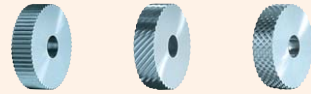


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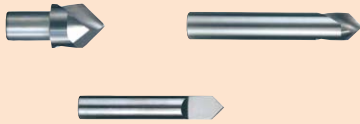
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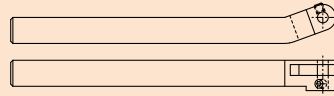
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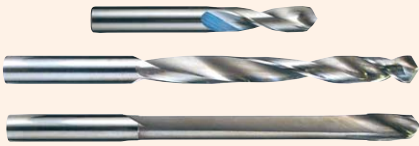
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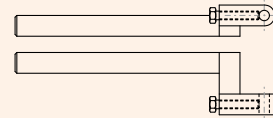
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6.25



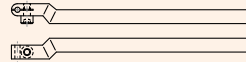
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6.26



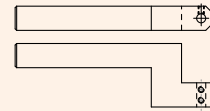
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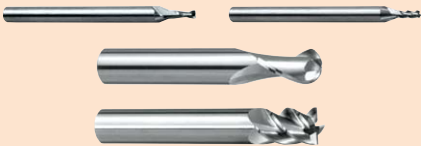
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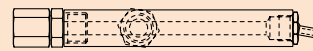
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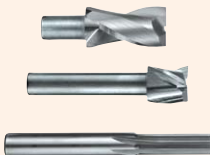
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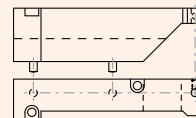


6.30



6.22  
6.23

### TORNOS DECO



6.31

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 / $\curvearrowright$			Vc	avance par tour Vorschub per Umdrehung Feed per rotation mm / $\curvearrowright$		
			m / min	Ø1-4	Ø 4-8		Ø 8-12	m / min	Ø 1-4
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 Stahl steel < 600 N/mm2	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 Stahl steel < 800 N/mm2	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 Stahl steel < 1000 N/mm2	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 Stahl steel > 1000 N/mm2	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

		 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			
matière Werkstoff material	lubrifiant* Kühlung* coolant*	Vc m / min	avance par dent Vorschub pro Zahn Feed per tooth mm / Z		Vc m / min	avance par dent Vorschub pro Zahn Feed per tooth mm / Z		
			Ø 0.2-1.2	Ø 1.3-2.9		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 steel < 600 N/mm2	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 steel < 800 N/mm2	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 steel < 1000 N/mm2	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 steel > 1000 N/mm2	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

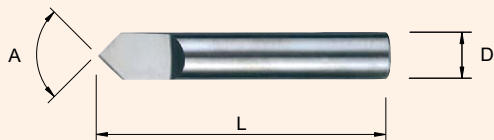
\* A = sec (air comprimé) / Trocken (Pressluft) / Dry (air)

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

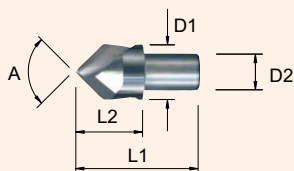


A	D	L	métal dur Vollhartmetall solid carbide Art. N°
90°	3	13	1200-313
90°	3	17	1200-317
90°	3	38	1200-338
90°	4	40	1200-440
90°	5	50	1200-550
90°	6	50	1200-650
90°	8	58	1200-858
90°	10	66	1200-1066
90°	12	73	1200-1273

Forets à centrer hélicoïdaux  
Zentrierspiralbohrer  
Centering twist drills

Type 1500

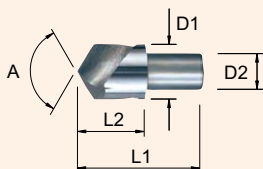
L



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



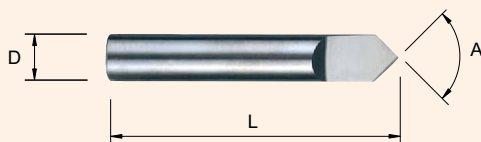
120°	5	4	17	8	1510-5-HSS	1510-5-MD
120°	7	5	17	8	1510-7-HSS	1510-7-MD
120°	10	6	22	10	1510-10-HSS	1510-10-MD
120°	12	8	26	12	1510-12-HSS	1510-12-MD

Revêtement sur demande  
Beschichtung auf Anfrage  
Coating on request

Forets à centrer plat  
Zentrierflachbohrer  
Centering flat drills

Type 2200

R

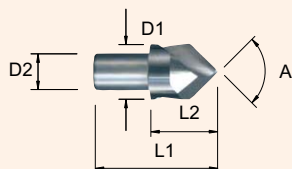


A	D	L	métal dur Vollhartmetall solid carbide Art. N°
90°	3	13	2200-313
90°	3	17	2200-317
90°	3	38	2200-338
90°	4	40	2200-440
90°	5	50	2200-550
90°	6	50	2200-650
90°	8	58	2200-858
90°	10	66	2200-1066
90°	12	73	2200-1273

Forets à centrer hélicoïdaux  
Zentrierspiralbohrer  
Centering twist drills

Type 2520

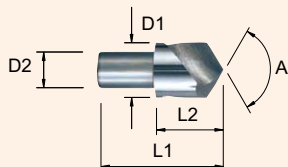
R



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

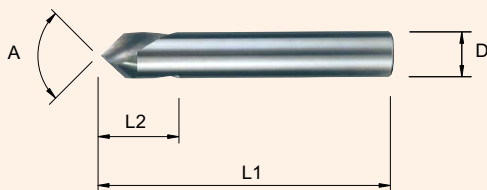
Revêtement sur demande  
Beschichtung auf Anfrage  
Coating on request

Forets à centrer NC  
NC-Zentrierbohrer  
NC centering tools

Type 1680

## L

## 90°

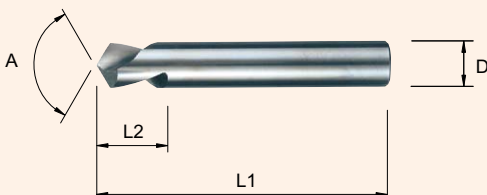


A	D	L1	L2	HSS	métal dur Vollhartmetall solid carbide
				Art. N°	Art. N°
90°	2	38	8	---	1680-2-90-MD
90°	2.5	38	8	---	1680-2.5-90-MD
90°	3	38	10	1680-3-90-HSS	1680-3-90-MD
90°	4	50	12	1680-4-90-HSS	1680-4-90-MD
90°	5	50	15	1680-5-90-HSS	1680-5-90-MD
90°	6	57	16	1680-6-90-HSS	1680-6-90-MD
90°	8	63	20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

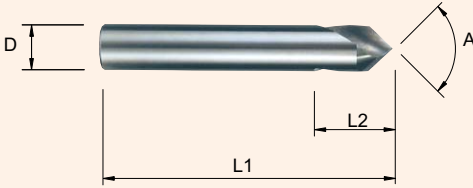
Revêtement sur demande  
Beschichtung auf Anfrage  
Coating on request

**Forets à centrer NC  
NC-Zentrierbohrer  
NC centering tools**

**Type 2680**

**R**

**90°**

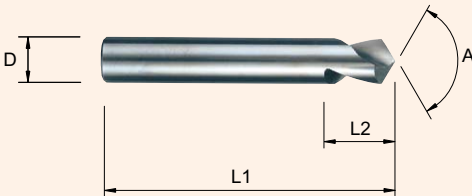


				HSS	métal dur Vollhartmetall solid carbide
A	D	L1	L2	Art. N°	Art. N°
90°	2	38	8	---	2680-2-90-MD
90°	2.5	38	8	---	2680-2.5-90-MD
90°	3	38	10	2680-3-90-HSS	2680-3-90-MD
90°	4	50	12	2680-4-90-HSS	2680-4-90-MD
90°	5	50	15	2680-5-90-HSS	2680-5-90-MD
90°	6	57	16	2680-6-90-HSS	2680-6-90-MD
90°	8	63	20	2680-8-90-HSS	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°**



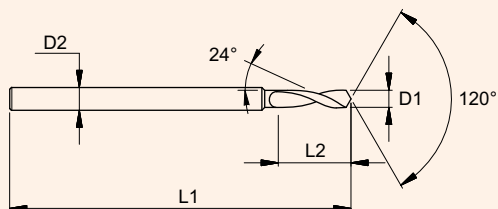
				HSS	métal dur Vollhartmetall solid carbide
A	D	L1	L2	Art. N°	Art. N°
120°	2	38	8	---	2680-2-120-MD
120°	2.5	38	8	---	2680-2.5-120-MD
120°	3	38	10	2680-3-120-HSS	2680-3-120-MD
120°	4	50	12	2680-4-120-HSS	2680-4-120-MD
120°	5	50	15	2680-5-120-HSS	2680-5-120-MD
120°	6	57	16	2680-6-120-HSS	2680-6-120-MD
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

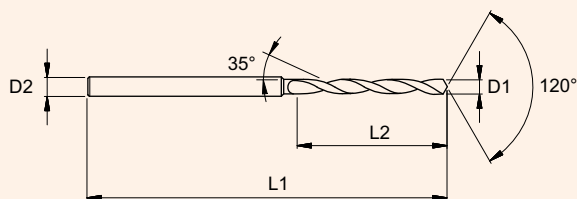


D1 h6	D2 h6	L1	L2	D1 h6	D2 h6	L1	L2
0.50	1.5	30	1.7	1.30	1.5	30	4.2
0.55	1.5	30	1.9	1.40	1.5	30	4.7
0.60	1.5	30	1.9	1.50	2.0	38	4.7
0.65	1.5	30	1.9	1.60	2.0	38	5.4
0.70	1.5	30	2.4	1.70	2.0	38	5.4
0.75	1.5	30	2.4	1.80	2.0	38	6.5
0.80	1.5	30	2.6	1.90	2.0	38	6.5
0.85	1.5	30	2.6	2.00	2.5	38	6.5
0.90	1.5	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

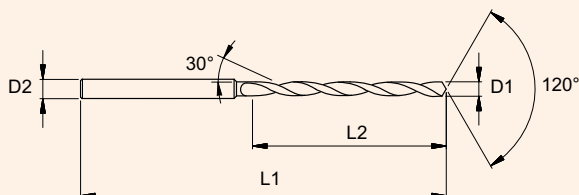
R



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

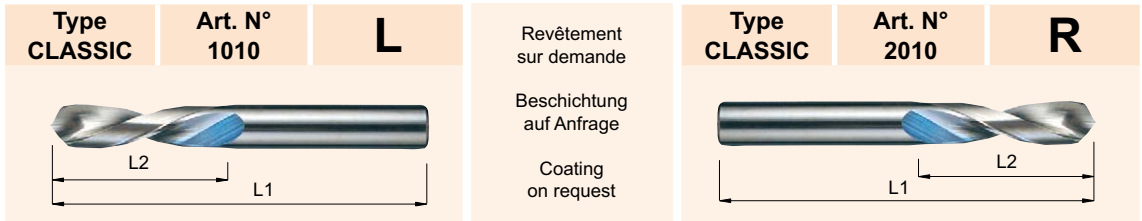


D1 h6	D2 h6	L1	L2	D1 h6	D2 h6	L1	L2
0.50	1.5	30	6.0	1.25	1.5	38	15.0
0.55	1.5	30	6.5	1.30	1.5	38	17.0
0.60	1.5	30	6.5	1.35	1.5	38	17.0
0.65	1.5	30	7.5	1.40	1.5	38	17.0
0.70	1.5	30	8.5	1.45	1.5	38	17.0
0.75	1.5	30	8.5	1.50	2.0	38	18.0
0.80	1.5	30	9.5	1.55	2.0	38	18.0
0.85	1.5	30	9.5	1.60	2.0	38	18.0
0.90	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



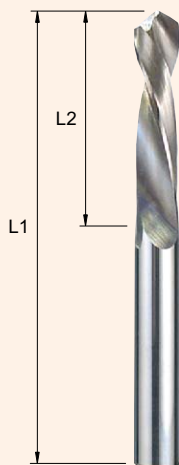
Type CLASSIC Art. N° 1010 L			Type CLASSIC Art. N° 2010 R		
D h6	L1	L2	D h6	L1	L2
0.50	30	5	2.55	45	18
0.55	30	5	2.60	45	18
0.60	30	5	2.65	45	18
0.65	30	6	2.70	45	18
0.70	30	6	2.75	45	18
0.75	30	8	2.80	45	18
0.80	30	8	2.85	45	18
0.85	30	9	2.90	45	18
0.90	30	9	2.95	45	18
0.95	30	10	3.00	45	18
1.00	30	10	3.10	50	20
1.05	30	10	3.20	50	20
1.10	30	10	3.30	50	20
1.15	30	12	3.40	50	20
1.20	30	12	3.50	50	20
1.25	30	12	3.60	50	20
1.30	30	12	3.70	50	20
1.35	30	12	3.80	50	20
1.40	30	12	3.90	50	20
1.45	30	12	4.00	50	20
1.50	30	12	4.10	50	25
1.55	40	16	4.20	50	25
1.60	40	16	4.30	50	25
1.65	40	16	4.40	50	25
1.70	40	16	4.50	50	25
1.75	40	16	4.60	50	25
1.80	40	16	4.70	50	25
1.85	40	16	4.80	50	25
1.90	40	16	4.90	50	25
1.95	40	16	5.00	50	25
2.00	40	16	5.10	50	25
2.05	40	18	5.20	50	25
2.10	40	18	5.30	50	25
2.15	40	18	5.40	50	25
2.20	40	18	5.50	50	25
2.25	40	18	5.60	50	25
2.30	40	18	5.70	50	25
2.35	40	18	5.80	50	25
2.40	40	18	5.90	50	25
2.45	40	18	6.00	50	25
2.50	40	18			

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

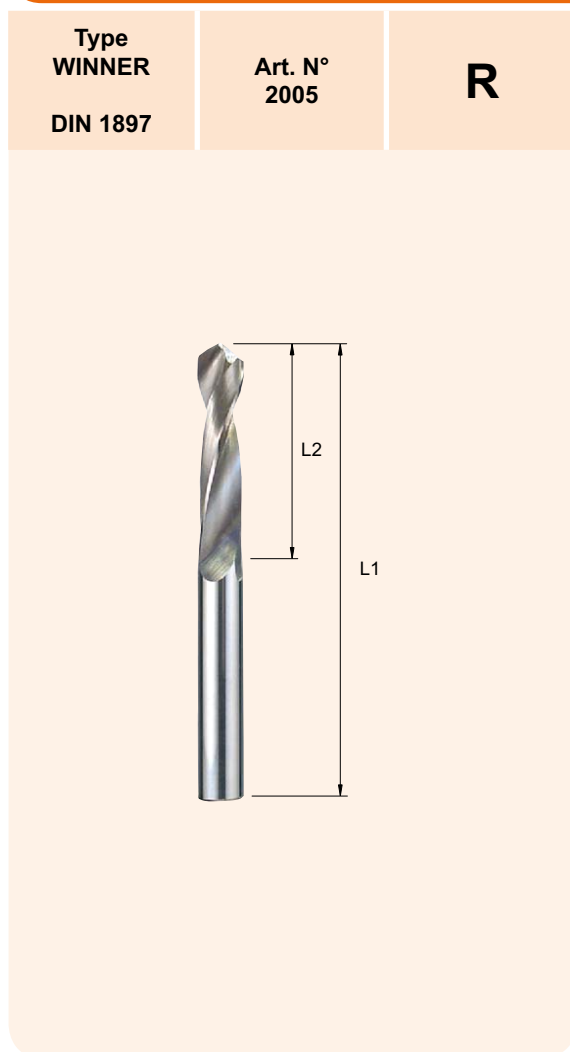
L



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



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			

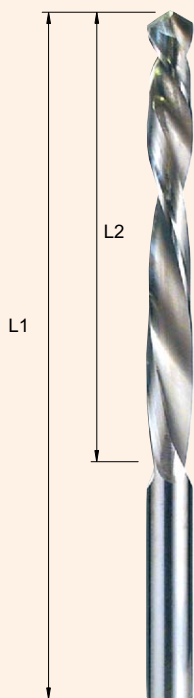
Revêtement sur demande  
 Beschichtung auf Anfrage  
 Coating on request

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

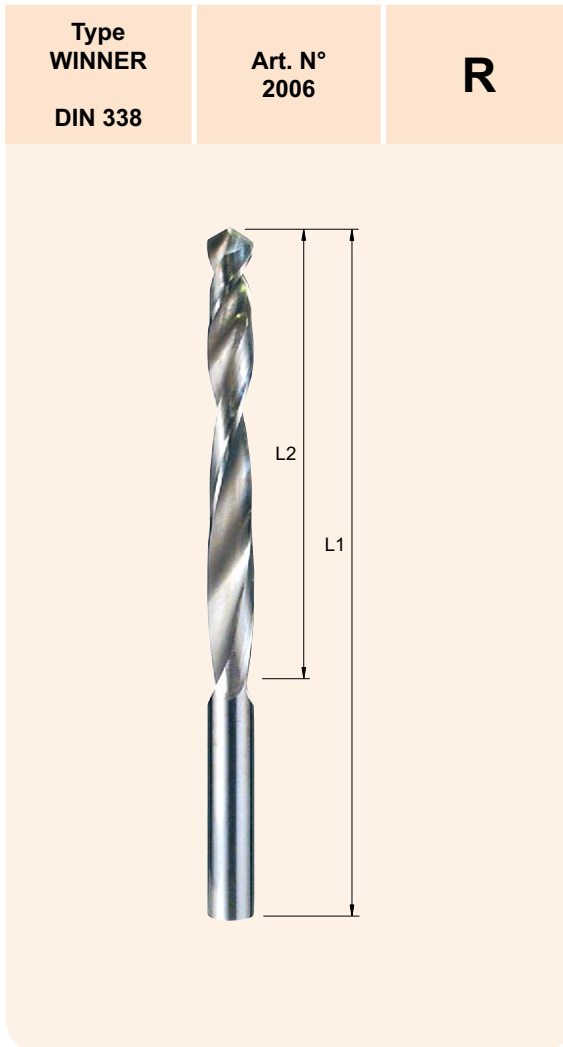
**L**



D h6	L1	L2	D h6	L1	L2
1.50	40	18	4.50	80	47
1.55	43	20	4.60	80	47
1.60	43	20	4.70	80	47
1.65	43	20	4.80	86	52
1.70	43	20	4.90	86	52
1.75	46	22	5.00	86	52
1.80	46	22	5.10	86	52
1.85	46	22	5.20	86	52
1.90	46	22	5.30	86	52
1.95	49	24	5.40	93	57
2.00	49	24	5.50	93	57
2.05	49	24	5.60	93	57
2.10	49	24	5.70	93	57
2.15	53	27	5.80	93	57
2.20	53	27	5.90	93	27
2.25	53	27	6.00	93	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			

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



D h6	L1	L2	D h6	L1	L2
1.50	40	18	4.50	80	47
1.55	43	20	4.60	80	47
1.60	43	20	4.70	80	47
1.65	43	20	4.80	86	52
1.70	43	20	4.90	86	52
1.75	46	22	5.00	86	52
1.80	46	22	5.10	86	52
1.85	46	22	5.20	86	52
1.90	46	22	5.30	86	52
1.95	49	24	5.40	93	57
2.00	49	24	5.50	93	57
2.05	49	24	5.60	93	57
2.10	49	24	5.70	93	57
2.15	53	27	5.80	93	57
2.20	53	27	5.90	93	57
2.25	53	27	6.00	93	57
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			

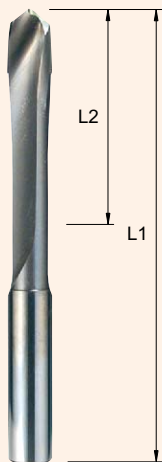
Revêtement sur demande  
 Beschichtung auf Anfrage  
 Coating on request

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

Type  
THOR  
DIN 1897

Art. N°  
2000

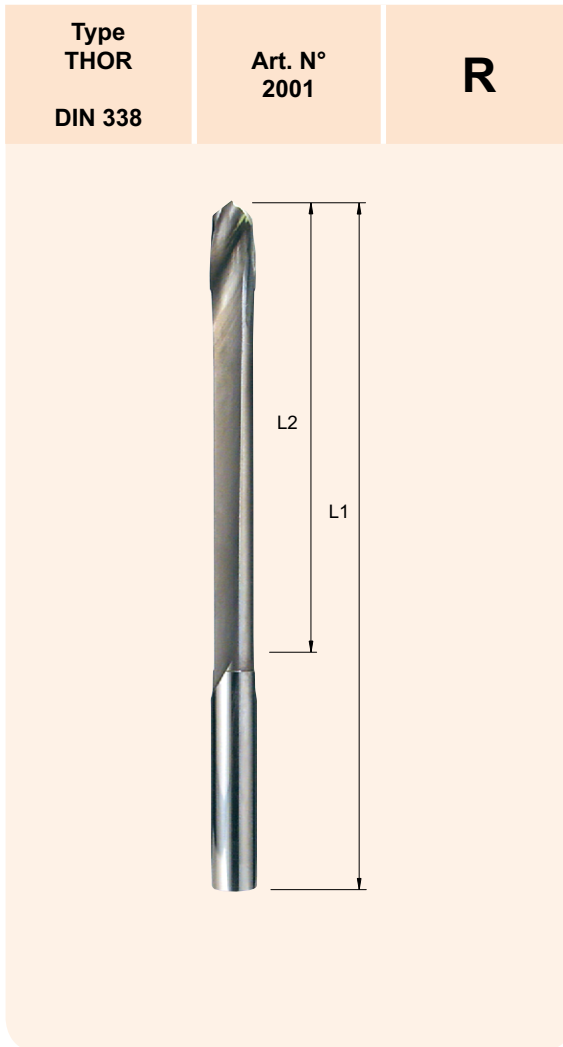
R



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



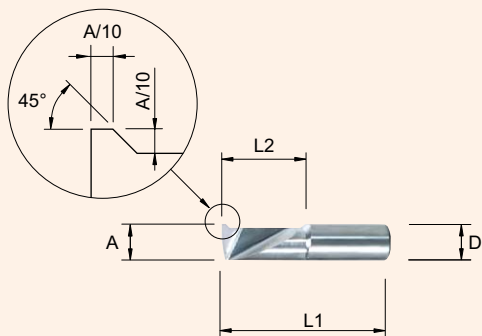
D h6	L1	L2	D h6	L1	L2
2.00	49	24	5.20	86	52
2.05	49	24	5.30	86	52
2.10	49	24	5.40	93	57
2.15	53	27	5.50	93	57
2.20	53	27	5.60	93	57
2.25	53	27	5.70	93	57
2.30	53	27	5.80	93	57
2.35	53	27	5.90	93	57
2.40	57	30	6.00	93	57
2.45	57	30			
2.50	57	30			
2.55	57	30			
2.60	57	30			
2.65	57	30			
2.70	61	33			
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			

Revêtement sur demande  
 Beschichtung auf Anfrage  
 Coating on request

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

Type 1600

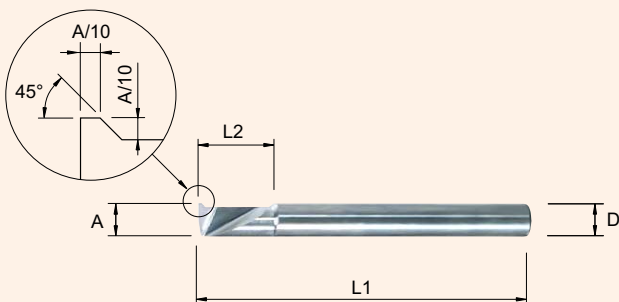
L



A <sup>-0.05</sup>	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

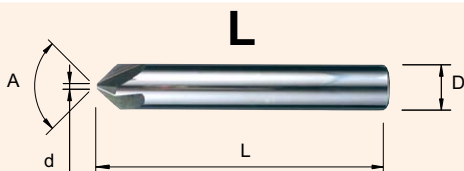


A <sup>-0.05</sup>	D	L1	L2	Art. N°
2	3	38	4	1610-2-4
3	3	38	6	1610-3-6
4	4	40	8	1610-4-8
4	4	40	12	1610-4-12
5	5	50	10	1610-5-10
5	5	54	15	1610-5-15
6	6	50	12	1610-6-12
6	6	57	18	1610-6-18
8	8	58	16	1610-8-16
8	8	63	24	1610-8-24

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

Type 1901

Z=4



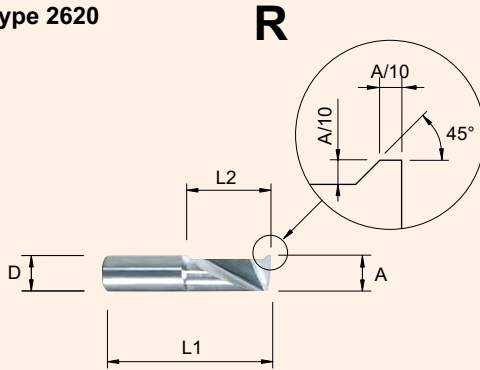
A	D	d	L	Art. N°
90°	3.0	0.3	38	1901-3
90°	6.0	0.7	50	1901-6
90°	8.0	1.2	58	1901-8
90°	12.0	1.6	73	1901-12

Revêtement sur demande  
Beschichtung auf Anfrage  
Coating on request



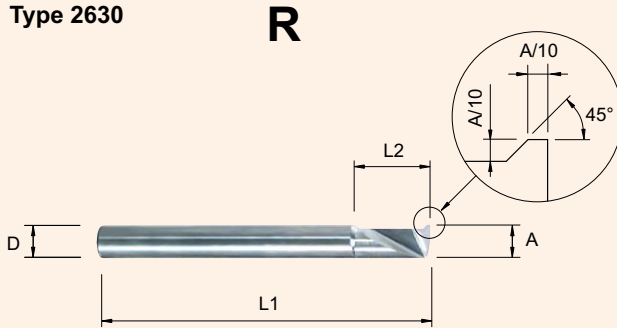
Burins intérieurs en métal dur  
Vollhartmetall Innendrehwerkzeuge  
Solid carbide internal turning tools

Type 2620



A <sup>-0.05</sup>	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 <sup>-0.05</sup>	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

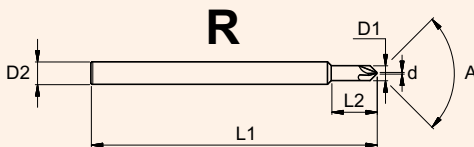
Fraises à angler coniques en métal dur  
Vollhartmetall Kegelsenker  
Solid carbide chamfering tools

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



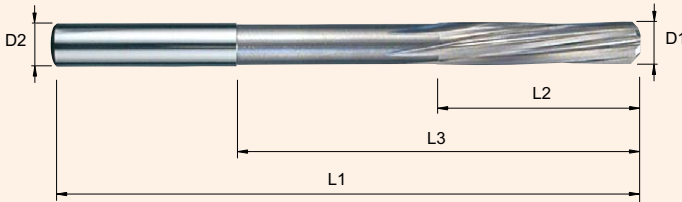
A	D1	d	D2 h6	L1	L2	Art. N°
90°	1.0	0.1	3.0	39	3	3911-1.0
90°	1.5	0.1	3.0	39	4.5	3911-1.5
90°	2.0	0.1	3.0	39	6	3911-2.0
90°	2.5	0.1	3.0	39	7.5	3911-2.5

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

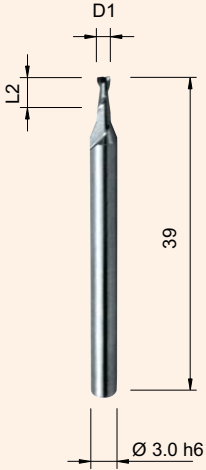
Ø	0.97 - 3.03	→ 0 / +0.003
	3.10 - 10.03	→ 0 / +0.004
Ø H7	1.0H7 - 3.0H7	→ +0.004 / +0.008
= ~ 40% tol. (VSM 34306)	3.5H7 - 6.0H7	→ +0.005 / +0.010
	6.5H7 - 10.0H7	→ +0.006 / +0.012
	11.0H7 - 12.0H7	→ +0.008 / +0.015

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

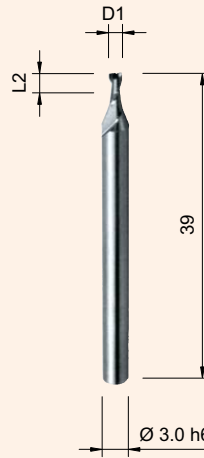
Type 3271



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

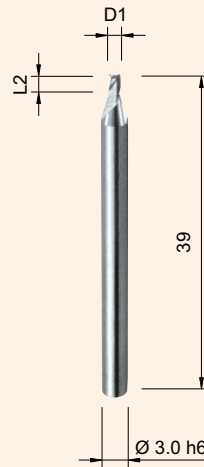
Type 3371



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

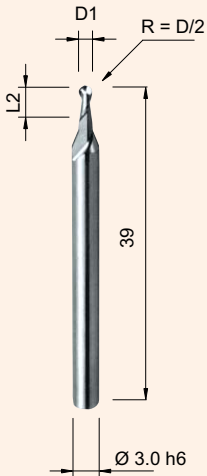
**Z=3** coupe au centre  
Zentrumsschnitt  
cut over center  
**30°** hélice  
Drall  
spiral  
extra-courte  
Extra kurz  
extra short

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

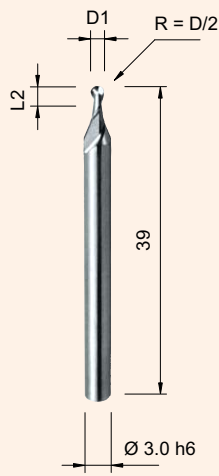
coupe au centre  
Zentrumsschnitt  
cut over center

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

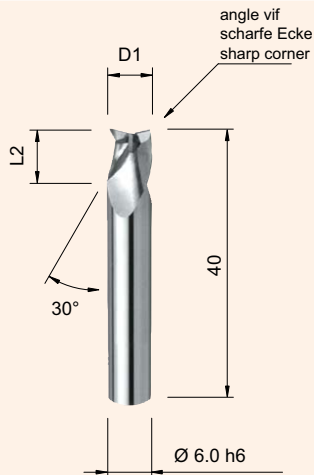
30°

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		

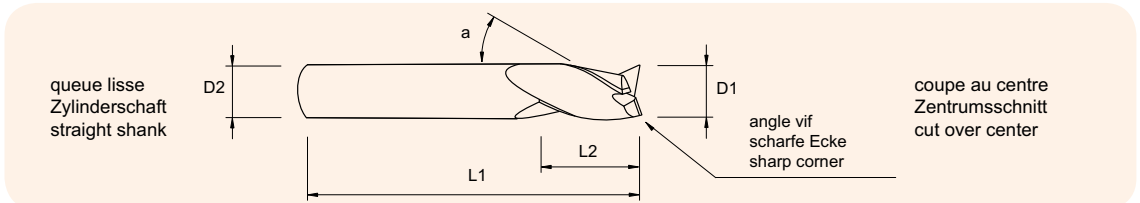
Z=3

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

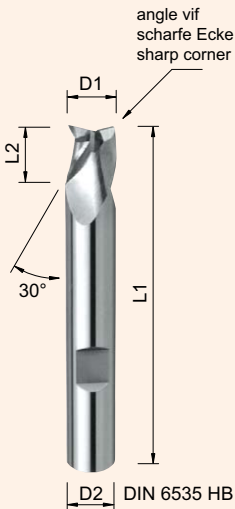
Type 3231	Type 3238	Type 3331	Type 3338	Type 3341	Type 3361	Type 3431	Type 3441	dimensions Abmessungen dimensions		
Z = 2	Z = 2	Z = 3	Z = 3	Z = 3	Z = 3	Z = 4	Z = 4	D1 h10 D2 h6	L1	L2
a = 30°	a = 30°	a = 30°	a = 30°	a = 45°	a = 60°	a = 30°	a = 45°			
-	R = D1 / 2	-	R = D1 / 2	-	-	-	-	2.0	32	8
								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



Type 3336 DIN 6527 K

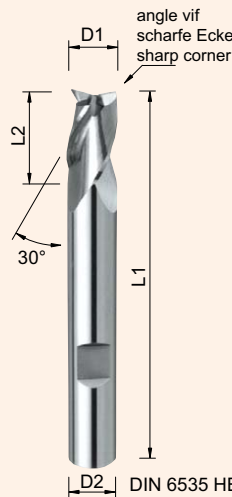
Z = 3

coupe au centre  
Zentrumschnitt  
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  
Zentrumschnitt  
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

Z = 2

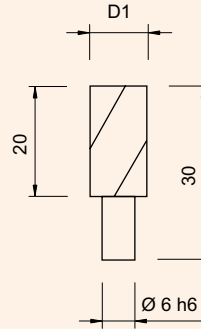


Type 3381

Z = 3



dimensions  
Abmessungen  
dimensions



D1 h10

- 6.0
- 8.0
- 10.0
- 12.0

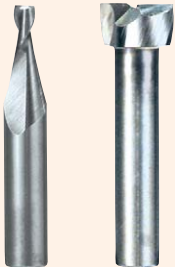
coupe au centre  
Zentrumsschnitt  
cut over center

30°

hélice  
Drall  
spiral

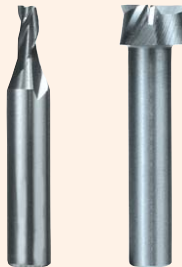
Type 3282

Z = 2

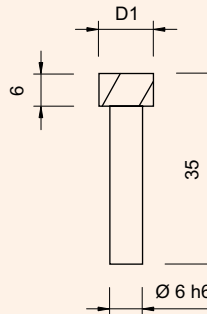


Type 3382

Z = 3



dimensions  
Abmessungen  
dimensions



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 |      |

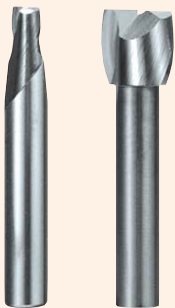
coupe au centre  
Zentrumsschnitt  
cut over center

30°

hélice  
Drall  
spiral

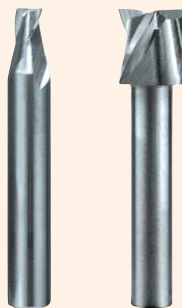
Type 3283

Z = 2

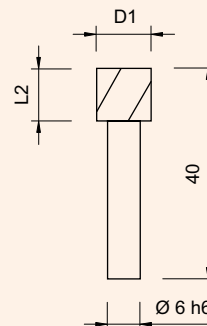


Type 3383

Z = 3



dimensions  
Abmessungen  
dimensions



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°

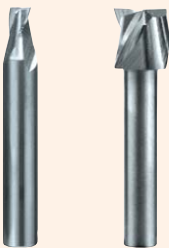
hélice  
Drall  
spiral

Revêtement sur demande  
Beschichtung auf Anfrage  
Coating on request

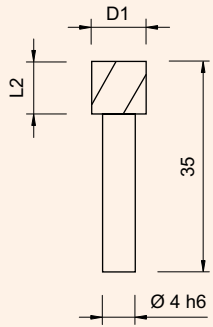
Fraises en bout en métal dur pour usinage en bout plat  
 VHM-Schaftfräser für flache Frontbearbeitung  
 Solid carbide end mills for flat front machining

**Type 3384** *new*

**dimensions**  
**Abmessungen**  
**dimensions**



**Z = 3**



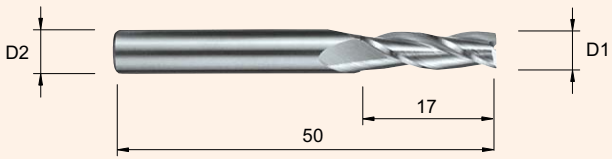
coupe au centre  
 Zentrumsschnitt  
 cut over center

**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

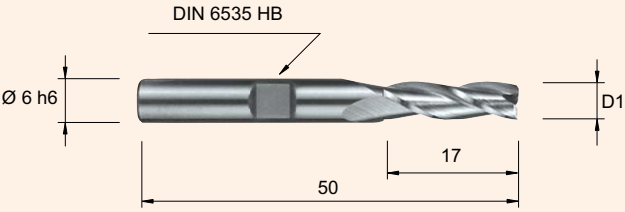
**Z = 3**



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

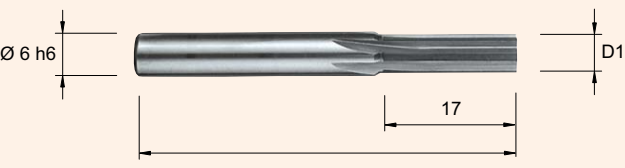
**Z = 3**

DIN 6535 HB



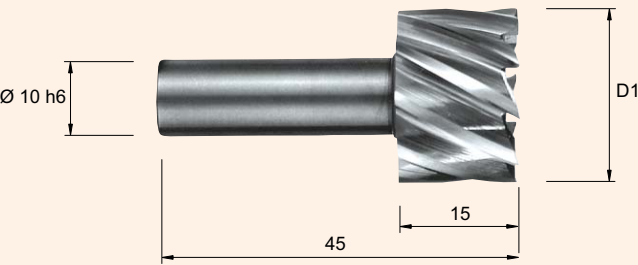
D1	Art. N°
5.2	3812
6.0	3813

**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

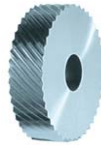
## Type 1107



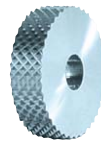
AA



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

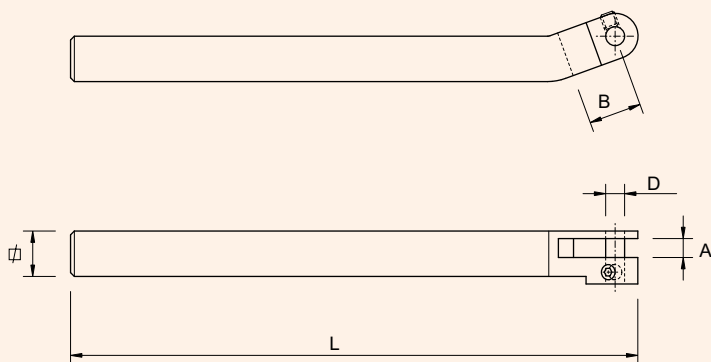
Exécutions spéciales sur demande  
Sonderausführungen auf Anfrage  
Specials execution on request



Porte-molettes  
Rändelhalter  
Knurl holders

## Type 2402

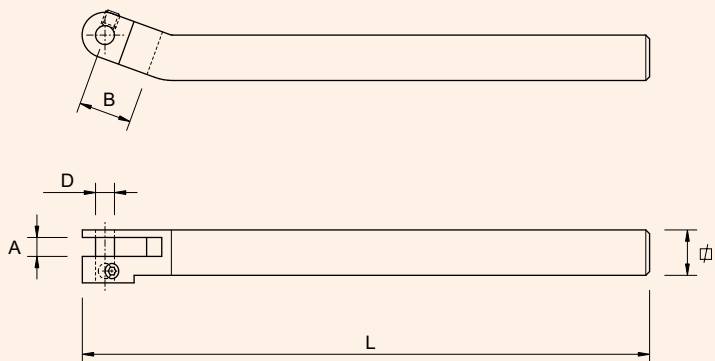
**R**



φ	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

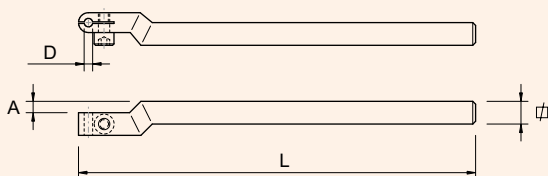
**L**



φ	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

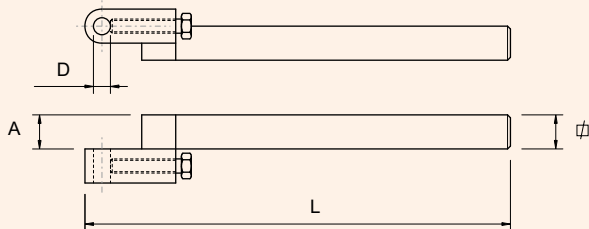
Porte-outils  
Werkzeughalter  
Tool holders

**Type 1400-J L**



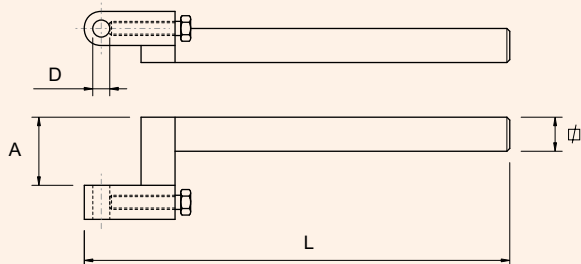
$\varnothing$	L	A	D	Art. N°
6 x 6	132	3	1.5	1400-J-615
6 x 6	132	3	2.0	1400-J-620
6 x 6	132	3	3.0	1400-J-630
7 x 7	140	3	1.5	1400-J-715
7 x 7	140	3	2.0	1400-J-720
7 x 7	140	3	3.0	1400-J-730
8 x 8	140	4	1.5	1400-J-815
8 x 8	140	4	2.0	1400-J-820
8 x 8	140	4	3.0	1400-J-830

**Type 1401-K L**



$\varnothing$	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

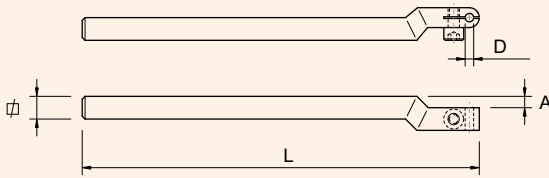
**Type 1420 L**



$\varnothing$	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

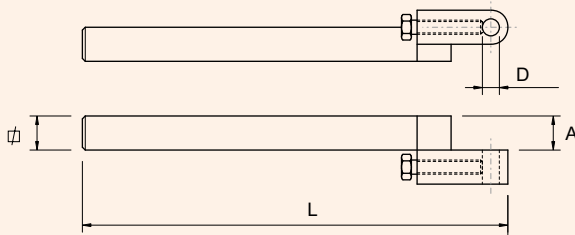
Porte-outils  
Werkzeughalter  
Tool holders

**Type 2400-J R**



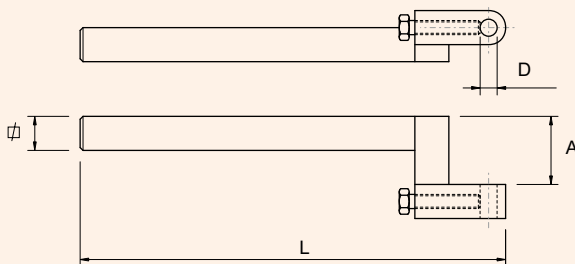
φ	L	A	D	Art. N°
6 x 6	132	3	1.5	2400-J-615
6 x 6	132	3	2.0	2400-J-620
6 x 6	132	3	3.0	2400-J-630
7 x 7	140	3	1.5	2400-J-715
7 x 7	140	3	2.0	2400-J-720
7 x 7	140	3	3.0	2400-J-730
8 x 8	140	4	1.5	2400-J-815
8 x 8	140	4	2.0	2400-J-820
8 x 8	140	4	3.0	2400-J-830

**Type 2401-K R**



φ	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

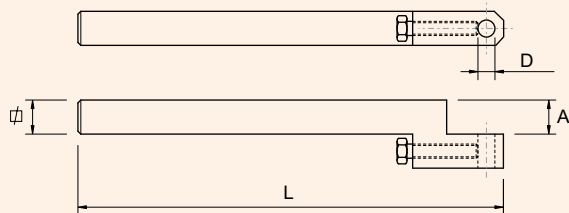
**Type 2420 R**



φ	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

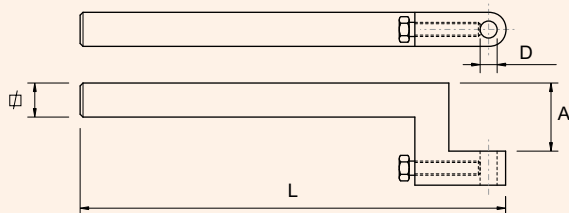
Porte-outils  
Werkzeughalter  
Tool holders

**Type 2405**



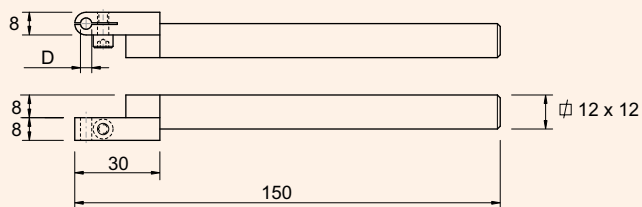
∅	L	A	D	Art. N°
8 x 8	120	8	3.0	2405-K-830
8 x 8	120	8	4.0	2405-K-840
8 x 8	120	8	5.0	2405-K-850
8 x 8	120	8	6.0	2405-K-860
10 x 10	100	10	4.0	2405-K-1040
10 x 10	100	10	5.0	2405-K-1050
10 x 10	100	10	6.0	2405-K-1060
12 x 12	150	12	4.0	2405-K-1240
12 x 12	150	12	6.0	2405-K-1260
12 x 12	150	12	8.0	2405-K-1280

**Type 2425**



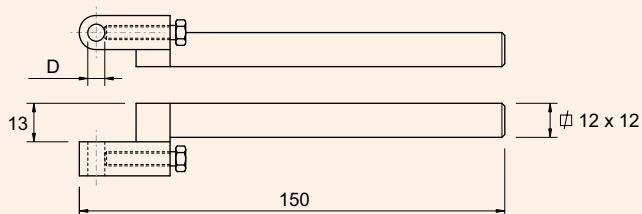
∅	L	A	D	Art. N°
8 x 8	120	12	4.0	2425-8124
8 x 8	120	15	5.0	2425-8155
8 x 8	120	20	5.0	2425-8205
10 x 10	100	15	6.0	2425-10156
10 x 10	100	20	6.0	2425-10206
12 x 12	150	18	6.0	2425-12186
12 x 12	150	24	8.0	2425-12248

**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



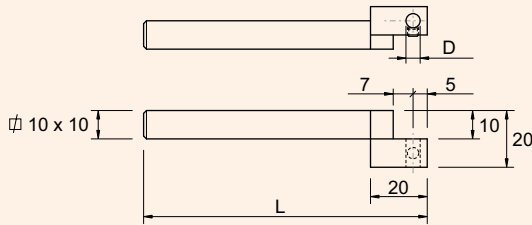
D	Art. N°
4.0	1460-4
5.0	1460-5
6.0	1460-6
8.0	1460-8

Porte-outils  
Werkzeughalter  
Tool holders

## Type 2450-SP

R

10 x 10

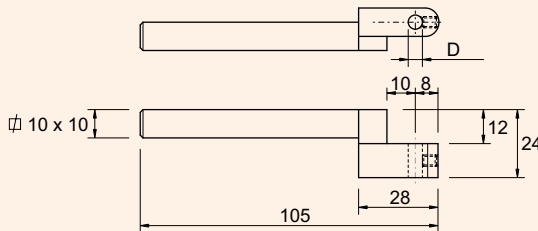


D	L	Art. N°
3.0	100	2450-SP-3
4.0	100	2450-SP-4
5.0	100	2450-SP-5
6.0	100	2450-SP-6
3.0	120	2450-SP-3-120
4.0	120	2450-SP-4-120
5.0	120	2450-SP-5-120
6.0	120	2450-SP-6-120

## Type 2470

R

10 x 10

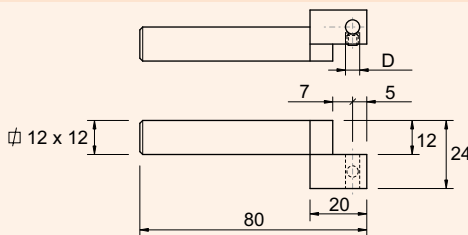


D	Art. N°
3.0	2470-3
4.0	2470-4
5.0	2470-5
6.0	2470-6
7.0	2470-7

## Type 2450

R

12 x 12

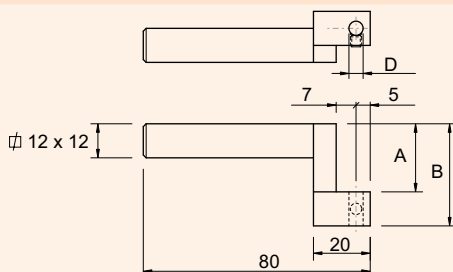


D	Art. N°
3.0	2450-3
4.0	2450-4
5.0	2450-5
6.0	2450-6
8.0	2450-8

## Type 2460

R

12 x 12



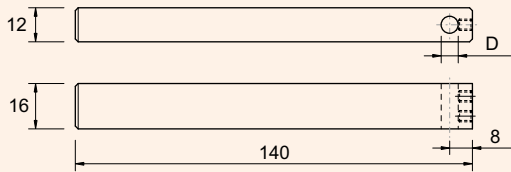
A	B	D	Art. N°
16	28	4.0	2460-284
16	28	6.0	2460-286
16	28	8.0	2460-288
20	32	4.0	2460-324
20	32	6.0	2460-326
20	32	8.0	2460-328
24	36	4.0	2460-364
24	36	6.0	2460-366
24	36	8.0	2460-368

Porte-outils  
Werkzeughalter  
Tool holders

## Type 2441

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

□ 12 x 16

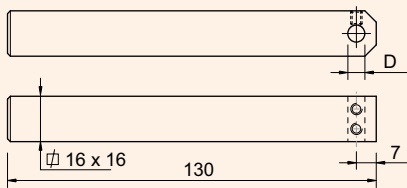


D	Art. N°
3.0	2441-0-3
4.0	2441-0-4
5.0	2441-0-5
6.0	2441-0-6

## Type 2440-0

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

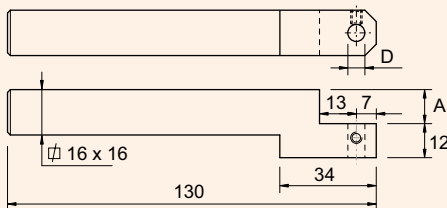
□ 16 x 16



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

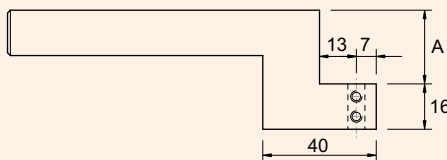
□ 16 x 16



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

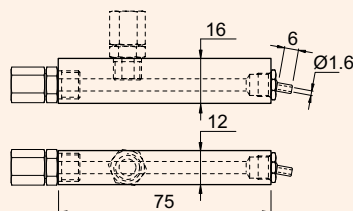
### Outil d'arrosage

Werkzeug für Kühlmittelzufuhr  
Tool for coolant supply

## Type 2490

□ 12 x 16

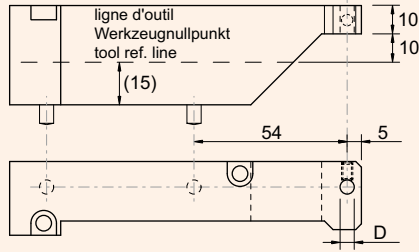
Raccord  
Anschluss  
connection  
Ø 6 - G1/8



Art. N°
2490

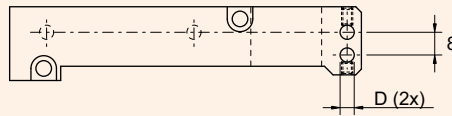
Porte-outils monoblocs pour machine TORNOS DECO 7/10  
 Monoblockwerkzeughalter für TORNOS DECO 7/10 Maschine  
 Monobloc tool holders for machine TORNOS DECO 7/10

Type 2435



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

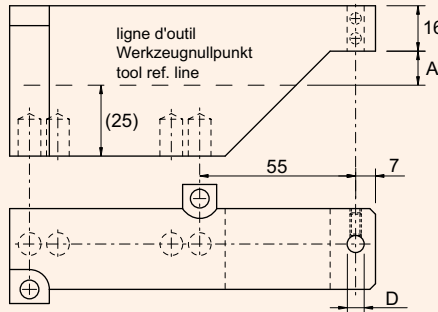
Type 2435-T



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

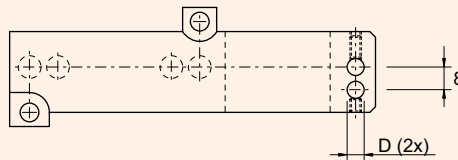
Porte-outils monoblocs pour machine TORNOS DECO 7/10  
 Monoblockwerkzeughalter für TORNOS DECO 7/10 Maschine  
 Monobloc tool holders for machine TORNOS DECO 7/10

Type 2436



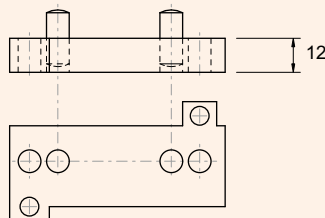
A	D	Art. N°
12	3.0	2436-12-3
12	4.0	2436-12-4
12	5.0	2436-12-5
12	6.0	2436-12-6
12	8.0	2436-12-8
18	3.0	2436-18-3
18	4.0	2436-18-4
18	5.0	2436-18-5
18	6.0	2436-18-6
18	8.0	2436-18-8

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