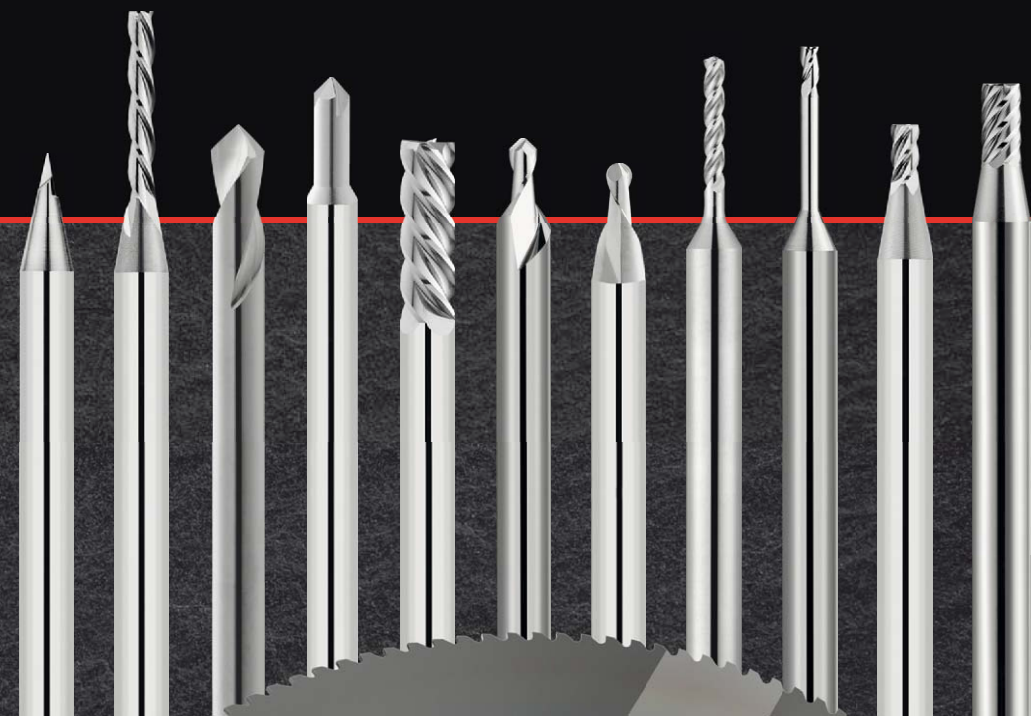






Alfatool SA

Fraises à graver
Gravierfräser
Engraving mills



1

Forets à centrer / Forets
Zentrierbohrer / Bohrer
Centering drills / Drills



2

Micro-fraises
Mikrofräser
Micro end mills



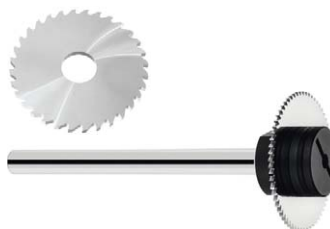
3

Fraises en bout / Fraises à angler
Schaftfräser / Kegelsenker
End mills / Chamfering tools



4

Fraises circulaires / Tasseaux
Kreissägeblätter / Fräsdorne
Slitting saws / Milling arbors



5

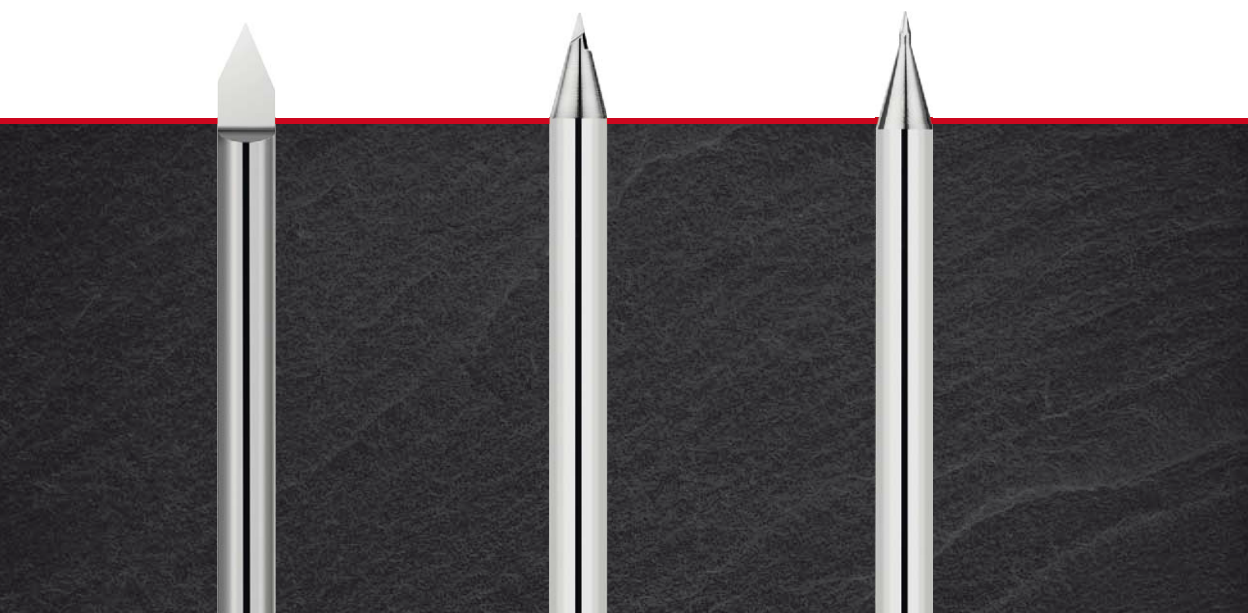
Informations techniques et symboles
Technische Informationen und Symbole
Technical information and symbols

6

Répertoire des articles
Artikelverzeichnis
Index of items

7

2000



Répertoire **Fraises à graver**
 Verzeichnis **Gravierfräser**
 Index **Engraving mills**

Paramètres de coupe indicatifs
 Empfohlene Schnittwerte
 Standard machining data

1.02

	Fraises à graver Gravierfräser Engraving mills				
	Type	A	Flat[E] / Radius [r]	D2	page
	2100-P	20° / 30° / 35° / 40° 45° / 50° / 55° / 60° 65° / 70° / 90° / 120°	0.05-0.30 0.05-0.10 / every 0.01 0.10-0.30 / every 0.05	Ø3h4 Ø6h5	1.03
	2300-P	20° / 30° / 35° / 40° 45° / 50° / 55° / 60° 65° / 70° / 90°	0.02-0.30 0.02-0.10 / every 0.01 0.10-0.30 / every 0.05	Ø3h4	1.04
	2300-R	20° / 30° / 35° / 40° 45° / 50° / 55° / 60° 65° / 70° / 90°	0.04-0.30 0.04-0.10 / every 0.01 0.10-0.30 / every 0.05	Ø3h4	1.05
	2900-P	20° / 30° / 35° / 40° 45° / 50° / 55° / 60° 65° / 70° / 90°	0.04-0.30 0.04-0.10 / every 0.01 0.10-0.30 / every 0.05	Ø3h4	1.06
	2900-R	20° / 30° / 35° / 40° 45° / 50° / 55° / 60° 65° / 70° / 90°	0.04-0.30 0.04-0.10 / every 0.01 0.10-0.30 / every 0.05	Ø3h4	1.07

Paramètres de coupe indicatifs **Fraises à graver**
 Empfohlene Schnittwerte **Gravierfräser**
 Standard machining data **Engraving mills**

Matière Werkstoff Material	n (tr/min)	Vf (mm/min)	N	TiAlN*	STF*	TiCN*	ALFA- TOP*
Acier de décolletage Automatenstahl Free-cutting steel (P)	20 - 50'000	100 - 180	-	+++	+++	++	-
Acier Stahl Steel < 600 N/mm² (P)	20 - 50'000	100 - 180	-	+++	+++	++	-
Acier Stahl Steel < 800 N/mm² (P)	20 - 50'000	100 - 180	-	+++	+++	++	-
Acier Stahl Steel > 800 N/mm² (P)	20 - 50'000	100 - 150	-	+++	+++	++	-
Acier trempé Gehärteter Stahl Hardened steel -55HRC (H)	20 - 50'000	-	-	+++	+++	+	-
Acier trempé Gehärteter Stahl Hardened steel +55HRC (H)	20 - 50'000	-	-	+++	+++	+	-
Inox Rostfreistahl Stainless steel (M)	20 - 50'000	100 - 170	-	+++	+++	++	-
Aluminium (N)	20 - 50'000	100 - 250	+++	++	++	+	+++
Cuivre, laiton, bronze Kupfer, Messing, Bronze Copper, brass, bronze (N)	20 - 50'000	70 - 150	+++	++	++	++	+++
Matière synthétique Synthetisches Material Synthetic material (N)	20 - 50'000	100 - 200	+++	++	++	++	+++
Métaux précieux Edelmetalle Precious metals (N)	20 - 50'000	100 - 200	+++	++	++	++	+++
Titane Titan Titanium (S)	20 - 50'000	70 - 150	-	+++	+++	++	-
Alliage de nickel Nickel-Legierung Nickel alloy (S)	20 - 50'000	80 - 180	-	+++	+++	++	-
Matière exotique Exotisches material Exotic material (O)	20 - 50'000	80 - 180	+	+++	+++	++	+++

* Avec revêtement, augmenter les valeurs de 20 %
 Mit Beschichtung, Daten um 20 % erhöhen
 With coating, increase data by 20 %

+ Bien / Gut / Good
 ++ Très bien / Sehr gut / Very good
 +++ Excellent / Ausgezeichnet / Excellent

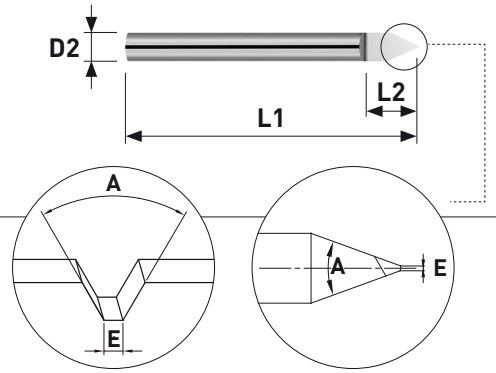
Avance conseillée pour des vitesses de rotation entre 20'000 et 30'000 tours/min
 Empfohlener Vorschub für Drehgeschwindigkeiten zwischen 20'000 und 30'000 U/Min
 Recommended feed rate for rotation speeds between 20'000 and 30'000 RPM

Fraises à graver avec plat

Gravierfräser mit Fläche

Engraving mills with flat

MD
VHM
HM



Art. N°	A	E	L2	D2 Ø3h4 Ø6h5	L1	N	TiAlN	STF	TiCN	ALFA- TOP
2120-P-_(E)	20°	0.05-0.10* / 0.10-0.30 **	5.20	3.00	33	●	●	●	●	●
2130-P-_(E)	30°	0.05-0.10* / 0.10-0.30 **	5.20	3.00	33	●	●	●	●	●
2135-P-_(E)	35°	0.05-0.10* / 0.10-0.30 **	5.20	3.00	33	●	●	●	●	●
2140-P-_(E)	40°	0.05-0.10* / 0.10-0.30 **	6.00	3.00	33	●	●	●	●	●
2145-P-_(E)	45°	0.05-0.10* / 0.10-0.30 **	6.00	3.00	33	●	●	●	●	●
2150-P-_(E)	50°	0.05-0.10* / 0.10-0.30 **	6.00	3.00	33	●	●	●	●	●
2155-P-_(E)	55°	0.05-0.10* / 0.10-0.30 **	6.00	3.00	33	●	●	●	●	●
2160-P-_(E)	60°	0.05-0.10* / 0.10-0.30 **	8.00	3.00	33	●	●	●	●	●
2165-P-_(E)	65°	0.05-0.10* / 0.10-0.30 **	8.00	3.00	33	●	●	●	●	●
2170-P-_(E)	70°	0.05-0.10* / 0.10-0.30 **	8.00	3.00	33	●	●	●	●	●
2190-P-_(E)	90°	0.05-0.10* / 0.10-0.30 **	8.00	3.00	33	●	●	●	●	●
21120-P-_(E)	120°	0.05-0.10* / 0.10-0.30 **	8.00	3.00	33	●	●	●	●	●
2130-6-P-_(E)	30°	0.05-0.10* / 0.10-0.30 **	12.00	6.00	40	●	●	●	●	●
2140-6-P-_(E)	40°	0.05-0.10* / 0.10-0.30 **	12.00	6.00	40	●	●	●	●	●

* tous les 0.01 mm
alle 0.01 mm
every 0.01 mm

** tous les 0.05 mm
alle 0.05 mm
every 0.05 mm

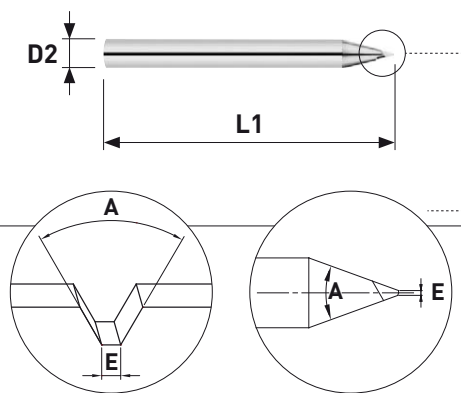


Fraises à graver avec plat

Gravierfräser mit Fläche

Engraving mills with flat

MD
VHM
HM



Art. N°	A	E	D2 _{h4}	L1	N	TiAlN	STF	TiCN	ALFA-TOP
2320-P-_(E)	20°	0.02-0.10* / 0.10-0.30**	3.00	33	●	●	●	●	●
2330-P-_(E)	30°	0.02-0.10* / 0.10-0.30**	3.00	33	●	●	●	●	●
2335-P-_(E)	35°	0.02-0.10* / 0.10-0.30**	3.00	33	●	●	●	●	●
2340-P-_(E)	40°	0.02-0.10* / 0.10-0.30**	3.00	33	●	●	●	●	●
2345-P-_(E)	45°	0.02-0.10* / 0.10-0.30**	3.00	33	●	●	●	●	●
2350-P-_(E)	50°	0.02-0.10* / 0.10-0.30**	3.00	33	●	●	●	●	●
2355-P-_(E)	55°	0.02-0.10* / 0.10-0.30**	3.00	33	●	●	●	●	●
2360-P-_(E)	60°	0.02-0.10* / 0.10-0.30**	3.00	33	●	●	●	●	●
2365-P-_(E)	65°	0.02-0.10* / 0.10-0.30**	3.00	33	●	●	●	●	●
2370-P-_(E)	70°	0.02-0.10* / 0.10-0.30**	3.00	33	●	●	●	●	●
2390-P-_(E)	90°	0.02-0.10* / 0.10-0.30**	3.00	33	●	●	●	●	●

* tous les 0.01 mm
alle 0.01 mm
every 0.01 mm

** tous les 0.05 mm
alle 0.05 mm
every 0.05 mm

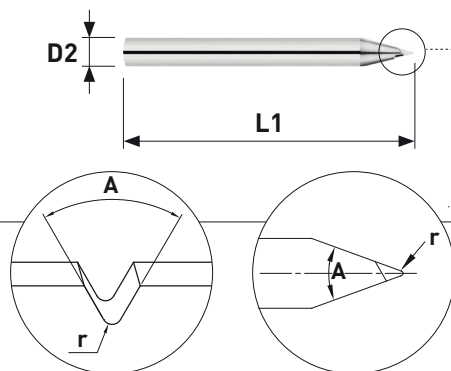


Fraises à graver à rayon

Gravierfräser mit Radius

Engraving mills with radius

MD
VHM
HM



Art. N°	A	r	D2 h4	L1	N	TiAlN	STF	TiCN	ALFA-TOP
2320-R-_(r)	20°	0.04-0.10* / 0.10-0.30**	3.00	33	●	●	●	●	●
2330-R-_(r)	30°	0.04-0.10* / 0.10-0.30**	3.00	33	●	●	●	●	●
2335-R-_(r)	35°	0.04-0.10* / 0.10-0.30**	3.00	33	●	●	●	●	●
2340-R-_(r)	40°	0.04-0.10* / 0.10-0.30**	3.00	33	●	●	●	●	●
2345-R-_(r)	45°	0.04-0.10* / 0.10-0.30**	3.00	33	●	●	●	●	●
2350-R-_(r)	50°	0.04-0.10* / 0.10-0.30**	3.00	33	●	●	●	●	●
2355-R-_(r)	55°	0.04-0.10* / 0.10-0.30**	3.00	33	●	●	●	●	●
2360-R-_(r)	60°	0.04-0.10* / 0.10-0.30**	3.00	33	●	●	●	●	●
2365-R-_(r)	65°	0.04-0.10* / 0.10-0.30**	3.00	33	●	●	●	●	●
2370-R-_(r)	70°	0.04-0.10* / 0.10-0.30**	3.00	33	●	●	●	●	●
2390-R-_(r)	90°	0.04-0.10* / 0.10-0.30**	3.00	33	●	●	●	●	●

* tous les 0.01 mm
alle 0.01 mm
every 0.01 mm

** tous les 0.05 mm
alle 0.05 mm
every 0.05 mm

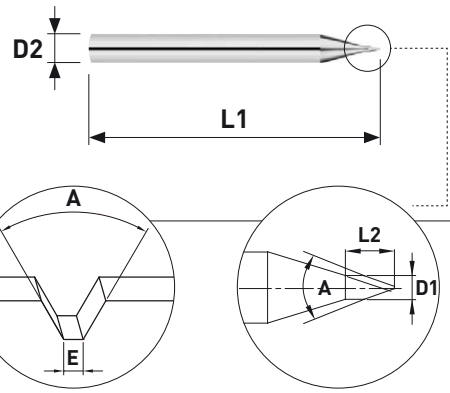


Fraises à graver renforcées

Verstärkte Gravierfräser

Reinforced engraving mills

MD
VHM
HM



Art. N°	A	E	D1	L2	D2 _{h4}	L1	N	TiAlN	STF	TiCN	ALFA-TOP
2920-P_(E)	20°	0.04-0.10* / 0.10-0.30**	0.60	1.80	3.00	33	●	●	●	●	●
2930-P_(E)	30°	0.04-0.10* / 0.10-0.30**	0.60	1.80	3.00	33	●	●	●	●	●
2935-P_(E)	35°	0.04-0.10* / 0.10-0.30**	0.60	1.80	3.00	33	●	●	●	●	●
2940-P_(E)	40°	0.04-0.10* / 0.10-0.30**	0.60	1.80	3.00	33	●	●	●	●	●
2945-P_(E)	45°	0.04-0.10* / 0.10-0.30**	1.00	1.80	3.00	33	●	●	●	●	●
2950-P_(E)	50°	0.04-0.10* / 0.10-0.30**	1.00	2.00	3.00	33	●	●	●	●	●
2955-P_(E)	55°	0.04-0.10* / 0.10-0.30**	1.00	2.00	3.00	33	●	●	●	●	●
2960-P_(E)	60°	0.04-0.10* / 0.10-0.30**	1.20	2.00	3.00	33	●	●	●	●	●
2965-P_(E)	65°	0.04-0.10* / 0.10-0.30**	1.20	2.00	3.00	33	●	●	●	●	●
2970-P_(E)	70°	0.04-0.10* / 0.10-0.30**	1.20	2.00	3.00	33	●	●	●	●	●
2990-P_(E)	90°	0.04-0.10* / 0.10-0.30**	1.20	2.00	3.00	33	●	●	●	●	●

* tous les 0.01 mm
alle 0.01 mm
every 0.01 mm

** tous les 0.05 mm
alle 0.05 mm
every 0.05 mm

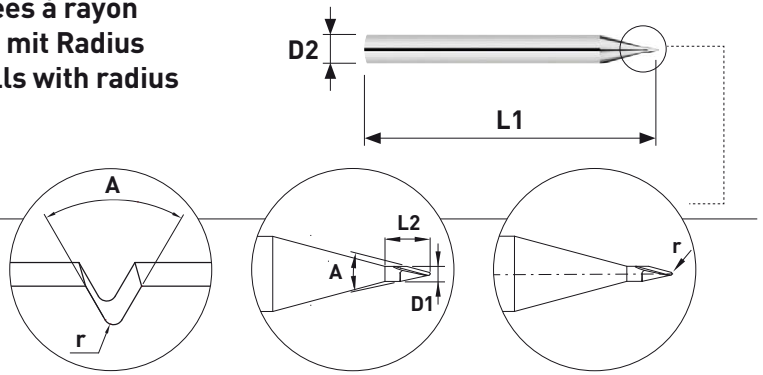


Fraises à graver renforcées à rayon

Verstärkte Gravierfräser mit Radius

Reinforced engraving mills with radius

MD
VHM
HM



Art. N°	A	r	D1	L2	D2 _{h4}	L1	N	TiAlN	STF	TiCN	ALFA-TOP
2920-R-_(r)	20°	0.04-0.10* / 0.10-0.20**	0.60	1.80	3.00	33	●	●	●	●	●
2930-R-_(r)	30°	0.04-0.10* / 0.10-0.20**	0.60	1.80	3.00	33	●	●	●	●	●
2935-R-_(r)	35°	0.04-0.10* / 0.10-0.20**	0.60	1.80	3.00	33	●	●	●	●	●
2940-R-_(r)	40°	0.04-0.10* / 0.10-0.20**	0.60	1.80	3.00	33	●	●	●	●	●
2945-R-_(r)	45°	0.04-0.10* / 0.10-0.30**	1.00	1.80	3.00	33	●	●	●	●	●
2950-R-_(r)	50°	0.04-0.10* / 0.10-0.30**	1.00	2.00	3.00	33	●	●	●	●	●
2955-R-_(r)	55°	0.04-0.10* / 0.10-0.30**	1.00	2.00	3.00	33	●	●	●	●	●
2960-R-_(r)	60°	0.04-0.10* / 0.10-0.30**	1.20	2.00	3.00	33	●	●	●	●	●
2965-R-_(r)	65°	0.04-0.10* / 0.10-0.30**	1.20	2.00	3.00	33	●	●	●	●	●
2970-R-_(r)	70°	0.04-0.10* / 0.10-0.30**	1.20	2.00	3.00	33	●	●	●	●	●
2990-R-_(r)	90°	0.04-0.10* / 0.10-0.30**	1.20	2.00	3.00	33	●	●	●	●	●

* tous les 0.01 mm
alle 0.01 mm
every 0.01 mm

** tous les 0.05 mm
alle 0.05 mm
every 0.05 mm



3000



Répertoire **Forets à centrer NC / Forets**
 Verzeichnis **NC-Zentrierbohrer / Bohrer**
 Index **NC centering drills / Drills**

Paramètres de coupe indicatifs
 Empfohlene Schnittwerte
 Standard machining data

2.02-2.03

	Forets à centrer NC / Forets NC-Zentrierbohrer / Bohrer NC centering drills / Drills					
	Z	D2	λ	D1	Type	Page
		Ø2 - Ø6 h5	60°	Ø2.00 - 6.00	3680-60	2.04
		Ø2 - Ø6 h5	90°	Ø0.50 - 6.00	3680-90	2.05
		Ø2 - Ø6 h5	120°	Ø0.50 - 6.00	3680-120	2.06
		Ø2 - Ø3 h5	90°	Ø0.50 - 3.00	3690	2.07
	Z2	D = D h6	118°	Ø0.50 - 6.00	3010	2.08
		Ø2 h6	120°	Ø0.80 - 2.00	3011	2.09
		Ø1.50 - Ø3.00 h6	120°	Ø0.50 - 2.40	3012	2.10
		Ø1.00 - Ø2.00 h6	120°	Ø0.40 - 1.90	3013	2.11
		Ø1.50 - Ø2.00 h6	120°	Ø0.50 - 1.95	3014	2.12
		Ø3 h6	130°	Ø0.10 - 2.00	3020	2.13 - 2.14
		Ø3 h6	130°	Ø0.10 - 3.00	3023	2.15 - 2.17
		Ø3 h6	130°	Ø0.20 - 2.00	3026	2.18 - 2.19
	Z3	Ø3 h6	140°	Ø0.20 - 2.99	3030	2.20 - 2.22

Paramètres de coupe indicatifs **Forets à centrer NC**
 Empfohlene Schnittwerte **NC-Zentrierbohrer**
 Standard machining data **NC centering drills**

Matière Werkstoff Material		VC	f	N	TiAlN*	STF*
		(m/min)	(mm)			
Acier de décolletage Automatenstahl Free-cutting steel	P	60	D1/55	++	+++	+++
Acier Stahl	< 600 N/mm ² P	55	D1/55	++	+++	+++
Acier Stahl	< 800 N/mm ² P	55	D1/55	++	+++	+++
Acier Stahl	> 800 N/mm ² P	55	D1/55	++	+++	+++
Acier trempé Gehärteter Stahl Hardened steel	-55HRC H	10	D1/100	-	+++	+++
Acier trempé Gehärteter Stahl Hardened steel	+55HRC H	-	-	-	-	-
Inox Rostfreistahl Stainless steel	M	30	D1/85	++	+++	+++
Aluminium	N	100 - 180	D1/50	+++	++	++
Cuivre, laiton, bronze Kupfer, Messing, Bronze Copper, brass, bronze	N	60 - 90	D1/60	+++	++	++
Matière synthétique Synthetisches Material Synthetic material	N	350 - 700	D1/60	+++	++	++
Métaux précieux Edelmetalle Precious metals	N	50 - 80	D1/100	+++	++	++
Titane Titan Titanium	S	30	D1/115	++	+++	+++
Alliage de nickel Nickel-Legierung Nickel alloy	S	15 - 20	D1/120	++	+++	+++
Matière exotique Exotisches material Exotic material	O	10	D1/100	++	+++	+++

* Avec revêtement, augmenter les valeurs de 20 %
 Mit Beschichtung, Daten um 20 % erhöhen
 With coating, increase data by 20 %

+ Bien / Gut / Good
 ++ Très bien / Sehr gut / Very good
 +++ Excellent / Ausgezeichnet / Excellent

Paramètres de coupe indicatifs **Forets**
 Empfohlene Schnittwerte **Bohrer**
 Standard machining data **Drills**

Matière Werkstoff Material		VC	f	Débouillage Entspannvorgang Pecking
		(m/min)	(mm)	
Acier de décolletage Automatenstahl Free-cutting steel	P	60 - 90	D1/70	1.5xØ
Acier Stahl Steel	< 600 N/mm ² P	50 - 80	D1/70	1.5xØ
Acier Stahl Steel	< 800 N/mm ² P	50 - 80	D1/70	1.5xØ
Acier Stahl Steel	> 800 N/mm ² P	50 - 80	D1/70	1.5xØ
Acier trempé Gehärteter Stahl Hardened steel	-55HRC H	-	-	-
Acier trempé Gehärteter Stahl Hardened steel	+55HRC H	-	-	-
Inox Rostfreistahl Stainless steel	M	20 - 30	D1/70	3xØ
Aluminium	N	100 - 180	D1/40	2xØ
Cuivre, laiton, bronze Kupfer, Messing, Bronze Copper, brass, bronze	N	50 - 85	D1/120	1xØ
Matière synthétique Synthetisches Material Synthetic material	N	350 - 750	D1/40	2xØ
Métaux précieux Edelmetalle Precious metals	N	60 - 90	D1/100	0.85xØ
Titane Titan Titanium	S	20 - 40	D1/120	1.3xØ
Alliage de nickel Nickel-Legierung Nickel alloy	S	20	D1/120	1xØ
Matière exotique Exotisches material Exotic material	O	5 - 10	D1/100	1xØ

Avec revêtement, augmenter les valeurs de 20 %
 Mit Beschichtung, Daten um 20 % erhöhen
 With coating, increase data by 20 %

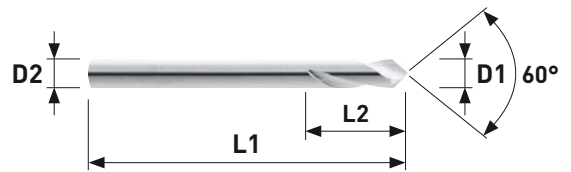
Forets à centrer NC

NC-Zentrierbohrer

NC centering drills

MD
VHM
HM λ 25°

60°



Art. N°	D1 _{h6}	L2	D2 _{h5}	L1	N	TiAlN	STF
3680-2.00-60	2.00	8.00	2.00	39	●	●	●
3680-3.00-60	3.00	10.00	3.00	39	●	●	●
3680-4.00-60	4.00	12.00	4.00	50	●	●	●
3680-5.00-60	5.00	14.00	5.00	50	●	●	●
3680-6.00-60	6.00	16.00	6.00	50	●	●	●



Forets à centrer NC

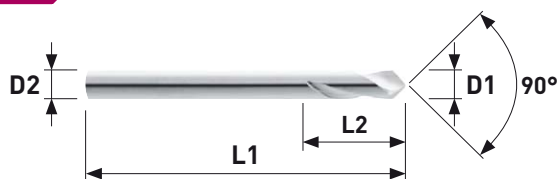
NC-Zentrierbohrer

NC centering drills

MD
VHM
HM

λ 25°

90°



Art. N°	D1 _{h6}	L2	D2 _{h5}	L1	N	TiAlN	STF
3680-0.50-90	0.50	1.50	2.00	39	●		
3680-0.60-90	0.60	1.50	2.00	39	●		
3680-0.70-90	0.70	1.50	2.00	39	●		
3680-0.80-90	0.80	1.50	2.00	39	●		
3680-0.90-90	0.90	1.50	2.00	39	●		
3680-1.00-90	1.00	3.00	2.00	39	●		
3680-1.10-90	1.10	3.00	2.00	39	●		
3680-1.20-90	1.20	3.00	2.00	39	●		
3680-1.30-90	1.30	3.00	2.00	39	●		
3680-1.40-90	1.40	3.00	2.00	39	●		
3680-1.50-90	1.50	4.00	2.00	39	●		
3680-1.60-90	1.60	4.00	2.00	39	●		
3680-1.70-90	1.70	4.00	2.00	39	●		
3680-1.80-90	1.80	4.00	2.00	39	●		
3680-1.90-90	1.90	4.00	2.00	39	●		
3680-2.00-90	2.00	8.00	2.00	39	●	●	●
3680-2.50-90	2.50	8.00	2.50	39	●	●	●
3680-3.00-90	3.00	10.00	3.00	39	●	●	●
3680-4.00-90	4.00	12.00	4.00	50	●	●	●
3680-5.00-90	5.00	15.00	5.00	50	●	●	●
3680-6.00-90	6.00	16.00	6.00	57	●	●	●



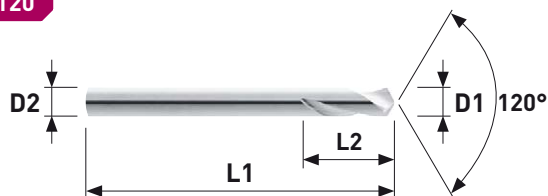
Forets à centre NC

NC-Zentrierbohrer

NC centering drills

MD
VHM
HM λ 25°

120°



Art. N°	D1 h6	L2	D2 h5	L1	N	TiAlN	STF
3680-0.50-120	0.50	1.50	2.00	39	●		
3680-0.60-120	0.60	1.50	2.00	39	●		
3680-0.70-120	0.70	1.50	2.00	39	●		
3680-0.80-120	0.80	1.50	2.00	39	●		
3680-0.90-120	0.90	1.50	2.00	39	●		
3680-1.00-120	1.00	3.00	2.00	39	●		
3680-1.10-120	1.10	3.00	2.00	39	●		
3680-1.20-120	1.20	3.00	2.00	39	●		
3680-1.30-120	1.30	3.00	2.00	39	●		
3680-1.40-120	1.40	3.00	2.00	39	●		
3680-1.50-120	1.50	4.00	2.00	39	●		
3680-1.60-120	1.60	4.00	2.00	39	●		
3680-1.70-120	1.70	4.00	2.00	39	●		
3680-1.80-120	1.80	4.00	2.00	39	●		
3680-1.90-120	1.90	4.00	2.00	39	●		
3680-2.00-120	2.00	8.00	2.00	39	●	●	●
3680-2.50-120	2.50	8.00	2.50	39	●	●	●
3680-3.00-120	3.00	10.00	3.00	39	●	●	●
3680-4.00-120	4.00	12.00	4.00	50	●	●	●
3680-5.00-120	5.00	15.00	5.00	50	●	●	●
3680-6.00-120	6.00	16.00	6.00	57	●	●	●



Forets à centrer NC

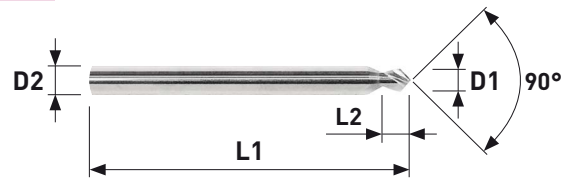
NC-Zentrierbohrer

NC centering drills

MD
VHM
HM*
λ 25°

λ 32°

90°



Art. N°	D1 h ₆	L2	D2 h ₅	L1	N	TiAlN	STF
3690-0.50	0.50*	2.50	2.00	39	●		
3690-0.60	0.60*	2.50	2.00	39	●		
3690-0.70	0.70*	2.50	2.00	39	●		
3690-0.80	0.80*	2.50	2.00	39	●		
3690-0.90	0.90*	2.50	2.00	39	●		
3690-1.00	1.00	3.00	2.00	39	●		
3690-1.10	1.10	3.00	2.00	39	●		
3690-1.20	1.20	3.00	2.00	39	●		
3690-1.30	1.30	3.00	2.00	39	●		
3690-1.40	1.40	3.00	2.00	39	●		
3690-1.50	1.50	3.50	2.00	39	●		
3690-1.60	1.60	3.50	2.00	39	●		
3690-1.70	1.70	3.50	2.00	39	●		
3690-1.80	1.80	3.50	2.00	39	●		
3690-1.90	1.90	3.50	2.00	39	●		
3690-2.00	2.00	-	2.00	39	●	●	●
3690-2.10	2.10	4.00	3.00	39	●	●	●
3690-2.20	2.20	4.00	3.00	39	●	●	●
3690-2.30	2.30	4.00	3.00	39	●	●	●
3690-2.40	2.40	4.00	3.00	39	●	●	●
3690-2.50	2.50	4.00	3.00	39	●	●	●
3690-2.60	2.60	4.00	3.00	39	●	●	●
3690-2.70	2.70	4.00	3.00	39	●	●	●
3690-2.80	2.80	4.00	3.00	39	●	●	●
3690-2.90	2.90	4.00	3.00	39	●	●	●
3690-3.00	3.00	-	3.00	50	●	●	●



Forets cylindriques

Zylindrische Bohrer

Cylindrical drills

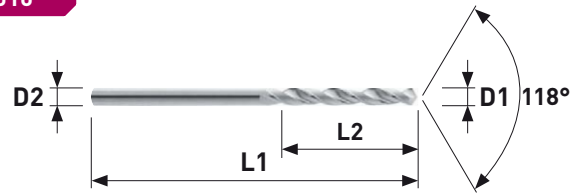
MD
VHM
HM

λ 25°

*
λ 35°

Z = 2

118°



Art. N°	D1 _{h6} D2 _{h6}	L1	L2	N
3010-0.50	0.50	30	5.00	●
3010-0.55	0.55	30	5.00	●
3010-0.60	0.60	30	5.00	●
3010-0.65	0.65	30	6.00	●
3010-0.70	0.70*	30	6.00	●
3010-0.75	0.75*	30	8.00	●
3010-0.80	0.80*	30	8.00	●
3010-0.85	0.85*	30	9.00	●
3010-0.90	0.90*	30	9.00	●
3010-0.95	0.95*	30	10.00	●
3010-1.00	1.00*	30	10.00	●
3010-1.05	1.05*	30	10.00	●
3010-1.10	1.10*	30	10.00	●
3010-1.15	1.15*	30	12.00	●
3010-1.20	1.20*	30	12.00	●
3010-1.25	1.25*	30	12.00	●
3010-1.30	1.30*	30	12.00	●
3010-1.35	1.35*	30	12.00	●
3010-1.40	1.40*	30	12.00	●
3010-1.45	1.45*	30	12.00	●
3010-1.50	1.50*	30	12.00	●
3010-1.55	1.55*	40	16.00	●
3010-1.60	1.60*	40	16.00	●
3010-1.65	1.65*	40	16.00	●
3010-1.70	1.70*	40	16.00	●
3010-1.75	1.75*	40	16.00	●
3010-1.80	1.80*	40	16.00	●
3010-1.85	1.85*	40	16.00	●
3010-1.90	1.90*	40	16.00	●
3010-1.95	1.95*	40	16.00	●
3010-2.00	2.00	40	16.00	●
3010-2.05	2.05	40	18.00	●
3010-2.10	2.10	40	18.00	●
3010-2.15	2.15	40	18.00	●
3010-2.20	2.20	40	18.00	●
3010-2.25	2.25	40	18.00	●
3010-2.30	2.30	40	18.00	●
3010-2.35	2.35	40	18.00	●
3010-2.40	2.40	40	18.00	●
3010-2.45	2.45	40	18.00	●
3010-2.50	2.50	40	18.00	●

Art. N°	D1 _{h6} D2 _{h6}	L1	L2	N
3010-2.55	2.55	45	18.00	●
3010-2.60	2.60	45	18.00	●
3010-2.65	2.65	45	18.00	●
3010-2.70	2.70	45	18.00	●
3010-2.75	2.75	45	18.00	●
3010-2.80	2.80	45	18.00	●
3010-2.85	2.85	45	18.00	●
3010-2.90	2.90	45	18.00	●
3010-2.95	2.95	45	18.00	●
3010-3.00	3.00	45	18.00	●
3010-3.10	3.10	50	20.00	●
3010-3.20	3.20	50	20.00	●
3010-3.30	3.30	50	20.00	●
3010-3.40	3.40	50	20.00	●
3010-3.50	3.50	50	20.00	●
3010-3.60	3.60	50	20.00	●
3010-3.70	3.70	50	20.00	●
3010-3.80	3.80	50	20.00	●
3010-3.90	3.90	50	20.00	●
3010-4.00	4.00	50	20.00	●
3010-4.10	4.10	50	25.00	●
3010-4.20	4.20	50	25.00	●
3010-4.30	4.30	50	25.00	●
3010-4.40	4.40	50	25.00	●
3010-4.50	4.50	50	25.00	●
3010-4.60	4.60	50	25.00	●
3010-4.70	4.70	50	25.00	●
3010-4.80	4.80	50	25.00	●
3010-4.90	4.90	50	25.00	●
3010-5.00	5.00	50	25.00	●
3010-5.10	5.10	50	25.00	●
3010-5.20	5.20	50	25.00	●
3010-5.30	5.30	50	25.00	●
3010-5.40	5.40	50	25.00	●
3010-5.50	5.50	50	25.00	●
3010-5.60	5.60	50	25.00	●
3010-5.70	5.70	50	25.00	●
3010-5.80	5.80	50	25.00	●
3010-5.90	5.90	50	25.00	●
3010-6.00	6.00	50	25.00	●



Micro-forets

Mikrobohrer

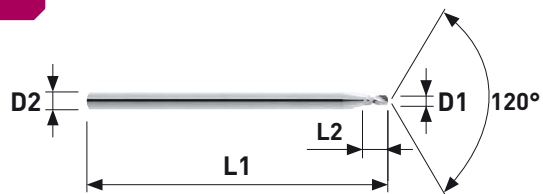
Micro drills

MD
VHM
HM

λ 30°

Z = 2

120°



Art. N°	D1 _{h6}	L2	D2 _{h6}	L1	N
3011-0.80	0.80	2.50	2.00	30	●
3011-0.90	0.90	2.50	2.00	30	●
3011-1.00	1.00	2.50	2.00	30	●
3011-1.10	1.10	2.50	2.00	30	●
3011-1.20	1.20	2.50	2.00	30	●
3011-1.30	1.30	2.50	2.00	30	●
3011-1.40	1.40	2.50	2.00	30	●
3011-1.50	1.50	2.50	2.00	30	●
3011-2.00	2.00	2.50	2.00	30	●



Micro-forets

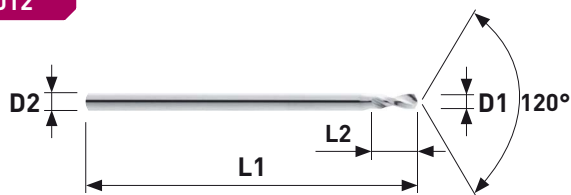
Mikrobohrer

Micro drills

MD
VHM
HM λ 24°

Z = 2

120°



Art. N°	D1 h ₆	L2	D2 Ø1.5h ₆ Ø2h ₆ Ø3h ₆	L1	N
3012-0.50	0.50	1.70	1.50	30	●
3012-0.55	0.55	1.90	1.50	30	●
3012-0.60	0.60	1.90	1.50	30	●
3012-0.65	0.65	1.90	1.50	30	●
3012-0.70	0.70	2.40	1.50	30	●
3012-0.75	0.75	2.40	1.50	30	●
3012-0.80	0.80	2.60	1.50	30	●
3012-0.85	0.85	2.60	1.50	30	●
3012-0.90	0.90	3.00	1.50	30	●
3012-0.95	0.95	3.00	1.50	30	●
3012-1.00	1.00	3.40	1.50	30	●
3012-1.10	1.10	3.80	1.50	30	●
3012-1.20	1.20	4.20	1.50	30	●
3012-1.30	1.30	4.20	1.50	30	●
3012-1.40	1.40	4.70	1.50	30	●
3012-1.50	1.50	4.70	2.00	38	●
3012-1.60	1.60	5.40	2.00	38	●
3012-1.70	1.70	5.40	2.00	38	●
3012-1.80	1.80	6.50	2.00	38	●
3012-1.90	1.90	6.50	2.00	38	●
3012-2.00	2.00	6.50	3.00	38	●
3012-2.10	2.10	6.50	3.00	38	●
3012-2.20	2.20	6.50	3.00	38	●
3012-2.30	2.30	6.50	3.00	38	●
3012-2.40	2.40	6.50	3.00	38	●



Micro-forets

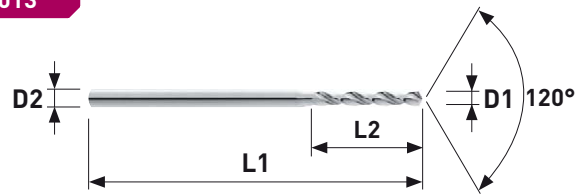
Mikrobohrer

Micro drills

MD
VHM
HM λ 35°

Z = 2

120°



Art. N°	D1 h ₆	L2	D2 h ₆	L1	N
3013-0.40	0.40	3.60	1.00	25	●
3013-0.45	0.45	3.60	1.00	25	●
3013-0.50	0.50	4.00	1.00	25	●
3013-0.55	0.55	4.50	1.00	25	●
3013-0.60	0.60	4.50	1.50	30	●
3013-0.65	0.65	5.00	1.50	30	●
3013-0.70	0.70	5.60	1.50	30	●
3013-0.75	0.75	5.60	1.50	30	●
3013-0.80	0.80	6.30	1.50	30	●
3013-0.85	0.85	6.30	1.50	30	●
3013-0.90	0.90	7.10	1.50	30	●
3013-0.95	0.95	7.10	1.50	30	●
3013-1.00	1.00	8.00	1.50	30	●
3013-1.05	1.05	8.00	1.50	30	●
3013-1.10	1.10	9.00	1.50	30	●
3013-1.15	1.15	9.00	1.50	30	●
3013-1.20	1.20	10.00	1.50	30	●
3013-1.25	1.25	10.00	1.50	30	●
3013-1.30	1.30	10.00	1.50	30	●
3013-1.35	1.35	11.20	1.50	30	●
3013-1.40	1.40	11.20	1.50	30	●
3013-1.45	1.45	11.20	1.50	30	●
3013-1.50	1.50	12.00	2.00	38	●
3013-1.60	1.60	12.00	2.00	38	●
3013-1.70	1.70	12.00	2.00	38	●
3013-1.80	1.80	12.00	2.00	38	●
3013-1.90	1.90	12.00	2.00	38	●



Micro-forets

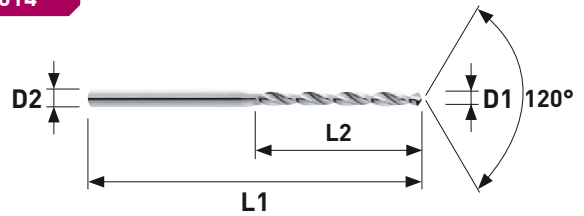
Mikrobohrer

Micro drills

MD
VHM
HM λ 30°

Z = 2

120°



Art. N°	D1 h ₆	L2	D2 h ₆	L1	N
3014-0.50	0.50	6.00	1.50	30	●
3014-0.55	0.55	6.50	1.50	30	●
3014-0.60	0.60	6.50	1.50	30	●
3014-0.65	0.65	7.50	1.50	30	●
3014-0.70	0.70	8.50	1.50	30	●
3014-0.75	0.75	8.50	1.50	30	●
3014-0.80	0.80	9.50	1.50	30	●
3014-0.85	0.85	9.50	1.50	30	●
3014-0.90	0.90	10.50	1.50	30	●
3014-0.95	0.95	10.50	1.50	30	●
3014-1.00	1.00	12.00	1.50	38	●
3014-1.05	1.05	12.00	1.50	38	●
3014-1.10	1.10	13.50	1.50	38	●
3014-1.15	1.15	13.50	1.50	38	●
3014-1.20	1.20	15.00	1.50	38	●
3014-1.25	1.25	15.00	1.50	38	●
3014-1.30	1.30	17.00	1.50	38	●
3014-1.35	1.35	17.00	1.50	38	●
3014-1.40	1.40	17.00	1.50	38	●
3014-1.45	1.45	17.00	1.50	38	●
3014-1.50	1.50	18.00	2.00	38	●
3014-1.55	1.55	18.00	2.00	38	●
3014-1.60	1.60	18.00	2.00	38	●
3014-1.65	1.65	18.00	2.00	38	●
3014-1.70	1.70	18.00	2.00	38	●
3014-1.75	1.75	18.00	2.00	38	●
3014-1.80	1.80	18.00	2.00	38	●
3014-1.85	1.85	18.00	2.00	38	●
3014-1.90	1.90	18.00	2.00	38	●
3014-1.95	1.95	18.00	2.00	38	●



Micro-forets de préperçage

Mikro Pilotbohrer

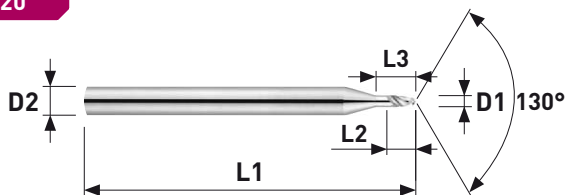
Micro pilot drills

MD
VHM
HM λ 30°

2xD1

Z = 2

130°



Art. N°	D1 0/+0.005	L2	L3	D2 h6	L1	N	Art. N°	D1 0/+0.005	L2	L3	D2 h6	L1	N
3020-0.10	0.10	0.35	0.55	3.00	38	●	3020-0.58	0.58	1.16	1.90	3.00	38	●
3020-0.11	0.11	0.35	0.55	3.00	38	●	3020-0.59	0.59	1.18	1.90	3.00	38	●
3020-0.12	0.12	0.35	0.55	3.00	38	●	3020-0.60	0.60	1.20	1.90	3.00	38	●
3020-0.13	0.13	0.40	0.60	3.00	38	●	3020-0.61	0.61	1.22	2.00	3.00	38	●
3020-0.14	0.14	0.40	0.60	3.00	38	●	3020-0.62	0.62	1.24	2.00	3.00	38	●
3020-0.15	0.15	0.40	0.60	3.00	38	●	3020-0.63	0.63	1.26	2.00	3.00	38	●
3020-0.16	0.16	0.40	0.60	3.00	38	●	3020-0.64	0.64	1.28	2.00	3.00	38	●
3020-0.17	0.17	0.50	0.70	3.00	38	●	3020-0.65	0.65	1.30	2.00	3.00	38	●
3020-0.18	0.18	0.50	0.70	3.00	38	●	3020-0.66	0.66	1.32	2.10	3.00	38	●
3020-0.19	0.19	0.50	0.70	3.00	38	●	3020-0.67	0.67	1.34	2.10	3.00	38	●
3020-0.20	0.20	0.55	0.75	3.00	38	●	3020-0.68	0.68	1.36	2.10	3.00	38	●
3020-0.21	0.21	0.55	0.75	3.00	38	●	3020-0.69	0.69	1.38	2.10	3.00	38	●
3020-0.22	0.22	0.60	0.80	3.00	38	●	3020-0.70	0.70	1.40	2.10	3.00	38	●
3020-0.23	0.23	0.60	0.80	3.00	38	●	3020-0.71	0.71	1.42	2.20	3.00	38	●
3020-0.24	0.24	0.60	0.80	3.00	38	●	3020-0.72	0.72	1.44	2.20	3.00	38	●
3020-0.25	0.25	0.70	0.90	3.00	38	●	3020-0.73	0.73	1.46	2.20	3.00	38	●
3020-0.26	0.26	0.70	0.90	3.00	38	●	3020-0.74	0.74	1.48	2.20	3.00	38	●
3020-0.27	0.27	0.70	0.90	3.00	38	●	3020-0.75	0.75	1.50	2.20	3.00	38	●
3020-0.28	0.28	0.80	1.00	3.00	38	●	3020-0.76	0.76	1.52	2.30	3.00	38	●
3020-0.29	0.29	0.80	1.00	3.00	38	●	3020-0.77	0.77	1.54	2.30	3.00	38	●
3020-0.30	0.30	0.90	1.20	3.00	38	●	3020-0.78	0.78	1.56	2.30	3.00	38	●
3020-0.31	0.31	0.90	1.20	3.00	38	●	3020-0.79	0.79	1.58	2.30	3.00	38	●
3020-0.32	0.32	0.90	1.20	3.00	38	●	3020-0.80	0.80	1.60	2.30	3.00	38	●
3020-0.33	0.33	0.90	1.20	3.00	38	●	3020-0.81	0.81	1.62	2.40	3.00	38	●
3020-0.34	0.34	0.90	1.35	3.00	38	●	3020-0.82	0.82	1.64	2.40	3.00	38	●
3020-0.35	0.35	0.90	1.35	3.00	38	●	3020-0.83	0.83	1.66	2.40	3.00	38	●
3020-0.36	0.36	0.95	1.35	3.00	38	●	3020-0.84	0.84	1.68	2.40	3.00	38	●
3020-0.37	0.37	0.95	1.35	3.00	38	●	3020-0.85	0.85	1.70	2.40	3.00	38	●
3020-0.38	0.38	0.95	1.50	3.00	38	●	3020-0.86	0.86	1.72	2.50	3.00	38	●
3020-0.39	0.39	0.95	1.50	3.00	38	●	3020-0.87	0.87	1.74	2.50	3.00	38	●
3020-0.40	0.40	0.80	1.60	3.00	38	●	3020-0.88	0.88	1.76	2.50	3.00	38	●
3020-0.41	0.41	0.82	1.60	3.00	38	●	3020-0.89	0.89	1.78	2.50	3.00	38	●
3020-0.42	0.42	0.84	1.60	3.00	38	●	3020-0.90	0.90	1.80	2.50	3.00	38	●
3020-0.43	0.43	0.86	1.60	3.00	38	●	3020-0.91	0.91	1.82	2.60	3.00	38	●
3020-0.44	0.44	0.88	1.60	3.00	38	●	3020-0.92	0.92	1.84	2.60	3.00	38	●
3020-0.45	0.45	0.90	1.60	3.00	38	●	3020-0.93	0.93	1.86	2.60	3.00	38	●
3020-0.46	0.46	0.92	1.70	3.00	38	●	3020-0.94	0.94	1.88	2.60	3.00	38	●
3020-0.47	0.47	0.94	1.70	3.00	38	●	3020-0.95	0.95	1.90	2.60	3.00	38	●
3020-0.48	0.48	0.96	1.70	3.00	38	●	3020-0.96	0.96	1.92	2.70	3.00	38	●
3020-0.49	0.49	0.98	1.70	3.00	38	●	3020-0.97	0.97	1.94	2.70	3.00	38	●
3020-0.50	0.50	1.00	1.70	3.00	38	●	3020-0.98	0.98	1.96	2.70	3.00	38	●
3020-0.51	0.51	1.02	1.80	3.00	38	●	3020-0.99	0.99	1.98	2.70	3.00	38	●
3020-0.52	0.52	1.04	1.80	3.00	38	●	3020-1.00	1.00	2.00	2.70	3.00	38	●
3020-0.53	0.53	1.06	1.80	3.00	38	●	3020-1.01	1.01	2.02	3.50	3.00	38	●
3020-0.54	0.54	1.08	1.80	3.00	38	●	3020-1.02	1.02	2.04	3.50	3.00	38	●
3020-0.55	0.55	1.10	1.80	3.00	38	●	3020-1.03	1.03	2.06	3.50	3.00	38	●
3020-0.56	0.56	1.12	1.90	3.00	38	●	3020-1.04	1.04	2.08	3.50	3.00	38	●
3020-0.57	0.57	1.14	1.90	3.00	38	●	3020-1.05	1.05	2.10	3.50	3.00	38	●



Micro-forets de préperçage

Mikro Pilotbohrer

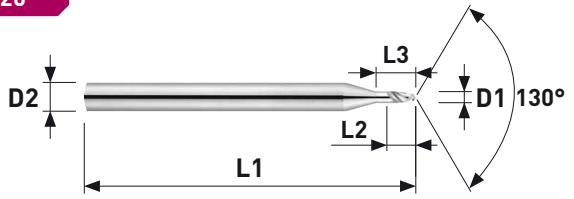
Micro pilot drills

MD
VHM
HM λ 30°

2xD1

Z = 2

130°



Art. N°	D1 0 / +0.005	L2	L3	D2 h ₆	L1	N	Art. N°	D1 0 / +0.005	L2	L3	D2 h ₆	L1	N
3020-1.06	1.06	2.12	3.60	3.00	38	●	3020-1.54	1.54	3.08	5.10	3.00	38	●
3020-1.07	1.07	2.14	3.60	3.00	38	●	3020-1.55	1.55	3.10	5.10	3.00	38	●
3020-1.08	1.08	2.16	3.60	3.00	38	●	3020-1.56	1.56	3.12	5.20	3.00	38	●
3020-1.09	1.09	2.18	3.60	3.00	38	●	3020-1.57	1.57	3.14	5.20	3.00	38	●
3020-1.10	1.10	2.20	3.60	3.00	38	●	3020-1.58	1.58	3.16	5.20	3.00	38	●
3020-1.11	1.11	2.22	3.70	3.00	38	●	3020-1.59	1.59	3.18	5.20	3.00	38	●
3020-1.12	1.12	2.24	3.70	3.00	38	●	3020-1.60	1.60	3.20	5.20	3.00	38	●
3020-1.13	1.13	2.26	3.70	3.00	38	●	3020-1.61	1.61	3.22	5.30	3.00	38	●
3020-1.14	1.14	2.28	3.70	3.00	38	●	3020-1.62	1.62	3.24	5.30	3.00	38	●
3020-1.15	1.15	2.30	3.70	3.00	38	●	3020-1.63	1.63	3.26	5.30	3.00	38	●
3020-1.16	1.16	2.32	3.80	3.00	38	●	3020-1.64	1.64	3.28	5.30	3.00	38	●
3020-1.17	1.17	2.34	3.80	3.00	38	●	3020-1.65	1.65	3.30	5.30	3.00	38	●
3020-1.18	1.18	2.36	3.80	3.00	38	●	3020-1.66	1.66	3.32	5.40	3.00	38	●
3020-1.19	1.19	2.38	3.80	3.00	38	●	3020-1.67	1.67	3.34	5.40	3.00	38	●
3020-1.20	1.20	2.40	3.80	3.00	38	●	3020-1.68	1.68	3.36	5.40	3.00	38	●
3020-1.21	1.21	2.42	4.20	3.00	38	●	3020-1.69	1.69	3.38	5.40	3.00	38	●
3020-1.22	1.22	2.44	4.20	3.00	38	●	3020-1.70	1.70	3.40	5.40	3.00	38	●
3020-1.23	1.23	2.46	4.20	3.00	38	●	3020-1.71	1.71	3.42	5.50	3.00	38	●
3020-1.24	1.24	2.48	4.20	3.00	38	●	3020-1.72	1.72	3.44	5.50	3.00	38	●
3020-1.25	1.25	2.50	4.20	3.00	38	●	3020-1.73	1.73	3.46	5.50	3.00	38	●
3020-1.26	1.26	2.52	4.30	3.00	38	●	3020-1.74	1.74	3.48	5.50	3.00	38	●
3020-1.27	1.27	2.54	4.30	3.00	38	●	3020-1.75	1.75	3.50	5.50	3.00	38	●
3020-1.28	1.28	2.56	4.30	3.00	38	●	3020-1.76	1.76	3.52	5.60	3.00	38	●
3020-1.29	1.29	2.58	4.30	3.00	38	●	3020-1.77	1.77	3.54	5.60	3.00	38	●
3020-1.30	1.30	2.60	4.30	3.00	38	●	3020-1.78	1.78	3.56	5.60	3.00	38	●
3020-1.31	1.31	2.62	4.40	3.00	38	●	3020-1.79	1.79	3.58	5.60	3.00	38	●
3020-1.32	1.32	2.64	4.40	3.00	38	●	3020-1.80	1.80	3.60	5.60	3.00	38	●
3020-1.33	1.33	2.66	4.40	3.00	38	●	3020-1.81	1.81	3.62	5.70	3.00	38	●
3020-1.34	1.34	2.68	4.40	3.00	38	●	3020-1.82	1.82	3.64	5.70	3.00	38	●
3020-1.35	1.35	2.70	4.40	3.00	38	●	3020-1.83	1.83	3.66	5.70	3.00	38	●
3020-1.36	1.36	2.72	4.50	3.00	38	●	3020-1.84	1.84	3.68	5.70	3.00	38	●
3020-1.37	1.37	2.74	4.50	3.00	38	●	3020-1.85	1.85	3.70	5.70	3.00	38	●
3020-1.38	1.38	2.76	4.50	3.00	38	●	3020-1.86	1.86	3.72	5.80	3.00	38	●
3020-1.39	1.39	2.78	4.50	3.00	38	●	3020-1.87	1.87	3.74	5.80	3.00	38	●
3020-1.40	1.40	2.80	4.50	3.00	38	●	3020-1.88	1.88	3.76	5.80	3.00	38	●
3020-1.41	1.41	2.82	4.60	3.00	38	●	3020-1.89	1.89	3.78	5.80	3.00	38	●
3020-1.42	1.42	2.84	4.60	3.00	38	●	3020-1.90	1.90	3.80	5.80	3.00	38	●
3020-1.43	1.43	2.86	4.60	3.00	38	●	3020-1.91	1.91	3.82	5.90	3.00	38	●
3020-1.44	1.44	2.88	4.60	3.00	38	●	3020-1.92	1.92	3.84	5.90	3.00	38	●
3020-1.45	1.45	2.90	4.60	3.00	38	●	3020-1.93	1.93	3.86	5.90	3.00	38	●
3020-1.46	1.46	2.92	4.70	3.00	38	●	3020-1.94	1.94	3.88	5.90	3.00	38	●
3020-1.47	1.47	2.94	4.70	3.00	38	●	3020-1.95	1.95	3.90	5.90	3.00	38	●
3020-1.48	1.48	2.96	4.70	3.00	38	●	3020-1.96	1.96	3.92	6.00	3.00	38	●
3020-1.49	1.49	2.98	4.70	3.00	38	●	3020-1.97	1.97	3.94	6.00	3.00	38	●
3020-1.50	1.50	3.00	4.70	3.00	38	●	3020-1.98	1.98	3.96	6.00	3.00	38	●
3020-1.51	1.51	3.02	5.10	3.00	38	●	3020-1.99	1.99	3.98	6.00	3.00	38	●
3020-1.52	1.52	3.04	5.10	3.00	38	●	3020-2.00	2.00	4.00	6.00	3.00	38	●
3020-1.53	1.53	3.06	5.10	3.00	38	●							



Micro-forets

Mikrobohrer

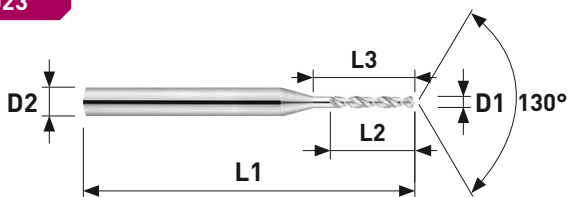
Micro drills

MD
VHM
HM λ 35°

6xD1

Z = 2

130°



Art. N°	D1 0 / -0.004	L2	L3	D2 h6	L1	N	Art. N°	D1 0 / -0.004	L2	L3	D2 h6	L1	N
3023-0.10	0.10	0.50	0.70	3.00	38	●	3023-0.58	0.58	3.60	4.50	3.00	38	●
3023-0.11	0.11	0.50	0.70	3.00	38	●	3023-0.59	0.59	3.60	4.50	3.00	38	●
3023-0.12	0.12	0.50	0.70	3.00	38	●	3023-0.60	0.60	3.60	4.50	3.00	38	●
3023-0.13	0.13	0.80	1.00	3.00	38	●	3023-0.61	0.61	3.90	5.00	3.00	38	●
3023-0.14	0.14	0.80	1.00	3.00	38	●	3023-0.62	0.62	3.90	5.00	3.00	38	●
3023-0.15	0.15	0.80	1.00	3.00	38	●	3023-0.63	0.63	3.90	5.00	3.00	38	●
3023-0.16	0.16	1.10	1.40	3.00	38	●	3023-0.64	0.64	3.90	5.00	3.00	38	●
3023-0.17	0.17	1.10	1.40	3.00	38	●	3023-0.65	0.65	3.90	5.00	3.00	38	●
3023-0.18	0.18	1.10	1.40	3.00	38	●	3023-0.66	0.66	3.90	5.00	3.00	38	●
3023-0.19	0.19	1.10	1.40	3.00	38	●	3023-0.67	0.67	3.90	5.00	3.00	38	●
3023-0.20	0.20	1.50	1.80	3.00	38	●	3023-0.68	0.68	4.50	5.60	3.00	38	●
3023-0.21	0.21	1.50	1.80	3.00	38	●	3023-0.69	0.69	4.50	5.60	3.00	38	●
3023-0.22	0.22	1.50	1.80	3.00	38	●	3023-0.70	0.70	4.50	5.60	3.00	38	●
3023-0.23	0.23	1.50	1.80	3.00	38	●	3023-0.71	0.71	4.50	5.60	3.00	38	●
3023-0.24	0.24	1.50	1.80	3.00	38	●	3023-0.72	0.72	4.50	5.60	3.00	38	●
3023-0.25	0.25	1.90	2.20	3.00	38	●	3023-0.73	0.73	4.50	5.60	3.00	38	●
3023-0.26	0.26	1.90	2.20	3.00	38	●	3023-0.74	0.74	4.50	5.60	3.00	38	●
3023-0.27	0.27	1.90	2.20	3.00	38	●	3023-0.75	0.75	4.50	5.60	3.00	38	●
3023-0.28	0.28	1.90	2.20	3.00	38	●	3023-0.76	0.76	5.00	6.30	3.00	38	●
3023-0.29	0.29	1.90	2.20	3.00	38	●	3023-0.77	0.77	5.00	6.30	3.00	38	●
3023-0.30	0.30	1.80	2.40	3.00	38	●	3023-0.78	0.78	5.00	6.30	3.00	38	●
3023-0.31	0.31	1.80	2.40	3.00	38	●	3023-0.79	0.79	5.00	6.30	3.00	38	●
3023-0.32	0.32	1.80	2.40	3.00	38	●	3023-0.80	0.80	5.00	6.30	3.00	38	●
3023-0.33	0.33	1.80	2.40	3.00	38	●	3023-0.81	0.81	5.00	6.30	3.00	38	●
3023-0.34	0.34	1.80	2.40	3.00	38	●	3023-0.82	0.82	5.00	6.30	3.00	38	●
3023-0.35	0.35	2.20	2.80	3.00	38	●	3023-0.83	0.83	5.00	6.30	3.00	38	●
3023-0.36	0.36	2.20	2.80	3.00	38	●	3023-0.84	0.84	5.00	6.30	3.00	38	●
3023-0.37	0.37	2.20	2.80	3.00	38	●	3023-0.85	0.85	5.00	6.30	3.00	38	●
3023-0.38	0.38	2.20	2.80	3.00	38	●	3023-0.86	0.86	5.70	7.10	3.00	38	●
3023-0.39	0.39	2.70	3.60	3.00	38	●	3023-0.87	0.87	5.70	7.10	3.00	38	●
3023-0.40	0.40	2.70	3.60	3.00	38	●	3023-0.88	0.88	5.70	7.10	3.00	38	●
3023-0.41	0.41	2.70	3.60	3.00	38	●	3023-0.89	0.89	5.70	7.10	3.00	38	●
3023-0.42	0.42	2.70	3.60	3.00	38	●	3023-0.90	0.90	5.70	7.10	3.00	38	●
3023-0.43	0.43	2.70	3.60	3.00	38	●	3023-0.91	0.91	5.70	7.10	3.00	38	●
3023-0.44	0.44	2.70	3.60	3.00	38	●	3023-0.92	0.92	5.70	7.10	3.00	38	●
3023-0.45	0.45	2.70	3.60	3.00	38	●	3023-0.93	0.93	5.70	7.10	3.00	38	●
3023-0.46	0.46	2.70	3.60	3.00	38	●	3023-0.94	0.94	5.70	7.10	3.00	38	●
3023-0.47	0.47	2.70	3.60	3.00	38	●	3023-0.95	0.95	5.70	7.10	3.00	38	●
3023-0.48	0.48	2.70	3.60	3.00	38	●	3023-0.96	0.96	6.50	8.00	3.00	38	●
3023-0.49	0.49	3.20	4.00	3.00	38	●	3023-0.97	0.97	6.50	8.00	3.00	38	●
3023-0.50	0.50	3.20	4.00	3.00	38	●	3023-0.98	0.98	6.50	8.00	3.00	38	●
3023-0.51	0.51	3.20	4.00	3.00	38	●	3023-0.99	0.99	6.50	8.00	3.00	38	●
3023-0.52	0.52	3.20	4.00	3.00	38	●	3023-1.00	1.00	6.50	8.00	3.00	38	●
3023-0.53	0.53	3.20	4.00	3.00	38	●	3023-1.01	1.01	6.50	8.00	3.00	38	●
3023-0.54	0.54	3.60	4.50	3.00	38	●	3023-1.02	1.02	6.50	8.00	3.00	38	●
3023-0.55	0.55	3.60	4.50	3.00	38	●	3023-1.03	1.03	6.50	8.00	3.00	38	●
3023-0.56	0.56	3.60	4.50	3.00	38	●	3023-1.04	1.04	6.50	8.00	3.00	38	●
3023-0.57	0.57	3.60	4.50	3.00	38	●	3023-1.05	1.05	6.50	8.00	3.00	38	●



Micro-forets

Mikrobohrer

Micro drills

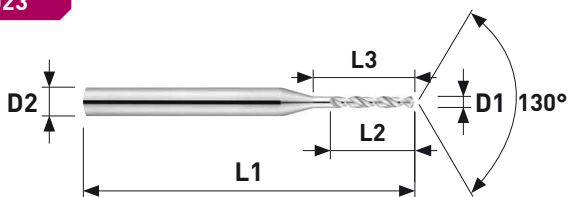
MD
VHM
HM

λ 35°

6xD1

Z = 2

130°



Art. N°	D1 0 / -0.004	L2	L3	D2 h ₆	L1	N	Art. N°	D1 0 / -0.004	L2	L3	D2 h ₆	L1	N
3023-1.06	1.06	7.30	9.00	3.00	38	●	3023-1.55	1.55	11.20	13.40	3.00	38	●
3023-1.07	1.07	7.30	9.00	3.00	38	●	3023-1.56	1.56	11.20	13.40	3.00	38	●
3023-1.08	1.08	7.30	9.00	3.00	38	●	3023-1.57	1.57	11.20	13.40	3.00	38	●
3023-1.09	1.09	7.30	9.00	3.00	38	●	3023-1.58	1.58	11.20	13.40	3.00	38	●
3023-1.10	1.10	7.30	9.00	3.00	38	●	3023-1.59	1.59	11.20	13.40	3.00	38	●
3023-1.11	1.11	7.30	9.00	3.00	38	●	3023-1.60	1.60	11.20	13.40	3.00	38	●
3023-1.12	1.12	7.30	9.00	3.00	38	●	3023-1.61	1.61	11.20	13.40	3.00	38	●
3023-1.13	1.13	7.30	9.00	3.00	38	●	3023-1.62	1.62	11.20	13.40	3.00	38	●
3023-1.14	1.14	7.30	9.00	3.00	38	●	3023-1.63	1.63	11.20	13.40	3.00	38	●
3023-1.15	1.15	7.30	9.00	3.00	38	●	3023-1.64	1.64	11.20	13.40	3.00	38	●
3023-1.16	1.16	8.20	10.00	3.00	38	●	3023-1.65	1.65	11.20	13.40	3.00	38	●
3023-1.17	1.17	8.20	10.00	3.00	38	●	3023-1.66	1.66	11.20	13.40	3.00	38	●
3023-1.18	1.18	8.20	10.00	3.00	38	●	3023-1.67	1.67	11.20	13.40	3.00	38	●
3023-1.19	1.19	8.20	10.00	3.00	38	●	3023-1.68	1.68	11.20	13.40	3.00	38	●
3023-1.20	1.20	8.20	10.00	3.00	38	●	3023-1.69	1.69	11.20	13.40	3.00	38	●
3023-1.21	1.21	8.20	10.00	3.00	38	●	3023-1.70	1.70	11.20	13.40	3.00	38	●
3023-1.22	1.22	8.20	10.00	3.00	38	●	3023-1.71	1.71	11.20	13.40	3.00	38	●
3023-1.23	1.23	8.20	10.00	3.00	38	●	3023-1.72	1.72	11.20	13.40	3.00	38	●
3023-1.24	1.24	8.20	10.00	3.00	38	●	3023-1.73	1.73	11.20	13.40	3.00	38	●
3023-1.25	1.25	8.20	10.00	3.00	38	●	3023-1.74	1.74	11.20	13.40	3.00	38	●
3023-1.26	1.26	8.20	10.00	3.00	38	●	3023-1.75	1.75	11.20	13.40	3.00	38	●
3023-1.27	1.27	8.20	10.00	3.00	38	●	3023-1.76	1.76	11.20	13.40	3.00	38	●
3023-1.28	1.28	8.20	10.00	3.00	38	●	3023-1.77	1.77	11.20	13.40	3.00	38	●
3023-1.29	1.29	8.20	10.00	3.00	38	●	3023-1.78	1.78	11.20	13.40	3.00	38	●
3023-1.30	1.30	8.20	10.00	3.00	38	●	3023-1.79	1.79	11.20	13.40	3.00	38	●
3023-1.31	1.31	9.20	11.20	3.00	38	●	3023-1.80	1.80	11.20	13.40	3.00	38	●
3023-1.32	1.32	9.20	11.20	3.00	38	●	3023-1.81	1.81	11.20	13.40	3.00	38	●
3023-1.33	1.33	9.20	11.20	3.00	38	●	3023-1.82	1.82	11.20	13.40	3.00	38	●
3023-1.34	1.34	9.20	11.20	3.00	38	●	3023-1.83	1.83	11.20	13.40	3.00	38	●
3023-1.35	1.35	9.20	11.20	3.00	38	●	3023-1.84	1.84	11.20	13.40	3.00	38	●
3023-1.36	1.36	9.20	11.20	3.00	38	●	3023-1.85	1.85	11.20	13.40	3.00	38	●
3023-1.37	1.37	9.20	11.20	3.00	38	●	3023-1.86	1.86	11.20	13.40	3.00	38	●
3023-1.38	1.38	9.20	11.20	3.00	38	●	3023-1.87	1.87	11.20	13.40	3.00	38	●
3023-1.39	1.39	9.20	11.20	3.00	38	●	3023-1.88	1.88	11.20	13.40	3.00	38	●
3023-1.40	1.40	9.20	11.20	3.00	38	●	3023-1.89	1.89	11.20	13.40	3.00	38	●
3023-1.41	1.41	9.20	11.20	3.00	38	●	3023-1.90	1.90	11.20	13.40	3.00	38	●
3023-1.42	1.42	9.20	11.20	3.00	38	●	3023-1.91	1.91	11.20	13.40	3.00	38	●
3023-1.43	1.43	9.20	11.20	3.00	38	●	3023-1.92	1.92	11.20	13.40	3.00	38	●
3023-1.44	1.44	9.20	11.20	3.00	38	●	3023-1.93	1.93	11.20	13.40	3.00	38	●
3023-1.45	1.45	9.20	11.20	3.00	38	●	3023-1.94	1.94	11.20	13.40	3.00	38	●
3023-1.46	1.46	9.20	11.20	3.00	38	●	3023-1.95	1.95	11.20	13.40	3.00	38	●
3023-1.47	1.47	9.20	11.20	3.00	38	●	3023-1.96	1.96	11.20	13.40	3.00	38	●
3023-1.48	1.48	9.20	11.20	3.00	38	●	3023-1.97	1.97	11.20	13.40	3.00	38	●
3023-1.49	1.49	9.20	11.20	3.00	38	●	3023-1.98	1.98	11.20	13.40	3.00	38	●
3023-1.50	1.50	9.20	11.20	3.00	38	●	3023-1.99	1.99	11.20	13.40	3.00	38	●
3023-1.51	1.51	11.20	13.40	3.00	38	●	3023-2.00	2.00	11.20	13.40	3.00	38	●
3023-1.52	1.52	11.20	13.40	3.00	38	●	3023-2.01	2.01	12.50	14.00	3.00	38	●
3023-1.53	1.53	11.20	13.40	3.00	38	●	3023-2.02	2.02	12.50	14.00	3.00	38	●
3023-1.54	1.54	11.20	13.40	3.00	38	●	3023-2.03	2.03	12.50	14.00	3.00	38	●



Micro-forets

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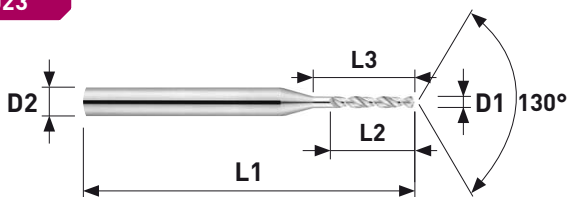
Micro drills

MD
VHM
HM λ 35°

6xD1

Z = 2

130°



Art. N°	D1 0 / -0.004	L2	L3	D2 h6	L1	N	Art. N°	D1 0 / -0.004	L2	L3	D2 h6	L1	N
3023-2.04	2.04	12.50	14.00	3.00	38	●	3023-2.53	2.53	14.00	17.00	3.00	38	●
3023-2.05	2.05	12.50	14.00	3.00	38	●	3023-2.54	2.54	14.00	17.00	3.00	38	●
3023-2.06	2.06	12.50	14.00	3.00	38	●	3023-2.55	2.55	14.00	17.00	3.00	38	●
3023-2.07	2.07	12.50	14.00	3.00	38	●	3023-2.56	2.56	14.00	17.00	3.00	38	●
3023-2.08	2.08	12.50	14.00	3.00	38	●	3023-2.57	2.57	14.00	17.00	3.00	38	●
3023-2.09	2.09	12.50	14.00	3.00	38	●	3023-2.58	2.58	14.00	17.00	3.00	38	●
3023-2.10	2.10	12.50	14.00	3.00	38	●	3023-2.59	2.59	14.00	17.00	3.00	38	●
3023-2.11	2.11	12.50	14.00	3.00	38	●	3023-2.60	2.60	14.00	17.00	3.00	38	●
3023-2.12	2.12	12.50	14.00	3.00	38	●	3023-2.61	2.61	14.00	17.00	3.00	38	●
3023-2.13	2.13	12.50	14.00	3.00	38	●	3023-2.62	2.62	14.00	17.00	3.00	38	●
3023-2.14	2.14	12.50	14.00	3.00	38	●	3023-2.63	2.63	14.00	17.00	3.00	38	●
3023-2.15	2.15	12.50	14.00	3.00	38	●	3023-2.64	2.64	14.00	17.00	3.00	38	●
3023-2.16	2.16	12.50	14.00	3.00	38	●	3023-2.65	2.65	14.00	17.00	3.00	38	●
3023-2.17	2.17	12.50	14.00	3.00	38	●	3023-2.66	2.66	14.00	17.00	3.00	38	●
3023-2.18	2.18	12.50	14.00	3.00	38	●	3023-2.67	2.67	14.00	17.00	3.00	38	●
3023-2.19	2.19	12.50	14.00	3.00	38	●	3023-2.68	2.68	14.00	17.00	3.00	38	●
3023-2.20	2.20	12.50	14.00	3.00	38	●	3023-2.69	2.69	14.00	17.00	3.00	38	●
3023-2.21	2.21	12.50	14.00	3.00	38	●	3023-2.70	2.70	14.00	17.00	3.00	38	●
3023-2.22	2.22	12.50	14.00	3.00	38	●	3023-2.71	2.71	14.00	17.00	3.00	38	●
3023-2.23	2.23	12.50	14.00	3.00	38	●	3023-2.72	2.72	14.00	17.00	3.00	38	●
3023-2.24	2.24	12.50	14.00	3.00	38	●	3023-2.73	2.73	14.00	17.00	3.00	38	●
3023-2.25	2.25	12.50	14.00	3.00	38	●	3023-2.74	2.74	14.00	17.00	3.00	38	●
3023-2.26	2.26	12.50	14.00	3.00	38	●	3023-2.75	2.75	14.00	17.00	3.00	38	●
3023-2.27	2.27	12.50	14.00	3.00	38	●	3023-2.76	2.76	14.00	17.00	3.00	38	●
3023-2.28	2.28	12.50	14.00	3.00	38	●	3023-2.77	2.77	14.00	17.00	3.00	38	●
3023-2.29	2.29	12.50	14.00	3.00	38	●	3023-2.78	2.78	14.00	17.00	3.00	38	●
3023-2.30	2.30	12.50	14.00	3.00	38	●	3023-2.79	2.79	14.00	17.00	3.00	38	●
3023-2.31	2.31	12.50	14.00	3.00	38	●	3023-2.80	2.80	14.00	17.00	3.00	38	●
3023-2.32	2.32	12.50	14.00	3.00	38	●	3023-2.81	2.81	14.00	17.00	3.00	38	●
3023-2.33	2.33	12.50	14.00	3.00	38	●	3023-2.82	2.82	14.00	17.00	3.00	38	●
3023-2.34	2.34	12.50	14.00	3.00	38	●	3023-2.83	2.83	14.00	17.00	3.00	38	●
3023-2.35	2.35	12.50	14.00	3.00	38	●	3023-2.84	2.84	14.00	17.00	3.00	38	●
3023-2.36	2.36	12.50	14.00	3.00	38	●	3023-2.85	2.85	14.00	17.00	3.00	38	●
3023-2.37	2.37	12.50	14.00	3.00	38	●	3023-2.86	2.86	14.00	17.00	3.00	38	●
3023-2.38	2.38	12.50	14.00	3.00	38	●	3023-2.87	2.87	14.00	17.00	3.00	38	●
3023-2.39	2.39	12.50	14.00	3.00	38	●	3023-2.88	2.88	14.00	17.00	3.00	38	●
3023-2.40	2.40	12.50	14.00	3.00	38	●	3023-2.89	2.89	14.00	17.00	3.00	38	●
3023-2.41	2.41	12.50	14.00	3.00	38	●	3023-2.90	2.90	14.00	17.00	3.00	38	●
3023-2.42	2.42	12.50	14.00	3.00	38	●	3023-2.91	2.91	14.00	17.00	3.00	38	●
3023-2.43	2.43	12.50	14.00	3.00	38	●	3023-2.92	2.92	14.00	17.00	3.00	38	●
3023-2.44	2.44	12.50	14.00	3.00	38	●	3023-2.93	2.93	14.00	17.00	3.00	38	●
3023-2.45	2.45	12.50	14.00	3.00	38	●	3023-2.94	2.94	14.00	17.00	3.00	38	●
3023-2.46	2.46	12.50	14.00	3.00	38	●	3023-2.95	2.95	14.00	17.00	3.00	38	●
3023-2.47	2.47	12.50	14.00	3.00	38	●	3023-2.96	2.96	14.00	17.00	3.00	38	●
3023-2.48	2.48	12.50	14.00	3.00	38	●	3023-2.97	2.97	14.00	17.00	3.00	38	●
3023-2.49	2.49	12.50	14.00	3.00	38	●	3023-2.98	2.98	14.00	17.00	3.00	38	●
3023-2.50	2.50	14.00	17.00	3.00	38	●	3023-2.99	2.99	14.00	17.00	3.00	38	●
3023-2.51	2.51	14.00	17.00	3.00	38	●	3023-3.00	3.00	14.00	17.00	3.00	38	●
3023-2.52	2.52	14.00	17.00	3.00	38	●							



Micro-forets

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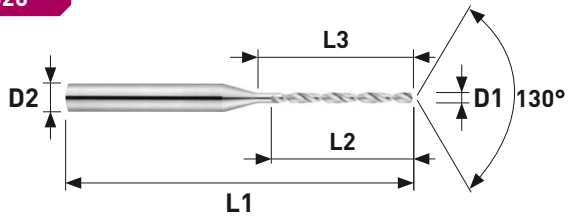
MD
VHM
HM

λ 25°

12xD1

Z = 2

130°



Art. N°	D1 h ₆	L2	L3	D2 h ₆	L1	N	Art. N°	D1 h ₆	L2	L3	D2 h ₆	L1	N
3026-0.20	0.20	2.40	3.50	3.00	38	●	3026-0.69	0.69	8.30	10.00	3.00	38	●
3026-0.21	0.21	2.50	3.50	3.00	38	●	3026-0.70	0.70	8.40	10.00	3.00	38	●
3026-0.22	0.22	2.70	3.50	3.00	38	●	3026-0.71	0.71	8.50	10.00	3.00	38	●
3026-0.23	0.23	2.80	3.50	3.00	38	●	3026-0.72	0.72	8.70	10.50	3.00	38	●
3026-0.24	0.24	2.90	4.00	3.00	38	●	3026-0.73	0.73	8.80	10.50	3.00	38	●
3026-0.25	0.25	3.00	4.00	3.00	38	●	3026-0.74	0.74	8.90	10.50	3.00	38	●
3026-0.26	0.26	3.10	4.00	3.00	38	●	3026-0.75	0.75	9.00	10.50	3.00	38	●
3026-0.27	0.27	3.30	4.00	3.00	38	●	3026-0.76	0.76	9.10	11.00	3.00	38	●
3026-0.28	0.28	3.40	4.50	3.00	38	●	3026-0.77	0.77	9.30	11.00	3.00	38	●
3026-0.29	0.29	3.50	4.50	3.00	38	●	3026-0.78	0.78	9.40	11.00	3.00	38	●
3026-0.30	0.30	3.60	4.50	3.00	38	●	3026-0.79	0.79	9.50	11.00	3.00	38	●
3026-0.31	0.31	3.70	4.50	3.00	38	●	3026-0.80	0.80	9.60	11.50	3.00	38	●
3026-0.32	0.32	3.90	5.00	3.00	38	●	3026-0.81	0.81	9.70	11.50	3.00	38	●
3026-0.33	0.33	4.00	5.00	3.00	38	●	3026-0.82	0.82	9.90	11.50	3.00	38	●
3026-0.34	0.34	4.10	5.00	3.00	38	●	3026-0.83	0.83	10.00	11.50	3.00	38	●
3026-0.35	0.35	4.20	5.00	3.00	38	●	3026-0.84	0.84	10.10	12.00	3.00	38	●
3026-0.36	0.36	4.30	5.50	3.00	38	●	3026-0.85	0.85	10.20	12.00	3.00	38	●
3026-0.37	0.37	4.50	5.50	3.00	38	●	3026-0.86	0.86	10.30	12.00	3.00	38	●
3026-0.38	0.38	4.60	5.50	3.00	38	●	3026-0.87	0.87	10.50	12.00	3.00	38	●
3026-0.39	0.39	4.70	5.50	3.00	38	●	3026-0.88	0.88	10.60	12.50	3.00	38	●
3026-0.40	0.40	4.80	6.00	3.00	38	●	3026-0.89	0.89	10.70	12.50	3.00	38	●
3026-0.41	0.41	4.90	6.00	3.00	38	●	3026-0.90	0.90	10.80	12.50	3.00	38	●
3026-0.42	0.42	5.10	6.00	3.00	38	●	3026-0.91	0.91	10.90	12.50	3.00	38	●
3026-0.43	0.43	5.20	6.00	3.00	38	●	3026-0.92	0.92	11.10	13.00	3.00	38	●
3026-0.44	0.44	5.30	6.50	3.00	38	●	3026-0.93	0.93	11.20	13.00	3.00	38	●
3026-0.45	0.45	5.40	6.50	3.00	38	●	3026-0.94	0.94	11.30	13.00	3.00	38	●
3026-0.46	0.46	5.50	6.50	3.00	38	●	3026-0.95	0.95	11.40	13.00	3.00	38	●
3026-0.47	0.47	5.70	6.50	3.00	38	●	3026-0.96	0.96	11.50	13.50	3.00	38	●
3026-0.48	0.48	5.80	7.00	3.00	38	●	3026-0.97	0.97	11.70	13.50	3.00	38	●
3026-0.49	0.49	5.90	7.00	3.00	38	●	3026-0.98	0.98	11.80	13.50	3.00	38	●
3026-0.50	0.50	6.00	7.00	3.00	38	●	3026-0.99	0.99	11.90	13.50	3.00	38	●
3026-0.51	0.51	6.10	7.00	3.00	38	●	3026-1.00	1.00	12.00	14.50	3.00	38	●
3026-0.52	0.52	6.30	7.50	3.00	38	●	3026-1.01	1.01	12.10	14.50	3.00	38	●
3026-0.53	0.53	6.40	7.50	3.00	38	●	3026-1.02	1.02	12.30	14.50	3.00	38	●
3026-0.54	0.54	6.50	7.50	3.00	38	●	3026-1.03	1.03	12.40	14.50	3.00	38	●
3026-0.55	0.55	6.60	7.50	3.00	38	●	3026-1.04	1.04	12.50	15.00	3.00	38	●
3026-0.56	0.56	6.70	8.00	3.00	38	●	3026-1.05	1.05	12.60	15.00	3.00	38	●
3026-0.57	0.57	6.90	8.00	3.00	38	●	3026-1.06	1.06	12.70	15.00	3.00	38	●
3026-0.58	0.58	7.00	8.00	3.00	38	●	3026-1.07	1.07	12.90	15.00	3.00	38	●
3026-0.59	0.59	7.10	8.00	3.00	38	●	3026-1.08	1.08	13.00	15.50	3.00	38	●
3026-0.60	0.60	7.20	9.00	3.00	38	●	3026-1.09	1.09	13.10	15.50	3.00	38	●
3026-0.61	0.61	7.30	9.00	3.00	38	●	3026-1.10	1.10	13.20	15.50	3.00	38	●
3026-0.62	0.62	7.50	9.00	3.00	38	●	3026-1.11	1.11	13.30	15.50	3.00	38	●
3026-0.63	0.63	7.60	9.00	3.00	38	●	3026-1.12	1.12	13.50	16.00	3.00	38	●
3026-0.64	0.64	7.70	9.50	3.00	38	●	3026-1.13	1.13	13.60	16.00	3.00	38	●
3026-0.65	0.65	7.80	9.50	3.00	38	●	3026-1.14	1.14	13.70	16.00	3.00	38	●
3026-0.66	0.66	7.90	9.50	3.00	38	●	3026-1.15	1.15	13.80	16.00	3.00	38	●
3026-0.67	0.67	8.10	9.50	3.00	38	●	3026-1.16	1.16	13.90	16.50	3.00	38	●
3026-0.68	0.68	8.20	10.00	3.00	38	●	3026-1.17	1.17	14.10	16.50	3.00	38	●

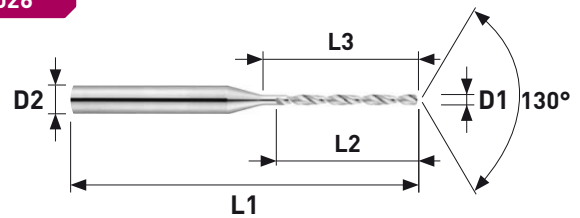
Micro-forets Mikrobohrer Micro drills

MD
VHM
HM λ 25°

12xD1

Z = 2

130°



Art. N°	D1 h ₆	L2	L3	D2 h ₆	L1	N	Art. N°	D1 h ₆	L2	L3	D2 h ₆	L1	N
3026-1.18	1.18	14.20	16.50	3.00	38	●	3026-1.67	1.67	20.10	23.00	3.00	50	●
3026-1.19	1.19	14.30	16.50	3.00	38	●	3026-1.68	1.68	20.20	23.00	3.00	50	●
3026-1.20	1.20	14.40	17.00	3.00	38	●	3026-1.69	1.69	20.30	23.00	3.00	50	●
3026-1.21	1.21	14.50	17.00	3.00	38	●	3026-1.70	1.70	20.40	23.50	3.00	50	●
3026-1.22	1.22	14.70	17.00	3.00	38	●	3026-1.71	1.71	20.50	23.50	3.00	50	●
3026-1.23	1.23	14.80	17.00	3.00	38	●	3026-1.72	1.72	20.70	23.50	3.00	50	●
3026-1.24	1.24	14.90	17.50	3.00	38	●	3026-1.73	1.73	20.80	23.50	3.00	50	●
3026-1.25	1.25	15.00	17.50	3.00	38	●	3026-1.74	1.74	20.90	24.00	3.00	50	●
3026-1.26	1.26	15.10	17.50	3.00	50	●	3026-1.75	1.75	21.00	24.00	3.00	50	●
3026-1.27	1.27	15.30	17.50	3.00	50	●	3026-1.76	1.76	21.10	24.00	3.00	50	●
3026-1.28	1.28	15.40	18.00	3.00	50	●	3026-1.77	1.77	21.30	24.00	3.00	50	●
3026-1.29	1.29	15.50	18.00	3.00	50	●	3026-1.78	1.78	21.40	24.50	3.00	50	●
3026-1.30	1.30	15.60	18.00	3.00	50	●	3026-1.79	1.79	21.50	24.50	3.00	50	●
3026-1.31	1.31	15.70	18.00	3.00	50	●	3026-1.80	1.80	21.60	25.00	3.00	50	●
3026-1.32	1.32	15.90	18.50	3.00	50	●	3026-1.81	1.81	21.70	25.00	3.00	50	●
3026-1.33	1.33	16.00	18.50	3.00	50	●	3026-1.82	1.82	21.90	25.00	3.00	50	●
3026-1.34	1.34	16.10	18.50	3.00	50	●	3026-1.83	1.83	22.00	25.00	3.00	50	●
3026-1.35	1.35	16.20	18.50	3.00	50	●	3026-1.84	1.84	22.10	25.50	3.00	50	●
3026-1.36	1.36	16.30	19.00	3.00	50	●	3026-1.85	1.85	22.20	25.50	3.00	50	●
3026-1.37	1.37	16.50	19.00	3.00	50	●	3026-1.86	1.86	22.30	25.50	3.00	50	●
3026-1.38	1.38	16.60	19.00	3.00	50	●	3026-1.87	1.87	22.50	25.50	3.00	50	●
3026-1.39	1.39	16.70	19.00	3.00	50	●	3026-1.88	1.88	22.60	26.00	3.00	50	●
3026-1.40	1.40	16.80	19.50	3.00	50	●	3026-1.89	1.89	22.70	26.00	3.00	50	●
3026-1.41	1.41	16.90	19.50	3.00	50	●	3026-1.90	1.90	22.80	26.00	3.00	50	●
3026-1.42	1.42	17.10	19.50	3.00	50	●	3026-1.91	1.91	22.90	26.00	3.00	50	●
3026-1.43	1.43	17.20	19.50	3.00	50	●	3026-1.92	1.92	23.10	26.50	3.00	50	●
3026-1.44	1.44	17.30	20.00	3.00	50	●	3026-1.93	1.93	23.20	26.50	3.00	50	●
3026-1.45	1.45	17.40	20.00	3.00	50	●	3026-1.94	1.94	23.30	26.50	3.00	50	●
3026-1.46	1.46	17.50	20.00	3.00	50	●	3026-1.95	1.95	23.40	26.50	3.00	50	●
3026-1.47	1.47	17.70	20.00	3.00	50	●	3026-1.96	1.96	23.50	27.00	3.00	50	●
3026-1.48	1.48	17.80	20.50	3.00	50	●	3026-1.97	1.97	23.70	27.00	3.00	50	●
3026-1.49	1.49	17.90	20.50	3.00	50	●	3026-1.98	1.98	23.80	27.00	3.00	50	●
3026-1.50	1.50	18.00	21.00	3.00	50	●	3026-1.99	1.99	23.90	27.00	3.00	50	●
3026-1.51	1.51	18.10	21.00	3.00	50	●	3026-2.00	2.00	24.00	27.00	3.00	50	●
3026-1.52	1.52	18.30	21.00	3.00	50	●							
3026-1.53	1.53	18.40	21.00	3.00	50	●							
3026-1.54	1.54	18.50	21.50	3.00	50	●							
3026-1.55	1.55	18.60	21.50	3.00	50	●							
3026-1.56	1.56	18.70	21.50	3.00	50	●							
3026-1.57	1.57	18.90	21.50	3.00	50	●							
3026-1.58	1.58	19.00	22.00	3.00	50	●							
3026-1.59	1.59	19.10	22.00	3.00	50	●							
3026-1.60	1.60	19.20	22.00	3.00	50	●							
3026-1.61	1.61	19.30	22.00	3.00	50	●							
3026-1.62	1.62	19.40	22.50	3.00	50	●							
3026-1.63	1.63	19.60	22.50	3.00	50	●							
3026-1.64	1.64	19.70	22.50	3.00	50	●							
3026-1.65	1.65	19.80	22.50	3.00	50	●							
3026-1.66	1.66	19.90	23.00	3.00	50	●							



Micro-forets

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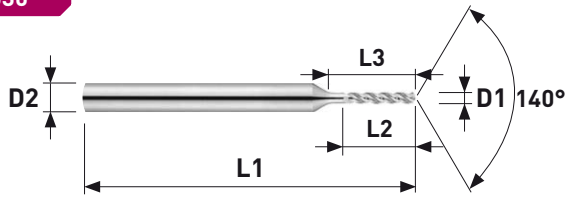
Micro drills

MD
VHM
HM λ 35°

5xD1

Z = 3

140°



Art. N°	D1 h ₆	L2	L3	D2 h ₆	L1	N	Art. N°	D1 h ₆	L2	L3	D2 h ₆	L1	N
3030-0.20	0.20	1.00	1.50	3.00	38	●	3030-0.69	0.69	3.45	3.90	3.00	38	●
3030-0.21	0.21	1.05	1.50	3.00	38	●	3030-0.70	0.70	3.50	4.00	3.00	38	●
3030-0.22	0.22	1.10	1.60	3.00	38	●	3030-0.71	0.71	3.55	4.00	3.00	38	●
3030-0.23	0.23	1.15	1.60	3.00	38	●	3030-0.72	0.72	3.60	4.10	3.00	38	●
3030-0.24	0.24	1.20	1.70	3.00	38	●	3030-0.73	0.73	3.65	4.10	3.00	38	●
3030-0.25	0.25	1.25	1.70	3.00	38	●	3030-0.74	0.74	3.70	4.20	3.00	38	●
3030-0.26	0.26	1.30	1.80	3.00	38	●	3030-0.75	0.75	3.75	4.20	3.00	38	●
3030-0.27	0.27	1.35	1.80	3.00	38	●	3030-0.76	0.76	3.80	4.30	3.00	38	●
3030-0.28	0.28	1.40	1.90	3.00	38	●	3030-0.77	0.77	3.85	4.30	3.00	38	●
3030-0.29	0.29	1.45	1.90	3.00	38	●	3030-0.78	0.78	3.90	4.40	3.00	38	●
3030-0.30	0.30	1.50	2.00	3.00	38	●	3030-0.79	0.79	3.95	4.40	3.00	38	●
3030-0.31	0.31	1.55	2.00	3.00	38	●	3030-0.80	0.80	4.00	4.50	3.00	38	●
3030-0.32	0.32	1.60	2.10	3.00	38	●	3030-0.81	0.81	4.05	4.50	3.00	38	●
3030-0.33	0.33	1.65	2.10	3.00	38	●	3030-0.82	0.82	4.10	4.60	3.00	38	●
3030-0.34	0.34	1.70	2.20	3.00	38	●	3030-0.83	0.83	4.15	4.60	3.00	38	●
3030-0.35	0.35	1.75	2.20	3.00	38	●	3030-0.84	0.84	4.20	4.70	3.00	38	●
3030-0.36	0.36	1.80	2.30	3.00	38	●	3030-0.85	0.85	4.25	4.70	3.00	38	●
3030-0.37	0.37	1.85	2.30	3.00	38	●	3030-0.86	0.86	4.30	4.80	3.00	38	●
3030-0.38	0.38	1.90	2.40	3.00	38	●	3030-0.87	0.87	4.35	4.80	3.00	38	●
3030-0.39	0.39	1.95	2.40	3.00	38	●	3030-0.88	0.88	4.40	4.90	3.00	38	●
3030-0.40	0.40	2.00	2.50	3.00	38	●	3030-0.89	0.89	4.45	4.90	3.00	38	●
3030-0.41	0.41	2.05	2.50	3.00	38	●	3030-0.90	0.90	4.50	5.00	3.00	38	●
3030-0.42	0.42	2.10	2.60	3.00	38	●	3030-0.91	0.91	4.55	5.00	3.00	38	●
3030-0.43	0.43	2.15	2.60	3.00	38	●	3030-0.92	0.92	4.60	5.10	3.00	38	●
3030-0.44	0.44	2.20	2.70	3.00	38	●	3030-0.93	0.93	4.65	5.10	3.00	38	●
3030-0.45	0.45	2.25	2.70	3.00	38	●	3030-0.94	0.94	4.70	5.20	3.00	38	●
3030-0.46	0.46	2.30	2.80	3.00	38	●	3030-0.95	0.95	4.75	5.20	3.00	38	●
3030-0.47	0.47	2.35	2.80	3.00	38	●	3030-0.96	0.96	4.80	5.30	3.00	38	●
3030-0.48	0.48	2.40	2.90	3.00	38	●	3030-0.97	0.97	4.85	5.30	3.00	38	●
3030-0.49	0.49	2.45	2.90	3.00	38	●	3030-0.98	0.98	4.90	5.40	3.00	38	●
3030-0.50	0.50	2.50	3.00	3.00	38	●	3030-0.99	0.99	4.95	5.40	3.00	38	●
3030-0.51	0.51	2.55	3.00	3.00	38	●	3030-1.00	1.00	5.00	6.50	3.00	38	●
3030-0.52	0.52	2.60	3.10	3.00	38	●	3030-1.01	1.01	5.05	6.50	3.00	38	●
3030-0.53	0.53	2.65	3.10	3.00	38	●	3030-1.02	1.02	5.10	6.50	3.00	38	●
3030-0.54	0.54	2.70	3.20	3.00	38	●	3030-1.03	1.03	5.15	6.50	3.00	38	●
3030-0.55	0.55	2.75	3.20	3.00	38	●	3030-1.04	1.04	5.20	6.50	3.00	38	●
3030-0.56	0.56	2.80	3.30	3.00	38	●	3030-1.05	1.05	5.25	6.50	3.00	38	●
3030-0.57	0.57	2.85	3.30	3.00	38	●	3030-1.06	1.06	5.30	6.50	3.00	38	●
3030-0.58	0.58	2.90	3.40	3.00	38	●	3030-1.07	1.07	5.35	7.50	3.00	38	●
3030-0.59	0.59	2.95	3.40	3.00	38	●	3030-1.08	1.08	5.40	7.50	3.00	38	●
3030-0.60	0.60	3.00	3.50	3.00	38	●	3030-1.09	1.09	5.45	7.50	3.00	38	●
3030-0.61	0.61	3.05	3.50	3.00	38	●	3030-1.10	1.10	5.50	7.50	3.00	38	●
3030-0.62	0.62	3.10	3.60	3.00	38	●	3030-1.11	1.11	5.55	7.50	3.00	38	●
3030-0.63	0.63	3.15	3.60	3.00	38	●	3030-1.12	1.12	5.60	7.50	3.00	38	●
3030-0.64	0.64	3.20	3.70	3.00	38	●	3030-1.13	1.13	5.65	7.50	3.00	38	●
3030-0.65	0.65	3.25	3.70	3.00	38	●	3030-1.14	1.14	5.70	7.50	3.00	38	●
3030-0.66	0.66	3.30	3.80	3.00	38	●	3030-1.15	1.15	5.75	7.50	3.00	38	●
3030-0.67	0.67	3.35	3.80	3.00	38	●	3030-1.16	1.16	5.80	7.50	3.00	38	●
3030-0.68	0.68	3.40	3.90	3.00	38	●	3030-1.17	1.17	5.85	7.50	3.00	38	●



Micro-forets

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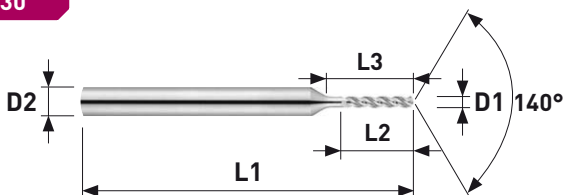
Micro drills

MD
VHM
HM λ 35°

5xD1

Z = 3

140°



Art. N°	D1 h ₆	L2	L3	D2 h ₆	L1	N	Art. N°	D1 h ₆	L2	L3	D2 h ₆	L1	N
3030-1.18	1.18	5.90	8.50	3.00	38	●	3030-1.67	1.67	8.35	10.50	3.00	38	●
3030-1.19	1.19	5.95	8.50	3.00	38	●	3030-1.68	1.68	8.40	10.50	3.00	38	●
3030-1.20	1.20	6.00	8.50	3.00	38	●	3030-1.69	1.69	8.45	10.50	3.00	38	●
3030-1.21	1.21	6.05	8.50	3.00	38	●	3030-1.70	1.70	8.50	10.50	3.00	38	●
3030-1.22	1.22	6.10	8.50	3.00	38	●	3030-1.71	1.71	8.55	11.50	3.00	38	●
3030-1.23	1.23	6.15	8.50	3.00	38	●	3030-1.72	1.72	8.60	11.50	3.00	38	●
3030-1.24	1.24	6.20	8.50	3.00	38	●	3030-1.73	1.73	8.65	11.50	3.00	38	●
3030-1.25	1.25	6.25	8.50	3.00	38	●	3030-1.74	1.74	8.70	11.50	3.00	38	●
3030-1.26	1.26	6.30	8.50	3.00	38	●	3030-1.75	1.75	8.75	11.50	3.00	38	●
3030-1.27	1.27	6.35	8.50	3.00	38	●	3030-1.76	1.76	8.80	11.50	3.00	38	●
3030-1.28	1.28	6.40	8.50	3.00	38	●	3030-1.77	1.77	8.85	11.50	3.00	38	●
3030-1.29	1.29	6.45	8.50	3.00	38	●	3030-1.78	1.78	8.90	11.50	3.00	38	●
3030-1.30	1.30	6.50	8.50	3.00	38	●	3030-1.79	1.79	8.95	11.50	3.00	38	●
3030-1.31	1.31	6.55	8.50	3.00	38	●	3030-1.80	1.80	9.00	11.50	3.00	38	●
3030-1.32	1.32	6.60	8.50	3.00	38	●	3030-1.81	1.81	9.05	11.50	3.00	38	●
3030-1.33	1.33	6.65	9.50	3.00	38	●	3030-1.82	1.82	9.10	11.50	3.00	38	●
3030-1.34	1.34	6.70	9.50	3.00	38	●	3030-1.83	1.83	9.15	11.50	3.00	38	●
3030-1.35	1.35	6.75	9.50	3.00	38	●	3030-1.84	1.84	9.20	11.50	3.00	38	●
3030-1.36	1.36	6.80	9.50	3.00	38	●	3030-1.85	1.85	9.25	11.50	3.00	38	●
3030-1.37	1.37	6.85	9.50	3.00	38	●	3030-1.86	1.86	9.30	11.50	3.00	38	●
3030-1.38	1.38	6.90	9.50	3.00	38	●	3030-1.87	1.87	9.35	11.50	3.00	38	●
3030-1.39	1.39	6.95	9.50	3.00	38	●	3030-1.88	1.88	9.40	11.50	3.00	38	●
3030-1.40	1.40	7.00	9.50	3.00	38	●	3030-1.89	1.89	9.45	11.50	3.00	38	●
3030-1.41	1.41	7.05	9.50	3.00	38	●	3030-1.90	1.90	9.50	11.50	3.00	38	●
3030-1.42	1.42	7.10	9.50	3.00	38	●	3030-1.91	1.91	9.55	12.50	3.00	38	●
3030-1.43	1.43	7.15	9.50	3.00	38	●	3030-1.92	1.92	9.60	12.50	3.00	38	●
3030-1.44	1.44	7.20	9.50	3.00	38	●	3030-1.93	1.93	9.65	12.50	3.00	38	●
3030-1.45	1.45	7.25	9.50	3.00	38	●	3030-1.94	1.94	9.70	12.50	3.00	38	●
3030-1.46	1.46	7.30	9.50	3.00	38	●	3030-1.95	1.95	9.75	12.50	3.00	38	●
3030-1.47	1.47	7.35	9.50	3.00	38	●	3030-1.96	1.96	9.80	12.50	3.00	38	●
3030-1.48	1.48	7.40	9.50	3.00	38	●	3030-1.97	1.97	9.85	12.50	3.00	38	●
3030-1.49	1.49	7.45	9.50	3.00	38	●	3030-1.98	1.98	9.90	12.50	3.00	38	●
3030-1.50	1.50	7.50	9.50	3.00	38	●	3030-1.99	1.99	9.95	12.50	3.00	38	●
3030-1.51	1.51	7.55	10.50	3.00	38	●	3030-2.00	2.00	10.00	12.50	3.00	38	●
3030-1.52	1.52	7.60	10.50	3.00	38	●	3030-2.01	2.01	10.05	12.50	3.00	38	●
3030-1.53	1.53	7.65	10.50	3.00	38	●	3030-2.02	2.02	10.10	12.50	3.00	38	●
3030-1.54	1.54	7.70	10.50	3.00	38	●	3030-2.03	2.03	10.15	12.50	3.00	38	●
3030-1.55	1.55	7.75	10.50	3.00	38	●	3030-2.04	2.04	10.20	12.50	3.00	38	●
3030-1.56	1.56	7.80	10.50	3.00	38	●	3030-2.05	2.05	10.25	12.50	3.00	38	●
3030-1.57	1.57	7.85	10.50	3.00	38	●	3030-2.06	2.06	10.30	12.50	3.00	38	●
3030-1.58	1.58	7.90	10.50	3.00	38	●	3030-2.07	2.07	10.35	12.50	3.00	38	●
3030-1.59	1.59	7.95	10.50	3.00	38	●	3030-2.08	2.08	10.40	12.50	3.00	38	●
3030-1.60	1.60	8.00	10.50	3.00	38	●	3030-2.09	2.09	10.45	12.50	3.00	38	●
3030-1.61	1.61	8.05	10.50	3.00	38	●	3030-2.10	2.10	10.50	12.50	3.00	38	●
3030-1.62	1.62	8.10	10.50	3.00	38	●	3030-2.11	2.11	10.55	12.50	3.00	38	●
3030-1.63	1.63	8.15	10.50	3.00	38	●	3030-2.12	2.12	10.60	12.50	3.00	38	●
3030-1.64	1.64	8.20	10.50	3.00	38	●	3030-2.13	2.13	10.65	13.50	3.00	38	●
3030-1.65	1.65	8.25	10.50	3.00	38	●	3030-2.14	2.14	10.70	13.50	3.00	38	●
3030-1.66	1.66	8.30	10.50	3.00	38	●	3030-2.15	2.15	10.75	13.50	3.00	38	●



Micro-forets

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Micro drills

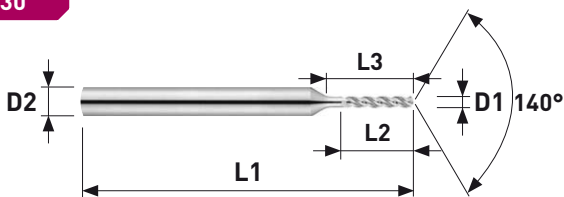
MD
VHM
HM

λ 35°

5xD1

Z = 3

140°



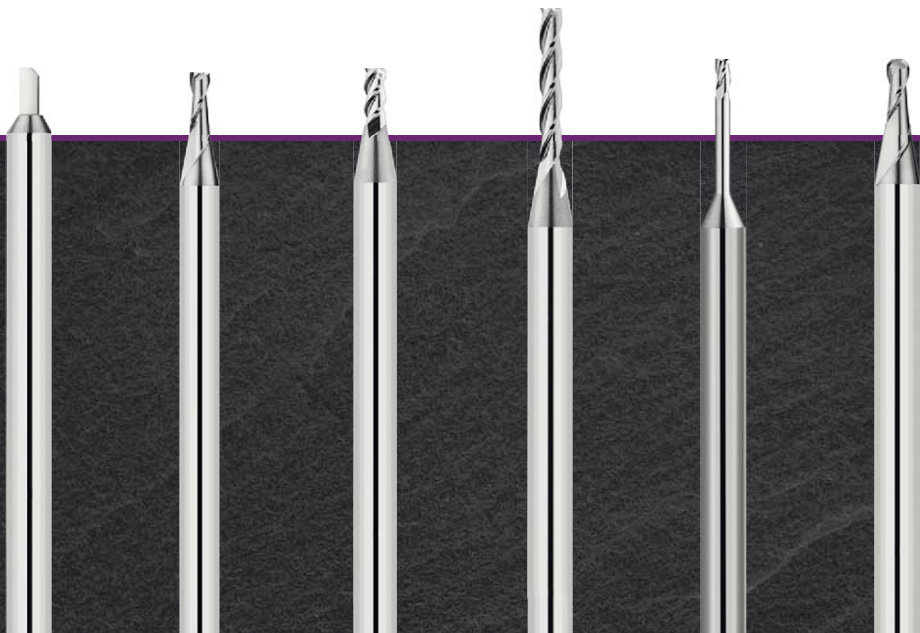
Art. N°	D1 h ₆	L2	L3	D2 h ₆	L1	N	Art. N°	D1 h ₆	L2	L3	D2 h ₆	L1	N
3030-2.16	2.16	10.80	13.50	3.00	38	●	3030-2.65	2.65	13.25	14.50	3.00	38	●
3030-2.17	2.17	10.85	13.50	3.00	38	●	3030-2.66	2.66	13.30	16.50	3.00	38	●
3030-2.18	2.18	10.90	13.50	3.00	38	●	3030-2.67	2.67	13.35	16.50	3.00	38	●
3030-2.19	2.19	10.95	13.50	3.00	38	●	3030-2.68	2.68	13.40	16.50	3.00	38	●
3030-2.20	2.20	11.00	13.50	3.00	38	●	3030-2.69	2.69	13.45	16.50	3.00	38	●
3030-2.21	2.21	11.05	13.50	3.00	38	●	3030-2.70	2.70	13.50	16.50	3.00	38	●
3030-2.22	2.22	11.10	13.50	3.00	38	●	3030-2.71	2.71	13.55	16.55	3.00	38	●
3030-2.23	2.23	11.15	13.50	3.00	38	●	3030-2.72	2.72	13.60	16.50	3.00	38	●
3030-2.24	2.24	11.20	13.50	3.00	38	●	3030-2.73	2.73	13.65	16.50	3.00	38	●
3030-2.25	2.25	11.25	13.50	3.00	38	●	3030-2.74	2.74	13.70	16.50	3.00	38	●
3030-2.26	2.26	11.30	13.50	3.00	38	●	3030-2.75	2.75	13.75	16.50	3.00	38	●
3030-2.27	2.27	11.35	13.50	3.00	38	●	3030-2.76	2.76	13.80	16.50	3.00	38	●
3030-2.28	2.28	11.40	13.50	3.00	38	●	3030-2.77	2.77	13.85	16.50	3.00	38	●
3030-2.29	2.29	11.45	13.50	3.00	38	●	3030-2.78	2.78	13.90	16.50	3.00	38	●
3030-2.30	2.30	11.50	13.50	3.00	38	●	3030-2.79	2.79	13.95	16.50	3.00	38	●
3030-2.31	2.31	11.55	13.50	3.00	38	●	3030-2.80	2.80	14.00	16.50	3.00	38	●
3030-2.32	2.32	11.60	13.50	3.00	38	●	3030-2.81	2.81	14.05	16.50	3.00	38	●
3030-2.33	2.33	11.65	13.50	3.00	38	●	3030-2.82	2.82	14.10	16.50	3.00	38	●
3030-2.34	2.34	11.70	13.50	3.00	38	●	3030-2.83	2.83	14.15	16.50	3.00	38	●
3030-2.35	2.35	11.75	13.50	3.00	38	●	3030-2.84	2.84	14.20	16.50	3.00	38	●
3030-2.36	2.36	11.80	13.50	3.00	38	●	3030-2.85	2.85	14.25	16.50	3.00	38	●
3030-2.37	2.37	11.85	14.50	3.00	38	●	3030-2.86	2.86	14.30	16.50	3.00	38	●
3030-2.38	2.38	11.90	14.50	3.00	38	●	3030-2.87	2.87	14.35	16.50	3.00	38	●
3030-2.39	2.39	11.95	14.50	3.00	38	●	3030-2.88	2.88	14.40	16.50	3.00	38	●
3030-2.40	2.40	12.00	14.50	3.00	38	●	3030-2.89	2.89	14.45	16.50	3.00	38	●
3030-2.41	2.41	12.05	14.50	3.00	38	●	3030-2.90	2.90	14.50	16.50	3.00	38	●
3030-2.42	2.42	12.10	14.50	3.00	38	●	3030-2.91	2.91	14.55	16.50	3.00	38	●
3030-2.43	2.43	12.15	14.50	3.00	38	●	3030-2.92	2.92	14.60	16.50	3.00	38	●
3030-2.44	2.44	12.20	14.50	3.00	38	●	3030-2.93	2.93	14.65	16.50	3.00	38	●
3030-2.45	2.45	12.25	14.50	3.00	38	●	3030-2.94	2.94	14.70	16.50	3.00	38	●
3030-2.46	2.46	12.30	14.50	3.00	38	●	3030-2.95	2.95	14.75	16.50	3.00	38	●
3030-2.47	2.47	12.35	14.50	3.00	38	●	3030-2.96	2.96	14.80	16.50	3.00	38	●
3030-2.48	2.48	12.40	14.50	3.00	38	●	3030-2.97	2.97	14.85	16.50	3.00	38	●
3030-2.49	2.49	12.45	14.50	3.00	38	●	3030-2.98	2.98	14.90	16.50	3.00	38	●
3030-2.50	2.50	12.50	14.50	3.00	38	●	3030-2.99	2.99	14.95	16.50	3.00	38	●
3030-2.51	2.51	12.55	14.50	3.00	38	●							
3030-2.52	2.52	12.60	14.50	3.00	38	●							
3030-2.53	2.53	12.65	14.50	3.00	38	●							
3030-2.54	2.54	12.70	14.50	3.00	38	●							
3030-2.55	2.55	12.75	14.50	3.00	38	●							
3030-2.56	2.56	12.80	14.50	3.00	38	●							
3030-2.57	2.57	12.85	14.50	3.00	38	●							
3030-2.58	2.58	12.90	14.50	3.00	38	●							
3030-2.59	2.59	12.95	14.50	3.00	38	●							
3030-2.60	2.60	13.00	14.50	3.00	38	●							
3030-2.61	2.61	13.05	14.50	3.00	38	●							
3030-2.62	2.62	13.10	14.50	3.00	38	●							
3030-2.63	2.63	13.15	14.50	3.00	38	●							
3030-2.64	2.64	13.20	14.50	3.00	38	●							





BECAUSE QUALITY REQUIRES PRECISION

4000



Répertoire **Micro-fraises**
Verzeichnis **Mikrofräser**
Index **Micro end mills**

Paramètres de coupe indicatifs
Empfohlene Schnittwerte
Standard machining data

3.03

Sharp Corner Radius Corner	Micro-fraises avec angles vifs / angles à rayon Mikrofräser mit scharfkantigen Ecken / Radienecken Micro end mills with sharp corners / radius corners						
	Z	λ	L2	D1	D2	Type	page
	Z=1	0°	2x D1	Ø0.20 - 3.00	Ø3h4 / Ø4h5	4170-2	3.04
			2x D1	Ø0.20 - 3.00	Ø3h4 / Ø4h5	4170R-2	3.05
			3x D1	Ø0.20 - 3.00	Ø3h4 / Ø4h5	4170R-3	3.06
			4x D1	Ø0.30 - 3.00	Ø3h4 / Ø4h5	4170R-4	3.07
	Z=2	30°	0.75x D1	Ø0.20 - 2.00	Ø3h4	4270-0.75	3.08
			1x D1	Ø0.30 - 2.50	Ø3h4	4270-1	3.09
			1.5x D1	Ø0.10 - 2.00	Ø3h4	4270-1.5	3.10
			2x D1	Ø0.10 - 2.00	Ø3h4	4270-2	3.11
			3x D1	Ø0.10 - 2.90	Ø3h4	4270-3	3.12
			5x D1	Ø0.30 - 2.50	Ø3h4	4270-5	3.13
			8x D1	Ø0.40 - 2.50	Ø3h4 / Ø4h5	4270-8	3.14
			2x D1	Ø0.20 - 3.00	Ø3h4 / Ø6h5	4270S-3X	3.15
			2x D1	Ø0.30 - 3.00	Ø3h4 / Ø6h5	4270S-6X	3.16
			2x D1	Ø0.40 - 3.00	Ø3h4 / Ø6h5	4270S-9X	3.17
			2x D1	Ø0.30 - 3.00	Ø3h4 / Ø6h5	4279T-3X	3.18
			2x D1	Ø0.30 - 3.00	Ø3h4 / Ø6h5	4279T-6X	3.19
			2x D1	Ø0.40 - 3.00	Ø3h4 / Ø6h5	4279T-9X	3.20
	Z=3	30°	1.3x D1	Ø0.30 - 2.90	Ø3h4	4370-1.3	3.21
			2x D1	Ø0.30 - 2.90	Ø3h4	4370-2	3.22
			3x D1	Ø0.30 - 2.90	Ø3h4	4370-3	3.23
			4x D1	Ø0.30 - 2.90	Ø3h4	4370-4	3.24
			5x D1	Ø0.50 - 2.50	Ø3h4	4370-5	3.25
		45°	8x D1	Ø0.50 - 2.50	Ø3h4 / Ø4h5	4370-8	3.26
			2.5x D1	Ø0.30 - 2.90	Ø3h4	4375-2.5	3.27
		36°-38°-40°	1.5x D1	Ø0.30 - 2.50	Ø3h4	DHD4370-1.5	3.28
			3x D1	Ø0.30 - 2.50	Ø3h4	DHD4370-3	3.29
		30°	2x D1	Ø0.30 - 3.00	Ø3h4 / Ø6h5	4370S-3X	3.30
			2x D1	Ø0.30 - 3.00	Ø3h4 / Ø6h5	4370S-6X	3.31
			2x D1	Ø0.40 - 3.00	Ø3h4 / Ø6h5	4370S-9X	3.32
			2x D1	Ø0.30 - 3.00	Ø3h4 / Ø6h5	4379T-3X	3.33
			2x D1	Ø0.30 - 3.00	Ø3h4 / Ø6h5	4379T-6X	3.34
			2x D1	Ø0.40 - 3.00	Ø3h4 / Ø6h5	4379T-9X	3.35
	Z=4	30°	1.5x D1	Ø0.30 - 2.90	Ø3h4	4470-1.5	3.36
			3x D1	Ø0.30 - 2.90	Ø3h4	4470-3	3.37
		40°	2x D1	Ø0.30 - 2.90	Ø3h4	4472-2	3.38
			4x D1	Ø0.40 - 2.90	Ø3h4	4472-4	3.39
		35°-38°	3x D1	Ø0.50 - 2.50	Ø3h4	DHP4470-3	3.40

Répertoire **Micro-fraises**
 Verzeichnis **Mikrofräser**
 Index **Micro end mills**

U	Micro-fraises hémisphériques Vollradius Mikrofräser Ball nose micro end mills						
	Z	λ	L2	Range	D2	Type	page
	Z = 2	30°	0.75x D1	Ø0.20 - 2.50	Ø3h4	4278-0.75	3.41
			1x D1	Ø0.20 - 2.90	Ø3h4	4278-1	3.42
			1.5x D1	Ø0.20 - 2.90	Ø3h4	4278-1.5	3.43
			3x D1	Ø0.20 - 2.90	Ø3h4	4278-3	3.44
			1.5x D1	Ø0.20 - 3.00	Ø3h4 / Ø6h5	4278H-3X	3.45
			1.5x D1	Ø0.30 - 3.00	Ø3h4 / Ø6h5	4278H-6X	3.46
			1.5x D1	Ø0.40 - 3.00	Ø3h4 / Ø6h5	4278H-9X	3.47

Paramètres de coupe indicatifs **Micro-fraises**
 Empfohlene Schnittwerte **Mikrofräser**
 Standard machining data **Micro end mills**

Matière Werkstoff Material		C	0.10 - 0.50	0.60 - 1.50	1.60 - 2.90	N	TiAlN*	STF*	TiCN*	ALFA-TOP*
		(m/min)	fz (mm)	fz (mm)	fz (mm)					
Acier de décolletage Automatenstahl Free-cutting steel	P	80 - 130	0.003 - 0.005	0.006 - 0.010	0.013 - 0.020	-	+++	+++	++	-
Acier Stahl Steel	< 600 N/mm ² P	70 - 100	0.003 - 0.005	0.006 - 0.010	0.013 - 0.020	-	+++	+++	++	-
Acier Stahl Steel	< 800 N/mm ² P	70 - 100	0.003 - 0.005	0.006 - 0.010	0.013 - 0.020	-	+++	+++	++	-
Acier Stahl Steel	> 800 N/mm ² P	50 - 80	0.003 - 0.005	0.006 - 0.010	0.013 - 0.020	-	+++	+++	++	-
Acier trempé Gehärteter Stahl Hardened steel	-55HRC H	60 - 90	0.001 - 0.002	0.003 - 0.005	0.007 - 0.010	-	+++	+++	+	-
Acier trempé Gehärteter Stahl Hardened steel	+55HRC H	40 - 70	0.001 - 0.002	0.003 - 0.005	0.007 - 0.010	-	+++	+++	+	-
Inox Rostfreistahl Stainless steel	M	40 - 80	0.003 - 0.005	0.006 - 0.010	0.013 - 0.020	-	+++	+++	++	-
Aluminium	N	200 - 300	0.002 - 0.005	0.005 - 0.010	0.010 - 0.030	+++	-	-	++	+++
Cuivre, laiton, bronze Kupfer, Messing, Bronze Copper, brass, bronze	N	100 - 200	0.001 - 0.005	0.006 - 0.010	0.010 - 0.015	+++	++	++	++	+++
Matière synthétique Synthetisches Material Synthetic material	N	200 - 700	0.002 - 0.004	0.006 - 0.015	0.015 - 0.050	+++	++	++	++	+++
Métaux précieux Edelmetalle Precious metals	N	90 - 140	0.002 - 0.003	0.004 - 0.012	0.012 - 0.025	+++	++	++	+	+++
Titane Titan Titanium	S	25 - 70	0.001 - 0.003	0.004 - 0.010	0.006 - 0.015	-	+++	+++	++	-
Alliage de nickel Nickel-Legierung Nickel alloy	S	40 - 70	0.001 - 0.003	0.004 - 0.008	0.008 - 0.012	-	+++	+++	++	-
Matière exotique Exotisches material Exotic material	O	15 - 25	0.001 - 0.002	0.003 - 0.005	0.006 - 0.010	-	+++	+++	++	+++

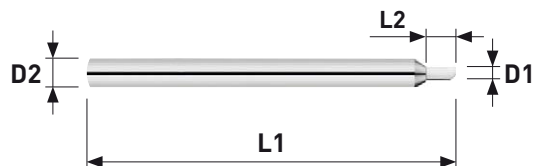
* Avec revêtement, augmenter les valeurs de 20 %
 Mit Beschichtung, Daten um 20 % erhöhen
 With coating, increase data by 20 %

+ Bien / Gut / Good
 ++ Très bien / Sehr gut / Very good
 +++ Excellent / Ausgezeichnet / Excellent

Micro-fraises

Mikrofräser

Micro end mills



Art. N°	D1 +0.005 / -0.010	L2	D2 ø3h4 ø4h5	L1	N	TiAlN	STF	TiCN	ALFA- TOP
4170-2-0.20	0.20	0.40	3.00	39	●				
4170-2-0.30	0.30	0.60	3.00	39	●	●	●	●	●
4170-2-0.40	0.40	0.80	3.00	39	●	●	●	●	●
4170-2-0.50	0.50	1.00	3.00	39	●	●	●	●	●
4170-2-0.60	0.60	1.20	3.00	39	●	●	●	●	●
4170-2-0.70	0.70	1.40	3.00	39	●	●	●	●	●
4170-2-0.80	0.80	1.60	3.00	39	●	●	●	●	●
4170-2-0.90	0.90	1.80	3.00	39	●	●	●	●	●
4170-2-1.00	1.00	2.00	3.00	39	●	●	●	●	●
4170-2-1.10	1.10	2.20	3.00	39	●	●	●	●	●
4170-2-1.20	1.20	2.40	3.00	39	●	●	●	●	●
4170-2-1.30	1.30	2.60	3.00	39	●	●	●	●	●
4170-2-1.40	1.40	2.80	3.00	39	●	●	●	●	●
4170-2-1.50	1.50	3.00	3.00	39	●	●	●	●	●
4170-2-1.60	1.60	3.20	3.00	39	●	●	●	●	●
4170-2-1.70	1.70	3.40	3.00	39	●	●	●	●	●
4170-2-1.80	1.80	3.60	3.00	39	●	●	●	●	●
4170-2-1.90	1.90	3.80	3.00	39	●	●	●	●	●
4170-2-2.00	2.00	4.00	3.00	39	●	●	●	●	●
4170-2-2.10	2.10	4.20	3.00	39	●	●	●	●	●
4170-2-2.20	2.20	4.40	3.00	39	●	●	●	●	●
4170-2-2.30	2.30	4.60	3.00	39	●	●	●	●	●
4170-2-2.40	2.40	4.80	3.00	39	●	●	●	●	●
4170-2-2.50	2.50	5.00	3.00	39	●	●	●	●	●
4170-2-2.60	2.60	5.20	3.00	39	●	●	●	●	●
4170-2-2.70	2.70	5.40	3.00	39	●	●	●	●	●
4170-2-2.80	2.80	5.60	3.00	39	●	●	●	●	●
4170-2-2.90	2.90	5.80	3.00	39	●	●	●	●	●
4170-2-3.00	3.00	6.00	4.00	40	●	●	●	●	●



Micro-fraises

Mikrofräser

Micro end mills

MD
VHM
HM $\lambda \ 0^\circ$ Sharp
Corner

2xD1

Z = 1



Art. N°	D1 +0.005 / -0.010	L2	D2 ø3h4 ø4h5	L1	N	TiAlN	STF	TiCN	ALFA- TOP
4170R-2-0.20	0.20	0.40	3.00	39	●				
4170R-2-0.30	0.30	0.60	3.00	39	●	●	●	●	●
4170R-2-0.40	0.40	0.80	3.00	39	●	●	●	●	●
4170R-2-0.50	0.50	1.00	3.00	39	●	●	●	●	●
4170R-2-0.60	0.60	1.20	3.00	39	●	●	●	●	●
4170R-2-0.70	0.70	1.40	3.00	39	●	●	●	●	●
4170R-2-0.80	0.80	1.60	3.00	39	●	●	●	●	●
4170R-2-0.90	0.90	1.80	3.00	39	●	●	●	●	●
4170R-2-1.00	1.00	2.00	3.00	39	●	●	●	●	●
4170R-2-1.10	1.10	2.20	3.00	39	●	●	●	●	●
4170R-2-1.20	1.20	2.40	3.00	39	●	●	●	●	●
4170R-2-1.30	1.30	2.60	3.00	39	●	●	●	●	●
4170R-2-1.40	1.40	2.80	3.00	39	●	●	●	●	●
4170R-2-1.50	1.50	3.00	3.00	39	●	●	●	●	●
4170R-2-1.60	1.60	3.20	3.00	39	●	●	●	●	●
4170R-2-1.70	1.70	3.40	3.00	39	●	●	●	●	●
4170R-2-1.80	1.80	3.60	3.00	39	●	●	●	●	●
4170R-2-1.90	1.90	3.80	3.00	39	●	●	●	●	●
4170R-2-2.00	2.00	4.00	3.00	39	●	●	●	●	●
4170R-2-2.10	2.10	4.10	3.00	39	●	●	●	●	●
4170R-2-2.20	2.20	4.40	3.00	39	●	●	●	●	●
4170R-2-2.30	2.30	4.60	3.00	39	●	●	●	●	●
4170R-2-2.40	2.40	4.80	3.00	39	●	●	●	●	●
4170R-2-2.50	2.50	5.00	3.00	39	●	●	●	●	●
4170R-2-2.60	2.60	5.20	3.00	39	●	●	●	●	●
4170R-2-2.70	2.70	5.40	3.00	39	●	●	●	●	●
4170R-2-2.80	2.80	5.60	3.00	39	●	●	●	●	●
4170R-2-2.90	2.90	5.80	3.00	39	●	●	●	●	●
4170R-2-3.00	3.00	6.00	4.00	40	●	●	●	●	●



Micro-fraises

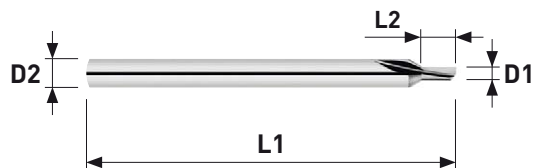
Mikrofräser

Micro end mills

MD
VHM
HM $\lambda \ 0^\circ$ Sharp
Corner

3xD1

Z = 1



Art. N°	D1 +0.005 / -0.010	L2	D2 ø3h4 ø4h5	L1	N	TiAlN	STF	TiCN	ALFA- TOP
4170R-3-0.20	0.20	0.60	3.00	39	●				
4170R-3-0.30	0.30	0.90	3.00	39	●	●	●	●	●
4170R-3-0.40	0.40	1.20	3.00	39	●	●	●	●	●
4170R-3-0.50	0.50	1.50	3.00	39	●	●	●	●	●
4170R-3-0.60	0.60	1.80	3.00	39	●	●	●	●	●
4170R-3-0.70	0.70	2.10	3.00	39	●	●	●	●	●
4170R-3-0.80	0.80	2.40	3.00	39	●	●	●	●	●
4170R-3-0.90	0.90	2.70	3.00	39	●	●	●	●	●
4170R-3-1.00	1.00	3.00	3.00	39	●	●	●	●	●
4170R-3-1.10	1.10	3.30	3.00	39	●	●	●	●	●
4170R-3-1.20	1.20	3.60	3.00	39	●	●	●	●	●
4170R-3-1.30	1.30	3.90	3.00	39	●	●	●	●	●
4170R-3-1.40	1.40	4.20	3.00	39	●	●	●	●	●
4170R-3-1.50	1.50	4.50	3.00	39	●	●	●	●	●
4170R-3-2.00	2.00	6.00	3.00	39	●	●	●	●	●
4170R-3-2.50	2.50	7.50	3.00	39	●	●	●	●	●
4170R-3-3.00	3.00	9.00	4.00	40	●	●	●	●	●



Micro-fraises

Mikrofräser

Micro end mills

MD
VHM
HM λ 0°Sharp
Corner

4xD1

Z = 1



Art. N°	D1 +0.005 / -0.010	L2	D2 ø3h4 ø4h5	L1	N	TiAlN	STF	TiCN	ALFA- TOP
4170R-4-0.30	0.30	1.20	3.00	39	●	●	●	●	●
4170R-4-0.40	0.40	1.60	3.00	39	●	●	●	●	●
4170R-4-0.50	0.50	2.00	3.00	39	●	●	●	●	●
4170R-4-0.60	0.60	2.40	3.00	39	●	●	●	●	●
4170R-4-0.70	0.70	2.80	3.00	39	●	●	●	●	●
4170R-4-0.80	0.80	3.20	3.00	39	●	●	●	●	●
4170R-4-0.90	0.90	3.60	3.00	39	●	●	●	●	●
4170R-4-1.00	1.00	4.00	3.00	39	●	●	●	●	●
4170R-4-1.10	1.10	4.40	3.00	39	●	●	●	●	●
4170R-4-1.20	1.20	4.80	3.00	39	●	●	●	●	●
4170R-4-1.30	1.30	5.20	3.00	39	●	●	●	●	●
4170R-4-1.40	1.40	5.60	3.00	39	●	●	●	●	●
4170R-4-1.50	1.50	6.00	3.00	39	●	●	●	●	●
4170R-4-2.00	2.00	8.00	3.00	39	●	●	●	●	●
4170R-4-2.50	2.50	10.00	3.00	39	●	●	●	●	●
4170R-4-3.00	3.00	12.00	4.00	40	●	●	●	●	●



Micro-fraises

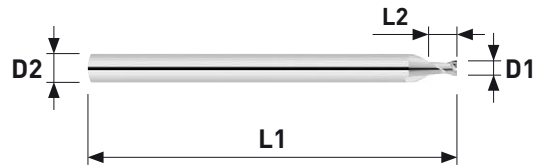
Mikrofräser

Micro end mills

MD
VHM
HM λ 30°Sharp
Corner

0.75xD1

Z = 2



Art. N°	D1 +0.005 / -0.010	L2	D2 h4	L1	N	TiAlN	STF	TiCN	ALFA- TOP
4270-0.75-0.20	0.20	0.15	3.00	39	●				
4270-0.75-0.30	0.30	0.25	3.00	39	●	●	●	●	●
4270-0.75-0.40	0.40	0.30	3.00	39	●	●	●	●	●
4270-0.75-0.50	0.50	0.37	3.00	39	●	●	●	●	●
4270-0.75-0.60	0.60	0.45	3.00	39	●	●	●	●	●
4270-0.75-0.70	0.70	0.53	3.00	39	●	●	●	●	●
4270-0.75-0.80	0.80	0.60	3.00	39	●	●	●	●	●
4270-0.75-0.90	0.90	0.70	3.00	39	●	●	●	●	●
4270-0.75-1.00	1.00	0.75	3.00	39	●	●	●	●	●
4270-0.75-1.10	1.10	0.90	3.00	39	●	●	●	●	●
4270-0.75-1.20	1.20	0.90	3.00	39	●	●	●	●	●
4270-0.75-1.30	1.30	1.00	3.00	39	●	●	●	●	●
4270-0.75-1.40	1.40	1.10	3.00	39	●	●	●	●	●
4270-0.75-1.50	1.50	1.15	3.00	39	●	●	●	●	●
4270-0.75-1.60	1.60	1.20	3.00	39	●	●	●	●	●
4270-0.75-1.70	1.70	1.30	3.00	39	●	●	●	●	●
4270-0.75-1.80	1.80	1.40	3.00	39	●	●	●	●	●
4270-0.75-1.90	1.90	1.45	3.00	39	●	●	●	●	●
4270-0.75-2.00	2.00	1.50	3.00	39	●	●	●	●	●



Micro-fraises

Mikrofräser

Micro end mills

MD
VHM
HM λ 30°Sharp
Corner

1xD1

Z = 2



Art. N°	D1 +0.005 / -0.010	L2	D2 h4	L1	N	TiAlN	STF	TiCN	ALFA- TOP
4270-1-0.30	0.30	0.30	3.00	39	●	●	●	●	●
4270-1-0.40	0.40	0.40	3.00	39	●	●	●	●	●
4270-1-0.50	0.50	0.50	3.00	39	●	●	●	●	●
4270-1-0.60	0.60	0.60	3.00	39	●	●	●	●	●
4270-1-0.70	0.70	0.70	3.00	39	●	●	●	●	●
4270-1-0.80	0.80	0.80	3.00	39	●	●	●	●	●
4270-1-0.90	0.90	0.90	3.00	39	●	●	●	●	●
4270-1-1.00	1.00	1.00	3.00	39	●	●	●	●	●
4270-1-1.10	1.10	1.10	3.00	39	●	●	●	●	●
4270-1-1.20	1.20	1.20	3.00	39	●	●	●	●	●
4270-1-1.30	1.30	1.30	3.00	39	●	●	●	●	●
4270-1-1.40	1.40	1.40	3.00	39	●	●	●	●	●
4270-1-1.50	1.50	1.50	3.00	39	●	●	●	●	●
4270-1-1.60	1.60	1.60	3.00	39	●	●	●	●	●
4270-1-1.70	1.70	1.70	3.00	39	●	●	●	●	●
4270-1-1.80	1.80	1.80	3.00	39	●	●	●	●	●
4270-1-1.90	1.90	1.90	3.00	39	●	●	●	●	●
4270-1-2.00	2.00	2.00	3.00	39	●	●	●	●	●
4270-1-2.50	2.50	2.50	3.00	39	●	●	●	●	●



Micro-fraises

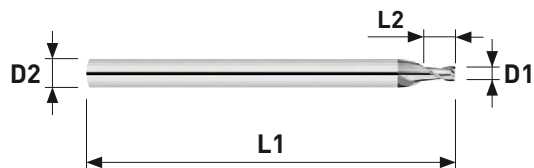
Mikrofräser

Micro end mills

MD
VHM
HM λ 30°Sharp
Corner

1.5xD1

Z = 2



Art. N°	D1 +0.005 / -0.010	L2	D2 h4	L1	N	TiAlN	STF	TiCN	ALFA- TOP
4270-1.5-0.10	0.10	0.15	3.00	39	●				
4270-1.5-0.15	0.15	0.20	3.00	39	●				
4270-1.5-0.20	0.20	0.30	3.00	39	●				
4270-1.5-0.25	0.25	0.35	3.00	39	●				
4270-1.5-0.30	0.30	0.45	3.00	39	●	●	●	●	●
4270-1.5-0.40	0.40	0.60	3.00	39	●	●	●	●	●
4270-1.5-0.45	0.45	0.70	3.00	39	●	●	●	●	●
4270-1.5-0.50	0.50	0.75	3.00	39	●	●	●	●	●
4270-1.5-0.60	0.60	0.90	3.00	39	●	●	●	●	●
4270-1.5-0.70	0.70	1.05	3.00	39	●	●	●	●	●
4270-1.5-0.80	0.80	1.20	3.00	39	●	●	●	●	●
4270-1.5-0.90	0.90	1.35	3.00	39	●	●	●	●	●
4270-1.5-1.00	1.00	1.50	3.00	39	●	●	●	●	●
4270-1.5-1.10	1.10	1.65	3.00	39	●	●	●	●	●
4270-1.5-1.20	1.20	1.80	3.00	39	●	●	●	●	●
4270-1.5-1.30	1.30	1.95	3.00	39	●	●	●	●	●
4270-1.5-1.40	1.40	2.10	3.00	39	●	●	●	●	●
4270-1.5-1.50	1.50	2.25	3.00	39	●	●	●	●	●
4270-1.5-1.60	1.60	2.40	3.00	39	●	●	●	●	●
4270-1.5-1.70	1.70	2.55	3.00	39	●	●	●	●	●
4270-1.5-1.80	1.80	2.70	3.00	39	●	●	●	●	●
4270-1.5-1.90	1.90	2.85	3.00	39	●	●	●	●	●
4270-1.5-2.00	2.00	3.00	3.00	39	●	●	●	●	●



Micro-fraises

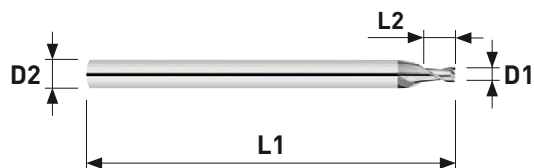
Mikrofräser

Micro end mills

MD
VHM
HM λ 30°Sharp
Corner

2xD1

Z = 2



Art. N°	D1 +0.005 / -0.010	L2	D2 h4	L1	N	TiAlN	STF	TiCN	ALFA- TOP
4270-2-0.10	0.10	0.20	3.00	39	●				
4270-2-0.15	0.15	0.30	3.00	39	●				
4270-2-0.20	0.20	0.40	3.00	39	●				
4270-2-0.25	0.25	0.50	3.00	39	●				
4270-2-0.30	0.30	0.60	3.00	39	●	●	●	●	●
4270-2-0.40	0.40	0.80	3.00	39	●	●	●	●	●
4270-2-0.50	0.50	1.00	3.00	39	●	●	●	●	●
4270-2-0.60	0.60	1.20	3.00	39	●	●	●	●	●
4270-2-0.70	0.70	1.40	3.00	39	●	●	●	●	●
4270-2-0.80	0.80	1.60	3.00	39	●	●	●	●	●
4270-2-0.90	0.90	1.80	3.00	39	●	●	●	●	●
4270-2-1.00	1.00	2.00	3.00	39	●	●	●	●	●
4270-2-1.10	1.10	2.20	3.00	39	●	●	●	●	●
4270-2-1.20	1.20	2.40	3.00	39	●	●	●	●	●
4270-2-1.30	1.30	2.60	3.00	39	●	●	●	●	●
4270-2-1.40	1.40	2.80	3.00	39	●	●	●	●	●
4270-2-1.50	1.50	3.00	3.00	39	●	●	●	●	●
4270-2-1.60	1.60	3.20	3.00	39	●	●	●	●	●
4270-2-1.70	1.70	3.40	3.00	39	●	●	●	●	●
4270-2-1.80	1.80	3.60	3.00	39	●	●	●	●	●
4270-2-1.90	1.90	3.80	3.00	39	●	●	●	●	●
4270-2-2.00	2.00	4.00	3.00	39	●	●	●	●	●



Micro-fraises

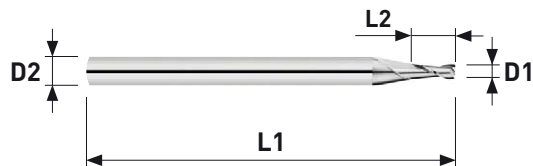
Mikrofräser

Micro end mills

MD
VHM
HM λ 30°Sharp
Corner

3xD1

Z = 2



Art. N°	D1 +0.005 / -0.010	L2	D2 h4	L1	N	TiAlN	STF	TiCN	ALFA- TOP
4270-3-0.10	0.10	0.25	3.00	39	●				
4270-3-0.15	0.15	0.45	3.00	39	●				
4270-3-0.20	0.20	0.50	3.00	39	●				
4270-3-0.25	0.25	0.75	3.00	39	●				
4270-3-0.30	0.30	1.00	3.00	39	●	●	●	●	●
4270-3-0.35	0.35	1.10	3.00	39	●	●	●	●	●
4270-3-0.40	0.40	1.20	3.00	39	●	●	●	●	●
4270-3-0.50	0.50	1.50	3.00	39	●	●	●	●	●
4270-3-0.60	0.60	2.00	3.00	39	●	●	●	●	●
4270-3-0.65	0.65	2.00	3.00	39	●	●	●	●	●
4270-3-0.70	0.70	2.00	3.00	39	●	●	●	●	●
4270-3-0.75	0.75	2.00	3.00	39	●	●	●	●	●
4270-3-0.80	0.80	2.50	3.00	39	●	●	●	●	●
4270-3-0.90	0.90	2.50	3.00	39	●	●	●	●	●
4270-3-0.95	0.95	3.00	3.00	39	●	●	●	●	●
4270-3-1.00	1.00	3.00	3.00	39	●	●	●	●	●
4270-3-1.05	1.05	3.00	3.00	39	●	●	●	●	●
4270-3-1.10	1.10	3.00	3.00	39	●	●	●	●	●
4270-3-1.15	1.15	3.50	3.00	39	●	●	●	●	●
4270-3-1.20	1.20	4.00	3.00	39	●	●	●	●	●
4270-3-1.30	1.30	4.00	3.00	39	●	●	●	●	●
4270-3-1.35	1.35	4.00	3.00	39	●	●	●	●	●
4270-3-1.40	1.40	4.00	3.00	39	●	●	●	●	●
4270-3-1.45	1.45	4.40	3.00	39	●	●	●	●	●
4270-3-1.50	1.50	4.50	3.00	39	●	●	●	●	●
4270-3-1.55	1.55	4.50	3.00	39	●	●	●	●	●
4270-3-1.60	1.60	4.50	3.00	39	●	●	●	●	●
4270-3-1.65	1.65	5.00	3.00	39	●	●	●	●	●
4270-3-1.70	1.70	5.00	3.00	39	●	●	●	●	●
4270-3-1.75	1.75	5.30	3.00	39	●	●	●	●	●
4270-3-1.80	1.80	6.00	3.00	39	●	●	●	●	●
4270-3-1.85	1.85	6.00	3.00	39	●	●	●	●	●
4270-3-1.90	1.90	6.00	3.00	39	●	●	●	●	●
4270-3-1.95	1.95	6.00	3.00	39	●	●	●	●	●
4270-3-2.00	2.00	6.00	3.00	39	●	●	●	●	●
4270-3-2.10	2.10	6.00	3.00	39	●	●	●	●	●
4270-3-2.20	2.20	6.50	3.00	39	●	●	●	●	●
4270-3-2.30	2.30	7.00	3.00	39	●	●	●	●	●
4270-3-2.40	2.40	7.00	3.00	39	●	●	●	●	●
4270-3-2.50	2.50	7.50	3.00	39	●	●	●	●	●
4270-3-2.60	2.60	7.50	3.00	39	●	●	●	●	●
4270-3-2.70	2.70	8.00	3.00	39	●	●	●	●	●
4270-3-2.80	2.80	8.00	3.00	39	●	●	●	●	●
4270-3-2.90	2.90	8.00	3.00	39	●	●	●	●	●



Micro-fraises

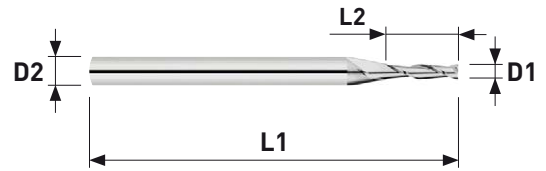
Mikrofräser

Micro end mills

MD
VHM
HM λ 30°Sharp
Corner

5xD1

Z = 2



Art. N°	D1 +0.005 / -0.010	L2	D2 h4	L1	N	TiAlN	STF	TiCN	ALFA- TOP
4270-5-0.30	0.30	1.50	3.00	39	●	●	●	●	●
4270-5-0.35	0.35	1.80	3.00	39	●	●	●	●	●
4270-5-0.40	0.40	2.00	3.00	39	●	●	●	●	●
4270-5-0.50	0.50	2.50	3.00	39	●	●	●	●	●
4270-5-0.55	0.55	2.80	3.00	39	●	●	●	●	●
4270-5-0.60	0.60	3.00	3.00	39	●	●	●	●	●
4270-5-0.65	0.65	3.30	3.00	39	●	●	●	●	●
4270-5-0.70	0.70	3.50	3.00	39	●	●	●	●	●
4270-5-0.75	0.75	3.80	3.00	39	●	●	●	●	●
4270-5-0.80	0.80	4.00	3.00	39	●	●	●	●	●
4270-5-0.85	0.85	4.30	3.00	39	●	●	●	●	●
4270-5-0.90	0.90	4.50	3.00	39	●	●	●	●	●
4270-5-0.95	0.95	4.80	3.00	39	●	●	●	●	●
4270-5-1.00	1.00	5.00	3.00	39	●	●	●	●	●
4270-5-1.10	1.10	5.50	3.00	39	●	●	●	●	●
4270-5-1.20	1.20	6.00	3.00	39	●	●	●	●	●
4270-5-1.50	1.50	7.50	3.00	39	●	●	●	●	●
4270-5-2.00	2.00	10.00	3.00	39	●	●	●	●	●
4270-5-2.50	2.50	12.50	3.00	39	●	●	●	●	●



Micro-fraises

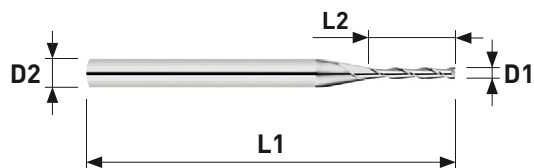
Mikrofräser

Micro end mills

MD
VHM
HM λ 30°Sharp
Corner

8xD1

Z = 2



Art. N°	D1 +0.005 / -0.010	L2	D2 ø3h4 ø4h5	L1	N	TiAlN	STF	TiCN	ALFA- TOP
4270-8-0.40	0.40	3.20	3.00	39	●	●	●	●	●
4270-8-0.50	0.50	4.00	3.00	39	●	●	●	●	●
4270-8-0.60	0.60	5.00	3.00	39	●	●	●	●	●
4270-8-0.70	0.70	5.60	3.00	39	●	●	●	●	●
4270-8-0.80	0.80	6.00	3.00	39	●	●	●	●	●
4270-8-0.90	0.90	7.20	3.00	39	●	●	●	●	●
4270-8-1.00	1.00	8.00	3.00	39	●	●	●	●	●
4270-8-1.20	1.20	9.00	3.00	39	●	●	●	●	●
4270-8-1.50	1.50	12.00	4.00	50	●	●	●	●	●
4270-8-2.00	2.00	16.00	4.00	50	●	●	●	●	●
4270-8-2.50	2.50	20.00	4.00	50	●	●	●	●	●



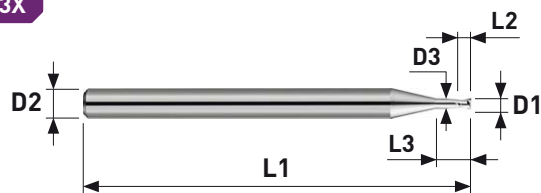
Micro-fraises

Mikrofräser

Micro end mills

MD
VHM
HM λ 30°Sharp
CornerL3
3xD1

Z = 2



Art. N°	D1 +0.005 / -0.010	L2	L3	D3	D2 Ø3h4 Ø6h5	L1	N	TiAlN	STF	TiCN	ALFA- TOP
4270S-3X-0.20	0.20	0.40	0.60	0.17	3.00	39	●				
4270S-3X-0.30	0.30	0.60	0.90	0.27	3.00	39	●	●	●	●	●
4270S-3X-0.40	0.40	0.80	1.20	0.37	3.00	39	●	●	●	●	●
4270S-3X-0.50	0.50	1.00	1.50	0.45	3.00	39	●	●	●	●	●
4270S-3X-0.60	0.60	1.20	1.80	0.55	3.00	39	●	●	●	●	●
4270S-3X-0.70	0.70	1.40	2.10	0.65	3.00	39	●	●	●	●	●
4270S-3X-0.80	0.80	1.60	2.40	0.75	3.00	39	●	●	●	●	●
4270S-3X-0.90	0.90	1.80	2.70	0.85	3.00	39	●	●	●	●	●
4270S-3X-1.00	1.00	2.00	3.00	0.95	3.00	39	●	●	●	●	●
4270S-3X-1.10	1.10	2.20	3.30	1.05	3.00	39	●	●	●	●	●
4270S-3X-1.20	1.20	2.40	3.60	1.15	3.00	39	●	●	●	●	●
4270S-3X-1.30	1.30	2.60	3.90	1.25	3.00	39	●	●	●	●	●
4270S-3X-1.40	1.40	2.80	4.20	1.35	3.00	39	●	●	●	●	●
4270S-3X-1.50	1.50	3.00	4.50	1.45	3.00	39	●	●	●	●	●
4270S-3X-1.60	1.60	3.20	4.80	1.55	3.00	39	●	●	●	●	●
4270S-3X-1.70	1.70	3.40	5.10	1.65	3.00	39	●	●	●	●	●
4270S-3X-1.80	1.80	3.60	5.40	1.75	3.00	39	●	●	●	●	●
4270S-3X-1.90	1.90	3.80	5.70	1.85	3.00	39	●	●	●	●	●
4270S-3X-2.00	2.00	4.00	6.00	1.95	6.00	50	●	●	●	●	●
4270S-3X-2.10	2.10	4.20	6.30	2.05	6.00	50	●	●	●	●	●
4270S-3X-2.20	2.20	4.40	6.60	2.15	6.00	50	●	●	●	●	●
4270S-3X-2.30	2.30	4.60	6.90	2.25	6.00	50	●	●	●	●	●
4270S-3X-2.40	2.40	4.80	7.20	2.35	6.00	50	●	●	●	●	●
4270S-3X-2.50	2.50	5.00	7.50	2.45	6.00	50	●	●	●	●	●
4270S-3X-3.00	3.00	6.00	9.00	2.95	6.00	50	●	●	●	●	●



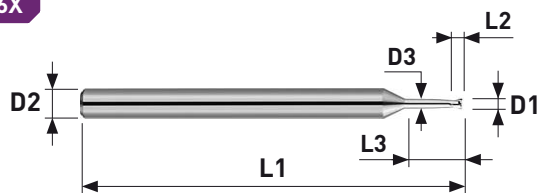
Micro-fraises

Mikrofräser

Micro end mills

MD
VHM
HM $\lambda \ 30^\circ$ Sharp
CornerL3
6xD1

Z = 2



Art. N°	D1 +0.005 / -0.010	L2	L3	D3	D2 Ø3h4 Ø6h5	L1	N	TiAlN	STF	TiCN	ALFA- TOP
4270S-6X-0.30	0.30	0.60	1.80	0.27	3.00	39	●	●	●	●	●
4270S-6X-0.40	0.40	0.80	2.40	0.37	3.00	39	●	●	●	●	●
4270S-6X-0.50	0.50	1.00	3.00	0.45	3.00	39	●	●	●	●	●
4270S-6X-0.60	0.60	1.20	3.60	0.55	3.00	39	●	●	●	●	●
4270S-6X-0.70	0.70	1.40	4.20	0.65	3.00	39	●	●	●	●	●
4270S-6X-0.80	0.80	1.60	4.80	0.75	3.00	39	●	●	●	●	●
4270S-6X-0.90	0.90	1.80	5.40	0.85	3.00	39	●	●	●	●	●
4270S-6X-1.00	1.00	2.00	6.00	0.95	3.00	39	●	●	●	●	●
4270S-6X-1.10	1.10	2.20	6.60	1.05	3.00	39	●	●	●	●	●
4270S-6X-1.20	1.20	2.40	7.20	1.15	3.00	39	●	●	●	●	●
4270S-6X-1.30	1.30	2.60	7.80	1.25	3.00	39	●	●	●	●	●
4270S-6X-1.40	1.40	2.80	8.40	1.35	3.00	39	●	●	●	●	●
4270S-6X-1.50	1.50	3.00	9.00	1.45	3.00	39	●	●	●	●	●
4270S-6X-1.60	1.60	3.20	9.60	1.55	3.00	39	●	●	●	●	●
4270S-6X-1.70	1.70	3.40	10.20	1.65	3.00	39	●	●	●	●	●
4270S-6X-1.80	1.80	3.60	10.80	1.75	3.00	39	●	●	●	●	●
4270S-6X-1.90	1.90	3.80	11.40	1.85	3.00	39	●	●	●	●	●
4270S-6X-2.00	2.00	4.00	12.00	1.95	6.00	50	●	●	●	●	●
4270S-6X-2.10	2.10	4.20	12.60	2.05	6.00	50	●	●	●	●	●
4270S-6X-2.20	2.20	4.40	13.20	2.15	6.00	50	●	●	●	●	●
4270S-6X-2.30	2.30	4.60	13.80	2.25	6.00	50	●	●	●	●	●
4270S-6X-2.40	2.40	4.80	14.40	2.35	6.00	50	●	●	●	●	●
4270S-6X-2.50	2.50	5.00	15.00	2.45	6.00	50	●	●	●	●	●
4270S-6X-3.00	3.00	6.00	18.00	2.95	6.00	50	●	●	●	●	●



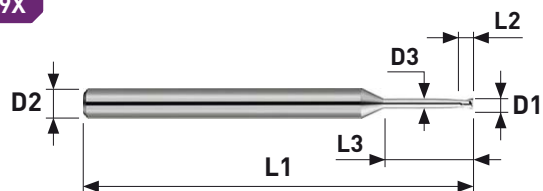
Micro-fraises

Mikrofräser

Micro end mills

MD
VHM
HM $\lambda \ 30^\circ$ Sharp
CornerL3
9xD1

Z = 2



Art. N°	D1 +0.005 / -0.010	L2	L3	D3	D2 Ø3h4 Ø6h5	L1	N	TiAlN	STF	TiCN	ALFA- TOP
4270S-9X-0.40	0.40	0.80	3.60	0.37	3.00	39	●	●	●	●	●
4270S-9X-0.50	0.50	1.00	4.50	0.45	3.00	39	●	●	●	●	●
4270S-9X-0.60	0.60	1.20	5.40	0.55	3.00	39	●	●	●	●	●
4270S-9X-0.70	0.70	1.40	6.30	0.65	3.00	39	●	●	●	●	●
4270S-9X-0.80	0.80	1.60	7.20	0.75	3.00	39	●	●	●	●	●
4270S-9X-0.90	0.90	1.80	8.10	0.85	3.00	39	●	●	●	●	●
4270S-9X-1.00	1.00	2.00	9.00	0.95	3.00	39	●	●	●	●	●
4270S-9X-1.10	1.10	2.20	9.90	1.05	3.00	39	●	●	●	●	●
4270S-9X-1.20	1.20	2.40	10.80	1.15	3.00	39	●	●	●	●	●
4270S-9X-1.30	1.30	2.60	11.70	1.25	3.00	39	●	●	●	●	●
4270S-9X-1.40	1.40	2.80	12.60	1.35	3.00	39	●	●	●	●	●
4270S-9X-1.50	1.50	3.00	13.50	1.45	3.00	39	●	●	●	●	●
4270S-9X-1.60	1.60	3.20	14.40	1.55	3.00	39	●	●	●	●	●
4270S-9X-1.70	1.70	3.40	15.30	1.65	3.00	39	●	●	●	●	●
4270S-9X-1.80	1.80	3.60	16.20	1.75	3.00	39	●	●	●	●	●
4270S-9X-1.90	1.90	3.80	17.10	1.85	3.00	39	●	●	●	●	●
4270S-9X-2.00	2.00	4.00	18.00	1.95	6.00	50	●	●	●	●	●
4270S-9X-2.10	2.10	4.20	18.90	2.05	6.00	50	●	●	●	●	●
4270S-9X-2.20	2.20	4.40	19.80	2.15	6.00	50	●	●	●	●	●
4270S-9X-2.30	2.30	4.60	20.70	2.25	6.00	50	●	●	●	●	●
4270S-9X-2.40	2.40	4.80	21.60	2.35	6.00	50	●	●	●	●	●
4270S-9X-2.50	2.50	5.00	22.50	2.45	6.00	50	●	●	●	●	●
4270S-9X-3.00	3.00	6.00	27.00	2.95	6.00	50	●	●	●	●	●



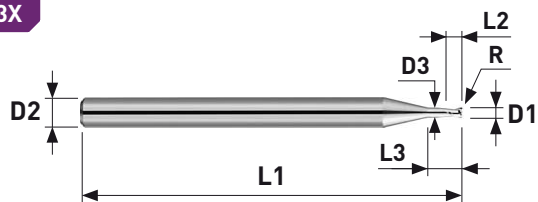
Micro-fraises toriques

Torische Mikrofräser

Toric micro end mills

MD
VHM
HM $\lambda \ 30^\circ$ Radius
CornerL3
3xD1

Z = 2



Art. N°	D1 +0.005 / -0.010	R +/- 0.02	L2	L3	D3	D2 Ø3h4 Ø6h5	L1	N	TiAlN	STF	TiCN	ALFA- TOP
4279T-3X-0.30	0.30	0.05	0.60	0.90	0.27	3.00	39	●	●	●	●	●
4279T-3X-0.40	0.40	0.05	0.80	1.20	0.37	3.00	39	●	●	●	●	●
4279T-3X-0.50	0.50	0.05	1.00	1.50	0.45	3.00	39	●	●	●	●	●
4279T-3X-0.60	0.60	0.05	1.20	1.80	0.55	3.00	39	●	●	●	●	●
4279T-3X-0.70	0.70	0.05	1.40	2.10	0.65	3.00	39	●	●	●	●	●
4279T-3X-0.80	0.80	0.05	1.60	2.40	0.75	3.00	39	●	●	●	●	●
4279T-3X-0.90	0.90	0.05	1.80	2.70	0.85	3.00	39	●	●	●	●	●
4279T-3X-1.00	1.00	0.10	2.00	3.00	0.95	3.00	39	●	●	●	●	●
4279T-3X-1.10	1.10	0.10	2.20	3.30	1.05	3.00	39	●	●	●	●	●
4279T-3X-1.20	1.20	0.10	2.40	3.60	1.15	3.00	39	●	●	●	●	●
4279T-3X-1.30	1.30	0.10	2.60	3.90	1.25	3.00	39	●	●	●	●	●
4279T-3X-1.40	1.40	0.10	2.80	4.20	1.35	3.00	39	●	●	●	●	●
4279T-3X-1.50	1.50	0.20	3.00	4.50	1.45	3.00	39	●	●	●	●	●
4279T-3X-1.60	1.60	0.20	3.20	4.80	1.55	3.00	39	●	●	●	●	●
4279T-3X-1.70	1.70	0.20	3.40	5.10	1.65	3.00	39	●	●	●	●	●
4279T-3X-1.80	1.80	0.20	3.60	5.40	1.75	3.00	39	●	●	●	●	●
4279T-3X-1.90	1.90	0.20	3.80	5.70	1.85	3.00	39	●	●	●	●	●
4279T-3X-2.00	2.00	0.20	4.00	6.00	1.95	6.00	50	●	●	●	●	●
4279T-3X-2.10	2.10	0.20	4.20	6.30	2.05	6.00	50	●	●	●	●	●
4279T-3X-2.20	2.20	0.20	4.40	6.60	2.15	6.00	50	●	●	●	●	●
4279T-3X-2.30	2.30	0.20	4.60	6.90	2.25	6.00	50	●	●	●	●	●
4279T-3X-2.40	2.40	0.20	4.80	7.20	2.35	6.00	50	●	●	●	●	●
4279T-3X-2.50	2.50	0.20	5.00	7.50	2.45	6.00	50	●	●	●	●	●
4279T-3X-3.00	3.00	0.20	6.00	9.00	2.95	6.00	50	●	●	●	●	●



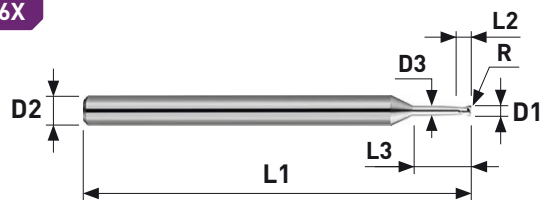
Micro-fraises toriques

Torische Mikrofräser

Toric micro end mills

MD
VHM
HM $\lambda \ 30^\circ$ Radius
CornerL3
6xD1

Z = 2



Art. N°	D1 +0.005 / -0.010	R +/- 0.02	L2	L3	D3	D2 Ø3h4 Ø6h5	L1	N	TiAlN	STF	TiCN	ALFA- TOP
4279T-6X-0.30	0.30	0.05	0.60	1.80	0.27	3.00	39	●	●	●	●	●
4279T-6X-0.40	0.40	0.05	0.80	2.40	0.37	3.00	39	●	●	●	●	●
4279T-6X-0.50	0.50	0.05	1.00	3.00	0.45	3.00	39	●	●	●	●	●
4279T-6X-0.60	0.60	0.05	1.20	3.60	0.55	3.00	39	●	●	●	●	●
4279T-6X-0.70	0.70	0.05	1.40	4.20	0.65	3.00	39	●	●	●	●	●
4279T-6X-0.80	0.80	0.05	1.60	4.80	0.75	3.00	39	●	●	●	●	●
4279T-6X-0.90	0.90	0.05	1.80	5.40	0.85	3.00	39	●	●	●	●	●
4279T-6X-1.00	1.00	0.10	2.00	6.00	0.95	3.00	39	●	●	●	●	●
4279T-6X-1.10	1.10	0.10	2.20	6.60	1.05	3.00	39	●	●	●	●	●
4279T-6X-1.20	1.20	0.10	2.40	7.20	1.15	3.00	39	●	●	●	●	●
4279T-6X-1.30	1.30	0.10	2.60	7.80	1.25	3.00	39	●	●	●	●	●
4279T-6X-1.40	1.40	0.10	2.80	8.40	1.35	3.00	39	●	●	●	●	●
4279T-6X-1.50	1.50	0.20	3.00	9.00	1.45	3.00	39	●	●	●	●	●
4279T-6X-1.60	1.60	0.20	3.20	9.60	1.55	3.00	39	●	●	●	●	●
4279T-6X-1.70	1.70	0.20	3.40	10.20	1.65	3.00	39	●	●	●	●	●
4279T-6X-1.80	1.80	0.20	3.60	10.80	1.75	3.00	39	●	●	●	●	●
4279T-6X-1.90	1.90	0.20	3.80	11.40	1.85	3.00	39	●	●	●	●	●
4279T-6X-2.00	2.00	0.20	4.00	12.00	1.95	6.00	50	●	●	●	●	●
4279T-6X-2.10	2.10	0.20	4.20	12.60	2.05	6.00	50	●	●	●	●	●
4279T-6X-2.20	2.20	0.20	4.40	13.20	2.15	6.00	50	●	●	●	●	●
4279T-6X-2.30	2.30	0.20	4.60	13.80	2.25	6.00	50	●	●	●	●	●
4279T-6X-2.40	2.40	0.20	4.80	14.40	2.35	6.00	50	●	●	●	●	●
4279T-6X-2.50	2.50	0.20	5.00	15.00	2.45	6.00	50	●	●	●	●	●
4279T-6X-3.00	3.00	0.20	6.00	18.00	2.95	6.00	50	●	●	●	●	●



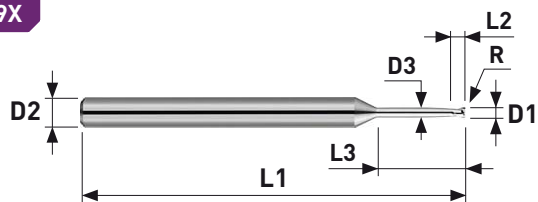
Micro-fraises toriques

Torische Mikrofräser

Toric micro end mills

MD
VHM
HM $\lambda \ 30^\circ$ Radius
CornerL3
9xD1

Z = 2



Art. N°	D1 +0.005 / -0.010	R +/- 0.02	L2	L3	D3	D2 Ø3h4 Ø6h5	L1	N	TiAlN	STF	TiCN	ALFA- TOP
4279T-9X-0.40	0.40	0.05	0.80	3.60	0.37	3.00	39	●	●	●	●	●
4279T-9X-0.50	0.50	0.05	1.00	4.50	0.45	3.00	39	●	●	●	●	●
4279T-9X-0.60	0.60	0.05	1.20	5.40	0.55	3.00	39	●	●	●	●	●
4279T-9X-0.70	0.70	0.05	1.40	6.30	0.65	3.00	39	●	●	●	●	●
4279T-9X-0.80	0.80	0.05	1.60	7.20	0.75	3.00	39	●	●	●	●	●
4279T-9X-0.90	0.90	0.05	1.80	8.10	0.85	3.00	39	●	●	●	●	●
4279T-9X-1.00	1.00	0.10	2.00	9.00	0.95	3.00	39	●	●	●	●	●
4279T-9X-1.10	1.10	0.10	2.20	9.90	1.05	3.00	39	●	●	●	●	●
4279T-9X-1.20	1.20	0.10	2.40	10.80	1.15	3.00	39	●	●	●	●	●
4279T-9X-1.30	1.30	0.10	2.60	11.70	1.25	3.00	39	●	●	●	●	●
4279T-9X-1.40	1.40	0.10	2.80	12.60	1.35	3.00	39	●	●	●	●	●
4279T-9X-1.50	1.50	0.20	3.00	13.50	1.45	3.00	39	●	●	●	●	●
4279T-9X-1.60	1.60	0.20	3.20	14.40	1.55	3.00	39	●	●	●	●	●
4279T-9X-1.70	1.70	0.20	3.40	15.30	1.65	3.00	39	●	●	●	●	●
4279T-9X-1.80	1.80	0.20	3.60	16.20	1.75	3.00	39	●	●	●	●	●
4279T-9X-1.90	1.90	0.20	3.80	17.10	1.85	3.00	39	●	●	●	●	●
4279T-9X-2.00	2.00	0.20	4.00	18.00	1.95	6.00	50	●	●	●	●	●
4279T-9X-2.10	2.10	0.20	4.20	18.90	2.05	6.00	50	●	●	●	●	●
4279T-9X-2.20	2.20	0.20	4.40	19.80	2.15	6.00	50	●	●	●	●	●
4279T-9X-2.30	2.30	0.20	4.60	20.70	2.25	6.00	50	●	●	●	●	●
4279T-9X-2.40	2.40	0.20	4.80	21.60	2.35	6.00	50	●	●	●	●	●
4279T-9X-2.50	2.50	0.20	5.00	22.50	2.45	6.00	50	●	●	●	●	●
4279T-9X-3.00	3.00	0.20	6.00	27.00	2.95	6.00	50	●	●	●	●	●



Micro-fraises

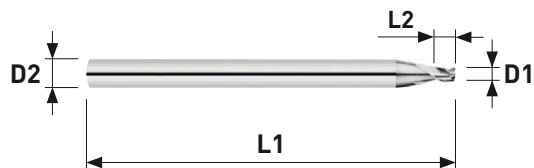
Mikrofräser

Micro end mills

MD
VHM
HM λ 30°Sharp
Corner

1.3xD1

Z = 3



Art. N°	D1 +0.005 / -0.010	L2	D2 h4	L1	N	TiAlN	STF	TiCN	ALFA- TOP
4370-1.3-0.30	0.30	0.40	3.00	39	●	●	●	●	●
4370-1.3-0.35	0.35	0.50	3.00	39	●	●	●	●	●
4370-1.3-0.40	0.40	0.50	3.00	39	●	●	●	●	●
4370-1.3-0.45	0.45	0.60	3.00	39	●	●	●	●	●
4370-1.3-0.50	0.50	0.70	3.00	39	●	●	●	●	●
4370-1.3-0.60	0.60	0.80	3.00	39	●	●	●	●	●
4370-1.3-0.70	0.70	0.90	3.00	39	●	●	●	●	●
4370-1.3-0.80	0.80	1.00	3.00	39	●	●	●	●	●
4370-1.3-0.90	0.90	1.30	3.00	39	●	●	●	●	●
4370-1.3-1.00	1.00	1.30	3.00	39	●	●	●	●	●
4370-1.3-1.10	1.10	1.50	3.00	39	●	●	●	●	●
4370-1.3-1.20	1.20	1.60	3.00	39	●	●	●	●	●
4370-1.3-1.30	1.30	1.80	3.00	39	●	●	●	●	●
4370-1.3-1.40	1.40	1.80	3.00	39	●	●	●	●	●
4370-1.3-1.50	1.50	2.00	3.00	39	●	●	●	●	●
4370-1.3-1.55	1.55	2.00	3.00	39	●	●	●	●	●
4370-1.3-1.60	1.60	2.00	3.00	39	●	●	●	●	●
4370-1.3-1.65	1.65	2.00	3.00	39	●	●	●	●	●
4370-1.3-1.70	1.70	2.00	3.00	39	●	●	●	●	●
4370-1.3-1.80	1.80	2.40	3.00	39	●	●	●	●	●
4370-1.3-1.90	1.90	2.40	3.00	39	●	●	●	●	●
4370-1.3-2.00	2.00	2.60	3.00	39	●	●	●	●	●
4370-1.3-2.05	2.05	2.70	3.00	39	●	●	●	●	●
4370-1.3-2.20	2.20	3.00	3.00	39	●	●	●	●	●
4370-1.3-2.50	2.50	3.30	3.00	39	●	●	●	●	●
4370-1.3-2.80	2.80	3.50	3.00	39	●	●	●	●	●
4370-1.3-2.90	2.90	3.50	3.00	39	●	●	●	●	●



Micro-fraises

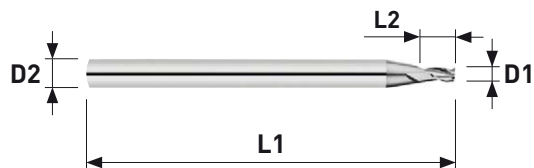
Mikrofräser

Micro end mills

MD
VHM
HM λ 30°Sharp
Corner

2xD1

Z = 3



Art. N°	D1 +0.005 / -0.010	L2	D2 h4	L1	N	TiAlN	STF	TiCN	ALFA- TOP
4370-2-0.30	0.30	0.60	3.00	39	●	●	●	●	●
4370-2-0.35	0.35	0.70	3.00	39	●	●	●	●	●
4370-2-0.40	0.40	0.80	3.00	39	●	●	●	●	●
4370-2-0.45	0.45	0.90	3.00	39	●	●	●	●	●
4370-2-0.50	0.50	1.00	3.00	39	●	●	●	●	●
4370-2-0.60	0.60	1.20	3.00	39	●	●	●	●	●
4370-2-0.70	0.70	1.40	3.00	39	●	●	●	●	●
4370-2-0.75	0.75	1.50	3.00	39	●	●	●	●	●
4370-2-0.80	0.80	1.60	3.00	39	●	●	●	●	●
4370-2-0.90	0.90	1.80	3.00	39	●	●	●	●	●
4370-2-0.95	0.95	1.90	3.00	39	●	●	●	●	●
4370-2-1.00	1.00	2.00	3.00	39	●	●	●	●	●
4370-2-1.10	1.10	2.20	3.00	39	●	●	●	●	●
4370-2-1.20	1.20	2.40	3.00	39	●	●	●	●	●
4370-2-1.30	1.30	2.60	3.00	39	●	●	●	●	●
4370-2-1.40	1.40	2.80	3.00	39	●	●	●	●	●
4370-2-1.50	1.50	3.00	3.00	39	●	●	●	●	●
4370-2-1.60	1.60	3.20	3.00	39	●	●	●	●	●
4370-2-1.70	1.70	3.40	3.00	39	●	●	●	●	●
4370-2-1.80	1.80	3.60	3.00	39	●	●	●	●	●
4370-2-1.90	1.90	3.80	3.00	39	●	●	●	●	●
4370-2-2.00	2.00	4.00	3.00	39	●	●	●	●	●
4370-2-2.10	2.10	4.20	3.00	39	●	●	●	●	●
4370-2-2.20	2.20	4.40	3.00	39	●	●	●	●	●
4370-2-2.30	2.30	4.60	3.00	39	●	●	●	●	●
4370-2-2.40	2.40	4.80	3.00	39	●	●	●	●	●
4370-2-2.50	2.50	5.00	3.00	39	●	●	●	●	●
4370-2-2.60	2.60	5.20	3.00	39	●	●	●	●	●
4370-2-2.70	2.70	5.40	3.00	39	●	●	●	●	●
4370-2-2.80	2.80	5.60	3.00	39	●	●	●	●	●
4370-2-2.90	2.90	5.80	3.00	39	●	●	●	●	●



Micro-fraises

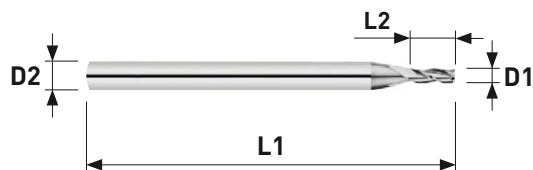
Mikrofräser

Micro end mills

MD
VHM
HM λ 30°Sharp
Corner

3xD1

Z = 3



Art. N°	D1 +0.005 / -0.010	L2	D2 h4	L1	N	TiAlN	STF	TiCN	ALFA- TOP
4370-3-0.30	0.30	0.90	3.00	39	●	●	●	●	●
4370-3-0.40	0.40	1.20	3.00	39	●	●	●	●	●
4370-3-0.45	0.45	1.40	3.00	39	●	●	●	●	●
4370-3-0.50	0.50	1.50	3.00	39	●	●	●	●	●
4370-3-0.55	0.55	1.80	3.00	39	●	●	●	●	●
4370-3-0.60	0.60	2.00	3.00	39	●	●	●	●	●
4370-3-0.65	0.65	2.00	3.00	39	●	●	●	●	●
4370-3-0.70	0.70	2.00	3.00	39	●	●	●	●	●
4370-3-0.75	0.75	2.00	3.00	39	●	●	●	●	●
4370-3-0.80	0.80	2.50	3.00	39	●	●	●	●	●
4370-3-0.85	0.85	2.50	3.00	39	●	●	●	●	●
4370-3-0.90	0.90	2.50	3.00	39	●	●	●	●	●
4370-3-0.95	0.95	2.90	3.00	39	●	●	●	●	●
4370-3-1.00	1.00	3.00	3.00	39	●	●	●	●	●
4370-3-1.05	1.05	3.20	3.00	39	●	●	●	●	●
4370-3-1.10	1.10	3.30	3.00	39	●	●	●	●	●
4370-3-1.15	1.15	3.50	3.00	39	●	●	●	●	●
4370-3-1.20	1.20	4.00	3.00	39	●	●	●	●	●
4370-3-1.25	1.25	4.00	3.00	39	●	●	●	●	●
4370-3-1.30	1.30	4.00	3.00	39	●	●	●	●	●
4370-3-1.35	1.35	4.00	3.00	39	●	●	●	●	●
4370-3-1.40	1.40	4.00	3.00	39	●	●	●	●	●
4370-3-1.45	1.45	4.50	3.00	39	●	●	●	●	●
4370-3-1.50	1.50	4.50	3.00	39	●	●	●	●	●
4370-3-1.60	1.60	4.50	3.00	39	●	●	●	●	●
4370-3-1.65	1.65	5.00	3.00	39	●	●	●	●	●
4370-3-1.70	1.70	5.00	3.00	39	●	●	●	●	●
4370-3-1.80	1.80	6.00	3.00	39	●	●	●	●	●
4370-3-1.85	1.85	6.00	3.00	39	●	●	●	●	●
4370-3-1.90	1.90	6.00	3.00	39	●	●	●	●	●
4370-3-1.95	1.95	6.00	3.00	39	●	●	●	●	●
4370-3-2.00	2.00	6.00	3.00	39	●	●	●	●	●
4370-3-2.10	2.10	6.00	3.00	39	●	●	●	●	●
4370-3-2.20	2.20	6.50	3.00	39	●	●	●	●	●
4370-3-2.30	2.30	7.00	3.00	39	●	●	●	●	●
4370-3-2.40	2.40	7.00	3.00	39	●	●	●	●	●
4370-3-2.50	2.50	7.50	3.00	39	●	●	●	●	●
4370-3-2.60	2.60	7.50	3.00	39	●	●	●	●	●
4370-3-2.70	2.70	8.00	3.00	39	●	●	●	●	●
4370-3-2.80	2.80	8.00	3.00	39	●	●	●	●	●
4370-3-2.90	2.90	8.50	3.00	39	●	●	●	●	●



Micro-fraises

Mikrofräser

Micro end mills

MD
VHM
HM λ 30°Sharp
Corner

4xD1

Z = 3



Art. N°	D1 +0.005 / -0.010	L2	D2 h4	L1	N	TiAlN	STF	TiCN	ALFA- TOP
4370-4-0.30	0.30	1.20	3.00	39	●	●	●	●	●
4370-4-0.40	0.40	1.60	3.00	39	●	●	●	●	●
4370-4-0.50	0.50	2.00	3.00	39	●	●	●	●	●
4370-4-0.60	0.60	2.40	3.00	39	●	●	●	●	●
4370-4-0.70	0.70	2.80	3.00	39	●	●	●	●	●
4370-4-0.80	0.80	3.20	3.00	39	●	●	●	●	●
4370-4-0.90	0.90	3.60	3.00	39	●	●	●	●	●
4370-4-1.00	1.00	4.00	3.00	39	●	●	●	●	●
4370-4-1.10	1.10	4.40	3.00	39	●	●	●	●	●
4370-4-1.20	1.20	4.80	3.00	39	●	●	●	●	●
4370-4-1.30	1.30	5.20	3.00	39	●	●	●	●	●
4370-4-1.40	1.40	5.60	3.00	39	●	●	●	●	●
4370-4-1.50	1.50	6.00	3.00	39	●	●	●	●	●
4370-4-1.60	1.60	6.40	3.00	39	●	●	●	●	●
4370-4-1.70	1.70	6.80	3.00	39	●	●	●	●	●
4370-4-1.80	1.80	7.20	3.00	39	●	●	●	●	●
4370-4-1.90	1.90	7.60	3.00	39	●	●	●	●	●
4370-4-2.00	2.00	8.00	3.00	39	●	●	●	●	●
4370-4-2.10	2.10	8.40	3.00	39	●	●	●	●	●
4370-4-2.20	2.20	8.80	3.00	39	●	●	●	●	●
4370-4-2.30	2.30	9.20	3.00	39	●	●	●	●	●
4370-4-2.40	2.40	9.60	3.00	39	●	●	●	●	●
4370-4-2.50	2.50	10.00	3.00	39	●	●	●	●	●
4370-4-2.60	2.60	10.40	3.00	39	●	●	●	●	●
4370-4-2.70	2.70	10.80	3.00	39	●	●	●	●	●
4370-4-2.80	2.80	11.20	3.00	39	●	●	●	●	●
4370-4-2.90	2.90	11.60	3.00	39	●	●	●	●	●



Micro-fraises

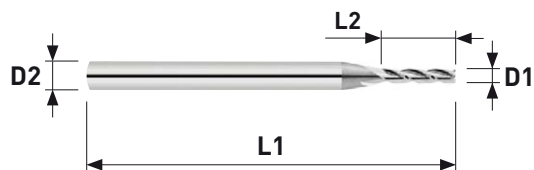
Mikrofräser

Micro end mills

MD
VHM
HM $\lambda \ 30^\circ$ Sharp
Corner

5xD1

Z = 3



Art. N°	D1 +0.005 / -0.010	L2	D2 h4	L1	N	TiAlN	STF	TiCN	ALFA- TOP
4370-5-0.50	0.50	2.50	3.00	39	●	●	●	●	●
4370-5-0.60	0.60	3.00	3.00	39	●	●	●	●	●
4370-5-0.70	0.70	3.50	3.00	39	●	●	●	●	●
4370-5-0.80	0.80	4.00	3.00	39	●	●	●	●	●
4370-5-0.90	0.90	4.50	3.00	39	●	●	●	●	●
4370-5-1.00	1.00	5.00	3.00	39	●	●	●	●	●
4370-5-1.10	1.10	5.50	3.00	39	●	●	●	●	●
4370-5-1.20	1.20	6.00	3.00	39	●	●	●	●	●
4370-5-1.50	1.50	7.50	3.00	39	●	●	●	●	●
4370-5-2.00	2.00	10.00	3.00	39	●	●	●	●	●
4370-5-2.50	2.50	12.50	3.00	39	●	●	●	●	●



Micro-fraises

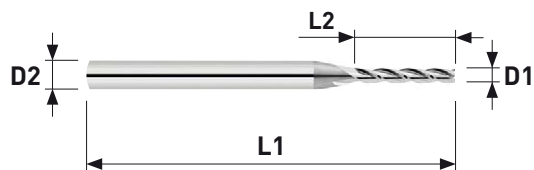
Mikrofräser

Micro end mills

MD
VHM
HM λ 30°Sharp
Corner

8xD1

Z = 3



Art. N°	D1 +0.005 / -0.010	L2	D2 ø3h4 ø4h5	L1	N	TiAlN	STF	TiCN	ALFA- TOP
4370-8-0.50	0.50	4.00	3.00	39	●	●	●	●	●
4370-8-0.60	0.60	5.00	3.00	39	●	●	●	●	●
4370-8-0.70	0.70	5.60	3.00	39	●	●	●	●	●
4370-8-0.80	0.80	6.00	3.00	39	●	●	●	●	●
4370-8-0.90	0.90	7.20	3.00	39	●	●	●	●	●
4370-8-1.00	1.00	8.00	3.00	39	●	●	●	●	●
4370-8-1.20	1.20	9.00	3.00	39	●	●	●	●	●
4370-8-1.30	1.30	11.00	3.00	39	●	●	●	●	●
4370-8-1.50	1.50	12.00	4.00	50	●	●	●	●	●
4370-8-2.00	2.00	16.00	4.00	50	●	●	●	●	●
4370-8-2.50	2.50	20.00	4.00	50	●	●	●	●	●



Micro-fraises

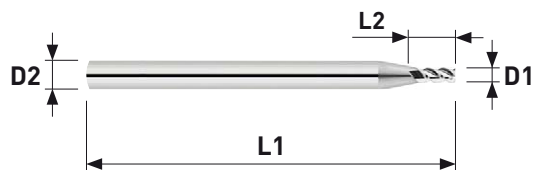
Mikrofräser

Micro end mills

MD
VHM
HM λ 45°Sharp
Corner

2,5xD1

Z = 3



Art. N°	D1 +0.005 / -0.010	L2	D2 h4	L1	N	TiAlN	STF	TiCN	ALFA- TOP
4375-2.5-0.30	0.30	0.80	3.00	39	●	●	●	●	●
4375-2.5-0.40	0.40	1.00	3.00	39	●	●	●	●	●
4375-2.5-0.50	0.50	1.30	3.00	39	●	●	●	●	●
4375-2.5-0.60	0.60	1.50	3.00	39	●	●	●	●	●
4375-2.5-0.70	0.70	1.70	3.00	39	●	●	●	●	●
4375-2.5-0.80	0.80	2.00	3.00	39	●	●	●	●	●
4375-2.5-0.90	0.90	2.30	3.00	39	●	●	●	●	●
4375-2.5-1.00	1.00	2.50	3.00	39	●	●	●	●	●
4375-2.5-1.10	1.10	2.80	3.00	39	●	●	●	●	●
4375-2.5-1.20	1.20	3.00	3.00	39	●	●	●	●	●
4375-2.5-1.30	1.30	3.30	3.00	39	●	●	●	●	●
4375-2.5-1.40	1.40	3.50	3.00	39	●	●	●	●	●
4375-2.5-1.50	1.50	3.80	3.00	39	●	●	●	●	●
4375-2.5-1.60	1.60	4.00	3.00	39	●	●	●	●	●
4375-2.5-1.70	1.70	4.30	3.00	39	●	●	●	●	●
4375-2.5-1.80	1.80	4.50	3.00	39	●	●	●	●	●
4375-2.5-1.90	1.90	4.80	3.00	39	●	●	●	●	●
4375-2.5-2.00	2.00	5.00	3.00	39	●	●	●	●	●
4375-2.5-2.10	2.10	5.30	3.00	39	●	●	●	●	●
4375-2.5-2.20	2.20	5.50	3.00	39	●	●	●	●	●
4375-2.5-2.30	2.30	5.80	3.00	39	●	●	●	●	●
4375-2.5-2.40	2.40	6.00	3.00	39	●	●	●	●	●
4375-2.5-2.50	2.50	6.30	3.00	39	●	●	●	●	●
4375-2.5-2.60	2.60	6.50	3.00	39	●	●	●	●	●
4375-2.5-2.70	2.70	6.80	3.00	39	●	●	●	●	●
4375-2.5-2.80	2.80	7.00	3.00	39	●	●	●	●	●
4375-2.5-2.90	2.90	7.30	3.00	39	●	●	●	●	●



Micro-fraises

Mikrofräser

Micro end mills

MD
VHM
HMλ 36°
λ 38°
λ 40°Sharp
Corner

1.5xD1

Z = 3



DHD

Denture à pas irrégulier, hélice différente
 Ungleiche Teilung, unterschiedliche Spirale
 Uneven tooth pitch, different helix

Art. N°	D1 +0.005 / -0.010	L2	D2 h4	L1	N	TiAlN	STF	TiCN	ALFA- TOP
DHD4370-1.5-0.30	0.30	0.45	3.00	39	●	●	●	●	●
DHD4370-1.5-0.40	0.40	0.60	3.00	39	●	●	●	●	●
DHD4370-1.5-0.50	0.50	0.75	3.00	39	●	●	●	●	●
DHD4370-1.5-0.60	0.60	0.90	3.00	39	●	●	●	●	●
DHD4370-1.5-0.70	0.70	1.05	3.00	39	●	●	●	●	●
DHD4370-1.5-0.80	0.80	1.20	3.00	39	●	●	●	●	●
DHD4370-1.5-0.90	0.90	1.35	3.00	39	●	●	●	●	●
DHD4370-1.5-1.00	1.00	1.50	3.00	39	●	●	●	●	●
DHD4370-1.5-1.10	1.10	1.65	3.00	39	●	●	●	●	●
DHD4370-1.5-1.20	1.20	1.80	3.00	39	●	●	●	●	●
DHD4370-1.5-1.30	1.30	1.95	3.00	39	●	●	●	●	●
DHD4370-1.5-1.40	1.40	2.10	3.00	39	●	●	●	●	●
DHD4370-1.5-1.50	1.50	2.25	3.00	39	●	●	●	●	●
DHD4370-1.5-1.60	1.60	2.40	3.00	39	●	●	●	●	●
DHD4370-1.5-1.70	1.70	2.55	3.00	39	●	●	●	●	●
DHD4370-1.5-1.80	1.80	2.70	3.00	39	●	●	●	●	●
DHD4370-1.5-1.90	1.90	2.85	3.00	39	●	●	●	●	●
DHD4370-1.5-2.00	2.00	3.00	3.00	39	●	●	●	●	●
DHD4370-1.5-2.50	2.50	3.75	3.00	39	●	●	●	●	●



Micro-fraises

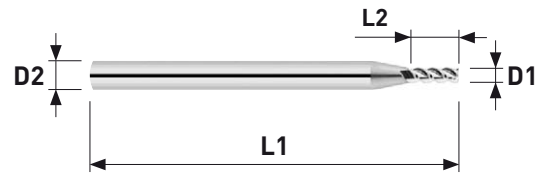
Mikrofräser

Micro end mills

MD
VHM
HMλ 36°
λ 38°
λ 40°Sharp
Corner

3xD1

Z = 3



DHD

Denture à pas irrégulier, hélice différente
Ungleiche Teilung, unterschiedliche Spirale
Uneven tooth pitch, different helix

Art. N°	D1 +0.005 / -0.010	L2	D2 h4	L1	N	TiAlN	STF	TiCN	ALFA- TOP
DHD4370-3-0.30	0.30	0.90	3.00	39	●	●	●	●	●
DHD4370-3-0.40	0.40	1.20	3.00	39	●	●	●	●	●
DHD4370-3-0.50	0.50	1.50	3.00	39	●	●	●	●	●
DHD4370-3-0.60	0.60	1.80	3.00	39	●	●	●	●	●
DHD4370-3-0.70	0.70	2.10	3.00	39	●	●	●	●	●
DHD4370-3-0.80	0.80	2.40	3.00	39	●	●	●	●	●
DHD4370-3-0.90	0.90	2.70	3.00	39	●	●	●	●	●
DHD4370-3-1.00	1.00	3.00	3.00	39	●	●	●	●	●
DHD4370-3-1.10	1.10	3.30	3.00	39	●	●	●	●	●
DHD4370-3-1.20	1.20	3.60	3.00	39	●	●	●	●	●
DHD4370-3-1.30	1.30	3.90	3.00	39	●	●	●	●	●
DHD4370-3-1.40	1.40	4.20	3.00	39	●	●	●	●	●
DHD4370-3-1.50	1.50	4.50	3.00	39	●	●	●	●	●
DHD4370-3-1.60	1.60	4.80	3.00	39	●	●	●	●	●
DHD4370-3-1.70	1.70	5.10	3.00	39	●	●	●	●	●
DHD4370-3-1.80	1.80	5.40	3.00	39	●	●	●	●	●
DHD4370-3-1.90	1.90	5.70	3.00	39	●	●	●	●	●
DHD4370-3-2.00	2.00	6.00	3.00	39	●	●	●	●	●
DHD4370-3-2.50	2.50	7.50	3.00	39	●	●	●	●	●



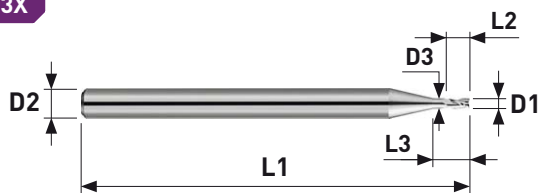
Micro-fraises

Mikrofräser

Micro end mills

MD
VHM
HM λ 30°Sharp
CornerL3
3xD1

Z = 3



Art. N°	D1 +0.005 / -0.010	L2	L3	D3	D2 Ø3h4 Ø6h5	L1	N	TiAlN	STF	TiCN	ALFA- TOP
4370S-3X-0.30	0.30	0.60	0.90	0.27	3.00	39	●	●	●	●	●
4370S-3X-0.40	0.40	0.80	1.20	0.37	3.00	39	●	●	●	●	●
4370S-3X-0.50	0.50	1.00	1.50	0.45	3.00	39	●	●	●	●	●
4370S-3X-0.60	0.60	1.20	1.80	0.55	3.00	39	●	●	●	●	●
4370S-3X-0.70	0.70	1.40	2.10	0.65	3.00	39	●	●	●	●	●
4370S-3X-0.80	0.80	1.60	2.40	0.75	3.00	39	●	●	●	●	●
4370S-3X-0.90	0.90	1.80	2.70	0.85	3.00	39	●	●	●	●	●
4370S-3X-1.00	1.00	2.00	3.00	0.95	3.00	39	●	●	●	●	●
4370S-3X-1.10	1.10	2.20	3.30	1.05	3.00	39	●	●	●	●	●
4370S-3X-1.20	1.20	2.40	3.60	1.15	3.00	39	●	●	●	●	●
4370S-3X-1.30	1.30	2.60	3.90	1.25	3.00	39	●	●	●	●	●
4370S-3X-1.40	1.40	2.80	4.20	1.35	3.00	39	●	●	●	●	●
4370S-3X-1.50	1.50	3.00	4.50	1.45	3.00	39	●	●	●	●	●
4370S-3X-1.60	1.60	3.20	4.80	1.55	3.00	39	●	●	●	●	●
4370S-3X-1.70	1.70	3.40	5.10	1.65	3.00	39	●	●	●	●	●
4370S-3X-1.80	1.80	3.60	5.40	1.75	3.00	39	●	●	●	●	●
4370S-3X-1.90	1.90	3.80	5.70	1.85	3.00	39	●	●	●	●	●
4370S-3X-2.00	2.00	4.00	6.00	1.95	6.00	50	●	●	●	●	●
4370S-3X-2.10	2.10	4.20	6.30	2.05	6.00	50	●	●	●	●	●
4370S-3X-2.20	2.20	4.40	6.60	2.15	6.00	50	●	●	●	●	●
4370S-3X-2.30	2.30	4.60	6.90	2.25	6.00	50	●	●	●	●	●
4370S-3X-2.40	2.40	4.80	7.20	2.35	6.00	50	●	●	●	●	●
4370S-3X-2.50	2.50	5.00	7.50	2.45	6.00	50	●	●	●	●	●
4370S-3X-3.00	3.00	6.00	9.00	2.95	6.00	50	●	●	●	●	●



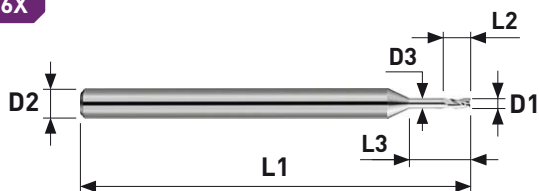
Micro-fraises

Mikrofräser

Micro end mills

MD
VHM
HM $\lambda \ 30^\circ$ Sharp
CornerL3
6xD1

Z = 3



Art. N°	D1 +0.005 / -0.010	L2	L3	D3	D2 Ø3h4 Ø6h5	L1	N	TiAlN	STF	TiCN	ALFA- TOP
4370S-6X-0.30	0.30	0.60	1.80	0.27	3.00	39	●	●	●	●	●
4370S-6X-0.40	0.40	0.80	2.40	0.37	3.00	39	●	●	●	●	●
4370S-6X-0.50	0.50	1.00	3.00	0.45	3.00	39	●	●	●	●	●
4370S-6X-0.60	0.60	1.20	3.60	0.55	3.00	39	●	●	●	●	●
4370S-6X-0.70	0.70	1.40	4.20	0.65	3.00	39	●	●	●	●	●
4370S-6X-0.80	0.80	1.60	4.80	0.75	3.00	39	●	●	●	●	●
4370S-6X-0.90	0.90	1.80	5.40	0.85	3.00	39	●	●	●	●	●
4370S-6X-1.00	1.00	2.00	6.00	0.95	3.00	39	●	●	●	●	●
4370S-6X-1.10	1.10	2.20	6.60	1.05	3.00	39	●	●	●	●	●
4370S-6X-1.20	1.20	2.40	7.20	1.15	3.00	39	●	●	●	●	●
4370S-6X-1.30	1.30	2.60	7.80	1.25	3.00	39	●	●	●	●	●
4370S-6X-1.40	1.40	2.80	8.40	1.35	3.00	39	●	●	●	●	●
4370S-6X-1.50	1.50	3.00	9.00	1.45	3.00	39	●	●	●	●	●
4370S-6X-1.60	1.60	3.20	9.60	1.55	3.00	39	●	●	●	●	●
4370S-6X-1.70	1.70	3.40	10.20	1.65	3.00	39	●	●	●	●	●
4370S-6X-1.80	1.80	3.60	10.80	1.75	3.00	39	●	●	●	●	●
4370S-6X-1.90	1.90	3.80	11.40	1.85	3.00	39	●	●	●	●	●
4370S-6X-2.00	2.00	4.00	12.00	1.95	6.00	50	●	●	●	●	●
4370S-6X-2.10	2.10	4.20	12.60	2.05	6.00	50	●	●	●	●	●
4370S-6X-2.20	2.20	4.40	13.20	2.15	6.00	50	●	●	●	●	●
4370S-6X-2.30	2.30	4.60	13.80	2.25	6.00	50	●	●	●	●	●
4370S-6X-2.40	2.40	4.80	14.40	2.35	6.00	50	●	●	●	●	●
4370S-6X-2.50	2.50	5.00	15.00	2.45	6.00	50	●	●	●	●	●
4370S-6X-3.00	3.00	6.00	18.00	2.95	6.00	50	●	●	●	●	●



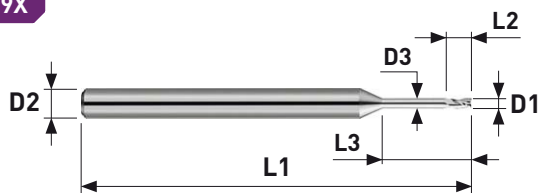
Micro-fraises

Mikrofräser

Micro end mills

MD
VHM
HM λ 30°Sharp
CornerL3
9xD1

Z = 3



Art. N°	D1 +0.005/ -0.010	L2	L3	D3	D2 Ø3h4 Ø6h5	L1	N	TiAlN	STF	TiCN	ALFA- TOP
4370S-9X-0.40	0.40	0.80	3.60	0.37	3.00	39	●	●	●	●	●
4370S-9X-0.50	0.50	1.00	4.50	0.45	3.00	39	●	●	●	●	●
4370S-9X-0.60	0.60	1.20	5.40	0.55	3.00	39	●	●	●	●	●
4370S-9X-0.70	0.70	1.40	6.30	0.65	3.00	39	●	●	●	●	●
4370S-9X-0.80	0.80	1.60	7.20	0.75	3.00	39	●	●	●	●	●
4370S-9X-0.90	0.90	1.80	8.10	0.85	3.00	39	●	●	●	●	●
4370S-9X-1.00	1.00	2.00	9.00	0.95	3.00	39	●	●	●	●	●
4370S-9X-1.10	1.10	2.20	9.90	1.05	3.00	39	●	●	●	●	●
4370S-9X-1.20	1.20	2.40	10.80	1.15	3.00	39	●	●	●	●	●
4370S-9X-1.30	1.30	2.60	11.70	1.25	3.00	39	●	●	●	●	●
4370S-9X-1.40	1.40	2.80	12.60	1.35	3.00	39	●	●	●	●	●
4370S-9X-1.50	1.50	3.00	13.50	1.45	3.00	39	●	●	●	●	●
4370S-9X-1.60	1.60	3.20	14.40	1.55	3.00	39	●	●	●	●	●
4370S-9X-1.70	1.70	3.40	15.30	1.65	3.00	39	●	●	●	●	●
4370S-9X-1.80	1.80	3.60	16.20	1.75	3.00	39	●	●	●	●	●
4370S-9X-1.90	1.90	3.80	17.10	1.85	3.00	39	●	●	●	●	●
4370S-9X-2.00	2.00	4.00	18.00	1.95	6.00	50	●	●	●	●	●
4370S-9X-2.10	2.10	4.20	18.90	2.05	6.00	50	●	●	●	●	●
4370S-9X-2.20	2.20	4.40	19.80	2.15	6.00	50	●	●	●	●	●
4370S-9X-2.30	2.30	4.60	20.70	2.25	6.00	50	●	●	●	●	●
4370S-9X-2.40	2.40	4.80	21.60	2.35	6.00	50	●	●	●	●	●
4370S-9X-2.50	2.50	5.00	22.50	2.45	6.00	50	●	●	●	●	●
4370S-9X-3.00	3.00	6.00	27.00	2.95	6.00	50	●	●	●	●	●



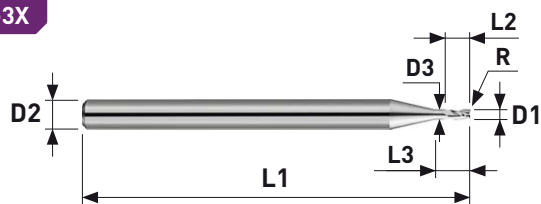
Micro-fraises toriques

Torische Mikrofräser

Toric micro end mills

MD
VHM
HM $\lambda \ 30^\circ$ Radius
CornerL3
3xD1

Z = 3



Art. N°	D1 +0.005 / -0.010	R +/- 0.02	L2	L3	D3	D2 Ø3h4 Ø6h5	L1	N	TiAlN	STF	TiCN	ALFA- TOP
4379T-3X-0.30	0.30	0.05	0.60	0.90	0.27	3.00	39	●	●	●	●	●
4379T-3X-0.40	0.40	0.05	0.80	1.20	0.37	3.00	39	●	●	●	●	●
4379T-3X-0.50	0.50	0.05	1.00	1.50	0.45	3.00	39	●	●	●	●	●
4379T-3X-0.60	0.60	0.05	1.20	1.80	0.55	3.00	39	●	●	●	●	●
4379T-3X-0.70	0.70	0.05	1.40	2.10	0.65	3.00	39	●	●	●	●	●
4379T-3X-0.80	0.80	0.05	1.60	2.40	0.75	3.00	39	●	●	●	●	●
4379T-3X-0.90	0.90	0.05	1.80	2.70	0.85	3.00	39	●	●	●	●	●
4379T-3X-1.00	1.00	0.10	2.00	3.00	0.95	3.00	39	●	●	●	●	●
4379T-3X-1.10	1.10	0.10	2.20	3.30	1.05	3.00	39	●	●	●	●	●
4379T-3X-1.20	1.20	0.10	2.40	3.60	1.15	3.00	39	●	●	●	●	●
4379T-3X-1.30	1.30	0.10	2.60	3.90	1.25	3.00	39	●	●	●	●	●
4379T-3X-1.40	1.40	0.10	2.80	4.20	1.35	3.00	39	●	●	●	●	●
4379T-3X-1.50	1.50	0.20	3.00	4.50	1.45	3.00	39	●	●	●	●	●
4379T-3X-1.60	1.60	0.20	3.20	4.80	1.55	3.00	39	●	●	●	●	●
4379T-3X-1.70	1.70	0.20	3.40	5.10	1.65	3.00	39	●	●	●	●	●
4379T-3X-1.80	1.80	0.20	3.60	5.40	1.75	3.00	39	●	●	●	●	●
4379T-3X-1.90	1.90	0.20	3.80	5.70	1.85	3.00	39	●	●	●	●	●
4379T-3X-2.00	2.00	0.20	4.00	6.00	1.95	6.00	50	●	●	●	●	●
4379T-3X-2.10	2.10	0.20	4.20	6.30	2.05	6.00	50	●	●	●	●	●
4379T-3X-2.20	2.20	0.20	4.40	6.60	2.15	6.00	50	●	●	●	●	●
4379T-3X-2.30	2.30	0.20	4.60	6.90	2.25	6.00	50	●	●	●	●	●
4379T-3X-2.40	2.40	0.20	4.80	7.20	2.35	6.00	50	●	●	●	●	●
4379T-3X-2.50	2.50	0.20	5.00	7.50	2.45	6.00	50	●	●	●	●	●
4379T-3X-3.00	3.00	0.20	6.00	9.00	2.95	6.00	50	●	●	●	●	●



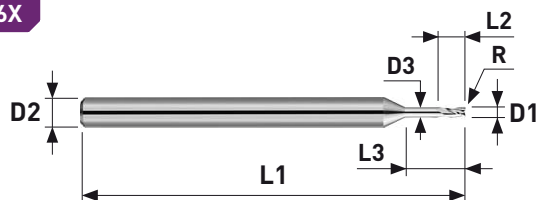
Micro-fraises toriques

Torische Mikrofräser

Toric micro end mills

MD
VHM
HM $\lambda \ 30^\circ$ Radius
CornerL3
6xD1

Z = 3



Art. N°	D1 +0.005 / -0.010	R +/- 0.02	L2	L3	D3	D2 Ø3h4 Ø6h5	L1	N	TiAlN	STF	TiCN	ALFA- TOP
4379T-6X-0.30	0.30	0.05	0.60	1.80	0.27	3.00	39	●	●	●	●	●
4379T-6X-0.40	0.40	0.05	0.80	2.40	0.37	3.00	39	●	●	●	●	●
4379T-6X-0.50	0.50	0.05	1.00	3.00	0.45	3.00	39	●	●	●	●	●
4379T-6X-0.60	0.60	0.05	1.20	3.60	0.55	3.00	39	●	●	●	●	●
4379T-6X-0.70	0.70	0.05	1.40	4.20	0.65	3.00	39	●	●	●	●	●
4379T-6X-0.80	0.80	0.05	1.60	4.80	0.75	3.00	39	●	●	●	●	●
4379T-6X-0.90	0.90	0.05	1.80	5.40	0.85	3.00	39	●	●	●	●	●
4379T-6X-1.00	1.00	0.10	2.00	6.00	0.95	3.00	39	●	●	●	●	●
4379T-6X-1.10	1.10	0.10	2.20	6.60	1.05	3.00	39	●	●	●	●	●
4379T-6X-1.20	1.20	0.10	2.40	7.20	1.15	3.00	39	●	●	●	●	●
4379T-6X-1.30	1.30	0.10	2.60	7.80	1.25	3.00	39	●	●	●	●	●
4379T-6X-1.40	1.40	0.10	2.80	8.40	1.35	3.00	39	●	●	●	●	●
4379T-6X-1.50	1.50	0.20	3.00	9.00	1.45	3.00	39	●	●	●	●	●
4379T-6X-1.60	1.60	0.20	3.20	9.60	1.55	3.00	39	●	●	●	●	●
4379T-6X-1.70	1.70	0.20	3.40	10.20	1.65	3.00	39	●	●	●	●	●
4379T-6X-1.80	1.80	0.20	3.60	10.80	1.75	3.00	39	●	●	●	●	●
4379T-6X-1.90	1.90	0.20	3.80	11.40	1.85	3.00	39	●	●	●	●	●
4379T-6X-2.00	2.00	0.20	4.00	12.00	1.95	6.00	50	●	●	●	●	●
4379T-6X-2.10	2.10	0.20	4.20	12.60	2.05	6.00	50	●	●	●	●	●
4379T-6X-2.20	2.20	0.20	4.40	13.20	2.15	6.00	50	●	●	●	●	●
4379T-6X-2.30	2.30	0.20	4.60	13.80	2.25	6.00	50	●	●	●	●	●
4379T-6X-2.40	2.40	0.20	4.80	14.40	2.35	6.00	50	●	●	●	●	●
4379T-6X-2.50	2.50	0.20	5.00	15.00	2.45	6.00	50	●	●	●	●	●
4379T-6X-3.00	3.00	0.20	6.00	18.00	2.95	6.00	50	●	●	●	●	●



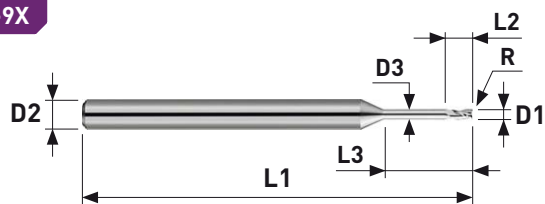
Micro-fraises toriques

Torische Mikrofräser

Toric micro end mills

MD
VHM
HM λ 30°Radius
CornerL3
9xD1

Z = 3



Art. N°	D1 +0.005 / -0.010	R +/- 0.02	L2	L3	D3	D2 Ø3h4 Ø6h5	L1	N	TiAlN	STF	TiCN	ALFA- TOP
4379T-9X-0.40	0.40	0.05	0.80	3.60	0.37	3.00	39	●	●	●	●	●
4379T-9X-0.50	0.50	0.05	1.00	4.50	0.45	3.00	39	●	●	●	●	●
4379T-9X-0.60	0.60	0.05	1.20	5.40	0.55	3.00	39	●	●	●	●	●
4379T-9X-0.70	0.70	0.05	1.40	6.30	0.65	3.00	39	●	●	●	●	●
4379T-9X-0.80	0.80	0.05	1.60	7.20	0.75	3.00	39	●	●	●	●	●
4379T-9X-0.90	0.90	0.05	1.80	8.10	0.85	3.00	39	●	●	●	●	●
4379T-9X-1.00	1.00	0.10	2.00	9.00	0.95	3.00	39	●	●	●	●	●
4379T-9X-1.10	1.10	0.10	2.20	9.90	1.05	3.00	39	●	●	●	●	●
4379T-9X-1.20	1.20	0.10	2.40	10.80	1.15	3.00	39	●	●	●	●	●
4379T-9X-1.30	1.30	0.10	2.60	11.70	1.25	3.00	39	●	●	●	●	●
4379T-9X-1.40	1.40	0.10	2.80	12.60	1.35	3.00	39	●	●	●	●	●
4379T-9X-1.50	1.50	0.20	3.00	13.50	1.45	3.00	39	●	●	●	●	●
4379T-9X-1.60	1.60	0.20	3.20	14.40	1.55	3.00	39	●	●	●	●	●
4379T-9X-1.70	1.70	0.20	3.40	15.30	1.65	3.00	39	●	●	●	●	●
4379T-9X-1.80	1.80	0.20	3.60	16.20	1.75	3.00	39	●	●	●	●	●
4379T-9X-1.90	1.90	0.20	3.80	17.10	1.85	3.00	39	●	●	●	●	●
4379T-9X-2.00	2.00	0.20	4.00	18.00	1.95	6.00	50	●	●	●	●	●
4379T-9X-2.10	2.10	0.20	4.20	18.90	2.05	6.00	50	●	●	●	●	●
4379T-9X-2.20	2.20	0.20	4.40	19.80	2.15	6.00	50	●	●	●	●	●
4379T-9X-2.30	2.30	0.20	4.60	20.70	2.25	6.00	50	●	●	●	●	●
4379T-9X-2.40	2.40	0.20	4.80	21.60	2.35	6.00	50	●	●	●	●	●
4379T-9X-2.50	2.50	0.20	5.00	22.50	2.45	6.00	50	●	●	●	●	●
4379T-9X-3.00	3.00	0.20	6.00	27.00	2.95	6.00	50	●	●	●	●	●



Micro-fraises

Mikrofräser

Micro end mills

MD
VHM
HM λ 30°Sharp
Corner

1.5xD1

Z = 4



Art. N°	D1 +0.005 / -0.010	L2	D2 h4	L1	N	TiAlN	STF	TiCN	ALFA- TOP
4470-1.5-0.30	0.30	0.45	3.00	39	●	●	●	●	●
4470-1.5-0.40	0.40	0.60	3.00	39	●	●	●	●	●
4470-1.5-0.50	0.50	0.75	3.00	39	●	●	●	●	●
4470-1.5-0.60	0.60	0.90	3.00	39	●	●	●	●	●
4470-1.5-0.70	0.70	1.05	3.00	39	●	●	●	●	●
4470-1.5-0.80	0.80	1.20	3.00	39	●	●	●	●	●
4470-1.5-0.90	0.90	1.35	3.00	39	●	●	●	●	●
4470-1.5-1.00	1.00	1.50	3.00	39	●	●	●	●	●
4470-1.5-1.10	1.10	1.65	3.00	39	●	●	●	●	●
4470-1.5-1.20	1.20	1.80	3.00	39	●	●	●	●	●
4470-1.5-1.30	1.30	1.95	3.00	39	●	●	●	●	●
4470-1.5-1.40	1.40	2.10	3.00	39	●	●	●	●	●
4470-1.5-1.50	1.50	2.25	3.00	39	●	●	●	●	●
4470-1.5-1.60	1.60	2.40	3.00	39	●	●	●	●	●
4470-1.5-1.70	1.70	2.55	3.00	39	●	●	●	●	●
4470-1.5-1.80	1.80	2.70	3.00	39	●	●	●	●	●
4470-1.5-1.90	1.90	2.85	3.00	39	●	●	●	●	●
4470-1.5-2.00	2.00	3.00	3.00	39	●	●	●	●	●
4470-1.5-2.10	2.10	3.15	3.00	39	●	●	●	●	●
4470-1.5-2.20	2.20	3.30	3.00	39	●	●	●	●	●
4470-1.5-2.30	2.30	3.45	3.00	39	●	●	●	●	●
4470-1.5-2.40	2.40	3.60	3.00	39	●	●	●	●	●
4470-1.5-2.50	2.50	3.75	3.00	39	●	●	●	●	●
4470-1.5-2.60	2.60	3.90	3.00	39	●	●	●	●	●
4470-1.5-2.70	2.70	4.05	3.00	39	●	●	●	●	●
4470-1.5-2.80	2.80	4.20	3.00	39	●	●	●	●	●
4470-1.5-2.90	2.90	4.35	3.00	39	●	●	●	●	●



Micro-fraises

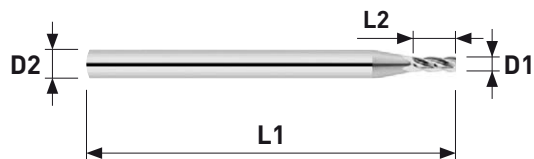
Mikrofräser

Micro end mills

MD
VHM
HM λ 30°Sharp
Corner

3xD1

Z = 4



Art. N°	D1 +0.005 / -0.010	L2	D2 h4	L1	N	TiAlN	STF	TiCN	ALFA-TOP
4470-3-0.30	0.30	0.90	3.00	39	●	●	●	●	●
4470-3-0.40	0.40	1.20	3.00	39	●	●	●	●	●
4470-3-0.50	0.50	1.50	3.00	39	●	●	●	●	●
4470-3-0.55	0.55	1.70	3.00	39	●	●	●	●	●
4470-3-0.60	0.60	1.80	3.00	39	●	●	●	●	●
4470-3-0.70	0.70	2.10	3.00	39	●	●	●	●	●
4470-3-0.75	0.75	2.30	3.00	39	●	●	●	●	●
4470-3-0.80	0.80	2.40	3.00	39	●	●	●	●	●
4470-3-0.85	0.85	2.60	3.00	39	●	●	●	●	●
4470-3-0.90	0.90	2.70	3.00	39	●	●	●	●	●
4470-3-0.95	0.95	2.90	3.00	39	●	●	●	●	●
4470-3-1.00	1.00	3.00	3.00	39	●	●	●	●	●
4470-3-1.10	1.10	3.30	3.00	39	●	●	●	●	●
4470-3-1.20	1.20	3.60	3.00	39	●	●	●	●	●
4470-3-1.30	1.30	3.90	3.00	39	●	●	●	●	●
4470-3-1.40	1.40	4.20	3.00	39	●	●	●	●	●
4470-3-1.50	1.50	4.50	3.00	39	●	●	●	●	●
4470-3-1.60	1.60	4.80	3.00	39	●	●	●	●	●
4470-3-1.70	1.70	5.10	3.00	39	●	●	●	●	●
4470-3-1.80	1.80	5.40	3.00	39	●	●	●	●	●
4470-3-1.90	1.90	5.70	3.00	39	●	●	●	●	●
4470-3-2.00	2.00	6.00	3.00	39	●	●	●	●	●
4470-3-2.10	2.10	6.30	3.00	39	●	●	●	●	●
4470-3-2.20	2.20	6.60	3.00	39	●	●	●	●	●
4470-3-2.30	2.30	6.90	3.00	39	●	●	●	●	●
4470-3-2.40	2.40	7.20	3.00	39	●	●	●	●	●
4470-3-2.50	2.50	7.50	3.00	39	●	●	●	●	●
4470-3-2.60	2.60	7.80	3.00	39	●	●	●	●	●
4470-3-2.70	2.70	8.10	3.00	39	●	●	●	●	●
4470-3-2.80	2.80	8.40	3.00	39	●	●	●	●	●
4470-3-2.90	2.90	8.70	3.00	39	●	●	●	●	●



Micro-fraises

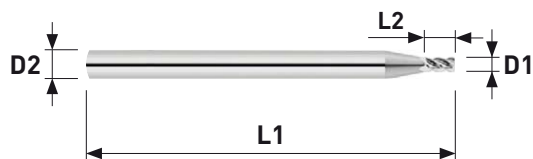
Mikrofräser

Micro end mills

MD
VHM
HM λ 40°Sharp
Corner

2xD1

Z = 4



Art. N°	D1 +0.005 / -0.010	L2	D2 h4	L1	N	TiAlN	STF	TiCN	ALFA- TOP
4472-2-0.30	0.30	0.60	3.00	39	●	●	●	●	●
4472-2-0.40	0.40	0.80	3.00	39	●	●	●	●	●
4472-2-0.50	0.50	1.00	3.00	39	●	●	●	●	●
4472-2-0.60	0.60	1.20	3.00	39	●	●	●	●	●
4472-2-0.70	0.70	1.40	3.00	39	●	●	●	●	●
4472-2-0.80	0.80	1.60	3.00	39	●	●	●	●	●
4472-2-0.90	0.90	1.80	3.00	39	●	●	●	●	●
4472-2-1.00	1.00	2.00	3.00	39	●	●	●	●	●
4472-2-1.10	1.10	2.20	3.00	39	●	●	●	●	●
4472-2-1.20	1.20	2.40	3.00	39	●	●	●	●	●
4472-2-1.30	1.30	2.60	3.00	39	●	●	●	●	●
4472-2-1.40	1.40	2.80	3.00	39	●	●	●	●	●
4472-2-1.50	1.50	3.00	3.00	39	●	●	●	●	●
4472-2-1.60	1.60	3.20	3.00	39	●	●	●	●	●
4472-2-1.70	1.70	3.40	3.00	39	●	●	●	●	●
4472-2-1.80	1.80	3.60	3.00	39	●	●	●	●	●
4472-2-1.90	1.90	3.80	3.00	39	●	●	●	●	●
4472-2-2.00	2.00	4.00	3.00	39	●	●	●	●	●
4472-2-2.10	2.10	4.20	3.00	39	●	●	●	●	●
4472-2-2.20	2.20	4.40	3.00	39	●	●	●	●	●
4472-2-2.30	2.30	4.60	3.00	39	●	●	●	●	●
4472-2-2.40	2.40	4.80	3.00	39	●	●	●	●	●
4472-2-2.50	2.50	5.00	3.00	39	●	●	●	●	●
4472-2-2.60	2.60	5.20	3.00	39	●	●	●	●	●
4472-2-2.70	2.70	5.40	3.00	39	●	●	●	●	●
4472-2-2.80	2.80	5.60	3.00	39	●	●	●	●	●
4472-2-2.90	2.90	5.80	3.00	39	●	●	●	●	●



Micro-fraises

Mikrofräser

Micro end mills

MD
VHM
HM λ 40°Sharp
Corner

4xD1

Z = 4



Art. N°	D1 +0.005 / -0.010	L2	D2 h4	L1	N	TiAlN	STF	TiCN	ALFA- TOP
4472-4-0.40	0.40	1.60	3.00	39	●	●	●	●	●
4472-4-0.50	0.50	2.00	3.00	39	●	●	●	●	●
4472-4-0.60	0.60	2.40	3.00	39	●	●	●	●	●
4472-4-0.70	0.70	2.80	3.00	39	●	●	●	●	●
4472-4-0.80	0.80	3.20	3.00	39	●	●	●	●	●
4472-4-0.90	0.90	3.60	3.00	39	●	●	●	●	●
4472-4-1.00	1.00	4.00	3.00	39	●	●	●	●	●
4472-4-1.10	1.10	4.40	3.00	39	●	●	●	●	●
4472-4-1.20	1.20	4.80	3.00	39	●	●	●	●	●
4472-4-1.30	1.30	5.20	3.00	39	●	●	●	●	●
4472-4-1.40	1.40	5.60	3.00	39	●	●	●	●	●
4472-4-1.50	1.50	6.00	3.00	39	●	●	●	●	●
4472-4-1.60	1.60	6.40	3.00	39	●	●	●	●	●
4472-4-1.70	1.70	6.80	3.00	39	●	●	●	●	●
4472-4-1.80	1.80	7.20	3.00	39	●	●	●	●	●
4472-4-1.90	1.90	7.60	3.00	39	●	●	●	●	●
4472-4-2.00	2.00	8.00	3.00	39	●	●	●	●	●
4472-4-2.10	2.10	8.40	3.00	39	●	●	●	●	●
4472-4-2.20	2.20	8.80	3.00	39	●	●	●	●	●
4472-4-2.30	2.30	9.20	3.00	39	●	●	●	●	●
4472-4-2.40	2.40	9.60	3.00	39	●	●	●	●	●
4472-4-2.50	2.50	10.00	3.00	39	●	●	●	●	●
4472-4-2.60	2.60	10.40	3.00	39	●	●	●	●	●
4472-4-2.70	2.70	10.80	3.00	39	●	●	●	●	●
4472-4-2.80	2.80	11.20	3.00	39	●	●	●	●	●
4472-4-2.90	2.90	11.60	3.00	39	●	●	●	●	●



Micro-fraises

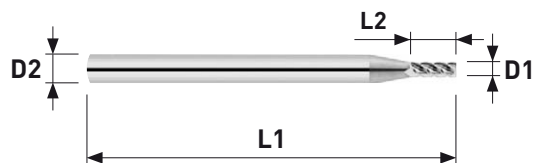
Mikrofräser

Micro end mills

MD
VHM
HM λ
35°/38°Sharp
Corner

3xD1

Z = 4



DHP

Denture à pas irrégulier, hélice progressive
 Ungleiche Teilung, progressive Spirale
 Uneven tooth pitch, progressive helix

Art. N°	D1 +0.005 / -0.010	L2	D2 h4	L1	N	TiAlN	STF	TiCN	ALFA- TOP
DHP4470-3-0.50	0.50	1.50	3.00	39	●	●	●	●	●
DHP4470-3-0.60	0.60	1.80	3.00	39	●	●	●	●	●
DHP4470-3-0.70	0.70	2.10	3.00	39	●	●	●	●	●
DHP4470-3-0.80	0.80	2.40	3.00	39	●	●	●	●	●
DHP4470-3-0.90	0.90	2.70	3.00	39	●	●	●	●	●
DHP4470-3-1.00	1.00	3.00	3.00	39	●	●	●	●	●
DHP4470-3-1.10	1.10	3.30	3.00	39	●	●	●	●	●
DHP4470-3-1.20	1.20	3.60	3.00	39	●	●	●	●	●
DHP4470-3-1.30	1.30	3.90	3.00	39	●	●	●	●	●
DHP4470-3-1.40	1.40	4.20	3.00	39	●	●	●	●	●
DHP4470-3-1.50	1.50	4.50	3.00	39	●	●	●	●	●
DHP4470-3-1.60	1.60	4.80	3.00	39	●	●	●	●	●
DHP4470-3-1.70	1.70	5.10	3.00	39	●	●	●	●	●
DHP4470-3-1.80	1.80	5.40	3.00	39	●	●	●	●	●
DHP4470-3-1.90	1.90	5.70	3.00	39	●	●	●	●	●
DHP4470-3-2.00	2.00	6.00	3.00	39	●	●	●	●	●
DHP4470-3-2.50	2.50	7.50	3.00	39	●	●	●	●	●



Micro-fraises hémisphériques

Vollradius Mikrofräser

Ball nose micro end mills

MD
VHM
HM $\lambda \ 30^\circ$ 

0.75xD1

Z = 2



Art. N°	D1 +0.005 / -0.010	R	L2	D2 h4	L1	N	TiAlN	STF	TiCN	ALFA- TOP
4278-0.75-0.20	0.20	0.10	0.15	3.00	39	●				
4278-0.75-0.30	0.30	0.15	0.20	3.00	39	●	●	●	●	●
4278-0.75-0.40	0.40	0.20	0.30	3.00	39	●	●	●	●	●
4278-0.75-0.50	0.50	0.25	0.35	3.00	39	●	●	●	●	●
4278-0.75-0.60	0.60	0.30	0.45	3.00	39	●	●	●	●	●
4278-0.75-0.70	0.70	0.35	0.55	3.00	39	●	●	●	●	●
4278-0.75-0.80	0.80	0.40	0.60	3.00	39	●	●	●	●	●
4278-0.75-0.90	0.90	0.45	0.70	3.00	39	●	●	●	●	●
4278-0.75-1.00	1.00	0.50	0.75	3.00	39	●	●	●	●	●
4278-0.75-1.50	1.50	0.75	1.15	3.00	39	●	●	●	●	●
4278-0.75-2.00	2.00	1.00	1.50	3.00	39	●	●	●	●	●
4278-0.75-2.50	2.50	1.25	1.90	3.00	39	●	●	●	●	●



Micro-fraises hémisphériques

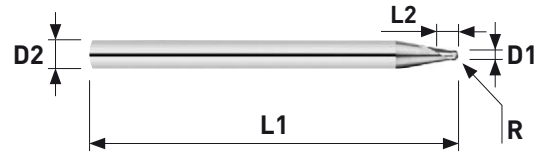
Vollradius Mikrofräser

Ball nose micro end mills

MD
VHM
HM $\lambda \ 30^\circ$ 

1xD1

Z = 2



Art. N°	D1 +0.005 / -0.010	R	L2	D2 h4	L1	N	TiAlN	STF	TiCN	ALFA- TOP
4278-1-0.20	0.20	0.10	0.20	3.00	39	●				
4278-1-0.30	0.30	0.15	0.30	3.00	39	●	●	●	●	●
4278-1-0.40	0.40	0.20	0.40	3.00	39	●	●	●	●	●
4278-1-0.50	0.50	0.25	0.50	3.00	39	●	●	●	●	●
4278-1-0.60	0.60	0.30	0.60	3.00	39	●	●	●	●	●
4278-1-0.70	0.70	0.35	0.70	3.00	39	●	●	●	●	●
4278-1-0.80	0.80	0.40	0.80	3.00	39	●	●	●	●	●
4278-1-0.90	0.90	0.45	0.90	3.00	39	●	●	●	●	●
4278-1-1.00	1.00	0.50	1.00	3.00	39	●	●	●	●	●
4278-1-1.10	1.10	0.55	1.10	3.00	39	●	●	●	●	●
4278-1-1.20	1.20	0.60	1.20	3.00	39	●	●	●	●	●
4278-1-1.30	1.30	0.35	1.30	3.00	39	●	●	●	●	●
4278-1-1.40	1.40	0.70	1.40	3.00	39	●	●	●	●	●
4278-1-1.50	1.50	0.75	1.50	3.00	39	●	●	●	●	●
4278-1-1.60	1.60	0.80	1.60	3.00	39	●	●	●	●	●
4278-1-1.70	1.70	0.85	1.70	3.00	39	●	●	●	●	●
4278-1-1.80	1.80	0.90	1.80	3.00	39	●	●	●	●	●
4278-1-1.90	1.90	0.95	1.90	3.00	39	●	●	●	●	●
4278-1-2.00	2.00	1.00	2.00	3.00	39	●	●	●	●	●
4278-1-2.10	2.10	1.05	2.10	3.00	39	●	●	●	●	●
4278-1-2.20	2.20	1.10	2.20	3.00	39	●	●	●	●	●
4278-1-2.30	2.30	1.15	2.30	3.00	39	●	●	●	●	●
4278-1-2.40	2.40	1.20	2.40	3.00	39	●	●	●	●	●
4278-1-2.50	2.50	1.25	2.50	3.00	39	●	●	●	●	●
4278-1-2.60	2.60	1.30	2.60	3.00	39	●	●	●	●	●
4278-1-2.70	2.70	1.35	2.70	3.00	39	●	●	●	●	●
4278-1-2.80	2.80	1.40	2.80	3.00	39	●	●	●	●	●
4278-1-2.90	2.90	1.45	2.90	3.00	39	●	●	●	●	●



Micro-fraises hémisphériques

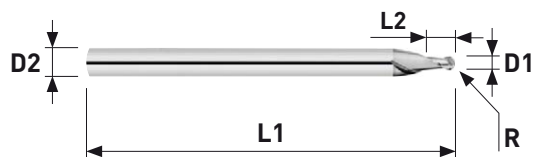
Vollradius Mikrofräser

Ball nose micro end mills

MD
VHM
HM λ 30°

1.5xD1

Z = 2



Art. N°	D1 +0.005 / -0.010	R	L2	D2 h4	L1	N	TiAlN	STF	TiCN	ALFA- TOP
4278-1.5-0.20	0.20	0.10	0.30	3.00	39	●				
4278-1.5-0.25	0.25	0.125	0.35	3.00	39	●				
4278-1.5-0.30	0.30	0.15	0.45	3.00	39	●	●	●	●	●
4278-1.5-0.40	0.40	0.20	0.60	3.00	39	●	●	●	●	●
4278-1.5-0.50	0.50	0.25	0.75	3.00	39	●	●	●	●	●
4278-1.5-0.60	0.60	0.30	0.90	3.00	39	●	●	●	●	●
4278-1.5-0.70	0.70	0.35	1.05	3.00	39	●	●	●	●	●
4278-1.5-0.80	0.80	0.40	1.20	3.00	39	●	●	●	●	●
4278-1.5-0.85	0.85	0.40	1.30	3.00	39	●	●	●	●	●
4278-1.5-0.90	0.90	0.45	1.35	3.00	39	●	●	●	●	●
4278-1.5-1.00	1.00	0.50	1.50	3.00	39	●	●	●	●	●
4278-1.5-1.10	1.10	0.55	1.65	3.00	39	●	●	●	●	●
4278-1.5-1.15	1.15	0.55	1.75	3.00	39	●	●	●	●	●
4278-1.5-1.20	1.20	0.60	1.80	3.00	39	●	●	●	●	●
4278-1.5-1.30	1.30	0.65	1.95	3.00	39	●	●	●	●	●
4278-1.5-1.40	1.40	0.70	2.10	3.00	39	●	●	●	●	●
4278-1.5-1.50	1.50	0.75	2.25	3.00	39	●	●	●	●	●
4278-1.5-1.60	1.60	0.80	2.40	3.00	39	●	●	●	●	●
4278-1.5-1.70	1.70	0.85	2.60	3.00	39	●	●	●	●	●
4278-1.5-1.80	1.80	0.90	2.70	3.00	39	●	●	●	●	●
4278-1.5-1.90	1.90	0.95	2.90	3.00	39	●	●	●	●	●
4278-1.5-2.00	2.00	1.00	3.00	3.00	39	●	●	●	●	●
4278-1.5-2.10	2.10	1.05	3.20	3.00	39	●	●	●	●	●
4278-1.5-2.20	2.20	1.10	3.30	3.00	39	●	●	●	●	●
4278-1.5-2.30	2.30	1.15	3.50	3.00	39	●	●	●	●	●
4278-1.5-2.40	2.40	1.20	3.60	3.00	39	●	●	●	●	●
4278-1.5-2.50	2.50	1.25	3.75	3.00	39	●	●	●	●	●
4278-1.5-2.60	2.60	1.30	3.90	3.00	39	●	●	●	●	●
4278-1.5-2.70	2.70	1.35	4.00	3.00	39	●	●	●	●	●
4278-1.5-2.80	2.80	1.40	4.20	3.00	39	●	●	●	●	●
4278-1.5-2.90	2.90	1.45	4.40	3.00	39	●	●	●	●	●



Micro-fraises hémisphériques

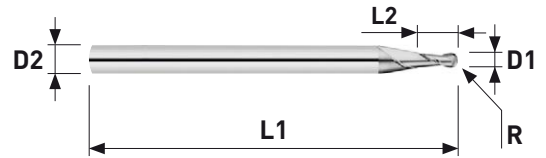
Vollradius Mikrofräser

Ball nose micro end mills

MD
VHM
HM $\lambda \ 30^\circ$ 

3xD1

Z = 2



Art. N°	D1 +0.005 / -0.010	R	L2	D2 h4	L1	N	TiAlN	STF	TiCN	ALFA- TOP
4278-3-0.20	0.20	0.10	0.60	3.00	39	●				
4278-3-0.30	0.30	0.15	1.00	3.00	39	●	●	●	●	●
4278-3-0.40	0.40	0.20	1.00	3.00	39	●	●	●	●	●
4278-3-0.50	0.50	0.25	1.50	3.00	39	●	●	●	●	●
4278-3-0.60	0.60	0.30	1.50	3.00	39	●	●	●	●	●
4278-3-0.70	0.70	0.35	2.00	3.00	39	●	●	●	●	●
4278-3-0.80	0.80	0.40	2.00	3.00	39	●	●	●	●	●
4278-3-0.90	0.90	0.45	2.50	3.00	39	●	●	●	●	●
4278-3-1.00	1.00	0.50	3.00	3.00	39	●	●	●	●	●
4278-3-1.20	1.20	0.60	4.00	3.00	39	●	●	●	●	●
4278-3-1.30	1.30	0.65	4.00	3.00	39	●	●	●	●	●
4278-3-1.40	1.40	0.70	4.00	3.00	39	●	●	●	●	●
4278-3-1.50	1.50	0.75	4.50	3.00	39	●	●	●	●	●
4278-3-1.55	1.55	0.775	5.00	3.00	39	●	●	●	●	●
4278-3-1.60	1.60	0.80	5.00	3.00	39	●	●	●	●	●
4278-3-1.80	1.80	0.90	5.50	3.00	39	●	●	●	●	●
4278-3-2.00	2.00	1.00	6.00	3.00	39	●	●	●	●	●
4278-3-2.10	2.10	1.05	6.50	3.00	39	●	●	●	●	●
4278-3-2.20	2.20	1.10	7.00	3.00	39	●	●	●	●	●
4278-3-2.50	2.50	1.25	7.50	3.00	39	●	●	●	●	●
4278-3-2.60	2.60	1.30	7.80	3.00	39	●	●	●	●	●
4278-3-2.70	2.70	1.35	8.10	3.00	39	●	●	●	●	●
4278-3-2.80	2.80	1.40	8.40	3.00	39	●	●	●	●	●
4278-3-2.90	2.90	1.45	8.70	3.00	39	●	●	●	●	●



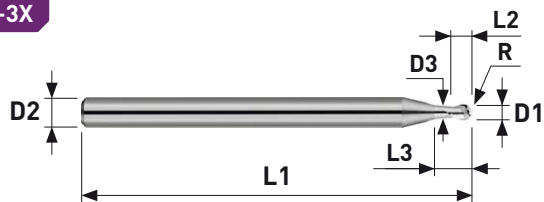
Micro-fraises hémisphériques

Vollradius Mikrofräser

Ball nose micro end mills

MD
VHM
HM $\lambda \ 30^\circ$ L3
3xD1

Z = 2



Art. N°	D1 +0.005 / -0.010	R	L2	L3	D3	D2 Ø3h4 Ø6h5	L1	N	TiAlN	STF	TiCN	ALFA- TOP
4278H-3X-0.20	0.20	0.10	0.30	0.60	0.19	3.00	39	●				
4278H-3X-0.30	0.30	0.15	0.45	0.90	0.27	3.00	39	●	●	●	●	●
4278H-3X-0.40	0.40	0.20	0.60	1.20	0.37	3.00	39	●	●	●	●	●
4278H-3X-0.50	0.50	0.25	0.75	1.50	0.45	3.00	39	●	●	●	●	●
4278H-3X-0.60	0.60	0.30	0.90	1.80	0.55	3.00	39	●	●	●	●	●
4278H-3X-0.70	0.70	0.35	1.05	2.10	0.65	3.00	39	●	●	●	●	●
4278H-3X-0.80	0.80	0.40	1.20	2.40	0.75	3.00	39	●	●	●	●	●
4278H-3X-0.90	0.90	0.45	1.35	2.70	0.85	3.00	39	●	●	●	●	●
4278H-3X-1.00	1.00	0.50	1.50	3.00	0.95	3.00	39	●	●	●	●	●
4278H-3X-1.10	1.10	0.55	1.65	3.30	1.05	3.00	39	●	●	●	●	●
4278H-3X-1.20	1.20	0.60	1.80	3.60	1.15	3.00	39	●	●	●	●	●
4278H-3X-1.30	1.30	0.65	1.95	3.90	1.25	3.00	39	●	●	●	●	●
4278H-3X-1.40	1.40	0.70	2.10	4.20	1.35	3.00	39	●	●	●	●	●
4278H-3X-1.50	1.50	0.75	2.25	4.50	1.45	3.00	39	●	●	●	●	●
4278H-3X-1.60	1.60	0.80	2.40	4.80	1.55	3.00	39	●	●	●	●	●
4278H-3X-1.70	1.70	0.85	2.55	5.10	1.65	3.00	39	●	●	●	●	●
4278H-3X-1.80	1.80	0.90	2.70	5.40	1.75	3.00	39	●	●	●	●	●
4278H-3X-1.90	1.90	0.95	2.85	5.70	1.85	3.00	39	●	●	●	●	●
4278H-3X-2.00	2.00	1.00	3.00	6.00	1.95	6.00	50	●	●	●	●	●
4278H-3X-2.10	2.10	1.05	3.15	6.30	2.05	6.00	50	●	●	●	●	●
4278H-3X-2.20	2.20	1.10	3.30	6.60	2.15	6.00	50	●	●	●	●	●
4278H-3X-2.30	2.30	1.15	3.45	6.90	2.25	6.00	50	●	●	●	●	●
4278H-3X-2.40	2.40	1.20	3.60	7.20	2.35	6.00	50	●	●	●	●	●
4278H-3X-2.50	2.50	1.25	3.75	7.50	2.45	6.00	50	●	●	●	●	●
4278H-3X-3.00	3.00	1.50	4.50	9.00	2.95	6.00	50	●	●	●	●	●



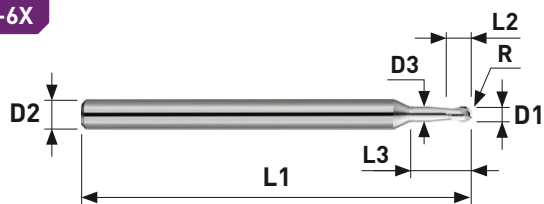
Micro-fraises hémisphériques

Vollradius Mikrofräser

Ball nose micro end mills

MD
VHM
HM $\lambda \ 30^\circ$ L3
6xD1

Z = 2



Art. N°	D1 +0.005 / -0.010	R	L2	L3	D3	D2 Ø3h4 Ø6h5	L1	N	TiAlN	STF	TiCN	ALFA- TOP
4278H-6X-0.30	0.30	0.15	0.45	1.80	0.27	3.00	39	●	●	●	●	●
4278H-6X-0.40	0.40	0.20	0.60	2.40	0.37	3.00	39	●	●	●	●	●
4278H-6X-0.50	0.50	0.25	0.75	3.00	0.45	3.00	39	●	●	●	●	●
4278H-6X-0.60	0.60	0.30	0.90	3.60	0.55	3.00	39	●	●	●	●	●
4278H-6X-0.70	0.70	0.35	1.05	4.20	0.65	3.00	39	●	●	●	●	●
4278H-6X-0.80	0.80	0.40	1.20	4.80	0.75	3.00	39	●	●	●	●	●
4278H-6X-0.90	0.90	0.45	1.35	5.40	0.85	3.00	39	●	●	●	●	●
4278H-6X-1.00	1.00	0.50	1.50	6.00	0.95	3.00	39	●	●	●	●	●
4278H-6X-1.10	1.10	0.55	1.65	6.60	1.05	3.00	39	●	●	●	●	●
4278H-6X-1.20	1.20	0.60	1.80	7.20	1.15	3.00	39	●	●	●	●	●
4278H-6X-1.30	1.30	0.65	1.95	7.80	1.25	3.00	39	●	●	●	●	●
4278H-6X-1.40	1.40	0.70	2.10	8.40	1.35	3.00	39	●	●	●	●	●
4278H-6X-1.50	1.50	0.75	2.25	9.00	1.45	3.00	39	●	●	●	●	●
4278H-6X-1.60	1.60	0.80	2.40	9.60	1.55	3.00	39	●	●	●	●	●
4278H-6X-1.70	1.70	0.85	2.55	10.20	1.65	3.00	39	●	●	●	●	●
4278H-6X-1.80	1.80	0.90	2.70	10.80	1.75	3.00	39	●	●	●	●	●
4278H-6X-1.90	1.90	0.95	2.85	11.40	1.85	3.00	39	●	●	●	●	●
4278H-6X-2.00	2.00	1.00	3.00	12.00	1.95	6.00	50	●	●	●	●	●
4278H-6X-2.10	2.10	1.05	3.15	12.60	2.05	6.00	50	●	●	●	●	●
4278H-6X-2.20	2.20	1.10	3.30	13.20	2.15	6.00	50	●	●	●	●	●
4278H-6X-2.30	2.30	1.15	3.45	13.80	2.25	6.00	50	●	●	●	●	●
4278H-6X-2.40	2.40	1.20	3.60	14.40	2.35	6.00	50	●	●	●	●	●
4278H-6X-2.50	2.50	1.25	3.75	15.00	2.45	6.00	50	●	●	●	●	●
4278H-6X-3.00	3.00	1.50	4.50	18.00	2.95	6.00	50	●	●	●	●	●



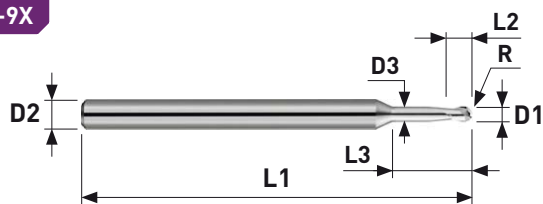
Micro-fraises hémisphériques

Vollradius Mikrofräser

Ball nose micro end mills

MD
VHM
HM λ 30°L3
9xD1

Z = 2



Art. N°	D1 +0.005 / -0.010	R	L2	L3	D3	D2 Ø3h4 Ø6h5	L1	N	TiAlN	STF	TiCN	ALFA- TOP
4278H-9X-0.40	0.40	0.20	0.60	3.60	0.37	3.00	39	●	●	●	●	●
4278H-9X-0.50	0.50	0.25	0.75	4.50	0.45	3.00	39	●	●	●	●	●
4278H-9X-0.60	0.60	0.30	0.90	5.40	0.55	3.00	39	●	●	●	●	●
4278H-9X-0.70	0.70	0.35	1.05	6.30	0.65	3.00	39	●	●	●	●	●
4278H-9X-0.80	0.80	0.40	1.20	7.20	0.75	3.00	39	●	●	●	●	●
4278H-9X-0.90	0.90	0.45	1.35	8.10	0.85	3.00	39	●	●	●	●	●
4278H-9X-1.00	1.00	0.50	1.50	9.00	0.95	3.00	39	●	●	●	●	●
4278H-9X-1.10	1.10	0.55	1.65	9.90	1.05	3.00	39	●	●	●	●	●
4278H-9X-1.20	1.20	0.60	1.80	10.80	1.15	3.00	39	●	●	●	●	●
4278H-9X-1.30	1.30	0.65	1.95	11.70	1.25	3.00	39	●	●	●	●	●
4278H-9X-1.40	1.40	0.70	2.10	12.60	1.35	3.00	39	●	●	●	●	●
4278H-9X-1.50	1.50	0.75	2.25	13.50	1.45	3.00	39	●	●	●	●	●
4278H-9X-1.60	1.60	0.80	2.40	14.40	1.55	3.00	39	●	●	●	●	●
4278H-9X-1.70	1.70	0.85	2.55	15.30	1.65	3.00	39	●	●	●	●	●
4278H-9X-1.80	1.80	0.90	2.70	16.20	1.75	3.00	39	●	●	●	●	●
4278H-9X-1.90	1.90	0.95	2.85	17.10	1.85	3.00	39	●	●	●	●	●
4278H-9X-2.00	2.00	1.00	3.00	18.00	1.95	6.00	50	●	●	●	●	●
4278H-9X-2.10	2.10	1.05	3.15	18.90	2.05	6.00	50	●	●	●	●	●
4278H-9X-2.20	2.20	1.10	3.30	19.80	2.15	6.00	50	●	●	●	●	●
4278H-9X-2.30	2.30	1.15	3.45	20.70	2.25	6.00	50	●	●	●	●	●
4278H-9X-2.40	2.40	1.20	3.60	21.60	2.35	6.00	50	●	●	●	●	●
4278H-9X-2.50	2.50	1.25	3.75	22.50	2.45	6.00	50	●	●	●	●	●
4278H-9X-3.00	3.00	1.50	4.50	27.00	2.95	6.00	50	●	●	●	●	●



4000



Répertoire **Fraises en bout**
Verzeichnis **Schaftfräser**
Index **End mills**

Paramètres de coupe indicatifs
Empfohlene Schnittwerte
Standard machining data

4.03-4.06

Sharp Corner	Fraises en bout avec angle vif Schaftfräser mit scharfkantigen Ecken End mills with sharp corners					
	Z	λ	D1	D2	Type	page
	Z=3	Div.	Ø1.00 - 8.00	Ø3/6/8	E-DHP4300-1.5	4.07
	Z=4	26° / 33°	Ø10.00	Ø10 h6	E-DHP4400-1.5	
	Z=3	Div.	Ø1.00 - 8.00	Ø3/6/8	E-DHP4300-2.5	4.08
	Z=4	26° / 33°	Ø10.00	Ø10h6	E-DHP4400-2.5	
	Z=1	23°	Ø1.00 - 6.00	Ø6h5	4123-2	4.09
			Ø1.00 - 6.00	Ø6h5	4123-4	4.10
	Z=2	60°	Ø0.50 - 6.00	Ø3/6/8	4260MV	4.11
		90°	Ø0.30 - 6.00	Ø3/6/8	4290MV	4.12
		120°	Ø0.50 - 6.00	Ø3/6/8	42120MV	4.13
	Z=2	30°	Ø1.00 - 6.00	Ø6 h5	4230	4.14
			Ø3.00 - 6.00	Ø6 h5	4230-1.5	4.15
			Ø3.00 - 6.00	Ø6 h5	4230-3	4.16
			Ø2.00 - 6.00	D1 = D2	4231	4.17
			Ø3.00 - 6.00	Ø6 h5	4239T-2.5X	4.18
			Ø3.00 - 6.00	Ø6 h5	4239T-4X	4.19
			Ø1.00 - 6.00	Ø6 h5	4330-S	4.20
			Ø3.00 - 6.00	D1 = D2	4330	4.21
	Z=3	30°	Ø3.00 - 6.00	Ø6 h5	4330-4	4.22
			Ø2.00 - 6.00	D1 = D2	4331	4.23
			Ø1.50 - 6.00	Ø6 h5	4336	4.24
			Ø1.50 - 6.00	Ø6 h5	4337	4.25
		45°	Ø2.00 - 6.00	D1 = D2	4341	4.26
			Ø0.50 - 6.00	Ø6 h5	4345-S	4.27
		60°	Ø2.00 - 6.00	D1 = D2	4361	4.28
		35° / 38°	Ø1.00 - 6.00	Ø6 h5	DHP4336	4.29
	Z=4	30°	Ø3.00 - 6.00	D1 = D2	4430	4.30
			Ø2.00 - 6.00	D1 = D2	4431	4.31
		45°	Ø2.00 - 6.00	D1 = D2	4441	4.32
			Ø0.50 - 6.00	Ø6 h5	4445-S	4.33
		50°	Ø1.00 - 6.00	Ø6 h5	4450	4.34
		35° / 38°	Ø1.00 - 6.00	Ø6 h5	DHP4436	4.35
		30°	Ø3.00 - 6.00	Ø6 h5	4439T-2.5X	4.36
			Ø3.00 - 6.00	Ø6 h5	4439T-4X	4.37
	Z=5	45°	Ø1.00 - 6.00	Ø6 h5	4545	4.38
	Z=4/5/6		Ø1.00 - 6.00	Ø6 h5	45645	4.39
	Z=8		Ø6.00	Ø6 h5	4810	4.40

Répertoire **Fraises en bout**
 Verzeichnis **Schaftfräser**
 Index **End mills**

 Sharp Corner	z	λ	D1	D2	Type	page
	Z=2	30°	Ø2.00 - 6.00	D1 = D2	4238	4.41
	Z=3	30°	Ø2.00 - 6.00	D1 = D2	4338	4.42
	Z=3	0°	Ø0.50 - 3.00	Ø3 h4	4611	4.43
	Z=3	0°	Ø0.30 - 3.00	Ø3 h4	4911	4.44
	Z=4	0°	Ø3.00 - 8.00	Ø3 h4 Ø6 h5 Ø8 h6	4901	4.45
				Ø6 h4	701S2300-P	4.47
				Ø6 h4	701S2300-R	4.48
	Z=1	0°	Ø0.50 - 3.00	Ø6 h4	701S4170R-2	4.49
	Z=2	30°	Ø0.30 - 3.00	Ø6 h4	701S4279T-3X	4.50
	Z=3	Div.	Ø0.30 - 3.20	Ø6 h4	701S4370-1	4.51
	Z=3	Div.	Ø0.30 - 3.00	Ø6 h4	701S4370-2	4.52
	Z=3	Div.	Ø0.30 - 2.50	Ø6 h4	701S4370-3	4.53
	Z=3	30°	Ø1.00 - 2.00	Ø6 h4	701S4379T-3X	4.54
	Z=3	0°	Ø0.40 - 2.00	Ø6 h4	701S4911	4.55

Paramètres de coupe indicatifs **Fraises ébauches**
 Empfohlene Schnittwerte **Schrupfräser**
 Standard machining data **Roughing mills**

Matière Werkstoff Material		C	1.0 - 2.0	2.0 - 4.0	4.0 - 6.0	6.0 - 10.0	N	TiAlN*	STF*
		(m/min)	fz (mm)	fz (mm)	fz (mm)	fz (mm)			
Acier de décolletage Automatenstahl Free-cutting steel	P	100 - 140	0.010 - 0.015	0.015 - 0.030	0.030 - 0.040	0.040 - 0.060	-	+++	+++
Acier Stahl Steel	< 600 N/mm ² P	90 - 140	0.010 - 0.015	0.015 - 0.030	0.030 - 0.040	0.040 - 0.060	-	+++	+++
Acier Stahl Steel	< 800 N/mm ² P	90 - 140	0.010 - 0.015	0.015 - 0.030	0.030 - 0.040	0.040 - 0.060	-	+++	+++
Acier Stahl Steel	> 800 N/mm ² P	80 - 120	0.010 - 0.015	0.015 - 0.030	0.030 - 0.040	0.040 - 0.060	-	+++	+++
Acier trempé Gehärteter Stahl Hardened steel	-55HRC H	120 - 170	0.005 - 0.008	0.008 - 0.015	0.015 - 0.020	0.020 - 0.035	-	+++	+++
Acier trempé Gehärteter Stahl Hardened steel	+55HRC H	110 - 150	0.005 - 0.008	0.008 - 0.015	0.015 - 0.020	0.020 - 0.035	-	+++	+++
Inox Rostfreistahl Stainless steel	M	50 - 90	0.004 - 0.008	0.008 - 0.012	0.012 - 0.020	0.020 - 0.040	-	+++	+++
Aluminium	N	250 - 350	0.008 - 0.015	0.015 - 0.030	0.030 - 0.040	0.040 - 0.065	-	+++	++
Cuivre, laiton, bronze Kupfer, Messing, Bronze Copper, brass, bronze	N	130 - 240	0.005 - 0.010	0.010 - 0.020	0.020 - 0.030	0.030 - 0.050	-	+++	++
Matière synthétique Synthetisches Material Synthetic material	N	150 - 300	0.020 - 0.030	0.030 - 0.050	0.050 - 0.080	0.080 - 0.150	-	+++	++
Métaux précieux Edelmetalle Precious metals	N	120 - 150	0.005 - 0.010	0.010 - 0.020	0.020 - 0.030	0.030 - 0.050	-	+++	++
Titane Titan Titanium	S	50 - 100	0.010 - 0.015	0.015 - 0.020	0.020 - 0.030	0.030 - 0.050	-	+++	+++
Alliage de nickel Nickel-Legierung Nickel alloy	S	40 - 60	0.005 - 0.007	0.007 - 0.012	0.012 - 0.020	0.020 - 0.030	-	+++	+++
Matière exotique Exotisches material Exotic material	O	15 - 25	0.005 - 0.010	0.010 - 0.020	0.020 - 0.030	0.030 - 0.050	-	+++	+++

* Avec revêtement, augmenter les valeurs de 20-30%
 Mit Beschichtung, Daten um 20-30% erhöhen
 With coating, increase data by 20-30%

+ Bien / Gut / Good
 ++ Très bien / Sehr gut / Very good
 +++ Excellent / Ausgezeichnet / Excellent

Paramètres de coupe indicatifs **Fraises en bout**
 Empfohlene Schnittwerte **Schaftfräser**
 Standard machining data **End mills**

Matière Werkstoff Material	VC	0.50 - 2.0	2.0 - 4.0	4.0 - 6.0	6.0 - 8.0	8.0 - 12.0	N	TiAlN*	STF*	ALFA- TOP*
	(m/min)	fz (mm)	fz (mm)	fz (mm)	fz (mm)	fz (mm)				
Acier de décolletage Automatenstahl Free-cutting steel (P)	80 - 130	0.004-0.015	0.015 - 0.025	0.025 - 0.035	0.035 - 0.050	0.050 - 0.080	-	+++	+++	-
Acier Stahl Steel < 600 N/mm ² (P)	70 - 100	0.004-0.015	0.015 - 0.025	0.025 - 0.035	0.035 - 0.050	0.050 - 0.080	-	+++	+++	-
Acier Stahl Steel < 800 N/mm ² (P)	70 - 100	0.004-0.015	0.015 - 0.025	0.025 - 0.035	0.035 - 0.050	0.050 - 0.080	-	+++	+++	-
Acier Stahl Steel > 800 N/mm ² (P)	50 - 80	0.004-0.015	0.015 - 0.025	0.025 - 0.035	0.035 - 0.050	0.050 - 0.080	-	+++	+++	-
Acier trempé Gehärteter Stahl -55HRC (H)	60 - 90	0.002 - 0.008	0.008 - 0.015	0.012 - 0.020	0.020 - 0.025	0.025 - 0.030	-	+++	+++	-
Acier trempé Gehärteter Stahl +55HRC (H)	40 - 70	0.002 - 0.008	0.008 - 0.015	0.012 - 0.020	0.020 - 0.025	0.020 - 0.030	-	+++	+++	-
Inox Rostfreistahl Stainless steel (M)	40 - 80	0.003 - 0.008	0.008 - 0.015	0.015 - 0.020	0.020 - 0.030	0.030 - 0.050	-	+++	+++	-
Aluminium (N)	230 - 320	0.003 - 0.010	0.010 - 0.025	0.025 - 0.030	0.030 - 0.050	0.050 - 0.080	++	+	++	+++
Cuivre, laiton, bronze Kupfer, Messing, Bronze Copper, brass, bronze (N)	100 - 190	0.003 - 0.010	0.010 - 0.020	0.020 - 0.030	0.030 - 0.040	0.040 - 0.070	++	+	++	+++
Matière synthétique Synthetisches Material Synthetic material (N)	250 - 500	0.005 - 0.030	0.030 - 0.050	0.050 - 0.080	0.080 - 0.100	0.100 - 0.200	+++	-	++	+++
Métaux précieux Edelmetalle Precious metals (N)	90 - 150	0.003 - 0.015	0.015 - 0.025	0.025 - 0.030	0.030 - 0.050	0.050 - 0.080	+++	+	++	+++
Titane Titan Titanium (S)	30 - 70	0.004 - 0.010	0.010 - 0.017	0.017-0.025	0.025 - 0.035	0.035 - 0.050	-	++	+++	-
Alliage de nickel Nickel-Legierung Nickel alloy (S)	30 - 60	0.003 - 0.008	0.008 - 0.015	0.015 - 0.020	0.020 - 0.025	0.025 - 0.040	-	+++	+++	-
Matière exotique Exotisches material Exotic material (O)	15 - 25	0.002 - 0.008	0.008 - 0.020	0.020 - 0.030	0.030 - 0.040	0.040 - 0.050	-	+++	+++	++

* Avec revêtement, augmenter les valeurs de 20 %
 Mit Beschichtung, Daten um 20 % erhöhen
 With coating, increase data by 20 %

+ Bien / Gut / Good
 ++ Très bien / Sehr gut / Very good
 +++ Excellent / Ausgezeichnet / Excellent

Paramètres de coupe indicatifs **Outils WM 701S**
 Empfohlene Schnittwerte **Werkzeuge WM 701S**
 Standard machining data **Tools WM 701S**

Matière Werkstoff Material	VC (m/min)	N	TiAlN*	STF*	ALFA- TOP*
Acier de décolletage Automatenstahl Free-cutting steel P	120 - 180	-	+++	+++	-
Acier Stahl Steel < 600 N/mm ² P	100 - 150	-	+++	+++	-
Acier Stahl Steel < 800 N/mm ² P	100 - 130	-	+++	+++	-
Acier Stahl Steel > 800 N/mm ² P	80 - 100	-	+++	+++	-
Acier trempé Gehärteter Stahl Hardened steel -55HRC H	-	-	+++	+++	-
Acier trempé Gehärteter Stahl Hardened steel +55HRC H	-	-	+++	+++	-
Inox Rostfreistahl Stainless steel M	60 - 90	-	+++	+++	-
Aluminium N	250 - 400	++	+++	+++	+++
Cuivre, laiton, bronze Kupfer, Messing, Bronze Copper, brass, bronze N	150 - 200	+++	++	++	+++
Matière synthétique Synthetisches Material Synthetic material N	100 - 150	+++	++	++	+++
Métaux précieux Edelmetalle Precious metals N	140 - 200	+++	++	++	+++
Titane Titan Titanium S	40 - 70	-	+++	+++	-
Alliage de nickel Nickel-Legierung Nickel alloy S	30 - 60	-	+++	+++	-
Matière exotique Exotisches material Exotic material O	30 - 60	-	+++	+++	+++

* Avec revêtement, augmenter les valeurs de 20 %
 Mit Beschichtung, Daten um 20 % erhöhen
 With coating, increase data by 20 %

+ Bien / Gut / Good
 ++ Très bien / Sehr gut / Very good
 +++ Excellent / Ausgezeichnet / Excellent

Paramètres de coupe indicatifs **Fraises à angler**
 Empfohlene Schnittwerte **Kegelsenker**
 Standard machining data **Chamfering tool**

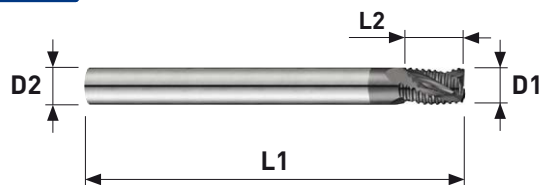
Matière Werkstoff Material		VC	N	TiAlN*	STF*
		(m/min)			
Acier de décolletage Automatenstahl Free-cutting steel	P	80 - 130	+	+++	+++
Acier Stahl Steel	< 600 N/mm ² P	70 - 100	+	+++	+++
Acier Stahl Steel	< 800 N/mm ² P	70 - 100	+	+++	+++
Acier Stahl Steel	> 800 N/mm ² P	50 - 80	+	+++	+++
Acier trempé Gehärteter Stahl Hardened steel	-55HRC H	60 - 90	-	++	+++
Acier trempé Gehärteter Stahl Hardened steel	+55HRC H	40 - 70	-	++	+++
Inox Rostfreistahl Stainless steel	M	50 - 100	+	+++	+++
Aluminium	N	200 - 300	+++	++	+++
Cuivre, laiton, bronze Kupfer, Messing, Bronze Copper, brass, bronze	N	100 - 200	+++	++	+++
Matière synthétique Synthetisches Material Synthetic material	N	200 - 500	+++	++	++
Métaux précieux Edelmetalle Precious metals	N	90 - 140	+++	++	+++
Titane Titan Titanium	S	30 - 80	-	+++	+++
Alliage de nickel Nickel-Legierung Nickel alloy	S	30 - 60	-	+++	+++
Matière exotique Exotisches material Exotic material	O	20 - 30	-	+++	+++

* Avec revêtement, augmenter les valeurs de 20 %
 Mit Beschichtung, Daten um 20 % erhöhen
 With coating, increase data by 20 %

+ Bien / Gut / Good
 ++ Très bien / Sehr gut / Very good
 +++ Excellent / Ausgezeichnet / Excellent

E-DHP4300-1.5

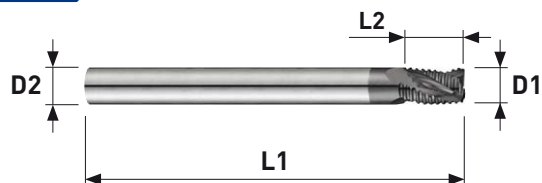
Fraises ébauches Schruppfräser Roughing mills



Art. N°	λ	Z	E	D1 _{h10}	L2	D2 Ø3h4 Ø6h5 Ø8h6	L1	N	TiAlN	STF
E-DHP4300-1.5-1.00	26°/30°	3	0.05	1.00	1.50	3.00	39	•	•	•
E-DHP4300-1.5-1.50	26°/30°	3	0.10	1.50	2.25	3.00	39	•	•	•
E-DHP4300-1.5-2.00	26°/30°	3	0.20	2.00	3.00	3.00	39	•	•	•
E-DHP4300-1.5-2.50	26°/33°	3	0.20	2.50	3.75	6.00	50	•	•	•
E-DHP4300-1.5-3.00	26°/33°	3	0.20	3.00	4.25	6.00	50	•	•	•
E-DHP4300-1.5-4.00	26°/33°	3	0.30	4.00	6.00	6.00	50	•	•	•
E-DHP4300-1.5-5.00	26°/33°	3	0.30	5.00	7.50	6.00	50	•	•	•
E-DHP4300-1.5-6.00	26°/33°	3	0.40	6.00	9.00	6.00	50	•	•	•
E-DHP4300-1.5-8.00	26°/33°	3	0.50	8.00	12.00	8.00	64	•	•	•

E-DHP4400-1.5

Fraises ébauches Schruppfräser Roughing mills

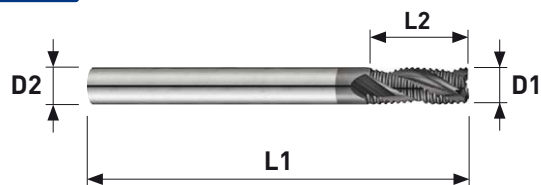


Art. N°	λ	Z	E	D1 _{h10}	L2	D2 _{h6}	L1	N	TiAlN	STF
E-DHP4400-1.5-10.00	26°/30°	4	0.50	10.00	15.00	10.00	73	•	•	•



E-DHP4300-2.5

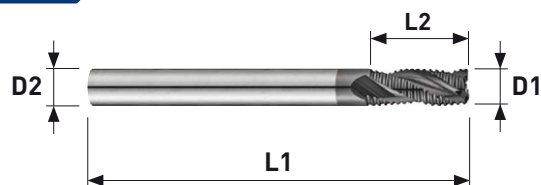
Fraises ébauches Schrupfräser Roughing mills



Art. N°	λ	Z	E	D1 _{h10}	L2	D2 Ø3h4 Ø6h5 Ø8h6	L1	N	TiAlN	STF
E-DHP4300-2.5-1.00	26°/30°	3	0.05	1.00	2.50	3.00	39	●	●	●
E-DHP4300-2.5-1.50	26°/30°	3	0.10	1.50	3.75	3.00	39	●	●	●
E-DHP4300-2.5-2.00	26°/30°	3	0.20	2.00	5.00	3.00	39	●	●	●
E-DHP4300-2.5-2.50	26°/33°	3	0.20	2.50	6.25	6.00	57	●	●	●
E-DHP4300-2.5-3.00	26°/33°	3	0.20	3.00	7.50	6.00	57	●	●	●
E-DHP4300-2.5-4.00	26°/33°	3	0.30	4.00	10.00	6.00	57	●	●	●
E-DHP4300-2.5-5.00	26°/33°	3	0.30	5.00	12.50	6.00	57	●	●	●
E-DHP4300-2.5-6.00	26°/33°	3	0.40	6.00	15.00	6.00	57	●	●	●
E-DHP4300-2.5-8.00	26°/33°	3	0.50	8.00	20.00	8.00	64	●	●	●

E-DHP4400-2.5

Fraises ébauches Schrupfräser Roughing mills



Art. N°	λ	Z	E	D1 _{h10}	L2	D2 _{h6}	L1	N	TiAlN	STF
E-DHP4400-2.5-10.00	26°/33°	4	0.50	10.00	25.00	10.00	73	●	●	●



Fraises en bout

Schaftfräser

End mills

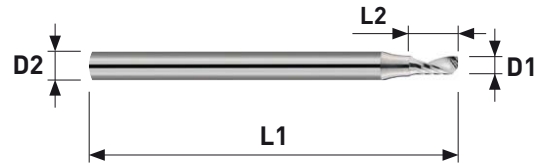
MD
VHM
HM λ 23°

45°



2xD1

Z = 1



Art. N°	D1 _{h10}	L2	D2 _{h5}	L1	N	TiAlN	STF	ALFA-TOP
4123-2-1.0	1.00	2.00	6.00	50	●	●	●	●
4123-2-2.0	2.00	4.00	6.00	50	●	●	●	●
4123-2-3.0	3.00	6.00	6.00	50	●	●	●	●
4123-2-4.0	4.00	8.00	6.00	50	●	●	●	●
4123-2-5.0	5.00	10.00	6.00	50	●	●	●	●
4123-2-6.0	6.00	12.00	6.00	50	●	●	●	●



Fraises en bout

Schaftfräser

End mills

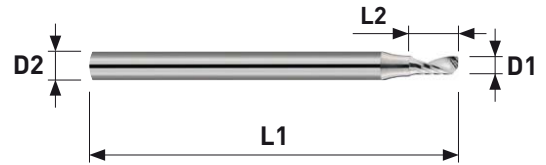
MD
VHM
HM λ 23°

45°



4xD1

Z = 1



Art. N°	D1 _{h10}	L2	D2 _{h5}	L1	N	TiAlN	STF	ALFA-TOP
4123-4-1.0	1.00	4.00	6.00	50	●	●	●	●
4123-4-2.0	2.00	8.00	6.00	50	●	●	●	●
4123-4-3.0	3.00	12.00	6.00	50	●	●	●	●
4123-4-4.0	4.00	16.00	6.00	50	●	●	●	●
4123-4-5.0	5.00	20.00	6.00	50	●	●	●	●
4123-4-6.0	6.00	24.00	6.00	50	●	●	●	●



Fraises en bout

Schaftfräser

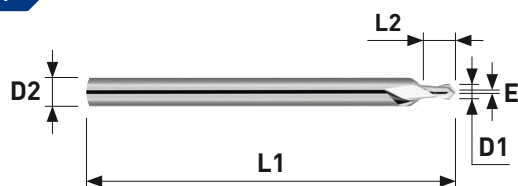
End mills

MD
VHM
HM

60°



Z = 2



Art. N°	D1 h10	E	L2	D2 Ø3h4 Ø6h5 Ø8h6	L1	N	TiAlN	STF
4260MV-0.5	0.50	0.05	1.00	3.00	39	●	●	●
4260MV-1.0	1.00	0.10	2.00	3.00	39	●	●	●
4260MV-1.5	1.50	0.15	3.00	3.00	39	●	●	●
4260MV-2.0	2.00	0.20	4.00	3.00	39	●	●	●
4260MV-2.5	2.50	0.25	5.00	3.00	39	●	●	●
4260MV-3.0	3.00	0.30	6.00	6.00	50	●	●	●
4260MV-4.0	4.00	0.40	8.00	6.00	50	●	●	●
4260MV-6.0	6.00	0.60	12.00	8.00	64	●	●	●



Fraises en bout

Schaftfräser

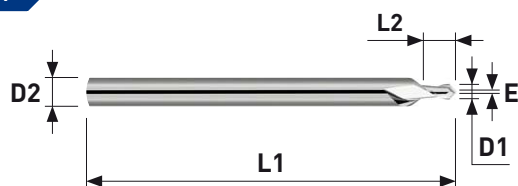
End mills

MD
VHM
HM

90°



Z = 2



Art. N°	D1 h10	E	L2	D2 Ø3h4 Ø6h5 Ø8h6	L1	N	TiAlN	STF
4290MV-0.3	0.30	0.03	0.60	3.00	39	●	●	●
4290MV-0.4	0.40	0.04	0.80	3.00	39	●	●	●
4290MV-0.5	0.50	0.05	1.00	3.00	39	●	●	●
4290MV-0.6	0.60	0.06	1.20	3.00	39	●	●	●
4290MV-0.7	0.70	0.07	1.40	3.00	39	●	●	●
4290MV-0.8	0.80	0.08	1.60	3.00	39	●	●	●
4290MV-0.9	0.90	0.09	1.80	3.00	39	●	●	●
4290MV-1.0	1.00	0.10	2.00	3.00	39	●	●	●
4290MV-1.1	1.10	0.11	2.20	3.00	39	●	●	●
4290MV-1.2	1.20	0.12	2.40	3.00	39	●	●	●
4290MV-1.3	1.30	0.13	2.60	3.00	39	●	●	●
4290MV-1.4	1.40	0.14	2.80	3.00	39	●	●	●
4290MV-1.5	1.50	0.15	3.00	3.00	39	●	●	●
4290MV-1.6	1.60	0.16	3.20	3.00	39	●	●	●
4290MV-1.7	1.70	0.17	3.40	3.00	39	●	●	●
4290MV-1.8	1.80	0.18	3.60	3.00	39	●	●	●
4290MV-1.9	1.90	0.19	3.80	3.00	39	●	●	●
4290MV-2.0	2.00	0.20	4.00	3.00	39	●	●	●
4290MV-2.5	2.50	0.25	5.00	3.00	39	●	●	●
4290MV-3.0	3.00	0.30	6.00	6.00	50	●	●	●
4290MV-4.0	4.00	0.40	8.00	6.00	50	●	●	●
4290MV-6.0	6.00	0.60	12.00	8.00	64	●	●	●



Fraises en bout

Schaftfräser

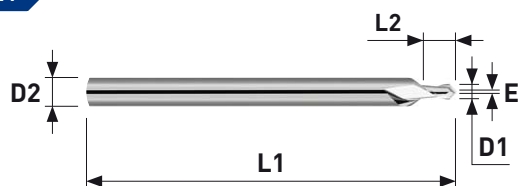
End mills

MD
VHM
HM

120°



Z = 2



Art. N°	D1 h10	E	L2	D2 Ø3h4 Ø6h5 Ø8h6	L1	N	TiAlN	STF
42120MV-0.5	0.50	0.05	1.00	3.00	39	●	●	●
42120MV-1.0	1.00	0.10	2.00	3.00	39	●	●	●
42120MV-1.5	1.50	0.15	3.00	3.00	39	●	●	●
42120MV-2.0	2.00	0.20	4.00	3.00	39	●	●	●
42120MV-2.5	2.50	0.25	5.00	3.00	39	●	●	●
42120MV-3.0	3.00	0.30	6.00	6.00	50	●	●	●
42120MV-4.0	4.00	0.40	8.00	6.00	50	●	●	●
42120MV-6.0	6.00	0.60	12.00	8.00	64	●	●	●



Fraises en bout

Schaftfräser

End mills

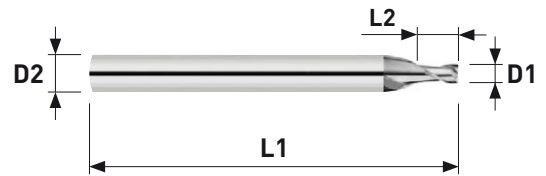
MD
VHM
HM

λ 30°

Sharp
Corner



Z = 2



Art. N°	D1 h10	L2	D2 h5	L1	N	TiAlN	STF
4230-1.0	1.00	1.00	6.00	50	●	●	●
4230-1.5	1.50	1.50	6.00	50	●	●	●
4230-2.0	2.00	2.00	6.00	50	●	●	●
4230-2.5	2.50	2.50	6.00	50	●	●	●
4230-3.0	3.00	3.00	6.00	50	●	●	●
4230-4.0	4.00	4.00	6.00	50	●	●	●
4230-5.0	5.00	5.00	6.00	50	●	●	●
4230-6.0	6.00	6.00	6.00	50	●	●	●



Fraises en bout

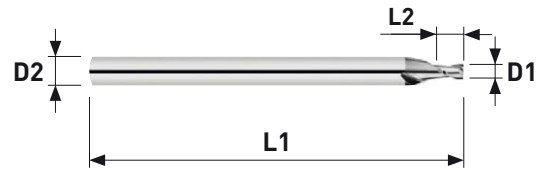
Schaftfräser

End mills

MD
VHM
HM λ 30°Sharp
Corner

1.5xD1

Z = 2



Art. N°	D1 _{h10}	L2	D2 _{h5}	L1	N	TiAlN	STF
4230-1.5-3.0	3.00	4.50	6.00	50	●	●	●
4230-1.5-3.5	3.50	5.00	6.00	50	●	●	●
4230-1.5-4.0	4.00	6.00	6.00	50	●	●	●
4230-1.5-4.5	4.50	7.00	6.00	50	●	●	●
4230-1.5-5.0	5.00	8.00	6.00	50	●	●	●
4230-1.5-6.0	6.00	9.00	6.00	50	●	●	●



Fraises en bout

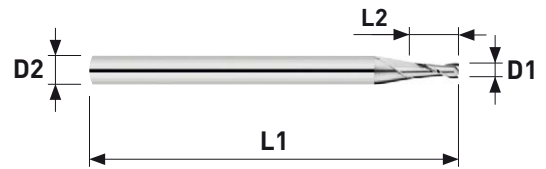
Schaftfräser

End mills

MD
VHM
HM λ 30°Sharp
Corner

3xD1

Z = 2



Art. N°	D1 _{h10}	L2	D2 _{h5}	L1	N	TiAlN	STF
4230-3-3.0	3.00	9.00	6.00	50	●	●	●
4230-3-3.5	3.50	10.00	6.00	50	●	●	●
4230-3-4.0	4.00	12.00	6.00	50	●	●	●
4230-3-4.5	4.50	13.00	6.00	50	●	●	●
4230-3-5.0	5.00	15.00	6.00	50	●	●	●
4230-3-6.0	6.00	18.00	6.00	50	●	●	●



Fraises en bout

Schaftfräser

End mills

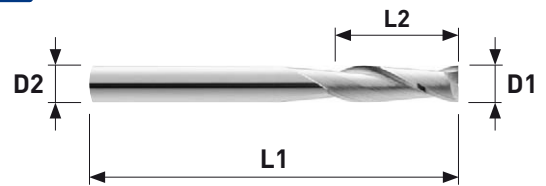
MD
VHM
HM

λ 30°

Sharp
Corner



Z = 2



Art. N°	D1 _{e9}	L2	D2 _{h5}	L1	N	TiAlN	STF
4231-2.0	2.00	8.00	2.00	32	●	●	●
4231-2.5	2.50	8.00	2.50	32	●	●	●
4231-3.0	3.00	12.00	3.00	32	●	●	●
4231-3.5	3.50	12.00	3.50	32	●	●	●
4231-4.0	4.00	12.00	4.00	40	●	●	●
4231-4.5	4.50	14.00	4.50	50	●	●	●
4231-5.0	5.00	14.00	5.00	50	●	●	●
4231-6.0	6.00	16.00	6.00	50	●	●	●



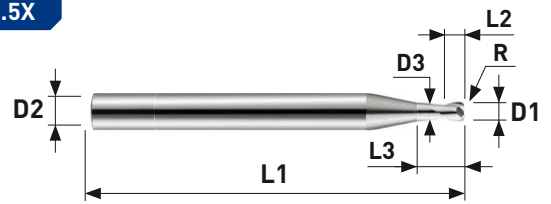
Fraises en bout toriques

Torische Schaftfräser

Toric End mills

MD
VHM
HM λ 30°Radius
CornerL3
2.5xD1

Z = 2



Art. N°	D1 _{h10}	R +/- 0.02	L2	L3	D3	D2 _{h5}	L1	N	TiAlN	STF
4239T-2.5X-3.0	3.00	0.50	3.00	7.50	2.95	6.00	57	●	●	●
4239T-2.5X-3.5	3.50	0.50	3.50	8.75	3.45	6.00	57	●	●	●
4239T-2.5X-4.0	4.00	0.50	4.00	10.00	3.95	6.00	57	●	●	●
4239T-2.5X-4.5	4.50	0.50	4.50	11.25	4.45	6.00	57	●	●	●
4239T-2.5X-5.0	5.00	0.50	5.00	12.50	4.95	6.00	57	●	●	●
4239T-2.5X-5.5	5.50	0.50	5.50	13.75	5.45	6.00	57	●	●	●
4239T-2.5X-6.0	6.00	0.50	6.00	15.00	5.95	6.00	57	●	●	●



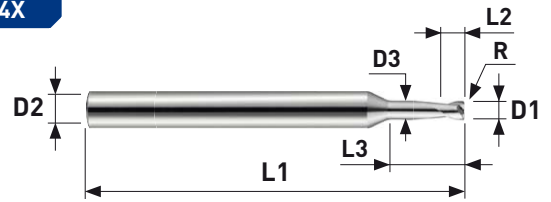
Fraises en bout toriques

Torische Schaftfräser

Toric End mills

MD
VHM
HM λ 30°Radius
CornerL3
4xD1

Z = 2



Art. N°	D1 h10	R +/- 0.02	L2	L3	D3	D2 h5	L1	N	TiAlN	STF
4239T-4X-3.0	3.00	0.50	3.00	12.00	2.95	6.00	57	●	●	●
4239T-4X-3.5	3.50	0.50	3.50	14.00	3.45	6.00	57	●	●	●
4239T-4X-4.0	4.00	0.50	4.00	16.00	3.95	6.00	57	●	●	●
4239T-4X-4.5	4.50	0.50	4.50	18.00	4.45	6.00	57	●	●	●
4239T-4X-5.0	5.00	0.50	5.00	20.00	4.95	6.00	57	●	●	●
4239T-4X-5.5	5.50	0.50	5.50	22.00	5.45	6.00	57	●	●	●
4239T-4X-6.0	6.00	0.50	6.00	24.00	5.95	6.00	57	●	●	●



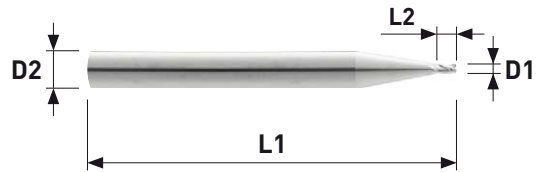
Fraises en bout

Schaftfräser

End mills

MD
VHM
HM λ 30°Sharp
Corner

Z = 3



Art. N°	D1 h10	L2	D2 h5	L1	N	TiAlN	STF
4330-1.0-S	1.00	3.00	6.00	40	●	●	●
4330-1.5-S	1.50	3.00	6.00	40	●	●	●
4330-2.0-S	2.00	3.00	6.00	40	●	●	●
4330-2.5-S	2.50	3.00	6.00	40	●	●	●
4330-3.0-S	3.00	4.00	6.00	40	●	●	●
4330-3.5-S	3.50	4.00	6.00	40	●	●	●
4330-4.0-S	4.00	5.00	6.00	40	●	●	●
4330-4.5-S	4.50	5.00	6.00	40	●	●	●
4330-5.0-S	5.00	6.00	6.00	40	●	●	●
4330-6.0-S	6.00	7.00	6.00	40	●	●	●



Fraises en bout

Schaftfräser

End mills

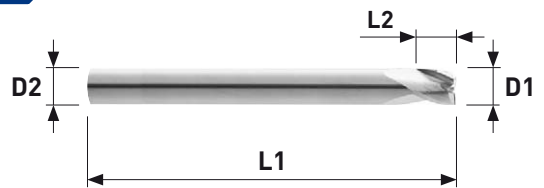
MD
VHM
HM

λ 30°

Sharp
Corner



Z = 3



Art. N°	D1 _{e9}	L2	D2 _{h5}	L1	N	TiAlN	STF
4330-3.0	3.00	3.00	3.00	39	•	•	•
4330-4.0	4.00	4.00	4.00	50	•	•	•
4330-5.0	5.00	5.00	5.00	50	•	•	•
4330-6.0	6.00	6.00	6.00	50	•	•	•



Fraises en bout

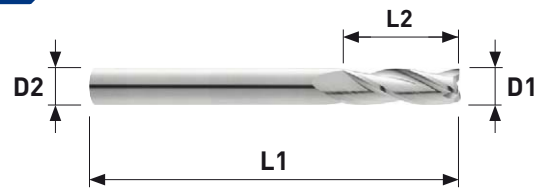
Schaftfräser

End mills

MD
VHM
HM λ 30°Sharp
Corner

4xD1

Z = 3



Art. N°	D1 h10	L2	D2 h5	L1	N	TiAlN	STF
4330-4-3.0	3.00	12.00	6.00	50	●	●	●
4330-4-4.0	4.00	16.00	6.00	50	●	●	●
4330-4-5.0	5.00	20.00	6.00	50	●	●	●
4330-4-6.0	6.00	24.00	6.00	57	●	●	●



Fraises en bout

Schaftfräser

End mills

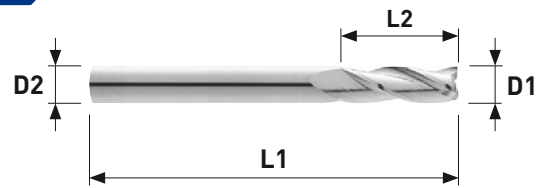
MD
VHM
HM

λ 30°

Sharp
Corner



Z = 3



Art. N°	D1 _{e9}	L2	D2 _{h5}	L1	N	TiAlN	STF
4331-2.0	2.00	8.00	2.00	32	●	●	●
4331-2.5	2.50	8.00	2.50	32	●	●	●
4331-3.0	3.00	12.00	3.00	32	●	●	●
4331-3.5	3.50	12.00	3.50	32	●	●	●
4331-4.0	4.00	12.00	4.00	40	●	●	●
4331-4.5	4.50	14.00	4.50	50	●	●	●
4331-5.0	5.00	14.00	5.00	50	●	●	●
4331-6.0	6.00	16.00	6.00	50	●	●	●



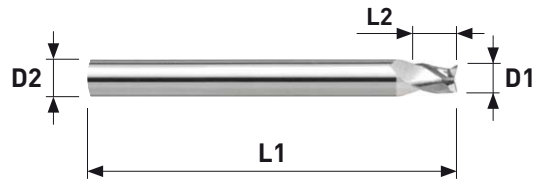
Fraises en bout

Schaftfräser

End mills

MD
VHM
HM λ 30°Sharp
Corner

Z = 3



Art. N°	D1 h10	L2	D2 h5	L1	N	TiAlN	STF
4336-1.5	1.50	3.00	6.00	50	●	●	●
4336-1.8	1.80	3.00	6.00	50	●	●	●
4336-2.0	2.00	3.00	6.00	50	●	●	●
4336-2.5	2.50	3.00	6.00	50	●	●	●
4336-2.8	2.80	4.00	6.00	50	●	●	●
4336-3.0	3.00	4.00	6.00	50	●	●	●
4336-3.5	3.50	4.00	6.00	50	●	●	●
4336-3.8	3.80	5.00	6.00	54	●	●	●
4336-4.0	4.00	5.00	6.00	54	●	●	●
4336-4.5	4.50	5.00	6.00	54	●	●	●
4336-4.8	4.80	6.00	6.00	54	●	●	●
4336-5.0	5.00	6.00	6.00	54	●	●	●
4336-5.5	5.50	7.00	6.00	54	●	●	●
4336-5.8	5.80	7.00	6.00	54	●	●	●
4336-6.0	6.00	7.00	6.00	54	●	●	●



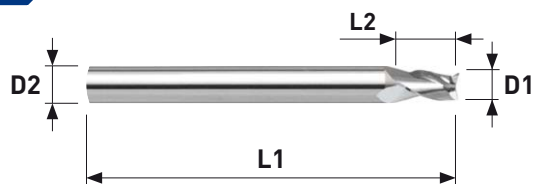
Fraises en bout

Schaftfräser

End mills

MD
VHM
HM λ 30°Sharp
Corner

Z = 3



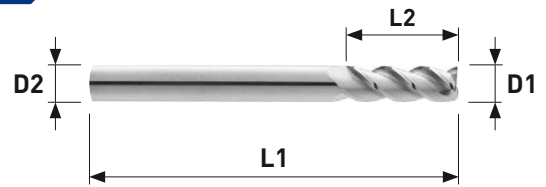
Art. N°	D1 h10	L2	D2 h5	L1	N	TiAlN	STF
4337-1.5	1.50	6.00	6.00	57	●	●	●
4337-1.8	1.80	6.00	6.00	57	●	●	●
4337-2.0	2.00	6.00	6.00	57	●	●	●
4337-2.5	2.50	6.00	6.00	57	●	●	●
4337-2.8	2.80	7.00	6.00	57	●	●	●
4337-3.0	3.00	7.00	6.00	57	●	●	●
4337-3.5	3.50	7.00	6.00	57	●	●	●
4337-3.8	3.80	8.00	6.00	57	●	●	●
4337-4.0	4.00	8.00	6.00	57	●	●	●
4337-4.5	4.50	8.00	6.00	57	●	●	●
4337-4.8	4.80	10.00	6.00	57	●	●	●
4337-5.0	5.00	10.00	6.00	57	●	●	●
4337-5.5	5.50	10.00	6.00	57	●	●	●
4337-5.8	5.80	10.00	6.00	57	●	●	●
4337-6.0	6.00	10.00	6.00	57	●	●	●



Fraises en bout Schaftfräser End mills

MD
VHM
HM λ 45°Sharp
Corner

Z = 3



Art. N°	D1 _{e9}	L2	D2 _{h5}	L1	N	TiAlN	STF
4341-2.0	2.00	8.00	2.00	32	●	●	●
4341-2.5	2.50	8.00	2.50	32	●	●	●
4341-3.0	3.00	12.00	3.00	32	●	●	●
4341-3.5	3.50	12.00	3.50	32	●	●	●
4341-4.0	4.00	12.00	4.00	40	●	●	●
4341-4.5	4.50	14.00	4.50	50	●	●	●
4341-5.0	5.00	14.00	5.00	50	●	●	●
4341-6.0	6.00	16.00	6.00	50	●	●	●



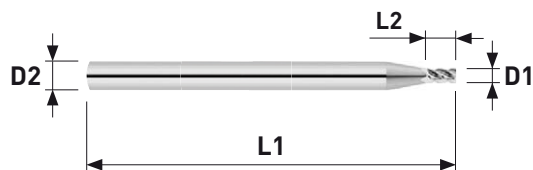
Fraises en bout

Schaftfräser

End mills

MD
VHM
HM λ 45°Sharp
Corner

Z = 3



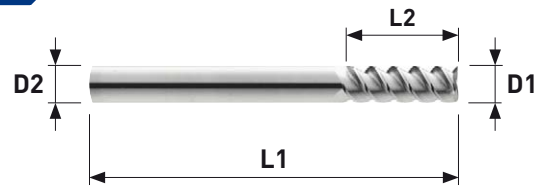
Art. N°	D1 h10	L2	D2 h5	L1	N	TiAlN	STF
4345-0.5-S	0.50	1.00	6.00	40	●	●	●
4345-0.6-S	0.60	1.20	6.00	40	●	●	●
4345-0.7-S	0.70	1.40	6.00	40	●	●	●
4345-0.8-S	0.80	1.60	6.00	40	●	●	●
4345-0.9-S	0.90	1.80	6.00	40	●	●	●
4345-1.0-S	1.00	2.00	6.00	40	●	●	●
4345-1.1-S	1.10	2.20	6.00	40	●	●	●
4345-1.2-S	1.20	2.40	6.00	40	●	●	●
4345-1.3-S	1.30	2.60	6.00	40	●	●	●
4345-1.4-S	1.40	2.80	6.00	40	●	●	●
4345-1.5-S	1.50	3.00	6.00	40	●	●	●
4345-1.6-S	1.60	3.20	6.00	40	●	●	●
4345-1.7-S	1.70	3.40	6.00	40	●	●	●
4345-1.8-S	1.80	3.60	6.00	40	●	●	●
4345-1.9-S	1.90	3.80	6.00	40	●	●	●
4345-2.0-S	2.00	4.00	6.00	40	●	●	●
4345-2.1-S	2.10	4.20	6.00	40	●	●	●
4345-2.2-S	2.20	4.40	6.00	40	●	●	●
4345-2.3-S	2.30	4.60	6.00	40	●	●	●
4345-2.4-S	2.40	4.80	6.00	40	●	●	●
4345-2.5-S	2.50	5.00	6.00	40	●	●	●
4345-2.6-S	2.60	5.20	6.00	40	●	●	●
4345-2.7-S	2.70	5.40	6.00	40	●	●	●
4345-2.8-S	2.80	5.60	6.00	40	●	●	●
4345-2.9-S	2.90	5.80	6.00	40	●	●	●
4345-3.0-S	3.00	6.00	6.00	40	●	●	●
4345-3.5-S	3.50	7.00	6.00	40	●	●	●
4345-4.0-S	4.00	8.00	6.00	40	●	●	●
4345-4.5-S	4.50	9.00	6.00	40	●	●	●
4345-5.0-S	5.00	10.00	6.00	40	●	●	●
4345-6.0-S	6.00	12.00	6.00	40	●	●	●



Fraises en bout Schaftfräser End mills

MD
VHM
HM λ 60°Sharp
Corner

Z = 3



Art. N°	D1 _{e9}	L2	D2 _{h5}	L1	N	TiAlN	STF
4361-2.0	2.00	8.00	2.00	32	●	●	●
4361-2.5	2.50	8.00	2.50	32	●	●	●
4361-3.0	3.00	12.00	3.00	32	●	●	●
4361-3.5	3.50	12.00	3.50	32	●	●	●
4361-4.0	4.00	12.00	4.00	40	●	●	●
4361-4.5	4.50	14.00	4.50	50	●	●	●
4361-5.0	5.00	14.00	5.00	50	●	●	●
4361-6.0	6.00	16.00	6.00	50	●	●	●



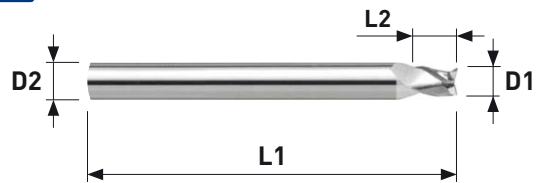
Fraises en bout

Schaftfräser

End mills

MD
VHM
HM λ
35°/38°Sharp
Corner

Z = 3



DHP

Denture à pas irrégulier, hélice progressive
 Ungleiche Teilung, progressive Spirale
 Uneven tooth pitch, progressive helix

Art. N°	D1 h10	L2	D2 h5	L1	N	TiAlN	STF
DHP4336-1.0	1.00	4.00	6.00	40	●	●	●
DHP4336-1.5	1.50	4.00	6.00	40	●	●	●
DHP4336-2.0	2.00	4.00	6.00	40	●	●	●
DHP4336-2.5	2.50	4.00	6.00	40	●	●	●
DHP4336-3.0	3.00	5.00	6.00	40	●	●	●
DHP4336-3.5	3.50	5.00	6.00	40	●	●	●
DHP4336-4.0	4.00	6.00	6.00	40	●	●	●
DHP4336-5.0	5.00	7.00	6.00	40	●	●	●
DHP4336-6.0	6.00	8.00	6.00	40	●	●	●



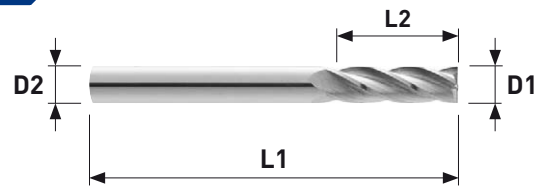
Fraises en bout

Schaftfräser

End mills

MD
VHM
HM λ 30°Sharp
Corner

Z = 4



Art. N°	D1 _{e9}	L2	D2 _{h5}	L1	N	TiAlN	STF
4430-3.0	3.00	3.00	3.00	39	●	●	●
4430-4.0	4.00	4.00	4.00	50	●	●	●
4430-5.0	5.00	5.00	5.00	50	●	●	●
4430-6.0	6.00	6.00	6.00	50	●	●	●



Fraises en bout

Schaftfräser

End mills

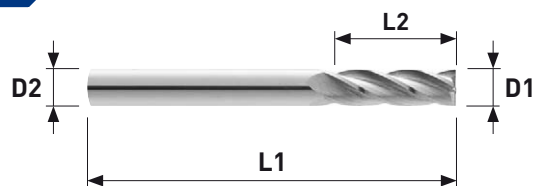
MD
VHM
HM

λ 30°

Sharp
Corner



Z = 4



Art. N°	D1 _{e9}	L2	D2 _{h5}	L1	N	TiAlN	STF
4431-2.0	2.00	8.00	2.00	32	●	●	●
4431-2.5	2.50	8.00	2.50	32	●	●	●
4431-3.0	3.00	12.00	3.00	32	●	●	●
4431-3.5	3.50	12.00	3.50	32	●	●	●
4431-4.0	4.00	12.00	4.00	40	●	●	●
4431-4.5	4.50	14.00	4.50	50	●	●	●
4431-5.0	5.00	14.00	5.00	50	●	●	●
4431-6.0	6.00	16.00	6.00	50	●	●	●



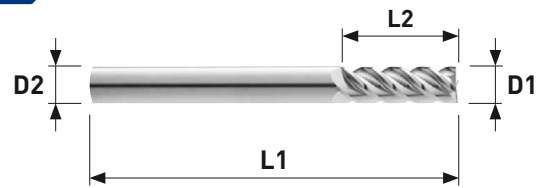
Fraises en bout

Schaftfräser

End mills

MD
VHM
HM λ 45°Sharp
Corner

Z = 4



Art. N°	D1 _{e9}	L2	D2 _{h5}	L1	N	TiAlN	STF
4441-2.0	2.00	8.00	2.00	32	●	●	●
4441-2.5	2.50	8.00	2.50	32	●	●	●
4441-3.0	3.00	12.00	3.00	32	●	●	●
4441-3.5	3.50	12.00	3.50	32	●	●	●
4441-4.0	4.00	12.00	4.00	40	●	●	●
4441-4.5	4.50	14.00	4.50	50	●	●	●
4441-5.0	5.00	14.00	5.00	50	●	●	●
4441-6.0	6.00	16.00	6.00	50	●	●	●



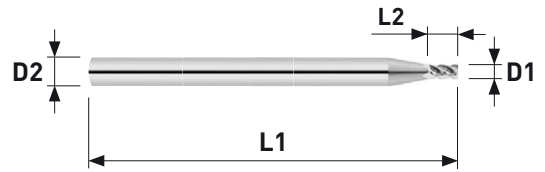
Fraises en bout

Schaftfräser

End mills

MD
VHM
HM λ 45°

Z = 4



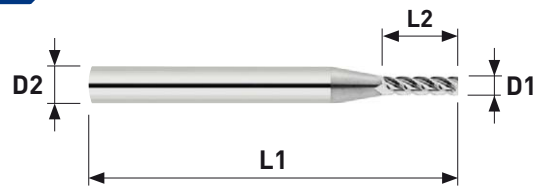
Art. N°	D1 h10	L2	D2 h5	L1	N	TiAlN	STF
4445-0.5-S	0.50	1.00	6.00	40	●	●	●
4445-0.6-S	0.60	1.20	6.00	40	●	●	●
4445-0.7-S	0.70	1.40	6.00	40	●	●	●
4445-0.8-S	0.80	1.60	6.00	40	●	●	●
4445-0.9-S	0.90	1.80	6.00	40	●	●	●
4445-1.0-S	1.00	2.00	6.00	40	●	●	●
4445-1.1-S	1.10	2.20	6.00	40	●	●	●
4445-1.2-S	1.20	2.40	6.00	40	●	●	●
4445-1.3-S	1.30	2.60	6.00	40	●	●	●
4445-1.4-S	1.40	2.80	6.00	40	●	●	●
4445-1.5-S	1.50	3.00	6.00	40	●	●	●
4445-1.6-S	1.60	3.20	6.00	40	●	●	●
4445-1.7-S	1.70	3.40	6.00	40	●	●	●
4445-1.8-S	1.80	3.60	6.00	40	●	●	●
4445-1.9-S	1.90	3.80	6.00	40	●	●	●
4445-2.0-S	2.00	4.00	6.00	40	●	●	●
4445-2.1-S	2.10	4.20	6.00	40	●	●	●
4445-2.2-S	2.20	4.40	6.00	40	●	●	●
4445-2.3-S	2.30	4.60	6.00	40	●	●	●
4445-2.4-S	2.40	4.80	6.00	40	●	●	●
4445-2.5-S	2.50	5.00	6.00	40	●	●	●
4445-2.6-S	2.60	5.20	6.00	40	●	●	●
4445-2.7-S	2.70	5.40	6.00	40	●	●	●
4445-2.8-S	2.80	5.60	6.00	40	●	●	●
4445-2.9-S	2.90	5.80	6.00	40	●	●	●
4445-3.0-S	3.00	6.00	6.00	40	●	●	●
4445-3.5-S	3.50	7.00	6.00	40	●	●	●
4445-4.0-S	4.00	8.00	6.00	40	●	●	●
4445-4.5-S	4.50	9.00	6.00	40	●	●	●
4445-5.0-S	5.00	10.00	6.00	40	●	●	●
4445-6.0-S	6.00	12.00	6.00	40	●	●	●



Fraises en bout Schaftfräser End mills

MD
VHM
HM λ 50°Sharp
Corner

Z = 4



Art. N°	D1 h10	L2	D2 h5	L1	N	TiAlN	STF
4450-1.0	1.00	1.50	6.00	50	●	●	●
4450-1.5	1.50	2.25	6.00	50	●	●	●
4450-2.0	2.00	3.00	6.00	50	●	●	●
4450-2.5	2.50	3.75	6.00	50	●	●	●
4450-3.0	3.00	4.50	6.00	50	●	●	●
4450-3.5	3.50	5.25	6.00	50	●	●	●
4450-4.0	4.00	6.00	6.00	50	●	●	●
4450-5.0	5.00	7.50	6.00	50	●	●	●
4450-6.0	6.00	9.00	6.00	50	●	●	●



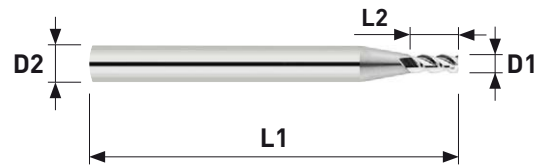
Fraises en bout

Schaftfräser

End mills

MD
VHM
HM λ
35°/38°Sharp
Corner

Z = 4



DHP

Denture à pas irrégulier, hélice progressive
 Ungleiche Teilung, progressive Spirale
 Uneven tooth pitch, progressive helix

Art. N°	D1 h10	L2	D2 h5	L1	N	TiAlN	STF
DHP4436-1.0	1.00	4.00	6.00	40	●	●	●
DHP4436-1.5	1.50	4.00	6.00	40	●	●	●
DHP4436-2.0	2.00	4.00	6.00	40	●	●	●
DHP4436-2.5	2.50	4.00	6.00	40	●	●	●
DHP4436-3.0	3.00	5.00	6.00	40	●	●	●
DHP4436-3.5	3.50	5.00	6.00	40	●	●	●
DHP4436-4.0	4.00	6.00	6.00	40	●	●	●
DHP4436-5.0	5.00	7.00	6.00	40	●	●	●
DHP4436-6.0	6.00	8.00	6.00	40	●	●	●



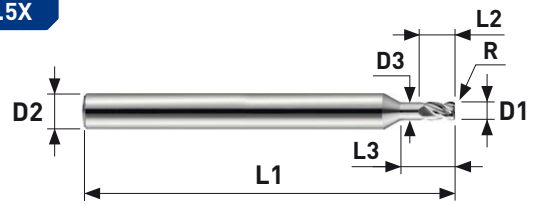
Fraises en bout toriques

Torische Schaftfräser

Toric End mills

MD
VHM
HM λ 30°Radius
CornerL3
2.5xD1

Z = 4



Art. N°	D1 _{h10}	R +/- 0.02	L2	L3	D3	D2 _{h5}	L1	N	TiAlN	STF
4439T-2.5X-3.0	3.00	0.50	3.00	7.50	2.95	6.00	57	●	●	●
4439T-2.5X-3.5	3.50	0.50	3.50	8.75	3.45	6.00	57	●	●	●
4439T-2.5X-4.0	4.00	0.50	4.00	10.00	3.95	6.00	57	●	●	●
4439T-2.5X-4.5	4.50	0.50	4.50	11.25	4.45	6.00	57	●	●	●
4439T-2.5X-5.0	5.00	0.50	5.00	12.50	4.95	6.00	57	●	●	●
4439T-2.5X-5.5	5.50	0.50	5.50	13.75	5.45	6.00	57	●	●	●
4439T-2.5X-6.0	6.00	0.50	6.00	15.00	5.95	6.00	57	●	●	●



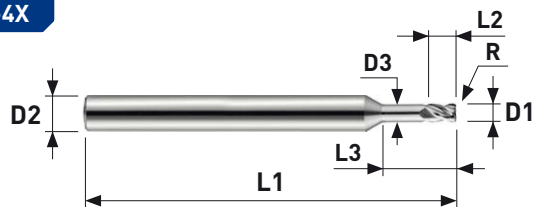
Fraises en bout toriques

Torische Schaftfräser

Toric End mills

MD
VHM
HM λ 30°Radius
CornerL3
4xD1

Z = 4



Art. N°	D1 h10	R +/- 0.02	L2	L3	D3	D2 h5	L1	N	TiAlN	STF
4439T-4X-3.0	3.00	0.50	3.00	12.00	2.95	6.00	57	●	●	●
4439T-4X-3.5	3.50	0.50	3.50	14.00	3.45	6.00	57	●	●	●
4439T-4X-4.0	4.00	0.50	4.00	16.00	3.95	6.00	57	●	●	●
4439T-4X-4.5	4.50	0.50	4.50	18.00	4.45	6.00	57	●	●	●
4439T-4X-5.0	5.00	0.50	5.00	20.00	4.95	6.00	57	●	●	●
4439T-4X-5.5	5.50	0.50	5.50	22.00	5.45	6.00	57	●	●	●
4439T-4X-6.0	6.00	0.50	6.00	24.00	5.95	6.00	57	●	●	●



Fraises en bout

Schaftfräser

End mills

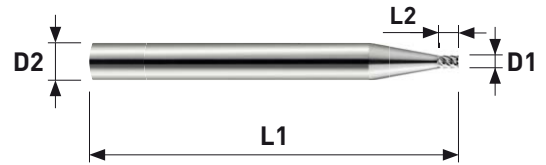
MD
VHM
HM

λ 45°

Sharp
Corner



Z = 5



Art. N°	D1 h10	L2	D2 h5	L1	N	TiAlN	STF
4545-1.0	1.00	1.50	6.00	50	●	●	●
4545-2.0	2.00	3.00	6.00	50	●	●	●
4545-3.0	3.00	4.50	6.00	50	●	●	●
4545-4.0	4.00	6.00	6.00	50	●	●	●
4545-5.0	5.00	7.50	6.00	50	●	●	●
4545-6.0	6.00	9.00	6.00	50	●	●	●



Fraises en bout

Schaftfräser

End mills

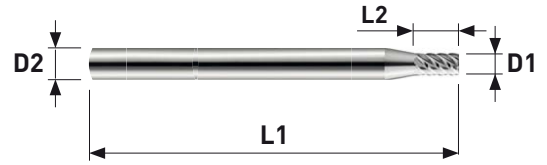
MD
VHM
HM

λ 45°

Sharp
Corner



Z = 4
Z = 5
Z = 6



Art. N°	D1 _{h10}	L2	Z	D2 _{h5}	L1	N	TiAlN	STF
45645-1.0	1.00	2.00	4	6.00	50	●	●	●
45645-1.5	1.50	3.00	5	6.00	50	●	●	●
45645-2.0	2.00	4.00	5	6.00	50	●	●	●
45645-2.5	2.50	5.00	5	6.00	50	●	●	●
45645-3.0	3.00	6.00	5	6.00	50	●	●	●
45645-3.5	3.50	7.00	5	6.00	50	●	●	●
45645-4.0	4.00	8.00	6	6.00	50	●	●	●
45645-4.5	4.50	9.00	6	6.00	50	●	●	●
45645-5.0	5.00	10.00	6	6.00	50	●	●	●
45645-6.0	6.00	12.00	6	6.00	50	●	●	●



Fraises en bout

Schaftfräser

End mills

MD
VHM
HM λ 10°Sharp
Corner

Z = 8



Art. N°	D1 _{e9}	L2	D2 _{h5}	L1	N	TiAlN	STF
4810-0.65-6.0	6.00	4.00	6.00	50	•	•	•
4810-1.0-6.0	6.00	6.00	6.00	57	•	•	•
4810-1.5-6.0	6.00	9.00	6.00	57	•	•	•



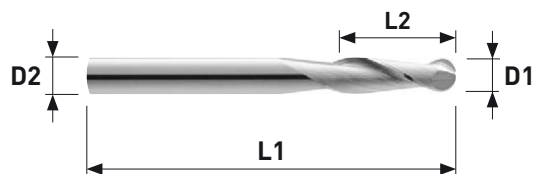
Fraises en bout

Schaftfräser

End mills

MD
VHM
HM λ 30°

Z = 2



Art. N°	D1 _{e9}	L2	D2 _{h5}	L1	N	TiAlN	STF
4238-2.0	2.00	8.00	2.00	32	●	●	●
4238-2.5	2.50	8.00	2.50	32	●	●	●
4238-3.0	3.00	12.00	3.00	32	●	●	●
4238-3.5	3.50	12.00	3.50	32	●	●	●
4238-4.0	4.00	12.00	4.00	40	●	●	●
4238-4.5	4.50	14.00	4.50	50	●	●	●
4238-5.0	5.00	14.00	5.00	50	●	●	●
4238-6.0	6.00	16.00	6.00	50	●	●	●



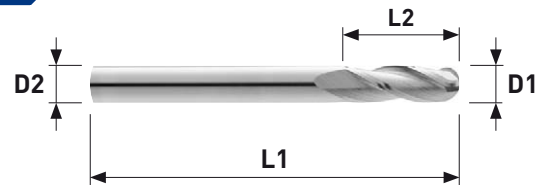
Fraises en bout

Schaftfräser

End mills

MD
VHM
HM $\lambda \ 30^\circ$ 

Z = 3



Art. N°	D1 _{e9}	L2	D2 _{h5}	L1	N	TiAlN	STF
4338-2.0	2.00	8.00	2.00	32	●	●	●
4338-2.5	2.50	8.00	2.50	32	●	●	●
4338-3.0	3.00	12.00	3.00	32	●	●	●
4338-3.5	3.50	12.00	3.50	32	●	●	●
4338-4.0	4.00	12.00	4.00	40	●	●	●
4338-4.5	4.50	14.00	4.50	50	●	●	●
4338-5.0	5.00	14.00	5.00	50	●	●	●
4338-6.0	6.00	16.00	6.00	50	●	●	●



Fraises à angler

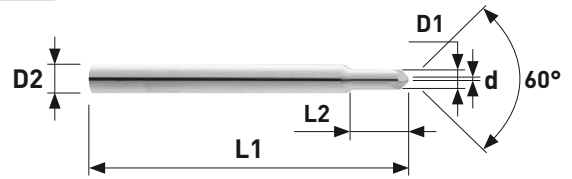
Kegelsenker

Chamfering tools

MD
VHM
HM $\lambda \ 0^\circ$ 

Z = 3

60°



Art. N°	D1 +0.01 -0.01	L2	D2 h4	L1	d	N	TiAlN	STF
4611-0.5	0.50	3.00	3.00	39	0.10	●	●	●
4611-0.6	0.60	3.00	3.00	39	0.10	●	●	●
4611-0.7	0.70	3.00	3.00	39	0.10	●	●	●
4611-0.8	0.80	3.00	3.00	39	0.10	●	●	●
4611-0.9	0.90	3.00	3.00	39	0.10	●	●	●
4611-1.0	1.00	3.00	3.00	39	0.10	●	●	●
4611-1.5	1.50	4.50	3.00	39	0.10	●	●	●
4611-2.0	2.00	6.00	3.00	39	0.10	●	●	●
4611-2.5	2.50	7.50	3.00	39	0.10	●	●	●
4611-3.0	3.00	-	3.00	39	0.10	●	●	●



Fraises à angler

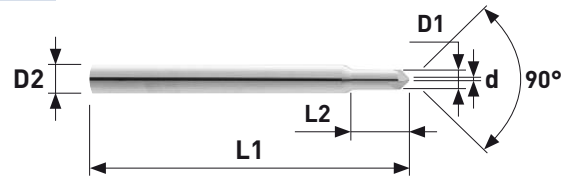
Kegelsenker

Chamfering tools

MD
VHM
HM λ 0°

Z = 3

90°



Art. N°	D1 +0.010 -0.010	L2	D2 h4	L1	d	N	TiAlN	STF
4911-0.30	0.30	2.00	3.00	39	0.05	●	●	●
4911-0.40	0.40	2.00	3.00	39	0.05	●	●	●
4911-0.50	0.50	3.00	3.00	39	0.10	●	●	●
4911-0.60	0.60	3.00	3.00	39	0.10	●	●	●
4911-0.70	0.70	3.00	3.00	39	0.10	●	●	●
4911-0.80	0.80	3.00	3.00	39	0.10	●	●	●
4911-0.90	0.90	3.00	3.00	39	0.10	●	●	●
4911-1.00	1.00	3.00	3.00	39	0.10	●	●	●
4911-1.10	1.10	3.00	3.00	39	0.10	●	●	●
4911-1.20	1.20	3.00	3.00	39	0.10	●	●	●
4911-1.30	1.30	3.00	3.00	39	0.10	●	●	●
4911-1.40	1.40	3.00	3.00	39	0.10	●	●	●
4911-1.50	1.50	4.50	3.00	39	0.10	●	●	●
4911-2.00	2.00	6.00	3.00	39	0.10	●	●	●
4911-2.50	2.50	7.50	3.00	39	0.10	●	●	●
4911-3.00	3.00	-	3.00	39	0.10	●	●	●



Fraises à angler

Kegelsenker

Chamfering tools

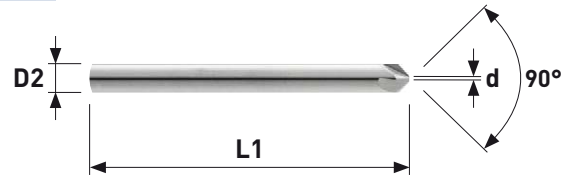
MD
VHM
HM

λ 0°



Z = 4

90°



Art. N°	D2 Ø3h4 Ø6h5 Ø8h6	d	L1	N	TiAlN	STF
4901-3.0	3.00	0.30	39	•	•	•
4901-6.0	6.00	0.70	50	•	•	•
4901-8.0	8.00	1.20	59	•	•	•



Outils pour machine **WM 701S**
Werkzeuge für Maschine **WM 701S**
Executions for machine **WM 701S**



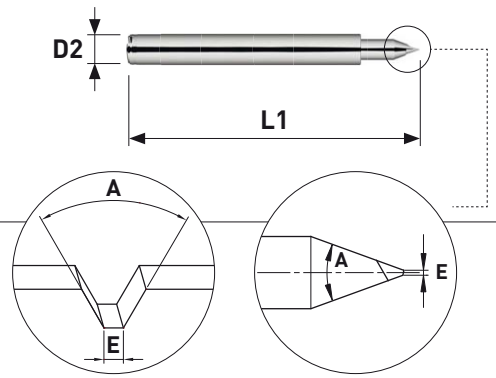
**Tous les outils de notre catalogue sont réalisables
pour la machine WM 701S sur demande.**

**Alle Werkzeuge unseres Katalogs sind machbar
für die Maschine WM 701S auf Anfrage.**

**All tools of our catalogue can be produced for
the machine WM 701S on request.**

Fraises à graver avec plat - WM 701S
Gravierfräser mit Fläche - WM 701S
Engraving mills with flat - WM 701S

MD
VHM
HM



Art. N°	A	E	D2 h4	L1	N	TiAlN	STF	ALFA-TOP
701S2330-P_(E)	30°	0.02-0.10* / 0.10-0.30**	6.00	33	●	●	●	●
701S2335-P_(E)	35°	0.02-0.10* / 0.10-0.30**	6.00	33	●	●	●	●
701S2340-P_(E)	40°	0.02-0.10* / 0.10-0.30**	6.00	33	●	●	●	●
701S2350-P_(E)	50°	0.02-0.10* / 0.10-0.30**	6.00	33	●	●	●	●
701S2360-P_(E)	60°	0.02-0.10* / 0.10-0.30**	6.00	33	●	●	●	●

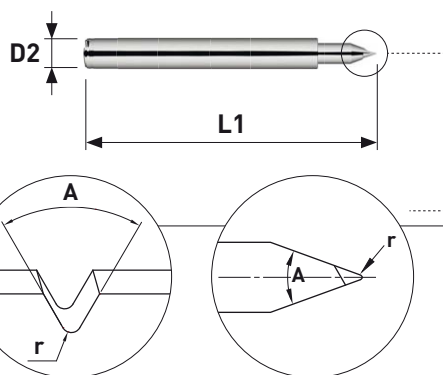
* tous les 0.01 mm
alle 0.01 mm
every 0.01 mm

** tous les 0.05 mm
alle 0.05 mm
every 0.05 mm



Fraises à graver à rayon - WM 701S
Gravierfräser mit Radius - WM 701S
Engraving mills with radius - WM 701S

MD
VHM
HM



Art. N°	A	r	D2 h4	L1	N	TiAlN	STF	ALFA-TOP
701S2330-R_(r)	30°	0.04-0.10* / 0.10-0.30**	6.00	33	●	●	●	●
701S2335-R_(r)	35°	0.04-0.10* / 0.10-0.30**	6.00	33	●	●	●	●
701S2340-R_(r)	40°	0.04-0.10* / 0.10-0.30**	6.00	33	●	●	●	●
701S2350-R_(r)	50°	0.04-0.10* / 0.10-0.30**	6.00	33	●	●	●	●
701S2360-R_(r)	60°	0.04-0.10* / 0.10-0.30**	6.00	33	●	●	●	●

* tous les 0.01 mm
alle 0.01 mm
every 0.01 mm

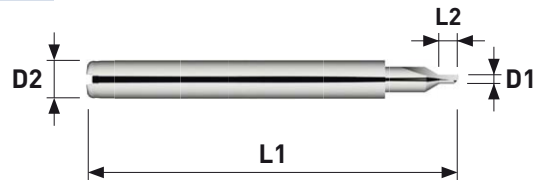
** tous les 0.05 mm
alle 0.05 mm
every 0.05 mm



Fraises en bout - WM 701S

Schaftfräser - WM 701S

End mills - WM 701S



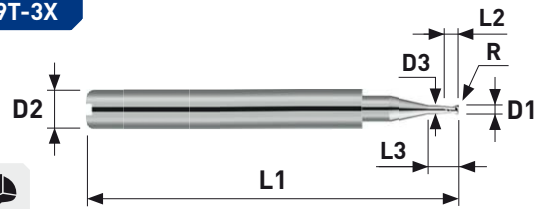
Art. N°	D1 +0.005 -0.010	L2	D2 h4	L1	N	TiAlN	STF	ALFA- TOP
701S4170R-2-0.50	0.50	1.00	6.00	33	●	●	●	●
701S4170R-2-1.00	1.00	2.00	6.00	33	●	●	●	●
701S4170R-2-1.50	1.50	3.00	6.00	33	●	●	●	●
701S4170R-2-2.00	2.00	4.00	6.00	33	●	●	●	●
701S4170R-2-2.50	2.50	5.00	6.00	33	●	●	●	●
701S4170R-2-3.00	3.00	6.00	6.00	33	●	●	●	●



Fraises en bout toriques - WM 701S

Torische Schaftfräser - WM 701S

Toric end mills - WM 701S



Art. N°	D1 +0.005 -0.010	R +/-0.020	L2	L3	D3	D2 h4	L1	N	TiAlN	STF	ALFA- TOP
701S4279T-3X-0.30	0.30	0.05	0.30	0.90	0.27	6.00	33	●	●	●	●
701S4279T-3X-0.40	0.40	0.05	0.40	1.20	0.45	6.00	33	●	●	●	●
701S4279T-3X-0.50	0.50	0.05	0.50	1.50	0.45	6.00	33	●	●	●	●
701S4279T-3X-0.60	0.60	0.05	0.60	1.80	0.55	6.00	33	●	●	●	●
701S4279T-3X-0.80	0.80	0.05	0.80	2.40	0.75	6.00	33	●	●	●	●
701S4279T-3X-1.00	1.00	0.10	1.00	3.00	0.95	6.00	33	●	●	●	●
701S4279T-3X-1.20	1.20	0.10	1.20	3.60	1.15	6.00	33	●	●	●	●
701S4279T-3X-1.50	1.50	0.20	1.50	4.50	1.45	6.00	33	●	●	●	●
701S4279T-3X-1.80	1.80	0.20	1.80	5.40	1.75	6.00	33	●	●	●	●
701S4279T-3X-2.00	2.00	0.20	2.00	6.00	1.95	6.00	33	●	●	●	●
701S4279T-3X-2.50	2.50	0.20	2.50	7.50	2.45	6.00	33	●	●	●	●
701S4279T-3X-3.00	3.00	0.20	3.00	9.00	2.95	6.00	33	●	●	●	●



Fraises en bout - WM 701S

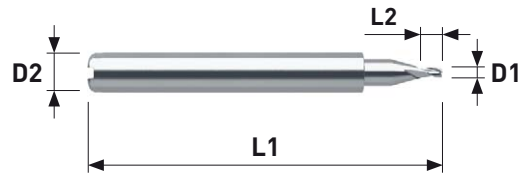
Schaftfräser - WM 701S

End mills - WM 701S

MD
VHM
HM λ 36°
 λ 37°
 λ 38°Sharp
Corner

1xD1

Z = 3



Art. N°	D1 +0.005 -0.010	L2	D2 h4	L1	N	TiAlN	STF	ALFA- TOP
701S4370-1-0.30	0.30	0.30	6.00	33	●	●	●	●
701S4370-1-0.40	0.40	0.40	6.00	33	●	●	●	●
701S4370-1-0.50	0.50	0.50	6.00	33	●	●	●	●
701S4370-1-0.60	0.60	0.60	6.00	33	●	●	●	●
701S4370-1-0.80	0.80	0.80	6.00	33	●	●	●	●
701S4370-1-1.00	1.00	1.00	6.00	33	●	●	●	●
701S4370-1-1.20	1.20	1.20	6.00	33	●	●	●	●
701S4370-1-1.50	1.50	1.50	6.00	33	●	●	●	●
701S4370-1-1.80	1.80	1.80	6.00	33	●	●	●	●
701S4370-1-2.00	2.00	2.00	6.00	33	●	●	●	●
701S4370-1-2.50	2.50	2.50	6.00	33	●	●	●	●
701S4370-1-3.00	3.00	3.00	6.00	33	●	●	●	●
701S4370-1-3.20	3.20	3.20	6.00	33	●	●	●	●



Fraises en bout - WM 701S

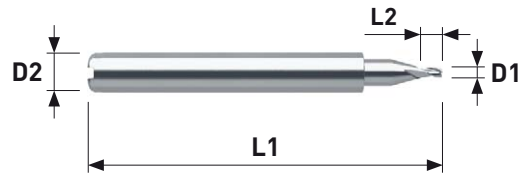
Schافتfräser - WM 701S

End mills - WM 701S

MD
VHM
HM λ 36°
 λ 37°
 λ 38°Sharp
Corner

2xD1

Z = 3



Art. N°	D1 +0.005 -0.010	L2	D2 h4	L1	N	TiAlN	STF	ALFA- TOP
701S4370-2-0.30	0.30	0.60	6.00	33	●	●	●	●
701S4370-2-0.40	0.40	0.80	6.00	33	●	●	●	●
701S4370-2-0.50	0.50	1.00	6.00	33	●	●	●	●
701S4370-2-0.60	0.60	1.20	6.00	33	●	●	●	●
701S4370-2-0.80	0.80	1.60	6.00	33	●	●	●	●
701S4370-2-1.00	1.00	2.00	6.00	33	●	●	●	●
701S4370-2-1.20	1.20	2.40	6.00	33	●	●	●	●
701S4370-2-1.50	1.50	3.00	6.00	33	●	●	●	●
701S4370-2-1.80	1.80	3.60	6.00	33	●	●	●	●
701S4370-2-2.00	2.00	4.00	6.00	33	●	●	●	●
701S4370-2-2.50	2.50	5.00	6.00	33	●	●	●	●
701S4370-2-3.00	3.00	6.00	6.00	33	●	●	●	●



Fraises en bout - WM 701S

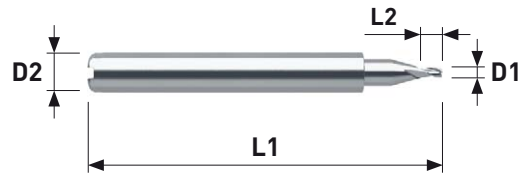
Schaftfräser - WM 701S

End mills - WM 701S

MD
VHM
HM λ 36°
 λ 37°
 λ 38°Sharp
Corner

3xD1

Z = 3



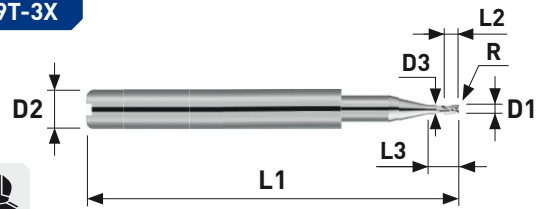
Art. N°	D1 +0.005 -0.010	L2	D2 h4	L1	N	TiAlN	STF	ALFA- TOP
701S4370-3-0.30	0.30	0.90	6.00	33	●	●	●	●
701S4370-3-0.40	0.40	1.20	6.00	33	●	●	●	●
701S4370-3-0.50	0.50	1.50	6.00	33	●	●	●	●
701S4370-3-0.60	0.60	1.80	6.00	33	●	●	●	●
701S4370-3-0.80	0.80	2.40	6.00	33	●	●	●	●
701S4370-3-1.00	1.00	3.00	6.00	33	●	●	●	●
701S4370-3-1.20	1.20	3.60	6.00	33	●	●	●	●
701S4370-3-1.50	1.50	4.50	6.00	33	●	●	●	●
701S4370-3-1.80	1.80	5.40	6.00	33	●	●	●	●
701S4370-3-2.00	2.00	6.00	6.00	33	●	●	●	●
701S4370-3-2.50	2.50	7.50	6.00	33	●	●	●	●



Fraises en bout toriques - WM 701S

Torische Schaftfräser - WM 701S

Toric end mills - WM 701S



Art. N°	D1 +0.005 -0.010	R +/-0.020	L2	L3	D3	D2 h4	L1	N	TiAlN	STF	ALFA- TOP
701S4379T-3X-1.00	1.00	0.10	2.00	3.00	0.95	6.00	33	•	•	•	•
701S4379T-3X-1.50	1.50	0.20	3.00	4.50	1.45	6.00	33	•	•	•	•
701S4379T-3X-2.00	2.00	0.20	4.00	6.00	1.95	6.00	33	•	•	•	•



Fraises à angler - WM 701S
Kegelsenker - WM 701S
Chamfering tools - WM 701S

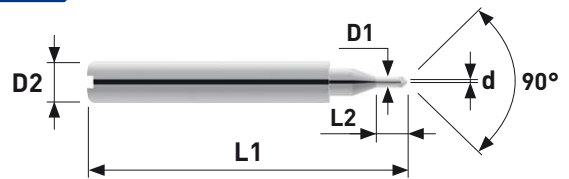
MD
VHM
HM

λ 0°



Z = 3

90°



Art. N°	D1 +0.010 -0.010	L2	D2 h4	L1	d +/-0.020	N	TiAlN	STF	ALFA- TOP
701S4911-0.40	0.40	2.00	6.00	33	0.05	●	●	●	●
701S4911-0.50	0.50	2.50	6.00	33	0.05	●	●	●	●
701S4911-0.60	0.60	2.50	6.00	33	0.05	●	●	●	●
701S4911-1.00	1.00	3.00	6.00	33	0.05	●	●	●	●
701S4911-1.50	1.50	4.50	6.00	33	0.05	●	●	●	●
701S4911-2.00	2.00	4.50	6.00	33	0.05	●	●	●	●



5000



Répertoire **Fraises circulaires MD / Tasseaux**
 Verzeichnis **VHM-Kreissägeblätter / Fräsdorne**
 Index **Carbide slitting saws HM / Milling arbors**

Paramètres
Schnittwerte
Data

5.02-5.03

	Fraises circulaires MD / Tasseaux VHM-Kreissägeblätter / Fräsdorne Carbide slitting saws HM / Milling arbors			
		Type	D	page
Fraises circulaires MD VHM-Kreissägeblätter Carbide slitting saws HM	Denture fine Feine Verzahnung Fine teeth	5101	Ø15 - 160	5.04
	Denture grossière Grosse Verzahnung Large teeth	5102	Ø15 - 160	5.05
	Denture extra-fine Extra feine Verzahnung Extra fine teeth	5103	Ø8 - 80	5.06-5.08
	Denture revêtue pour INOX Verzahnung beschichtet für INOX Teeth coated for INOX	5104	Ø63 - 100	5.09
	Avec un biais Mit Schräge Angled	5105	Ø63 - 100	5.10-5.11
Tasseaux Fräsdorne Milling arbors	Serrage avant R Spannung von vorne R With front clamping R	2810	-	5.13
		2811	-	5.13
	Petit Ø Kleiner Ø Small Ø	2815	-	5.13
	Serrage arrière R Spannung von hinten R With rear clamping R	2820	-	5.14
	Serrage arrière L Spannung von hinten L With rear clamping L	1820	-	5.15
Pièces de rechange Ersatzteile Spare parts				5.16-5.17

Définition du nombre de dents Empfohlene Zähnezahl Recommended number of teeth

Idéalement 2-3 dents en contact

Im Idealfall 2-3 Zähne im Einsatz

Ideally 2-3 teeth in contact

Trop de dents = avance trop faible par dent /
pas assez de place pour le copeau

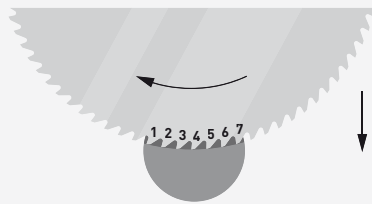
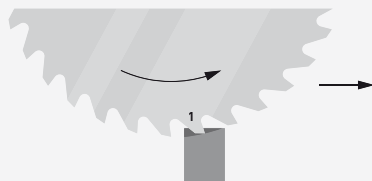
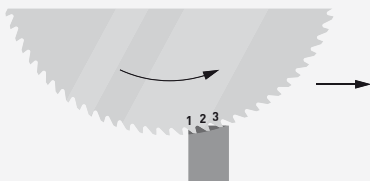
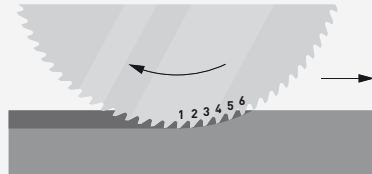
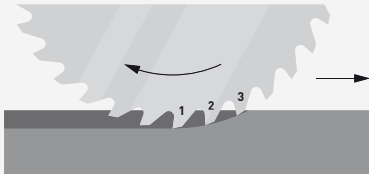
Trop peu de dents = risque de vibration /
usure prématurée

Zu viele Zähne = zu geringer Vorschub pro Zahn /
zu kleiner Spanraum

Zu wenig Zähne = Vibrationen / Verschleissrisiko

Too many teeth = feed too low per tooth /
not enough place for the chips

Not enough teeth = vibration / risk of quick wearout



Paramètres de coupe indicatifs **Fraises circulaires**
 Empfohlene Schnittwerte **Kreissägeblätter**
 Standard machining data **Slitting saws**

Matière Werkstoff Material	Lubrifiant* Kühlung* Coolant*	Vc	Choix de la denture / avance Verzahnungswahl / Vorschub Teeth selection / cutting feed
		[m/min]	
Acier de décolletage Automatenstahl Free-cutting steel (P)	O / E	120 - 240	Type 5101 / 5104 / 5105 - Pour usinage peu profond ou longueur à fendre faible. Avance par dent : 0.005 - 0.05** - Für kleine Bearbeitungstiefen oder kurze Schlitzlängen. Vorschub pro Zahn : 0.005 - 0.05** - For low machining depth or short slots. Feed per tooth : 0.005 - 0.05**
Acier Stahl Stahl <600 N/mm ² (P)	O / E	100 - 200	
Acier Stahl Stahl <800 N/mm ² (P)	O / E	80 - 160	
Acier Stahl Stahl <1000 N/mm ² (P)	O / E	60 - 120	
Acier Stahl Stahl >1000 N/mm ² (P)	O / E	40 - 80	
Fonte Gusseisen Cast iron (K)	A / E	60 - 120	Type 5102 - Pour usinage profond ou grande longueur à fendre. Avance par dent : 0.01 - 0.1** - Für grosse Bearbeitungstiefen oder grosse Schlitzlängen. Vorschub pro Zahn : 0.01 - 0.1** - For deep machining or long slots. Feed per tooth : 0.01 - 0.1**
Acier inoxydable Rostfreistahl Stainless steel (M)	O / E	50 - 100	
Aluminium Si <12 % (N)	O / E	150 - 600	
Aluminium Si >12 % (N)	O / E	80 - 300	
Cuivre, laiton, bronze Kupfer, Messing, Bronze Copper, brass, bronze (N)	A / O / E	80 - 300	
Thermoplastique Thermoplaste Thermoplastics (N)	A	200 - 700	Type 5103 - Pour usinage de pièces fragiles ou fines. Avance par dent : 0.002 - 0.02** - Für die Bearbeitung von empfindlichen oder dünnwandigen Werkstücken. Vorschub pro Zahn : 0.002 - 0.02** - For machining of fragile or thin workpieces. Feed per tooth : 0.002 - 0.02**
Duroplastique Duroplaste Duroplastics (N)	A	150 - 600	
Acier réfractaire Warmfester Stahl Heat resistant steel (S)	O / E	25 - 60	
Titane Titan Titanium (S)	O / E	30 - 60	

Avec revêtement, augmenter les valeurs de 20 %
 Mit Beschichtung, Daten um 20 % erhöhen
 With coating, increase data by 20 %

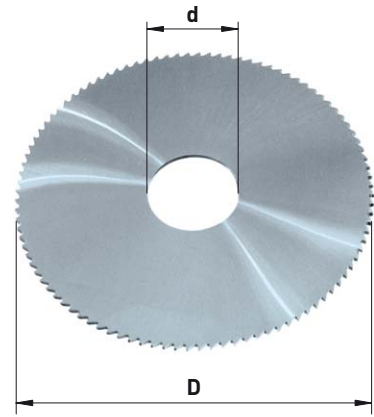
* O = huile de coupe / Schneidöl / cutting oil
 * E = Emulsion
 * A = sec (air comprimé) / Trocken (Pressluft) / dry (air)

** selon la matière, l'épaisseur ainsi que la rigidité globale
 je nach Werkstoffe, Dicke und Gesamtstarrheit
 according to material, thickness and global rigidity

Fraises circulaires Kreissägeblätter Slitting saws

MD
VHM
HM

Art. N° ex :
5101-20/5-1.70 Z32



Denture fine Feine Verzahnung Fine teeth											DIN 1837	
D js12	15	20	25	30	40	50	63	80	100	125	160	
d H7	5	5	8	8	10	13	16	22	22	22	32	
Epaisseur Dicke Thickness	Nombre de dents Zähnezahl Number of teeth											
E ±0.01												
0.10	64	80	80	100	128	-	-	-	-	-	-	
0.15	64	80	80	100	128	-	-	-	-	-	-	
0.20	64	80	80	100	128	128	160	-	-	-	-	
0.25	64	64	80	100	100	128	128	-	-	-	-	
0.30	64	64	80	80	100	128	128	160	-	-	-	
0.35	64	64	64	80	100	100	128	160	-	-	-	
0.40	64	64	64	80	100	100	128	160	-	-	-	
0.45	48	48	64	80	80	100	128	128	-	-	-	
0.50	48	48	64	80	80	100	128	128	160	-	-	
0.60	48	48	64	64	80	100	100	128	160	160	-	
0.70	48	48	48	64	80	80	100	128	128	160	-	
0.80	40	40	48	64	80	80	100	128	128	160	-	
0.90	40	40	48	64	64	80	100	100	128	160	-	
1.00	40	40	48	64	64	80	100	100	128	160	160	
1.10	40	40	48	48	64	80	80	100	128	128	-	
1.20	40	40	48	48	64	80	80	100	128	128	160	
1.30	40	40	40	48	64	64	80	100	100	-	-	
1.40	40	40	40	48	64	64	80	100	100	128	-	
1.50	40	40	40	48	64	64	80	100	100	128	160	
1.60	40	40	40	48	64	64	80	100	100	128	160	
1.70	40	32	40	48	48	64	80	80	100	-	-	
1.80	40	32	40	48	48	64	80	80	100	128	128	
1.90	40	32	40	48	48	64	80	80	100	-	-	
2.00	40	32	40	48	48	64	80	80	100	128	128	
2.50	40	32	40	40	48	64	64	80	100	100	128	
3.00	40	32	32	40	48	48	64	80	80	100	128	
3.50	24	24	32	40	40	48	64	64	80	100	-	
4.00	24	24	32	40	40	48	64	64	80	100	-	
5.00	24	24	32	32	40	48	48	64	80	100	-	
6.00	24	24	24	32	40	40	48	64	64	100	-	

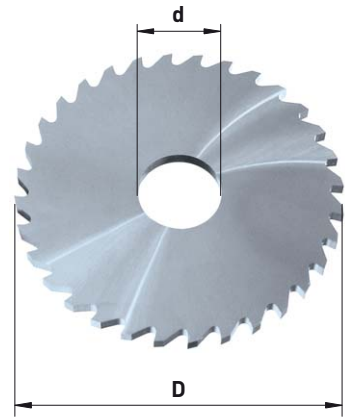
Fraises circulaires

Kreissägeblätter

Slitting saws

MD
VHM
HM

Art. N° ex :
5102-40/10-0.80 Z32



Denture grossière Grobe Verzahnung Large teeth											DIN 1838	
D js12	15	20	25	30	40	50	63	80	100	125	160	
d H7	5	5	8	8	10	13	16	22	22	22	32	
Epaisseur Dicke Thickness	Nombre de dents Zähnezahl Number of teeth											
E ±0.01												
0.20	20	20	20	30	40	-	-	-	-	-	-	
0.25	20	20	20	30	40	-	-	-	-	-	-	
0.30	20	20	20	30	40	-	64	-	-	-	-	
0.40	20	20	20	30	40	48	64	-	-	-	-	
0.50	20	20	20	30	40	48	64	-	-	-	-	
0.60	20	20	20	30	40	48	48	64	80	-	-	
0.70	20	20	20	30	40	40	48	64	64	-	-	
0.80	20	20	20	24	32	40	48	64	64	80	-	
0.90	20	20	20	24	32	40	48	48	64	80	-	
1.00	20	20	20	24	32	40	48	48	64	80	80	
1.20	20	20	20	24	32	40	40	48	64	64	80	
1.50	20	20	20	24	32	32	40	48	48	64	80	
1.60	20	20	20	24	32	32	40	48	48	64	-	
1.80	20	20	20	24	24	32	40	40	48	64	-	
2.00	20	20	20	24	24	32	40	40	48	64	80	
2.50	20	20	20	24	24	32	32	40	48	48	80	
3.00	20	20	20	24	24	24	32	40	40	48	64	
4.00	20	20	20	24	20	24	32	32	40	48	-	
5.00	20	20	20	24	20	24	24	32	40	40	-	
6.00	20	20	20	24	20	20	24	32	32	40	-	



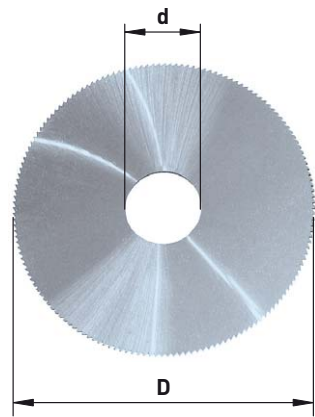
Fraises circulaires

Kreissägeblätter

Slitting saws

MD
VHM
HM

Art. N° ex:
5103-15/5-0.20 Z80



Denture extra-fine Extra feine Verzahnung Extra fine teeth				
D js12	8	10	12	15
d H7	3	3	5	5
Epaisseur Dicke Thickness	Nombre de dents Zähnezahl Number of teeth			
E ±0.005				
0.10	48	64	64	80
0.11	48	64	64	80
0.12	48	64	64	80
0.13	48	64	64	80
0.14	48	64	64	80
0.15	48	64	64	80
0.16	48	64	64	80
0.17	48	64	64	80
0.18	48	64	64	80
0.19	48	64	64	80
0.20	48	64	64	80



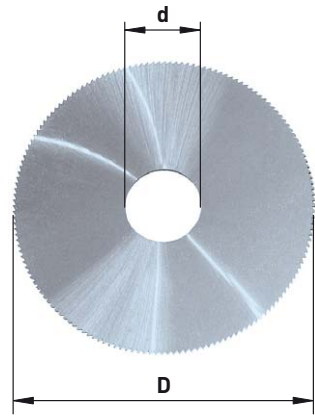
Fraises circulaires

Kreissägeblätter

Slitting saws

MD
VHM
HM

Art. N° ex:
5103-20/6-1.20 Z80



Denture extra-fine Extra feine Verzahnung Extra fine teeth												
D js12	8	10	12	15	20	20	20	25	25	25	30	32
d H7	3	3	5	5	5	5	6	5	6	8	8	8
Epaisseur Dicke Thickness	Nombre de dents Zähnezahl Number of teeth											
E ±0.01												
0.10	**	**	**	**	*	100	80	80	-	-	-	-
0.15	**	**	**	**	*	100	80	80	100	100	-	80
0.20	**	**	**	**	*	100	80	80	100	100	*	80
0.25	48	64	64	80	80	100	80	80	100	100	*	80
0.30	48	64	64	80	80	100	80	80	100	100	100	80
0.35	48	64	64	80	80	-	80	80	100	100	100	80
0.40	48	64	64	80	80	100	80	80	100	100	100	80
0.50	48	64	64	80	80	100	80	80	100	100	100	80
0.60	48	64	64	80	80	-	80	80	100	100	100	80
0.70	48	64	64	80	80	-	80	80	100	100	100	80
0.80	48	64	64	80	80	-	80	80	100	100	100	80
0.90	48	64	64	80	80	-	80	80	100	100	100	80
1.00	48	64	64	80	80	-	80	80	100	100	100	80
1.20	-	-	-	80	80	-	80	80	100	100	100	80
1.50	-	-	-	80	80	-	80	80	100	100	100	80
2.00	-	-	-	80	80	-	80	80	100	100	100	80
2.50	-	-	-	80	80	-	80	80	100	100	100	80
3.00	-	-	-	80	80	-	80	80	100	100	100	80

Dimensions Ø 35 - Ø 80, voir p. 5.08
Abmessungen Ø 35 - Ø 80, siehe S. 5.08
Dimensions Ø 35 - Ø 80, see p. 5.08

* = voir type 5101
* = siehe Typ 5101
* = see type 5101

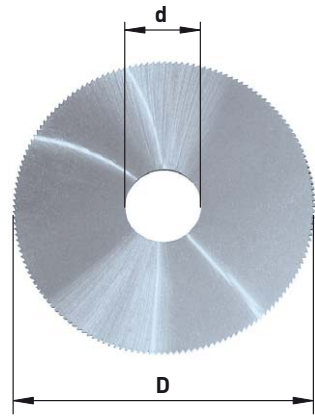
** Epaisseur 0.10 / 0.15 / 0.20, voir p. 5.06
** Dicke 0.10 / 0.15 / 0.20, siehe S. 5.06
** Thickness 0.10 / 0.15 / 0.20, see p. 5.06



Fraises circulaires Kreissägeblätter Slitting saws

MD
VHM
HM

Art. N° ex :
5103-50/10-0.35 Z100



Denture extra-fine Extra feine Verzahnung Extra fine teeth											
D js12	35	40	40	40	40	45	45	50	50	63	80
d H7	8	8	8	10	10	8	8	10	13	16	16
Epaisseur Dicke Thickness E ±0.01	Nombre de dents Zähnezahl Number of teeth										
0.10	-	-	-	-	-	-	-	-	-	-	-
0.15	96	100	160	100	160	100	160	-	-	-	-
0.20	96	100	160	100	160	100	160	100	-	-	-
0.25	96	100	160	*	160	100	160	100	120	120	-
0.30	96	100	160	*	160	100	160	100	120	120	-
0.35	96	100	160	*	160	100	160	100	120	120	-
0.40	96	100	160	*	160	100	160	100	120	120	-
0.50	96	100	160	100	160	100	160	100	120	120	128
0.60	96	100	160	100	160	100	160	100	120	120	128
0.70	96	100	160	100	160	100	160	100	120	120	128
0.80	96	100	160	100	160	100	160	100	120	120	128
0.90	96	100	160	100	160	100	160	100	120	120	128
1.00	96	100	160	100	160	100	160	100	120	120	128
1.20	96	100	160	100	160	100	160	100	120	120	128
1.50	96	100	160	100	160	100	160	100	120	120	128
2.00	96	100	160	100	160	100	160	100	120	120	128
2.50	96	100	160	100	160	100	160	100	120	120	128
3.00	96	100	160	100	160	100	160	100	120	120	128

Dimensions Ø 8 - Ø 32, voir p. 5.07
Abmessungen Ø 8 - Ø 32, siehe S. 5.07
Dimensions Ø 8 - Ø 32, see p. 5.07

* = voir type 5101
* = siehe Typ 5101
* = see type 5101



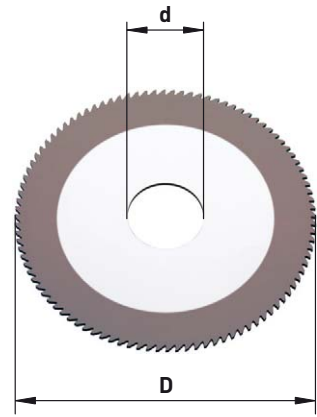
Fraises circulaires

Kreissägeblätter

Slitting saws

MD
VHM
HM

Art. N° ex :
5104-63/16-0.80 Z80-MAXINOX



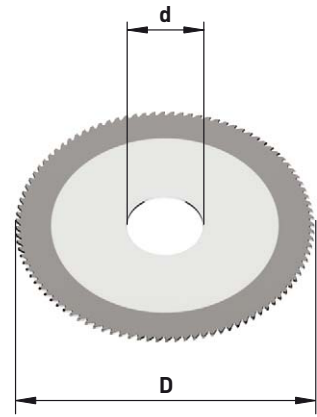
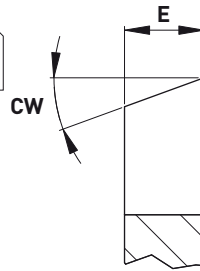
Denture optimisée INOX Optimierte INOX-Verzahnung Optimized INOX teeth				
D js12	63	80	100	Maxinox
d H7	16	22	22	
Epaisseur Dicke Thickness E ±0.01	Nombre de dents Zähnezahl Number of teeth			
0.80	80	100	120	
1.00	80	100	120	



Fraises circulaires avec un biais Kreissägeblätter mit Schräge Angled slitting saw

MD
VHM
HM

CW

Art. N° ex:
5105-100/22-0.60-CW20 Z160-N


Avec un biais Mit Schräge Angled					
D js12	63	80	100	Z	Maxinox
d H7	16	22	22		
CW	20°	20°	20°		
Epaisseur Dicke Thickness E ±0.01	Nombre de dents Zähnezahl Number of teeth				
0.60	100	128	160	●	●
0.80	100	128	128	●	●
1.00	100	100	128	●	●
1.20	80	100	128	●	●



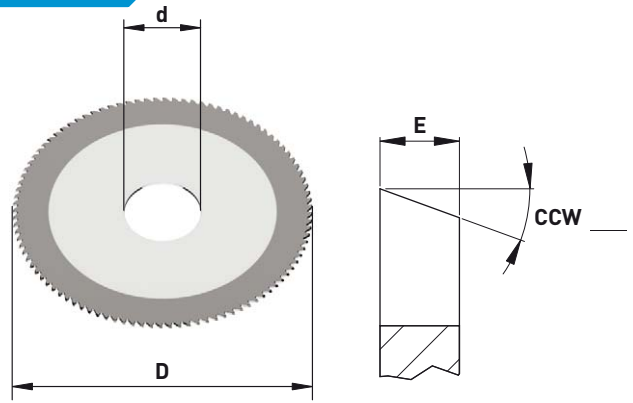
Fraises circulaires avec un biais

Kreissägeblätter mit Schräge

Angled slitting saw

MD
VHM
HM

CCW

Art. N° ex :
5105-100/22-0.60-CCW20 Z160-N

Avec un biais Mit Schräge Angled						
D js12		63	80	100	Z	Maxinox
d H7		16	22	22		
CCW		20°	20°	20°		
Epaisseur Dicke Thickness		Nombre de dents Zähnezahl Number of teeth				
E ±0.01						
0.60		100	128	160	●	●
0.80		100	128	128	●	●
1.00		100	100	128	●	●
1.20		80	100	128	●	●



Exécutions spéciales Sonderanfertigungen Special executions

En complément de l'offre présentée dans le catalogue, des réalisations spéciales peuvent également être effectuées sur demande.

Ergänzend zu unserem Katalogsortiment sind auf Anfrage auch Sonderanfertigungen möglich.

In addition to our catalog range, special executions can also be carried out upon request.

Alésage avec entrée de clavette
Bohrung mit Keilnute
Bore with keyway



Train de fraises
Spezielle Kreissägeblätter im Satz
Special slitting saws in set



Denture à rayon
Radiusfräser
Radius tooth



Denture forme B
Zahnform B
Tooth form B



Denture alternée forme W
Wechselverzahnung Form W
Alternate teeth form W



Denture isocèle
Prismenfräser
Biconical slitting saws



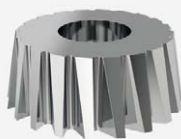
Denture hélicoïdale
Schrägverzahnung
Helical teeth



Revêtement sur demande
Beschichtung auf Anfrage
Coating on request



Denture conique 1 taille
Winkelfräser 1 Schnitt
Conical single cut saw

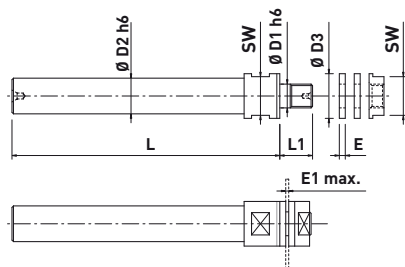


Denture conique 2 tailles
Winkelfräser 2 Schnitt
Conical double cut saw



Tasseaux Fräsdorne Milling arbors

2810
2811
2815



Rotation à droite (filet à droite) Drehrichtung rechts (Rechtsgewinde) Right hand rotation (right hand thread)

Art. N°	D1 h6	M	D2 h6	D3	L	L1	E	SW	E1 max.
2810-5-6	5.0	M5x0.5	6.0	10.0	70	9.0	2.0	8.0	6.0
2810-5-10	5.0	M5x0.5	10.0	10.0	80	9.0	2.0	8.0	6.0
2810-6-10	6.0	M6x0.5	10.0	12.0	80	9.5	2.0	10.0	6.0
2810-8-10	8.0	M8x0.75	10.0	15.0	80	10.0	2.0	13.0	6.0
2810-8-12	8.0	M8x0.75	12.0	15.0	90	10.0	2.0	13.0	6.0
2810-10-6	10.0	M10x0.75	6.0	18.0	80	10.5	2.0	15.0	6.0
2810-10-10	10.0	M10x0.75	10.0	18.0	80	10.5	2.0	15.0	6.0
2810-10-16	10.0	M10x0.75	16.0	18.0	100	10.5	2.0	15.0	6.0
2810-13-16	13.0	M13x1	16.0	22.0	110	11.0	2.0	19.0	6.0
2810-16-20	16.0	M16x1	20.0	26.0	120	12.0	2.0	22.0	6.0
2810-22-16	22.0	M22x1	16.0	32.0	120	12.0	2.0	27.0	6.0

Art. N°	D1 h6	M	D2 h6	D3	L	L1	E	SW	E1 max.
2811-16-10	16.0	M16x1	10.0	22.0	80	8.0	2.0	19.0	3.0

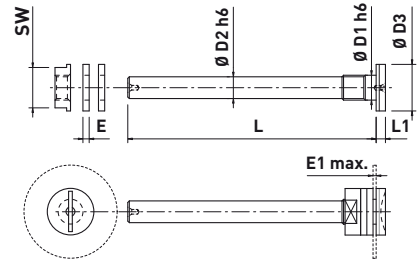
Pour petites fraises circulaires (filet à droite) Für kleine Kreissägeblätter (Rechtsgewinde) For small slitting saws (right hand thread)

Art. N°	D1 h6	M	D2 h6	D3	L	L1	E	SW	E1 max.
2815-3-5	3.0	M3x0.5	5.0	5.0	60	7.0	1.0	4.0	3.0
2815-5-6	5.0	M5x0.5	6.0	7.5	70	7.0	1.0	6.0	3.0

Chaque tasseau est livré avec 2 entretoises et 1 écrou
Jeder Fräsdorn wird mit 2 Abstandsrings und 1 Mutter geliefert
2 distance rings and 1 nut are included with each arbor



Tasseaux Fräsdorne Milling arbors



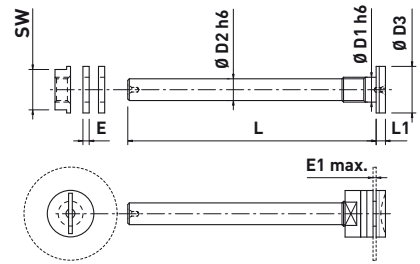
Rotation à droite (filet à gauche)
Drehrichtung rechts (Linksgewinde)
Right hand rotation (left hand thread)

Art. N°	D1 h6	M	D2 h6	D3	L	L1	E	SW	E1 max.
2820-5-4	5.0	M5x0.5	4.0	10.0	50	3.0	2.0	8.0	6.0
2820-6-5	6.0	M6x0.5	5.0	12.0	60	3.0	2.0	10.0	6.0
2820-8-6	8.0	M8x0.75	6.0	15.0	80	3.0	2.0	13.0	6.0
2820-8-7	8.0	M8x0.75	7.0	15.0	80	3.0	2.0	13.0	6.0
2820-10-6	10.0	M10x0.75	6.0	18.0	70	3.5	2.0	15.0	6.0
2820-10-8	10.0	M10x0.75	8.0	18.0	90	3.5	2.0	15.0	6.0
2820-13-10	13.0	M13x1	10.0	22.0	110	3.5	2.0	19.0	6.0
2820-16-12	16.0	M16x1	12.0	26.0	120	3.5	2.0	22.0	6.0



Chaque tasseau est livré avec 2 entretoises et 1 écrou
Jeder Fräsdorn wird mit 2 Abstandsrings und 1 Mutter geliefert
2 distance rings and 1 nut are included with each arbor

Tasseaux Fräsdorne Milling arbors



Rotation à gauche (filet à droite)
Drehrichtung links (Rechtsgewinde)
Left hand rotation (right hand thread)

Art. N°	D1 h6	M	D2 h6	D3	L	L1	E	SW	E1 max.
1820-5-4	5.0	M5x0.5	4.0	10.0	50	3.0	2.0	8.0	6.0
1820-6-5	6.0	M6x0.5	5.0	12.0	60	3.0	2.0	10.0	6.0
1820-8-6	8.0	M8x0.75	6.0	15.0	70	3.0	2.0	13.0	6.0
1820-10-6	10.0	M10x0.75	6.0	18.0	70	3.5	2.0	15.0	6.0

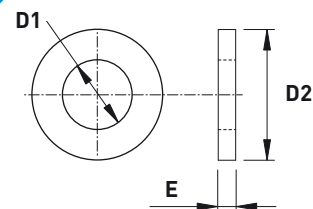
Chaque tasseau est livré avec 2 entretoises et 1 écrou
Jeder Fräsdorn wird mit 2 Abstandsrings und 1 Mutter geliefert
2 distance rings and 1 nut are included with each arbor



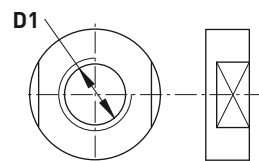
Entretoise

Abstandsring

Ring



Art. N°	E	D1	D2
1820-5-A1	1.0	5	10.0
1820-5-A2	2.0		10.0
1820-6-A1	1.0	6	12.0
1820-6-A2	2.0		12.0
1820-8-A1	1.0	8	15.0
1820-8-A2	2.0		15.0
1820-10-A1	1.0	10	18.0
1820-10-A2	2.0		18.0
2810-5-A1	1.0	5	10.0
2810-5-A2	2.0		10.0
2810-6-A1	1.0	6	12.0
2810-6-A2	2.0		12.0
2810-8-A1	1.0	8	15.0
2810-8-A2	2.0		15.0
2810-10-A1	1.0	10	18.0
2810-10-A2	2.0		18.0
2810-13-A1	1.0	13	22.0
2810-13-A2	2.0		22.0
2810-16-A1	1.0	16	26.0
2810-16-A2	2.0		26.0
2810-22-A1	1.0	22	32.0
2810-22-A2	2.0		32.0
2811-16-A1	1.0	16	22.0
2811-16-A2	2.0		22.0
2815-3-A1	1.0	3	5.0
2815-5-A1	1.0	5	7.5
2820-5-A1	1.0	5	10.0
2820-5-A2	2.0		10.0
2820-6-A1	1.0	6	12.0
2820-6-A2	2.0		12.0
2820-8-A1	1.0	8	15.0
2820-8-A2	2.0		15.0
2820-10-A1	1.0	10	18.0
2820-10-A2	2.0		18.0
2820-13-A1	1.0	13	22.0
2820-13-A2	2.0		22.0
2820-16-A1	1.0	16	26.0
2820-16-A2	2.0		26.0



Art. N°	D1	M
1820-5-B	5.0	M5x0.5
1820-6-B	6.0	M6x0.5
1820-8-B	8.0	M8x0.75
1820-10-B	10.0	M10x0.75
2810-5-B	5.0	M5x0.5
2810-6-B	6.0	M6x0.5
2810-8-B	8.0	M8x0.75
2810-10-B	10.0	M10x0.75
2810-13-B	13.0	M13x1
2810-16-B	16.0	M16x1
2810-22-B	22.0	M22x1
2811-16-B	16.0	M16x1
2815-3-B	3.0	M3x0.5
2815-5-B	5.0	M5x0.5
2820-5-B	5.0	M5x0.5
2820-6-B	6.0	M6x0.5
2820-8-B	8.0	M8x0.75
2820-10-B	10.0	M10x0.75
2820-13-B	13.0	M13x1
2820-16-B	16.0	M16x1

Informations techniques et symboles

Technische Informationen und Symbole

Technical information and symbols

 60° 90° 120°	Angle Winkel Angle	 Sharp Corner	Coin vif Scharfkantige Ecke Sharp corner
 λ 25°	Angle d'hélice Spiralwinkel Helix angle		Fraises hémisphériques Radiusfräser End mills with ball nose
 λ 36° λ 38° λ 40°	Hélice différente Unterschiedliche Spirale Different helix	 Radius Corner	Rayon de coin Eckradius Corner radius
 λ 35°/38°	Hélice progressive Progressive Spirale Progressive helix		Dents avec coupe centrale Zähne Zentrumschnitt Teeth center cutting
 Z	Nombre de dents Anzahl der Zähne Number of teeth		Denture décalée Versetzte Verzahnung Alternated teeth
 2xD1	Rapport longueur-diamètre Länge-Durchmesser Verhältnis Length to diameter ratio	 DHD	Denture à pas irrégulier, hélice différente Ungleiche Teilung, unterschiedliche Spirale Uneven tooth pitch, different helix
	Lèvres, affûtage à facettes Schneiden, Facettenschärfen Flutes, sharpening with facets	 DHP	Denture à pas irrégulier, hélice progressive Ungleiche Teilung, progressive Spirale Uneven tooth pitch, progressive helix
	Taillage demi-lune Kanonenbohrer Spitze Gun drills tip		Usinage torique Torusbearbeitung Toroidal machining
	Taillage renforcé 3/4 3/4 genuteter Fräser 3/4 straight fluted	 CW	Sens horaire Uhrzeigersinn Clockwise
	Usinage radial, diagonal et axial Radiale, diagonale und axiale Bearbeitung Radial, diagonal and axial machining	 CCW	Sens antihoraire Gegenuhrzeigersinn Counterclockwise
	Usinage radial et axial Radiale und axiale Bearbeitung Radial and axial machining	 MD VHM HM	Métal dur Vollhartmetall Hard metal
 45° E	Chanfrein Fase Chamfer		

Nuances Sorten Grades

N

Non revêtu
Unbeschichtet
Uncoated

- Carbures de haute qualité, adaptés aux différents groupes de produits
- Tous les carbures ont une excellente dureté et une bonne résistance à la déformation
- Acuité d'arête maximale grâce à une finition super polie
- Idéal pour l'usinage en super finition de matières non ferreuses ou faiblement alliées

- Hochwertige und spezifische Hartmetalle gemäss den Produktgruppen
- Alle Hartmetalle haben eine ausgezeichnete Härte und eine gute Verformungsbeständigkeit
- Maximale Kantenschärfe durch hochpoliertes Finish
- Ideal für superfinish Bearbeitung von Nichteisen- oder niedriglegierten Materialien

- High-quality and specific carbides according to the product groups
- All carbides have excellent hardness and good resistance to deformation
- Maximum edge sharpness thanks to a super polished tool finish
- Ideal for super-finish machining of non-ferrous or low-alloy materials

TiAlN

Revêtement PVD à couche mince
Dünnschicht PVD Beschichtung
Thin PVD coating

- Revêtement de dernière génération couche mince et lisse
- Idéal pour tous les aciers et aciers inoxydables
- Bonne condition pour les grades de titane et les alliages de nickel
- Excellente variante universelle pour un fraisage en finition ou ébauche
- Très bonne résistance à la température

- Neuesten Generation Beschichtung, dünne und glatte Schicht
- Hervorragend für alle Stähle und rostfreie Stähle
- Guter Zustand für Titan- und Nickellegierungssorten
- Ausgezeichnete Universalsorte zum Schlicht- oder Schruppfräsen
- Sehr gute Temperaturbeständigkeit

- Latest generation coating thin and smooth layer
- Specially adapted for our tools Ideal for all basic steels and stainless steels
- Good condition for titanium grades and nickel alloys
- Excellent universal variant for finishing or rough milling
- Very good temperature resistance

STF

Revêtement PVD à couche mince
Dünnschicht PVD Beschichtung
Thin PVD coating

- Revêtement de haute performance
- Premier choix pour les alliages de chrome/nickel, inox, titane, zirconium
- Spécialement adapté aux matières extrêmes en général

- Hochleistungsbeschichtung
- Erste Wahl für Chrom/Nickel, rostfreier Stahl, Titan, Zirkoniumlegierungen
- Speziell angepasst für extreme Materialien im Allgemeinen

- High performance coating
- First choice for chrome/nickel, stainless steel, titanium, zirconium alloys
- Specially adapted to extreme materials in general

TiCN

Revêtement PVD à couche mince
Dünnschicht PVD Beschichtung
Thin PVD coating

- Revêtement de dernière génération offrant une excellente adhérence, avec une couche mince et lisse
- Idéal pour le fraisage en finition de tous les aciers et aciers inoxydables
- Excellente nuance pour les outils de petits diamètres (0.02-0.90 mm)

- Beschichtung der neuesten Generation mit ausgezeichneter Haftung, dünner und glatter Schicht
- Hervorragend für Schlichtfräsen aller Stähle und rostfreien Stähle
- Ausgezeichnete Sorte für Werkzeuge mit kleinem Durchmesser (0.02-0.90 mm)

- Latest generation coating with excellent adhesion, thin and smooth layer
- Ideal for finish milling of all steels and stainless steels
- Specially adapted for small diameters (0.02-0.90 mm)

ALFATOP

Revêtement DLC à couche mince
Dünnschicht DLC Beschichtung
Thin DLC coating

- Revêtement de très haute performance et à couche extra-mince
- Très faible coefficient de frottement
- Premier choix pour toutes les matières précieuses, non ferreuses et abrasives, telles que l'or, l'argent, le laiton sans plomb, le cuivre, l'aluminium, la fibre de carbone, la nacre et divers polymères...
- Angles de coupe à finition poli miroir, offrant une excellente acuité d'arête
- Durée de vie de l'outil considérablement prolongée

- Hochleistungsbeschichtung mit extra-feiner Schicht
- Sehr geringer Reibwert
- Erste Wahl für alle edlen, NE- und abrasiven Materialien wie Gold, Silber, bleifreies Messing, Kupfer, Aluminium, Kohlefaser, Perlmutt und diverse Polymere...
- Schneidkanten mit geläppter Oberfläche, die eine hervorragende Schneidkantenschärfe bieten
- Deutlich verlängerte Lebensdauer des Werkzeugs

- Very high-performance coating with extra-thin layer
- Very low friction ratio
- First choice for all precious, non-ferrous and abrasive materials, such as gold, silver, lead-free brass, copper, aluminum, carbon fiber, mother-of-pearl and various polymers...
- Cutting edges with mirror-polished finish, offering excellent edge sharpness
- Significantly extended tool life

Informations techniques et symboles Technische Informationen und Symbole Technical information and symbols

Diamètre outil Werkzeugdurchmesser Tool diameter	D (mm)		
Nombre de dents Zähnezahl Number of teeth	Z		
Profondeur de coupe Schnitttiefe Cutting depth	ap (mm)		
Largeur de coupe Schnittbreite Cutting width	ae (mm)		
Vitesse de coupe Schnittgeschwindigkeit Cutting speed	(m/min)	Vc =	$\frac{D \times \pi \times n}{1000}$
Nombre de tours Umdrehungen Rotations	(U/min)	n =	$\frac{Vc \times 1000}{\pi \times D}$
Avance par dent Vorschub pro Zahn Cutting feed per teeth	(mm)	fz =	$\frac{Vf}{n \times Z}$
Vitesse d'avance Vorschubgeschwindigkeit Feed rate	(mm/min)	Vf =	fz x Z x n
Débit d'enlèvement de copeaux Spanvolumen Chip flow rate	(mm ³ /min)	Q =	ap x ae x Vf
Avance par tour Vorschub pro Umdrehung Cutting feed per rotation	(mm/U)	f =	$\frac{Vf}{n}$

Nos propositions techniques s'appliquent à la plupart des utilisations courantes.
N'hésitez pas à nous contacter pour des conseils plus précis.

Diese technische Empfehlungen gelten für die Mehrzahl der Standardanwendungen.
Unsere Techniker beraten Sie gerne für spezifische Anliegen.

These technical propositions apply to the majority of standard usages.
Do not hesitate to contact us for more specific advices.

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