000	25,000	0,400
0,070	1,000	25,000	0,500
0,075	1,000	25,000	0,500
0,080	1,000	25,000	0,500
0,090	1,000	25,000	0,500
0,100	1,000	25,000	0,500
0,105	1,000	25,000	0,500
0,110	1,000	25,000	0,500
0,115	1,000	25,000	0,500
0,120	1,000	25,000	0,500
0,121	1,000	25,000	0,800
0,125	1,000	25,000	0,800
0,128	1,000	25,000	0,800
0,130	1,000	25,000	0,800
0,140	1,000	25,000	0,800
0,143	1,000	25,000	0,800
0,145	1,000	25,000	0,800
0,147	1,000	25,000	0,800
0,150	1,000	25,000	0,800
0,155	1,000	25,000	1,100
0,160	1,000	25,000	1,100
0,170	1,000	25,000	1,100
0,175	1,000	25,000	1,100
0,180	1,000	25,000	1,100
0,190	1,000	25,000	1,100
0,195	1,000	25,000	1,500
0,200	1,000	25,000	1,500
0,205	1,000	25,000	1,500
0,210	1,000	25,000	1,500
0,215	1,000	25,000	1,500
0,220	1,000	25,000	1,500
0,225	1,000	25,000	1,500
0,230	1,000	25,000	1,500
0,235	1,000	25,000	1,500
0,240	1,000	25,000	1,500
0,245	1,000	25,000	1,900
0,250	1,000	25,000	1,900
0,255	1,000	25,000	1,900
0,260	1,000	25,000	1,900
0,265	1,000	25,000	1,900
0,270	1,000	25,000	1,900

d1	d2	l1	l2
mm	mm	mm	mm
0,275	1,000	25,000	1,900
0,280	1,000	25,000	1,900
0,285	1,000	25,000	1,900
0,290	1,000	25,000	1,900
0,295	1,000	25,000	1,900
0,300	1,000	25,000	1,900
0,305	1,000	25,000	2,400
0,310	1,000	25,000	2,400
0,315	1,000	25,000	2,400
0,320	1,000	25,000	2,400
0,325	1,000	25,000	2,400
0,330	1,000	25,000	2,400
0,335	1,000	25,000	2,400
0,340	1,000	25,000	2,400
0,345	1,000	25,000	2,400
0,350	1,000	25,000	2,400
0,355	1,000	25,000	2,400
0,360	1,000	25,000	2,400
0,365	1,000	25,000	2,400
0,370	1,000	25,000	2,400
0,375	1,000	25,000	2,400
0,380	1,000	25,000	2,400
0,385	1,000	25,000	3,000
0,390	1,000	25,000	3,000
0,400	1,000	25,000	3,000
0,405	1,000	25,000	3,000
0,410	1,000	25,000	3,000
0,415	1,000	25,000	3,000
0,420	1,000	25,000	3,000
0,425	1,000	25,000	3,000
0,430	1,000	25,000	3,000
0,432	1,000	25,000	3,000
0,435	1,000	25,000	3,000
0,440	1,000	25,000	3,000
0,445	1,000	25,000	3,000
0,450	1,000	25,000	3,000
0,455	1,000	25,000	3,000
0,460	1,000	25,000	3,000
0,470	1,000	25,000	3,000
0,475	1,000	25,000	3,000
0,480	1,000	25,000	3,000
0,485	1,000	25,000	3,400



Forets hélicoïdaux à queue cylindrique

d1	d2	l1	l2
mm	mm	mm	mm
0,490	1,000	25,000	3,400
0,495	1,000	25,000	3,400
0,500	1,000	25,000	3,400
0,505	1,000	25,000	3,400
0,510	1,000	25,000	3,400
0,515	1,000	25,000	3,400
0,520	1,000	25,000	3,400
0,525	1,000	25,000	3,400
0,530	1,000	25,000	3,400
0,535	1,000	25,000	3,900
0,540	1,000	25,000	3,900
0,545	1,000	25,000	3,900
0,550	1,000	25,000	3,900
0,560	1,000	25,000	3,900
0,570	1,000	25,000	3,900
0,580	1,000	25,000	3,900
0,585	1,000	25,000	3,900
0,590	1,000	25,000	3,900
0,595	1,000	25,000	3,900
0,600	1,000	25,000	3,900
0,605	1,000	25,000	4,200
0,610	1,000	25,000	4,200
0,615	1,000	25,000	4,200
0,620	1,000	25,000	4,200
0,625	1,000	25,000	4,200
0,630	1,000	25,000	4,200
0,632	1,000	25,000	4,200
0,640	1,000	25,000	4,200
0,650	1,000	25,000	4,200
0,655	1,000	25,000	4,200
0,660	1,000	25,000	4,200
0,665	1,000	25,000	4,200
0,670	1,000	25,000	4,200
0,675	1,000	25,000	4,800
0,680	1,000	25,000	4,800
0,690	1,000	25,000	4,800
0,695	1,000	25,000	4,800
0,700	1,000	25,000	4,800
0,705	1,000	25,000	4,800
0,710	1,000	25,000	4,800
0,720	1,000	25,000	4,800
0,725	1,000	25,000	4,800
0,730	1,000	25,000	4,800
0,740	1,000	25,000	4,800
0,750	1,000	25,000	4,800
0,760	1,000	25,000	5,300
0,770	1,000	25,000	5,300
0,780	1,000	25,000	5,300
0,790	1,000	25,000	5,300
0,795	1,500	25,000	5,300
0,800	1,500	25,000	5,300
0,810	1,500	25,000	5,300
0,820	1,500	25,000	5,300
0,825	1,500	25,000	5,300
0,830	1,500	25,000	5,300
0,840	1,500	25,000	5,300
0,845	1,500	25,000	5,300
0,850	1,500	25,000	5,300
0,860	1,500	25,000	6,000
0,870	1,500	25,000	6,000
0,880	1,500	25,000	6,000
0,890	1,500	25,000	6,000
0,900	1,500	25,000	6,000
0,910	1,500	25,000	6,000
0,920	1,500	25,000	6,000
0,925	1,500	25,000	6,000
0,930	1,500	25,000	6,000
0,940	1,500	25,000	6,000
0,950	1,500	25,000	6,000
0,960	1,500	25,000	6,800
0,970	1,500	25,000	6,800
0,980	1,500	25,000	6,800

d1	d2	l1	l2
mm	mm	mm	mm
0,990	1,500	25,000	6,800
1,000	1,500	25,000	6,800
1,010	1,500	25,000	6,800
1,020	1,500	25,000	6,800
1,030	1,500	25,000	6,800
1,040	1,500	25,000	6,800
1,050	1,500	25,000	6,800
1,055	1,500	25,000	6,800
1,060	1,500	25,000	6,800
1,070	1,500	25,000	7,600
1,080	1,500	25,000	7,600
1,090	1,500	25,000	7,600
1,100	1,500	25,000	7,600
1,110	1,500	25,000	7,600
1,120	1,500	25,000	7,600
1,130	1,500	25,000	7,600
1,140	1,500	25,000	7,600
1,150	1,500	25,000	7,600
1,160	1,500	25,000	7,600
1,170	1,500	25,000	7,600
1,180	1,500	25,000	7,600
1,190	1,500	25,000	8,500
1,200	1,500	25,000	8,500
1,210	1,500	25,000	8,500
1,220	1,500	25,000	8,500
1,230	1,500	25,000	8,500
1,240	1,500	25,000	8,500
1,250	1,500	25,000	8,500
1,260	1,500	25,000	8,500
1,265	1,500	25,000	8,500
1,270	1,500	25,000	8,500
1,280	1,500	25,000	8,500
1,290	1,500	25,000	8,500
1,300	1,500	25,000	8,500
1,310	1,500	25,000	8,500
1,320	1,500	25,000	8,500
1,325	1,500	25,000	9,500
1,330	1,500	25,000	9,500
1,340	1,500	25,000	9,500
1,350	1,500	25,000	9,500
1,370	1,500	25,000	9,500
1,380	1,500	25,000	9,500
1,390	1,500	25,000	9,500
1,400	1,500	25,000	9,500
1,410	1,500	25,000	9,500
1,420	1,500	25,000	9,500
1,430	1,500	25,000	9,500
1,440	1,500	25,000	9,500
1,450	1,500	25,000	9,500
1,460	2,000	30,000	9,500
1,470	2,000	30,000	9,500
1,500	2,000	30,000	9,500
1,520	2,000	30,000	10,600
1,530	2,000	30,000	10,600
1,540	2,000	30,000	10,600
1,550	2,000	30,000	10,600
1,590	2,000	30,000	10,600
1,600	2,000	30,000	10,600
1,610	2,000	30,000	10,600
1,630	2,000	30,000	10,600
1,640	2,000	30,000	10,600
1,650	2,000	30,000	10,600
1,660	2,000	30,000	10,600
1,690	2,000	30,000	10,600
1,700	2,000	30,000	10,600
1,710	2,000	30,000	11,800
1,715	2,000	30,000	11,800
1,730	2,000	30,000	11,800
1,745	2,000	30,000	11,800
1,750	2,000	30,000	11,800
1,775	2,000	30,000	11,800
1,800	2,000	30,000	11,800



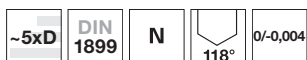


d1	d2	l1	l2
mm	mm	mm	mm
1,830	2,000	30,000	11,800
1,840	2,000	30,000	11,800
1,850	2,000	30,000	11,800
1,860	2,000	30,000	11,800
1,900	2,000	30,000	11,800
1,920	2,000	30,000	13,200

d1	d2	l1	l2
mm	mm	mm	mm



Microforets en HSS-E PM fritté, sans canaux de lubrification



Matière de coupe **HSS-E-PM**

Surface **S**

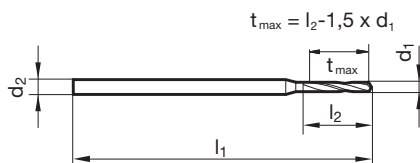
Sens de coupe **R**

- P** • affûtage en pente • avec attachement renforcé • meilleure résistance à l'usure
- M** •
- K** •
- N** • aciers hautement alliés
- S** ○
- H**

**GUHRING** NAVIGATOR

Paramètres de coupe, page 796

Forets hélicoïdaux à queue cylindrique



N° d'article **660**

d1	d2	l1	l2
mm	mm	mm	mm
0,160	1,000	25,000	1,100
0,170	1,000	25,000	1,100
0,180	1,000	25,000	1,100
0,190	1,000	25,000	1,100
0,200	1,000	25,000	1,500
0,210	1,000	25,000	1,500
0,220	1,000	25,000	1,500
0,230	1,000	25,000	1,500
0,240	1,000	25,000	1,500
0,250	1,000	25,000	1,900
0,255	1,000	25,000	1,900
0,260	1,000	25,000	1,900
0,265	1,000	25,000	1,900
0,270	1,000	25,000	1,900
0,280	1,000	25,000	1,900
0,290	1,000	25,000	1,900
0,295	1,000	25,000	1,900
0,300	1,000	25,000	1,900
0,305	1,000	25,000	2,400
0,310	1,000	25,000	2,400
0,320	1,000	25,000	2,400
0,325	1,000	25,000	2,400
0,330	1,000	25,000	2,400
0,340	1,000	25,000	2,400
0,350	1,000	25,000	2,400
0,360	1,000	25,000	2,400
0,370	1,000	25,000	2,400
0,380	1,000	25,000	2,400
0,390	1,000	25,000	3,000
0,400	1,000	25,000	3,000
0,410	1,000	25,000	3,000
0,420	1,000	25,000	3,000
0,430	1,000	25,000	3,000
0,440	1,000	25,000	3,000
0,450	1,000	25,000	3,000
0,460	1,000	25,000	3,000
0,470	1,000	25,000	3,000
0,480	1,000	25,000	3,000
0,490	1,000	25,000	3,400
0,500	1,000	25,000	3,400
0,510	1,000	25,000	3,400
0,520	1,000	25,000	3,400

d1	d2	l1	l2
mm	mm	mm	mm
0,530	1,000	25,000	3,400
0,540	1,000	25,000	3,900
0,550	1,000	25,000	3,900
0,560	1,000	25,000	3,900
0,570	1,000	25,000	3,900
0,580	1,000	25,000	3,900
0,590	1,000	25,000	3,900
0,600	1,000	25,000	3,900
0,610	1,000	25,000	4,200
0,620	1,000	25,000	4,200
0,630	1,000	25,000	4,200
0,640	1,000	25,000	4,200
0,650	1,000	25,000	4,200
0,660	1,000	25,000	4,200
0,670	1,000	25,000	4,200
0,680	1,000	25,000	4,800
0,690	1,000	25,000	4,800
0,700	1,000	25,000	4,800
0,710	1,000	25,000	4,800
0,720	1,000	25,000	4,800
0,730	1,000	25,000	4,800
0,740	1,000	25,000	4,800
0,750	1,000	25,000	4,800
0,760	1,000	25,000	5,300
0,770	1,000	25,000	5,300
0,780	1,000	25,000	5,300
0,790	1,000	25,000	5,300
0,800	1,500	25,000	5,300
0,810	1,500	25,000	5,300
0,820	1,500	25,000	5,300
0,830	1,500	25,000	5,300
0,840	1,500	25,000	5,300
0,850	1,500	25,000	5,300
0,860	1,500	25,000	6,000
0,870	1,500	25,000	6,000
0,880	1,500	25,000	6,000
0,900	1,500	25,000	6,000
0,910	1,500	25,000	6,000
0,920	1,500	25,000	6,000
0,940	1,500	25,000	6,000
0,950	1,500	25,000	6,000
0,960	1,500	25,000	6,800

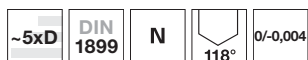


d1	d2	l1	l2
mm	mm	mm	mm
0,970	1,500	25,000	6,800
0,980	1,500	25,000	6,800
1,000	1,500	25,000	6,800
1,020	1,500	25,000	6,800
1,040	1,500	25,000	6,800
1,050	1,500	25,000	6,800
1,070	1,500	25,000	7,600
1,080	1,500	25,000	7,600
1,100	1,500	25,000	7,600
1,150	1,500	25,000	7,600
1,180	1,500	25,000	7,600
1,190	1,500	25,000	8,500

d1	d2	l1	l2
mm	mm	mm	mm
1,200	1,500	25,000	8,500
1,220	1,500	25,000	8,500
1,250	1,500	25,000	8,500
1,300	1,500	25,000	8,500
1,350	1,500	25,000	9,500
1,390	1,500	25,000	9,500
1,400	1,500	25,000	9,500
1,420	1,500	25,000	9,500
1,450	1,500	25,000	9,500
1,500	2,000	30,000	9,500
1,800	2,000	30,000	11,800
1,900	2,000	30,000	11,800



Microforets en HSS-E PM fritté, sans canaux de lubrification



Matière de coupe **HSS-E-PM**

Surface

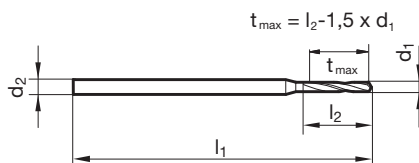
Sens de coupe

- P** • affûtage en pente • avec attachement renforcé • < Ø 0,15 mm acier rapide au Co
- M** •
- K** •
- N** • aciers hautement alliés
- S** ○
- H**

**GUHRING** NAVIGATOR

Paramètres de coupe, page 796

Forets hélicoïdaux à queue cylindrique



N° d'article **303**

d1	d2	l1	l2
mm	mm	mm	mm
0,130	1,000	25,000	0,800
0,140	1,000	25,000	0,800
0,150	1,000	25,000	0,800
0,155	1,000	25,000	1,100
0,160	1,000	25,000	1,100
0,170	1,000	25,000	1,100
0,175	1,000	25,000	1,100
0,180	1,000	25,000	1,100
0,185	1,000	25,000	1,100
0,190	1,000	25,000	1,100
0,195	1,000	25,000	1,500
0,200	1,000	25,000	1,500
0,210	1,000	25,000	1,500
0,215	1,000	25,000	1,500
0,220	1,000	25,000	1,500
0,225	1,000	25,000	1,500
0,230	1,000	25,000	1,500
0,235	1,000	25,000	1,500
0,240	1,000	25,000	1,500
0,245	1,000	25,000	1,900
0,250	1,000	25,000	1,900
0,255	1,000	25,000	1,900
0,260	1,000	25,000	1,900
0,265	1,000	25,000	1,900
0,270	1,000	25,000	1,900
0,275	1,000	25,000	1,900
0,280	1,000	25,000	1,900
0,290	1,000	25,000	1,900
0,295	1,000	25,000	1,900
0,300	1,000	25,000	1,900
0,310	1,000	25,000	2,400
0,315	1,000	25,000	2,400
0,330	1,000	25,000	2,400
0,340	1,000	25,000	2,400
0,345	1,000	25,000	2,400
0,350	1,000	25,000	2,400
0,355	1,000	25,000	2,400
0,360	1,000	25,000	2,400
0,370	1,000	25,000	2,400
0,380	1,000	25,000	2,400
0,390	1,000	25,000	3,000
0,400	1,000	25,000	3,000

d1	d2	l1	l2
mm	mm	mm	mm
0,410	1,000	25,000	3,000
0,415	1,000	25,000	3,000
0,420	1,000	25,000	3,000
0,430	1,000	25,000	3,000
0,435	1,000	25,000	3,000
0,440	1,000	25,000	3,000
0,450	1,000	25,000	3,000
0,460	1,000	25,000	3,000
0,465	1,000	25,000	3,000
0,470	1,000	25,000	3,000
0,480	1,000	25,000	3,000
0,485	1,000	25,000	3,400
0,490	1,000	25,000	3,400
0,495	1,000	25,000	3,400
0,500	1,000	25,000	3,400
0,510	1,000	25,000	3,400
0,520	1,000	25,000	3,400
0,525	1,000	25,000	3,400
0,540	1,000	25,000	3,900
0,545	1,000	25,000	3,900
0,550	1,000	25,000	3,900
0,555	1,000	25,000	3,900
0,565	1,000	25,000	3,900
0,570	1,000	25,000	3,900
0,580	1,000	25,000	3,900
0,590	1,000	25,000	3,900
0,600	1,000	25,000	3,900
0,615	1,000	25,000	4,200
0,620	1,000	25,000	4,200
0,630	1,000	25,000	4,200
0,640	1,000	25,000	4,200
0,650	1,000	25,000	4,200
0,660	1,000	25,000	4,200
0,670	1,000	25,000	4,200
0,675	1,000	25,000	4,800
0,680	1,000	25,000	4,800
0,685	1,000	25,000	4,800
0,690	1,000	25,000	4,800
0,695	1,000	25,000	4,800
0,700	1,000	25,000	4,800
0,710	1,000	25,000	4,800
0,720	1,000	25,000	4,800



d1	d2	l1	l2
mm	mm	mm	mm
0,740	1,000	25,000	4,800
0,750	1,000	25,000	4,800
0,760	1,000	25,000	5,300
0,770	1,000	25,000	5,300
0,780	1,000	25,000	5,300
0,790	1,000	25,000	5,300
0,800	1,500	25,000	5,300
0,805	1,500	25,000	5,300
0,810	1,500	25,000	5,300
0,820	1,500	25,000	5,300
0,830	1,500	25,000	5,300
0,840	1,500	25,000	5,300
0,850	1,500	25,000	5,300
0,855	1,500	25,000	6,000
0,860	1,500	25,000	6,000
0,870	1,500	25,000	6,000
0,880	1,500	25,000	6,000
0,885	1,500	25,000	6,000
0,890	1,500	25,000	6,000
0,900	1,500	25,000	6,000
0,910	1,500	25,000	6,000
0,915	1,500	25,000	6,000
0,920	1,500	25,000	6,000
0,925	1,500	25,000	6,000
0,935	1,500	25,000	6,000
0,940	1,500	25,000	6,000
0,950	1,500	25,000	6,000
0,960	1,500	25,000	6,800
0,970	1,500	25,000	6,800
0,975	1,500	25,000	6,800
0,980	1,500	25,000	6,800
0,985	1,500	25,000	6,800
0,990	1,500	25,000	6,800
1,000	1,500	25,000	6,800
1,005	1,500	25,000	6,800
1,020	1,500	25,000	6,800

d1	d2	l1	l2
mm	mm	mm	mm
1,030	1,500	25,000	6,800
1,040	1,500	25,000	6,800
1,050	1,500	25,000	6,800
1,060	1,500	25,000	6,800
1,080	1,500	25,000	7,600
1,085	1,500	25,000	7,600
1,090	1,500	25,000	7,600
1,100	1,500	25,000	7,600
1,110	1,500	25,000	7,600
1,120	1,500	25,000	7,600
1,125	1,500	25,000	7,600
1,150	1,500	25,000	7,600
1,160	1,500	25,000	7,600
1,170	1,500	25,000	7,600
1,180	1,500	25,000	7,600
1,200	1,500	25,000	8,500
1,250	1,500	25,000	8,500
1,270	1,500	25,000	8,500
1,280	1,500	25,000	8,500
1,285	1,500	25,000	8,500
1,290	1,500	25,000	8,500
1,310	1,500	25,000	8,500
1,330	1,500	25,000	9,500
1,350	1,500	25,000	9,500
1,360	1,500	25,000	9,500
1,375	1,500	25,000	9,500
1,400	1,500	25,000	9,500
1,405	1,500	25,000	9,500
1,425	1,500	25,000	9,500
1,450	1,500	25,000	9,500
1,460	2,000	30,000	9,500
1,500	2,000	30,000	9,500
1,600	2,000	30,000	10,600
1,615	2,000	30,000	10,600
1,800	2,000	30,000	11,800
1,850	2,000	30,000	11,800

Forets hélicoïdaux  
à queue cylindrique



Microforets en CW monobloc, sans canaux de lubrification



Matière de coupe **CW monobloc**

Surface

Sens de coupe

**P** • Amin. de l'âme  $\geq \varnothing 0,800$  • affûtage en pente • arête de coupe principale rectiligne

**M** ○

**K** •

**N** ○ aciers de construction et de cémentation • fontes • bronze, laiton

• aluminium et alliages d'aluminium • magnésium, alliages de magnésium

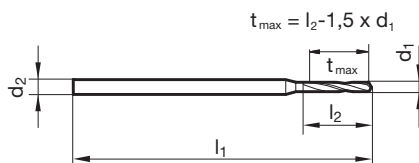
**S** ○ • matières synthét. et mat.synthét.renforcées de fibres

**H** ○

**GÜHRING** NAVIGATOR

Paramètres de coupe, page 796

Forets hélicoïdaux à queue cylindrique



N° d'article **701**

d1	d2	l1	l2
mm	mm	mm	mm
0,200	1,000	25,000	1,500
0,220	1,000	25,000	1,500
0,250	1,000	25,000	1,900
0,260	1,000	25,000	1,900
0,280	1,000	25,000	1,900
0,300	1,000	25,000	1,900
0,330	1,000	25,000	2,400
0,350	1,000	25,000	2,400
0,400	1,000	25,000	3,000
0,450	1,000	25,000	3,000
0,500	1,000	25,000	3,400
0,600	1,000	25,000	3,900
0,650	1,000	25,000	4,200
0,700	1,000	25,000	4,800
0,750	1,000	25,000	4,800
0,800	1,500	25,000	5,300
0,810	1,500	25,000	5,300
0,830	1,500	25,000	5,300

d1	d2	l1	l2
mm	mm	mm	mm
0,850	1,500	25,000	5,300
0,900	1,500	25,000	6,000
1,000	1,500	25,000	6,800
1,050	1,500	25,000	6,800
1,100	1,500	25,000	7,600
1,150	1,500	25,000	7,600
1,200	1,500	25,000	8,500
1,250	1,500	25,000	8,500
1,300	1,500	25,000	8,500
1,350	1,500	25,000	9,500
1,400	1,500	25,000	9,500



Microforets en CW monobloc, sans canaux de lubrification



Matière de coupe **CW monobloc**

Surface **A**

Sens de coupe **R**

**P** • Amin. de l'âme ≥ Ø 0,800 • affûtage en pente

**M**

**K** •

**N**

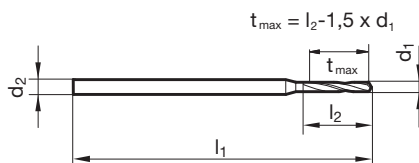
aciers de construction et de cémentation • aciers de décolletage, aciers d'amélioration • aciers alliés jusqu'à 1200 N/mm<sup>2</sup> • fontes

**S**

**H**

**GUHRING NAVIGATOR**

Paramètres de coupe, page 796



Forets hélicoïdaux à queue cylindrique

N° d'article **3899**

d1	d2 h6	l1	l2
mm	mm	mm	mm
0,100	3,000	38,000	1,200
0,150	3,000	38,000	2,000
0,200	3,000	38,000	2,500
0,250	3,000	38,000	3,000
0,260	3,000	38,000	3,000
0,270	3,000	38,000	3,000
0,280	3,000	38,000	3,000
0,300	3,000	38,000	5,000
0,310	3,000	38,000	5,000
0,330	3,000	38,000	5,000
0,350	3,000	38,000	6,000
0,360	3,000	38,000	6,000
0,370	3,000	38,000	6,000
0,380	3,000	38,000	6,000
0,400	3,000	38,000	7,000
0,410	3,000	38,000	7,000
0,430	3,000	38,000	7,000
0,440	3,000	38,000	7,000
0,450	3,000	38,000	7,000
0,480	3,000	38,000	7,000
0,500	3,000	38,000	7,000
0,510	3,000	38,000	7,000
0,530	3,000	38,000	7,000
0,550	3,000	38,000	7,000
0,570	3,000	38,000	7,000
0,600	3,000	38,000	7,000
0,640	3,000	38,000	7,000
0,650	3,000	38,000	7,000
0,660	3,000	38,000	7,000
0,680	3,000	38,000	7,000
0,700	3,000	38,000	8,000
0,710	3,000	38,000	8,000
0,720	3,000	38,000	8,000
0,740	3,000	38,000	8,000
0,750	3,000	38,000	8,000
0,760	3,000	38,000	8,000
0,770	3,000	38,000	8,000
0,780	3,000	38,000	8,000
0,790	3,000	38,000	8,000
0,800	3,000	38,000	10,000
0,810	3,000	38,000	10,000
0,820	3,000	38,000	10,000

d1	d2 h6	l1	l2
mm	mm	mm	mm
0,830	3,000	38,000	10,000
0,840	3,000	38,000	10,000
0,850	3,000	38,000	10,000
0,860	3,000	38,000	10,000
0,870	3,000	38,000	10,000
0,880	3,000	38,000	10,000
0,890	3,000	38,000	10,000
0,900	3,000	38,000	10,000
0,910	3,000	38,000	10,000
0,920	3,000	38,000	10,000
0,930	3,000	38,000	10,000
0,940	3,000	38,000	10,000
0,950	3,000	38,000	10,000
0,960	3,000	38,000	10,000
0,970	3,000	38,000	10,000
0,980	3,000	38,000	10,000
0,990	3,000	38,000	10,000
1,000	3,000	38,000	10,000
1,010	3,000	38,000	10,000
1,020	3,000	38,000	10,000
1,050	3,000	38,000	10,000
1,060	3,000	38,000	10,000
1,070	3,000	38,000	10,000
1,090	3,000	38,000	10,000
1,100	3,000	38,000	10,000
1,110	3,000	38,000	10,000
1,150	3,000	38,000	10,000
1,170	3,000	38,000	10,000
1,190	3,000	38,000	10,000
1,200	3,000	38,000	10,000
1,210	3,000	38,000	10,000
1,220	3,000	38,000	10,000
1,230	3,000	38,000	10,000
1,240	3,000	38,000	10,000
1,260	3,000	38,000	10,000
1,270	3,000	38,000	10,000
1,280	3,000	38,000	10,000
1,300	3,000	38,000	10,000
1,370	3,000	38,000	10,000
1,400	3,000	38,000	10,000
1,420	3,000	38,000	10,000
1,450	3,000	38,000	10,000



Forets hélicoïdaux à queue cylindrique

d1	d2 h6	l1	l2
mm	mm	mm	mm
1,490	3,000	38,000	10,000
1,500	3,000	38,000	10,000
1,510	3,000	38,000	10,000
1,520	3,000	38,000	10,000
1,550	3,000	38,000	10,000
1,560	3,000	38,000	10,000
1,580	3,000	38,000	10,000
1,590	3,000	38,000	10,000
1,600	3,000	38,000	12,000
1,630	3,000	38,000	12,000
1,650	3,000	38,000	12,000
1,700	3,000	38,000	12,000
1,750	3,000	38,000	12,000
1,800	3,000	38,000	12,000
1,810	3,000	38,000	12,000
1,820	3,000	38,000	12,000
1,830	3,000	38,000	12,000
1,840	3,000	38,000	12,000
1,850	3,000	38,000	12,000
1,860	3,000	38,000	12,000
1,900	3,000	38,000	12,000
1,920	3,000	38,000	12,000
1,950	3,000	38,000	12,000
1,980	3,000	38,000	12,000

d1	d2 h6	l1	l2
mm	mm	mm	mm
2,000	3,000	38,000	12,000
2,050	3,000	38,000	12,000
2,100	3,000	38,000	12,000
2,150	3,000	38,000	12,000
2,200	3,000	38,000	12,000
2,400	3,000	38,000	12,000
2,500	3,000	38,000	12,000
2,550	3,000	38,000	12,000
2,600	3,000	38,000	12,000
2,750	3,000	38,000	12,000
2,800	3,000	38,000	12,000
2,950	3,000	38,000	12,000
3,000	3,000	38,000	12,000





Microforets ExclusiveLine sans canaux de lubrification



Matière de coupe **CW monobloc**

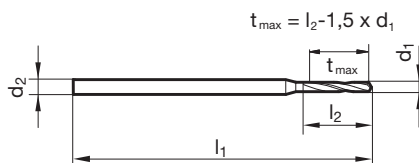
Surface **A**

Sens de coupe **R**

- P** • Amin. de l'âme  $\geq \varnothing 0,500$  • affûtage en pente • arête de coupe principale rectiligne • affilage de l'arête de coupe automatisé
- M** •
- K** •
- N** ○ aciers de construction et de cémentation • aciers de décolletage, aciers d'amélioration • aciers alliés jusqu'à 1200 N/mm<sup>2</sup> • aciers inoxydables
- S** ○ fontes
- H**

**GUHRING** NAVIGATOR

Paramètres de coupe, page 796



Forets hélicoïdaux à queue cylindrique

N° d'article **6400**

d1	d2 h6	l1	l2
mm	mm	mm	mm
0,500	3,000	47,000	3,000
0,550	3,000	47,000	3,300
0,600	3,000	47,000	3,600
0,650	3,000	47,000	3,900
0,700	3,000	47,000	4,200
0,750	3,000	47,000	4,500
0,800	3,000	47,000	4,800
0,850	3,000	47,000	5,100
0,900	3,000	47,000	5,400
0,950	3,000	47,000	5,700
1,000	3,000	47,000	6,000
1,050	3,000	47,000	6,300
1,100	3,000	47,000	6,600
1,150	3,000	47,000	6,900
1,200	3,000	47,000	7,200
1,250	3,000	47,000	7,500
1,300	3,000	47,000	7,800
1,350	3,000	47,000	8,100
1,400	3,000	47,000	8,400
1,450	3,000	47,000	8,700
1,500	3,000	47,000	9,000
1,550	3,000	47,000	9,300
1,590	3,000	47,000	9,600
1,600	3,000	47,000	9,600
1,650	3,000	47,000	9,900
1,700	3,000	47,000	10,200
1,750	3,000	47,000	10,500
1,800	3,000	52,000	10,800
1,850	3,000	52,000	11,100
1,900	3,000	52,000	11,400

d1	d2 h6	l1	l2
mm	mm	mm	mm
1,950	3,000	52,000	11,700
1,980	4,000	59,000	12,000
2,000	4,000	59,000	12,000
2,050	4,000	59,000	12,300
2,100	4,000	59,000	12,600
2,150	4,000	59,000	12,900
2,200	4,000	59,000	13,200
2,250	4,000	59,000	13,500
2,300	4,000	59,000	13,800
2,350	4,000	59,000	14,100
2,380	4,000	59,000	14,400
2,400	4,000	59,000	14,400
2,450	4,000	59,000	14,700
2,500	4,000	59,000	15,000
2,550	4,000	59,000	15,300
2,600	4,000	59,000	15,600
2,650	4,000	59,000	15,900
2,700	4,000	59,000	16,200
2,750	4,000	59,000	16,500
2,780	4,000	59,000	16,800
2,800	4,000	59,000	16,800
2,850	4,000	59,000	17,100
2,900	4,000	59,000	17,400
2,950	4,000	59,000	17,700
3,000	4,000	59,000	18,000



Microforets ExclusiveLine sans canaux de lubrification



Matière de coupe **CW monobloc**

Surface **A**

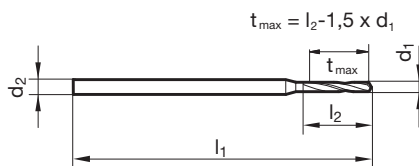
Sens de coupe **R**

- P** • Amin. de l'âme  $\geq \varnothing 0,500$  • affûtage en pente • arête de coupe principale rectiligne • affilage de l'arête de coupe automatisé
- M** •
- K** •
- N** ○ aciers de construction et de cémentation • aciers de décolletage, aciers d'amélioration • aciers alliés jusqu'à 1200 N/mm<sup>2</sup> • aciers inoxydables
- S** ○ fontes
- H**

Forets hélicoïdaux à queue cylindrique

**GUHRING NAVIGATOR**

Paramètres de coupe, page 796



N° d'article **6401**

d1	d2 h6	l1	l2
mm	mm	mm	mm
0,500	3,000	47,000	4,000
0,550	3,000	47,000	4,400
0,600	3,000	47,000	4,800
0,650	3,000	47,000	5,200
0,700	3,000	47,000	5,600
0,750	3,000	47,000	6,000
0,800	3,000	47,000	6,400
0,850	3,000	47,000	6,800
0,900	3,000	47,000	7,200
0,950	3,000	47,000	7,600
1,000	3,000	47,000	8,000
1,050	3,000	47,000	8,400
1,100	3,000	47,000	8,800
1,150	3,000	47,000	9,200
1,200	3,000	52,000	10,800
1,250	3,000	52,000	11,300
1,300	3,000	52,000	11,700
1,350	3,000	52,000	12,200
1,400	3,000	52,000	12,600
1,450	3,000	52,000	13,100
1,500	3,000	52,000	13,500
1,550	3,000	52,000	14,000
1,590	3,000	52,000	14,400
1,600	3,000	52,000	14,400
1,650	3,000	52,000	14,900
1,700	3,000	52,000	15,300
1,750	3,000	52,000	15,800
1,800	3,000	52,000	16,200
1,850	3,000	52,000	16,700
1,900	3,000	52,000	17,100

d1	d2 h6	l1	l2
mm	mm	mm	mm
1,950	3,000	52,000	17,600
1,980	4,000	63,000	18,000
2,000	4,000	63,000	18,000
2,050	4,000	63,000	18,500
2,100	4,000	63,000	18,900
2,150	4,000	63,000	19,400
2,200	4,000	63,000	19,800
2,250	4,000	63,000	20,300
2,300	4,000	63,000	20,700
2,350	4,000	63,000	21,200
2,380	4,000	63,000	21,600
2,400	4,000	63,000	21,600
2,450	4,000	63,000	22,100
2,500	4,000	63,000	22,500
2,550	4,000	63,000	23,000
2,600	4,000	67,000	23,400
2,650	4,000	67,000	23,900
2,700	4,000	67,000	24,300
2,750	4,000	67,000	24,800
2,780	4,000	67,000	25,200
2,800	4,000	67,000	25,200
2,850	4,000	67,000	25,700
2,900	4,000	67,000	26,100
2,950	4,000	67,000	26,600
3,000	4,000	67,000	27,000



Microforets ExclusiveLine avec canaux de lubrification



Matière de coupe **CW monobloc**

Surface **A**

Sens de coupe **R**



**P** • Amin. de l'âme  $\geq \varnothing 1,400$  • affûtage en pente • arête de coupe principale rectiligne • affilage de l'arête de coupe automatisé

**M** •

**K** •

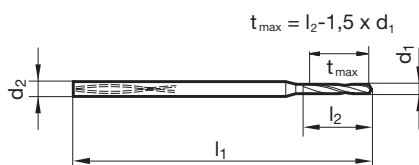
**N** ○ aciers de construction et de cémentation • aciers de décolletage, aciers d'amélioration • aciers alliés jusqu'à 1200 N/mm<sup>2</sup> • aciers inoxydables

**S** ○ fontes

**H**

**GUHRING NAVIGATOR**

Paramètres de coupe, page 796



Forets hélicoïdaux à queue cylindrique

N° d'article **6405**

d1	d2 h6	l1	l2
mm	mm	mm	mm
1,400	4,000	52,000	11,000
1,450	4,000	52,000	12,000
1,500	4,000	52,000	12,000
1,550	4,000	52,000	12,000
1,590	4,000	52,000	13,000
1,600	4,000	52,000	13,000
1,650	4,000	52,000	13,000
1,700	4,000	56,000	14,000
1,750	4,000	56,000	14,000
1,800	4,000	56,000	14,000
1,850	4,000	56,000	15,000
1,900	4,000	56,000	15,000
1,950	4,000	56,000	16,000
1,980	4,000	56,000	16,000
2,000	4,000	56,000	16,000
2,050	4,000	56,000	16,000
2,100	4,000	62,000	17,000
2,150	4,000	62,000	17,000
2,200	4,000	62,000	18,000
2,250	4,000	62,000	18,000
2,300	4,000	62,000	18,000
2,350	4,000	62,000	19,000
2,380	4,000	62,000	19,000
2,400	4,000	62,000	19,000

d1	d2 h6	l1	l2
mm	mm	mm	mm
2,450	4,000	62,000	20,000
2,500	4,000	62,000	20,000
2,550	4,000	62,000	20,000
2,600	4,000	66,000	21,000
2,650	4,000	66,000	21,000
2,700	4,000	66,000	22,000
2,750	4,000	66,000	22,000
2,780	4,000	66,000	22,000
2,800	4,000	66,000	22,000
2,850	4,000	66,000	23,000
2,900	4,000	66,000	23,000
2,950	4,000	66,000	24,000
3,000	4,000	66,000	24,000



Microforets ExclusiveLine avec canaux de lubrification



Matière de coupe **CW monobloc**

Surface **A**

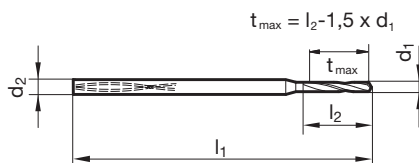
Sens de coupe **R**

- P** • Amin. de l'âme ≥ Ø 1,400 • affûtage en pente • arête de coupe principale rectiligne • affilage de l'arête de coupe automatisé
- M** •
- K** •
- N** ○ aciers de construction et de cémentation • aciers de décolletage, aciers d'amélioration • aciers alliés jusqu'à 1200 N/mm<sup>2</sup> • aciers inoxydables
- S** ○ fontes
- H**

Forets hélicoïdaux à queue cylindrique

**GÜHRING** NAVIGATOR

Paramètres de coupe, page 796



N° d'article **6408**

d1	d2 h6	l1	l2
mm	mm	mm	mm
1,400	4,000	52,000	15,000
1,450	4,000	52,000	16,000
1,500	4,000	52,000	17,000
1,550	4,000	52,000	17,000
1,590	4,000	52,000	18,000
1,600	4,000	52,000	18,000
1,650	4,000	52,000	18,000
1,700	4,000	56,000	19,000
1,750	4,000	56,000	19,000
1,800	4,000	56,000	20,000
1,850	4,000	56,000	20,000
1,900	4,000	56,000	21,000
1,950	4,000	56,000	21,000
1,980	4,000	56,000	22,000
2,000	4,000	56,000	22,000
2,050	4,000	56,000	23,000
2,100	4,000	62,000	23,000
2,150	4,000	62,000	24,000
2,200	4,000	62,000	24,000
2,250	4,000	62,000	25,000
2,300	4,000	62,000	25,000
2,320	4,000	62,000	26,000
2,350	4,000	62,000	26,000
2,380	4,000	62,000	26,000

d1	d2 h6	l1	l2
mm	mm	mm	mm
2,400	4,000	62,000	26,000
2,450	4,000	62,000	27,000
2,500	4,000	62,000	28,000
2,550	4,000	62,000	28,000
2,600	4,000	66,000	29,000
2,650	4,000	66,000	29,000
2,700	4,000	66,000	30,000
2,750	4,000	66,000	30,000
2,780	4,000	66,000	31,000
2,800	4,000	66,000	31,000
2,850	4,000	66,000	31,000
2,900	4,000	66,000	32,000
2,950	4,000	66,000	32,000
3,000	4,000	66,000	33,000



Microforets ExclusiveLine avec canaux de lubrification



Matière de coupe **CW monobloc**

Surface **A**

Sens de coupe **R**

**P** • Amin. de l'âme  $\geq \varnothing 1,400$  • affûtage en pente • arête de coupe principale rectiligne • affilage de l'arête de coupe automatisé

**M** •

**K** •

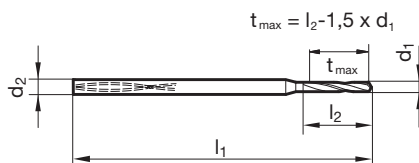
**N** ○ aciers de construction et de cémentation • aciers de décolletage, aciers d'amélioration • aciers alliés jusqu'à 1200 N/mm<sup>2</sup> • aciers inoxydables

**S** ○ fontes

**H**

**GÜHRING** NAVIGATOR

Paramètres de coupe, page 796



Forets hélicoïdaux à queue cylindrique

N° d'article **6412**

d1	d2 h6	l1	l2
mm	mm	mm	mm
1,400	4,000	62,000	25,000
1,500	4,000	62,000	27,000
1,590	4,000	62,000	29,000
1,600	4,000	62,000	29,000
1,700	4,000	70,000	31,000
1,800	4,000	70,000	32,000
1,900	4,000	70,000	34,000
1,980	4,000	70,000	36,000
2,000	4,000	70,000	36,000
2,100	4,000	78,000	38,000
2,200	4,000	78,000	40,000
2,300	4,000	78,000	42,000

d1	d2 h6	l1	l2
mm	mm	mm	mm
2,380	4,000	78,000	44,000
2,400	4,000	78,000	44,000
2,500	4,000	78,000	45,000
2,600	4,000	87,000	47,000
2,700	4,000	87,000	48,000
2,780	4,000	87,000	50,000
2,800	4,000	87,000	50,000
2,900	4,000	87,000	52,000
3,000	4,000	87,000	54,000



Forets hél. courts, queue cyl. Ø 12,7 mm



Matière de coupe **HSS**

Surface

Sens de coupe

**P** • Amin. de l'âme  $\geq \text{Ø } 14,290$  • affûtage à dépouille conique • avec queue décollée

**M**

**K** •

**N** ○ acier, fonte aciérée (alliée / non alliée) • fontes grises, fontes malléables, fontes à graphite sphéroïdal • fer fritté, maillechort, graphite

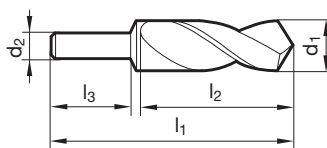
**S**

**H**

**GÜHRING** NAVIGATOR

Paramètres de coupe, page 778

Forets hélicoïdaux à queue cylindrique



N° d'article **268**

d1	d2	l1	l2	l3
mm	mm	mm	mm	mm
13,000	12,700	156,000	82,000	57,000
13,490	12,700	156,000	82,000	57,000
13,500	12,700	156,000	82,000	57,000
14,000	12,700	156,000	82,000	57,000
14,290	12,700	157,000	83,000	57,000
14,500	12,700	157,000	83,000	57,000
15,000	12,700	157,000	83,000	57,000
15,500	12,700	157,000	83,000	57,000
15,870	12,700	157,000	83,000	57,000
16,000	12,700	157,000	83,000	57,000
16,500	12,700	158,000	84,000	57,000
16,670	12,700	158,000	84,000	57,000
17,000	12,700	158,000	84,000	57,000
17,460	12,700	158,000	84,000	57,000
17,500	12,700	158,000	84,000	57,000
18,000	12,700	158,000	84,000	57,000
19,000	12,700	158,000	84,000	57,000
19,050	12,700	159,000	85,000	57,000

d1	d2	l1	l2	l3
mm	mm	mm	mm	mm
19,840	12,700	159,000	85,000	57,000
20,000	12,700	159,000	85,000	57,000
21,000	12,700	159,000	85,000	57,000
21,430	12,700	159,000	85,000	57,000
22,000	12,700	159,000	85,000	57,000
22,220	12,700	159,000	85,000	57,000
23,000	12,700	159,000	85,000	57,000
23,020	12,700	159,000	85,000	57,000
23,810	12,700	160,000	86,000	57,000
24,000	12,700	160,000	86,000	57,000
25,000	12,700	160,000	86,000	57,000
25,400	12,700	160,000	86,000	57,000
28,570	12,700	160,000	86,000	57,000



Forets hél. courts, queue cyl. Ø 16,0 mm



Matière de coupe **HSCO**

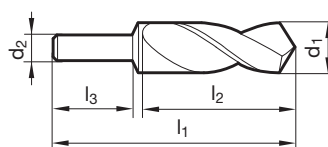
Surface ○

Sens de coupe

- P** ● sans affûtage au sommet • acier rapide au Co • meilleure résistance à l'usure • avec queue décolletée • produit semi-fini pourvu de centre
- M** ● aux 2 extrémités • pour la transformation, par exemple, rectification du diamètre, affûtage de l'étagé, affûtage de forme spéciale
- K** ○
- N** ○ mat. difficiles à usiner • aciers inoxydables, inaltérables aux acides
- S** ○ • aciers à ressorts • aciers austénitiques
- H** ○

**GÜHRING** NAVIGATOR

Paramètres de coupe, page 772



Forets hélicoïdaux à queue cylindrique

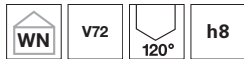
N° d'article **128**

d1	d2	l1	l2	l3
mm	mm	mm	mm	mm
16,000	16,000	130,000	88,000	42,000
16,500	16,000	130,000	88,000	40,000
17,000	16,000	130,000	88,000	40,000
17,500	16,000	130,000	88,000	40,000
18,000	16,000	130,000	88,000	40,000
19,000	16,000	130,000	88,000	40,000
20,000	16,000	130,000	88,000	40,000
20,500	16,000	130,000	88,000	40,000
21,000	16,000	130,000	88,000	40,000
21,500	16,000	130,000	88,000	40,000
22,000	16,000	130,000	88,000	40,000
22,500	16,000	130,000	88,000	40,000
23,000	16,000	130,000	88,000	40,000
23,500	16,000	130,000	88,000	40,000
24,000	16,000	130,000	88,000	40,000
24,500	16,000	130,000	88,000	40,000
25,000	16,000	130,000	88,000	40,000
25,500	16,000	140,000	98,000	40,000

d1	d2	l1	l2	l3
mm	mm	mm	mm	mm
26,000	16,000	140,000	98,000	40,000
27,000	16,000	140,000	98,000	40,000
28,000	16,000	140,000	98,000	40,000
28,500	16,000	140,000	98,000	40,000
30,000	16,000	140,000	98,000	40,000
31,000	16,000	140,000	98,000	40,000
32,000	16,000	140,000	98,000	40,000
35,000	16,000	140,000	98,000	40,000
38,000	16,000	140,000	98,000	40,000
40,000	16,000	140,000	98,000	40,000



Forets hél. courts, queue cyl. Ø 25,4 mm



Matière de coupe **HSCO**

Surface ○

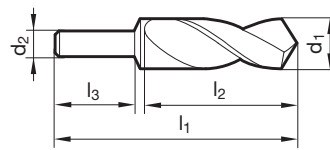
Sens de coupe

- P** ● sans affûtage au sommet • acier rapide au Co • meilleure résistance à l'usure • avec queue décollée • produit semi-fini pourvu de centre aux 2 extrémités • pour la transformation, par exemple, rectification du diamètre, affûtage de l'étagé, affûtage de forme spéciale
- M** ●
- K** ○
- N** ○ aciers inoxydables, inaltérables aux acides • mat. difficiles à usiner
- S** ○ • aciers à ressorts • aciers austénitiques
- H** ○

Forets hélicoïdaux à queue cylindrique

**GÜHRING** NAVIGATOR

Paramètres de coupe, page 772



N° d'article **129**

d1	d2	l1	l2	l3
mm	mm	mm	mm	mm
25,000	25,400	140,000	93,000	45,000
26,000	25,400	140,000	93,000	45,000
28,000	25,400	140,000	93,000	45,000
29,500	25,400	140,000	93,000	45,000
30,000	25,400	140,000	93,000	45,000
32,000	25,400	140,000	93,000	45,000
33,000	25,400	140,000	93,000	45,000
34,000	25,400	140,000	93,000	45,000
35,000	25,400	140,000	93,000	45,000
36,000	25,400	140,000	93,000	45,000
37,000	25,400	140,000	93,000	45,000
38,000	25,400	140,000	93,000	45,000

d1	d2	l1	l2	l3
mm	mm	mm	mm	mm
40,000	25,400	140,000	93,000	45,000





Forets hél. courts, queue cyl. Ø 25,4 mm



Matière de coupe **HSCO**

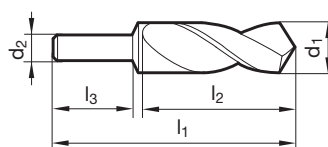
Surface ○

Sens de coupe Ⓛ

- P** ● sans affûtage au sommet • acier rapide au Co • résistance à l'usure, améliorée • avec queue décollée • produit semi-fini pourvu de centre aux 2 extrémités • pour la transformation, par exemple, rectification du diamètre, affûtage de l'étagé, affûtage de forme spéciale
- M** ●
- K** ○
- N** ○ mat. difficiles à usiner • aciers inoxydables, inaltérables aux acides (VA aciers) • aciers à ressorts • aciers austénitiques
- S** ○
- H** ○

**GÜHRING** NAVIGATOR

Paramètres de coupe, page 772



N° d'article **136**

d1	d2	l1	l2	l3
mm	mm	mm	mm	mm
25,000	25,400	140,000	93,000	45,000
25,500	25,400	140,000	93,000	45,000
26,000	25,400	140,000	93,000	45,000
26,500	25,400	140,000	93,000	45,000
27,500	25,400	140,000	93,000	45,000
29,500	25,400	140,000	93,000	45,000

d1	d2	l1	l2	l3
mm	mm	mm	mm	mm
36,000	25,400	140,000	93,000	45,000
38,000	25,400	140,000	93,000	45,000
39,000	25,400	140,000	93,000	45,000

Forets hélicoïdaux à queue cylindrique



## Forets de chaudronnerie



Matière de coupe **HSS**

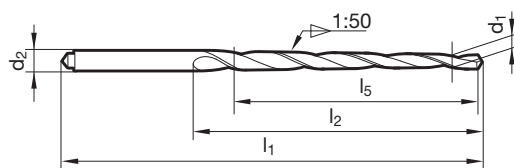
Surface  $\text{Ra} > 2,36$

Sens de coupe

**P** • Amin. de l'âme  $\geq \text{Ø } 1,000$  • affûtage à dépouille conique • pour trous coniques • avec tenon d'entraînement

- M** ○
- K** •
- N** ○
- S** ○
- H** ○

Forets hélicoïdaux à queue cylindrique



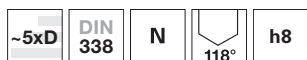
N° d'article **531**

d1	d2	l1	l2	l5
mm	mm	mm	mm	mm
2,000	3,150	86,000	52,000	48,000
2,500	3,150	86,000	52,000	48,000
3,000	4,000	100,000	63,000	58,000
3,500	5,000	112,000	74,000	68,000
4,000	5,000	112,000	74,000	68,000
4,500	6,300	122,000	81,000	73,000

d1	d2	l1	l2	l5
mm	mm	mm	mm	mm
5,000	6,300	122,000	81,000	73,000
5,500	8,000	160,000	114,000	105,000
6,000	8,000	160,000	114,000	105,000
8,000	10,000	207,000	157,000	145,000
10,000	12,500	245,000	190,000	175,000
12,000	16,000	290,000	228,000	210,000



## Jeux de forets hélicoïdaux

Matière de coupe **HSS**Surface  $>0,2,36$ Sens de coupe **R**

**P** • affûtage à dépouille conique • Jeux de forets en coffrets ou sur socle bakélite, pourvus de diamètres usuels, livrables pour les monteuses et artisans. Sur demande, il est possible de réaliser des jeux de forets avec d'autres diamètres.

**M****K** •**N** ○**S****H**

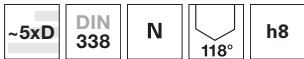
Forets hélicoïdaux à queue cylindrique

N° d'article **201**

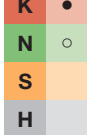
d1	ascendant par	Pièce/jeu	N° de code
mm	mm		
1,0-5,0	0,1	41	0,011
5,1-10,0	0,1	50	0,012
1,0-10,0	0,5	19	0,013
1,0-13,0	0,5	25	0,014
1,0-5,9	0,1	50	0,015
6,0-10,0	0,1	41	0,016
1,0-10,5	0,5	24	0,018
1,0-10,5	0,5	32	0,019
1/16 - 1/2	1/64	29	0,021
1,02-5,79	1/64	60	0,026



## Jeux de forets hélicoïdaux, en vrac



**P** • affûtage à dépouille conique • Jeux de forets en coffrets ou sur socle bakélite, pourvus de diamètres usuels, livrables pour les monteurs et artisans. Sur demande, il est possible de réaliser des jeux de forets avec d'autres diamètres.



Matière de coupe **HSS**

Surface

Sens de coupe



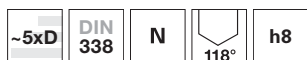
N° d'article **200**

d1	ascendant par	Pièce/jeu	N° de code
mm	mm		
1,0-5,0	0,1	41	0,011
5,1-10,0	0,1	50	0,012
1,0-10,0	0,5	19	0,013
1,0-13,0	0,5	25	0,014
1,0-5,9	0,1	50	0,015
6,0-10,0	0,1	41	0,016
1,0-10,5	0,5	24	0,018

Forets hélicoïdaux à queue cylindrique



## Jeux de forets hélicoïdaux

Matière de coupe **HSS**Surface **S**Sens de coupe **R**

**P** • affûtage à dépouille conique • Jeux de forets en coffrets ou sur socle bakélite, pourvus de diamètres usuels, livrables pour les monteuses et artisans. Sur demande, il est possible de réaliser des jeux de forets avec d'autres diamètres.

**M****K** •**N** ○**S****H**

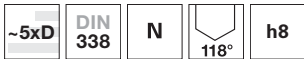
Forets hélicoïdaux à queue cylindrique

N° d'article **17**

d1	ascendant par	Pièce/jeu	N° de code
mm	mm		
1,0-10,0	0,5	19	6,013
1,0-13,0	0,5	25	6,014
1,0-5,9	0,1	50	6,015
6,0-10,0	0,1	41	6,016
1/16 - 1/2	1/64	29	6,021



## Jeux de forets hélicoïdaux



**P** ● affûtage à dépouille conique • Jeux de forets en coffrets ou sur socle bakélite, pourvus de diamètres usuels, livrables pour les monteuses et artisans. Sur demande, il est possible de réaliser des jeux de forets avec d'autres diamètres.

- M** ○
- K** ●
- N** ○
- S** ○
- H** ○

Matière de coupe **HSCO**

Surface ○

Sens de coupe



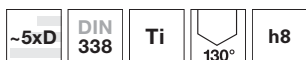
N° d'article **16**

d1	ascendant par	Pièce/jeu	N° de code
mm	mm		
1,0-10,0	0,5	19	3,013
1,0-13,0	0,5	25	3,014
1,0-5,9	0,1	50	3,015
6,0-10,0	0,1	41	3,016
1/16 - 1/2	1/64	29	3,021

Forets hélicoïdaux à queue cylindrique



**Jeux de forets hélicoïdaux**



Matière de coupe **HSCO**

Surface ○

Sens de coupe **(R)**

**P** ○ affûtage à dépouille conique • Jeux de forets en coffrets ou sur socle bakélite, pourvus de diamètres usuels, livrables pour les monteuses et artisans. Sur demande, il est possible de réaliser des jeux de forets avec d'autres diamètres.

- M** •
- K** •
- N** •
- S** •
- H** •



Forets hélicoïdaux à queue cylindrique

N° d'article **18**

d1 mm	ascendant par mm	Pièce/jeu	N° de code
1,0-10,0	0,5	19	8,013
1,0-13,0	0,5	25	8,014
1,0-5,9	0,1	50	8,015
6,0-10,0	0,1	41	8,016
1,0-10,5	0,5	24	8,018



Jeux de forets hélicoïdaux



- P** ○ affûtage à dépouille conique • Jeux de forets en coffrets ou sur socle bakélite, pourvus de diamètres usuels, livrables pour les monteuses et artisans. Sur demande, il est possible de réaliser des jeux de forets avec d'autres diamètres.
- M** ●
- K** ○
- N** ○
- S** ○
- H** ○

Forets hélicoïdaux à queue cylindrique

Matière de coupe	<b>HSCO</b>
Surface	○
Sens de coupe	Ⓜ



N° d'article **195**

d1	ascendant par	Pièce/jeu	N° de code
mm	mm		
1,0-13,0	0,5	25	8,014
1,0-10,5	0,5	24	8,018





**Jeux de forets hélicoïdaux**



Matière de coupe **HSCO**

Surface

Sens de coupe

**P** ● affûtage à dépouille conique • Jeux de forets en coffrets ou sur socle bakélite, pourvus de diamètres usuels, livrables pour les monteuses et artisans. Sur demande, il est possible de réaliser des jeux de forets avec d'autres diamètres.

- M** ○
- K** ○
- N** ○
- S** ○
- H** ○



Forets hélicoïdaux à queue cylindrique

N° d'article **2049**

d1	ascendant par	Pièce/jeu	N° de code
mm	mm		
1,0-13,0	0,5	25	0,014
1,0-10,0	0,5	19	0,013
1,0-10,5	0,5	24	0,018
1,0-5,0	0,1	41	0,011
5,1-10,0	0,1	50	0,012



## Jeux de forets hélicoïdaux



**P** ● affûtage à dépouille conique • Jeux de forets en coffrets ou sur socle bakélite, pourvus de diamètres usuels, livrables pour les monteuses et artisans. Sur demande, il est possible de réaliser des jeux de forets avec d'autres diamètres.

- M** ○
- K** ○
- N** ○
- S** ○
- H** ○

Matière de coupe **HSCO**

Surface **M**

Sens de coupe **R**



N° d'article **2050**

d1	ascendant par	Pièce/jeu	N° de code
mm	mm		
1,0-10,0	0,5	19	0,013
5,1-10,0	0,1	50	0,012

Forets hélicoïdaux à queue cylindrique



**Jeux de forets hélicoïdaux AeroX**



- P** • affûtage en croix, optimisé • acier rapide allié, HSCO, avec un taux de cobalt de 8% • Jeux de forets en coffrets ou sur socle bakélite,
- M** • pourvus de diamètres usuels, livrables pour les monteurs et artisans. Sur demande, il est possible de réaliser des jeux de forets avec d'autres diamètres.
- K** •
- N** • aciers non alliés et aciers hautement alliés • fontes • métaux non ferreux
- S** • Titane et ses alliages
- H** ○

Matière de coupe **M42**

Surface

Sens de coupe



Forets hélicoïdaux à queue cylindrique

N° d'article **1083**

d1	ascendant par	Pièce/jeu	N° de code
mm	mm		
1,0-13,0	0,5	25	0,014
1,0-10,0	0,5	19	0,013



Jeux de forets hélicoïdaux



Coffret vide

Forets hélicoïdaux à queue cylindrique



N° d'article 36

d1 mm	ascendant par mm	Pièce/jeu	N° de code
1,0-13,0			0,214
1,0-10,0			0,213
1,0-5,9			0,215
6,0-10,0			0,216
1,0-10,5			0,218



## Jeux de forets hélicoïdaux



Coffret vide

Forets hélicoïdaux  
à queue cylindrique

N° d'article

73

d1 mm	ascendant par mm	Pièce/jeu	N° de code
1,0-13,0			0,614



Jeux de forets hélicoïdaux



support en bakélite

Forets hélicoïdaux à queue cylindrique



N° d'article 11

d1 mm	ascendant par mm	Pièce/jeu	N° de code
1,0-13,0			0,114
5,1-10,0			0,112
1,0-5,0			0,111
1,0-5,9			0,115
1,0-10,0			0,113
1/16 - 1/2			0,121
1/16 - 1/2			0,122



Forets spéciaux avec arêtes de coupe CW



Matière de coupe **CW**

Surface ○

Sens de coupe

**P** ○ Amin. de l'âme  $\geq \varnothing 1,700$  • affûtage en pente • à plaquette(s) cw rapportée(s)

**M**

**K** ○

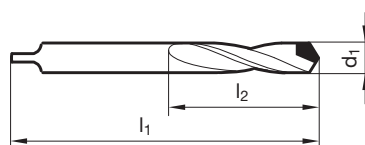
**N** bande d'acier à ressorts • fontes dures > 300 HB • molybdène pur • bronzes tenaces et durs

**S**

**H** ○

**GÜHRING** NAVIGATOR

Paramètres de coupe, page 776



N° d'article **703**

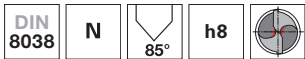
d1	l1	l2
mm	mm	mm
1,700	45,000	18,000
2,600	50,000	20,000
2,700	50,000	20,000
2,900	50,000	20,000
3,000	50,000	20,000
3,100	56,000	25,000
3,200	56,000	25,000
3,250	56,000	25,000
3,300	56,000	25,000
3,500	56,000	25,000
3,700	56,000	25,000
3,800	56,000	25,000
3,900	56,000	25,000
4,000	56,000	25,000
4,100	63,000	28,000
4,200	63,000	28,000
4,300	63,000	28,000
4,500	63,000	28,000
4,800	63,000	28,000
4,900	63,000	28,000
5,000	63,000	28,000
5,100	71,000	32,000
5,200	71,000	32,000
5,300	71,000	32,000
5,400	71,000	32,000
5,500	71,000	32,000
5,800	71,000	32,000
6,000	71,000	32,000
6,200	71,000	32,000
6,300	71,000	32,000
6,350	71,000	32,000
6,400	71,000	32,000
6,500	71,000	32,000
6,700	80,000	40,000
6,800	80,000	40,000
7,000	80,000	40,000

d1	l1	l2
mm	mm	mm
7,200	80,000	40,000
7,500	80,000	40,000
7,800	80,000	40,000
8,000	80,000	40,000
8,200	90,000	50,000
8,400	90,000	50,000
8,500	90,000	50,000
9,000	90,000	50,000
9,500	90,000	50,000
9,800	100,000	56,000
10,000	100,000	56,000
10,200	100,000	56,000
10,400	100,000	56,000
10,500	100,000	56,000
11,000	100,000	56,000
11,500	112,000	63,000
12,000	112,000	63,000
12,500	112,000	63,000
12,700	112,000	63,000
13,000	112,000	63,000
13,500	125,000	71,000
14,000	125,000	71,000
14,500	125,000	71,000
15,000	125,000	71,000
15,500	140,000	80,000
16,000	140,000	80,000
16,500	140,000	80,000
17,000	140,000	80,000
17,500	160,000	90,000
18,000	160,000	90,000
19,000	160,000	90,000
19,500	160,000	90,000
20,000	160,000	90,000
21,000	160,000	90,000
22,000	160,000	90,000
24,000	170,000	100,000

Forets hélicoïdaux à queue cylindrique



Forets spéciaux avec arêtes de coupe CW



Matière de coupe **CW**

Surface

Sens de coupe

**P** Amin. de l'âme  $\geq \varnothing 1,500$  • affûtage en pente • à plaquette(s) cw rapportée(s)

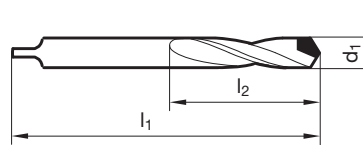
- M**
- K**
- N**
- S**
- H**

matières synthétiques renforcées de fibres de verre • thermodurcissables abrasifs avec effet abrasif sur arêtes de coupe et listels

Forets hélicoïdaux à queue cylindrique

**GÜHRING** NAVIGATOR

Paramètres de coupe, page 776



N° d'article **704**

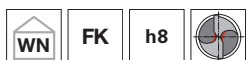
d1	l1	l2
mm	mm	mm
1,900	45,000	18,000
2,200	45,000	18,000
3,100	56,000	25,000
3,200	56,000	25,000
3,500	56,000	25,000
4,200	63,000	28,000

d1	l1	l2
mm	mm	mm
5,000	63,000	28,000
6,000	71,000	32,000
8,000	80,000	40,000
24,000	170,000	100,000





Forets hélicoïdaux FK



<b>P</b>	Amin. de l'âme $\geq \varnothing 2,380$ • affûtage spécial
<b>M</b>	
<b>K</b>	
<b>N</b>	matières synthétiques renforcées de fibres
<b>S</b>	
<b>H</b>	

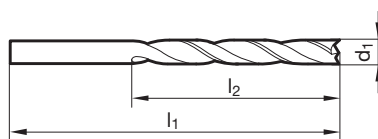
Matière de coupe **CW monobloc**

Surface

Sens de coupe

**GÜHRING** NAVIGATOR

Paramètres de coupe, page 776



Forets hélicoïdaux à queue cylindrique

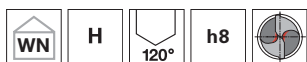
N° d'article **1149**

d1		l1	l2
mm	inch	mm	mm
2,500		43,000	14,000
3,200		49,000	18,000
3,570	9/64	52,000	20,000
4,000		55,000	22,000
4,760	3/16	62,000	26,000
5,000		62,000	26,000

d1		l1	l2
mm	inch	mm	mm
6,000		66,000	28,000
8,000		79,000	37,000
10,000		89,000	43,000



Forets à pointe rapportée



**P** ○ Amin. de l'âme  $\geq \varnothing 3,000$  • affûtage en pente • forets spéciaux  
• utilisation dans des conditions difficiles

**M**

**K** ○

**N** fontes dures • aciers durs

**S**

**H** ○

Matière de coupe **CW**

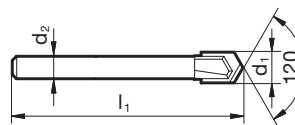
Surface ○

Sens de coupe **R**

Forets hélicoïdaux à queue cylindrique

**GÜHRING** NAVIGATOR

Paramètres de coupe, page 776



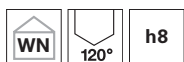
N° d'article **707**

d1	l1	l2
mm	mm	mm
3,000	50,000	
5,000	63,000	
5,500	70,000	
6,000	70,000	
8,000	80,000	
9,000	90,000	

d1	l1	l2
mm	mm	mm
12,000	112,000	



Forets béton



Matière de coupe **CW**

Surface ○

Sens de coupe

**P** affûtage en pente • à plaquette(s) cw rapportée(s) • pour les perceuses et perc. à percussion • perçage des carrelages sans percussion

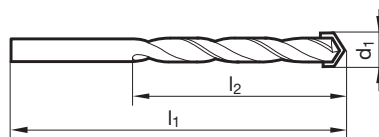
**M**

**K**

**N** béton, pierres et carrelages

**S**

**H**



Forets hélicoïdaux à queue cylindrique

N° d'article **716**

d1	l1	l2
mm	mm	mm
4,000	75,000	40,000
5,000	85,000	50,000
6,000	100,000	60,000
8,000	120,000	80,000
10,000	120,000	80,000
12,000	150,000	90,000

d1	l1	l2
mm	mm	mm



# FORETS HÉLICOÏDAUX À QUEUE CM

Forets hélicoïdaux  
à queue CM





P	M	K	N	S	H	Présentation	Profondeur	Norme	Type	Sens de coupe	Matière de coupe	Surface	d1/mm	N° d'article	Param. de coupe, page	Page
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### Forets hélicoïdaux courts

• • • • • ○		~3xD	WN	GV 120	(R)	HSCO	○	8,100 - 38,000	<b>363</b>	772	448
• • • • • ○		~3xD	WN	GV 120	(R)	HSCO	Ⓢ	10,500 - 31,000	<b>663</b>	774	449

### Forets hélicoïdaux

• • • ○		~5xD	DIN 345	N	(R)	HSS	○ <sup>+0</sup> / <sub>2,36</sub>	2,380 - 96,000	<b>245</b>	778	450
• • • ○		~5xD	DIN 345	N	(R)	HSS	○ <sup>+0</sup> / <sub>16,0</sub>	10,000 - 28,000	<b>592</b>	778	454
• • • ○		~5xD	DIN 345	N	(R)	HSS	Ⓢ	3,000 - 31,000	<b>654</b>	780	455
• • • ○		~5xD	DIN 345	N	(L)	HSS	○	6,000 - 60,000	<b>248</b>	778	457
• • • ○		~5xD	DIN 345	N	(R)	HSS	○	8,500 - 59,000	<b>229</b>	778	458
• • • ○		~5xD	DIN 345	H	(R)	HSS	○	6,700 - 25,250	<b>246</b>	778	459
• • • ○		~5xD	DIN 345	W	(R)	HSS	○	3,200 - 32,000	<b>247</b>	778	460
• • • •		~5xD	DIN 345	GT 100	(R)	HSS	○ <sup>+0</sup> / <sub>16,0</sub>	7,940 - 31,750	<b>558</b>	778	461
• • • •		~5xD	DIN 345	GT 100	(R)	HSS	Ⓢ	7,940 - 31,500	<b>606</b>	780	462
• ○ • ○		~5xD	DIN 345	N	(R)	HSCO	○	4,000 - 50,000	<b>345</b>	780	463
• ○ • ○		~5xD	DIN 345	N	(R)	HSCO	Ⓢ	8,000 - 30,000	<b>661</b>	782	465
• ○ • ○		~5xD	DIN 345	GT 100	(R)	HSCO	○ <sup>+0</sup> / <sub>16,0</sub>	10,000 - 39,000	<b>645</b>	780	466
• ○ • ○		~5xD	DIN 345	GT 100	(R)	HSCO	Ⓢ	10,000 - 23,810	<b>662</b>	782	467
• ○ • ○		~5xD	DIN 345	GT 100	(R)	HSCO	Ⓒ	10,000 - 30,160	<b>1222</b>	782	468
○ • • ○		~5xD	DIN 345	GT 100	(R)	HSCO	Ⓐ	10,400 - 30,160	<b>1224</b>	782	469
○ • • ○		~5xD	DIN 345	VA	(R)	HSCO	○	10,000 - 34,000	<b>1262</b>	780	470
• • • ○		~5xD	DIN 346	N	(R)	HSS	○	10,000 - 73,000	<b>251</b>	778	471
• ○ • •		~5xD	DIN 346	N	(R)	HSCO	○	12,000 - 31,500	<b>351</b>	780	472

### Forets pour perçage par canon

• • • ○		~10xD	DIN 341	N	(R)	HSS	○	2,900 - 50,000	<b>257</b>	786	473
• • • ○		~10xD	DIN 341	N	(R)	HSS	Ⓢ	5,500 - 22,000	<b>655</b>	786	475
• • • •		~10xD	DIN 341	GT 100	(R)	HSS	○ <sup>+0</sup> / <sub>16,0</sub>	5,500 - 32,000	<b>551</b>	786	476

Forets hélicoïdaux à queue CM



P	M	K	N	S	H	Présentation	Profondeur	Norme	Type	Sens de coupe	Matière de coupe	Surface	d1/mm	N° d'article	Param. de coupe, page	Page
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### Forets pour perçage par canon

•	•	•					~10xD	DIN 341	GT 100	R	HSS	Ⓢ	7,000 - 23,000	656	786	478
○		•					~10xD	DIN 341	GT 50	R	HSS	○	5,500 - 29,500	505	786	479
•	○	•	•	○			~10xD	DIN 341	N	R	HSCO	●	4,750 - 40,000	357	792	480
•	•	•	•		○		~10xD	DIN 341	GT 100	R	HSCO	● <sub>160</sub>	10,000 - 26,000	623	792	481
•		•	○				~10xD	WN	N	R	HSS	●	10,000 - 29,000	523	786	482

### Forets hélicoïdaux extra-longs, série 1

•	•	○					~15xD	DIN 1870	N	R	HSS	●	8,000 - 50,000	266	788	483
•	•	•					~15xD	DIN 1870	GT 100	R	HSS	● <sub>160</sub>	8,000 - 30,000	526	790	484
○		•					~15xD	DIN 1870	GT 50	R	HSS	○	8,500 - 33,000	525	788	485
•	•	•	•		○		~15xD	DIN 1870	GT 100	R	HSCO	● <sub>160</sub>	9,520 - 30,000	620	794	486

### Forets hélicoïdaux extra-longs, série 2

•	•	○					~20xD	DIN 1870	N	R	HSS	●	8,000 - 45,000	267	788	487
•	•	•					~20xD	DIN 1870	GT 100	R	HSS	● <sub>160</sub>	8,000 - 30,000	527	790	488
○		•					~20xD	DIN 1870	GT 50	R	HSS	○	8,500 - 31,000	542	788	489
•	•	•	•		○		~20xD	DIN 1870	GT 100	R	HSCO	● <sub>160</sub>	9,520 - 23,420	621	794	490

### Forets hélicoïdaux extra-longs

•	•	•					>20xD	WN	GT 100	R	HSS	●	6,000 - 7,500	563	790	491
•	•	•					>20xD	WN	GT 100	R	HSS	●	6,000 - 10,000	564	790	492
•	•	•					>20xD	WN	GT 100	R	HSS	● <sub>160</sub>	6,000 - 17,000	565	790	493
•	•	•					>20xD	WN	GT 100	R	HSS	● <sub>160</sub>	8,000 - 40,000	566	790	494
•	•	•					>20xD	WN	GT 100	R	HSS	● <sub>160</sub>	14,000 - 40,000	293	790	495
•	•	•					>20xD	WN	GT 100	R	HSS	○	14,000 - 18,000	298	790	496
•	•	•					>20xD	WN	GT 100	R	HSS	○	14,000 - 18,000	299	790	497

### Forets courts, à canaux de lubrification

•	○	•	•				~7xD	WN	N	R	HSS	●	9,920 - 23,020	269	788	498
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Forets hélicoïdaux à queue CM



P	M	K	N	S	H	Présentation	Profondeur	Norme	Type	Sens de coupe	Matière de coupe	Surface	d1/mm	N° d'article	Param. de coupe, page	Page
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Forets à canaux de lubrification, long. gouj. selon norme usine

•	○	•	•					WN	N	(R)	HSS	●	8,000 - 50,000	254	788	499
•	○	•	•					WN	N	(R)	HSS	●	8,000 - 42,000	255	788	500

Forets à canaux de lubrification, long. gouj. DIN 341

•	○	•	•				~10xD	WN	N	(R)	HSS	●	10,000 - 32,000	1101	788	501
•	○	•	•				~10xD	WN	N	(R)	HSS	●	10,000 - 40,000	270	788	502
•	○	•	•				~10xD	WN	N	(R)	HSS	●	10,000 - 44,450	271	788	503
•	○	•	•				~10xD	WN	N	(R)	HSS	●	10,000 - 44,450	272	788	504
•	•	•	•	○			~10xD	WN	GT 100	(R)	HSCO	●	11,000 - 34,920	370	794	505
•	•	•	•	○			~10xD	WN	GT 100	(R)	HSCO	●	11,000 - 34,920	371	794	506
•	•	•	•	○			~10xD	WN	GT 100	(R)	HSCO	●	12,500 - 34,000	372	794	507

Forets à canaux de lubrification, long. gouj. DIN 1870

•	•	•	•	○			~15xD	WN	GT 100	(R)	HSCO	●	11,000 - 34,000	374	794	508
•	•	•	•	○			~15xD	WN	GT 100	(R)	HSCO	●	11,000 - 34,000	375	794	509
•	•	•	•	○			~15xD	WN	GT 100	(R)	HSCO	●	11,000 - 29,000	376	794	510

Forets de chaudronnerie

•	○	•	○					DIN 1898	N	(R)	HSS	●	5,000 - 25,000	532		511
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Forets spéciaux avec arêtes de coupe CW

○	○	○	○					DIN 8041	N	(R)	HM	○	8,000 - 40,000	705	776	512
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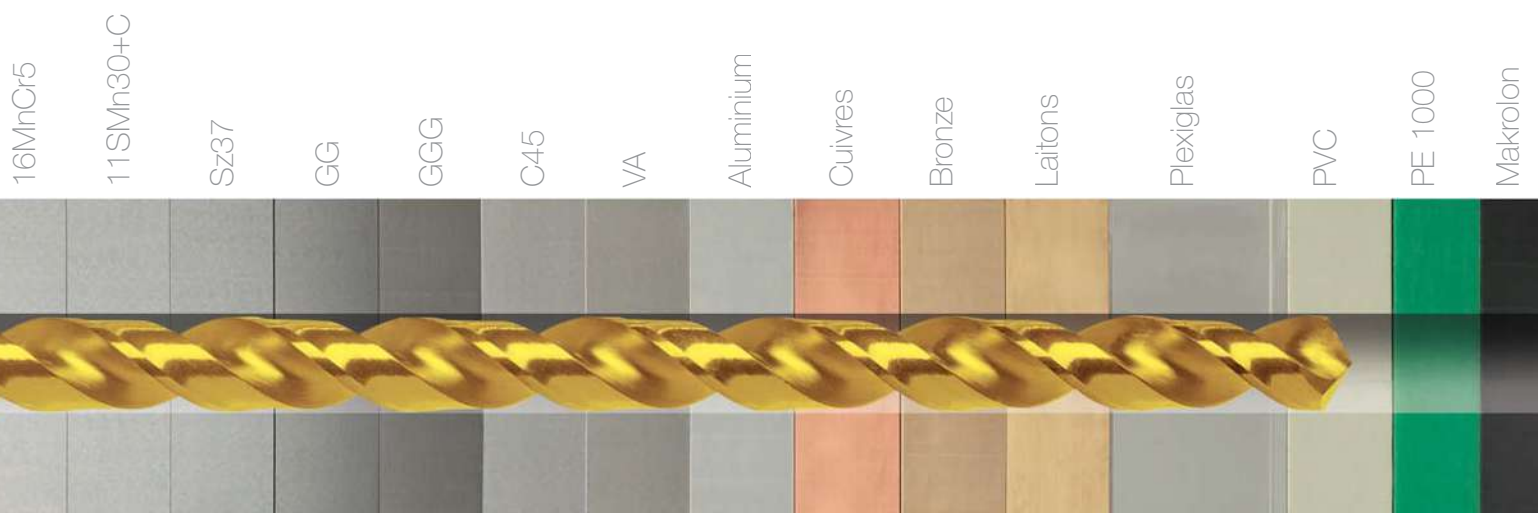
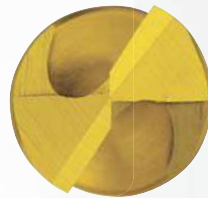
Forets hélicoïdaux à queue CM



# GU 500

## Le foret universel en HSCO

- Utilisation universelle pour presque tous les matériaux
- Affûtage à 4 pentes assurant l'autocentrage et la précision de perçage
- Grâce à l'affûtage de précision, efforts axiaux et efforts de couple amoindris
- Grâce au profil goujures, excellente évacuation des copeaux



GU 500 - Utilisation universelle pour presque tous les matériaux

Acier de construction et aciers au carbone · aciers hautement alliés jusqu'à 850 N/mm<sup>2</sup>  
aciers inoxydables · fontes et non - ferreux



ACIERS

~ 3xD  
Norme usine

~ 5xD  
DIN 345

~ 10xD  
DIN 341

~ 15xD  
DIN 1870  
R1

No 1

Ø 3,00 - 31,00 mm  
N° d'article 654  
à partir de p. 455



No 1

Ø 5,50 - 22,00 mm  
N° d'article 655  
à partir de p. 475



Ø 8,00 - 50,00 mm  
N° d'article 266  
à partir de p. 483



Ø 8,00 - 30,00 mm  
N° d'article 661  
à partir de p. 465



Ø 4,75 - 40,00 mm  
N° d'article 357  
à partir de p. 480



Ø 7,94 - 31,50 mm  
N° d'article 606  
à partir de p. 462



Ø 7,00 - 23,00 mm  
N° d'article 656  
à partir de p. 478



Ø 8,00 - 30,00 mm  
N° d'article 526  
à partir de p. 484



Ø 10,00 - 23,81 mm  
N° d'article 662  
à partir de p. 467



Ø 10,00 - 26,00 mm  
N° d'article 623  
à partir de p. 481



Ø 9,52 - 30,00 mm  
N° d'article 620  
à partir de p. 486



No 1

Ø 10,50 - 31,00 mm  
N° d'article 663  
à partir de p. 449



~ 10xD  
Longueurs des  
goujures selon  
DIN 341

~ 15xD  
Longueurs des  
goujures selon  
DIN 1870 R1

No 1

Ø 10,00 - 32,00 mm  
N° d'article 1101  
à partir de p. 501



No 1

Ø 11,00 - 34,92 mm  
N° d'article 370  
à partir de p. 505



Ø 11,00 - 34,00 mm  
N° d'article 374  
à partir de p. 508



Forets hélicoïdaux à queue CM

sans lubrification intérieure

avec lubrification intér.



# QUICKFINDER

~20xD  
DIN 1870  
R2

>20xD  
Norme usine  
extra long

No 1 outil idéal

Ø 8,00 - 45,00 mm  
N° d'article 267  
à partir de p. 487



Type N, HSS



Type N, HSCO

Ø 8,00 - 30,00 mm  
N° d'article 527  
à partir de p. 488



No 1

Ø 8,00 - 40,00 mm  
N° d'article 566  
à partir de p. 494



GT100, HSS

No 1

Ø 9,52 - 23,42 mm  
N° d'article 621 à  
partir de p. 490



GT100, HSCO



GV120, HSCO



Type N, HSS



GT100, HSCO

Forets hélicoïdaux à  
queue CM



ACIERS  
INOXYDABLES



TITANE &  
ALLIAGES SPÉCIAUX

~ 3xD  
Norme usine

~ 5xD  
DIN 345

~ 10xD  
DIN 341

~ 15xD  
DIN 1870  
R1

No 1 No 1

Ø 10,00 - 34,00 mm  
N° d'article 1262  
à partir de p. 470



No 1 No 1

Ø 10,00 - 26,00 mm  
N° d'article 623  
à partir de p. 481



No 1 No 1

Ø 9,52 - 30,00 mm  
N° d'article 620  
à partir de p. 486



No 1 No 1

Ø 10,50 - 31,00 mm  
N° d'article 663  
ab S.449



Ø 8,00 - 30,00 mm  
N° d'article 661  
à partir de p. 465



Ø 4,75 - 40,00 mm  
N° d'article 357  
à partir de p. 480



~ 10xD  
Longueurs des  
goujures selon  
DIN 341

~ 15xD  
Longueurs des  
goujures selon  
DIN 1870 R1

No 1 No 1

Ø 11,00 - 34,92 mm  
N° d'article 370  
à partir de p. 505



No 1 No 1

Ø 11,00 - 34,00 mm  
N° d'article 374  
à partir de p. 508



Forets hélicoïdaux à  
queue CM

sans lubrification intérieure

avec lubrification intér.



# QUICKFINDER

~20xD  
DIN 1870  
R2

>20xD  
Norme usine  
extra long

**No 1** Outil idéal pour acier inoxydable

**No 1** Outil idéal pour alliages spéciaux et alliages de titane



Type VA, HSCO

**No 1** **No 1**

Ø 9,52 - 23,42 mm  
N° d'article 621  
à partir de p. 490



GT100, HSCO



GV120, HSCO



Type N, HSCO



GT100, HSCO



FONTE

~ 3xD  
Norme usine

~ 5xD  
DIN 345

~ 10xD  
DIN 341

~ 15xD  
DIN 1870  
R1

No 1

Ø 3,00 - 31,00 mm  
N° d'article 654  
à partir de p. 455



No 1

Ø 5,50 - 22,00 mm  
N° d'article 655  
à partir de p. 475



Ø 8,00 - 50,00 mm  
N° d'article 266  
à partir de p. 483



Ø 8,00 - 30,00 mm  
N° d'article 661  
à partir de p. 465



Ø 4,75 - 40,00 mm  
N° d'article 357  
à partir de p. 480



Ø 7,94 - 31,50 mm  
N° d'article 606  
à partir de p. 462



Ø 7,00 - 23,00 mm  
N° d'article 656  
à partir de p. 478



Ø 8,00 - 30,00 mm  
N° d'article 526  
à partir de p. 484



Ø 10,00 - 23,81 mm  
N° d'article 662  
à partir de p. 467



Ø 10,00 - 26,00 mm  
N° d'article 623  
à partir de p. 481



Ø 9,52 - 30,00 mm  
N° d'article 620  
à partir de p. 486



No 1

Ø 10,50 - 31,00 mm  
N° d'article 663  
à partir de p. 449



~ 10xD  
Longueurs des  
goujures selon  
DIN 341

~ 15xD  
Longueurs des  
goujures selon  
DIN 1870 R1

No 1

Ø 10,00 - 32,00 mm  
N° d'article 1101  
à partir de p. 501



Ø 11,00 - 34,92 mm  
N° d'article 370  
à partir de p. 505



No 1

Ø 11,00 - 34,00 mm  
N° d'article 374  
à partir de p. 508



Forets hélicoïdaux à  
queue CM

sans lubrification intérieure

avec lubrification intér.



# QUICKFINDER

~20xD  
DIN 1870  
R2

>20xD  
Norme usine  
extra long

**No 1** outil idéal

Ø 8,00 - 45,00 mm  
N° d'article 267  
à partir de p. 487



Type N, HSS



Type N, HSCO

Ø 8,00 - 30,00 mm  
N° d'article 527  
à partir de p. 488



**No 1**

Ø 8,00 - 40,00 mm  
N° d'article 566  
à partir de p. 494



GT100, HSS

**No 1**

Ø 9,52 - 23,42 mm  
N° d'article 621  
à partir de p. 490



GT100, HSCO



GV120, HSCO



Type N, HSS



GT100, HSCO

Forets hélicoïdaux à queue CM



**N**

ALUMINIUM, N-F, MAT. SYNTHETIQUES

~ 3xD  
Norme usine

~ 5xD  
DIN 345

~ 10xD  
DIN 341

~ 15xD  
DIN 1870  
R1

**No 1**

Ø 3,20 - 32,00 mm  
N° d'article 247  
à partir de p. 460

Type W pour les matériaux  
doux, à copeaux longs

**No 1**

Ø 6,70 - 25,25 mm  
N° d'article 246  
à partir de p. 459

Type H pour les matériaux  
durs et cassants

**No 1**

Ø 5,50 - 29,50 mm  
N° d'article 505  
à partir de p. 479

**No 1**

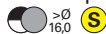
Ø 8,50 - 33,00 mm  
N° d'article 525  
à partir de p. 485

Type GT 50 pour les matériaux  
doux, à copeaux longs

Ø 7,94 - 31,75 mm  
N° d'article 558  
à partir de p. 461

Ø 5,50 - 32,00 mm  
N° d'article 551  
à partir de p. 476

Ø 8,00 - 30,00 mm  
N° d'article 526  
à partir de p. 484



Ø 10,00 - 39,00 mm  
N° d'article 645  
à partir de p. 466

Ø 10,00 - 26,00 mm  
N° d'article 623  
à partir de p. 481

Ø 9,52 - 30,00 mm  
N° d'article 620  
à partir de p. 486



~ 10xD  
Longueurs des  
goujures selon  
DIN 341

~ 15xD  
Longueurs des  
goujures selon  
DIN 1870 R1

**No 1**

Ø 10,00 - 32,00 mm  
N° d'article 1101  
à partir de p. 501

**No 1**

Ø 11,00 - 34,92 mm  
N° d'article 370  
à partir de p. 505

Ø 11,00 - 34,00 mm  
N° d'article 374  
à partir de p. 508

Forets hélicoïdaux à  
queue CM

sans lubrification intérieure

avec lubrification intér.





# QUICKFINDER

~20xD  
DIN 1870  
R2

>20xD  
Norme usine  
extra long

**No 1** outil idéal



Type W, HSS



Type H, HSS

**No 1**

Ø 8,50 - 31,00 mm  
N° d'article 542  
à partir de p. 489



GT50, HSS

**No 1**

Ø 8,00 - 30,00 mm  
N° d'article 527  
à partir de p. 488



Ø 8,00 - 40,00 mm  
N° d'article 566  
à partir de p. 494



GT100, HSS

Ø 9,52 - 23,42 mm  
N° d'article 621  
à partir de p. 490



GT100, HSCO



Type N, HSS



GT100, HSCO

Forets hélicoïdaux à queue CM



Forets hélicoïdaux courts



Matière de coupe **HSCO**

Surface

Sens de coupe

**P** • Amin. de l'âme  $\geq \varnothing 7,000$  • affûtage à dépouille conique • acier rapide au Co • meilleure résistance à l'usure

**M** •

**K** •

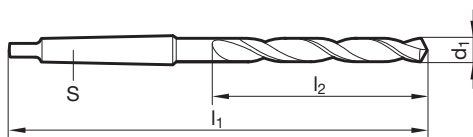
**N** ○ mat. difficiles à usiner • aciers inoxydables, inaltérables aux acides  
• aciers à ressorts, aciers austénitiques

**S** •

**H** ○

**GÜHRING** NAVIGATOR

Paramètres de coupe, page 772



N° d'article **363**

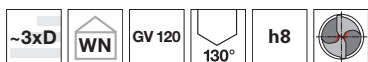
Forets hélicoïdaux à queue CM

d1		S	l1	l2
mm	inch		mm	mm
8,100		MK-1	130,000	49,000
8,200		MK-1	130,000	49,000
8,300		MK-1	130,000	49,000
8,500		MK-1	130,000	49,000
8,600		MK-1	134,000	53,000
8,730	11/32	MK-1	134,000	53,000
9,000		MK-1	134,000	53,000
9,520	3/8	MK-1	138,000	57,000
9,920	25/64	MK-1	138,000	57,000
10,000		MK-1	138,000	57,000
10,100		MK-1	138,000	57,000
10,200		MK-1	138,000	57,000
10,500		MK-1	138,000	57,000
11,000		MK-1	142,000	61,000
11,750		MK-1	142,000	61,000
12,000		MK-1	147,000	66,000
12,500		MK-1	147,000	66,000
12,700	1/2	MK-1	147,000	66,000
13,000		MK-1	147,000	66,000
13,490	17/32	MK-2	168,000	70,000
13,500		MK-2	168,000	70,000
14,000		MK-2	168,000	70,000
14,500		MK-2	172,000	74,000
15,000		MK-2	172,000	74,000
15,500		MK-2	176,000	78,000
16,000		MK-2	176,000	78,000
16,500		MK-2	179,000	81,000
17,000		MK-2	179,000	81,000
17,500		MK-2	183,000	85,000
18,000		MK-2	183,000	85,000

d1		S	l1	l2
mm	inch		mm	mm
18,500		MK-2	186,000	88,000
19,000		MK-2	186,000	88,000
19,450	49/64	MK-3	212,000	91,000
20,000		MK-3	212,000	91,000
20,500		MK-3	216,000	95,000
20,900		MK-3	216,000	95,000
21,000		MK-3	216,000	95,000
21,500		MK-3	219,000	98,000
22,000		MK-3	219,000	98,000
22,220	7/8	MK-3	219,000	98,000
23,000		MK-3	222,000	101,000
23,020	29/32	MK-3	222,000	101,000
24,000		MK-3	225,000	104,000
24,500		MK-3	225,000	104,000
25,000	63/64	MK-3	225,000	104,000
26,000		MK-4	256,000	107,000
26,500		MK-4	256,000	107,000
27,000		MK-4	259,000	110,000
27,500		MK-4	259,000	110,000
28,000		MK-4	259,000	110,000
29,000		MK-4	263,000	114,000
29,370	1 5/32	MK-4	263,000	114,000
30,000		MK-4	263,000	114,000
32,000		MK-4	269,000	120,000
33,000		MK-4	269,000	120,000
37,000		MK-4	276,000	127,000
38,000		MK-5	317,000	130,000



Forets hélicoïdaux courts



Matière de coupe **HSCO**

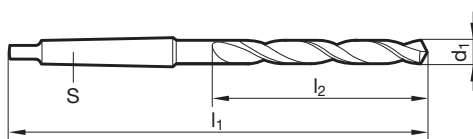
Surface **S**

Sens de coupe **R**

- P** • Amin. de l'âme  $\geq \varnothing 9,000$  • affûtage à dépouille conique • acier rapide au Co • résistance à l'usure, améliorée
- M** •
- K** •
- N** ○ mat. difficiles à usiner • aciers inoxydables, inaltérables aux acides (VA aciers) • aciers à ressorts, aciers austénitiques
- S** •
- H** ○

**GÜHRING** NAVIGATOR

Paramètres de coupe, page 774



N° d'article **663**

Forets hélicoïdaux à queue CM

d1		S	l1	l2
mm	inch		mm	mm
10,500		MK-1	138,000	57,000
10,750		MK-1	142,000	61,000
11,500		MK-1	142,000	61,000
12,500		MK-1	147,000	66,000
13,500		MK-2	168,000	70,000
14,000		MK-2	168,000	70,000
14,250		MK-2	172,000	74,000
15,000		MK-2	172,000	74,000
16,000		MK-2	176,000	78,000
16,500		MK-2	179,000	81,000
17,000		MK-2	179,000	81,000
17,500		MK-2	183,000	85,000

d1		S	l1	l2
mm	inch		mm	mm
18,000		MK-2	183,000	85,000
19,000		MK-2	186,000	88,000
20,000		MK-3	212,000	91,000
21,000		MK-3	216,000	95,000
22,000		MK-3	219,000	98,000
23,000		MK-3	222,000	101,000
25,000	63/64	MK-3	225,000	104,000
27,000		MK-4	259,000	110,000
29,000		MK-4	263,000	114,000
30,000		MK-4	263,000	114,000
31,000		MK-4	266,000	117,000



Forets hélicoïdaux



Matière de coupe **HSS**

Surface

Sens de coupe

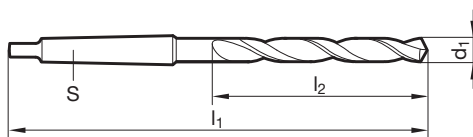
**P** • Amin. de l'âme ≥ Ø 14,050 • affûtage à dépouille conique



**N** ○ acier, fonte aciérée (alliée / non alliée) • fontes grises, fontes malléables, fontes à graphite sphéroïdal • fer fritté, maillechort, graphite

**GÜHRING**NAVIGATOR

Paramètres de coupe, page 778



N° d'article **245**

Forets hélicoïdaux à queue CM

d1		S	l1	l2
mm	inch		mm	mm
2,380	3/32	MK-1	111,000	30,000
2,400		MK-1	111,000	30,000
2,450		MK-1	111,000	30,000
2,500		MK-1	111,000	30,000
2,650		MK-1	111,000	30,000
2,780	7/64	MK-1	114,000	33,000
2,900		MK-1	114,000	33,000
3,000		MK-1	114,000	33,000
3,050		MK-1	117,000	36,000
3,170	1/8	MK-1	117,000	36,000
3,200		MK-1	117,000	36,000
3,250		MK-1	117,000	36,000
3,300		MK-1	117,000	36,000
3,450		MK-1	120,000	39,000
3,500		MK-1	120,000	39,000
3,570	9/64	MK-1	120,000	39,000
3,600		MK-1	120,000	39,000
3,970	5/32	MK-1	124,000	43,000
4,000		MK-1	124,000	43,000
4,200		MK-1	124,000	43,000
4,250		MK-1	124,000	43,000
4,300		MK-1	128,000	47,000
4,370	11/64	MK-1	128,000	47,000
4,400		MK-1	128,000	47,000
4,500		MK-1	128,000	47,000
4,600		MK-1	128,000	47,000
4,750		MK-1	128,000	47,000
4,760	3/16	MK-1	133,000	52,000
4,800		MK-1	133,000	52,000
5,000		MK-1	133,000	52,000
5,100		MK-1	133,000	52,000
5,160	13/64	MK-1	133,000	52,000
5,200		MK-1	133,000	52,000
5,250		MK-1	133,000	52,000
5,300		MK-1	133,000	52,000
5,500		MK-1	138,000	57,000
5,560	7/32	MK-1	138,000	57,000
5,600		MK-1	138,000	57,000
5,700		MK-1	138,000	57,000
5,750		MK-1	138,000	57,000
5,800		MK-1	138,000	57,000
5,900		MK-1	138,000	57,000

d1		S	l1	l2
mm	inch		mm	mm
5,950	15/64	MK-1	138,000	57,000
6,000		MK-1	138,000	57,000
6,050		MK-1	144,000	63,000
6,100		MK-1	144,000	63,000
6,200		MK-1	144,000	63,000
6,300		MK-1	144,000	63,000
6,350	1/4	MK-1	144,000	63,000
6,400		MK-1	144,000	63,000
6,500		MK-1	144,000	63,000
6,600		MK-1	144,000	63,000
6,700		MK-1	144,000	63,000
6,750	17/64	MK-1	150,000	69,000
6,800		MK-1	150,000	69,000
6,900		MK-1	150,000	69,000
7,000		MK-1	150,000	69,000
7,140	9/32	MK-1	150,000	69,000
7,200		MK-1	150,000	69,000
7,250		MK-1	150,000	69,000
7,300		MK-1	150,000	69,000
7,400		MK-1	150,000	69,000
7,500		MK-1	150,000	69,000
7,540	19/64	MK-1	156,000	75,000
7,600		MK-1	156,000	75,000
7,700		MK-1	156,000	75,000
7,750		MK-1	156,000	75,000
7,800		MK-1	156,000	75,000
7,900		MK-1	156,000	75,000
7,940	5/16	MK-1	156,000	75,000
8,000		MK-1	156,000	75,000
8,050		MK-1	156,000	75,000
8,100		MK-1	156,000	75,000
8,200		MK-1	156,000	75,000
8,250		MK-1	156,000	75,000
8,300	21/64	MK-1	156,000	75,000
8,330		MK-1	156,000	75,000
8,400		MK-1	156,000	75,000
8,500		MK-1	156,000	75,000
8,600		MK-1	162,000	81,000
8,700		MK-1	162,000	81,000
8,730	11/32	MK-1	162,000	81,000
8,750		MK-1	162,000	81,000
8,800		MK-1	162,000	81,000



d1		S	l1	l2
mm	inch		mm	mm
8,900		MK-1	162,000	81,000
9,000		MK-1	162,000	81,000
9,050		MK-1	162,000	81,000
9,100		MK-1	162,000	81,000
9,130	23/64	MK-1	162,000	81,000
9,200		MK-1	162,000	81,000
9,250		MK-1	162,000	81,000
9,300		MK-1	162,000	81,000
9,500		MK-1	162,000	81,000
9,520	3/8	MK-1	168,000	87,000
9,750		MK-1	168,000	87,000
9,800		MK-1	168,000	87,000
9,900		MK-1	168,000	87,000
9,920	25/64	MK-1	168,000	87,000
10,000		MK-1	168,000	87,000
10,100		MK-1	168,000	87,000
10,200		MK-1	168,000	87,000
10,250		MK-1	168,000	87,000
10,300		MK-1	168,000	87,000
10,320	13/32	MK-1	168,000	87,000
10,400		MK-1	168,000	87,000
10,500		MK-1	168,000	87,000
10,520		MK-1	168,000	87,000
10,600		MK-1	168,000	87,000
10,700		MK-1	175,000	94,000
10,720	27/64	MK-1	175,000	94,000
10,750		MK-1	175,000	94,000
10,800		MK-1	175,000	94,000
10,900		MK-1	175,000	94,000
11,000		MK-1	175,000	94,000
11,100		MK-1	175,000	94,000
11,110	7/16	MK-1	175,000	94,000
11,200		MK-1	175,000	94,000
11,250		MK-1	175,000	94,000
11,300		MK-1	175,000	94,000
11,500		MK-1	175,000	94,000
11,600		MK-1	175,000	94,000
11,700		MK-1	175,000	94,000
11,750		MK-1	175,000	94,000
11,800		MK-1	175,000	94,000
11,900		MK-1	182,000	101,000
11,910	15/32	MK-1	182,000	101,000
12,000		MK-1	182,000	101,000
12,100		MK-1	182,000	101,000
12,200		MK-1	182,000	101,000
12,250		MK-1	182,000	101,000
12,300	31/64	MK-1	182,000	101,000
12,500		MK-1	182,000	101,000
12,550		MK-1	182,000	101,000
12,600		MK-1	182,000	101,000
12,700	1/2	MK-1	182,000	101,000
12,750		MK-1	182,000	101,000
12,800		MK-1	182,000	101,000
12,900		MK-1	182,000	101,000
13,000		MK-1	182,000	101,000
13,100	33/64	MK-1	182,000	101,000
13,200		MK-1	182,000	101,000
13,250		MK-1	189,000	108,000
13,300		MK-1	189,000	108,000
13,490	17/32	MK-1	189,000	108,000
13,500		MK-1	189,000	108,000
13,600		MK-1	189,000	108,000
13,700		MK-1	189,000	108,000
13,750		MK-1	189,000	108,000
13,800		MK-1	189,000	108,000
13,890	35/64	MK-1	189,000	108,000
14,000		MK-1	189,000	108,000
14,050		MK-2	212,000	114,000
14,100		MK-2	212,000	114,000
14,200		MK-2	212,000	114,000
14,250		MK-2	212,000	114,000
14,290	9/16	MK-2	212,000	114,000

d1		S	l1	l2
mm	inch		mm	mm
14,300		MK-2	212,000	114,000
14,400		MK-2	212,000	114,000
14,500		MK-2	212,000	114,000
14,600		MK-2	212,000	114,000
14,680	37/64	MK-2	212,000	114,000
14,700		MK-2	212,000	114,000
14,750		MK-2	212,000	114,000
14,800		MK-2	212,000	114,000
14,900		MK-2	212,000	114,000
15,000		MK-2	212,000	114,000
15,080	19/32	MK-2	218,000	120,000
15,100		MK-2	218,000	120,000
15,200		MK-2	218,000	120,000
15,250		MK-2	218,000	120,000
15,300		MK-2	218,000	120,000
15,400		MK-2	218,000	120,000
15,500		MK-2	218,000	120,000
15,600		MK-2	218,000	120,000
15,700		MK-2	218,000	120,000
15,750		MK-2	218,000	120,000
15,800		MK-2	218,000	120,000
15,870	5/8	MK-2	218,000	120,000
15,900		MK-2	218,000	120,000
16,000		MK-2	218,000	120,000
16,100		MK-2	223,000	125,000
16,200		MK-2	223,000	125,000
16,250		MK-2	223,000	125,000
16,270	41/64	MK-2	223,000	125,000
16,300		MK-2	223,000	125,000
16,400		MK-2	223,000	125,000
16,500		MK-2	223,000	125,000
16,670	21/32	MK-2	223,000	125,000
16,700		MK-2	223,000	125,000
16,750		MK-2	223,000	125,000
16,800		MK-2	223,000	125,000
17,000		MK-2	223,000	125,000
17,070	43/64	MK-2	228,000	130,000
17,100		MK-2	228,000	130,000
17,250		MK-2	228,000	130,000
17,300		MK-2	228,000	130,000
17,400		MK-2	228,000	130,000
17,460	11/16	MK-2	228,000	130,000
17,500		MK-2	228,000	130,000
17,600		MK-2	228,000	130,000
17,700		MK-2	228,000	130,000
17,750		MK-2	228,000	130,000
17,800		MK-2	228,000	130,000
17,860	45/64	MK-2	228,000	130,000
17,900		MK-2	228,000	130,000
18,000		MK-2	228,000	130,000
18,100		MK-2	233,000	135,000
18,200		MK-2	233,000	135,000
18,250		MK-2	233,000	135,000
18,260	23/32	MK-2	233,000	135,000
18,300		MK-2	233,000	135,000
18,500		MK-2	233,000	135,000
18,650	47/64	MK-2	233,000	135,000
18,750		MK-2	233,000	135,000
18,800		MK-2	233,000	135,000
18,900		MK-2	233,000	135,000
19,000		MK-2	233,000	135,000
19,050	3/4	MK-2	238,000	140,000
19,100		MK-2	238,000	140,000
19,200		MK-2	238,000	140,000
19,250		MK-2	238,000	140,000
19,450	49/64	MK-2	238,000	140,000
19,500		MK-2	238,000	140,000
19,700		MK-2	238,000	140,000
19,750		MK-2	238,000	140,000
19,800		MK-2	238,000	140,000
19,840	25/32	MK-2	238,000	140,000
20,000		MK-2	238,000	140,000



d1		S	l1	l2
mm	inch		mm	mm
20,100		MK-2	243,000	145,000
20,200		MK-2	243,000	145,000
20,250		MK-2	243,000	145,000
20,300		MK-2	243,000	145,000
20,400		MK-2	243,000	145,000
20,500		MK-2	243,000	145,000
20,640	13/16	MK-2	243,000	145,000
20,750		MK-2	243,000	145,000
21,000		MK-2	243,000	145,000
21,030	53/64	MK-2	243,000	145,000
21,100		MK-2	243,000	145,000
21,200		MK-2	243,000	145,000
21,250		MK-2	248,000	150,000
21,430	27/32	MK-2	248,000	150,000
21,500		MK-2	248,000	150,000
21,750		MK-2	248,000	150,000
21,830	55/64	MK-2	248,000	150,000
22,000		MK-2	248,000	150,000
22,100		MK-2	248,000	150,000
22,200		MK-2	248,000	150,000
22,220	7/8	MK-2	248,000	150,000
22,250		MK-2	248,000	150,000
22,400		MK-2	248,000	150,000
22,500		MK-2	253,000	155,000
22,620	57/64	MK-2	253,000	155,000
22,750		MK-2	253,000	155,000
23,000		MK-2	253,000	155,000
23,020	29/32	MK-2	253,000	155,000
23,250		MK-3	276,000	155,000
23,420	59/64	MK-3	276,000	155,000
23,500		MK-3	276,000	155,000
23,750		MK-3	281,000	160,000
23,810	15/16	MK-3	281,000	160,000
23,900		MK-3	281,000	160,000
24,000		MK-3	281,000	160,000
24,100		MK-3	281,000	160,000
24,210	61/64	MK-3	281,000	160,000
24,250		MK-3	281,000	160,000
24,500		MK-3	281,000	160,000
24,610	31/32	MK-3	281,000	160,000
24,750		MK-3	281,000	160,000
25,000	63/64	MK-3	281,000	160,000
25,100		MK-3	286,000	165,000
25,200		MK-3	286,000	165,000
25,250		MK-3	286,000	165,000
25,400	1	MK-3	286,000	165,000
25,500		MK-3	286,000	165,000
25,750		MK-3	286,000	165,000
25,800	1 1/64	MK-3	286,000	165,000
26,000		MK-3	286,000	165,000
26,190	1 1/32	MK-3	286,000	165,000
26,250		MK-3	286,000	165,000
26,500		MK-3	286,000	165,000
26,590	1 3/64	MK-3	291,000	170,000
26,750		MK-3	291,000	170,000
26,990	1 1/16	MK-3	291,000	170,000
27,000		MK-3	291,000	170,000
27,500		MK-3	291,000	170,000
27,750		MK-3	291,000	170,000
27,780	1 3/32	MK-3	291,000	170,000
28,000		MK-3	291,000	170,000
28,250		MK-3	296,000	175,000
28,500		MK-3	296,000	175,000
28,570	1 1/8	MK-3	296,000	175,000
28,750		MK-3	296,000	175,000
29,000		MK-3	296,000	175,000
29,250		MK-3	296,000	175,000
29,500		MK-3	296,000	175,000
29,750		MK-3	296,000	175,000
30,000		MK-3	296,000	175,000
30,100		MK-3	301,000	180,000
30,160	1 3/16	MK-3	301,000	180,000

d1		S	l1	l2
mm	inch		mm	mm
30,250		MK-3	301,000	180,000
30,500		MK-3	301,000	180,000
30,560	1 13/64	MK-3	301,000	180,000
30,750		MK-3	301,000	180,000
31,000		MK-3	301,000	180,000
31,250		MK-3	301,000	180,000
31,500		MK-3	301,000	180,000
31,750	1 1/4	MK-3	306,000	185,000
32,000		MK-4	334,000	185,000
32,150	1 17/64	MK-4	334,000	185,000
32,250		MK-4	334,000	185,000
32,500		MK-4	334,000	185,000
32,750		MK-4	334,000	185,000
33,000		MK-4	334,000	185,000
33,340	1 5/16	MK-4	334,000	185,000
33,500		MK-4	334,000	185,000
34,000		MK-4	339,000	190,000
34,500		MK-4	339,000	190,000
34,750		MK-4	339,000	190,000
34,920	1 3/8	MK-4	339,000	190,000
35,000		MK-4	339,000	190,000
35,500		MK-4	339,000	190,000
36,000		MK-4	344,000	195,000
36,500		MK-4	344,000	195,000
36,750		MK-4	344,000	195,000
37,000		MK-4	344,000	195,000
37,310	1 15/32	MK-4	344,000	195,000
37,500		MK-4	344,000	195,000
37,700	1 31/64	MK-4	349,000	200,000
38,000		MK-4	349,000	200,000
38,100	1 1/2	MK-4	349,000	200,000
38,500	1 33/64	MK-4	349,000	200,000
39,000		MK-4	349,000	200,000
39,500		MK-4	349,000	200,000
39,690	1 9/16	MK-4	349,000	200,000
40,000		MK-4	349,000	200,000
40,500		MK-4	354,000	205,000
40,750		MK-4	354,000	205,000
40,800		MK-4	354,000	205,000
41,000		MK-4	354,000	205,000
41,270	1 5/8	MK-4	354,000	205,000
41,500		MK-4	354,000	205,000
42,000		MK-4	354,000	205,000
42,500		MK-4	354,000	205,000
43,000		MK-4	359,000	210,000
43,500		MK-4	359,000	210,000
44,000		MK-4	359,000	210,000
44,450	1 3/4	MK-4	359,000	210,000
44,500		MK-4	359,000	210,000
45,000		MK-4	359,000	210,000
45,500		MK-4	364,000	215,000
46,000		MK-4	364,000	215,000
46,430	1 53/64	MK-4	364,000	215,000
46,500		MK-4	364,000	215,000
47,000		MK-4	364,000	215,000
47,230	1 55/64	MK-4	364,000	215,000
47,500		MK-4	364,000	215,000
47,620	1 7/8	MK-4	369,000	220,000
48,000		MK-4	369,000	220,000
48,020	1 57/64	MK-4	369,000	220,000
48,500		MK-4	369,000	220,000
48,820	1 59/64	MK-4	369,000	220,000
49,000		MK-4	369,000	220,000
49,500		MK-4	369,000	220,000
49,610	1 61/64	MK-4	369,000	220,000
50,000		MK-4	369,000	220,000
50,500		MK-4	374,000	225,000
50,800	2	MK-4	374,000	225,000
51,000		MK-5	412,000	225,000
52,000		MK-5	412,000	225,000
53,000		MK-5	412,000	225,000
53,390		MK-5	417,000	230,000

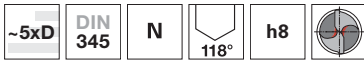


d1		S	l1	l2
mm	inch		mm	mm
53,400		MK-5	417,000	230,000
54,000		MK-5	417,000	230,000
55,000		MK-5	417,000	230,000
56,000		MK-5	417,000	230,000
57,000		MK-5	422,000	235,000
58,000		MK-5	422,000	235,000
59,000		MK-5	422,000	235,000
60,000		MK-5	422,000	235,000
61,000		MK-5	427,000	240,000
62,000		MK-5	427,000	240,000
63,000		MK-5	427,000	240,000
63,500	2 1/2	MK-5	432,000	245,000
65,000		MK-5	432,000	245,000
66,670	2 5/8	MK-5	432,000	245,000
67,500		MK-5	437,000	250,000
68,000		MK-5	437,000	250,000
69,850	2 3/4	MK-5	437,000	250,000
70,000		MK-5	437,000	250,000

d1		S	l1	l2
mm	inch		mm	mm
71,500		MK-5	442,000	255,000
72,000		MK-5	442,000	255,000
75,000		MK-5	442,000	255,000
76,990	3 1/32	MK-6	514,000	260,000
77,000		MK-6	514,000	260,000
77,790	3 1/16	MK-6	514,000	260,000
78,580	3 3/32	MK-6	514,000	260,000
79,500		MK-6	514,000	260,000
87,310	3 7/16	MK-6	524,000	270,000
89,000		MK-6	524,000	270,000
92,500		MK-6	529,000	275,000
93,000		MK-6	529,000	275,000
94,000		MK-6	529,000	275,000
94,500		MK-6	529,000	275,000
95,250	3 3/4	MK-6	534,000	280,000
95,500		MK-6	534,000	280,000
96,000		MK-6	534,000	280,000



Forets hélicoïdaux



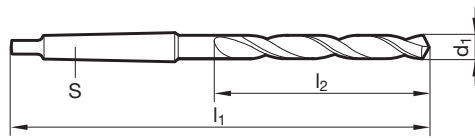
**P** • Amin. de l'âme  $\geq \varnothing 10,000$  • affûtage à dépouille conique • pour utilis. diffic. en constr. métall.

- M**
- K** •
- N** ○ acier, fonte aciérée (alliée / non alliée)
- S**
- H**

**GÜHRING** NAVIGATOR

Paramètres de coupe, page 778

Matière de coupe	<b>HSS</b>
Surface	$\frac{Ra}{16,0} > 0$
Sens de coupe	(R)



N° d'article **592**

Forets hélicoïdaux à queue CM

d1		S	l1	l2
mm	inch		mm	mm
10,000		MK-1	168,000	87,000
10,320	13/32	MK-1	168,000	87,000
11,000		MK-1	175,000	94,000
11,110	7/16	MK-1	175,000	94,000
11,500		MK-1	175,000	94,000
11,910	15/32	MK-1	182,000	101,000
12,000		MK-1	182,000	101,000
12,700	1/2	MK-1	182,000	101,000
13,000		MK-1	182,000	101,000
13,490	17/32	MK-1	189,000	108,000
13,500		MK-1	189,000	108,000
14,000		MK-1	189,000	108,000

d1		S	l1	l2
mm	inch		mm	mm
14,290	9/16	MK-2	212,000	114,000
15,080	19/32	MK-2	218,000	120,000
17,000		MK-2	223,000	125,000
18,000		MK-2	228,000	130,000
19,050	3/4	MK-2	238,000	140,000
19,840	25/32	MK-2	238,000	140,000
20,000		MK-2	238,000	140,000
21,430	27/32	MK-2	248,000	150,000
22,000		MK-2	248,000	150,000
23,000		MK-2	253,000	155,000
28,000		MK-3	291,000	170,000





Forets hélicoïdaux

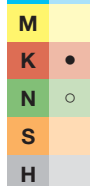


Matière de coupe **HSS**

Surface **S**

Sens de coupe **R**

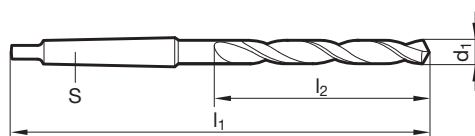
**P** • Amin. de l'âme ≥ Ø 3,000 • affûtage à dépouille conique



**N** ○ acier, fonte aciérée (alliée / non alliée) • fontes grises, fontes malléables, fontes à graphite sphéroïdal • fer fritté, maillechort, graphite

**GUHRING NAVIGATOR**

Paramètres de coupe, page 780



N° d'article **654**

Forets hélicoïdaux à queue CM

d1		S	l1	l2	d1		S	l1	l2
mm	inch		mm	mm	mm	inch		mm	mm
3,000		MK-1	114,000	33,000	11,110	7/16	MK-1	175,000	94,000
3,170	1/8	MK-1	117,000	36,000	11,200		MK-1	175,000	94,000
3,500		MK-1	120,000	39,000	11,250		MK-1	175,000	94,000
3,970	5/32	MK-1	124,000	43,000	11,500		MK-1	175,000	94,000
4,000		MK-1	124,000	43,000	11,510	29/64	MK-1	175,000	94,000
4,100		MK-1	124,000	43,000	11,750		MK-1	175,000	94,000
4,370	11/64	MK-1	128,000	47,000	11,910	15/32	MK-1	182,000	101,000
4,500		MK-1	128,000	47,000	12,000		MK-1	182,000	101,000
4,760	3/16	MK-1	133,000	52,000	12,200		MK-1	182,000	101,000
5,000		MK-1	133,000	52,000	12,400		MK-1	182,000	101,000
5,160	13/64	MK-1	133,000	52,000	12,500		MK-1	182,000	101,000
5,560	7/32	MK-1	138,000	57,000	12,700	1/2	MK-1	182,000	101,000
6,000		MK-1	138,000	57,000	12,750		MK-1	182,000	101,000
6,500		MK-1	144,000	63,000	13,000		MK-1	182,000	101,000
6,750	17/64	MK-1	150,000	69,000	13,250		MK-1	189,000	108,000
6,800		MK-1	150,000	69,000	13,490	17/32	MK-1	189,000	108,000
7,000		MK-1	150,000	69,000	13,500		MK-1	189,000	108,000
7,100		MK-1	150,000	69,000	13,890	35/64	MK-1	189,000	108,000
7,140	9/32	MK-1	150,000	69,000	14,000		MK-1	189,000	108,000
7,400		MK-1	150,000	69,000	14,200		MK-2	212,000	114,000
7,700		MK-1	156,000	75,000	14,250		MK-2	212,000	114,000
8,000		MK-1	156,000	75,000	14,290	9/16	MK-2	212,000	114,000
8,500		MK-1	156,000	75,000	14,500		MK-2	212,000	114,000
8,730	11/32	MK-1	162,000	81,000	14,680	37/64	MK-2	212,000	114,000
8,800		MK-1	162,000	81,000	14,750		MK-2	212,000	114,000
9,000		MK-1	162,000	81,000	14,900		MK-2	212,000	114,000
9,400		MK-1	162,000	81,000	15,000		MK-2	212,000	114,000
9,520	3/8	MK-1	168,000	87,000	15,250		MK-2	218,000	120,000
9,600		MK-1	168,000	87,000	15,500		MK-2	218,000	120,000
9,750		MK-1	168,000	87,000	15,750		MK-2	218,000	120,000
9,800		MK-1	168,000	87,000	15,870	5/8	MK-2	218,000	120,000
10,000		MK-1	168,000	87,000	16,000		MK-2	218,000	120,000
10,200		MK-1	168,000	87,000	16,200		MK-2	223,000	125,000
10,250		MK-1	168,000	87,000	16,500		MK-2	223,000	125,000
10,300		MK-1	168,000	87,000	17,000		MK-2	223,000	125,000
10,320	13/32	MK-1	168,000	87,000	17,070	43/64	MK-2	228,000	130,000
10,400		MK-1	168,000	87,000	17,250		MK-2	228,000	130,000
10,500		MK-1	168,000	87,000	17,500		MK-2	228,000	130,000
10,720	27/64	MK-1	175,000	94,000	17,750		MK-2	228,000	130,000
10,750		MK-1	175,000	94,000	18,000		MK-2	228,000	130,000
10,800		MK-1	175,000	94,000	18,250		MK-2	233,000	135,000
11,000		MK-1	175,000	94,000	18,260	23/32	MK-2	233,000	135,000



d1		S	l1	l2
mm	inch		mm	mm
18,500		MK-2	233,000	135,000
18,650	47/64	MK-2	233,000	135,000
19,000		MK-2	233,000	135,000
19,050	3/4	MK-2	238,000	140,000
19,450	49/64	MK-2	238,000	140,000
19,500		MK-2	238,000	140,000
19,750		MK-2	238,000	140,000
19,840	25/32	MK-2	238,000	140,000
20,000		MK-2	238,000	140,000
20,250		MK-2	243,000	145,000
20,500		MK-2	243,000	145,000
20,640	13/16	MK-2	243,000	145,000
20,750		MK-2	243,000	145,000
21,000		MK-2	243,000	145,000
21,250		MK-2	248,000	150,000
21,500		MK-2	248,000	150,000
21,750		MK-2	248,000	150,000
21,830	55/64	MK-2	248,000	150,000
22,000		MK-2	248,000	150,000
22,220	7/8	MK-2	248,000	150,000
22,500		MK-2	253,000	155,000
23,000		MK-2	253,000	155,000
23,500		MK-3	276,000	155,000
23,750		MK-3	281,000	160,000

d1		S	l1	l2
mm	inch		mm	mm
24,000		MK-3	281,000	160,000
24,500		MK-3	281,000	160,000
24,750		MK-3	281,000	160,000
25,000	63/64	MK-3	281,000	160,000
25,400	1	MK-3	286,000	165,000
25,500		MK-3	286,000	165,000
26,000		MK-3	286,000	165,000
26,500		MK-3	286,000	165,000
26,990	1 1/16	MK-3	291,000	170,000
27,000		MK-3	291,000	170,000
27,380	1 5/64	MK-3	291,000	170,000
28,000		MK-3	291,000	170,000
28,500		MK-3	296,000	175,000
28,570	1 1/8	MK-3	296,000	175,000
29,000		MK-3	296,000	175,000
29,500		MK-3	296,000	175,000
29,750		MK-3	296,000	175,000
30,000		MK-3	296,000	175,000
30,500		MK-3	301,000	180,000
31,000		MK-3	301,000	180,000



Forets hélicoïdaux



Matière de coupe **HSS**

Surface

Sens de coupe

**P** • Amin. de l'âme  $\geq \varnothing 14,750$  • affûtage à dépouille conique

**M**

**K** •

**N** ○

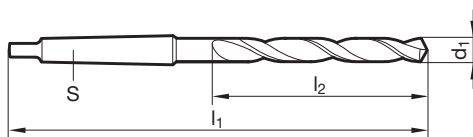
**S**

**H**

acier, fonte aciérée (alliée / non alliée) • fontes grises, fontes malléables, fontes à graphite sphéroïdal • fer fritté, maillechort, graphite

**GUHRING** NAVIGATOR

Paramètres de coupe, page 778



N° d'article **248**

Forets hélicoïdaux à queue CM

d1		S	l1	l2
mm	inch		mm	mm
6,000		MK-1	138,000	57,000
8,000		MK-1	156,000	75,000
8,100		MK-1	156,000	75,000
8,400		MK-1	156,000	75,000
8,500		MK-1	156,000	75,000
9,000		MK-1	162,000	81,000
10,500		MK-1	168,000	87,000
11,000		MK-1	175,000	94,000
11,500		MK-1	175,000	94,000
13,000		MK-1	182,000	101,000
14,000		MK-1	189,000	108,000
15,000		MK-2	212,000	114,000
17,200		MK-2	228,000	130,000
18,000		MK-2	228,000	130,000
20,000		MK-2	238,000	140,000
20,500		MK-2	243,000	145,000
25,500		MK-3	286,000	165,000
28,000		MK-3	291,000	170,000

d1		S	l1	l2
mm	inch		mm	mm
29,000		MK-3	296,000	175,000
30,500		MK-3	301,000	180,000
32,500		MK-4	334,000	185,000
33,000		MK-4	334,000	185,000
34,000		MK-4	339,000	190,000
38,000		MK-4	349,000	200,000
40,000		MK-4	349,000	200,000
60,000		MK-5	422,000	235,000



Forets hélicoïdaux



Matière de coupe **HSS**

Surface

Sens de coupe

**P** • Amin. de l'âme  $\geq \varnothing 8,500$  • affûtage à dépouille conique • fragmentation du copeau améliorée • particulièrement bien approprié sur machines à transfert rotatif

**M**

**K** •

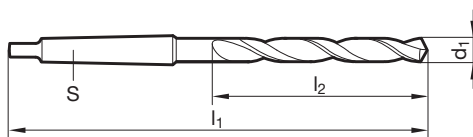
**N** ○ matières à copeaux longs

**S**

**H**

**GÜHRING** NAVIGATOR

Paramètres de coupe, page 778



N° d'article **229**

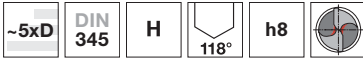
Forets hélicoïdaux à queue CM

d1		S	l1	l2
mm	inch		mm	mm
8,500		MK-1	156,000	75,000
8,730	11/32	MK-1	162,000	81,000
9,000		MK-1	162,000	81,000
9,500		MK-1	162,000	81,000
9,520	3/8	MK-1	168,000	87,000
11,000		MK-1	175,000	94,000
11,910	15/32	MK-1	182,000	101,000
12,250		MK-1	182,000	101,000
12,500		MK-1	182,000	101,000
13,000		MK-1	182,000	101,000
13,250		MK-1	189,000	108,000
13,490	17/32	MK-1	189,000	108,000
14,000		MK-1	189,000	108,000
14,290	9/16	MK-2	212,000	114,000
14,500		MK-2	212,000	114,000
15,000		MK-2	212,000	114,000
15,080	19/32	MK-2	218,000	120,000
16,000		MK-2	218,000	120,000
18,000		MK-2	228,000	130,000
18,250		MK-2	233,000	135,000
19,500		MK-2	238,000	140,000
19,840	25/32	MK-2	238,000	140,000
20,000		MK-2	238,000	140,000
20,640	13/16	MK-2	243,000	145,000

d1		S	l1	l2
mm	inch		mm	mm
21,000		MK-2	243,000	145,000
22,000		MK-2	248,000	150,000
22,220	7/8	MK-2	248,000	150,000
23,810	15/16	MK-3	281,000	160,000
25,000	63/64	MK-3	281,000	160,000
25,400	1	MK-3	286,000	165,000
26,000		MK-3	286,000	165,000
26,190	1 1/32	MK-3	286,000	165,000
26,500		MK-3	286,000	165,000
35,000		MK-4	339,000	190,000
39,500		MK-4	349,000	200,000
42,500		MK-4	354,000	205,000
43,500		MK-4	359,000	210,000
46,040	1 13/16	MK-4	364,000	215,000
46,500		MK-4	364,000	215,000
47,500		MK-4	364,000	215,000
56,000		MK-5	417,000	230,000
57,000		MK-5	422,000	235,000
58,000		MK-5	422,000	235,000
59,000		MK-5	422,000	235,000



Forets hélicoïdaux



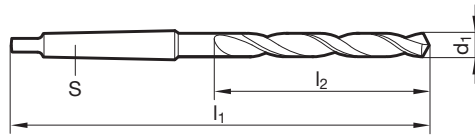
**P** Amin. de l'âme  $\geq \varnothing 14,500$  • affûtage à dépouille conique

- M**
- K**
- N** • matières dures et friables • laitons, alliages de magnésium • bronze, bronze phosphoreux • ardoise, mica, pertinax
- S**
- H**

**GÜHRING** NAVIGATOR

Paramètres de coupe, page 778

Matière de coupe	<b>HSS</b>
Surface	○
Sens de coupe	Ⓜ



N° d'article **246**

d1		S	l1	l2
mm	inch		mm	mm
6,700		MK-1	144,000	63,000
8,200		MK-1	156,000	75,000
11,000		MK-1	175,000	94,000
11,750		MK-1	175,000	94,000
12,600		MK-1	182,000	101,000
12,800		MK-1	182,000	101,000
13,750		MK-1	189,000	108,000
14,500		MK-2	212,000	114,000
15,000		MK-2	212,000	114,000
15,500		MK-2	218,000	120,000
16,000		MK-2	218,000	120,000
16,500		MK-2	223,000	125,000

d1		S	l1	l2
mm	inch		mm	mm
17,000		MK-2	223,000	125,000
20,500		MK-2	243,000	145,000
22,000		MK-2	248,000	150,000
22,250		MK-2	248,000	150,000
23,000		MK-2	253,000	155,000
25,000	63/64	MK-3	281,000	160,000
25,250		MK-3	286,000	165,000

Forets hélicoïdaux à queue CM



Forets hélicoïdaux



Matière de coupe **HSS**

Surface

Sens de coupe

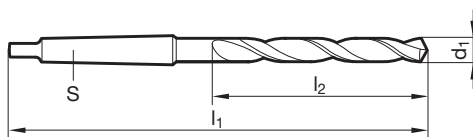
**P** Amin. de l'âme  $\geq \varnothing 14,100$  • affûtage à dépouille conique

- M**
- K**
- N** •
- S**
- H**

• matières tendres et à copeaux longs • aluminium/alliages d'aluminium à copeaux longs • zinc, cuivre de 1ère fusion, Alpax, électrode

**GÜHRING** NAVIGATOR

Paramètres de coupe, page 778



N° d'article **247**

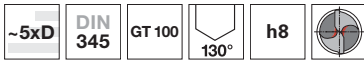
Forets hélicoïdaux à queue CM

d1		S	l1	l2
mm	inch		mm	mm
3,200		MK-1	117,000	36,000
3,300		MK-1	117,000	36,000
3,800		MK-1	124,000	43,000
4,000		MK-1	124,000	43,000
5,000		MK-1	133,000	52,000
5,400		MK-1	138,000	57,000
5,500		MK-1	138,000	57,000
6,000		MK-1	138,000	57,000
6,300		MK-1	144,000	63,000
6,500		MK-1	144,000	63,000
6,600		MK-1	144,000	63,000
6,750	17/64	MK-1	150,000	69,000
6,800		MK-1	150,000	69,000
7,000		MK-1	150,000	69,000
7,500		MK-1	150,000	69,000
7,750		MK-1	156,000	75,000
8,000		MK-1	156,000	75,000
9,200		MK-1	162,000	81,000
9,500		MK-1	162,000	81,000
9,750		MK-1	168,000	87,000
9,800		MK-1	168,000	87,000
12,000		MK-1	182,000	101,000
12,500		MK-1	182,000	101,000
13,000		MK-1	182,000	101,000

d1		S	l1	l2
mm	inch		mm	mm
13,200		MK-1	182,000	101,000
14,000		MK-1	189,000	108,000
16,000		MK-2	218,000	120,000
17,000		MK-2	223,000	125,000
18,000		MK-2	228,000	130,000
18,500		MK-2	233,000	135,000
19,000		MK-2	233,000	135,000
20,000		MK-2	238,000	140,000
21,000		MK-2	243,000	145,000
22,000		MK-2	248,000	150,000
23,000		MK-2	253,000	155,000
27,000		MK-3	291,000	170,000
27,200		MK-3	291,000	170,000
27,250		MK-3	291,000	170,000
27,500		MK-3	291,000	170,000
28,000		MK-3	291,000	170,000
28,500		MK-3	296,000	175,000
30,300		MK-3	301,000	180,000
30,500		MK-3	301,000	180,000
31,000		MK-3	301,000	180,000
31,500		MK-3	301,000	180,000
32,000		MK-4	334,000	185,000



Forets hélicoïdaux



Matière de coupe **HSS**

Surface

Sens de coupe

**P** • Amin. de l'âme  $\geq \varnothing 7,940$  • affûtage à dépouille conique • goujures larges • parfait pour les profondeurs  $> 3xD$

**M**

**K** •

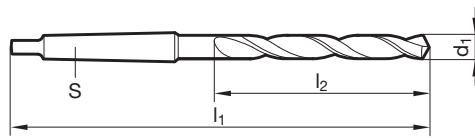
**N** • fontes grises et aciers jusqu'à 1000 N/mm<sup>2</sup> • Ne pas utiliser pour les aciers CrNi et les aciers inox

**S**

**H**

**GUHRING NAVIGATOR**

Paramètres de coupe, page 778



N° d'article **558**

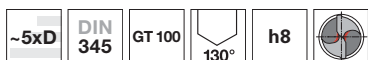
Forets hélicoïdaux à queue CM

d1		S	l1	l2
mm	inch		mm	mm
7,940	5/16	MK-1	156,000	75,000
8,000		MK-1	156,000	75,000
8,250		MK-1	156,000	75,000
9,500		MK-1	162,000	81,000
10,000		MK-1	168,000	87,000
10,250		MK-1	168,000	87,000
11,000		MK-1	175,000	94,000
11,110	7/16	MK-1	175,000	94,000
12,700	1/2	MK-1	182,000	101,000
12,750		MK-1	182,000	101,000
13,000		MK-1	182,000	101,000
13,250		MK-1	189,000	108,000
14,000		MK-1	189,000	108,000
14,290	9/16	MK-2	212,000	114,000
14,500		MK-2	212,000	114,000
17,500		MK-2	228,000	130,000
18,000		MK-2	228,000	130,000
19,500		MK-2	238,000	140,000

d1		S	l1	l2
mm	inch		mm	mm
20,000		MK-2	238,000	140,000
20,500		MK-2	243,000	145,000
21,000		MK-2	243,000	145,000
21,250		MK-2	248,000	150,000
27,500		MK-3	291,000	170,000
28,500		MK-3	296,000	175,000
28,570	1 1/8	MK-3	296,000	175,000
29,500		MK-3	296,000	175,000
30,160	1 3/16	MK-3	301,000	180,000
30,500		MK-3	301,000	180,000
31,500		MK-3	301,000	180,000
31,750	1 1/4	MK-3	306,000	185,000



Forets hélicoïdaux



Matière de coupe **HSS**

Surface **S**

Sens de coupe **R**

**P** • Amin. de l'âme  $\geq \varnothing 7,940$  • affûtage à dépouille conique • goujures larges • parfait pour les profondeurs  $> 3xD$

**M**

**K** •

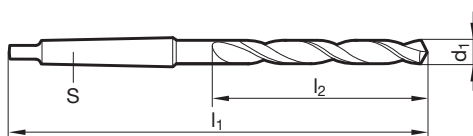
**N** • fontes grises et aciers jusqu'à  $1000 \text{ N/mm}^2$  • Ne pas utiliser pour les aciers CrNi et les aciers inox

**S**

**H**

**GÜHRING** NAVIGATOR

Paramètres de coupe, page 780



N° d'article **606**

Forets hélicoïdaux à queue CM

d1		S	l1	l2
mm	inch		mm	mm
7,940	5/16	MK-1	156,000	75,000
8,750		MK-1	162,000	81,000
9,000		MK-1	162,000	81,000
9,520	3/8	MK-1	168,000	87,000
10,000		MK-1	168,000	87,000
11,110	7/16	MK-1	175,000	94,000
12,250		MK-1	182,000	101,000
12,500		MK-1	182,000	101,000
12,750		MK-1	182,000	101,000
14,000		MK-1	189,000	108,000
14,500		MK-2	212,000	114,000
15,750		MK-2	218,000	120,000

d1		S	l1	l2
mm	inch		mm	mm
15,870	5/8	MK-2	218,000	120,000
17,500		MK-2	228,000	130,000
23,500		MK-3	276,000	155,000
23,810	15/16	MK-3	281,000	160,000
25,400	1	MK-3	286,000	165,000
26,990	1 1/16	MK-3	291,000	170,000
28,500		MK-3	296,000	175,000
28,570	1 1/8	MK-3	296,000	175,000
29,000		MK-3	296,000	175,000
31,500		MK-3	301,000	180,000





Forets hélicoïdaux



Matière de coupe **HSCO**

Surface

Sens de coupe

**P** • Amin. de l'âme  $\geq \varnothing 3,000$  • affûtage à dépouille conique • acier rapide au Co • meilleure résistance à l'usure

**M** ○

**K** •

**N** ○

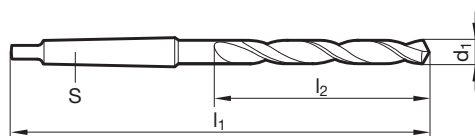
**S** ○

**H** ○

aciers, alliés ou non alliés, et fontes  $> 800 \text{ N/mm}^2$  • aciers à outils, travail à froid et à chaud • aciers à roulement • aciers hautement alliés • aciers de cémentation et d'amélioration

**GUHRING NAVIGATOR**

Paramètres de coupe, page 780



N° d'article **345**

Forets hélicoïdaux à queue CM

d1		S	l1	l2	d1		S	l1	l2
mm	inch		mm	mm	mm	inch		mm	mm
4,000		MK-1	124,000	43,000	12,700	1/2	MK-1	182,000	101,000
5,000		MK-1	133,000	52,000	12,750		MK-1	182,000	101,000
5,200		MK-1	133,000	52,000	13,000		MK-1	182,000	101,000
5,500		MK-1	138,000	57,000	13,100	33/64	MK-1	182,000	101,000
6,000		MK-1	138,000	57,000	13,200		MK-1	182,000	101,000
6,500		MK-1	144,000	63,000	13,250		MK-1	189,000	108,000
6,700		MK-1	144,000	63,000	13,490	17/32	MK-1	189,000	108,000
6,750	17/64	MK-1	150,000	69,000	13,500		MK-1	189,000	108,000
6,800		MK-1	150,000	69,000	13,700		MK-1	189,000	108,000
7,000		MK-1	150,000	69,000	13,750		MK-1	189,000	108,000
7,500		MK-1	150,000	69,000	13,800		MK-1	189,000	108,000
8,000		MK-1	156,000	75,000	13,900		MK-1	189,000	108,000
8,200		MK-1	156,000	75,000	14,000		MK-1	189,000	108,000
8,500		MK-1	156,000	75,000	14,100		MK-2	212,000	114,000
8,700		MK-1	162,000	81,000	14,200		MK-2	212,000	114,000
9,000		MK-1	162,000	81,000	14,250		MK-2	212,000	114,000
9,500		MK-1	162,000	81,000	14,290	9/16	MK-2	212,000	114,000
9,520	3/8	MK-1	168,000	87,000	14,500		MK-2	212,000	114,000
10,000		MK-1	168,000	87,000	14,750		MK-2	212,000	114,000
10,100		MK-1	168,000	87,000	15,000		MK-2	212,000	114,000
10,150		MK-1	168,000	87,000	15,080	19/32	MK-2	218,000	120,000
10,200		MK-1	168,000	87,000	15,250		MK-2	218,000	120,000
10,250		MK-1	168,000	87,000	15,500		MK-2	218,000	120,000
10,320	13/32	MK-1	168,000	87,000	15,750		MK-2	218,000	120,000
10,500		MK-1	168,000	87,000	15,870	5/8	MK-2	218,000	120,000
10,700		MK-1	175,000	94,000	16,000		MK-2	218,000	120,000
10,720	27/64	MK-1	175,000	94,000	16,100		MK-2	223,000	125,000
10,750		MK-1	175,000	94,000	16,250		MK-2	223,000	125,000
10,800		MK-1	175,000	94,000	16,270	41/64	MK-2	223,000	125,000
11,000		MK-1	175,000	94,000	16,500		MK-2	223,000	125,000
11,110	7/16	MK-1	175,000	94,000	16,670	21/32	MK-2	223,000	125,000
11,200		MK-1	175,000	94,000	16,750		MK-2	223,000	125,000
11,500		MK-1	175,000	94,000	17,000		MK-2	223,000	125,000
11,600		MK-1	175,000	94,000	17,460	11/16	MK-2	228,000	130,000
11,750		MK-1	175,000	94,000	17,500		MK-2	228,000	130,000
11,800		MK-1	175,000	94,000	17,750		MK-2	228,000	130,000
11,900		MK-1	182,000	101,000	17,860	45/64	MK-2	228,000	130,000
12,000		MK-1	182,000	101,000	18,000		MK-2	228,000	130,000
12,100		MK-1	182,000	101,000	18,200		MK-2	233,000	135,000
12,200		MK-1	182,000	101,000	18,250		MK-2	233,000	135,000
12,250		MK-1	182,000	101,000	18,260	23/32	MK-2	233,000	135,000
12,500		MK-1	182,000	101,000	18,500		MK-2	233,000	135,000



d1		S	l1	l2
mm	inch		mm	mm
18,650	47/64	MK-2	233,000	135,000
18,750		MK-2	233,000	135,000
19,000		MK-2	233,000	135,000
19,050	3/4	MK-2	238,000	140,000
19,250		MK-2	238,000	140,000
19,500		MK-2	238,000	140,000
19,750		MK-2	238,000	140,000
19,840	25/32	MK-2	238,000	140,000
20,000		MK-2	238,000	140,000
20,250		MK-2	243,000	145,000
20,500	13/16	MK-2	243,000	145,000
20,640		MK-2	243,000	145,000
20,750		MK-2	243,000	145,000
21,000		MK-2	243,000	145,000
21,250		MK-2	248,000	150,000
21,500		MK-2	248,000	150,000
22,000		MK-2	248,000	150,000
22,220	7/8	MK-2	248,000	150,000
22,250		MK-2	248,000	150,000
22,500		MK-2	253,000	155,000
22,620	57/64	MK-2	253,000	155,000
23,000		MK-2	253,000	155,000
23,020	29/32	MK-2	253,000	155,000
23,500		MK-3	276,000	155,000
24,000	61/64	MK-3	281,000	160,000
24,210		MK-3	281,000	160,000
24,500		MK-3	281,000	160,000
25,000		MK-3	281,000	160,000
25,250	63/64	MK-3	286,000	165,000
25,400		MK-3	286,000	165,000

d1		S	l1	l2
mm	inch		mm	mm
25,500		MK-3	286,000	165,000
26,000		MK-3	286,000	165,000
26,500		MK-3	286,000	165,000
27,000		MK-3	291,000	170,000
27,500	1 1/8	MK-3	291,000	170,000
28,000		MK-3	291,000	170,000
28,500		MK-3	296,000	175,000
28,570		MK-3	296,000	175,000
29,000		MK-3	296,000	175,000
29,500		MK-3	296,000	175,000
30,000		MK-3	296,000	175,000
30,500	1 1/4	MK-3	301,000	180,000
31,000		MK-3	301,000	180,000
31,500		MK-3	301,000	180,000
31,750		MK-3	306,000	185,000
32,000		MK-4	334,000	185,000
32,500		MK-4	334,000	185,000
33,000		MK-4	334,000	185,000
34,000	1 21/32	MK-4	339,000	190,000
35,000		MK-4	339,000	190,000
36,000		MK-4	344,000	195,000
37,000		MK-4	344,000	195,000
38,000		MK-4	349,000	200,000
39,000		MK-4	349,000	200,000
40,000		MK-4	349,000	200,000
42,000		MK-4	354,000	205,000
42,070		MK-4	354,000	205,000
43,000		MK-4	359,000	210,000
45,000	MK-4	359,000	210,000	
50,000	MK-4	369,000	220,000	



Forets hélicoïdaux



Matière de coupe **HSCO**

Surface **S**

Sens de coupe **R**

**P** • Amin. de l'âme  $\geq \varnothing 7,940$  • affûtage à dépouille conique • acier rapide au Co • résistance à l'usure, améliorée

**M** ○

**K** •

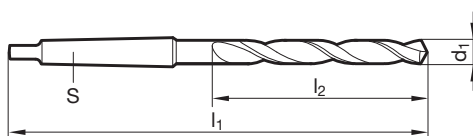
**N** ○ aciers, alliés ou non alliés, et fontes  $> 800 \text{ N/mm}^2$  • aciers à outils, travail à froid et à chaud • aciers à roulement • aciers hautement alliés • aciers de cémentation et d'amélioration

**S** ○

**H** ○

**GUHRING NAVIGATOR**

Paramètres de coupe, page 782



N° d'article **661**

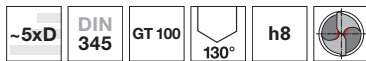
Forets hélicoïdaux à queue CM

d1		S	l1	l2
mm	inch		mm	mm
8,000		MK-1	156,000	75,000
8,500		MK-1	156,000	75,000
9,000		MK-1	162,000	81,000
9,500		MK-1	162,000	81,000
9,520	3/8	MK-1	168,000	87,000
10,000		MK-1	168,000	87,000
11,000		MK-1	175,000	94,000
12,000		MK-1	182,000	101,000
12,500		MK-1	182,000	101,000
12,700	1/2	MK-1	182,000	101,000
13,000		MK-1	182,000	101,000
13,500		MK-1	189,000	108,000
14,000		MK-1	189,000	108,000
14,500		MK-2	212,000	114,000
15,000		MK-2	212,000	114,000
16,000		MK-2	218,000	120,000
17,000		MK-2	223,000	125,000
17,070	43/64	MK-2	228,000	130,000

d1		S	l1	l2
mm	inch		mm	mm
17,460	11/16	MK-2	228,000	130,000
17,500		MK-2	228,000	130,000
18,000		MK-2	228,000	130,000
19,000		MK-2	233,000	135,000
19,500		MK-2	238,000	140,000
20,000		MK-2	238,000	140,000
21,000		MK-2	243,000	145,000
22,000		MK-2	248,000	150,000
23,000		MK-2	253,000	155,000
23,810	15/16	MK-3	281,000	160,000
25,000	63/64	MK-3	281,000	160,000
26,000		MK-3	286,000	165,000
26,500		MK-3	286,000	165,000
26,990	1 1/16	MK-3	291,000	170,000
29,000		MK-3	296,000	175,000
30,000		MK-3	296,000	175,000



Forets hélicoïdaux



Matière de coupe **HSCO**

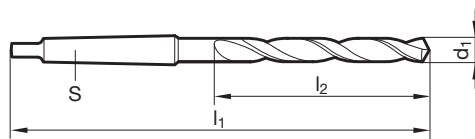
Surface

Sens de coupe

- P** • Amin. de l'âme ≥ Ø 9,520 • affûtage à dépouille conique • acier rapide au Co • goujures larges • résistance à l'usure, améliorée • parfait pour les profondeurs > 3xD
- M** ○
- K** •
- N** ○ aciers, alliés ou non alliés, et fontes > 1000 N/mm<sup>2</sup> • aciers à outils, travail à froid et à chaud • aciers à roulement • aciers hautement alliés
- S** • aciers de cémentation et d'amélioration
- H**

**GÜHRING**NAVIGATOR

Paramètres de coupe, page 780



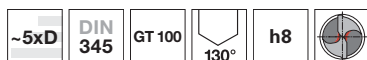
N° d'article **645**

Forets hélicoïdaux à queue CM

d1		S	l1	l2	d1		S	l1	l2
mm	inch		mm	mm	mm	inch		mm	mm
10,000		MK-1	168,000	87,000	18,250		MK-2	233,000	135,000
10,100		MK-1	168,000	87,000	18,500		MK-2	233,000	135,000
10,200		MK-1	168,000	87,000	19,000		MK-2	233,000	135,000
10,500		MK-1	168,000	87,000	20,000		MK-2	238,000	140,000
10,720	27/64	MK-1	175,000	94,000	20,500		MK-2	243,000	145,000
10,800		MK-1	175,000	94,000	21,000		MK-2	243,000	145,000
11,000		MK-1	175,000	94,000	22,000		MK-2	248,000	150,000
11,500		MK-1	175,000	94,000	22,220	7/8	MK-2	248,000	150,000
11,510	29/64	MK-1	175,000	94,000	22,620	57/64	MK-2	253,000	155,000
12,000		MK-1	182,000	101,000	23,000		MK-2	253,000	155,000
12,500		MK-1	182,000	101,000	24,000		MK-3	281,000	160,000
13,000		MK-1	182,000	101,000	24,210	61/64	MK-3	281,000	160,000
13,300		MK-1	189,000	108,000	24,610	31/32	MK-3	281,000	160,000
13,500		MK-1	189,000	108,000	25,000	63/64	MK-3	281,000	160,000
14,000		MK-1	189,000	108,000	26,000		MK-3	286,000	165,000
14,250		MK-2	212,000	114,000	26,500		MK-3	286,000	165,000
14,290	9/16	MK-2	212,000	114,000	27,780	1 3/32	MK-3	291,000	170,000
14,500		MK-2	212,000	114,000	28,570	1 1/8	MK-3	296,000	175,000
15,000		MK-2	212,000	114,000	30,000		MK-3	296,000	175,000
15,250		MK-2	218,000	120,000	31,000		MK-3	301,000	180,000
15,500		MK-2	218,000	120,000	33,000		MK-4	334,000	185,000
15,750		MK-2	218,000	120,000	35,000		MK-4	339,000	190,000
16,000		MK-2	218,000	120,000	37,000		MK-4	344,000	195,000
16,500		MK-2	223,000	125,000	38,000		MK-4	349,000	200,000
16,670	21/32	MK-2	223,000	125,000	39,000		MK-4	349,000	200,000
17,000		MK-2	223,000	125,000					
17,250		MK-2	228,000	130,000					
17,460	11/16	MK-2	228,000	130,000					
17,500		MK-2	228,000	130,000					
18,000		MK-2	228,000	130,000					



Forets hélicoïdaux



Matière de coupe **HSCO**

Surface **S**

Sens de coupe **R**

**P** • Amin. de l'âme  $\geq \varnothing 10,000$  • affûtage à dépouille conique • acier rapide au Co • goujures larges • résistance à l'usure, améliorée • parfait pour les profondeurs  $> 3xD$

**M** ○

**K** •

**N** ○

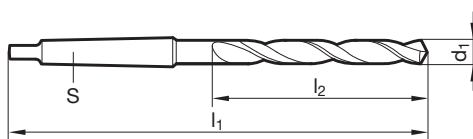
**S** ○

**H** ○

aciers, alliés ou non alliés, et fontes  $> 1000 \text{ N/mm}^2$  • aciers à outils, travail à froid et à chaud • aciers à roulement • aciers hautement alliés • aciers de cémentation et d'amélioration

**GUHRING NAVIGATOR**

Paramètres de coupe, page 782



N° d'article **662**

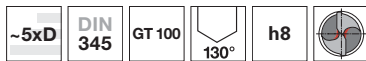
Forets hélicoïdaux à queue CM

d1		S	l1	l2
mm	inch		mm	mm
10,000		MK-1	168,000	87,000
10,200		MK-1	168,000	87,000
11,000		MK-1	175,000	94,000
11,110	7/16	MK-1	175,000	94,000
11,400		MK-1	175,000	94,000
12,200		MK-1	182,000	101,000
12,300	31/64	MK-1	182,000	101,000
12,500		MK-1	182,000	101,000
13,000		MK-1	182,000	101,000
14,000		MK-1	189,000	108,000
14,290	9/16	MK-2	212,000	114,000
15,000		MK-2	212,000	114,000

d1		S	l1	l2
mm	inch		mm	mm
16,000		MK-2	218,000	120,000
17,460	11/16	MK-2	228,000	130,000
17,500		MK-2	228,000	130,000
18,000		MK-2	228,000	130,000
20,000		MK-2	238,000	140,000
20,500		MK-2	243,000	145,000
21,000		MK-2	243,000	145,000
22,000		MK-2	248,000	150,000
23,000		MK-2	253,000	155,000
23,500		MK-3	276,000	155,000
23,810	15/16	MK-3	281,000	160,000



Forets hélicoïdaux



Matière de coupe **HSCO**

Surface **G**

Sens de coupe **R**

**P** • Amin. de l'âme  $\geq \varnothing 10,000$  • affûtage à dépouille conique • acier rapide au Co • goujures larges • résistance à l'usure, améliorée • parfait pour les profondeurs  $> 3xD$

**M**

**K** ○

**N**

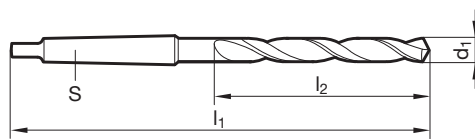
**S**

**H**

aciers, alliés ou non alliés, et fontes  $> 1000 \text{ N/mm}^2$  • aciers à outils, travail à froid et à chaud • aciers à roulement • aciers hautement alliés • aciers de cémentation et d'amélioration

**GÜHRING** NAVIGATOR

Paramètres de coupe, page 782



N° d'article

**1222**

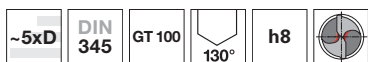
Forets hélicoïdaux à queue CM

d1		S	l1	l2
mm	inch		mm	mm
10,000		MK-1	168,000	87,000
10,200		MK-1	168,000	87,000
11,000		MK-1	175,000	94,000
11,110	7/16	MK-1	175,000	94,000
12,500		MK-1	182,000	101,000
12,700	1/2	MK-1	182,000	101,000
14,200		MK-2	212,000	114,000
15,870	5/8	MK-2	218,000	120,000
16,500		MK-2	223,000	125,000
16,670	21/32	MK-2	223,000	125,000
17,460	11/16	MK-2	228,000	130,000
19,500		MK-2	238,000	140,000

d1		S	l1	l2
mm	inch		mm	mm
23,500		MK-3	276,000	155,000
23,810	15/16	MK-3	281,000	160,000
25,500		MK-3	286,000	165,000
26,990	1 1/16	MK-3	291,000	170,000
27,500		MK-3	291,000	170,000
29,500		MK-3	296,000	175,000
30,160	1 3/16	MK-3	301,000	180,000



Forets hélicoïdaux



Matière de coupe **HSCO**

Surface **A**

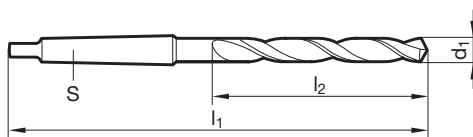
Sens de coupe **R**

**P** ○ Amin. de l'âme ≥ Ø 10,400 • affûtage à dépouille conique • acier rapide au Co • goujures larges • résistance à l'usure, améliorée • parfait pour les profondeurs > 3xD

**M** ○  
**K** ●  
**N** ○ aciers, alliés ou non alliés, et fontes > 1000 N/mm<sup>2</sup> • aciers à outils, travail à froid et à chaud • aciers à roulement • aciers hautement alliés • aciers de cémentation et d'amélioration  
**S** ○  
**H** ○

**GUHRING** NAVIGATOR

Paramètres de coupe, page 782



N° d'article **1224**

Forets hélicoïdaux à queue CM

d1		S	l1	l2
mm	inch		mm	mm
10,400		MK-1	168,000	87,000
11,110	7/16	MK-1	175,000	94,000
12,300	31/64	MK-1	182,000	101,000
12,700	1/2	MK-1	182,000	101,000
14,200		MK-2	212,000	114,000
14,290	9/16	MK-2	212,000	114,000
15,870	5/8	MK-2	218,000	120,000
16,000		MK-2	218,000	120,000
16,500		MK-2	223,000	125,000
19,000		MK-2	233,000	135,000
19,500		MK-2	238,000	140,000
23,810	15/16	MK-3	281,000	160,000

d1		S	l1	l2
mm	inch		mm	mm
25,500		MK-3	286,000	165,000
26,990	1 1/16	MK-3	291,000	170,000
27,000		MK-3	291,000	170,000
28,000		MK-3	291,000	170,000
28,500		MK-3	296,000	175,000
29,000		MK-3	296,000	175,000
29,500		MK-3	296,000	175,000
30,160	1 3/16	MK-3	301,000	180,000



Forets hélicoïdaux



Matière de coupe **HSCO**

Surface ○

Sens de coupe (R)

**P** ○ affûtage à dépouille conique • acier rapide au Co • meilleure résistance à l'usure

**M** ●

**K**

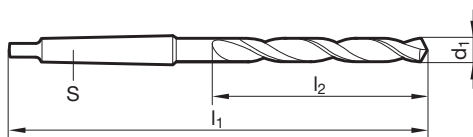
**N** ○ aciers austénit., inox., inaltérablesaux acides, réfractaires (V2A et V4A)

**S** ○

**H**

**GÜHRING**NAVIGATOR

Paramètres de coupe, page 780



N° d'article **1262**

Forets hélicoïdaux à queue CM

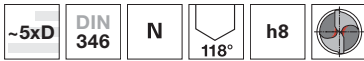
d1		S	l1	l2
mm	inch		mm	mm
10,000		MK-1	168,000	87,000
10,200		MK-1	168,000	87,000
10,500		MK-1	168,000	87,000
10,800		MK-1	175,000	94,000
11,000		MK-1	175,000	94,000
11,200		MK-1	175,000	94,000
11,800		MK-1	175,000	94,000
12,000		MK-1	182,000	101,000
12,300	31/64	MK-1	182,000	101,000
12,500		MK-1	182,000	101,000
13,000		MK-1	182,000	101,000
13,490	17/32	MK-1	189,000	108,000
13,500		MK-1	189,000	108,000
13,800		MK-1	189,000	108,000
14,000		MK-1	189,000	108,000
14,250		MK-2	212,000	114,000
14,500		MK-2	212,000	114,000
14,750		MK-2	212,000	114,000
15,000		MK-2	212,000	114,000
15,250		MK-2	218,000	120,000
15,480	39/64	MK-2	218,000	120,000
15,500		MK-2	218,000	120,000
16,000		MK-2	218,000	120,000
16,250		MK-2	223,000	125,000
16,500		MK-2	223,000	125,000
17,000		MK-2	223,000	125,000
17,500		MK-2	228,000	130,000
18,000		MK-2	228,000	130,000
18,500		MK-2	233,000	135,000
19,000		MK-2	233,000	135,000

d1		S	l1	l2
mm	inch		mm	mm
19,500		MK-2	238,000	140,000
20,000		MK-2	238,000	140,000
20,500		MK-2	243,000	145,000
21,000		MK-2	243,000	145,000
21,500		MK-2	248,000	150,000
21,750		MK-2	248,000	150,000
22,000		MK-2	248,000	150,000
22,500		MK-2	253,000	155,000
23,000		MK-2	253,000	155,000
23,420	59/64	MK-3	276,000	155,000
24,000		MK-3	281,000	160,000
24,500		MK-3	281,000	160,000
25,000	63/64	MK-3	281,000	160,000
25,500		MK-3	286,000	165,000
26,000		MK-3	286,000	165,000
26,500		MK-3	286,000	165,000
27,000		MK-3	291,000	170,000
27,500		MK-3	291,000	170,000
28,000		MK-3	291,000	170,000
28,500		MK-3	296,000	175,000
29,000		MK-3	296,000	175,000
30,000		MK-3	296,000	175,000
32,000		MK-4	334,000	185,000
34,000		MK-4	339,000	190,000





Forets hélicoïdaux



Matière de coupe **HSS**

Surface

Sens de coupe

**P** • Amin. de l'âme  $\geq \varnothing 14,200$  • affûtage à dépouille conique • avec cône Morse renforcé

**M**

**K** •

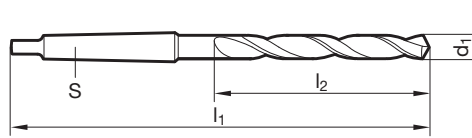
**N** ○ aciers et fontes aciérées, alliés ou non alliés • fontes grises, fontes malléables, fontes à graphite sphéroïdal • fer fritté, maillechort, graphite

**S**

**H**

**GÜHRING** NAVIGATOR

Paramètres de coupe, page 778



N° d'article **251**

Forets hélicoïdaux à queue CM

d1		S	l1	l2	d1		S	l1	l2
mm	inch		mm	mm	mm	inch		mm	mm
10,000		MK-2	185,000	87,000	21,430	27/32	MK-3	271,000	150,000
10,500		MK-2	185,000	87,000	21,500		MK-3	271,000	150,000
11,000		MK-2	192,000	94,000	22,000		MK-3	271,000	150,000
11,910	15/32	MK-2	199,000	101,000	22,220	7/8	MK-3	271,000	150,000
12,000		MK-2	199,000	101,000	23,000		MK-3	276,000	155,000
12,250		MK-2	199,000	101,000	23,020	29/32	MK-3	276,000	155,000
12,500		MK-2	199,000	101,000	27,500		MK-4	319,000	170,000
13,000		MK-2	199,000	101,000	27,750		MK-4	319,000	170,000
13,100	33/64	MK-2	199,000	101,000	27,780	1 3/32	MK-4	319,000	170,000
13,250		MK-2	206,000	108,000	28,000		MK-4	319,000	170,000
13,490	17/32	MK-2	206,000	108,000	28,180	1 7/64	MK-4	324,000	175,000
13,500		MK-2	206,000	108,000	28,500		MK-4	324,000	175,000
13,890	35/64	MK-2	206,000	108,000	28,570	1 1/8	MK-4	324,000	175,000
14,000		MK-2	206,000	108,000	28,970	1 9/64	MK-4	324,000	175,000
16,700		MK-3	246,000	125,000	29,770	1 11/64	MK-4	324,000	175,000
17,000		MK-3	246,000	125,000	31,500		MK-4	329,000	180,000
17,250		MK-3	251,000	130,000	32,000		MK-5	372,000	185,000
18,250		MK-3	256,000	135,000	36,000		MK-5	382,000	195,000
18,260	23/32	MK-3	256,000	135,000	40,080	1 37/64	MK-5	392,000	205,000
18,650	47/64	MK-3	256,000	135,000	41,000		MK-5	392,000	205,000
18,750		MK-3	256,000	135,000	41,500		MK-5	392,000	205,000
19,000		MK-3	256,000	135,000	42,070	1 21/32	MK-5	392,000	205,000
19,050	3/4	MK-3	261,000	140,000	44,050	1 47/64	MK-5	397,000	210,000
19,450	49/64	MK-3	261,000	140,000	45,000		MK-5	397,000	210,000
19,840	25/32	MK-3	261,000	140,000	46,040	1 13/16	MK-5	402,000	215,000
20,000		MK-3	261,000	140,000	47,000		MK-5	402,000	215,000
20,250		MK-3	266,000	145,000	49,000		MK-5	407,000	220,000
20,640	13/16	MK-3	266,000	145,000	49,500		MK-5	407,000	220,000
21,000		MK-3	266,000	145,000	73,000		MK-6	509,000	255,000
21,030	53/64	MK-3	266,000	145,000					



Forets hélicoïdaux



Matière de coupe **HSCO**

Surface

Sens de coupe

**P** • Amin. de l'âme  $\geq \varnothing 10,000$  • affûtage à dépouille conique • acier rapide au Co • résistance à l'usure, améliorée • avec cône Morse renforcé

**M** ○

**K** •

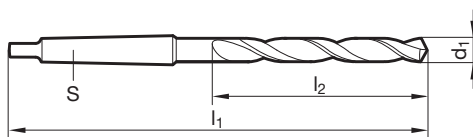
**N** • aciers, alliés ou non alliés, et fontes  $> 800 \text{ N/mm}^2$  • aciers à outils, travail à froid et à chaud • aciers à roulement • aciers hautement alliés • aciers de cémentation et d'amélioration

**S**

**H**

**GÜHRING** NAVIGATOR

Paramètres de coupe, page 780



N° d'article **351**

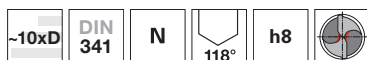
Forets hélicoïdaux à queue CM

d1		S	l1	l2
mm	inch		mm	mm
12,000		MK-2	199,000	101,000
13,000		MK-2	199,000	101,000
14,000		MK-2	206,000	108,000
17,500		MK-3	251,000	130,000
18,500		MK-3	256,000	135,000
20,000		MK-3	261,000	140,000
21,000		MK-3	266,000	145,000
21,500		MK-3	271,000	150,000
22,750		MK-3	276,000	155,000
23,000		MK-3	276,000	155,000
29,000		MK-4	324,000	175,000
30,000		MK-4	324,000	175,000

d1		S	l1	l2
mm	inch		mm	mm
31,000		MK-4	329,000	180,000
31,500		MK-4	329,000	180,000



Forets pour perçage par canon



Matière de coupe **HSS**

Surface

Sens de coupe

**P** • Amin. de l'âme  $\geq \text{Ø } 14,100$  • affûtage à dépouille conique • pour le perçage avec canons de perçage

**M**

**K** •

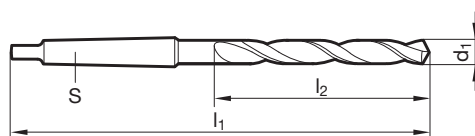
**N** ○ acier, fonte aciérée (alliée / non alliée) • fontes grises, fontes malléables, fontes à graphite sphéroïdal • fer fritté, maillechort, graphite

**S**

**H**

**GUHRING NAVIGATOR**

Paramètres de coupe, page 786



N° d'article **257**

Forets hélicoïdaux à queue CM

d1		S	l1	l2	d1		S	l1	l2
mm	inch		mm	mm	mm	inch		mm	mm
2,900		MK-1	132,000	51,000	9,900		MK-1	197,000	116,000
3,900		MK-1	145,000	64,000	10,000		MK-1	197,000	116,000
4,000		MK-1	145,000	64,000	10,050		MK-1	197,000	116,000
4,100		MK-1	145,000	64,000	10,100		MK-1	197,000	116,000
4,200		MK-1	145,000	64,000	10,200		MK-1	197,000	116,000
4,500		MK-1	150,000	69,000	10,250		MK-1	197,000	116,000
4,700		MK-1	150,000	69,000	10,300		MK-1	197,000	116,000
5,000		MK-1	155,000	74,000	10,400		MK-1	197,000	116,000
5,100		MK-1	155,000	74,000	10,500		MK-1	197,000	116,000
5,200		MK-1	155,000	74,000	10,600		MK-1	197,000	116,000
5,250		MK-1	155,000	74,000	10,700		MK-1	206,000	125,000
5,500		MK-1	161,000	80,000	10,750		MK-1	206,000	125,000
5,800		MK-1	161,000	80,000	10,800		MK-1	206,000	125,000
6,000		MK-1	161,000	80,000	10,900		MK-1	206,000	125,000
6,500		MK-1	167,000	86,000	11,000		MK-1	206,000	125,000
6,700		MK-1	167,000	86,000	11,250		MK-1	206,000	125,000
6,800		MK-1	174,000	93,000	11,400		MK-1	206,000	125,000
7,000		MK-1	174,000	93,000	11,500		MK-1	206,000	125,000
7,100		MK-1	174,000	93,000	11,750		MK-1	206,000	125,000
7,200		MK-1	174,000	93,000	11,800		MK-1	206,000	125,000
7,300		MK-1	174,000	93,000	12,000		MK-1	215,000	134,000
7,400		MK-1	174,000	93,000	12,100		MK-1	215,000	134,000
7,500		MK-1	174,000	93,000	12,200		MK-1	215,000	134,000
7,600		MK-1	181,000	100,000	12,250		MK-1	215,000	134,000
7,800		MK-1	181,000	100,000	12,300	31/64	MK-1	215,000	134,000
8,000		MK-1	181,000	100,000	12,400		MK-1	215,000	134,000
8,050		MK-1	181,000	100,000	12,500		MK-1	215,000	134,000
8,200		MK-1	181,000	100,000	12,600		MK-1	215,000	134,000
8,250		MK-1	181,000	100,000	13,000		MK-1	215,000	134,000
8,500		MK-1	181,000	100,000	13,100	33/64	MK-1	215,000	134,000
8,600		MK-1	188,000	107,000	13,200		MK-1	215,000	134,000
8,750		MK-1	188,000	107,000	13,490	17/32	MK-1	223,000	142,000
8,800		MK-1	188,000	107,000	13,500		MK-1	223,000	142,000
8,900		MK-1	188,000	107,000	13,750		MK-1	223,000	142,000
9,000		MK-1	188,000	107,000	13,900		MK-1	223,000	142,000
9,100		MK-1	188,000	107,000	14,000		MK-1	223,000	142,000
9,300		MK-1	188,000	107,000	14,100		MK-2	245,000	147,000
9,400		MK-1	188,000	107,000	14,250		MK-2	245,000	147,000
9,500		MK-1	188,000	107,000	14,290	9/16	MK-2	245,000	147,000
9,600		MK-1	197,000	116,000	14,300		MK-2	245,000	147,000
9,700		MK-1	197,000	116,000	14,400		MK-2	245,000	147,000
9,800		MK-1	197,000	116,000	14,500		MK-2	245,000	147,000



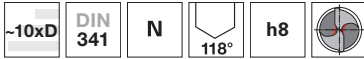
Forets hélicoïdaux à queue CM

d1		S	l1	l2
mm	inch		mm	mm
14,750		MK-2	245,000	147,000
14,900		MK-2	245,000	147,000
15,000		MK-2	245,000	147,000
15,200		MK-2	251,000	153,000
15,250		MK-2	251,000	153,000
15,500		MK-2	251,000	153,000
15,600		MK-2	251,000	153,000
15,750		MK-2	251,000	153,000
16,000		MK-2	251,000	153,000
16,100		MK-2	257,000	159,000
16,200		MK-2	257,000	159,000
16,250		MK-2	257,000	159,000
16,500		MK-2	257,000	159,000
16,670	21/32	MK-2	257,000	159,000
16,750		MK-2	257,000	159,000
17,000		MK-2	257,000	159,000
17,250		MK-2	263,000	165,000
17,460	11/16	MK-2	263,000	165,000
17,500		MK-2	263,000	165,000
17,750		MK-2	263,000	165,000
18,000		MK-2	263,000	165,000
18,250		MK-2	269,000	171,000
18,500		MK-2	269,000	171,000
18,750		MK-2	269,000	171,000
19,000		MK-2	269,000	171,000
19,500		MK-2	275,000	177,000
19,750		MK-2	275,000	177,000
19,840	25/32	MK-2	275,000	177,000
20,000		MK-2	275,000	177,000
20,250		MK-2	282,000	184,000
20,500		MK-2	282,000	184,000
20,640	13/16	MK-2	282,000	184,000
21,000		MK-2	282,000	184,000
21,500		MK-2	289,000	191,000
21,750		MK-2	289,000	191,000
21,830	55/64	MK-2	289,000	191,000
22,000		MK-2	289,000	191,000
22,220	7/8	MK-2	289,000	191,000
22,250		MK-2	289,000	191,000
22,500		MK-2	296,000	198,000
23,000		MK-2	296,000	198,000
23,500		MK-3	319,000	198,000
23,750		MK-3	327,000	206,000
23,810	15/16	MK-3	327,000	206,000
24,000		MK-3	327,000	206,000
24,250		MK-3	327,000	206,000
24,500		MK-3	327,000	206,000
25,000	63/64	MK-3	327,000	206,000

d1		S	l1	l2
mm	inch		mm	mm
25,250		MK-3	335,000	214,000
25,500		MK-3	335,000	214,000
26,000		MK-3	335,000	214,000
26,500		MK-3	335,000	214,000
26,590	1 3/64	MK-3	343,000	222,000
26,990	1 1/16	MK-3	343,000	222,000
27,000		MK-3	343,000	222,000
27,380	1 5/64	MK-3	343,000	222,000
27,500		MK-3	343,000	222,000
28,000		MK-3	343,000	222,000
28,500		MK-3	351,000	230,000
29,000		MK-3	351,000	230,000
29,500		MK-3	351,000	230,000
30,000		MK-3	351,000	230,000
30,500		MK-3	360,000	239,000
31,000		MK-3	360,000	239,000
32,000		MK-4	397,000	248,000
33,000		MK-4	397,000	248,000
33,500		MK-4	397,000	248,000
34,000		MK-4	406,000	257,000
35,000		MK-4	406,000	257,000
36,000		MK-4	416,000	267,000
36,120	1 27/64	MK-4	416,000	267,000
36,910	1 29/64	MK-4	416,000	267,000
37,000		MK-4	416,000	267,000
37,500		MK-4	416,000	267,000
38,000		MK-4	426,000	277,000
39,000		MK-4	426,000	277,000
39,500		MK-4	426,000	277,000
40,000		MK-4	426,000	277,000
40,080	1 37/64	MK-4	436,000	287,000
40,880	1 39/64	MK-4	436,000	287,000
41,000		MK-4	436,000	287,000
41,670	1 41/64	MK-4	436,000	287,000
42,000		MK-4	436,000	287,000
43,000		MK-4	447,000	298,000
43,660	1 23/32	MK-4	447,000	298,000
44,000		MK-4	447,000	298,000
45,000		MK-4	447,000	298,000
46,830	1 27/32	MK-4	459,000	310,000
48,000		MK-4	470,000	321,000
49,000		MK-4	470,000	321,000
50,000		MK-4	470,000	321,000



Forets hélicoïdaux courts



Matière de coupe **HSS**

Surface **S**

Sens de coupe **R**

**P** • Amin. de l'âme  $\geq \varnothing 4,000$  • affûtage à dépouille conique • pour le perçage avec canons de perçage

**M**

**K** •

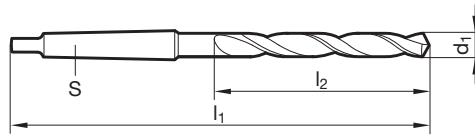
**N** ○ acier, fonte aciérée (alliée / non alliée) • fontes grises, fontes malléables, fontes à graphite sphéroïdal • fer fritté, maillechort, graphite

**S**

**H**

**GÜHRING** NAVIGATOR

Paramètres de coupe, page 786



N° d'article **655**

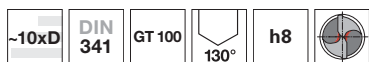
Forets hélicoïdaux à queue CM

d1		S	l1	l2
mm	inch		mm	mm
5,500		MK-1	161,000	80,000
6,000		MK-1	161,000	80,000
6,800		MK-1	174,000	93,000
7,000		MK-1	174,000	93,000
7,300		MK-1	174,000	93,000
8,000		MK-1	181,000	100,000
8,200		MK-1	181,000	100,000
8,400		MK-1	181,000	100,000
8,500		MK-1	181,000	100,000
8,600		MK-1	188,000	107,000
8,700		MK-1	188,000	107,000
8,800		MK-1	188,000	107,000
9,000		MK-1	188,000	107,000
9,500		MK-1	188,000	107,000
10,000		MK-1	197,000	116,000
10,050		MK-1	197,000	116,000
10,100		MK-1	197,000	116,000
10,200		MK-1	197,000	116,000
10,400		MK-1	197,000	116,000
10,500		MK-1	197,000	116,000
11,000		MK-1	206,000	125,000
11,400		MK-1	206,000	125,000
11,500		MK-1	206,000	125,000
11,750		MK-1	206,000	125,000

d1		S	l1	l2
mm	inch		mm	mm
12,000		MK-1	215,000	134,000
12,500		MK-1	215,000	134,000
13,000		MK-1	215,000	134,000
13,500		MK-1	223,000	142,000
14,000		MK-1	223,000	142,000
14,250		MK-2	245,000	147,000
14,500		MK-2	245,000	147,000
14,750		MK-2	245,000	147,000
15,000		MK-2	245,000	147,000
15,250		MK-2	251,000	153,000
15,870	5/8	MK-2	251,000	153,000
17,000		MK-2	257,000	159,000
17,500		MK-2	263,000	165,000
18,000		MK-2	263,000	165,000
21,000		MK-2	282,000	184,000
22,000		MK-2	289,000	191,000



Forets pour perçage par canon



Matière de coupe **HSS**

Surface

Sens de coupe

**P** • Amin. de l'âme  $\geq \varnothing 5,500$  • affûtage à dépouille conique • goujures larges • en cas de mauvaise évacuation des copeaux

**M**

**K** •

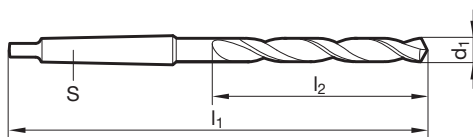
**N** • fontes grises et aciers jusqu'à 1000 N/mm<sup>2</sup> • Ne pas utiliser pour les aciers CrNi et les aciers inox

**S**

**H**

**GÜHRING** NAVIGATOR

Paramètres de coupe, page 786



N° d'article **551**

d1		S	l1	l2
mm	inch		mm	mm
5,500		MK-1	161,000	80,000
5,550		MK-1	161,000	80,000
6,350	1/4	MK-1	167,000	86,000
6,500		MK-1	167,000	86,000
6,750	17/64	MK-1	174,000	93,000
6,800		MK-1	174,000	93,000
7,000		MK-1	174,000	93,000
7,500		MK-1	174,000	93,000
7,940	5/16	MK-1	181,000	100,000
8,000		MK-1	181,000	100,000
8,100		MK-1	181,000	100,000
8,200		MK-1	181,000	100,000
8,300		MK-1	181,000	100,000
8,330	21/64	MK-1	181,000	100,000
8,500		MK-1	181,000	100,000
8,600		MK-1	188,000	107,000
8,700		MK-1	188,000	107,000
8,750		MK-1	188,000	107,000
9,000		MK-1	188,000	107,000
9,500		MK-1	188,000	107,000
9,520	3/8	MK-1	197,000	116,000
9,800		MK-1	197,000	116,000
9,900		MK-1	197,000	116,000
9,920	25/64	MK-1	197,000	116,000
10,000		MK-1	197,000	116,000
10,200		MK-1	197,000	116,000
10,250		MK-1	197,000	116,000
10,320	13/32	MK-1	197,000	116,000
10,500		MK-1	197,000	116,000
10,750		MK-1	206,000	125,000
11,000		MK-1	206,000	125,000
11,110	7/16	MK-1	206,000	125,000
11,500		MK-1	206,000	125,000
11,510	29/64	MK-1	206,000	125,000
11,750		MK-1	206,000	125,000
11,800		MK-1	206,000	125,000
12,000		MK-1	215,000	134,000
12,300	31/64	MK-1	215,000	134,000
12,500		MK-1	215,000	134,000
12,700	1/2	MK-1	215,000	134,000
12,800		MK-1	215,000	134,000
13,000		MK-1	215,000	134,000

d1		S	l1	l2
mm	inch		mm	mm
13,100	33/64	MK-1	215,000	134,000
13,490	17/32	MK-1	223,000	142,000
13,500		MK-1	223,000	142,000
13,800		MK-1	223,000	142,000
13,890	35/64	MK-1	223,000	142,000
14,000		MK-1	223,000	142,000
14,200		MK-2	245,000	147,000
14,250		MK-2	245,000	147,000
14,290	9/16	MK-2	245,000	147,000
14,500		MK-2	245,000	147,000
14,750		MK-2	245,000	147,000
15,000		MK-2	245,000	147,000
15,250		MK-2	251,000	153,000
15,480	39/64	MK-2	251,000	153,000
15,750		MK-2	251,000	153,000
16,000		MK-2	251,000	153,000
16,500		MK-2	257,000	159,000
16,670	21/32	MK-2	257,000	159,000
17,000		MK-2	257,000	159,000
17,460	11/16	MK-2	263,000	165,000
17,500		MK-2	263,000	165,000
18,000		MK-2	263,000	165,000
18,260	23/32	MK-2	269,000	171,000
19,000		MK-2	269,000	171,000
19,500		MK-2	275,000	177,000
19,840	25/32	MK-2	275,000	177,000
20,000		MK-2	275,000	177,000
21,000		MK-2	282,000	184,000
22,000		MK-2	289,000	191,000
23,000		MK-2	296,000	198,000
23,020	29/32	MK-2	296,000	198,000
23,500		MK-3	319,000	198,000
24,000		MK-3	327,000	206,000
25,000	63/64	MK-3	327,000	206,000
26,000		MK-3	335,000	214,000
26,590	1 3/64	MK-3	343,000	222,000
28,570	1 1/8	MK-3	351,000	230,000
28,900		MK-3	351,000	230,000
28,970	1 9/64	MK-3	351,000	230,000
29,000		MK-3	351,000	230,000
30,000		MK-3	351,000	230,000
30,500		MK-3	360,000	239,000

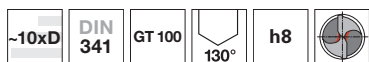


d1		S	l1	l2
mm	inch		mm	mm
30,560	1 13/64	MK-3	360,000	239,000
30,960	1 7/32	MK-3	360,000	239,000
31,000		MK-3	360,000	239,000
31,500		MK-3	360,000	239,000
32,000		MK-4	397,000	248,000

d1		S	l1	l2
mm	inch		mm	mm



Forets pour perçage par canon



**P** • Amin. de l'âme  $\geq \varnothing 5,600$  • affûtage à dépouille conique • goujures larges • en cas de mauvaise évacuation des copeaux

**M**

**K** •

**N** • fontes grises et aciers jusqu'à 1000 N/mm<sup>2</sup> • Ne pas utiliser pour les aciers CrNi et les aciers inox

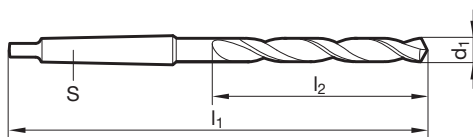
**S**

**H**

**GÜHRING** NAVIGATOR

Paramètres de coupe, page 786

Matière de coupe	<b>HSS</b>
Surface	<b>S</b>
Sens de coupe	<b>R</b>



N° d'article **656**

d1		S	l1	l2
mm	inch		mm	mm
7,000		MK-1	174,000	93,000
9,000		MK-1	188,000	107,000
9,500		MK-1	188,000	107,000
9,920	25/64	MK-1	197,000	116,000
10,000		MK-1	197,000	116,000
10,200		MK-1	197,000	116,000
10,320	13/32	MK-1	197,000	116,000
10,500		MK-1	197,000	116,000
11,000		MK-1	206,000	125,000
11,110	7/16	MK-1	206,000	125,000
11,500		MK-1	206,000	125,000
12,000		MK-1	215,000	134,000
12,500		MK-1	215,000	134,000
13,000		MK-1	215,000	134,000
13,800		MK-1	223,000	142,000
14,000		MK-1	223,000	142,000
14,500		MK-2	245,000	147,000
15,000		MK-2	245,000	147,000

d1		S	l1	l2
mm	inch		mm	mm
16,000		MK-2	251,000	153,000
16,670	21/32	MK-2	257,000	159,000
17,460	11/16	MK-2	263,000	165,000
17,500		MK-2	263,000	165,000
18,000		MK-2	263,000	165,000
19,050	3/4	MK-2	275,000	177,000
20,500		MK-2	282,000	184,000
20,640	13/16	MK-2	282,000	184,000
21,500		MK-2	289,000	191,000
23,000		MK-2	296,000	198,000

Forets hélicoïdaux à queue CM





Forets pour perçage par canon



Matière de coupe **HSS**

Surface ○

Sens de coupe (R)

**P** ○ Amin. de l'âme ≥ Ø 4,200 • affûtage à dépouille conique • goujures particulièrement volumineuses

**M**

**K**

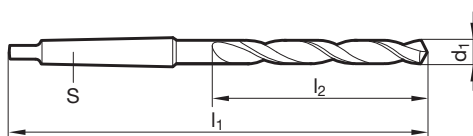
**N** • matières tendres et à copeaux longs < 500 N/mm<sup>2</sup> • aciers de décolletage, doux • aluminium/alliages d'aluminium à copeaux longs

**S** • zinc, cuivre de 1ère fusion, Alpax, électrode • zamak, thermoplastiques, bois

**H**

**GUHRING NAVIGATOR**

Paramètres de coupe, page 786



N° d'article **505**

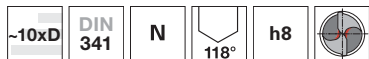
Forets hélicoïdaux à queue CM

d1		S	l1	l2
mm	inch		mm	mm
5,500		MK-1	161,000	80,000
5,600		MK-1	161,000	80,000
5,800		MK-1	161,000	80,000
6,000		MK-1	161,000	80,000
6,100		MK-1	167,000	86,000
6,300		MK-1	167,000	86,000
6,500		MK-1	167,000	86,000
6,700		MK-1	167,000	86,000
6,800		MK-1	174,000	93,000
7,000		MK-1	174,000	93,000
7,200		MK-1	174,000	93,000
7,300		MK-1	174,000	93,000
7,500		MK-1	174,000	93,000
7,700		MK-1	181,000	100,000
7,950		MK-1	181,000	100,000
8,000		MK-1	181,000	100,000
8,200		MK-1	181,000	100,000
8,300		MK-1	181,000	100,000
8,400		MK-1	181,000	100,000
8,500		MK-1	181,000	100,000
8,600		MK-1	188,000	107,000
9,050		MK-1	188,000	107,000
9,300		MK-1	188,000	107,000
9,500		MK-1	188,000	107,000
9,600		MK-1	197,000	116,000
9,700		MK-1	197,000	116,000
9,800		MK-1	197,000	116,000
10,000		MK-1	197,000	116,000
10,200		MK-1	197,000	116,000
10,250		MK-1	197,000	116,000

d1		S	l1	l2
mm	inch		mm	mm
10,700		MK-1	206,000	125,000
10,750		MK-1	206,000	125,000
10,800		MK-1	206,000	125,000
11,200		MK-1	206,000	125,000
11,500		MK-1	206,000	125,000
11,800		MK-1	206,000	125,000
12,000		MK-1	215,000	134,000
12,200		MK-1	215,000	134,000
12,500		MK-1	215,000	134,000
12,700	1/2	MK-1	215,000	134,000
12,800		MK-1	215,000	134,000
13,250		MK-1	223,000	142,000
13,750		MK-1	223,000	142,000
13,800		MK-1	223,000	142,000
14,200		MK-2	245,000	147,000
14,250		MK-2	245,000	147,000
14,300		MK-2	245,000	147,000
14,500		MK-2	245,000	147,000
15,000		MK-2	245,000	147,000
16,000		MK-2	251,000	153,000
16,500		MK-2	257,000	159,000
16,800		MK-2	257,000	159,000
18,500		MK-2	269,000	171,000
19,250		MK-2	275,000	177,000
21,000		MK-2	282,000	184,000
23,500		MK-3	319,000	198,000
24,000		MK-3	327,000	206,000
29,000		MK-3	351,000	230,000
29,500		MK-3	351,000	230,000



Forets pour perçage par canon



Matière de coupe **HSCO**

Surface

Sens de coupe

**P** • Amin. de l'âme  $\geq \varnothing 4,750$  • affûtage à dépouille conique • acier rapide au Co • meilleure résistance à l'usure • pour le perçage avec canons de perçage

**M** ○

**K** •

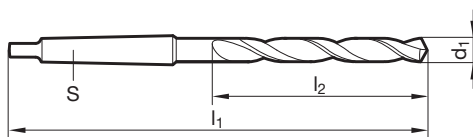
**N** • aciers, alliés ou non alliés, et fontes  $> 800 \text{ N/mm}^2$  • aciers à outils, travail à froid et à chaud • aciers à roulement • aciers hautement alliés • aciers de cémentation et d'amélioration

**S** ○

**H**

**GÜHRING** NAVIGATOR

Paramètres de coupe, page 792



N° d'article **357**

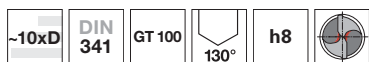
Forets hélicoïdaux à queue CM

d1		S	l1	l2
mm	inch		mm	mm
4,750		MK-1	150,000	69,000
5,000		MK-1	155,000	74,000
5,400		MK-1	161,000	80,000
6,000		MK-1	161,000	80,000
6,750	17/64	MK-1	174,000	93,000
6,800		MK-1	174,000	93,000
7,000		MK-1	174,000	93,000
8,000		MK-1	181,000	100,000
8,200		MK-1	181,000	100,000
8,500		MK-1	181,000	100,000
8,800		MK-1	188,000	107,000
9,000		MK-1	188,000	107,000
9,500		MK-1	188,000	107,000
9,800		MK-1	197,000	116,000
10,000		MK-1	197,000	116,000
10,200		MK-1	197,000	116,000
10,250		MK-1	197,000	116,000
10,500		MK-1	197,000	116,000
11,000		MK-1	206,000	125,000
11,500		MK-1	206,000	125,000
12,000		MK-1	215,000	134,000
12,250		MK-1	215,000	134,000
12,500		MK-1	215,000	134,000
13,000		MK-1	215,000	134,000

d1		S	l1	l2
mm	inch		mm	mm
13,500		MK-1	223,000	142,000
14,000		MK-1	223,000	142,000
14,500		MK-2	245,000	147,000
14,750		MK-2	245,000	147,000
15,000		MK-2	245,000	147,000
15,500		MK-2	251,000	153,000
16,000		MK-2	251,000	153,000
16,750		MK-2	257,000	159,000
17,000		MK-2	257,000	159,000
17,500		MK-2	263,000	165,000
18,000		MK-2	263,000	165,000
20,000		MK-2	275,000	177,000
21,000		MK-2	282,000	184,000
22,000		MK-2	289,000	191,000
23,000		MK-2	296,000	198,000
24,000		MK-3	327,000	206,000
25,000	63/64	MK-3	327,000	206,000
26,000		MK-3	335,000	214,000
26,500		MK-3	335,000	214,000
27,000		MK-3	343,000	222,000
28,000		MK-3	343,000	222,000
30,000		MK-3	351,000	230,000
33,000		MK-4	397,000	248,000
40,000		MK-4	426,000	277,000



Forets pour perçage par canon



Matière de coupe **HSCO**

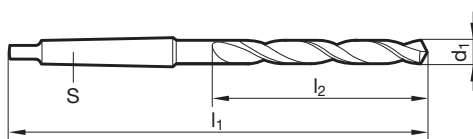
Surface

Sens de coupe

- P** • Amin. de l'âme  $\geq \varnothing 10,000$  • affûtage à dépouille conique • acier rapide au Co • goujures larges • meilleure résistance à l'usure • en cas de mauvaise évacuation des copeaux
- M** •
- K** •
- N** • aciers, alliés ou non alliés, et fontes  $> 800 \text{ N/mm}^2$  • aciers à outils, travail à froid et à chaud • aciers à roulement • aciers hautement alliés • aciers de cémentation et d'amélioration
- S** •
- H** ○

**GUHRING** NAVIGATOR

Paramètres de coupe, page 792



N° d'article **623**

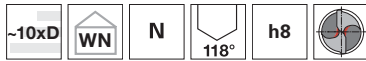
Forets hélicoïdaux à queue CM

d1		S	l1	l2
mm	inch		mm	mm
10,000		MK-1	197,000	116,000
10,200		MK-1	197,000	116,000
10,320	13/32	MK-1	197,000	116,000
10,500		MK-1	197,000	116,000
10,800		MK-1	206,000	125,000
11,000		MK-1	206,000	125,000
11,200		MK-1	206,000	125,000
11,500		MK-1	206,000	125,000
11,510	29/64	MK-1	206,000	125,000
11,800		MK-1	206,000	125,000
12,000		MK-1	215,000	134,000
12,200		MK-1	215,000	134,000
12,400		MK-1	215,000	134,000
12,500		MK-1	215,000	134,000
13,000		MK-1	215,000	134,000
13,490	17/32	MK-1	223,000	142,000
13,500		MK-1	223,000	142,000
13,890	35/64	MK-1	223,000	142,000
14,000		MK-1	223,000	142,000
14,200		MK-2	245,000	147,000
14,290	9/16	MK-2	245,000	147,000
14,500		MK-2	245,000	147,000
14,680	37/64	MK-2	245,000	147,000
15,000		MK-2	245,000	147,000

d1		S	l1	l2
mm	inch		mm	mm
15,500		MK-2	251,000	153,000
16,000		MK-2	251,000	153,000
16,500		MK-2	257,000	159,000
17,000		MK-2	257,000	159,000
17,460	11/16	MK-2	263,000	165,000
17,500		MK-2	263,000	165,000
18,000		MK-2	263,000	165,000
18,500		MK-2	269,000	171,000
19,000		MK-2	269,000	171,000
19,500		MK-2	275,000	177,000
20,000		MK-2	275,000	177,000
20,500		MK-2	282,000	184,000
21,000		MK-2	282,000	184,000
22,000		MK-2	289,000	191,000
22,500		MK-2	296,000	198,000
24,000		MK-3	327,000	206,000
25,000	63/64	MK-3	327,000	206,000
26,000		MK-3	335,000	214,000



Forets pour perçage par canon



Matière de coupe **HSS**

Surface

Sens de coupe

**P** • Amin. de l'âme  $\geq \varnothing 16,500$  • affûtage à dépouille conique • avec cône Morse renforcé • pour le perçage avec canons de perçage

**M**

**K** •

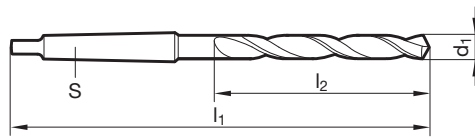
**N** ○ acier, fonte aciérée (alliée / non alliée) • fontes grises, fontes malléables, fontes à graphite sphéroïdal • fer fritté, maillechort, graphite

**S**

**H**

**GÜHRING** NAVIGATOR

Paramètres de coupe, page 786



N° d'article **523**

Forets hélicoïdaux à queue CM

d1		S	l1	l2
mm	inch		mm	mm
10,000		MK-2	214,000	116,000
11,000		MK-2	223,000	125,000
12,300	31/64	MK-2	232,000	134,000
12,500		MK-2	232,000	134,000
14,000		MK-2	240,000	142,000
21,000		MK-3	305,000	184,000

d1		S	l1	l2
mm	inch		mm	mm
23,000		MK-3	319,000	198,000
29,000		MK-4	379,000	230,000



Forets hélicoïdaux extra-longs, série 1



Matière de coupe **HSS**

Surface

Sens de coupe

**P** • Amin. de l'âme  $\geq \varnothing 7,800$  • affûtage à dépouille conique • pour les perçages très profonds

**M**

**K** •

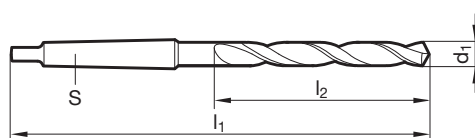
**N** ○ acier, fonte aciérée (alliée / non alliée) • fontes grises, fontes malléables, fontes à graphite sphéroïdal • fer fritté, maillechort, graphite

**S**

**H**

**GUHRING NAVIGATOR**

Paramètres de coupe, page 788



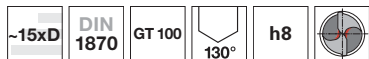
N° d'article **266**

d1		S	l1	l2	d1		S	l1	l2
mm	inch		mm	mm	mm	inch		mm	mm
8,000		MK-1	265,000	165,000	20,500		MK-2	385,000	260,000
8,500		MK-1	265,000	165,000	20,640	13/16	MK-2	385,000	260,000
9,000		MK-1	275,000	175,000	21,000		MK-2	385,000	260,000
9,500		MK-1	275,000	175,000	21,430	27/32	MK-2	405,000	270,000
10,000		MK-1	285,000	185,000	21,500		MK-2	405,000	270,000
10,200		MK-1	285,000	185,000	22,000		MK-2	405,000	270,000
10,250		MK-1	285,000	185,000	22,500		MK-2	405,000	270,000
10,500		MK-1	285,000	185,000	23,000		MK-2	405,000	270,000
11,000		MK-1	300,000	195,000	23,020	29/32	MK-2	405,000	270,000
11,400		MK-1	300,000	195,000	23,500		MK-3	425,000	270,000
11,500		MK-1	300,000	195,000	24,000		MK-3	440,000	290,000
11,750		MK-1	300,000	195,000	24,500		MK-3	440,000	290,000
11,800		MK-1	300,000	195,000	25,000	63/64	MK-3	440,000	290,000
12,000		MK-1	310,000	205,000	26,000		MK-3	440,000	290,000
12,200		MK-1	310,000	205,000	26,500		MK-3	440,000	290,000
12,500		MK-1	310,000	205,000	27,000		MK-3	460,000	305,000
12,700	1/2	MK-1	310,000	205,000	28,000		MK-3	460,000	305,000
13,000		MK-1	310,000	205,000	30,000		MK-3	460,000	305,000
13,500		MK-1	325,000	220,000	30,500		MK-3	480,000	320,000
13,750		MK-1	325,000	220,000	31,000		MK-3	480,000	320,000
14,000		MK-1	325,000	220,000	32,000		MK-4	505,000	320,000
14,290	9/16	MK-2	340,000	220,000	33,000		MK-4	505,000	320,000
14,500		MK-2	340,000	220,000	34,000		MK-4	530,000	340,000
15,000		MK-2	340,000	220,000	35,000		MK-4	530,000	340,000
15,250		MK-2	355,000	230,000	36,000		MK-4	530,000	340,000
15,500		MK-2	355,000	230,000	38,000		MK-4	555,000	360,000
15,750		MK-2	355,000	230,000	39,000		MK-4	555,000	360,000
15,800		MK-2	355,000	230,000	40,000		MK-4	555,000	360,000
16,000		MK-2	355,000	230,000	42,000		MK-4	555,000	360,000
16,250		MK-2	355,000	230,000	45,000		MK-4	585,000	385,000
16,500		MK-2	355,000	230,000	45,240	1 25/32	MK-4	585,000	385,000
16,670	21/32	MK-2	355,000	230,000	48,000		MK-4	605,000	405,000
17,000		MK-2	355,000	230,000	50,000		MK-4	605,000	405,000
17,500		MK-2	370,000	245,000					
17,750		MK-2	370,000	245,000					
18,000		MK-2	370,000	245,000					
18,500		MK-2	370,000	245,000					
18,650	47/64	MK-2	370,000	245,000					
19,000		MK-2	370,000	245,000					
19,500		MK-2	385,000	260,000					
19,750		MK-2	385,000	260,000					
20,000		MK-2	385,000	260,000					

Forets hélicoïdaux à queue CM



Forets hélicoïdaux extra-longs, série 1



Matière de coupe **HSS**

Surface

Sens de coupe

**P** • Amin. de l'âme  $\geq \varnothing 5,800$  • affûtage à dépouille conique • goujures larges • pour les perçages très profonds

**M** • en cas de mauvaise évacuation des copeaux

**K** •

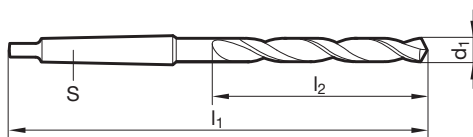
**N** • fontes grises et aciers jusqu'à 1000 N/mm<sup>2</sup> • Ne pas utiliser pour les aciers CrNi et les aciers inox

**S**

**H**

**GÜHRING** NAVIGATOR

Paramètres de coupe, page 790



N° d'article **526**

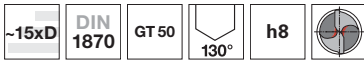
Forets hélicoïdaux à queue CM

d1		S	l1	l2
mm	inch		mm	mm
8,000		MK-1	265,000	165,000
8,500		MK-1	265,000	165,000
8,600		MK-1	275,000	175,000
8,700		MK-1	275,000	175,000
9,000		MK-1	275,000	175,000
9,500		MK-1	275,000	175,000
9,520	3/8	MK-1	285,000	185,000
9,800		MK-1	285,000	185,000
10,000		MK-1	285,000	185,000
10,200		MK-1	285,000	185,000
10,500		MK-1	285,000	185,000
10,720	27/64	MK-1	300,000	195,000
11,000		MK-1	300,000	195,000
11,110	7/16	MK-1	300,000	195,000
11,500		MK-1	300,000	195,000
11,510	29/64	MK-1	300,000	195,000
11,750		MK-1	300,000	195,000
12,000		MK-1	310,000	205,000
12,500		MK-1	310,000	205,000
12,700	1/2	MK-1	310,000	205,000
12,800		MK-1	310,000	205,000
13,000		MK-1	310,000	205,000
13,490	17/32	MK-1	325,000	220,000
13,500		MK-1	325,000	220,000
14,000		MK-1	325,000	220,000
14,200		MK-2	340,000	220,000
14,290	9/16	MK-2	340,000	220,000
14,500		MK-2	340,000	220,000
15,000		MK-2	340,000	220,000
15,500		MK-2	355,000	230,000

d1		S	l1	l2
mm	inch		mm	mm
15,870	5/8	MK-2	355,000	230,000
16,000		MK-2	355,000	230,000
16,500		MK-2	355,000	230,000
17,000		MK-2	355,000	230,000
17,460	11/16	MK-2	370,000	245,000
17,500		MK-2	370,000	245,000
18,000		MK-2	370,000	245,000
18,500		MK-2	370,000	245,000
19,000		MK-2	370,000	245,000
19,500		MK-2	385,000	260,000
20,000		MK-2	385,000	260,000
20,500		MK-2	385,000	260,000
21,000		MK-2	385,000	260,000
21,500		MK-2	405,000	270,000
22,000		MK-2	405,000	270,000
23,000		MK-2	405,000	270,000
24,000		MK-3	440,000	290,000
25,000	63/64	MK-3	440,000	290,000
26,000		MK-3	440,000	290,000
26,500		MK-3	440,000	290,000
28,000		MK-3	460,000	305,000
28,500		MK-3	460,000	305,000
29,000		MK-3	460,000	305,000
30,000		MK-3	460,000	305,000



Forets hélicoïdaux extra-longs, série 1



Matière de coupe **HSS**

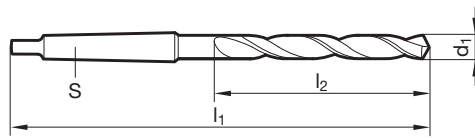
Surface ○

Sens de coupe (R)

- P** ○ Amin. de l'âme ≥ Ø 7,900 • affûtage à dépouille conique • pour les perçages très profonds
- M** • pour matières tendres et à copeaux longs
- K**
- N** • matières tendres et à copeaux longs < 500 N/mm<sup>2</sup> • aciers de décolletage, doux • aluminium/alliages d'aluminium à copeaux longs
- S** • zinc, cuivre de 1ère fusion, Alpax, électrode • zamak, thermoplastiques, bois
- H**

**GÜHRING** NAVIGATOR

Paramètres de coupe, page 788



N° d'article **525**

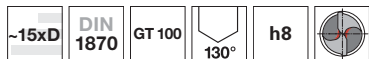
Forets hélicoïdaux à queue CM

d1		S	l1	l2
mm	inch		mm	mm
8,500		MK-1	265,000	165,000
8,700		MK-1	275,000	175,000
9,000		MK-1	275,000	175,000
9,500		MK-1	275,000	175,000
10,000		MK-1	285,000	185,000
10,500		MK-1	285,000	185,000
11,000		MK-1	300,000	195,000
12,000		MK-1	310,000	205,000
12,500		MK-1	310,000	205,000
13,000		MK-1	310,000	205,000
13,500		MK-1	325,000	220,000
14,000		MK-1	325,000	220,000
15,000		MK-2	340,000	220,000
15,500		MK-2	355,000	230,000
16,000		MK-2	355,000	230,000
18,000		MK-2	370,000	245,000
19,500		MK-2	385,000	260,000
21,000		MK-2	385,000	260,000

d1		S	l1	l2
mm	inch		mm	mm
23,000		MK-2	405,000	270,000
24,000		MK-3	440,000	290,000
24,300		MK-3	440,000	290,000
24,380		MK-3	440,000	290,000
24,500		MK-3	440,000	290,000
25,500		MK-3	440,000	290,000
26,500		MK-3	440,000	290,000
27,500		MK-3	460,000	305,000
28,000		MK-3	460,000	305,000
29,000		MK-3	460,000	305,000
31,000		MK-3	480,000	320,000
33,000		MK-4	505,000	320,000



Forets hélicoïdaux extra-longs, série 1



Matière de coupe **HSCO**

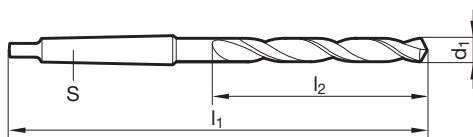
Surface

Sens de coupe

- P** • Amin. de l'âme  $\geq \varnothing 9,520$  • affûtage à dépouille conique • acier rapide au Co • goujures larges • meilleure résistance à l'usure • pour les perçages très profonds
- M** •
- K** • en cas de mauvaise évacuation des copeaux
- N** • aciers et fontes aciérées à haute résistance • fontes grises, fontes malléables, fontes à graphite sphéroïdal
- S** •
- H** ○

**GÜHRING** NAVIGATOR

Paramètres de coupe, page 794



N° d'article **620**

d1		S	l1	l2
mm	inch		mm	mm
9,520	3/8	MK-1	285,000	185,000
10,000		MK-1	285,000	185,000
10,200		MK-1	285,000	185,000
10,320	13/32	MK-1	285,000	185,000
10,500		MK-1	285,000	185,000
11,000		MK-1	300,000	195,000
11,110	7/16	MK-1	300,000	195,000
11,500		MK-1	300,000	195,000
11,510	29/64	MK-1	300,000	195,000
12,000		MK-1	310,000	205,000
12,300	31/64	MK-1	310,000	205,000
12,500		MK-1	310,000	205,000
12,700	1/2	MK-1	310,000	205,000
13,000		MK-1	310,000	205,000
13,500		MK-1	325,000	220,000
14,000		MK-1	325,000	220,000
14,290	9/16	MK-2	340,000	220,000
14,500		MK-2	340,000	220,000
15,000		MK-2	340,000	220,000
15,080	19/32	MK-2	355,000	230,000
15,500		MK-2	355,000	230,000
16,000		MK-2	355,000	230,000
16,500		MK-2	355,000	230,000
17,000		MK-2	355,000	230,000

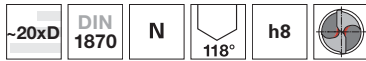
d1		S	l1	l2
mm	inch		mm	mm
17,500		MK-2	370,000	245,000
18,000		MK-2	370,000	245,000
18,500		MK-2	370,000	245,000
19,000		MK-2	370,000	245,000
20,000		MK-2	385,000	260,000
21,000		MK-2	385,000	260,000
21,830		MK-2	405,000	270,000
22,000		MK-2	405,000	270,000
22,620		MK-2	405,000	270,000
23,000		MK-2	405,000	270,000
25,500		MK-3	440,000	290,000
26,000		MK-3	440,000	290,000
27,180		MK-3	460,000	305,000
29,370	1 5/32	MK-3	460,000	305,000
30,000		MK-3	460,000	305,000

Forets hélicoïdaux à queue CM





Forets hélicoïdaux extra-longs, série 2



Matière de coupe **HSS**

Surface

Sens de coupe

**P** • Amin. de l'âme  $\geq \varnothing 7,700$  • affûtage à dépouille conique • pour les perçages très profonds

**M**

**K** •

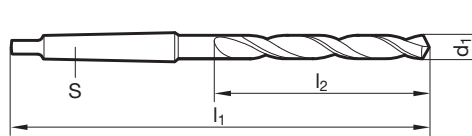
**N** ○ acier, fonte aciérée (alliée / non alliée) • fontes grises, fontes malléables, fontes à graphite sphéroïdal • fer fritté, maillechort, graphite

**S**

**H**

**GUHRING NAVIGATOR**

Paramètres de coupe, page 788



N° d'article **267**

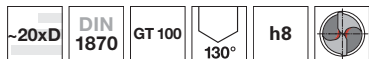
Forets hélicoïdaux à queue CM

d1		S	l1	l2
mm	inch		mm	mm
8,000		MK-1	330,000	210,000
8,500		MK-1	330,000	210,000
9,000		MK-1	345,000	220,000
10,000		MK-1	360,000	235,000
10,200		MK-1	360,000	235,000
10,500		MK-1	360,000	235,000
11,000		MK-1	375,000	250,000
11,500		MK-1	375,000	250,000
11,750		MK-1	375,000	250,000
11,800		MK-1	375,000	250,000
12,000		MK-1	395,000	260,000
13,000		MK-1	395,000	260,000
13,490	17/32	MK-1	410,000	275,000
13,500		MK-1	410,000	275,000
14,000		MK-1	410,000	275,000
14,500		MK-2	425,000	275,000
15,000		MK-2	425,000	275,000
15,480	39/64	MK-2	445,000	295,000
15,500		MK-2	445,000	295,000
16,000		MK-2	445,000	295,000
16,500		MK-2	445,000	295,000
17,000		MK-2	445,000	295,000
17,070	43/64	MK-2	465,000	310,000
17,500		MK-2	465,000	310,000
18,000		MK-2	465,000	310,000
18,500		MK-2	465,000	310,000
19,000		MK-2	465,000	310,000
19,050	3/4	MK-2	490,000	325,000
19,500		MK-2	490,000	325,000
20,000		MK-2	490,000	325,000

d1		S	l1	l2
mm	inch		mm	mm
20,640	13/16	MK-2	490,000	325,000
21,000		MK-2	490,000	325,000
21,430	27/32	MK-2	515,000	345,000
21,500		MK-2	515,000	345,000
21,830	55/64	MK-2	515,000	345,000
22,000		MK-2	515,000	345,000
22,800		MK-2	515,000	345,000
23,000		MK-2	515,000	345,000
23,020	29/32	MK-2	515,000	345,000
23,750		MK-3	555,000	365,000
23,810	15/16	MK-3	555,000	365,000
24,000		MK-3	555,000	365,000
24,500		MK-3	555,000	365,000
25,000	63/64	MK-3	555,000	365,000
26,000		MK-3	555,000	365,000
28,000		MK-3	580,000	385,000
29,500		MK-3	580,000	385,000
30,000		MK-3	580,000	385,000
31,000		MK-3	610,000	410,000
32,000		MK-4	635,000	410,000
34,000		MK-4	665,000	430,000
40,000		MK-4	695,000	460,000
45,000		MK-4	735,000	490,000



Forets hélicoïdaux extra-longs, série 2



Matière de coupe **HSS**

Surface

Sens de coupe

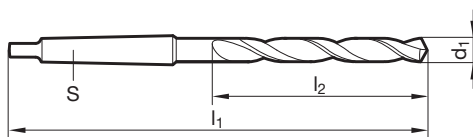
**P** • Amin. de l'âme  $\geq 7,800$  • affûtage à dépouille conique • goujures larges • en cas de mauvaise évacuation des copeaux • pour les perçages très profonds

**K** • fontes grises et aciers jusqu'à  $1000 \text{ N/mm}^2$  • Ne pas utiliser pour les aciers CrNi et les aciers inox

**N** •

**GÜHRING** NAVIGATOR

Paramètres de coupe, page 790



N° d'article **527**

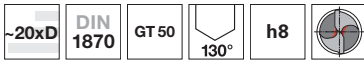
Forets hélicoïdaux à queue CM

d1		S	l1	l2
mm	inch		mm	mm
8,000		MK-1	330,000	210,000
8,400		MK-1	330,000	210,000
8,500		MK-1	330,000	210,000
9,000		MK-1	345,000	220,000
9,500		MK-1	345,000	220,000
10,000		MK-1	360,000	235,000
10,500		MK-1	360,000	235,000
11,000		MK-1	375,000	250,000
11,110	7/16	MK-1	375,000	250,000
11,500		MK-1	375,000	250,000
11,510	29/64	MK-1	375,000	250,000
11,800		MK-1	375,000	250,000
11,910	15/32	MK-1	395,000	260,000
12,000		MK-1	395,000	260,000
12,500		MK-1	395,000	260,000
12,700	1/2	MK-1	395,000	260,000
13,000		MK-1	395,000	260,000
13,500		MK-1	410,000	275,000
13,700		MK-1	410,000	275,000
13,800		MK-1	410,000	275,000
13,890	35/64	MK-1	410,000	275,000
14,000		MK-1	410,000	275,000
14,290	9/16	MK-2	425,000	275,000
14,500		MK-2	425,000	275,000
15,000		MK-2	425,000	275,000
15,500		MK-2	445,000	295,000
16,000		MK-2	445,000	295,000
16,500		MK-2	445,000	295,000
17,000		MK-2	445,000	295,000
17,070	43/64	MK-2	465,000	310,000

d1		S	l1	l2
mm	inch		mm	mm
17,500		MK-2	465,000	310,000
17,800		MK-2	465,000	310,000
18,000		MK-2	465,000	310,000
18,500		MK-2	465,000	310,000
19,000		MK-2	465,000	310,000
19,450	49/64	MK-2	490,000	325,000
19,500		MK-2	490,000	325,000
20,000		MK-2	490,000	325,000
20,500		MK-2	490,000	325,000
21,000		MK-2	490,000	325,000
21,030	53/64	MK-2	490,000	325,000
21,430	27/32	MK-2	515,000	345,000
22,000		MK-2	515,000	345,000
23,000		MK-2	515,000	345,000
23,020	29/32	MK-2	515,000	345,000
23,810	15/16	MK-3	555,000	365,000
24,000		MK-3	555,000	365,000
24,210	61/64	MK-3	555,000	365,000
25,000	63/64	MK-3	555,000	365,000
26,000		MK-3	555,000	365,000
26,190	1 1/32	MK-3	555,000	365,000
26,500		MK-3	555,000	365,000
27,000		MK-3	580,000	385,000
28,000		MK-3	580,000	385,000
28,750		MK-3	580,000	385,000
29,000		MK-3	580,000	385,000
29,500		MK-3	580,000	385,000
30,000		MK-3	580,000	385,000



Forets hélicoïdaux extra-longs, série 2



Matière de coupe **HSS**

Surface ○

Sens de coupe (R)

**P** ○ Amin. de l'âme ≥ Ø 8,000 • affûtage à dépouille conique • pour les perçages très profonds

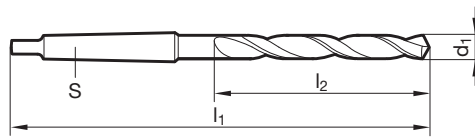
**M**

**K**

**N** • matières tendres et à copeaux longs < 500 N/mm<sup>2</sup> • aciers de décolletage, doux • aluminium/alliages d'aluminium à copeaux longs  
**S** • zinc, cuivre de 1ère fusion, Alpax, électrode • zamak, thermoplastiques, bois  
**H**

**GÜHRING** NAVIGATOR

Paramètres de coupe, page 788



N° d'article **542**

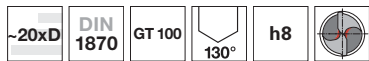
Forets hélicoïdaux à queue CM

d1		S	l1	l2
mm	inch		mm	mm
8,500		MK-1	330,000	210,000
8,600		MK-1	345,000	220,000
8,800		MK-1	345,000	220,000
9,000		MK-1	345,000	220,000
9,500		MK-1	345,000	220,000
10,500		MK-1	360,000	235,000
10,700		MK-1	375,000	250,000
11,000		MK-1	375,000	250,000
11,500		MK-1	375,000	250,000
12,000		MK-1	395,000	260,000
12,500		MK-1	395,000	260,000
13,000		MK-1	395,000	260,000
13,500		MK-1	410,000	275,000
14,500		MK-2	425,000	275,000
15,000		MK-2	425,000	275,000
17,000		MK-2	445,000	295,000
17,500		MK-2	465,000	310,000
20,500		MK-2	490,000	325,000

d1		S	l1	l2
mm	inch		mm	mm
21,000		MK-2	490,000	325,000
21,500		MK-2	515,000	345,000
22,000		MK-2	515,000	345,000
23,000		MK-2	515,000	345,000
24,000		MK-3	555,000	365,000
24,500		MK-3	555,000	365,000
25,500		MK-3	555,000	365,000
26,000		MK-3	555,000	365,000
26,500		MK-3	555,000	365,000
27,500		MK-3	580,000	385,000
28,000		MK-3	580,000	385,000
29,000		MK-3	580,000	385,000
29,500		MK-3	580,000	385,000
30,000		MK-3	580,000	385,000
31,000		MK-3	610,000	410,000



Forets hélicoïdaux extra-longs, série 2



Matière de coupe **HSCO**

Surface

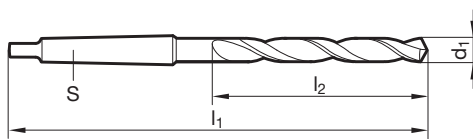
Sens de coupe

**P** • Amin. de l'âme  $\geq \varnothing 9,520$  • affûtage à dépouille conique • acier rapide au Co • goujures larges • résistance à l'usure, améliorée • en cas de mauvaise évacuation des copeaux • pour les perçages très profonds

**M** •  
**K** •  
**N** • aciers et fontes aciérées à haute résistance • fontes grises, fontes malléables, fontes à graphite sphéroïdal  
**S** •  
**H** ○

**GÜHRING** NAVIGATOR

Paramètres de coupe, page 794



N° d'article **621**

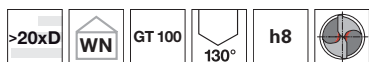
d1		S	l1	l2
mm	inch			
9,520	3/8	MK-1	360,000	235,000
10,000		MK-1	360,000	235,000
10,500		MK-1	360,000	235,000
10,720	27/64	MK-1	375,000	250,000
11,000		MK-1	375,000	250,000
11,500		MK-1	375,000	250,000
11,510	29/64	MK-1	375,000	250,000
12,000		MK-1	395,000	260,000
12,500		MK-1	395,000	260,000
12,700	1/2	MK-1	395,000	260,000
13,000		MK-1	395,000	260,000
13,500		MK-1	410,000	275,000

d1		S	l1	l2
mm	inch			
14,000		MK-1	410,000	275,000
14,500		MK-2	425,000	275,000
15,000		MK-2	425,000	275,000
16,000		MK-2	445,000	295,000
16,270		MK-2	445,000	295,000
18,000		MK-2	465,000	310,000
18,500		MK-2	465,000	310,000
19,000		MK-2	465,000	310,000
20,000		MK-2	490,000	325,000
21,430	27/32	MK-2	515,000	345,000
23,420	59/64	MK-3	535,000	345,000

Forets hélicoïdaux à queue CM



Forets hélicoïdaux extra-longs



Matière de coupe **HSS**

Surface

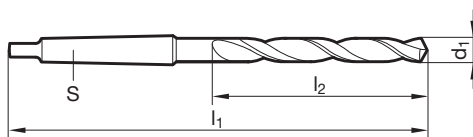
Sens de coupe

**P** • Amin. de l'âme  $\geq \varnothing 6,000$  • affûtage à dépouille conique • goujures larges • en cas de mauvaise évacuation des copeaux • pour les perçages très profonds

**K** •  
**N** • fontes grises et aciers jusqu'à 1000 N/mm<sup>2</sup> • Ne pas utiliser pour les aciers CrNi et les aciers inox  
**S**  
**H**

**GÜHRING** NAVIGATOR

Paramètres de coupe, page 790



N° d'article **563**

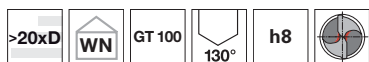
d1		S	l1	l2
mm	inch			
6,000		MK-1	200,000	120,000
6,500		MK-1	200,000	120,000
7,000		MK-1	200,000	120,000
7,500		MK-1	200,000	120,000

d1		S	l1	l2
mm	inch			

Forets hélicoïdaux à queue CM



Forets hélicoïdaux extra-longs



Matière de coupe **HSS**

Surface

Sens de coupe

**P** • Amin. de l'âme  $\geq \varnothing 6,000$  • affûtage à dépouille conique • goujures larges • en cas de mauvaise évacuation des copeaux • pour les perçages très profonds

**M**

**K** •

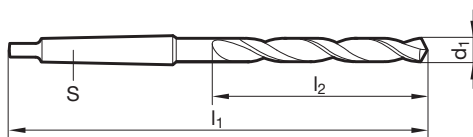
**N** • fontes grises et aciers jusqu'à 1000 N/mm<sup>2</sup> • Ne pas utiliser pour les aciers CrNi et les aciers inox

**S**

**H**

**GÜHRING** NAVIGATOR

Paramètres de coupe, page 790



N° d'article **564**

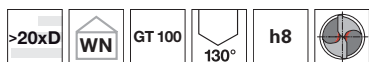
Forets hélicoïdaux à queue CM

d1		S	l1	l2
mm	inch			
6,000		MK-1	300,000	220,000
6,500		MK-1	300,000	220,000
7,000		MK-1	300,000	220,000
8,000		MK-1	350,000	270,000
8,500		MK-1	350,000	270,000
9,000		MK-1	350,000	270,000

d1		S	l1	l2
mm	inch			
10,000		MK-1	350,000	270,000



Forets hélicoïdaux extra-longs



Matière de coupe **HSS**

Surface  $\frac{+0}{-16,0}$

Sens de coupe

**P** • Amin. de l'âme  $\geq \varnothing 6,000$  • affûtage à dépouille conique • goujures larges • en cas de mauvaise évacuation des copeaux • pour les perçages très profonds

**M**

**K** •

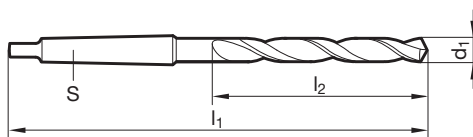
**N** • fontes grises et aciers jusqu'à 1000 N/mm<sup>2</sup> • Ne pas utiliser pour les aciers CrNi et les aciers inox

**S**

**H**

**GUHRING** NAVIGATOR

Paramètres de coupe, page 790



N° d'article **565**

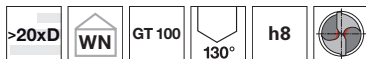
Forets hélicoïdaux à queue CM

d1		S	l1	l2
mm	inch		mm	mm
6,000		MK-1	425,000	345,000
6,500		MK-1	425,000	345,000
7,000		MK-1	425,000	345,000
7,500		MK-1	425,000	345,000
8,000		MK-1	425,000	345,000
8,500		MK-1	425,000	345,000
9,000		MK-1	425,000	345,000
10,000		MK-1	425,000	345,000
11,000		MK-1	425,000	345,000
12,000		MK-1	425,000	345,000
13,000		MK-1	425,000	345,000
14,000		MK-1	425,000	345,000

d1		S	l1	l2
mm	inch		mm	mm
15,000		MK-2	425,000	325,000
16,000		MK-2	425,000	325,000
17,000		MK-2	425,000	325,000



Forets hélicoïdaux extra-longs



**P** • Amin. de l'âme  $\geq \varnothing 8,000$  • affûtage à dépouille conique • goujures larges • en cas de mauvaise évacuation des copeaux • pour les perçages très profonds

**K** •  
**N** • fontes grises et aciers jusqu'à 1000 N/mm<sup>2</sup> • Ne pas utiliser pour les aciers CrNi et les aciers inox  
**S**  
**H**

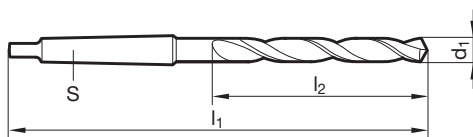
**GÜHRING** NAVIGATOR

Paramètres de coupe, page 790

Matière de coupe **HSS**

Surface

Sens de coupe



N° d'article **566**

Forets hélicoïdaux à queue CM

d1		S	l1	l2
mm	inch		mm	mm
8,000		MK-1	500,000	420,000
8,500		MK-1	500,000	420,000
9,000		MK-1	500,000	420,000
9,500		MK-1	500,000	420,000
10,000		MK-1	500,000	420,000
11,000		MK-1	500,000	420,000
12,000		MK-1	500,000	420,000
13,000		MK-1	500,000	420,000
14,000		MK-1	500,000	420,000
15,000		MK-2	500,000	400,000
16,000		MK-2	500,000	400,000
17,000		MK-2	500,000	400,000

d1		S	l1	l2
mm	inch		mm	mm
18,000		MK-2	500,000	400,000
19,000		MK-2	500,000	400,000
20,000		MK-2	500,000	400,000
21,000		MK-2	500,000	400,000
22,000		MK-2	500,000	400,000
35,000		MK-4	500,000	350,000
40,000		MK-4	500,000	350,000





Forets hélicoïdaux extra-longs



- P** • Amin. de l'âme  $\geq \varnothing 14,000$  • affûtage à dépouille conique • goujures larges • en cas de mauvaise évacuation des copeaux • pour les perçages très profonds
- M**
- K** •
- N** • fontes grises et aciers jusqu'à 1000 N/mm<sup>2</sup> • Ne pas utiliser pour les aciers CrNi et les aciers inox
- S**
- H**

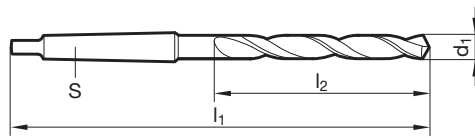
Matière de coupe **HSS**

Surface

Sens de coupe

**GÜHRING** NAVIGATOR

Paramètres de coupe, page 790



N° d'article **293**

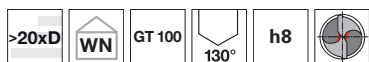
Forets hélicoïdaux à queue CM

d1		S	l1	l2
mm	inch		mm	mm
14,000		MK-1	600,000	500,000
15,000		MK-2	600,000	500,000
16,000		MK-2	600,000	500,000
17,000		MK-2	600,000	500,000
18,000		MK-2	600,000	500,000
19,000		MK-2	600,000	500,000
20,000		MK-2	600,000	500,000
21,000		MK-2	600,000	500,000
22,000		MK-2	600,000	500,000
23,000		MK-2	600,000	500,000
24,000		MK-3	600,000	475,000
25,000	63/64	MK-3	600,000	475,000

d1		S	l1	l2
mm	inch		mm	mm
26,000		MK-3	600,000	475,000
28,000		MK-3	600,000	475,000
30,000		MK-3	600,000	475,000
32,000		MK-4	600,000	450,000
35,000		MK-4	600,000	450,000
38,000		MK-4	600,000	450,000
40,000		MK-4	600,000	450,000



Forets hélicoïdaux extra-longs

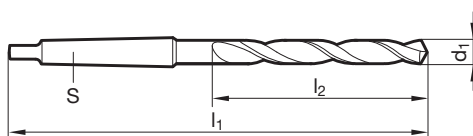


- P** • Amin. de l'âme  $\geq \varnothing 14,000$  • affûtage à dépouille conique • goujures larges • en cas de mauvaise évacuation des copeaux • pour les perçages très profonds
- M**
- K** •
- N** • fontes grises et aciers jusqu'à 1000 N/mm<sup>2</sup> • Ne pas utiliser pour les aciers CrNi et les aciers inox
- S**
- H**

**GÜHRING** NAVIGATOR

Paramètres de coupe, page 790

Matière de coupe	<b>HSS</b>
Surface	○
Sens de coupe	Ⓜ



N° d'article

**298**

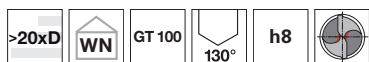
d1		S	l1	l2
mm	inch		mm	mm
14,000		MK-1	750,000	650,000
15,000		MK-2	750,000	650,000
16,000		MK-2	750,000	650,000
18,000		MK-2	750,000	650,000

d1		S	l1	l2
mm	inch		mm	mm

Forets hélicoïdaux à queue CM



Forets hélicoïdaux extra-longs



Matière de coupe **HSS**

Surface ○

Sens de coupe (R)

**P** • Amin. de l'âme  $\geq \varnothing 14,000$  • affûtage à dépouille conique • goujures larges • en cas de mauvaise évacuation des copeaux • pour les perçages très profonds

**K** •

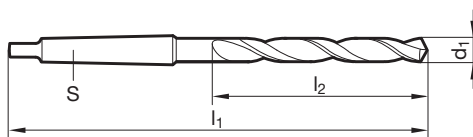
**N** • fontes grises et aciers jusqu'à 1000 N/mm<sup>2</sup> • Ne pas utiliser pour les aciers CrNi et les aciers inox

**S**

**H**

**GÜHRING** NAVIGATOR

Paramètres de coupe, page 790



N° d'article **299**

d1		S	l1	l2
mm	inch			
14,000		MK-1	1000,000	850,000
15,000		MK-2	1000,000	850,000
16,000		MK-2	1000,000	850,000
18,000		MK-2	1000,000	850,000

d1		S	l1	l2
mm	inch			

Forets hélicoïdaux à queue CM



Forets courts, à canaux de lubrification



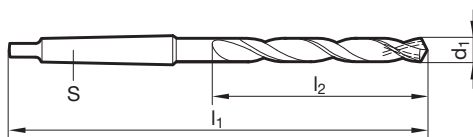
**P** • Amin. de l'âme  $\geq \text{Ø } 9,520$  • affûtage à dépouille conique • pour le perçage avec canons de perçage • adduction radiale du liquide de refroid. p. bague d'adduct. Gühring

- M** ○
- K** •
- N** • tôles superposées • acier et fonte aciérée, fonte grise • aciers austénitiques jusqu'à 800 N/mm<sup>2</sup>
- S** ○
- H** ○

**GÜHRING NAVIGATOR**

Paramètres de coupe, page 788

Matière de coupe	<b>HSS</b>
Surface	●
Sens de coupe	Ⓜ



N° d'article **269**

Forets hélicoïdaux à queue CM

d1		S	l1	l2
mm	inch		mm	mm
9,920	25/64	MK-1	197,000	101,000
10,320	13/32	MK-1	197,000	101,000
10,500		MK-1	197,000	101,000
11,000		MK-1	206,000	110,000
11,110	7/16	MK-1	206,000	110,000
11,500		MK-1	206,000	110,000
12,500		MK-1	215,000	119,000
12,700	1/2	MK-1	215,000	119,000
12,800		MK-1	215,000	119,000
13,000		MK-1	215,000	119,000
13,200		MK-1	215,000	119,000
13,490	17/32	MK-1	223,000	127,000
13,500		MK-1	223,000	127,000
13,800		MK-1	223,000	127,000
14,000		MK-1	223,000	127,000
14,250		MK-2	245,000	133,000
14,290	9/16	MK-2	245,000	133,000
14,500		MK-2	245,000	133,000
15,000		MK-2	245,000	133,000
15,080	19/32	MK-2	251,000	139,000
15,150		MK-2	251,000	139,000
15,180		MK-2	251,000	139,000
15,250		MK-2	251,000	139,000
15,870	5/8	MK-2	251,000	139,000
16,000		MK-2	251,000	139,000
16,500		MK-2	257,000	145,000
16,670	21/32	MK-2	257,000	145,000
16,750		MK-2	257,000	145,000
17,000		MK-2	257,000	145,000
17,100		MK-2	263,000	151,000

d1		S	l1	l2
mm	inch		mm	mm
17,460	11/16	MK-2	263,000	151,000
17,500		MK-2	263,000	151,000
17,750		MK-2	263,000	151,000
18,000		MK-2	263,000	151,000
18,260	23/32	MK-2	269,000	157,000
18,500		MK-2	269,000	157,000
19,000		MK-2	269,000	157,000
19,050	3/4	MK-2	275,000	163,000
19,200		MK-2	275,000	163,000
19,250		MK-2	275,000	163,000
19,500		MK-2	275,000	163,000
19,750		MK-2	275,000	163,000
19,840	25/32	MK-2	275,000	163,000
20,250		MK-2	282,000	170,000
20,640	13/16	MK-2	282,000	170,000
20,750		MK-2	282,000	170,000
21,000		MK-2	282,000	170,000
21,430	27/32	MK-2	289,000	177,000
21,500		MK-2	289,000	177,000
22,220	7/8	MK-2	289,000	177,000
23,020	29/32	MK-2	296,000	184,000



Forets à canaux de lubrification, long. gouj. selon norme usine



- P** • Amin. de l'âme  $\geq \varnothing 8,000$  • affûtage à dépouille conique • adduction axiale et radiale du produit de lub. et de refroid. par le cône Morse
- M** ○ (semblable DIN 228 Forme BK) • possibilité d'ouvrir et d'obturer les canaux d'adduction avec les vis sans tête livrées
- K** •
- N** • optimisé pour l'usinage des poutrelles en acier sur équipements de machines de sciage et de perçage • tôles superposées • acier et fonte aciérée, fonte grise • aciers austénitiques jusqu'à 800 N/mm<sup>2</sup>
- S**
- H**

Matière de coupe **HSS**

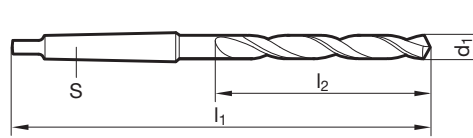
Surface

Sens de coupe



**GUHRING** NAVIGATOR

Paramètres de coupe, page 788



N° d'article **254**

Forets hélicoïdaux à queue CM

d1		S	l1	l2
mm	inch		mm	mm
8,000		MK-2	268,000	116,000
9,000		MK-2	268,000	116,000
10,000		MK-3	268,000	116,000
10,500		MK-3	268,000	116,000
11,000		MK-3	278,000	125,000
12,000		MK-3	287,000	134,000
13,000		MK-3	287,000	134,000
13,500		MK-3	285,000	142,000
14,000		MK-3	285,000	142,000
15,000		MK-3	300,000	147,000
16,000		MK-3	306,000	153,000
17,000		MK-3	311,000	159,000
17,500		MK-3	318,000	165,000
18,000		MK-3	318,000	165,000
19,000		MK-3	324,000	171,000
20,000		MK-3	330,000	177,000
21,000		MK-3	343,000	184,000
22,000		MK-3	350,000	191,000
23,000		MK-3	357,000	198,000
24,000		MK-3	365,000	206,000
25,000	63/64	MK-3	365,000	206,000
26,000		MK-3	373,000	214,000
27,000		MK-4	407,000	222,000
28,000		MK-4	407,000	222,000

d1		S	l1	l2
mm	inch		mm	mm
29,000		MK-4	410,000	225,000
30,000		MK-4	410,000	225,000
31,000		MK-4	410,000	225,000
32,000		MK-4	410,000	225,000
33,000		MK-4	410,000	225,000
34,000		MK-4	410,000	225,000
35,000		MK-4	410,000	225,000
36,000		MK-4	410,000	225,000
37,000		MK-4	410,000	225,000
38,000		MK-4	410,000	225,000
39,000		MK-4	410,000	225,000
40,000		MK-4	410,000	225,000
41,000		MK-4	410,000	225,000
42,000		MK-4	410,000	225,000
43,000		MK-4	410,000	225,000
44,000		MK-4	410,000	225,000
45,000		MK-4	410,000	225,000
46,000		MK-4	410,000	225,000
47,000		MK-4	410,000	225,000
48,000		MK-4	410,000	225,000
49,000		MK-4	410,000	225,000
50,000		MK-4	410,000	225,000



Forets à canaux de lubrification, long. gouj. selon norme usine



- P** • Amin. de l'âme  $\geq \varnothing 8,000$  • affûtage à dépouille conique • affûtage spéc. au sommet a. un angle à  $170^\circ$  et une pointe de centrage à  $90^\circ$  • excellent auto-centrage • adduction axiale et radiale du produit de lub. et de refroid. par le cône Morse (semblable DIN 228 Forme BK) • possibilité d'ouvrir et d'obturer les canaux d'adduction avec les vis sans tête livrées
- M** ○
- K** •
- N** • optimisé pour l'usinage des poutrelles en acier sur équipements de machines de sciage et de perçage • acier et fonte aciée, fonte grise
- S** • aciers austénitiques jusqu'à  $800 \text{ N/mm}^2$
- H**

Matière de coupe **HSS**

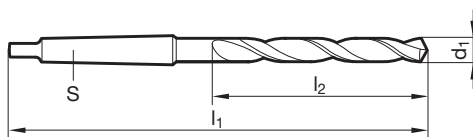
Surface

Sens de coupe



**GÜHRING** NAVIGATOR

Paramètres de coupe, page 788



N° d'article **255**

Forets hélicoïdaux à queue CM

d1		S	l1	l2
mm	inch		mm	mm
8,000		MK-2	268,000	116,000
9,000		MK-2	268,000	116,000
10,000		MK-3	268,000	116,000
10,500		MK-3	268,000	116,000
11,000		MK-3	278,000	125,000
12,000		MK-3	287,000	134,000
13,000		MK-3	287,000	134,000
13,500		MK-3	285,000	142,000
14,000		MK-3	285,000	142,000
15,000		MK-3	300,000	147,000
16,000		MK-3	306,000	153,000
17,000		MK-3	311,000	159,000
17,500		MK-3	318,000	165,000
18,000		MK-3	318,000	165,000
19,000		MK-3	324,000	171,000
20,000		MK-3	330,000	177,000
21,000		MK-3	343,000	184,000
22,000		MK-3	350,000	191,000
23,000		MK-3	357,000	198,000
24,000		MK-3	365,000	206,000
25,000	63/64	MK-3	365,000	206,000
26,000		MK-3	373,000	214,000
27,000		MK-4	375,000	193,000
28,000		MK-4	375,000	193,000

d1		S	l1	l2
mm	inch		mm	mm
29,000		MK-4	375,000	193,000
30,000		MK-4	375,000	193,000
31,000		MK-4	375,000	193,000
32,000		MK-4	375,000	193,000
33,000		MK-4	375,000	193,000
34,000		MK-4	375,000	193,000
35,000		MK-4	375,000	193,000
36,000		MK-4	375,000	193,000
37,000		MK-4	375,000	193,000
38,000		MK-4	375,000	193,000
39,000		MK-4	375,000	193,000
40,000		MK-4	375,000	193,000
41,000		MK-4	375,000	193,000
42,000		MK-4	375,000	193,000



Forets à canaux de lubrification, long. gouj. DIN 341



Matière de coupe **HSS**

Surface

Sens de coupe

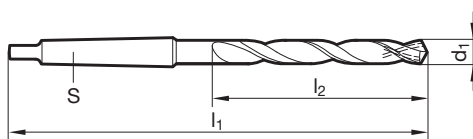
**P** • Amin. de l'âme  $\geq \varnothing 10,000$  • affûtage à dépouille conique • Pour le perçage avec canon de perçage. Adduction du lubrifiant selon norme DIN 228 BK.

**K** • tôles superposées • acier et fonte aciérée, fonte grise • aciers austénitiques jusqu'à 800 N/mm<sup>2</sup>

**H**

**GUHRING** NAVIGATOR

Paramètres de coupe, page 788



N° d'article **1101**

Forets hélicoïdaux à queue CM

d1		S	l1	l2
mm	inch		mm	mm
10,000		MK-2	223,000	116,000
10,500		MK-2	223,000	116,000
11,000		MK-2	232,000	125,000
11,500		MK-2	232,000	125,000
12,000		MK-2	241,000	134,000
12,500		MK-2	241,000	134,000
13,000		MK-2	241,000	134,000
13,500		MK-2	249,000	142,000
14,000		MK-2	249,000	142,000
14,750		MK-2	254,000	147,000
15,000		MK-2	254,000	147,000
16,000		MK-2	260,000	153,000
16,250		MK-2	266,000	159,000
17,000		MK-2	266,000	159,000
17,500		MK-2	272,000	165,000
18,000		MK-2	272,000	165,000
19,000		MK-2	278,000	171,000
20,000		MK-2	284,000	177,000

d1		S	l1	l2
mm	inch		mm	mm
21,000		MK-2	291,000	184,000
22,000		MK-2	298,000	191,000
24,000		MK-3	332,000	206,000
25,000	63/64	MK-3	332,000	206,000
26,000		MK-3	340,000	214,000
28,000		MK-3	348,000	222,000
29,000		MK-3	356,000	230,000
30,000		MK-3	356,000	230,000
32,000		MK-4	409,000	248,000



Forets à canaux de lubrification, long. gouj. DIN 341



Matière de coupe **HSS**

Surface

Sens de coupe

**P** • Amin. de l'âme  $\geq \varnothing 10,000$  • affûtage à dépouille conique • pour le perçage avec canons de perçage • adduction axiale du liquide de refroid. p. le CM

**M** ○

**K** •

**N** •

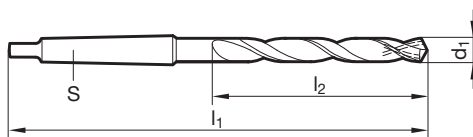
**S** ○

**H** ○

tôles superposées • acier et fonte aciérée, fonte grise • aciers austénitiques jusqu'à 800 N/mm<sup>2</sup>

**GÜHRING NAVIGATOR**

Paramètres de coupe, page 788



N° d'article **270**

Forets hélicoïdaux à queue CM

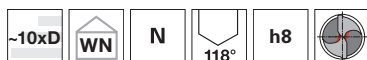
d1		S	l1	l2
mm	inch		mm	mm
10,000		MK-2	233,000	116,000
11,000		MK-2	242,000	125,000
12,000		MK-2	251,000	134,000
13,000		MK-2	251,000	134,000
13,200		MK-2	251,000	134,000
13,500		MK-2	259,000	142,000
14,000		MK-2	259,000	142,000
14,290	9/16	MK-2	264,000	147,000
15,000		MK-2	264,000	147,000
15,500		MK-2	270,000	153,000
16,000		MK-2	270,000	153,000
16,500		MK-2	276,000	159,000
17,000		MK-2	276,000	159,000
17,460	11/16	MK-2	282,000	165,000
17,500		MK-2	282,000	165,000
18,000		MK-2	282,000	165,000
18,500		MK-3	307,000	171,000
19,000		MK-3	307,000	171,000
19,500		MK-3	313,000	177,000
20,000		MK-3	313,000	177,000
20,500		MK-3	320,000	184,000
21,000		MK-3	320,000	184,000
22,000		MK-3	327,000	191,000
23,000		MK-3	334,000	198,000

d1		S	l1	l2
mm	inch		mm	mm
23,020	29/32	MK-3	334,000	198,000
24,000		MK-3	342,000	206,000
25,000	63/64	MK-3	342,000	206,000
26,000		MK-3	350,000	214,000
26,500		MK-3	350,000	214,000
27,000		MK-4	385,000	222,000
28,000		MK-4	385,000	222,000
29,000		MK-4	393,000	230,000
29,500		MK-4	393,000	230,000
30,000		MK-4	393,000	230,000
32,000		MK-4	421,000	248,000
33,000		MK-4	421,000	248,000
34,000		MK-4	430,000	257,000
35,000		MK-4	430,000	257,000
40,000		MK-4	450,000	277,000





Forets à canaux de lubrification, long. gouj. DIN 341



Matière de coupe **HSS**

Surface

Sens de coupe

**P** • Amin. de l'âme  $\geq \text{Ø } 10,000$  • affûtage à dépouille conique • pour le perçage avec canons de perçage • adduction radiale du liquide de refroid. p. bague d'adduct. Gühring

**M** ○

**K** • tôles superposées • acier et fonte aciérée, fonte grise • aciers austénitiques jusqu'à  $800 \text{ N/mm}^2$

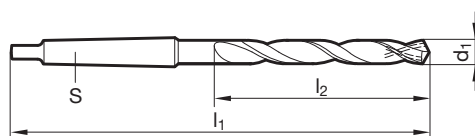
**N** •

**S** ○

**H** ○

**GÜHRING NAVIGATOR**

Paramètres de coupe, page 788



N° d'article **271**

Forets hélicoïdaux à queue CM

d1		S	l1	l2
mm	inch		mm	mm
10,000		MK-2	233,000	116,000
10,500		MK-2	233,000	116,000
10,720	27/64	MK-2	242,000	125,000
11,000		MK-2	242,000	125,000
11,510	29/64	MK-2	242,000	125,000
11,910	15/32	MK-2	251,000	134,000
12,300	31/64	MK-2	251,000	134,000
13,000		MK-2	251,000	134,000
13,800		MK-2	259,000	142,000
14,000		MK-2	259,000	142,000
14,250		MK-2	264,000	147,000
14,290	9/16	MK-2	264,000	147,000
14,500		MK-2	264,000	147,000
15,000		MK-2	264,000	147,000
15,080	19/32	MK-2	270,000	153,000
15,500		MK-2	270,000	153,000
16,000		MK-2	270,000	153,000
16,500		MK-2	276,000	159,000
17,000		MK-2	276,000	159,000
17,250		MK-2	282,000	165,000
17,500		MK-2	282,000	165,000
18,250		MK-3	307,000	171,000
18,500		MK-3	307,000	171,000
19,050	3/4	MK-3	313,000	177,000

d1		S	l1	l2
mm	inch		mm	mm
19,500		MK-3	313,000	177,000
19,840	25/32	MK-3	313,000	177,000
20,000		MK-3	313,000	177,000
20,250		MK-3	320,000	184,000
22,500		MK-3	334,000	198,000
23,000		MK-3	334,000	198,000
23,750		MK-3	342,000	206,000
24,250		MK-3	342,000	206,000
24,610	31/32	MK-3	342,000	206,000
25,400	1	MK-3	350,000	214,000
26,000		MK-3	350,000	214,000
26,990	1 1/16	MK-4	385,000	222,000
27,780	1 3/32	MK-4	385,000	222,000
28,570	1 1/8	MK-4	393,000	230,000
28,750		MK-4	393,000	230,000
29,000		MK-4	393,000	230,000
29,500		MK-4	393,000	230,000
30,000		MK-4	393,000	230,000
30,500		MK-4	402,000	239,000
34,000		MK-4	430,000	257,000
44,450		MK-4	471,000	298,000



Forets à canaux de lubrification, long. gouj. DIN 341

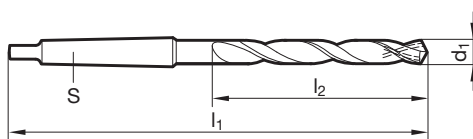


- P** • Amin. de l'âme  $\geq \varnothing 10,000$  • affûtage à dépouille conique • pour le perçage avec canons de perçage • adduction radiale du liquide de refroid. p. le CM
- M** ○
- K** •
- N** • tôles superposées • acier et fonte aciérée, fonte grise • aciers austénitiques jusqu'à 800 N/mm<sup>2</sup>
- S**
- H**

**GÜHRING** NAVIGATOR

Paramètres de coupe, page 788

Matière de coupe	<b>HSS</b>
Surface	●
Sens de coupe	Ⓜ



N° d'article **272**

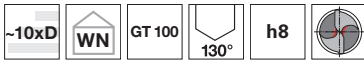
d1		S	l1	l2
mm	inch		mm	mm
10,000		MK-2	233,000	116,000
12,500		MK-2	251,000	134,000
13,200		MK-2	251,000	134,000
13,500		MK-2	259,000	142,000
14,750		MK-2	264,000	147,000
15,500		MK-2	270,000	153,000
15,870	5/8	MK-2	270,000	153,000
16,500		MK-2	276,000	159,000
16,670	21/32	MK-2	276,000	159,000
17,000		MK-2	276,000	159,000
18,000		MK-2	282,000	165,000
18,500		MK-3	307,000	171,000

d1		S	l1	l2
mm	inch		mm	mm
20,000		MK-3	313,000	177,000
22,000		MK-3	327,000	191,000
22,500		MK-3	334,000	198,000
24,000		MK-3	342,000	206,000
26,000		MK-3	350,000	214,000
26,990	1 1/16	MK-4	385,000	222,000
29,500		MK-4	393,000	230,000
32,000		MK-4	421,000	248,000
44,450	1 3/4	MK-4	471,000	298,000

Forets hélicoïdaux à queue CM



Forets à canaux de lubrification, long. gouj. DIN 341



- P** • Amin. de l'âme  $\geq \varnothing 11,000$  • affûtage à dépouille conique • adduction axiale du liquide de refroid. p. le CM • acier rapide au Co • meilleure résistance à l'usure • pour le perçage avec canons de perçage
- M** •
- K** •
- N** • aciers tenaces et aciers à haute résistance • fontes aciérées, fontes grises • aciers inox., inaltérables aux acides et réfractaires • résistance jusqu'à 1300 N/mm<sup>2</sup>
- S** •
- H** ○

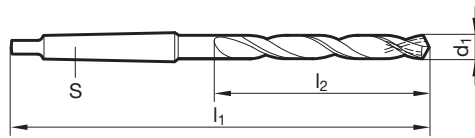
Matière de coupe **HSCO**

Surface

Sens de coupe

**GÜHRING** NAVIGATOR

Paramètres de coupe, page 794



N° d'article **370**

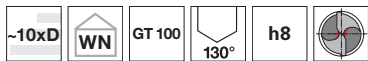
Forets hélicoïdaux à queue CM

d1		S	l1	l2
mm	inch		mm	mm
11,000		MK-2	242,000	125,000
12,000		MK-2	251,000	134,000
12,500		MK-2	251,000	134,000
13,000		MK-2	251,000	134,000
13,500		MK-2	259,000	142,000
14,000		MK-2	259,000	142,000
15,000		MK-2	264,000	147,000
15,080	19/32	MK-2	270,000	153,000
16,000		MK-2	270,000	153,000
17,000		MK-2	276,000	159,000
17,500		MK-2	282,000	165,000
18,000		MK-2	282,000	165,000
18,500		MK-3	307,000	171,000
19,000		MK-3	307,000	171,000
20,000		MK-3	313,000	177,000
21,000		MK-3	320,000	184,000
21,500		MK-3	327,000	191,000
22,000		MK-3	327,000	191,000

d1		S	l1	l2
mm	inch		mm	mm
24,000		MK-3	342,000	206,000
24,610	31/32	MK-3	342,000	206,000
29,370	1 5/32	MK-4	393,000	230,000
29,500		MK-4	393,000	230,000
30,000		MK-4	393,000	230,000
30,960	1 7/32	MK-4	402,000	239,000
31,000		MK-4	402,000	239,000
32,000		MK-4	421,000	248,000
32,250		MK-4	421,000	248,000
32,500		MK-4	421,000	248,000
32,540	1 9/32	MK-4	421,000	248,000
33,000		MK-4	421,000	248,000
34,130	1 11/32	MK-4	430,000	257,000
34,920	1 3/8	MK-4	430,000	257,000



Forets à canaux de lubrification, long. gouj. DIN 341

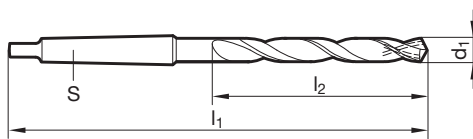


- P** • Amin. de l'âme  $\geq \varnothing 11,000$  • affûtage à dépouille conique • adduction radiale du liquide de refroid. p. bague d'adduct. Gühring • acier rapide
- M** • résistance à l'usure, améliorée • pour le perçage avec canons de perçage
- K** •
- N** • aciers tenaces et aciers à haute résistance • fontes aciérées, fontes grises • aciers inox., inaltérables aux acides et réfractaires • résistance jusqu'à 1300 N/mm<sup>2</sup>
- S** •
- H** ○

**GÜHRING** NAVIGATOR

Paramètres de coupe, page 794

Matière de coupe	<b>HSCO</b>
Surface	●
Sens de coupe	Ⓜ



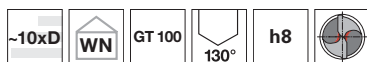
N° d'article **371**

Forets hélicoïdaux à queue CM

d1		S	l1	l2	d1		S	l1	l2
mm	inch		mm	mm	mm	inch		mm	mm
11,000		MK-2	242,000	125,000	21,500		MK-3	327,000	191,000
11,110	7/16	MK-2	242,000	125,000	22,220	7/8	MK-3	327,000	191,000
11,500		MK-2	242,000	125,000	22,500		MK-3	334,000	198,000
12,300	31/64	MK-2	251,000	134,000	23,020	29/32	MK-3	334,000	198,000
12,500		MK-2	251,000	134,000	23,810	15/16	MK-3	342,000	206,000
12,800		MK-2	251,000	134,000	28,570	1 1/8	MK-4	393,000	230,000
13,000		MK-2	251,000	134,000	29,000		MK-4	393,000	230,000
13,490	17/32	MK-2	259,000	142,000	30,000		MK-4	393,000	230,000
13,500		MK-2	259,000	142,000	30,960	1 7/32	MK-4	402,000	239,000
14,000		MK-2	259,000	142,000	31,750	1 1/4	MK-4	411,000	248,000
14,290	9/16	MK-2	264,000	147,000	32,000		MK-4	421,000	248,000
14,500		MK-2	264,000	147,000	32,540	1 9/32	MK-4	421,000	248,000
15,000		MK-2	264,000	147,000	33,340	1 5/16	MK-4	421,000	248,000
16,000		MK-2	270,000	153,000	34,000		MK-4	430,000	257,000
16,500		MK-2	276,000	159,000	34,920	1 3/8	MK-4	430,000	257,000
16,670	21/32	MK-2	276,000	159,000					
17,000		MK-2	276,000	159,000					
17,460	11/16	MK-2	282,000	165,000					
18,260	23/32	MK-3	307,000	171,000					
19,500		MK-3	313,000	177,000					
19,840	25/32	MK-3	313,000	177,000					
20,500		MK-3	320,000	184,000					
20,640	13/16	MK-3	320,000	184,000					
21,000		MK-3	320,000	184,000					



Forets à canaux de lubrification, long. gouj. DIN 341



Matière de coupe **HSCO**

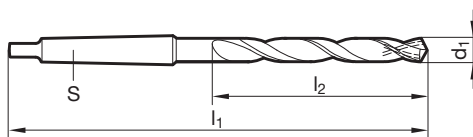
Surface

Sens de coupe

- P** • Amin. de l'âme  $\geq \text{Ø } 11,500$  • affûtage à dépouille conique • adduction radiale du liquide de refroid. p. le CM • acier rapide au Co • résistance à l'usure, améliorée • pour le perçage avec canons de perçage
- M** •
- K** •
- N** • aciers tenaces et aciers à haute résistance • fontes aciérées, fontes grises • aciers inox., inaltérables aux acides et réfractaires • résistance jusqu'à 1300 N/mm<sup>2</sup>
- S** •
- H** ○

**GÜHRING** NAVIGATOR

Paramètres de coupe, page 794



N° d'article **372**

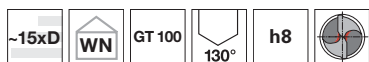
Forets hélicoïdaux à queue CM

d1		S	l1	l2
mm	inch		mm	mm
12,500		MK-2	251,000	134,000
12,700	1/2	MK-2	251,000	134,000
14,000		MK-2	259,000	142,000
16,000		MK-2	270,000	153,000
17,000		MK-2	276,000	159,000
18,500		MK-3	307,000	171,000

d1		S	l1	l2
mm	inch		mm	mm
21,500		MK-3	327,000	191,000
23,810	15/16	MK-3	342,000	206,000
27,000		MK-4	385,000	222,000
30,000		MK-4	393,000	230,000
34,000		MK-4	430,000	257,000



Forets à canaux de lubrification, long. gouj. DIN 1870



Matière de coupe **HSCO**

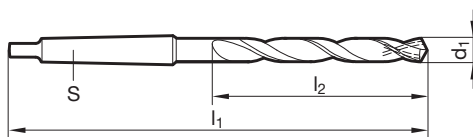
Surface

Sens de coupe

- P** • Amin. de l'âme  $\geq \text{Ø } 11,000$  • affûtage à dépouille conique • adduction axiale du liquide de refroid. p. le CM • acier rapide au Co • meilleure résistance à l'usure • pour le perçage avec canons de perçage
- M** •
- K** •
- N** • aciers tenaces et aciers à haute résistance • fontes aciérées, fontes grises • aciers inox., inaltérables aux acides et réfractaires • résistance jusqu'à 1300 N/mm<sup>2</sup>
- S** •
- H** ○

**GÜHRING** NAVIGATOR

Paramètres de coupe, page 794



N° d'article **374**

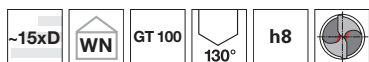
Forets hélicoïdaux à queue CM

d1		S	l1	l2
mm	inch		mm	mm
11,000		MK-2	312,000	195,000
12,000		MK-2	322,000	205,000
12,300	31/64	MK-2	322,000	205,000
12,500		MK-2	322,000	205,000
13,000		MK-2	322,000	205,000
14,000		MK-2	337,000	220,000
15,000		MK-2	337,000	220,000
16,000		MK-2	347,000	230,000
16,500		MK-2	347,000	230,000
17,500		MK-2	362,000	245,000
18,000		MK-2	362,000	245,000
18,500		MK-3	381,000	245,000
19,840	25/32	MK-3	396,000	260,000
20,000		MK-3	396,000	260,000
21,000		MK-3	396,000	260,000
21,430	27/32	MK-3	406,000	270,000
21,500		MK-3	406,000	270,000
24,610	31/32	MK-3	426,000	290,000

d1		S	l1	l2
mm	inch		mm	mm
28,570	1 1/8	MK-4	468,000	305,000
28,750		MK-4	468,000	305,000
29,370	1 5/32	MK-4	468,000	305,000
30,960	1 7/32	MK-4	483,000	320,000
32,250		MK-4	493,000	320,000
32,540	1 9/32	MK-4	493,000	320,000
34,000		MK-4	513,000	340,000



Forets à canaux de lubrification, long. gouj. DIN 1870



Matière de coupe **HSCO**

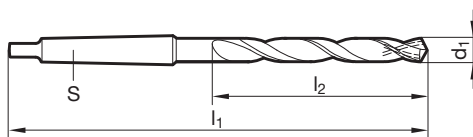
Surface

Sens de coupe

- P** • Amin. de l'âme  $\geq \text{Ø } 11,000$  • affûtage à dépouille conique • adduction radiale du liquide de refroid. p. bague d'adduct. Gühring • acier rapide
- M** • au Co • résistance à l'usure, améliorée • pour le perçage avec canons de perçage
- K** •
- N** • aciers tenaces et aciers à haute résistance • fontes aciérées, fontes grises • aciers inox., inaltérables aux acides et réfractaires • résistance jusqu'à 1300 N/mm<sup>2</sup>
- S** •
- H** ○

**GUHRING** NAVIGATOR

Paramètres de coupe, page 794



N° d'article **375**

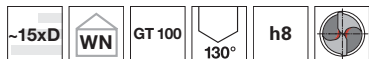
Forets hélicoïdaux à queue CM

d1		S	l1	l2
mm	inch		mm	mm
11,000		MK-2	312,000	195,000
11,110	7/16	MK-2	312,000	195,000
11,510	29/64	MK-2	312,000	195,000
12,800		MK-2	322,000	205,000
13,500		MK-2	337,000	220,000
18,260	23/32	MK-3	381,000	245,000
19,000		MK-3	381,000	245,000
21,000		MK-3	396,000	260,000
21,430	27/32	MK-3	406,000	270,000
24,500		MK-3	426,000	290,000
25,000	63/64	MK-3	426,000	290,000
25,400	1	MK-3	426,000	290,000

d1		S	l1	l2
mm	inch		mm	mm
26,500		MK-3	426,000	290,000
28,570	1 1/8	MK-4	468,000	305,000
30,960	1 7/32	MK-4	483,000	320,000
32,540	1 9/32	MK-4	493,000	320,000
33,340	1 5/16	MK-4	493,000	320,000
34,000		MK-4	513,000	340,000



Forets à canaux de lubrification, long. gouj. DIN 1870



Matière de coupe **HSCO**

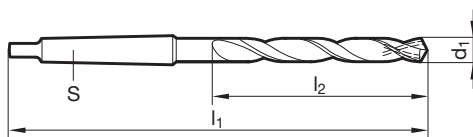
Surface

Sens de coupe

- P** • Amin. de l'âme  $\geq \varnothing 11,000$  • affûtage à dépouille conique • adduction radiale du liquide de refroid. p. le CM • acier rapide au Co • résistance à l'usure, améliorée • pour le perçage avec canons de perçage
- M** •
- K** •
- N** • aciers tenaces et aciers à haute résistance • fontes aciérées, fontes grises • aciers inox., inaltérables aux acides et réfractaires • résistance jusqu'à 1300 N/mm<sup>2</sup>
- S** •
- H** ○

**GÜHRING** NAVIGATOR

Paramètres de coupe, page 794



N° d'article **376**

d1		S	l1	l2
mm	inch		mm	mm
11,000		MK-2	312,000	195,000
13,000		MK-2	322,000	205,000
14,000		MK-2	337,000	220,000
16,500		MK-2	347,000	230,000
18,000		MK-2	362,000	245,000
19,840	25/32	MK-3	396,000	260,000

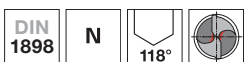
d1		S	l1	l2
mm	inch		mm	mm
21,500		MK-3	406,000	270,000
27,780	1 3/32	MK-4	468,000	305,000
29,000		MK-4	468,000	305,000

Forets hélicoïdaux à queue CM





Forets de chaudronnerie



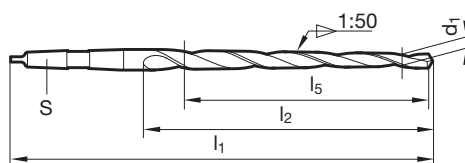
Matière de coupe **HSS**

Surface

Sens de coupe

**P** • Amin. de l'âme  $\geq \varnothing 5,000$  • affûtage à dépouille conique • Pour les perçages coniques pour les logements de goupilles coniques selon normes DIN 1 (nouv. DIN EN 22 339), DIN 7978 (nouv. DIN EN 28 736), DIN 7977 (nouv. DIN EN 28737) et DIN 258

- M** ○
- K** •
- N** ○
- S** ○
- H** ○



N° d'article **532**

Forets hélicoïdaux à queue CM

d1	S	l1	l2	l5
mm		mm	mm	mm
5,000	MK-1	155,000	81,000	73,000
6,000	MK-1	187,000	108,000	105,000
8,000	MK-1	227,000	149,000	145,000
10,000	MK-1	257,000	180,000	175,000
12,000	MK-2	315,000	219,000	210,000
13,000	MK-2	325,000	229,000	220,000

d1	S	l1	l2	l5
mm		mm	mm	mm
14,000	MK-2	325,000	229,000	220,000
16,000	MK-2	335,000	239,000	230,000
20,000	MK-3	377,000	263,000	250,000
25,000	MK-3	427,000	311,000	300,000



Forets spéciaux avec arêtes de coupe CW



**P** ○ Amin. de l'âme ≥ Ø 8,000 • affûtage en pente • à plaquette(s) cw rapportée(s)

**M**

**K** ○

**N** bande d'acier à ressorts • fontes dures > 300 HB • molybdène pur  
• bronzes tenaces et durs

**S**

**H** ○

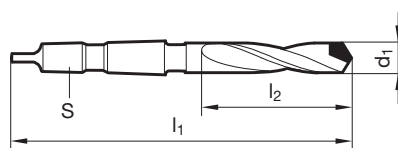
Matière de coupe **CW**

Surface ○

Sens de coupe

**GÜHRING** NAVIGATOR

Paramètres de coupe, page 776



N° d'article **705**

Forets hélicoïdaux à queue CM

d1		S	l1	l2
mm	inch		mm	mm
8,000		MK-1	130,000	40,000
8,500		MK-1	135,000	45,000
10,000		MK-1	140,000	50,000
10,200		MK-1	140,000	50,000
10,500		MK-1	140,000	50,000
11,000		MK-1	140,000	50,000
11,500		MK-1	146,000	56,000
12,000		MK-1	146,000	56,000
13,000		MK-1	146,000	56,000
13,500		MK-2	168,000	63,000
14,000		MK-2	168,000	63,000
14,500		MK-2	168,000	63,000
15,000		MK-2	168,000	63,000
15,500		MK-2	175,000	70,000
16,000		MK-2	175,000	70,000
16,500		MK-2	175,000	70,000
17,000		MK-2	175,000	70,000
17,500		MK-2	185,000	80,000
18,000		MK-2	185,000	80,000
19,000		MK-2	185,000	80,000
19,500		MK-3	215,000	90,000
20,000		MK-3	215,000	90,000
21,000		MK-3	215,000	90,000
21,500		MK-3	215,000	90,000

d1		S	l1	l2
mm	inch		mm	mm
22,000		MK-3	215,000	90,000
23,000		MK-3	225,000	100,000
24,000		MK-3	225,000	100,000
24,500		MK-3	225,000	100,000
25,000	63/64	MK-3	225,000	100,000
26,000		MK-4	260,000	110,000
26,500		MK-4	260,000	110,000
27,000		MK-4	260,000	110,000
28,000		MK-4	260,000	110,000
30,000		MK-4	275,000	125,000
32,000		MK-4	275,000	125,000
33,000		MK-4	290,000	140,000
38,000		MK-4	310,000	160,000
40,000		MK-4	310,000	160,000

# Attachements HSK-A pour cônes Morse CM

Prévus pour les outils à cône  
Morse pourvus d'un tenon  
d'éjection.

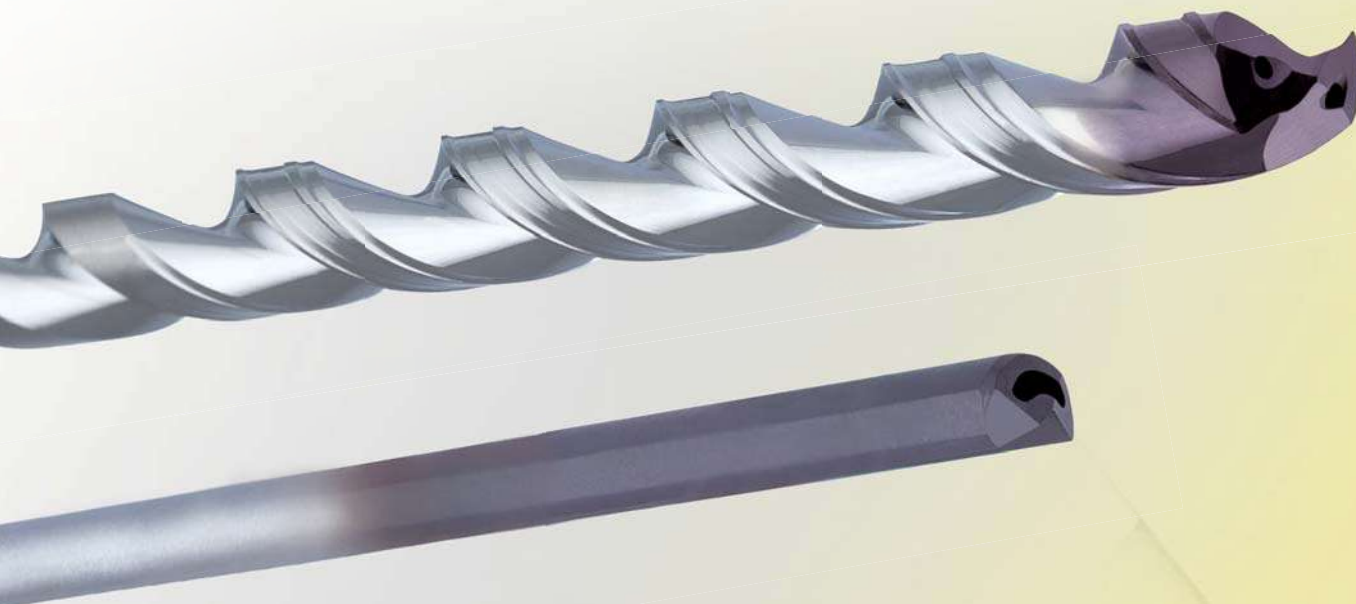


Vous trouverez toutes les caractéristiques techniques  
complémentaires dans notre catalogue GM 300.



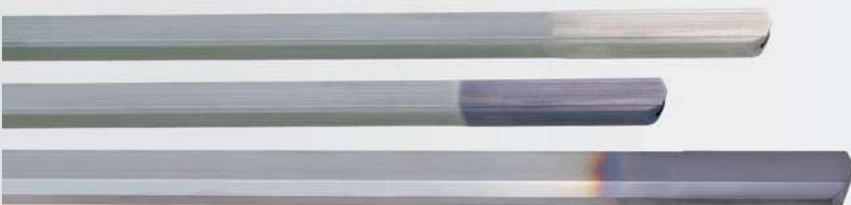


# OUTILS DE FORAGE





FORETS HÉLICOÏDAUX  
EN CW MONOBLOC  
POUR FORAGES PROFONDS



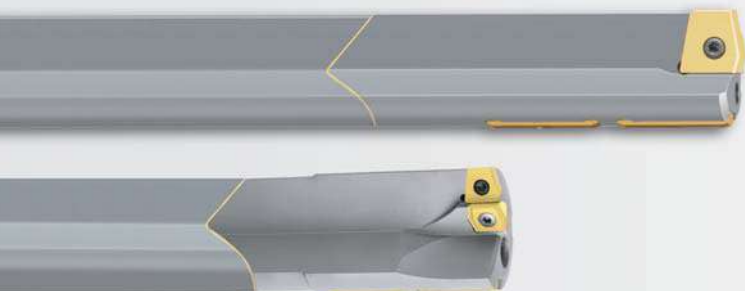
FORETS À UNE LÈVRE  
EN CW MONOBLOC  
POUR FORAGES PROFONDS  
EB 100



FORETS À UNE LÈVRE,  
À PLAQUETTES DE COUPE  
EN CW BRASÉE,  
POUR FORAGES PROFONDS  
EB 80



FORETS À DEUX LÈVRES,  
À PLAQUETTES DE COUPE  
EN CW BRASÉE,  
POUR FORAGES PROFONDS  
ZB 80



FORETS À UNE LÈVRE,  
SYSTÈME MODULAIRE,  
POUR FORAGES PROFONDS  
EB 800



FORETS HÉLICOÏDAUX  
EN HSS/HSCO  
POUR FORAGES PROFONDS



- Forets en cw monobloc pour perçages profonds avec hautes vitesses de coupe et d'avances
- Profondeurs de perçages de 15xD à 40xD
- Diamètre nominal de 3,00 à 14,00 mm
- Rigidité d'outil optimale et refroidissement d'outil assuré
- Tenues de coupe très élevées malgré les temps d'usinage, considérablement raccourcis
- approprié pour presque tous les matériaux

à partir de la page 523

- Outils de forage à une lèvre de coupe pour les forages avec des tolérances très serrées
- réalisable à partir du diamètre nominal de 0,90 mm
- Diamètre nominal jusqu'à 16,00 mm
- Longueurs de goujures jusqu'à 500 mm, toutefois maximales jusqu'à 100xD
- Jusqu'à une profondeur de 80xD avec un seul outil
- Appropriés pour presque tous les matériaux

à partir de la page 529

- Outils de forage à une lèvre de coupe avec embout cw rapporté
- Longueurs totales réalisables jusqu'à 3000,00 mm
- Diamètre nominal de 2,00 à 40,00 mm
- différentes versions par exemple, avec affûtage rayonné ou en foret étagé
- Appropriés pour presque tous les matériaux

à partir de la page 540

Outils de forage

- Outils de forage à 2 lèvres de coupe avec embout cw rapporté
- Diamètre nominal de 6,00 à 30,00 mm
- pour le forage des fontes EN-GJL-250, fontes à graphite sphéroïdal EN - GJMW - 350 - 4, fontes vermiculaires GGV
- Extrême grosse section des canaux d'adduction de la lubrification
- Géométrie d'affûtage optimisée

à partir de la page 551

- Outils de forage à une lèvre de coupe pourvus de plaquettes de coupe et de guidage interchangeables
- Diamètre nominal de 12,00 mm à 52,00 mm
- Chaque support de base transformable par 0,50 mm
- Différentes combinaisons de nuances cw et revêtements possible
- Appropriés pour presque tous les matériaux

à partir de la page 553

- Forets hélicoïdaux en HSS / HSCO pour le procédé de perçage fiable des trous profonds
- Diamètres de 0,40 mm à 50,00 mm
- Longueurs de goujures jusqu'à 850 mm
- Disponibles avec attachements cylindriques ou coniques CM
- Appropriés pour de nombreux matériaux

à partir de la page 580



P	M	K	N	S	H	Présentation	Profondeur	Norme	Type	Sens de coupe	Matière de coupe	Surface	d1/mm	N° d'article	Param. de coupe, page	Page
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### Forets Ratio à canaux de lubrification

•	•	•	○	○	○		15xD	WN	RT 100 T	R	VHM	A	3,000 - 14,000	6509	760	523
•	•	•	○	○	○		20xD	WN	RT 100 T	R	VHM	A	3,000 - 14,000	6511	760	524
•	•	•	○	○	○		25xD	WN	RT 100 T	R	VHM	A	3,000 - 12,000	6512	760	525
•	•	•	○	○	○		30xD	WN	RT 100 T	R	VHM	A	3,000 - 10,000	6513	760	526
•	•	•	○	○	○		40xD	WN	RT 100 T	R	VHM	A	3,000 - 8,000	6514	760	527

### Forets à une lèvre EB 100

•	•	○	○	○	○		25xD	WN	EB 100	R	VHM	a	2,380 - 12,000	5646	808	529
•	•	○	○	○	○		50xD	WN	EB 100	R	VHM	a	2,380 - 8,000	5647	808	530
•	•	○	○	○	○		75xD	WN	EB 100	R	VHM	a	2,380 - 6,000	5648	808	531
○	○	○	•	•	○		45,00	WN	EB 100	R	VHM	○	1,200 - 3,200	5024	808	532
•	○	•	○	○	○		45,00	WN	EB 100	R	VHM	A	1,200 - 3,200	5632	808	533
○	○	○	•	•	○		80,00	WN	EB 100	R	VHM	○	1,200 - 5,000	5020	808	534
•	○	•	○	○	○		80,00	WN	EB 100	R	VHM	A	1,200 - 5,000	5633	808	535
○	○	○	•	•	○		120,00	WN	EB 100	R	VHM	○	1,500 - 5,000	5026	808	536
•	○	•	○	○	○		120,00	WN	EB 100	R	VHM	A	1,500 - 5,000	5637	808	537
○	○	○	•	•	○		160,00	WN	EB 100	R	VHM	○	1,500 - 8,000	5021	808	538
•	○	•	○	○	○		160,00	WN	EB 100	R	VHM	A	1,500 - 8,000	5638	808	539

### Forets à une lèvre EB 80

•	○	•	○	○	○		20xD	WN	EB 80	R	HM	S	4,000 - 12,000	5018	808	540
○	•	○	•	○	○		20xD	WN	EB 80	R	HM	C	3,970 - 12,700	5639	808	541
•	○	•	○	○	○		30xD	WN	EB 80	R	HM	S	4,000 - 12,000	5460	808	542
○	•	○	•	○	○		30xD	WN	EB 80	R	HM	C	3,970 - 12,700	5640	808	543
•	○	•	○	○	○		40xD	WN	EB 80	R	HM	○	4,000 - 12,000	5689	808	544
•	○	•	○	○	○		40xD	WN	EB 80	R	HM	S	4,000 - 12,000	5022	808	545
○	•	○	•	○	○		40xD	WN	EB 80	R	HM	C	3,970 - 12,700	5641	808	546

Outils de forage





P	M	K	N	S	H	Présentation	Profondeur	Norme	Type	Sens de coupe	Matière de coupe	Surface	d1/mm	N° d'article	Param. de coupe, page	Page
<b>Forets à une lèvre EB 80</b>																
•	○	•	○	○			80xD	WN	EB 80	R	HM	○	3,970 - 11,950	5690	808	547
•	○	•	○	○			80xD	WN	EB 80	R	HM	Ⓢ	4,950 - 11,950	5023	808	548
○	•	○	•	○			80xD	WN	EB 80	R	HM	Ⓢ	4,950 - 12,650	5642	808	549
•	○	•	•	○			1100,00	WN	EB 80	R	HM	Ⓢ	6,000 - 22,000	5164	808	550
<b>Outils de forage à deux lèvres ZB 80</b>																
			•				30xD	WN	ZB 80	R	HM	○	8,000 - 12,000	5019	808	551
		•					30xD	WN	ZB 80	R	HM	○	8,000 - 12,000	5643	808	552
<b>Forets à une lèvre EB 800 à plaquette interchangeables</b>																
•	○	○	•	○			30xD	WN	EB 800	R	HM	Ⓢ	12,000 - 24,000	5644	808	555
<b>Tournevis Torx</b>																
								WN						1612		558
<b>Clé dynamométrique</b>																
								WN						4915		559
<b>Embouts pour Vis Torx</b>																
								WN						4917		560
<b>Vis de fixation</b>																
								WN						4071		561
<b>Canon de perçage</b>																
								WN			VHM			5748		565
								WN			HSS			5747		566
<b>Rondelles d'étanchéité pour les forets à une lèvre</b>																
								WN						5752		569
<b>Guides de lunettes, de forme spéciale, pour les forets à une lèvre</b>																
								WN						5750		571
<b>Guides de lunettes pour outils à forer 1 et 2 lèvres</b>																
								WN						5749		573

Outils de forage



P	M	K	N	S	H	Présentation	Profondeur	Norme	Type	Sens de coupe	Matière de coupe	Surface	d1/mm	N° d'article	Param. de coupe, page	Page
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## Rondelles d'étanchéité pour les outils de forage à deux lèvres de coupe

			<b>5753</b>	575
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## Guides de lunettes pour les outils de forage à deux lèvres

			<b>5751</b>	576
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## Vis de réglage

			<b>5754</b>	577
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			<b>5755</b>	578
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## Forets hélicoïdaux longs

		~10xD	DIN 340	N		HSS		0,400 - 36,510	<b>217</b>	786	580
		~10xD	DIN 340	N		HSS		0,500 - 22,220	<b>667</b>	786	583
		~10xD	DIN 340	N		HSS		0,450 - 29,000	<b>220</b>	786	585
		~10xD	DIN 340	N		HSS		2,950 - 25,250	<b>204</b>	786	587
		~10xD	DIN 340	H		HSS		0,500 - 16,000	<b>218</b>	786	588
		~10xD	DIN 340	H		HSS		0,450 - 15,000	<b>221</b>	786	590
		~10xD	DIN 340	W		HSS		0,500 - 20,640	<b>219</b>	786	591
		~10xD	DIN 340	GT 100		HSS		1,000 - 14,000	<b>535</b>	786	593
		~10xD	DIN 340	GT 100		HSS		1,000 - 14,000	<b>668</b>	786	596
		~10xD	DIN 340	GT 100		HSS		1,000 - 10,000	<b>2462</b>	786	598
		~10xD	DIN 340	GT 100		HSS		1,400 - 13,000	<b>506</b>	786	599
		~10xD	DIN 340	GT 50		HSS		1,000 - 32,600	<b>501</b>	786	600
		~10xD	DIN 340	N		HSCO		0,500 - 22,000	<b>317</b>	792	602
		~10xD	DIN 340	GT 100		HSCO		1,000 - 16,000	<b>336</b>	792	604
		~10xD	DIN 340	GT 100		HSCO		1,000 - 12,000	<b>396</b>	792	606
		~10xD	DIN 340	Ti		HSCO		1,000 - 15,000	<b>617</b>	792	607
		~10xD	DIN 340	Ti		HSCO		1,000 - 10,200	<b>669</b>	792	609

Outils de forage



P	M	K	N	S	H	Présentation	Profondeur	Norme	Type	Sens de coupe	Matière de coupe	Surface	d1/mm	N° d'article	Param. de coupe, page	Page
						Forets hélicoïdaux longs	~10xD	WN	N	R	VHM	○	0,500 - 1,450	706	792	611
						Forets hélicoïdaux extra-long, série 1										
•	•	•	○				~15xD	DIN 1869	N	R	HSS	● <sub>2,36</sub>	1,600 - 13,000	235	788	612
•	•	•	•				~15xD	DIN 1869	GT 100	R	HSS	● <sub>2,36</sub>	1,950 - 13,000	502	790	614
•	•	•	○				~15xD	DIN 1869	GT 100	R	HSS	● <sub>S</sub>	2,000 - 12,700	670	790	616
○			•				~15xD	DIN 1869	GT 50	R	HSS	○	2,000 - 12,700	524	788	617
•	•	•	•	○			~15xD	DIN 1869	GT 100	R	HSCO	●	2,700 - 10,000	618	794	619
						Forets hélicoïdaux extra-long, série 2										
•	•	•	○				~20xD	DIN 1869	N	R	HSS	●	2,700 - 13,000	236	788	620
•	•	•	•				~20xD	DIN 1869	GT 100	R	HSS	● <sub>2,36</sub>	2,000 - 13,000	503	790	621
•	•	•	○				~20xD	DIN 1869	GT 100	R	HSS	● <sub>S</sub>	2,700 - 8,500	671	790	623
○			•				~20xD	DIN 1869	GT 50	R	HSS	○	3,000 - 13,000	528	788	624
•	•	•	•	○			~20xD	DIN 1869	GT 100	R	HSCO	●	3,000 - 10,000	619	794	625
						Forets hélicoïdaux extra-long, série 3										
•	•	•	○				~25xD	DIN 1869	N	R	HSS	●	3,500 - 13,000	237	788	626
•	•	•	•				~25xD	DIN 1869	GT 100	R	HSS	●	2,500 - 13,000	504	790	627
○			•				~25xD	DIN 1869	GT 50	R	HSS	○	2,500 - 10,000	529	788	628
•	•	•	•	○			~25xD	DIN 1869	GT 100	R	HSCO	●	2,500 - 13,000	571	794	629
						Forets hélicoïdaux extra-long										
•	•	•	•				>25xD	WN	GT 100	R	HSS	●	6,000 - 12,000	242	790	630
•	•	•	•				>25xD	WN	GT 100	R	HSS	○	8,000 - 12,000	243	790	631
•	•	•	•				>25xD	WN	GT 100	R	HSS	○	10,000 - 12,000	244	790	632
						Forets hélicoïdaux extra-long, série 1										
•	•	•	○				~15xD	DIN 1870	N	R	HSS	●	8,000 - 50,000	266	788	633
•	•	•	•				~15xD	DIN 1870	GT 100	R	HSS	● <sub>160</sub>	8,000 - 30,000	526	790	634

Outils de forage



P	M	K	N	S	H	Présentation	Profondeur	Norme	Type	Sens de coupe	Matière de coupe	Surface	d1/mm	N° d'article	Param. de coupe, page	Page
Forets hélicoïdaux extra-longs, série 1																
○	●	●	●	●	○		~15xD	DIN 1870	GT 50		HSS	○	8,500 - 33,000	525	788	635
●	●	●	●	●	○		~15xD	DIN 1870	GT 100		HSCO		9,520 - 30,000	620	794	636
Forets hélicoïdaux extra-longs, série 2																
●	●	○	○	○	○		~20xD	DIN 1870	N		HSS	●	8,000 - 45,000	267	788	637
●	●	●	●	●	○		~20xD	DIN 1870	GT 100		HSS		8,000 - 30,000	527	790	638
○	●	●	●	●	○		~20xD	DIN 1870	GT 50		HSS	○	8,500 - 31,000	542	788	639
●	●	●	●	●	○		~20xD	DIN 1870	GT 100		HSCO		9,520 - 23,420	621	794	640
Forets à canaux de lubrification, long. gouj. DIN 1870																
●	●	●	●	●	○		~15xD	WN	GT 100		HSCO	●	11,000 - 34,000	374	794	641
●	●	●	●	●	○		~15xD	WN	GT 100		HSCO	●	11,000 - 34,000	375	794	642
●	●	●	●	●	○		~15xD	WN	GT 100		HSCO	●	11,000 - 29,000	376	794	643

Outils de forage



Forets Ratio à canaux de lubrification

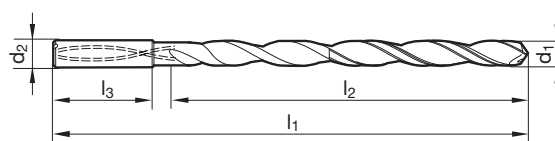


- P** • Amin. de l'âme  $\geq \varnothing 3,000$  • affûtage à dépouille conique • forme concave de l'arête de coupe principale • section des goujures optimisée • section maximale des canaux de lubrification • respecter la pression du liquide de refroid.
- M** •
- K** •
- N** ○ aciers de construction et de cémentation • aciers de décolletage, aciers d'amélioration • aciers alliés jusqu'à 1200 N/mm<sup>2</sup> • aciers inoxydables
- S** ○ • fontes
- H** ○

**GÜHRING** NAVIGATOR

Paramètres de coupe, page 760

Matière de coupe	<b>CW monobloc</b>
Surface	<b>A</b>
Forme d'attachement	HA



N° d'article **6509**

d1		d2 h6	l1	l2	l3	d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm	mm	inch	mm	mm	mm	mm
3,000		6,000	95,000	55,000	36,000	7,940	5/16	8,000	183,000	143,000	36,000
3,170	1/8	6,000	106,000	67,000	36,000	8,000		8,000	183,000	143,000	36,000
3,500		6,000	116,000	76,000	36,000	8,330	21/64	10,000	204,000	160,000	40,000
3,570	9/64	6,000	116,000	76,000	36,000	8,500		10,000	204,000	160,000	40,000
3,970	5/32	6,000	116,000	76,000	36,000	8,730	11/32	10,000	204,000	160,000	40,000
4,000		6,000	116,000	76,000	36,000	9,000		10,000	204,000	160,000	40,000
4,370	11/64	6,000	133,000	93,000	36,000	9,130	23/64	10,000	221,000	177,000	40,000
4,500		6,000	133,000	93,000	36,000	9,520	3/8	10,000	221,000	177,000	40,000
4,760	3/16	6,000	133,000	93,000	36,000	9,920	25/64	10,000	221,000	177,000	40,000
5,000		6,000	133,000	93,000	36,000	10,000		10,000	221,000	177,000	40,000
5,100		6,000	150,000	110,000	36,000	10,320	13/32	12,000	247,000	198,000	45,000
5,160	13/64	6,000	150,000	110,000	36,000	10,720	27/64	12,000	247,000	198,000	45,000
5,410		6,000	150,000	110,000	36,000	11,000		12,000	247,000	198,000	45,000
5,500		6,000	150,000	110,000	36,000	11,110	7/16	12,000	263,000	214,000	45,000
5,560	7/32	6,000	150,000	110,000	36,000	11,510	29/64	12,000	263,000	214,000	45,000
5,950	15/64	6,000	150,000	110,000	36,000	11,910	15/32	12,000	263,000	214,000	45,000
6,000		6,000	150,000	110,000	36,000	12,000		12,000	263,000	214,000	45,000
6,350	1/4	8,000	167,000	127,000	36,000	12,300	31/64	14,000	297,000	248,000	45,000
6,500		8,000	167,000	127,000	36,000	12,700	1/2	14,000	297,000	248,000	45,000
6,750	17/64	8,000	167,000	127,000	36,000	13,100	33/64	14,000	297,000	248,000	45,000
7,000		8,000	167,000	127,000	36,000	13,490	17/32	14,000	297,000	248,000	45,000
7,140	9/32	8,000	183,000	143,000	36,000	13,890	35/64	14,000	297,000	248,000	45,000
7,500		8,000	183,000	143,000	36,000	14,000		14,000	297,000	248,000	45,000
7,540	19/64	8,000	183,000	143,000	36,000						

Outils de forage



Forets Ratio à canaux de lubrification

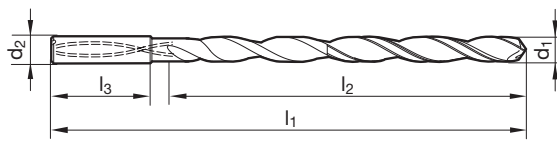


- P** • Amin. de l'âme  $\geq \varnothing 3,000$  • affûtage à dépouille conique • forme concave de l'arête de coupe principale • section des goujures optimisée • section maximale des canaux de lubrification • respecter la pression du liquide de refroid.
- M** •
- K** •
- N** ○ aciers de construction et de cémentation • aciers de décolletage, aciers d'amélioration • aciers alliés jusqu'à 1200 N/mm<sup>2</sup> • aciers inoxydables
- S** ○
- H** ○

**GÜHRING** NAVIGATOR

Paramètres de coupe, page 760

Matière de coupe	<b>CW monobloc</b>
Surface	<b>A</b>
Forme d'attachement	HA



N° d'article **6511**

Outils de forage

d1		d2 h6	l1	l2	l3	d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm	mm	inch	mm	mm	mm	mm
3,000		6,000	110,000	70,000	36,000	8,730	11/32	10,000	249,000	205,000	40,000
3,100		6,000	123,000	83,000	36,000	9,000		10,000	249,000	205,000	40,000
3,170	1/8	6,000	123,000	83,000	36,000	9,130	23/64	10,000	271,000	227,000	40,000
3,500		6,000	136,000	96,000	36,000	9,520	3/8	10,000	271,000	227,000	40,000
3,570	9/64	6,000	136,000	96,000	36,000	9,920	25/64	10,000	271,000	227,000	40,000
3,970	5/32	6,000	136,000	96,000	36,000	10,000		10,000	271,000	227,000	40,000
4,000		6,000	136,000	96,000	36,000	10,320	13/32	12,000	302,000	253,000	45,000
4,200		6,000	158,000	118,000	36,000	10,720	27/64	12,000	302,000	253,000	45,000
4,370	11/64	6,000	158,000	118,000	36,000	11,000		12,000	302,000	253,000	45,000
4,500		6,000	158,000	118,000	36,000	11,110	7/16	12,000	323,000	274,000	45,000
4,760	3/16	6,000	158,000	118,000	36,000	11,510	29/64	12,000	323,000	274,000	45,000
5,000		6,000	158,000	118,000	36,000	11,910	15/32	12,000	323,000	274,000	45,000
5,100		6,000	180,000	140,000	36,000	12,000		12,000	323,000	274,000	45,000
5,160	13/64	6,000	180,000	140,000	36,000	12,300	31/64	14,000	367,000	318,000	45,000
5,410		6,000	180,000	140,000	36,000	12,700	1/2	14,000	367,000	318,000	45,000
5,500		6,000	180,000	140,000	36,000	13,100	33/64	14,000	367,000	318,000	45,000
5,560	7/32	6,000	180,000	140,000	36,000	13,490	17/32	14,000	367,000	318,000	45,000
5,950	15/64	6,000	180,000	140,000	36,000	13,890	35/64	14,000	367,000	318,000	45,000
6,000		6,000	180,000	140,000	36,000	14,000		14,000	367,000	318,000	45,000
6,350	1/4	8,000	202,000	162,000	36,000						
6,500		8,000	202,000	162,000	36,000						
6,750	17/64	8,000	202,000	162,000	36,000						
7,000		8,000	202,000	162,000	36,000						
7,140	9/32	8,000	223,000	183,000	36,000						
7,500		8,000	223,000	183,000	36,000						
7,540	19/64	8,000	223,000	183,000	36,000						
7,940	5/16	8,000	223,000	183,000	36,000						
8,000		8,000	223,000	183,000	36,000						
8,330	21/64	10,000	249,000	205,000	40,000						
8,500		10,000	249,000	205,000	40,000						



Forets Ratio à canaux de lubrification

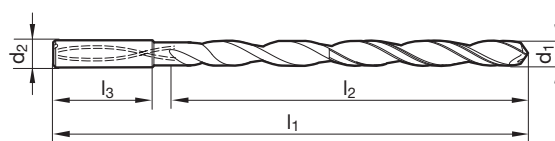


- P** • Amin. de l'âme  $\geq \varnothing 3,000$  • affûtage à dépouille conique • forme concave de l'arête de coupe principale • section des goujures optimisée • section maximale des canaux de lubrification • respecter la pression du liquide de refroid.
- M** •
- K** •
- N** ○ aciers de construction et de cémentation • aciers de décolletage, aciers d'amélioration • aciers alliés jusqu'à 1200 N/mm<sup>2</sup> • aciers inoxydables
- S** ○ • fontes
- H** ○

**GÜHRING** NAVIGATOR

Paramètres de coupe, page 760

Matière de coupe	<b>CW monobloc</b>
Surface	<b>A</b>
Forme d'attachement	HA



N° d'article **6512**

d1		d2 h6	l1	l2	l3	d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm	mm	inch	mm	mm	mm	mm
3,000		6,000	125,000	85,000	36,000	7,000		8,000	237,000	197,000	36,000
3,100		6,000	141,000	101,000	36,000	7,140	9/32	8,000	263,000	223,000	36,000
3,170	1/8	6,000	141,000	101,000	36,000	7,500		8,000	263,000	223,000	36,000
3,500		6,000	156,000	116,000	36,000	7,540	19/64	8,000	263,000	223,000	36,000
3,570	9/64	6,000	156,000	116,000	36,000	7,940	5/16	8,000	263,000	223,000	36,000
3,800		6,000	156,000	116,000	36,000	8,000		8,000	263,000	223,000	36,000
3,970	5/32	6,000	156,000	116,000	36,000	8,330	21/64	10,000	294,000	250,000	40,000
4,000		6,000	156,000	116,000	36,000	8,500		10,000	294,000	250,000	40,000
4,200		6,000	183,000	143,000	36,000	8,730	11/32	10,000	294,000	250,000	40,000
4,370	11/64	6,000	183,000	143,000	36,000	8,800		10,000	294,000	250,000	40,000
4,500		6,000	183,000	143,000	36,000	9,000		10,000	294,000	250,000	40,000
4,760	3/16	6,000	183,000	143,000	36,000	9,130	23/64	10,000	321,000	277,000	40,000
5,000		6,000	183,000	143,000	36,000	9,520	3/8	10,000	321,000	277,000	40,000
5,100		6,000	210,000	170,000	36,000	9,920	25/64	10,000	321,000	277,000	40,000
5,160	13/64	6,000	210,000	170,000	36,000	10,000		10,000	321,000	277,000	40,000
5,410		6,000	210,000	170,000	36,000	10,320	13/32	12,000	359,000	310,000	45,000
5,500		6,000	210,000	170,000	36,000	10,720	27/64	12,000	359,000	310,000	45,000
5,560	7/32	6,000	210,000	170,000	36,000	11,000		12,000	359,000	310,000	45,000
5,950	15/64	6,000	210,000	170,000	36,000	11,110	7/16	12,000	386,000	337,000	45,000
6,000		6,000	210,000	170,000	36,000	11,510	29/64	12,000	386,000	337,000	45,000
6,300		8,000	237,000	197,000	36,000	11,910	15/32	12,000	386,000	337,000	45,000
6,350	1/4	8,000	237,000	197,000	36,000	12,000		12,000	386,000	337,000	45,000
6,500		8,000	237,000	197,000	36,000						
6,750	17/64	8,000	237,000	197,000	36,000						

Outils de forage



Forets Ratio à canaux de lubrification

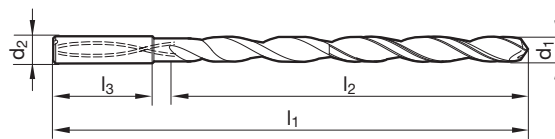


- P** • Amin. de l'âme  $\geq \varnothing 3,000$  • affûtage à dépouille conique • forme concave de l'arête de coupe principale • section des goujures optimisée • section maximale des canaux de lubrification • respecter la pression du liquide de refroid.
- M** •
- K** •
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- S** ○ • fontes
- H** ○

**GÜHRING** NAVIGATOR

Paramètres de coupe, page 760

Matière de coupe	<b>CW monobloc</b>
Surface	<b>A</b>
Forme d'attachement	HA



N° d'article **6513**

Outils de forage

d1		d2 h6	l1	l2	l3	d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm	mm	inch	mm	mm	mm	mm
3,000		6,000	140,000	100,000	36,000	7,000		8,000	272,000	232,000	36,000
3,100		6,000	158,000	118,000	36,000	7,140	9/32	8,000	303,000	263,000	36,000
3,170	1/8	6,000	158,000	118,000	36,000	7,500		8,000	303,000	263,000	36,000
3,500		6,000	176,000	136,000	36,000	7,540	19/64	8,000	303,000	263,000	36,000
3,570	9/64	6,000	176,000	136,000	36,000	7,940	5/16	8,000	303,000	263,000	36,000
3,800		6,000	176,000	136,000	36,000	8,000		8,000	303,000	263,000	36,000
3,970	5/32	6,000	176,000	136,000	36,000	8,330	21/64	10,000	339,000	295,000	40,000
4,000		6,000	176,000	136,000	36,000	8,500		10,000	339,000	295,000	40,000
4,200		6,000	208,000	168,000	36,000	8,730	11/32	10,000	339,000	295,000	40,000
4,370	11/64	6,000	208,000	168,000	36,000	8,800		10,000	339,000	295,000	40,000
4,500		6,000	208,000	168,000	36,000	9,000		10,000	339,000	295,000	40,000
4,760	3/16	6,000	208,000	168,000	36,000	9,130	23/64	10,000	371,000	327,000	40,000
5,000		6,000	208,000	168,000	36,000	9,520	3/8	10,000	371,000	327,000	40,000
5,100		6,000	240,000	200,000	36,000	9,920	25/64	10,000	371,000	327,000	40,000
5,160	13/64	6,000	240,000	200,000	36,000	10,000		10,000	371,000	327,000	40,000
5,410		6,000	240,000	200,000	36,000						
5,500		6,000	240,000	200,000	36,000						
5,560	7/32	6,000	240,000	200,000	36,000						
5,950	15/64	6,000	240,000	200,000	36,000						
6,000		6,000	240,000	200,000	36,000						
6,300		8,000	272,000	232,000	36,000						
6,350	1/4	8,000	272,000	232,000	36,000						
6,500		8,000	272,000	232,000	36,000						
6,750	17/64	8,000	272,000	232,000	36,000						





Forets Ratio à canaux de lubrification

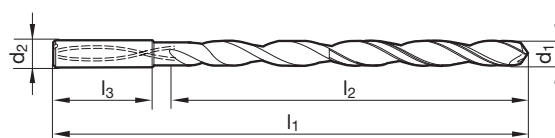


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- S** ○ • fontes
- H** ○

**GÜHRING** NAVIGATOR

Paramètres de coupe, page 760

Matière de coupe	<b>CW monobloc</b>
Surface	<b>A</b>
Forme d'attachement	HA



N° d'article **6514**

d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm
3,000		6,000	170,000	130,000	36,000
3,100		6,000	193,000	153,000	36,000
3,170	1/8	6,000	193,000	153,000	36,000
3,500		6,000	193,000	153,000	36,000
3,570	9/64	6,000	216,000	176,000	36,000
3,800		6,000	216,000	176,000	36,000
3,970	5/32	6,000	216,000	176,000	36,000
4,000		6,000	216,000	176,000	36,000
4,200		6,000	238,000	198,000	36,000
4,370	11/64	6,000	238,000	198,000	36,000
4,500		6,000	238,000	198,000	36,000
4,760	3/16	6,000	258,000	218,000	36,000
5,000		6,000	258,000	218,000	36,000
5,100		6,000	280,000	240,000	36,000
5,160	13/64	6,000	280,000	240,000	36,000
5,410		6,000	280,000	240,000	36,000
5,500		6,000	280,000	240,000	36,000
5,560	7/32	6,000	300,000	260,000	36,000

d1		d2 h6	l1	l2	l3
mm	inch	mm	mm	mm	mm
5,950	15/64	6,000	300,000	260,000	36,000
6,000		6,000	300,000	260,000	36,000
6,300		8,000	322,000	282,000	36,000
6,350	1/4	8,000	322,000	282,000	36,000
6,500		8,000	322,000	282,000	36,000
6,750	17/64	8,000	342,000	302,000	36,000
7,000		8,000	342,000	302,000	36,000
7,140	9/32	8,000	363,000	323,000	36,000
7,500		8,000	363,000	323,000	36,000
7,540	19/64	8,000	383,000	343,000	36,000
7,940	5/16	8,000	383,000	343,000	36,000
8,000		8,000	383,000	343,000	36,000

Outils de forage



## Action Service Rapide d'outils de forage

Réalisation rapide d'outils de forage à une lèvre de coupe sur mesure en quelques jours: l'action Gühring super rapide de forage le permet!

### EB 100

Différentes possibilités de versions:

- Longueurs de goujures:

45 mm Ø 1,2 / 1,5 / 1,59 / 1,6 / 1,98 / 2,0 / 2,5 / 2,7 / 3,0 / 3,2

80 mm Ø 1,5 / 1,59 / 1,6 / 1,98 / 2,0 / 2,5 / 2,7 / 3,0 / 3,2 / 3,5 / 4,0 / 4,2 / 4,5 / 5,0

120 mm Ø 1,5 / 1,59 / 1,6 / 1,98 / 2,0 / 2,5 / 2,7 / 3,0 / 3,2 / 3,5 / 4,0 / 4,2 / 4,5 / 5,0

160 mm Ø 1,5 / 1,59 / 1,6 / 1,98 / 2,0 / 2,5 / 2,7 / 3,0 / 3,2 / 3,5 / 4,0 / 4,2 / 4,5 / 5,0 / 6,0 / 8,0

- Solutions spécifiques: Diamètre nominal 0,90 à 16,00 mm, longueurs maximales de goujures: 500 mm
- Nuance cw: K30 / K40
- Forme périphérique: G
- poli ou revêtu
- Possibilités de choisir entre différentes douilles de serrage usuelles

Réalisation des outils spéciaux en 15 journées de travail

### EB 80

Différentes possibilités de versions:

- Diamètre nominal de 2,00 mm à 13,90 mm ascendant par 0,10 mm
- Diamètre nominal de 14,00 mm à 22,00 mm ascendant par 0,50 mm
- Longueurs totales des outils jusqu'à 1200 mm, longueurs minimales des goujures: 20xD
- Forme périphérique G
- Douilles de serrage usuelles
- Nuance cw K15
- Poli avec affûtage standard pour les fontes et aluminiums
- Revêtement S (Ti N) avec diviseur de copeaux pour les aciers à copeaux longs
- Choix entre différents revêtements de surface

Réalisation des outils spéciaux en 10 journées de travail



Forets à une lèvre EB 100



Matière de coupe **CW monobloc**

Surface

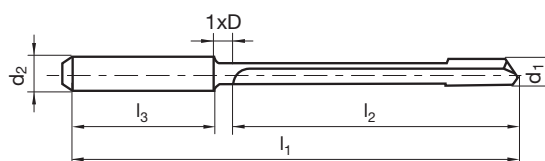
Forme d'attachement HA

**P** • forme périphérique G • à partir de d1=3mm ou d2=6mm, attach.cyl.cw monobloc av.extrémité conique MQL

<b>P</b>	•
<b>M</b>	•
<b>K</b>	○
<b>N</b>	
<b>S</b>	○
<b>H</b>	○

**GÜHRING**NAVIGATOR

Paramètres de coupe, page 808



N° d'article **5646**

d1 h5		d2 h6		l1	l2	l3	N° de code
mm	inch	mm	mm	mm	mm	mm	
2,380	3/32	4,000	100,000	70,000	28,000	2,380	
2,500		4,000	115,000	85,000	28,000	2,500	
2,780	7/64	4,000	115,000	85,000	28,000	2,780	
3,000		6,000	145,000	105,000	36,000	3,000	
3,170	1/8	6,000	145,000	105,000	36,000	3,170	
3,500		6,000	145,000	105,000	36,000	3,500	
3,570	9/64	6,000	160,000	120,000	36,000	3,570	
3,970	5/32	6,000	160,000	120,000	36,000	3,970	
4,000		6,000	160,000	120,000	36,000	4,000	
4,370	11/64	6,000	220,000	180,000	36,000	4,370	
4,760	3/16	6,000	220,000	180,000	36,000	4,760	
5,000		6,000	220,000	180,000	36,000	5,000	
5,160	13/64	6,000	220,000	180,000	36,000	5,160	
5,560	7/32	6,000	220,000	180,000	36,000	5,560	
5,950	15/64	6,000	220,000	180,000	36,000	5,950	
6,000		6,000	220,000	180,000	36,000	6,000	
6,350	1/4	8,000	260,000	210,000	36,000	6,350	
6,750	17/64	8,000	260,000	210,000	36,000	6,750	
7,000		8,000	260,000	210,000	36,000	7,000	
7,140	9/32	8,000	285,000	240,000	36,000	7,140	
7,540	19/64	8,000	285,000	240,000	36,000	7,540	
7,940	5/16	8,000	285,000	240,000	36,000	7,940	
8,000		8,000	285,000	240,000	36,000	8,000	
9,000		10,000	350,000	300,000	40,000	9,000	
10,000		10,000	350,000	300,000	40,000	10,000	
11,000		12,000	420,000	360,000	45,000	11,000	
12,000		12,000	420,000	360,000	45,000	12,000	

Outils de forage



Forets à une lèvre EB 100



Matière de coupe **CW monobloc**

Surface

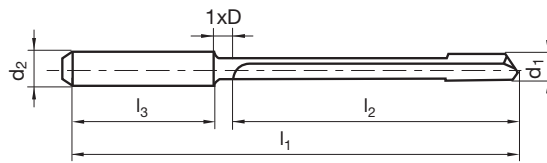
Forme d'attachement HA

**P** • forme périphérique G • à partir de d1=3mm ou d2=6mm, attach.cyl.cw monobloc av.extrémité conique MQL

<b>P</b>	•
<b>M</b>	•
<b>K</b>	○
<b>N</b>	
<b>S</b>	○
<b>H</b>	○

**GÜHRING**NAVIGATOR

Paramètres de coupe, page 808



N° d'article **5647**

Outils de forage

d1 h5		d2 h6		l1	l2	l3	N° de code
mm	inch	mm	mm	mm	mm	mm	
2,380	3/32	4,000	160,000	130,000	28,000	2,380	
2,500		4,000	185,000	155,000	28,000	2,500	
2,780	7/64	4,000	185,000	155,000	28,000	2,780	
3,000		6,000	230,000	190,000	36,000	3,000	
3,170	1/8	6,000	230,000	190,000	36,000	3,170	
3,500		6,000	230,000	190,000	36,000	3,500	
3,570	9/64	6,000	260,000	220,000	36,000	3,570	
3,970	5/32	6,000	260,000	220,000	36,000	3,970	
4,000		6,000	260,000	220,000	36,000	4,000	
4,370	11/64	6,000	370,000	330,000	36,000	4,370	
4,760	3/16	6,000	370,000	330,000	36,000	4,760	
5,000		6,000	370,000	330,000	36,000	5,000	
5,160	13/64	6,000	370,000	330,000	36,000	5,160	
5,560	7/32	6,000	370,000	330,000	36,000	5,560	
5,950	15/64	6,000	370,000	330,000	36,000	5,950	
6,000		6,000	370,000	330,000	36,000	6,000	
6,350	1/4	8,000	430,000	385,000	36,000	6,350	
6,750	17/64	8,000	430,000	385,000	36,000	6,750	
7,000		8,000	430,000	385,000	36,000	7,000	
7,140	9/32	8,000	485,000	440,000	36,000	7,140	
7,540	19/64	8,000	485,000	440,000	36,000	7,540	
7,940	5/16	8,000	485,000	440,000	36,000	7,940	
8,000		8,000	485,000	440,000	36,000	8,000	



Forets à une lèvre EB 100



Matière de coupe **CW monobloc**

Surface **Ⓜ**

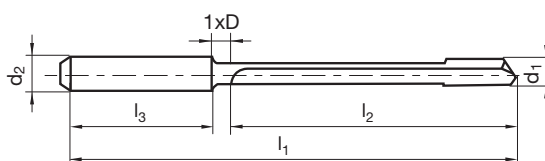
Forme d'attachement HA

**P** • forme périphérique G • à partir de d1=3mm ou d2=6mm, attach.cyl.cw monobloc av.extrémité conique MQL

<b>P</b>	•
<b>M</b>	•
<b>K</b>	○
<b>N</b>	
<b>S</b>	○
<b>H</b>	○

**GÜHRING** NAVIGATOR

Paramètres de coupe, page 808



N° d'article **5648**

d1 h5		d2 h6		l1	l2	l3	N° de code
mm	inch	mm	mm	mm	mm	mm	
2,380	3/32	4,000	220,000	190,000	28,000	2,380	
2,500		4,000	255,000	220,000	28,000	2,500	
2,780	7/64	4,000	255,000	220,000	28,000	2,780	
3,000		6,000	320,000	280,000	36,000	3,000	
3,170	1/8	6,000	320,000	280,000	36,000	3,170	
3,500		6,000	320,000	280,000	36,000	3,500	
3,570	9/64	6,000	360,000	320,000	36,000	3,570	
3,970	5/32	6,000	360,000	320,000	36,000	3,970	
4,000		6,000	360,000	320,000	36,000	4,000	
4,370	11/64	6,000	525,000	485,000	36,000	4,370	
4,760	3/16	6,000	525,000	485,000	36,000	4,760	
5,000		6,000	525,000	485,000	36,000	5,000	
5,160	13/64	6,000	525,000	485,000	36,000	5,160	
5,560	7/32	6,000	525,000	485,000	36,000	5,560	
5,950	15/64	6,000	525,000	485,000	36,000	5,950	
6,000		6,000	525,000	485,000	36,000	6,000	

Outils de forage



Forets à une lèvre EB 100

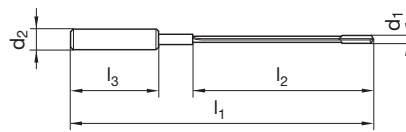


<b>P</b>	○	longueur taillée 45 mm • forme périphérique G
<b>M</b>	○	
<b>K</b>	○	
<b>N</b>	●	
<b>S</b>	●	
<b>H</b>	○	

**GÜHRING** NAVIGATOR

Paramètres de coupe, page 808

Matière de coupe	<b>CW monobloc</b>
Surface	○
Forme d'attachement	HA



N° d'article **5024**

Outils de forage

d1 h5		d2 h6	l1	l2	l3	N° de code
mm	inch	mm	mm	mm	mm	
1,200		4,000	90,000	45,000	28,000	1,200
1,500		4,000	90,000	45,000	28,000	1,500
1,590	1/16	4,000	90,000	45,000	28,000	1,590
1,600		4,000	90,000	45,000	28,000	1,600
1,980	5/64	4,000	90,000	45,000	28,000	1,980
2,000		4,000	90,000	45,000	28,000	2,000
2,500		10,000	100,000	45,000	40,000	2,500
2,700		10,000	100,000	45,000	40,000	2,700
3,000		10,000	100,000	45,000	40,000	3,000
3,200		10,000	100,000	45,000	40,000	3,200



Forets à une lèvre EB 100



Matière de coupe **CW monobloc**

Surface **A**

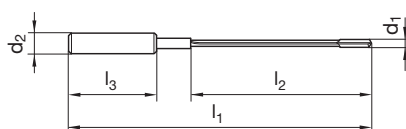
Forme d'attachement HA

**P** • longueur taillée 45 mm • forme périphérique G

<b>P</b>	•
<b>M</b>	○
<b>K</b>	•
<b>N</b>	○
<b>S</b>	○
<b>H</b>	○

**GÜHRING** NAVIGATOR

Paramètres de coupe, page 808



N° d'article **5632**

d1 h5		d2 h6	l1	l2	l3	N° de code
mm	inch	mm	mm	mm	mm	
1,200		4,000	90,000	45,000	28,000	1,200
1,500		4,000	90,000	45,000	28,000	1,500
1,590	1/16	4,000	90,000	45,000	28,000	1,590
1,600		4,000	90,000	45,000	28,000	1,600
1,980	5/64	4,000	90,000	45,000	28,000	1,980
2,000		4,000	90,000	45,000	28,000	2,000
2,500		10,000	100,000	45,000	40,000	2,500
2,700		10,000	100,000	45,000	40,000	2,700
3,000		10,000	100,000	45,000	40,000	3,000
3,200		10,000	100,000	45,000	40,000	3,200

Outils de forage



Forets à une lèvre EB 100

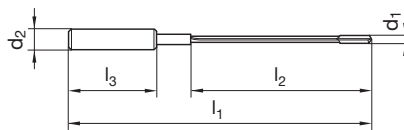


<b>P</b>	○	longueur taillée 80 mm • forme périphérique G
<b>M</b>	○	
<b>K</b>	○	
<b>N</b>	●	
<b>S</b>	●	
<b>H</b>	○	

**GÜHRING** NAVIGATOR

Paramètres de coupe, page 808

Matière de coupe	<b>CW monobloc</b>
Surface	○
Forme d'attachement	HA



N° d'article **5020**

Outils de forage

d1 h5		d2 h6	l1	l2	l3	N° de code
mm	inch	mm	mm	mm	mm	
1,200		4,000	125,000	80,000	28,000	1,200
1,500		4,000	125,000	80,000	28,000	1,500
1,590	1/16	4,000	125,000	80,000	28,000	1,590
1,600		4,000	125,000	80,000	28,000	1,600
1,980	5/64	4,000	125,000	80,000	28,000	1,980
2,000		4,000	125,000	80,000	28,000	2,000
2,500		10,000	135,000	80,000	40,000	2,500
2,700		10,000	135,000	80,000	40,000	2,700
3,000		10,000	135,000	80,000	40,000	3,000
3,200		10,000	135,000	80,000	40,000	3,200
3,500		10,000	135,000	80,000	40,000	3,500
4,000		10,000	135,000	80,000	40,000	4,000
4,200		10,000	135,000	80,000	40,000	4,200
4,500		10,000	135,000	80,000	40,000	4,500
5,000		10,000	135,000	80,000	40,000	5,000





Forets à une lèvre EB 100



Matière de coupe **CW monobloc**

Surface **A**

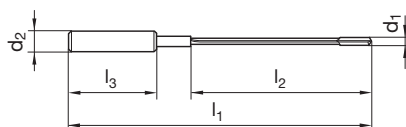
Forme d'attachement HA

**P** • longueur taillée 80 mm • forme périphérique G

<b>P</b>	•
<b>M</b>	○
<b>K</b>	•
<b>N</b>	○
<b>S</b>	○
<b>H</b>	○

**GÜHRING** NAVIGATOR

Paramètres de coupe, page 808



N° d'article **5633**

d1 h5		d2 h6		l1	l2	l3	N° de code
mm	inch	mm	mm	mm	mm	mm	
1,200		4,000	125,000	80,000	28,000	1,200	
1,500		4,000	125,000	80,000	28,000	1,500	
1,590	1/16	4,000	125,000	80,000	28,000	1,590	
1,600		4,000	125,000	80,000	28,000	1,600	
1,980	5/64	4,000	125,000	80,000	28,000	1,980	
2,000		4,000	125,000	80,000	28,000	2,000	
2,500		10,000	135,000	80,000	40,000	2,500	
2,700		10,000	135,000	80,000	40,000	2,700	
3,000		10,000	135,000	80,000	40,000	3,000	
3,200		10,000	135,000	80,000	40,000	3,200	
3,500		10,000	135,000	80,000	40,000	3,500	
4,000		10,000	135,000	80,000	40,000	4,000	
4,200		10,000	135,000	80,000	40,000	4,200	
4,500		10,000	135,000	80,000	40,000	4,500	
5,000		10,000	135,000	80,000	40,000	5,000	

Outils de forage



Forets à une lèvre EB 100

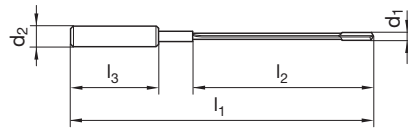


<b>P</b>	○	longueur taillée 120 mm • forme périphérique G
<b>M</b>	○	
<b>K</b>	○	
<b>N</b>	●	
<b>S</b>	●	
<b>H</b>	○	

**GÜHRING** NAVIGATOR

Paramètres de coupe, page 808

Matière de coupe	<b>CW monobloc</b>
Surface	○
Forme d'attachement	HA



N° d'article **5026**

Outils de forage

d1 h5		d2 h6		l1	l2	l3	N° de code
mm	inch	mm	mm	mm	mm	mm	
1,500		4,000	165,000	120,000	28,000	1,500	
1,590	1/16	4,000	165,000	120,000	28,000	1,590	
1,600		4,000	165,000	120,000	28,000	1,600	
1,980	5/64	4,000	165,000	120,000	28,000	1,980	
2,000		4,000	165,000	120,000	28,000	2,000	
2,500		10,000	175,000	120,000	40,000	2,500	
2,700		10,000	175,000	120,000	40,000	2,700	
3,000		10,000	175,000	120,000	40,000	3,000	
3,200		10,000	175,000	120,000	40,000	3,200	
3,500		10,000	175,000	120,000	40,000	3,500	
4,000		10,000	175,000	120,000	40,000	4,000	
4,200		10,000	175,000	120,000	40,000	4,200	
4,500		10,000	175,000	120,000	40,000	4,500	
5,000		10,000	175,000	120,000	40,000	5,000	



Forets à une lèvre EB 100



Matière de coupe **CW monobloc**

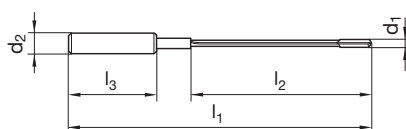
Surface **A**

Forme d'attachement HA

<b>P</b>	•	longueur taillée 120 mm • forme périphérique G
<b>M</b>	○	
<b>K</b>	•	
<b>N</b>	○	
<b>S</b>	○	
<b>H</b>	○	

**GÜHRING** NAVIGATOR

Paramètres de coupe, page 808



N° d'article **5637**

d1 h5		d2 h6		l1	l2	l3	N° de code
mm	inch	mm	mm	mm	mm	mm	
1,500		4,000	165,000	120,000	28,000	1,500	
1,590	1/16	4,000	165,000	120,000	28,000	1,590	
1,600		4,000	165,000	120,000	28,000	1,600	
1,980	5/64	4,000	165,000	120,000	28,000	1,980	
2,000		4,000	165,000	120,000	28,000	2,000	
2,500		10,000	175,000	120,000	40,000	2,500	
2,700		10,000	175,000	120,000	40,000	2,700	
3,000		10,000	175,000	120,000	40,000	3,000	
3,200		10,000	175,000	120,000	40,000	3,200	
3,500		10,000	175,000	120,000	40,000	3,500	
4,000		10,000	175,000	120,000	40,000	4,000	
4,200		10,000	175,000	120,000	40,000	4,200	
4,500		10,000	175,000	120,000	40,000	4,500	
5,000		10,000	175,000	120,000	40,000	5,000	

Outils de forage



Forets à une lèvre EB 100

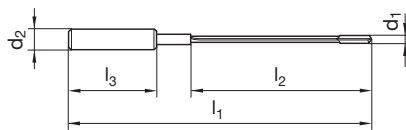


<b>P</b>	○	longueur taillée 160 mm • forme périphérique G
<b>M</b>	○	
<b>K</b>	○	
<b>N</b>	●	
<b>S</b>	●	
<b>H</b>	○	

**GÜHRING** NAVIGATOR

Paramètres de coupe, page 808

Matière de coupe	<b>CW monobloc</b>
Surface	○
Forme d'attachement	HA



N° d'article **5021**

Outils de forage

d1 h5		d2 h6		l1	l2	l3	N° de code
mm	inch	mm	mm	mm	mm	mm	
1,500		4,000	205,000	160,000	28,000	1,500	
1,590	1/16	4,000	205,000	160,000	28,000	1,590	
1,600		4,000	205,000	160,000	28,000	1,600	
1,980	5/64	4,000	205,000	160,000	28,000	1,980	
2,000		4,000	205,000	160,000	28,000	2,000	
2,500		10,000	215,000	160,000	40,000	2,500	
2,700		10,000	215,000	160,000	40,000	2,700	
3,000		10,000	215,000	160,000	40,000	3,000	
3,200		10,000	215,000	160,000	40,000	3,200	
3,500		10,000	215,000	160,000	40,000	3,500	
4,000		10,000	215,000	160,000	40,000	4,000	
4,200		10,000	215,000	160,000	40,000	4,200	
4,500		10,000	215,000	160,000	40,000	4,500	
5,000		10,000	215,000	160,000	40,000	5,000	
6,000		16,000	225,000	160,000	48,000	6,000	
8,000		16,000	225,000	160,000	48,000	8,000	



Forets à une lèvre EB 100



Matière de coupe **CW monobloc**

Surface **A**

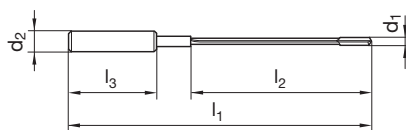
Forme d'attachement HA

**P** • longueur taillée 160 mm • forme périphérique G

<b>P</b>	•
<b>M</b>	○
<b>K</b>	•
<b>N</b>	○
<b>S</b>	○
<b>H</b>	○

**GÜHRING** NAVIGATOR

Paramètres de coupe, page 808



N° d'article **5638**

d1 h5		d2 h6		l1	l2	l3	N° de code
mm	inch	mm	mm	mm	mm	mm	
1,500		4,000	205,000	160,000	28,000	1,500	1,500
1,590	1/16	4,000	205,000	160,000	28,000	1,590	1,590
1,600		4,000	205,000	160,000	28,000	1,600	1,600
1,980	5/64	4,000	205,000	160,000	28,000	1,980	1,980
2,000		4,000	205,000	160,000	28,000	2,000	2,000
2,500		10,000	215,000	160,000	40,000	2,500	2,500
2,700		10,000	215,000	160,000	40,000	2,700	2,700
3,000		10,000	215,000	160,000	40,000	3,000	3,000
3,200		10,000	215,000	160,000	40,000	3,200	3,200
3,500		10,000	215,000	160,000	40,000	3,500	3,500
4,000		10,000	215,000	160,000	40,000	4,000	4,000
4,200		10,000	215,000	160,000	40,000	4,200	4,200
4,500		10,000	215,000	160,000	40,000	4,500	4,500
5,000		10,000	215,000	160,000	40,000	5,000	5,000
6,000		16,000	225,000	160,000	48,000	6,000	6,000
8,000		16,000	225,000	160,000	48,000	8,000	8,000

Outils de forage



Forets à une lèvre EB 80

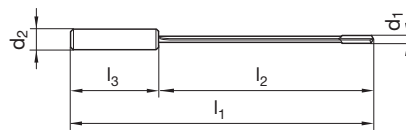


Matière de coupe	<b>CW</b>
Surface	<b>S</b>
Forme d'attachement	HA

<b>P</b>	•	avec volume de lubrification décalé • forme périphérique G • avec brise-copeaux latéral
<b>M</b>	○	
<b>K</b>	•	
<b>N</b>	○	
<b>S</b>	○	
<b>H</b>	○	

**GÜHRING** NAVIGATOR

Paramètres de coupe, page 808



N° d'article **5018**

Outils de forage

d1 h5		d2 h6	l1	l2	l3	N° de code
mm	inch	mm	mm	mm	mm	
4,000		12,000	150,000	100,000	45,000	4,000
4,200		12,000	160,000	110,000	45,000	4,200
4,500		12,000	170,000	120,000	45,000	4,500
5,000		16,000	180,000	130,000	48,000	5,000
5,500		16,000	190,000	140,000	48,000	5,500
6,000		16,000	210,000	160,000	48,000	6,000
6,500		16,000	220,000	170,000	48,000	6,500
7,000		16,000	235,000	185,000	48,000	7,000
8,000		16,000	260,000	210,000	48,000	8,000
9,000		16,000	280,000	230,000	48,000	9,000
10,000		20,000	320,000	260,000	50,000	10,000
12,000		20,000	370,000	310,000	50,000	12,000



## Forets à une lèvre EB 80


 Matière de coupe **CW**

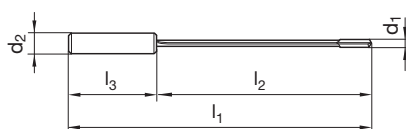
 Surface **C**

 Forme d'attachement **HA**

<b>P</b>	○	forme périphérique G
<b>M</b>	●	
<b>K</b>	○	
<b>N</b>		
<b>S</b>	●	
<b>H</b>	○	

**GÜHRING** NAVIGATOR

Paramètres de coupe, page 808


 N° d'article **5639**

d1 h5		d2 h6		l1	l2	l3	N° de code
mm	inch	mm	mm	mm	mm	mm	
3,970	5/32	10,000	150,000	100,000	40,000	3,970	
4,000		12,000	150,000	100,000	45,000	4,000	
5,000		16,000	180,000	130,000	48,000	5,000	
5,156	13/64	16,000	180,000	130,000	48,000	5,156	
6,000		16,000	210,000	160,000	48,000	6,000	
6,350	1/4	16,000	220,000	170,000	48,000	6,350	
7,000		16,000	235,000	185,000	48,000	7,000	
7,938	5/16	16,000	260,000	210,000	48,000	7,938	
8,000		16,000	260,000	210,000	48,000	8,000	
9,000		16,000	280,000	230,000	48,000	9,000	
9,525	3/8	16,000	290,000	240,000	48,000	9,525	
10,000		20,000	320,000	260,000	50,000	10,000	
11,000		20,000	340,000	290,000	50,000	11,000	
11,113	7/16	20,000	340,000	290,000	50,000	11,113	
12,000		20,000	370,000	310,000	50,000	12,000	
12,700	1/2	20,000	385,000	330,000	50,000	12,700	

Outils de forage



Forets à une lèvre EB 80



Matière de coupe **CW**

Surface **S**

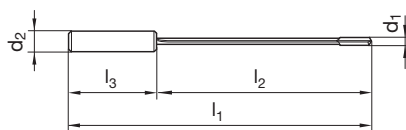
Forme d'attachement HA

**P** • avec volume de lubrification décalé • forme périphérique G • avec brise-copeaux latéral

<b>M</b>	○
<b>K</b>	•
<b>N</b>	○
<b>S</b>	○
<b>H</b>	○

**GÜHRING** NAVIGATOR

Paramètres de coupe, page 808



N° d'article **5460**

Outils de forage

d1 h5		d2 h6	l1	l2	l3	N° de code
mm	inch	mm	mm	mm	mm	
4,000		12,000	200,000	155,000	45,000	4,000
4,200		12,000	210,000	165,000	45,000	4,200
4,500		12,000	220,000	175,000	45,000	4,500
5,000		16,000	230,000	182,000	48,000	5,000
5,500		16,000	245,000	197,000	48,000	5,500
6,000		16,000	260,000	212,000	48,000	6,000
6,500		16,000	275,000	227,000	48,000	6,500
7,000		16,000	290,000	242,000	48,000	7,000
8,000		16,000	320,000	272,000	48,000	8,000
9,000		16,000	350,000	302,000	48,000	9,000
10,000		20,000	400,000	350,000	50,000	10,000
12,000		20,000	450,000	400,000	50,000	12,000





## Forets à une lèvre EB 80


 Matière de coupe **CW**

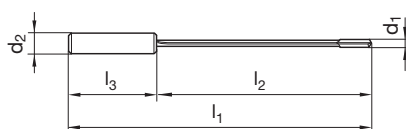
Surface

Forme d'attachement HA

<b>P</b>	○	forme périphérique G
<b>M</b>	●	
<b>K</b>	○	
<b>N</b>		
<b>S</b>	●	
<b>H</b>	○	

**GUHRING** NAVIGATOR

Paramètres de coupe, page 808


 N° d'article **5640**

d1 h5		d2 h6		l1	l2	l3	N° de code
mm	inch	mm	mm	mm	mm	mm	
3,970	5/32	10,000	200,000	155,000	40,000	3,970	
4,000		12,000	200,000	155,000	45,000	4,000	
5,000		16,000	230,000	182,000	48,000	5,000	
5,156	13/64	16,000	230,000	182,000	48,000	5,156	
6,000		16,000	260,000	212,000	48,000	6,000	
6,350	1/4	16,000	275,000	227,000	48,000	6,350	
7,000		16,000	290,000	242,000	48,000	7,000	
7,938	5/16	16,000	320,000	272,000	48,000	7,938	
8,000		16,000	320,000	272,000	48,000	8,000	
9,000		16,000	350,000	302,000	48,000	9,000	
9,525	3/8	16,000	380,000	330,000	48,000	9,525	
10,000		20,000	400,000	350,000	50,000	10,000	
11,000		20,000	430,000	380,000	50,000	11,000	
11,113	7/16	20,000	430,000	380,000	50,000	11,113	
12,000		20,000	450,000	400,000	50,000	12,000	
12,700	1/2	20,000	500,000	450,000	50,000	12,700	

Outils de forage



Forets à une lèvre EB 80



Matière de coupe **CW**

Surface ○

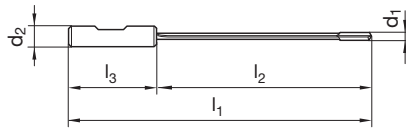
Forme d'attachement HB



<b>P</b>	•	avec volume de lubrification décalé • forme périphérique G • avec brise-copeaux latéral
<b>M</b>	○	
<b>K</b>	•	
<b>N</b>	○	
<b>S</b>	○	
<b>H</b>	○	

**GÜHRING** NAVIGATOR

Paramètres de coupe, page 808



N° d'article **5689**

Outils de forage

d1 h5		d2 h6	l1	l2	l3	N° de code
mm	inch	mm	mm	mm	mm	
4,000		12,000	230,000	185,000	45,000	4,000
5,000		16,000	280,000	232,000	48,000	5,000
6,000		16,000	320,000	272,000	48,000	6,000
8,000		16,000	420,000	372,000	48,000	8,000
10,000		20,000	510,000	460,000	50,000	10,000
12,000		20,000	600,000	550,000	50,000	12,000



## Forets à une lèvre EB 80


 Matière de coupe **CW**

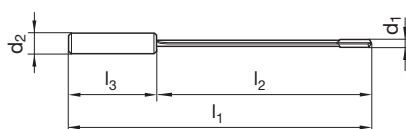
 Surface **S**

Forme d'attachement HA

<b>P</b>	•	avec volume de lubrification décalé • forme périphérique G • avec brise-copeaux latéral
<b>M</b>	○	
<b>K</b>	•	
<b>N</b>	○	
<b>S</b>	○	
<b>H</b>	○	

**GUHRING** NAVIGATOR

Paramètres de coupe, page 808


 N° d'article **5022**

d1 h5		d2 h6	l1	l2	l3	N° de code
mm	inch	mm	mm	mm	mm	
4,000		12,000	230,000	185,000	45,000	4,000
4,200		12,000	240,000	195,000	45,000	4,200
4,500		12,000	250,000	205,000	45,000	4,500
5,000		16,000	280,000	232,000	48,000	5,000
5,500		16,000	300,000	252,000	48,000	5,500
6,000		16,000	320,000	272,000	48,000	6,000
6,500		16,000	340,000	292,000	48,000	6,500
7,000		16,000	370,000	322,000	48,000	7,000
8,000		16,000	420,000	372,000	48,000	8,000
9,000		16,000	450,000	402,000	48,000	9,000
10,000		20,000	510,000	460,000	50,000	10,000
12,000		20,000	600,000	550,000	50,000	12,000

Outils de forage



Forets à une lèvre EB 80

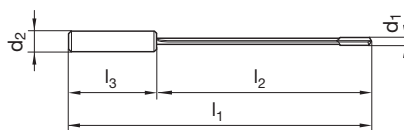


<b>P</b>	○	forme périphérique G
<b>M</b>	●	
<b>K</b>	○	
<b>N</b>	○	
<b>S</b>	●	
<b>H</b>	○	

**GÜHRING** NAVIGATOR

Paramètres de coupe, page 808

Matière de coupe	<b>CW</b>
Surface	⊙
Forme d'attachement	HA



N° d'article **5641**

Outils de forage

d1 h5		d2 h6	l1	l2	l3	N° de code
mm	inch	mm	mm	mm	mm	
3,970	5/32	10,000	230,000	185,000	40,000	3,970
4,000		12,000	230,000	185,000	45,000	4,000
5,000		16,000	280,000	232,000	48,000	5,000
5,156	13/64	16,000	280,000	232,000	48,000	5,156
6,000		16,000	320,000	272,000	48,000	6,000
6,350	1/4	16,000	340,000	292,000	48,000	6,350
7,000		16,000	370,000	322,000	48,000	7,000
7,938	5/16	16,000	420,000	372,000	48,000	7,938
8,000		16,000	420,000	372,000	48,000	8,000
9,000		16,000	450,000	402,000	48,000	9,000
9,525	3/8	16,000	480,000	432,000	48,000	9,525
10,000		20,000	510,000	460,000	50,000	10,000
11,000		20,000	550,000	500,000	50,000	11,000
11,113	7/16	20,000	550,000	500,000	50,000	11,113
12,000		20,000	600,000	550,000	50,000	12,000
12,700	1/2	20,000	635,000	585,000	50,000	12,700



Forets à une lèvre EB 80



Matière de coupe **CW**

Surface ○

Forme d'attachement HB



**P** ● avec volume de lubrification décalé ● forme périphérique G ● avec brise-copeaux latéral

**M** ○

**K** ●

**N** ○

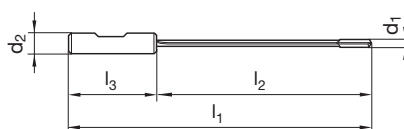
**S** ○

**H** ○

Profondeur maximale pour chaque outil 40 x D, pour les profondeurs au-dessus de 40 x D, utiliser, auparavant, les forets n° d'article 5689.

**GUHRING** NAVIGATOR

Paramètres de coupe, page 808



N° d'article **5690**

d1 h5		d2 h6		l1	l2	l3	N° de code
mm	inch	mm	mm	mm	mm	mm	
3,970	5/32	10,000	390,000	350,000	40,000	3,970	
4,950		16,000	480,000	432,000	48,000	4,950	
5,950	15/64	16,000	560,000	512,000	48,000	5,950	
7,950		16,000	740,000	692,000	48,000	7,950	
9,950		20,000	910,000	860,000	50,000	9,950	
11,950		20,000	1080,000	1030,000	50,000	11,950	

Outils de forage



Forets à une lèvre EB 80

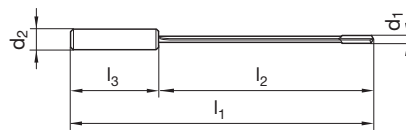


Matière de coupe	<b>CW</b>
Surface	<b>S</b>
Forme d'attachement	HA

<b>P</b>	•	avec volume de lubrification décalé • forme périphérique G • avec brise-copeaux latéral
<b>M</b>	○	
<b>K</b>	•	
<b>N</b>	○	longueur max. des goujures 40xD, p. les prof. sup., avant, utiliser l'art. n°: 5022 !
<b>S</b>	○	
<b>H</b>	○	

**GÜHRING** NAVIGATOR

Paramètres de coupe, page 808



N° d'article **5023**

Outils de forage

d1 h5		d2 h6	l1	l2	l3	N° de code
mm	inch	mm	mm	mm	mm	
4,950		16,000	480,000	432,000	48,000	4,950
5,950	15/64	16,000	560,000	512,000	48,000	5,950
7,950		16,000	740,000	692,000	48,000	7,950
9,950		20,000	910,000	860,000	50,000	9,950
11,950		20,000	1080,000	1030,000	50,000	11,950



Forets à une lèvre EB 80



Matière de coupe **CW**

Surface

Forme d'attachement HA

**P** ○ forme périphérique G

**M** ●

**K** ○

**N**

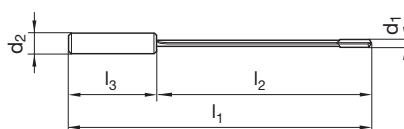
**S** ●

**H** ○

Profondeur maximale pour chaque outil 40 x D, pour les profondeurs au-dessus de 40 x D, utiliser, auparavant, les forets n° d'article 5641.

**GÜHRING** NAVIGATOR

Paramètres de coupe, page 808



N° d'article **5642**

d1 h5		d2 h6	l1	l2	l3	N° de code
mm	inch	mm	mm	mm	mm	
4,950		16,000	480,000	432,000	48,000	4,950
5,106		16,000	480,000	432,000	48,000	5,106
5,950	15/64	16,000	560,000	512,000	48,000	5,950
6,300		16,000	590,000	542,000	48,000	6,300
6,950		16,000	650,000	602,000	48,000	6,950
7,888		16,000	740,000	692,000	48,000	7,888
7,950		16,000	740,000	692,000	48,000	7,950
8,950		16,000	820,000	772,000	48,000	8,950
9,475		16,000	870,000	822,000	48,000	9,475
9,950		20,000	910,000	860,000	50,000	9,950
10,950		20,000	995,000	945,000	50,000	10,950
11,063		20,000	995,000	945,000	50,000	11,063
11,950		20,000	1080,000	1030,000	50,000	11,950
12,650		20,000	1140,000	1090,000	50,000	12,650

Outils de forage



Forets à une lèvre EB 80

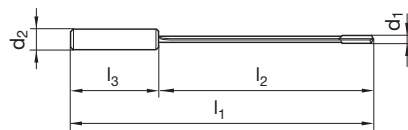


<b>P</b>	•	ongueur totale = 1100 lmm • forme périphérique G • attachement de serrage pour les machines de forage (T 3.1)
<b>M</b>	○	
<b>K</b>	•	
<b>N</b>	•	
<b>S</b>	○	
<b>H</b>	○	

Matière de coupe	<b>CW</b>
Surface	<b>S</b>
Forme d'attachement	cyl.

**GÜHRING** NAVIGATOR

Paramètres de coupe, page 808



N° d'article **5164**

Outils de forage

d1 h5		d2 h6	l1	l2	l3	N° de code
mm	inch	mm	mm	mm	mm	
6,000		25,000	1100,000	1010,000	70,000	6,000
7,000		25,000	1100,000	1010,000	70,000	7,000
8,000		25,000	1100,000	1010,000	70,000	8,000
10,000		25,000	1100,000	1010,000	70,000	10,000
12,000		25,000	1100,000	1010,000	70,000	12,000
16,000		25,000	1100,000	1010,000	70,000	16,000
20,000		25,000	1100,000	1010,000	70,000	20,000
22,000		25,000	1100,000	1000,000	70,000	22,000





Outils de forage à deux lèvres ZB 80

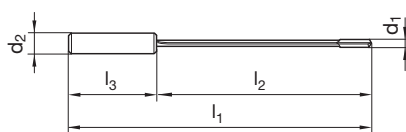


P	Foret TLB à 4 listels • pour aluminium
M	
K	
N	•
S	
H	

**GÜHRING** NAVIGATOR

Paramètres de coupe, page 808

Matière de coupe	<b>CW</b>
Surface	○
Forme d'attachement	HA



N° d'article **5019**

d1 h5	d2	l1	l2	l3	N° de code
mm	mm	mm	mm	mm	
8,000	16,000	330,000	280,000	48,000	8,000
10,000	20,000	390,000	340,000	50,000	10,000
12,000	20,000	450,000	400,000	50,000	12,000

Outils de forage



**Outils de forage à deux lèvres ZB 80**

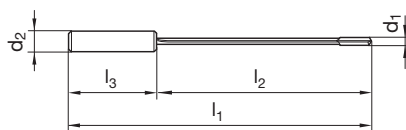


<b>P</b>	Foret TLB à 4 listels • pour les fontes
<b>M</b>	
<b>K</b>	•
<b>N</b>	
<b>S</b>	
<b>H</b>	

**GÜHRING NAVIGATOR**

Paramètres de coupe, page 808

Matière de coupe	<b>CW</b>
Surface	○
Forme d'attachement	HA



N° d'article **5643**

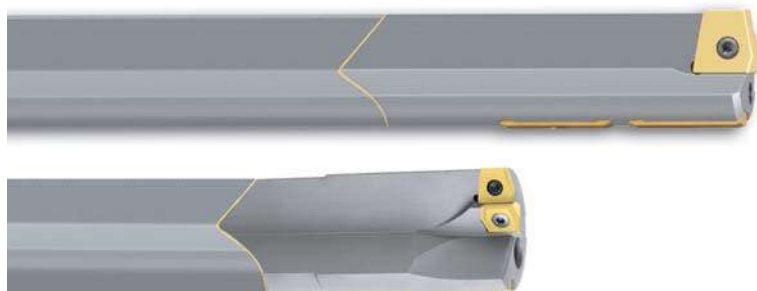
Outils de forage

d1 h5	d2	l1	l2	l3	N° de code
mm	mm	mm	mm	mm	
8,000	16,000	330,000	280,000	48,000	8,000
10,000	20,000	390,000	340,000	50,000	10,000
12,000	20,000	450,000	400,000	50,000	12,000



## EB 800

- solutions spéciale à Ø 52,00 mm
- plaquettes de coupe et patins de guidage interchangeables, en standard, avec des dim. au 1/10 mm et, en spécial, au 1/100 mm avec supplément fixe



Les forets Gühring à 1 lèvre à plaquettes et patins de guidage interchangeables sont fabriqués uniquement en tant qu'outils spéciaux pour des applications spécifiques du client. Ils sont indiqués pour l'usinage de quasiment tous les matériaux et disponibles de Ø 16,00 à 40,00 mm avec une longueur totale jusqu'à 3000 mm.

Les principaux avantages sont:

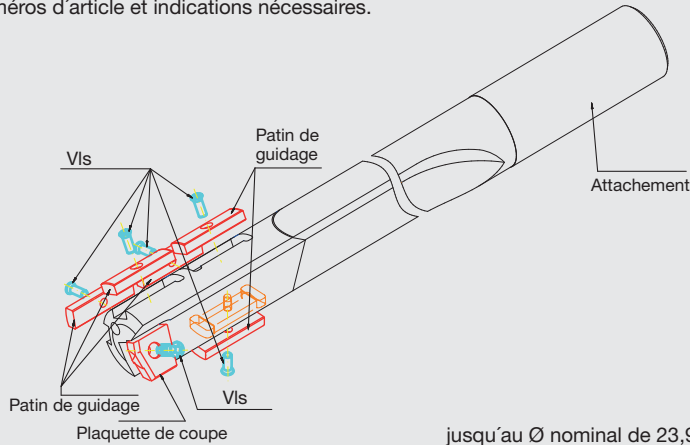
- Ce système à éléments interchangeables permet la combinaison de différentes nuances de carbures avec différents revêtements.
- Echange des éléments sans réglage grâce à la précision des plaquettes et des patins de guidage interchangeables.
- Les patins de guidage de précision sont réalisés, pour votre application de forage, en CW spécial. Ils sont réversibles, ce qui double leur durée de vie. De plus, ils peuvent être pourvus, selon votre choix, de n'importe quel revêtement
- Les sièges des plaquettes de coupe et des patins de guidage sont réalisés avec grande précision ce qui minimise le nombre d'éléments interchangeables et contribue à la bonne rigidité du foret à une lèvre de coupe.
- Les éléments interchangeables peuvent être échangés directement sur la machine. Cela réduit les temps d'arrêt des machines et diminue les prix de revient de la fabrication.
- Grâce à ce système à éléments interchangeables, le réaffûtage très coûteux est définitivement éliminé !
- Le meilleur choix de la plaquette interchangeable assure toujours la formation optimale des copeaux, même sur les matières les plus difficiles à maîtriser.
- Bien appropriées à votre application de forage individuelle, les plaquettes de coupe de précision, interchangeables, réalisées avec des CW spéciaux peuvent aussi être revêtues avec tous les revêtements Gühring.
- Chacun des supports d'outils de forage permet de réaliser différents diamètres dès que vous échangez les éléments interchangeables.
- Les supports et leur attachement sont réalisés avec des aciers d'amélioration, attachements selon les normes:
  - DIN 6535 HA      - DIN 6535 HE
  - DIN 6535 HB      - DIN 1835 E

Nous avons aussi la possibilité de réaliser d'autres attachements pour les foreuses conventionnelles.



**Attention: - longueur minimum de goujure 15xD  
- tolérance minimale possible IT9 / IT10**

A chaque offre de prix et délais, nous ajoutons un plan avec nos numéros d'article et indications nécessaires.



jusqu'au Ø nominal de 23,99 mm avec 4 plaquettes de guidage  
à partir du Ø nominal de 24,00 mm avec 5 plaquettes de guidage

Outils de forage

**Couple de serrage - Valeur indicative**

Arête de coupe extérieure de la plaquette de coupe WSP

Taille	Diamètre in mm	Filetage ISO métrique en mm	Taille de Torx	Couple de serrage en Nm
0.	12,00 – 15,99	M2,5 x 5,2	T8	1,00
1.	16,00 – 19,99	M3,0 x 6,4	T9	1,40
2.	20,00 – 25,99	M4,0 x 7,7	T15	2,50
3.	26,00 – 29,99	M4,0 x 10,6	T15	2,50
4.	30,00 – 33,99	M4,0 x 10,6	T15	2,50
5.	34,00 – 37,99	M5,0 x 14,2	T20	5,00
6.	38,00 – 40,00	M5,0 x 14,2	T20	5,00
7.	40,01 – 43,99	M3,0 x 6,4	T9	1,40
8.	44,00 – 47,99	M4,0 x 7,7	T15	2,50
9.	48,00 – 52,00	M4,0 x 10,6	T15	2,50

Arête de coupe intérieure de la plaquette de coupe WSP

Taille	Diamètre in mm	Filetage ISO métrique en mm	Taille de Torx	Couple de serrage en Nm
7. – 9.	40,01 – 52,00	M4,5 x 11,8	T15	3,00

Plaquette de guidage

Taille	Diamètre in mm	Filetage ISO métrique en mm	Taille de Torx	Couple de serrage en Nm
0.	12,00 – 15,99	M1,6 x 4,4	T5	0,40
1.	16,00 – 17,99	M2,2 x 4,6	T7	0,60
1.	18,00 – 19,99	M2,2 x 5,6	T7	0,60
2.	20,00 – 22,49	M2,5 x 5,2	T8	1,00
2.	22,50 – 25,99	M2,5 x 6,4	T8	1,00
3.	26,00 – 29,99	M2,5 x 6,4	T8	1,00
4. – 9.	30,00 – 52,00	M3,0 x 8,0	T9	1,40



Forets à une lèvre EB 800 à plaquette interchangeable

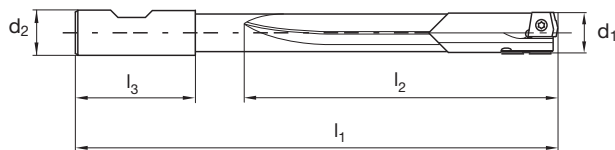


P	•	avec plaquettes interchangeables • avec patins de guidage interchangeables • avec tournevis • avec vis • pour applications universelles • a commander séparément: clé dynamométrique n° d'article 4915
M	○	
K	○	
N	•	
S	○	
H		

**GÜHRING** NAVIGATOR

Paramètres de coupe, page 808

Matière de coupe	<b>CW</b>
Surface	<b>S</b>
Forme d'attachement	HB









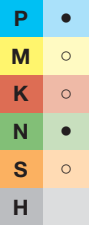
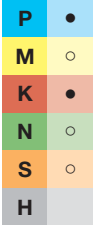

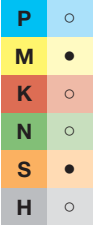



N° d'article **5644**

d1 h8		d2	l1	l2	l3	N° de code
mm	inch	mm	mm	mm	mm	
12,000		20,000	446,000	384,000	50,000	12,000
12,700	1/2	20,000	468,000	406,000	50,000	12,700
14,000		20,000	510,000	448,000	50,000	14,000
15,000		25,000	548,000	480,000	56,000	15,000
16,000		25,000	580,000	512,000	56,000	16,000
18,000		25,000	644,000	576,000	56,000	18,000
20,000		32,000	712,000	640,000	60,000	20,000
24,000		32,000	840,000	768,000	60,000	24,000

Outils de forage



Solutions spéciales pour les Ø de 12,00 à 52,00 mm, longueur totale max. 3000 mm

Taille	Diamètre / Plage du support	Support de base / Support	Plaquette de coupe (ext.)				Plaquettes de coupe	
			Plaquette de coupe (ext.)				Vis	Tounevis
								
Revêtu TiN	Revêtu FIRE	Revêtu Signum	Revêtu TiAlN nanoA					
0.	Ø12.00 - Ø12.49 Ø12.50 - Ø12.99 Ø13.00 - Ø13.49 Ø13.50 - Ø13.99 Ø14.00 - Ø14.49 Ø14.50 - Ø14.99 Ø15.00 - Ø15.49 Ø15.50 - Ø15.99	Corps de base / Support selon besoin individuel du client / Longueur totale jusqu'à 3000 mm, longueur des goujures à partir de 10xD / Alternative: Programme standard N° d'article: 5644 du Ø 12,00 mm à 24,00 mm dans les diamètres préférentiels, complets avec plaquettes de coupe et plaquettes de guidage revêtues Ti N					Article n° 4071 2.502 T8 M2.5x 5.2	Article n° 1612 8.001
	1.		Ø16.00 - Ø16.49 Ø16.50 - Ø16.99 Ø17.00 - Ø17.49 Ø17.50 - Ø17.99 Ø18.00 - Ø18.49 Ø18.50 - Ø18.99 Ø19.00 - Ø19.49 Ø19.50 - Ø19.99					
2.			Ø20.00 - Ø20.49 Ø20.50 - Ø20.99 Ø21.00 - Ø21.49 Ø21.50 - Ø21.99 Ø22.00 - Ø22.49 Ø22.50 - Ø22.99 Ø23.00 - Ø23.49 Ø23.50 - Ø23.99 Ø24.00 - Ø24.49 Ø24.50 - Ø24.99 Ø25.00 - Ø25.49 Ø25.50 - Ø25.99	Article n° 5029 + diamètre nominal = N° de code de commande	Article n° 5704 + diamètre nominal = N° de code de commande	Article n° 5702 + diamètre nominal = N° de code de commande	Article n° 5706 + diamètre nominal = N° de code de commande	Article n° 4071 4.001 T15 M4x7.7
	3.		Ø26.00 - Ø26.49 Ø26.50 - Ø26.99 Ø27.00 - Ø27.49 Ø27.50 - Ø27.99 Ø28.00 - Ø28.49 Ø28.50 - Ø28.99 Ø29.00 - Ø29.49 Ø29.50 - Ø29.99					
4.			Ø30.00 - Ø30.49 Ø30.50 - Ø30.99 Ø31.00 - Ø31.49 Ø31.50 - Ø31.99 Ø32.00 - Ø32.49 Ø32.50 - Ø32.99 Ø33.00 - Ø33.49 Ø33.50 - Ø33.99	Foret spécial	Foret spécial	Foret spécial	Foret spécial	Article n° 4071 3.002 TX9 M3x6.4
	5.		Ø34.00 - Ø34.49 Ø34.50 - Ø34.99 Ø35.00 - Ø35.49 Ø35.50 - Ø35.99 Ø36.00 - Ø36.49 Ø36.50 - Ø36.99 Ø37.00 - Ø37.49 Ø37.50 - Ø37.99					
6.			Ø38.00 - Ø38.49 Ø38.50 - Ø38.99 Ø39.00 - Ø39.49 Ø39.50 - Ø40.00	Foret spécial	Foret spécial	Foret spécial	Foret spécial	Article n° 4071 3.002 TX9 M3x6.4
	7.		Ø40.01 - Ø40.49 Ø40.50 - Ø40.99 Ø41.00 - Ø41.49 Ø41.50 - Ø41.99 Ø42.00 - Ø42.49 Ø42.50 - Ø42.99 Ø43.00 - Ø43.49 Ø43.50 - Ø43.99					
8.			Ø44.00 - Ø44.49 Ø44.50 - Ø44.99 Ø45.00 - Ø45.49 Ø45.50 - Ø45.99 Ø46.00 - Ø46.49 Ø46.50 - Ø46.99 Ø47.00 - Ø47.49 Ø47.50 - Ø47.99	Foret spécial	Foret spécial	Foret spécial	Foret spécial	Article n° 4071 3.002 TX9 M3x6.4
	9.		Ø48.00 - Ø48.49 Ø48.50 - Ø48.99 Ø49.00 - Ø49.49 Ø49.50 - Ø49.99 Ø50.00 - Ø50.49 Ø50.50 - Ø50.99 Ø51.00 - Ø51.49 Ø51.50 - Ø52.00					

Outils de forage

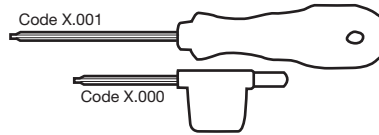


Plaquette de coupe (int.)	Vis	Tounevis	Plaquette de guidage				Vis	Tounevis																																																
			Revêtu TiN	Revêtu FIRE	Revêtu Signum	Revêtu TiAIN nanoA																																																		
			<table border="1"> <tr><td>P</td><td>•</td></tr> <tr><td>M</td><td>○</td></tr> <tr><td>K</td><td>○</td></tr> <tr><td>N</td><td>•</td></tr> <tr><td>S</td><td>○</td></tr> <tr><td>H</td><td></td></tr> </table>	P	•	M	○	K	○	N	•	S	○	H		<table border="1"> <tr><td>P</td><td>•</td></tr> <tr><td>M</td><td>○</td></tr> <tr><td>K</td><td>•</td></tr> <tr><td>N</td><td>○</td></tr> <tr><td>S</td><td>○</td></tr> <tr><td>H</td><td></td></tr> </table>	P	•	M	○	K	•	N	○	S	○	H		<table border="1"> <tr><td>P</td><td>•</td></tr> <tr><td>M</td><td>•</td></tr> <tr><td>K</td><td>•</td></tr> <tr><td>N</td><td>•</td></tr> <tr><td>S</td><td>•</td></tr> <tr><td>H</td><td>○</td></tr> </table>	P	•	M	•	K	•	N	•	S	•	H	○	<table border="1"> <tr><td>P</td><td>○</td></tr> <tr><td>M</td><td>•</td></tr> <tr><td>K</td><td>○</td></tr> <tr><td>N</td><td>○</td></tr> <tr><td>S</td><td>•</td></tr> <tr><td>H</td><td>○</td></tr> </table>	P	○	M	•	K	○	N	○	S	•	H	○	<p>Article n° 4071 1.601 T5 M1.6x4.4</p>	<p>Article n° 1612 5.001</p>
P	•																																																							
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							<p>Article n° 4071 2.203 T7 / M2.2x 4,6</p>	<p>Article n° 1612 7.001</p>																																																
							<p>Article n° 4071 2.202 T7 / M2.2x5.6</p>																																																	
							<p>Article n° 4071 2.502 T8 M2.5x 5.2</p>	<p>Article n° 1612 8.001</p>																																																
			<p>Article n° 5030 + diamètre nominal = N° de code de commande</p>	<p>Article n° 5705 + diamètre nominal = N° de code de commande</p>	<p>Article n° 5703 + diamètre nominal = N° de code de commande</p>	<p>Article n° 5707 + diamètre nominal = N° de code de commande</p>	<p>Article n° 4071 2.501 T8 M2.5x6.4</p>																																																	
							<p>Article n° 4071 3.003 T9 M3x8</p>	<p>Article n° 1612 9.001</p>																																																
<p><b>poli</b> Foret spécial</p> <p><b>TiN</b> Foret spécial</p> <p><b>FIRE</b> Foret spécial</p>	<p>Article n° 4071 4.501 T15 M4.5x11.8</p>	<p>Article n° 1612 15.001</p>	<p>Foret spécial</p>	<p>Foret spécial</p>	<p>Foret spécial</p>	<p>Foret spécial</p>																																																		

Outils de forage



Tournevis Torx



N° d'article **1612**

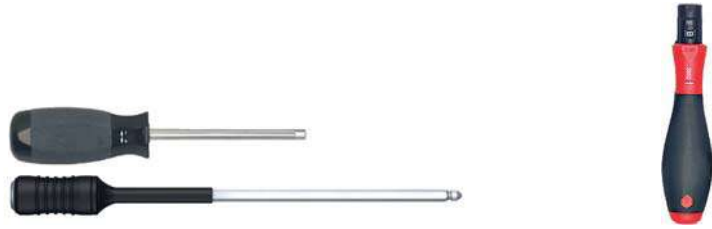
Taille	N° de code
T5	5,001
T7	7,001
T8	8,001
T9	9,001
T15	15,001
T20	20,001

Outils de forage





## Clé dynamométrique



N° d'article

4915

Entraînement		Nm	Type	N° de code
1/4»	hexagonal	0,4-1	A	1,001
1/4»	hexagonal	1-5	A	5,001



## Embouts pour Vis Torx



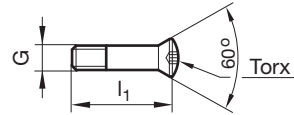
N° d'article

4917

Entraînement		Torx	L	N° de code
			mm	
1/4	hexagonal	T5	25,000	5,000
1/4	hexagonal	T7	25,000	7,000
1/4	hexagonal	T8	25,000	8,000
1/4	hexagonal	T9	25,000	9,000
1/4	hexagonal	T15	25,000	15,000
1/4	hexagonal	T20	25,000	20,000



## Vis de fixation



N° d'article

4071

G	l1 mm	Torx	N° de code
M1,6	4,400	T5	1,601
M2,2	5,600	T7	2,202
M2,2	4,600	T7	2,203
M2,5	6,400	T8	2,501
M2,5	5,200	T8	2,502
M3	6,400	T9	3,002
M3	8,000	T9	3,003
M4	7,700	T15	4,001
M4	10,600	T15	4,002
M5	14,200	T20	5,002

Outils de forage



## Appareil d'affûtage pour les outils de forage à une lèvre TBM 116

La TBM 116 est une machine universelle et manuelle pour affûter les outils. De construction massive, dès qu'elle est équipée du dispositif d'affûtage des forets à une lèvre et du jeu des deux meules accouplées Gühring, il en résulte une unité parfaite de réaffûtage des outils de forage à une lèvre de coupe. Le point fort de cette machine est le réaffûtage de petites et moyennes séries d'outils de différents diamètres et différentes longueurs. En outre, elle vous permet de réaliser facilement un brise-copeaux sur l'arête princ. de la coupe des outils de forage.

### Livraison:

Machine à affûter avec 2 lampes spéciales et deux prises de courant 220 V (A commander séparément: Dispositif d'affûtage et meules)

### Spécifications de la machine:

Branchement: 380 V/50 Hz, Vitesse de rotation: 2850 tr/mn, Diamètre de meules: 150 mm.

N° d'article: 600 127 170





## Appareil d'affûtage pour les outils de forage à une lèvre TBV 116 de Ø 3 à 30 mm

Le dispositif d'affûtage TBV 116 est prévu pour le réaffûtage des outils de forage à une lèvre de coupe de diamètres 3 mm à 30 mm. Il permet de réaliser les affûtages standards et spéciaux. Il est très court et peut aussi affûter des forets très courts. Les forets longs sont soutenus par un support livré avec le dispositif d'affûtage. Ainsi, le dispositif TBV 116 est universel et peut être monté sur toutes les machines manuelles de rectification d'outils usuelles.

**Pour le TBV 116, nous vous recommandons l'utilisation de la double-meule DSS 125.**

### Attention:

L'angle d'ouverture de la goujure des forets à une lèvre est de 120°, c'est pourquoi ces forets ne peuvent pas être serrés en pince dans un diviseur sans les abîmer.

**N° d'article:** 600 127 171



## Equipement d'affûtage pour les outils de forage à une lèvre TBV 216 pour Ø 1 à 6 mm

Le nouveau dispositif universel d'affûtage TBV 216 est spécialement prévu pour le réaffûtage ou la modification d'affûtage des forets à une lèvre de coupe de petits diamètres entre 1,00 et 6,00 mm et une longueur totale maximale de 350 mm. Très simple de maniement, il assure le réaffûtage rapide en seulement quatre passes. L'affûtage est réalisé sur un dispositif pivotant sur trois différentes positions. Chacun des trois axes est individuellement réglable et mis au point sur une valeur angulaire qui permet de réaliser la géométrie du sommet de l'outil.

**Nous vous conseillons l'utilisation de la meule ESS 125.**

### Livraison:

- Un jeu de douilles de guidage de diamètres: 1,00 / 1,50 / 2,00 / 2,50 / 3,00 / 3,50 mm
- Différentes entretoises.
- Un microscope de centrage
- Une lampe à éclairage focalisé et une loupe millimétr.

**N° d'article:** 600 132 346





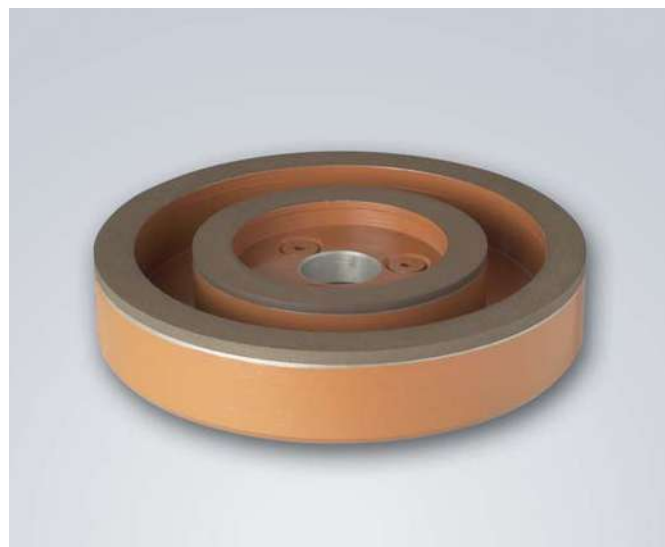
## La double-meule DSS 125

Les doubles-meules DSS 125 sont des jeux composés de deux différentes meules fixées et ajustées afin de pouvoir être dressées ensemble. La meule diamant extérieure grand diamètre a un grain plus grossier et est prévue pour enlever le gros de l'usure tandis que la meule diamant intérieure a un grain plus fin et est prévue pour la finition afin de donner la finesse aux arêtes de coupe. De temps à autres, il est nécessaire de rafraîchir les meules avec une pierre de nettoyage de façon à éliminer les poussières de rectification qui encrassent les meules. Les meules encrassées ne coupent plus, dégagent trop de chaleur et détruisent les arêtes de coupe en carbure.

### La double-meule DSS 125 est composée:

- une meule extérieure Ø 125 mm, largeur abrasive 10 mm, sur 3 mm d'épaisseur, alésage Ø 20 mm, grain D 126,
- une meule intérieure Ø 75 mm, largeur abrasive 10 mm, sur 2 mm d'épaisseur, alésage Ø 20 mm, grain D 46

**N° d'article:** 400 110 098



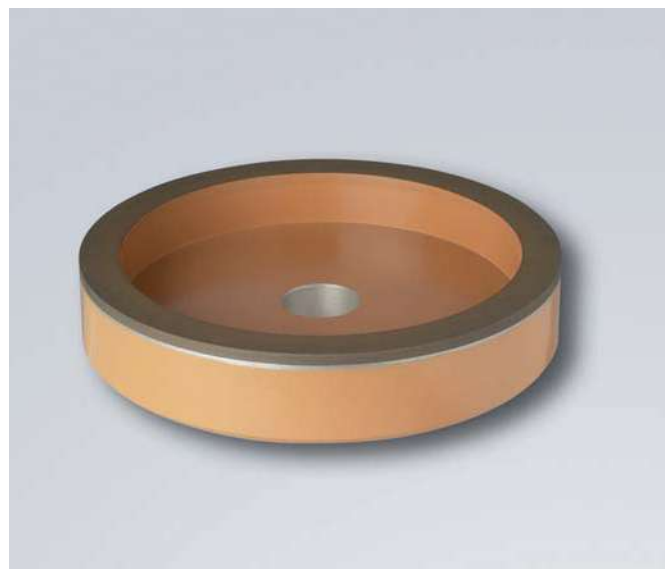
## Le meule ESS 125

La meule d'affûtage ESS 125 est une meule diamant avec un grain très fin, ce qui permet d'obtenir une excellente qualité de finition des arêtes de coupe. De temps à autres, il est nécessaire de rafraîchir la meule avec une pierre de nettoyage de façon à éliminer les poussières de rectification qui encrassent la meule. Les meules encrassées ne coupent plus, dégagent trop de chaleur et détruisent les arêtes de coupe cw.

### La meule ESS 125 est composée:

- une meule Ø 125 mm, largeur abrasive 10 mm, sur 3 mm d'épaisseur, alésage Ø 20 mm, grain D 25

**N° d'article:** 400 119 203





## Canon de perçage

Matière de coupe

CW monobloc



N° d'article

5748

d2	d1	l1	N° de code
mm	mm	mm	
0,900	3,000	9,000	0,900
1,590	4,000	9,000	1,590
1,600	4,000	9,000	1,600
1,605	4,000	9,000	1,605
2,000	5,000	9,000	2,000
2,030	5,000	9,000	2,030
2,040	5,000	9,000	2,040
2,500	5,000	9,000	2,500
3,000	6,000	12,000	3,000
3,500	7,000	12,000	3,500
3,750	7,000	12,000	3,750
4,000	7,000	12,000	4,000
4,500	8,000	12,000	4,500
5,000	8,000	12,000	5,000
5,200	10,000	16,000	5,200
5,500	10,000	16,000	5,500
5,515	10,000	16,000	5,515
5,525	10,000	16,000	5,525
6,000	10,000	16,000	6,000
6,100	12,000	16,000	6,100
6,900	12,000	16,000	6,900
7,100	12,000	16,000	7,100
8,000	12,000	16,000	8,000
8,015	12,000	16,000	8,015
8,510	15,000	20,000	8,510
10,000	15,000	20,000	10,000
10,920	18,000	20,000	10,920
11,000	18,000	20,000	11,000
12,000	18,000	20,000	12,000
12,030	18,000	20,000	12,030

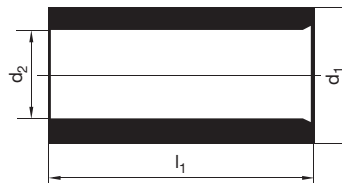
d2	d1	l1	N° de code
mm	mm	mm	
12,600	22,000	28,000	12,600
14,000	22,000	28,000	14,000
14,030	22,000	28,000	14,030
14,400	22,000	28,000	14,400
16,000	26,000	28,000	16,000
16,030	26,000	28,000	16,030
16,200	26,000	28,000	16,200
18,000	26,000	28,000	18,000
18,030	26,000	28,000	18,030
18,050	26,000	28,000	18,050
20,000	30,000	36,000	20,000
20,030	30,000	36,000	20,030
22,000	30,000	36,000	22,000
22,030	30,000	36,000	22,030
22,120	35,000	36,000	22,120
23,500	35,000	36,000	23,500
24,000	35,000	36,000	24,000
24,030	35,000	36,000	24,030
25,000	35,000	36,000	25,000
26,000	35,000	36,000	26,000
30,000	42,000	45,000	30,000
34,000	48,000	45,000	34,000
40,000	55,000	55,000	40,000



## Canon de perçage



Matière de coupe

**HSS**

N° d'article

**5747**

Outils de forage

d2	d1	l1	N° de code	d2	d1	l1	N° de code
mm	mm	mm		mm	mm	mm	
0,900	3,000	9,000	0,900	6,800	12,000	16,000	6,800
1,600	4,000	9,000	1,600	7,000	12,000	16,000	7,000
2,000	5,000	9,000	2,000	7,100	12,000	16,000	7,100
2,200	5,000	9,000	2,200	7,400	12,000	16,000	7,400
2,340	5,000	9,000	2,340	7,500	12,000	16,000	7,500
2,700	6,000	12,000	2,700	7,600	12,000	16,000	7,600
3,000	6,000	12,000	3,000	7,800	12,000	16,000	7,800
3,100	6,000	12,000	3,100	7,830	12,000	16,000	7,830
3,255	6,000	12,000	3,255	7,938	12,000	16,000	7,938
3,300	6,000	12,000	3,300	8,000	12,000	16,000	8,000
3,400	7,000	12,000	3,400	8,020	12,000	16,000	8,020
3,500	7,000	12,000	3,500	8,050	12,000	16,000	8,050
3,650	7,000	12,000	3,650	8,100	15,000	20,000	8,100
3,700	7,000	12,000	3,700	8,500	15,000	20,000	8,500
3,800	7,000	12,000	3,800	8,530	15,000	20,000	8,530
4,000	7,000	12,000	4,000	8,800	15,000	20,000	8,800
4,100	8,000	12,000	4,100	9,000	15,000	20,000	9,000
4,300	8,000	12,000	4,300	9,100	15,000	20,000	9,100
4,500	8,000	12,000	4,500	9,200	15,000	20,000	9,200
4,600	8,000	12,000	4,600	9,300	15,000	20,000	9,300
4,760	8,000	12,000	4,760	9,500	15,000	20,000	9,500
4,763	8,000	12,000	4,763	9,525	15,000	20,000	9,525
4,800	8,000	12,000	4,800	9,530	15,000	20,000	9,530
5,000	8,000	12,000	5,000	9,570	15,000	20,000	9,570
5,020	8,000	12,000	5,020	9,652	15,000	20,000	9,652
5,100	10,000	16,000	5,100	9,800	15,000	20,000	9,800
5,200	10,000	16,000	5,200	10,000	15,000	20,000	10,000
5,300	10,000	16,000	5,300	10,100	18,000	20,000	10,100
5,500	10,000	16,000	5,500	10,600	18,000	20,000	10,600
5,600	10,000	16,000	5,600	11,080	18,000	20,000	11,080
5,800	10,000	16,000	5,800	11,100	18,000	20,000	11,100
6,000	10,000	16,000	6,000	11,113	18,000	20,000	11,113
6,050	10,000	16,000	6,050	11,500	18,000	20,000	11,500
6,100	12,000	16,000	6,100	11,600	18,000	20,000	11,600
6,300	12,000	16,000	6,300	12,000	18,000	20,000	12,000
6,350	12,000	16,000	6,350	12,020	18,000	20,000	12,020
6,370	12,000	16,000	6,370	12,100	22,000	28,000	12,100
6,502	12,000	16,000	6,502	12,530	22,000	28,000	12,530
6,600	12,000	16,000	6,600	12,600	22,000	28,000	12,600
6,730	12,000	16,000	6,730	12,700	22,000	28,000	12,700
6,731	12,000	16,000	6,731	12,800	22,000	28,000	12,800
6,750	12,000	16,000	6,750	12,954	22,000	28,000	12,954





d2	d1	l1	N° de code
mm	mm	mm	
13,000	22,000	28,000	13,000
13,400	22,000	28,000	13,400
13,500	22,000	28,000	13,500
13,700	22,000	28,000	13,700
13,800	22,000	28,000	13,800
14,000	22,000	28,000	14,000
14,310	22,000	28,000	14,310
14,620	22,000	28,000	14,620
14,770	22,000	28,000	14,770
15,000	22,000	28,000	15,000
15,875	26,000	28,000	15,875
16,000	26,000	28,000	16,000
16,330	26,000	28,000	16,330
17,040	26,000	28,000	17,040
17,080	26,000	28,000	17,080
18,000	26,000	28,000	18,000
18,255	30,000	36,000	18,255
18,450	30,000	36,000	18,450
19,000	30,000	36,000	19,000
19,050	30,000	36,000	19,050
19,300	30,000	36,000	19,300
19,700	30,000	36,000	19,700
20,000	30,000	36,000	20,000
21,050	30,000	36,000	21,050

d2	d1	l1	N° de code
mm	mm	mm	
22,000	30,000	36,000	22,000
22,100	35,000	36,000	22,100
22,120	35,000	36,000	22,120
22,225	35,000	36,000	22,225
23,500	35,000	36,000	23,500
24,000	35,000	36,000	24,000
24,500	35,000	36,000	24,500
25,000	35,000	36,000	25,000
25,250	35,000	36,000	25,250
25,400	35,000	36,000	25,400
26,000	35,000	36,000	26,000
28,000	42,000	45,000	28,000
28,169	42,000	45,000	28,169
30,000	42,000	45,000	30,000
30,100	48,000	45,000	30,100
34,000	48,000	45,000	34,000
38,100	55,000	55,000	38,100
40,000	55,000	55,000	40,000



## Accessoires pour les machines de forage

Contrairement aux machines conventionnelles, les foreuses sont équipées d'accessoires spéciaux comme par exemple les canons de guidage, les joints d'étanchéité, les guides des lunettes etc. qui font partie de l'équipement de base. Sur les pages suivantes, vous trouverez un grand choix de tous ces produits dans les dimensions les plus usuelles.



L'illustration peut différencier de l'origine

## Accessoires

Les joints d'étanchéité et les douilles de lunettes, n° d'articles 5749, 5750, 5751, 5752 et 5753, recouvrent toujours une gamme de diamètres nominaux des outils de forage à monter. Lors d'une commande, nous vous demandons de bien vouloir nous indiquer le n° d'article + le n° de code du tableau ci - dessous !

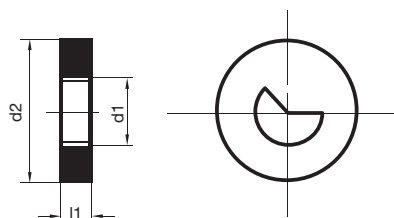
### N° de code de la liste de références / Diamètre de l'outil de forage pour accessoires

Code N°	pour diamètre nominal d1	
	de mm	à mm
1,900	2,000	2,099
2,000	2,100	2,199
2,100	2,200	2,299
2,200	2,300	2,399
2,300	2,400	2,499
2,400	2,500	2,599
2,500	2,600	2,699
2,600	2,700	2,799
2,700	2,800	2,899
2,800	2,900	3,099
3,000	3,100	3,359
3,200	3,360	3,459
3,300	3,460	3,559
3,400	3,560	3,799
3,600	3,800	3,959
3,700	3,960	4,259
4,000	4,260	4,499
4,200	4,500	4,749
4,500	4,750	4,999
4,700	5,000	5,249
5,000	5,250	5,499
5,200	5,500	5,749
5,500	5,750	5,999
5,700	6,000	6,249
6,000	6,250	6,449
6,200	6,450	6,749
6,500	6,750	6,999
6,700	7,000	7,299
7,000	7,300	7,599
7,300	7,600	7,799
7,500	7,800	7,999
7,700	8,000	8,299
8,000	8,300	8,699
8,400	8,700	8,999
8,700	9,000	9,299
9,000	9,300	9,699

Code N°	pour diamètre nominal d1	
	de mm	à mm
9,400	9,700	9,999
9,700	10,000	10,299
10,000	10,300	10,799
10,500	10,800	11,299
11,000	11,300	11,799
11,500	11,800	12,399
12,000	12,400	12,899
12,500	12,900	13,399
13,000	13,400	13,899
13,500	13,900	14,399
14,000	14,400	14,899
14,500	14,900	15,399
15,000	15,400	15,899
15,500	15,900	16,399
16,000	16,400	16,899
16,500	16,900	17,399
17,000	17,400	17,899
17,500	17,900	18,399
18,000	18,400	19,509
19,000	19,510	20,509
20,000	20,510	21,509
21,000	21,510	22,609
22,000	22,610	23,609
23,000	23,610	24,609
24,000	24,610	25,609
25,000	25,610	26,609
26,000	26,610	27,609
27,000	27,610	28,609
28,000	28,610	29,609
29,000	29,610	30,609
30,000	30,610	32,609
32,000	32,610	34,699
34,000	34,700	36,699
36,000	36,700	38,699
38,000	38,700	40,000



## Rondelles d'étanchéité pour les forets à une lèvre

N° d'article **5752**

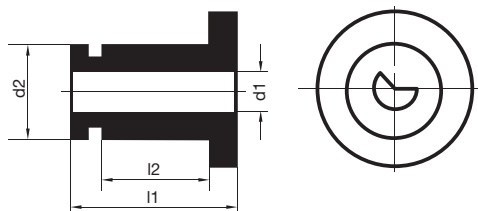
d1 mm	Capacité Ø	d2 mm	l1 mm	N° de code
2,100	2,200-2,299	20,000	4,000	2,100
2,200	2,300-2,399	20,000	4,000	2,200
2,600	2,700-2,799	20,000	4,000	2,600
2,800	2,900-3,099	20,000	4,000	2,800
3,000	3,100-3,359	20,000	4,000	3,000
3,300	3,460-3,559	20,000	4,000	3,300
3,400	3,560-3,799	20,000	4,000	3,400
3,600	3,800-3,959	20,000	4,000	3,600
3,700	3,960-4,259	20,000	4,000	3,700
4,000	4,260-4,499	20,000	4,000	4,000
4,200	4,500-4,749	20,000	4,000	4,200
4,500	4,750-4,999	20,000	4,000	4,500
4,700	5,000-5,249	20,000	4,000	4,700
5,000	5,250-5,499	32,000	4,000	5,000
5,200	5,500-5,749	32,000	4,000	5,200
5,500	5,750-5,999	32,000	4,000	5,500
5,700	6,000-6,249	32,000	4,000	5,700
6,000	6,250-6,449	32,000	4,000	6,000
6,200	6,450-6,749	32,000	4,000	6,200
6,500	6,750-6,999	32,000	4,000	6,500
6,700	7,000-7,299	32,000	4,000	6,700
7,000	7,300-7,599	32,000	4,000	7,000
7,300	7,600-7,799	32,000	4,000	7,300
7,500	7,800-7,999	32,000	4,000	7,500
7,700	8,000-8,299	32,000	4,000	7,700
8,000	8,300-8,699	32,000	4,000	8,000
8,400	8,700-8,999	32,000	4,000	8,400
8,700	9,000-9,299	32,000	4,000	8,700
9,000	9,300-9,699	32,000	4,000	9,000
9,400	9,700-9,999	32,000	4,000	9,400
9,700	10,000-10,299	32,000	4,000	9,700
10,000	11,300-11,799	32,000	4,000	10,000
10,500	10,800-11,299	32,000	4,000	10,500
11,000	11,300-11,799	32,000	4,000	11,000
11,500	11,800-12,399	32,000	4,000	11,500
12,000	12,400-12,899	32,000	4,000	12,000
12,500	12,900-13,399	32,000	4,000	12,500
13,500	13,900-14,399	32,000	4,000	13,500
14,000	14,400-14,899	32,000	4,000	14,000
14,500	14,900-15,399	32,000	4,000	14,500
15,000	15,400-15,899	32,000	4,000	15,000
15,500	15,900-16,399	40,000	4,000	15,500
16,500	16,900-17,399	40,000	4,000	16,500
17,000	17,400-17,899	40,000	4,000	17,000
17,500	17,900-18,399	40,000	4,000	17,500
18,000	18,400-19,509	40,000	4,000	18,000
19,000	19,510-20,509	40,000	4,000	19,000
20,000	20,510-21,509	40,000	4,000	20,000



d1	Capacité Ø	d2	l1	N° de code
mm		mm	mm	
21,000	21,510-22,609	40,000	4,000	21,000
22,000	22,610-23,609	40,000	4,000	22,000
23,000	23,610-24,609	40,000	4,000	23,000
24,000	24,610-25,609	40,000	4,000	24,000
25,000	25,610-26,609	40,000	4,000	25,000
27,000	27,610-28,609	90,000	4,000	27,000
29,000	29,610-30,609	90,000	4,000	29,000
30,000	30,610-32,609	90,000	4,000	30,000
32,000	32,610-34,699	90,000	4,000	32,000
36,000	36,700-38,699	90,000	4,000	36,000
38,000	38,700-40,000	90,000	4,000	38,000



## Guides de lunettes, de forme spéciale, pour les forets à une lèvre



N° d'article

5750

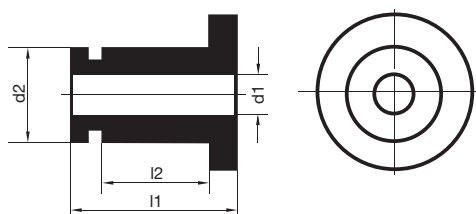
d1	Capacité Ø	d2	l1	l2	N° de code
mm		mm	mm	mm	
2,100	2,200-2,299	20,000	20,000	12,000	202,100
2,600	2,700-2,799	20,000	20,000	12,000	202,600
2,800	2,900-3,099	20,000	20,000	12,000	202,800
3,000	3,100-3,359	20,000	20,000	12,000	203,000
3,300	3,460-3,559	20,000	20,000	12,000	203,300
3,700	3,960-4,259	20,000	20,000	12,000	203,700
4,700	5,000-5,249	20,000	20,000	12,000	204,700
5,700	6,000-6,249	20,000	20,000	12,000	205,700
6,700	7,000-7,299	20,000	20,000	12,000	206,700
7,700	8,000-8,299	20,000	20,000	12,000	207,700
8,000	8,300-8,699	20,000	20,000	12,000	208,000
8,700	9,000-9,299	20,000	20,000	12,000	208,700
9,700	10,000-10,299	20,000	20,000	12,000	209,700
11,500	11,800-12,399	20,000	20,000	12,000	211,500
3,700	3,960-4,259	30,000	26,000	13,000	303,700
4,000	4,260-4,499	30,000	26,000	13,000	304,000
4,200	4,500-4,749	30,000	26,000	13,000	304,200
4,500	4,750-4,999	30,000	26,000	13,000	304,500
4,700	5,000-5,249	30,000	26,000	13,000	304,700
5,000	5,250-5,499	30,000	26,000	13,000	305,000
5,200	5,500-5,749	30,000	26,000	13,000	305,200
5,500	5,750-5,999	30,000	26,000	13,000	305,500
5,700	6,000-6,249	30,000	26,000	13,000	305,700
6,000	6,250-6,449	30,000	26,000	13,000	306,000
6,200	6,450-6,749	30,000	26,000	13,000	306,200
6,500	6,750-6,999	30,000	26,000	13,000	306,500
6,700	7,000-7,299	30,000	26,000	13,000	306,700
7,000	7,300-7,599	30,000	26,000	13,000	307,000
7,300	7,600-7,799	30,000	26,000	13,000	307,300
7,500	7,800-7,999	30,000	26,000	13,000	307,500
7,700	8,000-8,299	30,000	26,000	13,000	307,700
8,000	8,300-8,699	30,000	26,000	13,000	308,000
8,400	8,700-8,999	30,000	26,000	13,000	308,400
8,700	9,000-9,299	30,000	26,000	13,000	308,700
9,000	9,300-9,699	30,000	26,000	13,000	309,000
9,400	9,700-9,999	30,000	26,000	13,000	309,400
9,700	10,000-10,299	30,000	26,000	13,000	309,700
10,000	10,300-10,799	30,000	26,000	13,000	310,000
10,500	10,800-11,299	30,000	26,000	13,000	310,500
11,000	11,300-11,799	30,000	26,000	13,000	311,000
11,500	11,800-12,399	30,000	26,000	13,000	311,500
12,000	12,400-12,899	30,000	26,000	13,000	312,000
12,500	12,900-13,399	30,000	26,000	13,000	312,500
13,500	13,900-14,399	30,000	26,000	13,000	313,500
14,000	14,400-14,899	30,000	26,000	13,000	314,000
14,500	14,900-15,399	30,000	26,000	13,000	314,500
15,000	15,400-15,899	30,000	26,000	13,000	315,000
15,500	15,900-16,399	30,000	26,000	13,000	315,500



d1	Capacité Ø	d2	l1	l2	N° de code
mm		mm	mm	mm	
16,500	16,900-17,399	30,000	26,000	13,000	316,500
17,000	17,400-17,899	30,000	26,000	13,000	317,000
17,500	17,900-18,399	30,000	26,000	13,000	317,500
18,000	18,400-19,509	30,000	26,000	13,000	318,000
19,000	19,510-20,509	30,000	26,000	13,000	319,000
21,000	21,510-22,609	30,000	26,000	13,000	321,000
20,000	20,510-21,509	45,000	26,000	16,000	420,000
21,000	21,510-22,609	45,000	26,000	16,000	421,000
22,000	22,610-23,609	45,000	26,000	16,000	422,000
23,000	23,610-24,609	45,000	26,000	16,000	423,000
24,000	24,610-25,609	45,000	26,000	16,000	424,000
25,000	25,610-26,609	45,000	26,000	16,000	425,000
27,000	27,610-28,609	45,000	26,000	16,000	427,000
28,000	28,610-29,609	45,000	26,000	16,000	428,000
29,000	29,610-30,609	45,000	26,000	16,000	429,000
30,000	30,610-32,609	45,000	26,000	16,000	430,000
32,000	32,610-34,699	45,000	26,000	16,000	432,000
34,000	34,700-36,699	45,000	26,000	16,000	434,000



## Guides de lunettes pour outils à forer 1 et 2 lèvres



N° d'article

5749

d1	Capacité Ø	d2	l1	l2	N° de code
mm		mm	mm	mm	
3,000	3,100-3,359	20,000	22,000	12,000	203,000
3,700	3,960-4,259	20,000	22,000	12,000	203,700
4,500	4,750-4,999	20,000	22,000	12,000	204,500
4,700	5,000-5,249	20,000	22,000	12,000	204,700
5,700	6,000-6,249	20,000	22,000	12,000	205,700
8,000	8,300-8,699	20,000	22,000	12,000	208,000
9,700	10,000-10,299	20,000	22,000	12,000	209,700
2,200	2,300-2,399	30,000	26,000	13,000	302,200
3,000	3,100-3,359	30,000	26,000	13,000	303,000
3,300	3,460-3,559	30,000	26,000	13,000	303,300
3,400	3,560-3,799	30,000	26,000	13,000	303,400
3,600	3,800-3,959	30,000	26,000	13,000	303,600
3,700	3,960-4,259	30,000	26,000	13,000	303,700
4,000	4,260-4,499	30,000	26,000	13,000	304,000
4,200	4,500-4,749	30,000	26,000	13,000	304,200
4,500	4,750-4,999	30,000	26,000	13,000	304,500
4,700	5,000-5,249	30,000	26,000	13,000	304,700
5,000	5,250-5,499	30,000	26,000	13,000	305,000
5,200	5,500-5,749	30,000	26,000	13,000	305,200
5,500	5,750-5,999	30,000	26,000	13,000	305,500
5,700	6,000-6,249	30,000	26,000	13,000	305,700
6,000	6,250-6,449	30,000	26,000	13,000	306,000
6,200	6,450-6,749	30,000	26,000	13,000	306,200
6,700	7,000-7,299	30,000	26,000	13,000	306,700
7,500	7,800-7,999	30,000	26,000	13,000	307,500
7,700	8,000-8,299	30,000	26,000	13,000	307,700
8,700	9,000-9,299	30,000	26,000	13,000	308,700
9,000	9,300-9,699	30,000	26,000	13,000	309,000
9,700	10,000-10,299	30,000	26,000	13,000	309,700
10,000	10,300-10,799	30,000	26,000	13,000	310,000
10,500	10,800-11,299	30,000	26,000	13,000	310,500
11,000	11,300-11,799	30,000	26,000	13,000	311,000
11,500	11,800-12,399	30,000	26,000	13,000	311,500
12,000	12,400-12,899	30,000	26,000	13,000	312,000
12,500	12,900-13,399	30,000	26,000	13,000	312,500
13,500	13,900-14,399	30,000	26,000	13,000	313,500
14,000	14,400-14,899	30,000	26,000	13,000	314,000
14,500	14,900-15,399	30,000	26,000	13,000	314,500
15,000	15,400-15,899	30,000	26,000	13,000	315,000
15,500	15,900-16,399	30,000	26,000	13,000	315,500
16,600	17,900-18,399	30,000	26,000	13,000	316,600
17,000	17,400-17,899	30,000	26,000	13,000	317,000
17,500	17,900-18,399	30,000	26,000	13,000	317,500
18,000	18,400-19,509	30,000	26,000	13,000	318,000
19,000	19,510-20,509	30,000	26,000	13,000	319,000
20,000	20,510-21,509	30,000	26,000	13,000	320,000
21,000	21,510-22,609	30,000	26,000	13,000	321,000
22,000	22,610-23,609	30,000	26,000	13,000	322,000

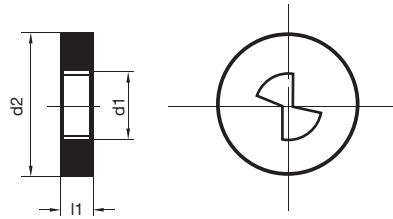


d1	Capacité Ø	d2	l1	l2	N° de code
mm		mm	mm	mm	
23,000	23,610-24,609	30,000	26,000	13,000	323,000
24,000	24,610-25,609	30,000	26,000	13,000	324,000
4,700	5,000-5,249	45,000	26,000	16,000	404,700
6,200	6,450-6,749	45,000	26,000	16,000	406,200
7,500	7,800-7,999	45,000	26,000	16,000	407,500
7,700	8,000-8,299	45,000	26,000	16,000	407,700
9,000	9,300-9,699	45,000	26,000	16,000	409,000
9,400	9,700-9,999	45,000	26,000	16,000	409,400
9,700	10,000-10,299	45,000	26,000	16,000	409,700
11,500	11,800-12,399	45,000	26,000	16,000	411,500
14,000	14,400-14,899	45,000	26,000	16,000	414,000
15,000	15,400-15,899	45,000	26,000	16,000	415,000
15,500	15,900-16,399	45,000	26,000	16,000	415,500
17,500	17,900-18,399	45,000	26,000	16,000	417,500
18,000	18,400-19,509	45,000	26,000	16,000	418,000
19,000	19,510-20,509	45,000	26,000	16,000	419,000
21,000	21,510-22,609	45,000	26,000	16,000	421,000
24,000	24,610-25,609	45,000	26,000	16,000	424,000
25,000	25,610-26,609	45,000	26,000	16,000	425,000
26,000	26,610-27,609	45,000	26,000	16,000	426,000
27,000	27,610-28,609	45,000	26,000	16,000	427,000
29,000	29,610-30,609	45,000	26,000	16,000	429,000
32,000	32,610-34,699	45,000	26,000	16,000	432,000





## Rondelles d'étanchéité pour les outils de forage à deux lèvres de coupe



N° d'article

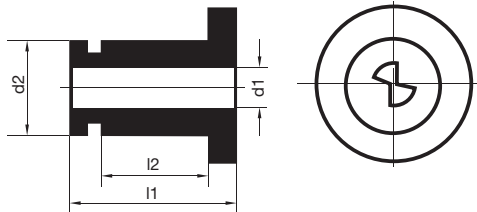
5753

d1 mm	Capacité Ø	d2 mm	l1 mm	N° de code
5,700	6,000-6,249	32,000	4,000	5,700
7,700	8,000-8,299	32,000	4,000	7,700
8,700	9,000-9,299	32,000	4,000	8,700
9,000	9,300-9,699	32,000	4,000	9,000
9,700	10,000-10,299	32,000	4,000	9,700
11,500	11,800-12,399	32,000	4,000	11,500
13,500	13,900-14,399	32,000	4,000	13,500
15,500	15,900-16,399	40,000	4,000	15,500
19,000	19,510-20,509	40,000	4,000	19,000
23,000	23,610-24,609	40,000	4,000	23,000
25,000	25,610-26,609	40,000	4,000	25,000

Outils de forage



Guides de lunettes pour les outils de forage à deux lèbres



N° d'article **5751**

d1	Capacité Ø	d2	l1	l2	N° de code
mm		mm	mm	mm	
5,700	6,000-6,249	20,000	20,000	12,000	205,700
9,700	10,000-10,299	20,000	20,000	12,000	209,700
6,500	6,750-6,999	30,000	26,000	13,000	306,500
6,700	7,000-7,299	30,000	26,000	13,000	306,700
7,700	8,000-8,299	30,000	26,000	13,000	307,700
9,400	9,700-9,999	30,000	26,000	13,000	309,400
9,700	10,000-10,299	30,000	26,000	13,000	309,700
11,500	11,800-12,399	30,000	26,000	13,000	311,500
15,000	15,400-15,899	30,000	26,000	13,000	315,000
15,500	15,900-16,399	30,000	26,000	13,000	315,500
16,600	17,900-18,399	30,000	26,000	13,000	316,600
17,000	17,400-17,899	30,000	26,000	13,000	317,000
17,500	17,900-18,399	30,000	26,000	13,000	317,500
8,700	9,000-9,299	45,000	26,000	16,000	408,700
13,500	13,900-14,399	45,000	26,000	16,000	413,500
19,000	19,510-20,509	45,000	26,000	16,000	419,000
23,000	23,610-24,609	45,000	26,000	16,000	423,000
24,000	24,610-25,609	45,000	26,000	16,000	424,000
25,000	25,610-26,609	45,000	26,000	16,000	425,000
26,000	26,610-27,609	45,000	26,000	16,000	426,000
27,000	27,610-28,609	45,000	26,000	16,000	427,000

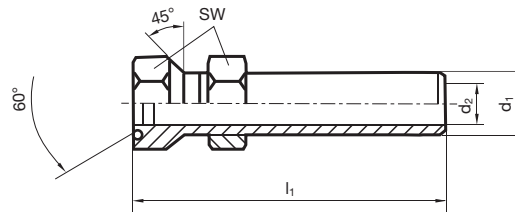
Outils de forage



## Vis de réglage



Vis de réglage sans élément d'étanchéité



N° d'article

**5754**

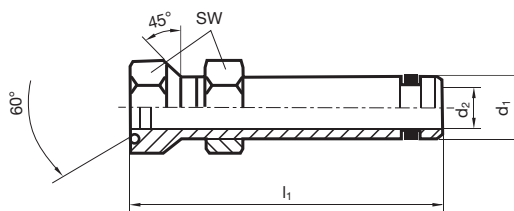
d1	d2	l1	SW	N° de code
	mm	mm	mm	
M6 x 0,5	3,500	26,000	9,000	6,000
M10 x 1	6,000	38,000	13,000	10,000
M16 x 1,5	10,000	57,000	22,000	16,000



Vis de réglage



Vis de réglage avec élément d'étanchéité

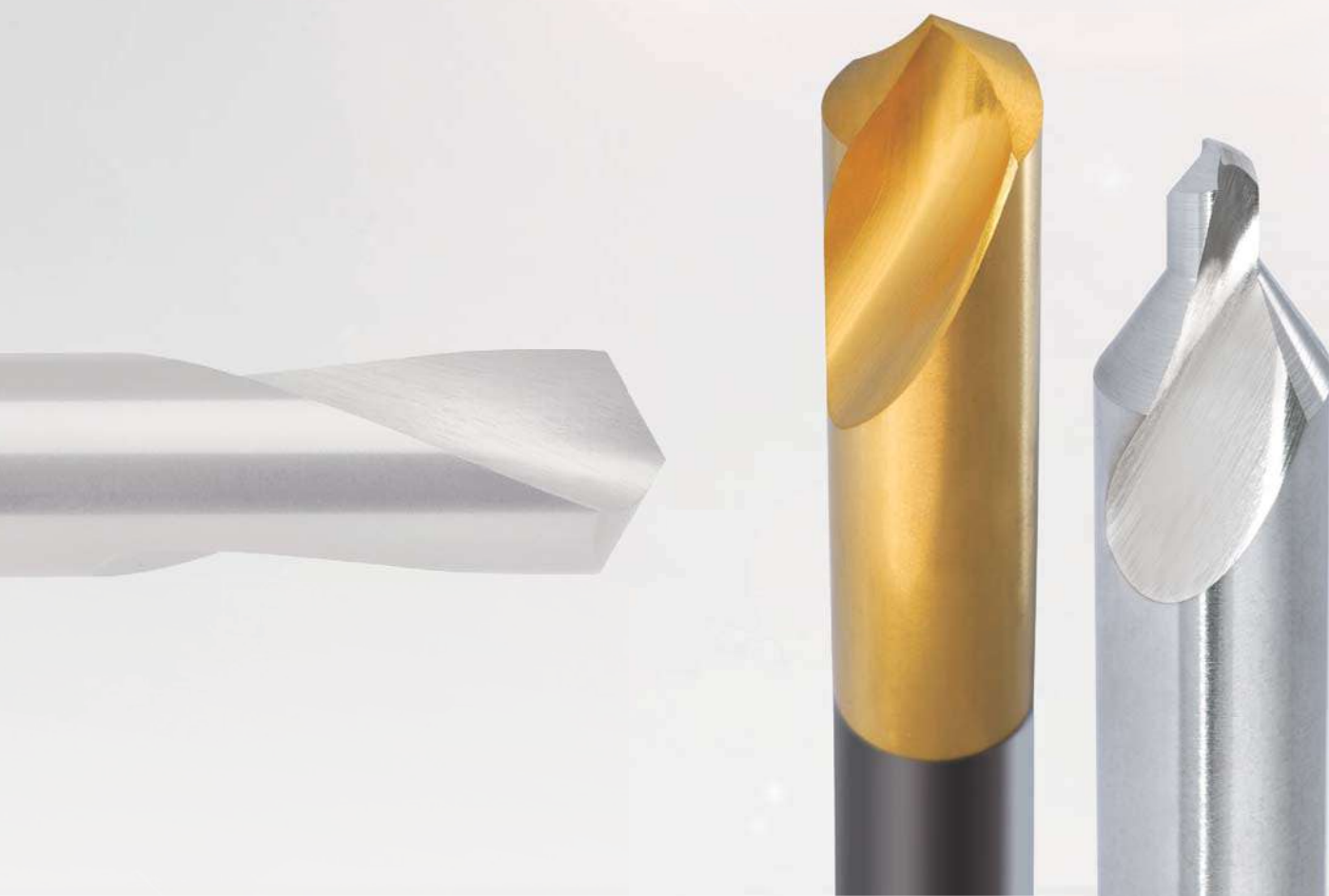


N° d'article **5755**

d1	d2	l1	SW	N° de code
	mm	mm	mm	
M6 x 0,5	3,500	45,000	9,000	6,000
M10 x 1	6,000	50,000	13,000	10,000
M16 x 1,5	10,000	65,000	22,000	16,000
M24X1,5	16,000	90,000	30,000	24,000

# Forets NC et forets à centrer

Lors de l'usinage avec de longs forets hélicoïdaux, nous vous recommandons de réaliser un centrage avant le perçage. Pour cette opération, nos forets NC sont parfaitement appropriés. Pour la réalisation des perçages de forme, nous vous recommandons d'utiliser nos forets à centrer.





Forets hélicoïdaux longs

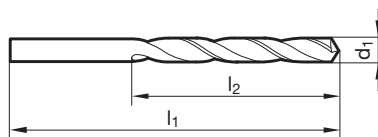


Matière de coupe	<b>HSS</b>
Surface	$\text{Ra} > 0,2,36$
Sens de coupe	

- P** • Amin. de l'âme  $\geq \text{Ø } 1,000$  • affûtage à dépouille conique • pour les perçages profonds
- M**
- K** •
- N** ○ acier, fonte aciérée (alliée / non alliée) • fontes grises, fontes malléables, fontes à graphite sphéroïdal • fer fritté, maillechort, graphite
- S**
- H**

**GÜHRING** NAVIGATOR

Paramètres de coupe, page 786



N° d'article **217**

Outils de forage

d1		l1	l2	d1		l1	l2
mm	inch	mm	mm	mm	inch	mm	mm
0,400	1/64	30,000	10,000	1,500		70,000	45,000
0,440		30,000	10,000	1,510		76,000	50,000
0,450		30,000	10,000	1,550		76,000	50,000
0,470		30,000	10,000	1,590	1/16	76,000	50,000
0,500		32,000	12,000	1,600		76,000	50,000
0,520		32,000	12,000	1,610		76,000	50,000
0,550		35,000	15,000	1,650		76,000	50,000
0,570		35,000	15,000	1,700		76,000	50,000
0,600		35,000	15,000	1,750		80,000	53,000
0,620		38,000	18,000	1,780		80,000	53,000
0,650		38,000	18,000	1,800		80,000	53,000
0,700		42,000	21,000	1,850		80,000	53,000
0,730		42,000	21,000	1,900		80,000	53,000
0,750		42,000	21,000	1,930		85,000	56,000
0,760		46,000	25,000	1,950		85,000	56,000
0,790	1/32	46,000	25,000	1,980	5/64	85,000	56,000
0,800		46,000	25,000	2,000		85,000	56,000
0,820		46,000	25,000	2,030		85,000	56,000
0,850		46,000	25,000	2,050		85,000	56,000
0,900		51,000	29,000	2,060		85,000	56,000
0,910		51,000	29,000	2,080		85,000	56,000
0,920		51,000	29,000	2,100		85,000	56,000
0,950		51,000	29,000	2,150		90,000	59,000
0,970		56,000	33,000	2,200		90,000	59,000
1,000		56,000	33,000	2,250		90,000	59,000
1,040		56,000	33,000	2,260		90,000	59,000
1,050		56,000	33,000	2,300		90,000	59,000
1,080		60,000	37,000	2,350		90,000	59,000
1,090		60,000	37,000	2,370		95,000	62,000
1,100		60,000	37,000	2,380	3/32	95,000	62,000
1,120		60,000	37,000	2,400		95,000	62,000
1,130		60,000	37,000	2,420		95,000	62,000
1,150		60,000	37,000	2,440		95,000	62,000
1,180		60,000	37,000	2,450		95,000	62,000
1,190	3/64	65,000	41,000	2,490		95,000	62,000
1,200		65,000	41,000	2,500		95,000	62,000
1,250		65,000	41,000	2,550		95,000	62,000
1,300		65,000	41,000	2,580		95,000	62,000
1,350		70,000	45,000	2,600		95,000	62,000
1,400		70,000	45,000	2,620		95,000	62,000
1,450		70,000	45,000	2,640		95,000	62,000
1,490		70,000	45,000	2,650		95,000	62,000



d1		l1	l2	d1		l1	l2
mm	inch	mm	mm	mm	inch	mm	mm
2,700		100,000	66,000	5,060		132,000	87,000
2,710		100,000	66,000	5,100		132,000	87,000
2,750		100,000	66,000	5,110		132,000	87,000
2,780	7/64	100,000	66,000	5,150		132,000	87,000
2,790		100,000	66,000	5,160	13/64	132,000	87,000
2,800		100,000	66,000	5,180		132,000	87,000
2,820		100,000	66,000	5,200		132,000	87,000
2,850		100,000	66,000	5,220		132,000	87,000
2,870		100,000	66,000	5,250		132,000	87,000
2,900		100,000	66,000	5,300		132,000	87,000
2,950		100,000	66,000	5,310		139,000	91,000
3,000		100,000	66,000	5,350		139,000	91,000
3,030		106,000	69,000	5,400		139,000	91,000
3,050		106,000	69,000	5,410		139,000	91,000
3,100		106,000	69,000	5,450		139,000	91,000
3,150		106,000	69,000	5,500		139,000	91,000
3,170	1/8	106,000	69,000	5,550		139,000	91,000
3,200		106,000	69,000	5,560	7/32	139,000	91,000
3,250		106,000	69,000	5,600		139,000	91,000
3,260		106,000	69,000	5,650		139,000	91,000
3,300		106,000	69,000	5,700		139,000	91,000
3,350		106,000	69,000	5,750		139,000	91,000
3,400		112,000	73,000	5,790		139,000	91,000
3,450		112,000	73,000	5,790		139,000	91,000
3,500		112,000	73,000	5,800		139,000	91,000
3,550		112,000	73,000	5,900		139,000	91,000
3,570	9/64	112,000	73,000	5,950	15/64	139,000	91,000
3,600		112,000	73,000	6,000		139,000	91,000
3,650		112,000	73,000	6,060		148,000	97,000
3,660		112,000	73,000	6,100		148,000	97,000
3,700		112,000	73,000	6,200		148,000	97,000
3,750		112,000	73,000	6,250		148,000	97,000
3,800		119,000	78,000	6,300		148,000	97,000
3,850		119,000	78,000	6,350	1/4	148,000	97,000
3,860		119,000	78,000	6,400		148,000	97,000
3,900		119,000	78,000	6,500		148,000	97,000
3,910		119,000	78,000	6,600		148,000	97,000
3,950		119,000	78,000	6,700		148,000	97,000
3,970	5/32	119,000	78,000	6,750	17/64	156,000	102,000
3,990		119,000	78,000	6,800		156,000	102,000
4,000		119,000	78,000	6,900		156,000	102,000
4,030		119,000	78,000	7,000		156,000	102,000
4,040		119,000	78,000	7,100		156,000	102,000
4,050		119,000	78,000	7,140	9/32	156,000	102,000
4,090		119,000	78,000	7,200		156,000	102,000
4,100		119,000	78,000	7,250		156,000	102,000
4,150		119,000	78,000	7,300		156,000	102,000
4,200		119,000	78,000	7,400		156,000	102,000
4,220		119,000	78,000	7,500		156,000	102,000
4,250		119,000	78,000	7,540	19/64	165,000	109,000
4,300		126,000	82,000	7,600		165,000	109,000
4,350		126,000	82,000	7,700		165,000	109,000
4,370	11/64	126,000	82,000	7,750		165,000	109,000
4,390		126,000	82,000	7,800		165,000	109,000
4,400		126,000	82,000	7,900		165,000	109,000
4,450		126,000	82,000	7,940	5/16	165,000	109,000
4,500		126,000	82,000	8,000		165,000	109,000
4,570		126,000	82,000	8,100		165,000	109,000
4,600		126,000	82,000	8,200		165,000	109,000
4,650		126,000	82,000	8,250		165,000	109,000
4,700		126,000	82,000	8,300		165,000	109,000
4,750		126,000	82,000	8,330	21/64	165,000	109,000
4,760	3/16	132,000	87,000	8,400		165,000	109,000
4,800		132,000	87,000	8,500		165,000	109,000
4,850		132,000	87,000	8,600		175,000	115,000
4,900		132,000	87,000	8,700		175,000	115,000
4,920		132,000	87,000	8,730	11/32	175,000	115,000
4,950		132,000	87,000	8,750		175,000	115,000
4,980		132,000	87,000	8,800		175,000	115,000
5,000		132,000	87,000	8,900		175,000	115,000
5,030		132,000	87,000	9,000		175,000	115,000
5,050		132,000	87,000	9,100		175,000	115,000
				9,130	23/64	175,000	115,000

Outils de forage

Outils de forage

d1		l1	l2
mm	inch	mm	mm
9,200		175,000	115,000
9,300		175,000	115,000
9,400		175,000	115,000
9,500		175,000	115,000
9,520	3/8	184,000	121,000
9,600		184,000	121,000
9,700		184,000	121,000
9,750		184,000	121,000
9,800		184,000	121,000
9,900		184,000	121,000
9,920	25/64	184,000	121,000
10,000		184,000	121,000
10,100		184,000	121,000
10,200		184,000	121,000
10,250		184,000	121,000
10,300		184,000	121,000
10,320	13/32	184,000	121,000
10,400		184,000	121,000
10,500		184,000	121,000
10,700		195,000	128,000
10,720	27/64	195,000	128,000
10,750		195,000	128,000
10,800		195,000	128,000
11,000		195,000	128,000
11,110	7/16	195,000	128,000
11,200		195,000	128,000
11,400		195,000	128,000
11,500		195,000	128,000
11,510	29/64	195,000	128,000
11,600		195,000	128,000
11,700		195,000	128,000
11,750		195,000	128,000
11,800		195,000	128,000
11,910	15/32	205,000	134,000
12,000		205,000	134,000
12,100		205,000	134,000
12,200		205,000	134,000
12,300	31/64	205,000	134,000
12,500		205,000	134,000
12,700	1/2	205,000	134,000
12,800		205,000	134,000
13,000		205,000	134,000
13,200		205,000	134,000
13,490	17/32	214,000	140,000
13,500		214,000	140,000
13,800		214,000	140,000
13,890	35/64	214,000	140,000
14,000		214,000	140,000
14,200		220,000	144,000
14,250		220,000	144,000
14,290	9/16	220,000	144,000
14,490		220,000	144,000
14,500		220,000	144,000
14,900		220,000	144,000

d1		l1	l2
mm	inch	mm	mm
15,000		220,000	144,000
15,080	19/32	227,000	149,000
15,200		227,000	149,000
15,250		227,000	149,000
15,400		227,000	149,000
15,480	39/64	227,000	149,000
15,500		227,000	149,000
15,600		227,000	149,000
15,870	5/8	227,000	149,000
16,000		227,000	149,000
16,270	41/64	235,000	154,000
16,500		235,000	154,000
16,670	21/32	235,000	154,000
17,000		235,000	154,000
17,070	43/64	241,000	158,000
17,460	11/16	241,000	158,000
17,500		241,000	158,000
18,000		241,000	158,000
18,500		247,000	162,000
18,650	47/64	247,000	162,000
19,000		247,000	162,000
19,050	3/4	254,000	166,000
19,500		254,000	166,000
20,000		254,000	166,000
20,500		261,000	171,000
20,640	13/16	261,000	171,000
21,000		261,000	171,000
21,500		268,000	176,000
22,000		268,000	176,000
23,300		275,000	180,000
23,810	15/16	282,000	185,000
24,000		282,000	185,000
25,000	63/64	282,000	185,000
26,190	1 1/32	290,000	190,000
26,500		290,000	190,000
26,990	1 1/16	298,000	195,000
28,570	1 1/8	307,000	201,000
29,000		307,000	201,000
29,370	1 5/32	307,000	201,000
29,500		307,000	201,000
30,160	1 3/16	316,000	207,000
30,960	1 7/32	316,000	207,000
31,000		316,000	207,000
36,510	1 7/16	345,000	225,000





Forets hélicoïdaux longs



Matière de coupe **HSS**

Surface **S**

Sens de coupe **R**

**P** • Amin. de l'âme  $\geq \varnothing 1,000$  • affûtage à dépouille conique • pour les perçages profonds • pour le perçage avec canons de perçage

**M**

**K** •

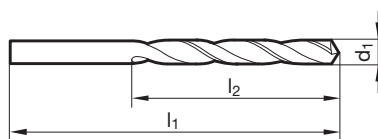
**N** ○ acier, fonte aciérée (alliée / non alliée) • fontes grises, fontes malléables, fontes à graphite sphéroïdal • fer fritté, mallechort, graphite

**S**

**H**

**GUHRING NAVIGATOR**

Paramètres de coupe, page 786



N° d'article **667**

d1		l1	l2
mm	inch	mm	mm
0,500		32,000	12,000
0,600		35,000	15,000
0,700		42,000	21,000
0,750		42,000	21,000
0,800		46,000	25,000
0,900		51,000	29,000
0,950		51,000	29,000
1,000		56,000	33,000
1,100		60,000	37,000
1,150		60,000	37,000
1,200		65,000	41,000
1,250		65,000	41,000
1,300		65,000	41,000
1,350		70,000	45,000
1,400		70,000	45,000
1,450		70,000	45,000
1,500		70,000	45,000
1,550		76,000	50,000
1,590	1/16	76,000	50,000
1,600		76,000	50,000
1,650		76,000	50,000
1,700		76,000	50,000
1,800		80,000	53,000
1,850		80,000	53,000
1,900		80,000	53,000
1,950		85,000	56,000
1,980	5/64	85,000	56,000
2,000		85,000	56,000
2,100		85,000	56,000
2,200		90,000	59,000
2,300		90,000	59,000
2,350		90,000	59,000
2,370		95,000	62,000
2,380	3/32	95,000	62,000
2,440		95,000	62,000
2,450		95,000	62,000
2,500		95,000	62,000
2,530		95,000	62,000
2,650		95,000	62,000
2,700		100,000	66,000
2,750		100,000	66,000
2,780	7/64	100,000	66,000

d1		l1	l2
mm	inch	mm	mm
2,800		100,000	66,000
2,850		100,000	66,000
2,870		100,000	66,000
2,900		100,000	66,000
3,000		100,000	66,000
3,030		106,000	69,000
3,050		106,000	69,000
3,100		106,000	69,000
3,170	1/8	106,000	69,000
3,200		106,000	69,000
3,250		106,000	69,000
3,260		106,000	69,000
3,300		106,000	69,000
3,350		106,000	69,000
3,400		112,000	73,000
3,500		112,000	73,000
3,570	9/64	112,000	73,000
3,600		112,000	73,000
3,650		112,000	73,000
3,700		112,000	73,000
3,730		112,000	73,000
3,750		112,000	73,000
3,800		119,000	78,000
3,850		119,000	78,000
3,900		119,000	78,000
3,950		119,000	78,000
3,970	5/32	119,000	78,000
4,000		119,000	78,000
4,050		119,000	78,000
4,100		119,000	78,000
4,200		119,000	78,000
4,250		119,000	78,000
4,300		126,000	82,000
4,370	11/64	126,000	82,000
4,400		126,000	82,000
4,500		126,000	82,000
4,570		126,000	82,000
4,600		126,000	82,000
4,620		126,000	82,000
4,650		126,000	82,000
4,700		126,000	82,000
4,750		126,000	82,000

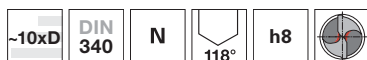
Outils de forage

d1		l1	l2
mm	inch	mm	mm
4,760	3/16	132,000	87,000
4,850		132,000	87,000
4,900		132,000	87,000
5,000		132,000	87,000
5,100		132,000	87,000
5,160	13/64	132,000	87,000
5,200		132,000	87,000
5,250		132,000	87,000
5,300		132,000	87,000
5,310		139,000	91,000
5,400		139,000	91,000
5,410		139,000	91,000
5,500		139,000	91,000
5,560	7/32	139,000	91,000
5,600		139,000	91,000
5,610		139,000	91,000
5,700		139,000	91,000
5,790		139,000	91,000
5,900		139,000	91,000
6,000		139,000	91,000
6,100		148,000	97,000
6,200		148,000	97,000
6,250		148,000	97,000
6,350	1/4	148,000	97,000
6,400		148,000	97,000
6,500		148,000	97,000
6,600		148,000	97,000
6,750	17/64	156,000	102,000
6,800		156,000	102,000
7,000		156,000	102,000
7,100		156,000	102,000
7,140	9/32	156,000	102,000
7,200		156,000	102,000
7,250		156,000	102,000
7,300		156,000	102,000
7,370		156,000	102,000
7,400		156,000	102,000
7,500		156,000	102,000
7,540	19/64	165,000	109,000
7,700		165,000	109,000
7,940	5/16	165,000	109,000
8,000		165,000	109,000
8,050		165,000	109,000
8,100		165,000	109,000
8,200		165,000	109,000
8,250		165,000	109,000
8,300		165,000	109,000
8,400		165,000	109,000
8,500		165,000	109,000
8,700		175,000	115,000
8,730	11/32	175,000	115,000
8,800		175,000	115,000
8,900		175,000	115,000
9,000		175,000	115,000

d1		l1	l2
mm	inch	mm	mm
9,100		175,000	115,000
9,300		175,000	115,000
9,400		175,000	115,000
9,500		175,000	115,000
9,520	3/8	184,000	121,000
9,700		184,000	121,000
9,900		184,000	121,000
9,920	25/64	184,000	121,000
10,000		184,000	121,000
10,200		184,000	121,000
10,320	13/32	184,000	121,000
10,500		184,000	121,000
10,720	27/64	195,000	128,000
10,800		195,000	128,000
10,900		195,000	128,000
11,000		195,000	128,000
11,110	7/16	195,000	128,000
11,500		195,000	128,000
11,750		195,000	128,000
11,910	15/32	205,000	134,000
12,000		205,000	134,000
12,500		205,000	134,000
12,700	1/2	205,000	134,000
13,000		205,000	134,000
13,490	17/32	214,000	140,000
13,500		214,000	140,000
13,800		214,000	140,000
13,890	35/64	214,000	140,000
14,000		214,000	140,000
14,290	9/16	220,000	144,000
14,500		220,000	144,000
14,750		220,000	144,000
14,800		220,000	144,000
14,900		220,000	144,000
15,000		220,000	144,000
15,080	19/32	227,000	149,000
16,000		227,000	149,000
16,500		235,000	154,000
16,670	21/32	235,000	154,000
16,750		235,000	154,000
17,000		235,000	154,000
17,460	11/16	241,000	158,000
18,000		241,000	158,000
18,250		247,000	162,000
22,220	7/8	268,000	176,000



Forets hélicoïdaux longs



Matière de coupe **HSS**

Surface

Sens de coupe

**P** • Amin. de l'âme  $\geq \varnothing 14,750$  • affûtage à dépouille conique • pour les perçages profonds • pour le perçage avec canons de perçage

**M**

**K** •

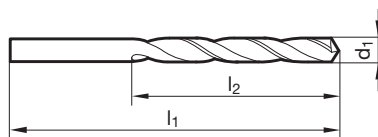
**N** ○ acier, fonte aciérée (alliée / non alliée) • fontes grises, fontes malléables, fontes à graphite sphéroïdal • fer fritté, mallechort, graphite

**S**

**H**

**GUHRING NAVIGATOR**

Paramètres de coupe, page 786



N° d'article **220**

d1		l1	l2
mm	inch	mm	mm
0,450		30,000	10,000
0,470		30,000	10,000
0,900		51,000	29,000
0,950		51,000	29,000
1,100		60,000	37,000
1,150		60,000	37,000
1,200		65,000	41,000
1,250		65,000	41,000
1,400		70,000	45,000
1,450		70,000	45,000
1,500		70,000	45,000
1,600		76,000	50,000
1,630		76,000	50,000
1,660		76,000	50,000
1,730		80,000	53,000
1,800		80,000	53,000
1,850		80,000	53,000
1,900		80,000	53,000
2,000		85,000	56,000
2,300		90,000	59,000
2,500		95,000	62,000
2,700		100,000	66,000
2,750		100,000	66,000
2,900		100,000	66,000
2,950		100,000	66,000
3,000		100,000	66,000
3,050		106,000	69,000
3,070		106,000	69,000
3,100		106,000	69,000
3,250		106,000	69,000
3,300		106,000	69,000
3,350		106,000	69,000
3,400		112,000	73,000
3,500		112,000	73,000
3,550		112,000	73,000
3,600		112,000	73,000
3,700		112,000	73,000
3,800		119,000	78,000
4,000		119,000	78,000
4,050		119,000	78,000
4,250		119,000	78,000
4,300		126,000	82,000

d1		l1	l2
mm	inch	mm	mm
4,500		126,000	82,000
4,600		126,000	82,000
4,780		132,000	87,000
4,800		132,000	87,000
4,950		132,000	87,000
5,000		132,000	87,000
5,100		132,000	87,000
5,200		132,000	87,000
5,600		139,000	91,000
5,700		139,000	91,000
6,000		139,000	91,000
6,050		148,000	97,000
6,100		148,000	97,000
6,400		148,000	97,000
6,500		148,000	97,000
6,600		148,000	97,000
6,800		156,000	102,000
7,200		156,000	102,000
7,500		156,000	102,000
7,800		165,000	109,000
8,000		165,000	109,000
8,100		165,000	109,000
8,250		165,000	109,000
8,400		165,000	109,000
8,800		175,000	115,000
9,000		175,000	115,000
9,520	3/8	184,000	121,000
9,700		184,000	121,000
9,800		184,000	121,000
9,900		184,000	121,000
10,000		184,000	121,000
10,100		184,000	121,000
10,500		184,000	121,000
11,000		195,000	128,000
11,500		195,000	128,000
11,900		205,000	134,000
12,000		205,000	134,000
12,200		205,000	134,000
12,500		205,000	134,000
13,000		205,000	134,000
13,500		214,000	140,000
14,750		220,000	144,000

Outils de forage

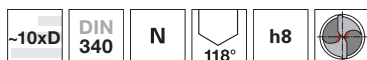


d1		l1	l2
mm	inch	mm	mm
19,000		247,000	162,000
20,000		254,000	166,000
22,000		268,000	176,000
25,000	63/64	282,000	185,000
25,500		290,000	190,000
29,000		307,000	201,000

d1		l1	l2
mm	inch	mm	mm



Forets hélicoïdaux longs



Matière de coupe **HSS**

Surface

Sens de coupe

**P** • Amin. de l'âme  $\geq \varnothing 2,950$  • affûtage à dépouille conique • avec tenon d'entraînement

**M**

**K** •

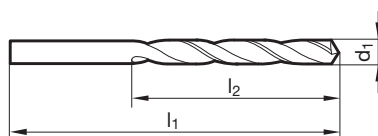
**N** ○ acier, fonte aciérée (alliée / non alliée) • fontes grises, fontes malléables, fontes à graphite sphéroïdal • fer fritté, maillechort, graphite

**S**

**H**

**GUHRING** NAVIGATOR

Paramètres de coupe, page 786



N° d'article **204**

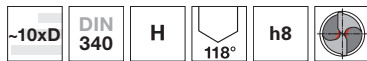
d1		l1	l2
mm	inch	mm	mm
2,950		100,000	66,000
3,000		100,000	66,000
3,100		106,000	69,000
3,170	1/8	106,000	69,000
3,200		106,000	69,000
3,300		106,000	69,000
3,400		112,000	73,000
3,500		112,000	73,000
3,600		112,000	73,000
3,800		119,000	78,000
3,900		119,000	78,000
4,000		119,000	78,000
4,050		119,000	78,000
4,100		119,000	78,000
4,200		119,000	78,000
4,250		119,000	78,000
4,300		126,000	82,000
4,400		126,000	82,000
4,500		126,000	82,000
4,760	3/16	132,000	87,000
4,800		132,000	87,000
5,000		132,000	87,000
5,080		132,000	87,000
5,100		132,000	87,000
5,200		132,000	87,000
5,500		139,000	91,000
5,600		139,000	91,000
5,800		139,000	91,000
5,850		139,000	91,000
5,900		139,000	91,000
6,000		139,000	91,000
6,100		148,000	97,000
6,200		148,000	97,000
6,300		148,000	97,000
6,350	1/4	148,000	97,000
6,400		148,000	97,000
6,500		148,000	97,000
6,600		148,000	97,000
6,700		148,000	97,000
6,750	17/64	156,000	102,000
6,800		156,000	102,000
6,900		156,000	102,000

d1		l1	l2
mm	inch	mm	mm
7,000		156,000	102,000
7,400		156,000	102,000
7,500		156,000	102,000
7,600		165,000	109,000
7,700		165,000	109,000
7,800		165,000	109,000
8,000		165,000	109,000
8,100		165,000	109,000
8,200		165,000	109,000
8,250		165,000	109,000
8,400		165,000	109,000
8,450		165,000	109,000
8,500		165,000	109,000
8,600		175,000	115,000
8,750		175,000	115,000
8,800		175,000	115,000
9,000		175,000	115,000
9,300		175,000	115,000
9,400		175,000	115,000
9,700		184,000	121,000
9,800		184,000	121,000
9,900		184,000	121,000
10,000		184,000	121,000
10,200		184,000	121,000
10,300		184,000	121,000
10,400		184,000	121,000
10,500		184,000	121,000
10,800		195,000	128,000
11,600		195,000	128,000
12,000		205,000	134,000
13,000		205,000	134,000
25,250		290,000	190,000

Outils de forage



Forets hélicoïdaux longs



Matière de coupe **HSS**

Surface

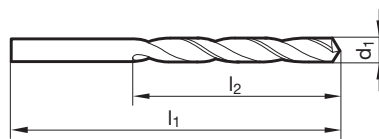
Sens de coupe

**P** Amin. de l'âme  $\geq \varnothing 15,000$  • affûtage à dépouille conique • pour les perçages profonds

- M**
- K**
- N** • matières dures et friables • laitons, alliages de magnésium • bronze, bronze phosphoreux • ardoise, mica, pertinax
- S**
- H**

**GÜHRING** NAVIGATOR

Paramètres de coupe, page 786



N° d'article **218**

Outils de forage

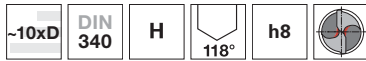
d1		l1	l2	d1		l1	l2
mm	inch	mm	mm	mm	inch	mm	mm
0,500		32,000	12,000	2,300		90,000	59,000
0,520		32,000	12,000	2,350		90,000	59,000
0,550		35,000	15,000	2,400		95,000	62,000
0,600		35,000	15,000	2,500		95,000	62,000
0,650		38,000	18,000	2,550		95,000	62,000
0,700		42,000	21,000	2,600		95,000	62,000
0,750		42,000	21,000	2,650		95,000	62,000
0,800		46,000	25,000	2,700		100,000	66,000
0,820		46,000	25,000	2,800		100,000	66,000
0,840		46,000	25,000	2,830		100,000	66,000
0,850		46,000	25,000	2,870		100,000	66,000
0,900		51,000	29,000	2,900		100,000	66,000
0,950		51,000	29,000	2,940		100,000	66,000
0,970		56,000	33,000	3,000		100,000	66,000
1,000		56,000	33,000	3,020		106,000	69,000
1,050		56,000	33,000	3,050		106,000	69,000
1,100		60,000	37,000	3,060		106,000	69,000
1,150		60,000	37,000	3,100		106,000	69,000
1,200		65,000	41,000	3,150		106,000	69,000
1,250		65,000	41,000	3,180		106,000	69,000
1,300		65,000	41,000	3,200		106,000	69,000
1,400		70,000	45,000	3,250		106,000	69,000
1,500		70,000	45,000	3,270		106,000	69,000
1,550		76,000	50,000	3,300		106,000	69,000
1,560		76,000	50,000	3,400		112,000	73,000
1,570		76,000	50,000	3,500		112,000	73,000
1,580		76,000	50,000	3,550		112,000	73,000
1,600		76,000	50,000	3,600		112,000	73,000
1,650		76,000	50,000	3,800		119,000	78,000
1,700		76,000	50,000	3,900		119,000	78,000
1,750		80,000	53,000	4,000		119,000	78,000
1,800		80,000	53,000	4,030		119,000	78,000
1,820		80,000	53,000	4,100		119,000	78,000
1,850		80,000	53,000	4,200		119,000	78,000
1,900		80,000	53,000	4,300		126,000	82,000
1,950		85,000	56,000	4,400		126,000	82,000
2,000		85,000	56,000	4,500		126,000	82,000
2,050		85,000	56,000	4,600		126,000	82,000
2,100		85,000	56,000	4,700		126,000	82,000
2,180		90,000	59,000	4,760	3/16	132,000	87,000
2,200		90,000	59,000	4,800		132,000	87,000
2,250		90,000	59,000	4,900		132,000	87,000



d1		l1	l2	d1		l1	l2
mm	inch	mm	mm	mm	inch	mm	mm
5,000		132,000	87,000	8,000		165,000	109,000
5,100		132,000	87,000	8,200		165,000	109,000
5,200		132,000	87,000	8,300		165,000	109,000
5,300		132,000	87,000	8,700		175,000	115,000
5,400		139,000	91,000	9,000		175,000	115,000
5,450		139,000	91,000	9,500		175,000	115,000
5,500		139,000	91,000	9,700		184,000	121,000
5,600		139,000	91,000	9,900		184,000	121,000
5,900		139,000	91,000	10,000		184,000	121,000
5,950	15/64	139,000	91,000	11,250		195,000	128,000
6,000		139,000	91,000	12,100		205,000	134,000
6,100		148,000	97,000	14,000		214,000	140,000
6,200		148,000	97,000	15,000		220,000	144,000
6,300		148,000	97,000	16,000		227,000	149,000
6,420		148,000	97,000				
6,500		148,000	97,000				
6,600		148,000	97,000				
6,700		148,000	97,000				
6,800		156,000	102,000				
6,900		156,000	102,000				
7,000		156,000	102,000				
7,200		156,000	102,000				
7,350		156,000	102,000				
7,500		156,000	102,000				



Forets hélicoïdaux longs

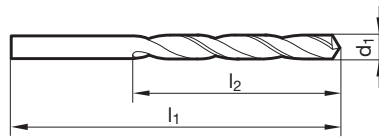


- P** Amin. de l'âme  $\geq \varnothing 15,000$  • affûtage à dépouille conique • pour les perçages profonds
- M**
- K**
- N** • matières dures et friables • laitons, alliages de magnésium • bronze, bronze phosphoreux • ardoise, mica, pertinax
- S**
- H**

Matière de coupe	<b>HSS</b>
Surface	○
Sens de coupe	Ⓛ

**GÜHRING**NAVIGATOR

Paramètres de coupe, page 786



N° d'article **221**

Outils de forage

d1		l1	l2	d1		l1	l2
mm	inch	mm	mm	mm	inch	mm	mm
0,450		30,000	10,000	3,510		112,000	73,000
0,600		35,000	15,000	3,700		112,000	73,000
0,650		38,000	18,000	4,100		119,000	78,000
0,900		51,000	29,000	4,200		119,000	78,000
1,100		60,000	37,000	4,400		126,000	82,000
1,240		65,000	41,000	4,500		126,000	82,000
1,300		65,000	41,000	4,900		132,000	87,000
1,320		65,000	41,000	5,000		132,000	87,000
1,370		70,000	45,000	5,050		132,000	87,000
1,400		70,000	45,000	5,100		132,000	87,000
1,500		70,000	45,000	5,400		139,000	91,000
1,550		76,000	50,000	5,600		139,000	91,000
1,800		80,000	53,000	5,900		139,000	91,000
1,850		80,000	53,000	6,000		139,000	91,000
2,000		85,000	56,000	6,800		156,000	102,000
2,160		90,000	59,000	8,000		165,000	109,000
2,180		90,000	59,000	9,000		175,000	115,000
2,200		90,000	59,000	12,800		205,000	134,000
2,270		90,000	59,000	15,000		220,000	144,000
2,350		90,000	59,000				
2,850		100,000	66,000				
2,900		100,000	66,000				
2,950		100,000	66,000				
3,000		100,000	66,000				
3,170	1/8	106,000	69,000				
3,200		106,000	69,000				
3,250		106,000	69,000				
3,400		112,000	73,000				
3,450		112,000	73,000				
3,500		112,000	73,000				





Forets hélicoïdaux longs



Matière de coupe **HSS**

Surface ○

Sens de coupe (R)

**P** Amin. de l'âme ≥ Ø 14,500 • affûtage à dépouille conique • pour les perçages profonds

**M**

**K**

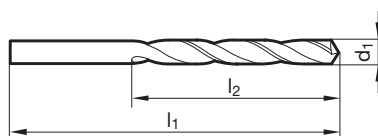
**N** • matières tendres et à copeaux longs • aluminium/alliages d'aluminium à copeaux longs • zinc, cuivre de 1ère fusion, Alpax, électrode

**S** • thermoplastiques, bois

**H**

**GUHRING** NAVIGATOR

Paramètres de coupe, page 786



N° d'article **219**

d1		l1	l2
mm	inch	mm	mm
0,500		32,000	12,000
0,600		35,000	15,000
0,650		38,000	18,000
0,700		42,000	21,000
0,740		42,000	21,000
0,750		42,000	21,000
0,800		46,000	25,000
0,850		46,000	25,000
0,900		51,000	29,000
0,950		51,000	29,000
0,970		56,000	33,000
0,980		56,000	33,000
1,000		56,000	33,000
1,100		60,000	37,000
1,180		60,000	37,000
1,190	3/64	65,000	41,000
1,200		65,000	41,000
1,220		65,000	41,000
1,250		65,000	41,000
1,300		65,000	41,000
1,350		70,000	45,000
1,370		70,000	45,000
1,400		70,000	45,000
1,440		70,000	45,000
1,500		70,000	45,000
1,520		76,000	50,000
1,600		76,000	50,000
1,610		76,000	50,000
1,650		76,000	50,000
1,700		76,000	50,000
1,750		80,000	53,000
1,760		80,000	53,000
1,770		80,000	53,000
1,780		80,000	53,000
1,800		80,000	53,000
1,850		80,000	53,000
1,900		80,000	53,000
1,950		85,000	56,000
1,970		85,000	56,000
2,000		85,000	56,000
2,050		85,000	56,000
2,070		85,000	56,000

d1		l1	l2
mm	inch	mm	mm
2,100		85,000	56,000
2,150		90,000	59,000
2,200		90,000	59,000
2,250		90,000	59,000
2,300		90,000	59,000
2,350		90,000	59,000
2,380	3/32	95,000	62,000
2,400		95,000	62,000
2,430		95,000	62,000
2,450		95,000	62,000
2,490		95,000	62,000
2,500		95,000	62,000
2,550		95,000	62,000
2,600		95,000	62,000
2,650		95,000	62,000
2,700		100,000	66,000
2,710		100,000	66,000
2,750		100,000	66,000
2,800		100,000	66,000
2,850		100,000	66,000
2,880		100,000	66,000
2,900		100,000	66,000
2,950		100,000	66,000
3,000		100,000	66,000
3,100		106,000	69,000
3,170	1/8	106,000	69,000
3,180		106,000	69,000
3,200		106,000	69,000
3,250		106,000	69,000
3,260		106,000	69,000
3,300		106,000	69,000
3,350		106,000	69,000
3,400		112,000	73,000
3,500		112,000	73,000
3,550		112,000	73,000
3,600		112,000	73,000
3,650		112,000	73,000
3,700		112,000	73,000
3,750		112,000	73,000
3,800		119,000	78,000
3,830		119,000	78,000
3,900		119,000	78,000

Outils de forage

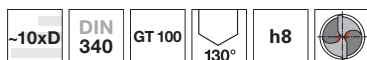
Outils de forage

d1		l1	l2
mm	inch	mm	mm
3,920		119,000	78,000
3,990		119,000	78,000
4,000		119,000	78,000
4,100		119,000	78,000
4,150		119,000	78,000
4,200		119,000	78,000
4,250		119,000	78,000
4,300		126,000	82,000
4,400		126,000	82,000
4,500		126,000	82,000
4,700		126,000	82,000
4,800		132,000	87,000
4,830		132,000	87,000
4,870		132,000	87,000
4,900		132,000	87,000
4,950		132,000	87,000
5,000		132,000	87,000
5,100		132,000	87,000
5,200		132,000	87,000
5,300		132,000	87,000
5,400		139,000	91,000
5,430		139,000	91,000
5,500		139,000	91,000
5,650		139,000	91,000
5,700		139,000	91,000
5,800		139,000	91,000
5,900		139,000	91,000
5,980		139,000	91,000
6,000		139,000	91,000
6,100		148,000	97,000
6,250		148,000	97,000
6,300		148,000	97,000
6,400		148,000	97,000
6,500		148,000	97,000
6,600		148,000	97,000
6,700		148,000	97,000
6,800		156,000	102,000
6,900		156,000	102,000
7,000		156,000	102,000
7,100		156,000	102,000
7,300		156,000	102,000
7,400		156,000	102,000
7,450		156,000	102,000
7,500		156,000	102,000
7,540	19/64	165,000	109,000
7,550		165,000	109,000
7,670		165,000	109,000
7,700		165,000	109,000

d1		l1	l2
mm	inch	mm	mm
7,850		165,000	109,000
7,900		165,000	109,000
7,950		165,000	109,000
8,000		165,000	109,000
8,200		165,000	109,000
8,300		165,000	109,000
8,500		165,000	109,000
8,550		175,000	115,000
8,600		175,000	115,000
8,700		175,000	115,000
8,750		175,000	115,000
8,800		175,000	115,000
8,900		175,000	115,000
9,000		175,000	115,000
9,100		175,000	115,000
9,500		175,000	115,000
9,700		184,000	121,000
9,800		184,000	121,000
9,900		184,000	121,000
10,000		184,000	121,000
10,300		184,000	121,000
10,700		195,000	128,000
10,750		195,000	128,000
11,000		195,000	128,000
11,300		195,000	128,000
11,400		195,000	128,000
12,000		205,000	134,000
13,100	33/64	205,000	134,000
13,500		214,000	140,000
13,750		214,000	140,000
14,000		214,000	140,000
14,500		220,000	144,000
15,000		220,000	144,000
15,500		227,000	149,000
17,000		235,000	154,000
18,000		241,000	158,000
18,250		247,000	162,000
19,000		247,000	162,000
19,840	25/32	254,000	166,000
20,000		254,000	166,000
20,640	13/16	261,000	171,000



Forets hélicoïdaux longs



Matière de coupe **HSS**

Surface

Sens de coupe

**P** • Amin. de l'âme  $\geq \varnothing 1,000$  • affûtage à dépouille conique • goujures larges • en cas de mauvaise évacuation des copeaux

**M**

**K** •

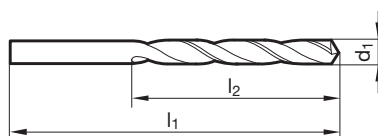
**N** • fontes grises et aciers jusqu'à 1000 N/mm<sup>2</sup> • Ne pas utiliser pour les aciers CrNi et les aciers inox

**S**

**H**

**GUHRING NAVIGATOR**

Paramètres de coupe, page 786



N° d'article **535**

d1		l1	l2
mm	inch	mm	mm
1,000		56,000	33,000
1,020		56,000	33,000
1,040		56,000	33,000
1,050		56,000	33,000
1,070		60,000	37,000
1,090		60,000	37,000
1,100		60,000	37,000
1,150		60,000	37,000
1,180		60,000	37,000
1,190	3/64	65,000	41,000
1,200		65,000	41,000
1,250		65,000	41,000
1,300		65,000	41,000
1,320		65,000	41,000
1,350		70,000	45,000
1,400		70,000	45,000
1,450		70,000	45,000
1,500		70,000	45,000
1,510		76,000	50,000
1,520		76,000	50,000
1,550		76,000	50,000
1,590	1/16	76,000	50,000
1,600		76,000	50,000
1,650		76,000	50,000
1,670		76,000	50,000
1,700		76,000	50,000
1,750		80,000	53,000
1,780		80,000	53,000
1,800		80,000	53,000
1,850		80,000	53,000
1,900		80,000	53,000
1,930		85,000	56,000
1,950		85,000	56,000
1,980	5/64	85,000	56,000
1,990		85,000	56,000
2,000		85,000	56,000
2,050		85,000	56,000
2,060		85,000	56,000
2,080		85,000	56,000
2,100		85,000	56,000
2,150		90,000	59,000
2,180		90,000	59,000

d1		l1	l2
mm	inch	mm	mm
2,200		90,000	59,000
2,250		90,000	59,000
2,260		90,000	59,000
2,300		90,000	59,000
2,350		90,000	59,000
2,370		95,000	62,000
2,380	3/32	95,000	62,000
2,400		95,000	62,000
2,440		95,000	62,000
2,450		95,000	62,000
2,480		95,000	62,000
2,490		95,000	62,000
2,500		95,000	62,000
2,530		95,000	62,000
2,550		95,000	62,000
2,580		95,000	62,000
2,600		95,000	62,000
2,640		95,000	62,000
2,650		95,000	62,000
2,700		100,000	66,000
2,710		100,000	66,000
2,750		100,000	66,000
2,780	7/64	100,000	66,000
2,790		100,000	66,000
2,800		100,000	66,000
2,820		100,000	66,000
2,830		100,000	66,000
2,850		100,000	66,000
2,870		100,000	66,000
2,900		100,000	66,000
2,940		100,000	66,000
2,950		100,000	66,000
3,000		100,000	66,000
3,050		106,000	69,000
3,100		106,000	69,000
3,150		106,000	69,000
3,170	1/8	106,000	69,000
3,200		106,000	69,000
3,250		106,000	69,000
3,260		106,000	69,000
3,270		106,000	69,000
3,300		106,000	69,000

Outils de forage

d1		l1	l2
mm	inch	mm	mm
3,400		112,000	73,000
3,450		112,000	73,000
3,500		112,000	73,000
3,550		112,000	73,000
3,570	9/64	112,000	73,000
3,600		112,000	73,000
3,660		112,000	73,000
3,700		112,000	73,000
3,730		112,000	73,000
3,750		112,000	73,000
3,800		119,000	78,000
3,860		119,000	78,000
3,900		119,000	78,000
3,910		119,000	78,000
3,970	5/32	119,000	78,000
3,990		119,000	78,000
4,000		119,000	78,000
4,040		119,000	78,000
4,050		119,000	78,000
4,090		119,000	78,000
4,100		119,000	78,000
4,130		119,000	78,000
4,150		119,000	78,000
4,200		119,000	78,000
4,220		119,000	78,000
4,250		119,000	78,000
4,300		126,000	82,000
4,350		126,000	82,000
4,370	11/64	126,000	82,000
4,390		126,000	82,000
4,400		126,000	82,000
4,500		126,000	82,000
4,570		126,000	82,000
4,600		126,000	82,000
4,620		126,000	82,000
4,700		126,000	82,000
4,750		126,000	82,000
4,760	3/16	132,000	87,000
4,800		132,000	87,000
4,850		132,000	87,000
4,900		132,000	87,000
4,920		132,000	87,000
4,980		132,000	87,000
5,000		132,000	87,000
5,050		132,000	87,000
5,060		132,000	87,000
5,100		132,000	87,000
5,110		132,000	87,000
5,160	13/64	132,000	87,000
5,180		132,000	87,000
5,200		132,000	87,000
5,220		132,000	87,000
5,250		132,000	87,000
5,300		132,000	87,000
5,310		139,000	91,000
5,400		139,000	91,000
5,410		139,000	91,000
5,500		139,000	91,000
5,560	7/32	139,000	91,000
5,600		139,000	91,000
5,610		139,000	91,000
5,700		139,000	91,000
5,750		139,000	91,000
5,790		139,000	91,000
5,800		139,000	91,000
5,900		139,000	91,000
5,940		139,000	91,000
5,950	15/64	139,000	91,000
6,000		139,000	91,000
6,040		148,000	97,000
6,050		148,000	97,000
6,100		148,000	97,000

d1		l1	l2
mm	inch	mm	mm
6,150		148,000	97,000
6,200		148,000	97,000
6,250		148,000	97,000
6,300		148,000	97,000
6,350	1/4	148,000	97,000
6,400		148,000	97,000
6,500		148,000	97,000
6,530		148,000	97,000
6,600		148,000	97,000
6,630		148,000	97,000
6,700		148,000	97,000
6,750	17/64	156,000	102,000
6,800		156,000	102,000
6,900		156,000	102,000
6,910		156,000	102,000
7,000		156,000	102,000
7,030		156,000	102,000
7,040		156,000	102,000
7,100		156,000	102,000
7,140	9/32	156,000	102,000
7,200		156,000	102,000
7,300		156,000	102,000
7,370		156,000	102,000
7,400		156,000	102,000
7,490		156,000	102,000
7,500		156,000	102,000
7,540	19/64	165,000	109,000
7,600		165,000	109,000
7,670		165,000	109,000
7,700		165,000	109,000
7,750		165,000	109,000
7,800		165,000	109,000
7,850		165,000	109,000
7,900		165,000	109,000
7,940	5/16	165,000	109,000
8,000		165,000	109,000
8,030		165,000	109,000
8,100		165,000	109,000
8,200		165,000	109,000
8,250		165,000	109,000
8,300		165,000	109,000
8,330	21/64	165,000	109,000
8,400		165,000	109,000
8,430		165,000	109,000
8,500		165,000	109,000
8,600		175,000	115,000
8,610		175,000	115,000
8,700		175,000	115,000
8,730	11/32	175,000	115,000
8,800		175,000	115,000
8,840		175,000	115,000
8,900		175,000	115,000
9,000		175,000	115,000
9,090		175,000	115,000
9,100		175,000	115,000
9,130	23/64	175,000	115,000
9,200		175,000	115,000
9,300		175,000	115,000
9,340		175,000	115,000
9,350		175,000	115,000
9,400		175,000	115,000
9,500		175,000	115,000
9,520	3/8	184,000	121,000
9,600		184,000	121,000
9,700		184,000	121,000
9,800		184,000	121,000
9,900		184,000	121,000
9,920	25/64	184,000	121,000
10,000		184,000	121,000
10,080		184,000	121,000
10,100		184,000	121,000
10,200		184,000	121,000

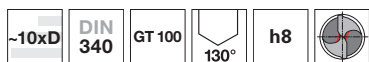


d1		l1	l2
mm	inch	mm	mm
10,300		184,000	121,000
10,320	13/32	184,000	121,000
10,400		184,000	121,000
10,490		184,000	121,000
10,500		184,000	121,000
10,600		184,000	121,000
10,720	27/64	195,000	128,000
10,800		195,000	128,000
10,900		195,000	128,000
11,000		195,000	128,000
11,100		195,000	128,000
11,110	7/16	195,000	128,000
11,300		195,000	128,000
11,400		195,000	128,000
11,500		195,000	128,000
11,800		195,000	128,000
11,900		205,000	134,000
11,910	15/32	205,000	134,000

d1		l1	l2
mm	inch	mm	mm
12,000		205,000	134,000
12,150		205,000	134,000
12,300	31/64	205,000	134,000
12,500		205,000	134,000
12,600		205,000	134,000
12,700	1/2	205,000	134,000
13,000		205,000	134,000
13,100	33/64	205,000	134,000
13,490	17/32	214,000	140,000
13,500		214,000	140,000
13,700		214,000	140,000
13,890	35/64	214,000	140,000
13,900		214,000	140,000
14,000		214,000	140,000



Forets hélicoïdaux longs



Matière de coupe **HSS**

Surface **S**

Sens de coupe **R**

**P** • Amin. de l'âme  $\geq \varnothing 1,000$  • affûtage à dépouille conique • goujures larges • en cas de mauvaise évacuation des copeaux

**M**

**K** •

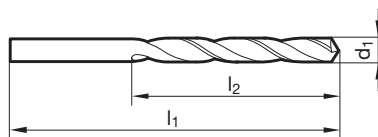
**N** • fontes grises et aciers jusqu'à 1000 N/mm<sup>2</sup> • Ne pas utiliser pour les aciers CrNi et les aciers inox

**S**

**H**

**GÜHRING** NAVIGATOR

Paramètres de coupe, page 786



N° d'article **668**

Outils de forage

d1		l1	l2	d1		l1	l2
mm	inch	mm	mm	mm	inch	mm	mm
1,000		56,000	33,000	2,800		100,000	66,000
1,090		60,000	37,000	2,820		100,000	66,000
1,100		60,000	37,000	2,850		100,000	66,000
1,180		60,000	37,000	2,870		100,000	66,000
1,190	3/64	65,000	41,000	2,900		100,000	66,000
1,200		65,000	41,000	2,950		100,000	66,000
1,300		65,000	41,000	3,000		100,000	66,000
1,320		65,000	41,000	3,050		106,000	69,000
1,400		70,000	45,000	3,100		106,000	69,000
1,500		70,000	45,000	3,170	1/8	106,000	69,000
1,510		76,000	50,000	3,200		106,000	69,000
1,590	1/16	76,000	50,000	3,250		106,000	69,000
1,600		76,000	50,000	3,260		106,000	69,000
1,650		76,000	50,000	3,300		106,000	69,000
1,700		76,000	50,000	3,400		112,000	73,000
1,800		80,000	53,000	3,450		112,000	73,000
1,850		80,000	53,000	3,500		112,000	73,000
1,900		80,000	53,000	3,570	9/64	112,000	73,000
1,930		85,000	56,000	3,600		112,000	73,000
1,950		85,000	56,000	3,700		112,000	73,000
1,980	5/64	85,000	56,000	3,730		112,000	73,000
1,990		85,000	56,000	3,750		112,000	73,000
2,000		85,000	56,000	3,800		119,000	78,000
2,060		85,000	56,000	3,860		119,000	78,000
2,080		85,000	56,000	3,870		119,000	78,000
2,100		85,000	56,000	3,900		119,000	78,000
2,180		90,000	59,000	3,910		119,000	78,000
2,200		90,000	59,000	3,970	5/32	119,000	78,000
2,260		90,000	59,000	4,000		119,000	78,000
2,300		90,000	59,000	4,040		119,000	78,000
2,380	3/32	95,000	62,000	4,090		119,000	78,000
2,400		95,000	62,000	4,100		119,000	78,000
2,490		95,000	62,000	4,200		119,000	78,000
2,500		95,000	62,000	4,220		119,000	78,000
2,530		95,000	62,000	4,300		126,000	82,000
2,550		95,000	62,000	4,370	11/64	126,000	82,000
2,580		95,000	62,000	4,400		126,000	82,000
2,600		95,000	62,000	4,500		126,000	82,000
2,640		95,000	62,000	4,600		126,000	82,000
2,700		100,000	66,000	4,700		126,000	82,000
2,710		100,000	66,000	4,760	3/16	132,000	87,000
2,780	7/64	100,000	66,000	4,800		132,000	87,000



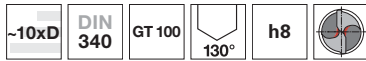
d1		l1	l2
mm	inch	mm	mm
4,850		132,000	87,000
4,900		132,000	87,000
4,910		132,000	87,000
4,920		132,000	87,000
5,000		132,000	87,000
5,060		132,000	87,000
5,100		132,000	87,000
5,160	13/64	132,000	87,000
5,200		132,000	87,000
5,300		132,000	87,000
5,400		139,000	91,000
5,500		139,000	91,000
5,560	7/32	139,000	91,000
5,600		139,000	91,000
5,700		139,000	91,000
5,800		139,000	91,000
5,900		139,000	91,000
5,950	15/64	139,000	91,000
6,000		139,000	91,000
6,040		148,000	97,000
6,100		148,000	97,000
6,150		148,000	97,000
6,200		148,000	97,000
6,250		148,000	97,000
6,300		148,000	97,000
6,350	1/4	148,000	97,000
6,400		148,000	97,000
6,500		148,000	97,000
6,530		148,000	97,000
6,600		148,000	97,000
6,630		148,000	97,000
6,700		148,000	97,000
6,750	17/64	156,000	102,000
6,760		156,000	102,000
6,800		156,000	102,000
6,900		156,000	102,000
7,000		156,000	102,000
7,100		156,000	102,000
7,140	9/32	156,000	102,000
7,250		156,000	102,000
7,300		156,000	102,000
7,370		156,000	102,000
7,490		156,000	102,000
7,500		156,000	102,000
7,600		165,000	109,000
7,700		165,000	109,000
7,800		165,000	109,000
7,900		165,000	109,000

d1		l1	l2
mm	inch	mm	mm
7,940	5/16	165,000	109,000
8,000		165,000	109,000
8,200		165,000	109,000
8,300		165,000	109,000
8,400		165,000	109,000
8,430		165,000	109,000
8,500		165,000	109,000
8,600		175,000	115,000
8,610		175,000	115,000
8,700		175,000	115,000
8,730	11/32	175,000	115,000
8,800		175,000	115,000
8,900		175,000	115,000
9,000		175,000	115,000
9,130	23/64	175,000	115,000
9,200		175,000	115,000
9,340		175,000	115,000
9,400		175,000	115,000
9,500		175,000	115,000
9,520	3/8	184,000	121,000
9,700		184,000	121,000
9,900		184,000	121,000
9,920	25/64	184,000	121,000
10,000		184,000	121,000
10,100		184,000	121,000
10,200		184,000	121,000
10,320	13/32	184,000	121,000
10,500		184,000	121,000
11,000		195,000	128,000
11,110	7/16	195,000	128,000
11,500		195,000	128,000
11,510	29/64	195,000	128,000
11,910	15/32	205,000	134,000
12,000		205,000	134,000
12,300	31/64	205,000	134,000
12,700	1/2	205,000	134,000
13,000		205,000	134,000
14,000		214,000	140,000

Outils de forage



Forets hélicoïdaux longs

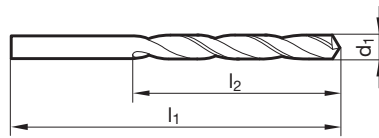


- P** • Amin. de l'âme  $\geq \varnothing 1,000$  • affûtage à dépouille conique • goujures larges • en cas de mauvaise évacuation des copeaux
- M**
- K** •
- N** • fontes grises et aciers jusqu'à 1000 N/mm<sup>2</sup> • Ne pas utiliser pour les aciers CrNi et les aciers inox
- S**
- H**

**GÜHRING** NAVIGATOR

Paramètres de coupe, page 786

Matière de coupe	<b>HSS</b>
Surface	<b>F</b>
Sens de coupe	<b>R</b>



N° d'article **2462**

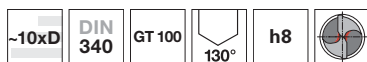
Outils de forage

d1		l1	l2	d1		l1	l2
mm	inch	mm	mm	mm	inch	mm	mm
1,000		56,000	33,000	3,800		119,000	78,000
1,100		60,000	37,000	4,000		119,000	78,000
1,200		65,000	41,000	4,200		119,000	78,000
1,300		65,000	41,000	4,300		126,000	82,000
1,500		70,000	45,000	4,500		126,000	82,000
1,600		76,000	50,000	4,800		132,000	87,000
1,700		76,000	50,000	5,000		132,000	87,000
1,800		80,000	53,000	5,200		132,000	87,000
1,900		80,000	53,000	5,400		139,000	91,000
2,000		85,000	56,000	5,500		139,000	91,000
2,100		85,000	56,000	6,000		139,000	91,000
2,200		90,000	59,000	6,100		148,000	97,000
2,300		90,000	59,000	6,200		148,000	97,000
2,400		95,000	62,000	6,500		148,000	97,000
2,500		95,000	62,000	6,600		148,000	97,000
2,600		95,000	62,000	6,800		156,000	102,000
2,800		100,000	66,000	7,000		156,000	102,000
2,900		100,000	66,000	7,200		156,000	102,000
3,000		100,000	66,000	7,300		156,000	102,000
3,100		106,000	69,000	7,600		165,000	109,000
3,200		106,000	69,000	8,000		165,000	109,000
3,300		106,000	69,000	9,000		175,000	115,000
3,400		112,000	73,000	10,000		184,000	121,000
3,500		112,000	73,000				





Forets hélicoïdaux longs



Matière de coupe **HSS**

Surface

Sens de coupe

**P** • Amin. de l'âme  $\geq \varnothing 1,400$  • affûtage à dépouille conique • goujures larges • en cas de mauvaise évacuation des copeaux

**M**

**K** •

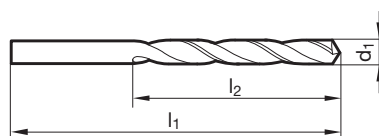
**N** • fontes grises et aciers jusqu'à 1000 N/mm<sup>2</sup> • Ne pas utiliser pour les aciers CrNi et les aciers inox

**S**

**H**

**GÜHRING** NAVIGATOR

Paramètres de coupe, page 786



N° d'article **506**

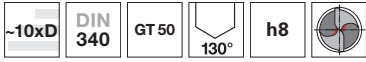
d1		l1	l2
mm	inch	mm	mm
1,400		70,000	45,000
1,500		70,000	45,000
1,600		76,000	50,000
1,680		76,000	50,000
1,800		80,000	53,000
1,850		80,000	53,000
2,000		85,000	56,000
2,200		90,000	59,000
2,300		90,000	59,000
2,350		90,000	59,000
2,500		95,000	62,000
2,800		100,000	66,000
3,000		100,000	66,000
3,050		106,000	69,000
3,200		106,000	69,000
3,300		106,000	69,000
3,400		112,000	73,000
3,500		112,000	73,000
3,550		112,000	73,000
3,800		119,000	78,000
3,950		119,000	78,000
4,000		119,000	78,000
4,400		126,000	82,000
4,500		126,000	82,000

d1		l1	l2
mm	inch	mm	mm
4,600		126,000	82,000
4,760	3/16	132,000	87,000
4,800		132,000	87,000
4,950		132,000	87,000
5,160	13/64	132,000	87,000
5,200		132,000	87,000
5,400		139,000	91,000
5,600		139,000	91,000
5,700		139,000	91,000
5,800		139,000	91,000
5,900		139,000	91,000
6,000		139,000	91,000
7,400		156,000	102,000
7,800		165,000	109,000
8,500		165,000	109,000
9,000		175,000	115,000
9,900		184,000	121,000
10,320	13/32	184,000	121,000
11,000		195,000	128,000
11,500		195,000	128,000
11,600		195,000	128,000
12,000		205,000	134,000
12,500		205,000	134,000
13,000		205,000	134,000

Outils de forage



Forets hélicoïdaux longs



Matière de coupe **HSS**

Surface ○

Sens de coupe (R)

**P** ○ Amin. de l'âme ≥ Ø 2,370 • affûtage à dépouille conique • goujures particulièrement volumineuses

**M**

**K**

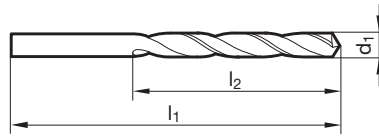
**N** • matières tendres et à copeaux longs < 500 N/mm<sup>2</sup> • aciers de décolletage, doux • aluminium/alliages d'aluminium à copeaux longs

**S** • zinc, cuivre de 1ère fusion, Alpax, électrode • zamak, thermoplastiques, bois

**H**

**GÜHRING** NAVIGATOR

Paramètres de coupe, page 786



N° d'article **501**

Outils de forage

d1		l1	l2	d1		l1	l2
mm	inch	mm	mm	mm	inch	mm	mm
1,000		56,000	33,000	2,350		90,000	59,000
1,020		56,000	33,000	2,370		95,000	62,000
1,030		56,000	33,000	2,380	3/32	95,000	62,000
1,040		56,000	33,000	2,400		95,000	62,000
1,070		60,000	37,000	2,440		95,000	62,000
1,090		60,000	37,000	2,450		95,000	62,000
1,100		60,000	37,000	2,490		95,000	62,000
1,180		60,000	37,000	2,500		95,000	62,000
1,190	3/64	65,000	41,000	2,520		95,000	62,000
1,200		65,000	41,000	2,530		95,000	62,000
1,250		65,000	41,000	2,550		95,000	62,000
1,300		65,000	41,000	2,580		95,000	62,000
1,320		65,000	41,000	2,600		95,000	62,000
1,400		70,000	45,000	2,640		95,000	62,000
1,450		70,000	45,000	2,650		95,000	62,000
1,480		70,000	45,000	2,700		100,000	66,000
1,500		70,000	45,000	2,710		100,000	66,000
1,510		76,000	50,000	2,750		100,000	66,000
1,550		76,000	50,000	2,780	7/64	100,000	66,000
1,590	1/16	76,000	50,000	2,790		100,000	66,000
1,600		76,000	50,000	2,800		100,000	66,000
1,610		76,000	50,000	2,820		100,000	66,000
1,700		76,000	50,000	2,850		100,000	66,000
1,750		80,000	53,000	2,870		100,000	66,000
1,780		80,000	53,000	2,900		100,000	66,000
1,800		80,000	53,000	2,950		100,000	66,000
1,850		80,000	53,000	3,000		100,000	66,000
1,900		80,000	53,000	3,050		106,000	69,000
1,930		85,000	56,000	3,100		106,000	69,000
1,950		85,000	56,000	3,170	1/8	106,000	69,000
1,980	5/64	85,000	56,000	3,200		106,000	69,000
1,990		85,000	56,000	3,250		106,000	69,000
2,000		85,000	56,000	3,260		106,000	69,000
2,050		85,000	56,000	3,300		106,000	69,000
2,060		85,000	56,000	3,350		106,000	69,000
2,080		85,000	56,000	3,400		112,000	73,000
2,100		85,000	56,000	3,450		112,000	73,000
2,180		90,000	59,000	3,500		112,000	73,000
2,200		90,000	59,000	3,570	9/64	112,000	73,000
2,250		90,000	59,000	3,600		112,000	73,000
2,260		90,000	59,000	3,650		112,000	73,000
2,300		90,000	59,000	3,660		112,000	73,000



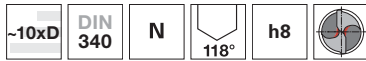
d1		l1	l2
mm	inch	mm	mm
3,700		112,000	73,000
3,800		119,000	78,000
3,860		119,000	78,000
3,900		119,000	78,000
3,910		119,000	78,000
3,970	5/32	119,000	78,000
3,990		119,000	78,000
4,000		119,000	78,000
4,040		119,000	78,000
4,050		119,000	78,000
4,090		119,000	78,000
4,100		119,000	78,000
4,200		119,000	78,000
4,220		119,000	78,000
4,250		119,000	78,000
4,300		126,000	82,000
4,350		126,000	82,000
4,370	11/64	126,000	82,000
4,400		126,000	82,000
4,500		126,000	82,000
4,570		126,000	82,000
4,600		126,000	82,000
4,620		126,000	82,000
4,700		126,000	82,000
4,750		126,000	82,000
4,760	3/16	132,000	87,000
4,800		132,000	87,000
4,850		132,000	87,000
4,900		132,000	87,000
4,920		132,000	87,000
4,980		132,000	87,000
5,000		132,000	87,000
5,060		132,000	87,000
5,100		132,000	87,000
5,110		132,000	87,000
5,160	13/64	132,000	87,000
5,180		132,000	87,000
5,200		132,000	87,000
5,300		132,000	87,000
5,310		139,000	91,000
5,400		139,000	91,000
5,410		139,000	91,000
5,500		139,000	91,000
5,560	7/32	139,000	91,000
5,600		139,000	91,000
5,610		139,000	91,000
5,650		139,000	91,000
5,700		139,000	91,000
5,790		139,000	91,000
5,800		139,000	91,000
5,900		139,000	91,000
5,940		139,000	91,000
5,950	15/64	139,000	91,000
6,000		139,000	91,000
6,030		148,000	97,000
6,040		148,000	97,000
6,150		148,000	97,000
6,200		148,000	97,000
6,250		148,000	97,000
6,300		148,000	97,000
6,350	1/4	148,000	97,000
6,400		148,000	97,000
6,500		148,000	97,000
6,530		148,000	97,000
6,600		148,000	97,000
6,630		148,000	97,000
6,700		148,000	97,000
6,750	17/64	156,000	102,000
6,800		156,000	102,000
6,900		156,000	102,000
7,000		156,000	102,000
7,040		156,000	102,000

d1		l1	l2
mm	inch	mm	mm
7,100		156,000	102,000
7,140	9/32	156,000	102,000
7,300		156,000	102,000
7,370		156,000	102,000
7,490		156,000	102,000
7,500		156,000	102,000
7,540	19/64	165,000	109,000
7,600		165,000	109,000
7,670		165,000	109,000
7,900		165,000	109,000
7,940	5/16	165,000	109,000
8,000		165,000	109,000
8,025		165,000	109,000
8,030		165,000	109,000
8,100		165,000	109,000
8,200		165,000	109,000
8,330	21/64	165,000	109,000
8,430		165,000	109,000
8,500		165,000	109,000
8,600		175,000	115,000
8,610		175,000	115,000
8,700		175,000	115,000
8,730	11/32	175,000	115,000
8,750		175,000	115,000
8,900		175,000	115,000
9,000		175,000	115,000
9,090		175,000	115,000
9,100		175,000	115,000
9,130	23/64	175,000	115,000
9,300		175,000	115,000
9,340		175,000	115,000
9,350		175,000	115,000
9,400		175,000	115,000
9,500		175,000	115,000
9,520	3/8	184,000	121,000
9,580		184,000	121,000
9,600		184,000	121,000
9,800		184,000	121,000
9,900		184,000	121,000
9,920	25/64	184,000	121,000
10,000		184,000	121,000
10,080		184,000	121,000
10,200		184,000	121,000
10,260		184,000	121,000
10,320	13/32	184,000	121,000
10,500		184,000	121,000
10,600		184,000	121,000
10,700		195,000	128,000
10,720	27/64	195,000	128,000
10,800		195,000	128,000
11,000		195,000	128,000
11,110	7/16	195,000	128,000
11,200		195,000	128,000
11,400		195,000	128,000
11,500		195,000	128,000
11,510	29/64	195,000	128,000
11,750		195,000	128,000
11,800		195,000	128,000
11,900		205,000	134,000
11,910	15/32	205,000	134,000
12,000		205,000	134,000
12,200		205,000	134,000
12,300	31/64	205,000	134,000
12,500		205,000	134,000
12,700	1/2	205,000	134,000
13,000		205,000	134,000
13,100	33/64	205,000	134,000
13,490	17/32	214,000	140,000
14,000		214,000	140,000
32,600		325,000	213,000

Outils de forage



Forets hélicoïdaux longs

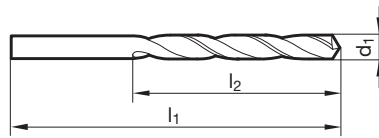


Matière de coupe	<b>HSCO</b>
Surface	$\text{Ra} > 0,2,36$
Sens de coupe	

- P** • Amin. de l'âme  $\geq \text{Ø } 1,000$  • affûtage à dépouille conique • acier rapide au Co • meilleure résistance à l'usure
- M** ○
- K** •
- N** • aciers, alliés ou non alliés, et fontes  $> 800 \text{ N/mm}^2$  • aciers à outils, travail à froid et à chaud • aciers à roulement • aciers hautement alliés • aciers de cémentation et d'amélioration
- S** ○
- H** ○

**GÜHRING** NAVIGATOR

Paramètres de coupe, page 792



N° d'article **317**

Outils de forage

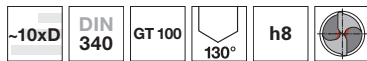
				N° d'article <b>317</b>			
d1		l1	l2	d1		l1	l2
mm	inch	mm	mm	mm	inch	mm	mm
0,500		32,000	12,000	2,500		95,000	62,000
0,600		35,000	15,000	2,600		95,000	62,000
0,700		42,000	21,000	2,700		100,000	66,000
0,750		42,000	21,000	2,780	7/64	100,000	66,000
0,800		46,000	25,000	2,800		100,000	66,000
0,850		46,000	25,000	2,900		100,000	66,000
0,900		51,000	29,000	3,000		100,000	66,000
0,950		51,000	29,000	3,050		106,000	69,000
0,960		56,000	33,000	3,100		106,000	69,000
1,000		56,000	33,000	3,170	1/8	106,000	69,000
1,020		56,000	33,000	3,200		106,000	69,000
1,050		56,000	33,000	3,250		106,000	69,000
1,100		60,000	37,000	3,300		106,000	69,000
1,150		60,000	37,000	3,400		112,000	73,000
1,190	3/64	65,000	41,000	3,500		112,000	73,000
1,200		65,000	41,000	3,550		112,000	73,000
1,250		65,000	41,000	3,570	9/64	112,000	73,000
1,300		65,000	41,000	3,600		112,000	73,000
1,350		70,000	45,000	3,700		112,000	73,000
1,400		70,000	45,000	3,800		119,000	78,000
1,450		70,000	45,000	3,900		119,000	78,000
1,500		70,000	45,000	3,970	5/32	119,000	78,000
1,510		76,000	50,000	4,000		119,000	78,000
1,550		76,000	50,000	4,040		119,000	78,000
1,590	1/16	76,000	50,000	4,100		119,000	78,000
1,600		76,000	50,000	4,200		119,000	78,000
1,650		76,000	50,000	4,300		126,000	82,000
1,700		76,000	50,000	4,370	11/64	126,000	82,000
1,780		80,000	53,000	4,400		126,000	82,000
1,800		80,000	53,000	4,500		126,000	82,000
1,850		80,000	53,000	4,600		126,000	82,000
1,900		80,000	53,000	4,700		126,000	82,000
1,950		85,000	56,000	4,760	3/16	132,000	87,000
1,980	5/64	85,000	56,000	4,800		132,000	87,000
2,000		85,000	56,000	4,850		132,000	87,000
2,050		85,000	56,000	4,900		132,000	87,000
2,060		85,000	56,000	5,000		132,000	87,000
2,100		85,000	56,000	5,050		132,000	87,000
2,200		90,000	59,000	5,100		132,000	87,000
2,300		90,000	59,000	5,160	13/64	132,000	87,000
2,380	3/32	95,000	62,000	5,200		132,000	87,000
2,400		95,000	62,000	5,300		132,000	87,000



d1		l1	l2	d1		l1	l2
mm	inch	mm	mm	mm	inch	mm	mm
5,400		139,000	91,000	9,520		184,000	121,000
5,500		139,000	91,000	9,700	3/8	184,000	121,000
5,560	7/32	139,000	91,000	9,920	25/64	184,000	121,000
5,600		139,000	91,000	10,000		184,000	121,000
5,700		139,000	91,000	10,100		184,000	121,000
5,800		139,000	91,000	10,200		184,000	121,000
5,900		139,000	91,000	10,320	13/32	184,000	121,000
5,950	15/64	139,000	91,000	10,500		184,000	121,000
6,000		139,000	91,000	10,720	27/64	195,000	128,000
6,100		148,000	97,000	10,750		195,000	128,000
6,200		148,000	97,000	10,800		195,000	128,000
6,300		148,000	97,000	10,800		195,000	128,000
6,350	1/4	148,000	97,000	11,000		195,000	128,000
6,400		148,000	97,000	11,110	7/16	195,000	128,000
6,500		148,000	97,000	11,200		195,000	128,000
6,600		148,000	97,000	11,500		195,000	128,000
6,630		148,000	97,000	11,510	29/64	195,000	128,000
6,750	17/64	156,000	102,000	11,910	15/32	205,000	134,000
6,800		156,000	102,000	12,000		205,000	134,000
6,900		156,000	102,000	12,300	31/64	205,000	134,000
7,000		156,000	102,000	12,500		205,000	134,000
7,140	9/32	156,000	102,000	12,700	1/2	205,000	134,000
7,200		156,000	102,000	13,000		205,000	134,000
7,500		156,000	102,000	13,100	33/64	205,000	134,000
7,540	19/64	165,000	109,000	13,500		214,000	140,000
7,600		165,000	109,000	13,700		214,000	140,000
7,700		165,000	109,000	13,890	35/64	214,000	140,000
7,800		165,000	109,000	13,900		214,000	140,000
7,940	5/16	165,000	109,000	14,000		214,000	140,000
8,000		165,000	109,000	14,290	9/16	220,000	144,000
8,200		165,000	109,000	14,400		220,000	144,000
8,330	21/64	165,000	109,000	14,600		220,000	144,000
8,430		165,000	109,000	14,680	37/64	220,000	144,000
8,500		165,000	109,000	14,700		220,000	144,000
8,600		175,000	115,000	14,750		220,000	144,000
8,730	11/32	175,000	115,000	14,900		220,000	144,000
8,800		175,000	115,000	15,000		220,000	144,000
9,000		175,000	115,000	15,080	19/32	227,000	149,000
9,130	23/64	175,000	115,000	15,480	39/64	227,000	149,000
9,200		175,000	115,000	15,800		227,000	149,000
9,300		175,000	115,000	15,870	5/8	227,000	149,000
9,500		175,000	115,000	16,000		227,000	149,000
				22,000		268,000	176,000



Forets hélicoïdaux longs



Matière de coupe **HSCO**

Surface

Sens de coupe

**P** • Amin. de l'âme  $\geq \varnothing 1,000$  • affûtage à dépouille conique • acier rapide au Co • goujures larges • meilleure résistance à l'usure • en cas de mauvaise évacuation des copeaux

**M** •

**K** •

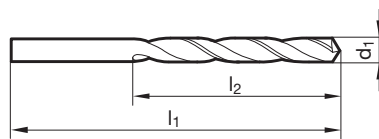
**N** • aciers, alliés ou non alliés, et fontes  $> 800 \text{ N/mm}^2$  • aciers à outils, travail à froid et à chaud • aciers à roulement • aciers hautement alliés • aciers de cémentation et d'amélioration

**S** •

**H** ○

**GÜHRING** NAVIGATOR

Paramètres de coupe, page 792



N° d'article **336**

Outils de forage

d1		l1	l2	d1		l1	l2
mm	inch	mm	mm	mm	inch	mm	mm
1,000		56,000	33,000	2,440		95,000	62,000
1,020		56,000	33,000	2,450		95,000	62,000
1,040		56,000	33,000	2,490		95,000	62,000
1,070		60,000	37,000	2,500		95,000	62,000
1,090		60,000	37,000	2,530		95,000	62,000
1,100		60,000	37,000	2,550		95,000	62,000
1,180		60,000	37,000	2,580		95,000	62,000
1,190	3/64	65,000	41,000	2,600		95,000	62,000
1,200		65,000	41,000	2,640		95,000	62,000
1,250		65,000	41,000	2,700		100,000	66,000
1,300		65,000	41,000	2,710		100,000	66,000
1,320		65,000	41,000	2,750		100,000	66,000
1,400		70,000	45,000	2,780	7/64	100,000	66,000
1,500		70,000	45,000	2,790		100,000	66,000
1,510		76,000	50,000	2,800		100,000	66,000
1,550		76,000	50,000	2,820		100,000	66,000
1,590	1/16	76,000	50,000	2,850		100,000	66,000
1,600		76,000	50,000	2,870		100,000	66,000
1,610		76,000	50,000	2,900		100,000	66,000
1,700		76,000	50,000	2,950		100,000	66,000
1,750		80,000	53,000	3,000		100,000	66,000
1,780		80,000	53,000	3,050		106,000	69,000
1,800		80,000	53,000	3,100		106,000	69,000
1,850		80,000	53,000	3,170	1/8	106,000	69,000
1,900		80,000	53,000	3,200		106,000	69,000
1,930		85,000	56,000	3,260		106,000	69,000
1,980	5/64	85,000	56,000	3,300		106,000	69,000
1,990		85,000	56,000	3,400		112,000	73,000
2,000		85,000	56,000	3,440		112,000	73,000
2,050		85,000	56,000	3,450		112,000	73,000
2,060		85,000	56,000	3,500		112,000	73,000
2,080		85,000	56,000	3,570	9/64	112,000	73,000
2,100		85,000	56,000	3,600		112,000	73,000
2,180		90,000	59,000	3,660		112,000	73,000
2,200		90,000	59,000	3,700		112,000	73,000
2,250		90,000	59,000	3,730		112,000	73,000
2,260		90,000	59,000	3,750		112,000	73,000
2,300		90,000	59,000	3,800		119,000	78,000
2,350		90,000	59,000	3,860		119,000	78,000
2,370		95,000	62,000	3,900		119,000	78,000
2,380	3/32	95,000	62,000	3,910		119,000	78,000
2,400		95,000	62,000	3,970	5/32	119,000	78,000

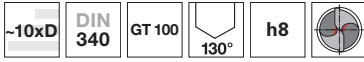


d1		l1	l2
mm	inch	mm	mm
3,990		119,000	78,000
4,000		119,000	78,000
4,040		119,000	78,000
4,090		119,000	78,000
4,100		119,000	78,000
4,200		119,000	78,000
4,220		119,000	78,000
4,300		126,000	82,000
4,370	11/64	126,000	82,000
4,390		126,000	82,000
4,400		126,000	82,000
4,500		126,000	82,000
4,570		126,000	82,000
4,600		126,000	82,000
4,620		126,000	82,000
4,700		126,000	82,000
4,760	3/16	132,000	87,000
4,800		132,000	87,000
4,850		132,000	87,000
4,900		132,000	87,000
4,920		132,000	87,000
4,980		132,000	87,000
5,000		132,000	87,000
5,060		132,000	87,000
5,100		132,000	87,000
5,110		132,000	87,000
5,160	13/64	132,000	87,000
5,180		132,000	87,000
5,200		132,000	87,000
5,220		132,000	87,000
5,300		132,000	87,000
5,310		139,000	91,000
5,400		139,000	91,000
5,410		139,000	91,000
5,500		139,000	91,000
5,560	7/32	139,000	91,000
5,600		139,000	91,000
5,610		139,000	91,000
5,700		139,000	91,000
5,790		139,000	91,000
5,800		139,000	91,000
5,900		139,000	91,000
5,940		139,000	91,000
5,950	15/64	139,000	91,000
6,000		139,000	91,000
6,040		148,000	97,000
6,100		148,000	97,000
6,150		148,000	97,000
6,200		148,000	97,000
6,250		148,000	97,000
6,300		148,000	97,000
6,350	1/4	148,000	97,000
6,400		148,000	97,000
6,500		148,000	97,000
6,530		148,000	97,000
6,600		148,000	97,000
6,630		148,000	97,000
6,700		148,000	97,000
6,750	17/64	156,000	102,000
6,800		156,000	102,000

d1		l1	l2
mm	inch	mm	mm
6,900		156,000	102,000
7,000		156,000	102,000
7,030		156,000	102,000
7,100		156,000	102,000
7,140	9/32	156,000	102,000
7,200		156,000	102,000
7,300		156,000	102,000
7,370		156,000	102,000
7,400		156,000	102,000
7,490		156,000	102,000
7,500		156,000	102,000
7,540	19/64	165,000	109,000
7,670		165,000	109,000
7,700		165,000	109,000
7,800		165,000	109,000
7,900		165,000	109,000
7,940	5/16	165,000	109,000
8,000		165,000	109,000
8,030		165,000	109,000
8,100		165,000	109,000
8,200		165,000	109,000
8,300		165,000	109,000
8,400		165,000	109,000
8,500		165,000	109,000
8,600		175,000	115,000
8,610		175,000	115,000
8,700		175,000	115,000
8,730	11/32	175,000	115,000
8,800		175,000	115,000
8,840		175,000	115,000
8,900		175,000	115,000
9,000		175,000	115,000
9,090		175,000	115,000
9,100		175,000	115,000
9,200		175,000	115,000
9,300		175,000	115,000
9,350		175,000	115,000
9,400		175,000	115,000
9,500		175,000	115,000
9,520	3/8	184,000	121,000
9,700		184,000	121,000
9,750		184,000	121,000
9,800		184,000	121,000
9,900		184,000	121,000
10,000		184,000	121,000
10,200		184,000	121,000
10,500		184,000	121,000
10,750		195,000	128,000
10,800		195,000	128,000
10,900		195,000	128,000
11,000		195,000	128,000
11,500		195,000	128,000
11,800		195,000	128,000
12,000		205,000	134,000
12,500		205,000	134,000
13,000		205,000	134,000
15,500		227,000	149,000
16,000		227,000	149,000

Outils de forage

Forets hélicoïdaux longs



Matière de coupe **HSCO**

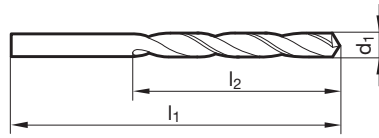
Surface **F**

Sens de coupe **R**

- P** • Amin. de l'âme  $\geq \varnothing 1,000$  • affûtage à dépouille conique • acier rapide au Co • goujures larges • résistance à l'usure particulièrement élevée • en cas de mauvaise évacuation des copeaux
- M** •
- K** •
- N** • aciers, alliés ou non alliés, et fontes  $> 800 \text{ N/mm}^2$  • aciers à outils, travail à froid et à chaud • aciers à roulement • aciers hautement alliés • aciers de cémentation et d'amélioration
- S** •
- H** ○

**GÜHRING** NAVIGATOR

Paramètres de coupe, page 792



N° d'article **396**

Outils de forage

d1		l1	l2	d1		l1	l2
mm	inch	mm	mm	mm	inch	mm	mm
1,000		56,000	33,000	5,800		139,000	91,000
1,100		60,000	37,000	5,900		139,000	91,000
1,200		65,000	41,000	6,000		139,000	91,000
1,300		65,000	41,000	6,200		148,000	97,000
1,500		70,000	45,000	6,500		148,000	97,000
1,600		76,000	50,000	6,700		148,000	97,000
1,800		80,000	53,000	6,800		156,000	102,000
1,900		80,000	53,000	7,000		156,000	102,000
2,000		85,000	56,000	7,200		156,000	102,000
2,100		85,000	56,000	7,400		156,000	102,000
2,200		90,000	59,000	7,500		156,000	102,000
2,300		90,000	59,000	7,600		165,000	109,000
2,400		95,000	62,000	7,700		165,000	109,000
2,500		95,000	62,000	7,800		165,000	109,000
2,700		100,000	66,000	7,900		165,000	109,000
2,800		100,000	66,000	8,000		165,000	109,000
2,900		100,000	66,000	8,200		165,000	109,000
3,000		100,000	66,000	8,300		165,000	109,000
3,100		106,000	69,000	8,500		165,000	109,000
3,200		106,000	69,000	8,600		175,000	115,000
3,300		106,000	69,000	8,800		175,000	115,000
3,400		112,000	73,000	8,900		175,000	115,000
3,500		112,000	73,000	9,000		175,000	115,000
3,600		112,000	73,000	9,100		175,000	115,000
3,800		119,000	78,000	9,200		175,000	115,000
3,900		119,000	78,000	9,300		175,000	115,000
4,000		119,000	78,000	9,500		175,000	115,000
4,100		119,000	78,000	9,600		184,000	121,000
4,200		119,000	78,000	9,700		184,000	121,000
4,500		126,000	82,000	10,000		184,000	121,000
4,800		132,000	87,000	10,200		184,000	121,000
5,000		132,000	87,000	10,500		184,000	121,000
5,100		132,000	87,000	11,000		195,000	128,000
5,200		132,000	87,000	11,500		195,000	128,000
5,400		139,000	91,000	12,000		205,000	134,000
5,500		139,000	91,000				





Forets hélicoïdaux longs



Matière de coupe **HSCO**

Surface ○

Sens de coupe (R)

**P** ○ Amin. de l'âme ≥ Ø 1,000 • affûtage à dépouille conique • acier rapide au Co • meilleure résistance à l'usure

**M** •

**K** •

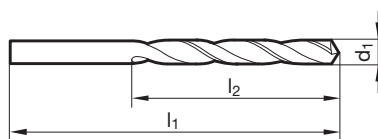
**N** Titane et ses alliages • aciers austénit., inox., inaltérables aux acides, réfractaires • aciers > 900 N/mm<sup>2</sup>, à copeaux courts • aciers à roulement • Hastelloy, Inconel, Nimonic

**S** •

**H**

**GUHRING NAVIGATOR**

Paramètres de coupe, page 792



N° d'article **617**

d1		l1	l2
mm	inch	mm	mm
1,000		56,000	33,000
1,100		60,000	37,000
1,200		65,000	41,000
1,300		65,000	41,000
1,400		70,000	45,000
1,450		70,000	45,000
1,500		70,000	45,000
1,590	1/16	76,000	50,000
1,600		76,000	50,000
1,610		76,000	50,000
1,650		76,000	50,000
1,700		76,000	50,000
1,750		80,000	53,000
1,800		80,000	53,000
1,850		80,000	53,000
1,900		80,000	53,000
1,930		85,000	56,000
1,950		85,000	56,000
1,980	5/64	85,000	56,000
2,000		85,000	56,000
2,050		85,000	56,000
2,100		85,000	56,000
2,150		90,000	59,000
2,200		90,000	59,000
2,260		90,000	59,000
2,300		90,000	59,000
2,380	3/32	95,000	62,000
2,400		95,000	62,000
2,450		95,000	62,000
2,500		95,000	62,000
2,550		95,000	62,000
2,600		95,000	62,000
2,700		100,000	66,000
2,780	7/64	100,000	66,000
2,800		100,000	66,000
2,900		100,000	66,000
3,000		100,000	66,000
3,050		106,000	69,000
3,100		106,000	69,000
3,170	1/8	106,000	69,000
3,200		106,000	69,000
3,250		106,000	69,000

d1		l1	l2
mm	inch	mm	mm
3,300		106,000	69,000
3,400		112,000	73,000
3,450		112,000	73,000
3,500		112,000	73,000
3,570	9/64	112,000	73,000
3,600		112,000	73,000
3,700		112,000	73,000
3,800		119,000	78,000
3,900		119,000	78,000
3,970	5/32	119,000	78,000
4,000		119,000	78,000
4,050		119,000	78,000
4,100		119,000	78,000
4,200		119,000	78,000
4,300		126,000	82,000
4,400		126,000	82,000
4,500		126,000	82,000
4,600		126,000	82,000
4,700		126,000	82,000
4,760	3/16	132,000	87,000
4,800		132,000	87,000
4,900		132,000	87,000
4,950		132,000	87,000
5,000		132,000	87,000
5,100		132,000	87,000
5,160	13/64	132,000	87,000
5,200		132,000	87,000
5,300		132,000	87,000
5,400		139,000	91,000
5,500		139,000	91,000
5,600		139,000	91,000
5,700		139,000	91,000
5,800		139,000	91,000
6,000		139,000	91,000
6,100		148,000	97,000
6,200		148,000	97,000
6,300		148,000	97,000
6,350	1/4	148,000	97,000
6,400		148,000	97,000
6,500		148,000	97,000
6,600		148,000	97,000
6,700		148,000	97,000

Outils de forage

d1		l1	l2
mm	inch	mm	mm
6,750	17/64	156,000	102,000
6,800		156,000	102,000
6,900		156,000	102,000
7,000	9/32	156,000	102,000
7,100		156,000	102,000
7,140		156,000	102,000
7,250		156,000	102,000
7,400		156,000	102,000
7,500	19/64	156,000	102,000
7,540		165,000	109,000
7,700		165,000	109,000
7,800		165,000	109,000
7,940		165,000	109,000
8,000	5/16	165,000	109,000
8,100		165,000	109,000
8,200		165,000	109,000
8,300	21/64	165,000	109,000
8,330		165,000	109,000
8,400		165,000	109,000
8,500		165,000	109,000
8,600		175,000	115,000
8,700	11/32	175,000	115,000
8,730		175,000	115,000
8,800		175,000	115,000

d1		l1	l2
mm	inch	mm	mm
9,000		175,000	115,000
9,100		175,000	115,000
9,500		175,000	115,000
9,520	3/8	184,000	121,000
9,800		184,000	121,000
10,000		184,000	121,000
10,200		184,000	121,000
10,500	7/16	184,000	121,000
11,000		195,000	128,000
11,110		195,000	128,000
11,510		195,000	128,000
12,000		205,000	134,000
12,500	29/64	205,000	134,000
13,000		205,000	134,000
15,000		220,000	144,000



Forets hélicoïdaux longs



Matière de coupe **HSCO**

Surface **S**

Sens de coupe **R**

**P** ○ Amin. de l'âme ≥ Ø 1,000 • affûtage à dépouille conique • acier rapide au Co • meilleure résistance à l'usure

**M** ●

**K** ●

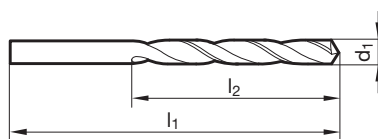
**N** ● Titane et ses alliages • aciers austénit., inox., inaltérables aux acides, réfractaires • aciers > 900 N/mm<sup>2</sup>, à copeaux courts • aciers à roulement • Hastelloy, Inconel, Nimonic

**S** ●

**H** ●

**GUHRING** NAVIGATOR

Paramètres de coupe, page 792



N° d'article **669**

d1		l1	l2
mm	inch	mm	mm
1,000		56,000	33,000
1,200		65,000	41,000
1,300		65,000	41,000
1,400		70,000	45,000
1,500		70,000	45,000
1,590	1/16	76,000	50,000
1,600		76,000	50,000
1,700		76,000	50,000
1,800		80,000	53,000
1,900		80,000	53,000
1,980	5/64	85,000	56,000
2,000		85,000	56,000
2,050		85,000	56,000
2,100		85,000	56,000
2,200		90,000	59,000
2,300		90,000	59,000
2,380	3/32	95,000	62,000
2,400		95,000	62,000
2,500		95,000	62,000
2,600		95,000	62,000
2,700		100,000	66,000
2,750		100,000	66,000
2,780	7/64	100,000	66,000
2,800		100,000	66,000
2,900		100,000	66,000
3,000		100,000	66,000
3,100		106,000	69,000
3,170	1/8	106,000	69,000
3,200		106,000	69,000
3,250		106,000	69,000
3,300		106,000	69,000
3,400		112,000	73,000
3,500		112,000	73,000
3,570	9/64	112,000	73,000
3,600		112,000	73,000
3,700		112,000	73,000
3,800		119,000	78,000
3,900		119,000	78,000
3,970	5/32	119,000	78,000
4,000		119,000	78,000
4,100		119,000	78,000
4,200		119,000	78,000

d1		l1	l2
mm	inch	mm	mm
4,300		126,000	82,000
4,370	11/64	126,000	82,000
4,400		126,000	82,000
4,500		126,000	82,000
4,700		126,000	82,000
4,760	3/16	132,000	87,000
4,800		132,000	87,000
5,000		132,000	87,000
5,100		132,000	87,000
5,160	13/64	132,000	87,000
5,200		132,000	87,000
5,300		132,000	87,000
5,500		139,000	91,000
5,600		139,000	91,000
5,700		139,000	91,000
5,800		139,000	91,000
6,000		139,000	91,000
6,100		148,000	97,000
6,200		148,000	97,000
6,300		148,000	97,000
6,350	1/4	148,000	97,000
6,400		148,000	97,000
6,500		148,000	97,000
6,700		148,000	97,000
6,750	17/64	156,000	102,000
6,800		156,000	102,000
7,000		156,000	102,000
7,100		156,000	102,000
7,140	9/32	156,000	102,000
7,200		156,000	102,000
7,400		156,000	102,000
7,500		156,000	102,000
7,540	19/64	165,000	109,000
7,800		165,000	109,000
7,900		165,000	109,000
7,940	5/16	165,000	109,000
8,000		165,000	109,000
8,200		165,000	109,000
8,500		165,000	109,000
8,730	11/32	175,000	115,000
9,000		175,000	115,000
9,130	23/64	175,000	115,000

Outils de forage

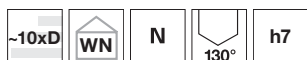


d1		l1	l2
mm	inch	mm	mm
9,300		175,000	115,000
9,500		175,000	115,000
9,520	3/8	184,000	121,000
10,000		184,000	121,000
10,200		184,000	121,000

d1		l1	l2
mm	inch	mm	mm



Forets hélicoïdaux longs



Matière de coupe **CW monobloc**

Surface ○

Sens de coupe (R)

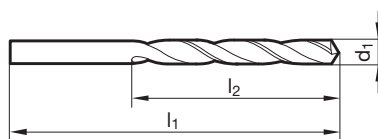
**P** affûtage en pente • arête de coupe principale rectiligne

- M**
- K**
- N**
- S**
- H**

matières synthétiques renforcées de fibres de verre • thermodurcissables abrasifs avec effet abrasif sur arêtes de coupe et listels

**GUHRING** NAVIGATOR

Paramètres de coupe, page 792



N° d'article **706**

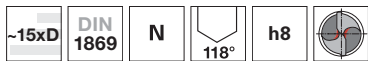
d1		l1	l2
mm	inch	mm	mm
0,500		38,000	8,500
0,600		38,000	9,500
0,650		38,000	10,500
0,700		38,000	10,500
0,750		38,000	12,500
0,800		38,000	12,500
0,850		38,000	14,500
0,900		38,000	14,500
1,000		38,000	17,000
1,050		38,000	17,000
1,100		38,000	17,000
1,400		38,000	17,000

d1		l1	l2
mm	inch	mm	mm
1,450		38,000	17,000

Outils de forage



Forets hélicoïdaux extra-longs, série 1



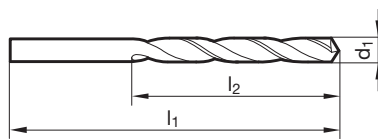
- P** • Amin. de l'âme  $\geq \varnothing 2,380$  • affûtage à dépouille conique • pour les perçages très profonds
- M**
- K** •
- N** ○ acier, fonte aciérée (alliée / non alliée) • fontes grises, fontes malléables, fontes à graphite sphéroïdal • fer fritté, maillechort, graphite
- S**
- H**

Matière de coupe	<b>HSS</b>
Surface	$>0.236$
Sens de coupe	<b>(R)</b>



**GÜHRING** NAVIGATOR

Paramètres de coupe, page 788



N° d'article **235**

Outils de forage

				N° d'article <b>235</b>			
d1		l1	l2	d1		l1	l2
mm	inch	mm	mm	mm	inch	mm	mm
1,600		115,000	75,000	4,600		185,000	125,000
1,700		115,000	75,000	4,700		185,000	125,000
1,800		120,000	80,000	4,760	3/16	195,000	135,000
1,900		120,000	80,000	4,800		195,000	135,000
1,930		125,000	85,000	4,900		195,000	135,000
1,950		125,000	85,000	5,000		195,000	135,000
2,000		125,000	85,000	5,100		195,000	135,000
2,050		125,000	85,000	5,200		195,000	135,000
2,100		125,000	85,000	5,300		195,000	135,000
2,200		135,000	90,000	5,340		205,000	140,000
2,300		135,000	90,000	5,400		205,000	140,000
2,350		135,000	90,000	5,500		205,000	140,000
2,380	3/32	140,000	95,000	5,560	7/32	205,000	140,000
2,400		140,000	95,000	5,600		205,000	140,000
2,500		140,000	95,000	5,700		205,000	140,000
2,600		140,000	95,000	5,800		205,000	140,000
2,700		150,000	100,000	5,900		205,000	140,000
2,800		150,000	100,000	6,000		205,000	140,000
2,900		150,000	100,000	6,100		215,000	150,000
3,000		150,000	100,000	6,200		215,000	150,000
3,100		155,000	105,000	6,250		215,000	150,000
3,170	1/8	155,000	105,000	6,300		215,000	150,000
3,200		155,000	105,000	6,350	1/4	215,000	150,000
3,250		155,000	105,000	6,400		215,000	150,000
3,300		155,000	105,000	6,500		215,000	150,000
3,400		165,000	115,000	6,600		215,000	150,000
3,500		165,000	115,000	6,700		215,000	150,000
3,570	9/64	165,000	115,000	6,750	17/64	225,000	155,000
3,600		165,000	115,000	6,800		225,000	155,000
3,650		165,000	115,000	7,000		225,000	155,000
3,700		165,000	115,000	7,200		225,000	155,000
3,750		165,000	115,000	7,400		225,000	155,000
3,800		175,000	120,000	7,500		225,000	155,000
3,900		175,000	120,000	7,700		240,000	165,000
3,970	5/32	175,000	120,000	7,800		240,000	165,000
4,000		175,000	120,000	7,900		240,000	165,000
4,100		175,000	120,000	7,940	5/16	240,000	165,000
4,200		175,000	120,000	8,000		240,000	165,000
4,300		185,000	125,000	8,100		240,000	165,000
4,370	11/64	185,000	125,000	8,200		240,000	165,000
4,400		185,000	125,000	8,330	21/64	240,000	165,000
4,500		185,000	125,000	8,400		240,000	165,000

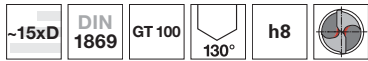


d1		l1	l2
mm	inch	mm	mm
8,500		240,000	165,000
8,700		250,000	175,000
8,730	11/32	250,000	175,000
8,800		250,000	175,000
8,900		250,000	175,000
9,000		250,000	175,000
9,130	23/64	250,000	175,000
9,500		250,000	175,000
9,520	3/8	265,000	185,000
9,600		265,000	185,000
9,700		265,000	185,000
9,800		265,000	185,000
9,900		265,000	185,000
9,920	25/64	265,000	185,000
10,000		265,000	185,000
10,100		265,000	185,000
10,200		265,000	185,000
10,250		265,000	185,000

d1		l1	l2
mm	inch	mm	mm
10,320	13/32	265,000	185,000
10,500		265,000	185,000
11,000		280,000	195,000
11,500		280,000	195,000
11,510	29/64	280,000	195,000
11,800		280,000	195,000
12,000		295,000	205,000
12,100		295,000	205,000
12,250		295,000	205,000
12,300	31/64	295,000	205,000
12,500		295,000	205,000
12,700	1/2	295,000	205,000
13,000		295,000	205,000



Forets hélicoïdaux extra-longs, série 1

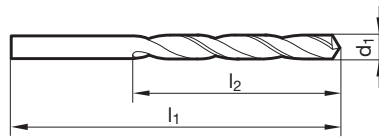


- P** • Amin. de l'âme  $\geq \varnothing 1,950$  • affûtage à dépouille conique • goujures larges • pour les perçages très profonds
- M** • en cas de mauvaise évacuation des copeaux
- K** •
- N** • fontes grises et aciers jusqu'à 1000 N/mm<sup>2</sup> • Ne pas utiliser pour les aciers CrNi et les aciers inox
- S**
- H**

Matière de coupe	<b>HSS</b>
Surface	
Sens de coupe	

**GÜHRING**NAVIGATOR

Paramètres de coupe, page 790



N° d'article **502**

Outils de forage

d1		l1	l2	d1		l1	l2
mm	inch	mm	mm	mm	inch	mm	mm
1,950		125,000	85,000	4,400		185,000	125,000
2,000		125,000	85,000	4,500		185,000	125,000
2,050		125,000	85,000	4,570		185,000	125,000
2,100		125,000	85,000	4,600		185,000	125,000
2,200		135,000	90,000	4,700		185,000	125,000
2,300		135,000	90,000	4,760	3/16	195,000	135,000
2,370		140,000	95,000	4,800		195,000	135,000
2,380	3/32	140,000	95,000	4,900		195,000	135,000
2,400		140,000	95,000	5,000		195,000	135,000
2,500		140,000	95,000	5,100		195,000	135,000
2,550		140,000	95,000	5,110		195,000	135,000
2,580		140,000	95,000	5,160	13/64	195,000	135,000
2,600		140,000	95,000	5,200		195,000	135,000
2,700		150,000	100,000	5,300		195,000	135,000
2,780	7/64	150,000	100,000	5,400		205,000	140,000
2,800		150,000	100,000	5,500		205,000	140,000
2,850		150,000	100,000	5,560	7/32	205,000	140,000
2,870		150,000	100,000	5,600		205,000	140,000
2,900		150,000	100,000	5,700		205,000	140,000
2,950		150,000	100,000	5,750		205,000	140,000
3,000		150,000	100,000	5,800		205,000	140,000
3,030		155,000	105,000	5,900		205,000	140,000
3,100		155,000	105,000	5,950	15/64	205,000	140,000
3,170	1/8	155,000	105,000	6,000		205,000	140,000
3,200		155,000	105,000	6,100		215,000	150,000
3,250		155,000	105,000	6,200		215,000	150,000
3,300		155,000	105,000	6,250		215,000	150,000
3,400		165,000	115,000	6,300		215,000	150,000
3,500		165,000	115,000	6,350	1/4	215,000	150,000
3,570	9/64	165,000	115,000	6,400		215,000	150,000
3,600		165,000	115,000	6,500		215,000	150,000
3,700		165,000	115,000	6,600		215,000	150,000
3,750		165,000	115,000	6,700		215,000	150,000
3,800		175,000	120,000	6,750	17/64	225,000	155,000
3,860		175,000	120,000	6,800		225,000	155,000
3,900		175,000	120,000	6,900		225,000	155,000
3,970	5/32	175,000	120,000	7,000		225,000	155,000
4,000		175,000	120,000	7,100		225,000	155,000
4,100		175,000	120,000	7,200		225,000	155,000
4,200		175,000	120,000	7,300		225,000	155,000
4,300		185,000	125,000	7,500		225,000	155,000
4,370	11/64	185,000	125,000	7,540	19/64	240,000	165,000



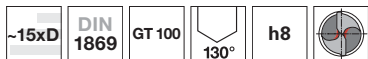


d1		l1	l2
mm	inch	mm	mm
7,700		240,000	165,000
7,750		240,000	165,000
7,800		240,000	165,000
7,900		240,000	165,000
7,940	5/16	240,000	165,000
8,000		240,000	165,000
8,100		240,000	165,000
8,200		240,000	165,000
8,300		240,000	165,000
8,330	21/64	240,000	165,000
8,400		240,000	165,000
8,430		240,000	165,000
8,500		240,000	165,000
8,600		250,000	175,000
8,700		250,000	175,000
8,730	11/32	250,000	175,000
8,800		250,000	175,000
9,000		250,000	175,000
9,200		250,000	175,000
9,300		250,000	175,000
9,400		250,000	175,000
9,500		250,000	175,000
9,520	3/8	265,000	185,000
9,600		265,000	185,000

d1		l1	l2
mm	inch	mm	mm
9,700		265,000	185,000
9,800		265,000	185,000
9,900		265,000	185,000
9,920	25/64	265,000	185,000
10,000		265,000	185,000
10,200		265,000	185,000
10,320	13/32	265,000	185,000
10,500		265,000	185,000
10,720	27/64	280,000	195,000
11,000		280,000	195,000
11,110	7/16	280,000	195,000
11,200		280,000	195,000
11,500		280,000	195,000
11,510	29/64	280,000	195,000
11,750		280,000	195,000
11,800		280,000	195,000
12,000		295,000	205,000
12,500		295,000	205,000
12,700	1/2	295,000	205,000
13,000		295,000	205,000



Forets hélicoïdaux extra-longs, série 1

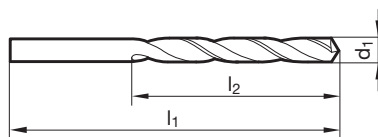


- P** • Amin. de l'âme  $\geq \varnothing 1,980$  • affûtage à dépouille conique • goujures larges • pour les perçages très profonds
- M** • en cas de mauvaise évacuation des copeaux
- K** •
- N** • fontes grises et aciers jusqu'à 1000 N/mm<sup>2</sup> • Ne pas utiliser pour les aciers CrNi et les aciers inox
- S** ○
- H**

Matière de coupe	<b>HSS</b>
Surface	<b>S</b>
Sens de coupe	<b>R</b>

**GÜHRING** NAVIGATOR

Paramètres de coupe, page 790



N° d'article **670**

Outils de forage

d1		l1	l2
mm	inch	mm	mm
2,000		125,000	85,000
2,100		125,000	85,000
2,200		135,000	90,000
2,300		135,000	90,000
2,380	3/32	140,000	95,000
2,400		140,000	95,000
2,500		140,000	95,000
2,780	7/64	150,000	100,000
2,800		150,000	100,000
2,950		150,000	100,000
3,000		150,000	100,000
3,100		155,000	105,000
3,170	1/8	155,000	105,000
3,200		155,000	105,000
3,300		155,000	105,000
3,500		165,000	115,000
3,570	9/64	165,000	115,000
3,600		165,000	115,000
3,800		175,000	120,000
3,970	5/32	175,000	120,000
4,000		175,000	120,000
4,200		175,000	120,000
4,370	11/64	185,000	125,000
4,500		185,000	125,000
4,600		185,000	125,000
4,760	3/16	195,000	135,000
4,800		195,000	135,000
5,000		195,000	135,000
5,100		195,000	135,000
5,160	13/64	195,000	135,000
5,200		195,000	135,000
5,500		205,000	140,000
5,560	7/32	205,000	140,000
6,000		205,000	140,000
6,100		215,000	150,000
6,200		215,000	150,000

d1		l1	l2
mm	inch	mm	mm
6,350	1/4	215,000	150,000
6,500		215,000	150,000
6,600		215,000	150,000
6,800		225,000	155,000
7,000		225,000	155,000
7,140	9/32	225,000	155,000
7,500		225,000	155,000
7,540	19/64	240,000	165,000
7,940	5/16	240,000	165,000
8,000		240,000	165,000
8,200		240,000	165,000
8,500		240,000	165,000
8,730	11/32	250,000	175,000
9,000		250,000	175,000
9,520	3/8	265,000	185,000
9,600		265,000	185,000
9,920	25/64	265,000	185,000
10,000		265,000	185,000
10,900		280,000	195,000
11,000		280,000	195,000
11,900		295,000	205,000
11,910	15/32	295,000	205,000
12,000		295,000	205,000
12,500		295,000	205,000
12,700	1/2	295,000	205,000



Forets hélicoïdaux extra-longs, série 1



Matière de coupe **HSS**

Surface

Sens de coupe

**P** ○ Amin. de l'âme ≥ Ø 2,380 • affûtage à dépouille conique • pour les perçages très profonds

**M**

**K**

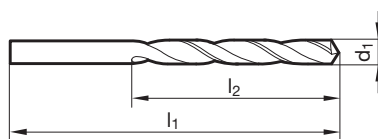
**N** ● matières tendres et à copeaux longs < 500 N/mm<sup>2</sup> • aciers de décolletage, doux • aluminium/alliages d'aluminium à copeaux longs

**S** ● zinc, cuivre de 1ère fusion, Alpax, électrode • zamak, thermoplastiques, bois

**H**

**GUHRING** NAVIGATOR

Paramètres de coupe, page 788



N° d'article **524**

d1		l1	l2
mm	inch	mm	mm
2,000		125,000	85,000
2,100		125,000	85,000
2,200		135,000	90,000
2,300		135,000	90,000
2,350		135,000	90,000
2,380	3/32	140,000	95,000
2,400		140,000	95,000
2,450		140,000	95,000
2,500		140,000	95,000
2,600		140,000	95,000
2,780	7/64	150,000	100,000
2,800		150,000	100,000
2,900		150,000	100,000
2,950		150,000	100,000
3,000		150,000	100,000
3,100		155,000	105,000
3,170	1/8	155,000	105,000
3,200		155,000	105,000
3,300		155,000	105,000
3,350		155,000	105,000
3,400		165,000	115,000
3,450		165,000	115,000
3,500		165,000	115,000
3,530		165,000	115,000
3,570	9/64	165,000	115,000
3,600		165,000	115,000
3,800		175,000	120,000
3,900		175,000	120,000
3,970	5/32	175,000	120,000
4,000		175,000	120,000
4,100		175,000	120,000
4,200		175,000	120,000
4,250		175,000	120,000
4,300		185,000	125,000
4,370	11/64	185,000	125,000
4,400		185,000	125,000
4,500		185,000	125,000
4,760	3/16	195,000	135,000
4,900		195,000	135,000
5,000		195,000	135,000
5,100		195,000	135,000
5,160	13/64	195,000	135,000

d1		l1	l2
mm	inch	mm	mm
5,200		195,000	135,000
5,400		205,000	140,000
5,600		205,000	140,000
5,700		205,000	140,000
5,800		205,000	140,000
5,900		205,000	140,000
5,950	15/64	205,000	140,000
6,000		205,000	140,000
6,100		215,000	150,000
6,350	1/4	215,000	150,000
6,400		215,000	150,000
6,500		215,000	150,000
6,600		215,000	150,000
6,750	17/64	225,000	155,000
6,800		225,000	155,000
7,000		225,000	155,000
7,100		225,000	155,000
7,140	9/32	225,000	155,000
7,300		225,000	155,000
7,400		225,000	155,000
7,500		225,000	155,000
7,540	19/64	240,000	165,000
7,800		240,000	165,000
7,900		240,000	165,000
7,940	5/16	240,000	165,000
8,000		240,000	165,000
8,100		240,000	165,000
8,330	21/64	240,000	165,000
8,600		250,000	175,000
8,730	11/32	250,000	175,000
8,900		250,000	175,000
9,000		250,000	175,000
9,130	23/64	250,000	175,000
9,200		250,000	175,000
9,500		250,000	175,000
9,520	3/8	265,000	185,000
9,920	25/64	265,000	185,000
10,000		265,000	185,000
10,320	13/32	265,000	185,000
10,500		265,000	185,000
11,000		280,000	195,000
11,110	7/16	280,000	195,000

Outils de forage

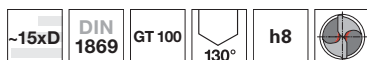


d1		l1	l2
mm	inch	mm	mm
11,500		280,000	195,000
11,910	15/32	295,000	205,000
12,000		295,000	205,000
12,700	1/2	295,000	205,000

d1		l1	l2
mm	inch	mm	mm



Forets hélicoïdaux extra-longs, série 1



Matière de coupe **HSCO**

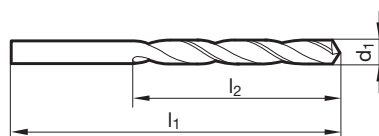
Surface

Sens de coupe

- P** • Amin. de l'âme  $\geq \varnothing 2,700$  • affûtage à dépouille conique • acier rapide au Co • goujures larges • meilleure résistance à l'usure • pour les perçages très profonds
- M** •
- K** • en cas de mauvaise évacuation des copeaux
- N** • aciers et fontes aciérées à haute résistance • fontes grises, fontes malléables, fontes à graphite sphéroïdal
- S** •
- H** ○

**GÜHRING** NAVIGATOR

Paramètres de coupe, page 794



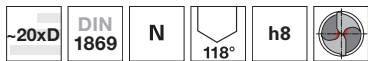
N° d'article **618**

d1		l1	l2
mm	inch	mm	mm
2,700		150,000	100,000
2,900		150,000	100,000
3,000		150,000	100,000
3,100		155,000	105,000
3,170	1/8	155,000	105,000
3,200		155,000	105,000
3,300		155,000	105,000
3,400		165,000	115,000
3,500		165,000	115,000
3,570	9/64	165,000	115,000
3,600		165,000	115,000
3,700		165,000	115,000
3,750		165,000	115,000
3,800		175,000	120,000
3,970	5/32	175,000	120,000
4,000		175,000	120,000
4,100		175,000	120,000
4,200		175,000	120,000
4,300		185,000	125,000
4,370	11/64	185,000	125,000
4,400		185,000	125,000
4,500		185,000	125,000
4,600		185,000	125,000
4,760	3/16	195,000	135,000
4,800		195,000	135,000
4,850		195,000	135,000
5,000		195,000	135,000
5,100		195,000	135,000
5,160	13/64	195,000	135,000
5,200		195,000	135,000
5,300		195,000	135,000
5,400		205,000	140,000
5,500		205,000	140,000
5,560	7/32	205,000	140,000
5,600		205,000	140,000
5,700		205,000	140,000

d1		l1	l2
mm	inch	mm	mm
5,800		205,000	140,000
6,000		205,000	140,000
6,100		215,000	150,000
6,200		215,000	150,000
6,300		215,000	150,000
6,350	1/4	215,000	150,000
6,400		215,000	150,000
6,500		215,000	150,000
6,600		215,000	150,000
6,700		215,000	150,000
6,750	17/64	225,000	155,000
6,800		225,000	155,000
7,000		225,000	155,000
7,140	9/32	225,000	155,000
7,400		225,000	155,000
7,500		225,000	155,000
7,540	19/64	240,000	165,000
7,700		240,000	165,000
7,800		240,000	165,000
7,940	5/16	240,000	165,000
8,000		240,000	165,000
8,200		240,000	165,000
8,330	21/64	240,000	165,000
8,500		240,000	165,000
8,700		250,000	175,000
8,730	11/32	250,000	175,000
8,800		250,000	175,000
9,000		250,000	175,000
9,130	23/64	250,000	175,000
9,400		250,000	175,000
9,500		250,000	175,000
9,520	3/8	265,000	185,000
9,700		265,000	185,000
10,000		265,000	185,000

Outils de forage

Forets hélicoïdaux extra-longs, série 2

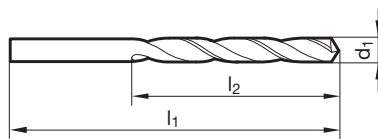


- P** • Amin. de l'âme  $\geq \varnothing 2,700$  • affûtage à dépouille conique • pour les perçages très profonds
- M**
- K** •
- N** ○ acier, fonte aciérée (alliée / non alliée) • fontes grises, fontes malléables, fontes à graphite sphéroïdal • fer fritté, maillechort, graphite
- S**
- H**

**GÜHRING** NAVIGATOR

Paramètres de coupe, page 788

Matière de coupe	<b>HSS</b>
Surface	●
Sens de coupe	Ⓜ



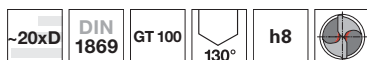
N° d'article **236**

Outils de forage

d1		l1	l2	d1		l1	l2
mm	inch	mm	mm	mm	inch	mm	mm
2,700		190,000	130,000	6,500		275,000	190,000
2,800		190,000	130,000	6,700		275,000	190,000
2,900		190,000	130,000	6,800		290,000	200,000
3,000		190,000	130,000	7,000		290,000	200,000
3,100		200,000	135,000	7,140	9/32	290,000	200,000
3,170	1/8	200,000	135,000	7,500		290,000	200,000
3,200		200,000	135,000	7,540	19/64	305,000	210,000
3,300		200,000	135,000	7,800		305,000	210,000
3,500		210,000	145,000	7,940	5/16	305,000	210,000
3,570	9/64	210,000	145,000	8,000		305,000	210,000
3,600		210,000	145,000	8,100		305,000	210,000
3,800		220,000	150,000	8,500		305,000	210,000
3,970	5/32	220,000	150,000	8,700		320,000	220,000
4,000		220,000	150,000	8,730	11/32	320,000	220,000
4,100		220,000	150,000	8,800		320,000	220,000
4,200		220,000	150,000	8,900		320,000	220,000
4,500		235,000	160,000	9,000		320,000	220,000
4,760	3/16	245,000	170,000	9,130	23/64	320,000	220,000
4,800		245,000	170,000	9,500		320,000	220,000
4,900		245,000	170,000	9,800		340,000	235,000
5,000		245,000	170,000	10,000		340,000	235,000
5,200		245,000	170,000	10,200		340,000	235,000
5,500		260,000	180,000	10,500		340,000	235,000
5,560	7/32	260,000	180,000	11,000		365,000	250,000
5,800		260,000	180,000	11,110	7/16	365,000	250,000
5,900		260,000	180,000	11,500		365,000	250,000
5,950	15/64	260,000	180,000	11,510	29/64	365,000	250,000
6,000		260,000	180,000	11,750		365,000	250,000
6,200		275,000	190,000	12,000		375,000	260,000
6,350	1/4	275,000	190,000	13,000		375,000	260,000



Forets hélicoïdaux extra-longs, série 2



Matière de coupe **HSS**

Surface

Sens de coupe

**P** • Amin. de l'âme  $\geq \varnothing 2,000$  • affûtage à dépouille conique • goujures larges • pour les perçages très profonds

**M** • en cas de mauvaise évacuation des copeaux

**K** •

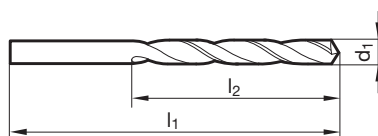
**N** • fontes grises et aciers jusqu'à 1000 N/mm<sup>2</sup> • Ne pas utiliser pour les aciers CrNi et les aciers inox

**S**

**H**

**GÜHRING** NAVIGATOR

Paramètres de coupe, page 790



N° d'article **503**

d1		l1	l2
mm	inch	mm	mm
2,000		160,000	110,000
2,200		170,000	115,000
2,300		170,000	115,000
2,500		180,000	120,000
2,800		190,000	130,000
3,000		190,000	130,000
3,030		200,000	135,000
3,100		200,000	135,000
3,170	1/8	200,000	135,000
3,200		200,000	135,000
3,300		200,000	135,000
3,400		210,000	145,000
3,500		210,000	145,000
3,570	9/64	210,000	145,000
3,600		210,000	145,000
3,700		210,000	145,000
3,800		220,000	150,000
3,900		220,000	150,000
3,970	5/32	220,000	150,000
4,000		220,000	150,000
4,100		220,000	150,000
4,200		220,000	150,000
4,300		235,000	160,000
4,370	11/64	235,000	160,000
4,400		235,000	160,000
4,500		235,000	160,000
4,760	3/16	245,000	170,000
4,800		245,000	170,000
4,900		245,000	170,000
5,000		245,000	170,000
5,100		245,000	170,000
5,160	13/64	245,000	170,000
5,200		245,000	170,000
5,300		245,000	170,000
5,400		260,000	180,000
5,500		260,000	180,000
5,560	7/32	260,000	180,000
5,700		260,000	180,000
5,800		260,000	180,000
5,900		260,000	180,000
5,950	15/64	260,000	180,000
6,000		260,000	180,000

d1		l1	l2
mm	inch	mm	mm
6,100		275,000	190,000
6,150		275,000	190,000
6,200		275,000	190,000
6,350	1/4	275,000	190,000
6,400		275,000	190,000
6,500		275,000	190,000
6,600		275,000	190,000
6,700		275,000	190,000
6,750	17/64	290,000	200,000
6,800		290,000	200,000
6,900		290,000	200,000
7,000		290,000	200,000
7,140	9/32	290,000	200,000
7,500		290,000	200,000
7,540	19/64	305,000	210,000
7,800		305,000	210,000
7,940	5/16	305,000	210,000
8,000		305,000	210,000
8,200		305,000	210,000
8,330	21/64	305,000	210,000
8,500		305,000	210,000
8,600		320,000	220,000
8,730	11/32	320,000	220,000
8,800		320,000	220,000
9,000		320,000	220,000
9,100		320,000	220,000
9,130	23/64	320,000	220,000
9,500		320,000	220,000
9,520	3/8	340,000	235,000
9,700		340,000	235,000
9,800		340,000	235,000
9,920	25/64	340,000	235,000
10,000		340,000	235,000
10,200		340,000	235,000
10,500		340,000	235,000
10,720	27/64	365,000	250,000
11,000		365,000	250,000
11,110	7/16	365,000	250,000
11,500		365,000	250,000
11,510	29/64	365,000	250,000
11,750		365,000	250,000
11,910	15/32	375,000	260,000

Outils de forage



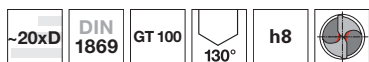
d1		l1	l2
mm	inch	mm	mm
12,000		375,000	260,000
12,300	31/64	375,000	260,000
12,500		375,000	260,000
12,700	1/2	375,000	260,000
13,000		375,000	260,000

d1		l1	l2
mm	inch	mm	mm





Forets hélicoïdaux extra-longs, série 2



Matière de coupe **HSS**

Surface **S**

Sens de coupe **R**

**P** • Amin. de l'âme  $\geq \varnothing 2,300$  • affûtage à dépouille conique • goujures larges • pour les perçages très profonds

**M** • en cas de mauvaise évacuation des copeaux

**K** •

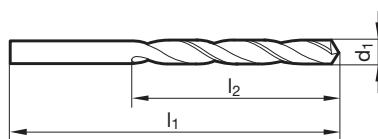
**N** • fontes grises et aciers jusqu'à 1000 N/mm<sup>2</sup> • Ne pas utiliser pour les aciers CrNi et les aciers inox

**S** ○

**H**

**GÜHRING** NAVIGATOR

Paramètres de coupe, page 790



N° d'article **671**

d1		l1	l2
mm	inch	mm	mm
2,700		190,000	130,000
2,800		190,000	130,000
3,000		190,000	130,000
3,100		200,000	135,000
3,170	1/8	200,000	135,000
3,200		200,000	135,000
3,500		210,000	145,000
3,570	9/64	210,000	145,000
3,970	5/32	220,000	150,000
4,000		220,000	150,000
4,090		220,000	150,000
4,370	11/64	235,000	160,000
4,400		235,000	160,000
4,500		235,000	160,000
4,600		235,000	160,000
4,760	3/16	245,000	170,000
4,800		245,000	170,000
5,000		245,000	170,000

d1		l1	l2
mm	inch	mm	mm
5,300		245,000	170,000
5,500		260,000	180,000
5,560	7/32	260,000	180,000
6,000		260,000	180,000
6,350	1/4	275,000	190,000
6,500		275,000	190,000
6,750	17/64	290,000	200,000
6,800		290,000	200,000
7,000		290,000	200,000
7,140	9/32	290,000	200,000
7,500		290,000	200,000
7,940	5/16	305,000	210,000
8,000		305,000	210,000
8,500		305,000	210,000

Outils de forage



Forets hélicoïdaux extra-longs, série 2



Matière de coupe **HSS**

Surface

Sens de coupe

**P** Amin. de l'âme  $\geq \varnothing 2,800$  • affûtage à dépouille conique • pour les perçages très profonds

**M**

**K**

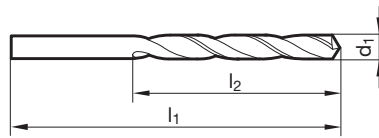
**N** matières tendres et à copeaux longs  $< 500 \text{ N/mm}^2$  • aciers de décolletage, doux • aluminium/alliages d'aluminium à copeaux longs

**S** • zinc, cuivre de 1ère fusion, Alpax, électrode • zamak, thermoplastiques, bois

**H**

**GÜHRING** NAVIGATOR

Paramètres de coupe, page 788



N° d'article **528**

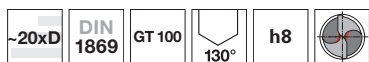
Outils de forage

d1		l1	l2
mm	inch	mm	mm
3,000		190,000	130,000
3,030		200,000	135,000
3,100		200,000	135,000
3,170	1/8	200,000	135,000
3,500		210,000	145,000
3,650		210,000	145,000
3,800		220,000	150,000
4,000		220,000	150,000
4,200		220,000	150,000
4,500		235,000	160,000
4,760	3/16	245,000	170,000
4,800		245,000	170,000
5,000		245,000	170,000
5,110		245,000	170,000
5,500		260,000	180,000
5,800		260,000	180,000
6,000		260,000	180,000
7,000		290,000	200,000

d1		l1	l2
mm	inch	mm	mm
7,500		290,000	200,000
8,000		305,000	210,000
8,500		305,000	210,000
9,000		320,000	220,000
10,000		340,000	235,000
10,500		340,000	235,000
11,500		365,000	250,000
13,000		375,000	260,000



Forets hélicoïdaux extra-longs, série 2



Matière de coupe **HSCO**

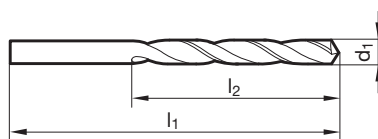
Surface

Sens de coupe

- P** • Amin. de l'âme  $\geq \varnothing 3,000$  • affûtage à dépouille conique • acier rapide au Co • goujures larges • meilleure résistance à l'usure • pour les perçages très profonds
- M** •
- K** • en cas de mauvaise évacuation des copeaux
- N** • aciers et fontes aciérées à haute résistance • fontes grises, fontes malléables, fontes à graphite sphéroïdal
- S** •
- H** ○

**GÜHRING** NAVIGATOR

Paramètres de coupe, page 794



N° d'article **619**

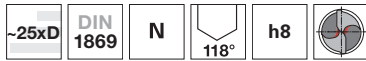
d1		l1	l2
mm	inch	mm	mm
3,000		190,000	130,000
3,170	1/8	200,000	135,000
3,200		200,000	135,000
3,300		200,000	135,000
3,500		210,000	145,000
3,570	9/64	210,000	145,000
3,970	5/32	220,000	150,000
4,000		220,000	150,000
4,100		220,000	150,000
4,200		220,000	150,000
4,370	11/64	235,000	160,000
4,500		235,000	160,000
4,760	3/16	245,000	170,000
4,800		245,000	170,000
4,900		245,000	170,000
5,000		245,000	170,000
5,200		245,000	170,000
5,500		260,000	180,000
5,560	7/32	260,000	180,000
5,950	15/64	260,000	180,000
6,000		260,000	180,000
6,100		275,000	190,000
6,200		275,000	190,000
6,350	1/4	275,000	190,000

d1		l1	l2
mm	inch	mm	mm
6,500		275,000	190,000
6,750	17/64	290,000	200,000
6,800		290,000	200,000
7,000		290,000	200,000
7,140	9/32	290,000	200,000
7,400		290,000	200,000
7,500		290,000	200,000
7,540	19/64	305,000	210,000
7,600		305,000	210,000
7,940	5/16	305,000	210,000
8,000		305,000	210,000
8,200		305,000	210,000
8,500		305,000	210,000
8,730	11/32	320,000	220,000
9,000		320,000	220,000
9,130	23/64	320,000	220,000
9,500		320,000	220,000
9,520	3/8	340,000	235,000
9,600		340,000	235,000
9,900		340,000	235,000
10,000		340,000	235,000

Outils de forage



Forets hélicoïdaux extra-longs, série 3



Matière de coupe **HSS**

Surface

Sens de coupe

**P** • Amin. de l'âme  $\geq \varnothing 3,500$  • affûtage à dépouille conique • pour les perçages très profonds

**M**

**K** •

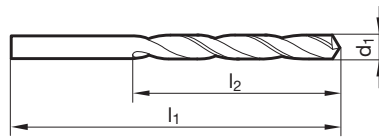
**N** ○ acier, fonte aciérée (alliée / non alliée) • fontes grises, fontes malléables, fontes à graphite sphéroïdal • fer fritté, maillechort, graphite

**S**

**H**

**GÜHRING** NAVIGATOR

Paramètres de coupe, page 788



N° d'article **237**

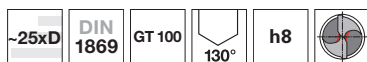
Outils de forage

d1		l1	l2
mm	inch	mm	mm
3,500		265,000	180,000
3,800		280,000	190,000
4,000		280,000	190,000
4,100		280,000	190,000
4,200		280,000	190,000
4,500		295,000	200,000
5,000		315,000	210,000
5,200		315,000	210,000
5,500		330,000	225,000
5,800		330,000	225,000
5,900		330,000	225,000
6,000		330,000	225,000
6,100		350,000	235,000
6,200		350,000	235,000
6,500		350,000	235,000
6,700		350,000	235,000
6,800		370,000	250,000
7,000		370,000	250,000

d1		l1	l2
mm	inch	mm	mm
7,500		370,000	250,000
7,800		390,000	265,000
8,000		390,000	265,000
8,500		390,000	265,000
9,000		410,000	280,000
9,500		410,000	280,000
9,800		430,000	295,000
10,000		430,000	295,000
10,300		430,000	295,000
10,500		430,000	295,000
11,000		455,000	310,000
11,500		455,000	310,000
11,750		455,000	310,000
12,000		480,000	330,000
12,500		480,000	330,000
13,000		480,000	330,000



Forets hélicoïdaux extra-longs, série 3



Matière de coupe **HSS**

Surface

Sens de coupe

**P** • Amin. de l'âme  $\geq \varnothing 2,500$  • affûtage à dépouille conique • goujures larges • en cas de mauvaise évacuation des copeaux • pour les perçages très profonds

**K** •

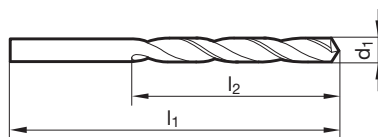
**N** • fontes grises et aciers jusqu'à 1000 N/mm<sup>2</sup> • Ne pas utiliser pour les aciers CrNi et les aciers inox

**S**

**H**

**GÜHRING**NAVIGATOR

Paramètres de coupe, page 790



N° d'article **504**

d1		l1	l2
mm	inch	mm	mm
2,500		225,000	150,000
3,000		240,000	160,000
3,100		250,000	170,000
3,170	1/8	250,000	170,000
3,200		250,000	170,000
3,300		250,000	170,000
3,400		265,000	180,000
3,500		265,000	180,000
3,570	9/64	265,000	180,000
3,600		265,000	180,000
3,700		265,000	180,000
3,800		280,000	190,000
3,900		280,000	190,000
3,970	5/32	280,000	190,000
4,000		280,000	190,000
4,100		280,000	190,000
4,200		280,000	190,000
4,300		295,000	200,000
4,370	11/64	295,000	200,000
4,400		295,000	200,000
4,500		295,000	200,000
4,600		295,000	200,000
4,760	3/16	315,000	210,000
4,800		315,000	210,000
4,900		315,000	210,000
5,000		315,000	210,000
5,100		315,000	210,000
5,200		315,000	210,000
5,500		330,000	225,000
5,560	7/32	330,000	225,000
5,800		330,000	225,000
5,950	15/64	330,000	225,000
6,000		330,000	225,000
6,100		350,000	235,000
6,200		350,000	235,000
6,300		350,000	235,000
6,350	1/4	350,000	235,000
6,400		350,000	235,000
6,500		350,000	235,000
6,700		350,000	235,000
6,750	17/64	370,000	250,000
6,800		370,000	250,000

d1		l1	l2
mm	inch	mm	mm
7,000		370,000	250,000
7,140	9/32	370,000	250,000
7,200		370,000	250,000
7,500		370,000	250,000
7,540	19/64	390,000	265,000
7,750		390,000	265,000
7,800		390,000	265,000
7,940	5/16	390,000	265,000
8,000		390,000	265,000
8,200		390,000	265,000
8,330	21/64	390,000	265,000
8,500		390,000	265,000
8,600		410,000	280,000
8,730	11/32	410,000	280,000
8,800		410,000	280,000
8,900		410,000	280,000
9,000		410,000	280,000
9,200		410,000	280,000
9,500		410,000	280,000
9,520	3/8	430,000	295,000
9,530		430,000	295,000
9,920	25/64	430,000	295,000
10,000		430,000	295,000
10,320	13/32	430,000	295,000
10,500		430,000	295,000
10,720	27/64	455,000	310,000
11,000		455,000	310,000
11,110	7/16	455,000	310,000
11,500		455,000	310,000
12,000		480,000	330,000
12,200		480,000	330,000
12,500		480,000	330,000
13,000		480,000	330,000

Outils de forage



Forets hélicoïdaux extra-longs, série 3



Matière de coupe **HSS**

Surface ○

Sens de coupe (R)

**P** ○ Amin. de l'âme  $\geq \varnothing 2,500$  • affûtage à dépouille conique • pour les perçages très profonds

**M**

**K**

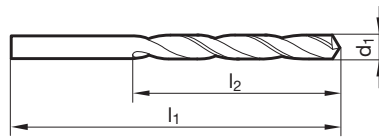
**N** • matières tendres et à copeaux longs  $< 500 \text{ N/mm}^2$  • aciers de décolletage, doux • aluminium/alliages d'aluminium à copeaux longs

**S** • zinc, cuivre de 1ère fusion, Alpax, électrode • zamak, thermoplastiques, bois

**H**

**GÜHRING** NAVIGATOR

Paramètres de coupe, page 788



N° d'article **529**

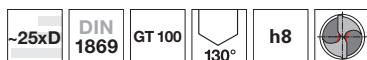
Outils de forage

d1		l1	l2
mm	inch	mm	mm
2,500		225,000	150,000
3,000		240,000	160,000
3,500		265,000	180,000
3,800		280,000	190,000
4,000		280,000	190,000
4,500		295,000	200,000
5,000		315,000	210,000
6,000		330,000	225,000
6,500		350,000	235,000
6,700		350,000	235,000
6,800		370,000	250,000
7,500		370,000	250,000

d1		l1	l2
mm	inch	mm	mm
8,000		390,000	265,000
9,500		410,000	280,000
10,000		430,000	295,000



Forets hélicoïdaux extra-longs, série 3



Matière de coupe **HSCO**

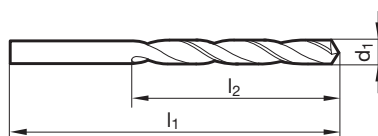
Surface

Sens de coupe

- P** • Amin. de l'âme  $\geq \varnothing 2,500$  • affûtage à dépouille conique • acier rapide au Co • goujures larges • résistance à l'usure, améliorée • pour les perçages très profonds
- M** •
- K** • en cas de mauvaise évacuation des copeaux
- N** • aciers et fontes aciérées à haute résistance • fontes grises, fontes malléables, fontes à graphite sphéroïdal
- S** •
- H** ○

**GUHRING** NAVIGATOR

Paramètres de coupe, page 794



N° d'article **571**

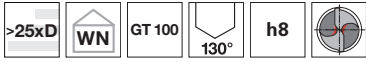
d1		l1	l2
mm	inch	mm	mm
2,500		225,000	150,000
3,000		240,000	160,000
3,100		250,000	170,000
3,170	1/8	250,000	170,000
3,200		250,000	170,000
3,300		250,000	170,000
3,400		265,000	180,000
3,500		265,000	180,000
3,700		265,000	180,000
3,800		280,000	190,000
3,900		280,000	190,000
3,970	5/32	280,000	190,000
4,000		280,000	190,000
4,100		280,000	190,000
4,200		280,000	190,000
4,300		295,000	200,000
4,500		295,000	200,000
4,600		295,000	200,000
4,760	3/16	315,000	210,000
4,800		315,000	210,000
4,900		315,000	210,000
5,000		315,000	210,000
5,100		315,000	210,000
5,200		315,000	210,000
5,500		330,000	225,000
5,560	7/32	330,000	225,000
5,800		330,000	225,000
5,950	15/64	330,000	225,000
6,000		330,000	225,000
6,100		350,000	235,000
6,200		350,000	235,000
6,300		350,000	235,000
6,350	1/4	350,000	235,000
6,400		350,000	235,000
6,500		350,000	235,000
6,700		350,000	235,000

d1		l1	l2
mm	inch	mm	mm
6,750	17/64	370,000	250,000
6,800		370,000	250,000
7,000		370,000	250,000
7,140	9/32	370,000	250,000
7,200		370,000	250,000
7,500		370,000	250,000
7,750		390,000	265,000
7,800		390,000	265,000
7,940	5/16	390,000	265,000
8,000		390,000	265,000
8,200		390,000	265,000
8,500		390,000	265,000
8,600		410,000	280,000
8,730	11/32	410,000	280,000
8,800		410,000	280,000
9,000		410,000	280,000
9,500		410,000	280,000
9,520	3/8	430,000	295,000
10,000		430,000	295,000
10,320	13/32	430,000	295,000
10,500		430,000	295,000
10,720	27/64	455,000	310,000
11,000		455,000	310,000
11,110	7/16	455,000	310,000
11,500		455,000	310,000
12,000		480,000	330,000
12,200		480,000	330,000
12,500		480,000	330,000
13,000		480,000	330,000

Outils de forage



Forets hélicoïdaux extra-longs

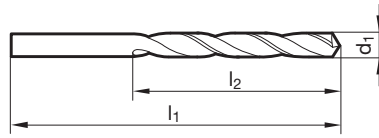


- P** • Amin. de l'âme  $\geq \varnothing 6,000$  • affûtage à dépouille conique • goujures larges • pour les perçages très profonds
- M** • en cas de mauvaise évacuation des copeaux
- K** •
- N** • fontes grises et aciers jusqu'à 1000 N/mm<sup>2</sup> • Ne pas utiliser pour les aciers CrNi et les aciers inox
- S**
- H**

Matière de coupe **HSS**

Surface

Sens de coupe



N° d'article **242**

Outils de forage

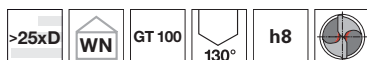
d1		l1	l2
mm	inch		
6,000		500,000	400,000
8,000		500,000	400,000
10,000		600,000	500,000
11,000		600,000	500,000
12,000		600,000	500,000

d1		l1	l2
mm	inch		





Forets hélicoïdaux extra-longs



Matière de coupe **HSS**

Surface ○

Sens de coupe (R)

**P** • Amin. de l'âme  $\geq \varnothing 8,000$  • affûtage à dépouille conique • goujures larges • pour les perçages très profonds

**M** • en cas de mauvaise évacuation des copeaux

**K** •

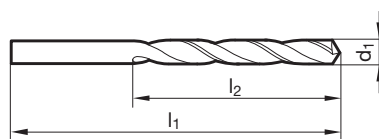
**N** • fontes grises et aciers jusqu'à 1000 N/mm<sup>2</sup> • Ne pas utiliser pour les aciers CrNi et les aciers inox

**S**

**H**

**GUHRING** NAVIGATOR

Paramètres de coupe, page 790



N° d'article **243**

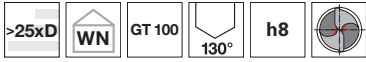
d1		l1	l2
mm	inch	mm	mm
8,000		750,000	650,000
10,000		750,000	650,000
11,000		750,000	650,000
12,000		750,000	650,000

d1		l1	l2
mm	inch	mm	mm

Outils de forage



Forets hélicoïdaux extra-longs



- P** • Amin. de l'âme  $\geq \text{Ø } 10,000$  • affûtage à dépouille conique • goujures larges • pour les perçages très profonds
- M** • en cas de mauvaise évacuation des copeaux
- K** •
- N** • fontes grises et aciers jusqu'à  $1000 \text{ N/mm}^2$  • Ne pas utiliser pour les aciers CrNi et les aciers inox
- S**
- H**

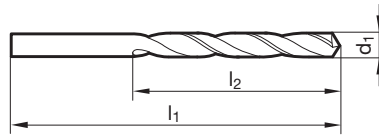
Matière de coupe **HSS**

Surface ○

Sens de coupe (R)

**GÜHRING** NAVIGATOR

Paramètres de coupe, page 790



N° d'article **244**

Outils de forage

d1		l1	l2
mm	inch		
10,000		1000,000	850,000
11,000		1000,000	850,000
12,000		1000,000	850,000

d1		l1	l2
mm	inch		



## Forets hélicoïdaux extra-longs, série 1


 Matière de coupe **HSS**

Surface

Sens de coupe

**P** • Amin. de l'âme  $\geq \varnothing 7,800$  • affûtage à dépouille conique • pour les perçages très profonds

**M**

**K** •

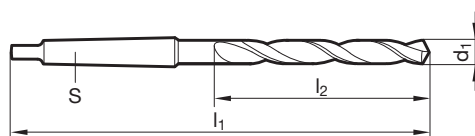
**N** ○ acier, fonte aciérée (alliée / non alliée) • fontes grises, fontes malléables, fontes à graphite sphéroïdal • fer fritté, maillechort, graphite

**S**

**H**

**GUHRING**NAVIGATOR

Paramètres de coupe, page 788


 N° d'article **266**

d1		S	l1	l2	d1		S	l1	l2
mm	inch		mm	mm	mm	inch		mm	mm
8,000		MK-1	265,000	165,000	20,500		MK-2	385,000	260,000
8,500		MK-1	265,000	165,000	20,640	13/16	MK-2	385,000	260,000
9,000		MK-1	275,000	175,000	21,000		MK-2	385,000	260,000
9,500		MK-1	275,000	175,000	21,430	27/32	MK-2	405,000	270,000
10,000		MK-1	285,000	185,000	21,500		MK-2	405,000	270,000
10,200		MK-1	285,000	185,000	22,000		MK-2	405,000	270,000
10,250		MK-1	285,000	185,000	22,500		MK-2	405,000	270,000
10,500		MK-1	285,000	185,000	23,000		MK-2	405,000	270,000
11,000		MK-1	300,000	195,000	23,020	29/32	MK-2	405,000	270,000
11,400		MK-1	300,000	195,000	23,500		MK-3	425,000	270,000
11,500		MK-1	300,000	195,000	24,000		MK-3	440,000	290,000
11,750		MK-1	300,000	195,000	24,500		MK-3	440,000	290,000
11,800		MK-1	300,000	195,000	25,000	63/64	MK-3	440,000	290,000
12,000		MK-1	310,000	205,000	26,000		MK-3	440,000	290,000
12,200		MK-1	310,000	205,000	26,500		MK-3	440,000	290,000
12,500		MK-1	310,000	205,000	27,000		MK-3	460,000	305,000
12,700	1/2	MK-1	310,000	205,000	28,000		MK-3	460,000	305,000
13,000		MK-1	310,000	205,000	30,000		MK-3	460,000	305,000
13,500		MK-1	325,000	220,000	30,500		MK-3	480,000	320,000
13,750		MK-1	325,000	220,000	31,000		MK-3	480,000	320,000
14,000		MK-1	325,000	220,000	32,000		MK-4	505,000	320,000
14,290	9/16	MK-2	340,000	220,000	33,000		MK-4	505,000	320,000
14,500		MK-2	340,000	220,000	34,000		MK-4	530,000	340,000
15,000		MK-2	340,000	220,000	35,000		MK-4	530,000	340,000
15,250		MK-2	355,000	230,000	36,000		MK-4	530,000	340,000
15,500		MK-2	355,000	230,000	38,000		MK-4	555,000	360,000
15,750		MK-2	355,000	230,000	39,000		MK-4	555,000	360,000
15,800		MK-2	355,000	230,000	40,000		MK-4	555,000	360,000
16,000		MK-2	355,000	230,000	42,000		MK-4	555,000	360,000
16,250		MK-2	355,000	230,000	45,000		MK-4	585,000	385,000
16,500		MK-2	355,000	230,000	45,240	1 25/32	MK-4	585,000	385,000
16,670	21/32	MK-2	355,000	230,000	48,000		MK-4	605,000	405,000
17,000		MK-2	355,000	230,000	50,000		MK-4	605,000	405,000
17,500		MK-2	370,000	245,000					
17,750		MK-2	370,000	245,000					
18,000		MK-2	370,000	245,000					
18,500		MK-2	370,000	245,000					
18,650	47/64	MK-2	370,000	245,000					
19,000		MK-2	370,000	245,000					
19,500		MK-2	385,000	260,000					
19,750		MK-2	385,000	260,000					
20,000		MK-2	385,000	260,000					



Forets hélicoïdaux extra-longs, série 1

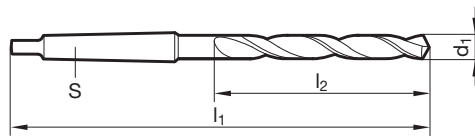


- P** • Amin. de l'âme  $\geq \varnothing 5,800$  • affûtage à dépouille conique • goujures larges • pour les perçages très profonds
- M** • en cas de mauvaise évacuation des copeaux
- K** •
- N** • fontes grises et aciers jusqu'à 1000 N/mm<sup>2</sup> • Ne pas utiliser pour les aciers CrNi et les aciers inox
- S**
- H**

Matière de coupe	<b>HSS</b>
Surface	$\frac{0,016}{16,0}$
Sens de coupe	(R)

**GÜHRING** NAVIGATOR

Paramètres de coupe, page 790



N° d'article **526**

Outils de forage

d1		S	l1	l2	d1		S	l1	l2
mm	inch				mm	inch			
8,000		MK-1	265,000	165,000	15,870	5/8	MK-2	355,000	230,000
8,500		MK-1	265,000	165,000	16,000		MK-2	355,000	230,000
8,600		MK-1	275,000	175,000	16,500		MK-2	355,000	230,000
8,700		MK-1	275,000	175,000	17,000		MK-2	355,000	230,000
9,000		MK-1	275,000	175,000	17,460	11/16	MK-2	370,000	245,000
9,500		MK-1	275,000	175,000	17,500		MK-2	370,000	245,000
9,520	3/8	MK-1	285,000	185,000	18,000		MK-2	370,000	245,000
9,800		MK-1	285,000	185,000	18,500		MK-2	370,000	245,000
10,000		MK-1	285,000	185,000	19,000		MK-2	370,000	245,000
10,200		MK-1	285,000	185,000	19,500		MK-2	385,000	260,000
10,500		MK-1	285,000	185,000	20,000		MK-2	385,000	260,000
10,720	27/64	MK-1	300,000	195,000	20,500		MK-2	385,000	260,000
11,000		MK-1	300,000	195,000	21,000		MK-2	385,000	260,000
11,110	7/16	MK-1	300,000	195,000	21,500		MK-2	405,000	270,000
11,500		MK-1	300,000	195,000	22,000		MK-2	405,000	270,000
11,510	29/64	MK-1	300,000	195,000	23,000		MK-2	405,000	270,000
11,750		MK-1	300,000	195,000	24,000		MK-3	440,000	290,000
12,000		MK-1	310,000	205,000	25,000	63/64	MK-3	440,000	290,000
12,500		MK-1	310,000	205,000	26,000		MK-3	440,000	290,000
12,700	1/2	MK-1	310,000	205,000	26,500		MK-3	440,000	290,000
12,800		MK-1	310,000	205,000	28,000		MK-3	460,000	305,000
13,000		MK-1	310,000	205,000	28,500		MK-3	460,000	305,000
13,490	17/32	MK-1	325,000	220,000	29,000		MK-3	460,000	305,000
13,500		MK-1	325,000	220,000	30,000		MK-3	460,000	305,000
14,000		MK-1	325,000	220,000					
14,200		MK-2	340,000	220,000					
14,290	9/16	MK-2	340,000	220,000					
14,500		MK-2	340,000	220,000					
15,000		MK-2	340,000	220,000					
15,500		MK-2	355,000	230,000					



Forets hélicoïdaux extra-longs, série 1



Matière de coupe **HSS**

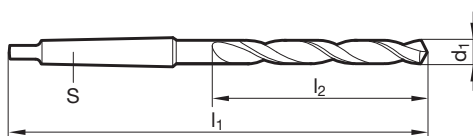
Surface

Sens de coupe

- P** ○ Amin. de l'âme  $\geq \varnothing 7,900$  • affûtage à dépouille conique • pour les perçages très profonds
- M** ■ • pour matières tendres et à copeaux longs
- K** ■
- N** ● matières tendres et à copeaux longs  $< 500 \text{ N/mm}^2$  • aciers de décolletage, doux • aluminium/alliages d'aluminium à copeaux longs
- S** ■ • zinc, cuivre de 1ère fusion, Alpax, électrode • zamak, thermoplastiques, bois
- H** ■

**GÜHRING** NAVIGATOR

Paramètres de coupe, page 788



N° d'article **525**

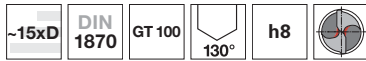
d1		S	l1	l2
mm	inch		mm	mm
8,500		MK-1	265,000	165,000
8,700		MK-1	275,000	175,000
9,000		MK-1	275,000	175,000
9,500		MK-1	275,000	175,000
10,000		MK-1	285,000	185,000
10,500		MK-1	285,000	185,000
11,000		MK-1	300,000	195,000
12,000		MK-1	310,000	205,000
12,500		MK-1	310,000	205,000
13,000		MK-1	310,000	205,000
13,500		MK-1	325,000	220,000
14,000		MK-1	325,000	220,000
15,000		MK-2	340,000	220,000
15,500		MK-2	355,000	230,000
16,000		MK-2	355,000	230,000
18,000		MK-2	370,000	245,000
19,500		MK-2	385,000	260,000
21,000		MK-2	385,000	260,000

d1		S	l1	l2
mm	inch		mm	mm
23,000		MK-2	405,000	270,000
24,000		MK-3	440,000	290,000
24,300		MK-3	440,000	290,000
24,380		MK-3	440,000	290,000
24,500		MK-3	440,000	290,000
25,500		MK-3	440,000	290,000
26,500		MK-3	440,000	290,000
27,500		MK-3	460,000	305,000
28,000		MK-3	460,000	305,000
29,000		MK-3	460,000	305,000
31,000		MK-3	480,000	320,000
33,000		MK-4	505,000	320,000

Outils de forage



Forets hélicoïdaux extra-longs, série 1



Matière de coupe **HSCO**

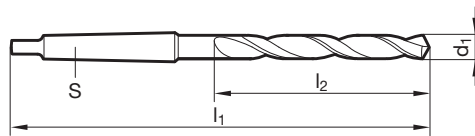
Surface

Sens de coupe

- P** • Amin. de l'âme  $\geq \varnothing 9,520$  • affûtage à dépouille conique • acier rapide au Co • goujures larges • meilleure résistance à l'usure • pour les perçages très profonds
- M** •
- K** • en cas de mauvaise évacuation des copeaux
- N** • aciers et fontes aciérées à haute résistance • fontes grises, fontes malléables, fontes à graphite sphéroïdal
- S** •
- H** ○

**GÜHRING** NAVIGATOR

Paramètres de coupe, page 794



N° d'article **620**

Outils de forage

d1		S	l1	l2	d1		S	l1	l2
mm	inch				mm	mm			
9,520	3/8	MK-1	285,000	185,000	17,500		MK-2	370,000	245,000
10,000		MK-1	285,000	185,000	18,000		MK-2	370,000	245,000
10,200		MK-1	285,000	185,000	18,500		MK-2	370,000	245,000
10,320	13/32	MK-1	285,000	185,000	19,000		MK-2	370,000	245,000
10,500		MK-1	285,000	185,000	20,000		MK-2	385,000	260,000
11,000		MK-1	300,000	195,000	21,000		MK-2	385,000	260,000
11,110	7/16	MK-1	300,000	195,000	21,830		MK-2	405,000	270,000
11,500		MK-1	300,000	195,000	22,000		MK-2	405,000	270,000
11,510	29/64	MK-1	300,000	195,000	22,620		MK-2	405,000	270,000
12,000		MK-1	310,000	205,000	23,000		MK-2	405,000	270,000
12,300	31/64	MK-1	310,000	205,000	25,500		MK-3	440,000	290,000
12,500		MK-1	310,000	205,000	26,000		MK-3	440,000	290,000
12,700	1/2	MK-1	310,000	205,000	27,180		MK-3	460,000	305,000
13,000		MK-1	310,000	205,000	29,370	1 5/32	MK-3	460,000	305,000
13,500		MK-1	325,000	220,000	30,000		MK-3	460,000	305,000
14,000		MK-1	325,000	220,000					
14,290	9/16	MK-2	340,000	220,000					
14,500		MK-2	340,000	220,000					
15,000		MK-2	340,000	220,000					
15,080	19/32	MK-2	355,000	230,000					
15,500		MK-2	355,000	230,000					
16,000		MK-2	355,000	230,000					
16,500		MK-2	355,000	230,000					
17,000		MK-2	355,000	230,000					



Forets hélicoïdaux extra-longs, série 2



Matière de coupe **HSS**

Surface

Sens de coupe

**P** • Amin. de l'âme  $\geq \varnothing 7,700$  • affûtage à dépouille conique • pour les perçages très profonds

**M**

**K** •

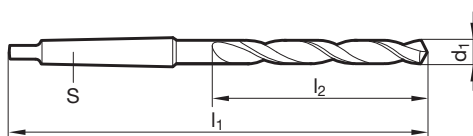
**N** ○ acier, fonte aciérée (alliée / non alliée) • fontes grises, fontes malléables, fontes à graphite sphéroïdal • fer fritté, maillechort, graphite

**S**

**H**

**GUHRING** NAVIGATOR

Paramètres de coupe, page 788



N° d'article **267**

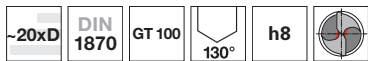
d1		S	l1	l2
mm	inch		mm	mm
8,000		MK-1	330,000	210,000
8,500		MK-1	330,000	210,000
9,000		MK-1	345,000	220,000
10,000		MK-1	360,000	235,000
10,200		MK-1	360,000	235,000
10,500		MK-1	360,000	235,000
11,000		MK-1	375,000	250,000
11,500		MK-1	375,000	250,000
11,750		MK-1	375,000	250,000
11,800		MK-1	375,000	250,000
12,000		MK-1	395,000	260,000
13,000		MK-1	395,000	260,000
13,490	17/32	MK-1	410,000	275,000
13,500		MK-1	410,000	275,000
14,000		MK-1	410,000	275,000
14,500		MK-2	425,000	275,000
15,000		MK-2	425,000	275,000
15,480	39/64	MK-2	445,000	295,000
15,500		MK-2	445,000	295,000
16,000		MK-2	445,000	295,000
16,500		MK-2	445,000	295,000
17,000		MK-2	445,000	295,000
17,070	43/64	MK-2	465,000	310,000
17,500		MK-2	465,000	310,000
18,000		MK-2	465,000	310,000
18,500		MK-2	465,000	310,000
19,000		MK-2	465,000	310,000
19,050	3/4	MK-2	490,000	325,000
19,500		MK-2	490,000	325,000
20,000		MK-2	490,000	325,000

d1		S	l1	l2
mm	inch		mm	mm
20,640	13/16	MK-2	490,000	325,000
21,000		MK-2	490,000	325,000
21,430	27/32	MK-2	515,000	345,000
21,500		MK-2	515,000	345,000
21,830	55/64	MK-2	515,000	345,000
22,000		MK-2	515,000	345,000
22,800		MK-2	515,000	345,000
23,000		MK-2	515,000	345,000
23,020	29/32	MK-2	515,000	345,000
23,750		MK-3	555,000	365,000
23,810	15/16	MK-3	555,000	365,000
24,000		MK-3	555,000	365,000
24,500		MK-3	555,000	365,000
25,000	63/64	MK-3	555,000	365,000
26,000		MK-3	555,000	365,000
28,000		MK-3	580,000	385,000
29,500		MK-3	580,000	385,000
30,000		MK-3	580,000	385,000
31,000		MK-3	610,000	410,000
32,000		MK-4	635,000	410,000
34,000		MK-4	665,000	430,000
40,000		MK-4	695,000	460,000
45,000		MK-4	735,000	490,000

Outils de forage



Forets hélicoïdaux extra-longs, série 2

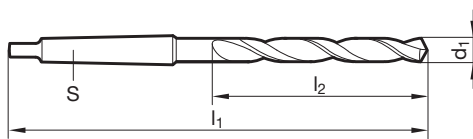


- P** • Amin. de l'âme  $\geq \varnothing 7,800$  • affûtage à dépouille conique • goujures larges • en cas de mauvaise évacuation des copeaux • pour les perçages très profonds
- M**
- K** •
- N** • fontes grises et aciers jusqu'à 1000 N/mm<sup>2</sup> • Ne pas utiliser pour les aciers CrNi et les aciers inox
- S**
- H**

Matière de coupe **HSS**

Surface

Sens de coupe



N° d'article **527**

Outils de forage

d1		S	l1	l2	d1		S	l1	l2
mm	inch				mm	inch			
8,000		MK-1	330,000	210,000	17,500		MK-2	465,000	310,000
8,400		MK-1	330,000	210,000	17,800		MK-2	465,000	310,000
8,500		MK-1	330,000	210,000	18,000		MK-2	465,000	310,000
9,000		MK-1	345,000	220,000	18,500		MK-2	465,000	310,000
9,500		MK-1	345,000	220,000	19,000		MK-2	465,000	310,000
10,000		MK-1	360,000	235,000	19,450	49/64	MK-2	490,000	325,000
10,500		MK-1	360,000	235,000	19,500		MK-2	490,000	325,000
11,000		MK-1	375,000	250,000	20,000		MK-2	490,000	325,000
11,110	7/16	MK-1	375,000	250,000	20,500		MK-2	490,000	325,000
11,500		MK-1	375,000	250,000	21,000		MK-2	490,000	325,000
11,510	29/64	MK-1	375,000	250,000	21,030	53/64	MK-2	490,000	325,000
11,800		MK-1	375,000	250,000	21,430	27/32	MK-2	515,000	345,000
11,910	15/32	MK-1	395,000	260,000	22,000		MK-2	515,000	345,000
12,000		MK-1	395,000	260,000	23,000		MK-2	515,000	345,000
12,500		MK-1	395,000	260,000	23,020	29/32	MK-2	515,000	345,000
12,700	1/2	MK-1	395,000	260,000	23,810	15/16	MK-3	555,000	365,000
13,000		MK-1	395,000	260,000	24,000		MK-3	555,000	365,000
13,500		MK-1	410,000	275,000	24,210	61/64	MK-3	555,000	365,000
13,700		MK-1	410,000	275,000	25,000	63/64	MK-3	555,000	365,000
13,800		MK-1	410,000	275,000	26,000		MK-3	555,000	365,000
13,890	35/64	MK-1	410,000	275,000	26,190	1 1/32	MK-3	555,000	365,000
14,000		MK-1	410,000	275,000	26,500		MK-3	555,000	365,000
14,290	9/16	MK-2	425,000	275,000	27,000		MK-3	580,000	385,000
14,500		MK-2	425,000	275,000	28,000		MK-3	580,000	385,000
15,000		MK-2	425,000	275,000	28,750		MK-3	580,000	385,000
15,500		MK-2	445,000	295,000	29,000		MK-3	580,000	385,000
16,000		MK-2	445,000	295,000	29,500		MK-3	580,000	385,000
16,500		MK-2	445,000	295,000	30,000		MK-3	580,000	385,000
17,000		MK-2	445,000	295,000					
17,070	43/64	MK-2	465,000	310,000					





Forets hélicoïdaux extra-longs, série 2



Matière de coupe **HSS**

Surface ○

Sens de coupe (R)

**P** ○ Amin. de l'âme  $\geq \varnothing 8,000$  • affûtage à dépouille conique • pour les perçages très profonds

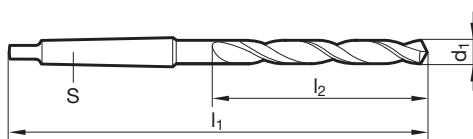
**M**

**K**

**N** • matières tendres et à copeaux longs  $< 500 \text{ N/mm}^2$  • aciers de décolletage, doux • aluminium/alliages d'aluminium à copeaux longs  
**S** • zinc, cuivre de 1ère fusion, Alpax, électrode • zamak, thermoplastiques, bois  
**H**

**GUHRING NAVIGATOR**

Paramètres de coupe, page 788



N° d'article **542**

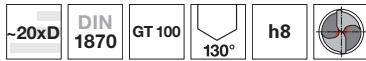
d1		S	l1	l2
mm	inch		mm	mm
8,500		MK-1	330,000	210,000
8,600		MK-1	345,000	220,000
8,800		MK-1	345,000	220,000
9,000		MK-1	345,000	220,000
9,500		MK-1	345,000	220,000
10,500		MK-1	360,000	235,000
10,700		MK-1	375,000	250,000
11,000		MK-1	375,000	250,000
11,500		MK-1	375,000	250,000
12,000		MK-1	395,000	260,000
12,500		MK-1	395,000	260,000
13,000		MK-1	395,000	260,000
13,500		MK-1	410,000	275,000
14,500		MK-2	425,000	275,000
15,000		MK-2	425,000	275,000
17,000		MK-2	445,000	295,000
17,500		MK-2	465,000	310,000
20,500		MK-2	490,000	325,000

d1		S	l1	l2
mm	inch		mm	mm
21,000		MK-2	490,000	325,000
21,500		MK-2	515,000	345,000
22,000		MK-2	515,000	345,000
23,000		MK-2	515,000	345,000
24,000		MK-3	555,000	365,000
24,500		MK-3	555,000	365,000
25,500		MK-3	555,000	365,000
26,000		MK-3	555,000	365,000
26,500		MK-3	555,000	365,000
27,500		MK-3	580,000	385,000
28,000		MK-3	580,000	385,000
29,000		MK-3	580,000	385,000
29,500		MK-3	580,000	385,000
30,000		MK-3	580,000	385,000
31,000		MK-3	610,000	410,000

Outils de forage



Forets hélicoïdaux extra-longs, série 2

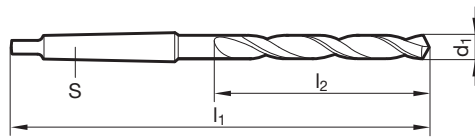


Matière de coupe	<b>HSCO</b>
Surface	$\frac{+0}{16,0}$
Sens de coupe	(R)

- P** • Amin. de l'âme  $\geq \varnothing 9,520$  • affûtage à dépouille conique • acier rapide au Co • goujures larges • résistance à l'usure, améliorée • en cas de mauvaise évacuation des copeaux • pour les perçages très profonds
- M** •
- K** •
- N** • aciers et fontes aciérées à haute résistance • fontes grises, fontes malléables, fontes à graphite sphéroïdal
- S** •
- H** ○

**GÜHRING** NAVIGATOR

Paramètres de coupe, page 794



N° d'article **621**

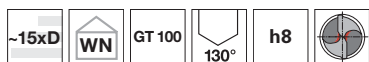
Outils de forage

d1		S	l1	l2
mm	inch			
9,520	3/8	MK-1	360,000	235,000
10,000		MK-1	360,000	235,000
10,500		MK-1	360,000	235,000
10,720	27/64	MK-1	375,000	250,000
11,000		MK-1	375,000	250,000
11,500		MK-1	375,000	250,000
11,510	29/64	MK-1	375,000	250,000
12,000		MK-1	395,000	260,000
12,500		MK-1	395,000	260,000
12,700	1/2	MK-1	395,000	260,000
13,000		MK-1	395,000	260,000
13,500		MK-1	410,000	275,000

d1		S	l1	l2
mm	inch			
14,000		MK-1	410,000	275,000
14,500		MK-2	425,000	275,000
15,000		MK-2	425,000	275,000
16,000		MK-2	445,000	295,000
16,270		MK-2	445,000	295,000
18,000		MK-2	465,000	310,000
18,500		MK-2	465,000	310,000
19,000		MK-2	465,000	310,000
20,000		MK-2	490,000	325,000
21,430	27/32	MK-2	515,000	345,000
23,420	59/64	MK-3	535,000	345,000



Forets à canaux de lubrification, long. gouj. DIN 1870



Matière de coupe **HSCO**

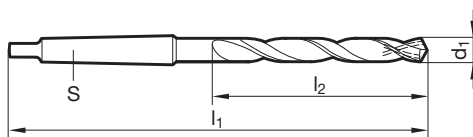
Surface

Sens de coupe

- P** • Amin. de l'âme  $\geq \varnothing 11,000$  • affûtage à dépouille conique • adduction axiale du liquide de refroid. p. le CM • acier rapide au Co • meilleure résistance à l'usure • pour le perçage avec canons de perçage
- M** •
- K** •
- N** • aciers tenaces et aciers à haute résistance • fontes aciérées, fontes grises • aciers inox., inaltérables aux acides et réfractaires • résistance jusqu'à 1300 N/mm<sup>2</sup>
- S** •
- H** ○

**GÜHRING** NAVIGATOR

Paramètres de coupe, page 794



N° d'article **374**

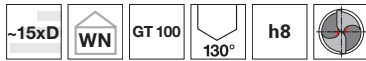
d1		S	l1	l2
mm	inch		mm	mm
11,000		MK-2	312,000	195,000
12,000		MK-2	322,000	205,000
12,300	31/64	MK-2	322,000	205,000
12,500		MK-2	322,000	205,000
13,000		MK-2	322,000	205,000
14,000		MK-2	337,000	220,000
15,000		MK-2	337,000	220,000
16,000		MK-2	347,000	230,000
16,500		MK-2	347,000	230,000
17,500		MK-2	362,000	245,000
18,000		MK-2	362,000	245,000
18,500		MK-3	381,000	245,000
19,840	25/32	MK-3	396,000	260,000
20,000		MK-3	396,000	260,000
21,000		MK-3	396,000	260,000
21,430	27/32	MK-3	406,000	270,000
21,500		MK-3	406,000	270,000
24,610	31/32	MK-3	426,000	290,000

d1		S	l1	l2
mm	inch		mm	mm
28,570	1 1/8	MK-4	468,000	305,000
28,750		MK-4	468,000	305,000
29,370	1 5/32	MK-4	468,000	305,000
30,960	1 7/32	MK-4	483,000	320,000
32,250		MK-4	493,000	320,000
32,540	1 9/32	MK-4	493,000	320,000
34,000		MK-4	513,000	340,000

Outils de forage



Forets à canaux de lubrification, long. gouj. DIN 1870



Matière de coupe **HSCO**

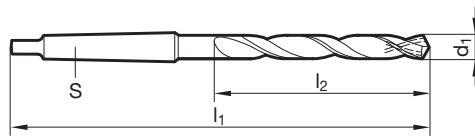
Surface

Sens de coupe

- P** • Amin. de l'âme  $\geq \text{Ø } 11,000$  • affûtage à dépouille conique • adduction radiale du liquide de refroid. p. bague d'adduct. Gühring • acier rapide
- M** • au Co • résistance à l'usure, améliorée • pour le perçage avec canons de perçage
- K** •
- N** • aciers tenaces et aciers à haute résistance • fontes aciérées, fontes grises • aciers inox., inaltérables aux acides et réfractaires • résistance jusqu'à 1300 N/mm<sup>2</sup>
- S** •
- H** ○

**GÜHRING** NAVIGATOR

Paramètres de coupe, page 794



N° d'article **375**

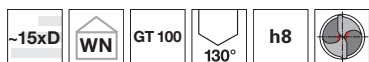
Outils de forage

d1		S	l1	l2
mm	inch			
11,000		MK-2	312,000	195,000
11,110	7/16	MK-2	312,000	195,000
11,510	29/64	MK-2	312,000	195,000
12,800		MK-2	322,000	205,000
13,500		MK-2	337,000	220,000
18,260	23/32	MK-3	381,000	245,000
19,000		MK-3	381,000	245,000
21,000		MK-3	396,000	260,000
21,430	27/32	MK-3	406,000	270,000
24,500		MK-3	426,000	290,000
25,000	63/64	MK-3	426,000	290,000
25,400	1	MK-3	426,000	290,000

d1		S	l1	l2
mm	inch			
26,500		MK-3	426,000	290,000
28,570	1 1/8	MK-4	468,000	305,000
30,960	1 7/32	MK-4	483,000	320,000
32,540	1 9/32	MK-4	493,000	320,000
33,340	1 5/16	MK-4	493,000	320,000
34,000		MK-4	513,000	340,000



Forets à canaux de lubrification, long. gouj. DIN 1870



Matière de coupe **HSCO**

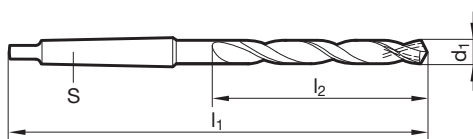
Surface

Sens de coupe

- P** • Amin. de l'âme  $\geq \varnothing 11,000$  • affûtage à dépouille conique • adduction radiale du liquide de refroid. p. le CM • acier rapide au Co • résistance à l'usure, améliorée • pour le perçage avec canons de perçage
- M** •
- K** •
- N** • aciers tenaces et aciers à haute résistance • fontes aciérées, fontes grises • aciers inox., inaltérables aux acides et réfractaires • résistance jusqu'à 1300 N/mm<sup>2</sup>
- S** •
- H** ○

**GÜHRING** NAVIGATOR

Paramètres de coupe, page 794

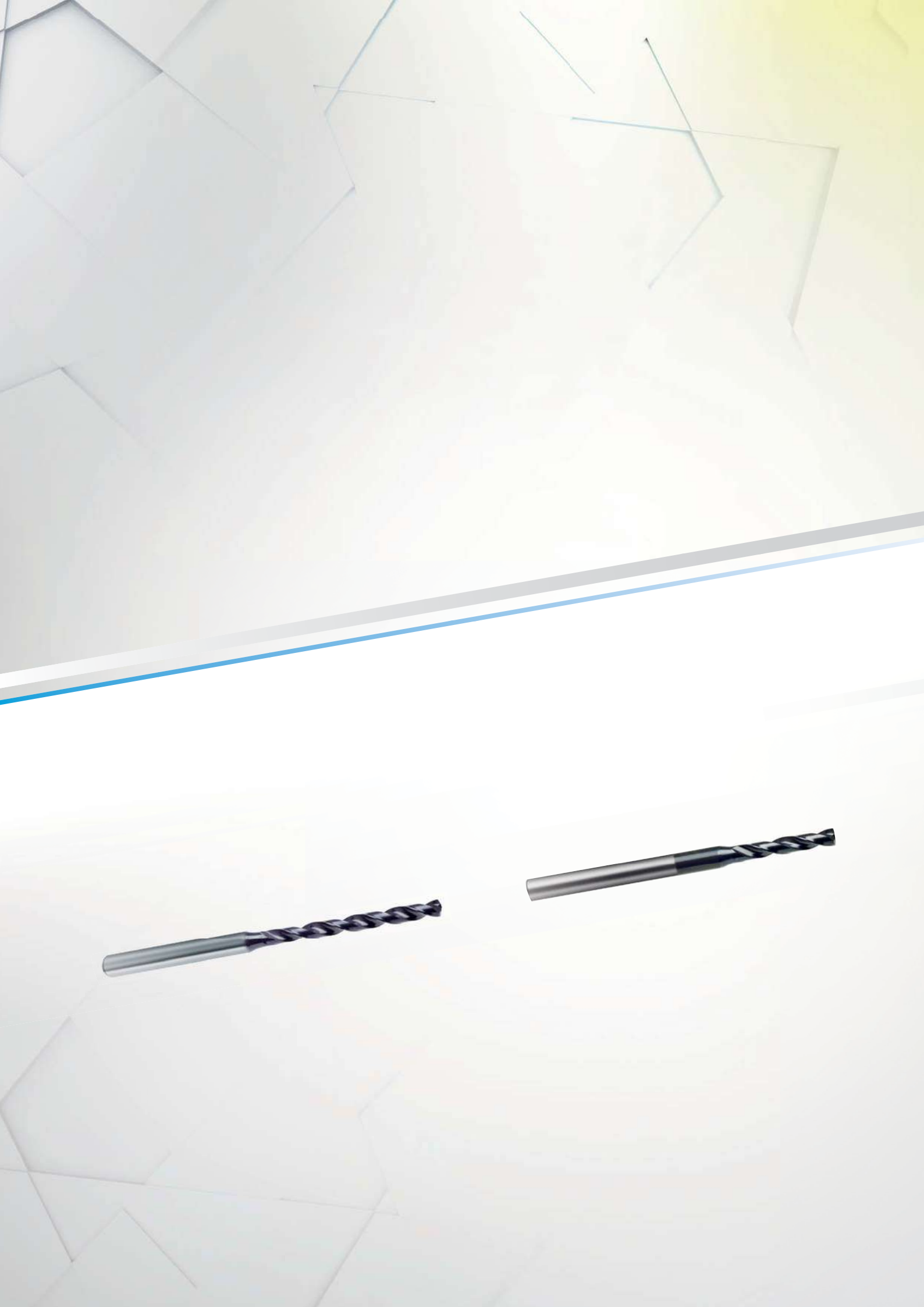


N° d'article **376**

d1		S	l1	l2
mm	inch		mm	mm
11,000		MK-2	312,000	195,000
13,000		MK-2	322,000	205,000
14,000		MK-2	337,000	220,000
16,500		MK-2	347,000	230,000
18,000		MK-2	362,000	245,000
19,840	25/32	MK-3	396,000	260,000

d1		S	l1	l2
mm	inch		mm	mm
21,500		MK-3	406,000	270,000
27,780	1 3/32	MK-4	468,000	305,000
29,000		MK-4	468,000	305,000

Outils de forage



# MICROFORETS



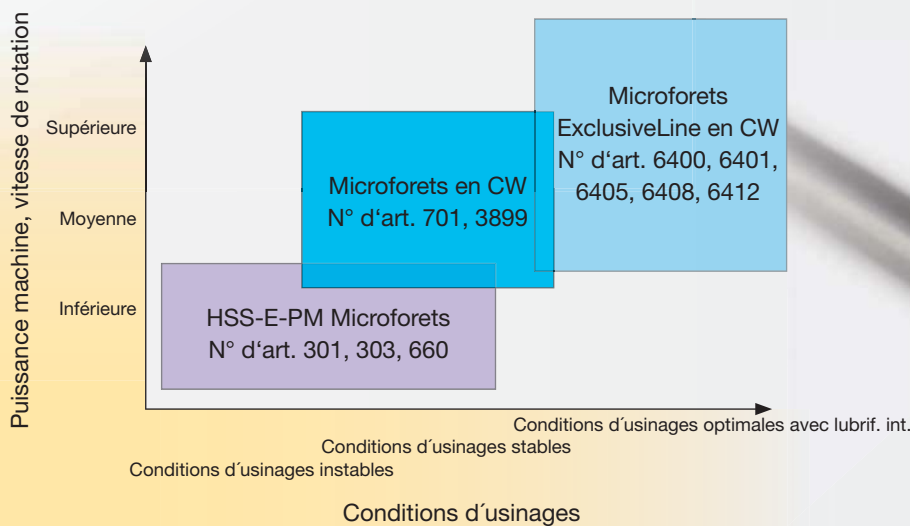


# Types de Microforets

## AVANTAGES ET DOMAINES D'APPLICATIONS

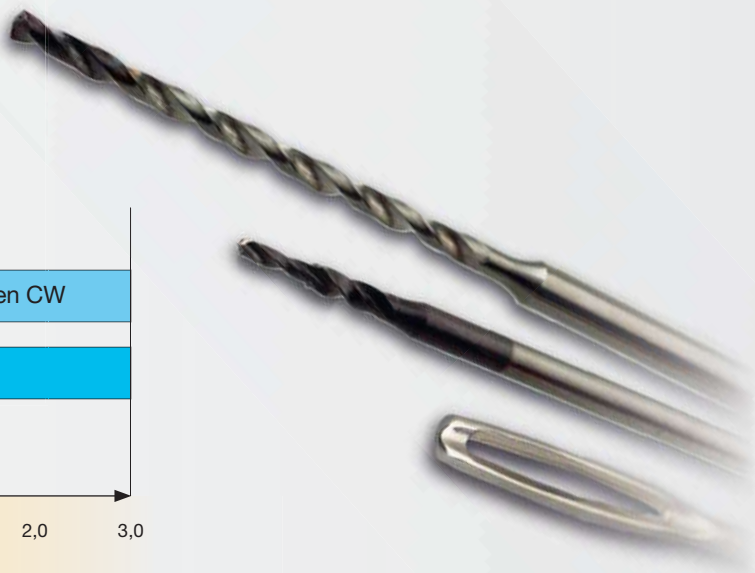
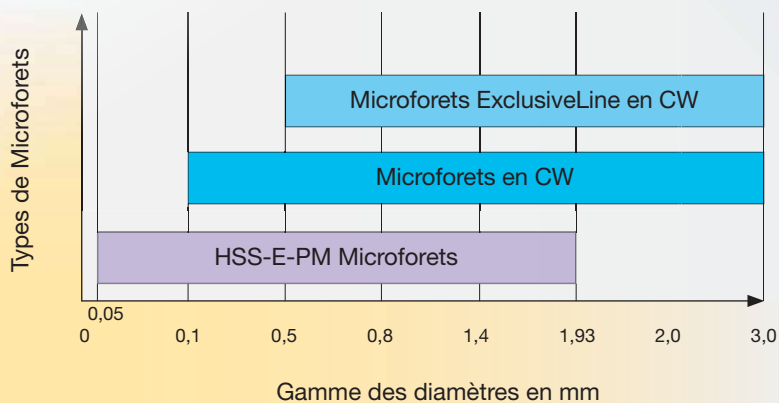
Appropriés pour les fabrications de grandes séries, sur les machines à haut rendement pourvues de lubrification intérieure, mais aussi, pour l'usinage de plus petites séries,

sur des machines moins performantes ou pour solutionner des cas d'usinages très difficiles, la Société Gühring vous offre toujours une solution optimale.



## DÉNOMBREMENT DU PROGRAMME

Le programme complet de Microforets CW monobloc et A.R. en HSS-E-PM (Acier Fritté) Gühring couvre la gamme de diamètres de 0,05 mm à 3,00 mm:



Le programme de Microforets Gühring, avec des outils en carbures métalliques monobloc et en acier rapide fritté (HSS-E-PM), est optimal pour la réalisation des perçages jusqu'au plus petit diamètre, dans tous les domaines d'applications.

La réalisation des perçages de diamètres inférieurs, de plus haute précision, demande une qualité exceptionnelle des outils de perçages et reste l'une des opérations de perçages très sophistiquées. Avec son programme standard et complet de Microforets, Gühring vous offre pour chacun des cas d'usinages de chacun des utilisateurs, le foret optimal.





## MICROFORETS EN HSS-E-PM

Les Microforets Gühring en acier fritté HSS-E-PM « Haute Performance » se distinguent nettement par une grande résistance à l'usure et une haute ténacité des arêtes de coupe, facteur très important lors de l'usinage sur des machines dont les conditions d'usinage sont instables. La structure de l'acier rapide fritté HSS-E est très homogène, facteur très important, afin de pouvoir garantir constamment de hauts rendements d'usinages avec les Microforets.



Les Microforets Gühring en acier fritté HSS-E-PM « Haute Performance » sont, par exemple, particulièrement bien recommandés pour l'usinage sur les machines multibroches, sur les machines avec des vitesses de rotation inférieures ou lorsqu'il s'agit de réaliser de petites séries et de garantir un rapport de « Prix / Qualité » optimal. Afin d'obtenir de plus hautes performances des tenues de coupe avec des paramètres de coupe plus élevés, Gühring vous offre un programme standard de Microforets pourvus du revêtement TiN. Pour les cas d'usinages spécifiques et besoins d'outils avec coupe à gauche, Gühring vous offre aussi une solution avec des outils standards.

## MICROFORETS EN CW

Les Microforets Gühring en CW monobloc, sans lubrification intérieure, couvrent la gamme de diamètres de 0,10 mm à 3,00 mm. Comparés aux Microforets en acier rapide fritté HSS-E-PM, les Microforets en CW monobloc assurent, lorsque les conditions d'usinages sont stables sur des machines à haut rendement, des paramètres de coupe



plus élevés ainsi que des tenues de coupe d'outils plus importantes. Cela provient de la granulométrie extrafine des carbures métalliques qui augmente la dureté, la résistance à la chaleur et la résistance à l'usure, tout cela afin d'améliorer les hautes performances des Microforets en CW.

## MICROFORETS EXCLUSIVELINE EN CW, AUSSI AVEC LUBRIFICATION INTÉRIEURE

Les Microforets ExclusiveLine en CW monobloc, disponibles sans et avec lubrification intérieure, assurent de hauts rendements d'usinages sur presque tous les matériaux. Au mieux appropriés lors de l'usinage de grandes séries sur machines à haut rendement assurant les conditions optimales au niveau des vitesses de rotation, l'énorme profit de leurs performances est absolument garanti. Grâce à l'affûtage deux pentes pour chacune des arêtes de coupe, avec affilage spécial par rectification, les paramètres de coupe sont plus élevés et la maîtrise des copeaux est optimale. Le profil spécial des goujures assure l'évacuation optimale des copeaux.

Pour les profondeurs de perçages jusqu'à 4xD et 7xD, les Microforets en CW, sans lubrification intérieure, sont disponibles dans les diamètres de 0,50 mm à 3,00 mm.



Surtout lors de l'usinage des aciers inoxydables et alliages spéciaux mais aussi lorsque les profondeurs de perçages sont importantes, les Microforets en CW 5xD, 8xD et 15xD, pourvus de la lubrification intérieure, démontrent leur énorme facteur de capacité productive. Grâce à leur géométrie optimisée, les Microforets en CW de Gühring ne nécessitent aucun déburrage pour les profondeurs de perçages jusqu'à 15xD. La construction des outils est étudiée de façon à ce que les Microforets en CW jusqu'à 4xD, sans lubrification interne, et jusqu'à 5xD, avec lubrification interne, réalisent un perçage pilote optimal avant le perçage avec les Microforets 15xD en CW monobloc.

Microforets

## SOLUTIONS SPÉCIALES SELON BESOINS ET SOUHAITS DU CLIENT

En parallèle au programme standard de Microforets, la société Gühring vous offre des outils spéciaux en CW monobloc et en acier fritté HSS-E-PM spécifiquement réalisés en fonction des besoins et souhaits des clients. Cela signifie:



- Diamètres intermédiaires à ceux du programme standard
- Outils étagés pour perçages étagés ou perçages avec chanfreinage ou lamage
- Longueurs spéciales jusqu'aux profondeurs = 30xD
- Différentes versions d'attachements
- Différents revêtements



P	M	K	N	S	H	Présentation	Profondeur	Norme	Type	Sens de coupe	Matière de coupe	Surface	d1/mm	N° d'article	Param. de coupe, page	Page
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Microforets en HSS-E PM fritté, sans canaux de lubrification

•	•	•	•	○			~5xD	DIN 1899	N	R	HSS-E-PM	○	0,050 - 1,920	301	796	649
•	•	•	•	○			~5xD	DIN 1899	N	R	HSS-E-PM	Ⓢ	0,160 - 1,900	660	796	652
•	•	•	•	○			~5xD	DIN 1899	N	L	HSS-E-PM	○	0,130 - 1,850	303	796	654

Microforets en CW monobloc, sans canaux de lubrification

•	○	○	○	○	○		~5xD	WN	N	R	VHM	○	0,200 - 1,400	701	796	656
•	•							WN	N	R	VHM	ⓐ	0,100 - 3,000	3899	796	657

Microforets ExclusiveLine sans canaux de lubrification

•	•	•	○	○			4xD	WN	N	R	VHM	ⓐ	0,500 - 3,000	6400	796	659
•	•	•	○	○			7xD	WN	N	R	VHM	ⓐ	0,500 - 3,000	6401	796	660

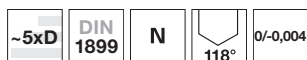
Microforets ExclusiveLine avec canaux de lubrification

•	•	•	○	○			5xD	WN	N	R	VHM	ⓐ	1,400 - 3,000	6405	796	661
•	•	•	○	○			8xD	WN	N	R	VHM	ⓐ	1,400 - 3,000	6408	796	662
•	•	•	○	○			15xD	WN	N	R	VHM	ⓐ	1,400 - 3,000	6412	796	663

Microforets



Microforets en HSS-E PM fritté, sans canaux de lubrification



Matière de coupe **HSS-E-PM**

Surface



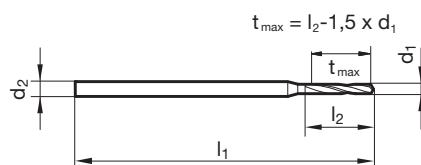
Sens de coupe



- P** • affûtage en pente • avec attachement renforcé • <math>\phi < 0,15\text{ mm}</math> acier rapide au Co
- M** •
- K** •
- N** • aciers hautement alliés
- S** ○
- H**

**GUHRING** NAVIGATOR

Paramètres de coupe, page 796



N° d'article **301**

d1	d2	l1	l2
mm	mm	mm	mm
0,050	1,000	25,000	0,400
0,060	1,000	25,000	0,400
0,070	1,000	25,000	0,500
0,075	1,000	25,000	0,500
0,080	1,000	25,000	0,500
0,090	1,000	25,000	0,500
0,100	1,000	25,000	0,500
0,105	1,000	25,000	0,500
0,110	1,000	25,000	0,500
0,115	1,000	25,000	0,500
0,120	1,000	25,000	0,500
0,121	1,000	25,000	0,800
0,125	1,000	25,000	0,800
0,128	1,000	25,000	0,800
0,130	1,000	25,000	0,800
0,140	1,000	25,000	0,800
0,143	1,000	25,000	0,800
0,145	1,000	25,000	0,800
0,147	1,000	25,000	0,800
0,150	1,000	25,000	0,800
0,155	1,000	25,000	1,100
0,160	1,000	25,000	1,100
0,170	1,000	25,000	1,100
0,175	1,000	25,000	1,100
0,180	1,000	25,000	1,100
0,190	1,000	25,000	1,100
0,195	1,000	25,000	1,500
0,200	1,000	25,000	1,500
0,205	1,000	25,000	1,500
0,210	1,000	25,000	1,500
0,215	1,000	25,000	1,500
0,220	1,000	25,000	1,500
0,225	1,000	25,000	1,500
0,230	1,000	25,000	1,500
0,235	1,000	25,000	1,500
0,240	1,000	25,000	1,500
0,245	1,000	25,000	1,900
0,250	1,000	25,000	1,900
0,255	1,000	25,000	1,900
0,260	1,000	25,000	1,900
0,265	1,000	25,000	1,900
0,270	1,000	25,000	1,900

d1	d2	l1	l2
mm	mm	mm	mm
0,275	1,000	25,000	1,900
0,280	1,000	25,000	1,900
0,285	1,000	25,000	1,900
0,290	1,000	25,000	1,900
0,295	1,000	25,000	1,900
0,300	1,000	25,000	1,900
0,305	1,000	25,000	2,400
0,310	1,000	25,000	2,400
0,315	1,000	25,000	2,400
0,320	1,000	25,000	2,400
0,325	1,000	25,000	2,400
0,330	1,000	25,000	2,400
0,335	1,000	25,000	2,400
0,340	1,000	25,000	2,400
0,345	1,000	25,000	2,400
0,350	1,000	25,000	2,400
0,355	1,000	25,000	2,400
0,360	1,000	25,000	2,400
0,365	1,000	25,000	2,400
0,370	1,000	25,000	2,400
0,375	1,000	25,000	2,400
0,380	1,000	25,000	2,400
0,385	1,000	25,000	3,000
0,390	1,000	25,000	3,000
0,400	1,000	25,000	3,000
0,405	1,000	25,000	3,000
0,410	1,000	25,000	3,000
0,415	1,000	25,000	3,000
0,420	1,000	25,000	3,000
0,425	1,000	25,000	3,000
0,430	1,000	25,000	3,000
0,432	1,000	25,000	3,000
0,435	1,000	25,000	3,000
0,440	1,000	25,000	3,000
0,445	1,000	25,000	3,000
0,450	1,000	25,000	3,000
0,455	1,000	25,000	3,000
0,460	1,000	25,000	3,000
0,470	1,000	25,000	3,000
0,475	1,000	25,000	3,000
0,480	1,000	25,000	3,000
0,485	1,000	25,000	3,400

Microforets



d1	d2	l1	l2
mm	mm	mm	mm
0,490	1,000	25,000	3,400
0,495	1,000	25,000	3,400
0,500	1,000	25,000	3,400
0,505	1,000	25,000	3,400
0,510	1,000	25,000	3,400
0,515	1,000	25,000	3,400
0,520	1,000	25,000	3,400
0,525	1,000	25,000	3,400
0,530	1,000	25,000	3,400
0,535	1,000	25,000	3,900
0,540	1,000	25,000	3,900
0,545	1,000	25,000	3,900
0,550	1,000	25,000	3,900
0,560	1,000	25,000	3,900
0,570	1,000	25,000	3,900
0,580	1,000	25,000	3,900
0,585	1,000	25,000	3,900
0,590	1,000	25,000	3,900
0,595	1,000	25,000	3,900
0,600	1,000	25,000	3,900
0,605	1,000	25,000	4,200
0,610	1,000	25,000	4,200
0,615	1,000	25,000	4,200
0,620	1,000	25,000	4,200
0,625	1,000	25,000	4,200
0,630	1,000	25,000	4,200
0,632	1,000	25,000	4,200
0,640	1,000	25,000	4,200
0,650	1,000	25,000	4,200
0,655	1,000	25,000	4,200
0,660	1,000	25,000	4,200
0,665	1,000	25,000	4,200
0,670	1,000	25,000	4,200
0,675	1,000	25,000	4,800
0,680	1,000	25,000	4,800
0,690	1,000	25,000	4,800
0,695	1,000	25,000	4,800
0,700	1,000	25,000	4,800
0,705	1,000	25,000	4,800
0,710	1,000	25,000	4,800
0,720	1,000	25,000	4,800
0,725	1,000	25,000	4,800
0,730	1,000	25,000	4,800
0,740	1,000	25,000	4,800
0,750	1,000	25,000	4,800
0,760	1,000	25,000	5,300
0,770	1,000	25,000	5,300
0,780	1,000	25,000	5,300
0,790	1,000	25,000	5,300
0,795	1,500	25,000	5,300
0,800	1,500	25,000	5,300
0,810	1,500	25,000	5,300
0,820	1,500	25,000	5,300
0,825	1,500	25,000	5,300
0,830	1,500	25,000	5,300
0,840	1,500	25,000	5,300
0,845	1,500	25,000	5,300
0,850	1,500	25,000	5,300
0,860	1,500	25,000	6,000
0,870	1,500	25,000	6,000
0,880	1,500	25,000	6,000
0,890	1,500	25,000	6,000
0,900	1,500	25,000	6,000
0,910	1,500	25,000	6,000
0,920	1,500	25,000	6,000
0,925	1,500	25,000	6,000
0,930	1,500	25,000	6,000
0,940	1,500	25,000	6,000
0,950	1,500	25,000	6,000
0,960	1,500	25,000	6,800
0,970	1,500	25,000	6,800
0,980	1,500	25,000	6,800

d1	d2	l1	l2
mm	mm	mm	mm
0,990	1,500	25,000	6,800
1,000	1,500	25,000	6,800
1,010	1,500	25,000	6,800
1,020	1,500	25,000	6,800
1,030	1,500	25,000	6,800
1,040	1,500	25,000	6,800
1,050	1,500	25,000	6,800
1,055	1,500	25,000	6,800
1,060	1,500	25,000	6,800
1,070	1,500	25,000	7,600
1,080	1,500	25,000	7,600
1,090	1,500	25,000	7,600
1,100	1,500	25,000	7,600
1,110	1,500	25,000	7,600
1,120	1,500	25,000	7,600
1,130	1,500	25,000	7,600
1,140	1,500	25,000	7,600
1,150	1,500	25,000	7,600
1,160	1,500	25,000	7,600
1,170	1,500	25,000	7,600
1,180	1,500	25,000	7,600
1,190	1,500	25,000	8,500
1,200	1,500	25,000	8,500
1,210	1,500	25,000	8,500
1,220	1,500	25,000	8,500
1,230	1,500	25,000	8,500
1,240	1,500	25,000	8,500
1,250	1,500	25,000	8,500
1,260	1,500	25,000	8,500
1,265	1,500	25,000	8,500
1,270	1,500	25,000	8,500
1,280	1,500	25,000	8,500
1,290	1,500	25,000	8,500
1,300	1,500	25,000	8,500
1,310	1,500	25,000	8,500
1,320	1,500	25,000	8,500
1,325	1,500	25,000	9,500
1,330	1,500	25,000	9,500
1,340	1,500	25,000	9,500
1,350	1,500	25,000	9,500
1,370	1,500	25,000	9,500
1,380	1,500	25,000	9,500
1,390	1,500	25,000	9,500
1,400	1,500	25,000	9,500
1,410	1,500	25,000	9,500
1,420	1,500	25,000	9,500
1,430	1,500	25,000	9,500
1,440	1,500	25,000	9,500
1,450	1,500	25,000	9,500
1,460	2,000	30,000	9,500
1,470	2,000	30,000	9,500
1,500	2,000	30,000	9,500
1,520	2,000	30,000	10,600
1,530	2,000	30,000	10,600
1,540	2,000	30,000	10,600
1,550	2,000	30,000	10,600
1,590	2,000	30,000	10,600
1,600	2,000	30,000	10,600
1,610	2,000	30,000	10,600
1,630	2,000	30,000	10,600
1,640	2,000	30,000	10,600
1,650	2,000	30,000	10,600
1,660	2,000	30,000	10,600
1,690	2,000	30,000	10,600
1,700	2,000	30,000	10,600
1,710	2,000	30,000	11,800
1,715	2,000	30,000	11,800
1,730	2,000	30,000	11,800
1,745	2,000	30,000	11,800
1,750	2,000	30,000	11,800
1,775	2,000	30,000	11,800
1,800	2,000	30,000	11,800

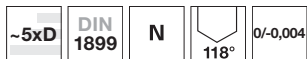


d1	d2	l1	l2
mm	mm	mm	mm
1,830	2,000	30,000	11,800
1,840	2,000	30,000	11,800
1,850	2,000	30,000	11,800
1,860	2,000	30,000	11,800
1,900	2,000	30,000	11,800
1,920	2,000	30,000	13,200

d1	d2	l1	l2
mm	mm	mm	mm



Microforets en HSS-E PM fritté, sans canaux de lubrification



Matière de coupe **HSS-E-PM**

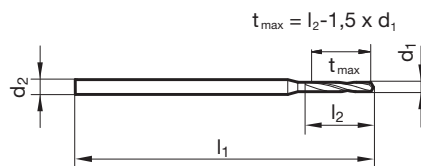
Surface **S**

Sens de coupe **R**

- P** • affûtage en pente • avec attachement renforcé • meilleure résistance à l'usure
- M** •
- K** •
- N** • aciers hautement alliés
- S** ○
- H**

**GÜHRING** NAVIGATOR

Paramètres de coupe, page 796



N° d'article **660**

Microforets

d1	d2	l1	l2	d1	d2	l1	l2
mm	mm	mm	mm	mm	mm	mm	mm
0,160	1,000	25,000	1,100	0,530	1,000	25,000	3,400
0,170	1,000	25,000	1,100	0,540	1,000	25,000	3,900
0,180	1,000	25,000	1,100	0,550	1,000	25,000	3,900
0,190	1,000	25,000	1,100	0,560	1,000	25,000	3,900
0,200	1,000	25,000	1,500	0,570	1,000	25,000	3,900
0,210	1,000	25,000	1,500	0,580	1,000	25,000	3,900
0,220	1,000	25,000	1,500	0,590	1,000	25,000	3,900
0,230	1,000	25,000	1,500	0,600	1,000	25,000	3,900
0,240	1,000	25,000	1,500	0,610	1,000	25,000	4,200
0,250	1,000	25,000	1,900	0,620	1,000	25,000	4,200
0,255	1,000	25,000	1,900	0,630	1,000	25,000	4,200
0,260	1,000	25,000	1,900	0,640	1,000	25,000	4,200
0,265	1,000	25,000	1,900	0,650	1,000	25,000	4,200
0,270	1,000	25,000	1,900	0,660	1,000	25,000	4,200
0,280	1,000	25,000	1,900	0,670	1,000	25,000	4,200
0,290	1,000	25,000	1,900	0,680	1,000	25,000	4,800
0,295	1,000	25,000	1,900	0,690	1,000	25,000	4,800
0,300	1,000	25,000	1,900	0,700	1,000	25,000	4,800
0,305	1,000	25,000	2,400	0,710	1,000	25,000	4,800
0,310	1,000	25,000	2,400	0,720	1,000	25,000	4,800
0,320	1,000	25,000	2,400	0,730	1,000	25,000	4,800
0,325	1,000	25,000	2,400	0,740	1,000	25,000	4,800
0,330	1,000	25,000	2,400	0,750	1,000	25,000	4,800
0,340	1,000	25,000	2,400	0,760	1,000	25,000	5,300
0,350	1,000	25,000	2,400	0,770	1,000	25,000	5,300
0,360	1,000	25,000	2,400	0,780	1,000	25,000	5,300
0,370	1,000	25,000	2,400	0,790	1,000	25,000	5,300
0,380	1,000	25,000	2,400	0,800	1,500	25,000	5,300
0,390	1,000	25,000	3,000	0,810	1,500	25,000	5,300
0,400	1,000	25,000	3,000	0,820	1,500	25,000	5,300
0,410	1,000	25,000	3,000	0,830	1,500	25,000	5,300
0,420	1,000	25,000	3,000	0,840	1,500	25,000	5,300
0,430	1,000	25,000	3,000	0,850	1,500	25,000	5,300
0,440	1,000	25,000	3,000	0,860	1,500	25,000	6,000
0,450	1,000	25,000	3,000	0,870	1,500	25,000	6,000
0,460	1,000	25,000	3,000	0,880	1,500	25,000	6,000
0,470	1,000	25,000	3,000	0,900	1,500	25,000	6,000
0,480	1,000	25,000	3,000	0,910	1,500	25,000	6,000
0,490	1,000	25,000	3,400	0,920	1,500	25,000	6,000
0,500	1,000	25,000	3,400	0,940	1,500	25,000	6,000
0,510	1,000	25,000	3,400	0,950	1,500	25,000	6,000
0,520	1,000	25,000	3,400	0,960	1,500	25,000	6,800

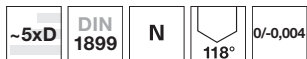


d1	d2	l1	l2
mm	mm	mm	mm
0,970	1,500	25,000	6,800
0,980	1,500	25,000	6,800
1,000	1,500	25,000	6,800
1,020	1,500	25,000	6,800
1,040	1,500	25,000	6,800
1,050	1,500	25,000	6,800
1,070	1,500	25,000	7,600
1,080	1,500	25,000	7,600
1,100	1,500	25,000	7,600
1,150	1,500	25,000	7,600
1,180	1,500	25,000	7,600
1,190	1,500	25,000	8,500

d1	d2	l1	l2
mm	mm	mm	mm
1,200	1,500	25,000	8,500
1,220	1,500	25,000	8,500
1,250	1,500	25,000	8,500
1,300	1,500	25,000	8,500
1,350	1,500	25,000	9,500
1,390	1,500	25,000	9,500
1,400	1,500	25,000	9,500
1,420	1,500	25,000	9,500
1,450	1,500	25,000	9,500
1,500	2,000	30,000	9,500
1,800	2,000	30,000	11,800
1,900	2,000	30,000	11,800



Microforets en HSS-E PM fritté, sans canaux de lubrification



Matière de coupe **HSS-E-PM**

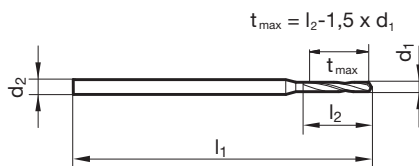
Surface

Sens de coupe

- P** • affûtage en pente • avec attachement renforcé • < Ø 0,15 mm acier rapide au Co
- M** •
- K** •
- N** • aciers hautement alliés
- S** ○
- H**

**GUHRING** NAVIGATOR

Paramètres de coupe, page 796



N° d'article **303**

Microforets

d1	d2	l1	l2	d1	d2	l1	l2
mm	mm	mm	mm	mm	mm	mm	mm
0,130	1,000	25,000	0,800	0,410	1,000	25,000	3,000
0,140	1,000	25,000	0,800	0,415	1,000	25,000	3,000
0,150	1,000	25,000	0,800	0,420	1,000	25,000	3,000
0,155	1,000	25,000	1,100	0,430	1,000	25,000	3,000
0,160	1,000	25,000	1,100	0,435	1,000	25,000	3,000
0,170	1,000	25,000	1,100	0,440	1,000	25,000	3,000
0,175	1,000	25,000	1,100	0,450	1,000	25,000	3,000
0,180	1,000	25,000	1,100	0,460	1,000	25,000	3,000
0,185	1,000	25,000	1,100	0,465	1,000	25,000	3,000
0,190	1,000	25,000	1,100	0,470	1,000	25,000	3,000
0,195	1,000	25,000	1,500	0,480	1,000	25,000	3,000
0,200	1,000	25,000	1,500	0,485	1,000	25,000	3,400
0,210	1,000	25,000	1,500	0,490	1,000	25,000	3,400
0,215	1,000	25,000	1,500	0,495	1,000	25,000	3,400
0,220	1,000	25,000	1,500	0,500	1,000	25,000	3,400
0,225	1,000	25,000	1,500	0,510	1,000	25,000	3,400
0,230	1,000	25,000	1,500	0,520	1,000	25,000	3,400
0,235	1,000	25,000	1,500	0,525	1,000	25,000	3,400
0,240	1,000	25,000	1,500	0,540	1,000	25,000	3,900
0,245	1,000	25,000	1,900	0,545	1,000	25,000	3,900
0,250	1,000	25,000	1,900	0,550	1,000	25,000	3,900
0,255	1,000	25,000	1,900	0,555	1,000	25,000	3,900
0,260	1,000	25,000	1,900	0,565	1,000	25,000	3,900
0,265	1,000	25,000	1,900	0,570	1,000	25,000	3,900
0,270	1,000	25,000	1,900	0,580	1,000	25,000	3,900
0,275	1,000	25,000	1,900	0,590	1,000	25,000	3,900
0,280	1,000	25,000	1,900	0,600	1,000	25,000	3,900
0,290	1,000	25,000	1,900	0,615	1,000	25,000	4,200
0,295	1,000	25,000	1,900	0,620	1,000	25,000	4,200
0,300	1,000	25,000	1,900	0,630	1,000	25,000	4,200
0,310	1,000	25,000	2,400	0,640	1,000	25,000	4,200
0,315	1,000	25,000	2,400	0,650	1,000	25,000	4,200
0,330	1,000	25,000	2,400	0,660	1,000	25,000	4,200
0,340	1,000	25,000	2,400	0,670	1,000	25,000	4,200
0,345	1,000	25,000	2,400	0,675	1,000	25,000	4,800
0,350	1,000	25,000	2,400	0,680	1,000	25,000	4,800
0,355	1,000	25,000	2,400	0,685	1,000	25,000	4,800
0,360	1,000	25,000	2,400	0,690	1,000	25,000	4,800
0,370	1,000	25,000	2,400	0,695	1,000	25,000	4,800
0,380	1,000	25,000	2,400	0,700	1,000	25,000	4,800
0,390	1,000	25,000	3,000	0,710	1,000	25,000	4,800
0,400	1,000	25,000	3,000	0,720	1,000	25,000	4,800



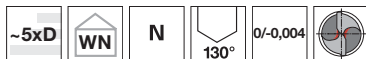


d1	d2	l1	l2
mm	mm	mm	mm
0,740	1,000	25,000	4,800
0,750	1,000	25,000	4,800
0,760	1,000	25,000	5,300
0,770	1,000	25,000	5,300
0,780	1,000	25,000	5,300
0,790	1,000	25,000	5,300
0,800	1,500	25,000	5,300
0,805	1,500	25,000	5,300
0,810	1,500	25,000	5,300
0,820	1,500	25,000	5,300
0,830	1,500	25,000	5,300
0,840	1,500	25,000	5,300
0,850	1,500	25,000	5,300
0,855	1,500	25,000	6,000
0,860	1,500	25,000	6,000
0,870	1,500	25,000	6,000
0,880	1,500	25,000	6,000
0,885	1,500	25,000	6,000
0,890	1,500	25,000	6,000
0,900	1,500	25,000	6,000
0,910	1,500	25,000	6,000
0,915	1,500	25,000	6,000
0,920	1,500	25,000	6,000
0,925	1,500	25,000	6,000
0,935	1,500	25,000	6,000
0,940	1,500	25,000	6,000
0,950	1,500	25,000	6,000
0,960	1,500	25,000	6,800
0,970	1,500	25,000	6,800
0,975	1,500	25,000	6,800
0,980	1,500	25,000	6,800
0,985	1,500	25,000	6,800
0,990	1,500	25,000	6,800
1,000	1,500	25,000	6,800
1,005	1,500	25,000	6,800
1,020	1,500	25,000	6,800

d1	d2	l1	l2
mm	mm	mm	mm
1,030	1,500	25,000	6,800
1,040	1,500	25,000	6,800
1,050	1,500	25,000	6,800
1,060	1,500	25,000	6,800
1,080	1,500	25,000	7,600
1,085	1,500	25,000	7,600
1,090	1,500	25,000	7,600
1,100	1,500	25,000	7,600
1,110	1,500	25,000	7,600
1,120	1,500	25,000	7,600
1,125	1,500	25,000	7,600
1,150	1,500	25,000	7,600
1,160	1,500	25,000	7,600
1,170	1,500	25,000	7,600
1,180	1,500	25,000	7,600
1,200	1,500	25,000	8,500
1,250	1,500	25,000	8,500
1,270	1,500	25,000	8,500
1,280	1,500	25,000	8,500
1,285	1,500	25,000	8,500
1,290	1,500	25,000	8,500
1,310	1,500	25,000	8,500
1,330	1,500	25,000	9,500
1,350	1,500	25,000	9,500
1,360	1,500	25,000	9,500
1,375	1,500	25,000	9,500
1,400	1,500	25,000	9,500
1,405	1,500	25,000	9,500
1,425	1,500	25,000	9,500
1,450	1,500	25,000	9,500
1,460	2,000	30,000	9,500
1,500	2,000	30,000	9,500
1,600	2,000	30,000	10,600
1,615	2,000	30,000	10,600
1,800	2,000	30,000	11,800
1,850	2,000	30,000	11,800



**Microforets en CW monobloc, sans canaux de lubrification**



Matière de coupe **CW monobloc**

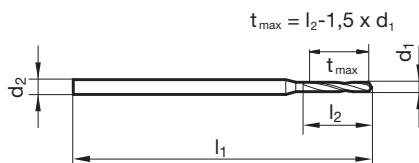
Surface

Sens de coupe

- P** • Amin. de l'âme  $\geq \varnothing 0,800$  • affûtage en pente • arête de coupe principale rectiligne
- M** ○
- K** •
- N** ○ aciers de construction et de cémentation • fontes • bronze, laiton
- S** ○ • aluminium et alliages d'aluminium • magnésium, alliages de magnésium
- H** ○ • matières synthét. et mat.synthét.renforcées de fibres

**GÜHRING NAVIGATOR**

Paramètres de coupe, page 796



N° d'article **701**

d1	d2	l1	l2
mm	mm	mm	mm
0,200	1,000	25,000	1,500
0,220	1,000	25,000	1,500
0,250	1,000	25,000	1,900
0,260	1,000	25,000	1,900
0,280	1,000	25,000	1,900
0,300	1,000	25,000	1,900
0,330	1,000	25,000	2,400
0,350	1,000	25,000	2,400
0,400	1,000	25,000	3,000
0,450	1,000	25,000	3,000
0,500	1,000	25,000	3,400
0,600	1,000	25,000	3,900
0,650	1,000	25,000	4,200
0,700	1,000	25,000	4,800
0,750	1,000	25,000	4,800
0,800	1,500	25,000	5,300
0,810	1,500	25,000	5,300
0,830	1,500	25,000	5,300

d1	d2	l1	l2
mm	mm	mm	mm
0,850	1,500	25,000	5,300
0,900	1,500	25,000	6,000
1,000	1,500	25,000	6,800
1,050	1,500	25,000	6,800
1,100	1,500	25,000	7,600
1,150	1,500	25,000	7,600
1,200	1,500	25,000	8,500
1,250	1,500	25,000	8,500
1,300	1,500	25,000	8,500
1,350	1,500	25,000	9,500
1,400	1,500	25,000	9,500

Microforets



Microforets en CW monobloc, sans canaux de lubrification



Matière de coupe **CW monobloc**

Surface **A**

Sens de coupe **R**

**P** • Amin. de l'âme ≥ Ø 0,800 • affûtage en pente

**M**

**K** •

**N**

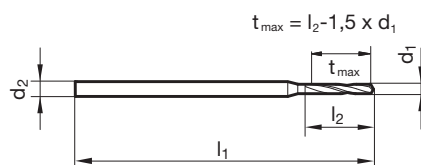
aciers de construction et de cémentation • aciers de décolletage, aciers d'amélioration • aciers alliés jusqu'à 1200 N/mm<sup>2</sup> • fontes

**S**

**H**

**GUHRING NAVIGATOR**

Paramètres de coupe, page 796



N° d'article **3899**

d1	d2 h6	l1	l2
mm	mm	mm	mm
0,100	3,000	38,000	1,200
0,150	3,000	38,000	2,000
0,200	3,000	38,000	2,500
0,250	3,000	38,000	3,000
0,260	3,000	38,000	3,000
0,270	3,000	38,000	3,000
0,280	3,000	38,000	3,000
0,300	3,000	38,000	5,000
0,310	3,000	38,000	5,000
0,330	3,000	38,000	5,000
0,350	3,000	38,000	6,000
0,360	3,000	38,000	6,000
0,370	3,000	38,000	6,000
0,380	3,000	38,000	6,000
0,400	3,000	38,000	7,000
0,410	3,000	38,000	7,000
0,430	3,000	38,000	7,000
0,440	3,000	38,000	7,000
0,450	3,000	38,000	7,000
0,480	3,000	38,000	7,000
0,500	3,000	38,000	7,000
0,510	3,000	38,000	7,000
0,530	3,000	38,000	7,000
0,550	3,000	38,000	7,000
0,570	3,000	38,000	7,000
0,600	3,000	38,000	7,000
0,640	3,000	38,000	7,000
0,650	3,000	38,000	7,000
0,660	3,000	38,000	7,000
0,680	3,000	38,000	7,000
0,700	3,000	38,000	8,000
0,710	3,000	38,000	8,000
0,720	3,000	38,000	8,000
0,740	3,000	38,000	8,000
0,750	3,000	38,000	8,000
0,760	3,000	38,000	8,000
0,770	3,000	38,000	8,000
0,780	3,000	38,000	8,000
0,790	3,000	38,000	8,000
0,800	3,000	38,000	10,000
0,810	3,000	38,000	10,000
0,820	3,000	38,000	10,000

d1	d2 h6	l1	l2
mm	mm	mm	mm
0,830	3,000	38,000	10,000
0,840	3,000	38,000	10,000
0,850	3,000	38,000	10,000
0,860	3,000	38,000	10,000
0,870	3,000	38,000	10,000
0,880	3,000	38,000	10,000
0,890	3,000	38,000	10,000
0,900	3,000	38,000	10,000
0,910	3,000	38,000	10,000
0,920	3,000	38,000	10,000
0,930	3,000	38,000	10,000
0,940	3,000	38,000	10,000
0,950	3,000	38,000	10,000
0,960	3,000	38,000	10,000
0,970	3,000	38,000	10,000
0,980	3,000	38,000	10,000
0,990	3,000	38,000	10,000
1,000	3,000	38,000	10,000
1,010	3,000	38,000	10,000
1,020	3,000	38,000	10,000
1,050	3,000	38,000	10,000
1,060	3,000	38,000	10,000
1,070	3,000	38,000	10,000
1,090	3,000	38,000	10,000
1,100	3,000	38,000	10,000
1,110	3,000	38,000	10,000
1,150	3,000	38,000	10,000
1,170	3,000	38,000	10,000
1,190	3,000	38,000	10,000
1,200	3,000	38,000	10,000
1,210	3,000	38,000	10,000
1,220	3,000	38,000	10,000
1,230	3,000	38,000	10,000
1,240	3,000	38,000	10,000
1,260	3,000	38,000	10,000
1,270	3,000	38,000	10,000
1,280	3,000	38,000	10,000
1,300	3,000	38,000	10,000
1,370	3,000	38,000	10,000
1,400	3,000	38,000	10,000
1,420	3,000	38,000	10,000
1,450	3,000	38,000	10,000

Microforets



d1	d2 h6	l1	l2
mm	mm	mm	mm
1,490	3,000	38,000	10,000
1,500	3,000	38,000	10,000
1,510	3,000	38,000	10,000
1,520	3,000	38,000	10,000
1,550	3,000	38,000	10,000
1,560	3,000	38,000	10,000
1,580	3,000	38,000	10,000
1,590	3,000	38,000	10,000
1,600	3,000	38,000	12,000
1,630	3,000	38,000	12,000
1,650	3,000	38,000	12,000
1,700	3,000	38,000	12,000
1,750	3,000	38,000	12,000
1,800	3,000	38,000	12,000
1,810	3,000	38,000	12,000
1,820	3,000	38,000	12,000
1,830	3,000	38,000	12,000
1,840	3,000	38,000	12,000
1,850	3,000	38,000	12,000
1,860	3,000	38,000	12,000
1,900	3,000	38,000	12,000
1,920	3,000	38,000	12,000
1,950	3,000	38,000	12,000
1,980	3,000	38,000	12,000

d1	d2 h6	l1	l2
mm	mm	mm	mm
2,000	3,000	38,000	12,000
2,050	3,000	38,000	12,000
2,100	3,000	38,000	12,000
2,150	3,000	38,000	12,000
2,200	3,000	38,000	12,000
2,400	3,000	38,000	12,000
2,500	3,000	38,000	12,000
2,550	3,000	38,000	12,000
2,600	3,000	38,000	12,000
2,750	3,000	38,000	12,000
2,800	3,000	38,000	12,000
2,950	3,000	38,000	12,000
3,000	3,000	38,000	12,000



**Microforets ExclusiveLine sans canaux de lubrification**



Matière de coupe **CW monobloc**

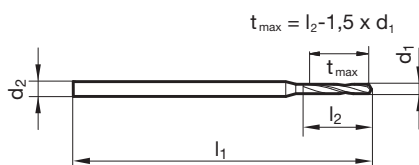
Surface **A**

Sens de coupe **R**

- P** • Amin. de l'âme ≥ Ø 0,500 • affûtage en pente • arête de coupe principale rectiligne • affilage de l'arête de coupe automatisé
- M** •
- K** •
- N** ○ aciers de construction et de cémentation • aciers de décolletage, aciers d'amélioration • aciers alliés jusqu'à 1200 N/mm<sup>2</sup> • aciers inoxydables
- S** ○ fontes
- H**

**GUHRING NAVIGATOR**

Paramètres de coupe, page 796



N° d'article **6400**

d1	d2 h6	l1	l2
mm	mm	mm	mm
0,500	3,000	47,000	3,000
0,550	3,000	47,000	3,300
0,600	3,000	47,000	3,600
0,650	3,000	47,000	3,900
0,700	3,000	47,000	4,200
0,750	3,000	47,000	4,500
0,800	3,000	47,000	4,800
0,850	3,000	47,000	5,100
0,900	3,000	47,000	5,400
0,950	3,000	47,000	5,700
1,000	3,000	47,000	6,000
1,050	3,000	47,000	6,300
1,100	3,000	47,000	6,600
1,150	3,000	47,000	6,900
1,200	3,000	47,000	7,200
1,250	3,000	47,000	7,500
1,300	3,000	47,000	7,800
1,350	3,000	47,000	8,100
1,400	3,000	47,000	8,400
1,450	3,000	47,000	8,700
1,500	3,000	47,000	9,000
1,550	3,000	47,000	9,300
1,590	3,000	47,000	9,600
1,600	3,000	47,000	9,600
1,650	3,000	47,000	9,900
1,700	3,000	47,000	10,200
1,750	3,000	47,000	10,500
1,800	3,000	52,000	10,800
1,850	3,000	52,000	11,100
1,900	3,000	52,000	11,400

d1	d2 h6	l1	l2
mm	mm	mm	mm
1,950	3,000	52,000	11,700
1,980	4,000	59,000	12,000
2,000	4,000	59,000	12,000
2,050	4,000	59,000	12,300
2,100	4,000	59,000	12,600
2,150	4,000	59,000	12,900
2,200	4,000	59,000	13,200
2,250	4,000	59,000	13,500
2,300	4,000	59,000	13,800
2,350	4,000	59,000	14,100
2,380	4,000	59,000	14,400
2,400	4,000	59,000	14,400
2,450	4,000	59,000	14,700
2,500	4,000	59,000	15,000
2,550	4,000	59,000	15,300
2,600	4,000	59,000	15,600
2,650	4,000	59,000	15,900
2,700	4,000	59,000	16,200
2,750	4,000	59,000	16,500
2,780	4,000	59,000	16,800
2,800	4,000	59,000	16,800
2,850	4,000	59,000	17,100
2,900	4,000	59,000	17,400
2,950	4,000	59,000	17,700
3,000	4,000	59,000	18,000

Microforets



**Microforets ExclusiveLine sans canaux de lubrification**



Matière de coupe **CW monobloc**

Surface **A**

Sens de coupe **R**

**P** • Amin. de l'âme  $\geq \varnothing 0,500$  • affûtage en pente • arête de coupe principale rectiligne • affilage de l'arête de coupe automatisé

**M** •

**K** •

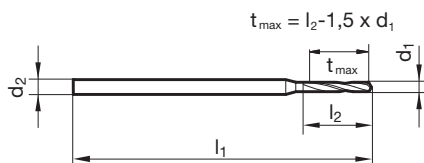
**N** ○ aciers de construction et de cémentation • aciers de décolletage, aciers d'amélioration • aciers alliés jusqu'à 1200 N/mm<sup>2</sup> • aciers inoxydables

**S** ○ fontes

**H**

**GÜHRING NAVIGATOR**

Paramètres de coupe, page 796



N° d'article **6401**

Microforets

d1	d2 h6	l1	l2
mm	mm	mm	mm
0,500	3,000	47,000	4,000
0,550	3,000	47,000	4,400
0,600	3,000	47,000	4,800
0,650	3,000	47,000	5,200
0,700	3,000	47,000	5,600
0,750	3,000	47,000	6,000
0,800	3,000	47,000	6,400
0,850	3,000	47,000	6,800
0,900	3,000	47,000	7,200
0,950	3,000	47,000	7,600
1,000	3,000	47,000	8,000
1,050	3,000	47,000	8,400
1,100	3,000	47,000	8,800
1,150	3,000	47,000	9,200
1,200	3,000	52,000	10,800
1,250	3,000	52,000	11,300
1,300	3,000	52,000	11,700
1,350	3,000	52,000	12,200
1,400	3,000	52,000	12,600
1,450	3,000	52,000	13,100
1,500	3,000	52,000	13,500
1,550	3,000	52,000	14,000
1,590	3,000	52,000	14,400
1,600	3,000	52,000	14,400
1,650	3,000	52,000	14,900
1,700	3,000	52,000	15,300
1,750	3,000	52,000	15,800
1,800	3,000	52,000	16,200
1,850	3,000	52,000	16,700
1,900	3,000	52,000	17,100

d1	d2 h6	l1	l2
mm	mm	mm	mm
1,950	3,000	52,000	17,600
1,980	4,000	63,000	18,000
2,000	4,000	63,000	18,000
2,050	4,000	63,000	18,500
2,100	4,000	63,000	18,900
2,150	4,000	63,000	19,400
2,200	4,000	63,000	19,800
2,250	4,000	63,000	20,300
2,300	4,000	63,000	20,700
2,350	4,000	63,000	21,200
2,380	4,000	63,000	21,600
2,400	4,000	63,000	21,600
2,450	4,000	63,000	22,100
2,500	4,000	63,000	22,500
2,550	4,000	63,000	23,000
2,600	4,000	67,000	23,400
2,650	4,000	67,000	23,900
2,700	4,000	67,000	24,300
2,750	4,000	67,000	24,800
2,780	4,000	67,000	25,200
2,800	4,000	67,000	25,200
2,850	4,000	67,000	25,700
2,900	4,000	67,000	26,100
2,950	4,000	67,000	26,600
3,000	4,000	67,000	27,000



**Microforets ExclusiveLine avec canaux de lubrification**



Matière de coupe **CW monobloc**

Surface **A**

Sens de coupe **R**



**P** • Amin. de l'âme  $\geq \varnothing 1,400$  • affûtage en pente • arête de coupe principale rectiligne • affilage de l'arête de coupe automatisé

**M** •

**K** •

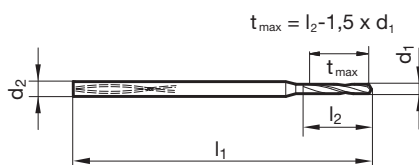
**N** ○ aciers de construction et de cémentation • aciers de décolletage, aciers d'amélioration • aciers alliés jusqu'à 1200 N/mm<sup>2</sup> • aciers inoxydables

**S** ○ fontes

**H**

**GUHRING NAVIGATOR**

Paramètres de coupe, page 796



N° d'article **6405**

d1	d2 h6	l1	l2
mm	mm	mm	mm
1,400	4,000	52,000	11,000
1,450	4,000	52,000	12,000
1,500	4,000	52,000	12,000
1,550	4,000	52,000	12,000
1,590	4,000	52,000	13,000
1,600	4,000	52,000	13,000
1,650	4,000	52,000	13,000
1,700	4,000	56,000	14,000
1,750	4,000	56,000	14,000
1,800	4,000	56,000	14,000
1,850	4,000	56,000	15,000
1,900	4,000	56,000	15,000
1,950	4,000	56,000	16,000
1,980	4,000	56,000	16,000
2,000	4,000	56,000	16,000
2,050	4,000	56,000	16,000
2,100	4,000	62,000	17,000
2,150	4,000	62,000	17,000
2,200	4,000	62,000	18,000
2,250	4,000	62,000	18,000
2,300	4,000	62,000	18,000
2,350	4,000	62,000	19,000
2,380	4,000	62,000	19,000
2,400	4,000	62,000	19,000

d1	d2 h6	l1	l2
mm	mm	mm	mm
2,450	4,000	62,000	20,000
2,500	4,000	62,000	20,000
2,550	4,000	62,000	20,000
2,600	4,000	66,000	21,000
2,650	4,000	66,000	21,000
2,700	4,000	66,000	22,000
2,750	4,000	66,000	22,000
2,780	4,000	66,000	22,000
2,800	4,000	66,000	22,000
2,850	4,000	66,000	23,000
2,900	4,000	66,000	23,000
2,950	4,000	66,000	24,000
3,000	4,000	66,000	24,000

Microforets



**Microforets ExclusiveLine avec canaux de lubrification**



Matière de coupe **CW monobloc**

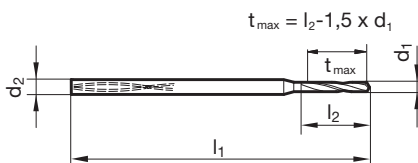
Surface **A**

Sens de coupe **R**

- P** • Amin. de l'âme  $\geq \varnothing 1,400$  • affûtage en pente • arête de coupe principale rectiligne • affilage de l'arête de coupe automatisé
- M** •
- K** •
- N** ○ aciers de construction et de cémentation • aciers de décolletage, aciers d'amélioration • aciers alliés jusqu'à 1200 N/mm<sup>2</sup> • aciers inoxydables
- S** ○ fontes
- H**

**GÜHRING NAVIGATOR**

Paramètres de coupe, page 796



N° d'article **6408**

d1	d2 h6	l1	l2
mm	mm	mm	mm
1,400	4,000	52,000	15,000
1,450	4,000	52,000	16,000
1,500	4,000	52,000	17,000
1,550	4,000	52,000	17,000
1,590	4,000	52,000	18,000
1,600	4,000	52,000	18,000
1,650	4,000	52,000	18,000
1,700	4,000	56,000	19,000
1,750	4,000	56,000	19,000
1,800	4,000	56,000	20,000
1,850	4,000	56,000	20,000
1,900	4,000	56,000	21,000
1,950	4,000	56,000	21,000
1,980	4,000	56,000	22,000
2,000	4,000	56,000	22,000
2,050	4,000	56,000	23,000
2,100	4,000	62,000	23,000
2,150	4,000	62,000	24,000
2,200	4,000	62,000	24,000
2,250	4,000	62,000	25,000
2,300	4,000	62,000	25,000
2,320	4,000	62,000	26,000
2,350	4,000	62,000	26,000
2,380	4,000	62,000	26,000

d1	d2 h6	l1	l2
mm	mm	mm	mm
2,400	4,000	62,000	26,000
2,450	4,000	62,000	27,000
2,500	4,000	62,000	28,000
2,550	4,000	62,000	28,000
2,600	4,000	66,000	29,000
2,650	4,000	66,000	29,000
2,700	4,000	66,000	30,000
2,750	4,000	66,000	30,000
2,780	4,000	66,000	31,000
2,800	4,000	66,000	31,000
2,850	4,000	66,000	31,000
2,900	4,000	66,000	32,000
2,950	4,000	66,000	32,000
3,000	4,000	66,000	33,000

Microforets





**Microforets ExclusiveLine avec canaux de lubrification**



Matière de coupe **CW monobloc**

Surface **A**

Sens de coupe **R**

**P** • Amin. de l'âme  $\geq \varnothing 1,400$  • affûtage en pente • arête de coupe principale rectiligne • affilage de l'arête de coupe automatisé

**M** •

**K** •

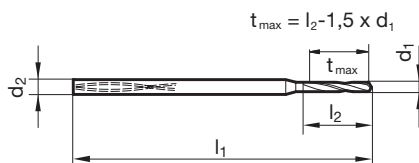
**N** ○ aciers de construction et de cémentation • aciers de décolletage, aciers d'amélioration • aciers alliés jusqu'à 1200 N/mm<sup>2</sup> • aciers inoxydables

**S** ○ fontes

**H**

**GUHRING NAVIGATOR**

Paramètres de coupe, page 796



N° d'article **6412**

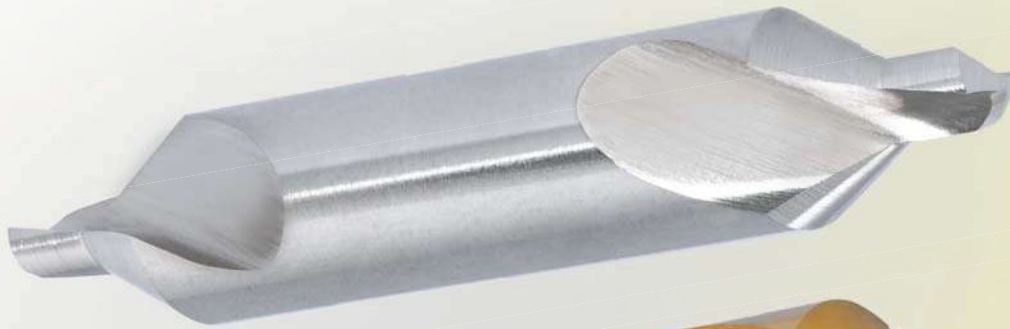
d1	d2 h6	l1	l2
mm	mm	mm	mm
1,400	4,000	62,000	25,000
1,500	4,000	62,000	27,000
1,590	4,000	62,000	29,000
1,600	4,000	62,000	29,000
1,700	4,000	70,000	31,000
1,800	4,000	70,000	32,000
1,900	4,000	70,000	34,000
1,980	4,000	70,000	36,000
2,000	4,000	70,000	36,000
2,100	4,000	78,000	38,000
2,200	4,000	78,000	40,000
2,300	4,000	78,000	42,000

d1	d2 h6	l1	l2
mm	mm	mm	mm
2,380	4,000	78,000	44,000
2,400	4,000	78,000	44,000
2,500	4,000	78,000	45,000
2,600	4,000	87,000	47,000
2,700	4,000	87,000	48,000
2,780	4,000	87,000	50,000
2,800	4,000	87,000	50,000
2,900	4,000	87,000	52,000
3,000	4,000	87,000	54,000

Microforets



# FORETS À CENTRER / FORETS NC





P	M	K	N	S	H	Présentation	Forme d'attachement	Norme	Forme	Sens de coupe	Matière de coupe	Surface	d1/mm	N° d'article	Param. de coupe, page	Page
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### Forets à centrer sans méplat

•	○	•	•	○			Cyl	DIN 333	A	R	HSS	○	0,500 - 12,500	581	802	668
•	○	•	•	○			Cyl	DIN 333	A	R	HSS	Ⓢ	0,500 - 8,000	613	802	669
•	○	•	•	○			Cyl	DIN 333	A	L	HSS	○	0,500 - 12,500	582		670
•	○	•	•	○			Cyl	DIN 333	A	R	HSS	○	1,000 - 12,500	590		671
•	○	•	•	○			Cyl	DIN 333	R	R	HSS	○	0,500 - 12,500	583	802	672
•	○	•	•	○			Cyl	DIN 333	R	R	HSS	Ⓢ	0,800 - 8,000	614	802	673
•	○	•	•	○			Cyl	DIN 333	R	L	HSS	○	0,800 - 5,000	584		674
•	○	•	•	○			Cyl	DIN 333	B	R	HSS	○	1,000 - 10,000	585	802	675
•	○	•	•	○			Cyl	DIN 333	B	L	HSS	○	1,000 - 10,000	586		676
•	○	•	•	○			Cyl	DIN 333	B	R	HSS	○	1,000 - 6,300	591		677
•	○	•	•	○			Cyl	ASME B94.11 M	A	R	HSS	○	1,190 - 7,940	594		678
•	○	•	•	○			Cyl	ASME B94.11 M	B	R	HSS	○	1,190 - 6,350	595		679
•	○	•	•	○			Cyl	BS 328	A	R	HSS	○	1,190 - 7,940	292	802	680
•	○	•	•	○			Cyl	BS 328	A	L	HSS	○	1,190 - 7,940	294		681
•	•	•	•	○			Cyl	DIN 333	A	R	HSCO	○	1,000 - 4,000	381	802	682
○	○	○	○	○	○		Cyl	WN	A	R	VHM	○	0,500 - 6,300	736		683
•	○	•	•	○			Cyl	WN	A	R	HSS	○	0,500 - 10,000	281		684
•	○	•	•	○			Cyl	WN	A	L	HSS	○	0,800 - 5,000	282		685
•	○	•	•	○			Cyl	WN	R	R	HSS	○	0,500 - 10,000	283		686
•	○	•	•	○			Cyl	WN	R	L	HSS	○	1,600 - 4,000	284		687
•	○	•	•	○			Cyl	WN	B	R	HSS	○	1,000 - 6,300	285		688
•	○	•	•	○			Cyl	WN	A	R	HSS	○	1,000 - 3,150	280	802	689

### Forets à centrer avec méplat

•	○	•	•	○			Cyl	DIN 333	A	R	HSS	○	1,600 - 10,000	587	802	690
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Forets à centrer/  
Forets NC



P	M	K	N	S	H	Présentation	Forme d'attachement	Norme	Forme	Sens de coupe	Matière de coupe	Surface	d1/mm	N° d'article	Param. de coupe, page	Page
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### Forets à centrer avec méplat

•	○	•	•	○		Cyl	DIN 333	R		HSS	○	1,000 - 10,000	588	802	691
•	○	•	•	○		Cyl	DIN 333	B		HSS	○	1,600 - 8,000	589		692
•	○	•	•	○		Cyl	DIN 333	A		HSS	○	1,600 - 10,000	287		693
•	○	•	•	○		Cyl	DIN 333	R		HSS	○	2,000 - 8,000	288		694
•	○	•	•	○		Cyl	WN	B		HSS	○	1,600 - 5,000	289		695

### Forets NC à 90°

•	○	•	•	○		Cyl	WN			HSS	○	3,000 - 25,400	557	798	696
•	○	•	•	○		Cyl	WN			HSS	Ⓢ	3,000 - 25,400	568	798	697
•	•	•	•	○		B	WN			HSCO	○	3,000 - 20,000	1136	798	698
•	•	•	•	○		B	WN			HSCO	Ⓡ	3,000 - 20,000	1133	798	699
•	○	•	•	○		Cyl	WN			HSS	○	6,350 - 25,400	559	798	700
○	○	○	○	○		Cyl	WN			VHM	○	4,000 - 20,000	723		701

### Forets NC à 120°

•	○	•	•	○		Cyl	WN			HSS	○	3,000 - 25,400	556	798	702
•	○	•	•	○		Cyl	WN			HSS	Ⓢ	3,000 - 25,000	567	798	703
•	•	•	•	○		B	WN			HSCO	○	3,000 - 20,000	1134	798	704
•	•	•	•	○		B	WN			HSCO	Ⓡ	3,000 - 20,000	1135	798	705
○	○	○	○	○		HA	WN			VHM	○	5,000 - 20,000	724		706

### Forets NC à 142°

○	○	○	○	○		HB	WN			VHM	○	4,000 - 20,000	546		707
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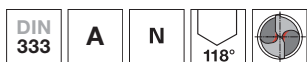
### Forets carrosseries

•	○	•	•	○		Cyl	WN			HSS		1,500 - 10,000	554		708
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Forets à centrer/  
Forets NC



Forets à centrer sans méplat



Matière de coupe **HSS**

Surface

Sens de coupe

**P** • Amin. de l'âme  $\geq \varnothing 2,000$  • affûtage à dépouille conique • sans chanfrein de protection • selon DIN 332, page 1, forme A •  $d1 \leq 0,8$  mm : avec une seule pointe

**M** ○

**K** •

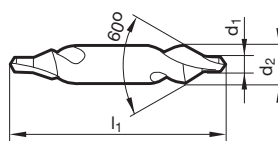
**N** •

**S** ○

**H**

**GÜHRING** NAVIGATOR

Paramètres de coupe, page 802



N° d'article **581**

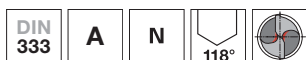
d1	d2	l1
mm	mm	mm
0,500	3,150	25,000
0,800	3,150	25,000
1,000	3,150	31,500
1,250	3,150	31,500
1,600	4,000	35,500
2,000	5,000	40,000
2,500	6,300	45,000
3,150	8,000	50,000
4,000	10,000	56,000
5,000	12,500	63,000
6,300	16,000	71,000
8,000	20,000	80,000

d1	d2	l1
mm	mm	mm
10,000	25,000	100,000
12,500	31,500	125,000

Forets à centrer/  
Forets NC



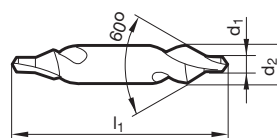
## Forets à centrer sans méplat

Matière de coupe **HSS**Surface **S**Sens de coupe **R**

**P** • Amin. de l'âme  $\geq \varnothing 2,000$  • affûtage à dépouille conique • sans chanfrein de protection • selon DIN 332, page 1, forme A •  $d1 \leq 0,8$  mm : avec une seule pointe • meilleure résistance à l'usure

**M** ○**K** •**N** •**S** ○**H****GÜHRING** NAVIGATOR

Paramètres de coupe, page 802



N° d'article

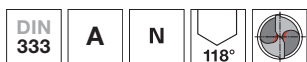
**613**

d1	d2	l1
mm	mm	mm
0,500	3,150	25,000
0,800	3,150	25,000
1,000	3,150	31,500
1,250	3,150	31,500
1,600	4,000	35,500
2,000	5,000	40,000

d1	d2	l1
mm	mm	mm
2,500	6,300	45,000
3,150	8,000	50,000
4,000	10,000	56,000
5,000	12,500	63,000
6,300	16,000	71,000
8,000	20,000	80,000



Forets à centrer sans méplat



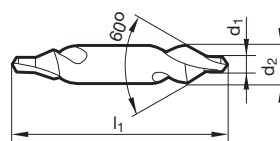
Matière de coupe **HSS**

Surface

Sens de coupe

**P** • Amin. de l'âme  $\geq \varnothing 2,000$  • affûtage à dépouille conique • sans chanfrein de protection • selon DIN 332, page 1, forme A •  $d1 \leq 0,8$  mm : avec une seule pointe

- M** ○
- K** •
- N** •
- S** ○
- H** ○



N° d'article **582**

d1	d2	l1
mm	mm	mm
0,500	3,150	25,000
0,800	3,150	25,000
1,000	3,150	31,500
1,250	3,150	31,500
1,600	4,000	35,500
2,000	5,000	40,000
2,500	6,300	45,000
3,150	8,000	50,000
4,000	10,000	56,000
5,000	12,500	63,000
6,300	16,000	71,000
8,000	20,000	80,000

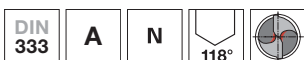
d1	d2	l1
mm	mm	mm
10,000	25,000	100,000
12,500	31,500	125,000

Forets à centrer/  
Forets NC





## Forets à centrer sans méplat

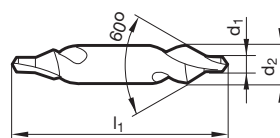
Matière de coupe **HSS**

Surface

Sens de coupe

**P** • Amin. de l'âme  $\geq \varnothing 2,000$  • affûtage à dépouille conique • avec épaulement, plus résistant à la casse • sans chanfrein de protection

**M** ○ • chambrage entre chanfr. et perç. p. réserve de lubrif., graisse • selon DIN 332, page 1, forme A

**K** •**N** •**S** ○**H**

N° d'article

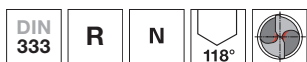
**590**

d1	d2	l1
mm	mm	mm
1,000	3,150	31,500
1,250	3,150	31,500
1,600	4,000	35,500
2,000	5,000	40,000
2,500	6,300	45,000
3,150	8,000	50,000

d1	d2	l1
mm	mm	mm
4,000	10,000	56,000
5,000	12,500	63,000
6,300	16,000	71,000
8,000	20,000	80,000
10,000	25,000	100,000
12,500	31,500	125,000



Forets à centrer sans méplat



Matière de coupe **HSS**

Surface

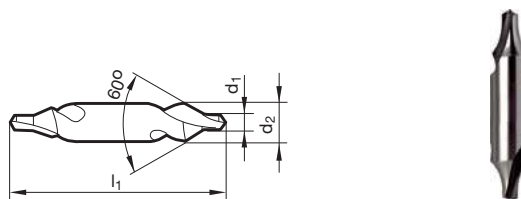
Sens de coupe

**P** • Amin. de l'âme  $\geq \varnothing 2,000$  • affûtage à dépouille conique • dispositif correct entre pointes de centrage • pour les centrages selon Norme DIN 332, Partie 1, Forme R •  $d1 \leq 0,8$  mm : avec une seule pointe

- M** ○
- K** •
- N** •
- S** ○
- H** ○

**GÜHRING** NAVIGATOR

Paramètres de coupe, page 802



N° d'article **583**

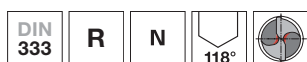
d1	d2	l1
mm	mm	mm
0,500	3,150	25,000
0,800	3,150	25,000
1,000	3,150	31,500
1,250	3,150	31,500
1,600	4,000	35,500
2,000	5,000	40,000
2,500	6,300	45,000
3,150	8,000	50,000
4,000	10,000	56,000
5,000	12,500	63,000
6,300	16,000	71,000
8,000	20,000	80,000

d1	d2	l1
mm	mm	mm
10,000	25,000	100,000
12,500	31,500	125,000

Forets à centrer/  
Forets NC



## Forets à centrer sans méplat

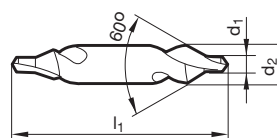
Matière de coupe **HSS**Surface **S**Sens de coupe **R**

**P** • Amin. de l'âme  $\geq \varnothing 2,000$  • affûtage à dépouille conique • meilleure résistance à l'usure • dispositif correct entre pointes de centrage • pour les centrages selon Norme DIN 332, Partie 1, Forme R •  $d1 \leq 0,8 \text{ mm}$  : avec une seule pointe

<b>P</b>	•
<b>M</b>	○
<b>K</b>	•
<b>N</b>	•
<b>S</b>	○
<b>H</b>	

**GÜHRING** NAVIGATOR

Paramètres de coupe, page 802



N° d'article

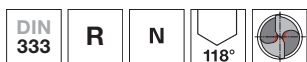
**614**

d1	d2	l1
mm	mm	mm
0,800	3,150	25,000
1,000	3,150	31,500
1,250	3,150	31,500
1,600	4,000	35,500
2,000	5,000	40,000
2,500	6,300	45,000

d1	d2	l1
mm	mm	mm
3,150	8,000	50,000
4,000	10,000	56,000
5,000	12,500	63,000
6,300	16,000	71,000
8,000	20,000	80,000



Forets à centrer sans méplat



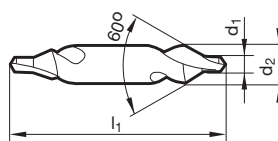
Matière de coupe **HSS**

Surface

Sens de coupe

**P** • Amin. de l'âme  $\geq \varnothing 2,000$  • affûtage à dépouille conique • dispositif correct entre pointes de centrage • pour les centrages selon Norme DIN 332, Partie 1, Forme R •  $d1 \leq 0,8$  mm : avec une seule pointe

- M** ○
- K** •
- N** •
- S** ○
- H** ○



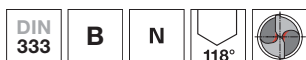
N° d'article **584**

d1	d2	l1
mm	mm	mm
0,800	3,150	25,000
1,000	3,150	31,500
1,250	3,150	31,500
1,600	4,000	35,500
2,000	5,000	40,000
2,500	6,300	45,000

d1	d2	l1
mm	mm	mm
3,150	8,000	50,000
4,000	10,000	56,000
5,000	12,500	63,000



## Forets à centrer sans méplat

Matière de coupe **HSS**

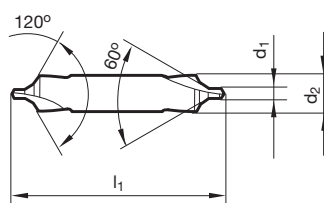
Surface

Sens de coupe

**P** • Amin. de l'âme  $\geq \varnothing 2,000$  • affûtage à dépouille conique • selon DIN 332, page 1, forme B • avec chanfrein de protection  $120^\circ$

**M** ○**K** •**N** •**S** ○**H****GÜHRING** NAVIGATOR

Paramètres de coupe, page 802



N° d'article

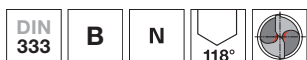
**585**

d1	d2	l1
mm	mm	mm
1,000	4,000	35,500
1,250	5,000	40,000
1,600	6,300	45,000
2,000	8,000	50,000
2,500	10,000	56,000
3,150	11,200	60,000

d1	d2	l1
mm	mm	mm
4,000	14,000	67,000
5,000	18,000	75,000
6,300	20,000	80,000
8,000	25,000	100,000
10,000	31,500	125,000



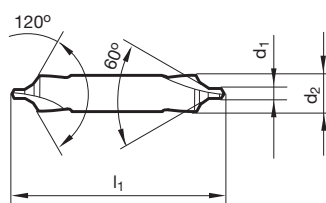
## Forets à centrer sans méplat

Matière de coupe **HSS**

Surface

Sens de coupe

**P** • Amin. de l'âme  $\geq \varnothing 2,000$  • affûtage à dépouille conique • selon DIN 332, page 1, forme B • avec chanfrein de protection  $120^\circ$

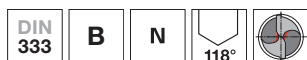
**M** ○**K** •**N** •**S** ○**H**N° d'article **586**

d1	d2	l1
mm	mm	mm
1,000	4,000	35,500
1,250	5,000	40,000
1,600	6,300	45,000
2,000	8,000	50,000
2,500	10,000	56,000
3,150	11,200	60,000

d1	d2	l1
mm	mm	mm
4,000	14,000	67,000
5,000	18,000	75,000
6,300	20,000	80,000
8,000	25,000	100,000
10,000	31,500	125,000



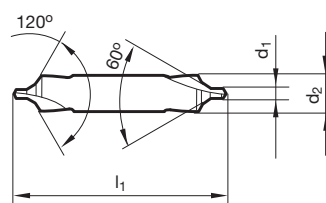
## Forets à centrer sans méplat

Matière de coupe **HSS**

Surface ○

Sens de coupe

**P** • Amin. de l'âme  $\geq \varnothing 2,000$  • affûtage à dépouille conique • avec épaulement, plus résistant à la casse • chambrage entre chanfr. et perç.  
**M** ○ p. réserve de lubrif., graisse • selon DIN 332, page 1, forme B • avec chanfrein de protection 120°

**K** •**N** •**S** ○**H**

N° d'article

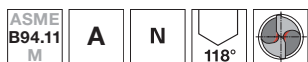
**591**

d1	d2	l1
mm	mm	mm
1,000	4,000	35,500
1,600	6,300	45,000
2,000	8,000	50,000
2,500	10,000	56,000
3,150	11,200	60,000
4,000	14,000	67,000

d1	d2	l1
mm	mm	mm
5,000	18,000	75,000
6,300	20,000	80,000



Forets à centrer sans méplat



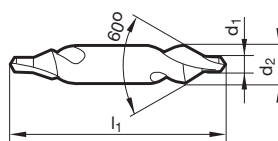
Matière de coupe **HSS**

Surface ○

Sens de coupe

**P** • Amin. de l'âme  $\geq \varnothing 1,980$  • affûtage à dépouille conique • forme A selon norme américaine

- M** ○
- K** •
- N** •
- S** ○
- H** ○



N° d'article **594**

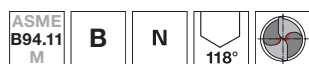
Taille	d1		d2	l1	N° de code
	mm	inch			
1	1,190	3/64	3,170	32,000	1,190
2	1,980	5/64	4,760	48,000	1,980
3	2,780	7/64	6,350	51,000	2,780
4	3,170	1/8	7,940	54,000	3,170
5	4,760	3/16	11,110	70,000	4,760
6	5,560	7/32	12,700	76,000	5,560

Taille	d1		d2	l1	N° de code
	mm	inch			
7	6,350	1/4	15,870	83,000	6,350
8	7,940	5/16	19,050	89,000	7,940





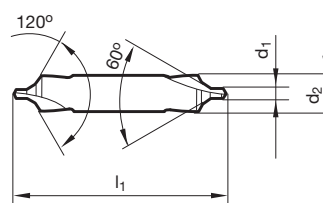
## Forets à centrer sans méplat

Matière de coupe **HSS**

Surface ○

Sens de coupe

**P** ● Amin. de l'âme  $\geq \varnothing 2,380$  • affûtage à dépouille conique • forme B selon norme américaine

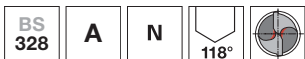
**M** ○**K** ●**N** ●**S** ○**H** ○N° d'article **595**

Taille	d1		d2	l1	N° de code
	mm	inch			
11	1,190	3/64	3,170	32,000	1,190
12	1,590	1/16	4,760	48,000	1,590
13	2,380	3/32	6,350	51,000	2,380
14	2,780	7/64	7,940	54,000	2,780
15	3,970	5/32	11,110	70,000	3,970
16	4,760	3/16	12,700	76,000	4,760

Taille	d1		d2	l1	N° de code
	mm	inch			
17	5,560	7/32	15,870	83,000	5,560
18	6,350	1/4	19,050	89,000	6,350



Forets à centrer sans méplat



Matière de coupe **HSS**

Surface ○

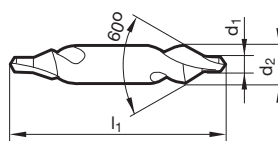
Sens de coupe

**P** • Amin. de l'âme  $\geq \varnothing 1,190$  • affûtage à dépouille conique • forme A selon norme anglaise

- M** ○
- K** •
- N** •
- S** ○
- H** ○

**GÜHRING** NAVIGATOR

Paramètres de coupe, page 802



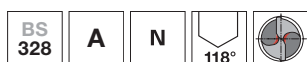
N° d'article **292**

Taille	d1		d2	l1	N° de code
	mm	inch			
1	1,190	3/64	3,170	38,000	1,190
2	1,590	1/16	4,760	44,000	1,590
3	2,380	3/32	6,350	51,000	2,380
4	3,170	1/8	7,940	57,000	3,170
5	4,760	3/16	11,110	63,000	4,760
6	6,350	1/4	15,870	76,000	6,350

Taille	d1		d2	l1	N° de code
	mm	inch			
7	7,940	5/16	19,050	89,000	7,940



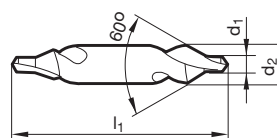
## Forets à centrer sans méplat

Matière de coupe **HSS**

Surface ○

Sens de coupe (L)

**P** • Amin. de l'âme  $\geq \varnothing 1,190$  • affûtage à dépouille conique • forme A selon norme anglaise

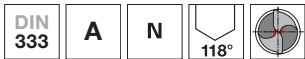
**M** ○**K** •**N** •**S** ○**H**N° d'article **294**

Taille	d1		d2	l1	N° de code
	mm	inch			
1	1,190	3/64	3,170	38,000	1,190
2	1,590	1/16	4,760	44,000	1,590
3	2,380	3/32	6,350	51,000	2,380
4	3,170	1/8	7,940	57,000	3,170
5	4,760	3/16	11,110	63,000	4,760
6	6,350	1/4	15,870	76,000	6,350

Taille	d1		d2	l1	N° de code
	mm	inch			
7	7,940	5/16	19,050	89,000	7,940



Forets à centrer sans méplat



Matière de coupe **HSCO**

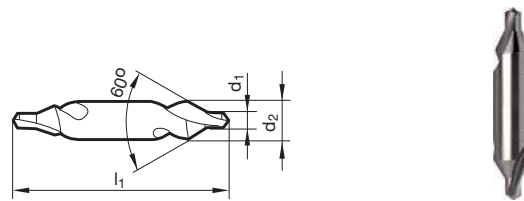
Surface

Sens de coupe

- P** • Amin. de l'âme  $\geq \varnothing 2,000$  • affûtage à dépouille conique • sans chanfrein de protection • meilleure résistance à l'usure • selon DIN 332, page 1, forme A
- M** •
- K** •
- N** • matériaux  $> 800 \text{ N/mm}^2$  • aciers au Cr Ni, inox., inaltérables aux acides, réfractaires
- S** ○
- H**

**GÜHRING** NAVIGATOR

Paramètres de coupe, page 802



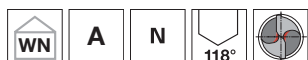
N° d'article **381**

d1	d2	l1
mm	mm	mm
1,000	3,150	31,500
1,250	3,150	31,500
1,600	4,000	35,500
2,000	5,000	40,000
2,500	6,300	45,000
3,150	8,000	50,000

d1	d2	l1
mm	mm	mm
4,000	10,000	56,000



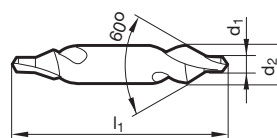
## Forets à centrer sans méplat

Matière de coupe **CW monobloc**

Surface

Sens de coupe

**P** ○ Amin. de l'âme  $\geq \varnothing 2,000$  • affûtage à dépouille conique • sans chanfrein de protection • selon DIN 332, page 1, forme A •  $d1 \leq 0,8$  mm : avec une seule pointe

**M** ○**K** ○**N** ○ universelle aptitude matérielle**S** ○**H** ○

N° d'article

**736**

d1	d2	l1
mm	mm	mm
0,500	3,150	25,000
0,800	3,150	25,000
1,000	3,150	31,500
1,250	3,150	31,500
1,600	4,000	35,500
2,000	5,000	40,000

d1	d2	l1
mm	mm	mm
2,500	6,300	45,000
3,150	8,000	50,000
4,000	10,000	56,000
5,000	12,500	63,000
6,300	16,000	71,000



Forets à centrer sans méplat



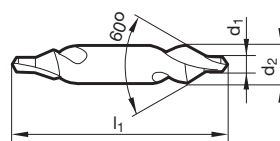
Matière de coupe **HSS**

Surface

Sens de coupe

**P** • Amin. de l'âme  $\geq \varnothing 2,000$  • affûtage à dépouille conique • sans chanfrein de protection • pour les centrages selon Norme DIN 332, Page 1, (Edition 09.1960 x retirée), Forme A •  $d1 \leq 0,8 \text{ mm}$  : avec une seule pointe

- M** ○
- K** •
- N** •
- S** ○
- H** ○



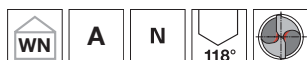
N° d'article **281**

d1	d2	l1
mm	mm	mm
0,500	3,150	25,000
1,000	3,150	31,500
1,250	4,000	35,500
1,600	5,000	40,000
2,000	6,300	45,000
2,500	8,000	50,000

d1	d2	l1
mm	mm	mm
3,150	10,000	56,000
4,000	12,500	63,000
5,000	16,000	71,000
6,300	20,000	80,000
8,000	25,000	100,000
10,000	31,500	125,000



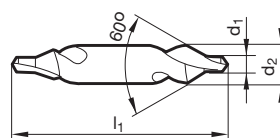
## Forets à centrer sans méplat

Matière de coupe **HSS**

Surface ○

Sens de coupe (L)

**P** ● Amin. de l'âme  $\geq \varnothing 2,000$  • affûtage à dépouille conique • sans chanfrein de protection • pour les centrages selon Norme DIN 332, Page 1, (Edition 09.1960 x retirée), Forme A •  $d1 \leq 0,8$  mm : avec une seule pointe

**M** ○**K** ●**N** ●**S** ○**H** ○

N° d'article

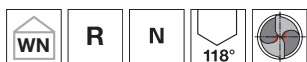
**282**

d1	d2	l1
mm	mm	mm
0,800	3,150	25,000
1,250	4,000	35,500
1,600	5,000	40,000
2,000	6,300	45,000
2,500	8,000	50,000
3,150	10,000	56,000

d1	d2	l1
mm	mm	mm
4,000	12,500	63,000
5,000	16,000	71,000



Forets à centrer sans méplat



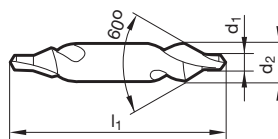
Matière de coupe **HSS**

Surface ○

Sens de coupe

**P** • Amin. de l'âme  $\geq \varnothing 2,000$  • affûtage à dépouille conique • dispositif correct entre pointes de centrage • selon DIN 332, page 1, forme R •  $d1 \leq 0,8 \text{ mm}$  : avec une seule pointe

- M** ○
- K** •
- N** •
- S** ○
- H** ○



N° d'article **283**

d1	d2	l1
mm	mm	mm
0,500	3,150	25,000
0,800	3,150	25,000
1,000	3,150	31,500
1,250	4,000	35,500
1,600	5,000	40,000
2,000	6,300	45,000
2,500	8,000	50,000
3,150	10,000	56,000
4,000	12,500	63,000
5,000	16,000	71,000
6,300	20,000	80,000
8,000	25,000	100,000

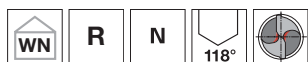
d1	d2	l1
mm	mm	mm
10,000	31,500	125,000

Forets à centrer/  
Forets NC





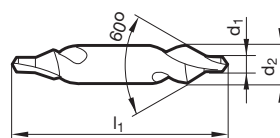
## Forets à centrer sans méplat

Matière de coupe **HSS**

Surface

Sens de coupe

**P** • Amin. de l'âme  $\geq \varnothing 2,000$  • affûtage à dépouille conique • dispositif correct entre pointes de centrage • selon DIN 332, page 1, forme R

**M** ○**K** •**N** •**S** ○**H** ○

N° d'article

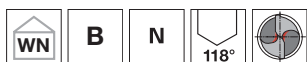
**284**

d1	d2	l1
mm	mm	mm
1,600	5,000	40,000
2,000	6,300	45,000
2,500	8,000	50,000
3,150	10,000	56,000
4,000	12,500	63,000

d1	d2	l1
mm	mm	mm



Forets à centrer sans méplat

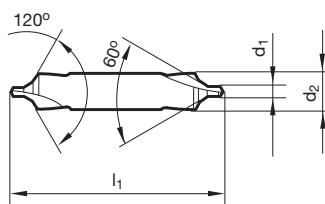


Matière de coupe **HSS**

Surface ○

Sens de coupe

**P** • Amin. de l'âme  $\geq \varnothing 2,000$  • affûtage à dépouille conique • pour les centrages selon Norme DIN 332, Page 1, (Edition 09.1960 x retirée),  
**M** ○  
**K** •  
**N** •  
**S** ○  
**H** ○



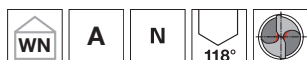
N° d'article **285**

d1	d2	l1
mm	mm	mm
1,000	6,300	40,000
1,600	8,000	50,000
2,000	10,000	56,000
2,500	11,200	63,000
3,150	14,000	71,000
4,000	16,000	80,000

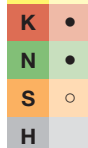
d1	d2	l1
mm	mm	mm
5,000	20,000	90,000
6,300	25,000	100,000



## Forets à centrer sans méplat



**P** • Amin. de l'âme  $\geq \varnothing 2,000$  • affûtage à dépouille conique • forets à centrer extra-longs • sans chanfrein de protection • pour les centrages semblables à la Norme DIN 332, Page 1, Forme A • pour les centrages placés en profondeur



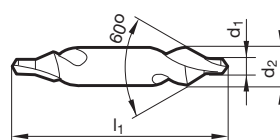
## GÜHRING NAVIGATOR

Paramètres de coupe, page 802

Matière de coupe **HSS**

Surface ○

Sens de coupe



N° d'article

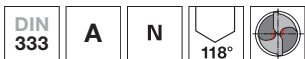
**280**

d1	d2	l1
mm	mm	mm
1,000	4,000	120,000
1,600	5,000	120,000
2,000	6,000	120,000
2,500	8,000	120,000
3,150	10,000	120,000

d1	d2	l1
mm	mm	mm



Forets à centrer avec méplat



Matière de coupe **HSS**

Surface ○

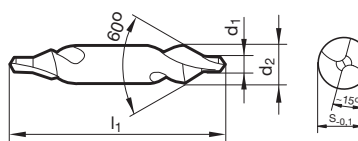
Sens de coupe

**P** • Amin. de l'âme  $\geq \varnothing 2,000$  • affûtage à dépouille conique • selon DIN 332, page 1, forme A • sans chanfrein de protection

- M** ○
- K** •
- N** •
- S** ○
- H** ○

**GÜHRING** NAVIGATOR

Paramètres de coupe, page 802



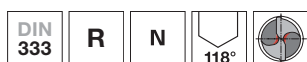
N° d'article **587**

d1	d2	l1	S
mm	mm	mm	mm
1,600	4,000	35,500	3,250
2,000	5,000	40,000	4,200
2,500	6,300	45,000	5,350
3,150	8,000	50,000	6,950
4,000	10,000	56,000	8,400
5,000	12,500	63,000	10,950

d1	d2	l1	S
mm	mm	mm	mm
6,300	16,000	71,000	14,000
8,000	20,000	80,000	17,900
10,000	25,000	100,000	22,500



## Forets à centrer avec méplat

Matière de coupe **HSS**

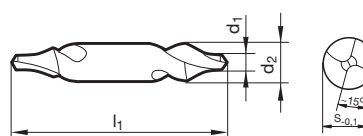
Surface ○

Sens de coupe

**P** • Amin. de l'âme  $\geq \varnothing 2,000$  • affûtage à dépouille conique • dispositif correct entre pointes de centrage • pour les centrages selon Norme DIN 332, Partie 1, Forme R

**M** ○**K** •**N** •**S** ○**H****GÜHRING** NAVIGATOR

Paramètres de coupe, page 802



N° d'article

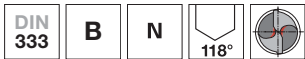
**588**

d1	d2	l1	S
mm	mm	mm	mm
1,000	3,150	31,500	2,350
2,000	5,000	40,000	4,200
2,500	6,300	45,000	5,350
3,150	8,000	50,000	6,950
4,000	10,000	56,000	8,400
5,000	12,500	63,000	10,950

d1	d2	l1	S
mm	mm	mm	mm
6,300	16,000	71,000	14,000
8,000	20,000	80,000	17,900
10,000	25,000	100,000	22,500



Forets à centrer avec méplat



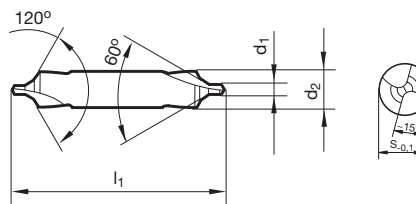
Matière de coupe **HSS**

Surface ○

Sens de coupe

**P** • Amin. de l'âme  $\geq \varnothing 2,000$  • affûtage à dépouille conique • selon DIN 332, page 1, forme B • avec chanfrein de protection 120°

- M** ○
- K** •
- N** •
- S** ○
- H** ○



N° d'article **589**

d1	d2	l1	S
mm	mm	mm	mm
1,600	6,300	45,000	5,350
2,000	8,000	50,000	6,950
2,500	10,000	56,000	8,400
3,150	11,200	60,000	10,000
4,000	14,000	67,000	12,650
5,000	18,000	75,000	16,400

d1	d2	l1	S
mm	mm	mm	mm
6,300	20,000	80,000	17,900
8,000	25,000	100,000	22,500



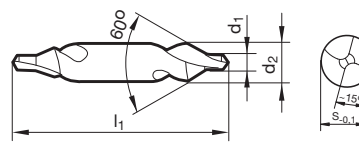
## Forets à centrer avec méplat

Matière de coupe **HSS**

Surface ○

Sens de coupe

**P** ● Amin. de l'âme  $\geq \varnothing 2,000$  • affûtage à dépouille conique • sans chanfrein de protection • pour les centrages selon Norme DIN 332, Page 1, (Edition 09.1960 x retirée), Forme A

**M** ○**K** ●**N** ●**S** ○**H** ○

N° d'article

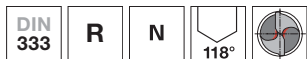
**287**

d1	d2	l1	S
mm	mm	mm	mm
1,600	5,000	40,000	4,200
2,000	6,300	45,000	5,350
2,500	8,000	50,000	6,850
3,150	10,000	56,000	8,400
4,000	12,500	63,000	10,650
5,000	16,000	71,000	13,650

d1	d2	l1	S
mm	mm	mm	mm
6,300	20,000	80,000	17,400
8,000	25,000	100,000	21,900
10,000	31,500	125,000	27,100



Forets à centrer avec méplat



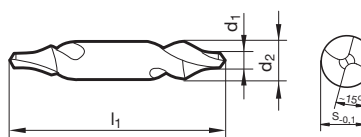
Matière de coupe **HSS**

Surface

Sens de coupe

**P** • Amin. de l'âme  $\geq \varnothing 2,000$  • affûtage à dépouille conique • dispositif correct entre pointes de centrage • selon DIN 332, page 1, forme R

- M** ○
- K** •
- N** •
- S** ○
- H** ○



N° d'article **288**

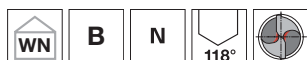
d1	d2	l1	S
mm	mm	mm	mm
2,000	6,300	45,000	5,350
2,500	8,000	50,000	6,850
3,150	10,000	56,000	8,400
4,000	12,500	63,000	10,650
5,000	16,000	71,000	13,650
6,300	20,000	80,000	17,400

d1	d2	l1	S
mm	mm	mm	mm
8,000	25,000	100,000	21,900





## Forets à centrer avec méplat

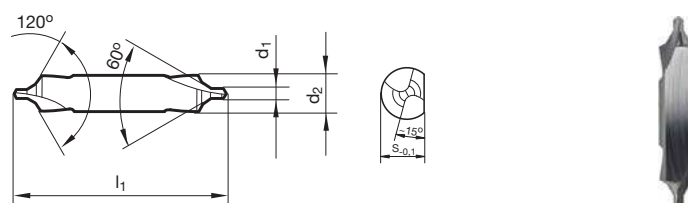
Matière de coupe **HSS**

Surface ○

Sens de coupe

**P** ● Amin. de l'âme  $\geq \varnothing 2,000$  • affûtage à dépouille conique • pour les centrages selon Norme DIN 332, Page 1, (Edition 09.1960 x retirée),  
**M** ○  
**K** ●  
**N** ●  
**S** ○  
**H** ●

Forme B • avec chanfrein de protection 120°

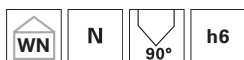
N° d'article **289**

d1	d2	l1	S
mm	mm	mm	mm
1,600	8,000	50,000	6,500
2,000	10,000	56,000	7,950
2,500	11,200	63,000	9,500
3,150	14,000	71,000	12,000
4,000	16,000	80,000	14,400
5,000	20,000	90,000	18,400

d1	d2	l1	S
mm	mm	mm	mm



Forets NC à 90°



Matière de coupe **HSS**

Surface ○

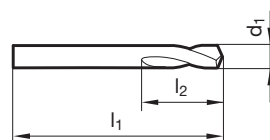
Sens de coupe (R)

**P** ● affûtage à dépouille conique ● seulement prévu pour amorcer un perçage

- M** ○
- K** ●
- N** ●
- S** ○
- H** ○

**GÜHRING** NAVIGATOR

Paramètres de coupe, page 798



N° d'article **557**

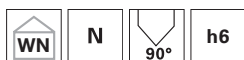
d1		l1	l2
mm	inch	mm	mm
3,000		46,000	12,000
4,000		55,000	12,000
5,000		62,000	14,000
6,000		66,000	16,000
6,350	1/4	70,000	17,000
8,000		79,000	21,000
9,000		84,000	22,000
9,520	3/8	89,000	25,000
10,000		89,000	25,000
12,000		102,000	30,000
12,700	1/2	102,000	30,000
13,000		102,000	30,000

d1		l1	l2
mm	inch	mm	mm
14,000		107,000	33,500
15,870	5/8	115,000	37,500
16,000		115,000	37,500
19,050	3/4	131,000	45,000
20,000		131,000	45,000
25,000	63/64	151,000	53,000
25,400	1	156,000	53,000

Forets à centrer/  
Forets NC



## Forets NC à 90°

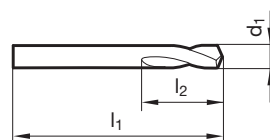
Matière de coupe **HSS**Surface **S**Sens de coupe **R**

**P** • affûtage à dépouille conique • seulement prévu pour amorcer un perçage

<b>P</b>	•
<b>M</b>	○
<b>K</b>	•
<b>N</b>	•
<b>S</b>	○
<b>H</b>	

**GUHRING** NAVIGATOR

Paramètres de coupe, page 798



N° d'article

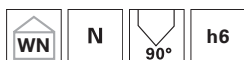
**568**

d1		l1	l2
mm	inch	mm	mm
3,000		46,000	12,000
4,000		55,000	12,000
5,000		62,000	14,000
6,000		66,000	16,000
6,350	1/4	70,000	17,000
8,000		79,000	21,000
9,520	3/8	89,000	25,000
10,000		89,000	25,000
12,000		102,000	30,000
12,700	1/2	102,000	30,000
15,870	5/8	115,000	37,500
16,000		115,000	37,500

d1		l1	l2
mm	inch	mm	mm
19,050	3/4	131,000	45,000
20,000		131,000	45,000
25,000	63/64	151,000	53,000
25,400	1	156,000	53,000



Forets NC à 90°



Matière de coupe **HSCO**

Surface ○

Sens de coupe (R)

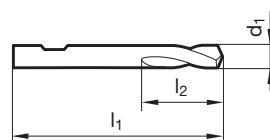
- P** • affûtage à dépouille conique • seulement prévu pour amorcer un perçage
- ≥ Ø 6,0 mm avec méplat d'entraîn. selon DIN 1835-B • acier rapide au
- M** • Co • meilleure résistance à l'usure

- K** •
- N** •
- S** ○
- H**



**GÜHRING** NAVIGATOR

Paramètres de coupe, page 798



N° d'article **1136**

d1		l1	l2
mm	inch	mm	mm
3,000		46,000	12,000
4,000		55,000	12,000
5,000		62,000	14,000
6,000		66,000	16,000
8,000		79,000	21,000
10,000		89,000	25,000

d1		l1	l2
mm	inch	mm	mm
12,000		102,000	30,000
16,000		115,000	37,500
20,000		131,000	45,000



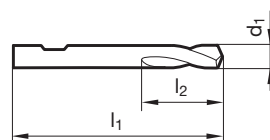
## Forets NC à 90°

Matière de coupe **HSCO**Surface **F**Sens de coupe **R****NEW**

- P** • affûtage à dépouille conique • seulement prévu pour amorcer un perçage  
 •  $\geq \varnothing 6,0$  mm avec méplat d'entraîn. selon DIN 1835-B • acier rapide au  
**M** • Co • meilleure résistance à l'usure

**GUHRING** NAVIGATOR

Paramètres de coupe, page 798



N° d'article

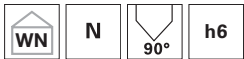
**1133**

d1		l1	l2
mm	inch	mm	mm
3,000		46,000	12,000
4,000		55,000	12,000
5,000		62,000	14,000
6,000		66,000	16,000
8,000		79,000	21,000
10,000		89,000	25,000

d1		l1	l2
mm	inch	mm	mm
12,000		102,000	30,000
16,000		115,000	37,500
20,000		131,000	45,000



Forets NC à 90°



Matière de coupe **HSS**

Surface ○

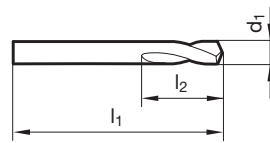
Sens de coupe (R)

**P** ● affûtage à dépouille conique ● seulement prévu pour amorcer un perçage

- M** ○
- K** ●
- N** ●
- S** ○
- H** ○

**GÜHRING** NAVIGATOR

Paramètres de coupe, page 798



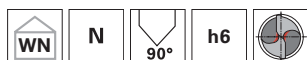
N° d'article **559**

d1		l1	l2
mm	inch	mm	mm
6,350	1/4	105,000	17,000
8,000		118,000	21,000
9,520	3/8	132,000	25,000
12,700	1/2	159,000	30,000
15,870	5/8	186,000	37,500
19,050	3/4	213,000	45,000

d1		l1	l2
mm	inch	mm	mm
25,400	1	216,000	53,000



## Forets NC à 90°

Matière de coupe **CW monobloc**

Surface



Sens de coupe



**P** ○ Amin. de l'âme  $\geq \varnothing 6,000$  • affûtage en pente • seulement prévu pour amorcer un perçage

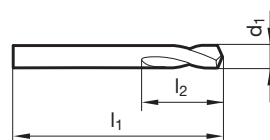
**M** ○

**K** ○

**N** ○ universelle aptitude matérielle

**S** ○

**H** ○



N° d'article

723

d1		l1	l2
mm	inch	mm	mm
4,000		55,000	12,000
5,000		62,000	14,000
6,000		66,000	16,000
6,350	1/4	70,000	17,000
8,000		79,000	21,000
9,520	3/8	89,000	25,000
10,000		89,000	25,000
12,000		102,000	30,000
12,700	1/2	102,000	30,000
15,870	5/8	115,000	37,500
16,000		115,000	37,500
19,050	3/4	131,000	45,000

d1		l1	l2
mm	inch	mm	mm
20,000		131,000	45,000



Forets NC à 120°



Matière de coupe **HSS**

Surface ○

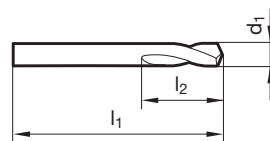
Sens de coupe

**P** ● affûtage à dépouille conique ● seulement prévu pour amorcer un perçage

- M** ○
- K** ●
- N** ●
- S** ○
- H** ○

**GÜHRING** NAVIGATOR

Paramètres de coupe, page 798



N° d'article **556**

d1		l1	l2
mm	inch	mm	mm
3,000		46,000	12,000
4,000		55,000	12,000
5,000		62,000	14,000
5,600		66,000	16,000
6,000		66,000	16,000
6,350	1/4	70,000	17,000
6,500		70,000	17,000
7,000		74,000	19,000
8,000		79,000	21,000
9,520	3/8	89,000	25,000
10,000		89,000	25,000
11,550		95,000	28,000

d1		l1	l2
mm	inch	mm	mm
12,000		102,000	30,000
12,700	1/2	102,000	30,000
14,000		107,000	33,500
15,000		111,000	33,500
15,870	5/8	115,000	37,500
16,000		115,000	37,500
19,000		127,000	40,000
19,050	3/4	131,000	45,000
20,000		131,000	45,000
25,000	63/64	151,000	53,000
25,400	1	156,000	53,000

Forets à centrer/  
Forets NC





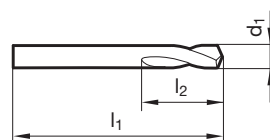
## Forets NC à 120°

Matière de coupe **HSS**Surface **S**Sens de coupe **R**

**P** ● affûtage à dépouille conique ● seulement prévu pour amorcer un perçage

**M** ○**K** ●**N** ●**S** ○**H****GUHRING** NAVIGATOR

Paramètres de coupe, page 798



N° d'article

**567**

d1		l1	l2
mm	inch	mm	mm
3,000		46,000	12,000
4,000		55,000	12,000
5,000		62,000	14,000
6,000		66,000	16,000
6,350	1/4	70,000	17,000
8,000		79,000	21,000
9,520	3/8	89,000	25,000
10,000		89,000	25,000
12,000		102,000	30,000
12,700	1/2	102,000	30,000
15,870	5/8	115,000	37,500
16,000		115,000	37,500

d1		l1	l2
mm	inch	mm	mm
19,050	3/4	131,000	45,000
20,000		131,000	45,000
25,000	63/64	151,000	53,000



Forets NC à 120°



Matière de coupe **HSCO**

Surface ○

Sens de coupe (R)

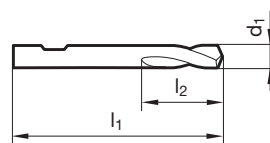
- P** • affûtage à dépouille conique • seulement prévu pour amorcer un perçage
- M** • ≥ Ø 6,0 mm avec méplat d'entraîn. selon DIN 1835-B • acier rapide au Co • meilleure résistance à l'usure

- K** •
- N** •
- S** ○
- H**



**GÜHRING** NAVIGATOR

Paramètres de coupe, page 798



N° d'article **1134**

d1		l1	l2
mm	inch	mm	mm
3,000		46,000	12,000
4,000		55,000	12,000
5,000		62,000	14,000
6,000		66,000	16,000
8,000		79,000	21,000
10,000		89,000	25,000

d1		l1	l2
mm	inch	mm	mm
12,000		102,000	30,000
16,000		115,000	37,500
20,000		131,000	45,000



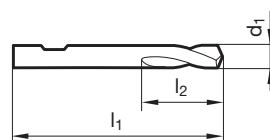
## Forets NC à 120°

Matière de coupe **HSCO**Surface **F**Sens de coupe **R****NEW**

- P** • affûtage à dépouille conique • seulement prévu pour amorcer un perçage  
 •  $\geq \varnothing 6,0$  mm avec méplat d'entraîn. selon DIN 1835-B • acier rapide au  
**M** • Co • meilleure résistance à l'usure

**GUHRING** NAVIGATOR

Paramètres de coupe, page 798



N° d'article

**1135**

d1		l1	l2
mm	inch	mm	mm
3,000		46,000	12,000
4,000		55,000	12,000
5,000		62,000	14,000
6,000		66,000	16,000
8,000		79,000	21,000
10,000		89,000	25,000

d1		l1	l2
mm	inch	mm	mm
12,000		102,000	30,000
16,000		115,000	37,500
20,000		131,000	45,000



Forets NC à 120°



Matière de coupe **CW monobloc**

Surface

Sens de coupe

**P** ○ Amin. de l'âme  $\geq \varnothing 13,500$  • affûtage en pente • seulement prévu pour amorcer un perçage

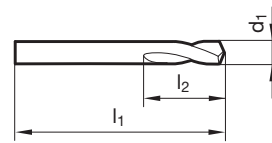
**M** ○

**K** ○

**N** ○ universelle aptitude matérielle

**S** ○

**H** ○



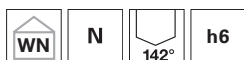
N° d'article **724**

d1		l1	l2
mm	inch	mm	mm
5,000		62,000	14,000
6,000		66,000	16,000
6,350	1/4	70,000	17,000
8,000		79,000	21,000
9,520	3/8	89,000	25,000
10,000		89,000	25,000

d1		l1	l2
mm	inch	mm	mm
12,000		102,000	30,000
12,700	1/2	102,000	30,000
15,870	5/8	115,000	37,500
16,000		115,000	37,500
19,050	3/4	131,000	45,000
20,000		131,000	45,000



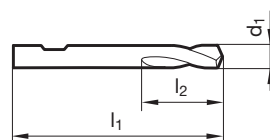
## Forets NC à 142°

Matière de coupe **CW monobloc**

Surface ○

Sens de coupe (R)

**P** ○ affûtage en pente • seulement prévu pour amorcer un perçage  
•  $\geq \varnothing 6,00$  mm avec méplat de serrage Forme d'attachement HB

**M** ○**K** ○**N** ○ universelle aptitude matérielle**S** ○**H** ○

N° d'article

546

d1		l1	l2
mm	inch	mm	mm
4,000		55,000	12,000
5,000		62,000	14,000
6,000		66,000	16,000
8,000		79,000	21,000
10,000		89,000	25,000
12,000		102,000	30,000

d1		l1	l2
mm	inch	mm	mm
16,000		115,000	37,500
20,000		131,000	45,000



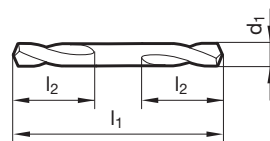
Forets carrosseries



Matière de coupe	<b>HSS</b>
Surface	$\geq \frac{\phi}{2,36}$
Sens de coupe	(R)

**P** • Amin. de l'âme  $\geq \phi 1,450$  • affûtage à dépouille conique • pour utilisation des deux côtés • p. perçage à main levée dans ateliers de carross.

- M** ○
- K** •
- N** • matériaux minces
- S** ○
- H** ○



N° d'article **554**

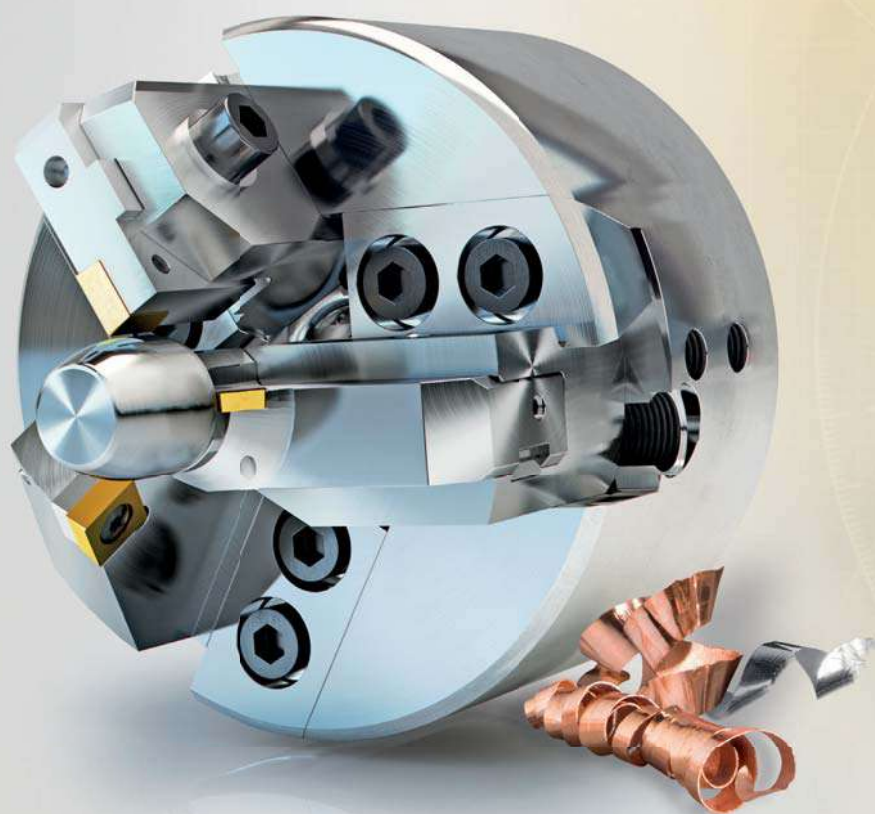
d1	l1	l2
mm	mm	mm
1,500	32,000	6,000
1,900	36,000	7,100
2,000	38,000	7,500
2,100	38,000	7,500
2,200	40,000	8,500
2,300	40,000	8,500
2,400	43,000	9,500
2,450	43,000	9,500
2,500	43,000	9,500
2,600	43,000	9,500
2,700	46,000	10,600
2,780	46,000	10,600
2,800	46,000	10,600
2,900	46,000	10,600
3,000	46,000	10,600
3,050	49,000	11,200
3,100	49,000	11,200
3,170	49,000	11,200
3,200	49,000	11,200
3,260	49,000	11,200
3,300	49,000	11,200
3,500	52,000	12,500
3,570	52,000	12,500
3,600	52,000	12,500
3,650	52,000	12,500
3,700	52,000	12,500
3,800	55,000	14,000
3,970	55,000	14,000
4,000	55,000	14,000
4,100	55,000	14,000
4,200	55,000	14,000
4,300	58,000	15,500
4,500	58,000	15,500
4,600	58,000	15,500
4,760	62,000	17,000
4,800	62,000	17,000

d1	l1	l2
mm	mm	mm
4,900	62,000	17,000
5,000	62,000	17,000
5,100	62,000	17,000
5,200	62,000	17,000
5,300	62,000	17,000
5,400	66,000	19,000
5,500	66,000	19,000
5,560	66,000	19,000
5,600	66,000	19,000
5,800	66,000	19,000
5,900	66,000	19,000
5,950	66,000	19,000
6,000	66,000	19,000
6,100	70,000	21,200
6,350	70,000	21,200
6,500	70,000	21,200
6,800	74,000	23,600
7,000	74,000	23,600
7,100	74,000	23,600
7,500	74,000	23,600
7,940	79,000	25,000
8,000	79,000	25,000
8,500	79,000	25,000
8,600	84,000	25,000
9,000	84,000	25,000
9,500	84,000	25,000
9,520	89,000	25,000
10,000	89,000	25,000

Forets à centrer/  
Forets NC

# GE 100

Système modulaire d'outillage multifonction pour l'usinage des extrémités des barres. Cela vous permet de réaliser 5 opérations d'usinage en une seule fois avec un seul outil !



De deux à quatre supports d'outils réglables et un foret à centre voire, un foret étagé, vous permettent de réaliser un usinage complet en quelques secondes.



Vous trouverez toutes les caractéristiques techniques complémentaires dans notre catalogue GE 100.





# FORETS ÉTAGÉS / FORETS ALÉSEURS





P	M	K	N	S	H	Présentation	Norme	Forme	Type	Sens de coupe	Matière de coupe	Surface	d1/mm	N° d'article	Param. de coupe, page	Page
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### Forets étagés pour centres int. selon DIN 332

•	○	•	•	○			WN	D	N	R	HSS	●	8,000 - 40,000	274	804	714
•	○	•	•	○			WN	DR	N	R	HSS	●	8,000 - 40,000	574	804	715
•	○	•	•	○			WN	D	N	R	HSS	●	8,000 - 20,000	575	804	716
•	○	•	•	○			WN	D	N	R	HSS	●	14,000 - 40,000	576	804	717

### Forets étagés à queue cylindrique, courts

•	○	•	•	○			WN		N	R	HSS	○	6,000 - 19,000	378	804	718
•	○	•	•	○			WN		N	R	HSS	○	6,600 - 21,500	1147	804	719
•	○	•	•	○			WN		N	R	HSS	○	6,000 - 18,000	379	804	720
•	○	•	•	○			WN		N	R	HSS	○	3,400 - 13,500	380	804	721

### Forets étagés à listels continus, queue cyl.

•	○	•	•	○			DIN 8374	A	N	R	HSS	●	6,000 - 15,000	536	806	722
•	○	•	•	○			DIN 8374	B	N	R	HSS	●	7,500 - 19,000	569	806	723
•	○	•	•	○			WN		N	R	HSS	●	6,600 - 17,200	636	806	724
•	○	•	•	○			WN		N	R	HSS	●	6,000 - 8,000	638	806	725
•	○	•	•	○			DIN 8376		N	R	HSS	●	6,000 - 18,000	538	806	726
○	○	○	○	○	○		WN		N	R	VHM	○	6,000 - 15,000	738		727
•	○	•	•	○			WN		N	R	HSS	●	5,900 - 17,500	514	806	728
•	○	•	•	○			DIN 8378		N	R	HSS	●	3,400 - 13,500	540	806	729
○	○	○	○	○	○		WN		N	R	VHM	○	4,500 - 11,000	739		730

### Forets étagés à listels continus, queue CM

•	○	•	•	○			WN		N	R	HSS	●	11,500 - 23,000	637	806	731
•	○	•	•	○			WN		N	R	HSS	●	11,000 - 29,000	537	806	732
•	○	•	•	○			WN		N	R	HSS	●	18,000 - 26,000	639	806	733
•	○	•	•	○			DIN 8377		N	R	HSS	●	10,000 - 33,000	539	806	734
•	○	•	•	○			WN		N	R	HSS	●	9,400 - 33,000	520	806	735

Forets étagés/  
Forets aléseurs



P	M	K	N	S	H	Présentation	Norme	Forme	Type	Sens de coupe	Matière de coupe	Surface	d1/mm	N° d'article	Param. de coupe, page	Page
Forets étagés à listels continus, queue CM								DIN 8379	N	R	HSS	●	9,000 - 22,000	541	806	736
Forets aléseurs, queue cylindrique								DIN 344	N	R	HSS	●	3,800 - 20,000	533	800	737
							WN	N	R	HM	○	3,800 - 15,000	750		739	
Forets aléseurs, queue CM								DIN 343	N	R	HSS	●	7,800 - 50,000	534	800	740
							DIN 343	N	R	HSCO	●	8,500 - 26,000	634	800	742	
							DIN 1864	N	R	HSS	●	5,000 - 30,000	555	800	743	
							DIN 1864	N	R	HSCO	●	8,000 - 15,000	635	800	744	
							WN	N	R	HM	○	28,700 - 39,600	729		745	
Forets de chaudronnerie								DIN 1898	N	R	HSS	● <sub>2,36</sub> <sup>0</sup>	2,000 - 12,000	531		746
							DIN 1898	N	R	HSS	●	5,000 - 25,000	532		747	

Forets étagés/  
Forets aléseurs



Forets étagés pour centres int. selon DIN 332



Matière de coupe **HSS**

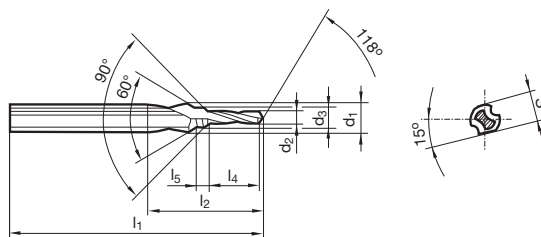
Surface

Sens de coupe

- P** • Amin. de l'âme  $\geq \varnothing 8,000$  • les caractéristiques de l'amincissement se rapportent au  $\varnothing$  nominal d1 • affûtage à dépouille conique • queue à méplat • angle de chanfreinage à  $60^\circ$  • selon DIN 332, page 2, forme D • utilisation sur machines: à centrer, à tronçonner
- M** ○
- K** •
- N** •
- S** ○
- H** ○

**GÜHRING** NAVIGATOR

Paramètres de coupe, page 804

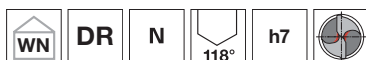


N° d'article **274**

d1 h7	d2 h8	d3	l1	l2	l4	l5	S	pour filetage
mm	mm	mm	mm	mm	mm	mm	mm	
8,000	3,300	4,300	63,000	23,000	11,000	1,600	6,750	M 4
10,000	4,200	5,300	67,000	27,000	13,000	2,150	8,450	M 5
12,500	5,000	6,400	71,000	33,000	16,000	2,900	10,450	M 6
14,000	6,800	8,400	88,000	41,000	19,500	3,500	12,500	M 8
16,000	8,500	10,500	94,000	47,000	23,000	4,700	14,850	M10
20,000	10,200	13,000	105,000	59,000	28,000	6,500	18,450	M12
25,000	14,000	17,000	132,000	67,000	33,000	8,300	23,400	M16
31,500	17,500	21,000	145,000	76,500	38,000	10,350	29,350	M20
40,000	21,000	25,000	160,000	90,000	45,000	12,000	36,500	M24



Forets étagés pour centres int. selon DIN 332



Matière de coupe **HSS**

Surface

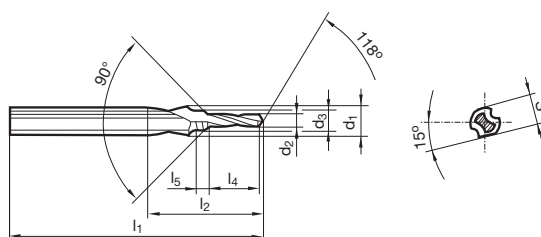
Sens de coupe

- P** • Amin. de l'âme  $\geq \varnothing 8,000$  • les caractéristiques de l'amincissement se rapportent au  $\varnothing$  nominal d1 • affûtage à dépouille conique • queue à méplat • angle de chanfreinage à  $60^\circ$  • selon DIN 332, page 2, forme DR • utilisation sur machines: à centrer, à tronçonner

- M** ○
- K** •
- N** •
- S** ○
- H** ○

**GUHRING** NAVIGATOR

Paramètres de coupe, page 804



N° d'article **574**

d1 h7	d2 h8	d3	l1	l2	l4	l5	S	pour filetage
mm	mm	mm	mm	mm	mm	mm	mm	
8,000	3,300	4,300	63,000	23,000	11,000	1,600	6,750	M 4
10,000	4,200	5,300	67,000	27,000	13,000	2,150	8,450	M 5
12,500	5,000	6,400	71,000	33,000	16,000	2,900	10,450	M 6
14,000	6,800	8,400	88,000	41,000	19,500	3,500	12,500	M 8
16,000	8,500	10,500	94,000	47,000	23,000	4,700	14,850	M10
20,000	10,200	13,000	105,000	59,000	28,000	6,500	18,450	M12
25,000	14,000	17,000	132,000	67,000	33,000	8,300	23,400	M16
31,500	17,500	21,000	145,000	76,500	38,000	10,350	29,350	M20
40,000	21,000	25,000	160,000	90,000	45,000	12,000	36,500	M24



Forets étagés pour centres int. selon DIN 332



Matière de coupe **HSS**

Surface

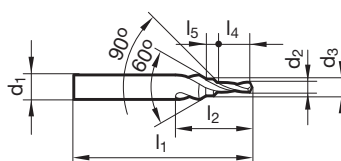
Sens de coupe

**P** • Amin. de l'âme  $\geq \varnothing 8,000$  • les caractéristiques de l'amincissement se rapportent au  $\varnothing$  nominal d1 • affûtage à dépouille conique • angle de chanfreinage à  $60^\circ$  • selon DIN 332, page 2, forme D

- M** ○
- K** •
- N** •
- S** ○
- H** ○

**GÜHRING** NAVIGATOR

Paramètres de coupe, page 804

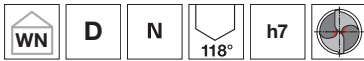


N° d'article **575**

d1 h7	d2 h8	d3	l1	l2	l4	l5	pour filetage
mm	mm	mm	mm	mm	mm	mm	
8,000	3,300	4,300	63,000	23,000	11,000	1,600	M 4
10,000	4,200	5,300	67,000	27,000	13,000	2,150	M 5
12,500	5,000	6,400	71,000	33,000	16,000	2,900	M 6
14,000	6,800	8,400	88,000	41,000	19,500	3,500	M 8
16,000	8,500	10,500	94,000	47,000	23,000	4,700	M10
20,000	10,200	13,000	105,000	59,000	28,000	6,500	M12



Forets étagés pour centres int. selon DIN 332



Matière de coupe **HSS**

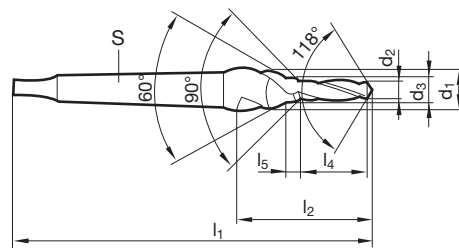
Surface

Sens de coupe

- P** • Amin. de l'âme  $\geq \varnothing 14,000$  • les caractéristiques de l'amincissement se rapportent au  $\varnothing$  nominal d1 • affûtage à dépouille conique • angle de chanfreinage à  $60^\circ$  • selon DIN 332, page 2, forme D
- M** ○
- K** •
- N** •
- S** ○
- H** ○

**GÜHRING** NAVIGATOR

Paramètres de coupe, page 804



N° d'article **576**

d1 h7	d2 h8	d3	l1	l2	l4	l5	pour filetage
mm	mm	mm	mm	mm	mm	mm	
14,000	6,800	8,400	110,000	41,000	19,500	3,500	M 8
16,000	8,500	10,500	131,000	47,000	23,000	4,700	M10
20,000	10,200	13,000	145,000	59,000	28,000	6,500	M12
25,000	14,000	17,000	172,000	67,000	33,000	8,300	M16
31,500	17,500	21,000	184,000	76,500	38,000	10,350	M20
40,000	21,000	25,000	222,000	90,000	45,000	12,000	M24



Forets étagés à queue cylindrique, courts



Matière de coupe **HSS**

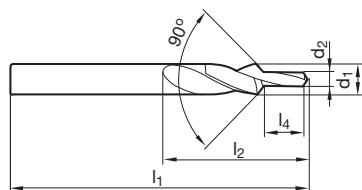
Surface ○

Sens de coupe (R)

- P** • Amin. de l'âme  $\geq \varnothing 6,000$  • les caractéristiques de l'amincissement se rapportent au  $\varnothing$  nominal d1 • affûtage à dépouille conique • très résistant à la torsion • pour les machines à commande numérique • pour les perçages débouchants selon norme DIN EN 20 273, tolérance fine • pour les chanfreinages de têtes de vis à 90° selon DIN 74, forme A • f en fonction du plus petit diamètre • vc calculée sur le grand diamètre
- M** ○
- K** •
- N** •
- S** ○
- H** ○

**GÜHRING** NAVIGATOR

Paramètres de coupe, page 804



N° d'article **378**

d1	d2 h6	l1	l2	l4	pour filetage
mm	mm	mm	mm	mm	
6,000	3,200	66,000	28,000	9,000	M 3
8,000	4,300	79,000	37,000	11,000	M 4
10,000	5,300	89,000	43,000	13,000	M 5
11,500	6,400	95,000	47,000	15,000	M 6
15,000	8,400	111,000	56,000	19,000	M 8
19,000	10,500	127,000	64,000	23,000	M 10





## Forets étagés à queue cylindrique, courts

Matière de coupe **HSS**

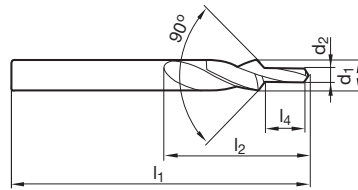
Surface ○

Sens de coupe

<b>P</b>	•	Amin. de l'âme $\geq \varnothing 6,600$ • les caractéristiques de l'amincissement se rapportent au $\varnothing$ nominal d1 • affûtage à dépouille conique • très résistant à la torsion • pour les machines à commande numérique • pour les perçages débouchants selon norme DIN EN 20 273, tolérance moyenne
<b>M</b>	○	
<b>K</b>	•	• pour les chanfreinages de têtes de vis à $90^\circ$ selon DIN 74, forme A • f en fonction du plus petit diamètre • vc calculée sur le grand diamètre
<b>N</b>	•	
<b>S</b>	○	
<b>H</b>		

**GÜHRING** NAVIGATOR

Paramètres de coupe, page 804



N° d'article

**1147**

d1	d2 h6	l1	l2	l4	pour filetage
mm	mm	mm	mm	mm	
6,600	3,400	70,000	31,000	9,000	M 3
9,000	4,500	84,000	40,000	11,000	M 4
11,000	5,500	95,000	47,000	13,000	M 5
13,000	6,600	102,000	51,000	15,000	M 6
17,200	9,000	123,000	62,000	19,000	M 8
21,500	11,000	141,000	70,000	23,000	M 10



Forets étagés à queue cylindrique, courts

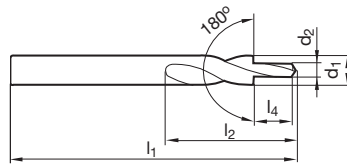


Matière de coupe	<b>HSS</b>
Surface	○
Sens de coupe	Ⓜ

- P** • Amin. de l'âme  $\geq \varnothing 6,000$  • les caractéristiques de l'amincissement se rapportent au  $\varnothing$  nominal d1 • affûtage à dépouille conique • très résistant à la torsion • pour les machines à commande numérique • pour les perçages débouchants selon norme DIN EN 20 273, tolérance moyenne
- M** ○
- K** • pour le lamage des têtes de vis à 180° • pour les vis selon Norme DIN 6912, 7984, 34821, DIN EN ISO 1207, 4762, 14579, 14580 • f en fonction du plus petit diamètre • vc calculée sur le grand diamètre
- N** •
- S** ○
- H**

**GÜHRING** NAVIGATOR

Paramètres de coupe, page 804



N° d'article **379**

d1	d2 h6	l1	l2	l4	pour filetage
mm	mm	mm	mm	mm	
6,000	3,400	66,000	28,000	9,000	M 3
8,000	4,500	79,000	37,000	11,000	M 4
10,000	5,500	89,000	43,000	13,000	M 5
11,000	6,600	95,000	47,000	15,000	M 6
15,000	9,000	111,000	56,000	19,000	M 8
18,000	11,000	123,000	62,000	23,000	M 10

Forets étagés/  
Forets aléseurs



Forets étagés à queue cylindrique, courts



Matière de coupe **HSS**

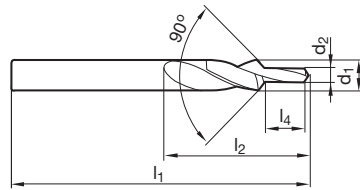
Surface ○

Sens de coupe (R)

- P** • Amin. de l'âme  $\geq \varnothing 3,400$  • les caractéristiques de l'amincissement se rapportent au  $\varnothing$  nominal d1 • affûtage à dépouille conique • très résistant à la torsion • pour les machines à commande numérique • pour les perçages avant filetages, selon Norme DIN 336 • pour chanfreinages à 90° • f en fonction du plus petit diamètre • vc calculée sur le grand diamètre
- M** ○
- K** •
- N** •
- S** ○
- H** ○

**GUHRING** NAVIGATOR

Paramètres de coupe, page 804



N° d'article **380**

d1	d2 h6	l1	l2	l4	pour filetage
mm	mm	mm	mm	mm	
3,400	2,500	52,000	20,000	8,800	M 3
4,500	3,300	58,000	24,000	11,400	M 4
5,500	4,200	66,000	28,000	13,600	M 5
6,600	5,000	70,000	31,000	16,500	M 6
9,000	6,800	84,000	40,000	21,000	M 8
11,000	8,500	95,000	47,000	25,500	M 10
13,500	10,200	107,000	54,000	30,000	M 12

Forets étagés/  
Forets aléseurs



Forets étagés à listels continus, queue cyl.



Matière de coupe **HSS**

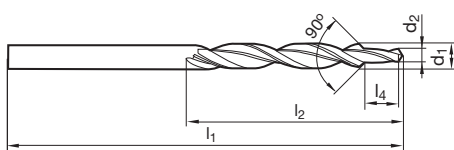
Surface

Sens de coupe

- P** • Amin. de l'âme  $\geq \varnothing 6,000$  • les caractéristiques de l'amincissement se rapportent au  $\varnothing$  nominal d1 • affûtage à dépouille conique • pour
- M** ○ les perçages débouchants selon norme DIN EN 20 273, tolérance fine
- K** • pour le chanfreinage des têtes de vis à 90° • f en fonction du plus petit diamètre • vc calculée sur le grand diamètre
- N** ○
- S**
- H**

**GÜHRING** NAVIGATOR

Paramètres de coupe, page 806



N° d'article **536**

d1 h8	d2 h9	l1	l2	l4	pour filetage
mm	mm	mm	mm	mm	
6,000	3,200	93,000	57,000	9,000	M 3
8,000	4,300	117,000	75,000	11,000	M 4
10,000	5,300	133,000	87,000	13,000	M 5
11,500	6,400	142,000	94,000	15,000	M 6
15,000	8,400	169,000	114,000	19,000	M 8



Forets étagés à listels continus, queue cyl.



- P** • Amin. de l'âme  $\geq \varnothing 7,500$  • les caractéristiques de l'amincissement se rapportent au  $\varnothing$  nominal d1 • affûtage à dépouille conique • pour les perçages débouchants selon norme DIN EN 20 273, tolérance moyenne
- M** ○
- K** • pour les chanfreinages de têtes de vis à 90° selon Norme DIN 74, formes A et F • f en fonction du plus petit diamètre • vc calculée sur le grand diamètre
- N** ○
- S**
- H**

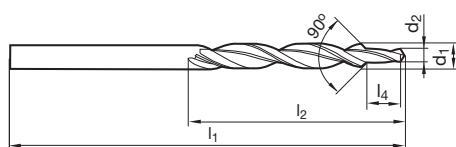
Matière de coupe **HSS**

Surface

Sens de coupe

**GÜHRING** NAVIGATOR

Paramètres de coupe, page 806



N° d'article **569**

d1 h8	d2 h9	l1	l2	l4	pour filetage
mm	mm	mm	mm	mm	
7,500	3,400	109,000	69,000	9,000	M 3
9,700	4,500	133,000	87,000	11,000	M 4
12,000	5,500	151,000	101,000	13,000	M 5
14,500	6,600	169,000	114,000	15,000	M 6
19,000	9,000	198,000	135,000	19,000	M 8

Forets étagés/  
Forets aléseurs



Forets étagés à listels continus, queue cyl.



Matière de coupe **HSS**

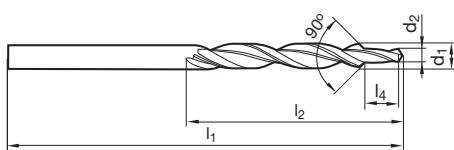
Surface

Sens de coupe

- P** • Amin. de l'âme  $\geq \varnothing 6,600$  • les caractéristiques de l'amincissement se rapportent au  $\varnothing$  nominal d1 • affûtage à dépouille conique • pour les
- M** ○ perçages débouchants selon norme DIN EN 20 273, tolérance moyenne
- K** • pour les chanfreinages de têtes de vis à  $90^\circ$  selon Norme DIN 74 partie 1 (Edition 12.1980 retirée), formes A et B, classe moyenne • f en fonction du plus petit diamètre • vc calculée sur le grand diamètre
- N** ○
- S**
- H**

**GÜHRING** NAVIGATOR

Paramètres de coupe, page 806



N° d'article **636**

d1 h8	d2 h9	l1	l2	l4	pour filetage
mm	mm	mm	mm	mm	
6,600	3,400	101,000	63,000	9,000	M 3
9,000	4,500	125,000	81,000	11,000	M 4
11,000	5,500	142,000	94,000	13,000	M 5
13,000	6,600	151,000	101,000	15,000	M 6
17,200	9,000	191,000	130,000	19,000	M 8



Forets étagés à listels continus, queue cyl.



Matière de coupe **HSS**

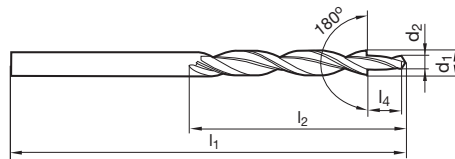
Surface

Sens de coupe

- P** • Amin. de l'âme  $\geq \varnothing 6,000$  • les caractéristiques de l'amincissement se rapportent au  $\varnothing$  nominal d1 • affûtage à dépouille conique • pour les
- M** ○ perçages débouchants selon norme DIN EN 20 273, tolérance fine • pour le
- K** • lamage des têtes de vis à 180° • pour les vis selon Norme DIN 6912, 7513, 7984 • f en fonction du plus petit diamètre • vc calculée sur le
- N** ○ grand diamètre
- S**
- H**

**GÜHRING** NAVIGATOR

Paramètres de coupe, page 806



N° d'article **638**

d1 h8	d2 h9	l1	l2	l4	pour filetage
mm	mm	mm	mm	mm	
6,000	3,200	93,000	57,000	9,000	M 3
8,000	4,300	117,000	75,000	11,000	M 4



Forets étagés à listels continus, queue cyl.

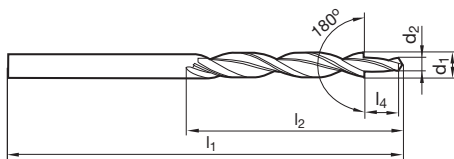


- P** • Amin. de l'âme  $\geq \varnothing 6,000$  • les caractéristiques de l'amincissement se rapportent au  $\varnothing$  nominal d1 • affûtage à dépouille conique • pour les perçages débouchants selon norme DIN EN 20 273, tolérance moyenne
- M** ○ pour le lamage des têtes de vis à 180° • pour les vis selon Norme DIN 6912, 7984, 34821, DIN EN ISO 1207, 4762, 14579, 14580 et DIN 7513, 7516, 7500 - 1 • f en fonction du plus petit diamètre • vc calculée sur le grand diamètre
- K** •
- N** ○
- S**
- H**

**GÜHRING** NAVIGATOR

Paramètres de coupe, page 806

Matière de coupe	<b>HSS</b>
Surface	●
Sens de coupe	Ⓜ



N° d'article **538**

d1 h8	d2 h9	l1	l2	l4	pour filetage
mm	mm	mm	mm	mm	
6,000	3,400	93,000	57,000	9,000	M 3
8,000	4,500	117,000	75,000	11,000	M 4
10,000	5,500	133,000	87,000	13,000	M 5
11,000	6,600	142,000	94,000	15,000	M 6
15,000	9,000	169,000	114,000	19,000	M 8
18,000	11,000	191,000	130,000	23,000	M 10





Forets étagés à listels continus, queue cyl.

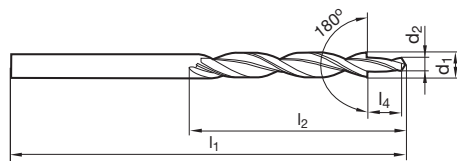


Matière de coupe **CW monobloc**

Surface

Sens de coupe

- P** ◦ Amin. de l'âme  $\geq \varnothing 6,000$  • affûtage à dépouille conique • pour les perçages débouchants selon norme DIN EN 20 273, tolérance moyenne
- M** ◦ • pour le lamage des têtes de vis à 180° • pour les vis selon Norme DIN 6912, 7513, 7984 • f en fonction du plus petit diamètre • vc calculée sur le grand diamètre
- K** ◦
- N** ◦
- S** ◦ universelle aptitude matérielle
- H** ◦



N° d'article **738**

d1 h8	d2 h9	l1	l2	l4	pour filetage
mm	mm	mm	mm	mm	
6,000	3,400	93,000	57,000	9,000	M 3
8,000	4,500	117,000	75,000	11,000	M 4
10,000	5,500	133,000	87,000	13,000	M 5
11,000	6,600	142,000	94,000	15,000	M 6
15,000	9,000	169,000	114,000	19,000	M 8

Forets étagés/  
Forets aléseurs



Forets étagés à listels continus, queue cyl.



Matière de coupe **HSS**

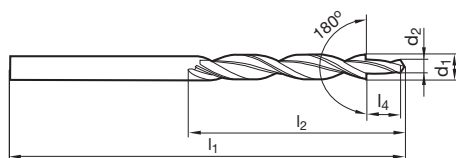
Surface

Sens de coupe

- P** • Amin. de l'âme  $\geq \varnothing 5,900$  • les caractéristiques de l'amincissement se rapportent au  $\varnothing$  nominal d1 • affûtage à dépouille conique • pour
- M** ○ les perçages débouchants avec des lamages / chanfreinages, version ancienne, formes H, J, K selon Norme DIN 75, partie 2 (Edition 04. 1968 retirée), tolérances moyennes et fines • pour vis selon DIN 84, 912, 6912
- K** •
- N** ○ • f en fonction du plus petit diamètre • vc calculée sur le grand diamètre
- S**
- H**

**GÜHRING**NAVIGATOR

Paramètres de coupe, page 806

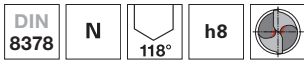


N° d'article **514**

d1 h8	d2 h9	l1	l2	l4	pour filetage
mm	mm	mm	mm	mm	
5,900	3,200	93,000	57,000	11,000	M 3
7,400	4,300	109,000	69,000	13,000	M 4
8,000	4,800	117,000	75,000	13,000	M 4
9,400	5,300	125,000	81,000	16,000	M 5
10,000	5,800	133,000	87,000	16,000	M 5
10,400	6,400	133,000	87,000	19,000	M 6
11,000	7,000	142,000	94,000	19,000	M 6
13,500	8,400	160,000	108,000	22,000	M 8
16,500	10,500	184,000	125,000	25,000	M 10
17,500	11,500	191,000	130,000	25,000	M 10



Forets étagés à listels continus, queue cyl.



- P** • Amin. de l'âme  $\geq \varnothing 3,400$  • les caractéristiques de l'amincissement se rapportent au  $\varnothing$  nominal d1 • affûtage à dépouille conique • pour les perçages avant filetages, selon Norme DIN 336 • pour chanfreinages à 90° • f en fonction du plus petit diamètre • vc calculée sur le grand diamètre
- M** ○
- K** •
- N** ○
- S** ○
- H** ○

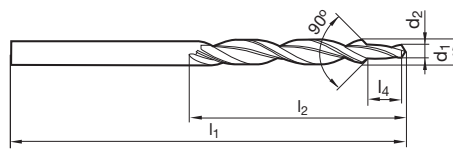
Matière de coupe **HSS**

Surface

Sens de coupe

**GÜHRING** NAVIGATOR

Paramètres de coupe, page 806



N° d'article **540**

d1 h8	d2 h9	l1	l2	l4	pour filetage
mm	mm	mm	mm	mm	
3,400	2,500	70,000	39,000	8,800	M 3
4,500	3,300	80,000	47,000	11,400	M 4
5,500	4,200	93,000	57,000	13,600	M 5
6,600	5,000	101,000	63,000	16,500	M 6
9,000	6,800	125,000	81,000	21,000	M 8
11,000	8,500	142,000	94,000	25,500	M 10
13,500	10,200	160,000	108,000	30,000	M 12

Forets étagés/  
Forets aléseurs



Forets étagés à listels continus, queue cyl.



Matière de coupe **CW monobloc**

Surface ○

Sens de coupe (R)

**P** ○ Amin. de l'âme  $\geq \varnothing 4,500$  • affûtage à dépouille conique • pour les perçages avant filetages, selon Norme DIN 336 • pour chanfreinages à 90° • f en fonction du plus petit diamètre • vc calculée sur le grand diamètre

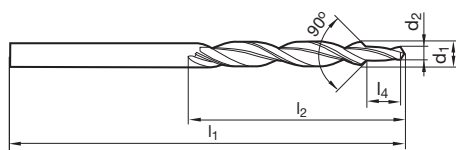
**M** ○

**K** ○

**N** ○

**S** ○ universelle aptitude matérielle

**H** ○



N° d'article **739**

d1 h8	d2 h9	l1	l2	l4	pour filetage
mm	mm	mm	mm	mm	
4,500	3,300	80,000	47,000	11,400	M 4
5,500	4,200	93,000	57,000	13,600	M 5
6,600	5,000	101,000	63,000	16,500	M 6
9,000	6,800	125,000	81,000	21,000	M 8
11,000	8,500	142,000	94,000	25,500	M 10



Forets étagés à listels continus, queue CM



Matière de coupe **HSS**

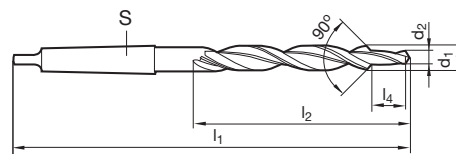
Surface

Sens de coupe

- P** • Amin. de l'âme  $\geq \varnothing 11,500$  • les caractéristiques de l'amincissement se rapportent au  $\varnothing$  nominal d1 • affûtage à dépouille conique • pour les
- M** ○ perçages débouchants selon norme DIN EN 20 273, tolérance fine • pour
- K** • les chanfreinages de têtes de vis à 90° selon DIN 74, partie 1 (Edition
- N** ○ 12.1980 retirée), forme A, tolérance fine • f en fonction du plus petit
- S** ○ diamètre • vc calculée sur le grand diamètre
- H** ○

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N° d'article **637**

d1 h8	d2 h9	S	l1	l2	l4	pour filetage
mm	mm		mm	mm	mm	
11,500	6,400	MK-1	175,000	94,000	15,000	M 6
15,000	8,400	MK-2	212,000	114,000	19,000	M 8
19,000	10,500	MK-2	233,000	135,000	23,000	M 10
23,000	13,000	MK-2	253,000	155,000	27,000	M 12

Forets étagés/  
Forets aléseurs



Forets étagés à listels continus, queue CM

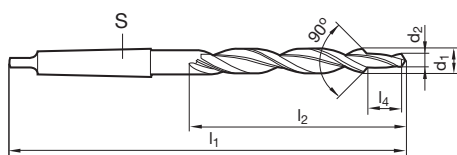


- P** • Amin. de l'âme  $\geq \varnothing 11,000$  • les caractéristiques de l'amincissement se rapportent au  $\varnothing$  nominal d1 • affûtage à dépouille conique • pour les
- M** ○ perçages débouchants selon norme DIN EN 20 273, tolérance moyenne
- K** • pour les chanfreinages de têtes de vis à 90° selon Norme DIN 74 partie 1 (Edition 12.1980 retirée), formes A et B, classe moyenne • f en fonction du plus petit diamètre • vc calculée sur le grand diamètre
- N** ○
- S** ○
- H** ○

**GÜHRING** NAVIGATOR

Paramètres de coupe, page 806

Matière de coupe	<b>HSS</b>
Surface	●
Sens de coupe	Ⓜ

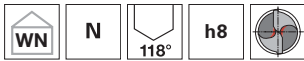


N° d'article **537**

d1 h8	d2 h9	S	l1	l2	l4	pour filetage
mm	mm		mm	mm	mm	
11,000	5,500	MK-1	175,000	94,000	13,000	M 5
17,200	9,000	MK-2	228,000	130,000	19,000	M 8
21,500	11,000	MK-2	248,000	150,000	23,000	M 10
26,000	14,000	MK-3	286,000	165,000	27,000	M 12
29,000	16,000	MK-3	296,000	175,000	31,000	M 14



Forets étagés à listels continus, queue CM

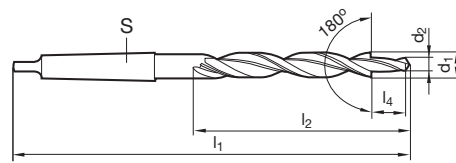


<b>P</b>	•	Amin. de l'âme $\geq \varnothing 10,000$ • les caractéristiques de l'amincissement se rapportent au $\varnothing$ nominal d1 • affûtage à dépouille conique • pour les
<b>M</b>	○	perçages débouchants selon norme DIN EN 20 273, tolérance fine • pour le
<b>K</b>	•	lamage des têtes de vis à 180° • pour les vis selon Norme DIN 6912, 7984, 34821, DIN EN ISO 1207, 4762, 14579, 14580 • f en fonction du
<b>N</b>	○	plus petit diamètre • vc calculée sur le grand diamètre
<b>S</b>		
<b>H</b>		

**GÜHRING** NAVIGATOR

Paramètres de coupe, page 806

Matière de coupe	<b>HSS</b>
Surface	●
Sens de coupe	Ⓜ



N° d'article **639**

d1 h8	d2 h9	S	l1	l2	l4	pour filetage
mm	mm		mm	mm	mm	
18,000	10,500	MK-2	228,000	130,000	23,000	M 10
20,000	13,000	MK-2	238,000	140,000	27,000	M 12
26,000	17,000	MK-3	286,000	165,000	35,000	M 16

Forets étagés/  
Forets aléseurs



Forets étagés à listels continus, queue CM



Matière de coupe **HSS**

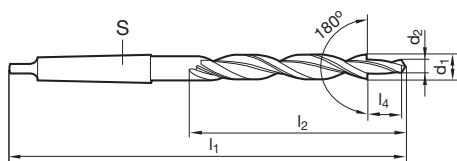
Surface

Sens de coupe

- P** • Amin. de l'âme  $\geq \varnothing 10,000$  • les caractéristiques de l'amincissement se rapportent au  $\varnothing$  nominal d1 • affûtage à dépouille conique • pour les perçages débouchants selon norme DIN EN 20 273, tolérance moyenne
- M** ○
- K** • pour le lamage des têtes de vis à 180° • pour les vis selon Norme DIN 6912, 7984, 34821, DIN EN ISO 1207, 4762, 14579, 14580 et DIN 7513, 7516, 7500 - 1 • f en fonction du plus petit diamètre • vc calculée sur le grand diamètre
- N** ○
- S**
- H**

**GÜHRING** NAVIGATOR

Paramètres de coupe, page 806



N° d'article **539**

d1 h8	d2 h9	S	l1	l2	l4	pour filetage
mm	mm		mm	mm	mm	
10,000	5,500	MK-1	168,000	87,000	13,000	M 5
11,000	6,600	MK-1	175,000	94,000	15,000	M 6
15,000	9,000	MK-2	212,000	114,000	19,000	M 8
18,000	11,000	MK-2	228,000	130,000	23,000	M 10
20,000	13,500	MK-2	238,000	140,000	27,000	M 12
26,000	17,500	MK-3	286,000	165,000	35,000	M 16
30,000	20,000	MK-3	296,000	175,000	39,000	M 18
33,000	22,000	MK-4	334,000	185,000	43,000	M 20





Forets étagés à listels continus, queue CM



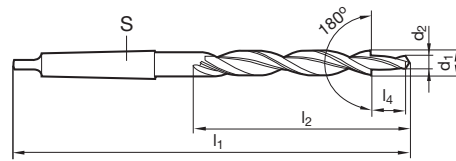
**P** • Amin. de l'âme  $\geq \varnothing 9,400$  • les caractéristiques de l'amincissement se rapportent au  $\varnothing$  nominal d1 • affûtage à dépouille conique • avec lamages anciennes formes H, J, K • pour vis selon DIN 84, 912, 6912 • f en fonction du plus petit diamètre • vc calculée sur le grand diamètre

- M** ○
- K** •
- N** ○
- S** ○
- H** ○

**GUHRING** NAVIGATOR

Paramètres de coupe, page 806

Matière de coupe	<b>HSS</b>
Surface	●
Sens de coupe	Ⓜ



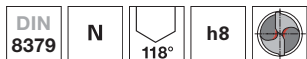
N° d'article **520**

d1 h8	d2 h9	S	l1	l2	l4	pour filetage
mm	mm		mm	mm	mm	
9,400	5,300	MK-1	162,000	81,000	16,000	M 5
10,000	5,800	MK-1	168,000	87,000	16,000	M 5
11,000	7,000	MK-1	175,000	94,000	19,000	M 6
13,500	8,400	MK-1	189,000	108,000	22,000	M 8
16,500	10,500	MK-2	223,000	125,000	25,000	M 10
17,500	11,500	MK-2	228,000	130,000	25,000	M 10
19,000	13,000	MK-2	233,000	135,000	28,000	M 12
20,000	14,000	MK-2	238,000	140,000	28,000	M 12
23,000	15,000	MK-2	253,000	155,000	30,000	M 14
24,000	16,000	MK-3	281,000	160,000	30,000	M 14
25,000	17,000	MK-3	281,000	160,000	33,000	M 16
26,000	18,000	MK-3	286,000	165,000	33,000	M 16
28,000	19,000	MK-3	291,000	170,000	36,000	M 18
29,000	20,000	MK-3	296,000	175,000	36,000	M 18
31,000	21,000	MK-3	301,000	180,000	39,000	M 20
33,000	23,000	MK-4	334,000	185,000	39,000	M 20

Forets étagés/  
Forets aléseurs



Forets étagés à listels continus, queue CM



Matière de coupe **HSS**

Surface

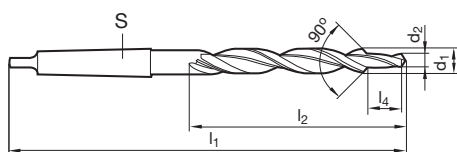
Sens de coupe

**P** • Amin. de l'âme  $\geq \varnothing 9,000$  • les caractéristiques de l'amincissement se rapportent au  $\varnothing$  nominal d1 • affûtage à dépouille conique • pour les perçages avant filetages, selon Norme DIN 336 • pour chanfreinages à 90° • f en fonction du plus petit diamètre • vc calculée sur le grand diamètre

- M** ○
- K** •
- N** ○
- S** ○
- H** ○

**GÜHRING** NAVIGATOR

Paramètres de coupe, page 806

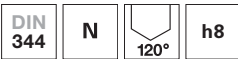


N° d'article **541**

d1 h8	d2 h9	S	l1	l2	l4	pour filetage
mm	mm		mm	mm	mm	
9,000	6,800	MK-1	162,000	81,000	21,000	M 8
11,000	8,500	MK-1	175,000	94,000	25,500	M 10
13,500	10,200	MK-1	189,000	108,000	30,000	M 12
15,500	12,000	MK-2	218,000	120,000	34,500	M 14
17,500	14,000	MK-2	228,000	130,000	38,500	M 16
20,000	15,500	MK-2	238,000	140,000	43,500	M 18
22,000	17,500	MK-2	248,000	150,000	47,500	M 20



## Forets aléseurs, queue cylindrique

Matière de coupe **HSS**

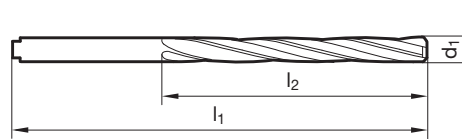
Surface

Sens de coupe

<b>P</b>	•	affûtage à dépouille conique • particulièrement rigide • pour les perçages préalablement coulés, percés ou estampés • avec tenon suiv. DIN 1809
<b>M</b>	○	• précision d'alignement corrigée • erreur de circularité corrigée • état de surface du perçage amélioré • Ø d'entrée < que le Ø du perçage à aléser
<b>K</b>	•	• respecter le Ø minimum de l'avant-perçage • après le foret aléseur, alésage final optimisé
<b>N</b>	○	
<b>S</b>		
<b>H</b>		

**GUHRING** NAVIGATOR

Paramètres de coupe, page 800



N° d'article

**533**

d1	l1	l2	d0 ≥	d1	l1	l2	d0 ≥
mm	mm	mm	mm	mm	mm	mm	mm
3,800	96,000	64,000	2,80	8,200	142,000	100,000	5,60
4,000	96,000	64,000	2,80	8,250	142,000	100,000	5,60
4,100	96,000	64,000	2,80	8,300	142,000	100,000	5,60
4,400	102,000	69,000	3,20	8,400	142,000	100,000	5,60
4,500	102,000	69,000	3,20	8,500	142,000	100,000	5,60
4,600	102,000	69,000	3,20	8,600	151,000	107,000	6,30
4,750	102,000	69,000	3,20	8,700	151,000	107,000	6,30
4,800	108,000	74,000	3,50	8,800	151,000	107,000	6,30
4,900	108,000	74,000	3,50	8,850	151,000	107,000	6,30
5,000	108,000	74,000	3,50	9,000	151,000	107,000	6,30
5,050	108,000	74,000	3,50	9,100	151,000	107,000	6,30
5,100	108,000	74,000	3,50	9,200	151,000	107,000	6,30
5,300	108,000	74,000	3,50	9,300	151,000	107,000	6,30
5,400	116,000	80,000	4,20	9,400	151,000	107,000	6,30
5,500	116,000	80,000	4,20	9,500	151,000	107,000	6,30
5,550	116,000	80,000	4,20	9,650	162,000	116,000	7,00
5,750	116,000	80,000	4,20	9,800	162,000	116,000	7,00
5,800	116,000	80,000	4,20	10,000	162,000	116,000	7,00
5,850	116,000	80,000	4,20	10,100	162,000	116,000	7,00
5,900	116,000	80,000	4,20	10,200	162,000	116,000	7,00
6,000	116,000	80,000	4,20	10,300	162,000	116,000	7,00
6,100	124,000	86,000	4,20	10,500	162,000	116,000	7,00
6,200	124,000	86,000	4,20	10,600	162,000	116,000	7,00
6,250	124,000	86,000	4,20	10,700	173,000	125,000	7,70
6,300	124,000	86,000	4,20	10,750	173,000	125,000	7,70
6,400	124,000	86,000	4,20	11,000	173,000	125,000	7,70
6,500	124,000	86,000	4,20	11,250	173,000	125,000	7,70
6,700	124,000	86,000	4,20	11,300	173,000	125,000	7,70
6,800	133,000	93,000	4,90	11,750	184,000	134,000	8,40
7,000	133,000	93,000	4,90	11,800	184,000	134,000	8,40
7,150	133,000	93,000	4,90	12,000	184,000	134,000	8,40
7,200	133,000	93,000	4,90	12,200	184,000	134,000	8,40
7,250	133,000	93,000	4,90	12,500	184,000	134,000	8,40
7,500	133,000	93,000	4,90	12,750	184,000	134,000	9,10
7,600	142,000	100,000	5,60	13,000	184,000	134,000	9,10
7,700	142,000	100,000	5,60	13,500	194,000	142,000	9,80
7,750	142,000	100,000	5,60	13,750	194,000	142,000	9,80
7,800	142,000	100,000	5,60	14,000	194,000	142,000	9,80
7,950	142,000	100,000	5,60	15,000	202,000	147,000	10,50
8,000	142,000	100,000	5,60	15,750	211,000	153,000	11,20
8,050	142,000	100,000	5,60	16,000	211,000	153,000	11,20
8,100	142,000	100,000	5,60	17,000	218,000	159,000	11,90

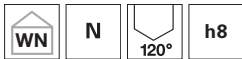


d1	l1	l2	d0 ≥
mm	mm	mm	mm
18,000	226,000	165,000	12,60
20,000	242,000	177,000	14,00

d1	l1	l2	d0 ≥
mm	mm	mm	mm



Forets aléseurs, queue cylindrique

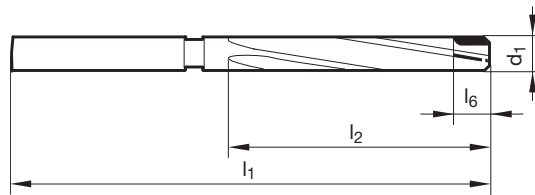


Matière de coupe **CW**

Surface ○

Sens de coupe

- P** ○ affûtage à dépouille conique • à plaquette(s) cw rapportée(s) • pour les perçages préalablement coulés, percés ou estampés • précision d'alignement corrigée • erreur de circularité corrigée • état de surface du perçage amélioré • Ø d'entrée < que le Ø du perçage à aléser • respecter le Ø minimum de l'avant-perçage
- M** ○
- K** ○
- N** ○
- S** ○ universelle aptitude matérielle
- H** ○



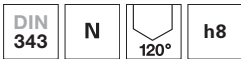
N° d'article **750**

d1	l1	l2	l6	d0 ≥
mm	mm	mm	mm	mm
3,800	96,000	64,000		2,800
4,800	108,000	74,000		3,500
5,000	108,000	74,000		3,500
5,800	116,000	80,000		4,200
6,000	116,000	80,000		4,200
7,000	133,000	93,000		4,900

d1	l1	l2	l6	d0 ≥
mm	mm	mm	mm	mm
7,800	142,000	100,000		5,600
8,000	142,000	100,000		5,600
14,000	194,000	142,000	19,000	9,800
15,000	202,000	147,000	19,000	10,500



Forets aléseurs, queue CM



Matière de coupe **HSS**

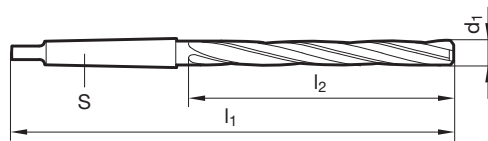
Surface

Sens de coupe

- P** ● affûtage à dépouille conique • particulièrement rigide • pour les perçages préalablement coulés, percés ou estampés • précision d'alignement corrigée • erreur de circularité corrigée • état de surface du perçage amélioré • Ø d'entrée < que le Ø du perçage à aléser • respecter le Ø minimum de l'avant-perçage • après le foret aléseur, alésage final optimisé
- M** ○
- K** ●
- N** ○
- S**
- H**

**GÜHRING** NAVIGATOR

Paramètres de coupe, page 800



N° d'article **534**

d1	S	l1	l2	d0 ≥	d1	S	l1	l2	d0 ≥
mm		mm	mm	mm	mm		mm	mm	mm
7,800	MK-1	156,000	75,000	5,60	16,200	MK-2	223,000	125,000	11,90
8,000	MK-1	156,000	75,000	5,60	16,250	MK-2	223,000	125,000	11,90
8,100	MK-1	156,000	75,000	5,60	16,500	MK-2	223,000	125,000	11,90
8,800	MK-1	162,000	81,000	6,30	16,750	MK-2	223,000	125,000	11,90
9,000	MK-1	162,000	81,000	6,30	17,000	MK-2	223,000	125,000	11,90
9,200	MK-1	162,000	81,000	6,30	17,500	MK-2	228,000	130,000	12,60
9,700	MK-1	168,000	87,000	7,00	17,750	MK-2	228,000	130,000	12,60
9,800	MK-1	168,000	87,000	7,00	18,000	MK-2	228,000	130,000	12,60
9,900	MK-1	168,000	87,000	7,00	18,100	MK-2	233,000	135,000	13,30
10,000	MK-1	168,000	87,000	7,00	18,250	MK-2	233,000	135,000	13,30
10,100	MK-1	168,000	87,000	7,00	18,500	MK-2	233,000	135,000	13,30
10,200	MK-1	168,000	87,000	7,00	18,700	MK-2	233,000	135,000	13,30
10,750	MK-1	175,000	94,000	7,70	18,750	MK-2	233,000	135,000	13,30
11,000	MK-1	175,000	94,000	7,70	18,800	MK-2	233,000	135,000	13,30
11,100	MK-1	175,000	94,000	7,70	19,000	MK-2	233,000	135,000	13,30
11,250	MK-1	175,000	94,000	7,70	19,250	MK-2	238,000	140,000	14,00
11,500	MK-1	175,000	94,000	7,70	19,500	MK-2	238,000	140,000	14,00
11,750	MK-1	182,000	101,000	8,40	19,700	MK-2	238,000	140,000	14,00
11,800	MK-1	182,000	101,000	8,40	19,750	MK-2	238,000	140,000	14,00
12,000	MK-1	182,000	101,000	8,40	20,000	MK-2	238,000	140,000	14,00
12,200	MK-1	182,000	101,000	8,40	20,200	MK-2	243,000	145,000	14,60
12,300	MK-1	182,000	101,000	8,40	20,250	MK-2	243,000	145,000	14,60
12,500	MK-1	182,000	101,000	8,40	20,500	MK-2	243,000	145,000	14,60
12,700	MK-1	182,000	101,000	9,10	20,700	MK-2	243,000	145,000	14,60
12,750	MK-1	182,000	101,000	9,10	21,000	MK-2	243,000	145,000	14,60
13,000	MK-1	182,000	101,000	9,10	21,500	MK-2	248,000	150,000	15,30
13,250	MK-1	189,000	108,000	9,80	21,700	MK-2	248,000	150,000	15,30
13,500	MK-1	189,000	108,000	9,80	21,750	MK-2	248,000	150,000	15,30
13,750	MK-1	189,000	108,000	9,80	22,000	MK-2	248,000	150,000	15,30
13,800	MK-1	189,000	108,000	9,80	22,250	MK-2	248,000	150,000	15,30
14,000	MK-1	189,000	108,000	9,80	22,400	MK-2	248,000	150,000	15,30
14,100	MK-2	212,000	114,000	10,50	22,500	MK-2	253,000	155,000	16,00
14,200	MK-2	212,000	114,000	10,50	22,700	MK-2	253,000	155,000	16,00
14,450	MK-2	212,000	114,000	10,50	23,000	MK-2	253,000	155,000	16,00
14,500	MK-2	212,000	114,000	10,50	23,500	MK-2	253,000	155,000	16,00
14,750	MK-2	212,000	114,000	10,50	23,700	MK-3	281,000	160,000	16,60
15,000	MK-2	212,000	114,000	10,50	24,000	MK-3	281,000	160,000	16,60
15,250	MK-2	218,000	120,000	11,20	24,200	MK-3	281,000	160,000	16,60
15,500	MK-2	218,000	120,000	11,20	24,500	MK-3	281,000	160,000	17,30
15,750	MK-2	218,000	120,000	11,20	24,700	MK-3	281,000	160,000	17,30
16,000	MK-2	218,000	120,000	11,20	24,750	MK-3	281,000	160,000	17,30
16,150	MK-2	223,000	125,000	11,90	25,000	MK-3	281,000	160,000	17,30

Forets étagés/  
Forets aléseurs



d1	S	l1	l2	d0 ≥
mm		mm	mm	mm
25,250	MK-3	286,000	165,000	18,00
25,500	MK-3	286,000	165,000	18,00
25,600	MK-3	286,000	165,000	18,00
25,700	MK-3	286,000	165,000	18,00
26,000	MK-3	286,000	165,000	18,00
26,500	MK-3	286,000	165,000	18,00
26,700	MK-3	291,000	170,000	18,60
27,000	MK-3	291,000	170,000	18,60
27,500	MK-3	291,000	170,000	18,60
27,700	MK-3	291,000	170,000	19,30
28,000	MK-3	291,000	170,000	19,30
28,700	MK-3	296,000	175,000	20,00
29,000	MK-3	296,000	175,000	20,00
29,500	MK-3	296,000	175,000	20,50
29,700	MK-3	296,000	175,000	20,50
29,750	MK-3	296,000	175,000	20,50
30,000	MK-3	296,000	175,000	20,50
30,500	MK-3	301,000	180,000	21,00
30,600	MK-3	301,000	180,000	21,00
31,000	MK-3	301,000	180,000	21,00
31,600	MK-4	334,000	185,000	22,00
32,000	MK-4	334,000	185,000	22,00
32,600	MK-4	334,000	185,000	23,00
33,000	MK-4	334,000	185,000	23,00

d1	S	l1	l2	d0 ≥
mm		mm	mm	mm
33,600	MK-4	339,000	190,000	24,00
34,000	MK-4	339,000	190,000	24,00
34,600	MK-4	339,000	190,000	25,00
35,000	MK-4	339,000	190,000	25,00
35,600	MK-4	344,000	195,000	25,50
36,000	MK-4	344,000	195,000	25,50
36,600	MK-4	344,000	195,000	26,00
37,600	MK-4	349,000	200,000	26,50
38,000	MK-4	349,000	200,000	26,50
39,000	MK-4	349,000	200,000	27,00
39,600	MK-4	349,000	200,000	28,00
40,000	MK-4	349,000	200,000	28,00
44,000	MK-4	359,000	210,000	30,50
44,600	MK-4	359,000	210,000	31,00
45,000	MK-4	359,000	210,000	31,00
50,000	MK-4	369,000	220,000	34,50



Forets aléseurs, queue CM

DIN 343	N	120°	h8
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Matière de coupe **HSCO**

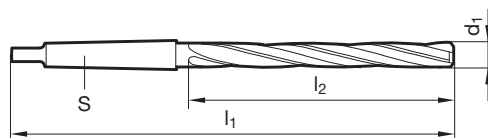
Surface

Sens de coupe

- P** ● affûtage à dépouille conique • particulièrement rigide • pour les perçages préalablement coulés, percés ou estampés • précision d'alignement corrigée • erreur de circularité corrigée • état de surface du perçage amélioré • Ø d'entrée < que le Ø du perçage à aléser • respecter le Ø minimum de l'avant-perçage • après le foret aléseur, alésage final optimisé
- M** ○
- K** ●
- N** ●
- S** ○
- H** ○

**GÜHRING** NAVIGATOR

Paramètres de coupe, page 800



N° d'article **634**

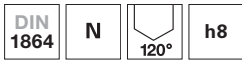
d1	S	l1	l2	d0 ≥
mm		mm	mm	mm
8,500	MK-1	156,000	75,000	5,60
9,000	MK-1	162,000	81,000	6,30
9,800	MK-1	168,000	87,000	7,00
10,750	MK-1	175,000	94,000	7,70
11,750	MK-1	182,000	101,000	8,40
12,000	MK-1	182,000	101,000	8,40
12,500	MK-1	182,000	101,000	8,40
12,750	MK-1	182,000	101,000	9,10
13,000	MK-1	182,000	101,000	9,10
14,000	MK-1	189,000	108,000	9,80
14,750	MK-2	212,000	114,000	10,50
15,750	MK-2	218,000	120,000	11,20

d1	S	l1	l2	d0 ≥
mm		mm	mm	mm
16,000	MK-2	218,000	120,000	11,20
16,500	MK-2	223,000	125,000	11,90
17,000	MK-2	223,000	125,000	11,90
18,000	MK-2	228,000	130,000	12,60
19,700	MK-2	238,000	140,000	14,00
20,000	MK-2	238,000	140,000	14,00
21,000	MK-2	243,000	145,000	14,60
22,000	MK-2	248,000	150,000	15,30
23,000	MK-2	253,000	155,000	16,00
24,000	MK-3	281,000	160,000	16,60
25,000	MK-3	281,000	160,000	17,30
26,000	MK-3	286,000	165,000	18,00





Forets aléseurs, queue CM



Matière de coupe **HSS**

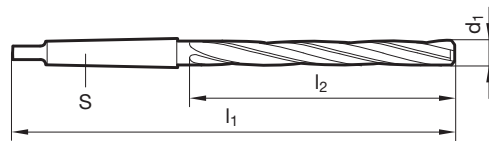
Surface

Sens de coupe

- P** ● affûtage à dépouille conique • particulièrement rigide • pour les perçages préalablement coulés, percés ou estampés • précision d'alignement corrigée • erreur de circularité corrigée • état de surface du perçage amélioré • Ø d'entrée < que le Ø du perçage à aléser • respecter le Ø minimum de l'avant-perçage • après le foret aléseur, alésage final optimisé
- M** ○
- K** ●
- N** ○
- S** ○
- H** ○

**GÜHRING** NAVIGATOR

Paramètres de coupe, page 800



N° d'article **555**

d1	S	l1	l2	d0 ≥
mm		mm	mm	mm
5,000	MK-1	155,000	74,000	3,50
8,000	MK-1	181,000	100,000	5,60
8,800	MK-1	188,000	107,000	6,30
9,000	MK-1	188,000	107,000	6,30
9,700	MK-1	197,000	116,000	7,00
9,800	MK-1	197,000	116,000	7,00
10,000	MK-1	197,000	116,000	7,00
10,100	MK-1	197,000	116,000	7,00
10,500	MK-1	197,000	116,000	7,00
11,100	MK-1	206,000	125,000	7,70
11,750	MK-1	215,000	134,000	8,40
12,000	MK-1	215,000	134,000	8,40
12,750	MK-1	215,000	134,000	9,10
13,000	MK-1	215,000	134,000	9,10
13,750	MK-1	223,000	142,000	9,80
14,000	MK-1	223,000	142,000	9,80
15,000	MK-2	245,000	147,000	10,50
15,750	MK-2	251,000	153,000	11,20

d1	S	l1	l2	d0 ≥
mm		mm	mm	mm
16,000	MK-2	251,000	153,000	11,20
17,750	MK-2	263,000	165,000	12,60
19,000	MK-2	269,000	171,000	13,30
19,700	MK-2	275,000	177,000	14,00
20,000	MK-2	275,000	177,000	14,00
20,700	MK-2	282,000	184,000	14,60
21,000	MK-2	282,000	184,000	14,60
21,700	MK-2	289,000	191,000	15,30
22,000	MK-2	289,000	191,000	15,30
22,700	MK-2	296,000	198,000	16,00
23,000	MK-2	296,000	198,000	16,00
24,000	MK-3	327,000	206,000	16,60
25,000	MK-3	327,000	206,000	17,30
25,700	MK-3	335,000	214,000	18,00
30,000	MK-3	351,000	230,000	20,50



Forets aléseurs, queue CM

DIN 1864	N	120°	h8
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Matière de coupe **HSCO**

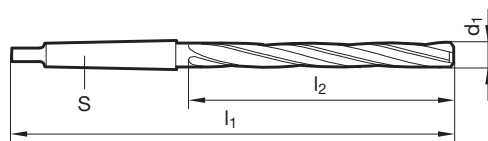
Surface

Sens de coupe

- P** ● affûtage à dépouille conique • particulièrement rigide • pour les perçages préalablement coulés, percés ou estampés • précision d'alignement corrigée • erreur de circularité corrigée • état de surface du perçage amélioré • Ø d'entrée < que le Ø du perçage à aléser • respecter le Ø minimum de l'avant-perçage • après le foret aléseur, alésage final optimisé
- M** ○
- K** ●
- N** ●
- S** ○
- H** ○

**GÜHRING** NAVIGATOR

Paramètres de coupe, page 800



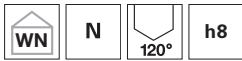
N° d'article **635**

d1	S	l1	l2	d0 ≥
mm		mm	mm	mm
8,000	MK-1	181,000	100,000	5,60
10,000	MK-1	197,000	116,000	7,00
14,000	MK-1	223,000	142,000	9,80
15,000	MK-2	245,000	147,000	10,50

d1	S	l1	l2	d0 ≥
mm		mm	mm	mm



Forets aléseurs, queue CM



Matière de coupe **CW**

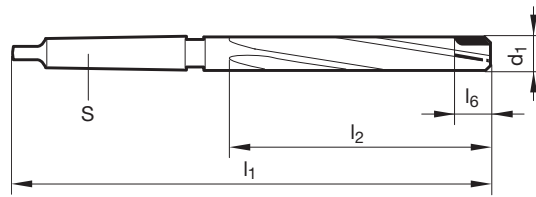
Surface ○

Sens de coupe

- P** ○ affûtage à dépouille conique • à plaquette(s) cw rapportée(s) • pour les perçages préalablement coulés, percés ou estampés • précision d'alignement corrigée • erreur de circularité corrigée • état de surface du perçage amélioré • Ø d'entrée < que le Ø du perçage à aléser • respecter le Ø minimum de l'avant-perçage
- M** ○
- K** ○
- N** ○
- S** ○ universelle aptitude matérielle
- H** ○

**GÜHRING** NAVIGATOR

Paramètres de coupe, page 800



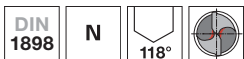
N° d'article **729**

d1	S	l1	l2	l6	d0 ≥
mm		mm	mm	mm	mm
28,700	MK-3	296,000	175,000	25,000	21,0
29,700	MK-3	296,000	175,000	25,000	22,0
30,600	MK-3	301,000	180,000	25,000	23,0
31,600	MK-4	334,000	185,000	25,000	24,0
33,000	MK-4	334,000	185,000	25,000	25,0
33,600	MK-4	339,000	190,000	25,000	26,0

d1	S	l1	l2	l6	d0 ≥
mm		mm	mm	mm	mm
34,000	MK-4	339,000	190,000	25,000	26,0
36,000	MK-4	344,000	195,000	25,000	28,0
37,600	MK-4	349,000	200,000	25,000	30,0
38,600	MK-4	349,000	200,000	25,000	31,0
39,000	MK-4	349,000	200,000	25,000	31,0
39,600	MK-4	349,000	200,000	25,000	32,0



Forets de chaudronnerie



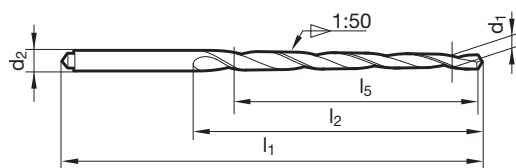
Matière de coupe **HSS**

Surface  $\text{Ra} > 0,2,36$

Sens de coupe

**P** • Amin. de l'âme  $\geq \text{Ø } 1,000$  • affûtage à dépouille conique • pour trous coniques • avec tenon d'entraînement

- M** ○
- K** •
- N** ○
- S** ○
- H** ○



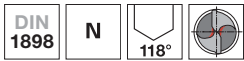
N° d'article **531**

d1	d2	l1	l2	l5
mm	mm	mm	mm	mm
2,000	3,150	86,000	52,000	48,000
2,500	3,150	86,000	52,000	48,000
3,000	4,000	100,000	63,000	58,000
3,500	5,000	112,000	74,000	68,000
4,000	5,000	112,000	74,000	68,000
4,500	6,300	122,000	81,000	73,000

d1	d2	l1	l2	l5
mm	mm	mm	mm	mm
5,000	6,300	122,000	81,000	73,000
5,500	8,000	160,000	114,000	105,000
6,000	8,000	160,000	114,000	105,000
8,000	10,000	207,000	157,000	145,000
10,000	12,500	245,000	190,000	175,000
12,000	16,000	290,000	228,000	210,000



Forets de chaudronnerie



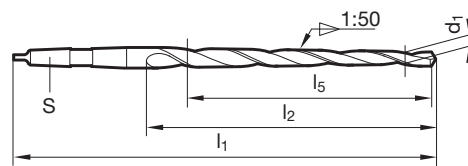
Matière de coupe **HSS**

Surface

Sens de coupe

**P** • Amin. de l'âme  $\geq \varnothing 5,000$  • affûtage à dépouille conique • Pour les perçages coniques pour les logements de goupilles coniques selon normes DIN 1 (nouv. DIN EN 22 339), DIN 7978 (nouv. DIN EN 28 736), DIN 7977 (nouv. DIN EN 28737) et DIN 258

- M** ○
- K** •
- N** ○
- S** ○
- H** ○



N° d'article **532**

d1	d2	l1	l2	l5
mm	mm	mm	mm	mm
5,000		155,000	81,000	73,000
6,000		187,000	108,000	105,000
8,000		227,000	149,000	145,000
10,000		257,000	180,000	175,000
12,000		315,000	219,000	210,000
13,000		325,000	229,000	220,000

d1	d2	l1	l2	l5
mm	mm	mm	mm	mm
14,000		325,000	229,000	220,000
16,000		335,000	239,000	230,000
20,000		377,000	263,000	250,000
25,000		427,000	311,000	300,000

GUERRILLAS

NAWMIC

BRING

**GÜHRING** NAVIGATOR

GATOR



# GÜHRING NAVIGATOR

Il est conseillé de choisir des outils dont les avances sont en caractères gras.  
Pour le choix optimal de l'outil et de ses paramètres d'utilisation,  
sous [www.guehring.de](http://www.guehring.de) vous disposez du logiciel „Navigateur Gühring“.

N° d'article
Norme/DIN
Matière de coupe
Nuance carbure
Type
Version
Lubrification
Prix/dim. page

Ø outil mm	Gamme d'avance n°								
	1	2	3	4	5	6	7	8	9
	f (mm/tr.)								
0,50	0,004	0,006	0,007	0,008	0,010	0,012	0,014	0,016	0,019
1,00	0,006	0,008	0,012	0,014	0,016	0,018	0,020	0,023	0,025
2,00	0,020	0,025	0,032	0,040	0,050	0,063	0,080	0,100	0,125
2,50	0,025	0,032	0,040	0,050	0,063	0,080	0,100	0,125	0,160
3,15	0,032	0,040	0,050	0,063	0,080	0,100	0,125	0,160	0,160
4,00	0,040	0,050	0,063	0,080	0,100	0,125	0,160	0,200	0,200
5,00	0,040	0,050	0,063	0,080	0,100	0,125	0,160	0,200	0,250
6,30	0,050	0,063	0,080	0,100	0,125	0,160	0,200	0,250	0,315
8,00	0,063	0,080	0,100	0,125	0,160	0,200	0,250	0,315	0,315
10,00	0,080	0,100	0,125	0,160	0,200	0,250	0,315	0,400	0,400
12,50	0,080	0,100	0,125	0,160	0,200	0,250	0,315	0,400	0,500
16,00	0,100	0,125	0,160	0,200	0,250	0,315	0,400	0,500	0,630
20,00	0,125	0,160	0,200	0,250	0,315	0,400	0,500	0,630	0,630
25,00	0,160	0,200	0,250	0,315	0,400	0,500	0,630	0,800	0,800
31,50	0,160	0,200	0,250	0,315	0,400	0,500	0,630	0,800	1,000
40,00	0,200	0,250	0,315	0,400	0,500	0,630	0,800	1,000	1,250
50,00	0,250	0,310	0,400	0,500	0,630	0,800	1,000	1,250	1,250
63,00	0,315	0,400	0,500	0,630	0,800	1,000	1,250	1,600	1,600
80,00	0,400	0,500	0,630	0,800	1,000	1,250	1,600	1,600	2,000

Produits de refroidissement:

- Air
- Huile
- Huile soluble

Sens de coupe:

- Ⓜ coupe à droite
- Ⓛ coupe à gauche

Matières	Exemples, nouvelle désignation ( Ancienne désignation entre parenthèses ) Caractères gras = N° de matières suivant DIN EN	Résistance MPa (N/mm²)	Dureté	Prod. de réf.
Aciers de construction	<b>1.0035</b> S185(St33), <b>1.0486</b> P275N(StE285), <b>1.0345</b> P235GH(H1), <b>1.0425</b> P265GH(H2)	≤500		○
	<b>1.0050</b> E295 (St50-2), <b>1.0070</b> E360 (St70-2), <b>1.8937</b> P500NH (WStE500)	≤1000		○
Aciers de décolletage	<b>1.0718</b> 11SMnPb30 (9SMnPb28), <b>1.0736</b> 11SMn37 (9SMn36)	≤850		○
	<b>1.0727</b> 46S20 (45S20), <b>1.0728</b> (60S20), <b>1.0757</b> 46SPb20 (45SPb20)	≤1000		○
Aciers d'amélioration non-alliés	<b>1.0402</b> C22, <b>1.1178</b> C30E (Ck30)	≤700		○
	<b>1.0503</b> C45, <b>1.1191</b> C45E (Ck45)	≤850		○
	<b>1.0601</b> C60, <b>1.1221</b> C60E (Ck60)	≤1000		○
Aciers d'amélioration alliés	<b>1.5131</b> 50MnSi4, <b>1.7003</b> 38Cr2, <b>1.7030</b> 28Cr4	≤1000		○
	<b>1.5710</b> 36NiCr6, <b>1.7035</b> 41Cr4, <b>1.7225</b> 42CrMo4	≤1400		○
Aciers de cémentation non-alliés	<b>1.0301</b> (C10), <b>1.1121</b> C10E (Ck10)	≤850		○
Aciers de cémentation alliés	<b>1.7276</b> 10CrMo11, <b>1.5125</b> 11MnSi6	≤1000		●
	<b>1.5752</b> 15NiCr13, <b>1.7131</b> 16MnCr5, <b>1.7264</b> 20CrMo5	≤1400		●
Aciers de nitruration	<b>1.8504</b> 34CrAl6	≤1000		○
	<b>1.8519</b> 31CrMoV9, <b>1.8550</b> 34CrAlNi7	≤1400		●
Aciers à outils	<b>1.1750</b> C75W, <b>1.2067</b> 102Cr6, <b>1.2307</b> 29CrMoV9	≤850		○
	<b>1.2080</b> X210Cr12, <b>1.2083</b> X42Cr13, <b>1.2419</b> 105WCr6, <b>1.2767</b> X45NiCrMo4	≤1400		○
Aciers rapides	<b>1.3243</b> S 6-5-2-5, <b>1.3343</b> S 6-5-2, <b>1.3344</b> S 6-5-3	≤1400		●
Aciers à ressort	<b>1.5026</b> 55Si7, <b>1.7176</b> 55Cr3, <b>1.8159</b> 51CrV4 (51CrV4)		≤350 HB	●
Aciers trempés	-		≤48 HRC	●
			≤66 HRC	●
Aciers inoxydables, sulfurés	<b>1.4005</b> X12CrS13, <b>1.4104</b> X14CrMoS17, <b>1.4105</b> X6CrMoS17, <b>1.4305</b> X8CrNiS18-9	≤900		●
austénitiques	<b>1.4301</b> X5CrNi18-10 (V2A), <b>1.4541</b> X6CrNiTi18-10, <b>1.4571</b> X6CrNiMoTi 17-12-2 (V4A)	≤1100		●
martensitiques	<b>1.4057</b> X20CrNi172 (X17CrNi16-2), <b>1.4122</b> X39CrMo17-1, <b>1.4521</b> X2CrMoTi18-2	≤1500		●
Fontes	<b>0.6010</b> EN-GJL-100 (GG10), <b>0.6020</b> EN-GJL-200 (GG20)		≤240 HB	○
	<b>0.6025</b> EN-GJL-250 (GG25), <b>0.6035</b> EN-GJL-350 (GG35)		≤350 HB	○
Fontes à graphite sphéroïdal et fontes malléables	<b>0.7050</b> EN-GJS-500-7 (GGG50), <b>0.8035</b> EN-GJMW-350-4 (GTW35)		≤240 HB	○
	<b>0.7070</b> EN-GJS-700-2 (GGG70), <b>0.8170</b> EN-GJMB-700-2 (GTS70)		≤350 HB	○
Fontes dures	-		≤350 HB	○
Nouvelles fontes GGV	<b>EN-GJV250</b> (GGV25), <b>EN-GJV350</b> (GGV35)		≤220 HB	○
	<b>EN-GJV400</b> (GGV40), <b>EN-GJV500</b> (GGV50), SiMo 6		≤300 HB	○
Nouvelles fontes ADI	<b>EN-GJS-800-8</b> (ADI800), <b>EN-GJS-1000-5</b> (ADI1000)	≤1000		○
	<b>EN-GJS-1200-2</b> (ADI1200), <b>EN-GJS-1400-1</b> (ADI1400)	≤1400		○
Alliages spéciaux	Nimonic, Inconel, Monel, Hastelloy	≤2000		●
Titane et alliages de Titane	<b>3.7024</b> Ti99,5, <b>3.7114</b> TiAl5Sn2,5, <b>3.7124</b> TiCu2	≤850		●
	<b>3.7154</b> TiAl6Zr5, <b>3.7165</b> TiAl6V4, <b>3.7184</b> TiAl4Mo4Sn2,5, - TiAl8Mo1V1	≤1400		●
Aluminium et ses alliages	<b>3.0255</b> Al99,5, <b>3.2315</b> AlMgSi1, <b>3.3515</b> AlMg1	≤400		○
Alliages malléables d'Al	<b>3.0615</b> AlMgSiPb, <b>3.1325</b> AlCuMg1, <b>3.3245</b> AlMg3Si, <b>3.4365</b> AlZnMgCu1,5	≤650		○
Alliages d'Al d'inject. ≤ 10 % Si	<b>3.2131</b> G-AlSi5Cu1, <b>3.2153</b> G-AlSi7Cu3, <b>3.2573</b> G-AlSi9	≤600		○
≤ 24 % Si	<b>3.2581</b> G-AlSi12, <b>3.2583</b> G-AlSi12Cu, - G-AlSi12CuNiMg	≤600		○
Alliages de Magnésium	<b>3.5200</b> MgMn2, <b>3.5812.05</b> G-MgAl8Zn1, <b>3.5612.05</b> G-MgAl6Zn1	≤400		○
Cuivres, faiblement alliés	<b>2.0070</b> SE-Cu, <b>2.1020</b> CuSn6, <b>2.1096</b> G-CuSn5ZnPb	≤500		○
Laiton à copeaux courts, à copeaux longs	<b>2.0380</b> CuZn39Pb2, <b>2.0401</b> CuZn39Pb3, <b>2.0410</b> CuZn43Pb2	≤600		○
	<b>2.0250</b> CuZn20, <b>2.0280</b> CuZn33, <b>2.0332</b> CuZn37Pb0,5	≤600		○
Bronze, à copeaux courts	<b>2.1090</b> CuSn7ZnPb, <b>2.1170</b> CuPb5Sn5, <b>2.1176</b> CuPb10Sn	≤600		○
	<b>2.0790</b> CuNi18Zn19Pb	≤850		○
Bronze, à copeaux longs	<b>2.0916</b> CuAl5, <b>2.0960</b> CuAl9Mn, <b>2.1050</b> CuSn10	≤850		○
	<b>2.0980</b> CuAl11Ni, <b>2.1247</b> CuBe2	≤1000		○
Thermodurcissables	Résine époxy, Resopal, Pertinax, Moltopren	≤150		○
Thermoplastiques	Plexiglas, Hostalen, Novodur, Makralon	≤100		○
renf. de fibres d'aramides	Kevlar	≤1000		○
renf. de fibres de verre ou carbone	GFK/CFK	≤1000		○





≤3xD Profondeur

1171
6538K
Carbure
P
RT 80 U
<b>S</b>
axial
55

1660	1180	1181
6537K	6537K	6537K
CW mono. CW mono. CW mono.		
K/P	K/P	K/P
RT 100 F	RT 100 F	RT 100 U
<b>S</b>	<b>S</b>	<b>S</b>
axial	axial	axial
53	54	43

2468	2477	2469
6537K	6537K	6537K
CW mono. CW mono. CW mono.		
K/P	K/P	K/P
RT 100 F	RT 100 U	RT 100 U
<b>F</b>	<b>F</b>	<b>F</b>
axial	axial	axial
52	39	41

8510	8610
6537K	6537K
CW mono. CW mono.	
K/P	K/P
RT 100 VA	
<b>a</b>	<b>a</b>
axial	axial
48	50

8520	8620
6537K	6537K
CW mono. CW mono.	
K/P	K/P
RT 100 HF	
<b>Y</b>	<b>Y</b>
axial	axial
44	46



Vc m/min	Gamme d'avance N°
95	6
80	5
95	7
75	6
80	6
75	6
70	6
75	6
60	5
90	7
75	6
60	5
75	6
60	5
45	5
35	5
40	4
40	2
35	2
35	2
150	7
110	7
110	7
90	6
200	8
200	8
170	8
140	7
240	8
240	8
200	8
170	8
230	7
95	6
250	7
170	6
95	6
80	5
70	5
60	5

Vc m/min	Gamme d'avance N°		
110	6	6	6
90	5	5	5
130	7	7	7
110	7	7	7
100	7	7	7
95	6	6	6
90	6	6	6
90	6	6	6
80	6	6	6
110	7	7	7
90	6	6	6
65	4	4	4
85	6	6	6
80	4	4	5
60	5	5	5
50	4	4	4
45	3	3	3
45	2	2	2
40	2	2	2
20	1	1	1
45	4	4	4
40	2	2	2
35	4	4	4
160	8	8	8
120	8	8	8
100	8	8	8
95	7	7	7
30	2	2	2
25	3	3	3
35	3	3	3
30	2	2	2
240	8	8	8
240	8	8	8
200	8	8	8
170	8	8	8
230	7	7	7
95	6	6	6
250	7	7	7
170	6	6	6
95	6	6	6
80	5	5	5
70	5	5	5
60	5	5	5

Vc m/min	Gamme d'avance N°		
145	7	7	7
120	6	6	6
170	8	8	8
145	8	8	8
130	8	8	8
125	7	7	7
120	7	7	7
120	7	7	7
105	7	7	7
145	8	8	8
120	7	7	7
85	5	5	5
110	7	7	7
105	5	5	5
80	6	6	6
65	5	5	5
60	4	4	4
60	3	3	3
55	3	3	3
35	2	2	2
60	5	5	5
55	2	2	2
45	5	5	5
210	9	9	9
160	9	9	9
140	9	9	9
130	8	8	8
40	3	3	3
35	4	4	4
45	4	4	4
40	3	3	3
310	9	9	9
310	9	9	9
260	9	9	9
220	9	9	9
280	8	8	8
125	7	7	7
325	8	8	8
220	7	7	7
125	7	7	7
105	6	6	6
90	6	6	6
80	6	6	6

Vc m/min	Gamme d'avance N°		
80	5	5	5
60	2-3	2-3	2-3
80	5	5	5
30	4	4	4
45	4	4	4
40	3	3	3

Vc m/min	Gamme d'avance N°		
145	7	7	7
120	6	6	6
170	8	8	8
145	8	8	8
130	8	8	8
125	7	7	7
120	7	7	7
120	7	7	7
105	7	7	7
145	8	8	8
120	7	7	7
85	5	5	5
110	7	7	7
105	5	5	5
80	6	6	6
65	5	5	5
60	4	4	4
60	3	3	3
55	3	3	3
35	2	2	2
35	4	4	4
45	4	4	4
40	3	3	3



# GÜHRING NAVIGATOR

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N° d'article
Norme/DIN
Matière de coupe
Nuance carbure
Type
Version
Lubrification
Prix/dim. page

Ø outil mm	Gamme d'avance n°								
	1	2	3	4	5	6	7	8	9
	f (mm/tr.)								
0,50	0,004	0,006	0,007	0,008	0,010	0,012	0,014	0,016	0,019
1,00	0,006	0,008	0,012	0,014	0,016	0,018	0,020	0,023	0,025
2,00	0,020	0,025	0,032	0,040	0,050	0,063	0,080	0,100	0,125
2,50	0,025	0,032	0,040	0,050	0,063	0,080	0,100	0,125	0,160
3,15	0,032	0,040	0,050	0,063	0,080	0,100	0,125	0,160	0,160
4,00	0,040	0,050	0,063	0,080	0,100	0,125	0,160	0,200	0,200
5,00	0,040	0,050	0,063	0,080	0,100	0,125	0,160	0,200	0,250
6,30	0,050	0,063	0,080	0,100	0,125	0,160	0,200	0,250	0,315
8,00	0,063	0,080	0,100	0,125	0,160	0,200	0,250	0,315	0,315
10,00	0,080	0,100	0,125	0,160	0,200	0,250	0,315	0,400	0,400
12,50	0,080	0,100	0,125	0,160	0,200	0,250	0,315	0,400	0,500
16,00	0,100	0,125	0,160	0,200	0,250	0,315	0,400	0,500	0,630
20,00	0,125	0,160	0,200	0,250	0,315	0,400	0,500	0,630	0,630
25,00	0,160	0,200	0,250	0,315	0,400	0,500	0,630	0,800	0,800
31,50	0,160	0,200	0,250	0,315	0,400	0,500	0,630	0,800	1,000
40,00	0,200	0,250	0,315	0,400	0,500	0,630	0,800	1,000	1,250
50,00	0,250	0,310	0,400	0,500	0,630	0,800	1,000	1,250	1,250
63,00	0,315	0,400	0,500	0,630	0,800	1,000	1,250	1,600	1,600
80,00	0,400	0,500	0,630	0,800	1,000	1,250	1,600	1,600	2,000

**Al**  
Prévu pour l'usinage de l'aluminium et de ses alliages

**G**  
Prévu pour l'usinage des fontes

Produits de refroidissement:  
○ Air  
● Huile  
● Huile soluble

Sens de coupe:  
Ⓜ coupe à droite  
Ⓛ coupe à gauche

Matières	Exemples, nouvelle désignation ( Ancienne désignation entre parenthèses ) Caractères gras = N° de matières suivant DIN EN	Résistance MPa (N/mm²)	Dureté	Prod. de réf.
Aciers de construction	<b>1.0035</b> S185(St33), <b>1.0486</b> P275N(StE285), <b>1.0345</b> P235GH(H1), <b>1.0425</b> P265GH(H2) <b>1.0050</b> E295 (St50-2), <b>1.0070</b> E360 (St70-2), <b>1.8937</b> P500NH (WStE500)	≤500 ≤1000		○ ○
Aciers de décolletage	<b>1.0718</b> 11SMnPb30 (9SMnPb28), <b>1.0736</b> 11SMn37 (9SMn36) <b>1.0727</b> 46S20 (45S20), <b>1.0728</b> (60S20), <b>1.0757</b> 46SPb20 (45SPb20)	≤850 ≤1000		○ ○
Aciers d'amélioration non-alliés	<b>1.0402</b> C22, <b>1.1178</b> C30E (Ck30) <b>1.0503</b> C45, <b>1.1191</b> C45E (Ck45) <b>1.0601</b> C60, <b>1.1221</b> C60E (Ck60)	≤700 ≤850 ≤1000		○ ○ ○
Aciers d'amélioration alliés	<b>1.5131</b> 50MnSi4, <b>1.7003</b> 38Cr2, <b>1.7030</b> 28Cr4 <b>1.5710</b> 36NiCr6, <b>1.7035</b> 41Cr4, <b>1.7225</b> 42CrMo4	≤1000 ≤1400		○ ○
Aciers de cémentation non-alliés	<b>1.0301</b> (C10), <b>1.1121</b> C10E (Ck10)	≤850		○
Aciers de cémentation alliés	<b>1.7276</b> 10CrMo11, <b>1.5125</b> 11MnSi6 <b>1.5752</b> 15NiCr13, <b>1.7131</b> 16MnCr5, <b>1.7264</b> 20CrMo5	≤1000 ≤1400		○ ○
Aciers de nitruration	<b>1.8504</b> 34CrAl6 <b>1.8519</b> 31CrMoV9, <b>1.8550</b> 34CrAlNi7	≤1000 ≤1400		○ ○
Aciers à outils	<b>1.1750</b> C75W, <b>1.2067</b> 102Cr6, <b>1.2307</b> 29CrMoV9 <b>1.2080</b> X210Cr12, <b>1.2083</b> X42Cr13, <b>1.2419</b> 105WCr6, <b>1.2767</b> X45NiCrMo4	≤850 ≤1400		○ ○
Aciers rapides	<b>1.3243</b> S 6-5-2-5, <b>1.3343</b> S 6-5-2, <b>1.3344</b> S 6-5-3	≤1400		○
Aciers à ressort	<b>1.5026</b> 55Si7, <b>1.7176</b> 55Cr3, <b>1.8159</b> 51CrV4 (51CrV4)		≤350 HB	○
Aciers trempés	-		≤48 HRC ≤66 HRC	○ ○
Aciers inoxydables, sulfurés	<b>1.4005</b> X12CrS13, <b>1.4104</b> X14CrMoS17, <b>1.4105</b> X6CrMoS17, <b>1.4305</b> X8CrNiS18-9	≤900 ≤1100		○ ○
austénitiques	<b>1.4301</b> X5CrNi18-10 (V2A), <b>1.4541</b> X6CrNiTi18-10, <b>1.4571</b> X6CrNiMoTi 17-12-2 (V4A)	≤1100		○
martensitiques	<b>1.4057</b> X20CrNi172 (X17CrNi16-2), <b>1.4122</b> X39CrMo17-1, <b>1.4521</b> X2CrMoTi18-2	≤1500		○
Fontes	<b>0.6010</b> EN-GJL-100 (GG10), <b>0.6020</b> EN-GJL-200 (GG20) <b>0.6025</b> EN-GJL-250 (GG25), <b>0.6035</b> EN-GJL-350 (GG35)		≤240 HB ≤350 HB	○ ○
Fontes à graphite sphéroïdal et fontes malléables	<b>0.7050</b> EN-GJS-500-7 (GGG50), <b>0.8035</b> EN-GJMW-350-4 (GTW35) <b>0.7070</b> EN-GJS-700-2 (GGG70), <b>0.8170</b> EN-GJMB-700-2 (GTS70)		≤240 HB ≤350 HB	○ ○
Fontes dures	-		≤350 HB	○
Nouvelles fontes GGV	<b>EN-GJV250</b> (GGV25), <b>EN-GJV350</b> (GGV35) <b>EN-GJV400</b> (GGV40), <b>EN-GJV500</b> (GGV50), SiMo 6		≤220 HB ≤300 HB	○ ○
Nouvelles fontes ADI	<b>EN-GJS-800-8</b> (ADI800), <b>EN-GJS-1000-5</b> (ADI1000) <b>EN-GJS-1200-2</b> (ADI1200), <b>EN-GJS-1400-1</b> (ADI1400)	≤1000 ≤1400		○ ○
Alliages spéciaux	Nimonic, Inconel, Monel, Hastelloy	≤2000		○
Titane et alliages de Titane	<b>3.7024</b> Ti99,5, <b>3.7114</b> TiAl5Sn2,5, <b>3.7124</b> TiCu2 <b>3.7154</b> TiAl6Zr5, <b>3.7165</b> TiAl6V4, <b>3.7184</b> TiAl4Mo4Sn2,5, - TiAl8Mo1V1	≤850 ≤1400		○ ○
Aluminium et ses alliages	<b>3.0255</b> Al99,5, <b>3.2315</b> AlMgSi1, <b>3.3515</b> AlMg1	≤400		○
Alliages malléables d'Al	<b>3.0615</b> AlMgSiPb, <b>3.1325</b> AlCuMg1, <b>3.3245</b> AlMg3Si, <b>3.4365</b> AlZnMgCu1,5	≤650		○
Alliages d'Al d'inject. ≤ 10 % Si	<b>3.2131</b> G-AlSi5Cu1, <b>3.2153</b> G-AlSi7Cu3, <b>3.2573</b> G-AlSi9	≤600		○
≤ 24 % Si	<b>3.2581</b> G-AlSi12, <b>3.2583</b> G-AlSi12Cu, - G-AlSi12CuNiMg	≤600		○
Alliages de Magnésium	<b>3.5200</b> MgMn2, <b>3.5812.05</b> G-MgAl8Zn1, <b>3.5612.05</b> G-MgAl6Zn1	≤400		○
Cuivres, faiblement alliés	<b>2.0070</b> SE-Cu, <b>2.1020</b> CuSn6, <b>2.1096</b> G-CuSn5ZnPb	≤500		○
Laiton à copeaux courts, à copeaux longs	<b>2.0380</b> CuZn39Pb2, <b>2.0401</b> CuZn39Pb3, <b>2.0410</b> CuZn43Pb2 <b>2.0250</b> CuZn20, <b>2.0280</b> CuZn33, <b>2.0332</b> CuZn37Pb0,5	≤600 ≤600		○ ○
Bronze, à copeaux courts	<b>2.1090</b> CuSn7ZnPb, <b>2.1170</b> CuPb5Sn5, <b>2.1176</b> CuPb10Sn <b>2.0790</b> CuNi18Zn19Pb	≤600 ≤850		○ ○
Bronze, à copeaux longs	<b>2.0916</b> CuAl5, <b>2.0960</b> CuAl9Mn, <b>2.1050</b> CuSn10 <b>2.0980</b> CuAl11Ni, <b>2.1247</b> CuBe2	≤850 ≤1000		○ ○
Thermodurcissables	Résine époxy, Resopal, Pertinax, Moltopren	≤150		○
Thermoplastiques	Plexiglas, Hostalen, Novodur, Makralon	≤100		○
renf. de fibres d'aramides	Kevlar	≤1000		○
renf. de fibres de verre ou carbone	GFK/CFK	≤1000		○

Navigateur



≤3xD Profondeur

1702	1184	1242
6539	6537K	6539
CW mono. CW mono. CW mono.		
K/P	K/P	K/P
RT 100 F	RT 100 U	RT 100 U
<b>S</b>	<b>S</b>	<b>S</b>
28	21	23

2475	2480	2472	2473
6537K	6537K	6537K	6539
CW mono. CW mono. CW mono. CW mono.			
K/P	K/P	K/P	K/P
RT 100 F	RT 100 U	RT 100 U	RT 100 U
<b>F</b>	<b>F</b>	<b>F</b>	<b>F</b>
27	16	18	20

8524
6537K
CW mono.
K/P
RT 100 HF
<b>Y</b>
25

≤4xD

768	6068
WN	WN
CW mono. CW mono.	
K	K
RT 150 GG	RT 150 GG
○	○
axial	axial
56	58
<b>Al</b>	<b>G</b>



Vc m/min	Gamme d'avance N°		
100	6	6	6
85	5	5	5
110	7	7	7
85	6	6	6
90	6	6	6
85	6	6	6
80	6	6	6
80	6	6	6
75	5	5	5
100	7	7	7
90	6	6	6
65	4	4	4
75	5	5	5
70	4	4	4
50	5	5	5
40	4	4	4
40	3		
35	2	2	2
35	1	1	1
20	1	1	1
40	2	2	2
15	2	1	1
35	2	2	2
160	7	7	7
120	7	7	7
120	7	6	6
95	7	6	6
25	2	2	2
20	3	3	3
15	1	1	1
15	1	1	1
200	8	8	8
200	8	8	8
170	8	8	8
140	7	7	7
200	7	7	7
80	6	6	6
210	7	7	7
140	6	6	6
80	5	5	5
65	5	5	5
60	4	4	4
45	4	4	4

Vc m/min	Gamme d'avance N°			
130	7	7	7	7
110	6	6	6	6
145	8	8	8	8
110	7	7	7	7
120	7	7	7	7
110	7	7	7	7
105	7	7	7	7
105	7	7	7	7
100	6	6	6	6
130	8	8	8	8
120	7	7	7	7
85	5	5	5	5
100	6	6	6	6
90	5	5	5	5
65	6	6	6	6
55	5	5	5	5
55	4			
45	3	3	3	3
40	1	1	1	1
20	1	1	1	1
40	2	2	2	2
15	1	1	1	1
35	2	2	2	2
210	8	8	8	8
155	8	8	8	8
155	8	7	7	7
125	8	7	7	7
35	3	3	3	3
25	4	4	4	4
15	1	1	1	1
15	1	1	1	1
260	9	9	9	9
260	9	9	9	9
220	9	8	8	8
180	8	8	8	8
260	8	8	8	8
105	7	7	7	7
270	8	8	8	8
180	7	7	7	7
105	6	6	6	6
85	6	6	6	6
80	5	5	5	5
60	5	5	5	5

Vc m/min	Gamme d'avance N°
130	7
110	6
145	8
110	7
120	7
110	7
105	7
105	7
100	6
130	8
120	7
85	5
100	6
90	5
65	6
55	5
55	4
45	3
40	1
20	1
40	2
15	1
35	2
25	4
15	1
15	1

Vc m/min	Gamme d'avance N°	
120	7	7
100	7	7
90	7	7
80	7	7
40	2	2
410	9	7
410	9	7
380	9	7
330	9	7
280	9	9
110	6	6
80	5	5





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N° d'article
Norme/DIN
Matière de coupe
Nuance carbure
Type
Version
Lubrification
Prix/dim. page

Ø outil mm	Gamme d'avance n°								
	1	2	3	4	5	6	7	8	9
	f (mm/tr.)								
0,50	0,004	0,006	0,007	0,008	0,010	0,012	0,014	0,016	0,019
1,00	0,006	0,008	0,012	0,014	0,016	0,018	0,020	0,023	0,025
2,00	0,020	0,025	0,032	0,040	0,050	0,063	0,080	0,100	0,125
2,50	0,025	0,032	0,040	0,050	0,063	0,080	0,100	0,125	0,160
3,15	0,032	0,040	0,050	0,063	0,080	0,100	0,125	0,160	0,160
4,00	0,040	0,050	0,063	0,080	0,100	0,125	0,160	0,200	0,200
5,00	0,040	0,050	0,063	0,080	0,100	0,125	0,160	0,200	0,250
6,30	0,050	0,063	0,080	0,100	0,125	0,160	0,200	0,250	0,315
8,00	0,063	0,080	0,100	0,125	0,160	0,200	0,250	0,315	0,315
10,00	0,080	0,100	0,125	0,160	0,200	0,250	0,315	0,400	0,400
12,50	0,080	0,100	0,125	0,160	0,200	0,250	0,315	0,400	0,500
16,00	0,100	0,125	0,160	0,200	0,250	0,315	0,400	0,500	0,630
20,00	0,125	0,160	0,200	0,250	0,315	0,400	0,500	0,630	0,630
25,00	0,160	0,200	0,250	0,315	0,400	0,500	0,630	0,800	0,800
31,50	0,160	0,200	0,250	0,315	0,400	0,500	0,630	0,800	1,000
40,00	0,200	0,250	0,315	0,400	0,500	0,630	0,800	1,000	1,250
50,00	0,250	0,310	0,400	0,500	0,630	0,800	1,000	1,250	1,250
63,00	0,315	0,400	0,500	0,630	0,800	1,000	1,250	1,600	1,600
80,00	0,400	0,500	0,630	0,800	1,000	1,250	1,600	1,600	2,000

Produits de refroidissement:

- Air
- Huile
- Huile soluble

Sens de coupe:

- Ⓜ coupe à droite
- Ⓛ coupe à gauche

Matières	Exemples, nouvelle désignation ( Ancienne désignation entre parenthèses ) Caractères gras = N° de matières suivant DIN EN	Résistance MPa (N/mm²)	Dureté	Prod. de réf.
Aciers de construction	<b>1.0035</b> S185(St33), <b>1.0486</b> P275N(StE285), <b>1.0345</b> P235GH(H1), <b>1.0425</b> P265GH(H2)	≤500		○
	<b>1.0050</b> E295 (St50-2), <b>1.0070</b> E360 (St70-2), <b>1.8937</b> P500NH (WStE500)	≤1000		○
Aciers de décolletage	<b>1.0718</b> 11SMnPb30 (9SMnPb28), <b>1.0736</b> 11SMn37 (9SMn36)	≤850		○
	<b>1.0727</b> 46S20 (45S20), <b>1.0728</b> (60S20), <b>1.0757</b> 46SPb20 (45SPb20)	≤1000		○
Aciers d'amélioration non-alliés	<b>1.0402</b> C22, <b>1.1178</b> C30E (Ck30)	≤700		○
	<b>1.0503</b> C45, <b>1.1191</b> C45E (Ck45)	≤850		○
	<b>1.0601</b> C60, <b>1.1221</b> C60E (Ck60)	≤1000		○
Aciers d'amélioration alliés	<b>1.5131</b> 50MnSi4, <b>1.7003</b> 38Cr2, <b>1.7030</b> 28Cr4	≤1000		○
	<b>1.5710</b> 36NiCr6, <b>1.7035</b> 41Cr4, <b>1.7225</b> 42CrMo4	≤1400		○
Aciers de cémentation non-alliés	<b>1.0301</b> (C10), <b>1.1121</b> C10E (Ck10)	≤850		○
Aciers de cémentation alliés	<b>1.7276</b> 10CrMo11, <b>1.5125</b> 11MnSi6	≤1000		○
	<b>1.5752</b> 15NiCr13, <b>1.7131</b> 16MnCr5, <b>1.7264</b> 20CrMo5	≤1400		○
Aciers de nitruration	<b>1.8504</b> 34CrAl6	≤1000		○
	<b>1.8519</b> 31CrMoV9, <b>1.8550</b> 34CrAlNi7	≤1400		○
Aciers à outils	<b>1.1750</b> C75W, <b>1.2067</b> 102Cr6, <b>1.2307</b> 29CrMoV9	≤850		○
	<b>1.2080</b> X210Cr12, <b>1.2083</b> X42Cr13, <b>1.2419</b> 105WCr6, <b>1.2767</b> X45NiCrMo4	≤1400		○
Aciers rapides	<b>1.3243</b> S 6-5-2-5, <b>1.3343</b> S 6-5-2, <b>1.3344</b> S 6-5-3	≤1400		○
Aciers à ressort	<b>1.5026</b> 55Si7, <b>1.7176</b> 55Cr3, <b>1.8159</b> 51CrV4 (51CrV4)		≤350 HB	○
Aciers trempés	-		≤48 HRC	○
			≤66 HRC	○
Aciers inoxydables, sulfurés	<b>1.4005</b> X12CrS13, <b>1.4104</b> X14CrMoS17, <b>1.4105</b> X6CrMoS17, <b>1.4305</b> X8CrNiS18-9	≤900		○
austénitiques	<b>1.4301</b> X5CrNi18-10 (V2A), <b>1.4541</b> X6CrNiTi18-10, <b>1.4571</b> X6CrNiMoTi 17-12-2 (V4A)	≤1100		○
martensitiques	<b>1.4057</b> X20CrNi172 (X17CrNi16-2), <b>1.4122</b> X39CrMo17-1, <b>1.4521</b> X2CrMoTi18-2	≤1500		○
Fontes	<b>0.6010</b> EN-GJL-100 (GG10), <b>0.6020</b> EN-GJL-200 (GG20)		≤240 HB	○
	<b>0.6025</b> EN-GJL-250 (GG25), <b>0.6035</b> EN-GJL-350 (GG35)		≤350 HB	○
Fontes à graphite sphéroïdal et fontes malléables	<b>0.7050</b> EN-GJS-500-7 (GGG50), <b>0.8035</b> EN-GJMW-350-4 (GTW35)		≤240 HB	○
	<b>0.7070</b> EN-GJS-700-2 (GGG70), <b>0.8170</b> EN-GJMB-700-2 (GTS70)		≤350 HB	○
Fontes dures	-		≤350 HB	○
Nouvelles fontes GGV	<b>EN-GJV250</b> (GGV25), <b>EN-GJV350</b> (GGV35)		≤220 HB	○
	<b>EN-GJV400</b> (GGV40), <b>EN-GJV500</b> (GGV50), SiMo 6		≤300 HB	○
Nouvelles fontes ADI	<b>EN-GJS-800-8</b> (ADI800), <b>EN-GJS-1000-5</b> (ADI1000)	≤1000		○
	<b>EN-GJS-1200-2</b> (ADI1200), <b>EN-GJS-1400-1</b> (ADI1400)	≤1400		○
Alliages spéciaux	Nimonic, Inconel, Monel, Hastelloy	≤2000		○
Titane et alliages de Titane	<b>3.7024</b> Ti99,5, <b>3.7114</b> TiAl5Sn2,5, <b>3.7124</b> TiCu2	≤850		○
	<b>3.7154</b> TiAl6Zr5, <b>3.7165</b> TiAl6V4, <b>3.7184</b> TiAl4Mo4Sn2,5, - TiAl8Mo1V1	≤1400		○
Aluminium et ses alliages	<b>3.0255</b> Al99,5, <b>3.2315</b> AlMgSi1, <b>3.3515</b> AlMg1	≤400		○
Alliages malléables d'Al	<b>3.0615</b> AlMgSiPb, <b>3.1325</b> AlCuMg1, <b>3.3245</b> AlMg3Si, <b>3.4365</b> AlZnMgCu1,5	≤650		○
Alliages d'Al d'inject. ≤ 10 % Si	<b>3.2131</b> G-AlSi5Cu1, <b>3.2153</b> G-AlSi7Cu3, <b>3.2573</b> G-AlSi9	≤600		○
≤ 24 % Si	<b>3.2581</b> G-AlSi12, <b>3.2583</b> G-AlSi12Cu, - G-AlSi12CuNiMg	≤600		○
Alliages de Magnésium	<b>3.5200</b> MgMn2, <b>3.5812.05</b> G-MgAl8Zn1, <b>3.5612.05</b> G-MgAl6Zn1	≤400		○
Cuivres, faiblement alliés	<b>2.0070</b> SE-Cu, <b>2.1020</b> CuSn6, <b>2.1096</b> G-CuSn5ZnPb	≤500		○
Laiton à copeaux courts,	<b>2.0380</b> CuZn39Pb2, <b>2.0401</b> CuZn39Pb3, <b>2.0410</b> CuZn43Pb2	≤600		○
à copeaux longs	<b>2.0250</b> CuZn20, <b>2.0280</b> CuZn33, <b>2.0332</b> CuZn37Pb0,5	≤600		○
Bronze, à copeaux courts	<b>2.1090</b> CuSn7ZnPb, <b>2.1170</b> CuPb5Sn5, <b>2.1176</b> CuPb10Sn	≤600		○
	<b>2.0790</b> CuNi18Zn19Pb	≤850		○
Bronze, à copeaux longs	<b>2.0916</b> CuAl5, <b>2.0960</b> CuAl9Mn, <b>2.1050</b> CuSn10	≤850		○
	<b>2.0980</b> CuAl11Ni, <b>2.1247</b> CuBe2	≤1000		○
Therm durcissables	Résine époxy, Resopal, Pertinax, Moltopren	≤150		○
Thermoplastiques	Plexiglas, Hostalen, Novodur, Makralon	≤100		○
renf. de fibres d'aramides	Kevlar	≤1000		○
renf. de fibres de verre ou carbone	GFK/CFK	≤1000		○



≤5xD Profondeur

1172	6501	1662	1182	1663	1183	2478	2470	2479	2471	5759
6538M	6537L	6537L	6537L	6537L	6537L	6537L	6537L	6537L	6537L	6537L
CW	CW mono.	CW mono.	CW mono.	CW mono.	CW mono.	CW mono.	CW mono.	CW mono.	CW mono.	CW mono.
P	K/P	K/P	K/P	K/P	K/P	K/P	K/P	K/P	K/P	K/P
RT 80 U	RT 100 R	RT 100 F	RT 100 F	RT 100 U	RT 100 U	RT 100 F	RT 100 F	RT 100 U	RT 100 U	RT 100 S
S	F	S	S	S	S	F	F	F	F	F
axial	axial	axial	axial	axial	axial	axial	axial	axial	axial	axial
84	82	78	80	65	66	76	77	61	63	59



Vc m/min	Gamme d'av. N°	Vc m/min	Gamme d'av. N°	Vc m/min	Gamme d'avance N°				Vc m/min	Gamme d'avance N°				Vc m/min	Gamme d'av. N°
95	5			110	6	6	6	6	145	7	7	7	7	145-230	8
80	4			90	5	5	5	5	120	6	6	6	6	120-220	7
95	6			130	7	7	7	7	170	8	8	8	8	170-260	8
75	5			110	7	7	7	7	145	8	8	8	8	145-230	8
80	5			100	7	7	7	7	130	8	8	8	8	130-220	8
75	5			95	6	6	6	6	125	7	7	7	7	125-210	7
75	5			90	6	6	6	6	120	7	7	7	7	120-200	7
75	5			90	6	6	6	6	120	7	7	7	7	120-210	7
55	4			80	6	6	6	6	105	7	7	7	7	105-200	7
90	6			110	7	7	7	7	145	8	8	8	8	145-230	8
75	5			90	6	6	6	6	120	7	7	7	7	120-210	7
55	4			65	4	4	4	4	85	5	5	5	5	105-200	6
70	5			85	6	6	6	6	105	7	7	7	7	110-150	7
55	4			80	4	4	5	5	100	5	5	5	5	100-150	5
40	4			60	5	5	5	5	70	6	6	6	6	70-120	6
35	4			50	4	4	4	4	55	5	5	5	5	55-100	5
40	3			45	3	3	4	4	60	4	4	5	5	60-100	5
				45	2	2	2	2	60	3	3	3	3	60-100	5
				40	2	2	2	2	55	3	3	3	3		
				25	1	1	1	1	35	2	2	2	2		
40	2			45	4	4	4	4	60	5	5	5	5		
35	2			40	2	2	2	2	55	2	2	2	2		
35	2			35	4	4	4	4	50	5	5	5	5		
150	6	210	9	160	8	8	8	8	195	9	9	9	9		
110	6	160	9	120	8	8	8	8	160	9	9	9	9		
110	6	160	9	100	8	8	8	8	140	9	9	9	9		
90	5	130	8	95	7	7	7	7	130	8	8	8	8		
				30	2	2	2	2	40	3	3	3	3		
		130	8												
		100	8												
		80	8												
		60	8												
				25	3	3	3	3	35	4	4	4	4		
				35	3	3	3	3	45	4	4	4	4		
				30	2	2	2	2	40	3	3	3	3		
200	7			240	8	8	8	8	310	9	9	9	9		
200	7			240	8	8	8	8	310	9	9	9	9		
170	7			200	8	8	8	8	260	9	9	9	9		
140	6			170	8	8	8	8	220	9	9	9	9		
				230	7	7	7	7	280	8	8	8	8		
				95	6	6	6	6	125	7	7	7	7		
				250	7	7	7	7	325	8	8	8	8		
				170	6	6	6	6	220	7	7	7	7		
				95	6	6	6	6	125	7	7	7	7		
				80	5	5	5	5	105	6	6	6	6		
				70	5	5	5	5	90	6	6	6	6		
				60	5	5	5	5	80	6	6	6	6		



# GÜHRING NAVIGATOR

Il est conseillé de choisir des outils dont les avances sont en caractères gras.  
Pour le choix optimal de l'outil et de ses paramètres d'utilisation,  
sous [www.guehring.de](http://www.guehring.de) vous disposez du logiciel „Navigateur Gühring“.

N° d'article
Norme/DIN
Matière de coupe
Nuance carbure
Type
Version
Lubrification
Prix/dim. page

Ø outil mm	Gamme d'avance n°								
	1	2	3	4	5	6	7	8	9
	f (mm/tr.)								
0,50	0,004	0,006	0,007	0,008	0,010	0,012	0,014	0,016	0,019
1,00	0,006	0,008	0,012	0,014	0,016	0,018	0,020	0,023	0,025
2,00	0,020	0,025	0,032	0,040	0,050	0,063	0,080	0,100	0,125
2,50	0,025	0,032	0,040	0,050	0,063	0,080	0,100	0,125	0,160
3,15	0,032	0,040	0,050	0,063	0,080	0,100	0,125	0,160	0,160
4,00	0,040	0,050	0,063	0,080	0,100	0,125	0,160	0,200	0,200
5,00	0,040	0,050	0,063	0,080	0,100	0,125	0,160	0,200	0,250
6,30	0,050	0,063	0,080	0,100	0,125	0,160	0,200	0,250	0,315
8,00	0,063	0,080	0,100	0,125	0,160	0,200	0,250	0,315	0,315
10,00	0,080	0,100	0,125	0,160	0,200	0,250	0,315	0,400	0,400
12,50	0,080	0,100	0,125	0,160	0,200	0,250	0,315	0,400	0,500
16,00	0,100	0,125	0,160	0,200	0,250	0,315	0,400	0,500	0,630
20,00	0,125	0,160	0,200	0,250	0,315	0,400	0,500	0,630	0,630
25,00	0,160	0,200	0,250	0,315	0,400	0,500	0,630	0,800	0,800
31,50	0,160	0,200	0,250	0,315	0,400	0,500	0,630	0,800	1,000
40,00	0,200	0,250	0,315	0,400	0,500	0,630	0,800	1,000	1,250
50,00	0,250	0,310	0,400	0,500	0,630	0,800	1,000	1,250	1,250
63,00	0,315	0,400	0,500	0,630	0,800	1,000	1,250	1,600	1,600
80,00	0,400	0,500	0,630	0,800	1,000	1,250	1,600	1,600	2,000

Produits de refroidissement:

- Air
- Huile
- Huile soluble

Sens de coupe:

- Ⓜ coupe à droite
- Ⓛ coupe à gauche

Matières	Exemples, nouvelle désignation ( Ancienne désignation entre parenthèses ) Caractères gras = N° de matières suivant DIN EN	Résistance MPa (N/mm²)	Dureté	Prod. de réf.
Aciers de construction	<b>1.0035</b> S185(St33), <b>1.0486</b> P275N(StE285), <b>1.0345</b> P235GH(H1), <b>1.0425</b> P265GH(H2)	≤500		○
	<b>1.0050</b> E295 (St50-2), <b>1.0070</b> E360 (St70-2), <b>1.8937</b> P500NH (WStE500)	≤1000		○
Aciers de décolletage	<b>1.0718</b> 11SMnPb30 (9SMnPb28), <b>1.0736</b> 11SMn37 (9SMn36)	≤850		○
	<b>1.0727</b> 46S20 (45S20), <b>1.0728</b> (60S20), <b>1.0757</b> 46SPb20 (45SPb20)	≤1000		○
Aciers d'amélioration non-alliés	<b>1.0402</b> C22, <b>1.1178</b> C30E (Ck30)	≤700		○
	<b>1.0503</b> C45, <b>1.1191</b> C45E (Ck45)	≤850		○
	<b>1.0601</b> C60, <b>1.1221</b> C60E (Ck60)	≤1000		○
Aciers d'amélioration alliés	<b>1.5131</b> 50MnSi4, <b>1.7003</b> 38Cr2, <b>1.7030</b> 28Cr4	≤1000		○
	<b>1.5710</b> 36NiCr6, <b>1.7035</b> 41Cr4, <b>1.7225</b> 42CrMo4	≤1400		○
Aciers de cémentation non-alliés	<b>1.0301</b> (C10), <b>1.1121</b> C10E (Ck10)	≤850		○
Aciers de cémentation alliés	<b>1.7276</b> 10CrMo11, <b>1.5125</b> 11MnSi6	≤1000		●
	<b>1.5752</b> 15NiCr13, <b>1.7131</b> 16MnCr5, <b>1.7264</b> 20CrMo5	≤1400		●
Aciers de nitruration	<b>1.8504</b> 34CrAl6	≤1000		○
	<b>1.8519</b> 31CrMoV9, <b>1.8550</b> 34CrAlNi7	≤1400		●
Aciers à outils	<b>1.1750</b> C75W, <b>1.2067</b> 102Cr6, <b>1.2307</b> 29CrMoV9	≤850		○
	<b>1.2080</b> X210Cr12, <b>1.2083</b> X42Cr13, <b>1.2419</b> 105WCr6, <b>1.2767</b> X45NiCrMo4	≤1400		○
Aciers rapides	<b>1.3243</b> S 6-5-2-5, <b>1.3343</b> S 6-5-2, <b>1.3344</b> S 6-5-3	≤1400		●
Aciers à ressort	<b>1.5026</b> 55Si7, <b>1.7176</b> 55Cr3, <b>1.8159</b> 51CrV4 (51CrV4)		≤350 HB	●
Aciers trempés	-		≤48 HRC	●
			≤66 HRC	●
Aciers inoxydables, sulfurés	<b>1.4005</b> X12CrS13, <b>1.4104</b> X14CrMoS17, <b>1.4105</b> X6CrMoS17, <b>1.4305</b> X8CrNiS18-9	≤900		●
austénitiques	<b>1.4301</b> X5CrNi18-10 (V2A), <b>1.4541</b> X6CrNiTi18-10, <b>1.4571</b> X6CrNiMoTi 17-12-2 (V4A)	≤1100		●
martensitiques	<b>1.4057</b> X20CrNi172 (X17CrNi16-2), <b>1.4122</b> X39CrMo17-1, <b>1.4521</b> X2CrMoTi18-2	≤1500		●
Fontes	<b>0.6010</b> EN-GJL-100 (GG10), <b>0.6020</b> EN-GJL-200 (GG20)		≤240 HB	○
	<b>0.6025</b> EN-GJL-250 (GG25), <b>0.6035</b> EN-GJL-350 (GG35)		≤350 HB	○
Fontes à graphite sphéroïdal et fontes malléables	<b>0.7050</b> EN-GJS-500-7 (GGG50), <b>0.8035</b> EN-GJMW-350-4 (GTW35)		≤240 HB	○
	<b>0.7070</b> EN-GJS-700-2 (GGG70), <b>0.8170</b> EN-GJMB-700-2 (GTS70)		≤350 HB	○
Fontes dures	-		≤350 HB	○
Nouvelles fontes GGV	<b>EN-GJV250</b> (GGV25), <b>EN-GJV350</b> (GGV35)		≤220 HB	○
	<b>EN-GJV400</b> (GGV40), <b>EN-GJV500</b> (GGV50), SiMo 6		≤300 HB	○
Nouvelles fontes ADI	<b>EN-GJS-800-8</b> (ADI800), <b>EN-GJS-1000-5</b> (ADI1000)	≤1000		○
	<b>EN-GJS-1200-2</b> (ADI1200), <b>EN-GJS-1400-1</b> (ADI1400)	≤1400		○
Alliages spéciaux	Nimonic, Inconel, Monel, Hastelloy	≤2000		●
Titane et alliages de Titane	<b>3.7024</b> Ti99,5, <b>3.7114</b> TiAl5Sn2,5, <b>3.7124</b> TiCu2	≤850		●
	<b>3.7154</b> TiAl6Zr5, <b>3.7165</b> TiAl6V4, <b>3.7184</b> TiAl4Mo4Sn2,5, - TiAl8Mo1V1	≤1400		●
Aluminium et ses alliages	<b>3.0255</b> Al99,5, <b>3.2315</b> AlMgSi1, <b>3.3515</b> AlMg1	≤400		○
Alliages malléables d'Al	<b>3.0615</b> AlMgSiPb, <b>3.1325</b> AlCuMg1, <b>3.3245</b> AlMg3Si, <b>3.4365</b> AlZnMgCu1,5	≤650		○
Alliages d'Al d'inject. ≤ 10 % Si	<b>3.2131</b> G-AlSi5Cu1, <b>3.2153</b> G-AlSi7Cu3, <b>3.2573</b> G-AlSi9	≤600		○
≤ 24 % Si	<b>3.2581</b> G-AlSi12, <b>3.2583</b> G-AlSi12Cu, - G-AlSi12CuNiMg	≤600		○
Alliages de Magnésium	<b>3.5200</b> MgMn2, <b>3.5812.05</b> G-MgAl8Zn1, <b>3.5612.05</b> G-MgAl6Zn1	≤400		○
Cuivres, faiblement alliés	<b>2.0070</b> SE-Cu, <b>2.1020</b> CuSn6, <b>2.1096</b> G-CuSn5ZnPb	≤500		○
Laiton à copeaux courts, à copeaux longs	<b>2.0380</b> CuZn39Pb2, <b>2.0401</b> CuZn39Pb3, <b>2.0410</b> CuZn43Pb2	≤600		○
	<b>2.0250</b> CuZn20, <b>2.0280</b> CuZn33, <b>2.0332</b> CuZn37Pb0,5	≤600		○
Bronze, à copeaux courts	<b>2.1090</b> CuSn7ZnPb, <b>2.1170</b> CuPb5Sn5, <b>2.1176</b> CuPb10Sn	≤600		○
	<b>2.0790</b> CuNi18Zn19Pb	≤850		○
Bronze, à copeaux longs	<b>2.0916</b> CuAl5, <b>2.0960</b> CuAl9Mn, <b>2.1050</b> CuSn10	≤850		○
	<b>2.0980</b> CuAl11Ni, <b>2.1247</b> CuBe2	≤1000		○
Therm durcissables	Résine époxy, Resopal, Pertinax, Moltopren	≤150		○
Thermoplastiques	Plexiglas, Hostalen, Novodur, Makralon	≤100		○
renf. de fibres d'aramides	Kevlar	≤1000		○
renf. de fibres de verre ou carbone	GFK/CFK	≤1000		○



≤5xD Profondeur

8511	8611
6537L	6537L
CW mono. CW mono.	
K/P	K/P
RT 100 VA	RT 100 VA
<b>a</b>	<b>a</b>
axial	axial
72	74

8521	8621
6537L	6537L
CW mono. CW mono.	
K/P	K/P
RT 100 HF	RT 100 HF
<b>Y</b>	<b>Y</b>
axial	axial
68	70

1243	2717
WN	6537L
CW mono. CW mono.	
K/P	K/P
RT 100 U	RT 100 U
<b>S</b>	<b>S</b>
36	35

2712	2474	2996	2719
6537L	WN	6537L	6537L
CW mono. CW mono. CW mono. CW mono.			
K/P	K/P	K/P	K/P
RT 100 F	RT 100 U	RT 100 U	RT 100 U
<b>F</b>	<b>F</b>	<b>F</b>	<b>F</b>
38	34	30	32



Vc m/min	Gamme d'avance N°		Vc m/min	Gamme d'avance N°		Vc m/min	Gamme d'avance N°		Vc m/min	Gamme d'avance N°			
			145	7	7	100	6	6	130	7	7	7	7
			120	6	6	85	5	5	110	6	6	6	6
			170	8	8	110	7	7	145	8	8	8	8
			145	8	8	85	6	6	110	7	7	7	7
			130	8	8	90	6	6	120	7	7	7	7
			125	7	7	85	6	6	110	7	7	7	7
			120	7	7	80	6	6	105	7	7	7	7
			120	7	7	80	6	6	105	7	7	7	7
			105	7	7	75	5	5	100	6	6	6	6
			145	8	8	100	7	7	130	8	8	8	8
			120	7	7	90	6	6	120	7	7	7	7
			85	5	5	65	4	4	85	5	5	5	5
			110	7	7	75	5	5	100	6	6	6	6
			105	5	5	70	4	4	90	5	5	5	5
			80	6	6	50	5	5	65	6	6	6	6
			65	5	5	40	4	4	55	5	5	5	5
			60	4	4				55	4			
			60	3	3	35	2	2	45	3	3	3	3
			55	3	3	35	1	1	35	1	1	1	1
			35	2	2	20	1	1	20	1	1	1	1
80	5	5				40	2	2	45	2	2	2	2
60	2-3	2-3				15	1	1	15	1	1	1	1
80	5	5				35	2	2	35	2	1	2	2
						160	7	7	210	8	8	8	8
						120	7	7	155	8	8	8	8
						120	6	6	145	8	7	7	7
						95	6	6	125	8	7	7	7
						25	2	2	35	3	3	3	3
30	4	4	35	4	4	20	3	3	25	4	4	4	4
45	4	4	45	4	4	15	1	1	15	1	1	1	1
40	3	3	40	3	3	15	1	1	15	1	1	1	1
						200	8	8	260	9	9	9	9
						200	8	8	260	9	9	9	9
						170	8	8	235	9	9	9	9
						140	7	7	170	8	8	8	8
						200	7	7	260	8	8	8	8
						80	6	6	105	7	7	7	7
						210	7	7	270	8	8	8	8
						140	6	6	180	7	7	7	7
						80	5	5	105	6	6	6	6
						65	5	5	85	6	6	6	6
						60	4	4	80	5	5	5	5
						45	4	4	60	5	5	5	5

Navigateur



# GÜHRING NAVIGATOR

Il est conseillé de choisir des outils dont les avances sont en caractères gras.

**Pour le choix optimal de l'outil et de ses paramètres d'utilisation, pour [www.guehring.de](http://www.guehring.de) vous disposez du logiciel „Navigateur Gühring“.**

Profondeurs au-dessus de 7 x D seulement avec perçage pilote:

1. Le perçage pilote peut être réalisé avec un foret extra-court et rigide, d'un diamètre supérieur de 0,01-0,02 mm à celui du foret RT 150 GG sur une longueur minimum d'environ  $\geq 1 \times D$ .
  2. Le foret Ratio peut aussi réaliser lui-même son alésage pilote. Pour cela il faut réduire la vitesse de coupe et l'avance d'environ 30-40%.
  3. La pression de lubrification conseillée est d'au moins 40 bars.
- Attention, pour des raisons de sécurité, il est très important de ne jamais laisser tourner un foret à vide à plus de  $n = 6.000$  U/min sans qu'il ne soit guidé!

La force centrifuge peut amorcer la rupture du foret avant qu'il n'atteigne la pièce à usiner.

Ø outil mm	Gamme d'avance n°								
	1	2	3	4	5	6	7	8	9
	f (mm/tr.)								
<b>0,50</b>	0,004	0,006	0,007	0,008	0,010	0,012	0,014	0,016	0,019
<b>1,00</b>	0,006	0,008	0,012	0,014	0,016	0,018	0,020	0,023	0,025
<b>2,00</b>	0,020	0,025	0,032	0,040	0,050	0,063	0,080	0,100	0,125
<b>2,50</b>	0,025	0,032	0,040	0,050	0,063	0,080	0,100	0,125	0,160
<b>3,15</b>	0,032	0,040	0,050	0,063	0,080	0,100	0,125	0,160	0,160
<b>4,00</b>	0,040	0,050	0,063	0,080	0,100	0,125	0,160	0,200	0,200
<b>5,00</b>	0,040	0,050	0,063	0,080	0,100	0,125	0,160	0,200	0,250
<b>6,30</b>	0,050	0,063	0,080	0,100	0,125	0,160	0,200	0,250	0,315
<b>8,00</b>	0,063	0,080	0,100	0,125	0,160	0,200	0,250	0,315	0,315
<b>10,00</b>	0,080	0,100	0,125	0,160	0,200	0,250	0,315	0,400	0,400
<b>12,50</b>	0,080	0,100	0,125	0,160	0,200	0,250	0,315	0,400	0,500
<b>16,00</b>	0,100	0,125	0,160	0,200	0,250	0,315	0,400	0,500	0,630
<b>20,00</b>	0,125	0,160	0,200	0,250	0,315	0,400	0,500	0,630	0,630
<b>25,00</b>	0,160	0,200	0,250	0,315	0,400	0,500	0,630	0,800	0,800
<b>31,50</b>	0,160	0,200	0,250	0,315	0,400	0,500	0,630	0,800	1,000
<b>40,00</b>	0,200	0,250	0,315	0,400	0,500	0,630	0,800	1,000	1,250
<b>50,00</b>	0,250	0,310	0,400	0,500	0,630	0,800	1,000	1,250	1,250
<b>63,00</b>	0,315	0,400	0,500	0,630	0,800	1,000	1,250	1,600	1,600
<b>80,00</b>	0,400	0,500	0,630	0,800	1,000	1,250	1,600	1,600	2,000

Al

Prévu pour l'usinage de l'aluminium et de ses alliages

G

Prévu pour l'usinage des fontes

Produits de refroidissement:

○ Air

● Huile

● Huile soluble

Sens de coupe:

Ⓜ coupe à droite

Ⓛ coupe à gauche

Matières	Exemples, nouvelle désignation ( Ancienne désignation entre parenthèses ) Caractères gras = N° de matières suivant DIN EN	Résistance MPa (N/mm²)	Dureté	Prod. de réf.
Aciers de construction	<b>1.0035</b> S185(St33), <b>1.0486</b> P275N(StE285), <b>1.0345</b> P235GH(H1), <b>1.0425</b> P265GH(H2)	≤500		○
	<b>1.0050</b> E295 (St50-2), <b>1.0070</b> E360 (St70-2), <b>1.8937</b> P500NH (WStE500)	≤1000		○
Aciers de décolletage	<b>1.0718</b> 11SMnPb30 (9SMnPb28), <b>1.0736</b> 11SMn37 (9SMn36)	≤850		○
	<b>1.0727</b> 46S20 (45S20), <b>1.0728</b> (60S20), <b>1.0757</b> 46SPb20 (45SPb20)	≤1000		○
Aciers d'amélioration non-alliés	<b>1.0402</b> C22, <b>1.1178</b> C30E (Ck30)	≤700		○
	<b>1.0503</b> C45, <b>1.1191</b> C45E (Ck45)	≤850		○
	<b>1.0601</b> C60, <b>1.1221</b> C60E (Ck60)	≤1000		○
Aciers d'amélioration alliés	<b>1.5131</b> 50MnSi4, <b>1.7003</b> 38Cr2, <b>1.7030</b> 28Cr4	≤1000		○
	<b>1.5710</b> 36NiCr6, <b>1.7035</b> 41Cr4, <b>1.7225</b> 42CrMo4	≤1400		○
Aciers de cémentation non-alliés	<b>1.0301</b> (C10), <b>1.1121</b> C10E (Ck10)	≤850		○
Aciers de cémentation alliés	<b>1.7276</b> 10CrMo11, <b>1.5125</b> 11MnSi6	≤1000		○
	<b>1.5752</b> 15NiCr13, <b>1.7131</b> 16MnCr5, <b>1.7264</b> 20CrMo5	≤1400		○
Aciers de nitruration	<b>1.8504</b> 34CrAl6	≤1000		○
	<b>1.8519</b> 31CrMoV9, <b>1.8550</b> 34CrAlNi7	≤1400		○
Aciers à outils	<b>1.1750</b> C75W, <b>1.2067</b> 102Cr6, <b>1.2307</b> 29CrMoV9	≤850		○
	<b>1.2080</b> X210Cr12, <b>1.2083</b> X42Cr13, <b>1.2419</b> 105WCr6, <b>1.2767</b> X45NiCrMo4	≤1400		○
Aciers rapides	<b>1.3243</b> S 6-5-2-5, <b>1.3343</b> S 6-5-2, <b>1.3344</b> S 6-5-3	≤1400		○
Aciers à ressort	<b>1.5026</b> 55Si7, <b>1.7176</b> 55Cr3, <b>1.8159</b> 51CrV4 (51CrV4)		≤350 HB	○
Aciers trempés	-		≤48 HRC	○
			≤66 HRC	○
Aciers inoxydables, sulfurés	<b>1.4005</b> X12CrS13, <b>1.4104</b> X14CrMoS17, <b>1.4105</b> X6CrMoS17, <b>1.4305</b> X8CrNiS18-9	≤900		○
austénitiques	<b>1.4301</b> X5CrNi18-10 (V2A), <b>1.4541</b> X6CrNiTi18-10, <b>1.4571</b> X6CrNiMoTi 17-12-2 (V4A)	≤1100		○
martensitiques	<b>1.4057</b> X20CrNi172 (X17CrNi16-2), <b>1.4122</b> X39CrMo17-1, <b>1.4521</b> X2CrMoTi18-2	≤1500		○
Fontes	<b>0.6010</b> EN-GJL-100 (GG10), <b>0.6020</b> EN-GJL-200 (GG20)		≤240 HB	○
	<b>0.6025</b> EN-GJL-250 (GG25), <b>0.6035</b> EN-GJL-350 (GG35)		≤350 HB	○
Fontes à graphite sphéroïdal et fontes malléables	<b>0.7050</b> EN-GJS-500-7 (GGG50), <b>0.8035</b> EN-GJMW-350-4 (GTW35)		≤240 HB	○
	<b>0.7070</b> EN-GJS-700-2 (GGG70), <b>0.8170</b> EN-GJMB-700-2 (GTS70)		≤350 HB	○
Fontes dures	-		≤350 HB	○
Nouvelles fontes GGV	<b>EN-GJV250</b> (GGV25), <b>EN-GJV350</b> (GGV35)		≤220 HB	○
	<b>EN-GJV400</b> (GGV40), <b>EN-GJV500</b> (GGV50), SiMo 6		≤300 HB	○
Nouvelles fontes ADI	<b>EN-GJS-800-8</b> (ADI800), <b>EN-GJS-1000-5</b> (ADI1000)	≤1000		○
	<b>EN-GJS-1200-2</b> (ADI1200), <b>EN-GJS-1400-1</b> (ADI1400)	≤1400		○
Alliages spéciaux	Nimonic, Inconel, Monel, Hastelloy	≤2000		○
Titane et alliages de Titane	<b>3.7024</b> Ti99,5, <b>3.7114</b> TiAl5Sn2,5, <b>3.7124</b> TiCu2	≤850		○
	<b>3.7154</b> TiAl6Zr5, <b>3.7165</b> TiAl6V4, <b>3.7184</b> TiAl4Mo4Sn2,5, - TiAl8Mo1V1	≤1400		○
Aluminium et ses alliages	<b>3.0255</b> Al99,5, <b>3.2315</b> AlMgSi1, <b>3.3515</b> AlMg1	≤400		○
Alliages malléables d'Al	<b>3.0615</b> AlMgSiPb, <b>3.1325</b> AlCuMg1, <b>3.3245</b> AlMg3Si, <b>3.4365</b> AlZnMgCu1,5	≤650		○
Alliages d'Al d'inject. ≤ 10 % Si	<b>3.2131</b> G-AlSi5Cu1, <b>3.2153</b> G-AlSi7Cu3, <b>3.2573</b> G-AlSi9	≤600		○
≤ 24 % Si	<b>3.2581</b> G-AlSi12, <b>3.2583</b> G-AlSi12Cu, - G-AlSi12CuNiMg	≤600		○
Alliages de Magnésium	<b>3.5200</b> MgMn2, <b>3.5812.05</b> G-MgAl8Zn1, <b>3.5612.05</b> G-MgAl6Zn1	≤400		○
Cuivres, faiblement alliés	<b>2.0070</b> SE-Cu, <b>2.1020</b> CuSn6, <b>2.1096</b> G-CuSn5ZnPb	≤500		○
Laiton à copeaux courts, à copeaux longs	<b>2.0380</b> CuZn39Pb2, <b>2.0401</b> CuZn39Pb3, <b>2.0410</b> CuZn43Pb2	≤600		○
	<b>2.0250</b> CuZn20, <b>2.0280</b> CuZn33, <b>2.0332</b> CuZn37Pb0,5	≤600		○
Bronze, à copeaux courts	<b>2.1090</b> CuSn7Zn19Pb, <b>2.1170</b> CuPb5Sn5, <b>2.1176</b> CuPb10Sn	≤600		○
	<b>2.0790</b> CuNi18Zn19Pb	≤850		○
Bronze, à copeaux longs	<b>2.0916</b> CuAl5, <b>2.0960</b> CuAl9Mn, <b>2.1050</b> CuSn10	≤850		○
	<b>2.0980</b> CuAl11Ni, <b>2.1247</b> CuBe2	≤1000		○
Thermodurcissables	Résine époxy, Resopal, Pertinax, Moltopren	≤150		○
Thermoplastiques	Plexiglas, Hostalen, Novodur, Makralon	≤100		○
renf. de fibres d'aramides	Kevlar	≤1000		○
renf. de fibres de verre ou carbone	GFK/CFK	≤1000		○

Navigateur





≤7xD Profondeur

1173
6538L
CW
P
RT80U
<b>S</b>
axial
95

769	6069
WN	WN
CW mono.	
K	K
RT 150 GG	
○	○
axial	axial
93	94
Al	G

2711
WN
CW mono.
K/P
RT100U
<b>S</b>
axial
89

4044	4045
WN	WN
CW mono.	
K/P	K/P
RT 100 U	
<b>F</b>	<b>F</b>
axial	axial
85	87

6502
WN
CW mono.
K/P
RT100R
<b>F</b>
axial
91

8522
WN
CW mono.
K/P
RT100HF
<b>Y</b>
axial
90

≤8xD

5760
6537L
CW mono.
K/P
RT100S
<b>F</b>
axial
96

≤10xD

770	6070
WN	WN
CW mono.	
K	K
RT 150 GG	
○	○
axial	axial
98	99
Al	G

≤12xD

5525
WN
CW mono.
K/P
RT100U
<b>F</b>
axial
100



V <sub>c</sub> m/min	Gamme d'av. N°	V <sub>c</sub> m/min	Gamme d'avance N°	V <sub>c</sub> m/min	Gamme d'av. N°	V <sub>c</sub> m/min	Gamme d'avance N°	V <sub>c</sub> m/min	Gamme d'av. N°	V <sub>c</sub> m/min	Gamme d'av. N°	V <sub>c</sub> m/min	Gamme d'avance N°	V <sub>c</sub> m/min	Gamme d'av. N°		
95	4			110	5	145	6 6			145	6	145-230	7		110	6	
75	3			90	4	120	5 5			120	5	120-220	6		110	5	
90	5			130	6	170	7 7			170	7	170-260	7		110	7	
75	4			110	6	145	7 7			145	7	145-230	7		100	7	
80	4			100	6	130	7 7			130	7	130-220	7		110	7	
75	4			95	5	125	6 6			125	6	125-210	6		110	6	
60	4			90	5	120	6 6			120	6	120-200	6		100	6	
75	4			90	5	120	6 6			120	6	120-210	6		110	6	
60	3			80	5	105	6 6			105	6	105-200	6		105	6	
90	5			110	6	145	7 7			145	7	145-230	7		110	7	
75	4			90	5	120	6 6			120	6	120-210	6		110	6	
55	3			65	3	85	4 4			85	4	105-200	5		85	4	
75	4			80	5	110	6 6			110	6	110-150	6		100	6	
55	3			75	4	105	4 4			105	4	100-150	4		80	4	
40	3			55	4	80	5 5			80	5	70-120	5		80	5	
35	3			40	3	65	4 4			65	4	65-100	4		65	4	
40	2			45	2	60	4 4			60	3	60-100	4		50	4	
				45	1	60	2 2			60	2	60-100	4		50	2	
				40	1	55	2 2			55	2						
				25	1	35	1 1			35	1						
35	1			45	3	60	4 4								60	4	
33	1			40	2	55	2 2								55	2	
25	1			35	3	45	4 4								45	4	
150	5	120	6 7	150	7	195	8 8	210	8					120	6 6	120	8
110	5	100	6 7	120	7	160	8 8	160	8					100	6 6	120	8
110	5	90	6 7	100	7	140	8 8	160	8					90	6 6	100	8
90	4	80	6 7	95	6	130	7 7	130	7					80	6 6	90	7
		40	2 2	30	1	40	2 2							40	1 2		
								130	7								
								100	7								
								80	7								
								60	7								
				25	2	35	3 3			35	3						
				35	1	40	3 3			45	3						
				30	1	40	2 2			40	4						
180	6	410	8 7	240	7	310	8 8							410	8 6	150	8
180	6	410	8 7	240	7	310	8 8							410	8 6	150	8
160	6	380	8 8	200	7	260	8 8							380	8 6	150	8
130	5	330	8 8	170	7	220	8 8							330	8 6	120	8
				230	6	280	7 7									150	7
				95	6	125	6 6									80	6
				250	7	325	7 7							280	7 7	120	7
				170	6	220	6 6									120	6
		110	6 6	95	6	125	6 6							110	6 6	40	6
		80	5 5	80	5	105	5 5							80	5 5		
				70	5	90	5 5										
				60	5	80	5 5									40	5

Navigateur



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N° d'article
Norme/DIN
Matière de coupe
Nuance carbure
Type
Version
Lubrification
Prix/dim. page

Ø outil mm	Gamme d'avance n°								
	1	2	3	4	5	6	7	8	9
	f (mm/tr.)								
<b>0,50</b>	0,004	0,006	0,007	0,008	0,010	0,012	0,014	0,016	0,019
<b>1,00</b>	0,006	0,008	0,012	0,014	0,016	0,018	0,020	0,023	0,025
<b>2,00</b>	0,020	0,025	0,032	0,040	0,050	0,063	0,080	0,100	0,125
<b>2,50</b>	0,025	0,032	0,040	0,050	0,063	0,080	0,100	0,125	0,160
<b>3,15</b>	0,032	0,040	0,050	0,063	0,080	0,100	0,125	0,160	0,160
<b>4,00</b>	0,040	0,050	0,063	0,080	0,100	0,125	0,160	0,200	0,200
<b>5,00</b>	0,040	0,050	0,063	0,080	0,100	0,125	0,160	0,200	0,250
<b>6,30</b>	0,050	0,063	0,080	0,100	0,125	0,160	0,200	0,250	0,315
<b>8,00</b>	0,063	0,080	0,100	0,125	0,160	0,200	0,250	0,315	0,315
<b>10,00</b>	0,080	0,100	0,125	0,160	0,200	0,250	0,315	0,400	0,400
<b>12,50</b>	0,080	0,100	0,125	0,160	0,200	0,250	0,315	0,400	0,500
<b>16,00</b>	0,100	0,125	0,160	0,200	0,250	0,315	0,400	0,500	0,630
<b>20,00</b>	0,125	0,160	0,200	0,250	0,315	0,400	0,500	0,630	0,630
<b>25,00</b>	0,160	0,200	0,250	0,315	0,400	0,500	0,630	0,800	0,800
<b>31,50</b>	0,160	0,200	0,250	0,315	0,400	0,500	0,630	0,800	1,000
<b>40,00</b>	0,200	0,250	0,315	0,400	0,500	0,630	0,800	1,000	1,250
<b>50,00</b>	0,250	0,310	0,400	0,500	0,630	0,800	1,000	1,250	1,250
<b>63,00</b>	0,315	0,400	0,500	0,630	0,800	1,000	1,250	1,600	1,600
<b>80,00</b>	0,400	0,500	0,630	0,800	1,000	1,250	1,600	1,600	2,000

Produits de refroidissement:

- Air
- Huile
- Huile soluble

Sens de coupe:

- Ⓜ coupe à droite
- Ⓛ coupe à gauche

Matières	Exemples, nouvelle désignation ( Ancienne désignation entre parenthèses ) Caractères gras = N° de matières suivant DIN EN	Résistance MPa (N/mm²)	Dureté	Prod. de réf.
Aciers de construction	<b>1.0035</b> S185(St33), <b>1.0486</b> P275N(StE285), <b>1.0345</b> P235GH(H1), <b>1.0425</b> P265GH(H2) <b>1.0050</b> E295 (St50-2), <b>1.0070</b> E360 (St70-2), <b>1.8937</b> P500NH (WStE500)	≤500 ≤1000		○ ○
Aciers de décolletage	<b>1.0718</b> 11SMnPb30 (9SMnPb28), <b>1.0736</b> 11SMn37 (9SMn36) <b>1.0727</b> 46S20 (45S20), <b>1.0728</b> (60S20), <b>1.0757</b> 46SPb20 (45SPb20)	≤850 ≤1000		○ ○
Aciers d'amélioration non-alliés	<b>1.0402</b> C22, <b>1.1178</b> C30E (Ck30) <b>1.0503</b> C45, <b>1.1191</b> C45E (Ck45) <b>1.0601</b> C60, <b>1.1221</b> C60E (Ck60)	≤700 ≤850 ≤1000		○ ○ ○
Aciers d'amélioration alliés	<b>1.5131</b> 50MnSi4, <b>1.7003</b> 38Cr2, <b>1.7030</b> 28Cr4 <b>1.5710</b> 36NiCr6, <b>1.7035</b> 41Cr4, <b>1.7225</b> 42CrMo4	≤1000 ≤1400		○ ○
Aciers de cémentation non-alliés	<b>1.0301</b> (C10), <b>1.1121</b> C10E (Ck10)	≤850		○
Aciers de cémentation alliés	<b>1.7276</b> 10CrMo11, <b>1.5125</b> 11MnSi6 <b>1.5752</b> 15NiCr13, <b>1.7131</b> 16MnCr5, <b>1.7264</b> 20CrMo5	≤1000 ≤1400		○ ○
Aciers de nitruration	<b>1.8504</b> 34CrAl6 <b>1.8519</b> 31CrMoV9, <b>1.8550</b> 34CrAlNi7	≤1000 ≤1400		○ ○
Aciers à outils	<b>1.1750</b> C75W, <b>1.2067</b> 102Cr6, <b>1.2307</b> 29CrMoV9 <b>1.2080</b> X210Cr12, <b>1.2083</b> X42Cr13, <b>1.2419</b> 105WCr6, <b>1.2767</b> X45NiCrMo4	≤850 ≤1400		○ ○
Aciers rapides	<b>1.3243</b> S 6-5-2-5, <b>1.3343</b> S 6-5-2, <b>1.3344</b> S 6-5-3	≤1400		○
Aciers à ressort	<b>1.5026</b> 55Si7, <b>1.7176</b> 55Cr3, <b>1.8159</b> 51CrV4 (51CrV4)		≤350 HB	○
Aciers trempés	-		≤48 HRC ≤66 HRC	○ ○
Aciers inoxydables, sulfurés	<b>1.4005</b> X12CrS13, <b>1.4104</b> X14CrMoS17, <b>1.4105</b> X6CrMoS17, <b>1.4305</b> X8CrNiS18-9	≤900		○
austénitiques	<b>1.4301</b> X5CrNi18-10 (V2A), <b>1.4541</b> X6CrNiTi18-10, <b>1.4571</b> X6CrNiMoTi 17-12-2 (V4A)	≤1100		○
martensitiques	<b>1.4057</b> X20CrNi172 (X17CrNi16-2), <b>1.4122</b> X39CrMo17-1, <b>1.4521</b> X2CrMoTi18-2	≤1500		○
Fontes	<b>0.6010</b> EN-GJL-100 (GG10), <b>0.6020</b> EN-GJL-200 (GG20) <b>0.6025</b> EN-GJL-250 (GG25), <b>0.6035</b> EN-GJL-350 (GG35)		≤240 HB ≤350 HB	○ ○
Fontes à graphite sphéroïdal et fontes malléables	<b>0.7050</b> EN-GJS-500-7 (GGG50), <b>0.8035</b> EN-GJMW-350-4 (GTW35) <b>0.7070</b> EN-GJS-700-2 (GGG70), <b>0.8170</b> EN-GJMB-700-2 (GTS70)		≤240 HB ≤350 HB	○ ○
Fontes dures	-		≤350 HB	○
Nouvelles fontes GGV	<b>EN-GJV250</b> (GGV25), <b>EN-GJV350</b> (GGV35) <b>EN-GJV400</b> (GGV40), <b>EN-GJV500</b> (GGV50), SiMo 6		≤220 HB ≤300 HB	○ ○
Nouvelles fontes ADI	<b>EN-GJS-800-8</b> (ADI800), <b>EN-GJS-1000-5</b> (ADI1000) <b>EN-GJS-1200-2</b> (ADI1200), <b>EN-GJS-1400-1</b> (ADI1400)	≤1000 ≤1400		○ ○
Alliages spéciaux	Nimonic, Inconel, Monel, Hastelloy	≤2000		○
Titane et alliages de Titane	<b>3.7024</b> Ti99,5, <b>3.7114</b> TiAl5Sn2,5, <b>3.7124</b> TiCu2 <b>3.7154</b> TiAl6Zr5, <b>3.7165</b> TiAl6V4, <b>3.7184</b> TiAl4Mo4Sn2,5, - TiAl8Mo1V1	≤850 ≤1400		○ ○
Aluminium et ses alliages	<b>3.0255</b> Al99,5, <b>3.2315</b> AlMgSi1, <b>3.3515</b> AlMg1	≤400		○
Alliages malléables d'Al	<b>3.0615</b> AlMgSiPb, <b>3.1325</b> AlCuMg1, <b>3.3245</b> AlMg3Si, <b>3.4365</b> AlZnMgCu1,5	≤650		○
Alliages d'Al d'inject. ≤ 10 % Si ≤ 24 % Si	<b>3.2131</b> G-AlSi5Cu1, <b>3.2153</b> G-AlSi7Cu3, <b>3.2573</b> G-AlSi9 <b>3.2581</b> G-AlSi12, <b>3.2583</b> G-AlSi12Cu, - G-AlSi12CuNiMg	≤600 ≤600		○ ○
Alliages de Magnésium	<b>3.5200</b> MgMn2, <b>3.5812.05</b> G-MgAl8Zn1, <b>3.5612.05</b> G-MgAl6Zn1	≤400		○
Cuivres, faiblement alliés	<b>2.0070</b> SE-Cu, <b>2.1020</b> CuSn6, <b>2.1096</b> G-CuSn5ZnPb	≤500		○
Laiton à copeaux courts, à copeaux longs	<b>2.0380</b> CuZn39Pb2, <b>2.0401</b> CuZn39Pb3, <b>2.0410</b> CuZn43Pb2 <b>2.0250</b> CuZn20, <b>2.0280</b> CuZn33, <b>2.0332</b> CuZn37Pb0,5	≤600 ≤600		○ ○
Bronze, à copeaux courts	<b>2.1090</b> CuSn7ZnPb, <b>2.1170</b> CuPb5Sn5, <b>2.1176</b> CuPb10Sn <b>2.0790</b> CuNi18Zn19Pb	≤600 ≤850		○ ○
Bronze, à copeaux longs	<b>2.0916</b> CuAl5, <b>2.0960</b> CuAl9Mn, <b>2.1050</b> CuSn10 <b>2.0980</b> CuAl11Ni, <b>2.1247</b> CuBe2	≤850 ≤1000		○ ○
Therm durcissables	Résine époxy, Resopal, Pertinax, Moltopren	≤150		○
Thermoplastiques	Plexiglas, Hostalen, Novodur, Makralon	≤100		○
renf. de fibres d'aramides	Kevlar	≤1000		○
renf. de fibres de verre ou carbone	GFK/CFK	≤1000		○



≤15xD

773
WN
CW mono.
K
RT 150 GN
○
axial
103

≤15xD

6509
WN
CW monobloc
K/P
RT 100 T
Ⓐ
40 bar MQL
102

≤20xD

6511
WN
CW monobloc
K/P
RT 100 T
Ⓐ
40 bar MQL
104

≤25xD

6512
WN
CW monobloc
K/P
RT 100 T
Ⓐ
40 bar MQL
105

≤30xD

6513
WN
CW monobloc
K/P
RT 100 T
Ⓐ
40 bar MQL
106

≤40xD

6514
WN
CW monobloc
K/P
RT 100 T
Ⓐ
40 bar
107



Vc m/min	Gamme d'avance N°	Vc m/min	Av. N°	Vc m/min	Av. N°	Vc m/min	Av. N°	Vc m/min	Av. N°	Vc m/min	Av. N°	Vc m/min	Av. N°	Vc m/min	Av. N°
		110	8			110	8			100	8			80	7
		110	8			110	8			100	8			80	7
		120	8			120	8			120	8			100	8
		120	8			120	8			100	8			100	8
		110	6			110	6			110	6			110	6
		110	8			110	8			100	8			80	7
		100	7			100	7			100	7			80	7
		110	7	80	7	110	7	80	7	100	7	70	7	80	7
		110	6	80	7	110	6	80	7	100	6	70	7	80	6
		110	8			110	8			100	8			80	7
		110	7	80	6-7	110	7	80	6-7	100	7	70	6-7	80	6
		110	6	80	6-7	110	6	80	6-7	100	6	70	6-7	80	6
		100	5			100	5			80	5			80	5
		80	5			80	5			60	5			60	5
		100	6-7			100	6			90	6			80	6
		80	5			80	5			70	4			70	4
		50	5			50	5			50	4			50	4
		50	5			50	5			50	4			50	4
		50	4			50	4			50	4			50	4
		100	5			100	5			100	5			80	5
		70	2-3			60	3			60	3			60	3
		100	5			100	5			100	5			80	5
120	5	140	8			140	8			130	8			120	8
100	5	100	8			100	8			90	8			80	8
90	5	140	8			140	8			130	8			120	8
80	5	100	8			100	8			90	8			80	8
40	1														
		100	6			100	6			90	6			80	6
		100	6			100	6			90	6			80	6
		90	8	90	8	90	8	90	8	80	8	80	8	70	8
		30	2			30	2			30	2			30	2
410	6														
410	6														
380	7														
330	7														
		120	1			120	1			120	1			120	1
280	6	120	8			120	8			110	8			100	8
110	5														
80	4														



# GÜHRING NAVIGATOR

Il est conseillé de choisir des outils dont les avances sont en caractères gras.  
Pour le choix optimal de l'outil et de ses paramètres d'utilisation,  
sous [www.guehring.de](http://www.guehring.de) vous disposez du logiciel „Navigateur Gühring“.

N° d'article
Norme/DIN
Matière de coupe
Nuance carbure
Type
Version
Lubrification
Prix/dim. page

Ø outil mm	Gamme d'avance n°								
	1	2	3	4	5	6	7	8	9
	f (mm/tr.)								
0,50	0,004	0,006	0,007	0,008	0,010	0,012	0,014	0,016	0,019
1,00	0,006	0,008	0,012	0,014	0,016	0,018	0,020	0,023	0,025
2,00	0,020	0,025	0,032	0,040	0,050	0,063	0,080	0,100	0,125
2,50	0,025	0,032	0,040	0,050	0,063	0,080	0,100	0,125	0,160
3,15	0,032	0,040	0,050	0,063	0,080	0,100	0,125	0,160	0,160
4,00	0,040	0,050	0,063	0,080	0,100	0,125	0,160	0,200	0,200
5,00	0,040	0,050	0,063	0,080	0,100	0,125	0,160	0,200	0,250
6,30	0,050	0,063	0,080	0,100	0,125	0,160	0,200	0,250	0,315
8,00	0,063	0,080	0,100	0,125	0,160	0,200	0,250	0,315	0,315
10,00	0,080	0,100	0,125	0,160	0,200	0,250	0,315	0,400	0,400
12,50	0,080	0,100	0,125	0,160	0,200	0,250	0,315	0,400	0,500
16,00	0,100	0,125	0,160	0,200	0,250	0,315	0,400	0,500	0,630
20,00	0,125	0,160	0,200	0,250	0,315	0,400	0,500	0,630	0,630
25,00	0,160	0,200	0,250	0,315	0,400	0,500	0,630	0,800	0,800
31,50	0,160	0,200	0,250	0,315	0,400	0,500	0,630	0,800	1,000
40,00	0,200	0,250	0,315	0,400	0,500	0,630	0,800	1,000	1,250
50,00	0,250	0,310	0,400	0,500	0,630	0,800	1,000	1,250	1,250
63,00	0,315	0,400	0,500	0,630	0,800	1,000	1,250	1,600	1,600
80,00	0,400	0,500	0,630	0,800	1,000	1,250	1,600	1,600	2,000

Produits de refroidissement:

- Air
- Huile
- Huile soluble

Sens de coupe:

- Ⓜ coupe à droite
- Ⓛ coupe à gauche

Matières	Exemples, nouvelle désignation ( Ancienne désignation entre parenthèses ) Caractères gras = N° de matières suivant DIN EN	Résistance MPa (N/mm²)	Dureté	Prod. de réf.
Aciers de construction	<b>1.0035</b> S185(St33), <b>1.0486</b> P275N(StE285), <b>1.0345</b> P235GH(H1), <b>1.0425</b> P265GH(H2)	≤500		○
	<b>1.0050</b> E295 (St50-2), <b>1.0070</b> E360 (St70-2), <b>1.8937</b> P500NH (WStE500)	≤1000		○
Aciers de décolletage	<b>1.0718</b> 11SMnPb30 (9SMnPb28), <b>1.0736</b> 11SMn37 (9SMn36)	≤850		○
	<b>1.0727</b> 46S20 (45S20), <b>1.0728</b> (60S20), <b>1.0757</b> 46SPb20 (45SPb20)	≤1000		○
Aciers d'amélioration non-alliés	<b>1.0402</b> C22, <b>1.1178</b> C30E (Ck30)	≤700		○
	<b>1.0503</b> C45, <b>1.1191</b> C45E (Ck45)	≤850		○
	<b>1.0601</b> C60, <b>1.1221</b> C60E (Ck60)	≤1000		○
Aciers d'amélioration alliés	<b>1.5131</b> 50MnSi4, <b>1.7003</b> 38Cr2, <b>1.7030</b> 28Cr4	≤1000		○
	<b>1.5710</b> 36NiCr6, <b>1.7035</b> 41Cr4, <b>1.7225</b> 42CrMo4	≤1400		○
Aciers de cémentation non-alliés	<b>1.0301</b> (C10), <b>1.1121</b> C10E (Ck10)	≤850		○
Aciers de cémentation alliés	<b>1.7276</b> 10CrMo11, <b>1.5125</b> 11MnSi6	≤1000		●
	<b>1.5752</b> 15NiCr13, <b>1.7131</b> 16MnCr5, <b>1.7264</b> 20CrMo5	≤1400		●
Aciers de nitruration	<b>1.8504</b> 34CrAl6	≤1000		○
	<b>1.8519</b> 31CrMoV9, <b>1.8550</b> 34CrAlNi7	≤1400		●
Aciers à outils	<b>1.1750</b> C75W, <b>1.2067</b> 102Cr6, <b>1.2307</b> 29CrMoV9	≤850		○
	<b>1.2080</b> X210Cr12, <b>1.2083</b> X42Cr13, <b>1.2419</b> 105WCr6, <b>1.2767</b> X45NiCrMo4	≤1400		○
Aciers rapides	<b>1.3243</b> S 6-5-2-5, <b>1.3343</b> S 6-5-2, <b>1.3344</b> S 6-5-3	≤1400		●
Aciers à ressort	<b>1.5026</b> 55Si7, <b>1.7176</b> 55Cr3, <b>1.8159</b> 51CrV4 (51CrV4)		≤350 HB	●
Aciers trempés	-		≤48 HRC	●
			≤66 HRC	●
Aciers inoxydables, sulfurés	<b>1.4005</b> X12CrS13, <b>1.4104</b> X14CrMoS17, <b>1.4105</b> X6CrMoS17, <b>1.4305</b> X8CrNiS18-9	≤900		●
austénitiques	<b>1.4301</b> X5CrNi18-10 (V2A), <b>1.4541</b> X6CrNiTi18-10, <b>1.4571</b> X6CrNiMoTi 17-12-2 (V4A)	≤1100		●
martensitiques	<b>1.4057</b> X20CrNi172 (X17CrNi16-2), <b>1.4122</b> X39CrMo17-1, <b>1.4521</b> X2CrMoTi18-2	≤1500		●
Fontes	<b>0.6010</b> EN-GJL-100 (GG10), <b>0.6020</b> EN-GJL-200 (GG20)		≤240 HB	○
	<b>0.6025</b> EN-GJL-250 (GG25), <b>0.6035</b> EN-GJL-350 (GG35)		≤350 HB	○
Fontes à graphite sphéroïdal et fontes malléables	<b>0.7050</b> EN-GJS-500-7 (GGG50), <b>0.8035</b> EN-GJMW-350-4 (GTW35)		≤240 HB	○
	<b>0.7070</b> EN-GJS-700-2 (GGG70), <b>0.8170</b> EN-GJMB-700-2 (GTS70)		≤350 HB	○
Fontes dures	-		≤350 HB	○
Nouvelles fontes GGV	<b>EN-GJV250</b> (GGV25), <b>EN-GJV350</b> (GGV35)		≤220 HB	○
	<b>EN-GJV400</b> (GGV40), <b>EN-GJV500</b> (GGV50), SiMo 6		≤300 HB	○
Nouvelles fontes ADI	<b>EN-GJS-800-8</b> (ADI800), <b>EN-GJS-1000-5</b> (ADI1000)	≤1000		○
	<b>EN-GJS-1200-2</b> (ADI1200), <b>EN-GJS-1400-1</b> (ADI1400)	≤1400		○
Alliages spéciaux	Nimonic, Inconel, Monel, Hastelloy	≤2000		●
Titane et alliages de Titane	<b>3.7024</b> Ti99,5, <b>3.7114</b> TiAl5Sn2,5, <b>3.7124</b> TiCu2	≤850		●
	<b>3.7154</b> TiAl6Zr5, <b>3.7165</b> TiAl6V4, <b>3.7184</b> TiAl4Mo4Sn2,5, - TiAl8Mo1V1	≤1400		●
Aluminium et ses alliages	<b>3.0255</b> Al99,5, <b>3.2315</b> AlMgSi1, <b>3.3515</b> AlMg1	≤400		○
Alliages malléables d'Al	<b>3.0615</b> AlMgSiPb, <b>3.1325</b> AlCuMg1, <b>3.3245</b> AlMg3Si, <b>3.4365</b> AlZnMgCu1,5	≤650		○
Alliages d'Al d'inject. ≤ 10 % Si	<b>3.2131</b> G-AlSi5Cu1, <b>3.2153</b> G-AlSi7Cu3, <b>3.2573</b> G-AlSi9	≤600		○
≤ 24 % Si	<b>3.2581</b> G-AlSi12, <b>3.2583</b> G-AlSi12Cu, - G-AlSi12CuNiMg	≤600		○
Alliages de Magnésium	<b>3.5200</b> MgMn2, <b>3.5812.05</b> G-MgAl8Zn1, <b>3.5612.05</b> G-MgAl6Zn1	≤400		○
Cuivres, faiblement alliés	<b>2.0070</b> SE-Cu, <b>2.1020</b> CuSn6, <b>2.1096</b> G-CuSn5ZnPb	≤500		○
Laiton à copeaux courts,	<b>2.0380</b> CuZn39Pb2, <b>2.0401</b> CuZn39Pb3, <b>2.0410</b> CuZn43Pb2	≤600		○
à copeaux longs	<b>2.0250</b> CuZn20, <b>2.0280</b> CuZn33, <b>2.0332</b> CuZn37Pb0,5	≤600		○
Bronze, à copeaux courts	<b>2.1090</b> CuSn7ZnPb, <b>2.1170</b> CuPb5Sn5, <b>2.1176</b> CuPb10Sn	≤600		○
	<b>2.0790</b> CuNi18Zn19Pb	≤850		○
Bronze, à copeaux longs	<b>2.0916</b> CuAl5, <b>2.0960</b> CuAl9Mn, <b>2.1050</b> CuSn10	≤850		○
	<b>2.0980</b> CuAl11Ni, <b>2.1247</b> CuBe2	≤1000		○
Thermodurcissables	Résine époxy, Resopal, Pertinax, Moltopren	≤150		○
Thermoplastiques	Plexiglas, Hostalen, Novodur, Makralon	≤100		○
renf. de fibres d'aramides	Kevlar	≤1000		○
renf. de fibres de verre ou carbone	GFK/CFK	≤1000		○



≤3xD

745
6539
<b>CW monobloc</b>
K10/K20
GS 200 G
○
116

≤5xD Profondeur

1025	2713	731
6539	6537L	6539
<b>CW monobloc</b>	<b>CW monobloc</b>	<b>CW monobloc</b>
K	K	K
GS 200 G	FT 200 G	GS 200 U
○	○	○
117	113	115

1027	611
6539	6539
<b>CW monobloc</b>	<b>CW monobloc</b>
K10/K20	K/P
GS 200 F	GS 200 U
<b>S</b>	<b>S</b>
119	114



Vc m/min	Gamme d'avance N°
100	6
80	6
80	6
70	6
180	7
160	7
150	7
120	6
180	6
180	6

Vc m/min	Gamme d'avance N°		
90	6		
75	5		
100	6	6	6
80	6	6	6
80	6	6	6
70	6	6	6
180	7	7	7
160	7	7	7
150	7	7	7
120	6	6	6
180	6	6	6
180	6	6	6

Vc m/min	Gamme d'avance N°	
100	5	5
85	4	4
110	6	6
95	5	5
90	5	5
85	5	5
80	5	5
80	5	5
70	4	4
100	6	6
80	5	5
70	4	4
75	4	4
70	4	4
50	4	4
40	4	4
35	3	3
140	6	6
100	6	6
100	6	6
90	6	6
200	7	7
180	7	7
170	7	7
140	6	6
200	6	6
210	6	6

Navigateur

**GÜHRING NAVIGATOR**

Toutes ces données sont des valeurs indicatives. Les valeurs réelles des avances et vitesses de coupe optimales dépendent de chacune des conditions d'usinage. Nous vous recommandons de réaliser quelques essais de perçage.

Pour le choix optimal de l'outil et de ses paramètres d'utilisation, sous [www.guehring.de](http://www.guehring.de) vous disposez du logiciel „Navigateur Gühring“.

N° d'article
Norme/DIN
Matière de coupe
Nuance carbure
Profondeur
Version
Application
Prix/dim. page

Ø outil mm	Gamme d'avance n°								
	1	2	3	4	5	6	7	8	9
	f (mm/tr.)								
5,00	0,040	0,050	0,063	0,080	0,100	0,125	0,160	0,200	0,250
6,30	0,050	0,063	0,080	0,100	0,125	0,160	0,200	0,250	0,315
8,00	0,063	0,080	0,100	0,125	0,160	0,200	0,250	0,315	0,315
10,00	0,080	0,100	0,125	0,160	0,200	0,250	0,315	0,400	0,400
12,50	0,080	0,100	0,125	0,160	0,200	0,250	0,315	0,400	0,500
16,00	0,100	0,125	0,160	0,200	0,250	0,315	0,400	0,500	0,630
20,00	0,125	0,160	0,200	0,250	0,315	0,400	0,500	0,630	0,630
25,00	0,160	0,200	0,250	0,315	0,400	0,500	0,630	0,800	0,800
31,50	0,160	0,200	0,250	0,315	0,400	0,500	0,630	0,800	1,000
40,00	0,200	0,250	0,315	0,400	0,500	0,630	0,800	1,000	1,250
50,00	0,250	0,310	0,400	0,500	0,630	0,800	1,000	1,250	1,250
63,00	0,315	0,400	0,500	0,630	0,800	1,000	1,250	1,600	1,600
80,00	0,400	0,500	0,630	0,800	1,000	1,250	1,600	1,600	2,000

Produits de refroidissement:

- Air
- Huile
- Huile soluble

Matières	Exemples, nouvelle désignation ( Ancienne désignation entre parenthèses ) Caractères gras = N° de matières suivant DIN EN	Résistance MPa (N/mm²)	Dureté	Prod. de réf.
Aciers de construction	<b>1.0035</b> S185(St33), <b>1.0486</b> P275N(StE285), <b>1.0345</b> P235GH(H1), <b>1.0425</b> P265GH(H2) <b>1.0050</b> E295 (St50-2), <b>1.0070</b> E360 (St70-2), <b>1.8937</b> P500NH (WStE500)	≤500 ≤1000		○
Aciers de décolletage	<b>1.0718</b> 11SMnPb30 (9SMnPb28), <b>1.0736</b> 11SMn37 (9SMn36) <b>1.0727</b> 46S20 (45S20), <b>1.0728</b> (60S20), <b>1.0757</b> 46SPb20 (45SPb20)	≤850 ≤1000		○
Aciers d'amélioration non-alliés	<b>1.0402</b> C22, <b>1.1178</b> C30E (Ck30) <b>1.0503</b> C45, <b>1.1191</b> C45E (Ck45) <b>1.0601</b> C60, <b>1.1221</b> C60E (Ck60)	≤700 ≤850 ≤1000		○
Aciers d'amélioration alliés	<b>1.5131</b> 50MnSi4, <b>1.7003</b> 38Cr2, <b>1.7030</b> 28Cr4 <b>1.5710</b> 36NiCr6, <b>1.7035</b> 41Cr4, <b>1.7225</b> 42CrMo4	≤1000 ≤1400		○
Aciers de cémentation non-alliés	<b>1.0301</b> (C10), <b>1.1121</b> C10E (Ck10)	≤850		○
Aciers de cémentation alliés	<b>1.7276</b> 10CrMo11, <b>1.5125</b> 11MnSi6 <b>1.5752</b> 15NiCr13, <b>1.7131</b> 16MnCr5, <b>1.7264</b> 20CrMo5	≤1000 ≤1400		●
Aciers de nitruration	<b>1.8504</b> 34CrAl6 <b>1.8519</b> 31CrMoV9, <b>1.8550</b> 34CrAlNi7	≤1000 ≤1400		●
Aciers à outils	<b>1.1750</b> C75W, <b>1.2067</b> 102Cr6, <b>1.2307</b> 29CrMoV9 <b>1.2080</b> X210Cr12, <b>1.2083</b> X42Cr13, <b>1.2419</b> 105WCr6, <b>1.2767</b> X45NiCrMo4	≤850 ≤1400		○
Aciers rapides	<b>1.3243</b> S 6-5-2-5, <b>1.3343</b> S 6-5-2, <b>1.3344</b> S 6-5-3	≤1400		●
Aciers à ressort	<b>1.5026</b> 55Si7, <b>1.7176</b> 55Cr3, <b>1.8159</b> 51CrV4 (51CrV4)		≤350 HB	●
Aciers trempés	-		≤48 HRC ≤66 HRC	●
Aciers inoxydables, sulfurés	<b>1.4005</b> X12CrS13, <b>1.4104</b> X14CrMoS17, <b>1.4105</b> X6CrMoS17, <b>1.4305</b> X8CrNiS18-9	≤900		●
austénitiques	<b>1.4301</b> X5CrNi18-10 (V2A), <b>1.4541</b> X6CrNiTi18-10, <b>1.4571</b> X6CrNiMoTi 17-12-2 (V4A)	≤1100		●
martensitiques	<b>1.4057</b> X20CrNi172 (X17CrNi16-2), <b>1.4122</b> X39CrMo17-1, <b>1.4521</b> X2CrMoTi18-2	≤1500		●
Fontes	<b>0.6010</b> EN-GJL-100 (GG10), <b>0.6020</b> EN-GJL-200 (GG20) <b>0.6025</b> EN-GJL-250 (GG25), <b>0.6035</b> EN-GJL-350 (GG35)		≤240 HB ≤350 HB	○
Fontes à graphite sphéroïdal et fontes malléables	<b>0.7050</b> EN-GJS-500-7 (GGG50), <b>0.8035</b> EN-GJMW-350-4 (GTW35) <b>0.7070</b> EN-GJS-700-2 (GGG70), <b>0.8170</b> EN-GJMB-700-2 (GTS70)		≤240 HB ≤350 HB	○
Fontes dures	-		≤350 HB	○
Nouvelles fontes GGV	<b>EN-GJV250</b> (GGV25), <b>EN-GJV350</b> (GGV35) <b>EN-GJV400</b> (GGV40), <b>EN-GJV500</b> (GGV50), SiMo 6		≤220 HB ≤300 HB	○
Nouvelles fontes ADI	<b>EN-GJS-800-8</b> (ADI800), <b>EN-GJS-1000-5</b> (ADI1000) <b>EN-GJS-1200-2</b> (ADI1200), <b>EN-GJS-1400-1</b> (ADI1400)	≤1000 ≤1400		○
Alliages spéciaux	Nimonic, Inconel, Monel, Hastelloy	≤2000		●
Titane et alliages de Titane	<b>3.7024</b> Ti99,5, <b>3.7114</b> TiAl5Sn2,5, <b>3.7124</b> TiCu2 <b>3.7154</b> TiAl6Zr5, <b>3.7165</b> TiAl6V4, <b>3.7184</b> TiAl4Mo4Sn2,5, - TiAl8Mo1V1	≤850 ≤1400		●
Aluminium et ses alliages	<b>3.0255</b> Al99,5, <b>3.2315</b> AlMgSi1, <b>3.3515</b> AlMg1	≤400		○
Alliages malléables d'Al	<b>3.0615</b> AlMgSiPb, <b>3.1325</b> AlCuMg1, <b>3.3245</b> AlMg3Si, <b>3.4365</b> AlZnMgCu1,5	≤650		○
Alliages d'Al d'inject. ≤ 10 % Si	<b>3.2131</b> G-AlSi5Cu1, <b>3.2153</b> G-AlSi7Cu3, <b>3.2573</b> G-AlSi9	≤600		○
≤ 24 % Si	<b>3.2581</b> G-AlSi12, <b>3.2583</b> G-AlSi12Cu, - G-AlSi12CuNiMg	≤600		○
Alliages de Magnésium	<b>3.5200</b> MgMn2, <b>3.5812.05</b> G-MgAl8Zn1, <b>3.5612.05</b> G-MgAl6Zn1	≤400		○
Cuivres, faiblement alliés	<b>2.0070</b> SE-Cu, <b>2.1020</b> CuSn6, <b>2.1096</b> G-CuSn5ZnPb	≤500		○
Laiton à copeaux courts, à copeaux longs	<b>2.0380</b> CuZn39Pb2, <b>2.0401</b> CuZn39Pb3, <b>2.0410</b> CuZn43Pb2 <b>2.0250</b> CuZn20, <b>2.0280</b> CuZn33, <b>2.0332</b> CuZn37Pb0,5	≤600 ≤600		○
Bronze, à copeaux courts	<b>2.1090</b> CuSn7ZnPb, <b>2.1170</b> CuPb5Sn5, <b>2.1176</b> CuPb10Sn <b>2.0790</b> CuNi18Zn19Pb	≤600 ≤850		○
Bronze, à copeaux longs	<b>2.0916</b> CuAl5, <b>2.0960</b> CuAl9Mn, <b>2.1050</b> CuSn10 <b>2.0980</b> CuAl11Ni, <b>2.1247</b> CuBe2	≤850 ≤1000		○
Thermodurcissables	Résine époxy, Resopal, Pertinax, Moltopren	≤150		○
Thermoplastiques	Plexiglas, Hostalen, Novodur, Makralon	≤100		○
renf. de fibres d'aramides	Kevlar	≤1000		○
renf. de fibres de verre ou carbone	GFK/CFK	≤1000		○



HT 800 WP ≤1,5xD

≤3xD

<b>4112</b> WN CW mono. K/P 1,5xD F aciers 139	<b>4115</b> WN CW mono. K/P 1,5xD a aciers inox 145	<b>4113</b> WN CW mono. K/P 1,5xD F fonte 142	<b>4114</b> WN CW mono. K/P 1,5xD ○ Alu/ses all. 148	<b>4112</b> WN CW mono. K/P 3xD F aciers 139	<b>4115</b> WN CW mono. K/P 3xD a aciers inox 145	<b>4113</b> WN CW mono. K/P 3xD F fonte 142	<b>4114</b> WN CW mono. K/P 3xD ○ Alu/ses all. 148
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V <sub>c</sub> m/min	Gamme d'av. N°	V <sub>c</sub> m/min	Gamme d'av. N°	V <sub>c</sub> m/min	Gamme d'av. N°	V <sub>c</sub> m/min	Gamme d'av. N°	V <sub>c</sub> m/min	Gamme d'av. N°	V <sub>c</sub> m/min	Gamme d'av. N°	V <sub>c</sub> m/min	Gamme d'av. N°
130	6							130	6				
110	5							110	5				
130	7							130	7				
110	6							110	6				
130	6							130	6				
125	6							125	6				
110	5							110	5				
110	6							110	6				
90	5							90	5				
130	7							130	7				
110	6							110	6				
70	4							70	4				
105	5							105	5				
70	4							70	4				
60	5							60	5				
55	4							55	4				
55	3							55	3				
50	2							50	2				
		25	2							25	2		
		55	3							55	3		
		40	3							40	3		
		35	3							35	3		
				100	6							100	6
				90	6							90	6
				120	7							120	7
				100	6							100	6
		90	6							90	6		
				80	5							80	5
				80	5							80	5
				80	5							80	5
				80	5							80	5
		25	2							25	2		
		40	3							40	3		
		35	2							35	2		
						200	7					200	7
						180	7					180	7
						150	7					150	7
						120	7					120	7
						180	7					180	7
						70	6					70	6
						180	7					180	7
						120	6					120	6
						70	6					70	6
						50	6					50	6
						45	6					45	6
						35	5					35	5

Navigateur

**GÜHRING**NAVIGATOR

Toutes ces données sont des valeurs indicatives. Les valeurs réelles des avances et vitesses de coupe optimales dépendent de chacune des conditions d'usinage. Nous vous recommandons de réaliser quelques essais de perçage.

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N° d'article
Norme/DIN
Matière de coupe
Nuance carbure
Profondeur
Version
Application
Prix/dim. page

Ø outil mm	Gamme d'avance n°								
	1	2	3	4	5	6	7	8	9
	f (mm/tr.)								
5,00	0,040	0,050	0,063	0,080	0,100	0,125	0,160	0,200	0,250
6,30	0,050	0,063	0,080	0,100	0,125	0,160	0,200	0,250	0,315
8,00	0,063	0,080	0,100	0,125	0,160	0,200	0,250	0,315	0,315
10,00	0,080	0,100	0,125	0,160	0,200	0,250	0,315	0,400	0,400
12,50	0,080	0,100	0,125	0,160	0,200	0,250	0,315	0,400	0,500
16,00	0,100	0,125	0,160	0,200	0,250	0,315	0,400	0,500	0,630
20,00	0,125	0,160	0,200	0,250	0,315	0,400	0,500	0,630	0,630
25,00	0,160	0,200	0,250	0,315	0,400	0,500	0,630	0,800	0,800
31,50	0,160	0,200	0,250	0,315	0,400	0,500	0,630	0,800	1,000
40,00	0,200	0,250	0,315	0,400	0,500	0,630	0,800	1,000	1,250
50,00	0,250	0,310	0,400	0,500	0,630	0,800	1,000	1,250	1,250
63,00	0,315	0,400	0,500	0,630	0,800	1,000	1,250	1,600	1,600
80,00	0,400	0,500	0,630	0,800	1,000	1,250	1,600	1,600	2,000

Produits de refroidissement:

- Air
- Huile
- Huile soluble

Matières	Exemples, nouvelle désignation ( Ancienne désignation entre parenthèses ) Caractères gras = N° de matières suivant DIN EN	Résistance MPa (N/mm²)	Dureté	Prod. de réf.
Aciers de construction	<b>1.0035</b> S185(St33), <b>1.0486</b> P275N(StE285), <b>1.0345</b> P235GH(H1), <b>1.0425</b> P265GH(H2) <b>1.0050</b> E295 (St50-2), <b>1.0070</b> E360 (St70-2), <b>1.8937</b> P500NH (WStE500)	≤500 ≤1000		○ ○
Aciers de décolletage	<b>1.0718</b> 11SMnPb30 (9SMnPb28), <b>1.0736</b> 11SMn37 (9SMn36) <b>1.0727</b> 46S20 (45S20), <b>1.0728</b> (60S20), <b>1.0757</b> 46SPb20 (45SPb20)	≤850 ≤1000		○ ○
Aciers d'amélioration non-alliés	<b>1.0402</b> C22, <b>1.1178</b> C30E (Ck30) <b>1.0503</b> C45, <b>1.1191</b> C45E (Ck45) <b>1.0601</b> C60, <b>1.1221</b> C60E (Ck60)	≤700 ≤850 ≤1000		○ ○ ○
Aciers d'amélioration alliés	<b>1.5131</b> 50MnSi4, <b>1.7003</b> 38Cr2, <b>1.7030</b> 28Cr4 <b>1.5710</b> 36NiCr6, <b>1.7035</b> 41Cr4, <b>1.7225</b> 42CrMo4	≤1000 ≤1400		○ ○
Aciers de cémentation non-alliés	<b>1.0301</b> (C10), <b>1.1121</b> C10E (Ck10)	≤850		○
Aciers de cémentation alliés	<b>1.7276</b> 10CrMo11, <b>1.5125</b> 11MnSi6 <b>1.5752</b> 15NiCr13, <b>1.7131</b> 16MnCr5, <b>1.7264</b> 20CrMo5	≤1000 ≤1400		● ●
Aciers de nitruration	<b>1.8504</b> 34CrAl6 <b>1.8519</b> 31CrMoV9, <b>1.8550</b> 34CrAlNi7	≤1000 ≤1400		○ ●
Aciers à outils	<b>1.1750</b> C75W, <b>1.2067</b> 102Cr6, <b>1.2307</b> 29CrMoV9 <b>1.2080</b> X210Cr12, <b>1.2083</b> X42Cr13, <b>1.2419</b> 105WCr6, <b>1.2767</b> X45NiCrMo4	≤850 ≤1400		○ ○
Aciers rapides	<b>1.3243</b> S 6-5-2-5, <b>1.3343</b> S 6-5-2, <b>1.3344</b> S 6-5-3	≤1400		●
Aciers à ressort	<b>1.5026</b> 55Si7, <b>1.7176</b> 55Cr3, <b>1.8159</b> 51CrV4 (51CrV4)		≤350 HB	●
Aciers trempés	-		≤48 HRC ≤66 HRC	● ●
Aciers inoxydables, sulfurés	<b>1.4005</b> X12CrS13, <b>1.4104</b> X14CrMoS17, <b>1.4105</b> X6CrMoS17, <b>1.4305</b> X8CrNiS18-9	≤900		●
austénitiques	<b>1.4301</b> X5CrNi18-10 (V2A), <b>1.4541</b> X6CrNiTi18-10, <b>1.4571</b> X6CrNiMoTi 17-12-2 (V4A)	≤1100		●
martensitiques	<b>1.4057</b> X20CrNi172 (X17CrNi16-2), <b>1.4122</b> X39CrMo17-1, <b>1.4521</b> X2CrMoTi18-2	≤1500		●
Fontes	<b>0.6010</b> EN-GJL-100 (GG10), <b>0.6020</b> EN-GJL-200 (GG20) <b>0.6025</b> EN-GJL-250 (GG25), <b>0.6035</b> EN-GJL-350 (GG35)		≤240 HB ≤350 HB	○ ○
Fontes à graphite sphéroïdal et fontes malléables	<b>0.7050</b> EN-GJS-500-7 (GGG50), <b>0.8035</b> EN-GJMW-350-4 (GTW35) <b>0.7070</b> EN-GJS-700-2 (GGG70), <b>0.8170</b> EN-GJMB-700-2 (GTS70)		≤240 HB ≤350 HB	○ ○
Fontes dures	-		≤350 HB	○
Nouvelles fontes GGV	<b>EN-GJV250</b> (GGV25), <b>EN-GJV350</b> (GGV35) <b>EN-GJV400</b> (GGV40), <b>EN-GJV500</b> (GGV50), SiMo 6		≤220 HB ≤300 HB	○ ○
Nouvelles fontes ADI	<b>EN-GJS-800-8</b> (ADI800), <b>EN-GJS-1000-5</b> (ADI1000) <b>EN-GJS-1200-2</b> (ADI1200), <b>EN-GJS-1400-1</b> (ADI1400)	≤1000 ≤1400		○ ○
Alliages spéciaux	Nimonic, Inconel, Monel, Hastelloy	≤2000		●
Titane et alliages de Titane	<b>3.7024</b> Ti99,5, <b>3.7114</b> TiAl5Sn2,5, <b>3.7124</b> TiCu2 <b>3.7154</b> TiAl6Zr5, <b>3.7165</b> TiAl6V4, <b>3.7184</b> TiAl4Mo4Sn2,5, - TiAl8Mo1V1	≤850 ≤1400		● ○
Aluminium et ses alliages	<b>3.0255</b> Al99,5, <b>3.2315</b> AlMgSi1, <b>3.3515</b> AlMg1	≤400		○
Alliages malléables d'Al	<b>3.0615</b> AlMgSiPb, <b>3.1325</b> AlCuMg1, <b>3.3245</b> AlMg3Si, <b>3.4365</b> AlZnMgCu1,5	≤650		○
Alliages d'Al d'inject. ≤ 10 % Si	<b>3.2131</b> G-AlSi5Cu1, <b>3.2153</b> G-AlSi7Cu3, <b>3.2573</b> G-AlSi9	≤600		○
≤ 24 % Si	<b>3.2581</b> G-AlSi12, <b>3.2583</b> G-AlSi12Cu, - G-AlSi12CuNiMg	≤600		○
Alliages de Magnésium	<b>3.5200</b> MgMn2, <b>3.5812.05</b> G-MgAl8Zn1, <b>3.5612.05</b> G-MgAl6Zn1	≤400		○
Cuivres, faiblement alliés	<b>2.0070</b> SE-Cu, <b>2.1020</b> CuSn6, <b>2.1096</b> G-CuSn5ZnPb	≤500		○
Laiton à copeaux courts, à copeaux longs	<b>2.0380</b> CuZn39Pb2, <b>2.0401</b> CuZn39Pb3, <b>2.0410</b> CuZn43Pb2 <b>2.0250</b> CuZn20, <b>2.0280</b> CuZn33, <b>2.0332</b> CuZn37Pb0,5	≤600 ≤600		○ ○
Bronze, à copeaux courts	<b>2.1090</b> CuSn7ZnPb, <b>2.1170</b> CuPb5Sn5, <b>2.1176</b> CuPb10Sn <b>2.0790</b> CuNi18Zn19Pb	≤600 ≤850		○ ○
Bronze, à copeaux longs	<b>2.0916</b> CuAl5, <b>2.0960</b> CuAl9Mn, <b>2.1050</b> CuSn10 <b>2.0980</b> CuAl11Ni, <b>2.1247</b> CuBe2	≤850 ≤1000		○ ○
Thermodurcissables	Résine époxy, Resopal, Pertinax, Moltopren	≤150		○
Thermoplastiques	Plexiglas, Hostalen, Novodur, Makralon	≤100		○
renf. de fibres d'aramides	Kevlar	≤1000		○
renf. de fibres de verre ou carbone	GFK/CFK	≤1000		○





HT 800 WP ≤5xD

≤7xD

<b>4112</b>	<b>4115</b>	<b>4113</b>	<b>4114</b>	<b>4112</b>	<b>4115</b>	<b>4113</b>	<b>4114</b>
WN	WN	WN	WN	WN	WN	WN	WN
CW mono.	CW mono.	CW mono.	CW mono.	CW mono.	CW mono.	CW mono.	CW mono.
K/P	K/P	K/P	K/P	K/P	K/P	K/P	K/P
5xD	5xD	5xD	5xD	7xD	7xD	7xD	7xD
<b>F</b>	<b>a</b>	<b>F</b>	○	<b>F</b>	<b>a</b>	<b>F</b>	○
aciers	aciers inox	fonte	Alu/ses all.	aciers	aciers inox	fonte	Alu/ses all.
139	145	142	148	139	145	142	148



V <sub>c</sub> m/min	Gamme d'av. N°	V <sub>c</sub> m/min	Gamme d'av. N°	V <sub>c</sub> m/min	Gamme d'av. N°	V <sub>c</sub> m/min	Gamme d'av. N°	V <sub>c</sub> m/min	Gamme d'av. N°	V <sub>c</sub> m/min	Gamme d'av. N°	V <sub>c</sub> m/min	Gamme d'av. N°
125	6							120	5				
105	5							105	4				
125	7							120	6				
105	6							105	5				
125	6							120	5				
120	6							110	5				
105	5							100	4				
105	6							100	5				
85	5							85	4				
125	7							120	6				
105	6							100	5				
70	4							70	4				
105	5							105	4				
70	4							70	3				
55	5							55	4				
50	4							50	3				
55	3							55	2				
50	2							50	2				
		25	2							25	1		
		55	3							55	2		
		40	3							40	2		
		35	3							35	2		
				100	6							80	6
				90	6							70	6
				120	7							100	7
				100	6							80	6
		90	6							70	6		
				80	5							60	5
				80	5							60	5
				80	5							60	5
				80	5							60	5
		25	2							25	1		
		40	3							40	2		
		35	2							35	1		
						180	7					180	6
						180	7					180	6
						140	7					140	6
						110	7					110	6
						180	7					180	6
						70	6					70	5
						180	7					180	6
						120	6					120	5
						70	6					70	5
						50	6					50	5
						45	6					45	5
						35	5					35	4

Navigateur

**GÜHRING NAVIGATOR**

Toutes ces données sont des valeurs indicatives. Les valeurs réelles des avances et vitesses de coupe optimales dépendent de chacune des conditions d'usinage. Nous vous recommandons de réaliser quelques essais de perçage.

Pour le choix optimal de l'outil et de ses paramètres d'utilisation, sous [www.guehring.de](http://www.guehring.de) vous disposez du logiciel „Navigateur Gühring“.

N° d'article
Norme/DIN
Matière de coupe
Nuance carbure
Profondeur
Version
Application
Prix/dim. page

Ø outil mm	Gamme d'avance n°								
	1	2	3	4	5	6	7	8	9
	f (mm/tr.)								
5,00	0,040	0,050	0,063	0,080	0,100	0,125	0,160	0,200	0,250
6,30	0,050	0,063	0,080	0,100	0,125	0,160	0,200	0,250	0,315
8,00	0,063	0,080	0,100	0,125	0,160	0,200	0,250	0,315	0,315
10,00	0,080	0,100	0,125	0,160	0,200	0,250	0,315	0,400	0,400
12,50	0,080	0,100	0,125	0,160	0,200	0,250	0,315	0,400	0,500
16,00	0,100	0,125	0,160	0,200	0,250	0,315	0,400	0,500	0,630
20,00	0,125	0,160	0,200	0,250	0,315	0,400	0,500	0,630	0,630
25,00	0,160	0,200	0,250	0,315	0,400	0,500	0,630	0,800	0,800
31,50	0,160	0,200	0,250	0,315	0,400	0,500	0,630	0,800	1,000
40,00	0,200	0,250	0,315	0,400	0,500	0,630	0,800	1,000	1,250
50,00	0,250	0,310	0,400	0,500	0,630	0,800	1,000	1,250	1,250
63,00	0,315	0,400	0,500	0,630	0,800	1,000	1,250	1,600	1,600
80,00	0,400	0,500	0,630	0,800	1,000	1,250	1,600	1,600	2,000

Produits de refroidissement:

- Air
- Huile
- Huile soluble

Matières	Exemples, nouvelle désignation ( Ancienne désignation entre parenthèses ) Caractères gras = N° de matières suivant DIN EN	Résistance MPa (N/mm²)	Dureté	Prod. de réf.
Aciers de construction	<b>1.0035</b> S185(St33), <b>1.0486</b> P275N(StE285), <b>1.0345</b> P235GH(H1), <b>1.0425</b> P265GH(H2) <b>1.0050</b> E295 (St50-2), <b>1.0070</b> E360 (St70-2), <b>1.8937</b> P500NH (WStE500)	≤500 ≤1000		○ ○
Aciers de décolletage	<b>1.0718</b> 11SMnPb30 (9SMnPb28), <b>1.0736</b> 11SMn37 (9SMn36) <b>1.0727</b> 46S20 (45S20), <b>1.0728</b> (60S20), <b>1.0757</b> 46SPb20 (45SPb20)	≤850 ≤1000		○ ○
Aciers d'amélioration non-alliés	<b>1.0402</b> C22, <b>1.1178</b> C30E (Ck30) <b>1.0503</b> C45, <b>1.1191</b> C45E (Ck45) <b>1.0601</b> C60, <b>1.1221</b> C60E (Ck60)	≤700 ≤850 ≤1000		○ ○ ○
Aciers d'amélioration alliés	<b>1.5131</b> 50MnSi4, <b>1.7003</b> 38Cr2, <b>1.7030</b> 28Cr4 <b>1.5710</b> 36NiCr6, <b>1.7035</b> 41Cr4, <b>1.7225</b> 42CrMo4	≤1000 ≤1400		○ ○
Aciers de cémentation non-alliés	<b>1.0301</b> (C10), <b>1.1121</b> C10E (Ck10)	≤850		○
Aciers de cémentation alliés	<b>1.7276</b> 10CrMo11, <b>1.5125</b> 11MnSi6 <b>1.5752</b> 15NiCr13, <b>1.7131</b> 16MnCr5, <b>1.7264</b> 20CrMo5	≤1000 ≤1400		● ●
Aciers de nitruration	<b>1.8504</b> 34CrAl6 <b>1.8519</b> 31CrMoV9, <b>1.8550</b> 34CrAlNi7	≤1000 ≤1400		○ ●
Aciers à outils	<b>1.1750</b> C75W, <b>1.2067</b> 102Cr6, <b>1.2307</b> 29CrMoV9 <b>1.2080</b> X210Cr12, <b>1.2083</b> X42Cr13, <b>1.2419</b> 105WCr6, <b>1.2767</b> X45NiCrMo4	≤850 ≤1400		○ ○
Aciers rapides	<b>1.3243</b> S 6-5-2-5, <b>1.3343</b> S 6-5-2, <b>1.3344</b> S 6-5-3	≤1400		●
Aciers à ressort	<b>1.5026</b> 55Si7, <b>1.7176</b> 55Cr3, <b>1.8159</b> 51CrV4 (51CrV4)		≤350 HB	●
Aciers trempés	-		≤48 HRC ≤66 HRC	● ●
Aciers inoxydables, sulfurés	<b>1.4005</b> X12CrS13, <b>1.4104</b> X14CrMoS17, <b>1.4105</b> X6CrMoS17, <b>1.4305</b> X8CrNiS18-9	≤900		●
austénitiques	<b>1.4301</b> X5CrNi18-10 (V2A), <b>1.4541</b> X6CrNiTi18-10, <b>1.4571</b> X6CrNiMoTi 17-12-2 (V4A)	≤1100		●
martensitiques	<b>1.4057</b> X20CrNi172 (X17CrNi16-2), <b>1.4122</b> X39CrMo17-1, <b>1.4521</b> X2CrMoTi18-2	≤1500		●
Fontes	<b>0.6010</b> EN-GJL-100 (GG10), <b>0.6020</b> EN-GJL-200 (GG20) <b>0.6025</b> EN-GJL-250 (GG25), <b>0.6035</b> EN-GJL-350 (GG35)		≤240 HB ≤350 HB	○ ○
Fontes à graphite sphéroïdal et fontes malléables	<b>0.7050</b> EN-GJS-500-7 (GGG50), <b>0.8035</b> EN-GJMW-350-4 (GTW35) <b>0.7070</b> EN-GJS-700-2 (GGG70), <b>0.8170</b> EN-GJMB-700-2 (GTS70)		≤240 HB ≤350 HB	○ ○
Fontes dures	-		≤350 HB	○
Nouvelles fontes GGV	<b>EN-GJV250</b> (GGV25), <b>EN-GJV350</b> (GGV35) <b>EN-GJV400</b> (GGV40), <b>EN-GJV500</b> (GGV50), SiMo 6		≤220 HB ≤300 HB	○ ○
Nouvelles fontes ADI	<b>EN-GJS-800-8</b> (ADI800), <b>EN-GJS-1000-5</b> (ADI1000) <b>EN-GJS-1200-2</b> (ADI1200), <b>EN-GJS-1400-1</b> (ADI1400)	≤1000 ≤1400		○ ○
Alliages spéciaux	Nimonic, Inconel, Monel, Hastelloy	≤2000		●
Titane et alliages de Titane	<b>3.7024</b> Ti99,5, <b>3.7114</b> TiAl5Sn2,5, <b>3.7124</b> TiCu2 <b>3.7154</b> TiAl6Zr5, <b>3.7165</b> TiAl6V4, <b>3.7184</b> TiAl4Mo4Sn2,5, - TiAl8Mo1V1	≤850 ≤1400		● ○
Aluminium et ses alliages	<b>3.0255</b> Al99,5, <b>3.2315</b> AlMgSi1, <b>3.3515</b> AlMg1	≤400		○
Alliages malléables d'Al	<b>3.0615</b> AlMgSiPb, <b>3.1325</b> AlCuMg1, <b>3.3245</b> AlMg3Si, <b>3.4365</b> AlZnMgCu1,5	≤650		○
Alliages d'Al d'inject. ≤ 10 % Si	<b>3.2131</b> G-AlSi5Cu1, <b>3.2153</b> G-AlSi7Cu3, <b>3.2573</b> G-AlSi9	≤600		○
≤ 24 % Si	<b>3.2581</b> G-AlSi12, <b>3.2583</b> G-AlSi12Cu, - G-AlSi12CuNiMg	≤600		○
Alliages de Magnésium	<b>3.5200</b> MgMn2, <b>3.5812.05</b> G-MgAl8Zn1, <b>3.5612.05</b> G-MgAl6Zn1	≤400		○
Cuivres, faiblement alliés	<b>2.0070</b> SE-Cu, <b>2.1020</b> CuSn6, <b>2.1096</b> G-CuSn5ZnPb	≤500		○
Laiton à copeaux courts, à copeaux longs	<b>2.0380</b> CuZn39Pb2, <b>2.0401</b> CuZn39Pb3, <b>2.0410</b> CuZn43Pb2 <b>2.0250</b> CuZn20, <b>2.0280</b> CuZn33, <b>2.0332</b> CuZn37Pb0,5	≤600 ≤600		○ ○
Bronze, à copeaux courts	<b>2.1090</b> CuSn7ZnPb, <b>2.1170</b> CuPb5Sn5, <b>2.1176</b> CuPb10Sn <b>2.0790</b> CuNi18Zn19Pb	≤600 ≤850		○ ○
Bronze, à copeaux longs	<b>2.0916</b> CuAl5, <b>2.0960</b> CuAl9Mn, <b>2.1050</b> CuSn10 <b>2.0980</b> CuAl11Ni, <b>2.1247</b> CuBe2	≤850 ≤1000		○ ○
Thermodurcissables	Résine époxy, Resopal, Pertinax, Moltopren	≤150		○
Thermoplastiques	Plexiglas, Hostalen, Novodur, Makralon	≤100		○
renf. de fibres d'aramides	Kevlar	≤1000		○
renf. de fibres de verre ou carbone	GFK/CFK	≤1000		○



HT 800 WP ≤10xD

4112
WN
CW mono.
K/P
10xD
F
aciers
139

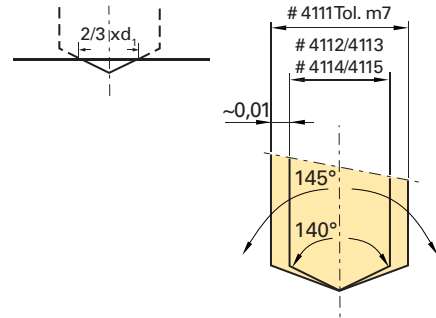
4115
WN
CW mono.
K/P
10xD
a
aciers inox
145

4113
WN
CW mono.
K/P
10xD
F
fonte
142

4114
WN
CW mono.
K/P
10xD
○
Alu/ses all.
148

4111
WN
CW mono.
K/P
1xD
a
pil./lam.ch.
151

≤1xD perc. pilotes, lamages et chanfrein.



- Lors de la réalisation de perçages débouchants, il faut veiller à ce que les listels de guidage de la plaquette de coupe restent toujours en contact dans le perçage réalisé. En outre, avant que la plaquette de coupe ne traverse les derniers millimètres à percer, nous recommandons de réduire l'avance.
- En principe, lorsqu'il faut réaliser des centrages ou des perçages pilotes avec des profondeurs de perçages au-dessus de 5 x D, nous recommandons l'utilisation du porte-outils n° d'article 4105 et de la plaquette de coupe n° d'article 4111 pour les perçages pilotes. En fonction des matériaux à usiner, il est aussi possible d'utiliser les Forets Ratio RT 100 U ou RT 100 VA.
- Lors du perçage direct, sans centrage, nous recommandons de réduire l'avance pendant l'opération de centrage.
- Lorsqu'il s'agit d'usinages à coupe interrompue (rainures, perçages transversaux), avant d'utiliser ces outils, il faut réaliser quelques essais de perçage et, lors de la coupe interrompue de (max. : 0,2 x D), il est aussi recommandé de réduire l'avance.
- Contrairement aux outils classiques à plaquettes réversibles, les outils HT 800 peuvent percer les tôles empilées.
- Lors de l'utilisation sur les tours où l'outil de perçage est fixe, il faut s'assurer du bon centrage et de l'alignement parfait de l'outil.
- Afin d'obtenir un résultat d'usinage optimal, il faut s'assurer d'une parfaite alimentation des liquides de lubrification et de refroidissement, huiles de coupe, entières ou solubles.
- Ce système d'outils n'est que partiellement approprié à l'usinage MQL, voire, à sec. Lors de l'usinage MQL, il est recommandé d'utiliser les attachements avec géométrie conique MQL à leur extrémité et les accessoires MQL Gühring adéquats. Les techniciens de notre service en clientèle vous renseignent volontiers.



Vc m/min	Gamme d'av. N°	Vc m/min	Gamme d'av. N°	Vc m/min	Gamme d'av. N°	Vc m/min	Gamme d'av. N°	Vc m/min	Gamme d'av. N°
100	5							130	6
95	4							110	5
100	6							130	7
95	5							110	6
100	5							130	6
95	5							125	6
90	4							110	5
90	5							110	6
85	4							90	5
100	6							130	7
90	5							110	6
70	4							70	4
95	4							105	5
70	3							70	4
55	4							60	5
50	3							55	4
55	2							55	3
50	2							50	2
		25	1					25	2
		55	2					55	3
		40	2					40	3
		35	2					35	3
				80	6			100	6
				70	6			90	6
				100	7			120	7
				80	6			100	6
		70	6					90	6
				60	5			80	5
				60	5			80	5
				60	5			80	5
				60	5			80	5
		25	1					25	2
		40	2					40	3
		35	1					35	2
						150	6	200	7
						150	6	180	7
						130	6	150	7
						105	6	120	7
						150	6	180	7
						70	5	70	6
						150	6	180	7
						110	5	120	6
						70	5	70	6
						50	5	50	6
						45	5	45	6
						35	4	35	5

**GÜHRING NAVIGATOR**

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N° d'article
Norme/DIN
Matière de coupe
Nuance carbure
Profondeur
Version
Application
Prix/dim. page

Ø outil mm	Gamme d'avance n°								
	1	2	3	4	5	6	7	8	9
	f (mm/tr.)								
5,00	0,040	0,050	0,063	0,080	0,100	0,125	0,160	0,200	0,250
6,30	0,050	0,063	0,080	0,100	0,125	0,160	0,200	0,250	0,315
8,00	0,063	0,080	0,100	0,125	0,160	0,200	0,250	0,315	0,315
10,00	0,080	0,100	0,125	0,160	0,200	0,250	0,315	0,400	0,400
12,50	0,080	0,100	0,125	0,160	0,200	0,250	0,315	0,400	0,500
16,00	0,100	0,125	0,160	0,200	0,250	0,315	0,400	0,500	0,630
20,00	0,125	0,160	0,200	0,250	0,315	0,400	0,500	0,630	0,630
25,00	0,160	0,200	0,250	0,315	0,400	0,500	0,630	0,800	0,800
31,50	0,160	0,200	0,250	0,315	0,400	0,500	0,630	0,800	1,000
40,00	0,200	0,250	0,315	0,400	0,500	0,630	0,800	1,000	1,250
50,00	0,250	0,310	0,400	0,500	0,630	0,800	1,000	1,250	1,250
63,00	0,315	0,400	0,500	0,630	0,800	1,000	1,250	1,600	1,600
80,00	0,400	0,500	0,630	0,800	1,000	1,250	1,600	1,600	2,000

Produits de refroidissement:

- Air
- Huile
- Huile soluble

Matières	Exemples, nouvelle désignation ( Ancienne désignation entre parenthèses ) Caractères gras = N° de matières suivant DIN EN	Résistance MPa (N/mm²)	Dureté	Prod. de réf.
Aciers de construction	<b>1.0035</b> S185(St33), <b>1.0486</b> P275N(StE285), <b>1.0345</b> P235GH(H1), <b>1.0425</b> P265GH(H2) <b>1.0050</b> E295 (St50-2), <b>1.0070</b> E360 (St70-2), <b>1.8937</b> P500NH (WStE500)	≤500 ≤1000		○
Aciers de décolletage	<b>1.0718</b> 11SMnPb30 (9SMnPb28), <b>1.0736</b> 11SMn37 (9SMn36) <b>1.0727</b> 46S20 (45S20), <b>1.0728</b> (60S20), <b>1.0757</b> 46SPb20 (45SPb20)	≤850 ≤1000		○
Aciers d'amélioration non-alliés	<b>1.0402</b> C22, <b>1.1178</b> C30E (Ck30) <b>1.0503</b> C45, <b>1.1191</b> C45E (Ck45) <b>1.0601</b> C60, <b>1.1221</b> C60E (Ck60)	≤700 ≤850 ≤1000		○
Aciers d'amélioration alliés	<b>1.5131</b> 50MnSi4, <b>1.7003</b> 38Cr2, <b>1.7030</b> 28Cr4 <b>1.5710</b> 36NiCr6, <b>1.7035</b> 41Cr4, <b>1.7225</b> 42CrMo4	≤1000 ≤1400		○
Aciers de cémentation non-alliés	<b>1.0301</b> (C10), <b>1.1121</b> C10E (Ck10)	≤850		○
Aciers de cémentation alliés	<b>1.7276</b> 10CrMo11, <b>1.5125</b> 11MnSi6 <b>1.5752</b> 15NiCr13, <b>1.7131</b> 16MnCr5, <b>1.7264</b> 20CrMo5	≤1000 ≤1400		●
Aciers de nitruration	<b>1.8504</b> 34CrAl6 <b>1.8519</b> 31CrMoV9, <b>1.8550</b> 34CrAlNi7	≤1000 ≤1400		●
Aciers à outils	<b>1.1750</b> C75W, <b>1.2067</b> 102Cr6, <b>1.2307</b> 29CrMoV9 <b>1.2080</b> X210Cr12, <b>1.2083</b> X42Cr13, <b>1.2419</b> 105WCr6, <b>1.2767</b> X45NiCrMo4	≤850 ≤1400		○
Aciers rapides	<b>1.3243</b> S 6-5-2-5, <b>1.3343</b> S 6-5-2, <b>1.3344</b> S 6-5-3	≤1400		●
Aciers à ressort	<b>1.5026</b> 55Si7, <b>1.7176</b> 55Cr3, <b>1.8159</b> 51CrV4 (51CrV4)		≤350 HB	●
Aciers trempés	-		≤48 HRC ≤66 HRC	●
Aciers inoxydables, sulfurés	<b>1.4005</b> X12CrS13, <b>1.4104</b> X14CrMoS17, <b>1.4105</b> X6CrMoS17, <b>1.4305</b> X8CrNiS18-9	≤900		●
austénitiques	<b>1.4301</b> X5CrNi18-10 (V2A), <b>1.4541</b> X6CrNiTi18-10, <b>1.4571</b> X6CrNiMoTi 17-12-2 (V4A)	≤1100		●
martensitiques	<b>1.4057</b> X20CrNi172 (X17CrNi16-2), <b>1.4122</b> X39CrMo17-1, <b>1.4521</b> X2CrMoTi18-2	≤1500		●
Fontes	<b>0.6010</b> EN-GJL-100 (GG10), <b>0.6020</b> EN-GJL-200 (GG20) <b>0.6025</b> EN-GJL-250 (GG25), <b>0.6035</b> EN-GJL-350 (GG35)		≤240 HB ≤350 HB	○
Fontes à graphite sphéroïdal et fontes malléables	<b>0.7050</b> EN-GJS-500-7 (GGG50), <b>0.8035</b> EN-GJMW-350-4 (GTW35) <b>0.7070</b> EN-GJS-700-2 (GGG70), <b>0.8170</b> EN-GJMB-700-2 (GTS70)		≤240 HB ≤350 HB	○
Fontes dures	-		≤350 HB	○
Nouvelles fontes GGV	<b>EN-GJV250</b> (GGV25), <b>EN-GJV350</b> (GGV35) <b>EN-GJV400</b> (GGV40), <b>EN-GJV500</b> (GGV50), SiMo 6		≤220 HB ≤300 HB	○
Nouvelles fontes ADI	<b>EN-GJS-800-8</b> (ADI800), <b>EN-GJS-1000-5</b> (ADI1000) <b>EN-GJS-1200-2</b> (ADI1200), <b>EN-GJS-1400-1</b> (ADI1400)	≤1000 ≤1400		○
Alliages spéciaux	Nimonic, Inconel, Monel, Hastelloy	≤2000		●
Titane et alliages de Titane	<b>3.7024</b> Ti99,5, <b>3.7114</b> TiAl5Sn2,5, <b>3.7124</b> TiCu2 <b>3.7154</b> TiAl6Zr5, <b>3.7165</b> TiAl6V4, <b>3.7184</b> TiAl4Mo4Sn2,5, - TiAl8Mo1V1	≤850 ≤1400		●
Aluminium et ses alliages	<b>3.0255</b> Al99,5, <b>3.2315</b> AlMgSi1, <b>3.3515</b> AlMg1	≤400		○
Alliages malléables d'Al	<b>3.0615</b> AlMgSiPb, <b>3.1325</b> AlCuMg1, <b>3.3245</b> AlMg3Si, <b>3.4365</b> AlZnMgCu1,5	≤650		○
Alliages d'Al d'inject. ≤ 10 % Si	<b>3.2131</b> G-AlSi5Cu1, <b>3.2153</b> G-AlSi7Cu3, <b>3.2573</b> G-AlSi9	≤600		○
≤ 24 % Si	<b>3.2581</b> G-AlSi12, <b>3.2583</b> G-AlSi12Cu, - G-AlSi12CuNiMg	≤600		○
Alliages de Magnésium	<b>3.5200</b> MgMn2, <b>3.5812.05</b> G-MgAl8Zn1, <b>3.5612.05</b> G-MgAl6Zn1	≤400		○
Cuivres, faiblement alliés	<b>2.0070</b> SE-Cu, <b>2.1020</b> CuSn6, <b>2.1096</b> G-CuSn5ZnPb	≤500		○
Laiton à copeaux courts, à copeaux longs	<b>2.0380</b> CuZn39Pb2, <b>2.0401</b> CuZn39Pb3, <b>2.0410</b> CuZn43Pb2 <b>2.0250</b> CuZn20, <b>2.0280</b> CuZn33, <b>2.0332</b> CuZn37Pb0,5	≤600 ≤600		○
Bronze, à copeaux courts	<b>2.1090</b> CuSn7ZnPb, <b>2.1170</b> CuPb5Sn5, <b>2.1176</b> CuPb10Sn <b>2.0790</b> CuNi18Zn19Pb	≤600 ≤850		○
Bronze, à copeaux longs	<b>2.0916</b> CuAl5, <b>2.0960</b> CuAl9Mn, <b>2.1050</b> CuSn10 <b>2.0980</b> CuAl11Ni, <b>2.1247</b> CuBe2	≤850 ≤1000		○
Therm durcissables	Résine époxy, Resopal, Pertinax, Moltopren	≤150		○
Thermoplastiques	Plexiglas, Hostalen, Novodur, Makralon	≤100		○
renf. de fibres d'aramides	Kevlar	≤1000		○
renf. de fibres de verre ou carbone	GFK/CFK	≤1000		○





# GÜHRING NAVIGATOR

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**Pour le choix optimal de l'outil et de ses paramètres d'utilisation,**  
 sous [www.guehring.de](http://www.guehring.de) vous disposez du logiciel „Navigateur Gühring“.

N° d'article

N° d'article

Norme/DIN

Matière de coupe

Version

Type

Prix/dim. page

Ø outil mm	Gamme d'avance n°								
	1	2	3	4	5	6	7	8	9
	f (mm/tr.)								
0,50	0,004	0,006	0,007	0,008	0,010	0,012	0,014	0,016	0,019
1,00	0,006	0,008	0,012	0,014	0,016	0,018	0,020	0,023	0,025
2,00	0,020	0,025	0,032	0,040	0,050	0,063	0,080	0,100	0,125
2,50	0,025	0,032	0,040	0,050	0,063	0,080	0,100	0,125	0,160
3,15	0,032	0,040	0,050	0,063	0,080	0,100	0,125	0,160	0,160
4,00	0,040	0,050	0,063	0,080	0,100	0,125	0,160	0,200	0,200
5,00	0,040	0,050	0,063	0,080	0,100	0,125	0,160	0,200	0,250
6,30	0,050	0,063	0,080	0,100	0,125	0,160	0,200	0,250	0,315
8,00	0,063	0,080	0,100	0,125	0,160	0,200	0,250	0,315	0,315
10,00	0,080	0,100	0,125	0,160	0,200	0,250	0,315	0,400	0,400
12,50	0,080	0,100	0,125	0,160	0,200	0,250	0,315	0,400	0,500
16,00	0,100	0,125	0,160	0,200	0,250	0,315	0,400	0,500	0,630
20,00	0,125	0,160	0,200	0,250	0,315	0,400	0,500	0,630	0,630
25,00	0,160	0,200	0,250	0,315	0,400	0,500	0,630	0,800	0,800
31,50	0,160	0,200	0,250	0,315	0,400	0,500	0,630	0,800	1,000
40,00	0,200	0,250	0,315	0,400	0,500	0,630	0,800	1,000	1,250
50,00	0,250	0,310	0,400	0,500	0,630	0,800	1,000	1,250	1,250
63,00	0,315	0,400	0,500	0,630	0,800	1,000	1,250	1,600	1,600
80,00	0,400	0,500	0,630	0,800	1,000	1,250	1,600	1,600	2,000

Produits de refroidissement:

- Air
- Huile
- Huile soluble

Sens de coupe:

- coupe à droite
- coupe à gauche

Matières	Exemples, nouvelle désignation ( Ancienne désignation entre parenthèses ) Caractères gras = N° de matières suivant DIN EN	Résistance MPa (N/mm²)	Dureté	Prod. de réf.
Aciers de construction	<b>1.0035</b> S185(St33), <b>1.0486</b> P275N(StE285), <b>1.0345</b> P235GH(H1), <b>1.0425</b> P265GH(H2)	≤500		
	<b>1.0050</b> E295 (St50-2), <b>1.0070</b> E360 (St70-2), <b>1.8937</b> P500NH (WStE500)	≤1000		
Aciers de décolletage	<b>1.0718</b> 11SMnPb30 (9SMnPb28), <b>1.0736</b> 11SMn37 (9SMn36)	≤850		
	<b>1.0727</b> 46S20 (45S20), <b>1.0728</b> (60S20), <b>1.0757</b> 46SPb20 (45SPb20)	≤1000		
Aciers d'amélioration non-alliés	<b>1.0402</b> C22, <b>1.1178</b> C30E (Ck30)	≤700		
	<b>1.0503</b> C45, <b>1.1191</b> C45E (Ck45)	≤850		
	<b>1.0601</b> C60, <b>1.1221</b> C60E (Ck60)	≤1000		
Aciers d'amélioration alliés	<b>1.5131</b> 50MnSi4, <b>1.7003</b> 38Cr2, <b>1.7030</b> 28Cr4	≤1000		
	<b>1.5710</b> 36NiCr6, <b>1.7035</b> 41Cr4, <b>1.7225</b> 42CrMo4	≤1400		
Aciers de cémentation non-alliés	<b>1.0301</b> (C10), <b>1.1121</b> C10E (Ck10)	≤850		
Aciers de cémentation alliés	<b>1.7276</b> 10CrMo11, <b>1.5125</b> 11MnSi6	≤1000		
	<b>1.5752</b> 15NiCr13, <b>1.7131</b> 16MnCr5, <b>1.7264</b> 20CrMo5	≤1400		
Aciers de nitruration	<b>1.8504</b> 34CrAl6	≤1000		
	<b>1.8519</b> 31CrMoV9, <b>1.8550</b> 34CrAlNi7	≤1400		
Aciers à outils	<b>1.1750</b> C75W, <b>1.2067</b> 102Cr6, <b>1.2307</b> 29CrMoV9	≤850		
	<b>1.2080</b> X210Cr12, <b>1.2083</b> X42Cr13, <b>1.2419</b> 105WCr6, <b>1.2767</b> X45NiCrMo4	≤1400		
Aciers rapides	<b>1.3243</b> S 6-5-2-5, <b>1.3343</b> S 6-5-2, <b>1.3344</b> S 6-5-3	≤1400		
Aciers à ressort	<b>1.5026</b> 55Si7, <b>1.7176</b> 55Cr3, <b>1.8159</b> 51CrV4 (51CrV4)		≤350 HB	
Aciers trempés	-		≤48 HRC	
			≤66 HRC	
Aciers inoxydables, sulfurés	<b>1.4005</b> X12CrS13, <b>1.4104</b> X14CrMoS17, <b>1.4105</b> X6CrMoS17, <b>1.4305</b> X8CrNiS18-9	≤900		
austénitiques	<b>1.4301</b> X5CrNi18-10 (V2A), <b>1.4541</b> X6CrNiTi18-10, <b>1.4571</b> X6CrNiMoTi 17-12-2 (V4A)	≤1100		
martensitiques	<b>1.4057</b> X20CrNi172 (X17CrNi16-2), <b>1.4122</b> X39CrMo17-1, <b>1.4521</b> X2CrMoTi18-2	≤1500		
Fontes	<b>0.6010</b> EN-GJL-100 (GG10), <b>0.6020</b> EN-GJL-200 (GG20)		≤240 HB	
	<b>0.6025</b> EN-GJL-250 (GG25), <b>0.6035</b> EN-GJL-350 (GG35)		≤350 HB	
Fontes à graphite sphéroïdal et fontes malléables	<b>0.7050</b> EN-GJS-500-7 (GGG50), <b>0.8035</b> EN-GJMW-350-4 (GTW35)		≤240 HB	
	<b>0.7070</b> EN-GJS-700-2 (GGG70), <b>0.8170</b> EN-GJMB-700-2 (GTS70)		≤350 HB	
Fontes dures	-		≤350 HB	
Nouvelles fontes GGV	<b>EN-GJV250</b> (GGV25), <b>EN-GJV350</b> (GGV35)		≤220 HB	
	<b>EN-GJV400</b> (GGV40), <b>EN-GJV500</b> (GGV50), SiMo 6		≤300 HB	
Nouvelles fontes ADI	<b>EN-GJS-800-8</b> (ADI800), <b>EN-GJS-1000-5</b> (ADI1000)	≤1000		
	<b>EN-GJS-1200-2</b> (ADI1200), <b>EN-GJS-1400-1</b> (ADI1400)	≤1400		
Alliages spéciaux	Nimonic, Inconel, Monel, Hastelloy	≤2000		
Titane et alliages de Titane	<b>3.7024</b> Ti99,5, <b>3.7114</b> TiAl5Sn2,5, <b>3.7124</b> TiCu2	≤850		
	<b>3.7154</b> TiAl6Zr5, <b>3.7165</b> TiAl6V4, <b>3.7184</b> TiAl4Mo4Sn2,5, - TiAl8Mo1V1	≤1400		
Aluminium et ses alliages	<b>3.0255</b> Al99,5, <b>3.2315</b> AlMgSi1, <b>3.3515</b> AlMg1	≤400		
Alliages malléables d'Al	<b>3.0615</b> AlMgSiPb, <b>3.1325</b> AlCuMg1, <b>3.3245</b> AlMg3Si, <b>3.4365</b> AlZnMgCu1,5	≤650		
Alliages d'Al d'inject. ≤ 10 % Si	<b>3.2131</b> G-AlSi5Cu1, <b>3.2153</b> G-AlSi7Cu3, <b>3.2573</b> G-AlSi9	≤600		
≤ 24 % Si	<b>3.2581</b> G-AlSi12, <b>3.2583</b> G-AlSi12Cu, - G-AlSi12CuNiMg	≤600		
Alliages de Magnésium	<b>3.5200</b> MgMn2, <b>3.5812.05</b> G-MgAl8Zn1, <b>3.5612.05</b> G-MgAl6Zn1	≤400		
Cuivres, faiblement alliés	<b>2.0070</b> SE-Cu, <b>2.1020</b> CuSn6, <b>2.1096</b> G-CuSn5ZnPb	≤500		
Laiton à copeaux courts,	<b>2.0380</b> CuZn39Pb2, <b>2.0401</b> CuZn39Pb3, <b>2.0410</b> CuZn43Pb2	≤600		
à copeaux longs	<b>2.0250</b> CuZn20, <b>2.0280</b> CuZn33, <b>2.0332</b> CuZn37Pb0,5	≤600		
Bronze, à copeaux courts	<b>2.1090</b> CuSn7ZnPb, <b>2.1170</b> CuPb5Sn5, <b>2.1176</b> CuPb10Sn	≤600		
	<b>2.0790</b> CuNi18Zn19Pb	≤850		
Bronze, à copeaux longs	<b>2.0916</b> CuAl5, <b>2.0960</b> CuAl9Mn, <b>2.1050</b> CuSn10	≤850		
	<b>2.0980</b> CuAl11Ni, <b>2.1247</b> CuBe2	≤1000		
Therm durcissables	Résine époxy, Resopal, Pertinax, Moltopren	≤150		
Thermoplastiques	Plexiglas, Hostalen, Novodur, Makralon	≤100		
renf. de fibres d'aramides	Kevlar	≤1000		
renf. de fibres de verre ou carbone	GFK/CFK	≤1000		



≤3xD Profondeur

223	224	225	552
226	227	228	553
1897	1897	1897	1897
<b>HSS</b>	<b>HSS</b>	<b>HSS</b>	<b>HSS</b>
<b>N</b>	<b>H</b>	<b>W</b>	<b>GT 80</b>
192/200	204/206	208/210	212/215

653
672
1897
<b>HSS</b>
<b>N</b>
196/203

2460
1897
<b>HSS</b>
<b>N</b>
199

329	363	1261	129	1259
330			136	
1897	WN	1897	WN	1897
<b>HSCO</b>	<b>HSCO</b>	<b>HSCO</b>	<b>HSCO</b>	<b>M42</b>
<b>GV 120</b>	<b>GV 120</b>	<b>VA</b>	<b>N</b>	<b>N</b>
218/225	448	230	414/415	235

128
WN
<b>HSCO</b>
<b>N</b>
413



Vc m/min	Gamme d'avance N°				Vc m/min	Gamme d'av. N°	Vc m/min	Gamme d'av. N°	Vc m/min	Gamme d'avance N°				Vc m/min	Gamme d'av. N°
27	6			6	30	6	32	7	35	5	5	5	5		
22	5			5	24	5	26	6	30	5	5	5	5		
30	6			6	33	6	36	7	40	5	5	5	5		
30	5			5	33	5	36	6	40	5	5	5	5	5	
25	5			5	28	5	31	6	40	5	5	5	5		
25	5			5	28	5	31	6	40	5	5	5	5		
					25	4	28	5	35	4	4		4	4	
					22	4	24	5	20	4	4		4	4	
									16	3	3		3	3	
30	6			6	33	6	36	7	36	6	6	6	6		
					20	4	22	5	20	4	4		4	3	
									15	3	3		3	3	
					14	4	16	5	16	4	4		4	4	
									12	3	3		3	3	
16	4			4	18	4	20	5	12	3	3		3	3	
									15	4	4		4	3	
									12	3	3		3	3	
									15	3	3		3	3	
									15	3	3		3	3	
									8	2	2		2	2	
									4	1	1		1		
									18	1	1	4	4	3	
									14	3	3	3	3	3	
									16	3	3	3	3	3	
30	6			6	33	6	36	7	35	6	6		5		
30	6			6	33	6	36	7	30	6	6		5		
25	6			6	28	6	31	7	30	6	6		5		
20	6			6	22	6	24	7	25	6	6		5		
									10	3	3		3		
70			7	7				85	8	90		7	7		
70			7	7				85	8	90		7	7		
50	7		7	7				60	8	80		7	7		
50	6		6	6				60	7	70		6	6		
70	6	6		6	80	6		90	6	70		6	6		
60	5		5	5	65	5		70	6	40		5	5		
70		6		6	75	5		80	6	60		5	5		
40	5		5	5	45	5		50	6	40		5	5		
30	4	4		4	33	4		36	5	35	4	4	4	4	
25	4			4	27	4		30	5	30	4	4	4	4	
15	4			4	16	4		18	5	20	4	4	4	4	
					15	4		18	5	15	4	4	4	4	
18	4	4		4	22	4		29	5	20	4	4	4	4	
28	5	5	5	5	36	5		47	6	30		4	4		

Navigateur



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N° d'article  
 Norme/DIN  
 Matière de coupe  
 Version  
 Type  
 Prix/dim. page

Ø outil mm	Gamme d'avance n°								
	1	2	3	4	5	6	7	8	9
	f (mm/tr.)								
0,50	0,004	0,006	0,007	0,008	0,010	0,012	0,014	0,016	0,019
1,00	0,006	0,008	0,012	0,014	0,016	0,018	0,020	0,023	0,025
2,00	0,020	0,025	0,032	0,040	0,050	0,063	0,080	0,100	0,125
2,50	0,025	0,032	0,040	0,050	0,063	0,080	0,100	0,125	0,160
3,15	0,032	0,040	0,050	0,063	0,080	0,100	0,125	0,160	0,160
4,00	0,040	0,050	0,063	0,080	0,100	0,125	0,160	0,200	0,200
5,00	0,040	0,050	0,063	0,080	0,100	0,125	0,160	0,200	0,250
6,30	0,050	0,063	0,080	0,100	0,125	0,160	0,200	0,250	0,315
8,00	0,063	0,080	0,100	0,125	0,160	0,200	0,250	0,315	0,315
10,00	0,080	0,100	0,125	0,160	0,200	0,250	0,315	0,400	0,400
12,50	0,080	0,100	0,125	0,160	0,200	0,250	0,315	0,400	0,500
16,00	0,100	0,125	0,160	0,200	0,250	0,315	0,400	0,500	0,630
20,00	0,125	0,160	0,200	0,250	0,315	0,400	0,500	0,630	0,630
25,00	0,160	0,200	0,250	0,315	0,400	0,500	0,630	0,800	0,800
31,50	0,160	0,200	0,250	0,315	0,400	0,500	0,630	0,800	1,000
40,00	0,200	0,250	0,315	0,400	0,500	0,630	0,800	1,000	1,250
50,00	0,250	0,310	0,400	0,500	0,630	0,800	1,000	1,250	1,250
63,00	0,315	0,400	0,500	0,630	0,800	1,000	1,250	1,600	1,600
80,00	0,400	0,500	0,630	0,800	1,000	1,250	1,600	1,600	2,000

Produits de refroidissement:

- Air
- Huile
- Huile soluble

Sens de coupe:

- Ⓜ coupe à droite
- Ⓛ coupe à gauche

Matières	Exemples, nouvelle désignation ( Ancienne désignation entre parenthèses ) Caractères gras = N° de matières suivant DIN EN	Résistance MPa (N/mm²)	Dureté	Prod. de réf.
Aciers de construction	<b>1.0035</b> S185(St33), <b>1.0486</b> P275N(StE285), <b>1.0345</b> P235GH(H1), <b>1.0425</b> P265GH(H2) <b>1.0050</b> E295 (St50-2), <b>1.0070</b> E360 (St70-2), <b>1.8937</b> P500NH (WStE500)	≤500 ≤1000		○ ○
Aciers de décolletage	<b>1.0718</b> 11SMnPb30 (9SMnPb28), <b>1.0736</b> 11SMn37 (9SMn36) <b>1.0727</b> 46S20 (45S20), <b>1.0728</b> (60S20), <b>1.0757</b> 46SPb20 (45SPb20)	≤850 ≤1000		○ ○
Aciers d'amélioration non-alliés	<b>1.0402</b> C22, <b>1.1178</b> C30E (Ck30) <b>1.0503</b> C45, <b>1.1191</b> C45E (Ck45) <b>1.0601</b> C60, <b>1.1221</b> C60E (Ck60)	≤700 ≤850 ≤1000		○ ○ ○
Aciers d'amélioration alliés	<b>1.5131</b> 50MnSi4, <b>1.7003</b> 38Cr2, <b>1.7030</b> 28Cr4 <b>1.5710</b> 36NiCr6, <b>1.7035</b> 41Cr4, <b>1.7225</b> 42CrMo4	≤1000 ≤1400		○ ○
Aciers de cémentation non-alliés	<b>1.0301</b> (C10), <b>1.1121</b> C10E (Ck10)	≤850		○
Aciers de cémentation alliés	<b>1.7276</b> 10CrMo11, <b>1.5125</b> 11MnSi6 <b>1.5752</b> 15NiCr13, <b>1.7131</b> 16MnCr5, <b>1.7264</b> 20CrMo5	≤1000 ≤1400		● ●
Aciers de nitruration	<b>1.8504</b> 34CrAl6 <b>1.8519</b> 31CrMoV9, <b>1.8550</b> 34CrAlNi7	≤1000 ≤1400		○ ●
Aciers à outils	<b>1.1750</b> C75W, <b>1.2067</b> 102Cr6, <b>1.2307</b> 29CrMoV9 <b>1.2080</b> X210Cr12, <b>1.2083</b> X42Cr13, <b>1.2419</b> 105WCr6, <b>1.2767</b> X45NiCrMo4	≤850 ≤1400		○ ○
Aciers rapides	<b>1.3243</b> S 6-5-2-5, <b>1.3343</b> S 6-5-2, <b>1.3344</b> S 6-5-3	≤1400		●
Aciers à ressort	<b>1.5026</b> 55Si7, <b>1.7176</b> 55Cr3, <b>1.8159</b> 51CrV4 (51CrV4)		≤350 HB	●
Aciers trempés	-		≤48 HRC ≤66 HRC	● ●
Aciers inoxydables, sulfurés	<b>1.4005</b> X12CrS13, <b>1.4104</b> X14CrMoS17, <b>1.4105</b> X6CrMoS17, <b>1.4305</b> X8CrNiS18-9	≤900		●
austénitiques	<b>1.4301</b> X5CrNi18-10 (V2A), <b>1.4541</b> X6CrNiTi18-10, <b>1.4571</b> X6CrNiMoTi 17-12-2 (V4A)	≤1100		●
martensitiques	<b>1.4057</b> X20CrNi172 (X17CrNi16-2), <b>1.4122</b> X39CrMo17-1, <b>1.4521</b> X2CrMoTi18-2	≤1500		●
Fontes	<b>0.6010</b> EN-GJL-100 (GG10), <b>0.6020</b> EN-GJL-200 (GG20) <b>0.6025</b> EN-GJL-250 (GG25), <b>0.6035</b> EN-GJL-350 (GG35)		≤240 HB ≤350 HB	○ ○
Fontes à graphite sphéroïdal et fontes malléables	<b>0.7050</b> EN-GJS-500-7 (GGG50), <b>0.8035</b> EN-GJMW-350-4 (GTW35) <b>0.7070</b> EN-GJS-700-2 (GGG70), <b>0.8170</b> EN-GJMB-700-2 (GTS70)		≤240 HB ≤350 HB	○ ○
Fontes dures	-		≤350 HB	○
Nouvelles fontes GGV	<b>EN-GJV250</b> (GGV25), <b>EN-GJV350</b> (GGV35) <b>EN-GJV400</b> (GGV40), <b>EN-GJV500</b> (GGV50), SiMo 6		≤220 HB ≤300 HB	○ ○
Nouvelles fontes ADI	<b>EN-GJS-800-8</b> (ADI800), <b>EN-GJS-1000-5</b> (ADI1000) <b>EN-GJS-1200-2</b> (ADI1200), <b>EN-GJS-1400-1</b> (ADI1400)	≤1000 ≤1400		○ ○
Alliages spéciaux	Nimonic, Inconel, Monel, Hastelloy	≤2000		●
Titane et alliages de Titane	<b>3.7024</b> Ti99,5, <b>3.7114</b> TiAl5Sn2,5, <b>3.7124</b> TiCu2 <b>3.7154</b> TiAl6Zr5, <b>3.7165</b> TiAl6V4, <b>3.7184</b> TiAl4Mo4Sn2,5, - TiAl8Mo1V1	≤850 ≤1400		● ○
Aluminium et ses alliages	<b>3.0255</b> Al99,5, <b>3.2315</b> AlMgSi1, <b>3.3515</b> AlMg1	≤400		○
Alliages malléables d'Al	<b>3.0615</b> AlMgSiPb, <b>3.1325</b> AlCuMg1, <b>3.3245</b> AlMg3Si, <b>3.4365</b> AlZnMgCu1,5	≤650		○
Alliages d'Al d'inject. ≤ 10 % Si	<b>3.2131</b> G-AlSi5Cu1, <b>3.2153</b> G-AlSi7Cu3, <b>3.2573</b> G-AlSi9	≤600		○
≤ 24 % Si	<b>3.2581</b> G-AlSi12, <b>3.2583</b> G-AlSi12Cu, - G-AlSi12CuNiMg	≤600		○
Alliages de Magnésium	<b>3.5200</b> MgMn2, <b>3.5812.05</b> G-MgAl8Zn1, <b>3.5612.05</b> G-MgAl6Zn1	≤400		○
Cuivres, faiblement alliés	<b>2.0070</b> SE-Cu, <b>2.1020</b> CuSn6, <b>2.1096</b> G-CuSn5ZnPb	≤500		○
Laiton à copeaux courts, à copeaux longs	<b>2.0380</b> CuZn39Pb2, <b>2.0401</b> CuZn39Pb3, <b>2.0410</b> CuZn43Pb2 <b>2.0250</b> CuZn20, <b>2.0280</b> CuZn33, <b>2.0332</b> CuZn37Pb0,5	≤600 ≤600		○ ○
Bronze, à copeaux courts	<b>2.1090</b> CuSn7ZnPb, <b>2.1170</b> CuPb5Sn5, <b>2.1176</b> CuPb10Sn <b>2.0790</b> CuNi18Zn19Pb	≤600 ≤850		○ ○
Bronze, à copeaux longs	<b>2.0916</b> CuAl5, <b>2.0960</b> CuAl9Mn, <b>2.1050</b> CuSn10 <b>2.0980</b> CuAl11Ni, <b>2.1247</b> CuBe2	≤850 ≤1000		○ ○
Thermodurcissables	Résine époxy, Resopal, Pertinax, Moltopren	≤150		○
Thermoplastiques	Plexiglas, Hostalen, Novodur, Makralon	≤100		○
renf. de fibres d'aramides	Kevlar	≤1000		○
renf. de fibres de verre ou carbone	GFK/CFK	≤1000		○

Navigateur





≤3xD Profondeur

572	2048	1228	2498	659	663	2461	512	515
1897	1897	1897	1897	1897	WN	1897	WN	1897
HSCO	HSCO	HSCO	HSCO	HSCO	HSCO	HSCO	HSCO	HSS-E-PM
S	M	S	F	S	S	F	S	F
VA	P2000	GT 80	GT 80	GV 120	GV 120	GV 120	GU 500	GT 500
231	233	227	229	222	449	224	384	237



Vc m/min	Gamme d'av. N°	Vc m/min	Gamme d'av. N°	Vc m/min	Gamme d'av. N°	Vc m/min	Gamme d'av. N°	Vc m/min	Gamme d'avance N°		Vc m/min	Gamme d'av. N°	Vc m/min	Gamme d'av. N°	Vc m/min	Gamme d'av. N°
38	6	35	6	38	6	42	6	38	5	5	42	6	45	6	42	6
33	5	30	5	33	5	36	5	33	4	4	36	5	35	5	37	5
44	6	40	6	44	6	48	7	44	5	5	48	6	50	6	47	7
42	5	40	5	38	5	42	6	38	5	5	42	6	40	6	44	6
44	5	40	5	44	6	48	6	44	5	5	48	6	44	6	47	6
44	5	40	5	44	5	48	6	44	5	5	48	6	44	6	47	6
		35	4	38	4	42	5	38	4	4	42	5	40	5	44	5
		25	4	27	4	30	5	27	4	4	30	5	27	4	30	4
		20	3	22	3	24	4	22	3	3	24	4	22	3	25	3
40	6	40	6	44	4	48	4	44	4	4	48	5	44	6	47	4
		20	4	22	4	24	5	22	4	4	24	5	22	4	25	5
		15	3	18	3	20	4	18	3	3	20	4	18	3	20	4
		20	4	22	4	24	5	22	4	4	24	5	22	4	25	5
		15	3	18	3	20	4	18	3	3	20	4	16	3	18	4
		18	4	19	4	21	5	19	4	4	21	5	20	4	22	5
		12	3	14	3	16	4	14	3	3	16	4	15	3	17	4
		12	3	14	3	17	4	14	3	3	17	4	13	3	17	4
		8	2	9	2	11	3	9	2	2	11	3	9	2	12	2
								4	1	1	5	2				
20	4	14	4	15	4	17	4	20	4	4	22	5	20	4	22	4
15	3	10	3	10	3	12	3	15	3	3	17	4	16	4	18	3
18	3	12	3	12	3	14	3	18	3	3	20	4	18	4	20	3
30	6	38	6	45	6	50	7	40	6	6	45	7	45	6	50	7
30	6	30	6	40	6	45	7	35	6	6	40	7	40	6	44	7
		30	6	33	6	36	7	33	6	6	36	7	40	6	45	7
		25	6	27	6	29	7	27	6	6	29	7	30	6	33	7
		10	3	8	3	10	4	12	3	3	14	4			16	4
8	1	5	2					6	2	2	7	2			6	2
12	2							11	2	2	12	3				
8	2							7	2	2	8	3				
90	7	90	7										70	7		
90	7	90	7										70	7		
80	7	80	7										85	7		
70	6	70	6										70	6		
70	6	85	6										80	6		
70	5	80	5	88	5	96	6						80	5	80	5
60	5	70	5	77	5	84	6						77	5		
40	5	40	5	44	5	48	6						44	5	60	5
35	4	40	4	45	5	50	5	45	5	5	50	6	50	4	50	5
33	4	30	4	40	4	45	5	40	4	4	45	5	40	4	44	5
20	4	25	4	22	4	25	5	23	4	4	26	5	32	4	33	5
15	4	15	4	17	4	20	5	17	4	4	20	5	28	4	28	5
		20	4	22	4	24	5						25	4	25	5
30	4	25	5	27	5	30	5						27	4		

Navigateur



# GÜHRING NAVIGATOR

Il est conseillé de choisir des outils dont les avances sont en caractères gras.  
**Pour le choix optimal de l'outil et de ses paramètres d'utilisation,**  
 sous [www.guehring.de](http://www.guehring.de) vous disposez du logiciel „Navigateur Gühring“.

- N° d'article
- Norme/DIN
- Matière de coupe
- Nuance carbure
- Version
- Type
- Prix/dim. page

Ø outil mm	Gamme d'avance n°								
	1	2	3	4	5	6	7	8	9
	f (mm/tr.)								
0,50	0,004	0,006	0,007	0,008	0,010	0,012	0,014	0,016	0,019
1,00	0,006	0,008	0,012	0,014	0,016	0,018	0,020	0,023	0,025
2,00	0,020	0,025	0,032	0,040	0,050	0,063	0,080	0,100	0,125
2,50	0,025	0,032	0,040	0,050	0,063	0,080	0,100	0,125	0,160
3,15	0,032	0,040	0,050	0,063	0,080	0,100	0,125	0,160	0,160
4,00	0,040	0,050	0,063	0,080	0,100	0,125	0,160	0,200	0,200
5,00	0,040	0,050	0,063	0,080	0,100	0,125	0,160	0,200	0,250
6,30	0,050	0,063	0,080	0,100	0,125	0,160	0,200	0,250	0,315
8,00	0,063	0,080	0,100	0,125	0,160	0,200	0,250	0,315	0,315
10,00	0,080	0,100	0,125	0,160	0,200	0,250	0,315	0,400	0,400
12,50	0,080	0,100	0,125	0,160	0,200	0,250	0,315	0,400	0,500
16,00	0,100	0,125	0,160	0,200	0,250	0,315	0,400	0,500	0,630
20,00	0,125	0,160	0,200	0,250	0,315	0,400	0,500	0,630	0,630
25,00	0,160	0,200	0,250	0,315	0,400	0,500	0,630	0,800	0,800
31,50	0,160	0,200	0,250	0,315	0,400	0,500	0,630	0,800	1,000
40,00	0,200	0,250	0,315	0,400	0,500	0,630	0,800	1,000	1,250
50,00	0,250	0,310	0,400	0,500	0,630	0,800	1,000	1,250	1,250
63,00	0,315	0,400	0,500	0,630	0,800	1,000	1,250	1,600	1,600
80,00	0,400	0,500	0,630	0,800	1,000	1,250	1,600	1,600	2,000

Produits de refroidissement:

- Air
- Huile
- Huile soluble

Sens de coupe:

- Ⓜ coupe à droite
- Ⓛ coupe à gauche

Matières	Exemples, nouvelle désignation ( Ancienne désignation entre parenthèses ) Caractères gras = N° de matières suivant DIN EN	Résistance MPa (N/mm²)	Dureté	Prod. de réf.
Aciers de construction	<b>1.0035</b> S185(St33), <b>1.0486</b> P275N(StE285), <b>1.0345</b> P235GH(H1), <b>1.0425</b> P265GH(H2) <b>1.0050</b> E295 (St50-2), <b>1.0070</b> E360 (St70-2), <b>1.8937</b> P500NH (WStE500)	≤500 ≤1000		○ ○
Aciers de décolletage	<b>1.0718</b> 11SMnPb30 (9SMnPb28), <b>1.0736</b> 11SMn37 (9SMn36) <b>1.0727</b> 46S20 (45S20), <b>1.0728</b> (60S20), <b>1.0757</b> 46SPb20 (45SPb20)	≤850 ≤1000		○ ○
Aciers d'amélioration non-alliés	<b>1.0402</b> C22, <b>1.1178</b> C30E (Ck30) <b>1.0503</b> C45, <b>1.1191</b> C45E (Ck45) <b>1.0601</b> C60, <b>1.1221</b> C60E (Ck60)	≤700 ≤850 ≤1000		○ ○ ○
Aciers d'amélioration alliés	<b>1.5131</b> 50MnSi4, <b>1.7003</b> 38Cr2, <b>1.7030</b> 28Cr4 <b>1.5710</b> 36NiCr6, <b>1.7035</b> 41Cr4, <b>1.7225</b> 42CrMo4	≤1000 ≤1400		○ ○
Aciers de cémentation non-alliés	<b>1.0301</b> (C10), <b>1.1121</b> C10E (Ck10)	≤850		○
Aciers de cémentation alliés	<b>1.7276</b> 10CrMo11, <b>1.5125</b> 11MnSi6 <b>1.5752</b> 15NiCr13, <b>1.7131</b> 16MnCr5, <b>1.7264</b> 20CrMo5	≤1000 ≤1400		● ●
Aciers de nitruration	<b>1.8504</b> 34CrAl6 <b>1.8519</b> 31CrMoV9, <b>1.8550</b> 34CrAlNi7	≤1000 ≤1400		○ ●
Aciers à outils	<b>1.1750</b> C75W, <b>1.2067</b> 102Cr6, <b>1.2307</b> 29CrMoV9 <b>1.2080</b> X210Cr12, <b>1.2083</b> X42Cr13, <b>1.2419</b> 105WCr6, <b>1.2767</b> X45NiCrMo4	≤850 ≤1400		○ ○
Aciers rapides	<b>1.3243</b> S 6-5-2-5, <b>1.3343</b> S 6-5-2, <b>1.3344</b> S 6-5-3	≤1400		●
Aciers à ressort	<b>1.5026</b> 55Si7, <b>1.7176</b> 55Cr3, <b>1.8159</b> 51CrV4 (51CrV4)		≤350 HB	●
Aciers trempés	-		≤48 HRC ≤66 HRC	● ●
Aciers inoxydables, sulfurés	<b>1.4005</b> X12CrS13, <b>1.4104</b> X14CrMoS17, <b>1.4105</b> X6CrMoS17, <b>1.4305</b> X8CrNiS18-9	≤900		●
austénitiques	<b>1.4301</b> X5CrNi18-10 (V2A), <b>1.4541</b> X6CrNiTi18-10, <b>1.4571</b> X6CrNiMoTi 17-12-2 (V4A)	≤1100		●
martensitiques	<b>1.4057</b> X20CrNi172 (X17CrNi16-2), <b>1.4122</b> X39CrMo17-1, <b>1.4521</b> X2CrMoTi18-2	≤1500		●
Fontes	<b>0.6010</b> EN-GJL-100 (GG10), <b>0.6020</b> EN-GJL-200 (GG20) <b>0.6025</b> EN-GJL-250 (GG25), <b>0.6035</b> EN-GJL-350 (GG35)		≤240 HB ≤350 HB	○ ○
Fontes à graphite sphéroïdal et fontes malléables	<b>0.7050</b> EN-GJS-500-7 (GGG50), <b>0.8035</b> EN-GJMW-350-4 (GTW35) <b>0.7070</b> EN-GJS-700-2 (GGG70), <b>0.8170</b> EN-GJMB-700-2 (GTS70)		≤240 HB ≤350 HB	○ ○
Fontes dures	-		≤350 HB	○
Nouvelles fontes GGV	<b>EN-GJV250</b> (GGV25), <b>EN-GJV350</b> (GGV35) <b>EN-GJV400</b> (GGV40), <b>EN-GJV500</b> (GGV50), SiMo 6		≤220 HB ≤300 HB	○ ○
Nouvelles fontes ADI	<b>EN-GJS-800-8</b> (ADI800), <b>EN-GJS-1000-5</b> (ADI1000) <b>EN-GJS-1200-2</b> (ADI1200), <b>EN-GJS-1400-1</b> (ADI1400)	≤1000 ≤1400		○ ○
Alliages spéciaux	Nimonic, Inconel, Monel, Hastelloy	≤2000		●
Titane et alliages de Titane	<b>3.7024</b> Ti99,5, <b>3.7114</b> TiAl5Sn2,5, <b>3.7124</b> TiCu2 <b>3.7154</b> TiAl6Zr5, <b>3.7165</b> TiAl6V4, <b>3.7184</b> TiAl4Mo4Sn2,5, - TiAl8Mo1V1	≤850 ≤1400		● ○
Aluminium et ses alliages	<b>3.0255</b> Al99,5, <b>3.2315</b> AlMgSi1, <b>3.3515</b> AlMg1	≤400		○
Alliages malléables d'Al	<b>3.0615</b> AlMgSiPb, <b>3.1325</b> AlCuMg1, <b>3.3245</b> AlMg3Si, <b>3.4365</b> AlZnMgCu1,5	≤650		○
Alliages d'Al d'inject. ≤ 10 % Si ≤ 24 % Si	<b>3.2131</b> G-AlSi5Cu1, <b>3.2153</b> G-AlSi7Cu3, <b>3.2573</b> G-AlSi9 <b>3.2581</b> G-AlSi12, <b>3.2583</b> G-AlSi12Cu, - G-AlSi12CuNiMg	≤600 ≤600		○ ○
Alliages de Magnésium	<b>3.5200</b> MgMn2, <b>3.5812.05</b> G-MgAl8Zn1, <b>3.5612.05</b> G-MgAl6Zn1	≤400		○
Cuivres, faiblement alliés	<b>2.0070</b> SE-Cu, <b>2.1020</b> CuSn6, <b>2.1096</b> G-CuSn5Zn1Pb	≤500		○
Laiton à copeaux courts, à copeaux longs	<b>2.0380</b> CuZn39Pb2, <b>2.0401</b> CuZn39Pb3, <b>2.0410</b> CuZn43Pb2 <b>2.0250</b> CuZn20, <b>2.0280</b> CuZn33, <b>2.0332</b> CuZn37Pb0,5	≤600 ≤600		○ ○
Bronze, à copeaux courts	<b>2.1090</b> CuSn7Zn1Pb, <b>2.1170</b> CuPb5Sn5, <b>2.1176</b> CuPb10Sn <b>2.0790</b> CuNi18Zn19Pb	≤600 ≤850		○ ○
Bronze, à copeaux longs	<b>2.0916</b> CuAl5, <b>2.0960</b> CuAl9Mn, <b>2.1050</b> CuSn10 <b>2.0980</b> CuAl11Ni, <b>2.1247</b> CuBe2	≤850 ≤1000		○ ○
Thermodurcissables	Résine époxy, Resopal, Pertinax, Moltopren	≤150		○
Thermoplastiques	Plexiglas, Hostalen, Novodur, Makralon	≤100		○
renf. de fibres d'aramides	Kevlar	≤1000		○
renf. de fibres de verre ou carbone	GFK/CFK	≤1000		○



≤3xD Profondeur

730	702	1149	710	703	705	704	707
6539	WN	WN	WN	8037	8041	8038	WN
CW mono.			Carbure		Carbure		Carbure
K10/K20							
○	○	○	○	○	○	○	○
N	N	N	Duro 150	N	N	N	H
239	243	431	323	429	512	430	432

2463	1946
6539	6537K
CW mono.	CW mono.
K/P	K/P
F	A
N	H
241	389



V <sub>c</sub> m/min	Gamme d'avance N°						V <sub>c</sub> m/min	Gamme d'av. N°	V <sub>c</sub> m/min	Gamme d'av. N°
80	4						104	5		
70	4						91	5		
80	5		4	4	4		104	6		
70	4		3	3	3		91	5		
80	4						104	5		
70	4						91	5		
60	4						78	5		
60	4						78	5		
80	5						104	6	80	6
60	4						78	5		
50	4						65	5	65	4
50	3						65	4	80	4
25	2		2	2	2		32	3		
20	2		3	3	3		26	4	40	2
10			2	2	2				30	1
25	2						32	2		
15	1						20	1		
25	2						32	2		
90	4		4	4	4		117	5	90	8
80	4		4	4	4		104	5	80	8
80	4		4	4	4		91	5	80	8
70	4		4	4	4		104	5	70	7
10			1	1	1				30	2
15	2						20	2		
15	1						15	1		
15	1						15	1		
200	7						260	8		
200	7						260	8		
150	6						195	7		
120	6						156	7		
180	6						234	6		
80	5						104	6		
180	5		5	5	5		234	6		
180	5		5	5	5		234	6		
120	5						156	6		
120	5						156	6		
70	4						91	5		
50	3						65	4		
50	4	4					65	5		
40	3	3				3	52	4		
150			1							
80	3	3				2	104	4		

Navigateur



# GÜHRING NAVIGATOR

Il est conseillé de choisir des outils dont les avances sont en caractères gras.  
**Pour le choix optimal de l'outil et de ses paramètres d'utilisation,**  
 sous [www.guehring.de](http://www.guehring.de) vous disposez du logiciel „Navigateur Gühring“.

- N° d'article
- N° d'article
- Norme/DIN
- Matière de coupe
- Version
- Type
- Prix/dim. page

Ø outil mm	Gamme d'avance n°								
	1	2	3	4	5	6	7	8	9
	f (mm/tr.)								
0,50	0,004	0,006	0,007	0,008	0,010	0,012	0,014	0,016	0,019
1,00	0,006	0,008	0,012	0,014	0,016	0,018	0,020	0,023	0,025
2,00	0,020	0,025	0,032	0,040	0,050	0,063	0,080	0,100	0,125
2,50	0,025	0,032	0,040	0,050	0,063	0,080	0,100	0,125	0,160
3,15	0,032	0,040	0,050	0,063	0,080	0,100	0,125	0,160	0,160
4,00	0,040	0,050	0,063	0,080	0,100	0,125	0,160	0,200	0,200
5,00	0,040	0,050	0,063	0,080	0,100	0,125	0,160	0,200	0,250
6,30	0,050	0,063	0,080	0,100	0,125	0,160	0,200	0,250	0,315
8,00	0,063	0,080	0,100	0,125	0,160	0,200	0,250	0,315	0,315
10,00	0,080	0,100	0,125	0,160	0,200	0,250	0,315	0,400	0,400
12,50	0,080	0,100	0,125	0,160	0,200	0,250	0,315	0,400	0,500
16,00	0,100	0,125	0,160	0,200	0,250	0,315	0,400	0,500	0,630
20,00	0,125	0,160	0,200	0,250	0,315	0,400	0,500	0,630	0,630
25,00	0,160	0,200	0,250	0,315	0,400	0,500	0,630	0,800	0,800
31,50	0,160	0,200	0,250	0,315	0,400	0,500	0,630	0,800	1,000
40,00	0,200	0,250	0,315	0,400	0,500	0,630	0,800	1,000	1,250
50,00	0,250	0,310	0,400	0,500	0,630	0,800	1,000	1,250	1,250
63,00	0,315	0,400	0,500	0,630	0,800	1,000	1,250	1,600	1,600
80,00	0,400	0,500	0,630	0,800	1,000	1,250	1,600	1,600	2,000

Produits de refroidissement:

- Air
- Huile
- Huile soluble

Sens de coupe:

- coupe à droite
- coupe à gauche

Matières	Exemples, nouvelle désignation ( Ancienne désignation entre parenthèses ) Caractères gras = N° de matières suivant DIN EN	Résistance MPa (N/mm²)	Dureté	Prod. de réf.
Aciers de construction	<b>1.0035</b> S185(St33), <b>1.0486</b> P275N(StE285), <b>1.0345</b> P235GH(H1), <b>1.0425</b> P265GH(H2)	≤500		
	<b>1.0050</b> E295 (St50-2), <b>1.0070</b> E360 (St70-2), <b>1.8937</b> P500NH (WStE500)	≤1000		
Aciers de décolletage	<b>1.0718</b> 11SMnPb30 (9SMnPb28), <b>1.0736</b> 11SMn37 (9SMn36)	≤850		
	<b>1.0727</b> 46S20 (45S20), <b>1.0728</b> (60S20), <b>1.0757</b> 46SPb20 (45SPb20)	≤1000		
Aciers d'amélioration non-alliés	<b>1.0402</b> C22, <b>1.1178</b> C30E (Ck30)	≤700		
	<b>1.0503</b> C45, <b>1.1191</b> C45E (Ck45)	≤850		
	<b>1.0601</b> C60, <b>1.1221</b> C60E (Ck60)	≤1000		
Aciers d'amélioration alliés	<b>1.5131</b> 50MnSi4, <b>1.7003</b> 38Cr2, <b>1.7030</b> 28Cr4	≤1000		
	<b>1.5710</b> 36NiCr6, <b>1.7035</b> 41Cr4, <b>1.7225</b> 42CrMo4	≤1400		
Aciers de cémentation non-alliés	<b>1.0301</b> (C10), <b>1.1121</b> C10E (Ck10)	≤850		
Aciers de cémentation alliés	<b>1.7276</b> 10CrMo11, <b>1.5125</b> 11MnSi6	≤1000		
	<b>1.5752</b> 15NiCr13, <b>1.7131</b> 16MnCr5, <b>1.7264</b> 20CrMo5	≤1400		
Aciers de nitruration	<b>1.8504</b> 34CrAl6	≤1000		
	<b>1.8519</b> 31CrMoV9, <b>1.8550</b> 34CrAlNi7	≤1400		
Aciers à outils	<b>1.1750</b> C75W, <b>1.2067</b> 102Cr6, <b>1.2307</b> 29CrMoV9	≤850		
	<b>1.2080</b> X210Cr12, <b>1.2083</b> X42Cr13, <b>1.2419</b> 105WCr6, <b>1.2767</b> X45NiCrMo4	≤1400		
Aciers rapides	<b>1.3243</b> S 6-5-2-5, <b>1.3343</b> S 6-5-2, <b>1.3344</b> S 6-5-3	≤1400		
Aciers à ressort	<b>1.5026</b> 55Si7, <b>1.7176</b> 55Cr3, <b>1.8159</b> 51CrV4 (51CrV4)		≤350 HB	
Aciers trempés	-		≤48 HRC	
			≤66 HRC	
Aciers inoxydables, sulfurés	<b>1.4005</b> X12CrS13, <b>1.4104</b> X14CrMoS17, <b>1.4105</b> X6CrMoS17, <b>1.4305</b> X8CrNiS18-9	≤900		
austénitiques	<b>1.4301</b> X5CrNi18-10 (V2A), <b>1.4541</b> X6CrNiTi18-10, <b>1.4571</b> X6CrNiMoTi 17-12-2 (V4A)	≤1100		
martensitiques	<b>1.4057</b> X20CrNi172 (X17CrNi16-2), <b>1.4122</b> X39CrMo17-1, <b>1.4521</b> X2CrMoTi18-2	≤1500		
Fontes	<b>0.6010</b> EN-GJL-100 (GG10), <b>0.6020</b> EN-GJL-200 (GG20)		≤240 HB	
	<b>0.6025</b> EN-GJL-250 (GG25), <b>0.6035</b> EN-GJL-350 (GG35)		≤350 HB	
Fontes à graphite sphéroïdal et fontes malléables	<b>0.7050</b> EN-GJS-500-7 (GGG50), <b>0.8035</b> EN-GJMW-350-4 (GTW35)		≤240 HB	
	<b>0.7070</b> EN-GJS-700-2 (GGG70), <b>0.8170</b> EN-GJMB-700-2 (GTS70)		≤350 HB	
Fontes dures	-		≤350 HB	
Nouvelles fontes GGV	<b>EN-GJV250</b> (GGV25), <b>EN-GJV350</b> (GGV35)		≤220 HB	
	<b>EN-GJV400</b> (GGV40), <b>EN-GJV500</b> (GGV50), SiMo 6		≤300 HB	
Nouvelles fontes ADI	<b>EN-GJS-800-8</b> (ADI800), <b>EN-GJS-1000-5</b> (ADI1000)	≤1000		
	<b>EN-GJS-1200-2</b> (ADI1200), <b>EN-GJS-1400-1</b> (ADI1400)	≤1400		
Alliages spéciaux	Nimonic, Inconel, Monel, Hastelloy	≤2000		
Titane et alliages de Titane	<b>3.7024</b> Ti99,5, <b>3.7114</b> TiAl5Sn2,5, <b>3.7124</b> TiCu2	≤850		
	<b>3.7154</b> TiAl6Zr5, <b>3.7165</b> TiAl6V4, <b>3.7184</b> TiAl4Mo4Sn2,5, - TiAl8Mo1V1	≤1400		
Aluminium et ses alliages	<b>3.0255</b> Al99,5, <b>3.2315</b> AlMgSi1, <b>3.3515</b> AlMg1	≤400		
Alliages malléables d'Al	<b>3.0615</b> AlMgSiPb, <b>3.1325</b> AlCuMg1, <b>3.3245</b> AlMg3Si, <b>3.4365</b> AlZnMgCu1,5	≤650		
Alliages d'Al d'inject. ≤ 10 % Si	<b>3.2131</b> G-AlSi5Cu1, <b>3.2153</b> G-AlSi7Cu3, <b>3.2573</b> G-AlSi9	≤600		
≤ 24 % Si	<b>3.2581</b> G-AlSi12, <b>3.2583</b> G-AlSi12Cu, - G-AlSi12CuNiMg	≤600		
Alliages de Magnésium	<b>3.5200</b> MgMn2, <b>3.5812.05</b> G-MgAl8Zn1, <b>3.5612.05</b> G-MgAl6Zn1	≤400		
Cuivres, faiblement alliés	<b>2.0070</b> SE-Cu, <b>2.1020</b> CuSn6, <b>2.1096</b> G-CuSn5ZnPb	≤500		
Laiton à copeaux courts, à copeaux longs	<b>2.0380</b> CuZn39Pb2, <b>2.0401</b> CuZn39Pb3, <b>2.0410</b> CuZn43Pb2	≤600		
	<b>2.0250</b> CuZn20, <b>2.0280</b> CuZn33, <b>2.0332</b> CuZn37Pb0,5	≤600		
Bronze, à copeaux courts	<b>2.1090</b> CuSn7ZnPb, <b>2.1170</b> CuPb5Sn5, <b>2.1176</b> CuPb10Sn	≤600		
	<b>2.0790</b> CuNi18Zn19Pb	≤850		
Bronze, à copeaux longs	<b>2.0916</b> CuAl5, <b>2.0960</b> CuAl9Mn, <b>2.1050</b> CuSn10	≤850		
	<b>2.0980</b> CuAl11Ni, <b>2.1247</b> CuBe2	≤1000		
Therm durcissables	Résine époxy, Resopal, Pertinax, Moltopren	≤150		
Thermoplastiques	Plexiglas, Hostalen, Novodur, Makralon	≤100		
renf. de fibres d'aramides	Kevlar	≤1000		
renf. de fibres de verre ou carbone	GFK/CFK	≤1000		



≤5xD Profondeur

560	205	240	268	229	245	592	251	206	246	207	247	549	558
	208			248				209		210		550	
338	338	338	WN	345	345	345	346	338	345	338	345	338	345
HSS	HSS	HSS	HSS	HSS	HSS	HSS	HSS	HSS	HSS	HSS	HSS	HSS	HSS
N	N	N	N	N	N	N	N	H	H	W	W	GT 100	GT 100
256	244/258	257	412	458/457	450	454	471	263/266	459	269/272	460	274/281	461



Vc m/min	Gamme d'avance N°												
27	6	6	6	6	6	6	6	6				6	6
22	5	5	5	5	5	5	5	5				5	5
30	6	6	6	6	6	6	6	6				6	6
30	5	5	5	5	5	5	5	5				5	5
25	5	5	5	5	5	5	5	5				5	5
25	5	5	5	5	5	5	5	5				5	5
30	6	6	6	6	6	6	6	6				6	6
16		4	4	4	4	4	4	4				4	4
30	6	6	6	6	6	6	6	6				6	6
30	6	6	6	6	6	6	6	6				6	6
25	6	6	6	6	6	6	6	6				6	6
25	6	6	6	6	6	6	6	6				6	6
80											7	7	
80											7	7	
70	7	7	7	7	7	7	7	7			7	7	7
70	6	6	6	6	6	6	6	6				6	6
50	6	6	6	6	6	6	6	6	6	6		6	6
50	5	5	5	5	5	5	5	5			5	5	5
70									6	6			
40	5	5	5	5	5	5	5	5				5	5
30	4	4	4	4	4	4	4	4	4	4			
25	4	4	4	4	4	4	4	4					
15	4	4	4	4	4	4	4	4				4	4
18	4	4	4	4	4	4	4	4	4	4		4	4
28	5	5	5	5	5	5	5	5	5	5	5	5	5

Navigateur



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- N° d'article
- N° d'article
- Norme/DIN
- Matière de coupe
- Version
- Type
- Prix/dim. page

Ø outil mm	Gamme d'avance n°								
	1	2	3	4	5	6	7	8	9
	f (mm/tr.)								
0,50	0,004	0,006	0,007	0,008	0,010	0,012	0,014	0,016	0,019
1,00	0,006	0,008	0,012	0,014	0,016	0,018	0,020	0,023	0,025
2,00	0,020	0,025	0,032	0,040	0,050	0,063	0,080	0,100	0,125
2,50	0,025	0,032	0,040	0,050	0,063	0,080	0,100	0,125	0,160
3,15	0,032	0,040	0,050	0,063	0,080	0,100	0,125	0,160	0,160
4,00	0,040	0,050	0,063	0,080	0,100	0,125	0,160	0,200	0,200
5,00	0,040	0,050	0,063	0,080	0,100	0,125	0,160	0,200	0,250
6,30	0,050	0,063	0,080	0,100	0,125	0,160	0,200	0,250	0,315
8,00	0,063	0,080	0,100	0,125	0,160	0,200	0,250	0,315	0,315
10,00	0,080	0,100	0,125	0,160	0,200	0,250	0,315	0,400	0,400
12,50	0,080	0,100	0,125	0,160	0,200	0,250	0,315	0,400	0,500
16,00	0,100	0,125	0,160	0,200	0,250	0,315	0,400	0,500	0,630
20,00	0,125	0,160	0,200	0,250	0,315	0,400	0,500	0,630	0,630
25,00	0,160	0,200	0,250	0,315	0,400	0,500	0,630	0,800	0,800
31,50	0,160	0,200	0,250	0,315	0,400	0,500	0,630	0,800	1,000
40,00	0,200	0,250	0,315	0,400	0,500	0,630	0,800	1,000	1,250
50,00	0,250	0,310	0,400	0,500	0,630	0,800	1,000	1,250	1,250
63,00	0,315	0,400	0,500	0,630	0,800	1,000	1,250	1,600	1,600
80,00	0,400	0,500	0,630	0,800	1,000	1,250	1,600	1,600	2,000

Produits de refroidissement:

- Air
- Huile
- Huile soluble

Sens de coupe:

- coupe à droite
- coupe à gauche










Matières	Exemples, nouvelle désignation ( Ancienne désignation entre parenthèses ) Caractères gras = N° de matières suivant DIN EN	Résistance MPa (N/mm²)	Dureté	Prod. de réf.
Aciers de construction	<b>1.0035</b> S185(St33), <b>1.0486</b> P275N(StE285), <b>1.0345</b> P235GH(H1), <b>1.0425</b> P265GH(H2)	≤500		
	<b>1.0050</b> E295 (St50-2), <b>1.0070</b> E360 (St70-2), <b>1.8937</b> P500NH (WStE500)	≤1000		
Aciers de décolletage	<b>1.0718</b> 11SMnPb30 (9SMnPb28), <b>1.0736</b> 11SMn37 (9SMn36)	≤850		
	<b>1.0727</b> 46S20 (45S20), <b>1.0728</b> (60S20), <b>1.0757</b> 46SPb20 (45SPb20)	≤1000		
Aciers d'amélioration non-alliés	<b>1.0402</b> C22, <b>1.1178</b> C30E (Ck30)	≤700		
	<b>1.0503</b> C45, <b>1.1191</b> C45E (Ck45)	≤850		
	<b>1.0601</b> C60, <b>1.1221</b> C60E (Ck60)	≤1000		
Aciers d'amélioration alliés	<b>1.5131</b> 50MnSi4, <b>1.7003</b> 38Cr2, <b>1.7030</b> 28Cr4	≤1000		
	<b>1.5710</b> 36NiCr6, <b>1.7035</b> 41Cr4, <b>1.7225</b> 42CrMo4	≤1400		
Aciers de cémentation non-alliés	<b>1.0301</b> (C10), <b>1.1121</b> C10E (Ck10)	≤850		
Aciers de cémentation alliés	<b>1.7276</b> 10CrMo11, <b>1.5125</b> 11MnSi6	≤1000		
	<b>1.5752</b> 15NiCr13, <b>1.7131</b> 16MnCr5, <b>1.7264</b> 20CrMo5	≤1400		
Aciers de nitruration	<b>1.8504</b> 34CrAl6	≤1000		
	<b>1.8519</b> 31CrMoV9, <b>1.8550</b> 34CrAlNi7	≤1400		
Aciers à outils	<b>1.1750</b> C75W, <b>1.2067</b> 102Cr6, <b>1.2307</b> 29CrMoV9	≤850		
	<b>1.2080</b> X210Cr12, <b>1.2083</b> X42Cr13, <b>1.2419</b> 105WCr6, <b>1.2767</b> X45NiCrMo4	≤1400		
Aciers rapides	<b>1.3243</b> S 6-5-2-5, <b>1.3343</b> S 6-5-2, <b>1.3344</b> S 6-5-3	≤1400		
Aciers à ressort	<b>1.5026</b> 55Si7, <b>1.7176</b> 55Cr3, <b>1.8159</b> 51CrV4 (51CrV4)		≤350 HB	
Aciers trempés	-		≤48 HRC	
			≤66 HRC	
Aciers inoxydables, sulfurés	<b>1.4005</b> X12CrS13, <b>1.4104</b> X14CrMoS17, <b>1.4105</b> X6CrMoS17, <b>1.4305</b> X8CrNiS18-9	≤900		
austénitiques	<b>1.4301</b> X5CrNi18-10 (V2A), <b>1.4541</b> X6CrNiTi18-10, <b>1.4571</b> X6CrNiMoTi 17-12-2 (V4A)	≤1100		
martensitiques	<b>1.4057</b> X20CrNi172 (X17CrNi16-2), <b>1.4122</b> X39CrMo17-1, <b>1.4521</b> X2CrMoTi18-2	≤1500		
Fontes	<b>0.6010</b> EN-GJL-100 (GG10), <b>0.6020</b> EN-GJL-200 (GG20)		≤240 HB	
	<b>0.6025</b> EN-GJL-250 (GG25), <b>0.6035</b> EN-GJL-350 (GG35)		≤350 HB	
Fontes à graphite sphéroïdal et fontes malléables	<b>0.7050</b> EN-GJS-500-7 (GGG50), <b>0.8035</b> EN-GJMW-350-4 (GTW35)		≤240 HB	
	<b>0.7070</b> EN-GJS-700-2 (GGG70), <b>0.8170</b> EN-GJMB-700-2 (GTS70)		≤350 HB	
Fontes dures	-		≤350 HB	
Nouvelles fontes GGV	<b>EN-GJV250</b> (GGV25), <b>EN-GJV350</b> (GGV35)		≤220 HB	
	<b>EN-GJV400</b> (GGV40), <b>EN-GJV500</b> (GGV50), SiMo 6		≤300 HB	
Nouvelles fontes ADI	<b>EN-GJS-800-8</b> (ADI800), <b>EN-GJS-1000-5</b> (ADI1000)	≤1000		
	<b>EN-GJS-1200-2</b> (ADI1200), <b>EN-GJS-1400-1</b> (ADI1400)	≤1400		
Alliages spéciaux	Nimonic, Inconel, Monel, Hastelloy	≤2000		
Titane et alliages de Titane	<b>3.7024</b> Ti99,5, <b>3.7114</b> TiAl5Sn2,5, <b>3.7124</b> TiCu2	≤850		
	<b>3.7154</b> TiAl6Zr5, <b>3.7165</b> TiAl6V4, <b>3.7184</b> TiAl4Mo4Sn2,5, - TiAl8Mo1V1	≤1400		
Aluminium et ses alliages	<b>3.0255</b> Al99,5, <b>3.2315</b> AlMgSi1, <b>3.3515</b> AlMg1	≤400		
Alliages malléables d'Al	<b>3.0615</b> AlMgSiPb, <b>3.1325</b> AlCuMg1, <b>3.3245</b> AlMg3Si, <b>3.4365</b> AlZnMgCu1,5	≤650		
Alliages d'Al d'inject. ≤ 10 % Si	<b>3.2131</b> G-AlSi5Cu1, <b>3.2153</b> G-AlSi7Cu3, <b>3.2573</b> G-AlSi9	≤600		
≤ 24 % Si	<b>3.2581</b> G-AlSi12, <b>3.2583</b> G-AlSi12Cu, - G-AlSi12CuNiMg	≤600		
Alliages de Magnésium	<b>3.5200</b> MgMn2, <b>3.5812.05</b> G-MgAl8Zn1, <b>3.5612.05</b> G-MgAl6Zn1	≤400		
Cuivres, faiblement alliés	<b>2.0070</b> SE-Cu, <b>2.1020</b> CuSn6, <b>2.1096</b> G-CuSn5ZnPb	≤500		
Laiton à copeaux courts,	<b>2.0380</b> CuZn39Pb2, <b>2.0401</b> CuZn39Pb3, <b>2.0410</b> CuZn43Pb2	≤600		
à copeaux longs	<b>2.0250</b> CuZn20, <b>2.0280</b> CuZn33, <b>2.0332</b> CuZn37Pb0,5	≤600		
Bronze, à copeaux courts	<b>2.1090</b> CuSn7ZnPb, <b>2.1170</b> CuPb5Sn5, <b>2.1176</b> CuPb10Sn	≤600		
	<b>2.0790</b> CuNi18Zn19Pb	≤850		
Bronze, à copeaux longs	<b>2.0916</b> CuAl5, <b>2.0960</b> CuAl9Mn, <b>2.1050</b> CuSn10	≤850		
	<b>2.0980</b> CuAl11Ni, <b>2.1247</b> CuBe2	≤1000		
Thermodurcissables	Résine époxy, Resopal, Pertinax, Moltopren	≤150		
Thermoplastiques	Plexiglas, Hostalen, Novodur, Makralon	≤100		
renf. de fibres d'aramides	Kevlar	≤1000		
renf. de fibres de verre ou carbone	GFK/CFK	≤1000		



≤5xD Profondeur

651	654	652	606
664		665	
338	345	338	345
<b>HSS</b>	<b>HSS</b>	<b>HSS</b>	<b>HSS</b>
<b>S</b>	<b>S</b>	<b>S</b>	<b>S</b>
N	N	GT 100	GT 100
250/261	455	277/283	462

2456	2457
338	338
<b>HSS</b>	<b>HSS</b>
<b>F</b>	<b>F</b>
N	GT 100
254	280

305	345	351	622	645	605	1260	1262	1146
308					608			
338	345	346	338	345	338	338	345	338
<b>HSCO</b>	<b>HSCO</b>	<b>HSCO</b>	<b>HSCO</b>	<b>HSCO</b>	<b>HSCO</b>	<b>HSCO</b>	<b>HSCO</b>	<b>M42</b>
								
N	N	N	GT 100	GT 100	Ti	VA	VA	N
281/289	463	472	291	466	301/308	309	470	315



Vc m/min	Gamme d'avance N°			
30	6	6	6	6
24	5	5	5	5
33	6	6	6	6
33	5	5	5	5
28	5	5	5	5
28	5	5	5	5
25	4	4	4	4
22	4	4	4	4
33	6	6	6	6
20	4	4	4	4
14	4	4	4	4
18	4	4	4	4
33	6	6	6	6
33	6	6	6	6
28	6	6	6	6
22	6	6	6	6
80	6	6		
65	5	5	5	5
75	5	5	5	5
45	5	5	5	5
33	4	4		
27	4	4		
16	4	4	4	4
15	4	4	4	4
22	4	4	4	4
36	5	5		

Vc m/min	Gamme d'avance N°	
32	7	7
26	6	6
36	7	7
36	6	6
31	6	6
31	6	6
28	5	5
24	5	5
36	7	7
22	5	5
16	5	5
20	5	5
36	7	7
36	7	7
31	7	7
24	7	7
85	8	8
85	8	8
60	8	8
60	8	7
90	7	7
70	6	6
80	6	6
50	6	6
36	5	5
33	5	5
18	5	5
18	5	5
29	5	5

Vc m/min	Gamme d'avance N°								
35	5	5	5	5	5		5	5	5
30	5	5	5	5	5		5	5	5
40	5	5	5	5	5		5	5	5
40	5	5	5	5	5		5	5	5
40	5	5	5	5	5		5	5	5
35	4	4	4	4	4				5
20	4	4	4	4	4				4
16	3	3	3	3	3	3			3
36	6	6	6	6	6	6	6	6	6
20	4	4	4	4	4	4			3
15	3	3	3	3	3	3	3		3
16	4	4	4	4	4	4	4	4	3
12	3	3	3	3	3	3	3		3
15	4	4	4	4	4	4			3
12	3	3	3	3	3	3	3		3
15	3	3	3	3	3	3	3		3
8	2	2	2	2	2	2			2
4									1
18	4	4	4	4	4	4	4	4	3
14	3	3	3	2	2	3	3	3	3
16	3	3	3	3	3	3	3	3	3
35	6	6	6	6	6	6	6	6	5
30	6	6	6	6	6	6	6	6	5
30	6	6	6	6	6	6	6	6	5
28	6	6	6	6	6	6	6	6	5
10	3	3	3	3	3	3	3		3
8									1
10							2	2	2
6							2	2	2
90							7	7	7
90							7	7	7
80				7	7		7	7	7
70				6	6		6	6	6
70							6	6	6
40	5	5	5	5	5		5	5	5
60							5	5	5
40	5	5	5	4	4		5	5	5
35	4	4	4				4	4	4
33	4	4	4				4	4	4
20	4	4	4	4	4		4	4	4
15	4	4	4	4	4		1	1	4
20	4	4	4	4	4				

Navigateur



# GÜHRING NAVIGATOR

Il est conseillé de choisir des outils dont les avances sont en caractères gras.  
**Pour le choix optimal de l'outil et de ses paramètres d'utilisation,**  
 sous [www.guehring.de](http://www.guehring.de) vous disposez du logiciel „Navigateur Gühring“.

N° d'article  
 Norme/DIN  
 Matière de coupe  
 Version  
 Type  
 Prix/dim. page

Ø outil mm	Gamme d'avance n°								
	1	2	3	4	5	6	7	8	9
	f (mm/tr.)								
0,50	0,004	0,006	0,007	0,008	0,010	0,012	0,014	0,016	0,019
1,00	0,006	0,008	0,012	0,014	0,016	0,018	0,020	0,023	0,025
2,00	0,020	0,025	0,032	0,040	0,050	0,063	0,080	0,100	0,125
2,50	0,025	0,032	0,040	0,050	0,063	0,080	0,100	0,125	0,160
3,15	0,032	0,040	0,050	0,063	0,080	0,100	0,125	0,160	0,160
4,00	0,040	0,050	0,063	0,080	0,100	0,125	0,160	0,200	0,200
5,00	0,040	0,050	0,063	0,080	0,100	0,125	0,160	0,200	0,250
6,30	0,050	0,063	0,080	0,100	0,125	0,160	0,200	0,250	0,315
8,00	0,063	0,080	0,100	0,125	0,160	0,200	0,250	0,315	0,315
10,00	0,080	0,100	0,125	0,160	0,200	0,250	0,315	0,400	0,400
12,50	0,080	0,100	0,125	0,160	0,200	0,250	0,315	0,400	0,500
16,00	0,100	0,125	0,160	0,200	0,250	0,315	0,400	0,500	0,630
20,00	0,125	0,160	0,200	0,250	0,315	0,400	0,500	0,630	0,630
25,00	0,160	0,200	0,250	0,315	0,400	0,500	0,630	0,800	0,800
31,50	0,160	0,200	0,250	0,315	0,400	0,500	0,630	0,800	1,000
40,00	0,200	0,250	0,315	0,400	0,500	0,630	0,800	1,000	1,250
50,00	0,250	0,310	0,400	0,500	0,630	0,800	1,000	1,250	1,250
63,00	0,315	0,400	0,500	0,630	0,800	1,000	1,250	1,600	1,600
80,00	0,400	0,500	0,630	0,800	1,000	1,250	1,600	1,600	2,000

Produits de refroidissement:

- Air
- Huile
- Huile soluble

Sens de coupe:

- Ⓜ coupe à droite
- Ⓛ coupe à gauche

Matières	Exemples, nouvelle désignation ( Ancienne désignation entre parenthèses ) Caractères gras = N° de matières suivant DIN EN	Résistance MPa (N/mm²)	Dureté	Prod. de réf.
Aciers de construction	<b>1.0035</b> S185(St33), <b>1.0486</b> P275N(StE285), <b>1.0345</b> P235GH(H1), <b>1.0425</b> P265GH(H2)	≤500		○
	<b>1.0050</b> E295 (St50-2), <b>1.0070</b> E360 (St70-2), <b>1.8937</b> P500NH (WStE500)	≤1000		○
Aciers de décolletage	<b>1.0718</b> 11SMnPb30 (9SMnPb28), <b>1.0736</b> 11SMn37 (9SMn36)	≤850		○
	<b>1.0727</b> 46S20 (45S20), <b>1.0728</b> (60S20), <b>1.0757</b> 46SPb20 (45SPb20)	≤1000		○
Aciers d'amélioration non-alliés	<b>1.0402</b> C22, <b>1.1178</b> C30E (Ck30)	≤700		○
	<b>1.0503</b> C45, <b>1.1191</b> C45E (Ck45)	≤850		○
	<b>1.0601</b> C60, <b>1.1221</b> C60E (Ck60)	≤1000		○
Aciers d'amélioration alliés	<b>1.5131</b> 50MnSi4, <b>1.7003</b> 38Cr2, <b>1.7030</b> 28Cr4	≤1000		○
	<b>1.5710</b> 36NiCr6, <b>1.7035</b> 41Cr4, <b>1.7225</b> 42CrMo4	≤1400		○
Aciers de cémentation non-alliés	<b>1.0301</b> (C10), <b>1.1121</b> C10E (Ck10)	≤850		○
Aciers de cémentation alliés	<b>1.7276</b> 10CrMo11, <b>1.5125</b> 11MnSi6	≤1000		○
	<b>1.5752</b> 15NiCr13, <b>1.7131</b> 16MnCr5, <b>1.7264</b> 20CrMo5	≤1400		○
Aciers de nitruration	<b>1.8504</b> 34CrAl6	≤1000		○
	<b>1.8519</b> 31CrMoV9, <b>1.8550</b> 34CrAlNi7	≤1400		○
Aciers à outils	<b>1.1750</b> C75W, <b>1.2067</b> 102Cr6, <b>1.2307</b> 29CrMoV9	≤850		○
	<b>1.2080</b> X210Cr12, <b>1.2083</b> X42Cr13, <b>1.2419</b> 105WCr6, <b>1.2767</b> X45NiCrMo4	≤1400		○
Aciers rapides	<b>1.3243</b> S 6-5-2-5, <b>1.3343</b> S 6-5-2, <b>1.3344</b> S 6-5-3	≤1400		○
Aciers à ressort	<b>1.5026</b> 55Si7, <b>1.7176</b> 55Cr3, <b>1.8159</b> 51CrV4 (51CrV4)		≤350 HB	○
Aciers trempés	-		≤48 HRC	○
			≤66 HRC	○
Aciers inoxydables, sulfurés	<b>1.4005</b> X12CrS13, <b>1.4104</b> X14CrMoS17, <b>1.4105</b> X6CrMoS17, <b>1.4305</b> X8CrNiS18-9	≤900		○
austénitiques	<b>1.4301</b> X5CrNi18-10 (V2A), <b>1.4541</b> X6CrNiTi18-10, <b>1.4571</b> X6CrNiMoTi 17-12-2 (V4A)	≤1100		○
martensitiques	<b>1.4057</b> X20CrNi172 (X17CrNi16-2), <b>1.4122</b> X39CrMo17-1, <b>1.4521</b> X2CrMoTi18-2	≤1500		○
Fontes	<b>0.6010</b> EN-GJL-100 (GG10), <b>0.6020</b> EN-GJL-200 (GG20)		≤240 HB	○
	<b>0.6025</b> EN-GJL-250 (GG25), <b>0.6035</b> EN-GJL-350 (GG35)		≤350 HB	○
Fontes à graphite sphéroïdal et fontes malléables	<b>0.7050</b> EN-GJS-500-7 (GGG50), <b>0.8035</b> EN-GJMW-350-4 (GTW35)		≤240 HB	○
	<b>0.7070</b> EN-GJS-700-2 (GGG70), <b>0.8170</b> EN-GJMB-700-2 (GTS70)		≤350 HB	○
Fontes dures	-		≤350 HB	○
Nouvelles fontes GGV	<b>EN-GJV250</b> (GGV25), <b>EN-GJV350</b> (GGV35)		≤220 HB	○
	<b>EN-GJV400</b> (GGV40), <b>EN-GJV500</b> (GGV50), SiMo 6		≤300 HB	○
Nouvelles fontes ADI	<b>EN-GJS-800-8</b> (ADI800), <b>EN-GJS-1000-5</b> (ADI1000)	≤1000		○
	<b>EN-GJS-1200-2</b> (ADI1200), <b>EN-GJS-1400-1</b> (ADI1400)	≤1400		○
Alliages spéciaux	Nimonic, Inconel, Monel, Hastelloy	≤2000		○
Titane et alliages de Titane	<b>3.7024</b> Ti99,5, <b>3.7114</b> TiAl5Sn2,5, <b>3.7124</b> TiCu2	≤850		○
	<b>3.7154</b> TiAl6Zr5, <b>3.7165</b> TiAl6V4, <b>3.7184</b> TiAl4Mo4Sn2,5, - TiAl8Mo1V1	≤1400		○
Aluminium et ses alliages	<b>3.0255</b> Al99,5, <b>3.2315</b> AlMgSi1, <b>3.3515</b> AlMg1	≤400		○
Alliages malléables d'Al	<b>3.0615</b> AlMgSiPb, <b>3.1325</b> AlCuMg1, <b>3.3245</b> AlMg3Si, <b>3.4365</b> AlZnMgCu1,5	≤650		○
Alliages d'Al d'inject. ≤ 10 % Si	<b>3.2131</b> G-AlSi5Cu1, <b>3.2153</b> G-AlSi7Cu3, <b>3.2573</b> G-AlSi9	≤600		○
≤ 24 % Si	<b>3.2581</b> G-AlSi12, <b>3.2583</b> G-AlSi12Cu, - G-AlSi12CuNiMg	≤600		○
Alliages de Magnésium	<b>3.5200</b> MgMn2, <b>3.5812.05</b> G-MgAl8Zn1, <b>3.5612.05</b> G-MgAl6Zn1	≤400		○
Cuivres, faiblement alliés	<b>2.0070</b> SE-Cu, <b>2.1020</b> CuSn6, <b>2.1096</b> G-CuSn5ZnPb	≤500		○
Laiton à copeaux courts,	<b>2.0380</b> CuZn39Pb2, <b>2.0401</b> CuZn39Pb3, <b>2.0410</b> CuZn43Pb2	≤600		○
à copeaux longs	<b>2.0250</b> CuZn20, <b>2.0280</b> CuZn33, <b>2.0332</b> CuZn37Pb0,5	≤600		○
Bronze, à copeaux courts	<b>2.1090</b> CuSn7ZnPb, <b>2.1170</b> CuPb5Sn5, <b>2.1176</b> CuPb10Sn	≤600		○
	<b>2.0790</b> CuNi18Zn19Pb	≤850		○
Bronze, à copeaux longs	<b>2.0916</b> CuAl5, <b>2.0960</b> CuAl9Mn, <b>2.1050</b> CuSn10	≤850		○
	<b>2.0980</b> CuAl11Ni, <b>2.1247</b> CuBe2	≤1000		○
Therm durcissables	Résine époxy, Resopal, Pertinax, Moltopren	≤150		○
Thermoplastiques	Plexiglas, Hostalen, Novodur, Makralon	≤100		○
renf. de fibres d'aramides	Kevlar	≤1000		○
renf. de fibres de verre ou carbone	GFK/CFK	≤1000		○

Navigateur





≤5xD Profondeur

2997	661	658	662	657
338	345	338	345	338
HSCO	HSCO	HSCO	HSCO	HSCO
S	S	S	S	S
N	N	GT 100	GT 100	Ti
288	465	294	467	304

2459	2458
338	338
HSCO	HSCO
F	F
GT 100	Ti
296	306

1223	1224	1221	1222
338	345	338	345
HSCO	HSCO	HSCO	HSCO
A	A	C	C
GT 100	GT 100	GT 100	GT 100
299	469	298	468



Vc m/min	Gamme d'avance N°				
38	6	6	6	6	
33	5	5	5	5	
44	5	5	5	5	
38	5	5	5	5	
44	5	5	5	5	
38	4	4	4	4	
27	4	4	4	4	
22	3	3	3	3	3
44	4	4	4	4	
22	4	4	4	4	
18	3	3	3	3	
22	4	4	4	4	
18	3	3	3	3	
19	4	4	4	4	
14	3	3	3	3	
14	3	3	3	3	3
9	2	2			2
20	4	4	4	4	4
15	3	3			3
18		3	3	3	3
40	6	6	6	6	
35	6	6	6	6	
33	6	6	6	6	
27	6	6	6	6	
12					3
6					2
11					2
7					2
88	5	5	5	5	
40	4	4			
22	4	4	4	4	
17	4	4	4	4	4
22	4	4	4	4	

Vc m/min	Gamme d'avance N°	
42	6	
36	5	
48	6	
42	6	
48	6	
42	5	
30	5	
34	4	4
48	6	
24	5	
20	4	
24	5	
20	4	
21	5	
16	4	
17	4	4
11	3	2
6	1	
22	5	5
17	4	3
20	4	4
45	7	
40	7	
36	7	
29	7	
14	4	3
7		2
12		2
8		2
85	8	
72	7	
96	6	
40		
25	5	
20	5	4
24	5	

Vc m/min	Gamme d'avance N°			
42			6	6
36			6	6
48			6	6
42	5	5	6	6
42			5	5
30			5	5
34			4	4
48			7	7
24			5	5
20			4	4
20			5	5
15			4	4
21			5	5
16			4	4
17			4	4
11			3	3
22			5	5
18			4	4
45	7	7		
40	7	7		
36	7	7		
29	7	7		
85	7	7		
96	6	6		
25	5	5		
20	5	5		
24	5	5		

Navigateur



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N° d'article
Norme/DIN
Matière de coupe
Version
Type
Lubrification
Prix/dim. page

Ø outil mm	Gamme d'avance n°								
	1	2	3	4	5	6	7	8	9
	f (mm/tr.)								
0,50	0,004	0,006	0,007	0,008	0,010	0,012	0,014	0,016	0,019
1,00	0,006	0,008	0,012	0,014	0,016	0,018	0,020	0,023	0,025
2,00	0,020	0,025	0,032	0,040	0,050	0,063	0,080	0,100	0,125
2,50	0,025	0,032	0,040	0,050	0,063	0,080	0,100	0,125	0,160
3,15	0,032	0,040	0,050	0,063	0,080	0,100	0,125	0,160	0,160
4,00	0,040	0,050	0,063	0,080	0,100	0,125	0,160	0,200	0,200
5,00	0,040	0,050	0,063	0,080	0,100	0,125	0,160	0,200	0,250
6,30	0,050	0,063	0,080	0,100	0,125	0,160	0,200	0,250	0,315
8,00	0,063	0,080	0,100	0,125	0,160	0,200	0,250	0,315	0,315
10,00	0,080	0,100	0,125	0,160	0,200	0,250	0,315	0,400	0,400
12,50	0,080	0,100	0,125	0,160	0,200	0,250	0,315	0,400	0,500
16,00	0,100	0,125	0,160	0,200	0,250	0,315	0,400	0,500	0,630
20,00	0,125	0,160	0,200	0,250	0,315	0,400	0,500	0,630	0,630
25,00	0,160	0,200	0,250	0,315	0,400	0,500	0,630	0,800	0,800
31,50	0,160	0,200	0,250	0,315	0,400	0,500	0,630	0,800	1,000
40,00	0,200	0,250	0,315	0,400	0,500	0,630	0,800	1,000	1,250
50,00	0,250	0,310	0,400	0,500	0,630	0,800	1,000	1,250	1,250
63,00	0,315	0,400	0,500	0,630	0,800	1,000	1,250	1,600	1,600
80,00	0,400	0,500	0,630	0,800	1,000	1,250	1,600	1,600	2,000

Produits de refroidissement:

- Air
- Huile
- Huile soluble

Sens de coupe:

- Ⓡ coupe à droite
- Ⓛ coupe à gauche

Matières	Exemples, nouvelle désignation ( Ancienne désignation entre parenthèses ) Caractères gras = N° de matières suivant DIN EN	Résistance MPa (N/mm²)	Dureté	Prod. de réf.
Aciers de construction	<b>1.0035</b> S185(St33), <b>1.0486</b> P275N(StE285), <b>1.0345</b> P235GH(H1), <b>1.0425</b> P265GH(H2)	≤500		○
	<b>1.0050</b> E295 (St50-2), <b>1.0070</b> E360 (St70-2), <b>1.8937</b> P500NH (WStE500)	≤1000		○
Aciers de décolletage	<b>1.0718</b> 11SMnPb30 (9SMnPb28), <b>1.0736</b> 11SMn37 (9SMn36)	≤850		○
	<b>1.0727</b> 46S20 (45S20), <b>1.0728</b> (60S20), <b>1.0757</b> 46SPb20 (45SPb20)	≤1000		○
Aciers d'amélioration non-alliés	<b>1.0402</b> C22, <b>1.1178</b> C30E (Ck30)	≤700		○
	<b>1.0503</b> C45, <b>1.1191</b> C45E (Ck45)	≤850		○
	<b>1.0601</b> C60, <b>1.1221</b> C60E (Ck60)	≤1000		○
Aciers d'amélioration alliés	<b>1.5131</b> 50MnSi4, <b>1.7003</b> 38Cr2, <b>1.7030</b> 28Cr4	≤1000		○
	<b>1.5710</b> 36NiCr6, <b>1.7035</b> 41Cr4, <b>1.7225</b> 42CrMo4	≤1400		○
Aciers de cémentation non-alliés	<b>1.0301</b> (C10), <b>1.1121</b> C10E (Ck10)	≤850		○
Aciers de cémentation alliés	<b>1.7276</b> 10CrMo11, <b>1.5125</b> 11MnSi6	≤1000		○
	<b>1.5752</b> 15NiCr13, <b>1.7131</b> 16MnCr5, <b>1.7264</b> 20CrMo5	≤1400		○
Aciers de nitruration	<b>1.8504</b> 34CrAl6	≤1000		○
	<b>1.8519</b> 31CrMoV9, <b>1.8550</b> 34CrAlNi7	≤1400		○
Aciers à outils	<b>1.1750</b> C75W, <b>1.2067</b> 102Cr6, <b>1.2307</b> 29CrMoV9	≤850		○
	<b>1.2080</b> X210Cr12, <b>1.2083</b> X42Cr13, <b>1.2419</b> 105WCr6, <b>1.2767</b> X45NiCrMo4	≤1400		○
Aciers rapides	<b>1.3243</b> S 6-5-2-5, <b>1.3343</b> S 6-5-2, <b>1.3344</b> S 6-5-3	≤1400		○
Aciers à ressort	<b>1.5026</b> 55Si7, <b>1.7176</b> 55Cr3, <b>1.8159</b> 51CrV4 (51CrV4)		≤350 HB	○
Aciers trempés	-		≤48 HRC	○
			≤66 HRC	○
Aciers inoxydables, sulfurés	<b>1.4005</b> X12CrS13, <b>1.4104</b> X14CrMoS17, <b>1.4105</b> X6CrMoS17, <b>1.4305</b> X8CrNiS18-9	≤900		○
austénitiques	<b>1.4301</b> X5CrNi18-10 (V2A), <b>1.4541</b> X6CrNiTi18-10, <b>1.4571</b> X6CrNiMoTi 17-12-2 (V4A)	≤1100		○
martensitiques	<b>1.4057</b> X20CrNi172 (X17CrNi16-2), <b>1.4122</b> X39CrMo17-1, <b>1.4521</b> X2CrMoTi18-2	≤1500		○
Fontes	<b>0.6010</b> EN-GJL-100 (GG10), <b>0.6020</b> EN-GJL-200 (GG20)		≤240 HB	○
	<b>0.6025</b> EN-GJL-250 (GG25), <b>0.6035</b> EN-GJL-350 (GG35)		≤350 HB	○
Fontes à graphite sphéroïdal et fontes malléables	<b>0.7050</b> EN-GJS-500-7 (GGG50), <b>0.8035</b> EN-GJMW-350-4 (GTW35)		≤240 HB	○
	<b>0.7070</b> EN-GJS-700-2 (GGG70), <b>0.8170</b> EN-GJMB-700-2 (GTS70)		≤350 HB	○
Fontes dures	-		≤350 HB	○
Nouvelles fontes GGV	<b>EN-GJV250</b> (GGV25), <b>EN-GJV350</b> (GGV35)		≤220 HB	○
	<b>EN-GJV400</b> (GGV40), <b>EN-GJV500</b> (GGV50), SiMo 6		≤300 HB	○
Nouvelles fontes ADI	<b>EN-GJS-800-8</b> (ADI800), <b>EN-GJS-1000-5</b> (ADI1000)	≤1000		○
	<b>EN-GJS-1200-2</b> (ADI1200), <b>EN-GJS-1400-1</b> (ADI1400)	≤1400		○
Alliages spéciaux	Nimonic, Inconel, Monel, Hastelloy	≤2000		○
Titane et alliages de Titane	<b>3.7024</b> Ti99,5, <b>3.7114</b> TiAl5Sn2,5, <b>3.7124</b> TiCu2	≤850		○
	<b>3.7154</b> TiAl6Zr5, <b>3.7165</b> TiAl6V4, <b>3.7184</b> TiAl4Mo4Sn2,5, - TiAl8Mo1V1	≤1400		○
Aluminium et ses alliages	<b>3.0255</b> Al99,5, <b>3.2315</b> AlMgSi1, <b>3.3515</b> AlMg1	≤400		○
Alliages malléables d'Al	<b>3.0615</b> AlMgSiPb, <b>3.1325</b> AlCuMg1, <b>3.3245</b> AlMg3Si, <b>3.4365</b> AlZnMgCu1,5	≤650		○
Alliages d'Al d'inject. ≤ 10 % Si	<b>3.2131</b> G-AlSi5Cu1, <b>3.2153</b> G-AlSi7Cu3, <b>3.2573</b> G-AlSi9	≤600		○
≤ 24 % Si	<b>3.2581</b> G-AlSi12, <b>3.2583</b> G-AlSi12Cu, - G-AlSi12CuNiMg	≤600		○
Alliages de Magnésium	<b>3.5200</b> MgMn2, <b>3.5812.05</b> G-MgAl8Zn1, <b>3.5612.05</b> G-MgAl6Zn1	≤400		○
Cuivres, faiblement alliés	<b>2.0070</b> SE-Cu, <b>2.1020</b> CuSn6, <b>2.1096</b> G-CuSn5ZnPb	≤500		○
Laiton à copeaux courts,	<b>2.0380</b> CuZn39Pb2, <b>2.0401</b> CuZn39Pb3, <b>2.0410</b> CuZn43Pb2	≤600		○
à copeaux longs	<b>2.0250</b> CuZn20, <b>2.0280</b> CuZn33, <b>2.0332</b> CuZn37Pb0,5	≤600		○
Bronze, à copeaux courts	<b>2.1090</b> CuSn7ZnPb, <b>2.1170</b> CuPb5Sn5, <b>2.1176</b> CuPb10Sn	≤600		○
	<b>2.0790</b> CuNi18Zn19Pb	≤850		○
Bronze, à copeaux longs	<b>2.0916</b> CuAl5, <b>2.0960</b> CuAl9Mn, <b>2.1050</b> CuSn10	≤850		○
	<b>2.0980</b> CuAl11Ni, <b>2.1247</b> CuBe2	≤1000		○
Thermodurcissables	Résine époxy, Resopal, Pertinax, Moltopren	≤150		○
Thermoplastiques	Plexiglas, Hostalen, Novodur, Makralon	≤100		○
renf. de fibres d'aramides	Kevlar	≤1000		○
renf. de fibres de verre ou carbone	GFK/CFK	≤1000		○



≤5xD Profondeur

<b>1199</b>	<b>1018</b>	<b>2047</b>	<b>511</b>	<b>513</b>	<b>1131</b>	<b>1132</b>	<b>732</b>	<b>2464</b>
338	338	338	WN	WN	WN	WN	WN	WN
M42	M42	HSCO	HSCO	HSS-E-PM	HSCO	HSCO	CW m.	CW m.
<b>F</b> nano								
N	AeroX	P2000	GU 500	GT 500	GT 80 IK	GT 80 IK	N	N
sans	sans	sans	sans	sans	avec	avec	sans	sans
317	313	311	386	388	395	396	319	321



Vc m/min	Gamme d'av. N°	Vc m/min	Gamme d'av. N°	Vc m/min	Gamme d'av. N°	Vc m/min	Gamme d'av. N°	Vc m/min	Gamme d'av. N°	Vc m/min	Gamme d'av. N°	Vc m/min	Gamme d'av. N°	Vc m/min	Gamme d'av. N°	Vc m/min	Gamme d'av. N°
42	6	35	6	35	6	45	6	42	6	48	7	60	7	80	4	100	5
36	5	30	5	30	5	35	5	37	5	38	6	48	6	70	4	90	5
48	6	40	6	40	6	50	6	47	6	48	7	60	7	80	5	100	6
42	5	40	5	40	5	40	6	44	6	38	6	48	6	70	4	90	4
44	6	40	5	40	5	44	6	47	6	48	6	60	6	80	4	100	5
44	5	40	5	40	5	44	6	47	6	48	6	60	6	70	4	90	5
42	5	35	4	35	4	40	5	44	5	38	5	50	5	60	4	80	5
30	4	20	4	25	4	27	4	30	4	28	5	33	5	60	4	80	5
25	3	16	3	20	3	22	3	25	3	26	4	31	4				
40	6	36	6	40	6	44	6	47	3	43	7	55	7	80	5	100	6
25	3	20	3	20	4	22	4	25	4	25	5	31	5	60	4	80	5
20	3	15	3	15	3	18	3	20	3	24	4	31	4				
20	3	16	4	20	4	22	4	25	4	25	5	30	5	50	4	65	5
18	3	12	3	15	3	16	3	18	4	20	4	24	4				
21	4	15	3	18	4	20	4	22	5	24	5	30	5	50	3	65	3
16	3	12	3	12	3	15	3	17	4	16	4	20	4				
17	3	15	3	12	3	13	3	14	4	14	4	18	4				
11	2	8	2	8	2	9	2	12	2	12	3	15	3	25	2	30	3
6	1	4	1							4	3	5	3	20	2	20	2
20	4	18	3	14	4	20	4	22	4	20	5	25	5	25	2	30	2
15	3	14	3	10	3	16	4	18	3	14	4	18	4	15	1	20	1
18	3	16	3	12	3	18	4	20	3	16	4	20	4	25	2	30	2
45	6	35	6	38	6	45	6	50	7	48	7	60	7	90	4	115	5
40	6	30	6	30	6	40	6	40	7	38	7	48	7	80	4	100	5
36	6	30	6	30	6	40	6	44	7	42	7	52	7	70	4	90	5
29	6	28	6	25	6	30	6	33	7	32	7	40	7	80	4	80	5
14	3	10	3	10	3			16	4	12	4	15	4				
9	1	8	1	5	2			6	2	10	2	12	2	15	2	20	3
12	2	10	2							14	3	18	3	15	1	15	1
8	2	6	2							10	3	12	3	15	1	15	1
		90	7	90	7	70	7							200	7	260	8
		90	7	90	7	70	7							200	7	260	8
80	7	80	7	80	7	85	7			95	7	120	7	150	6	195	7
70	6	70	6	70	6	70	6			75	8	95	8	120	6	155	7
80	6	70	6	85	6	80	6							180	5	235	6
70	5	70	5	80	5	80	5	50	5	90	6	100	6	80	5	100	6
60	5	60	5	70	5	77	5							180	5	235	6
40	5	40	5	40	5	44	5	60	5	45	6	55	6	180	5	235	6
35	4	35	4	40	4	50	4	50	5					120	5	155	6
33	4	33	4	30	4	40	4	44	5	48	5	60	5	120	5	155	6
20	4	20	4	25	4	32	4	33	5	45	5	55	5	70	4	90	5
15	4	15	4	15	4	28	4	28	5	38	5	45	5	50	3	65	4
		20	4	20	4	25	4	25	4					50	4	50	5
		30	5	25	5	27	4			38	6	48	6	40	3	65	4
														80	3	100	4

Navigateur



GÜHRING NAVIGATOR

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- N° d'article (R)
N° d'article (L)
Norme/DIN
Matière de coupe
Version
Type
Lubrification
Prix/dim. page

Table with 10 columns: Ø outil mm, 1-9 (f mm/tr.), and rows for various drill diameters from 0,50 to 80,00.

- Produits de refroidissement: Air, Huile, Huile soluble
Sens de coupe: coupe à droite, coupe à gauche

Main table with 5 columns: Matières, Exemples, nouvelle désignation, Résistance MPa, Dureté, Prod. de réf. Rows include various materials like Aciers de construction, Aciers de décolletage, etc.

Navigateur



≤10xD Profondeur

561	211	204	217	257	523
			220		
339	339	340	340	341	WN
HSS	HSS	HSS	HSS	HSS	HSS
N	N	N	N	N	N
sans	sans	sans	sans	sans	sans
327	325	338	331/336	473	482

218	219	501	505	535	551
221				506	
340	340	340	341	340	341
HSS	HSS	HSS	HSS	HSS	HSS
H	W	GT50	GT50	GT100	GT100
sans	sans	sans	sans	sans	sans
339/341	342	351	479	344/350	476

666	667	655	668	656
339	340	341	340	341
HSS	HSS	HSS	HSS	HSS
N	N	N	GT100	GT100
sans	sans	sans	sans	sans
328	334	475	347	478

2462
340
HSS
GT100
sans
349



Vc m/min	Gamme d'avance N°					
24	6	6	6	6	6	6
20	5	5	5	5	5	5
27	6	6	6	6	6	6
27	5	5	5	5	5	5
22	5	5	5	5	5	5
22	5	5	5	5	5	5
27	6	6	6	6	6	6
14	4	4	4	4	4	4
27	6	6	6	6	6	6
27	6	6	6	6	6	6
22	6	6	6	6	6	6
18	6	6	6	6	6	6
45	7	7	7	7	7	7
45	6	6	6	6	6	6
63	6	6	6	6	6	6
54	5	5	5	5	5	5
36	5	5	5	5	5	5
28	4	4	4	4	4	4
22	4	4	4	4	4	4
22	4	4	4	4	4	4
14	4	4	4	4	4	4
22	5	5	5	5	5	5

Vc m/min	Gamme d'avance N°					
24					6	6
20					5	5
27					6	6
27					5	5
22					5	5
22					5	5
27					6	6
14					4	4
27					6	6
27					6	6
22					6	6
18					6	6
65	7	7	7			
65	7	7	7			
45	7				7	7
45					6	6
63	6		6	6		
54		5			5	5
63	6					
36					5	5
28	4					
22					4	4
22					4	4
14	4				4	4
22	5	5	5	5		

Vc m/min	Gamme d'avance N°					
28	6	6	6	6	6	6
22	5	5	5	5	5	5
30	6	6	6	6	6	6
30	5	5	5	5	5	5
25	5	5	5	5	5	5
25	5	5	5	5	5	5
22	4	4	4	4	4	4
18	4	4	4	4	4	4
30	6	6	6	6	6	6
14	4	4	4	4	4	4
12	4	4	4	4	4	4
16	4	4	4	4	4	4
10	3	3	3	3	3	3
30	6	6	6	6	6	6
30	6	6	6	6	6	6
24	6	6	6	6	6	6
20	6	6	6	6	6	6
50	7	7	7	7	7	7
50	6	6	6	6	6	6
70	6	6	6	6	6	6
60	5	5	5	5	5	5
40	5	5	5	5	5	5
30	4	4	4	4	4	4
25	4	4	4	4	4	4
14	4	4	4	4	4	4
12	4	4	4	4	4	4
18	4	4	4	4	4	4
32	5	5	5	5	5	5

Vc m/min	Gamme d'av.
30	7
24	6
33	7
33	6
28	6
28	6
24	5
23	5
33	7
18	5
15	5
19	5
13	4
33	7
33	7
26	7
22	7
55	8
55	7
70	
65	6
44	6
30	
25	
16	5
14	5
23	5
32	



# GÜHRING NAVIGATOR

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 sous [www.guehring.de](http://www.guehring.de) vous disposez du logiciel „Navigateur Gühring“.

N° d'article
Norme/DIN
Matière de coupe
Version
Type
Lubrification
Prix/dim. page

Ø outil mm	Gamme d'avance n°								
	1	2	3	4	5	6	7	8	9
	f (mm/tr.)								
0,50	0,004	0,006	0,007	0,008	0,010	0,012	0,014	0,016	0,019
1,00	0,006	0,008	0,012	0,014	0,016	0,018	0,020	0,023	0,025
2,00	0,020	0,025	0,032	0,040	0,050	0,063	0,080	0,100	0,125
2,50	0,025	0,032	0,040	0,050	0,063	0,080	0,100	0,125	0,160
3,15	0,032	0,040	0,050	0,063	0,080	0,100	0,125	0,160	0,160
4,00	0,040	0,050	0,063	0,080	0,100	0,125	0,160	0,200	0,200
5,00	0,040	0,050	0,063	0,080	0,100	0,125	0,160	0,200	0,250
6,30	0,050	0,063	0,080	0,100	0,125	0,160	0,200	0,250	0,315
8,00	0,063	0,080	0,100	0,125	0,160	0,200	0,250	0,315	0,315
10,00	0,080	0,100	0,125	0,160	0,200	0,250	0,315	0,400	0,400
12,50	0,080	0,100	0,125	0,160	0,200	0,250	0,315	0,400	0,500
16,00	0,100	0,125	0,160	0,200	0,250	0,315	0,400	0,500	0,630
20,00	0,125	0,160	0,200	0,250	0,315	0,400	0,500	0,630	0,630
25,00	0,160	0,200	0,250	0,315	0,400	0,500	0,630	0,800	0,800
31,50	0,160	0,200	0,250	0,315	0,400	0,500	0,630	0,800	1,000
40,00	0,200	0,250	0,315	0,400	0,500	0,630	0,800	1,000	1,250
50,00	0,250	0,310	0,400	0,500	0,630	0,800	1,000	1,250	1,250
63,00	0,315	0,400	0,500	0,630	0,800	1,000	1,250	1,600	1,600
80,00	0,400	0,500	0,630	0,800	1,000	1,250	1,600	1,600	2,000

Produits de refroidissement:

- Air
- Huile
- Huile soluble

Sens de coupe:

- Ⓜ coupe à droite
- Ⓛ coupe à gauche

Matières	Exemples, nouvelle désignation ( Ancienne désignation entre parenthèses ) Caractères gras = N° de matières suivant DIN EN	Résistance MPa (N/mm²)	Dureté	Prod. de réf.
Aciers de construction	<b>1.0035</b> S185(St33), <b>1.0486</b> P275N(StE285), <b>1.0345</b> P235GH(H1), <b>1.0425</b> P265GH(H2)	≤500		○
	<b>1.0050</b> E295 (St50-2), <b>1.0070</b> E360 (St70-2), <b>1.8937</b> P500NH (WStE500)	≤1000		○
Aciers de décolletage	<b>1.0718</b> 11SMnPb30 (9SMnPb28), <b>1.0736</b> 11SMn37 (9SMn36)	≤850		○
	<b>1.0727</b> 46S20 (45S20), <b>1.0728</b> (60S20), <b>1.0757</b> 46SPb20 (45SPb20)	≤1000		○
Aciers d'amélioration non-alliés	<b>1.0402</b> C22, <b>1.1178</b> C30E (Ck30)	≤700		○
	<b>1.0503</b> C45, <b>1.1191</b> C45E (Ck45)	≤850		○
	<b>1.0601</b> C60, <b>1.1221</b> C60E (Ck60)	≤1000		○
Aciers d'amélioration alliés	<b>1.5131</b> 50MnSi4, <b>1.7003</b> 38Cr2, <b>1.7030</b> 28Cr4	≤1000		○
	<b>1.5710</b> 36NiCr6, <b>1.7035</b> 41Cr4, <b>1.7225</b> 42CrMo4	≤1400		○
Aciers de cémentation non-alliés	<b>1.0301</b> (C10), <b>1.1121</b> C10E (Ck10)	≤850		○
Aciers de cémentation alliés	<b>1.7276</b> 10CrMo11, <b>1.5125</b> 11MnSi6	≤1000		○
	<b>1.5752</b> 15NiCr13, <b>1.7131</b> 16MnCr5, <b>1.7264</b> 20CrMo5	≤1400		○
Aciers de nitruration	<b>1.8504</b> 34CrAl6	≤1000		○
	<b>1.8519</b> 31CrMoV9, <b>1.8550</b> 34CrAlNi7	≤1400		○
Aciers à outils	<b>1.1750</b> C75W, <b>1.2067</b> 102Cr6, <b>1.2307</b> 29CrMoV9	≤850		○
	<b>1.2080</b> X210Cr12, <b>1.2083</b> X42Cr13, <b>1.2419</b> 105WCr6, <b>1.2767</b> X45NiCrMo4	≤1400		○
Aciers rapides	<b>1.3243</b> S 6-5-2-5, <b>1.3343</b> S 6-5-2, <b>1.3344</b> S 6-5-3	≤1400		○
Aciers à ressort	<b>1.5026</b> 55Si7, <b>1.7176</b> 55Cr3, <b>1.8159</b> 51CrV4 (51CrV4)		≤350 HB	○
Aciers trempés	-		≤48 HRC	○
			≤66 HRC	○
Aciers inoxydables, sulfurés	<b>1.4005</b> X12CrS13, <b>1.4104</b> X14CrMoS17, <b>1.4105</b> X6CrMoS17, <b>1.4305</b> X8CrNiS18-9	≤900		○
austénitiques	<b>1.4301</b> X5CrNi18-10 (V2A), <b>1.4541</b> X6CrNiTi18-10, <b>1.4571</b> X6CrNiMoTi 17-12-2 (V4A)	≤1100		○
martensitiques	<b>1.4057</b> X20CrNi172 (X17CrNi16-2), <b>1.4122</b> X39CrMo17-1, <b>1.4521</b> X2CrMoTi18-2	≤1500		○
Fontes	<b>0.6010</b> EN-GJL-100 (GG10), <b>0.6020</b> EN-GJL-200 (GG20)		≤240 HB	○
	<b>0.6025</b> EN-GJL-250 (GG25), <b>0.6035</b> EN-GJL-350 (GG35)		≤350 HB	○
Fontes à graphite sphéroïdal et fontes malléables	<b>0.7050</b> EN-GJS-500-7 (GGG50), <b>0.8035</b> EN-GJMW-350-4 (GTW35)		≤240 HB	○
	<b>0.7070</b> EN-GJS-700-2 (GGG70), <b>0.8170</b> EN-GJMB-700-2 (GTS70)		≤350 HB	○
Fontes dures	-		≤350 HB	○
Nouvelles fontes GGV	<b>EN-GJV250</b> (GGV25), <b>EN-GJV350</b> (GGV35)		≤220 HB	○
	<b>EN-GJV400</b> (GGV40), <b>EN-GJV500</b> (GGV50), SiMo 6		≤300 HB	○
Nouvelles fontes ADI	<b>EN-GJS-800-8</b> (ADI800), <b>EN-GJS-1000-5</b> (ADI1000)	≤1000		○
	<b>EN-GJS-1200-2</b> (ADI1200), <b>EN-GJS-1400-1</b> (ADI1400)	≤1400		○
Alliages spéciaux	Nimonic, Inconel, Monel, Hastelloy	≤2000		○
Titane et alliages de Titane	<b>3.7024</b> Ti99,5, <b>3.7114</b> TiAl5Sn2,5, <b>3.7124</b> TiCu2	≤850		○
	<b>3.7154</b> TiAl6Zr5, <b>3.7165</b> TiAl6V4, <b>3.7184</b> TiAl4Mo4Sn2,5, - TiAl8Mo1V1	≤1400		○
Aluminium et ses alliages	<b>3.0255</b> Al99,5, <b>3.2315</b> AlMgSi1, <b>3.3515</b> AlMg1	≤400		○
Alliages malléables d'Al	<b>3.0615</b> AlMgSiPb, <b>3.1325</b> AlCuMg1, <b>3.3245</b> AlMg3Si, <b>3.4365</b> AlZnMgCu1,5	≤650		○
Alliages d'Al d'inject. ≤ 10 % Si	<b>3.2131</b> G-AlSi5Cu1, <b>3.2153</b> G-AlSi7Cu3, <b>3.2573</b> G-AlSi9	≤600		○
≤ 24 % Si	<b>3.2581</b> G-AlSi12, <b>3.2583</b> G-AlSi12Cu, - G-AlSi12CuNiMg	≤600		○
Alliages de Magnésium	<b>3.5200</b> MgMn2, <b>3.5812.05</b> G-MgAl8Zn1, <b>3.5612.05</b> G-MgAl6Zn1	≤400		○
Cuivres, faiblement alliés	<b>2.0070</b> SE-Cu, <b>2.1020</b> CuSn6, <b>2.1096</b> G-CuSn5ZnPb	≤500		○
Laiton à copeaux courts,	<b>2.0380</b> CuZn39Pb2, <b>2.0401</b> CuZn39Pb3, <b>2.0410</b> CuZn43Pb2	≤600		○
à copeaux longs	<b>2.0250</b> CuZn20, <b>2.0280</b> CuZn33, <b>2.0332</b> CuZn37Pb0,5	≤600		○
Bronze, à copeaux courts	<b>2.1090</b> CuSn7ZnPb, <b>2.1170</b> CuPb5Sn5, <b>2.1176</b> CuPb10Sn	≤600		○
	<b>2.0790</b> CuNi18Zn19Pb	≤850		○
Bronze, à copeaux longs	<b>2.0916</b> CuAl5, <b>2.0960</b> CuAl9Mn, <b>2.1050</b> CuSn10	≤850		○
	<b>2.0980</b> CuAl11Ni, <b>2.1247</b> CuBe2	≤1000		○
Thermodurcissables	Résine époxy, Resopal, Pertinax, Moltopren	≤150		○
Thermoplastiques	Plexiglas, Hostalen, Novodur, Makralon	≤100		○
renf. de fibres d'aramides	Kevlar	≤1000		○
renf. de fibres de verre ou carbone	GFK/CFK	≤1000		○



### ≤10xD Profondeur

390	254	255	269	270	271	272	1101
WN	WN	WN	WN	WN	WN	WN	WN
HSS	HSS	HSS	HSS	HSS	HSS	HSS	HSS
○	●	●	●	●	●	●	●
N	N	N	N	N	N	N	N
avec	avec	avec	avec	avec	avec	avec	avec
394	499	500	498	502	503	504	501

### >10xD Profondeur

235	236	237	266	267	524	528	529	525	542
1869 R1	1869 R2	1869 R3	1870 R1	1870 R2	1869 R1	1869 R2	1869 R3	1870 R1	1870 R2
HSS	HSS	HSS	HSS	HSS	HSS	HSS	HSS	HSS	HSS
○	○	●	●	●	○	○	○	○	○
N	N	N	N	N	GT 50	GT 50	GT 50	GT 50	GT 50
sans	sans	sans	sans	sans	sans	sans	sans	sans	sans
363	371	377	483	487	368	375	379	485	489



Vc m/min	Gamme d'avance N°							
26	6	6	6	6	6	6	6	6
22	5	5	5	5	5	5	5	5
30	6	6	6	6	6	6	6	6
30	5	5	5	5	5	5	5	5
24	5	5	5	5	5	5	5	5
24	5	5	5	5	5	5	5	5
22	4	4	4	4	4	4	4	4
20	4	4	4	4	4	4	4	4
14	3	3	3	3	3	3	3	3
30	6	6	6	6	6	6	6	6
17	4	4	4	4	4	4	4	4
12	3	3	3	3	3	3	3	3
14	4	4	4	4	4	4	4	4
10	3	3	3	3	3	3	3	3
15	4	4	4	4	4	4	4	4
10	3	3	3	3	3	3	3	3
10	3	3	3	3	3	3	3	3
7	2	2	2	2	2	2	2	2

	Gamme d'avance N°									
22	5	5	5	5	5					
18	4	4	4	4	4					
20	5	5	5	5	5					
20	4	4	4	4	4					
25	4	4	4	4	4					
25	4	4	4	4	4					
12	3	3	3	3	3					
22	5	5	5	5	5					
10	3	3	3	3	3					
8	3	3	3	3	3					
12	3	3	3	3	3					
6	2	2	2	2	2					
6	2	2	2	2	2					

30	6	6	6	6	6	6	6	6
30	6	6	6	6	6	6	6	6
24	6	6	6	6	6	6	6	6
20	6	6	6	6	6	6	6	6
7	3	3	3	3	3	3	3	3
80	6							
50	7	7	7	7	7	7	7	7
50	6	6	6	6	6	6	6	6
60	5	5	5	5	5	5	5	5
40	5	5	5	5	5	5	5	5
24	4	4	4	4	4	4	4	4
24	4	4	4	4	4	4	4	4
22	4	4	4	4	4	4	4	4
24	5	5	5	5	5	5	5	5

22	5	5	5	5	5					
18	5	5	5	5	5					
20	5	5	5	5	5					
14	5	5	5	5	5					
55						6	6	6	6	6
55						6	6	6	6	6
45	6	6	6	6	6					
36	5	5	5	5	5					
55	5	5	5	5	5	5	5	5	5	5
22	4	4	4	4	4					
45	4	4	4	4	4					
28	4	4	4	4	4					
22	3	3	3	3	3					
20	3	3	3	3	3					
18	3	3	3	3	3					
12	3	3	3	3	3					
18	4	4	4	4	4	4	4	4	4	4

Navigateur



# GÜHRING NAVIGATOR

Il est conseillé de choisir des outils dont les avances sont en caractères gras.  
**Pour le choix optimal de l'outil et de ses paramètres d'utilisation,**  
 sous [www.guehring.de](http://www.guehring.de) vous disposez du logiciel „Navigateur Gühring“.

**N° d'article**  
**Norme/DIN**  
**Matière de coupe**  
**Version**  
**Type**  
**Prix/dim. page**

Ø outil mm	Gamme d'avance n°								
	1	2	3	4	5	6	7	8	9
	f (mm/tr.)								
0,50	0,004	0,006	0,007	0,008	0,010	0,012	0,014	0,016	0,019
1,00	0,006	0,008	0,012	0,014	0,016	0,018	0,020	0,023	0,025
2,00	0,020	0,025	0,032	0,040	0,050	0,063	0,080	0,100	0,125
2,50	0,025	0,032	0,040	0,050	0,063	0,080	0,100	0,125	0,160
3,15	0,032	0,040	0,050	0,063	0,080	0,100	0,125	0,160	0,160
4,00	0,040	0,050	0,063	0,080	0,100	0,125	0,160	0,200	0,200
5,00	0,040	0,050	0,063	0,080	0,100	0,125	0,160	0,200	0,250
6,30	0,050	0,063	0,080	0,100	0,125	0,160	0,200	0,250	0,315
8,00	0,063	0,080	0,100	0,125	0,160	0,200	0,250	0,315	0,315
10,00	0,080	0,100	0,125	0,160	0,200	0,250	0,315	0,400	0,400
12,50	0,080	0,100	0,125	0,160	0,200	0,250	0,315	0,400	0,500
16,00	0,100	0,125	0,160	0,200	0,250	0,315	0,400	0,500	0,630
20,00	0,125	0,160	0,200	0,250	0,315	0,400	0,500	0,630	0,630
25,00	0,160	0,200	0,250	0,315	0,400	0,500	0,630	0,800	0,800
31,50	0,160	0,200	0,250	0,315	0,400	0,500	0,630	0,800	1,000
40,00	0,200	0,250	0,315	0,400	0,500	0,630	0,800	1,000	1,250
50,00	0,250	0,310	0,400	0,500	0,630	0,800	1,000	1,250	1,250
63,00	0,315	0,400	0,500	0,630	0,800	1,000	1,250	1,600	1,600
80,00	0,400	0,500	0,630	0,800	1,000	1,250	1,600	1,600	2,000

Produits de refroidissement:

- Air
- Huile
- Huile soluble

Sens de coupe:

- Ⓜ coupe à droite
- Ⓛ coupe à gauche

Matières	Exemples, nouvelle désignation ( Ancienne désignation entre parenthèses ) Caractères gras = N° de matières suivant DIN EN	Résistance MPa (N/mm²)	Dureté	Prod. de réf.
Aciers de construction	<b>1.0035</b> S185(St33), <b>1.0486</b> P275N(StE285), <b>1.0345</b> P235GH(H1), <b>1.0425</b> P265GH(H2)	≤500		○
	<b>1.0050</b> E295 (St50-2), <b>1.0070</b> E360 (St70-2), <b>1.8937</b> P500NH (WStE500)	≤1000		○
Aciers de décolletage	<b>1.0718</b> 11SMnPb30 (9SMnPb28), <b>1.0736</b> 11SMn37 (9SMn36)	≤850		○
	<b>1.0727</b> 46S20 (45S20), <b>1.0728</b> (60S20), <b>1.0757</b> 46SPb20 (45SPb20)	≤1000		○
Aciers d'amélioration non-alliés	<b>1.0402</b> C22, <b>1.1178</b> C30E (Ck30)	≤700		○
	<b>1.0503</b> C45, <b>1.1191</b> C45E (Ck45)	≤850		○
	<b>1.0601</b> C60, <b>1.1221</b> C60E (Ck60)	≤1000		○
Aciers d'amélioration alliés	<b>1.5131</b> 50MnSi4, <b>1.7003</b> 38Cr2, <b>1.7030</b> 28Cr4	≤1000		○
	<b>1.5710</b> 36NiCr6, <b>1.7035</b> 41Cr4, <b>1.7225</b> 42CrMo4	≤1400		○
Aciers de cémentation non-alliés	<b>1.0301</b> (C10), <b>1.1121</b> C10E (Ck10)	≤850		○
Aciers de cémentation alliés	<b>1.7276</b> 10CrMo11, <b>1.5125</b> 11MnSi6	≤1000		○
	<b>1.5752</b> 15NiCr13, <b>1.7131</b> 16MnCr5, <b>1.7264</b> 20CrMo5	≤1400		○
Aciers de nitruration	<b>1.8504</b> 34CrAl6	≤1000		○
	<b>1.8519</b> 31CrMoV9, <b>1.8550</b> 34CrAlNi7	≤1400		○
Aciers à outils	<b>1.1750</b> C75W, <b>1.2067</b> 102Cr6, <b>1.2307</b> 29CrMoV9	≤850		○
	<b>1.2080</b> X210Cr12, <b>1.2083</b> X42Cr13, <b>1.2419</b> 105WCr6, <b>1.2767</b> X45NiCrMo4	≤1400		○
Aciers rapides	<b>1.3243</b> S 6-5-2-5, <b>1.3343</b> S 6-5-2, <b>1.3344</b> S 6-5-3	≤1400		○
Aciers à ressort	<b>1.5026</b> 55Si7, <b>1.7176</b> 55Cr3, <b>1.8159</b> 51CrV4 (51CrV4)		≤350 HB	○
Aciers trempés	-		≤48 HRC	○
			≤66 HRC	○
Aciers inoxydables, sulfurés	<b>1.4005</b> X12CrS13, <b>1.4104</b> X14CrMoS17, <b>1.4105</b> X6CrMoS17, <b>1.4305</b> X8CrNiS18-9	≤900		○
austénitiques	<b>1.4301</b> X5CrNi18-10 (V2A), <b>1.4541</b> X6CrNiTi18-10, <b>1.4571</b> X6CrNiMoTi 17-12-2 (V4A)	≤1100		○
martensitiques	<b>1.4057</b> X20CrNi172 (X17CrNi16-2), <b>1.4122</b> X39CrMo17-1, <b>1.4521</b> X2CrMoTi18-2	≤1500		○
Fontes	<b>0.6010</b> EN-GJL-100 (GG10), <b>0.6020</b> EN-GJL-200 (GG20)		≤240 HB	○
	<b>0.6025</b> EN-GJL-250 (GG25), <b>0.6035</b> EN-GJL-350 (GG35)		≤350 HB	○
Fontes à graphite sphéroïdal et fontes malléables	<b>0.7050</b> EN-GJS-500-7 (GGG50), <b>0.8035</b> EN-GJMW-350-4 (GTW35)		≤240 HB	○
	<b>0.7070</b> EN-GJS-700-2 (GGG70), <b>0.8170</b> EN-GJMB-700-2 (GTS70)		≤350 HB	○
Fontes dures	-		≤350 HB	○
Nouvelles fontes GGV	<b>EN-GJV250</b> (GGV25), <b>EN-GJV350</b> (GGV35)		≤220 HB	○
	<b>EN-GJV400</b> (GGV40), <b>EN-GJV500</b> (GGV50), SiMo 6		≤300 HB	○
Nouvelles fontes ADI	<b>EN-GJS-800-8</b> (ADI800), <b>EN-GJS-1000-5</b> (ADI1000)	≤1000		○
	<b>EN-GJS-1200-2</b> (ADI1200), <b>EN-GJS-1400-1</b> (ADI1400)	≤1400		○
Alliages spéciaux	Nimonic, Inconel, Monel, Hastelloy	≤2000		○
Titane et alliages de Titane	<b>3.7024</b> Ti99,5, <b>3.7114</b> TiAl5Sn2,5, <b>3.7124</b> TiCu2	≤850		○
	<b>3.7154</b> TiAl6Zr5, <b>3.7165</b> TiAl6V4, <b>3.7184</b> TiAl4Mo4Sn2,5, - TiAl8Mo1V1	≤1400		○
Aluminium et ses alliages	<b>3.0255</b> Al99,5, <b>3.2315</b> AlMgSi1, <b>3.3515</b> AlMg1	≤400		○
Alliages malléables d'Al	<b>3.0615</b> AlMgSiPb, <b>3.1325</b> AlCuMg1, <b>3.3245</b> AlMg3Si, <b>3.4365</b> AlZnMgCu1,5	≤650		○
Alliages d'Al d'inject. ≤ 10 % Si	<b>3.2131</b> G-AlSi5Cu1, <b>3.2153</b> G-AlSi7Cu3, <b>3.2573</b> G-AlSi9	≤600		○
≤ 24 % Si	<b>3.2581</b> G-AlSi12, <b>3.2583</b> G-AlSi12Cu, - G-AlSi12CuNiMg	≤600		○
Alliages de Magnésium	<b>3.5200</b> MgMn2, <b>3.5812.05</b> G-MgAl8Zn1, <b>3.5612.05</b> G-MgAl6Zn1	≤400		○
Cuivres, faiblement alliés	<b>2.0070</b> SE-Cu, <b>2.1020</b> CuSn6, <b>2.1096</b> G-CuSn5ZnPb	≤500		○
Laiton à copeaux courts,	<b>2.0380</b> CuZn39Pb2, <b>2.0401</b> CuZn39Pb3, <b>2.0410</b> CuZn43Pb2	≤600		○
à copeaux longs	<b>2.0250</b> CuZn20, <b>2.0280</b> CuZn33, <b>2.0332</b> CuZn37Pb0,5	≤600		○
Bronze, à copeaux courts	<b>2.1090</b> CuSn7ZnPb, <b>2.1170</b> CuPb5Sn5, <b>2.1176</b> CuPb10Sn	≤600		○
	<b>2.0790</b> CuNi18Zn19Pb	≤850		○
Bronze, à copeaux longs	<b>2.0916</b> CuAl5, <b>2.0960</b> CuAl9Mn, <b>2.1050</b> CuSn10	≤850		○
	<b>2.0980</b> CuAl11Ni, <b>2.1247</b> CuBe2	≤1000		○
Thermodurcissables	Résine époxy, Resopal, Pertinax, Moltopren	≤150		○
Thermoplastiques	Plexiglas, Hostalen, Novodur, Makralon	≤100		○
renf. de fibres d'aramides	Kevlar	≤1000		○
renf. de fibres de verre ou carbone	GFK/CFK	≤1000		○

Navigateur





>10xD Profondeur

502	503	504	242	243	244	526	527	563	564	565	566	293	298	299
1869 R1	1869 R2	1869 R3	WN	WN	WN	1870 R1	1870 R2	WN	WN	WN	WN	WN	WN	WN
HSS	HSS	HSS	HSS	HSS	HSS	HSS	HSS	HSS	HSS	HSS	HSS	HSS	HSS	HSS
GT 100	GT 100	GT 100	GT 100	GT 100	GT 100	GT 100	GT 100	GT 100	GT 100	GT 100	GT 100	GT 100	GT 100	GT 100
365	372	378	381	382	383	484	488	491	492	493	494	495	496	497

670	671
1869 R1	1869 R2
HSS	HSS
GT 100	GT 100
367	374



Vc m/min	Gamme d'avance N°													
22	5	5	5	5	5	5	5	5	5	5	5	5	5	5
18	4	4	4	4	4	4	4	4	4	4	4	4	4	4
22	5	5	5	5	5	5	5	5	5	5	5	5	5	5
18	4	4	4	4	4	4	4	4	4	4	4	4	4	4
22	4	4	4	4	4	4	4	4	4	4	4	4	4	4
18	4	4	4	4	4	4	4	4	4	4	4	4	4	4
22	5	5	5	5	5	5	5	5	5	5	5	5	5	5
12	3	3	3	3	3	3	3	3	3	3	3	3	3	3
6	2	2	2	2	2	2	2	2	2	2	2	2	2	2
22	5	5	5	5	5	5	5	5	5	5	5	5	5	5
18	5	5	5	5	5	5	5	5	5	5	5	5	5	5
20	5	5	5	5	5	5	5	5	5	5	5	5	5	5
14	5	5	5	5	5	5	5	5	5	5	5	5	5	5
28	4	4	4	4	4	4	4	4	4	4	4	4	4	4
22	3	3	3	3	3	3	3	3	3	3	3	3	3	3
20	3	3	3	3	3	3	3	3	3	3	3	3	3	3
18	3	3	3	3	3	3	3	3	3	3	3	3	3	3
12	3	3	3	3	3	3	3	3	3	3	3	3	3	3
18	4	4	4	4	4	4	4	4	4	4	4	4	4	4

Vc m/min	Gamme d'avance N°	
28	5	5
22	4	4
28	5	5
22	4	4
28	4	4
22	4	4
16	3	3
28	5	5
12	3	3
8	2	2
28	5	5
22	5	5
25	5	5
18	5	5
6	1	1
70	6	6
70	6	6
55	6	6
45	5	5
70	5	5
28	4	4
36	4	4
28	3	3
25	3	3
22	3	3
18	3	3
15	3	3
22	4	4

Navigateur



# GÜHRING NAVIGATOR

Il est conseillé de choisir des outils dont les avances sont en caractères gras.  
**Pour le choix optimal de l'outil et de ses paramètres d'utilisation,**  
 sous [www.guehring.de](http://www.guehring.de) vous disposez du logiciel „Navigateur Gühring“.

- N° d'article
- Norme/DIN
- Matière de coupe
- Nuance carbure
- Version
- Type
- Prix/dim. page

Ø outil mm	Gamme d'avance n°								
	1	2	3	4	5	6	7	8	9
	f (mm/tr.)								
0,50	0,004	0,006	0,007	0,008	0,010	0,012	0,014	0,016	0,019
1,00	0,006	0,008	0,012	0,014	0,016	0,018	0,020	0,023	0,025
2,00	0,020	0,025	0,032	0,040	0,050	0,063	0,080	0,100	0,125
2,50	0,025	0,032	0,040	0,050	0,063	0,080	0,100	0,125	0,160
3,15	0,032	0,040	0,050	0,063	0,080	0,100	0,125	0,160	0,160
4,00	0,040	0,050	0,063	0,080	0,100	0,125	0,160	0,200	0,200
5,00	0,040	0,050	0,063	0,080	0,100	0,125	0,160	0,200	0,250
6,30	0,050	0,063	0,080	0,100	0,125	0,160	0,200	0,250	0,315
8,00	0,063	0,080	0,100	0,125	0,160	0,200	0,250	0,315	0,315
10,00	0,080	0,100	0,125	0,160	0,200	0,250	0,315	0,400	0,400
12,50	0,080	0,100	0,125	0,160	0,200	0,250	0,315	0,400	0,500
16,00	0,100	0,125	0,160	0,200	0,250	0,315	0,400	0,500	0,630
20,00	0,125	0,160	0,200	0,250	0,315	0,400	0,500	0,630	0,630
25,00	0,160	0,200	0,250	0,315	0,400	0,500	0,630	0,800	0,800
31,50	0,160	0,200	0,250	0,315	0,400	0,500	0,630	0,800	1,000
40,00	0,200	0,250	0,315	0,400	0,500	0,630	0,800	1,000	1,250
50,00	0,250	0,310	0,400	0,500	0,630	0,800	1,000	1,250	1,250
63,00	0,315	0,400	0,500	0,630	0,800	1,000	1,250	1,600	1,600
80,00	0,400	0,500	0,630	0,800	1,000	1,250	1,600	1,600	2,000

Produits de refroidissement:

- Air
- Huile
- Huile soluble

Sens de coupe:

- Ⓜ coupe à droite
- Ⓛ coupe à gauche

Matières	Exemples, nouvelle désignation ( Ancienne désignation entre parenthèses ) Caractères gras = N° de matières suivant DIN EN	Résistance MPa (N/mm²)	Dureté	Prod. de réf.
Aciers de construction	<b>1.0035</b> S185(St33), <b>1.0486</b> P275N(StE285), <b>1.0345</b> P235GH(H1), <b>1.0425</b> P265GH(H2) <b>1.0050</b> E295 (St50-2), <b>1.0070</b> E360 (St70-2), <b>1.8937</b> P500NH (WStE500)	≤500 ≤1000		○ ○
Aciers de décolletage	<b>1.0718</b> 11SMnPb30 (9SMnPb28), <b>1.0736</b> 11SMn37 (9SMn36) <b>1.0727</b> 46S20 (45S20), <b>1.0728</b> (60S20), <b>1.0757</b> 46SPb20 (45SPb20)	≤850 ≤1000		○ ○
Aciers d'amélioration non-alliés	<b>1.0402</b> C22, <b>1.1178</b> C30E (Ck30) <b>1.0503</b> C45, <b>1.1191</b> C45E (Ck45) <b>1.0601</b> C60, <b>1.1221</b> C60E (Ck60)	≤700 ≤850 ≤1000		○ ○ ○
Aciers d'amélioration alliés	<b>1.5131</b> 50MnSi4, <b>1.7003</b> 38Cr2, <b>1.7030</b> 28Cr4 <b>1.5710</b> 36NiCr6, <b>1.7035</b> 41Cr4, <b>1.7225</b> 42CrMo4	≤1000 ≤1400		○ ○
Aciers de cémentation non-alliés	<b>1.0301</b> (C10), <b>1.1121</b> C10E (Ck10)	≤850		○
Aciers de cémentation alliés	<b>1.7276</b> 10CrMo11, <b>1.5125</b> 11MnSi6 <b>1.5752</b> 15NiCr13, <b>1.7131</b> 16MnCr5, <b>1.7264</b> 20CrMo5	≤1000 ≤1400		● ●
Aciers de nitruration	<b>1.8504</b> 34CrAl6 <b>1.8519</b> 31CrMoV9, <b>1.8550</b> 34CrAlNi7	≤1000 ≤1400		○ ●
Aciers à outils	<b>1.1750</b> C75W, <b>1.2067</b> 102Cr6, <b>1.2307</b> 29CrMoV9 <b>1.2080</b> X210Cr12, <b>1.2083</b> X42Cr13, <b>1.2419</b> 105WCr6, <b>1.2767</b> X45NiCrMo4	≤850 ≤1400		○ ○
Aciers rapides	<b>1.3243</b> S 6-5-2-5, <b>1.3343</b> S 6-5-2, <b>1.3344</b> S 6-5-3	≤1400		●
Aciers à ressort	<b>1.5026</b> 55Si7, <b>1.7176</b> 55Cr3, <b>1.8159</b> 51CrV4 (51CrV4)		≤350 HB	●
Aciers trempés	-		≤48 HRC ≤66 HRC	● ●
Aciers inoxydables, sulfurés	<b>1.4005</b> X12CrS13, <b>1.4104</b> X14CrMoS17, <b>1.4105</b> X6CrMoS17, <b>1.4305</b> X8CrNiS18-9	≤900		●
austénitiques	<b>1.4301</b> X5CrNi18-10 (V2A), <b>1.4541</b> X6CrNiTi18-10, <b>1.4571</b> X6CrNiMoTi 17-12-2 (V4A)	≤1100		●
martensitiques	<b>1.4057</b> X20CrNi172 (X17CrNi16-2), <b>1.4122</b> X39CrMo17-1, <b>1.4521</b> X2CrMoTi18-2	≤1500		●
Fontes	<b>0.6010</b> EN-GJL-100 (GG10), <b>0.6020</b> EN-GJL-200 (GG20) <b>0.6025</b> EN-GJL-250 (GG25), <b>0.6035</b> EN-GJL-350 (GG35)		≤240 HB ≤350 HB	○ ○
Fontes à graphite sphéroïdal et fontes malléables	<b>0.7050</b> EN-GJS-500-7 (GGG50), <b>0.8035</b> EN-GJMW-350-4 (GTW35) <b>0.7070</b> EN-GJS-700-2 (GGG70), <b>0.8170</b> EN-GJMB-700-2 (GTS70)		≤240 HB ≤350 HB	○ ○
Fontes dures	-		≤350 HB	○
Nouvelles fontes GGV	<b>EN-GJV250</b> (GGV25), <b>EN-GJV350</b> (GGV35) <b>EN-GJV400</b> (GGV40), <b>EN-GJV500</b> (GGV50), SiMo 6		≤220 HB ≤300 HB	○ ○
Nouvelles fontes ADI	<b>EN-GJS-800-8</b> (ADI800), <b>EN-GJS-1000-5</b> (ADI1000) <b>EN-GJS-1200-2</b> (ADI1200), <b>EN-GJS-1400-1</b> (ADI1400)	≤1000 ≤1400		○ ○
Alliages spéciaux	Nimonic, Inconel, Monel, Hastelloy	≤2000		●
Titane et alliages de Titane	<b>3.7024</b> Ti99,5, <b>3.7114</b> TiAl5Sn2,5, <b>3.7124</b> TiCu2 <b>3.7154</b> TiAl6Zr5, <b>3.7165</b> TiAl6V4, <b>3.7184</b> TiAl4Mo4Sn2,5, - TiAl8Mo1V1	≤850 ≤1400		● ○
Aluminium et ses alliages	<b>3.0255</b> Al99,5, <b>3.2315</b> AlMgSi1, <b>3.3515</b> AlMg1	≤400		○
Alliages malléables d'Al	<b>3.0615</b> AlMgSiPb, <b>3.1325</b> AlCuMg1, <b>3.3245</b> AlMg3Si, <b>3.4365</b> AlZnMgCu1,5	≤650		○
Alliages d'Al d'inject. ≤ 10 % Si ≤ 24 % Si	<b>3.2131</b> G-AlSi5Cu1, <b>3.2153</b> G-AlSi7Cu3, <b>3.2573</b> G-AlSi9 <b>3.2581</b> G-AlSi12, <b>3.2583</b> G-AlSi12Cu, - G-AlSi12CuNiMg	≤600 ≤600		○ ○
Alliages de Magnésium	<b>3.5200</b> MgMn2, <b>3.5812.05</b> G-MgAl8Zn1, <b>3.5612.05</b> G-MgAl6Zn1	≤400		○
Cuivres, faiblement alliés	<b>2.0070</b> SE-Cu, <b>2.1020</b> CuSn6, <b>2.1096</b> G-CuSn5ZnPb	≤500		○
Laiton à copeaux courts, à copeaux longs	<b>2.0380</b> CuZn39Pb2, <b>2.0401</b> CuZn39Pb3, <b>2.0410</b> CuZn43Pb2 <b>2.0250</b> CuZn20, <b>2.0280</b> CuZn33, <b>2.0332</b> CuZn37Pb0,5	≤600 ≤600		○ ○
Bronze, à copeaux courts	<b>2.1090</b> CuSn7ZnPb, <b>2.1170</b> CuPb5Sn5, <b>2.1176</b> CuPb10Sn <b>2.0790</b> CuNi18Zn19Pb	≤600 ≤850		○ ○
Bronze, à copeaux longs	<b>2.0916</b> CuAl5, <b>2.0960</b> CuAl9Mn, <b>2.1050</b> CuSn10 <b>2.0980</b> CuAl11Ni, <b>2.1247</b> CuBe2	≤850 ≤1000		○ ○
Thermodurcissables	Résine époxy, Resopal, Pertinax, Moltopren	≤150		○
Thermoplastiques	Plexiglas, Hostalen, Novodur, Makralon	≤100		○
renf. de fibres d'aramides	Kevlar	≤1000		○
renf. de fibres de verre ou carbone	GFK/CFK	≤1000		○

Navigateur





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- N° d'article
- Norme/DIN
- Matière de coupe
- Version
- Type
- Lubrification
- Prix/dim. page

Ø outil mm	Gamme d'avance n°								
	1	2	3	4	5	6	7	8	9
	f (mm/tr.)								
0,50	0,004	0,006	0,007	0,008	0,010	0,012	0,014	0,016	0,019
1,00	0,006	0,008	0,012	0,014	0,016	0,018	0,020	0,023	0,025
2,00	0,020	0,025	0,032	0,040	0,050	0,063	0,080	0,100	0,125
2,50	0,025	0,032	0,040	0,050	0,063	0,080	0,100	0,125	0,160
3,15	0,032	0,040	0,050	0,063	0,080	0,100	0,125	0,160	0,160
4,00	0,040	0,050	0,063	0,080	0,100	0,125	0,160	0,200	0,200
5,00	0,040	0,050	0,063	0,080	0,100	0,125	0,160	0,200	0,250
6,30	0,050	0,063	0,080	0,100	0,125	0,160	0,200	0,250	0,315
8,00	0,063	0,080	0,100	0,125	0,160	0,200	0,250	0,315	0,315
10,00	0,080	0,100	0,125	0,160	0,200	0,250	0,315	0,400	0,400
12,50	0,080	0,100	0,125	0,160	0,200	0,250	0,315	0,400	0,500
16,00	0,100	0,125	0,160	0,200	0,250	0,315	0,400	0,500	0,630
20,00	0,125	0,160	0,200	0,250	0,315	0,400	0,500	0,630	0,630
25,00	0,160	0,200	0,250	0,315	0,400	0,500	0,630	0,800	0,800
31,50	0,160	0,200	0,250	0,315	0,400	0,500	0,630	0,800	1,000
40,00	0,200	0,250	0,315	0,400	0,500	0,630	0,800	1,000	1,250
50,00	0,250	0,310	0,400	0,500	0,630	0,800	1,000	1,250	1,250
63,00	0,315	0,400	0,500	0,630	0,800	1,000	1,250	1,600	1,600
80,00	0,400	0,500	0,630	0,800	1,000	1,250	1,600	1,600	2,000

Produits de refroidissement:

- Air
- Huile
- Huile soluble

Sens de coupe:

- Ⓜ coupe à droite
- Ⓛ coupe à gauche

Matières	Exemples, nouvelle désignation ( Ancienne désignation entre parenthèses ) Caractères gras = N° de matières suivant DIN EN	Résistance MPa (N/mm²)	Dureté	Prod. de réf.
Aciers de construction	<b>1.0035</b> S185(St33), <b>1.0486</b> P275N(StE285), <b>1.0345</b> P235GH(H1), <b>1.0425</b> P265GH(H2)	≤500		○
	<b>1.0050</b> E295 (St50-2), <b>1.0070</b> E360 (St70-2), <b>1.8937</b> P500NH (WStE500)	≤1000		○
Aciers de décolletage	<b>1.0718</b> 11SMnPb30 (9SMnPb28), <b>1.0736</b> 11SMn37 (9SMn36)	≤850		○
	<b>1.0727</b> 46S20 (45S20), <b>1.0728</b> (60S20), <b>1.0757</b> 46SPb20 (45SPb20)	≤1000		○
Aciers d'amélioration non-alliés	<b>1.0402</b> C22, <b>1.1178</b> C30E (Ck30)	≤700		○
	<b>1.0503</b> C45, <b>1.1191</b> C45E (Ck45)	≤850		○
	<b>1.0601</b> C60, <b>1.1221</b> C60E (Ck60)	≤1000		○
Aciers d'amélioration alliés	<b>1.5131</b> 50MnSi4, <b>1.7003</b> 38Cr2, <b>1.7030</b> 28Cr4	≤1000		○
	<b>1.5710</b> 36NiCr6, <b>1.7035</b> 41Cr4, <b>1.7225</b> 42CrMo4	≤1400		○
Aciers de cémentation non-alliés	<b>1.0301</b> (C10), <b>1.1121</b> C10E (Ck10)	≤850		○
Aciers de cémentation alliés	<b>1.7276</b> 10CrMo11, <b>1.5125</b> 11MnSi6	≤1000		○
	<b>1.5752</b> 15NiCr13, <b>1.7131</b> 16MnCr5, <b>1.7264</b> 20CrMo5	≤1400		○
Aciers de nitruration	<b>1.8504</b> 34CrAl6	≤1000		○
	<b>1.8519</b> 31CrMoV9, <b>1.8550</b> 34CrAlNi7	≤1400		○
Aciers à outils	<b>1.1750</b> C75W, <b>1.2067</b> 102Cr6, <b>1.2307</b> 29CrMoV9	≤850		○
	<b>1.2080</b> X210Cr12, <b>1.2083</b> X42Cr13, <b>1.2419</b> 105WCr6, <b>1.2767</b> X45NiCrMo4	≤1400		○
Aciers rapides	<b>1.3243</b> S 6-5-2-5, <b>1.3343</b> S 6-5-2, <b>1.3344</b> S 6-5-3	≤1400		○
Aciers à ressort	<b>1.5026</b> 55Si7, <b>1.7176</b> 55Cr3, <b>1.8159</b> 51CrV4 (51CrV4)		≤350 HB	○
Aciers trempés	-		≤48 HRC	○
			≤66 HRC	○
Aciers inoxydables, sulfurés	<b>1.4005</b> X12CrS13, <b>1.4104</b> X14CrMoS17, <b>1.4105</b> X6CrMoS17, <b>1.4305</b> X8CrNiS18-9	≤900		○
austénitiques	<b>1.4301</b> X5CrNi18-10 (V2A), <b>1.4541</b> X6CrNiTi18-10, <b>1.4571</b> X6CrNiMoTi 17-12-2 (V4A)	≤1100		○
martensitiques	<b>1.4057</b> X20CrNi172 (X17CrNi16-2), <b>1.4122</b> X39CrMo17-1, <b>1.4521</b> X2CrMoTi18-2	≤1500		○
Fontes	<b>0.6010</b> EN-GJL-100 (GG10), <b>0.6020</b> EN-GJL-200 (GG20)		≤240 HB	○
	<b>0.6025</b> EN-GJL-250 (GG25), <b>0.6035</b> EN-GJL-350 (GG35)		≤350 HB	○
Fontes à graphite sphéroïdal et fontes malléables	<b>0.7050</b> EN-GJS-500-7 (GGG50), <b>0.8035</b> EN-GJMW-350-4 (GTW35)		≤240 HB	○
	<b>0.7070</b> EN-GJS-700-2 (GGG70), <b>0.8170</b> EN-GJMB-700-2 (GTS70)		≤350 HB	○
Fontes dures	-		≤350 HB	○
Nouvelles fontes GGV	<b>EN-GJV250</b> (GGV25), <b>EN-GJV350</b> (GGV35)		≤220 HB	○
	<b>EN-GJV400</b> (GGV40), <b>EN-GJV500</b> (GGV50), SiMo 6		≤300 HB	○
Nouvelles fontes ADI	<b>EN-GJS-800-8</b> (ADI800), <b>EN-GJS-1000-5</b> (ADI1000)	≤1000		○
	<b>EN-GJS-1200-2</b> (ADI1200), <b>EN-GJS-1400-1</b> (ADI1400)	≤1400		○
Alliages spéciaux	Nimonic, Inconel, Monel, Hastelloy	≤2000		○
Titane et alliages de Titane	<b>3.7024</b> Ti99,5, <b>3.7114</b> TiAl5Sn2,5, <b>3.7124</b> TiCu2	≤850		○
	<b>3.7154</b> TiAl6Zr5, <b>3.7165</b> TiAl6V4, <b>3.7184</b> TiAl4Mo4Sn2,5, - TiAl8Mo1V1	≤1400		○
Aluminium et ses alliages	<b>3.0255</b> Al99,5, <b>3.2315</b> AlMgSi1, <b>3.3515</b> AlMg1	≤400		○
Alliages malléables d'Al	<b>3.0615</b> AlMgSiPb, <b>3.1325</b> AlCuMg1, <b>3.3245</b> AlMg3Si, <b>3.4365</b> AlZnMgCu1,5	≤650		○
Alliages d'Al d'inject. ≤ 10 % Si	<b>3.2131</b> G-AlSi5Cu1, <b>3.2153</b> G-AlSi7Cu3, <b>3.2573</b> G-AlSi9	≤600		○
≤ 24 % Si	<b>3.2581</b> G-AlSi12, <b>3.2583</b> G-AlSi12Cu, - G-AlSi12CuNiMg	≤600		○
Alliages de Magnésium	<b>3.5200</b> MgMn2, <b>3.5812.05</b> G-MgAl8Zn1, <b>3.5612.05</b> G-MgAl6Zn1	≤400		○
Cuivres, faiblement alliés	<b>2.0070</b> SE-Cu, <b>2.1020</b> CuSn6, <b>2.1096</b> G-CuSn5ZnPb	≤500		○
Laiton à copeaux courts, à copeaux longs	<b>2.0380</b> CuZn39Pb2, <b>2.0401</b> CuZn39Pb3, <b>2.0410</b> CuZn43Pb2	≤600		○
	<b>2.0250</b> CuZn20, <b>2.0280</b> CuZn33, <b>2.0332</b> CuZn37Pb0,5	≤600		○
Bronze, à copeaux courts	<b>2.1090</b> CuSn7ZnPb, <b>2.1170</b> CuPb5Sn5, <b>2.1176</b> CuPb10Sn	≤600		○
	<b>2.0790</b> CuNi18Zn19Pb	≤850		○
Bronze, à copeaux longs	<b>2.0916</b> CuAl5, <b>2.0960</b> CuAl9Mn, <b>2.1050</b> CuSn10	≤850		○
	<b>2.0980</b> CuAl11Ni, <b>2.1247</b> CuBe2	≤1000		○
Therm durcissables	Résine époxy, Resopal, Pertinax, Moltopren	≤150		○
Thermoplastiques	Plexiglas, Hostalen, Novodur, Makralon	≤100		○
renf. de fibres d'aramides	Kevlar	≤1000		○
renf. de fibres de verre ou carbone	GFK/CFK	≤1000		○



>10xD Profondeur

618	619	620	621
1869 R1	1869 R2	1870 R1	1870 R2
HSCO	HSCO	HSCO	HSCO
GT 100	GT 100	GT 100	GT 100
sans	sans	sans	sans
370	376	486	490

571
1869 R3
HSCO
GT 100
sans
380

370	371	372
WN	WN	WN
HSCO	HSCO	HSCO
GT 100	GT 100	GT 100
avec	avec	avec
505	506	507

374	375	376
WN	WN	WN
HSCO	HSCO	HSCO
GT 100	GT 100	GT 100
avec	avec	avec
508	509	510



Vc m/min	Gamme d'avance N°			
30	4	4	4	4
25	4	4	4	4
33	4	4	4	4
30	4	4	4	4
33	4	4	4	4
33	4	4	4	4
20	3	3	3	3
14	3	3	3	3
10	2	2	2	2
29	4	4	4	4
14	3	3	3	3
10	2	2	2	2
10	3	3	3	3
8	2	2	2	2
11	3	3	3	3
8	2	2	2	2
8	2	2	2	2
5	1	1	1	1
3	1	1	1	1
10	3	3	3	3
8	2	2	2	2
10	2	2	2	2
20	5	5	5	5
16	5	5	5	5
5	2	2	2	2
5	1	1	1	1
6	1	1	1	1
5	1	1	1	1
50	6	6	6	6
40	5	5	5	5
30	4	4	4	4
45	4	4	4	4
30	4	4	4	4
25	4	4	4	4
20	4	4	4	4
16	3	3	3	3
10	3	3	3	3
14	3	3	3	3
20	3	3	3	3

Vc m/min	Gamme d'avance N°
30	4
25	4
33	4
30	4
33	4
33	4
20	3
14	3
10	2
29	4
14	3
10	2
10	3
8	2
11	3
8	2
8	2
5	1
3	1
10	3
8	2
10	2
20	5
16	5
5	2
5	1
6	1
5	1
50	6
40	5
30	4
45	4
30	4
25	4
20	4
16	3
10	3
14	3
20	3

Vc m/min	Gamme d'avance N°		
35	6	6	6
30	5	5	5
30	6	6	6
30	5	5	5
35	5	5	5
29	5	5	5
22	4	4	4
18	4	4	4
14	3	3	3
35	6	6	6
18	4	4	4
14	3	3	3
14	4	4	4
12	3	3	3
15	4	4	4
11	3	3	3
11	3	3	3
8	2	2	2
4	2	2	2
14	4	4	4
10	3	3	3
12	3	3	3
30	6	6	6
24	6	6	6
24	6	6	6
20	6	6	6
8	3	3	3
8	1	1	1
10	2	2	2
8	2	2	2
60	7	7	7
50	6	6	6
38	5	5	5
55	5	5	5
36	5	5	5
24	4	4	4
20	4	4	4
14	4	4	4
25	5	5	5

Vc m/min	Gamme d'avance N°		
30	5	5	5
25	4	4	4
30	5	5	5
25	4	4	4
30	4	4	4
25	4	4	4
18	3	3	3
16	3	3	3
12	2	2	2
30	5	5	5
16	3	3	3
12	2	2	2
12	3	3	3
10	2	2	2
13	3	3	3
9	2	2	2
9	2	2	2
6	2	2	2
4	1	1	1
12	3	3	3
8	2	2	2
12	2	2	2
28	5	5	5
22	5	5	5
22	5	5	5
18	5	5	5
6	2	2	2
6	1	1	1
8	2	2	2
6	2	2	2
55	6	6	6
44	5	5	5
35	4	4	4
50	4	4	4
33	4	4	4
22	4	4	4
18	4	4	4
12	4	4	4
25	4	4	4

Navigateur



GÜHRING NAVIGATOR

Il est conseillé de choisir des outils dont les avances sont en caractères gras. Pour le choix optimal de l'outil et de ses paramètres d'utilisation, sous www.guehring.de vous disposez du logiciel „Navigateur Gühring“.

- N° d'article
N° d'article
Norme/DIN
Matière de coupe
Nuance carbure
Version
Type
Lubrification
Prix/dim. page

Table with 9 columns (101-109) and 13 rows (0.10-2.00) showing cutting speed ranges (f in mm/tr.) for various tool diameters.

Table with 14 columns (56-68) and 8 rows (0.50-3.00) showing cutting speed ranges (f in mm/tr.) for tool diameters 0.50 to 3.00 mm.

- Produits de refroidissement: Air, Huile, Huile soluble
Sens de coupe: coupe à droite, coupe à gauche

Main table with 5 columns: Matière, Exemples/nouveaux désignations, Résistance MPa, Dureté, Prod. de réf. Lists various materials like Aciers de construction, Aciers de décolletage, etc.

Navigateur



301
303
1899
HSS-E-PM
○
N
sans
649/654

660
1899
HSS-E-PM
Ⓢ
N
sans
652

701
WN
CW mono
K10/K20
○
N
sans
656

3899
WN
CW mono
K/P
Ⓐ
N
sans
657

≤4xD ≤7xD

6400	6401
WN	WN
CW mono	CW mono
K/P	K/P
Ⓐ	Ⓐ
N	N
sans	sans
108/659	109/660

≤5xD ≤8xD ≤15xD

6405	6408	6412
WN	WN	WN
CW mono	CW mono	CW mono
K/P	K/P	K/P
Ⓐ	Ⓐ	Ⓐ
N	N	N
avec	avec	avec
110/661	111/662	112/663



Vc m/min	Gamme d'avance N°	Vc m/min	Gamme d'avance N°	Vc m/min	Gamme d'avance N°	Vc m/min	Gamme d'avance N°	Vc m/min	Gamme d'avance N°	Vc m/min	Gamme d'avance N°	Vc m/min	Gamme d'avance N°	Vc m/min	Gamme d'avance N°	Vc m/min	Gamme d'avance N°
21	106	27	106	50	105	100	62	100	64	62	105	62	58	58			
18	105	23	105	35	104	100	62	100	64	62	100	62	58	58			
18	106	23	106	50	105	100	62	100	64	62	105	62	59	59			
16	105	21	105	45	104	90	61	90	63	61	90	61	59	59			
20	105	26	105	45	104	90	62	90	64	62	95	62	58	58			
18	105	23	105	35	104	90	62	90	64	62	95	62	58	58			
14	104	18	104	30	103	90	61	90	63	61	90	61	58	58			
14	104	18	104	30	103	90	61	90	63	61	90	61	58	58			
12	103	16	103	70	60	70	60	70	62	60	70	60	58	58			
18	106	23	106	50	103	100	61	100	63	61	100	61	57	57			
14	104	18	104	40	103	85	61	85	63	61	85	61	58	58			
12	103	16	103	70	60	70	60	70	62	60	70	60	58	58			
14	104	18	104	25	103	70	60	70	62	60	70	60	57	57			
12	103	16	103	60	60	60	60	60	62	60	60	60	57	57			
16	104	20	104	50	60	50	60	50	62	60	50	60	58	58			
14	103	18	103	60	60	60	60	60	62	60	50	60	58	58			
14	103	18	103					60	57	57	50	57	57	57			
8	102	10	102	20	102			60	57	57	50	57	57	57			
				15	104												
18	104	20	104	25	103			30	57	57	70	57	57	57			
14	103	16	103	25	102			15	56	56	60	56	56	56			
16	103	18	103	25	102			30	57	57	70	57	57	57			
26	106	33	106	80	105	130	66	130	68	66	150	60	60	60			
22	106	28	106	60	105	130	66	130	68	66	140	60	60	60			
18	106	23	106	60	105	130	66	130	68	66	140	60	60	60			
22	106	28	106	50	105	120	65	120	67	65	130	60	60	60			
				15	103			10	56	56	25	56	56	56			
				45	104			15	56	56	35	56	56	56			
				25	104			15	56	56	35	56	56	56			
				160	107			70	68	68	70	68	68	68			
				150	106			70	68	68	70	68	68	68			
26	107			100	106			135	59	59	135	59	59	59			
18	106			60	106			135	59	59	135	59	59	59			
75	106	80	106	150	105												
42	105	53	105	50	105												
				67	106												
22	105	28	105	44	104												
22	104	28	104	68	103												
18	104	23	104	49	103												
13	104	16	104	53	103												
		14	104	36	103												
16	104	20	104	50	103												
18	104	23	104	36	103												
				60	104												

Navigateur

# GÜHRING NAVIGATOR Forets NC

Il est conseillé de choisir des outils dont les avances sont en caractères gras.  
**Pour le choix optimal de l'outil et de ses paramètres d'utilisation,**  
 sous [www.guehring.de](http://www.guehring.de) vous disposez du logiciel „Navigateur Gühring“.

N° d'article  
 Norme/DIN  
 Matière de coupe  
 Version  
 Type  
 Angle au sommet °  
 Prix/dim. page

Ø outil mm	Gamme d'avance n°								
	1	2	3	4	5	6	7	8	9
	f (mm/tr.)								
<b>0,50</b>	0,004	0,006	0,007	0,008	0,010	0,012	0,014	0,016	0,019
<b>1,00</b>	0,006	0,008	0,012	0,014	0,016	0,018	0,020	0,023	0,025
<b>2,00</b>	0,020	0,025	0,032	0,040	0,050	0,063	0,080	0,100	0,125
<b>2,50</b>	0,025	0,032	0,040	0,050	0,063	0,080	0,100	0,125	0,160
<b>3,15</b>	0,032	0,040	0,050	0,063	0,080	0,100	0,125	0,160	0,160
<b>4,00</b>	0,040	0,050	0,063	0,080	0,100	0,125	0,160	0,200	0,200
<b>5,00</b>	0,040	0,050	0,063	0,080	0,100	0,125	0,160	0,200	0,250
<b>6,30</b>	0,050	0,063	0,080	0,100	0,125	0,160	0,200	0,250	0,315
<b>8,00</b>	0,063	0,080	0,100	0,125	0,160	0,200	0,250	0,315	0,315
<b>10,00</b>	0,080	0,100	0,125	0,160	0,200	0,250	0,315	0,400	0,400
<b>12,50</b>	0,080	0,100	0,125	0,160	0,200	0,250	0,315	0,400	0,500
<b>16,00</b>	0,100	0,125	0,160	0,200	0,250	0,315	0,400	0,500	0,630
<b>20,00</b>	0,125	0,160	0,200	0,250	0,315	0,400	0,500	0,630	0,630
<b>25,00</b>	0,160	0,200	0,250	0,315	0,400	0,500	0,630	0,800	0,800
<b>31,50</b>	0,160	0,200	0,250	0,315	0,400	0,500	0,630	0,800	1,000
<b>40,00</b>	0,200	0,250	0,315	0,400	0,500	0,630	0,800	1,000	1,250
<b>50,00</b>	0,250	0,310	0,400	0,500	0,630	0,800	1,000	1,250	1,250
<b>63,00</b>	0,315	0,400	0,500	0,630	0,800	1,000	1,250	1,600	1,600
<b>80,00</b>	0,400	0,500	0,630	0,800	1,000	1,250	1,600	1,600	2,000

Produits de refroidissement:  
 ○ Air  
 ● Huile  
 ● Huile soluble  
 Sens de coupe:  
 ⊞ coupe à droite  
 ⊞ coupe à gauche

Matières	Exemples, nouvelle désignation ( Ancienne désignation entre parenthèses ) Caractères gras = N° de matières suivant DIN EN	Résistance MPa (N/mm²)	Dureté	Prod. de réf.
Aciers de construction	<b>1.0035</b> S185(St33), <b>1.0486</b> P275N(StE285), <b>1.0345</b> P235GH(H1), <b>1.0425</b> P265GH(H2) <b>1.0050</b> E295 (St50-2), <b>1.0070</b> E360 (St70-2), <b>1.8937</b> P500NH (WStE500)	≤500 ≤1000		○ ○
Aciers de décolletage	<b>1.0718</b> 11SMnPb30 (9SMnPb28), <b>1.0736</b> 11SMn37 (9SMn36) <b>1.0727</b> 46S20 (45S20), <b>1.0728</b> (60S20), <b>1.0757</b> 46SPb20 (45SPb20)	≤850 ≤1000		○ ○
Aciers d'amélioration non-alliés	<b>1.0402</b> C22, <b>1.1178</b> C30E (Ck30) <b>1.0503</b> C45, <b>1.1191</b> C45E (Ck45) <b>1.0601</b> C60, <b>1.1221</b> C60E (Ck60)	≤700 ≤850 ≤1000		○ ○ ○
Aciers d'amélioration alliés	<b>1.5131</b> 50MnSi4, <b>1.7003</b> 38Cr2, <b>1.7030</b> 28Cr4 <b>1.5710</b> 36NiCr6, <b>1.7035</b> 41Cr4, <b>1.7225</b> 42CrMo4	≤1000 ≤1400		○ ○
Aciers de cémentation non-alliés	<b>1.0301</b> (C10), <b>1.1121</b> C10E (Ck10)	≤850		○
Aciers de cémentation alliés	<b>1.7276</b> 10CrMo11, <b>1.5125</b> 11MnSi6 <b>1.5752</b> 15NiCr13, <b>1.7131</b> 16MnCr5, <b>1.7264</b> 20CrMo5	≤1000 ≤1400		○ ○
Aciers de nitruration	<b>1.8504</b> 34CrAl6 <b>1.8519</b> 31CrMoV9, <b>1.8550</b> 34CrAlNi7	≤1000 ≤1400		○ ○
Aciers à outils	<b>1.1750</b> C75W, <b>1.2067</b> 102Cr6, <b>1.2307</b> 29CrMoV9 <b>1.2080</b> X210Cr12, <b>1.2083</b> X42Cr13, <b>1.2419</b> 105WCr6, <b>1.2767</b> X45NiCrMo4	≤850 ≤1400		○ ○
Aciers rapides	<b>1.3243</b> S 6-5-2-5, <b>1.3343</b> S 6-5-2, <b>1.3344</b> S 6-5-3	≤1400		○
Aciers à ressort	<b>1.5026</b> 55Si7, <b>1.7176</b> 55Cr3, <b>1.8159</b> 51CrV4 (51CrV4)		≤350 HB	○
Aciers trempés	-		≤48 HRC ≤66 HRC	○ ○
Aciers inoxydables, sulfurés	<b>1.4005</b> X12CrS13, <b>1.4104</b> X14CrMoS17, <b>1.4105</b> X6CrMoS17, <b>1.4305</b> X8CrNiS18-9	≤900		○
austénitiques	<b>1.4301</b> X5CrNi18-10 (V2A), <b>1.4541</b> X6CrNiTi18-10, <b>1.4571</b> X6CrNiMoTi 17-12-2 (V4A)	≤1100		○
martensitiques	<b>1.4057</b> X20CrNi172 (X17CrNi16-2), <b>1.4122</b> X39CrMo17-1, <b>1.4521</b> X2CrMoTi18-2	≤1500		○
Fontes	<b>0.6010</b> EN-GJL-100 (GG10), <b>0.6020</b> EN-GJL-200 (GG20) <b>0.6025</b> EN-GJL-250 (GG25), <b>0.6035</b> EN-GJL-350 (GG35)		≤240 HB ≤350 HB	○ ○
Fontes à graphite sphéroïdal et fontes malléables	<b>0.7050</b> EN-GJS-500-7 (GGG50), <b>0.8035</b> EN-GJMW-350-4 (GTW35) <b>0.7070</b> EN-GJS-700-2 (GGG70), <b>0.8170</b> EN-GJMB-700-2 (GTS70)		≤240 HB ≤350 HB	○ ○
Fontes dures	-		≤350 HB	○
Nouvelles fontes GGV	<b>EN-GJV250</b> (GGV25), <b>EN-GJV350</b> (GGV35) <b>EN-GJV400</b> (GGV40), <b>EN-GJV500</b> (GGV50), SiMo 6		≤220 HB ≤300 HB	○ ○
Nouvelles fontes ADI	<b>EN-GJS-800-8</b> (ADI800), <b>EN-GJS-1000-5</b> (ADI1000) <b>EN-GJS-1200-2</b> (ADI1200), <b>EN-GJS-1400-1</b> (ADI1400)	≤1000 ≤1400		○ ○
Alliages spéciaux	Nimonic, Inconel, Monel, Hastelloy	≤2000		○
Titane et alliages de Titane	<b>3.7024</b> Ti99,5, <b>3.7114</b> TiAl5Sn2,5, <b>3.7124</b> TiCu2 <b>3.7154</b> TiAl6Zr5, <b>3.7165</b> TiAl6V4, <b>3.7184</b> TiAl4Mo4Sn2,5, - TiAl8Mo1V1	≤850 ≤1400		○ ○
Aluminium et ses alliages	<b>3.0255</b> Al99,5, <b>3.2315</b> AlMgSi1, <b>3.3515</b> AlMg1	≤400		○
Alliages malléables d'Al	<b>3.0615</b> AlMgSiPb, <b>3.1325</b> AlCuMg1, <b>3.3245</b> AlMg3Si, <b>3.4365</b> AlZnMgCu1,5	≤650		○
Alliages d'Al d'inject. ≤ 10 % Si ≤ 24 % Si	<b>3.2131</b> G-AlSi5Cu1, <b>3.2153</b> G-AlSi7Cu3, <b>3.2573</b> G-AlSi9 <b>3.2581</b> G-AlSi12, <b>3.2583</b> G-AlSi12Cu, - G-AlSi12CuNiMg	≤600 ≤600		○ ○
Alliages de Magnésium	<b>3.5200</b> MgMn2, <b>3.5812.05</b> G-MgAl8Zn1, <b>3.5612.05</b> G-MgAl6Zn1	≤400		○
Cuivres, faiblement alliés	<b>2.0070</b> SE-Cu, <b>2.1020</b> CuSn6, <b>2.1096</b> G-CuSn5ZnPb	≤500		○
Laiton à copeaux courts, à copeaux longs	<b>2.0380</b> CuZn39Pb2, <b>2.0401</b> CuZn39Pb3, <b>2.0410</b> CuZn43Pb2 <b>2.0250</b> CuZn20, <b>2.0280</b> CuZn33, <b>2.0332</b> CuZn37Pb0,5	≤600 ≤600		○ ○
Bronze, à copeaux courts	<b>2.1090</b> CuSn7ZnPb, <b>2.1170</b> CuPb5Sn5, <b>2.1176</b> CuPb10Sn <b>2.0790</b> CuNi18Zn19Pb	≤600 ≤850		○ ○
Bronze, à copeaux longs	<b>2.0916</b> CuAl5, <b>2.0960</b> CuAl9Mn, <b>2.1050</b> CuSn10 <b>2.0980</b> CuAl11Ni, <b>2.1247</b> CuBe2	≤850 ≤1000		○ ○
Therm durcissables	Résine époxy, Resopal, Pertinax, Moltopren	≤150		○
Thermoplastiques	Plexiglas, Hostalen, Novodur, Makralon	≤100		○
renf. de fibres d'aramides	Kevlar	≤1000		○
renf. de fibres de verre ou carbone	GFK/CFK	≤1000		○

Navigateur





557	556	559
WN		
HSS		
○	○	○
N	N	N
90	120	90
696	702	700

568	567
WN	
HSS	
Ⓢ	Ⓢ
N	N
90	120
697	703

1136	1134
WN	
HSCO	
○	○
N	N
90	120
698	704

1133	1135
WN	
HSCO	
Ⓢ	Ⓢ
N	N
90	120
699	705



Vc m/min	Gamme d'avance N°		
30	6	6	6
25	5	5	5
32	6	6	6
30	5	5	5
25	5	5	5
25	5	5	5
20	4	4	4
15	4	4	4
12	3	3	3
30	6	6	6
15	4	4	4
8	3	3	3
16	4	4	4
10	3	3	3
6	3	3	3
8	3	3	3
30	6	6	6
30	6	6	6
25	6	6	6
20	6	6	6
70	7	7	7
70	7	7	7
50	7	7	7
50	6	6	6
70	6	6	6
60	5	5	5
60	5	5	5
40	5	5	5
30	4	4	4
25	4	4	4
15	4	4	4
12	4	4	4
18	4	4	4
28	5	5	5

Vc m/min	Gamme d'avance N°	
32	6	6
26	5	5
35	6	6
33	5	5
28	5	5
28	5	5
25	4	4
22	4	4
17	3	3
33	6	6
20	4	4
12	3	3
14	4	4
18	4	4
12	3	3
8	3	3
10	3	3
8	3	3
10	3	3
33	6	6
33	6	6
28	6	6
22	6	6
60	6	6
80	6	6
65	5	5
70	5	5
45	5	5
33	4	4
27	4	4
16	4	4
15	4	4
22	4	4
36	5	5

Vc m/min	Gamme d'avance N°	
35	6	6
30	5	5
40	5	5
40	5	5
35	5	5
35	5	5
30	4	4
22	4	4
17	3	3
33	6	6
20	4	4
15	3	3
14	4	4
12	3	3
18	4	4
12	3	3
8	3	3
8	2	2
12	3	3
10	3	3
10	3	3
33	6	6
33	6	6
30	6	6
25	6	6
6	1	1
8	2	2
6	2	2
80	7	7
80	7	7
60	7	7
60	6	6
70	6	6
65	5	5
70	5	5
45	5	5
35	4	4
33	4	4
20	4	4
15	4	4
22	4	4
36	5	5

Vc m/min	Gamme d'avance N°	
42	6	6
36	5	5
48	6	6
42	6	6
44	6	6
44	6	6
40	5	5
27	4	4
22	3	3
37	6	6
22	4	4
18	3	3
19	4	4
15	3	3
21	4	4
16	3	3
12	3	3
10	2	2
18	3	3
15	3	3
12	3	3
38	6	6
35	6	6
33	6	6
28	6	6
7	1	1
10	2	2
8	2	2
85	7	7
65	7	7
65	6	6
80	6	6
70	5	5
75	5	5
50	5	5
45	5	5
40	4	4
25	4	4
20	4	4
25	4	4
40	4	4



# GÜHRING NAVIGATOR Forets aléseurs

Il est conseillé de choisir des outils dont les avances sont en caractères gras.  
**Pour le choix optimal de l'outil et de ses paramètres d'utilisation,**  
 sous [www.guehring.de](http://www.guehring.de) vous disposez du logiciel „Navigateur Gühring“.

N° d'article	
Norme/DIN	
Matière de coupe	
Version	
Type	
Prix/dim. page	

Ø outil mm	Gamme d'avance n°								
	1	2	3	4	5	6	7	8	9
	f (mm/tr.)								
0,50	0,004	0,006	0,007	0,008	0,010	0,012	0,014	0,016	0,019
1,00	0,006	0,008	0,012	0,014	0,016	0,018	0,020	0,023	0,025
2,00	0,020	0,025	0,032	0,040	0,050	0,063	0,080	0,100	0,125
2,50	0,025	0,032	0,040	0,050	0,063	0,080	0,100	0,125	0,160
3,15	0,032	0,040	0,050	0,063	0,080	0,100	0,125	0,160	0,160
4,00	0,040	0,050	0,063	0,080	0,100	0,125	0,160	0,200	0,200
5,00	0,040	0,050	0,063	0,080	0,100	0,125	0,160	0,200	0,250
6,30	0,050	0,063	0,080	0,100	0,125	0,160	0,200	0,250	0,315
8,00	0,063	0,080	0,100	0,125	0,160	0,200	0,250	0,315	0,315
10,00	0,080	0,100	0,125	0,160	0,200	0,250	0,315	0,400	0,400
12,50	0,080	0,100	0,125	0,160	0,200	0,250	0,315	0,400	0,500
16,00	0,100	0,125	0,160	0,200	0,250	0,315	0,400	0,500	0,630
20,00	0,125	0,160	0,200	0,250	0,315	0,400	0,500	0,630	0,630
25,00	0,160	0,200	0,250	0,315	0,400	0,500	0,630	0,800	0,800
31,50	0,160	0,200	0,250	0,315	0,400	0,500	0,630	0,800	1,000
40,00	0,200	0,250	0,315	0,400	0,500	0,630	0,800	1,000	1,250
50,00	0,250	0,310	0,400	0,500	0,630	0,800	1,000	1,250	1,250
63,00	0,315	0,400	0,500	0,630	0,800	1,000	1,250	1,600	1,600
80,00	0,400	0,500	0,630	0,800	1,000	1,250	1,600	1,600	2,000

Produits de refroidissement:

- Air
- Huile
- Huile soluble

Sens de coupe:

- coupe à droite
- coupe à gauche

Matières	Exemples, nouvelle désignation ( Ancienne désignation entre parenthèses ) Caractères gras = N° de matières suivant DIN EN	Résistance MPa (N/mm²)	Dureté	Prod. de réf.
Aciers de construction	<b>1.0035</b> S185(St33), <b>1.0486</b> P275N(StE285), <b>1.0345</b> P235GH(H1), <b>1.0425</b> P265GH(H2) <b>1.0050</b> E295 (St50-2), <b>1.0070</b> E360 (St70-2), <b>1.8937</b> P500NH (WStE500)	≤500 ≤1000		<input type="radio"/> <input type="radio"/>
Aciers de décolletage	<b>1.0718</b> 11SMnPb30 (9SMnPb28), <b>1.0736</b> 11SMn37 (9SMn36) <b>1.0727</b> 46S20 (45S20), <b>1.0728</b> (60S20), <b>1.0757</b> 46SPb20 (45SPb20)	≤850 ≤1000		<input type="radio"/> <input type="radio"/>
Aciers d'amélioration non-alliés	<b>1.0402</b> C22, <b>1.1178</b> C30E (Ck30) <b>1.0503</b> C45, <b>1.1191</b> C45E (Ck45) <b>1.0601</b> C60, <b>1.1221</b> C60E (Ck60)	≤700 ≤850 ≤1000		<input type="radio"/> <input type="radio"/> <input type="radio"/>
Aciers d'amélioration alliés	<b>1.5131</b> 50MnSi4, <b>1.7003</b> 38Cr2, <b>1.7030</b> 28Cr4 <b>1.5710</b> 36NiCr6, <b>1.7035</b> 41Cr4, <b>1.7225</b> 42CrMo4	≤1000 ≤1400		<input type="radio"/> <input type="radio"/>
Aciers de cémentation non-alliés	<b>1.0301</b> (C10), <b>1.1121</b> C10E (Ck10)	≤850		<input type="radio"/>
Aciers de cémentation alliés	<b>1.7276</b> 10CrMo11, <b>1.5125</b> 11MnSi6 <b>1.5752</b> 15NiCr13, <b>1.7131</b> 16MnCr5, <b>1.7264</b> 20CrMo5	≤1000 ≤1400		<input type="radio"/> <input type="radio"/>
Aciers de nitruration	<b>1.8504</b> 34CrAl6 <b>1.8519</b> 31CrMoV9, <b>1.8550</b> 34CrAlNi7	≤1000 ≤1400		<input type="radio"/> <input type="radio"/>
Aciers à outils	<b>1.1750</b> C75W, <b>1.2067</b> 102Cr6, <b>1.2307</b> 29CrMoV9 <b>1.2080</b> X210Cr12, <b>1.2083</b> X42Cr13, <b>1.2419</b> 105WCr6, <b>1.2767</b> X45NiCrMo4	≤850 ≤1400		<input type="radio"/> <input type="radio"/>
Aciers rapides	<b>1.3243</b> S 6-5-2-5, <b>1.3343</b> S 6-5-2, <b>1.3344</b> S 6-5-3	≤1400		<input type="radio"/>
Aciers à ressort	<b>1.5026</b> 55Si7, <b>1.7176</b> 55Cr3, <b>1.8159</b> 51CrV4 (51CrV4)		≤350 HB	<input type="radio"/>
Aciers trempés	-		≤48 HRC ≤66 HRC	<input type="radio"/> <input type="radio"/>
Aciers inoxydables, sulfurés	<b>1.4005</b> X12CrS13, <b>1.4104</b> X14CrMoS17, <b>1.4105</b> X6CrMoS17, <b>1.4305</b> X8CrNiS18-9	≤900		<input type="radio"/>
austénitiques	<b>1.4301</b> X5CrNi18-10 (V2A), <b>1.4541</b> X6CrNiTi18-10, <b>1.4571</b> X6CrNiMoTi 17-12-2 (V4A)	≤1100		<input type="radio"/>
martensitiques	<b>1.4057</b> X20CrNi172 (X17CrNi16-2), <b>1.4122</b> X39CrMo17-1, <b>1.4521</b> X2CrMoTi18-2	≤1500		<input type="radio"/>
Fontes	<b>0.6010</b> EN-GJL-100 (GG10), <b>0.6020</b> EN-GJL-200 (GG20) <b>0.6025</b> EN-GJL-250 (GG25), <b>0.6035</b> EN-GJL-350 (GG35)		≤240 HB ≤350 HB	<input type="radio"/> <input type="radio"/>
Fontes à graphite sphéroïdal et fontes malléables	<b>0.7050</b> EN-GJS-500-7 (GGG50), <b>0.8035</b> EN-GJMW-350-4 (GTW35) <b>0.7070</b> EN-GJS-700-2 (GGG70), <b>0.8170</b> EN-GJMB-700-2 (GTS70)		≤240 HB ≤350 HB	<input type="radio"/> <input type="radio"/>
Fontes dures	-		≤350 HB	<input type="radio"/>
Nouvelles fontes GGV	<b>EN-GJV250</b> (GGV25), <b>EN-GJV350</b> (GGV35) <b>EN-GJV400</b> (GGV40), <b>EN-GJV500</b> (GGV50), SiMo 6		≤220 HB ≤300 HB	<input type="radio"/> <input type="radio"/>
Nouvelles fontes ADI	<b>EN-GJS-800-8</b> (ADI800), <b>EN-GJS-1000-5</b> (ADI1000) <b>EN-GJS-1200-2</b> (ADI1200), <b>EN-GJS-1400-1</b> (ADI1400)	≤1000 ≤1400		<input type="radio"/> <input type="radio"/>
Alliages spéciaux	Nimonic, Inconel, Monel, Hastelloy	≤2000		<input type="radio"/>
Titane et alliages de Titane	<b>3.7024</b> Ti99,5, <b>3.7114</b> TiAl5Sn2,5, <b>3.7124</b> TiCu2 <b>3.7154</b> TiAl6Zr5, <b>3.7165</b> TiAl6V4, <b>3.7184</b> TiAl4Mo4Sn2,5, - TiAl8Mo1V1	≤850 ≤1400		<input type="radio"/> <input type="radio"/>
Aluminium et ses alliages	<b>3.0255</b> Al99,5, <b>3.2315</b> AlMgSi1, <b>3.3515</b> AlMg1	≤400		<input type="radio"/>
Alliages malléables d'Al	<b>3.0615</b> AlMgSiPb, <b>3.1325</b> AlCuMg1, <b>3.3245</b> AlMg3Si, <b>3.4365</b> AlZnMgCu1,5	≤650		<input type="radio"/>
Alliages d'Al d'inject. ≤ 10 % Si ≤ 24 % Si	<b>3.2131</b> G-AlSi5Cu1, <b>3.2153</b> G-AlSi7Cu3, <b>3.2573</b> G-AlSi9 <b>3.2581</b> G-AlSi12, <b>3.2583</b> G-AlSi12Cu, - G-AlSi12CuNiMg	≤600 ≤600		<input type="radio"/> <input type="radio"/>
Alliages de Magnésium	<b>3.5200</b> MgMn2, <b>3.5812.05</b> G-MgAl8Zn1, <b>3.5612.05</b> G-MgAl6Zn1	≤400		<input type="radio"/>
Cuivres, faiblement alliés	<b>2.0070</b> SE-Cu, <b>2.1020</b> CuSn6, <b>2.1096</b> G-CuSn5ZnPb	≤500		<input type="radio"/>
Laiton à copeaux courts, à copeaux longs	<b>2.0380</b> CuZn39Pb2, <b>2.0401</b> CuZn39Pb3, <b>2.0410</b> CuZn43Pb2 <b>2.0250</b> CuZn20, <b>2.0280</b> CuZn33, <b>2.0332</b> CuZn37Pb0,5	≤600 ≤600		<input type="radio"/> <input type="radio"/>
Bronze, à copeaux courts	<b>2.1090</b> CuSn7Zn1Pb, <b>2.1170</b> CuPb5Sn5, <b>2.1176</b> CuPb10Sn <b>2.0790</b> CuNi18Zn19Pb	≤600 ≤850		<input type="radio"/> <input type="radio"/>
Bronze, à copeaux longs	<b>2.0916</b> CuAl5, <b>2.0960</b> CuAl9Mn, <b>2.1050</b> CuSn10 <b>2.0980</b> CuAl11Ni, <b>2.1247</b> CuBe2	≤850 ≤1000		<input type="radio"/> <input type="radio"/>
Therm durcissables	Résine époxy, Resopal, Pertinax, Moltopren	≤150		<input type="radio"/>
Thermoplastiques	Plexiglas, Hostalen, Novodur, Makralon	≤100		<input type="radio"/>
renf. de fibres d'aramides	Kevlar	≤1000		<input type="radio"/>
renf. de fibres de verre ou carbone	GFK/CFK	≤1000		<input type="radio"/>



533	534	555
DIN 344	DIN 343	DIN 1864
HSS		
N	N	N
737	740	743

634	635
DIN 343	DIN 1864
HSCO	
N	N
742	744



Vc m/min	Gamme d'avance N°		
27	4	4	4
20	4	4	4
28	4	4	4
25	4	4	4
22	4	4	4
20	4	4	4
18	3	3	3
15	4	4	4
8	3	3	3
23	5	5	5
15	4	4	4
8	3	3	3
10	4	4	4
8	3	3	3
10	3	3	3
6	3	3	3
6	3	3	3
5	2	2	2
8	2	2	2
6	2	2	2
5	2	2	2
20	6	6	6
20	5	5	5
18	6	6	6
16	5	5	5
3	1	1	1
5	2	2	2
4	2	2	2
60	7	7	7
60	7	7	7
36	6	6	6
36	6	6	6
40	6	6	6
50	5	5	5
50	5	5	5
30	5	5	5
30	4	4	4
25	4	4	4
15	4	4	4
15	4	4	4
15	4	4	4
25	5	5	5

Vc m/min	Gamme d'avance N°	
30	4	4
25	4	4
32	4	4
30	4	4
25	4	4
22	4	4
20	3	3
17	4	4
10	3	3
25	5	5
17	4	4
10	3	3
13	4	4
10	3	3
13	3	3
8	3	3
8	3	3
6	2	2
10	2	2
8	2	2
6	2	2
25	6	6
25	5	5
20	6	6
18	5	5
4	1	1
6	2	2
5	2	2
70	7	7
70	7	7
40	6	6
40	6	6
50	6	6
55	5	5
55	5	5
35	5	5
35	4	4
30	4	4
20	4	4
18	4	4
20	4	4
30	5	5

**GÜHRING** NAVIGATOR Forets à centrer

Il est conseillé de choisir des outils dont les avances sont en caractères gras.  
 Pour le choix optimal de l'outil et de ses paramètres d'utilisation,  
 sous [www.guehring.de](http://www.guehring.de) vous disposez du logiciel „Navigateur Gühring“.

N° d'article 

Norme/DIN

Matière de coupe

Version

Forme

Prix/dim. page

Ø outil mm	Gamme d'avance n°								
	1	2	3	4	5	6	7	8	9
	f (mm/tr.)								
0,50	0,004	0,006	0,007	0,008	0,010	0,012	0,014	0,016	0,019
1,00	0,006	0,008	0,012	0,014	0,016	0,018	0,020	0,023	0,025
2,00	0,020	0,025	0,032	0,040	0,050	0,063	0,080	0,100	0,125
2,50	0,025	0,032	0,040	0,050	0,063	0,080	0,100	0,125	0,160
3,15	0,032	0,040	0,050	0,063	0,080	0,100	0,125	0,160	0,160
4,00	0,040	0,050	0,063	0,080	0,100	0,125	0,160	0,200	0,200
5,00	0,040	0,050	0,063	0,080	0,100	0,125	0,160	0,200	0,250
6,30	0,050	0,063	0,080	0,100	0,125	0,160	0,200	0,250	0,315
8,00	0,063	0,080	0,100	0,125	0,160	0,200	0,250	0,315	0,315
10,00	0,080	0,100	0,125	0,160	0,200	0,250	0,315	0,400	0,400
12,50	0,080	0,100	0,125	0,160	0,200	0,250	0,315	0,400	0,500
16,00	0,100	0,125	0,160	0,200	0,250	0,315	0,400	0,500	0,630
20,00	0,125	0,160	0,200	0,250	0,315	0,400	0,500	0,630	0,630
25,00	0,160	0,200	0,250	0,315	0,400	0,500	0,630	0,800	0,800
31,50	0,160	0,200	0,250	0,315	0,400	0,500	0,630	0,800	1,000
40,00	0,200	0,250	0,315	0,400	0,500	0,630	0,800	1,000	1,250
50,00	0,250	0,310	0,400	0,500	0,630	0,800	1,000	1,250	1,250
63,00	0,315	0,400	0,500	0,630	0,800	1,000	1,250	1,600	1,600
80,00	0,400	0,500	0,630	0,800	1,000	1,250	1,600	1,600	2,000

Produits de refroidissement:


 Air

 Huile

 Huile soluble

Sens de coupe:

 coupe à droite

 coupe à gauche

Matières	Exemples, nouvelle désignation ( Ancienne désignation entre parenthèses ) Caractères gras = N° de matières suivant DIN EN	Résistance MPa (N/mm <sup>2</sup> )	Dureté	Prod. de réf.
Aciers de construction	<b>1.0035</b> S185(St33), <b>1.0486</b> P275N(StE285), <b>1.0345</b> P235GH(H1), <b>1.0425</b> P265GH(H2) <b>1.0050</b> E295 (St50-2), <b>1.0070</b> E360 (St70-2), <b>1.8937</b> P500NH (WStE500)	≤500 ≤1000		 
Aciers de décolletage	<b>1.0718</b> 11SMnPb30 (9SMnPb28), <b>1.0736</b> 11SMn37 (9SMn36) <b>1.0727</b> 46S20 (45S20), <b>1.0728</b> (60S20), <b>1.0757</b> 46SPb20 (45SPb20)	≤850 ≤1000		 
Aciers d'amélioration non-alliés	<b>1.0402</b> C22, <b>1.1178</b> C30E (Ck30) <b>1.0503</b> C45, <b>1.1191</b> C45E (Ck45) <b>1.0601</b> C60, <b>1.1221</b> C60E (Ck60)	≤700 ≤850 ≤1000		  
Aciers d'amélioration alliés	<b>1.5131</b> 50MnSi4, <b>1.7003</b> 38Cr2, <b>1.7030</b> 28Cr4 <b>1.5710</b> 36NiCr6, <b>1.7035</b> 41Cr4, <b>1.7225</b> 42CrMo4	≤1000 ≤1400		 
Aciers de cémentation non-alliés	<b>1.0301</b> (C10), <b>1.1121</b> C10E (Ck10)	≤850		
Aciers de cémentation alliés	<b>1.7276</b> 10CrMo11, <b>1.5125</b> 11MnSi6 <b>1.5752</b> 15NiCr13, <b>1.7131</b> 16MnCr5, <b>1.7264</b> 20CrMo5	≤1000 ≤1400		 
Aciers de nitruration	<b>1.8504</b> 34CrAl6 <b>1.8519</b> 31CrMoV9, <b>1.8550</b> 34CrAlNi7	≤1000 ≤1400		 
Aciers à outils	<b>1.1750</b> C75W, <b>1.2067</b> 102Cr6, <b>1.2307</b> 29CrMoV9 <b>1.2080</b> X210Cr12, <b>1.2083</b> X42Cr13, <b>1.2419</b> 105WCr6, <b>1.2767</b> X45NiCrMo4	≤850 ≤1400		 
Aciers rapides	<b>1.3243</b> S 6-5-2-5, <b>1.3343</b> S 6-5-2, <b>1.3344</b> S 6-5-3	≤1400		
Aciers à ressort	<b>1.5026</b> 55Si7, <b>1.7176</b> 55Cr3, <b>1.8159</b> 51CrV4 (51CrV4)		≤350 HB	
Aciers trempés	-		≤48 HRC ≤66 HRC	 
Aciers inoxydables, sulfurés	<b>1.4005</b> X12CrS13, <b>1.4104</b> X14CrMoS17, <b>1.4105</b> X6CrMoS17, <b>1.4305</b> X8CrNiS18-9	≤900 ≤1100		 
austénitiques	<b>1.4301</b> X5CrNi18-10 (V2A), <b>1.4541</b> X6CrNiTi18-10, <b>1.4571</b> X6CrNiMoTi 17-12-2 (V4A)	≤1100		
martensitiques	<b>1.4057</b> X20CrNi172 (X17CrNi16-2), <b>1.4122</b> X39CrMo17-1, <b>1.4521</b> X2CrMoTi18-2	≤1500		
Fontes	<b>0.6010</b> EN-GJL-100 (GG10), <b>0.6020</b> EN-GJL-200 (GG20) <b>0.6025</b> EN-GJL-250 (GG25), <b>0.6035</b> EN-GJL-350 (GG35)		≤240 HB ≤350 HB	 
Fontes à graphite sphéroïdal et fontes malléables	<b>0.7050</b> EN-GJS-500-7 (GGG50), <b>0.8035</b> EN-GJMW-350-4 (GTW35) <b>0.7070</b> EN-GJS-700-2 (GGG70), <b>0.8170</b> EN-GJMB-700-2 (GTS70)		≤240 HB ≤350 HB	 
Fontes dures	-		≤350 HB	
Nouvelles fontes GGV	<b>EN-GJV250</b> (GGV25), <b>EN-GJV350</b> (GGV35) <b>EN-GJV400</b> (GGV40), <b>EN-GJV500</b> (GGV50), SiMo 6		≤220 HB ≤300 HB	 
Nouvelles fontes ADI	<b>EN-GJS-800-8</b> (ADI800), <b>EN-GJS-1000-5</b> (ADI1000) <b>EN-GJS-1200-2</b> (ADI1200), <b>EN-GJS-1400-1</b> (ADI1400)	≤1000 ≤1400		 
Alliages spéciaux	Nimonic, Inconel, Monel, Hastelloy	≤2000		
Titane et alliages de Titane	<b>3.7024</b> Ti99,5, <b>3.7114</b> TiAl5Sn2,5, <b>3.7124</b> TiCu2 <b>3.7154</b> TiAl6Zr5, <b>3.7165</b> TiAl6V4, <b>3.7184</b> TiAl4Mo4Sn2,5, - TiAl8Mo1V1	≤850 ≤1400		 
Aluminium et ses alliages	<b>3.0255</b> Al99,5, <b>3.2315</b> AlMgSi1, <b>3.3515</b> AlMg1	≤400		
Alliages malléables d'Al	<b>3.0615</b> AlMgSiPb, <b>3.1325</b> AlCuMg1, <b>3.3245</b> AlMg3Si, <b>3.4365</b> AlZnMgCu1,5	≤650		
Alliages d'Al d'inject. ≤ 10 % Si	<b>3.2131</b> G-AlSi5Cu1, <b>3.2153</b> G-AlSi7Cu3, <b>3.2573</b> G-AlSi9	≤600		
≤ 24 % Si	<b>3.2581</b> G-AlSi12, <b>3.2583</b> G-AlSi12Cu, - G-AlSi12CuNiMg	≤600		
Alliages de Magnésium	<b>3.5200</b> MgMn2, <b>3.5812.05</b> G-MgAl8Zn1, <b>3.5612.05</b> G-MgAl6Zn1	≤400		
Cuivres, faiblement alliés	<b>2.0070</b> SE-Cu, <b>2.1020</b> CuSn6, <b>2.1096</b> G-CuSn5ZnPb	≤500		
Laiton à copeaux courts, à copeaux longs	<b>2.0380</b> CuZn39Pb2, <b>2.0401</b> CuZn39Pb3, <b>2.0410</b> CuZn43Pb2 <b>2.0250</b> CuZn20, <b>2.0280</b> CuZn33, <b>2.0332</b> CuZn37Pb0,5	≤600 ≤600		 
Bronze, à copeaux courts	<b>2.1090</b> CuSn7Zn19Pb, <b>2.1170</b> CuPb5Sn5, <b>2.1176</b> CuPb10Sn <b>2.0790</b> CuNi18Zn19Pb	≤600 ≤850		 
Bronze, à copeaux longs	<b>2.0916</b> CuAl5, <b>2.0960</b> CuAl9Mn, <b>2.1050</b> CuSn10 <b>2.0980</b> CuAl11Ni, <b>2.1247</b> CuBe2	≤850 ≤1000		 
Therm durcissables	Résine époxy, Resopal, Pertinax, Moltopren	≤150		
Thermoplastiques	Plexiglas, Hostalen, Novodur, Makralon	≤100		
renf. de fibres d'aramides	Kevlar	≤1000		
renf. de fibres de verre ou carbone	GFK/CFK	≤1000		

Navigateur



581	583	585	280	292	587	588
DIN 333			WN	BS 328	DIN 333	
HSS						
○	○	○	○	○	○	○
A	R	B	B	A	A	R
668	672	675	689	680	690	691

613	614
DIN 333	
HSS	
Ⓢ	Ⓢ
A	R
669	673

381
DIN 333
HSCO
○
A
682



Vc m/min	Gamme d'avance N°						
30	4	4	4	4	4	4	4
25	4	4	4	4	4	4	4
30	4	4	4	4	4	4	4
30	4	4	4	4	4	4	4
25	4	4	4	4	4	4	4
20	4	4	4	4	4	4	4
20	3	3	3	3	3	3	3
15	4	4	4	4	4	4	4
8	3	3	3	3	3	3	3
25	5	5	5	5	5	5	5
15	4	4	4	4	4	4	4
8	3	3	3	3	3	3	3
10	4	4	4	4	4	4	4
8	3	3	3	3	3	3	3
10	3	3	3	3	3	3	3
6	3	3	3	3	3	3	3
6	3	3	3	3	3	3	3
5	2	2	2	2	2	2	2
10	3	3	3	3	3	3	3
8	3	3	3	3	3	3	3
6	3	3	3	3	3	3	3
20	6	6	6	6	6	6	6
20	5	5	5	5	5	5	5
25	6	6	6	6	6	6	6
20	5	5	5	5	5	5	5
3	1	1	1	1	1	1	1
5	2	2	2	2	2	2	2
4	2	2	2	2	2	2	2
70	7	7	7	7	7	7	7
70	7	7	7	7	7	7	7
40	6	6	6	6	6	6	6
40	6	6	6	6	6	6	6
60	6	6	6	6	6	6	6
50	5	5	5	5	5	5	5
60	5	5	5	5	5	5	5
40	5	5	5	5	5	5	5
30	4	4	4	4	4	4	4
25	4	4	4	4	4	4	4
15	4	4	4	4	4	4	4
15	4	4	4	4	4	4	4
15	4	4	4	4	4	4	4
25	5	5	5	5	5	5	5

Vc m/min	Gamme d'avance N°		Vc m/min	Gamme d'avance N°	
35	4	4	35	4	4
30	4	4	30	4	4
35	4	4	35	4	4
35	4	4	35	4	4
30	4	4	30	4	4
25	4	4	25	4	4
22	3	3	22	3	3
17	4	4	17	4	4
10	3	3	10	3	3
30	5	5	30	5	5
18	4	4	18	4	4
10	3	3	10	3	3
13	4	4	13	4	4
10	3	3	10	3	3
13	3	3	13	3	3
8	3	3	8	3	3
8	3	3	8	3	3
8	2	2	8	2	2
15	3	3	15	3	3
10	3	3	10	3	3
8	3	3	8	3	3
25	6	6	25	6	6
25	5	5	25	5	5
30	6	6	30	6	6
25	5	5	25	5	5
6	1	1	6	1	1
6	2	2	6	2	2
5	2	2	5	2	2
50	6	6	50	6	6
70	6	6	70	6	6
60	5	5	60	5	5
70	5	5	70	5	5
45	5	5	45	5	5
35	4	4	35	4	4
30	4	4	30	4	4
20	4	4	20	4	4
18	4	4	18	4	4
20	4	4	20	4	4
30	5	5	30	5	5

Navigateur



# GÜHRING NAVIGATOR Forets étagés pour centres int./Forets étagés à queue cyl., courts

Il est conseillé de choisir des outils dont les avances sont en caractères gras.  
Pour le choix optimal de l'outil et de ses paramètres d'utilisation,  
sous [www.guehring.de](http://www.guehring.de) vous disposez du logiciel „Navigateur Gühring“.

N° d'article

Norme/DIN

Matière de coupe

Surface

Type

Prix/dim. page

Ø outil mm	Gamme d'avance n°								
	1	2	3	4	5	6	7	8	9
	f (mm/tr.)								
<b>0,50</b>	0,004	0,006	0,007	0,008	0,010	0,012	0,014	0,016	0,019
<b>1,00</b>	0,006	0,008	0,012	0,014	0,016	0,018	0,020	0,023	0,025
<b>2,00</b>	0,020	0,025	0,032	0,040	0,050	0,063	0,080	0,100	0,125
<b>2,50</b>	0,025	0,032	0,040	0,050	0,063	0,080	0,100	0,125	0,160
<b>3,15</b>	0,032	0,040	0,050	0,063	0,080	0,100	0,125	0,160	0,160
<b>4,00</b>	0,040	0,050	0,063	0,080	0,100	0,125	0,160	0,200	0,200
<b>5,00</b>	0,040	0,050	0,063	0,080	0,100	0,125	0,160	0,200	0,250
<b>6,30</b>	0,050	0,063	0,080	0,100	0,125	0,160	0,200	0,250	0,315
<b>8,00</b>	0,063	0,080	0,100	0,125	0,160	0,200	0,250	0,315	0,315
<b>10,00</b>	0,080	0,100	0,125	0,160	0,200	0,250	0,315	0,400	0,400
<b>12,50</b>	0,080	0,100	0,125	0,160	0,200	0,250	0,315	0,400	0,500
<b>16,00</b>	0,100	0,125	0,160	0,200	0,250	0,315	0,400	0,500	0,630
<b>20,00</b>	0,125	0,160	0,200	0,250	0,315	0,400	0,500	0,630	0,630
<b>25,00</b>	0,160	0,200	0,250	0,315	0,400	0,500	0,630	0,800	0,800
<b>31,50</b>	0,160	0,200	0,250	0,315	0,400	0,500	0,630	0,800	1,000
<b>40,00</b>	0,200	0,250	0,315	0,400	0,500	0,630	0,800	1,000	1,250
<b>50,00</b>	0,250	0,310	0,400	0,500	0,630	0,800	1,000	1,250	1,250
<b>63,00</b>	0,315	0,400	0,500	0,630	0,800	1,000	1,250	1,600	1,600
<b>80,00</b>	0,400	0,500	0,630	0,800	1,000	1,250	1,600	1,600	2,000

Produits de refroidissement:

- Air
- Huile
- Huile soluble

Sens de coupe:

- coupe à droite
- coupe à gauche

Matières	Exemples, nouvelle désignation ( Ancienne désignation entre parenthèses ) Caractères gras = N° de matières suivant DIN EN	Résistance MPa (N/mm <sup>2</sup> )	Dureté	Prod. de réf.
Aciers de construction	<b>1.0035</b> S185(St33), <b>1.0486</b> P275N(StE285), <b>1.0345</b> P235GH(H1), <b>1.0425</b> P265GH(H2)	≤500 ≤1000		
Aciers de décolletage	<b>1.0718</b> 11SMnPb30 (9SMnPb28), <b>1.0736</b> 11SMn37 (9SMn36)	≤850		
	<b>1.0727</b> 46S20 (45S20), <b>1.0728</b> (60S20), <b>1.0757</b> 46SPb20 (45SPb20)	≤1000		
Aciers d'amélioration non-alliés	<b>1.0402</b> C22, <b>1.1178</b> C30E (Ck30)	≤700		
	<b>1.0503</b> C45, <b>1.1191</b> C45E (Ck45)	≤850		
	<b>1.0601</b> C60, <b>1.1221</b> C60E (Ck60)	≤1000		
Aciers d'amélioration alliés	<b>1.5131</b> 50MnSi4, <b>1.7003</b> 38Cr2, <b>1.7030</b> 28Cr4	≤1000		
	<b>1.5710</b> 36NiCr6, <b>1.7035</b> 41Cr4, <b>1.7225</b> 42CrMo4	≤1400		
Aciers de cémentation non-alliés	<b>1.0301</b> (C10), <b>1.1121</b> C10E (Ck10)	≤850		
Aciers de cémentation alliés	<b>1.7276</b> 10CrMo11, <b>1.5125</b> 11MnSi6	≤1000		
	<b>1.5752</b> 15NiCr13, <b>1.7131</b> 16MnCr5, <b>1.7264</b> 20CrMo5	≤1400		
Aciers de nitruration	<b>1.8504</b> 34CrAl6	≤1000		
	<b>1.8519</b> 31CrMoV9, <b>1.8550</b> 34CrAlNi7	≤1400		
Aciers à outils	<b>1.1750</b> C75W, <b>1.2067</b> 102Cr6, <b>1.2307</b> 29CrMoV9	≤850		
	<b>1.2080</b> X210Cr12, <b>1.2083</b> X42Cr13, <b>1.2419</b> 105WCr6, <b>1.2767</b> X45NiCrMo4	≤1400		
Aciers rapides	<b>1.3243</b> S 6-5-2-5, <b>1.3343</b> S 6-5-2, <b>1.3344</b> S 6-5-3	≤1400		
Aciers à ressort	<b>1.5026</b> 55Si7, <b>1.7176</b> 55Cr3, <b>1.8159</b> 51CrV4 (51CrV4)		≤350 HB	
Aciers trempés	-		≤48 HRC ≤66 HRC	
Aciers inoxydables, sulfurés	<b>1.4005</b> X12CrS13, <b>1.4104</b> X14CrMoS17, <b>1.4105</b> X6CrMoS17, <b>1.4305</b> X8CrNiS18-9	≤900		
austénitiques	<b>1.4301</b> X5CrNi18-10 (V2A), <b>1.4541</b> X6CrNiTi18-10, <b>1.4571</b> X6CrNiMoTi17-12-2 (V4A)	≤1100		
martensitiques	<b>1.4057</b> X20CrNi172 (X17CrNi16-2), <b>1.4122</b> X39CrMo17-1, <b>1.4521</b> X2CrMoTi18-2	≤1500		
Fontes	<b>0.6010</b> EN-GJL-100 (GG10), <b>0.6020</b> EN-GJL-200 (GG20)		≤240 HB	
	<b>0.6025</b> EN-GJL-250 (GG25), <b>0.6035</b> EN-GJL-350 (GG35)		≤350 HB	
Fontes à graphite sphéroïdal et fontes malléables	<b>0.7050</b> EN-GJS-500-7 (GGG50), <b>0.8035</b> EN-GJMW-350-4 (GTW35)		≤240 HB	
	<b>0.7070</b> EN-GJS-700-2 (GGG70), <b>0.8170</b> EN-GJMB-700-2 (GTS70)		≤350 HB	
Fontes dures	-		≤350 HB	
Nouvelles fontes GGV	<b>EN-GJV250</b> (GGV25), <b>EN-GJV350</b> (GGV35)		≤220 HB	
	<b>EN-GJV400</b> (GGV40), <b>EN-GJV500</b> (GGV50), SiMo 6		≤300 HB	
Nouvelles fontes ADI	<b>EN-GJS-800-8</b> (ADI800), <b>EN-GJS-1000-5</b> (ADI1000)	≤1000		
	<b>EN-GJS-1200-2</b> (ADI1200), <b>EN-GJS-1400-1</b> (ADI1400)	≤1400		
Alliages spéciaux	Nimonic, Inconel, Monel, Hastelloy	≤2000		
Titane et alliages de Titane	<b>3.7024</b> Ti99,5, <b>3.7114</b> TiAl5Sn2,5, <b>3.7124</b> TiCu2	≤850		
	<b>3.7154</b> TiAl6Zr5, <b>3.7165</b> TiAl6V4, <b>3.7184</b> TiAl4Mo4Sn2,5, - TiAl8Mo1V1	≤1400		
Aluminium et ses alliages	<b>3.0255</b> Al99,5, <b>3.2315</b> AlMgSi1, <b>3.3515</b> AlMg1	≤400		
Alliages malléables d'Al	<b>3.0615</b> AlMgSiPb, <b>3.1325</b> AlCuMg1, <b>3.3245</b> AlMg3Si, <b>3.4365</b> AlZnMgCu1,5	≤650		
Alliages d'Al d'inject. ≤ 10 % Si	<b>3.2131</b> G-AlSi5Cu1, <b>3.2153</b> G-AlSi7Cu3, <b>3.2573</b> G-AlSi9	≤600		
≤ 24 % Si	<b>3.2581</b> G-AlSi12, <b>3.2583</b> G-AlSi12Cu, - G-AlSi12CuNiMg	≤600		
Alliages de Magnésium	<b>3.5200</b> MgMn2, <b>3.5812.05</b> G-MgAl8Zn1, <b>3.5612.05</b> G-MgAl6Zn1	≤400		
Cuivres, faiblement alliés	<b>2.0070</b> SE-Cu, <b>2.1020</b> CuSn6, <b>2.1096</b> G-CuSn5ZnPb	≤500		
Laiton à copeaux courts,	<b>2.0380</b> CuZn39Pb2, <b>2.0401</b> CuZn39Pb3, <b>2.0410</b> CuZn43Pb2	≤600		
à copeaux longs	<b>2.0250</b> CuZn20, <b>2.0280</b> CuZn33, <b>2.0332</b> CuZn37Pb0,5	≤600		
Bronze, à copeaux courts	<b>2.1090</b> CuSn7ZnPb, <b>2.1170</b> CuPb5Sn5, <b>2.1176</b> CuPb10Sn	≤600		
	<b>2.0790</b> CuNi18Zn19Pb	≤850		
Bronze, à copeaux longs	<b>2.0916</b> CuAl5, <b>2.0960</b> CuAl9Mn, <b>2.1050</b> CuSn10	≤850		
	<b>2.0980</b> CuAl11Ni, <b>2.1247</b> CuBe2	≤1000		
Therm durcissables	Bakelit, Resopal, Pertinax, Moltopren	≤150		
Thermoplastiques	Plexiglas, Hostalen, Novodur, Makralon	≤100		
renf. de fibres d'aramides	Kevlar	≤1000		
renf. de fibres de verre ou carbone	GFK/CFK	≤1000		

Navigateur



274	574	575	576
WN			
HSS			
●	●	●	●
N	N	N	N
714	715	716	717

378	1147	379	380
WN			
HSS			
○	○	○	○
N	N	N	N
718	719	720	721



V <sub>c</sub> m/min	Gamme d'avance N°			
30	4	4	4	4
25	4	4	4	4
30	4	4	4	4
30	4	4	4	4
25	4	4	4	4
20	4	4	4	4
20	3	3	3	3
15	4	4	4	4
8	3	3	3	3
25	5	5	5	5
15	4	4	4	4
8	3	3	3	3
10	4	4	4	4
8	3	3	3	3
10	3	3	3	3
6	3	3	3	3
6	3	3	3	3
5	2	2	2	2
8	2	2	2	2
6	2	2	2	2
5	2	2	2	2
20	6	6	6	6
20	5	5	5	5
25	6	6	6	6
20	5	5	5	5
3	1	1	1	1
5	2	2	2	2
4	2	2	2	2
60	7	7	7	7
60	7	7	7	7
40	6	6	6	6
40	6	6	6	6
40	6	6	6	6
50	5	5	5	5
60	5	5	5	5
40	5	5	5	5
30	4	4	4	4
25	4	4	4	4
15	4	4	4	4
15	4	4	4	4
15	4	4	4	4
25	5	5	5	5

V <sub>c</sub> m/min	Gamme d'avance N°			
30	4	4	4	4
25	4	4	4	4
30	4	4	4	4
30	4	4	4	4
25	4	4	4	4
20	4	4	4	4
20	3	3	3	3
15	4	4	4	4
8	3	3	3	3
25	5	5	5	5
15	4	4	4	4
8	3	3	3	3
10	4	4	4	4
8	3	3	3	3
10	3	3	3	3
6	3	3	3	3
6	3	3	3	3
5	2	2	2	2
8	2	2	2	2
6	2	2	2	2
5	2	2	2	2
20	6	6	6	6
20	5	5	5	5
25	6	6	6	6
20	5	5	5	5
3	1	1	1	1
5	2	2	2	2
4	2	2	2	2
60	7	7	7	7
60	7	7	7	7
40	6	6	6	6
40	6	6	6	6
40	6	6	6	6
50	5	5	5	5
60	5	5	5	5
40	5	5	5	5
30	4	4	4	4
25	4	4	4	4
15	4	4	4	4
15	4	4	4	4
15	4	4	4	4
25	5	5	5	5



# GÜHRING NAVIGATOR Forets étagés à listels continus

Il est conseillé de choisir des outils dont les avances sont en caractères gras.  
**Pour le choix optimal de l'outil et de ses paramètres d'utilisation, sous [www.guehring.de](http://www.guehring.de) vous disposez du logiciel „Navigateur Gühring“.**

N° d'article	
Norme/DIN	
Matière de coupe	
Surface	
Type	
Prix/dim. page	

Ø outil mm	Gamme d'avance n°								
	1	2	3	4	5	6	7	8	9
	f (mm/tr.)								
<b>0,50</b>	0,004	0,006	0,007	0,008	0,010	0,012	0,014	0,016	0,019
<b>1,00</b>	0,006	0,008	0,012	0,014	0,016	0,018	0,020	0,023	0,025
<b>2,00</b>	0,020	0,025	0,032	0,040	0,050	0,063	0,080	0,100	0,125
<b>2,50</b>	0,025	0,032	0,040	0,050	0,063	0,080	0,100	0,125	0,160
<b>3,15</b>	0,032	0,040	0,050	0,063	0,080	0,100	0,125	0,160	0,160
<b>4,00</b>	0,040	0,050	0,063	0,080	0,100	0,125	0,160	0,200	0,200
<b>5,00</b>	0,040	0,050	0,063	0,080	0,100	0,125	0,160	0,200	0,250
<b>6,30</b>	0,050	0,063	0,080	0,100	0,125	0,160	0,200	0,250	0,315
<b>8,00</b>	0,063	0,080	0,100	0,125	0,160	0,200	0,250	0,315	0,315
<b>10,00</b>	0,080	0,100	0,125	0,160	0,200	0,250	0,315	0,400	0,400
<b>12,50</b>	0,080	0,100	0,125	0,160	0,200	0,250	0,315	0,400	0,500
<b>16,00</b>	0,100	0,125	0,160	0,200	0,250	0,315	0,400	0,500	0,630
<b>20,00</b>	0,125	0,160	0,200	0,250	0,315	0,400	0,500	0,630	0,630
<b>25,00</b>	0,160	0,200	0,250	0,315	0,400	0,500	0,630	0,800	0,800
<b>31,50</b>	0,160	0,200	0,250	0,315	0,400	0,500	0,630	0,800	1,000
<b>40,00</b>	0,200	0,250	0,315	0,400	0,500	0,630	0,800	1,000	1,250
<b>50,00</b>	0,250	0,310	0,400	0,500	0,630	0,800	1,000	1,250	1,250
<b>63,00</b>	0,315	0,400	0,500	0,630	0,800	1,000	1,250	1,600	1,600
<b>80,00</b>	0,400	0,500	0,630	0,800	1,000	1,250	1,600	1,600	2,000

Produits de refroidissement:

- Air
- Huile
- Huile soluble

Sens de coupe:

- coupe à droite
- coupe à gauche

Matières	Exemples, nouvelle désignation ( Ancienne désignation entre parenthèses ) Caractères gras = N° de matières suivant DIN EN	Résistance MPa (N/mm²)	Dureté	Prod. de réf.
Aciers de construction	<b>1.0035</b> S185(St33), <b>1.0486</b> P275N(StE285), <b>1.0345</b> P235GH(H1), <b>1.0425</b> P265GH(H2) <b>1.0050</b> E295 (St50-2), <b>1.0070</b> E360 (St70-2), <b>1.8937</b> P500NH (WStE500)	≤500 ≤1000		
Aciers de décolletage	<b>1.0718</b> 11SMnPb30 (9SMnPb28), <b>1.0736</b> 11SMn37 (9SMn36) <b>1.0727</b> 46S20 (45S20), <b>1.0728</b> (60S20), <b>1.0757</b> 46SPb20 (45SPb20)	≤850 ≤1000		
Aciers d'amélioration non-alliés	<b>1.0402</b> C22, <b>1.1178</b> C30E (Ck30) <b>1.0503</b> C45, <b>1.1191</b> C45E (Ck45) <b>1.0601</b> C60, <b>1.1221</b> C60E (Ck60)	≤700 ≤850 ≤1000		
Aciers d'amélioration alliés	<b>1.5131</b> 50MnSi4, <b>1.7003</b> 38Cr2, <b>1.7030</b> 28Cr4 <b>1.5710</b> 36NiCr6, <b>1.7035</b> 41Cr4, <b>1.7225</b> 42CrMo4	≤1000 ≤1400		
Aciers de cémentation non-alliés	<b>1.0301</b> (C10), <b>1.1121</b> C10E (Ck10)	≤850		
Aciers de cémentation alliés	<b>1.7276</b> 10CrMo11, <b>1.5125</b> 11MnSi6 <b>1.5752</b> 15NiCr13, <b>1.7131</b> 16MnCr5, <b>1.7264</b> 20CrMo5	≤1000 ≤1400		
Aciers de nitruration	<b>1.8504</b> 34CrAl6 <b>1.8519</b> 31CrMoV9, <b>1.8550</b> 34CrAlNi7	≤1000 ≤1400		
Aciers à outils	<b>1.1750</b> C75W, <b>1.2067</b> 102Cr6, <b>1.2307</b> 29CrMoV9 <b>1.2080</b> X210Cr12, <b>1.2083</b> X42Cr13, <b>1.2419</b> 105WCr6, <b>1.2767</b> X45NiCrMo4	≤850 ≤1400		
Aciers rapides	<b>1.3243</b> S 6-5-2-5, <b>1.3343</b> S 6-5-2, <b>1.3344</b> S 6-5-3	≤1400		
Aciers à ressort	<b>1.5026</b> 55Si7, <b>1.7176</b> 55Cr3, <b>1.8159</b> 51CrV4 (51CrV4)		≤350 HB	
Aciers trempés	-		≤48 HRC ≤66 HRC	
Aciers inoxydables, sulfurés	<b>1.4005</b> X12CrS13, <b>1.4104</b> X14CrMoS17, <b>1.4105</b> X6CrMoS17, <b>1.4305</b> X8CrNiS18-9	≤900		
austénitiques	<b>1.4301</b> X5CrNi18-10 (V2A), <b>1.4541</b> X6CrNiTi18-10, <b>1.4571</b> X6CrNiMoTi 17-12-2 (V4A)	≤1100		
martensitiques	<b>1.4057</b> X20CrNi172 (X17CrNi16-2), <b>1.4122</b> X39CrMo17-1, <b>1.4521</b> X2CrMoTi18-2	≤1500		
Fontes	<b>0.6010</b> EN-GJL-100 (GG10), <b>0.6020</b> EN-GJL-200 (GG20) <b>0.6025</b> EN-GJL-250 (GG25), <b>0.6035</b> EN-GJL-350 (GG35)		≤240 HB ≤350 HB	
Fontes à graphite sphéroïdal et fontes malléables	<b>0.7050</b> EN-GJS-500-7 (GGG50), <b>0.8035</b> EN-GJMW-350-4 (GTW35) <b>0.7070</b> EN-GJS-700-2 (GGG70), <b>0.8170</b> EN-GJMB-700-2 (GTS70)		≤240 HB ≤350 HB	
Fontes dures	-		≤350 HB	
Nouvelles fontes GGV	<b>EN-GJV250</b> (GGV25), <b>EN-GJV350</b> (GGV35) <b>EN-GJV400</b> (GGV40), <b>EN-GJV500</b> (GGV50), SiMo 6		≤220 HB ≤300 HB	
Nouvelles fontes ADI	<b>EN-GJS-800-8</b> (ADI800), <b>EN-GJS-1000-5</b> (ADI1000) <b>EN-GJS-1200-2</b> (ADI1200), <b>EN-GJS-1400-1</b> (ADI1400)	≤1000 ≤1400		
Alliages spéciaux	Nimonic, Inconel, Monel, Hastelloy	≤2000		
Titane et alliages de Titane	<b>3.7024</b> Ti99,5, <b>3.7114</b> TiAl5Sn2,5, <b>3.7124</b> TiCu2 <b>3.7154</b> TiAl6Zr5, <b>3.7165</b> TiAl6V4, <b>3.7184</b> TiAl4Mo4Sn2,5, - TiAl8Mo1V1	≤850 ≤1400		
Aluminium et ses alliages	<b>3.0255</b> Al99,5, <b>3.2315</b> AlMgSi1, <b>3.3515</b> AlMg1	≤400		
Alliages malléables d'Al	<b>3.0615</b> AlMgSiPb, <b>3.1325</b> AlCuMg1, <b>3.3245</b> AlMg3Si, <b>3.4365</b> AlZnMgCu1,5	≤650		
Alliages d'Al d'inject. ≤ 10 % Si	<b>3.2131</b> G-AlSi5Cu1, <b>3.2153</b> G-AlSi7Cu3, <b>3.2573</b> G-AlSi9	≤600		
≤ 24 % Si	<b>3.2581</b> G-AlSi12, <b>3.2583</b> G-AlSi12Cu, - G-AlSi12CuNiMg	≤600		
Alliages de Magnésium	<b>3.5200</b> MgMn2, <b>3.5812.05</b> G-MgAl8Zn1, <b>3.5612.05</b> G-MgAl6Zn1	≤400		
Cuivres, faiblement alliés	<b>2.0070</b> SE-Cu, <b>2.1020</b> CuSn6, <b>2.1096</b> G-CuSn5ZnPb	≤500		
Laiton à copeaux courts, à copeaux longs	<b>2.0380</b> CuZn39Pb2, <b>2.0401</b> CuZn39Pb3, <b>2.0410</b> CuZn43Pb2 <b>2.0250</b> CuZn20, <b>2.0280</b> CuZn33, <b>2.0332</b> CuZn37Pb0,5	≤600 ≤600		
Bronze, à copeaux courts	<b>2.1090</b> CuSn7ZnPb, <b>2.1170</b> CuPb5Sn5, <b>2.1176</b> CuPb10Sn <b>2.0790</b> CuNi18Zn19Pb	≤600 ≤850		
Bronze, à copeaux longs	<b>2.0916</b> CuAl5, <b>2.0960</b> CuAl9Mn, <b>2.1050</b> CuSn10 <b>2.0980</b> CuAl11Ni, <b>2.1247</b> CuBe2	≤850 ≤1000		
Therm durcissables	Bakelit, Resopal, Pertinax, Moltopren	≤150		
Thermoplastiques	Plexiglas, Hostalen, Novodur, Makralon	≤100		
renf. de fibres d'aramides	Kevlar	≤1000		
renf. de fibres de verre ou carbone	GFK/CFK	≤1000		





536	569	636	638	538	514	540	637	537	639	539	520	541	
DIN 8374		WN		DIN 8376		WN	DIN 8378		WN	DIN 8377		WN	DIN 8379
HSS													
●	●	●	●	●	●	●	●	●	●	●	●	●	
N	N	N	N	N	N	N	N	N	N	N	N	N	
722	723	724	725	726	728	729	731	732	733	734	735	736	



Vc m/min	Gamme d'avance N°												
30	4	4	4	4	4	4	4	4	4	4	4	4	4
25	4	4	4	4	4	4	4	4	4	4	4	4	4
30	4	4	4	4	4	4	4	4	4	4	4	4	4
30	4	4	4	4	4	4	4	4	4	4	4	4	4
25	4	4	4	4	4	4	4	4	4	4	4	4	4
20	4	4	4	4	4	4	4	4	4	4	4	4	4
20	3	3	3	3	3	3	3	3	3	3	3	3	3
15	4	4	4	4	4	4	4	4	4	4	4	4	4
8	3	3	3	3	3	3	3	3	3	3	3	3	3
25	5	5	5	5	5	5	5	5	5	5	5	5	5
15	4	4	4	4	4	4	4	4	4	4	4	4	4
8	3	3	3	3	3	3	3	3	3	3	3	3	3
10	4	4	4	4	4	4	4	4	4	4	4	4	4
8	3	3	3	3	3	3	3	3	3	3	3	3	3
10	3	3	3	3	3	3	3	3	3	3	3	3	3
6	3	3	3	3	3	3	3	3	3	3	3	3	3
6	3	3	3	3	3	3	3	3	3	3	3	3	3
5	2	2	2	2	2	2	2	2	2	2	2	2	2
8	2	2	2	2	2	2	2	2	2	2	2	2	2
6	2	2	2	2	2	2	2	2	2	2	2	2	2
5	2	2	2	2	2	2	2	2	2	2	2	2	2
20	6	6	6	6	6	6	6	6	6	6	6	6	6
20	5	5	5	5	5	5	5	5	5	5	5	5	5
25	6	6	6	6	6	6	6	6	6	6	6	6	6
20	5	5	5	5	5	5	5	5	5	5	5	5	5
3	1	1	1	1	1	1	1	1	1	1	1	1	1
5	2	2	2	2	2	2	2	2	2	2	2	2	2
4	2	2	2	2	2	2	2	2	2	2	2	2	2
60	7	7	7	7	7	7	7	7	7	7	7	7	7
60	7	7	7	7	7	7	7	7	7	7	7	7	7
40	6	6	6	6	6	6	6	6	6	6	6	6	6
40	6	6	6	6	6	6	6	6	6	6	6	6	6
40	6	6	6	6	6	6	6	6	6	6	6	6	6
50	5	5	5	5	5	5	5	5	5	5	5	5	5
60	5	5	5	5	5	5	5	5	5	5	5	5	5
40	5	5	5	5	5	5	5	5	5	5	5	5	5
30	4	4	4	4	4	4	4	4	4	4	4	4	4
25	4	4	4	4	4	4	4	4	4	4	4	4	4
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15	4	4	4	4	4	4	4	4	4	4	4	4	4
15	4	4	4	4	4	4	4	4	4	4	4	4	4
25	5	5	5	5	5	5	5	5	5	5	5	5	5



Table with 9 columns: Ø foret mm à partir de, Gamme d'avance N°, 11, 12, 13, 14, 15, 16, 17, 18. It lists feed rates (f) in mm/tr for various drill diameters.

\*Les avances se basent toujours sur des outils avec un revêtement approprié. Pour certains matériaux, un revêtement s'avère obligatoire.



Lorsqu'ils commencent à forer, les outils de forage doivent toujours être guidés! Il ne faut jamais les laisser tourner avec une vitesse de rotation élevée lorsqu'ils sont libres (hors de la pièce).

Recommandations utiles

- Pour les profondeurs supérieures à 40 x D, nous conseillons l'utilisation de deux ou plusieurs outils de forage, par ex. Ø 10 x 400 et 9,95 x 800 mm.
- Pour les profondeurs supérieures à 40 x D, faire avancer les outils de forage dans le perçage pilote, en tournant à gauche.
- Lors du montage des outils de forage de longueurs supérieures à 40 x D, il est recommandé de mettre la lubrification intérieure du foret pendant une seconde sous pression afin de le tranquilliser.
- Pour l'usinage des matériaux à copeaux longs, nous vous conseillons de commander des outils de forage pourvus de goujures polies.
- En ce qui concerne la concentration des matières grasses des huiles solubles, nous conseillons un taux minimum de 10 %.
- Pour l'AL à copeaux longs, nous vous conseillons de commander des outils de forage affûtés à 180° avec volume de lubrification décalé.
- Lorsqu'il s'agit de forer l'alliage d'aluminium avec moins de 1 % de Si, donc avec des vitesses de coupe supérieures à 160 m/mn, il est recommandé d'augmenter progressivement la vitesse de rotation. En outre, la profondeur du perçage pilote doit être augmentée à environ 3 x D.

Conditions d'utilisation des outils de forage

- Réaliser un perçage pilote (L = 1,5 x D / Alu L ≈ 3 x D, tol. G9)
• Avancer à env. 500 mm/mn et faible vit. de rot., env. à 200 Tr./mn afin d'entrer dans le pré-perçage. Pour les profondeurs supérieures à 40 x D, faire avancer les outils en tournant à gauche.
• Mettre la lub. sous pression et programmer la vitesse de rotation d'usinage.
• Forer continuellement sans déboutrages. Lors de l'utilisation des forets à une lèvre de très grandes longueurs et petits diamètres nous vous conseillons de réduire les paramètres de coupe sur une prof. de forage d'environ 25 mm (à peu près à 75% des valeurs de coupe optimales).
• En fin de forage, stopper la lubrification
• Retirer l'outil de forage, sans rotation, en avance rapide

Liquide de refroidissement en fonction des matériaux à forer :

- air
● huile
● huile soluble

EB100

Foret une lèvre

CW monobloc

0,9 ... 12,0



≤35xD

>35xD

Main table with 10 columns: Matières, Exemples Caractères gras = No de matière suiv. DIN EN, Résist. Dureté N/mm², Prod. de ref., Revêt. recom.\*, Vc m/mn, Gamme av. N°, Vc m/mn, Gamme av. N°. It lists various materials and their recommended drilling parameters.



**Processus d'usinage**

Afin d'obtenir d'excellents résultats lorsque vous usinez de très profonds perçages surtout si l'entrée du perçage est bombée, rayonnée ou si la surface est inégale, nous vous recommandons de procéder comme suit :

1. Fraiser une surface plane, perpendiculaire à l'axe de perçage du foret, par exemple, avec la fraise Ratio Gühring RF 100 U pourvue de la coupe au centre.
2. Réaliser un alésage cylindrique pilote de tolérance G9 sur une profondeur d'au moins une fois le diamètre. Pour réaliser cet alésage, nous vous conseillons d'utiliser le foret Ratio RT 100 U voire, RT 100 F qui eux, avec leur angle au sommet de 140° et leur tolérance du diamètre m 7, sont au mieux appropriés pour cette opération.
3. Engagez le foret hélicoïdal dans son perçage pilote avec une vitesse de rotation d'environ 300 tr. / mn et une avance d'environ 500 mm / mn.
4. Mettre la lubrification sous pression et programmer la vitesse de rotation d'usinage.
5. Percer continuellement sans débouurer.
6. Lorsque le trou est débouchant, avec sortie perpendiculaire à 90°, il est recommandé de réduire la vitesse de l'avance à 50 %, environ 1 mm avant le débouché du foret.
7. Lorsque le forage est débouchant avec une sortie en biais, il faut réduire la vitesse de l'avance vf à environ 40 %, à peu près 1 mm avant la sortie du foret.
8. Quand le foret a atteint sa profondeur de perçage, stoppez la rotation et la lubrification de l'outil et sortez le foret en reculant à grande vitesse.



**Fraise Ratio RF 100 U, article n° 3736**

Grâce au pas différentiel des Fraises Gühring Ratio RF 100 U, pourvues du revêtement Fire, vous pouvez réaliser des fraisages de finition et d'ébauche avec des avances très élevées et obtenir des durées de vie d'outils très performantes sur les aciers, fontes ainsi que sur les titanes et les alliages au nickel.



**Foret Ratio RT 100 U, article n° 2477**

**Foret Ratio RT 100 F, article n° 1660**

Grâce à leur géométrie spéciale de coupe, les Forets - Ratio Gühring se centrent très bien et percent avec une grande rectitude. Le type U est réservé au perçage des aciers, en général, et alliages d'aluminium avec haut pourcentage de Si. Le type F est prévu pour les aciers inoxydables, réfractaires et résistants aux acides, pour l'aluminium et ses alliages, le magnésium et ses alliages ainsi que pour le titane et ses alliages.

**EB80**

Foret une lèvre

**Embout CW**

2,0 ... 40,0



**ZB80**

Foret deux lèvres

**Embout CW**

6,0 ... 27,0



**EB800**

Foret une lèvre

**avec plaquettes interch.**

12,0 ... 40,0

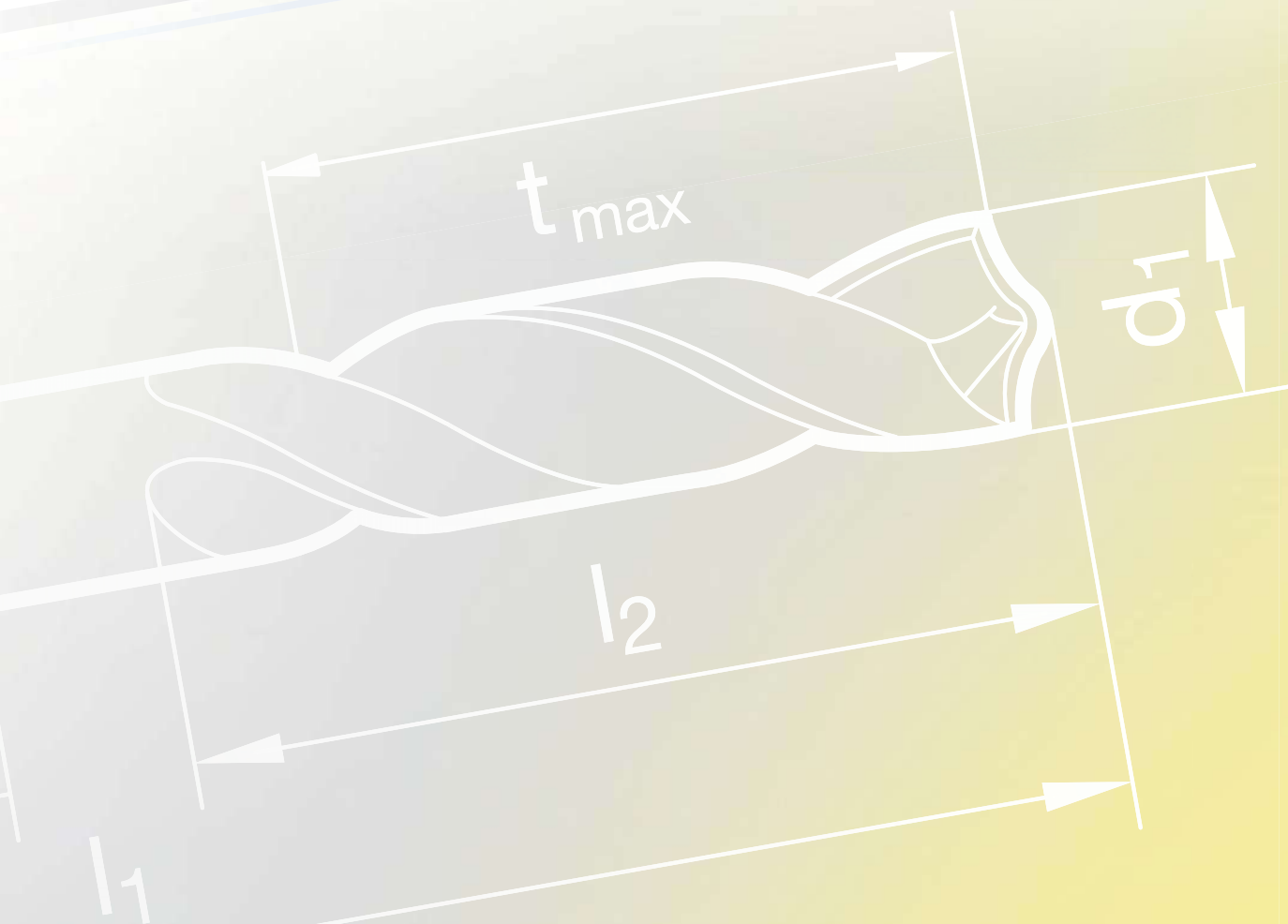


Revêt. recom.*	≤35xD		>35xD		Revêt. recom.*	≤35xD		>35xD		Revêt. recom.*	≤35xD		>35xD	
	Vc m/mn	Gamme av. N°	Vc m/mn	Gamme av. N°		Vc m/mn	Gamme av. N°	Vc m/mn	Gamme av. N°		Vc m/mn	Gamme av. N°	Vc m/mn	Gamme av. N°
T	100	14	95	13						T	90	15	85	15
	85	14	80	13							80	15	75	15
T	90	14	85	13						T	85	16	80	16
	80	14	75	13							75	16	70	16
T	90	13	85	12						T	85	15	80	15
	80	13	75	12							80	15	75	15
	75	13	70	12							75	15	70	15
T	75	13	70	12						T	75	15	70	15
	65	13	60	12							65	15	60	15
T	80	14	75	13						T	80	15	75	15
	75	13	70	12							75	15	70	15
T	65	13	60	12						T	70	15	65	15
	75	13	70	12							70	15	65	15
	65	13	60	12							60	15	55	15
C	75	13	70	12						T	65	14	60	14
	65	13	60	12							60	14	55	14
C	75	12	70	11						T	55	14	50	14
	65	12	60	11							65	15	60	15
C	55	11	50	11						T	30	13	25	13
	65	12	60	12							25	12	20	12
C	30	12	25	11						T	50	14	45	14
	25	11	20	11							45	14	40	14
C	55	13	50	12						F	40	14	35	14
	45	13	40	12							85	16	80	16
C	35	13	35	12							80	16	75	16
	85	15	80	14		85	18	80	17		80	16	75	16
	80	15	75	14		80	18	75	17		75	16	70	16
	80	14	75	13		75	17	70	16		70	16	65	16
	70	14	65	13		70	17	65	16	T	70	16	65	16
	55	13	50	12		65	16	60	15		55	15	50	15
C	20	11	20	11						F	25	13	20	13
	35	11	30	11							35	13	30	13
	30	11	25	11							30	12	25	12
C	150	16	140	15		120	18	115	17	F	140	16	135	16
	120	15	115	14		110	18	105	17		125	16	120	16
	150	16	140	15		135	18	130	17		170	17	165	17
	130	16	120	15		120	17	115	16		140	17	135	17
	110	16	100	15							115	16	110	16
C	75	14	70	13						F	75	15	70	15
	120	17	115	16							120	17	115	17
	90	17	85	16		130	18	125	17		90	17	85	17
	95	16	90	15		120	18	115	17		95	17	90	17
	75	16	70	15		110	17	105	16		75	17	70	17
	70	16	65	15		110	17	105	16		70	17	65	17
	60	16	55	15		95	17	90	16		60	17	55	17
	75	14	70	13		95	17	90	16		75	16	70	16
	70	14	65	13							70	16	65	16
	60	13	55	12							60	15	55	15
	50	13	45	12							50	15	45	15



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# CARACTERISTIQUES TECHNIQUES





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## RT 100 TRIGON®

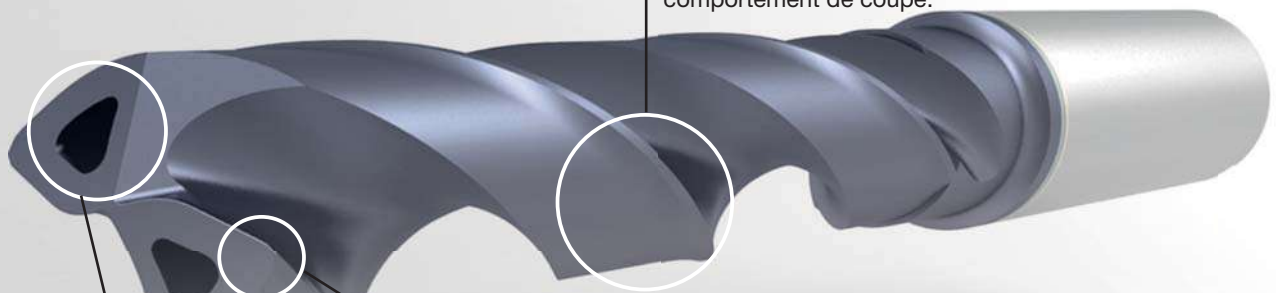
Canaux de lubrification, avec stylique innovante trigone, assurant un refroidissement efficace

Un haut pourcentage de chrome et de nickel augmente considérablement la résistance mécanique et la résistance à la corrosion des aciers inoxydables. C'est pourquoi leur usinage est de plus en plus difficile à réaliser et les températures du procédé d'usinage augmentent.

Ainsi, grâce à la géométrie innovante des canaux d'adduction des produits de refroidissement et de lubrification, les forets RT 100 Trigon assurent des paramètres de coupe, vitesses de coupe et valeurs des avances, inégalables.

### Forme des goujures

La forme des goujures a été spécialement développée. Un état de surface de très haute qualité et un affûtage 4 pentes optimisent extrêmement la formation des copeaux et le comportement de coupe.



### Préparation des arêtes de coupe

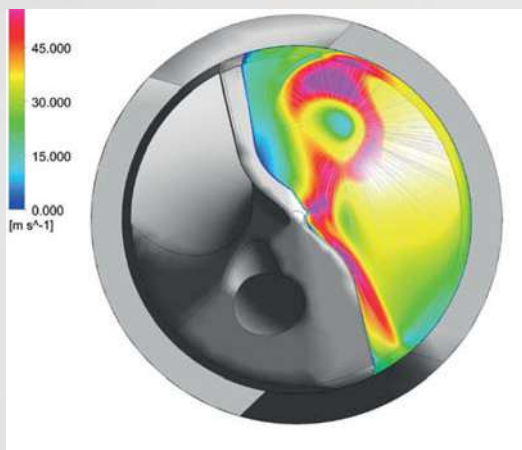
Le façonnage spécifique des arêtes de coupe et le revêtement TiAlN augmentent considérablement la résistance à l'usure des zones de coupe fortement sollicitées lors de l'usinage.



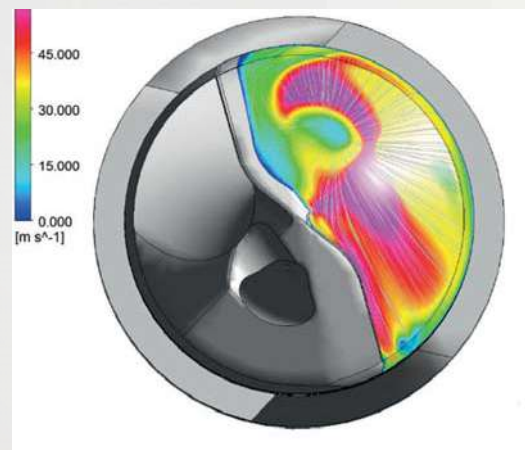
De par cette nouvelle forme de géométrie trigone des canaux de lubrification, le volume du liquide de refroidissement est plus élevé, la vitesse d'écoulement des flux est accélérée et l'adduction est mieux ciblée ce qui avantage l'élimination des hautes températures du procédé d'usinage. Comparé aux

canaux de lubrification classiques, avec une section de forme cylindrique, le produit de refroidissement est précisément bien ciblé afin de lubrifier et de refroidir les zones de coupe très sollicitées telles les arêtes de coupe principales et les becs des outils.

Canaux d'adduction classiques



Canaux d'adduction avec stylique innovante trigone



Comparaison du comportement des flux



## RT 100 C

Foret Ratio pour le perçage des aciers à copeaux longs

### Géométrie des arêtes de coupe

La forme concave des arêtes de la coupe frontale assure un comportement de coupe et de pénétration optimal lors de l'usinage des matériaux à copeaux longs. Les efforts de coupe et les températures d'usinage sont considérablement amoindris.

### Forme de rainure

Une forme de goujures spécifique, avec un profil étroit, spécialement conçue pour le perçage des aciers à copeaux longs, assure un comportement optimal de la formation des copeaux, même à basse vitesse de coupe.

L'état de surface d'excellente qualité et le nouveau revêtement avec une surface très lisse assurent l'évacuation optimale des copeaux. Cela garantit aussi l'élimination fiable et rapide des températures d'usinages.

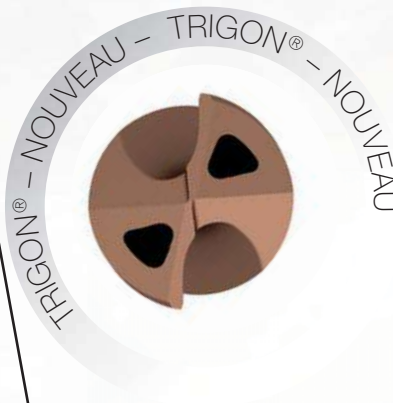
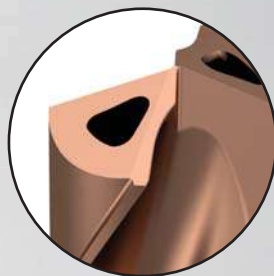
- outil spécial
- Ø 3-20 mm
- profondeurs de perçage jusqu'à 7 x D
- à partir du Ø = 6,00 mm, avec nouveau stylisme des canaux de lubrification TRIGON®

### Nouveau stylisme des canaux de lubrification

De par cette nouvelle forme de la section des canaux de lubrification, la vitesse d'écoulement du flux est accélérée, le volume du débit est plus élevé et la direction du jet est optimisée ainsi, les températures d'usinages sont plus rapidement évacuées. En comparaison avec les canaux de forme cylindrique, le liquide de refroidissement atteint plus précisément les arêtes de la coupe frontale et les becs des outils.

### Préparation des arêtes de coupe

Grâce à la préparation spéciale des arêtes de coupe qui consiste à réaliser un affilage avec une géométrie définie bien spécifique et un état de surface amélioré, il est possible d'augmenter considérablement la valeur des tenues de coupe des outils. En outre, la résistance au micro-écaillage des arêtes de coupe est améliorée et le collage sur les arêtes de coupe est, pour ainsi dire, éliminé.







## RT 100 AL

Le nouveau Foret Gühring en CW monobloc

En ce qui concerne le perçage des matériaux à base d'aluminium, non seulement la formation des copeaux reste un chapitre de grande importance, en outre, il est absolument nécessaire d'assurer l'excellente évacuation des copeaux. Les forets RT 100 Al assurent la formation optimale des copeaux et garantissent leur évacuation, sur tous les alliages d'aluminium, des plus mous aux plus tenaces, des alliages corroyés jusqu'aux alliages avec un très haut pourcentage de silicium.

### état de surface d'extrême qualité au niveau de l'amincissement de l'âme, de la face de coupe et de la surface dépouillée:

- Réduction des températures d'usinage
- Elimination du collage sur les arêtes de coupe

### géométrie au sommet et forme des arêtes de coupe:

- comportement optimal pour la formation des copeaux

Le Foret RT 100 Al est particulier et remarquable de par son amincissement de l'âme ouvert pourvu, comme sur les faces de coupe et surfaces dépouillées, d'un état de surface de qualité supérieure. Les arêtes de coupe et les becs, avec traitement microscopique, complètent la géométrie de coupe au sommet et assure l'excellent comportement de coupe avec de basses températures sur les arêtes, ce qui empêche le collage lors de l'usinage des aluminiums.

### Arêtes de coupe vives avec traitement microscopique

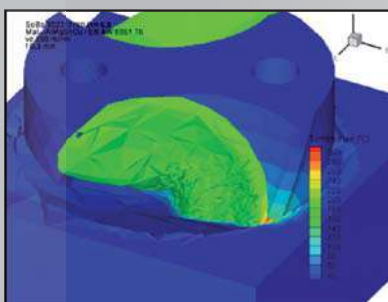
- comportement de coupe optimal, aussi sur les alliages Al Si thermiquement traités
- copeaux courts, même sur les alliages d'aluminium corroyés

### Profil des goujures

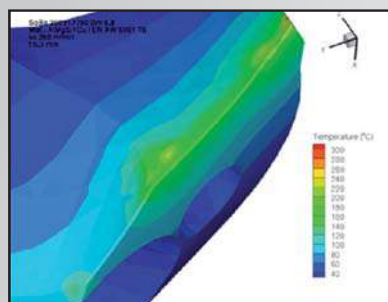
- Goujures polies assurant l'évacuation optimale des copeaux
- Minimalisation de la friction
- Elimination du collage



Formation des copeaux



Répartition des températures sur les arêtes de coupe



Les outils sont polis, pour les matériaux abrasifs à base d'aluminium, il est possible de réaliser un revêtement complémentaire au sommet afin d'augmenter la valeur des tenues de coupe des outils.

Sur demande, nous sommes aussi en mesure de réaliser et de vous livrer des forets étagés simples ou étagés avec plusieurs étages.

## Matériaux synthétiques renforcés par des fibres (FVK)

Les matériaux synthétiques modernes (FVK), renforcés par des fibres, font preuve d'une énorme efficacité en assurant une réduction de poids et une haute résistance des matériaux. Ainsi, ils se généralisent dynamiquement et solutionnent de nombreuses applications industrielles. De par leurs excellentes propriétés physiques, ils soutiennent le développement de la construction métallique légère, classique, réalisée à partir de matériaux légers tels les alliages de titane et alliages d'aluminium. Les FVK sont réalisés à partir d'une multitude de différents matériaux. Il en résulte un mélange de FVK et de matériaux métalliques, aussi nommés « composites ». Ces matériaux composites sont encore exclusifs et réservés aux constituants de l'industrie aéronautique et aérospatiale, mais aussi à l'industrie automobile sportive et autres applications de haute technologie ou produits très nobles liés aux innovations techniques.

L'accroissement de l'implication de ces matériaux composites est particulièrement remarquable dans les domaines de la technologie de puissance, la technique des véhicules utilitaires et de l'énergie éolienne mais aussi dans le secteur de la

construction des machines. Les composites FVK sont surtout utilisés partout où il est nécessaire de garantir de très hautes résistances spécifiques avec un minimum de poids et là où il est nécessaire d'assurer une grande efficacité énergétique et dynamique du processus.

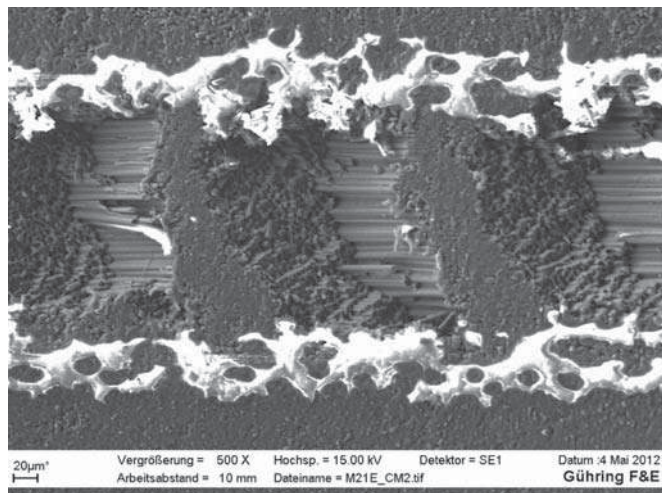
Depuis les années, à partir de 1980, la Société Gühring vous offre des outils standards et des outils spéciaux pour solutionner l'usinage des matériaux composites FVK. Cette expérience depuis des années nous a obligés à développer différents outils spécifiques « haute performance » absolument bien appropriés aux multiples conditions et cas d'usinages comme par exemple le perçage à main levée, le perçage sur unités pourvues d'un système avec avances assistées, l'usinage robotique ou bien l'usinage sur les centres d'usinage conventionnels.

Les outils Gühring conçus pour l'usinage des matériaux composites FVK répondent parfaitement aux exigences de l'usinage de ces matériaux modernes prévus pour les ouvrages de construction légère.

- Pièces sans encorbellement de fibres
- Sans délaminage de l'état de surface sur les pièces
- Aucun endommagement des pièces par « Peelup » ou par « Pushout »
- Empêchement de l'arrachement des fibres « Pullouts) sur les pièces
- Minimisation de la formation de bavures
- Empêchement d'endommagements thermiques

Afin de pouvoir usiner les matériaux composites FVK sans endommager les pièces à usiner, il est nécessaire d'utiliser des outils pourvus d'arêtes de coupe de très haute qualité mais aussi réalisés à partir de matériaux très résistants à l'usure.

Les conditions pour obtenir une coupe franche de ces matériaux fibreux très abrasifs, en particulier lorsque le pourcentage du volume de fibres dépasse une valeur de 55 %, il est absolument nécessaire d'avoir des arêtes de coupe très vives.



### Agrandissement de 500 X sur la surface de coupe d'un CFK

Après l'usinage avec des outils Gühring et à l'aide d'un microscope à balayage électronique, il est possible de constater l'excellent état de la structure et du sens des fibres franchement coupées. Les fibres ne sont pas écrasées, pressées ou effilochées.



## GFK / CFK

Les matériaux synthétiques (GFK) renforcés de fibres de verre sont industriellement réalisés en grande quantité, utilisés dans l'industrie de l'énergie éolienne, de constructions de bâtiments et domaines des transports. En général, les GFK se limitent aux applications avec grande surface mais où une faible résistance suffit, par exemple pour les coffrages destinés au moulage du béton. Les éléments (GFK) en fibres de verre sont plus pesants et moins résistants aux efforts, toutefois il est souvent préférable de les utiliser car ils sont moins chers à réaliser et plus faciles à usiner que les matériaux synthétiques (CFK) renforcés de fibres de carbone qui eux, sont encore plus légers. Les éléments réalisés à partir de matériaux synthétiques (CFK) renforcés avec des fibres de carbone, souvent dénommés « pièces en carbone », sont, comparés aux GFK, considérablement plus résistants aux efforts et sollicitations mécaniques. En fonction de leur procédé de fabrication et du diamètre des fibres, les fibres de carbone pures sont nettement plus légères et beaucoup plus résistantes à la traction que les matériaux métalliques. Lorsqu'il s'agit d'obtenir des pièces avec une structure de très haute résistance aux sollicitations mécaniques, il est absolument nécessaire d'utiliser des matériaux synthétiques CFK.

La réalisation de la forme des pièces en matériaux synthétiques demande maintes précautions préliminaires au niveau des efforts et de la résistance des pièces mais aussi au niveau de la protection des fibres, c'est pourquoi les pièces en CFK et GFK sont moulées dans des matrices. Le rapport « volumes des fibres : matrices » détermine le seuil de saturation du volume des fibres qui, en fonction des sollicitations mécaniques sur les pièces en matériaux CFK, peut varier et atteindre un pourcentage jusqu'à 65 % sur les pièces fortement sollicitées. Afin d'assurer les propriétés mécaniques sur les pièces finies, lors de la réalisation de ces pièces, il faut prendre en considération le type de fibres mais aussi leur alignement et leur orientation. L'orientation des fibres dans les matériaux synthétiques renforcés de fibres de carbone CFK est l'un des facteurs les plus importants en ce qui concerne la tendance au délaminage et à l'arrachement des fibres lors de l'usinage des pièces. Ainsi, une très forte tendance au délaminage est particulièrement programmée lors de la sortie du perçage lorsque la disposition des différentes couches fibreuses est unidirectionnelle.



Les fibres de tous les matériaux composites CFK et GFK renforcés sont extrêmement abrasives, c'est pourquoi il est très difficile de solutionner les problèmes d'outils pour l'usinage de ces matériaux. Afin d'éliminer l'endommagement typique sur les pièces réalisées en FVK, la Société Gühring vous offre

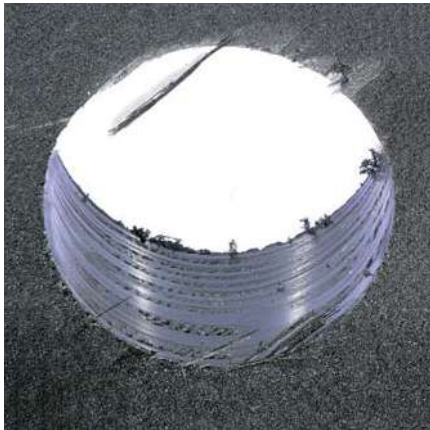
des solutions d'outils spécifiques de très haute performance. Leurs propriétés physiques et mécaniques sont très particulières et assurent l'excellente répartition et l'inclinaison des directions des efforts de coupe ce qui empêche la formation du délaminage lors de l'usinage.



### Opérations de perçage lors de l'usinage des matériaux FVK

Lorsqu'il s'agit de réaliser des opérations de perçage sur les matériaux FVK, il faut choisir des outils de perçage adéquats, avec différentes géométries de coupe au sommet, en fonction des matériaux et des applications spécifiques. Avec des outils parfaitement bien appropriés, vous pouvez avec fiabilité, aussi bien obtenir une coupe franche sur les matériaux pourvus de

couches superposées unidirectionnelles que sur les matériaux pourvus de couches tissées. Ainsi, il est possible d'éliminer complètement le délaminage de l'état de surface à l'entrée, sur toute la longueur et à la sortie du perçage (« peel up » / « Push out »).



**Bohrung D = 6,35 mm mit Faserüberständen an Deckschicht und Delaminationen**



**Bohrung D = 6,35 mm CFK mit Gewebedecklage, optimale Bearbeitungsqualität**



**Bohrung D = 6,35 mm unidirectionales CFK mit optimaler Bearbeitungsqualität**

### Stack-Materialien

Als Stack-Materialien, kurz Stacks, bezeichnet man die Kombination von mindestens zwei verschiedenen Materialien mit unterschiedlichen Eigenschaften. Häufig eingesetzte Werkstoffpaarungen für Leichtbauanwendungen sind CFK/Titan sowie CFK/Aluminium. Möglich sind aber auch Kombinationen der Werkstoffe CFK, Titan, Edelstahl und Aluminium in unterschiedlicher Zusammensetzung. Zur Einbringung von Verbindungselementen müssen diese unterschiedlichen Materialien in einem Prozess miteinander bearbeitet werden. Die Herausforderung für Zerspanungswerkzeuge bei der Bearbeitung ergibt sich aus den sehr unterschiedlichen Materialeigenschaften und Bearbeitungsstrategien der zusammengesetzten Werkstoffe. Bei der Bearbeitung von CFK/Titan-Stacks wirkt CFK stark abrasiv und führt schnell zu einer Verrundung der Werkzeugschneiden. Titan hingegen ist sehr zäh und verursacht durch die geringe Wärmeleitfähigkeit hohe Bearbeitungstemperaturen. Bei der Bearbeitung entstehen so sehr schnell Schäden im CFK durch zu hohe Bearbeitungskräfte und Temperaturen. Trotz der unterschiedlichen Werkstoffkennwerte muss die maßhaltige Bearbeitung über einen langen Standweg gewährleistet werden.

Gühring bietet auch für diese Werkstoffgruppe spezielle Werkzeuglösungen aus Vollhartmetall (VHM), beschichtetem Hartmetall und mit PKD-bestückten Schneiden an. Diese sind speziell auf den jeweiligen Materialaufbau abgestimmt und stellen den Spantransport sowie gleichmäßige Bohrungsdurchmesser über alle Werkstoffe hinweg sicher.





## Surface de dépouille structurée au Laser

### Optimisation des tenues de coupe en maîtrisant l'adduction, bien ciblée, du produit de lubrification et de refroidissement

L'usinage des opérations de perçages exige un volume important de produits de lubrification et de refroidissement (KSS) sans toutefois, toujours pouvoir obtenir les résultats souhaités. Effectivement, l'adduction du produit doit absolument être bien ciblée, avec une grande précision. C'est pourquoi l'usinage des outils de perçages pourvus de surfaces structurées au laser offrent de nouvelles possibilités de conception d'outils. Des vis de réglage, de grande importance, influencent la lubrification du perçage et manipulent la section et le positionnement des canaux de lubrification au niveau de la surface de la dépouille. En outre, des structures sur la surface de dépouille ou sur les surfaces collatérales peuvent influencer le comportement du flux du produit de lubrification et de refroidisse-

ment. Ces structures sont réalisées par usinage au laser. Finalement, le but est de diriger précisément le produit de lubrification et de refroidissement afin de lubrifier et de refroidir les zones fortement sollicitées, en particulier, les zones thermiquement touchées comme, par exemple les listels de guidage et les becs des arêtes de coupe des outils, tout cela afin d'amoindrir l'usure et d'augmenter la tenue de coupe ainsi que la durée de vie des outils. Cela concerne toutes les opérations de perçages où les outils sont, hautement et thermiquement, sollicités. Ainsi, puisque l'effet de refroidissement et de lubrification est considérablement amélioré et comme la température d'usinage est amoindrie, la qualité du perçage est systématiquement optimisée.

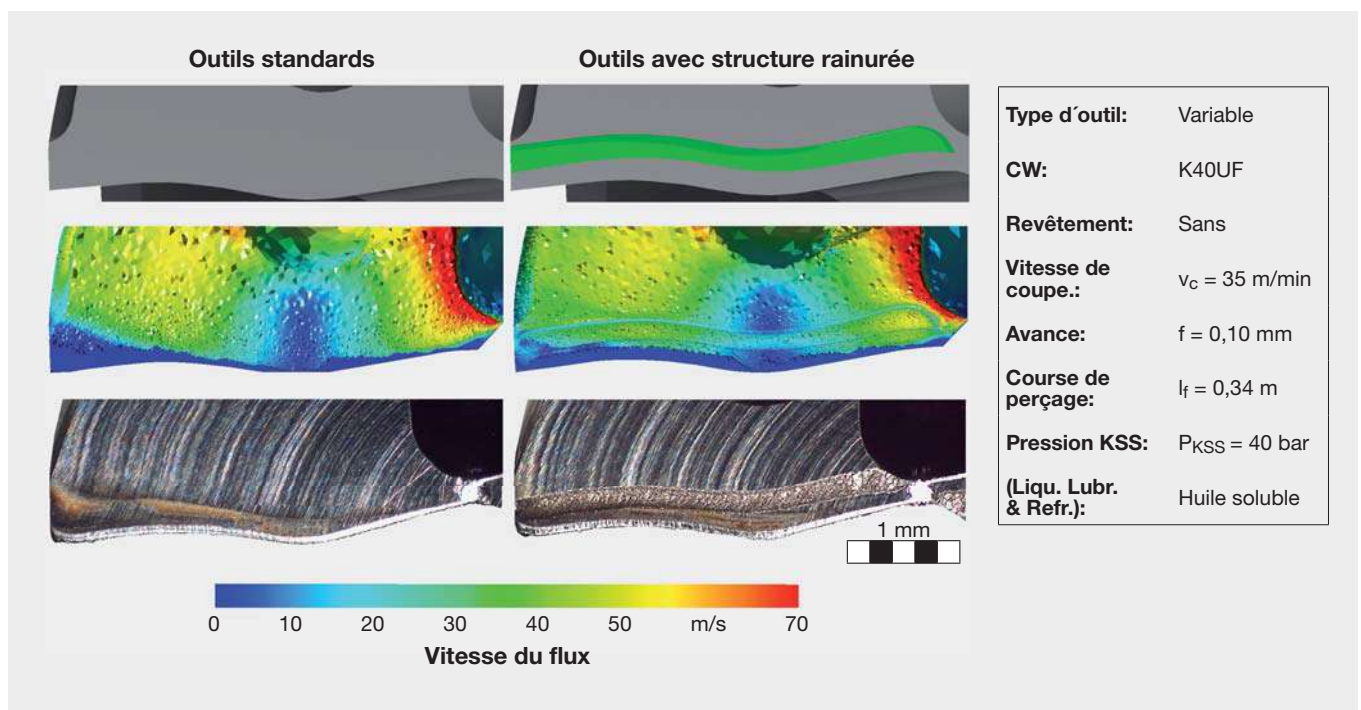
### Simulation avec CFD

#### « Computational Fluid Dynamics »

A l'aide des simulations CFD, il est possible d'analyser précisément l'influence de la valeur du diamètre des canaux d'adduction du produit de lubrification et de refroidissement ainsi que l'influence de la réalisation des structures au laser sur le comportement du flux des liquides. Les premiers examens provenaient d'une structure de rainurage toute simple, positionnée avec intervalle constant de 150  $\mu\text{m}$  à partir de l'arête de coupe principale. Cette rainure avait une profondeur d'environ 50  $\mu\text{m}$ . Les simulations CFD réalisées font preuve d'une influence positive du comportement du flux du liquide puisque le refroidissement de la zone thermiquement sollicitée s'est nettement amélioré. De plus grandes zones, au niveau des becs de l'outil, qui auparavant pour des raisons dimensionnelles du volume entre la surface de dépouille et la surface du fond de perçage ne pouvaient pour ainsi dire pas être irriguées

sont, de par la maîtrise de l'angle de la direction du flux et de par l'agrandissement du volume, largement irriguées donc, abondamment lubrifiées et réfrigérées.

Les dépôts, d'une couleur brune, sur la surface de dépouille des outils d'usinages de l'alliage Inconel 718, à base de nickel, prouvent l'augmentation des performances du refroidissement de ces zones. La rainure de la zone structurée au laser influence, aussi bien que le volume agrandi ou que l'intensité des dépôts, résultants des résidus brûlés du liquide de lubrification et de refroidissement, la zone intermédiaire entre l'arête de coupe principale et la zone structurée pourvue le la rainure. Ainsi, la réduction des sollicitations thermiques augmente considérablement la tenue de coupe et la durée de vie des outils en optimisant la qualité de perçage lors de l'usinage de l'Inconel 718.

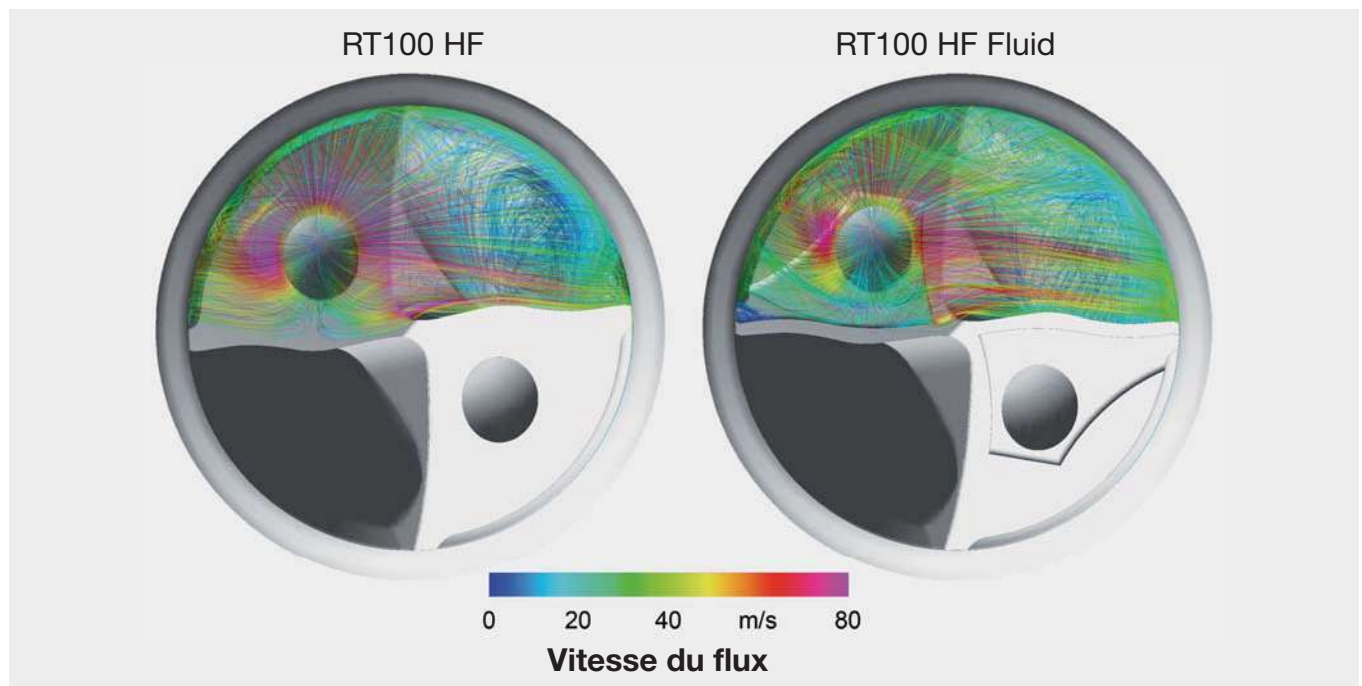




## Observations des structures complexes

A partir de résultats obtenus sur des structures simples, il est nécessaire de continuer les développements sur les structures de formes complexes afin d'améliorer la précision du positionnement de l'adduction. Etant donné que l'usinage au laser offre d'énormes possibilités de conception sur les outils de coupe, il est possible de réaliser les formes les plus sophistiquées qui, aussi accentuées, ne pourraient en aucun cas être réalisées par d'autres procédés d'usinages. Afin de pouvoir réaliser des surfaces structurées au laser, il faut prendre en considération la forme, le positionnement, la profondeur sur les surfaces afin d'assurer l'adduction optimale des liquides de lubrification et de refroidissement. C'est pourquoi l'assistance de la simulation CFD détaillée est indispensable afin de pouvoir analyser l'influence des différentes formes structurées sur le comportement des flux, mais aussi sur la formation de tourbillons qui eux, engendrent une efficacité supérieure de refroidissement au niveau des becs d'outils.

Avec une surface structurée selon les résultats de dernières recherches, dénommées KSS - FLUID, et en comparaison avec les structures simples, d'énormes innovations et améliorations au niveau des tenues de la coupe et du comportement de l'usure des outils ont été enregistrées. Parallèlement au développement des structures, des recherches sur l'usinage au laser ont aussi été effectuées afin de détecter les endommagements éventuels sur les zones superficielles des surfaces usinées au laser et d'éviter des valeurs de rugosité trop importantes, de l'état de surface obtenu, car ce sont des facteurs qui peuvent négativement influencer le comportement du flux. L'usinage actuel au laser réalise des états de surface, indépendamment de la nuance de cw à usiner, de  $Rz < 5 \mu\text{m}$ , sans perte de performance et sans endommagement de l'état superficiel d'usinage. L'usinage de la structure de la surface de dépouille au laser n'influence pas l'adhérence du revêtement des outils.



## Domaines d'applications

L'utilisation des outils modifiés est surtout réservée à l'usinage des matériaux très tenaces et difficiles à usiner, par exemple lorsque les outils sont thermiquement très sollicités. Il s'agit des aciers inoxydables, des alliages à base de titane et alliages à base de nickel. Actuellement et en fonction des recherches et développements, le point fort est de solutionner l'usinage de l'Inconel 718. Les propriétés thermomécaniques de

l'Inconel 718 sollicitent extrêmement les outils à tous niveaux tels les tenues de coupe et durées de vie ainsi que le rendement de la productivité. Afin de pouvoir optimiser les résultats d'usinages, il est absolument nécessaire de maîtriser l'adduction et de bien cibler le flux du liquide de lubrification et de refroidissement.



## Optimisation du procédé d'usinage par enlèvement de copeaux avec oscillations superposées

L'usinage conventionnel de nouveaux matériaux, tels les matériaux synthétiques renforcés de fibres, les matériaux très tenaces comme les alliages de titanes et alliages de cuivres, les matériaux très durs et cassants comme les céramiques, nous sollicite fortement car leur comportement est extrême au niveau de l'usure des outils et de la formation des copeaux. C'est pourquoi il nous faut remplacer les moyens d'usinage conventionnels et solutionner l'optimisation des procédés d'u-

sinages par enlèvement de copeaux en utilisant de nouveaux épaulements comme le procédé par oscillations superposées en direction de l'avance des outils de coupe. Ce processus garantit une amélioration de la formation des copeaux, une réduction des efforts de coupe, une meilleure qualité de l'état de la surface usinée tout cela en augmentant considérablement la durée de vie des outils utilisés.

### Observations fondamentales

Lors du procédé d'usinage avec oscillations superposées des mouvements axiaux en direction de l'avance et, en fonction des applications d'usinages, la bande de fréquence hertzienne utilisée peut varier de quelques Hz jusqu'à des milliers de Hz. En outre, se produit un changement défini de l'angle de la direction effective de la coupe et un accroissement de la vitesse de l'arête de coupe de l'outil. De par un procédé d'usinage assisté par oscillations superposées et dépendamment de l'application d'usinage et du type de l'outil, résultent maints effets positifs:

- Formation des copeaux plus favorable / amélioration de la rupture des copeaux
- Evacuation copeaux améliorée
- Réalisation de points de rupture sur les copeaux
- Amoindrissement de la formation d'arêtes rapportées
- Augmentation de la tenue de coupe et durée de vie des outils
- Efforts de coupe amoindris
- Températures d'usinages considérablement amoindries

Actuellement, le procédé d'usinage par enlèvement de copeaux assisté par oscillations superposées est surtout appliqué pour l'usinage des matériaux très difficiles à usiner tels les super - alloys, les matériaux synthétiques renforcés de fibres et les matériaux stacks, mais aussi pour les cas d'usinages

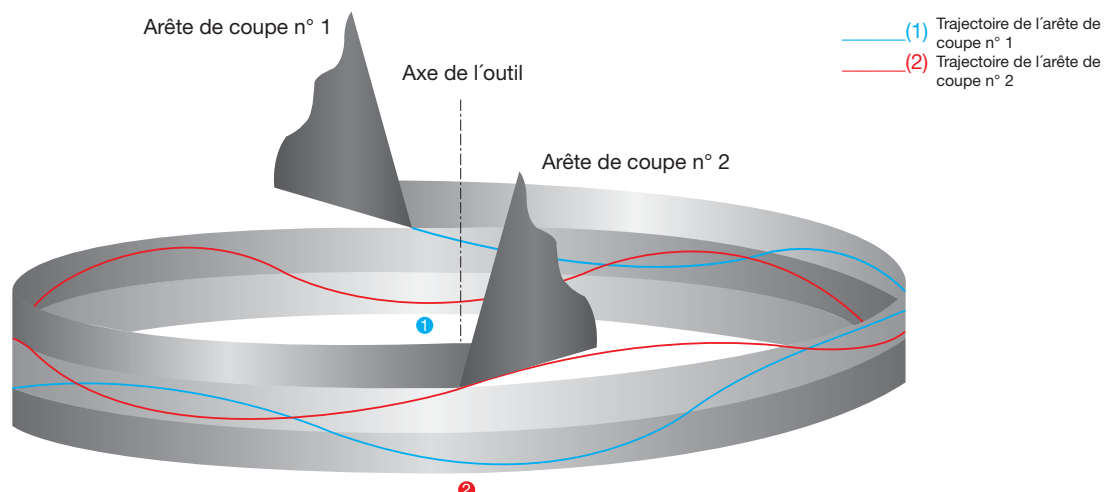
des matériaux alliés à copeaux longs comme les alliages de cuivres sans plomb. Lors de l'usinage assisté par oscillations superposées, il faut différencier les types d'oscillations « Basse Fréquence » et « Haute Fréquence ».

### 1.) Excitation « Basse Fréquence »

Pour l'excitation des oscillations superposées à basse fréquence, la bande de fréquences utilisée peut varier jusqu'à 1 kHz avec une amplitude de 0,50 mm. Dans cette catégorie, sont prises en considération les évacuations de copeaux programmées par le levage de l'outil ou bien par une brève interruption de l'avance de l'outil. Sur les centres d'usinages conventionnels, une avance discontinue de cette valeur ne peut pas être atteinte car la dynamique des mouvements des axes est très limitée. Afin d'obtenir ces mouvements d'oscillations superposées avec des fréquences d'une valeur qui dépasse multiplicativement la vitesse de rotation des broches, il est nécessaire d'utiliser des

boîtes de vitesses mécaniques spécialement conçues pour les machines. Ces boîtes de vitesses qui sont des variateurs, peuvent être intégrées dans la machine ou, directement être installées, comme tête de réduction, sur la broche. La course est mécaniquement commandée par la transmission de l'axe de l'avance ou par une commande à came.

Divergent de la trajectoire de coupe en forme de spirale avec une section constante des copeaux lors du perçage avec une avance constante, résulte, de par ce système d'oscillations superposées du mouvement axial de l'avance, une section variable des copeaux.





Lors de l'usinage des matériaux très ductiles, le mouvement axial d'oscillations superposées à basse fréquence permet la réalisation de copeaux avec des longueurs et des sections bien définies. L'amplitude du mouvement axial des oscillations superposées est responsable de l'épaisseur maximale des copeaux. Le réglage de l'amplitude peut influencer le rétrécissement de la section du copeau ou définir l'intervalle

entre l'arête de coupe et la surface usinée, donc le levage de l'arête de coupe avec interruption de la formation des copeaux. L'accouplement de la vitesse de rotation à la fréquence qui, en général est mécanique, détermine la distance entre le point de rétrécissement et, ou bien, le nombre de levages de l'outil par révolution de l'outil.

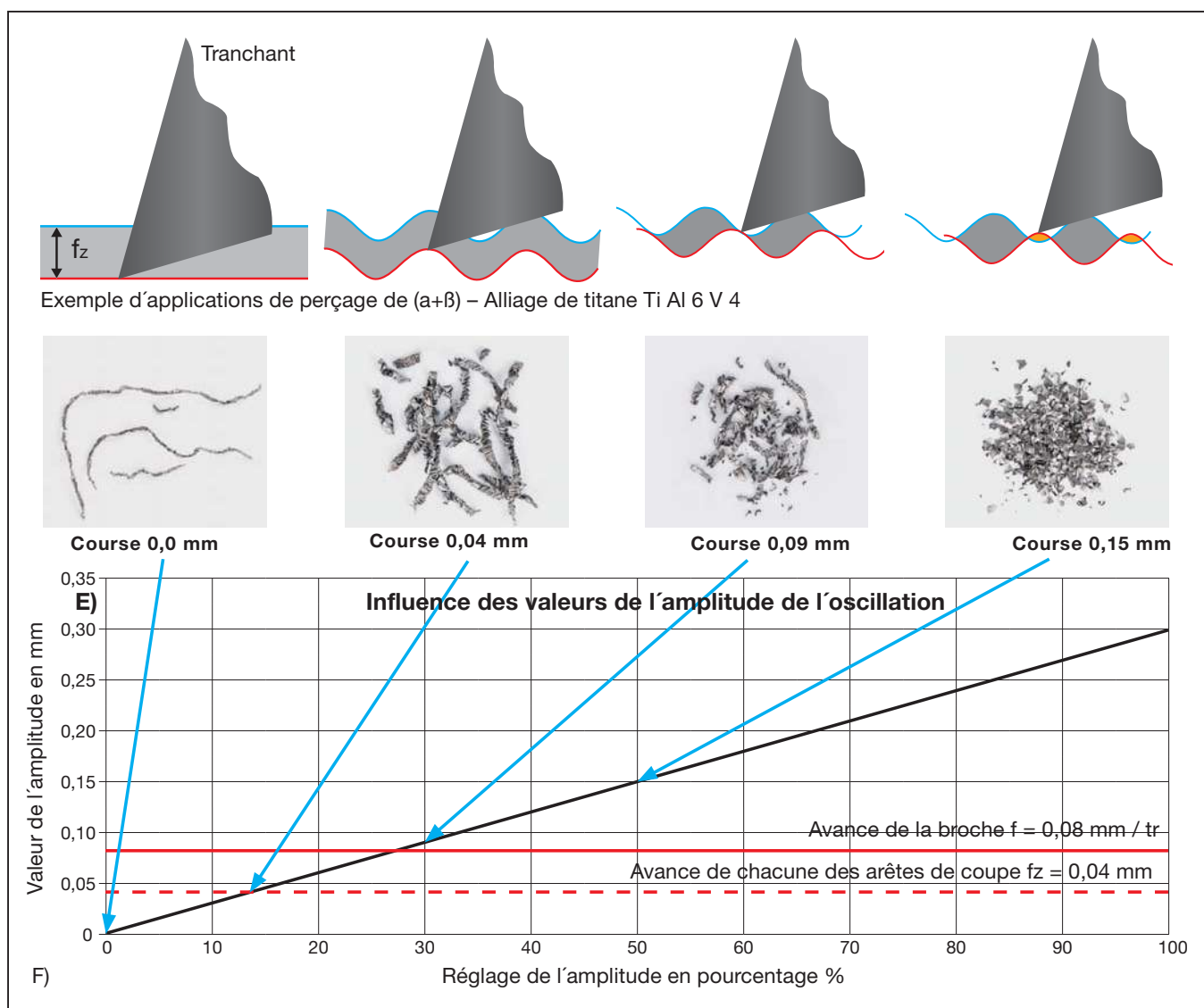
## Influence des oscillations superposées sur la formation des copeaux

Un essai de perçage a été réalisé sur un alliage de titane (Ti Al 6 V 4). Uniquement, la valeur de l'amplitude des oscillations superposées pouvait varier. Tous les essais ont été réalisés avec des outils de perçages identiques, diamètre  $d = 6,35$  mm, usinage à sec. Valeurs des paramètres de coupe:  $V_c = 30$  m/min et avance  $F = 0,08$  mm / tr.

En considérant la formation des copeaux réalisés, l'influence de la valeur de l'amplitude est clairement démontrée. Déjà, lorsque la valeur de l'amplitude est identique à la valeur de l'épaisseur du copeau, la longueur du copeau est considérablement raccourcie. Afin d'obtenir de très courts copeaux d'usinage des matériaux ductiles, il est absolument nécessaire

de choisir une valeur de l'amplitude supérieure à la valeur de l'avance de l'arête de coupe. Ainsi, l'arête de coupe se libère complètement de la surface de la pièce à usiner et l'interruption de la formation de copeaux est définie.

Lors de l'usinage des combinaisons de matériaux hybrides, les dénommés « sandwich et stacks », actuellement, le procédé d'usinage assisté par oscillations superposées est partout adopté et devenu usuel. Ce processus garantit la rupture des copeaux et évite le lavage des surfaces de coupe lors de l'usinage des matériaux synthétiques renforcés de fibres en assurant un amoindrissement considérable des températures d'usinage.



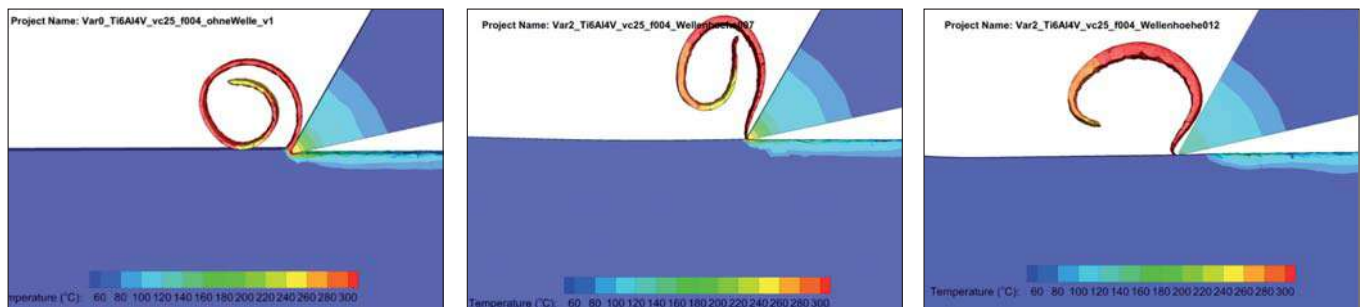




## Influence des valeurs de l'amplitude du procédé d'usinage avec oscillations superposées sur la température d'usinage

A l'aide de la méthode FEM « Finite – Element – Methode » il est possible de simuler directement la formation du copeau sur l'arête de coupe de l'outil de différentes applications et conditions d'usinage. La description de la formation des copeaux ainsi que les résultats de la simulation FEM sont schématiquement démontrés sur les figures suivantes.

Les résultats de la simulation FEM démontrent qu'avec l'augmentation de la valeur de l'amplitude des oscillations, l'épaisseur du copeau augmente et la longueur du copeau est raccourcie. En outre, la température de coupe au niveau des arêtes de coupe augmente considérablement lors d'une coupe continue sans levage ou interruption de l'outil.

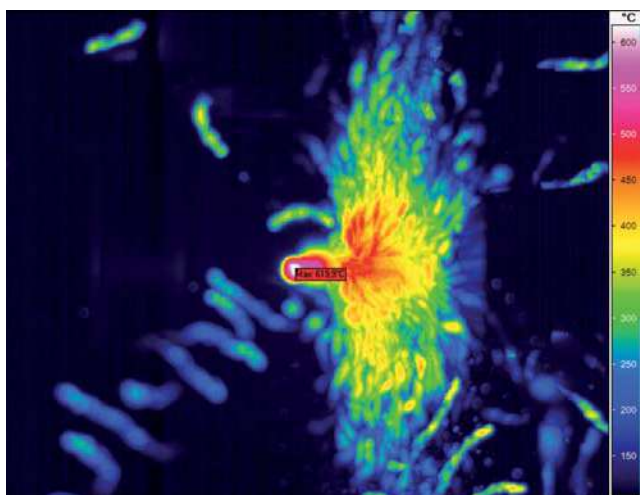


Ce phénomène est encore plus marquant lorsqu'il s'agit de comparer les températures d'usinages lors de l'usinage des matériaux stacks composites de titane et de fibres de carbone. Lors des essais, les forets identiques de diamètre  $d = 6,35$  mm usinaient à sec avec des paramètres de coupe  $V_c = 30$  m / min. et avance  $f = 0,08$  mm / tr.

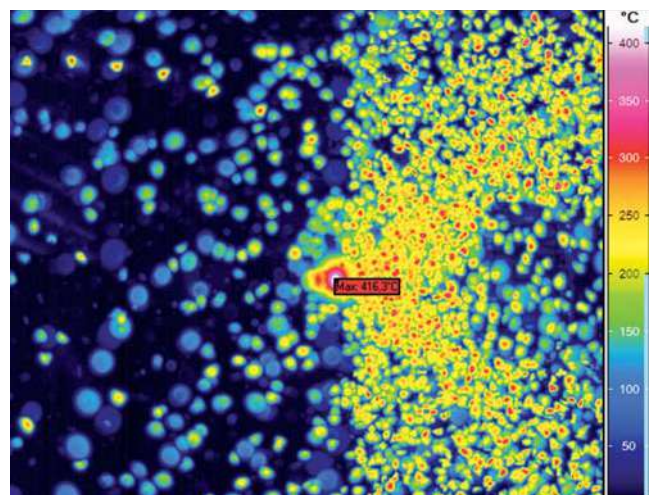
Avec nos caméscopes thermographiques, nous pouvons enregistrer les valeurs de la température résultante de l'usinage des matériaux stacks de titane et fibres de carbone en temps réels. L'épaisseur de la plaque de matière pour les essais est de 20 mm dont 6 mm de fibres de carbone et 14 mm d'alliages de titane Ti Al 6 V 4. La valeur de la paroi restante après perçage était de 1,50 mm. La comparaison de la valeur des

températures des arêtes de coupe directement à la sortie du perçage, au – dessous de la plaque, ainsi que la cumulation des températures enregistrées au cours du perçage démontre la différence entre l'usinage conventionnel et l'usinage assisté par oscillations superposées. Pendant les essais, les températures maximales relevées sans l'assistance par oscillations superposées dépassaient les 600 °C, directement mesurées sur les arêtes de coupe. Lors de l'usinage avec des conditions identiques, mais avec assistance par oscillations superposées, la température maximale était considérablement réduite, au – dessous de 450 °C. En outre, la rupture des copeaux s'était améliorée, la qualité du perçage était meilleure et la tenue de coupe des outils était nettement plus importante.

## Enregistrement de l'usinage de stack CFK / (a + $\beta$ ) – Alliage de titane Ti Al 6 V 4



Conventionnel à sec :  
 $\vartheta_{\max}$ : 619 °C



Avec assistance d'oscillations superposées, à sec:  
 $\vartheta_{\max}$ : 416 °C



## 2.) Excitation „ Haute Fréquence“ (Assistance Ultrasons):

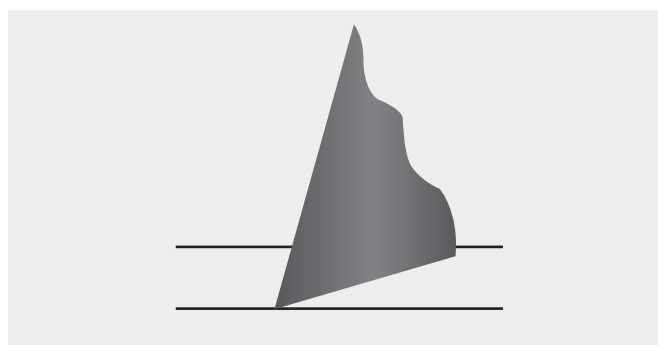
Lors du procédé d'usinage par enlèvement de copeaux avec excitation haute fréquence – aussi dénommé: « usinage assisté par ultrasons » - il y a une interférence de la cinématique conventionnelle avec oscillations de l'outil en direction axiale qui, contrairement à l'excitation basse fréquence, produit une fréquence considérablement plus élevée avec 16 ... 55 kHz. La valeur de l'amplitude maximale atteinte au sommet de l'outil est d'environ de 2 à 30 µm et dépend intensivement de la combinaison de l'ensemble outil, système d'excitation et puissance d'alimentation puisque l'oscillation résulte de l'excitation de l'outil avec la fréquence de sa résonance.

L'excitation résulte d'un ensemble complexe composé de générateur, convertisseur, booster et de la combinaison outil et attachement d'outil, dénommé « sonotrode ». Le générateur modifie l'énergie électrique en oscillation sinusoïdale de très haute fréquence qui est transmise au convertisseur. Le booster transforme l'amplitude de l'oscillation qui provient du convertisseur, augmente cette amplitude pour enfin la conduire vers la sonotrode dans laquelle les éléments piezo-électriques transforment l'énergie électrique en énergie mécanique.

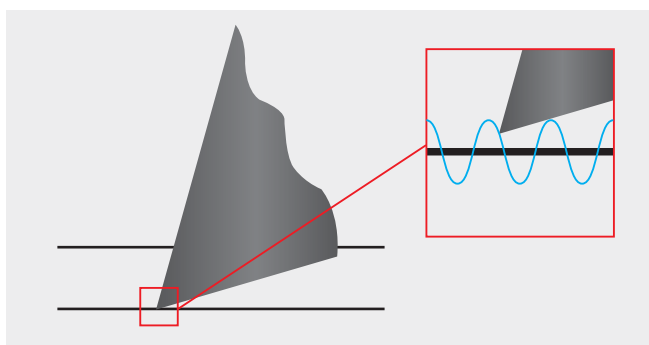
La combinaison du mouvement d'avance et du mouvement linéaire oscillant permet d'obtenir l'usinage économique des

matériaux de très haute dureté comme par exemple les matériaux composites à base de céramiques. Jusqu'à présent, l'usinage avec assistance ultrasons était surtout réservé aux applications d'usinages des dénommés Advanced Materials comme le verre, la céramique et les métaux durs en carbures métalliques en utilisant des outils pourvus de géométries de coupe indéfinies. Les opérations d'usinages telles perçages et fraisages des matériaux composites, matériaux synthétiques renforcés de fibres, matériaux avec structure en sandwich et mousses solidifiées, exigent de plus en plus l'usinage par enlèvement de copeaux assisté par ultrasons avec des outils pourvus de géométries de coupe bien définies. Lors de l'usinage avec des outils pourvus d'une géométrie de coupe bien définie, se produit une rupture microscopique de la matière à usiner, ce qui influence en partie la qualité de l'état de la surface usinée et occasionne une réduction des efforts de coupe des procédés d'usinages.

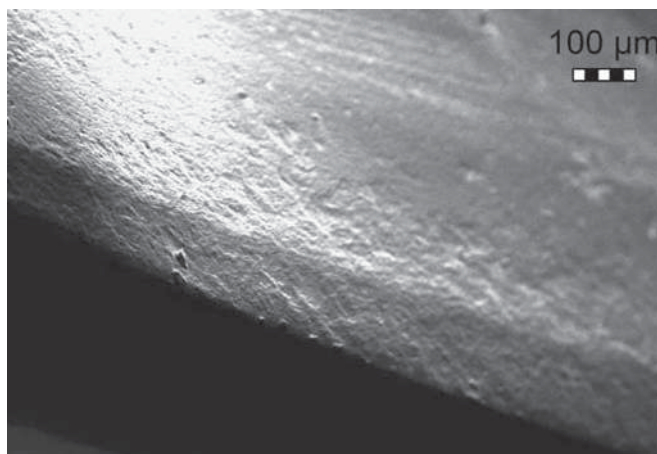
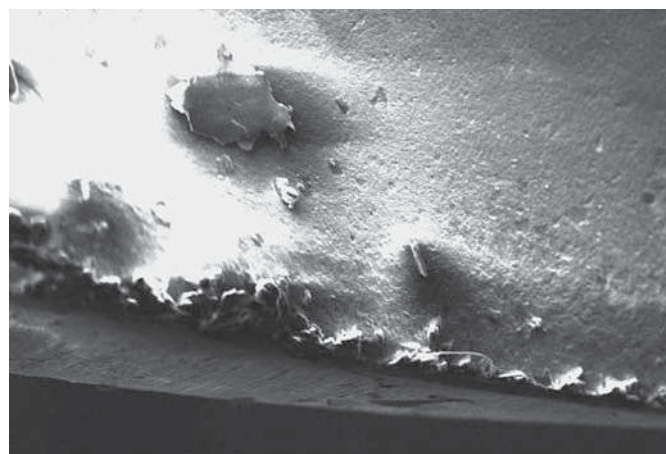
En plus de l'influence positive sur le comportement de l'usure lors de l'usinage des matériaux métalliques, la formation d'arêtes rapportées sur les arêtes de coupe des forets, lors du perçage des alliages à base nickel, est considérablement réduite.



Sans assistance par ultrasons



Avec assistance par ultrasons



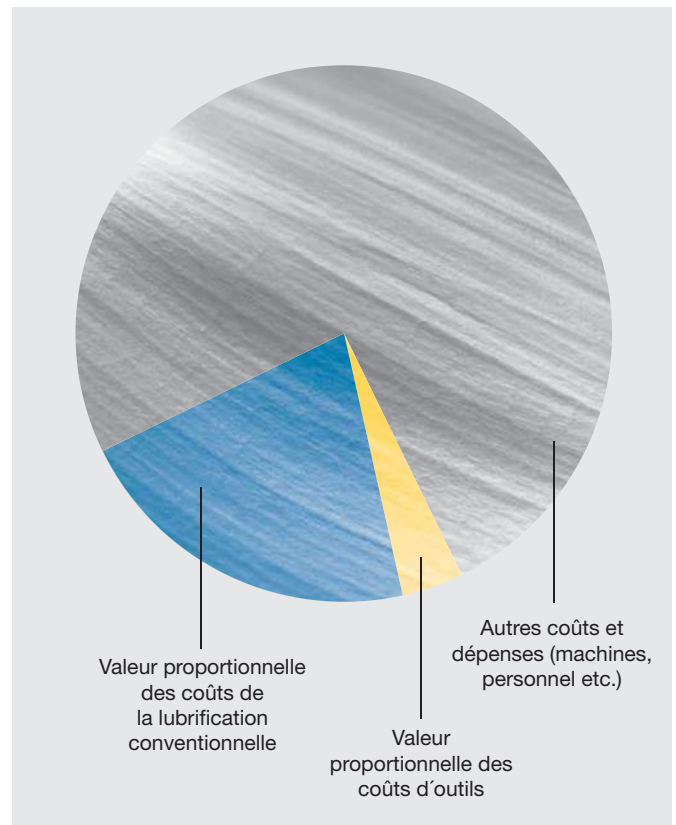


# Technologie MQL

## Principes de bases

Les dépenses causées par les équipements et par les produits de lubrification et de réfrigération sont énormes. A côté des coûts de machines et des frais d'outils, ils représentent une grande partie du processus d'usinage, des coûts de fabrication et prix de revient du produit fabriqué. Ainsi, une diminution des consommations de produits de lubrification et de refroidissement représente un énorme potentiel économique.

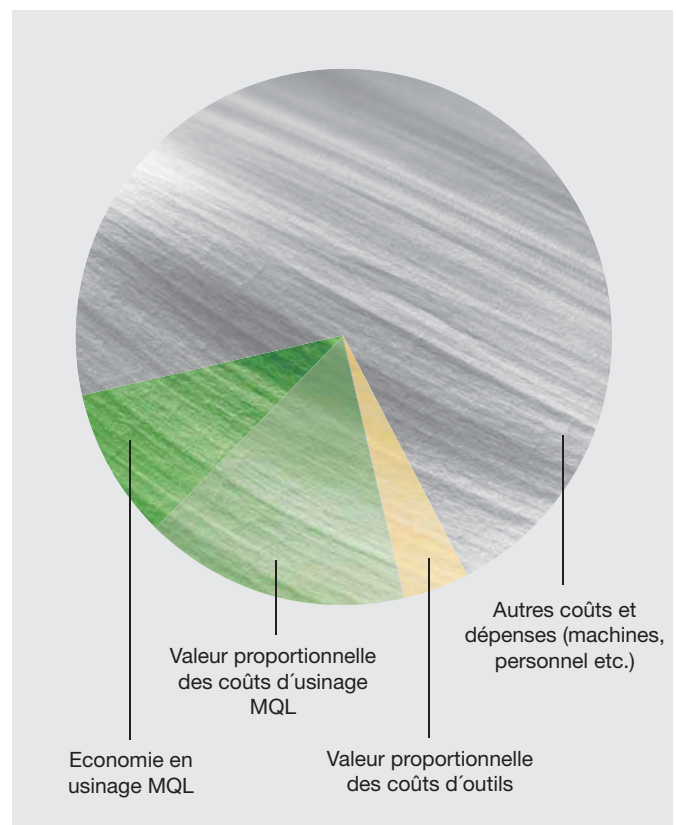
Une diminution des consommations des produits de lubrification et de refroidissement n'est pas seulement une économie pécuniaire mais une protection de notre état de santé et de la dégradation de l'environnement. Les recherches et développements de la technologie MQL datent des années 1990 et la Société Gühring est l'un des principaux précurseurs.



## But de l'usinage MQL

Se procurer un nouvel équipement de lubrification minimale MQL est nettement moins coûteux que de se procurer un équipement de lubrification et de refroidissement conventionnel!

- Réduction des sollicitations thermiques des arêtes de coupe au sommet de l'outil
- Amoindrissement de l'usure des outils
- Evacuation effective des copeaux lors de l'usinage des perçages profonds
- Réduction des consommations de produits de lubrification et de refroidissement
- Efficacité de lubrification et de refroidissement très élevée, particulièrement lors de l'usinage des perçages profonds
- Amoindrissement des coûts suivants:
  - Coûts de nettoyage des pièces usinées
  - Coûts d'élimination ou de recyclage des produits de lubrification et de refroidissement
  - Coûts d'élimination des produits de lubrification et de refroidissement sur les copeaux
- Protection santé et environnement





### Développement des Systèmes MQL modernes

Avec toutes ses recherches de bases sur l'usinage MQL, la Société Gühring s'était réservée la réalisation de la technologie d'usinage MQL axée sur la pratique. De l'élément de serrage jusqu'aux arêtes de coupe de l'outil, il a fallu développer tous les composants et le résultat était le premier élément du système d'adduction MQL.

#### Caractéristiques:

- Système modulaire standardisé
- Grâce aux contours identiques des broches, les éléments de serrage, conventionnels ou MQL, sont interchangeables
- Tous les éléments de serrage, mandrins hydrauliques, mandrins de frettage et mandrins Synchro sont prévus pour l'élément de serrage MQL



### Le système MQL Gühring actuel

De par l'intégration d'une vis de réglage des longueurs MQL dans le système d'adduction MQL de Gühring, selon la conception d'origine, nous avons fiabilisé et optimisé l'adduction du flux des produits de lubrification et de refroidissement. Ainsi, aujourd'hui, notre clientèle dispose d'un système d'adduction MQL fiable qui répond absolument à toutes les exigences modernes nécessaires aux procédés d'usinages optimisés.

#### Caractéristiques du système d'adduction MQL Gühring:

- Ecoulement libre du flux de lubrification, assuré et constant, sans entrave ou interruption
- Adducteur complet, spécial MQL, pour la lubrification minimale
- Extrémité d'attachement des outils, de géométrie MQL, appropriée pour la lubrification minimale
- Vis de réglage des longueurs de forme conique

L'utilisateur profite d'un système modulaire standardisé et, grâce aux composants compatibles, les frais de stockage sont réduits au minimum.





## Perfection de la géométrie des extrémités des attachements!

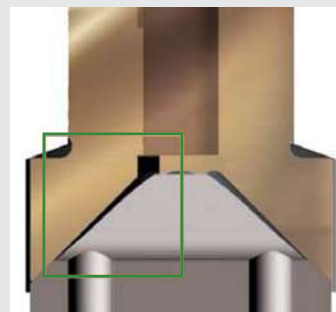
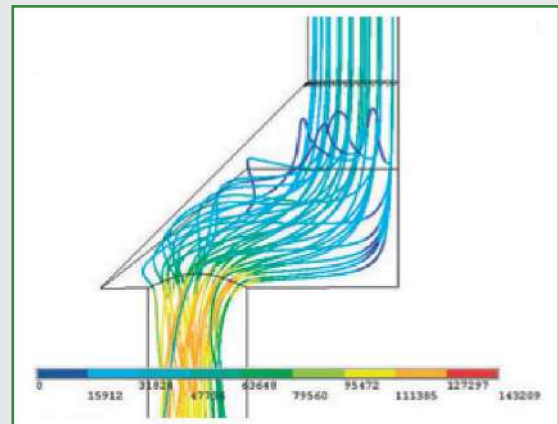
### Afin d'assurer une adduction optimale MQL

Il est très important de pouvoir conduire cette quantité minimale de lubrifiant, directement, à l'endroit précis, sollicité. Et c'est pourquoi la précision de la forme géométrique de l'extrémité de l'attachement de l'outil est de très grande importance. La forme conique, de conception Gühring, de l'extrémité de l'attachement des outils, vous procure les conditions optimales lors de l'utilisation d'un équipement MQL.

### Avantages de la forme conique de l'extrémité des attachements:

- Ecoulement libre du flux de lubrification, assuré et constant, sans entrave ou interruption
- Espace inactif minimal
- Utilisation facile
- Prix de revient avantageux

Profil de l'écoulement du flux, pour ainsi dire, sans tourbillonnement

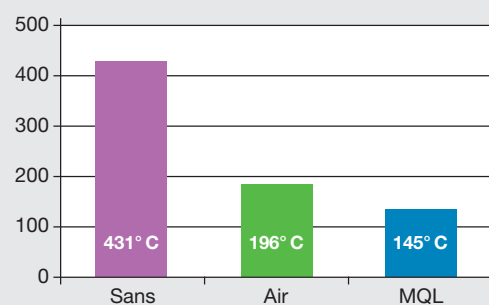
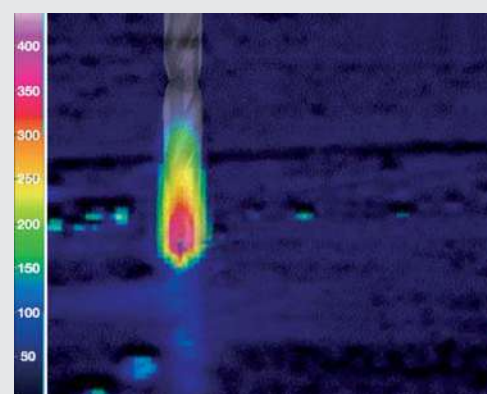


Comportement de l'écoulement du flux, au niveau de la rainure de jonction des canaux d'adduction, à l'intérieur du raccordement conique

## Outil toujours bien refroidi

Les températures lors de l'usinage MQL sont, comparées à celles de l'usinage à sec, considérablement amoindries. Cela fiabilise le procédé d'usinage et augmente les tenues de coupes et durées de vie des outils.

Analyse thermographique chez Gühring: Comparaison des températures des outils





**La géométrie optimale MQL !**

Exemple: Les meilleurs résultats obtenus avec des géométries d'outils MQL optimisées sont ceux de l'usinage avec le type de foret RT 100 T !



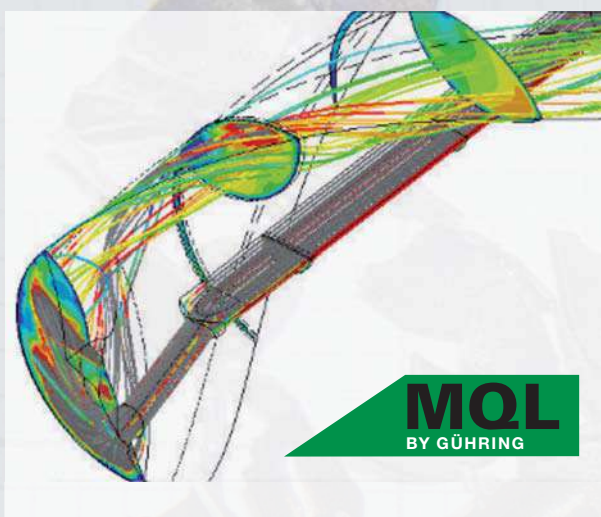
**1. Section des goujures:**

La géométrie des goujures des outils MQL Gühring assure la réalisation de copeaux courts et une évacuation optimale des copeaux fragmentés lors de l'usinage des perçages profonds.

**2. Valeur maximale de la section des canaux d'adduction de la lubrification:**

Non seulement l'alimentation en produit de lubrification et de refroidissement mais aussi l'évacuation des copeaux ont été, grâce à la section maximale des canaux d'adduction des outils, considérablement optimisés.

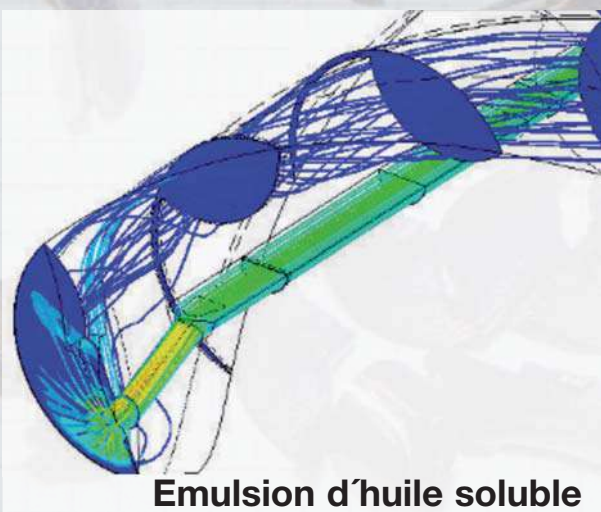
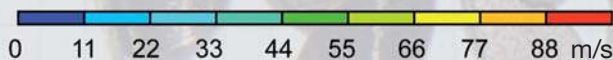
**Comparaison des vitesses d'écoulement des flux**



Dans les goujures, **la vitesse d'écoulement** des flux MQL est de 30,40 m/sec.

**Le volume MQL** est de 6,960 l/h (Norme: Litre(s) air/heure)

Diamètre de l'outil: 11,70 mm  
Pression à la pompe: 6 bars  
Pression outil: 4 bars



Dans les goujures, **la vitesse d'écoulement** des flux de l'huile soluble est de 3,50 m/sec.

**Le volume** de l'huile soluble est de 600 l/h (Norme: Litre(s) air/heure)

Diamètre de l'outil: 11,70 mm  
Pression à la pompe: 60 bars  
Pression outil: 31 bars



## Versions de systèmes MQL

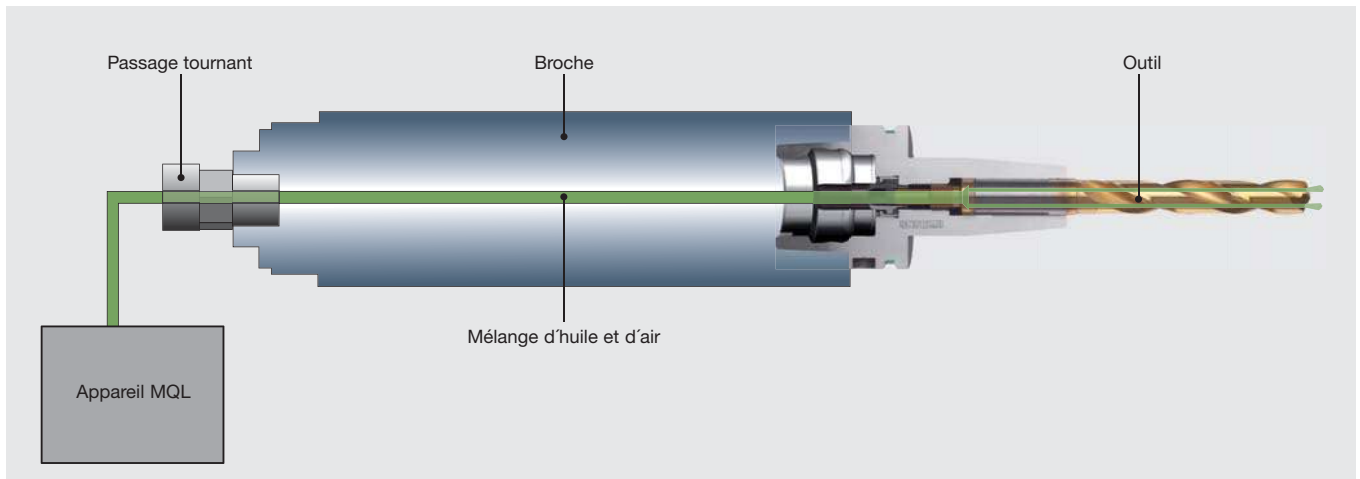
Il y a deux possibilités de préparer les produits de lubrification et de refroidissement MQL et d'assurer leur adduction jusqu'aux outils: le mélange aérosol peut être préparé en dehors de la machine et être acheminé au lieu d'usinage (système à un seul canal) ou bien, l'air comprimé et le produit lubrifiant sont séparément acheminés dans une centrale de mélange afin de se mélanger (système à deux canaux).

### Système MQL à un seul canal

Avec un système MQL à un seul canal, la réalisation du mélange aérosol lubrifiant a lieu dans un appareil MQL séparé et adapté sur la machine. Un système spécial de buses et de gicleurs incorporé dans un réservoir sous pression assure, à

l'alimentation du mélange aérosol vers le lieu d'usinage est assurée par le système de lubrification à quantité minimale et acheminée par un passage tournant (si possible par adduction axiale), par la broche, par l'élément de serrage et pour finir, par l'outil de coupe. Les différences inévitables des valeurs des sections d'adduction doivent absolument être réalisées de façon à ne pas gêner l'écoulement des flux.

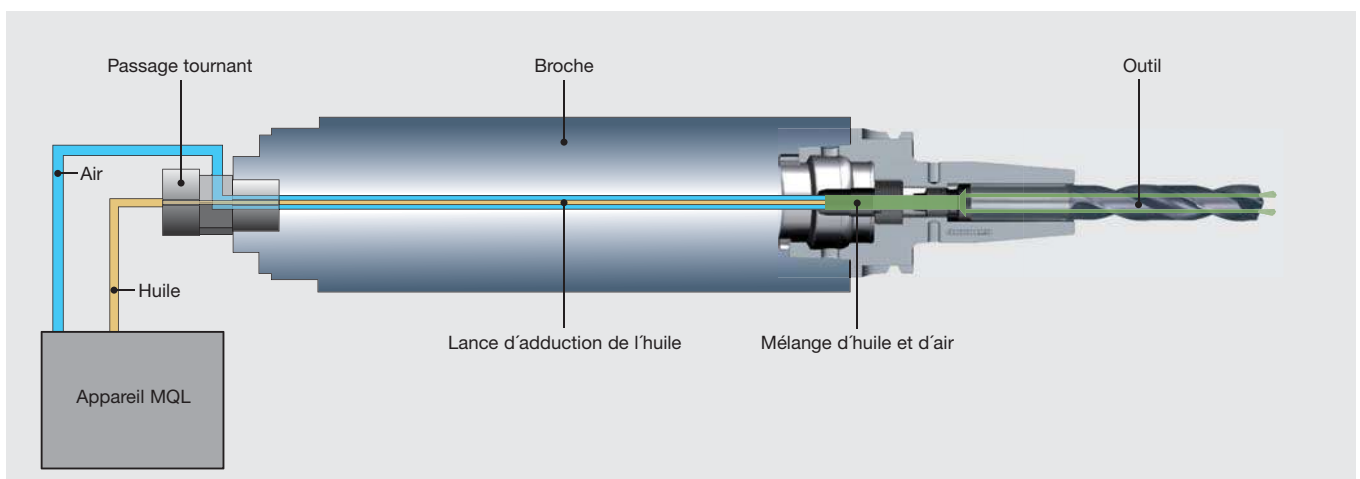
l'aide d'impulsions dosées d'air comprimé, l'alimentation du mélange aérosol lubrifiant dont la concentration, réglable, peut varier. La commande MQL est en mesure de maîtriser l'ensemble en respectant les limites des propriétés physiques.



### Système MQL à deux canaux

Avec un système MQL à deux canaux, l'alimentation d'huile de l'appareil MQL est assurée par un circuit circulaire et par un canal de raccordement si court possible pour, finalement, être acheminée vers le passage tournant. Afin de pouvoir doser des quantités minimales d'huile, une vanne à réaction rapide est intégrée dans le passage tournant. Le flux d'huile est transporté par une lance incorporée dans la broche jusqu'au mandrin de serrage de l'outil. Le deuxième canal du passage tournant assure le transport de l'air jusqu'au mandrin

de serrage de l'outil. C'est à partir de cet endroit que se mélangent l'huile et l'air. Le mandrin de serrage de l'outil est pourvu d'une buse spéciale pressée dans laquelle se trouve une chambre pour la réalisation du mélange aérosol. Ce système permet de mélanger toutes les quantités possibles d'huile et d'air, pour ainsi dire, sans limites. La distance entre la chambre de mélange et le lieu d'usinage est minimale, ce qui influence positivement les temps de réaction et permet de modifier rapidement les quantités d'huile.



### Etat de surface poli



Spécialement prévus pour les opérations de perçages des fontes d'aluminium et fontes de corroyage avec un pourcentage de silicium modéré, les forets sans revêtement assurent d'excellents rendements d'usinage. Afin d'amoindrir l'usure d'adhésion (collage et arêtes de coupe rapportées) ces outils sont pourvus d'une géométrie spéciale et d'un état de surface de qualité supérieure au niveau des surfaces de dépouille, de l'amincissement de l'âme et des goujures ce qui justifie bien leur utilisation dans ces domaines d'applications.

### Traitement vapeur / Nitruration superficielle



Les surfaces traitées à la vapeur sont artificiellement pourvues d'une oxydation superficielle sur une profondeur d'environ 3 à 10 µm afin d'améliorer la protection de l'acier contre la corrosion et de renforcer le comportement tribologique des outils. Pour les applications de perçages des matériaux abrasifs, il est recommandé de nitrurer la superficie ce qui augmente la dureté superficielle des outils et la résistance à l'usure.

### Revêtement TiN



Températures maximales d'utilisation: < 600 °C  
Couleur: jaune or  
Structure: monocouche  
Dureté: 2300 HV 0,05

Développé par la Société Gühring au début des années 1980, le revêtement TiN est très universel, à prix avantageux, prévu pour les applications de perçages avec des outils HSS et outils CW.

### Revêtements FIRE / nano-FIRE



Températures maximales d'utilisation: < 800 °C  
Couleur: violet  
Structure: multicouche  
Dureté: 3300 HV 0,05

Les revêtements FIRE et nano-FIRE sont structurés à base de titane et d'azote mais aussi avec un apport d'aluminium. Ces revêtements ont été développés à la fin des années 1990 afin de perfectionner les performances du revêtement TiN. Ils se font remarquer par leur dureté, très élevée, par leur excellente résistance thermo-chimique et sont aussi appropriés pour les revêtements des outils HSS et CW.





### Revêtement Raptor

Températures maximales d'utilisation: < 800 °C  
Couleur: Or pâle  
Structure: multicouche  
Dureté: 3300 HV 0,05



La structure multicouche TiN / TiAlN du revêtement Raptor assure l'excellence performance des résultats d'usinage des aciers. Grâce à sa couche superficielle, à base de zirconium, le coefficient de friction est considérablement amélioré. Les risques d'adhésion sur les aciers (par exemple, aciers ferreux, austénitiques et duplex) sont éliminés, ce qui augmente les performances des résultats d'usinage.

### Revêtement TiAlN

Températures maximales d'utilisation: < 800 °C  
Couleur: violet  
Structure: monocouche  
Dureté: 3300 HV 0,05



Le revêtement TiAlN a des propriétés semblables à celles des revêtements Fire et nano-FIRE. Étant donné sa structure monocouche, son domaine d'applications est très souvent réservé aux revêtements des microforets.

### Revêtement nano-A

Températures maximales d'utilisation: < 900 °C  
Couleur: bleu - violet  
Structure: multicouche, structure nanométrique  
Dureté: 3300 HV 0,05



Le revêtement nano-A, aussi basé sur le revêtement TiAlN, est surtout remarquable au niveau de l'usinage des aciers inoxydables mais aussi partiellement pour les applications de perçages des fontes, des aciers à base de titane, de nickel et des alliages au cobalt et chrome. De par sa structure multicouche nanométrique, les risques de propagation des fissures du revêtement sont considérablement amoindris. En fonction de sa composition particulièrement bien appropriée, la résistance thermo-chimique est excellente et beaucoup plus élevée que celle du revêtement TiAlN.

### Revêtement Sirius

Températures maximales d'utilisation: < 900 °C  
Couleur: Or pâle  
Structure: multicouche, structure nanométrique  
Dureté: 3400 HV 0,05



Le revêtement Sirius, à base de AlTiN, est particulièrement bien approprié pour l'usinage des aciers inoxydables. De par sa structure multicouche nanométrique, les ténacités et duretés sont optimales. Sa couche superficielle à base de zirconium élimine la réaction chimique avec la matière à usiner et améliore l'évacuation des copeaux.

### Revêtement Signum



Températures maximales d'utilisation: < 800 °C  
Couleur: bronze  
Structure: multicouche, structure Nano - composite  
Dureté: 5500 HV 0,05

Le revêtement Signum fait partie des groupes dénommés Nano – composites. Sa microstructure est remarquable de par ses cristaux nanométriques TiAlN, extrêmement fins, noyés dans une matrice de nitrure de silicium vitrifiée, extrêmement résistants aux hautes températures. Le revêtement Signum est d'une dureté extrême et est surtout réservé aux applications d'usinages des fontes dures et des aciers trempés.

### Revêtement Endurum



Températures maximales d'utilisation: < 800 °C  
Couleur: cuivre  
Structure: multicouche, structure Nano - composite  
Dureté: 4000 HV 0,05

Le revêtement Endurum est aussi un revêtement des groupes dénommés Nano – composites. Sa structure multicouche est spécialement prévue pour l'usinage des aciers au carbone, des aciers de décolletage et des alliages d'aciers au manganèse.

### Revêtement Zenit



Températures maximales d'utilisation: < 700 °C  
Couleur: Or pâle  
Structure: multicouche, structure nanométrique  
Dureté: 2500 HV 0,05

Le revêtement Zenit de structure nanométrique a été spécialement développé et optimisé pour l'usinage des alliages de titane. Sa structure spéciale mais aussi sa composition amoindrissent fortement l'usure tribologique chimique. C'est pourquoi ce revêtement est devenu un vrai spécialiste qui, en parallèle, réalise aussi d'excellentes performances de perçages sur les alliages d'aluminium pourvus d'un pourcentage de silicium modéré.

### Revêtement Ice



Températures maximales d'utilisation: < 1000 °C  
Couleur: gris métallique  
Structure: multicouche  
Dureté: 3500 HV 0,05

Le revêtement Ice à base de titane, aluminium et chrome est spécifiquement prévu pour l'usinage des non – ferreux tels les alliages de cuivres ainsi que les bronzes et les laitons.



### Revêtement Carbo

Températures maximales d'utilisation: < 500 °C

Couleur: gris - noir

Structure: monocouche

Dureté: 5000 HV 0,05



Le revêtement Carbo fait partie du groupe des revêtements DLC (DLC – diamond-like carbon). Ces revêtements « carbone » ont des propriétés semblables au diamant. Le revêtement Carbo, de base 100 % carbone avec sa structure (ta - C), est extrêmement dur. C'est pourquoi les performances de perçages des non – ferreux par exemple, des alliages d'aluminiums corroyés et alliages d'aluminiums de fonderie (< 12 % Si), cuivres, laitons et bronzes. En outre, il est très bien approprié au perçage du bois et des matériaux synthétiques non chargés.

### Revêtement Cristal

Températures maximales d'utilisation: < 600 °C

Couleur: gris - noir

Structure: monocouche

Dureté: 8000 HV 0,05



Le revêtement Cristal est un revêtement de diamant cristallin pur et ne possède aucun inconvénient par rapport au diamant naturel. En plus de nombreuses propriétés physiques intéressantes, il est remarquable par sa dureté extraordinaire. C'est pourquoi ce revêtement Cristal microcristallin est parfaitement bien approprié à l'usinage des matériaux très abrasifs tels les matériaux synthétiques renforcés de fibres, les céramiques, les graphites et alliages d'aluminiums avec un pourcentage de silicium supérieur à 12 % (> 12 %). Pour des raisons techniques bien particulières, ce revêtement ne peut être réalisé que sur des nuances de carbures métalliques spéciales.



	Percer		
	CW		HSS
	Conventionnelle	MQL	
<b>Aciers au carbone</b>	Endurum	Endurum	Fire
<b>Aciers de décolletage</b>	Raptor	Raptor	-
<b>Aciers au manganèse</b>	Fire	Fire	-
<b>Aciers faiblement alliés</b>	Fire	Fire	Fire
	Endurum	Endurum	TiN
	Raptor	Raptor	
<b>Aciers alliés</b>	Fire	Fire	Fire
	Signum	Signum	TiN
	nanoA	nanoA	
<b>Aciers trempés &lt;55 HRC</b>	Signum	Signum	-
	Fire	Fire	-
	TiAlN	TiAlN	-
<b>Aciers trempés 55-65 HRC</b>	Signum	Signum	-
	Fire	Fire	-
	TiAlN	TiAlN	-
<b>Aciers inoxydables et inaltérables aux acides</b>	nanoA	nanoA	Sirius
	Sirius	Sirius	Fire
	Endurum	Endurum	TiN
<b>Fontes grises</b>	Signum	Signum	Fire
	Fire	Fire	-
	nanoA	nanoA	-
<b>Alliages corroyés d'aluminium</b>	Poli	Poli	Poli
	Carbo	Carbo	Carbo
	Cristall	Cristall	-
<b>Fontes d'aluminium alliées (&lt; 12% Silicium)</b>	Poli	Poli	Poli
	Zenit	Zenit	Zenit
	Carbo	Carbo	Carbo
<b>Fontes d'aluminium alliées (≥ 12% Silicium)</b>	Cristall	Cristall	-
	-	-	-
	-	-	-
<b>Alliages à base de nickel (par ex.: Inconel)</b>	nanoA	nanoA	Fire
	Signum	Signum	-
	Fire	Fire	-
<b>Titane et ses alliages</b>	Zenit	Zenit	Fire
	nanoA	nanoA	-
<b>Cuivres / bronzes / laitons</b>	ICE	ICE	TiN
	Carbo	Carbo	-
<b>Alliages de chrome et cobalt</b>	nanoA	nanoA	-
	Signum	Signum	-
	Fire	Fire	-
<b>Métaux précieux</b>	nanoA	nanoA	-
<b>Céramiques</b>	Cristall	Cristall	-
<b>Matériaux synthétiques non renforcés</b>	Carbo	-	-
<b>Matériaux synthétiques renforcés de fibres</b>	Cristall	Cristall	-
	Signum	Signum	-

**Remarque:**

Cette vue d'ensemble montre les recommandations des revêtements Gühring en général en fonction des applications d'usinages. Priorité des recommandations de haut en bas.

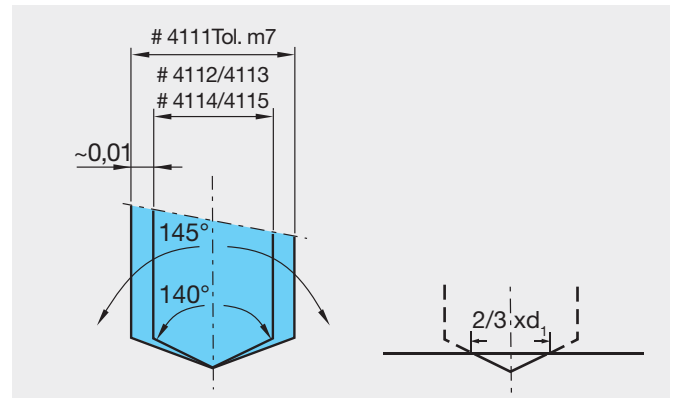
# Centrer et piloter

## Centrer et piloter pour les outils du système de perçage HT 800

Avant de percer avec les HT 800 et pour les profondeurs de perçages supérieures à  $5xD$ , nous recommandons généralement de centrer et de piloter.

Pour le centrage, le diamètre du foret devrait avoir une valeur correspondant aux  $2/3$  du diamètre du perçage nominal. Pour le perçage pilote, nous recommandons une profondeur de perçage de  $1xD$ . En outre, les valeurs de l'angle au sommet et du diamètre de l'outil à piloter devraient être supérieures à celles de l'outil du perçage nominal.

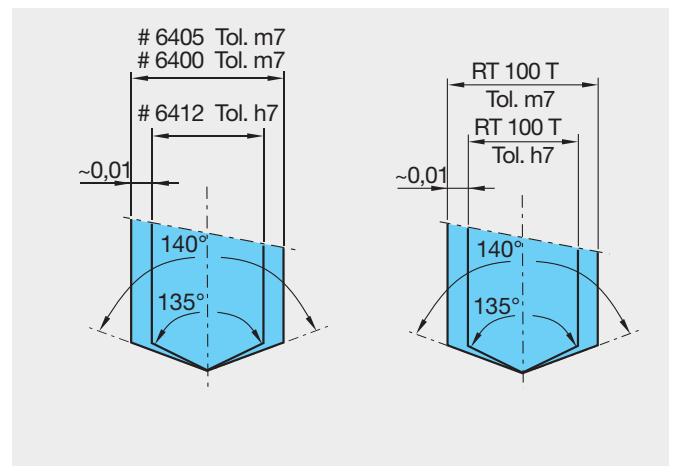
Afin d'être sûr du processus, nous recommandons l'utilisation de la plaquette de coupe à piloter n° d'article 4111 avec un angle au sommet de  $145^\circ$  et une tolérance m7 sur le diamètre, prévue pour le pilotage et montée sur le support court et rigide n° d'article 4105.



## Centrer et piloter pour les forets CW monobloc

Lors de l'utilisation des forets en CW monobloc, pour les profondeurs de  $7xD$  à  $12xD$ , nous recommandons de réaliser un centrage ou un perçage pilote sur une profondeur de  $1xD$  à  $2xD$ . Pour les profondeurs supérieures à  $12xD$ , il faut absolument réaliser un perçage pilote sur une profondeur de  $1xD$  à  $2xD$ .

Lors de l'utilisation des microforets ExclusiveLine  $15xD$ , (n° d'article: 6412), nous recommandons de réaliser un perçage pilote avec les microforets ExclusiveLine  $4xD$  sans canaux d'adduction (n° d'article: 6400) ou  $5xD$  avec canaux d'adduction (n° d'article: 6405) qui, au niveau de la valeur de l'angle au sommet et de la tolérance du diamètre, sont parfaitement appropriés.



Pour les perçages pilote avant les perçages profonds avec les forets hélicoïdaux RT 100 T, il est possible, par exemple, d'utiliser le foret Ratio RT 100 U, avec canaux d'adduction,  $3xD$  (n° d'article: 2477) qui, au niveau de la valeur de son angle au sommet et de sa tolérance au diamètre, est parfaitement approprié.

## Centrer et piloter pour les forets en HSS

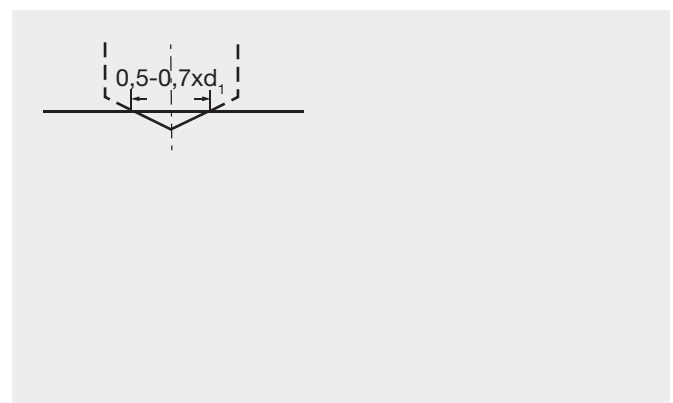
### Centrer pour les forets de longueurs selon la norme DIN 340

Lors de l'utilisation des forets HSS / HSCO selon la norme DIN 340, nous recommandons de réaliser un centrage avec un diamètre de  $0,5$  à  $0,7 \times D$  du diamètre nominal du perçage. Les forets NC en HSS / HSCO conviennent au mieux pour la réalisation de ces centrages. Dans le chapitre Forets NC, vous trouverez des spécifications techniques plus détaillées.

### Centrer pour les forets de longueurs selon la norme DIN 1869

Lors de l'utilisation des forets HSS / HSCO, longs et extra-longs, selon la norme DIN 1869, nous recommandons de réaliser un perçage pilote sur une profondeur de  $1xD$  à  $2xD$ .

Les forets extra-courts, type GV 120 selon la norme DIN 1897, conviennent au mieux pour la réalisation de ces centrages.





## Forets NC

### Forets NC

Afin de pouvoir réaliser des positionnements de perçages très précis, des perçages avec des tolérances serrées, des perçages profonds ou, en général, lorsque la forme des pièces à usiner est défavorable, rugueuse, arrondie ou en biais, nous vous recommandons de faire un centrage ou un amorçage avec un foret NC avant de percer la pièce à usiner. Cela garantit un excellent positionnement du foret et évite une déviation éventuelle du foret.

Mais aussi lorsqu'il s'agit de réaliser un chanfreinage, lamage et centrage en une seule opération, il est possible d'utiliser un foret NC à condition de choisir un diamètre avec une valeur supérieure à celle du foret de perçage.

La longueur des goujures des forets NC est très courte, le diamètre périphérique ne possède pas de listels de guidage, cela renforce leur rigidité et avantage la précision de positionnement des perçages. C'est pourquoi les forets NC sont seulement prévus pour l'amorçage et non pour le perçage en profondeur. La profondeur maximale d'amorçage est égale à la hauteur de la pointe du foret NC.

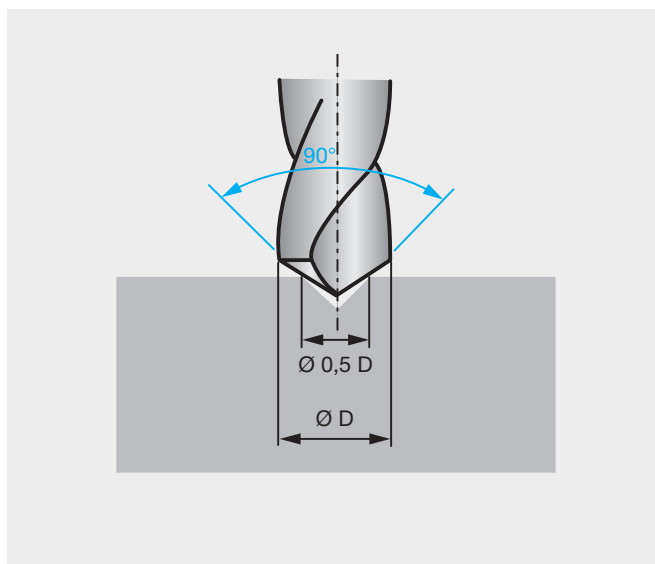
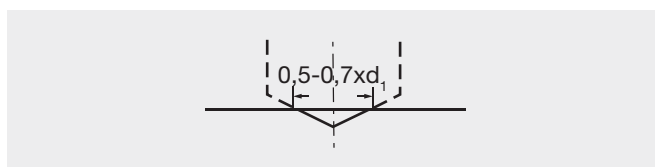
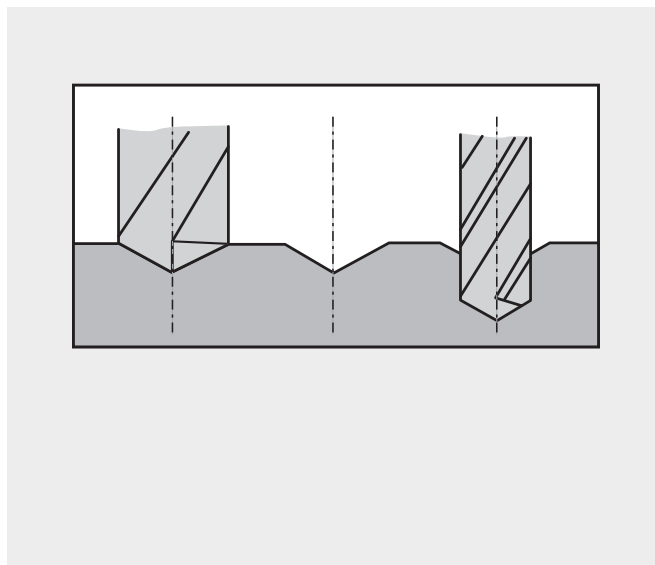
### Choix du foret NC

Le diamètre optimal d'amorçage recommandé est d'une valeur de 0,5 à 0,7 x D du diamètre nominal du perçage.

### Forets NC à 90°

Les forets NC pourvus d'un angle de 90°, au sommet, sont prévus pour l'amorçage des perçages réalisés avec des forets HSS/HSCO avec une épaisseur d'âme renforcée. Ainsi, le foret de perçage en HSS/HSCO commence à percer avec ses arêtes de coupe principales et se guide ensuite par les becs résistants.

En outre, les forets NC avec un angle de 90° au sommet sont prévus pour réaliser l'amorçage et le chanfreinage à 90° en une seule opération, à condition de choisir un diamètre avec une valeur supérieure à celle du foret de perçage.

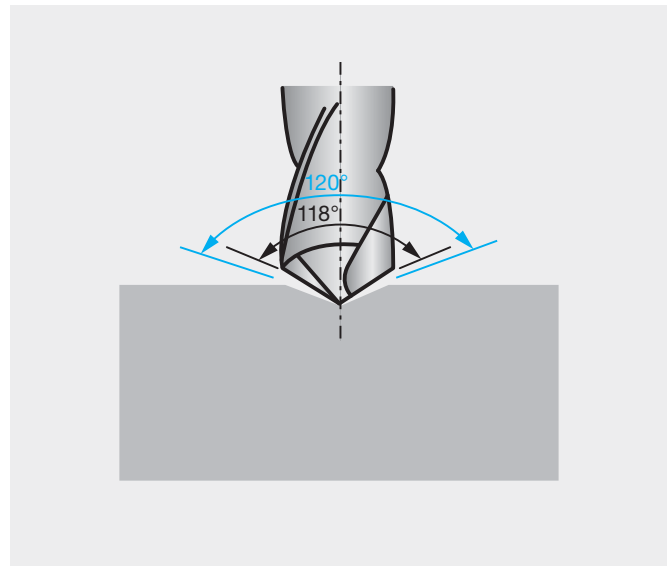




## Forets NC

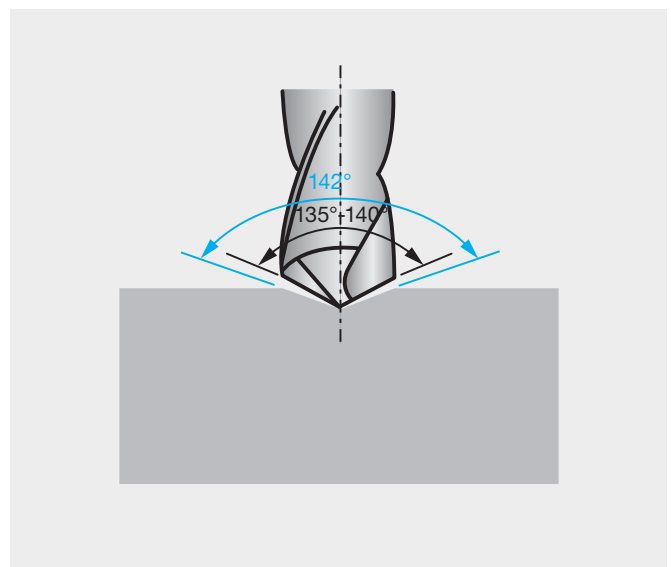
### Forets NC à 120°

Les forets NC pourvus d'un angle à 120°, au sommet, sont spécialement prévus pour l'amorçage des perçages réalisés avec des forets HSS/HSCO pourvus d'un angle au sommet de 118°. Ainsi, le foret de perçage en HSS/HSCO commence à percer avec sa pointe, se centre et continue à se guider dans son axe.






### Forets NC à 142°

Les forets NC pourvus d'un angle à 142°, au sommet, sont spécialement prévus pour l'amorçage des perçages réalisés avec des forets CW pourvus d'un angle au sommet de 135° à 140°. Ainsi, le foret de perçage en CW commence à percer avec sa pointe, se centre et continue à se guider dans son axe. Sinon, dans le cas où le foret CW commencerait à percer avec ses becs avant de percer avec sa pointe, les risques de casses au niveau des becs seraient trop élevés.



### Forets NC

90°	120°	142°
		



## Pressions et débits des liquides de lubrification Forets Ratio

Les désignations des valeurs des débits „optimal“ „normal“ et „minimal“ sur les diagrammes sont seulement valables pour les forets Ratio du type RT 100 sur toutes les machines. Par contre, en ce qui concerne les pressions, chaque système de lubrification est différent, plus ou moins étanche, c'est pourquoi ce sont des informations approximatives (Fig.: 1) qui vous donnent une idée sur ces valeurs.

Pour les forets du type RT 80, c'est différent et il faut se référer au diagramme (Fig.: 2).

Ces diagrammes ont été réalisés pour les usinages les plus fréquents avec les forets Ratio, donc pour les aciers, à partir de bases expérimentales. Il s'agit de valeurs recommandées, aussi applicables pour d'autres matières, puisque l'usinage des aciers nécessite les pressions les plus fortes. Les valeurs des pressions et débits se font surtout ressentir sur les forets Ratio du type RT 150 GG qui sont particulièrement

dépendants des différentes matières à usiner. Par exemple, de faibles pressions pour l'usinage des fontes grises diminuent nettement plus la durée de vie des forets que sur l'usinage des alliages d'aluminium chargés de silicium. Toutefois, c'est seulement valable pour les alliages d'aluminium à copeaux courts et c'est pourquoi il est conseillé d'augmenter les pressions „minimales“ ou „normales“ dès qu'il s'agit d'usiner les fontes grises (Fig.: 3 et 4).

Ces valeurs conseillées sont valables pour les profondeurs jusqu'à environ:  $5 \times D$ . Au-dessus, nous conseillons l'utilisation des forets Ratio RT 150 GN à canaux de lubrification intérieure, afin d'obtenir, en fonction des matières à usiner, une meilleure rentabilité.

Pressions de lubr. nécessaires	Débits de lubr. nécessaires
pression optimale	débit optimal
pression normale	débit normal
pression minimale	débit minimal

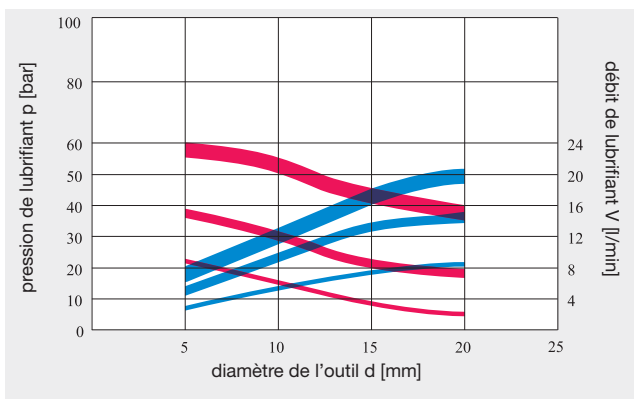


fig. 1: Pressions et débits des lubrifiants nécessaires pour les forets Ratio RT 100 à canaux de lubrification hélicoïdaux.

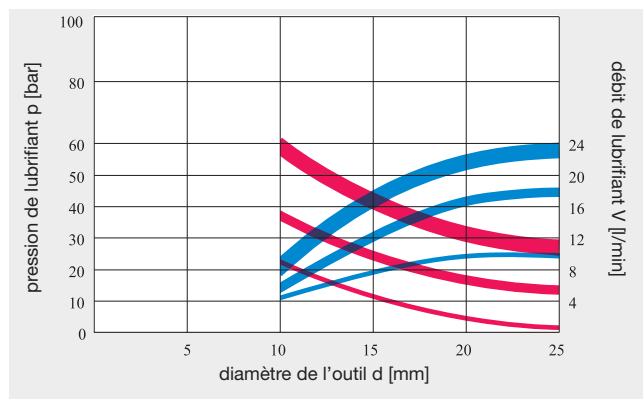


fig. 2: Pressions et débits des lubrifiants nécessaires pour les forets Ratio RT 80 à canal de lubrification central.

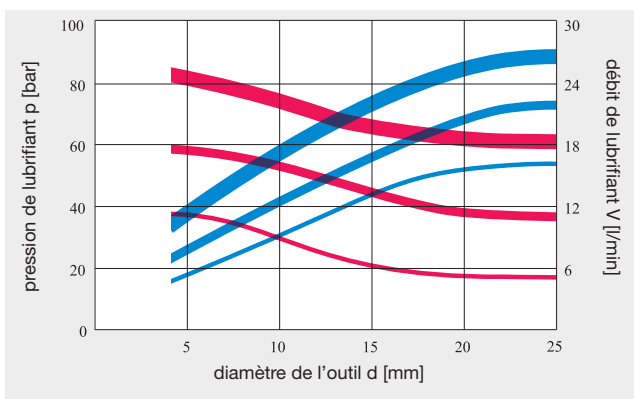


fig. 3: Pressions et débits des lubrifiants nécessaires à l'usinage de la fonte FT 25 avec les forets Ratio RT 150 GG à goujures droites.

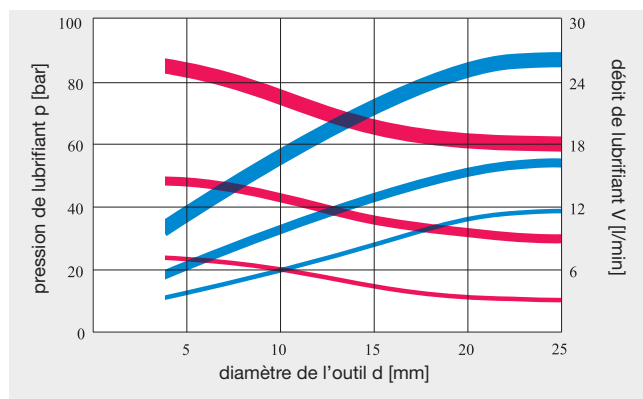


fig. 4: Pressions et débits des lubrifiants nécessaires à l'usinage de l'alliage d'aluminium AISi7 avec les forets Ratio RT 150 GG à goujures droites.





# Qualité de perçage exemplaire

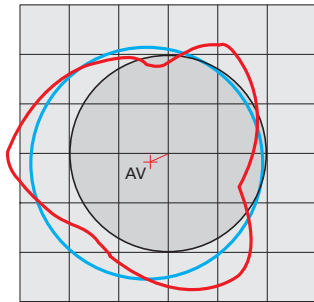
## 1. sur l'acier 42 C D 4 V, Ø 14,5 mm

### Foret-HSS, type N

Art.-N° 651 **S**

vc = 25 m/mn  
 f = 0,25 mm/tr  
 +Rmax = 131,8 µm  
 -Rmax = -49,1 µm  
 Ø-eff. = 14,566 mm  
 dRmax = 103,5 µm  
 AV = 49,2 µm  
 Ra = 2,6 µm, Rz = 6,8 µm

**IT12**

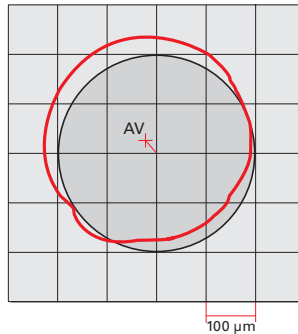


### Foret-Ratio, type RT 80

Art.-N° 1171 **S**

vc = 70 m/mn  
 f = 0,25 mm/tr  
 +Rmax = 42,7 µm  
 -Rmax = -29,6 µm  
 Ø-eff. = 14,515 mm  
 dRmax = 12,9 µm  
 AV = 35,3 µm  
 Ra = 1,4 µm, Rz = 4,31 µm

**IT9**

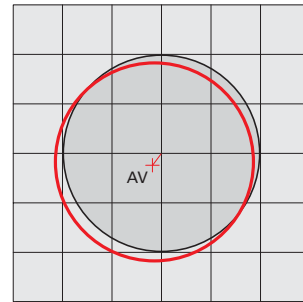


### Foret-Ratio, type RT 100

Art.-N° 1181 **S**

vc = 70 m/mn  
 f = 0,25 mm/tr  
 +Rmax = 26,7 µm  
 -Rmax = -17,2 µm  
 Ø-eff. = 14,509 mm  
 dRmax = 5,2 µm  
 AV = 22,8 µm  
 Ra = 1,04 µm, Rz = 3,2 µm

**IT8**



L'erreur maximale de la circularité ( dR max. ) est la somme des valeurs des deux différences effectives, négative et positive, par rapport à la valeur moyenne. L'erreur de coaxialité ( AV ) correspond à la valeur de la déviation en µ. La valeur maximale de la déviation en fonction du diamètre de l'outil correspond à la valeur de la tolérance IT du perçage.

Le cercle noir représente la forme de la valeur théorique de perçage. Le cercle rouge représente la valeur effective réalisée par l'outil. Le cercle bleu représente la moyenne calculée de la valeur effective du diamètre, donc du cercle rouge ( en perçage avec des Forets Ratio, ces deux cercles sont pratiquement identiques ).

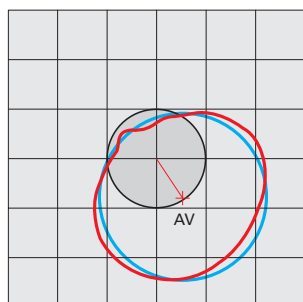
## 2. sur la fonte Fts 400, Ø 10,0 mm

### Foret-HSS, type N

Art.-N° 651 **S**

vc = 30 m/mn  
 f = 0,2 mm/tr  
 Ø-eff. = 10,077 mm  
 +Rmax = 106 µm  
 -Rmax = -28 µm  
 dRmax = 42 µm  
 AV = 68,5 µm  
 Ra = 3,7 µm, Rz = 17,2 µm

**IT12**

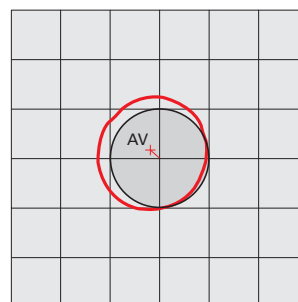


### Foret-Ratio, type RT 100

Art.-N° 1181 **S**

vc = 90 m/mn  
 f = 0,3 mm/tr  
 Ø-eff. = 10,027 mm  
 +Rmax = 34 µm  
 -Rmax = -9,2 µm  
 dRmax = 6,5 µm  
 AV = 22,5 µm  
 Ra = 2,2 µm, Rz = 11,5 µm

**IT9**

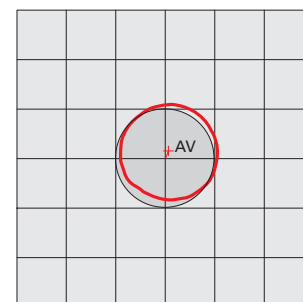


### Foret-Ratio, type RT 150 GG

Art.-N° 768 **O**

vc = 130 m/mn  
 f = 0,2 mm/tr  
 Ø-eff. = 9,994 mm  
 +Rmax = 11,5 µm  
 -Rmax = -18 µm  
 dRmax = 5 µm  
 AV = 14 µm  
 Ra = 1,99 µm, Rz = 11,2 µm

**IT8**



# Introduction brève dans la technique du forage

Dans le domaine du perçage, pour les profondeurs au-dessus de  $15 \times \varnothing$ , l'on parle souvent de "forage", et non de "perçage" mais les perçages moins profonds peuvent également être réalisés par forage. Dans ce cas, l'on profite des avantages du forage, état de surface de qualité, diamètre nettement plus précis et rectitude du perçage améliorée.

## Aujourd'hui, la pompe haute pression ne fait plus exception!


Depuis ces dernières années, bon nombre de forets sont pourvus de canaux de lubrification intérieure, ainsi le produit liquide de coupe, lubrifiant et réfrigérant, arrive toujours à l'endroit précis, là où il est indispensable de l'avoir. Cela permet d'augmenter les durées de vie des forets, tarauds, alésoirs etc. et de diminuer la casse des outils. Actuellement, chaque machine conventionnelle d'usinage peut être équipée d'une pompe haute pression avec adduction centrale du lubrifiant, cela permet de réaliser le forage! Les outils de forage sont de plus en plus utilisés sur les tours ou centres d'usinage. Ainsi le forage devient de plus en plus populaire!

## Conditions d'utilisation des outils de forage sur les machines conventionnelles:

- Réaliser un perçage "pilote"  
( $L = 1,5 \times D$  / Alu  $L \approx 3 \times D$ , tolérance H8)
- Avancer à environ 500 mm/mn. et à faible vitesse de rotation, environ 200 T/mn. afin d'entrer dans le préperçage. Pour les profondeurs supérieures à  $40 \times D$ , faire avancer les outils en tournant à gauche.
- Mettre la lub. sous pression et programmer la vitesse de rotation d'usinage
- Forer continuellement, sans débourrages. Lors de l'utilisation des forets à une lèvre de très grandes longueurs et petits diamètres (par exemple sur EB 100 à partir d'une longueur de goujure de 160 mm) nous vous conseillons de réduire les paramètres de coupe sur une profondeur de forage d'environ 25 mm (à peu près à 75% des valeurs de coupe optimales).
- En fin de forage, stopper la lubrification
- Retirer l'outil de forage, sans rotation, en avance rapide

## D'excellents conseils:

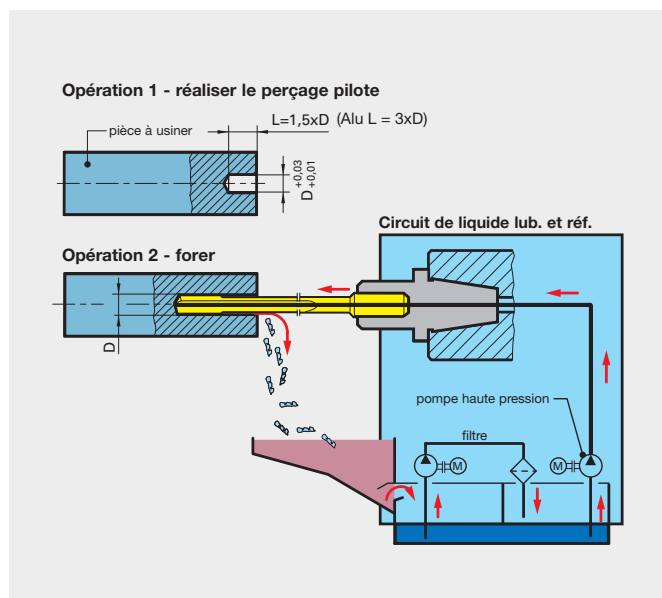
- Lorsque les profondeurs de forage dépassent  $40 \times D$ , nous vous recommandons d'utiliser deux ou plusieurs forets de forage par exemple le  $\varnothing = 10 \times 400$  mm et le  $\varnothing = 9,95 \times 800$  mm.
- Tous les forets à une lèvre de coupe pour les profondeurs de plus de  $40 \times D$  doivent tourner à gauche lorsqu'il faut les placer dans leur forage.
- Pour l'usinage des matériaux à copeaux longs, nous vous conseillons de choisir des forets à goujures polies.
- Les outils de forage pour les aluminiums à copeaux longs doivent être affûtés à  $180^\circ$  et être pourvus du volume de lubrification décalé.
- En général nous vous recommandons d'utiliser une huile soluble avec une concentration de produits gras supérieure à 10 %.
- Pour l'aluminium à copeaux longs, nous vous conseillons de commander des outils de forage affûtés à  $180^\circ$  avec volume de lubrification décalé.
- Lorsqu'il s'agit de forer l'alliage d'aluminium avec moins de 1 % de Si, donc avec des vitesses de coupe supérieures à 160 m/mn, il est recommandé d'augmenter progressivement la vitesse de rotation. En outre, la profondeur du perçage pilote doit être augmentée à environ  $3 \times D$ .



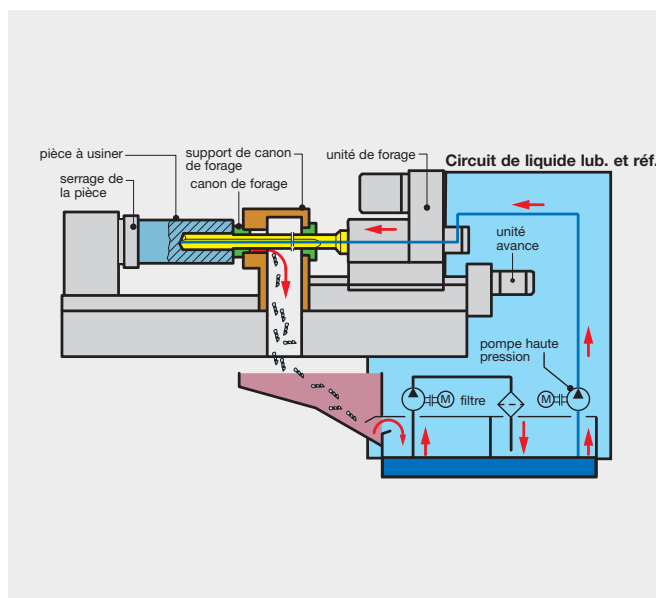
**A l'amorçage du forage, il faut guider la plupart des outils de forage. Il ne faut jamais laisser tourner les outils de forage à vide ou à haute vitesse de rotation.**

**Attention!**  
En général les attachements en acier des outils de forage ne sont pas prévus pour le serrage par frettage!  
(Exception: T 16, voir page suivante)

## Le forage sur machines conventionnelles



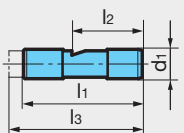
## sur foreuse



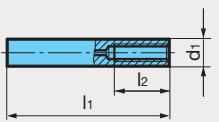
Le programme d'attachements ci-dessous représente les attachements standards tenus en stock. Nous pouvons réaliser n'importe quel attachement de précision, sur plan client ou

pour vous, individuellement, selon vos besoins. Attention! Les attachements des forets EB 100 doivent absolument être pourvus du collet de redressage! Informations sur demande.

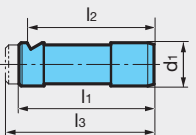
**Attachements sur les foreuses**

**1** 

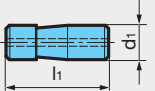
Code	d <sub>1</sub>	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>
1.1	10	40	24	-
1.2	10	40	24	45
1.3	10	40	24	55
1.4	16	45	31,2	-
1.5	25	70	34	-
1.6	25	70	34	78

**5** 

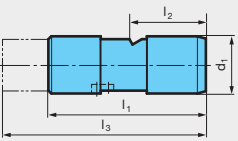
Code	d <sub>1</sub>	l <sub>1</sub>	l <sub>2</sub>
5.1	10	60	20
5.2	16	80	28
5.3	25	100	50
5.4	10	100	-
5.5	10	110	-

**2** 

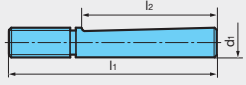
Code	d <sub>1</sub>	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>
2.1	16	50	47	-
2.2	16	50	47	55
2.3	16	50	47	70

**6** 

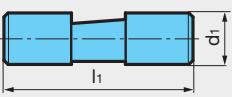
Code	d <sub>1</sub>	l <sub>1</sub>
6.1	12,7	38
6.2	19,05	70
6.3	38,1	70

**3** 

Code	d <sub>1</sub>	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>
3.1	25	70	34	100

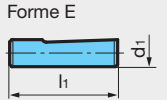
**7** 

Code	d <sub>1</sub>	l <sub>1</sub>	l <sub>2</sub>
7.1	16	112	73
7.2	20	126	82

**4** 

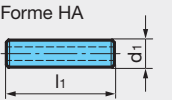
Code	d <sub>1</sub>	l <sub>1</sub>
4.1	19,05	70
4.2	12,70	70
4.3	25,40	70
4.4	31,75	-
4.5	36,10	70

**Attachements selon DIN 1835**

Forme E 

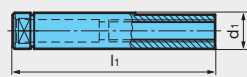
Code	d <sub>1</sub>	l <sub>1</sub>
9.1	8	36
9.2	10	40
9.3	12	45
9.4	16	48
9.5	20	50
9.6	25	56
9.7	32	60
9.8	31,75	70
9.9	38,1	70
9.10	40	70

**Attachements selon DIN 6535**

Forme HA 

Code	d <sub>1</sub>	l <sub>1</sub>
10.1	8	36
10.2	10	40
10.3	12	45
10.4	16	48
10.5	20	50
10.6	25	56
10.7	32	60
10.8	25	70
10.9	40	70

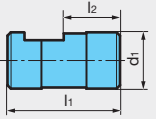
**Attachements selon projet VDI**

**12** 

Code	d <sub>1</sub>	l <sub>1</sub>
12.1	10	68
12.2	16	90
12.3	25	112

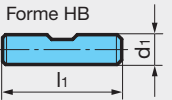
Aussi utilisable sur machines de forage

**Attachements selon système Speed-Bit**

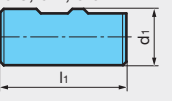
**13** 

Code	d <sub>1</sub>	l <sub>1</sub>	l <sub>2</sub>
13.1	16	40	16
13.2	25	50	25
13.2	35,6	60	-

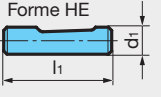
Aussi utilisable sur machines de forage

Forme HB 

pour code 8.6, 8.7, 8.8

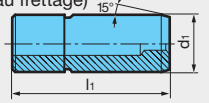
**8** 

Code	d <sub>1</sub>	l <sub>1</sub>
8.1	8	36
8.2	10	40
8.3	12	45
8.4	16	48
8.5	20	50
8.6	25	56
8.7	32	60
8.8	40	70

Forme HE 

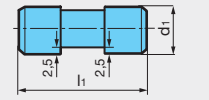
**11**

Code	d <sub>1</sub>	l <sub>1</sub>
11.1	8	36
11.2	10	40
11.3	12	45
11.4	16	48
11.5	20	50
11.6	25,4	70
11.7	25	56
11.8	32	60
11.9	40	70

similaire Forme HA (Approprié au frettage) 

**16**

Code	d <sub>1</sub>	l <sub>1</sub>
16.1	10	50
16.2	16	64
16.3	20	70
16.4	25	81
16.5	32	92

similaire Forme HE 

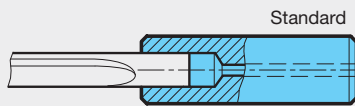
**17**

Code	d <sub>1</sub>	l <sub>1</sub>
17.1	19,05	70
17.2	25,40	70
17.3	31,75	70
17.4	38,1	70

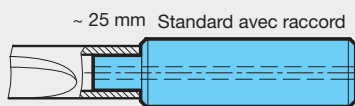
Aussi utilisable sur machines de forage

**Ajustements des tubes des outils de forage sur leur attachement**

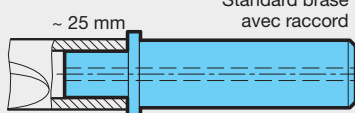
Lorsque le diamètre nominal est inférieur à celui de l'attachement ( Différence de 6 mm minimum ) le tube est brasé à l'intérieur de son attachement.



Lorsque le diamètre nominal est égal à celui de l'attachement ( maximum de même diamètre ) le tube se brase sur le raccord.



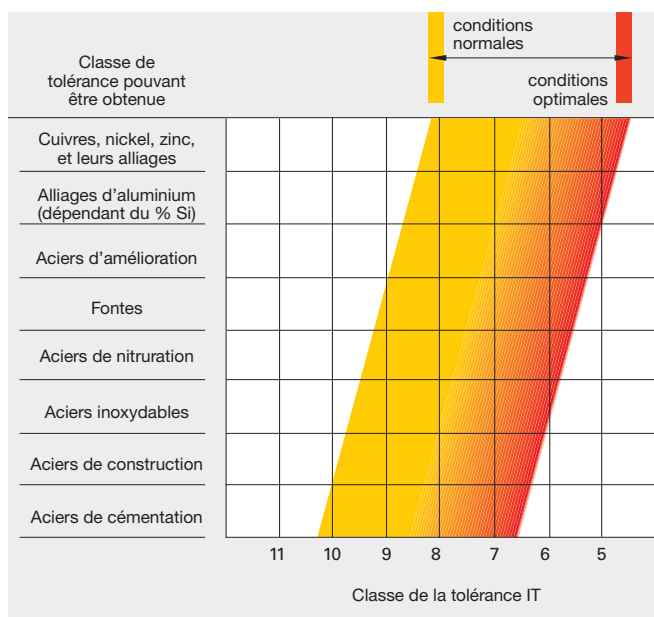
Lorsque le diamètre nominal est plus grand que celui de l'attachement, le tube est brasé sur le raccord, en appui sur son attachement.



# La précision des perçages réalisés en forage

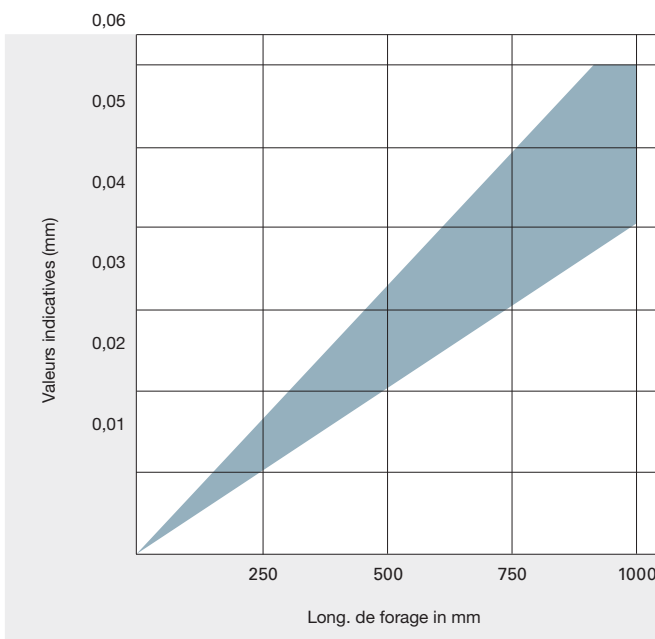
## La tolérance des diamètres\*

En forage, le diamètre réalisé est nettement plus précis. Cela provient de la répartition des forces résultantes de la coupe sur les patins de guidage périphériques. En perçage avec des forets hélicoïdaux, une erreur minime de la géométrie des arêtes de coupe suffit pour réaliser un plus grand diamètre.



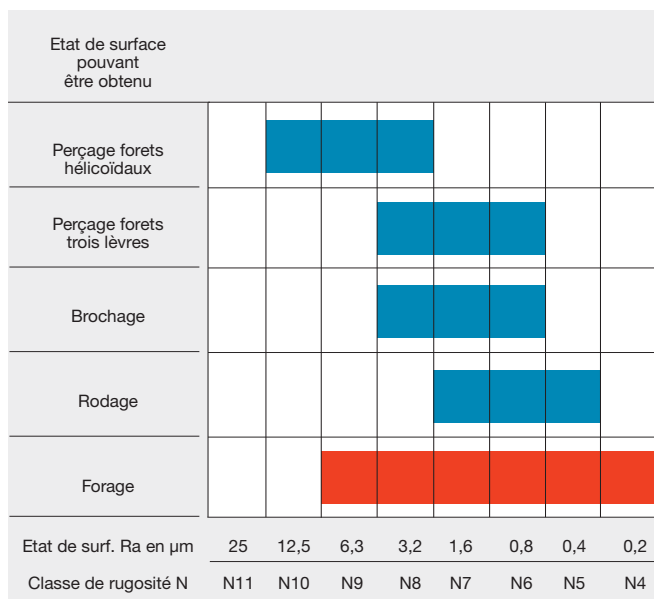
## La rectitude du perçage\*

Sur les outils de forage, brasés, l'embout de précision en carbure monobloc est toujours brasé sur un tube flexible, ainsi, il ne peut pas être influencé par une éventuelle erreur de battement de l'outil et assure la bonne rectitude du perçage. Il est certain que de grosses différences de structure dans la matière à usiner, ou autres facteurs, peuvent considérablement influencer la rectitude.



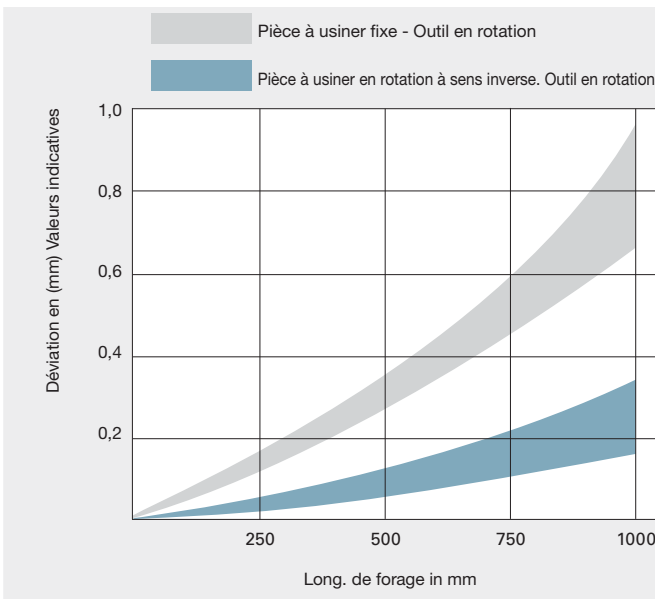
## L'état de surface\*

L'effort de coupe sur la lèvre de coupe principale se répercute sur les patins de guidage qui eux, lissent la surface du perçage. Le film gras de la lubrification entre les patins de guidage et la surface du perçage joue un rôle très important. Meilleure est la qualité du lubrifiant, meilleur est l'état de surface obtenu!



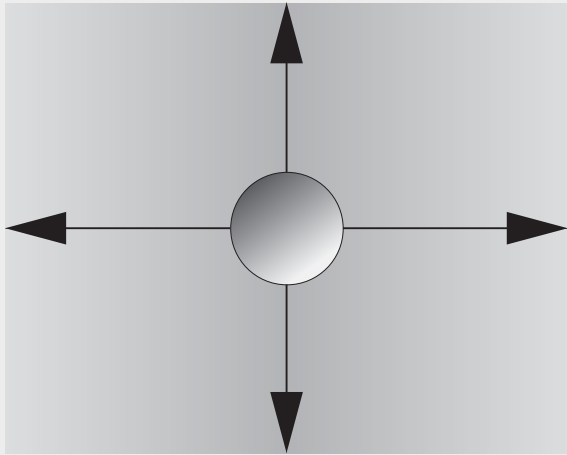
## Excentricité du perçage\*

La qualité de la symétrie de l'affûtage d'un foret hélicoïdal influence le positionnement et la concentricité du perçage. Des efforts de coupe inégaux et mal répartis font dévier l'outil. En forage, les efforts de coupe sont absorbés par les patins de guidage ce qui assure une bonne concentricité d'usinage.

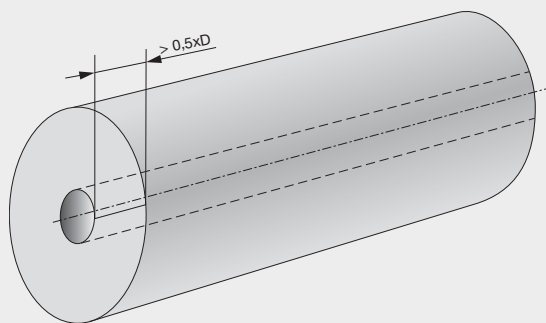


\* Les valeurs obtenues avec des outils de forage à deux lèvres de coupe, à goujures droites ou hélicoïdaux, sont d'environ 50 % des valeurs indiquées.

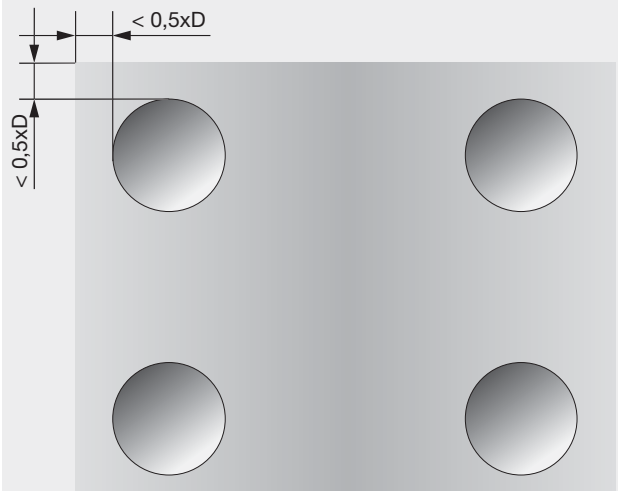
**Rectitude du forage / Erreur coaxiale**



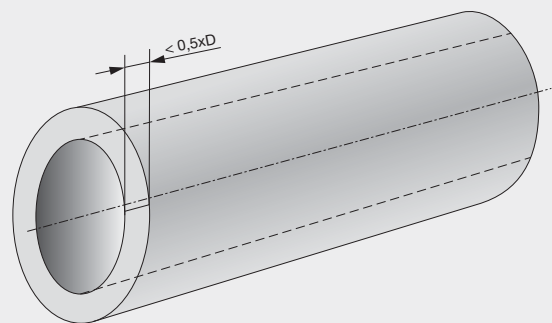
Intervalle entre l'axe de forage et la périphérie  $> 0,5xD$



Intervalle suffisant: « Forage : Périphérie »  
 $(> 0,5xD) \rightarrow$  optimal



Intervalle entre l'axe de forage et la périphérie  $< 0,5xD$



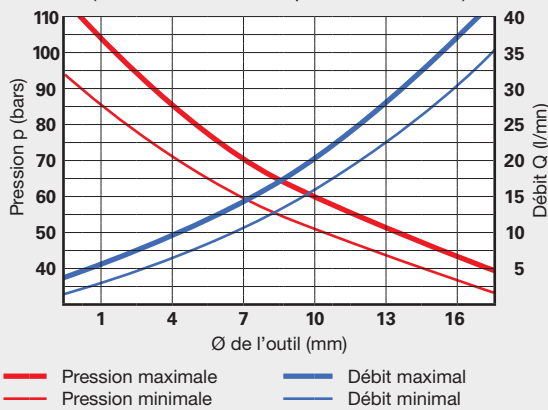
Intervalle minimum:  $(0,5xD)$   
 Intervalle au - dessous de  $0,5 \times D \rightarrow$  peut influencer et dégrader la précision de la rectitude.

## Valeurs du liquide

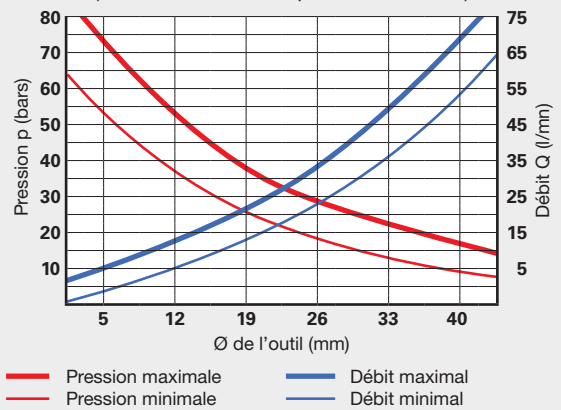
### Nous vous demandons de bien vouloir tenir compte::

- L'usinage avec les outils de forage demande impérativement l'utilisation de la lubrification centrale, qu'il s'agisse d'air, d'huile soluble ou d'huile entière. Sans la lubrification centrale, il n'est pas possible d'évacuer les copeaux.
- L'usinage avec les outils de forage peut être réalisé avec une huile entière, toutefois, afin de pouvoir obtenir le même débit, il est nécessaire d'augmenter la pression de 30 %.
- Lors du forage MQL, et cela en fonction du système de l'équipement MQL et surtout avec des outils de plus petits diamètres, il faut aussi augmenter la pression.
- Lorsque les conditions de refroidissement et de lubrification ne sont pas optimales, il est possible de forer avec des paramètres de coupe amoindris. Il est aussi possible d'adapter un système de surpression.
- Lorsque la longueur des outils de forage augmente, il faut aussi augmenter la pression du liquide de lubrification et de refroidissement afin d'assurer le débit nécessaire à l'extrémité de l'outil.

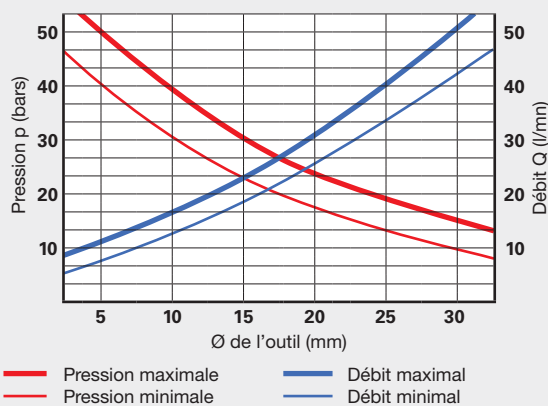
**Valeurs du liquide de refroidissement EB 100**  
(Valeurs de référence pour huile soluble)



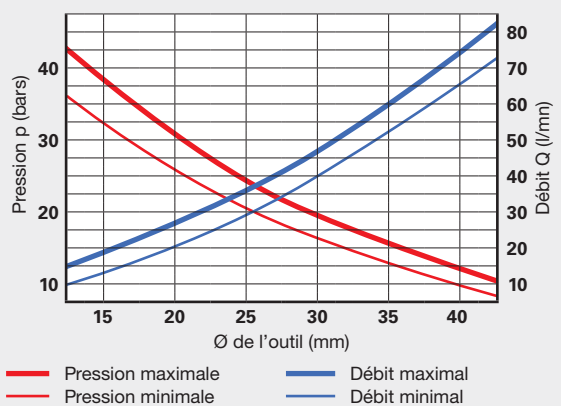
**Valeurs du liquide de refroidissement EB 80**  
(Valeurs de référence pour huile soluble)



**Valeurs du liquide de refroidissement ZB 80**  
(Valeurs de référence pour huile soluble)

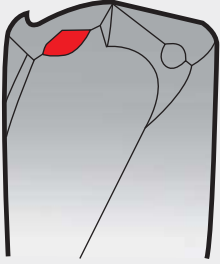
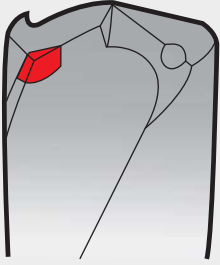
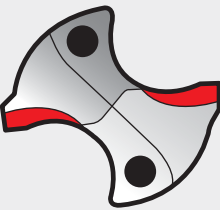
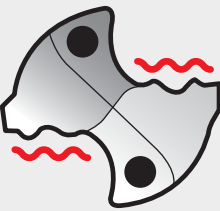


**Valeurs du liquide de refroidissement EB 800**  
(Valeurs de référence pour huile soluble)





# Incidents d'usinage

Erreur	Provenance	Remèdes
<b>1. Collage</b> 	<ul style="list-style-type: none"> <li><span style="color: red;">■</span> Vitesse de coupe trop faible</li> <li><span style="color: red;">■</span> Affilage des arêtes de coupe trop important</li> <li><span style="color: red;">■</span> Arêtes de coupe non revêtues</li> </ul>	<ul style="list-style-type: none"> <li><span style="color: yellow;">■</span> Augmenter la vitesse de coupe</li> <li><span style="color: yellow;">■</span> Amoindrir la valeur de l'affilage</li> <li><span style="color: yellow;">■</span> Revêtir la plaquette de coupe</li> </ul>
<b>2. Ebréchure des becs de la plaquette</b> 	<ul style="list-style-type: none"> <li><span style="color: red;">■</span> Manque de rigidité de l'ensemble lors de l'usinage</li> <li><span style="color: red;">■</span> Erreur de battement trop importante</li> <li><span style="color: red;">■</span> Coupe interrompue</li> </ul>	<ul style="list-style-type: none"> <li><span style="color: yellow;">■</span> Améliorer le serrage de la pièce</li> <li><span style="color: yellow;">■</span> Contrôler et éliminer l'erreur de battement</li> <li><span style="color: yellow;">■</span> Réduire la valeur de l'avance</li> </ul>
<b>3. Usure anormale en dépouille</b> 	<ul style="list-style-type: none"> <li><span style="color: red;">■</span> Vitesse de coupe trop élevée</li> <li><span style="color: red;">■</span> Avance trop faible</li> <li><span style="color: red;">■</span> Angle de la dépouille trop faible</li> </ul>	<ul style="list-style-type: none"> <li><span style="color: yellow;">■</span> Diminuer la vitesse de coupe</li> <li><span style="color: yellow;">■</span> Augmenter l'avance</li> <li><span style="color: yellow;">■</span> Augmenter la valeur de l'angle de la dépouille</li> </ul>
<b>4. Ebréchure des arêtes de coupe principales</b> 	<ul style="list-style-type: none"> <li><span style="color: red;">■</span> Manque de rigidité de l'ensemble lors de l'usinage</li> <li><span style="color: red;">■</span> Coupe interrompue</li> <li><span style="color: red;">■</span> Valeur de l'usure maximale, dépassée</li> <li><span style="color: red;">■</span> Type d'outil non approprié</li> </ul>	<ul style="list-style-type: none"> <li><span style="color: yellow;">■</span> Améliorer le serrage de la pièce</li> <li><span style="color: yellow;">■</span> Réduire la valeur de l'avance</li> <li><span style="color: yellow;">■</span> Echanger, plus souvent, la plaquette de coupe</li> <li><span style="color: yellow;">■</span> Choisir un outil mieux approprié</li> </ul>



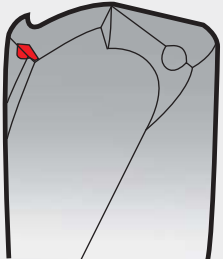
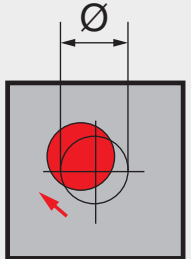
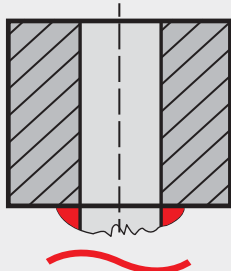
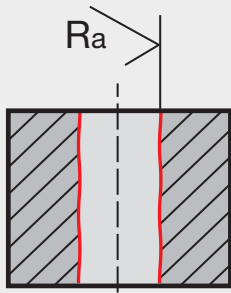
## Incidents d'usinage

Erreur	Provenance	Remèdes
<b>5. Usure des listels périphériques</b> 	<ul style="list-style-type: none"> <li>■ Manque de rigidité de l'ensemble lors de l'usinage</li> <li>■ Erreur de battement trop importante</li> <li>■ Conicité arrière insuffisante</li> <li>■ Lubrifiant non approprié, concentration de l'huile soluble trop faible</li> </ul>	<ul style="list-style-type: none"> <li>■ Améliorer le serrage de la pièce</li> <li>■ Contrôler et éliminer l'erreur de battement</li> <li>■ Augmenter la conicité arrière</li> <li>■ Utiliser une huile entière ou une huile soluble plus concentrée</li> </ul>
<b>6. Rayures sur le porte-outil</b> 	<ul style="list-style-type: none"> <li>■ Manque de rigidité de l'ensemble lors de l'usinage</li> <li>■ Erreur de battement trop importante</li> <li>■ Coupe interrompue</li> <li>■ Matériaux abrasifs</li> </ul>	<ul style="list-style-type: none"> <li>■ Améliorer le serrage de la pièce</li> <li>■ Contrôler et éliminer l'erreur de battement</li> <li>■ Réduire la valeur de l'avance</li> <li>■ Utiliser une huile entière ou une huile soluble plus concentrée</li> </ul>
<b>7. Usure anormale de l'arête transversale</b> 	<ul style="list-style-type: none"> <li>■ Vitesse de coupe trop faible</li> <li>■ Valeur de l'avance trop importante</li> <li>■ Affilage des arêtes de coupe trop important</li> </ul>	<ul style="list-style-type: none"> <li>■ Augmenter la vitesse de coupe</li> <li>■ Réduire la valeur de l'avance</li> <li>■ Amoindrir la valeur de l'affilage</li> </ul>
<b>8. Ebréchure entre l'amincissement de l'âme et l'arête de coupe principale</b> 	<ul style="list-style-type: none"> <li>■ Angle de la dépouille trop faible</li> <li>■ Affilage des arêtes de coupe trop important</li> <li>■ Type d'outil non approprié</li> </ul>	<ul style="list-style-type: none"> <li>■ Augmenter la valeur de l'angle de la dépouille</li> <li>■ Amoindrir la valeur de l'affilage</li> <li>■ Choisir un outil mieux approprié</li> </ul>





## Incidents d'usinage

Erreur	Provenance	Remèdes
<b>9. Déformation plastique des becs</b> 	<ul style="list-style-type: none"> <li>■ Vitesse de coupe trop élevée</li> <li>■ Débit de lubrification trop faible</li> <li>■ Renfort des becs mal réalisé, manque</li> </ul>	<ul style="list-style-type: none"> <li>■ Diminuer la vitesse de coupe</li> <li>■ Augmenter les débit et pression du lubrifiant</li> <li>■ Réaliser des renforts conformes au niveau des becs</li> </ul>
<b>10. Ecart d'alignement</b> 	<ul style="list-style-type: none"> <li>■ Manque de rigidité de l'ensemble lors de l'usinage</li> <li>■ Erreur de battement trop importante</li> <li>■ Amorce de perçage sur plan incliné</li> <li>■ Valeur du reste de l'arête transversale trop importante</li> </ul>	<ul style="list-style-type: none"> <li>■ Améliorer le serrage de la pièce</li> <li>■ Contrôler et éliminer l'erreur de battement</li> <li>■ Réaliser un perçage pilote avec une fraise 2 dents à 180°</li> <li>■ Diminuer la valeur du reste de l'arête transversale</li> </ul>
<b>11. Bavure importante à la sortie du perçage</b> 	<ul style="list-style-type: none"> <li>■ Valeur de l'avance trop importante</li> <li>■ Valeur de l'usure maximale dépassée</li> <li>■ Affilage des arêtes de coupe trop important</li> </ul>	<ul style="list-style-type: none"> <li>■ Réduire la valeur de l'avance</li> <li>■ Echanger, plus souvent, la plaquette de coupe</li> <li>■ Amoindrir la valeur de l'affilage</li> </ul>
<b>12. Mauvais état de surface</b> 	<ul style="list-style-type: none"> <li>■ Manque de rigidité de l'ensemble lors de l'usinage</li> <li>■ Erreur de battement trop importante</li> <li>■ Débit de lubrification trop faible</li> </ul>	<ul style="list-style-type: none"> <li>■ Améliorer le serrage de la pièce</li> <li>■ Contrôler et éliminer l'erreur de battement</li> <li>■ Augmenter les débit et pression du lubrifiant</li> </ul>



## Aciers rapides

Tous nos outils en acier rapide sont systématiquement réalisés à partir de matières de coupe de qualité! Nous choisissons ces alliages en fonction de leurs éléments composants avec les propriétés optimales pour chacun des cas d'usinage:

Le tungstène et le molybdène favorisent la résistance au revenu et améliorent la résistance à l'usure

Le Vanadium améliore la résistance à l'usure.

Le Cobalt améliore la résistance à l'usure, ce qui augmente sa résistance aux températures d'usinage plus élevées.

Références Gühring	Type	Domaine d'application, propriétés
<b>HSS</b>	Acier rapide commun	matière standard pour utilisation universelle
<b>HSCO / HSS-E</b>	Acier rapide au cobalt	Matière de coupe avec haute résistance à la chaleur, pour les usinages thermiquement sollicités, par exemple, températures élevées ou refroidissement défavorable.
<b>M42</b>	Acier rapide avec 8% de cobalt	Matière de coupe avec haute résistance à la chaleur et à la dureté, appropriée pour les usinages des matériaux difficiles à usiner.
<b>HSS-E</b>		
<b>HSS-E-PM</b>	Acier rapide fritté, au cobalt	Matière de coupe, très dure, avec structure dense et régulière. Excellente résistance à la chaleur et à l'usure, avec grande stabilité des arêtes de coupe.



## Les nuances essentielles de carbures métalliques CW pour les outils Gühring.

Le tableau suivant démontre les nuances essentielles de CW des outils du programme standard de perçage, Gühring, en stock. Sur demande, nous vous offrons d'autres nuances, vous trouverez des informations complémentaires sous [www.guehring-carbide.de](http://www.guehring-carbide.de)

A notre connaissance, dans plus que 80% des applications d'usinages, les meilleurs résultats obtenus sont réalisés à partir d'outils en DK 460 UF pourvus d'un revêtement approprié. D'autres nuances revêtues n'ont, en aucun cas, réussi à atteindre ces performances. Tel jugement, ajouté à la disponibilité du stock, simplifie considérablement le choix d'une nuance ou d'un outil. Nos techniciens spécialistes en usinage vous conseillent volontiers et vous aident à choisir une autre nuance, si nécessaire.

Sorte	Taux de cobalt Co en %	Granulométrie des CW en $\mu$	Dureté [HV]	Classification ISO [ISO 513]	Caractéristiques
DK460UF K40UF	10	0,6	1620	K20-K40	Nuance très universelle, généralement revêtue, pour la plupart des applications sur les aciers, l'Al et ses alliages, les fontes mais aussi sur les « Superalliages » comme l'Inconel 718. Actuellement, cette nuance est l'une des principales activités de notre fabrication de CW.
DK500UF K44UF	12	0,5	1690	K20-K30	Cette nuance, spécialement développée et réalisée pour l'usinage des matériaux durs, est plus dure que le DK 460 UF et sa tolérance de déformation est plus large. Le taux de cobalt est plus élevé, c'est pourquoi il est recommandé de faire un revêtement.
DK255F	8	0,7	1720	K20	Cette nuance est réservée à l'usinage des matériaux durs, fontes dures et alliages d'aluminium chargés de Si et durs, ainsi que pour l'usinage MQL. Il est conseillé de faire un revêtement.
DK120	6	1,3	1620	K15-K20	Nuance particulièrement recommandée lorsqu'il est prévu de réaliser un revêtement diamant sur l'outil.
DK120UF	7	0,7	1850	K05-K10	Nuance de granulométrie ultrafine avec une énorme résistance à l'usure, prévue sur machines très rigides, bien appropriée pour les alésoirs.
K55SF	9	0,2-0,4	1920	K05-K10	Pour l'usinage des mat. résist. à l'usure donc difficiles à usiner, les aciers inox., les composites comme le Kevlar, ainsi que les usinages UGV, UTGV et MQL.
DK400N	10	0,7	1580	K20-K40	Nuance très tenace pour l'usinage des métaux réfractaires.
DK256EH	10	0,6	1750	K20	Cette nuance est particulièrement bien recommandée pour l'usinage des alliages à base de nickel
K6UF	6	0,6	1870	K05-K10	Les nuances de carbures métalliques avec une granulométrie ultrafine, sont extrêmement résistantes à l'usure et particulièrement recommandées pour l'usinage des matériaux haute résistance, très difficiles à usiner, ainsi que pour les composites CFK et Kevlar.
K5UF	5	0,5	2010	K05-K10	Récemment développée pour le perçage et pour l'alésage, cette nuance très dure, est particulièrement recommandée pour les matériaux composites et CFK.



## Matières très dures

Ce n'est pas seulement l'extrême dureté des matières très dures mais aussi leur grande résistance à la chaleur qui permet les grandes vitesses de coupe et augmente leur productivité. Le PCD (Polycristallin de diamant) est le plus résistant à l'usure. Le domaine principal d'applications d'usinages du PCD est l'usinage de l'aluminium et de ses alliages ainsi que

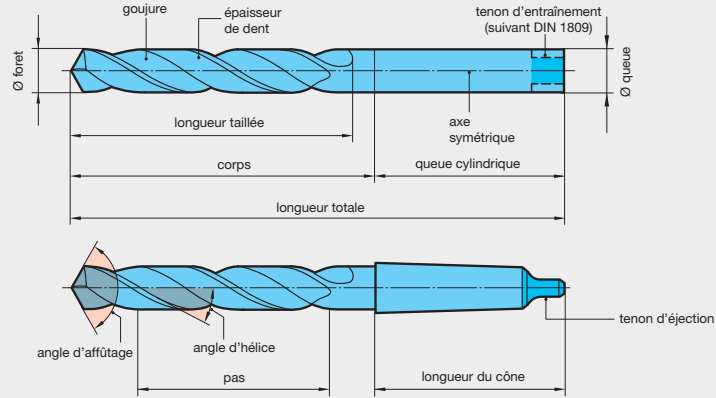
l'usinage des matériaux synthétiques renforcés par des fibres. Le PcBN (Nitrure de bore polycristallin, cubique) est prévu pour l'usinage des matériaux ferreux. Afin d'obtenir un résultat d'usinage optimal avec ces matériaux, il est recommandé d'usiner sur des machines très stables.

Désignation Gühring	Classification	Domaine d'application, propriétés	Granulométrie moyenne	Pourcentage de la matière de coupe
<b>PCD</b>	Grains fins	Aluminium et ses alliages au silicium < 10 % Si, alliages au magnésium, laitons, cuivres, bronzes, qualité exceptionnelle des arêtes de coupe avec une énorme résistance à l'usure assurant un état de surface d'usinage de qualité supérieure.	2-4 µm	> 90% PCD
	Grains moyens	Nuance universelle (en général pour l'usinage de finition) des alliages d'aluminium et silicium < 14 % Si, alliages de cuivres, graphites et matériaux chargés de graphite, matériaux synthétiques renforcés de fibres, agglomérés de céramiques et de carbures métalliques, avant le frittage, avec (<15 % d'agglomérant), haute résistance à l'usure et état de surface d'usinage de qualité supérieure.	5-10 µm	env. 92% PCD
	Gros grains	Pour les applications d'usinages d'ébauche des alliages d'aluminiums avec > 14 % de Si et autres usinages de matériaux abrasifs, MMS, agglomérés de céramiques et de carbures métalliques avant le frittage (< 15 % d'agglomérant), très résistant à l'usure et aux chocs, assurant d'excellentes tenues de coupe avec un état de surface d'usinage de qualité acceptable.	>25 µm	env. 94% PCD
	Granulométrie mélangée	Pour les applications d'usinages des alliages d'aluminiums avec, par exemple, > 14 % de Si, et autres usinages de matériaux très abrasifs, MMC, matériaux synthétiques renforcés de fibres, haute résistance aux chocs et à l'abrasion, assurant la qualité des arêtes de coupe avec une bonne tenue de coupe et un excellent résultat de l'état de surface usinée.	4 µm+ 25 µm	env. 95% PCD
<b>PcBN 10..</b>	Bas % de PCB sur support CW	Pour les usinages de finition des aciers à outils, cémentés, améliorés ou trempés, en coupe continue ou en coupe interrompue, avec des profondeurs de passe ap de < 0,30 mm. Haute résistance à l'usure, aux chocs, aux températures élevées et aux matériaux très tenaces.	<1-4 µm	40-65% CBN
<b>PcBN 20..</b>	Haut % de PCB sur support CW	Pour l'usinage des fontes grises perlitiques (> 45 HRC), des aciers frittés, moulages en acier dur. Utilisation en coupe continue et en coupe interrompue avec des profondeurs de passe de 0,50 à 1,50 mm. Haute résistance à l'usure et aux chocs.	2-3 µm	70-90% CBN
<b>PcBN 30..</b>	Haut % de PCB monobloc	Matière de coupe PcBN massive appropriée pour les usinages d'ébauche des fontes perlitiques, fontes dures et aciers trempés. Utilisation sur supports d'outils avec serrage mécanique, tête de fraisage, en perçage, fraisage et alésage. Haute résistance à l'usure et aux chocs.	2-20 µm	70-87% CBN

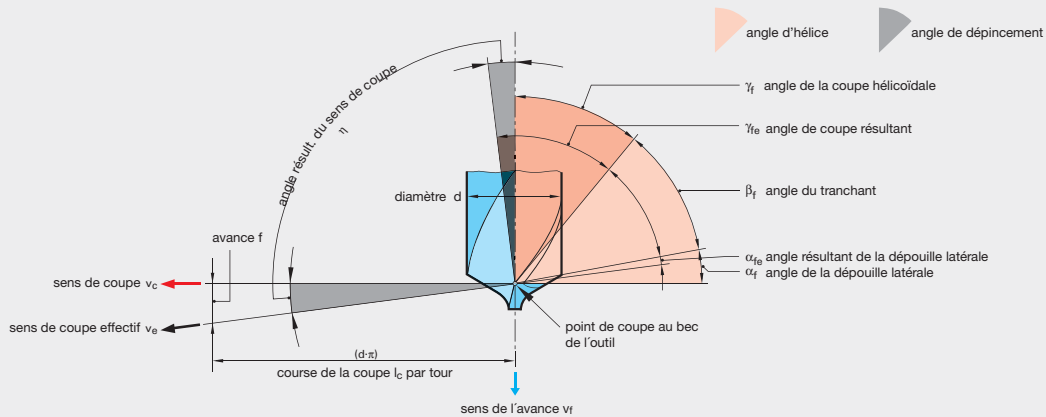
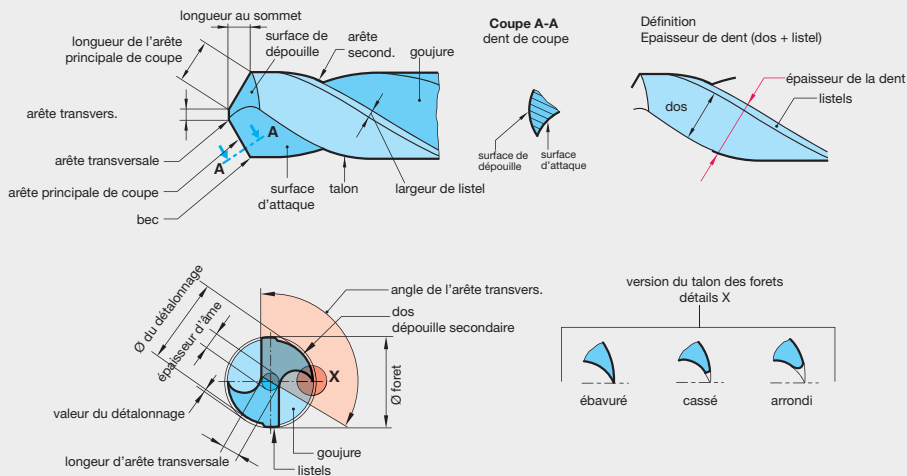


# Définitions, dimensions et valeurs angulaires DIN ISO 5419 (extrait; édition 06/98)

## Forets hélicoïdal à queue cyl./queue CM



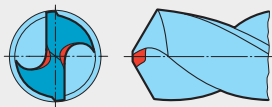
## Partie taillante



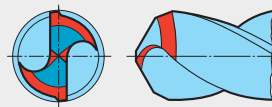


# Types d’affûtages et tolérance de fabrication

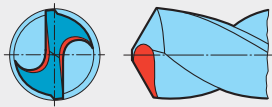
## Types d’affûtages DIN 1412 (extrait; édition 03/01)



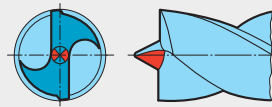
**Forme A**  
Amincissement  
de l'âme



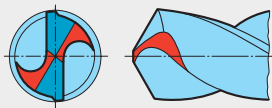
**Forme D**  
Affûtage  
pour fontes



**Forme B**  
Amincissement  
de l'âme et  
lèvres corrigées



**Forme E**  
Pointe de centrage



**Forme C**  
Affûtage  
en croix

## Tolérance de fabrication des forets hélicoïdaux suivant DIN ISO 286, partie 2

diamètre (nominal) jusqu'à incl. mm	tolérance mm	
	h8	h7
0,38 ... 0,60	10	7
0,95	12	8
3,00	14	10
6,00	18	12
10,00	22	15
18,00	27	18
30,00	33	21
50,00	39	25
80,00	46	30
120,00	54	35

\* Si la tolérance de fabrication des outils ISO h8 ne vous suffit pas, nous pouvons réaliser des tolérances plus serrées (voir les suppléments à la fin du chapitre „Perçage“).

### Références des autres normes

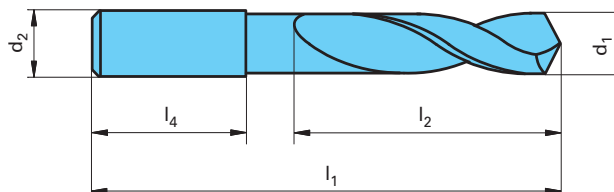
- DIN 228      Partie 1 cônes d’outils; cônes Morse et cônes métriques, queues coniques
- DIN 1414-1    conditions de livraison pour forets hélicoïdaux en acier rapide
- DIN 6580      Définitions de coupe; Mouvements en géométries des procédés de coupe
- DIN 6581      Définitions de coupe; Système de référence et angles de coupe de l’outil

Ces normes sont données avec l'accord de l'institut Germanique des Normes (Deutsches Institut für Normung). La plus récente édition est livrable en format DIN A4, à cette adresse Beuth-Verlag GmbH, D-10787 Berlin.

## Forets hélicoïdaux CW (Forets Ratio)

### Forets hélicoïdaux CW (Forets Ratio) DIN 6537

Valable pour les forets hélicoïdaux en CW avec 2 ou 3 lèbres de coupe et attachement cylindrique suivant DIN 6535

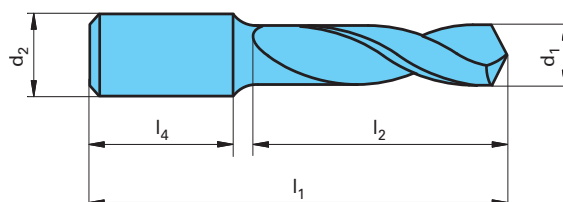


Dimensions en mm

Ø nominal jusqu'à	Ø d'attachement	Forets Ratio pour 3 x D		Forets Ratio pour 5 x D		longueur de l'attachem. l4
		longueur totale l1	longueur taillée max. l2	longueur totale l1	longueur taillée max. l2	
d1m7	d2h6					
2,9...3,75	6	62	20	66	28	36
4,75	6	66	24	74	36	36
6,00	6	66	28	82	44	36
7,00	8	79	34	91	53	36
8,00	8	79	41	91	53	36
10,00	10	89	47	103	61	40
12,00	12	102	55	118	71	45
14,00	14	107	60	124	77	45
16,00	16	115	65	133	83	48
18,00	18	123	73	143	93	48
20,00	20	131	79	153	101	50

### Forets hélicoïdaux CW (Forets Ratio) DIN 6538

Valable pour les forets hélicoïdaux avec plaquettes CW rapportées ou embout CW brasé, avec attachement cylindrique renforcé, en acier, suivant DIN 6535. L'embout CW peut être court ou long (Lg. taillée).



Dimensions en mm

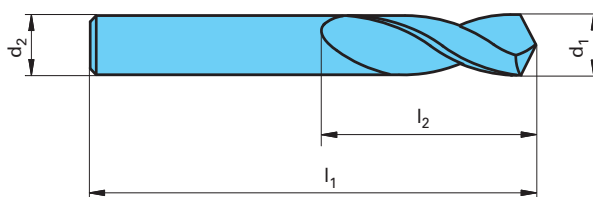
Ø nominal jusqu'à	Ø d'attachement	Forets Ratio pour 3 x D		Forets Ratio pour 5 x D		Forets Ratio pour 7 x D		longueur de l'attachem. l4
		longueur totale l1	longueur taillée max. l2	longueur totale l1	longueur taillée max. l2	longueur totale l1	longueur taillée max. l2	
d1h7	d2h6							
9,5...12,0	16	103	51	127	75	151	99	48
14,0	16	111	59	139	87	167	115	48
16,0	20	122	68	154	100	186	132	50
18,0	20	130	76	166	112	202	148	50
20,0	25	144	84	184	124	224	164	56
22,0	25	153	93	197	137	241	181	56
24,0	25	161	101	209	149	257	197	56
26,0	32	174	110	226	162	278	214	60
28,0	32	182	118	238	174	294	230	60
30,0	32	190	126	250	186	310	246	60



## Forets hélicoïdaux CW (Forets Ratio)

### Forets hélicoïdaux CW (Forets Ratio) DIN 6539

Valable pour les forets hélicoïdaux en CW monobloc, avec attachement cylindrique de diamètre identique à celui du foret



Dimensions en mm

Ø nominal jusqu'à (= Ø d'attach. d2) d1	longueur totale		longueur taillée	
	l1		l2	
<b>1,90...2,12</b>	38	12		
<b>2,36</b>	40	13		
<b>2,65</b>	43	14		
<b>3,00</b>	46	16		
<b>3,35</b>	49	18		
<b>3,75</b>	52	20		
<b>4,25</b>	55	22		
<b>4,75</b>	58	24		
<b>5,30</b>	62	26		
<b>6,00</b>	66	28		
<b>6,70</b>	70	31		
<b>7,50</b>	74	34		
<b>8,00</b>	79	37		
<b>8,50</b>	79	37		
<b>9,50</b>	84	40		

Ø nominal jusqu'à (= Ø d'attach. d2) d1	longueur totale		longueur taillée	
	l1		l2	
<b>10,00</b>	89	43		
<b>10,60</b>	89	43		
<b>11,80</b>	95	47		
<b>12,00</b>	102	51		
<b>13,20</b>	102	51		
<b>14,00</b>	107	54		
<b>15,00</b>	111	56		
<b>16,00</b>	115	58		
<b>17,00</b>	119	60		
<b>18,00</b>	123	62		
<b>19,00</b>	127	64		
<b>20,00</b>	131	66		



# Forets hélicoïdaux à queue cylindrique

dia- mètres jusqu'à (inclus) mm	DIN 338		DIN 339		DIN 340		DIN 1897		DIN 1869 Forets extra-longs					
									grandeur 1		grandeur 2		grandeur 3	
	long. totale	long. taillée	long. totale	long. taillée	long. totale	long. taillée	long. totale	long. taillée	long. totale	long. taillée	long. totale	long. taillée	long. totale	long. taillée
mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm
≤ 0,24	19	2,5					19	1,5						
0,30	19	3					19	1,5						
0,38	19	4					19	2						
0,48	20	5			30*	10*	19	2,5						
0,53	22	6			32*	12*	20	3						
0,60	24	7	32*	15*	35*	15*	21	3,5						
0,67	26	8	36*	18*	38*	18*	22	4						
0,75	28	9	39*	20*	42*	21*	23	4,5						
0,85	30	10	42*	22*	46*	25*	24	5						
0,95	32	11	45*	24*	51*	29*	25	5,5						
1,06	34	12	48	26	56	33	26	6						
1,18	36	14	50	28	60	37	28	7						
1,32	38	16	52	30	65	41	30	8						
1,50	40	18	55	33	70	45	32	9						
1,70	43	20	58	35	76	50	34	10	115*	75*				
1,90	46	22	62	38	80	53	36	11	120*	80*				
2,12	49	24	66	41	85	56	38	12	125	85	160*	110*	205*	135*
2,36	53	27	70	44	90	59	40	13	135	90	170*	115*	215*	145*
2,65	57	30	74	47	95	62	43	14	140	95	180*	120*	225*	150*
3,00	61	33	79	51	100	66	46	16	150	100	190	130	240*	160*
3,35	65	36	84	55	106	69	49	18	155	105	200	135	250*	170*
3,75	70	39	91	60	112	73	52	20	165	115	210	145	265	180
4,25	75	43	96	64	119	78	55	22	175	120	220	150	280	190
4,75	80	47	102	69	126	82	58	24	185	125	235	160	295	200
5,30	86	52	108	74	132	87	62	26	195	135	245	170	315	210
6,00	93	57	116	80	139	91	66	28	205	140	260	180	330	225
6,70	101	63	124	86	148	97	70	31	215	150	275	190	350	235
7,50	109	69	133	93	156	102	74	34	225	155	290	200	370	250
8,50	117	75	142	100	165	109	79	37	240	165	305	210	390	265
9,50	125	81	151	107	175	115	84	40	250	175	320	220	410	280
10,60	133	87	162	116	184	121	89	43	265	185	340	235	430	295
11,80	142	94	173	125	195	128	95	47	280*	195*	365*	250*	455*	310*
13,20	151	101	184	134	205	134	102	51	295*	205*	375*	260*	480*	330*
14,00	160	108	194	142	214	140	107	54						
15,00	169	114	202	147	220	144	111	56						
16,00	178	120	211	153	227	149	115	58						
17,00	184	125	218	159	235	154	119	60						
18,00	191	130	226	165	241	158	123	62						
19,00	198	135	234	171	247	162	127	64						
20,00	205	140	242	177	254	166	131	66						
21,20					261	171	136	68						
22,40					268	176	141	70						
23,60					275	180	146	72						
25,00					282	185	151	75						
26,50					290	190	156	78						
28,00					298	195	162	81						
30,00					307	201	168	84						
31,50					316	207	174	87						
33,50							180	90						
35,50							186	93						
37,50							193	96						
40,00							200	100						
42,50							207	104						
45,00							214	108						
47,50							221	112						
50,00							228	116						

Gühring vous livre des forets hélicoïdaux, selon Norme Usine, jusqu'à 1000 mm de longueur totale, ce sont les articles n° : 242, 243, 244

\* Norme Usine

Caractéristiques techniques



## Forets hélicoïdaux à queue cône Morse

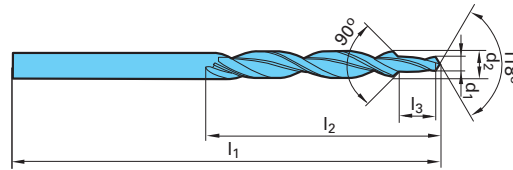
dia- mètres jusqu'à (inclus) mm	DIN 345			DIN 346			DIN 341			Forets pour le perçage / canon avec cône renforcé*			Forets GV/VA* pour les matières difficiles			DIN 1870 Forets extra-longs							
																grandeur 1			grandeur 2				
	long. totale	long. taillée	cône Morse	long. totale	long. taillée	cône Morse	long. totale	long. taillée	cône Morse	long. totale	long. taillée	cône Morse	long. totale	long. taillée	cône Morse	long. totale	long. taillée	cône Morse	long. totale	long. taillée	cône Morse		
mm	mm		mm	mm		mm	mm		mm	mm		mm	mm		mm	mm		mm	mm				
2,65	111*	30*	1*																				
3,00	114	33	1																				
3,35	117	36	1																				
3,75	120	39	1																				
4,25	124	43	1																				
4,75	128	47	1																				
5,30	133	52	1																				
6,00	138	57	1																				
6,70	144	63	1																				
7,50	150	69	1																				
8,50	156	75	1												130	49	1	265	165	1	330	210	1
9,50	162	81	1												134	53	1	275	175	1	345	220	1
10,60	168	87	1	185*	87*	2*	197	116	1	214	116	2	138	57	1	285	185	1	360	235	1		
11,80	175	94	1	192*	94*	2*	206	125	1	223	125	2	142	61	1	300	195	1	375	250	1		
13,20	182	101	1	199	101	2	215	134	1	232	134	2	147	66	1	310	205	1	395	260	1		
14,00	189	108	1	206	108	2	223	142	1	240	142	2	168	70	2	325	220	1	410	275	1		
15,00	212	114	2	235*	114*	3*	245	147	2	268	147	3	172	74	2	340	220	2	425	275	2		
16,00	218	120	2	241*	120*	3*	251	153	2	274	153	3	176	78	2	355	230	2	445	295	2		
17,00	223	125	2	246*	125*	3*	257	159	2	280	159	3	179	81	2	355	230	2	445	295	2		
18,00	228	130	2	251*	130*	3*	263	165	2	286	165	3	183	85	2	370	245	2	465	310	2		
19,00	233	135	2	256	135	3	269	171	2	292	171	3	186	88	2	370	245	2	465	310	2		
20,00	238	140	2	261	140	3	275	177	2	298	177	3	212	91	3	385	260	2	490	325	2		
21,20	243	145	2	266	145	3	282	184	2	305	184	3	216	95	3	385	260	3	490	325	3		
22,40	248	150	2	271	150	3	289	191	2	312	191	3	219	98	3	405	270	3	515	345	3		
23,02	253	155	2	276	155	3	296	198	2	319	198	3	222	101	3	405	270	3	515	345	3		
23,60	276	155	3	304*	155*	4*	319	198	3	347	198	4	222	101	3	425	270	3	535	345	3		
25,00	281	160	3	309*	160*	4*	327	206	3	355	206	4	225	104	3	440	290	3	555	365	3		
26,50	286	165	3	314*	165*	4*	335	214	3	363	214	4	256	107	4	440	290	3	555	365	3		
28,00	291	170	3	319	170	4	343	222	3	371	222	4	259	110	4	460	305	3	580	385	3		
30,00	296	175	3	324	175	4	351	230	3	379	230	4	263	114	4	460	305	3	580	385	3		
31,50	301	180	3	329	180	4	360	239	3	388	239	4	266	117	4	480	320	3	610	410	3		
31,75	306	185	3	334	185	4	369	248	3	397	248	4	269	120	4	480	320	3	610	410	3		
33,50	334	185	4	372*	185*	5*	397	248	4	435	248	5	269	120	4	505	320	4	635	410	4		
35,50	339	190	4	377*	190*	5*	406	257	4				272	123	4	530	340	4	665	430	4		
37,50	344	195	4	382*	195*	5*	416	267	4				276	127	4	530	340	4	665	430	4		
40,00	349	200	4	387*	200*	5*	426	277	4				317	130	5	555	360	4	695	460	4		
42,50	354	205	4	392	205	5	436	287	4				320	133	5	555	360	4	695	460	4		
45,00	359	210	4	397	210	5	447	298	4				323	136	5	585	385	4	735	490	4		
47,50	364	215	4	402	215	5	459	310	4							585	385	4	735	490	4		
50,00	369	220	4	407	220	5	470	321	4							605	405	4	765	510	4		
50,80	374	225	4	412	225	5	475*	326*	4*														
53,00	412	225	5	479*	225*	6*	513*	326*	5*														
56,00	417	230	5	484*	230*	6*	518*	331*	5*														
60,00	422	235	5	489*	235*	6*	523*	336*	5*														
63,00	427	240	5	494*	240*	6*																	
67,00	432	245	5	499	245	6																	
71,00	437	250	5	504	250	6																	
75,00	442	255	5	509	255	6																	
76,50	447	260	5	514	260	6																	
80,00	514	260	6																				
85,00	519	265	6																				
90,00	524	270	6																				
95,00	529	275	6																				
100,00	534	280	6																				
106,00	539*	285*	6*																				

Gühring vous livre des forets hélicoïdaux, selon Norme Usine, jusqu'à 1000 mm de longueur totale, ce sont les articles n° : 293, 298, 299, 563, 564, 565, 566

\* Werknorm



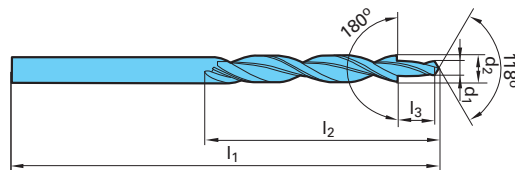
# Forets étagés avec attachement cylindrique, listels continus, à 90°



Ø nominal d2 h8 mm	Ø étage d1 h9 mm	long. totale l1 mm	long. taillée l2 mm	long. d'étage l3 mm	pour taraudage	domaines d'applications
			<b>HSS</b> DIN 8378/	<b>CW</b>	Norme Usine	
3,4	2,5	70	39	8,8	M 3	Pour avant-trous de taraudage suivant DIN 336 et chanfreins en accord avec les trous débouchants suivant DIN ISO 273 (anc.) et DIN EN 20273 »tolérance moyenne«.
4,5	3,3	80	47	11,4	M 4	
5,5	4,2	93	57	13,6	M 5	
6,6	5,0	101	63	16,5	M 6	
9,0	6,8	125	81	21,0	M 8	
11,0	8,5	142	94	25,5	M10	
13,5	10,2	160	108	30,0	M12	
DIN 8374 pour chanfreins, tolérance fine						
6,0	3,2	93	57	9,0	M 3	Pour trous débouchants suivant DIN ISO 273 (anc.), DIN EN 20273 »tolérance fine«, chanfreins pour tête de vis suiv. DIN 74 forme F et chanfreins pour tête de vis formes A et B suivant DIN 74 partie 1 (anc.): »tolérance fine«. Pour vis suivant DIN 963 (anc.) et DIN 964 (anc.).
8,0	4,3	117	75	11,0	M 4	
10,0	5,3	133	87	13,0	M 5	
11,5	6,4	142	94	15,0	M 6	
15,0	8,4	169	114	19,0	M 8	
19,0	10,5	198	135	23,0	M10	
Norme Usine pour chanfreins, tolérance moyenne						
6,6	3,4	101	63	9,0	M 3	Pour trous débouchants suivant DIN ISO 273 (anc.) et chanfreins pour tête de vis formes A et B suivant DIN 74 partie 1 (anc.): »tolérance moyenne«. Pour vis suivant DIN 963 (anc.) et DIN 964 (anc.).
9,0	4,5	125	81	11,0	M 4	
11,0	5,5	142	94	13,0	M 5	
13,0	6,6	151	101	15,0	M 6	
17,2	9,0	191	130	19,0	M 8	
DIN 8374 pour chanfreins, tolérance moyenne						
7,5	3,4	109	69	9,0	M 3	Pour trous débouchants suivant DIN ISO 273 (anc.) et chanfreins pour tête de vis formes A et B suivant DIN 74 partie 1 (anc.): »tolérance moyenne«. Pour vis suivant DIN 963 (anc.) et DIN 964 (anc.).
9,7	4,5	133	87	11,0	M 4	
12,0	5,5	151	101	13,0	M 5	
14,5	6,6	169	114	15,0	M 6	
19,9	9,0	198	135	19,0	M 8	



## Forets étagés avec queue cylindrique, listels continus, à 180°

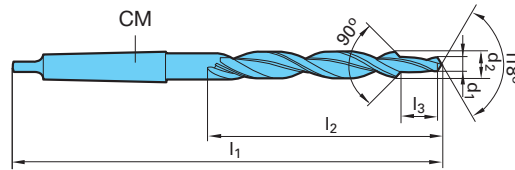


Ø nominal d2 h8 mm	Ø étage d1 h9 mm	long. totale l1 mm	long. taillée l2 mm	long. d'étage l3 mm	pour taraudage	domaines d'applications
		<b>HSS</b> DIN 8376/		<b>CW</b> Werksnorm		
6,0**	3,4	93**	57**	9,0	M 3	Pour trous débouchants suivant DIN-ISO 273 (anc.), DIN EN 20273 »tolérance moyenne«, chanfreins pour tête de vis suiv. DIN et chanfreins pour tête de vis forme H, J et K suivant DIN 74 partie 2 (anc.): »tolérance moyenne«. Pour vis DIN 84 (anc.), 912 (anc.), 6912, 7513 et DIN 7984.
6,5	3,4	101	63	9,0	M 3	
8,0	4,5	117	75	11,0	M 4	
10,0	5,5	133	87	13,0	M 5	
11,0	6,6	142	94	15,0	M 6	
15,0	9,0	169	114	19,0	M 8	
18,0	11,0	191	130	23,0	M10	
Norme Usine						
6,0	3,2	93	57	9,0	M 3	Pour trous débouchants suivant DIN-ISO 273 (anc.) et chanfreins pour tête de vis forme H, J et K suivant DIN 74 partie 2 (anc.): »tolérance fine«. Pour vis DIN 84 (anc.), 912 (anc.), 6912, 7513 et DIN 7984.
8,0	4,3	117	75	11,0	M 4	
Norme Usine pour chanfreins, tolérance fine (anc.*)						
5,9	3,2	93	57	11,0	M 3	Pour vis DIN 84 (anc.), DIN 912 (anc.) et DIN 6912. Pour anciens alésages forme H, J et K suivant DIN 75 partie 2: »tolérance fine«.
7,4	4,3	109	69	13,0	M 4	
9,4	5,3	125	81	16,0	M 5	
10,4	6,4	133	87	19,0	M 6	
13,5	8,4	160	108	22,0	M 8	
16,5	10,5	184	125	25,0	M10	
Norme Usine pour chanfreins, tolérance moyenne (anc.*)						
8,0	4,8	117	75	13,0	M 3	Pour vis DIN 84 (anc.), DIN 912 (anc.) et DIN 6912. Pour anciens alésages forme H, J et K suivant DIN 75 partie 2: »tolérance moyenne«.
10,0	5,8	133	87	16,0	M 4	
11,0	7,0	142	94	19,0	M 5	
14,5	9,5	169	114	22,0	M 6	
17,5	11,5	191	130	25,0	M 8	

\* DIN 75, partie 2; Norme Usine



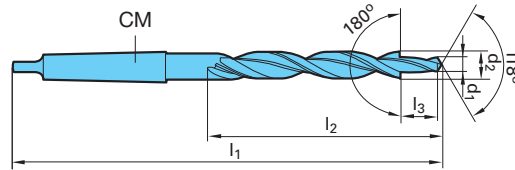
## Forets étagés avec queue cône Morse, listels continus, à 90°



Ø nominal d2 h8 mm	Ø étage d1 h9 mm	long. totale l1 mm	long. taillée l2 mm	cône Morse CM	long. d'étage l3 mm	pour tarudage	domaines d'applications
Norme Usine							
11,0	5,5	175	94	1	13,0	M 5	Pour trous débouchants suivant DIN ISO 273 (anc.), DIN EN 20273 »tolérance moyenne«, chanfreins pour tête de vis suiv. DIN 74 forme F et chanfreins pour tête de vis forme A et B suivant DIN 74 partie 1 (anc.): »tolérance moyenne«. Pour vis suivant DIN 963 (anc.) et DIN 964 (anc.).
13,0	6,6	182	101	1	15,0	M 6	
17,2	9,0	228	130	2	19,0	M 8	
21,5	11,0	248	150	2	23,0	M10	
26,0	14,0	286	165	3	27,0	M12	
29,0	16,0	296	175	3	31,0	M14	
DIN 8375							
12,0	5,5	182	101	1	13,0	M 5	Pour trous débouchants suivant DIN ISO 273 (anc.), DIN EN 20273 »tolérance moyenne«, chanfreins pour tête de vis suiv. DIN 74 forme F et chanfreins pour tête de vis forme A et B suivant DIN 74 partie 1 (anc.): »tolérance moyenne«. Pour vis suivant DIN 963 (anc.) et DIN 964 (anc.).
14,5	6,6	---	108	1	15,0	M 6	
19,0	9,0	253	135	2	19,0	M 8	
23,0	11,0	248	155	2	23,0	M10	
Norme Usine							
11,5	6,4	175	94	1	15,0	M 6	Pour trous débouchants suivant DIN ISO 273 (anc.) et chanfreins pour tête de vis forme A et B suivant DIN 74 partie 1 (anc.): »tolérance fine«. Pour vis suivant DIN 963 (anc.) et DIN 964 (anc.).
15,0	8,4	212	114	2	19,0	M 8	
19,0	10,5	233	135	2	23,0	M10	
23,0	13,0	253	155	2	27,0	M12	
26,0	15,0	286	165	3	31,0	M14	
30,0	17,0	296	175	3	35,0	M16	
DIN 8379							
9,0	6,8	162	81	1	21,0	M 8	Pour avant-trous de tarudage suivant DIN 336 (anc.), DIN EN 20273 »tolérance moyenne« et chanfreins en accord avec les trous débouchants suivant DIN ISO 273 (anc.).
11,0	8,5	175	94	1	25,5	M10	
13,5	10,2	189	108	1	30,0	M12	
15,5	12,0	218	120	2	34,5	M14	
17,5	14,0	228	130	2	38,5	M16	
20,0	15,5	238	140	2	43,5	M18	
22,0	17,5	248	150	2	47,5	M20	



## Forets étagés avec queue cône Morse, listels continus, à 180°



Ø nominal d2 h8 mm	Ø étage d1 h9 mm	long. totale l1 mm	long. taillée l2 mm	cône Morse CM	long. d'étage l3 mm	pour taroudage	domaines d'applications					
<b>HSS</b> DIN 8377/				<b>CW</b> Norme Usine								
10,0	5,5	168	87	1	13,0	M 5	Pour trous débouchants suivant DIN-ISO 273 (anc.), DIN EN 20273 «tolérance moyenne», chanfreins pour tête de vis suiv. DIN 974-1 et chanfreins pour tête de vis forme H, J et K suivant DIN 74 partie 2 (anc.): «tolérance moyenne». Pour vis DIN 84 (anc.), 912 (anc.), 6912, 7513 et DIN 7984.					
11,0	6,6	175	94	1	15,0	M 6						
15,0	9,0	212	114	2	19,0	M 8						
18,0	11,0	228	130	2	23,0	M10						
20,0	13,5	238	140	2	27,0	M12						
24,0	15,5	281	160	3	31,0	M14						
26,0	17,5	286	165	3	35,0	M16						
30,0	20,0	296	175	3	39,0	M18						
33,0	22,0	334	185	4	43,0	M20						
Norme Usine												
10,0	5,3	168	87	1	13,0	M 5	Pour trous débouchants suivant DIN-ISO 273 (anc.) et chanfreins pour tête de vis forme H, J et K suivant DIN 74 partie 2 (anc.): «tolérance fine». Pour vis DIN 84 (anc.), 912 (anc.), 6912, 7513 et DIN 7984.					
11,0	6,4	175	94	1	15,0	M 6						
15,0	8,4	212	114	2	19,0	M 8						
18,0	10,5	228	130	2	23,0	M10						
20,0	13,0	238	140	2	27,0	M12						
24,0	15,0	281	160	3	31,0	M14						
26,0	17,0	286	165	3	35,0	M16						
Norme Usine pour chanfreins, tolérance fine (anc.*)												
9,4	5,3	162	81	1	16,0	M 5	Pour vis DIN 84 (anc.), DIN 912 (anc.) et DIN 6912. Pour anciens alésages forme H, J et K suivant DIN 75 partie 2: «tolérance fine».					
10,4	6,4	168	87	1	19,0	M 6						
13,5	8,4	189	108	1	22,0	M 8						
16,5	10,5	223	125	2	25,0	M10						
19,0	13,0	233	135	2	28,0	M12						
23,0	15,0	253	155	2	30,0	M14						
25,0	17,0	281	160	3	33,0	M16						
28,0	19,0	291	170	3	36,0	M18						
31,0	21,0	301	180	3	39,0	M 20						
Norme Usine pour chanfreins, tolérance moyenne (anc.*)												
10,0	5,8	168	87	1	16,0	M 5	Pour vis DIN 84 (anc.), DIN 912 et DIN 6912. Pour anciens alésages forme H, J et K suivant DIN 75 partie 2: «tolérance moyenne».					
11,0	7,0	175	94	1	19,0	M 6						
14,5	9,5	212	114	2	22,0	M 8						
17,5	11,5	228	130	2	25,0	M10						
20,0	14,0	238	140	2	28,0	M12						
24,0	16,0	281	160	3	30,0	M14						
26,0	18,0	286	165	3	33,0	M16						
29,0	20,0	296	175	3	36,0	M18						
33,0	23,0	334	185	4	39,0	M20						
pouce	mm	pouce	mm	pouces	mm	pouces	mm	CM	pouces	mm	p. taroudage	domaines d'applications
British Standard												
19/32	15,08	25/64	9,92	8 5/8	219	4 3/4	121	2	3/4	19,05	3/8 pouce	Pour vis à tête plate, suivant norme britannique
21/32	16,67	29/64	11,51	8 3/4	222	4 7/8	124	2	7/8	22,22	7/16 pouce	
25/32	19,84	33/64	13,10	9 3/8	238	5 1/2	140	2	1	25,40	1/2 pouce	

\* DIN 75, partie 2

**Forets aléseurs à queue cylindrique**

**Forets aléseurs creux**

diamètres jusqu'à inclus mm	DIN 344					DIN 222		
	longueur totale mm	longueur taillée mm	diamètres jusqu'à inclus mm	longueur totale mm	longueur taillée mm	Ø nominal jusqu'à inclus mm	longueur totale mm	Ø alésage mm
4,25	96*	64*	11,70	173	125	35,5	45	13
4,75	102*	69*	13,20	184	134	45,0	50	16
5,30	108	74	14,00	194	142	53,0	56	19
6,00	116	80	15,00	202	147	63,0	63	22
6,70	124	86	16,00	211	153	75,0	71	27
7,50	133	93	17,00	218	159	90,0	80	32
8,50	142	100	18,00	226	165	101,6	90	40
9,50	151	107	19,00	234	171			
10,60	162	116	20,00	242	177			

**Forets aléseurs à queue cône Morse**

diamètres jusqu'à inclus mm	DIN 343			DIN 1864		
	longueur totale mm	longueur taillée mm	cône Morse	longueur totale mm	longueur taillée mm	cône Morse
7,50	150*	69*	1*	174*	93*	1*
8,50	156*	75*	1*	181*	100*	1*
9,50	162	81	1	188	107	1
10,60	168	87	1	197	116	1
11,70	175	94	1	206	125	1
13,20	182	101	1	215	134	1
14,00	189	108	1	223	142	1
15,00	212	114	2	245	147	2
16,00	218	120	2	251	153	2
17,00	223	125	2	257	159	2
18,00	228	130	2	263	165	2
19,00	233	135	2	269	171	2
20,00	238	140	2	275	177	2
21,20	243	145	2	282	184	2
22,40	248	150	2	289	191	2
23,60	253	155	2	296	198	2
25,00	281	160	3	327	206	3
26,50	286	165	3	335	214	3
28,00	291	170	3	343	222	3
30,00	296	175	3	351	230	3
31,50	301	180	3	360	239	3
33,50	334	185	4			
35,50	339	190	4			
37,50	344	195	4			
40,00	349	200	4			
42,50	354	205	4			
45,00	359	210	4			
47,50	364	215	4			
50,00	369	220	4			

\*Norme Usine

**Microforets (longueur totale 25 mm)**

DIN 1899					
diamètres jusqu'à inclus mm	Ø queue mm	longueur taillée mm	diamètres jusqu'à inclus mm	Ø queue mm	longueur taillée mm
de 0,1 . . . 0,12	1,0	0,5	0,67	1,0	4,2
0,15	1,0	0,8	0,75	1,0	4,8
0,19	1,0	1,1	0,79	1,0	5,3
0,24	1,0	1,5	0,85	1,5	5,3
0,30	1,0	1,9	0,95	1,5	6,0
0,38	1,0	2,4	1,06	1,5	6,8
0,48	1,0	3,0	1,18	1,5	7,6
0,53	1,0	3,4	1,32	1,5	8,5
0,60	1,0	3,9	1,45	1,5	9,5

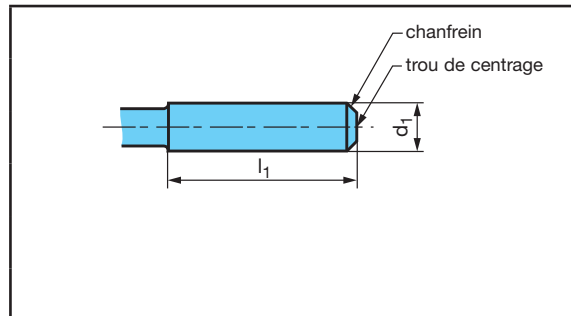
Caractéristiques techniques



# Attachements cylindriques en acier rapide, DIN 1835-1 (extrait)

## Forme A, lisse

Dimensions en mm



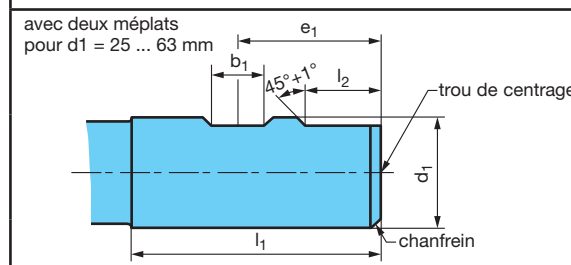
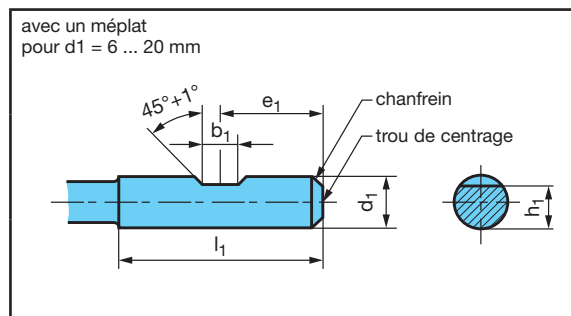
d <sub>1</sub>	l <sub>1</sub>
h8	$\begin{matrix} +2 \\ 0 \end{matrix}$
3	28
4	28
5	28
6	36
8	36
10	40

d <sub>1</sub>	l <sub>1</sub>
h8	$\begin{matrix} +2 \\ 0 \end{matrix}$
12	45
16	48
20	50
25	56
32	60
40	70

d <sub>1</sub>	l <sub>1</sub>
h8	$\begin{matrix} +2 \\ 0 \end{matrix}$
50	80
63	90

## Forme B, avec méplat

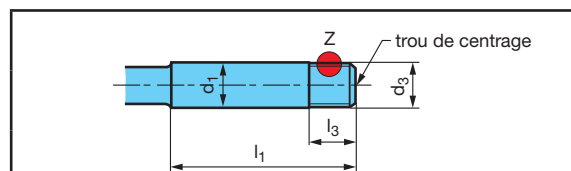
Dimensions en mm



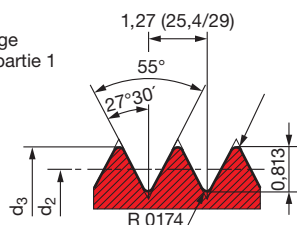
d <sub>1</sub>	b <sub>1</sub>	e <sub>1</sub>	h <sub>1</sub>	l <sub>1</sub>	l <sub>2</sub>	Trou de centrage forme R DIN 332 partie 1
h6	$\begin{matrix} +0,05 \\ 0 \end{matrix}$	$\begin{matrix} 0 \\ -1 \end{matrix}$	h13	$\begin{matrix} +2 \\ 0 \end{matrix}$	$\begin{matrix} +1 \\ 0 \end{matrix}$	
6	4,2	18	4,8	36	-	1,6x2,5
8	5,5	18	6,6	36	-	1,6x3,35
10	7	20	8,4	40	-	1,6x3,35
12	8	22,5	10,4	45	-	1,6x3,35
16	10	24	14,2	48	-	2,0x4,25
20	11	25	18,2	50	-	2,5x5,3
25	12	32	23	56	17	2,5x5,3
32	14	36	30	60	19	3,15x6,7
40	14	40	38	70	19	3,15x6,7
50	18	45	47,8	80	23	3,15x6,7
63	18	50	60,8	90	23	3,15x6,7

## Forme D, avec attachement fileté

Dimensions en mm



**Détail Z**  
(coupe)  
profil de filetage  
DIN ISO 228 partie 1



d <sub>1</sub>	d <sub>3</sub>	zone de tolér.	d <sub>2</sub>	zone de tolér.	l <sub>1</sub>	l <sub>3</sub>	Trou de centrage forme R DIN 332 partie 1
h8					$\begin{matrix} +2 \\ 0 \end{matrix}$	$\begin{matrix} +2 \\ 0 \end{matrix}$	
6	5,9	$\begin{matrix} 0 \\ -0,1 \end{matrix}$	5,087	$\begin{matrix} 0 \\ -0,1 \end{matrix}$	36	10	1,6 x 2,5
10	9,9	$\begin{matrix} 0 \\ -0,1 \end{matrix}$	9,087	$\begin{matrix} 0 \\ -0,1 \end{matrix}$	40	10	1,6 x 3,35
12	11,9	$\begin{matrix} 0 \\ -0,1 \end{matrix}$	11,087	$\begin{matrix} 0 \\ -0,1 \end{matrix}$	45	10	1,6 x 3,35
16	15,9	$\begin{matrix} 0 \\ -0,1 \end{matrix}$	15,087	$\begin{matrix} 0 \\ -0,1 \end{matrix}$	48	10	2,0 x 4,25
20	19,9	$\begin{matrix} 0 \\ -0,15 \end{matrix}$	19,087	$\begin{matrix} 0 \\ -0,15 \end{matrix}$	50	15	2,5 x 5,3
25	24,9	$\begin{matrix} 0 \\ -0,15 \end{matrix}$	24,087	$\begin{matrix} 0 \\ -0,15 \end{matrix}$	56	15	2,5 x 5,3
32	31,9	$\begin{matrix} 0 \\ -0,15 \end{matrix}$	31,087	$\begin{matrix} 0 \\ -0,15 \end{matrix}$	60	15	3,15 x 6,7

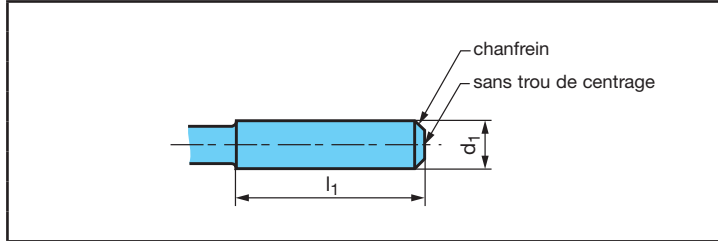




# Attachements cylindriques pour forets hélicoïdaux et fraises 2 tailles en CW DIN 6535

## Forme HA, lisse

Dimensions en mm

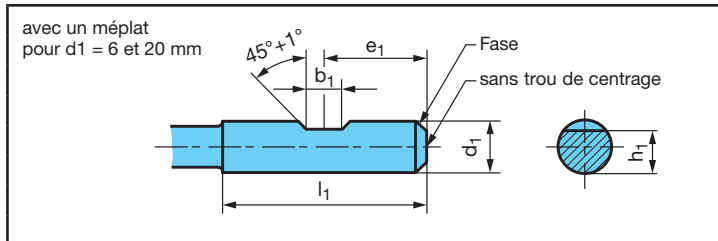


d <sub>1</sub>	l <sub>1</sub> +2 0
2	28
3	28
4	28
5	28
6	36
8	36
10	40
12	45

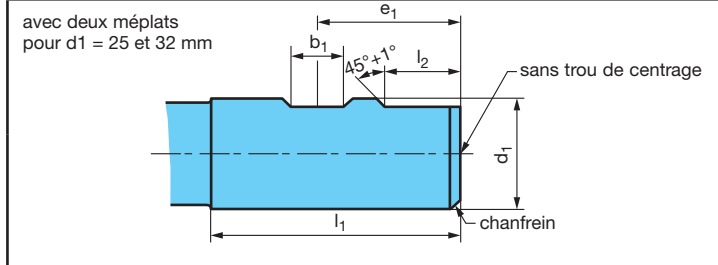
d <sub>1</sub>	l <sub>1</sub> +2 0
14	45
16	48
18	48
20	50
25	56
32	60

## Forme HB, avec méplat

Dimensions en mm



d <sub>1</sub>	b <sub>1</sub> +0,05 0	e <sub>1</sub> 0 -1	h <sub>1</sub>	l <sub>1</sub> +2 0	l <sub>2</sub> +1 0
6	4,2	18	5,1	36	-
8	5,5	18	6,9	36	-
10	7	20	8,5	40	-
12	8	22,5	10,4	45	-
14	8	22,5	12,7	45	-
16	10	24	14,2	48	-
18	10	24	16,2	48	-
20	11	25	18,2	50	-

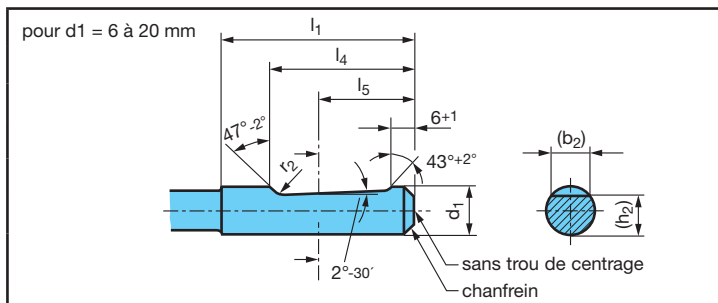


25	12	32	23	56	17
32	14	36	30	60	19

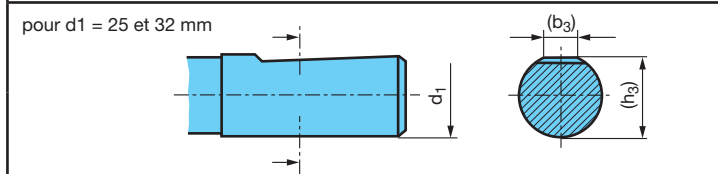
## Forme HE, avec méplat incliné sans trou d'huile\*

\* Forme: Les queues cylindriques suivant DIN 6535 sont livrables avec ou sans trou d'huile. Applications variées, dimensions et position des trous d'huile sont décrites dans la norme.

Dimensions en mm



d <sub>1</sub>	(b <sub>2</sub> )	(b <sub>3</sub> )	h <sub>2</sub>	(h <sub>3</sub> )	l <sub>1</sub> +2 0	l <sub>4</sub> 0 -1	l <sub>5</sub> taille nom.	r <sub>2</sub> min.
6	4,3	-	5,1	-	36	25	18	1,2
8	5,5	-	6,9	-	36	25	18	1,2
10	7,1	-	8,5	-	40	28	20	1,2
12	8,2	-	10,4	-	45	33	22,5	1,2
14	8,1	-	12,7	-	45	33	22,5	1,2
16	10,1	-	14,2	-	48	36	24	1,6
18	10,8	-	16,2	-	48	36	24	1,6
20	11,4	-	18,2	-	50	38	25	1,6



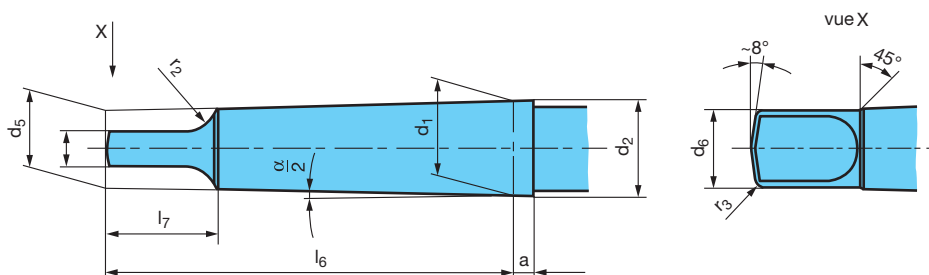
25	13,6	9,3	23,0	24,1	56	44	32	1,6
32	15,5	9,9	30,0	31,2	60	48	35	1,6

Caractéristiques techniques



# Attachements coniques DIN 228 partie 1 (extrait)

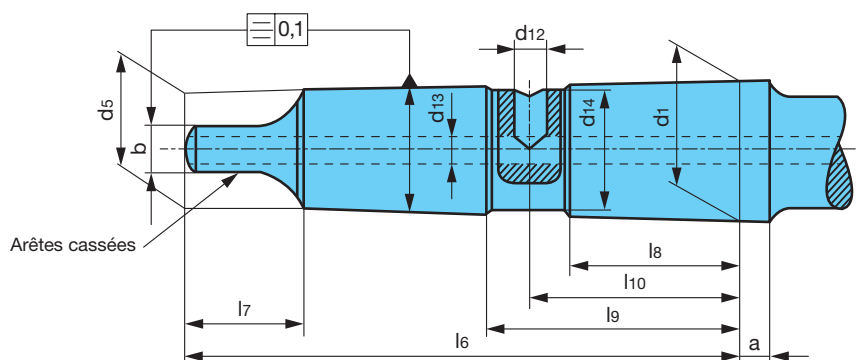
## Forme B, cône Morse avec tenon d'éjection



Dimensions en mm

attachement suiv. DIN 228 forme B taille	a	dim. limit.	b	d <sub>1</sub>	d <sub>2</sub> ≈	d <sub>5</sub> ≈	d <sub>6</sub> max.	l <sub>6</sub> 0 -1	l <sub>7</sub> max.	r <sub>2</sub> max.	r <sub>3</sub> ≈	$\frac{\alpha}{2}$
<b>CM 1</b>	3,5	+1,4 0	5,2	12,065	12,2	9,0	8,7	62	13,5	5	1,2	1°25'43"
<b>CM 2</b>	5,0	+1,4 0	6,3	17,780	18,0	14,0	13,5	75	16	6	1,6	1°25'50"
<b>CM 3</b>	5,0	+1,7 0	7,9	23,825	24,1	19,1	18,5	94	20	7	2	1°26'16"
<b>CM 4</b>	6,5	+1,9 0	11,9	31,267	31,6	25,2	24,5	117,5	24	8	2,5	1°29'15"
<b>CM 5</b>	6,5	+1,9 0	15,9	44,399	44,7	36,5	35,7	149,5	29	10	3	1°30'26"

## Forme BK, Cône Morse avec tenon d'éjection et adduction du produit de lubrification et de refroidissement



Dimensions en mm

attachement suiv. DIN 228 forme BK taille	a ±0,1	dim. limit.	b h13	d <sub>1</sub>	d <sub>5</sub> ≈	d <sub>12</sub>	d <sub>13</sub>	d <sub>14</sub> 0 -0,01	l <sub>6</sub> 0 -1	l <sub>7</sub> max.	l <sub>8</sub>	l <sub>9</sub>	l <sub>10</sub>
<b>CM 1</b>	3,5	+1,4 0	5,2	12,065	9,0	-	-	-	62	13,5	-	-	-
<b>CM 2</b>	5	+1,4 0	6,3	17,780	14,0	4,2	4,2	15,0	75	16	20	34	27
<b>CM 3</b>	5	+1,7 0	7,9	23,825	19,1	5,0	5,0	21,0	94	20	29	43	36
<b>CM 4</b>	6,5	+1,9 0	11,9	31,267	25,2	6,8	6,8	28,0	117,5	24	39	55	47
<b>CM 5</b>	6,5	+1,9 0	15,9	44,399	36,5	8,5	8,5	40,0	149,5	29	51	69	60

# Tolérances forets à centrer

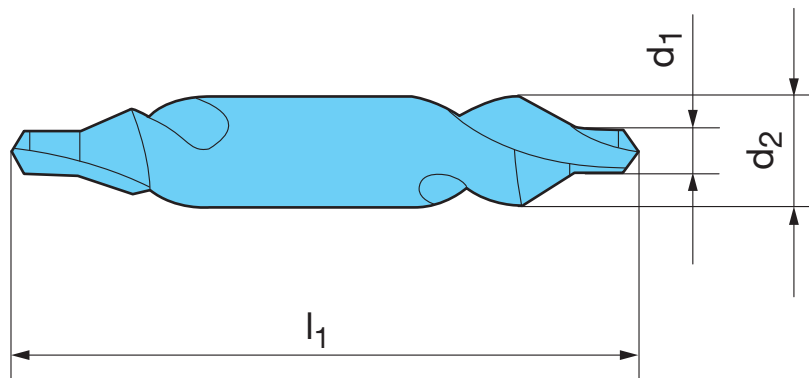
DIN 333	
capacité Ø d1 en mm	tolérance usuelle de d1 en mm
0,50 – 2,50	0 +0,14
3,15 – 5,00	0 +0,18
6,30 – 10,00	0 +0,22
12,50	0 +0,27

pour N° d'art. 285/286	
capacité Ø d1 en mm	tolérance usuelle de d1 en mm
1,00 – 1,25	0 +0,10
1,60 – 3,15	0 +0,15
3,15 – 10,00	0 +0,20

selon la norme B.S. 328	
capacité Ø d1 en mm	tolérance usuelle de d1 en mm
1,19 – 1,59	0 ±0,05
2,38 – 3,17	0 ±0,07
4,76	0 ±0,07
6,35 – 7,94	0 ±0,12

selon la norme B.S. 328	
capacité Ø d'attachement d1 en mm	tolérance usuelle de d1 en mm
3,17 – 4,76	-0,020
6,35	-0,025
7,94 – 11,11	-0,050
15,87 – 19,05	-0,050

selon la norme ASA	
capacité Ø d1 en mm	tolérance usuelle de d1 en mm
tous Ø	0 + 0,07 mm





# Diamètres des perçages avant le taraudage par enlèvement de copeaux

Filetages métriques ISO DIN 13				Filetages métriques ISO fins DIN 13				Filetages UNC ASME B1.1							
Ø nom.	pas P	Ø perçage DIN 336	Ø avant-trou filetage écrou 6H*	Ø nom.	pas P	Ø perçage DIN 336	Ø avant-trou filetage écrou 6H	Ø nom.	pas P	Ø perçage DIN 336	Ø avant-trou filetage écrou 6H	Ø nom.	Gang	Ø perçage DIN 336	Ø avant-trou filetage écrou 2B
			min. max.				min. max.				min. max.		pro		min. max.
	mm	mm	mm mm			mm	mm mm			mm	mm mm		inch	mm	mm mm
M 1	0,25	<b>0,75</b>	0,729 0,785	M 2,5 x	0,35	<b>2,15</b>	2,121 2,221	M 22 x	1,00	<b>21,00</b>	20,917 21,153	Nr. 1 -	64	<b>1,55</b>	1,425 1,580
M 1,1	0,25	<b>0,85</b>	0,829 0,885	M 3,0 x	0,35	<b>2,65</b>	2,621 2,721	M 22 x	1,50	<b>20,50</b>	20,376 20,676	Nr. 2 -	56	<b>1,85</b>	1,694 1,872
M 1,2	0,25	<b>0,95</b>	0,929 0,985	M 3,5 x	0,35	<b>3,15</b>	3,121 3,221	M 22 x	2,00	<b>20,00</b>	19,835 20,210	Nr. 3 -	48	<b>2,10</b>	1,941 2,146
M 1,4	0,30	<b>1,10</b>	1,075 1,142	M 4,0 x	0,50	<b>3,50</b>	3,459 3,599	M 24 x	1,00	<b>23,00</b>	22,917 23,153	Nr. 4 -	40	<b>2,35</b>	2,157 2,385
M 1,6	0,35	<b>1,25</b>	1,221 1,321	M 4,5 x	0,50	<b>4,00</b>	3,959 4,099	M 24 x	1,50	<b>22,50</b>	22,376 22,676	Nr. 5 -	40	<b>2,65</b>	2,487 2,698
M 1,8	0,35	<b>1,45</b>	1,421 1,521	M 5,0 x	0,50	<b>4,50</b>	4,459 4,599	M 24 x	2,00	<b>22,00</b>	21,835 22,210	Nr. 6 -	32	<b>2,85</b>	2,642 2,896
M 2	0,40	<b>1,60</b>	1,567 1,679	M 5,5 x	0,50	<b>5,00</b>	4,959 5,099	M 25 x	1,00	<b>24,00</b>	23,917 24,153	Nr. 8 -	32	<b>3,50</b>	3,302 3,531
M 2,2	0,45	<b>1,75</b>	1,713 1,838	M 6,0 x	0,75	<b>5,20</b>	5,188 5,378	M 25 x	1,50	<b>23,50</b>	23,376 23,676	Nr. 10 -	24	<b>3,90</b>	3,683 3,937
M 2,5	0,45	<b>2,05</b>	2,013 2,138	M 7,0 x	0,75	<b>6,20</b>	6,188 6,378	M 25 x	2,00	<b>23,00</b>	22,835 23,210	Nr. 12 -	24	<b>4,50</b>	4,343 4,597
M 3	0,50	<b>2,50</b>	2,459 2,599	M 8,0 x	0,50	<b>7,50</b>	7,459 7,599	M 27 x	1,00	<b>26,00</b>	25,917 26,153	1/4 -	20	<b>5,10</b>	4,978 5,258
M 3,5	0,60	<b>2,90</b>	2,850 3,010	M 8,0 x	0,75	<b>7,20</b>	7,188 7,378	M 27 x	1,50	<b>25,50</b>	25,376 25,676	5/16 -	18	<b>6,60</b>	6,401 6,731
M 4	0,70	<b>3,30</b>	3,242 3,422	M 8,0 x	1,00	<b>7,00</b>	6,917 7,153	M 27 x	2,00	<b>25,00</b>	24,835 25,210	3/8 -	16	<b>8,00</b>	7,798 8,153
M 4,5	0,75	<b>3,70</b>	3,688 3,878	M 9,0 x	0,75	<b>8,20</b>	8,188 8,378	M 28 x	1,00	<b>27,00</b>	26,917 27,153	7/16 -	14	<b>9,40</b>	9,144 9,550
M 5	0,80	<b>4,20</b>	4,134 4,334	M 9,0 x	1,00	<b>8,00</b>	7,917 8,153	M 28 x	1,50	<b>26,50</b>	26,376 26,676	1/2 -	13	<b>10,80</b>	10,592 11,024
M 6	1,00	<b>5,00</b>	4,917 5,153	M 10 x	0,75	<b>9,20</b>	9,188 9,378	M 28 x	2,00	<b>26,00</b>	25,835 26,210	9/16 -	12	<b>12,20</b>	11,989 12,446
M 7	1,00	<b>6,00</b>	5,917 6,153	M 10 x	1,00	<b>9,00</b>	8,917 9,153	M 30 x	1,00	<b>29,00</b>	28,917 29,153	5/8 -	11	<b>13,50</b>	13,386 13,868
M 8	1,25	<b>6,80</b>	6,647 6,912	M 10 x	1,25	<b>8,80</b>	8,647 8,912	M 30 x	1,50	<b>28,50</b>	28,376 28,676	3/4 -	10	<b>16,50</b>	16,307 16,840
M 9	1,25	<b>7,80</b>	7,647 7,912	M 11 x	0,75	<b>10,20</b>	10,188 10,378	M 30 x	2,00	<b>28,00</b>	27,835 28,210	7/8 -	9	<b>19,50</b>	19,177 19,761
M 10	1,50	<b>8,50</b>	8,376 8,676	M 11 x	1,00	<b>10,00</b>	9,917 10,153	M 30 x	3,00	<b>27,00</b>	26,752 27,252	1 -	8	<b>22,25</b>	21,971 22,606
M 11	1,50	<b>9,50</b>	9,376 9,676	M 12 x	1,00	<b>11,00</b>	10,917 11,153	M 32 x	1,50	<b>30,50</b>	30,376 30,676	1 1/8 -	7	<b>25,00</b>	24,638 25,349
M 12	1,75	<b>10,20</b>	10,106 10,441	M 12 x	1,25	<b>10,80</b>	10,647 10,912	M 32 x	2,00	<b>30,00</b>	29,835 30,210	1 1/4 -	7	<b>28,00</b>	27,813 28,524
M 14	2,00	<b>12,00</b>	11,835 12,210	M 12 x	1,50	<b>10,50</b>	10,376 10,676	M 33 x	1,50	<b>31,50</b>	31,376 31,676	1 3/8 -	6	<b>30,75</b>	30,353 31,115
M 16	2,00	<b>14,00</b>	13,835 14,210	M 14 x	1,00	<b>13,00</b>	12,917 13,153	M 33 x	2,00	<b>31,00</b>	30,835 31,210	1 1/2 -	6	<b>34,00</b>	33,528 34,290
M 18	2,50	<b>15,50</b>	15,294 15,744	M 14 x	1,25	<b>12,80</b>	12,647 12,912	M 33 x	3,00	<b>30,00</b>	29,752 30,252	1 3/4 -	5	<b>39,50</b>	38,938 39,802
M 20	2,50	<b>17,50</b>	17,294 17,744	M 14 x	1,50	<b>12,50</b>	12,376 12,676	M 35 x	1,50	<b>33,50</b>	33,376 33,676	2 -	4,5	<b>45,00</b>	44,679 45,593
M 22	2,50	<b>19,50</b>	19,294 19,744	M 15 x	1,00	<b>14,00</b>	13,917 14,153	M 36 x	1,50	<b>34,50</b>	34,376 34,676				
M 24	3,00	<b>21,00</b>	20,752 21,252	M 15 x	1,50	<b>13,50</b>	13,376 13,676								
M 27	3,00	<b>24,00</b>	23,752 24,252	M 16 x	1,00	<b>15,00</b>	14,917 15,153								
M 30	3,50	<b>26,50</b>	26,211 26,771	M 16 x	1,25	<b>14,80</b>	14,647 14,912								
M 33	3,50	<b>29,50</b>	29,211 29,771	M 16 x	1,50	<b>14,50</b>	14,376 14,676								
M 36	4,00	<b>32,00</b>	31,670 32,270	M 17 x	1,00	<b>16,00</b>	15,917 16,153								
M 39	4,00	<b>35,00</b>	34,670 35,270	M 17 x	1,50	<b>15,50</b>	15,376 15,676								
M 42	4,50	<b>37,50</b>	37,129 37,799	M 18 x	1,00	<b>17,00</b>	16,917 17,153								
M 45	4,50	<b>40,50</b>	40,129 40,799	M 18 x	1,50	<b>16,50</b>	16,376 16,676								
M 48	5,00	<b>43,00</b>	42,587 43,297	M 20 x	1,00	<b>19,00</b>	18,917 19,153								
M 52	5,00	<b>47,00</b>	46,587 47,297	M 20 x	1,50	<b>18,50</b>	18,376 18,676								
M 56	5,50	<b>50,50</b>	50,046 50,796	M 20 x	2,00	<b>18,00</b>	17,835 18,210								

\* M 1,1 jusqu'à M 1,4 Ø de l'avant - trou filetage écrou 5H

Filetages MJ DIN ISO 5855				Filetages UNJC ISO 3161				Filetages UNJF ISO 3161							
Ø nom.	x pas P	Ø perçage DIN 336	Ø avant-trou filetage écrou 5H*	Ø nom.	filets par pouce	Ø perçage DIN 336	Ø avant-trou filetage écrou 3B	Ø nom.	filets par pouce	Ø perçage DIN 336	Ø avant-trou filetage écrou 3B	Ø nom.	filets par pouce	Ø perçage DIN 336	Ø avant-trou filetage écrou 3B
			min. max.				min. max.				min. max.				min. max.
	mm	mm	mm mm			mm	mm mm			mm	mm mm			mm	mm mm
MJ 3	x 0,50	<b>2,60</b>	2,513 2,653	Nr. 6 -	32	<b>2,85</b>	2,733 2,939	Nr. 6 -	40	<b>3,00</b>	2,888 3,053				
MJ 4	x 0,70	<b>3,40</b>	3,318 3,498	Nr. 8 -	32	<b>3,55</b>	3,393 3,599	Nr. 8 -	36	<b>3,60</b>	3,480 3,663				
MJ 5	x 0,80	<b>4,30</b>	4,221 4,421	Nr. 10 -	24	<b>4,00</b>	3,795 4,064	Nr. 10 -	32	<b>4,20</b>	4,054 4,255				
MJ 6	x 0,50	<b>5,55</b>	5,513 5,625	Nr. 12 -	24	<b>4,60</b>	4,455 4,704	Nr. 12 -	28	<b>4,75</b>	4,602 4,816				
MJ 6	x 0,75	<b>5,35</b>	5,269 5,419	1/4 -	20	<b>5,30</b>	5,113 5,387	1/4 -	28	<b>5,60</b>	5,466 5,662				
MJ 6	x 1,00	<b>5,10</b>	5,026 5,216	5/16 -	18	<b>6,75</b>	6,563 6,833	5/16 -	24	<b>7,00</b>	6,906 7,109				
MJ 8	x 0,50	<b>7,55</b>	7,513 7,625	3/8 -	16	<b>8,20</b>	7,978 8,255	3/8 -	24	<b>8,60</b>	8,494 8,679				
MJ 8	x 0,75	<b>7,35</b>	7,269 7,419	7/16 -	14	<b>9,60</b>	9,346 9,639	7/16 -	20	<b>10,00</b>	9,876 10,084				
MJ 8	x 1,00	<b>7,10</b>	7,026 7,216	1/2 -	13	<b>11,00</b>	10,798 11,095	1/2 -	20	<b>11,60</b>	11,463 11,661				
MJ 8	x 1,25	<b>6,90</b>	6,782 6,994	9/16 -	12	<b>12,40</b>	12,228 12,482	9/16 -	18	<b>13,00</b>	12,913 13,122				
MJ 10	x 1,00	<b>9,10</b>	9,026 9,216	5/8 -	11	<b>13,80</b>	13,627 13,904	5/8 -	18	<b>14,60</b>	14,501 14,702				
MJ 10	x 1,25	<b>8,90</b>	8,782 8,994												
MJ 10	x 1,50	<b>8,60</b>	8,539 8,775												
MJ 12	x 1,75	<b>10,40</b>	10,295 10,560												
MJ 16	x 2,00	<b>14,20</b>	14,051 14,351												

\* MJ 3 x 0,50 jusqu'à MJ 5 x 0,80 Ø de l'avant-trou filetage écrou 6H



Filetages UNF ASME B1.1					Filetages Whitworth BS84					Filetages Whitworth BSP (selon DIN-ISO 228-1)					Filetages électriques Pg selon DIN 40430				
Ø nom.	filets par pouce	Ø perçage DIN 336 mm	Ø avant-trou filetage écrou 2B		Ø nom.	filets par pouce	Ø perçage DIN 336 mm	Ø avant-trou filetage écrou 2B		Ø nom.	filets par pouce	Ø perçage DIN 336 mm	Ø avant-trou filetage écrou		Ø nom.	filets par pouce	Ø perçage mm	Ø avant-trou filetage écrou	
			min. mm	max. mm				min. mm	max. mm				min. mm	max. mm				min. mm	max. mm
Nr. 1 - 72	1,55	1,473	1,610		W 1/16	60	1,20	1,045	1,230	G 1/16	28	6,80	6,561	6,843	Pg 7	20	11,40	11,280	11,430
Nr. 2 - 64	1,85	1,755	1,910		W 3/32	48	1,80	1,704	1,912	G 1/8	28	8,80	8,566	8,848	Pg 9	18	14,00	13,860	14,010
Nr. 3 - 56	2,15	2,024	2,197		W 1/8	40	2,50	2,362	2,591	G 1/4	19	11,80	11,445	11,890	Pg 11	18	17,30	17,260	17,410
Nr. 4 - 48	2,40	2,271	2,459		W 5/32	32	3,20	2,952	3,214	G 3/8	19	15,25	14,950	15,395	Pg 13,5	18	19,00	19,060	19,210
Nr. 5 - 44	2,70	2,550	2,741		W 3/16	24	3,60	3,407	3,745	G 1/2	14	19,00	18,631	19,172	Pg 16	18	21,30	21,160	21,310
Nr. 6 - 40	2,95	2,819	3,023		W 7/32	24	4,50	4,201	4,539	G 5/8	14	21,00	20,587	21,128	Pg 21	16	26,90	26,780	27,030
Nr. 8 - 36	3,50	3,404	3,607		W 1/4	20	5,10	4,724	5,156	G 3/4	14	24,50	24,117	24,658	Pg 29	16	35,50	35,480	35,730
Nr. 10 - 32	4,10	3,962	4,166		W 5/16	18	6,50	6,130	6,590	G 7/8	14	28,25	27,877	28,418	Pg 36	16	45,50	45,480	45,730
Nr. 12 - 28	4,60	4,496	4,724		W 3/8	16	7,90	7,492	7,987	G 1	11	30,75	30,291	30,931	Pg 42	16	52,50	52,480	52,730
1/4 - 28	5,50	5,359	5,588		W 7/16	14	9,20	8,789	9,330	G 1 1/8	11	35,50	34,939	35,579	Pg 48	16	57,80	57,780	58,030
5/16 - 24	6,90	6,782	7,036		W 1/2	12	10,50	9,989	10,591	G 1 1/4	11	39,50	38,952	39,592					
3/8 - 24	8,50	8,382	8,636		W 9/16	12	12,00	11,577	12,179	G 1 1/2	11	45,25	44,845	45,485					
7/16 - 20	9,90	9,728	10,033		W 5/8	11	13,50	12,918	13,558	G 1 3/4	11	51,00	50,788	51,428					
1/2 - 20	11,50	11,328	11,608		W 3/4	10	16,25	15,797	16,483	G 2	11	57,00	56,656	57,296					
9/16 - 18	12,90	12,751	13,081		W 7/8	9	19,25	18,611	19,353										
5/8 - 18	14,50	14,351	14,681		W 1	8	22,00	21,334	22,147										
3/4 - 16	17,50	17,323	17,678		W 1 1/8	7	24,50	23,928	24,832										
7/8 - 14	20,40	20,269	20,650		W 1 1/4	7	27,75	27,103	28,007										
1 - 12	23,25	23,114	23,571		W 1 3/8	6	30,50	29,504	30,528										
1 1/8 - 12	26,50	26,289	26,746		W 1 1/2	6	33,50	32,679	33,703										
1 1/4 - 12	29,50	29,464	29,921		W 1 5/8	5	35,50	34,769	35,963										
1 3/8 - 12	32,75	32,639	33,096		W 1 3/4	5	39,00	37,944	39,138										
1 1/2 - 12	36,00	35,814	36,271		W 2	4,5	44,50	43,571	44,877										

Filetages coniques NPT ANSI B 2.1 cône 1:16									
Version A (à proscrire)		Version B		Ø nom.	filets par pouce	Ø perçage cylindr. (A) d <sub>1</sub>	Ø perçage conique (B) D <sub>1</sub>	long. de filet. ET mm	prof. perç. BT (min) mm
				1/16	- 27	6,15	6,39	9,29	10,7
				1/8	- 27	8,40	8,74	9,32	10,8
				1/4	- 18	11,10	11,36	13,52	15,6
				3/8	- 18	14,30	14,80	13,83	16,0
				1/2	- 14	17,90	18,32	18,07	20,8
				3/4	- 14	23,30	23,67	18,55	21,3
				1	- 11,5	29,00	29,69	22,29	25,6
				1 1/4	- 11,5	37,70	38,45	22,80	26,1
				1 1/2	- 11,5	43,70	44,52	22,80	26,1
				2	- 11,5	55,60	56,56	23,20	26,5
				2 1/2	- 8	66,30	67,62	31,75	36,3
				3	- 8	82,30	83,52	33,74	38,5

Filetages EG métr. / métr.fins (EG M 14 x 1,25) pour filets rapportés selon DIN 8140				Filetages EG UNC ( UNC-STI ) pour filets rapportés ASME B 18.29.1				Filetages EG UNF ( UNF-STI ) pour filets rapportés ASME B 18.29.1						
Ø nom.	x pas P mm	Ø perçage DIN 336 mm	Ø avant-trou filetage écrou		Ø nom.	filets par pouce	Ø perçage mm	Ø avant-trou filetage écrou		Ø nom.	filets par pouce	Ø perçage mm	Ø avant-trou filetage écrou	
			min. mm	max. mm				min. mm	max. mm				min. mm	max. mm
EG M 4 x 0,70		4,20	4,152	4,292	EG Nr. 6 - 32	3,80	3,678	3,879		EG Nr. 6 - 40	3,70	3,644	3,818	
EG M 5 x 0,80		5,25	5,174	5,334	EG Nr. 8 - 32	4,40	4,338	4,524		EG Nr. 8 - 36	4,40	4,321	4,498	
EG M 6 x 1,00		6,30	6,217	6,407	EG Nr. 10 - 24	5,20	5,055	5,283		EG Nr. 10 - 32	5,10	4,999	5,184	
EG M 8 x 1,25		8,40	8,271	8,483	EG Nr. 12 - 24	5,80	5,715	5,944		EG Nr. 12 - 28	5,70	5,682	5,809	
EG M10 x 1,50		10,50	10,324	10,560	EG 1/4 - 20	6,70	6,624	6,868		EG 1/4 - 28	6,60	6,546	6,721	
EG M12 x 1,75		12,50	12,379	12,644	EG 5/16 - 18	8,40	8,242	8,489		EG 5/16 - 24	8,25	8,166	8,352	
EG M14 x 1,25		14,40	14,271	14,483	EG 3/8 - 16	10,00	9,868	10,127		EG 3/8 - 24	9,80	9,754	9,931	
EG M16 x 2,00		16,50	16,433	16,733	EG 7/16 - 14	11,60	11,506	11,783		EG 7/16 - 20	11,50	11,389	11,585	
					EG 1/2 - 13	13,30	13,122	13,393		EG 1/2 - 20	13,10	12,974	13,172	
					EG 9/16 - 12	14,90	14,747	15,032		EG 9/16 - 18	14,70	14,592	14,798	
					EG 5/8 - 11	16,50	16,375	16,673		EG 5/8 - 18	16,25	16,180	16,386	

Caractéristiques techniques



### Diamètres des perçages avant le taraudage par déformation

Filetages métriques ISO DIN 13						
Ø nom.	pas P	Ø per- çage	Ø perçage		Ø avant-trou filetage écrou 7H*	
			min. mm	max. mm	min. mm	max. mm
mm						
M 2	0,40	<b>1,85</b>	1,84	1,88	1,567	1,679
M 2,2	0,45	<b>2,00</b>	2,01	2,05	1,713	1,838
M 2,5	0,45	<b>2,30</b>	2,28	2,32	2,013	2,138
M 3	0,50	<b>2,80</b>	2,78	2,85	2,459	2,639
M 3,5	0,60	<b>3,25</b>	3,23	3,30	2,850	3,050
M 4	0,70	<b>4,70</b>	3,68	3,76	3,242	3,466
M 4,5	0,75	<b>3,20</b>				
M 5	0,80	<b>4,65</b>	4,62	4,71	4,134	4,384
M 6	1,00	<b>5,55</b>	5,52	5,62	4,917	5,217
M 7	1,00	<b>6,55</b>	6,52	6,62	5,917	6,217
M 8	1,25	<b>7,40</b>	7,36	7,47	6,647	6,982
M 9	1,25	<b>8,40</b>	8,36	8,47	7,647	7,982
M 10	1,50	<b>9,30</b>	9,26	9,38	8,376	8,751
M 11	1,50	<b>10,30</b>	10,26	10,38	9,376	9,751
M 12	1,75	<b>11,20</b>	11,15	11,29	10,106	10,531
M 14	2,00	<b>13,10</b>	13,05	13,20	11,835	12,310
M 16	2,00	<b>15,10</b>	15,05	15,20	13,835	14,310
M 18	2,50	<b>16,90</b>	16,83	17,02	15,294	15,854
M 20	2,50	<b>18,90</b>	18,83	19,02	17,294	17,854
M 22	2,50	<b>20,90</b>	20,83	21,02	19,294	19,854
M 24	3,00	<b>22,70</b>	22,62	22,80	20,752	21,382
M 27	3,00	<b>25,70</b>	25,62	25,80	23,752	24,382
M 30	3,50	<b>28,50</b>	28,40	28,60	26,211	26,921
M 33	3,50	<b>31,50</b>	31,40	31,60	29,211	29,921
M 36	4,00	<b>34,30</b>	34,17	34,40	31,670	32,420
M 39	4,00	<b>37,30</b>	37,17	37,40	34,670	35,420
M 42	4,50	<b>40,10</b>	39,95	40,20	37,129	37,979

Filetages métriques ISO fins DIN 13															
Ø nom.	x	pas P	Ø per- çage	Ø perçage		Ø avant-trou filetage écrou 7H*		Ø nom.	x	pas P	Ø per- çage	Ø perçage		Ø avant-trou filetage écrou 7H*	
				min. mm	max. mm	min. mm	max. mm					min. mm	max. mm		
mm															
M 2,5	x	0,35	<b>2,35</b>	2,35	2,38	2,121	2,221	M 17	x	1,50	<b>16,30</b>	16,26	16,38	15,376	15,751
M 3	x	0,35	<b>2,85</b>	2,85	2,88	2,621	2,721	M 18	x	1,00	<b>17,55</b>	17,52	17,62	16,917	17,217
M 4	x	0,35	<b>3,85</b>	3,85	3,88	3,621	3,721	M 18	x	1,50	<b>17,30</b>	17,26	17,38	16,376	16,751
M 4	x	0,50	<b>3,80</b>	3,78	3,83	3,459	3,639	M 18	x	2,00	<b>17,10</b>	17,05	17,20	15,835	16,310
M 5	x	0,50	<b>4,80</b>	4,78	4,83	4,459	4,639	M 20	x	1,00	<b>19,55</b>	19,52	19,62	18,917	19,217
M 5,5	x	0,50	<b>5,30</b>	5,28	5,33	4,959	5,139	M 20	x	1,50	<b>19,30</b>	19,26	19,38	18,376	19,751
M 6	x	0,75	<b>5,65</b>	5,62	5,70	5,188	5,424	M 24	x	1,00	<b>23,55</b>	23,52	23,62	22,917	23,217
M 7	x	0,75	<b>6,65</b>	6,62	6,70	6,188	6,424	M 24	x	1,50	<b>23,30</b>	23,26	23,38	22,376	22,751
M 8	x	0,75	<b>7,65</b>	7,62	7,70	7,188	7,424	M 24	x	2,00	<b>23,10</b>	23,05	23,20	21,835	22,310
M 8	x	1,00	<b>7,55</b>	7,52	7,62	6,917	7,217	M 27	x	1,50	<b>26,30</b>	26,26	26,38	25,376	25,751
M 9	x	0,75	<b>8,65</b>	8,62	8,70	8,188	8,424	M 30	x	1,50	<b>29,30</b>	29,26	29,38	28,376	28,751
M 9	x	1,00	<b>8,55</b>	8,52	8,62	7,917	8,217	M 33	x	1,50	<b>32,30</b>	32,26	32,38	31,376	31,751
M 10	x	0,75	<b>9,65</b>	9,62	9,70	9,188	9,424	M 36	x	1,50	<b>35,30</b>	35,26	35,38	34,376	34,751
M 10	x	1,00	<b>9,55</b>	9,52	9,62	8,917	9,217	M 39	x	1,50	<b>38,30</b>	38,26	38,38	37,376	37,751
M 10	x	1,25	<b>9,40</b>	9,36	9,47	8,647	8,982	M 42	x	1,50	<b>41,30</b>	41,26	41,38	42,376	42,751
M 11	x	0,75	<b>10,65</b>	10,62	10,70	10,188	10,424								
M 11	x	1,00	<b>10,55</b>	10,52	10,62	9,917	10,217								
M 12	x	1,00	<b>11,55</b>	11,52	11,62	10,917	11,217								
M 12	x	1,25	<b>11,40</b>	11,36	11,47	10,647	10,982								
M 12	x	1,50	<b>11,30</b>	11,26	11,38	10,376	10,751								
M 14	x	1,00	<b>13,55</b>	13,52	13,62	12,917	13,217								
M 14	x	1,25	<b>13,40</b>	13,36	13,47	12,647	12,982								
M 14	x	1,50	<b>13,30</b>	13,26	13,38	12,376	12,751								
M 15	x	1,00	<b>14,55</b>	14,52	14,62	13,917	14,217								
M 15	x	1,50	<b>14,30</b>	14,26	14,38	13,376	13,751								
M 16	x	1,00	<b>15,55</b>	15,52	15,62	14,917	15,217								
M 16	x	1,50	<b>15,30</b>	15,26	15,38	14,376	14,751								
M 17	x	1,00	<b>16,55</b>	16,52	16,62	15,917	16,217								

\* M 2 jusqu'à M 2,5 Ø de l'avant - trou filetage écrou 6H

\* M 2,5 x 0,35 jusqu'à M 4 x 0,35 Ø de l'avant-trou filetage écrou 6H

#### Classe de tol. du dia. de perçage avant le taraudage par déformation ( selon la Norme DIN 13, parag. 50 )

En taraudage par refoulement, il n'est pas nécessaire de respecter la classe 6 H ; la classe de tolérance 7 H suffit. La valeur du recouvrement des flancs du filetage de la vis et des flancs du filetage de l'écrou doit être au moins égale à la valeur de 0,32 x le pas du filetage. En outre, les filetages réalisés par refoulement de la matière sont plus résistants aux efforts de traction que ceux obtenus par enlèvement de copeaux puisque les tissus fibreux sont comprimés au lieu d'être interrompus.

Filetages UNC ASME B1.1						
Ø nom.	filets par pouce	Ø per- çage	Ø perçage		Ø avant-trou filetage écrou 2B	
			min. mm	max. mm	min. mm	max. mm
Nr. 1	- 64	<b>1,68</b>	1,67	1,70	1,425	1,580
Nr. 2	- 56	<b>1,98</b>	1,97	2,01	1,694	1,872
Nr. 3	- 48	<b>2,28</b>	2,27	2,32	1,941	2,146
Nr. 4	- 40	<b>2,55</b>	2,54	2,59	2,157	2,385
Nr. 5	- 40	<b>2,90</b>	2,89	2,94	2,487	2,698
Nr. 6	- 32	<b>3,15</b>	3,14	3,19	2,642	2,896
Nr. 8	- 32	<b>3,80</b>	3,78	3,82	3,302	3,531
Nr. 10	- 24	<b>4,35</b>	4,33	4,39	3,683	3,937
Nr. 12	- 24	<b>5,00</b>	4,97	5,03	4,343	4,597
1/4	- 20	<b>5,75</b>	5,72	5,80	4,978	5,258
5/16	- 18	<b>7,30</b>	7,26	7,37	6,401	6,731
3/8	- 16	<b>8,80</b>	8,77	8,88	7,798	8,153
7/16	- 14	<b>10,30</b>	10,27	10,37	9,144	9,550
1/2	- 13	<b>11,80</b>	11,77	11,88	10,592	11,024
9/16	- 12	<b>13,30</b>	13,28	13,39	11,989	12,446
5/8	- 11	<b>14,80</b>	14,78	14,90	13,386	13,868
3/4	- 10	<b>17,90</b>	17,85	17,97	16,307	16,840
7/8	- 9	<b>21,00</b>	20,95	21,10	19,177	19,761
1	- 8	<b>24,00</b>	23,95	24,12	21,971	22,606

Filetages UNF ASME B1.1						
Ø nom.	filets par pouce	Ø per- çage	Ø perçage		Ø avant-trou filetage écrou 2B	
			min. mm	max. mm	min. mm	max. mm
Nr. 1	- 72	<b>1,70</b>	1,69	1,72	1,473	1,610
Nr. 2	- 64	<b>2,00</b>	1,99	2,03	1,755	1,910
Nr. 3	- 56	<b>2,30</b>	2,29	2,34	2,024	2,197
Nr. 4	- 48	<b>2,60</b>	2,59	2,63	2,271	2,459
Nr. 5	- 44	<b>2,90</b>	2,89	2,93	2,550	2,741
Nr. 6	- 40	<b>3,20</b>	3,19	3,24	2,819	3,023
Nr. 8	- 36	<b>3,85</b>	3,83	3,88	3,404	3,607
Nr. 10	- 32	<b>4,45</b>	4,43	4,49	3,962	4,166
Nr. 12	- 28	<b>5,10</b>	5,07	5,13	4,496	4,724
1/4	- 28	<b>5,95</b>	5,92	5,99	5,359	5,588
5/16	- 24	<b>7,45</b>	7,42	7,50	6,782	7,036
3/8	- 24	<b>9,05</b>	9,02	9,10	8,838	9,163
7/16	- 20	<b>10,55</b>	10,48	10,58	9,728	10,033
1/2	- 20	<b>12,10</b>	12,08	12,18	11,328	11,608
9/16	- 18	<b>13,65</b>	13,61	13,72	12,751	13,081
5/8	- 18	<b>15,25</b>	15,21	15,32	14,351	14,681
3/4	- 16	<b>18,35</b>	18,30	18,41	17,323	17,678
7/8	- 14	<b>21,40</b>	21,35	21,49	20,269	20,650
1	- 12	<b>24,45</b>	24,40	24,54	23,114	23,571

Filetages Whitworth BSP DIN EN ISO 228-1						
Ø nom.	filets par pouce	Ø per- çage	Ø perçage		Ø avant-trou filetage écrou 2B	
			min. mm	max. mm	min. mm	max. mm
G 1/16	28	<b>7,30</b>	7,28	7,35	6,561	6,843
G 1/8	28	<b>9,30</b>	9,28	9,35	8,566	8,848
G 1/4	19	<b>12,50</b>	12,48	12,55	11,445	11,890
G 3/8	19	<b>16,00</b>	15,98	16,05	14,950	15,395
G 1/2	14	<b>20,00</b>	19,98	20,12	18,631	19,172
G 5/8	14	<b>22,00</b>	21,98	22,12	20,587	21,128
G 3/4	14	<b>25,50</b>	25,48	25,62	24,117	24,658
G 7/8	14	<b>29,25</b>	29,23	29,37	27,877	28,418
G 1	11	<b>32,00</b>	31,98	32,15	30,291	30,931
G 1 1/4	11	<b>40,75</b>	40,70	40,85	38,952	39,592



## De 1/64 à 11 63/64

Dimension (Pouce)	mm	Partie de Pouce (Décimal)	Dimension (Pouce)	mm	Partie de Pouce (Décimal)	Dimension (Pouce)	mm	Partie de Pouce (Décimal)	Dimension (Pouce)	mm	Partie de Pouce (Décimal)
-	0,10	0,0039	51	1,70	0,0670	4	5,31	0,2090	-	14,00	0,5512
97	0,15	0,0059		1,75	0,0689	3	5,41	0,213	9/16	14,29	0,5625
96	0,16	0,0063	50	1,78	0,0700		5,50	0,2165		14,50	0,5709
95	0,17	0,0067		1,80	0,0709	7/32	5,56	0,2188	37/64	14,68	0,5781
94	0,18	0,0071	49	1,85	0,0730	2	5,61	0,221	-	15,00	0,5906
93	0,19	0,0075		1,90	0,0748	1	5,79	0,228	19/32	15,08	0,5938
92	0,20	0,0079	48	1,93	0,0760	A	5,94	0,234	39/64	15,48	0,6094
91	0,21	0,0083		1,95	0,0768	15/64	5,95	0,2344		15,50	0,6102
90	0,22	0,0087	5/64	1,98	0,0781	-	6,00	0,2362	5/8	15,88	0,625
89	0,23	0,0091	47	1,99	0,0785	B	6,05	0,238	-	16,00	0,6299
88	0,24	0,0095	-	2,00	0,0787	C	6,15	0,242	41/64	16,27	0,6406
-	0,25	0,0098		2,05	0,0807	D	6,25	0,246		16,50	0,6496
87	0,25	0,0100	46	2,06	0,0810	1/4	6,35	0,25	21/32	16,67	0,6562
	0,26	0,0102	45	2,08	0,0820	E	6,35	0,25	-	17,00	0,6693
86	0,27	0,0105		2,15	0,0846		6,50	0,2559	43/64	17,07	0,6719
	0,27	0,0106	44	2,18	0,0860	F	6,53	0,257	11/16	17,46	0,6875
85	0,28	0,0110	43	2,26	0,0890	G	6,63	0,261		17,50	0,689
	0,29	0,0114	42	2,37	0,0935	17/64	6,75	0,2656	45/64	17,86	0,7031
84	0,29	0,0115	3/32	2,38	0,0938		6,75	0,2657	-	18,00	0,7087
-	0,30	0,0118	41	2,44	0,0960	H	6,76	0,266	23/32	18,26	0,7188
83	0,30	0,0120	40	2,50	0,0980	I	6,91	0,272		18,50	0,7283
82	0,32	0,0125	39	2,53	0,0995	-	7,00	0,2756	47/64	18,65	0,7344
	0,32	0,0126	38	2,58	0,1015	J	7,04	0,2772	-	19,00	0,748
81	0,33	0,0130	37	2,64	0,1040	K	7,14	0,281	3/4	19,05	0,75
80	0,34	0,0135	36	2,71	0,1065	9/32	7,14	0,2812	49/64	19,45	0,7656
79	0,37	0,0145	7/64	2,78	0,1094	L	7,37	0,29		19,50	0,7677
1/64	0,40	0,0156	35	2,79	0,11	M	7,49	0,2949	25/32	19,84	0,7812
78	0,41	0,0160	34	2,82	0,111		7,50	0,2953	-	20,00	0,7874
77	0,46	0,0180	33	2,87	0,113	19/64	7,54	0,2969	51/64	20,24	0,7969
-	0,50	0,0197		2,90	0,1142	N	7,67	0,3020		20,50	0,8071
76	0,51	0,0200	32	2,95	0,116		7,75	0,3051	13/16	20,64	0,8125
75	0,53	0,0210	-	3,00	0,1181	5/16	7,94	0,3125	-	21,00	0,8268
74	0,57	0,0225	31	3,05	0,12	-	8,00	0,315	53/64	21,03	0,8281
-	0,60	0,0236	1/8	3,18	0,125	O	8,03	0,316	27/32	21,43	0,8438
73	0,61	0,0240	30	3,26	0,1285	P	8,20	0,323		21,50	0,8465
72	0,64	0,0250		3,30	0,1299	21/64	8,33	0,3281	55/64	21,84	0,8594
71	0,66	0,0260	29	3,45	0,136	Q	8,43	0,332	-	22,00	0,8661
-	0,70	0,0276		3,50	0,1378		8,50	0,3346	7/8	22,23	0,875
70	0,71	0,0280	28	3,57	0,1405	R	8,61	0,339		22,50	0,8858
69	0,74	0,0292	9/64	3,57	0,1406	11/32	8,73	0,3438	57/64	22,62	0,8906
-	0,75	0,0295	27	3,66	0,144		8,75	0,3445	-	23,00	0,9055
68	0,79	0,0310	26	3,73	0,147	S	8,84	0,348	29/32	23,02	0,9062
1/32	0,79	0,0313		3,75	0,1476	-	9,00	0,3543	59/64	23,42	0,9219
-	0,80	0,0315	25	3,80	0,1495	T	9,09	0,358		23,50	0,9252
67	0,81	0,0320	24	3,86	0,152	23/64	9,13	0,3594	15/16	23,81	0,9375
66	0,84	0,0330	23	3,91	0,154	U	9,35	0,368	-	24,00	0,9449
65	0,89	0,0350	5/32	3,97	0,1562		9,50	0,374	61/64	24,21	0,9531
-	0,90	0,0354	22	3,99	0,157	3/8	9,53	0,375		24,50	0,9646
64	0,91	0,0360	-	4,00	0,1575	V	9,56	0,377	31/32	24,61	0,9688
63	0,94	0,0370	21	4,04	0,159	W	9,80	0,386	-	25,00	0,9843
62	0,97	0,0380	20	4,09	0,161	25/64	9,92	0,3906	63/64	25,00	0,9844
61	0,99	0,0390		4,20	0,1654	-	10,00	0,3937	1	25,40	1,00
-	1,00	0,0394	19	4,22	0,166	X	10,08	0,397			
60	1,02	0,0400	18	4,31	0,1695	Y	10,26	0,4040			
59	1,04	0,0410	11/64	4,37	0,1719	13/32	10,32	0,4062			
58	1,07	0,0420	17	4,39	0,173	Z	10,49	0,413			
57	1,09	0,0430	16	4,50	0,177		10,50	0,4134			
56	1,18	0,0465	15	4,57	0,18	27/64	10,72	0,4219			
3/64	1,19	0,0469	14	4,62	0,182	-	11,00	0,4331			
	1,20	0,0472	13	4,70	0,185	7/16	11,11	0,4375			
	1,25	0,0492	3/16	4,76	0,1875		11,50	0,4528			
	1,30	0,0512	12	4,80	0,189	29/64	11,51	0,4531			
55	1,32	0,0520	11	4,85	0,191	15/32	11,91	0,4688			
54	1,40	0,0550	10	4,91	0,1935	-	12,00	0,4724			
	1,45	0,0571	9	4,98	0,196	31/64	12,30	0,4844			
	1,50	0,0591	-	5,00	0,1968		12,50	0,4921			
53	1,51	0,0595	8	5,05	0,199	1/2	12,70	0,50			
	1,55	0,0610	7	5,11	0,2010	-	13,00	0,5118			
1/16	1,59	0,0625	13/64	5,16	0,2031	33/64	13,10	0,5156			
	1,60	0,0630	6	5,18	0,2040	17/32	13,49	0,5312			
52	1,61	0,0635	5	5,22	0,2055		13,50	0,5315			
	1,65	0,0650		5,25	0,2067	35/64	13,89	0,5469			

1 pouce = 25,400 0 mm, voir DIN 4890 (Edition 2 / 75)



# Les nouvelles désignations des matières (choix)

N° de mat.	Abréviations anciennes	Abréviations nouvelles	N° de mat.	Abréviations anciennes	Abréviations nouvelles	N° de mat.	Abréviations anciennes	Abréviations nouvelles	N° de mat.	Abréviations anciennes	Abréviations nouvelles
0.6010	GG10	EN-GJL-100	1.0728	60 S 20	-	1.4436	X5CrNiMo 17 133	X3CrNiMo17-13-3	1.7043	-	38Cr4
0.6020	GG20	EN-GJL-200	1.0736	9 SMn 36	11SMn37	1.4438	X2CrNiMo 18 16 4	X2CrNiMo18-15-4	1.7147	20 MnCr 5	20MnCr5
0.6025	GG25	EN-GJL-250	1.0737	9 SMnPb 36	11SMnPb37	1.4460	X4CrNiMo 27 5 2	X3CrNiMoN27-5-2	1.7149	20 MnCrS 5	20MnCrS5
0.6035	GG35	EN-GJL-350	1.0756	35 SPb 20	35SPb20	1.4462	X2CrNiMoN225 3	X2CrNiMoN22-5-3	1.7176	55 Cr 3	55Cr3
0.7050	GGG50	EN-GJS-500-7	1.0757	45 SPb 20	46SPb20	1.4509	X6CrTiNb 18	X2CrTiNb18	1.7182	27 MnCrB 5 2	27MnCrB5-2
0.7070	GGG70	EN-GJS-700-2	1.0760	-	38SMn26	1.4510	X6CrTi 17	X3CrTi17	1.7185	33 MnCrB 5 2	33MnCrB5-2
0.8035	GTW35	EN-GJMW-350-4	1.0761	-	38SMnPb26	1.4511	X6CrNb 17	X3CrNb17	1.7189	39 MnCrB 6 2	39MnCrB6-2
0.8155	GTS55	EN-GJMB-550-4	1.0762	-	44SMn28	1.4512	X6CrTi 12	X2CrTi12	1.7213	25 CrMoS 4	25CrMoS4
0.8170	GTS70	EN-GJMB-700-2	1.0763	-	44SMnPb28	1.4520	X1CrTi 15	X2CrTi17	1.7218	25 CrMo 4	25CrMo4
1.0022	St 01Z	-	1.0873	-	DC06 [Fe P06]	1.4521	X2CrMoTi 18 2	X2CrMoTi18-2	1.7219	-	26CrMo4-2
1.0035	St 33	S185	1.1103	ESStE 255	S255NL1	1.4522	X2CrMoNb 18 2	X2CrMoNb18-2	1.7220	34 CrMo 4	34CrMo4
1.0039	St 37 -2	S235JRH	1.1105	ESStE 315	S315NL1	1.4532	X7CrNiMoAl 15 7	X8CrNiMoAl15-7-2	1.7225	20 CrMo 4	42CrMo4
1.0044	St 44 -2	S275JR	1.1121	Ck 10	C10E	1.4541	X6CrNiTi18 10	X6CrNiTi18-10	1.7226	34 CrMoS 4	34CrMoS4
1.0050	St 50 -2	E295	1.1141	Ck15	C15E	1.4542	X5CrNiCuNb 17 4	X5CrNiCuNb16-4	1.7227	42 CrMoS 4	42CrMoS4
1.0060	St 60 -2	E335	1.1151	Ck 22	C22E	1.4550	X6CrNiNb 18 10	X6CrNiNb18-10	1.7228	50 CrMo 4	50CrMo4
1.0070	St 70 -2	E360	1.1158	Ck 25	C25E	1.4558	X2NiCrAlTi 32 20	X2NiCrAlTi32-20	1.7264	20 CrMo 5	20CrMo5
1.0114	St 37 -3U	S235J0	1.1170	28 Mn 6	28Mn6	1.4567	X3CrNiCu 18 9 X	X3CrNiCu18-9-4	1.7321	20 MoCr 4	20MoCr4
1.0226	St 02Z	DX51D	1.1178	Ck 30	C30E	1.4568	X7CrNiAl 17 7	X7CrNiAl17-7	1.7323	20 MoCrS 4	20MoCrS4
1.0242	StE 250 -2Z	S250GD	1.1181	Ck 35	C35E	1.4571	-	X6CrNiMoTi17-12-2	1.7333	22 CrMoS 3 5	22CrMoS3-5
1.0244	StE 280 -2Z	S280GD	1.1186	Ck 40	C40E	1.4577	X3CrNiMoTi 25 25	X3CrNiMoTi25-25	1.7335	13 CrMo 4 4	13CrMo4-5
1.0250	StE 320 -3Z	S320GD	1.1191	Ck 45	C45E	1.4592	X1CrMoTi 29 4	X2CrMoTi29-4	1.7362	12 CrMo 19 5	12CrMo19-5
1.0301	C 10	-	1.1203	Ck 55	C55E	1.4713	X10CrAl 7	X10CrAlSi7	1.7380	10 CrMo 9 10	10CrMo9-10
1.0302	C 10 Pb	-	1.1206	Ck 50	C50E	1.4724	X10CrAl 13	X10CrAlSi13	1.7383	-	11CrMo9-10
1.0306	St 06 Z	DX54D	1.1221	Ck 60	C60E	1.4742	X10CrAl 18	X10CrAlSi18	1.7388	-	20CrMoV13-5-5
1.0312	St 15	DC05 [Fe P05]	1.1241	Cm 50	C50R	1.4762	X10CrAl 24	X10CrAlSi25	1.8159	50 CrV 4	51CrV4
1.0319	RRStE 210.7	L210GA	1.1750	C 75 W	C75W	1.4821	X20CrNiSi 25 4	X20CrNiSi25-4	1.8504	34 CrAl 6	34CrAl6
1.0322	-	DX56D	1.2067	102 Cr 6	102Cr6	1.4828	X15CrNiSi 20 12	X15CrNiSi20-12	1.8519	31 CrMoV 9	31CrMoV9
1.0330	St 12 [St 2]	DC01 [Fe P01]	1.2080	-	X210Cr12	1.4833	X7CrNi 23 14	X7CrNi23-12	1.8550	34 CrAlNi 7	34CrAlNi7
1.0333	USt 13	-	1.2083	-	X42Cr13	1.4841	X15CrNiSi 25 20	X15CrNiSi25-21	1.8807	13 MnNiMoV 5 4	13MnNiMoV5-4
1.0338	St 14 [St 4]	DC04 [Fe P04]	1.2419	-	105WCr6	1.4845	X12CrNi 25 21	X12CrNi25-21	1.8812	18 MnMoV 5 2	18MnMoV5-2
1.0345	H I	P235GH	1.2767	-	X45NiCrMo4	1.4864	X12NiCrSi 36 16	X12NiCrSi35-16	1.8815	18 MnMoV 6 3	18MnMoV6-3
1.0347	RRSt 13 [RRSt 3]	DC03 [Fe P03]	1.3243	S 6-5-2-5	S 6-5-2-5	1.4878	X12CrNiTi18 9	X12CrNiTi18-10	1.8821	34 CrAlNi 7	34CrAlNi7
1.0348	UH I	P195GH	1.3343	S 6-5-2	S 6-5-2	1.4903	-	X10CrMoVNb9-1	1.8824	StE 420 TM	P420M
1.0350	St 03Z	DX52D	1.3344	S 6-5-3	S 6-5-3	1.5026	55 Si 7	55Si7	1.8826	StE 460 TM	P460M
1.0355	St 05Z	DX53D	1.4000	X6Cr 13	X6Cr13	1.5131	50 MnSi 4	50MnSi4	1.8828	ESTE 420 TM	P420ML2
1.0356	TTSt 35 N	P215NL	1.4002	X6CrAl 13	X6CrAl13	1.5415	15 Mo 3	16Mo3	1.8831	ESTE 460 TM	P460ML2
1.0358	St 05 Z	-	1.4003	X2Cr 11	X2CrNi12	1.5530	21 MnB 5	20MnB5	1.8832	TStE 355 TM	P355ML1
1.0401	C 15	-	1.4005	-	X12CrS13	1.5531	30 MnB 5	30MnB5	1.8835	TStE 420 TM	P420ML1
1.0402	C 22	C22	1.4006	X10Cr 13	X12Cr13	1.5532	38 MnB 5	38MnB5	1.8837	TStE 460 TM	P460ML1
1.0403	C 15 Pb	-	1.4016	X6Cr 17	X6Cr17	1.5637	10 Ni 14	12Ni14	1.8879	StE ...	P690Q
1.0406	C 25	C25	1.4021	X20Cr 13	X20Cr13	1.5662	-	X11CrMo5+I	1.8880	WStE ...	P690QH
1.0419	St 52.0	L355	1.4028	X30Cr 13	X30Cr13	1.5680	-	X12Ni5	1.8881	TStE ...	P690QL1
1.0424	St 45.8 (ersetzt)	P265	1.4031	X38Cr 13	X38Cr13	1.5710	36 NiCr 6	36NiCr6	1.8882	10 MnTi 3	10MnTi3
1.0424	St 42.8 (ersetzt)	P265	1.4034	X46Cr 13	X46Cr13	1.5715	-	16NiCrS4	1.8888	ESTE ...	P690QL2
1.0425	H2	P265GH	1.4037	X65Cr13	X65Cr13	1.5752	14 NiCr 14	15NiCr13	1.8900	StE 380	S380N
1.0429	StE 290.7 TM	L290MB	1.4057	X20CrNi 17 2	X17CrNi16-2	1.6210	15 MnNi 6 3	15MnNi6-3	1.8901	StE 460	S460N
1.0457	StE 240.7	L245NB	1.4104	X12CrMoS 17	X14CrMoS17	1.6211	16 MnNi 6 3	16MnNi6-3	1.8902	StE 420	S420N
1.0459	RRStE 240.7	L245GA	1.4105	X4CrMoS 18	X6CrMoS17	1.6310	20 MnMoNi 5 5	20MnMoNi5-5	1.8903	TStE 460	S460NL
1.0461	StE 255	S255N	1.4109	X65CrMo 14	X70CrMo15	1.6311	20 MnMoNi 4 5	20MnMoNi4-5	1.8905	StE 460	P460N
1.0473	19 Mn 6	P355GH	1.4110	X55CrMo 14	X55CrMo14	1.6341	11 NiMoV 5 3	11NiMoV5-3	1.8907	StE 500	S500N
1.0481	17 Mn 4	P295GH	1.4112	X90CrMoV 18	X90CrMoV18	1.6368	15 NiCuMoNb 5	15NiCuMoNb5	1.8910	TStE 380	S380NL
1.0484	StE 290.7	L290NB	1.4113	X6CrMo 17 1	X6CrMo17-1	1.6511	36 CrNiMo 4	36CrNiMo4	1.8911	ESTE 380	S380NL1
1.0486	StE 285	P275N	1.4116	X45CrMoV 15	X50CrMoV15	1.6523	21 NiCrMo 2	21NiCrMo2-2	1.8912	TStE 420	S420NL
1.0501	C 35	C35	1.4120	X20CrMo 13	X20CrMo13	1.6526	21 NiCrMoS 2	21NiCrMoS2-2	1.8913	ESTE 420	S420NL1
1.0503	C 45	C45	1.4122	X35CrMo 17	X39CrMo17-1	1.6580	30 CrNiMo 8	30CrNiMo8	1.8915	TStE 460	P460NL1
1.0505	StE 315	P315N	1.4125	X105CrMo 17	X105CrMo17	1.6582	34 CrNiMo 6	34CrNiMo6	1.8917	WStE 500	S500NL
1.0511	C 40	C40	1.4301	X5CrNi 18 10	X5CrNi18-10	1.6587	17 CrNiMo 6	18CrNiMo7-6	1.8918	ESTE 460	P460NL2
1.0528	C 30	C30	1.4303	X5CrNi 18 12	X4CrNi18-12	1.7003	38 Cr 2	38Cr2	1.8919	ESTE 500	S500NL1
1.0529	StE 350 -3Z	S350GD	1.4305	X10CrNiS 18 9	X8CrNiS18-9	1.7006	46 Cr 2	46Cr2	1.8930	WStE 380	P380NH
1.0535	C 55	C55	1.4306	X2CrNi 19 11	X2CrNi19-11	1.7017	17 Cr 3	17Cr3	1.8932	WStE 420	P420NH
1.0539	StE 355N	S355NH	1.4310	X12CrNi 17 7	X10CrNi18-8	1.7023	38 CrS 2	38CrS2	1.8935	WStE 460	P460NH
1.0540	C 50	C50	1.4311	X2CrNiN 18 10	X2CrNiN18-10	1.7025	46 CrS 2	46CrS2	1.8937	TStE 500	P500NH
1.0547	St 52 -3U	S355J0H	1.4313	X4CrNi 13 4	X3CrNiMo13-4	1.7030	28 Cr 4	28Cr4	1.8972	StE 415.7	L415NB
1.0582	StE 360.7	L360NB	1.4318	X2CrNiN 18 7	X2CrNiN18-7	1.7033	34 Cr 4	34Cr4	1.8973	StE 415.7 TM	L415MB
1.0601	C 60	C60	1.4335	X1CrNi 25 21	X1CrNi25-21	1.7034	37 Cr 4	37Cr4	1.8975	StE 445.7 TM	L450MB
1.0710	15 S 10	-	1.4361	X1CrNiSi 18 15	X1CrNiSi18-15-4	1.7035	41 Cr 4	41Cr4	1.8977	StE 480.7 TM	L485MB
1.0715	9 SMn 28	11SMn30	1.4362	X2CrNiN 23 4	X2CrNiN23-4	1.7036	28 CrS 4	28CrS4	1.8978	StE 550.7 TM	L555MB
1.0718	9 SMnPb 28	11SMnPb30	1.4401	X5CrNiMo 17 12 2	X5CrNiMo17-12-2	1.7037	34 CrS 4	34CrS4			
1.0721	10 S 20	10S20	1.4404	X2CrNiMo 17 13 2	X2CrNiMo17-12-2	1.7038	37 CrS 4	37CrS4			
1.0722	10 S Pb 20	10SPb20	1.4410	X10CrNiMo 18 9	X2CrNiMoN25-7-4	1.7039	41 CrS 4	41CrS4			
1.0726	35 S 20	35S20	1.4418	X4CrNiMo 16 5	X4CrNiMo16-5-1	1.7131	16 MnCr 5	16MnCr5			
1.0727	45 S 20	46S20	1.4435	X2CrNiMo 18 14 3	X2CrNiMo18-14-3	1.7139	16 MnCrS 5	16MnCrS5			

Caractéristiques techniques



# PROGRAMME DE VENTE

BRUNNEN  
GÜNTHER



N° d'article	Page	Profondeur	Norme	Désignation	Matière de coupe	Type	Forme
11	428		Norme usine	Jeux de forets hélicoïdaux			
16	420	~5xD	DIN 338	Jeux de forets hélicoïdaux	HSCO	N	
17	419	~5xD	DIN 338	Jeux de forets hélicoïdaux	HSS	N	
18	421	~5xD	DIN 338	Jeux de forets hélicoïdaux	HSCO	Ti	
36	426		Norme usine	Jeux de forets hélicoïdaux			
73	427		Norme usine	Jeux de forets hélicoïdaux			
128	413		Norme usine	Forets hél. courts, queue cyl. Ø 16,0 mm	HSCO	V72	
129	414		Norme usine	Forets hél. courts, queue cyl. Ø 25,4 mm	HSCO	V72	
136	415		Norme usine	Forets hél. courts, queue cyl. Ø 25,4 mm	HSCO	V72	
195	422	~5xD	DIN 338	Jeux de forets hélicoïdaux	HSCO	VA	
200	418	~5xD	DIN 338	Jeux de forets hélicoïdaux, en vrac	HSS	N	
201	417	~5xD	DIN 338	Jeux de forets hélicoïdaux	HSS	N	
204	338, 587	~10xD	DIN 340	Forets hélicoïdaux longs	HSS	N	
205	244	~5xD	DIN 338	Forets hélicoïdaux courts	HSS	N	
206	263	~5xD	DIN 338	Forets hélicoïdaux courts	HSS	H	
207	269	~5xD	DIN 338	Forets hélicoïdaux courts	HSS	W	
208	258	~5xD	DIN 338	Forets hélicoïdaux courts	HSS	N	
209	266	~5xD	DIN 338	Forets hélicoïdaux courts	HSS	H	
210	272	~5xD	DIN 338	Forets hélicoïdaux courts	HSS	W	
211	325	~10xD	DIN 339	Forets pour perçage par canon	HSS	N	
217	331, 580	~10xD	DIN 340	Forets hélicoïdaux longs	HSS	N	
218	339, 588	~10xD	DIN 340	Forets hélicoïdaux longs	HSS	H	
219	342, 591	~10xD	DIN 340	Forets hélicoïdaux longs	HSS	W	
220	336, 585	~10xD	DIN 340	Forets hélicoïdaux longs	HSS	N	
221	341, 590	~10xD	DIN 340	Forets hélicoïdaux longs	HSS	H	
223	192	~3xD	DIN 1897	Forets hélicoïdaux extra-courts	HSS	N	
224	204	~3xD	DIN 1897	Forets hélicoïdaux extra-courts	HSS	H	
225	208	~3xD	DIN 1897	Forets hélicoïdaux extra-courts	HSS	W	
226	200	~3xD	DIN 1897	Forets hélicoïdaux extra-courts	HSS	N	
227	206	~3xD	DIN 1897	Forets hélicoïdaux extra-courts	HSS	H	
228	210	~3xD	DIN 1897	Forets hélicoïdaux extra-courts	HSS	W	
229	458	~5xD	DIN 345	Forets hélicoïdaux	HSS	N	
235	363, 612	~15xD	DIN 1869	Forets hélicoïdaux extra-longs, série 1	HSS	N	
236	371, 620	~20xD	DIN 1869	Forets hélicoïdaux extra-longs, série 2	HSS	N	
237	377, 626	~25xD	DIN 1869	Forets hélicoïdaux extra-longs, série 3	HSS	N	
240	257	~5xD	DIN 338	Forets hélicoïdaux courts	HSS	N	
242	381, 630	>25xD	Norme usine	Forets hélicoïdaux extra-longs	HSS	GT 100	
243	382, 631	>25xD	Norme usine	Forets hélicoïdaux extra-longs	HSS	GT 100	
244	383, 632	>25xD	Norme usine	Forets hélicoïdaux extra-longs	HSS	GT 100	
245	450	~5xD	DIN 345	Forets hélicoïdaux	HSS	N	
246	459	~5xD	DIN 345	Forets hélicoïdaux	HSS	H	
247	460	~5xD	DIN 345	Forets hélicoïdaux	HSS	W	
248	457	~5xD	DIN 345	Forets hélicoïdaux	HSS	N	
251	471	~5xD	DIN 346	Forets hélicoïdaux	HSS	N	
254	499		Norme usine	Forets à canaux de lubrification, long. gouj. selon norme usine	HSS	N	
255	500		Norme usine	Forets à canaux de lubrification, long. gouj. selon norme usine	HSS	N	
257	473	~10xD	DIN 341	Forets pour perçage par canon	HSS	N	
266	483, 633	~15xD	DIN 1870	Forets hélicoïdaux extra-longs, série 1	HSS	N	
267	487, 637	~20xD	DIN 1870	Forets hélicoïdaux extra-longs, série 2	HSS	N	
268	412		Norme usine	Forets hél. courts, queue cyl. Ø 12,7 mm	HSS	N	
269	498	~7xD	Norme usine	Forets courts, à canaux de lubrification	HSS	N	
270	502	~10xD	Norme usine	Forets à canaux de lubrification, long. gouj. DIN 341	HSS	N	
271	503	~10xD	Norme usine	Forets à canaux de lubrification, long. gouj. DIN 341	HSS	N	
272	504	~10xD	Norme usine	Forets à canaux de lubrification, long. gouj. DIN 341	HSS	N	
274	714		Norme usine	Forets étagés pour centres int. selon DIN 332	HSS	N	D
280	689		Norme usine	Forets à centrer sans méplat	HSS	N	A
281	684		Norme usine	Forets à centrer sans méplat	HSS	N	A
282	685		Norme usine	Forets à centrer sans méplat	HSS	N	A
283	686		Norme usine	Forets à centrer sans méplat	HSS	N	R
284	687		Norme usine	Forets à centrer sans méplat	HSS	N	R
285	688		Norme usine	Forets à centrer sans méplat	HSS	N	B
287	693		DIN 333	Forets à centrer avec méplat	HSS	N	A
288	694		DIN 333	Forets à centrer avec méplat	HSS	N	R
289	695		Norme usine	Forets à centrer avec méplat	HSS	N	B
292	680		BS 328	Forets à centrer sans méplat	HSS	N	A
293	495	>20xD	Norme usine	Forets hélicoïdaux extra-longs	HSS	GT 100	
294	681		BS 328	Forets à centrer sans méplat	HSS	N	A
298	496	>20xD	Norme usine	Forets hélicoïdaux extra-longs	HSS	GT 100	
299	497	>20xD	Norme usine	Forets hélicoïdaux extra-longs	HSS	GT 100	
301	397, 649	~5xD	DIN 1899	Microforets en HSS-E PM fritté, sans canaux de lubrification	HSS-E-PM	N	
303	402, 654	~5xD	DIN 1899	Microforets en HSS-E PM fritté, sans canaux de lubrification	HSS-E-PM	N	
305	284	~5xD	DIN 338	Forets hélicoïdaux courts	HSCO	N	



N° d'article	Page	Profondeur	Norme	Désignation	Matière de coupe	Type	Forme
308	289	~5xD	DIN 338	Forets hélicoïdaux courts	HSCO	N	
311	330	~10xD	DIN 339	Forets pour perçage par canon	HSCO	N	
317	353, 602	~10xD	DIN 340	Forets hélicoïdaux longs	HSCO	N	
329	218	~3xD	DIN 1897	Forets hélicoïdaux extra-courts	HSCO	GV 120	
330	225	~3xD	DIN 1897	Forets hélicoïdaux extra-courts	HSCO	GV 120	
336	355, 604	~10xD	DIN 340	Forets hélicoïdaux longs	HSCO	GT 100	
345	463	~5xD	DIN 345	Forets hélicoïdaux	HSCO	N	
351	472	~5xD	DIN 346	Forets hélicoïdaux	HSCO	N	
357	480	~10xD	DIN 341	Forets pour perçage par canon	HSCO	N	
363	448	~3xD	Norme usine	Forets hélicoïdaux courts	HSCO	GV 120	
370	505	~10xD	Norme usine	Forets à canaux de lubrification, long. gouj. DIN 341	HSCO	GT 100	
371	506	~10xD	Norme usine	Forets à canaux de lubrification, long. gouj. DIN 341	HSCO	GT 100	
372	507	~10xD	Norme usine	Forets à canaux de lubrification, long. gouj. DIN 341	HSCO	GT 100	
374	508, 641	~15xD	Norme usine	Forets à canaux de lubrification, long. gouj. DIN 1870	HSCO	GT 100	
375	509, 642	~15xD	Norme usine	Forets à canaux de lubrification, long. gouj. DIN 1870	HSCO	GT 100	
376	510, 643	~15xD	Norme usine	Forets à canaux de lubrification, long. gouj. DIN 1870	HSCO	GT 100	
378	718		Norme usine	Forets étagés à queue cylindrique, courts	HSS	N	
379	720		Norme usine	Forets étagés à queue cylindrique, courts	HSS	N	
380	721		Norme usine	Forets étagés à queue cylindrique, courts	HSS	N	
381	682		DIN 333	Forets à centrer sans méplat	HSCO	N	A
390	394	~10xD	Norme usine	Forets à canaux de lubrification	HSS	N	
396	357, 606	~10xD	DIN 340	Forets hélicoïdaux longs	HSCO	GT 100	
501	351, 600	~10xD	DIN 340	Forets hélicoïdaux longs	HSS	GT 50	
502	365, 614	~15xD	DIN 1869	Forets hélicoïdaux extra-longs, série 1	HSS	GT 100	
503	372, 621	~20xD	DIN 1869	Forets hélicoïdaux extra-longs, série 2	HSS	GT 100	
504	378, 627	~25xD	DIN 1869	Forets hélicoïdaux extra-longs, série 3	HSS	GT 100	
505	479	~10xD	DIN 341	Forets pour perçage par canon	HSS	GT 50	
506	350, 599	~10xD	DIN 340	Forets hélicoïdaux longs	HSS	GT 100	
511	386	~5xD	Norme usine	Forets hélicoïd. à queue cylind.renforcée	HSCO	GU 500	
512	384	~3xD	Norme usine	Forets hélicoïd. à queue cylind.renforcée	HSCO	GU 500	
513	388	~5xD	Norme usine	Forets hélicoïd. à queue cylind.renforcée	HSS-E-PM	GT 500	
514	728		Norme usine	Forets étagés à listels continus, queue cyl.	HSS	N	
515	237	~3xD	DIN 1897	Forets hélicoïdaux extra-courts	HSS-E-PM	GT 500	
520	735		Norme usine	Forets étagés à listels continus, queue CM	HSS	N	
523	482	~10xD	Norme usine	Forets pour perçage par canon	HSS	N	
524	368, 617	~15xD	DIN 1869	Forets hélicoïdaux extra-longs, série 1	HSS	GT 50	
525	485, 635	~15xD	DIN 1870	Forets hélicoïdaux extra-longs, série 1	HSS	GT 50	
526	484, 634	~15xD	DIN 1870	Forets hélicoïdaux extra-longs, série 1	HSS	GT 100	
527	488, 638	~20xD	DIN 1870	Forets hélicoïdaux extra-longs, série 2	HSS	GT 100	
528	375, 624	~20xD	DIN 1869	Forets hélicoïdaux extra-longs, série 2	HSS	GT 50	
529	379, 628	~25xD	DIN 1869	Forets hélicoïdaux extra-longs, série 3	HSS	GT 50	
531	416, 746		DIN 1898	Forets de chaudronnerie	HSS	N	
532	511, 747		DIN 1898	Forets de chaudronnerie	HSS	N	
533	737		DIN 344	Forets aléseurs, queue cylindrique	HSS	N	
534	740		DIN 343	Forets aléseurs, queue CM	HSS	N	
535	344, 593	~10xD	DIN 340	Forets hélicoïdaux longs	HSS	GT 100	
536	722		DIN 8374	Forets étagés à listels continus, queue cyl.	HSS	N	A
537	732		Norme usine	Forets étagés à listels continus, queue CM	HSS	N	
538	726		DIN 8376	Forets étagés à listels continus, queue cyl.	HSS	N	
539	734		DIN 8377	Forets étagés à listels continus, queue CM	HSS	N	
540	729		DIN 8378	Forets étagés à listels continus, queue cyl.	HSS	N	
541	736		DIN 8379	Forets étagés à listels continus, queue CM	HSS	N	
542	489, 639	~20xD	DIN 1870	Forets hélicoïdaux extra-longs, série 2	HSS	GT 50	
546	707		Norme usine	Forets NC à 142°	CW monobloc	N	
549	274	~5xD	DIN 338	Forets hélicoïdaux courts	HSS	GT 100	
550	281	~5xD	DIN 338	Forets hélicoïdaux courts	HSS	GT 100	
551	476	~10xD	DIN 341	Forets pour perçage par canon	HSS	GT 100	
552	212	~3xD	DIN 1897	Forets hélicoïdaux extra-courts	HSS	GT 80	
553	215	~3xD	DIN 1897	Forets hélicoïdaux extra-courts	HSS	GT 80	
554	708		Norme usine	Forets carrosseries	HSS	DK 77	
555	743		DIN 1864	Forets aléseurs, queue CM	HSS	N	
556	702		Norme usine	Forets NC à 120°	HSS	N	
557	696		Norme usine	Forets NC à 90°	HSS	N	
558	461	~5xD	DIN 345	Forets hélicoïdaux	HSS	GT 100	
559	700		Norme usine	Forets NC à 90°	HSS	N	
560	256	~5xD	DIN 338	Forets hélicoïdaux courts	HSS	N	
561	327	~10xD	DIN 339	Forets pour perçage par canon	HSS	N	
563	491	>20xD	Norme usine	Forets hélicoïdaux extra-longs	HSS	GT 100	
564	492	>20xD	Norme usine	Forets hélicoïdaux extra-longs	HSS	GT 100	
565	493	>20xD	Norme usine	Forets hélicoïdaux extra-longs	HSS	GT 100	
566	494	>20xD	Norme usine	Forets hélicoïdaux extra-longs	HSS	GT 100	
567	703		Norme usine	Forets NC à 120°	HSS	N	



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568	697		Norme usine	Forets NC à 90°	HSS	N	
569	723		DIN 8374	Forets étagés à listels continus, queue cyl.	HSS	N	B
571	380, 629	~25xD	DIN 1869	Forets hélicoïdaux extra-longs, série 3	HSCO	GT 100	
572	231	~3xD	DIN 1897	Forets hélicoïdaux extra-courts	HSCO	VA	
574	715		Norme usine	Forets étagés pour centres int.sel.on DIN 332	HSS	N	DR
575	716		Norme usine	Forets étagés pour centres int.sel.on DIN 332	HSS	N	D
576	717		Norme usine	Forets étagés pour centres int.sel.on DIN 332	HSS	N	D
577	390		NAS 907	Forets aviation, longueur 6 pouces	HSS	N	
578	392		NAS 907	Forets aviation, longueur 12 pouces	HSS	N	
579	391		NAS 907	Forets aviation, longueur 6 pouces	HSS	N	
580	393		NAS 907	Forets aviation, longueur 12 pouces	HSS	N	
581	668		DIN 333	Forets à centrer sans méplat	HSS	N	A
582	670		DIN 333	Forets à centrer sans méplat	HSS	N	A
583	672		DIN 333	Forets à centrer sans méplat	HSS	N	R
584	674		DIN 333	Forets à centrer sans méplat	HSS	N	R
585	675		DIN 333	Forets à centrer sans méplat	HSS	N	B
586	676		DIN 333	Forets à centrer sans méplat	HSS	N	B
587	690		DIN 333	Forets à centrer avec méplat	HSS	N	A
588	691		DIN 333	Forets à centrer avec méplat	HSS	N	R
589	692		DIN 333	Forets à centrer avec méplat	HSS	N	B
590	671		DIN 333	Forets à centrer sans méplat	HSS	N	A
591	677		DIN 333	Forets à centrer sans méplat	HSS	N	B
592	454	~5xD	DIN 345	Forets hélicoïdaux	HSS	N	
594	678		ASME B94.11 M	Forets à centrer sans méplat	HSS	N	A
595	679		ASME B94.11 M	Forets à centrer sans méplat	HSS	N	B
605	301	~5xD	DIN 338	Forets hélicoïdaux courts	HSCO	Ti	
606	462	~5xD	DIN 345	Forets hélicoïdaux	HSS	GT 100	
608	308	~5xD	DIN 338	Forets hélicoïdaux courts	HSCO	Ti	
611	114	5xD	DIN 6539	Forets Ratio à 3 lèvres	CW monobloc	GS 200 U	
613	669		DIN 333	Forets à centrer sans méplat	HSS	N	A
614	673		DIN 333	Forets à centrer sans méplat	HSS	N	R
617	358, 607	~10xD	DIN 340	Forets hélicoïdaux longs	HSCO	Ti	
618	370, 619	~15xD	DIN 1869	Forets hélicoïdaux extra-longs, série 1	HSCO	GT 100	
619	376, 625	~20xD	DIN 1869	Forets hélicoïdaux extra-longs, série 2	HSCO	GT 100	
620	486, 636	~15xD	DIN 1870	Forets hélicoïdaux extra-longs, série 1	HSCO	GT 100	
621	490, 640	~20xD	DIN 1870	Forets hélicoïdaux extra-longs, série 2	HSCO	GT 100	
622	291	~5xD	DIN 338	Forets hélicoïdaux courts	HSCO	GT 100	
623	481	~10xD	DIN 341	Forets pour perçage par canon	HSCO	GT 100	
634	742		DIN 343	Forets aléseurs, queue CM	HSCO	N	
635	744		DIN 1864	Forets aléseurs, queue CM	HSCO	N	
636	724		Norme usine	Forets étagés à listels continus, queue cyl.	HSS	N	
637	731		Norme usine	Forets étagés à listels continus, queue CM	HSS	N	
638	725		Norme usine	Forets étagés à listels continus, queue cyl.	HSS	N	
639	733		Norme usine	Forets étagés à listels continus, queue CM	HSS	N	
645	466	~5xD	DIN 345	Forets hélicoïdaux	HSCO	GT 100	
651	250	~5xD	DIN 338	Forets hélicoïdaux courts	HSS	N	
652	277	~5xD	DIN 338	Forets hélicoïdaux courts	HSS	GT 100	
653	196	~3xD	DIN 1897	Forets hélicoïdaux extra-courts	HSS	N	
654	455	~5xD	DIN 345	Forets hélicoïdaux	HSS	N	
655	475	~10xD	DIN 341	Forets hélicoïdaux courts	HSS	N	
656	478	~10xD	DIN 341	Forets pour perçage par canon	HSS	GT 100	
657	304	~5xD	DIN 338	Forets hélicoïdaux courts	HSCO	Ti	
658	294	~5xD	DIN 338	Forets hélicoïdaux courts	HSCO	GT 100	
659	222	~3xD	DIN 1897	Forets hélicoïdaux extra-courts	HSCO	GV 120	
660	400, 652	~5xD	DIN 1899	Microforets en HSS-E PM fritté, sans canaux de lubrification	HSS-E-PM	N	
661	465	~5xD	DIN 345	Forets hélicoïdaux	HSCO	N	
662	467	~5xD	DIN 345	Forets hélicoïdaux	HSCO	GT 100	
663	449	~3xD	Norme usine	Forets hélicoïdaux courts	HSCO	GV 120	
664	261	~5xD	DIN 338	Forets hélicoïdaux courts	HSS	N	
665	283	~5xD	DIN 338	Forets hélicoïdaux courts	HSS	GT 100	
666	328	~10xD	DIN 339	Forets pour perçage par canon	HSS	N	
667	334, 583	~10xD	DIN 340	Forets hélicoïdaux longs	HSS	N	
668	347, 596	~10xD	DIN 340	Forets hélicoïdaux longs	HSS	GT 100	
669	360, 609	~10xD	DIN 340	Forets hélicoïdaux longs	HSCO	Ti	
670	367, 616	~15xD	DIN 1869	Forets hélicoïdaux extra-longs, série 1	HSS	GT 100	
671	374, 623	~20xD	DIN 1869	Forets hélicoïdaux extra-longs, série 2	HSS	GT 100	
672	203	~3xD	DIN 1897	Forets hélicoïdaux extra-courts	HSS	N	
701	404, 656	~5xD	Norme usine	Microforets en CW monobloc, sans canaux de lubrification	CW monobloc	N	
702	243	~3xD	Norme usine	Forets hélicoïdaux extra-courts	CW monobloc	N	
703	429		DIN 8037	Forets spéciaux avec arêtes de coupe CW	CW	N	
704	430		DIN 8038	Forets spéciaux avec arêtes de coupe CW	CW	N	
705	512		DIN 8041	Forets spéciaux avec arêtes de coupe CW	CW	N	



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706	362, 611	~10xD	Norme usine	Forets hélicoïdaux longs	CW monobloc	N	
707	432		Norme usine	Forets à pointe rapportée	CW	H	
710	323	~5xD	Norme usine	Forets hélicoïdaux courts	CW	Duro 150	
716	433		Norme usine	Forets béton	CW	N	
723	701		Norme usine	Forets NC à 90°	CW monobloc	N	
724	706		Norme usine	Forets NC à 120°	CW monobloc	N	
729	745		Norme usine	Forets aléseurs, queue CM	CW	N	
730	239	3xD	DIN 6539	Forets hélicoïdaux extra-courts	CW monobloc	N	
731	115	5xD	DIN 6539	Forets Ratio à 3 lèvres	CW monobloc	GS 200 U	
732	319	~5xD	Norme usine	Forets hélicoïdaux courts	CW monobloc	N	
736	683		Norme usine	Forets à centrer sans méplat	CW monobloc	N	A
738	727		Norme usine	Forets étagés à listels continus, queue cyl.	CW monobloc	N	
739	730		Norme usine	Forets étagés à listels continus, queue cyl.	CW monobloc	N	
745	116	5xD	DIN 6539	Forets Ratio à 3 lèvres	CW monobloc	GS 200 G	
750	739		Norme usine	Forets aléseurs, queue cylindrique	CW	N	
768	56	4xD	Norme usine	Forets Ratio à canaux de lubrification	CW monobloc	RT 150 GG	
769	93	7xD	Norme usine	Forets Ratio à canaux de lubrification	CW monobloc	RT 150 GG	
770	98	10xD	Norme usine	Forets Ratio à canaux de lubrification	CW monobloc	RT 150 GG	
773	103	15xD	Norme usine	Forets Ratio à canaux de lubrification	CW monobloc	RT 150 GN	
1018	313	~5xD	DIN 338	Forets hélicoïdaux AeroX avec affûtage en croix	M42	AeroX	
1025	117	5xD	DIN 6539	Forets Ratio à 3 lèvres	CW monobloc	GS 200 G	
1027	119	5xD	DIN 6539	Forets Ratio à 3 lèvres	CW monobloc	GS 200 F	
1032	120	3xD	Norme usine	Forets étagés Ratio, 3 lèvres	CW monobloc	GS 200 G	
1047	162		Norme usine	Plaquettes interchangeables RT 800	CW monobloc	RT 800 WP	
1071	168		Norme usine	Vis de fixation pour RT 800			
1083	425	~5xD	DIN 338	Jeux de forets hélicoïdaux AeroX	M42	AeroX	
1101	501	~10xD	Norme usine	Forets à canaux de lubrification, long. gouj. DIN 341	HSS	N	
1131	395	~5xD	Norme usine	Forets à canaux de lubrification	HSCO	GT 80 IK	
1132	396	~5xD	Norme usine	Forets à canaux de lubrification	HSCO	GT 80 IK	
1133	699		Norme usine	Forets NC à 90°	HSCO	N	
1134	704		Norme usine	Forets NC à 120°	HSCO	N	
1135	705		Norme usine	Forets NC à 120°	HSCO	N	
1136	698		Norme usine	Forets NC à 90°	HSCO	N	
1146	315	~5xD	DIN 338	Forets hélicoïdaux courts	M42	N	
1147	719		Norme usine	Forets étagés à queue cylindrique, courts	HSS	N	
1149	431		Norme usine	Forets hélicoïdaux FK	CW monobloc	FK	
1171	55	3xD	DIN 6538K	Forets Ratio à canaux de lubrification	CW	RT 80 U	
1172	84	5xD	DIN 6538M	Forets Ratio à canaux de lubrification	CW	RT 80 U	
1173	95	7xD	DIN 6538L	Forets Ratio à canaux de lubrification	CW	RT 80 U	
1180	54	3xD	DIN 6537K	Forets Ratio à canaux de lubrification	CW monobloc	RT 100 F	
1181	43	3xD	DIN 6537K	Forets Ratio à canaux de lubrification	CW monobloc	RT 100 U	
1182	80	5xD	DIN 6537L	Forets Ratio à canaux de lubrification	CW monobloc	RT 100 F	
1183	66	5xD	DIN 6537L	Forets Ratio à canaux de lubrification	CW monobloc	RT 100 U	
1184	21	3xD	DIN 6537K	Forets Ratio sans canaux de lubrification	CW monobloc	RT 100 U	
1199	317	~5xD	DIN 338	Forets hélicoïdaux courts	M42	N	
1221	298	~5xD	DIN 338	Forets hélicoïdaux courts	HSCO	GT 100	
1222	468	~5xD	DIN 345	Forets hélicoïdaux	HSCO	GT 100	
1223	299	~5xD	DIN 338	Forets hélicoïdaux courts	HSCO	GT 100	
1224	469	~5xD	DIN 345	Forets hélicoïdaux	HSCO	GT 100	
1228	227	~3xD	DIN 1897	Forets hélicoïdaux extra-courts	HSCO	GT 80	
1242	23	3xD	DIN 6539	Forets Ratio sans canaux de lubrification	CW monobloc	RT 100 U	
1243	36	5xD	Norme usine	Forets Ratio sans canaux de lubrification	CW monobloc	RT 100 U	
1259	235	~3xD	DIN 1897	Forets hélicoïdaux extra-courts	M42	N	
1260	309	~5xD	DIN 338	Forets hélicoïdaux courts	HSCO	VA	
1261	230	~3xD	DIN 1897	Forets hélicoïdaux extra-courts	HSCO	VA	
1262	470	~5xD	DIN 345	Forets hélicoïdaux	HSCO	VA	
1612	171, 558		Norme usine	Toumevis Torx			
1660	53	3xD	DIN 6537K	Forets Ratio à canaux de lubrification	CW monobloc	RT 100 F	
1662	78	5xD	DIN 6537L	Forets Ratio à canaux de lubrification	CW monobloc	RT 100 F	
1663	65	5xD	DIN 6537L	Forets Ratio à canaux de lubrification	CW monobloc	RT 100 U	
1702	28	3xD	DIN 6539	Forets Ratio sans canaux de lubrification	CW monobloc	RT 100 F	
1946	389	~3xD	DIN 6537K	Forets hélicoïd. à queue cylind. renforcée	CW monobloc	H	
2047	311	~5xD	DIN 338	Forets hélicoïdaux courts	HSCO	P2000	
2048	233	~3xD	DIN 1897	Forets hélicoïdaux extra-courts	HSCO	P2000	
2049	423	~5xD	DIN 338	Jeux de forets hélicoïdaux	HSCO	P2000	
2050	424	~3xD	DIN 1897	Jeux de forets hélicoïdaux	HSCO	P2000	
2456	264	~5xD	DIN 338	Forets hélicoïdaux courts	HSS	N	
2457	280	~5xD	DIN 338	Forets hélicoïdaux courts	HSS	GT 100	
2458	306	~5xD	DIN 338	Forets hélicoïdaux courts	HSCO	Ti	
2459	296	~5xD	DIN 338	Forets hélicoïdaux courts	HSCO	GT 100	
2460	199	~3xD	DIN 1897	Forets hélicoïdaux extra-courts	HSS	N	
2461	224	~3xD	DIN 1897	Forets hélicoïdaux extra-courts	HSCO	GV 120	



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2462	349, 598	~10xD	DIN 340	Forets hélicoïdaux longs	HSS	GT 100	
2463	241	~3xD	DIN 6539	Forets hélicoïdaux extra-courts	CW monobloc	N	
2464	321	~5xD	Norme usine	Forets hélicoïdaux courts	CW monobloc	N	
2468	52	3xD	DIN 6537K	Forets Ratio à canaux de lubrification	CW monobloc	RT 100 F	
2469	41	3xD	DIN 6537K	Forets Ratio à canaux de lubrification	CW monobloc	RT 100 U	
2470	77	5xD	DIN 6537L	Forets Ratio à canaux de lubrification	CW monobloc	RT 100 F	
2471	63	5xD	DIN 6537L	Forets Ratio à canaux de lubrification	CW monobloc	RT 100 U	
2472	18	3xD	DIN 6537K	Forets Ratio sans canaux de lubrification	CW monobloc	RT 100 U	
2473	20	3xD	DIN 6539	Forets Ratio sans canaux de lubrification	CW monobloc	RT 100 U	
2474	34	5xD	Norme usine	Forets Ratio sans canaux de lubrification	CW monobloc	RT 100 U	
2475	27	3xD	DIN 6537K	Forets Ratio sans canaux de lubrification	CW monobloc	RT 100 F	
2477	39	3xD	DIN 6537K	Forets Ratio à canaux de lubrification	CW monobloc	RT 100 U	
2478	76	5xD	DIN 6537L	Forets Ratio à canaux de lubrification	CW monobloc	RT 100 F	
2479	61	5xD	DIN 6537L	Forets Ratio à canaux de lubrification	CW monobloc	RT 100 U	
2480	16	3xD	DIN 6537K	Forets Ratio sans canaux de lubrification	CW monobloc	RT 100 U	
2485	164		Norme usine	Plaquettes interchangeables RT 800	CW monobloc	RT 800 WP	
2498	229	~3xD	DIN 1897	Forets hélicoïdaux extra-courts	HSCO	GT 80	
2711	89	7xD	Norme usine	Forets Ratio à canaux de lubrification	CW monobloc	RT 100 U	
2712	38	5xD	DIN 6537L	Forets Ratio sans canaux de lubrification	CW monobloc	RT 100 F	
2713	113	5xD	DIN 6537L	Forets Ratio à 3 lèvres	CW monobloc	FT 200 G	
2717	35	5xD	DIN 6537L	Forets Ratio sans canaux de lubrification	CW monobloc	RT 100 U	
2719	32	5xD	DIN 6537L	Forets Ratio sans canaux de lubrification	CW monobloc	RT 100 U	
2747	166		Norme usine	Plaquettes interchangeables RT 800	CW monobloc	RT 800 WP	
2996	30	5xD	DIN 6537L	Forets Ratio sans canaux de lubrification	CW monobloc	RT 100 U	
2997	288	~5xD	DIN 338	Forets hélicoïdaux courts	HSCO	N	
3899	405, 657		Norme usine	Microforets en CW monobloc, sans canaux de lubrification	CW monobloc	N	
4044	85	7xD	Norme usine	Forets Ratio à canaux de lubrification	CW monobloc	RT 100 U	
4045	87	7xD	Norme usine	Forets Ratio à canaux de lubrification	CW monobloc	RT 100 U	
4071	158, 561		Norme usine	Vis de fixation			
4105	138	1xD	Norme usine	Porte-outil HT 800		HT 800 WP	
4106	128	1,5xD	Norme usine	Porte-outil HT 800		HT 800 WP	
4107	130	3xD	Norme usine	Porte-outil HT 800		HT 800 WP	
4108	132	5xD	Norme usine	Porte-outil HT 800		HT 800 WP	
4109	134	7xD	Norme usine	Porte-outil HT 800		HT 800 WP	
4110	136	10xD	Norme usine	Porte-outil HT 800		HT 800 WP	
4111	151		Norme usine	Plaquettes interchangeables HT 800	CW monobloc	HT 800 WP	
4112	139		Norme usine	Plaquettes interchangeables HT 800	CW monobloc	HT 800 WP	
4113	142		Norme usine	Plaquettes interchangeables HT 800	CW monobloc	HT 800 WP	
4114	148		Norme usine	Plaquettes interchangeables HT 800	CW monobloc	HT 800 WP	
4115	145		Norme usine	Plaquettes interchangeables HT 800	CW monobloc	HT 800 WP	
4915	169, 559		Norme usine	Clé dynamométrique			
4917	170, 560		Norme usine	Embout pour Vis Torx			
5018	540	20xD	Norme usine	Forets à une lèvre EB 80	CW	EB 80	
5019	551	30xD	Norme usine	Outils de forage à deux lèvres ZB 80	CW	ZB 80	
5020	534	80.000	Norme usine	Forets à une lèvre EB 100	CW monobloc	EB 100	
5021	538	160.000	Norme usine	Forets à une lèvre EB 100	CW monobloc	EB 100	
5022	545	40xD	Norme usine	Forets à une lèvre EB 80	CW	EB 80	
5023	548	80xD	Norme usine	Forets à une lèvre EB 80	CW	EB 80	
5024	532	45.000	Norme usine	Forets à une lèvre EB 100	CW monobloc	EB 100	
5026	536	120.000	Norme usine	Forets à une lèvre EB 100	CW monobloc	EB 100	
5164	550	1100.000	Norme usine	Forets à une lèvre EB 80	CW	EB 80	
5242	159	3xD	Norme usine	Porte-outil RT 800		RT 800 WP	
5243	160	5xD	Norme usine	Porte-outil RT 800		RT 800 WP	
5248	161	7xD	Norme usine	Porte-outil RT 800		RT 800 WP	
5460	542	30xD	Norme usine	Forets à une lèvre EB 80	CW	EB 80	
5525	100	12xD	Norme usine	Forets Ratio à canaux de lubrification	CW monobloc	RT 100 U	
5632	533	45.000	Norme usine	Forets à une lèvre EB 100	CW monobloc	EB 100	
5633	535	80.000	Norme usine	Forets à une lèvre EB 100	CW monobloc	EB 100	
5637	537	120.000	Norme usine	Forets à une lèvre EB 100	CW monobloc	EB 100	
5638	539	160.000	Norme usine	Forets à une lèvre EB 100	CW monobloc	EB 100	
5639	541	20xD	Norme usine	Forets à une lèvre EB 80	CW	EB 80	
5640	543	30xD	Norme usine	Forets à une lèvre EB 80	CW	EB 80	
5641	546	40xD	Norme usine	Forets à une lèvre EB 80	CW	EB 80	
5642	549	80xD	Norme usine	Forets à une lèvre EB 80	CW	EB 80	
5643	552	30xD	Norme usine	Outils de forage à deux lèvres ZB 80	CW	ZB 80	
5644	555	30xD	Norme usine	Forets à une lèvre EB 800 à plaquette interchangeable	CW	EB 800	
5646	529	25xD	Norme usine	Forets à une lèvre EB 100	CW monobloc	EB 100	
5647	530	50xD	Norme usine	Forets à une lèvre EB 100	CW monobloc	EB 100	
5648	531	75xD	Norme usine	Forets à une lèvre EB 100	CW monobloc	EB 100	
5689	544	40xD	Norme usine	Forets à une lèvre EB 80	CW	EB 80	
5690	547	80xD	Norme usine	Forets à une lèvre EB 80	CW	EB 80	
5747	566		Norme usine	Canon de perçage	HSS		



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5748	565		Norme usine	Canon de perçage	CW monobloc		
5749	573		Norme usine	Guides de lunettes pour outils à forer 1 et 2 lèvres			
5750	571		Norme usine	Guides de lunettes, de forme spéciale, pour les forets à une lèvre			
5751	576		Norme usine	Guides de lunettes pour les outils de forage à deux lèvres			
5752	569		Norme usine	Rondelles d'étanchéité pour les forets à une lèvre			
5753	575		Norme usine	Rondelles d'étanchéité pour les outils de forage à deux lèvres de coupe			
5754	577		Norme usine	Vis de réglage			
5755	578		Norme usine	Vis de réglage			
5759	59	5xD	DIN 6537L	Forets Ratio à canaux de lubrification	CW monobloc	RT 100 S	
5760	96	8xD	Norme usine	Forets Ratio à canaux de lubrification	CW monobloc	RT 100 S	
6068	58	4xD	Norme usine	Forets Ratio à canaux de lubrification	CW monobloc	RT 150 GG	
6069	94	7xD	Norme usine	Forets Ratio à canaux de lubrification	CW monobloc	RT 150 GG	
6070	99	10xD	Norme usine	Forets Ratio à canaux de lubrification	CW monobloc	RT 150 GG	
6128	157		Norme usine	Vis de fixation			
6400	108, 407, 659	4xD	Norme usine	Microforets ExclusiveLine sans canaux de lubrification	CW monobloc	N	
6401	109, 408, 660	7xD	Norme usine	Microforets ExclusiveLine sans canaux de lubrification	CW monobloc	N	
6405	110, 409, 661	5xD	Norme usine	Microforets ExclusiveLine avec canaux de lubrification	CW monobloc	N	
6408	111, 410, 662	8xD	Norme usine	Microforets ExclusiveLine avec canaux de lubrification	CW monobloc	N	
6412	112, 411, 663	15xD	Norme usine	Microforets ExclusiveLine avec canaux de lubrification	CW monobloc	N	
6501	82	5xD	DIN 6537L	Forets Ratio à canaux de lubrification	CW monobloc	RT 100 R	
6502	91	7xD	Norme usine	Forets Ratio à canaux de lubrification	CW monobloc	RT 100 R	
6509	102, 523	15xD	Norme usine	Forets Ratio à canaux de lubrification	CW monobloc	RT 100 T	
6511	104, 524	20xD	Norme usine	Forets Ratio à canaux de lubrification	CW monobloc	RT 100 T	
6512	105, 525	25xD	Norme usine	Forets Ratio à canaux de lubrification	CW monobloc	RT 100 T	
6513	106, 526	30xD	Norme usine	Forets Ratio à canaux de lubrification	CW monobloc	RT 100 T	
6514	107, 527	40xD	Norme usine	Forets Ratio à canaux de lubrification	CW monobloc	RT 100 T	
7632	155		Norme usine	Plaquettes de lamage HT 800	CW monobloc		
7635	156		Norme usine	Plaquettes de lamage HT 800	CW monobloc		
7645	154		Norme usine	Plaquettes de lamage HT 800	CW monobloc		
8510	48	3xD	DIN 6537K	Forets Ratio à canaux de lubrification	CW monobloc	RT 100 VA	
8511	72	5xD	DIN 6537L	Forets Ratio à canaux de lubrification	CW monobloc	RT 100 VA	
8520	44	3xD	DIN 6537K	Forets Ratio à canaux de lubrification	CW monobloc	RT 100 HF	
8521	68	5xD	DIN 6537L	Forets Ratio à canaux de lubrification	CW monobloc	RT 100 HF	
8522	90	7xD	Norme usine	Forets Ratio à canaux de lubrification	CW monobloc	RT 100 HF	
8524	25	3xD	DIN 6537K	Forets Ratio sans canaux de lubrification	CW monobloc	RT 100 HF	
8610	50	3xD	DIN 6537K	Forets Ratio à canaux de lubrification	CW monobloc	RT 100 VA	
8611	74	5xD	DIN 6537L	Forets Ratio à canaux de lubrification	CW monobloc	RT 100 VA	
8620	46	3xD	DIN 6537K	Forets Ratio à canaux de lubrification	CW monobloc	RT 100 HF	
8621	70	5xD	DIN 6537L	Forets Ratio à canaux de lubrification	CW monobloc	RT 100 HF	



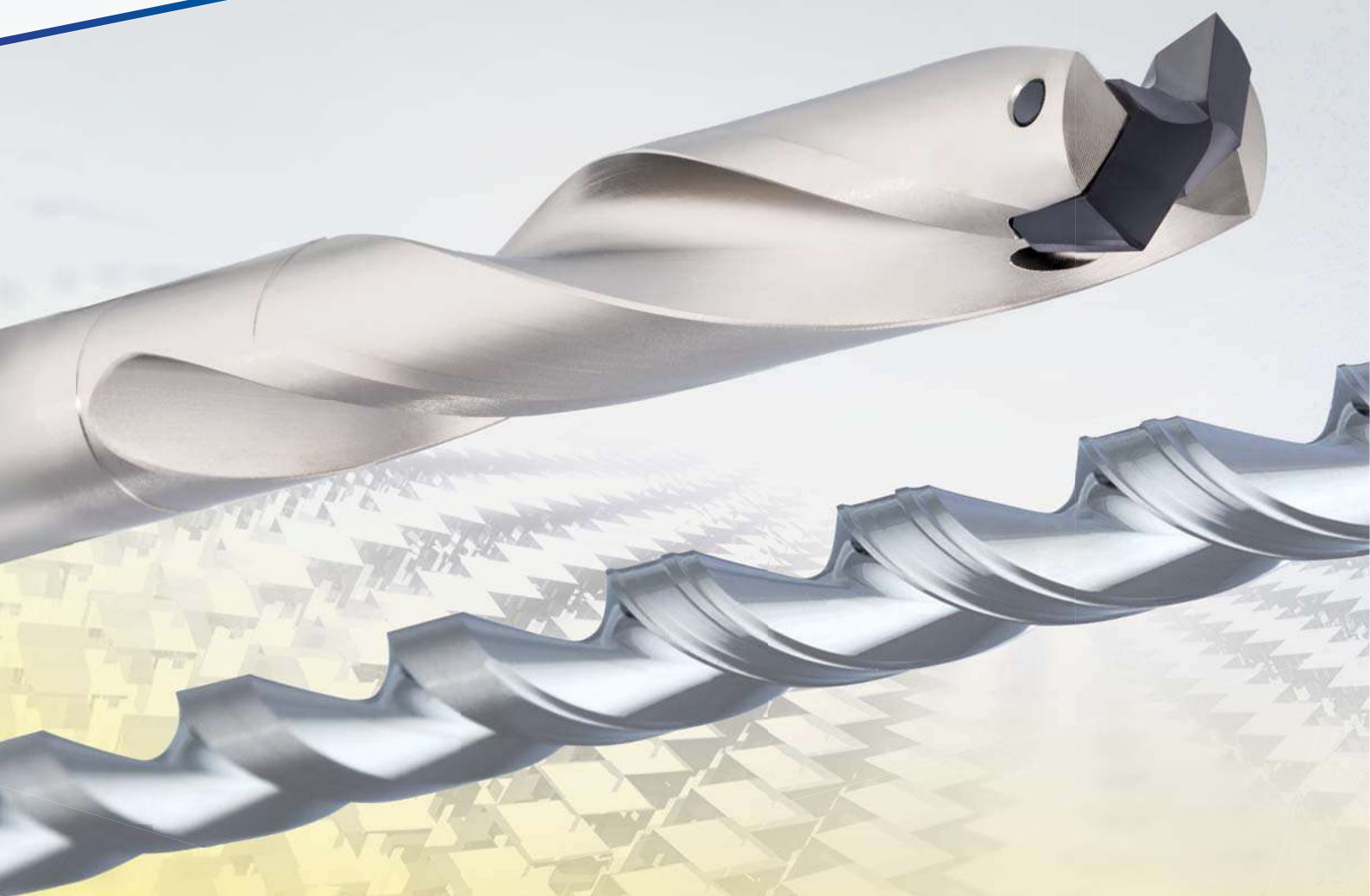








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