Paramètres de coupe indicatifs
Empfohlene Schnittwerte
Standard machining data


matière Werkstoff material	lubrifiant* Kühlung* coolant*	Forets en métal dur VHM-Bohrer Solid carbide drills				Alésoirs en métal dur VHM-Reibahlen Solid carbide reamers			
		Vc	avance par tour Vorschub per Umdrehung Feed per rotation mm / ↻			Vc	avance par tour Vorschub per Umdrehung Feed per rotation mm / ↻		
		m / min	Ø1-4	Ø 4-8	Ø 8-12	m / min	Ø 1-4	Ø 4-8	Ø 8-12
acier de décolletage Automatenstahl free-cutting steel	O / E	90 - 120	0.02 - 0.05	0.05 - 0.07	0.07 - 0.10	15 - 22	0.12	0.16	0.25
acier < 600 N/mm2 Stahl steel	O / E	80 - 110	0.01 - 0.04	0.04 - 0.06	0.06 - 0.08	10 - 18	0.10	0.15	0.20
acier < 800 N/mm2 Stahl steel	O / E	70 - 100	0.01 - 0.03	0.03 - 0.05	0.05 - 0.07	8 - 15	0.10	0.13	0.16
acier < 1000 N/mm2 Stahl steel	O / E	60 - 80	0.01 - 0.03	0.03 - 0.05	0.05 - 0.07	6 - 12	0.07	0.10	0.13
acier > 1000 N/mm2 Stahl steel	O / E	30 - 50	0.01 - 0.02	0.02 - 0.04	0.04 - 0.06	5 - 10	0.05	0.08	0.10
acier inoxydable rostfreier Stahl stainless steel	O / E	30 - 50	0.01 - 0.03	0.03 - 0.05	0.05 - 0.08	8 - 12	0.04	0.06	0.08
acier réfractaire warmfester Stahl heat resistant steel	O / E	20 - 40	0.01 - 0.02	0.02 - 0.03	0.03 - 0.05	5 - 10	0.03	0.05	0.07
fonte Gusseisen cast iron	A / E	70 - 100	0.03 - 0.05	0.05 - 0.07	0.07 - 0.10	8 - 12	0.20	0.25	0.30
Aluminium Si < 12%	O / E	100 - 150	0.04 - 0.06	0.06 - 0.10	0.10 - 0.14	20 - 35	0.20	0.25	0.30
Aluminium Si > 12 %	O /E	50 - 100	0.02 - 0.04	0.04 - 0.06	0.06 - 0.09	10 - 22	0.10	0.15	0.20
titane Titan titanium	O / E	30 - 50	0.01 - 0.02	0.02 - 0.04	0.04 - 0.08	6 - 10	0.08	0.10	0.12
cuivre, laiton, bronze Kupfer, Messing, Bronze copper, brass, bronze	A / O / E	60 - 100	0.03 - 0.06	0.06 - 0.10	0.10 - 0.15	15 - 40	0.15	0.20	0.30
thermoplastique Thermoplaste thermoplastics	A	80 - 150	0.03 - 0.04	0.04 - 0.06	0.06 - 0.08	15 - 35	0.10	0.15	0.20
duroplastique Duroplaste duroplastics	A	60 - 120	0.03 - 0.05	0.05 - 0.08	0.08 - 0.12	15 - 35	0.10	0.15	0.20

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

avec revêtement TiN / TiCN / TiALN, augmenter les valeurs de 20%
mit TiN / TiCN / TiALN Beschichtung, Daten um 20% erhöhen
with TiN / TiCN / TiALN coating, increase data by 20 %

Paramètres de coupe indicatifs
Empfohlene Schnittwerte
Standard machining data

matière Werkstoff material	lubrifiant* Kühlung* coolant*	Micro-fraises de précision en métal dur Vollhartmetall Micropräzisionsfräser Solid carbide precision micro end mills			Fraises en bout en métal dur VHM-Schaftfräser Solid carbide end mills			
		Vc	avance par dent Vorschub pro Zahn Feed per tooth mm / Z		Vc	avance par dent Vorschub pro Zahn Feed per tooth mm / Z		
		m / min	Ø 0.2-1.2	Ø 1.3-2.9	m / min	Ø 3-4	Ø 4-8	Ø 8-12
acier de décolletage Automatenstahl free-cutting steel	O / E	30 - 100	0.002 - 0.010	0.005 - 0.020	100 - 150	0.015 - 0.04	0.02 - 0.05	0.04 - 0.08
acier Stahl < 600 N/mm2 steel	O / E	30 - 90	0.002 - 0.008	0.005 - 0.015	80 - 120	0.01 - 0.03	0.02 - 0.04	0.03 - 0.07
acier Stahl < 800 N/mm2 steel	O / E	30 - 80	0.001 - 0.008	0.005 - 0.015	70 - 100	0.01 - 0.02	0.015 - 0.03	0.02 - 0.05
acier Stahl < 1000 N/mm2 steel	O / E	30 - 60	0.001 - 0.008	0.003 - 0.012	50 - 80	0.01 - 0.02	0.015 - 0.03	0.02 - 0.05
acier Stahl > 1000 N/mm2 steel	O / E	25 - 60	0.001 - 0.005	0.002 - 0.012	30 - 60	0.01 - 0.02	0.015 - 0.03	0.02 - 0.05
acier inoxydable rostfreier Stahl stainless steel	O / E	30 - 70	0.001 - 0.008	0.004 - 0.020	40 - 80	0.01 - 0.03	0.01 - 0.04	0.02 - 0.05
acier réfractaire warmfester Stahl heat resistant steel	O / E	20 - 50	0.001 - 0.005	0.002 - 0.012	20 - 50	0.01 - 0.03	0.01 - 0.04	0.02 - 0.05
fonte Gusseisen cast iron	A / E	30 - 100	0.002 - 0.010	0.004 - 0.020	60 - 100	0.01 - 0.03	0.012 - 0.04	0.03 - 0.06
Aluminium Si < 12%	O / E	100 - 300	0.002 - 0.010	0.005 - 0.020	250 - 400	0.02 - 0.05	0.02 - 0.06	0.03 - 0.10
Aluminium Si > 12 %	O /E	80 - 250	0.002 - 0.008	0.005 - 0.018	120 - 250	0.015 - 0.04	0.02 - 0.05	0.03 - 0.08
titane Titan titanium	O / E	25 - 40	0.001 - 0.008	0.003 - 0.010	25 - 50	0.01 - 0.03	0.02 - 0.04	0.03 - 0.05
cuivre, laiton, bronze Kupfer, Messing, Bronze copper, brass, bronze	A / O / E	60 - 200	0.002 - 0.010	0.004 - 0.020	100 - 300	0.015 - 0.04	0.03 - 0.06	0.03 - 0.08
thermoplastique Thermoplaste thermoplastics	A	80 - 250	0.003 - 0.012	0.008 - 0.025	120 - 200	0.02 - 0.05	0.03 - 0.07	0.04 - 0.10
duroplastique Duroplaste duroplastics	A	60 - 180	0.003 - 0.012	0.008 - 0.025	80 - 120	0.02 - 0.05	0.03 - 0.07	0.04 - 0.10

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

avec revêtement TiN / TiCN / TiALN, augmenter les valeurs de 20%
mit TiN / TiCN / TiALN Beschichtung, Daten um 20% erhöhen
with TiN / TiCN / TiALN coating, increase data by 20 %

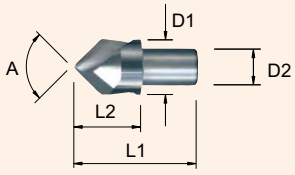
Forets à centrer plat
Zentrierflachbohrer
Centering flat drills

Type 1200 L

A	D	L	métal dur Vollhartmetall solid carbide Art. N°
90°	3	13	1200-313
90°	3	17	1200-317
90°	3	38	1200-338
90°	4	40	1200-440
90°	5	50	1200-550
90°	6	50	1200-650
90°	8	58	1200-858
90°	10	66	1200-1066
90°	12	73	1200-1273

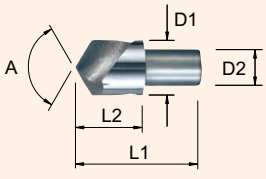
Forets à centrer hélicoïdaux
Zentrierspiralbohrer
Centering twist drills

Type 1500 L



A	D1	D2	L1	L2	HSS Art. N°	métal dur Vollhartmetall solid carbide Art. N°
90°	5	4	17	8	1500-5-HSS	1500-5-MD
90°	7	5	17	8	1500-7-HSS	1500-7-MD
90°	10	6	22	10	1500-10-HSS	1500-10-MD
90°	12	8	26	12	1500-12-HSS	1500-12-MD

Type 1510 L

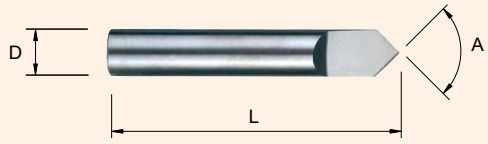


120°	5	4	17	8	1510-5-HSS	1510-5-MD
120°	7	5	17	8	1510-7-HSS	1510-7-MD
120°	10	6	22	10	1510-10-HSS	1510-10-MD
120°	12	8	26	12	1510-12-HSS	1510-12-MD

Revêtement sur demande
Beschichtung auf Anfrage
Coating on request

Forets à centrer plat
Zentrierflachbohrer
Centering flat drills

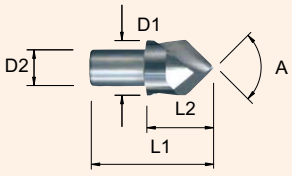
Type 2200 R



A	D	L	métal dur Vollhartmetall solid carbide Art. N°
90°	3	13	2200-313
90°	3	17	2200-317
90°	3	38	2200-338
90°	4	40	2200-440
90°	5	50	2200-550
90°	6	50	2200-650
90°	8	58	2200-858
90°	10	66	2200-1066
90°	12	73	2200-1273

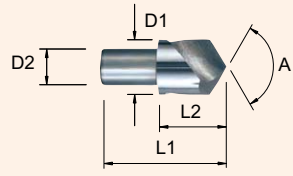
Forets à centrer hélicoïdaux
Zentrierspiralbohrer
Centering twist drills

Type 2520 R



A	D1	D2	L1	L2	HSS Art. N°	métal dur Vollhartmetall solid carbide Art. N°
90°	5	4	17	8	2520-5-HSS	2520-5-MD
90°	7	5	17	8	2520-7-HSS	2520-7-MD
90°	10	6	22	10	2520-10-HSS	2520-10-MD
90°	12	8	26	12	2520-12-HSS	2520-12-MD

Type 2530 R

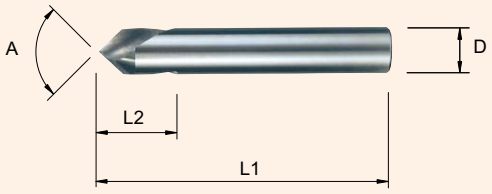


120°	5	4	17	8	2530-5-HSS	2530-5-MD
120°	7	5	17	8	2530-7-HSS	2530-7-MD
120°	10	6	22	10	2530-10-HSS	2530-10-MD
120°	12	8	26	12	2530-12-HSS	2530-12-MD

Revêtement sur demande
Beschichtung auf Anfrage
Coating on request

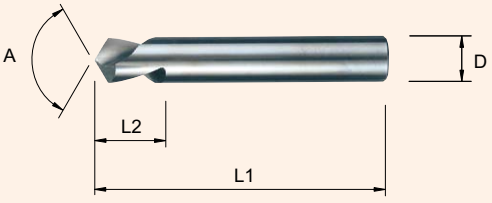
Forets à centrer NC
NC-Zentrierbohrer
NC centering tools

Type 1680 L 90°



A	D	L1	L2	HSS Art. N°	métal dur Vollhartmetall solid carbide Art. N°
90°	2	38	8	---	1680-2-90-MD
90°	2.5	38	8	---	1680-2.5-90-MD
90°	3	38	10	1680-3-90-HSS	1680-3-90-MD
90°	4	50	12	1680-4-90-HSS	1680-4-90-MD
90°	5	50	15	1680-5-90-HSS	1680-5-90-MD
90°	6	57	16	1680-6-90-HSS	1680-6-90-MD
90°	8	63	20	1680-8-90-HSS	1680-8-90-MD
90°	10	72	22	1680-10-90-HSS	1680-10-90-MD
90°	12	73	24	1680-12-90-HSS	1680-12-90-MD
90°	16	82	26	---	1680-16-90-MD
90°	20	92	30	---	1680-20-90-MD

Type 1680 L 120°

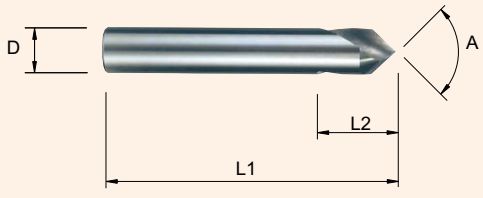


A	D	L1	L2	HSS Art. N°	métal dur Vollhartmetall solid carbide Art. N°
120°	2	38	8	---	1680-2-120-MD
120°	2.5	38	8	---	1680-2.5-120-MD
120°	3	38	10	1680-3-120-HSS	1680-3-120-MD
120°	4	50	12	1680-4-120-HSS	1680-4-120-MD
120°	5	50	15	1680-5-120-HSS	1680-5-120-MD
120°	6	57	16	1680-6-120-HSS	1680-6-120-MD
120°	8	63	20	1680-8-120-HSS	1680-8-120-MD
120°	10	72	22	1680-10-120-HSS	1680-10-120-MD
120°	12	73	24	1680-12-120-HSS	1680-12-120-MD
120°	16	82	26	---	1680-16-120-MD
120°	20	92	30	---	1680-20-120-MD

Revêtement sur demande
Beschichtung auf Anfrage
Coating on request

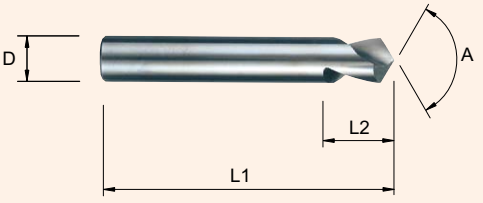
Forets à centrer NC
NC-Zentrierbohrer
NC centering tools

Type 2680 R 90°



A	D	L1	L2	HSS Art. N°	métal dur Vollhartmetall solid carbide Art. N°
90°	2	38	8	---	2680-2-90-MD
90°	2.5	38	8	---	2680-2.5-90-MD
90°	3	38	10	2680-3-90-HSS	2680-3-90-MD
90°	4	50	12	2680-4-90-HSS	2680-4-90-MD
90°	5	50	15	2680-5-90-HSS	2680-5-90-MD
90°	6	57	16	2680-6-90-HSS	2680-6-90-MD
90°	8	63	20	2680-8-90-HSS	2680-8-90-MD
90°	10	72	22	2680-10-90-HSS	2680-10-90-MD
90°	12	73	24	2680-12-90-HSS	2680-12-90-MD
90°	16	82	26	---	2680-16-90-MD
90°	20	92	30	---	2680-20-90-MD

Type 2680 R 120°

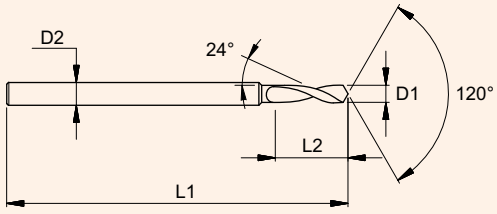


A	D	L1	L2	HSS Art. N°	métal dur Vollhartmetall solid carbide Art. N°
120°	2	38	8	---	2680-2-120-MD
120°	2.5	38	8	---	2680-2.5-120-MD
120°	3	38	10	2680-3-120-HSS	2680-3-120-MD
120°	4	50	12	2680-4-120-HSS	2680-4-120-MD
120°	5	50	15	2680-5-120-HSS	2680-5-120-MD
120°	6	57	16	2680-6-120-HSS	2680-6-120-MD
120°	8	63	20	2680-8-120-HSS	2680-8-120-MD
120°	10	72	22	2680-10-120-HSS	2680-10-120-MD
120°	12	73	24	2680-12-120-HSS	2680-12-120-MD
120°	16	82	26	---	2680-16-120-MD
120°	20	92	30	---	2680-20-120-MD

Revêtement sur demande
Beschichtung auf Anfrage
Coating on request

Forets pointeurs en métal dur
Vollhartmetall Anbohrer
Solid carbide spot drills

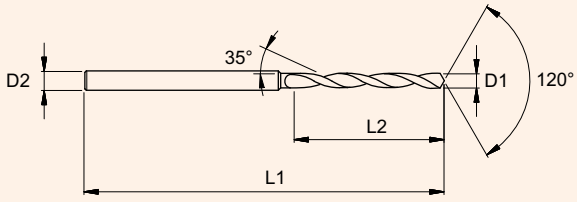
Type 2012 R



D1 h6	D2 h6	L1	L2	D1 h6	D2 h6	L1	L2
0.50	1.5	30	1.7	**1.30**	1.5	30	4.2
0.55	1.5	30	1.9	**1.40**	1.5	30	4.7
0.60	1.5	30	1.9	**1.50**	2.0	38	4.7
0.65	1.5	30	1.9	**1.60**	2.0	38	5.4
0.70	1.5	30	2.4	**1.70**	2.0	38	5.4
0.75	1.5	30	2.4	**1.80**	2.0	38	6.5
0.80	1.5	30	2.6	**1.90**	2.0	38	6.5
0.85	1.5	30	2.6	**2.00**	2.5	38	6.5
0.90	1.5	30	3.0	**2.10**	2.5	38	6.5
0.95	1.5	30	3.0	**2.20**	2.5	38	6.5
1.00	1.5	30	3.4	**2.30**	2.5	38	6.5
1.10	1.5	30	3.8	**2.40**	2.5	38	6.5
1.20	1.5	30	4.2				

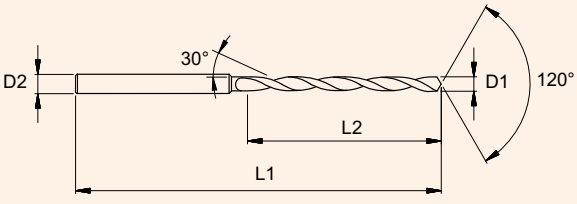
Micro forets en métal dur
Vollhartmetall Mikro-Bohrer
Solid carbide micro drills

Type 2013 R



D1 h6	D2 h6	L1	L2	D1 h6	D2 h6	L1	L2
0.40	1.0	25	3.6	**1.10**	1.5	30	9.0
0.45	1.0	25	3.6	**1.15**	1.5	30	9.0
0.50	1.0	25	4.0	**1.20**	1.5	30	10.0
0.55	1.0	25	4.5	**1.25**	1.5	30	10.0
0.60	1.0	25	4.5	**1.30**	1.5	30	10.0
0.65	1.0	25	5.0	**1.35**	1.5	30	11.2
0.70	1.0	25	5.6	**1.40**	1.5	30	11.2
0.75	1.0	25	5.6	**1.45**	1.5	30	11.2
0.80	1.5	30	6.3	**1.50**	2.0	38	12.0
0.85	1.5	30	6.3	**1.60**	2.0	38	12.0
0.90	1.5	30	7.1	**1.70**	2.0	38	12.0
0.95	1.5	30	7.1	**1.80**	2.0	38	12.0
1.00	1.5	30	8.0	**1.90**	2.0	38	12.0
1.05	1.5	30	8.0				

Type 2014 R

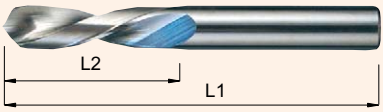


D1 h6	D2 h6	L1	L2	D1 h6	D2 h6	L1	L2
0.50	1.5	30	6.0	**1.25**	1.5	38	15.0
0.55	1.5	30	6.5	**1.30**	1.5	38	17.0
0.60	1.5	30	6.5	**1.35**	1.5	38	17.0
0.65	1.5	30	7.5	**1.40**	1.5	38	17.0
0.70	1.5	30	8.5	**1.45**	1.5	38	17.0
0.75	1.5	30	8.5	**1.50**	2.0	38	18.0
0.80	1.5	30	9.5	**1.55**	2.0	38	18.0
0.85	1.5	30	9.5	**1.60**	2.0	38	18.0
0.90	1.5	30	10.5	**1.65**	2.0	38	18.0
0.95	1.5	30	10.5	**1.70**	2.0	38	18.0
1.00	1.5	38	12.0	**1.75**	2.0	38	18.0
1.05	1.5	38	12.0	**1.80**	2.0	38	18.0
1.10	1.5	38	13.5	**1.85**	2.0	38	18.0
1.15	1.5	38	13.5	**1.90**	2.0	38	18.0
1.20	1.5	38	15.0	**1.95**	2.0	38	18.0

Revêtement sur demande
Beschichtung auf Anfrage
Coating on request

forets hélicoïdaux en métal dur
Vollhartmetall Spiralbohrer
Solid carbide twist drills

Type CLASSIC	Art. N° 1010	L

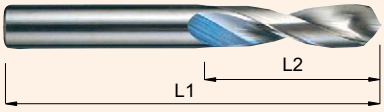


Revêtement sur demande

Beschichtung auf Anfrage

Coating on request

Type CLASSIC	Art. N° 2010	R



D h6	L1	L2
0.50	30	5
0.55	30	5
0.60	30	5
0.65	30	6
0.70	30	6
0.75	30	8
0.80	30	8
0.85	30	9
0.90	30	9
0.95	30	10
1.00	30	10
1.05	30	10
1.10	30	10
1.15	30	12
1.20	30	12
1.25	30	12
1.30	30	12
1.35	30	12
1.40	30	12
1.45	30	12
1.50	30	12
1.55	40	16
1.60	40	16
1.65	40	16
1.70	40	16
1.75	40	16
1.80	40	16
1.85	40	16
1.90	40	16
1.95	40	16
2.00	40	16
2.05	40	18
2.10	40	18
2.15	40	18
2.20	40	18
2.25	40	18
2.30	40	18
2.35	40	18
2.40	40	18
2.45	40	18
2.50	40	18

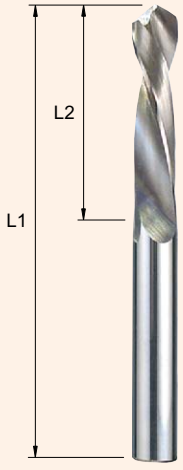
D h6	L1	L2
2.55	45	18
2.60	45	18
2.65	45	18
2.70	45	18
2.75	45	18
2.80	45	18
2.85	45	18
2.90	45	18
2.95	45	18
3.00	45	18
3.10	50	20
3.20	50	20
3.30	50	20
3.40	50	20
3.50	50	20
3.60	50	20
3.70	50	20
3.80	50	20
3.90	50	20
4.00	50	20
4.10	50	25
4.20	50	25
4.30	50	25
4.40	50	25
4.50	50	25
4.60	50	25
4.70	50	25
4.80	50	25
4.90	50	25
5.00	50	25
5.10	50	25
5.20	50	25
5.30	50	25
5.40	50	25
5.50	50	25
5.60	50	25
5.70	50	25
5.80	50	25
5.90	50	25
6.00	50	25

D h6	L1	L2
0.50	30	5
0.55	30	5
0.60	30	5
0.65	30	6
0.70	30	6
0.75	30	8
0.80	30	8
0.85	30	9
0.90	30	9
0.95	30	10
1.00	30	10
1.05	30	10
1.10	30	10
1.15	30	12
1.20	30	12
1.25	30	12
1.30	30	12
1.35	30	12
1.40	30	12
1.45	30	12
1.50	30	12
1.55	40	16
1.60	40	16
1.65	40	16
1.70	40	16
1.75	40	16
1.80	40	16
1.85	40	16
1.90	40	16
1.95	40	16
2.00	40	16
2.05	40	18
2.10	40	18
2.15	40	18
2.20	40	18
2.25	40	18
2.30	40	18
2.35	40	18
2.40	40	18
2.45	40	18
2.50	40	18

D h6	L1	L2
2.55	45	18
2.60	45	18
2.65	45	18
2.70	45	18
2.75	45	18
2.80	45	18
2.85	45	18
2.90	45	18
2.95	45	18
3.00	45	18
3.10	50	20
3.20	50	20
3.30	50	20
3.40	50	20
3.50	50	20
3.60	50	20
3.70	50	20
3.80	50	20
3.90	50	20
4.00	50	20
4.10	50	25
4.20	50	25
4.30	50	25
4.40	50	25
4.50	50	25
4.60	50	25
4.70	50	25
4.80	50	25
4.90	50	25
5.00	50	25
5.10	50	25
5.20	50	25
5.30	50	25
5.40	50	25
5.50	50	25
5.60	50	25
5.70	50	25
5.80	50	25
5.90	50	25
6.00	50	25

Forets à hélice progressive en métal dur
Vollhartmetall Bohrer mit progressiver Spirale
Solid carbide twist drills with progressive spiral

Type WINNER DIN 1897	Art. N° 1005	L

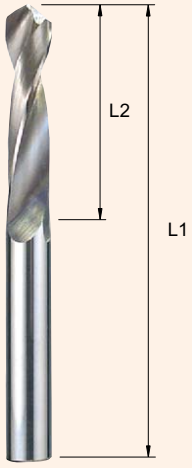


D h6	L1	L2	D h6	L1	L2
1.50	32	9	4.50	58	24
1.55	34	10	4.60	58	24
1.60	34	10	4.70	58	24
1.65	34	10	4.80	62	26
1.70	34	10	4.90	62	26
1.75	36	11	5.00	62	26
1.80	36	11	5.10	62	26
1.85	36	11	5.20	62	26
1.90	36	11	5.30	62	26
1.95	38	12	5.40	66	28
2.00	38	12	5.50	66	28
2.05	38	12	5.60	66	28
2.10	38	12	5.70	66	28
2.15	40	13	5.80	66	28
2.20	40	13	5.90	66	28
2.25	40	13	6.00	66	28
2.30	40	13	6.10	70	31
2.35	40	13	6.20	70	31
2.40	43	14	6.30	70	31
2.45	43	14	6.40	70	31
2.50	43	14	6.50	70	31
2.55	43	14	6.60	70	31
2.60	43	14	6.70	70	31
2.65	43	14	6.80	74	34
2.70	46	16	6.90	74	34
2.75	46	16	7.00	74	34
2.80	46	16	7.10	74	34
2.85	46	16	7.20	74	34
2.90	46	16	7.30	74	34
2.95	46	16	7.40	74	34
3.00	46	16	7.50	79	37
3.10	49	18	7.60	79	37
3.20	49	18	7.70	79	37
3.30	49	18	7.80	79	37
3.40	52	20	7.90	79	37
3.50	52	20	8.00	79	37
3.60	52	20	8.20	79	37
3.70	52	20	8.50	79	37
3.80	55	22	8.80	84	40
3.90	55	22	9.00	84	40
4.00	55	22	9.20	84	40
4.10	55	22	9.50	84	40
4.20	55	22	9.80	89	43
4.30	58	24	10.00	89	43
4.40	58	24			

Revêtement sur demande
Beschichtung auf Anfrage
Coating on request

Forets à hélice progressive en métal dur
Vollhartmetall Bohrer mit progressiver Spirale
Solid carbide twist drills with progressive spiral

Type WINNER DIN 1897	Art. N° 2005	R

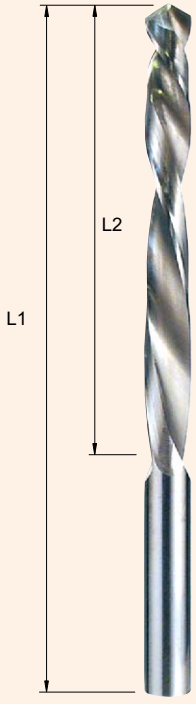


D h6	L1	L2	D h6	L1	L2
1.50	32	9	4.50	58	24
1.55	34	10	4.60	58	24
1.60	34	10	4.70	58	24
1.65	34	10	4.80	62	26
1.70	34	10	4.90	62	26
1.75	36	11	5.00	62	26
1.80	36	11	5.10	62	26
1.85	36	11	5.20	62	26
1.90	36	11	5.30	62	26
1.95	38	12	5.40	66	28
2.00	38	12	5.50	66	28
2.05	38	12	5.60	66	28
2.10	38	12	5.70	66	28
2.15	40	13	5.80	66	28
2.20	40	13	5.90	66	28
2.25	40	13	6.00	66	28
2.30	40	13	6.10	70	31
2.35	40	13	6.20	70	31
2.40	43	14	6.30	70	31
2.45	43	14	6.40	70	31
2.50	43	14	6.50	70	31
2.55	43	14	6.60	70	31
2.60	43	14	6.70	70	31
2.65	43	14	6.80	74	34
2.70	46	16	6.90	74	34
2.75	46	16	7.00	74	34
2.80	46	16	7.10	74	34
2.85	46	16	7.20	74	34
2.90	46	16	7.30	74	34
2.95	46	16	7.40	74	34
3.00	46	16	7.50	79	37
3.10	49	18	7.60	79	37
3.20	49	18	7.70	79	37
3.30	49	18	7.80	79	37
3.40	52	20	7.90	79	37
3.50	52	20	8.00	79	37
3.60	52	20	8.20	79	37
3.70	52	20	8.50	79	37
3.80	55	22	8.80	84	40
3.90	55	22	9.00	84	40
4.00	55	22	9.20	84	40
4.10	55	22	9.50	84	40
4.20	55	22	9.80	89	43
4.30	58	24	10.00	89	43
4.40	58	24			

Revêtement sur demande
Beschichtung auf Anfrage
Coating on request

Forets à hélice progressive en métal dur
Vollhartmetall Bohrer mit progressiver Spirale
Solid carbide twist drills with progressive spiral

Type WINNER DIN 338	Art. N° 1006	L



D h6	L1	L2
1.50	40	18
1.55	43	20
1.60	43	20
1.65	43	20
1.70	43	20
1.75	46	22
1.80	46	22
1.85	46	22
1.90	46	22
1.95	49	24
2.00	49	24
2.05	49	24
2.10	49	24
2.15	53	27
2.20	53	27
2.25	53	27
2.30	53	27
2.35	53	27
2.40	57	30
2.45	57	30
2.50	57	30
2.55	57	30
2.60	57	30
2.65	57	30
2.70	61	33
2.75	61	33
2.80	61	33
2.85	61	33
2.90	61	33
2.95	61	33
3.00	61	33
3.10	65	36
3.20	65	36
3.30	65	36
3.40	70	39
3.50	70	39
3.60	70	39
3.70	70	39
3.80	75	43
3.90	75	43
4.00	75	43
4.10	75	43
4.20	75	43
4.30	80	47
4.40	80	47

D h6	L1	L2
4.50	80	47
4.60	80	47
4.70	80	47
4.80	86	52
4.90	86	52
5.00	86	52
5.10	86	52
5.20	86	52
5.30	86	52
5.40	93	57
5.50	93	57
5.60	93	57
5.70	93	57
5.80	93	57
5.90	93	27
6.00	93	27

Revêtement sur demande
Beschichtung auf Anfrage
Coating on request

Forets à hélice progressive en métal dur
Vollhartmetall Bohrer mit progressiver Spirale
Solid carbide twist drills with progressive spiral

Type WINNER DIN 338	Art. N° 2006	R

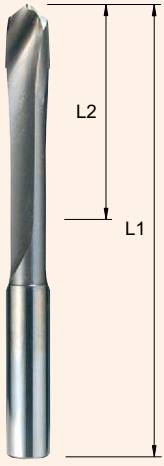
D h6	L1	L2
1.50	40	18
1.55	43	20
1.60	43	20
1.65	43	20
1.70	43	20
1.75	46	22
1.80	46	22
1.85	46	22
1.90	46	22
1.95	49	24
2.00	49	24
2.05	49	24
2.10	49	24
2.15	53	27
2.20	53	27
2.25	53	27
2.30	53	27
2.35	53	27
2.40	57	30
2.45	57	30
2.50	57	30
2.55	57	30
2.60	57	30
2.65	57	30
2.70	61	33
2.75	61	33
2.80	61	33
2.85	61	33
2.90	61	33
2.95	61	33
3.00	61	33
3.10	65	36
3.20	65	36
3.30	65	36
3.40	70	39
3.50	70	39
3.60	70	39
3.70	70	39
3.80	75	43
3.90	75	43
4.00	75	43
4.10	75	43
4.20	75	43
4.30	80	47
4.40	80	47

D h6	L1	L2
4.50	80	47
4.60	80	47
4.70	80	47
4.80	86	52
4.90	86	52
5.00	86	52
5.10	86	52
5.20	86	52
5.30	86	52
5.40	93	57
5.50	93	57
5.60	93	57
5.70	93	57
5.80	93	57
5.90	93	57
6.00	93	57

Revêtement sur demande
Beschichtung auf Anfrage
Coating on request

Forets à hélice partielle en métal dur
Vollhartmetall Bohrer mit Spiralspitze
Solid carbide drills with partial spiral

Type THOR DIN 1897	Art. N° 2000	R

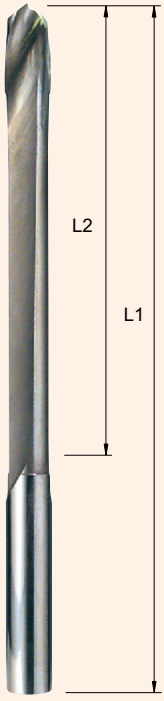


D h6	L1	L2	D h6	L1	L2
1.50	32	9	4.50	58	24
1.55	34	10	4.60	58	24
1.60	34	10	4.70	58	24
1.65	34	10	4.80	62	26
1.70	34	10	4.90	62	26
1.75	36	11	5.00	62	26
1.80	36	11	5.10	62	26
1.85	36	11	5.20	62	26
1.90	36	11	5.30	62	26
1.95	38	12	5.40	66	28
2.00	38	12	5.50	66	28
2.05	38	12	5.60	66	28
2.10	38	12	5.70	66	28
2.15	40	13	5.80	66	28
2.20	40	13	5.90	66	28
2.25	40	13	6.00	66	28
2.30	40	13	6.10	70	31
2.35	40	13	6.20	70	31
2.40	43	14	6.30	70	31
2.45	43	14	6.40	70	31
2.50	43	14	6.50	70	31
2.55	43	14	6.60	70	31
2.60	43	14	6.70	70	31
2.65	43	14	6.80	74	34
2.70	46	16	6.90	74	34
2.75	46	16	7.00	74	34
2.80	46	16	7.10	74	34
2.85	46	16	7.20	74	34
2.90	46	16	7.30	74	34
2.95	46	16	7.40	74	34
3.00	46	16	7.50	79	37
3.10	49	18	7.60	79	37
3.20	49	18	7.70	79	37
3.30	49	18	7.80	79	37
3.40	52	20	7.90	79	37
3.50	52	20	8.00	79	37
3.60	52	20	8.20	79	37
3.70	52	20	8.50	79	37
3.80	55	22	8.80	84	40
3.90	55	22	9.00	84	40
4.00	55	22	9.20	84	40
4.10	55	22	9.50	84	40
4.20	55	22	9.80	89	43
4.30	58	24	10.00	89	43
4.40	58	24			

Revêtement sur demande
Beschichtung auf Anfrage
Coating on request

Forets à hélice partielle en métal dur
Vollhartmetall Bohrer mit Spiralspitze
Solid carbide drills with partial spiral

Type THOR DIN 338	Art. N° 2001	R



D h6	L1	L2
2.00	49	24
2.05	49	24
2.10	49	24
2.15	53	27
2.20	53	27
2.25	53	27
2.30	53	27
2.35	53	27
2.40	57	30
2.45	57	30
2.50	57	30
2.55	57	30
2.60	57	30
2.65	57	30
2.70	61	33
2.75	61	33
2.80	61	33
2.85	61	33
2.90	61	33
2.95	61	33
3.00	61	33
3.10	65	36
3.20	65	36
3.30	65	36
3.40	70	39
3.50	70	39
3.60	70	39
3.70	70	39
3.80	75	43
3.90	75	43
4.00	75	43
4.10	75	43
4.20	75	43
4.30	80	47
4.40	80	47
4.50	80	47
4.60	80	47
4.70	80	47
4.80	86	52
4.90	86	52
5.00	86	52
5.10	86	52

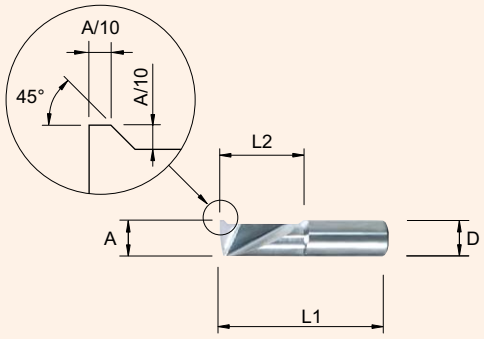
D h6	L1	L2
5.20	86	52
5.30	86	52
5.40	93	57
5.50	93	57
5.60	93	57
5.70	93	57
5.80	93	57
5.90	93	57
6.00	93	57

Revêtement sur demande
Beschichtung auf Anfrage
Coating on request

Burins intérieurs en métal dur
Vollhartmetall Innendrehwerkzeuge
Solid carbide internal turning tools

Type 1600

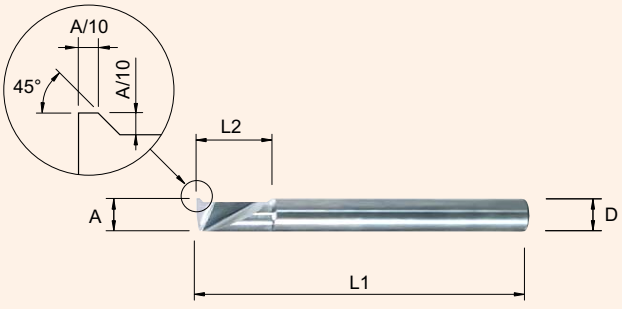
L



A -0.05	D	L1	L2	Art. N°
2	3	13	4	**1600-2-4**
3	3	15	6	**1600-3-6**
4	4	17	8	**1600-4-8**
4	4	21	12	**1600-4-12**
5	5	21	10	**1600-5-10**
5	5	26	15	**1600-5-15**
6	6	25	12	**1600-6-12**
6	6	31	18	**1600-6-18**
8	8	32	16	**1600-8-16**
8	8	40	24	**1600-8-24**

Type 1610

L



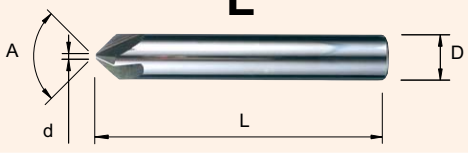
A -0.05	D	L1	L2	Art. N°
2	3	38	4	**1610-2-4**
3	3	38	6	**1610-3-6**
4	4	40	8	**1610-4-8**
4	4	40	12	**1610-4-12**
5	5	50	10	**1610-5-10**
5	5	54	15	**1610-5-15**
6	6	50	12	**1610-6-12**
6	6	57	18	**1610-6-18**
8	8	58	16	**1610-8-16**
8	8	63	24	**1610-8-24**

Fraises à angler coniques en métal dur
Vollhartmetall Kegelsenker
Solid carbide chamfering tools

Type 1901

Z=4

L

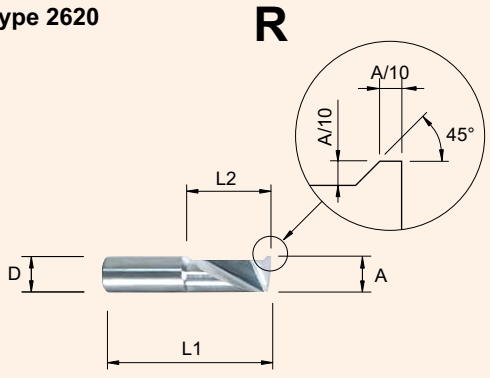


A	D	d	L	Art. N°
90°	3.0	0.3	38	**1901-3**
90°	6.0	0.7	50	**1901-6**
90°	8.0	1.2	58	**1901-8**
90°	12.0	1.6	73	**1901-12**

Revêtement sur demande
Beschichtung auf Anfrage
Coating on request

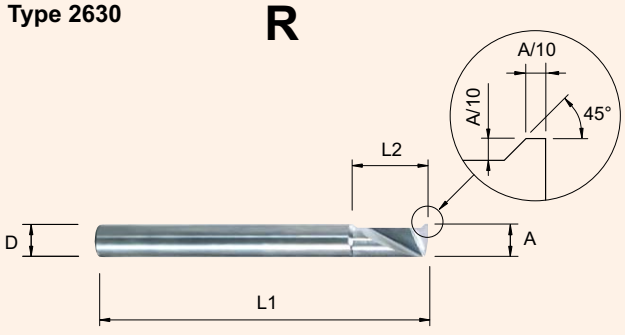
Burins intérieurs en métal dur
Vollhartmetall Innendrehwerkzeuge
Solid carbide internal turning tools

Type 2620



A -0.05	D	L1	L2	Art. N°
2	3	13	4	**2620-2-4**
3	3	15	6	**2620-3-6**
4	4	17	8	**2620-4-8**
4	4	21	12	**2620-4-12**
5	5	21	10	**2620-5-10**
5	5	26	15	**2620-5-15**
6	6	25	12	**2620-6-12**
6	6	31	18	**2620-6-18**
8	8	32	16	**2620-8-16**
8	8	40	24	**2620-8-24**

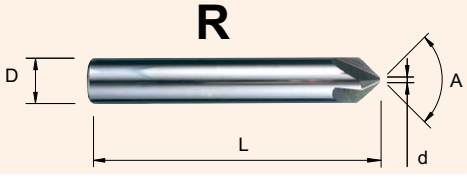
Type 2630



A -0.05	D	L1	L2	Art. N°
2	3	38	4	**2630-2-4**
3	3	38	6	**2630-3-6**
4	4	40	8	**2630-4-8**
4	4	40	12	**2630-4-12**
5	5	50	10	**2630-5-10**
5	5	54	15	**2630-5-15**
6	6	50	12	**2630-6-12**
6	6	57	18	**2630-6-18**
8	8	58	16	**2630-8-16**
8	8	63	24	**2630-8-24**
10	10	72	30	**2630-10-30**
12	12	83	36	**2630-12-36**

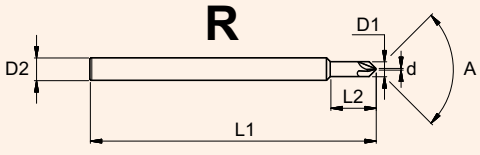
Fraises à angler coniques en métal dur
Vollhartmetall Kegelsenker
Solid carbide chamfering tools

Type 3901
Z=4



A	D	d	L	Art. N°
90°	3.0	0.3	38	**3901-3**
90°	6.0	0.7	50	**3901-6**
90°	8.0	1.2	58	**3901-8**
90°	12.0	1.6	73	**3901-12**

Type 3911
Z=3



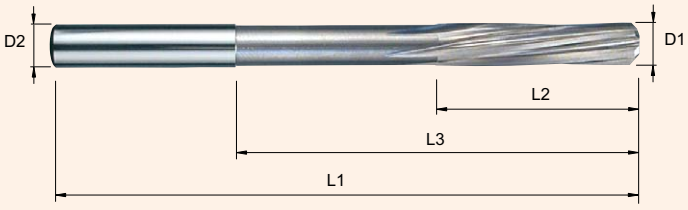
A	D1	d	D2 h6	L1	L2	Art. N°
90°	1.0	0.1	3.0	39	3	**3911-1.0**
90°	1.5	0.1	3.0	39	4.5	**3911-1.5**
90°	2.0	0.1	3.0	39	6	**3911-2.0**
90°	2.5	0.1	3.0	39	7.5	**3911-2.5**

Revêtement sur demande
Beschichtung auf Anfrage
Coating on request

Alésoirs en métal dur
VHM-Reibahlen
Solid carbide reamers

Type 2100

Coupe à droite, hélice à gauche 8°
Rechtsschneidend, linksdrall 8°
Right-hand cut, left-hand spiral 8°



nombre de dents Zähnezahl number of teeth		
0.97 - 4.50	→	Z = 4
4.60 - 12.0	→	Z = 6

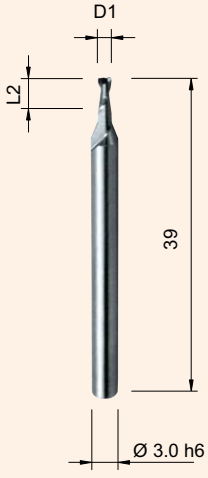
Tolérance D1 D1-Toleranz Tolerance D1		
Ø	0.97 - 3.03	→ 0 / +0.003
	3.10 - 10.03	→ 0 / +0.004
Ø H7 = ~ 40% tol. (VSM 34306)	1.0H7 - 3.0H7	→ +0.004 / +0.008
	3.5H7 - 6.0H7	→ +0.005 / +0.010
	6.5H7 - 10.0H7	→ +0.006 / +0.012
	11.0H7 - 12.0H7	→ +0.008 / +0.015

D1	D2	L1	L2	L3	D1	D2	L1	L2	L3	D1	D2	L1	L2	L3	D1	D2	L1	L2	L3
0.97	1.5	50	15	30	**2.52**	2.5	50	15	30	**4.50**	4.5	60	20	40	**6.99**	7.0	100	30	65
0.98	1.5	50	15	30	**2.53**	2.5	50	15	30	**4.5H7**	4.5	60	20	40	**7.00**	7.0	100	30	65
0.99	1.5	50	15	30	**2.60**	3.0	60	20	40	**4.60**	5.0	75	25	50	**7.0H7**	7.0	100	30	65
1.00	1.5	50	15	30	**2.70**	3.0	60	20	40	**4.70**	5.0	75	25	50	**7.01**	7.0	100	30	65
1.0H7	1.5	50	15	30	**2.80**	3.0	60	20	40	**4.80**	5.0	75	25	50	**7.02**	7.0	100	30	65
1.01	1.5	50	15	30	**2.90**	3.0	60	20	40	**4.90**	5.0	75	25	50	**7.03**	7.0	100	30	65
1.02	1.5	50	15	30	**2.97**	3.0	60	20	40	**4.97**	5.0	75	25	50	**7.97**	8.0	100	30	65
1.03	1.5	50	15	30	**2.98**	3.0	60	20	40	**4.98**	5.0	75	25	50	**7.98**	8.0	100	30	65
1.10	1.5	50	15	30	**2.99**	3.0	60	20	40	**4.99**	5.0	75	25	50	**7.99**	8.0	100	30	65
1.20	1.5	50	15	30	**3.00**	3.0	60	20	40	**5.00**	5.0	75	25	50	**8.00**	8.0	100	30	65
1.30	1.5	50	15	30	**3.0H7**	3.0	60	20	40	**5.0H7**	5.0	75	25	50	**8.0H7**	8.0	100	30	65
1.40	1.5	50	15	30	**3.01**	3.0	60	20	40	**5.01**	5.0	75	25	50	**8.01**	8.0	100	30	65
1.50	1.5	50	15	30	**3.02**	3.0	60	20	40	**5.02**	5.0	75	25	50	**8.02**	8.0	100	30	65
1.5H7	1.5	50	15	30	**3.03**	3.0	60	20	40	**5.03**	5.0	75	25	50	**8.03**	8.0	100	30	65
1.60	2.0	50	15	30	**3.10**	3.5	60	20	40	**5.10**	6.0	75	25	50	**8.97**	9.0	100	30	65
1.70	2.0	50	15	30	**3.20**	3.5	60	20	40	**5.20**	6.0	75	25	50	**8.98**	9.0	100	30	65
1.80	2.0	50	15	30	**3.30**	3.5	60	20	40	**5.30**	6.0	75	25	50	**8.99**	9.0	100	30	65
1.90	2.0	50	15	30	**3.40**	3.5	60	20	40	**5.40**	6.0	75	25	50	**9.00**	9.0	100	30	65
1.97	2.0	50	15	30	**3.50**	3.5	60	20	40	**5.50**	6.0	75	25	50	**9.0H7**	9.0	100	30	65
1.98	2.0	50	15	30	**3.5H7**	3.5	60	20	40	**5.5H7**	6.0	75	25	50	**9.01**	9.0	100	30	65
1.99	2.0	50	15	30	**3.60**	4.0	60	20	40	**5.60**	6.0	75	25	50	**9.02**	9.0	100	30	65
2.00	2.0	50	15	30	**3.70**	4.0	60	20	40	**5.70**	6.0	75	25	50	**9.03**	9.0	100	30	65
2.0H7	2.0	50	15	30	**3.80**	4.0	60	20	40	**5.80**	6.0	75	25	50	**9.97**	10.0	100	30	65
2.01	2.0	50	15	30	**3.90**	4.0	60	20	40	**5.90**	6.0	75	25	50	**9.98**	10.0	100	30	65
2.02	2.0	50	15	30	**3.97**	4.0	60	20	40	**5.97**	6.0	75	25	50	**9.99**	10.0	100	30	65
2.03	2.0	50	15	30	**3.98**	4.0	60	20	40	**5.98**	6.0	75	25	50	**10.00**	10.0	100	30	65
2.10	2.5	50	15	30	**3.99**	4.0	60	20	40	**5.99**	6.0	75	25	50	**10.0H7**	10.0	100	30	65
2.20	2.5	50	15	30	**4.00**	4.0	60	20	40	**6.00**	6.0	75	25	50	**10.01**	10.0	100	30	65
2.30	2.5	50	15	30	**4.0H7**	4.0	60	20	40	**6.0H7**	6.0	75	25	50	**10.02**	10.0	100	30	65
2.40	2.5	50	15	30	**4.01**	4.0	60	20	40	**6.01**	6.0	75	25	50	**10.03**	10.0	100	30	65
2.47	2.5	50	15	30	**4.02**	4.0	60	20	40	**6.02**	6.0	75	25	50	**11.0H7**	11.0	100	30	65
2.48	2.5	50	15	30	**4.03**	4.0	60	20	40	**6.03**	6.0	75	25	50	**12.0H7**	12.0	100	30	65
2.49	2.5	50	15	30	**4.10**	4.5	60	20	40	**6.50**	7.0	75	25	50					
2.50	2.5	50	15	30	**4.20**	4.5	60	20	40	**6.5H7**	7.0	75	25	50					
2.5H7	2.5	50	15	30	**4.30**	4.5	60	20	40	**6.97**	7.0	100	30	65					
2.51	2.5	50	15	30	**4.40**	4.5	60	20	40	**6.98**	7.0	100	30	65					

Revêtement sur demande
Beschichtung auf Anfrage
Coating on request

Micro-fraises de précision en métal dur
Vollhartmetall Micropräzisionsfräser
Solid carbide precision micro end mills

Type 3271

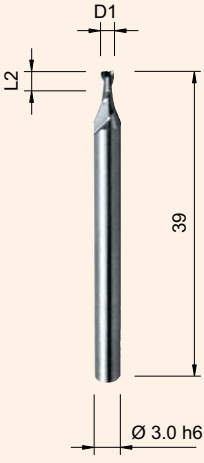


D1 +/- 0.015	L2	D1 +/- 0.015	L2
0.2		1.6	4
0.3	1	1.7	5
0.4	1	1.8	5
0.5	1.5	1.9	5
0.6	1.5	2.0	5
0.7	2	2.1	5
0.75	2	2.2	5
0.8	2	2.3	7
0.9	2.5	2.4	7
1.0	3	2.5	7
1.1	3	2.6	7
1.2	4	2.7	7
1.3	4	2.8	7
1.4	4	2.9	7
1.5	4		

Z=2 coupe au centre / Zentrumsschnitt / cut over center

30° hélice / Drall / spiral

Type 3274



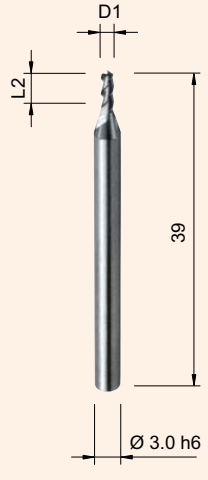
D1 +/- 0.015	L2	D1 +/- 0.015	L2
0.2	0.3	1.1	1.65
0.25	0.35	1.2	1.8
0.3	0.45	1.3	1.95
0.4	0.6	1.4	2.1
0.5	0.75	1.5	2.25
0.6	0.9	1.6	2.4
0.7	1.05	1.7	2.55
0.8	1.2	1.8	2.7
0.9	1.35	1.9	2.85
1.0	1.5	2.0	3.0

Z=2 coupe au centre / Zentrumsschnitt / cut over center

30° hélice / Drall / spiral

extra-courte / Extra kurz / extra short

Type 3371



D1 +/- 0.015	L2	D1 +/- 0.015	L2
0.5	1.5	1.7	5
0.6	1.5	1.8	5
0.7	2	1.9	5
0.75	2	2.0	5
0.8	2	2.1	5
0.9	2.5	2.2	5
1.0	3	2.3	7
1.1	3	2.4	7
1.2	4	2.5	7
1.3	4	2.6	7
1.4	4	2.7	7
1.5	4	2.8	7
1.6	4	2.9	7

Z=3 coupe au centre / Zentrumsschnitt / cut over center

30° hélice / Drall / spiral

Type 3374

D1 +/- 0.015	L2	D1 +/- 0.015	L2
0.4	0.6	1.4	1.8
0.45	0.7	1.5	1.8
0.5	0.7	1.6	2.0
0.6	0.8	1.7	2.0
0.7	0.9	1.8	2.0
0.8	1.0	1.9	2.4
0.9	1.3	2.0	2.4
1.0	1.3	2.2	2.6
1.1	1.6	2.5	3.0
1.2	1.6	2.8	3.5
1.3	1.8	2.9	3.5

Z=3 coupe au centre / Zentrumsschnitt / cut over center

30° hélice / Drall / spiral

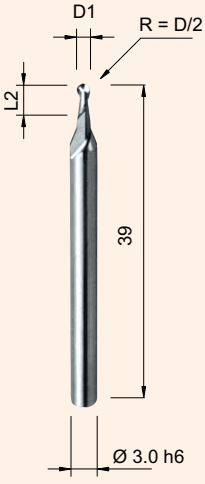
extra-courte / Extra kurz / extra short

Revêtement sur demande
Beschichtung auf Anfrage
Coating on request

Micro-fraises de précision en métal dur
Vollhartmetall Micropräzisionsfräser
Solid carbide precision micro end mills

Type 3278

hémisphérique
Stirnradius
ball end



D1 +/- 0.015	L2	D1 +/- 0.015	L2
0.3	1	**1.4**	4
0.4	1	**1.5**	4
0.5	1.5	**1.6**	4
0.6	1.5	**1.8**	5
0.7	2	**2.0**	7
0.8	2	**2.2**	7
0.9	2.5	**2.5**	7
1.0	3	**2.8**	7
1.2	4		

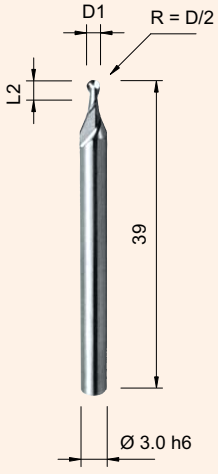
Z=2

coupe au centre
Zentrumsschnitt
cut over center

30° hélice
Drall
spiral

Type 3279

hémisphérique, extra-courte
Stirnradius, Extra kurz
ball end, extra short



D1 +/- 0.015	L2	D1 +/- 0.015	L2
0.2	0.3	**1.0**	1.5
0.25	0.35	**1.1**	1.65
0.3	0.45	**1.2**	1.8
0.4	0.6	**1.3**	1.95
0.5	0.75	**1.4**	2.1
0.6	0.9	**1.5**	2.25
0.7	1.05	**1.6**	2.4
0.8	1.2	**1.8**	2.7
0.9	1.35	**2.0**	3.0

Z=2

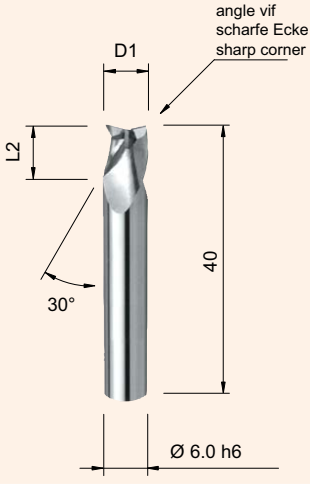
coupe au centre
Zentrumsschnitt
cut over center

30° hélice
Drall
spiral

Micro-fraises de précision en métal dur
Vollhartmetall-Micropräzisionsfräser
Solid carbide precision micro end mills

Type 3335

extra-courte
Extra kurz
extra short



D1 +/- 0.015	L2	D1 +/- 0.015	L2
1.5	3	**4.0**	5
2.0	3	**4.5**	5
2.5	3	**5.0**	6
3.0	4	**6.0**	7
3.5	4		

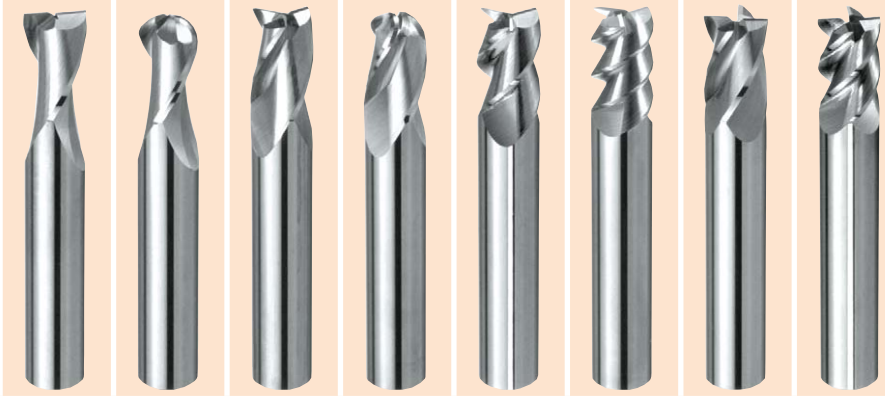
Z=3

coupe au centre
Zentrumsschnitt
cut over center

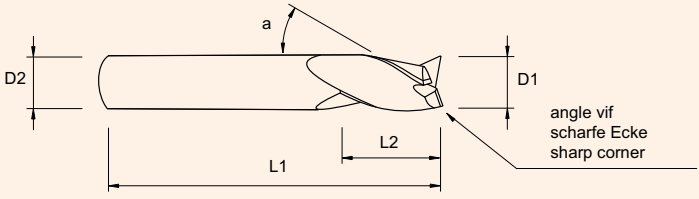
Revêtement sur demande
Beschichtung auf Anfrage
Coating on request

Fraises en bout en métal dur
VHM-Schaftfräser
Solid carbide end mills

Type 3231	Type 3238	Type 3331	Type 3338	Type 3341	Type 3361	Type 3431	Type 3441
Z = 2	Z = 2	Z = 3	Z = 3	Z = 3	Z = 3	Z = 4	Z = 4
a = 30°	a = 30°	a = 30°	a = 30°	a = 45°	a = 60°	a = 30°	a = 45°
-	R = D1 / 2	-	R = D1 / 2	-	-	-	-



dimensions Abmessungen dimensions		
D1 h10 D2 h6	L1	L2
2.0	32	8
2.5	32	8
3.0	32	12
3.5	32	12
4.0	40	12
4.5	50	14
5.0	50	14
6.0	50	16
7.0	60	20
8.0	60	20
9.0	60	20
10.0	70	22
12.0	70	22



queue lisse
Zylinderschaft
straight shank

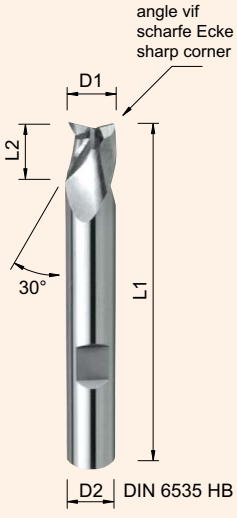
angle vif
scharfe Ecke
sharp corner

coupe au centre
Zentrumsschnitt
cut over center

Type 3336 DIN 6527 K

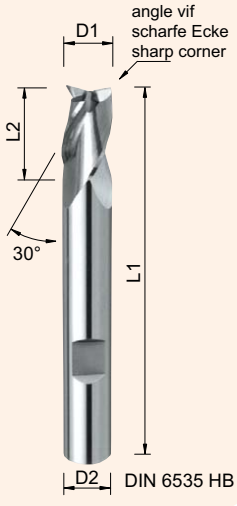
Z = 3

coupe au centre
Zentrumsschnitt
cut over center



D1 h10	D2 h6	L1	L2
1.5	6.0	50	3
1.8	6.0	50	3
2.0	6.0	50	3
2.5	6.0	50	3
2.8	6.0	50	4
3.0	6.0	50	4
3.5	6.0	50	4
3.8	6.0	54	5
4.0	6.0	54	5
4.5	6.0	54	5
4.8	6.0	54	6
5.0	6.0	54	6
5.5	6.0	54	7
5.8	6.0	54	7
6.0	6.0	54	7
7.0	8.0	58	8
8.0	8.0	58	9
9.0	10.0	66	10
10.0	10.0	66	11
12.0	12.0	73	12

Type 3337 DIN 6527 L



D1 h10	D2 h6	L1	L2
2.0	6.0	57	6
2.5	6.0	57	6
3.0	6.0	57	7
3.5	6.0	57	7
4.0	6.0	57	8
4.5	6.0	57	8
5.0	6.0	57	10
6.0	6.0	57	10
8.0	8.0	63	16
10.0	10.0	72	19
12.0	12.0	83	22

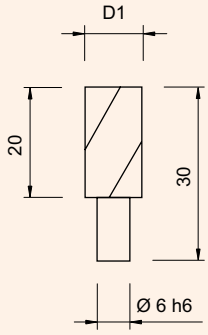
Z = 3

coupe au centre
Zentrumsschnitt
cut over center

Revêtement sur demande
Beschichtung auf Anfrage
Coating on request

Fraises en bout en métal dur pour usinage en bout plat
VHM-Schaftfräser für flache Frontbearbeitung
Solid carbide end mills for flat front machining

Type 3281	Type 3381	dimensions Abmessungen dimensions
Z = 2	Z = 3	

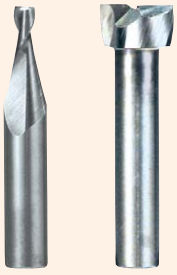


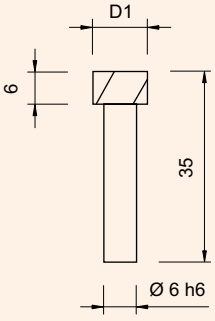
D1 h10
6.0
8.0
10.0
12.0

coupe au centre
Zentrumsschnitt
cut over center

30° hélice
Drall
spiral

Type 3282	Type 3382	dimensions Abmessungen dimensions
Z = 2	Z = 3	



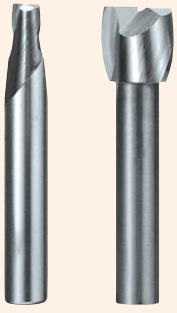


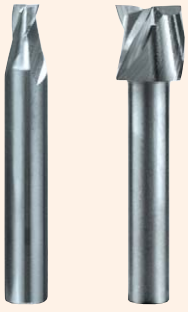
D1 h10	D1 h10
3.0	6.0
3.5	7.0
4.0	8.0
4.5	10.0
5.0	12.0
5.5	

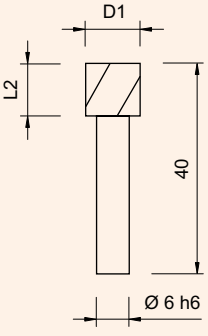
coupe au centre
Zentrumsschnitt
cut over center

30° hélice
Drall
spiral

Type 3283	Type 3383	dimensions Abmessungen dimensions
Z = 2	Z = 3	







D1 h10	L2
4.0	4
5.0	5
6.0	6
7.0	7
8.0	8
10.0	10
12.0	12

coupe au centre
Zentrumsschnitt
cut over center

30° hélice
Drall
spiral

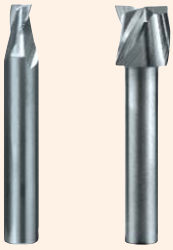
Revêtement sur demande
Beschichtung auf Anfrage
Coating on request

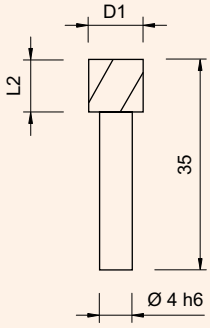
Fraises en bout en métal dur pour usinage en bout plat
VHM-Schaftfräser für flache Frontbearbeitung
Solid carbide end mills for flat front machining

Type 3384 new

dimensions
Abmessungen
dimensions

Z = 3





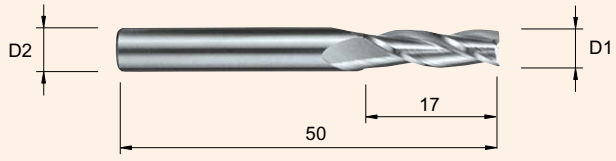
coupe au centre
Zentrumsschnitt
cut over center

30° hélice
Drall
spiral

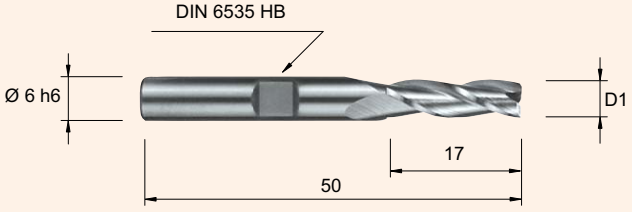
D1 h10	L2
3.0	6
4.0	6
5.0	6
6.0	6
8.0	6

Fraises en bout en métal dur pour usinage de cames
Vollhartmetall Schaftfräser für Kurvenbearbeitung
Solid carbide end mills for came machining

Z = 3

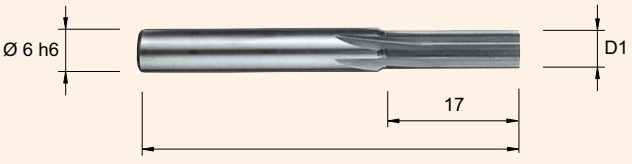


D1	D2 h6	Art. N°
5.0	5.0	3801
5.2	6.0	3802
6.0	6.0	3803



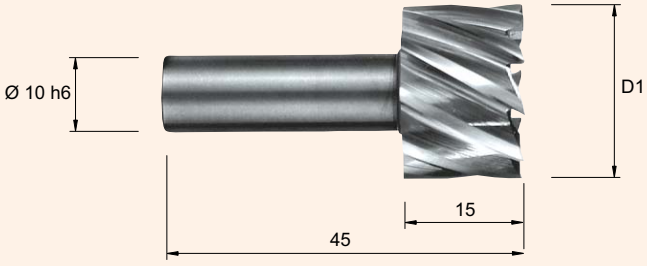
D1	Art. N°
5.2	3812
6.0	3813

Z = 6



D1	Art. N°
4.2	3821
5.2	3822

Z = 10

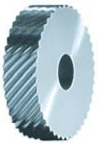


D1	Art. N°
16.3	3831
18.3	3832
20.3	3833
22.3	3834
24.3	3835

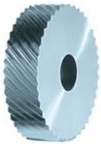
Molettes en métal dur
Vollhartmetall Rändelrädchen
Solid carbide knurling wheels

Type 1107

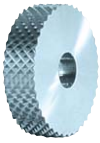
AA



BL



BR



GE

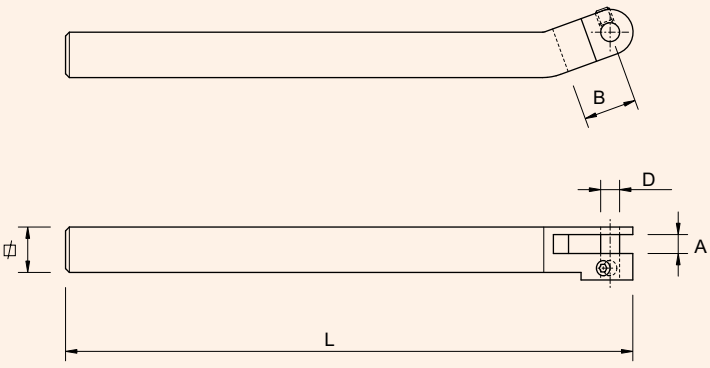
molettes standard standard Rändelrädchen standard knurls	Ø	épaisseur Dicke thickness	alésage Bohrung bore	pas (tous les 0.1 mm) Teilung (alle 0.1 mm) pitch (every 0.1 mm)
AA (0°) BL 15° / BR 15° BL 30° / BR 30° BL 45° / BR 45° GE 30° GE 45°	8	2	3	0.2 - 0.6
	8	2	4	0.2 - 0.6
	8	3	3	0.2 - 0.6
	8	3	4	0.2 - 0.6
	8	4	3	0.2 - 0.6
	8	4	4	0.2 - 0.6
	10	2	3	0.2 - 0.8
	10	2	4	0.2 - 0.8
	10	3	3	0.2 - 0.8
	10	3	4	0.2 - 0.8
	10	4	3	0.2 - 0.8
	10	4	4	0.2 - 0.8
	12	4	4	0.3 - 1.0
	15	4	4	0.4 - 1.0
	15	4	5	0.4 - 1.0
	15	5	4	0.4 - 1.0
	15	5	5	0.4 - 1.0
	20	4	5	0.5 - 1.2
	20	5	5	0.5 - 1.2
	20	6	6	0.5 - 1.2
	20	8	6	0.5 - 1.2

molettes "Quick" "Quick"-Rändelrädchen "Quick" knurling wheels	Ø	épaisseur Dicke thickness	alésage Bohrung bore	pas (tous les 0.1 mm) Teilung (alle 0.1 mm) pitch (every 0.1 mm)
AA (0°)	8.9	2.5	4	0.2 - 0.8
BL 15° / BR 15°	14.5	3	5	0.4 - 1.0
BL 30° / BR 30°	21.5	5	8	0.5 - 1.2

Exécutions spéciales sur demande
Sonderausführungen auf Anfrage
Specials execution on request

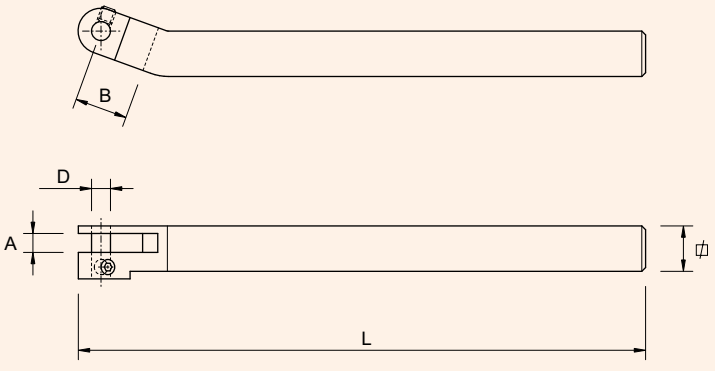
Porte-molettes
Rändelhalter
Knurl holders

Type 2402 R



⌀	L	A	D	B	Art. N°
6 x 6	132	2	3	10	2402-623
6 x 6	132	3	3	10	2402-633
7 x 7	140	2	3	10	2402-723
7 x 7	140	3	3	10	2402-733
7 x 7	140	4	3	10	2402-743
7 x 7	140	2	4	10	2402-724
7 x 7	140	3	4	10	2402-734
7 x 7	140	4	4	10	2402-744
8 x 8	140	2	3	10	2402-823
8 x 8	140	3	3	10	2402-833
8 x 8	140	4	3	10	2402-843
8 x 8	140	2	4	10	2402-824
8 x 8	140	3	4	10	2402-834
8 x 8	140	4	4	10	2402-844
10 x 10	150	3	3	10	2402-1033
10 x 10	150	4	3	10	2402-1043
10 x 10	150	3	4	10	2402-1034
10 x 10	150	4	4	10	2402-1044
12 x 12	150	4	4	12	2402-1244
12 x 12	150	5	4	12	2402-1254
12 x 12	150	4	5	12	2402-1245
12 x 12	150	5	5	12	2402-1255
16 x 16	150	4	4	12	2402-1644
16 x 16	150	4	5	12	2402-1645
16 x 16	150	5	5	12	2402-1655
16 x 16	150	6	4	12	2402-1664
16 x 16	150	6	6	12	2402-1666
16 x 16	150	8	6	12	2402-1686

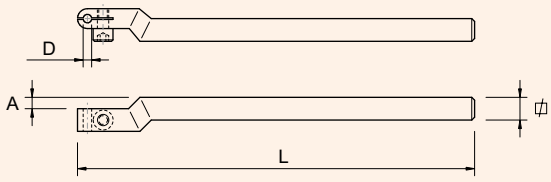
Type 1402 L



⌀	L	A	D	B	Art. N°
6 x 6	132	2	3	10	1402-623
6 x 6	132	3	3	10	1402-633
7 x 7	140	2	3	10	1402-723
7 x 7	140	3	3	10	1402-733
7 x 7	140	4	3	10	1402-743
7 x 7	140	2	4	10	1402-724
7 x 7	140	3	4	10	1402-734
7 x 7	140	4	4	10	1402-744
8 x 8	140	2	3	10	1402-823
8 x 8	140	3	3	10	1402-833
8 x 8	140	4	3	10	1402-843
8 x 8	140	2	4	10	1402-824
8 x 8	140	3	4	10	1402-834
8 x 8	140	4	4	10	1402-844
10 x 10	150	3	3	10	1402-1033
10 x 10	150	4	3	10	1402-1043
10 x 10	150	3	4	10	1402-1034
10 x 10	150	4	4	10	1402-1044
10 x 10	150	5	4	10	1402-1054
12 x 12	150	4	4	12	1402-1244
12 x 12	150	5	4	12	1402-1254
12 x 12	150	4	5	12	1402-1245
12 x 12	150	5	5	12	1402-1255
16 x 16	150	4	4	12	1402-1644

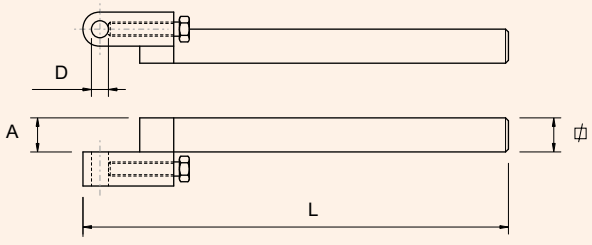
Porte-outils
Werkzeughalter
Tool holders

Type 1400-J L



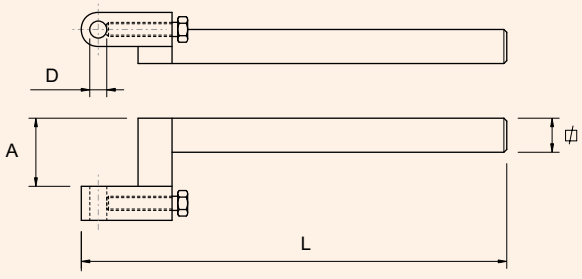
⌀	L	A	D	Art. N°
6 x 6	132	3	1.5	1400-J-615
6 x 6	132	3	2.0	1400-J-620
6 x 6	132	3	3.0	1400-J-630
7 x 7	140	3	1.5	1400-J-715
7 x 7	140	3	2.0	1400-J-720
7 x 7	140	3	3.0	1400-J-730
8 x 8	140	4	1.5	1400-J-815
8 x 8	140	4	2.0	1400-J-820
8 x 8	140	4	3.0	1400-J-830

Type 1401-K L



⌀	L	A	D	Art. N°
7 x 7	146	7	2.0	1401-K-720
7 x 7	146	7	3.0	1401-K-730
7 x 7	146	7	4.0	1401-K-740
8 x 8	146	8	2.0	1401-K-820
8 x 8	146	8	3.0	1401-K-830
8 x 8	146	8	4.0	1401-K-840
8 x 8	146	8	5.0	1401-K-850
8 x 8	146	8	6.0	1401-K-860
10 x 10	150	10	4.0	1401-K-1040
10 x 10	150	10	5.0	1401-K-1050
10 x 10	150	10	6.0	1401-K-1060
10 x 10	150	10	7.0	1401-K-1070
12 x 12	150	12	4.0	1401-K-1240
12 x 12	150	12	5.0	1401-K-1250
12 x 12	150	12	6.0	1401-K-1260
12 x 12	150	12	8.0	1401-K-1280
14 x 14	150	14	4.0	1401-K-1440
14 x 14	150	14	6.0	1401-K-1460
14 x 14	150	14	8.0	1401-K-1480

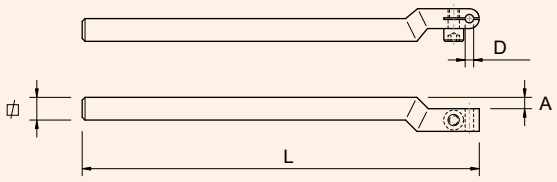
Type 1420 L



⌀	L	A	D	Art. N°
7 x 7	146	12	4.0	1420-7124
8 x 8	146	12	4.0	1420-8124
8 x 8	146	14	3.0	1420-8143
8 x 8	146	15	5.0	1420-8155
8 x 8	146	20	5.0	1420-8205
10 x 10	150	20	6.0	1420-10206
12 x 12	150	18	6.0	1420-12186
12 x 12	150	18	8.0	1420-12188
12 x 12	150	24	8.0	1420-12248
14 x 14	150	20	8.0	1420-14208
14 x 14	150	24	8.0	1420-14248

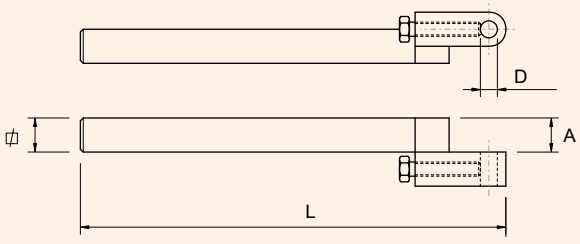
Porte-outils
Werkzeughalter
Tool holders

Type 2400-J R



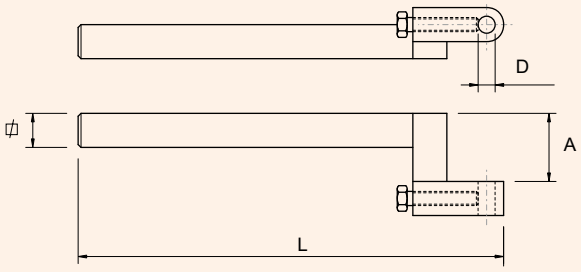
⌀	L	A	D	Art. N°
6 x 6	132	3	1.5	2400-J-615
6 x 6	132	3	2.0	2400-J-620
6 x 6	132	3	3.0	2400-J-630
7 x 7	140	3	1.5	2400-J-715
7 x 7	140	3	2.0	2400-J-720
7 x 7	140	3	3.0	2400-J-730
8 x 8	140	4	1.5	2400-J-815
8 x 8	140	4	2.0	2400-J-820
8 x 8	140	4	3.0	2400-J-830

Type 2401-K R



⌀	L	A	D	Art. N°
7 x 7	146	7	3.0	2401-K-730
7 x 7	146	7	4.0	2401-K-740
8 x 8	146	8	3.0	2401-K-830
8 x 8	146	8	4.0	2401-K-840
8 x 8	146	8	5.0	2401-K-850
8 x 8	146	8	6.0	2401-K-860
10 x 10	150	10	3.0	2401-K-1030
10 x 10	150	10	4.0	2401-K-1040
10 x 10	150	10	5.0	2401-K-1050
10 x 10	150	10	6.0	2401-K-1060
10 x 10	150	10	7.0	2401-K-1070
12 x 12	150	12	3.0	2401-K-1230
12 x 12	150	12	4.0	2401-K-1240
12 x 12	150	12	5.0	2401-K-1250
12 x 12	150	12	6.0	2401-K-1260
12 x 12	150	12	8.0	2401-K-1280
14 x 14	150	14	4.0	2401-K-1440
14 x 14	150	14	6.0	2401-K-1460
14 x 14	150	14	8.0	2401-K-1480

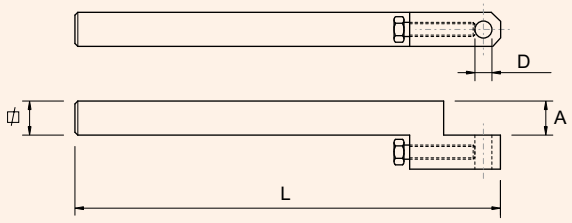
Type 2420 R



⌀	L	A	D	Art. N°
7 x 7	146	12	4.0	2420-7124
8 x 8	146	12	4.0	2420-8124
8 x 8	146	14	3.0	2420-8143
8 x 8	146	15	5.0	2420-8155
8 x 8	146	20	5.0	2420-8205
10 x 10	150	20	6.0	2420-10206
12 x 12	150	18	6.0	2420-12186
12 x 12	150	24	8.0	2420-12248
14 x 14	150	20	8.0	2420-14208
14 x 14	150	24	8.0	2420-14248

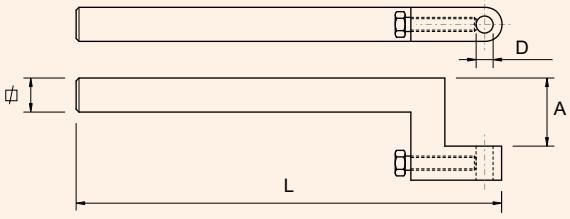
Porte-outils
Werkzeughalter
Tool holders

Type 2405



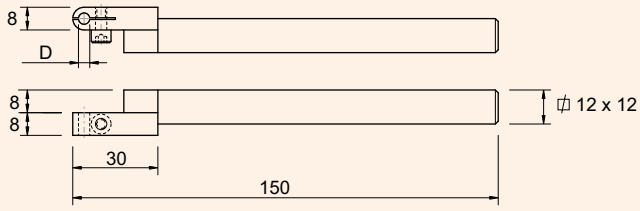
⌀	L	A	D	Art. N°
8 x 8	120	8	3.0	2405-K-830
8 x 8	120	8	4.0	2405-K-840
8 x 8	120	8	5.0	2405-K-850
8 x 8	120	8	6.0	2405-K-860
10 x 10	100	10	4.0	2405-K-1040
10 x 10	100	10	5.0	2405-K-1050
10 x 10	100	10	6.0	2405-K-1060
12 x 12	150	12	4.0	2405-K-1240
12 x 12	150	12	6.0	2405-K-1260
12 x 12	150	12	8.0	2405-K-1280

Type 2425



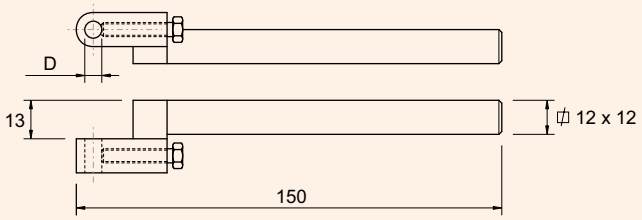
⌀	L	A	D	Art. N°
8 x 8	120	12	4.0	2425-8124
8 x 8	120	15	5.0	2425-8155
8 x 8	120	20	5.0	2425-8205
10 x 10	100	15	6.0	2425-10156
10 x 10	100	20	6.0	2425-10206
12 x 12	150	18	6.0	2425-12186
12 x 12	150	24	8.0	2425-12248

Type 1450 special ENC 16/164 L ⌀ 12 x 12



D	Art. N°
4.0	1450-4
5.0	1450-5

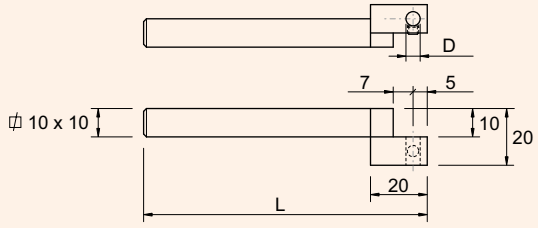
Type 1460 special ENC 16/164 L ⌀ 12 x 12



D	Art. N°
4.0	1460-4
5.0	1460-5
6.0	1460-6
8.0	1460-8

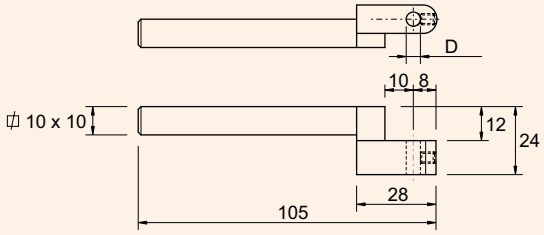
Porte-outils
Werkzeughalter
Tool holders

Type 2450-SP R ⌀ 10 x 10



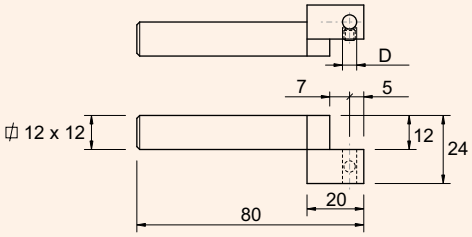
D	L	Art. N°
3.0	100	2450-SP-3
4.0	100	2450-SP-4
5.0	100	2450-SP-5
6.0	100	2450-SP-6
3.0	120	2450-SP-3-120
4.0	120	2450-SP-4-120
5.0	120	2450-SP-5-120
6.0	120	2450-SP-6-120

Type 2470 R ⌀ 10 x 10



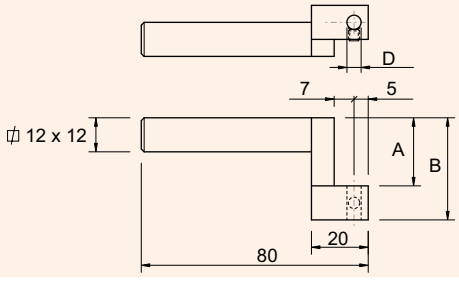
D	Art. N°
3.0	2470-3
4.0	2470-4
5.0	2470-5
6.0	2470-6
7.0	2470-7

Type 2450 R ⌀ 12 x 12



D	Art. N°
3.0	2450-3
4.0	2450-4
5.0	2450-5
6.0	2450-6
8.0	2450-8

Type 2460 R ⌀ 12 x 12



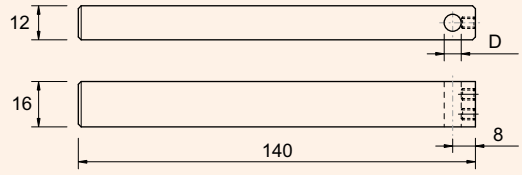
A	B	D	Art. N°
16	28	4.0	2460-284
16	28	6.0	2460-286
16	28	8.0	2460-288
20	32	4.0	2460-324
20	32	6.0	2460-326
20	32	8.0	2460-328
24	36	4.0	2460-364
24	36	6.0	2460-366
24	36	8.0	2460-368

Porte-outils
Werkzeughalter
Tool holders

Type 2441

Pour usinage côté contre-broche
Für die Bearbeitung auf der Gegenspindelseite
For machining on subspindle side

⌀ 12 x 16

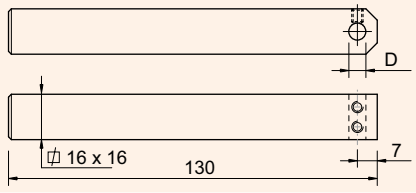


D	Art. N°
3.0	2441-0-3
4.0	2441-0-4
5.0	2441-0-5
6.0	2441-0-6

Type 2440-0

Pour usinage côté contre-broche
Für die Bearbeitung auf der Gegenspindelseite
For machining on subspindle side

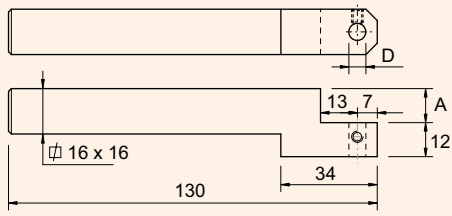
⌀ 16 x 16



D	Art. N°
3.0	2440-0-3
4.0	2440-0-4
5.0	2440-0-5
6.0	2440-0-6
8.0	2440-0-8

Types 2440-8
2440-12

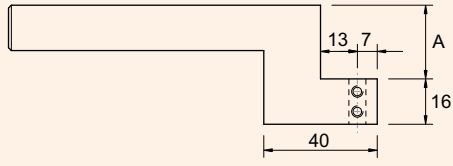
⌀ 16 x 16



A	D	Art. N°
8	3.0	2440-8-3
8	4.0	2440-8-4
8	5.0	2440-8-5
8	6.0	2440-8-6
8	8.0	2440-8-8
12	3.0	2440-12-3
12	4.0	2440-12-4
12	5.0	2440-12-5
12	6.0	2440-12-6
12	8.0	2440-12-8

Types 2440-18
2440-26

⌀ 16 x 16



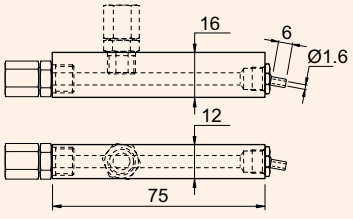
18	4.0	2440-18-4
18	5.0	2440-18-5
18	6.0	2440-18-6
18	8.0	2440-18-8
26	4.0	2440-26-4
26	5.0	2440-26-5
26	6.0	2440-26-6
26	8.0	2440-26-8

Outil d'arrosage
Werkzeug für Kühlmittelzufuhr
Tool for coolant supply

Type 2490

⌀ 12 x 16

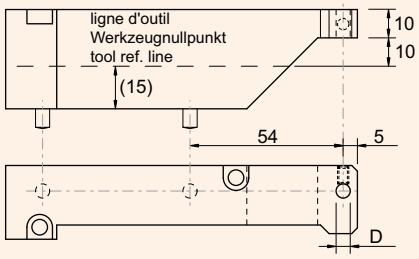
Raccord
Anschluss
connection
Ø 6 - G1/8



Art. N°
2490

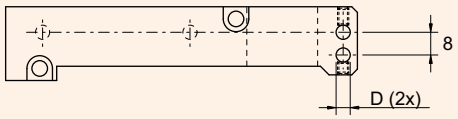
Porte-outils monoblocs pour machine TORNOS DECO 7/10
Monoblockwerkzeughalter für TORNOS DECO 7/10 Maschine
Monobloc tool holders for machine TORNOS DECO 7/10

Type 2435



D	Art. N°
3.0	2435-3
4.0	2435-4
5.0	2435-5
6.0	2435-6

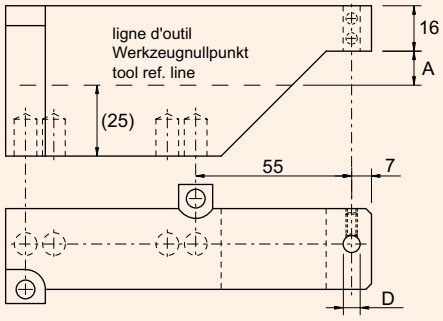
Type 2435-T



D (2x)	Art. N°
3.0	2435-3-T
4.0	2435-4-T
5.0	2435-5-T
6.0	2435-6-T

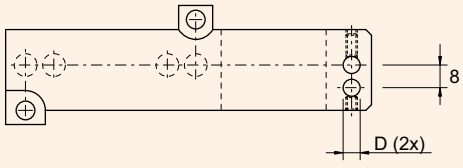
Porte-outils monoblocs pour machine TORNOS DECO 7/10
Monoblockwerkzeughalter für TORNOS DECO 7/10 Maschine
Monobloc tool holders for machine TORNOS DECO 7/10

Type 2436



A	D	Art. N°
12	3.0	2436-12-3
12	4.0	2436-12-4
12	5.0	2436-12-5
12	6.0	2436-12-6
12	8.0	2436-12-8
18	3.0	2436-18-3
18	4.0	2436-18-4
18	5.0	2436-18-5
18	6.0	2436-18-6
18	8.0	2436-18-8

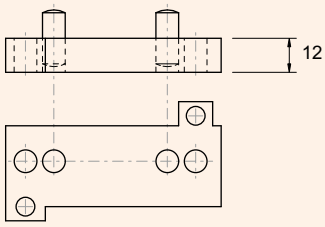
Type 2436-T



A	D (2x)	Art. N°
12	3.0	2436T-12-3
12	4.0	2436T-12-4
12	5.0	2436T-12-5
12	6.0	2436T-12-6
18	3.0	2436T-18-3
18	4.0	2436T-18-4
18	5.0	2436T-18-5
18	6.0	2436T-18-6

Entretoise
Erhöhungsplatte
Spacer

Type 2436-S12



Art. N°
2436-S12