

SPHINX+TOOLS



SPHINX HIGH PRECISION CUTTING TOOLS
VOL. 3



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SPHINX TOOLS the Partner for Maximum Success

SPHINX is not just a leading company in the production and sale of precision cutting tools, but also a trusted partner. Our strong international position today is the result of continuous growth, consistent reinvestment in our production plants, and the personal dedication of our employees. We don't just view customer needs as the motivation for all our innovations, we prioritize them. This is why renowned industrial and medical companies rely on our quality and experience. What sets us apart is our ability to provide unique solutions to complex tasks, contributing significantly to the market success of well-known companies. As the market becomes increasingly demanding, we rise to the challenge, ensuring our customers' needs are always met.

The Highest Quality for the Highest Precision

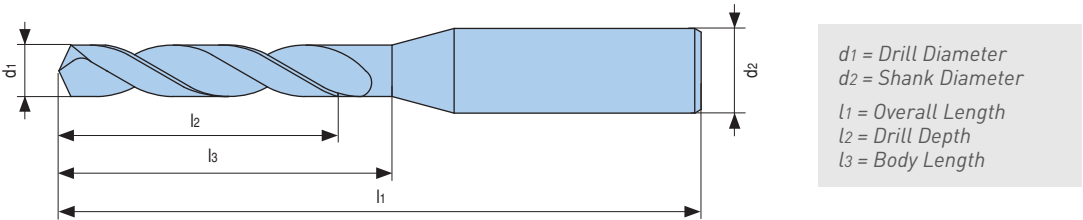
Our quality management system is multi-certified to ISO 9001:2015, EN ISO 13485:2016, and FDA registration: 3010871687. Therefore, SPHINX stands for the highest quality and worldwide service. Thanks to repeatable quality, clear specifications, distinct procedures, and total traceability, we fully meet customers' requirements.

Our procedures are secured through various process stages, including:

- Initial Sample Test Report (ISTR)
- Potential Failure Mode and Effects Analysis (P-FMEA)
- Customer-specific tests and specifications

For medical technology, we perform cleaning and packaging in accordance with Good Manufacturing Practices (GMP) in an approved clean room of category 8, ISO 14644-1.

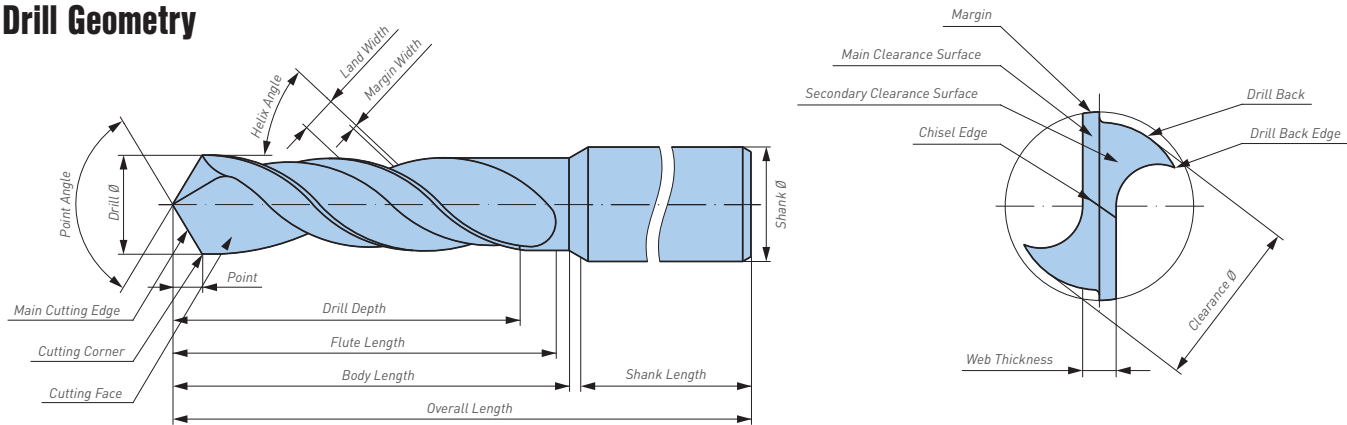
Drill Dimensions



Drill Material

HSS	Carbide
High Speed Steel w/ 8% Cobalt	Solid Carbide

Drill Geometry

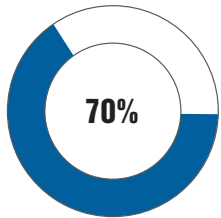


130°	20°	2xd	H7-H9
Drill Point Angle	Helix Angle	Length-to-Dia. Ratio	Achievable Hole Tolerance

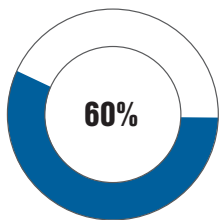
RECOMMENDATION FOR COATING

All the non-coated tools can also be offered with coating.

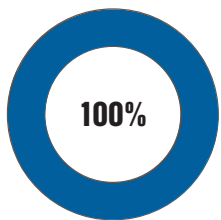
Consult BIG DAISHOWA engineering to recommend the optimum coat for your application.



... representing the choice of the coat in relation to your application!



... cost saving as a result of a longer tool-life!



Up to 100 % higher performance!



Material Grade		Strength/Hardness (N/mm2)	Material
P	P1	≤700	Mild, Low-Carbon Steel, Steel Casting 1018, 1020, 1551, A36
	P2	≤1000	Low- to Medium-Carbon Alloy Steel 4140, 4340, 8620
	P3	≤1400	High-Carbon Alloy Steel, Tool Steel 1060, 52100, M2, A2, H13, O1
M	M1	—	Ferritic / Martensitic Stainless Steel 403, 410, 416, 430, 440C
	M2	—	Austenitic Stainless Steel 201, 202, 304, 316, 17-4 PH
K	K1	—	Grey Cast Iron Class 20, 30
	K2	—	Ductile Cast Iron Ductile/Nodular/Chilled
N	N1	≤350	Malleable / Wrought Aluminum Alloy 2024, 6061, 7075
	N2	≤300	Cast Aluminum Alloy (< 10% Silicon) 2024, 6061, 7075
	N3	≤450	Cast Aluminum Alloy (≥ 10% Silicon) A356.2, A390, A4032
	N4	—	Magnesium, Magnesium Alloy AE44, AJ62A, WE43, AZ31B, AZ91, Magnox
	N5	—	Copper Nickel Alloy, Brass, Bronze C26000, C36000, C70600, C95400
	N6	—	Copper Forging Alloy C18150, C18200, C15000, C17200
	N7	—	Silver
	N8	—	Gold
S	S1	>450	Titanium, Titanium Alloy
	S2	—	Nickel / Copper-Based Super Alloy Inconel, Monel
H	H1	1700–2000	Hardened Steels (50 – 55 HRC) Pre-Hardened / Heat-Treated Steel, Tool Steel
	H2	2000–2250	Hardened Steels (55 – 60 HRC) Pre-Hardened / Heat-Treated Steel, Tool Steel
	H3	>2250	Hardened Steels (> 60 HRC) Pre-Hardened / Heat-Treated Steel, Tool Steel
O	O1	—	Thermoplastic, Thermosetting Plastic Acrylic, ABS, Nylon, Polycarbonate
	O2	—	Fiber-Reinforced Plastic Fiberglass, Carbon Fiber
	O3	—	Graphite

Drilling and Reaming

	Article	Diameter Range	Increments	Cutting Length	Point Angle	Helix Angle	
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NC Spotting Drill

	50806	.50–6.00	.10		60°	20°	
	50809	.50–3.00	.10		90°	20°	
	50808	.50–3.00	.10		90°	20°	
	50810	2.00–2.00	1.00		90°	20°	
	50811	2.00–12.00	1.00		90°	20°	
	50812	2.00–2.00	1.00		123°	20°	
	50813	2.00–1.00	1.00		123°	20°	
	50814	2.00–2.00	1.00		142°	20°	
	50815	2.00–1.00	1.00		142°	20°	
	50818	1.60–12.00	.20		142°/90°	20°	

Pilot Drill

	56005	.10–1.50	.01	2–4 × Ø	130°	20°	
	56033	.03–2.99	.01	2 × Ø	130°	30°	
	56036	.30–6.00	.05	2 × Ø	140°/90°	30°	
	16004	.10–1.50	.05	2–3 × Ø	130°	20°	

Micro Drill

	50695	.20–1.50	.01	6 × Ø	118°	30°	
	50699	.05–2.00	.01	6 × Ø	118°	30°	

	Material	Workpiece Material *							Application *	Page
		P	M	K	N	S	H	O		
	Carbide	✓	✓	✓	✓	•		✓	 	14
	Carbide	✓	✓	✓	✓	•		✓	 	16
	Carbide, TiAlSiN	✓	✓	✓	✓	✓	✓	✓	 	15
	Carbide	✓	✓	✓	✓	•		✓	 	17
	Carbide; TiAlSiN	✓	✓	✓	✓	•	✓	✓	 	18
	Carbide	✓	✓	✓	✓	•		✓	 	19
	Carbide; TiAlSiN	✓	✓	✓	✓	•	✓	✓	 	20
	Carbide	✓	✓	✓	✓	•		✓	 	21
	Carbide; TiAlSiN	✓	✓	✓	✓	•	✓	✓	 	22
	Carbide	✓	✓	✓	✓	•		✓		23
	Carbide	✓	•	✓	✓	✓		✓	  	24
	Carbide	✓	✓	✓	✓	✓		✓	  	26
	Carbide; AlCrN	✓	✓	✓	✓	✓	•	•	 	30
	HSS	✓	•	✓	•			•	  	32
	Carbide	✓	•	✓	✓			•	 	34
	Carbide	✓	•	✓	✓			•	 	36

* S. 142+143
p. 142+143

✓ outstanding • suitable



Drilling and Reaming

	Article	Diameter Range	Increments	Cutting Length	Point Angle	Helix Angle	
Micro Drill							
	51200	.03–3.00	.01	6 × Ø	130°	35°	
	51201	.20–3.00	.01	6 × Ø	130°	35°	
	50621	.15–3.00	.01	12 × Ø	130°	25°	
	50622	.20–3.00	.01	12 × Ø	130°	25°	
	12604	.05–3.175	.01	DIN 1899-A	118°	25°	
Micro Deep Hole Drill							
	50720	.20–2.00	.05	20 × Ø	129°	30°	
	50740	.40–1.50	.05	40 × Ø	126°	30°	
	50760	.40–1.50	.05	60 × Ø	126°	30°	
	50780	.40–1.50	.05	80 × Ø	126°	30°	
High-Performance Drill Nirox							
	51609	.30–3.00	.05	9 × Ø	140°	28°	
High-Performance Drill Phoenix TC2							
	52903	1.00–10.00	.05	3 × Ø	140°	30°	
	52906	1.00–10.00	.05	6 × Ø	140°	30°	
	52909	1.00–10.00	.10	9 × Ø	140°	30°	
	52912	1.00–10.00	.10	12 × Ø	137°	30°	
	52916	1.00–10.00	.10	16 × Ø	137°	30°	
	52920	3.00–10.00	1.00	20 × Ø	137°	30°	
	52930	3.00–10.00	1.00	30 × Ø	137°	30°	

	Material	Workpiece Material *							Application *	Page
		P	M	K	N	S	H	O		
	Carbide	✓	✓	✓	✓	✓		•	 	40
	Carbide; TiAlN	✓	✓	✓	✓	✓	•	•	  	40
	Carbide	✓	•	✓	✓			•	 	48
	Carbide; TiAlN	✓	•	✓	✓	•	•	•	  	48
	HSS	✓	•	✓	•			•	 	56
	Carbide; Mi-Nova	✓	•	✓	✓	•	•	✓	  	58
	Carbide; Mi-Nova	✓	•	✓	✓	•	•	✓	  	60
	Carbide; Mi-Nova	✓	•	✓	✓	•	•	✓	  	61
	Carbide; Mi-Nova	✓	•	✓	✓	•	•	✓	  	61
	Carbide; TiAlSiN	✓	✓	•	•	✓	•	✓	   	62
	Carbide; AlTiCrN+S	✓	✓	✓	✓	✓	•	•	    	64
	Carbide; AlTiCrN+S	✓	✓	✓	✓	✓	•	•	    	64
	Carbide; AlTiCrN+S	✓	✓	✓	✓	✓	•	•	   	64
	Carbide; AlCrTiN	✓	✓	✓	✓	✓	•	•	   	68
	Carbide; AlCrTiN	✓	✓	•	✓	✓	•	•	  	68
	Carbide; AlCrTiN	•	✓	•	✓	✓	•	•	  	71
	Carbide; AlCrTiN	•	✓	•	✓	✓	•	•	  	71

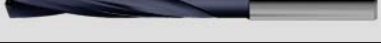
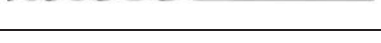
* S. 142+143
p. 142+143

✓ outstanding

• suitable



Drilling and Reaming

	Article	Diameter Range	Increments	Cutting Length	Point Angle	Helix Angle	
High-Performance Drill Phoenix							
	50938	1.00–12.70	.10	3 × Ø	140°	30°	
	50940	1.00–12.70	.05	6 × Ø	140°	30°	
	50941	.50–3.00	.10	6 × Ø	140°	30°	
High-Performance Drill Quadro							
	52100	3.00–19.50	.50	6 × Ø	140°	0°	
	52200	3.00–2.00	.50	12 × Ø	140°	0°	
	52150	4.00–2.00	.50	6 × Ø	140°	15°	
Twist Drill							
	50950	3.00–2.00	.10	DIN 6537	140°	30°	
	50830	.30–2.00	.10	DIN 6539	118°	35°	
	50838	.30–6.00	.05	3–8 × Ø	118°	30°	
	50820	.70–14.00	.10	DIN 338	130°	35° – 15°	
Drill Reamer							
	50840	2.00–14.00	.10	DIN 6539	118°	35°	
	55654	1.00–14.00	.10	DIN 6539	140°	35°	
	55338	1.00–14.00	.10	DIN 338	140°	35°	
	55652	.20–2.99	.01	5 × Ø	140°	35°	
Reamer							
	58000	.987–6.018	.01	– 8 × Ø		10°	
	58500	.987–6.018	.01	– 8 × Ø		10°	

	Material	Workpiece Material *							Application *	Page
		P	M	K	N	S	H	O		
	Carbide; AlCrN	✓	✓	✓	•	•	•		    	72
	Carbide; TiAlN	✓	✓	✓	•	•	•		    	76
	Carbide; TiAlN	✓	✓	✓	•	•	•		    	79
	Carbide			✓	✓			•	  	80
	Carbide			✓	✓			•	  	80
	Carbide; TiAlN	✓		✓	✓		•		   	82
	Carbide; TiAlN	✓	•	✓	•	•	•	•	    	84
	Carbide	✓	✓	•	✓	•		✓	 	86
	Carbide	✓	✓	•	✓	•		✓	 	88
	Carbide	✓		✓	•				 	90
	Carbide	•	•	•	✓	•			 	92
	Carbide	✓	•	✓	•	•			    	94
	Carbide	✓	•	✓	•	•			    	94
	Carbide	✓	•	✓	•	•		•	    	98
	Carbide	✓	✓	✓	✓	•			 	102
	Carbide	✓	✓	✓	✓	•				103

* S. 142+143
p. 142+143

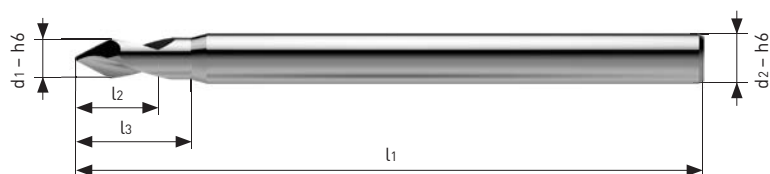
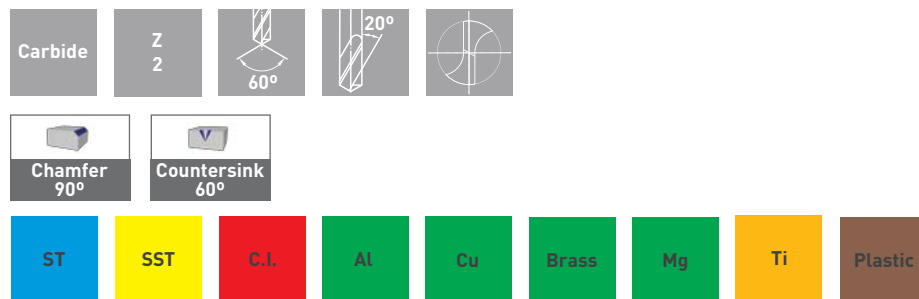
✓ outstanding

• suitable



NC Spotting

Art. 50806



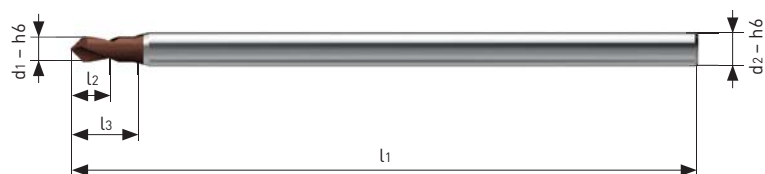
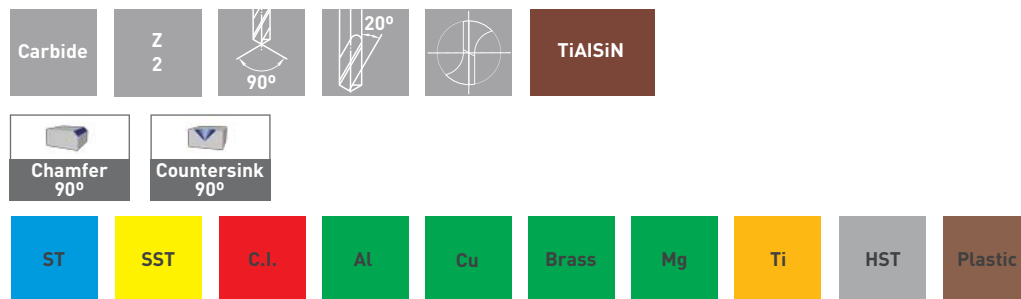
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40.50806.0060	.60	.0236	1.50	2.00	38	3.00
40.50806.0070	.70	.0276	1.50	2.00	38	3.00
40.50806.0080	.80	.0315	2.00	2.50	38	3.00
40.50806.0090	.90	.0354	2.00	2.50	38	3.00
40.50806.0100	1.00	.0394	2.00	2.50	38	3.00
40.50806.0110	1.10	.0433	2.50	3.50	38	3.00
40.50806.0120	1.20	.0472	2.50	3.50	38	3.00
40.50806.0130	1.30	.0512	2.50	3.50	38	3.00
40.50806.0140	1.40	.0551	3.00	4.00	38	3.00
40.50806.0150	1.50	.0591	3.00	4.00	38	3.00
40.50806.0160	1.60	.0630	3.00	4.00	38	3.00
40.50806.0170	1.70	.0670	4.00	5.00	38	3.00
40.50806.0180	1.80	.0709	4.00	5.00	38	3.00
40.50806.0190	1.90	.0748	4.00	5.00	38	3.00
40.50806.0200	2.00	.0787	5.00	6.00	38	3.00
40.50806.0210	2.10	.0827	5.00	6.00	38	3.00
40.50806.0220	2.20	.0866	5.00	6.00	38	3.00
40.50806.0230	2.30	.0906	6.00	7.00	38	3.00
40.50806.0240	2.40	.0945	6.00	7.00	38	3.00
40.50806.0250	2.50	.0984	6.00	7.00	38	3.00
40.50806.0260	2.60	.1024	7.00	8.00	38	3.00
40.50806.0270	2.70	.1063	7.00	8.00	38	3.00
40.50806.0280	2.80	.1102	7.00	8.00	38	3.00
40.50806.0290	2.90	.1142	7.00	8.00	38	3.00
40.50806.0300	3.00	.1181	9.50	9.50	38	3.00
40.50806.0400	4.00	.1575	10.50	10.50	40	4.00
40.50806.0500	5.00	.1969	16.00	16.00	50	5.00
40.50806.0600	6.00	.2362	16.00	16.00	50	6.00

- All dimensions are millimeters unless otherwise noted
- For cutting data see pg. 140

NC Spotting

Art. 50808

A.1
CENTERING

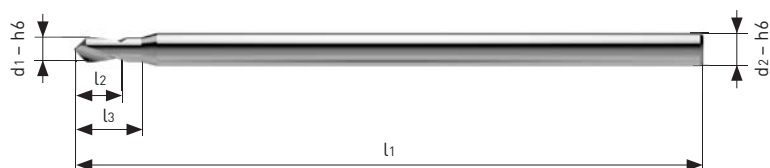
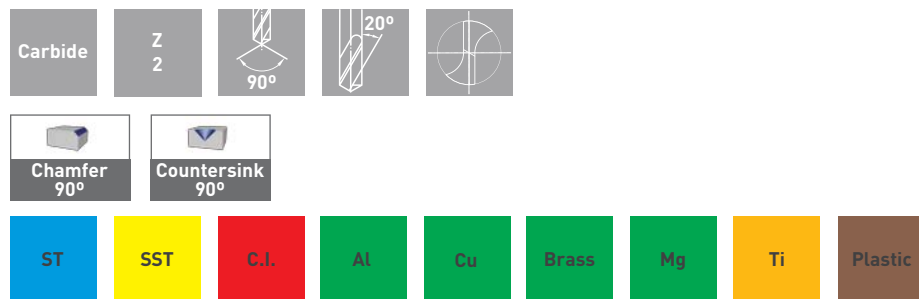


Catalog Number	d_1	d_1 (in.)	l_2	l_3	l_1	d_2
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40.50808.0060	.60	.0236	1.20	1.80	38	2.00
40.50808.0070	.70	.0276	1.40	2.00	38	2.00
40.50808.0080	.80	.0315	1.60	2.20	38	2.00
40.50808.0090	.90	.0354	1.80	2.40	38	2.00
40.50808.0100	1.00	.0394	2.00	2.60	38	2.00
40.50808.0110	1.10	.0433	2.20	2.80	38	2.00
40.50808.0120	1.20	.0472	2.40	3.00	38	2.00
40.50808.0130	1.30	.0512	2.60	3.20	38	2.00
40.50808.0140	1.40	.0551	2.80	3.40	38	2.00
40.50808.0150	1.50	.0591	3.00	3.80	38	2.00
40.50808.0160	1.60	.0630	3.20	4.20	38	2.00
40.50808.0170	1.70	.0670	3.40	4.40	38	2.00
40.50808.0180	1.80	.0709	3.60	4.60	38	2.00
40.50808.0190	1.90	.0748	3.80	4.80	38	2.00
40.50808.0200	2.00	.0787	5.00	6.00	38	3.00
40.50808.0250	2.50	.0984	6.50	8.00	38	3.00
40.50808.0300	3.00	.1181	7.50	7.50	38	3.00

- All dimensions are millimeters unless otherwise noted
- For cutting data see pg. 140

NC Spotting

Art. 50809



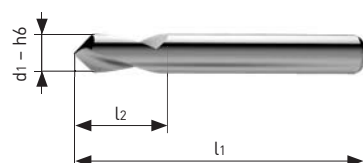
Catalog Number	d_1	d_1 (in.)	l_2	l_3	l_1	d_2
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40.50809.0060	.60	.0236	1.20	1.80	38	2.00
40.50809.0070	.70	.0276	1.40	2.00	38	2.00
40.50809.0080	.80	.0315	1.60	2.20	38	2.00
40.50809.0090	.90	.0354	1.80	2.40	38	2.00
40.50809.0100	1.00	.0394	2.00	2.60	38	2.00
40.50809.0110	1.10	.0433	2.20	2.80	38	2.00
40.50809.0120	1.20	.0472	2.40	3.00	38	2.00
40.50809.0130	1.30	.0512	2.60	3.20	38	2.00
40.50809.0140	1.40	.0551	2.80	3.40	38	2.00
40.50809.0150	1.50	.0591	3.00	3.80	38	2.00
40.50809.0160	1.60	.0630	3.20	4.20	38	2.00
40.50809.0170	1.70	.0670	3.40	4.40	38	2.00
40.50809.0180	1.80	.0709	3.60	4.60	38	2.00
40.50809.0190	1.90	.0748	3.80	4.80	38	2.00
40.50809.0200	2.00	.0787	5.00	6.00	38	3.00
40.50809.0250	2.50	.0984	6.50	8.00	38	3.00
40.50809.0300	3.00	.1181	7.50	7.50	38	3.00

- All dimensions are millimeters unless otherwise noted
- For cutting data see pg. 140

NC Spotting

Art. 50810

A.1
CENTERING

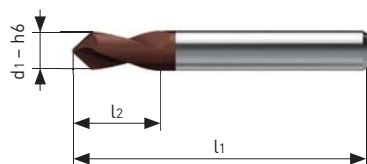
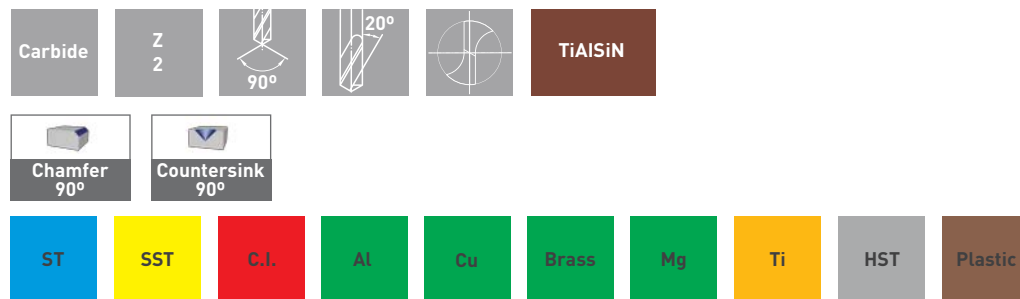


Catalog Number	d1	d1 (in.)	l2	l1
40.50810.0020	2.00	.0787	8.50	25
40.50810.0030	3.00	.1181	9.50	32
40.50810.0040	4.00	.1575	10.50	40
40.50810.0050	5.00	.1969	16.00	50
40.50810.0060	6.00	.2362	16.00	50
40.50810.0080	8.00	.3150	20.00	60
40.50810.0100	10.00	.3937	22.00	70
40.50810.0120	12.00	.4724	22.00	70
40.50810.0140	14.00	.5512	25.00	75
40.50810.0160	16.00	.6299	25.00	75
40.50810.0200	20.00	.7874	35.00	75

- All dimensions are millimeters unless otherwise noted
- TiAlSiN coated equivalent, Art. 50811; see pg. 18
- For cutting data see pg. 141

NC Spotting

Art. 50811



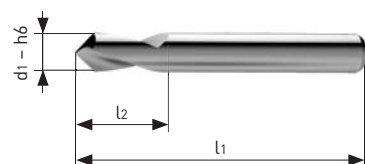
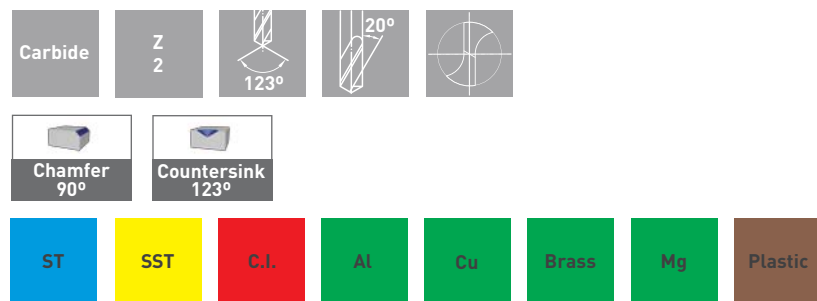
Catalog Number	d_1	d_1 (in.)	l_2	l_1
40.50811.0200	2.00	.0787	8.50	25
40.50811.0300	3.00	.1181	9.50	32
40.50811.0400	4.00	.1575	10.50	40
40.50811.0500	5.00	.1969	16.00	50
40.50811.0600	6.00	.2362	16.00	50
40.50811.0800	8.00	.3150	20.00	60
40.50811.1000	10.00	.3937	22.00	70
40.50811.1200	12.00	.4724	22.00	70

- All dimensions are millimeters unless otherwise noted
- For cutting data see pg. 141

NC Spotting

Art. 50812

A.1
CENTERING

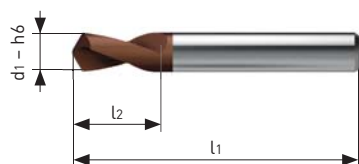
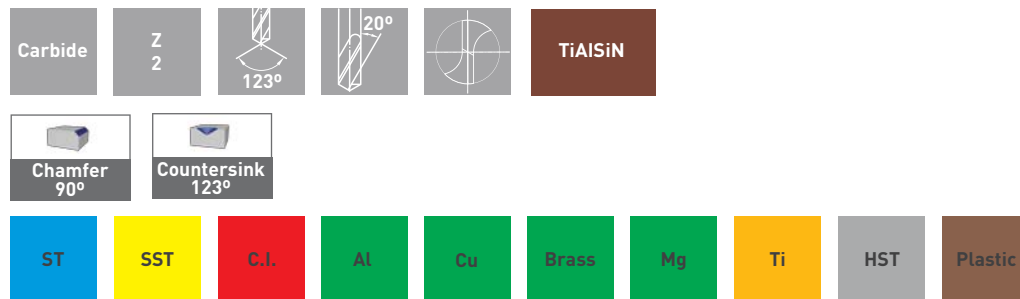


Catalog Number	d_1	d_1 (in.)	l_2	l_1
40.50812.0020	2.00	.0787	8.50	25
40.50812.0030	3.00	.1181	9.50	32
40.50812.0040	4.00	.1575	10.50	40
40.50812.0050	5.00	.1969	16.00	50
40.50812.0060	6.00	.2362	16.00	50
40.50812.0080	8.00	.3150	20.00	60
40.50812.0100	10.00	.3937	22.00	70
40.50812.0120	12.00	.4724	22.00	70
40.50812.0140	14.00	.5512	25.00	75
40.50812.0160	16.00	.6299	25.00	75
40.50812.0200	20.00	.7874	35.00	75

- All dimensions are millimeters unless otherwise noted
- TiAlSiN coated equivalent, Art. 50813; see pg. 20
- For cutting data see pg. 141

NC Spotting

Art. 50813



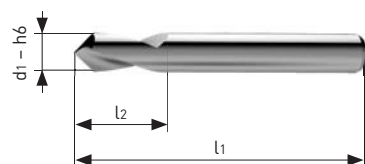
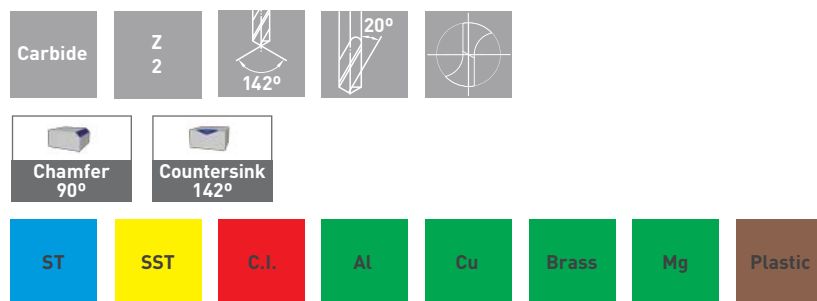
Catalog Number	d1	d1 (in.)	l2	l1
40.50813.0200	2.00	.0787	8.50	25
40.50813.0300	3.00	.1181	9.50	32
40.50813.0400	4.00	.1575	10.50	40
40.50813.0500	5.00	.1969	16.00	50
40.50813.0600	6.00	.2362	16.00	50
40.50813.0800	8.00	.3150	20.00	60
40.50813.1000	10.00	.3937	22.00	70

- All dimensions are millimeters unless otherwise noted
- For cutting data see pg. 141

NC Spotting

Art. 50814

A.1
CENTERING

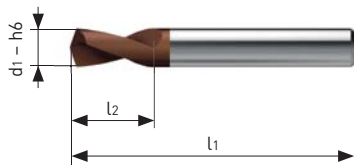
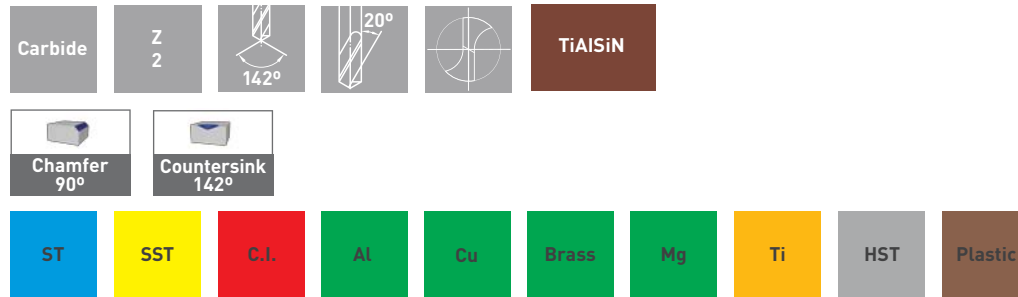


Catalog Number	d_1	d_1 (in.)	l_2	l_1
40.50814.0020	2.00	.0787	8.50	25
40.50814.0030	3.00	.1181	9.50	32
40.50814.0040	4.00	.1575	10.50	40
40.50814.0050	5.00	.1969	16.00	50
40.50814.0060	6.00	.2362	16.00	50
40.50814.0080	8.00	.3150	20.00	60
40.50814.0100	10.00	.3937	22.00	70
40.50814.0120	12.00	.4724	22.00	70
40.50814.0140	14.00	.5512	25.00	75
40.50814.0160	16.00	.6299	25.00	75
40.50814.0200	20.00	.7874	35.00	75

- All dimensions are millimeters unless otherwise noted
- TiAlSiN coated equivalent, Art. 50815; see pg. 22
- For cutting data see pg. 141

NC Spotting

Art. 50815



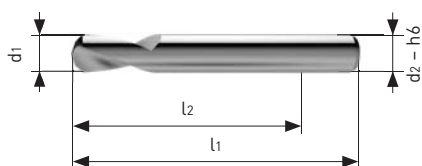
Catalog Number	d1	d1 (in.)	l1
40.50815.0020	2.00	.0787	25
40.50815.0030	3.00	.1181	32
40.50815.0040	4.00	.1575	40
40.50815.0050	5.00	.1969	50
40.50815.0060	6.00	.2362	50
40.50815.0080	8.00	.3150	60
40.50815.0100	10.00	.3937	70

- All dimensions are millimeters unless otherwise noted
- For cutting data see pg. 141

Spotting & Chamfering

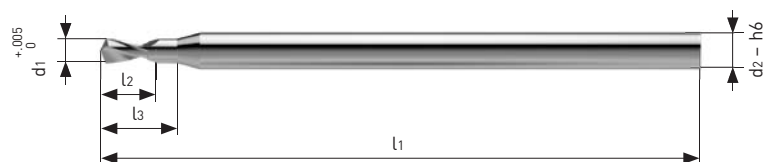
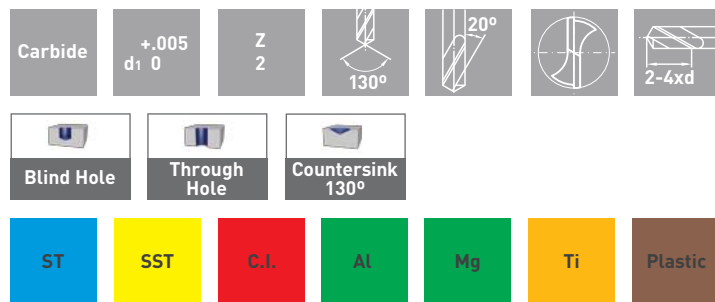
Art. 50818

A.1
CENTERING



Catalog Number	d1	d1 (in.)	l2	l1	d2
40.50818.0160	1.60	.0630	9.50	32	3.00
40.50818.0200	2.00	.0787	9.50	32	3.00
40.50818.0250	2.50	.0984	10.50	40	4.00
40.50818.0300	3.00	.1181	10.50	40	4.00
40.50818.0330	3.30	.1299	16.00	50	5.00
40.50818.0400	4.00	.1575	16.00	50	5.00
40.50818.0420	4.20	.1654	16.00	50	6.00
40.50818.0500	5.00	.1969	20.00	60	8.00
40.50818.0600	6.00	.2362	20.00	60	8.00
40.50818.0680	6.80	.2677	22.00	70	10.00
40.50818.0700	7.00	.2756	22.00	70	10.00
40.50818.0800	8.00	.3150	22.00	70	10.00
40.50818.0850	8.50	.3346	22.00	70	12.00
40.50818.0900	9.00	.3543	22.00	70	12.00
40.50818.1000	10.00	.3937	22.00	70	12.00
40.50818.1020	10.20	.4016	25.00	75	14.00
40.50818.1100	11.00	.4331	25.00	75	14.00
40.50818.1200	12.00	.4724	25.00	75	16.00

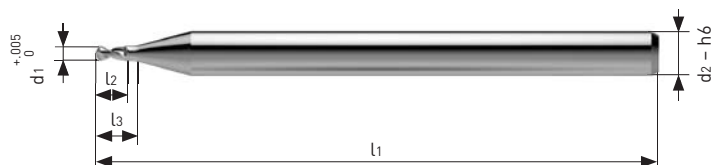
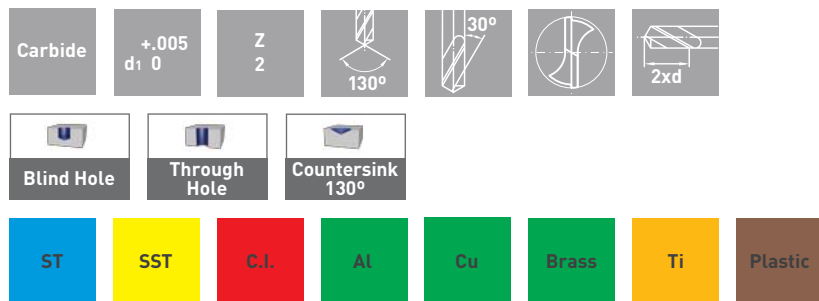
- All dimensions are millimeters unless otherwise noted
- For cutting data see pg. 141



Catalog Number	d1	d1 (in.)	l2	l3	l1	d2
40.56005.0010	.10	.0039	.40	.60	25	1.50
40.56005.0015	.15	.0059	.40	.60	25	1.50
40.56005.0020	.20	.0079	.60	.90	25	1.50
40.56005.0025	.25	.0098	.60	.90	25	1.50
40.56005.0030	.30	.0118	.90	1.20	25	1.50
40.56005.0035	.35	.0138	.90	1.20	25	1.50
40.56005.0040	.40	.0157	.90	1.60	25	1.50
40.56005.0045	.45	.0177	.90	1.60	25	1.50
40.56005.0050	.50	.0197	1.00	1.80	25	1.50
40.56005.0055	.55	.0217	1.00	1.80	25	1.50
40.56005.0060	.60	.0236	1.20	2.00	25	1.50
40.56005.0065	.65	.0256	1.20	2.00	25	1.50
40.56005.0070	.70	.0276	1.50	2.50	25	1.50
40.56005.0075	.75	.0295	1.50	2.50	25	1.50
40.56005.0080	.80	.0315	1.50	2.50	25	1.50
40.56005.0085	.85	.0335	1.50	2.50	25	1.50
40.56005.0090	.90	.0354	1.60	2.60	25	1.50
40.56005.0095	.95	.0374	1.60	2.60	25	1.50
40.56005.0100	1.00	.0394	2.00	3.20	25	1.50
40.56005.0105	1.05	.0413	2.00	3.20	25	1.50
40.56005.0110	1.10	.0433	2.30	3.50	25	1.50
40.56005.0115	1.15	.0453	2.30	3.50	25	1.50
40.56005.0120	1.20	.0472	2.30	3.50	25	1.50
40.56005.0125	1.25	.0492	2.30	3.50	25	1.50
40.56005.0130	1.30	.0512	2.70	4.20	25	1.50
40.56005.0135	1.35	.0531	2.70	4.20	25	1.50
40.56005.0140	1.40	.0551	2.70	4.20	25	1.50
40.56005.0145	1.45	.0571	2.70	4.20	25	1.50
40.56005.0150	1.50	.0591	3.00	4.20	25	1.50

- All dimensions are millimeters unless otherwise noted
- Packaged in quantities of 10 pieces
- For cutting data see pg. 142





Catalog Number	d1	d1 (in.)	l2	l3	l1	d2
40.56033.0003	.03	.0012	.15	.30	38	3.00
40.56033.0004	.04	.0016	.15	.30	38	3.00
40.56033.0005	.05	.0020	.20	.40	38	3.00
40.56033.0006	.06	.0024	.20	.40	38	3.00
40.56033.0007	.07	.0028	.25	.45	38	3.00
40.56033.0008	.08	.0031	.25	.45	38	3.00
40.56033.0009	.09	.0035	.30	.50	38	3.00
40.56033.0010	.10	.0039	.35	.55	38	3.00
40.56033.0011	.11	.0043	.35	.55	38	3.00
40.56033.0012	.12	.0047	.35	.55	38	3.00
40.56033.0013	.13	.0051	.40	.60	38	3.00
40.56033.0014	.14	.0055	.40	.60	38	3.00
40.56033.0015	.15	.0059	.40	.60	38	3.00
40.56033.0016	.16	.0063	.40	.60	38	3.00
40.56033.0017	.17	.0067	.50	.70	38	3.00
40.56033.0018	.18	.0071	.50	.70	38	3.00
40.56033.0019	.19	.0075	.50	.70	38	3.00
40.56033.0020	.20	.0079	.55	.75	38	3.00
40.56033.0021	.21	.0083	.55	.75	38	3.00
40.56033.0022	.22	.0087	.60	.80	38	3.00
40.56033.0023	.23	.0091	.60	.80	38	3.00
40.56033.0024	.24	.0094	.60	.80	38	3.00
40.56033.0025	.25	.0098	.70	.90	38	3.00
40.56033.0026	.26	.0102	.70	.90	38	3.00
40.56033.0027	.27	.0106	.70	.90	38	3.00
40.56033.0028	.28	.0110	.80	1.00	38	3.00
40.56033.0029	.29	.0114	.80	1.00	38	3.00
40.56033.0030	.30	.0118	.90	1.20	38	3.00
40.56033.0031	.31	.0122	.90	1.20	38	3.00
40.56033.0032	.32	.0126	.90	1.20	38	3.00

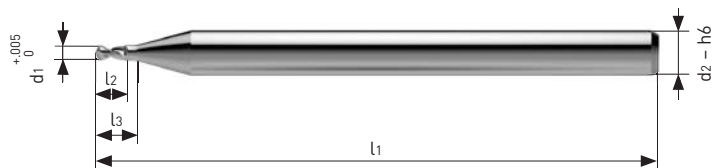
Catalog Number	d1	d1 (in.)	l2	l3	l1	d2
40.56033.0033	.33	.0130	.90	1.20	38	3.00
40.56033.0034	.34	.0134	.90	1.35	38	3.00
40.56033.0035	.35	.0138	.90	1.35	38	3.00
40.56033.0036	.36	.0142	.95	1.35	38	3.00
40.56033.0037	.37	.0146	.95	1.35	38	3.00
40.56033.0038	.38	.0150	.95	1.50	38	3.00
40.56033.0039	.39	.0154	.95	1.50	38	3.00
40.56033.0040	.40	.0157	.80	1.60	38	3.00
40.56033.0041	.41	.0161	.82	1.60	38	3.00
40.56033.0042	.42	.0165	.84	1.60	38	3.00
40.56033.0043	.43	.0169	.86	1.60	38	3.00
40.56033.0044	.44	.0173	.88	1.60	38	3.00
40.56033.0045	.45	.0177	.90	1.60	38	3.00
40.56033.0046	.46	.0181	.92	1.70	38	3.00
40.56033.0047	.47	.0185	.94	1.70	38	3.00
40.56033.0048	.48	.0189	.96	1.70	38	3.00
40.56033.0049	.49	.0193	.98	1.70	38	3.00
40.56033.0050	.50	.0197	1.00	1.70	38	3.00
40.56033.0051	.51	.0201	1.02	1.80	38	3.00
40.56033.0052	.52	.0205	1.04	1.80	38	3.00
40.56033.0053	.53	.0209	1.06	1.80	38	3.00
40.56033.0054	.54	.0213	1.08	1.80	38	3.00
40.56033.0055	.55	.0217	1.10	1.80	38	3.00
40.56033.0056	.56	.0220	1.12	1.90	38	3.00
40.56033.0057	.57	.0224	1.14	1.90	38	3.00
40.56033.0058	.58	.0228	1.16	1.90	38	3.00
40.56033.0059	.59	.0232	1.18	1.90	38	3.00
40.56033.0060	.60	.0236	1.20	1.90	38	3.00
40.56033.0061	.61	.0240	1.22	2.00	38	3.00
40.56033.0062	.62	.0244	1.24	2.00	38	3.00

Catalog Number	d1	d1 (in.)	l2	l3	l1	d2
40.56033.0063	.63	.0248	1.26	2.00	38	3.00
40.56033.0064	.64	.0252	1.28	2.00	38	3.00
40.56033.0065	.65	.0256	1.30	2.00	38	3.00
40.56033.0066	.66	.0260	1.32	2.10	38	3.00
40.56033.0067	.67	.0264	1.34	2.10	38	3.00
40.56033.0068	.68	.0268	1.36	2.10	38	3.00
40.56033.0069	.69	.0272	1.38	2.10	38	3.00
40.56033.0070	.70	.0276	1.40	2.10	38	3.00
40.56033.0071	.71	.0280	1.42	2.20	38	3.00
40.56033.0072	.72	.0283	1.44	2.20	38	3.00
40.56033.0073	.73	.0287	1.46	2.20	38	3.00
40.56033.0074	.74	.0291	1.48	2.20	38	3.00
40.56033.0075	.75	.0295	1.50	2.20	38	3.00
40.56033.0076	.76	.0299	1.52	2.30	38	3.00
40.56033.0077	.77	.0303	1.54	2.30	38	3.00
40.56033.0078	.78	.0307	1.56	2.30	38	3.00
40.56033.0079	.79	.0311	1.58	2.30	38	3.00
40.56033.0080	.80	.0315	1.60	2.30	38	3.00
40.56033.0081	.81	.0319	1.62	2.40	38	3.00
40.56033.0082	.82	.0323	1.64	2.40	38	3.00
40.56033.0083	.83	.0327	1.66	2.40	38	3.00
40.56033.0084	.84	.0331	1.68	2.40	38	3.00
40.56033.0085	.85	.0335	1.70	2.40	38	3.00
40.56033.0086	.86	.0339	1.72	2.50	38	3.00
40.56033.0087	.87	.0343	1.74	2.50	38	3.00
40.56033.0088	.88	.0346	1.76	2.50	38	3.00
40.56033.0089	.89	.0350	1.78	2.50	38	3.00
40.56033.0090	.90	.0354	1.80	2.50	38	3.00
40.56033.0091	.91	.0358	1.82	2.60	38	3.00
40.56033.0092	.92	.0362	1.84	2.60	38	3.00
40.56033.0093	.93	.0366	1.86	2.60	38	3.00
40.56033.0094	.94	.0370	1.88	2.60	38	3.00
40.56033.0095	.95	.0374	1.90	2.60	38	3.00
40.56033.0096	.96	.0378	1.92	2.70	38	3.00
40.56033.0097	.97	.0382	1.94	2.70	38	3.00
40.56033.0098	.98	.0386	1.96	2.70	38	3.00
40.56033.0099	.99	.0390	1.98	2.70	38	3.00
40.56033.0100	1.00	.0394	2.00	2.70	38	3.00
40.56033.0101	1.01	.0398	2.02	3.50	38	3.00
40.56033.0102	1.02	.0402	2.04	3.50	38	3.00
40.56033.0103	1.03	.0406	2.06	3.50	38	3.00
40.56033.0104	1.04	.0409	2.08	3.50	38	3.00
40.56033.0105	1.05	.0413	2.10	3.50	38	3.00
40.56033.0106	1.06	.0417	2.12	3.60	38	3.00
40.56033.0107	1.07	.0421	2.14	3.60	38	3.00

Catalog Number	d1	d1 (in.)	l2	l3	l1	d2
40.56033.0108	1.08	.0425	2.16	3.60	38	3.00
40.56033.0109	1.09	.0429	2.18	3.60	38	3.00
40.56033.0110	1.10	.0433	2.20	3.60	38	3.00
40.56033.0111	1.11	.0437	2.22	3.70	38	3.00
40.56033.0112	1.12	.0441	2.24	3.70	38	3.00
40.56033.0113	1.13	.0445	2.26	3.70	38	3.00
40.56033.0114	1.14	.0449	2.28	3.70	38	3.00
40.56033.0115	1.15	.0453	2.30	3.70	38	3.00
40.56033.0116	1.16	.0457	2.32	3.80	38	3.00
40.56033.0117	1.17	.0461	2.34	3.80	38	3.00
40.56033.0118	1.18	.0465	2.36	3.80	38	3.00
40.56033.0119	1.19	.0469	2.38	3.80	38	3.00
40.56033.0120	1.20	.0472	2.40	3.80	38	3.00
40.56033.0121	1.21	.0476	2.42	4.20	38	3.00
40.56033.0122	1.22	.0480	2.44	4.20	38	3.00
40.56033.0123	1.23	.0484	2.46	4.20	38	3.00
40.56033.0124	1.24	.0488	2.48	4.20	38	3.00
40.56033.0125	1.25	.0492	2.50	4.20	38	3.00
40.56033.0126	1.26	.0496	2.52	4.30	38	3.00
40.56033.0127	1.27	.0500	2.54	4.30	38	3.00
40.56033.0128	1.28	.0504	2.56	4.30	38	3.00
40.56033.0129	1.29	.0508	2.58	4.30	38	3.00
40.56033.0130	1.30	.0512	2.60	4.30	38	3.00
40.56033.0131	1.31	.0516	2.62	4.40	38	3.00
40.56033.0132	1.32	.0520	2.64	4.40	38	3.00
40.56033.0133	1.33	.0524	2.66	4.40	38	3.00
40.56033.0134	1.34	.0528	2.68	4.40	38	3.00
40.56033.0135	1.35	.0531	2.70	4.40	38	3.00
40.56033.0136	1.36	.0535	2.72	4.50	38	3.00
40.56033.0137	1.37	.0539	2.74	4.50	38	3.00
40.56033.0138	1.38	.0543	2.76	4.50	38	3.00
40.56033.0139	1.39	.0547	2.78	4.50	38	3.00
40.56033.0140	1.40	.0551	2.80	4.50	38	3.00
40.56033.0141	1.41	.0555	2.82	4.60	38	3.00
40.56033.0142	1.42	.0559	2.84	4.60	38	3.00
40.56033.0143	1.43	.0563	2.86	4.60	38	3.00
40.56033.0144	1.44	.0567	2.88	4.60	38	3.00
40.56033.0145	1.45	.0571	2.90	4.60	38	3.00
40.56033.0146	1.46	.0575	2.92	4.70	38	3.00
40.56033.0147	1.47	.0579	2.94	4.70	38	3.00
40.56033.0148	1.48	.0583	2.96	4.70	38	3.00
40.56033.0149	1.49	.0587	2.98	4.70	38	3.00
40.56033.0150	1.50	.0591	3.00	4.70	38	3.00
40.56033.0151	1.51	.0594	3.02	5.10	38	3.00
40.56033.0152	1.52	.0598	3.04	5.10	38	3.00

- All dimensions are millimeters unless otherwise noted
- For cutting data see pg. 142





Catalog Number	d1	d1 (in.)	l2	l3	l1	d2
40.56033.0153	1.53	.0602	3.06	5.10	38	3.00
40.56033.0154	1.54	.0606	3.08	5.10	38	3.00
40.56033.0155	1.55	.0610	3.10	5.10	38	3.00
40.56033.0156	1.56	.0614	3.12	5.20	38	3.00
40.56033.0157	1.57	.0618	3.14	5.20	38	3.00
40.56033.0158	1.58	.0622	3.16	5.20	38	3.00
40.56033.0159	1.59	.0626	3.18	5.20	38	3.00
40.56033.0160	1.60	.0630	3.20	5.20	38	3.00
40.56033.0161	1.61	.0634	3.22	5.30	38	3.00
40.56033.0162	1.62	.0638	3.24	5.30	38	3.00
40.56033.0163	1.63	.0642	3.26	5.30	38	3.00
40.56033.0164	1.64	.0646	3.28	5.30	38	3.00
40.56033.0165	1.65	.0650	3.30	5.30	38	3.00
40.56033.0166	1.66	.0654	3.32	5.40	38	3.00
40.56033.0167	1.67	.0657	3.34	5.40	38	3.00
40.56033.0168	1.68	.0661	3.36	5.40	38	3.00
40.56033.0169	1.69	.0665	3.38	5.40	38	3.00
40.56033.0170	1.70	.0669	3.40	5.40	38	3.00
40.56033.0171	1.71	.0673	3.42	5.50	38	3.00
40.56033.0172	1.72	.0677	3.44	5.50	38	3.00
40.56033.0173	1.73	.0681	3.46	5.50	38	3.00
40.56033.0174	1.74	.0685	3.48	5.50	38	3.00
40.56033.0175	1.75	.0689	3.50	5.50	38	3.00
40.56033.0176	1.76	.0693	3.52	5.60	38	3.00
40.56033.0177	1.77	.0697	3.54	5.60	38	3.00
40.56033.0178	1.78	.0701	3.56	5.60	38	3.00
40.56033.0179	1.79	.0705	3.58	5.60	38	3.00
40.56033.0180	1.80	.0709	3.60	5.60	38	3.00
40.56033.0181	1.81	.0713	3.62	5.70	38	3.00
40.56033.0182	1.82	.0717	3.64	5.70	38	3.00
40.56033.0183	1.83	.0720	3.66	5.70	38	3.00
40.56033.0184	1.84	.0724	3.68	5.70	38	3.00
40.56033.0185	1.85	.0728	3.70	5.70	38	3.00
40.56033.0186	1.86	.0732	3.72	5.80	38	3.00
40.56033.0187	1.87	.0736	3.74	5.80	38	3.00
40.56033.0188	1.88	.0740	3.76	5.80	38	3.00
40.56033.0189	1.89	.0744	3.78	5.80	38	3.00
40.56033.0190	1.90	.0748	3.80	5.80	38	3.00
40.56033.0191	1.91	.0752	3.82	5.90	38	3.00
40.56033.0192	1.92	.0756	3.84	5.90	38	3.00

Catalog Number	d1	d1 (in.)	l2	l3	l1	d2
40.56033.0193	1.93	.0760	3.86	5.90	38	3.00
40.56033.0194	1.94	.0764	3.88	5.90	38	3.00
40.56033.0195	1.95	.0768	3.90	5.90	38	3.00
40.56033.0196	1.96	.0772	3.92	6.00	38	3.00
40.56033.0197	1.97	.0776	3.94	6.00	38	3.00
40.56033.0198	1.98	.0780	3.96	6.00	38	3.00
40.56033.0199	1.99	.0783	3.98	6.00	38	3.00
40.56033.0200	2.00	.0787	4.00	6.00	38	3.00
40.56033.0201	2.01	.0791	4.02	6.10	38	3.00
40.56033.0202	2.02	.0795	4.04	6.10	38	3.00
40.56033.0203	2.03	.0799	4.06	6.10	38	3.00
40.56033.0204	2.04	.0803	4.08	6.10	38	3.00
40.56033.0205	2.05	.0807	4.10	6.10	38	3.00
40.56033.0206	2.06	.0811	4.12	6.20	38	3.00
40.56033.0207	2.07	.0815	4.14	6.20	38	3.00
40.56033.0208	2.08	.0819	4.16	6.20	38	3.00
40.56033.0209	2.09	.0823	4.18	6.20	38	3.00
40.56033.0210	2.10	.0827	4.20	6.20	38	3.00
40.56033.0211	2.11	.0831	4.22	6.30	38	3.00
40.56033.0212	2.12	.0835	4.24	6.30	38	3.00
40.56033.0213	2.13	.0839	4.26	6.30	38	3.00
40.56033.0214	2.14	.0843	4.28	6.30	38	3.00
40.56033.0215	2.15	.0846	4.30	6.30	38	3.00
40.56033.0216	2.16	.0850	4.32	6.40	38	3.00
40.56033.0217	2.17	.0854	4.34	6.40	38	3.00
40.56033.0218	2.18	.0858	4.36	6.40	38	3.00
40.56033.0219	2.19	.0862	4.38	6.40	38	3.00
40.56033.0220	2.20	.0866	4.40	6.40	38	3.00
40.56033.0221	2.21	.0870	4.42	6.50	38	3.00
40.56033.0222	2.22	.0874	4.44	6.50	38	3.00
40.56033.0223	2.23	.0878	4.46	6.50	38	3.00
40.56033.0224	2.24	.0882	4.48	6.50	38	3.00
40.56033.0225	2.25	.0886	4.50	6.50	38	3.00
40.56033.0226	2.26	.0890	4.52	6.60	38	3.00
40.56033.0227	2.27	.0894	4.54	6.60	38	3.00
40.56033.0228	2.28	.0898	4.56	6.60	38	3.00
40.56033.0229	2.29	.0902	4.58	6.60	38	3.00
40.56033.0230	2.30	.0906	4.60	6.60	38	3.00
40.56033.0231	2.31	.0909	4.62	6.70	38	3.00
40.56033.0232	2.32	.0913	4.64	6.70	38	3.00



Catalog Number	d1	d1 (in.)	l2	l3	l1	d2
40.56033.0233	2.33	.0917	4.66	6.70	38	3.00
40.56033.0234	2.34	.0921	4.68	6.70	38	3.00
40.56033.0235	2.35	.0925	4.70	6.70	38	3.00
40.56033.0236	2.36	.0929	4.72	6.80	38	3.00
40.56033.0237	2.37	.0933	4.74	6.80	38	3.00
40.56033.0238	2.38	.0937	4.76	6.80	38	3.00
40.56033.0239	2.39	.0941	4.78	6.80	38	3.00
40.56033.0240	2.40	.0945	4.80	6.80	38	3.00
40.56033.0241	2.41	.0949	4.82	6.90	38	3.00
40.56033.0242	2.42	.0953	4.84	6.90	38	3.00
40.56033.0243	2.43	.0957	4.86	6.90	38	3.00
40.56033.0244	2.44	.0961	4.88	6.90	38	3.00
40.56033.0245	2.45	.0965	4.90	6.90	38	3.00
40.56033.0246	2.46	.0969	4.92	7.00	38	3.00
40.56033.0247	2.47	.0972	4.94	7.00	38	3.00
40.56033.0248	2.48	.0976	4.96	7.00	38	3.00
40.56033.0249	2.49	.0980	4.98	7.00	38	3.00
40.56033.0250	2.50	.0984	5.00	7.00	38	3.00
40.56033.0251	2.51	.0988	5.02	7.10	38	3.00
40.56033.0252	2.52	.0992	5.04	7.10	38	3.00
40.56033.0253	2.53	.0996	5.06	7.10	38	3.00
40.56033.0254	2.54	.1000	5.08	7.10	38	3.00
40.56033.0255	2.55	.1004	5.10	7.10	38	3.00
40.56033.0256	2.56	.1008	5.12	7.20	38	3.00
40.56033.0257	2.57	.1012	5.14	7.20	38	3.00
40.56033.0258	2.58	.1016	5.16	7.20	38	3.00
40.56033.0259	2.59	.1020	5.18	7.20	38	3.00
40.56033.0260	2.60	.1024	5.20	7.20	38	3.00
40.56033.0261	2.61	.1028	5.22	7.30	38	3.00
40.56033.0262	2.62	.1031	5.24	7.30	38	3.00
40.56033.0263	2.63	.1035	5.26	7.30	38	3.00
40.56033.0264	2.64	.1039	5.28	7.30	38	3.00
40.56033.0265	2.65	.1043	5.30	7.30	38	3.00
40.56033.0266	2.66	.1047	5.32	7.40	38	3.00

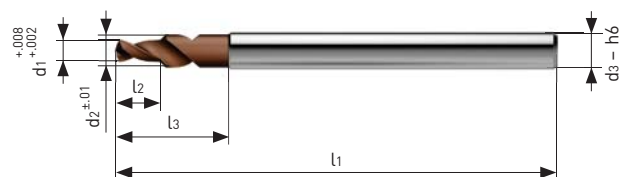
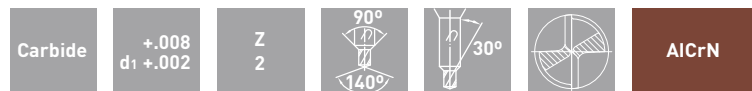
Catalog Number	d1	d1 (in.)	l2	l3	l1	d2
40.56033.0267	2.67	.1051	5.34	7.40	38	3.00
40.56033.0268	2.68	.1055	5.36	7.40	38	3.00
40.56033.0269	2.69	.1059	5.38	7.40	38	3.00
40.56033.0270	2.70	.1063	5.40	7.40	38	3.00
40.56033.0271	2.71	.1067	5.42	7.50	38	3.00
40.56033.0272	2.72	.1071	5.44	7.50	38	3.00
40.56033.0273	2.73	.1075	5.46	7.50	38	3.00
40.56033.0274	2.74	.1079	5.48	7.50	38	3.00
40.56033.0275	2.75	.1083	5.50	7.50	38	3.00
40.56033.0276	2.76	.1087	5.52	7.60	38	3.00
40.56033.0277	2.77	.1091	5.54	7.60	38	3.00
40.56033.0278	2.78	.1094	5.56	7.60	38	3.00
40.56033.0279	2.79	.1098	5.58	7.60	38	3.00
40.56033.0280	2.80	.1102	5.60	7.60	38	3.00
40.56033.0281	2.81	.1106	5.62	7.70	38	3.00
40.56033.0282	2.82	.1110	5.64	7.70	38	3.00
40.56033.0283	2.83	.1114	5.66	7.70	38	3.00
40.56033.0284	2.84	.1118	5.68	7.70	38	3.00
40.56033.0285	2.85	.1122	5.70	7.70	38	3.00
40.56033.0286	2.86	.1126	5.72	7.80	38	3.00
40.56033.0287	2.87	.1130	5.74	7.80	38	3.00
40.56033.0288	2.88	.1134	5.76	7.80	38	3.00
40.56033.0289	2.89	.1138	5.78	7.80	38	3.00
40.56033.0290	2.90	.1142	5.80	7.80	38	3.00
40.56033.0291	2.91	.1146	5.82	7.90	38	3.00
40.56033.0292	2.92	.1150	5.84	7.90	38	3.00
40.56033.0293	2.93	.1154	5.86	7.90	38	3.00
40.56033.0294	2.94	.1157	5.88	7.90	38	3.00
40.56033.0295	2.95	.1161	5.90	7.90	38	3.00
40.56033.0296	2.96	.1165	5.92	8.00	38	3.00
40.56033.0297	2.97	.1169	5.94	8.00	38	3.00
40.56033.0298	2.98	.1173	5.96	8.00	38	3.00
40.56033.0299	2.99	.1177	5.98	8.00	38	3.00

- All dimensions are millimeters unless otherwise noted
- For cutting data see pg. 142

Step

Art. 56036

PILOT A.2



Catalog Number	d1	d1 (in.)	d2	l2	l3	l1	d3
40.56036.0030	.30	.0118	.70	.60	2.50	50	4.00
40.56036.0035	.35	.0138	.70	.70	2.50	50	4.00
40.56036.0040	.40	.0157	1.00	.80	3.00	50	4.00
40.56036.0050	.50	.0197	1.20	1.00	3.50	50	4.00
40.56036.0055	.55	.0217	1.30	1.10	3.50	50	4.00
40.56036.0060	.60	.0236	1.40	1.20	4.30	50	4.00
40.56036.0065	.65	.0256	1.50	1.30	4.30	50	4.00
40.56036.0070	.70	.0276	1.80	1.40	5.30	50	4.00
40.56036.0075	.75	.0295	1.80	1.50	5.30	50	4.00
40.56036.0080	.80	.0315	2.00	1.60	6.00	50	4.00
40.56036.0085	.85	.0335	2.00	1.70	6.00	50	4.00
40.56036.0090	.90	.0354	2.00	1.80	6.00	50	4.00
40.56036.0095	.95	.0374	2.00	1.90	6.00	50	4.00
40.56036.0100	1.00	.0394	2.20	2.00	7.00	50	4.00
40.56036.0105	1.05	.0413	2.20	2.10	7.00	50	4.00
40.56036.0110	1.10	.0433	2.20	2.20	7.00	50	4.00
40.56036.0115	1.15	.0453	2.20	2.30	7.00	50	4.00
40.56036.0120	1.20	.0472	2.20	2.40	7.00	50	4.00
40.56036.0125	1.25	.0492	2.50	2.50	8.00	50	4.00
40.56036.0130	1.30	.0512	2.50	2.60	8.00	50	4.00
40.56036.0135	1.35	.0531	2.50	2.70	8.00	50	4.00
40.56036.0140	1.40	.0551	2.50	2.80	8.00	50	4.00
40.56036.0145	1.45	.0571	2.70	2.90	9.00	50	4.00
40.56036.0150	1.50	.0591	2.70	3.00	9.00	50	4.00
40.56036.0155	1.55	.061	2.70	3.10	9.00	50	4.00
40.56036.0160	1.60	.063	2.70	3.20	9.00	50	4.00
40.56036.0165	1.65	.065	2.80	3.30	9.50	50	4.00
40.56036.0170	1.70	.0669	2.80	3.40	9.50	50	4.00
40.56036.0175	1.75	.0689	2.80	3.50	9.50	50	4.00
40.56036.0180	1.80	.0709	2.80	3.60	9.50	50	4.00

Catalog Number	d1	d1 (in.)	d2	l2	l3	l1	d3
40.56036.0185	1.85	.0728	3.00	3.70	10.20	50	4.00
40.56036.0190	1.90	.0748	3.00	3.80	10.20	50	4.00
40.56036.0195	1.95	.0768	3.00	3.90	10.20	50	4.00
40.56036.0200	2.00	.0787	3.00	4.00	10.20	50	4.00
40.56036.0205	2.05	.0807	3.20	4.10	11.00	50	4.00
40.56036.0210	2.10	.0827	3.20	4.20	11.00	50	4.00
40.56036.0215	2.15	.0846	3.20	4.30	11.00	50	4.00
40.56036.0220	2.20	.0866	3.20	4.40	11.00	50	4.00
40.56036.0225	2.25	.0886	3.40	4.50	12.00	50	4.00
40.56036.0230	2.30	.0906	3.40	4.60	12.00	50	4.00
40.56036.0235	2.35	.0925	3.40	4.70	12.00	50	4.00
40.56036.0240	2.40	.0945	3.40	4.80	12.00	50	4.00
40.56036.0245	2.45	.0965	3.60	4.90	12.70	50	4.00
40.56036.0250	2.50	.0984	3.60	5.00	12.70	50	4.00
40.56036.0255	2.55	.1004	3.60	5.10	12.70	50	4.00
40.56036.0260	2.60	.1024	3.60	5.20	12.70	50	4.00
40.56036.0265	2.65	.1043	3.80	5.30	13.50	50	4.00
40.56036.0270	2.70	.1063	3.80	5.40	13.50	50	4.00
40.56036.0275	2.75	.1083	3.80	5.50	13.50	50	4.00
40.56036.0280	2.80	.1102	3.80	5.60	13.50	50	4.00
40.56036.0285	2.85	.1122	4.00	5.70	14.10	50	4.00
40.56036.0290	2.90	.1142	4.00	5.80	14.10	50	4.00
40.56036.0295	2.95	.1161	4.00	5.90	14.10	50	4.00
40.56036.0300	3.00	.1181	4.00	6.00	14.10	50	4.00
40.56036.0305	3.05	.1201	4.60	6.10	14.00	55	6.00
40.56036.0310	3.10	.122	4.60	6.20	14.50	55	6.00
40.56036.0315	3.15	.124	4.60	6.30	14.50	55	6.00
40.56036.0320	3.20	.126	4.60	6.40	14.50	55	6.00
40.56036.0325	3.25	.128	4.80	6.50	14.50	55	6.00
40.56036.0330	3.30	.1299	4.80	6.60	14.50	55	6.00



Catalog Number	d1	d1 (in.)	d2	l2	l3	l1	d3
40.56036.0335	3.35	.1319	4.80	6.70	15.00	55	6.00
40.56036.0340	3.40	.1339	4.80	6.80	15.00	55	6.00
40.56036.0345	3.45	.1358	5.00	6.90	15.00	55	6.00
40.56036.0350	3.50	.1378	5.00	7.00	15.00	55	6.00
40.56036.0355	3.55	.1398	5.00	7.10	15.50	55	6.00
40.56036.0360	3.60	.1417	5.00	7.20	15.50	55	6.00
40.56036.0365	3.65	.1437	5.20	7.30	15.50	55	6.00
40.56036.0370	3.70	.1457	5.20	7.40	15.50	55	6.00
40.56036.0375	3.75	.1476	5.20	7.50	16.00	55	6.00
40.56036.0380	3.80	.1496	5.20	7.60	16.00	55	6.00
40.56036.0385	3.85	.1516	5.40	7.70	16.00	55	6.00
40.56036.0390	3.90	.1535	5.40	7.80	16.00	55	6.00
40.56036.0395	3.95	.1555	5.40	7.90	16.50	55	6.00
40.56036.0400	4.00	.1575	5.40	8.00	16.50	55	6.00
40.56036.0405	4.05	.1594	5.60	8.10	16.50	55	6.00
40.56036.0410	4.10	.1614	5.60	8.20	16.50	55	6.00
40.56036.0415	4.15	.1634	5.60	8.30	17.00	55	6.00
40.56036.0420	4.20	.1654	5.60	8.40	17.00	55	6.00
40.56036.0425	4.25	.1673	5.80	8.50	17.00	64	8.00
40.56036.0430	4.30	.1693	5.80	8.60	17.00	64	8.00
40.56036.0435	4.35	.1713	5.80	8.70	17.50	64	8.00
40.56036.0440	4.40	.1732	5.80	8.80	17.50	64	8.00
40.56036.0445	4.45	.1752	6.00	8.90	17.50	64	8.00
40.56036.0450	4.50	.1772	6.00	9.00	18.00	64	8.00
40.56036.0455	4.55	.1791	6.00	9.10	18.00	64	8.00
40.56036.0460	4.60	.1811	6.00	9.20	18.00	64	8.00
40.56036.0465	4.65	.1831	6.20	9.30	18.50	64	8.00

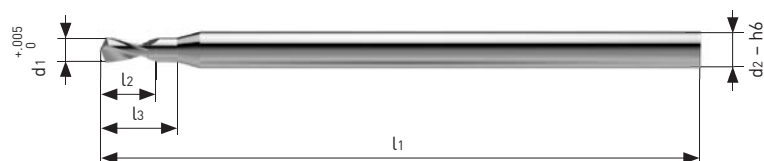
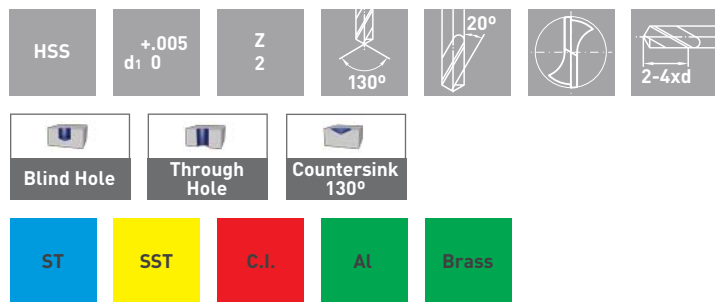
Catalog Number	d1	d1 (in.)	d2	l2	l3	l1	d3
40.56036.0470	4.70	.185	6.20	9.40	18.50	64	8.00
40.56036.0475	4.75	.187	6.20	9.50	18.50	64	8.00
40.56036.0480	4.80	.189	6.20	9.60	19.00	64	8.00
40.56036.0485	4.85	.1909	6.40	9.70	19.00	64	8.00
40.56036.0490	4.90	.1929	6.40	9.80	19.00	64	8.00
40.56036.0495	4.95	.1949	6.40	9.90	19.50	64	8.00
40.56036.0500	5.00	.1969	6.40	10.00	19.50	64	8.00
40.56036.0505	5.05	.1988	6.60	10.10	19.50	64	8.00
40.56036.0510	5.10	.2008	6.60	10.20	20.00	64	8.00
40.56036.0515	5.15	.2028	6.60	10.30	20.00	64	8.00
40.56036.0520	5.20	.2047	6.60	10.40	20.00	64	8.00
40.56036.0525	5.25	.2067	6.80	10.50	20.50	64	8.00
40.56036.0530	5.30	.2087	6.80	10.60	20.50	64	8.00
40.56036.0535	5.35	.2106	6.80	10.70	20.50	64	8.00
40.56036.0540	5.40	.2126	6.80	10.80	21.00	64	8.00
40.56036.0545	5.45	.2146	7.00	10.90	21.00	64	8.00
40.56036.0550	5.50	.2165	7.00	11.00	21.00	64	8.00
40.56036.0555	5.55	.2185	7.00	11.10	21.50	64	8.00
40.56036.0560	5.60	.2205	7.00	11.20	21.50	64	8.00
40.56036.0565	5.65	.2224	7.20	11.30	21.50	64	8.00
40.56036.0570	5.70	.2244	7.20	11.40	22.00	64	8.00
40.56036.0575	5.75	.2264	7.20	11.50	22.00	64	8.00
40.56036.0580	5.80	.2283	7.20	11.60	22.00	64	8.00
40.56036.0585	5.85	.2303	7.40	11.70	22.50	64	8.00
40.56036.0590	5.90	.2323	7.40	11.80	22.50	64	8.00
40.56036.0595	5.95	.2343	7.40	11.90	22.50	64	8.00
40.56036.0600	6.00	.2362	7.40	12.00	23.00	64	8.00

- All dimensions are millimeters unless otherwise noted
- For cutting data see pg. 143

Spirec

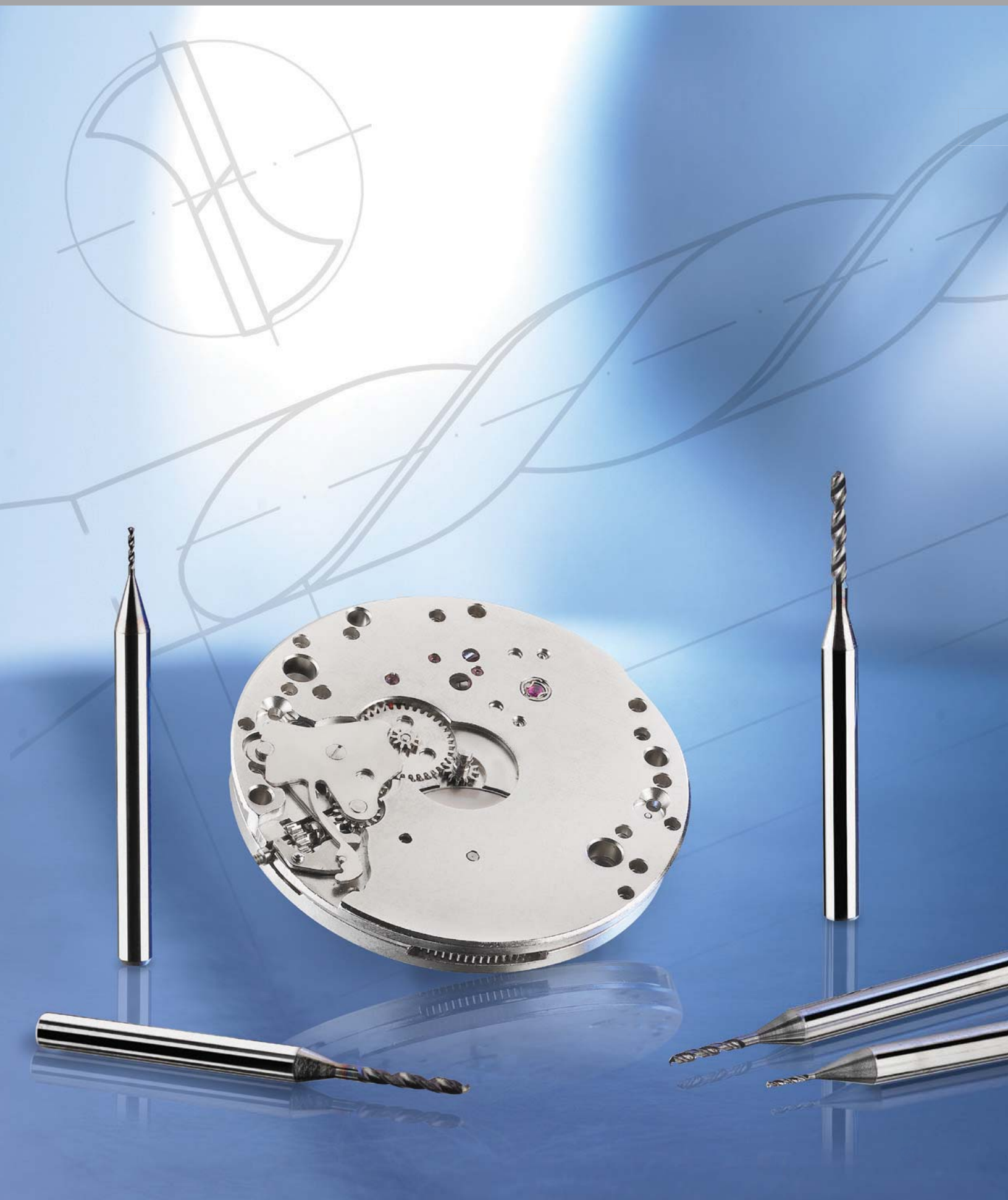
Art. 16004

PILOT A.2



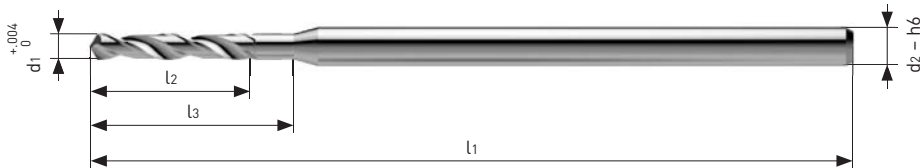
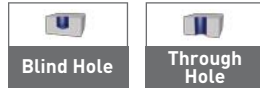
Catalog Number	d1	d1 (in.)	l2	l3	l1	d2
40.16004.0010	.10	.0039	.40	.60	25	1.50
40.16004.0015	.15	.0059	.40	.60	25	1.50
40.16004.0020	.20	.0079	.60	.90	25	1.50
40.16004.0025	.25	.0098	.60	.90	25	1.50
40.16004.0030	.30	.0118	.90	1.20	25	1.50
40.16004.0035	.35	.0138	.90	1.20	25	1.50
40.16004.0040	.40	.0157	.90	1.60	25	1.50
40.16004.0045	.45	.0177	.90	1.60	25	1.50
40.16004.0050	.50	.0197	1.00	1.80	25	1.50
40.16004.0055	.55	.0217	1.00	1.80	25	1.50
40.16004.0060	.60	.0236	1.20	2.00	25	1.50
40.16004.0065	.65	.0256	1.20	2.00	25	1.50
40.16004.0070	.70	.0276	1.50	2.50	25	1.50
40.16004.0075	.75	.0295	1.50	2.50	25	1.50
40.16004.0080	.80	.0315	1.50	2.50	25	1.50
40.16004.0085	.85	.0335	1.50	2.50	25	1.50
40.16004.0090	.90	.0354	1.60	2.60	25	1.50
40.16004.0095	.95	.0374	1.60	2.60	25	1.50
40.16004.0100	1.00	.0394	2.00	3.20	25	1.50
40.16004.0105	1.05	.0413	2.00	3.20	25	1.50
40.16004.0110	1.10	.0433	2.30	3.50	25	1.50
40.16004.0115	1.15	.0453	2.30	3.50	25	1.50
40.16004.0120	1.20	.0472	2.30	3.50	25	1.50
40.16004.0125	1.25	.0492	2.30	3.50	25	1.50
40.16004.0130	1.30	.0512	2.70	4.20	25	1.50
40.16004.0135	1.35	.0531	2.70	4.20	25	1.50
40.16004.0140	1.40	.0551	2.70	4.20	25	1.50
40.16004.0145	1.45	.0571	2.70	4.20	25	1.50
40.16004.0150	1.50	.0591	3.00	4.20	25	1.50

- All dimensions are millimeters unless otherwise noted
- Packaged in quantities of 10 pieces
- For cutting data see pg. 143



Spirec-Plus

Art. 50695



Catalog Number	d1	d1 (in.)	l2	l3	l1	d2
40.50695.0020	.20	.0079	1.50	1.80	30	1.00
40.50695.0021	.21	.0083	1.50	1.80	30	1.00
40.50695.0022	.22	.0087	1.50	1.80	30	1.00
40.50695.0023	.23	.0091	1.50	1.80	30	1.00
40.50695.0024	.24	.0094	1.50	1.80	30	1.00
40.50695.0025	.25	.0098	1.90	2.20	30	1.00
40.50695.0026	.26	.0102	1.90	2.20	30	1.00
40.50695.0027	.27	.0106	1.90	2.20	30	1.00
40.50695.0028	.28	.0110	1.90	2.20	30	1.00
40.50695.0029	.29	.0114	1.90	2.20	30	1.00
40.50695.0030	.30	.0118	1.90	2.20	30	1.00
40.50695.0031	.31	.0122	2.40	2.80	30	1.00
40.50695.0032	.32	.0126	2.40	2.80	30	1.00
40.50695.0033	.33	.0130	2.40	2.80	30	1.00
40.50695.0034	.34	.0134	2.40	2.80	30	1.00
40.50695.0035	.35	.0138	2.40	2.80	30	1.00
40.50695.0036	.36	.0142	2.40	2.80	30	1.00
40.50695.0037	.37	.0146	2.40	2.80	30	1.00
40.50695.0038	.38	.0150	2.40	2.80	30	1.00
40.50695.0039	.39	.0154	2.70	3.60	30	1.00
40.50695.0040	.40	.0157	2.70	3.60	30	1.00
40.50695.0041	.41	.0161	2.70	3.60	30	1.00
40.50695.0042	.42	.0165	2.70	3.60	30	1.00
40.50695.0043	.43	.0169	2.70	3.60	30	1.00
40.50695.0044	.44	.0173	2.70	3.60	30	1.00
40.50695.0045	.45	.0177	2.70	3.60	30	1.00
40.50695.0046	.46	.0181	2.70	3.60	30	1.00
40.50695.0047	.47	.0185	2.70	3.60	30	1.00
40.50695.0048	.48	.0189	2.70	3.60	30	1.00

Catalog Number	d1	d1 (in.)	l2	l3	l1	d2
40.50695.0049	.49	.0193	3.20	4.00	30	1.00
40.50695.0050	.50	.0197	3.20	4.00	30	1.00
40.50695.0051	.51	.0201	3.20	4.00	30	1.00
40.50695.0052	.52	.0205	3.20	4.00	30	1.00
40.50695.0053	.53	.0209	3.20	4.00	30	1.00
40.50695.0054	.54	.0213	3.60	4.50	30	1.00
40.50695.0055	.55	.0217	3.60	4.50	30	1.00
40.50695.0056	.56	.0220	3.60	4.50	30	1.00
40.50695.0057	.57	.0224	3.60	4.50	30	1.00
40.50695.0058	.58	.0228	3.60	4.50	30	1.00
40.50695.0059	.59	.0232	3.60	4.50	30	1.00
40.50695.0060	.60	.0236	3.60	4.50	30	1.00
40.50695.0061	.61	.0240	3.90	5.00	30	1.00
40.50695.0062	.62	.0244	3.90	5.00	30	1.00
40.50695.0063	.63	.0248	3.90	5.00	30	1.00
40.50695.0064	.64	.0252	3.90	5.00	30	1.00
40.50695.0065	.65	.0256	3.90	5.00	30	1.00
40.50695.0066	.66	.0260	3.90	5.00	30	1.00
40.50695.0067	.67	.0264	3.90	5.00	30	1.00
40.50695.0068	.68	.0268	4.50	5.60	30	1.00
40.50695.0069	.69	.0272	4.50	5.60	30	1.00
40.50695.0070	.70	.0276	4.50	5.60	30	1.00
40.50695.0071	.71	.0280	4.50	5.60	30	1.00
40.50695.0072	.72	.0283	4.50	5.60	30	1.00
40.50695.0073	.73	.0287	4.50	5.60	30	1.00
40.50695.0074	.74	.0291	4.50	5.60	30	1.00
40.50695.0075	.75	.0295	4.50	5.60	30	1.00
40.50695.0076	.76	.0299	5.00	6.30	30	1.00
40.50695.0077	.77	.0303	5.00	6.30	30	1.00

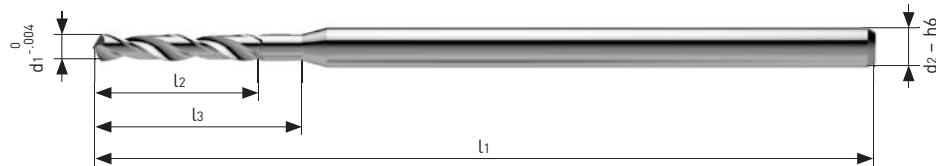
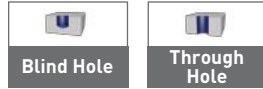
Catalog Number	d1	d1 (in.)	l2	l3	l1	d2
40.50695.0078	.78	.0307	5.00	6.30	30	1.00
40.50695.0079	.79	.0311	5.00	6.30	30	1.00
40.50695.0080	.80	.0315	5.00	6.30	30	1.50
40.50695.0081	.81	.0319	5.00	6.30	30	1.50
40.50695.0082	.82	.0323	5.00	6.30	30	1.50
40.50695.0083	.83	.0327	5.00	6.30	30	1.50
40.50695.0084	.84	.0331	5.00	6.30	30	1.50
40.50695.0085	.85	.0335	5.00	6.30	30	1.50
40.50695.0086	.86	.0339	5.70	7.10	30	1.50
40.50695.0087	.87	.0343	5.70	7.10	30	1.50
40.50695.0088	.88	.0346	5.70	7.10	30	1.50
40.50695.0089	.89	.0350	5.70	7.10	30	1.50
40.50695.0090	.90	.0354	5.70	7.10	30	1.50
40.50695.0091	.91	.0358	5.70	7.10	30	1.50
40.50695.0092	.92	.0362	5.70	7.10	30	1.50
40.50695.0093	.93	.0366	5.70	7.10	30	1.50
40.50695.0094	.94	.0370	5.70	7.10	30	1.50
40.50695.0095	.95	.0374	5.70	7.10	30	1.50
40.50695.0096	.96	.0378	6.50	8.00	30	1.50
40.50695.0097	.97	.0382	6.50	8.00	30	1.50
40.50695.0098	.98	.0386	6.50	8.00	30	1.50
40.50695.0099	.99	.0390	6.50	8.00	30	1.50
40.50695.0100	1.00	.0394	6.50	8.00	30	1.50
40.50695.0101	1.01	.0398	6.50	8.00	30	1.50
40.50695.0102	1.02	.0402	6.50	8.00	30	1.50
40.50695.0103	1.03	.0406	6.50	8.00	30	1.50
40.50695.0104	1.04	.0409	6.50	8.00	30	1.50
40.50695.0105	1.05	.0413	6.50	8.00	30	1.50
40.50695.0106	1.06	.0417	7.30	9.00	30	1.50
40.50695.0107	1.07	.0421	7.30	9.00	30	1.50
40.50695.0108	1.08	.0425	7.30	9.00	30	1.50
40.50695.0109	1.09	.0429	7.30	9.00	30	1.50
40.50695.0110	1.10	.0433	7.30	9.00	30	1.50
40.50695.0111	1.11	.0437	7.30	9.00	30	1.50
40.50695.0112	1.12	.0441	7.30	9.00	30	1.50
40.50695.0113	1.13	.0445	7.30	9.00	30	1.50
40.50695.0114	1.14	.0449	7.30	9.00	30	1.50

Catalog Number	d1	d1 (in.)	l2	l3	l1	d2
40.50695.0115	1.15	.0453	7.30	9.00	30	1.50
40.50695.0116	1.16	.0457	8.20	10.00	30	1.50
40.50695.0117	1.17	.0461	8.20	10.00	30	1.50
40.50695.0118	1.18	.0465	8.20	10.00	30	1.50
40.50695.0119	1.19	.0469	8.20	10.00	30	1.50
40.50695.0120	1.20	.0472	8.20	10.00	30	1.50
40.50695.0121	1.21	.0476	8.20	10.00	30	1.50
40.50695.0122	1.22	.0480	8.20	10.00	30	1.50
40.50695.0123	1.23	.0484	8.20	10.00	30	1.50
40.50695.0124	1.24	.0488	8.20	10.00	30	1.50
40.50695.0125	1.25	.0492	8.20	10.00	30	1.50
40.50695.0126	1.26	.0496	8.20	10.00	30	1.50
40.50695.0127	1.27	.0500	8.20	10.00	30	1.50
40.50695.0128	1.28	.0504	8.20	10.00	30	1.50
40.50695.0129	1.29	.0508	8.20	10.00	30	1.50
40.50695.0130	1.30	.0512	8.20	10.00	30	1.50
40.50695.0131	1.31	.0516	9.20	11.20	30	1.50
40.50695.0132	1.32	.0520	9.20	11.20	30	1.50
40.50695.0133	1.33	.0524	9.20	11.20	30	1.50
40.50695.0134	1.34	.0528	9.20	11.20	30	1.50
40.50695.0135	1.35	.0531	9.20	11.20	30	1.50
40.50695.0136	1.36	.0535	9.20	11.20	30	1.50
40.50695.0137	1.37	.0539	9.20	11.20	30	1.50
40.50695.0138	1.38	.0543	9.20	11.20	30	1.50
40.50695.0139	1.39	.0547	9.20	11.20	30	1.50
40.50695.0140	1.40	.0551	9.20	11.20	30	1.50
40.50695.0141	1.41	.0555	9.20	11.20	30	1.50
40.50695.0142	1.42	.0559	9.20	11.20	30	1.50
40.50695.0143	1.43	.0563	9.20	11.20	30	1.50
40.50695.0144	1.44	.0567	9.20	11.20	30	1.50
40.50695.0145	1.45	.0571	9.20	11.20	30	1.50
40.50695.0146	1.46	.0575	9.20	11.20	30	1.50
40.50695.0147	1.47	.0579	9.20	11.20	30	1.50
40.50695.0148	1.48	.0583	9.20	11.20	30	1.50
40.50695.0149	1.49	.0587	9.20	11.20	30	1.50
40.50695.0150	1.50	.0591	9.20	—	30	1.50

- All dimensions are millimeters unless otherwise noted
- Packaged in quantities of 10 pieces
- For cutting data see pg. 144

Spirec

Art. 50699



MICRO / MICRO DEEP HOLE A.3

Catalog Number	d1	d1 (in.)	l2	l3	l1	d2
40.50699.0005	.05	.0020	.40	.60	25	1.00
40.50699.0006	.06	.0024	.40	.60	25	1.00
40.50699.0007	.07	.0028	.50	.70	25	1.00
40.50699.0008	.08	.0031	.50	.70	25	1.00
40.50699.0009	.09	.0035	.50	.70	25	1.00
40.50699.0010	.10	.0039	.50	.70	25	1.00
40.50699.0011	.11	.0043	.50	.70	25	1.00
40.50699.0012	.12	.0047	.50	.70	25	1.00
40.50699.0013	.13	.0051	.80	1.00	25	1.00
40.50699.0014	.14	.0055	.80	1.00	25	1.00
40.50699.0015	.15	.0059	.80	1.00	25	1.00
40.50699.0016	.16	.0063	1.10	1.40	25	1.00
40.50699.0017	.17	.0067	1.10	1.40	25	1.00
40.50699.0018	.18	.0071	1.10	1.40	25	1.00
40.50699.0019	.19	.0075	1.10	1.40	25	1.00
40.50699.0020	.20	.0079	1.50	1.80	25	1.00
40.50699.0021	.21	.0083	1.50	1.80	25	1.00
40.50699.0022	.22	.0087	1.50	1.80	25	1.00
40.50699.0023	.23	.0091	1.50	1.80	25	1.00
40.50699.0024	.24	.0094	1.50	1.80	25	1.00
40.50699.0025	.25	.0098	1.90	2.20	25	1.00
40.50699.0026	.26	.0102	1.90	2.20	25	1.00
40.50699.0027	.27	.0106	1.90	2.20	25	1.00
40.50699.0028	.28	.0110	1.90	2.20	25	1.00
40.50699.0029	.29	.0114	1.90	2.20	25	1.00
40.50699.0030	.30	.0118	1.90	2.20	25	1.00
40.50699.0031	.31	.0122	2.40	2.80	25	1.00
40.50699.0032	.32	.0126	2.40	2.80	25	1.00
40.50699.0033	.33	.0130	2.40	2.80	25	1.00
40.50699.0034	.34	.0134	2.40	2.80	25	1.00

Catalog Number	d1	d1 (in.)	l2	l3	l1	d2
40.50699.0035	.35	.0138	2.40	2.80	25	1.00
40.50699.0036	.36	.0142	2.40	2.80	25	1.00
40.50699.0037	.37	.0146	2.40	2.80	25	1.00
40.50699.0038	.38	.0150	2.40	2.80	25	1.00
40.50699.0039	.39	.0154	2.70	3.60	25	1.00
40.50699.0040	.40	.0157	2.70	3.60	25	1.00
40.50699.0041	.41	.0161	2.70	3.60	25	1.00
40.50699.0042	.42	.0165	2.70	3.60	25	1.00
40.50699.0043	.43	.0169	2.70	3.60	25	1.00
40.50699.0044	.44	.0173	2.70	3.60	25	1.00
40.50699.0045	.45	.0177	2.70	3.60	25	1.00
40.50699.0046	.46	.0181	2.70	3.60	25	1.00
40.50699.0047	.47	.0185	2.70	3.60	25	1.00
40.50699.0048	.48	.0189	2.70	3.60	25	1.00
40.50699.0049	.49	.0193	3.20	4.00	25	1.00
40.50699.0050	.50	.0197	3.20	4.00	25	1.00
40.50699.0051	.51	.0201	3.20	4.00	25	1.00
40.50699.0052	.52	.0205	3.20	4.00	25	1.00
40.50699.0053	.53	.0209	3.20	4.00	25	1.00
40.50699.0054	.54	.0213	3.60	4.50	25	1.00
40.50699.0055	.55	.0217	3.60	4.50	25	1.00
40.50699.0056	.56	.0220	3.60	4.50	25	1.00
40.50699.0057	.57	.0224	3.60	4.50	25	1.00
40.50699.0058	.58	.0228	3.60	4.50	25	1.00
40.50699.0059	.59	.0232	3.60	4.50	25	1.00
40.50699.0060	.60	.0236	3.60	4.50	25	1.00
40.50699.0061	.61	.0240	3.90	5.00	25	1.00
40.50699.0062	.62	.0244	3.90	5.00	25	1.00
40.50699.0063	.63	.0248	3.90	5.00	25	1.00
40.50699.0064	.64	.0252	3.90	5.00	25	1.00



Catalog Number	d1	d1 (in.)	l2	l3	l1	d2
40.50699.0065	.65	.0256	3.90	5.00	25	1.00
40.50699.0066	.66	.0260	3.90	5.00	25	1.00
40.50699.0067	.67	.0264	3.90	5.00	25	1.00
40.50699.0068	.68	.0268	4.50	5.60	25	1.00
40.50699.0069	.69	.0272	4.50	5.60	25	1.00
40.50699.0070	.70	.0276	4.50	5.60	25	1.00
40.50699.0071	.71	.0280	4.50	5.60	25	1.00
40.50699.0072	.72	.0283	4.50	5.60	25	1.00
40.50699.0073	.73	.0287	4.50	5.60	25	1.00
40.50699.0074	.74	.0291	4.50	5.60	25	1.00
40.50699.0075	.75	.0295	4.50	5.60	25	1.00
40.50699.0076	.76	.0299	5.00	6.30	25	1.00
40.50699.0077	.77	.0303	5.00	6.30	25	1.00
40.50699.0078	.78	.0307	5.00	6.30	25	1.00
40.50699.0079	.79	.0311	5.00	6.30	25	1.00
40.50699.0080	.80	.0315	5.00	6.30	25	1.50
40.50699.0081	.81	.0319	5.00	6.30	25	1.50
40.50699.0082	.82	.0323	5.00	6.30	25	1.50
40.50699.0083	.83	.0327	5.00	6.30	25	1.50
40.50699.0084	.84	.0331	5.00	6.30	25	1.50
40.50699.0085	.85	.0335	5.00	6.30	25	1.50
40.50699.0086	.86	.0339	5.70	7.10	25	1.50
40.50699.0087	.87	.0343	5.70	7.10	25	1.50
40.50699.0088	.88	.0346	5.70	7.10	25	1.50
40.50699.0089	.89	.0350	5.70	7.10	25	1.50
40.50699.0090	.90	.0354	5.70	7.10	25	1.50
40.50699.0091	.91	.0358	5.70	7.10	25	1.50
40.50699.0092	.92	.0362	5.70	7.10	25	1.50
40.50699.0093	.93	.0366	5.70	7.10	25	1.50
40.50699.0094	.94	.0370	5.70	7.10	25	1.50
40.50699.0095	.95	.0374	5.70	7.10	25	1.50
40.50699.0096	.96	.0378	6.50	8.00	25	1.50
40.50699.0097	.97	.0382	6.50	8.00	25	1.50
40.50699.0098	.98	.0386	6.50	8.00	25	1.50
40.50699.0099	.99	.0390	6.50	8.00	25	1.50
40.50699.0100	1.00	.0394	6.50	8.00	25	1.50
40.50699.0101	1.01	.0398	6.50	8.00	25	1.50
40.50699.0102	1.02	.0402	6.50	8.00	25	1.50
40.50699.0103	1.03	.0406	6.50	8.00	25	1.50
40.50699.0104	1.04	.0409	6.50	8.00	25	1.50
40.50699.0105	1.05	.0413	6.50	8.00	25	1.50
40.50699.0106	1.06	.0417	7.30	9.00	25	1.50
40.50699.0107	1.07	.0421	7.30	9.00	25	1.50
40.50699.0108	1.08	.0425	7.30	9.00	25	1.50
40.50699.0109	1.09	.0429	7.30	9.00	25	1.50

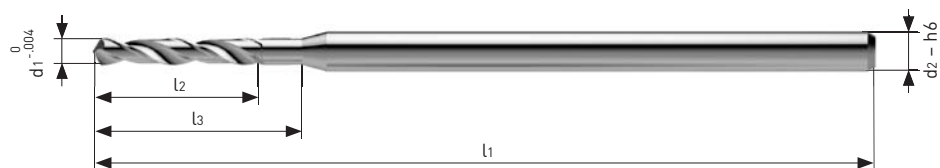
Catalog Number	d1	d1 (in.)	l2	l3	l1	d2
40.50699.0110	1.10	.0433	7.30	9.00	25	1.50
40.50699.0111	1.11	.0437	7.30	9.00	25	1.50
40.50699.0112	1.12	.0441	7.30	9.00	25	1.50
40.50699.0113	1.13	.0445	7.30	9.00	25	1.50
40.50699.0114	1.14	.0449	7.30	9.00	25	1.50
40.50699.0115	1.15	.0453	7.30	9.00	25	1.50
40.50699.0116	1.16	.0457	8.20	10.00	25	1.50
40.50699.0117	1.17	.0461	8.20	10.00	25	1.50
40.50699.0118	1.18	.0465	8.20	10.00	25	1.50
40.50699.0119	1.19	.0469	8.20	10.00	25	1.50
40.50699.0120	1.20	.0472	8.20	10.00	25	1.50
40.50699.0121	1.21	.0476	8.20	10.00	25	1.50
40.50699.0122	1.22	.0480	8.20	10.00	25	1.50
40.50699.0123	1.23	.0484	8.20	10.00	25	1.50
40.50699.0124	1.24	.0488	8.20	10.00	25	1.50
40.50699.0125	1.25	.0492	8.20	10.00	25	1.50
40.50699.0126	1.26	.0496	8.20	10.00	25	1.50
40.50699.0127	1.27	.0500	8.20	10.00	25	1.50
40.50699.0128	1.28	.0504	8.20	10.00	25	1.50
40.50699.0129	1.29	.0508	8.20	10.00	25	1.50
40.50699.0130	1.30	.0512	8.20	10.00	25	1.50
40.50699.0131	1.31	.0516	9.20	11.20	25	1.50
40.50699.0132	1.32	.0520	9.20	11.20	25	1.50
40.50699.0133	1.33	.0524	9.20	11.20	25	1.50
40.50699.0134	1.34	.0528	9.20	11.20	25	1.50
40.50699.0135	1.35	.0531	9.20	11.20	25	1.50
40.50699.0136	1.36	.0535	9.20	11.20	25	1.50
40.50699.0137	1.37	.0539	9.20	11.20	25	1.50
40.50699.0138	1.38	.0543	9.20	11.20	25	1.50
40.50699.0139	1.39	.0547	9.20	11.20	25	1.50
40.50699.0140	1.40	.0551	9.20	11.20	25	1.50
40.50699.0141	1.41	.0555	9.20	11.20	25	1.50
40.50699.0142	1.42	.0559	9.20	11.20	25	1.50
40.50699.0143	1.43	.0563	9.20	11.20	25	1.50
40.50699.0144	1.44	.0567	9.20	11.20	25	1.50
40.50699.0145	1.45	.0571	9.20	11.20	25	1.50
40.50699.0146	1.46	.0575	9.20	11.20	25	1.50
40.50699.0147	1.47	.0579	9.20	11.20	25	1.50
40.50699.0148	1.48	.0583	9.20	11.20	25	1.50
40.50699.0149	1.49	.0587	9.20	11.20	25	1.50
40.50699.0150	1.50	.0591	9.20	—	25	1.50
40.50699.0151	1.51	.0594	11.20	13.40	38	2.00
40.50699.0152	1.52	.0598	11.20	13.40	38	2.00
40.50699.0153	1.53	.0602	11.20	13.40	38	2.00
40.50699.0154	1.54	.0606	11.20	13.40	38	2.00

- All dimensions are millimeters unless otherwise noted
- Packaged in quantities of 10 pieces
- For cutting data see pg. 144



Spirec

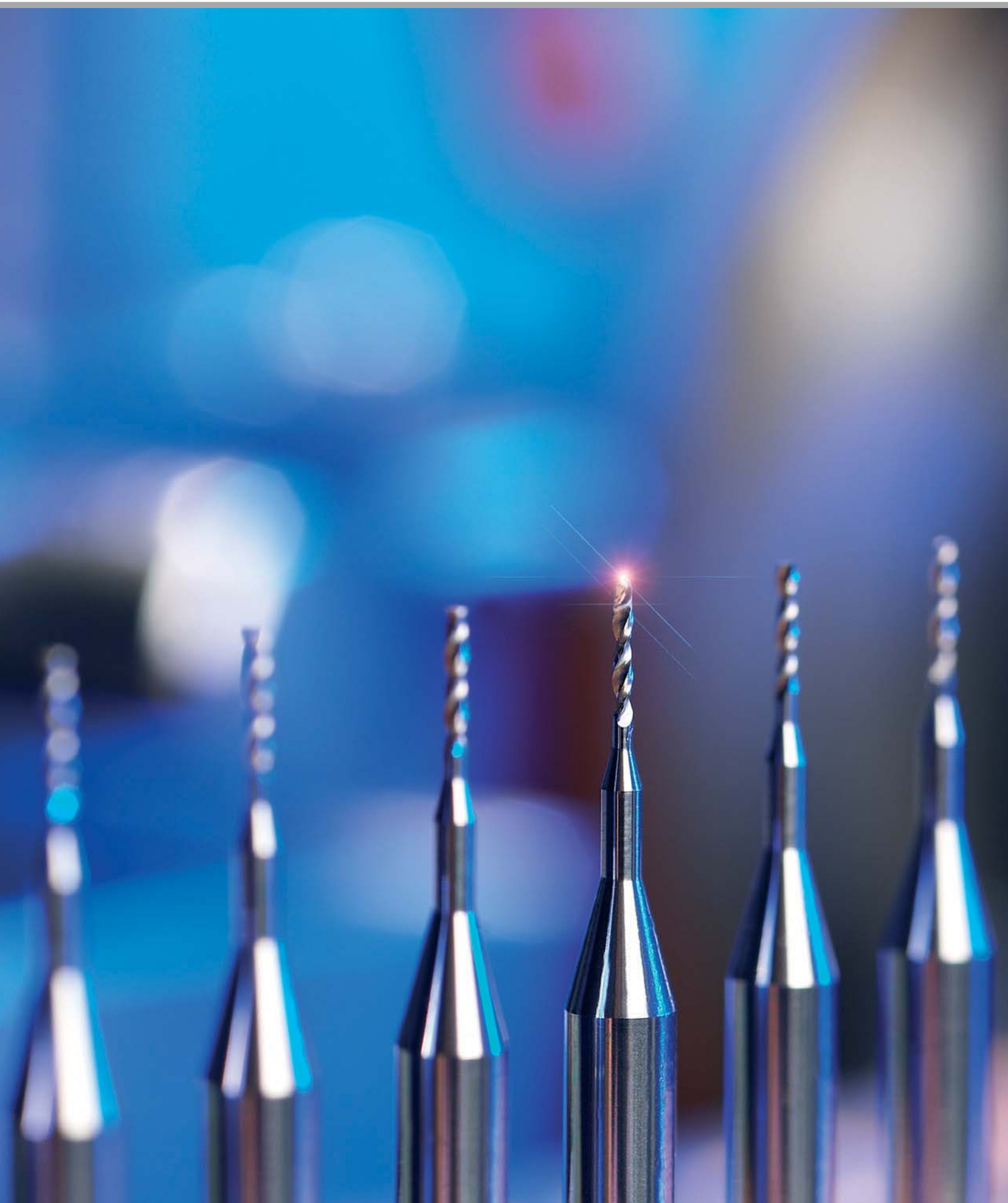
Art. 50699 Cont.



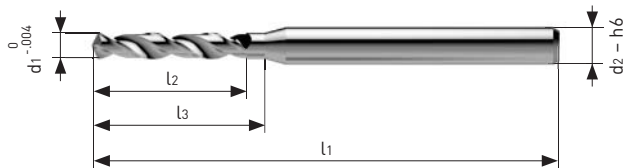
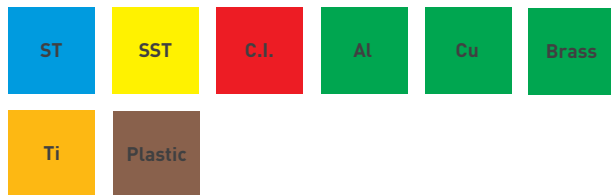
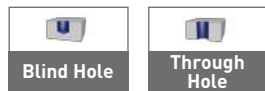
Catalog Number	d1	d1 (in.)	l2	l3	l1	d2
40.50699.0155	1.55	.0610	11.20	13.40	38	2.00
40.50699.0156	1.56	.0614	11.20	13.40	38	2.00
40.50699.0157	1.57	.0618	11.20	13.40	38	2.00
40.50699.0158	1.58	.0622	11.20	13.40	38	2.00
40.50699.0159	1.59	.0626	11.20	13.40	38	2.00
40.50699.0160	1.60	.0630	11.20	13.40	38	2.00
40.50699.0161	1.61	.0634	11.20	13.40	38	2.00
40.50699.0162	1.62	.0638	11.20	13.40	38	2.00
40.50699.0163	1.63	.0642	11.20	13.40	38	2.00
40.50699.0164	1.64	.0646	11.20	13.40	38	2.00
40.50699.0165	1.65	.0650	11.20	13.40	38	2.00
40.50699.0166	1.66	.0654	11.20	13.40	38	2.00
40.50699.0167	1.67	.0657	11.20	13.40	38	2.00
40.50699.0168	1.68	.0661	11.20	13.40	38	2.00
40.50699.0169	1.69	.0665	11.20	13.40	38	2.00
40.50699.0170	1.70	.0669	11.20	13.40	38	2.00
40.50699.0171	1.71	.0673	11.20	13.40	38	2.00
40.50699.0172	1.72	.0677	11.20	13.40	38	2.00
40.50699.0173	1.73	.0681	11.20	13.40	38	2.00
40.50699.0174	1.74	.0685	11.20	13.40	38	2.00
40.50699.0175	1.75	.0689	11.20	13.40	38	2.00
40.50699.0176	1.76	.0693	11.20	13.40	38	2.00
40.50699.0177	1.77	.0697	11.20	13.40	38	2.00

Catalog Number	d1	d1 (in.)	l2	l3	l1	d2
40.50699.0178	1.78	.0701	11.20	13.40	38	2.00
40.50699.0179	1.79	.0705	11.20	13.40	38	2.00
40.50699.0180	1.80	.0709	11.20	13.40	38	2.00
40.50699.0181	1.81	.0713	11.20	13.40	38	2.00
40.50699.0182	1.82	.0717	11.20	13.40	38	2.00
40.50699.0183	1.83	.0720	11.20	13.40	38	2.00
40.50699.0184	1.84	.0724	11.20	13.40	38	2.00
40.50699.0185	1.85	.0728	11.20	13.40	38	2.00
40.50699.0186	1.86	.0732	11.20	13.40	38	2.00
40.50699.0187	1.87	.0736	11.20	13.40	38	2.00
40.50699.0188	1.88	.0740	11.20	13.40	38	2.00
40.50699.0189	1.89	.0744	11.20	13.40	38	2.00
40.50699.0190	1.90	.0748	11.20	13.40	38	2.00
40.50699.0191	1.91	.0752	11.20	13.40	38	2.00
40.50699.0192	1.92	.0756	11.20	13.40	38	2.00
40.50699.0193	1.93	.0760	11.20	13.40	38	2.00
40.50699.0194	1.94	.0764	11.20	13.40	38	2.00
40.50699.0195	1.95	.0768	11.20	13.40	38	2.00
40.50699.0196	1.96	.0772	11.20	13.40	38	2.00
40.50699.0197	1.97	.0776	11.20	13.40	38	2.00
40.50699.0198	1.98	.0780	11.20	13.40	38	2.00
40.50699.0199	1.99	.0783	11.20	13.40	38	2.00
40.50699.0200	2.00	.0787	11.20	—	38	2.00

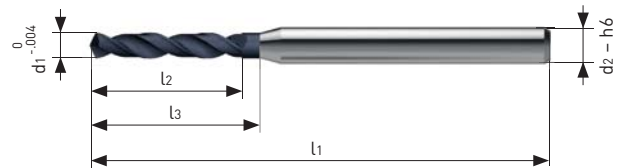
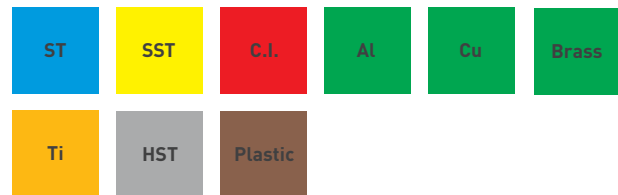
- All dimensions are millimeters unless otherwise noted
- Packaged in quantities of 10 pieces
- For cutting data see pg. 144



Art. 51200



Art. 51201



Art. 51200	Art. 51201	d1	d1 (in.)	l2	l3	l1	d2
Catalog Number	Catalog Number						
40.51200.0003	—	.03	.0012	.25	.35	38	3.00
40.51200.0004	—	.04	.0016	.30	.40	38	3.00
40.51200.0005	—	.05	.0020	.35	.45	38	3.00
40.51200.0006	—	.06	.0024	.40	.50	38	3.00
40.51200.0007	—	.07	.0028	.45	.60	38	3.00
40.51200.0008	—	.08	.0031	.50	.70	38	3.00
40.51200.0009	—	.09	.0035	.50	.70	38	3.00
40.51200.0010	—	.10	.0039	.50	.70	38	3.00
40.51200.0011	—	.11	.0043	.50	.70	38	3.00
40.51200.0012	—	.12	.0047	.50	.70	38	3.00
40.51200.0013	—	.13	.0051	.80	1.00	38	3.00
40.51200.0014	—	.14	.0055	.80	1.00	38	3.00
40.51200.0015	—	.15	.0059	.80	1.00	38	3.00
40.51200.0016	—	.16	.0063	1.10	1.40	38	3.00
40.51200.0017	—	.17	.0067	1.10	1.40	38	3.00
40.51200.0018	—	.18	.0071	1.10	1.40	38	3.00
40.51200.0019	—	.19	.0075	1.10	1.40	38	3.00
40.51200.0020	40.51201.0020	.20	.0079	1.50	1.80	38	3.00
40.51200.0021	40.51201.0021	.21	.0083	1.50	1.80	38	3.00
40.51200.0022	40.51201.0022	.22	.0087	1.50	1.80	38	3.00
40.51200.0023	40.51201.0023	.23	.0091	1.50	1.80	38	3.00
40.51200.0024	40.51201.0024	.24	.0094	1.50	1.80	38	3.00
40.51200.0025	40.51201.0025	.25	.0098	1.90	2.20	38	3.00
40.51200.0026	40.51201.0026	.26	.0102	1.90	2.20	38	3.00

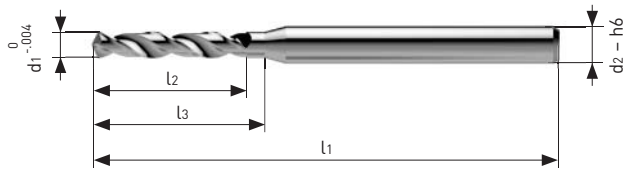


Art. 51200	Art. 51201	d1	d1 (in.)	l2	l3	l1	d2
Catalog Number	Catalog Number						
40.51200.0027	40.51201.0027	.27	.0106	1.90	2.20	38	3.00
40.51200.0028	40.51201.0028	.28	.0110	1.90	2.20	38	3.00
40.51200.0029	40.51201.0029	.29	.0114	1.90	2.20	38	3.00
40.51200.0030	40.51201.0030	.30	.0118	1.80	2.40	38	3.00
40.51200.0031	40.51201.0031	.31	.0122	1.80	2.40	38	3.00
40.51200.0032	40.51201.0032	.32	.0126	1.80	2.40	38	3.00
40.51200.0033	40.51201.0033	.33	.0130	1.80	2.40	38	3.00
40.51200.0034	40.51201.0034	.34	.0134	1.80	2.40	38	3.00
40.51200.0035	40.51201.0035	.35	.0138	2.20	2.80	38	3.00
40.51200.0036	40.51201.0036	.36	.0142	2.20	2.80	38	3.00
40.51200.0037	40.51201.0037	.37	.0146	2.20	2.80	38	3.00
40.51200.0038	40.51201.0038	.38	.0150	2.20	2.80	38	3.00
40.51200.0039	40.51201.0039	.39	.0154	2.70	3.60	38	3.00
40.51200.0040	40.51201.0040	.40	.0157	2.70	3.60	38	3.00
40.51200.0041	40.51201.0041	.41	.0161	2.70	3.60	38	3.00
40.51200.0042	40.51201.0042	.42	.0165	2.70	3.60	38	3.00
40.51200.0043	40.51201.0043	.43	.0169	2.70	3.60	38	3.00
40.51200.0044	40.51201.0044	.44	.0173	2.70	3.60	38	3.00
40.51200.0045	40.51201.0045	.45	.0177	2.70	3.60	38	3.00
40.51200.0046	40.51201.0046	.46	.0181	2.70	3.60	38	3.00
40.51200.0047	40.51201.0047	.47	.0185	2.70	3.60	38	3.00
40.51200.0048	40.51201.0048	.48	.0189	2.70	3.60	38	3.00
40.51200.0049	40.51201.0049	.49	.0193	3.20	4.00	38	3.00
40.51200.0050	40.51201.0050	.50	.0197	3.20	4.00	38	3.00
40.51200.0051	40.51201.0051	.51	.0201	3.20	4.00	38	3.00
40.51200.0052	40.51201.0052	.52	.0205	3.20	4.00	38	3.00
40.51200.0053	40.51201.0053	.53	.0209	3.20	4.00	38	3.00
40.51200.0054	40.51201.0054	.54	.0213	3.60	4.50	38	3.00
40.51200.0055	40.51201.0055	.55	.0217	3.60	4.50	38	3.00
40.51200.0056	40.51201.0056	.56	.0220	3.60	4.50	38	3.00
40.51200.0057	40.51201.0057	.57	.0224	3.60	4.50	38	3.00
40.51200.0058	40.51201.0058	.58	.0228	3.60	4.50	38	3.00
40.51200.0059	40.51201.0059	.59	.0232	3.60	4.50	38	3.00
40.51200.0060	40.51201.0060	.60	.0236	3.60	4.50	38	3.00
40.51200.0061	40.51201.0061	.61	.0240	3.90	5.00	38	3.00
40.51200.0062	40.51201.0062	.62	.0244	3.90	5.00	38	3.00
40.51200.0063	40.51201.0063	.63	.0248	3.90	5.00	38	3.00
40.51200.0064	40.51201.0064	.64	.0252	3.90	5.00	38	3.00
40.51200.0065	40.51201.0065	.65	.0256	3.90	5.00	38	3.00
40.51200.0066	40.51201.0066	.66	.0260	3.90	5.00	38	3.00
40.51200.0067	40.51201.0067	.67	.0264	3.90	5.00	38	3.00
40.51200.0068	40.51201.0068	.68	.0268	4.50	5.60	38	3.00
40.51200.0069	40.51201.0069	.69	.0272	4.50	5.60	38	3.00
40.51200.0070	40.51201.0070	.70	.0276	4.50	5.60	38	3.00
40.51200.0071	40.51201.0071	.71	.0280	4.50	5.60	38	3.00
40.51200.0072	40.51201.0072	.72	.0283	4.50	5.60	38	3.00

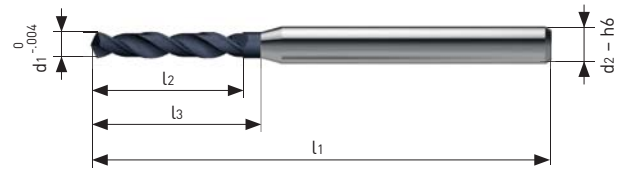
- All dimensions are millimeters unless otherwise noted
- For cutting data see pg. 144-145



Art. 51200 Cont.



Art. 51201 Cont.



Art. 51200	Art. 51201	d1	d1 (in.)	l2	l3	l1	d2
Catalog Number	Catalog Number						
40.51200.0073	40.51201.0073	.73	.0287	4.50	5.60	38	3.00
40.51200.0074	40.51201.0074	.74	.0291	4.50	5.60	38	3.00
40.51200.0075	40.51201.0075	.75	.0295	4.50	5.60	38	3.00
40.51200.0076	40.51201.0076	.76	.0299	5.00	6.30	38	3.00
40.51200.0077	40.51201.0077	.77	.0303	5.00	6.30	38	3.00
40.51200.0078	40.51201.0078	.78	.0307	5.00	6.30	38	3.00
40.51200.0079	40.51201.0079	.79	.0311	5.00	6.30	38	3.00
40.51200.0080	40.51201.0080	.80	.0315	5.00	6.30	38	3.00
40.51200.0081	40.51201.0081	.81	.0319	5.00	6.30	38	3.00
40.51200.0082	40.51201.0082	.82	.0323	5.00	6.30	38	3.00
40.51200.0083	40.51201.0083	.83	.0327	5.00	6.30	38	3.00
40.51200.0084	40.51201.0084	.84	.0331	5.00	6.30	38	3.00
40.51200.0085	40.51201.0085	.85	.0335	5.00	6.30	38	3.00
40.51200.0086	40.51201.0086	.86	.0339	5.70	7.10	38	3.00
40.51200.0087	40.51201.0087	.87	.0343	5.70	7.10	38	3.00
40.51200.0088	40.51201.0088	.88	.0346	5.70	7.10	38	3.00
40.51200.0089	40.51201.0089	.89	.0350	5.70	7.10	38	3.00
40.51200.0090	40.51201.0090	.90	.0354	5.70	7.10	38	3.00
40.51200.0091	40.51201.0091	.91	.0358	5.70	7.10	38	3.00
40.51200.0092	40.51201.0092	.92	.0362	5.70	7.10	38	3.00
40.51200.0093	40.51201.0093	.93	.0366	5.70	7.10	38	3.00
40.51200.0094	40.51201.0094	.94	.0370	5.70	7.10	38	3.00
40.51200.0095	40.51201.0095	.95	.0374	5.70	7.10	38	3.00
40.51200.0096	40.51201.0096	.96	.0378	6.50	8.00	38	3.00
40.51200.0097	40.51201.0097	.97	.0382	6.50	8.00	38	3.00
40.51200.0098	40.51201.0098	.98	.0386	6.50	8.00	38	3.00
40.51200.0099	40.51201.0099	.99	.0390	6.50	8.00	38	3.00
40.51200.0100	40.51201.0100	1.00	.0394	6.50	8.00	38	3.00
40.51200.0101	40.51201.0101	1.01	.0398	6.50	8.00	38	3.00
40.51200.0102	40.51201.0102	1.02	.0402	6.50	8.00	38	3.00
40.51200.0103	40.51201.0103	1.03	.0406	6.50	8.00	38	3.00
40.51200.0104	40.51201.0104	1.04	.0409	6.50	8.00	38	3.00
40.51200.0105	40.51201.0105	1.05	.0413	6.50	8.00	38	3.00
40.51200.0106	40.51201.0106	1.06	.0417	7.30	9.00	38	3.00
40.51200.0107	40.51201.0107	1.07	.0421	7.30	9.00	38	3.00
40.51200.0108	40.51201.0108	1.08	.0425	7.30	9.00	38	3.00
40.51200.0109	40.51201.0109	1.09	.0429	7.30	9.00	38	3.00
40.51200.0110	40.51201.0110	1.10	.0433	7.30	9.00	38	3.00
40.51200.0111	40.51201.0111	1.11	.0437	7.30	9.00	38	3.00
40.51200.0112	40.51201.0112	1.12	.0441	7.30	9.00	38	3.00

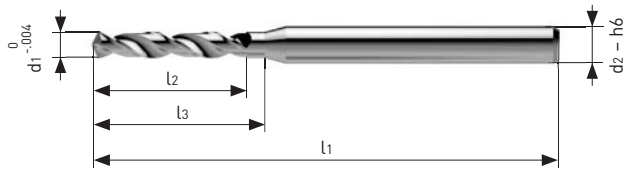


Art. 51200	Art. 51201	d ₁	d ₁ (in.)	l ₂	l ₃	l ₁	d ₂
Catalog Number	Catalog Number						
40.51200.0113	40.51201.0113	1.13	.0445	7.30	9.00	38	3.00
40.51200.0114	40.51201.0114	1.14	.0449	7.30	9.00	38	3.00
40.51200.0115	40.51201.0115	1.15	.0453	7.30	9.00	38	3.00
40.51200.0116	40.51201.0116	1.16	.0457	8.20	10.00	38	3.00
40.51200.0117	40.51201.0117	1.17	.0461	8.20	10.00	38	3.00
40.51200.0118	40.51201.0118	1.18	.0465	8.20	10.00	38	3.00
40.51200.0119	40.51201.0119	1.19	.0469	8.20	10.00	38	3.00
40.51200.0120	40.51201.0120	1.20	.0472	8.20	10.00	38	3.00
40.51200.0121	40.51201.0121	1.21	.0476	8.20	10.00	38	3.00
40.51200.0122	40.51201.0122	1.22	.0480	8.20	10.00	38	3.00
40.51200.0123	40.51201.0123	1.23	.0484	8.20	10.00	38	3.00
40.51200.0124	40.51201.0124	1.24	.0488	8.20	10.00	38	3.00
40.51200.0125	40.51201.0125	1.25	.0492	8.20	10.00	38	3.00
40.51200.0126	40.51201.0126	1.26	.0496	8.20	10.00	38	3.00
40.51200.0127	40.51201.0127	1.27	.0500	8.20	10.00	38	3.00
40.51200.0128	40.51201.0128	1.28	.0504	8.20	10.00	38	3.00
40.51200.0129	40.51201.0129	1.29	.0508	8.20	10.00	38	3.00
40.51200.0130	40.51201.0130	1.30	.0512	8.20	10.00	38	3.00
40.51200.0131	40.51201.0131	1.31	.0516	9.20	11.20	38	3.00
40.51200.0132	40.51201.0132	1.32	.0520	9.20	11.20	38	3.00
40.51200.0133	40.51201.0133	1.33	.0524	9.20	11.20	38	3.00
40.51200.0134	40.51201.0134	1.34	.0528	9.20	11.20	38	3.00
40.51200.0135	40.51201.0135	1.35	.0531	9.20	11.20	38	3.00
40.51200.0136	40.51201.0136	1.36	.0535	9.20	11.20	38	3.00
40.51200.0137	40.51201.0137	1.37	.0539	9.20	11.20	38	3.00
40.51200.0138	40.51201.0138	1.38	.0543	9.20	11.20	38	3.00
40.51200.0139	40.51201.0139	1.39	.0547	9.20	11.20	38	3.00
40.51200.0140	40.51201.0140	1.40	.0551	9.20	11.20	38	3.00
40.51200.0141	40.51201.0141	1.41	.0555	9.20	11.20	38	3.00
40.51200.0142	40.51201.0142	1.42	.0559	9.20	11.20	38	3.00
40.51200.0143	40.51201.0143	1.43	.0563	9.20	11.20	38	3.00
40.51200.0144	40.51201.0144	1.44	.0567	9.20	11.20	38	3.00
40.51200.0145	40.51201.0145	1.45	.0571	9.20	11.20	38	3.00
40.51200.0146	40.51201.0146	1.46	.0575	9.20	11.20	38	3.00
40.51200.0147	40.51201.0147	1.47	.0579	9.20	11.20	38	3.00
40.51200.0148	40.51201.0148	1.48	.0583	9.20	11.20	38	3.00
40.51200.0149	40.51201.0149	1.49	.0587	9.20	11.20	38	3.00
40.51200.0150	40.51201.0150	1.50	.0591	9.20	11.20	38	3.00
40.51200.0151	40.51201.0151	1.51	.0594	11.20	13.40	38	3.00
40.51200.0152	40.51201.0152	1.52	.0598	11.20	13.40	38	3.00
40.51200.0153	40.51201.0153	1.53	.0602	11.20	13.40	38	3.00
40.51200.0154	40.51201.0154	1.54	.0606	11.20	13.40	38	3.00
40.51200.0155	40.51201.0155	1.55	.0610	11.20	13.40	38	3.00
40.51200.0156	40.51201.0156	1.56	.0614	11.20	13.40	38	3.00
40.51200.0157	40.51201.0157	1.57	.0618	11.20	13.40	38	3.00
40.51200.0158	40.51201.0158	1.58	.0622	11.20	13.40	38	3.00

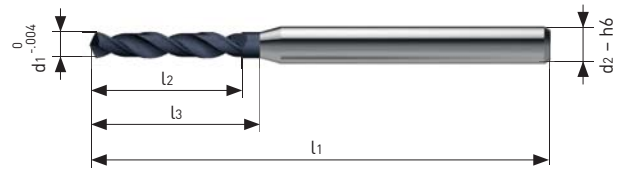
- All dimensions are millimeters unless otherwise noted
- For cutting data see pg. 144-145



Art. 51200 Cont.



Art. 51201 Cont.

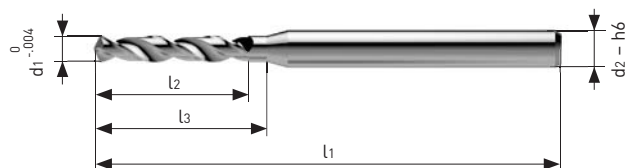


Art. 51200	Art. 51201	d1	d1 (in.)	l2	l3	l1	d2
Catalog Number	Catalog Number						
40.51200.0159	40.51201.0159	1.59	.0626	11.20	13.40	38	3.00
40.51200.0160	40.51201.0160	1.60	.0630	11.20	13.40	38	3.00
40.51200.0161	40.51201.0161	1.61	.0634	11.20	13.40	38	3.00
40.51200.0162	40.51201.0162	1.62	.0638	11.20	13.40	38	3.00
40.51200.0163	40.51201.0163	1.63	.0642	11.20	13.40	38	3.00
40.51200.0164	40.51201.0164	1.64	.0646	11.20	13.40	38	3.00
40.51200.0165	40.51201.0165	1.65	.0650	11.20	13.40	38	3.00
40.51200.0166	40.51201.0166	1.66	.0654	11.20	13.40	38	3.00
40.51200.0167	40.51201.0167	1.67	.0657	11.20	13.40	38	3.00
40.51200.0168	40.51201.0168	1.68	.0661	11.20	13.40	38	3.00
40.51200.0169	40.51201.0169	1.69	.0665	11.20	13.40	38	3.00
40.51200.0170	40.51201.0170	1.70	.0669	11.20	13.40	38	3.00
40.51200.0171	40.51201.0171	1.71	.0673	11.20	13.40	38	3.00
40.51200.0172	40.51201.0172	1.72	.0677	11.20	13.40	38	3.00
40.51200.0173	40.51201.0173	1.73	.0681	11.20	13.40	38	3.00
40.51200.0174	40.51201.0174	1.74	.0685	11.20	13.40	38	3.00
40.51200.0175	40.51201.0175	1.75	.0689	11.20	13.40	38	3.00
40.51200.0176	40.51201.0176	1.76	.0693	11.20	13.40	38	3.00
40.51200.0177	40.51201.0177	1.77	.0697	11.20	13.40	38	3.00
40.51200.0178	40.51201.0178	1.78	.0701	11.20	13.40	38	3.00
40.51200.0179	40.51201.0179	1.79	.0705	11.20	13.40	38	3.00
40.51200.0180	40.51201.0180	1.80	.0709	11.20	13.40	38	3.00
40.51200.0181	40.51201.0181	1.81	.0713	11.20	13.40	38	3.00
40.51200.0182	40.51201.0182	1.82	.0717	11.20	13.40	38	3.00
40.51200.0183	40.51201.0183	1.83	.0720	11.20	13.40	38	3.00
40.51200.0184	40.51201.0184	1.84	.0724	11.20	13.40	38	3.00
40.51200.0185	40.51201.0185	1.85	.0728	11.20	13.40	38	3.00
40.51200.0186	40.51201.0186	1.86	.0732	11.20	13.40	38	3.00
40.51200.0187	40.51201.0187	1.87	.0736	11.20	13.40	38	3.00
40.51200.0188	40.51201.0188	1.88	.0740	11.20	13.40	38	3.00
40.51200.0189	40.51201.0189	1.89	.0744	11.20	13.40	38	3.00
40.51200.0190	40.51201.0190	1.90	.0748	11.20	13.40	38	3.00
40.51200.0191	40.51201.0191	1.91	.0752	11.20	13.40	38	3.00
40.51200.0192	40.51201.0192	1.92	.0756	11.20	13.40	38	3.00
40.51200.0193	40.51201.0193	1.93	.0760	11.20	13.40	38	3.00
40.51200.0194	40.51201.0194	1.94	.0764	11.20	13.40	38	3.00
40.51200.0195	40.51201.0195	1.95	.0768	11.20	13.40	38	3.00
40.51200.0196	40.51201.0196	1.96	.0772	11.20	13.40	38	3.00
40.51200.0197	40.51201.0197	1.97	.0776	11.20	13.40	38	3.00
40.51200.0198	40.51201.0198	1.98	.0780	11.20	13.40	38	3.00

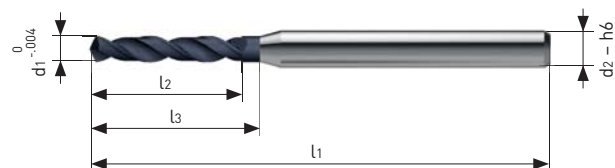
Art. 51200	Art. 51201	d1	d1 (in.)	l2	l3	l1	d2
Catalog Number	Catalog Number						
40.51200.0199	40.51201.0199	1.99	.0783	11.20	13.40	38	3.00
40.51200.0200	40.51201.0200	2.00	.0787	11.20	13.40	38	3.00
40.51200.0201	40.51201.0201	2.01	.0791	12.50	14.00	38	3.00
40.51200.0202	40.51201.0202	2.02	.0795	12.50	14.00	38	3.00
40.51200.0203	40.51201.0203	2.03	.0799	12.50	14.00	38	3.00
40.51200.0204	40.51201.0204	2.04	.0803	12.50	14.00	38	3.00
40.51200.0205	40.51201.0205	2.05	.0807	12.50	14.00	38	3.00
40.51200.0206	40.51201.0206	2.06	.0811	12.50	14.00	38	3.00
40.51200.0207	40.51201.0207	2.07	.0815	12.50	14.00	38	3.00
40.51200.0208	40.51201.0208	2.08	.0819	12.50	14.00	38	3.00
40.51200.0209	40.51201.0209	2.09	.0823	12.50	14.00	38	3.00
40.51200.0210	40.51201.0210	2.10	.0827	12.50	14.00	38	3.00
40.51200.0211	40.51201.0211	2.11	.0831	12.50	14.00	38	3.00
40.51200.0212	40.51201.0212	2.12	.0835	12.50	14.00	38	3.00
40.51200.0213	40.51201.0213	2.13	.0839	12.50	14.00	38	3.00
40.51200.0214	40.51201.0214	2.14	.0843	12.50	14.00	38	3.00
40.51200.0215	40.51201.0215	2.15	.0846	12.50	14.00	38	3.00
40.51200.0216	40.51201.0216	2.16	.0850	12.50	14.00	38	3.00
40.51200.0217	40.51201.0217	2.17	.0854	12.50	14.00	38	3.00
40.51200.0218	40.51201.0218	2.18	.0858	12.50	14.00	38	3.00
40.51200.0219	40.51201.0219	2.19	.0862	12.50	14.00	38	3.00
40.51200.0220	40.51201.0220	2.20	.0866	12.50	14.00	38	3.00
40.51200.0221	40.51201.0221	2.21	.0870	12.50	14.00	38	3.00
40.51200.0222	40.51201.0222	2.22	.0874	12.50	14.00	38	3.00
40.51200.0223	40.51201.0223	2.23	.0878	12.50	14.00	38	3.00
40.51200.0224	40.51201.0224	2.24	.0882	12.50	14.00	38	3.00
40.51200.0225	40.51201.0225	2.25	.0886	12.50	14.00	38	3.00
40.51200.0226	40.51201.0226	2.26	.0890	12.50	14.00	38	3.00
40.51200.0227	40.51201.0227	2.27	.0894	12.50	14.00	38	3.00
40.51200.0228	40.51201.0228	2.28	.0898	12.50	14.00	38	3.00
40.51200.0229	40.51201.0229	2.29	.0902	12.50	14.00	38	3.00
40.51200.0230	40.51201.0230	2.30	.0906	12.50	14.00	38	3.00
40.51200.0231	40.51201.0231	2.31	.0909	12.50	14.00	38	3.00
40.51200.0232	40.51201.0232	2.32	.0913	12.50	14.00	38	3.00
40.51200.0233	40.51201.0233	2.33	.0917	12.50	14.00	38	3.00
40.51200.0234	40.51201.0234	2.34	.0921	12.50	14.00	38	3.00
40.51200.0235	40.51201.0235	2.35	.0925	12.50	14.00	38	3.00
40.51200.0236	40.51201.0236	2.36	.0929	12.50	14.00	38	3.00
40.51200.0237	40.51201.0237	2.37	.0933	12.50	14.00	38	3.00
40.51200.0238	40.51201.0238	2.38	.0937	12.50	14.00	38	3.00
40.51200.0239	40.51201.0239	2.39	.0941	12.50	14.00	38	3.00
40.51200.0240	40.51201.0240	2.40	.0945	12.50	14.00	38	3.00
40.51200.0241	40.51201.0241	2.41	.0949	12.50	14.00	38	3.00
40.51200.0242	40.51201.0242	2.42	.0953	12.50	14.00	38	3.00
40.51200.0243	40.51201.0243	2.43	.0957	12.50	14.00	38	3.00
40.51200.0244	40.51201.0244	2.44	.0961	12.50	14.00	38	3.00

- All dimensions are millimeters unless otherwise noted
- For cutting data see pg. 144-145

Art. 51200 Cont.



Art. 51201 Cont.



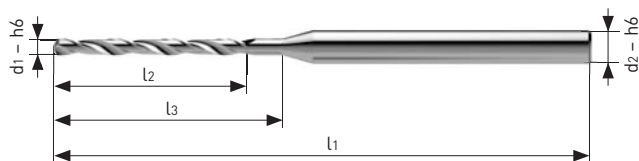
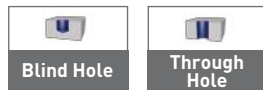
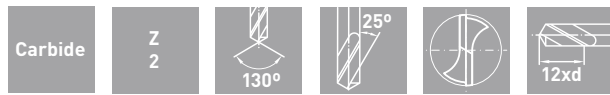
Art. 51200	Art. 51201	d1	d1 (in.)	l2	l3	l1	d2
Catalog Number	Catalog Number						
40.51200.0245	40.51201.0245	2.45	.0965	12.50	14.00	38	3.00
40.51200.0246	40.51201.0246	2.46	.0969	12.50	14.00	38	3.00
40.51200.0247	40.51201.0247	2.47	.0972	12.50	14.00	38	3.00
40.51200.0248	40.51201.0248	2.48	.0976	12.50	14.00	38	3.00
40.51200.0249	40.51201.0249	2.49	.0980	12.50	14.00	38	3.00
40.51200.0250	40.51201.0250	2.50	.0984	14.00	17.00	38	3.00
40.51200.0251	40.51201.0251	2.51	.0988	14.00	17.00	38	3.00
40.51200.0252	40.51201.0252	2.52	.0992	14.00	17.00	38	3.00
40.51200.0253	40.51201.0253	2.53	.0996	14.00	17.00	38	3.00
40.51200.0254	40.51201.0254	2.54	.1000	14.00	17.00	38	3.00
40.51200.0255	40.51201.0255	2.55	.1004	14.00	17.00	38	3.00
40.51200.0256	40.51201.0256	2.56	.1008	14.00	17.00	38	3.00
40.51200.0257	40.51201.0257	2.57	.1012	14.00	17.00	38	3.00
40.51200.0258	40.51201.0258	2.58	.1016	14.00	17.00	38	3.00
40.51200.0259	40.51201.0259	2.59	.1020	14.00	17.00	38	3.00
40.51200.0260	40.51201.0260	2.60	.1024	14.00	17.00	38	3.00
40.51200.0261	40.51201.0261	2.61	.1028	14.00	17.00	38	3.00
40.51200.0262	40.51201.0262	2.62	.1031	14.00	17.00	38	3.00
40.51200.0263	40.51201.0263	2.63	.1035	14.00	17.00	38	3.00
40.51200.0264	40.51201.0264	2.64	.1039	14.00	17.00	38	3.00
40.51200.0265	40.51201.0265	2.65	.1043	14.00	17.00	38	3.00
40.51200.0266	40.51201.0266	2.66	.1047	14.00	17.00	38	3.00
40.51200.0267	40.51201.0267	2.67	.1051	14.00	17.00	38	3.00
40.51200.0268	40.51201.0268	2.68	.1055	14.00	17.00	38	3.00
40.51200.0269	40.51201.0269	2.69	.1059	14.00	17.00	38	3.00
40.51200.0270	40.51201.0270	2.70	.1063	14.00	17.00	38	3.00
40.51200.0271	40.51201.0271	2.71	.1067	14.00	17.00	38	3.00
40.51200.0272	40.51201.0272	2.72	.1071	14.00	17.00	38	3.00
40.51200.0273	40.51201.0273	2.73	.1075	14.00	17.00	38	3.00
40.51200.0274	40.51201.0274	2.74	.1079	14.00	17.00	38	3.00
40.51200.0275	40.51201.0275	2.75	.1083	14.00	17.00	38	3.00
40.51200.0276	40.51201.0276	2.76	.1087	14.00	17.00	38	3.00
40.51200.0277	40.51201.0277	2.77	.1091	14.00	17.00	38	3.00
40.51200.0278	40.51201.0278	2.78	.1094	14.00	17.00	38	3.00
40.51200.0279	40.51201.0279	2.79	.1098	14.00	17.00	38	3.00
40.51200.0280	40.51201.0280	2.80	.1102	14.00	17.00	38	3.00
40.51200.0281	40.51201.0281	2.81	.1106	14.00	17.00	38	3.00
40.51200.0282	40.51201.0282	2.82	.1110	14.00	17.00	38	3.00
40.51200.0283	40.51201.0283	2.83	.1114	14.00	17.00	38	3.00
40.51200.0284	40.51201.0284	2.84	.1118	14.00	17.00	38	3.00

Art. 51200	Art. 51201	d1	d1 (in.)	l2	l3	l1	d2
Catalog Number	Catalog Number						
40.51200.0285	40.51201.0285	2.85	.1122	14.00	17.00	38	3.00
40.51200.0286	40.51201.0286	2.86	.1126	14.00	17.00	38	3.00
40.51200.0287	40.51201.0287	2.87	.1130	14.00	17.00	38	3.00
40.51200.0288	40.51201.0288	2.88	.1134	14.00	17.00	38	3.00
40.51200.0289	40.51201.0289	2.89	.1138	14.00	17.00	38	3.00
40.51200.0290	40.51201.0290	2.90	.1142	14.00	17.00	38	3.00
40.51200.0291	40.51201.0291	2.91	.1146	14.00	17.00	38	3.00
40.51200.0292	40.51201.0292	2.92	.1150	14.00	17.00	38	3.00
40.51200.0293	40.51201.0293	2.93	.1154	14.00	17.00	38	3.00
40.51200.0294	40.51201.0294	2.94	.1157	14.00	17.00	38	3.00
40.51200.0295	40.51201.0295	2.95	.1161	14.00	17.00	38	3.00
40.51200.0296	40.51201.0296	2.96	.1165	14.00	17.00	38	3.00
40.51200.0297	40.51201.0297	2.97	.1169	14.00	17.00	38	3.00
40.51200.0298	40.51201.0298	2.98	.1173	14.00	17.00	38	3.00
40.51200.0299	40.51201.0299	2.99	.1177	14.00	17.00	38	3.00
40.51200.0300	40.51201.0300	3.00	.1181	14.00	17.00	38	3.00

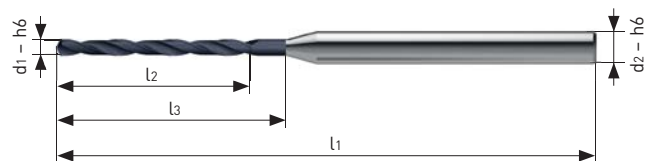
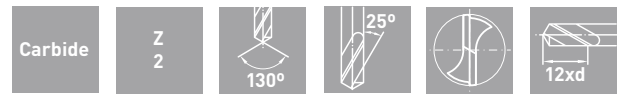
- All dimensions are millimeters unless otherwise noted
- For cutting data see pg. 144-145



Art. 50621



Art. 50622



Art. 50621	Art. 50622	d1	d1 (in.)	l2	l3	l1	d2
Catalog Number	Catalog Number						
40.50621.0015	—	.15	.0059	2.50	3.50	38	3.00
40.50621.0016	—	.16	.0063	2.50	3.50	38	3.00
40.50621.0017	—	.17	.0067	2.60	3.50	38	3.00
40.50621.0018	—	.18	.0071	2.60	3.50	38	3.00
40.50621.0019	—	.19	.0075	2.60	3.50	38	3.00
40.50621.0020	40.50622.0020	.20	.0079	2.40	3.50	38	3.00
40.50621.0021	40.50622.0021	.21	.0083	2.50	3.50	38	3.00
40.50621.0022	40.50622.0022	.22	.0087	2.70	3.50	38	3.00
40.50621.0023	40.50622.0023	.23	.0091	2.80	3.50	38	3.00
40.50621.0024	40.50622.0024	.24	.0094	2.90	4.00	38	3.00
40.50621.0025	40.50622.0025	.25	.0098	3.00	4.00	38	3.00
40.50621.0026	40.50622.0026	.26	.0102	3.10	4.00	38	3.00
40.50621.0027	40.50622.0027	.27	.0106	3.30	4.00	38	3.00
40.50621.0028	40.50622.0028	.28	.0110	3.40	4.50	38	3.00
40.50621.0029	40.50622.0029	.29	.0114	3.50	4.50	38	3.00
40.50621.0030	40.50622.0030	.30	.0118	3.60	4.50	38	3.00
40.50621.0031	40.50622.0031	.31	.0122	3.70	4.50	38	3.00
40.50621.0032	40.50622.0032	.32	.0126	3.90	5.00	38	3.00
40.50621.0033	40.50622.0033	.33	.0130	4.00	5.00	38	3.00
40.50621.0034	40.50622.0034	.34	.0134	4.10	5.00	38	3.00
40.50621.0035	40.50622.0035	.35	.0138	4.20	5.00	38	3.00
40.50621.0036	40.50622.0036	.36	.0142	4.30	5.50	38	3.00
40.50621.0037	40.50622.0037	.37	.0146	4.50	5.50	38	3.00
40.50621.0038	40.50622.0038	.38	.0150	4.60	5.50	38	3.00
40.50621.0039	40.50622.0039	.39	.0154	4.70	5.50	38	3.00
40.50621.0040	40.50622.0040	.40	.0157	4.80	6.00	38	3.00

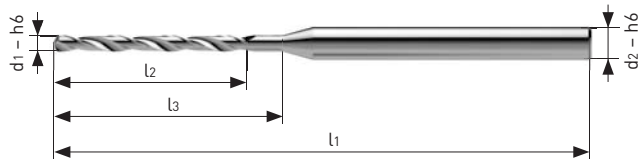


Art. 50621	Art. 50622	d1	d1 (in.)	l2	l3	l1	d2
Catalog Number	Catalog Number						
40.50621.0041	40.50622.0041	.41	.0161	4.90	6.00	38	3.00
40.50621.0042	40.50622.0042	.42	.0165	5.10	6.00	38	3.00
40.50621.0043	40.50622.0043	.43	.0169	5.20	6.00	38	3.00
40.50621.0044	40.50622.0044	.44	.0173	5.30	6.50	38	3.00
40.50621.0045	40.50622.0045	.45	.0177	5.40	6.50	38	3.00
40.50621.0046	40.50622.0046	.46	.0181	5.50	6.50	38	3.00
40.50621.0047	40.50622.0047	.47	.0185	5.70	6.50	38	3.00
40.50621.0048	40.50622.0048	.48	.0189	5.80	7.00	38	3.00
40.50621.0049	40.50622.0049	.49	.0193	5.90	7.00	38	3.00
40.50621.0050	40.50622.0050	.50	.0197	6.00	7.00	38	3.00
40.50621.0051	40.50622.0051	.51	.0201	6.10	7.00	38	3.00
40.50621.0052	40.50622.0052	.52	.0205	6.30	7.50	38	3.00
40.50621.0053	40.50622.0053	.53	.0209	6.40	7.50	38	3.00
40.50621.0054	40.50622.0054	.54	.0213	6.50	7.50	38	3.00
40.50621.0055	40.50622.0055	.55	.0217	6.60	7.50	38	3.00
40.50621.0056	40.50622.0056	.56	.0220	6.70	8.00	38	3.00
40.50621.0057	40.50622.0057	.57	.0224	6.90	8.00	38	3.00
40.50621.0058	40.50622.0058	.58	.0228	7.00	8.00	38	3.00
40.50621.0059	40.50622.0059	.59	.0232	7.10	8.00	38	3.00
40.50621.0060	40.50622.0060	.60	.0236	7.20	9.00	38	3.00
40.50621.0061	40.50622.0061	.61	.0240	7.30	9.00	38	3.00
40.50621.0062	40.50622.0062	.62	.0244	7.50	9.00	38	3.00
40.50621.0063	40.50622.0063	.63	.0248	7.60	9.00	38	3.00
40.50621.0064	40.50622.0064	.64	.0252	7.70	9.50	38	3.00
40.50621.0065	40.50622.0065	.65	.0256	7.80	9.50	38	3.00
40.50621.0066	40.50622.0066	.66	.0260	7.90	9.50	38	3.00
40.50621.0067	40.50622.0067	.67	.0264	8.10	9.50	38	3.00
40.50621.0068	40.50622.0068	.68	.0268	8.20	10.00	38	3.00
40.50621.0069	40.50622.0069	.69	.0272	8.30	10.00	38	3.00
40.50621.0070	40.50622.0070	.70	.0276	8.40	10.00	38	3.00
40.50621.0071	40.50622.0071	.71	.0280	8.50	10.00	38	3.00
40.50621.0072	40.50622.0072	.72	.0283	8.70	10.50	38	3.00
40.50621.0073	40.50622.0073	.73	.0287	8.80	10.50	38	3.00
40.50621.0074	40.50622.0074	.74	.0291	8.90	10.50	38	3.00
40.50621.0075	40.50622.0075	.75	.0295	9.00	10.50	38	3.00
40.50621.0076	40.50622.0076	.76	.0299	9.10	11.00	38	3.00
40.50621.0077	40.50622.0077	.77	.0303	9.30	11.00	38	3.00
40.50621.0078	40.50622.0078	.78	.0307	9.40	11.00	38	3.00
40.50621.0079	40.50622.0079	.79	.0311	9.50	11.00	38	3.00
40.50621.0080	40.50622.0080	.80	.0315	9.60	11.50	38	3.00
40.50621.0081	40.50622.0081	.81	.0319	9.70	11.50	38	3.00
40.50621.0082	40.50622.0082	.82	.0323	9.90	11.50	38	3.00
40.50621.0083	40.50622.0083	.83	.0327	10.00	11.50	38	3.00
40.50621.0084	40.50622.0084	.84	.0331	10.10	12.00	38	3.00
40.50621.0085	40.50622.0085	.85	.0335	10.20	12.00	38	3.00

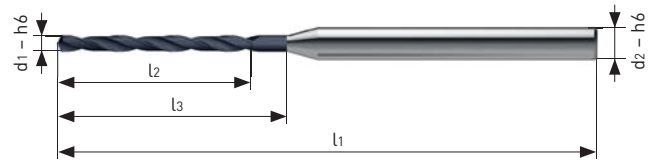
- All dimensions are millimeters unless otherwise noted
- Pilot drill recommended
- For cutting data see pg. 145-146



Art. 50621 Cont.



Art. 50622 Cont.



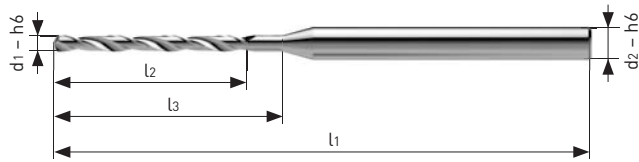
Art. 50621	Art. 50622	d1	d1 (in.)	l2	l3	l1	d2
Catalog Number	Catalog Number						
40.50621.0086	40.50622.0086	.86	.0339	10.30	12.00	38	3.00
40.50621.0087	40.50622.0087	.87	.0343	10.50	12.00	38	3.00
40.50621.0088	40.50622.0088	.88	.0346	10.60	12.50	38	3.00
40.50621.0089	40.50622.0089	.89	.0350	10.70	12.50	38	3.00
40.50621.0090	40.50622.0090	.90	.0354	10.80	12.50	38	3.00
40.50621.0091	40.50622.0091	.91	.0358	10.90	12.50	38	3.00
40.50621.0092	40.50622.0092	.92	.0362	11.10	13.00	38	3.00
40.50621.0093	40.50622.0093	.93	.0366	11.20	13.00	38	3.00
40.50621.0094	40.50622.0094	.94	.0370	11.30	13.00	38	3.00
40.50621.0095	40.50622.0095	.95	.0374	11.40	13.00	38	3.00
40.50621.0096	40.50622.0096	.96	.0378	11.50	13.50	38	3.00
40.50621.0097	40.50622.0097	.97	.0382	11.70	13.50	38	3.00
40.50621.0098	40.50622.0098	.98	.0386	11.80	13.50	38	3.00
40.50621.0099	40.50622.0099	.99	.0390	11.90	13.50	38	3.00
40.50621.0100	40.50622.0100	1.00	.0394	12.00	14.50	38	3.00
40.50621.0101	40.50622.0101	1.01	.0398	12.10	14.50	38	3.00
40.50621.0102	40.50622.0102	1.02	.0402	12.30	14.50	38	3.00
40.50621.0103	40.50622.0103	1.03	.0406	12.40	14.50	38	3.00
40.50621.0104	40.50622.0104	1.04	.0409	12.50	15.00	38	3.00
40.50621.0105	40.50622.0105	1.05	.0413	12.60	15.00	38	3.00
40.50621.0106	40.50622.0106	1.06	.0417	12.70	15.00	38	3.00
40.50621.0107	40.50622.0107	1.07	.0421	12.90	15.00	38	3.00
40.50621.0108	40.50622.0108	1.08	.0425	13.00	15.50	38	3.00
40.50621.0109	40.50622.0109	1.09	.0429	13.10	15.50	38	3.00
40.50621.0110	40.50622.0110	1.10	.0433	13.20	15.50	38	3.00
40.50621.0111	40.50622.0111	1.11	.0437	13.30	15.50	38	3.00
40.50621.0112	40.50622.0112	1.12	.0441	13.50	16.00	38	3.00
40.50621.0113	40.50622.0113	1.13	.0445	13.60	16.00	38	3.00
40.50621.0114	40.50622.0114	1.14	.0449	13.70	16.00	38	3.00
40.50621.0115	40.50622.0115	1.15	.0453	13.80	16.00	38	3.00
40.50621.0116	40.50622.0116	1.16	.0457	13.90	16.50	38	3.00
40.50621.0117	40.50622.0117	1.17	.0461	14.10	16.50	38	3.00
40.50621.0118	40.50622.0118	1.18	.0465	14.20	16.50	38	3.00
40.50621.0119	40.50622.0119	1.19	.0469	14.30	16.50	38	3.00
40.50621.0120	40.50622.0120	1.20	.0472	14.40	17.00	38	3.00
40.50621.0121	40.50622.0121	1.21	.0476	14.50	17.00	38	3.00
40.50621.0122	40.50622.0122	1.22	.0480	14.70	17.00	38	3.00
40.50621.0123	40.50622.0123	1.23	.0484	14.80	17.00	38	3.00
40.50621.0124	40.50622.0124	1.24	.0488	14.90	17.50	38	3.00



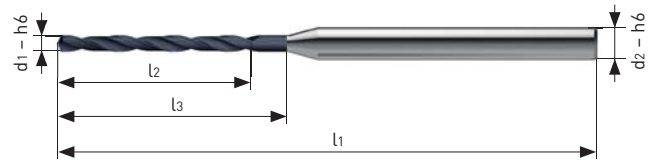
Art. 50621	Art. 50622	d1	d1 (in.)	l2	l3	l1	d2
Catalog Number	Catalog Number						
40.50621.0125	40.50622.0125	1.25	.0492	15.00	17.50	38	3.00
40.50621.0126	40.50622.0126	1.26	.0496	15.10	17.50	50	3.00
40.50621.0127	40.50622.0127	1.27	.0500	15.30	17.50	50	3.00
40.50621.0128	40.50622.0128	1.28	.0504	15.40	18.00	50	3.00
40.50621.0129	40.50622.0129	1.29	.0508	15.50	18.00	50	3.00
40.50621.0130	40.50622.0130	1.30	.0512	15.60	18.00	50	3.00
40.50621.0131	40.50622.0131	1.31	.0516	15.70	18.00	50	3.00
40.50621.0132	40.50622.0132	1.32	.0520	15.90	18.50	50	3.00
40.50621.0133	40.50622.0133	1.33	.0524	16.00	18.50	50	3.00
40.50621.0134	40.50622.0134	1.34	.0528	16.10	18.50	50	3.00
40.50621.0135	40.50622.0135	1.35	.0531	16.20	18.50	50	3.00
40.50621.0136	40.50622.0136	1.36	.0535	16.30	19.00	50	3.00
40.50621.0137	40.50622.0137	1.37	.0539	16.50	19.00	50	3.00
40.50621.0138	40.50622.0138	1.38	.0543	16.60	19.00	50	3.00
40.50621.0139	40.50622.0139	1.39	.0547	16.70	19.00	50	3.00
40.50621.0140	40.50622.0140	1.40	.0551	16.80	19.50	50	3.00
40.50621.0141	40.50622.0141	1.41	.0555	16.90	19.50	50	3.00
40.50621.0142	40.50622.0142	1.42	.0559	17.10	19.50	50	3.00
40.50621.0143	40.50622.0143	1.43	.0563	17.20	19.50	50	3.00
40.50621.0144	40.50622.0144	1.44	.0567	17.30	20.00	50	3.00
40.50621.0145	40.50622.0145	1.45	.0571	17.40	20.00	50	3.00
40.50621.0146	40.50622.0146	1.46	.0575	17.50	20.00	50	3.00
40.50621.0147	40.50622.0147	1.47	.0579	17.70	20.00	50	3.00
40.50621.0148	40.50622.0148	1.48	.0583	17.80	20.50	50	3.00
40.50621.0149	40.50622.0149	1.49	.0587	17.90	20.50	50	3.00
40.50621.0150	40.50622.0150	1.50	.0591	18.00	21.00	50	3.00
40.50621.0151	40.50622.0151	1.51	.0594	18.10	21.00	50	3.00
40.50621.0152	40.50622.0152	1.52	.0598	18.30	21.00	50	3.00
40.50621.0153	40.50622.0153	1.53	.0602	18.40	21.00	50	3.00
40.50621.0154	40.50622.0154	1.54	.0606	18.50	21.50	50	3.00
40.50621.0155	40.50622.0155	1.55	.0610	18.60	21.50	50	3.00
40.50621.0156	40.50622.0156	1.56	.0614	18.70	21.50	50	3.00
40.50621.0157	40.50622.0157	1.57	.0618	18.90	21.50	50	3.00
40.50621.0158	40.50622.0158	1.58	.0622	19.00	22.00	50	3.00
40.50621.0159	40.50622.0159	1.59	.0626	19.10	22.00	50	3.00
40.50621.0160	40.50622.0160	1.60	.0630	19.20	22.00	50	3.00
40.50621.0161	40.50622.0161	1.61	.0634	19.30	22.00	50	3.00
40.50621.0162	40.50622.0162	1.62	.0638	19.40	22.50	50	3.00
40.50621.0163	40.50622.0163	1.63	.0642	19.60	22.50	50	3.00
40.50621.0164	40.50622.0164	1.64	.0646	19.70	22.50	50	3.00
40.50621.0165	40.50622.0165	1.65	.0650	19.80	22.50	50	3.00
40.50621.0166	40.50622.0166	1.66	.0654	19.90	23.00	50	3.00
40.50621.0167	40.50622.0167	1.67	.0657	20.10	23.00	50	3.00
40.50621.0168	40.50622.0168	1.68	.0661	20.20	23.00	50	3.00
40.50621.0169	40.50622.0169	1.69	.0665	20.30	23.00	50	3.00

- All dimensions are millimeters unless otherwise noted
- Pilot drill recommended
- For cutting data see pg. 145-146

Art. 50621 Cont.



Art. 50622 Cont.



Art. 50621	Art. 50622	d1	d1 (in.)	l2	l3	l1	d2
Catalog Number	Catalog Number						
40.50621.0170	40.50622.0170	1.70	.0669	20.40	23.50	50	3.00
40.50621.0171	40.50622.0171	1.71	.0673	20.50	23.50	50	3.00
40.50621.0172	40.50622.0172	1.72	.0677	20.70	23.50	50	3.00
40.50621.0173	40.50622.0173	1.73	.0681	20.80	23.50	50	3.00
40.50621.0174	40.50622.0174	1.74	.0685	20.90	24.00	50	3.00
40.50621.0175	40.50622.0175	1.75	.0689	21.00	24.00	50	3.00
40.50621.0176	40.50622.0176	1.76	.0693	21.10	24.00	50	3.00
40.50621.0177	40.50622.0177	1.77	.0697	21.30	24.00	50	3.00
40.50621.0178	40.50622.0178	1.78	.0701	21.40	24.50	50	3.00
40.50621.0179	40.50622.0179	1.79	.0705	21.50	24.50	50	3.00
40.50621.0180	40.50622.0180	1.80	.0709	21.60	25.00	50	3.00
40.50621.0181	40.50622.0181	1.81	.0713	21.70	25.00	50	3.00
40.50621.0182	40.50622.0182	1.82	.0717	21.90	25.00	50	3.00
40.50621.0183	40.50622.0183	1.83	.0720	22.00	25.00	50	3.00
40.50621.0184	40.50622.0184	1.84	.0724	22.10	25.50	50	3.00
40.50621.0185	40.50622.0185	1.85	.0728	22.20	25.50	50	3.00
40.50621.0186	40.50622.0186	1.86	.0732	22.30	25.50	50	3.00
40.50621.0187	40.50622.0187	1.87	.0736	22.50	25.50	50	3.00
40.50621.0188	40.50622.0188	1.88	.0740	22.60	26.00	50	3.00
40.50621.0189	40.50622.0189	1.89	.0744	22.70	26.00	50	3.00
40.50621.0190	40.50622.0190	1.90	.0748	22.80	26.00	50	3.00
40.50621.0191	40.50622.0191	1.91	.0752	22.90	26.00	50	3.00
40.50621.0192	40.50622.0192	1.92	.0756	23.10	26.50	50	3.00
40.50621.0193	40.50622.0193	1.93	.0760	23.20	26.50	50	3.00
40.50621.0194	40.50622.0194	1.94	.0764	23.30	26.50	50	3.00
40.50621.0195	40.50622.0195	1.95	.0768	23.40	26.50	50	3.00
40.50621.0196	40.50622.0196	1.96	.0772	23.50	27.00	50	3.00
40.50621.0197	40.50622.0197	1.97	.0776	23.70	27.00	50	3.00
40.50621.0198	40.50622.0198	1.98	.0780	23.80	27.00	50	3.00
40.50621.0199	40.50622.0199	1.99	.0783	23.90	27.00	50	3.00
40.50621.0200	40.50622.0200	2.00	.0787	24.00	27.00	50	3.00
40.50621.0201	40.50622.0201	2.01	.0791	24.10	27.50	60	3.00
40.50621.0202	40.50622.0202	2.02	.0795	24.20	27.50	60	3.00
40.50621.0203	40.50622.0203	2.03	.0799	24.40	27.50	60	3.00
40.50621.0204	40.50622.0204	2.04	.0803	24.50	27.50	60	3.00
40.50621.0205	40.50622.0205	2.05	.0807	24.60	28.00	60	3.00
40.50621.0206	40.50622.0206	2.06	.0811	24.70	28.00	60	3.00
40.50621.0207	40.50622.0207	2.07	.0815	24.80	28.00	60	3.00
40.50621.0208	40.50622.0208	2.08	.0819	25.00	28.00	60	3.00

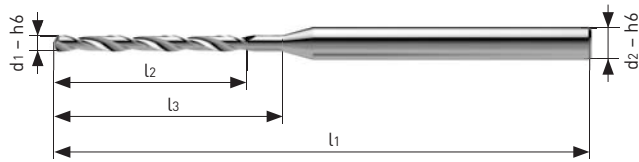


Art. 50621	Art. 50622	d1	d1 (in.)	l2	l3	l1	d2
Catalog Number	Catalog Number						
40.50621.0209	40.50622.0209	2.09	.0823	25.10	28.50	60	3.00
40.50621.0210	40.50622.0210	2.10	.0827	25.20	28.50	60	3.00
40.50621.0211	40.50622.0211	2.11	.0831	25.40	28.50	60	3.00
40.50621.0212	40.50622.0212	2.12	.0835	25.50	28.50	60	3.00
40.50621.0213	40.50622.0213	2.13	.0839	25.60	29.00	60	3.00
40.50621.0214	40.50622.0214	2.14	.0843	25.70	29.00	60	3.00
40.50621.0215	40.50622.0215	2.15	.0846	25.80	29.00	60	3.00
40.50621.0216	40.50622.0216	2.16	.0850	25.90	29.00	60	3.00
40.50621.0217	40.50622.0217	2.17	.0854	26.10	29.50	60	3.00
40.50621.0218	40.50622.0218	2.18	.0858	26.20	29.50	60	3.00
40.50621.0219	40.50622.0219	2.19	.0862	26.30	29.50	60	3.00
40.50621.0220	40.50622.0220	2.20	.0866	26.40	29.50	60	3.00
40.50621.0221	40.50622.0221	2.21	.0870	26.50	30.00	60	3.00
40.50621.0222	40.50622.0222	2.22	.0874	26.70	30.00	60	3.00
40.50621.0223	40.50622.0223	2.23	.0878	26.80	30.00	60	3.00
40.50621.0224	40.50622.0224	2.24	.0882	26.90	30.00	60	3.00
40.50621.0225	40.50622.0225	2.25	.0886	27.00	30.50	60	3.00
40.50621.0226	40.50622.0226	2.26	.0890	27.10	30.50	60	3.00
40.50621.0227	40.50622.0227	2.27	.0894	27.20	30.50	60	3.00
40.50621.0228	40.50622.0228	2.28	.0898	27.40	30.50	60	3.00
40.50621.0229	40.50622.0229	2.29	.0902	27.50	31.00	60	3.00
40.50621.0230	40.50622.0230	2.30	.0906	27.60	31.00	60	3.00
40.50621.0231	40.50622.0231	2.31	.0909	27.70	31.00	65	3.00
40.50621.0232	40.50622.0232	2.32	.0913	27.80	31.00	65	3.00
40.50621.0233	40.50622.0233	2.33	.0917	28.00	31.50	65	3.00
40.50621.0234	40.50622.0234	2.34	.0921	28.10	31.50	65	3.00
40.50621.0235	40.50622.0235	2.35	.0925	28.20	31.50	65	3.00
40.50621.0236	40.50622.0236	2.36	.0929	28.30	31.50	65	3.00
40.50621.0237	40.50622.0237	2.37	.0933	28.40	32.00	65	3.00
40.50621.0238	40.50622.0238	2.38	.0937	28.60	32.00	65	3.00
40.50621.0239	40.50622.0239	2.39	.0941	28.70	32.00	65	3.00
40.50621.0240	40.50622.0240	2.40	.0945	28.80	32.00	65	3.00
40.50621.0241	40.50622.0241	2.41	.0949	28.90	33.00	65	3.00
40.50621.0242	40.50622.0242	2.42	.0953	29.00	33.00	65	3.00
40.50621.0243	40.50622.0243	2.43	.0957	29.20	33.00	65	3.00
40.50621.0244	40.50622.0244	2.44	.0961	29.30	33.00	65	3.00
40.50621.0245	40.50622.0245	2.45	.0965	29.40	33.00	65	3.00
40.50621.0246	40.50622.0246	2.46	.0969	29.50	33.50	65	3.00
40.50621.0247	40.50622.0247	2.47	.0972	29.60	33.50	65	3.00
40.50621.0248	40.50622.0248	2.48	.0976	29.80	33.50	65	3.00
40.50621.0249	40.50622.0249	2.49	.0980	29.90	33.50	65	3.00
40.50621.0250	40.50622.0250	2.50	.0984	30.00	34.00	65	3.00
40.50621.0251	40.50622.0251	2.51	.0988	30.10	34.00	65	3.00
40.50621.0252	40.50622.0252	2.52	.0992	30.20	34.00	65	3.00
40.50621.0253	40.50622.0253	2.53	.0996	30.40	34.00	65	3.00

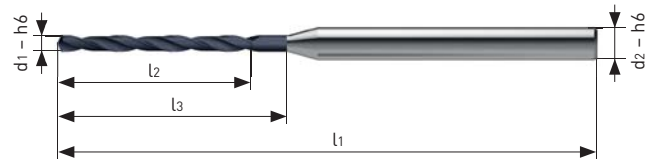
- All dimensions are millimeters unless otherwise noted
- Pilot drill recommended
- For cutting data see pg. 145-146



Art. 50621 Cont.



Art. 50622 Cont.

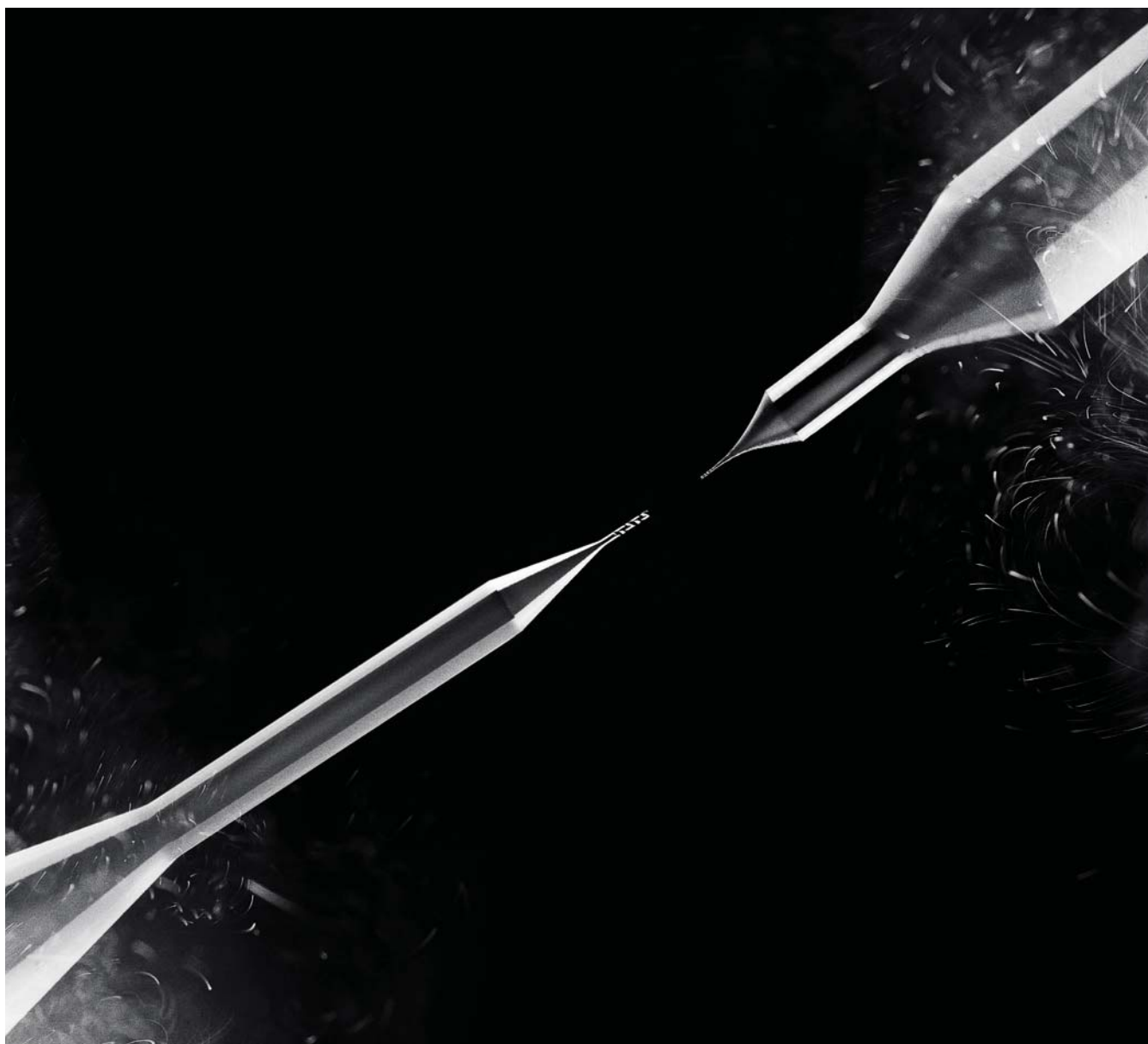


Art. 50621	Art. 50622	d1	d1 (in.)	l2	l3	l1	d2
Catalog Number	Catalog Number						
40.50621.0254	40.50622.0254	2.54	.1000	30.50	34.50	65	3.00
40.50621.0255	40.50622.0255	2.55	.1004	30.60	34.50	65	3.00
40.50621.0256	40.50622.0256	2.56	.1008	30.70	34.50	65	3.00
40.50621.0257	40.50622.0257	2.57	.1012	30.80	34.50	65	3.00
40.50621.0258	40.50622.0258	2.58	.1016	31.00	35.00	65	3.00
40.50621.0259	40.50622.0259	2.59	.1020	31.10	35.00	65	3.00
40.50621.0260	40.50622.0260	2.60	.1024	31.20	35.00	65	3.00
40.50621.0261	40.50622.0261	2.61	.1028	31.30	35.00	65	3.00
40.50621.0262	40.50622.0262	2.62	.1031	31.40	35.50	65	3.00
40.50621.0263	40.50622.0263	2.63	.1035	31.60	35.50	65	3.00
40.50621.0264	40.50622.0264	2.64	.1039	31.70	35.50	65	3.00
40.50621.0265	40.50622.0265	2.65	.1043	31.80	35.50	65	3.00
40.50621.0266	40.50622.0266	2.66	.1047	31.90	36.00	65	3.00
40.50621.0267	40.50622.0267	2.67	.1051	32.00	36.00	65	3.00
40.50621.0268	40.50622.0268	2.68	.1055	32.20	36.00	65	3.00
40.50621.0269	40.50622.0269	2.69	.1059	32.30	36.00	65	3.00
40.50621.0270	40.50622.0270	2.70	.1063	32.40	36.50	65	3.00
40.50621.0271	40.50622.0271	2.71	.1067	32.50	36.50	65	3.00
40.50621.0272	40.50622.0272	2.72	.1071	32.60	36.50	65	3.00
40.50621.0273	40.50622.0273	2.73	.1075	32.80	36.50	65	3.00
40.50621.0274	40.50622.0274	2.74	.1079	32.90	37.00	65	3.00
40.50621.0275	40.50622.0275	2.75	.1083	33.00	37.00	65	3.00
40.50621.0276	40.50622.0276	2.76	.1087	33.10	37.00	65	3.00
40.50621.0277	40.50622.0277	2.77	.1091	33.20	37.00	65	3.00
40.50621.0278	40.50622.0278	2.78	.1094	33.40	37.50	65	3.00
40.50621.0279	40.50622.0279	2.79	.1098	33.50	37.50	65	3.00
40.50621.0280	40.50622.0280	2.80	.1102	33.60	37.50	65	3.00
40.50621.0281	40.50622.0281	2.81	.1106	33.70	37.50	65	3.00
40.50621.0282	40.50622.0282	2.82	.1110	33.80	38.00	65	3.00
40.50621.0283	40.50622.0283	2.83	.1114	34.00	38.00	65	3.00
40.50621.0284	40.50622.0284	2.84	.1118	34.10	38.00	65	3.00
40.50621.0285	40.50622.0285	2.85	.1122	34.20	38.00	65	3.00
40.50621.0286	40.50622.0286	2.86	.1126	34.30	38.50	65	3.00
40.50621.0287	40.50622.0287	2.87	.1130	34.40	38.50	65	3.00
40.50621.0288	40.50622.0288	2.88	.1134	34.60	38.50	65	3.00
40.50621.0289	40.50622.0289	2.89	.1138	34.70	38.50	65	3.00
40.50621.0290	40.50622.0290	2.90	.1142	34.80	39.00	65	3.00
40.50621.0291	40.50622.0291	2.91	.1146	34.90	39.00	65	3.00
40.50621.0292	40.50622.0292	2.92	.1150	35.00	39.00	65	3.00



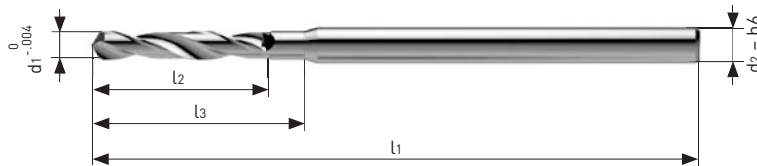
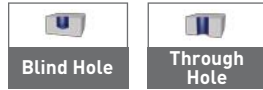
Art. 50621	Art. 50622	d1	d1 (in.)	l2	l3	l1	d2
Catalog Number	Catalog Number						
40.50621.0293	40.50622.0293	2.93	.1154	35.20	39.00	65	3.00
40.50621.0294	40.50622.0294	2.94	.1157	35.30	39.50	65	3.00
40.50621.0295	40.50622.0295	2.95	.1161	35.40	39.50	65	3.00
40.50621.0296	40.50622.0296	2.96	.1165	35.50	39.50	65	3.00
40.50621.0297	40.50622.0297	2.97	.1169	35.60	39.50	65	3.00
40.50621.0298	40.50622.0298	2.98	.1173	35.80	40.00	65	3.00
40.50621.0299	40.50622.0299	2.99	.1177	35.90	40.00	65	3.00
40.50621.0300	40.50622.0300	3.00	.1181	36.00	40.00	65	3.00

- All dimensions are millimeters unless otherwise noted
- Pilot drill recommended
- For cutting data see pg. 145-146



Spirec

Art. 12604



Catalog Number	d1	d1 (in.)	l2	l3	l1	d2
40.12604.0005	.05	.0020	.40	.60	25	1.00
40.12604.0006	.06	.0024	.40	.60	25	1.00
40.12604.0007	.07	.0028	.50	.70	25	1.00
40.12604.0008	.08	.0031	.50	.70	25	1.00
40.12604.0009	.09	.0035	.50	.70	25	1.00
40.12604.0010	.10	.0039	.50	.70	25	1.00
40.12604.0011	.11	.0043	.50	.70	25	1.00
40.12604.0012	.12	.0047	.50	.70	25	1.00
40.12604.0013	.13	.0051	.80	1.00	25	1.00
40.12604.0014	.14	.0055	.80	1.00	25	1.00
40.12604.0015	.15	.0059	.80	1.00	25	1.00
40.12604.0016	.16	.0063	1.10	1.40	25	1.00
40.12604.0017	.17	.0067	1.10	1.40	25	1.00
40.12604.0018	.18	.0071	1.10	1.40	25	1.00
40.12604.0019	.19	.0075	1.10	1.40	25	1.00
40.12604.0020	.20	.0079	1.50	1.80	25	1.00
40.12604.0021	.21	.0083	1.50	1.80	25	1.00
40.12604.0022	.22	.0087	1.50	1.80	25	1.00
40.12604.0023	.23	.0091	1.50	1.80	25	1.00
40.12604.0024	.24	.0094	1.50	1.80	25	1.00
40.12604.0025	.25	.0098	1.90	2.20	25	1.00
40.12604.0026	.26	.0102	1.90	2.20	25	1.00
40.12604.0027	.27	.0106	1.90	2.20	25	1.00
40.12604.0028	.28	.0110	1.90	2.20	25	1.00
40.12604.0029	.29	.0114	1.90	2.20	25	1.00
40.12604.0030	.30	.0118	1.90	2.20	25	1.00
40.12604.0031	.31	.0122	2.40	2.80	25	1.00
40.12604.0032	.32	.0126	2.40	2.80	25	1.00
40.12604.0033	.33	.0130	2.40	2.80	25	1.00
40.12604.0034	.34	.0134	2.40	2.80	25	1.00

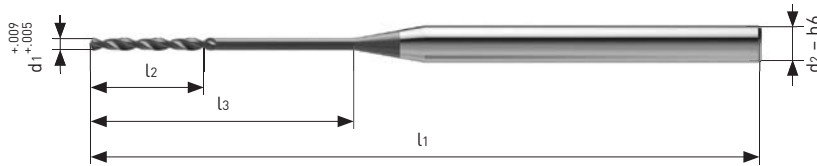
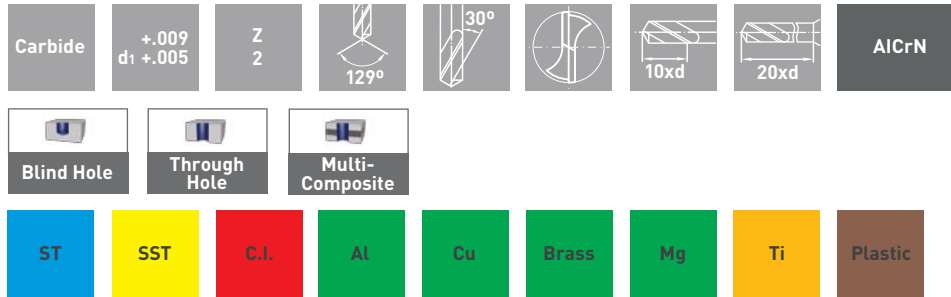
Catalog Number	d1	d1 (in.)	l2	l3	l1	d2
40.12604.0035	.35	.0138	2.40	2.80	25	1.00
40.12604.0036	.36	.0142	2.40	2.80	25	1.00
40.12604.0037	.37	.0146	2.40	2.80	25	1.00
40.12604.0038	.38	.0150	2.40	2.80	25	1.00
40.12604.0039	.39	.0154	2.70	3.60	25	1.00
40.12604.0040	.40	.0157	2.70	3.60	25	1.00
40.12604.0041	.41	.0161	2.70	3.60	25	1.00
40.12604.0042	.42	.0165	2.70	3.60	25	1.00
40.12604.0043	.43	.0169	2.70	3.60	25	1.00
40.12604.0044	.44	.0173	2.70	3.60	25	1.00
40.12604.0045	.45	.0177	2.70	3.60	25	1.00
40.12604.0046	.46	.0181	2.70	3.60	25	1.00
40.12604.0047	.47	.0185	2.70	3.60	25	1.00
40.12604.0048	.48	.0189	2.70	3.60	25	1.00
40.12604.0049	.49	.0193	3.20	4.00	25	1.00
40.12604.0050	.50	.0197	3.20	4.00	25	1.00
40.12604.0051	.51	.0201	3.20	4.00	25	1.00
40.12604.0052	.52	.0205	3.20	4.00	25	1.00
40.12604.0053	.53	.0209	3.20	4.00	25	1.00
40.12604.0054	.54	.0213	3.60	4.50	25	1.00
40.12604.0055	.55	.0217	3.60	4.50	25	1.00
40.12604.0056	.56	.0220	3.60	4.50	25	1.00
40.12604.0057	.57	.0224	3.60	4.50	25	1.00
40.12604.0058	.58	.0228	3.60	4.50	25	1.00
40.12604.0059	.59	.0232	3.60	4.50	25	1.00
40.12604.0060	.60	.0236	3.60	4.50	25	1.00
40.12604.0061	.61	.0240	3.90	5.00	25	1.00
40.12604.0062	.62	.0244	3.90	5.00	25	1.00
40.12604.0063	.63	.0248	3.90	5.00	25	1.00
40.12604.0064	.64	.0252	3.90	5.00	25	1.00

Catalog Number	d1	d1 (in.)	l2	l3	l1	d2
40.12604.0065	.65	.0256	3.90	5.00	25	1.00
40.12604.0066	.66	.0260	3.90	5.00	25	1.00
40.12604.0067	.67	.0264	3.90	5.00	25	1.00
40.12604.0068	.68	.0268	4.50	5.60	25	1.00
40.12604.0069	.69	.0272	4.50	5.60	25	1.00
40.12604.0070	.70	.0276	4.50	5.60	25	1.00
40.12604.0071	.71	.0280	4.50	5.60	25	1.00
40.12604.0072	.72	.0283	4.50	5.60	25	1.00
40.12604.0073	.73	.0287	4.50	5.60	25	1.00
40.12604.0074	.74	.0291	4.50	5.60	25	1.00
40.12604.0075	.75	.0295	4.50	5.60	25	1.00
40.12604.0076	.76	.0299	5.00	6.30	25	1.00
40.12604.0077	.77	.0303	5.00	6.30	25	1.00
40.12604.0078	.78	.0307	5.00	6.30	25	1.00
40.12604.0079	.79	.0311	5.00	6.30	25	1.00
40.12604.0080	.80	.0315	5.00	6.30	25	1.50
40.12604.0081	.81	.0319	5.00	6.30	25	1.50
40.12604.0082	.82	.0323	5.00	6.30	25	1.50
40.12604.0083	.83	.0327	5.00	6.30	25	1.50
40.12604.0084	.84	.0331	5.00	6.30	25	1.50
40.12604.0085	.85	.0335	5.00	6.30	25	1.50
40.12604.0086	.86	.0339	5.70	7.10	25	1.50
40.12604.0087	.87	.0343	5.70	7.10	25	1.50
40.12604.0088	.88	.0346	5.70	7.10	25	1.50
40.12604.0089	.89	.0350	5.70	7.10	25	1.50
40.12604.0090	.90	.0354	5.70	7.10	25	1.50
40.12604.0091	.91	.0358	5.70	7.10	25	1.50
40.12604.0092	.92	.0362	5.70	7.10	25	1.50
40.12604.0093	.93	.0366	5.70	7.10	25	1.50
40.12604.0094	.94	.0370	5.70	7.10	25	1.50
40.12604.0095	.95	.0374	5.70	7.10	25	1.50
40.12604.0096	.96	.0378	6.50	8.00	25	1.50
40.12604.0097	.97	.0382	6.50	8.00	25	1.50
40.12604.0098	.98	.0386	6.50	8.00	25	1.50
40.12604.0099	.99	.0390	6.50	8.00	25	1.50
40.12604.0100	1.00	.0394	6.50	8.00	25	1.50
40.12604.0105	1.05	.0413	6.50	8.00	25	1.50
40.12604.0110	1.10	.0433	7.30	9.00	25	1.50
40.12604.0115	1.15	.0453	7.30	9.00	25	1.50
40.12604.0120	1.20	.0472	8.20	10.00	25	1.50
40.12604.0125	1.25	.0492	8.20	10.00	25	1.50

Catalog Number	d1	d1 (in.)	l2	l3	l1	d2
40.12604.0130	1.30	.0512	8.20	10.00	25	1.50
40.12604.0135	1.35	.0531	9.20	11.20	25	1.50
40.12604.0140	1.40	.0551	9.20	11.20	25	1.50
40.12604.0145	1.45	.0571	9.20	11.20	25	1.50
40.12604.0150	1.50	.0591	10.90	12.90	38	2.00
40.12604.0155	1.55	.0610	11.20	13.40	38	2.00
40.12604.0158	1.587	.0625 (1/16)	11.20	13.40	38	2.00
40.12604.0160	1.60	.0630	11.20	13.40	38	2.00
40.12604.0165	1.65	.0650	11.20	13.40	38	2.00
40.12604.0170	1.70	.0669	11.20	13.40	38	2.00
40.12604.0175	1.75	.0689	11.20	13.40	38	2.00
40.12604.0180	1.80	.0709	11.20	13.40	38	2.00
40.12604.0185	1.85	.0728	11.20	13.40	38	2.00
40.12604.0190	1.90	.0748	11.70	14.00	38	2.00
40.12604.0195	1.95	.0768	11.70	14.00	38	2.00
40.12604.0198	1.984	.0781 (5/64)	11.70	14.00	38	2.00
40.12604.0200	2.00	.0787	12.70	15.00	43	2.50
40.12604.0205	2.05	.0807	12.70	15.00	43	2.50
40.12604.0210	2.10	.0827	12.70	15.00	43	2.50
40.12604.0215	2.15	.0846	12.70	15.00	43	2.50
40.12604.0220	2.20	.0866	13.70	17.00	43	2.50
40.12604.0225	2.25	.0886	13.70	17.00	43	2.50
40.12604.0230	2.30	.0906	13.70	17.00	43	2.50
40.12604.0235	2.35	.0925	13.70	17.00	43	2.50
40.12604.0238	2.381	.0938 (3/32)	13.70	17.00	43	2.50
40.12604.0240	2.40	.0945	14.70	18.00	43	2.50
40.12604.0245	2.45	.0965	14.70	18.00	43	2.50
40.12604.0250	2.50	.0984	14.70	18.00	46	3.00
40.12604.0255	2.55	.1004	15.70	19.00	46	3.00
40.12604.0260	2.60	.1024	15.70	19.00	46	3.00
40.12604.0265	2.65	.1043	16.70	20.00	46	3.00
40.12604.0270	2.70	.1063	16.70	20.00	46	3.00
40.12604.0275	2.75	.1083	17.70	21.00	46	3.00
40.12604.0278	2.778	.1094 (7/64)	17.70	21.00	46	3.00
40.12604.0280	2.80	.1102	17.70	21.00	46	3.00
40.12604.0285	2.85	.1122	18.70	22.00	46	3.00
40.12604.0290	2.90	.1142	18.70	22.00	46	3.00
40.12604.0295	2.95	.1161	19.70	23.00	46	3.00
40.12604.0300	3.00	.1181	19.70	—	46	3.00
40.12604.0318	3.175	.1250 (1/8)	19.70	—	46	3.175

- All dimensions are millimeters unless otherwise noted
- Packaged in quantities of 10 pieces
- For cutting data see pg. 146

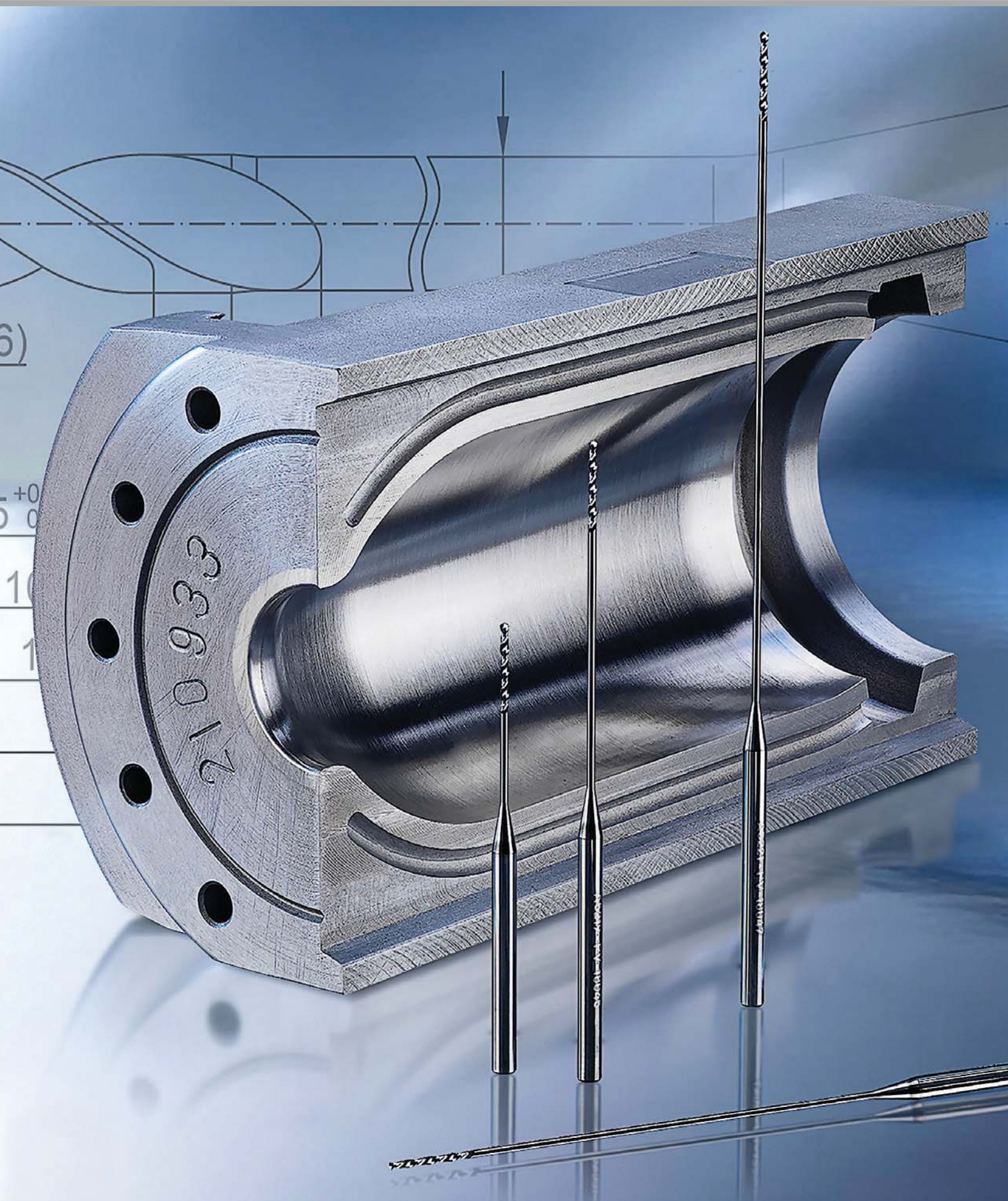
Art. 50720



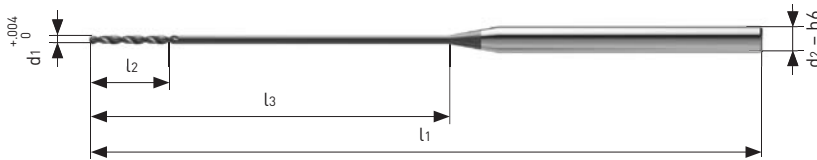
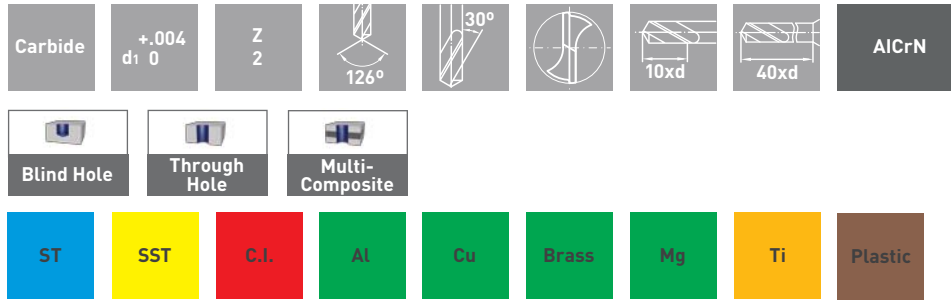
Catalog Number	d1	d1 (in)	d2	l2	l3	l1
40.50720.0020	.20	.0079	3.00	2.50	4.00	38
40.50720.0025	.25	.0098	3.00	3.00	5.00	38
40.50720.0030	.30	.0118	3.00	3.50	6.00	38
40.50720.0035	.35	.0138	3.00	4.00	7.00	38
40.50720.0040	.40	.0157	3.00	4.50	8.00	38
40.50720.0045	.45	.0177	3.00	5.00	9.00	38
40.50720.0050	.50	.0197	3.00	5.50	10.00	50
40.50720.0055	.55	.0217	3.00	6.00	11.00	50
40.50720.0060	.60	.0236	3.00	6.50	12.00	50
40.50720.0065	.65	.0256	3.00	7.00	13.00	50
40.50720.0070	.70	.0276	3.00	7.50	14.00	50
40.50720.0075	.75	.0295	3.00	8.00	15.00	50
40.50720.0080	.80	.0315	3.00	8.50	16.00	55
40.50720.0085	.85	.0335	3.00	9.00	17.00	55

Catalog Number	d1	d1 (in)	d2	l2	l3	l1
40.50720.0090	.90	.0354	3.00	9.50	18.00	55
40.50720.0095	.95	.0374	3.00	10.00	19.00	55
40.50720.0100	1.00	.0394	3.00	10.50	20.00	55
40.50720.0105	1.05	.0413	3.00	11.00	21.00	60
40.50720.0110	1.10	.0433	3.00	11.50	22.00	60
40.50720.0115	1.15	.0453	3.00	12.00	23.00	60
40.50720.0120	1.20	.0472	3.00	12.50	24.00	60
40.50720.0125	1.25	.0492	3.00	13.00	25.00	60
40.50720.0130	1.30	.0512	3.00	13.50	26.00	65
40.50720.0135	1.35	.0531	3.00	14.00	27.00	65
40.50720.0140	1.40	.0551	3.00	14.50	28.00	65
40.50720.0145	1.45	.0571	3.00	15.00	29.00	65
40.50720.0150	1.50	.0591	3.00	15.50	30.00	65

- All dimensions are millimeters unless otherwise noted
- Pilot drill recommended
- For cutting data see pg. 147



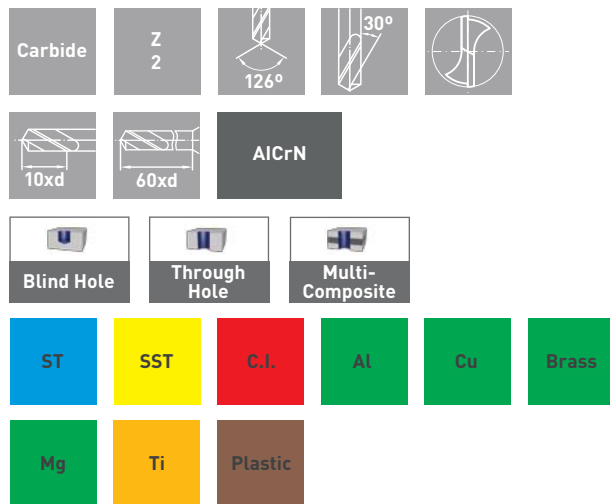
Art. 50740



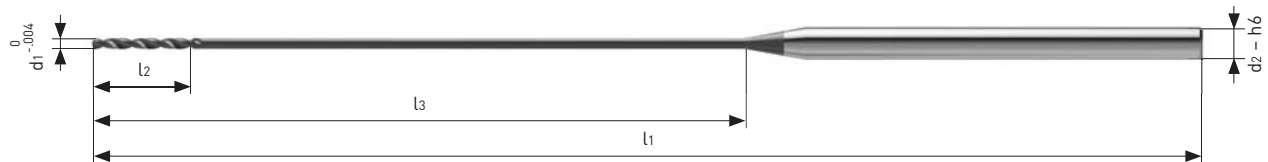
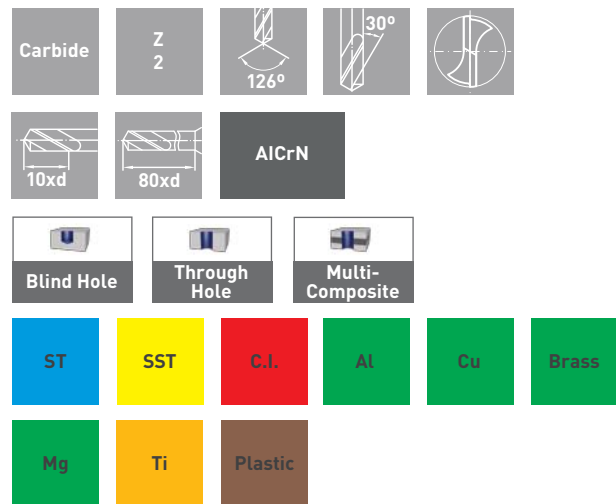
Catalog Number	d_1	d_1 (in)	d_2	l_2	l_3	l_1
40.50740.0040	.40	.0157	3.00	4.50	16.00	50
40.50740.0045	.45	.0177	3.00	5.00	18.00	50
40.50740.0050	.50	.0197	3.00	5.50	20.00	70
40.50740.0055	.55	.0217	3.00	6.00	22.00	70
40.50740.0060	.60	.0236	3.00	6.50	24.00	70
40.50740.0065	.65	.0256	3.00	7.00	26.00	70
40.50740.0070	.70	.0276	3.00	7.50	28.00	70
40.50740.0075	.75	.0295	3.00	8.00	30.00	70
40.50740.0080	.80	.0315	3.00	8.50	32.00	78
40.50740.0085	.85	.0335	3.00	9.00	34.00	78
40.50740.0090	.90	.0354	3.00	9.50	36.00	78
40.50740.0095	.95	.0374	3.00	10.00	38.00	78
40.50740.0100	1.00	.0394	3.00	10.50	40.00	78
40.50740.0105	1.05	.0413	3.00	11.00	42.00	88
40.50740.0110	1.10	.0433	3.00	11.50	44.00	88
40.50740.0115	1.15	.0453	3.00	12.00	46.00	88
40.50740.0120	1.20	.0472	3.00	12.50	48.00	88
40.50740.0125	1.25	.0492	3.00	13.00	50.00	88
40.50740.0130	1.30	.0512	3.00	13.50	52.00	98
40.50740.0135	1.35	.0531	3.00	14.00	54.00	98
40.50740.0140	1.40	.0551	3.00	14.50	56.00	98
40.50740.0145	1.45	.0571	3.00	15.00	58.00	98
40.50740.0150	1.50	.0591	3.00	15.50	60.00	98

- All dimensions are millimeters unless otherwise noted
- Pilot drill recommended
- For cutting data see pg. 147

Art. 50760



Art. 50780

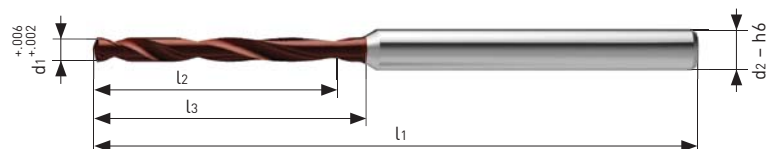
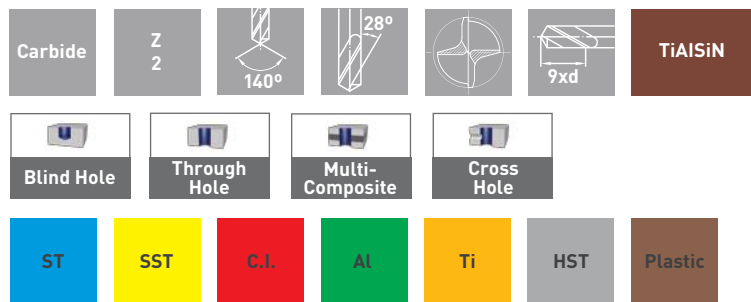


d1	d1 (in)	d2	Art. 50760				Art. 50780			
			Catalog Number	l2	l3	l1	Catalog Number	l2	l3	l1
.40	.0157	3.00	40.50760.0040	4.50	24.00	60	40.50780.0040	4.50	32.00	70
.45	.0177	3.00	40.50760.0045	5.00	27.00	60	40.50780.0045	5.00	36.00	70
.50	.0197	3.00	40.50760.0050	5.50	30.00	85	40.50780.0050	5.50	40.00	100
.55	.0217	3.00	40.50760.0055	6.00	33.00	85	40.50780.0055	6.00	44.00	100
.60	.0236	3.00	40.50760.0060	6.50	36.00	85	40.50780.0060	6.50	48.00	100
.65	.0256	3.00	40.50760.0065	7.00	39.00	85	40.50780.0065	7.00	52.00	100
.70	.0276	3.00	40.50760.0070	7.50	42.00	85	40.50780.0070	7.50	56.00	100
.75	.0295	3.00	40.50760.0075	8.00	45.00	85	40.50780.0075	8.00	60.00	100
.80	.0315	3.00	40.50760.0080	8.50	48.00	100	40.50780.0080	8.50	64.00	120
.85	.0335	3.00	40.50760.0085	9.00	51.00	100	40.50780.0085	9.00	68.00	120
.90	.0354	3.00	40.50760.0090	9.50	54.00	100	40.50780.0090	9.50	72.00	120
.95	.0374	3.00	40.50760.0095	10.00	57.00	100	40.50780.0095	10.00	76.00	120
1.00	.0394	3.00	40.50760.0100	10.50	60.00	100	40.50780.0100	10.50	80.00	120
1.05	.0413	3.00	40.50760.0105	11.00	63.00	115	40.50780.0105	11.00	84.00	140
1.10	.0433	3.00	40.50760.0110	11.50	66.00	115	40.50780.0110	11.50	88.00	140
1.15	.0453	3.00	40.50760.0115	12.00	69.00	115	40.50780.0115	12.00	92.00	140
1.20	.0472	3.00	40.50760.0120	12.50	72.00	115	40.50780.0120	12.50	96.00	140
1.25	.0492	3.00	40.50760.0125	13.00	75.00	115	40.50780.0125	13.00	100.00	140
1.30	.0512	3.00	40.50760.0130	13.50	78.00	130	40.50780.0130	13.50	104.00	160
1.35	.0531	3.00	40.50760.0135	14.00	81.00	130	40.50780.0135	14.00	108.00	160
1.40	.0551	3.00	40.50760.0140	14.50	84.00	130	40.50780.0140	14.50	112.00	160
1.45	.0571	3.00	40.50760.0145	15.00	87.00	130	40.50780.0145	15.00	116.00	160
1.50	.0591	3.00	40.50760.0150	15.50	90.00	130	40.50780.0150	15.50	120.00	160

- All dimensions are millimeters unless otherwise noted
- Pilot drill recommended
- For cutting data see pg. 147

Nirox

Art. 51609



Catalog Number	d1	d1 (in.)	l2	l3	l1	d2
40.51609.0030	.30	.0118	2.70	3.30	38	3.00
40.51609.0035	.35	.0138	3.20	3.90	38	3.00
40.51609.0040	.40	.0157	3.60	4.40	38	3.00
40.51609.0045	.45	.0177	4.10	5.00	38	3.00
40.51609.0050	.50	.0197	4.50	5.50	38	3.00
40.51609.0055	.55	.0217	5.00	6.10	38	3.00
40.51609.0060	.60	.0236	5.40	6.60	38	3.00
40.51609.0065	.65	.0256	5.90	7.20	38	3.00
40.51609.0070	.70	.0276	6.30	7.70	38	3.00
40.51609.0075	.75	.0295	6.80	8.30	38	3.00
40.51609.0080	.80	.0315	7.20	8.80	38	3.00
40.51609.0085	.85	.0335	7.70	9.40	38	3.00
40.51609.0090	.90	.0354	8.10	9.90	38	3.00
40.51609.0095	.95	.0374	8.60	10.50	38	3.00
40.51609.0100	1.00	.0394	9.00	11.00	38	3.00
40.51609.0105	1.05	.0413	9.50	11.60	38	3.00
40.51609.0110	1.10	.0433	9.90	12.10	38	3.00
40.51609.0115	1.15	.0453	10.40	12.70	38	3.00
40.51609.0120	1.20	.0472	10.80	13.20	38	3.00
40.51609.0125	1.25	.0492	11.30	13.80	38	3.00
40.51609.0130	1.30	.0512	11.70	14.30	38	3.00
40.51609.0135	1.35	.0531	12.20	14.90	38	3.00
40.51609.0140	1.40	.0551	12.60	15.40	38	3.00
40.51609.0145	1.45	.0571	13.10	16.00	38	3.00
40.51609.0150	1.50	.0591	13.50	16.50	38	3.00
40.51609.0155	1.55	.0610	14.00	17.10	50	3.00
40.51609.0160	1.60	.0630	14.40	17.60	50	3.00
40.51609.0165	1.65	.0650	14.90	18.20	50	3.00

Catalog Number	d1	d1 (in.)	l2	l3	l1	d2
40.51609.0170	1.70	.0669	15.30	18.70	50	3.00
40.51609.0175	1.75	.0689	15.80	19.30	50	3.00
40.51609.0180	1.80	.0709	16.20	19.80	50	3.00
40.51609.0185	1.85	.0728	16.70	20.40	50	3.00
40.51609.0190	1.90	.0748	17.10	20.90	50	3.00
40.51609.0195	1.95	.0768	17.60	21.50	50	3.00
40.51609.0200	2.00	.0787	18.00	22.00	50	3.00
40.51609.0205	2.05	.0807	18.50	22.60	50	3.00
40.51609.0210	2.10	.0827	18.90	23.10	50	3.00
40.51609.0215	2.15	.0846	19.40	23.70	50	3.00
40.51609.0220	2.20	.0866	19.80	24.20	50	3.00
40.51609.0225	2.25	.0886	20.30	24.80	50	3.00
40.51609.0230	2.30	.0906	20.70	25.30	50	3.00
40.51609.0235	2.35	.0925	21.20	25.90	50	3.00
40.51609.0240	2.40	.0945	21.60	26.40	50	3.00
40.51609.0245	2.45	.0965	22.10	27.00	50	3.00
40.51609.0250	2.50	.0984	22.50	27.50	50	3.00
40.51609.0255	2.55	.1004	23.00	28.10	50	3.00
40.51609.0260	2.60	.1024	23.40	28.60	50	3.00
40.51609.0265	2.65	.1043	23.90	29.20	50	3.00
40.51609.0270	2.70	.1063	24.30	29.70	50	3.00
40.51609.0275	2.75	.1083	24.80	3.30	50	3.00
40.51609.0280	2.80	.1102	25.20	30.80	50	3.00
40.51609.0285	2.85	.1122	25.70	31.40	50	3.00
40.51609.0290	2.90	.1142	26.10	31.90	50	3.00
40.51609.0295	2.95	.1161	26.60	32.50	50	3.00
40.51609.0300	3.00	.1181	27.00	33.00	50	3.00

- All dimensions are millimeters unless otherwise noted
- For cutting data see pg. 148



Phoenix TC2

Art. 52903

Carbide	Z 2				
AlTiCrN+S					
ST	SST	C.I.	Al	Cu	Brass
Mg	Ti	HST	Plastic		

Phoenix TC2

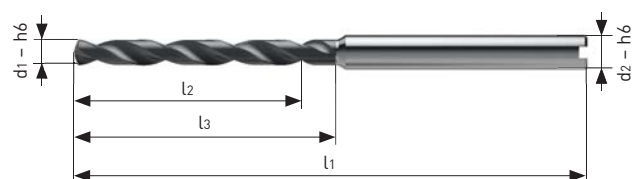
Art. 52906

Carbide	Z 2				
AlTiCrN+S					
ST	SST	C.I.	Al	Cu	Brass
Mg	Ti	HST	Plastic		

Phoenix TC2

Art. 52909

Carbide	Z 2				
AlTiCrN+S					
ST	SST	C.I.	Al	Cu	Brass
Mg	Ti	HST	Plastic		

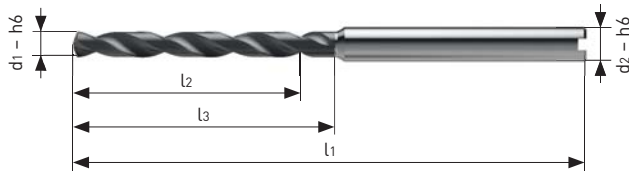


d1	d1 [in.]	d2	Art. 52903				Art. 52906				Art. 52909			
			Catalog Number	l2	l3	l1	Catalog Number	l2	l3	l1	Catalog Number	l2	l3	l1
1.00	.0394	3.00	40.52903.0100	3.00	5.00	38	40.52906.0100	6.00	8.00	38	40.52909.0100	9.00	11.00	51
1.05	.0413	3.00	40.52903.0105	3.15	5.25	38	40.52906.0105	6.30	8.30	38	—	—	—	—
1.10	.0433	3.00	40.52903.0110	3.30	5.50	38	40.52906.0110	6.60	8.60	38	40.52909.0110	9.90	12.00	51
1.15	.0453	3.00	40.52903.0115	3.45	5.50	38	40.52906.0115	6.90	8.90	38	—	—	—	—
1.20	.0472	3.00	40.52903.0120	3.60	5.50	38	40.52906.0120	7.20	9.20	38	40.52909.0120	1.80	13.00	51
1.25	.0492	3.00	40.52903.0125	3.75	6.00	38	40.52906.0125	7.50	9.50	38	—	—	—	—
1.30	.0512	3.00	40.52903.0130	3.90	6.00	38	40.52906.0130	7.80	9.80	38	40.52909.0130	11.70	14.00	51
1.35	.0531	3.00	40.52903.0135	4.05	6.00	38	40.52906.0135	8.10	10.10	38	—	—	—	—
1.40	.0551	3.00	40.52903.0140	4.20	6.50	38	40.52906.0140	8.40	10.40	38	40.52909.0140	12.60	15.00	51
1.45	.0571	3.00	40.52903.0145	4.35	6.50	38	40.52906.0145	8.70	10.70	38	—	—	—	—
1.50	.0591	3.00	40.52903.0150	4.50	6.50	38	40.52906.0150	9.00	11.00	38	40.52909.0150	13.50	16.50	51
1.55	.0610	3.00	40.52903.0155	4.65	7.50	38	40.52906.0155	9.30	11.30	38	—	—	—	—
1.60	.0630	3.00	40.52903.0160	4.80	7.50	38	40.52906.0160	9.60	12.60	38	40.52909.0160	14.40	17.50	51
1.65	.0650	3.00	40.52903.0165	4.95	8.00	38	40.52906.0165	9.90	12.90	38	—	—	—	—
1.70	.0669	3.00	40.52903.0170	5.10	8.00	38	40.52906.0170	10.20	13.20	38	40.52909.0170	15.30	18.50	51
1.75	.0689	3.00	40.52903.0175	5.25	8.00	38	40.52906.0175	10.50	13.50	38	—	—	—	—
1.80	.0709	3.00	40.52903.0180	5.40	8.50	38	40.52906.0180	10.80	13.80	38	40.52909.0180	16.20	19.00	51
1.85	.0728	3.00	40.52903.0185	5.55	8.50	38	40.52906.0185	11.10	14.10	38	—	—	—	—
1.90	.0748	3.00	40.52903.0190	5.70	8.50	38	40.52906.0190	11.40	14.40	38	40.52909.0190	17.10	20.00	51
1.95	.0768	3.00	40.52903.0195	5.85	9.00	38	40.52906.0195	11.70	14.70	38	—	—	—	—
2.00	.0787	3.00	40.52903.0200	6.00	9.00	38	40.52906.0200	12.00	15.00	50	40.52909.0200	18.00	21.00	51
2.05	.0807	3.00	40.52903.0205	6.15	9.00	38	40.52906.0205	12.30	15.30	50	—	—	—	—
2.10	.0827	3.00	40.52903.0210	6.30	9.50	38	40.52906.0210	12.60	15.60	50	40.52909.0210	18.90	22.00	61
2.15	.0846	3.00	40.52903.0215	6.45	9.50	38	40.52906.0215	12.90	15.90	50	—	—	—	—
2.20	.0866	3.00	40.52903.0220	6.60	9.50	38	40.52906.0220	13.20	16.20	50	40.52909.0220	19.80	23.00	61
2.25	.0886	3.00	40.52903.0225	6.75	10.00	38	40.52906.0225	13.50	16.50	50	—	—	—	—
2.30	.0906	3.00	40.52903.0230	6.90	10.00	38	40.52906.0230	13.80	16.80	50	40.52909.0230	20.70	24.00	61
2.35	.0925	3.00	40.52903.0235	7.05	10.00	38	40.52906.0235	14.10	17.10	50	—	—	—	—
2.40	.0945	3.00	40.52903.0240	7.20	10.00	38	40.52906.0240	14.40	17.40	50	40.52909.0240	21.60	24.50	61
2.45	.0965	3.00	40.52903.0245	7.35	10.00	38	40.52906.0245	14.70	17.70	50	—	—	—	—
2.50	.0984	3.00	40.52903.0250	7.50	10.50	50	40.52906.0250	15.00	18.00	50	40.52909.0250	22.50	25.50	61
2.55	.1004	3.00	40.52903.0255	7.65	11.00	50	40.52906.0255	15.30	18.30	50	—	—	—	—
2.60	.1024	3.00	40.52903.0260	7.80	11.00	50	40.52906.0260	15.60	18.60	50	40.52909.0260	23.40	26.50	61
2.65	.1043	3.00	40.52903.0265	7.95	11.00	50	40.52906.0265	15.90	18.90	50	—	—	—	—
2.70	.1063	3.00	40.52903.0270	8.10	11.50	50	40.52906.0270	16.20	19.20	50	40.52909.0270	24.30	27.50	61
2.75	.1083	3.00	40.52903.0275	8.25	11.50	50	40.52906.0275	16.50	19.50	50	—	—	—	—
2.80	.1102	3.00	40.52903.0280	8.40	11.50	50	40.52906.0280	16.80	19.80	50	40.52909.0280	25.20	28.00	61
2.85	.1122	3.00	40.52903.0285	8.55	12.00	50	40.52906.0285	17.10	20.10	50	—	—	—	—
2.90	.1142	3.00	40.52903.0290	8.70	12.00	50	40.52906.0290	17.40	20.40	50	40.52909.0290	26.10	29.00	61
2.95	.1161	3.00	40.52903.0295	8.85	12.00	50	40.52906.0295	17.70	20.70	50	—	—	—	—
3.00	.1181	3.00	40.52903.0300	9.00	12.50	50	40.52906.0300	18.00	21.00	50	40.52909.0300	27.00	31.00	61
3.05	.1201	6.00	40.52903.0305	9.15	12.50	55	40.52906.0305	18.30	22.30	66	—	—	—	—
3.10	.1220	6.00	40.52903.0310	9.30	12.50	55	40.52906.0310	18.60	22.60	66	40.52909.0310	27.90	32.00	79
3.15	.1240	6.00	40.52903.0315	9.45	12.50	55	40.52906.0315	18.90	22.90	66	—	—	—	—
3.20	.1260	6.00	40.52903.0320	9.60	12.50	55	40.52906.0320	19.20	23.20	66	40.52909.0320	28.80	33.00	79

- All dimensions are millimeters unless otherwise noted
- Internal coolant for all sizes
- For cutting data see pg. 148

Phoenix TC2

Art. 52903 / 52906 / 52909 Cont.



d1	d1 [in.]	d2	Art. 52903				Art. 52906				Art. 52909			
			Catalog Number	l2	l3	l1	Catalog Number	l2	l3	l1	Catalog Number	l2	l3	l1
3.25	.1280	6.00	40.52903.0325	9.75	12.50	55	40.52906.0325	19.50	23.50	66	—	—	—	—
3.30	.1299	6.00	40.52903.0330	9.90	12.50	55	40.52906.0330	19.80	23.80	66	40.52909.0330	29.70	34.00	79
3.35	.1319	6.00	40.52903.0335	10.05	14.00	55	40.52906.0335	20.10	24.10	66	—	—	—	—
3.40	.1339	6.00	40.52903.0340	10.20	14.00	55	40.52906.0340	20.40	24.40	66	40.52909.0340	30.60	35.00	79
3.45	.1358	6.00	40.52903.0345	10.35	14.00	55	40.52906.0345	20.70	24.70	66	—	—	—	—
3.50	.1378	6.00	40.52903.0350	10.50	14.50	55	40.52906.0350	21.00	25.00	66	40.52909.0350	31.50	36.50	79
3.55	.1398	6.00	40.52903.0355	10.65	14.50	55	40.52906.0355	21.30	25.30	66	—	—	—	—
3.60	.1417	6.00	40.52903.0360	10.80	15.00	55	40.52906.0360	21.60	25.60	66	40.52909.0360	32.40	37.50	79
3.65	.1437	6.00	40.52903.0365	10.95	15.00	55	40.52906.0365	21.90	25.90	66	—	—	—	—
3.70	.1457	6.00	40.52903.0370	11.10	15.00	55	40.52906.0370	22.20	26.20	66	40.52909.0370	33.30	38.50	79
3.75	.1476	6.00	40.52903.0375	11.25	15.00	55	40.52906.0375	22.50	26.50	66	—	—	—	—
3.80	.1496	6.00	40.52903.0380	11.40	15.50	55	40.52906.0380	22.80	26.80	66	40.52909.0380	34.20	39.00	79
3.85	.1516	6.00	40.52903.0385	11.55	15.50	55	40.52906.0385	23.10	27.10	66	—	—	—	—
3.90	.1535	6.00	40.52903.0390	11.70	15.50	55	40.52906.0390	23.40	27.40	66	40.52909.0390	35.10	4.00	79
3.95	.1555	6.00	40.52903.0395	11.85	15.50	55	40.52906.0395	23.70	27.70	66	—	—	—	—
4.00	.1575	6.00	40.52903.0400	12.00	15.50	55	40.52906.0400	24.00	28.00	66	40.52909.0400	36.00	41.00	79
4.05	.1594	6.00	40.52903.0405	12.15	16.50	60	40.52906.0405	24.30	30.20	79	—	—	—	—
4.10	.1614	6.00	40.52903.0410	12.30	18.50	60	40.52906.0410	24.60	30.50	79	40.52909.0410	36.90	43.00	91
4.15	.1634	6.00	40.52903.0415	12.45	18.50	60	40.52906.0415	24.90	30.80	79	—	—	—	—
4.20	.1654	6.00	40.52903.0420	12.60	18.50	60	40.52906.0420	25.20	31.00	79	40.52909.0420	37.80	44.00	91
4.25	.1673	6.00	40.52903.0425	12.75	18.50	60	40.52906.0425	25.50	31.50	79	—	—	—	—
4.30	.1693	6.00	40.52903.0430	12.90	19.00	60	40.52906.0430	25.80	32.00	79	40.52909.0430	38.70	45.00	91
4.35	.1713	6.00	40.52903.0435	13.05	19.00	60	40.52906.0435	26.10	32.50	79	—	—	—	—
4.40	.1732	6.00	40.52903.0440	13.20	19.00	60	40.52906.0440	26.40	32.50	79	40.52909.0440	39.60	45.50	91
4.45	.1752	6.00	40.52903.0445	13.35	2.50	60	40.52906.0445	26.70	33.00	79	—	—	—	—
4.50	.1772	6.00	40.52903.0450	13.50	2.50	60	40.52906.0450	27.00	33.00	79	40.52909.0450	40.50	46.50	91
4.55	.1791	6.00	40.52903.0455	13.65	2.50	60	40.52906.0455	27.30	35.50	79	—	—	—	—
4.60	.1811	6.00	40.52903.0460	13.80	22.00	60	40.52906.0460	27.60	35.50	79	40.52909.0460	41.40	49.50	91
4.65	.1831	6.00	40.52903.0465	13.95	22.00	60	40.52906.0465	27.90	36.00	79	—	—	—	—
4.70	.1850	6.00	40.52903.0470	14.10	22.00	60	40.52906.0470	28.20	36.00	79	40.52909.0470	42.30	5.50	91
4.75	.1870	6.00	40.52903.0475	14.25	22.00	60	40.52906.0475	28.50	37.00	79	—	—	—	—
4.80	.1890	6.00	40.52903.0480	14.40	22.50	60	40.52906.0480	28.80	37.00	79	40.52909.0480	43.20	51.00	91
4.85	.1909	6.00	40.52903.0485	14.55	22.50	60	40.52906.0485	29.10	37.50	79	—	—	—	—
4.90	.1929	6.00	40.52903.0490	14.70	22.50	60	40.52906.0490	29.40	37.60	79	40.52909.0490	44.10	52.00	91
4.95	.1949	6.00	40.52903.0495	14.85	23.00	60	40.52906.0495	29.70	38.00	79	—	—	—	—
5.00	.1969	6.00	40.52903.0500	15.00	23.00	60	40.52906.0500	30.00	38.00	79	40.52909.0500	45.00	53.00	91
5.05	.1988	6.00	40.52903.0505	15.15	23.00	64	40.52906.0505	30.30	38.50	79	—	—	—	—
5.10	.2008	6.00	40.52903.0510	15.30	23.50	64	40.52906.0510	30.60	38.50	79	40.52909.0510	45.90	54.00	100
5.15	.2028	6.00	40.52903.0515	15.45	23.50	64	40.52906.0515	30.90	39.00	79	—	—	—	—

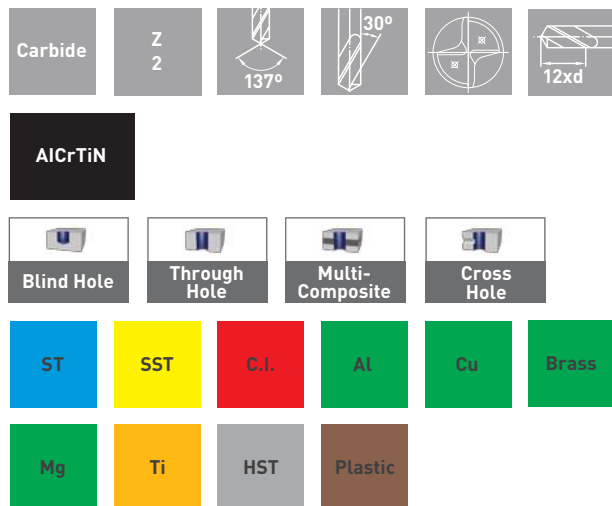


d1	d1 (in.)	d2	Art. 52903				Art. 52906				Art. 52909			
			Catalog Number	l2	l3	l1	Catalog Number	l2	l3	l1	Catalog Number	l2	l3	l1
5.20	.2047	6.00	40.52903.0520	15.60	23.50	64	40.52906.0520	31.20	39.00	79	40.52909.0520	46.80	55.00	100
5.25	.2067	6.00	40.52903.0525	15.75	23.50	64	40.52906.0525	31.50	40.00	79	—	—	—	—
5.30	.2087	6.00	40.52903.0530	15.90	24.00	64	40.52906.0530	31.80	40.00	79	40.52909.0530	47.70	56.00	100
5.35	.2106	6.00	40.52903.0535	16.05	24.00	64	40.52906.0535	32.10	40.50	79	—	—	—	—
5.40	.2126	6.00	40.52903.0540	16.20	24.00	64	40.52906.0540	32.40	40.50	79	40.52909.0540	48.60	57.00	100
5.45	.2146	6.00	40.52903.0545	16.35	24.00	64	40.52906.0545	32.70	41.00	79	—	—	—	—
5.50	.2165	6.00	40.52903.0550	16.50	24.50	64	40.52906.0550	33.00	41.00	79	40.52909.0550	49.50	57.50	100
5.55	.2185	6.00	40.52903.0555	16.65	24.50	64	40.52906.0555	33.30	41.50	81	—	—	—	—
5.60	.2205	6.00	40.52903.0560	16.80	24.50	64	40.52906.0560	33.60	41.50	81	40.52909.0560	5.40	58.50	100
5.65	.2224	6.00	40.52903.0565	16.95	24.50	64	40.52906.0565	33.90	42.00	81	—	—	—	—
5.70	.2244	6.00	40.52903.0570	17.10	25.50	64	40.52906.0570	34.20	42.00	81	40.52909.0570	51.30	59.50	100
5.75	.2264	6.00	40.52903.0575	17.25	25.50	64	40.52906.0575	34.50	43.00	81	—	—	—	—
5.80	.2283	6.00	40.52903.0580	17.40	25.50	64	40.52906.0580	34.80	43.00	81	40.52909.0580	52.20	6.00	100
5.85	.2303	6.00	40.52903.0585	17.55	25.50	64	40.52906.0585	35.10	43.50	81	—	—	—	—
5.90	.2323	6.00	40.52903.0590	17.70	26.00	64	40.52906.0590	35.40	43.50	81	40.52909.0590	53.10	61.00	100
5.95	.2343	6.00	40.52903.0595	17.85	26.00	64	40.52906.0595	35.70	44.00	81	—	—	—	—
6.00	.2362	6.00	40.52903.0600	18.00	27.00	64	40.52906.0600	36.00	44.00	81	40.52909.0600	54.00	62.00	100
6.10	.2402	8.00	40.52903.0610	18.30	27.50	68	40.52906.0610	36.60	45.50	89	40.52909.0610	54.90	64.00	111
6.20	.2441	8.00	40.52903.0620	18.60	27.50	68	40.52906.0620	37.20	46.00	89	40.52909.0620	55.80	65.00	111
6.30	.2480	8.00	40.52903.0630	18.90	28.00	68	40.52906.0630	37.80	47.00	89	40.52909.0630	56.70	66.00	111
6.40	.2520	8.00	40.52903.0640	19.20	28.00	68	40.52906.0640	38.40	47.50	89	40.52909.0640	57.60	66.50	111
6.50	.2559	8.00	40.52903.0650	19.50	28.50	68	40.52906.0650	39.00	48.00	89	40.52909.0650	58.50	67.50	111
6.60	.2598	8.00	40.52903.0660	19.80	29.00	68	40.52906.0660	39.60	48.50	89	40.52909.0660	59.40	68.50	111
6.70	.2638	8.00	40.52903.0670	20.10	29.50	68	40.52906.0670	40.20	49.00	89	40.52909.0670	6.30	69.50	111
6.80	.2677	8.00	40.52903.0680	20.40	29.50	68	40.52906.0680	40.80	50.00	89	40.52909.0680	61.20	70.00	111
6.90	.2717	8.00	40.52903.0690	20.70	30.00	68	40.52906.0690	41.40	50.50	89	40.52909.0690	62.10	71.00	111
7.00	.2756	8.00	40.52903.0700	21.00	31.00	68	40.52906.0700	42.00	52.00	89	40.52909.0700	63.00	73.00	111
7.10	.2795	8.00	40.52903.0710	21.30	31.50	72	40.52906.0710	42.60	52.50	95	40.52909.0710	63.90	74.00	120
7.20	.2835	8.00	40.52903.0720	21.60	31.50	72	40.52906.0720	43.20	53.50	95	40.52909.0720	64.80	75.00	120
7.30	.2874	8.00	40.52903.0730	21.90	32.00	72	40.52906.0730	43.80	54.00	95	40.52909.0730	65.70	76.00	120
7.40	.2913	8.00	40.52903.0740	22.20	32.00	72	40.52906.0740	44.40	54.50	95	40.52909.0740	66.60	76.50	120
7.50	.2953	8.00	40.52903.0750	22.50	32.50	72	40.52906.0750	45.00	55.00	95	40.52909.0750	67.50	77.50	120
7.60	.2992	8.00	40.52903.0760	22.80	32.50	72	40.52906.0760	45.60	55.50	95	40.52909.0760	68.40	78.50	120
7.70	.3031	8.00	40.52903.0770	23.10	33.50	72	40.52906.0770	46.20	56.00	95	40.52909.0770	69.30	79.50	120
7.80	.3071	8.00	40.52903.0780	23.40	33.50	72	40.52906.0780	46.80	57.00	95	40.52909.0780	7.20	80.00	120
7.90	.3110	8.00	40.52903.0790	23.70	34.00	72	40.52906.0790	47.40	57.50	95	40.52909.0790	72.00	81.00	120
8.00	.3150	8.00	40.52903.0800	24.00	34.00	72	40.52906.0800	48.00	58.00	95	40.52909.0800	72.00	82.00	120
8.50	.3346	10.00	40.52903.0850	25.50	36.50	79	40.52906.0850	51.00	62.00	106	40.52909.0850	76.50	87.50	134
9.00	.3543	10.00	40.52903.0900	27.00	38.00	79	40.52906.0900	54.00	65.00	106	40.52909.0900	81.00	92.00	134
9.50	.3740	10.00	40.52903.0950	28.50	40.00	85	40.52906.0950	57.00	68.00	113	40.52909.0950	85.50	96.50	144
10.00	.3937	10.00	40.52903.1000	30.00	42.00	85	40.52906.1000	60.00	72.00	113	40.52909.1000	90.00	102.00	144

- All dimensions are millimeters unless otherwise noted
- Internal coolant for all sizes
- For cutting data see pg. 148

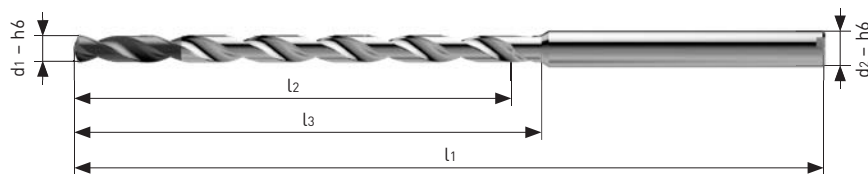
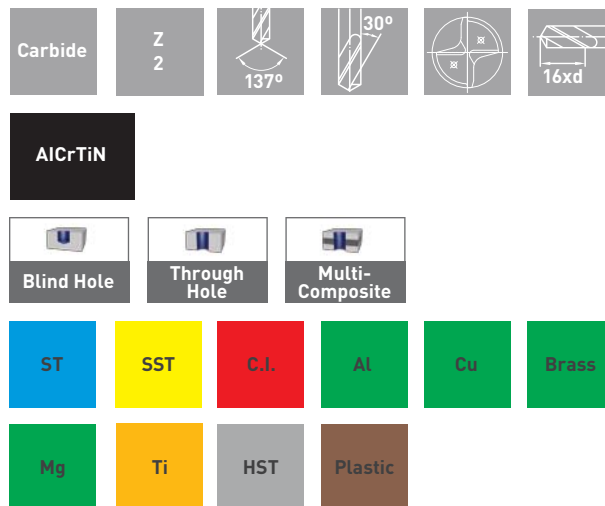
Phoenix TC2

Art. 52912



Phoenix TC2

Art. 52916



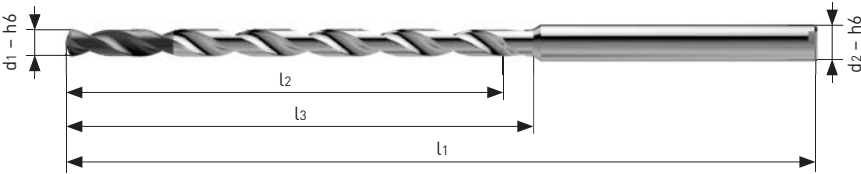
d1	d1 [in.]	d2	Art. 52912				Art. 52916			
			Catalog Number	l2	l3	l1	Catalog Number	l2	l3	l1
1.00	.0394	3.00	40.52912.0100	12.00	14.00	50	40.52916.0100	16.00	18.00	65
1.10	.0433	3.00	40.52912.0110	13.20	15.50	50	40.52916.0110	17.60	19.50	65
1.20	.0472	3.00	40.52912.0120	14.40	16.50	50	40.52916.0120	19.20	21.00	65
1.30	.0512	3.00	40.52912.0130	15.60	17.50	50	40.52916.0130	20.80	23.00	65
1.40	.0551	3.00	40.52912.0140	16.80	19.00	50	40.52916.0140	22.40	24.50	65
1.50	.0591	3.00	40.52912.0150	18.00	21.00	50	40.52916.0150	24.00	27.00	65
1.60	.0630	3.00	40.52912.0160	19.20	22.50	50	40.52916.0160	25.60	28.50	65
1.70	.0669	3.00	40.52912.0170	20.40	23.50	50	40.52916.0170	27.20	30.00	65
1.80	.0709	3.00	40.52912.0180	21.60	24.50	50	40.52916.0180	28.80	32.00	65
1.90	.0748	3.00	40.52912.0190	22.80	26.00	55	40.52916.0190	30.40	33.50	65
2.00	.0787	3.00	40.52912.0200	24.00	27.00	55	40.52916.0200	32.00	35.00	65
2.10	.0827	3.00	40.52912.0210	25.20	28.50	55	40.52916.0210	33.60	36.50	82
2.20	.0866	3.00	40.52912.0220	26.40	29.50	55	40.52916.0220	35.20	38.00	82
2.30	.0906	3.00	40.52912.0230	27.60	30.50	55	40.52916.0230	36.80	40.00	82
2.40	.0945	3.00	40.52912.0240	28.80	32.00	55	40.52916.0240	38.40	41.50	82
2.50	.0984	3.00	40.52912.0250	30.00	33.00	60	40.52916.0250	40.00	43.00	82
2.60	.1024	3.00	40.52912.0260	31.20	34.50	60	40.52916.0260	41.60	44.50	82
2.70	.1063	3.00	40.52912.0270	32.40	35.50	60	40.52916.0270	43.20	46.00	82
2.80	.1102	3.00	40.52912.0280	33.60	36.50	60	40.52916.0280	44.80	48.00	82
2.90	.1142	3.00	40.52912.0290	34.80	38.00	60	40.52916.0290	46.40	49.50	82
3.00	.1181	3.00	40.52912.0300	36.00	40.00	60	40.52916.0300	48.00	52.00	82

d1	d1 (in.)	d2	Art. 52912				Art. 52916			
			Catalog Number	l2	l3	l1	Catalog Number	l2	l3	l1
3.10	.1220	6.00	40.52912.0310	37.20	41.50	80	40.52916.0310	49.60	53.50	107
3.20	.1260	6.00	40.52912.0320	38.40	42.50	80	40.52916.0320	51.20	55.00	107
3.30	.1299	6.00	40.52912.0330	39.60	43.50	80	40.52916.0330	52.80	57.00	107
3.40	.1339	6.00	40.52912.0340	40.80	45.00	85	40.52916.0340	54.40	58.50	107
3.50	.1378	6.00	40.52912.0350	42.00	47.00	85	40.52916.0350	56.00	61.00	107
3.60	.1417	6.00	40.52912.0360	43.20	48.50	85	40.52916.0360	57.60	62.50	107
3.70	.1457	6.00	40.52912.0370	44.40	49.50	90	40.52916.0370	59.20	64.00	107
3.80	.1496	6.00	40.52912.0380	45.60	50.50	90	40.52916.0380	60.80	66.00	107
3.90	.1535	6.00	40.52912.0390	46.80	52.00	90	40.52916.0390	62.40	67.50	107
4.00	.1575	6.00	40.52912.0400	48.00	53.00	90	40.52916.0400	64.00	69.00	107
4.10	.1614	6.00	40.52912.0410	49.20	55.50	105	40.52916.0410	65.60	71.50	126
4.20	.1654	6.00	40.52912.0420	50.40	56.50	105	40.52916.0420	67.20	73.00	126
4.30	.1693	6.00	40.52912.0430	51.60	57.50	105	40.52916.0430	68.80	75.00	126
4.40	.1732	6.00	40.52912.0440	52.80	59.00	105	40.52916.0440	70.40	76.50	126
4.50	.1772	6.00	40.52912.0450	54.00	60.00	105	40.52916.0450	72.00	78.00	126
4.60	.1811	6.00	40.52912.0460	55.20	63.50	105	40.52916.0460	73.60	81.50	126
4.70	.1850	6.00	40.52912.0470	56.40	64.50	105	40.52916.0470	75.20	83.00	126
4.80	.1890	6.00	40.52912.0480	57.60	65.50	105	40.52916.0480	76.80	85.00	126
4.90	.1929	6.00	40.52912.0490	58.80	67.00	105	40.52916.0490	78.40	86.50	126
5.00	.1969	6.00	40.52912.0500	60.00	68.00	105	40.52916.0500	80.00	88.00	126
5.10	.2008	6.00	40.52912.0510	61.20	69.50	118	40.52916.0510	81.60	89.50	142
5.20	.2047	6.00	40.52912.0520	62.40	70.50	118	40.52916.0520	83.20	91.00	142
5.30	.2087	6.00	40.52912.0530	63.60	71.50	118	40.52916.0530	84.80	93.00	142
5.40	.2126	6.00	40.52912.0540	64.80	73.00	118	40.52916.0540	86.40	94.50	142
5.50	.2165	6.00	40.52912.0550	66.00	74.00	118	40.52916.0550	88.00	96.00	142
5.60	.2205	6.00	40.52912.0560	67.20	75.50	118	40.52916.0560	89.60	97.50	142
5.70	.2244	6.00	40.52912.0570	68.40	76.50	118	40.52916.0570	91.20	99.00	142
5.80	.2283	6.00	40.52912.0580	69.60	77.50	118	40.52916.0580	92.80	101.00	142
5.90	.2323	6.00	40.52912.0590	70.80	79.00	118	40.52916.0590	94.40	102.50	142
6.00	.2362	6.00	40.52912.0600	72.00	80.00	118	40.52916.0600	96.00	104.00	142
6.10	.2402	8.00	40.52912.0610	73.20	82.50	136	40.52916.0610	97.60	106.50	160
6.20	.2441	8.00	40.52912.0620	74.40	83.50	136	40.52916.0620	99.20	108.00	160
6.30	.2480	8.00	40.52912.0630	75.60	84.50	136	40.52916.0630	100.80	110.00	160
6.40	.2520	8.00	40.52912.0640	76.80	86.00	136	40.52916.0640	102.40	111.50	160
6.50	.2559	8.00	40.52912.0650	78.00	87.50	136	40.52916.0650	104.00	113.00	160
6.60	.2598	8.00	40.52912.0660	79.20	88.50	136	40.52916.0660	105.60	114.50	160
6.70	.2638	8.00	40.52912.0670	80.40	89.50	136	40.52916.0670	107.20	116.00	160
6.80	.2677	8.00	40.52912.0680	81.60	90.50	136	40.52916.0680	108.80	118.00	160
6.90	.2717	8.00	40.52912.0690	82.80	92.00	136	40.52916.0690	110.40	119.50	160
7.00	.2756	8.00	40.52912.0700	84.00	94.00	136	40.52916.0700	112.00	122.00	160
7.10	.2795	8.00	40.52912.0710	85.20	95.50	148	40.52916.0710	113.60	123.50	176
7.20	.2835	8.00	40.52912.0720	86.40	96.50	148	40.52916.0720	115.20	125.00	176
7.30	.2874	8.00	40.52912.0730	87.60	97.50	148	40.52916.0730	116.80	127.00	176
7.40	.2913	8.00	40.52912.0740	88.80	99.00	148	40.52916.0740	118.40	128.50	176

- All dimensions are millimeters unless otherwise noted
- Internal coolant for all sizes
- For cutting data see pg. 149

Phoenix TC2

Art. 52912 / 52916 Cont.

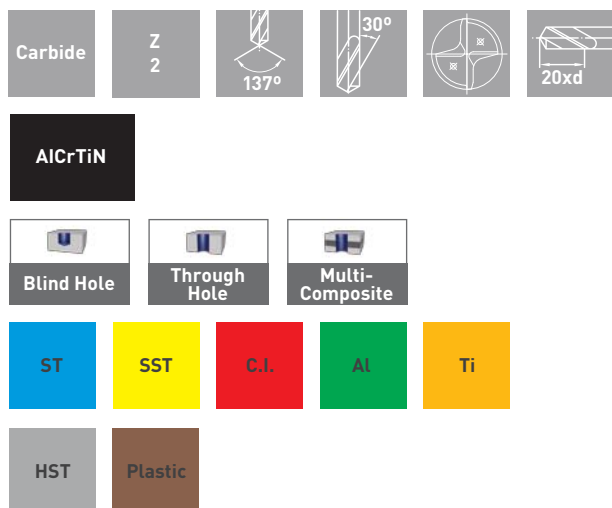


d1	d1 (in.)	d2	Art. 52912				Art. 52916			
			Catalog Number	l2	l3	l1	Catalog Number	l2	l3	l1
7.50	.2953	8.00	40.52912.0750	90.00	100.00	148	40.52916.0750	120.00	130.00	176
7.60	.2992	8.00	40.52912.0760	91.20	101.50	148	40.52916.0760	121.60	131.50	176
7.70	.3031	8.00	40.52912.0770	92.40	102.50	148	40.52916.0770	123.20	133.00	176
7.80	.3071	8.00	40.52912.0780	93.60	103.50	148	40.52916.0780	124.80	135.00	176
7.90	.3110	8.00	40.52912.0790	94.80	105.00	148	40.52916.0790	126.40	136.50	176
8.00	.3150	8.00	40.52912.0800	96.00	106.00	148	40.52916.0800	128.00	138.00	176
8.50	.3346	10.00	40.52912.0850	102.00	113.00	162	40.52916.0850	136.00	147.00	197
9.00	.3543	10.00	40.52912.0900	108.00	119.00	162	40.52916.0900	144.00	155.00	197
9.50	.3740	10.00	40.52912.0950	114.00	125.00	175	40.52916.0950	152.00	163.00	214
10.00	.3937	10.00	40.52912.1000	120.00	132.00	175	40.52916.1000	160.00	172.00	214

- All dimensions are millimeters unless otherwise noted
- Internal coolant for all sizes
- For cutting data see pg. 149

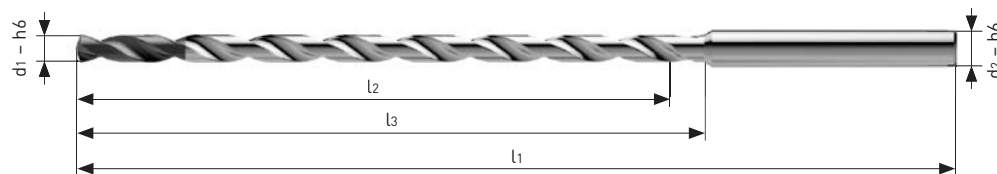
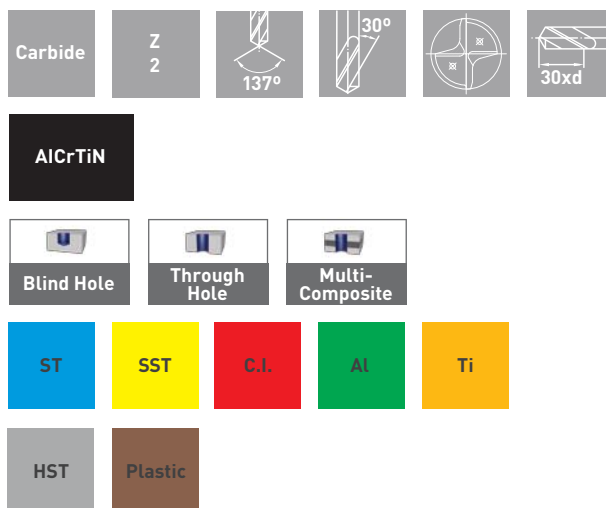
Phoenix TC2

Art. 52920



Phoenix TC2

Art. 52930

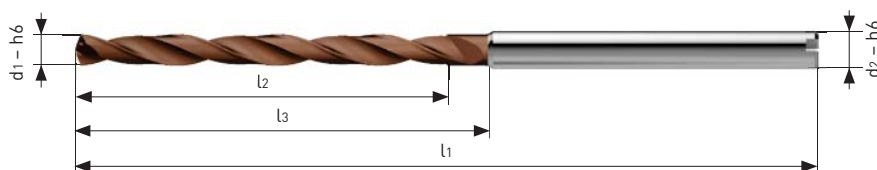
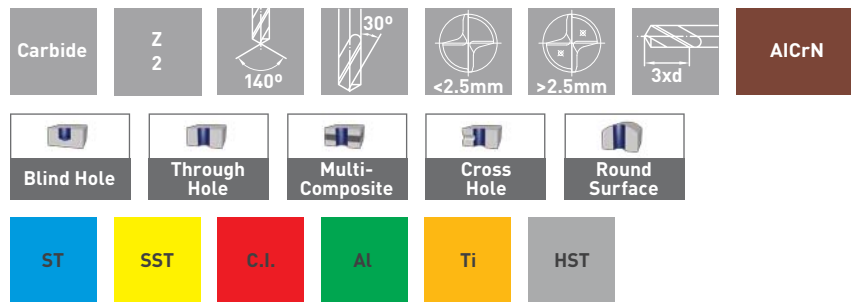


d1	d1 (in.)	d2	Art. 52920				Art. 52930			
			Catalog Number	l2	l3	l1	Catalog Number	l2	l3	l1
3.00	.1181	6.00	40.52920.0300	60.00	69.00	108	40.52930.0300	90.00	99.00	138
3.30	.1299	6.00	40.52920.0330	66.00	75.00	113	40.52930.0330	99.00	108.00	146
4.00	.1575	6.00	40.52920.0400	80.00	94.00	132	40.52930.0400	120.00	134.00	172
4.20	.1654	6.00	40.52920.0420	84.00	98.00	136	40.52930.0420	126.00	140.00	178
5.00	.1969	6.00	40.52920.0500	100.00	107.00	145	40.52930.0500	150.00	167.00	205
6.00	.2362	6.00	40.52920.0600	120.00	138.00	176	40.52930.0600	180.00	198.00	236
6.80	.2677	8.00	40.52920.0680	136.00	156.00	196	40.52930.0680	204.00	224.00	264
7.00	.2756	8.00	40.52920.0700	140.00	161.00	201	40.52930.0700	210.00	231.00	271
8.00	.3150	8.00	40.52920.0800	160.00	182.00	222	40.52930.0800	240.00	262.00	302
8.50	.3346	10.00	40.52920.0850	170.00	195.00	240	40.52930.0850	255.00	280.00	325
9.00	.3543	10.00	40.52920.0900	180.00	207.00	252	40.52930.0900	270.00	297.00	342
10.00	.3937	10.00	40.52920.1000	200.00	230.00	275	40.52930.1000	285.00	300.00	345

- All dimensions are millimeters unless otherwise noted
- Internal coolant for all sizes
- For cutting data see pg. 149

Phoenix

Art. 50938



Catalog Number	d1	d1 (in.)	d2	l2	l3	l1
40.50938.0100	1.00	.0394	3.00	3.00	5.00	38
40.50938.0110	1.10	.0433	3.00	3.30	5.50	38
40.50938.0120	1.20	.0472	3.00	3.60	5.50	38
40.50938.0130	1.30	.0512	3.00	3.90	6.00	38
40.50938.0140	1.40	.0551	3.00	4.20	6.00	38
40.50938.0150	1.50	.0591	3.00	4.50	6.50	38
40.50938.0160	1.60	.0630	3.00	4.80	7.50	38
40.50938.0170	1.70	.0669	3.00	5.10	8.00	38
40.50938.0180	1.80	.0709	3.00	5.40	8.50	38
40.50938.0190	1.90	.0748	3.00	5.70	8.50	38
40.50938.0200	2.00	.0787	3.00	6.00	9.00	38
40.50938.0210	2.10	.0827	3.00	6.30	9.50	38
40.50938.0220	2.20	.0866	3.00	6.60	9.50	38
40.50938.0230	2.30	.0906	3.00	6.90	10.00	38
40.50938.0240	2.40	.0945	3.00	7.20	10.00	38
40.50938.0250	2.50	.0984	3.00	7.50	10.50	50
40.50938.0260	2.60	.1024	3.00	7.80	11.00	50
40.50938.0270	2.70	.1063	3.00	8.10	11.50	50
40.50938.0280	2.80	.1102	3.00	8.40	11.50	50
40.50938.0290	2.90	.1142	3.00	8.70	12.00	50
40.50938.0300	3.00	.1181	3.00	9.00	12.50	50
40.50938.0310	3.10	.1220	6.00	9.30	13.50	55
40.50938.0320	3.20	.1260	6.00	9.60	13.50	55
40.50938.0330	3.30	.1299	6.00	9.90	13.50	55
40.50938.0340	3.40	.1339	6.00	10.20	14.00	55
40.50938.0350	3.50	.1378	6.00	10.50	14.50	55
40.50938.0360	3.60	.1417	6.00	10.80	15.00	55
40.50938.0380	3.80	.1496	6.00	11.40	15.50	55
40.50938.0390	3.90	.1535	6.00	11.70	15.50	55

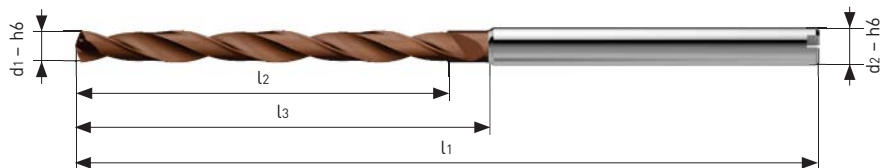


Catalog Number	d ₁	d ₁ (in.)	d ₂	l ₂	l ₃	l ₁
40.50938.0400	4.00	.1575	6.00	12.00	16.00	55
40.50938.0410	4.10	.1614	6.00	12.30	18.50	60
40.50938.0420	4.20	.1654	6.00	12.60	18.50	60
40.50938.0430	4.30	.1693	6.00	12.90	19.00	60
40.50938.0440	4.40	.1732	6.00	13.20	19.00	60
40.50938.0450	4.50	.1772	6.00	13.50	20.50	60
40.50938.0460	4.60	.1811	6.00	13.80	22.00	60
40.50938.0470	4.70	.1850	6.00	14.10	22.00	60
40.50938.0480	4.80	.1890	6.00	14.40	22.50	60
40.50938.0490	4.90	.1929	6.00	14.70	22.50	60
40.50938.0500	5.00	.1969	6.00	15.00	23.00	60
40.50938.0510	5.10	.2008	6.00	15.30	23.50	64
40.50938.0520	5.20	.2047	6.00	15.60	23.50	64
40.50938.0530	5.30	.2087	6.00	15.90	24.00	64
40.50938.0540	5.40	.2126	6.00	16.20	24.00	64
40.50938.0550	5.50	.2165	6.00	16.50	24.50	64
40.50938.0560	5.60	.2205	6.00	16.80	24.50	64
40.50938.0570	5.70	.2244	6.00	17.10	25.50	64
40.50938.0580	5.80	.2283	6.00	17.40	25.50	64
40.50938.0590	5.90	.2323	6.00	17.70	25.50	64
40.50938.0600	6.00	.2362	6.00	18.00	27.00	64
40.50938.0610	6.10	.2402	8.00	18.30	27.50	68
40.50938.0620	6.20	.2441	8.00	18.60	27.50	68
40.50938.0630	6.30	.2480	8.00	18.90	28.00	68
40.50938.0640	6.40	.2520	8.00	19.20	28.00	68
40.50938.0650	6.50	.2559	8.00	19.50	28.50	68
40.50938.0660	6.60	.2598	8.00	19.80	29.00	68
40.50938.0670	6.70	.2638	8.00	20.10	29.50	68
40.50938.0680	6.80	.2677	8.00	20.40	29.50	68
40.50938.0690	6.90	.2717	8.00	20.70	30.00	68
40.50938.0700	7.00	.2756	8.00	21.00	31.00	68
40.50938.0710	7.10	.2795	8.00	21.30	31.50	72
40.50938.0720	7.20	.2835	8.00	21.60	31.50	72
40.50938.0730	7.30	.2874	8.00	21.90	32.00	72
40.50938.0740	7.40	.2913	8.00	22.20	32.00	72
40.50938.0750	7.50	.2953	8.00	22.50	32.50	72
40.50938.0760	7.60	.2992	8.00	22.80	32.50	72
40.50938.0770	7.70	.3031	8.00	23.10	33.50	72
40.50938.0780	7.80	.3071	8.00	23.40	33.50	72
40.50938.0790	7.90	.3110	8.00	23.70	34.00	72
40.50938.0800	8.00	.3150	8.00	24.00	34.00	72
40.50938.0810	8.10	.3189	10.00	24.30	35.50	79
40.50938.0820	8.20	.3228	10.00	24.60	35.50	79
40.50938.0830	8.30	.3268	10.00	24.90	36.00	79
40.50938.0840	8.40	.3307	10.00	25.20	36.00	79

- All dimensions are millimeters unless otherwise noted
- Internal coolant beginning at Ø2.5mm
- For cutting data see pg. 150

Phoenix

Art. 50938 Cont.



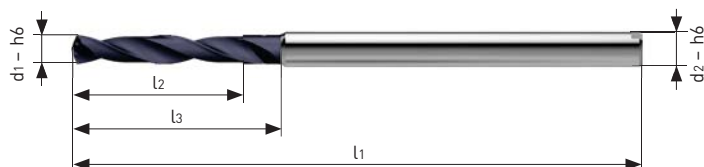
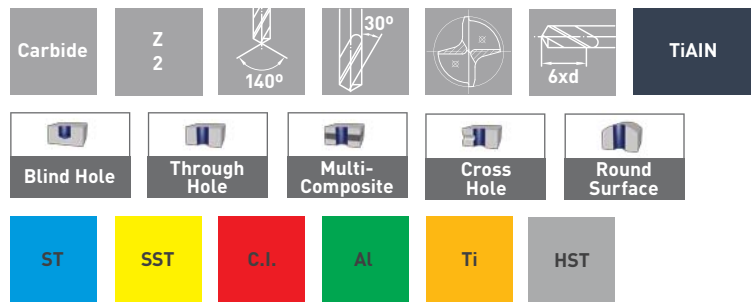
Catalog Number	d1	d1 (in.)	d2	l2	l3	l1
40.50938.0850	8.50	.3346	10.00	25.50	36.50	79
40.50938.0860	8.60	.3386	10.00	25.80	37.00	79
40.50938.0870	8.70	.3425	10.00	26.10	37.00	79
40.50938.0880	8.80	.3465	10.00	26.40	37.50	79
40.50938.0890	8.90	.3504	10.00	26.70	37.50	79
40.50938.0900	9.00	.3543	10.00	27.00	38.00	79
40.50938.0910	9.10	.3583	10.00	27.30	38.50	85
40.50938.0920	9.20	.3622	10.00	27.60	38.50	85
40.50938.0930	9.30	.3661	10.00	27.90	39.00	85
40.50938.0940	9.40	.3701	10.00	28.20	39.00	85
40.50938.0950	9.50	.3740	10.00	28.50	40.00	85
40.50938.0960	9.60	.3780	10.00	28.80	40.00	85
40.50938.0970	9.70	.3819	10.00	29.10	40.50	85
40.50938.0980	9.80	.3858	10.00	29.40	40.50	85
40.50938.0990	9.90	.3898	10.00	29.70	41.00	85
40.50938.1000	10.00	.3937	10.00	30.00	42.00	85
40.50938.1010	10.10	.3976	12.00	30.30	42.50	93
40.50938.1020	10.20	.4016	12.00	30.60	42.50	93
40.50938.1030	10.30	.4055	12.00	30.90	43.00	93
40.50938.1040	10.40	.4094	12.00	31.20	43.00	93
40.50938.1050	10.50	.4134	12.00	31.50	43.50	93
40.50938.1060	10.60	.4173	12.00	31.80	44.00	93
40.50938.1070	10.70	.4213	12.00	32.10	44.00	93
40.50938.1080	10.80	.4252	12.00	32.40	44.50	93
40.50938.1090	10.90	.4291	12.00	32.70	44.50	93
40.50938.1100	11.00	.4331	12.00	33.00	46.00	93
40.50938.1110	11.10	.4370	12.00	33.30	46.50	97
40.50938.1120	11.20	.4409	12.00	33.60	46.50	97
40.50938.1130	11.30	.4449	12.00	33.90	47.00	97
40.50938.1140	11.40	.4488	12.00	34.20	47.00	97
40.50938.1150	11.50	.4528	12.00	34.50	48.00	97
40.50938.1160	11.60	.4567	12.00	34.80	48.00	97
40.50938.1170	11.70	.4606	12.00	35.10	48.00	97
40.50938.1180	11.80	.4646	12.00	35.40	48.50	97
40.50938.1190	11.90	.4685	12.00	35.70	48.50	97
40.50938.1200	12.00	.4724	12.00	36.00	50.00	97
40.50938.1250	12.50	.4921	14.00	37.80	53.00	100
40.50938.1270	12.70	.5000	14.00	38.10	53.00	100

- All dimensions are millimeters unless otherwise noted
- Internal coolant beginning at Ø2.5mm
- For cutting data see pg. 150



Phoenix

Art. 50940



Catalog Number	d1	d1 [in.]	l2	l3	l1	d2
40.50940.0100	1.00	.0394	6.00	8.00	38	3.00
40.50940.0105	1.05	.0413	6.30	8.30	38	3.00
40.50940.0110	1.10	.0433	6.60	8.60	38	3.00
40.50940.0115	1.15	.0453	6.90	8.90	38	3.00
40.50940.0120	1.20	.0472	7.20	9.20	38	3.00
40.50940.0125	1.25	.0492	7.50	9.50	38	3.00
40.50940.0130	1.30	.0512	7.80	9.80	38	3.00
40.50940.0135	1.35	.0531	8.10	10.10	38	3.00
40.50940.0140	1.40	.0551	8.40	10.40	38	3.00
40.50940.0145	1.45	.0571	8.70	10.70	38	3.00
40.50940.0150	1.50	.0591	9.00	11.00	38	3.00
40.50940.0155	1.55	.0610	9.30	11.30	38	3.00
40.50940.0160	1.60	.0630	9.60	12.60	38	3.00
40.50940.0165	1.65	.0650	9.90	12.90	38	3.00
40.50940.0170	1.70	.0669	10.20	13.20	38	3.00
40.50940.0175	1.75	.0689	10.50	13.50	38	3.00
40.50940.0180	1.80	.0709	10.80	13.80	38	3.00
40.50940.0185	1.85	.0728	11.10	14.10	38	3.00
40.50940.0190	1.90	.0748	11.40	14.40	38	3.00
40.50940.0195	1.95	.0768	11.70	14.70	38	3.00
40.50940.0200	2.00	.0787	12.00	15.00	50	3.00
40.50940.0205	2.05	.0807	12.30	15.30	50	3.00
40.50940.0210	2.10	.0827	12.60	15.60	50	3.00
40.50940.0215	2.15	.0846	12.90	15.90	50	3.00
40.50940.0220	2.20	.0866	13.20	16.20	50	3.00
40.50940.0225	2.25	.0886	13.50	16.50	50	3.00
40.50940.0230	2.30	.0906	13.80	16.80	50	3.00
40.50940.0235	2.35	.0925	14.10	17.10	50	3.00
40.50940.0240	2.40	.0945	14.40	17.40	50	3.00
40.50940.0245	2.45	.0965	14.70	17.70	50	3.00

Catalog Number	d1	d1 [in.]	l2	l3	l1	d2
40.50940.0250	2.50	.0984	15.00	18.00	50	3.00
40.50940.0255	2.55	.1004	15.30	18.30	50	3.00
40.50940.0260	2.60	.1024	15.60	18.60	50	3.00
40.50940.0265	2.65	.1043	15.90	18.90	50	3.00
40.50940.0270	2.70	.1063	16.20	19.20	50	3.00
40.50940.0275	2.75	.1083	16.50	19.50	50	3.00
40.50940.0280	2.80	.1102	16.80	19.80	50	3.00
40.50940.0285	2.85	.1122	17.10	20.10	50	3.00
40.50940.0290	2.90	.1142	17.40	20.40	50	3.00
40.50940.0295	2.95	.1161	17.70	20.70	50	3.00
40.50940.0300	3.00	.1181	18.00	—	50	3.00
40.50940.0305	3.05	.1201	18.30	22.30	66	6.00
40.50940.0310	3.10	.1220	18.60	22.60	66	6.00
40.50940.0315	3.15	.1240	18.90	22.90	66	6.00
40.50940.0320	3.20	.1260	19.20	23.20	66	6.00
40.50940.0325	3.25	.1280	19.50	23.50	66	6.00
40.50940.0330	3.30	.1299	19.80	23.80	66	6.00
40.50940.0335	3.35	.1319	20.10	24.10	66	6.00
40.50940.0340	3.40	.1339	20.40	24.40	66	6.00
40.50940.0345	3.45	.1358	20.70	24.70	66	6.00
40.50940.0350	3.50	.1378	21.00	25.00	66	6.00
40.50940.0355	3.55	.1398	21.30	25.30	66	6.00
40.50940.0360	3.60	.1417	21.60	25.60	66	6.00
40.50940.0365	3.65	.1437	21.90	25.90	66	6.00
40.50940.0370	3.70	.1457	22.20	26.20	66	6.00
40.50940.0375	3.75	.1476	22.50	26.50	66	6.00
40.50940.0380	3.80	.1496	22.80	26.80	66	6.00
40.50940.0385	3.85	.1516	23.10	27.10	66	6.00
40.50940.0390	3.90	.1535	23.40	27.40	66	6.00
40.50940.0395	3.95	.1555	23.70	27.70	66	6.00

Catalog Number	d1	d1 (in.)	l2	l3	l1	d2
40.50940.0400	4.00	.1575	24.00	28.00	66	6.00
40.50940.0405	4.05	.1594	24.30	30.20	79	6.00
40.50940.0410	4.10	.1614	24.60	30.50	79	6.00
40.50940.0415	4.15	.1634	24.90	30.80	79	6.00
40.50940.0420	4.20	.1654	25.20	31.00	79	6.00
40.50940.0425	4.25	.1673	25.50	31.50	79	6.00
40.50940.0430	4.30	.1693	25.80	32.00	79	6.00
40.50940.0435	4.35	.1713	26.10	32.50	79	6.00
40.50940.0440	4.40	.1732	26.40	32.50	79	6.00
40.50940.0445	4.45	.1752	26.70	33.00	79	6.00
40.50940.0450	4.50	.1772	27.00	33.00	79	6.00
40.50940.0455	4.55	.1791	27.30	35.50	79	6.00
40.50940.0460	4.60	.1811	27.60	35.50	79	6.00
40.50940.0465	4.65	.1831	27.90	36.00	79	6.00
40.50940.0470	4.70	.1850	28.20	36.00	79	6.00
40.50940.0475	4.75	.1870	28.50	37.00	79	6.00
40.50940.0480	4.80	.1890	28.80	37.00	79	6.00
40.50940.0485	4.85	.1909	29.10	37.50	79	6.00
40.50940.0490	4.90	.1929	29.40	37.50	79	6.00
40.50940.0495	4.95	.1949	29.70	38.00	79	6.00
40.50940.0500	5.00	.1969	30.00	38.00	79	6.00
40.50940.0505	5.05	.1988	30.30	38.50	79	6.00
40.50940.0510	5.10	.2008	30.60	38.50	79	6.00
40.50940.0515	5.15	.2028	30.90	39.00	79	6.00
40.50940.0520	5.20	.2047	31.20	39.00	79	6.00
40.50940.0525	5.25	.2067	31.50	40.00	79	6.00
40.50940.0530	5.30	.2087	31.80	40.00	79	6.00
40.50940.0535	5.35	.2106	32.10	40.50	79	6.00
40.50940.0540	5.40	.2126	32.40	40.50	79	6.00
40.50940.0545	5.45	.2146	32.70	41.00	79	6.00
40.50940.0550	5.50	.2165	33.00	41.00	79	6.00
40.50940.0555	5.55	.2185	33.30	41.50	81	6.00
40.50940.0560	5.60	.2205	33.60	41.50	81	6.00
40.50940.0565	5.65	.2224	33.90	42.00	81	6.00
40.50940.0570	5.70	.2244	34.20	42.00	81	6.00
40.50940.0575	5.75	.2264	34.50	43.00	81	6.00
40.50940.0580	5.80	.2283	34.80	43.00	81	6.00
40.50940.0585	5.85	.2303	35.10	43.50	81	6.00
40.50940.0590	5.90	.2323	35.40	43.50	81	6.00
40.50940.0595	5.95	.2343	35.70	44.00	81	6.00
40.50940.0600	6.00	.2362	36.00	—	81	6.00
40.50940.0610	6.10	.2402	36.60	45.50	89	8.00
40.50940.0620	6.20	.2441	37.20	46.00	89	8.00
40.50940.0630	6.30	.2480	37.80	47.00	89	8.00
40.50940.0640	6.40	.2520	38.40	47.50	89	8.00

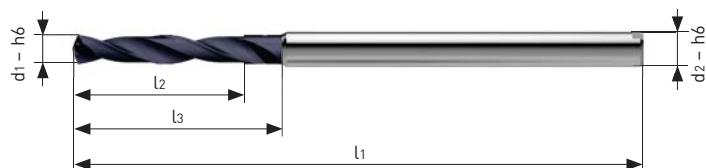
Catalog Number	d1	d1 (in.)	l2	l3	l1	d2
40.50940.0650	6.50	.2559	39.00	48.00	89	8.00
40.50940.0660	6.60	.2598	39.60	48.50	89	8.00
40.50940.0670	6.70	.2638	40.20	49.00	89	8.00
40.50940.0680	6.80	.2677	40.80	50.00	89	8.00
40.50940.0690	6.90	.2717	41.40	50.50	89	8.00
40.50940.0700	7.00	.2756	42.00	52.00	89	8.00
40.50940.0710	7.10	.2795	42.60	52.50	95	8.00
40.50940.0720	7.20	.2835	43.20	53.50	95	8.00
40.50940.0730	7.30	.2874	43.80	54.00	95	8.00
40.50940.0740	7.40	.2913	44.40	54.50	95	8.00
40.50940.0750	7.50	.2953	45.00	55.00	95	8.00
40.50940.0760	7.60	.2992	45.60	55.50	95	8.00
40.50940.0770	7.70	.3031	46.20	56.00	95	8.00
40.50940.0780	7.80	.3071	46.80	57.00	95	8.00
40.50940.0790	7.90	.3110	47.40	57.50	95	8.00
40.50940.0800	8.00	.3150	48.00	58.00	95	8.00
40.50940.0810	8.10	.3189	48.60	59.50	106	1.00
40.50940.0820	8.20	.3228	49.20	60.00	106	1.00
40.50940.0830	8.30	.3268	49.80	61.00	106	1.00
40.50940.0840	8.40	.3307	50.40	61.50	106	1.00
40.50940.0850	8.50	.3346	51.00	62.00	106	1.00
40.50940.0860	8.60	.3386	51.60	62.50	106	1.00
40.50940.0870	8.70	.3425	52.20	63.00	106	1.00
40.50940.0880	8.80	.3465	52.80	64.00	106	1.00
40.50940.0890	8.90	.3504	53.40	64.50	106	1.00
40.50940.0900	9.00	.3543	54.00	65.00	106	1.00
40.50940.0910	9.10	.3583	54.60	65.50	113	1.00
40.50940.0920	9.20	.3622	55.20	66.00	113	1.00
40.50940.0930	9.30	.3661	55.80	67.00	113	1.00
40.50940.0940	9.40	.3701	56.40	67.50	113	1.00
40.50940.0950	9.50	.3740	57.00	68.00	113	1.00
40.50940.0960	9.60	.3780	57.60	68.50	113	1.00
40.50940.0970	9.70	.3819	58.20	69.00	113	1.00
40.50940.0980	9.80	.3858	58.80	70.00	113	1.00
40.50940.0990	9.90	.3898	59.40	70.50	113	1.00
40.50940.1000	1.00	.3937	6.00	72.00	113	1.00
40.50940.1010	1.10	.3976	6.60	72.50	125	12.00
40.50940.1020	1.20	.4016	61.20	73.00	125	12.00
40.50940.1030	1.30	.4055	61.80	74.00	125	12.00
40.50940.1040	1.40	.4094	62.40	74.50	125	12.00
40.50940.1050	1.50	.4134	63.00	75.00	125	12.00
40.50940.1060	1.60	.4173	63.60	75.50	125	12.00
40.50940.1070	1.70	.4213	64.20	76.00	125	12.00
40.50940.1080	1.80	.4252	64.80	77.00	125	12.00
40.50940.1090	1.90	.4291	65.40	77.50	125	12.00

- All dimensions are millimeters unless otherwise noted
- Internal coolant for all sizes
- For cutting data see pg. 150



Phoenix

Art. 50940 Cont.



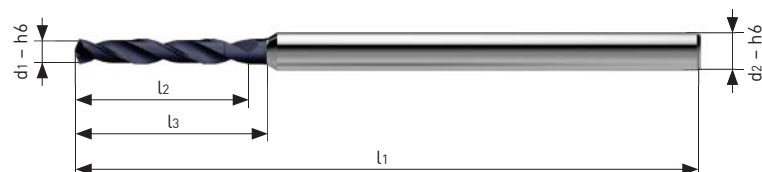
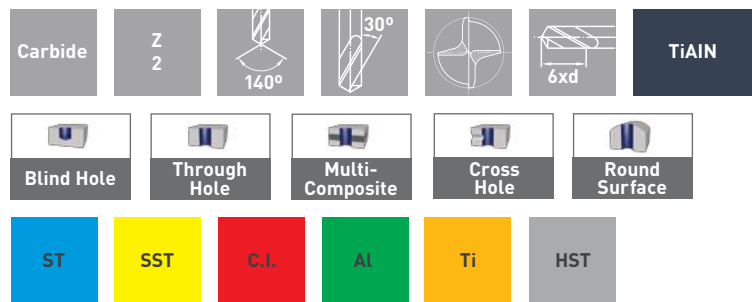
Catalog Number	d1	d1 (in.)	l2	l3	l1	d2
40.50940.1100	11.00	.4331	66.00	79.00	125	12.00
40.50940.1110	11.10	.4370	66.60	79.50	132	12.00
40.50940.1120	11.20	.4409	67.20	80.00	132	12.00
40.50940.1130	11.30	.4449	67.80	81.00	132	12.00
40.50940.1140	11.40	.4488	68.40	81.50	132	12.00
40.50940.1150	11.50	.4528	69.00	82.00	132	12.00
40.50940.1160	11.60	.4567	69.60	82.50	132	12.00

Catalog Number	d1	d1 (in.)	l2	l3	l1	d2
40.50940.1170	11.70	.4606	70.20	83.00	132	12.00
40.50940.1180	11.80	.4646	70.80	84.00	132	12.00
40.50940.1190	11.90	.4685	71.40	84.50	132	12.00
40.50940.1200	12.00	.4724	72.00	86.00	132	12.00
40.50940.1250	12.50	.4921	75.00	90.00	140	14.00
40.50940.1270	12.70	.5000	76.20	91.00	140	14.00

- All dimensions are millimeters unless otherwise noted
- Internal coolant for all sizes
- For cutting data see pg. 150

Phoenix

Art. 50941



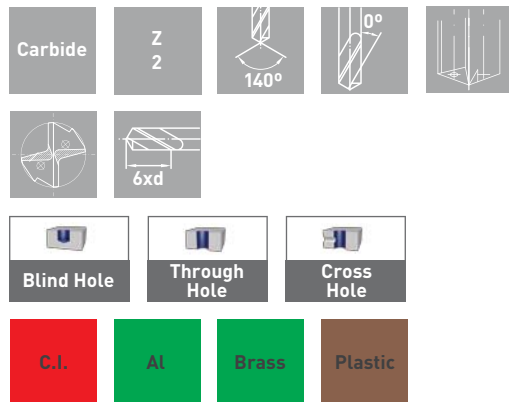
Catalog Number	d_1	d_1 (in.)	l_2	l_3	l_1	d_2
40.50941.0050	.50	.0197	3.00	4.80	38	3.00
40.50941.0060	.60	.0236	3.60	5.40	38	3.00
40.50941.0070	.70	.0276	4.20	6.00	38	3.00
40.50941.0080	.80	.0315	4.80	6.70	38	3.00
40.50941.0090	.90	.0354	5.40	7.80	38	3.00
40.50941.0100	1.00	.0394	6.00	8.00	38	3.00
40.50941.0110	1.10	.0433	6.60	8.60	38	3.00
40.50941.0120	1.20	.0472	7.20	9.20	38	3.00
40.50941.0130	1.30	.0512	7.80	9.80	38	3.00
40.50941.0140	1.40	.0551	8.40	10.40	38	3.00

Catalog Number	d_1	d_1 (in.)	l_2	l_3	l_1	d_2
40.50941.0150	1.50	.0591	9.00	11.00	38	3.00
40.50941.0160	1.60	.0630	9.60	12.60	38	3.00
40.50941.0170	1.70	.0669	10.20	13.20	38	3.00
40.50941.0180	1.80	.0709	10.80	13.80	38	3.00
40.50941.0190	1.90	.0748	11.40	14.40	38	3.00
40.50941.0200	2.00	.0787	12.00	15.00	50	3.00
40.50941.0210	2.10	.0827	12.60	15.60	50	3.00
40.50941.0220	2.20	.0866	13.20	16.20	50	3.00
40.50941.0230	2.30	.0906	13.80	16.80	50	3.00
40.50941.0240	2.40	.0945	14.40	17.40	50	3.00

- All dimensions are millimeters unless otherwise noted
- Internal coolant for all sizes
- For cutting data see pg. 151

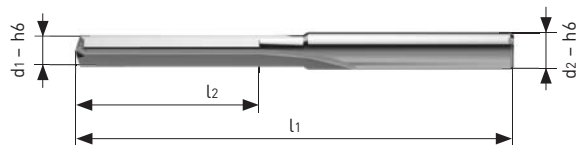
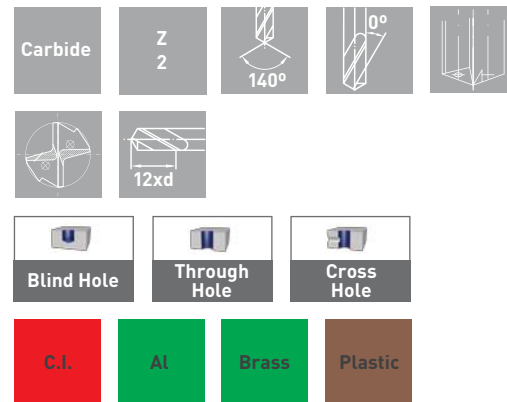
Quadro

Art. 52100



Quadro

Art. 52200



d1	d1 [in.]	d2	Art. 52100			Art. 52200		
			Catalog Number	l2	l1	Catalog Number	l2	l1
3.00	.1181	6.00	40.52100.0030	18.00	82	40.52200.0030	36.00	106
3.20	.1260	6.00	—	—	—	40.52200.0032	39.00	106
3.30	.1299	6.00	40.52100.0033	20.00	82	40.52200.0033	40.00	106
3.50	.1378	6.00	40.52100.0035	21.00	82	40.52200.0035	42.00	106
4.00	.1575	6.00	40.52100.0040	24.00	82	40.52200.0040	48.00	106
4.20	.1654	6.00	40.52100.0042	26.00	88	40.52200.0042	51.00	118
4.50	.1772	6.00	40.52100.0045	27.00	88	40.52200.0045	54.00	118
4.80	.1890	6.00	—	—	—	40.52200.0048	58.00	118
5.00	.1969	6.00	40.52100.0050	30.00	88	40.52200.0050	60.00	118
5.50	.2165	6.00	40.52100.0055	33.00	94	40.52200.0055	66.00	130
6.00	.2362	6.00	40.52100.0060	36.00	94	40.52200.0060	72.00	130
6.40	.2520	8.00	—	—	—	40.52200.0064	78.00	144
6.50	.2559	8.00	40.52100.0065	39.00	102	40.52200.0065	78.00	144
6.80	.2677	8.00	40.52100.0068	41.00	102	40.52200.0068	82.00	144
7.00	.2756	8.00	40.52100.0070	42.00	102	40.52200.0070	84.00	144
7.50	.2953	8.00	40.52100.0075	45.00	108	40.52200.0075	90.00	156
7.60	.2992	8.00	—	—	—	40.52200.0076	92.00	156
8.00	.3150	8.00	40.52100.0080	48.00	108	40.52200.0080	96.00	156
8.50	.3346	10.00	40.52100.0085	51.00	121	40.52200.0085	102.00	175
9.00	.3543	10.00	40.52100.0090	54.00	121	40.52200.0090	108.00	175
9.50	.3740	10.00	40.52100.0095	57.00	127	40.52200.0095	114.00	187
10.00	.3937	10.00	40.52100.1000	60.00	127	40.52200.1000	120.00	187
10.20	.4016	12.00	40.52100.1020	62.00	141	40.52200.1020	123.00	207
10.50	.4134	12.00	40.52100.1050	63.00	141	40.52200.1050	126.00	207
11.00	.4331	12.00	40.52100.1100	66.00	141	40.52200.1100	132.00	207
11.50	.4528	12.00	40.52100.1150	69.00	147	40.52200.1150	138.00	219
12.00	.4724	12.00	40.52100.1200	72.00	147	40.52200.1200	144.00	219
12.50	.4921	14.00	40.52100.1250	75.00	155	40.52200.1250	150.00	233



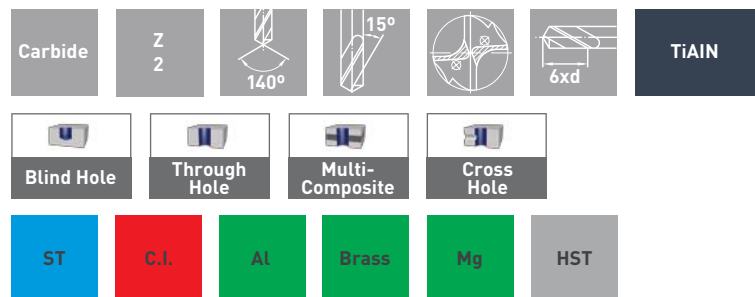
d1	d1 (in.)	d2	Art. 52100			Art. 52200		
			Catalog Number	l2	l1	Catalog Number	l2	l1
12.70	.5000	14.00	—	—	—	40.52200.1270	153.00	233
13.00	.5118	14.00	40.52100.1300	78.00	155	40.52200.1300	156.00	233
13.50	.5315	14.00	40.52100.1350	81.00	162	40.52200.1350	162.00	245
14.00	.5512	14.00	40.52100.1400	84.00	162	40.52200.1400	168.00	245
14.50	.5709	16.00	40.52100.1450	87.00	172	40.52200.1450	174.00	262
15.00	.5906	16.00	40.52100.1500	90.00	172	40.52200.1500	180.00	262
15.50	.6102	16.00	40.52100.1550	93.00	178	40.52200.1550	186.00	274
15.90	.6260	16.00	—	—	—	40.52200.1590	191.00	274
16.00	.6299	16.00	40.52100.1600	96.00	178	40.52200.1600	192.00	274
16.50	.6496	18.00	40.52100.1650	99.00	192	40.52200.1650	198.00	300
17.00	.6693	18.00	40.52100.1700	102.00	192	40.52200.1700	204.00	300
17.50	.6890	18.00	40.52100.1750	105.00	192	40.52200.1750	210.00	300
18.00	.7087	18.00	40.52100.1800	108.00	192	40.52200.1800	216.00	300
18.50	.7283	20.00	40.52100.1850	111.00	207	40.52200.1850	222.00	327
19.00	.7480	20.00	40.52100.1900	114.00	207	40.52200.1900	228.00	327
19.50	.7677	20.00	40.52100.1950	117.00	207	40.52200.1950	234.00	327
20.00	.7874	20.00	40.52100.2000	120.00	207	40.52200.2000	240.00	327

- All dimensions are millimeters unless otherwise noted
- Internal coolant for all sizes
- For cutting data see pg. 151



Quadro

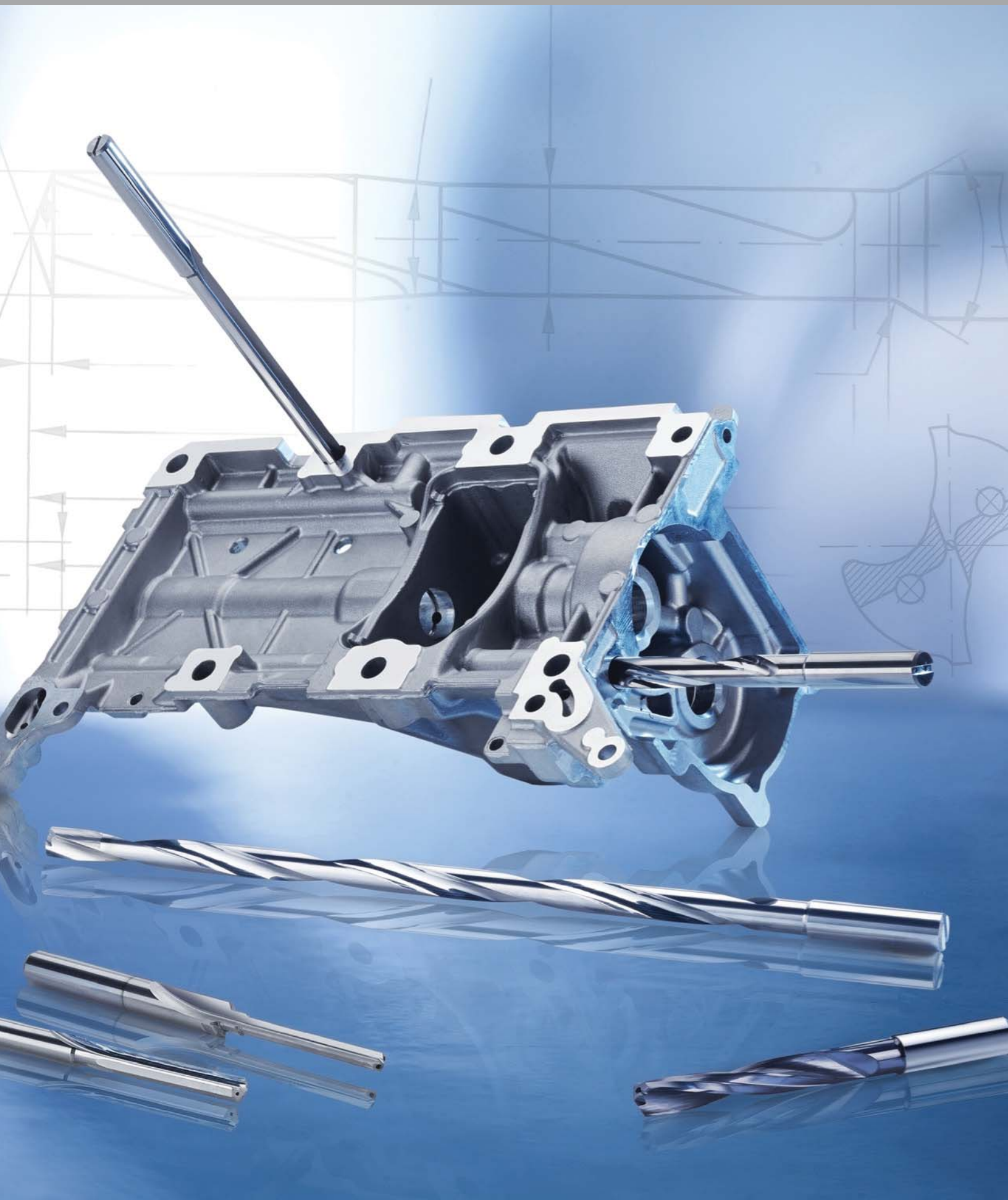
Art. 52150



Catalog Number	d1	d1 (in.)	l2	l1	d2
40.52150.0040	4.00	.1575	24.00	75	6.00
40.52150.0042	4.20	.1654	25.50	75	6.00
40.52150.0045	4.50	.1772	27.00	75	6.00
40.52150.0050	5.00	.1969	30.00	87	6.00
40.52150.0055	5.50	.2165	33.00	87	6.00
40.52150.0060	6.00	.2362	36.00	87	6.00
40.52150.0065	6.50	.2559	39.00	100	8.00
40.52150.0068	6.80	.2677	41.00	100	8.00
40.52150.0070	7.00	.2756	42.00	100	8.00
40.52150.0075	7.50	.2953	45.00	100	8.00
40.52150.0080	8.00	.3150	48.00	100	8.00
40.52150.0085	8.50	.3346	51.00	118	10.00
40.52150.0090	9.00	.3543	54.00	118	10.00
40.52150.0095	9.50	.3740	57.00	118	10.00
40.52150.1000	10.00	.3937	60.00	118	10.00
40.52150.1020	10.20	.4016	62.00	135	12.00
40.52150.1050	10.50	.4134	63.00	135	12.00
40.52150.1100	11.00	.4331	66.00	135	12.00

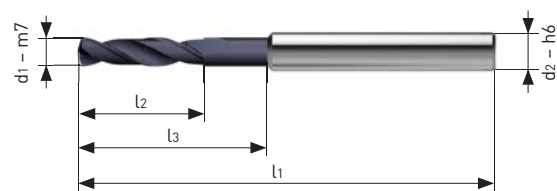
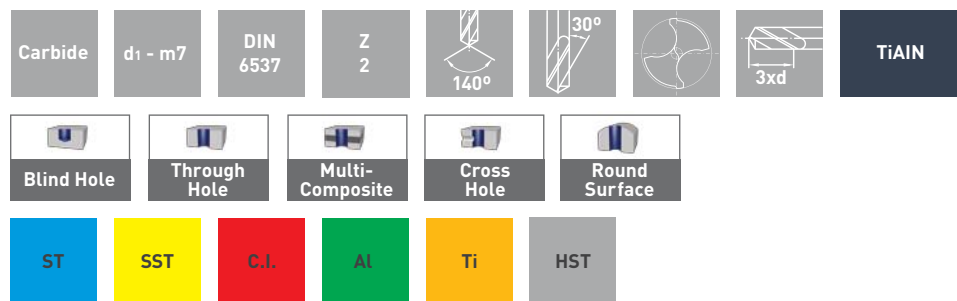
Catalog Number	d1	d1 (in.)	l2	l1	d2
40.52150.1150	11.50	.4528	69.00	135	12.00
40.52150.1200	12.00	.4724	72.00	135	12.00
40.52150.1250	12.50	.4921	75.00	147	14.00
40.52150.1300	13.00	.5118	78.00	147	14.00
40.52150.1350	13.50	.5315	81.00	147	14.00
40.52150.1400	14.00	.5512	84.00	147	14.00
40.52150.1450	14.50	.5709	87.00	164	16.00
40.52150.1500	15.00	.5906	90.00	164	16.00
40.52150.1550	15.50	.6102	93.00	164	16.00
40.52150.1600	16.00	.6299	96.00	164	16.00
40.52150.1650	16.50	.6496	99.00	178	18.00
40.52150.1700	17.00	.6693	102.00	178	18.00
40.52150.1750	17.50	.6890	105.00	178	18.00
40.52150.1800	18.00	.7087	108.00	178	18.00
40.52150.1850	18.50	.7283	111.00	195	20.00
40.52150.1900	19.00	.7480	114.00	195	20.00
40.52150.1950	19.50	.7677	117.00	195	20.00
40.52150.2000	20.00	.7874	120.00	195	20.00

- All dimensions are millimeters unless otherwise noted
- Internal coolant for all sizes
- For cutting data see pg. 152



Fastcut

Art. 50950



Catalog Number	d1	d1 (in.)	l2	l3	l1	d2
40.50950.0300	3.00	.1181	14.00	20.00	62	6.00
40.50950.0310	3.10	.1220	14.00	20.00	62	6.00
40.50950.0320	3.20	.1260	14.00	20.00	62	6.00
40.50950.0330	3.30	.1299	14.00	20.00	62	6.00
40.50950.0340	3.40	.1339	14.00	20.00	62	6.00
40.50950.0350	3.50	.1378	14.00	20.00	62	6.00
40.50950.0360	3.60	.1417	14.00	20.00	62	6.00
40.50950.0370	3.70	.1457	14.00	20.00	62	6.00
40.50950.0380	3.80	.1496	17.00	24.00	66	6.00
40.50950.0390	3.90	.1535	17.00	24.00	66	6.00
40.50950.0400	4.00	.1575	17.00	24.00	66	6.00
40.50950.0410	4.10	.1614	17.00	24.00	66	6.00
40.50950.0420	4.20	.1654	17.00	24.00	66	6.00
40.50950.0430	4.30	.1693	17.00	24.00	66	6.00
40.50950.0440	4.40	.1732	17.00	24.00	66	6.00
40.50950.0450	4.50	.1772	17.00	24.00	66	6.00
40.50950.0460	4.60	.1811	17.00	24.00	66	6.00
40.50950.0470	4.70	.1850	17.00	24.00	66	6.00
40.50950.0480	4.80	.1890	20.00	28.00	66	6.00
40.50950.0490	4.90	.1929	20.00	28.00	66	6.00
40.50950.0500	5.00	.1969	20.00	28.00	66	6.00
40.50950.0510	5.10	.2008	20.00	28.00	66	6.00
40.50950.0520	5.20	.2047	20.00	28.00	66	6.00
40.50950.0530	5.30	.2087	20.00	28.00	66	6.00
40.50950.0540	5.40	.2126	20.00	28.00	66	6.00
40.50950.0550	5.50	.2165	20.00	28.00	66	6.00
40.50950.0560	5.60	.2205	20.00	28.00	66	6.00
40.50950.0570	5.70	.2244	20.00	28.00	66	6.00
40.50950.0580	5.80	.2283	20.00	28.00	66	6.00

Catalog Number	d1	d1 (in.)	l2	l3	l1	d2
40.50950.0590	5.90	.2323	20.00	28.00	66	6.00
40.50950.0600	6.00	.2362	20.00	28.00	66	6.00
40.50950.0610	6.10	.2402	24.00	34.00	79	8.00
40.50950.0620	6.20	.2441	24.00	34.00	79	8.00
40.50950.0630	6.30	.2480	24.00	34.00	79	8.00
40.50950.0640	6.40	.2520	24.00	34.00	79	8.00
40.50950.0650	6.50	.2559	24.00	34.00	79	8.00
40.50950.0660	6.60	.2598	24.00	34.00	79	8.00
40.50950.0670	6.70	.2638	24.00	34.00	79	8.00
40.50950.0680	6.80	.2677	24.00	34.00	79	8.00
40.50950.0690	6.90	.2717	24.00	34.00	79	8.00
40.50950.0700	7.00	.2756	24.00	34.00	79	8.00
40.50950.0710	7.10	.2795	29.00	41.00	79	8.00
40.50950.0720	7.20	.2835	29.00	41.00	79	8.00
40.50950.0730	7.30	.2874	29.00	41.00	79	8.00
40.50950.0740	7.40	.2913	29.00	41.00	79	8.00
40.50950.0750	7.50	.2953	29.00	41.00	79	8.00
40.50950.0760	7.60	.2992	29.00	41.00	79	8.00
40.50950.0770	7.70	.3031	29.00	41.00	79	8.00
40.50950.0780	7.80	.3071	29.00	41.00	79	8.00
40.50950.0790	7.90	.3110	29.00	41.00	79	8.00
40.50950.0800	8.00	.3150	29.00	41.00	79	8.00
40.50950.0810	8.10	.3189	35.00	47.00	89	10.00
40.50950.0820	8.20	.3228	35.00	47.00	89	10.00
40.50950.0830	8.30	.3268	35.00	47.00	89	10.00
40.50950.0840	8.40	.3307	35.00	47.00	89	10.00
40.50950.0850	8.50	.3346	35.00	47.00	89	10.00
40.50950.0860	8.60	.3386	35.00	47.00	89	10.00
40.50950.0870	8.70	.3425	35.00	47.00	89	10.00

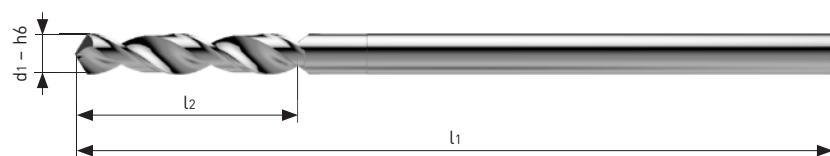
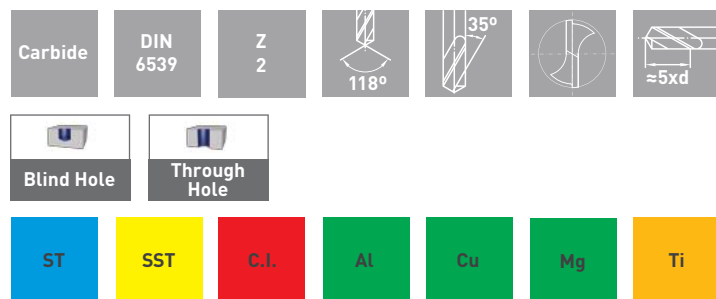
Catalog Number	d ₁	d ₁ (in.)	l ₂	l ₃	l ₁	d ₂
40.50950.0880	8.80	.3465	35.00	47.00	89	10.00
40.50950.0890	8.90	.3504	35.00	47.00	89	10.00
40.50950.0900	9.00	.3543	35.00	47.00	89	10.00
40.50950.0910	9.10	.3583	35.00	47.00	89	10.00
40.50950.0920	9.20	.3622	35.00	47.00	89	10.00
40.50950.0930	9.30	.3661	35.00	47.00	89	10.00
40.50950.0940	9.40	.3701	35.00	47.00	89	10.00
40.50950.0950	9.50	.3740	35.00	47.00	89	10.00
40.50950.0960	9.60	.3780	35.00	47.00	89	10.00
40.50950.0970	9.70	.3819	35.00	47.00	89	10.00
40.50950.0980	9.80	.3858	35.00	47.00	89	10.00
40.50950.0990	9.90	.3898	35.00	47.00	89	10.00
40.50950.1000	10.00	.3937	35.00	47.00	89	10.00
40.50950.1010	10.10	.3976	40.00	55.00	102	12.00
40.50950.1020	10.20	.4016	40.00	55.00	102	12.00
40.50950.1030	10.30	.4055	40.00	55.00	102	12.00
40.50950.1040	10.40	.4094	40.00	55.00	102	12.00
40.50950.1050	10.50	.4134	40.00	55.00	102	12.00
40.50950.1060	10.60	.4173	40.00	55.00	102	12.00
40.50950.1070	10.70	.4213	40.00	55.00	102	12.00
40.50950.1080	10.80	.4252	40.00	55.00	102	12.00
40.50950.1090	10.90	.4291	40.00	55.00	102	12.00
40.50950.1100	11.00	.4331	40.00	55.00	102	12.00
40.50950.1110	11.10	.4370	40.00	55.00	102	12.00
40.50950.1120	11.20	.4409	40.00	55.00	102	12.00
40.50950.1130	11.30	.4449	40.00	55.00	102	12.00
40.50950.1140	11.40	.4488	40.00	55.00	102	12.00
40.50950.1150	11.50	.4528	40.00	55.00	102	12.00

Catalog Number	d ₁	d ₁ (in.)	l ₂	l ₃	l ₁	d ₂
40.50950.1160	11.60	.4567	40.00	55.00	102	12.00
40.50950.1170	11.70	.4606	40.00	55.00	102	12.00
40.50950.1180	11.80	.4646	40.00	55.00	102	12.00
40.50950.1190	11.90	.4685	40.00	55.00	102	12.00
40.50950.1200	12.00	.4724	40.00	55.00	102	12.00
40.50950.1250	12.50	.4921	43.00	60.00	107	14.00
40.50950.1280	12.80	.5039	43.00	60.00	107	14.00
40.50950.1300	13.00	.5118	43.00	60.00	107	14.00
40.50950.1350	13.50	.5315	43.00	60.00	107	14.00
40.50950.1380	13.80	.5433	43.00	60.00	107	14.00
40.50950.1400	14.00	.5512	43.00	60.00	107	14.00
40.50950.1450	14.50	.5709	45.00	65.00	115	16.00
40.50950.1480	14.80	.5827	45.00	65.00	115	16.00
40.50950.1500	15.00	.5906	45.00	65.00	115	16.00
40.50950.1550	15.50	.6102	45.00	65.00	115	16.00
40.50950.1580	15.80	.6220	45.00	65.00	115	16.00
40.50950.1600	16.00	.6299	45.00	65.00	115	16.00
40.50950.1650	16.50	.6496	51.00	73.00	123	18.00
40.50950.1700	17.00	.6693	51.00	73.00	123	18.00
40.50950.1750	17.50	.6890	51.00	73.00	123	18.00
40.50950.1800	18.00	.7087	51.00	73.00	123	18.00
40.50950.1850	18.50	.7283	55.00	79.00	131	20.00
40.50950.1880	18.80	.7402	55.00	79.00	131	20.00
40.50950.1900	19.00	.7480	55.00	79.00	131	20.00
40.50950.1950	19.50	.7677	55.00	79.00	131	20.00
40.50950.1980	19.80	.7795	55.00	79.00	131	20.00
40.50950.2000	20.00	.7874	55.00	79.00	131	20.00

- All dimensions are millimeters unless otherwise noted
- For cutting data see pg. 153

Posicut

Art. 50830



Catalog Number	d1	d1 (in.)	l2	l1
40.50830.0003	.30	.0118	1.50	19
40.50830.0004	.40	.0157	2.30	19
40.50830.0005	.50	.0197	2.80	20
40.50830.0006	.60	.0236	3.30	21
40.50830.0007	.70	.0276	4.30	23
40.50830.0008	.80	.0315	4.80	24
40.50830.0009	.90	.0354	5.30	25
40.50830.0010	1.00	.0394	5.70	26
40.50830.0011	1.10	.0433	6.70	28
40.50830.0012	1.20	.0472	7.70	30
40.50830.0013	1.30	.0512	7.70	30
40.50830.0014	1.40	.0551	8.70	32
40.50830.0015	1.50	.0591	8.70	32
40.50830.0016	1.60	.0630	9.70	34
40.50830.0017	1.70	.0669	9.70	34
40.50830.0018	1.80	.0709	10.70	36
40.50830.0019	1.90	.0748	10.70	36
40.50830.0020	2.00	.0787	11.50	38
40.50830.0021	2.10	.0827	11.50	38
40.50830.0022	2.20	.0866	12.50	40
40.50830.0023	2.30	.0906	12.50	40
40.50830.0024	2.40	.0945	13.50	43
40.50830.0025	2.50	.0984	13.50	43
40.50830.0026	2.60	.1024	13.50	43
40.50830.0027	2.70	.1063	15.50	46
40.50830.0028	2.80	.1102	15.50	46
40.50830.0029	2.90	.1142	15.50	46
40.50830.0030	3.00	.1181	15.50	46
40.50830.0031	3.10	.1220	17.50	49
40.50830.0032	3.20	.1260	17.50	49

Catalog Number	d1	d1 (in.)	l2	l1
40.50830.0033	3.30	.1299	17.50	49
40.50830.0034	3.40	.1339	19.50	52
40.50830.0035	3.50	.1378	19.50	52
40.50830.0036	3.60	.1417	19.50	52
40.50830.0037	3.70	.1457	19.50	52
40.50830.0038	3.80	.1496	21.50	55
40.50830.0039	3.90	.1535	21.50	55
40.50830.0040	4.00	.1575	21.50	55
40.50830.0041	4.10	.1614	21.50	55
40.50830.0042	4.20	.1654	21.50	55
40.50830.0043	4.30	.1693	23.00	58
40.50830.0044	4.40	.1732	23.00	58
40.50830.0045	4.50	.1772	23.00	58
40.50830.0046	4.60	.1811	23.00	58
40.50830.0047	4.70	.1850	23.00	58
40.50830.0048	4.80	.1890	25.00	62
40.50830.0049	4.90	.1929	25.00	62
40.50830.0050	5.00	.1969	25.00	62
40.50830.0051	5.10	.2008	25.00	62
40.50830.0052	5.20	.2047	25.00	62
40.50830.0053	5.30	.2087	25.00	62
40.50830.0054	5.40	.2126	27.00	66
40.50830.0055	5.50	.2165	27.00	66
40.50830.0056	5.60	.2205	27.00	66
40.50830.0057	5.70	.2244	27.00	66
40.50830.0058	5.80	.2283	27.00	66
40.50830.0059	5.90	.2323	27.00	66
40.50830.0060	6.00	.2362	27.00	66
40.50830.0061	6.10	.2402	30.00	70
40.50830.0062	6.20	.2441	30.00	70

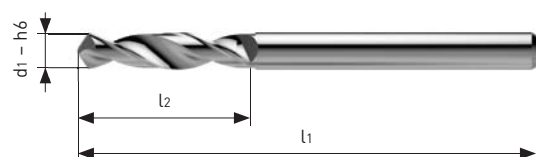
Catalog Number	d1	d1 (in.)	l2	l1
40.50830.0063	6.30	.2480	30.00	70
40.50830.0064	6.40	.2520	30.00	70
40.50830.0065	6.50	.2559	30.00	70
40.50830.0066	6.60	.2598	30.00	70
40.50830.0067	6.70	.2638	30.00	70
40.50830.0068	6.80	.2677	33.00	74
40.50830.0069	6.90	.2717	33.00	74
40.50830.0070	7.00	.2756	33.00	74
40.50830.0071	7.10	.2795	33.00	74
40.50830.0072	7.20	.2835	33.00	74
40.50830.0073	7.30	.2874	33.00	74
40.50830.0074	7.40	.2913	33.00	74
40.50830.0075	7.50	.2953	33.00	74
40.50830.0076	7.60	.2992	36.00	79
40.50830.0077	7.70	.3031	36.00	79
40.50830.0078	7.80	.3071	36.00	79
40.50830.0079	7.90	.3110	36.00	79
40.50830.0080	8.00	.3150	36.00	79
40.50830.0081	8.10	.3189	36.00	79
40.50830.0082	8.20	.3228	36.00	79
40.50830.0083	8.30	.3268	36.00	79
40.50830.0084	8.40	.3307	36.00	79
40.50830.0085	8.50	.3346	36.00	79
40.50830.0086	8.60	.3386	39.00	84
40.50830.0087	8.70	.3425	39.00	84
40.50830.0088	8.80	.3465	39.00	84
40.50830.0089	8.90	.3504	39.00	84

Catalog Number	d1	d1 (in.)	l2	l1
40.50830.0090	9.00	.3543	39.00	84
40.50830.0091	9.10	.3583	39.00	84
40.50830.0092	9.20	.3622	39.00	84
40.50830.0093	9.30	.3661	39.00	84
40.50830.0094	9.40	.3701	39.00	84
40.50830.0095	9.50	.3740	39.00	84
40.50830.0096	9.60	.3780	41.00	89
40.50830.0097	9.70	.3819	41.00	89
40.50830.0098	9.80	.3858	41.00	89
40.50830.0099	9.90	.3898	41.00	89
40.50830.0100	10.00	.3937	41.00	89
40.50830.0102	10.20	.4016	41.00	89
40.50830.0105	10.50	.4134	41.00	89
40.50830.0110	11.00	.4331	45.00	95
40.50830.0115	11.50	.4528	45.00	95
40.50830.0120	12.00	.4724	49.00	102
40.50830.0125	12.50	.4921	49.00	102
40.50830.0130	13.00	.5118	49.00	102
40.50830.0135	13.50	.5315	52.00	107
40.50830.0140	14.00	.5512	52.00	107
40.50830.0150	15.00	.5906	54.00	111
40.50830.0160	16.00	.6299	56.00	115
40.50830.0170	17.00	.6693	58.00	119
40.50830.0180	18.00	.7087	60.00	123
40.50830.0190	19.00	.7480	62.00	127
40.50830.0200	2.00	.7874	64.00	131

- All dimensions are millimeters unless otherwise noted
- For cutting data see pg. 154

Spirec

Art. 50838



TWIST
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Catalog Number	d1	d1 (in.)	l2	l1
40.50838.0030	.30	.0118	3.70	38
40.50838.0035	.35	.0138	3.70	38
40.50838.0040	.40	.0157	4.70	38
40.50838.0045	.45	.0177	4.70	38
40.50838.0050	.50	.0197	5.70	38
40.50838.0055	.55	.0217	5.70	38
40.50838.0060	.60	.0236	7.70	38
40.50838.0065	.65	.0256	7.70	38
40.50838.0070	.70	.0276	9.70	38
40.50838.0075	.75	.0295	9.70	38
40.50838.0080	.80	.0315	11.70	38
40.50838.0085	.85	.0335	11.70	38
40.50838.0090	.90	.0354	14.70	38
40.50838.0095	.95	.0374	14.70	38
40.50838.0100	1.00	.0394	14.70	38
40.50838.0105	1.05	.0413	14.70	38
40.50838.0110	1.10	.0433	14.70	38
40.50838.0115	1.15	.0453	14.70	38
40.50838.0120	1.20	.0472	14.70	38
40.50838.0125	1.25	.0492	14.70	38
40.50838.0130	1.30	.0512	14.70	38
40.50838.0135	1.35	.0531	14.70	38
40.50838.0140	1.40	.0551	14.70	38
40.50838.0145	1.45	.0571	14.70	38
40.50838.0150	1.50	.0591	14.70	38
40.50838.0155	1.55	.0610	14.70	38
40.50838.0160	1.60	.0630	14.70	38
40.50838.0165	1.65	.0650	14.70	38
40.50838.0170	1.70	.0669	14.70	38
40.50838.0175	1.75	.0689	14.70	38

Catalog Number	d1	d1 (in.)	l2	l1
40.50838.0180	1.80	.0709	14.70	38
40.50838.0185	1.85	.0728	14.70	38
40.50838.0190	1.90	.0748	14.70	38
40.50838.0195	1.95	.0768	14.70	38
40.50838.0200	2.00	.0787	14.70	38
40.50838.0205	2.05	.0807	14.70	38
40.50838.0210	2.10	.0827	14.70	38
40.50838.0215	2.15	.0846	14.70	38
40.50838.0220	2.20	.0866	14.70	38
40.50838.0225	2.25	.0886	14.70	38
40.50838.0230	2.30	.0906	14.70	38
40.50838.0235	2.35	.0925	14.70	38
40.50838.0240	2.40	.0945	14.70	38
40.50838.0245	2.45	.0965	14.70	38
40.50838.0250	2.50	.0984	14.70	38
40.50838.0255	2.55	.1004	14.70	38
40.50838.0260	2.60	.1024	14.70	38
40.50838.0265	2.65	.1043	14.70	38
40.50838.0270	2.70	.1063	14.70	38
40.50838.0275	2.75	.1083	14.70	38
40.50838.0280	2.80	.1102	14.70	38
40.50838.0285	2.85	.1122	14.70	38
40.50838.0290	2.90	.1142	14.70	38
40.50838.0295	2.95	.1161	14.70	38
40.50838.0300	3.00	.1181	14.70	38
40.50838.0305	3.05	.1201	14.70	38
40.50838.0310	3.10	.1220	14.70	38
40.50838.0315	3.15	.1240	14.70	38
40.50838.3175	3.175	.1250	14.70	38
40.50838.0320	3.20	.1260	19.70	50



Catalog Number	d1	d1 (in.)	l2	l1
40.50838.0330	3.30	.1299	19.70	50
40.50838.0340	3.40	.1339	19.70	50
40.50838.0350	3.50	.1378	19.70	50
40.50838.0360	3.60	.1417	19.70	50
40.50838.0370	3.70	.1457	19.70	50
40.50838.0380	3.80	.1496	19.70	50
40.50838.0390	3.90	.1535	19.70	50
40.50838.0400	4.00	.1575	19.70	50
40.50838.0410	4.10	.1614	24.70	50
40.50838.0420	4.20	.1654	24.70	50
40.50838.0430	4.30	.1693	24.70	50
40.50838.0440	4.40	.1732	24.70	50
40.50838.0450	4.50	.1772	24.70	50
40.50838.0460	4.60	.1811	24.70	50
40.50838.0470	4.70	.1850	24.70	50
40.50838.0480	4.80	.1890	24.70	50
40.50838.0490	4.90	.1929	24.70	50
40.50838.0500	5.00	.1969	24.70	50
40.50838.0510	5.10	.2008	24.70	50
40.50838.0520	5.20	.2047	24.70	50
40.50838.0530	5.30	.2087	24.70	50
40.50838.0540	5.40	.2126	24.70	50
40.50838.0550	5.50	.2165	24.70	50
40.50838.0560	5.60	.2205	24.70	50
40.50838.0570	5.70	.2244	24.70	50
40.50838.0580	5.80	.2283	24.70	50
40.50838.0590	5.90	.2323	24.70	50
40.50838.0600	6.00	.2362	24.70	50

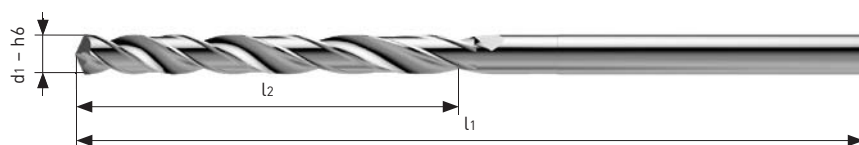
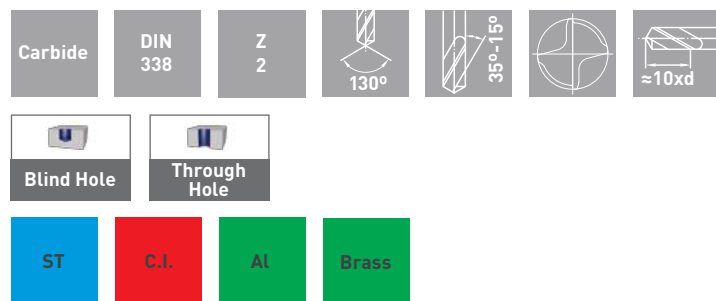
- All dimensions are millimeters unless otherwise noted
- For cutting data see pg. 154



A.5
TWIST

Spicut

Art. 50820



Catalog Number	d1	d1 (in.)	l2	l1
40.50820.0007	.70	.0276	8.00	28
40.50820.0008	.80	.0315	9.00	30
40.50820.0009	.90	.0354	10.00	32
40.50820.0010	1.00	.0394	11.00	34
40.50820.0011	1.10	.0433	13.00	36
40.50820.0012	1.20	.0472	15.00	38
40.50820.0013	1.30	.0512	15.00	38
40.50820.0014	1.40	.0551	17.00	40
40.50820.0015	1.50	.0591	17.00	40
40.50820.0016	1.60	.0630	19.00	43
40.50820.0017	1.70	.0669	19.00	43
40.50820.0018	1.80	.0709	21.00	46
40.50820.0019	1.90	.0748	21.00	46
40.50820.0020	2.00	.0787	23.00	49
40.50820.0021	2.10	.0827	23.00	49
40.50820.0022	2.20	.0866	26.00	53
40.50820.0023	2.30	.0906	26.00	53
40.50820.0024	2.40	.0945	29.00	57
40.50820.0025	2.50	.0984	29.00	57
40.50820.0026	2.60	.1024	29.00	57
40.50820.0027	2.70	.1063	31.00	61
40.50820.0028	2.80	.1102	31.00	61
40.50820.0029	2.90	.1142	31.00	61
40.50820.0030	3.00	.1181	31.00	61
40.50820.0031	3.10	.1220	34.00	65
40.50820.0032	3.20	.1260	34.00	65
40.50820.0033	3.30	.1299	34.00	65
40.50820.0034	3.40	.1339	37.00	70
40.50820.0035	3.50	.1378	37.00	70
40.50820.0036	3.60	.1417	37.00	70

Catalog Number	d1	d1 (in.)	l2	l1
40.50820.0037	3.70	.1457	37.00	70
40.50820.0038	3.80	.1496	41.00	75
40.50820.0039	3.90	.1535	41.00	75
40.50820.0040	4.00	.1575	41.00	75
40.50820.0041	4.10	.1614	41.00	75
40.50820.0042	4.20	.1654	41.00	75
40.50820.0043	4.30	.1693	45.00	80
40.50820.0044	4.40	.1732	45.00	80
40.50820.0045	4.50	.1772	45.00	80
40.50820.0046	4.60	.1811	45.00	80
40.50820.0047	4.70	.1850	45.00	80
40.50820.0048	4.80	.1890	50.00	86
40.50820.0049	4.90	.1929	50.00	86
40.50820.0050	5.00	.1969	50.00	86
40.50820.0051	5.10	.2008	50.00	86
40.50820.0052	5.20	.2047	50.00	86
40.50820.0053	5.30	.2087	50.00	86
40.50820.0054	5.40	.2126	55.00	93
40.50820.0055	5.50	.2165	55.00	93
40.50820.0056	5.60	.2205	55.00	93
40.50820.0057	5.70	.2244	55.00	93
40.50820.0058	5.80	.2283	55.00	93
40.50820.0059	5.90	.2323	55.00	93
40.50820.0060	6.00	.2362	55.00	93
40.50820.0061	6.10	.2402	61.00	101
40.50820.0062	6.20	.2441	61.00	101
40.50820.0063	6.30	.2480	61.00	101
40.50820.0064	6.40	.2520	61.00	101
40.50820.0065	6.50	.2559	61.00	101
40.50820.0066	6.60	.2598	61.00	101



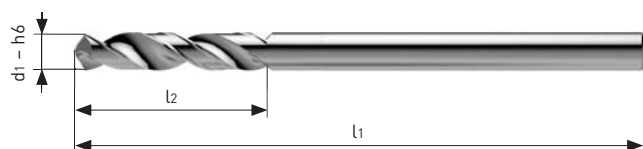
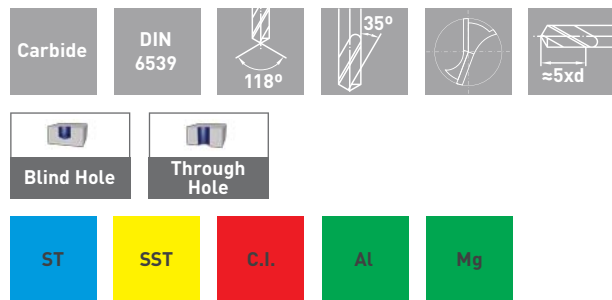
Catalog Number	d1	d1 [in.]	l2	l1
40.50820.0067	6.70	.2638	61.00	101
40.50820.0068	6.80	.2677	67.00	109
40.50820.0069	6.90	.2717	67.00	109
40.50820.0070	7.00	.2756	67.00	109
40.50820.0071	7.10	.2795	67.00	109
40.50820.0072	7.20	.2835	67.00	109
40.50820.0073	7.30	.2874	67.00	109
40.50820.0074	7.40	.2913	67.00	109
40.50820.0075	7.50	.2953	67.00	109
40.50820.0076	7.60	.2992	73.00	117
40.50820.0077	7.70	.3031	73.00	117
40.50820.0078	7.80	.3071	73.00	117
40.50820.0079	7.90	.3110	73.00	117
40.50820.0080	8.00	.3150	73.00	117
40.50820.0081	8.10	.3189	73.00	117
40.50820.0082	8.20	.3228	73.00	117
40.50820.0083	8.30	.3268	73.00	117
40.50820.0084	8.40	.3307	73.00	117
40.50820.0085	8.50	.3346	73.00	117
40.50820.0086	8.60	.3386	78.00	125
40.50820.0087	8.70	.3425	78.00	125
40.50820.0088	8.80	.3465	78.00	125

Catalog Number	d1	d1 [in.]	l2	l1
40.50820.0089	8.90	.3504	78.00	125
40.50820.0090	9.00	.3543	78.00	125
40.50820.0091	9.10	.3583	78.00	125
40.50820.0092	9.20	.3622	78.00	125
40.50820.0093	9.30	.3661	78.00	125
40.50820.0094	9.40	.3701	78.00	125
40.50820.0095	9.50	.3740	78.00	125
40.50820.0096	9.60	.3780	84.00	133
40.50820.0097	9.70	.3819	84.00	133
40.50820.0098	9.80	.3858	84.00	133
40.50820.0099	9.90	.3898	84.00	133
40.50820.0100	1.00	.3937	84.00	133
40.50820.0102	1.20	.4016	84.00	133
40.50820.0105	1.50	.4134	84.00	133
40.50820.0110	11.00	.4331	91.00	142
40.50820.0115	11.50	.4528	91.00	142
40.50820.0120	12.00	.4724	98.00	151
40.50820.0125	12.50	.4921	98.00	151
40.50820.0130	13.00	.5118	98.00	151
40.50820.0135	13.50	.5315	105.00	160
40.50820.0140	14.00	.5512	105.00	160

- All dimensions are millimeters unless otherwise noted
- Degressive helix from 35° to 15°
- Four margins beginning at Ø2mm
- For cutting data see pg. 155

Asycut

Art. 50840



Catalog Number	d1	d1 (in.)	l2	l1
40.50840.0020	2.00	.0787	11.5	38
40.50840.0021	2.10	.0827	11.5	38
40.50840.0022	2.20	.0866	12.5	40
40.50840.0023	2.30	.0906	12.5	40
40.50840.0024	2.40	.0945	13.5	43
40.50840.0025	2.50	.0984	13.5	43
40.50840.0026	2.60	.1024	13.5	43
40.50840.0027	2.70	.1063	15.5	46
40.50840.0028	2.80	.1102	15.5	46
40.50840.0029	2.90	.1142	15.5	46
40.50840.0030	3.00	.1181	15.5	46
40.50840.0031	3.10	.1220	17.5	49
40.50840.0032	3.20	.1260	17.5	49
40.50840.0033	3.30	.1299	17.5	49
40.50840.0034	3.40	.1339	19.5	52
40.50840.0035	3.50	.1378	19.5	52
40.50840.0036	3.60	.1417	19.5	52
40.50840.0037	3.70	.1457	19.5	52
40.50840.0038	3.80	.1496	21.5	55
40.50840.0039	3.90	.1535	21.5	55
40.50840.0040	4.00	.1575	21.5	55
40.50840.0041	4.10	.1614	21.5	55
40.50840.0042	4.20	.1654	21.5	55
40.50840.0043	4.30	.1693	23.0	58
40.50840.0044	4.40	.1732	23.0	58
40.50840.0045	4.50	.1772	23.0	58
40.50840.0046	4.60	.1811	23.0	58
40.50840.0047	4.70	.1850	23.0	58
40.50840.0048	4.80	.1890	25.0	62
40.50840.0049	4.90	.1929	25.0	62

Catalog Number	d1	d1 (in.)	l2	l1
40.50840.0050	5.00	.1969	25.0	62
40.50840.0051	5.10	.2008	25.0	62
40.50840.0052	5.20	.2047	25.0	62
40.50840.0053	5.30	.2087	25.0	62
40.50840.0054	5.40	.2126	27.0	66
40.50840.0055	5.50	.2165	27.0	66
40.50840.0056	5.60	.2205	27.0	66
40.50840.0057	5.70	.2244	27.0	66
40.50840.0058	5.80	.2283	27.0	66
40.50840.0059	5.90	.2323	27.0	66
40.50840.0060	6.00	.2362	27.0	66
40.50840.0061	6.10	.2402	30.0	70
40.50840.0062	6.20	.2441	30.0	70
40.50840.0063	6.30	.2480	30.0	70
40.50840.0064	6.40	.2520	30.0	70
40.50840.0065	6.50	.2559	30.0	70
40.50840.0066	6.60	.2598	30.0	70
40.50840.0067	6.70	.2638	30.0	70
40.50840.0068	6.80	.2677	33.0	74
40.50840.0069	6.90	.2717	33.0	74
40.50840.0070	7.00	.2756	33.0	74
40.50840.0071	7.10	.2795	33.0	74
40.50840.0072	7.20	.2835	33.0	74
40.50840.0073	7.30	.2874	33.0	74
40.50840.0074	7.40	.2913	33.0	74
40.50840.0075	7.50	.2953	33.0	74
40.50840.0076	7.60	.2992	36.0	79
40.50840.0077	7.70	.3031	36.0	79
40.50840.0078	7.80	.3071	36.0	79
40.50840.0079	7.90	.3110	36.0	79



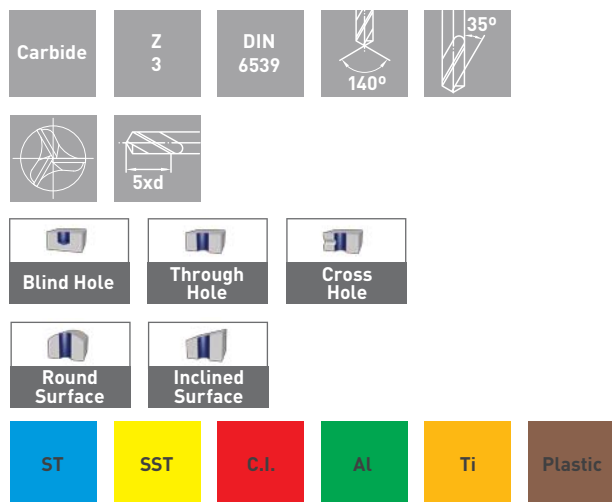
Catalog Number	d1	d1 (in.)	l2	l1
40.50840.0080	8.00	.3150	36.0	79
40.50840.0081	8.10	.3189	36.0	79
40.50840.0082	8.20	.3228	36.0	79
40.50840.0083	8.30	.3268	36.0	79
40.50840.0084	8.40	.3307	36.0	79
40.50840.0085	8.50	.3346	36.0	79
40.50840.0086	8.60	.3386	39.0	84
40.50840.0087	8.70	.3425	39.0	84
40.50840.0088	8.80	.3465	39.0	84
40.50840.0089	8.90	.3504	39.0	84
40.50840.0090	9.00	.3543	39.0	84
40.50840.0091	9.10	.3583	39.0	84
40.50840.0092	9.20	.3622	39.0	84
40.50840.0093	9.30	.3661	39.0	84
40.50840.0094	9.40	.3701	39.0	84

Catalog Number	d1	d1 (in.)	l2	l1
40.50840.0095	9.50	.3740	39.0	84
40.50840.0096	9.60	.3780	41.0	89
40.50840.0097	9.70	.3819	41.0	89
40.50840.0098	9.80	.3858	41.0	89
40.50840.0099	9.90	.3898	41.0	89
40.50840.0100	10.00	.3937	41.0	89
40.50840.0102	10.20	.4016	41.0	89
40.50840.0105	10.50	.4134	41.0	89
40.50840.0110	11.00	.4331	45.0	95
40.50840.0115	11.50	.4528	45.0	95
40.50840.0120	12.00	.4724	49.0	102
40.50840.0125	12.50	.4921	49.0	102
40.50840.0130	13.00	.5118	49.0	102
40.50840.0135	13.50	.5315	52.0	107
40.50840.0140	14.00	.5512	52.0	107

- All dimensions are millimeters unless otherwise noted
- Three margin asymmetrical flute design
- For cutting data see pg. 156

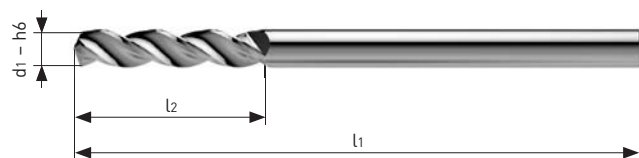
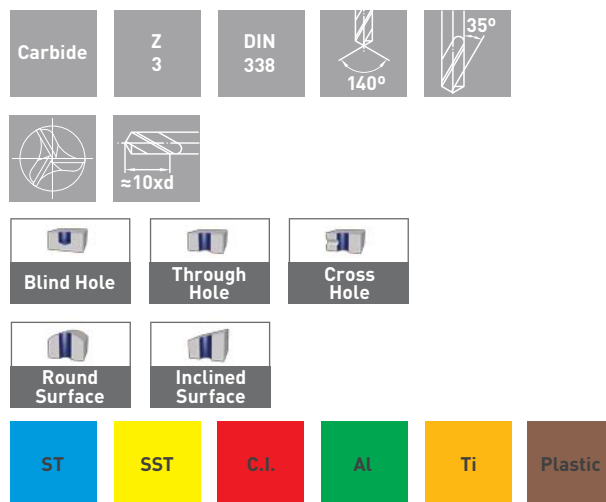
Tricut

Art. 55654



Tricut

Art. 55338



d1	d1 (in.)	Art. 55654			Art. 55338		
		Catalog Number	l2	l1	Catalog Number	l2	l1
1.00	.0394	40.55654.0010	6.00	26	40.55338.0010	11.50	34
1.10	.0433	40.55654.0011	6.50	28	40.55338.0011	13.00	36
1.20	.0472	40.55654.0012	7.50	30	40.55338.0012	15.00	38
1.30	.0512	40.55654.0013	7.50	30	40.55338.0013	15.00	38
1.40	.0551	40.55654.0014	8.50	32	40.55338.0014	17.00	40
1.50	.0591	40.55654.0015	8.50	32	40.55338.0015	17.00	40
1.60	.0630	40.55654.0016	9.50	34	40.55338.0016	19.00	43
1.70	.0669	40.55654.0017	9.50	34	40.55338.0017	19.00	43
1.80	.0709	40.55654.0018	10.50	36	40.55338.0018	21.00	46
1.90	.0748	40.55654.0019	10.50	36	40.55338.0019	21.00	46
2.00	.0787	40.55654.0020	11.50	38	40.55338.0020	22.00	49
2.10	.0827	40.55654.0021	11.50	38	40.55338.0021	22.00	49
2.20	.0866	40.55654.0022	12.50	40	40.55338.0022	25.00	53
2.30	.0906	40.55654.0023	12.50	40	40.55338.0023	25.00	53
2.40	.0945	40.55654.0024	13.50	43	40.55338.0024	28.00	57
2.50	.0984	40.55654.0025	13.50	43	40.55338.0025	28.00	57
2.60	.1024	40.55654.0026	13.50	43	40.55338.0026	28.00	57
2.70	.1063	40.55654.0027	15.50	46	40.55338.0027	31.00	61
2.80	.1102	40.55654.0028	15.50	46	40.55338.0028	31.00	61
2.90	.1142	40.55654.0029	15.50	46	40.55338.0029	31.00	61
3.00	.1181	40.55654.0030	15.50	46	40.55338.0030	31.00	61
3.10	.1220	40.55654.0031	17.00	49	40.55338.0031	34.00	65
3.175	.1250 (1/8)	40.55654.3175	17.00	49	—	—	—
3.20	.1260	40.55654.0032	17.00	49	40.55338.0032	34.00	65
3.30	.1299	40.55654.0033	17.00	49	40.55338.0033	34.00	65

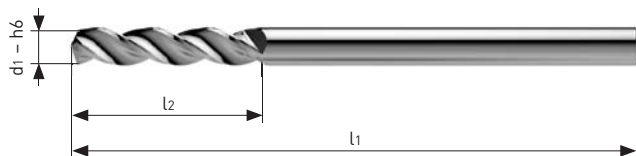


d1	d1 (in.)	Art. 55654			Art. 55338		
		Catalog Number	l2	l1	Catalog Number	l2	l1
3.40	.1339	40.55654.0034	19.00	52	40.55338.0034	37.00	70
3.50	.1378	40.55654.0035	19.00	52	40.55338.0035	37.00	70
3.60	.1417	40.55654.0036	19.00	52	40.55338.0036	37.00	70
3.70	.1457	40.55654.0037	19.00	52	40.55338.0037	37.00	70
3.80	.1496	40.55654.0038	21.00	55	40.55338.0038	41.00	75
3.90	.1535	40.55654.0039	21.00	55	40.55338.0039	41.00	75
3.969	.1563 [5/32]	40.55654.3969	21.00	55	—	—	—
4.00	.1575	40.55654.0040	21.00	55	40.55338.0040	41.00	75
4.10	.1614	40.55654.0041	21.00	55	40.55338.0041	41.00	75
4.20	.1654	40.55654.0042	21.00	55	40.55338.0042	41.00	75
4.30	.1693	40.55654.0043	22.50	58	40.55338.0043	45.00	80
4.40	.1732	40.55654.0044	22.50	58	40.55338.0044	45.00	80
4.50	.1772	40.55654.0045	22.50	58	40.55338.0045	45.00	80
4.60	.1811	40.55654.0046	22.50	58	40.55338.0046	45.00	80
4.70	.1850	40.55654.0047	22.50	58	40.55338.0047	45.00	80
4.763	.1875 [3/16]	40.55654.4763	24.50	62	—	—	—
4.80	.1890	40.55654.0048	24.50	62	40.55338.0048	50.00	86
4.90	.1929	40.55654.0049	24.50	62	40.55338.0049	50.00	86
5.00	.1969	40.55654.0050	24.50	62	40.55338.0050	50.00	86
5.10	.2008	40.55654.0051	24.50	62	40.55338.0051	50.00	86
5.20	.2047	40.55654.0052	24.50	62	40.55338.0052	50.00	86
5.30	.2087	40.55654.0053	24.50	62	40.55338.0053	50.00	86
5.40	.2126	40.55654.0054	26.00	66	40.55338.0054	55.00	93
5.50	.2165	40.55654.0055	26.00	66	40.55338.0055	55.00	93
5.556	.2187 [7/32]	40.55654.5556	26.00	66	—	—	—
5.60	.2205	40.55654.0056	26.00	66	40.55338.0056	55.00	93
5.70	.2244	40.55654.0057	26.00	66	40.55338.0057	55.00	93
5.80	.2283	40.55654.0058	26.00	66	40.55338.0058	55.00	93
5.90	.2323	40.55654.0059	26.00	66	40.55338.0059	55.00	93
6.00	.2362	40.55654.0060	26.00	66	40.55338.0060	55.00	93
6.10	.2402	40.55654.0061	28.50	70	40.55338.0061	60.00	101
6.20	.2441	40.55654.0062	28.50	70	40.55338.0062	60.00	101
6.30	.2480	40.55654.0063	28.50	70	40.55338.0063	60.00	101
6.35	.2500 [1/4]	40.55654.6350	28.50	70	—	—	—
6.40	.2520	40.55654.0064	28.50	70	40.55338.0064	60.00	101
6.50	.2559	40.55654.0065	28.50	70	40.55338.0065	60.00	101
6.60	.2598	40.55654.0066	28.50	70	40.55338.0066	60.00	101
6.70	.2638	40.55654.0067	28.50	70	40.55338.0067	60.00	101
6.80	.2677	40.55654.0068	31.00	74	40.55338.0068	66.00	109
6.90	.2717	40.55654.0069	31.00	74	40.55338.0069	66.00	109
7.00	.2756	40.55654.0070	31.00	74	40.55338.0070	66.00	109
7.10	.2795	40.55654.0071	31.00	74	40.55338.0071	66.00	109
7.144	.2813 [9/32]	40.55654.7144	31.00	74	—	—	—
7.20	.2835	40.55654.0072	31.00	74	40.55338.0072	66.00	109
7.30	.2874	40.55654.0073	31.00	74	40.55338.0073	66.00	109
7.40	.2913	40.55654.0074	31.00	74	40.55338.0074	66.00	109

- All dimensions are millimeters unless otherwise noted
- For cutting data see pg. 157

Tricut

Art. 55654 / 55338 Cont.



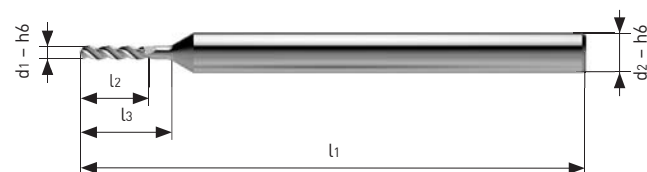
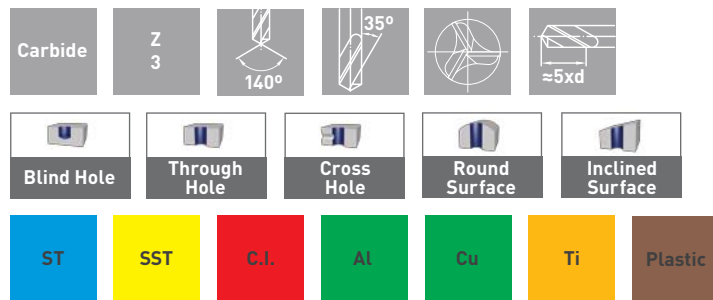
d1	d1 (in.)	Art. 55654			Art. 55338		
		Catalog Number	l2	l1	Catalog Number	l2	l1
7.50	.2953	40.55654.0075	31.00	74	40.55338.0075	66.00	109
7.60	.2992	40.55654.0076	34.00	79	40.55338.0076	72.00	117
7.70	.3031	40.55654.0077	34.00	79	40.55338.0077	72.00	117
7.80	.3071	40.55654.0078	34.00	79	40.55338.0078	72.00	117
7.90	.3110	40.55654.0079	34.00	79	40.55338.0079	72.00	117
7.938	.3125 (5/16)	40.55654.7938	34.00	79	—	—	—
8.00	.3150	40.55654.0080	34.00	79	40.55338.0080	72.00	117
8.10	.3189	40.55654.0081	34.00	79	40.55338.0081	72.00	117
8.20	.3228	40.55654.0082	34.00	79	40.55338.0082	72.00	117
8.30	.3268	40.55654.0083	34.00	79	40.55338.0083	72.00	117
8.40	.3307	40.55654.0084	34.00	79	40.55338.0084	72.00	117
8.50	.3346	40.55654.0085	34.00	79	40.55338.0085	72.00	117
8.60	.3386	40.55654.0086	36.50	84	40.55338.0086	78.00	125
8.70	.3425	40.55654.0087	36.50	84	40.55338.0087	78.00	125
8.80	.3465	40.55654.0088	36.50	84	40.55338.0088	78.00	125
8.90	.3504	40.55654.0089	36.50	84	40.55338.0089	78.00	125
9.00	.3543	40.55654.0090	36.50	84	40.55338.0090	78.00	125
9.10	.3583	40.55654.0091	36.50	84	40.55338.0091	78.00	125
9.20	.3622	40.55654.0092	36.50	84	40.55338.0092	78.00	125
9.30	.3661	40.55654.0093	36.50	84	40.55338.0093	78.00	125
9.40	.3701	40.55654.0094	36.50	84	40.55338.0094	78.00	125
9.50	.3740	40.55654.0095	36.50	84	40.55338.0095	78.00	125
9.525	.3750 (3/8)	40.55654.9525	39.00	89	—	—	—
9.60	.3780	40.55654.0096	39.00	89	40.55338.0096	84.00	133
9.70	.3819	40.55654.0097	39.00	89	40.55338.0097	84.00	133
9.80	.3858	40.55654.0098	39.00	89	40.55338.0098	84.00	133
9.90	.3898	40.55654.0099	39.00	89	40.55338.0099	84.00	133
10.00	.3937	40.55654.1000	39.00	89	40.55338.0100	84.00	133
10.20	.4016	40.55654.1020	39.00	89	40.55338.0102	84.00	133
10.50	.4134	40.55654.1050	39.00	89	40.55338.0105	84.00	133
11.00	.4331	40.55654.1100	43.00	95	40.55338.0110	91.00	142
11.113	.4375 (7/16)	40.55654.1111	43.00	95	—	—	—
11.50	.4528	40.55654.1150	43.00	95	40.55338.0115	91.00	142
12.00	.4724	40.55654.1200	47.00	102	40.55338.0120	98.00	151
12.50	.4921	40.55654.1250	47.00	102	40.55338.0125	98.00	151
12.70	.5000 (1/2)	40.55654.1270	47.00	102	—	—	—
13.00	.5118	40.55654.1300	47.00	102	40.55338.0130	98.00	151
13.50	.5315	40.55654.1350	50.00	107	40.55338.0135	105.00	160
14.00	.5512	40.55654.1400	50.00	107	40.55338.0140	105.00	160

- All dimensions are millimeters unless otherwise noted
- For cutting data see pg. 157



Microtricut

Art. 55652



Catalog Number	d1	d1 (in.)	l2	l3	l1	d2
40.55652.0020	.20	.0079	1.00	1.50	38	3.00
40.55652.0021	.21	.0083	1.05	1.50	38	3.00
40.55652.0022	.22	.0087	1.10	1.60	38	3.00
40.55652.0023	.23	.0091	1.15	1.60	38	3.00
40.55652.0024	.24	.0094	1.20	1.70	38	3.00
40.55652.0025	.25	.0098	1.25	1.70	38	3.00
40.55652.0026	.26	.0102	1.30	1.80	38	3.00
40.55652.0027	.27	.0106	1.35	1.80	38	3.00
40.55652.0028	.28	.0110	1.40	1.90	38	3.00
40.55652.0029	.29	.0114	1.45	1.90	38	3.00
40.55652.0030	.30	.0118	1.50	2.00	38	3.00
40.55652.0031	.31	.0122	1.55	2.00	38	3.00
40.55652.0032	.32	.0126	1.60	2.10	38	3.00
40.55652.0033	.33	.0130	1.65	2.10	38	3.00
40.55652.0034	.34	.0134	1.70	2.20	38	3.00
40.55652.0035	.35	.0138	1.75	2.20	38	3.00
40.55652.0036	.36	.0142	1.80	2.30	38	3.00
40.55652.0037	.37	.0146	1.85	2.30	38	3.00
40.55652.0038	.38	.0150	1.90	2.40	38	3.00
40.55652.0039	.39	.0154	1.95	2.40	38	3.00
40.55652.0040	.40	.0157	2.00	2.50	38	3.00
40.55652.0041	.41	.0161	2.05	2.50	38	3.00
40.55652.0042	.42	.0165	2.10	2.60	38	3.00
40.55652.0043	.43	.0169	2.15	2.60	38	3.00
40.55652.0044	.44	.0173	2.20	2.70	38	3.00
40.55652.0045	.45	.0177	2.25	2.70	38	3.00
40.55652.0046	.46	.0181	2.30	2.80	38	3.00
40.55652.0047	.47	.0185	2.35	2.80	38	3.00
40.55652.0048	.48	.0189	2.40	2.90	38	3.00

Catalog Number	d1	d1 (in.)	l2	l3	l1	d2
40.55652.0049	.49	.0193	2.45	2.90	38	3.00
40.55652.0050	.50	.0197	2.50	3.00	38	3.00
40.55652.0051	.51	.0201	2.55	3.00	38	3.00
40.55652.0052	.52	.0205	2.60	3.10	38	3.00
40.55652.0053	.53	.0209	2.65	3.10	38	3.00
40.55652.0054	.54	.0213	2.70	3.20	38	3.00
40.55652.0055	.55	.0217	2.75	3.20	38	3.00
40.55652.0056	.56	.0220	2.80	3.30	38	3.00
40.55652.0057	.57	.0224	2.85	3.30	38	3.00
40.55652.0058	.58	.0228	2.90	3.40	38	3.00
40.55652.0059	.59	.0232	2.95	3.40	38	3.00
40.55652.0060	.60	.0236	3.00	3.50	38	3.00
40.55652.0061	.61	.0240	3.05	3.50	38	3.00
40.55652.0062	.62	.0244	3.10	3.60	38	3.00
40.55652.0063	.63	.0248	3.15	3.60	38	3.00
40.55652.0064	.64	.0252	3.20	3.70	38	3.00
40.55652.0065	.65	.0256	3.25	3.70	38	3.00
40.55652.0066	.66	.0260	3.30	3.80	38	3.00
40.55652.0067	.67	.0264	3.35	3.80	38	3.00
40.55652.0068	.68	.0268	3.40	3.90	38	3.00
40.55652.0069	.69	.0272	3.45	3.90	38	3.00
40.55652.0070	.70	.0276	3.50	4.00	38	3.00
40.55652.0071	.71	.0280	3.55	4.00	38	3.00
40.55652.0072	.72	.0283	3.60	4.10	38	3.00
40.55652.0073	.73	.0287	3.65	4.10	38	3.00
40.55652.0074	.74	.0291	3.70	4.20	38	3.00
40.55652.0075	.75	.0295	3.75	4.20	38	3.00
40.55652.0076	.76	.0299	3.80	4.30	38	3.00
40.55652.0077	.77	.0303	3.85	4.30	38	3.00

Catalog Number	d1	d1 (in.)	l2	l3	l1	d2
40.55652.0078	.78	.0307	3.90	4.40	38	3.00
40.55652.0079	.79	.0311	3.95	4.40	38	3.00
40.55652.0080	.80	.0315	4.00	4.50	38	3.00
40.55652.0081	.81	.0319	4.05	4.50	38	3.00
40.55652.0082	.82	.0323	4.10	4.60	38	3.00
40.55652.0083	.83	.0327	4.15	4.60	38	3.00
40.55652.0084	.84	.0331	4.20	4.70	38	3.00
40.55652.0085	.85	.0335	4.25	4.70	38	3.00
40.55652.0086	.86	.0339	4.30	4.80	38	3.00
40.55652.0087	.87	.0343	4.35	4.80	38	3.00
40.55652.0088	.88	.0346	4.40	4.90	38	3.00
40.55652.0089	.89	.0350	4.45	4.90	38	3.00
40.55652.0090	.90	.0354	4.50	5.00	38	3.00
40.55652.0091	.91	.0358	4.55	5.00	38	3.00
40.55652.0092	.92	.0362	4.60	5.10	38	3.00
40.55652.0093	.93	.0366	4.65	5.10	38	3.00
40.55652.0094	.94	.0370	4.70	5.20	38	3.00
40.55652.0095	.95	.0374	4.75	5.20	38	3.00
40.55652.0096	.96	.0378	4.80	5.30	38	3.00
40.55652.0097	.97	.0382	4.85	5.30	38	3.00
40.55652.0098	.98	.0386	4.90	5.40	38	3.00
40.55652.0099	.99	.0390	4.95	5.40	38	3.00
40.55652.0100	1.00	.0394	5.00	6.50	38	3.00
40.55652.0101	1.01	.0398	5.05	6.50	38	3.00
40.55652.0102	1.02	.0402	5.10	6.50	38	3.00
40.55652.0103	1.03	.0406	5.15	6.50	38	3.00
40.55652.0104	1.04	.0409	5.20	6.50	38	3.00
40.55652.0105	1.05	.0413	5.25	6.50	38	3.00
40.55652.0106	1.06	.0417	5.30	6.50	38	3.00
40.55652.0107	1.07	.0421	5.35	7.50	38	3.00
40.55652.0108	1.08	.0425	5.40	7.50	38	3.00
40.55652.0109	1.09	.0429	5.45	7.50	38	3.00
40.55652.0110	1.10	.0433	5.50	7.50	38	3.00
40.55652.0111	1.11	.0437	5.55	7.50	38	3.00
40.55652.0112	1.12	.0441	5.60	7.50	38	3.00
40.55652.0113	1.13	.0445	5.65	7.50	38	3.00
40.55652.0114	1.14	.0449	5.70	7.50	38	3.00
40.55652.0115	1.15	.0453	5.75	7.50	38	3.00
40.55652.0116	1.16	.0457	5.80	7.50	38	3.00
40.55652.0117	1.17	.0461	5.85	7.50	38	3.00
40.55652.0118	1.18	.0465	5.90	8.50	38	3.00
40.55652.0119	1.19	.0469	5.95	8.50	38	3.00
40.55652.0120	1.20	.0472	6.00	8.50	38	3.00
40.55652.0121	1.21	.0476	6.05	8.50	38	3.00
40.55652.0122	1.22	.0480	6.10	8.50	38	3.00

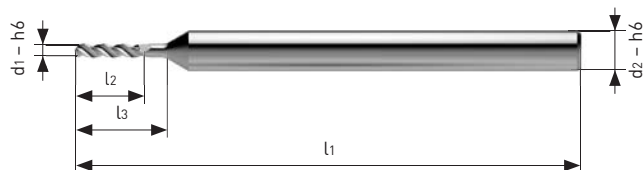
Catalog Number	d1	d1 (in.)	l2	l3	l1	d2
40.55652.0123	1.23	.0484	6.15	8.50	38	3.00
40.55652.0124	1.24	.0488	6.20	8.50	38	3.00
40.55652.0125	1.25	.0492	6.25	8.50	38	3.00
40.55652.0126	1.26	.0496	6.30	8.50	38	3.00
40.55652.0127	1.27	.0500	6.35	8.50	38	3.00
40.55652.0128	1.28	.0504	6.40	8.50	38	3.00
40.55652.0129	1.29	.0508	6.45	8.50	38	3.00
40.55652.0130	1.30	.0512	6.50	8.50	38	3.00
40.55652.0131	1.31	.0516	6.55	8.50	38	3.00
40.55652.0132	1.32	.0520	6.60	8.50	38	3.00
40.55652.0133	1.33	.0524	6.65	9.50	38	3.00
40.55652.0134	1.34	.0528	6.70	9.50	38	3.00
40.55652.0135	1.35	.0531	6.75	9.50	38	3.00
40.55652.0136	1.36	.0535	6.80	9.50	38	3.00
40.55652.0137	1.37	.0539	6.85	9.50	38	3.00
40.55652.0138	1.38	.0543	6.90	9.50	38	3.00
40.55652.0139	1.39	.0547	6.95	9.50	38	3.00
40.55652.0140	1.40	.0551	7.00	9.50	38	3.00
40.55652.0141	1.41	.0555	7.05	9.50	38	3.00
40.55652.0142	1.42	.0559	7.10	9.50	38	3.00
40.55652.0143	1.43	.0563	7.15	9.50	38	3.00
40.55652.0144	1.44	.0567	7.20	9.50	38	3.00
40.55652.0145	1.45	.0571	7.25	9.50	38	3.00
40.55652.0146	1.46	.0575	7.30	9.50	38	3.00
40.55652.0147	1.47	.0579	7.35	9.50	38	3.00
40.55652.0148	1.48	.0583	7.40	9.50	38	3.00
40.55652.0149	1.49	.0587	7.45	9.50	38	3.00
40.55652.0150	1.50	.0591	7.50	9.50	38	3.00
40.55652.0151	1.51	.0594	7.55	10.50	38	3.00
40.55652.0152	1.52	.0598	7.60	10.50	38	3.00
40.55652.0153	1.53	.0602	7.65	10.50	38	3.00
40.55652.0154	1.54	.0606	7.70	10.50	38	3.00
40.55652.0155	1.55	.0610	7.75	10.50	38	3.00
40.55652.0156	1.56	.0614	7.80	10.50	38	3.00
40.55652.0157	1.57	.0618	7.85	10.50	38	3.00
40.55652.0158	1.58	.0622	7.90	10.50	38	3.00
40.55652.0159	1.59	.0626	7.95	10.50	38	3.00
40.55652.0160	1.60	.0630	8.00	10.50	38	3.00
40.55652.0161	1.61	.0634	8.05	10.50	38	3.00
40.55652.0162	1.62	.0638	8.10	10.50	38	3.00
40.55652.0163	1.63	.0642	8.15	10.50	38	3.00
40.55652.0164	1.64	.0646	8.20	10.50	38	3.00
40.55652.0165	1.65	.0650	8.25	10.50	38	3.00
40.55652.0166	1.66	.0654	8.30	10.50	38	3.00
40.55652.0167	1.67	.0657	8.35	10.50	38	3.00

- All dimensions are millimeters unless otherwise noted
- For cutting data see pg. 158



Microtricut

Art. 55652 Cont.



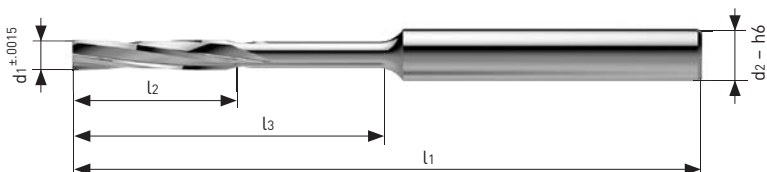
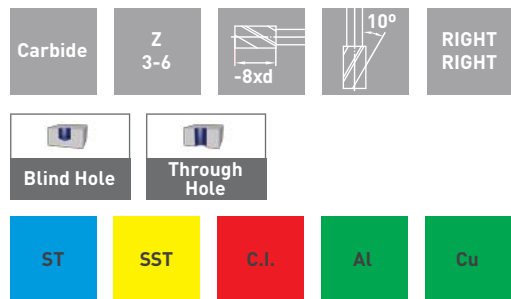
Catalog Number	d1	d1 (in.)	l2	l3	l1	d2
40.55652.0168	1.68	.0661	8.40	10.50	38	3.00
40.55652.0169	1.69	.0665	8.45	10.50	38	3.00
40.55652.0170	1.70	.0669	8.50	10.50	38	3.00
40.55652.0171	1.71	.0673	8.55	11.50	38	3.00
40.55652.0172	1.72	.0677	8.60	11.50	38	3.00
40.55652.0173	1.73	.0681	8.65	11.50	38	3.00
40.55652.0174	1.74	.0685	8.70	11.50	38	3.00
40.55652.0175	1.75	.0689	8.75	11.50	38	3.00
40.55652.0176	1.76	.0693	8.80	11.50	38	3.00
40.55652.0177	1.77	.0697	8.85	11.50	38	3.00
40.55652.0178	1.78	.0701	8.90	11.50	38	3.00
40.55652.0179	1.79	.0705	8.95	11.50	38	3.00
40.55652.0180	1.80	.0709	9.00	11.50	38	3.00
40.55652.0181	1.81	.0713	9.05	11.50	38	3.00
40.55652.0182	1.82	.0717	9.10	11.50	38	3.00
40.55652.0183	1.83	.0720	9.15	11.50	38	3.00
40.55652.0184	1.84	.0724	9.20	11.50	38	3.00
40.55652.0185	1.85	.0728	9.25	11.50	38	3.00
40.55652.0186	1.86	.0732	9.30	11.50	38	3.00
40.55652.0187	1.87	.0736	9.35	11.50	38	3.00
40.55652.0188	1.88	.0740	9.40	11.50	38	3.00
40.55652.0189	1.89	.0744	9.45	11.50	38	3.00
40.55652.0190	1.90	.0748	9.50	11.50	38	3.00
40.55652.0191	1.91	.0752	9.55	12.50	38	3.00
40.55652.0192	1.92	.0756	9.60	12.50	38	3.00
40.55652.0193	1.93	.0760	9.65	12.50	38	3.00
40.55652.0194	1.94	.0764	9.70	12.50	38	3.00
40.55652.0195	1.95	.0768	9.75	12.50	38	3.00
40.55652.0196	1.96	.0772	9.80	12.50	38	3.00
40.55652.0197	1.97	.0776	9.85	12.50	38	3.00
40.55652.0198	1.98	.0780	9.90	12.50	38	3.00
40.55652.0199	1.99	.0783	9.95	12.50	38	3.00
40.55652.0200	2.00	.0787	10.00	12.50	38	3.00
40.55652.0201	2.01	.0791	10.05	12.50	38	3.00
40.55652.0202	2.02	.0795	10.10	12.50	38	3.00
40.55652.0203	2.03	.0799	10.15	12.50	38	3.00
40.55652.0204	2.04	.0803	10.20	12.50	38	3.00
40.55652.0205	2.05	.0807	10.25	12.50	38	3.00
40.55652.0206	2.06	.0811	10.30	12.50	38	3.00

Catalog Number	d1	d1 (in.)	l2	l3	l1	d2
40.55652.0207	2.07	.0815	10.35	12.50	38	3.00
40.55652.0208	2.08	.0819	10.40	12.50	38	3.00
40.55652.0209	2.09	.0823	10.45	12.50	38	3.00
40.55652.0210	2.10	.0827	10.50	12.50	38	3.00
40.55652.0211	2.11	.0831	10.55	12.50	38	3.00
40.55652.0212	2.12	.0835	10.60	12.50	38	3.00
40.55652.0213	2.13	.0839	10.65	13.50	38	3.00
40.55652.0214	2.14	.0843	10.70	13.50	38	3.00
40.55652.0215	2.15	.0846	10.75	13.50	38	3.00
40.55652.0216	2.16	.0850	10.80	13.50	38	3.00
40.55652.0217	2.17	.0854	10.85	13.50	38	3.00
40.55652.0218	2.18	.0858	10.90	13.50	38	3.00
40.55652.0219	2.19	.0862	10.95	13.50	38	3.00
40.55652.0220	2.20	.0866	11.00	13.50	38	3.00
40.55652.0221	2.21	.0870	11.05	13.50	38	3.00
40.55652.0222	2.22	.0874	11.10	13.50	38	3.00
40.55652.0223	2.23	.0878	11.15	13.50	38	3.00
40.55652.0224	2.24	.0882	11.20	13.50	38	3.00
40.55652.0225	2.25	.0886	11.25	13.50	38	3.00
40.55652.0226	2.26	.0890	11.30	13.50	38	3.00
40.55652.0227	2.27	.0894	11.35	13.50	38	3.00
40.55652.0228	2.28	.0898	11.40	13.50	38	3.00
40.55652.0229	2.29	.0902	11.45	13.50	38	3.00
40.55652.0230	2.30	.0906	11.50	13.50	38	3.00
40.55652.0231	2.31	.0909	11.55	13.50	38	3.00
40.55652.0232	2.32	.0913	11.60	13.50	38	3.00
40.55652.0233	2.33	.0917	11.65	13.50	38	3.00
40.55652.0234	2.34	.0921	11.70	13.50	38	3.00
40.55652.0235	2.35	.0925	11.75	13.50	38	3.00
40.55652.0236	2.36	.0929	11.80	13.50	38	3.00
40.55652.0237	2.37	.0933	11.85	14.50	38	3.00
40.55652.0238	2.38	.0937	11.90	14.50	38	3.00
40.55652.0239	2.39	.0941	11.95	14.50	38	3.00
40.55652.0240	2.40	.0945	12.00	14.50	38	3.00
40.55652.0241	2.41	.0949	12.05	14.50	38	3.00
40.55652.0242	2.42	.0953	12.10	14.50	38	3.00
40.55652.0243	2.43	.0957	12.15	14.50	38	3.00
40.55652.0244	2.44	.0961	12.20	14.50	38	3.00
40.55652.0245	2.45	.0965	12.25	14.50	38	3.00

Catalog Number	d1	d1 (in.)	l2	l3	l1	d2
40.55652.0246	2.46	.0969	12.30	14.50	38	3.00
40.55652.0247	2.47	.0972	12.35	14.50	38	3.00
40.55652.0248	2.48	.0976	12.40	14.50	38	3.00
40.55652.0249	2.49	.0980	12.45	14.50	38	3.00
40.55652.0250	2.50	.0984	12.50	14.50	38	3.00
40.55652.0251	2.51	.0988	12.55	14.50	38	3.00
40.55652.0252	2.52	.0992	12.60	14.50	38	3.00
40.55652.0253	2.53	.0996	12.65	14.50	38	3.00
40.55652.0254	2.54	.1000	12.70	14.50	38	3.00
40.55652.0255	2.55	.1004	12.75	14.50	38	3.00
40.55652.0256	2.56	.1008	12.80	14.50	38	3.00
40.55652.0257	2.57	.1012	12.85	14.50	38	3.00
40.55652.0258	2.58	.1016	12.90	14.50	38	3.00
40.55652.0259	2.59	.1020	12.95	14.50	38	3.00
40.55652.0260	2.60	.1024	13.00	14.50	38	3.00
40.55652.0261	2.61	.1028	13.05	14.50	38	3.00
40.55652.0262	2.62	.1031	13.10	14.50	38	3.00
40.55652.0263	2.63	.1035	13.15	14.50	38	3.00
40.55652.0264	2.64	.1039	13.20	14.50	38	3.00
40.55652.0265	2.65	.1043	13.25	14.50	38	3.00
40.55652.0266	2.66	.1047	13.30	16.50	38	3.00
40.55652.0267	2.67	.1051	13.35	16.50	38	3.00
40.55652.0268	2.68	.1055	13.40	16.50	38	3.00
40.55652.0269	2.69	.1059	13.45	16.50	38	3.00
40.55652.0270	2.70	.1063	13.50	16.50	38	3.00
40.55652.0271	2.71	.1067	13.55	16.50	38	3.00
40.55652.0272	2.72	.1071	13.60	16.50	38	3.00

Catalog Number	d1	d1 (in.)	l2	l3	l1	d2
40.55652.0273	2.73	.1075	13.65	16.50	38	3.00
40.55652.0274	2.74	.1079	13.70	16.50	38	3.00
40.55652.0275	2.75	.1083	13.75	16.50	38	3.00
40.55652.0276	2.76	.1087	13.80	16.50	38	3.00
40.55652.0277	2.77	.1091	13.85	16.50	38	3.00
40.55652.0278	2.78	.1094	13.90	16.50	38	3.00
40.55652.0279	2.79	.1098	13.95	16.50	38	3.00
40.55652.0280	2.80	.1102	14.00	16.50	38	3.00
40.55652.0281	2.81	.1106	14.05	16.50	38	3.00
40.55652.0282	2.82	.1110	14.10	16.50	38	3.00
40.55652.0283	2.83	.1114	14.15	16.50	38	3.00
40.55652.0284	2.84	.1118	14.20	16.50	38	3.00
40.55652.0285	2.85	.1122	14.25	16.50	38	3.00
40.55652.0286	2.86	.1126	14.30	16.50	38	3.00
40.55652.0287	2.87	.1130	14.35	16.50	38	3.00
40.55652.0288	2.88	.1134	14.40	16.50	38	3.00
40.55652.0289	2.89	.1138	14.45	16.50	38	3.00
40.55652.0290	2.90	.1142	14.50	16.50	38	3.00
40.55652.0291	2.91	.1146	14.55	16.50	38	3.00
40.55652.0292	2.92	.1150	14.60	16.50	38	3.00
40.55652.0293	2.93	.1154	14.65	16.50	38	3.00
40.55652.0294	2.94	.1157	14.70	16.50	38	3.00
40.55652.0295	2.95	.1161	14.75	16.50	38	3.00
40.55652.0296	2.96	.1165	14.80	16.50	38	3.00
40.55652.0297	2.97	.1169	14.85	16.50	38	3.00
40.55652.0298	2.98	.1173	14.90	16.50	38	3.00
40.55652.0299	2.99	.1177	14.95	16.50	38	3.00

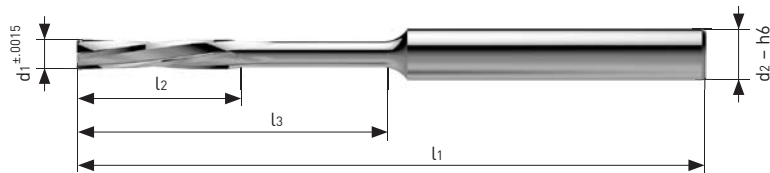
- All dimensions are millimeters unless otherwise noted
- For cutting data see pg. 158



Catalog Number	Ø	d1	d1 (in.)	l2	l3	l1	d2	z
40.58000.00987	1.0-P7	.987	.0389	8.00	16.00	48	3.00	3.00
40.58000.01005	1.0-H7	1.005	.0396	8.00	16.00	48	3.00	3.00
40.58000.01011	1.0-F7	1.011	.0398	8.00	16.00	48	3.00	3.00
40.58000.01102		1.102	.0434	8.00	16.00	48	3.00	3.00
40.58000.01115		1.115	.0439	8.00	16.00	48	3.00	3.00
40.58000.01255		1.255	.0494	8.00	16.00	48	3.00	3.00
40.58000.01480		1.480	.0583	10.00	20.00	52	3.00	3.00
40.58000.01679		1.679	.0661	11.00	22.00	54	3.00	3.00
40.58000.01690		1.690	.0665	11.00	22.00	54	3.00	3.00
40.58000.01692		1.692	.0666	11.00	22.00	54	3.00	3.00
40.58000.01695		1.695	.0667	11.00	22.00	54	3.00	3.00
40.58000.01697		1.697	.0668	11.00	22.00	54	3.00	3.00
40.58000.01701		1.701	.0670	11.00	22.00	54	3.00	3.00
40.58000.01790		1.790	.0705	11.00	22.00	54	3.00	3.00
40.58000.01985		1.985	.0781	11.00	22.00	54	3.00	4.00
40.58000.01987	2.0-P7	1.987	.0782	11.00	22.00	54	3.00	4.00
40.58000.01995		1.995	.0785	11.00	22.00	54	3.00	4.00
40.58000.02005	2.0-H7	2.005	.0789	11.00	22.00	54	3.00	4.00
40.58000.02011	2.0-F7	2.011	.0792	11.00	22.00	54	3.00	4.00
40.58000.02015		2.015	.0793	11.00	22.00	54	3.00	4.00
40.58000.02040		2.040	.0803	11.00	22.00	54	3.00	4.00
40.58000.02240		2.240	.0882	12.00	24.00	56	3.00	4.00
40.58000.02285		2.285	.0900	12.00	24.00	56	3.00	4.00
40.58000.02483		2.483	.0978	14.00	26.00	56	3.00	4.00
40.58000.02970		2.970	.1169	15.00	30.00	60	3.00	4.00
40.58000.02980		2.980	.1173	15.00	30.00	60	3.00	4.00
40.58000.02987	3.0-P7	2.987	.1176	15.00	30.00	60	3.00	4.00
40.58000.02995		2.995	.1179	15.00	30.00	60	3.00	4.00
40.58000.03005	3.0-H7	3.005	.1183	15.00	30.00	60	3.00	4.00
40.58000.03011	3.0-F7	3.011	.1185	15.00	30.00	60	3.00	4.00
40.58000.03020		3.020	.1189	15.00	30.00	60	3.00	4.00

Catalog Number	Ø	d1	d1 (in.)	l2	l3	l1	d2	z
40.58000.03030		3.030	.1192	15.00	30.00	60	3.00	4.00
40.58000.03045		3.045	.1199	15.00	30.00	60	3.00	4.00
40.58000.03050		3.050	.1201	15.00	30.00	60	3.00	4.00
40.58000.03060		3.060	.1205	15.00	30.00	60	3.00	4.00
40.58000.03870		3.870	.1524	19.00	38.00	76	6.00	4.00
40.58000.03970		3.970	.1563	19.00	38.00	76	6.00	6.00
40.58000.03980		3.980	.1567	19.00	38.00	76	6.00	6.00
40.58000.03986	4.0-P7	3.986	.1569	19.00	38.00	76	6.00	6.00
40.58000.03992		3.992	.1572	19.00	38.00	76	6.00	6.00
40.58000.04006	4.0-H7	4.006	.1577	19.00	38.00	76	6.00	6.00
40.58000.04016	4.0-F7	4.016	.1581	19.00	38.00	76	6.00	6.00
40.58000.04020		4.020	.1583	19.00	38.00	76	6.00	6.00
40.58000.04025		4.025	.1585	19.00	38.00	76	6.00	6.00
40.58000.04030		4.030	.1587	19.00	38.00	76	6.00	6.00
40.58000.04040		4.040	.1591	19.00	38.00	76	6.00	6.00
40.58000.04970		4.970	.1957	23.00	46.00	84	6.00	6.00
40.58000.04980		4.980	.1961	23.00	46.00	84	6.00	6.00
40.58000.04986	5.0-P7	4.986	.1963	23.00	46.00	84	6.00	6.00
40.58000.05006	5.0-H7	5.006	.1971	23.00	46.00	84	6.00	6.00
40.58000.05018	5.0-F7	5.018	.1976	23.00	46.00	84	6.00	6.00
40.58000.05020		5.020	.1976	23.00	46.00	84	6.00	6.00
40.58000.05030		5.030	.1980	23.00	46.00	84	6.00	6.00
40.58000.05206		5.206	.2050	23.00	46.00	84	6.00	6.00
40.58000.05220		5.220	.2055	23.00	46.00	84	6.00	6.00
40.58000.05970		5.970	.2350	26.00	52.00	90	6.00	6.00
40.58000.05980		5.980	.2354	26.00	52.00	90	6.00	6.00
40.58000.05986	6.0-P7	5.986	.2357	26.00	52.00	90	6.00	6.00
40.58000.06006	6.0-H7	6.006	.2365	26.00	52.00	90	6.00	6.00
40.58000.06018	6.0-F7	6.018	.2369	26.00	52.00	90	6.00	6.00
40.58000.06020		6.020	.2370	26.00	52.00	90	6.00	6.00
40.58000.06030		6.030	.2374	26.00	52.00	90	6.00	6.00

- All dimensions are millimeters unless otherwise noted
- Intermediate diameters available upon request
- For cutting data see pg. 159

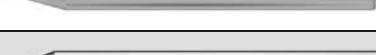


Catalog Number	Ø	d1	d1 (in.)	l2	l3	l1	d2	z
40.58500.00987	1.0-P7	.987	.0389	8.00	16.00	48	3.00	3.00
40.58500.01005	1.0-H7	1.005	.0396	8.00	16.00	48	3.00	3.00
40.58500.01011	1.0-F7	1.011	.0398	8.00	16.00	48	3.00	3.00
40.58500.01102		1.102	.0434	8.00	16.00	48	3.00	3.00
40.58500.01115		1.115	.0439	8.00	16.00	48	3.00	3.00
40.58500.01255		1.255	.0494	8.00	16.00	48	3.00	3.00
40.58500.01480		1.480	.0583	10.00	20.00	52	3.00	3.00
40.58500.01679		1.679	.0661	11.00	22.00	54	3.00	3.00
40.58500.01690		1.690	.0665	11.00	22.00	54	3.00	3.00
40.58500.01692		1.692	.0666	11.00	22.00	54	3.00	3.00
40.58500.01695		1.695	.0667	11.00	22.00	54	3.00	3.00
40.58500.01697		1.697	.0668	11.00	22.00	54	3.00	3.00
40.58500.01701		1.701	.0670	11.00	22.00	54	3.00	3.00
40.58500.01790		1.790	.0705	11.00	22.00	54	3.00	3.00
40.58500.01985		1.985	.0781	11.00	22.00	54	3.00	4.00
40.58500.01987	2.0-P7	1.987	.0782	11.00	22.00	54	3.00	4.00
40.58500.01995		1.995	.0785	11.00	22.00	54	3.00	4.00
40.58500.02005	2.0-H7	2.005	.0789	11.00	22.00	54	3.00	4.00
40.58500.02011	2.0-F7	2.011	.0792	11.00	22.00	54	3.00	4.00
40.58500.02015		2.015	.0793	11.00	22.00	54	3.00	4.00
40.58500.02040		2.040	.0803	11.00	22.00	54	3.00	4.00
40.58500.02240		2.240	.0882	12.00	24.00	56	3.00	4.00
40.58500.02285		2.285	.0900	12.00	24.00	56	3.00	4.00
40.58500.02483		2.483	.0978	14.00	26.00	58	3.00	4.00
40.58500.02970		2.970	.1169	15.00	30.00	60	3.00	4.00
40.58500.02980		2.980	.1173	15.00	30.00	60	3.00	4.00
40.58500.02987	3.0-P7	2.987	.1176	15.00	30.00	60	3.00	4.00
40.58500.02995		2.995	.1179	15.00	30.00	60	3.00	4.00
40.58500.03005	3.0-H7	3.005	.1183	15.00	30.00	60	3.00	4.00
40.58500.03011	3.0-F7	3.011	.1185	15.00	30.00	60	3.00	4.00
40.58500.03020		3.020	.1189	15.00	30.00	60	3.00	4.00

Catalog Number	Ø	d1	d1 (in.)	l2	l3	l1	d2	z
40.58500.03030		3.030	.1192	15.00	30.00	60	3.00	4.00
40.58500.03045		3.045	.1199	15.00	30.00	60	3.00	4.00
40.58500.03050		3.050	.1201	15.00	30.00	60	3.00	4.00
40.58500.03060		3.060	.1205	15.00	30.00	60	3.00	4.00
40.58500.03870		3.870	.1524	19.00	38.00	76	6.00	4.00
40.58500.03970		3.970	.1563	19.00	38.00	76	6.00	6.00
40.58500.03980		3.980	.1567	19.00	38.00	76	6.00	6.00
40.58500.03986	4.0-P7	3.986	.1569	19.00	38.00	76	6.00	6.00
40.58500.03992		3.992	.1572	19.00	38.00	76	6.00	6.00
40.58500.04006	4.0-H7	4.006	.1577	19.00	38.00	76	6.00	6.00
40.58500.04016	4.0-F7	4.016	.1581	19.00	38.00	76	6.00	6.00
40.58500.04020		4.020	.1583	19.00	38.00	76	6.00	6.00
40.58500.04025		4.025	.1585	19.00	38.00	76	6.00	6.00
40.58500.04030		4.030	.1587	19.00	38.00	76	6.00	6.00
40.58500.04040		4.040	.1591	19.00	38.00	76	6.00	6.00
40.58500.04970		4.970	.1957	23.00	46.00	84	6.00	6.00
40.58500.04980		4.980	.1961	23.00	46.00	84	6.00	6.00
40.58500.04986	5.0-P7	4.986	.1963	23.00	46.00	84	6.00	6.00
40.58500.05006	5.0-H7	5.006	.1971	23.00	46.00	84	6.00	6.00
40.58500.05018	5.0-F7	5.018	.1976	23.00	46.00	84	6.00	6.00
40.58500.05020		5.020	.1976	23.00	46.00	84	6.00	6.00
40.58500.05030		5.030	.1980	23.00	46.00	84	6.00	6.00
40.58500.05206		5.206	.2050	23.00	46.00	84	6.00	6.00
40.58500.05220		5.220	.2055	23.00	46.00	84	6.00	6.00
40.58500.05970		5.970	.2350	26.00	52.00	90	6.00	6.00
40.58500.05980		5.980	.2354	26.00	52.00	90	6.00	6.00
40.58500.05986	6.0-P7	5.986	.2357	26.00	52.00	90	6.00	6.00
40.58500.06006	6.0-H7	6.006	.2365	26.00	52.00	90	6.00	6.00
40.58500.06018	6.0-F7	6.018	.2369	26.00	52.00	90	6.00	6.00
40.58500.06020		6.020	.2370	26.00	52.00	90	6.00	6.00
40.58500.06030		6.030	.2374	26.00	52.00	90	6.00	6.00

- All dimensions are millimeters unless otherwise noted
- Intermediate diameters available upon request
- For cutting data see pg. 159

Milling

	Article	Diameter Range	Increments	Cutting Length	Point Angle	Helix Angle	Number of Teeth	
Engraving Mill								
	70030	.02-.15	.01		30°	0°	1	
	70040	.02-.15	.01		40°	0°	1	
	70050	.02-.15	.01		50°	0°	1	
	70060	.02-.15	.01		60°	0°	1	
	70090	.02-.15	.01		90°	0°	1	
	70130	.04-.10	.01		30°	0°	1	
	70140	.04-.10	.01		40°	0°	1	
	70150	.04-.10	.01		50°	0°	1	
	70160	.04-.10	.01		60°	0°	1	
	70190	.04-.10	.01		90°	0°	1	
Micro End Mill								
	72075	.20-2.00	.10	.75 × Ø		30°	2	
	72150	.10-2.00	.10	1.5 × Ø		30°	2	
	42000	.10-3.00	.05	3 × Ø		30°	2	
	72500	.30-2.50	.10	5 × Ø		30°	2	
	72800	.40-2.50	.10	8 × Ø		30°	2	
	73130	.30-3.00	.10	1.3 × Ø		30°	3	
	73200	.30-2.90	.10	2 × Ø		30°	3	

	Material	Workpiece Material*							Application *	Page
		P	M	K	N	S	H	O		
	Carbide	✓	✓	✓	✓	✓		✓		108
	Carbide	✓	✓	✓	✓	✓		✓		108
	Carbide	✓	✓	✓	✓	✓		✓		108
	Carbide	✓	✓	✓	✓	✓		✓		108
	Carbide	✓	✓	✓	✓	✓		✓		108
	Carbide	✓	✓	✓	✓	✓		✓		110
	Carbide	✓	✓	✓	✓	✓		✓		110
	Carbide	✓	✓	✓	✓	✓		✓		110
	Carbide	✓	✓	✓	✓	✓		✓		110
	Carbide	✓	•	✓	✓	•		•	      	112
	Carbide	✓	•	✓	✓	•		•	      	112
	Carbide	✓	•	✓	✓	•		•	      	113
	Carbide	✓	•	✓	✓	•		•	      	114
	Carbide	✓	•	✓	✓	•		•	      	114
	Carbide	✓	•	✓	•	•			      	116
	Carbide	✓	•	✓	•	•			      	116

* S. 142+143 p. 142+143 ✓ outstanding • suitable



Milling

	Article	Diameter Range	Increments	Cutting Length	Point Angle	Helix Angle	Number of Teeth	
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Micro End Mill

	73300	.30–2.90	.10	3 × Ø		30°	3	
	73800	.50–2.50	.10	8 × Ø		30°	3	
	73725	.30–2.90	.10	2.5 × Ø		45°	3	
	43105	.30–3.00	.10	1 × Ø		35°	3	
	43305	.30–3.00	.10	3 × Ø		35°	3	
	74720	.30–2.90	.10	2 × Ø		40°	4	
	74740	.40–2.90	.10	4 × Ø		40°	4	

Ball Nose End Mill

	74075	.20–2.00	.10	.75 × Ø		30°	2	
	74150	.20–2.00	.10	1.5 × Ø		30°	2	
	74300	.20–2.80	.10	3 × Ø		30°	2	

End Mill

	40000	2.00–12.00	.50	DIN 6528		30°	2	
	40002	2.00–12.00	.50	DIN 6528		30°	3	
	40004	2.00–12.00	.50	DIN 6528		30°	4	
	47000	3.00–2.00	1.00	1.5–4 × Ø		55°	2	
	47500	6.00–2.00	2.00	4–8 × Ø		55°	2	
	76300	1.50–6.00	.50	1.5–4 × Ø		30°	3	

	Material	Workpiece Material*							Application *	Page
		P	M	K	N	S	H	O		
	Carbide	✓	•	✓	•	•				116
	Carbide	✓	•	✓	✓	•				116
	Carbide	✓	✓	✓	•	✓				118
	Carbide; Cro-Nova	✓	✓	•	✓	✓	•	•		119
	Carbide; Cro-Nova	✓	✓	•	✓	✓	•	•		119
	Carbide	✓	✓	✓	•	•				120
	Carbide	✓	✓	✓	•	•				121
	Carbide	✓	•	✓	✓	•		•		122
	Carbide	✓	•	✓	✓	•		•		122
	Carbide	✓	•	✓	✓	•		•		122
	Carbide	•		•	✓			•		124
	Carbide	✓	•	✓	✓					125
	Carbide	✓	•	✓						126
	Carbide				✓			•		127
	Carbide				✓			•		128
	Carbide	✓	•	✓						129

* S. 142+143 p. 142+143 ✓ outstanding • suitable



Art. 70030

Carbide

Z
1

Groove
Flat

ST	SST	C.I.	Al	Cu
Brass	Mg	Ti	Plastic	

Art. 70040

Carbide

Z
1

Groove
Flat

ST	SST	C.I.	Al	Cu
Brass	Mg	Ti	Plastic	

Art. 70050

Carbide

Z
1

Groove
Flat

ST	SST	C.I.	Al	Cu
Brass	Mg	Ti	Plastic	

Art. 70060

Carbide

Z
1

Groove
Flat

ST	SST	C.I.	Al	Cu
Brass	Mg	Ti	Plastic	

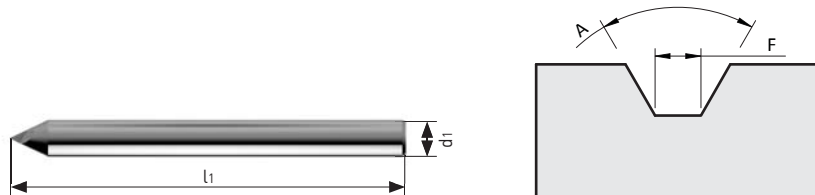
Art. 70090

Carbide

Z
1

Groove
Flat

ST	SST	C.I.	Al	Cu
Brass	Mg	Ti	Plastic	



Catalog Number	Point Angle A	Flat Width		L1	d1
		F	F (in.)		
40.70030.0002	30°	.02	.0008	33	3.00
40.70030.0003		.03	.0012	33	3.00
40.70030.0004		.04	.0016	33	3.00
40.70030.0005		.05	.0020	33	3.00
40.70030.0006		.06	.0024	33	3.00
40.70030.0007		.07	.0028	33	3.00
40.70030.0008		.08	.0031	33	3.00
40.70030.0009		.09	.0035	33	3.00
40.70030.0010		.10	.0039	33	3.00
40.70030.0012		.12	.0047	33	3.00
40.70030.0015		.15	.0059	33	3.00
40.70040.0002	40°	.02	.0008	33	3.00
40.70040.0003		.03	.0012	33	3.00
40.70040.0004		.04	.0016	33	3.00
40.70040.0005		.05	.0020	33	3.00
40.70040.0006		.06	.0024	33	3.00
40.70040.0007		.07	.0028	33	3.00
40.70040.0008		.08	.0031	33	3.00
40.70040.0009		.09	.0035	33	3.00
40.70040.0010		.10	.0039	33	3.00
40.70040.0012		.12	.0047	33	3.00
40.70040.0015		.15	.0059	33	3.00
40.70050.0002	50°	.02	.0008	33	3.00
40.70050.0003		.03	.0012	33	3.00
40.70050.0004		.04	.0016	33	3.00
40.70050.0005		.05	.0020	33	3.00
40.70050.0006		.06	.0024	33	3.00
40.70050.0007		.07	.0028	33	3.00
40.70050.0008		.08	.0031	33	3.00
40.70050.0009		.09	.0035	33	3.00
40.70050.0010		.10	.0039	33	3.00
40.70050.0012		.12	.0047	33	3.00
40.70050.0015		.15	.0059	33	3.00

Catalog Number	Point Angle A	Flat Width		L1	d1
		F	F (in.)		
40.70060.0002	60°	.02	.0008	33	3.00
40.70060.0003		.03	.0012	33	3.00
40.70060.0004		.04	.0016	33	3.00
40.70060.0005		.05	.0020	33	3.00
40.70060.0006		.06	.0024	33	3.00
40.70060.0007		.07	.0028	33	3.00
40.70060.0008		.08	.0031	33	3.00
40.70060.0009		.09	.0035	33	3.00
40.70060.0010		.10	.0039	33	3.00
40.70060.0012		.12	.0047	33	3.00
40.70060.0015		.15	.0059	33	3.00
40.70090.0002	90°	.02	.0008	33	3.00
40.70090.0003		.03	.0012	33	3.00
40.70090.0004		.04	.0016	33	3.00
40.70090.0005		.05	.0020	33	3.00
40.70090.0006		.06	.0024	33	3.00
40.70090.0007		.07	.0028	33	3.00
40.70090.0008		.08	.0031	33	3.00
40.70090.0009		.09	.0035	33	3.00
40.70090.0010		.10	.0039	33	3.00
40.70090.0012		.12	.0047	33	3.00
40.70090.0015		.15	.0059	33	3.00

- All dimensions are millimeters unless otherwise noted
- For cutting data see pg. 160

Art. 70130

Carbide

Z
1

Groove Radius

ST

SST

C.I.

Al

Cu

Brass

Mg

Ti

Plastic

Art. 70140

Carbide

Z
1

Groove Radius

ST

SST

C.I.

Al

Cu

Brass

Mg

Ti

Plastic

Art. 70150

Carbide

Z
1

Groove Radius

ST

SST

C.I.

Al

Cu

Brass

Mg

Ti

Plastic

Art. 70160

Carbide

Z
1

Groove Radius

ST

SST

C.I.

Al

Cu

Brass

Mg

Ti

Plastic

Art. 70190

Carbide

Z
1

Groove Radius

ST

SST

C.I.

Al

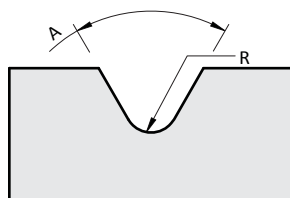
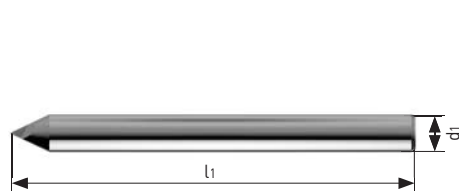
Cu

Brass

Mg

Ti

Plastic

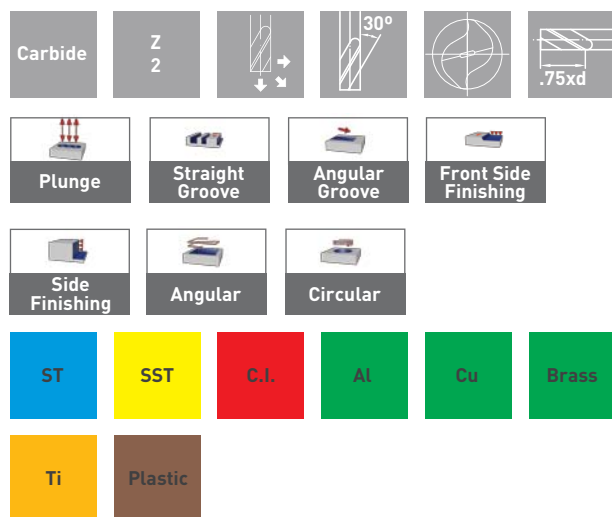


Catalog Number	Point Angle A	Radius		L1	d1
		R	R (in.)		
40.70130.0004	30°	.04	.0016	33	3.00
40.70130.0005		.05	.0020	33	3.00
40.70130.0006		.06	.0024	33	3.00
40.70130.0007		.07	.0028	33	3.00
40.70130.0008		.08	.0031	33	3.00
40.70130.0009		.09	.0035	33	3.00
40.70130.0010		.10	.0039	33	3.00
40.70140.0004	40°	.04	.0016	33	3.00
40.70140.0005		.05	.0020	33	3.00
40.70140.0006		.06	.0024	33	3.00
40.70140.0007		.07	.0028	33	3.00
40.70140.0008		.08	.0031	33	3.00
40.70140.0009		.09	.0035	33	3.00
40.70140.0010		.10	.0039	33	3.00
40.70150.0004	50°	.04	.0016	33	3.00
40.70150.0005		.05	.0020	33	3.00
40.70150.0006		.06	.0024	33	3.00
40.70150.0007		.07	.0028	33	3.00
40.70150.0008		.08	.0031	33	3.00
40.70150.0009		.09	.0035	33	3.00
40.70150.0010		.10	.0039	33	3.00
40.70160.0004	60°	.04	.0016	33	3.00
40.70160.0005		.05	.0020	33	3.00
40.70160.0006		.06	.0024	33	3.00
40.70160.0007		.07	.0028	33	3.00
40.70160.0008		.08	.0031	33	3.00
40.70160.0009		.09	.0035	33	3.00
40.70160.0010		.10	.0039	33	3.00
40.70190.0004	90°	.04	.0016	33	3.00
40.70190.0005		.05	.0020	33	3.00
40.70190.0006		.06	.0024	33	3.00
40.70190.0007		.07	.0028	33	3.00
40.70190.0008		.08	.0031	33	3.00
40.70190.0009		.09	.0035	33	3.00
40.70190.0010		.10	.0039	33	3.00

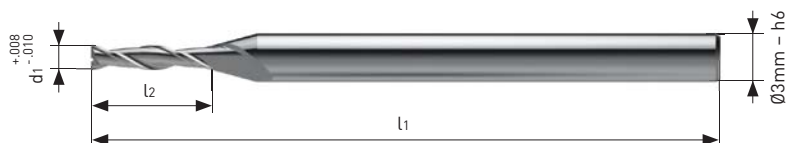
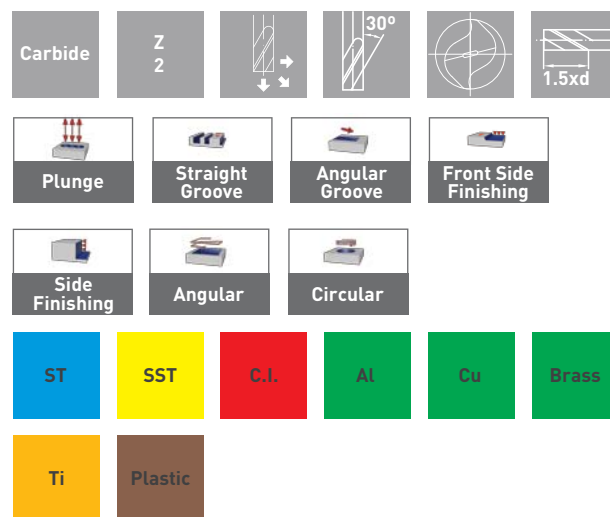
- All dimensions are millimeters unless otherwise noted
- For cutting data see pg. 160



Art. 72075



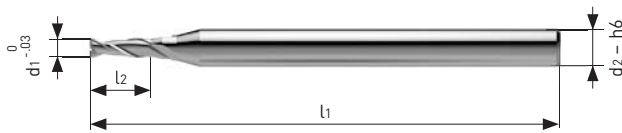
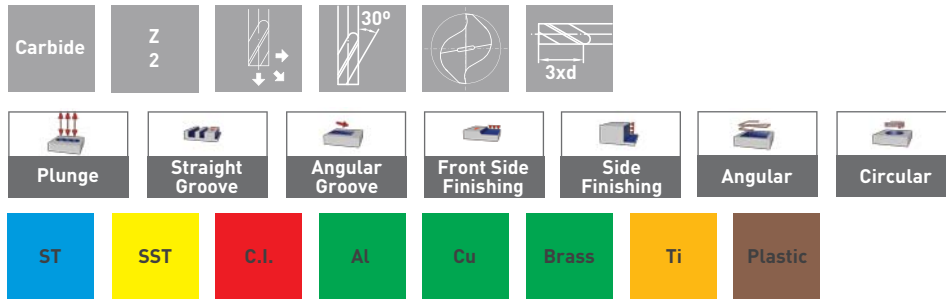
Art. 72150



d1	d1 (in.)	72075			72150		
		Catalog Number	l2	l1	Catalog Number	l2	l1
.10	.0039	—	—	—	40.72150.0010	.15	39
.15	.0059	—	—	—	40.72150.0015	.20	39
.20	.0079	40.72075.0020	.15	39	40.72150.0020	.30	39
.25	.0098	—	—	—	40.72150.0025	.35	39
.30	.0118	40.72075.0030	.25	39	40.72150.0030	.45	39
.40	.0157	40.72075.0040	.30	39	40.72150.0040	.60	39
.50	.0197	40.72075.0050	.37	39	40.72150.0050	.75	39
.60	.0236	40.72075.0060	.45	39	40.72150.0060	.90	39
.70	.0276	40.72075.0070	.53	39	40.72150.0070	1.05	39
.80	.0315	40.72075.0080	.60	39	40.72150.0080	1.20	39
.90	.0354	40.72075.0090	.70	39	40.72150.0090	1.35	39
1.00	.0394	40.72075.0100	.75	39	40.72150.0100	1.50	39
1.10	.0433	40.72075.0110	.90	39	40.72150.0110	1.65	39
1.20	.0472	40.72075.0120	.90	39	40.72150.0120	1.80	39
1.30	.0512	40.72075.0130	1.00	39	40.72150.0130	1.95	39
1.40	.0551	40.72075.0140	1.10	39	40.72150.0140	2.10	39
1.50	.0591	40.72075.0150	1.15	39	40.72150.0150	2.25	39
1.60	.0630	40.72075.0160	1.20	39	40.72150.0160	2.40	39
1.70	.0669	40.72075.0170	1.30	39	40.72150.0170	2.55	39
1.80	.0709	40.72075.0180	1.40	39	40.72150.0180	2.70	39
1.90	.0748	40.72075.0190	1.45	39	40.72150.0190	2.85	39
2.00	.0787	40.72075.0200	1.50	39	40.72150.0200	3.00	39
2.50	.0984	—	—	—	—	—	—

- All dimensions are millimeters unless otherwise noted
- * Indicates Ø4mm - h6 shank
- For cutting data see pg. 160

Art. 42000

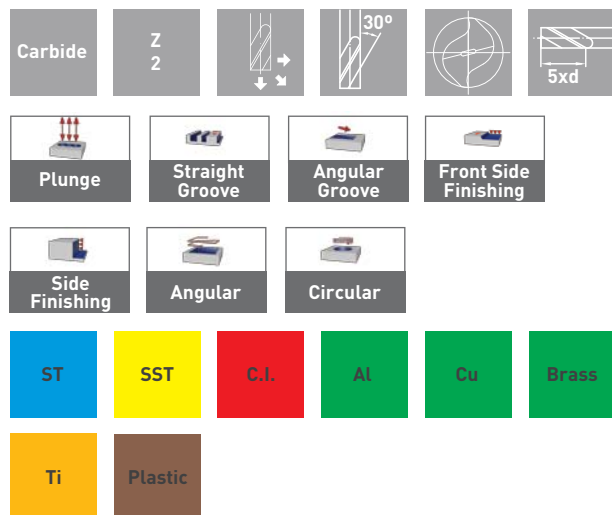


Catalog Number	d1	d1 (in.)	l2	l1	d2
40.42000.0010	.10	.0039	.30	38	3.00
40.42000.0015	.15	.0059	.45	38	3.00
40.42000.0020	.20	.0079	.60	38	3.00
40.42000.0025	.25	.0098	.75	38	3.00
40.42000.0030	.30	.0118	.90	38	3.00
40.42000.0035	.35	.0138	1.05	38	3.00
40.42000.0040	.40	.0157	1.20	38	3.00
40.42000.0045	.45	.0177	1.35	38	3.00
40.42000.0050	.50	.0197	1.50	38	3.00
40.42000.0055	.55	.0217	1.65	38	3.00
40.42000.0060	.60	.0236	1.80	38	3.00
40.42000.0065	.65	.0256	1.95	38	3.00
40.42000.0070	.70	.0276	2.10	38	3.00
40.42000.0075	.75	.0295	2.25	38	3.00
40.42000.0080	.80	.0315	2.40	38	3.00
40.42000.0085	.85	.0335	2.55	38	3.00
40.42000.0090	.90	.0354	2.70	38	3.00
40.42000.0095	.95	.0374	2.85	38	3.00
40.42000.0100	1.00	.0394	3.00	38	3.00
40.42000.0105	1.05	.0413	3.10	38	3.00
40.42000.0110	1.10	.0433	3.30	38	3.00
40.42000.0115	1.15	.0453	3.40	38	3.00
40.42000.0120	1.20	.0472	3.60	38	3.00
40.42000.0125	1.25	.0492	3.70	38	3.00
40.42000.0130	1.30	.0512	3.90	38	3.00

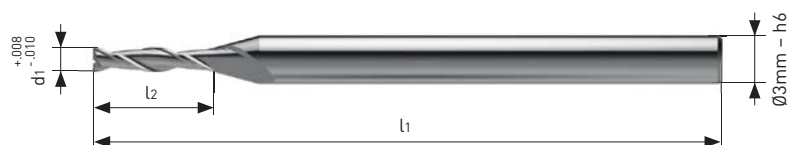
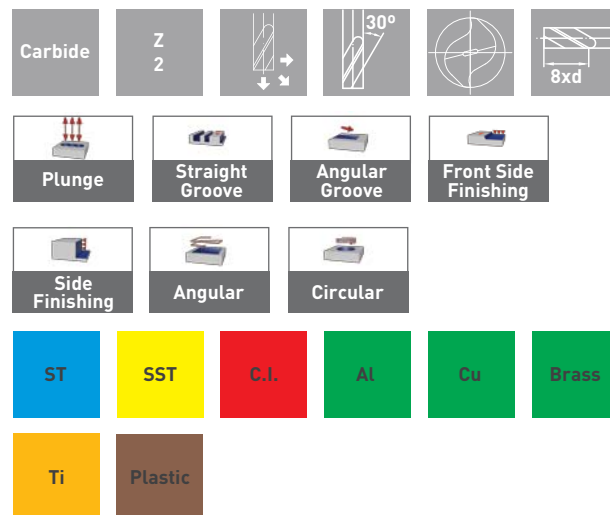
Catalog Number	d1	d1 (in.)	l2	l1	d2
40.42000.0135	1.35	.0531	4.00	38	3.00
40.42000.0140	1.40	.0551	4.20	38	3.00
40.42000.0145	1.45	.0571	4.30	38	3.00
40.42000.0150	1.50	.0591	4.50	38	3.00
40.42000.0155	1.55	.0610	4.60	38	3.00
40.42000.0160	1.60	.0630	4.80	38	3.00
40.42000.0165	1.65	.0650	4.90	38	3.00
40.42000.0170	1.70	.0669	5.10	38	3.00
40.42000.0175	1.75	.0689	5.20	38	3.00
40.42000.0180	1.80	.0709	5.40	38	3.00
40.42000.0185	1.85	.0728	5.50	38	3.00
40.42000.0190	1.90	.0748	5.70	38	3.00
40.42000.0195	1.95	.0768	5.80	38	3.00
40.42000.0200	2.00	.0787	6.00	38	3.00
40.42000.0210	2.10	.0827	6.30	38	3.00
40.42000.0220	2.20	.0866	6.60	38	3.00
40.42000.0230	2.30	.0906	6.90	38	3.00
40.42000.0240	2.40	.0945	7.20	38	3.00
40.42000.0250	2.50	.0984	7.50	38	3.00
40.42000.0260	2.60	.1024	7.80	38	3.00
40.42000.0270	2.70	.1063	8.10	38	3.00
40.42000.0280	2.80	.1102	8.40	38	3.00
40.42000.0290	2.90	.1142	8.70	38	3.00
40.42000.0300	3.00	.1181	9.00	38	3.00

- All dimensions are millimeters unless otherwise noted
- For cutting data see pg. 161

Art. 72500

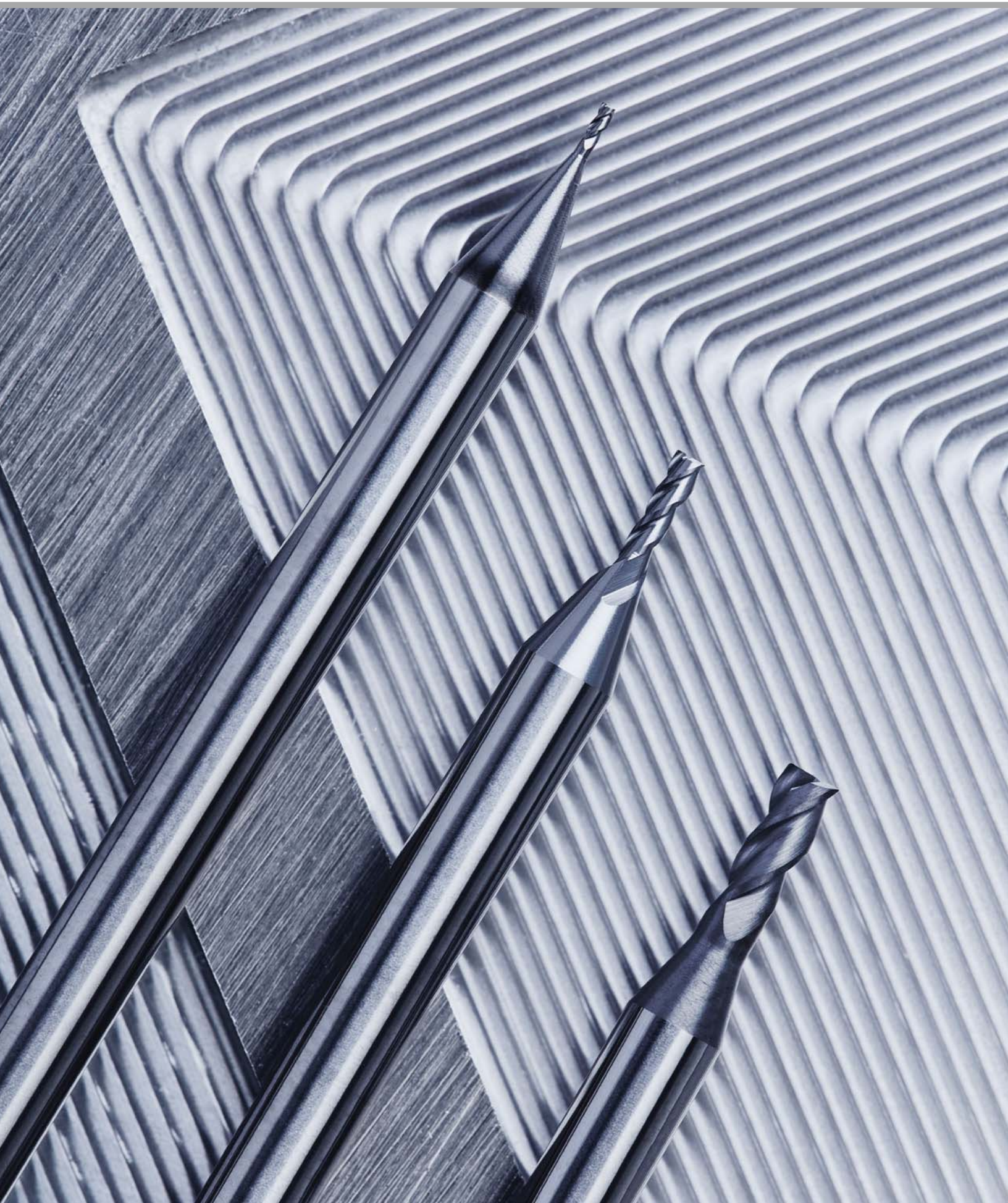


Art. 72800

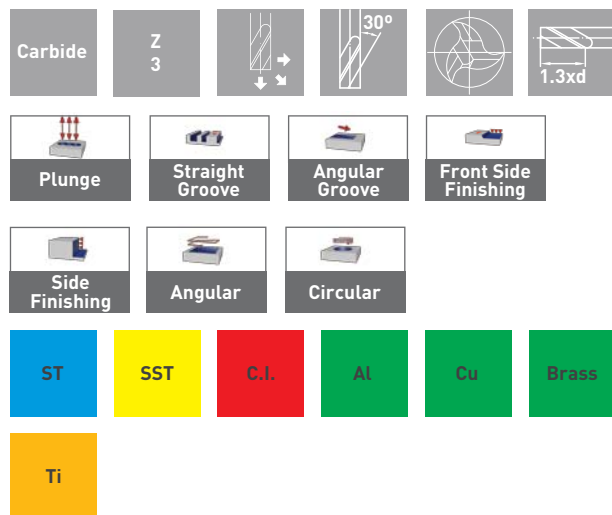


d1	d1 (in.)	72500			72800		
		Catalog Number	l2	l1	Catalog Number	l2	l1
.10	.0039	—	—	—	—	—	—
.15	.0059	—	—	—	—	—	—
.20	.0079	—	—	—	—	—	—
.25	.0098	—	—	—	—	—	—
.30	.0118	40.72500.0030	1.50	39	—	—	—
.40	.0157	40.72500.0040	2.00	39	40.72800.0040	3.20	39
.50	.0197	40.72500.0050	2.50	39	40.72800.0050	4.00	39
.60	.0236	40.72500.0060	3.00	39	40.72800.0060	5.00	39
.70	.0276	40.72500.0070	3.50	39	40.72800.0070	5.60	39
.80	.0315	40.72500.0080	4.00	39	40.72800.0080	6.00	39
.90	.0354	40.72500.0090	4.50	39	40.72800.0090	7.20	39
1.00	.0394	40.72500.0100	5.00	39	40.72800.0100	8.00	39
1.10	.0433	40.72500.0110	5.50	39	—	—	—
1.20	.0472	40.72500.0120	6.00	39	40.72800.0120	9.00	39
1.30	.0512	—	—	—	—	—	—
1.40	.0551	—	—	—	—	—	—
1.50	.0591	40.72500.0150	7.50	39	40.72800.0150*	12.00	50
1.60	.0630	—	—	—	—	—	—
1.70	.0669	—	—	—	—	—	—
1.80	.0709	—	—	—	—	—	—
1.90	.0748	—	—	—	—	—	—
2.00	.0787	40.72500.0200	10.00	39	40.72800.0200*	16.00	50
2.50	.0984	40.72500.0250	12.50	39	40.72800.0250*	20.00	50

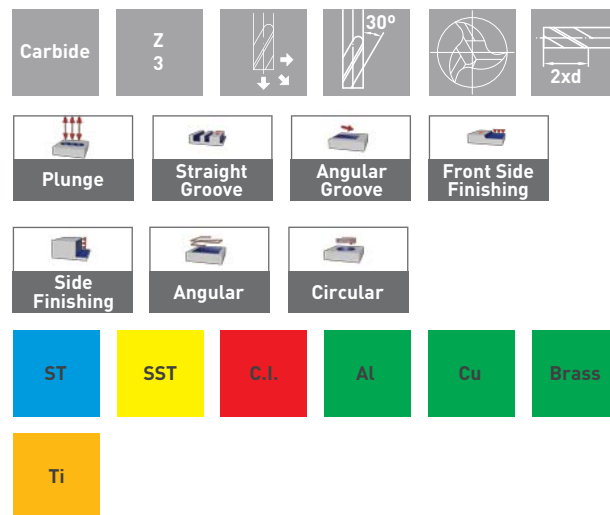
- All dimensions are millimeters unless otherwise noted
- * Indicates Ø4mm - h6 shank
- For cutting data see pg. 161



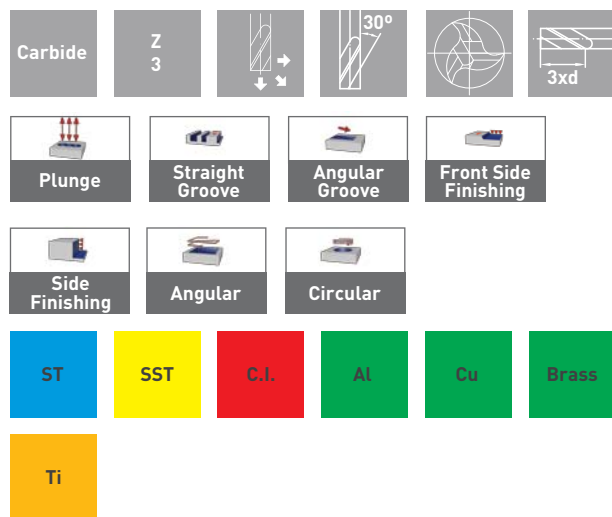
Art. 73130



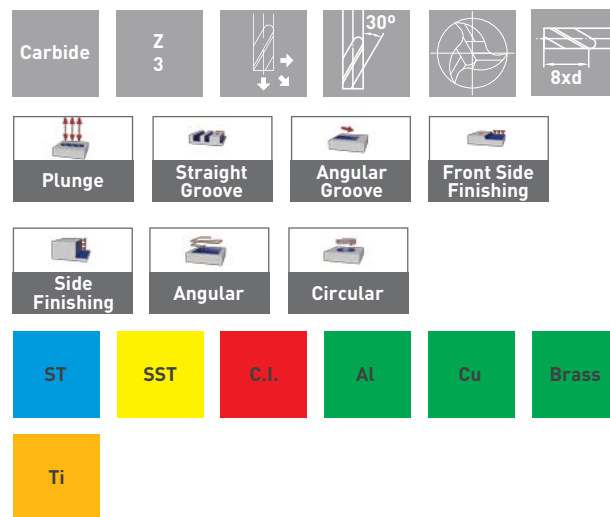
Art. 73200

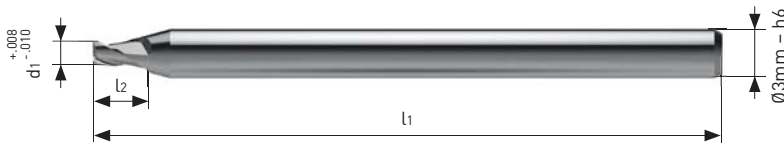


Art. 73300



Art. 73800



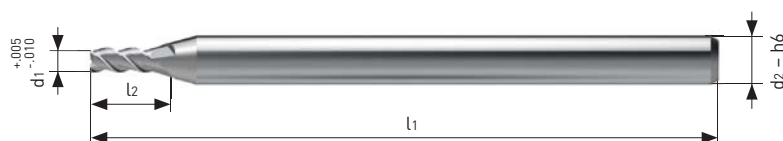
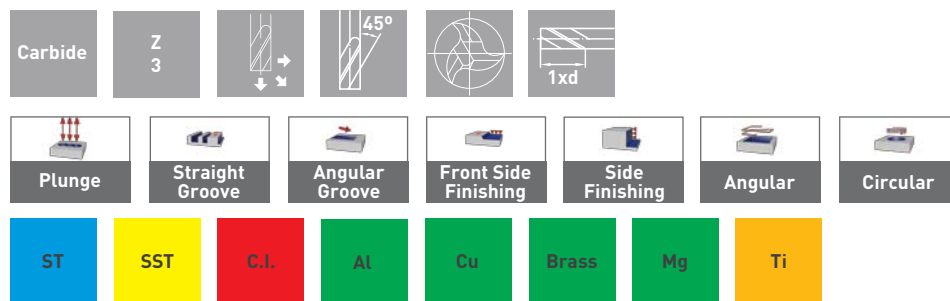


d1	d1 (in.)	73130			73200			73300			73800		
		Catalog Number	l2	l1	Catalog Number	l2	l1	Catalog Number	l2	l1	Catalog Number	l2	l1
.30	.0118	40.73130.0030	.40	39	40.73200.0030	.60	39	40.73300.0030	.90	39	—	—	—
.40	.0157	40.73130.0040	.50	39	40.73200.0040	.80	39	40.73300.0040	1.20	39	—	—	—
.45	.0177	40.73130.0045	.60	39	—	—	—	—	—	—	—	—	—
.50	.0197	40.73130.0050	.70	39	40.73200.0050	1.00	39	40.73300.0050	1.50	39	40.73800.0050	4.00	39
.60	.0236	40.73130.0060	.80	39	40.73200.0060	1.20	39	40.73300.0060	2.00	39	40.73800.0060	5.00	39
.70	.0276	40.73130.0070	.90	39	40.73200.0070	1.40	39	40.73300.0070	2.00	39	40.73800.0070	5.60	39
.75	.0295	—	—	—	40.73200.0075	1.50	39	40.73300.0075	2.00	39	—	—	—
.80	.0315	40.73130.0080	1.00	39	40.73200.0080	1.60	39	40.73300.0080	2.50	39	40.73800.0080	6.00	39
.90	.0354	40.73130.0090	1.30	39	40.73200.0090	1.80	39	40.73300.0090	2.50	39	40.73800.0090	7.20	39
1.00	.0394	40.73130.0100	1.30	39	40.73200.0100	2.00	39	40.73300.0100	3.00	39	40.73800.0100	8.00	39
1.10	.0433	40.73130.0110	1.50	39	40.73200.0110	2.20	39	40.73300.0110	3.30	39	—	—	—
1.20	.0472	40.73130.0120	1.60	39	40.73200.0120	2.40	39	40.73300.0120	4.00	39	40.73800.0120	9.00	39
1.30	.0512	40.73130.0130	1.80	39	40.73200.0130	2.60	39	40.73300.0130	4.00	39	—	—	—
1.40	.0551	40.73130.0140	1.80	39	40.73200.0140	2.80	39	40.73300.0140	4.00	39	—	—	—
1.50	.0591	40.73130.0150	2.00	39	40.73200.0150	3.00	39	40.73300.0150	4.50	39	40.73800.0150*	12.00	50
1.60	.0630	40.73130.0160	2.00	39	40.73200.0160	3.20	39	40.73300.0160	4.50	39	—	—	—
1.70	.0669	40.73130.0170	2.00	39	40.73200.0170	3.40	39	40.73300.0170	5.00	39	—	—	—
1.80	.0709	40.73130.0180	2.40	39	40.73200.0180	3.60	39	40.73300.0180	6.00	39	—	—	—
1.90	.0748	40.73130.0190	2.40	39	40.73200.0190	3.80	39	40.73300.0190	6.00	39	—	—	—
2.00	.0787	40.73130.0200	2.60	39	40.73200.0200	4.00	39	40.73300.0200	6.00	39	40.73800.0200*	16.00	50
2.10	.0827	—	—	—	40.73200.0210	4.20	39	40.73300.0210	6.50	39	—	—	—
2.20	.0866	40.73130.0220	3.00	39	40.73200.0220	4.40	39	40.73300.0220	7.00	39	—	—	—
2.30	.0906	—	—	—	40.73200.0230	4.60	39	40.73300.0230	7.00	39	—	—	—
2.40	.0945	—	—	—	40.73200.0240	4.80	39	40.73300.0240	7.50	39	—	—	—
2.50	.0984	40.73130.0250	3.30	39	40.73200.0250	5.00	39	40.73300.0250	7.50	39	40.73800.0250*	20.00	50
2.60	.1024	—	—	—	40.73200.0260	5.20	39	40.73300.0260	7.50	39	—	—	—
2.70	.1063	—	—	—	40.73200.0270	5.40	39	40.73300.0270	8.00	39	—	—	—
2.80	.1102	40.73130.0280	3.50	39	40.73200.0280	5.60	39	40.73300.0280	8.00	39	—	—	—
2.90	.1142	40.73130.0290	3.50	39	40.73200.0290	5.80	39	40.73300.0290	8.50	39	—	—	—
3.00	.1181	—	—	—	—	—	—	—	—	—	—	—	—

* Indicates $\varnothing 4\text{mm} - h6$ shank

- All dimensions are millimeters unless otherwise noted
- For cutting data see pg. 162-163

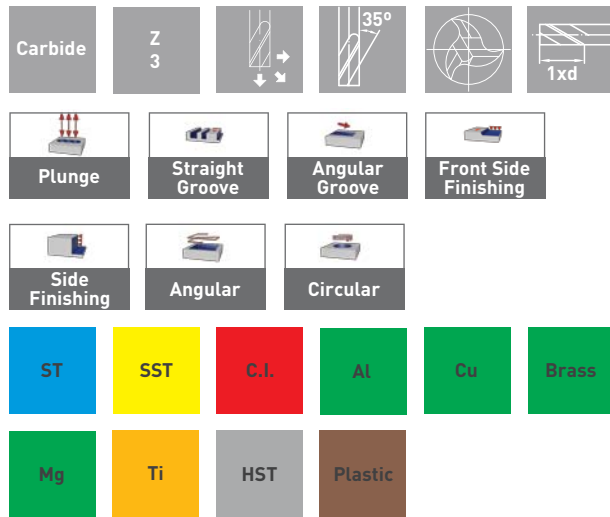
Art. 73725



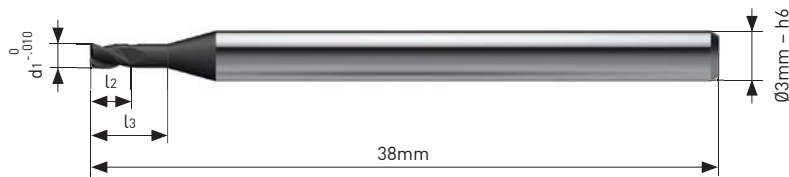
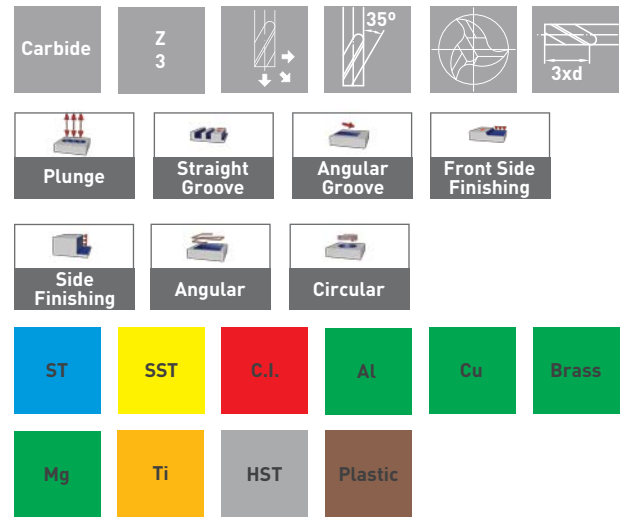
Catalog Number	d1	d1 (in.)	l2	l1	d2
40.73725.0030	.30	.0118	.80	39	3.00
40.73725.0040	.40	.0157	1.00	39	3.00
40.73725.0050	.50	.0197	1.30	39	3.00
40.73725.0060	.60	.0236	1.50	39	3.00
40.73725.0070	.70	.0276	1.70	39	3.00
40.73725.0080	.80	.0315	2.00	39	3.00
40.73725.0090	.90	.0354	2.30	39	3.00
40.73725.0100	1.00	.0394	2.50	39	3.00
40.73725.0110	1.10	.0433	2.80	39	3.00
40.73725.0120	1.20	.0472	3.00	39	3.00
40.73725.0130	1.30	.0512	3.30	39	3.00
40.73725.0140	1.40	.0551	3.50	39	3.00
40.73725.0150	1.50	.0591	3.80	39	3.00
40.73725.0160	1.60	.0630	4.00	39	3.00
40.73725.0170	1.70	.0669	4.30	39	3.00
40.73725.0180	1.80	.0709	4.50	39	3.00
40.73725.0190	1.90	.0748	4.80	39	3.00
40.73725.0200	2.00	.0787	5.00	39	3.00
40.73725.0210	2.10	.0827	5.30	39	3.00
40.73725.0220	2.20	.0866	5.50	39	3.00
40.73725.0230	2.30	.0906	5.80	39	3.00
40.73725.0240	2.40	.0945	6.00	39	3.00
40.73725.0250	2.50	.0984	6.30	39	3.00
40.73725.0260	2.60	.1024	6.50	39	3.00
40.73725.0270	2.70	.1063	6.80	39	3.00
40.73725.0280	2.80	.1102	7.00	39	3.00
40.73725.0290	2.90	.1142	7.30	39	3.00

- All dimensions are millimeters unless otherwise noted
- For cutting data see pg. 163

Art. 43105



Art. 43305

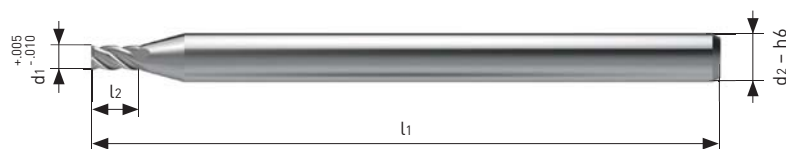
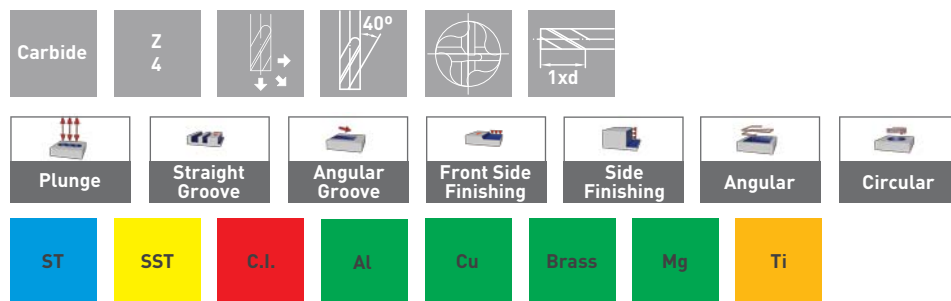


d1	d1 [in.]	43105		43305		
		Catalog Number	l2	Catalog Number	l2	l3
.30	.0118	40.43105.0030	.30	40.43305.0030	.30	.90
.40	.0157	40.43105.0040	.40	40.43305.0040	.40	1.20
.50	.0197	40.43105.0050	.50	40.43305.0050	.50	1.50
.60	.0236	40.43105.0060	.60	40.43305.0060	.60	1.80
.70	.0276	40.43105.0070	.70	40.43305.0070	.70	2.10
.80	.0315	40.43105.0080	.80	40.43305.0080	.80	2.40
.90	.0354	40.43105.0090	.90	40.43305.0090	.90	2.70
1.00	.0394	40.43105.0100	1.00	40.43305.0100	1.00	3.00
1.10	.0433	40.43105.0110	1.10	40.43305.0110	1.10	3.30
1.20	.0472	40.43105.0120	1.20	40.43305.0120	1.20	3.60
1.30	.0512	40.43105.0130	1.30	40.43305.0130	1.30	3.90
1.40	.0551	40.43105.0140	1.40	40.43305.0140	1.40	4.20
1.50	.0591	40.43105.0150	1.50	40.43305.0150	1.50	4.50
1.60	.0630	40.43105.0160	1.60	40.43305.0160	1.60	4.80

d1	d1 [in.]	43105		43305		
		Catalog Number	l2	Catalog Number	l2	l3
1.70	.0669	40.43105.0170	1.70	40.43305.0170	1.70	5.10
1.80	.0709	40.43105.0180	1.80	40.43305.0180	1.80	5.40
1.90	.0748	40.43105.0190	1.90	40.43305.0190	1.90	5.70
2.00	.0787	40.43105.0200	2.00	40.43305.0200	2.00	6.00
2.10	.0827	40.43105.0210	2.10	40.43305.0210	2.10	6.30
2.20	.0866	40.43105.0220	2.20	40.43305.0220	2.20	6.60
2.30	.0906	40.43105.0230	2.30	40.43305.0230	2.30	6.90
2.40	.0945	40.43105.0240	2.40	40.43305.0240	2.40	7.20
2.50	.0984	40.43105.0250	2.50	40.43305.0250	2.50	7.50
2.60	.1024	40.43105.0260	2.60	40.43305.0260	2.60	7.80
2.70	.1063	40.43105.0270	2.70	40.43305.0270	2.70	8.10
2.80	.1102	40.43105.0280	2.80	40.43305.0280	2.80	8.40
2.90	.1142	40.43105.0290	2.90	40.43305.0290	2.90	8.70
3.00	.1181	40.43105.0300	3.00	40.43305.0300	3.00	9.00

- All dimensions are millimeters unless otherwise noted
- For cutting data see pg. 164

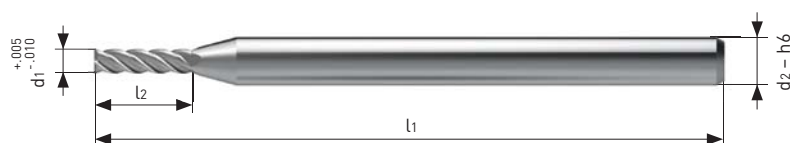
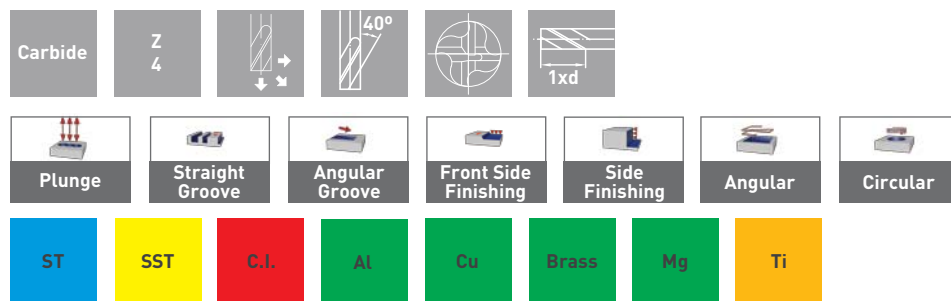
Art. 74720



Catalog Number	d_1	d_1 (in.)	l_2	l_1	d_2
40.74720.0030	.30	.0118	.60	39	3.00
40.74720.0040	.40	.0157	.80	39	3.00
40.74720.0050	.50	.0197	1.00	39	3.00
40.74720.0060	.60	.0236	1.20	39	3.00
40.74720.0070	.70	.0276	1.40	39	3.00
40.74720.0080	.80	.0315	1.60	39	3.00
40.74720.0090	.90	.0354	1.80	39	3.00
40.74720.0100	1.00	.0394	2.00	39	3.00
40.74720.0110	1.10	.0433	2.20	39	3.00
40.74720.0120	1.20	.0472	2.40	39	3.00
40.74720.0130	1.30	.0512	2.60	39	3.00
40.74720.0140	1.40	.0551	2.80	39	3.00
40.74720.0150	1.50	.0591	3.00	39	3.00
40.74720.0160	1.60	.0630	3.20	39	3.00
40.74720.0170	1.70	.0669	3.40	39	3.00
40.74720.0180	1.80	.0709	3.60	39	3.00
40.74720.0190	1.90	.0748	3.80	39	3.00
40.74720.0200	2.00	.0787	4.00	39	3.00
40.74720.0210	2.10	.0827	4.20	39	3.00
40.74720.0220	2.20	.0866	4.40	39	3.00
40.74720.0230	2.30	.0906	4.60	39	3.00
40.74720.0240	2.40	.0945	4.80	39	3.00
40.74720.0250	2.50	.0984	5.00	39	3.00
40.74720.0260	2.60	.1024	5.20	39	3.00
40.74720.0270	2.70	.1063	5.40	39	3.00
40.74720.0280	2.80	.1102	5.60	39	3.00
40.74720.0290	2.90	.1142	5.80	39	3.00

- All dimensions are millimeters unless otherwise noted
- For cutting data see pg. 165

Art. 74740



Catalog Number	d_1	d_1 (in.)	l_2	l_1	d_2
40.74740.0040	.40	.0157	1.60	39	3.00
40.74740.0050	.50	.0197	2.00	39	3.00
40.74740.0060	.60	.0236	2.40	39	3.00
40.74740.0070	.70	.0276	2.80	39	3.00
40.74740.0080	.80	.0315	3.20	39	3.00
40.74740.0090	.90	.0354	3.60	39	3.00
40.74740.0100	1.00	.0394	4.00	39	3.00
40.74740.0110	1.10	.0433	4.40	39	3.00
40.74740.0120	1.20	.0472	4.80	39	3.00
40.74740.0130	1.30	.0512	5.20	39	3.00
40.74740.0140	1.40	.0551	5.60	39	3.00
40.74740.0150	1.50	.0591	6.00	39	3.00
40.74740.0160	1.60	.0630	6.40	39	3.00
40.74740.0170	1.70	.0669	6.80	39	3.00
40.74740.0180	1.80	.0709	7.20	39	3.00
40.74740.0190	1.90	.0748	7.60	39	3.00
40.74740.0200	2.00	.0787	8.00	39	3.00
40.74740.0210	2.10	.0827	8.40	39	3.00
40.74740.0220	2.20	.0866	8.80	39	3.00
40.74740.0230	2.30	.0906	9.20	39	3.00
40.74740.0240	2.40	.0945	9.60	39	3.00
40.74740.0250	2.50	.0984	10.00	39	3.00
40.74740.0260	2.60	.1024	10.40	39	3.00
40.74740.0270	2.70	.1063	10.80	39	3.00
40.74740.0280	2.80	.1102	11.20	39	3.00
40.74740.0290	2.90	.1142	11.60	39	3.00

- All dimensions are millimeters unless otherwise noted
- For cutting data see pg. 165

Art. 74075

Carbide

Z
2

Plunge

Straight Groove

Plunge Radius

Straight Radius

ST

SST

C.I.

Al

Cu

Brass

Ti

Plastic

Art. 74150

Carbide

Z
2

Plunge

Straight Groove

Plunge Radius

Straight Radius

ST

SST

C.I.

Al

Cu

Brass

Ti

Plastic

Art. 74300

Carbide

Z
2

Plunge

Straight Groove

Plunge Radius

Straight Radius

ST

SST

C.I.

Al

Cu

Brass

Ti

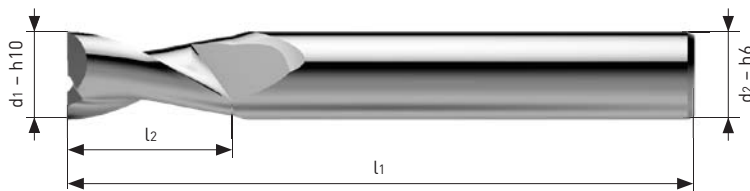
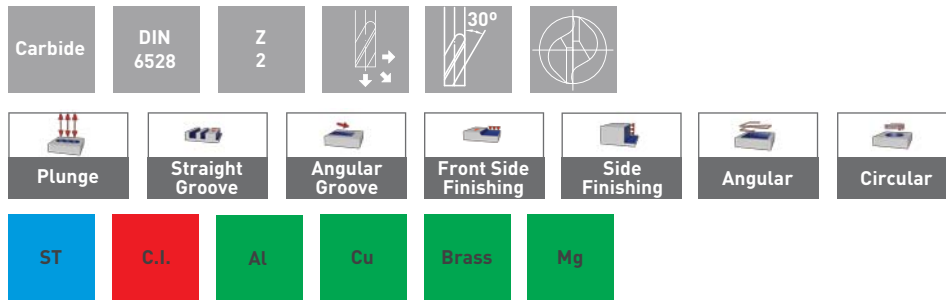
Plastic



d1	d1 (in.)	r	74075		74150		74300	
			Catalog Number	l2	Catalog Number	l2	Catalog Number	l2
.20	.0079	.100	40.74075.0020	.15	40.74150.0020	.30	40.74300.0020	.60
.25	.0098	.125	—	—	40.74150.0025	.35	—	—
.30	.0118	.150	40.74075.0030	.20	40.74150.0030	.45	40.74300.0030	1.00
.40	.0157	.200	40.74075.0040	.30	40.74150.0040	.60	40.74300.0040	1.00
.50	.0197	.250	40.74075.0050	.37	40.74150.0050	.75	40.74300.0050	1.50
.60	.0236	.300	40.74075.0060	.45	40.74150.0060	.90	40.74300.0060	1.50
.70	.0276	.350	—	—	40.74150.0070	1.05	40.74300.0070	2.00
.80	.0315	.400	40.74075.0080	.60	40.74150.0080	1.20	40.74300.0080	2.00
.90	.0354	.450	—	—	40.74150.0090	1.35	40.74300.0090	2.50
1.00	.0394	.500	40.74075.0100	.75	40.74150.0100	1.50	40.74300.0100	3.00
1.10	.0433	.550	—	—	40.74150.0110	1.65	—	—
1.20	.0472	.600	—	—	40.74150.0120	1.80	40.74300.0110	4.00
1.30	.0512	.650	—	—	40.74150.0130	1.95	—	—
1.40	.0551	.700	—	—	40.74150.0140	2.10	40.74300.0140	4.00
1.50	.0591	.750	—	—	40.74150.0150	2.25	40.74300.0150	4.00
1.60	.0630	.800	—	—	40.74150.0160	2.40	40.74300.0160	4.00
1.80	.0709	.900	—	—	40.74150.0180	2.70	40.74300.0180	5.50
1.90	.0748	.950	—	—	—	—	—	—
2.00	.0787	1.000	—	—	40.74150.0200	3.00	40.74300.0200	6.00
2.10	.0827	1.050	—	—	—	—	40.74300.0210	6.00
2.20	.0866	1.100	—	—	—	—	40.74300.0220	6.00
2.50	.0984	1.250	—	—	—	—	40.74300.0250	7.50
2.80	.1102	1.400	—	—	—	—	40.74300.0280	8.40

- All dimensions are millimeters unless otherwise noted
- For cutting data see pg. 166

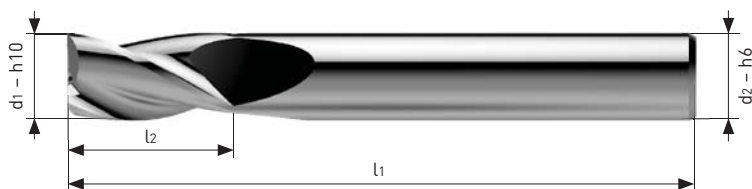
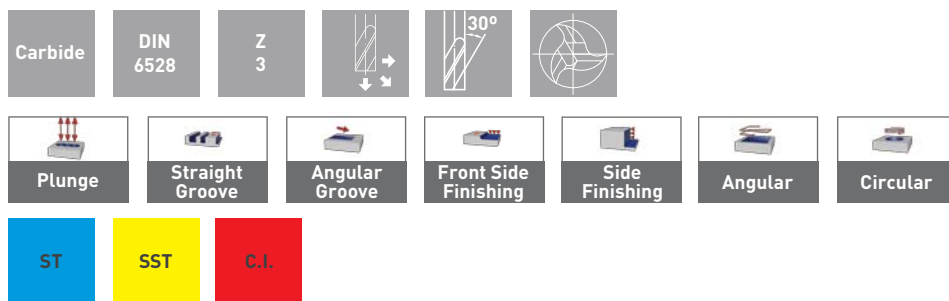
Art. 40000



Catalog Number	d1	d1 (in.)	l2	l1	d2
40.40000.0200	2.00	.0787	8.00	50	2.00
40.40000.0250	2.50	.0984	8.00	50	2.50
40.40000.0300	3.00	.1181	8.00	50	3.00
40.40000.0350	3.50	.1378	8.00	50	3.50
40.40000.0400	4.00	.1575	8.00	50	4.00
40.40000.0450	4.50	.1772	8.00	50	4.50
40.40000.0500	5.00	.1969	10.00	50	5.00
40.40000.0600	6.00	.2362	10.00	57	6.00
40.40000.0800	8.00	.3150	16.00	63	8.00
40.40000.1000	10.00	.3937	19.00	72	10.00
40.40000.1200	12.00	.4724	22.00	83	12.00

- All dimensions are millimeters unless otherwise noted
- For cutting data see pg. 166

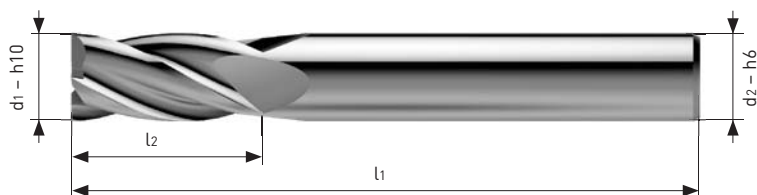
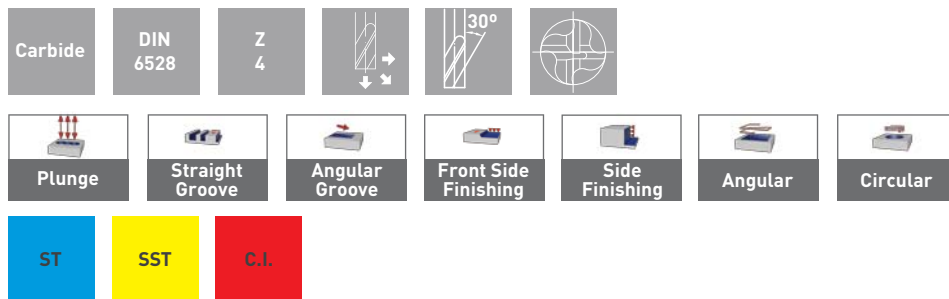
Art. 40002



Catalog Number	d_1	d_1 (in.)	l_2	l_1	d_2
40.40002.0200	2.00	.0787	8.00	50	2.00
40.40002.0250	2.50	.0984	8.00	50	2.50
40.40002.0300	3.00	.1181	8.00	50	3.00
40.40002.0350	3.50	.1378	8.00	50	3.50
40.40002.0400	4.00	.1575	8.00	50	4.00
40.40002.0450	4.50	.1772	8.00	50	4.50
40.40002.0500	5.00	.1969	10.00	50	5.00
40.40002.0600	6.00	.2362	10.00	57	6.00
40.40002.0800	8.00	.3150	16.00	63	8.00
40.40002.1000	10.00	.3937	19.00	72	10.00
40.40002.1200	12.00	.4724	22.00	83	12.00

- All dimensions are millimeters unless otherwise noted
- For cutting data see pg. 167

Art. 40004

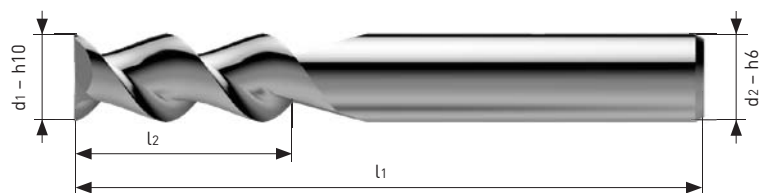
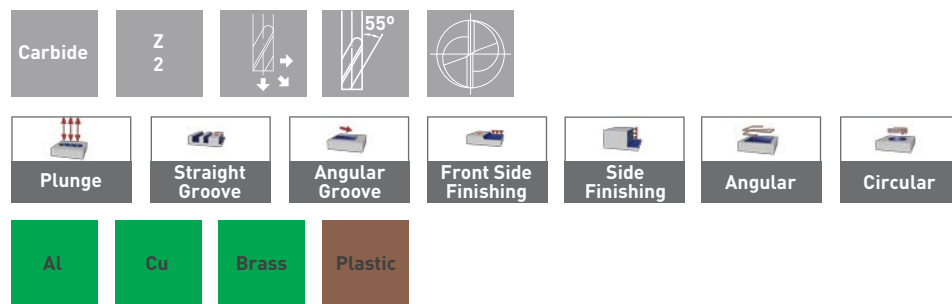


Catalog Number	d_1	d_1 (in.)	l_2	l_1	d_2
40.40004.0200	2.00	.0787	10.00	50	2.00
40.40004.0250	2.50	.0984	10.00	50	2.50
40.40004.0300	3.00	.1181	10.00	50	3.00
40.40004.0350	3.50	.1378	10.00	50	3.50
40.40004.0400	4.00	.1575	11.00	50	4.00
40.40004.0450	4.50	.1772	11.00	50	4.50
40.40004.0500	5.00	.1969	13.00	50	5.00
40.40004.0600	6.00	.2362	13.00	57	6.00
40.40004.0800	8.00	.3150	19.00	63	8.00
40.40004.1000	10.00	.3937	22.00	72	10.00
40.40004.1200	12.00	.4724	26.00	83	12.00

- All dimensions are millimeters unless otherwise noted
- For cutting data see pg. 167

AC2

Art. 47000

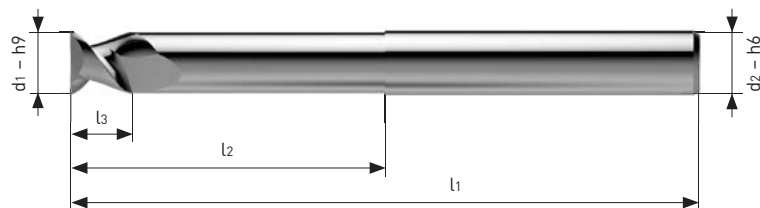
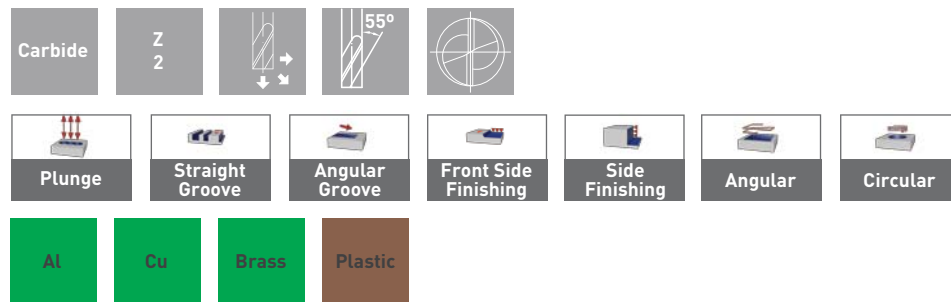


Catalog Number	d1	d1 (in.)	l2	l1	d2
40.47000.0300	3.00	.1181	12.00	50	3.00
40.47000.0400	4.00	.1575	15.00	50	4.00
40.47000.0500	5.00	.1969	20.00	50	5.00
40.47000.0600	6.00	.2362	20.00	57	6.00
40.47000.0800	8.00	.3150	20.00	63	8.00
40.47000.1000	10.00	.3937	25.00	72	10.00
40.47000.1200	12.00	.4724	25.00	83	12.00
40.47000.1400	14.00	.5512	30.00	90	14.00
40.47000.1600	16.00	.6299	30.00	92	16.00
40.47000.2000	20.00	.7874	38.00	104	20.00

- All dimensions are millimeters unless otherwise noted
- For cutting data see pg. 168

ACL2

Art. 47500

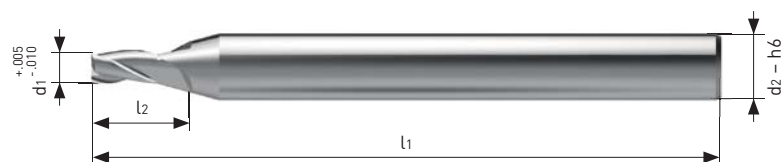
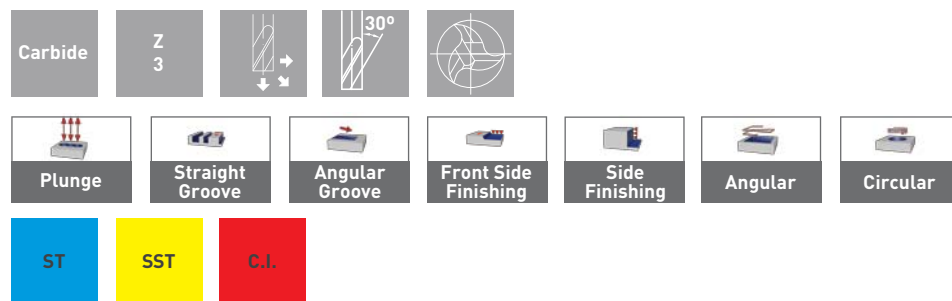


Catalog Number	d1	d1 (in.)	l2	l3	l1	d2
40.47500.0600	6.00	.2362	50.00	6.00	100	6.00
40.47500.0800	8.00	.3150	50.00	8.00	100	8.00
40.47500.1000	10.00	.3937	50.00	10.00	100	10.00
40.47500.1200	12.00	.4724	50.00	12.00	100	12.00
40.47500.1600	16.00	.6299	75.00	16.00	125	16.00
40.47500.2000	20.00	.7874	75.00	20.00	125	20.00

- All dimensions are millimeters unless otherwise noted
- For cutting data see pg. 168

AC2

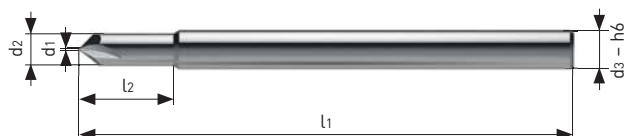
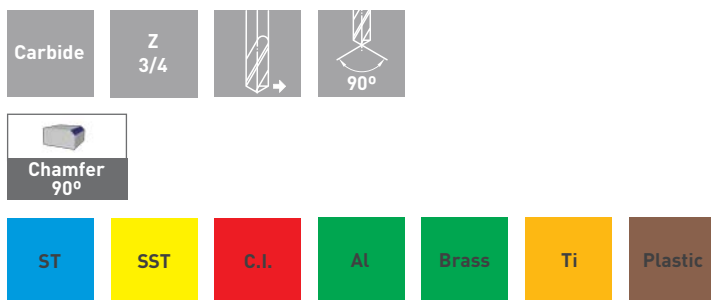
Art. 76300



Catalog Number	d1	d1 (in.)	l2	l1	d2
40.76300.0150	1.50	.0591	6.00	57	6.00
40.76300.0200	2.00	.0787	6.00	57	6.00
40.76300.0250	2.50	.0984	6.00	57	6.00
40.76300.0300	3.00	.1181	7.00	57	6.00
40.76300.0350	3.50	.1378	7.00	57	6.00
40.76300.0400	4.00	.1575	8.00	57	6.00
40.76300.0450	4.50	.1772	8.00	57	6.00
40.76300.0500	5.00	.1969	10.00	57	6.00
40.76300.0550	5.50	.2165	10.00	57	6.00
40.76300.0600	6.00	.2362	10.00	57	6.00

- All dimensions are millimeters unless otherwise noted
- For cutting data see pg. 168

Art. 73000



Catalog Number	d1	d2	d2 (in.)	l2	l1	d3	z
40.73000.0050	.10	.50	.0197	3.00	39	3.00	3
40.73000.0100	.10	1.00	.0394	3.00	39	3.00	3
40.73000.0150	.10	1.50	.0591	4.50	39	3.00	3
40.73000.0200	.10	2.00	.0787	6.00	39	3.00	3
40.73000.0250	.10	2.50	.0984	7.50	39	3.00	3
40.73000.0300	.10	3.00	.1181	7.50	39	3.00	3
40.73000.0600	.70	6.00	.2362	—	50	6.00	4
40.73000.0800	1.20	8.00	.3150	—	60	8.00	4

- All dimensions are millimeters unless otherwise noted
- For cutting data see pg. 169

Lollipop

Art. 43400

Carbide

Z
3







AlTiCrN+S



Deburring

ST

SST

C.I.

Al

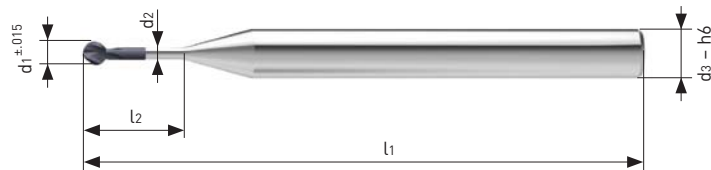
Cu

Brass

Mg

Ti

Plastic

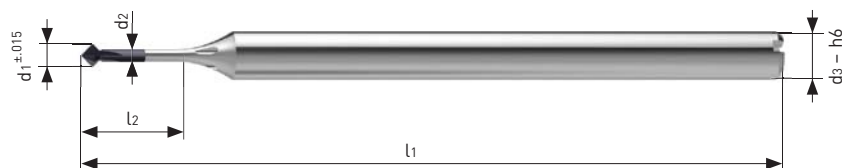
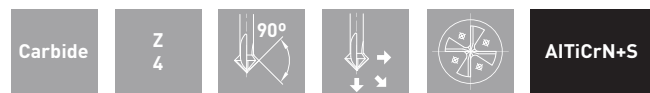


Catalog Number	d1	d1 (in.)	d2	l2	l1	d3
40.43400.0100	1.00	.0394	.60	4.00	60	4.00
40.43400.0150	1.50	.0591	.90	6.00	60	4.00
40.43400.0200	2.00	.0787	1.20	8.00	60	4.00
40.43400.0250	2.50	.0984	1.35	10.00	70	6.00
40.43400.0300	3.00	.1181	1.50	12.00	70	6.00
40.43400.0400	4.00	.1575	2.00	16.00	70	6.00
40.43400.0500	5.00	.1969	2.50	20.00	80	8.00
40.43400.0600	6.00	.2362	3.00	24.00	80	8.00

- All dimensions are millimeters unless otherwise noted
- For cutting data see pg. 169

Noventa

Art. 44400



Catalog Number	d1	d1 (in.)	d2	l2	l1	d3
40.44400.0080	.80	.0315	.30	3.6	60	4.00
40.44400.0100	1.00	.0394	.40	4.0	60	4.00
40.44400.0150	1.50	.0591	.60	6.0	60	4.00
40.44400.0200	2.00	.0787	1.00	8.0	60	4.00
40.44400.0250	2.50	.0984	1.30	10.0	70	6.00
40.44400.0300	3.00	.1181	1.80	12.0	70	6.00
40.44400.0400	4.00	.1575	2.50	16.0	70	6.00
40.44400.0500	5.00	.1969	3.20	20.0	80	8.00
40.44400.0600	6.00	.2362	4.00	24.0	80	8.00

- All dimensions are millimeters unless otherwise noted
- For cutting data see pg. 170



Ninety

Art. 45400

Carbide

Z
4

90°





AlTiCrN+S

Chamfer
90°

ST

SST

C.I.

Al

Cu

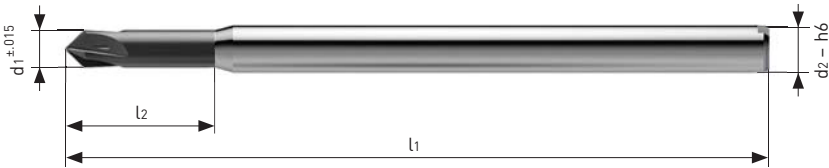
Brass

Mg

Ti

HST

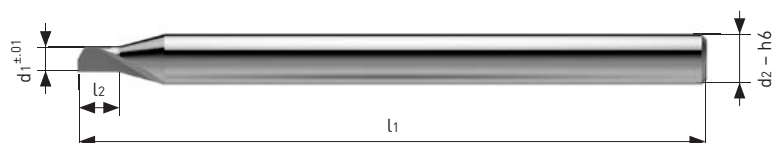
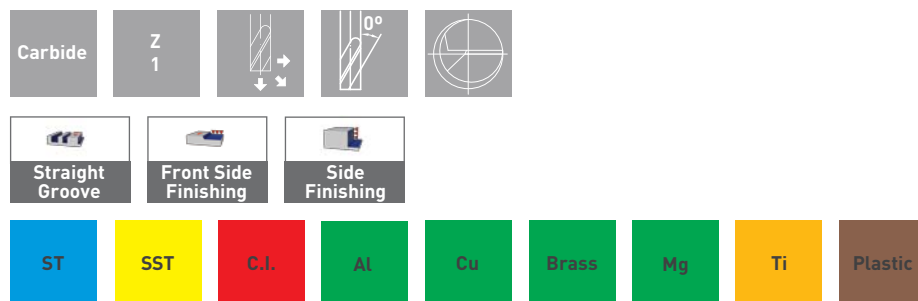
Plastic



Catalog Number	d1	d1 (in.)	l2	l1	d2
40.45400.0100	1.00	.0394	4.00	60	4.00
40.45400.0150	1.50	.0591	6.00	60	4.00
40.45400.0200	2.00	.0787	8.00	60	4.00
40.45400.0250	2.50	.0984	10.00	60	4.00
40.45400.0300	3.00	.1181	12.00	70	4.00
40.45400.0400	4.00	.1575	—	70	4.00
40.45400.0500	5.00	.1969	20.00	80	6.00
40.45400.0600	6.00	.2362	—	80	6.00

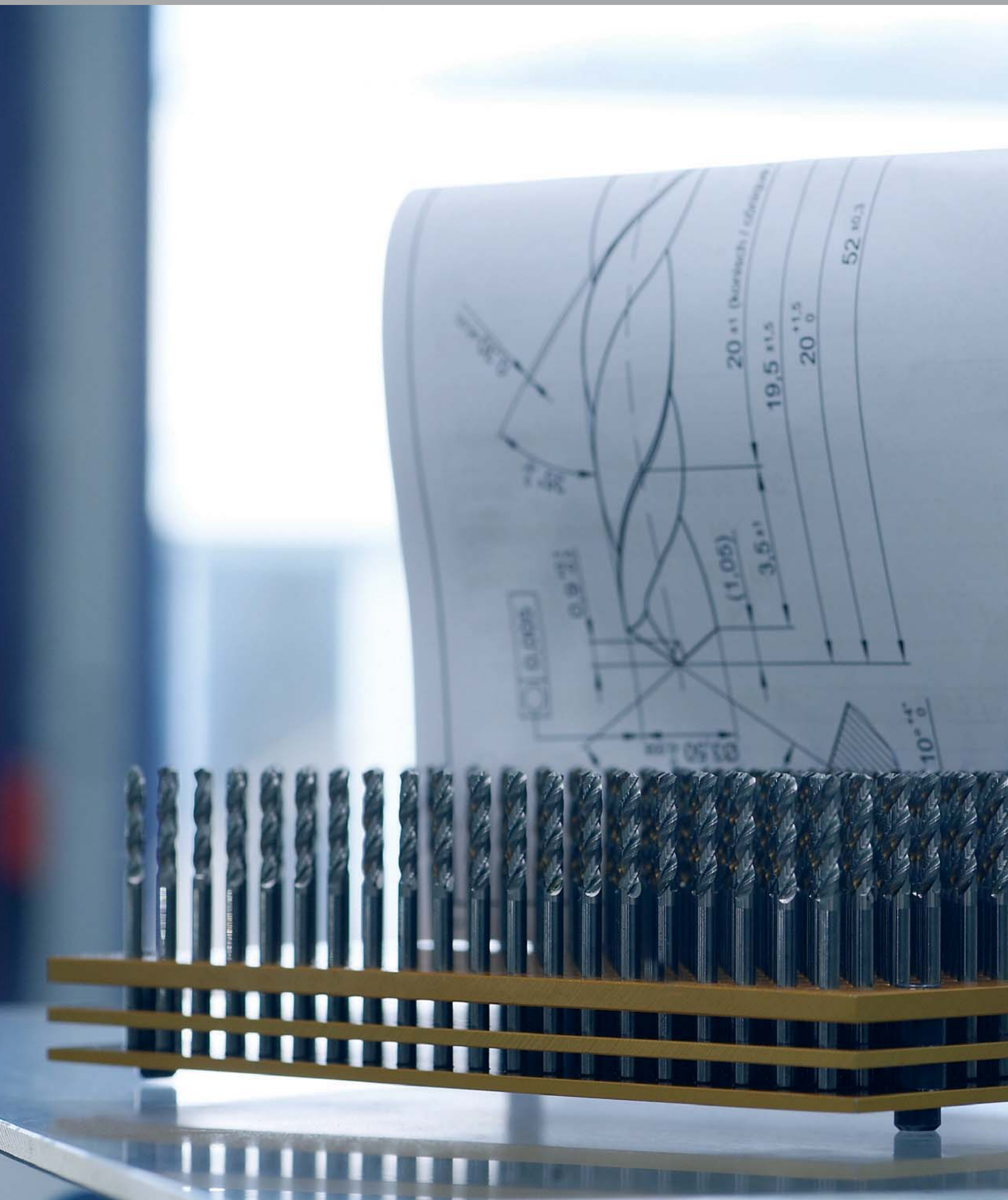
- All dimensions are millimeters unless otherwise noted
- For cutting data see pg. 170

Art. 71330



Catalog Number	d_1	d_1 (in.)	l_2	l_1	d_2
40.71330.0020	.20	.0079	.40	39	3.00
40.71330.0030	.30	.0118	.60	39	3.00
40.71330.0040	.40	.0157	.80	39	3.00
40.71330.0050	.50	.0197	1.00	39	3.00
40.71330.0060	.60	.0236	1.20	39	3.00
40.71330.0070	.70	.0276	1.40	39	3.00
40.71330.0080	.80	.0315	1.60	39	3.00
40.71330.0090	.90	.0354	1.80	39	3.00
40.71330.0100	1.00	.0394	2.00	39	3.00
40.71330.0110	1.10	.0433	2.20	39	3.00
40.71330.0120	1.20	.0472	2.40	39	3.00
40.71330.0130	1.30	.0512	2.60	39	3.00
40.71330.0140	1.40	.0551	2.80	39	3.00
40.71330.0150	1.50	.0591	3.00	39	3.00
40.71330.0160	1.60	.0630	3.20	39	3.00
40.71330.0170	1.70	.0669	3.40	39	3.00
40.71330.0180	1.80	.0709	3.60	39	3.00
40.71330.0190	1.90	.0748	3.80	39	3.00
40.71330.0200	2.00	.0787	4.00	39	3.00
40.71330.0210	2.10	.0827	4.20	39	3.00
40.71330.0220	2.20	.0866	4.40	39	3.00
40.71330.0230	2.30	.0906	4.60	39	3.00
40.71330.0240	2.40	.0945	4.80	39	3.00
40.71330.0250	2.50	.0984	5.00	39	3.00
40.71330.0260	2.60	.1024	5.20	39	3.00
40.71330.0270	2.70	.1063	5.40	39	3.00
40.71330.0280	2.80	.1102	5.60	39	3.00
40.71330.0290	2.90	.1142	5.80	39	3.00
40.71330.0300	3.00	.1181	6.00	40	4.00

- All dimensions are millimeters unless otherwise noted
- For cutting data see pg. 171



Cutting Speed v:

$$v = \frac{d \times \pi \times n}{1000}$$

Spindle Speed n:

$$n = \frac{v \times 1000}{d \times \pi}$$

Drill / Reamer

$V_c =$ Cutting speed in m/min

$f =$ Cutting feed in mm/rev

End Mill

$V_c =$ Cutting speed in m/min

$f_z =$ Cutting speed in mm/tooth

$V_f =$ Cutting speed in mm/min $f_z \times t \times n$

$a_p =$ Cutting depth

$a_e =$ Cutting width

Hole Dia. (Ø)	Tolerance (Upper Limit/Lower Limit)								
	H1	H2	H3	H4	H5	H6	H7	H8	H9
Ø≤3	+0.008	+0.012	+0.002	+0.003	+0.004	+0.006	+0.010	+0.014	+0.025
	0	0	0	0	0	0	0	0	0
3<Ø≤6	+0.001	+0.015	+0.0025	+0.004	+0.005	+0.008	+0.012	+0.018	+0.030
	0	0	0	0	0	0	0	0	0
6<Ø≤10	+0.001	+0.015	+0.0025	+0.004	+0.006	+0.009	+0.015	+0.022	+0.036
	0	0	0	0	0	0	0	0	0
10<Ø≤18	+0.012	+0.002	+0.003	+0.005	+0.008	+0.011	+0.018	+0.027	+0.043
	0	0	0	0	0	0	0	0	0
18<Ø≤30	+0.015	+0.0025	+0.004	+0.006	+0.009	+0.013	+0.021	+0.033	+0.052
	0	0	0	0	0	0	0	0	0
30<Ø≤50	+0.015	+0.0025	+0.004	+0.007	+0.011	+0.016	+0.025	+0.039	+0.062
	0	0	0	0	0	0	0	0	0
50<Ø≤80	+0.002	+0.003	+0.005	+0.008	+0.013	+0.019	+0.030	+0.046	+0.074
	0	0	0	0	0	0	0	0	0
80<Ø≤120	+0.0025	+0.004	+0.006	+0.010	+0.015	+0.022	+0.035	+0.054	+0.087
	0	0	0	0	0	0	0	0	0
120<Ø≤180	+0.0035	+0.005	+0.008	+0.012	+0.018	+0.025	+0.040	+0.063	+0.100
	0	0	0	0	0	0	0	0	0
180<Ø≤250	+0.0045	+0.007	+0.010	+0.014	+0.020	+0.029	+0.046	+0.072	+0.115
	0	0	0	0	0	0	0	0	0
250<Ø≤315	+0.006	+0.008	+0.012	+0.016	+0.023	+0.032	+0.052	+0.081	+0.130
	0	0	0	0	0	0	0	0	0
315<Ø≤400	+0.007	+0.009	+0.013	+0.018	+0.025	+0.036	+0.057	+0.089	+0.140
	0	0	0	0	0	0	0	0	0
400<Ø≤500	+0.008	+0.010	+0.015	+0.020	+0.027	+0.040	+0.063	+0.097	+0.155
	0	0	0	0	0	0	0	0	0

• All dimensions are millimeters unless otherwise noted

Shaft Dia. (Ø)	Tolerance (Upper Limit/Lower Limit)								
	h1	h2	h3	h4	h5	h6	h7	h8	h9
Ø≤3	0	0	0	0	0	0	0	0	0
	-.0008	-.0012	-.002	-.003	-.004	-.006	-.010	-.014	-.025
3<Ø≤6	0	0	0	0	0	0	0	0	0
	-.001	-.0015	-.0025	-.004	-.005	-.008	-.012	-.018	-.030
6<Ø≤10	0	0	0	0	0	0	0	0	0
	-.001	-.0015	-.0025	-.004	-.006	-.009	-.015	-.022	-.036
10<Ø≤18	0	0	0	0	0	0	0	0	0
	-.0012	-.002	-.003	-.005	-.008	-.011	-.018	-.027	-.043
18<Ø≤30	0	0	0	0	0	0	0	0	0
	-.0015	-.0025	-.004	-.006	-.009	-.013	-.021	-.033	-.052
30<Ø≤50	0	0	0	0	0	0	0	0	0
	-.0015	-.0025	-.004	-.007	-.011	-.016	-.025	-.039	-.062
50<Ø≤80	0	0	0	0	0	0	0	0	0
	-.002	-.003	-.005	-.008	-.013	-.019	-.030	-.046	-.074
80<Ø≤120	0	0	0	0	0	0	0	0	0
	-.0025	-.004	-.006	-.010	-.015	-.022	-.035	-.054	-.087
120<Ø≤180	0	0	0	0	0	0	0	0	0
	-.0035	-.005	-.008	-.012	-.018	-.025	-.040	-.063	-.100
180<Ø≤250	0	0	0	0	0	0	0	0	0
	-.0045	-.007	-.010	-.014	-.020	-.029	-.046	-.072	-.115
250<Ø≤315	0	0	0	0	0	0	0	0	0
	-.006	-.008	-.012	-.016	-.023	-.032	-.052	-.081	-.130
315<Ø≤400	0	0	0	0	0	0	0	0	0
	-.007	-.009	-.013	-.018	-.025	-.036	-.057	-.089	-.140
400<Ø≤500	0	0	0	0	0	0	0	0	0
	-.008	-.010	-.015	-.020	-.027	-.040	-.063	-.097	-.155

- All dimensions are millimeters unless otherwise noted

Art. 50806 / 50809

Art. 50808

Material		Ø.50-1.00	Ø1.10-2.90	Ø3.00-6.00
P1	V _c	15-25	25-40	25-40
	f	.020-.080	.060-.140	.120-.250
P2	V _c	12-20	20-35	20-35
	f	.010-.060	.040-.120	.100-.220
P3	V _c	8-18	12-30	12-30
	f	.010-.040	.030-.090	.080-.200
M1	V _c	6-12	10-20	10-20
	f	.020-.050	.030-.070	.050-.150
M2	V _c	5-10	8-16	8-16
	f	.010-.040	.030-.060	.040-.080
K1	V _c	15-25	25-40	25-40
	f	.010-.050	.030-.080	.070-.150
K2	V _c	12-20	20-35	20-35
	f	.010-.040	.030-.060	.050-.100
N1	V _c	30-45	45-60	45-60
	f	.030-.080	.060-.120	.100-.250
N2	V _c	20-35	30-45	30-45
	f	.040-.080	.070-.150	.130-.300
N3	V _c	15-30	25-40	25-40
	f	.020-.070	.060-.120	.100-.250
N4	V _c	15-25	25-40	25-40
	f	.010-.050	.030-.080	.060-.150
N5	V _c	30-45	45-60	45-60
	f	.040-.080	.070-.130	.100-.250
N6	V _c	15-30	25-40	25-40
	f	.010-.040	.038-.065	.060-.090
N7	V _c	15-25	25-40	25-40
	f	.010-.040	.030-.080	.050-.130
N8	V _c	8-18	12-30	12-30
	f	.010-.040	.020-.050	.030-.100
S1	V _c	20-35	30-45	30-45
	f	.010-.040	.020-.056	.040-.100
S2	V _c			
	f			
H1	V _c			
	f			
H2	V _c			
	f			
H3	V _c			
	f			
01	V _c	20-35	30-45	30-45
	f	.020-.060	.050-.120	.100-.250
02	V _c			
	f			
03	V _c			
	f			

Material		Ø.50-1.00	Ø1.10-2.00	Ø2.10-3.00
P1	V _c	20-35	35-50	35-50
	f	.010-.030	.030-.050	.050-.070
P2	V _c	15-30	30-45	30-45
	f	.010-.025	.025-.045	.045-.065
P3	V _c	12-25	25-40	25-40
	f	.010-.020	.020-.040	.040-.060
M1	V _c	10-20	20-35	20-35
	f	.010-.020	.020-.035	.035-.045
M2	V _c	8-16	16-30	16-30
	f	.010-.020	.020-.030	.030-.040
K1	V _c	20-35	35-50	35-50
	f	.010-.035	.035-.055	.055-.075
K2	V _c	15-30	30-45	30-45
	f	.010-.030	.030-.050	.050-.070
N1	V _c	35-50	50-65	50-65
	f	.020-.040	.040-.060	.060-.080
N2	V _c	25-40	40-55	40-55
	f	.020-.050	.050-.070	.070-.090
N3	V _c	20-35	35-50	35-50
	f	.020-.040	.040-.060	.060-.080
N4	V _c	15-30	30-45	30-45
	f	.010-.030	.030-.050	.050-.070
N5	V _c	35-50	50-65	50-65
	f	.020-.050	.050-.070	.070-.090
N6	V _c	20-35	35-50	35-50
	f	.010-.030	.030-.050	.050-.070
N7	V _c	15-30	30-45	30-45
	f	.010-.025	.025-.045	.045-.065
N8	V _c	10-20	20-35	20-35
	f	.010-.020	.020-.030	.030-.040
S1	V _c	25-35	35-50	35-50
	f	.010-.030	.030-.050	.050-.070
S2	V _c	10-15	15-25	15-25
	f	.010-.020	.020-.035	.035-.050
H1	V _c	10-15	15-25	15-25
	f	.010-.020	.020-.030	.030-.040
H2	V _c			
	f			
H3	V _c			
	f			
01	V _c	20-35	30-45	30-45
	f	.020-.050	.050-.075	.075-.100
02	V _c	20-35	30-45	30-45
	f	.015-.035	.035-.055	.055-.080
03	V _c			
	f			

Art. 50810 / 50812 / 50814 / 50818

Material		Ø3.00–6.00	Ø6.00–12.00	Ø12.00–2.00
P1	V _c	25–40	25–40	25–40
	f	.120–.250	.250–.300	.300–.400
P2	V _c	20–35	20–35	20–35
	f	.100–.200	.200–.250	.250–.300
P3	V _c	10–30	10–30	10–30
	f	.008–.150	.150–.220	.220–.300
M1	V _c	10–20	10–20	10–20
	f	.050–.150	.150–.200	.200–.250
M2	V _c	8–16	8–16	8–16
	f	.040–.080	.080–.140	.140–.200
K1	V _c	25–40	25–40	25–40
	f	.070–.150	.150–.200	.200–.350
K2	V _c	20–35	20–35	20–35
	f	.050–.100	.100–.150	.150–.250
N1	V _c	45–60	45–60	45–60
	f	.100–.250	.250–.350	.350–.400
N2	V _c	30–45	30–45	30–45
	f	.150–.300	.300–.400	.400–.600
N3	V _c	25–40	25–40	25–40
	f	.100–.250	.250–.350	.350–.550
N4	V _c	25–40	25–40	25–40
	f	.060–.150	.150–.250	.250–.400
N5	V _c	45–60	45–60	45–60
	f	.100–.250	.250–.350	.350–.450
N6	V _c	25–40	25–40	25–40
	f	.060–.100	.100–.150	.150–.250
N7	V _c	25–40	25–40	25–40
	f	.050–.150	.150–.250	.250–.350
N8	V _c	12–30	12–30	12–30
	f	.030–.100	.100–.150	.150–.200
S1	V _c	30–45	30–45	30–45
	f	.040–.150	.150–.200	.200–.300
S2	V _c			
	f			
H1	V _c			
	f			
H2	V _c			
	f			
H3	V _c			
	f			
O1	V _c	30–45	30–45	30–45
	f	.100–.250	.250–.400	.400–.800
O2	V _c			
	f			
O3	V _c			
	f			

Art. 50811 / 50813 / 50815

Material		Ø2.00–4.00	Ø4.00–6.00	Ø6.00–12.00
P1	V _c	40–60	40–60	40–60
	f	.120–.250	.250–.300	.300–.400
P2	V _c	35–55	35–55	35–55
	f	.100–.200	.200–.250	.250–.300
P3	V _c	30–45	30–45	30–45
	f	.008–.150	.150–.220	.220–.300
M1	V _c	25–40	25–40	25–40
	f	.050–.150	.150–.200	.200–.250
M2	V _c	20–35	20–35	20–35
	f	.040–.080	.080–.140	.140–.200
K1	V _c	35–50	35–50	35–50
	f	.070–.150	.150–.200	.200–.350
K2	V _c	30–45	30–45	30–45
	f	.050–.100	.100–.150	.150–.250
N1	V _c	60–70	60–70	60–70
	f	.100–.250	.250–.350	.350–.400
N2	V _c	50–60	50–60	50–60
	f	.150–.300	.300–.400	.400–.600
N3	V _c	40–55	40–55	40–55
	f	.100–.250	.250–.350	.350–.550
N4	V _c	35–50	35–50	35–50
	f	.060–.150	.150–.250	.250–.400
N5	V _c	60–70	60–70	60–70
	f	.100–.250	.250–.350	.350–.450
N6	V _c	40–55	40–55	40–55
	f	.060–.100	.100–.150	.150–.250
N7	V _c	35–50	35–50	35–50
	f	.050–.150	.150–.250	.250–.350
N8	V _c	25–40	25–40	25–40
	f	.030–.100	.100–.150	.150–.200
S1	V _c	35–50	35–50	35–50
	f	.040–.150	.150–.200	.200–.300
S2	V _c	15–25	15–25	15–25
	f	.030–.100	.100–.150	.150–.200
H1	V _c	15–25	15–25	15–25
	f	.040–.060	.060–.080	.080–.120
H2	V _c			
	f			
H3	V _c			
	f			
O1	V _c	30–45	30–45	30–45
	f	.100–.250	.250–.400	.400–.800
O2	V _c	30–45	30–45	30–45
	f	.080–.200	.200–.350	.350–.600
O3	V _c			
	f			

Art. 56005

Art. 56033

Material		Ø.10–.30	Ø.35–.80	Ø.85–1.50
P1	V _c	8–18	15–30	30–60
	f	.001–.003	.002–.010	.010–.020
P2	V _c	6–16	12–25	20–40
	f	.001–.002	.002–.008	.006–.015
P3	V _c	6–13	10–20	18–35
	f	.001–.002	.002–.005	.004–.012
M1	V _c	5–12	10–18	15–30
	f	.001–.002	.002–.005	.004–.010
M2	V _c	5–10	8–15	13–25
	f	.001–.002	.002–.004	.003–.009
K1	V _c	8–18	15–30	30–60
	f	.003–.008	.006–.010	.008–.025
K2	V _c	6–16	12–25	20–40
	f	.002–.004	.005–.008	.007–.020
N1	V _c	12–20	18–35	35–65
	f	.001–.004	.003–.008	.006–.015
N2	V _c	10–18	15–30	25–50
	f	.002–.005	.004–.010	.008–.025
N3	V _c	8–18	15–30	30–60
	f	.002–.005	.004–.008	.006–.020
N4	V _c	8–18	15–30	30–60
	f	.001–.004	.003–.006	.005–.015
N5	V _c	12–20	18–35	35–65
	f	.002–.005	.004–.010	.009–.025
N6	V _c	8–18	15–30	30–60
	f	.002–.005	.004–.008	.007–.020
N7	V _c	8–18	15–30	30–60
	f	.002–.005	.004–.008	.007–.020
N8	V _c	6–13	10–20	18–35
	f	.001–.004	.002–.007	.005–.015
S1	V _c	15–30	28–45	30–45
	f	.002–.006	.005–.010	.008–.020
S2	V _c			
	f			
H1	V _c			
	f			
H2	V _c			
	f			
H3	V _c			
	f			
01	V _c	8–18	15–30	30–60
	f	.005–.010	.008–.015	.013–.035
02	V _c			
	f			
03	V _c			
	f			

Material		Ø.03–.10	Ø.11–.50	Ø.51–1.00	Ø1.01–2.00	Ø2.01–3.00
P1	V _c	1.5–5	4–10	10–30	30–60	30–60
	f	.001–.003	.002–.010	.010–.018	.018–.028	.028–.045
P2	V _c	1.2–4	3.5–8	8–25	25–50	25–50
	f	.001–.002	.002–.008	.008–.016	.016–.026	.026–.040
P3	V _c	1–3	3–6	6–20	20–45	20–45
	f	.001–.002	.002–.007	.007–.013	.013–.024	.024–.035
M1	V _c	1.2–4	3.5–8	8–20	20–45	20–45
	f	.001–.002	.002–.007	.007–.013	.013–.023	.023–.033
M2	V _c	1–3	3–6	5–15	15–30	15–30
	f	.001–.002	.002–.005	.005–.010	.010–.020	.020–.030
K1	V _c	1.5–5	4–10	10–30	30–60	30–60
	f	.001–.004	.004–.008	.008–.015	.015–.030	.030–.045
K2	V _c	1.2–4	3.5–8	8–25	25–50	25–50
	f	.001–.003	.003–.007	.007–.013	.013–.025	.025–.040
N1	V _c	2–6	5–15	15–40	40–70	40–70
	f	.001–.003	.003–.006	.006–.012	.012–.023	.023–.035
N2	V _c	1.8–5.5	5–15	15–40	40–65	40–65
	f	.001–.003	.003–.007	.007–.013	.013–.025	.025–.040
N3	V _c	1.5–5	4–12	12–30	30–60	30–60
	f	.001–.002	.002–.006	.006–.011	.011–.022	.022–.035
N4	V _c	1.5–5	4–12	12–30	30–60	30–60
	f	.001–.002	.002–.005	.005–.010	.010–.020	.020–.030
N5	V _c	2–6	5–15	15–35	35–65	35–65
	f	.001–.003	.003–.006	.006–.013	.013–.025	.025–.040
N6	V _c	1.5–5	4–12	12–30	30–60	30–60
	f	.001–.002	.002–.004	.004–.010	.010–.022	.022–.035
N7	V _c	1.5–5	4–12	12–30	30–60	30–60
	f	.001–.002	.002–.004	.004–.009	.009–.020	.020–.031
N8	V _c	1–3	3–6	6–20	20–45	20–45
	f	.001–.002	.002–.004	.004–.008	.008–.016	.016–.027
S1	V _c	.8–5	4–7	7–15	15–30	15–30
	f	.001–.002	.002–.004	.004–.009	.009–.018	.018–.030
S2	V _c					
	f					
H1	V _c					
	f					
H2	V _c					
	f					
H3	V _c					
	f					
01	V _c	1.5–5	4–10	10–25	20–35	30–60
	f	.001–.003	.003–.008	.008–.014	.014–.035	.035–.060
02	V _c					
	f					
03	V _c					
	f					

Art. 56036

Art. 16004

Material		Ø.30-.95	Ø1.00-1.95	Ø2.00-2.95	Ø3.00-3.95	Ø4.00-6.00
P1	V _c	40-60	60-90	60-90	60-90	60-90
	f	.010-.025	.025-.040	.040-.055	.055-.070	.070-.100
P2	V _c	30-50	50-70	50-70	50-70	50-70
	f	.009-.023	.023-.036	.036-.050	.050-.065	.065-.080
P3	V _c	20-40	40-60	40-60	40-60	40-60
	f	.006-.015	.015-.025	.025-.040	.040-.055	.055-.070
M1	V _c	20-35	35-50	35-50	35-50	35-50
	f	.005-.013	.013-.023	.023-.035	.035-.050	.050-.065
M2	V _c	20-30	30-45	30-45	30-45	30-45
	f	.004-.010	.010-.020	.020-.032	.032-.046	.046-.060
K1	V _c	60-100	100-150	100-150	100-150	100-150
	f	.015-.025	.025-.038	.038-.055	.055-.075	.075-.130
K2	V _c	40-80	80-130	80-130	80-130	80-130
	f	.012-.022	.022-.035	.035-.050	.050-.070	.070-.090
N1	V _c	60-90	90-120	90-120	90-120	90-120
	f	.015-.025	.025-.035	.035-.050	.050-.070	.070-.085
N2	V _c	70-120	120-150	120-150	120-150	120-150
	f	.016-.027	.027-.042	.042-.060	.060-.080	.080-.110
N3	V _c	70-120	120-150	120-150	120-150	120-150
	f	.015-.025	.025-.035	.035-.050	.050-.070	.070-.085
N4	V _c	40-70	70-100	70-100	70-100	70-100
	f	.013-.023	.023-.033	.033-.045	.045-.060	.060-.080
N5	V _c	70-120	120-150	120-150	120-150	120-150
	f	.015-.025	.025-.035	.035-.050	.050-.070	.070-.100
N6	V _c					
	f					
N7	V _c					
	f					
N8	V _c					
	f					
S1	V _c	30-40	40-70	40-70	40-70	40-70
	f	.010-.022	.022-.035	.035-.050	.050-.070	.070-.090
S2	V _c					
	f					
H1	V _c	15-25	20-35	20-35	20-35	20-35
	f	.005-.010	.010-.020	.020-.030	.030-.040	.040-.055
H2	V _c					
	f					
H3	V _c					
	f					
01	V _c					
	f					
02	V _c					
	f					
03	V _c					
	f					

Material		Ø.10-.30	Ø.35-.50	Ø.55-.80	Ø.85-1.50
P1	V _c	1.0-2.0	2.0-5.5	3.5-11	9.0-15
	f	.001-.005	.004-.007	.006-.011	.010-.015
P2	V _c	.8-1.5	1.2-4.0	3.5-8.0	7.0-12
	f	.001-.003	.002-.006	.005-.007	.006-.010
P3	V _c				
	f				
M1	V _c	.8-1.5	1.2-4.0	3.5-8.0	7.0-12
	f	.001-.002	.002-.004	.003-.006	.005-.010
M2	V _c	.5-1.2	1.0-3.5	2.0-5.0	3.0-7.5
	f	.001-.002	.002-.004	.003-.005	.004-.008
K1	V _c	1.0-2.0	2.0-5.5	3.5-11	9.0-15
	f	.001-.005	.004-.008	.007-.011	.010-.015
K2	V _c	.8-1.5	1.2-4.0	3.5-8.0	7.0-12
	f	.001-.003	.002-.006	.005-.007	.006-.010
N1	V _c	1.0-2.0	2.0-5.5	3.5-11	9.0-15
	f	.001-.006	.005-.010	.008-.015	.013-.025
N2	V _c	.8-1.5	1.2-4.0	3.5-8.0	7.0-12
	f	.002-.006	.005-.010	.008-.015	.013-.025
N3	V _c				
	f				
N4	V _c				
	f				
N5	V _c	1.0-2.0	2.0-5.5	3.5-11	9.0-15
	f	.002-.006	.005-.010	.008-.015	.013-.020
N6	V _c				
	f				
N7	V _c				
	f				
N8	V _c				
	f				
S1	V _c				
	f				
S2	V _c				
	f				
H1	V _c				
	f				
H2	V _c				
	f				
H3	V _c				
	f				
01	V _c				
	f				
02	V _c				
	f				
03	V _c				
	f				

Art. 50695 / 50699

Art. 51200

Material		Ø.05-.30	Ø.31-.50	Ø.51-.80	Ø.81-1.20	Ø1.21-2.00
P1	V _c	1.0-6.0	6.0-15	10-23	23-60	23-60
	f	.001-.004	.003-.008	.007-.013	.012-.018	.016-.025
P2	V _c	1.0-6.0	2.0-10	3.5-16	7.0-30	7.0-30
	f	.001-.003	.002-.007	.006-.012	.010-.016	.014-.022
P3	V _c	.5-5.0	1.0-8.0	2.5-13	5.0-25	5.0-25
	f	.001-.002	.002-.006	.005-.010	.008-.014	.012-.020
M1	V _c	.5-3.0	1.0-6.0	4.0-10	8.0-18	8.0-18
	f	.001-.002	.002-.005	.004-.008	.007-.012	.010-.016
M2	V _c					
	f					
K1	V _c	2.0-8.0	6.0-15	10-23	23-60	23-60
	f	.001-.004	.003-.008	.007-.013	.012-.018	.016-.025
K2	V _c	1.0-6.0	2.0-10	3.5-16	7.0-30	7.0-30
	f	.001-.003	.002-.007	.006-.012	.010-.016	.014-.022
N1	V _c					
	f					
N2	V _c	3.0-16	8.0-26	13-55	30-100	30-100
	f	.001-.004	.004-.007	.007-.011	.010-.016	.015-.022
N3	V _c	2.5-13	6.0-22	10-40	20-80	20-80
	f	.001-.004	.004-.006	.005-.010	.009-.015	.014-.020
N4	V _c	2.0-8.0	6.0-15	10-23	23-60	23-60
	f	.001-.002	.002-.005	.004-.008	.007-.017	.010-.016
N5	V _c	3.0-16	8.0-26	13-55	30-100	30-100
	f	.001-.004	.004-.006	.005-.010	.009-.015	.014-.020
N6	V _c					
	f					
N7	V _c	2.0-8.0	6.0-15	10-23	23-60	23-60
	f	.001-.004	.004-.006	.005-.010	.009-.015	.014-.020
N8	V _c	1.0-6.0	2.0-10	3.5-16	7.0-30	7.0-30
	f	.001-.002	.002-.005	.004-.008	.007-.010	.008-.013
S1	V _c					
	f					
S2	V _c					
	f					
H1	V _c					
	f					
H2	V _c					
	f					
H3	V _c					
	f					
01	V _c					
	f					
02	V _c					
	f					
03	V _c					
	f					

Material		Ø.03-.30	Ø.31-.50	Ø.51-1.00	Ø1.01-2.00	Ø2.01-3.00
P1	V _c	1.5-5	4-10	10-30	30-60	30-60
	f	.001-.004	.003-.008	.007-.015	.014-.025	.023-.035
P2	V _c	1.2-4	3.5-8	8-25	25-50	25-50
	f	.001-.003	.002-.007	.006-.014	.012-.023	.021-.032
P3	V _c	1-3	3-6	6-20	20-45	20-45
	f	.001-.002	.002-.006	.005-.013	.011-.020	.018-.030
M1	V _c	1.2-4	3.5-8	8-20	20-45	20-45
	f	.001-.002	.002-.005	.004-.011	.010-.018	.016-.028
M2	V _c	1-3	3-6	5-15	15-30	15-30
	f	.001-.002	.002-.004	.003-.009	.008-.016	.016-.028
K1	V _c	1.5-5	4-10	10-30	30-60	30-60
	f	.001-.004	.003-.008	.007-.015	.014-.025	.023-.035
K2	V _c	1.2-4	3.5-8	8-25	25-50	25-50
	f	.001-.003	.002-.007	.006-.014	.012-.022	.020-.032
N1	V _c	2-6	5-15	15-40	40-70	40-70
	f	.001-.003	.002-.006	.005-.013	.012-.020	.018-.030
N2	V _c	1.8-5.5	5.0-15	15-40	40-65	40-65
	f	.001-.004	.003-.007	.006-.015	.014-.022	.020-.035
N3	V _c	1.5-5	4-12	12-30	30-60	30-60
	f	.001-.004	.003-.006	.006-.013	.012-.020	.018-.032
N4	V _c	1.5-5	4-12	12-30	30-60	30-60
	f	.001-.002	.002-.005	.004-.010	.009-.016	.015-.025
N5	V _c	2-6	5-15	15-35	35-65	35-65
	f	.001-.004	.003-.006	.005-.013	.012-.020	.018-.032
N6	V _c	1.5-5	4-12	12-30	30-60	30-60
	f	.001-.002	.002-.005	.004-.010	.009-.016	.015-.020
N7	V _c	1.5-5	4-12	12-30	30-60	30-60
	f	.001-.004	.003-.006	.005-.012	.011-.018	.016-.025
N8	V _c	1-3	2.5-6	6-20	20-45	20-45
	f	.001-.002	.002-.005	.004-.009	.008-.013	.012-.018
S1	V _c	.8-5	4-7	7-15	15-30	15-30
	f	.001-.003	.002-.006	.005-.013	.012-.020	.018-.030
S2	V _c					
	f					
H1	V _c					
	f					
H2	V _c					
	f					
H3	V _c					
	f					
01	V _c	1.5-5	4-10	10-25	20-35	30-60
	f	.001-.004	.003-.010	.009-.018	.016-.028	.026-.040
02	V _c					
	f					
03	V _c					
	f					

Art. 51201

Art. 50621

Material		Ø.30–.50	Ø.51–1.00	Ø1.01–2.00	Ø2.01–3.00
P1	V _c	5–12	12–35	35–65	35–60
	f	.003–.008	.007–.015	.014–.025	.023–.035
P2	V _c	4–9	9–28	28–55	28–55
	f	.002–.007	.006–.014	.012–.023	.021–.032
P3	V _c	3.3–7	7–23	23–50	23–50
	f	.002–.006	.005–.013	.011–.020	.018–.030
M1	V _c	4–9	9–28	28–55	28–55
	f	.002–.005	.004–.011	.010–.018	.016–.028
M2	V _c	3–8	8–20	18–35	18–35
	f	.002–.004	.003–.009	.008–.016	.016–.028
K1	V _c	5–12	12–35	35–65	35–60
	f	.003–.008	.007–.015	.014–.025	.023–.035
K2	V _c	4–10	10–30	30–55	30–50
	f	.002–.007	.006–.014	.012–.022	.020–.032
N1	V _c	6–19	19–45	45–80	45–80
	f	.002–.006	.005–.013	.012–.020	.018–.030
N2	V _c	5.5–17	17–45	45–70	45–70
	f	.003–.007	.006–.015	.014–.022	.020–.035
N3	V _c	5.5–15	15–35	35–65	35–65
	f	.003–.006	.006–.013	.012–.020	.018–.032
N4	V _c	5.5–15	15–35	35–65	35–65
	f	.002–.005	.004–.010	.009–.016	.015–.025
N5	V _c	6.5–18	18–40	40–70	40–70
	f	.003–.006	.005–.013	.012–.020	.018–.032
N6	V _c	5.5–15	15–35	35–65	35–65
	f	.002–.005	.004–.010	.009–.016	.015–.020
N7	V _c	5.5–15	15–35	35–65	35–65
	f	.003–.006	.005–.012	.011–.018	.016–.025
N8	V _c	3–7	7–23	23–50	23–50
	f	.002–.005	.004–.009	.008–.013	.012–.018
S1	V _c	5–8	8.0–18	18–35	18–35
	f	.002–.006	.005–.013	.012–.020	.018–.030
S2	V _c	2.5–7	6–12	11–20	11–20
	f	.002–.004	.003–.007	.006–.011	.010–.018
H1	V _c	2.5–7	6–12	11–20	11–20
	f	.002–.004	.003–.007	.006–.011	.010–.018
H2	V _c				
	f				
H3	V _c				
	f				
01	V _c	5–12	12–35	35–65	35–60
	f	.003–.010	.009–.018	.016–.028	.026–.040
02	V _c	2.5–6	6–20	20–45	20–45
	f	.002–.009	.008–.016	.015–.025	.022–.035
03	V _c				
	f				

Material		Ø.20–.50	Ø.51–1.00	Ø1.01–2.00	Ø2.01–3.00
P1	V _c	6–15	15–35	15–35	15–35
	f	.001–.010	.010–.020	.020–.030	.030–.045
P2	V _c	5–13	13–30	13–30	13–30
	f	.001–.008	.008–.018	.018–.028	.028–.042
P3	V _c	4–12	12–25	12–25	12–25
	f	.001–.007	.007–.016	.016–.025	.025–.038
M1	V _c	4–12	12–25	12–25	12–25
	f	.001–.007	.007–.016	.016–.025	.025–.038
M2	V _c				
	f				
K1	V _c	6–15	15–35	15–35	15–35
	f	.001–.010	.010–.020	.020–.030	.030–.045
K2	V _c	5–13	13–30	13–30	13–30
	f	.001–.008	.008–.018	.018–.028	.028–.042
N1	V _c				
	f				
N2	V _c	8–20	20–45	20–45	20–45
	f	.001–.010	.010–.020	.020–.030	.030–.045
N3	V _c	6–18	18–40	18–40	18–40
	f	.001–.008	.008–.018	.018–.028	.028–.042
N4	V _c				
	f				
N5	V _c	6–18	18–40	18–40	18–40
	f	.001–.010	.010–.020	.020–.035	.035–.060
N6	V _c				
	f				
N7	V _c				
	f				
N8	V _c				
	f				
S1	V _c				
	f				
S2	V _c				
	f				
H1	V _c				
	f				
H2	V _c				
	f				
H3	V _c				
	f				
01	V _c				
	f				
02	V _c				
	f				
03	V _c				
	f				

Art. 50622

Art. 12604

Material		Ø.20–.50	Ø.51–1.00	Ø1.01–2.00	Ø2.01–3.00
P1	V _c	8–20	20–40	20–40	20–40
	f	.001–.010	.010–.020	.020–.030	.030–.045
P2	V _c	6–18	18–38	18–38	18–38
	f	.001–.008	.008–.018	.018–.028	.028–.042
P3	V _c	5–14	14–30	14–30	14–30
	f	.001–.007	.007–.016	.016–.025	.025–.038
M1	V _c	5–14	14–30	14–30	14–30
	f	.001–.007	.007–.016	.016–.025	.025–.038
M2	V _c				
	f				
K1	V _c	8–20	20–40	20–40	20–40
	f	.001–.010	.010–.020	.020–.030	.030–.045
K2	V _c	6–18	18–38	18–38	18–38
	f	.001–.008	.008–.018	.018–.028	.028–.042
N1	V _c				
	f				
N2	V _c	10–25	25–55	25–55	25–55
	f	.001–.010	.010–.020	.020–.030	.030–.045
N3	V _c	8–22	22–50	22–50	22–50
	f	.001–.008	.008–.018	.018–.028	.028–.042
N4	V _c				
	f				
N5	V _c	8–22	22–50	22–50	22–50
	f	.001–.010	.010–.020	.020–.035	.035–.060
N6	V _c				
	f				
N7	V _c				
	f				
N8	V _c				
	f				
S1	V _c				
	f				
S2	V _c				
	f				
H1	V _c	2–5	5–12	5–12	5–12
	f	.001–.004	.004–.008	.008–.015	.015–.025
H2	V _c				
	f				
H3	V _c				
	f				
01	V _c				
	f				
02	V _c				
	f				
03	V _c				
	f				

Material		Ø.05–.30	Ø.31–.80	Ø.81–1.50	Ø1.55–3.17
P1	V _c	1.0–2.0	2.0–8.0	8.0–20	8.0–20
	f	.001–.005	.005–.011	.010–.015	.014–.021
P2	V _c	.5–1.5	1.5–7.0	7.0–16	7.0–16
	f	.001–.002	.002–.006	.005–.009	.008–.012
P3	V _c				
	f				
M1	V _c	.5–1.5	1.5–7.0	7.0–16	7.0–16
	f	.001–.002	.002–.006	.005–.009	.008–.015
M2	V _c	.5–1.2	1.2–6.0	6.0–15	6.0–15
	f	.001–.002	.002–.005	.004–.007	.006–.012
K1	V _c	1.0–5.0	5.0–10	10–20	10–20
	f	.001–.005	.004–.011	.010–.015	.014–.020
K2	V _c	.8–4.0	4.0–8.0	8.0–18	8.0–18
	f	.001–.004	.003–.008	.007–.011	.010–.016
N1	V _c	2.0–7.0	7.0–13	13–25	13–25
	f	.001–.004	.003–.010	.009–.016	.015–.022
N2	V _c	1.5–6.0	6.0–12	12–22	12–22
	f	.001–.005	.004–.011	.010–.020	.018–.035
N3	V _c				
	f				
N4	V _c				
	f				
N5	V _c	2.0–7.0	7.0–13	13–25	13–25
	f	.001–.004	.003–.010	.009–.018	.017–.030
N6	V _c				
	f				
N7	V _c				
	f				
N8	V _c				
	f				
S1	V _c				
	f				
S2	V _c				
	f				
H1	V _c				
	f				
H2	V _c				
	f				
H3	V _c				
	f				
01	V _c				
	f				
02	V _c				
	f				
03	V _c				
	f				

Art. 50720

Material		Ø.20-.50	Ø.55-.80	Ø.85-1.20	Ø1.25-2.00
P1	V _c	8-20	20-40	20-40	20-40
	f	.001-.010	.010-.018	.018-.025	.025-.035
P2	V _c	6-18	18-38	18-38	18-38
	f	.001-.008	.008-.016	.016-.023	.023-.033
P3	V _c	5-14	14-30	14-30	14-30
	f	.001-.007	.007-.015	.015-.020	.020-.030
M1	V _c	5-14	14-30	14-30	14-30
	f	.001-.008	.008-.016	.016-.023	.023-.033
M2	V _c	3-12	12-25	12-25	12-25
	f	.001-.005	.005-.010	.010-.016	.016-.020
K1	V _c	8-20	20-40	20-40	20-40
	f	.001-.010	.010-.018	.018-.025	.025-.035
K2	V _c	6-18	6-18	6-18	6-18
	f	.001-.008	.008-.016	.016-.023	.023-.033
N1	V _c	6-18	18-38	18-38	18-38
	f	.001-.007	.007-.015	.015-.020	.020-.030
N2	V _c	10-25	25-55	25-55	25-55
	f	.001-.010	.010-.018	.018-.025	.025-.035
N3	V _c	8-22	22-50	22-50	22-50
	f	.001-.008	.008-.016	.016-.023	.023-.033
N4	V _c	5-14	14-30	14-30	14-30
	f	.001-.005	.005-.010	.010-.016	.016-.020
N5	V _c	10-25	25-55	25-55	25-55
	f	.001-.010	.010-.018	.018-.025	.025-.035
N6	V _c	5-15	15-30	15-30	15-30
	f	.001-.005	.005-.010	.010-.016	.016-.020
N7	V _c				
	f				
N8	V _c				
	f				
S1	V _c	6-10	10-20	10-20	10-20
	f	.001-.005	.005-.010	.010-.016	.016-.020
S2	V _c				
	f				
H1	V _c				
	f				
H2	V _c				
	f				
H3	V _c				
	f				
O1	V _c	15-30	15-30	15-30	15-30
	f	.005-.015	.015-.030	.030-.045	.045-.060
O2	V _c				
	f				
O3	V _c				
	f				

Art. 50740 / 50760 / 50780

Material		Ø.20-.50	Ø.55-.80	Ø.85-1.20	Ø1.25-2.00
P1	V _c	6-10	10-25	10-25	10-25
	f	.001-.006	.006-.010	.010-.022	.022-.030
P2	V _c	5-8	8-20	8-20	8-20
	f	.001-.005	.005-.008	.008-.015	.015-.020
P3	V _c	4-7	7-18	7-18	7-18
	f	.001-.004	.004-.007	.007-.012	.012-.015
M1	V _c	4-5	5-15	5-15	5-15
	f	.001-.003	.003-.006	.006-.012	.012-.018
M2	V _c	2-4	4-12	4-12	4-12
	f	.001-.003	.003-.005	.005-.010	.010-.015
K1	V _c	6-10	10-25	10-25	10-25
	f	.001-.006	.006-.010	.010-.022	.022-.030
K2	V _c	5-8	8-20	8-20	8-20
	f	.001-.005	.005-.008	.008-.015	.015-.020
N1	V _c	4-6	6-18	6-18	6-18
	f	.001-.004	.004-.007	.007-.012	.012-.015
N2	V _c	6-10	10-25	10-25	10-25
	f	.001-.006	.006-.010	.010-.022	.022-.030
N3	V _c	5-8	8-20	8-20	8-20
	f	.001-.005	.005-.008	.008-.015	.015-.020
N4	V _c	3-5	5-15	5-15	5-15
	f	.001-.004	.004-.007	.007-.012	.012-.015
N5	V _c	6-10	10-25	10-25	10-25
	f	.001-.006	.006-.010	.010-.022	.022-.030
N6	V _c	4-6	6-18	6-18	6-18
	f	.001-.003	.003-.005	.005-.010	.010-.015
N7	V _c				
	f				
N8	V _c				
	f				
S1	V _c	3-5	5-12	5-12	5-12
	f	.001-.003	.003-.005	.005-.010	.010-.015
S2	V _c				
	f				
H1	V _c				
	f				
H2	V _c				
	f				
H3	V _c				
	f				
O1	V _c	10-20	10-20	10-20	10-20
	f	.005-.010	.010-.015	.015-.020	.020-.025
O2	V _c				
	f				
O3	V _c				
	f				

Art. 51609

Art. 52903 / 52906 / 52909

Material		Ø.30-.95	Ø1.00-1.95	Ø2.00-3.00
P1	V _c	50-70	70-100	70-100
	f	.010-.025	.025-.040	.040-.055
P2	V _c	40-60	60-80	60-80
	f	.010-.025	.025-.035	.035-.050
P3	V _c	30-50	50-70	50-70
	f	.010-.020	.015-.025	.025-.040
M1	V _c	20-35	30-45	30-45
	f	.005-.008	.015-.025	.025-.035
M2	V _c	20-30	25-35	25-35
	f	.005-.008	.010-.020	.020-.030
K1	V _c	70-110	110-150	110-150
	f	.020-.050	.030-.040	.040-.050
K2	V _c	50-90	90-130	90-130
	f	.015-.040	.025-.035	.035-.050
N1	V _c	70-100	100-130	100-130
	f	.020-.030	.030-.040	.040-.050
N2	V _c	80-120	130-160	130-160
	f	.020-.030	.030-.050	.050-.060
N3	V _c	80-120	130-160	130-160
	f	.020-.030	.030-.050	.050-.060
N4	V _c	50-80	80-110	80-110
	f	.015-.025	.025-.035	.035-.045
N5	V _c	80-120	130-160	130-160
	f	.015-.025	.025-.035	.035-.045
N6	V _c			
	f			
N7	V _c			
	f			
N8	V _c			
	f			
S1	V _c	20-30	20-30	20-30
	f	.005-.010	.010-.020	.020-.030
S2	V _c	15-25	15-25	15-25
	f	.005-.010	.010-.020	.020-.030
H1	V _c	20-30	25-40	25-40
	f	.005-.015	.015-.025	.025-.035
H2	V _c	8-12	12-15	15-20
	f	.003-.008	.008-.015	.015-.020
H3	V _c			
	f			
O1	V _c	60-100	70-110	70-110
	f	.010-.020	.020-.030	.030-.040
O2	V _c			
	f			
O3	V _c			
	f			

Material		Ø1.00-1.90	Ø2.00-5.00	Ø5.10-8.00	Ø8.10-12.70
P1	V _c	70-110	70-110	70-110	70-110
	f	.025-.055	.050-.130	.125-.170	.165-.215
P2	V _c	60-100	60-100	60-100	60-100
	f	.020-.050	.045-.120	.115-.150	.140-.190
P3	V _c	60-100	60-100	60-100	60-100
	f	.020-.050	.045-.120	.115-.150	.140-.190
M1	V _c	60-100	60-100	60-100	60-100
	f	.020-.050	.045-.120	.115-.150	.140-.190
M2	V _c	50-90	50-90	50-90	50-90
	f	.015-.045	.040-.100	.090-.130	.120-.150
K1	V _c	90-140	90-140	90-140	90-140
	f	.050-.110	.100-.270	.260-.340	.320-.420
K2	V _c	80-120	80-120	80-120	80-120
	f	.040-.100	.090-.250	.240-.300	.280-.360
N1	V _c	120-170	120-170	120-170	120-170
	f	.050-.110	.100-.250	.240-.340	.320-.420
N2	V _c	150-200	150-200	150-200	150-200
	f	.050-.110	.100-.250	.240-.340	.320-.420
N3	V _c	200-250	200-250	200-250	200-250
	f	.050-.110	.100-.250	.240-.340	.320-.420
N4	V _c	90-130	90-130	90-130	90-130
	f	.050-.110	.100-.250	.240-.340	.320-.420
N5	V _c	150-200	150-200	150-200	150-200
	f	.050-.110	.100-.250	.240-.340	.320-.420
N6	V _c	60-100	60-100	60-100	60-100
	f	.020-.050	.045-.120	.115-.150	.140-.190
N7	V _c				
	f				
N8	V _c				
	f				
S1	V _c	30-60	30-60	30-60	30-60
	f	.015-.035	.030-.085	.080-.110	.100-.135
S2	V _c	20-50	20-50	20-50	20-50
	f	.020-.050	.045-.120	.115-.150	.140-.190
H1	V _c	30-60	30-60	30-60	30-60
	f	.020-.030	.030-.100	.090-.140	.120-.170
H2	V _c				
	f				
H3	V _c				
	f				
O1	V _c	70-110	70-110	70-110	70-110
	f	.025-.055	.050-.130	.125-.170	.165-.215
O2	V _c				
	f				
O3	V _c				
	f				

Art. 52912 / 52916

Material		Ø1.00–2.40	Ø2.50–5.00	Ø5.10–8.00	Ø8.10–1.00
P1	V _c	70–110	70–110	70–110	70–110
	f	.030–.080	.060–.130	.125–.170	.170–.240
P2	V _c	60–100	60–100	60–100	60–100
	f	.020–.060	.050–.120	.115–.150	.150–.220
P3	V _c	50–90	50–90	50–90	50–90
	f	.015–.050	.040–.100	.080–.130	.140–.200
M1	V _c	50–90	50–90	50–90	50–90
	f	.015–.050	.040–.100	.080–.130	.140–.190
M2	V _c	40–80	40–80	40–80	40–80
	f	.010–.045	.030–.090	.070–.120	.120–.170
K1	V _c	90–140	90–140	90–140	90–140
	f	.030–.080	.080–.150	.150–.280	.280–.350
K2	V _c	80–120	80–120	80–120	80–120
	f	.040–.100	.060–.130	.130–.220	.220–.300
N1	V _c	150–200	150–200	150–200	150–200
	f	.050–.110	.100–.250	.240–.340	.320–.420
N2	V _c	150–200	150–200	150–200	150–200
	f	.050–.110	.100–.250	.240–.340	.320–.420
N3	V _c	150–200	150–200	150–200	150–200
	f	.050–.110	.100–.250	.240–.340	.320–.420
N4	V _c	120–170	120–170	120–170	120–170
	f	.030–.080	.060–.130	.140–.190	.165–.210
N5	V _c	120–170	120–170	120–170	120–170
	f	.040–.100	.100–.250	.240–.300	.280–.360
N6	V _c	80–120	80–120	80–120	80–120
	f	.040–.100	.100–.250	.240–.300	.280–.360
N7	V _c				
	f				
N8	V _c				
	f				
S1	V _c	50–90	50–90	50–90	50–90
	f	.020–.060	.040–.100	.100–.200	.100–.135
S2	V _c	30–55	30–55	30–55	30–55
	f	.010–.040	.030–.070	.080–.130	.100–.170
H1	V _c	30–60	30–60	30–60	30–60
	f	.015–.050	.040–.100	.090–.140	.120–.150
H2	V _c				
	f				
H3	V _c				
	f				
O1	V _c	70–110	70–110	70–110	70–110
	f	.025–.050	.050–.130	.130–.170	.170–.220
O2	V _c				
	f				
O3	V _c				
	f				

Art. 52920 / 52930

Material		Ø3.00–5.00	Ø5.10–8.00	Ø8.10–1.00
P1	V _c			
	f			
P2	V _c			
	f			
P3	V _c	40–80	40–80	40–80
	f	.050–.085	.080–.110	.100–.150
M1	V _c	30–70	30–70	30–70
	f	.045–.070	.065–.085	.080–.120
M2	V _c	25–55	25–55	25–55
	f	.035–.050	.045–.065	.080–.110
K1	V _c	70–110	70–110	70–110
	f	.100–.200	.180–.250	.230–.280
K2	V _c	60–100	60–100	60–100
	f	.090–.180	.170–.240	.220–.260
N1	V _c	60–100	60–100	60–100
	f	.130–.250	.230–.340	.320–.380
N2	V _c	65–100	65–100	65–100
	f	.130–.250	.230–.340	.320–.380
N3	V _c	70–110	70–110	70–110
	f	.130–.250	.230–.340	.320–.380
N4	V _c			
	f			
N5	V _c			
	f			
N6	V _c			
	f			
N7	V _c			
	f			
N8	V _c			
	f			
S1	V _c	30–60	30–60	30–60
	f	.035–.070	.065–.085	.080–.110
S2	V _c	20–50	20–50	20–50
	f	.030–.060	.050–.080	.070–.100
H1	V _c	20–40	20–40	20–40
	f	.010–.035	.030–.040	.035–.060
H2	V _c			
	f			
H3	V _c			
	f			
O1	V _c	60–100	60–100	60–100
	f	.090–.180	.170–.240	.220–.260
O2	V _c			
	f			
O3	V _c			
	f			

Art. 50938

Art. 50940

Material		Ø1.00–2.40	Ø2.50–5.00	Ø5.10–8.00	Ø8.10–12.70
P1	V _c	50–80	60–100	60–100	60–100
	f	.030–.070	.045–.120	.110–.150	.150–.200
P2	V _c	45–70	55–90	55–90	55–90
	f	.030–.060	.040–.115	.100–.140	.140–.180
P3	V _c	40–60	55–90	55–90	55–90
	f	.020–.050	.040–.115	.100–.140	.140–.180
M1	V _c	20–45	50–90	50–90	50–90
	f	.010–.040	.040–.100	.090–.130	.120–.150
M2	V _c	20–40	40–80	40–80	40–80
	f	.010–.035	.035–.090	.075–.110	.110–.130
K1	V _c	60–80	80–120	80–120	80–120
	f	.050–.080	.090–.250	.240–.300	.280–.360
K2	V _c	50–70	70–100	70–100	70–100
	f	.040–.070	.080–.230	.220–.280	.265–.320
N1	V _c				
	f				
N2	V _c	80–110	140–190	140–190	140–190
	f	.040–.130	.090–.230	.220–.300	.300–.360
N3	V _c	90–130	180–220	180–220	180–220
	f	.040–.140	.090–.230	.220–.300	.300–.360
N4	V _c				
	f				
N5	V _c				
	f				
N6	V _c				
	f				
N7	V _c				
	f				
N8	V _c				
	f				
S1	V _c	20–40	25–55	25–55	25–55
	f	.010–.030	.025–.050	.040–.070	.060–.100
S2	V _c				
	f				
H1	V _c	25–45	35–55	35–55	35–55
	f	.010–.020	.015–.040	.030–.060	.050–.090
H2	V _c				
	f				
H3	V _c				
	f				
01	V _c				
	f				
02	V _c				
	f				
03	V _c				
	f				

Material		Ø1.00–1.90	Ø2.00–5.00	Ø5.10–8.00	Ø8.10–12.70
P1	V _c	60–100	60–100	60–100	60–100
	f	.020–.050	.045–.120	.110–.150	.150–.200
P2	V _c	55–90	55–90	55–90	55–90
	f	.015–.045	.040–.115	.100–.140	.140–.180
P3	V _c	55–90	55–90	55–90	55–90
	f	.015–.045	.040–.115	.100–.140	.140–.180
M1	V _c	50–90	50–90	50–90	50–90
	f	.015–.045	.040–.100	.090–.130	.120–.150
M2	V _c	40–80	40–80	40–80	40–80
	f	.010–.040	.035–.090	.075–.110	.110–.130
K1	V _c	80–120	80–120	80–120	80–120
	f	.040–.100	.090–.250	.240–.300	.280–.360
K2	V _c	70–100	70–100	70–100	70–100
	f	.030–.090	.080–.230	.220–.280	.265–.320
N1	V _c				
	f				
N2	V _c	140–190	140–190	140–190	140–190
	f	.040–.100	.090–.230	.220–.300	.300–.360
N3	V _c	180–220	180–220	180–220	180–220
	f	.040–.100	.090–.230	.220–.300	.300–.360
N4	V _c				
	f				
N5	V _c				
	f				
N6	V _c				
	f				
N7	V _c				
	f				
N8	V _c				
	f				
S1	V _c	25–55	25–55	25–55	25–55
	f	.010–.030	.025–.050	.040–.070	.060–.100
S2	V _c				
	f				
H1	V _c	30–50	30–50	30–50	30–50
	f	.005–.015	.010–.040	.030–.050	.050–.065
H2	V _c				
	f				
H3	V _c				
	f				
01	V _c				
	f				
02	V _c				
	f				
03	V _c				
	f				

Art. 50941

Art. 52100 / 52200

Material		Ø.50-.90	Ø1.00-1.90	Ø2.00-3.00
P1	V _c	50-70	70-100	70-100
	f	.020-.040	.035-.060	.060-.120
P2	V _c	40-60	60-80	60-80
	f	.010-.030	.025-.045	.045-.100
P3	V _c	30-50	50-70	50-70
	f	.010-.020	.015-.040	.040-.080
M1	V _c	20-35	30-45	30-45
	f	.005-.008	.008-.020	.020-.030
M2	V _c	20-30	25-35	25-35
	f	.005-.008	.008-.015	.015-.025
K1	V _c	50-100	100-150	100-150
	f	.020-.050	.040-.080	.080-.120
K2	V _c	50-90	90-130	90-130
	f	.015-.040	.030-.060	.060-.100
N1	V _c			
	f			
N2	V _c	60-120	120-150	120-150
	f	.020-.040	.040-.080	.080-.120
N3	V _c	80-120	130-170	130-170
	f	.020-.040	.040-.080	.080-.120
N4	V _c			
	f			
N5	V _c			
	f			
N6	V _c			
	f			
N7	V _c			
	f			
N8	V _c			
	f			
S1	V _c	30-40	30-40	30-40
	f	.005-.008	.008-.020	.020-.035
S2	V _c			
	f			
H1	V _c	10-20	15-30	15-30
	f	.003-.006	.005-.015	.015-.020
H2	V _c			
	f			
H3	V _c			
	f			
01	V _c			
	f			
02	V _c			
	f			
03	V _c			
	f			

Material		Ø3.00-4.00	Ø4.10-8.00	Ø8.10-12.00	Ø12.10-16.00	Ø16.10-2.00
P1	V _c					
	f					
P2	V _c					
	f					
P3	V _c					
	f					
M1	V _c					
	f					
M2	V _c					
	f					
K1	V _c	60-110	60-110	60-110	60-110	60-110
	f	.040-.060	.050-.200	.160-.300	.280-.400	.380-.500
K2	V _c	50-100	50-100	50-100	50-100	50-100
	f	.020-.050	.040-.160	.140-.250	.220-.350	.320-.400
N1	V _c					
	f					
N2	V _c	200-250	200-250	200-250	200-250	200-250
	f	.040-.060	.050-.150	.140-.260	.250-.400	.380-.600
N3	V _c	220-280	220-280	220-280	220-280	220-280
	f	.040-.060	.050-.150	.140-.260	.250-.400	.380-.600
N4	V _c					
	f					
N5	V _c	80-120	80-120	80-120	80-120	80-120
	f	.040-.060	.050-.150	.140-.250	.230-.330	.300-.400
N6	V _c					
	f					
N7	V _c					
	f					
N8	V _c					
	f					
S1	V _c					
	f					
S2	V _c					
	f					
H1	V _c					
	f					
H2	V _c					
	f					
H3	V _c					
	f					
01	V _c	20-40	20-40	20-40	20-40	20-40
	f	.030-.050	.040-.100	.080-.150	.130-.180	.160-.200
02	V _c					
	f					
03	V _c					
	f					

Art. 52150

Material		Ø4.00-7.00	Ø7.10-1.00	Ø1.10-13.00	Ø13.10-16.00	Ø16.10-2.00
P1	V _c	90-120	90-120	90-120	90-120	90-120
	f	.080-.200	.180-.350	.300-.400	.350-.450	.400-.600
P2	V _c	80-150	80-150	80-150	80-150	80-150
	f	.050-.180	.160-.250	.220-.350	.330-.400	.380-.550
P3	V _c					
	f					
M1	V _c					
	f					
M2	V _c					
	f					
K1	V _c	200-250	200-250	200-250	200-250	200-250
	f	.100-.250	.220-.350	.330-.450	.420-.550	.520-.700
K2	V _c	160-200	160-200	160-200	160-200	160-200
	f	.080-.180	.160-.250	.230-.350	.330-.500	.450-.550
N1	V _c					
	f					
N2	V _c					
	f					
N3	V _c	250-300	250-300	250-300	250-300	250-300
	f	.050-.150	.130-.250	.230-.350	.330-.450	.430-.550
N4	V _c					
	f					
N5	V _c	80-120	80-120	80-120	80-120	80-120
	f	.050-.120	.100-.220	.200-.320	.300-.400	.380-.450
N6	V _c					
	f					
N7	V _c					
	f					
N8	V _c					
	f					
S1	V _c					
	f					
S2	V _c					
	f					
H1	V _c	70-100	70-100	70-100	70-100	70-100
	f	.050-.100	.080-.180	.160-.260	.240-.300	.280-.350
H2	V _c					
	f					
H3	V _c					
	f					
01	V _c					
	f					
02	V _c					
	f					
03	V _c					
	f					

Art. 50950

Material		Ø3.00–5.00	Ø5.10–8.00	Ø8.10–12.00	Ø12.10–16.00	Ø16.10–20.00
P1	V _c	80–120	80–120	80–120	80–120	80–120
	f	.060–.150	.120–.250	.220–.350	.320–.450	.400–.500
P2	V _c	60–80	60–80	60–80	60–80	60–80
	f	.050–.120	.100–.220	.200–.300	.280–.360	.340–.450
P3	V _c	50–70	50–70	50–70	50–70	50–70
	f	.040–.100	.090–.180	.160–.260	.240–.320	.300–.380
M1	V _c	40–60	40–60	40–60	40–60	40–60
	f	.030–.080	.070–.150	.140–.180	.170–.250	.230–.320
M2	V _c	30–50	30–50	30–50	30–50	30–50
	f	.030–.080	.070–.130	.120–.160	.150–.220	.200–.300
K1	V _c	100–130	100–130	100–130	100–130	100–130
	f	.100–.250	.230–.350	.320–.450	.400–.500	.450–.600
K2	V _c	60–80	60–80	60–80	60–80	60–80
	f	.060–.200	.180–.280	.250–.350	.320–.450	.420–.500
N1	V _c					
	f					
N2	V _c	150–200	150–200	150–200	150–200	150–200
	f	.100–.270	.250–.350	.330–.400	.380–.480	.460–.550
N3	V _c	130–160	130–160	130–160	130–160	130–160
	f	.100–.250	.220–.320	.300–.380	.360–.450	.420–.500
N4	V _c					
	f					
N5	V _c					
	f					
N6	V _c					
	f					
N7	V _c					
	f					
N8	V _c					
	f					
S1	V _c	30–60	30–60	30–60	30–60	30–60
	f	.005–.040	.030–.070	.060–.110	.100–.150	.140–.180
S2	V _c					
	f					
H1	V _c	60–90	60–90	60–90	60–90	60–90
	f	.050–.120	.100–.220	.200–.300	.280–.360	.340–.400
H2	V _c	40–60	40–60	40–60	40–60	40–60
	f	.030–.070	.060–.130	.110–.180	.160–.240	.200–.260
H3	V _c	15–35	15–35	15–35	15–35	15–35
	f	.005–.030	.020–.050	.040–.070	.060–.100	.080–.120
01	V _c					
	f					
02	V _c					
	f					
03	V _c					
	f					

Art. 50830

Art. 50838

Material		Ø.30-1.00	Ø1.10-5.00	Ø5.10-1.00	Ø1.10-15.00	Ø15.10-2.00
P1	V _c	30-60	50-90	50-90	50-90	50-90
	f	.010-.040	.038-.080	.076-.110	.100-.180	.170-.260
P2	V _c	20-35	30-60	30-60	30-60	30-60
	f	.010-.030	.028-.070	.065-.090	.085-.160	.150-.230
P3	V _c	15-30	25-50	25-50	25-50	25-50
	f	.005-.020	.018-.060	.057-.085	.080-.130	.125-.200
M1	V _c	15-30	25-50	25-50	25-50	25-50
	f	.005-.020	.018-.060	.057-.085	.080-.130	.125-.200
M2	V _c	10-20	15-40	15-40	15-40	15-40
	f	.004-.018	.016-.050	.048-.090	.085-.120	.110-.160
K1	V _c	40-80	70-120	70-120	70-120	70-120
	f	.010-.060	.055-.090	.085-.110	.100-.280	.260-.500
K2	V _c	30-50	40-80	40-80	40-80	40-80
	f	.010-.030	.028-.070	.067-.100	.095-.180	.170-.300
N1	V _c	30-60	50-90	50-90	50-90	50-90
	f	.012-.045	.042-.085	.080-.140	.135-.250	.230-.300
N2	V _c	40-80	70-120	70-120	70-120	70-120
	f	.015-.050	.480-.100	.095-.180	.170-.280	.260-.450
N3	V _c	30-70	60-110	60-110	60-110	60-110
	f	.010-.045	.040-.085	.080-.160	.150-.260	.240-.400
N4	V _c	20-40	30-70	30-70	30-70	30-70
	f	.005-.030	.028-.070	.065-.090	.085-.160	.150-.230
N5	V _c					
	f					
N6	V _c	15-30	25-50	25-50	25-50	25-50
	f	.012-.045	.042-.085	.080-.140	.135-.250	.230-.300
N7	V _c	15-30	25-50	25-50	25-50	25-50
	f	.012-.045	.042-.085	.080-.140	.135-.250	.230-.300
N8	V _c	10-20	15-35	15-35	15-35	15-35
	f	.004-.018	.016-.050	.048-.090	.085-.120	.110-.180
S1	V _c	20-30	25-50	25-50	25-50	25-50
	f	.020-.040	.038-.070	.065-.100	.095-.150	.145-.200
S2	V _c	10-20	15-35	15-35	15-35	15-35
	f	.004-.018	.016-.050	.048-.090	.085-.120	.110-.180
H1	V _c					
	f					
H2	V _c					
	f					
H3	V _c					
	f					
01	V _c	20-40	30-70	30-70	30-70	30-70
	f	.015-.050	.048-.100	.095-.180	.170-.280	.260-.450
02	V _c					
	f					
03	V _c					
	f					

Material		Ø.30-1.00	Ø1.05-3.00	Ø3.105-6.00
P1	V _c	30-60	50-90	50-90
	f	.010-.040	.038-.050	.045-.060
P2	V _c	20-35	30-60	30-60
	f	.010-.030	.028-.045	.040-.055
P3	V _c	15-30	25-50	25-50
	f	.005-.020	.018-.035	.030-.050
M1	V _c	15-30	25-50	25-50
	f	.005-.020	.018-.035	.030-.050
M2	V _c	10-20	15-40	15-40
	f	.004-.018	.016-.030	.028-.040
K1	V _c	40-80	70-120	70-120
	f	.010-.060	.055-.070	.065-.100
K2	V _c	30-50	40-80	40-80
	f	.010-.030	.028-.055	.050-.080
N1	V _c	30-60	50-90	50-90
	f	.012-.045	.042-.060	.055-.090
N2	V _c	40-80	70-120	70-120
	f	.015-.050	.048-.070	.065-.110
N3	V _c	30-70	60-110	60-110
	f	.010-.045	.040-.065	.060-.100
N4	V _c	20-40	30-70	30-70
	f	.005-.030	.028-.050	.048-.075
N5	V _c	30-60	50-90	50-90
	f	.015-.050	.048-.070	.065-.110
N6	V _c	15-30	25-50	25-50
	f	.012-.045	.040-.065	.060-.100
N7	V _c			
	f			
N8	V _c			
	f			
S1	V _c	20-35	30-60	30-60
	f	.010-.030	.028-.045	.040-.055
S2	V _c			
	f			
H1	V _c			
	f			
H2	V _c			
	f			
H3	V _c			
	f			
01	V _c	20-40	30-70	30-70
	f	.015-.050	.048-.070	.065-.120
02	V _c			
	f			
03	V _c			
	f			

Art. 50820

Material		Ø.70-2.50	Ø2.60-6.00	Ø6.10-9.00	Ø9.10-11.00	Ø11.10-14.00
P1	V _c	30-60	50-90	50-90	50-90	50-90
	f	.010-.020	.018-.040	.038-.065	.060-.090	.085-.120
P2	V _c	20-35	30-60	30-60	30-60	30-60
	f	.008-.018	.016-.035	.033-.055	.050-.075	.070-.100
P3	V _c					
	f					
M1	V _c					
	f					
M2	V _c					
	f					
K1	V _c	20-40	30-70	30-70	30-70	30-70
	f	.010-.025	.023-.045	.042-.075	.072-.110	.100-.150
K2	V _c	15-30	25-50	25-50	25-50	25-50
	f	.010-.020	.018-.040	.038-.065	.060-.090	.085-.120
N1	V _c					
	f					
N2	V _c	80-120	110-160	110-160	110-160	110-160
	f	.010-.030	.028-.080	.075-.120	.110-.160	.150-.200
N3	V _c	60-100	50-120	50-120	50-120	50-120
	f	.010-.030	.028-.080	.075-.120	.110-.160	.150-.200
N4	V _c					
	f					
N5	V _c	40-70	60-120	60-120	60-120	60-120
	f	.010-.025	.023-.045	.042-.075	.072-.110	.100-.150
N6	V _c					
	f					
N7	V _c					
	f					
N8	V _c					
	f					
S1	V _c					
	f					
S2	V _c					
	f					
H1	V _c					
	f					
H2	V _c					
	f					
H3	V _c					
	f					
01	V _c					
	f					
02	V _c					
	f					
03	V _c					
	f					

Art. 50840

Material		Ø2.00–5.00	Ø5.10–8.00	Ø8.10–11.00	Ø11.10–14.00
P1	V _c	30–60	30–60	30–60	30–60
	f	.020–.050	.045–.090	.080–.150	.130–.200
P2	V _c	25–50	25–50	25–50	25–50
	f	.015–.045	.040–.080	.075–.120	.100–.150
P3	V _c				
	f				
M1	V _c	20–45	20–45	20–45	20–45
	f	.150–.040	.035–.070	.065–.100	.090–.130
M2	V _c	15–35	15–35	15–35	15–35
	f	.010–.035	.030–.060	.055–.085	.080–.110
K1	V _c	30–60	30–60	30–60	30–60
	f	.020–.050	.450–.090	.080–.150	.130–.200
K2	V _c	25–50	25–50	25–50	25–50
	f	.015–.045	.040–.080	.075–.120	.100–.150
N1	V _c	30–60	30–60	30–60	30–60
	f	.020–.050	.045–.090	.080–.150	.130–.200
N2	V _c	60–100	60–100	60–100	60–100
	f	.030–.080	.070–.150	.140–.220	.200–.300
N3	V _c	50–90	50–90	50–90	50–90
	f	.025–.070	.060–.130	.120–.190	.180–.250
N4	V _c	50–90	50–90	50–90	50–90
	f	.030–.090	.080–.150	.130–.200	.180–.300
N5	V _c				
	f				
N6	V _c				
	f				
N7	V _c				
	f				
N8	V _c				
	f				
S1	V _c				
	f				
S2	V _c				
	f				
H1	V _c				
	f				
H2	V _c				
	f				
H3	V _c				
	f				
01	V _c				
	f				
02	V _c				
	f				
03	V _c				
	f				

Art. 55654 / 55338

Material		Ø1.00–2.00	Ø2.10–5.00	Ø5.10–8.00	Ø8.10–11.00	Ø11.10–14.00
P1	V _c	40–60	40–60	40–60	40–60	40–60
	f	.015–.040	.035–.080	.075–.170	.160–.230	.200–.300
P2	V _c	30–50	30–50	30–50	30–50	30–50
	f	.010–.035	.030–.075	.070–.155	.150–.210	.190–.250
P3	V _c					
	f					
M1	V _c	25–40	25–40	25–40	25–40	25–40
	f	.010–.030	.025–.070	.060–.100	.090–.140	.120–.200
M2	V _c					
	f					
K1	V _c	60–100	60–100	60–100	60–100	60–100
	f	.020–.050	.040–.090	.080–.180	.160–.280	.250–.350
K2	V _c	40–80	40–80	40–80	40–80	40–80
	f	.015–.040	.035–.080	.700–.170	.150–.230	.210–.300
N1	V _c					
	f					
N2	V _c	80–120	80–120	80–120	80–120	80–120
	f	.020–.060	.050–.120	.100–.230	.210–.340	.330–.450
N3	V _c	60–100	60–100	60–100	60–100	60–100
	f	.020–.060	.050–.120	.100–.230	.210–.340	.330–.450
N4	V _c					
	f					
N5	V _c					
	f					
N6	V _c					
	f					
N7	V _c					
	f					
N8	V _c					
	f					
S1	V _c	30–50	30–50	30–50	30–50	30–50
	f	.010–.030	.025–.070	.060–.130	.100–.160	.150–.200
S2	V _c					
	f					
H1	V _c					
	f					
H2	V _c					
	f					
H3	V _c					
	f					
01	V _c	30–50	30–50	30–50	30–50	30–50
	f	.013–.035	.035–.045	.045–.060	.060–.080	.080–.100
02	V _c					
	f					
03	V _c					
	f					

Art. 55652

Material		Ø.20-.50	Ø.51-1.00	Ø1.01-2.00	Ø2.01-2.99
P1	V _c	10-25	25-40	40-60	40-60
	f	.005-.008	.007-.015	.013-.040	.035-.050
P2	V _c	8.0-20	20-30	30-50	30-50
	f	.004-.007	.006-.015	.013-.035	.030-.045
P3	V _c				
	f				
M1	V _c	8-15	15-25	25-40	25-40
	f	.003-.006	.005-.012	.010-.020	.018-.030
M2	V _c				
	f				
K1	V _c	20-45	45-60	60-100	60-100
	f	.004-.008	.007-.015	.013-.040	.035-.050
K2	V _c	15-30	30-40	40-80	40-80
	f	.002-.006	.005-.013	.011-.032	.030-.045
N1	V _c				
	f				
N2	V _c	20-50	50-80	80-120	80-120
	f	.005-.010	.008-.020	.018-.050	.040-.080
N3	V _c	10-30	30-60	60-100	60-100
	f	.005-.010	.008-.020	.018-.050	.040-.080
N4	V _c				
	f				
N5	V _c				
	f				
N6	V _c				
	f				
N7	V _c				
	f				
N8	V _c				
	f				
S1	V _c	10-20	20-30	30-50	30-50
	f	.002-.005	.004-.010	.008-.030	.028-.040
S2	V _c				
	f				
H1	V _c				
	f				
H2	V _c				
	f				
H3	V _c				
	f				
01	V _c	8.0-20	20-30	30-50	30-50
	f	.004-.007	.006-.015	.013-.035	.030-.045
02	V _c				
	f				
03	V _c				
	f				

Art. 58000 / 58500

Material		Ø.99-2.00	Ø2.01-3.00	Ø3.01-4.00	Ø4.01-5.00	Ø5.01-6.00
P1	V _c	20-30	20-30	20-30	20-30	20-30
	f	.050-.100	.080-.130	.120-.180	.170-.230	.220-.280
P2	V _c	15-25	15-25	15-25	15-25	15-25
	f	.040-.080	.070-.120	.110-.170	.160-.220	.210-.260
P3	V _c	10-20	10-20	10-20	10-20	10-20
	f	.035-.070	.060-.100	.090-.150	.130-.180	.170-.200
M1	V _c	10-20	10-20	10-20	10-20	10-20
	f	.040-.080	.070-.120	.110-.170	.160-.220	.200-.260
M2	V _c	10-15	10-15	10-15	10-15	10-15
	f	.035-.070	.060-.100	.090-.150	.130-.180	.170-.200
K1	V _c	20-30	20-30	20-30	20-30	20-30
	f	.050-.100	.080-.150	.140-.220	.200-.260	.030-.280
K2	V _c	15-25	15-25	15-25	15-25	15-25
	f	.050-.090	.750-.140	.130-.200	.180-.240	.200-.260
N1	V _c					
	f					
N2	V _c	30-40	30-40	30-40	30-40	30-40
	f	.060-.120	.110-.160	.150-.220	.200-.260	.240-.300
N3	V _c	25-35	25-35	25-35	25-35	25-35
	f	.060-.120	.110-.160	.150-.220	.200-.260	.240-.300
N4	V _c	15-25	15-25	15-25	15-25	15-25
	f	.035-.070	.060-.100	.090-.150	.130-.180	.170-.200
N5	V _c	30-40	30-40	30-40	30-40	30-40
	f	.035-.070	.060-.100	.090-.150	.130-.180	.170-.200
N6	V _c					
	f					
N7	V _c					
	f					
N8	V _c					
	f					
S1	V _c	10-15	10-15	10-15	10-15	10-15
	f	.035-.070	.060-.100	.090-.150	.130-.180	.170-.200
S2	V _c					
	f					
H1	V _c					
	f					
H2	V _c					
	f					
H3	V _c					
	f					
O1	V _c					
	f					
O2	V _c					
	f					
O3	V _c					
	f					

Art. 70030-70090 / 70130-70190

Material			
P1	V _c	180-280	
	V _f	80-180	mm/min
P2	V _c	180-280	
	V _f	70-160	mm/min
P3	V _c	180-280	
	V _f	70-150	mm/min
M1	V _c	180-280	
	V _f	70-150	mm/min
M2	V _c	180-280	
	V _f	70-150	mm/min
K1	V _c	180-280	
	V _f	80-180	mm/min
K2	V _c	180-280	
	V _f	70-160	mm/min
N1	V _c	180-280	
	V _f	60-140	mm/min
N2	V _c	180-280	
	V _f	80-180	mm/min
N3	V _c	180-280	
	V _f	70-160	mm/min
N4	V _c	180-280	
	V _f	60-120	mm/min
N5	V _c	180-280	
	V _f	80-200	mm/min
N6	V _c	180-280	
	V _f	60-150	mm/min
N7	V _c	180-280	
	V _f	80-200	mm/min
N8	V _c	180-280	
	V _f	80-200	mm/min
S1	V _c	180-280	
	V _f	50-120	mm/min
S2	V _c		
	V _f		
H1	V _c		
	V _f		
H2	V _c		
	V _f		
H3	V _c		
	V _f		
O1	V _c	180-280	
	V _f	80-200	mm/min
O2	V _c		
	V _f		
O3	V _c		
	V _f		

Art. 72075 / 72150

Material		Ø.10-30	Ø.40-1.50	Ø1.50-3.0	a _p	a _e
P1	V _c	60-80	60-80	60-80		
	f _z	.001-.005	.004-.020	.018-.040	.5×d1	1×d1
P2	V _c	50-70	50-70	50-70		
	f _z	.001-.005	.004-.020	.018-.040	.3×d1	1×d1
P3	V _c	40-60	40-60	40-60		
	f _z	.001-.004	.003-.200	.015-.035	.2×d1	1×d1
M1	V _c	30-50	30-50	30-50		
	f _z	.001-.004	.003-.020	.015-.035	.4×d1	1×d1
M2	V _c	25-40	25-40	25-40		
	f _z	.001-.004	.003-.016	.014-.028	.25×d1	1×d1
K1	V _c	40-70	40-70	40-70		
	f _z	.001-.005	.004-.020	.018-.040	1×d1	1×d1
K2	V _c	30-60	30-60	30-60		
	f _z	.001-.004	.003-.020	.015-.035	.4×d1	1×d1
N1	V _c	70-100	70-100	70-100		
	f _z	.001-.004	.003-.020	.015-.035	1×d1	1×d1
N2	V _c	80-120	80-120	80-120		
	f _z	.001-.005	.004-.020	.018-.040	.9×d1	1×d1
N3	V _c	60-100	60-100	60-100		
	f _z	.001-.005	.004-.020	.018-.040	.9×d1	1×d1
N4	V _c					
	f _z					
N5	V _c	40-80	40-80	40-80		
	f _z	.001-.005	.004-.020	.018-.040	1×d1	1×d1
N6	V _c	25-50	25-50	25-50		
	f _z	.001-.004	.003-.020	.015-.035	.5×d1	1×d1
N7	V _c					
	f _z					
N8	V _c					
	f _z					
S1	V _c	25-50	25-50	25-50		
	f _z	.001-.003	.002-.015	.012-.030	.4×d1	1×d1
S2	V _c					
	f _z					
H1	V _c					
	f _z					
H2	V _c					
	f _z					
H3	V _c					
	f _z					
O1	V _c	80-120	80-120	80-120		
	f _z	.001-.006	.005-.025	.020-.045	1×d1	1×d1
O2	V _c					
	f _z					
O3	V _c					
	f _z					

Art. 42000

Art. 72500 / 72800

Material		Ø.30-.70	Ø.70-1.50	Ø1.50-2.50	a _p	a _e
P1	V _c	60-80	60-80	60-80		
	f _z	.005-.010	.008-.020	.018-.040	.30 x d1	1 x d1
P2	V _c	50-70	50-70	50-70		
	f _z	.005-.010	.008-.020	.018-.040	.15 x d1	1 x d1
P3	V _c	40-60	40-60	40-60		
	f _z	.004-.010	.006-.020	.0015-.035	.10 x d1	1 x d1
M1	V _c	30-50	30-50	30-50		
	f _z	.004-.010	.006-.020	.015-.035	.10 x d1	1 x d1
M2	V _c	25-40	25-40	25-40		
	f _z	.004-.008	.005-.016	.014-.028	.10 x d1	1 x d1
K1	V _c	40-70	40-70	40-70		
	f _z	.005-.010	.008-.020	.018-.040	.40 x d1	1 x d1
K2	V _c	30-60	30-60	30-60		
	f _z	.004-.010	.006-.020	.015-.035	.20 x d1	1 x d1
N1	V _c	70-100	70-100	70-100		
	f _z	.004-.01	.006-.020	.015-.0035	.40 x d1	1 x d1
N2	V _c	80-120	80-120	80-120		
	f _z	.005-.010	.008-.020	.018-.040	.25 x d1	1 x d1
N3	V _c	60-100	60-100	60-100		
	f _z	.005-.010	.008-.020	.018-.040	.25 x d1	1 x d1
N4	V _c					
	f _z					
N5	V _c	40-80	40-80	40-80		
	f _z	.005-.010	.008-.020	.018-.040	.40 x d1	1 x d1
N6	V _c	25-50	25-50	25-50		
	f _z	.004-.010	.006-.020	.015-.035	.20 x d1	1 x d1
N7	V _c					
	f _z					
N8	V _c					
	f _z					
S1	V _c	25-50	25-50	25-50		
	f _z	.003-.008	.006-.015	.012-.030	.20 x d1	1 x d1
S2	V _c					
	f _z					
H1	V _c					
	f _z					
H2	V _c					
	f _z					
H3	V _c					
	f _z					
O1	V _c	80-120	80-120	80-120		
	f _z	.006-.012	.010-.025	.020-.045	.20 x d1	1 x d1
O2	V _c					
	f _z					
O3	V _c					
	f _z					

Material		Ø.30-.70	Ø.70-1.50	Ø1.50-2.50	a _p	a _e
P1	V _c	60-80	60-80	60-80		
	f _z	.005-.010	.008-.020	.018-.040	.30 x d1	1 x d1
P2	V _c	50-70	50-70	50-70		
	f _z	.005-.010	.008-.020	.018-.040	.15 x d1	1 x d1
P3	V _c	40-60	40-60	40-60		
	f _z	.004-.010	.006-.020	.0015-.035	.10 x d1	1 x d1
M1	V _c	30-50	30-50	30-50		
	f _z	.004-.010	.006-.020	.015-.035	.10 x d1	1 x d1
M2	V _c	25-40	25-40	25-40		
	f _z	.004-.008	.005-.016	.014-.028	.10 x d1	1 x d1
K1	V _c	40-70	40-70	40-70		
	f _z	.005-.010	.008-.020	.018-.040	.40 x d1	1 x d1
K2	V _c	30-60	30-60	30-60		
	f _z	.004-.010	.006-.020	.015-.035	.20 x d1	1 x d1
N1	V _c	70-100	70-100	70-100		
	f _z	.004-.01	.006-.020	.015-.0035	.40 x d1	1 x d1
N2	V _c	80-120	80-120	80-120		
	f _z	.005-.010	.008-.020	.018-.040	.25 x d1	1 x d1
N3	V _c	60-100	60-100	60-100		
	f _z	.005-.010	.008-.020	.018-.040	.25 x d1	1 x d1
N4	V _c					
	f _z					
N5	V _c	40-80	40-80	40-80		
	f _z	.005-.010	.008-.020	.018-.040	.40 x d1	1 x d1
N6	V _c	25-50	25-50	25-50		
	f _z	.004-.010	.006-.020	.015-.035	.20 x d1	1 x d1
N7	V _c					
	f _z					
N8	V _c					
	f _z					
S1	V _c	25-50	25-50	25-50		
	f _z	.003-.008	.006-.015	.012-.030	.20 x d1	1 x d1
S2	V _c					
	f _z					
H1	V _c					
	f _z					
H2	V _c					
	f _z					
H3	V _c					
	f _z					
O1	V _c	80-120	80-120	80-120		
	f _z	.006-.012	.010-.025	.020-.045	.20 x d1	1 x d1
O2	V _c					
	f _z					
O3	V _c					
	f _z					

Art. 73130

Art. 73200 / 73300

Material		Ø.30-.70	Ø.70-1.50	Ø1.50-2.90	a _p	a _e
P1	V _c	60-80	60-80	60-80		
	f _z	.005-.010	.008-.020	.018-.040	.80 x d1	1 x d1
P2	V _c	50-70	50-70	50-70		
	f _z	.005-.010	.008-.020	.018-.040	.60 x d1	1 x d1
P3	V _c	40-60	40-60	40-60		
	f _z	.004-.010	.006-.020	.0015-.035	.50 x d1	1 x d1
M1	V _c	30-50	30-50	30-50		
	f _z	.004-.010	.006-.020	.015-.035	.50 x d1	1 x d1
M2	V _c	25-40	25-40	25-40		
	f _z	.004-.008	.005-.016	.014-.028	.40 x d1	1 x d1
K1	V _c	40-70	40-70	40-70		
	f _z	.005-.010	.008-.020	.018-.040	.80 x d1	1 x d1
K2	V _c	30-60	30-60	30-60		
	f _z	.004-.010	.006-.020	.015-.035	.80 x d1	1 x d1
N1	V _c	70-100	70-100	70-100		
	f _z	.004-.01	.006-.020	.015-.0035	1.00 x d1	1 x d1
N2	V _c	80-120	80-120	80-120		
	f _z	.005-.010	.008-.020	.018-.040	1.00 x d1	1 x d1
N3	V _c	60-100	60-100	60-100		
	f _z	.005-.010	.008-.020	.018-.040	1.30 x d1	1 x d1
N4	V _c					
	f _z					
N5	V _c	40-80	40-80	40-80		
	f _z	.005-.010	.008-.020	.018-.040	1.00 x d1	1 x d1
N6	V _c	25-50	25-50	25-50		
	f _z	.004-.010	.006-.020	.015-.035	.80 x d1	1 x d1
N7	V _c					
	f _z					
N8	V _c					
	f _z					
S1	V _c	25-50	25-50	25-50		
	f _z	.003-.008	.006-.015	.012-.030	.80 x d1	1 x d1
S2	V _c					
	f _z					
H1	V _c					
	f _z					
H2	V _c					
	f _z					
H3	V _c					
	f _z					
01	V _c					
	f _z					
02	V _c					
	f _z					
03	V _c					
	f _z					

Material		Ø.30-.70	Ø.70-1.50	Ø1.50-2.90	a _p	a _e
P1	V _c	60-80	60-80	60-80		
	f _z	.005-.010	.008-.020	.018-.040	.9 x d1	1 x d1
P2	V _c	50-70	50-70	50-70		
	f _z	.005-.010	.008-.020	.018-.040	.8 x d1	1 x d1
P3	V _c	40-60	40-60	40-60		
	f _z	.004-.010	.006-.020	.0015-.035	.7 x d1	1 x d1
M1	V _c	30-50	30-50	30-50		
	f _z	.004-.010	.006-.020	.015-.035	.6 x d1	1 x d1
M2	V _c	25-40	25-40	25-40		
	f _z	.004-.008	.005-.016	.014-.028	.5 x d1	1 x d1
K1	V _c	40-70	40-70	40-70		
	f _z	.005-.010	.008-.020	.018-.040	1.0 x d1	1 x d1
K2	V _c	30-60	30-60	30-60		
	f _z	.004-.010	.006-.020	.015-.035	.9 x d1	1 x d1
N1	V _c	70-100	70-100	70-100		
	f _z	.004-.01	.006-.020	.015-.0035	.9 x d1	1 x d1
N2	V _c	80-120	80-120	80-120		
	f _z	.005-.010	.008-.020	.018-.040	.9 x d1	1 x d1
N3	V _c	60-100	60-100	60-100		
	f _z	.005-.010	.008-.020	.018-.040	.9 x d1	1 x d1
N4	V _c					
	f _z					
N5	V _c	40-80	40-80	40-80		
	f _z	.005-.010	.008-.020	.018-.040	1 x d1	1 x d1
N6	V _c	25-50	25-50	25-50		
	f _z	.004-.010	.006-.020	.015-.035	.8 x d1	1 x d1
N7	V _c					
	f _z					
N8	V _c					
	f _z					
S1	V _c	25-50	25-50	25-50		
	f _z	.003-.008	.006-.015	.012-.030	.7 x d1	1 x d1
S2	V _c					
	f _z					
H1	V _c					
	f _z					
H2	V _c					
	f _z					
H3	V _c					
	f _z					
01	V _c					
	f _z					
02	V _c					
	f _z					
03	V _c					
	f _z					

Art. 73800

Art. 73725

Material		Ø.50-1.00	Ø1.00-2.00	Ø2.00-2.50	a _p	a _e
P1	V _c	60-80	60-80	60-80		
	f _z	.003-.008	.008-.016	.016-.030	.30 × d1	1 × d1
P2	V _c	50-70	50-70	50-70		
	f _z	.003-.008	.008-.016	.016-.030	.15 × d1	1 × d1
P3	V _c	40-60	40-60	40-60		
	f _z	.002-.007	.007-.014	.014-.026	.10 × d1	1 × d1
M1	V _c	30-50	30-50	30-50		
	f _z	.002-.007	.007-.014	.014-.026	.20 × d1	1 × d1
M2	V _c	25-40	25-40	25-40		
	f _z	.002-.006	.006-.012	.012-.022	.10 × d1	1 × d1
K1	V _c	40-70	40-70	40-70		
	f _z	.003-.008	.008-.016	.016-.030	.40 × d1	1 × d1
K2	V _c	30-60	30-60	30-60		
	f _z	.002-.007	.007-.014	.014-.026	.20 × d1	1 × d1
N1	V _c	70-100	70-100	70-100		
	f _z	.002-.007	.007-.014	.014-.026	.40 × d1	1 × d1
N2	V _c	80-120	80-120	80-120		
	f _z	.003-.008	.008-.016	.016-.030	.25 × d1	1 × d1
N3	V _c	60-100	60-100	60-100		
	f _z	.003-.008	.008-.016	.016-.030	.25 × d1	1 × d1
N4	V _c					
	f _z					
N5	V _c	40-80	40-80	40-80		
	f _z	.003-.008	.008-.016	.016-.030	.40 × d1	1 × d1
N6	V _c	25-50	25-50	25-50		
	f _z	.002-.007	.007-.014	.014-.026	.20 × d1	1 × d1
N7	V _c					
	f _z					
N8	V _c					
	f _z					
S1	V _c	25-50	25-50	25-50		
	f _z	.002-.006	.006-.012	.012-.020	.20 × d1	1 × d1
S2	V _c					
	f _z					
H1	V _c					
	f _z					
H2	V _c					
	f _z					
H3	V _c					
	f _z					
O1	V _c					
	f _z					
O2	V _c					
	f _z					
O3	V _c					
	f _z					

Material		Ø.30-.70	Ø.70-1.50	Ø1.50-2.90	a _p	a _e
P1	V _c	60-80	60-80	60-80		
	f _z	.003-.008	.008-.016	.016-.030	.45 × d1	1 × d1
P2	V _c	50-70	50-70	50-70		
	f _z	.003-.008	.008-.016	.016-.030	.25 × d1	1 × d1
P3	V _c	40-60	40-60	40-60		
	f _z	.002-.007	.007-.014	.014-.026	.15 × d1	1 × d1
M1	V _c	30-50	30-50	30-50		
	f _z	.002-.007	.007-.014	.014-.026	.35 × d1	1 × d1
M2	V _c	25-40	25-40	25-40		
	f _z	.002-.006	.006-.012	.012-.022	.2 × d1	1 × d1
K1	V _c	40-70	40-70	40-70		
	f _z	.003-.008	.008-.016	.016-.030	.8 × d1	1 × d1
K2	V _c	30-60	30-60	30-60		
	f _z	.002-.007	.007-.014	.014-.026	.35 × d1	1 × d1
N1	V _c	70-100	70-100	70-100		
	f _z	.002-.007	.007-.014	.014-.026	.8 × d1	1 × d1
N2	V _c	80-120	80-120	80-120		
	f _z	.003-.008	.008-.016	.016-.030	.7 × d1	1 × d1
N3	V _c	60-100	60-100	60-100		
	f _z	.003-.008	.008-.016	.016-.030	.7 × d1	1 × d1
N4	V _c					
	f _z					
N5	V _c	40-80	40-80	40-80		
	f _z	.003-.008	.008-.016	.016-.030	.8 × d1	1 × d1
N6	V _c	25-50	25-50	25-50		
	f _z	.002-.007	.007-.014	.014-.026	.45 × d1	1 × d1
N7	V _c					
	f _z					
N8	V _c					
	f _z					
S1	V _c	25-50	25-50	25-50		
	f _z	.002-.006	.006-.012	.012-.020	.3 × d1	1 × d1
S2	V _c					
	f _z					
H1	V _c					
	f _z					
H2	V _c					
	f _z					
H3	V _c					
	f _z					
O1	V _c					
	f _z					
O2	V _c					
	f _z					
O3	V _c					
	f _z					

Art. 43105

Art. 43305

Material		Ø.30-.70	Ø.80-1.50	Ø1.60-3.00	a _p	a _e
P1	V _c	80-120	80-120	80-120		
	f _z	.002-.005	.003-.015	.005-.030	.8×d1	1×d1
P2	V _c	70-100	70-100	70-100		
	f _z	.001-.004	.003-.012	.005-.025	.6×d1	1×d1
P3	V _c	40-70	40-70	40-70		
	f _z	.001-.003	.002-.012	.003-.018	.5×d1	1×d1
M1	V _c	60-90	60-90	60-90		
	f _z	.001-.003	.002-.012	.003-.016	.5×d1	1×d1
M2	V _c	30-60	30-60	30-60		
	f _z	.001-.003	.002-.010	.003-.013	.4×d1	1×d1
K1	V _c	150-200	150-200	150-200		
	f _z	.002-.005	.003-.014	.005-.028	.8×d1	1×d1
K2	V _c	60-100	60-100	60-100		
	f _z	.001-.006	.003-.012	.005-.023	.8×d1	1×d1
N1	V _c	150-300	150-300	150-300		
	f _z	.001-.004	.002-.012	.004-.025	1×d1	1×d1
N2	V _c	150-300	150-300	150-300		
	f _z	.002-.005	.003-.014	.005-.028	1×d1	1×d1
N3	V _c	130-250	130-250	130-250		
	f _z	.002-.015	.004-.030	.006-.060	1×d1	1×d1
N4	V _c	60-100	60-100	60-100		
	f _z	.001-.009	.003-.018	.004-.036	.8×d1	1×d1
N5	V _c	100-250	100-250	100-250		
	f _z	.002-.010	.004-.020	.006-.040	1×d1	1×d1
N6	V _c	80-150	80-150	80-150		
	f _z	.001-.008	.002-.018	.004-.035	.8×d1	1×d1
N7	V _c	80-130	80-130	80-130		
	f _z	.002-.010	.003-.020	.006-.050	1×d1	1×d1
N8	V _c	80-130	80-130	80-130		
	f _z	.002-.010	.003-.020	.006-.050	1×d1	1×d1
S1	V _c	40-70	40-70	40-70		
	f _z	.001-.005	.003-.012	.005-.025	.8×d1	1×d1
S2	V _c	20-40	20-40	20-40		
	f _z	.001-.002	.001-.004	.002-.008	.2×d1	1×d1
H1	V _c	20-45	20-45	20-45		
	f _z	.001-.002	.001-.003	.002-.006	.2×d1	1×d1
H2	V _c					
	f _z					
H3	V _c					
	f _z					
01	V _c	100-150	100-150	100-150		
	f _z	.003-.025	.006-.055	.010-.095	1×d1	1×d1
02	V _c					
	f _z					
03	V _c					
	f _z					

Material		Ø.30-.70	Ø.80-1.50	Ø1.60-3.00	a _p	a _e
P1	V _c	80-120	80-120	80-120		
	f _z	.001-.004	.002-.012	.004-.025	.6×d1	1×d1
P2	V _c	70-100	70-100	70-100		
	f _z	.001-.003	.002-.008	.003-.020	.4×d1	1×d1
P3	V _c	40-70	40-70	40-70		
	f _z	.001-.003	.001-.010	.002-.015	.3×d1	1×d1
M1	V _c	60-90	60-90	60-90		
	f _z	.001-.003	.002-.008	.002-.012	.3×d1	1×d1
M2	V _c	30-60	30-60	30-60		
	f _z	.001-.003	.002-.008	.002-.009	.2×d1	1×d1
K1	V _c	150-200	150-200	150-200		
	f _z	.001-.004	.001-.010	.002-.023	.6×d1	1×d1
K2	V _c	60-100	60-100	60-100		
	f _z	.001-.005	.002-.010	.003-.019	.6×d1	1×d1
N1	V _c	150-300	150-300	150-300		
	f _z	.001-.003	.001-.010	.002-.020	.8×d1	1×d1
N2	V _c	150-300	150-300	150-300		
	f _z	.001-.005	.002-.011	.003-.024	.8×d1	1×d1
N3	V _c	130-250	130-250	130-250		
	f _z	.001-.012	.002-.025	.003-.050	1×d1	1×d1
N4	V _c	60-100	60-100	60-100		
	f _z	.001-.007	.001-.016	.002-.032	.6×d1	1×d1
N5	V _c	100-250	100-250	100-250		
	f _z	.001-.008	.002-.018	.003-.030	.8×d1	1×d1
N6	V _c	80-150	80-150	80-150		
	f _z	.001-.006	.001-.015	.002-.030	.6×d1	1×d1
N7	V _c	80-130	80-130	80-130		
	f _z	.001-.008	.001-.015	.002-.035	.8×d1	1×d1
N8	V _c	80-130	80-130	80-130		
	f _z	.001-.008	.001-.016	.003-.040	.8×d1	1×d1
S1	V _c	40-70	40-70	40-70		
	f _z	.001-.003	.002-.008	.003-.018	.6×d1	1×d1
S2	V _c	20-40	20-40	20-40		
	f _z	.001-.002	.001-.003	.002-.005	.1×d1	1×d1
H1	V _c	20-45	20-45	20-45		
	f _z	.001-.002	.001-.003	.002-.006	.1×d1	1×d1
H2	V _c					
	f _z					
H3	V _c					
	f _z					
01	V _c	100-150	100-150	100-150		
	f _z	.002-.020	.005-.050	.008-.090	1×d1	1×d1
02	V _c					
	f _z					
03	V _c					
	f _z					

Art. 74720

Art. 74740

Material		Ø.30-.70	Ø.70 - 1.50	Ø1.50 - 2.90	a _p	a _e
P1	V _c	60-80	60-80	60-80		
	f _z	.003-.008	.008-.016	.016-.030	.45 x d1	1 x d1
P2	V _c	50-70	50-70	50-70		
	f _z	.003-.008	.008-.016	.016-.030	.25 x d1	1 x d1
P3	V _c	40-60	40-60	40-60		
	f _z	.002-.007	.007-.014	.014-.026	.20 x d1	1 x d1
M1	V _c	30-50	30-50	30-50		
	f _z	.002-.007	.007-.014	.014-.026	.15 x d1	1 x d1
M2	V _c	25-40	25-40	25-40		
	f _z	.002-.006	.006-.012	.012-.022	.20 x d1	1 x d1
K1	V _c	40-70	40-70	40-70		
	f _z	.003-.008	.008-.016	.016-.030	.70 x d1	1 x d1
K2	V _c	30-60	30-60	30-60		
	f _z	.002-.007	.007-.014	.014-.026	.35 x d1	1 x d1
N1	V _c	70-100	70-100	70-100		
	f _z	.002-.007	.007-.014	.014-.026	.80 x d1	1 x d1
N2	V _c	80-120	80-120	80-120		
	f _z	.003-.008	.008-.016	.016-.030	.70 x d1	1 x d1
N3	V _c	60-100	60-100	60-100		
	f _z	.003-.008	.008-.016	.016-.030	.70 x d1	1 x d1
N4	V _c					
	f _z					
N5	V _c	40-80	40-80	40-80		
	f _z	.003-.008	.008-.016	.016-.030	.80 x d1	1 x d1
N6	V _c	25-50	25-50	25-50		
	f _z	.002-.007	.007-.014	.014-.026	.45 x d1	1 x d1
N7	V _c					
	f _z					
N8	V _c					
	f _z					
S1	V _c	25-50	25-50	25-50		
	f _z	.002-.006	.006-.012	.012-.020	.30 x d1	1 x d1
S2	V _c					
	f _z					
H1	V _c					
	f _z					
H2	V _c					
	f _z					
H3	V _c					
	f _z					
01	V _c					
	f _z					
02	V _c					
	f _z					
03	V _c					
	f _z					

Material		Ø.40-.70	Ø.70-1.50	Ø1.50-2.90	a _p	a _e
P1	V _c	60-80	60-80	60-80		
	f _z	.003-.008	.008-.016	.016-.030	.40 x d1	1 x d1
P2	V _c	50-70	50-70	50-70		
	f _z	.003-.008	.008-.016	.016-.030	.20 x d1	1 x d1
P3	V _c	40-60	40-60	40-60		
	f _z	.002-.007	.007-.014	.014-.026	.12 x d1	1 x d1
M1	V _c	30-50	30-50	30-50		
	f _z	.002-.007	.007-.014	.014-.026	.30 x d1	1 x d1
M2	V _c	25-40	25-40	25-40		
	f _z	.002-.006	.006-.012	.012-.022	.15 x d1	1 x d1
K1	V _c	40-70	40-70	40-70		
	f _z	.003-.008	.008-.016	.016-.030	.65 x d1	1 x d1
K2	V _c	30-60	30-60	30-60		
	f _z	.002-.007	.007-.014	.014-.026	.30 x d1	1 x d1
N1	V _c	70-100	70-100	70-100		
	f _z	.002-.007	.007-.014	.014-.026	.65 x d1	1 x d1
N2	V _c	80-120	80-120	80-120		
	f _z	.003-.008	.008-.016	.016-.030	.5 x d1	1 x d1
N3	V _c	60-100	60-100	60-100		
	f _z	.003-.008	.008-.016	.016-.030	.5 x d1	1 x d1
N4	V _c					
	f _z					
N5	V _c	40-80	40-80	40-80		
	f _z	.003-.008	.008-.016	.016-.030	.65 x d1	1 x d1
N6	V _c	25-50	25-50	25-50		
	f _z	.002-.007	.007-.014	.014-.026	.40 x d1	1 x d1
N7	V _c					
	f _z					
N8	V _c					
	f _z					
S1	V _c	25-50	25-50	25-50		
	f _z	.002-.006	.006-.012	.012-.020	.3 x d1	1 x d1
S2	V _c					
	f _z					
H1	V _c					
	f _z					
H2	V _c					
	f _z					
H3	V _c					
	f _z					
01	V _c					
	f _z					
02	V _c					
	f _z					
03	V _c					
	f _z					

Art. 74075 / 74150 / 74300

Art. 40000

Material		Ø.20-.70	Ø.70-1.50	Ø1.50-2.80	ap	ae
P1	V _c	60-80	60-80	60-80		
	f _z	.004-.010	.008-.020	.018-.040	.45×d1	1×d1
P2	V _c	50-70	50-70	50-70		
	f _z	.004-.010	.008-.020	.018-.040	.25×d1	1×d1
P3	V _c	40-60	40-60	40-60		
	f _z	.003-.010	.006-.020	.0015-.035	.15×d1	1×d1
M1	V _c	30-50	30-50	30-50		
	f _z	.003-.010	.006-.020	.015-.035	.35×d1	1×d1
M2	V _c	25-40	25-40	25-40		
	f _z	.003-.008	.005-.016	.014-.028	.2×d1	1×d1
K1	V _c	40-70	40-70	40-70		
	f _z	.004-.010	.008-.020	.018-.040	.8×d1	1×d1
K2	V _c	30-60	30-60	30-60		
	f _z	.003-.010	.006-.020	.015-.035	.35×d1	1×d1
N1	V _c	70-100	70-100	70-100		
	f _z	.003-.01	.006-.020	.015-.0035	.8×d1	1×d1
N2	V _c	80-120	80-120	80-120		
	f _z	.004-.010	.008-.020	.018-.040	.7×d1	1×d1
N3	V _c	60-100	60-100	60-100		
	f _z	.004-.010	.008-.020	.018-.040	.7×d1	1×d1
N4	V _c					
	f _z					
N5	V _c	40-80	40-80	40-80		
	f _z	.004-.010	.008-.020	.018-.040	.8×d1	1×d1
N6	V _c	25-50	25-50	25-50		
	f _z	.004-.010	.006-.020	.015-.035	.45×d1	1×d1
N7	V _c					
	f _z					
N8	V _c					
	f _z					
S1	V _c	25-50	25-50	25-50		
	f _z	.002-.008	.006-.015	.012-.030	.3×d1	1×d1
S2	V _c					
	f _z					
H1	V _c					
	f _z					
H2	V _c					
	f _z					
H3	V _c					
	f _z					
01	V _c	80-120	80-120	80-120		
	f _z	.005-.012	.010-.025	.020-.045	.9×d1	1×d1
02	V _c					
	f _z					
03	V _c					
	f _z					

Material		Ø2.00-5.00	Ø6.00-12.00	ap	ae
P1	V _c	60-90	60-90		
	f _z	.015-.060	.050-.100	.5×d1	1×d1
P2	V _c	50-80	50-80		
	f _z	.015-.060	.050-.100	.3×d1	1×d1
P3	V _c				
	f _z				
M1	V _c				
	f _z				
M2	V _c				
	f _z				
K1	V _c	40-60	40-60		
	f _z	.020-.070	.050-.110	1×d1	1×d1
K2	V _c	30-50	30-50		
	f _z	.015-.060	.050-.100	.4×d1	1×d1
N1	V _c	100-150	100-150		
	f _z	.015-.060	.040-.120	1×d1	1×d1
N2	V _c	200-250	200-250		
	f _z	.020-.070	.050-.120	1×d1	1×d1
N3	V _c	180-220	180-220		
	f _z	.020-.070	.050-.120	1×d1	1×d1
N4	V _c	50-100	50-100		
	f _z	.015-.050	.030-.080	.5×d1	1×d1
N5	V _c	100-150	100-150		
	f _z	.020-.070	.050-.120	1×d1	1×d1
N6	V _c	30-60	30-60		
	f _z	.015-.050	.040-.100	.7×d1	1×d1
N7	V _c				
	f _z				
N8	V _c				
	f _z				
S1	V _c				
	f _z				
S2	V _c				
	f _z				
H1	V _c				
	f _z				
H2	V _c				
	f _z				
H3	V _c				
	f _z				
01	V _c				
	f _z				
02	V _c				
	f _z				
03	V _c				
	f _z				

Art. 40002

Art. 40004

Material		Ø2.00–5.00	Ø6.00–12.00	ap	ae
P1	V _c	60–80	60–80		
	f _z	.015–.060	.030–.110	1×d1	1×d1
P2	V _c	50–70	50–70		
	f _z	.015–.060	.030–.110	.6×d1	1×d1
P3	V _c	40–60	40–60		
	f _z	.010–.050	.020–.100	.5×d1	1×d1
M1	V _c	40–60	40–60		
	f _z	.010–.050	.020–.100	.5×d1	1×d1
M2	V _c				
	f _z				
K1	V _c	60–80	60–80		
	f _z	.015–.060	.030–.110	1×d1	1×d1
K2	V _c	50–70	60–80		
	f _z	.015–.060	.030–.100	.6×d1	1×d1
N1	V _c				
	f _z				
N2	V _c				
	f _z				
N3	V _c				
	f _z				
N4	V _c				
	f _z				
N5	V _c				
	f _z				
N6	V _c				
	f _z				
N7	V _c				
	f _z				
N8	V _c				
	f _z				
S1	V _c				
	f _z				
S2	V _c				
	f _z				
H1	V _c				
	f _z				
H2	V _c				
	f _z				
H3	V _c				
	f _z				
O1	V _c				
	f _z				
O2	V _c				
	f _z				
O3	V _c				
	f _z				

Material		Ø2.00–5.00	Ø6.00–12.00	ap	ae
P1	V _c	60–80	60–80		
	f _z	.020–.060	.030–.110	.5×d1	1×d1
P2	V _c	50–70	50–70		
	f _z	.015–.060	.030–.110	.5×d1	1×d1
P3	V _c	40–60	40–60		
	f _z	.010–.050	.020–.100	.4×d1	1×d1
M1	V _c	40–60	40–60		
	f _z	.010–.050	.020–.100	.4×d1	1×d1
M2	V _c				
	f _z				
K1	V _c	60–80	60–80		
	f _z	.020–.060	.030–.110	.80×d1	1×d1
K2	V _c	50–70	50–70		
	f _z	.150–.050	.030–.100	.70×d1	1×d1
N1	V _c				
	f _z				
N2	V _c				
	f _z				
N3	V _c				
	f _z				
N4	V _c				
	f _z				
N5	V _c				
	f _z				
N6	V _c				
	f _z				
N7	V _c				
	f _z				
N8	V _c				
	f _z				
S1	V _c				
	f _z				
S2	V _c				
	f _z				
H1	V _c				
	f _z				
H2	V _c				
	f _z				
H3	V _c				
	f _z				
O1	V _c				
	f _z				
O2	V _c				
	f _z				
O3	V _c				
	f _z				

Art. 47000 / 47500

Art. 76300

Material		Ø2.00–5.00	Ø6.00–12.00	Ø13.00–2.00	ap	ae
P1	V _c					
	f _z					
P2	V _c					
	f _z					
P3	V _c					
	f _z					
M1	V _c					
	f _z					
M2	V _c					
	f _z					
K1	V _c					
	f _z					
K2	V _c					
	f _z					
N1	V _c	300–600	300–600	300–600		
	f _z	.030–.050	.050–.120	.120–.200	.5 × d1	1 × d1
N2	V _c	300–1000	300–1000	300–1000		
	f _z	.030–.060	.060–.140	.140–.250	.5 × d1	1 × d1
N3	V _c	300–1000	300–1000	300–1000		
	f _z	.030–.060	.060–.140	.140–.250	.5 × d1	1 × d1
N4	V _c					
	f _z					
N5	V _c					
	f _z					
N6	V _c					
	f _z					
N7	V _c					
	f _z					
N8	V _c					
	f _z					
S1	V _c					
	f _z					
S2	V _c					
	f _z					
H1	V _c					
	f _z					
H2	V _c					
	f _z					
H3	V _c					
	f _z					
01	V _c	300–600	300–600	300–600		
	f _z	.030–.050	.050–.120	.120–.200	.5 × d1	1 × d1
02	V _c					
	f _z					
03	V _c					
	f _z					

Material		Ø1.50–2.50	Ø2.50–4.00	Ø4.00–6.00	ap	ae
P1	V _c	60–80	60–80	60–80		
	f _z	.010–.020	.020–.040	.040–.060	1 × d1	1 × d1
P2	V _c	50–70	50–70	50–70		
	f _z	.010–.020	.020–.040	.040–.060	.6 × d1	1 × d1
P3	V _c	40–60	40–60	40–60		
	f _z	.008–.015	.015–.035	.035–.050	.5 × d1	1 × d1
M1	V _c	40–60	40–60	40–60		
	f _z	.008–.015	.015–.035	.035–.050	.5 × d1	1 × d1
M2	V _c					
	f _z					
K1	V _c	60–80	60–80	60–80		
	f _z	.010–.020	.020–.040	.040–.060	1 × d1	1 × d1
K2	V _c	50–70	50–70	50–70		
	f _z	.010–.020	.020–.040	.040–.060	.6 × d1	1 × d1
N1	V _c					
	f _z					
N2	V _c					
	f _z					
N3	V _c					
	f _z					
N4	V _c					
	f _z					
N5	V _c					
	f _z					
N6	V _c					
	f _z					
N7	V _c					
	f _z					
N8	V _c					
	f _z					
S1	V _c					
	f _z					
S2	V _c					
	f _z					
H1	V _c					
	f _z					
H2	V _c					
	f _z					
H3	V _c					
	f _z					
01	V _c					
	f _z					
02	V _c					
	f _z					
03	V _c					
	f _z					

Art. 73000

Art. 43400

Material		Ø.50–1.50	Ø2.00–3.00	Ø6.00–8.00
P1	V _c	70–120	70–120	70–120
	f _z	.004–.015	.015–.030	.050–.120
P2	V _c	60–100	60–100	60–100
	f _z	.003–.013	.013–.025	.045–.100
P3	V _c	40–80	40–80	40–80
	f _z	.002–.012	.012–.023	.040–.090
M1	V _c	40–80	40–80	40–80
	f _z	.002–.012	.008–.020	.030–.080
M2	V _c	30–70	30–70	30–70
	f _z	.001–.010	.010–.016	.025–.070
K1	V _c	120–150	100–150	100–150
	f _z	.004–.015	.015–.030	.050–.120
K2	V _c	100–130	100–130	100–130
	f _z	.003–.013	.013–.025	.045–.100
N1	V _c	150–200	150–200	150–200
	f _z	.005–.018	.018–.035	.060–.150
N2	V _c	150–200	150–200	150–200
	f _z	.005–.018	.018–.035	.060–.150
N3	V _c	150–200	150–200	150–200
	f _z	.004–.015	.015–.030	.050–.120
N4	V _c	150–200	150–200	150–200
	f _z	.005–.018	.018–.035	.060–.150
N5	V _c	150–200	150–200	150–200
	f _z	.005–.018	.018–.035	.060–.150
N6	V _c			
	f _z			
N7	V _c	80–120	80–120	80–120
	f _z	.005–.018	.018–.035	.060–.150
N8	V _c	80–120	80–120	80–120
	f _z	.005–.018	.018–.035	.060–.150
S1	V _c	40–70	40–70	40–70
	f _z	.002–.012	.012–.023	.040–.090
S2	V _c			
	f _z			
H1	V _c			
	f _z			
H2	V _c			
	f _z			
H3	V _c			
	f _z			
01	V _c			
	f _z			
02	V _c			
	f _z			
03	V _c			
	f _z			

Material		Ø1.00–2.00	Ø3.00–4.00	Ø5.00–6.00
P1	V _c	80–120	80–120	80–120
	f _z	.020–.030	.030–.040	.040–.050
P2	V _c	80–100	80–100	80–100
	f _z	.010–.020	.020–.030	.030–.040
P3	V _c	50–80	50–80	50–80
	f _z	.005–.015	.015–.025	.025–.035
M1	V _c	60–100	60–100	60–100
	f _z	.010–.015	.015–.025	.025–.035
M2	V _c	40–70	40–70	40–70
	f _z	.015–.025	.025–.035	.035–.045
K1	V _c	100–150	100–150	100–150
	f _z	.010–.020	.020–.030	.030–.040
K2	V _c	60–100	60–100	60–100
	f _z	.005–.015	.015–.025	.025–.035
N1	V _c	150–200	150–200	150–200
	f _z	.020–.030	.030–.040	.040–.050
N2	V _c	150–200	150–200	150–200
	f _z	.020–.030	.030–.050	.050–.060
N3	V _c	130–200	130–200	130–200
	f _z	.020–.030	.030–.050	.050–.060
N4	V _c	60–150	60–150	60–150
	f _z	.015–.025	.025–.035	.035–.045
N5	V _c	100–200	100–200	100–200
	f _z	.015–.025	.025–.035	.035–.045
N6	V _c	80–150	80–150	80–150
	f _z	.010–.020	.020–.030	.030–.040
N7	V _c	80–150	80–150	80–150
	f _z	.010–.020	.020–.030	.030–.040
N8	V _c	80–150	80–150	80–150
	f _z	.010–.020	.020–.030	.030–.040
S1	V _c	40–70	40–70	40–70
	f _z	.010–.025	.020–.035	.030–.045
S2	V _c	20–40	20–40	20–40
	f _z	.005–.015	.015–.025	.020–.035
H1	V _c	20–45	25–40	25–40
	f _z	.005–.015	.015–.025	.025–.035
H2	V _c	20–30	15–25	15–25
	f _z	.005–.010	.010–.015	.015–.020
H3	V _c			
	f _z			
01	V _c	100–150	70–110	70–110
	f _z	.010–.020	.020–.030	.030–.040
02	V _c			
	f _z			
03	V _c			
	f _z			

Art. 44400

Art. 45400

Material		Ø.80-1.50	Ø2.00-3.00	Ø4.00-6.00
P1	V _c	140-160	140-160	140-160
	f _z	.020-.030	.030-.040	.040-.060
P2	V _c	120-140	120-140	120-140
	f _z	.010-.020	.020-.030	.030-.050
P3	V _c	100-120	100-120	100-120
	f _z	.005-.015	.015-.025	.025-.045
M1	V _c	100-120	100-120	100-120
	f _z	.010-.020	.020-.030	.030-.050
M2	V _c	80-100	80-100	80-100
	f _z	.005-.015	.015-.025	.025-.045
K1	V _c	120-140	120-140	120-140
	f _z	.015-.025	.025-.035	.035-.055
K2	V _c	100-120	100-120	100-120
	f _z	.010-.020	.020-.030	.030-.040
N1	V _c	230-250	230-250	230-250
	f _z	.020-.030	.030-.040	.040-.060
N2	V _c	200-220	200-220	200-220
	f _z	.020-.030	.030-.040	.040-.060
N3	V _c	180-200	180-200	180-200
	f _z	.020-.030	.030-.040	.040-.060
N4	V _c	80-100	80-100	80-100
	f _z	.015-.025	.025-.035	.035-.055
N5	V _c	130-150	130-150	130-150
	f _z	.015-.025	.025-.035	.035-.055
N6	V _c	100-120	100-120	100-120
	f _z	.010-.020	.020-.030	.030-.050
N7	V _c	100-120	100-120	100-120
	f _z	.010-.020	.020-.030	.030-.050
N8	V _c	100-120	100-120	100-120
	f _z	.010-.020	.020-.030	.030-.050
S1	V _c	60-80	60-80	60-80
	f _z	.010-.020	.020-.030	.030-.050
S2	V _c	40-60	40-60	40-60
	f _z	.005-.015	.015-.025	.025-.045
H1	V _c	40-60	40-60	40-60
	f _z	.005-.015	.015-.025	.025-.035
H2	V _c	30-50	30-50	30-50
	f _z	.005-.010	.010-.020	.020-.030
H3	V _c			
	f _z			
01	V _c	140-160	140-160	140-160
	f _z	.015-.025	.025-.035	.035-.055
02	V _c			
	f _z			
03	V _c			
	f _z			

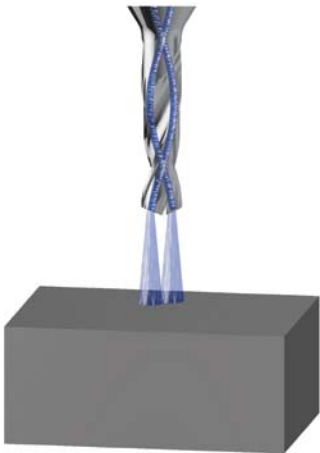
Material		Ø1.00-2.00	Ø3.00-4.00	Ø5.00-6.00
P1	V _c	140-160	140-160	140-160
	f _z	.025-.030	.035-.045	.050-.070
P2	V _c	120-140	120-140	120-140
	f _z	.015-.020	.025-.035	.040-.060
P3	V _c	100-120	100-120	100-120
	f _z	.010-.015	.020-.030	.035-.055
M1	V _c	100-120	100-120	100-120
	f _z	.015-.020	.025-.035	.040-.060
M2	V _c	80-100	80-100	80-100
	f _z	.010-.015	.020-.030	.035-.055
K1	V _c	120-140	120-140	120-140
	f _z	.020-.025	.030-.040	.045-.065
K2	V _c	100-120	100-120	100-120
	f _z	.015-.020	.025-.035	.040-.060
N1	V _c	230-250	230-250	230-250
	f _z	.025-.030	.035-.045	.050-.070
N2	V _c	200-220	200-220	200-220
	f _z	.025-.030	.035-.045	.050-.070
N3	V _c	180-200	180-200	180-200
	f _z	.025-.030	.035-.045	.050-.070
N4	V _c	80-100	80-100	80-100
	f _z	.020-.025	.030-.040	.045-.065
N5	V _c	130-150	130-150	130-150
	f _z	.020-.025	.030-.040	.045-.065
N6	V _c	100-120	100-120	100-120
	f _z	.015-.020	.025-.035	.040-.060
N7	V _c	100-120	100-120	100-120
	f _z	.015-.020	.025-.035	.040-.060
N8	V _c	100-120	100-120	100-120
	f _z	.015-.020	.025-.035	.040-.060
S1	V _c	60-80	60-80	60-80
	f _z	.015-.020	.025-.035	.040-.060
S2	V _c	40-60	40-60	40-60
	f _z	.010-.015	.020-.030	.035-.055
H1	V _c	40-60	40-60	40-60
	f _z	.010-.015	.020-.030	.035-.055
H2	V _c	30-50	30-50	30-50
	f _z	.010-.010	.015-.025	.030-.040
H3	V _c			
	f _z			
01	V _c	140-160	140-160	140-160
	f _z	.020-.025	.030-.040	.045-.065
02	V _c			
	f _z			
03	V _c			
	f _z			

Art. 71330

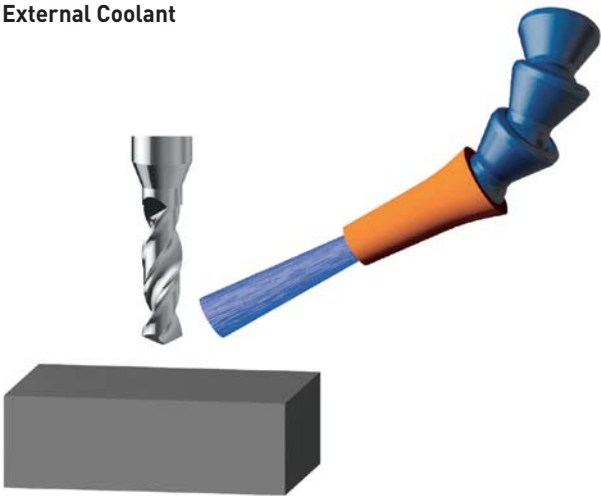
Material		Ø.20-1.00	Ø1.00-2.00	Ø2.00-3.00	ap	ae
P1	V _c	40-60	40-60	40-60		
	f _z	.002-.013	.013-.020	.020-.030	1 × d	.2 × d
P2	V _c	30-50	30-50	30-50		
	f _z	.002-.012	.012-.018	.018-.025	1 × d	.2 × d
P3	V _c					
	f _z					
M1	V _c	25-40	25-40	24-40		
	f _z	.002-.011	.011-.016	.016-.022	1 × d	.1 × d
M2	V _c	20-35	20-35	20-35		
	f _z	.002-.010	.010-.015	.015-.020	1 × d	.1 × d
K1	V _c	40-60	40-60	40-60		
	f _z	.002-.013	.013-.020	.020-.030	1 × d	.2 × d
K2	V _c	35-55	35-55	35-55		
	f _z	.002-.012	.012-.018	.018-.025	1 × d	.2 × d
N1	V _c					
	f _z					
N2	V _c	150-200	150-200	150-200		
	f _z	.003-.015	.015-.030	.030-.050	1 × d	.2 × d
N3	V _c	150-200	150-200	150-200		
	f _z	.002-.013	.013-.020	.020-.030	1 × d	.1 × d
N4	V _c					
	f _z					
N5	V _c	100-130	100-130	100-130		
	f _z	.003-.015	.015-.030	.030-.050	1 × d	.2 × d
N6	V _c					
	f _z					
N7	V _c	120-150	120-150	120-150		
	f _z	.003-.015	.015-.030	.030-.050	1 × d	.2 × d
N8	V _c	120-150	120-150	120-150		
	f _z	.002-.013	.013-.020	.020-.030	1 × d	.1 × d
S1	V _c	30-50	30-50	30-50		
	f _z	.002-.012	.012-.018	.018-.025	1 × d	.2 × d
S2	V _c					
	f _z					
H1	V _c					
	f _z					
H2	V _c					
	f _z					
H3	V _c					
	f _z					
01	V _c	150-200	150-200	150-200		
	f _z	.003-.015	.015-.030	.030-.050	1 × d	.2 × d
02	V _c					
	f _z					
03	V _c					
	f _z					

COOLANT

Internal Coolant



External Coolant



Diameter	Pressure			
	bar		psi	
	<6xd	>6xd	<6xd	>6xd
1.00–3.00	30	60	435	870
3.00–6.00	20	30	290	435
6.00–1.00	10	20	145	290

SPOT DRILLING – Entering and Exit

Centering



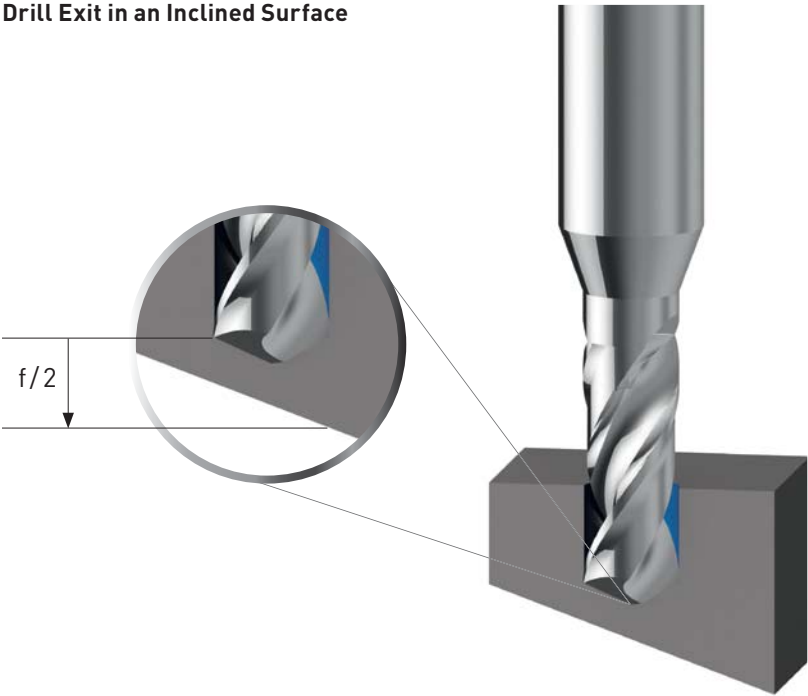
Pilot Hole



Milling a Flat

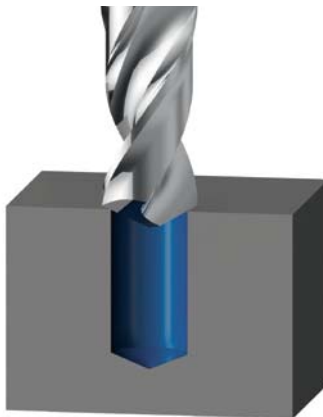
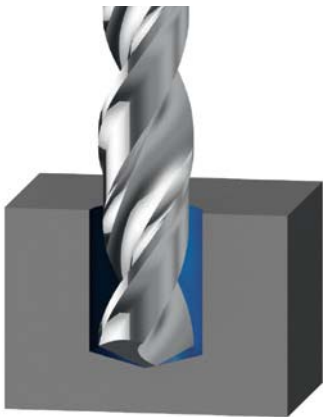


Drill Exit in an Inclined Surface



CAUTION 
Reduce feed rate by 50%

PILOT DRILLING (Subsequent tool shown, not pilot tool)

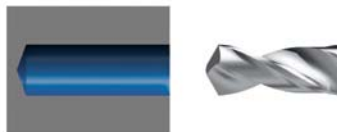
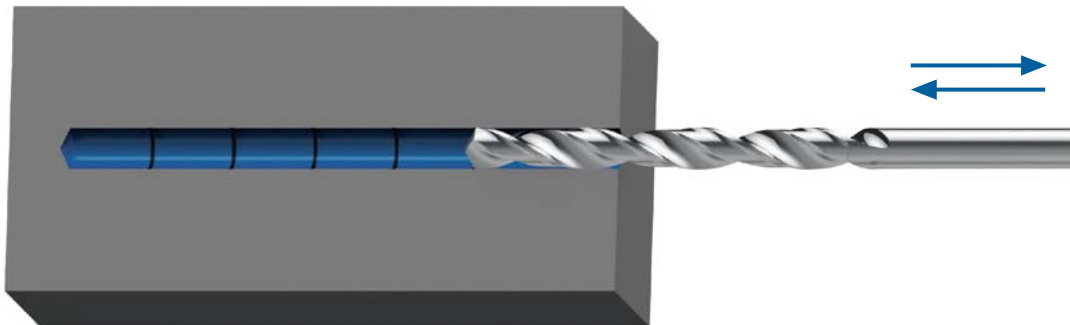


• Pilot diameter too small

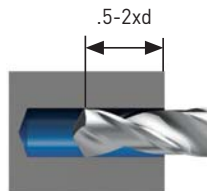


• Pilot point angle too small

PECKING CYCLE

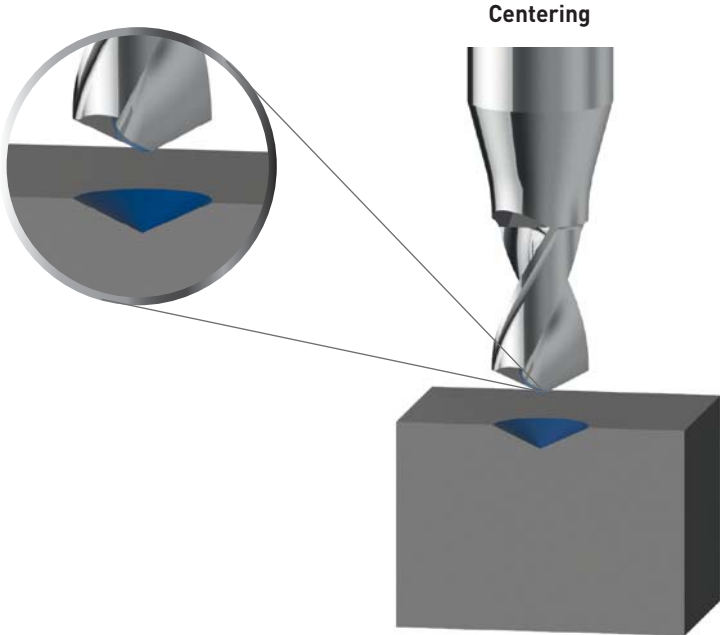


• No Pecking Cycle

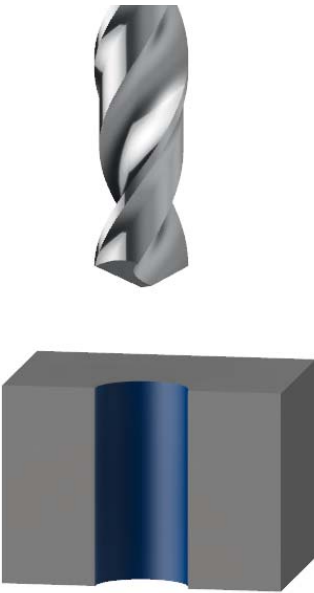


• Pecking .5-2xd

CENTERING $\leq 6xd$



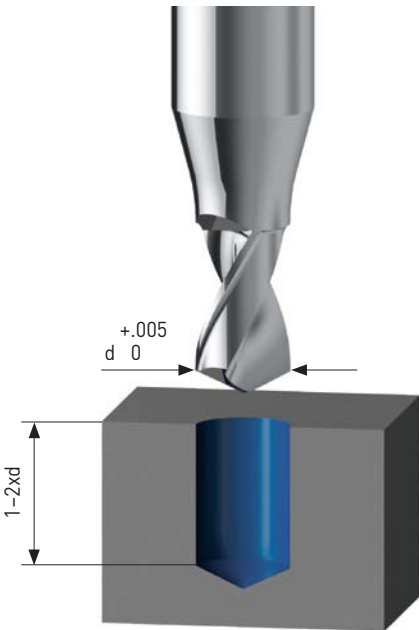
Micro Drilling



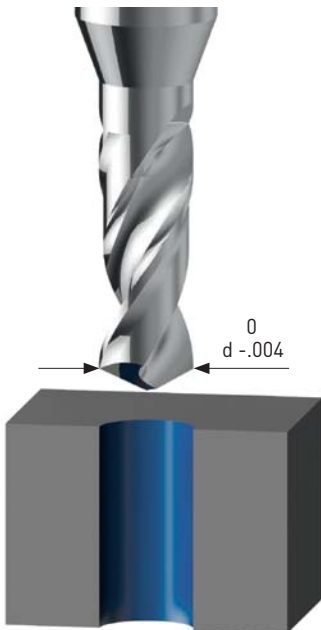
PILOT HOLE DRILLING $\geq 6xd$



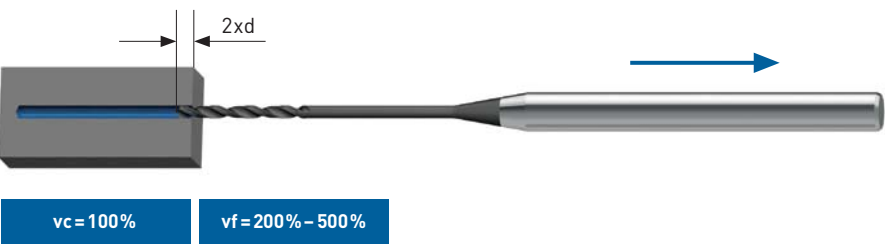
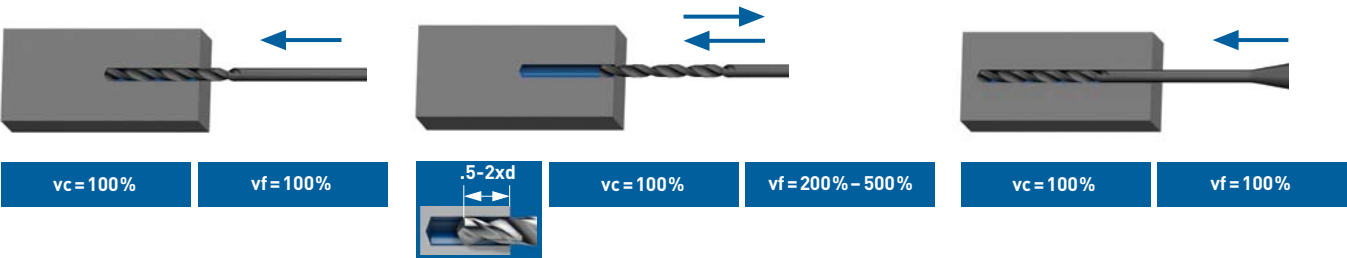
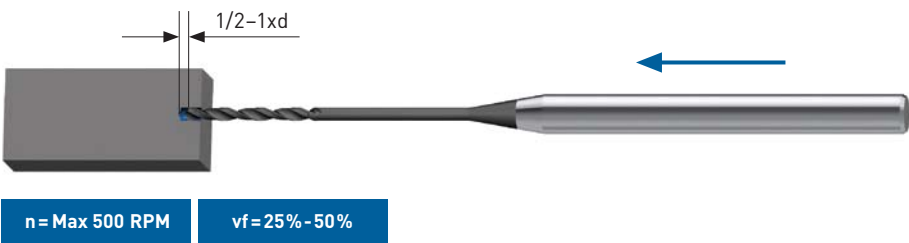
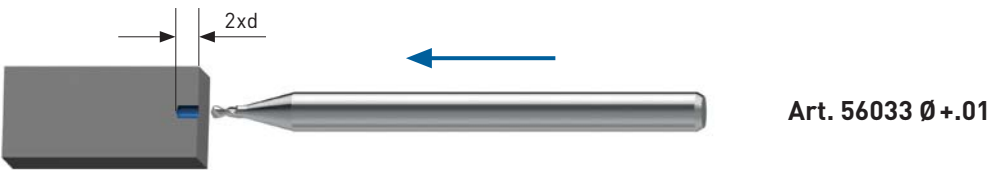
Pilot Hole Drilling



Micro Drilling



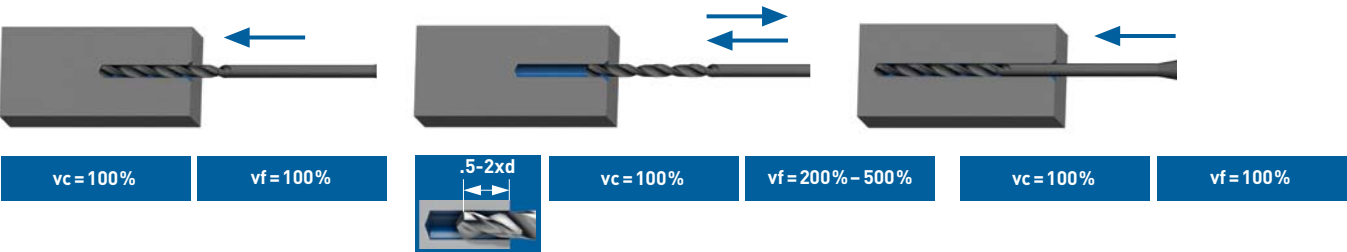
Micro Deep Hole Drilling – Art. 50720



Micro Deep Hole Drilling – Art. 50740/50760/50780



n = Max 500 RPM vf = 25% - 50%



vc = 100% vf = 200% - 500%



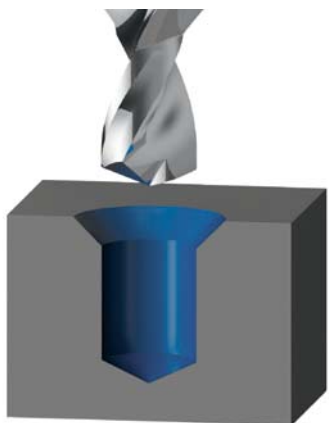
n = Max 500 RPM vf = Max

Centering $\leq 9x_d$ – Art. 50810/50812/50814/50818**Without Centering**

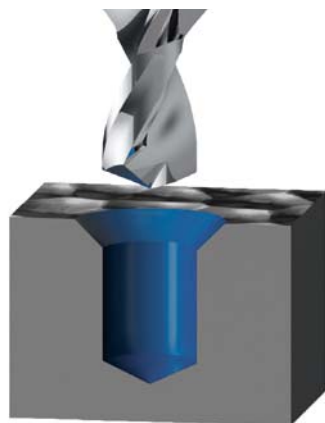
- Smooth entering surface

Center Drilling

- Rough or uneven entering surface

Pilot Hole Drilling $> 9x_d$ – Art. 56036/50950**Pilot Hole Drilling**

- Smooth entering surface

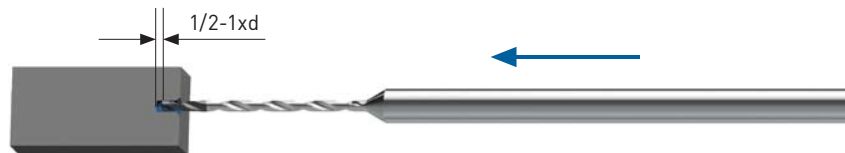
Pilot Hole Drilling

- Rough or uneven entering surface

Drilling Strategy >9xd



Art. 56036



n = Max 500 RPM

vf = 25% - 50%



vc = 100% → start vf

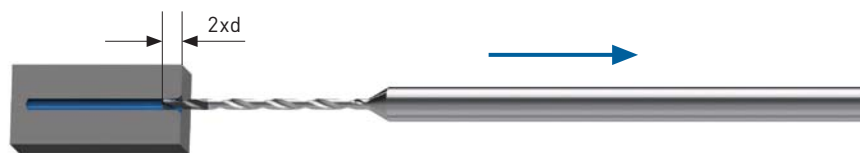
vc = 100%

vf = 100%



vc = 100%

vf = 100%



vc = 100%

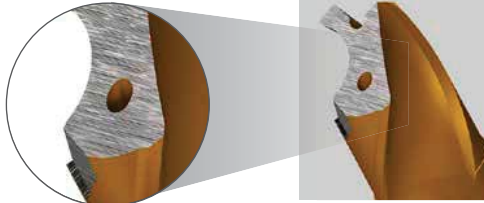
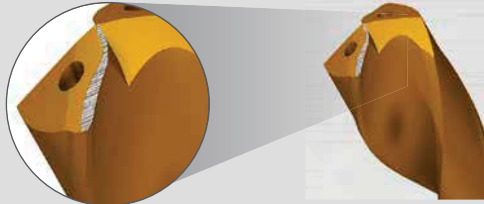
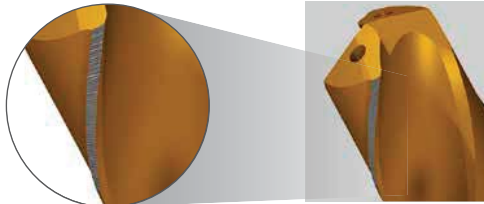
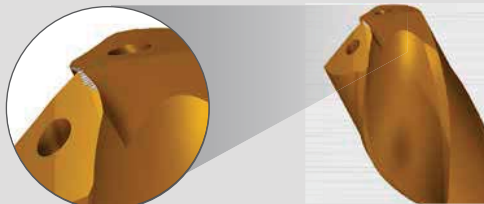
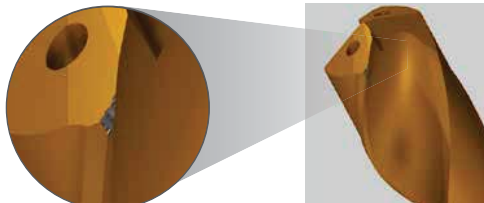
vf = 200% - 500%



n = Max 500 RPM

vf = Max

Troubleshooting in Case of Tool Wear

Type Of Wear		Cutting Conditions	
		Cutting Speed	Feed Rate
Drill Breakage			
Flank Wear			
Wear on Margin			
Chipping on Chisel Edge			
Chipping on Corner			
Wear on Main Cutting Edge			

Cutting Conditions			
Entry Feed Rate	Exit Feed Rate	Pre-Machining (Centering, Pilot Hole Drilling)	Pecking Cycle
↓	↓	⚠	⚠
↑	⚠	●	●
●	●	⚠	⚠
↑	↓	⚠	●
↓	↓	⚠	⚠
⚠	⚠	⚠	●

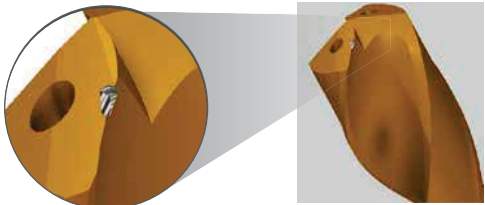
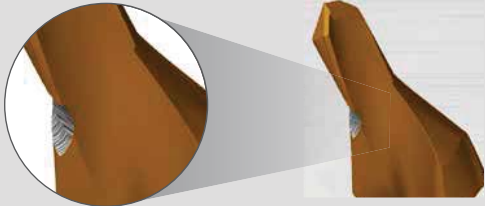
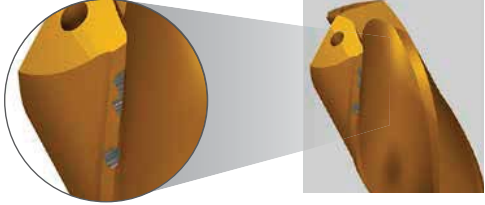
↑ increase

↓ reduce

⚠ verify

● not relevant

Troubleshooting in Case of Tool Wear

Type of Wear		Cutting Conditions	
		Cutting Speed	Feed Rate
Chipping Main Cutting Edge			
Chipping on Step Transition			
Chipping on Margin			
Built-Up Edge			

Cutting Conditions			
Entry Feed Rate	Exit Feed Rate	Pre-Machining (Centering, Pilot Hole Drilling)	Pecking Cycle
↓	↓	⚠	⚠
↓	↓	⚠	⚠
⚠	⚠	⚠	⚠
●	⚠	●	●

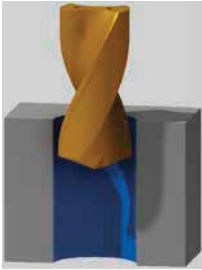
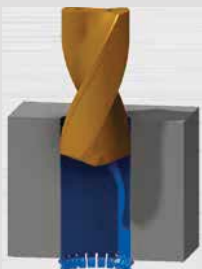
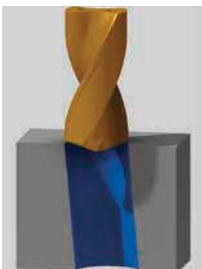
↑ increase

↓ reduce

⚠ verify

● not relevant

Troubleshooting in Case of Deviation at the Workpiece

Type of Wear		Cutting Conditions	
		Cutting Speed	Feed Rate
Diameter Too Large		↓	↑
Misalignment from the Center		●	↓
Poor Surface Quality		↑	↓
Burr Formation at Bore Exit		⚠	●
Bore Runout		⚠	↑

Cutting Conditions			
Entry Feed Rate	Exit Feed Rate	Pre-Machining (Centering, Pilot Hole Drilling)	Pecking Cycle
↑	⚠	⚠	⚠
↓	⚠	⚠	●
●	●	⚠	⚠
●	↓	●	●
⚠	●	⚠	⚠

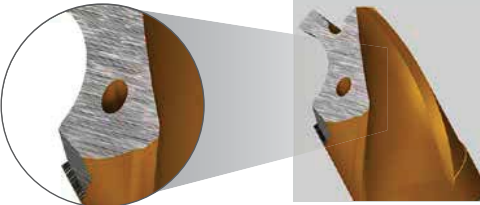
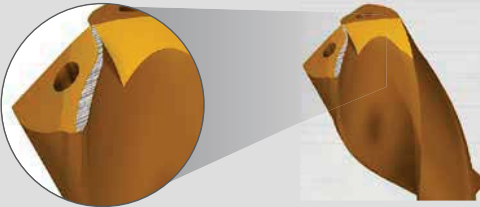
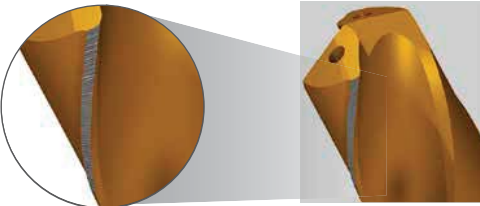
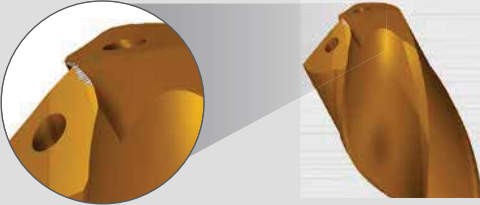
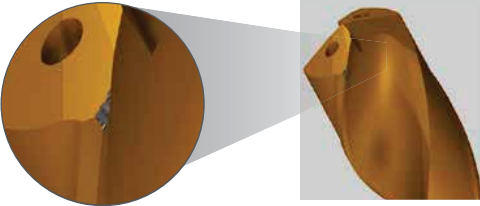
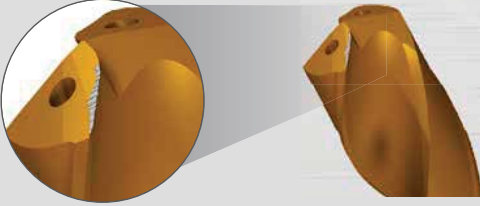
↑ increase

↓ reduce

⚠ verify

● not relevant

Troubleshooting in Case of Tool Wear

Type of Wear	Coolant	
	Concentration of Coolant	Rate of Coolant
Drill Breakage 	●	↑
Flank Wear 	↑	↑
Wear on Margin 	↑	↑
Chipping on Chisel Edge 	●	↑
Chipping on Corner 	●	↑
Wear on Main Cutting Edge 	↑	↑

Coolant	Machine and Fitting of the Tool			
Coolant Pressure	Concentricity	Shorter Projecting Length	Workpiece Clamping	Stability of the Machine
↑	⚠	⚠	⚠	⚠
↑	⚠	⚠	⚠	⚠
↑	⚠	●	⚠	⚠
↑	⚠	⚠	⚠	⚠
↑	⚠	⚠	⚠	⚠
↑	⚠	⚠	⚠	⚠

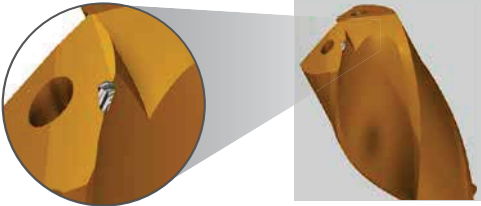
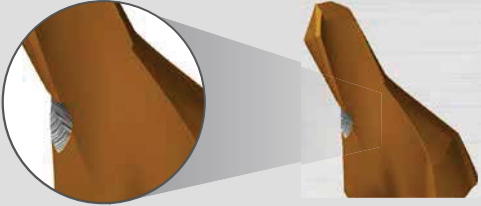
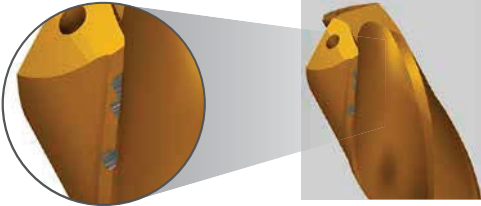
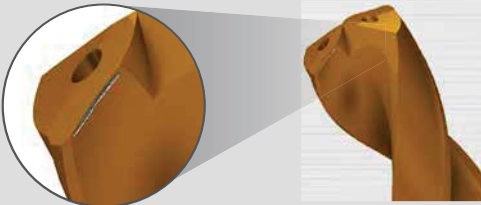
↑ increase

↓ reduce

⚠ verify

● not relevant

Troubleshooting in Case of Tool Wear

Type of Wear	Coolant	
	Concentration of Coolant	Rate of Coolant
Chipping Main Cutting Edge 	●	●
Chipping on Step Transition 	●	●
Chipping on Margin 	●	●
Built-Up Edge 	↑	↑

Coolant	Machine and Fitting of the Tool			
Coolant Pressure	Concentricity	Shorter Projecting Length	Workpiece Clamping	Stability of the Machine
●	⚠	⚠	⚠	⚠
●	⚠	⚠	⚠	⚠
●	●	●	⚠	⚠
↑	⚠	●	●	●

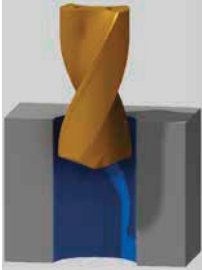
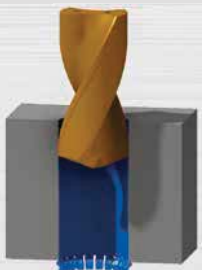
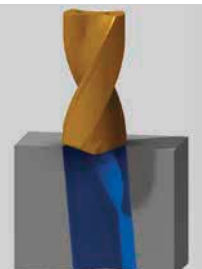
↑ increase

↓ reduce

⚠ verify

● not relevant

Troubleshooting in Case of Deviation at the Workpiece

Type of Wear		Coolant	
		Concentration of Coolant	Rate of Coolant
Diameter Too Large		↓	⚠
Misalignment from the Center		●	●
Poor Surface Quality		↑	↑
Burr Formation at Bore Exit		●	●
Bore Runout		●	⚠

Coolant	Machine and Fitting of the Tool			
Coolant Pressure	Concentricity	Shorter Projecting Length	Workpiece Clamping	Stability of the Machine
				
				
				
				
				

 increase

 reduce

 verify

 not relevant

Represented by

BIG DAISHOWA Inc.

2600 Huntington Blvd | Hoffman Estates, IL 60192 | P: (224) 770-2999 | F: (224) 770-2997 | bigdaishowa@us.bigdaishowa.com | bigdaishowa.com

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