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We are guarantor of growth  
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 **Swissmade tools**

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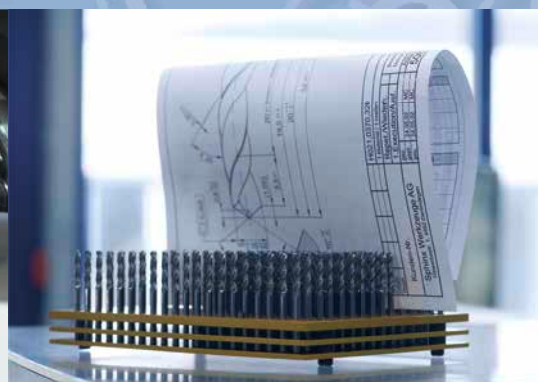


Die Sphinx Werkzeuge AG ist ein führendes Unternehmen für die Herstellung und den Vertrieb von Präzisionswerkzeugen für die zerspanende Fertigung. Kontinuierliches Wachstum, konsequente Reinvestitionen in die Produktionsanlagen sowie das persönliche Engagement der Mitarbeiter ergeben die weltweit starke Position. Die Kundenbedürfnisse sehen wir als Leitfaden aller Innovationen. Deshalb vertrauen renommierte Firmen aus Industrie und Medizintechnik auf unsere Qualität und Erfahrung. Durch Kundennähe und fundiertes Wissen lösen wir komplexe Aufgabenstellungen, bieten oft einzigartige Lösungen und leisten damit einen wesentlichen Beitrag zum Markterfolg namhafter Unternehmen. Auch in Zukunft wird der stetig anspruchsvoller werdende Markt unsere tägliche Herausforderung sein!

Sphinx Outils SA est une entreprise leader dans la fabrication et la vente d'outils de précision pour la production avec enlèvement de copeaux. Une croissance continue, des investissements réguliers pour les installations de production ainsi que l'engagement de collaborateurs qualifiés ont permis à l'entreprise de se forger une excellente réputation sur le marché mondial. Les besoins de notre clientèle sont pour nous une source permanente d'innovation. C'est la raison pour laquelle des sociétés renommées de l'industrie et de la technique médicale font confiance à notre qualité et à notre expérience.

Grâce à notre proximité avec la clientèle et à notre savoir-faire, nous résolvons des tâches complexes, offrons des solutions souvent uniques et contribuons ainsi largement au succès de nombreuses d'entreprises de renom. Les exigences croissantes du marché sont notre défi quotidien!

**Sphinx ist der richtige Partner.  
Sphinx est le partenaire idéal.  
Sphinx è il partner ideale.  
Sphinx is the right partner.**





La Sphinx Utensili SpA è un'azienda leader nella fabbricazione e vendita di utensili di precisione per la lavorazione a taglio.

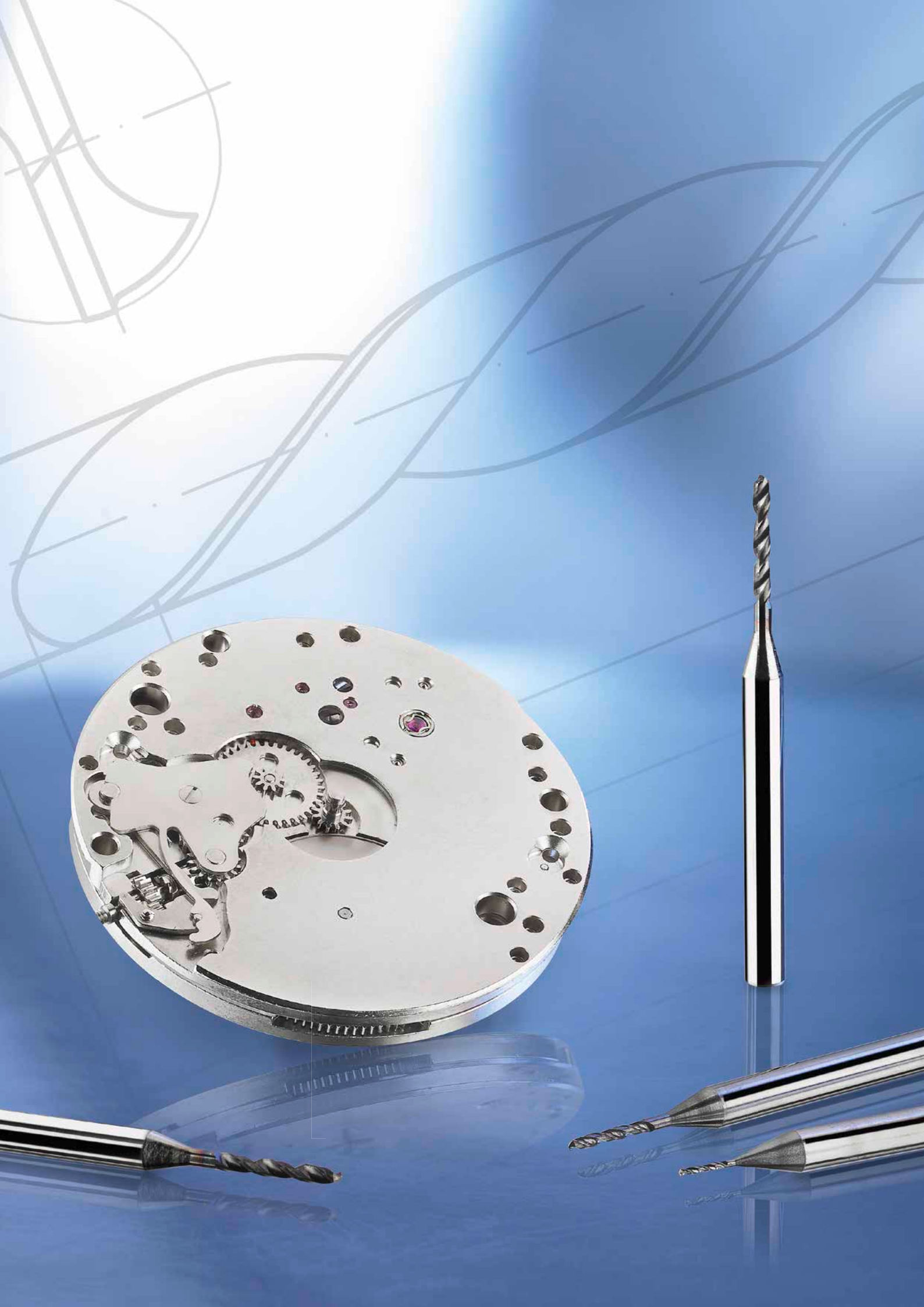
Una crescita continua, conseguenti reinvestizioni nell'impianto di produzione come l'impegno personale dei collaboratori ci permette di avere una forte posizione sul mercato mondiale. I bisogni della clientela sono per noi fonte d'innovazione.

E per questo motivo che società rinomate dell'industria e della tecnica medica confidano nella nostra qualità e nella nostra esperienza. Grazie alla nostra vicinanza alla clientela e il nostro fondato know-how, siamo in grado di risolvere richieste complesse, offrendo delle soluzioni spesso uniche e contribuendo al successo del mercato delle aziende più rinomate.

Anche nel futuro le costanti esigenze del mercato saranno la nostra sfida quotidiana.

Sphinx Tools Ltd. is a leading company for the production and sale of precision machining tools. Its strong international position today is a result of continuous growth, consistent reinvestment in the production plants and the personal dedication of the employees. We view customer needs as the motivation of all our innovations. That is why renowned industrial and medical companies rely on our quality and experience. Our closeness to customers and solid knowledge allows us to solve complex tasks and offer what are often unique solutions. In doing so, we contribute substantially to the market success of well-known companies. The market is becoming ever more demanding. Meeting those demands is our daily challenge today and in the future.





# Der neue E-Shop Le nouveau E-Shop Il nuovo E-Shop The new E-Shop

Dank unseres E-Shops können Sie sich nun unsere Produkte online ansehen und direkt bestellen.  
Grâce à notre E-Shop vous avez la possibilité de consulter et commander nos produits en ligne.  
Grazie al nostro E-Shop avete la possibilità di guardare ed ordinare i nostri prodotti online.  
Thanks to our E-Shop you can have a look at our tools online and place an order directly.







**Mikrobohrer ≤ Ø 3.00 mm**  
**Micro Foret ≤ Ø 3.00 mm**  
**Micro Punta ≤ Ø 3.00 mm**  
**Micro Drill ≤ Ø 3.00 mm**

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**8**

**Mikrofräser ≤ Ø 3.00 mm**  
**Micro Fraise ≤ Ø 3.00 mm**  
**Micro Fresa ≤ Ø 3.00 mm**  
**Micro Endmill ≤ Ø 3.00 mm**

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**52**

**Bohrer – Reibahlen**  
**Foret – Alésoir**  
**Punta – Alesatore**  
**Drill – Reamer**

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**90**

**Fräser**  
**Fraise**  
**Fresa**  
**Endmill**

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**138**

**Sonderwerkzeuge**  
**Outils spéciaux**  
**Utensili speciali**  
**Special tools**

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**148**

**Anwendungstechnik**  
**Application de la technologie**  
**Applicazione della tecnologia**  
**Application technology**

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**157**

**Mikrobohrer ≤ Ø 3.00 mm**

**Micro Foret ≤ Ø 3.00 mm**

**Micro Punta ≤ Ø 3.00 mm**

**Micro Drill ≤ Ø 3.00 mm**

	Artikel Article	Durchmesser-Bereich Diameter range	Abstufung Increments	Bohrtiefe Cutting length	Spitzen- winkel Point angle	Spiral- winkel Helix angle
<b>Mikro NC-Anbohrer, Pilotbohrer mit verstärktem Schaft ohne Innenkühlung</b>						
<b>Micro foret à pointer, foret de préperçage avec manche renforcée sans trou d'huile</b>						
	50806	0.50–6.00	0.10		60° +/- 1°	20°
	50809	0.50–3.00	0.10		90° +/- 1°	20°
	50808	0.50–3.00	0.10		90° +/- 1°	20°
	56005	0.10–1.50	0.05	2–4×Ø	130°	20°
	56030	0.10–1.00	0.01	2×Ø	130°	30°
	56033	0.03–2.99	0.01	2×Ø	130°	30°
	56036	0.30–6.00	0.05	2×Ø	140°/90°	30°
	16004	0.10–1.50	0.05	2–3×Ø	130°	20°
<b>Mikrobohrer mit verstärktem Schaft ohne Innenkühlung</b>						
<b>Micro foret avec manche renforcée sans trou d'huile</b>						
	50695	0.20–1.50	0.01	6×Ø	118°	30°
	50699	0.05–2.00	0.01	6×Ø	118°	30°
	51200	0.03–3.00	0.01	6×Ø	130°	35°
	51201	0.20–3.00	0.01	6×Ø	130°	35°
	50620	0.50–1.60	0.50	10–15×Ø	118°	25°
	50621	0.15–3.00	0.01	12×Ø	130°	25°
	50622	0.20–3.00	0.01	12×Ø	130°	25°
	50941	0.50–2.40	0.01	6×Ø	140°	30°
	55652	0.20–2.99	0.01	5×Ø	140°	35°





\* S. 187 + 189  
p. 187 + 189

- ✓ hervorragend / excellent / ottimamente / outstanding
- geeignet / approprié / adatto / suitable







Material	Werkstoffgruppe* Workpiece material*							Anwendung* Application*	Seite Page
	P	M	K	S	N	H	O		
<b>Micro punta a centrare, punta per preforo con gambo rinforzato senza fori di lubrificazione</b> <b>Micro NC spotting drill, pilot drill with reinforced shank without internal coolant</b>									
VHM/MD/SC	✓	✓	✓	•	✓		✓		13
VHM/MD/SC	✓	✓	✓	•	✓		✓		14
VHM/MD/SC, TiAlSiN	✓	✓	✓	✓	✓	✓	✓		15
VHM/MD/SC	✓	•	✓	✓	✓		✓		16
VHM/MD/SC	✓	✓	✓	✓	✓		✓		17
VHM/MD/SC	✓	✓	✓	✓	✓		✓		18
VHM/MD/SC; AlCrN	✓	✓	✓	✓	✓	•	•		20
HSS-E	✓	•	✓		•		•		21
<b>Micro punta con gambo rinforzato senza fori di lubrificazione</b> <b>Micro drill with reinforced shank without internal coolant</b>									
VHM/MD/SC	✓	•	✓		✓		•		23
VHM/MD/SC	✓	•	✓		✓		•		24
VHM/MD/SC	✓	✓	✓	✓	✓		•		26
VHM/MD/SC; TiAlN	✓	✓	✓	✓	✓	•	•		28
VHM/MD/SC	✓	•	✓		✓		•		30
VHM/MD/SC	✓	•	✓		✓		•		31
VHM/MD/SC; TiAlN	✓	•	✓	•	✓	•	•		33
VHM/MD/SC; TiAlN	✓	✓	✓	✓	✓	•	✓		35
VHM/MD/SC	✓	•	✓	•	✓		•		36








	Artikel Article	Durchmesser-Bereich Diameter range	Abstufung Increments	Bohrtiefe Cutting length	Spitzen- winkel Point angle	Spiral- winkel Helix angle
	12604	0.05–3.175	0.01	5–8× $\emptyset$	118°	25°
	11654	0.50–2.30	0.05	6× $\emptyset$	120°	30°

**Mikro-Tieflochbohrer  
Micro-foret de perçage profond**

	50720	0.20–1.50	0.05	20× $\emptyset$	129°	30°
	50740	0.40–1.50	0.05	40× $\emptyset$	126°	30°
	50760	0.40–1.50	0.05	60× $\emptyset$	126°	30°
	50780	0.40–1.50	0.05	80× $\emptyset$	126°	30°

**Mikro Hochleistungsbohrer Phoenix-TC2 mit verstärktem Schaft mit Innenkühlung  
Micro foret à grand rendement Phoenix-TC2 avec manche renforcée avec trou d'huile**

	52903	1.00–10.00	0.05	3× $\emptyset$	140°	30°
	52906	1.00–10.00	0.05	6× $\emptyset$	140°	30°
	52909	1.00–10.00	0.10	9× $\emptyset$	140°	30°
	52912	1.00–10.00	0.10	12× $\emptyset$	137°	30°
	52916	1.00–10.00	0.10	16× $\emptyset$	137°	30°

\* S. 187 + 189  
p. 187 + 189

- ✓ hervorragend / excellent / ottimamente / outstanding
- geeignet / approprié / adatto / suitable

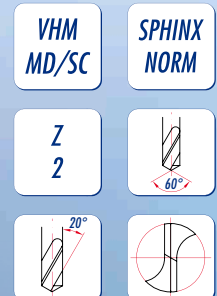
Material	Werkstoffgruppe* Workpiece material*							Anwendung* Application*	Seite Page
	P	M	K	S	N	H	O		
HSS-E	✓	•	✓		•		•	 	38
HSS-E	✓	•	✓		•			 	39
<b>Micro punta per foro profondo Micro deep hole drill</b>									
VHM/MD/SC; Mi-Nova	✓	•	✓	•	✓	•	✓	  	41
VHM/MD/SC; Mi-Nova	✓	•	✓	•	✓	•	✓	  	42
VHM/MD/SC; Mi-Nova	✓	•	✓	•	✓	•	✓	  	43
VHM/MD/SC; Mi-Nova	✓	•	✓	•	✓	•	✓	  	44
<b>Micro punta ad alto rendimento Phoenix-TC2 con gambo rinforzato con fori di lubrificazione Micro high performance drill Phoenix-TC2 with reinforced shank with internal coolant</b>									
VHM/MD/SC; AlTiCrN+S	✓	✓	✓	✓	✓	•	•	  	46
VHM/MD/SC; AlTiCrN+S	✓	✓	✓	✓	✓	•	•	  	47
VHM/MD/SC; AlTiCrN+S	✓	✓	✓	✓	✓	•	•	  	48
VHM/MD/SC; AlCrTiN	✓	✓	✓	✓	✓	•	•	  	49
VHM/MD/SC; AlCrTiN	✓	✓	✓	✓	✓	•	•	  	50





**Mikro-NC-Anbohrer und Anfaser 60°**  
**Micro foret à pointer NC et chanfreiner 60°**  
**Micro punta NC a centrare e smusso 60°**  
**Micro NC spotting and chamfering drill 60°**

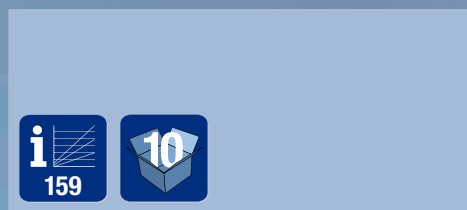
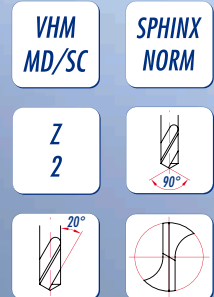
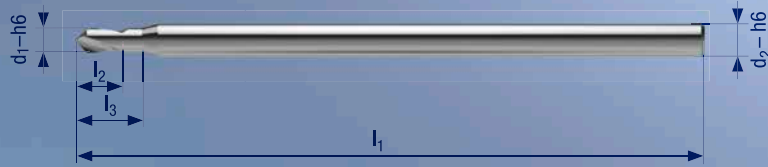
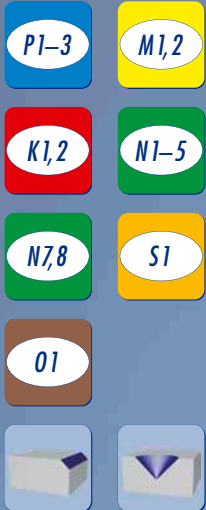
Art. 50806



d <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	l <sub>1</sub>	d <sub>2</sub>
mm	mm	mm	mm	mm
0.50	1.50	2.00	38	3.00
0.60	1.50	2.00	38	3.00
0.70	1.50	2.00	38	3.00
0.80	2.00	2.50	38	3.00
0.90	2.00	2.50	38	3.00
1.00	2.00	2.50	38	3.00
1.10	2.50	3.50	38	3.00
1.20	2.50	3.50	38	3.00
1.30	2.50	3.50	38	3.00
1.40	3.00	4.00	38	3.00
1.50	3.00	4.00	38	3.00
1.60	3.00	4.00	38	3.00
1.70	4.00	5.00	38	3.00
1.80	4.00	5.00	38	3.00
1.90	4.00	5.00	38	3.00
2.00	5.00	6.00	38	3.00
2.10	5.00	6.00	38	3.00
2.20	5.00	6.00	38	3.00
2.30	6.00	7.00	38	3.00
2.40	6.00	7.00	38	3.00
2.50	6.00	7.00	38	3.00
2.60	7.00	8.00	38	3.00
2.70	7.00	8.00	38	3.00
2.80	7.00	8.00	38	3.00
2.90	7.00	8.00	38	3.00
3.00	9.50	9.50	38	3.00
4.00	10.50	10.50	40	4.00
5.00	16.00	16.00	50	5.00
6.00	16.00	16.00	50	6.00

**Mikro-NC-Anbohrer 90°**  
**Micro foret à pointer NC 90°**  
**Micro punta NC a centrare 90°**  
**Micro NC spotting drill 90°**

**Art. 50809**



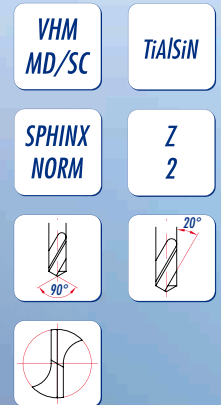
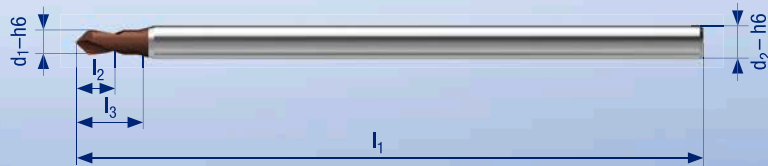
d <sub>1</sub> mm	l <sub>2</sub> mm	l <sub>3</sub> mm	l <sub>1</sub> mm	d <sub>2</sub> mm
0.50	1.00	1.60	38	2.00
0.60	1.20	1.80	38	2.00
0.70	1.40	2.00	38	2.00
0.80	1.60	2.20	38	2.00
0.90	1.80	2.40	38	2.00
1.00	2.00	2.60	38	2.00
1.10	2.20	2.80	38	2.00
1.20	2.40	3.00	38	2.00
1.30	2.60	3.20	38	2.00
1.40	2.80	3.40	38	2.00
1.50	3.00	3.80	38	2.00
1.60	3.20	4.20	38	2.00
1.70	3.40	4.40	38	2.00
1.80	3.60	4.60	38	2.00
1.90	3.80	4.80	38	2.00
2.00	5.00	6.00	38	3.00
2.50	6.50	8.00	38	3.00
3.00	7.50	7.50	38	3.00





**Mikro-NC-Anbohrer 90° TiAlSiN**  
**Micro foret à pointer NC 90° TiAlSiN**  
**Micro punta NC a centrare 90° TiAlSiN**  
**Micro NC spotting drill 90° TiAlSiN**

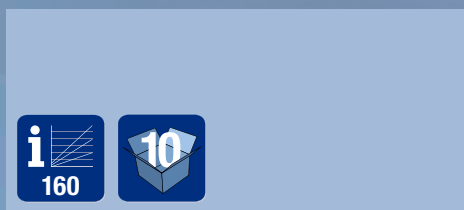
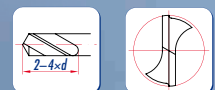
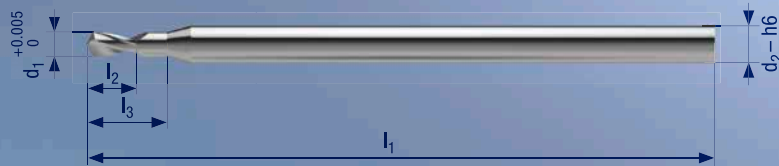
Art. 50808



d <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	l <sub>1</sub>	d <sub>2</sub>
mm	mm	mm	mm	mm
0.50	1.00	1.60	38	2.00
0.60	1.20	1.80	38	2.00
0.70	1.40	2.00	38	2.00
0.80	1.60	2.20	38	2.00
0.90	1.80	2.40	38	2.00
1.00	2.00	2.60	38	2.00
1.10	2.20	2.80	38	2.00
1.20	2.40	3.00	38	2.00
1.30	2.60	3.20	38	2.00
1.40	2.80	3.40	38	2.00
1.50	3.00	3.80	38	2.00
1.60	3.20	4.20	38	2.00
1.70	3.40	4.40	38	2.00
1.80	3.60	4.60	38	2.00
1.90	3.80	4.80	38	2.00
2.00	5.00	6.00	38	3.00
2.50	6.50	8.00	38	3.00
3.00	7.50	7.50	38	3.00

**Mikro-NC-Anbohrer Plus 130°**  
**Micro foret à pointer NC Plus 130°**  
**Micro punta NC a centrare Plus 130°**  
**Micro NC spotting drill Plus 130°**

**Art. 56005**

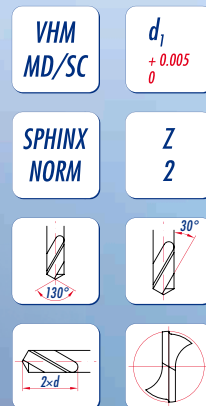
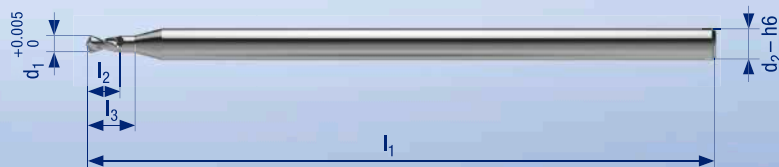
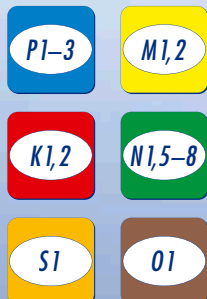


d <sub>1</sub> mm	l <sub>2</sub> mm	l <sub>3</sub> mm	l <sub>1</sub> mm	d <sub>2</sub> mm
0.10	0.40	0.60	25	1.50
0.15	0.40	0.60	25	1.50
0.20	0.60	0.90	25	1.50
0.25	0.60	0.90	25	1.50
0.30	0.90	1.20	25	1.50
0.35	0.90	1.20	25	1.50
0.40	0.90	1.60	25	1.50
0.45	0.90	1.60	25	1.50
0.50	1.00	1.80	25	1.50
0.55	1.00	1.80	25	1.50
0.60	1.20	2.00	25	1.50
0.65	1.20	2.00	25	1.50
0.70	1.50	2.50	25	1.50
0.75	1.50	2.50	25	1.50
0.80	1.50	2.50	25	1.50
0.85	1.50	2.50	25	1.50
0.90	1.60	2.60	25	1.50
0.95	1.60	2.60	25	1.50
1.00	2.00	3.20	25	1.50
1.05	2.00	3.20	25	1.50
1.10	2.30	3.50	25	1.50
1.15	2.30	3.50	25	1.50
1.20	2.30	3.50	25	1.50
1.25	2.30	3.50	25	1.50
1.30	2.70	4.20	25	1.50
1.35	2.70	4.20	25	1.50
1.40	2.70	4.20	25	1.50
1.45	2.70	4.20	25	1.50
1.50	3.00	4.20	25	1.50



**Mikro Pilotbohrer Spirec Plus 2 x d**  
**Micro foret de préperçage Spirec Plus 2 x d**  
**Micro punta per preforo Spirec Plus 2 x d**  
**Micro pilot drill Spirec Plus 2 x d**

Art. 56030



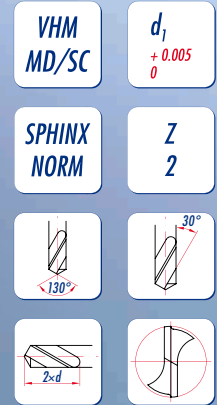
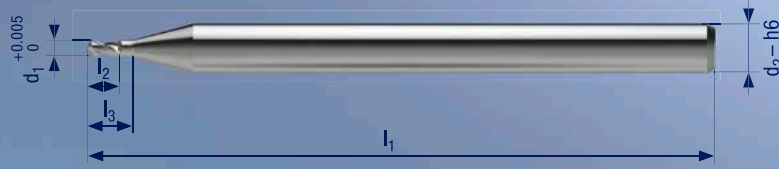
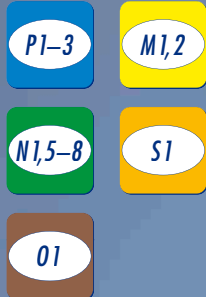
d <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	l <sub>1</sub>	d <sub>2</sub>
mm	mm	mm	mm	mm
0.10	0.35	0.55	30	1.50
0.11	0.35	0.55	30	1.50
0.12	0.35	0.55	30	1.50
0.13	0.40	0.60	30	1.50
0.14	0.40	0.60	30	1.50
0.15	0.40	0.60	30	1.50
0.16	0.40	0.60	30	1.50
0.17	0.50	0.70	30	1.50
0.18	0.50	0.70	30	1.50
0.19	0.50	0.70	30	1.50
0.20	0.55	0.75	30	1.50
0.21	0.55	0.75	30	1.50
0.22	0.60	0.80	30	1.50
0.23	0.60	0.80	30	1.50
0.24	0.60	0.80	30	1.50
0.25	0.70	0.90	30	1.50
0.26	0.70	0.90	30	1.50
0.27	0.70	0.90	30	1.50
0.28	0.80	1.00	30	1.50
0.29	0.80	1.00	30	1.50
0.30	0.90	1.20	30	1.50
0.31	0.90	1.20	30	1.50
0.32	0.90	1.20	30	1.50
0.33	0.90	1.20	30	1.50
0.34	0.90	1.35	30	1.50
0.35	0.90	1.35	30	1.50
0.36	0.95	1.35	30	1.50
0.37	0.95	1.35	30	1.50
0.38	0.95	1.50	30	1.50
0.39	0.95	1.50	30	1.50
0.40	0.80	1.60	30	1.50
0.41	0.82	1.60	30	1.50
0.42	0.84	1.60	30	1.50
0.43	0.86	1.60	30	1.50
0.44	0.88	1.60	30	1.50
0.45	0.90	1.60	30	1.50
0.46	0.92	1.70	30	1.50
0.47	0.94	1.70	30	1.50

d <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	l <sub>1</sub>	d <sub>2</sub>
mm	mm	mm	mm	mm
0.48	0.96	1.70	30	1.50
0.49	0.98	1.70	30	1.50
0.50	1.00	1.70	30	1.50
0.51	1.02	1.80	30	1.50
0.52	1.04	1.80	30	1.50
0.53	1.06	1.80	30	1.50
0.54	1.08	1.80	30	1.50
0.55	1.10	1.80	30	1.50
0.56	1.12	1.90	30	1.50
0.57	1.14	1.90	30	1.50
0.58	1.16	1.90	30	1.50
0.59	1.18	1.90	30	1.50
0.60	1.20	1.90	30	1.50
0.61	1.22	2.00	30	1.50
0.62	1.24	2.00	30	1.50
0.63	1.26	2.00	30	1.50
0.64	1.28	2.00	30	1.50
0.65	1.30	2.00	30	1.50
0.66	1.32	2.10	30	1.50
0.67	1.34	2.10	30	1.50
0.68	1.36	2.10	30	1.50
0.69	1.38	2.10	30	1.50
0.70	1.40	2.10	30	1.50
0.71	1.42	2.20	30	1.50
0.72	1.44	2.20	30	1.50
0.73	1.46	2.20	30	1.50
0.74	1.48	2.20	30	1.50
0.75	1.50	2.20	30	1.50
0.76	1.52	2.30	30	1.50
0.77	1.54	2.30	30	1.50
0.78	1.56	2.30	30	1.50
0.79	1.58	2.30	30	1.50
0.80	1.60	2.30	30	1.50
0.81	1.62	2.40	30	1.50
0.82	1.64	2.40	30	1.50
0.83	1.66	2.40	30	1.50
0.84	1.68	2.40	30	1.50
0.85	1.70	2.40	30	1.50

d <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	l <sub>1</sub>	d <sub>2</sub>
mm	mm	mm	mm	mm
0.86	1.72	2.50	30	1.50
0.87	1.74	2.50	30	1.50
0.88	1.76	2.50	30	1.50
0.89	1.78	2.50	30	1.50
0.90	1.80	2.50	30	1.50
0.91	1.82	2.60	30	1.50
0.92	1.84	2.60	30	1.50
0.93	1.86	2.60	30	1.50
0.94	1.88	2.60	30	1.50
0.95	1.90	2.60	30	1.50
0.96	1.92	2.70	30	1.50
0.97	1.94	2.70	30	1.50
0.98	1.96	2.70	30	1.50
0.99	1.98	2.70	30	1.50
1.00	2.00	2.70	30	1.50

**Mikro Pilotbohrer Plus 2 × d**  
**Micro foret de préperçage Plus 2 × d**  
**Micro punta per preforo Plus 2 × d**  
**Micro pilot drill Plus 2 × d**

**Art. 56033**



d <sub>1</sub> mm	l <sub>2</sub> mm	l <sub>3</sub> mm	l <sub>1</sub> mm	d <sub>2</sub> mm	d <sub>1</sub> mm	l <sub>2</sub> mm	l <sub>3</sub> mm	l <sub>1</sub> mm	d <sub>2</sub> mm	d <sub>1</sub> mm	l <sub>2</sub> mm	l <sub>3</sub> mm	l <sub>1</sub> mm	d <sub>2</sub> mm	d <sub>1</sub> mm	l <sub>2</sub> mm	l <sub>3</sub> mm	l <sub>1</sub> mm	d <sub>2</sub> mm
0.03	0.15	0.30	38	3.00	0.41	0.82	1.60	38	3.00	0.79	1.58	2.30	38	3.00	1.17	2.34	3.80	38	3.00
0.04	0.15	0.30	38	3.00	0.42	0.84	1.60	38	3.00	0.80	1.60	2.30	38	3.00	1.18	2.36	3.80	38	3.00
0.05	0.20	0.40	38	3.00	0.43	0.86	1.60	38	3.00	0.81	1.62	2.40	38	3.00	1.19	2.38	3.80	38	3.00
0.06	0.20	0.40	38	3.00	0.44	0.88	1.60	38	3.00	0.82	1.64	2.40	38	3.00	1.20	2.40	3.80	38	3.00
0.07	0.25	0.45	38	3.00	0.45	0.90	1.60	38	3.00	0.83	1.66	2.40	38	3.00	1.21	2.42	4.20	38	3.00
0.08	0.25	0.45	38	3.00	0.46	0.92	1.70	38	3.00	0.84	1.68	2.40	38	3.00	1.22	2.44	4.20	38	3.00
0.09	0.30	0.50	38	3.00	0.47	0.94	1.70	38	3.00	0.85	1.70	2.40	38	3.00	1.23	2.46	4.20	38	3.00
0.10	0.35	0.55	38	3.00	0.48	0.96	1.70	38	3.00	0.86	1.72	2.50	38	3.00	1.24	2.48	4.20	38	3.00
0.11	0.35	0.55	38	3.00	0.49	0.98	1.70	38	3.00	0.87	1.74	2.50	38	3.00	1.25	2.50	4.20	38	3.00
0.12	0.35	0.55	38	3.00	0.50	1.00	1.70	38	3.00	0.88	1.76	2.50	38	3.00	1.26	2.52	4.30	38	3.00
0.13	0.40	0.60	38	3.00	0.51	1.02	1.80	38	3.00	0.89	1.78	2.50	38	3.00	1.27	2.54	4.30	38	3.00
0.14	0.40	0.60	38	3.00	0.52	1.04	1.80	38	3.00	0.90	1.80	2.50	38	3.00	1.28	2.56	4.30	38	3.00
0.15	0.40	0.60	38	3.00	0.53	1.06	1.80	38	3.00	0.91	1.82	2.60	38	3.00	1.29	2.58	4.30	38	3.00
0.16	0.40	0.60	38	3.00	0.54	1.08	1.80	38	3.00	0.92	1.84	2.60	38	3.00	1.30	2.60	4.30	38	3.00
0.17	0.50	0.70	38	3.00	0.55	1.10	1.80	38	3.00	0.93	1.86	2.60	38	3.00	1.31	2.62	4.40	38	3.00
0.18	0.50	0.70	38	3.00	0.56	1.12	1.90	38	3.00	0.94	1.88	2.60	38	3.00	1.32	2.64	4.40	38	3.00
0.19	0.50	0.70	38	3.00	0.57	1.14	1.90	38	3.00	0.95	1.90	2.60	38	3.00	1.33	2.66	4.40	38	3.00
0.20	0.55	0.75	38	3.00	0.58	1.16	1.90	38	3.00	0.96	1.92	2.70	38	3.00	1.34	2.68	4.40	38	3.00
0.21	0.55	0.75	38	3.00	0.59	1.18	1.90	38	3.00	0.97	1.94	2.70	38	3.00	1.35	2.70	4.40	38	3.00
0.22	0.60	0.80	38	3.00	0.60	1.20	1.90	38	3.00	0.98	1.96	2.70	38	3.00	1.36	2.72	4.50	38	3.00
0.23	0.60	0.80	38	3.00	0.61	1.22	2.00	38	3.00	0.99	1.98	2.70	38	3.00	1.37	2.74	4.50	38	3.00
0.24	0.60	0.80	38	3.00	0.62	1.24	2.00	38	3.00	1.00	2.00	2.70	38	3.00	1.38	2.76	4.50	38	3.00
0.25	0.70	0.90	38	3.00	0.63	1.26	2.00	38	3.00	1.01	2.02	3.50	38	3.00	1.39	2.78	4.50	38	3.00
0.26	0.70	0.90	38	3.00	0.64	1.28	2.00	38	3.00	1.02	2.04	3.50	38	3.00	1.40	2.80	4.50	38	3.00
0.27	0.70	0.90	38	3.00	0.65	1.30	2.00	38	3.00	1.03	2.06	3.50	38	3.00	1.41	2.82	4.60	38	3.00
0.28	0.80	1.00	38	3.00	0.66	1.32	2.10	38	3.00	1.04	2.08	3.50	38	3.00	1.42	2.84	4.60	38	3.00
0.29	0.80	1.00	38	3.00	0.67	1.34	2.10	38	3.00	1.05	2.10	3.50	38	3.00	1.43	2.86	4.60	38	3.00
0.30	0.90	1.20	38	3.00	0.68	1.36	2.10	38	3.00	1.06	2.12	3.60	38	3.00	1.44	2.88	4.60	38	3.00
0.31	0.90	1.20	38	3.00	0.69	1.38	2.10	38	3.00	1.07	2.14	3.60	38	3.00	1.45	2.90	4.60	38	3.00
0.32	0.90	1.20	38	3.00	0.70	1.40	2.10	38	3.00	1.08	2.16	3.60	38	3.00	1.46	2.92	4.70	38	3.00
0.33	0.90	1.20	38	3.00	0.71	1.42	2.20	38	3.00	1.09	2.18	3.60	38	3.00	1.47	2.94	4.70	38	3.00
0.34	0.90	1.35	38	3.00	0.72	1.44	2.20	38	3.00	1.10	2.20	3.60	38	3.00	1.48	2.96	4.70	38	3.00
0.35	0.90	1.35	38	3.00	0.73	1.46	2.20	38	3.00	1.11	2.22	3.70	38	3.00	1.49	2.98	4.70	38	3.00
0.36	0.95	1.35	38	3.00	0.74	1.48	2.20	38	3.00	1.12	2.24	3.70	38	3.00	1.50	3.00	4.70	38	3.00
0.37	0.95	1.35	38	3.00	0.75	1.50	2.20	38	3.00	1.13	2.26	3.70	38	3.00	1.51	3.02	5.10	38	3.00
0.38	0.95	1.50	38	3.00	0.76	1.52	2.30	38	3.00	1.14	2.28	3.70	38	3.00	1.52	3.04	5.10	38	3.00
0.39	0.95	1.50	38	3.00	0.77	1.54	2.30	38	3.00	1.15	2.30	3.70	38	3.00	1.53	3.06	5.10	38	3.00
0.40	0.80	1.60	38	3.00	0.78	1.56	2.30	38	3.00	1.16	2.32	3.80	38	3.00	1.54	3.08	5.10	38	3.00





d <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	l <sub>1</sub>	d <sub>2</sub>
mm	mm	mm	mm	mm
1.55	3.10	5.10	38	3.00
1.56	3.12	5.20	38	3.00
1.57	3.14	5.20	38	3.00
1.58	3.16	5.20	38	3.00
1.59	3.18	5.20	38	3.00
1.60	3.20	5.20	38	3.00
1.61	3.22	5.30	38	3.00
1.62	3.24	5.30	38	3.00
1.63	3.26	5.30	38	3.00
1.64	3.28	5.30	38	3.00
1.65	3.30	5.30	38	3.00
1.66	3.32	5.40	38	3.00
1.67	3.34	5.40	38	3.00
1.68	3.36	5.40	38	3.00
1.69	3.38	5.40	38	3.00
1.70	3.40	5.40	38	3.00
1.71	3.42	5.50	38	3.00
1.72	3.44	5.50	38	3.00
1.73	3.46	5.50	38	3.00
1.74	3.48	5.50	38	3.00
1.75	3.50	5.50	38	3.00
1.76	3.52	5.60	38	3.00
1.77	3.54	5.60	38	3.00
1.78	3.56	5.60	38	3.00
1.79	3.58	5.60	38	3.00
1.80	3.60	5.60	38	3.00
1.81	3.62	5.70	38	3.00
1.82	3.64	5.70	38	3.00
1.83	3.66	5.70	38	3.00
1.84	3.68	5.70	38	3.00
1.85	3.70	5.70	38	3.00
1.86	3.72	5.80	38	3.00
1.87	3.74	5.80	38	3.00
1.88	3.76	5.80	38	3.00
1.89	3.78	5.80	38	3.00
1.90	3.80	5.80	38	3.00
1.91	3.82	5.90	38	3.00
1.92	3.84	5.90	38	3.00

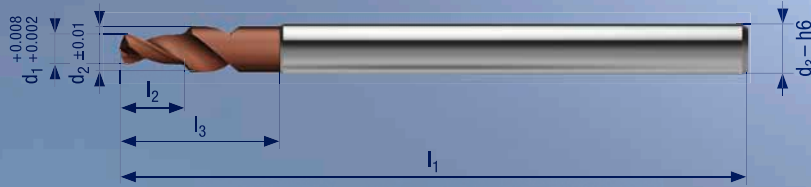
d <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	l <sub>1</sub>	d <sub>2</sub>
mm	mm	mm	mm	mm
1.93	3.86	5.90	38	3.00
1.94	3.88	5.90	38	3.00
1.95	3.90	5.90	38	3.00
1.96	3.92	6.00	38	3.00
1.97	3.94	6.00	38	3.00
1.98	3.96	6.00	38	3.00
1.99	3.98	6.00	38	3.00
2.00	4.00	6.00	38	3.00
2.01	4.02	6.10	38	3.00
2.02	4.04	6.10	38	3.00
2.03	4.06	6.10	38	3.00
2.04	4.08	6.10	38	3.00
2.05	4.10	6.10	38	3.00
2.06	4.12	6.20	38	3.00
2.07	4.14	6.20	38	3.00
2.08	4.16	6.20	38	3.00
2.09	4.18	6.20	38	3.00
2.10	4.20	6.20	38	3.00
2.11	4.22	6.30	38	3.00
2.12	4.24	6.30	38	3.00
2.13	4.26	6.30	38	3.00
2.14	4.28	6.30	38	3.00
2.15	4.30	6.30	38	3.00
2.16	4.32	6.40	38	3.00
2.17	4.34	6.40	38	3.00
2.18	4.36	6.40	38	3.00
2.19	4.38	6.40	38	3.00
2.20	4.40	6.40	38	3.00
2.21	4.42	6.50	38	3.00
2.22	4.44	6.50	38	3.00
2.23	4.46	6.50	38	3.00
2.24	4.48	6.50	38	3.00
2.25	4.50	6.50	38	3.00
2.26	4.52	6.60	38	3.00
2.27	4.54	6.60	38	3.00
2.28	4.56	6.60	38	3.00
2.29	4.58	6.60	38	3.00
2.30	4.60	6.60	38	3.00

d <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	l <sub>1</sub>	d <sub>2</sub>
mm	mm	mm	mm	mm
2.31	4.62	6.70	38	3.00
2.32	4.64	6.70	38	3.00
2.33	4.66	6.70	38	3.00
2.34	4.68	6.70	38	3.00
2.35	4.70	6.70	38	3.00
2.36	4.72	6.80	38	3.00
2.37	4.74	6.80	38	3.00
2.38	4.76	6.80	38	3.00
2.39	4.78	6.80	38	3.00
2.40	4.80	6.80	38	3.00
2.41	4.82	6.90	38	3.00
2.42	4.84	6.90	38	3.00
2.43	4.86	6.90	38	3.00
2.44	4.88	6.90	38	3.00
2.45	4.90	6.90	38	3.00
2.46	4.92	7.00	38	3.00
2.47	4.94	7.00	38	3.00
2.48	4.96	7.00	38	3.00
2.49	4.98	7.00	38	3.00
2.50	5.00	7.00	38	3.00
2.51	5.02	7.10	38	3.00
2.52	5.04	7.10	38	3.00
2.53	5.06	7.10	38	3.00
2.54	5.08	7.10	38	3.00
2.55	5.10	7.10	38	3.00
2.56	5.12	7.20	38	3.00
2.57	5.14	7.20	38	3.00
2.58	5.16	7.20	38	3.00
2.59	5.18	7.20	38	3.00
2.60	5.20	7.20	38	3.00
2.61	5.22	7.30	38	3.00
2.62	5.24	7.30	38	3.00
2.63	5.26	7.30	38	3.00
2.64	5.28	7.30	38	3.00
2.65	5.30	7.30	38	3.00
2.66	5.32	7.40	38	3.00
2.67	5.34	7.40	38	3.00
2.68	5.36	7.40	38	3.00

d <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	l <sub>1</sub>	d <sub>2</sub>
mm	mm	mm	mm	mm
2.69	5.38	7.40	38	3.00
2.70	5.40	7.40	38	3.00
2.71	5.42	7.50	38	3.00
2.72	5.44	7.50	38	3.00
2.73	5.46	7.50	38	3.00
2.74	5.48	7.50	38	3.00
2.75	5.50	7.50	38	3.00
2.76	5.52	7.60	38	3.00
2.77	5.54	7.60	38	3.00
2.78	5.56	7.60	38	3.00
2.79	5.58	7.60	38	3.00
2.80	5.60	7.60	38	3.00
2.81	5.62	7.70	38	3.00
2.82	5.64	7.70	38	3.00
2.83	5.66	7.70	38	3.00
2.84	5.68	7.70	38	3.00
2.85	5.70	7.70	38	3.00
2.86	5.72	7.80	38	3.00
2.87	5.74	7.80	38	3.00
2.88	5.76	7.80	38	3.00
2.89	5.78	7.80	38	3.00
2.90	5.80	7.80	38	3.00
2.91	5.82	7.90	38	3.00
2.92	5.84	7.90	38	3.00
2.93	5.86	7.90	38	3.00
2.94	5.88	7.90	38	3.00
2.95	5.90	7.90	38	3.00
2.96	5.92	8.00	38	3.00
2.97	5.94	8.00	38	3.00
2.98	5.96	8.00	38	3.00
2.99	5.98	8.00	38	3.00

**Mikro Pilot-Stufenbohrer Plus**  
**Micro foret étagé Plus de préperçage**  
**Micro punta Plus a gradino per preforo**  
**Micro pilot step drill Plus**

Art. 56036



d <sub>1</sub>	d <sub>2</sub>	l <sub>2</sub>	l <sub>3</sub>	l <sub>1</sub>	d <sub>3</sub>
mm	mm	mm	mm	mm	mm
0.30	0.70	0.60	2.50	50	4.00
0.35	0.70	0.70	2.50	50	4.00
0.40	1.00	0.80	3.00	50	4.00
0.45	1.00	0.90	3.00	50	4.00
0.50	1.20	1.00	3.50	50	4.00
0.55	1.30	1.10	3.50	50	4.00
0.60	1.40	1.20	4.30	50	4.00
0.65	1.50	1.30	4.30	50	4.00
0.70	1.80	1.40	5.30	50	4.00
0.75	1.80	1.50	5.30	50	4.00
0.80	2.00	1.60	6.00	50	4.00
0.85	2.00	1.70	6.00	50	4.00
0.90	2.00	1.80	6.00	50	4.00
0.95	2.00	1.90	6.00	50	4.00
1.00	2.20	2.00	7.00	50	4.00
1.05	2.20	2.10	7.00	50	4.00
1.10	2.20	2.20	7.00	50	4.00
1.15	2.20	2.30	7.00	50	4.00
1.20	2.20	2.40	7.00	50	4.00
1.25	2.50	2.50	8.00	50	4.00
1.30	2.50	2.60	8.00	50	4.00
1.35	2.50	2.70	8.00	50	4.00
1.40	2.50	2.80	8.00	50	4.00
1.45	2.70	2.90	9.00	50	4.00
1.50	2.70	3.00	9.00	50	4.00
1.55	2.70	3.10	9.00	50	4.00
1.60	2.70	3.20	9.00	50	4.00
1.65	2.80	3.30	9.50	50	4.00
1.70	2.80	3.40	9.50	50	4.00
1.75	2.80	3.50	9.50	50	4.00
1.80	2.80	3.60	9.50	50	4.00
1.85	3.00	3.70	10.20	50	4.00
1.90	3.00	3.80	10.20	50	4.00
1.95	3.00	3.90	10.20	50	4.00
2.00	3.00	4.00	10.20	50	4.00
2.05	3.20	4.10	11.00	50	4.00

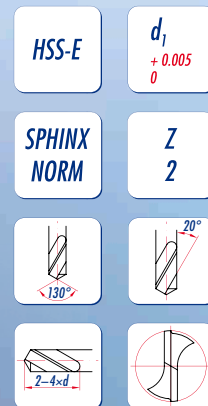
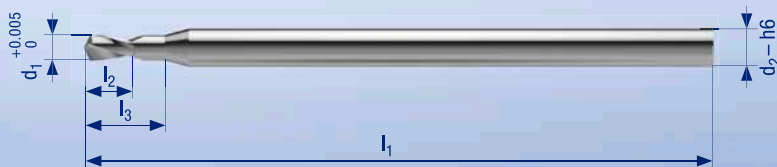
d <sub>1</sub>	d <sub>2</sub>	l <sub>2</sub>	l <sub>3</sub>	l <sub>1</sub>	d <sub>3</sub>
mm	mm	mm	mm	mm	mm
2.10	3.20	4.20	11.00	50	4.00
2.15	3.20	4.30	11.00	50	4.00
2.20	3.20	4.40	11.00	50	4.00
2.25	3.40	4.50	12.00	50	4.00
2.30	3.40	4.60	12.00	50	4.00
2.35	3.40	4.70	12.00	50	4.00
2.40	3.40	4.80	12.00	50	4.00
2.45	3.60	4.90	12.70	50	4.00
2.50	3.60	5.00	12.70	50	4.00
2.55	3.60	5.10	12.70	50	4.00
2.60	3.60	5.20	12.70	50	4.00
2.65	3.80	5.30	13.50	50	4.00
2.70	3.80	5.40	13.50	50	4.00
2.75	3.80	5.50	13.50	50	4.00
2.80	3.80	5.60	13.50	50	4.00
2.85	4.00	5.70		50	4.00
2.90	4.00	5.80		50	4.00
2.95	4.00	5.90		50	4.00
3.00	4.00	6.00		50	4.00
3.05	4.60	6.10	14.00	55	6.00
3.10	4.60	6.20	14.50	55	6.00
3.15	4.60	6.30	14.50	55	6.00
3.20	4.60	6.40	14.50	55	6.00
3.25	4.80	6.50	14.50	55	6.00
3.30	4.80	6.60	14.50	55	6.00
3.35	4.80	6.70	15.00	55	6.00
3.40	4.80	6.80	15.00	55	6.00
3.45	5.00	6.90	15.00	55	6.00
3.50	5.00	7.00	15.00	55	6.00
3.55	5.00	7.10	15.50	55	6.00
3.60	5.00	7.20	15.50	55	6.00
3.65	5.20	7.30	15.50	55	6.00
3.70	5.20	7.40	15.50	55	6.00
3.75	5.20	7.50	16.00	55	6.00
3.80	5.20	7.60	16.00	55	6.00
3.85	5.40	7.70	16.00	55	6.00

d <sub>1</sub>	d <sub>2</sub>	l <sub>2</sub>	l <sub>3</sub>	l <sub>1</sub>	d <sub>3</sub>
mm	mm	mm	mm	mm	mm
3.90	5.40	7.80	16.00	55	6.00
3.95	5.40	7.90	16.50	55	6.00
4.00	5.40	8.00	16.50	55	6.00
4.05	5.60	8.10	16.50	55	6.00
4.10	5.60	8.20	16.50	55	6.00
4.15	5.60	8.30	17.00	55	6.00
4.20	5.60	8.40	17.00	55	6.00
4.25	5.80	8.50	17.00	64	8.00
4.30	5.80	8.60	17.00	64	8.00
4.35	5.80	8.70	17.50	64	8.00
4.40	5.80	8.80	17.50	64	8.00
4.45	6.00	8.90	17.50	64	8.00
4.50	6.00	9.00	18.00	64	8.00
4.55	6.00	9.10	18.00	64	8.00
4.60	6.00	9.20	18.00	64	8.00
4.65	6.20	9.30	18.50	64	8.00
4.70	6.20	9.40	18.50	64	8.00
4.75	6.20	9.50	18.50	64	8.00
4.80	6.20	9.60	19.00	64	8.00
4.85	6.40	9.70	19.00	64	8.00
4.90	6.40	9.80	19.00	64	8.00
4.95	6.40	9.90	19.50	64	8.00
5.00	6.40	10.00	19.50	64	8.00
5.05	6.60	10.10	19.50	64	8.00
5.10	6.60	10.20	20.00	64	8.00
5.15	6.60	10.30	20.00	64	8.00
5.20	6.60	10.40	20.00	64	8.00
5.25	6.80	10.50	20.50	64	8.00
5.30	6.80	10.60	20.50	64	8.00
5.35	6.80	10.70	20.50	64	8.00
5.40	6.80	10.80	21.00	64	8.00
5.45	7.00	10.90	21.00	64	8.00
5.50	7.00	11.00	21.00	64	8.00
5.55	7.00	11.10	21.50	64	8.00
5.60	7.00	11.20	21.50	64	8.00
5.65	7.20	11.30	21.50	64	8.00

d <sub>1</sub>	d <sub>2</sub>	l <sub>2</sub>	l <sub>3</sub>	l <sub>1</sub>	d <sub>3</sub>
mm	mm	mm	mm	mm	mm
5.70	7.20	11.40	22.00	64	8.00
5.75	7.20	11.50	22.00	64	8.00
5.80	7.20	11.60	22.00	64	8.00
5.85	7.40	11.70	22.50	64	8.00
5.90	7.40	11.80	22.50	64	8.00
5.95	7.40	11.90	22.50	64	8.00
6.00	7.40	12.00	23.00	64	8.00

**Mikro Pilotbohrer Spirec Plus aus HSS-E**  
**Micro foret de préperçage Spirec Plus en HSS-E**  
**Micro punta per preforo Spirec Plus in HSS-E**  
**Micro Pilot drill Spirec Plus in HSS-E**

Art. 16004



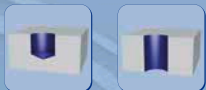
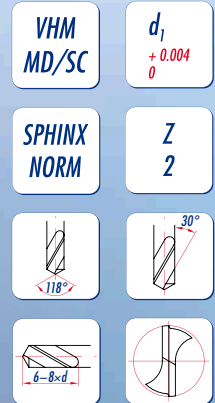
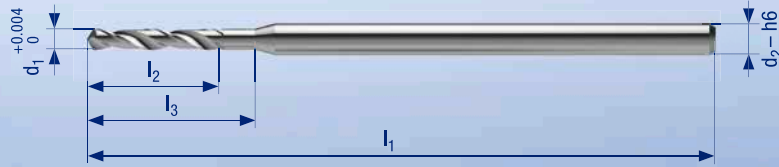
d <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	l <sub>1</sub>	d <sub>2</sub>
mm	mm	mm	mm	mm
0.10	0.40	0.60	25	1.50
0.15	0.40	0.60	25	1.50
0.20	0.60	0.90	25	1.50
0.25	0.60	0.90	25	1.50
0.30	0.90	1.20	25	1.50
0.35	0.90	1.20	25	1.50
0.40	0.90	1.60	25	1.50
0.45	0.90	1.60	25	1.50
0.50	1.00	1.80	25	1.50
0.55	1.00	1.80	25	1.50
0.60	1.20	2.00	25	1.50
0.65	1.20	2.00	25	1.50
0.70	1.50	2.50	25	1.50
0.75	1.50	2.50	25	1.50
0.80	1.50	2.50	25	1.50
0.85	1.50	2.50	25	1.50
0.90	1.60	2.60	25	1.50
0.95	1.60	2.60	25	1.50
1.00	2.00	3.20	25	1.50
1.05	2.00	3.20	25	1.50
1.10	2.30	3.50	25	1.50
1.15	2.30	3.50	25	1.50
1.20	2.30	3.50	25	1.50
1.25	2.30	3.50	25	1.50
1.30	2.70	4.20	25	1.50
1.35	2.70	4.20	25	1.50
1.40	2.70	4.20	25	1.50
1.45	2.70	4.20	25	1.50
1.50	3.00	4.20	25	1.50





**Mikrobohrer Spirec Plus 6 × d**  
**Micro foret Spirec Plus 6 × d**  
**Micro punta Spirec Plus 6 × d**  
**Micro drill Spirec Plus 6 × d**

**Art. 50695**



d <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	l <sub>1</sub>	d <sub>2</sub>
mm	mm	mm	mm	mm
0.20	1.50	1.80	30	1.00
0.21	1.50	1.80	30	1.00
0.22	1.50	1.80	30	1.00
0.23	1.50	1.80	30	1.00
0.24	1.50	1.80	30	1.00
0.25	1.90	2.20	30	1.00
0.26	1.90	2.20	30	1.00
0.27	1.90	2.20	30	1.00
0.28	1.90	2.20	30	1.00
0.29	1.90	2.20	30	1.00
0.30	1.90	2.20	30	1.00
0.31	2.40	2.80	30	1.00
0.32	2.40	2.80	30	1.00
0.33	2.40	2.80	30	1.00
0.34	2.40	2.80	30	1.00
0.35	2.40	2.80	30	1.00
0.36	2.40	2.80	30	1.00
0.37	2.40	2.80	30	1.00
0.38	2.40	2.80	30	1.00
0.39	2.70	3.60	30	1.00
0.40	2.70	3.60	30	1.00
0.41	2.70	3.60	30	1.00
0.42	2.70	3.60	30	1.00
0.43	2.70	3.60	30	1.00
0.44	2.70	3.60	30	1.00
0.45	2.70	3.60	30	1.00
0.46	2.70	3.60	30	1.00
0.47	2.70	3.60	30	1.00
0.48	2.70	3.60	30	1.00
0.49	3.20	4.00	30	1.00
0.50	3.20	4.00	30	1.00
0.51	3.20	4.00	30	1.00
0.52	3.20	4.00	30	1.00
0.53	3.20	4.00	30	1.00
0.54	3.60	4.50	30	1.00
0.55	3.60	4.50	30	1.00
0.56	3.60	4.50	30	1.00
0.57	3.60	4.50	30	1.00

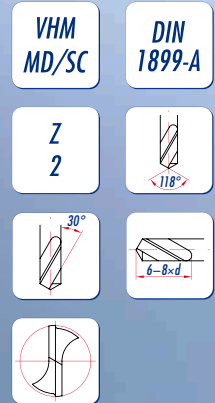
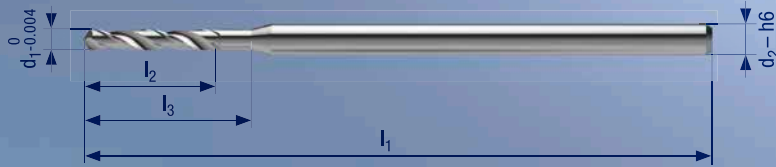
d <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	l <sub>1</sub>	d <sub>2</sub>
mm	mm	mm	mm	mm
0.58	3.60	4.50	30	1.00
0.59	3.60	4.50	30	1.00
0.60	3.60	4.50	30	1.00
0.61	3.90	5.00	30	1.00
0.62	3.90	5.00	30	1.00
0.63	3.90	5.00	30	1.00
0.64	3.90	5.00	30	1.00
0.65	3.90	5.00	30	1.00
0.66	3.90	5.00	30	1.00
0.67	3.90	5.00	30	1.00
0.68	4.50	5.60	30	1.00
0.69	4.50	5.60	30	1.00
0.70	4.50	5.60	30	1.00
0.71	4.50	5.60	30	1.00
0.72	4.50	5.60	30	1.00
0.73	4.50	5.60	30	1.00
0.74	4.50	5.60	30	1.00
0.75	4.50	5.60	30	1.00
0.76	5.00	6.30	30	1.00
0.77	5.00	6.30	30	1.00
0.78	5.00	6.30	30	1.00
0.79	5.00	6.30	30	1.00
0.80	5.00	6.30	30	1.50
0.81	5.00	6.30	30	1.50
0.82	5.00	6.30	30	1.50
0.83	5.00	6.30	30	1.50
0.84	5.00	6.30	30	1.50
0.85	5.00	6.30	30	1.50
0.86	5.70	7.10	30	1.50
0.87	5.70	7.10	30	1.50
0.88	5.70	7.10	30	1.50
0.89	5.70	7.10	30	1.50
0.90	5.70	7.10	30	1.50
0.91	5.70	7.10	30	1.50
0.92	5.70	7.10	30	1.50
0.93	5.70	7.10	30	1.50
0.94	5.70	7.10	30	1.50
0.95	5.70	7.10	30	1.50

d <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	l <sub>1</sub>	d <sub>2</sub>
mm	mm	mm	mm	mm
0.96	6.50	8.00	30	1.50
0.97	6.50	8.00	30	1.50
0.98	6.50	8.00	30	1.50
0.99	6.50	8.00	30	1.50
1.00	6.50	8.00	30	1.50
1.01	6.50	8.00	30	1.50
1.02	6.50	8.00	30	1.50
1.03	6.50	8.00	30	1.50
1.04	6.50	8.00	30	1.50
1.05	6.50	8.00	30	1.50
1.06	7.30	9.00	30	1.50
1.07	7.30	9.00	30	1.50
1.08	7.30	9.00	30	1.50
1.09	7.30	9.00	30	1.50
1.10	7.30	9.00	30	1.50
1.11	7.30	9.00	30	1.50
1.12	7.30	9.00	30	1.50
1.13	7.30	9.00	30	1.50
1.14	7.30	9.00	30	1.50
1.15	7.30	9.00	30	1.50
1.16	8.20	10.00	30	1.50
1.17	8.20	10.00	30	1.50
1.18	8.20	10.00	30	1.50
1.19	8.20	10.00	30	1.50
1.20	8.20	10.00	30	1.50
1.21	8.20	10.00	30	1.50
1.22	8.20	10.00	30	1.50
1.23	8.20	10.00	30	1.50
1.24	8.20	10.00	30	1.50
1.25	8.20	10.00	30	1.50
1.26	8.20	10.00	30	1.50
1.27	8.20	10.00	30	1.50
1.28	8.20	10.00	30	1.50
1.29	8.20	10.00	30	1.50
1.30	8.20	10.00	30	1.50
1.31	9.20	11.20	30	1.50
1.32	9.20	11.20	30	1.50
1.33	9.20	11.20	30	1.50

d <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	l <sub>1</sub>	d <sub>2</sub>
mm	mm	mm	mm	mm
1.34	9.20	11.20	30	1.50
1.35	9.20	11.20	30	1.50
1.36	9.20	11.20	30	1.50
1.37	9.20	11.20	30	1.50
1.38	9.20	11.20	30	1.50
1.39	9.20	11.20	30	1.50
1.40	9.20	11.20	30	1.50
1.41	9.20	11.20	30	1.50
1.42	9.20	11.20	30	1.50
1.43	9.20	11.20	30	1.50
1.44	9.20	11.20	30	1.50
1.45	9.20	11.20	30	1.50
1.46	9.20	11.20	30	1.50
1.47	9.20	11.20	30	1.50
1.48	9.20	11.20	30	1.50
1.49	9.20	11.20	30	1.50
1.50	9.20	11.20	30	1.50

**Mikrobohrer Spirec 6 × d**  
**Micro foret Spirec 6 × d**  
**Micro punta Spirec 6 × d**  
**Micro drill Spirec 6 × d**

**Art. 50699**



d <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	l <sub>1</sub>	d <sub>2</sub>
mm	mm	mm	mm	mm
0.05	0.40	0.60	25	1.00
0.06	0.40	0.60	25	1.00
0.07	0.50	0.70	25	1.00
0.08	0.50	0.70	25	1.00
0.09	0.50	0.70	25	1.00
0.10	0.50	0.70	25	1.00
0.11	0.50	0.70	25	1.00
0.12	0.50	0.70	25	1.00
0.13	0.80	1.00	25	1.00
0.14	0.80	1.00	25	1.00
0.15	0.80	1.00	25	1.00
0.16	1.10	1.40	25	1.00
0.17	1.10	1.40	25	1.00
0.18	1.10	1.40	25	1.00
0.19	1.10	1.40	25	1.00
0.20	1.50	1.80	25	1.00
0.21	1.50	1.80	25	1.00
0.22	1.50	1.80	25	1.00
0.23	1.50	1.80	25	1.00
0.24	1.50	1.80	25	1.00
0.25	1.90	2.20	25	1.00
0.26	1.90	2.20	25	1.00
0.27	1.90	2.20	25	1.00
0.28	1.90	2.20	25	1.00
0.29	1.90	2.20	25	1.00
0.30	1.90	2.20	25	1.00
0.31	2.40	2.80	25	1.00
0.32	2.40	2.80	25	1.00
0.33	2.40	2.80	25	1.00
0.34	2.40	2.80	25	1.00
0.35	2.40	2.80	25	1.00
0.36	2.40	2.80	25	1.00
0.37	2.40	2.80	25	1.00
0.38	2.40	2.80	25	1.00
0.39	2.70	3.60	25	1.00
0.40	2.70	3.60	25	1.00
0.41	2.70	3.60	25	1.00
0.42	2.70	3.60	25	1.00

d <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	l <sub>1</sub>	d <sub>2</sub>
mm	mm	mm	mm	mm
0.43	2.70	3.60	25	1.00
0.44	2.70	3.60	25	1.00
0.45	2.70	3.60	25	1.00
0.46	2.70	3.60	25	1.00
0.47	2.70	3.60	25	1.00
0.48	2.70	3.60	25	1.00
0.49	3.20	4.00	25	1.00
0.50	3.20	4.00	25	1.00
0.51	3.20	4.00	25	1.00
0.52	3.20	4.00	25	1.00
0.53	3.20	4.00	25	1.00
0.54	3.60	4.50	25	1.00
0.55	3.60	4.50	25	1.00
0.56	3.60	4.50	25	1.00
0.57	3.60	4.50	25	1.00
0.58	3.60	4.50	25	1.00
0.59	3.60	4.50	25	1.00
0.60	3.60	4.50	25	1.00
0.61	3.90	5.00	25	1.00
0.62	3.90	5.00	25	1.00
0.63	3.90	5.00	25	1.00
0.64	3.90	5.00	25	1.00
0.65	3.90	5.00	25	1.00
0.66	3.90	5.00	25	1.00
0.67	3.90	5.00	25	1.00
0.68	4.50	5.60	25	1.00
0.69	4.50	5.60	25	1.00
0.70	4.50	5.60	25	1.00
0.71	4.50	5.60	25	1.00
0.72	4.50	5.60	25	1.00
0.73	4.50	5.60	25	1.00
0.74	4.50	5.60	25	1.00
0.75	4.50	5.60	25	1.00
0.76	5.00	6.30	25	1.00
0.77	5.00	6.30	25	1.00
0.78	5.00	6.30	25	1.00
0.79	5.00	6.30	25	1.00
0.80	5.00	6.30	25	1.50

d <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	l <sub>1</sub>	d <sub>2</sub>
mm	mm	mm	mm	mm
0.81	5.00	6.30	25	1.50
0.82	5.00	6.30	25	1.50
0.83	5.00	6.30	25	1.50
0.84	5.00	6.30	25	1.50
0.85	5.00	6.30	25	1.50
0.86	5.70	7.10	25	1.50
0.87	5.70	7.10	25	1.50
0.88	5.70	7.10	25	1.50
0.89	5.70	7.10	25	1.50
0.90	5.70	7.10	25	1.50
0.91	5.70	7.10	25	1.50
0.92	5.70	7.10	25	1.50
0.93	5.70	7.10	25	1.50
0.94	5.70	7.10	25	1.50
0.95	5.70	7.10	25	1.50
0.96	6.50	8.00	25	1.50
0.97	6.50	8.00	25	1.50
0.98	6.50	8.00	25	1.50
0.99	6.50	8.00	25	1.50
1.00	6.50	8.00	25	1.50
1.01	6.50	8.00	25	1.50
1.02	6.50	8.00	25	1.50
1.03	6.50	8.00	25	1.50
1.04	6.50	8.00	25	1.50
1.05	6.50	8.00	25	1.50
1.06	7.30	9.00	25	1.50
1.07	7.30	9.00	25	1.50
1.08	7.30	9.00	25	1.50
1.09	7.30	9.00	25	1.50
1.10	7.30	9.00	25	1.50
1.11	7.30	9.00	25	1.50
1.12	7.30	9.00	25	1.50
1.13	7.30	9.00	25	1.50
1.14	7.30	9.00	25	1.50
1.15	7.30	9.00	25	1.50
1.16	8.20	10.00	25	1.50
1.17	8.20	10.00	25	1.50
1.18	8.20	10.00	25	1.50

d <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	l <sub>1</sub>	d <sub>2</sub>
mm	mm	mm	mm	mm
1.19	8.20	10.00	25	1.50
1.20	8.20	10.00	25	1.50
1.21	8.20	10.00	25	1.50
1.22	8.20	10.00	25	1.50
1.23	8.20	10.00	25	1.50
1.24	8.20	10.00	25	1.50
1.25	8.20	10.00	25	1.50
1.26	8.20	10.00	25	1.50
1.27	8.20	10.00	25	1.50
1.28	8.20	10.00	25	1.50
1.29	8.20	10.00	25	1.50
1.30	8.20	10.00	25	1.50
1.31	9.20	11.20	25	1.50
1.32	9.20	11.20	25	1.50
1.33	9.20	11.20	25	1.50
1.34	9.20	11.20	25	1.50
1.35	9.20	11.20	25	1.50
1.36	9.20	11.20	25	1.50
1.37	9.20	11.20	25	1.50
1.38	9.20	11.20	25	1.50
1.39	9.20	11.20	25	1.50
1.40	9.20	11.20	25	1.50
1.41	9.20	11.20	25	1.50
1.42	9.20	11.20	25	1.50
1.43	9.20	11.20	25	1.50
1.44	9.20	11.20	25	1.50
1.45	9.20	11.20	25	1.50
1.46	9.20	11.20	25	1.50
1.47	9.20	11.20	25	1.50
1.48	9.20	11.20	25	1.50
1.49	9.20	11.20	25	1.50
1.50	9.20	11.20	25	1.50
1.51	11.20	13.40	38	2.00
1.52	11.20	13.40	38	2.00
1.53	11.20	13.40	38	2.00
1.54	11.20	13.40	38	2.00
1.55	11.20	13.40	38	2.00
1.56	11.20	13.40	38	2.00



d <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	l <sub>1</sub>	d <sub>2</sub>
mm	mm	mm	mm	mm
1.57	11.20	13.40	38	2.00
1.58	11.20	13.40	38	2.00
1.59	11.20	13.40	38	2.00
1.60	11.20	13.40	38	2.00
1.61	11.20	13.40	38	2.00
1.62	11.20	13.40	38	2.00
1.63	11.20	13.40	38	2.00
1.64	11.20	13.40	38	2.00
1.65	11.20	13.40	38	2.00
1.66	11.20	13.40	38	2.00
1.67	11.20	13.40	38	2.00
1.68	11.20	13.40	38	2.00

d <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	l <sub>1</sub>	d <sub>2</sub>
mm	mm	mm	mm	mm
1.69	11.20	13.40	38	2.00
1.70	11.20	13.40	38	2.00
1.71	11.20	13.40	38	2.00
1.72	11.20	13.40	38	2.00
1.73	11.20	13.40	38	2.00
1.74	11.20	13.40	38	2.00
1.75	11.20	13.40	38	2.00
1.76	11.20	13.40	38	2.00
1.77	11.20	13.40	38	2.00
1.78	11.20	13.40	38	2.00
1.79	11.20	13.40	38	2.00
1.80	11.20	13.40	38	2.00

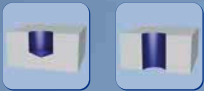
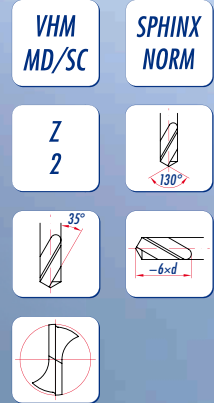
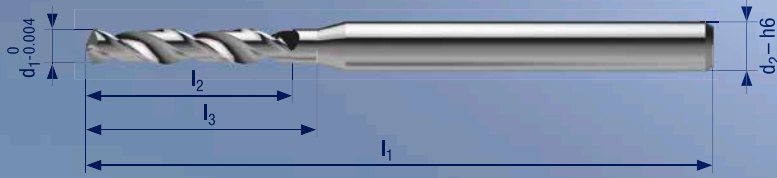
d <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	l <sub>1</sub>	d <sub>2</sub>
mm	mm	mm	mm	mm
1.81	11.20	13.40	38	2.00
1.82	11.20	13.40	38	2.00
1.83	11.20	13.40	38	2.00
1.84	11.20	13.40	38	2.00
1.85	11.20	13.40	38	2.00
1.86	11.20	13.40	38	2.00
1.87	11.20	13.40	38	2.00
1.88	11.20	13.40	38	2.00
1.89	11.20	13.40	38	2.00
1.90	11.20	13.40	38	2.00
1.91	11.20	13.40	38	2.00
1.92	11.20	13.40	38	2.00

d <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	l <sub>1</sub>	d <sub>2</sub>
mm	mm	mm	mm	mm
1.93	11.20	13.40	38	2.00
1.94	11.20	13.40	38	2.00
1.95	11.20	13.40	38	2.00
1.96	11.20	13.40	38	2.00
1.97	11.20	13.40	38	2.00
1.98	11.20	13.40	38	2.00
1.99	11.20	13.40	38	2.00
2.00	11.20	13.40	38	2.00



**Mikrobohrer 6 × d**  
**Micro foret 6 × d**  
**Micro punta 6 × d**  
**Micro drill 6 × d**

**Art. 51200**



d <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	l <sub>1</sub>	d <sub>2</sub>
mm	mm	mm	mm	mm
0.03	0.25	0.35	38	3.00
0.04	0.30	0.40	38	3.00
0.05	0.35	0.45	38	3.00
0.06	0.40	0.50	38	3.00
0.07	0.45	0.60	38	3.00
0.08	0.50	0.70	38	3.00
0.09	0.50	0.70	38	3.00
0.10	0.50	0.70	38	3.00
0.11	0.50	0.70	38	3.00
0.12	0.50	0.70	38	3.00
0.13	0.80	1.00	38	3.00
0.14	0.80	1.00	38	3.00
0.15	0.80	1.00	38	3.00
0.16	1.10	1.40	38	3.00
0.17	1.10	1.40	38	3.00
0.18	1.10	1.40	38	3.00
0.19	1.10	1.40	38	3.00
0.20	1.50	1.80	38	3.00
0.21	1.50	1.80	38	3.00
0.22	1.50	1.80	38	3.00
0.23	1.50	1.80	38	3.00
0.24	1.50	1.80	38	3.00
0.25	1.90	2.20	38	3.00
0.26	1.90	2.20	38	3.00
0.27	1.90	2.20	38	3.00
0.28	1.90	2.20	38	3.00
0.29	1.90	2.20	38	3.00
0.30	1.80	2.40	38	3.00
0.31	1.80	2.40	38	3.00
0.32	1.80	2.40	38	3.00
0.33	1.80	2.40	38	3.00
0.34	1.80	2.40	38	3.00
0.35	2.20	2.80	38	3.00
0.36	2.20	2.80	38	3.00
0.37	2.20	2.80	38	3.00
0.38	2.20	2.80	38	3.00
0.39	2.70	3.60	38	3.00
0.40	2.70	3.60	38	3.00

d <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	l <sub>1</sub>	d <sub>2</sub>
mm	mm	mm	mm	mm
0.41	2.70	3.60	38	3.00
0.42	2.70	3.60	38	3.00
0.43	2.70	3.60	38	3.00
0.44	2.70	3.60	38	3.00
0.45	2.70	3.60	38	3.00
0.46	2.70	3.60	38	3.00
0.47	2.70	3.60	38	3.00
0.48	2.70	3.60	38	3.00
0.49	3.20	4.00	38	3.00
0.50	3.20	4.00	38	3.00
0.51	3.20	4.00	38	3.00
0.52	3.20	4.00	38	3.00
0.53	3.20	4.00	38	3.00
0.54	3.60	4.50	38	3.00
0.55	3.60	4.50	38	3.00
0.56	3.60	4.50	38	3.00
0.57	3.60	4.50	38	3.00
0.58	3.60	4.50	38	3.00
0.59	3.60	4.50	38	3.00
0.60	3.60	4.50	38	3.00
0.61	3.90	5.00	38	3.00
0.62	3.90	5.00	38	3.00
0.63	3.90	5.00	38	3.00
0.64	3.90	5.00	38	3.00
0.65	3.90	5.00	38	3.00
0.66	3.90	5.00	38	3.00
0.67	3.90	5.00	38	3.00
0.68	4.50	5.60	38	3.00
0.69	4.50	5.60	38	3.00
0.70	4.50	5.60	38	3.00
0.71	4.50	5.60	38	3.00
0.72	4.50	5.60	38	3.00
0.73	4.50	5.60	38	3.00
0.74	4.50	5.60	38	3.00
0.75	4.50	5.60	38	3.00
0.76	5.00	6.30	38	3.00
0.77	5.00	6.30	38	3.00
0.78	5.00	6.30	38	3.00

d <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	l <sub>1</sub>	d <sub>2</sub>
mm	mm	mm	mm	mm
0.79	5.00	6.30	38	3.00
0.80	5.00	6.30	38	3.00
0.81	5.00	6.30	38	3.00
0.82	5.00	6.30	38	3.00
0.83	5.00	6.30	38	3.00
0.84	5.00	6.30	38	3.00
0.85	5.00	6.30	38	3.00
0.86	5.70	7.10	38	3.00
0.87	5.70	7.10	38	3.00
0.88	5.70	7.10	38	3.00
0.89	5.70	7.10	38	3.00
0.90	5.70	7.10	38	3.00
0.91	5.70	7.10	38	3.00
0.92	5.70	7.10	38	3.00
0.93	5.70	7.10	38	3.00
0.94	5.70	7.10	38	3.00
0.95	5.70	7.10	38	3.00
0.96	6.50	8.00	38	3.00
0.97	6.50	8.00	38	3.00
0.98	6.50	8.00	38	3.00
0.99	6.50	8.00	38	3.00
1.00	6.50	8.00	38	3.00
1.01	6.50	8.00	38	3.00
1.02	6.50	8.00	38	3.00
1.03	6.50	8.00	38	3.00
1.04	6.50	8.00	38	3.00
1.05	6.50	8.00	38	3.00
1.06	7.30	9.00	38	3.00
1.07	7.30	9.00	38	3.00
1.08	7.30	9.00	38	3.00
1.09	7.30	9.00	38	3.00
1.10	7.30	9.00	38	3.00
1.11	7.30	9.00	38	3.00
1.12	7.30	9.00	38	3.00
1.13	7.30	9.00	38	3.00
1.14	7.30	9.00	38	3.00
1.15	7.30	9.00	38	3.00
1.16	8.20	10.00	38	3.00

d <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	l <sub>1</sub>	d <sub>2</sub>
mm	mm	mm	mm	mm
1.17	8.20	10.00	38	3.00
1.18	8.20	10.00	38	3.00
1.19	8.20	10.00	38	3.00
1.20	8.20	10.00	38	3.00
1.21	8.20	10.00	38	3.00
1.22	8.20	10.00	38	3.00
1.23	8.20	10.00	38	3.00
1.24	8.20	10.00	38	3.00
1.25	8.20	10.00	38	3.00
1.26	8.20	10.00	38	3.00
1.27	8.20	10.00	38	3.00
1.28	8.20	10.00	38	3.00
1.29	8.20	10.00	38	3.00
1.30	8.20	10.00	38	3.00
1.31	9.20	11.20	38	3.00
1.32	9.20	11.20	38	3.00
1.33	9.20	11.20	38	3.00
1.34	9.20	11.20	38	3.00
1.35	9.20	11.20	38	3.00
1.36	9.20	11.20	38	3.00
1.37	9.20	11.20	38	3.00
1.38	9.20	11.20	38	3.00
1.39	9.20	11.20	38	3.00
1.40	9.20	11.20	38	3.00
1.41	9.20	11.20	38	3.00
1.42	9.20	11.20	38	3.00
1.43	9.20	11.20	38	3.00
1.44	9.20	11.20	38	3.00
1.45	9.20	11.20	38	3.00
1.46	9.20	11.20	38	3.00
1.47	9.20	11.20	38	3.00
1.48	9.20	11.20	38	3.00
1.49	9.20	11.20	38	3.00
1.50	9.20	11.20	38	3.00
1.51	11.20	13.40	38	3.00
1.52	11.20	13.40	38	3.00
1.53	11.20	13.40	38	3.00
1.54	11.20	13.40	38	3.00





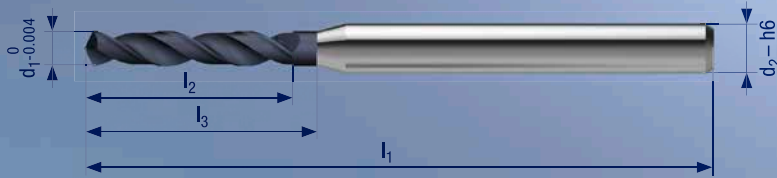


**Mikrobohrer 6 × d**  
**Micro foret 6 × d**  
**Micro punta 6 × d**  
**Micro drill 6 × d**

**Art. 51201**



PI-3 M1,2  
K1,2 N1,5-8  
S1 H1  
01,2



VHM MD/SC TiAlN  
SPHINX NORM Z 2

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d <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	l <sub>1</sub>	d <sub>2</sub>
mm	mm	mm	mm	mm
0.20	1.50	1.80	38	3.00
0.21	1.50	1.80	38	3.00
0.22	1.50	1.80	38	3.00
0.23	1.50	1.80	38	3.00
0.24	1.50	1.80	38	3.00
0.25	1.90	2.20	38	3.00
0.26	1.90	2.20	38	3.00
0.27	1.90	2.20	38	3.00
0.28	1.90	2.20	38	3.00
0.29	1.90	2.20	38	3.00
0.30	1.80	2.40	38	3.00
0.31	1.80	2.40	38	3.00
0.32	1.80	2.40	38	3.00
0.33	1.80	2.40	38	3.00
0.34	1.80	2.40	38	3.00
0.35	2.20	2.80	38	3.00
0.36	2.20	2.80	38	3.00
0.37	2.20	2.80	38	3.00
0.38	2.20	2.80	38	3.00
0.39	2.70	3.60	38	3.00
0.40	2.70	3.60	38	3.00
0.41	2.70	3.60	38	3.00
0.42	2.70	3.60	38	3.00
0.43	2.70	3.60	38	3.00
0.44	2.70	3.60	38	3.00
0.45	2.70	3.60	38	3.00
0.46	2.70	3.60	38	3.00
0.47	2.70	3.60	38	3.00
0.48	2.70	3.60	38	3.00
0.49	3.20	4.00	38	3.00
0.50	3.20	4.00	38	3.00
0.51	3.20	4.00	38	3.00
0.52	3.20	4.00	38	3.00
0.53	3.20	4.00	38	3.00
0.54	3.60	4.50	38	3.00
0.55	3.60	4.50	38	3.00
0.56	3.60	4.50	38	3.00
0.57	3.60	4.50	38	3.00

d <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	l <sub>1</sub>	d <sub>2</sub>
mm	mm	mm	mm	mm
0.58	3.60	4.50	38	3.00
0.59	3.60	4.50	38	3.00
0.60	3.60	4.50	38	3.00
0.61	3.90	5.00	38	3.00
0.62	3.90	5.00	38	3.00
0.63	3.90	5.00	38	3.00
0.64	3.90	5.00	38	3.00
0.65	3.90	5.00	38	3.00
0.66	3.90	5.00	38	3.00
0.67	3.90	5.00	38	3.00
0.68	4.50	5.60	38	3.00
0.69	4.50	5.60	38	3.00
0.70	4.50	5.60	38	3.00
0.71	4.50	5.60	38	3.00
0.72	4.50	5.60	38	3.00
0.73	4.50	5.60	38	3.00
0.74	4.50	5.60	38	3.00
0.75	4.50	5.60	38	3.00
0.76	5.00	6.30	38	3.00
0.77	5.00	6.30	38	3.00
0.78	5.00	6.30	38	3.00
0.79	5.00	6.30	38	3.00
0.80	5.00	6.30	38	3.00
0.81	5.00	6.30	38	3.00
0.82	5.00	6.30	38	3.00
0.83	5.00	6.30	38	3.00
0.84	5.00	6.30	38	3.00
0.85	5.00	6.30	38	3.00
0.86	5.70	7.10	38	3.00
0.87	5.70	7.10	38	3.00
0.88	5.70	7.10	38	3.00
0.89	5.70	7.10	38	3.00
0.90	5.70	7.10	38	3.00
0.91	5.70	7.10	38	3.00
0.92	5.70	7.10	38	3.00
0.93	5.70	7.10	38	3.00
0.94	5.70	7.10	38	3.00
0.95	5.70	7.10	38	3.00

d <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	l <sub>1</sub>	d <sub>2</sub>
mm	mm	mm	mm	mm
0.96	6.50	8.00	38	3.00
0.97	6.50	8.00	38	3.00
0.98	6.50	8.00	38	3.00
0.99	6.50	8.00	38	3.00
1.00	6.50	8.00	38	3.00
1.01	6.50	8.00	38	3.00
1.02	6.50	8.00	38	3.00
1.03	6.50	8.00	38	3.00
1.04	6.50	8.00	38	3.00
1.05	6.50	8.00	38	3.00
1.06	7.30	9.00	38	3.00
1.07	7.30	9.00	38	3.00
1.08	7.30	9.00	38	3.00
1.09	7.30	9.00	38	3.00
1.10	7.30	9.00	38	3.00
1.11	7.30	9.00	38	3.00
1.12	7.30	9.00	38	3.00
1.13	7.30	9.00	38	3.00
1.14	7.30	9.00	38	3.00
1.15	7.30	9.00	38	3.00
1.16	8.20	10.00	38	3.00
1.17	8.20	10.00	38	3.00
1.18	8.20	10.00	38	3.00
1.19	8.20	10.00	38	3.00
1.20	8.20	10.00	38	3.00
1.21	8.20	10.00	38	3.00
1.22	8.20	10.00	38	3.00
1.23	8.20	10.00	38	3.00
1.24	8.20	10.00	38	3.00
1.25	8.20	10.00	38	3.00
1.26	8.20	10.00	38	3.00
1.27	8.20	10.00	38	3.00
1.28	8.20	10.00	38	3.00
1.29	8.20	10.00	38	3.00
1.30	8.20	10.00	38	3.00
1.31	9.20	11.20	38	3.00
1.32	9.20	11.20	38	3.00
1.33	9.20	11.20	38	3.00

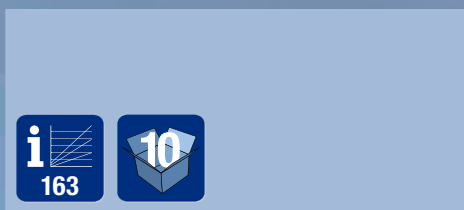
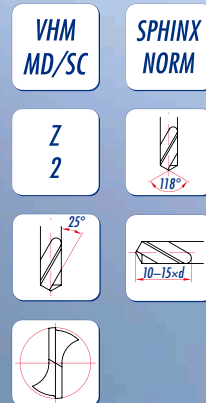
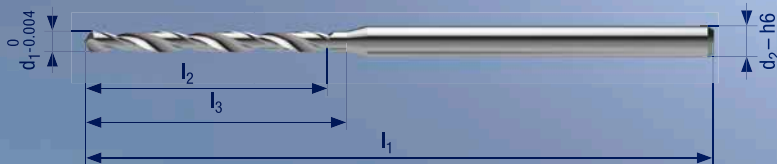
d <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	l <sub>1</sub>	d <sub>2</sub>
mm	mm	mm	mm	mm
1.34	9.20	11.20	38	3.00
1.35	9.20	11.20	38	3.00
1.36	9.20	11.20	38	3.00
1.37	9.20	11.20	38	3.00
1.38	9.20	11.20	38	3.00
1.39	9.20	11.20	38	3.00
1.40	9.20	11.20	38	3.00
1.41	9.20	11.20	38	3.00
1.42	9.20	11.20	38	3.00
1.43	9.20	11.20	38	3.00
1.44	9.20	11.20	38	3.00
1.45	9.20	11.20	38	3.00
1.46	9.20	11.20	38	3.00
1.47	9.20	11.20	38	3.00
1.48	9.20	11.20	38	3.00
1.49	9.20	11.20	38	3.00
1.50	9.20	11.20	38	3.00
1.51	11.20	13.40	38	3.00
1.52	11.20	13.40	38	3.00
1.53	11.20	13.40	38	3.00
1.54	11.20	13.40	38	3.00
1.55	11.20	13.40	38	3.00
1.56	11.20	13.40	38	3.00
1.57	11.20	13.40	38	3.00
1.58	11.20	13.40	38	3.00
1.59	11.20	13.40	38	3.00
1.60	11.20	13.40	38	3.00
1.61	11.20	13.40	38	3.00
1.62	11.20	13.40	38	3.00
1.63	11.20	13.40	38	3.00
1.64	11.20	13.40	38	3.00
1.65	11.20	13.40	38	3.00
1.66	11.20	13.40	38	3.00
1.67	11.20	13.40	38	3.00
1.68	11.20	13.40	38	3.00
1.69	11.20	13.40	38	3.00
1.70	11.20	13.40	38	3.00
1.71	11.20	13.40	38	3.00





**Mikrobohrer Tipdrill 10 × d**  
**Micro foret Tipdrill 10 × d**  
**Micro punta Tipdrill 10 × d**  
**Micro drill Tipdrill 10 × d**

**Art. 50620**



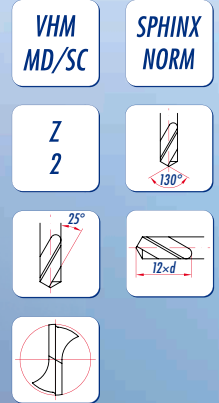
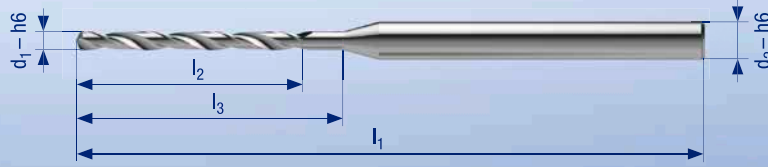
d <sub>1</sub> mm	l <sub>2</sub> mm	l <sub>3</sub> mm	l <sub>1</sub> mm	d <sub>2</sub> mm
0.50	4.00	5.00	30	1.00
0.55	4.00	5.00	30	1.00
0.60	8.00	12.00	30	1.00
0.65	8.00	12.00	30	1.00
0.70	11.70	12.50	30	1.00
0.75	11.70	12.50	30	1.00
0.80	11.70	12.50	30	1.50
0.85	11.70	12.50	30	1.50
0.90	11.70	12.50	30	1.50
0.95	11.70	12.50	30	1.50
1.00	11.70	12.50	30	1.50
1.05	12.00	13.00	30	1.50
1.10	12.00	13.00	30	1.50
1.15	12.00	13.00	30	1.50
1.20	12.00	13.00	30	1.50
1.25	12.00	13.00	30	1.50
1.30	12.00	13.00	30	1.50
1.35	12.00	13.00	30	1.50
1.40	12.00	13.00	30	1.50
1.45	12.00	13.00	30	1.50
1.50	12.00	13.00	30	2.00
1.55	12.00	13.00	30	2.00
1.60	12.00	13.00	30	2.00





**Mikrobohrer 12×d**  
**Micro foret 12×d**  
**Micro punta 12×d**  
**Micro drill 12×d**

**Art. 50621**



d <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	l <sub>1</sub>	d <sub>2</sub>
mm	mm	mm	mm	mm
0.15	2.50	3.50	38	3.00
0.16	2.50	3.50	38	3.00
0.17	2.60	3.50	38	3.00
0.18	2.60	3.50	38	3.00
0.19	2.60	3.50	38	3.00
0.20	2.40	3.50	38	3.00
0.21	2.50	3.50	38	3.00
0.22	2.70	3.50	38	3.00
0.23	2.80	3.50	38	3.00
0.24	2.90	4.00	38	3.00
0.25	3.00	4.00	38	3.00
0.26	3.10	4.00	38	3.00
0.27	3.30	4.00	38	3.00
0.28	3.40	4.50	38	3.00
0.29	3.50	4.50	38	3.00
0.30	3.60	4.50	38	3.00
0.31	3.70	4.50	38	3.00
0.32	3.90	5.00	38	3.00
0.33	4.00	5.00	38	3.00
0.34	4.10	5.00	38	3.00
0.35	4.20	5.00	38	3.00
0.36	4.30	5.50	38	3.00
0.37	4.50	5.50	38	3.00
0.38	4.60	5.50	38	3.00
0.39	4.70	5.50	38	3.00
0.40	4.80	6.00	38	3.00
0.41	4.90	6.00	38	3.00
0.42	5.10	6.00	38	3.00
0.43	5.20	6.00	38	3.00
0.44	5.30	6.50	38	3.00
0.45	5.40	6.50	38	3.00
0.46	5.50	6.50	38	3.00
0.47	5.70	6.50	38	3.00
0.48	5.80	7.00	38	3.00
0.49	5.90	7.00	38	3.00
0.50	6.00	7.00	38	3.00
0.51	6.10	7.00	38	3.00
0.52	6.30	7.50	38	3.00

d <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	l <sub>1</sub>	d <sub>2</sub>
mm	mm	mm	mm	mm
0.53	6.40	7.50	38	3.00
0.54	6.50	7.50	38	3.00
0.55	6.60	7.50	38	3.00
0.56	6.70	8.00	38	3.00
0.57	6.90	8.00	38	3.00
0.58	7.00	8.00	38	3.00
0.59	7.10	8.00	38	3.00
0.60	7.20	9.00	38	3.00
0.61	7.30	9.00	38	3.00
0.62	7.50	9.00	38	3.00
0.63	7.60	9.00	38	3.00
0.64	7.70	9.50	38	3.00
0.65	7.80	9.50	38	3.00
0.66	7.90	9.50	38	3.00
0.67	8.10	9.50	38	3.00
0.68	8.20	10.00	38	3.00
0.69	8.30	10.00	38	3.00
0.70	8.40	10.00	38	3.00
0.71	8.50	10.00	38	3.00
0.72	8.70	10.50	38	3.00
0.73	8.80	10.50	38	3.00
0.74	8.90	10.50	38	3.00
0.75	9.00	10.50	38	3.00
0.76	9.10	11.00	38	3.00
0.77	9.30	11.00	38	3.00
0.78	9.40	11.00	38	3.00
0.79	9.50	11.00	38	3.00
0.80	9.60	11.50	38	3.00
0.81	9.70	11.50	38	3.00
0.82	9.90	11.50	38	3.00
0.83	10.00	11.50	38	3.00
0.84	10.10	12.00	38	3.00
0.85	10.20	12.00	38	3.00
0.86	10.30	12.00	38	3.00
0.87	10.50	12.00	38	3.00
0.88	10.60	12.50	38	3.00
0.89	10.70	12.50	38	3.00
0.90	10.80	12.50	38	3.00

d <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	l <sub>1</sub>	d <sub>2</sub>
mm	mm	mm	mm	mm
0.91	10.90	12.50	38	3.00
0.92	11.10	13.00	38	3.00
0.93	11.20	13.00	38	3.00
0.94	11.30	13.00	38	3.00
0.95	11.40	13.00	38	3.00
0.96	11.50	13.50	38	3.00
0.97	11.70	13.50	38	3.00
0.98	11.80	13.50	38	3.00
0.99	11.90	13.50	38	3.00
1.00	12.00	14.50	38	3.00
1.01	12.10	14.50	38	3.00
1.02	12.30	14.50	38	3.00
1.03	12.40	14.50	38	3.00
1.04	12.50	15.00	38	3.00
1.05	12.60	15.00	38	3.00
1.06	12.70	15.00	38	3.00
1.07	12.90	15.00	38	3.00
1.08	13.00	15.50	38	3.00
1.09	13.10	15.50	38	3.00
1.10	13.20	15.50	38	3.00
1.11	13.30	15.50	38	3.00
1.12	13.50	16.00	38	3.00
1.13	13.60	16.00	38	3.00
1.14	13.70	16.00	38	3.00
1.15	13.80	16.00	38	3.00
1.16	13.90	16.50	38	3.00
1.17	14.10	16.50	38	3.00
1.18	14.20	16.50	38	3.00
1.19	14.30	16.50	38	3.00
1.20	14.40	17.00	38	3.00
1.21	14.50	17.00	38	3.00
1.22	14.70	17.00	38	3.00
1.23	14.80	17.00	38	3.00
1.24	14.90	17.50	38	3.00
1.25	15.00	17.50	38	3.00
1.26	15.10	17.50	50	3.00
1.27	15.30	17.50	50	3.00
1.28	15.40	18.00	50	3.00

d <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	l <sub>1</sub>	d <sub>2</sub>
mm	mm	mm	mm	mm
1.29	15.50	18.00	50	3.00
1.30	15.60	18.00	50	3.00
1.31	15.70	18.00	50	3.00
1.32	15.90	18.50	50	3.00
1.33	16.00	18.50	50	3.00
1.34	16.10	18.50	50	3.00
1.35	16.20	18.50	50	3.00
1.36	16.30	19.00	50	3.00
1.37	16.50	19.00	50	3.00
1.38	16.60	19.00	50	3.00
1.39	16.70	19.00	50	3.00
1.40	16.80	19.50	50	3.00
1.41	16.90	19.50	50	3.00
1.42	17.10	19.50	50	3.00
1.43	17.20	19.50	50	3.00
1.44	17.30	20.00	50	3.00
1.45	17.40	20.00	50	3.00
1.46	17.50	20.00	50	3.00
1.47	17.70	20.00	50	3.00
1.48	17.80	20.50	50	3.00
1.49	17.90	20.50	50	3.00
1.50	18.00	21.00	50	3.00
1.51	18.10	21.00	50	3.00
1.52	18.30	21.00	50	3.00
1.53	18.40	21.00	50	3.00
1.54	18.50	21.50	50	3.00
1.55	18.60	21.50	50	3.00
1.56	18.70	21.50	50	3.00
1.57	18.90	21.50	50	3.00
1.58	19.00	22.00	50	3.00
1.59	19.10	22.00	50	3.00
1.60	19.20	22.00	50	3.00
1.61	19.30	22.00	50	3.00
1.62	19.40	22.50	50	3.00
1.63	19.60	22.50	50	3.00
1.64	19.70	22.50	50	3.00
1.65	19.80	22.50	50	3.00
1.66	19.90	23.00	50	3.00

d <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	l <sub>1</sub>	d <sub>2</sub>
mm	mm	mm	mm	mm
1.67	20.10	23.00	50	3.00
1.68	20.20	23.00	50	3.00
1.69	20.30	23.00	50	3.00
1.70	20.40	23.50	50	3.00
1.71	20.50	23.50	50	3.00
1.72	20.70	23.50	50	3.00
1.73	20.80	23.50	50	3.00
1.74	20.90	24.00	50	3.00
1.75	21.00	24.00	50	3.00
1.76	21.10	24.00	50	3.00
1.77	21.30	24.00	50	3.00
1.78	21.40	24.50	50	3.00
1.79	21.50	24.50	50	3.00
1.80	21.60	25.00	50	3.00
1.81	21.70	25.00	50	3.00
1.82	21.90	25.00	50	3.00
1.83	22.00	25.00	50	3.00
1.84	22.10	25.50	50	3.00
1.85	22.20	25.50	50	3.00
1.86	22.30	25.50	50	3.00
1.87	22.50	25.50	50	3.00
1.88	22.60	26.00	50	3.00
1.89	22.70	26.00	50	3.00
1.90	22.80	26.00	50	3.00
1.91	22.90	26.00	50	3.00
1.92	23.10	26.50	50	3.00
1.93	23.20	26.50	50	3.00
1.94	23.30	26.50	50	3.00
1.95	23.40	26.50	50	3.00
1.96	23.50	27.00	50	3.00
1.97	23.70	27.00	50	3.00
1.98	23.80	27.00	50	3.00
1.99	23.90	27.00	50	3.00
2.00	24.00	27.00	50	3.00

d <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	l <sub>1</sub>	d <sub>2</sub>
mm	mm	mm	mm	mm
2.01	24.10	27.50	60	3.00
2.02	24.20	27.50	60	3.00
2.03	24.40	27.50	60	3.00
2.04	24.50	27.50	60	3.00
2.05	24.60	28.00	60	3.00
2.06	24.70	28.00	60	3.00
2.07	24.80	28.00	60	3.00
2.08	25.00	28.00	60	3.00
2.09	25.10	28.50	60	3.00
2.10	25.20	28.50	60	3.00
2.11	25.30	28.50	60	3.00
2.12	25.40	28.50	60	3.00
2.13	25.60	29.00	60	3.00
2.14	25.70	29.00	60	3.00
2.15	25.80	29.00	60	3.00
2.16	25.90	29.00	60	3.00
2.17	26.10	29.50	60	3.00
2.18	26.20	29.50	60	3.00
2.19	26.30	29.50	60	3.00
2.20	26.40	29.50	60	3.00
2.21	26.50	30.00	60	3.00
2.22	26.70	30.00	60	3.00
2.23	26.80	30.00	60	3.00
2.24	26.90	30.00	60	3.00
2.25	27.00	30.50	60	3.00
2.26	27.10	30.50	60	3.00
2.27	27.20	30.50	60	3.00
2.28	27.40	30.50	60	3.00
2.29	27.50	31.00	60	3.00
2.30	27.60	31.00	60	3.00
2.31	27.70	31.00	65	3.00
2.32	27.80	31.00	65	3.00
2.33	28.00	31.50	65	3.00
2.34	28.10	31.50	65	3.00

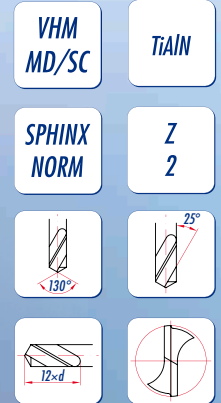
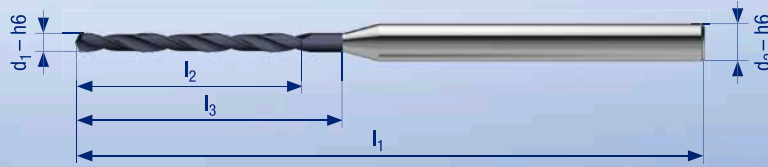
d <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	l <sub>1</sub>	d <sub>2</sub>
mm	mm	mm	mm	mm
2.35	28.20	31.50	65	3.00
2.36	28.30	31.50	65	3.00
2.37	28.40	32.00	65	3.00
2.38	28.60	32.00	65	3.00
2.39	28.70	32.00	65	3.00
2.40	28.80	32.00	65	3.00
2.41	28.90	33.00	65	3.00
2.42	29.00	33.00	65	3.00
2.43	29.20	33.00	65	3.00
2.44	29.30	33.00	65	3.00
2.45	29.40	33.00	65	3.00
2.46	29.50	33.50	65	3.00
2.47	29.60	33.50	65	3.00
2.48	29.80	33.50	65	3.00
2.49	29.90	33.50	65	3.00
2.50	30.00	34.00	65	3.00
2.51	30.10	34.00	65	3.00
2.52	30.20	34.00	65	3.00
2.53	30.40	34.00	65	3.00
2.54	30.50	34.50	65	3.00
2.55	30.60	34.50	65	3.00
2.56	30.70	34.50	65	3.00
2.57	30.80	34.50	65	3.00
2.58	31.00	35.00	65	3.00
2.59	31.10	35.00	65	3.00
2.60	31.20	35.00	65	3.00
2.61	31.30	35.00	65	3.00
2.62	31.40	35.50	65	3.00
2.63	31.60	35.50	65	3.00
2.64	31.70	35.50	65	3.00
2.65	31.80	35.50	65	3.00
2.66	31.90	36.00	65	3.00
2.67	32.00	36.00	65	3.00
2.68	32.20	36.00	65	3.00

d <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	l <sub>1</sub>	d <sub>2</sub>
mm	mm	mm	mm	mm
2.69	32.30	36.00	65	3.00
2.70	32.40	36.50	65	3.00
2.71	32.50	36.50	65	3.00
2.72	32.60	36.50	65	3.00
2.73	32.80	36.50	65	3.00
2.74	32.90	37.00	65	3.00
2.75	33.00	37.00	65	3.00
2.76	33.10	37.00	65	3.00
2.77	33.20	37.00	65	3.00
2.78	33.40	37.50	65	3.00
2.79	33.50	37.50	65	3.00
2.80	33.60	37.50	65	3.00
2.81	33.70	37.50	65	3.00
2.82	33.80	38.00	65	3.00
2.83	34.00	38.00	65	3.00
2.84	34.10	38.00	65	3.00
2.85	34.20	38.00	65	3.00
2.86	34.30	38.50	65	3.00
2.87	34.40	38.50	65	3.00
2.88	34.60	38.50	65	3.00
2.89	34.70	38.50	65	3.00
2.90	34.80	39.00	65	3.00
2.91	34.90	39.00	65	3.00
2.92	35.00	39.00	65	3.00
2.93	35.20	39.00	65	3.00
2.94	35.30	39.50	65	3.00
2.95	35.40	39.50	65	3.00
2.96	35.50	39.50	65	3.00
2.97	35.60	39.50	65	3.00
2.98	35.80	40.00	65	3.00
2.99	35.90	40.00	65	3.00
3.00	36.00	40.00	65	3.00



**Mikrobohrer 12×d**  
**Micro foret 12×d**  
**Micro punta 12×d**  
**Micro drill 12×d**

**Art. 50622**



d <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	l <sub>1</sub>	d <sub>2</sub>
mm	mm	mm	mm	mm
0.20	2.40	3.50	38	3.00
0.21	2.50	3.50	38	3.00
0.22	2.70	3.50	38	3.00
0.23	2.80	3.50	38	3.00
0.24	2.90	4.00	38	3.00
0.25	3.00	4.00	38	3.00
0.26	3.10	4.00	38	3.00
0.27	3.30	4.00	38	3.00
0.28	3.40	4.50	38	3.00
0.29	3.50	4.50	38	3.00
0.30	3.60	4.50	38	3.00
0.31	3.70	4.50	38	3.00
0.32	3.90	5.00	38	3.00
0.33	4.00	5.00	38	3.00
0.34	4.10	5.00	38	3.00
0.35	4.20	5.00	38	3.00
0.36	4.30	5.50	38	3.00
0.37	4.50	5.50	38	3.00
0.38	4.60	5.50	38	3.00
0.39	4.70	5.50	38	3.00
0.40	4.80	6.00	38	3.00
0.41	4.90	6.00	38	3.00
0.42	5.10	6.00	38	3.00
0.43	5.20	6.00	38	3.00
0.44	5.30	6.50	38	3.00
0.45	5.40	6.50	38	3.00
0.46	5.50	6.50	38	3.00
0.47	5.70	6.50	38	3.00
0.48	5.80	7.00	38	3.00
0.49	5.90	7.00	38	3.00
0.50	6.00	7.00	38	3.00
0.51	6.10	7.00	38	3.00
0.52	6.30	7.50	38	3.00
0.53	6.40	7.50	38	3.00
0.54	6.50	7.50	38	3.00
0.55	6.60	7.50	38	3.00
0.56	6.70	8.00	38	3.00
0.57	6.90	8.00	38	3.00

d <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	l <sub>1</sub>	d <sub>2</sub>
mm	mm	mm	mm	mm
0.58	7.00	8.00	38	3.00
0.59	7.10	8.00	38	3.00
0.60	7.20	9.00	38	3.00
0.61	7.30	9.00	38	3.00
0.62	7.50	9.00	38	3.00
0.63	7.60	9.00	38	3.00
0.64	7.70	9.50	38	3.00
0.65	7.80	9.50	38	3.00
0.66	7.90	9.50	38	3.00
0.67	8.10	9.50	38	3.00
0.68	8.20	10.00	38	3.00
0.69	8.30	10.00	38	3.00
0.70	8.40	10.00	38	3.00
0.71	8.50	10.00	38	3.00
0.72	8.70	10.50	38	3.00
0.73	8.80	10.50	38	3.00
0.74	8.90	10.50	38	3.00
0.75	9.00	10.50	38	3.00
0.76	9.10	11.00	38	3.00
0.77	9.30	11.00	38	3.00
0.78	9.40	11.00	38	3.00
0.79	9.50	11.00	38	3.00
0.80	9.60	11.50	38	3.00
0.81	9.70	11.50	38	3.00
0.82	9.90	11.50	38	3.00
0.83	10.00	11.50	38	3.00
0.84	10.10	12.00	38	3.00
0.85	10.20	12.00	38	3.00
0.86	10.30	12.00	38	3.00
0.87	10.50	12.00	38	3.00
0.88	10.60	12.50	38	3.00
0.89	10.70	12.50	38	3.00
0.90	10.80	12.50	38	3.00
0.91	10.90	12.50	38	3.00
0.92	11.10	13.00	38	3.00
0.93	11.20	13.00	38	3.00
0.94	11.30	13.00	38	3.00
0.95	11.40	13.00	38	3.00

d <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	l <sub>1</sub>	d <sub>2</sub>
mm	mm	mm	mm	mm
0.96	11.50	13.50	38	3.00
0.97	11.70	13.50	38	3.00
0.98	11.80	13.50	38	3.00
0.99	11.90	13.50	38	3.00
1.00	12.00	14.50	38	3.00
1.01	12.10	14.50	38	3.00
1.02	12.30	14.50	38	3.00
1.03	12.40	14.50	38	3.00
1.04	12.50	15.00	38	3.00
1.05	12.60	15.00	38	3.00
1.06	12.70	15.00	38	3.00
1.07	12.90	15.00	38	3.00
1.08	13.00	15.50	38	3.00
1.09	13.10	15.50	38	3.00
1.10	13.20	15.50	38	3.00
1.11	13.30	15.50	38	3.00
1.12	13.50	16.00	38	3.00
1.13	13.60	16.00	38	3.00
1.14	13.70	16.00	38	3.00
1.15	13.80	16.00	38	3.00
1.16	13.90	16.50	38	3.00
1.17	14.10	16.50	38	3.00
1.18	14.20	16.50	38	3.00
1.19	14.30	16.50	38	3.00
1.20	14.40	17.00	38	3.00
1.21	14.50	17.00	38	3.00
1.22	14.70	17.00	38	3.00
1.23	14.80	17.00	38	3.00
1.24	14.90	17.50	38	3.00
1.25	15.00	17.50	38	3.00
1.26	15.10	17.50	50	3.00
1.27	15.30	17.50	50	3.00
1.28	15.40	18.00	50	3.00
1.29	15.50	18.00	50	3.00
1.30	15.60	18.00	50	3.00
1.31	15.70	18.00	50	3.00
1.32	15.90	18.50	50	3.00
1.33	16.00	18.50	50	3.00

d <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	l <sub>1</sub>	d <sub>2</sub>
mm	mm	mm	mm	mm
1.34	16.10	18.50	50	3.00
1.35	16.20	18.50	50	3.00
1.36	16.30	19.00	50	3.00
1.37	16.50	19.00	50	3.00
1.38	16.60	19.00	50	3.00
1.39	16.70	19.00	50	3.00
1.40	16.80	19.50	50	3.00
1.41	16.90	19.50	50	3.00
1.42	17.10	19.50	50	3.00
1.43	17.20	19.50	50	3.00
1.44	17.30	20.00	50	3.00
1.45	17.40	20.00	50	3.00
1.46	17.50	20.00	50	3.00
1.47	17.70	20.00	50	3.00
1.48	17.80	20.50	50	3.00
1.49	17.90	20.50	50	3.00
1.50	18.00	21.00	50	3.00
1.51	18.10	21.00	50	3.00
1.52	18.30	21.00	50	3.00
1.53	18.40	21.00	50	3.00
1.54	18.50	21.50	50	3.00
1.55	18.60	21.50	50	3.00
1.56	18.70	21.50	50	3.00
1.57	18.90	21.50	50	3.00
1.58	19.00	22.00	50	3.00
1.59	19.10	22.00	50	3.00
1.60	19.20	22.00	50	3.00
1.61	19.30	22.00	50	3.00
1.62	19.40	22.50	50	3.00
1.63	19.60	22.50	50	3.00
1.64	19.70	22.50	50	3.00
1.65	19.80	22.50	50	3.00
1.66	19.90	23.00	50	3.00
1.67	20.10	23.00	50	3.00
1.68	20.20	23.00	50	3.00
1.69	20.30	23.00	50	3.00
1.70	20.40	23.50	50	3.00
1.71	20.50	23.50	50	3.00

d <sub>1</sub> mm	l <sub>2</sub> mm	l <sub>3</sub> mm	l <sub>1</sub> mm	d <sub>2</sub> mm
1.72	20.70	23.50	50	3.00
1.73	20.80	23.50	50	3.00
1.74	20.90	24.00	50	3.00
1.75	21.00	24.00	50	3.00
1.76	21.10	24.00	50	3.00
1.77	21.30	24.00	50	3.00
1.78	21.40	24.50	50	3.00
1.79	21.50	24.50	50	3.00
1.80	21.60	25.00	50	3.00
1.81	21.70	25.00	50	3.00
1.82	21.90	25.00	50	3.00
1.83	22.00	25.00	50	3.00
1.84	22.10	25.50	50	3.00
1.85	22.20	25.50	50	3.00
1.86	22.30	25.50	50	3.00
1.87	22.50	25.50	50	3.00
1.88	22.60	26.00	50	3.00
1.89	22.70	26.00	50	3.00
1.90	22.80	26.00	50	3.00
1.91	22.90	26.00	50	3.00
1.92	23.10	26.50	50	3.00
1.93	23.20	26.50	50	3.00
1.94	23.30	26.50	50	3.00
1.95	23.40	26.50	50	3.00
1.96	23.50	27.00	50	3.00
1.97	23.70	27.00	50	3.00
1.98	23.80	27.00	50	3.00
1.99	23.90	27.00	50	3.00
2.00	24.00	27.00	50	3.00
2.01	24.10	27.50	60	3.00
2.02	24.20	27.50	60	3.00
2.03	24.40	27.50	60	3.00
2.04	24.50	27.50	60	3.00
2.05	24.60	28.00	60	3.00

d <sub>1</sub> mm	l <sub>2</sub> mm	l <sub>3</sub> mm	l <sub>1</sub> mm	d <sub>2</sub> mm
2.06	24.70	28.00	60	3.00
2.07	24.80	28.00	60	3.00
2.08	25.00	28.00	60	3.00
2.09	25.10	28.50	60	3.00
2.10	25.20	28.50	60	3.00
2.11	24.40	28.50	60	3.00
2.12	25.40	28.50	60	3.00
2.13	25.60	29.00	60	3.00
2.14	25.70	29.00	60	3.00
2.15	25.80	29.00	60	3.00
2.16	25.90	29.00	60	3.00
2.17	26.10	29.50	60	3.00
2.18	26.20	29.50	60	3.00
2.19	26.30	29.50	60	3.00
2.20	26.40	29.50	60	3.00
2.21	26.50	30.00	60	3.00
2.22	26.70	30.00	60	3.00
2.23	26.80	30.00	60	3.00
2.24	26.90	30.00	60	3.00
2.25	27.00	30.50	60	3.00
2.26	27.10	30.50	60	3.00
2.27	27.20	30.50	60	3.00
2.28	27.40	30.50	60	3.00
2.29	27.50	31.00	60	3.00
2.30	27.60	31.00	60	3.00
2.31	27.70	31.00	65	3.00
2.32	27.80	31.00	65	3.00
2.33	28.00	31.50	65	3.00
2.34	28.10	31.50	65	3.00
2.35	28.20	31.50	65	3.00
2.36	28.30	31.50	65	3.00
2.37	28.40	32.00	65	3.00
2.38	28.60	32.00	65	3.00
2.39	28.70	32.00	65	3.00

d <sub>1</sub> mm	l <sub>2</sub> mm	l <sub>3</sub> mm	l <sub>1</sub> mm	d <sub>2</sub> mm
2.40	28.80	32.00	65	3.00
2.41	28.90	33.00	65	3.00
2.42	29.00	33.00	65	3.00
2.43	29.20	33.00	65	3.00
2.44	29.30	33.00	65	3.00
2.45	29.40	33.00	65	3.00
2.46	29.50	33.50	65	3.00
2.47	29.60	33.50	65	3.00
2.48	29.80	33.50	65	3.00
2.49	29.90	33.50	65	3.00
2.50	30.00	34.00	65	3.00
2.51	30.10	34.00	65	3.00
2.52	30.20	34.00	65	3.00
2.53	30.40	34.00	65	3.00
2.54	30.50	34.50	65	3.00
2.55	30.60	34.50	65	3.00
2.56	30.70	34.50	65	3.00
2.57	30.80	34.50	65	3.00
2.58	31.00	35.00	65	3.00
2.59	31.10	35.00	65	3.00
2.60	31.20	35.00	65	3.00
2.61	31.30	35.00	65	3.00
2.62	31.40	35.50	65	3.00
2.63	31.60	35.50	65	3.00
2.64	31.70	35.50	65	3.00
2.65	31.80	35.50	65	3.00
2.66	31.90	36.00	65	3.00
2.67	32.00	36.00	65	3.00
2.68	32.20	36.00	65	3.00
2.69	32.30	36.00	65	3.00
2.70	32.40	36.50	65	3.00
2.71	32.50	36.50	65	3.00
2.72	32.60	36.50	65	3.00
2.73	32.80	36.50	65	3.00

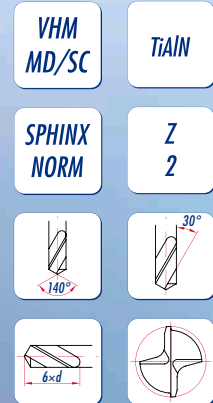
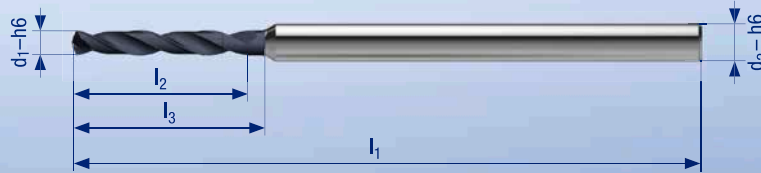
d <sub>1</sub> mm	l <sub>2</sub> mm	l <sub>3</sub> mm	l <sub>1</sub> mm	d <sub>2</sub> mm
2.74	32.90	37.00	65	3.00
2.75	33.00	37.00	65	3.00
2.76	33.10	37.00	65	3.00
2.77	33.20	37.00	65	3.00
2.78	33.40	37.50	65	3.00
2.79	33.50	37.50	65	3.00
2.80	33.60	37.50	65	3.00
2.81	33.70	37.50	65	3.00
2.82	33.80	38.00	65	3.00
2.83	34.00	38.00	65	3.00
2.84	34.10	38.00	65	3.00
2.85	34.20	38.00	65	3.00
2.86	34.30	38.50	65	3.00
2.87	34.40	38.50	65	3.00
2.88	34.60	38.50	65	3.00
2.89	34.70	38.50	65	3.00
2.90	34.80	39.00	65	3.00
2.91	34.90	39.00	65	3.00
2.92	35.00	39.00	65	3.00
2.93	35.20	39.00	65	3.00
2.94	35.30	39.50	65	3.00
2.95	35.40	39.50	65	3.00
2.96	35.50	39.50	65	3.00
2.97	35.60	39.50	65	3.00
2.98	35.80	40.00	65	3.00
2.99	35.90	40.00	65	3.00
3.00	36.00	40.00	65	3.00





**Mikro Hochleistungsbohrer Phoenix 6 × d**  
**Micro foret à grand rendement Phoenix 6 × d**  
**Micro punta ad alto rendimento Phoenix 6 × d**  
**Micro high performance drill Phoenix 6 × d**

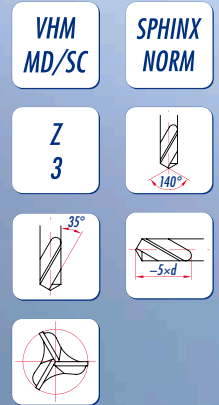
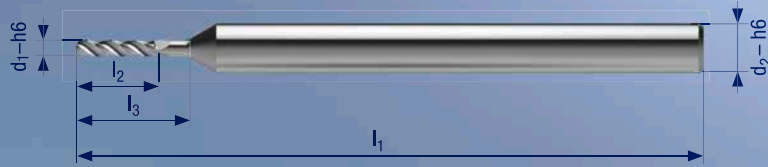
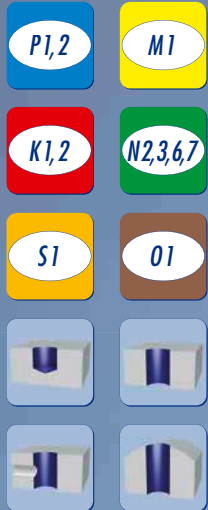
Art. 50941



d <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	l <sub>1</sub>	d <sub>2</sub>
mm	mm	mm	mm	mm
0.50	3.00	4.80	38	3.00
0.60	3.60	5.40	38	3.00
0.70	4.20	6.00	38	3.00
0.80	4.80	6.70	38	3.00
0.90	5.40	7.80	38	3.00
1.00	6.00	8.00	38	3.00
1.10	6.60	8.60	38	3.00
1.20	7.20	9.20	38	3.00
1.30	7.80	9.80	38	3.00
1.40	8.40	10.40	38	3.00
1.50	9.00	11.00	38	3.00
1.60	9.60	12.60	38	3.00
1.70	10.20	13.20	38	3.00
1.80	10.80	13.80	38	3.00
1.90	11.40	14.40	38	3.00
2.00	12.00	15.00	50	3.00
2.10	12.60	15.60	50	3.00
2.20	13.20	16.20	50	3.00
2.30	13.80	16.80	50	3.00
2.40	14.40	17.40	50	3.00

**Mikrotricut 5 × d**  
**Microtricut 5 × d**  
**Microtricut 5 × d**  
**Microtricut 5 × d**

**Art. 55652**



d <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	l <sub>1</sub>	d <sub>2</sub>
mm	mm	mm	mm	mm
0.20	1.00	1.50	38	3.00
0.21	1.05	1.50	38	3.00
0.22	1.10	1.60	38	3.00
0.23	1.15	1.60	38	3.00
0.24	1.20	1.70	38	3.00
0.25	1.25	1.70	38	3.00
0.26	1.30	1.80	38	3.00
0.27	1.35	1.80	38	3.00
0.28	1.40	1.90	38	3.00
0.29	1.45	1.90	38	3.00
0.30	1.50	2.00	38	3.00
0.31	1.55	2.00	38	3.00
0.32	1.60	2.10	38	3.00
0.33	1.65	2.10	38	3.00
0.34	1.70	2.20	38	3.00
0.35	1.75	2.20	38	3.00
0.36	1.80	2.30	38	3.00
0.37	1.85	2.30	38	3.00
0.38	1.90	2.40	38	3.00
0.39	1.95	2.40	38	3.00
0.40	2.00	2.50	38	3.00
0.41	2.05	2.50	38	3.00
0.42	2.10	2.60	38	3.00
0.43	2.15	2.60	38	3.00
0.44	2.20	2.70	38	3.00
0.45	2.25	2.70	38	3.00
0.46	2.30	2.80	38	3.00
0.47	2.35	2.80	38	3.00
0.48	2.40	2.90	38	3.00
0.49	2.45	2.90	38	3.00
0.50	2.50	3.00	38	3.00
0.51	2.55	3.00	38	3.00
0.52	2.60	3.10	38	3.00
0.53	2.65	3.10	38	3.00
0.54	2.70	3.20	38	3.00
0.55	2.75	3.20	38	3.00
0.56	2.80	3.30	38	3.00
0.57	2.85	3.30	38	3.00

d <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	l <sub>1</sub>	d <sub>2</sub>
mm	mm	mm	mm	mm
0.58	2.90	3.40	38	3.00
0.59	2.95	3.40	38	3.00
0.60	3.00	3.50	38	3.00
0.61	3.05	3.50	38	3.00
0.62	3.10	3.60	38	3.00
0.63	3.15	3.60	38	3.00
0.64	3.20	3.70	38	3.00
0.65	3.25	3.70	38	3.00
0.66	3.30	3.80	38	3.00
0.67	3.35	3.80	38	3.00
0.68	3.40	3.90	38	3.00
0.69	3.45	3.90	38	3.00
0.70	3.50	4.00	38	3.00
0.71	3.55	4.00	38	3.00
0.72	3.60	4.10	38	3.00
0.73	3.65	4.10	38	3.00
0.74	3.70	4.20	38	3.00
0.75	3.75	4.20	38	3.00
0.76	3.80	4.30	38	3.00
0.77	3.85	4.30	38	3.00
0.78	3.90	4.40	38	3.00
0.79	3.95	4.40	38	3.00
0.80	4.00	4.50	38	3.00
0.81	4.05	4.50	38	3.00
0.82	4.10	4.60	38	3.00
0.83	4.15	4.60	38	3.00
0.84	4.20	4.70	38	3.00
0.85	4.25	4.70	38	3.00
0.86	4.30	4.80	38	3.00
0.87	4.35	4.80	38	3.00
0.88	4.40	4.90	38	3.00
0.89	4.45	4.90	38	3.00
0.90	4.50	5.00	38	3.00
0.91	4.55	5.00	38	3.00
0.92	4.60	5.10	38	3.00
0.93	4.65	5.10	38	3.00
0.94	4.70	5.20	38	3.00
0.95	4.75	5.20	38	3.00

d <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	l <sub>1</sub>	d <sub>2</sub>
mm	mm	mm	mm	mm
0.96	4.80	5.30	38	3.00
0.97	4.85	5.30	38	3.00
0.98	4.90	5.40	38	3.00
0.99	4.95	5.40	38	3.00
1.00	5.00	5.50	38	3.00
1.01	5.05	5.50	38	3.00
1.02	5.10	5.50	38	3.00
1.03	5.15	5.50	38	3.00
1.04	5.20	5.60	38	3.00
1.05	5.25	5.60	38	3.00
1.06	5.30	5.60	38	3.00
1.07	5.35	5.70	38	3.00
1.08	5.40	5.70	38	3.00
1.09	5.45	5.70	38	3.00
1.10	5.50	5.70	38	3.00
1.11	5.55	5.70	38	3.00
1.12	5.60	5.70	38	3.00
1.13	5.65	5.70	38	3.00
1.14	5.70	5.70	38	3.00
1.15	5.75	5.70	38	3.00
1.16	5.80	5.70	38	3.00
1.17	5.85	5.70	38	3.00
1.18	5.90	5.80	38	3.00
1.19	5.95	5.80	38	3.00
1.20	6.00	5.80	38	3.00
1.21	6.05	5.80	38	3.00
1.22	6.10	5.80	38	3.00
1.23	6.15	5.80	38	3.00
1.24	6.20	5.80	38	3.00
1.25	6.25	5.80	38	3.00
1.26	6.30	5.80	38	3.00
1.27	6.35	5.80	38	3.00
1.28	6.40	5.80	38	3.00
1.29	6.45	5.80	38	3.00
1.30	6.50	5.80	38	3.00
1.31	6.55	5.80	38	3.00
1.32	6.60	5.80	38	3.00
1.33	6.65	5.80	38	3.00

d <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	l <sub>1</sub>	d <sub>2</sub>
mm	mm	mm	mm	mm
1.34	6.70	9.50	38	3.00
1.35	6.75	9.50	38	3.00
1.36	6.80	9.50	38	3.00
1.37	6.85	9.50	38	3.00
1.38	6.90	9.50	38	3.00
1.39	6.95	9.50	38	3.00
1.40	7.00	9.50	38	3.00
1.41	7.05	9.50	38	3.00
1.42	7.10	9.50	38	3.00
1.43	7.15	9.50	38	3.00
1.44	7.20	9.50	38	3.00
1.45	7.25	9.50	38	3.00
1.46	7.30	9.50	38	3.00
1.47	7.35	9.50	38	3.00
1.48	7.40	9.50	38	3.00
1.49	7.45	9.50	38	3.00
1.50	7.50	9.50	38	3.00
1.51	7.55	10.50	38	3.00
1.52	7.60	10.50	38	3.00
1.53	7.65	10.50	38	3.00
1.54	7.70	10.50	38	3.00
1.55	7.75	10.50	38	3.00
1.56	7.80	10.50	38	3.00
1.57	7.85	10.50	38	3.00
1.58	7.90	10.50	38	3.00
1.59	7.95	10.50	38	3.00
1.60	8.00	10.50	38	3.00
1.61	8.05	10.50	38	3.00
1.62	8.10	10.50	38	3.00
1.63	8.15	10.50	38	3.00
1.64	8.20	10.50	38	3.00
1.65	8.25	10.50	38	3.00
1.66	8.30	10.50	38	3.00
1.67	8.35	10.50	38	3.00
1.68	8.40	10.50	38	3.00
1.69	8.45	10.50	38	3.00
1.70	8.50	10.50	38	3.00
1.71	8.55	11.50	38	3.00



d <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	l <sub>1</sub>	d <sub>2</sub>
mm	mm	mm	mm	mm
1.72	8.60	11.50	38	3.00
1.73	8.65	11.50	38	3.00
1.74	8.70	11.50	38	3.00
1.75	8.75	11.50	38	3.00
1.76	8.80	11.50	38	3.00
1.77	8.85	11.50	38	3.00
1.78	8.90	11.50	38	3.00
1.79	8.95	11.50	38	3.00
1.80	9.00	11.50	38	3.00
1.81	9.05	11.50	38	3.00
1.82	9.10	11.50	38	3.00
1.83	9.15	11.50	38	3.00
1.84	9.20	11.50	38	3.00
1.85	9.25	11.50	38	3.00
1.86	9.30	11.50	38	3.00
1.87	9.35	11.50	38	3.00
1.88	9.40	11.50	38	3.00
1.89	9.45	11.50	38	3.00
1.90	9.50	11.50	38	3.00
1.91	9.55	12.50	38	3.00
1.92	9.60	12.50	38	3.00
1.93	9.65	12.50	38	3.00
1.94	9.70	12.50	38	3.00
1.95	9.75	12.50	38	3.00
1.96	9.80	12.50	38	3.00
1.97	9.85	12.50	38	3.00
1.98	9.90	12.50	38	3.00
1.99	9.95	12.50	38	3.00
2.00	10.00	12.50	38	3.00
2.01	10.05	12.50	38	3.00
2.02	10.10	12.50	38	3.00
2.03	10.15	12.50	38	3.00

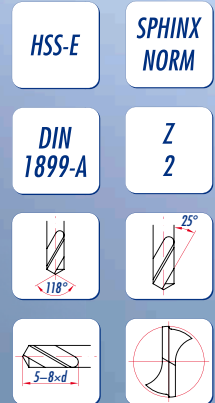
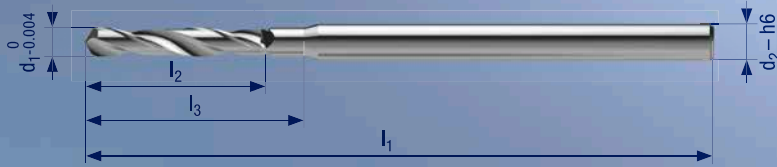
d <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	l <sub>1</sub>	d <sub>2</sub>
mm	mm	mm	mm	mm
2.04	10.20	12.50	38	3.00
2.05	10.25	12.50	38	3.00
2.06	10.30	12.50	38	3.00
2.07	10.35	12.50	38	3.00
2.08	10.40	12.50	38	3.00
2.09	10.45	12.50	38	3.00
2.10	10.50	12.50	38	3.00
2.11	10.55	12.50	38	3.00
2.12	10.60	12.50	38	3.00
2.13	10.65	13.50	38	3.00
2.14	10.70	13.50	38	3.00
2.15	10.75	13.50	38	3.00
2.16	10.80	13.50	38	3.00
2.17	10.85	13.50	38	3.00
2.18	10.90	13.50	38	3.00
2.19	10.95	13.50	38	3.00
2.20	11.00	13.50	38	3.00
2.21	11.05	13.50	38	3.00
2.22	11.10	13.50	38	3.00
2.23	11.15	13.50	38	3.00
2.24	11.20	13.50	38	3.00
2.25	11.25	13.50	38	3.00
2.26	11.30	13.50	38	3.00
2.27	11.35	13.50	38	3.00
2.28	11.40	13.50	38	3.00
2.29	11.45	13.50	38	3.00
2.30	11.50	13.50	38	3.00
2.31	11.55	13.50	38	3.00
2.32	11.60	13.50	38	3.00
2.33	11.65	13.50	38	3.00
2.34	11.70	13.50	38	3.00
2.35	11.75	13.50	38	3.00

d <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	l <sub>1</sub>	d <sub>2</sub>
mm	mm	mm	mm	mm
2.36	11.80	13.50	38	3.00
2.37	11.85	14.50	38	3.00
2.38	11.90	14.50	38	3.00
2.39	11.95	14.50	38	3.00
2.40	12.00	14.50	38	3.00
2.41	12.05	14.50	38	3.00
2.42	12.10	14.50	38	3.00
2.43	12.15	14.50	38	3.00
2.44	12.20	14.50	38	3.00
2.45	12.25	14.50	38	3.00
2.46	12.30	14.50	38	3.00
2.47	12.35	14.50	38	3.00
2.48	12.40	14.50	38	3.00
2.49	12.45	14.50	38	3.00
2.50	12.50	14.50	38	3.00
2.51	12.55	14.50	38	3.00
2.52	12.60	14.50	38	3.00
2.53	12.65	14.50	38	3.00
2.54	12.70	14.50	38	3.00
2.55	12.75	14.50	38	3.00
2.56	12.80	14.50	38	3.00
2.57	12.85	14.50	38	3.00
2.58	12.90	14.50	38	3.00
2.59	12.95	14.50	38	3.00
2.60	13.00	14.50	38	3.00
2.61	13.05	14.50	38	3.00
2.62	13.10	14.50	38	3.00
2.63	13.15	14.50	38	3.00
2.64	13.20	14.50	38	3.00
2.65	13.25	14.50	38	3.00
2.66	13.30	16.50	38	3.00
2.67	13.35	16.50	38	3.00

d <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	l <sub>1</sub>	d <sub>2</sub>
mm	mm	mm	mm	mm
2.68	13.40	16.50	38	3.00
2.69	13.45	16.50	38	3.00
2.70	13.50	16.50	38	3.00
2.71	13.55	16.50	38	3.00
2.72	13.60	16.50	38	3.00
2.73	13.65	16.50	38	3.00
2.74	13.70	16.50	38	3.00
2.75	13.75	16.50	38	3.00
2.76	13.80	16.50	38	3.00
2.77	13.85	16.50	38	3.00
2.78	13.90	16.50	38	3.00
2.79	13.95	16.50	38	3.00
2.80	14.00	16.50	38	3.00
2.81	14.05	16.50	38	3.00
2.82	14.10	16.50	38	3.00
2.83	14.15	16.50	38	3.00
2.84	14.20	16.50	38	3.00
2.85	14.25	16.50	38	3.00
2.86	14.30	16.50	38	3.00
2.87	14.35	16.50	38	3.00
2.88	14.40	16.50	38	3.00
2.89	14.45	16.50	38	3.00
2.90	14.50	16.50	38	3.00
2.91	14.55	16.50	38	3.00
2.92	14.60	16.50	38	3.00
2.93	14.65	16.50	38	3.00
2.94	14.70	16.50	38	3.00
2.95	14.75	16.50	38	3.00
2.96	14.80	16.50	38	3.00
2.97	14.85	16.50	38	3.00
2.98	14.90	16.50	38	3.00
2.99	14.95	16.50	38	3.00

**Mikrobohrer Spirec 6 × d aus HSS-E**  
**Micro foret Spirec 6 × d en HSS-E**  
**Micro punta Spirec 6 × d in HSS-E**  
**Micro drill Spirec 6 × d in HSS-E**

**Art. 12604**



d <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	l <sub>1</sub>	d <sub>2</sub>
mm	mm	mm	mm	mm
0.05	0.40	0.60	25	1.00
0.06	0.40	0.60	25	1.00
0.07	0.50	0.70	25	1.00
0.08	0.50	0.70	25	1.00
0.09	0.50	0.70	25	1.00
0.10	0.50	0.70	25	1.00
0.11	0.50	0.70	25	1.00
0.12	0.50	0.70	25	1.00
0.13	0.80	1.00	25	1.00
0.14	0.80	1.00	25	1.00
0.15	0.80	1.00	25	1.00
0.16	1.10	1.40	25	1.00
0.17	1.10	1.40	25	1.00
0.18	1.10	1.40	25	1.00
0.19	1.10	1.40	25	1.00
0.20	1.50	1.80	25	1.00
0.21	1.50	1.80	25	1.00
0.22	1.50	1.80	25	1.00
0.23	1.50	1.80	25	1.00
0.24	1.50	1.80	25	1.00
0.25	1.90	2.20	25	1.00
0.26	1.90	2.20	25	1.00
0.27	1.90	2.20	25	1.00
0.28	1.90	2.20	25	1.00
0.29	1.90	2.20	25	1.00
0.30	1.90	2.20	25	1.00
0.31	2.40	2.80	25	1.00
0.32	2.40	2.80	25	1.00
0.33	2.40	2.80	25	1.00
0.34	2.40	2.80	25	1.00
0.35	2.40	2.80	25	1.00
0.36	2.40	2.80	25	1.00
0.37	2.40	2.80	25	1.00
0.38	2.40	2.80	25	1.00
0.39	2.70	3.60	25	1.00
0.40	2.70	3.60	25	1.00
0.41	2.70	3.60	25	1.00
0.42	2.70	3.60	25	1.00

d <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	l <sub>1</sub>	d <sub>2</sub>
mm	mm	mm	mm	mm
0.43	2.70	3.60	25	1.00
0.44	2.70	3.60	25	1.00
0.45	2.70	3.60	25	1.00
0.46	2.70	3.60	25	1.00
0.47	2.70	3.60	25	1.00
0.48	2.70	3.60	25	1.00
0.49	3.20	4.00	25	1.00
0.50	3.20	4.00	25	1.00
0.51	3.20	4.00	25	1.00
0.52	3.20	4.00	25	1.00
0.53	3.20	4.00	25	1.00
0.54	3.60	4.50	25	1.00
0.55	3.60	4.50	25	1.00
0.56	3.60	4.50	25	1.00
0.57	3.60	4.50	25	1.00
0.58	3.60	4.50	25	1.00
0.59	3.60	4.50	25	1.00
0.60	3.60	4.50	25	1.00
0.61	3.90	5.00	25	1.00
0.62	3.90	5.00	25	1.00
0.63	3.90	5.00	25	1.00
0.64	3.90	5.00	25	1.00
0.65	3.90	5.00	25	1.00
0.66	3.90	5.00	25	1.00
0.67	3.90	5.00	25	1.00
0.68	4.50	5.60	25	1.00
0.69	4.50	5.60	25	1.00
0.70	4.50	5.60	25	1.00
0.71	4.50	5.60	25	1.00
0.72	4.50	5.60	25	1.00
0.73	4.50	5.60	25	1.00
0.74	4.50	5.60	25	1.00
0.75	4.50	5.60	25	1.00
0.76	5.00	6.30	25	1.00
0.77	5.00	6.30	25	1.00
0.78	5.00	6.30	25	1.00
0.79	5.00	6.30	25	1.00
0.80	5.00	6.30	25	1.50

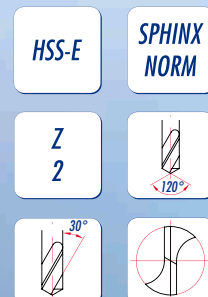
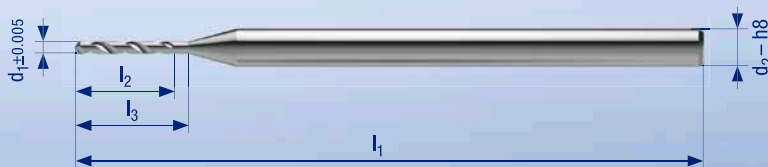
d <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	l <sub>1</sub>	d <sub>2</sub>
mm	mm	mm	mm	mm
0.81	5.00	6.30	25	1.50
0.82	5.00	6.30	25	1.50
0.83	5.00	6.30	25	1.50
0.84	5.00	6.30	25	1.50
0.85	5.00	6.30	25	1.50
0.86	5.70	7.10	25	1.50
0.87	5.70	7.10	25	1.50
0.88	5.70	7.10	25	1.50
0.89	5.70	7.10	25	1.50
0.90	5.70	7.10	25	1.50
0.91	5.70	7.10	25	1.50
0.92	5.70	7.10	25	1.50
0.93	5.70	7.10	25	1.50
0.94	5.70	7.10	25	1.50
0.95	5.70	7.10	25	1.50
0.96	6.50	8.00	25	1.50
0.97	6.50	8.00	25	1.50
0.98	6.50	8.00	25	1.50
0.99	6.50	8.00	25	1.50
1.00	6.50	8.00	25	1.50
1.05	6.50	8.00	25	1.50
1.10	7.30	9.00	25	1.50
1.15	7.30	9.00	25	1.50
1.20	8.20	10.00	25	1.50
1.25	8.20	10.00	25	1.50
1.30	8.20	10.00	25	1.50
1.35	9.20	11.20	25	1.50
1.40	9.20	11.20	25	1.50
1.45	9.20	11.20	25	1.50
1.50	10.90	12.90	38	2.00
1.55	11.20	13.40	38	2.00
1.587	11.20	13.40	38	2.00
1.60	11.20	13.40	38	2.00
1.65	11.20	13.40	38	2.00
1.70	11.20	13.40	38	2.00
1.75	11.20	13.40	38	2.00
1.80	11.20	13.40	38	2.00
1.85	11.20	13.40	38	2.00

d <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	l <sub>1</sub>	d <sub>2</sub>
mm	mm	mm	mm	mm
1.90	11.70	14.00	38	2.00
1.95	11.70	14.00	38	2.00
1.984	11.70	14.00	38	2.00
2.00	12.70	15.00	43	2.50
2.05	12.70	15.00	43	2.50
2.10	12.70	15.00	43	2.50
2.15	12.70	15.00	43	2.50
2.20	13.70	17.00	43	2.50
2.25	13.70	17.00	43	2.50
2.30	13.70	17.00	43	2.50
2.35	13.70	17.00	43	2.50
2.381	13.70	17.00	43	2.50
2.40	14.70	18.00	43	2.50
2.45	14.70	18.00	43	2.50
2.50	14.70	18.00	46	3.00
2.55	15.70	19.00	46	3.00
2.60	15.70	19.00	46	3.00
2.65	16.70	20.00	46	3.00
2.70	16.70	20.00	46	3.00
2.75	17.70	21.00	46	3.00
2.778	17.70	21.00	46	3.00
2.80	17.70	21.00	46	3.00
2.85	18.70	22.00	46	3.00
2.90	18.70	22.00	46	3.00
2.95	19.70	23.00	46	3.00
3.00	19.70	23.00	46	3.00
3.175	19.70	23.00	46	3.175

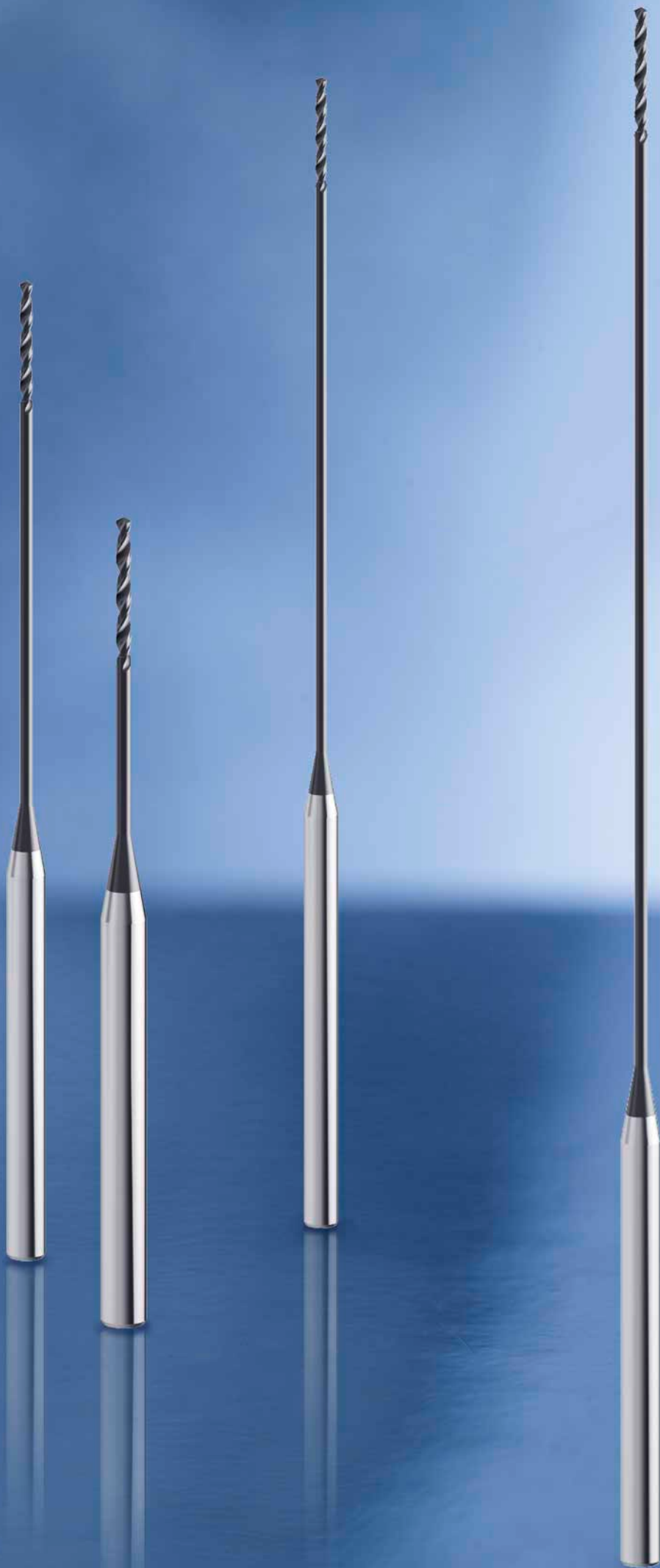


**Juwelierbohrer 6 × d aus HSS-E**  
**Foret pour la joaillerie 6 × d en HSS-E**  
**Punta per gioielleria 6 × d in HSS-E**  
**Jewellery drill 6 × d in HSS-E**

Art. 11654

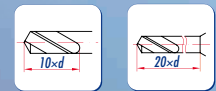
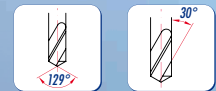
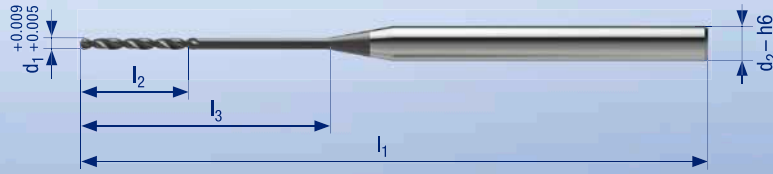


d <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	l <sub>1</sub>	d <sub>2</sub>
mm	mm	mm	mm	mm
0.50	4.00	4.50	25	1.50
0.55	4.00	4.50	25	1.50
0.60	4.50	5.00	25	1.50
0.65	5.00	5.50	25	1.50
0.70	5.00	5.50	25	1.50
0.75	5.00	5.50	25	1.50
0.80	6.00	6.50	25	1.50
0.85	6.00	6.50	25	1.50
0.90	6.00	6.50	25	1.50
0.95	6.00	6.50	25	1.50
1.00	6.00	6.50	25	1.50
1.05	7.00	7.50	25	1.50
1.10	7.00	7.50	25	1.50
1.15	7.00	7.50	25	1.50
1.20	8.00	8.50	25	1.50
1.25	8.00	8.50	25	1.50
1.30	8.00	8.50	25	1.50
1.35	8.00	8.50	25	1.50
1.40	9.00	9.50	25	1.50
1.45	9.00	9.50	25	1.50
1.50	9.00	9.50	38	2.00
1.55	9.00	9.50	38	2.00
1.60	10.00	11.00	38	2.00
1.65	10.00	11.00	38	2.00
1.70	10.00	11.00	38	2.00
1.75	10.00	11.00	38	2.00
1.80	10.00	11.00	38	2.00
1.85	12.00	13.00	38	2.00
1.90	12.00	13.00	38	2.00
1.95	12.00	13.00	38	2.00
2.00	12.00		38	2.00
2.05	14.00	15.00	43	2.50
2.10	14.00	15.00	43	2.50
2.15	14.00	15.00	43	2.50
2.20	14.00	15.00	43	2.50
2.25	14.00	15.00	43	2.50
2.30	14.00	15.00	43	2.50



**Mikro-Tieflochbohrer 20 × d**  
**Micro-foret de perçage profond 20 × d**  
**Micro punta per foro profondo 20 × d**  
**Micro deep hole drill 20 × d**

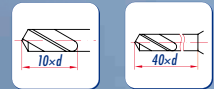
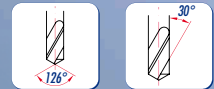
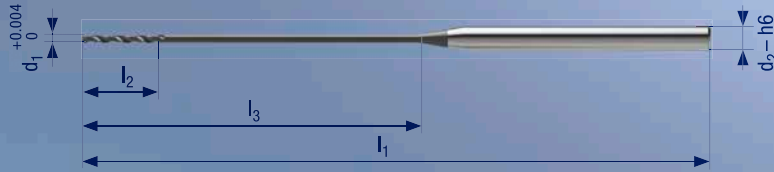
Art. 50720



d <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	l <sub>1</sub>	d <sub>2</sub>
mm	mm	mm	mm	mm
0.20	2.50	4.00	38	3.00
0.25	3.00	5.00	38	3.00
0.30	3.50	6.00	38	3.00
0.35	4.00	7.00	38	3.00
0.40	4.50	8.00	38	3.00
0.45	5.00	9.00	38	3.00
0.50	5.50	10.00	50	3.00
0.55	6.00	11.00	50	3.00
0.60	6.50	12.00	50	3.00
0.65	7.00	13.00	50	3.00
0.70	7.50	14.00	50	3.00
0.75	8.00	15.00	50	3.00
0.80	8.50	16.00	55	3.00
0.85	9.00	17.00	55	3.00
0.90	9.50	18.00	55	3.00
0.95	10.00	19.00	55	3.00
1.00	10.50	20.00	55	3.00
1.05	11.00	21.00	60	3.00
1.10	11.50	22.00	60	3.00
1.15	12.00	23.00	60	3.00
1.20	12.50	24.00	60	3.00
1.25	13.00	25.00	60	3.00
1.30	13.50	26.00	65	3.00
1.35	14.00	27.00	65	3.00
1.40	14.50	28.00	65	3.00
1.45	15.00	29.00	65	3.00
1.50	15.50	30.00	65	3.00

**Mikro-Tieflochbohrer 40 × d**  
**Micro-foret de perçage profond 40 × d**  
**Micro punta per foro profondo 40 × d**  
**Micro deep hole drill 40 × d**

**Art. 50740**



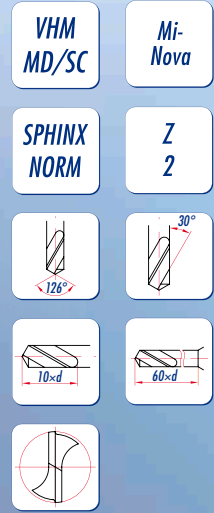
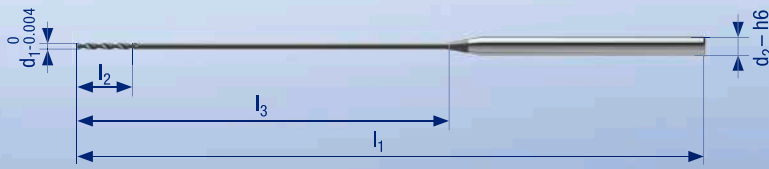
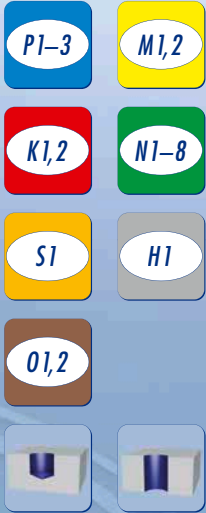
d <sub>1</sub> mm	l <sub>2</sub> mm	l <sub>3</sub> mm	l <sub>1</sub> mm	d <sub>2</sub> mm
0.40	4.50	16.00	50	3.00
0.45	5.00	18.00	50	3.00
0.50	5.50	20.00	70	3.00
0.55	6.00	22.00	70	3.00
0.60	6.50	24.00	70	3.00
0.65	7.00	26.00	70	3.00
0.70	7.50	28.00	70	3.00
0.75	8.00	30.00	70	3.00
0.80	8.50	32.00	78	3.00
0.85	9.00	34.00	78	3.00
0.90	9.50	36.00	78	3.00
0.95	10.00	38.00	78	3.00
1.00	10.50	40.00	78	3.00
1.05	11.00	42.00	88	3.00
1.10	11.50	44.00	88	3.00
1.15	12.00	46.00	88	3.00
1.20	12.50	48.00	88	3.00
1.25	13.00	50.00	88	3.00
1.30	13.50	52.00	98	3.00
1.35	14.00	54.00	98	3.00
1.40	14.50	56.00	98	3.00
1.45	15.00	58.00	98	3.00
1.50	15.50	60.00	98	3.00





**Mikro-Tieflochbohrer 60 × d**  
**Micro-foret de perçage profond 60 × d**  
**Micro punta per foro profondo 60 × d**  
**Micro deep hole drill 60 × d**

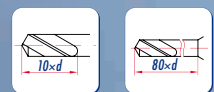
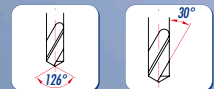
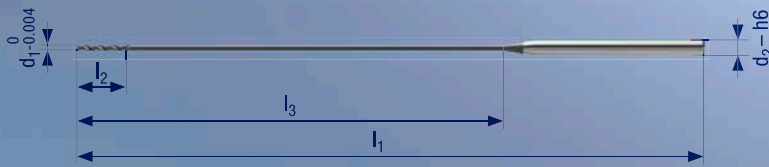
Art. 50760



d <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	l <sub>1</sub>	d <sub>2</sub>
mm	mm	mm	mm	mm
0.40	4.50	24.00	60	3.00
0.45	5.00	27.00	60	3.00
0.50	5.50	30.00	85	3.00
0.55	6.00	33.00	85	3.00
0.60	6.50	36.00	85	3.00
0.65	7.00	39.00	85	3.00
0.70	7.50	42.00	85	3.00
0.75	8.00	45.00	85	3.00
0.80	8.50	48.00	100	3.00
0.85	9.00	51.00	100	3.00
0.90	9.50	54.00	100	3.00
0.95	10.00	57.00	100	3.00
1.00	10.50	60.00	100	3.00
1.05	11.00	63.00	115	3.00
1.10	11.50	66.00	115	3.00
1.15	12.00	69.00	115	3.00
1.20	12.50	72.00	115	3.00
1.25	13.00	75.00	115	3.00
1.30	13.50	78.00	130	3.00
1.35	14.00	81.00	130	3.00
1.40	14.50	84.00	130	3.00
1.45	15.00	87.00	130	3.00
1.50	15.50	90.00	130	3.00

**Mikro-Tieflochbohrer 80 × d**  
**Micro-foret de perçage profond 80 × d**  
**Micro punta per foro profondo 80 × d**  
**Micro deep hole drill 80 × d**

**Art. 50780**



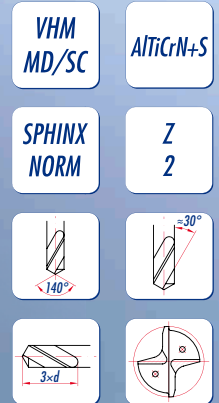
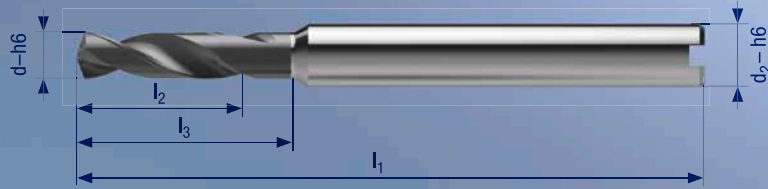
$d_1$ mm	$l_2$ mm	$l_3$ mm	$l_1$ mm	$d_2$ mm
0.40	4.50	32.00	70	3.00
0.45	5.00	36.00	70	3.00
0.50	5.50	40.00	100	3.00
0.55	6.00	44.00	100	3.00
0.60	6.50	48.00	100	3.00
0.65	7.00	52.00	100	3.00
0.70	7.50	56.00	100	3.00
0.75	8.00	60.00	100	3.00
0.80	8.50	64.00	120	3.00
0.85	9.00	68.00	120	3.00
0.90	9.50	72.00	120	3.00
0.95	10.00	76.00	120	3.00
1.00	10.50	80.00	120	3.00
1.05	11.00	84.00	140	3.00
1.10	11.50	88.00	140	3.00
1.15	12.00	92.00	140	3.00
1.20	12.50	96.00	140	3.00
1.25	13.00	100.00	140	3.00
1.30	13.50	104.00	160	3.00
1.35	14.00	108.00	160	3.00
1.40	14.50	112.00	160	3.00
1.45	15.00	116.00	160	3.00
1.50	15.50	120.00	160	3.00





**Hochleistungsbohrer Phoenix-TC2 3 × d**  
**Foret à grand rendement Phoenix-TC2 3 × d**  
**Punta ad alto rendimento Phoenix-TC2 3 × d**  
**High performance drill Phoenix-TC2 3 × d**

**Art. 52903**



d <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	l <sub>1</sub>	d <sub>2</sub>
mm	mm	mm	mm	mm
1.00	3.00	5.00	38	3.00
1.05	3.15	5.25	38	3.00
1.10	3.30	5.50	38	3.00
1.15	3.45	5.50	38	3.00
1.20	3.60	5.50	38	3.00
1.25	3.75	6.00	38	3.00
1.30	3.90	6.00	38	3.00
1.35	4.05	6.00	38	3.00
1.40	4.20	6.50	38	3.00
1.45	4.35	6.50	38	3.00
1.50	4.50	6.50	38	3.00
1.55	4.65	7.50	38	3.00
1.60	4.80	7.50	38	3.00
1.65	4.95	8.00	38	3.00
1.70	5.10	8.00	38	3.00
1.75	5.25	8.00	38	3.00
1.80	5.40	8.50	38	3.00
1.85	5.55	8.50	38	3.00
1.90	5.70	8.50	38	3.00
1.95	5.85	9.00	38	3.00
2.00	6.00	9.00	38	3.00
2.05	6.15	9.00	38	3.00
2.10	6.30	9.50	38	3.00
2.15	6.45	9.50	38	3.00
2.20	6.60	9.50	38	3.00
2.25	6.75	10.00	38	3.00
2.30	6.90	10.00	38	3.00
2.35	7.05	10.00	38	3.00
2.40	7.20	10.00	38	3.00
2.45	7.35	10.00	38	3.00
2.50	7.50	10.50	50	3.00
2.55	7.65	11.00	50	3.00
2.60	7.80	11.00	50	3.00
2.65	7.95	11.00	50	3.00
2.70	8.10	11.50	50	3.00
2.75	8.25	11.50	50	3.00
2.80	8.40	11.50	50	3.00
2.85	8.55	12.00	50	3.00

d <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	l <sub>1</sub>	d <sub>2</sub>
mm	mm	mm	mm	mm
2.90	8.70	12.00	50	3.00
2.95	8.85	12.00	50	3.00
3.00	9.00	12.50	50	3.00
3.05	9.15	12.50	55	6.00
3.10	9.30	13.50	55	6.00
3.15	9.45	13.50	55	6.00
3.20	9.60	13.50	55	6.00
3.25	9.75	13.50	55	6.00
3.30	9.90	13.50	55	6.00
3.35	10.05	14.00	55	6.00
3.40	10.20	14.00	55	6.00
3.45	10.35	14.00	55	6.00
3.50	10.50	14.50	55	6.00
3.55	10.65	14.50	55	6.00
3.60	10.80	15.00	55	6.00
3.65	10.95	15.00	55	6.00
3.70	11.10	15.00	55	6.00
3.75	11.25	15.00	55	6.00
3.80	11.40	15.50	55	6.00
3.85	11.55	15.50	55	6.00
3.90	11.70	15.50	55	6.00
3.95	11.85	15.50	55	6.00
4.00	12.00	15.50	55	6.00
4.05	12.15	16.50	60	6.00
4.10	12.30	18.50	60	6.00
4.15	12.45	18.50	60	6.00
4.20	12.60	18.50	60	6.00
4.25	12.75	18.50	60	6.00
4.30	12.90	19.00	60	6.00
4.35	13.05	19.00	60	6.00
4.40	13.20	19.00	60	6.00
4.45	13.35	20.50	60	6.00
4.50	13.50	20.50	60	6.00
4.55	13.65	20.50	60	6.00
4.60	13.80	22.00	60	6.00
4.65	13.95	22.00	60	6.00
4.70	14.10	22.00	60	6.00
4.75	14.25	22.00	60	6.00

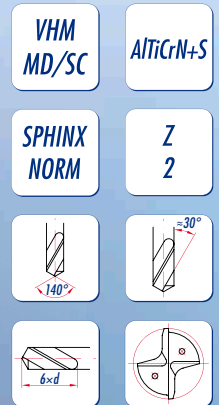
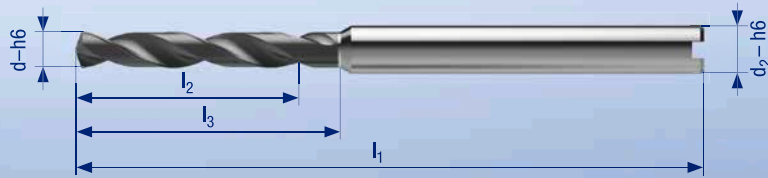
d <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	l <sub>1</sub>	d <sub>2</sub>
mm	mm	mm	mm	mm
4.80	14.40	22.50	60	6.00
4.85	14.55	22.50	60	6.00
4.90	14.70	22.50	60	6.00
4.95	14.85	23.00	60	6.00
5.00	15.00	23.00	60	6.00
5.05	15.15	23.00	64	6.00
5.10	15.30	23.50	64	6.00
5.15	15.45	23.50	64	6.00
5.20	15.60	23.50	64	6.00
5.25	15.75	23.50	64	6.00
5.30	15.90	24.00	64	6.00
5.35	16.05	24.00	64	6.00
5.40	16.20	24.00	64	6.00
5.45	16.35	24.00	64	6.00
5.50	16.50	24.50	64	6.00
5.55	16.65	24.50	64	6.00
5.60	16.80	24.50	64	6.00
5.65	16.95	24.50	64	6.00
5.70	17.10	25.50	64	6.00
5.75	17.25	25.50	64	6.00
5.80	17.40	25.50	64	6.00
5.85	17.55	25.50	64	6.00
5.90	17.70	26.00	64	6.00
5.95	17.85	26.00	64	6.00
6.00	18.00	27.00	64	6.00
6.10	18.30	27.50	68	8.00
6.20	18.60	27.50	68	8.00
6.30	18.90	28.00	68	8.00
6.40	19.20	28.00	68	8.00
6.50	19.50	28.50	68	8.00
6.60	19.80	29.00	68	8.00
6.70	20.10	29.50	68	8.00
6.80	20.40	29.50	68	8.00
6.90	20.70	30.00	68	8.00
7.00	21.00	31.00	68	8.00
7.10	21.30	31.50	72	8.00
7.20	21.60	31.50	72	8.00
7.30	21.90	32.00	72	8.00

d <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	l <sub>1</sub>	d <sub>2</sub>
mm	mm	mm	mm	mm
7.40	22.20	32.00	72	8.00
7.50	22.50	32.50	72	8.00
7.60	22.80	32.50	72	8.00
7.70	23.10	33.50	72	8.00
7.80	23.40	33.50	72	8.00
7.90	23.70	34.00	72	8.00
8.00	24.00	34.00	72	8.00
8.50	25.50	36.50	79	10.00
9.00	27.00	38.00	79	10.00
9.50	28.50	40.00	85	10.00
10.00	30.00	42.00	85	10.00



**Hochleistungsbohrer Phoenix-TC2 6 × d**  
**Foret à grand rendement Phoenix-TC2 6 × d**  
**Punta ad alto rendimento Phoenix-TC2 6 × d**  
**High performance drill Phoenix-TC2 6 × d**

**Art. 52906**



d <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	l <sub>1</sub>	d <sub>2</sub>
mm	mm	mm	mm	mm
1.00	6.00	8.00	38	3.00
1.05	6.30	8.30	38	3.00
1.10	6.60	8.60	38	3.00
1.15	6.90	8.90	38	3.00
1.20	7.20	9.20	38	3.00
1.25	7.50	9.50	38	3.00
1.30	7.80	9.80	38	3.00
1.35	8.10	10.10	38	3.00
1.40	8.40	10.40	38	3.00
1.45	8.70	10.70	38	3.00
1.50	9.00	11.00	38	3.00
1.55	9.30	11.30	38	3.00
1.60	9.60	12.60	38	3.00
1.65	9.90	12.90	38	3.00
1.70	10.20	13.20	38	3.00
1.75	10.50	13.50	38	3.00
1.80	10.80	13.80	38	3.00
1.85	11.10	14.10	38	3.00
1.90	11.40	14.40	38	3.00
1.95	11.70	14.70	38	3.00
2.00	12.00	15.00	50	3.00
2.05	12.30	15.30	50	3.00
2.10	12.60	15.60	50	3.00
2.15	12.90	15.90	50	3.00
2.20	13.20	16.20	50	3.00
2.25	13.50	16.50	50	3.00
2.30	13.80	16.80	50	3.00
2.35	14.10	17.10	50	3.00
2.40	14.40	17.40	50	3.00
2.45	14.70	17.70	50	3.00
2.50	15.00	18.00	50	3.00
2.55	15.30	18.30	50	3.00
2.60	15.60	18.60	50	3.00
2.65	15.90	18.90	50	3.00
2.70	16.20	19.20	50	3.00
2.75	16.50	19.50	50	3.00
2.80	16.80	19.80	50	3.00
2.85	17.10	20.10	50	3.00

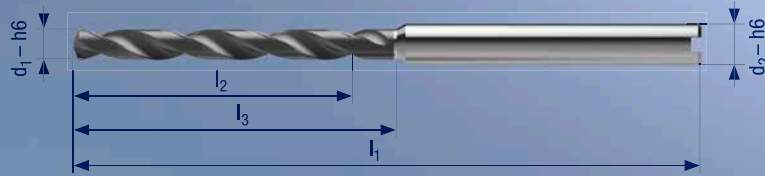
d <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	l <sub>1</sub>	d <sub>2</sub>
mm	mm	mm	mm	mm
2.90	17.40	20.40	50	3.00
2.95	17.70	20.70	50	3.00
3.00	18.00	21.00	50	3.00
3.05	18.30	22.30	66	6.00
3.10	18.60	22.60	66	6.00
3.15	18.90	22.90	66	6.00
3.20	19.20	23.20	66	6.00
3.25	19.50	23.50	66	6.00
3.30	19.80	23.80	66	6.00
3.35	20.10	24.10	66	6.00
3.40	20.40	24.40	66	6.00
3.45	20.70	24.70	66	6.00
3.50	21.00	25.00	66	6.00
3.55	21.30	25.30	66	6.00
3.60	21.60	25.60	66	6.00
3.65	21.90	25.90	66	6.00
3.68	22.20	26.20	66	6.00
3.70	22.20	26.20	66	6.00
3.72	22.40	26.40	66	6.00
3.74	22.50	26.50	66	6.00
3.75	22.50	26.50	66	6.00
3.80	22.80	26.80	66	6.00
3.85	23.10	27.10	66	6.00
3.90	23.40	27.40	66	6.00
3.95	23.70	27.70	66	6.00
4.00	24.00	28.00	66	6.00
4.05	24.30	30.20	79	6.00
4.10	24.60	30.50	79	6.00
4.15	24.90	30.80	79	6.00
4.20	25.20	31.00	79	6.00
4.25	25.50	31.50	79	6.00
4.30	25.80	32.00	79	6.00
4.35	26.10	32.50	79	6.00
4.40	26.40	32.50	79	6.00
4.45	26.70	33.00	79	6.00
4.50	27.00	33.00	79	6.00
4.55	27.30	35.50	79	6.00
4.60	27.60	35.50	79	6.00

d <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	l <sub>1</sub>	d <sub>2</sub>
mm	mm	mm	mm	mm
4.63	27.90	36.00	79	6.00
4.65	27.90	36.00	79	6.00
4.67	28.10	36.00	79	6.00
4.69	28.20	36.00	79	6.00
4.70	28.20	36.00	79	6.00
4.75	28.50	37.00	79	6.00
4.80	28.80	37.00	79	6.00
4.85	29.10	37.50	79	6.00
4.90	29.40	37.50	79	6.00
4.95	29.70	38.00	79	6.00
5.00	30.00	38.00	79	6.00
5.05	30.30	38.50	79	6.00
5.10	30.60	38.50	79	6.00
5.15	30.90	39.00	79	6.00
5.20	31.20	39.00	79	6.00
5.25	31.50	40.00	79	6.00
5.30	31.80	40.00	79	6.00
5.35	32.10	40.50	79	6.00
5.40	32.40	40.50	79	6.00
5.45	32.70	41.00	79	6.00
5.50	33.00	41.00	79	6.00
5.53	33.30	41.50	81	6.00
5.55	33.30	41.50	81	6.00
5.57	33.50	41.50	81	6.00
5.59	33.60	41.50	81	6.00
5.60	33.60	41.50	81	6.00
5.65	33.90	42.00	81	6.00
5.70	34.20	42.00	81	6.00
5.75	34.50	43.00	81	6.00
5.80	34.80	43.00	81	6.00
5.85	35.10	43.50	81	6.00
5.90	35.40	43.50	81	6.00
5.95	35.70	44.00	81	6.00
6.00	36.00	44.00	81	6.00
6.10	36.60	45.50	89	8.00
6.20	37.20	46.00	89	8.00
6.30	37.80	47.00	89	8.00
6.40	38.40	47.50	89	8.00

d <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	l <sub>1</sub>	d <sub>2</sub>
mm	mm	mm	mm	mm
6.50	39.00	48.00	89	8.00
6.60	39.60	48.50	89	8.00
6.70	40.20	49.00	89	8.00
6.80	40.80	50.00	89	8.00
6.90	41.40	50.50	89	8.00
7.00	42.00	52.00	89	8.00
7.10	42.60	52.50	95	8.00
7.20	43.20	53.50	95	8.00
7.30	43.80	54.00	95	8.00
7.40	44.40	54.50	95	8.00
7.50	45.00	55.00	95	8.00
7.60	45.60	55.50	95	8.00
7.70	46.20	56.00	95	8.00
7.80	46.80	57.00	95	8.00
7.90	47.40	57.50	95	8.00
8.00	48.00	58.00	95	8.00
8.50	51.00	62.00	106	10.00
9.00	54.00	65.00	106	10.00
9.50	57.00	68.00	113	10.00
10.00	60.00	72.00	113	10.00

**Hochleistungsbohrer Phoenix-TC2 9 × d**  
**Foret à grand rendement Phoenix-TC2 9 × d**  
**Punta ad alto rendimento Phoenix-TC2 9 × d**  
**High performance drill Phoenix-TC2 9 × d**

Art. 52909

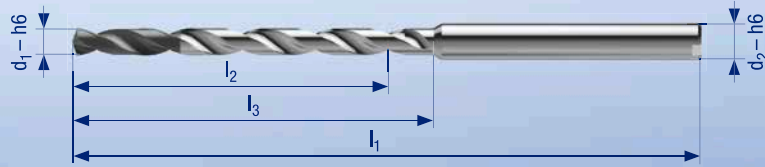


d <sub>1</sub> mm	l <sub>2</sub> mm	l <sub>3</sub> mm	l <sub>1</sub> mm	d <sub>2</sub> mm
1.00	9.00	11.00	51	3.00
1.10	9.90	12.00	51	3.00
1.20	10.80	13.00	51	3.00
1.30	11.70	14.00	51	3.00
1.40	12.60	15.00	51	3.00
1.50	13.50	16.50	51	3.00
1.60	14.40	17.50	51	3.00
1.70	15.30	18.50	51	3.00
1.80	16.20	19.00	51	3.00
1.90	17.10	20.00	51	3.00
2.00	18.00	21.00	51	3.00
2.10	18.90	22.00	61	3.00
2.20	19.80	23.00	61	3.00
2.30	20.70	24.00	61	3.00
2.40	21.60	24.50	61	3.00
2.50	22.50	25.50	61	3.00
2.60	23.40	26.50	61	3.00
2.70	24.30	27.50	61	3.00
2.80	25.20	28.00	61	3.00
2.90	26.10	29.00	61	3.00
3.00	27.00	31.00	61	3.00
3.10	27.90	32.00	79	6.00
3.20	28.80	33.00	79	6.00
3.30	29.70	34.00	79	6.00
3.40	30.60	35.00	79	6.00
3.50	31.50	36.50	79	6.00
3.60	32.40	37.50	79	6.00
3.70	33.30	38.50	79	6.00
3.80	34.20	39.00	79	6.00
3.90	35.10	40.00	79	6.00
4.00	36.00	41.00	79	6.00
4.10	36.90	43.00	91	6.00
4.20	37.80	44.00	91	6.00
4.30	38.70	45.00	91	6.00
4.40	39.60	45.50	91	6.00
4.50	40.50	46.50	91	6.00
4.60	41.40	49.50	91	6.00
4.70	42.30	50.50	91	6.00

d <sub>1</sub> mm	l <sub>2</sub> mm	l <sub>3</sub> mm	l <sub>1</sub> mm	d <sub>2</sub> mm
4.80	43.20	51.00	91	6.00
4.90	44.10	52.00	91	6.00
5.00	45.00	53.00	91	6.00
5.10	45.90	54.00	100	6.00
5.20	46.80	55.00	100	6.00
5.30	47.70	56.00	100	6.00
5.40	48.60	57.00	100	6.00
5.50	49.50	57.50	100	6.00
5.60	50.40	58.50	100	6.00
5.70	51.30	59.50	100	6.00
5.80	52.20	60.00	100	6.00
5.90	53.10	61.00	100	6.00
6.00	54.00	62.00	100	6.00
6.10	54.90	64.00	111	8.00
6.20	55.80	65.00	111	8.00
6.30	56.70	66.00	111	8.00
6.40	57.60	66.50	111	8.00
6.50	58.50	67.50	111	8.00
6.60	59.40	68.50	111	8.00
6.70	60.30	69.50	111	8.00
6.80	61.20	70.00	111	8.00
6.90	62.10	71.00	111	8.00
7.00	63.00	73.00	111	8.00
7.10	63.90	74.00	120	8.00
7.20	64.80	75.00	120	8.00
7.30	65.70	76.00	120	8.00
7.40	66.60	76.50	120	8.00
7.50	67.50	77.50	120	8.00
7.60	68.40	78.50	120	8.00
7.70	69.30	79.50	120	8.00
7.80	70.20	80.00	120	8.00
7.90	71.00	81.00	120	8.00
8.00	72.00	82.00	120	8.00
8.50	76.50	87.50	134	10.00
9.00	81.00	92.00	134	10.00
9.50	85.50	96.50	144	10.00
10.00	90.00	102.00	144	10.00

**Hochleistungsbohrer Phoenix-TC2 12 × d**  
**Foret à grand rendement Phoenix-TC2 12 × d**  
**Punta ad alto rendimento Phoenix-TC2 12 × d**  
**High performance drill Phoenix-TC2 12 × d**

Art. 52912

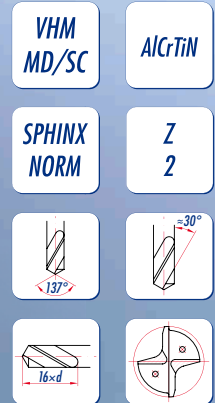
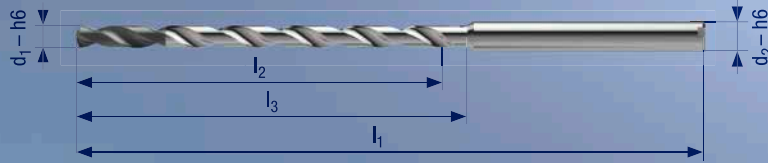
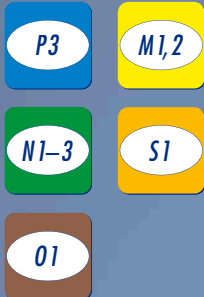


d <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	l <sub>1</sub>	d <sub>2</sub>
mm	mm	mm	mm	mm
1.00	12.00	14.00	50	3.00
1.10	13.20	15.50	50	3.00
1.20	14.40	16.50	50	3.00
1.30	15.60	17.50	50	3.00
1.40	16.80	19.00	50	3.00
1.50	18.00	21.00	50	3.00
1.60	19.20	22.50	50	3.00
1.70	20.40	23.50	50	3.00
1.80	21.60	24.50	50	3.00
1.90	22.80	26.00	55	3.00
2.00	24.00	27.00	55	3.00
2.10	25.20	28.50	55	3.00
2.20	26.40	29.50	55	3.00
2.30	27.60	30.50	55	3.00
2.40	28.80	32.00	55	3.00
2.50	30.00	33.00	60	3.00
2.60	31.20	34.50	60	3.00
2.70	32.40	35.50	60	3.00
2.80	33.60	36.50	60	3.00
2.90	34.80	38.00	60	3.00
3.00	36.00	40.00	60	3.00
3.10	37.20	41.50	80	6.00
3.20	38.40	42.50	80	6.00
3.30	39.60	43.50	80	6.00
3.40	40.80	45.00	85	6.00
3.50	42.00	47.00	85	6.00
3.60	43.20	48.50	85	6.00
3.70	44.40	49.50	90	6.00
3.80	45.60	50.50	90	6.00
3.90	46.80	52.00	90	6.00
4.00	48.00	53.00	90	6.00
4.10	49.20	55.50	105	6.00
4.20	50.40	56.50	105	6.00
4.30	51.60	57.50	105	6.00
4.40	52.80	59.00	105	6.00
4.50	54.00	60.00	105	6.00
4.60	55.20	63.50	105	6.00
4.70	56.40	64.50	105	6.00

d <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	l <sub>1</sub>	d <sub>2</sub>
mm	mm	mm	mm	mm
4.80	57.60	65.50	105	6.00
4.90	58.80	67.00	105	6.00
5.00	60.00	68.00	105	6.00
5.10	61.20	69.50	118	6.00
5.20	62.40	70.50	118	6.00
5.30	63.60	71.50	118	6.00
5.40	64.80	73.00	118	6.00
5.50	66.00	74.00	118	6.00
5.60	67.20	75.50	118	6.00
5.70	68.40	76.50	118	6.00
5.80	69.60	77.50	118	6.00
5.90	70.80	79.00	118	6.00
6.00	72.00	80.00	118	6.00
6.10	73.20	82.50	136	8.00
6.20	74.40	83.50	136	8.00
6.30	75.60	84.50	136	8.00
6.40	76.80	86.00	136	8.00
6.50	78.00	87.50	136	8.00
6.60	79.20	88.50	136	8.00
6.70	80.40	89.50	136	8.00
6.80	81.60	90.50	136	8.00
6.90	82.80	92.00	136	8.00
7.00	84.00	94.00	136	8.00
7.10	85.20	95.50	148	8.00
7.20	86.40	96.50	148	8.00
7.30	87.60	97.50	148	8.00
7.40	88.80	99.00	148	8.00
7.50	90.00	100.00	148	8.00
7.60	91.20	101.50	148	8.00
7.70	92.40	102.50	148	8.00
7.80	93.60	103.50	148	8.00
7.90	94.80	105.00	148	8.00
8.00	96.00	106.00	148	8.00
8.50	102.00	113.00	162	10.00
9.00	108.00	119.00	162	10.00
9.50	114.00	125.00	175	10.00
10.00	120.00	132.00	175	10.00

**Hochleistungsbohrer Phoenix-TC2 16 × d**  
**Foret à grand rendement Phoenix-TC2 16 × d**  
**Punta ad alto rendimento Phoenix-TC2 16 × d**  
**High performance drill Phoenix-TC2 16 × d**

Art. 52916





d <sub>1</sub> mm	l <sub>2</sub> mm	l <sub>3</sub> mm	l <sub>1</sub> mm	d <sub>2</sub> mm
1.00	16.00	18.00	65	3.00
1.10	17.60	19.50	65	3.00
1.20	19.20	21.00	65	3.00
1.30	20.80	23.00	65	3.00
1.40	22.40	24.50	65	3.00
1.50	24.00	27.00	65	3.00
1.60	25.60	28.50	65	3.00
1.70	27.20	30.00	65	3.00
1.80	28.80	32.00	65	3.00
1.90	30.40	33.50	65	3.00
2.00	32.00	35.00	65	3.00
2.10	33.60	36.50	82	3.00
2.20	35.20	38.00	82	3.00
2.30	36.80	40.00	82	3.00
2.40	38.40	41.50	82	3.00
2.50	40.00	43.00	82	3.00
2.60	41.60	44.50	82	3.00
2.70	43.20	46.00	82	3.00
2.80	44.80	48.00	82	3.00
2.90	46.40	49.50	82	3.00
3.00	48.00	52.00	82	3.00
3.10	49.60	53.50	107	6.00
3.20	51.20	55.00	107	6.00
3.30	52.80	57.00	107	6.00
3.40	54.40	58.50	107	6.00
3.50	56.00	61.00	107	6.00
3.60	57.60	62.50	107	6.00
3.70	59.20	64.00	107	6.00
3.80	60.80	66.00	107	6.00
3.90	62.40	67.50	107	6.00
4.00	64.00	69.00	107	6.00
4.10	65.60	71.50	126	6.00
4.20	67.20	73.00	126	6.00
4.30	68.80	75.00	126	6.00
4.40	70.40	76.50	126	6.00
4.50	72.00	78.00	126	6.00
4.60	73.60	81.50	126	6.00
4.70	75.20	83.00	126	6.00

d <sub>1</sub> mm	l <sub>2</sub> mm	l <sub>3</sub> mm	l <sub>1</sub> mm	d <sub>2</sub> mm
4.80	76.80	85.00	126	6.00
4.90	78.40	86.50	126	6.00
5.00	80.00	88.00	126	6.00
5.10	81.60	89.50	142	6.00
5.20	83.20	91.00	142	6.00
5.30	84.80	93.00	142	6.00
5.40	86.40	94.50	142	6.00
5.50	88.00	96.00	142	6.00
5.60	89.60	97.50	142	6.00
5.70	91.20	99.00	142	6.00
5.80	92.80	101.00	142	6.00
5.90	94.40	102.50	142	6.00
6.00	96.00	104.00	142	6.00
6.10	97.60	106.50	160	8.00
6.20	99.20	108.00	160	8.00
6.30	100.80	110.00	160	8.00
6.40	102.40	111.50	160	8.00
6.50	104.00	113.00	160	8.00
6.60	105.60	114.50	160	8.00
6.70	107.20	116.00	160	8.00
6.80	108.80	118.00	160	8.00
6.90	110.40	119.50	160	8.00
7.00	112.00	122.00	160	8.00
7.10	113.60	123.50	176	8.00
7.20	115.20	125.00	176	8.00
7.30	116.80	127.00	176	8.00
7.40	118.40	128.50	176	8.00
7.50	120.00	130.00	176	8.00
7.60	121.60	131.50	176	8.00
7.70	123.20	133.00	176	8.00
7.80	124.80	135.00	176	8.00
7.90	126.40	136.50	176	8.00
8.00	128.00	138.00	176	8.00
8.50	136.00	147.00	197	10.00
9.00	144.00	155.00	197	10.00
9.50	152.00	163.00	214	10.00
10.00	160.00	172.00	214	10.00











**Mikrofräser ≤ ø 3.00 mm**  
**Micro Fraise ≤ ø 3.00 mm**  
**Micro Fresa ≤ ø 3.00 mm**  
**Micro Endmill ≤ ø 3.00 mm**

	Artikel Article	Durchmesser-Bereich Diameter range	Abstufung Increments	Bearbeitungs- tiefe Cutting length	Spitzen- winkel Point angle	Spiral- winkel Helix angle	Zähne- zahl Number of teeth
<b>Gravierfräser mit verstärktem Schaft</b> <b>Fraise à graver avec manche renforcée</b>							
	70030	0.02–0.15	0.01		30°	0°	1
	70040	0.02–0.15	0.01		40°	0°	1
	70050	0.02–0.15	0.01		50°	0°	1
	70060	0.02–0.15	0.01		60°	0°	1
	70090	0.02–0.15	0.01		90°	0°	1
	70130	0.04–0.10	0.01		30°	0°	1
	70140	0.04–0.10	0.01		40°	0°	1
	70150	0.04–0.10	0.01		50°	0°	1
	70160	0.04–0.10	0.01		60°	0°	1
	70190	0.04–0.10	0.01		90°	0°	1
<b>Mikrofräser mit verstärktem Schaft</b> <b>Micro fraise avec manche renforcée</b>							
	72075	0.20–2.00	0.10	0.75×ø	30°		2
	72150	0.10–2.00	0.10	1.5×ø	30°		2
	42000	0.10–3.00	0.10	3×ø	30°		2
	72500	0.30–2.50	0.10	5×ø	30°		2
	72800	0.40–2.50	0.10	8×ø	30°		2
	73130	0.30–2.90	0.10	1.3×ø	30°		3
	73200	0.30–2.90	0.10	2×ø	30°		3
	73300	0.30–2.90	0.10	3×ø	30°		3




\* S. 187 + 189  
p. 187 + 189

- ✓ hervorragend / excellent / ottimamente / outstanding
- geeignet / approprié / adatto / suitable

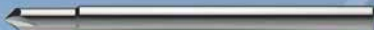

Material	Werkstoffgruppe* Workpiece material*							Anwendung* Application*	Seite Page
	P	M	K	S	N	H	O		
<b>Fresa per incidere con gambo rinforzato</b> <b>Engraving mill with reinforced shank</b>									
VHM/MD/SC	✓	✓	✓	✓	✓		✓		57
VHM/MD/SC	✓	✓	✓	✓	✓		✓		58
VHM/MD/SC	✓	✓	✓	✓	✓		✓		59
VHM/MD/SC	✓	✓	✓	✓	✓		✓		60
VHM/MD/SC	✓	✓	✓	✓	✓		✓		61
VHM/MD/SC	✓	✓	✓	✓	✓		✓		62
VHM/MD/SC	✓	✓	✓	✓	✓		✓		63
VHM/MD/SC	✓	✓	✓	✓	✓		✓		64
VHM/MD/SC	✓	✓	✓	✓	✓		✓		65
VHM/MD/SC	✓	✓	✓	✓	✓		✓		66
<b>Micro fresa con gambo rinforzato</b> <b>Micro Endmill with reinforced shank</b>									
VHM/MD/SC	✓	•	✓	•	✓		•	      	68
VHM/MD/SC	✓	•	✓	•	✓		•	      	69
VHM/MD/SC	✓	•	✓	•	✓		•	      	70
VHM/MD/SC	✓	•	✓	•	✓		•	      	71
VHM/MD/SC	✓	•	✓	•	✓		•	      	72
VHM/MD/SC	✓	•	✓	•	•		•	      	73
VHM/MD/SC	✓	•	✓	•	•		•	      	74
VHM/MD/SC	✓	•	✓	•	•		•	      	75

	Artikel Article	Durchmesser-Bereich Diameter range	Abstufung Increments	Bearbeitungs- tiefe Cutting length	Spitzen- winkel Point angle	Spiral- winkel Helix angle	Zähne- zahl Number of teeth
	73800	0.50–2.50	0.10	8× $\emptyset$		30°	3
	73725	0.30–2.90	0.10	2.5× $\emptyset$		45°	3
	43105	0.30–3.00	0.10	1× $\emptyset$		35°	3
	43305	0.30–3.00	0.10	3× $\emptyset$		35°	3
	74720	0.30–2.90	0.10	2× $\emptyset$		40°	4
	74740	0.40–2.90	0.10	4× $\emptyset$		40°	4

**Radiusfräser mit verstärktem Schaft  
Fraise hémisphérique avec manche renforcée**

	74075	0.20–1.00	0.10	0.75× $\emptyset$		30°	2
	74150	0.20–2.00	0.10	1.5× $\emptyset$		30°	2
	74300	0.20–2.80	0.10	3× $\emptyset$		30°	2

**Entgrat- und 1 Zahnfräser mit verstärktem Schaft  
Fraise à angler et fraise 1 dent avec manche renforcée**

	73000	0.50–8.00	0.50		90°	0°	3–4
	71330	0.20–3.00	0.10			0°	1



\* S. 187 + 189  
p. 187 + 189

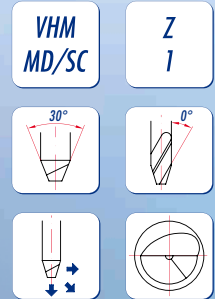
- ✓ hervorragend / excellent / ottimamente / outstanding
- geeignet / approprié / adatto / suitable

Material	Werkstoffgruppe* Workpiece material*							Anwendung* Application*	Seite Page
	P	M	K	S	N	H	O		
VHM/MD/SC	✓	•	✓	•	✓				76
VHM/MD/SC	✓	✓	✓	✓	•				77
VHM/MD/SC; Cro-Nova	✓	✓	•	✓	✓	•	•		78
VHM/MD/SC; Cro-Nova	✓	✓	•	✓	✓	•	•		79
VHM/MD/SC	✓	✓	✓	•	•				80
VHM/MD/SC	✓	✓	✓	•	•				81
<b>Fresa a raggio con gambo rinforzato</b> <b>Ball nose Endmill with reinforced shank</b>									
VHM/MD/SC	✓	•	✓	•	✓		•		83
VHM/MD/SC	✓	•	✓	•	✓		•		84
VHM/MD/SC	✓	•	✓	•	✓		•		85
<b>Fresa a smusso e fresa 1 dente con gambo rinforzato</b> <b>Chamfering tool and Endmill 1 tooth with reinforced shank</b>									
VHM/MD/SC	✓	•	✓	•	✓				87
VHM/MD/SC	•	•	•		✓				88



Gravierfräser 30° mit Fläche  
 Fraise à graver 30° avec plat  
 Fresa per incidere 30° con faccia  
 Engraving mill 30° with flat

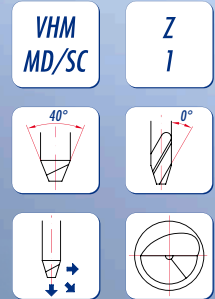
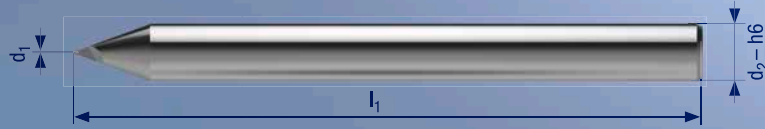
Art. 70030



d <sub>1</sub> mm	α °	l <sub>1</sub> mm	d <sub>2</sub> mm
0.02	30	33	3.00
0.03	30	33	3.00
0.04	30	33	3.00
0.05	30	33	3.00
0.06	30	33	3.00
0.07	30	33	3.00
0.08	30	33	3.00
0.09	30	33	3.00
0.10	30	33	3.00
0.12	30	33	3.00
0.15	30	33	3.00

Gravierfräser 40° mit Fläche  
 Fraise à graver 40° avec plat  
 Fresa per incidere 40° con faccia  
 Engraving mill 40° with flat

Art. 70040



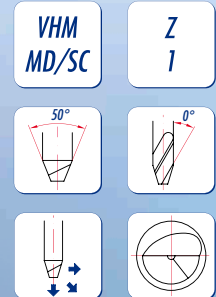
d <sub>1</sub> mm	α °	l <sub>1</sub> mm	d <sub>2</sub> mm
0.02	40	33	3.00
0.03	40	33	3.00
0.04	40	33	3.00
0.05	40	33	3.00
0.06	40	33	3.00
0.07	40	33	3.00
0.08	40	33	3.00
0.09	40	33	3.00
0.10	40	33	3.00
0.12	40	33	3.00
0.15	40	33	3.00





Gravierfräser 50° mit Fläche  
 Fraise à graver 50° avec plat  
 Fresa per incidere 50° con faccia  
 Engraving mill 50° with flat

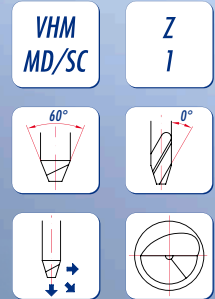
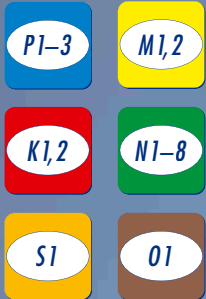
Art. 70050



d <sub>1</sub> mm	α °	l <sub>1</sub> mm	d <sub>2</sub> mm
0.02	50	33	3.00
0.03	50	33	3.00
0.04	50	33	3.00
0.05	50	33	3.00
0.06	50	33	3.00
0.07	50	33	3.00
0.08	50	33	3.00
0.09	50	33	3.00
0.10	50	33	3.00
0.12	50	33	3.00
0.15	50	33	3.00

Gravierfräser 60° mit Fläche  
 Fraise à graver 60° avec plat  
 Fresa per incidere 60° con faccia  
 Engraving mill 60° with flat

Art. 70060

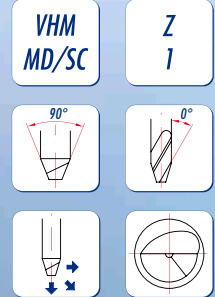
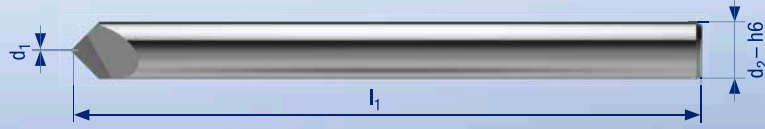


d <sub>1</sub> mm	α °	l <sub>1</sub> mm	d <sub>2</sub> mm
0.02	60	33	3.00
0.03	60	33	3.00
0.04	60	33	3.00
0.05	60	33	3.00
0.06	60	33	3.00
0.07	60	33	3.00
0.08	60	33	3.00
0.09	60	33	3.00
0.10	60	33	3.00
0.12	60	33	3.00
0.15	60	33	3.00



Gravierfräser 90° mit Fläche  
 Fraise à graver 90° avec plat  
 Fresa per incidere 90° con faccia  
 Engraving mill 90° with flat

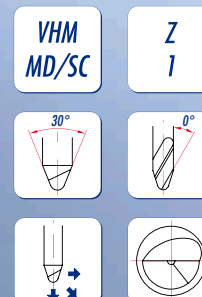
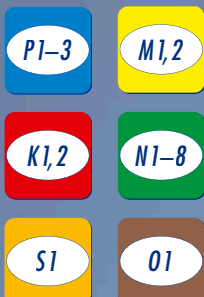
Art. 70090



d <sub>1</sub> mm	α °	l <sub>1</sub> mm	d <sub>2</sub> mm
0.02	90	33	3.00
0.03	90	33	3.00
0.04	90	33	3.00
0.05	90	33	3.00
0.06	90	33	3.00
0.07	90	33	3.00
0.08	90	33	3.00
0.09	90	33	3.00
0.10	90	33	3.00
0.12	90	33	3.00
0.15	90	33	3.00

Gravierfräser 30° mit Radius  
 Fraise à graver 30° à rayon  
 Fresa per incidere 30° con raggio  
 Engraving mill 30° with radius

Art. 70130



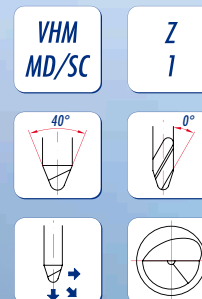
r	α	l <sub>1</sub>	d <sub>2</sub>
mm	°	mm	mm
0.04	30	33	3.00
0.05	30	33	3.00
0.06	30	33	3.00
0.07	30	33	3.00
0.08	30	33	3.00
0.09	30	33	3.00
0.10	30	33	3.00





Gravierfräser 40° mit Radius  
 Fraise à graver 40° à rayon  
 Fresa per incidere 40° con raggio  
 Engraving mill 40° with radius

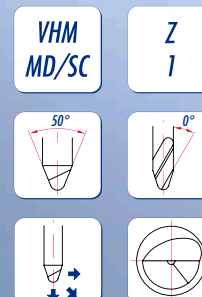
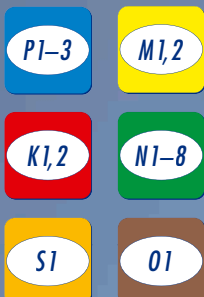
Art. 70140



r	α	l <sub>1</sub>	d <sub>2</sub>
mm	°	mm	mm
0.04	40	33	3.00
0.05	40	33	3.00
0.06	40	33	3.00
0.07	40	33	3.00
0.08	40	33	3.00
0.09	40	33	3.00
0.10	40	33	3.00

Gravierfräser 50° mit Radius  
 Fraise à graver 50° à rayon  
 Fresa per incidere 50° con raggio  
 Engraving mill 50° with radius

Art. 70150

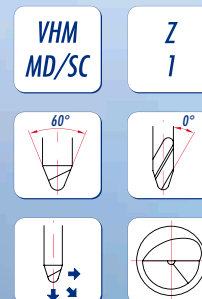


r	α	l <sub>1</sub>	d <sub>2</sub>
mm	°	mm	mm
0.04	50	33	3.00
0.05	50	33	3.00
0.06	50	33	3.00
0.07	50	33	3.00
0.08	50	33	3.00
0.09	50	33	3.00
0.10	50	33	3.00



Gravierfräser 60° mit Radius  
 Fraise à graver 60° à rayon  
 Fresa per incidere 60° con raggio  
 Engraving mill 60° with radius

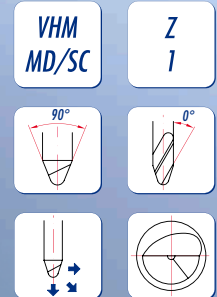
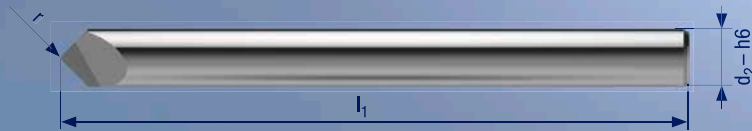
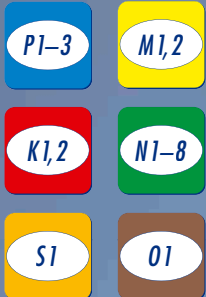
Art. 70160



r	$\alpha$	$l_1$	$d_2$
mm	°	mm	mm
0.04	60	33	3.00
0.05	60	33	3.00
0.06	60	33	3.00
0.07	60	33	3.00
0.08	60	33	3.00
0.09	60	33	3.00
0.10	60	33	3.00

Gravierfräser 90° mit Radius  
 Fraise à graver 90° à rayon  
 Fresa per incidere 90° con raggio  
 Engraving mill 90° with radius

Art. 70190



r	α	l <sub>1</sub>	d <sub>2</sub>
mm	°	mm	mm
0.04	90	33	3.00
0.05	90	33	3.00
0.06	90	33	3.00
0.07	90	33	3.00
0.08	90	33	3.00
0.09	90	33	3.00
0.10	90	33	3.00

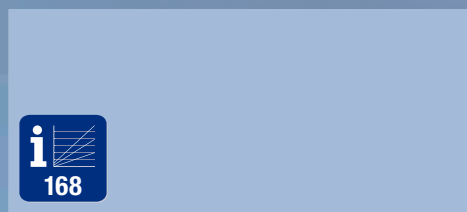
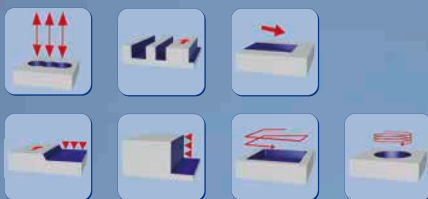
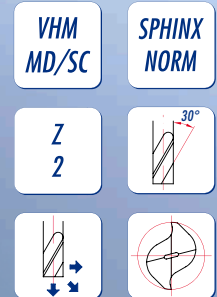
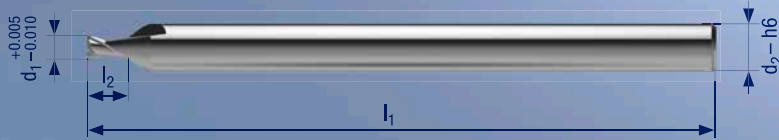






**Mikrofräser 0.75 × d 30°**  
**Micro fraise 0.75 × d 30°**  
**Micro fresa 0.75 × d 30°**  
**Micro Endmill 0.75 × d 30°**

**Art. 72075**

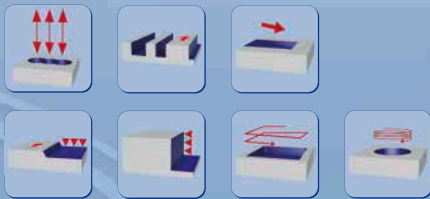


d <sub>1</sub> mm	l <sub>2</sub> mm	l <sub>1</sub> mm	d <sub>2</sub> mm
0.20	0.15	39	3.00
0.30	0.25	39	3.00
0.40	0.30	39	3.00
0.50	0.37	39	3.00
0.60	0.45	39	3.00
0.70	0.53	39	3.00
0.80	0.60	39	3.00
0.90	0.70	39	3.00
1.00	0.75	39	3.00
1.10	0.90	39	3.00
1.20	0.90	39	3.00
1.30	1.00	39	3.00
1.40	1.10	39	3.00
1.50	1.15	39	3.00
1.60	1.20	39	3.00
1.70	1.30	39	3.00
1.80	1.40	39	3.00
1.90	1.45	39	3.00
2.00	1.50	39	3.00



**Mikrofräser 1.5 × d 30°**  
**Micro fraise 1.5 × d 30°**  
**Micro fresa 1.5 × d 30°**  
**Micro Endmill 1.5 × d 30°**

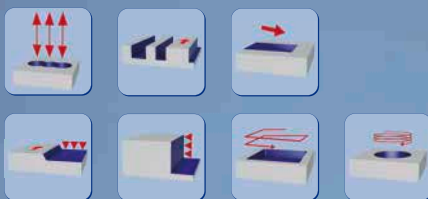
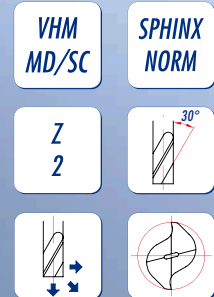
Art. 72150



d <sub>1</sub> mm	l <sub>2</sub> mm	l <sub>1</sub> mm	d <sub>2</sub> mm
0.10	0.15	39	3.00
0.15	0.20	39	3.00
0.20	0.30	39	3.00
0.25	0.35	39	3.00
0.30	0.45	39	3.00
0.40	0.60	39	3.00
0.50	0.75	39	3.00
0.60	0.90	39	3.00
0.70	1.05	39	3.00
0.80	1.20	39	3.00
0.90	1.35	39	3.00
1.00	1.50	39	3.00
1.10	1.65	39	3.00
1.20	1.80	39	3.00
1.30	1.95	39	3.00
1.40	2.10	39	3.00
1.50	2.25	39	3.00
1.60	2.40	39	3.00
1.70	2.55	39	3.00
1.80	2.70	39	3.00
1.90	2.85	39	3.00
2.00	3.00	39	3.00

**Mikrofräser 3 × d 30°**  
**Micro fraise 3 × d 30°**  
**Micro fresa 3 × d 30°**  
**Micro Endmill 3 × d 30°**

**Art. 42000**



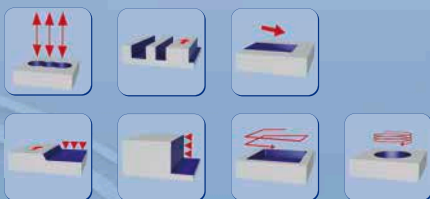
d <sub>1</sub> mm	l <sub>2</sub> mm	l <sub>1</sub> mm	d <sub>2</sub> mm
0.10	0.30	38	3.00
0.15	0.45	38	3.00
0.20	0.60	38	3.00
0.25	0.75	38	3.00
0.30	0.90	38	3.00
0.35	1.05	38	3.00
0.40	1.10	38	3.00
0.45	1.35	38	3.00
0.50	1.50	38	3.00
0.55	1.65	38	3.00
0.60	1.70	38	3.00
0.65	1.95	38	3.00
0.70	2.10	38	3.00
0.75	2.25	38	3.00
0.80	2.40	38	3.00
0.85	2.55	38	3.00
0.90	2.70	38	3.00
0.95	2.85	38	3.00
1.00	3.00	38	3.00
1.05	3.10	38	3.00
1.10	3.30	38	3.00
1.15	3.40	38	3.00
1.20	3.60	38	3.00
1.25	3.70	38	3.00
1.30	3.90	38	3.00
1.35	4.00	38	3.00
1.40	4.20	38	3.00
1.45	4.30	38	3.00
1.50	4.50	38	3.00
1.55	4.60	38	3.00
1.60	4.80	38	3.00
1.65	4.90	38	3.00
1.70	5.10	38	3.00
1.75	5.20	38	3.00
1.80	5.40	38	3.00
1.85	5.50	38	3.00
1.90	5.70	38	3.00
1.95	5.80	38	3.00

d <sub>1</sub> mm	l <sub>2</sub> mm	l <sub>1</sub> mm	d <sub>2</sub> mm
2.00	6.00	38	3.00
2.10	6.30	38	3.00
2.20	6.60	38	3.00
2.30	6.90	38	3.00
2.40	7.20	38	3.00
2.50	7.50	38	3.00
2.60	7.80	38	3.00
2.70	8.10	38	3.00
2.80	8.40	38	3.00
2.90	8.70	38	3.00
3.00	9.00	38	3.00



**Mikrofräser 5 × d 30°**  
**Micro fraise 5 × d 30°**  
**Micro fresa 5 × d 30°**  
**Micro Endmill 5 × d 30°**

**Art. 72500**



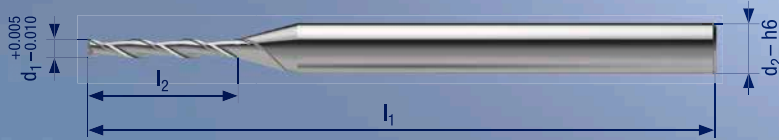
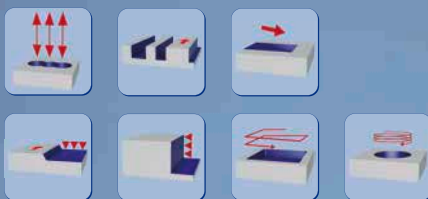
d <sub>1</sub> mm	l <sub>2</sub> mm	l <sub>1</sub> mm	d <sub>2</sub> mm
0.30	1.50	39	3.00
0.40	2.00	39	3.00
0.50	2.50	39	3.00
0.60	3.00	39	3.00
0.70	3.50	39	3.00
0.80	4.00	39	3.00
0.90	4.50	39	3.00
1.00	5.00	39	3.00
1.10	5.50	39	3.00
1.20	6.00	39	3.00
1.50	7.50	39	3.00
2.00	10.00	39	3.00
2.50	12.50	39	3.00

**Mikrofräser 8 × d 30°**  
**Micro fraise 8 × d 30°**  
**Micro fresa 8 × d 30°**  
**Micro Endmill 8 × d 30°**

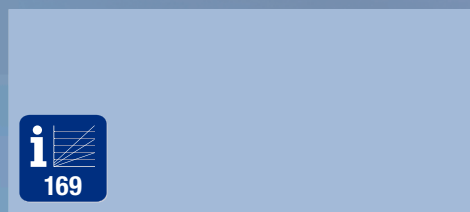
**Art. 72800**



PI-3
M1,2  
K1,2
N1-3  
N5,6
S1
01



VHM  
MD/SC
SPHINX  
NORM  
Z  
2
30°  
↓
↻

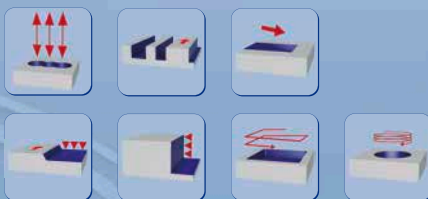
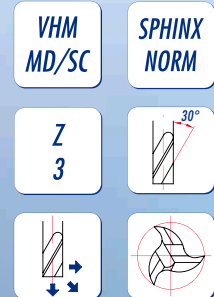


d <sub>1</sub> mm	l <sub>2</sub> mm	l <sub>1</sub> mm	d <sub>2</sub> mm
0.40	3.20	39	3.00
0.50	4.00	39	3.00
0.60	5.00	39	3.00
0.70	5.60	39	3.00
0.80	6.00	39	3.00
0.90	7.20	39	3.00
1.00	8.00	39	3.00
1.20	9.00	39	3.00
1.50	12.00	50	4.00
2.00	16.00	50	4.00
2.50	20.00	50	4.00



**Mikrofräser 1.3 × d 30°**  
**Micro fraise 1.3 × d 30°**  
**Micro fresa 1.3 × d 30°**  
**Micro Endmill 1.3 × d 30°**

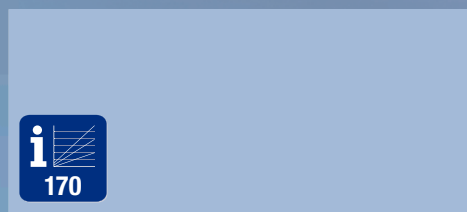
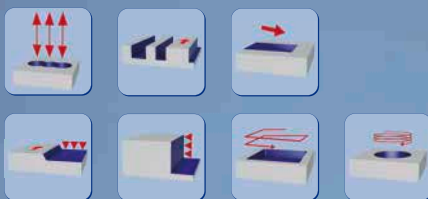
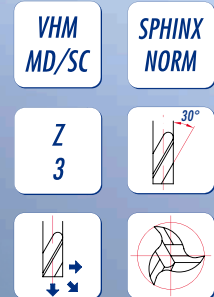
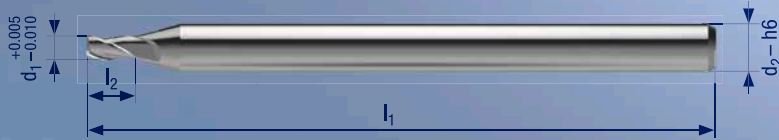
**Art. 73130**



d <sub>1</sub> mm	l <sub>2</sub> mm	l <sub>1</sub> mm	d <sub>2</sub> mm
0.30	0.40	39	3.00
0.40	0.50	39	3.00
0.45	0.60	39	3.00
0.50	0.70	39	3.00
0.60	0.80	39	3.00
0.70	0.90	39	3.00
0.80	1.00	39	3.00
0.90	1.30	39	3.00
1.00	1.30	39	3.00
1.10	1.50	39	3.00
1.20	1.60	39	3.00
1.30	1.80	39	3.00
1.40	1.80	39	3.00
1.50	2.00	39	3.00
1.60	2.00	39	3.00
1.70	2.00	39	3.00
1.80	2.40	39	3.00
1.90	2.40	39	3.00
2.00	2.60	39	3.00
2.20	3.00	39	3.00
2.50	3.30	39	3.00
2.80	3.50	39	3.00
2.90	3.50	39	3.00

**Mikrofräser 2 × d 30°**  
**Micro fraise 2 × d 30°**  
**Micro fresa 2 × d 30°**  
**Micro Endmill 2 × d 30°**

**Art. 73200**



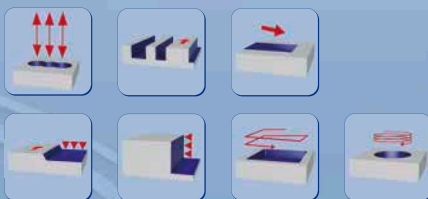
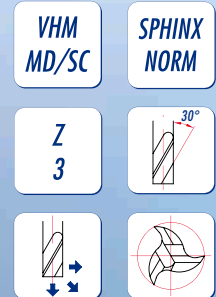
d <sub>1</sub> mm	l <sub>2</sub> mm	l <sub>1</sub> mm	d <sub>2</sub> mm
0.30	0.60	39	3.00
0.40	0.80	39	3.00
0.50	1.00	39	3.00
0.60	1.20	39	3.00
0.70	1.40	39	3.00
0.75	1.50	39	3.00
0.80	1.60	39	3.00
0.90	1.80	39	3.00
1.00	2.00	39	3.00
1.10	2.20	39	3.00
1.20	2.40	39	3.00
1.30	2.60	39	3.00
1.40	2.80	39	3.00
1.50	3.00	39	3.00
1.60	3.20	39	3.00
1.70	3.40	39	3.00
1.80	3.60	39	3.00
1.90	3.80	39	3.00
2.00	4.00	39	3.00
2.10	4.20	39	3.00
2.20	4.40	39	3.00
2.30	4.60	39	3.00
2.40	4.80	39	3.00
2.50	5.00	39	3.00
2.60	5.20	39	3.00
2.70	5.40	39	3.00
2.80	5.60	39	3.00
2.90	5.80	39	3.00





**Mikrofräser 3 × d 30°**  
**Micro fraise 3 × d 30°**  
**Micro fresa 3 × d 30°**  
**Micro Endmill 3 × d 30°**

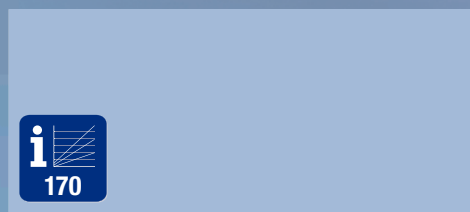
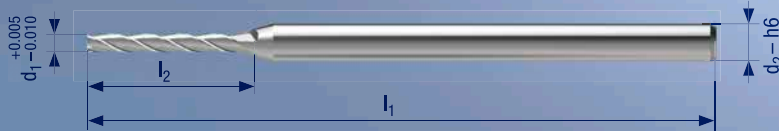
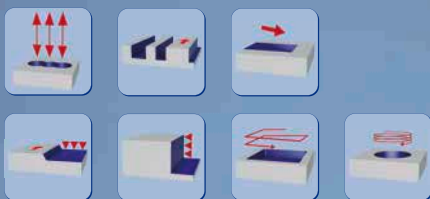
Art. 73300



d <sub>1</sub> mm	l <sub>2</sub> mm	l <sub>1</sub> mm	d <sub>2</sub> mm
0.30	0.90	39	3.00
0.40	1.20	39	3.00
0.50	1.50	39	3.00
0.60	2.00	39	3.00
0.70	2.00	39	3.00
0.75	2.00	39	3.00
0.80	2.50	39	3.00
0.90	2.50	39	3.00
1.00	3.00	39	3.00
1.10	3.30	39	3.00
1.20	4.00	39	3.00
1.30	4.00	39	3.00
1.40	4.00	39	3.00
1.50	4.50	39	3.00
1.60	4.50	39	3.00
1.70	5.00	39	3.00
1.80	6.00	39	3.00
1.90	6.00	39	3.00
2.00	6.00	39	3.00
2.10	6.00	39	3.00
2.20	6.50	39	3.00
2.30	7.00	39	3.00
2.40	7.00	39	3.00
2.50	7.50	39	3.00
2.60	7.50	39	3.00
2.70	8.00	39	3.00
2.80	8.00	39	3.00
2.90	8.50	39	3.00

**Mikrofräser 8 × d 30°**  
**Micro fraise 8 × d 30°**  
**Micro fresa 8 × d 30°**  
**Micro Endmill 8 × d 30°**

**Art. 73800**

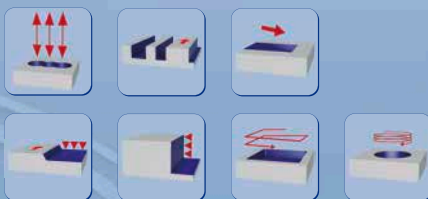
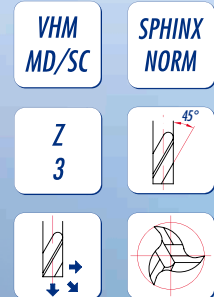
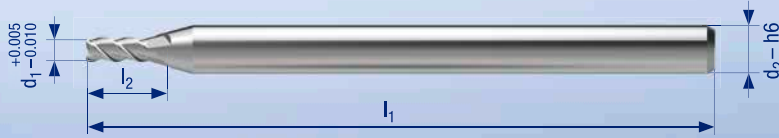


d <sub>1</sub> mm	l <sub>2</sub> mm	l <sub>1</sub> mm	d <sub>2</sub> mm
0.50	4.00	39	3.00
0.60	5.00	39	3.00
0.70	5.60	39	3.00
0.80	6.00	39	3.00
0.90	7.20	39	3.00
1.00	8.00	39	3.00
1.20	9.00	39	3.00
1.50	12.00	50	4.00
2.00	16.00	50	4.00
2.50	20.00	50	4.00



**Mikrofräser 2.5 × d 45°**  
**Micro fraise 2.5 × d 45°**  
**Micro fresa 2.5 × d 45°**  
**Micro Endmill 2.5 × d 45°**

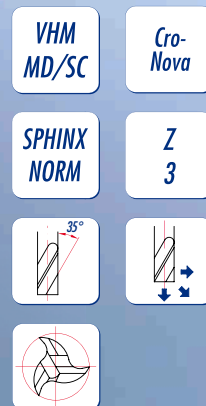
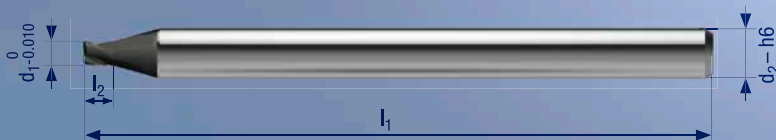
**Art. 73725**



d <sub>1</sub> mm	l <sub>2</sub> mm	l <sub>1</sub> mm	d <sub>2</sub> mm
0.30	0.80	39	3.00
0.40	1.00	39	3.00
0.50	1.30	39	3.00
0.60	1.50	39	3.00
0.70	1.70	39	3.00
0.80	2.00	39	3.00
0.90	2.30	39	3.00
1.00	2.50	39	3.00
1.10	2.80	39	3.00
1.20	3.00	39	3.00
1.30	3.30	39	3.00
1.40	3.50	39	3.00
1.50	3.80	39	3.00
1.60	4.00	39	3.00
1.70	4.30	39	3.00
1.80	4.50	39	3.00
1.90	4.80	39	3.00
2.00	5.00	39	3.00
2.10	5.30	39	3.00
2.20	5.50	39	3.00
2.30	5.80	39	3.00
2.40	6.00	39	3.00
2.50	6.30	39	3.00
2.60	6.50	39	3.00
2.70	6.80	39	3.00
2.80	7.00	39	3.00
2.90	7.30	39	3.00

**Mikrofräser 1 × d 35°**  
**Micro fraise 1 × d 35°**  
**Micro fresa 1 × d 35°**  
**Micro Endmill 1 × d 35°**

**Art. 43105**

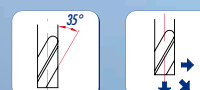
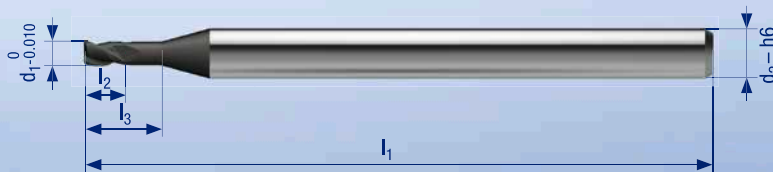
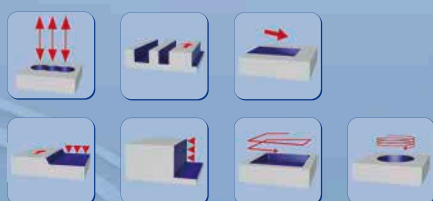


d <sub>1</sub> mm	l <sub>2</sub> mm	l <sub>1</sub> mm	d <sub>2</sub> mm
0.30	0.30	38	3.00
0.40	0.40	38	3.00
0.50	0.50	38	3.00
0.60	0.60	38	3.00
0.70	0.70	38	3.00
0.80	0.80	38	3.00
0.90	0.90	38	3.00
1.00	1.00	38	3.00
1.10	1.10	38	3.00
1.20	1.20	38	3.00
1.30	1.30	38	3.00
1.40	1.40	38	3.00
1.50	1.50	38	3.00
1.60	1.60	38	3.00
1.70	1.70	38	3.00
1.80	1.80	38	3.00
1.90	1.90	38	3.00
2.00	2.00	38	3.00
2.10	2.10	38	3.00
2.20	2.20	38	3.00
2.30	2.30	38	3.00
2.40	2.40	38	3.00
2.50	2.50	38	3.00
2.60	2.60	38	3.00
2.70	2.70	38	3.00
2.80	2.80	38	3.00
2.90	2.90	38	3.00
3.00	3.00	38	3.00



**Mikrofräser 3 × d 35°**  
**Micro fraise 3 × d 35°**  
**Micro fresa 3 × d 35°**  
**Micro Endmill 3 × d 35°**

Art. 43305

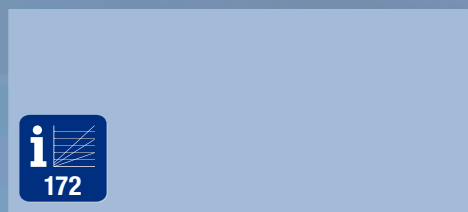
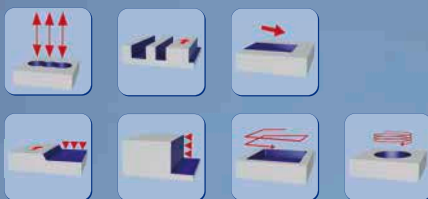
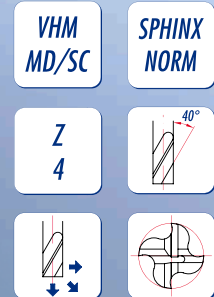
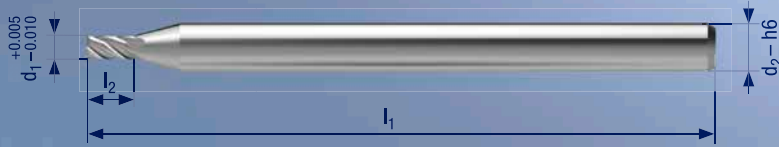
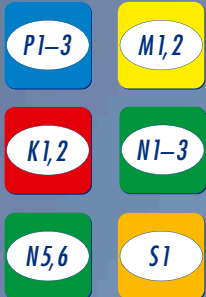


d <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	l <sub>1</sub>	d <sub>2</sub>
mm	mm	mm	mm	mm
0.30	0.30	0.90	38	3.00
0.40	0.40	1.20	38	3.00
0.50	0.50	1.50	38	3.00
0.60	0.60	1.80	38	3.00
0.70	0.70	2.10	38	3.00
0.80	0.80	2.40	38	3.00
0.90	0.90	2.70	38	3.00
1.00	1.00	3.00	38	3.00
1.10	1.10	3.30	38	3.00
1.20	1.20	3.60	38	3.00
1.30	1.30	3.90	38	3.00
1.40	1.40	4.20	38	3.00
1.50	1.50	4.50	38	3.00
1.60	1.60	4.80	38	3.00
1.70	1.70	5.10	38	3.00
1.80	1.80	5.40	38	3.00
1.90	1.90	5.70	38	3.00
2.00	2.00	6.00	38	3.00
2.10	2.10	6.30	38	3.00
2.20	2.20	6.60	38	3.00
2.30	2.30	6.90	38	3.00
2.40	2.40	7.20	38	3.00
2.50	2.50	7.50	38	3.00
2.60	2.60	7.80	38	3.00
2.70	2.70	8.10	38	3.00
2.80	2.80	8.40	38	3.00
2.90	2.90	8.70	38	3.00
3.00	3.00	9.00	38	3.00



**Mikrofräser 2 × d 40°**  
**Micro fraise 2 × d 40°**  
**Micro fresa 2 × d 40°**  
**Micro Endmill 2 × d 40°**

Art. 74720

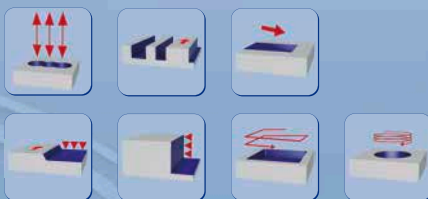
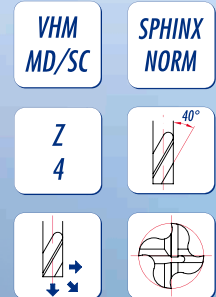
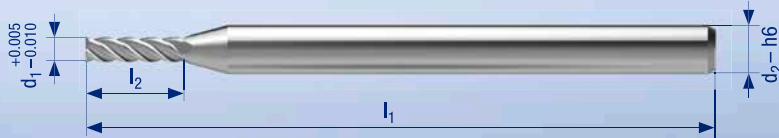


d <sub>1</sub> mm	l <sub>2</sub> mm	l <sub>1</sub> mm	d <sub>2</sub> mm
0.30	0.60	39	3.00
0.40	0.80	39	3.00
0.50	1.00	39	3.00
0.60	1.20	39	3.00
0.70	1.40	39	3.00
0.80	1.60	39	3.00
0.90	1.80	39	3.00
1.00	2.00	39	3.00
1.10	2.20	39	3.00
1.20	2.40	39	3.00
1.30	2.60	39	3.00
1.40	2.80	39	3.00
1.50	3.00	39	3.00
1.60	3.20	39	3.00
1.70	3.40	39	3.00
1.80	3.60	39	3.00
1.90	3.80	39	3.00
2.00	4.00	39	3.00
2.10	4.20	39	3.00
2.20	4.40	39	3.00
2.30	4.60	39	3.00
2.40	4.80	39	3.00
2.50	5.00	39	3.00
2.60	5.20	39	3.00
2.70	5.40	39	3.00
2.80	5.60	39	3.00
2.90	5.80	39	3.00

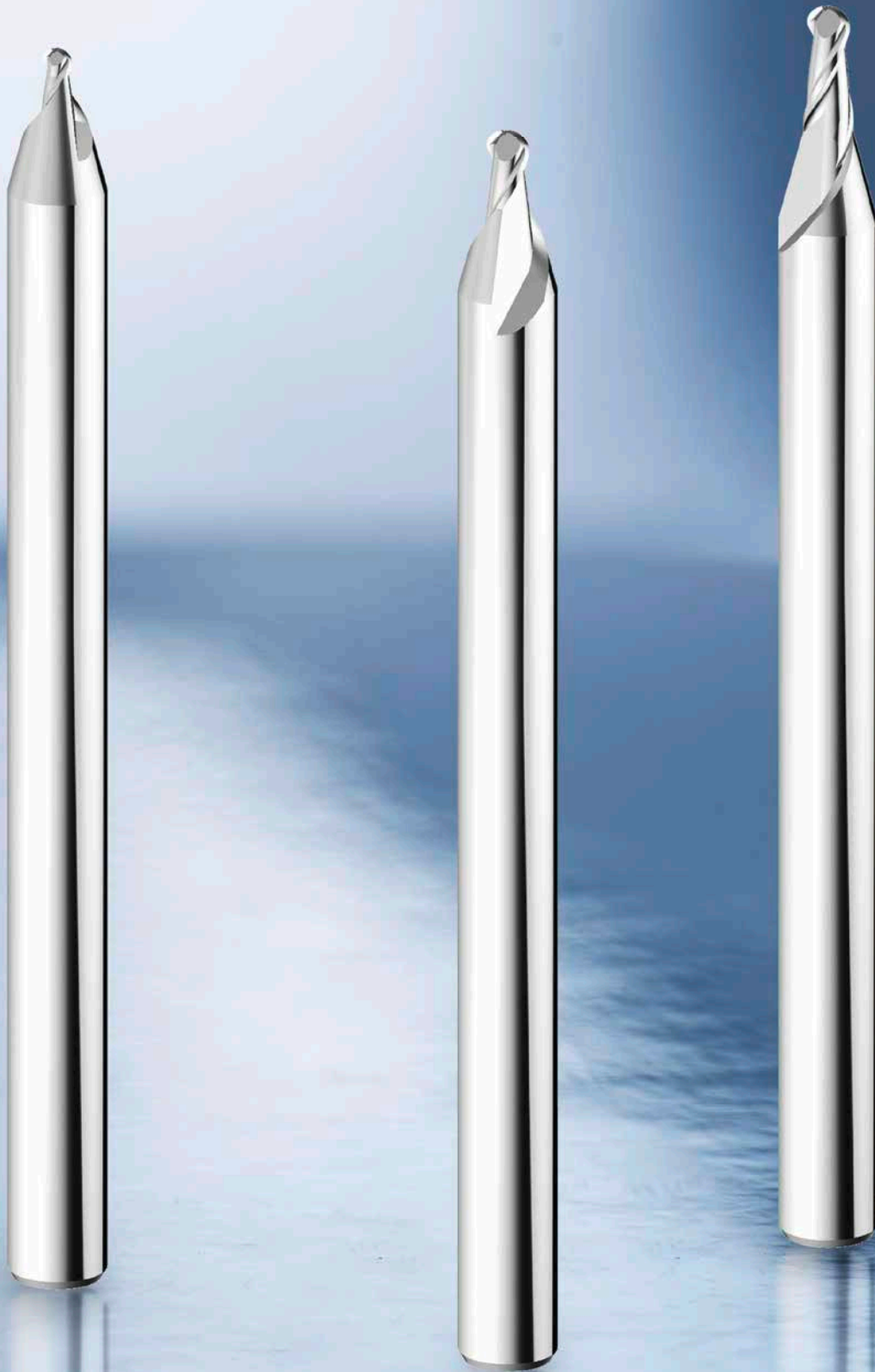


**Mikrofräser 4 × d 40°**  
**Micro fraise 4 × d 40°**  
**Micro fresa 4 × d 40°**  
**Micro Endmill 4 × d 40°**

**Art. 74740**

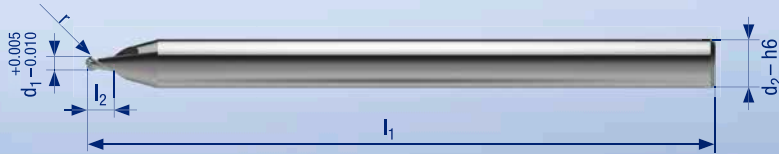


d <sub>1</sub> mm	l <sub>2</sub> mm	l <sub>1</sub> mm	d <sub>2</sub> mm
0.40	1.60	39	3.00
0.50	2.00	39	3.00
0.60	2.40	39	3.00
0.70	2.80	39	3.00
0.80	3.20	39	3.00
0.90	3.60	39	3.00
1.00	4.00	39	3.00
1.10	4.40	39	3.00
1.20	4.80	39	3.00
1.30	5.20	39	3.00
1.40	5.60	39	3.00
1.50	6.00	39	3.00
1.60	6.40	39	3.00
1.70	6.80	39	3.00
1.80	7.20	39	3.00
1.90	7.60	39	3.00
2.00	8.00	39	3.00
2.10	8.40	39	3.00
2.20	8.80	39	3.00
2.30	9.20	39	3.00
2.40	9.60	39	3.00
2.50	10.00	39	3.00
2.60	10.40	39	3.00
2.70	10.80	39	3.00
2.80	11.20	39	3.00
2.90	11.60	39	3.00



Radiusfräser 0.75 × d  
 Fraise hémisphérique 0.75 × d  
 Fresa a raggio 0.75 × d  
 Ball nose Endmill 0.75 × d

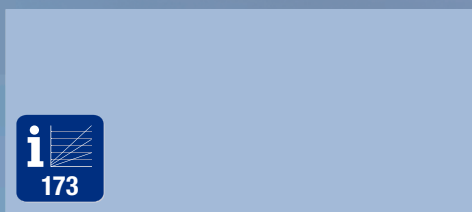
Art. 74075



d <sub>1</sub>	r	l <sub>2</sub>	l <sub>1</sub>	d <sub>2</sub>
mm	mm	mm	mm	mm
0.20	0.10	0.15	39	3.00
0.30	0.15	0.20	39	3.00
0.40	0.20	0.30	39	3.00
0.50	0.25	0.37	39	3.00
0.60	0.30	0.45	39	3.00
0.80	0.40	0.60	39	3.00
1.00	0.50	0.75	39	3.00

**Radiusfräser 1.5 × d**  
**Fraise hémisphérique 1.5 × d**  
**Fresa a radio 1.5 × d**  
**Ball nose Endmill 1.5 × d**

**Art. 74150**



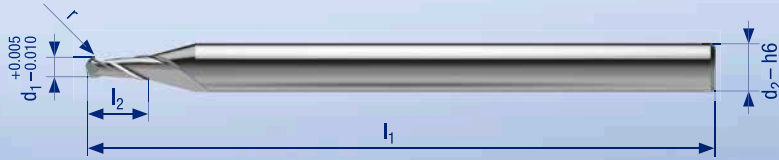
d <sub>1</sub> mm	r mm	l <sub>2</sub> mm	l <sub>1</sub> mm	d <sub>2</sub> mm
0.20	0.100	0.30	39	3.00
0.25	0.125	0.35	39	3.00
0.30	0.150	0.45	39	3.00
0.40	0.200	0.60	39	3.00
0.50	0.250	0.75	39	3.00
0.60	0.300	0.90	39	3.00
0.70	0.350	1.05	39	3.00
0.80	0.400	1.20	39	3.00
0.90	0.450	1.35	39	3.00
1.00	0.500	1.50	39	3.00
1.10	0.550	1.65	39	3.00
1.20	0.600	1.80	39	3.00
1.30	0.650	1.95	39	3.00
1.40	0.700	2.10	39	3.00
1.50	0.750	2.25	39	3.00
1.60	0.800	2.40	39	3.00
1.80	0.900	2.70	39	3.00
2.00	1.000	3.00	39	3.00





**Radiusfräser 3 × d**  
**Fraise hémisphérique 3 × d**  
**Fresa a raggio 3 × d**  
**Ball nose Endmill 3 × d**

**Art. 74300**

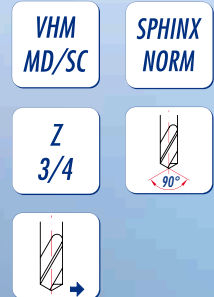


d <sub>1</sub>	r	l <sub>2</sub>	l <sub>1</sub>	d <sub>2</sub>
mm	mm	mm	mm	mm
0.20	0.10	0.60	39	3.00
0.30	0.15	1.00	39	3.00
0.40	0.20	1.00	39	3.00
0.50	0.25	1.50	39	3.00
0.60	0.30	1.50	39	3.00
0.70	0.35	2.00	39	3.00
0.80	0.40	2.00	39	3.00
0.90	0.45	2.50	39	3.00
1.00	0.50	3.00	39	3.00
1.20	0.60	4.00	39	3.00
1.40	0.70	4.00	39	3.00
1.50	0.75	4.00	39	3.00
1.60	0.80	4.00	39	3.00
1.80	0.90	5.50	39	3.00
2.00	1.00	6.00	39	3.00
2.10	1.05	6.00	39	3.00
2.20	1.10	6.00	39	3.00
2.50	1.25	7.50	39	3.00
2.80	1.40	8.40	39	3.00



Entgratfräser 90°  
 Fraise à angler 90°  
 Fresa a smusso 90°  
 Chamfering tool 90°

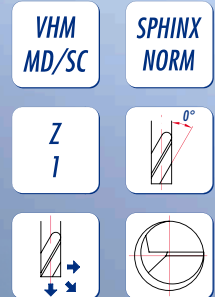
Art. 73000



d <sub>1</sub>	d <sub>2</sub>	l <sub>2</sub>	l <sub>1</sub>	d <sub>3</sub>	Z
mm	mm	mm	mm	mm	
0.10	0.50	3.00	39	3.00	3
0.10	1.00	3.00	39	3.00	3
0.10	1.50	4.50	39	3.00	3
0.10	2.00	6.00	39	3.00	3
0.10	2.50	7.50	39	3.00	3
0.10	3.00	7.50	39	3.00	3
0.70	6.00		50	6.00	4
1.20	8.00		60	8.00	4

Gerade genuteter Fräser – 1 Zahn  $\frac{3}{4}$   
 Fraise taille droite – 1 dent  $\frac{3}{4}$   
 Fresa taglio diritto – 1 dente  $\frac{3}{4}$   
 Straight fluted Endmill – 1 tooth  $\frac{3}{4}$

Art. 71330



d <sub>1</sub> mm	l <sub>2</sub> mm	l <sub>1</sub> mm	d <sub>2</sub> mm
0.20	0.40	39	3.0
0.30	0.60	39	3.0
0.40	0.80	39	3.0
0.50	1.00	39	3.0
0.60	1.20	39	3.0
0.70	1.40	39	3.0
0.80	1.60	39	3.0
0.90	1.80	39	3.0
1.00	2.00	39	3.0
1.10	2.20	39	3.0
1.20	2.40	39	3.0
1.30	2.60	39	3.0
1.40	2.80	39	3.0
1.50	3.00	39	3.0
1.60	3.20	39	3.0
1.70	3.40	39	3.0
1.80	3.60	39	3.0
1.90	3.80	39	3.0
2.00	4.00	39	3.0
2.10	4.20	39	3.0
2.20	4.40	39	3.0
2.30	4.60	39	3.0
2.40	4.80	39	3.0
2.50	5.00	39	3.0
2.60	5.20	39	3.0
2.70	5.40	39	3.0
2.80	5.60	39	3.0
2.90	5.80	39	3.0
3.00	6.00	40	4.0































**Bohrer – Reibahlen**  
**Foret – Alésoir**  
**Punta – Alesatore**  
**Drill – Reamer**


	Artikel Article	Durchmesser-Bereich Diameter range	Abstufung Increments	Bohrtiefe Cutting length	Spitzen- winkel Point angle	Spiral- winkel Helix angle	
<b>NC-Anbohrer, Pilotbohrer und Zentriersenker</b>							
<b>Foret à pointer, foret de préperçage et chanfreiner</b>							
	50806	0.50–6.00	0.10		60° +/- 1°	20°	
	50810	2.00–20.00	1.00		90° +/- 1°	20°	
	50811	2.00–12.00	1.00		90° +/- 1°	20°	
	50812	2.00–20.00	1.00		123°	20°	
	50813	2.00–10.00	1.00		123°	20°	
	50814	2.00–20.00	1.00		142°	20°	
	50815	2.00–10.00	1.00		142°	20°	
	50818	1.60–12.00	0.40		142°/90°	20°	
	56036	0.30–6.00	0.05	2xØ	140°/90°	30°	
<b>Spiralbohrer ohne Innenkühlung</b>							
<b>Foret hélicoïdal sans trou d'huile</b>							
	50950	3.00–20.00	0.10	DIN 6537	140°	30°	
	50830	0.30–20.00	0.10	DIN 6539	118°	35°	
	50838	0.30–6.00	0.05	SPHINX NORM	118°	30°	
	50820	0.70–14.00	0.10	DIN 338	130°	35°–15°	

\* S. 187 + 189  
p. 187 + 189

- ✓ hervorragend / excellent / ottimamente / outstanding
- geeignet / approprié / adatto / suitable






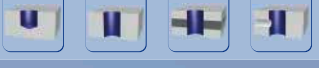

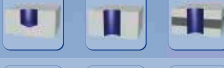




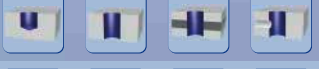




Material	Werkstoffgruppe* Workpiece material*							Anwendung* Application*	Seite Page
	P	M	K	S	N	H	O		
<b>Punta a centrare, punta per preforo e smusso NC spotting drill, pilotdrill and chamfering drill</b>									
VHM/MD/SC	✓	✓	✓	•	✓		✓	 	97
VHM/MD/SC	✓	✓	✓	•	✓		✓	 	98
VHM/MD/SC; TiAlSiN	✓	✓	✓	•	✓	✓	✓	 	99
VHM/MD/SC	✓	✓	✓	•	✓		✓		100
VHM/MD/SC; TiAlSiN	✓	✓	✓	•	✓	✓	✓		101
VHM/MD/SC	✓	✓	✓	•	✓		✓		102
VHM/MD/SC; TiAlSiN	✓	✓	✓	•	✓	✓	✓		103
VHM/MD/SC	✓	✓	✓	•	✓		✓		104
VHM/MD/SC; AlCrN	✓	✓	✓	✓	✓	•	•	 	105
<b>Punta elicoidale senza fori di lubrificazione Twist drill without internal coolant</b>									
VHM/MD/SC; TiAlN	✓	•	✓	•	•	•	•	    	106
VHM/MD/SC	✓	✓	•	•	✓		✓	 	107
VHM/MD/SC	✓	✓	•	•	✓		✓	 	108
VHM/MD/SC	✓		✓	•				 	109








	Artikel Article	Durchmesser-Bereich Diameter range	Abstufung Increments	Bohrtiefe Cutting length	Spitzen- winkel Point angle	Spiral- winkel Helix angle	
<b>Hochleistungsbohrer mit verstärktem Schaft mit Innenkühlung</b> <b>Foret à grand rendement avec manche renforcée avec trou d'huile</b>							
	50938	1.00–12.70	0.10	3×Ø	140°	30°	
	50940	1.00–12.70	0.05	6×Ø	140°	30°	
	50942	1.00–12.70	0.10	12×Ø	140°	30°	
	52100	3.00–20.00	0.50	6×Ø	140°	0°	
	52200	3.00–20.00	0.50	12×Ø	140°	0°	
	52150	4.00–20.00	0.50	6×Ø	140°	15°	
<b>Hochleistungsbohrer Power Phoenix mit verstärktem Schaft mit Innenkühlung</b> <b>Foret à grand rendement Power-Phoenix avec manche renforcée avec trou d'huile</b>							
	50912	2.00–12.70	0.10	12×Ø	137°	30°	
	50916	2.00–12.70	0.10	16×Ø	137°	30°	
	50920	3.00–10.00	1.00	20×Ø	137°	30°	
	50930	3.00–10.00	1.00	30×Ø	137°	30°	
<b>Hochleistungsbohrer Phoenix-TC2 mit verstärktem Schaft mit Innenkühlung</b> <b>Foret à grand rendement Phoenix-TC2 avec manche renforcée avec trou d'huile</b>							
	52903	1.00–10.00	0.05	3×Ø	140°	30°	
	52906	1.00–10.00	0.05	6×Ø	140°	30°	
	52909	1.00–10.00	0.10	9×Ø	140°	30°	
	52912	1.00–10.00	0.10	12×Ø	137°	30°	
	52916	1.00–10.00	0.10	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°	

\* S. 187 + 189  
p. 187 + 189

- ✓ hervorragend / excellent / ottimamente / outstanding
- geeignet / approprié / adatto / suitable

Material	Werkstoffgruppe* Workpiece material*							Anwendung* Application*	Seite Page
	P	M	K	S	N	H	O		
<b>Punta ad alto rendimento con gambo rinforzato con fori di lubrificazione</b> <b>High performance drill with reinforced shank with internal coolant</b>									
VHM / MD / SC; AlCrN	✓	✓	✓	•	•				111
VHM / MD / SC; TiAlN	✓	✓	✓	•	•				112
VHM / MD / SC; AlCrN	✓	•	✓	•	•				114
VHM / MD / SC			✓		✓		•		115
VHM / MD / SC			✓		✓		•		116
VHM / MD / SC; TiAlN	✓		✓		•	•			117
<b>Punta ad alto rendimento Power-Phoenix con gambo rinforzato con fori di lubrificazione</b> <b>High performance drill Power-Phoenix with reinforced shank with internal coolant</b>									
VHM / MD / SC; AlCrN	✓		✓		•				119
VHM / MD / SC; AlCrN	✓		✓		•				120
VHM / MD / SC; AlCrN	✓		✓		•				121
VHM / MD / SC; AlCrN	✓		✓		•				122
<b>Punta ad alto rendimento Phoenix-TC2 con gambo rinforzato con fori di lubrificazione</b> <b>High performance drill Phoenix-TC2 with reinforced shank with internal coolant</b>									
VHM / MD / SC; AlTiCrN+S	✓	✓	✓	✓	✓	•	•		124
VHM / MD / SC; AlTiCrN+S	✓	✓	✓	✓	✓	•	•		125
VHM / MD / SC; AlTiCrN+S	✓	✓	✓	✓	✓	•	•		126
VHM / MD / SC; AlCrTiN	✓	✓	✓	✓	✓	•	•		127
VHM / MD / SC; AlCrTiN	✓	✓	✓	✓	✓	•	•		128
VHM / MD / SC; AlCrTiN	•	✓	•	✓	✓	•	•		129
VHM / MD / SC; AlCrTiN	•	✓	•	✓	✓	•	•		130



	Artikel Article	Durchmesser-Bereich Diameter range	Abstufung Increments	Bohrtiefe Cutting length	Spitzen- winkel Point angle	Spiral- winkel Helix angle
<b>Bohrreibahlen und Reibahlen Foret alésoir et alésoir</b>						
	50840	2.00–14.00	0.10	DIN 6539	118°	35°
	55654	1.00–14.00	0.10	DIN 6539	140°	35°
	55338	1.00–14.00	0.10	DIN 338	140°	35°
	58000	0.99–6.00	0.01	–8× $\varnothing$		10°
	58500	0.99–6.00	0.01	–8× $\varnothing$		10°

$K=1,8$   
 $+0,1$   
 $0-0,1$



\* S. 187 + 189  
p. 187 + 189

- ✓ hervorragend / excellent / ottimamente / outstanding
- geeignet / approprié / adatto / suitable

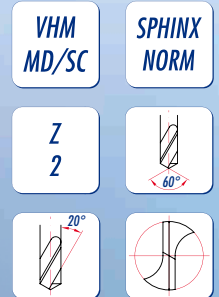
Material	Werkstoffgruppe* Workpiece material*							Anwendung* Application*	Seite Page
	P	M	K	S	N	H	O		
<b>Punta alesatore e alesatore Drill reamer and reamer</b>									
VHM/MD/SC	•	•	•	•	✓				132
VHM/MD/SC	✓	•	✓	•	•				133
VHM/MD/SC	✓	•	✓	•	•				134
VHM/MD/SC	✓	✓	✓	•	✓				135
VHM/MD/SC	✓	✓	✓	•	✓				136





**NC-Anbohrer und Anfaser 60°**  
**Foret à pointer NC et chanfreiner 60°**  
**Punta a centrare NC e smusso 60°**  
**NC spotting and chamfering drill 60°**

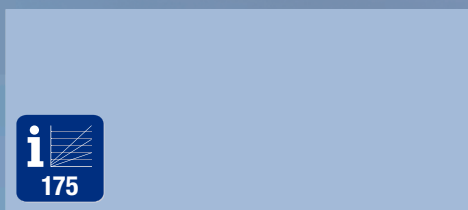
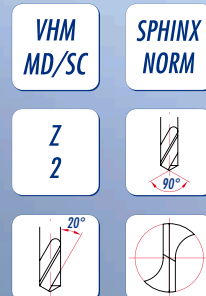
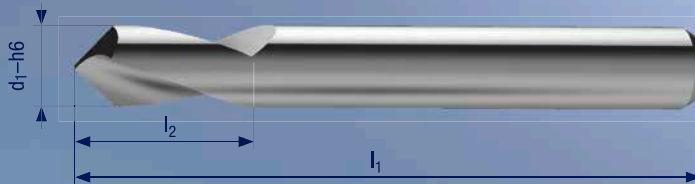
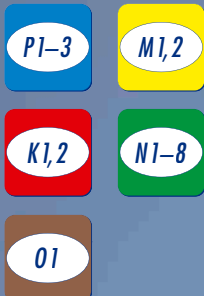
Art. 50806



d <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	l <sub>1</sub>	d <sub>2</sub>
mm	mm	mm	mm	mm
0.50	1.50	2.00	38	3.00
0.60	1.50	2.00	38	3.00
0.70	1.50	2.00	38	3.00
0.80	2.00	2.50	38	3.00
0.90	2.00	2.50	38	3.00
1.00	2.00	2.50	38	3.00
1.10	2.50	3.50	38	3.00
1.20	2.50	3.50	38	3.00
1.30	2.50	3.50	38	3.00
1.40	3.00	4.00	38	3.00
1.50	3.00	4.00	38	3.00
1.60	3.00	4.00	38	3.00
1.70	4.00	5.00	38	3.00
1.80	4.00	5.00	38	3.00
1.90	4.00	5.00	38	3.00
2.00	5.00	6.00	38	3.00
2.10	5.00	6.00	38	3.00
2.20	5.00	6.00	38	3.00
2.30	6.00	7.00	38	3.00
2.40	6.00	7.00	38	3.00
2.50	6.00	7.00	38	3.00
2.60	7.00	8.00	38	3.00
2.70	7.00	8.00	38	3.00
2.80	7.00	8.00	38	3.00
2.90	7.00	8.00	38	3.00
3.00	9.50	9.50	38	3.00
4.00	10.50	10.50	40	4.00
5.00	16.00	16.00	50	5.00
6.00	16.00	16.00	50	6.00

NC-Anbohrer 90°  
 Foret à pointer NC 90°  
 Punta a centrare NC 90°  
 NC spotting drill 90°

Art. 50810

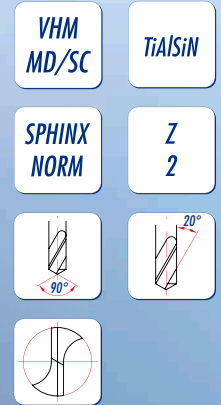
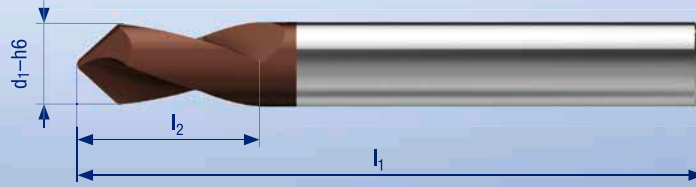
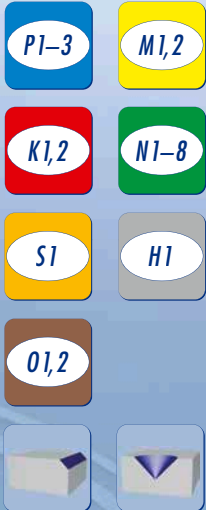


d <sub>1</sub> mm	l <sub>2</sub> mm	l <sub>1</sub> mm
2.00	8.50	25
3.00	9.50	32
4.00	10.50	40
5.00	16.00	50
6.00	16.00	50
8.00	20.00	60
10.00	22.00	70
12.00	22.00	70
14.00	25.00	75
16.00	25.00	75
20.00	35.00	75



NC-Anbohrer 90° TiAlSiN  
 Foret à pointer NC 90° TiAlSiN  
 Punta a centrare NC 90° TiAlSiN  
 NC spotting drill 90° TiAlSiN

Art. 50811

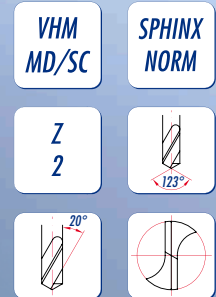
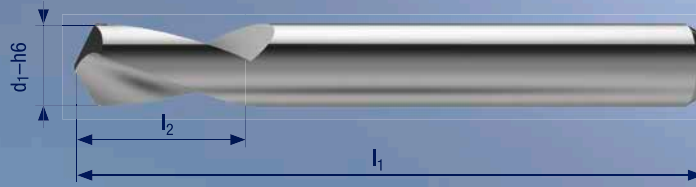


d <sub>1</sub> mm	l <sub>2</sub> mm	l <sub>1</sub> mm
2,00	8,50	25
3,00	9,50	32
4,00	10,50	40
5,00	16,00	50
6,00	16,00	50
8,00	20,00	60
10,00	22,00	70
12,00	22,00	70



NC-Anbohrer 123°  
 Foret à pointer NC 123°  
 Punta a centrare NC 123°  
 NC spotting drill 123°

Art. 50812

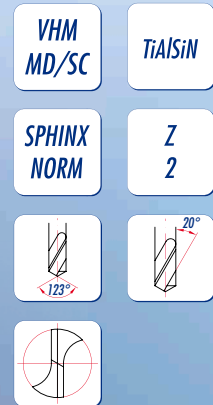
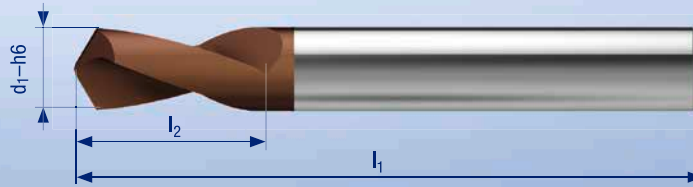


d <sub>1</sub> mm	l <sub>2</sub> mm	l <sub>1</sub> mm
2.00	8.50	25
3.00	9.50	32
4.00	10.50	40
5.00	16.00	50
6.00	16.00	50
8.00	20.00	60
10.00	22.00	70
12.00	22.00	70
14.00	25.00	75
16.00	25.00	75
20.00	35.00	75



NC-Anbohrer 123° TiAlSiN  
 Foret à pointer NC 123° TiAlSiN  
 Punta a centrare NC 123° TiAlSiN  
 NC spotting drill 123° TiAlSiN

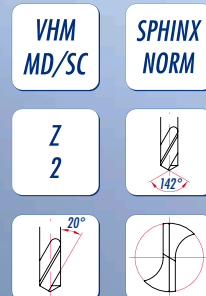
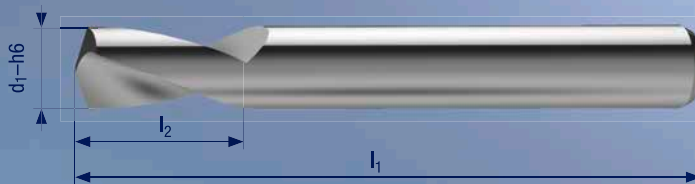
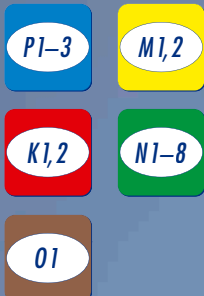
Art. 50813



d <sub>1</sub> mm	l <sub>2</sub> mm	l <sub>1</sub> mm
2.00	8.50	25
3.00	9.50	32
4.00	10.50	40
5.00	16.00	50
6.00	16.00	50
8.00	20.00	60
10.00	22.00	70

NC-Anbohrer 142°  
 Foret à pointer NC 142°  
 Punta a centrare NC 142°  
 NC spotting drill 142°

Art. 50814

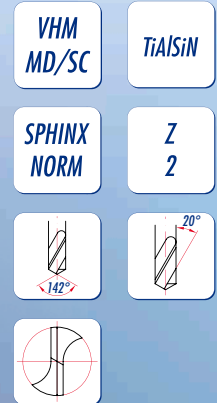
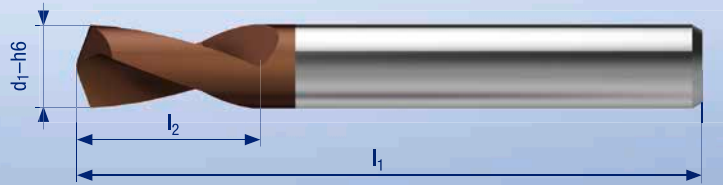
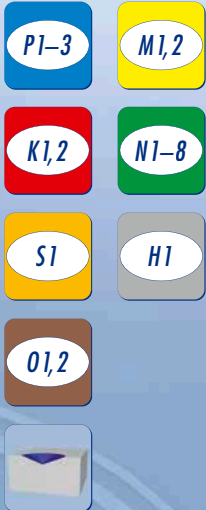


d <sub>1</sub> mm	l <sub>2</sub> mm	l <sub>1</sub> mm
2.00	8.50	25
3.00	9.50	32
4.00	10.50	40
5.00	16.00	50
6.00	16.00	50
8.00	20.00	60
10.00	22.00	70
12.00	22.00	70
14.00	25.00	75
16.00	25.00	75
20.00	35.00	75



NC-Anbohrer 142° TiAlSiN  
 Foret à pointer NC 142° TiAlSiN  
 Punta a centrare NC 142° TiAlSiN  
 NC spotting drill 142° TiAlSiN

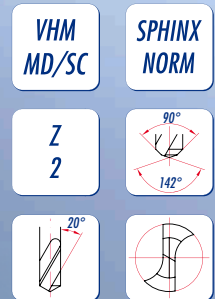
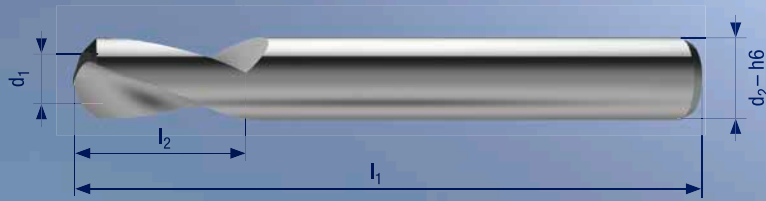
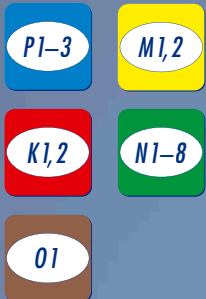
Art. 50815



d <sub>1</sub> mm	l <sub>2</sub> mm	l <sub>1</sub> mm
2,00	8,50	25
3,00	9,50	32
4,00	10,50	40
5,00	16,00	50
6,00	16,00	50
8,00	20,00	60
10,00	22,00	70

Zentriersenker 142°/90°  
 Foret à pointer et chanfreiner 142°/90°  
 Punta da centro e smusso 142°/90°  
 Spotting and chamfering drill 142°/90°

Art. 50818



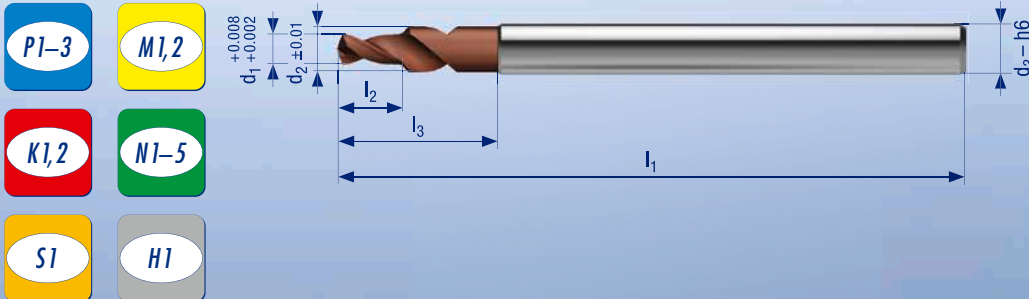
d <sub>1</sub> mm	l <sub>2</sub> mm	l <sub>1</sub> mm	d <sub>2</sub> mm
1.60	9.50	32	3.00
2.00	9.50	32	3.00
2.50	10.50	40	4.00
3.00	10.50	40	4.00
3.30	16.00	50	5.00
4.00	16.00	50	5.00
4.20	16.00	50	6.00
5.00	20.00	60	8.00
6.00	20.00	60	8.00
6.80	22.00	70	10.00
7.00	22.00	70	10.00
8.00	22.00	70	10.00
8.50	22.00	70	12.00
9.00	22.00	70	12.00
10.00	22.00	70	12.00
10.20	25.00	75	14.00
11.00	25.00	75	14.00
12.00	25.00	75	16.00





**Mikro Pilot-Stufenbohrer Plus**  
**Micro foret étagé Plus de préperçage**  
**Micro punta Plus a gradino per preforo**  
**Micro pilot step drill Plus**

Art. 56036



PI-3 M1,2  
K1,2 N1-5  
S1 H1

VHM MD/SC d<sub>1</sub>  
+ 0.008  
+ 0.002  
AlCrN SPHINX NORM  
Z  
2 90°  
140°



d <sub>1</sub>	d <sub>2</sub>	l <sub>2</sub>	l <sub>3</sub>	l <sub>1</sub>	d <sub>3</sub>
mm	mm	mm	mm	mm	mm
0.30	0.70	0.60	2.50	50	4.00
0.35	0.70	0.70	2.50	50	4.00
0.40	1.00	0.80	3.00	50	4.00
0.45	1.00	0.90	3.00	50	4.00
0.50	1.20	1.00	3.50	50	4.00
0.55	1.30	1.10	3.50	50	4.00
0.60	1.40	1.20	4.30	50	4.00
0.65	1.50	1.30	4.30	50	4.00
0.70	1.80	1.40	5.30	50	4.00
0.75	1.80	1.50	5.30	50	4.00
0.80	2.00	1.60	6.00	50	4.00
0.85	2.00	1.70	6.00	50	4.00
0.90	2.00	1.80	6.00	50	4.00
0.95	2.00	1.90	6.00	50	4.00
1.00	2.20	2.00	7.00	50	4.00
1.05	2.20	2.10	7.00	50	4.00
1.10	2.20	2.20	7.00	50	4.00
1.15	2.20	2.30	7.00	50	4.00
1.20	2.20	2.40	7.00	50	4.00
1.25	2.50	2.50	8.00	50	4.00
1.30	2.50	2.60	8.00	50	4.00
1.35	2.50	2.70	8.00	50	4.00
1.40	2.50	2.80	8.00	50	4.00
1.45	2.70	2.90	9.00	50	4.00
1.50	2.70	3.00	9.00	50	4.00
1.55	2.70	3.10	9.00	50	4.00
1.60	2.70	3.20	9.00	50	4.00
1.65	2.80	3.30	9.50	50	4.00
1.70	2.80	3.40	9.50	50	4.00
1.75	2.80	3.50	9.50	50	4.00
1.80	2.80	3.60	9.50	50	4.00
1.85	3.00	3.70	10.20	50	4.00
1.90	3.00	3.80	10.20	50	4.00
1.95	3.00	3.90	10.20	50	4.00
2.00	3.00	4.00	10.20	50	4.00
2.05	3.20	4.10	11.00	50	4.00

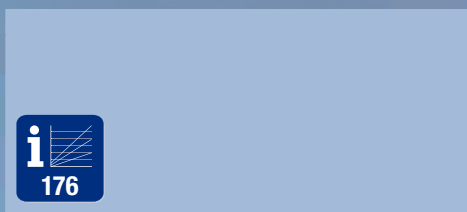
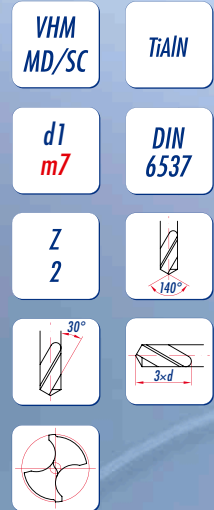
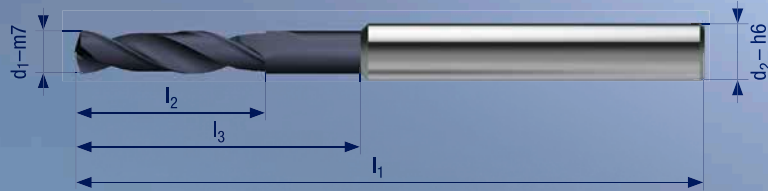
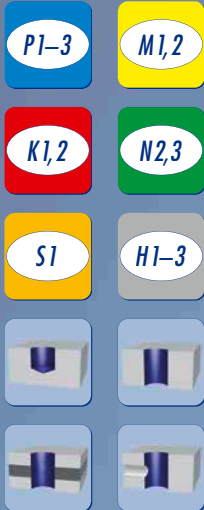
d <sub>1</sub>	d <sub>2</sub>	l <sub>2</sub>	l <sub>3</sub>	l <sub>1</sub>	d <sub>3</sub>
mm	mm	mm	mm	mm	mm
2.10	3.20	4.20	11.00	50	4.00
2.15	3.20	4.30	11.00	50	4.00
2.20	3.20	4.40	11.00	50	4.00
2.25	3.40	4.50	12.00	50	4.00
2.30	3.40	4.60	12.00	50	4.00
2.35	3.40	4.70	12.00	50	4.00
2.40	3.40	4.80	12.00	50	4.00
2.45	3.60	4.90	12.70	50	4.00
2.50	3.60	5.00	12.70	50	4.00
2.55	3.60	5.10	12.70	50	4.00
2.60	3.60	5.20	12.70	50	4.00
2.65	3.80	5.30	13.50	50	4.00
2.70	3.80	5.40	13.50	50	4.00
2.75	3.80	5.50	13.50	50	4.00
2.80	3.80	5.60	13.50	50	4.00
2.85	4.00	5.70		50	4.00
2.90	4.00	5.80		50	4.00
2.95	4.00	5.90		50	4.00
3.00	4.00	6.00		50	4.00
3.05	4.60	6.10	14.00	55	6.00
3.10	4.60	6.20	14.50	55	6.00
3.15	4.60	6.30	14.50	55	6.00
3.20	4.60	6.40	14.50	55	6.00
3.25	4.80	6.50	14.50	55	6.00
3.30	4.80	6.60	14.50	55	6.00
3.35	4.80	6.70	15.00	55	6.00
3.40	4.80	6.80	15.00	55	6.00
3.45	5.00	6.90	15.00	55	6.00
3.50	5.00	7.00	15.00	55	6.00
3.55	5.00	7.10	15.50	55	6.00
3.60	5.00	7.20	15.50	55	6.00
3.65	5.20	7.30	15.50	55	6.00
3.70	5.20	7.40	15.50	55	6.00
3.75	5.20	7.50	16.00	55	6.00
3.80	5.20	7.60	16.00	55	6.00
3.85	5.40	7.70	16.00	55	6.00

d <sub>1</sub>	d <sub>2</sub>	l <sub>2</sub>	l <sub>3</sub>	l <sub>1</sub>	d <sub>3</sub>
mm	mm	mm	mm	mm	mm
3.90	5.40	7.80	16.00	55	6.00
3.95	5.40	7.90	16.50	55	6.00
4.00	5.40	8.00	16.50	55	6.00
4.05	5.60	8.10	16.50	55	6.00
4.10	5.60	8.20	16.50	55	6.00
4.15	5.60	8.30	17.00	55	6.00
4.20	5.60	8.40	17.00	55	6.00
4.25	5.80	8.50	17.00	64	8.00
4.30	5.80	8.60	17.00	64	8.00
4.35	5.80	8.70	17.50	64	8.00
4.40	5.80	8.80	17.50	64	8.00
4.45	6.00	8.90	17.50	64	8.00
4.50	6.00	9.00	18.00	64	8.00
4.55	6.00	9.10	18.00	64	8.00
4.60	6.00	9.20	18.00	64	8.00
4.65	6.20	9.30	18.50	64	8.00
4.70	6.20	9.40	18.50	64	8.00
4.75	6.20	9.50	18.50	64	8.00
4.80	6.20	9.60	19.00	64	8.00
4.85	6.40	9.70	19.00	64	8.00
4.90	6.40	9.80	19.00	64	8.00
4.95	6.40	9.90	19.50	64	8.00
5.00	6.40	10.00	19.50	64	8.00
5.05	6.60	10.10	19.50	64	8.00
5.10	6.60	10.20	20.00	64	8.00
5.15	6.60	10.30	20.00	64	8.00
5.20	6.60	10.40	20.00	64	8.00
5.25	6.80	10.50	20.50	64	8.00
5.30	6.80	10.60	20.50	64	8.00
5.35	6.80	10.70	20.50	64	8.00
5.40	6.80	10.80	21.00	64	8.00
5.45	7.00	10.90	21.00	64	8.00
5.50	7.00	11.00	21.00	64	8.00
5.55	7.00	11.10	21.50	64	8.00
5.60	7.00	11.20	21.50	64	8.00
5.65	7.20	11.30	21.50	64	8.00

d <sub>1</sub>	d <sub>2</sub>	l <sub>2</sub>	l <sub>3</sub>	l <sub>1</sub>	d <sub>3</sub>
mm	mm	mm	mm	mm	mm
5.70	7.20	11.40	22.00	64	8.00
5.75	7.20	11.50	22.00	64	8.00
5.80	7.20	11.60	22.00	64	8.00
5.85	7.40	11.70	22.50	64	8.00
5.90	7.40	11.80	22.50	64	8.00
5.95	7.40	11.90	22.50	64	8.00
6.00	7.40	12.00	23.00	64	8.00

**Spiralbohrer Fastcut Plus**  
**Foret hélicoïdal Fastcut Plus**  
**Punta elicoidal Fastcut Plus**  
**Twist drill Fastcut Plus**

Art. 50950



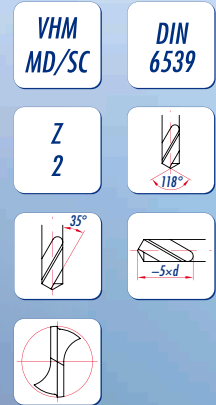
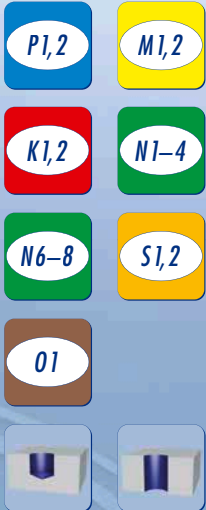
d <sub>1</sub> mm	l <sub>2</sub> mm	l <sub>3</sub> mm	l <sub>1</sub> mm	d <sub>2</sub> mm
3.00	14.00	20.00	62	6.00
3.10	14.00	20.00	62	6.00
3.20	14.00	20.00	62	6.00
3.30	14.00	20.00	62	6.00
3.40	14.00	20.00	62	6.00
3.50	14.00	20.00	62	6.00
3.60	14.00	20.00	62	6.00
3.70	14.00	20.00	62	6.00
3.80	17.00	24.00	66	6.00
3.90	17.00	24.00	66	6.00
4.00	17.00	24.00	66	6.00
4.10	17.00	24.00	66	6.00
4.20	17.00	24.00	66	6.00
4.30	17.00	24.00	66	6.00
4.40	17.00	24.00	66	6.00
4.50	17.00	24.00	66	6.00
4.60	17.00	24.00	66	6.00
4.70	17.00	24.00	66	6.00
4.80	20.00	28.00	66	6.00
4.90	20.00	28.00	66	6.00
5.00	20.00	28.00	66	6.00
5.10	20.00	28.00	66	6.00
5.20	20.00	28.00	66	6.00
5.30	20.00	28.00	66	6.00
5.40	20.00	28.00	66	6.00
5.50	20.00	28.00	66	6.00
5.60	20.00	28.00	66	6.00
5.70	20.00	28.00	66	6.00
5.80	20.00	28.00	66	6.00
5.90	20.00	28.00	66	6.00
6.00	20.00	28.00	66	6.00
6.10	24.00	34.00	79	8.00
6.20	24.00	34.00	79	8.00
6.30	24.00	34.00	79	8.00
6.40	24.00	34.00	79	8.00
6.50	24.00	34.00	79	8.00
6.60	24.00	34.00	79	8.00
6.70	24.00	34.00	79	8.00

d <sub>1</sub> mm	l <sub>2</sub> mm	l <sub>3</sub> mm	l <sub>1</sub> mm	d <sub>2</sub> mm
6.80	24.00	34.00	79	8.00
6.90	24.00	34.00	79	8.00
7.00	24.00	34.00	79	8.00
7.10	29.00	41.00	79	8.00
7.20	29.00	41.00	79	8.00
7.30	29.00	41.00	79	8.00
7.40	29.00	41.00	79	8.00
7.50	29.00	41.00	79	8.00
7.60	29.00	41.00	79	8.00
7.70	29.00	41.00	79	8.00
7.80	29.00	41.00	79	8.00
7.90	29.00	41.00	79	8.00
8.00	29.00	41.00	79	8.00
8.10	35.00	47.00	89	10.00
8.20	35.00	47.00	89	10.00
8.30	35.00	47.00	89	10.00
8.40	35.00	47.00	89	10.00
8.50	35.00	47.00	89	10.00
8.60	35.00	47.00	89	10.00
8.70	35.00	47.00	89	10.00
8.80	35.00	47.00	89	10.00
8.90	35.00	47.00	89	10.00
9.00	35.00	47.00	89	10.00
9.10	35.00	47.00	89	10.00
9.20	35.00	47.00	89	10.00
9.30	35.00	47.00	89	10.00
9.40	35.00	47.00	89	10.00
9.50	35.00	47.00	89	10.00
9.60	35.00	47.00	89	10.00
9.70	35.00	47.00	89	10.00
9.80	35.00	47.00	89	10.00
9.90	35.00	47.00	89	10.00
10.00	35.00	47.00	89	10.00
10.10	40.00	55.00	102	12.00
10.20	40.00	55.00	102	12.00
10.30	40.00	55.00	102	12.00
10.40	40.00	55.00	102	12.00
10.50	40.00	55.00	102	12.00

d <sub>1</sub> mm	l <sub>2</sub> mm	l <sub>3</sub> mm	l <sub>1</sub> mm	d <sub>2</sub> mm
10.60	40.00	55.00	102	12.00
10.70	40.00	55.00	102	12.00
10.80	40.00	55.00	102	12.00
10.90	40.00	55.00	102	12.00
11.00	40.00	55.00	102	12.00
11.10	40.00	55.00	102	12.00
11.20	40.00	55.00	102	12.00
11.30	40.00	55.00	102	12.00
11.40	40.00	55.00	102	12.00
11.50	40.00	55.00	102	12.00
11.60	40.00	55.00	102	12.00
11.70	40.00	55.00	102	12.00
11.80	40.00	55.00	102	12.00
11.90	40.00	55.00	102	12.00
12.00	40.00	55.00	102	12.00
12.50	43.00	60.00	107	14.00
12.80	43.00	60.00	107	14.00
13.00	43.00	60.00	107	14.00
13.50	43.00	60.00	107	14.00
13.80	43.00	60.00	107	14.00
14.00	43.00	60.00	107	14.00
14.50	45.00	65.00	115	16.00
14.80	45.00	65.00	115	16.00
15.00	45.00	65.00	115	16.00
15.50	45.00	65.00	115	16.00
15.80	45.00	65.00	115	16.00
16.00	45.00	65.00	115	16.00
16.50	51.00	73.00	123	18.00
17.00	51.00	73.00	123	18.00
17.50	51.00	73.00	123	18.00
18.00	51.00	73.00	123	18.00
18.50	55.00	79.00	131	20.00
18.80	55.00	79.00	131	20.00
19.00	55.00	79.00	131	20.00
19.50	55.00	79.00	131	20.00
19.80	55.00	79.00	131	20.00
20.00	55.00	79.00	131	20.00

**Spiralbohrer Posicut**  
**Foret hélicoïdal Posicut**  
**Punta elicoidale Posicut**  
**Twist drill Posicut**

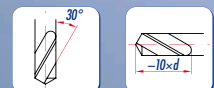
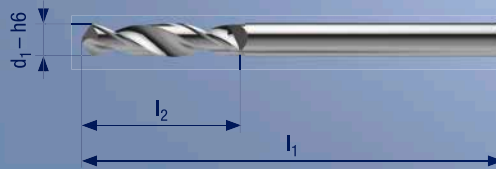
**Art. 50830**



d <sub>1</sub> mm	l <sub>2</sub> mm	l <sub>1</sub> mm	d <sub>1</sub> mm	l <sub>2</sub> mm	l <sub>1</sub> mm	d <sub>1</sub> mm	l <sub>2</sub> mm	l <sub>1</sub> mm
0.30	1.50	19	4.10	21.50	55	7.90	36.00	79
0.40	2.30	19	4.20	21.50	55	8.00	36.00	79
0.50	2.80	20	4.30	23.00	58	8.10	36.00	79
0.60	3.30	21	4.40	23.00	58	8.20	36.00	79
0.70	4.30	23	4.50	23.00	58	8.30	36.00	79
0.80	4.80	24	4.60	23.00	58	8.40	36.00	79
0.90	5.30	25	4.70	23.00	58	8.50	36.00	79
1.00	5.70	26	4.80	25.00	62	8.60	39.00	84
1.10	6.70	28	4.90	25.00	62	8.70	39.00	84
1.20	7.70	30	5.00	25.00	62	8.80	39.00	84
1.30	7.70	30	5.10	25.00	62	8.90	39.00	84
1.40	8.70	32	5.20	25.00	62	9.00	39.00	84
1.50	8.70	32	5.30	25.00	62	9.10	39.00	84
1.60	9.70	34	5.40	27.00	66	9.20	39.00	84
1.70	9.70	34	5.50	27.00	66	9.30	39.00	84
1.80	10.70	36	5.60	27.00	66	9.40	39.00	84
1.90	10.70	36	5.70	27.00	66	9.50	39.00	84
2.00	11.50	38	5.80	27.00	66	9.60	41.00	89
2.10	11.50	38	5.90	27.00	66	9.70	41.00	89
2.20	12.50	40	6.00	27.00	66	9.80	41.00	89
2.30	12.50	40	6.10	30.00	70	9.90	41.00	89
2.40	13.50	43	6.20	30.00	70	10.00	41.00	89
2.50	13.50	43	6.30	30.00	70	10.20	41.00	89
2.60	13.50	43	6.40	30.00	70	10.50	41.00	89
2.70	15.50	46	6.50	30.00	70	11.00	45.00	95
2.80	15.50	46	6.60	30.00	70	11.50	45.00	95
2.90	15.50	46	6.70	30.00	70	12.00	49.00	102
3.00	15.50	46	6.80	33.00	74	12.50	49.00	102
3.10	17.50	49	6.90	33.00	74	13.00	49.00	102
3.20	17.50	49	7.00	33.00	74	13.50	52.00	107
3.30	17.50	49	7.10	33.00	74	14.00	52.00	107
3.40	19.50	52	7.20	33.00	74	15.00	54.00	111
3.50	19.50	52	7.30	33.00	74	16.00	56.00	115
3.60	19.50	52	7.40	33.00	74	17.00	58.00	119
3.70	19.50	52	7.50	33.00	74	18.00	60.00	123
3.80	21.50	55	7.60	36.00	79	19.00	62.00	127
3.90	21.50	55	7.70	36.00	79	20.00	64.00	131
4.00	21.50	55	7.80	36.00	79			

Spiralbohrer Spirec  
 Foret hélicoïdal Spirec  
 Punta elicoidale Spirec  
 Twist drill Spirec

Art. 50838



d <sub>1</sub> mm	l <sub>2</sub> mm	l <sub>1</sub> mm
0.30	3.70	38
0.35	3.70	38
0.40	4.70	38
0.45	4.70	38
0.50	5.70	38
0.55	5.70	38
0.60	7.70	38
0.65	7.70	38
0.70	9.70	38
0.75	9.70	38
0.80	11.70	38
0.85	11.70	38
0.90	14.70	38
0.95	14.70	38
1.00	14.70	38
1.05	14.70	38
1.10	14.70	38
1.15	14.70	38
1.20	14.70	38
1.25	14.70	38
1.30	14.70	38
1.35	14.70	38
1.40	14.70	38
1.45	14.70	38
1.50	14.70	38
1.55	14.70	38
1.60	14.70	38
1.65	14.70	38
1.70	14.70	38
1.75	14.70	38
1.80	14.70	38
1.85	14.70	38
1.90	14.70	38
1.95	14.70	38
2.00	14.70	38
2.05	14.70	38
2.10	14.70	38
2.15	14.70	38

d <sub>1</sub> mm	l <sub>2</sub> mm	l <sub>1</sub> mm
2.20	14.70	38
2.25	14.70	38
2.30	14.70	38
2.35	14.70	38
2.40	14.70	38
2.45	14.70	38
2.50	14.70	38
2.55	14.70	38
2.60	14.70	38
2.65	14.70	38
2.70	14.70	38
2.75	14.70	38
2.80	14.70	38
2.85	14.70	38
2.90	14.70	38
2.95	14.70	38
3.00	14.70	38
3.05	14.70	38
3.10	14.70	38
3.15	14.70	38
3.175	14.70	38
3.20	19.70	50
3.30	19.70	50
3.40	19.70	50
3.50	19.70	50
3.60	19.70	50
3.70	19.70	50
3.80	19.70	50
3.90	19.70	50
4.00	19.70	50
4.10	24.70	50
4.20	24.70	50
4.30	24.70	50
4.40	24.70	50
4.50	24.70	50
4.60	24.70	50
4.70	24.70	50
4.80	24.70	50

d <sub>1</sub> mm	l <sub>2</sub> mm	l <sub>1</sub> mm
4.90	24.70	50
5.00	24.70	50
5.10	24.70	50
5.20	24.70	50
5.30	24.70	50
5.40	24.70	50
5.50	24.70	50
5.60	24.70	50
5.70	24.70	50
5.80	24.70	50
5.90	24.70	50
6.00	24.70	50



**Spiralbohrer Spicut**  
**Foret hélicoïdal Spicut**  
**Punta elicoidal Spicut**  
**Twist drill Spicut**

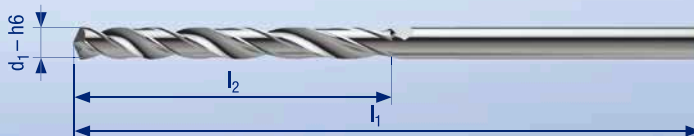
**Art. 50820**



**P1,2**

**K1,2**

**N2,3,5**



**VHM**  
**MD/SC**

**DIN**  
**338**

**Z**  
**2**



d <sub>1</sub> mm	l <sub>2</sub> mm	l <sub>1</sub> mm
0.70	8	28
0.80	9	30
0.90	10	32
1.00	11	34
1.10	13	36
1.20	15	38
1.30	15	38
1.40	17	40
1.50	17	40
1.60	19	43
1.70	19	43
1.80	21	46
1.90	21	46
2.00	23	49
2.10	23	49
2.20	26	53
2.30	26	53
2.40	29	57
2.50	29	57
2.60	29	57
2.70	31	61
2.80	31	61
2.90	31	61
3.00	31	61
3.10	34	65
3.20	34	65
3.30	34	65
3.40	37	70
3.50	37	70
3.60	37	70
3.70	37	70
3.80	41	75
3.90	41	75
4.00	41	75
4.10	41	75
4.20	41	75
4.30	45	80
4.40	45	80

d <sub>1</sub> mm	l <sub>2</sub> mm	l <sub>1</sub> mm
4.50	45	80
4.60	45	80
4.70	45	80
4.80	50	86
4.90	50	86
5.00	50	86
5.10	50	86
5.20	50	86
5.30	50	86
5.40	55	93
5.50	55	93
5.60	55	93
5.70	55	93
5.80	55	93
5.90	55	93
6.00	55	93
6.10	61	101
6.20	61	101
6.30	61	101
6.40	61	101
6.50	61	101
6.60	61	101
6.70	61	101
6.80	67	109
6.90	67	109
7.00	67	109
7.10	67	109
7.20	67	109
7.30	67	109
7.40	67	109
7.50	67	109
7.60	73	117
7.70	73	117
7.80	73	117
7.90	73	117
8.00	73	117
8.10	73	117
8.20	73	117

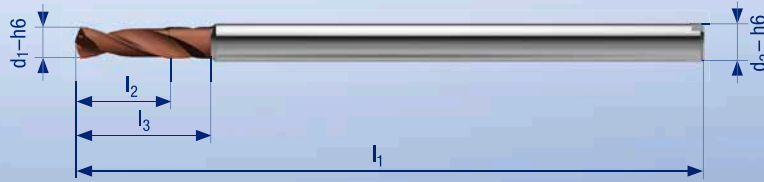
d <sub>1</sub> mm	l <sub>2</sub> mm	l <sub>1</sub> mm
8.30	73	117
8.40	73	117
8.50	73	117
8.60	78	125
8.70	78	125
8.80	78	125
8.90	78	125
9.00	78	125
9.10	78	125
9.20	78	125
9.30	78	125
9.40	78	125
9.50	78	125
9.60	84	133
9.70	84	133
9.80	84	133
9.90	84	133
10.00	84	133
10.20	84	133
10.50	84	133
11.00	91	142
11.50	91	142
12.00	98	151
12.50	98	151
13.00	98	151
13.50	105	160
14.00	105	160





**Hochleistungsbohrer Phoenix 3 × d**  
**Foret à grand rendement Phoenix 3 × d**  
**Punta ad alto rendimento Phoenix 3 × d**  
**High performance drill Phoenix 3 × d**

Art. 50938



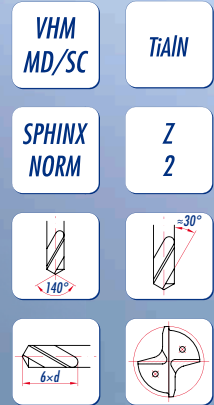
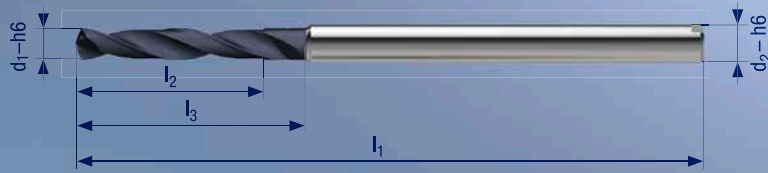
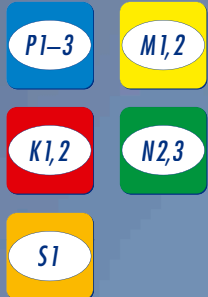
d <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	l <sub>1</sub>	d <sub>2</sub>
mm	mm	mm	mm	mm
1.00	3.00	5.00	38	3.00
1.10	3.30	5.50	38	3.00
1.20	3.60	5.50	38	3.00
1.30	3.90	6.00	38	3.00
1.40	4.20	6.00	38	3.00
1.50	4.50	6.50	38	3.00
1.60	4.80	7.50	38	3.00
1.70	5.10	8.00	38	3.00
1.80	5.40	8.50	38	3.00
1.90	5.70	8.50	38	3.00
2.00	6.00	9.00	38	3.00
2.10	6.30	9.50	38	3.00
2.20	6.60	9.50	38	3.00
2.30	6.90	10.00	38	3.00
2.40	7.20	10.00	38	3.00
2.50	7.50	10.50	50	3.00
2.60	7.80	11.00	50	3.00
2.70	8.10	11.50	50	3.00
2.80	8.40	11.50	50	3.00
2.90	8.70	12.00	50	3.00
3.00	9.00	12.50	50	3.00
3.10	9.30	13.50	55	6.00
3.20	9.60	13.50	55	6.00
3.30	9.90	13.50	55	6.00
3.40	10.20	14.00	55	6.00
3.50	10.50	14.50	55	6.00
3.60	10.80	15.00	55	6.00
3.70	11.10	15.00	55	6.00
3.80	11.40	15.50	55	6.00
3.90	11.70	15.50	55	6.00
4.00	12.00	16.00	55	6.00
4.10	12.30	18.50	60	6.00
4.20	12.60	18.50	60	6.00
4.30	12.90	19.00	60	6.00
4.40	13.20	19.00	60	6.00
4.50	13.50	20.50	60	6.00
4.60	13.80	22.00	60	6.00
4.70	14.10	22.00	60	6.00

d <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	l <sub>1</sub>	d <sub>2</sub>
mm	mm	mm	mm	mm
4.80	14.40	22.50	60	6.00
4.90	14.70	22.50	60	6.00
5.00	15.00	23.00	60	6.00
5.10	15.30	23.50	64	6.00
5.20	15.60	23.50	64	6.00
5.30	15.90	24.00	64	6.00
5.40	16.20	24.00	64	6.00
5.50	16.50	24.50	64	6.00
5.60	16.80	24.50	64	6.00
5.70	17.10	25.50	64	6.00
5.80	17.40	25.50	64	6.00
5.90	17.70	25.50	64	6.00
6.00	18.00	27.00	64	6.00
6.10	18.30	27.50	68	8.00
6.20	18.60	27.50	68	8.00
6.30	18.90	28.00	68	8.00
6.40	19.20	28.00	68	8.00
6.50	19.50	28.50	68	8.00
6.60	19.80	29.00	68	8.00
6.70	20.10	29.50	68	8.00
6.80	20.40	29.50	68	8.00
6.90	20.70	30.00	68	8.00
7.00	21.00	31.00	68	8.00
7.10	21.30	31.50	72	8.00
7.20	21.60	31.50	72	8.00
7.30	21.90	32.00	72	8.00
7.40	22.20	32.00	72	8.00
7.50	22.50	32.50	72	8.00
7.60	22.80	32.50	72	8.00
7.70	23.10	33.50	72	8.00
7.80	23.40	33.50	72	8.00
7.90	23.70	34.00	72	8.00
8.00	24.00	34.00	72	8.00
8.10	24.30	35.50	79	10.00
8.20	24.60	35.50	79	10.00
8.30	24.90	36.00	79	10.00
8.40	25.20	36.00	79	10.00
8.50	25.50	36.50	79	10.00

d <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	l <sub>1</sub>	d <sub>2</sub>
mm	mm	mm	mm	mm
8.60	25.80	37.00	79	10.00
8.70	26.10	37.00	79	10.00
8.80	26.40	37.50	79	10.00
8.90	26.70	37.50	79	10.00
9.00	27.00	38.00	79	10.00
9.10	27.30	38.50	85	10.00
9.20	27.60	38.50	85	10.00
9.30	27.90	39.00	85	10.00
9.40	28.20	39.00	85	10.00
9.50	28.50	40.00	85	10.00
9.60	28.80	40.00	85	10.00
9.70	29.10	40.50	85	10.00
9.80	29.40	40.50	85	10.00
9.90	29.70	41.00	85	10.00
10.00	30.00	42.00	85	10.00
10.10	30.30	42.50	93	12.00
10.20	30.60	42.50	93	12.00
10.30	30.90	43.00	93	12.00
10.40	31.20	43.00	93	12.00
10.50	31.50	43.50	93	12.00
10.60	31.80	44.00	93	12.00
10.70	32.10	44.00	93	12.00
10.80	32.40	44.50	93	12.00
10.90	32.70	44.50	93	12.00
11.00	33.00	46.00	93	12.00
11.10	33.30	46.50	97	12.00
11.20	33.60	46.50	97	12.00
11.30	33.90	47.00	97	12.00
11.40	34.20	47.00	97	12.00
11.50	34.50	48.00	97	12.00
11.60	34.80	48.00	97	12.00
11.70	35.10	48.00	97	12.00
11.80	35.40	48.50	97	12.00
11.90	35.70	48.50	97	12.00
12.00	36.00	50.00	97	12.00
12.50	37.80	53.00	100	14.00
12.70	38.10	53.00	100	14.00

**Hochleistungsbohrer Phoenix 6 × d**  
**Foret à grand rendement Phoenix 6 × d**  
**Punta ad alto rendimento Phoenix 6 × d**  
**High performance drill Phoenix 6 × d**

**Art. 50940**



d <sub>1</sub> mm	l <sub>2</sub> mm	l <sub>3</sub> mm	l <sub>1</sub> mm	d <sub>2</sub> mm
1.00	6.00	8.00	38	3.00
1.05	6.30	8.30	38	3.00
1.10	6.60	8.60	38	3.00
1.15	6.90	8.90	38	3.00
1.20	7.20	9.20	38	3.00
1.25	7.50	9.50	38	3.00
1.30	7.80	9.80	38	3.00
1.35	8.10	10.10	38	3.00
1.40	8.40	10.40	38	3.00
1.45	8.70	10.70	38	3.00
1.50	9.00	11.00	38	3.00
1.55	9.30	11.30	38	3.00
1.60	9.60	12.60	38	3.00
1.65	9.90	12.90	38	3.00
1.70	10.20	13.20	38	3.00
1.75	10.50	13.50	38	3.00
1.80	10.80	13.80	38	3.00
1.85	11.10	14.10	38	3.00
1.90	11.40	14.40	38	3.00
1.95	11.70	14.70	38	3.00
2.00	12.00	15.00	50	3.00
2.05	12.30	15.30	50	3.00
2.10	12.60	15.60	50	3.00
2.15	12.90	15.90	50	3.00
2.20	13.20	16.20	50	3.00
2.25	13.50	16.50	50	3.00
2.30	13.80	16.80	50	3.00
2.35	14.10	17.10	50	3.00
2.40	14.40	17.40	50	3.00
2.45	14.70	17.70	50	3.00
2.50	15.00	18.00	50	3.00
2.55	15.30	18.30	50	3.00
2.60	15.60	18.60	50	3.00
2.65	15.90	18.90	50	3.00
2.70	16.20	19.20	50	3.00
2.75	16.50	19.50	50	3.00
2.80	16.80	19.80	50	3.00
2.85	17.10	20.10	50	3.00

d <sub>1</sub> mm	l <sub>2</sub> mm	l <sub>3</sub> mm	l <sub>1</sub> mm	d <sub>2</sub> mm
2.90	17.40	20.40	50	3.00
2.95	17.70	20.70	50	3.00
3.00	18.00		50	3.00
3.05	18.30	22.30	66	6.00
3.10	18.60	22.60	66	6.00
3.15	18.90	22.90	66	6.00
3.20	19.20	23.20	66	6.00
3.25	19.50	23.50	66	6.00
3.30	19.80	23.80	66	6.00
3.35	20.10	24.10	66	6.00
3.40	20.40	24.40	66	6.00
3.45	20.70	24.70	66	6.00
3.50	21.00	25.00	66	6.00
3.55	21.30	25.30	66	6.00
3.60	21.60	25.60	66	6.00
3.65	21.90	25.90	66	6.00
3.70	22.20	26.20	66	6.00
3.75	22.50	26.50	66	6.00
3.80	22.80	26.80	66	6.00
3.85	23.10	27.10	66	6.00
3.90	23.40	27.40	66	6.00
3.95	23.70	27.70	66	6.00
4.00	24.00	28.00	66	6.00
4.05	24.30	30.20	79	6.00
4.10	24.60	30.50	79	6.00
4.15	24.90	30.80	79	6.00
4.20	25.20	31.00	79	6.00
4.25	25.50	31.50	79	6.00
4.30	25.80	32.00	79	6.00
4.35	26.10	32.50	79	6.00
4.40	26.40	32.50	79	6.00
4.45	26.70	33.00	79	6.00
4.50	27.00	33.00	79	6.00
4.55	27.30	35.50	79	6.00
4.60	27.60	35.50	79	6.00
4.65	27.90	36.00	79	6.00
4.70	28.20	36.00	79	6.00
4.75	28.50	37.00	79	6.00

d <sub>1</sub> mm	l <sub>2</sub> mm	l <sub>3</sub> mm	l <sub>1</sub> mm	d <sub>2</sub> mm
4.80	28.80	37.00	79	6.00
4.85	29.10	37.50	79	6.00
4.90	29.40	37.50	79	6.00
4.95	29.70	38.00	79	6.00
5.00	30.00	38.00	79	6.00
5.05	30.30	38.50	79	6.00
5.10	30.60	38.50	79	6.00
5.15	30.90	39.00	79	6.00
5.20	31.20	39.00	79	6.00
5.25	31.50	40.00	79	6.00
5.30	31.80	40.00	79	6.00
5.35	32.10	40.50	79	6.00
5.40	32.40	40.50	79	6.00
5.45	32.70	41.00	79	6.00
5.50	33.00	41.00	79	6.00
5.55	33.30	41.50	81	6.00
5.60	33.60	41.50	81	6.00
5.65	33.90	42.00	81	6.00
5.70	34.20	42.00	81	6.00
5.75	34.50	43.00	81	6.00
5.80	34.80	43.00	81	6.00
5.85	35.10	43.50	81	6.00
5.90	35.40	43.50	81	6.00
5.95	35.70	44.00	81	6.00
6.00	36.00		81	6.00
6.10	36.60	45.50	89	8.00
6.20	37.20	46.00	89	8.00
6.30	37.80	47.00	89	8.00
6.40	38.40	47.50	89	8.00
6.50	39.00	48.00	89	8.00
6.60	39.60	48.50	89	8.00
6.70	40.20	49.00	89	8.00
6.80	40.80	50.00	89	8.00
6.90	41.40	50.50	89	8.00
7.00	42.00	52.00	89	8.00
7.10	42.60	52.50	95	8.00
7.20	43.20	53.50	95	8.00
7.30	43.80	54.00	95	8.00

d <sub>1</sub> mm	l <sub>2</sub> mm	l <sub>3</sub> mm	l <sub>1</sub> mm	d <sub>2</sub> mm
7.40	44.40	54.50	95	8.00
7.50	45.00	55.00	95	8.00
7.60	45.60	55.50	95	8.00
7.70	46.20	56.00	95	8.00
7.80	46.80	57.00	95	8.00
7.90	47.40	57.50	95	8.00
8.00	48.00	58.00	95	8.00
8.10	48.60	59.50	106	10.00
8.20	49.20	60.00	106	10.00
8.30	49.80	61.00	106	10.00
8.40	50.40	61.50	106	10.00
8.50	51.00	62.00	106	10.00
8.60	51.60	62.50	106	10.00
8.70	52.20	63.00	106	10.00
8.80	52.80	64.00	106	10.00
8.90	53.40	64.50	106	10.00
9.00	54.00	65.00	106	10.00
9.10	54.60	65.50	113	10.00
9.20	55.20	66.00	113	10.00
9.30	55.80	67.00	113	10.00
9.40	56.40	67.50	113	10.00
9.50	57.00	68.00	113	10.00
9.60	57.60	68.50	113	10.00
9.70	58.20	69.00	113	10.00
9.80	58.80	70.00	113	10.00
9.90	59.40	70.50	113	10.00
10.00	60.00	72.00	113	10.00
10.10	60.60	72.50	125	12.00
10.20	61.20	73.00	125	12.00
10.30	61.80	74.00	125	12.00
10.40	62.40	74.50	125	12.00
10.50	63.00	75.00	125	12.00
10.60	63.60	75.50	125	12.00
10.70	64.20	76.00	125	12.00
10.80	64.80	77.00	125	12.00
10.90	65.40	77.50	125	12.00
11.00	66.00	79.00	125	12.00
11.10	66.60	79.50	132	12.00



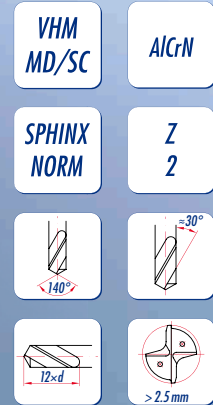
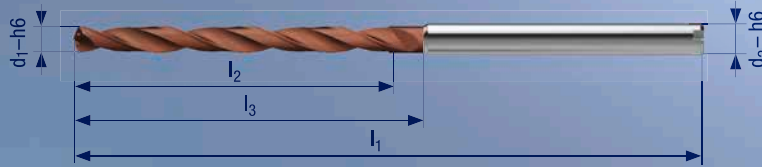
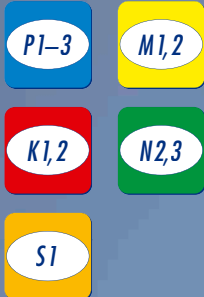
d <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	l <sub>1</sub>	d <sub>2</sub>
mm	mm	mm	mm	mm
11.20	67.20	80.00	132	12.00
11.30	67.80	81.00	132	12.00
11.40	68.40	81.50	132	12.00
11.50	69.00	82.00	132	12.00
11.60	69.60	82.50	132	12.00
11.70	70.20	83.00	132	12.00
11.80	70.80	84.00	132	12.00
11.90	71.40	84.50	132	12.00
12.00	72.00	86.00	132	12.00
12.50	75.00	90.00	140	14.00
12.70	76.20	91.00	140	14.00





**Hochleistungsbohrer Phoenix 12 × d**  
**Foret à grand rendement Phoenix 12 × d**  
**Punta ad alto rendimento Phoenix 12 × d**  
**High performance drill Phoenix 12 × d**

**Art. 50942**



d <sub>1</sub> mm	l <sub>2</sub> mm	l <sub>3</sub> mm	l <sub>1</sub> mm	d <sub>2</sub> mm
1.00	12.00	14.00	50	3.00
1.10	13.20	15.50	50	3.00
1.20	14.40	16.50	50	3.00
1.30	15.60	17.50	50	3.00
1.40	16.80	19.00	50	3.00
1.50	18.00	21.00	50	3.00
1.60	19.20	22.50	50	3.00
1.70	20.40	23.50	50	3.00
1.80	21.60	24.50	50	3.00
1.90	22.80	26.00	55	3.00
2.00	24.00	27.00	55	3.00
2.10	25.20	28.50	55	3.00
2.20	26.40	29.50	55	3.00
2.30	27.60	30.50	55	3.00
2.40	28.80	32.00	55	3.00
2.50	30.00	33.00	60	3.00
2.60	31.20	34.50	60	3.00
2.70	32.40	35.50	60	3.00
2.80	33.60	36.50	60	3.00
2.90	34.80	38.00	60	3.00
3.00	36.00	40.00	60	3.00
3.10	37.20	41.50	80	6.00
3.20	38.40	42.50	80	6.00
3.30	39.60	43.50	80	6.00
3.40	40.80	45.00	85	6.00
3.50	42.00	47.00	85	6.00
3.60	43.20	48.50	85	6.00
3.70	44.40	49.50	90	6.00
3.80	45.60	50.50	90	6.00
3.90	46.80	52.00	90	6.00
4.00	48.00	53.00	90	6.00
4.10	49.20	55.50	105	6.00
4.20	50.40	56.50	105	6.00
4.30	51.60	57.50	105	6.00
4.40	52.80	59.00	105	6.00
4.50	54.00	60.00	105	6.00
4.60	55.20	63.50	105	6.00
4.70	56.40	64.50	105	6.00

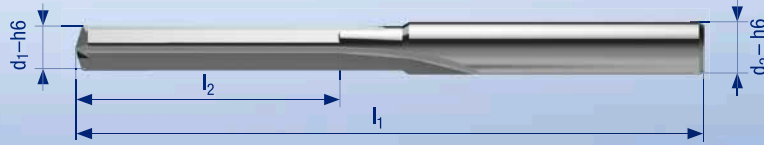
d <sub>1</sub> mm	l <sub>2</sub> mm	l <sub>3</sub> mm	l <sub>1</sub> mm	d <sub>2</sub> mm
4.80	57.60	65.50	105	6.00
4.90	58.80	67.00	105	6.00
5.00	60.00	68.00	105	6.00
5.10	61.20	69.50	118	6.00
5.20	62.40	70.50	118	6.00
5.30	63.60	71.50	118	6.00
5.40	64.80	73.00	118	6.00
5.50	66.00	74.00	118	6.00
5.60	67.20	75.50	118	6.00
5.70	68.40	76.50	118	6.00
5.80	69.60	77.50	118	6.00
5.90	70.80	79.00	118	6.00
6.00	72.00	80.00	118	6.00
6.10	73.20	82.50	136	8.00
6.20	74.40	83.50	136	8.00
6.30	75.60	84.50	136	8.00
6.40	76.80	86.00	136	8.00
6.50	78.00	87.50	136	8.00
6.60	79.20	88.50	136	8.00
6.70	80.40	89.50	136	8.00
6.80	81.60	90.50	136	8.00
6.90	82.80	92.00	136	8.00
7.00	84.00	94.00	136	8.00
7.10	85.20	95.50	148	8.00
7.20	86.40	96.50	148	8.00
7.30	87.60	97.50	148	8.00
7.40	88.80	99.00	148	8.00
7.50	90.00	100.00	148	8.00
7.60	91.20	101.50	148	8.00
7.70	92.40	102.50	148	8.00
7.80	93.60	103.50	148	8.00
7.90	94.80	105.00	148	8.00
8.00	96.00	106.00	148	8.00
8.10	97.20	108.50	162	10.00
8.20	98.40	109.50	162	10.00
8.30	99.60	110.50	162	10.00
8.40	100.80	112.00	162	10.00
8.50	102.00	113.00	162	10.00

d <sub>1</sub> mm	l <sub>2</sub> mm	l <sub>3</sub> mm	l <sub>1</sub> mm	d <sub>2</sub> mm
8.60	103.20	114.50	162	10.00
8.70	104.40	115.50	162	10.00
8.80	105.60	116.50	162	10.00
8.90	106.80	118.00	162	10.00
9.00	108.00	119.00	162	10.00
9.10	109.20	120.50	175	10.00
9.20	110.40	121.50	175	10.00
9.30	111.60	122.50	175	10.00
9.40	112.80	124.00	175	10.00
9.50	114.00	125.00	175	10.00
9.60	115.20	126.50	175	10.00
9.70	116.40	127.50	175	10.00
9.80	117.60	128.50	175	10.00
9.90	118.80	130.00	175	10.00
10.00	120.00	132.00	175	10.00
10.10	121.20	133.50	193	12.00
10.20	122.40	134.50	193	12.00
10.30	123.60	135.50	193	12.00
10.40	124.80	137.00	193	12.00
10.50	126.00	138.00	193	12.00
10.60	127.20	139.50	193	12.00
10.70	128.40	140.50	193	12.00
10.80	129.60	141.50	193	12.00
10.90	130.80	143.00	193	12.00
11.00	132.00	145.00	193	12.00
11.10	133.20	146.50	205	12.00
11.20	134.40	147.50	205	12.00
11.30	135.60	148.50	205	12.00
11.40	136.80	150.00	205	12.00
11.50	138.00	151.00	205	12.00
11.60	139.20	152.50	205	12.00
11.70	140.40	153.50	205	12.00
11.80	141.60	154.50	205	12.00
11.90	142.80	156.00	205	12.00
12.00	144.00	158.00	205	12.00
12.50	150.00	164.00	218	14.00
12.70	152.40	166.50	218	14.00



**Hochleistungsbohrer Quadro Plus 6 × d**  
**Foret à grand rendement Quadro Plus 6 × d**  
**Punta ad alto rendimento Quadro Plus 6 × d**  
**High performance drill Quadro Plus 6 × d**

Art. 52100

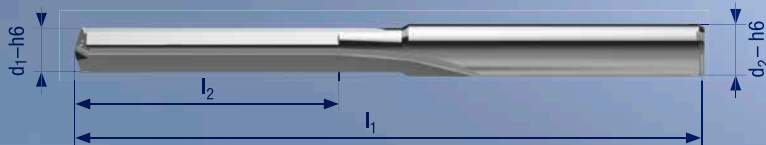


d <sub>1</sub> mm	l <sub>2</sub> mm	l <sub>1</sub> mm	d <sub>2</sub> mm
3.00	18.00	82	6.00
3.30	20.00	82	6.00
3.50	21.00	82	6.00
4.00	24.00	82	6.00
4.20	26.00	88	6.00
4.50	27.00	88	6.00
5.00	30.00	88	6.00
5.50	33.00	94	6.00
6.00	36.00	94	6.00
6.50	39.00	102	8.00
6.80	41.00	102	8.00
7.00	42.00	102	8.00
7.50	45.00	108	8.00
8.00	48.00	108	8.00
8.50	51.00	121	10.00
9.00	54.00	121	10.00
9.50	57.00	127	10.00
10.00	60.00	127	10.00
10.20	62.00	141	12.00
10.50	63.00	141	12.00
11.00	66.00	141	12.00
11.50	69.00	147	12.00
12.00	72.00	147	12.00
12.50	75.00	155	14.00
13.00	78.00	155	14.00
13.50	81.00	162	14.00
14.00	84.00	162	14.00
14.50	87.00	172	16.00
15.00	90.00	172	16.00
15.50	93.00	178	16.00
16.00	96.00	178	16.00
16.50	99.00	192	18.00
17.00	102.00	192	18.00
17.50	105.00	192	18.00
18.00	108.00	192	18.00
18.50	111.00	207	20.00
19.00	114.00	207	20.00
19.50	117.00	207	20.00

d <sub>1</sub> mm	l <sub>2</sub> mm	l <sub>1</sub> mm	d <sub>2</sub> mm
20.00	120.00	207	20.00

**Hochleistungsbohrer Quadro Plus 12×d**  
**Foret à grand rendement Quadro Plus 12×d**  
**Punta ad alto rendimento Quadro Plus 12×d**  
**High performance drill Quadro Plus 12×d**

Art. 52200



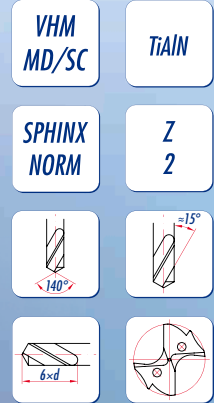
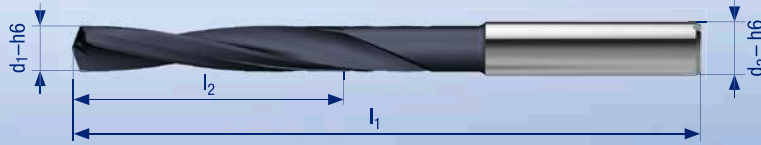
d <sub>1</sub> mm	l <sub>2</sub> mm	l <sub>1</sub> mm	d <sub>2</sub> mm
3.00	36.00	106	6.00
3.20	39.00	106	6.00
3.30	40.00	106	6.00
3.50	42.00	106	6.00
4.00	48.00	106	6.00
4.20	51.00	118	6.00
4.50	54.00	118	6.00
4.80	58.00	118	6.00
5.00	60.00	118	6.00
5.50	66.00	130	6.00
6.00	72.00	130	6.00
6.40	78.00	144	8.00
6.50	78.00	144	8.00
6.80	82.00	144	8.00
7.00	84.00	144	8.00
7.50	90.00	156	8.00
7.60	92.00	156	8.00
8.00	96.00	156	8.00
8.50	102.00	175	10.00
9.00	108.00	175	10.00
9.50	114.00	187	10.00
10.00	120.00	187	10.00
10.20	123.00	207	12.00
10.50	126.00	207	12.00
11.00	132.00	207	12.00
11.50	138.00	219	12.00
12.00	144.00	219	12.00
12.50	150.00	233	14.00
12.70	153.00	233	14.00
13.00	156.00	233	14.00
13.50	162.00	245	14.00
14.00	168.00	245	14.00
14.50	174.00	262	16.00
15.00	180.00	262	16.00
15.50	186.00	274	16.00
15.90	191.00	274	16.00
16.00	192.00	274	16.00
16.50	198.00	300	18.00

d <sub>1</sub> mm	l <sub>2</sub> mm	l <sub>1</sub> mm	d <sub>2</sub> mm
17.00	204.00	300	18.00
17.50	210.00	300	18.00
18.00	216.00	300	18.00
18.50	222.00	327	20.00
19.00	228.00	327	20.00
19.50	234.00	327	20.00
20.00	240.00	327	20.00



**Hochleistungsbohrer Quadro 15 Plus 6 × d**  
**Foret à grand rendement Quadro 15 Plus 6 × d**  
**Punta ad alto rendimento Quadro 15 Plus 6 × d**  
**High performance drill Quadro 15 Plus 6 × d**

Art. 52150

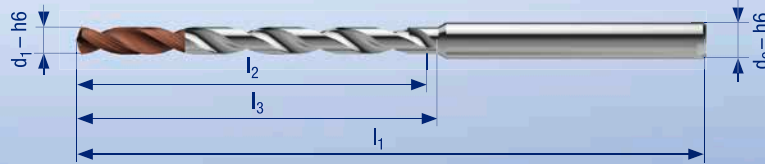


d <sub>1</sub> mm	l <sub>2</sub> mm	l <sub>1</sub> mm	d <sub>2</sub> mm
4.00	24.00	75	6.00
4.20	25.50	75	6.00
4.50	27.00	75	6.00
5.00	30.00	87	6.00
5.50	33.00	87	6.00
6.00	36.00	87	6.00
6.50	39.00	100	8.00
6.80	41.00	100	8.00
7.00	42.00	100	8.00
7.50	45.00	100	8.00
8.00	48.00	100	8.00
8.50	51.00	118	10.00
9.00	54.00	118	10.00
9.50	57.00	118	10.00
10.00	60.00	118	10.00
10.20	62.00	135	12.00
10.50	63.00	135	12.00
11.00	66.00	135	12.00
11.50	69.00	135	12.00
12.00	72.00	135	12.00
12.50	75.00	147	14.00
13.00	78.00	147	14.00
13.50	81.00	147	14.00
14.00	84.00	147	14.00
14.50	87.00	164	16.00
15.00	90.00	164	16.00
15.50	93.00	164	16.00
16.00	96.00	164	16.00
16.50	99.00	178	18.00
17.00	102.00	178	18.00
17.50	105.00	178	18.00
18.00	108.00	178	18.00
18.50	111.00	195	20.00
19.00	114.00	195	20.00
19.50	117.00	195	20.00
20.00	120.00	195	20.00



**Hochleistungsbohrer Power-Phoenix 12×d**  
**Foret à grand rendement Power-Phoenix 12×d**  
**Punta ad alto rendimento Power-Phoenix 12×d**  
**High performance drill Power-Phoenix 12×d**

Art. 50912



d <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	l <sub>1</sub>	d <sub>2</sub>
mm	mm	mm	mm	mm
2.00	24.00	27.00	55	3.00
2.10	25.20	28.50	55	3.00
2.20	26.40	29.50	55	3.00
2.30	27.60	30.50	55	3.00
2.40	28.80	32.00	55	3.00
2.50	30.00	33.00	60	3.00
2.60	31.20	34.50	60	3.00
2.70	32.40	35.50	60	3.00
2.80	33.60	36.50	60	3.00
2.90	34.80	38.00	60	3.00
3.00	36.00	40.00	60	3.00
3.10	37.20	41.50	80	6.00
3.20	38.40	42.50	80	6.00
3.30	39.60	43.50	80	6.00
3.40	40.80	45.00	85	6.00
3.50	42.00	47.00	85	6.00
3.60	43.20	48.50	85	6.00
3.70	44.40	49.50	90	6.00
3.80	45.60	50.50	90	6.00
3.90	46.80	52.00	90	6.00
4.00	48.00	53.00	90	6.00
4.10	49.20	55.50	105	6.00
4.20	50.40	56.50	105	6.00
4.30	51.60	57.50	105	6.00
4.40	52.80	59.00	105	6.00
4.50	54.00	60.00	105	6.00
4.60	55.20	63.50	105	6.00
4.70	56.40	64.50	105	6.00
4.80	57.60	65.50	105	6.00
4.90	58.80	67.00	105	6.00
5.00	60.00	68.00	105	6.00
5.10	61.20	69.50	118	6.00
5.20	62.40	70.50	118	6.00
5.30	63.60	71.50	118	6.00
5.40	64.80	73.00	118	6.00
5.50	66.00	74.00	118	6.00
5.60	67.20	75.50	118	6.00
5.70	68.40	76.50	118	6.00

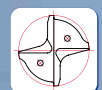
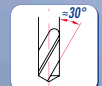
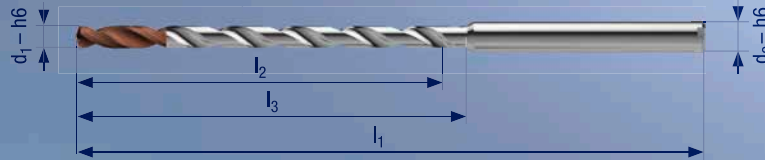
d <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	l <sub>1</sub>	d <sub>2</sub>
mm	mm	mm	mm	mm
5.80	69.60	77.50	118	6.00
5.90	70.80	79.00	118	6.00
6.00	72.00	80.00	118	6.00
6.10	73.20	82.50	136	8.00
6.20	74.40	83.50	136	8.00
6.30	75.60	84.50	136	8.00
6.40	76.80	86.00	136	8.00
6.50	78.00	87.50	136	8.00
6.60	79.20	88.50	136	8.00
6.70	80.40	89.50	136	8.00
6.80	81.60	90.50	136	8.00
6.90	82.80	92.00	136	8.00
7.00	84.00	94.00	136	8.00
7.10	85.20	95.50	148	8.00
7.20	86.40	96.50	148	8.00
7.30	87.60	97.50	148	8.00
7.40	88.80	99.00	148	8.00
7.50	90.00	100.00	148	8.00
7.60	91.20	101.50	148	8.00
7.70	92.40	102.50	148	8.00
7.80	93.60	103.50	148	8.00
7.90	94.80	105.00	148	8.00
8.00	96.00	106.00	148	8.00
8.10	97.20	108.50	162	10.00
8.20	98.40	109.50	162	10.00
8.30	99.60	110.50	162	10.00
8.40	100.80	112.00	162	10.00
8.50	102.00	113.00	162	10.00
8.60	103.20	114.50	162	10.00
8.70	104.40	115.50	162	10.00
8.80	105.60	116.50	162	10.00
8.90	106.80	118.00	162	10.00
9.00	108.00	119.00	162	10.00
9.10	109.20	120.50	175	10.00
9.20	110.40	121.50	175	10.00
9.30	111.60	122.50	175	10.00
9.40	112.80	124.00	175	10.00
9.50	114.00	125.00	175	10.00

d <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	l <sub>1</sub>	d <sub>2</sub>
mm	mm	mm	mm	mm
9.60	115.20	126.50	175	10.00
9.70	116.40	127.50	175	10.00
9.80	117.60	128.50	175	10.00
9.90	118.80	130.00	175	10.00
10.00	120.00	132.00	175	10.00
10.10	121.20	133.50	193	12.00
10.20	122.40	134.50	193	12.00
10.30	123.60	135.50	193	12.00
10.40	124.80	137.00	193	12.00
10.50	126.00	138.00	193	12.00
10.60	127.20	139.50	193	12.00
10.70	128.40	140.50	193	12.00
10.80	129.60	141.50	193	12.00
10.90	130.80	143.00	193	12.00
11.00	132.00	145.00	193	12.00
11.10	133.20	146.50	205	12.00
11.20	134.40	147.50	205	12.00
11.30	135.60	148.50	205	12.00
11.40	136.80	150.00	205	12.00
11.50	138.00	151.00	205	12.00
11.60	139.20	152.50	205	12.00
11.70	140.40	153.50	205	12.00
11.80	141.60	154.50	205	12.00
11.90	142.80	156.00	205	12.00
12.00	144.00	158.00	205	12.00
12.50	150.00	164.00	218	14.00
12.70	152.40	166.50	218	14.00



**Hochleistungsbohrer Power-Phoenix 16×d**  
**Foret à grand rendement Power-Phoenix 16×d**  
**Punta ad alto rendimento Power-Phoenix 16×d**  
**High performance drill Power-Phoenix 16×d**

Art. 50916



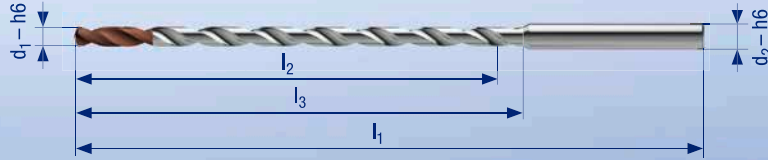
d <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	l <sub>1</sub>	d <sub>2</sub>
mm	mm	mm	mm	mm
2.00	32.00	35.00	65	3.00
2.10	33.60	36.50	82	3.00
2.20	35.20	38.00	82	3.00
2.30	36.80	40.00	82	3.00
2.40	38.40	41.50	82	3.00
2.50	40.00	43.00	82	3.00
2.60	41.60	44.50	82	3.00
2.70	43.20	46.00	82	3.00
2.80	44.80	48.00	82	3.00
2.90	46.40	49.50	82	3.00
3.00	48.00	52.00	82	3.00
3.10	49.60	53.50	107	6.00
3.20	51.20	55.00	107	6.00
3.30	52.80	57.00	107	6.00
3.40	54.40	58.50	107	6.00
3.50	56.00	61.00	107	6.00
3.60	57.60	62.50	107	6.00
3.70	59.20	64.00	107	6.00
3.80	60.80	66.00	107	6.00
3.90	62.40	67.50	107	6.00
4.00	64.00	69.00	107	6.00
4.10	65.60	71.50	126	6.00
4.20	67.20	73.00	126	6.00
4.30	68.80	75.00	126	6.00
4.40	70.40	76.50	126	6.00
4.50	72.00	78.00	126	6.00
4.60	73.60	81.50	126	6.00
4.70	75.20	83.00	126	6.00
4.80	76.80	85.00	126	6.00
4.90	78.40	86.50	126	6.00
5.00	80.00	88.00	126	6.00
5.10	81.60	89.50	142	6.00
5.20	83.20	91.00	142	6.00
5.30	84.80	93.00	142	6.00
5.40	86.40	94.50	142	6.00
5.50	88.00	96.00	142	6.00
5.60	89.60	97.50	142	6.00
5.70	91.20	99.00	142	6.00

d <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	l <sub>1</sub>	d <sub>2</sub>
mm	mm	mm	mm	mm
5.80	92.80	101.00	142	6.00
5.90	94.40	102.50	142	6.00
6.00	96.00	104.00	142	6.00
6.10	97.60	106.50	160	8.00
6.20	99.20	108.00	160	8.00
6.30	100.80	110.00	160	8.00
6.40	102.40	111.50	160	8.00
6.50	104.00	113.00	160	8.00
6.60	105.60	114.50	160	8.00
6.70	107.20	116.00	160	8.00
6.80	108.80	118.00	160	8.00
6.90	110.40	119.50	160	8.00
7.00	112.00	122.00	160	8.00
7.10	113.60	123.50	176	8.00
7.20	115.20	125.00	176	8.00
7.30	116.80	127.00	176	8.00
7.40	118.40	128.50	176	8.00
7.50	120.00	130.00	176	8.00
7.60	121.60	131.50	176	8.00
7.70	123.20	133.00	176	8.00
7.80	124.80	135.00	176	8.00
7.90	126.40	136.50	176	8.00
8.00	128.00	138.00	176	8.00
8.10	129.60	140.50	197	10.00
8.20	131.20	142.00	197	10.00
8.30	132.80	144.00	197	10.00
8.40	134.40	145.50	197	10.00
8.50	136.00	147.00	197	10.00
8.60	137.60	148.50	197	10.00
8.70	139.20	150.00	197	10.00
8.80	140.80	152.00	197	10.00
8.90	142.40	153.50	197	10.00
9.00	144.00	155.00	197	10.00
9.10	145.60	156.50	214	10.00
9.20	147.20	158.00	214	10.00
9.30	148.80	160.00	214	10.00
9.40	150.40	161.50	214	10.00
9.50	152.00	163.00	214	10.00

d <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	l <sub>1</sub>	d <sub>2</sub>
mm	mm	mm	mm	mm
9.60	153.60	164.50	214	10.00
9.70	155.20	166.00	214	10.00
9.80	156.80	168.00	214	10.00
9.90	158.40	169.50	214	10.00
10.00	160.00	172.00	214	10.00
10.10	161.60	173.50	236	12.00
10.20	163.20	175.00	236	12.00
10.30	164.80	177.00	236	12.00
10.40	166.40	178.50	236	12.00
10.50	168.00	180.00	236	12.00
10.60	169.60	181.50	236	12.00
10.70	171.20	183.00	236	12.00
10.80	172.80	185.00	236	12.00
10.90	174.40	186.50	236	12.00
11.00	176.00	189.00	236	12.00
11.10	177.60	190.50	253	12.00
11.20	179.20	192.00	253	12.00
11.30	180.80	194.00	253	12.00
11.40	182.40	195.50	253	12.00
11.50	184.00	197.00	253	12.00
11.60	185.60	198.50	253	12.00
11.70	187.20	200.00	253	12.00
11.80	188.80	202.00	253	12.00
11.90	190.40	203.50	253	12.00
12.00	192.00	206.00	253	12.00
12.50	200.00	214.00	270	14.00
12.70	203.20	217.00	270	14.00

**Hochleistungsbohrer Power-Phoenix 20 × d**  
**Foret à grand rendement Power-Phoenix 20 × d**  
**Punta ad alto rendimento Power-Phoenix 20 × d**  
**High performance drill Power-Phoenix 20 × d**

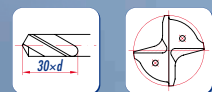
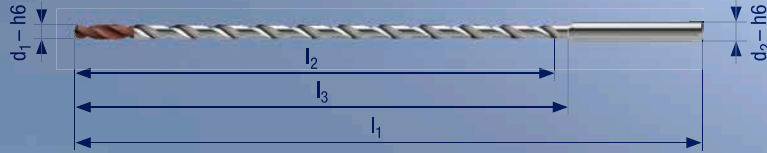
Art. 50920



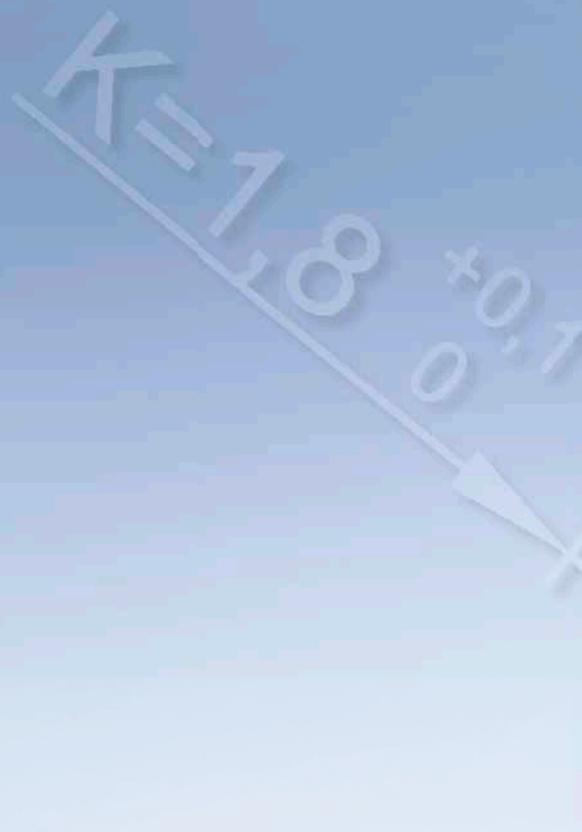
d <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	l <sub>1</sub>	d <sub>2</sub>
mm	mm	mm	mm	mm
3.00	60.00	69.00	108	6.00
3.30	66.00	75.00	113	6.00
4.00	80.00	94.00	132	6.00
4.20	84.00	98.00	136	6.00
5.00	100.00	107.00	145	6.00
6.00	120.00	138.00	176	6.00
6.80	136.00	156.00	196	8.00
7.00	140.00	161.00	201	8.00
8.00	160.00	182.00	222	8.00
8.50	170.00	195.00	240	10.00
9.00	180.00	207.00	252	10.00
10.00	200.00	230.00	275	10.00

Hochleistungsbohrer Power-Phoenix 30 x d  
 Foret à grand rendement Power-Phoenix 30 x d  
 Punta ad alto rendimento Power-Phoenix 30 x d  
 High performance drill Power-Phoenix 30 x d

Art. 50930



d <sub>1</sub> mm	l <sub>2</sub> mm	l <sub>3</sub> mm	l <sub>1</sub> mm	d <sub>2</sub> mm
3.00	90.00	99.00	138	6.00
3.30	99.00	108.00	146	6.00
4.00	120.00	134.00	172	6.00
4.20	126.00	140.00	178	6.00
5.00	150.00	167.00	205	6.00
6.00	180.00	198.00	236	6.00
6.80	204.00	224.00	264	8.00
7.00	210.00	231.00	271	8.00
8.00	240.00	262.00	302	8.00
8.50	255.00	280.00	325	10.00
9.00	270.00	297.00	342	10.00
10.00	285.00	300.00	345	10.00

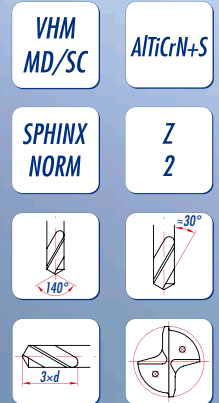
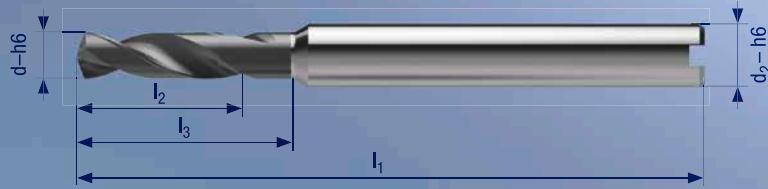






**Hochleistungsbohrer Phoenix-TC2 3 × d**  
**Foret à grand rendement Phoenix-TC2 3 × d**  
**Punta ad alto rendimento Phoenix-TC2 3 × d**  
**High performance drill Phoenix-TC2 3 × d**

**Art. 52903**



d <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	l <sub>1</sub>	d <sub>2</sub>
mm	mm	mm	mm	mm
1.00	3.00	5.00	38	3.00
1.05	3.15	5.25	38	3.00
1.10	3.30	5.50	38	3.00
1.15	3.45	5.50	38	3.00
1.20	3.60	5.50	38	3.00
1.25	3.75	6.00	38	3.00
1.30	3.90	6.00	38	3.00
1.35	4.05	6.00	38	3.00
1.40	4.20	6.50	38	3.00
1.45	4.35	6.50	38	3.00
1.50	4.50	6.50	38	3.00
1.55	4.65	7.50	38	3.00
1.60	4.80	7.50	38	3.00
1.65	4.95	8.00	38	3.00
1.70	5.10	8.00	38	3.00
1.75	5.25	8.00	38	3.00
1.80	5.40	8.50	38	3.00
1.85	5.55	8.50	38	3.00
1.90	5.70	8.50	38	3.00
1.95	5.85	9.00	38	3.00
2.00	6.00	9.00	38	3.00
2.05	6.15	9.00	38	3.00
2.10	6.30	9.50	38	3.00
2.15	6.45	9.50	38	3.00
2.20	6.60	9.50	38	3.00
2.25	6.75	10.00	38	3.00
2.30	6.90	10.00	38	3.00
2.35	7.05	10.00	38	3.00
2.40	7.20	10.00	38	3.00
2.45	7.35	10.00	38	3.00
2.50	7.50	10.50	50	3.00
2.55	7.65	11.00	50	3.00
2.60	7.80	11.00	50	3.00
2.65	7.95	11.00	50	3.00
2.70	8.10	11.50	50	3.00
2.75	8.25	11.50	50	3.00
2.80	8.40	11.50	50	3.00
2.85	8.55	12.00	50	3.00

d <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	l <sub>1</sub>	d <sub>2</sub>
mm	mm	mm	mm	mm
2.90	8.70	12.00	50	3.00
2.95	8.85	12.00	50	3.00
3.00	9.00	12.50	50	3.00
3.05	9.15	12.50	55	6.00
3.10	9.30	13.50	55	6.00
3.15	9.45	13.50	55	6.00
3.20	9.60	13.50	55	6.00
3.25	9.75	13.50	55	6.00
3.30	9.90	13.50	55	6.00
3.35	10.05	14.00	55	6.00
3.40	10.20	14.00	55	6.00
3.45	10.35	14.00	55	6.00
3.50	10.50	14.50	55	6.00
3.55	10.65	14.50	55	6.00
3.60	10.80	15.00	55	6.00
3.65	10.95	15.00	55	6.00
3.70	11.10	15.00	55	6.00
3.75	11.25	15.00	55	6.00
3.80	11.40	15.50	55	6.00
3.85	11.55	15.50	55	6.00
3.90	11.70	15.50	55	6.00
3.95	11.85	15.50	55	6.00
4.00	12.00	15.50	55	6.00
4.05	12.15	16.50	60	6.00
4.10	12.30	18.50	60	6.00
4.15	12.45	18.50	60	6.00
4.20	12.60	18.50	60	6.00
4.25	12.75	18.50	60	6.00
4.30	12.90	19.00	60	6.00
4.35	13.05	19.00	60	6.00
4.40	13.20	19.00	60	6.00
4.45	13.35	20.50	60	6.00
4.50	13.50	20.50	60	6.00
4.55	13.65	20.50	60	6.00
4.60	13.80	22.00	60	6.00
4.65	13.95	22.00	60	6.00
4.70	14.10	22.00	60	6.00
4.75	14.25	22.00	60	6.00

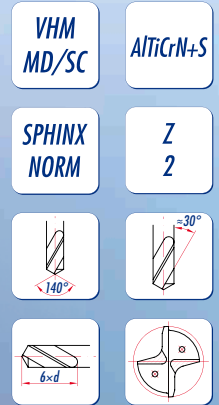
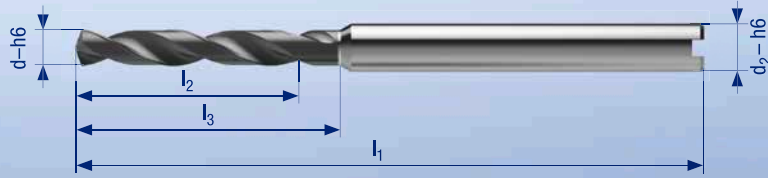
d <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	l <sub>1</sub>	d <sub>2</sub>
mm	mm	mm	mm	mm
4.80	14.40	22.50	60	6.00
4.85	14.55	22.50	60	6.00
4.90	14.70	22.50	60	6.00
4.95	14.85	23.00	60	6.00
5.00	15.00	23.00	60	6.00
5.05	15.15	23.00	64	6.00
5.10	15.30	23.50	64	6.00
5.15	15.45	23.50	64	6.00
5.20	15.60	23.50	64	6.00
5.25	15.75	23.50	64	6.00
5.30	15.90	24.00	64	6.00
5.35	16.05	24.00	64	6.00
5.40	16.20	24.00	64	6.00
5.45	16.35	24.00	64	6.00
5.50	16.50	24.50	64	6.00
5.55	16.65	24.50	64	6.00
5.60	16.80	24.50	64	6.00
5.65	16.95	24.50	64	6.00
5.70	17.10	25.50	64	6.00
5.75	17.25	25.50	64	6.00
5.80	17.40	25.50	64	6.00
5.85	17.55	25.50	64	6.00
5.90	17.70	26.00	64	6.00
5.95	17.85	26.00	64	6.00
6.00	18.00	27.00	64	6.00
6.10	18.30	27.50	68	8.00
6.20	18.60	27.50	68	8.00
6.30	18.90	28.00	68	8.00
6.40	19.20	28.00	68	8.00
6.50	19.50	28.50	68	8.00
6.60	19.80	29.00	68	8.00
6.70	20.10	29.50	68	8.00
6.80	20.40	29.50	68	8.00
6.90	20.70	30.00	68	8.00
7.00	21.00	31.00	68	8.00
7.10	21.30	31.50	72	8.00
7.20	21.60	31.50	72	8.00
7.30	21.90	32.00	72	8.00

d <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	l <sub>1</sub>	d <sub>2</sub>
mm	mm	mm	mm	mm
7.40	22.20	32.00	72	8.00
7.50	22.50	32.50	72	8.00
7.60	22.80	32.50	72	8.00
7.70	23.10	33.50	72	8.00
7.80	23.40	33.50	72	8.00
7.90	23.70	34.00	72	8.00
8.00	24.00	34.00	72	8.00
8.50	25.50	36.50	79	10.00
9.00	27.00	38.00	79	10.00
9.50	28.50	40.00	85	10.00
10.00	30.00	42.00	85	10.00



**Hochleistungsbohrer Phoenix-TC2 6 × d**  
**Foret à grand rendement Phoenix-TC2 6 × d**  
**Punta ad alto rendimento Phoenix-TC2 6 × d**  
**High performance drill Phoenix-TC2 6 × d**

**Art. 52906**



d <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	l <sub>1</sub>	d <sub>2</sub>
mm	mm	mm	mm	mm
1.00	6.00	8.00	38	3.00
1.05	6.30	8.30	38	3.00
1.10	6.60	8.60	38	3.00
1.15	6.90	8.90	38	3.00
1.20	7.20	9.20	38	3.00
1.25	7.50	9.50	38	3.00
1.30	7.80	9.80	38	3.00
1.35	8.10	10.10	38	3.00
1.40	8.40	10.40	38	3.00
1.45	8.70	10.70	38	3.00
1.50	9.00	11.00	38	3.00
1.55	9.30	11.30	38	3.00
1.60	9.60	12.60	38	3.00
1.65	9.90	12.90	38	3.00
1.70	10.20	13.20	38	3.00
1.75	10.50	13.50	38	3.00
1.80	10.80	13.80	38	3.00
1.85	11.10	14.10	38	3.00
1.90	11.40	14.40	38	3.00
1.95	11.70	14.70	38	3.00
2.00	12.00	15.00	50	3.00
2.05	12.30	15.30	50	3.00
2.10	12.60	15.60	50	3.00
2.15	12.90	15.90	50	3.00
2.20	13.20	16.20	50	3.00
2.25	13.50	16.50	50	3.00
2.30	13.80	16.80	50	3.00
2.35	14.10	17.10	50	3.00
2.40	14.40	17.40	50	3.00
2.45	14.70	17.70	50	3.00
2.50	15.00	18.00	50	3.00
2.55	15.30	18.30	50	3.00
2.60	15.60	18.60	50	3.00
2.65	15.90	18.90	50	3.00
2.70	16.20	19.20	50	3.00
2.75	16.50	19.50	50	3.00
2.80	16.80	19.80	50	3.00
2.85	17.10	20.10	50	3.00

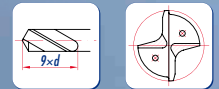
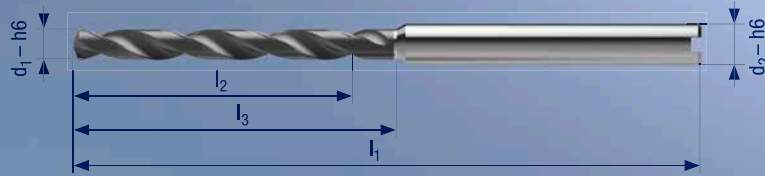
d <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	l <sub>1</sub>	d <sub>2</sub>
mm	mm	mm	mm	mm
2.90	17.40	20.40	50	3.00
2.95	17.70	20.70	50	3.00
3.00	18.00	21.00	50	3.00
3.05	18.30	22.30	66	6.00
3.10	18.60	22.60	66	6.00
3.15	18.90	22.90	66	6.00
3.20	19.20	23.20	66	6.00
3.25	19.50	23.50	66	6.00
3.30	19.80	23.80	66	6.00
3.35	20.10	24.10	66	6.00
3.40	20.40	24.40	66	6.00
3.45	20.70	24.70	66	6.00
3.50	21.00	25.00	66	6.00
3.55	21.30	25.30	66	6.00
3.60	21.60	25.60	66	6.00
3.65	21.90	25.90	66	6.00
3.68	22.20	26.20	66	6.00
3.70	22.20	26.20	66	6.00
3.72	22.40	26.40	66	6.00
3.74	22.50	26.50	66	6.00
3.75	22.50	26.50	66	6.00
3.80	22.80	26.80	66	6.00
3.85	23.10	27.10	66	6.00
3.90	23.40	27.40	66	6.00
3.95	23.70	27.70	66	6.00
4.00	24.00	28.00	66	6.00
4.05	24.30	30.20	79	6.00
4.10	24.60	30.50	79	6.00
4.15	24.90	30.80	79	6.00
4.20	25.20	31.00	79	6.00
4.25	25.50	31.50	79	6.00
4.30	25.80	32.00	79	6.00
4.35	26.10	32.50	79	6.00
4.40	26.40	32.50	79	6.00
4.45	26.70	33.00	79	6.00
4.50	27.00	33.00	79	6.00
4.55	27.30	35.50	79	6.00
4.60	27.60	35.50	79	6.00

d <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	l <sub>1</sub>	d <sub>2</sub>
mm	mm	mm	mm	mm
4.63	27.90	36.00	79	6.00
4.65	27.90	36.00	79	6.00
4.67	28.10	36.00	79	6.00
4.69	28.20	36.00	79	6.00
4.70	28.20	36.00	79	6.00
4.75	28.50	37.00	79	6.00
4.80	28.80	37.00	79	6.00
4.85	29.10	37.50	79	6.00
4.90	29.40	37.50	79	6.00
4.95	29.70	38.00	79	6.00
5.00	30.00	38.00	79	6.00
5.05	30.30	38.50	79	6.00
5.10	30.60	38.50	79	6.00
5.15	30.90	39.00	79	6.00
5.20	31.20	39.00	79	6.00
5.25	31.50	40.00	79	6.00
5.30	31.80	40.00	79	6.00
5.35	32.10	40.50	79	6.00
5.40	32.40	40.50	79	6.00
5.45	32.70	41.00	79	6.00
5.50	33.00	41.00	79	6.00
5.53	33.30	41.50	81	6.00
5.55	33.30	41.50	81	6.00
5.57	33.50	41.50	81	6.00
5.59	33.60	41.50	81	6.00
5.60	33.60	41.50	81	6.00
5.65	33.90	42.00	81	6.00
5.70	34.20	42.00	81	6.00
5.75	34.50	43.00	81	6.00
5.80	34.80	43.00	81	6.00
5.85	35.10	43.50	81	6.00
5.90	35.40	43.50	81	6.00
5.95	35.70	44.00	81	6.00
6.00	36.00	44.00	81	6.00
6.10	36.60	45.50	89	8.00
6.20	37.20	46.00	89	8.00
6.30	37.80	47.00	89	8.00
6.40	38.40	47.50	89	8.00

d <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	l <sub>1</sub>	d <sub>2</sub>
mm	mm	mm	mm	mm
6.50	39.00	48.00	89	8.00
6.60	39.60	48.50	89	8.00
6.70	40.20	49.00	89	8.00
6.80	40.80	50.00	89	8.00
6.90	41.40	50.50	89	8.00
7.00	42.00	52.00	89	8.00
7.10	42.60	52.50	95	8.00
7.20	43.20	53.50	95	8.00
7.30	43.80	54.00	95	8.00
7.40	44.40	54.50	95	8.00
7.50	45.00	55.00	95	8.00
7.60	45.60	55.50	95	8.00
7.70	46.20	56.00	95	8.00
7.80	46.80	57.00	95	8.00
7.90	47.40	57.50	95	8.00
8.00	48.00	58.00	95	8.00
8.50	51.00	62.00	106	10.00
9.00	54.00	65.00	106	10.00
9.50	57.00	68.00	113	10.00
10.00	60.00	72.00	113	10.00

**Hochleistungsbohrer Phoenix-TC2 9 × d**  
**Foret à grand rendement Phoenix-TC2 9 × d**  
**Punta ad alto rendimento Phoenix-TC2 9 × d**  
**High performance drill Phoenix-TC2 9 × d**

Art. 52909

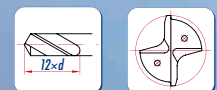
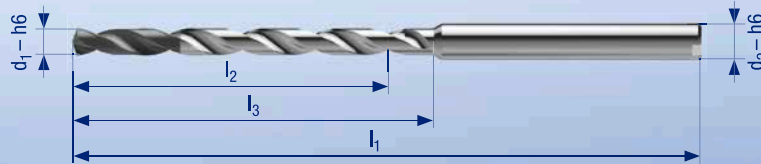


d <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	l <sub>1</sub>	d <sub>2</sub>
mm	mm	mm	mm	mm
1.00	9.00	11.00	51	3.00
1.10	9.90	12.00	51	3.00
1.20	10.80	13.00	51	3.00
1.30	11.70	14.00	51	3.00
1.40	12.60	15.00	51	3.00
1.50	13.50	16.50	51	3.00
1.60	14.40	17.50	51	3.00
1.70	15.30	18.50	51	3.00
1.80	16.20	19.00	51	3.00
1.90	17.10	20.00	51	3.00
2.00	18.00	21.00	51	3.00
2.10	18.90	22.00	61	3.00
2.20	19.80	23.00	61	3.00
2.30	20.70	24.00	61	3.00
2.40	21.60	24.50	61	3.00
2.50	22.50	25.50	61	3.00
2.60	23.40	26.50	61	3.00
2.70	24.30	27.50	61	3.00
2.80	25.20	28.00	61	3.00
2.90	26.10	29.00	61	3.00
3.00	27.00	31.00	61	3.00
3.10	27.90	32.00	79	6.00
3.20	28.80	33.00	79	6.00
3.30	29.70	34.00	79	6.00
3.40	30.60	35.00	79	6.00
3.50	31.50	36.50	79	6.00
3.60	32.40	37.50	79	6.00
3.70	33.30	38.50	79	6.00
3.80	34.20	39.00	79	6.00
3.90	35.10	40.00	79	6.00
4.00	36.00	41.00	79	6.00
4.10	36.90	43.00	91	6.00
4.20	37.80	44.00	91	6.00
4.30	38.70	45.00	91	6.00
4.40	39.60	45.50	91	6.00
4.50	40.50	46.50	91	6.00
4.60	41.40	49.50	91	6.00
4.70	42.30	50.50	91	6.00

d <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	l <sub>1</sub>	d <sub>2</sub>
mm	mm	mm	mm	mm
4.80	43.20	51.00	91	6.00
4.90	44.10	52.00	91	6.00
5.00	45.00	53.00	91	6.00
5.10	45.90	54.00	100	6.00
5.20	46.80	55.00	100	6.00
5.30	47.70	56.00	100	6.00
5.40	48.60	57.00	100	6.00
5.50	49.50	57.50	100	6.00
5.60	50.40	58.50	100	6.00
5.70	51.30	59.50	100	6.00
5.80	52.20	60.00	100	6.00
5.90	53.10	61.00	100	6.00
6.00	54.00	62.00	100	6.00
6.10	54.90	64.00	111	8.00
6.20	55.80	65.00	111	8.00
6.30	56.70	66.00	111	8.00
6.40	57.60	66.50	111	8.00
6.50	58.50	67.50	111	8.00
6.60	59.40	68.50	111	8.00
6.70	60.30	69.50	111	8.00
6.80	61.20	70.00	111	8.00
6.90	62.10	71.00	111	8.00
7.00	63.00	73.00	111	8.00
7.10	63.90	74.00	120	8.00
7.20	64.80	75.00	120	8.00
7.30	65.70	76.00	120	8.00
7.40	66.60	76.50	120	8.00
7.50	67.50	77.50	120	8.00
7.60	68.40	78.50	120	8.00
7.70	69.30	79.50	120	8.00
7.80	70.20	80.00	120	8.00
7.90	71.00	81.00	120	8.00
8.00	72.00	82.00	120	8.00
8.50	76.50	87.50	134	10.00
9.00	81.00	92.00	134	10.00
9.50	85.50	96.50	144	10.00
10.00	90.00	102.00	144	10.00

**Hochleistungsbohrer Phoenix-TC2 12 × d**  
**Foret à grand rendement Phoenix-TC2 12 × d**  
**Punta ad alto rendimento Phoenix-TC2 12 × d**  
**High performance drill Phoenix-TC2 12 × d**

Art. 52912

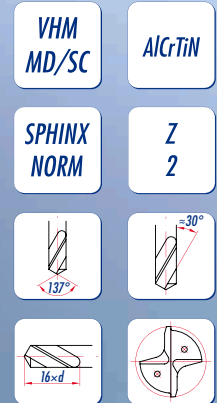
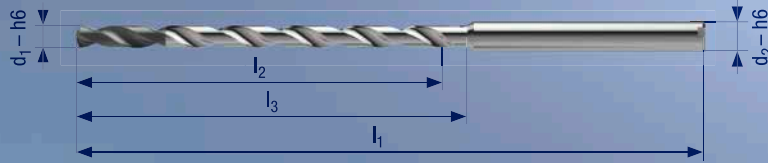
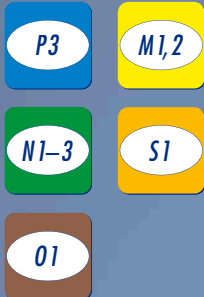


d <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	l <sub>1</sub>	d <sub>2</sub>
mm	mm	mm	mm	mm
1.00	12.00	14.00	50	3.00
1.10	13.20	15.50	50	3.00
1.20	14.40	16.50	50	3.00
1.30	15.60	17.50	50	3.00
1.40	16.80	19.00	50	3.00
1.50	18.00	21.00	50	3.00
1.60	19.20	22.50	50	3.00
1.70	20.40	23.50	50	3.00
1.80	21.60	24.50	50	3.00
1.90	22.80	26.00	55	3.00
2.00	24.00	27.00	55	3.00
2.10	25.20	28.50	55	3.00
2.20	26.40	29.50	55	3.00
2.30	27.60	30.50	55	3.00
2.40	28.80	32.00	55	3.00
2.50	30.00	33.00	60	3.00
2.60	31.20	34.50	60	3.00
2.70	32.40	35.50	60	3.00
2.80	33.60	36.50	60	3.00
2.90	34.80	38.00	60	3.00
3.00	36.00	40.00	60	3.00
3.10	37.20	41.50	80	6.00
3.20	38.40	42.50	80	6.00
3.30	39.60	43.50	80	6.00
3.40	40.80	45.00	85	6.00
3.50	42.00	47.00	85	6.00
3.60	43.20	48.50	85	6.00
3.70	44.40	49.50	90	6.00
3.80	45.60	50.50	90	6.00
3.90	46.80	52.00	90	6.00
4.00	48.00	53.00	90	6.00
4.10	49.20	55.50	105	6.00
4.20	50.40	56.50	105	6.00
4.30	51.60	57.50	105	6.00
4.40	52.80	59.00	105	6.00
4.50	54.00	60.00	105	6.00
4.60	55.20	63.50	105	6.00
4.70	56.40	64.50	105	6.00

d <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	l <sub>1</sub>	d <sub>2</sub>
mm	mm	mm	mm	mm
4.80	57.60	65.50	105	6.00
4.90	58.80	67.00	105	6.00
5.00	60.00	68.00	105	6.00
5.10	61.20	69.50	118	6.00
5.20	62.40	70.50	118	6.00
5.30	63.60	71.50	118	6.00
5.40	64.80	73.00	118	6.00
5.50	66.00	74.00	118	6.00
5.60	67.20	75.50	118	6.00
5.70	68.40	76.50	118	6.00
5.80	69.60	77.50	118	6.00
5.90	70.80	79.00	118	6.00
6.00	72.00	80.00	118	6.00
6.10	73.20	82.50	136	8.00
6.20	74.40	83.50	136	8.00
6.30	75.60	84.50	136	8.00
6.40	76.80	86.00	136	8.00
6.50	78.00	87.50	136	8.00
6.60	79.20	88.50	136	8.00
6.70	80.40	89.50	136	8.00
6.80	81.60	90.50	136	8.00
6.90	82.80	92.00	136	8.00
7.00	84.00	94.00	136	8.00
7.10	85.20	95.50	148	8.00
7.20	86.40	96.50	148	8.00
7.30	87.60	97.50	148	8.00
7.40	88.80	99.00	148	8.00
7.50	90.00	100.00	148	8.00
7.60	91.20	101.50	148	8.00
7.70	92.40	102.50	148	8.00
7.80	93.60	103.50	148	8.00
7.90	94.80	105.00	148	8.00
8.00	96.00	106.00	148	8.00
8.50	102.00	113.00	162	10.00
9.00	108.00	119.00	162	10.00
9.50	114.00	125.00	175	10.00
10.00	120.00	132.00	175	10.00

**Hochleistungsbohrer Phoenix-TC2 16 × d**  
**Foret à grand rendement Phoenix-TC2 16 × d**  
**Punta ad alto rendimento Phoenix-TC2 16 × d**  
**High performance drill Phoenix-TC2 16 × d**

Art. 52916



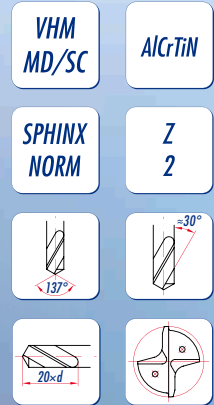
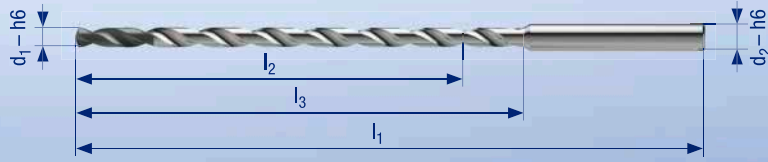
d <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	l <sub>1</sub>	d <sub>2</sub>
mm	mm	mm	mm	mm
1.00	16.00	18.00	65	3.00
1.10	17.60	19.50	65	3.00
1.20	19.20	21.00	65	3.00
1.30	20.80	23.00	65	3.00
1.40	22.40	24.50	65	3.00
1.50	24.00	27.00	65	3.00
1.60	25.60	28.50	65	3.00
1.70	27.20	30.00	65	3.00
1.80	28.80	32.00	65	3.00
1.90	30.40	33.50	65	3.00
2.00	32.00	35.00	65	3.00
2.10	33.60	36.50	82	3.00
2.20	35.20	38.00	82	3.00
2.30	36.80	40.00	82	3.00
2.40	38.40	41.50	82	3.00
2.50	40.00	43.00	82	3.00
2.60	41.60	44.50	82	3.00
2.70	43.20	46.00	82	3.00
2.80	44.80	48.00	82	3.00
2.90	46.40	49.50	82	3.00
3.00	48.00	52.00	82	3.00
3.10	49.60	53.50	107	6.00
3.20	51.20	55.00	107	6.00
3.30	52.80	57.00	107	6.00
3.40	54.40	58.50	107	6.00
3.50	56.00	61.00	107	6.00
3.60	57.60	62.50	107	6.00
3.70	59.20	64.00	107	6.00
3.80	60.80	66.00	107	6.00
3.90	62.40	67.50	107	6.00
4.00	64.00	69.00	107	6.00
4.10	65.60	71.50	126	6.00
4.20	67.20	73.00	126	6.00
4.30	68.80	75.00	126	6.00
4.40	70.40	76.50	126	6.00
4.50	72.00	78.00	126	6.00
4.60	73.60	81.50	126	6.00
4.70	75.20	83.00	126	6.00

d <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	l <sub>1</sub>	d <sub>2</sub>
mm	mm	mm	mm	mm
4.80	76.80	85.00	126	6.00
4.90	78.40	86.50	126	6.00
5.00	80.00	88.00	126	6.00
5.10	81.60	89.50	142	6.00
5.20	83.20	91.00	142	6.00
5.30	84.80	93.00	142	6.00
5.40	86.40	94.50	142	6.00
5.50	88.00	96.00	142	6.00
5.60	89.60	97.50	142	6.00
5.70	91.20	99.00	142	6.00
5.80	92.80	101.00	142	6.00
5.90	94.40	102.50	142	6.00
6.00	96.00	104.00	142	6.00
6.10	97.60	106.50	160	8.00
6.20	99.20	108.00	160	8.00
6.30	100.80	110.00	160	8.00
6.40	102.40	111.50	160	8.00
6.50	104.00	113.00	160	8.00
6.60	105.60	114.50	160	8.00
6.70	107.20	116.00	160	8.00
6.80	108.80	118.00	160	8.00
6.90	110.40	119.50	160	8.00
7.00	112.00	122.00	160	8.00
7.10	113.60	123.50	176	8.00
7.20	115.20	125.00	176	8.00
7.30	116.80	127.00	176	8.00
7.40	118.40	128.50	176	8.00
7.50	120.00	130.00	176	8.00
7.60	121.60	131.50	176	8.00
7.70	123.20	133.00	176	8.00
7.80	124.80	135.00	176	8.00
7.90	126.40	136.50	176	8.00
8.00	128.00	138.00	176	8.00
8.50	136.00	147.00	197	10.00
9.00	144.00	155.00	197	10.00
9.50	152.00	163.00	214	10.00
10.00	160.00	172.00	214	10.00



**Hochleistungsbohrer Phoenix-TC2 20 × d**  
**Foret à grand rendement Phoenix-TC2 20 × d**  
**Punta ad alto rendimento Phoenix-TC2 20 × d**  
**High performance drill Phoenix-TC2 20 × d**

Art. 52920

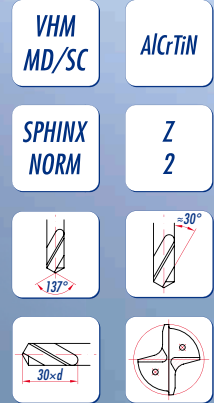
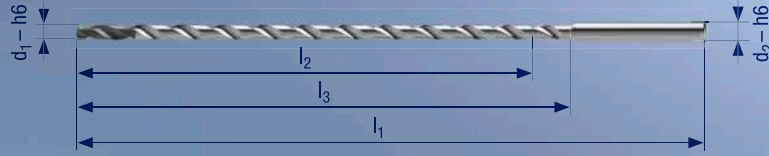
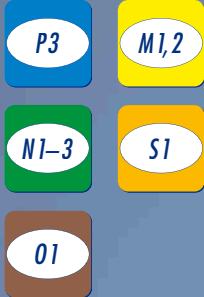


d <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	l <sub>1</sub>	d <sub>2</sub>
mm	mm	mm	mm	mm
3.00	60.00	69.00	108	6.00
3.30	66.00	75.00	113	6.00
4.00	80.00	94.00	132	6.00
4.20	84.00	98.00	136	6.00
5.00	100.00	107.00	145	6.00
6.00	120.00	138.00	176	6.00
6.80	136.00	156.00	196	8.00
7.00	140.00	161.00	201	8.00
8.00	160.00	182.00	222	8.00
8.50	170.00	195.00	240	10.00
9.00	180.00	207.00	252	10.00
10.00	200.00	230.00	275	10.00



Hochleistungsbohrer Phoenix-TC2 30 × d  
 Foret à grand rendement Phoenix-TC2 30 × d  
 Punta ad alto rendimento Phoenix-TC2 30 × d  
 High performance drill Phoenix-TC2 30 × d

Art. 52930



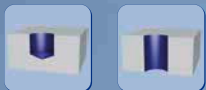
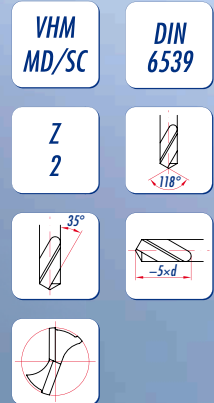
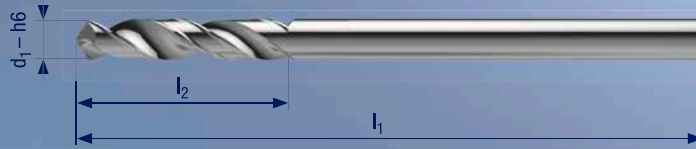
d <sub>1</sub> mm	l <sub>2</sub> mm	l <sub>3</sub> mm	l <sub>1</sub> mm	d <sub>2</sub> mm
3.00	90.00	99.00	138	6.00
3.30	99.00	108.00	146	6.00
4.00	120.00	134.00	172	6.00
4.20	126.00	140.00	178	6.00
5.00	150.00	167.00	205	6.00
6.00	180.00	198.00	236	6.00
6.80	204.00	224.00	264	8.00
7.00	210.00	231.00	271	8.00
8.00	240.00	262.00	302	8.00
8.50	255.00	280.00	325	10.00
9.00	270.00	297.00	342	10.00
10.00	285.00	300.00	345	10.00





**Bohrreibahle Asycut**  
**Foret alésoir Asycut**  
**Punta alesatore Asycut**  
**Drill reamer Asycut**

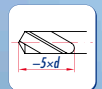
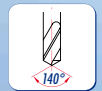
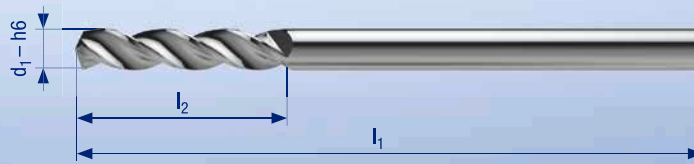
**Art. 50840**



d <sub>1</sub> mm	l <sub>2</sub> mm	l <sub>1</sub> mm	d <sub>1</sub> mm	l <sub>2</sub> mm	l <sub>1</sub> mm	d <sub>1</sub> mm	l <sub>2</sub> mm	l <sub>1</sub> mm
2.00	11.50	38	5.80	27.00	66	9.60	41.00	89
2.10	11.50	38	5.90	27.00	66	9.70	41.00	89
2.20	12.50	40	6.00	27.00	66	9.80	41.00	89
2.30	12.50	40	6.10	30.00	70	9.90	41.00	89
2.40	13.50	43	6.20	30.00	70	10.00	41.00	89
2.50	13.50	43	6.30	30.00	70	10.20	41.00	89
2.60	13.50	43	6.40	30.00	70	10.50	41.00	89
2.70	15.50	46	6.50	30.00	70	11.00	45.00	95
2.80	15.50	46	6.60	30.00	70	11.50	45.00	95
2.90	15.50	46	6.70	30.00	70	12.00	49.00	102
3.00	15.50	46	6.80	33.00	74	12.50	49.00	102
3.10	17.50	49	6.90	33.00	74	13.00	49.00	102
3.20	17.50	49	7.00	33.00	74	13.50	52.00	107
3.30	17.50	49	7.10	33.00	74	14.00	52.00	107
3.40	19.50	52	7.20	33.00	74			
3.50	19.50	52	7.30	33.00	74			
3.60	19.50	52	7.40	33.00	74			
3.70	19.50	52	7.50	33.00	74			
3.80	21.50	55	7.60	36.00	79			
3.90	21.50	55	7.70	36.00	79			
4.00	21.50	55	7.80	36.00	79			
4.10	21.50	55	7.90	36.00	79			
4.20	21.50	55	8.00	36.00	79			
4.30	23.00	58	8.10	36.00	79			
4.40	23.00	58	8.20	36.00	79			
4.50	23.00	58	8.30	36.00	79			
4.60	23.00	58	8.40	36.00	79			
4.70	23.00	58	8.50	36.00	79			
4.80	25.00	62	8.60	39.00	84			
4.90	25.00	62	8.70	39.00	84			
5.00	25.00	62	8.80	39.00	84			
5.10	25.00	62	8.90	39.00	84			
5.20	25.00	62	9.00	39.00	84			
5.30	25.00	62	9.10	39.00	84			
5.40	27.00	66	9.20	39.00	84			
5.50	27.00	66	9.30	39.00	84			
5.60	27.00	66	9.40	39.00	84			
5.70	27.00	66	9.50	39.00	84			

**Bohrreibahle Tricut**  
**Foret alésoir Tricut**  
**Punta alesatore Tricut**  
**Drill reamer Tricut**

Art. 55654



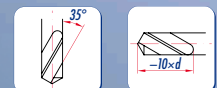
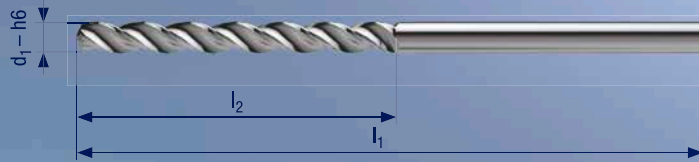
d <sub>1</sub> mm	l <sub>2</sub> mm	l <sub>1</sub> mm
1.00	6.0	26
1.10	6.5	28
1.20	7.5	30
1.30	7.5	30
1.40	8.5	32
1.50	8.5	32
1.60	9.5	34
1.70	9.5	34
1.80	10.5	36
1.90	10.5	36
2.00	11.5	38
2.10	11.5	38
2.20	12.5	40
2.30	12.5	40
2.40	13.5	43
2.50	13.5	43
2.60	13.5	43
2.70	15.5	46
2.80	15.5	46
2.90	15.5	46
3.00	15.5	46
3.10	17.0	49
3.175	1/8"	49
3.20	17.0	49
3.30	17.0	49
3.40	19.0	52
3.50	19.0	52
3.60	19.0	52
3.70	19.0	52
3.80	21.0	55
3.90	21.0	55
3.969	5/32"	55
4.00	21.0	55
4.10	21.0	55
4.20	21.0	55
4.30	22.5	58
4.40	22.5	58
4.50	22.5	58

d <sub>1</sub> mm	l <sub>2</sub> mm	l <sub>1</sub> mm
4.60	22.5	58
4.70	22.5	58
4.763	3/16"	62
4.80	24.5	62
4.90	24.5	62
5.00	24.5	62
5.10	24.5	62
5.20	24.5	62
5.30	24.5	62
5.40	26.0	66
5.50	26.0	66
5.556	7/32"	66
5.60	26.0	66
5.70	26.0	66
5.80	26.0	66
5.90	26.0	66
6.00	26.0	66
6.10	28.5	70
6.20	28.5	70
6.30	28.5	70
6.350	1/4"	70
6.40	28.5	70
6.50	28.5	70
6.60	28.5	70
6.70	28.5	70
6.80	31.0	74
6.90	31.0	74
7.00	31.0	74
7.10	31.0	74
7.144	9/32"	74
7.20	31.0	74
7.30	31.0	74
7.40	31.0	74
7.50	31.0	74
7.60	34.0	79
7.70	34.0	79
7.80	34.0	79
7.90	34.0	79

d <sub>1</sub> mm	l <sub>2</sub> mm	l <sub>1</sub> mm	
7.938	5/16"	34.0	79
8.00	34.0	79	
8.10	34.0	79	
8.20	34.0	79	
8.30	34.0	79	
8.40	34.0	79	
8.50	34.0	79	
8.60	36.5	84	
8.70	36.5	84	
8.80	36.5	84	
8.90	36.5	84	
9.00	36.5	84	
9.10	36.5	84	
9.20	36.5	84	
9.30	36.5	84	
9.40	36.5	84	
9.50	36.5	84	
9.525	3/8"	39.0	89
9.60	39.0	89	
9.70	39.0	89	
9.80	39.0	89	
9.90	39.0	89	
10.00	39.0	89	
10.20	39.0	89	
10.50	39.0	89	
11.00	43.0	95	
11.113	7/16"	43.0	95
11.50	43.0	95	
12.00	47.0	102	
12.50	47.0	102	
12.700	1/2"	47.0	102
13.00	47.0	102	
13.50	50.0	107	
14.00	50.0	107	

**Bohrreibahle Tricut long**  
**Foret alésoir Tricut long**  
**Punta alesatore Tricut long**  
**Drill reamer Tricut long**

**Art. 55338**



d <sub>1</sub> mm	l <sub>2</sub> mm	l <sub>1</sub> mm
1.00	11.5	34
1.10	13.0	36
1.20	15.0	38
1.30	15.0	38
1.40	17.0	40
1.50	17.0	40
1.60	19.0	43
1.70	19.0	43
1.80	21.0	46
1.90	21.0	46
2.00	22.0	49
2.10	22.0	49
2.20	25.0	53
2.30	25.0	53
2.40	28.0	57
2.50	28.0	57
2.60	28.0	57
2.70	31.0	61
2.80	31.0	61
2.90	31.0	61
3.00	31.0	61
3.10	34.0	65
3.20	34.0	65
3.30	34.0	65
3.40	37.0	70
3.50	37.0	70
3.60	37.0	70
3.70	37.0	70
3.80	41.0	75
3.90	41.0	75
4.00	41.0	75
4.10	41.0	75
4.20	41.0	75
4.30	45.0	80
4.40	45.0	80
4.50	45.0	80
4.60	45.0	80
4.70	45.0	80

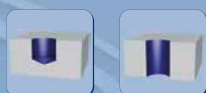
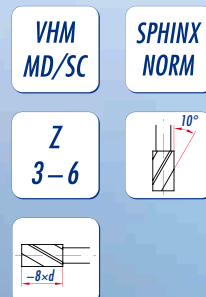
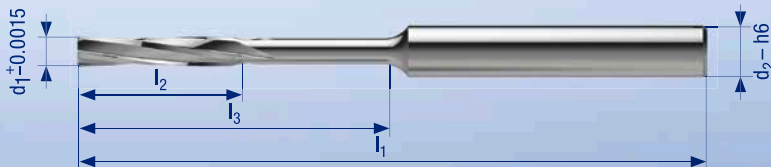
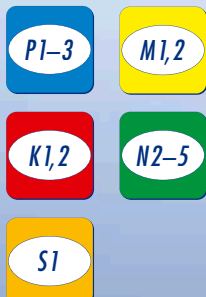
d <sub>1</sub> mm	l <sub>2</sub> mm	l <sub>1</sub> mm
4.80	50.0	86
4.90	50.0	86
5.00	50.0	86
5.10	50.0	86
5.20	50.0	86
5.30	50.0	86
5.40	55.0	93
5.50	55.0	93
5.60	55.0	93
5.70	55.0	93
5.80	55.0	93
5.90	55.0	93
6.00	55.0	93
6.10	60.0	101
6.20	60.0	101
6.30	60.0	101
6.40	60.0	101
6.50	60.0	101
6.60	60.0	101
6.70	60.0	101
6.80	66.0	109
6.90	66.0	109
7.00	66.0	109
7.10	66.0	109
7.20	66.0	109
7.30	66.0	109
7.40	66.0	109
7.50	66.0	109
7.60	72.0	117
7.70	72.0	117
7.80	72.0	117
7.90	72.0	117
8.00	72.0	117
8.10	72.0	117
8.20	72.0	117
8.30	72.0	117
8.40	72.0	117
8.50	72.0	117

d <sub>1</sub> mm	l <sub>2</sub> mm	l <sub>1</sub> mm
8.60	78.0	125
8.70	78.0	125
8.80	78.0	125
8.90	78.0	125
9.00	78.0	125
9.20	78.0	125
9.30	78.0	125
9.40	78.0	125
9.50	78.0	125
9.60	84.0	133
9.70	84.0	133
9.80	84.0	133
9.90	84.0	133
10.00	84.0	133
10.20	84.0	133
10.50	84.0	133
11.00	91.0	142
11.50	91.0	142
12.00	98.0	151
12.50	98.0	151
13.00	98.0	151
13.50	105.0	160
14.00	105.0	160



**Reibahle mit verstärktem Schaft**  
**Alésoir avec manche renforcée**  
**Alesatore con gambo rinforzato**  
**Reamer with reinforced shank**

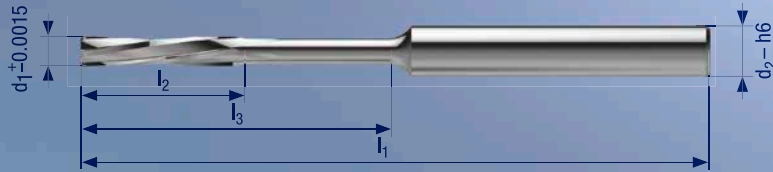
Art. 58000



$\emptyset$	$d_1$	$l_2$	$l_3$	$l_1$	$d_2$	Z
	mm	mm	mm	mm	mm	
1.0-P7	0.987	8.00	16.00	48	3.00	3
1.0-H7	1.005	8.00	16.00	48	3.00	3
1.0-F7	1.011	8.00	16.00	48	3.00	3
2.0-P7	1.987	11.00	22.00	54	3.00	4
2.0-H7	2.005	11.00	22.00	54	3.00	4
2.0-F7	2.011	11.00	22.00	54	3.00	4
3.0-P7	2.987	15.00	30.00	60	3.00	4
3.0-H7	3.005	15.00	30.00	60	3.00	4
3.0-F7	3.011	15.00	30.00	60	3.00	4
4.0-P7	3.986	19.00	38.00	76	6.00	6
4.0-H7	4.006	19.00	38.00	76	6.00	6
4.0-F7	4.016	19.00	38.00	76	6.00	6
5.0-P7	4.986	23.00	46.00	84	6.00	6
5.0-H7	5.006	23.00	46.00	84	6.00	6
5.0-F7	5.018	23.00	46.00	84	6.00	6
6.0-P7	5.986	26.00	52.00	90	6.00	6
6.0-H7	6.006	26.00	52.00	90	6.00	6
6.0-F7	6.018	26.00	52.00	90	6.00	6

**Reibahle mit verstärktem Schaft**  
**Alésoir avec manche renforcée**  
**Alesatore con gambo rinforzato**  
**Reamer with reinforced shank**

Art. 58500



∅	d <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	l <sub>1</sub>	d <sub>2</sub>	Z
	mm	mm	mm	mm	mm	
1.0-P7	0.987	8.00	16.00	48	3.00	3
1.0-H7	1.005	8.00	16.00	48	3.00	3
1.0-F7	1.011	8.00	16.00	48	3.00	3
2.0-P7	1.987	11.00	22.00	54	3.00	4
2.0-H7	2.005	11.00	22.00	54	3.00	4
2.0-F7	2.011	11.00	22.00	54	3.00	4
3.0-P7	2.987	15.00	30.00	60	3.00	4
3.0-H7	3.005	15.00	30.00	60	3.00	4
3.0-F7	3.011	15.00	30.00	60	3.00	4
4.0-P7	3.986	19.00	38.00	76	6.00	6
4.0-H7	4.006	19.00	38.00	76	6.00	6
4.0-F7	4.016	19.00	38.00	76	6.00	6
5.0-P7	4.986	23.00	46.00	84	6.00	6
5.0-H7	5.006	23.00	46.00	84	6.00	6
5.0-F7	5.018	23.00	46.00	84	6.00	6
6.0-P7	5.986	26.00	52.00	90	6.00	6
6.0-H7	6.006	26.00	52.00	90	6.00	6
6.0-F7	6.018	26.00	52.00	90	6.00	6



Fräser  
Fraisage  
Fresare  
Milling

	Artikel Article	Durchmesser-Bereich Diameter range	Abstufung Increments	Bearbeitungs- tiefe Cutting length	Spitzen- winkel Point angle	Spiral- winkel Helix angle	Zähne- zahl Number of teeth
<b>Fräser Fraise</b>							
	40000	2.00–12.00	0.50	DIN 6528		30°	2
	76300	1.50–6.00	0.50			30°	3
	40002	2.00–12.00	0.50	DIN 6528		30°	3
	40004	2.00–12.00	0.50	DIN 6528		30°	4
	47000	3.00–20.00	1.00	1.5–4×∅		55°	2
	47500	6.00–20.00	2.00	4.5–8×∅		55°	2



\* S. 187 + 189  
p. 187 + 189

- ✓ hervorragend / excellent / ottimamente / outstanding
- geeignet / approprié / adatto / suitable

Material	Werkstoffgruppe* Workpiece material*							Anwendung* Application*	Seite Page
	P	M	K	S	N	H	O		
<b>Fresa Endmill</b>									
VHM/MD/SC	•		•		✓		•		141
VHM/MD/SC	✓	•	✓						142
VHM/MD/SC	✓	•	✓		✓				143
VHM/MD/SC	✓	•	✓						144
VHM/MD/SC					✓		•		145
VHM/MD/SC					✓		•		146





Schafffräser 30°  
 Fraise 30°  
 Fresa 30°  
 Endmill 30°

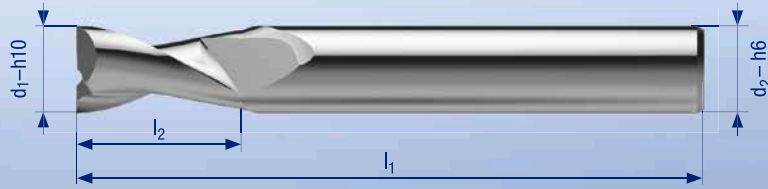
Art. 40000



P1,2

K1,2

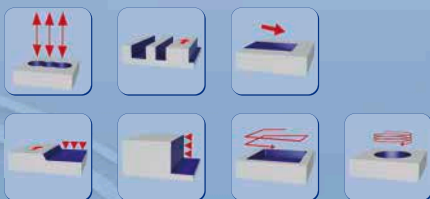
N1-6



VHM  
MD/SC

DIN  
6528

Z  
2



i  
184

d <sub>1</sub> mm	l <sub>2</sub> mm	l <sub>1</sub> mm	d <sub>2</sub> mm
2.00	8.00	50	2.00
2.50	8.00	50	2.50
3.00	8.00	50	3.00
3.50	8.00	50	3.50
4.00	8.00	50	4.00
4.50	8.00	50	4.50
5.00	10.00	50	5.00
6.00	10.00	57	6.00
8.00	16.00	63	8.00
10.00	19.00	72	10.00
12.00	22.00	83	12.00

Schafffräser 30°  
 Fraise 30°  
 Fresa 30°  
 Endmill 30°

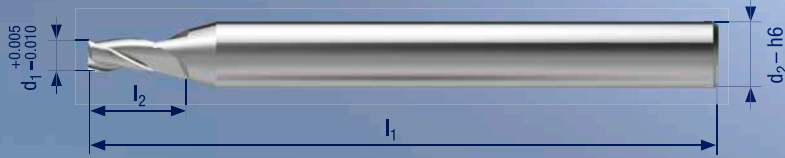
Art. 76300



PI-3

M1,2

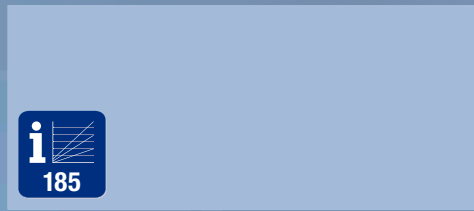
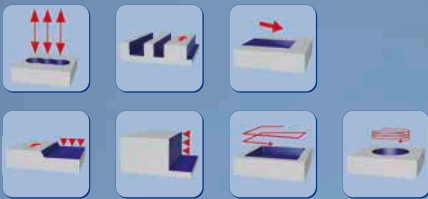
K1,2



VHM  
MD/SC

SPHINX  
NORM

Z  
3



d <sub>1</sub> mm	l <sub>2</sub> mm	l <sub>1</sub> mm	d <sub>2</sub> mm
1.50	6.00	57	6.0
2.00	6.00	57	6.0
2.50	6.00	57	6.0
3.00	7.00	57	6.0
3.50	7.00	57	6.0
4.00	8.00	57	6.0
4.50	8.00	57	6.0
5.00	10.00	57	6.0
5.50	10.00	57	6.0
6.00	10.00	57	6.0



Schafffräser 30°  
 Fraise 30°  
 Fresa 30°  
 Endmill 30°

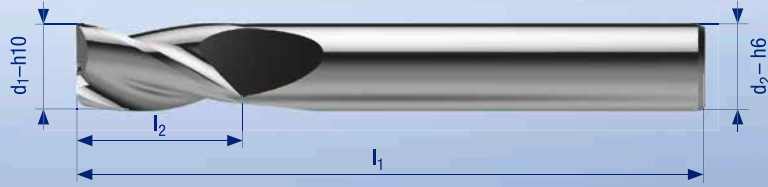
Art. 40002



PI-3

M1

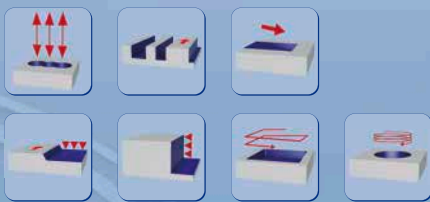
K1,2



VHM  
MD/SC

DIN  
6528

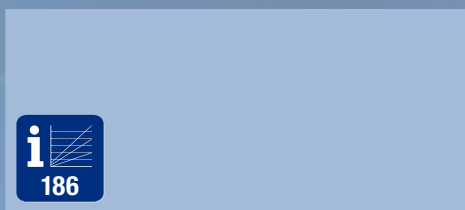
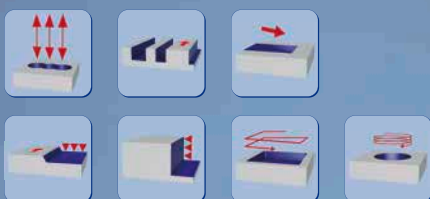
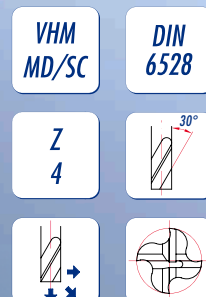
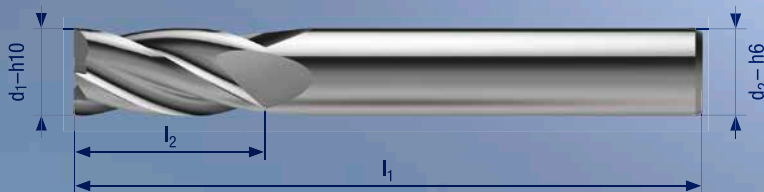
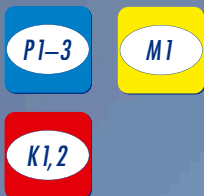
Z  
3



d <sub>1</sub> mm	l <sub>2</sub> mm	l <sub>1</sub> mm	d <sub>2</sub> mm
2.00	8.00	50	2.00
2.50	8.00	50	2.50
3.00	8.00	50	3.00
3.50	8.00	50	3.50
4.00	8.00	50	4.00
4.50	8.00	50	4.50
5.00	10.00	50	5.00
6.00	10.00	57	6.00
8.00	16.00	63	8.00
10.00	19.00	72	10.00
12.00	22.00	83	12.00

Schafffräser 30°  
 Fraise 30°  
 Fresa 30°  
 Endmill 30°

Art. 40004



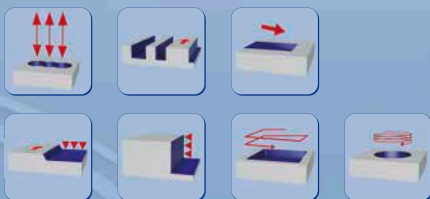
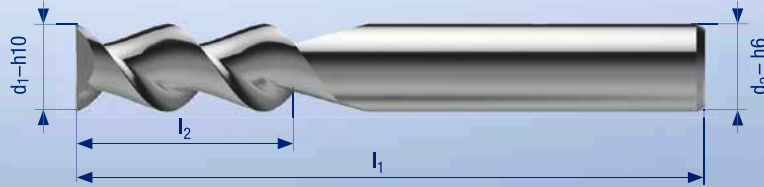
d <sub>1</sub> mm	l <sub>2</sub> mm	l <sub>1</sub> mm	d <sub>2</sub> mm
2.00	10.00	50	2.00
2.50	10.00	50	2.50
3.00	10.00	50	3.00
3.50	10.00	50	3.50
4.00	11.00	50	4.00
4.50	11.00	50	4.50
5.00	13.00	50	5.00
6.00	13.00	57	6.00
8.00	19.00	63	8.00
10.00	22.00	72	10.00
12.00	26.00	83	12.00





Schafffräser AC2 55°  
 Fraise AC2 55°  
 Fresa AC2 55°  
 Endmill AC2 55°

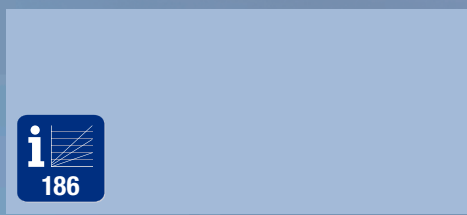
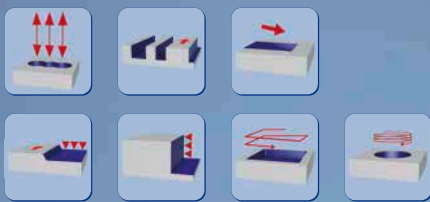
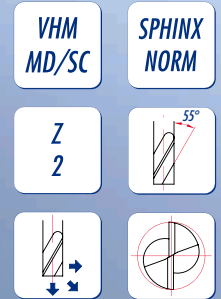
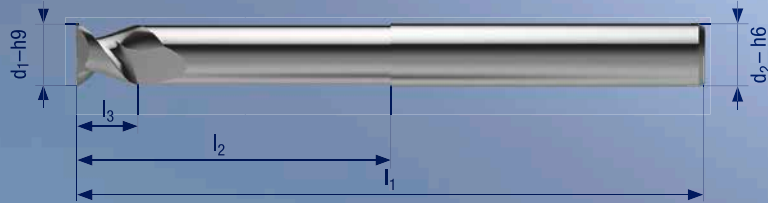
Art. 47000



d <sub>1</sub> mm	l <sub>2</sub> mm	l <sub>1</sub> mm	d <sub>2</sub> mm
3.00	12.00	50	3.00
4.00	15.00	50	4.00
5.00	20.00	50	5.00
6.00	20.00	57	6.00
8.00	20.00	63	8.00
10.00	25.00	72	10.00
12.00	25.00	83	12.00
14.00	30.00	90	14.00
16.00	30.00	92	16.00
20.00	38.00	104	20.00

Schafffräser ACL2 55°  
 Fraise ACL2 55°  
 Fresa ACL2 55°  
 Endmill ACL2 55°

Art. 47500



d <sub>1</sub> mm	l <sub>2</sub> mm	l <sub>3</sub> mm	l <sub>1</sub> mm	d <sub>2</sub> mm
6.00	50.00	6.00	100	6.00
8.00	50.00	8.00	100	8.00
10.00	50.00	10.00	100	10.00
12.00	50.00	12.00	100	12.00
16.00	75.00	16.00	125	16.00
20.00	75.00	20.00	125	20.00





**Inhaltsverzeichnis Sonderwerkzeuge**  
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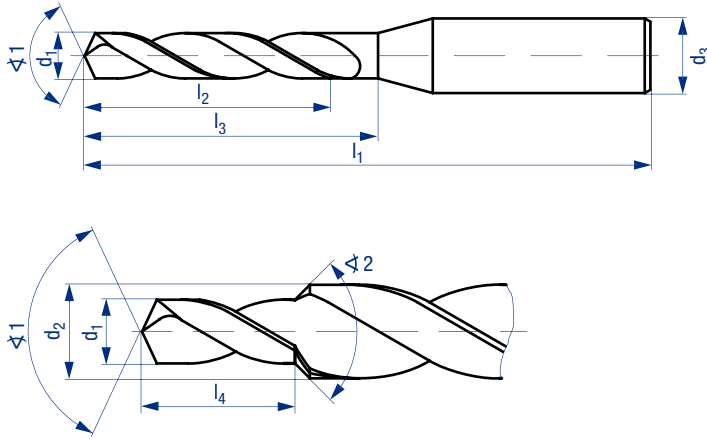
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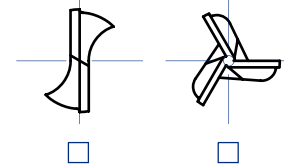
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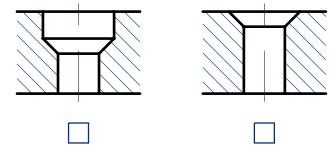
**Mikrobohrer**  
**Micro foret**  
**Micro punta**  
**Micro drill**



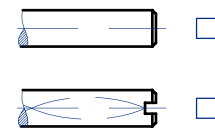
Schneidenanzahl:  
 Number of flutes:



Bohrungsart:  
 Type of hole:



Kühlmittelzuführung:  
 Coolant:



$d_1 =$  \_\_\_\_\_ Tol. = \_\_\_\_\_  $\varnothing 1 =$  \_\_\_\_\_ |  $l_1 =$  \_\_\_\_\_  $l_3 =$  \_\_\_\_\_  
 $d_2 =$  \_\_\_\_\_ Tol. = \_\_\_\_\_  $\varnothing 2 =$  \_\_\_\_\_ |  $l_2 =$  \_\_\_\_\_  $l_4 =$  \_\_\_\_\_  
 $d_3 =$  \_\_\_\_\_ Tol. = \_\_\_\_\_

Zu bearbeitender Werkstoff:  
 Material to be cut: \_\_\_\_\_

Schneidrichtung:  rechts  links  
 Direction of cutting:  right hand  left hand

Beschichtung:  keine  
 Coating: \_\_\_\_\_  without

Stückzahl: \_\_\_\_\_  Anfrage  Bestellung  
 Quantity: \_\_\_\_\_  Enquiry  Order

Bemerkung:  
 Remarks: \_\_\_\_\_  
 \_\_\_\_\_

Firma \_\_\_\_\_ Strasse/Nr. \_\_\_\_\_  
 Company \_\_\_\_\_ Street/No. \_\_\_\_\_

Postleitzahl/Ort \_\_\_\_\_ Phone \_\_\_\_\_  
 ZIP-Code/City \_\_\_\_\_

Kontaktperson \_\_\_\_\_ Fax \_\_\_\_\_  
 Contact \_\_\_\_\_

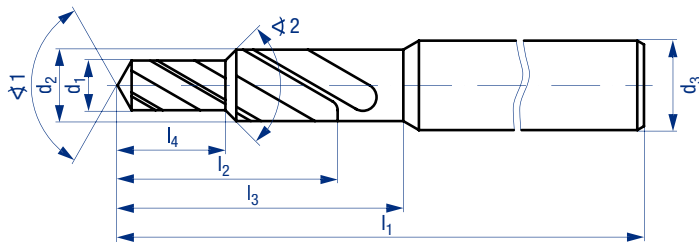
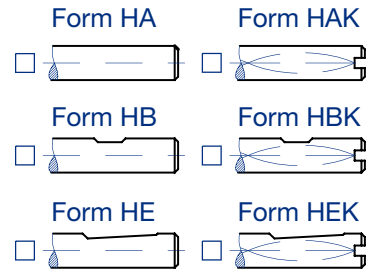
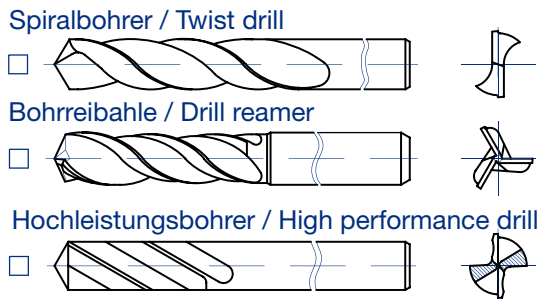
Datum/Unterschrift \_\_\_\_\_ E-Mail \_\_\_\_\_  
 Date/Signature \_\_\_\_\_

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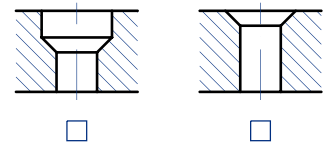




# Stufenbohrer Foret étagé Punta a diametri multipli Step drill



Bohrungsart:  
Type of hole:



$d_1 =$ _____	Tol. = _____	$\alpha 1 =$ _____		$l_1 =$ _____
$d_2 =$ _____	Tol. = _____	$\alpha 2 =$ _____		$l_2 =$ _____
$d_3 =$ _____	Tol. = _____			$l_3 =$ _____
				$l_4 =$ _____

Kühlmittelezuführung:  mit Innenkühlung  ohne Innenkühlung  
Coolant:  with internal coolant  without internal coolant

Zu bearbeitender Werkstoff:  
Material to be cut: \_\_\_\_\_

Schneidrichtung:  rechts  links  
Direction of cutting:  right hand  left hand

Beschichtung: \_\_\_\_\_  keine  
Coating: \_\_\_\_\_  without

Stückzahl: \_\_\_\_\_  Anfrage  Bestellung  
Quantity: \_\_\_\_\_  Enquiry  Order

Bemerkung:  
Remarks: \_\_\_\_\_  
\_\_\_\_\_

Firma \_\_\_\_\_ Strasse/Nr. \_\_\_\_\_  
Company \_\_\_\_\_ Street/No. \_\_\_\_\_

Postleitzahl/Ort \_\_\_\_\_ Phone \_\_\_\_\_  
ZIP-Code/City \_\_\_\_\_

Kontaktperson \_\_\_\_\_ Fax \_\_\_\_\_  
Contact \_\_\_\_\_

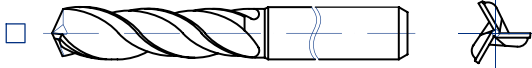
Datum/Unterschrift \_\_\_\_\_ E-Mail \_\_\_\_\_  
Date/Signature \_\_\_\_\_

# Stufenbohrer – 3 Stufen Foret étagé – 3 étages Punta a diametri multipli – 3 gradini Step drill – 3 steps

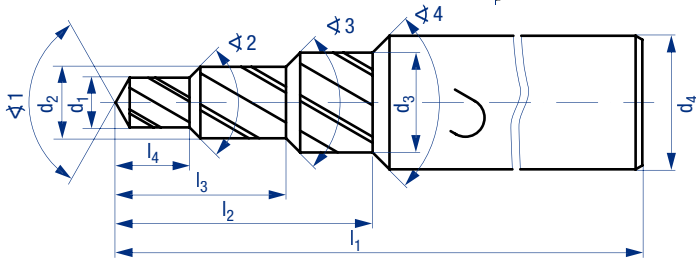
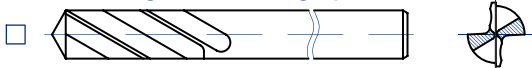
Spiralbohrer / Twist drill



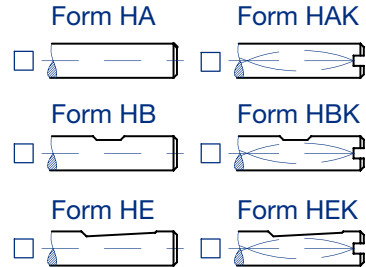
Bohrreibahle / Drill reamer



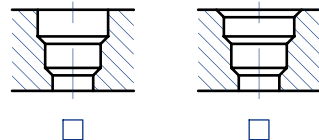
Hochleistungsbohrer / High performance drill



$d_1 =$ _____	Tol. = _____	$\sphericalangle 1 =$ _____	$l_1 =$ _____
$d_2 =$ _____	Tol. = _____	$\sphericalangle 2 =$ _____	$l_2 =$ _____
$d_3 =$ _____	Tol. = _____	$\sphericalangle 3 =$ _____	$l_3 =$ _____
$d_4 =$ _____	Tol. = _____	$\sphericalangle 4 =$ _____	$l_4 =$ _____



Bohrungsart:  
Type of hole:



Kühlmittelezuführung:  mit Innenkühlung  ohne Innenkühlung  
Coolant:  with internal coolant  without internal coolant

Zu bearbeitender Werkstoff:  
Material to be cut: \_\_\_\_\_

Schneidrichtung:  rechts  links  
Direction of cutting:  right hand  left hand

Beschichtung:  keine  without  
Coating: \_\_\_\_\_

Stückzahl: \_\_\_\_\_  Anfrage  Bestellung  
Quantity: \_\_\_\_\_  Enquiry  Order

Bemerkung:  
Remarks: \_\_\_\_\_  
\_\_\_\_\_

Firma \_\_\_\_\_ Strasse/Nr. \_\_\_\_\_  
Company \_\_\_\_\_ Street/No. \_\_\_\_\_

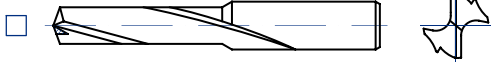
Postleitzahl/Ort \_\_\_\_\_ Phone \_\_\_\_\_  
ZIP-Code/City \_\_\_\_\_

Kontaktperson \_\_\_\_\_ Fax \_\_\_\_\_  
Contact \_\_\_\_\_

Datum/Unterschrift \_\_\_\_\_ E-Mail \_\_\_\_\_  
Date/Signature \_\_\_\_\_

**Quadro – Stufenbohrer**  
**Quadro – Foret étagé**  
**Quadro – Punta a diametri multipli**  
**Quadro – Step drill**

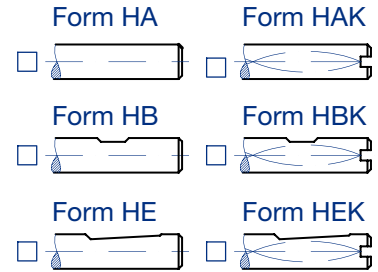
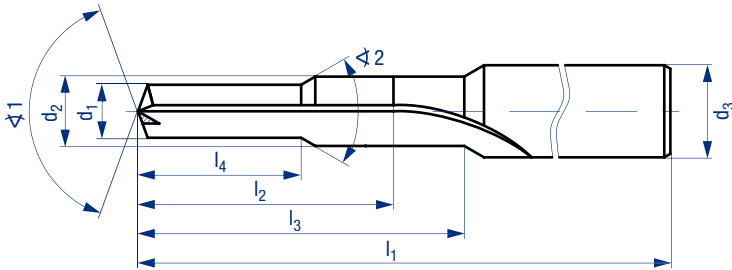
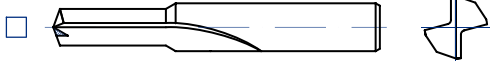
52150 – Quadro 15



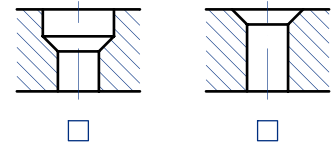
52200 – Quadro Plus



52000 – Quadro



Bohrungsart:  
Type of hole:



$d_1 =$  \_\_\_\_\_ Tol. = \_\_\_\_\_  $\sphericalangle 1 =$  \_\_\_\_\_ |  $l_1 =$  \_\_\_\_\_  $l_3 =$  \_\_\_\_\_  
 $d_2 =$  \_\_\_\_\_ Tol. = \_\_\_\_\_  $\sphericalangle 2 =$  \_\_\_\_\_ |  $l_2 =$  \_\_\_\_\_  $l_4 =$  \_\_\_\_\_  
 $d_3 =$  \_\_\_\_\_ Tol. = \_\_\_\_\_

Kühlmittelezuführung:  mit Innenkühlung       ohne Innenkühlung  
 Coolant:  with internal coolant       without internal coolant

Zu bearbeitender Werkstoff:  
Material to be cut: \_\_\_\_\_

Schneidrichtung:  rechts       links  
 Direction of cutting:  right hand       left hand

Beschichtung: \_\_\_\_\_  keine  
 Coating: \_\_\_\_\_  without

Stückzahl: \_\_\_\_\_  Anfrage       Bestellung  
 Quantity: \_\_\_\_\_  Enquiry       Order

Bemerkung:  
Remarks: \_\_\_\_\_  
 \_\_\_\_\_

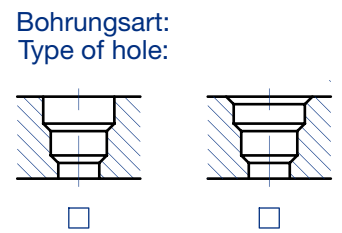
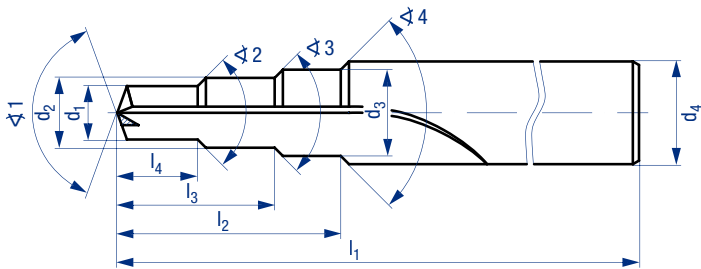
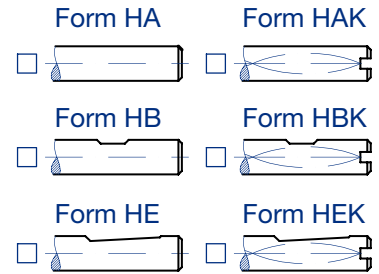
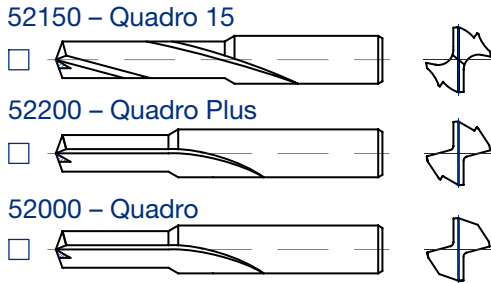
Firma \_\_\_\_\_ Strasse/Nr. \_\_\_\_\_  
 Company \_\_\_\_\_ Street/No. \_\_\_\_\_

Postleitzahl/Ort \_\_\_\_\_ Phone \_\_\_\_\_  
 ZIP-Code/City \_\_\_\_\_

Kontaktperson \_\_\_\_\_ Fax \_\_\_\_\_  
 Contact \_\_\_\_\_

Datum/Unterschrift \_\_\_\_\_ E-Mail \_\_\_\_\_  
 Date/Signature \_\_\_\_\_

**Quadro – Stufenbohrer – 3 Stufen**  
**Quadro – Foret étagé – 3 étages**  
**Quadro – Punta a diametri multipli – 3 gradini**  
**Quadro – Step drill – 3 steps**



$d_1 =$ _____	Tol. = _____	$\alpha 1 =$ _____	$l_1 =$ _____
$d_2 =$ _____	Tol. = _____	$\alpha 2 =$ _____	$l_2 =$ _____
$d_3 =$ _____	Tol. = _____	$\alpha 3 =$ _____	$l_3 =$ _____
$d_4 =$ _____	Tol. = _____	$\alpha 4 =$ _____	$l_4 =$ _____

Kühlmitteleinführung:  mit Innenkühlung  ohne Innenkühlung  
Coolant:  with internal coolant  without internal coolant

Zu bearbeitender Werkstoff:  
Material to be cut: \_\_\_\_\_

Schneidrichtung:  rechts  links  
Direction of cutting:  right hand  left hand

Beschichtung: \_\_\_\_\_  keine  
Coating: \_\_\_\_\_  without

Stückzahl: \_\_\_\_\_  Anfrage  Bestellung  
Quantity: \_\_\_\_\_  Enquiry  Order

Bemerkung:  
Remarks: \_\_\_\_\_

Firma \_\_\_\_\_ Strasse/Nr. \_\_\_\_\_  
Company \_\_\_\_\_ Street/No. \_\_\_\_\_

Postleitzahl/Ort \_\_\_\_\_ Phone \_\_\_\_\_  
ZIP-Code/City \_\_\_\_\_

Kontaktperson \_\_\_\_\_ Fax \_\_\_\_\_  
Contact \_\_\_\_\_

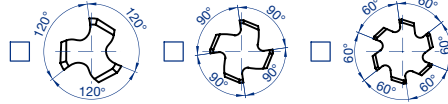
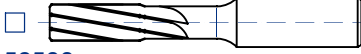
Datum/Unterschrift \_\_\_\_\_ E-Mail \_\_\_\_\_  
Date/Signature \_\_\_\_\_

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# Reibahle Alésoir Alesatore Reamer

58000

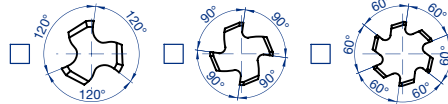
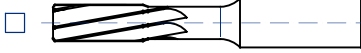
rechtsspiralisiert / right hand helix  
rechtsschneidend / right hand cut



Sackloch/Blind hole

58500

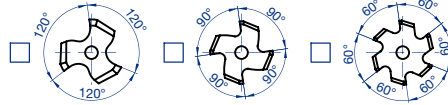
linksspiralisiert / left hand helix  
rechtsschneidend / right hand cut



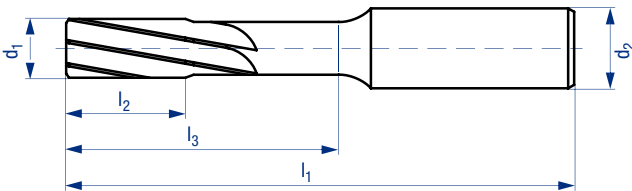
Durchgangsloch/Through hole

mit IKZ / with internal coolant

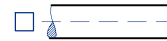
rechtsspiralisiert / right hand helix  
rechtsschneidend / right hand cut



Sackloch/Blind hole



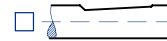
Form HA



Form HB



Form HE



$d_1 =$  \_\_\_\_\_ Tol. = \_\_\_\_\_ |  $l_1 =$  \_\_\_\_\_  $l_3 =$  \_\_\_\_\_  
 $d_2 =$  \_\_\_\_\_ Tol. = \_\_\_\_\_ |  $l_2 =$  \_\_\_\_\_

Zu bearbeitender Werkstoff:

Material to be cut: \_\_\_\_\_

Schneidrichtung:  rechts  links  
 Direction of cutting:  right hand  left hand

Beschichtung:  keine  ohne  
 Coating: \_\_\_\_\_  without

Stückzahl: \_\_\_\_\_  Anfrage  Bestellung  
 Quantity: \_\_\_\_\_  Enquiry  Order

Bemerkung:  
 Remarks: \_\_\_\_\_

Firma \_\_\_\_\_ Strasse/Nr. \_\_\_\_\_  
 Company \_\_\_\_\_ Street/No. \_\_\_\_\_

Postleitzahl/Ort \_\_\_\_\_ Phone \_\_\_\_\_  
 ZIP-Code/City \_\_\_\_\_

Kontaktperson \_\_\_\_\_ Fax \_\_\_\_\_  
 Contact \_\_\_\_\_

Datum/Unterschrift \_\_\_\_\_ E-Mail \_\_\_\_\_  
 Date/Signature \_\_\_\_\_



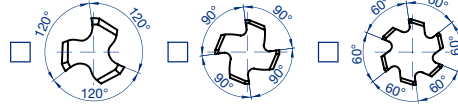
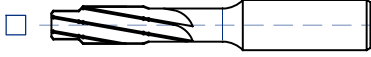
# Stufenreibahle

## Alésoir étagé

### Alesatore a diametri multipli

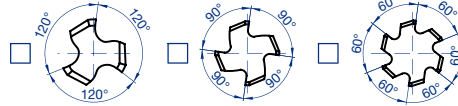
### Step reamer

rechtsspiralisiert / right hand helix  
rechtsschneidend / right hand cut



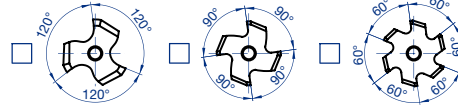
Sackloch/Blind hole

linksspiralisiert / left hand helix  
rechtsschneidend / right hand cut

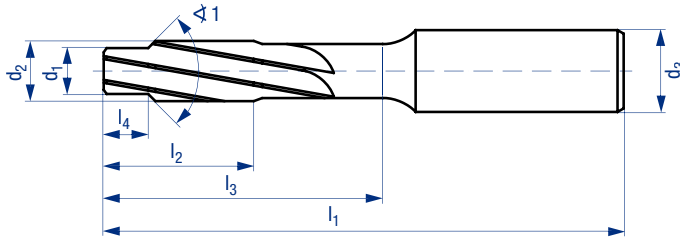


Durchgangslloch/Through hole

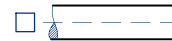
mit IKZ / with internal coolant  
rechtsspiralisiert / right hand helix  
rechtsschneidend / right hand cut



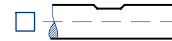
Sackloch/Blind hole



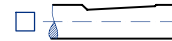
Form HA



Form HB



Form HE



$d_1 =$  \_\_\_\_\_ Tol. = \_\_\_\_\_  $\angle 1 =$  \_\_\_\_\_ |  $l_1 =$  \_\_\_\_\_  $l_3 =$  \_\_\_\_\_  
 $d_2 =$  \_\_\_\_\_ Tol. = \_\_\_\_\_ |  $l_2 =$  \_\_\_\_\_  $l_4 =$  \_\_\_\_\_  
 $d_3 =$  \_\_\_\_\_ Tol. = \_\_\_\_\_

Zu bearbeitender Werkstoff:

Material to be cut: \_\_\_\_\_

Schneidrichtung:  rechts  links  
Direction of cutting:  right hand  left hand

Beschichtung:  keine  ohne  
Coating: \_\_\_\_\_  without

Stückzahl:  Anfrage  Bestellung  
Quantity: \_\_\_\_\_  Enquiry  Order

Bemerkung: \_\_\_\_\_  
Remarks: \_\_\_\_\_

Firma \_\_\_\_\_ Strasse/Nr. \_\_\_\_\_  
Company \_\_\_\_\_ Street/No. \_\_\_\_\_

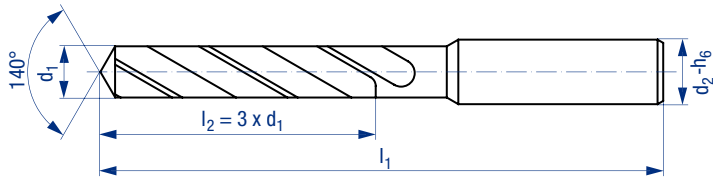
Postleitzahl/Ort \_\_\_\_\_ Phone \_\_\_\_\_  
ZIP-Code/City \_\_\_\_\_

Kontaktperson \_\_\_\_\_ Fax \_\_\_\_\_  
Contact \_\_\_\_\_

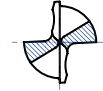
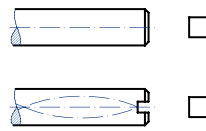
Datum/Unterschrift \_\_\_\_\_ E-Mail \_\_\_\_\_  
Date/Signature \_\_\_\_\_

# Pilotbohrer und Bohrer Extra-Long Foret de préperçage et Foret Extra-Long Punta per preforo e Punta Extra-Long Pilot drill and drill Extra-Long

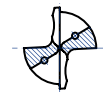
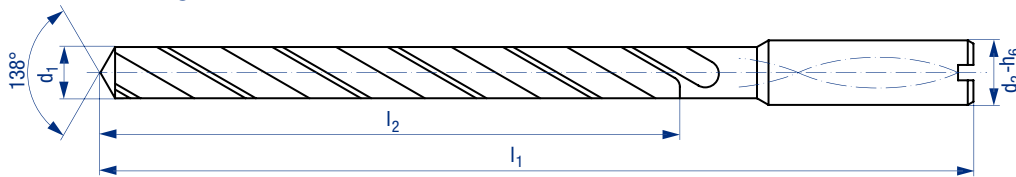
Pilotbohrer  
Pilot drill



Kühlmittelzuführung:  
Coolant supply:



Bohrer Extra-Long  
Drill Extra-Long



Pilotbohrer Pilot drill	Bohrer Extra-Long Drill Extra-Long
d <sub>1</sub> = _____	d <sub>1</sub> = _____ Tol. = _____
d <sub>2</sub> = _____	d <sub>2</sub> = _____
l <sub>1</sub> = _____	l <sub>1</sub> = _____
l <sub>2</sub> = 3 × d <sub>1</sub>	l <sub>2</sub> = _____

Zu bearbeitender Werkstoff:  
Material to be cut: \_\_\_\_\_

Stückzahl:  
Quantity: \_\_\_\_\_

Anfrage  Bestellung  
 Enquiry  Order

Bemerkung:  
Remarks: \_\_\_\_\_  
\_\_\_\_\_

Firma  
Company \_\_\_\_\_

Strasse/Nr.  
Street/No. \_\_\_\_\_

Postleitzahl/Ort  
ZIP-Code/City \_\_\_\_\_

Phone \_\_\_\_\_

Kontaktperson  
Contact \_\_\_\_\_

Fax \_\_\_\_\_

Datum/Unterschrift  
Date/Signature \_\_\_\_\_

E-Mail \_\_\_\_\_

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# Formeln Formules Formule Formulas

Formel Schnittgeschwindigkeit v:

Formule vitesse de coupe v:

Formula velocità di taglio v:

Formula cutting speed v:

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

Formel Drehzahl n:

Formule vitesse n:

Formula giri n:

Formula spindle speed n:

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

Bohrer, Reibahle

Forets, alésoir

Punte, alesatori

Drill, reamer

Vc = Schnittgeschwindigkeit in m/min

Vitesse de coupe en m/min

Velocità di taglio in m/min

Cutting speed in m/min

f = Vorschubgeschwindigkeit in mm/U

Avance en mm/t

Avanzamento in mm/g

Cutting feed in mm/rev

Fräser

Fraises

Frese

Endmill

Vc = Schnittgeschwindigkeit in m/min

Vitesse de coupe en m/min

Velocità di taglio in m/min

Cutting speed in m/min

fz = Vorschubgeschwindigkeit in mm/Zahn

Avance en mm/dent

Avanzamento in mm/tagliante

Cutting speed in mm/tooth

Vf = Vorschubgeschwindigkeit in mm/U = fz × Z × n

Avance en mm/t = fz × d × n

Avanzamento in mm/g = fz × d × n

Cutting speed in mm/rev = fz × t × n

ap = Schnitttiefe

Profondeur de coupe

Profondità di taglio

Cutting depth

ae = Schnittbreite

Largeur de coupe

Larghezza di taglio

Cutting width

# Schnittdaten

## Données de coupe

### Parametri di lavoro

#### Cutting data

### 50806 / 50809

Mat.		ø 0.50–1.00	ø 1.10–2.90	ø 3.00–6.00
P1	Vc	15–25	25–40	25–40
	f	0.020–0.080	0.060–0.140	0.120–0.250
P2	Vc	12–20	20–35	20–35
	f	0.010–0.060	0.040–0.120	0.100–0.220
P3	Vc	8–18	12–30	12–30
	f	0.010–0.040	0.030–0.090	0.080–0.200
M1	Vc	6–12	10–20	10–20
	f	0.020–0.050	0.030–0.070	0.050–0.150
M2	Vc	5–10	8–16	8–16
	f	0.010–0.040	0.030–0.060	0.040–0.080
K1	Vc	15–25	25–40	25–40
	f	0.010–0.050	0.030–0.080	0.070–0.150
K2	Vc	12–20	20–35	20–35
	f	0.010–0.040	0.030–0.060	0.050–0.100
N1	Vc	30–45	45–60	45–60
	f	0.030–0.080	0.060–0.120	0.100–0.250
N2	Vc	20–35	30–45	30–45
	f	0.040–0.080	0.070–0.150	0.130–0.300
N3	Vc	15–30	25–40	25–40
	f	0.020–0.070	0.060–0.120	0.100–0.250
N4	Vc	15–25	25–40	25–40
	f	0.010–0.050	0.030–0.08	0.060–0.150
N5	Vc	30–45	45–60	45–60
	f	0.040–0.080	0.070–0.130	0.100–0.250
N6	Vc	15–30	25–40	25–40
	f	0.010–0.040	0.038–0.065	0.060–0.090
N7	Vc	15–25	25–40	25–40
	f	0.010–0.040	0.030–0.080	0.050–0.130
N8	Vc	8–18	12–30	12–30
	f	0.010–0.040	0.020–0.050	0.030–0.100
S1	Vc	20–35	30–45	30–45
	f	0.010–0.040	0.020–0.0560	0.040–0.100
S2	Vc			
	f			
H1	Vc			
	f			
H2	Vc			
	f			
H3	Vc			
	f			
O1	Vc	20–35	30–45	30–45
	f	0.020–0.060	0.050–0.120	0.100–0.250
O2	Vc			
	f			
O3	Vc			
	f			

### Art. 50808

Mat.		ø 0.50–1.00	ø 1.10–2.00	ø 2.10–3.00
P1	Vc	20–35	35–50	35–50
	f	0.010–0.030	0.03–0.050	0.050–0.070
P2	Vc	15–30	30–45	30–45
	f	0.010–0.025	0.025–0.045	0.045–0.065
P3	Vc	12–25	25–40	25–40
	f	0.010–0.020	0.020–0.040	0.040–0.060
M1	Vc	10–20	20–35	20–35
	f	0.01–0.020	0.020–0.035	0.035–0.045
M2	Vc	8–16	16–30	16–30
	f	0.010–0.020	0.020–0.030	0.030–0.040
K1	Vc	20–35	35–50	35–50
	f	0.010–0.035	0.035–0.055	0.055–0.075
K2	Vc	15–30	30–45	30–45
	f	0.010–0.030	0.030–0.050	0.050–0.070
N1	Vc	35–50	50–65	50–65
	f	0.020–0.040	0.040–0.060	0.060–0.080
N2	Vc	25–40	40–55	40–55
	f	0.020–0.050	0.050–0.070	0.070–0.090
N3	Vc	20–35	35–50	35–50
	f	0.020–0.040	0.040–0.060	0.060–0.080
N4	Vc	15–30	30–45	30–45
	f	0.010–0.030	0.03–0.050	0.050–0.070
N5	Vc	35–50	50–65	50–65
	f	0.020–0.050	0.050–0.070	0.070–0.090
N6	Vc	20–35	35–50	35–50
	f	0.010–0.030	0.03–0.050	0.050–0.070
N7	Vc	15–30	30–45	30–45
	f	0.010–0.025	0.025–0.045	0.045–0.065
N8	Vc	10–20	20–35	20–35
	f	0.010–0.020	0.020–0.030	0.030–0.040
S1	Vc	25–35	35–50	35–50
	f	0.010–0.030	0.03–0.050	0.050–0.070
S2	Vc	10–15	15–25	15–25
	f	0.010–0.020	0.020–0.035	0.035–0.050
H1	Vc	10–15	15–25	15–25
	f	0.010–0.020	0.020–0.030	0.030–0.040
H2	Vc			
	f			
H3	Vc			
	f			
O1	Vc	20–35	30–45	30–45
	f	0.020–0.050	0.050–0.075	0.075–0.100
O2	Vc	20–35	30–45	30–45
	f	0.015–0.035	0.035–0.055	0.055–0.080
O3	Vc			
	f			

Genannte Werte sind Richtwerte, die je nach Maschine, Aufspannung, Kühlschmierstoff usw. noch angepasst werden müssen.

Les valeurs mentionnées sont des valeurs recommandées qui doivent être adaptées selon les conditions de la machine, du serrage, du lubrifiant etc.

Questi valori sono valori raccomandati che devono essere adattati secondo le condizioni della macchina, del serraggio, del lubrificante etc.

These are recommended values that depend on the condition of the machine, fixture, coolant etc., and they may have to be adapted yet.



# Schnittdaten

## Données de coupe

## Parametri di lavoro

## Cutting data

### 56005

Mat.		∅ 0.10–0.30	∅ 0.35–0.80	∅ 0.85–1.50
P1	Vc	8–18	15–30	30–60
	f	0.001–0.003	0.002–0.010	0.010–0.020
P2	Vc	6–16	12–25	20–40
	f	0.001–0.002	0.002–0.008	0.006–0.015
P3	Vc	6–13	10–20	18–35
	f	0.001–0.002	0.002–0.005	0.004–0.012
M1	Vc	5–12	10–18	15–30
	f	0.001–0.002	0.002–0.005	0.004–0.010
M2	Vc	5–10	8–15	13–25
	f	0.001–0.002	0.002–0.004	0.003–0.009
K1	Vc	8–18	15–30	30–60
	f	0.003–0.008	0.006–0.010	0.008–0.025
K2	Vc	6–16	12–25	20–40
	f	0.002–0.004	0.005–0.008	0.007–0.020
N1	Vc	12–20	18–35	35–65
	f	0.001–0.004	0.003–0.008	0.006–0.015
N2	Vc	10–18	15–30	25–50
	f	0.002–0.005	0.004–0.010	0.008–0.025
N3	Vc	8–18	15–30	30–60
	f	0.002–0.005	0.004–0.008	0.006–0.020
N4	Vc	8–18	15–30	30–60
	f	0.001–0.004	0.003–0.006	0.005–0.015
N5	Vc	12–20	18–35	35–65
	f	0.002–0.005	0.004–0.010	0.009–0.025
N6	Vc	8–18	15–30	30–60
	f	0.002–0.005	0.004–0.008	0.007–0.020
N7	Vc	8–18	15–30	30–60
	f	0.002–0.005	0.004–0.008	0.007–0.020
N8	Vc	6–13	10–20	18–35
	f	0.001–0.004	0.002–0.007	0.005–0.015
S1	Vc	15–30	28–45	30–45
	f	0.002–0.006	0.005–0.010	0.008–0.020
S2	Vc			
	f			
H1	Vc			
	f			
H2	Vc			
	f			
H3	Vc			
	f			
O1	Vc	8–18	15–30	30–60
	f	0.005–0.010	0.008–0.015	0.013–0.035
O2	Vc			
	f			
O3	Vc			
	f			

### Art. 56030 / 56033

Mat.		∅ 0.03–0.10	∅ 0.11–0.50	∅ 0.51–1.00	∅ 1.01–2.00	∅ 2.01–3.00
P1	Vc	1.5–5	4–10	10–30	30–60	30–60
	f	0.001–0.003	0.002–0.010	0.010–0.018	0.018–0.028	0.028–0.045
P2	Vc	1.2–4	3.5–8	8–25	25–50	25–50
	f	0.001–0.002	0.002–0.008	0.008–0.016	0.016–0.026	0.026–0.040
P3	Vc	1–3	3–6	6–20	20–45	20–45
	f	0.001–0.002	0.002–0.007	0.007–0.013	0.013–0.024	0.024–0.035
M1	Vc	1.2–4	3.5–8	8–20	20–45	20–45
	f	0.001–0.002	0.002–0.007	0.007–0.013	0.013–0.023	0.023–0.033
M2	Vc	1–3	3–6	5–15	15–30	15–30
	f	0.001–0.002	0.002–0.005	0.005–0.010	0.010–0.020	0.020–0.030
K1	Vc	1.5–5	4–10	10–30	30–60	30–60
	f	0.001–0.004	0.004–0.008	0.008–0.015	0.015–0.030	0.030–0.045
K2	Vc	1.2–4	3.5–8	8–25	25–50	25–50
	f	0.001–0.003	0.003–0.007	0.007–0.013	0.013–0.025	0.025–0.040
N1	Vc	2–6	5–15	15–40	40–70	40–70
	f	0.001–0.003	0.003–0.006	0.006–0.012	0.012–0.023	0.023–0.035
N2	Vc	1.8–5.5	5–15	15–40	40–65	40–65
	f	0.001–0.003	0.003–0.007	0.007–0.013	0.013–0.025	0.025–0.040
N3	Vc	1.5–5	4–12	12–30	30–60	30–60
	f	0.001–0.002	0.002–0.006	0.006–0.011	0.011–0.022	0.022–0.035
N4	Vc	1.5–5	4–12	12–30	30–60	30–60
	f	0.001–0.002	0.002–0.005	0.005–0.010	0.010–0.020	0.020–0.030
N5	Vc	2–6	5–15	15–35	35–65	35–65
	f	0.001–0.003	0.003–0.006	0.006–0.013	0.013–0.025	0.025–0.040
N6	Vc	1.5–5	4–12	12–30	30–60	30–60
	f	0.001–0.002	0.002–0.004	0.004–0.010	0.010–0.022	0.022–0.035
N7	Vc	1.5–5	4–12	12–30	30–60	30–60
	f	0.001–0.002	0.002–0.004	0.004–0.009	0.009–0.020	0.020–0.031
N8	Vc	1–3	3–6	6–20	20–45	20–45
	f	0.001–0.002	0.002–0.004	0.004–0.008	0.008–0.016	0.016–0.027
S1	Vc	0.8–5	4–7	7–15	15–30	15–30
	f	0.001–0.002	0.002–0.004	0.004–0.009	0.009–0.018	0.018–0.030
S2	Vc					
	f					
H1	Vc					
	f					
H2	Vc					
	f					
H3	Vc					
	f					
O1	Vc	1.5–5	4–10	10–25	20–35	30–60
	f	0.001–0.003	0.003–0.008	0.008–0.014	0.014–0.035	0.035–0.060
O2	Vc					
	f					
O3	Vc					
	f					

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Les valeurs mentionnées sont des valeurs recommandées qui doivent être adaptées selon les conditions de la machine, du serrage, du lubrifiant etc.

Questi valori sono valori raccomandati che devono essere adattati secondo le condizioni della macchina, del serraggio, del lubrificante etc.

These are recommended values that depend on the condition of the machine, fixture, coolant etc., and they may have to be adapted yet.

# Schnittdaten

## Données de coupe

### Parametri di lavoro

#### Cutting data

### Art. 56036

Mat.		∅ 0.40-0.95	∅ 1.00-1.95	∅ 2.00-02.95	∅ 3.00-3.95	∅ 4.00-6.00
P1	Vc	40-60	60-90	60-90	60-90	60-90
	f	0.010-0.025	0.025-0.040	0.040-0.055	0.055-0.070	0.070-0.100
P2	Vc	30-50	50-70	50-70	50-70	50-70
	f	0.009-0.023	0.023-0.036	0.036-0.050	0.050-0.065	0.065-0.080
P3	Vc	20-40	40-60	40-60	40-60	40-60
	f	0.006-0.015	0.015-0.025	0.025-0.040	0.040-0.055	0.055-0.070
M1	Vc	20-35	35-50	35-50	35-50	35-50
	f	0.005-0.013	0.013-0.023	0.023-0.035	0.035-0.050	0.050-0.065
M2	Vc	20-30	30-45	30-45	30-45	30-45
	f	0.004-0.010	0.010-0.020	0.020-0.032	0.032-0.046	0.046-0.060
K1	Vc	60-100	100-150	100-150	100-150	100-150
	f	0.015-0.025	0.025-0.038	0.038-0.055	0.055-0.075	0.075-0.130
K2	Vc	40-80	80-130	80-130	80-130	80-130
	f	0.012-0.022	0.022-0.035	0.035-0.050	0.050-0.070	0.070-0.090
N1	Vc	60-90	90-120	90-120	90-120	90-120
	f	0.015-0.025	0.025-0.035	0.035-0.050	0.050-0.070	0.070-0.085
N2	Vc	70-120	120-150	120-150	120-150	120-150
	f	0.016-0.027	0.027-0.042	0.042-0.060	0.060-0.080	0.080-0.110
N3	Vc	70-120	120-150	120-150	120-150	120-150
	f	0.015-0.025	0.025-0.035	0.035-0.050	0.050-0.070	0.070-0.085
N4	Vc	40-70	70-100	70-100	70-100	70-100
	f	0.013-0.023	0.023-0.033	0.033-0.045	0.045-0.060	0.060-0.080
N5	Vc	70-120	120-150	120-150	120-150	120-150
	f	0.015-0.025	0.025-0.035	0.035-0.050	0.050-0.070	0.070-0.100
N6	Vc					
	f					
N7	Vc					
	f					
N8	Vc					
	f					
S1	Vc	30-40	40-70	40-70	40-70	40-70
	f	0.010-0.022	0.022-0.035	0.035-0.050	0.050-0.070	0.070-0.090
S2	Vc					
	f					
H1	Vc	15-25	20-35	20-35	20-35	20-35
	f	0.005-0.010	0.010-0.020	0.020-0.030	0.030-0.040	0.040-0.055
H2	Vc					
	f					
H3	Vc					
	f					
O1	Vc					
	f					
O2	Vc					
	f					
O3	Vc					
	f					

### Art. 16004

Mat.		∅ 0.10-0.30	∅ 0.35-0.50	∅ 0.55-0.80	∅ 0.85-1.50
P1	Vc	1.0-2.0	2.0-5.5	3.5-11	9.0-15
	f	0.001-0.005	0.004-0.007	0.006-0.011	0.010-0.015
P2	Vc	0.8-1.5	1.2-4.0	3.5-8.0	7.0-12
	f	0.001-0.003	0.002-0.006	0.005-0.007	0.006-0.010
P3	Vc	0.5-1.2	1.0-3.5	2.0-5.0	3.0-7.5
	f	0.001-0.002	0.002-0.004	0.003-0.006	0.005-0.010
M1	Vc	0.8-1.5	1.2-4.0	3.5-8.0	7.0-12
	f	0.001-0.002	0.002-0.004	0.003-0.006	0.005-0.010
M2	Vc	0.5-1.2	1.0-3.5	2.0-5.0	3.0-7.5
	f	0.001-0.002	0.002-0.004	0.003-0.005	0.004-0.008
K1	Vc	1.0-2.0	2.0-5.5	3.5-11	9.0-15
	f	0.001-0.005	0.004-0.008	0.007-0.011	0.010-0.015
K2	Vc	0.8-1.5	1.2-4.0	3.5-8.0	7.0-12
	f	0.001-0.003	0.002-0.006	0.005-0.007	0.006-0.010
N1	Vc	1.0-2.0	2.0-5.5	3.5-11	9.0-15
	f	0.001-0.006	0.005-0.010	0.008-0.015	0.013-0.025
N2	Vc	0.8-1.5	1.2-4.0	3.5-8.0	7.0-12
	f	0.002-0.006	0.005-0.010	0.008-0.015	0.013-0.025
N3	Vc				
	f				
N4	Vc				
	f				
N5	Vc	1.0-2.0	2.0-5.5	3.5-11	9.0-15
	f	0.002-0.006	0.005-0.010	0.008-0.015	0.013-0.020
N6	Vc				
	f				
N7	Vc				
	f				
N8	Vc				
	f				
S1	Vc				
	f				
S2	Vc				
	f				
H1	Vc				
	f				
H2	Vc				
	f				
H3	Vc				
	f				
O1	Vc				
	f				
O2	Vc				
	f				
O3	Vc				
	f				

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# Schnittdaten

## Données de coupe

## Parametri di lavoro

## Cutting data

### Art. 50695/50699

Mat.		∅ 0.05–0.30	∅ 0.31–0.50	∅ 0.51–0.80	∅ 0.81–1.20	∅ 1.21–2.00
P1	Vc	1.0–6.0	6.0–15	10–23	23–60	23–60
	f	0.001–0.004	0.003–0.008	0.007–0.013	0.012–0.018	0.016–0.025
P2	Vc	1.0–6.0	2.0–10	3.5–16	7.0–30	7.0–30
	f	0.001–0.003	0.002–0.007	0.006–0.012	0.010–0.016	0.014–0.022
P3	Vc	0.5–5.0	1.0–8.0	2.5–13	5.0–25	5.0–25
	f	0.001–0.002	0.002–0.006	0.005–0.010	0.008–0.014	0.012–0.020
M1	Vc	0.5–3.0	1.0–6.0	4.0–10	8.0–18	8.0–18
	f	0.001–0.002	0.002–0.005	0.004–0.008	0.007–0.012	0.010–0.016
M2	Vc					
	f					
K1	Vc	2.0–8.0	6.0–15	10–23	23–60	23–60
	f	0.001–0.004	0.003–0.008	0.007–0.013	0.012–0.018	0.016–0.025
K2	Vc	1.0–6.0	2.0–10	3.5–16	7.0–30	7.0–30
	f	0.001–0.003	0.002–0.007	0.006–0.012	0.010–0.016	0.014–0.022
N1	Vc					
	f					
N2	Vc	3.0–16	8.0–26	13–55	30–100	30–100
	f	0.001–0.004	0.004–0.007	0.007–0.011	0.010–0.016	0.015–0.022
N3	Vc	2.5–13	6.0–22	10–40	20–80	20–80
	f	0.001–0.004	0.004–0.006	0.005–0.010	0.009–0.015	0.014–0.020
N4	Vc	2.0–8.0	6.0–15	10–23	23–60	23–60
	f	0.001–0.002	0.002–0.005	0.004–0.008	0.007–0.017	0.010–0.016
N5	Vc	3.0–16	8.0–26	13–55	30–100	30–100
	f	0.001–0.004	0.004–0.006	0.005–0.010	0.009–0.015	0.014–0.020
N6	Vc					
	f					
N7	Vc	2.0–8.0	6.0–15	10–23	23–60	23–60
	f	0.001–0.004	0.004–0.006	0.005–0.010	0.009–0.015	0.014–0.020
N8	Vc	1.0–6.0	2.0–10	3.5–16	7.0–30	7.0–30
	f	0.001–0.002	0.002–0.005	0.004–0.008	0.007–0.010	0.008–0.013
S1	Vc					
	f					
S2	Vc					
	f					
H1	Vc					
	f					
H2	Vc					
	f					
H3	Vc					
	f					
O1	Vc					
	f					
O2	Vc					
	f					
O3	Vc					
	f					

### Art. 51200

Mat.		∅ 0.03–0.30	∅ 0.31–0.50	∅ 0.51–1.00	∅ 1.01–2.00	∅ 2.01–3.00
P1	Vc	1.5–5	4–10	10–30	30–60	30–60
	f	0.001–0.004	0.003–0.008	0.007–0.015	0.014–0.025	0.023–0.035
P2	Vc	1.2–4	3.5–8	8–25	25–50	25–50
	f	0.001–0.003	0.002–0.007	0.006–0.014	0.012–0.023	0.021–0.032
P3	Vc	1–3	3–6	6–20	20–45	20–45
	f	0.001–0.002	0.002–0.006	0.005–0.013	0.011–0.020	0.018–0.030
M1	Vc	1.2–4	3.5–8	8–20	20–45	20–45
	f	0.001–0.002	0.002–0.005	0.004–0.011	0.010–0.018	0.016–0.028
M2	Vc	1–3	3–6	5–15	15–30	15–30
	f	0.001–0.002	0.002–0.004	0.003–0.009	0.008–0.016	0.016–0.028
K1	Vc	1.5–5	4–10	10–30	30–60	30–60
	f	0.001–0.004	0.003–0.008	0.007–0.015	0.014–0.025	0.023–0.035
K2	Vc	1.2–4	3.5–8	8–25	25–50	25–50
	f	0.001–0.003	0.002–0.007	0.006–0.014	0.012–0.022	0.020–0.032
N1	Vc	2–6	5–15	15–40	40–70	40–70
	f	0.001–0.003	0.002–0.006	0.005–0.013	0.012–0.020	0.018–0.030
N2	Vc	1.8–5.5	5.0–15	15–40	40–65	40–65
	f	0.001–0.004	0.003–0.007	0.006–0.015	0.014–0.022	0.020–0.035
N3	Vc	1.5–5	4–12	12–30	30–60	30–60
	f	0.001–0.004	0.003–0.006	0.006–0.013	0.012–0.020	0.018–0.032
N4	Vc	1.5–5	4–12	12–30	30–60	30–60
	f	0.001–0.002	0.002–0.005	0.004–0.010	0.009–0.016	0.015–0.025
N5	Vc	2–6	5–15	15–35	35–65	35–65
	f	0.001–0.004	0.003–0.006	0.005–0.013	0.012–0.020	0.018–0.032
N6	Vc	1.5–5	4–12	12–30	30–60	30–60
	f	0.001–0.002	0.002–0.005	0.004–0.010	0.009–0.016	0.015–0.020
N7	Vc	1.5–5	4–12	12–30	30–60	30–60
	f	0.001–0.004	0.003–0.006	0.005–0.012	0.011–0.018	0.016–0.025
N8	Vc	1–3	2.5–6	6–20	20–45	20–45
	f	0.001–0.002	0.002–0.005	0.004–0.009	0.008–0.013	0.012–0.018
S1	Vc	0.8–5	4–7	7–15	15–30	15–30
	f	0.001–0.003	0.002–0.006	0.005–0.013	0.012–0.020	0.018–0.030
S2	Vc					
	f					
H1	Vc					
	f					
H2	Vc					
	f					
H3	Vc					
	f					
O1	Vc	1.5–5	4–10	10–25	20–35	30–60
	f	0.001–0.004	0.003–0.010	0.009–0.018	0.016–0.028	0.026–0.040
O2	Vc					
	f					
O3	Vc					
	f					

Genannte Werte sind Richtwerte, die je nach Maschine, Aufspannung, Kühlschmierstoff usw. noch angepasst werden müssen.

Les valeurs mentionnées sont des valeurs recommandées qui doivent être adaptées selon les conditions de la machine, du serrage, du lubrifiant etc.

Questi valori sono valori raccomandati che devono essere adattati secondo le condizioni della macchina, del serraggio, del lubrificante etc.

These are recommended values that depend on the condition of the machine, fixture, coolant etc., and they may have to be adapted yet.

# Schnittdaten

## Données de coupe

### Parametri di lavoro

#### Cutting data

### Art. 51201

Mat.		ø 0.30-0.50	ø 0.51-1.00	ø 1.01-2.00	ø 2.01-3.00
P1	Vc	5-12	12-35	35-65	35-60
	f	0.003-0.008	0.007-0.015	0.014-0.025	0.023-0.035
P2	Vc	4-9	9-28	28-55	28-55
	f	0.002-0.007	0.006-0.014	0.012-0.023	0.021-0.032
P3	Vc	3.3-7	7-23	23-50	23-50
	f	0.002-0.006	0.005-0.013	0.011-0.020	0.018-0.030
M1	Vc	4-9	9-28	28-55	28-55
	f	0.002-0.005	0.004-0.011	0.010-0.018	0.016-0.028
M2	Vc	3-8	8-20	18-35	18-35
	f	0.002-0.004	0.003-0.009	0.008-0.016	0.016-0.028
K1	Vc	5-12	12-35	35-65	35-60
	f	0.003-0.008	0.007-0.015	0.014-0.025	0.023-0.035
K2	Vc	4-10	10-30	30-55	30-50
	f	0.002-0.007	0.006-0.014	0.012-0.022	0.020-0.032
N1	Vc	6-19	19-45	45-80	45-80
	f	0.002-0.006	0.005-0.013	0.012-0.020	0.018-0.030
N2	Vc	5.5-17	17-45	45-70	45-70
	f	0.003-0.007	0.006-0.015	0.014-0.022	0.020-0.035
N3	Vc	5.5-15	15-35	35-65	35-65
	f	0.003-0.006	0.006-0.013	0.012-0.020	0.018-0.032
N4	Vc	5.5-15	15-35	35-65	35-65
	f	0.002-0.005	0.004-0.010	0.009-0.016	0.015-0.025
N5	Vc	6.5-18	18-40	40-70	40-70
	f	0.003-0.006	0.005-0.013	0.012-0.020	0.018-0.032
N6	Vc	5.5-15	15-35	35-65	35-65
	f	0.002-0.005	0.004-0.010	0.009-0.016	0.015-0.020
N7	Vc	5.5-15	15-35	35-65	35-65
	f	0.003-0.006	0.005-0.012	0.011-0.018	0.016-0.025
N8	Vc	3-7	7-23	23-50	23-50
	f	0.002-0.005	0.004-0.009	0.008-0.013	0.012-0.018
S1	Vc	5-8	8.0-18	18-35	18-35
	f	0.002-0.006	0.005-0.013	0.012-0.020	0.018-0.030
S2	Vc	2.5-7	6-12	11-20	11-20
	f	0.002-0.004	0.003-0.007	0.006-0.011	0.010-0.018
H1	Vc	2.5-7	6-12	11-20	11-20
	f	0.002-0.004	0.003-0.007	0.006-0.011	0.010-0.018
H2	Vc				
	f				
H3	Vc				
	f				
O1	Vc	5-12	12-35	35-65	35-60
	f	0.003-0.010	0.009-0.018	0.016-0.028	0.026-0.040
O2	Vc	2.5-6	6-20	20-45	20-45
	f	0.002-0.009	0.008-0.016	0.015-0.025	0.022-0.035
O3	Vc				
	f				

### Art. 50620 / 50621

Mat.		ø 0.20-0.50	ø 0.51-1.00	ø 1.01-2.00	ø 2.01-3.00
P1	Vc	6-15	15-35	15-35	15-35
	f	0.001-0.010	0.010-0.020	0.020-0.03	0.030-0.045
P2	Vc	5-13	13-30	13-30	13-30
	f	0.001-0.008	0.008-0.018	0.018-0.028	0.028-0.042
P3	Vc	4-12	12-25	12-25	12-25
	f	0.001-0.007	0.007-0.016	0.016-0.025	0.025-0.038
M1	Vc	4-12	12-25	12-25	12-25
	f	0.001-0.007	0.007-0.016	0.016-0.025	0.025-0.038
M2	Vc				
	f				
K1	Vc	6-15	15-35	15-35	15-35
	f	0.001-0.010	0.010-0.020	0.020-0.030	0.030-0.045
K2	Vc	5-13	13-30	13-30	13-30
	f	0.001-0.008	0.008-0.018	0.018-0.028	0.028-0.042
N1	Vc				
	f				
N2	Vc	8-20	20-45	20-45	20-45
	f	0.001-0.010	0.010-0.020	0.020-0.030	0.030-0.045
N3	Vc	6-18	18-40	18-40	18-40
	f	0.001-0.008	0.008-0.018	0.018-0.028	0.028-0.042
N4	Vc				
	f				
N5	Vc	6-18	18-40	18-40	18-40
	f	0.001-0.010	0.010-0.020	0.020-0.035	0.035-0.060
N6	Vc				
	f				
N7	Vc				
	f				
N8	Vc				
	f				
S1	Vc				
	f				
S2	Vc				
	f				
H1	Vc				
	f				
H2	Vc				
	f				
H3	Vc				
	f				
O1	Vc				
	f				
O2	Vc				
	f				
O3	Vc				
	f				

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Les valeurs mentionnées sont des valeurs recommandées qui doivent être adaptées selon les conditions de la machine, du serrage, du lubrifiant etc.

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# Schnittdaten Données de coupe Parametri di lavoro Cutting data

## Art. 50622

Mat.		ø 0.20-0.50	ø 0.51-1.00	ø 1.01-2.00	ø 2.01-3.00
P1	Vc	8-20	20-40	20-40	20-40
	f	0.001-0.010	0.010-0.020	0.020-0.030	0.030-0.045
P2	Vc	6-18	18-38	18-38	18-38
	f	0.001-0.008	0.008-0.018	0.018-0.028	0.028-0.042
P3	Vc	5-14	14-30	14-30	14-30
	f	0.001-0.007	0.007-0.016	0.016-0.025	0.025-0.038
M1	Vc	5-14	14-30	14-30	14-30
	f	0.001-0.007	0.007-0.016	0.016-0.025	0.025-0.038
M2	Vc				
	f				
K1	Vc	8-20	20-40	20-40	20-40
	f	0.001-0.010	0.010-0.020	0.020-0.030	0.030-0.045
K2	Vc	6-18	18-38	18-38	18-38
	f	0.001-0.008	0.008-0.018	0.018-0.028	0.028-0.042
N1	Vc				
	f				
N2	Vc	10-25	25-55	25-55	25-55
	f	0.001-0.010	0.010-0.020	0.020-0.030	0.030-0.045
N3	Vc	8-22	22-50	22-50	22-50
	f	0.001-0.008	0.008-0.018	0.018-0.028	0.028-0.042
N4	Vc				
	f				
N5	Vc	8-22	22-50	22-50	22-50
	f	0.001-0.010	0.010-0.020	0.020-0.035	0.035-0.060
N6	Vc				
	f				
N7	Vc				
	f				
N8	Vc				
	f				
S1	Vc				
	f				
S2	Vc				
	f				
H1	Vc	2-5	5-12	5-12	5-12
	f	0.001-0.004	0.004-0.008	0.008-0.015	0.015-0.025
H2	Vc				
	f				
H3	Vc				
	f				
O1	Vc				
	f				
O2	Vc				
	f				
O3	Vc				
	f				

## Art. 50941

Mat.		ø 0.50-0.90	ø 1.00-1.60	ø 1.70-2.40
P1	Vc	40-80	80-130	80-130
	f	0.020-0.050	0.050-0.090	0.090-0.150
P2	Vc	35-75	70-100	70-100
	f	0.015-0.040	0.040-0.080	0.080-0.140
P3	Vc	30-50	50-90	50-90
	f	0.010-0.020	0.020-0.060	0.060-0.100
M1	Vc	30-40	40-80	40-80
	f	0.005-0.008	0.008-0.040	0.040-0.080
M2	Vc	20-30	30-70	30-70
	f	0.005-0.008	0.008-0.060	0.060-0.100
K1	Vc	50-100	100-150	100-150
	f	0.020-0.050	0.050-0.100	0.100-0.150
K2	Vc	40-80	80-130	80-130
	f	0.015-0.040	0.040-0.080	0.080-0.120
N1	Vc			
	f			
N2	Vc	60-120	120-150	120-150
	f	0.020-0.040	0.040-0.090	0.090-0.150
N3	Vc	60-120	120-180	120-180
	f	0.020-0.040	0.040-0.090	0.090-0.150
N4	Vc			
	f			
N5	Vc			
	f			
N6	Vc			
	f			
N7	Vc			
	f			
N8	Vc			
	f			
S1	Vc	20-30	30-60	30-60
	f	0.003-0.005	0.005-0.015	0.012-0.030
S2	Vc			
	f			
H1	Vc	10-20	15-30	15-30
	f	0.002-0.004	0.003-0.012	0.010-0.015
H2	Vc			
	f			
H3	Vc			
	f			
O1	Vc			
	f			
O2	Vc			
	f			
O3	Vc			
	f			

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These are recommended values that depend on the condition of the machine, fixture, coolant etc., and they may have to be adapted yet.



# Schnittdaten

## Données de coupe

## Parametri di lavoro

## Cutting data

### Art. 55652

Mat.		ø 0.20-0.50	ø 0.51-1.00	ø 1.01-2.00	ø 2.01-2.99
<b>P1</b>	Vc	10-25	25-40	40-60	40-60
	f	0.005-0.008	0.007-0.015	0.013-0.040	0.035-0.050
<b>P2</b>	Vc	8.0-20	20-30	30-50	30-50
	f	0.004-0.007	0.006-0.015	0.013-0.035	0.030-0.045
<b>P3</b>	Vc				
	f				
<b>M1</b>	Vc	8-15	15-25	25-40	25-40
	f	0.003-0.006	0.005-0.012	0.010-0.020	0.018-0.030
<b>M2</b>	Vc				
	f				
<b>K1</b>	Vc	20-45	45-60	60-100	60-100
	f	0.004-0.008	0.007-0.015	0.013-0.040	0.035-0.050
<b>K2</b>	Vc	15-30	30-40	40-80	40-80
	f	0.002-0.006	0.005-0.013	0.011-0.032	0.030-0.045
<b>N1</b>	Vc				
	f				
<b>N2</b>	Vc	20-50	50-80	80-120	80-120
	f	0.005-0.010	0.008-0.020	0.018-0.050	0.040-0.080
<b>N3</b>	Vc	20-40	30-70	60-100	60-100
	f				
<b>N4</b>	Vc				
	vf				
<b>N5</b>	Vc				
	f				
<b>N6</b>	Vc	20-40	30-70	60-100	60-100
	f				
<b>N7</b>	Vc				
	f				
<b>N8</b>	Vc				
	f				
<b>S1</b>	Vc	10-20	20-30	30-50	30-50
	f	0.002-0.005	0.004-0.010	0.008-0.030	0.028-0.040
<b>S2</b>	Vc				
	f				
<b>H1</b>	Vc				
	f				
<b>H2</b>	Vc				
	f				
<b>H3</b>	Vc				
	f				
<b>O1</b>	Vc	8.0-20	20-30	30-50	30-50
	f	0.004-0.007	0.006-0.015	0.013-0.035	0.030-0.045
<b>O2</b>	Vc				
	f				
<b>O3</b>	Vc				
	f				

### Art. 12604

Mat.		ø 0.05-0.30	ø 0.31-0.80	ø 0.81-1.50	ø 1.55-3.17
<b>P1</b>	Vc	1.0-2.0	2.0-8.0	8.0-20	8.0-20
	f	0.001-0.005	0.005-0.011	0.010-0.015	0.014-0.021
<b>P2</b>	Vc	0.5-1.5	1.5-7.0	7.0-16	7.0-16
	f	0.001-0.002	0.002-0.006	0.005-0.009	0.008-0.012
<b>P3</b>	Vc				
	f				
<b>M1</b>	Vc	0.5-1.5	1.5-7.0	7.0-16	7.0-16
	f	0.001-0.002	0.002-0.006	0.005-0.009	0.008-0.015
<b>M2</b>	Vc	0.5-1.2	1.2-6.0	6.0-15	6.0-15
	f	0.001-0.002	0.002-0.005	0.004-0.007	0.006-0.012
<b>K1</b>	Vc	1.0-5.0	5.0-10	10-20	10-20
	f	0.001-0.005	0.004-0.011	0.010-0.015	0.014-0.020
<b>K2</b>	Vc	0.8-4.0	4.0-8.0	8.0-18	8.0-18
	f	0.001-0.004	0.003-0.008	0.007-0.011	0.010-0.016
<b>N1</b>	Vc	2.0-7.0	7.0-13	13-25	13-25
	f	0.001-0.004	0.003-0.010	0.009-0.016	0.015-0.022
<b>N2</b>	Vc	1.5-6.0	6.0-12	12-22	12-22
	f	0.001-0.005	0.004-0.011	0.010-0.020	0.018-0.035
<b>N3</b>	Vc				
	f				
<b>N4</b>	Vc				
	f				
<b>N5</b>	Vc	2.0-7.0	7.0-13	13-25	13-25
	f	0.001-0.004	0.003-0.010	0.009-0.018	0.017-0.030
<b>N6</b>	Vc				
	f				
<b>N7</b>	Vc				
	f				
<b>N8</b>	Vc				
	f				
<b>S1</b>	Vc				
	f				
<b>S2</b>	Vc				
	f				
<b>H1</b>	Vc				
	f				
<b>H2</b>	Vc				
	f				
<b>H3</b>	Vc				
	f				
<b>O1</b>	Vc				
	f				
<b>O2</b>	Vc				
	f				
<b>O3</b>	Vc				
	f				

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**Schnittdaten**  
**Données de coupe**  
**Parametri di lavoro**  
**Cutting data**

**Art. 11654**

Mat.		∅ 0.50–1.00	∅ 1.050–1.70	∅ 1.70–2.30
P1	Vc	2.0–8.0	8.0–20	8.0–20
	f	0.006–0.012	0.011–0.019	0.018–0.026
P2	Vc	1.5–7.0	7.0–16	7.0–16
	f	0.005–0.010	0.009–0.016	0.015–0.022
P3	Vc			
	f			
M1	Vc			
	f			
M2	Vc			
	f			
K1	Vc	5.0–10	10–20	10–20
	f	0.006–0.012	0.011–0.019	0.018–0.025
K2	Vc	4.0–8.0	8.0–18	8.0–18
	f	0.004–0.010	0.009–0.017	0.015–0.022
N1	Vc			
	f			
N2	Vc			
	f			
N3	Vc			
	f			
N4	Vc			
	f			
N5	Vc	7.0–13	13–25	13–25
	f	0.006–0.012	0.011–0.020	0.018–0.035
N6	Vc			
	f			
N7	Vc	2.0–8.0	8.0–20	8.0–20
	f	0.006–0.012	0.011–0.019	0.018–0.030
N8	Vc	1.5–7.0	7.0–16	7.0–16
	f	0.003–0.008	0.007–0.013	0.012–0.018
S1	Vc			
	f			
S2	Vc			
	f			
H1	Vc			
	f			
H2	Vc			
	f			
H3	Vc			
	vf			
O1	Vc			
	f			
O2	Vc			
	f			
O3	Vc			
	f			

**Art. 50720**

Mat.		∅ 0.20–0.50	∅ 0.55–0.80	∅ 0.85–1.20	∅ 1.25–1.50
P1	Vc	8–20	20–40	20–40	20–40
	f	0.001–0.010	0.010–0.018	0.018–0.025	0.025–0.035
P2	Vc	6–18	18–38	18–38	18–38
	f	0.00–0.008	0.008–0.016	0.016–0.023	0.023–0.033
P3	Vc	5–14	14–30	14–30	14–30
	f	0.001–0.007	0.007–0.015	0.015–0.020	0.020–0.030
M1	Vc	5–14	14–30	14–30	14–30
	f	0.00–0.008	0.008–0.016	0.016–0.023	0.023–0.033
M2	Vc	3–12	12–25	12–25	12–25
	f	0.001–0.005	0.005–0.010	0.010–0.016	0.016–0.020
K1	Vc	8–20	20–40	20–40	20–40
	f	0.001–0.010	0.010–0.018	0.018–0.025	0.025–0.035
K2	Vc	6–18	6–18	6–18	6–18
	f	0.00–0.008	0.008–0.016	0.016–0.023	0.023–0.033
N1	Vc	6–18	18–38	18–38	18–38
	f	0.001–0.007	0.007–0.015	0.015–0.020	0.020–0.030
N2	Vc	10–25	25–55	25–55	25–55
	f	0.001–0.010	0.010–0.018	0.018–0.025	0.025–0.035
N3	Vc	8–22	22–50	22–50	22–50
	f	0.00–0.008	0.008–0.016	0.016–0.023	0.023–0.033
N4	Vc	5–14	14–30	14–30	14–30
	f	0.001–0.005	0.005–0.010	0.010–0.016	0.016–0.020
N5	Vc	10–25	25–55	25–55	25–55
	f	0.001–0.010	0.010–0.018	0.018–0.025	0.025–0.035
N6	Vc	5–15	15–30	15–30	15–30
	f	0.001–0.005	0.005–0.010	0.010–0.016	0.016–0.020
N7	Vc				
	f				
N8	Vc				
	f				
S1	Vc	6–10	10–20	10–20	10–20
	f	0.001–0.005	0.005–0.010	0.010–0.016	0.016–0.020
S2	Vc				
	f				
H1	Vc				
	f				
H2	Vc				
	f				
H3	Vc				
	f				
O1	Vc				
	f				
O2	Vc				
	f				
O3	Vc				
	f				

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# Schnittdaten

## Données de coupe

### Parametri di lavoro

#### Cutting data

### Art. 50740/50760/50780

Mat.		ø 0.40-0.50	ø 0.55-0.80	ø 0.85-1.20	ø 1.25-1.50
P1	Vc	6-10	10-25	10-25	10-25
	f	0.001-0.006	0.006-0.010	0.010-0.022	0.022-0.030
P2	Vc	5-8	8-20	8-20	8-20
	f	0.001-0.005	0.005-0.008	0.008-0.015	0.015-0.020
P3	Vc	4-7	7-18	7-18	7-18
	f	0.001-0.004	0.004-0.007	0.007-0.012	0.012-0.015
M1	Vc	4-5	5-15	5-15	5-15
	f	0.001-0.003	0.003-0.006	0.006-0.012	0.012-0.018
M2	Vc	2-4	4-12	4-12	4-12
	f	0.001-0.003	0.003-0.005	0.005-0.010	0.010-0.015
K1	Vc	6-10	10-25	10-25	10-25
	f	0.001-0.006	0.006-0.010	0.010-0.022	0.022-0.030
K2	Vc	5-8	8-20	8-20	8-20
	f	0.001-0.005	0.005-0.008	0.008-0.015	0.015-0.020
N1	Vc	4-6	6-18	6-18	6-18
	f	0.001-0.004	0.004-0.007	0.007-0.012	0.012-0.015
N2	Vc	6-10	10-25	10-25	10-25
	f	0.001-0.006	0.006-0.010	0.010-0.022	0.022-0.030
N3	Vc	5-8	8-20	8-20	8-20
	f	0.001-0.005	0.005-0.008	0.008-0.015	0.015-0.020
N4	Vc	3-5	5-15	5-15	5-15
	f	0.001-0.004	0.004-0.007	0.007-0.012	0.012-0.015
N5	Vc	6-10	10-25	10-25	10-25
	f	0.001-0.006	0.006-0.010	0.010-0.022	0.022-0.030
N6	Vc	4-6	6-18	6-18	6-18
	f	0.001-0.003	0.003-0.005	0.005-0.010	0.010-0.015
N7	Vc				
	f				
N8	Vc				
	f				
S1	Vc	3-5	5-12	5-12	5-12
	f	0.001-0.003	0.003-0.005	0.005-0.010	0.010-0.015
S2	Vc				
	f				
H1	Vc				
	f				
H2	Vc				
	f				
H3	Vc				
	f				
O1	Vc				
	f				
O2	Vc				
	f				
O3	Vc				
	f				

### Art. 70030-70090/70130-70190

Mat.			
P1	Vc	180-280	
	f <sub>z</sub>	80-180	mm/min
P2	Vc	180-280	
	f <sub>z</sub>	70-160	mm/min
P3	Vc	180-280	
	f <sub>z</sub>	70-150	mm/min
M1	Vc	180-280	
	f <sub>z</sub>	70-150	mm/min
M2	Vc	180-280	
	f <sub>z</sub>	70-150	mm/min
K1	Vc	180-280	
	f <sub>z</sub>	80-180	mm/min
K2	Vc	180-280	
	f <sub>z</sub>	70-160	mm/min
N1	Vc	180-280	
	f <sub>z</sub>	60-140	mm/min
N2	Vc	180-280	
	f <sub>z</sub>	80-180	mm/min
N3	Vc	180-280	
	f <sub>z</sub>	70-160	mm/min
N4	Vc	180-280	
	f <sub>z</sub>	60-120	mm/min
N5	Vc	180-280	
	f <sub>z</sub>	80-200	mm/min
N6	Vc	180-280	
	f <sub>z</sub>	60-150	mm/min
N7	Vc	180-280	
	f <sub>z</sub>	80-200	mm/min
N8	Vc	180-280	
	f <sub>z</sub>	80-200	mm/min
S1	Vc	180-280	
	f <sub>z</sub>	50-120	mm/min
S2	Vc		
	f <sub>z</sub>		
H1	Vc		
	f <sub>z</sub>		
H2	Vc		
	f <sub>z</sub>		
H3	Vc		
	f <sub>z</sub>		
O1	Vc	180-280	
	f <sub>z</sub>	80-200	mm/min
O2	Vc		
	f <sub>z</sub>		
O3	Vc		
	f <sub>z</sub>		

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# Schnittdaten

## Données de coupe

### Parametri di lavoro

#### Cutting data

### Art. 72075/72150

Mat.		ø 0.10-0.30	ø 0.40-1.50	ø 1.50-3.0	a <sub>e</sub>	a <sub>p</sub>
P1	V <sub>c</sub>	60-80	60-80	60-80	1 x d1	0.5 x d1
	f <sub>z</sub>	0.001-0.005	0.004-0.020	0.018-0.040		
P2	V <sub>c</sub>	50-70	50-70	50-70	1 x d1	0.3 x d1
	f <sub>z</sub>	0.001-0.005	0.004-0.020	0.018-0.040		
P3	V <sub>c</sub>	40-60	40-60	40-60	1 x d1	0.2 x d1
	f <sub>z</sub>	0.001-0.004	0.003-0.020	0.015-0.035		
M1	V <sub>c</sub>	30-50	30-50	30-50	1 x d1	0.4 x d1
	f <sub>z</sub>	0.001-0.004	0.003-0.020	0.015-0.035		
M2	V <sub>c</sub>	25-40	25-40	25-40	1 x d1	0.25 x d1
	f <sub>z</sub>	0.001-0.004	0.003-0.016	0.014-0.028		
K1	V <sub>c</sub>	40-70	40-70	40-70	1 x d1	1 x d1
	f <sub>z</sub>	0.001-0.005	0.004-0.020	0.018-0.040		
K2	V <sub>c</sub>	30-60	30-60	30-60	1 x d1	0.4 x d1
	f <sub>z</sub>	0.001-0.004	0.003-0.020	0.015-0.035		
N1	V <sub>c</sub>	70-100	70-100	70-100	1 x d1	1 x d1
	f <sub>z</sub>	0.001-0.004	0.003-0.020	0.015-0.035		
N2	V <sub>c</sub>	80-120	80-120	80-120	1 x d1	0.9 x d1
	f <sub>z</sub>	0.001-0.005	0.004-0.020	0.018-0.040		
N3	V <sub>c</sub>	60-100	60-100	60-100	1 x d1	0.9 x d1
	f <sub>z</sub>	0.001-0.005	0.004-0.020	0.018-0.040		
N4	V <sub>c</sub>					
	f <sub>z</sub>					
N5	V <sub>c</sub>	40-80	40-80	40-80	1 x d1	1 x d1
	f <sub>z</sub>	0.001-0.005	0.004-0.020	0.018-0.040		
N6	V <sub>c</sub>	25-50	25-50	25-50	1 x d1	0.5 x d1
	f <sub>z</sub>	0.001-0.004	0.003-0.020	0.015-0.035		
N7	V <sub>c</sub>					
	f <sub>z</sub>					
N8	V <sub>c</sub>					
	f <sub>z</sub>					
S1	V <sub>c</sub>	25-50	25-50	25-50	1 x d1	0.4 x d1
	f <sub>z</sub>	0.001-0.003	0.002-0.015	0.012-0.030		
S2	V <sub>c</sub>					
	f <sub>z</sub>					
H1	V <sub>c</sub>					
	f <sub>z</sub>					
H2	V <sub>c</sub>					
	f <sub>z</sub>					
H3	V <sub>c</sub>					
	f <sub>z</sub>					
O1	V <sub>c</sub>	80-120	80-120	80-120	1 x d1	1 x d1
	f <sub>z</sub>	0.001-0.006	0.005-0.025	0.020-0.045		
O2	V <sub>c</sub>					
	f <sub>z</sub>					
O3	V <sub>c</sub>					
	f <sub>z</sub>					

### Art. 42000

Mat.		ø 0.30-0.70	ø 0.70-1.50	ø 1.50-2.50	a <sub>e</sub>	a <sub>p</sub>
P1	V <sub>c</sub>	60-80	60-80	60-80	1 x d1	0.30 x d1
	f <sub>z</sub>	0.005-0.010	0.008-0.020	0.018-0.040		
P2	V <sub>c</sub>	50-70	50-70	50-70	1 x d1	0.15 x d1
	f <sub>z</sub>	0.005-0.010	0.008-0.020	0.018-0.040		
P3	V <sub>c</sub>	40-60	40-60	40-60	1 x d1	0.10 x d1
	f <sub>z</sub>	0.004-0.010	0.006-0.020	0.0015-0.035		
M1	V <sub>c</sub>	30-50	30-50	30-50	1 x d1	0.10 x d1
	f <sub>z</sub>	0.004-0.010	0.006-0.020	0.015-0.035		
M2	V <sub>c</sub>	25-40	25-40	25-40	1 x d1	0.10 x d1
	f <sub>z</sub>	0.004-0.008	0.005-0.016	0.014-0.028		
K1	V <sub>c</sub>	40-70	40-70	40-70	1 x d1	0.40 x d1
	f <sub>z</sub>	0.005-0.010	0.008-0.020	0.018-0.040		
K2	V <sub>c</sub>	30-60	30-60	30-60	1 x d1	0.20 x d1
	f <sub>z</sub>	0.004-0.010	0.006-0.020	0.015-0.035		
N1	V <sub>c</sub>	70-100	70-100	70-100	1 x d1	0.40 x d1
	f <sub>z</sub>	0.004-0.01	0.006-0.020	0.015-0.035		
N2	V <sub>c</sub>	80-120	80-120	80-120	1 x d1	0.25 x d1
	f <sub>z</sub>	0.005-0.010	0.008-0.020	0.018-0.040		
N3	V <sub>c</sub>	60-100	60-100	60-100	1 x d1	0.25 x d1
	f <sub>z</sub>	0.005-0.010	0.008-0.020	0.018-0.040		
N4	V <sub>c</sub>					
	f <sub>z</sub>					
N5	V <sub>c</sub>	40-80	40-80	40-80	1 x d1	0.40 x d1
	f <sub>z</sub>	0.005-0.010	0.008-0.020	0.018-0.040		
N6	V <sub>c</sub>	25-50	25-50	25-50	1 x d1	0.20 x d1
	f <sub>z</sub>	0.004-0.010	0.006-0.020	0.015-0.035		
N7	V <sub>c</sub>					
	f <sub>z</sub>					
N8	V <sub>c</sub>					
	f <sub>z</sub>					
S1	V <sub>c</sub>	25-50	25-50	25-50	1 x d1	0.20 x d1
	f <sub>z</sub>	0.003-0.008	0.006-0.015	0.012-0.030		
S2	V <sub>c</sub>					
	f <sub>z</sub>					
H1	V <sub>c</sub>					
	f <sub>z</sub>					
H2	V <sub>c</sub>					
	f <sub>z</sub>					
H3	V <sub>c</sub>					
	f <sub>z</sub>					
O1	V <sub>c</sub>	80-120	80-120	80-120	1 x d1	0.20 x d1
	f <sub>z</sub>	0.006-0.012	0.010-0.025	0.020-0.045		
O2	V <sub>c</sub>					
	f <sub>z</sub>					
O3	V <sub>c</sub>					
	f <sub>z</sub>					

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# Schnittdaten

## Données de coupe

## Parametri di lavoro

## Cutting data

### Art. 72500/72800

Mat.		ø 0.30-0.70	ø 0.70-1.50	ø 1.50-2.50	a <sub>e</sub>	a <sub>p</sub>
P1	V <sub>c</sub>	60-80	60-80	60-80		
	f <sub>z</sub>	0.005-0.010	0.008-0.020	0.018-0.040	1 x d1	0.30 x d1
P2	V <sub>c</sub>	50-70	50-70	50-70		
	f <sub>z</sub>	0.005-0.010	0.008-0.020	0.018-0.040	1 x d1	0.15 x d1
P3	V <sub>c</sub>	40-60	40-60	40-60		
	f <sub>z</sub>	0.004-0.010	0.006-0.020	0.015-0.035	1 x d1	0.10 x d1
M1	V <sub>c</sub>	30-50	30-50	30-50		
	f <sub>z</sub>	0.004-0.010	0.006-0.020	0.015-0.035	1 x d1	0.10 x d1
M2	V <sub>c</sub>	25-40	25-40	25-40		
	f <sub>z</sub>	0.004-0.008	0.005-0.016	0.014-0.028	1 x d1	0.10 x d1
K1	V <sub>c</sub>	40-70	40-70	40-70		
	f <sub>z</sub>	0.005-0.010	0.008-0.020	0.018-0.040	1 x d1	0.40 x d1
K2	V <sub>c</sub>	30-60	30-60	30-60		
	f <sub>z</sub>	0.004-0.010	0.006-0.020	0.015-0.035	1 x d1	0.20 x d1
N1	V <sub>c</sub>	70-100	70-100	70-100		
	f <sub>z</sub>	0.004-0.01	0.006-0.020	0.015-0.035	1 x d1	0.40 x d1
N2	V <sub>c</sub>	80-120	80-120	80-120		
	f <sub>z</sub>	0.005-0.010	0.008-0.020	0.018-0.040	1 x d1	0.25 x d1
N3	V <sub>c</sub>	60-100	60-100	60-100		
	f <sub>z</sub>	0.005-0.010	0.008-0.020	0.018-0.040	1 x d1	0.25 x d1
N4	V <sub>c</sub>					
	f <sub>z</sub>					
N5	V <sub>c</sub>	40-80	40-80	40-80		
	f <sub>z</sub>	0.005-0.010	0.008-0.020	0.018-0.040	1 x d1	0.40 x d1
N6	V <sub>c</sub>	25-50	25-50	25-50		
	f <sub>z</sub>	0.004-0.010	0.006-0.020	0.015-0.035	1 x d1	0.20 x d1
N7	V <sub>c</sub>					
	f <sub>z</sub>					
N8	V <sub>c</sub>					
	f <sub>z</sub>					
S1	V <sub>c</sub>	25-50	25-50	25-50		
	f <sub>z</sub>	0.003-0.008	0.006-0.015	0.012-0.030	1 x d1	0.20 x d1
S2	V <sub>c</sub>					
	f <sub>z</sub>					
H1	V <sub>c</sub>					
	f <sub>z</sub>					
H2	V <sub>c</sub>					
	f <sub>z</sub>					
H3	V <sub>c</sub>					
	f <sub>z</sub>					
O1	V <sub>c</sub>	80-120	80-120	80-120		
	f <sub>z</sub>	0.006-0.012	0.010-0.025	0.020-0.045	1 x d1	0.20 x d1
O2	V <sub>c</sub>					
	f <sub>z</sub>					
O3	V <sub>c</sub>					
	f <sub>z</sub>					

### Art. 73130

Mat.		ø 0.30-0.70	ø 0.70-1.50	ø 1.50-2.90	a <sub>e</sub>	a <sub>p</sub>
P1	V <sub>c</sub>	60-80	60-80	60-80		
	f <sub>z</sub>	0.005-0.010	0.008-0.020	0.018-0.040	1 x d1	0.80 x d1
P2	V <sub>c</sub>	50-70	50-70	50-70		
	f <sub>z</sub>	0.005-0.010	0.008-0.020	0.018-0.040	1 x d1	0.60 x d1
P3	V <sub>c</sub>	40-60	40-60	40-60		
	f <sub>z</sub>	0.004-0.010	0.006-0.020	0.015-0.035	1 x d1	0.50 x d1
M1	V <sub>c</sub>	30-50	30-50	30-50		
	f <sub>z</sub>	0.004-0.010	0.006-0.020	0.015-0.035	1 x d1	0.50 x d1
M2	V <sub>c</sub>	25-40	25-40	25-40		
	f <sub>z</sub>	0.004-0.008	0.005-0.016	0.014-0.028	1 x d1	0.40 x d1
K1	V <sub>c</sub>	40-70	40-70	40-70		
	f <sub>z</sub>	0.005-0.010	0.008-0.020	0.018-0.040	1 x d1	0.80 x d1
K2	V <sub>c</sub>	30-60	30-60	30-60		
	f <sub>z</sub>	0.004-0.010	0.006-0.020	0.015-0.035	1 x d1	0.80 x d1
N1	V <sub>c</sub>	70-100	70-100	70-100		
	f <sub>z</sub>	0.004-0.01	0.006-0.020	0.015-0.035	1 x d1	1.00 x d1
N2	V <sub>c</sub>	80-120	80-120	80-120		
	f <sub>z</sub>	0.005-0.010	0.008-0.020	0.018-0.040	1 x d1	1.00 x d1
N3	V <sub>c</sub>	60-100	60-100	60-100		
	f <sub>z</sub>	0.005-0.010	0.008-0.020	0.018-0.040	1 x d1	1.30 x d1
N4	V <sub>c</sub>					
	f <sub>z</sub>					
N5	V <sub>c</sub>	40-80	40-80	40-80		
	f <sub>z</sub>	0.005-0.010	0.008-0.020	0.018-0.040	1 x d1	1.00 x d1
N6	V <sub>c</sub>	25-50	25-50	25-50		
	f <sub>z</sub>	0.004-0.010	0.006-0.020	0.015-0.035	1 x d1	0.80 x d1
N7	V <sub>c</sub>					
	f <sub>z</sub>					
N8	V <sub>c</sub>					
	f <sub>z</sub>					
S1	V <sub>c</sub>	25-50	25-50	25-50		
	f <sub>z</sub>	0.003-0.008	0.006-0.015	0.012-0.030	1 x d1	0.80 x d1
S2	V <sub>c</sub>					
	f <sub>z</sub>					
H1	V <sub>c</sub>					
	f <sub>z</sub>					
H2	V <sub>c</sub>					
	f <sub>z</sub>					
H3	V <sub>c</sub>					
	f <sub>z</sub>					
O1	V <sub>c</sub>					
	f <sub>z</sub>					
O2	V <sub>c</sub>					
	f <sub>z</sub>					
O3	V <sub>c</sub>					
	f <sub>z</sub>					

Genannte Werte sind Richtwerte, die je nach Maschine, Aufspannung, Kühlschmierstoff usw. noch angepasst werden müssen.

Les valeurs mentionnées sont des valeurs recommandées qui doivent être adaptées selon les conditions de la machine, du serrage, du lubrifiant etc.

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These are recommended values that depend on the condition of the machine, fixture, coolant etc., and they may have to be adapted yet.



# Schnittdaten

## Données de coupe

## Parametri di lavoro

## Cutting data

### Art. 73200/73300

Mat.		ø 0.30-0.70	ø 0.70-1.50	ø 1.50-2.90	a <sub>e</sub>	a <sub>p</sub>
P1	V <sub>c</sub>	60-80	60-80	60-80	1 × d1	0.9 × d1
	f <sub>z</sub>	0.005-0.010	0.008-0.020	0.018-0.040		
P2	V <sub>c</sub>	50-70	50-70	50-70	1 × d1	0.8 × d1
	f <sub>z</sub>	0.005-0.010	0.008-0.020	0.018-0.040		
P3	V <sub>c</sub>	40-60	40-60	40-60	1 × d1	0.7 × d1
	f <sub>z</sub>	0.004-0.010	0.006-0.020	0.015-0.035		
M1	V <sub>c</sub>	30-50	30-50	30-50	1 × d1	0.6 × d1
	f <sub>z</sub>	0.004-0.010	0.006-0.020	0.015-0.035		
M2	V <sub>c</sub>	25-40	25-40	25-40	1 × d1	0.5 × d1
	f <sub>z</sub>	0.004-0.008	0.005-0.016	0.014-0.028		
K1	V <sub>c</sub>	40-70	40-70	40-70	1 × d1	1.0 × d1
	f <sub>z</sub>	0.005-0.010	0.008-0.020	0.018-0.040		
K2	V <sub>c</sub>	30-60	30-60	30-60	1 × d1	0.9 × d1
	f <sub>z</sub>	0.004-0.010	0.006-0.020	0.015-0.035		
N1	V <sub>c</sub>	70-100	70-100	70-100	1 × d1	0.9 × d1
	f <sub>z</sub>	0.004-0.01	0.006-0.020	0.015-0.035		
N2	V <sub>c</sub>	80-120	80-120	80-120	1 × d1	0.9 × d1
	f <sub>z</sub>	0.005-0.010	0.008-0.020	0.018-0.040		
N3	V <sub>c</sub>	60-100	60-100	60-100	1 × d1	0.9 × d1
	f <sub>z</sub>	0.005-0.010	0.008-0.020	0.018-0.040		
N4	V <sub>c</sub>					
	f <sub>z</sub>					
N5	V <sub>c</sub>	40-80	40-80	40-80	1 × d1	1 × d1
	f <sub>z</sub>	0.005-0.010	0.008-0.020	0.018-0.040		
N6	V <sub>c</sub>	25-50	25-50	25-50	1 × d1	0.8 × d1
	f <sub>z</sub>	0.004-0.010	0.006-0.020	0.015-0.035		
N7	V <sub>c</sub>					
	f <sub>z</sub>					
N8	V <sub>c</sub>					
	f <sub>z</sub>					
S1	V <sub>c</sub>	25-50	25-50	25-50	1 × d1	0.7 × d1
	f <sub>z</sub>	0.003-0.008	0.006-0.015	0.012-0.030		
S2	V <sub>c</sub>					
	f <sub>z</sub>					
H1	V <sub>c</sub>					
	f <sub>z</sub>					
H2	V <sub>c</sub>					
	f <sub>z</sub>					
H3	V <sub>c</sub>					
	f <sub>z</sub>					
O1	V <sub>c</sub>					
	f <sub>z</sub>					
O2	V <sub>c</sub>					
	f <sub>z</sub>					
O3	V <sub>c</sub>					
	f <sub>z</sub>					

### Art. 73800

Mat.		ø 0.50-1.00	ø 1.00-2.00	ø 2.00-2.50	a <sub>e</sub>	a <sub>p</sub>
P1	V <sub>c</sub>	60-80	60-80	60-80	1 × d1	0.30 × d1
	f <sub>z</sub>	0.003-0.008	0.008-0.016	0.016-0.030		
P2	V <sub>c</sub>	50-70	50-70	50-70	1 × d1	0.15 × d1
	f <sub>z</sub>	0.003-0.008	0.008-0.016	0.016-0.030		
P3	V <sub>c</sub>	40-60	40-60	40-60	1 × d1	0.10 × d1
	f <sub>z</sub>	0.002-0.007	0.007-0.014	0.014-0.026		
M1	V <sub>c</sub>	30-50	30-50	30-50	1 × d1	0.20 × d1
	f <sub>z</sub>	0.002-0.007	0.007-0.014	0.014-0.026		
M2	V <sub>c</sub>	25-40	25-40	25-40	1 × d1	0.10 × d1
	f <sub>z</sub>	0.002-0.006	0.006-0.012	0.012-0.022		
K1	V <sub>c</sub>	40-70	40-70	40-70	1 × d1	0.40 × d1
	f <sub>z</sub>	0.003-0.008	0.008-0.016	0.016-0.030		
K2	V <sub>c</sub>	30-60	30-60	30-60	1 × d1	0.20 × d1
	f <sub>z</sub>	0.002-0.007	0.007-0.014	0.014-0.026		
N1	V <sub>c</sub>	70-100	70-100	70-100	1 × d1	0.40 × d1
	f <sub>z</sub>	0.002-0.007	0.007-0.014	0.014-0.026		
N2	V <sub>c</sub>	80-120	80-120	80-120	1 × d1	0.25 × d1
	f <sub>z</sub>	0.003-0.008	0.008-0.016	0.016-0.030		
N3	V <sub>c</sub>	60-100	60-100	60-100	1 × d1	0.25 × d1
	f <sub>z</sub>	0.003-0.008	0.008-0.016	0.016-0.030		
N4	V <sub>c</sub>					
	f <sub>z</sub>					
N5	V <sub>c</sub>	40-80	40-80	40-80	1 × d1	0.40 × d1
	f <sub>z</sub>	0.003-0.008	0.008-0.016	0.016-0.030		
N6	V <sub>c</sub>	25-50	25-50	25-50	1 × d1	0.20 × d1
	f <sub>z</sub>	0.002-0.007	0.007-0.014	0.014-0.026		
N7	V <sub>c</sub>					
	f <sub>z</sub>					
N8	V <sub>c</sub>					
	f <sub>z</sub>					
S1	V <sub>c</sub>	25-50	25-50	25-50	1 × d1	0.20 × d1
	f <sub>z</sub>	0.002-0.006	0.006-0.012	0.012-0.020		
S2	V <sub>c</sub>					
	f <sub>z</sub>					
H1	V <sub>c</sub>					
	f <sub>z</sub>					
H2	V <sub>c</sub>					
	f <sub>z</sub>					
H3	V <sub>c</sub>					
	f <sub>z</sub>					
O1	V <sub>c</sub>					
	f <sub>z</sub>					
O2	V <sub>c</sub>					
	f <sub>z</sub>					
O3	V <sub>c</sub>					
	f <sub>z</sub>					

Genannte Werte sind Richtwerte, die je nach Maschine, Aufspannung, Kühlschmierstoff usw. noch angepasst werden müssen.

Les valeurs mentionnées sont des valeurs recommandées qui doivent être adaptées selon les conditions de la machine, du serrage, du lubrifiant etc.

Questi valori sono valori raccomandati che devono essere adattati secondo le condizioni della macchina, del serraggio, del lubrificante etc.

These are recommended values that depend on the condition of the machine, fixture, coolant etc., and they may have to be adapted yet.

# Schnittdaten

## Données de coupe

### Parametri di lavoro

#### Cutting data

### Art. 73725

Mat.		ø 0.30-0.70	ø 0.70-1.50	ø 1.50-2.90	a <sub>e</sub>	a <sub>p</sub>
P1	V <sub>c</sub>	60-80	60-80	60-80		
	f <sub>z</sub>	0.003-0.008	0.008-0.016	0.016-0.030	1 × d1	0.45 × d1
P2	V <sub>c</sub>	50-70	50-70	50-70		
	f <sub>z</sub>	0.003-0.008	0.008-0.016	0.016-0.030	1 × d1	0.25 × d1
P3	V <sub>c</sub>	40-60	40-60	40-60		
	f <sub>z</sub>	0.002-0.007	0.007-0.014	0.014-0.026	1 × d1	0.15 × d1
M1	V <sub>c</sub>	30-50	30-50	30-50		
	f <sub>z</sub>	0.002-0.007	0.007-0.014	0.014-0.026	1 × d1	0.35 × d1
M2	V <sub>c</sub>	25-40	25-40	25-40		
	f <sub>z</sub>	0.002-0.006	0.006-0.012	0.012-0.022	1 × d1	0.2 × d1
K1	V <sub>c</sub>	40-70	40-70	40-70		
	f <sub>z</sub>	0.003-0.008	0.008-0.016	0.016-0.030	1 × d1	0.8 × d1
K2	V <sub>c</sub>	30-60	30-60	30-60		
	f <sub>z</sub>	0.002-0.007	0.007-0.014	0.014-0.026	1 × d1	0.35 × d1
N1	V <sub>c</sub>	70-100	70-100	70-100		
	f <sub>z</sub>	0.002-0.007	0.007-0.014	0.014-0.026	1 × d1	0.8 × d1
N2	V <sub>c</sub>	80-120	80-120	80-120		
	f <sub>z</sub>	0.003-0.008	0.008-0.016	0.016-0.030	1 × d1	0.7 × d1
N3	V <sub>c</sub>	60-100	60-100	60-100		
	f <sub>z</sub>	0.003-0.008	0.008-0.016	0.016-0.030	1 × d1	0.7 × d1
N4	V <sub>c</sub>					
	f <sub>z</sub>					
N5	V <sub>c</sub>	40-80	40-80	40-80		
	f <sub>z</sub>	0.003-0.008	0.008-0.016	0.016-0.030	1 × d1	0.8 × d1
N6	V <sub>c</sub>	25-50	25-50	25-50		
	f <sub>z</sub>	0.002-0.007	0.007-0.014	0.014-0.026	1 × d1	0.45 × d1
N7	V <sub>c</sub>					
	f <sub>z</sub>					
N8	V <sub>c</sub>					
	f <sub>z</sub>					
S1	V <sub>c</sub>	25-50	25-50	25-50		
	f <sub>z</sub>	0.002-0.006	0.006-0.012	0.012-0.020	1 × d1	0.3 × d1
S2	V <sub>c</sub>					
	f <sub>z</sub>					
H1	V <sub>c</sub>					
	f <sub>z</sub>					
H2	V <sub>c</sub>					
	f <sub>z</sub>					
H3	V <sub>c</sub>					
	f <sub>z</sub>					
O1	V <sub>c</sub>					
	f <sub>z</sub>					
O2	V <sub>c</sub>					
	f <sub>z</sub>					
O3	V <sub>c</sub>					
	f <sub>z</sub>					

### Art. 43105

Mat.		ø 0.30-0.70	ø 0.80-1.50	ø 1.60-3.00	a <sub>e</sub>	a <sub>p</sub>
P1	V <sub>c</sub>	80-120	80-120	80-120		
	f <sub>z</sub>	0.002-0.005	0.003-0.015	0.005-0.03	1 × d1	0.8 × d1
P2	V <sub>c</sub>	70-100	70-100	70-100		
	f <sub>z</sub>	0.001-0.004	0.003-0.012	0.005-0.025	1 × d1	0.6 × d1
P3	V <sub>c</sub>	40-70	40-70	40-70		
	f <sub>z</sub>	0.001-0.003	0.002-0.012	0.003-0.018	1 × d1	0.5 × d1
M1	V <sub>c</sub>	60-90	60-90	60-90		
	f <sub>z</sub>	0.001-0.003	0.002-0.012	0.003-0.016	1 × d1	0.5 × d1
M2	V <sub>c</sub>	30-60	30-60	30-60		
	f <sub>z</sub>	0.001-0.003	0.002-0.010	0.003-0.013	1 × d1	0.4 × d1
K1	V <sub>c</sub>	150-200	150-200	150-200		
	f <sub>z</sub>	0.002-0.005	0.003-0.014	0.005-0.028	1 × d1	0.8 × d1
K2	V <sub>c</sub>	60-100	60-100	60-100		
	f <sub>z</sub>	0.001-0.006	0.003-0.012	0.005-0.023	1 × d1	0.8 × d1
N1	V <sub>c</sub>	150-300	150-300	150-300		
	f <sub>z</sub>	0.001-0.004	0.002-0.012	0.004-0.025	1 × d1	1 × d1
N2	V <sub>c</sub>	150-300	150-300	150-300		
	f <sub>z</sub>	0.002-0.005	0.003-0.014	0.005-0.028	1 × d1	1 × d1
N3	V <sub>c</sub>	130-250	130-250	130-250		
	f <sub>z</sub>	0.002-0.015	0.004-0.030	0.006-0.060	1 × d1	2 × d1
N4	V <sub>c</sub>	60-100	60-100	60-100		
	f <sub>z</sub>	0.001-0.009	0.003-0.018	0.004-0.036	1 × d1	0.8 × d1
N5	V <sub>c</sub>	100-250	100-250	100-250		
	f <sub>z</sub>	0.002-0.010	0.004-0.020	0.006-0.040	1 × d1	1 × d1
N6	V <sub>c</sub>	80-150	80-150	80-150		
	f <sub>z</sub>	0.001-0.008	0.002-0.018	0.004-0.035	1 × d1	0.8 × d1
N7	V <sub>c</sub>	80-130	80-130	80-130		
	f <sub>z</sub>	0.002-0.010	0.003-0.020	0.006-0.050	1 × d1	1 × d1
N8	V <sub>c</sub>	80-130	80-130	80-130		
	f <sub>z</sub>	0.002-0.010	0.003-0.020	0.006-0.050	1 × d1	1 × d1
S1	V <sub>c</sub>	40-70	40-70	40-70		
	f <sub>z</sub>	0.001-0.005	0.003-0.012	0.005-0.025	1 × d1	0.8 × d1
S2	V <sub>c</sub>	20-40	20-40	20-40		
	f <sub>z</sub>	0.001-0.002	0.001-0.004	0.002-0.008	1 × d1	0.2 × d1
H1	V <sub>c</sub>	20-45	20-45	20-45		
	f <sub>z</sub>	0.001-0.002	0.001-0.003	0.002-0.006	1 × d1	0.2 × d1
H2	V <sub>c</sub>					
	f <sub>z</sub>					
H3	V <sub>c</sub>					
	f <sub>z</sub>					
O1	V <sub>c</sub>	100-150	100-150	100-150		
	f <sub>z</sub>	0.003-0.025	0.006-0.055	0.010-0.095	1 × d1	2 × d1
O2	V <sub>c</sub>					
	f <sub>z</sub>					
O3	V <sub>c</sub>					
	f <sub>z</sub>					

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# Schnittdaten

## Données de coupe

### Parametri di lavoro

#### Cutting data

### Art. 43305

Mat.		ø 0.30-0.70	ø 0.80-1.50	ø 1.60-3.00	a <sub>e</sub>	a <sub>p</sub>
P1	V <sub>c</sub>	80-120	80-120	80-120	1 x d1	0.6 x d1
	f <sub>z</sub>	0.001-0.004	0.002-0.012	0.004-0.025		
P2	V <sub>c</sub>	70-100	70-100	70-100	1 x d1	0.4 x d1
	f <sub>z</sub>	0.001-0.003	0.002-0.008	0.003-0.020		
P3	V <sub>c</sub>	40-70	40-70	40-70	1 x d1	0.3 x d1
	f <sub>z</sub>	0.001-0.003	0.001-0.010	0.002-0.015		
M1	V <sub>c</sub>	60-90	60-90	60-90	1 x d1	0.3 x d1
	f <sub>z</sub>	0.001-0.003	0.002-0.008	0.002-0.012		
M2	V <sub>c</sub>	30-60	30-60	30-60	1 x d1	0.2 x d1
	f <sub>z</sub>	0.001-0.003	0.002-0.008	0.002-0.009		
K1	V <sub>c</sub>	150-200	150-200	150-200	1 x d1	0.6 x d1
	f <sub>z</sub>	0.001-0.004	0.001-0.010	0.002-0.023		
K2	V <sub>c</sub>	60-100	60-100	60-100	1 x d1	0.6 x d1
	f <sub>z</sub>	0.001-0.005	0.002-0.010	0.003-0.019		
N1	V <sub>c</sub>	150-300	150-300	150-300	1 x d1	0.8 x d1
	f <sub>z</sub>	0.001-0.003	0.001-0.010	0.002-0.020		
N2	V <sub>c</sub>	150-300	150-300	150-300	1 x d1	0.8 x d1
	f <sub>z</sub>	0.001-0.005	0.002-0.011	0.003-0.024		
N3	V <sub>c</sub>	130-250	130-250	130-250	1 x d1	1.5 x d1
	f <sub>z</sub>	0.001-0.012	0.002-0.025	0.003-0.050		
N4	V <sub>c</sub>	60-100	60-100	60-100	1 x d1	0.6 x d1
	f <sub>z</sub>	0.001-0.007	0.001-0.016	0.002-0.032		
N5	V <sub>c</sub>	100-250	100-250	100-250	1 x d1	0.8 x d1
	f <sub>z</sub>	0.001-0.008	0.002-0.018	0.003-0.030		
N6	V <sub>c</sub>	80-150	80-150	80-150	1 x d1	0.6 x d1
	f <sub>z</sub>	0.001-0.006	0.001-0.015	0.002-0.030		
N7	V <sub>c</sub>	80-130	80-130	80-130	1 x d1	0.8 x d1
	f <sub>z</sub>	0.001-0.008	0.001-0.015	0.002-0.035		
N8	V <sub>c</sub>	80-130	80-130	80-130	1 x d1	0.8 x d1
	f <sub>z</sub>	0.001-0.008	0.001-0.016	0.003-0.040		
S1	V <sub>c</sub>	40-70	40-70	40-70	1 x d1	0.6 x d1
	f <sub>z</sub>	0.001-0.003	0.002-0.008	0.003-0.018		
S2	V <sub>c</sub>	20-40	20-40	20-40	1 x d1	0.1 x d1
	f <sub>z</sub>	0.001-0.002	0.001-0.003	0.002-0.005		
H1	V <sub>c</sub>	20-45	20-45	20-45	1 x d1	0.1 x d1
	f <sub>z</sub>	0.001-0.002	0.001-0.003	0.002-0.006		
H2	V <sub>c</sub>					
	f <sub>z</sub>					
H3	V <sub>c</sub>					
	f <sub>z</sub>					
O1	V <sub>c</sub>	100-150	100-150	100-150	1 x d1	1.5 x d1
	f <sub>z</sub>	0.002-0.020	0.005-0.050	0.008-0.090		
O2	V <sub>c</sub>					
	f <sub>z</sub>					
O3	V <sub>c</sub>					
	f <sub>z</sub>					

### Art. 74720

Mat.		ø 0.30-0.70	ø 0.70-1.50	ø 1.50-2.90	a <sub>e</sub>	a <sub>p</sub>
P1	V <sub>c</sub>	60-80	60-80	60-80	1 x d1	0.45 x d1
	f <sub>z</sub>	0.003-0.008	0.008-0.016	0.016-0.030		
P2	V <sub>c</sub>	50-70	50-70	50-70	1 x d1	0.25 x d1
	f <sub>z</sub>	0.003-0.008	0.008-0.016	0.016-0.030		
P3	V <sub>c</sub>	40-60	40-60	40-60	1 x d1	0.20 x d1
	f <sub>z</sub>	0.002-0.007	0.007-0.014	0.014-0.026		
M1	V <sub>c</sub>	30-50	30-50	30-50	1 x d1	0.15 x d1
	f <sub>z</sub>	0.002-0.007	0.007-0.014	0.014-0.026		
M2	V <sub>c</sub>	25-40	25-40	25-40	1 x d1	0.20 x d1
	f <sub>z</sub>	0.002-0.006	0.006-0.012	0.012-0.022		
K1	V <sub>c</sub>	40-70	40-70	40-70	1 x d1	0.70 x d1
	f <sub>z</sub>	0.003-0.008	0.008-0.016	0.016-0.030		
K2	V <sub>c</sub>	30-60	30-60	30-60	1 x d1	0.35 x d1
	f <sub>z</sub>	0.002-0.007	0.007-0.014	0.014-0.026		
N1	V <sub>c</sub>	70-100	70-100	70-100	1 x d1	0.80 x d1
	f <sub>z</sub>	0.002-0.007	0.007-0.014	0.014-0.026		
N2	V <sub>c</sub>	80-120	80-120	80-120	1 x d1	0.70 x d1
	f <sub>z</sub>	0.003-0.008	0.008-0.016	0.016-0.030		
N3	V <sub>c</sub>	60-100	60-100	60-100	1 x d1	0.70 x d1
	f <sub>z</sub>	0.003-0.008	0.008-0.016	0.016-0.030		
N4	V <sub>c</sub>					
	f <sub>z</sub>					
N5	V <sub>c</sub>	40-80	40-80	40-80	1 x d1	0.80 x d1
	f <sub>z</sub>	0.003-0.008	0.008-0.016	0.016-0.030		
N6	V <sub>c</sub>	25-50	25-50	25-50	1 x d1	0.45 x d1
	f <sub>z</sub>	0.002-0.007	0.007-0.014	0.014-0.026		
N7	V <sub>c</sub>					
	f <sub>z</sub>					
N8	V <sub>c</sub>					
	f <sub>z</sub>					
S1	V <sub>c</sub>	25-50	25-50	25-50	1 x d1	0.30 x d1
	f <sub>z</sub>	0.002-0.006	0.006-0.012	0.012-0.020		
S2	V <sub>c</sub>					
	f <sub>z</sub>					
H1	V <sub>c</sub>					
	f <sub>z</sub>					
H2	V <sub>c</sub>					
	f <sub>z</sub>					
H3	V <sub>c</sub>					
	f <sub>z</sub>					
O1	V <sub>c</sub>					
	f <sub>z</sub>					
O2	V <sub>c</sub>					
	f <sub>z</sub>					
O3	V <sub>c</sub>					
	f <sub>z</sub>					

Genannte Werte sind Richtwerte, die je nach Maschine, Aufspannung, Kühlschmierstoff usw. noch angepasst werden müssen.

Les valeurs mentionnées sont des valeurs recommandées qui doivent être adaptées selon les conditions de la machine, du serrage, du lubrifiant etc.

Questi valori sono valori raccomandati che devono essere adattati secondo le condizioni della macchina, del serraggio, del lubrificante etc.

These are recommended values that depend on the condition of the machine, fixture, coolant etc., and they may have to be adapted yet.

# Schnittdaten

## Données de coupe

### Parametri di lavoro

#### Cutting data

### Art. 74740

Mat.		ø 0.40-0.70	ø 0.70-1.50	ø 1.50-2.90	a <sub>e</sub>	a <sub>p</sub>
P1	V <sub>c</sub>	60-80	60-80	60-80		
	f <sub>z</sub>	0.003-0.008	0.008-0.016	0.016-0.030	1 x d1	0.40 x d1
P2	V <sub>c</sub>	50-70	50-70	50-70		
	f <sub>z</sub>	0.003-0.008	0.008-0.016	0.016-0.030	1 x d1	0.20 x d1
P3	V <sub>c</sub>	40-60	40-60	40-60		
	f <sub>z</sub>	0.002-0.007	0.007-0.014	0.014-0.026	1 x d1	0.12 x d1
M1	V <sub>c</sub>	30-50	30-50	30-50		
	f <sub>z</sub>	0.002-0.007	0.007-0.014	0.014-0.026	1 x d1	0.30 x d1
M2	V <sub>c</sub>	25-40	25-40	25-40		
	f <sub>z</sub>	0.002-0.006	0.006-0.012	0.012-0.022	1 x d1	0.15 x d1
K1	V <sub>c</sub>	40-70	40-70	40-70		
	f <sub>z</sub>	0.003-0.008	0.008-0.016	0.016-0.030	1 x d1	0.65 x d1
K2	V <sub>c</sub>	30-60	30-60	30-60		
	f <sub>z</sub>	0.002-0.007	0.007-0.014	0.014-0.026	1 x d1	0.30 x d1
N1	V <sub>c</sub>	70-100	70-100	70-100		
	f <sub>z</sub>	0.002-0.007	0.007-0.014	0.014-0.026	1 x d1	0.65 x d1
N2	V <sub>c</sub>	80-120	80-120	80-120		
	f <sub>z</sub>	0.003-0.008	0.008-0.016	0.016-0.030	1 x d1	0.5 x d1
N3	V <sub>c</sub>	60-100	60-100	60-100		
	f <sub>z</sub>	0.003-0.008	0.008-0.016	0.016-0.030	1 x d1	0.5 x d1
N4	V <sub>c</sub>					
	f <sub>z</sub>					
N5	V <sub>c</sub>	40-80	40-80	40-80		
	f <sub>z</sub>	0.003-0.008	0.008-0.016	0.016-0.030	1 x d1	0.65 x d1
N6	V <sub>c</sub>	25-50	25-50	25-50		
	f <sub>z</sub>	0.002-0.007	0.007-0.014	0.014-0.026	1 x d1	0.40 x d1
N7	V <sub>c</sub>					
	f <sub>z</sub>					
N8	V <sub>c</sub>					
	f <sub>z</sub>					
S1	V <sub>c</sub>	25-50	25-50	25-50		
	f <sub>z</sub>	0.002-0.006	0.006-0.012	0.012-0.020	1 x d1	0.3 x d1
S2	V <sub>c</sub>					
	f <sub>z</sub>					
H1	V <sub>c</sub>					
	f <sub>z</sub>					
H2	V <sub>c</sub>					
	f <sub>z</sub>					
H3	V <sub>c</sub>					
	f <sub>z</sub>					
O1	V <sub>c</sub>					
	f <sub>z</sub>					
O2	V <sub>c</sub>					
	f <sub>z</sub>					
O3	V <sub>c</sub>					
	f <sub>z</sub>					

### Art. 74075 / 74150 / 74300

Mat.		ø 0.20-0.70	ø 0.70-1.50	ø 1.50-2.80	a <sub>e</sub>	a <sub>p</sub>
P1	V <sub>c</sub>	60-80	60-80	60-80		
	f <sub>z</sub>	0.004-0.010	0.008-0.020	0.018-0.040	1 x d1	0.45 x d1
P2	V <sub>c</sub>	50-70	50-70	50-70		
	f <sub>z</sub>	0.004-0.010	0.008-0.020	0.018-0.040	1 x d1	0.25 x d1
P3	V <sub>c</sub>	40-60	40-60	40-60		
	f <sub>z</sub>	0.003-0.010	0.006-0.020	0.0015-0.035	1 x d1	0.15 x d1
M1	V <sub>c</sub>	30-50	30-50	30-50		
	f <sub>z</sub>	0.003-0.010	0.006-0.020	0.015-0.035	1 x d1	0.35 x d1
M2	V <sub>c</sub>	25-40	25-40	25-40		
	f <sub>z</sub>	0.003-0.008	0.005-0.016	0.014-0.028	1 x d1	0.2 x d1
K1	V <sub>c</sub>	40-70	40-70	40-70		
	f <sub>z</sub>	0.004-0.010	0.008-0.020	0.018-0.040	1 x d1	0.8 x d1
K2	V <sub>c</sub>	30-60	30-60	30-60		
	f <sub>z</sub>	0.003-0.010	0.006-0.020	0.015-0.035	1 x d1	0.35 x d1
N1	V <sub>c</sub>	70-100	70-100	70-100		
	f <sub>z</sub>	0.003-0.01	0.006-0.020	0.015-0.035	1 x d1	0.8 x d1
N2	V <sub>c</sub>	80-120	80-120	80-120		
	f <sub>z</sub>	0.004-0.010	0.008-0.020	0.018-0.040	1 x d1	0.7 x d1
N3	V <sub>c</sub>	60-100	60-100	60-100		
	f <sub>z</sub>	0.004-0.010	0.008-0.020	0.018-0.040	1 x d1	0.7 x d1
N4	V <sub>c</sub>					
	f <sub>z</sub>					
N5	V <sub>c</sub>	40-80	40-80	40-80		
	f <sub>z</sub>	0.004-0.010	0.008-0.020	0.018-0.040	1 x d1	0.8 x d1
N6	V <sub>c</sub>	25-50	25-50	25-50		
	f <sub>z</sub>	0.004-0.010	0.006-0.020	0.015-0.035	1 x d1	0.45 x d1
N7	V <sub>c</sub>					
	f <sub>z</sub>					
N8	V <sub>c</sub>					
	f <sub>z</sub>					
S1	V <sub>c</sub>	25-50	25-50	25-50		
	f <sub>z</sub>	0.002-0.008	0.006-0.015	0.012-0.030	1 x d1	0.3 x d1
S2	V <sub>c</sub>					
	f <sub>z</sub>					
H1	V <sub>c</sub>					
	f <sub>z</sub>					
H2	V <sub>c</sub>					
	f <sub>z</sub>					
H3	V <sub>c</sub>					
	f <sub>z</sub>					
O1	V <sub>c</sub>	80-120	80-120	80-120		
	f <sub>z</sub>	0.005-0.012	0.010-0.025	0.020-0.045	1 x d1	0.9 x d1
O2	V <sub>c</sub>					
	f <sub>z</sub>					
O3	V <sub>c</sub>					
	f <sub>z</sub>					

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# Schnittdaten Données de coupe Parametri di lavoro Cutting data

## Art. 73000

Mat.		ø 0.50–1.50	ø 2.00–3.00	ø 6.00–8.00
P1	Vc	70–120	70–120	70–120
	fz	0.004–0.015	0.015–0.030	0.050–0.120
P2	Vc	60–100	60–100	60–100
	fz	0.003–0.013	0.013–0.025	0.045–0.100
P3	Vc	40–80	40–80	40–80
	fz	0.002–0.012	0.012–0.023	0.040–0.090
M1	Vc	40–80	40–80	40–80
	fz	0.002–0.012	0.008–0.020	0.030–0.080
M2	Vc	30–70	30–70	30–70
	fz	0.001–0.010	0.010–0.016	0.025–0.070
K1	Vc	120–150	100–150	100–150
	fz	0.004–0.015	0.015–0.030	0.050–0.120
K2	Vc	100–130	100–130	100–130
	fz	0.003–0.013	0.013–0.025	0.045–0.100
N1	Vc	150–200	150–200	150–200
	fz	0.005–0.018	0.018–0.035	0.060–0.150
N2	Vc	150–200	150–200	150–200
	fz	0.005–0.018	0.018–0.035	0.060–0.150
N3	Vc	150–200	150–200	150–200
	fz	0.004–0.015	0.015–0.030	0.050–0.120
N4	Vc	150–200	150–200	150–200
	fz	0.005–0.018	0.018–0.035	0.060–0.150
N5	Vc	150–200	150–200	150–200
	fz	0.005–0.018	0.018–0.035	0.060–0.150
N6	Vc			
	fz			
N7	Vc	80–120	80–120	80–120
	fz	0.005–0.018	0.018–0.035	0.060–0.150
N8	Vc	80–120	80–120	80–120
	fz	0.005–0.018	0.018–0.035	0.060–0.150
S1	Vc	40–70	40–70	40–70
	fz	0.002–0.012	0.012–0.023	0.040–0.090
S2	Vc			
	fz			
H1	Vc			
	fz			
H2	Vc			
	fz			
H3	Vc			
	fz			
O1	Vc			
	fz			
O2	Vc			
	fz			
O3	Vc			
	fz			

## Art. 71330

Mat.		ø 0.20–1.00	ø 1.00–2.00	ø 2.00–3.00	ae	ap
P1	Vc	40–60	40–60	40–60		
	fz	0.002–0.013	0.013–0.020	0.020–0.030	0.2×d	1×d
P2	Vc	30–50	30–50	30–50		
	fz	0.002–0.012	0.012–0.018	0.018–0.025	0.2×d	1×d
P3	Vc					
	fz					
M1	Vc	25–40	25–40	24–40		
	fz	0.002–0.011	0.011–0.016	0.016–0.022	0.1×d	1×d
M2	Vc	20–35	20–35	20–35		
	fz	0.002–0.010	0.010–0.015	0.015–0.020	0.1×d	1×d
K1	Vc	40–60	40–60	40–60		
	fz	0.002–0.013	0.013–0.020	0.020–0.030	0.2×d	1×d
K2	Vc	35–55	35–55	35–55		
	fz	0.002–0.012	0.012–0.018	0.018–0.025	0.2×d	1×d
N1	Vc					
	fz					
N2	Vc	150–200	150–200	150–200		
	fz	0.003–0.015	0.015–0.030	0.030–0.050	0.2×d	1×d
N3	Vc	150–200	150–200	150–200		
	fz	0.002–0.013	0.013–0.020	0.020–0.030	0.1×d	1×d
N4	Vc					
	fz					
N5	Vc	100–130	100–130	100–130		
	fz	0.003–0.015	0.015–0.030	0.030–0.050	0.2×d	1×d
N6	Vc					
	fz					
N7	Vc	120–150	120–150	120–150		
	fz	0.003–0.015	0.015–0.030	0.030–0.050	0.2×d	1×d
N8	Vc	120–150	120–150	120–150		
	fz	0.002–0.013	0.013–0.020	0.020–0.030	0.1×d	1×d
S1	Vc	30–50	30–50	30–50		
	fz	0.002–0.012	0.012–0.018	0.018–0.025	0.2×d	1×d
S2	Vc					
	fz					
H1	Vc					
	fz					
H2	Vc					
	fz					
H3	Vc					
	fz					
O1	Vc	150–200	150–200	150–200		
	fz	0.003–0.015	0.015–0.030	0.030–0.050	0.2×d	1×d
O2	Vc					
	fz					
O3	Vc					
	fz					

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**Schnittdaten**  
**Données de coupe**  
**Parametri di lavoro**  
**Cutting data**

**Art. 50810/50812/50814/50818**

Mat.		ø 3.00–6.00	ø 6.00–12.00	ø 12.00–20.00
P1	Vc	25–40	25–40	25–40
	f	0.120–0.250	0.200–0.300	0.280–0.400
P2	Vc	20–35	20–35	20–35
	f	0.100–0.200	0.150–0.250	0.200–0.350
P3	Vc	12–30	12–30	12–30
	f	0.080–0.150	0.140–0.220	0.180–0.300
M1	Vc	10–20	10–20	10–20
	f	0.050–0.150	0.110–0.200	0.150–0.250
M2	Vc	8–16	8–16	8–16
	f	0.040–0.080	0.060–0.140	0.100–0.150
K1	Vc	25–40	25–40	25–40
	f	0.070–0.150	0.130–0.200	0.180–0.350
K2	Vc	20–35	20–35	20–35
	f	0.050–0.100	0.080–0.150	0.120–0.250
N1	Vc	45–60	45–60	45–60
	f	0.100–0.250	0.200–0.300	0.260–0.350
N2	Vc	30–45	30–45	30–45
	f	0.130–0.300	0.260–0.350	0.330–0.500
N3	Vc	25–40	25–40	25–40
	f	0.100–0.250	0.200–0.300	0.260–0.350
N4	Vc	25–40	25–40	25–40
	f	0.006–0.150	0.120–0.180	0.160–0.220
N5	Vc	45–60	45–60	45–60
	f	0.100–0.250	0.200–0.300	0.260–0.350
N6	Vc	25–40	25–40	25–40
	f	0.060–0.090	0.080–0.110	0.100–0.130
N7	Vc	25–40	25–40	25–40
	f	0.050–0.130	0.100–0.180	0.160–0.250
N8	Vc	12–30	12–30	12–30
	f	0.030–0.100	0.080–0.130	0.100–0.150
S1	Vc	30–45	30–45	30–45
	f	0.040–0.120	0.080–0.160	0.150–0.220
S2	Vc			
	f			
H1	Vc			
	f			
H2	Vc			
	f			
H3	Vc			
	f			
O1	Vc	30–45	30–45	30–45
	f	0.100–0.250	0.220–0.400	0.350–0.700
O2	Vc			
	f			
O3	Vc			
	f			

**Art. 50811/50813/50815**

Mat.		ø 2.00–4.00	ø 5.00–6.00	ø 8.00–12.00
P1	Vc	35–50	35–50	35–50
	f	0.050–0.080	0.080–0.110	0.110–0.150
P2	Vc	30–45	30–45	30–45
	f	0.045–0.075	0.075–0.100	0.100–0.130
P3	Vc	25–40	25–40	25–40
	f	0.040–0.070	0.070–0.090	0.090–0.120
M1	Vc	20–35	20–35	20–35
	f	0.035–0.050	0.050–0.065	0.065–0.080
M2	Vc	16–30	16–30	16–30
	f	0.030–0.045	0.045–0.055	0.055–0.070
K1	Vc	35–50	35–50	35–50
	f	0.055–0.085	0.085–0.120	0.120–0.200
K2	Vc	30–45	30–45	30–45
	f	0.050–0.080	0.080–0.110	0.110–0.170
N1	Vc	50–65	50–65	50–65
	f	0.060–0.090	0.090–0.120	0.120–0.200
N2	Vc	40–55	40–55	40–55
	f	0.070–0.100	0.100–0.140	0.140–0.250
N3	Vc	35–50	35–50	35–50
	f	0.060–0.090	0.090–0.120	0.120–0.200
N4	Vc	30–45	30–45	30–45
	f	0.050–0.080	0.080–0.110	0.110–0.150
N5	Vc	50–65	50–65	50–65
	f	0.070–0.100	0.100–0.140	0.140–0.250
N6	Vc	35–50	35–50	35–50
	f	0.050–0.080	0.080–0.110	0.110–0.150
N7	Vc	30–45	30–45	30–45
	f	0.045–0.075	0.075–0.100	0.100–0.130
N8	Vc	20–35	20–35	20–35
	f	0.030–0.045	0.045–0.055	0.055–0.070
S1	Vc	35–50	35–50	35–50
	f	0.050–0.080	0.080–0.110	0.110–0.150
S2	Vc	15–25	15–25	15–25
	f	0.035–0.055	0.055–0.075	0.075–0.100
H1	Vc	15–25	15–25	15–25
	f	0.030–0.043	0.043–0.065	0.065–0.080
H2	Vc			
	f			
H3	Vc			
	f			
O1	Vc	30–45	30–45	30–45
	f	0.075–0.120	0.120–0.180	0.180–0.300
O2	Vc	30–45	30–45	30–45
	f	0.055–0.090	0.090–0.140	0.140–0.220
O3	Vc			
	f			

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# Schnittdaten

## Données de coupe

### Parametri di lavoro

#### Cutting data

### Art. 50950

Mat.		ø 3.00–5.00	ø 5.10–8.00	ø 8.10–12.00	ø 12.10–16.00	ø 16.10–20.00
P1	Vc	80–120	80–120	80–120	80–120	80–120
	f	0.060–0.150	0.120–0.250	0.220–0.350	0.320–0.450	0.400–0.500
P2	Vc	60–80	60–80	60–80	60–80	60–80
	f	0.050–0.120	0.100–0.220	0.200–0.300	0.280–0.360	0.340–0.450
P3	Vc	50–70	50–70	50–70	50–70	50–70
	f	0.040–0.100	0.090–0.180	0.160–0.260	0.240–0.320	0.300–0.380
M1	Vc	40–60	40–60	40–60	40–60	40–60
	f	0.030–0.080	0.070–0.150	0.140–0.180	0.170–0.250	0.230–0.320
M2	Vc	30–50	30–50	30–50	30–50	30–50
	f	0.030–0.080	0.070–0.130	0.120–0.160	0.150–0.220	0.200–0.300
K1	Vc	100–130	100–130	100–130	100–130	100–130
	f	0.100–0.250	0.230–0.350	0.320–0.450	0.400–0.500	0.450–0.600
K2	Vc	60–80	60–80	60–80	60–80	60–80
	f	0.060–0.200	0.180–0.280	0.250–0.350	0.320–0.450	0.420–0.500
N1	Vc					
	f					
N2	Vc	150–200	150–200	150–200	150–200	150–200
	f	0.100–0.270	0.250–0.350	0.330–0.400	0.380–0.480	0.460–0.55
N3	Vc	130–160	130–160	130–160	130–160	130–160
	f	0.100–0.250	0.220–0.320	0.300–0.380	0.360–0.450	0.420–0.500
N4	Vc					
	f					
N5	Vc					
	f					
N6	Vc					
	f					
N7	Vc					
	f					
N8	Vc					
	f					
S1	Vc	30–60	30–60	30–60	30–60	30–60
	f	0.005–0.040	0.030–0.070	0.060–0.110	0.100–0.150	0.140–0.180
S2	Vc					
	f					
H1	Vc	60–90	60–90	60–90	60–90	60–90
	f	0.050–0.120	0.100–0.220	0.200–0.300	0.280–0.360	0.340–0.400
H2	Vc	40–60	40–60	40–60	40–60	40–60
	f	0.030–0.070	0.060–0.130	0.110–0.180	0.160–0.240	0.200–0.260
H3	Vc	15–35	15–35	15–35	15–35	15–35
	f	0.005–0.030	0.020–0.050	0.040–0.070	0.060–0.100	0.080–0.120
O1	Vc					
	f					
O2	Vc					
	f					
O3	Vc					
	f					

### Art. 50830

Mat.		ø 0.30–1.00	ø 1.10–5.00	ø 5.10–10.00	ø 10.10–15.00	ø 15.10–20.00
P1	Vc	30–60	50–90	50–90	50–90	50–90
	f	0.010–0.040	0.038–0.080	0.076–0.110	0.100–0.180	0.170–0.260
P2	Vc	20–35	30–60	30–60	30–60	30–60
	f	0.010–0.030	0.028–0.070	0.065–0.090	0.085–0.160	0.150–0.230
P3	Vc	15–30	25–50	25–50	25–50	25–50
	f	0.005–0.020	0.018–0.060	0.057–0.085	0.080–0.130	0.125–0.200
M1	Vc	15–30	25–50	25–50	25–50	25–50
	f	0.005–0.020	0.018–0.060	0.057–0.085	0.080–0.130	0.125–0.200
M2	Vc	10–20	15–40	15–40	15–40	15–40
	f	0.004–0.018	0.016–0.050	0.048–0.090	0.085–0.120	0.110–0.160
K1	Vc	40–80	70–120	70–120	70–120	70–120
	f	0.010–0.060	0.055–0.090	0.085–0.110	0.100–0.280	0.260–0.500
K2	Vc	30–50	40–80	40–80	40–80	40–80
	f	0.010–0.030	0.028–0.070	0.067–0.100	0.095–0.180	0.170–0.300
N1	Vc	30–60	50–90	50–90	50–90	50–90
	f	0.012–0.045	0.042–0.085	0.080–0.140	0.135–0.250	0.230–0.300
N2	Vc	40–80	70–120	70–120	70–120	70–120
	f	0.015–0.050	0.048–0.100	0.095–0.180	0.170–0.280	0.260–0.450
N3	Vc	30–70	60–110	60–110	60–110	60–110
	f	0.010–0.045	0.040–0.085	0.080–0.160	0.150–0.260	0.240–0.400
N4	Vc	20–40	30–70	30–70	30–70	30–70
	f	0.005–0.030	0.028–0.070	0.065–0.090	0.085–0.160	0.150–0.230
N5	Vc					
	f					
N6	Vc	15–30	25–50	25–50	25–50	25–50
	f	0.012–0.045	0.042–0.085	0.080–0.140	0.135–0.250	0.230–0.300
N7	Vc	15–30	25–50	25–50	25–50	25–50
	f	0.012–0.045	0.042–0.085	0.080–0.140	0.135–0.250	0.230–0.300
N8	Vc	10–20	15–35	15–35	15–35	15–35
	f	0.004–0.018	0.016–0.050	0.048–0.090	0.085–0.120	0.110–0.180
S1	Vc	20–30	25–50	25–50	25–50	25–50
	f	0.020–0.040	0.038–0.070	0.065–0.100	0.095–0.150	0.145–0.200
S2	Vc	10–20	15–35	15–35	15–35	15–35
	f	0.004–0.018	0.016–0.050	0.048–0.090	0.085–0.120	0.110–0.180
H1	Vc					
	f					
H2	Vc					
	f					
H3	Vc					
	f					
O1	Vc	20–40	30–70	30–70	30–70	30–70
	f	0.015–0.050	0.048–0.100	0.095–0.180	0.170–0.280	0.260–0.450
O2	Vc					
	f					
O3	Vc					
	f					

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# Schnittdaten

## Données de coupe

## Parametri di lavoro

## Cutting data

### Art. 50838

Mat.		∅ 0.30-1.00	∅ 1.05-3.00	∅ 3.105-6.00
P1	Vc	30-60	50-90	50-90
	f	0.010-0.040	0.038-0.050	0.045-0.060
P2	Vc	20-35	30-60	30-60
	f	0.010-0.030	0.028-0.045	0.040-0.055
P3	Vc	15-30	25-50	25-50
	f	0.005-0.020	0.018-0.035	0.030-0.050
M1	Vc	15-30	25-50	25-50
	f	0.005-0.020	0.018-0.035	0.030-0.050
M2	Vc	10-20	15-40	15-40
	f	0.004-0.018	0.016-0.030	0.028-0.040
K1	Vc	40-80	70-120	70-120
	f	0.010-0.060	0.055-0.070	0.065-0.100
K2	Vc	30-50	40-80	40-80
	f	0.010-0.030	0.028-0.055	0.050-0.080
N1	Vc	30-60	50-90	50-90
	f	0.012-0.045	0.042-0.060	0.055-0.090
N2	Vc	40-80	70-120	70-120
	f	0.015-0.050	0.048-0.070	0.065-0.110
N3	Vc	30-70	60-110	60-110
	f	0.010-0.045	0.040-0.065	0.060-0.100
N4	Vc	20-40	30-70	30-70
	f	0.005-0.030	0.028-0.050	0.048-0.075
N5	Vc	30-60	50-90	50-90
	f	0.015-0.050	0.048-0.070	0.065-0.110
N6	Vc	15-30	25-50	25-50
	f	0.012-0.045	0.040-0.065	0.060-0.100
N7	Vc			
	f			
N8	Vc			
	f			
S1	Vc	20-35	30-60	30-60
	f	0.010-0.030	0.028-0.045	0.040-0.055
S2	Vc			
	f			
H1	Vc			
	f			
H2	Vc			
	f			
H3	Vc			
	f			
O1	Vc	20-40	30-70	30-70
	f	0.015-0.050	0.048-0.070	0.065-0.120
O2	Vc			
	f			
O3	Vc			
	f			

### Art. 50820

Mat.		∅ 0.70-2.50	∅ 2.60-6.00	∅ 6.10-9.00	∅ 9.10-11.00	∅ 11.10-14.00
P1	Vc	30-60	50-90	50-90	50-90	50-90
	f	0.010-0.020	0.018-0.040	0.038-0.065	0.060-0.090	0.085-0.120
P2	Vc	20-35	30-60	30-60	30-60	30-60
	f	0.008-0.018	0.016-0.035	0.033-0.055	0.050-0.075	0.070-0.100
P3	Vc					
	f					
M1	Vc					
	f					
M2	Vc					
	f					
K1	Vc	20-40	30-70	30-70	30-70	30-70
	f	0.010-0.025	0.023-0.045	0.042-0.075	0.072-0.110	0.100-0.150
K2	Vc	15-30	25-50	25-50	25-50	25-50
	f	0.010-0.020	0.018-0.040	0.038-0.065	0.060-0.090	0.085-0.120
N1	Vc					
	f					
N2	Vc	80-120	110-160	110-160	110-160	110-160
	f	0.010-0.030	0.028-0.080	0.075-0.120	0.110-0.160	0.150-0.200
N3	Vc	60-100	50-120	50-120	50-120	50-120
	f	0.010-0.030	0.028-0.080	0.075-0.120	0.110-0.160	0.150-0.200
N4	Vc					
	f					
N5	Vc	40-70	60-120	60-120	60-120	60-120
	f	0.010-0.025	0.023-0.045	0.042-0.075	0.072-0.110	0.100-0.150
N6	Vc					
	f					
N7	Vc					
	f					
N8	Vc					
	f					
S1	Vc					
	f					
S2	Vc					
	f					
H1	Vc					
	f					
H2	Vc					
	f					
H3	Vc					
	f					
O1	Vc					
	f					
O2	Vc					
	f					
O3	Vc					
	f					

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# Schnittdaten

## Données de coupe

### Parametri di lavoro

#### Cutting data

### Art. 50938

Mat.		ø 1.00-2.40	ø 2.50-5.00	ø 5.10-8.00	ø 8.10-12.70
P1	Vc	50-80	70-110	70-110	70-110
	f	0.040-0.080	0.050-0.130	0.125-0.170	0.165-0.215
P2	Vc	45-70	60-100	60-100	60-100
	f	0.040-0.075	0.045-0.120	0.115-0.150	0.140-0.190
P3	Vc	40-60	70-110	70-110	70-110
	f	0.030-0.070	0.050-0.130	0.125-0.170	0.165-0.215
M1	Vc	30-50	60-100	60-100	60-100
	f	0.010-0.050	0.045-0.120	0.115-0.150	0.140-0.190
M2	Vc	25-45	50-90	50-90	50-90
	f	0.010-0.045	0.040-0.100	0.090-0.130	0.120-0.150
K1	Vc	60-80	90-140	90-140	90-140
	f	0.050-0.100	0.100-0.270	0.260-0.340	0.320-0.420
K2	Vc	50-70	80-120	80-120	80-120
	f	0.040-0.080	0.090-0.250	0.240-0.300	0.280-0.360
N1	Vc				
	f				
N2	Vc	80-110	130-180	130-180	130-180
	f	0.040-0.130	0.100-0.250	0.240-0.340	0.320-0.420
N3	Vc	90-130	150-200	150-200	150-200
	f	0.040-0.140	0.100-0.250	0.240-0.340	0.320-0.420
N4	Vc				
	f				
N5	Vc				
	f				
N6	Vc				
	f				
N7	Vc				
	f				
N8	Vc				
	f				
S1	Vc	20-40	30-60	30-60	30-60
	f	0.010-0.030	0.030-0.085	0.080-0.110	0.100-0.135
S2	Vc				
	f				
H1	Vc	25-45	35-55	35-55	35-55
	f	0.010-0.020	0.015-0.040	0.030-0.060	0.050-0.090
H2	Vc				
	f				
H3	Vc				
	f				
O1	Vc				
	f				
O2	Vc				
	f				
O3	Vc				
	f				

### Art. 50940

Mat.		ø 1.00-2.40	ø 2.50-5.00	ø 5.10-8.00	ø 8.10-12.70
P1	Vc	120-180	120-180	120-180	120-180
	f	0.050-0.150	0.120-0.250	0.200-0.300	0.280-0.400
P2	Vc	100-160	100-160	100-160	100-160
	f	0.040-0.140	0.100-0.220	0.180-0.280	0.260-0.380
P3	Vc	90-150	90-150	90-150	90-150
	f	0.020-0.100	0.080-0.200	0.180-0.250	0.230-0.350
M1	Vc	80-130	80-130	80-130	80-130
	f	0.010-0.080	0.060-0.150	0.130-0.200	0.180-0.260
M2	Vc	70-120	70-120	70-120	70-120
	f	0.010-0.070	0.060-0.140	0.130-0.180	0.170-0.240
K1	Vc	150-200	150-200	150-200	150-200
	f	0.040-0.150	0.120-0.220	0.200-0.350	0.300-0.500
K2	Vc	130-180	130-180	130-180	130-180
	f	0.040-0.120	0.100-0.230	0.200-0.310	0.280-0.450
N1	Vc				
	f				
N2	Vc	150-200	150-200	150-200	150-200
	f	0.400-0.150	0.130-0.280	0.250-0.330	0.310-0.500
N3	Vc	200-250	200-250	200-250	200-250
	f	0.400-0.150	0.130-0.300	0.280-0.400	0.380-0.550
N4	Vc				
	f				
N5	Vc				
	f				
N6	Vc				
	f				
N7	Vc				
	f				
N8	Vc				
	f				
S1	Vc	40-60	40-60	40-60	40-60
	f	0.010-0.030	0.025-0.050	0.040-0.070	0.060-0.100
S2	Vc				
	f				
H1	Vc				
	f				
H2	Vc				
	f				
H3	Vc				
	f				
O1	Vc				
	f				
O2	Vc				
	f				
O3	Vc				
	f				

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# Schnittdaten

## Données de coupe

### Parametri di lavoro

#### Cutting data

### Art. 50942

Mat.		∅ 1.00–2.40	∅ 2.50–5.00	∅ 5.10–8.00	∅ 8.10–12.70
P1	Vc	50–80	70–110	70–110	70–110
	f	0.040–0.080	0.050–0.130	0.125–0.170	0.165–0.215
P2	Vc	45–70	60–100	60–100	60–100
	f	0.040–0.075	0.045–0.120	0.115–0.150	0.140–0.190
P3	Vc	40–60	70–110	70–110	70–110
	f	0.030–0.070	0.050–0.130	0.125–0.170	0.165–0.215
M1	Vc	30–50	60–100	60–100	60–100
	f	0.010–0.050	0.045–0.120	0.115–0.150	0.140–0.190
M2	Vc	25–45	50–90	50–90	50–90
	f	0.010–0.045	0.040–0.100	0.090–0.130	0.120–0.150
K1	Vc	60–80	90–140	90–140	90–140
	f	0.050–0.100	0.100–0.270	0.260–0.340	0.320–0.420
K2	Vc	50–70	80–120	80–120	80–120
	f	0.040–0.080	0.090–0.250	0.240–0.300	0.280–0.360
N1	Vc				
	f				
N2	Vc	80–110	130–180	130–180	130–180
	f	0.040–0.130	0.100–0.250	0.240–0.340	0.320–0.420
N3	Vc	90–130	150–200	150–200	150–200
	f	0.040–0.140	0.100–0.250	0.240–0.340	0.320–0.420
N4	Vc				
	f				
N5	Vc				
	f				
N6	Vc				
	f				
N7	Vc				
	f				
N8	Vc				
	f				
S1	Vc	20–40	30–60	30–60	30–60
	f	0.010–0.030	0.030–0.085	0.080–0.110	0.100–0.135
S2	Vc				
	f				
H1	Vc				
	f				
H2	Vc				
	f				
H3	Vc				
	f				
O1	Vc				
	f				
O2	Vc				
	f				
O3	Vc				
	f				

### Art. 52100 / 52200

Mat.		∅ 3.00–4.00	∅ 4.10–8.00	∅ 8.10–12.00	∅ 12.10–16.00	∅ 16.10–20.00
P1	Vc					
	f					
P2	Vc					
	f					
P3	Vc					
	f					
M1	Vc					
	f					
M2	Vc					
	f					
K1	Vc	60–110	60–110	60–110	60–110	60–110
	f	0.040–0.060	0.050–0.200	0.160–0.300	0.280–0.400	0.380–0.500
K2	Vc	50–100	50–100	50–100	50–100	50–100
	f	0.020–0.050	0.040–0.160	0.140–0.250	0.220–0.350	0.320–0.400
N1	Vc					
	f					
N2	Vc	200–250	200–250	200–250	200–250	200–250
	f	0.040–0.060	0.050–0.150	0.140–0.260	0.250–0.400	0.380–0.600
N3	Vc	220–280	220–280	220–280	220–280	220–280
	f	0.040–0.060	0.050–0.150	0.140–0.260	0.250–0.400	0.380–0.600
N4	Vc					
	f					
N5	Vc	80–120	80–120	80–120	80–120	80–120
	f	0.040–0.060	0.050–0.150	0.140–0.250	0.230–0.330	0.300–0.400
N6	Vc					
	f					
N7	Vc					
	f					
N8	Vc					
	f					
S1	Vc					
	f					
S2	Vc					
	f					
H1	Vc					
	f					
H2	Vc					
	f					
H3	Vc					
	f					
O1	Vc	20–40	20–40	20–40	20–40	20–40
	f	0.030–0.050	0.040–0.100	0.080–0.150	0.130–0.180	0.160–0.200
O2	Vc					
	f					
O3	Vc					
	f					

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**Schnittdaten**  
**Données de coupe**  
**Parametri di lavoro**  
**Cutting data**

**Art. 52150**

Mat.		ø 4.00–7.00	ø 7.10–10.00	ø 10.10–13.00	ø 13.10–16.00	ø 16.10–20.00
P1	Vc	90–120	90–120	90–120	90–120	90–120
	fz	0.080–0.200	0.180–0.350	0.300–0.400	0.350–0.450	0.400–0.600
P2	Vc	80–150	80–150	80–150	80–150	80–150
	fz	0.050–0.180	0.160–0.250	0.220–0.350	0.330–0.400	0.380–0.550
P3	Vc					
	fz					
M1	Vc					
	fz					
M2	Vc					
	fz					
K1	Vc	200–250	200–250	200–250	200–250	200–250
	fz	0.100–0.250	0.220–0.350	0.330–0.450	0.420–0.550	0.520–0.70
K2	Vc	160–200	160–200	160–200	160–200	160–200
	fz	0.080–0.180	0.160–0.250	0.230–0.350	0.330–0.500	0.450–0.550
N1	Vc					
	fz					
N2	Vc					
	fz					
N3	Vc	250–300	250–300	250–300	250–300	250–300
	fz	0.050–0.150	0.130–0.250	0.230–0.350	0.330–0.450	0.430–0.550
N4	Vc					
	fz					
N5	Vc	80–120	80–120	80–120	80–120	80–120
	fz	0.050–0.120	0.100–0.220	0.200–0.320	0.300–0.400	0.380–0.450
N6	Vc					
	fz					
N7	Vc					
	fz					
N8	Vc					
	fz					
S1	Vc					
	fz					
S2	Vc					
	fz					
H1	Vc	70–100	70–100	70–100	70–100	70–100
	fz	0.050–0.100	0.080–0.180	0.160–0.260	0.240–0.300	0.280–0.350
H2	Vc					
	fz					
H3	Vc					
	fz					
O1	Vc					
	fz					
O2	Vc					
	fz					
O3	Vc					
	fz					

**Art. 50912/50916**

Mat.		ø 2.00–5.00	ø 5.10–8.00	ø 8.10–12.70
P1	Vc	90–130	90–130	90–130
	fz	0.050–0.120	0.125–0.170	0.170–0.300
P2	Vc	70–110	70–110	70–110
	fz	0.045–0.100	0.115–0.150	0.150–0.270
P3	Vc			
	fz			
M1	Vc			
	fz			
M2	Vc			
	fz			
K1	Vc	80–120	80–120	80–120
	fz	0.070–0.150	0.140–0.300	0.280–0.450
K2	Vc	60–100	60–100	60–100
	fz	0.060–0.130	0.120–0.260	0.250–0.400
N1	Vc			
	fz			
N2	Vc	100–160	100–160	100–160
	fz	0.060–0.130	0.120–0.280	0.260–0.460
N3	Vc	110–180	110–180	110–180
	fz	0.070–0.150	0.140–0.300	0.280–0.450
N4	Vc			
	fz			
N5	Vc	60–100	60–100	60–100
	fz	0.060–0.130	0.120–0.280	0.260–0.400
N6	Vc			
	fz			
N7	Vc			
	fz			
N8	Vc			
	fz			
S1	Vc			
	fz			
S2	Vc			
	fz			
H1	Vc			
	fz			
H2	Vc			
	fz			
H3	Vc			
	fz			
O1	Vc			
	fz			
O2	Vc			
	fz			
O3	Vc			
	fz			

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# Schnittdaten

## Données de coupe

### Parametri di lavoro

#### Cutting data

### Art. 50920 / 50930

Mat.		ø 3.00–5.00	ø 5.10–8.00	ø 8.10–10.00
P1	Vc	80–120	80–120	80–120
	fz	0.050–0.150	0.140–0.250	0.240–0.380
P2	Vc	60–100	60–100	60–100
	fz	0.050–0.130	0.120–0.230	0.220–0.360
P3	Vc			
	fz			
M1	Vc			
	fz			
M2	Vc			
	fz			
K1	Vc	70–110	70–110	70–110
	fz	0.050–0.170	0.160–0.280	0.260–0.450
K2	Vc	60–100	60–100	60–100
	fz	0.050–0.140	0.130–0.250	0.240–0.400
N1	Vc			
	fz			
N2	Vc	80–140	80–140	80–140
	fz	0.050–0.150	0.140–0.250	0.240–0.350
N3	Vc	90–150	90–150	90–150
	fz	0.050–0.170	0.160–0.290	0.280–0.450
N4	Vc			
	fz			
N5	Vc	50–100	50–100	50–100
	fz	0.050–0.130	0.120–0.230	0.220–0.360
N6	Vc			
	fz			
N7	Vc			
	fz			
N8	Vc			
	fz			
S1	Vc			
	fz			
S2	Vc			
	fz			
H1	Vc			
	fz			
H2	Vc			
	fz			
H3	Vc			
	fz			
O1	Vc			
	fz			
O2	Vc			
	fz			
O3	Vc			
	fz			

### Art. 52903 / 52906 / 52909

Mat.		ø 1.00–1.90	ø 2.00–5.00	ø 5.10–8.00	ø 8.10–12.70
P1	Vc	70–110	70–110	70–110	70–110
	f	0.025–0.055	0.050–0.130	0.125–0.170	0.165–0.215
P2	Vc	60–100	60–100	60–100	60–100
	f	0.020–0.050	0.045–0.120	0.115–0.150	0.140–0.190
P3	Vc	60–100	60–100	60–100	60–100
	f	0.020–0.050	0.045–0.120	0.115–0.150	0.140–0.190
M1	Vc	60–100	60–100	60–100	60–100
	f	0.020–0.050	0.045–0.120	0.115–0.150	0.140–0.190
M2	Vc	50–90	50–90	50–90	50–90
	f	0.015–0.045	0.040–0.100	0.090–0.130	0.120–0.150
K1	Vc	90–140	90–140	90–140	90–140
	f	0.050–0.110	0.100–0.270	0.260–0.340	0.320–0.420
K2	Vc	80–120	80–120	80–120	80–120
	f	0.040–0.100	0.090–0.250	0.240–0.300	0.280–0.360
N1	Vc	120–170	120–170	120–170	120–170
	f	0.050–0.110	0.100–0.250	0.240–0.340	0.320–0.420
N2	Vc	150–200	150–200	150–200	150–200
	f	0.050–0.110	0.100–0.250	0.240–0.340	0.320–0.420
N3	Vc	200–250	200–250	200–250	200–250
	f	0.050–0.110	0.100–0.250	0.240–0.340	0.320–0.420
N4	Vc	90–130	90–130	90–130	90–130
	f	0.050–0.110	0.100–0.250	0.240–0.340	0.320–0.420
N5	Vc	150–200	150–200	150–200	150–200
	f	0.050–0.110	0.100–0.250	0.240–0.340	0.320–0.420
N6	Vc	60–100	60–100	60–100	60–100
	f	0.020–0.050	0.045–0.120	0.115–0.150	0.140–0.190
N7	Vc				
	f				
N8	Vc				
	f				
S1	Vc	30–60	30–60	30–60	30–60
	f	0.015–0.035	0.030–0.085	0.080–0.110	0.100–0.135
S2	Vc	20–50	20–50	20–50	20–50
	f	0.020–0.050	0.045–0.120	0.115–0.150	0.140–0.190
H1	Vc	70–110	70–110	70–110	70–110
	f	0.010–0.020	0.018–0.050	0.045–0.065	0.060–0.080
H2	Vc				
	f				
H3	Vc				
	f				
O1	Vc	70–110	70–110	70–110	70–110
	vf	0.025–0.055	0.050–0.130	0.125–0.170	0.165–0.215
O2	Vc				
	f				
O3	Vc				
	f				

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# Schnittdaten Données de coupe Parametri di lavoro Cutting data

## Art. 52912/52916

Mat.		1.00-2.40	2.50-5.00	5.10-8.00	8.10-10.00
P1	Vc	70-110	70-110	70-110	70-110
	f	0.030-0.080	0.060-0.130	0.125-0.170	0.170-0.240
P2	Vc	60-100	60-100	60-100	60-100
	f	0.020-0.060	0.050-0.120	0.115-0.150	0.150-0.220
P3	Vc	50-90	50-90	50-90	50-90
	f	0.015-0.050	0.040-0.100	0.080-0.130	0.140-0.200
M1	Vc	50-90	50-90	50-90	50-90
	f	0.015-0.050	0.040-0.100	0.080-0.130	0.140-0.190
M2	Vc	40-80	40-80	40-80	40-80
	f	0.010-0.045	0.030-0.090	0.070-0.120	0.120-0.170
K1	Vc	90-140	90-140	90-140	90-140
	f	0.030-0.080	0.080-0.150	0.150-0.280	0.280-0.350
K2	Vc	80-120	80-120	80-120	80-120
	f	0.040-0.100	0.060-0.130	0.130-0.220	0.220-0.300
N1	Vc	150-200	150-200	150-200	150-200
	f	0.050-0.110	0.100-0.250	0.240-0.340	0.320-0.420
N2	Vc	150-200	150-200	150-200	150-200
	f	0.050-0.110	0.100-0.250	0.240-0.340	0.320-0.420
N3	Vc	150-200	150-200	150-200	150-200
	f	0.050-0.110	0.100-0.250	0.240-0.340	0.320-0.420
N4	Vc	120-170	120-170	120-170	120-170
	f	0.030-0.080	0.060-0.130	0.140-0.190	0.165-0.210
N5	Vc	120-170	120-170	120-170	120-170
	f	0.040-0.100	0.100-0.250	0.240-0.300	0.280-0.360
N6	Vc	80-120	80-120	80-120	80-120
	f	0.040-0.100	0.100-0.250	0.240-0.300	0.280-0.360
N7	Vc				
	f				
N8	Vc				
	f				
S1	Vc	50-90	50-90	50-90	50-90
	f	0.020-0.060	0.040-0.100	0.100-0.200	0.100-0.135
S2	Vc	30-55	30-55	30-55	30-55
	f	0.010-0.040	0.030-0.070	0.080-0.130	0.100-0.170
H1	Vc	30-60	30-60	30-60	30-60
	f	0.015-0.050	0.040-0.100	0.090-0.140	0.120-0.150
H2	Vc				
	f				
H3	Vc				
	f				
O1	Vc				
	f				
O2	Vc				
	f				
O3	Vc				
	f				

## Art. 52920/52930

Mat.		ø 3.00-5.00	ø 5.10-8.00	ø 8.10-10.00
P1	Vc			
	f			
P2	Vc			
	f			
P3	Vc	40-80	40-80	40-80
	f	0.050-0.085	0.080-0.110	0.100-0.150
M1	Vc	30-70	30-70	30-70
	f	0.045-0.070	0.065-0.085	0.080-0.120
M2	Vc	25-55	25-55	25-55
	f	0.035-0.050	0.045-0.065	0.080-0.110
K1	Vc	70-110	70-110	70-110
	f	0.100-0.200	0.180-0.250	0.230-0.280
K2	Vc	60-100	60-100	60-100
	f	0.090-0.180	0.170-0.240	0.220-0.260
N1	Vc	60-100	60-100	60-100
	f	0.130-0.250	0.230-0.340	0.320-0.380
N2	Vc	65-100	65-100	65-100
	f	0.130-0.250	0.230-0.340	0.320-0.380
N3	Vc	70-110	70-110	70-110
	f	0.130-0.250	0.230-0.340	0.320-0.380
N4	Vc			
	f			
N5	Vc			
	f			
N6	Vc			
	f			
N7	Vc			
	f			
N8	Vc			
	f			
S1	Vc	30-60	30-60	30-60
	f	0.035-0.070	0.065-0.085	0.080-0.110
S2	Vc	20-50	20-50	20-50
	f	0.030-0.060	0.050-0.080	0.070-0.100
H1	Vc	20-40	20-40	20-40
	f	0.010-0.035	0.030-0.040	0.035-0.060
H2	Vc			
	f			
H3	Vc			
	f			
O1	Vc	60-100	60-100	60-100
	f	0.090-0.180	0.170-0.240	0.220-0.260
O2	Vc			
	f			
O3	Vc			
	f			

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# Schnittdaten

## Données de coupe

## Parametri di lavoro

## Cutting data

### Art. 50840

Mat.		∅ 2.00–5.00	∅ 5.10–8.00	∅ 8.10–11.00	∅ 11.10–14.00
P1	Vc	30–60	30–60	30–60	30–60
	f	0.020–0.050	0.045–0.090	0.080–0.150	0.130–0.200
P2	Vc	25–50	25–50	25–50	25–50
	f	0.015–0.045	0.040–0.080	0.075–0.120	0.100–0.150
P3	Vc				
	f				
M1	Vc	20–45	20–45	20–45	20–45
	f	0.15–0.040	0.035–0.070	0.065–0.100	0.090–0.130
M2	Vc	15–35	15–35	15–35	15–35
	f	0.010–0.035	0.030–0.060	0.055–0.085	0.080–0.110
K1	Vc	30–60	30–60	30–60	30–60
	f	0.020–0.050	0.45–0.090	0.080–0.150	0.130–0.200
K2	Vc	25–50	25–50	25–50	25–50
	f	0.015–0.045	0.040–0.080	0.075–0.120	0.100–0.150
N1	Vc	30–60	30–60	30–60	30–60
	f	0.020–0.050	0.045–0.090	0.080–0.150	0.130–0.200
N2	Vc	60–100	60–100	60–100	60–100
	f	0.030–0.080	0.070–0.150	0.140–0.220	0.200–0.300
N3	Vc	50–90	50–90	50–90	50–90
	f	0.025–0.070	0.060–0.130	0.120–0.190	0.180–0.250
N4	Vc	50–90	50–90	50–90	50–90
	f	0.030–0.090	0.080–0.150	0.130–0.200	0.180–0.300
N5	Vc				
	f				
N6	Vc				
	f				
N7	Vc				
	f				
N8	Vc				
	f				
S1	Vc				
	f				
S2	Vc				
	f				
H1	Vc				
	f				
H2	Vc				
	f				
H3	Vc				
	f				
O1	Vc				
	f				
O2	Vc				
	f				
O3	Vc				
	f				

### Art. 55654 / 55338

Mat.		∅ 1.00–2.00	∅ 2.10–5.00	∅ 5.10–8.00	∅ 8.10–11.00	∅ 11.10–14.00
P1	Vc	40–60	40–60	40–60	40–60	40–60
	f	0.015–0.040	0.035–0.080	0.075–0.170	0.160–0.230	0.200–0.300
P2	Vc	30–50	30–50	30–50	30–50	30–50
	f	0.010–0.035	0.030–0.075	0.070–0.155	0.150–0.210	0.190–0.250
P3	Vc					
	f					
M1	Vc	25–40	25–40	25–40	25–40	25–40
	f	0.010–0.030	0.025–0.070	0.060–0.100	0.090–0.140	0.120–0.200
M2	Vc					
	f					
K1	Vc	60–100	60–100	60–100	60–100	60–100
	f	0.020–0.050	0.040–0.090	0.080–0.180	0.160–0.280	0.250–0.350
K2	Vc	40–80	40–80	40–80	40–80	40–80
	f	0.015–0.040	0.035–0.080	0.700–0.170	0.150–0.230	0.210–0.300
N1	Vc					
	f					
N2	Vc	80–120	80–120	80–120	80–120	80–120
	f	0.020–0.060	0.050–0.120	0.100–0.230	0.210–0.340	0.330–0.450
N3	Vc	60–100	60–100	60–100	60–100	60–100
	f	0.020–0.060	0.050–0.120	0.100–0.230	0.210–0.340	0.330–0.450
N4	Vc					
	f					
N5	Vc					
	f					
N6	Vc					
	f					
N7	Vc					
	f					
N8	Vc					
	f					
S1	Vc	30–50	30–50	30–50	30–50	30–50
	f	0.010–0.030	0.025–0.070	0.060–0.130	0.100–0.160	0.150–0.200
S2	Vc					
	f					
H1	Vc					
	f					
H2	Vc					
	f					
H3	Vc					
	f					
O1	Vc					
	f					
O2	Vc					
	f					
O3	Vc					
	f					

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# Schnittdaten Données de coupe Parametri di lavoro Cutting data

## Art. 58000 / 58500

Mat.		ø 0.99–2.00	ø 2.01–3.00	ø 3.01–4.00	ø 4.01–5.00	ø 5.01–6.00
P1	V <sub>c</sub>	20–30	20–30	20–30	20–30	20–30
	f	0.050–0.100	0.080–0.130	0.120–0.180	0.170–0.230	0.220–0.280
P2	V <sub>c</sub>	15–25	15–25	15–25	15–25	15–25
	f	0.040–0.080	0.070–0.120	0.110–0.170	0.160–0.220	0.210–0.260
P3	V <sub>c</sub>	10–20	10–20	10–20	10–20	10–20
	f	0.035–0.070	0.060–0.100	0.090–0.150	0.130–0.180	0.170–0.200
M1	V <sub>c</sub>	10–20	10–20	10–20	10–20	10–20
	f	0.040–0.080	0.070–0.120	0.110–0.170	0.160–0.220	0.200–0.260
M2	V <sub>c</sub>	10–15	10–15	10–15	10–15	10–15
	f	0.035–0.070	0.060–0.100	0.090–0.150	0.130–0.180	0.170–0.200
K1	V <sub>c</sub>	20–30	20–30	20–30	20–30	20–30
	f	0.050–0.100	0.080–0.150	0.140–0.220	0.200–0.260	0.030–0.280
K2	V <sub>c</sub>	15–25	15–25	15–25	15–25	15–25
	f	0.050–0.090	0.75–0.140	0.130 0.200	0.180–0.240	0.200–0.260
N1	V <sub>c</sub>					
	f					
N2	V <sub>c</sub>	30–40	30–40	30–40	30–40	30–40
	f	0.060–0.120	0.110–0.160	0.150–0.220	0.200–0.260	0.240–0.300
N3	V <sub>c</sub>	25–35	25–35	25–35	25–35	25–35
	f	0.060–0.120	0.110–0.160	0.150–0.220	0.200–0.260	0.240–0.300
N4	V <sub>c</sub>	15–25	15–25	15–25	15–25	15–25
	f	0.035–0.070	0.060–0.100	0.090–0.150	0.130–0.180	0.170–0.200
N5	V <sub>c</sub>	30–40	30–40	30–40	30–40	30–40
	f	0.035–0.070	0.060–0.100	0.090–0.150	0.130–0.180	0.170–0.200
N6	V <sub>c</sub>					
	f					
N7	V <sub>c</sub>					
	f					
N8	V <sub>c</sub>					
	f					
S1	V <sub>c</sub>	10–15	10–15	10–15	10–15	10–15
	f	0.035–0.070	0.060–0.100	0.090–0.150	0.130–0.180	0.170–0.200
S2	V <sub>c</sub>					
	f					
H1	V <sub>c</sub>					
	f					
H2	V <sub>c</sub>					
	f					
H3	V <sub>c</sub>					
	f					
O1	V <sub>c</sub>					
	f					
O2	V <sub>c</sub>					
	f					
O3	V <sub>c</sub>					
	f					

## Art. 40000

Mat.		ø 2.00–5.00	ø 6.00–12.00	a <sub>e</sub>	a <sub>p</sub>
P1	V <sub>c</sub>	60–90	60–90		
	f <sub>z</sub>	0.015–0.060	0.050–0.100	1 × d1	0.5 × d1
P2	V <sub>c</sub>	50–80	50–80		
	f <sub>z</sub>	0.015–0.060	0.050–0.100	1 × d1	0.3 × d1
P3	V <sub>c</sub>				
	f <sub>z</sub>				
M1	V <sub>c</sub>				
	f <sub>z</sub>				
M2	V <sub>c</sub>				
	f <sub>z</sub>				
K1	V <sub>c</sub>	40–60	40–60		
	f <sub>z</sub>	0.020–0.070	0.050–0.110	1 × d1	1 × d1
K2	V <sub>c</sub>	30–50	30–50		
	f <sub>z</sub>	0.015–0.060	0.050–0.100	1 × d1	0.4 × d1
N1	V <sub>c</sub>	100–150	100–150		
	f <sub>z</sub>	0.015–0.060	0.040–0.120	1 × d1	1 × d1
N2	V <sub>c</sub>	200–250	200–250		
	f <sub>z</sub>	0.020–0.070	0.050–0.120	1 × d1	1 × d1
N3	V <sub>c</sub>	180–220	180–220		
	f <sub>z</sub>	0.020–0.070	0.050–0.120	1 × d1	1 × d1
N4	V <sub>c</sub>	50–100	50–100		
	f <sub>z</sub>	0.015–0.050	0.030–0.080	1 × d1	0.5 × d1
N5	V <sub>c</sub>	100–150	100–150		
	f <sub>z</sub>	0.020–0.070	0.050–0.120	1 × d1	1 × d1
N6	V <sub>c</sub>	30–60	30–60		
	f <sub>z</sub>	0.015–0.050	0.040–0.100	1 × d1	0.7 × d1
N7	V <sub>c</sub>				
	f <sub>z</sub>				
N8	V <sub>c</sub>				
	f <sub>z</sub>				
S1	V <sub>c</sub>				
	f <sub>z</sub>				
S2	V <sub>c</sub>				
	f <sub>z</sub>				
H1	V <sub>c</sub>				
	f <sub>z</sub>				
H2	V <sub>c</sub>				
	f <sub>z</sub>				
H3	V <sub>c</sub>				
	f <sub>z</sub>				
O1	V <sub>c</sub>				
	f <sub>z</sub>				
O2	V <sub>c</sub>				
	f <sub>z</sub>				
O3	V <sub>c</sub>				
	f <sub>z</sub>				

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**Schnittdaten**  
**Données de coupe**  
**Parametri di lavoro**  
**Cutting data**

**Art. 76300**

Mat.		ø 1.50-2.50	ø 2.50-4.00	ø 4.00-6.00	a <sub>e</sub>	a <sub>p</sub>
P1	V <sub>c</sub>	60-80	60-80	60-80		
	f <sub>z</sub>	0.010-0.020	0.020-0.040	0.040-0.060	1 × d1	1 × d1
P2	V <sub>c</sub>	50-70	50-70	50-70		
	f <sub>z</sub>	0.010-0.020	0.020-0.040	0.040-0.060	1 × d1	0.6 × d1
P3	V <sub>c</sub>	40-60	40-60	40-60		
	f <sub>z</sub>	0.008-0.015	0.015-0.035	0.035-0.050	1 × d1	0.5 × d1
M1	V <sub>c</sub>	40-60	40-60	40-60		
	f <sub>z</sub>	0.008-0.015	0.015-0.035	0.035-0.050	1 × d1	0.5 × d1
M2	V <sub>c</sub>					
	f <sub>z</sub>					
K1	V <sub>c</sub>	60-80	60-80	60-80		
	f <sub>z</sub>	0.010-0.020	0.020-0.040	0.040-0.060	1 × d1	1 × d1
K2	V <sub>c</sub>	50-70	50-70	50-70		
	f <sub>z</sub>	0.010-0.020	0.020-0.040	0.040-0.060	1 × d1	0.6 × d1
N1	V <sub>c</sub>					
	f <sub>z</sub>					
N2	V <sub>c</sub>					
	f <sub>z</sub>					
N3	V <sub>c</sub>					
	f <sub>z</sub>					
N4	V <sub>c</sub>					
	f <sub>z</sub>					
N5	V <sub>c</sub>					
	f <sub>z</sub>					
N6	V <sub>c</sub>					
	f <sub>z</sub>					
N7	V <sub>c</sub>					
	f <sub>z</sub>					
N8	V <sub>c</sub>					
	f <sub>z</sub>					
S1	V <sub>c</sub>					
	f <sub>z</sub>					
S2	V <sub>c</sub>					
	f <sub>z</sub>					
H1	V <sub>c</sub>					
	f <sub>z</sub>					
H2	V <sub>c</sub>					
	f <sub>z</sub>					
H3	V <sub>c</sub>					
	f <sub>z</sub>					
O1	V <sub>c</sub>					
	f <sub>z</sub>					
O2	V <sub>c</sub>					
	f <sub>z</sub>					
O3	V <sub>c</sub>					
	f <sub>z</sub>					

**Art. 40002**

Mat.		ø 2.00-5.00	ø 6.00-12.00	a <sub>e</sub>	a <sub>p</sub>
P1	V <sub>c</sub>	60-80	60-80		
	f <sub>z</sub>	0.015-0.060	0.030-0.110	1 × d1	1 × d1
P2	V <sub>c</sub>	50-70	50-70		
	f <sub>z</sub>	0.015-0.060	0.030-0.110	1 × d1	0.6 × d1
P3	V <sub>c</sub>	40-60	40-60		
	f <sub>z</sub>	0.010-0.050	0.020-0.100	1 × d1	0.5 × d1
M1	V <sub>c</sub>	40-60	40-60		
	f <sub>z</sub>	0.010-0.050	0.020-0.100	1 × d1	0.5 × d1
M2	V <sub>c</sub>				
	f <sub>z</sub>				
K1	V <sub>c</sub>	60-80	60-80		
	f <sub>z</sub>	0.015-0.060	0.030-0.110	1 × d1	1 × d1
K2	V <sub>c</sub>	50-70	60-80		
	f <sub>z</sub>	0.015-0.060	0.030-0.100	1 × d1	0.6 × d1
N1	V <sub>c</sub>				
	f <sub>z</sub>				
N2	V <sub>c</sub>				
	f <sub>z</sub>				
N3	V <sub>c</sub>				
	f <sub>z</sub>				
N4	V <sub>c</sub>				
	f <sub>z</sub>				
N5	V <sub>c</sub>				
	f <sub>z</sub>				
N6	V <sub>c</sub>				
	f <sub>z</sub>				
N7	V <sub>c</sub>				
	f <sub>z</sub>				
N8	V <sub>c</sub>				
	f <sub>z</sub>				
S1	V <sub>c</sub>				
	f <sub>z</sub>				
S2	V <sub>c</sub>				
	f <sub>z</sub>				
H1	V <sub>c</sub>				
	f <sub>z</sub>				
H2	V <sub>c</sub>				
	f <sub>z</sub>				
H3	V <sub>c</sub>				
	f <sub>z</sub>				
O1	V <sub>c</sub>				
	f <sub>z</sub>				
O2	V <sub>c</sub>				
	f <sub>z</sub>				
O3	V <sub>c</sub>				
	f <sub>z</sub>				

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# Schnittdaten Données de coupe Parametri di lavoro Cutting data

## Art. 40004

Mat.		ø 2.00–5.00	ø 6.00–12.00	a <sub>e</sub>	a <sub>p</sub>
P1	V <sub>c</sub>	60–80	60–80		
	f <sub>z</sub>	0.020–0.060	0.030–0.110	1 × d1	0.5 × d1
P2	V <sub>c</sub>	50–70	50–70		
	f <sub>z</sub>	0.015–0.060	0.030–0.110	1 × d1	0.5 × d1
P3	V <sub>c</sub>	40–60	40–60		
	f <sub>z</sub>	0.010–0.050	0.020–0.100	1 × d1	0.4 × d1
M1	V <sub>c</sub>	40–60	40–60		
	f <sub>z</sub>	0.010–0.050	0.020–0.100	1 × d1	0.4 × d1
M2	V <sub>c</sub>				
	f <sub>z</sub>				
K1	V <sub>c</sub>	60–80	60–80		
	f <sub>z</sub>	0.020–0.060	0.030–0.110	1 × d1	0.80 × d1
K2	V <sub>c</sub>	50–70	50–70		
	f <sub>z</sub>	0.150–0.050	0.030–0.100	1 × d1	0.70 × d1
N1	V <sub>c</sub>				
	f <sub>z</sub>				
N2	V <sub>c</sub>				
	f <sub>z</sub>				
N3	V <sub>c</sub>				
	f <sub>z</sub>				
N4	V <sub>c</sub>				
	f <sub>z</sub>				
N5	V <sub>c</sub>				
	f <sub>z</sub>				
N6	V <sub>c</sub>				
	f <sub>z</sub>				
N7	V <sub>c</sub>				
	f <sub>z</sub>				
N8	V <sub>c</sub>				
	f <sub>z</sub>				
S1	V <sub>c</sub>				
	f <sub>z</sub>				
S2	V <sub>c</sub>				
	f <sub>z</sub>				
H1	V <sub>c</sub>				
	f <sub>z</sub>				
H2	V <sub>c</sub>				
	f <sub>z</sub>				
H3	V <sub>c</sub>				
	f <sub>z</sub>				
O1	V <sub>c</sub>				
	f <sub>z</sub>				
O2	V <sub>c</sub>				
	f <sub>z</sub>				
O3	V <sub>c</sub>				
	f <sub>z</sub>				

## Art. 47000 / 47500

Mat.		ø 2.00–5.00	ø 6.00–12.00	ø 13.00–20.00	a <sub>e</sub>	a <sub>p</sub>
P1	V <sub>c</sub>					
	f <sub>z</sub>					
P2	V <sub>c</sub>					
	f <sub>z</sub>					
P3	V <sub>c</sub>					
	f <sub>z</sub>					
M1	V <sub>c</sub>					
	f <sub>z</sub>					
M2	V <sub>c</sub>					
	f <sub>z</sub>					
K1	V <sub>c</sub>					
	f <sub>z</sub>					
K2	V <sub>c</sub>					
	f <sub>z</sub>					
N1	V <sub>c</sub>	300–600	300–600	300–600		
	f <sub>z</sub>	0.030–0.050	0.050–0.120	0.120–0.200	1 × d1	0.5 × d1
N2	V <sub>c</sub>	300–1000	300–1000	300–1000		
	f <sub>z</sub>	0.030–0.060	0.060–0.140	0.140–0.250	1 × d1	0.5 × d1
N3	V <sub>c</sub>	300–1000	300–1000	300–1000		
	f <sub>z</sub>	0.030–0.060	0.060–0.140	0.140–0.250	1 × d1	0.5 × d1
N4	V <sub>c</sub>					
	f <sub>z</sub>					
N5	V <sub>c</sub>					
	f <sub>z</sub>					
N6	V <sub>c</sub>					
	f <sub>z</sub>					
N7	V <sub>c</sub>					
	f <sub>z</sub>					
N8	V <sub>c</sub>					
	f <sub>z</sub>					
S1	V <sub>c</sub>					
	f <sub>z</sub>					
S2	V <sub>c</sub>					
	f <sub>z</sub>					
H1	V <sub>c</sub>					
	f <sub>z</sub>					
H2	V <sub>c</sub>					
	f <sub>z</sub>					
H3	V <sub>c</sub>					
	f <sub>z</sub>					
O1	V <sub>c</sub>	300–600	300–600	300–600		
	f <sub>z</sub>	0.030–0.050	0.050–0.120	0.120–0.200	1 × d1	0.5 × d1
O2	V <sub>c</sub>					
	f <sub>z</sub>					
O3	V <sub>c</sub>					
	f <sub>z</sub>					

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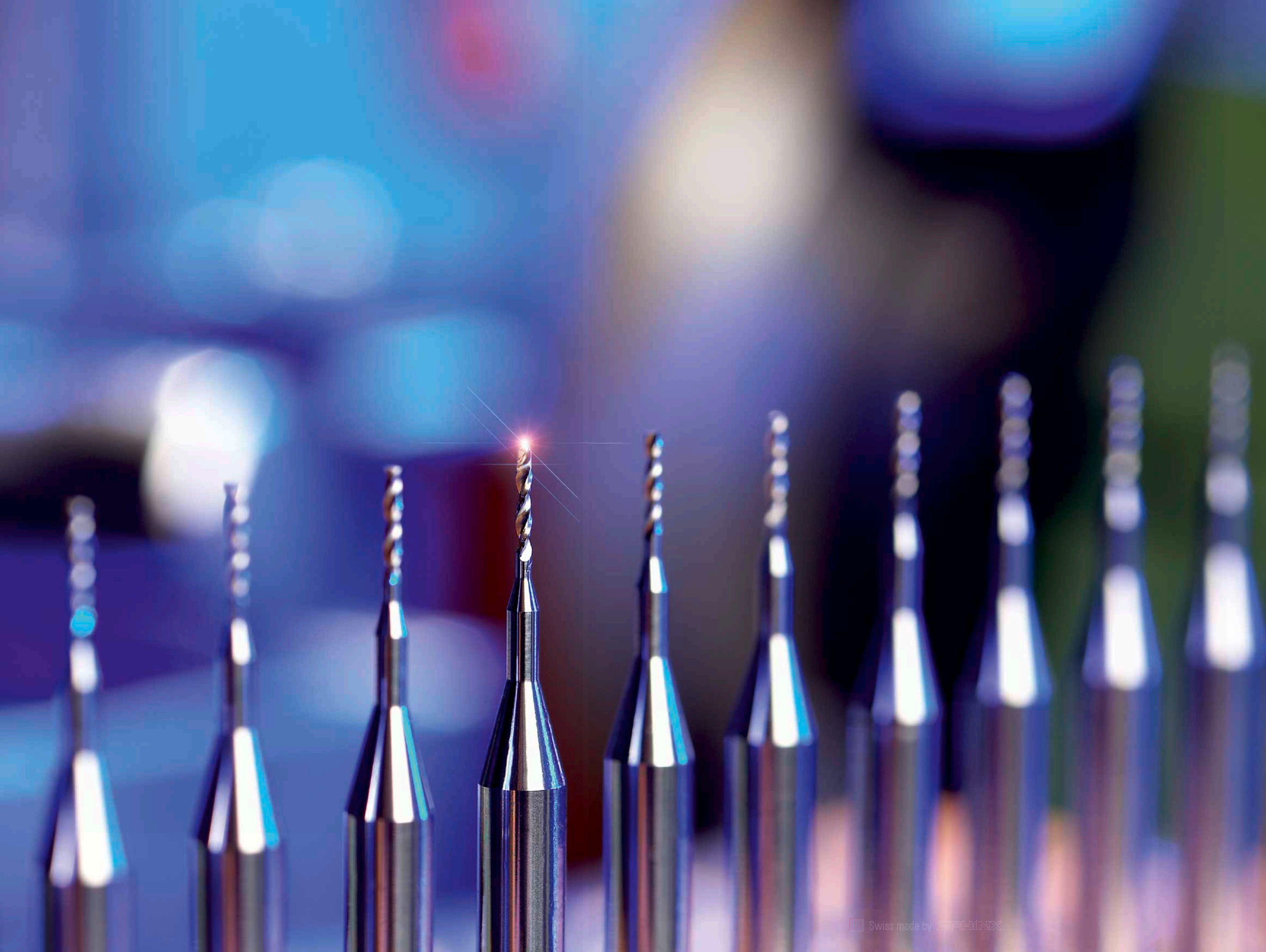
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**Werkstoffgruppen**  
**Groupe des matériaux**  
**Gruppi di materiali**  
**Workpiece materials**

		Festigkeit (N/mm <sup>2</sup> ), Härte Force (N/mm <sup>2</sup> ), dureté	Resistenza (N/mm <sup>2</sup> ), durezza Strength (N/mm <sup>2</sup> ), hardness	Beispiel Exemple	Esempio Example			Material Matière	Materiale Material
P	P1	bis / jusqu'à 700 N/mm <sup>2</sup>	sino / up to 700 N/mm <sup>2</sup>	1.0037, 1.0050, 1.0060, 1.0718,		P	P1	Unlegierte Stähle, Stahlguss Aciers non-alliés	Acciai non legati Unalloyed steels, steel casting
	P2	bis / jusqu'à 1000 N/mm <sup>2</sup>	sino / up to 1000 N/mm <sup>2</sup>	1.1191, 1.7225, 1.7131, 1.8509, 1.4104, 1.4021, 1.3505, 1.2067			P2	Legierte Stähle Aciers alliés	Acciai legati Alloyed steels
	P3	bis / jusqu'à 1400 N/mm <sup>2</sup>	sino / up to 1400 N/mm <sup>2</sup>	1.6582, 1.8519, 1.2344, 1.2721, 1.3243			P3	Hochlegierte Stähle Aciers ht.-alliés	Acciai alto legati High alloyed / high-grade steels
M	M1			1.4312, 1.4548, 1.4034, 1.4003, 1.4006, 1.4016,		M	M1	Nichtrostender Stahl ferritische / martensitische Aciers inox martensitiques	Acciaio inossidabile ferritico / martensitico Ferritic / martensitic stainless steels
	M2			1.4435, 1.4571, 1.4301, 1.4404, 1.4301, 1.4306, 1.4401			M2	Nichtrostender Stahl austenitisch Aciers inox austénitiques	Acciaio inossidabile austenitico Austenitic stainless steels
K	K1			0.6010, 0.6015, 0.6020, 0.6025, 0.6030, 0.6035, 0.6040		K	K1	Grauguss Fonte grise	Ghisa grigia Grey cast iron
	K2			0.8035, 0.8040, 0.8135, 0.8155, 0.8165, 0.8170			K2	Gusseisen mit Kugelgraphit ferritisch, perrlitisch Fonte sphéroïdale	Ghisa sferoidale ferritica, perlitica Spheroidal / ductile cast iron
N	N1	bis / jusqu'à 350 N/mm <sup>2</sup>	sino / up to 350 N/mm <sup>2</sup>	3.0255, 3.3315, 3.4345		N	N1	Alu-Knetlegierungen Aluminium malléable	Alluminio estruso Malleable alu alloy
	N2	bis / jusqu'à 300 N/mm <sup>2</sup>	sino / up to 300 N/mm <sup>2</sup>	3.1371, 3.2371, 3.2373, 3.2581			N2	Alu-Gusslegierung <10% Si Aluminium <10% Si	Leghe d'alluminio per getto <10% Si Cast alu alloy <10% Si
	N3	bis / jusqu'à 450 N/mm <sup>2</sup>	sino / up to 450 N/mm <sup>2</sup>	3.2581, 3.2582, 3.2583			N3	Alu-Gusslegierung >10% Si Aluminium >10% Si	Leghe d'alluminio per getto >10% Si Cast alu alloy >10% Si
	N4			3.5101, 3.5103, 3.5106, 3.5161, 3.5200, 3.5312, 3.5470, 3.5612, 3.5632, 3.5812			N4	Magnesiumlegierungen Alliages au magnésium	Leghe di magnesio Magnesium, magnesium alloys
	N5			2.0240, 2.0265, 2.0321, 2.0592, 2.0596, 2.0966, 2.0975, 2.1050, 2.1052, 2.1293			N5	Kupfer und Kupferlegierungen kurzspanend Alliages CuNi-Laiton	Rame e leghe di rame, trucioli corti Copper nickel alloys, brass
	N6			2.1090, 2.1096, 2.1176, 2.1182, 2.1188			N6	Kupfer und Kupferlegierungen langspanend Alliages CuBe-Cuivre	Rame e leghe di rame, trucioli lunghi Copper, forging copper alloys
	N7						N7	Silber Argent	Argento Silver
	N8						N8	Gold Or	Oro Gold
S	S1	über / au-dessus 450 N/mm <sup>2</sup>	oltre / over 450 N/mm <sup>2</sup>	3.7025, 3.7124, 3.7164, 3.7165		S	S1	Titan, Titanlegierungen Titane	Titanio, leghe di titanio Titanium, titanium alloys
	S2			2.4360, 2.4375, 2.4630, 2.4642, 2.4668, 2.4669, 2.4856, 2.4858			S2	Warmfeste Legierungen Ni- oder Co-Basis Super alliage NiCo	Super leghe a base Ni / Co Ni / Co based super alloys
H	H1					H	H1	Gehärtete Stähle, 50–55 HRC Ac. trempé 50–55 HRC	Acciai temperati, 50–55 HRC Hardened steels 50–55 HRC
	H2						H2	Gehärtete Stähle, 55–60 HRC Ac. trempé 55–60 HRC	Acciai temperati, 55–60 HRC Hardened steels 55–60 HRC
	H3						H3	Gehärtete Stähle, > 60 HRC Ac. trempé > 60 HRC	Acciai temperati, > 60 HRC Hardened steels > 60 HRC
O	O1			PMMA, Plexiglass, Acrylic glass, Polymethylmetacrylate, Polycarbonate		O	O1	Thermoplaste, Duroplaste ohne abrasive Füllstoffe Plastiques	Termoplastici e termoindurenti Thermoplast, thermosetting plastics
	O2			EP, Epoxid, Epoxy, Bakelite, Pertinax			O2	Kunststoffe Faserverstärkt Fibres synthétiques	Plastiche rinforzate con fibre Fiber-reinforced plastics
	O3						O3	Graphit Graphite	Grafite Graphite





# Anwendungen

## Application

### Applicazioni

#### Applications

	Sackloch Trou borgne	Foro cieco Blind hole
	Sackloch mit Senkung Trou borgne avec chanfrein	Foro cieco con smusso Blind hole with countersink
	Stufenbohrung Trou étagé	Foro a gradino Step hole
	Gravierstichel flach Graveur avec plat	Bulino piatto Graver for groove, flat bottom
	Gravierstichel rund Graveur avec rayon	Bulino a raggio Graver for groove, full bottom radius
	Radius einstechen Rayon en plongée	Raggio a tuffo Plunge radius
	Radius längs Fraise de rayon longitudinal	Raggio longitudinale Straight radius
	Durchgangsbohrung Trou traversant	Foro passante Through hole
	Durchgang mit Senkung Trou traversant avec chanfrein	Foro con smusso Through hole with countersink
	Mehrere Schichten Perçage multiple	Multistrato Multi-composite material
	Querbohrung Perçage latéral	Foro traversale Cross hole
	In Rundung Surface arrondie	Superficie a raggio Round surface
	In Schräge Surface inclinée	Superficie inclinata Inclined surface
	Kantenbruch 60° Chanfrein 60°	Smusso 60° Chamfer 60°
	Kantenbruch 90° Chanfrein 90°	Smusso 90° Chamfer 90°

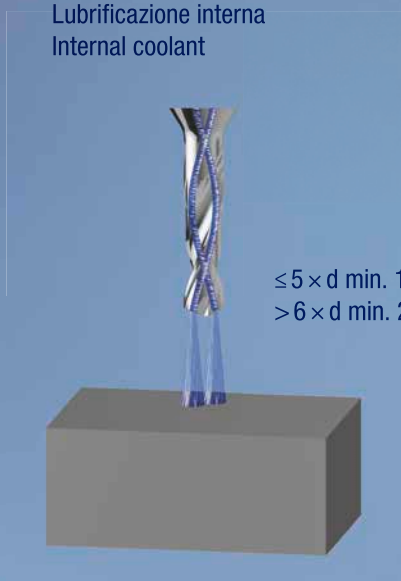
	Kantenbruch 120° Chanfrein 120°	Smusso 120° Chamfer 120°
	Senkung 60° Centrage / Chanfrein 60°	Angolo 60° Countersink 60°
	Senkung 90° Centrage / Chanfrein 90°	Angolo 90° Countersink 90°
	Senkung 120° Centrage / Chanfrein 120°	Angolo 120° Countersink 120°
	Senkung 130° Centrage / Chanfrein 130°	Angolo 130° Countersink 130°
	Senkung 140° Centrage / Chanfrein 140°	Angolo 140° Countersink 140°
	Senkung 90° – 140° Double angle 90° – 140°	Angolo 90° – 140° Double angle counter-sink 90° – 140°
	Einstechen Plongée	Entrata a tuffo Plunge
	Nuten normal Transversal	Fresatura normale Straight groove milling
	Nuten schräg Fraisage angulaire	Fresatura inclinata Angular groove milling
	Schlichten Stirnseite Fraisage de finition latéral et frontal	Finitura frontale Front side finishing
	Schlichten mit Umfang Fraisage de finition latéral	Finitura laterale Side finishing
	Schruppen Stirnseite Fraisage ébauche	Sgrossatura frontale Front side roughing
	Zyklisch eckig Fraisage de poche	Fresatura angolare Angular milling
	Zyklisch rund Fraisage circulaire	Fresatura circolare Circular milling



**Bearbeitungsverfahren allgemein**  
**Procédé d'usinage général**  
**Procedura d'usinaggio in generale**  
**General machining process**

**Kühlung**  
**Refroidissement**  
**Lubrificazione**  
**Cooling**

Innenkühlung  
Refroidissement intérieur  
Lubrificazione interna  
Internal coolant



Aussenkühlung  
Refroidissement extérieur  
Lubrificazione esterna  
External coolant



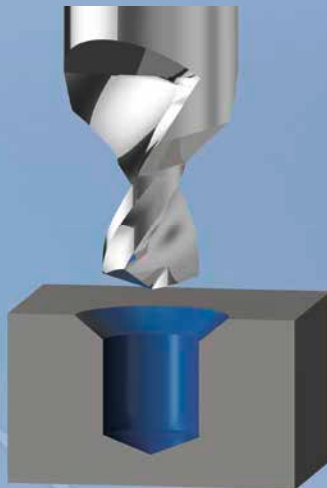
**Bearbeitungsverfahren allgemein**  
**Procédé d'usinage général**  
**Procedura d'usinaggio in generale**  
**General machining process**

**Anbohrerstrategie Eintritt und Bohreraustritt**  
**Stratégie de perçage entrée et sortie du foret**  
**Strategia di foratura con entrata ed uscita della punta**  
**Spot drilling strategy drill entering and exit**

Zentrieren  
 Centrer  
 Centrare  
 Centering



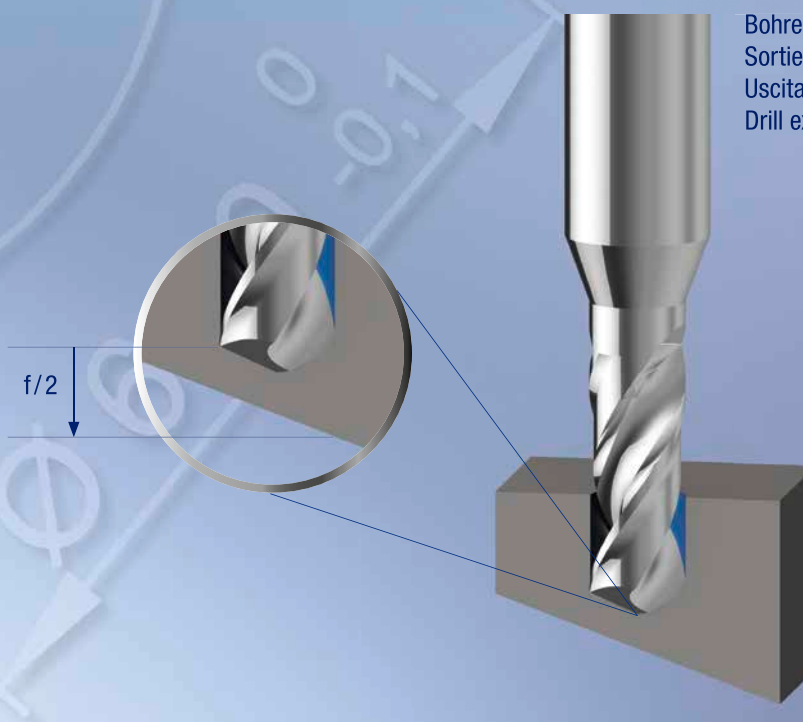
Pilotloch  
 Trou pilote  
 Preforo  
 Pilothole



Fräsen einer Fläche  
 Graver une surface  
 Fresatura di una superficie  
 Milling a flat

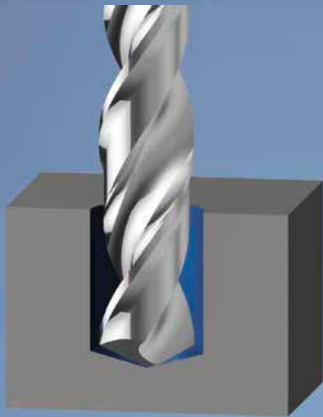


Bohreraustritt in schräger Fläche  
 Sortie du foret d'une surface inclinée  
 Uscita della punta in superficie inclinata  
 Drill exit in an inclined surface

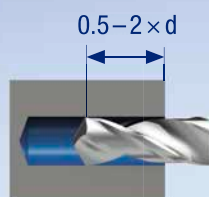
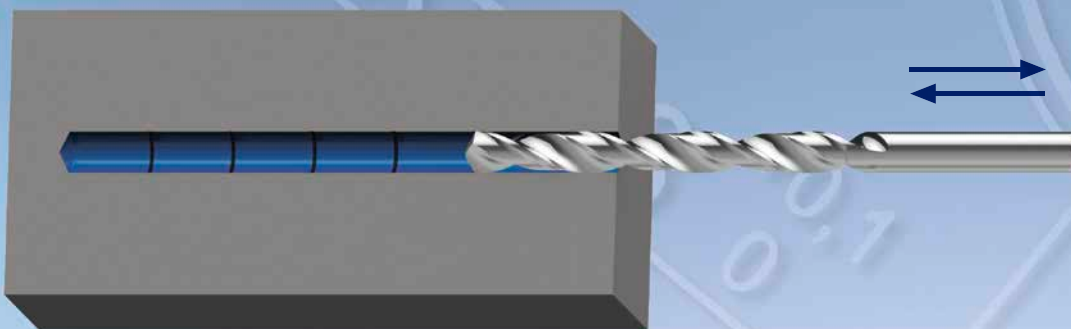


**Bearbeitungsverfahren allgemein**  
**Procédé d'usinage général**  
**Procedura d'usinaggio in generale**  
**General machining process**

**Folgewerkzeug**  
**Outil progressif**  
**Utensile seguente**  
**Subsequent tool**



**Entspänenzyklus**  
**Cycle de débouillage**  
**Ciclo evacuazione trucioli**  
**Pecking cycle**



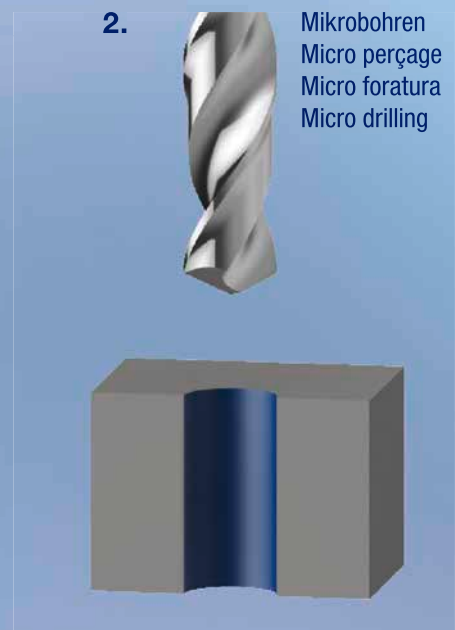
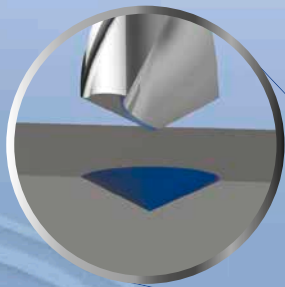
# Bearbeitungsverfahren Mikrobohren

## Procédé d'usinage pour micro perçage

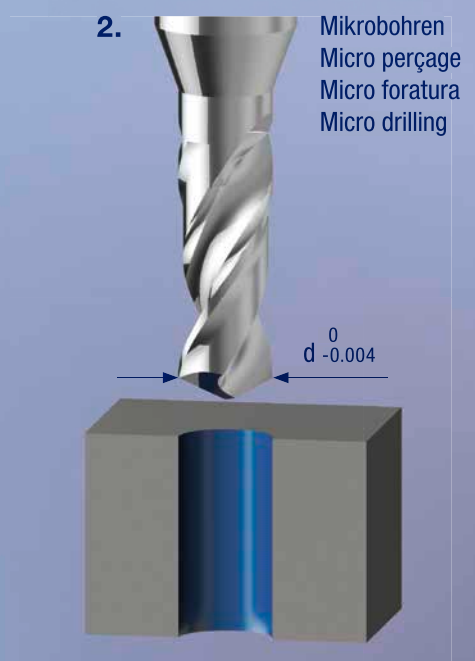
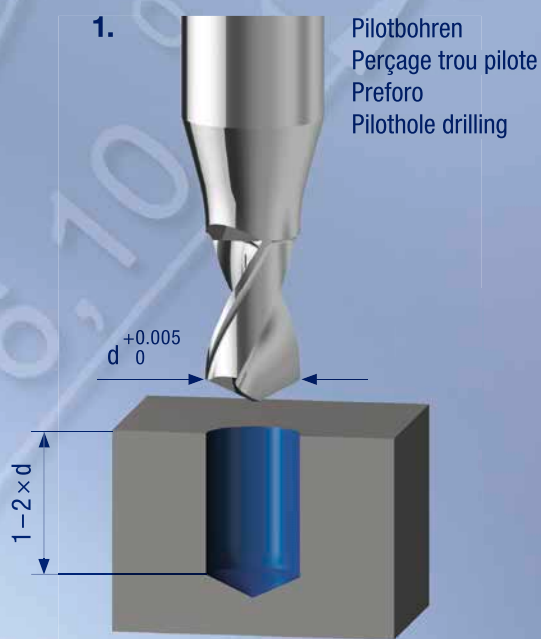
### Procedura d'usinaggio per micro foratura

#### Machining process for micro drilling

Zentrieren  $\leq 6 \times d$   
 Centrer  $\leq 6 \times d$   
 Centrare  $\leq 6 \times d$   
 Centering  $\leq 6 \times d$

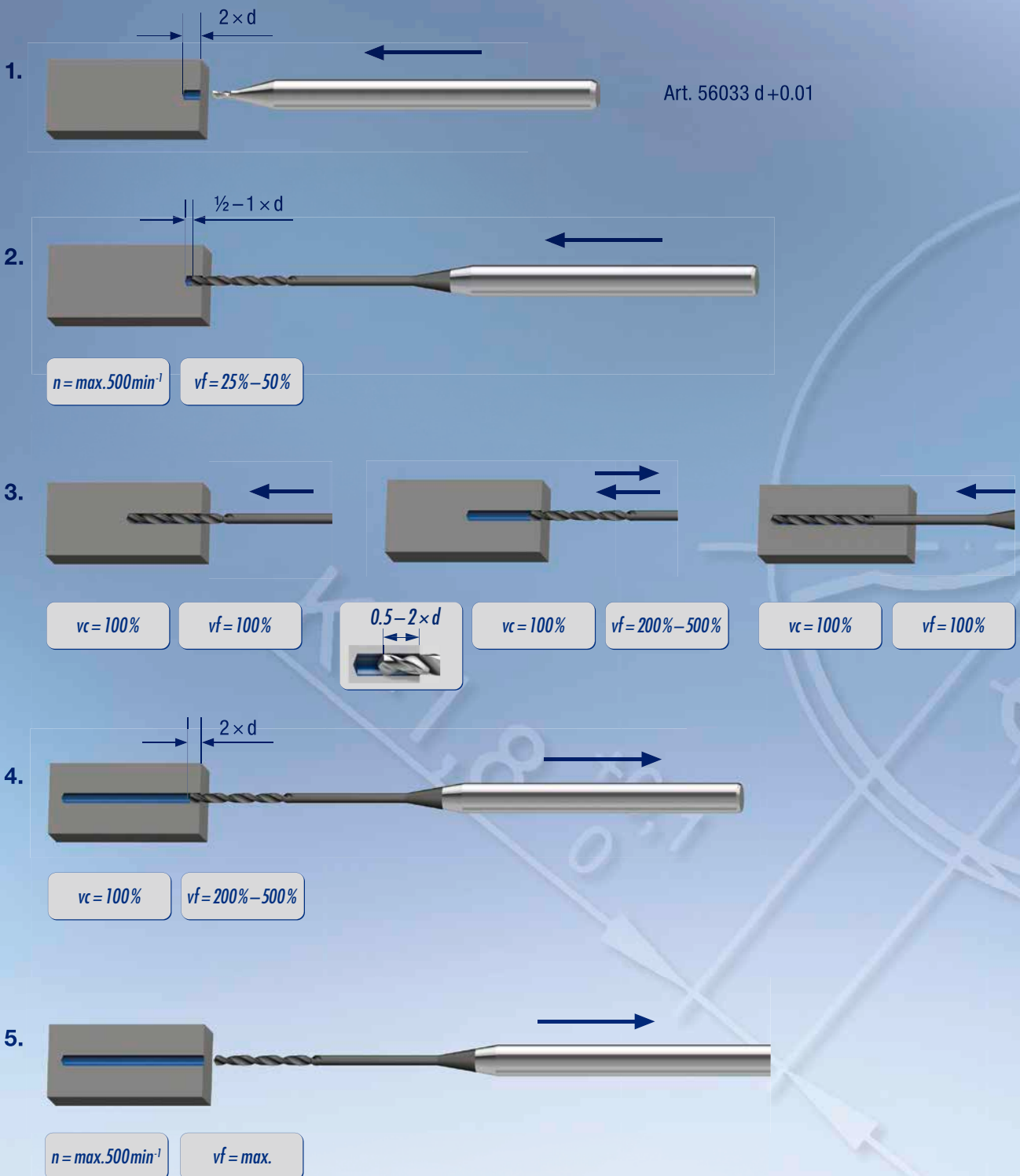


Pilotbohren  $\geq 6 \times d$   
 Perçage trou pilote  $\geq 6 \times d$   
 Preforo  $\geq 6 \times d$   
 Pilothele drilling  $\geq 6 \times d$



**Bearbeitungsverfahren Mikrobohren**  
**Procédé d'usinage pour micro perçage**  
**Procedura d'usinaggio per micro foratura**  
**Machining process for micro drilling**

**Mikro-Tieflochbohren Art. 50720**  
**Micro perçage profond Art. 50720**  
**Micro foratura profonda Art. 50720**  
**Micro deep hole drilling Art. 50720**





# Bearbeitungsverfahren Mikrobohren

## Procédé d'usinage pour micro perçage

### Procedura d'usinaggio per micro foratura

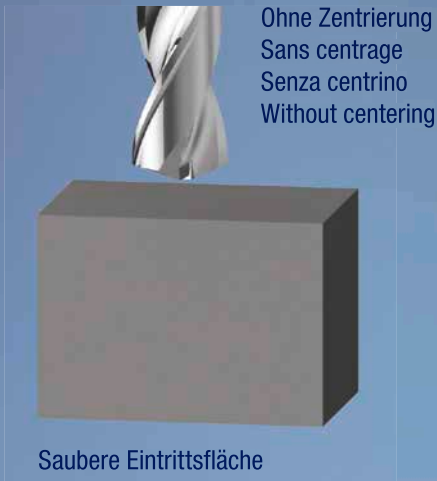
#### Machining process for micro drilling

Mikro-Tieflochbohren Art. 50740/50760/50780  
 Micro perçage profondo Art. 50740/50760/50780  
 Micro foratura profondo Art. 50740/50760/50780  
 Micro deep hole drilling Art. 50740/50760/50780

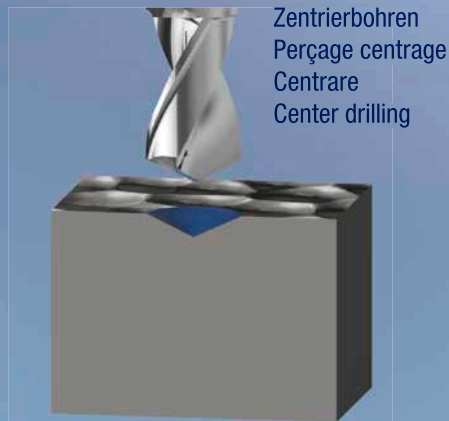


**Bearbeitungsverfahren Hochleistungsbohren**  
**Procédé d'usinage à grand rendement**  
**Procedura d'usinaggio per foratura ad alto rendimento**  
**Machining process for high performance drilling**

**Zentrierung  $\leq 9 \times d$**   
**Centrer  $\leq 9 \times d$**   
**Centrare  $\leq 9 \times d$**   
**Centering  $\leq 9 \times d$**

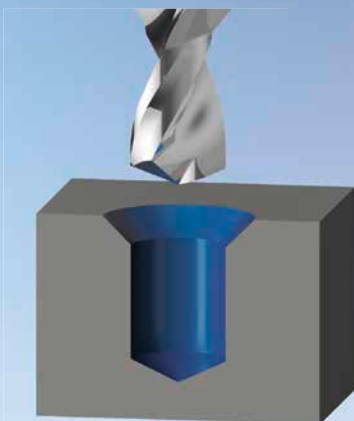


Saubere Eintrittsfläche  
 Surface plate  
 Superficie liscia  
 Smooth entering surface

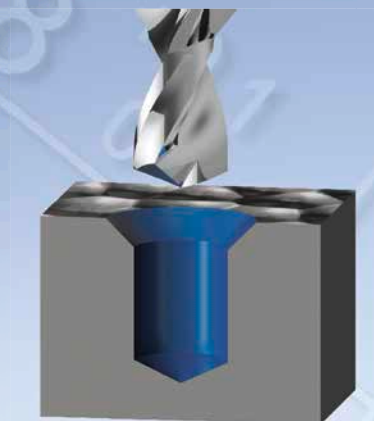


Raue oder unebene Eintrittsfläche  
 Surface rugueuse ou inégale  
 Superficie greeza  
 Rough or uneven entering surface

**Pilotbohrung  $> 9 \times d$**   
**Perçage trou pilote  $> 9 \times d$**   
**Preforo  $> 9 \times d$**   
**Pilohole drilling  $> 9 \times d$**



Saubere Eintrittsfläche  
 Surface plate  
 Superficie liscia  
 Smooth entering surface



Raue oder unebene Eintrittsfläche  
 Surface rugueuse ou inégale  
 Superficie greeza  
 Rough or uneven entering surface

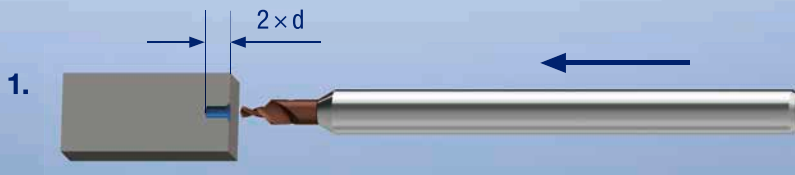
# Bearbeitungsverfahren Hochleistungsbohren

## Procédé d'usinage à grand rendement

### Procedura d'usinaggio per foratura ad alto rendimento

#### Machining process for high performance drilling

Bohrstrategie > 9 × d  
 Stratégie de perçage > 9 × d  
 Strategia di foratura > 9 × d  
 Drilling strategy > 9 × d



Art. 56036



$n = \text{max.} 500 \text{ min}^{-1}$      $vf = 25\% - 50\%$



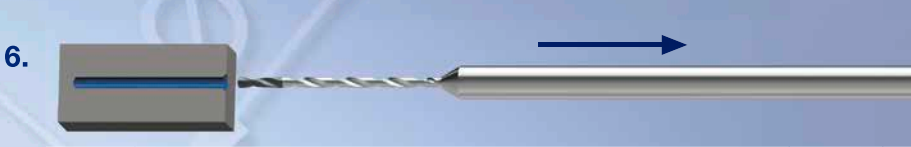
$vc = 100\% \rightarrow \text{start } vf$      $vc = 100\%$      $vf = 100\%$



$vc = 100\%$      $vf = 100\%$



$vc = 100\%$      $vf = 200\% - 500\%$



$n = \text{max.} 500 \text{ min}^{-1}$      $vf = \text{max.}$





## Allgemeine Verkaufsbedingungen

### Geltungsbereich

Für Bestellungen gelten ausschliesslich nachfolgende Bedingungen. Abweichende oder zusätzliche Bedingungen, insbesondere auch allg. Einkaufsbedingungen der Kunden gelten nur, wenn sie schriftlich vereinbart wurden.

### Preise

In Schweizerfranken und pro Stück, ohne MwSt. und Verpackung.

### Lieferfrist

Die Auslieferung erfolgt ab Lager oder bei nicht auf Lager gehaltenen Artikeln gemäss Auftragsbestätigung. Eine ausnahmsweise Nichteinhaltung der Lieferfrist unsererseits berechtigt nicht zur Annulation des Auftrages resp. Schadenersatzansprüchen.

### Versand / Transport

Ab Werk Derendingen unverpackt, auf Rechnung und Gefahr des Empfängers. Auf Wunsch decken wir die Transportversicherung zu Lasten des Empfängers.

### Mengentoleranzen

Mengentoleranzen bei Bestellmenge von

< 20 Stück =  $\pm 2$  Stück

$\geq 20$  Stück =  $\pm 10\%$

bleiben bei Sonderanfertigungen vorbehalten.

Die Verrechnung dieser Mehr- oder Mindermengen erfolgt auf Basis des für den Auftrag abgeschlossenen Preises.

### Eigentumsvorbehalt

Die gelieferte Ware bleibt bis zu ihrer vollständigen Bezahlung Eigentum der Sphinx Werkzeuge AG.

### Reklamationen

Müssen innerhalb 8 Tagen nach Empfang der Ware schriftlich erfolgen. Fehlerhafte Werkzeuge werden nach unserer Wahl ersetzt oder gutgeschrieben. Weitergehende Schadenersatzansprüche lehnen wir ab.

### Zahlung

Falls nicht anders vereinbart, gilt 30 Tage netto. Der Mindestfakturbetrag ist CHF 50.– pro Bestellung. Bestellungen unter CHF 100.– ohne Rabatt.

### Besondere Bestimmungen

Zeichnungen: Für Sphinx Katalogartikel liegt die Designverantwortung bei Sphinx. Für Sonderwerkzeuge, insbesondere für Medizinwerkzeuge liegt die Designverantwortung bei unseren Kunden.

### Änderungen

Technische Änderungen unserer Produkte im Zuge der Weiterentwicklung behalten wir uns vor.

Bei Sonderanfertigungen erfolgen Aenderungsmitteilungen durch die Kunden, ansonsten wird nach dem letzten Zeichnungsstand gefertigt. Aenderungen können kostenbeeinflussend wirken.

### Rückverfolgbarkeit

Wo nichts anderes vereinbart wird, erfolgt die Rückverfolgbarkeit über unsere Artikel- und Fabrikations-Auftrags-System Nummer.

### Anwendbares Recht

Anwendbar ist das schweizerische Recht. Gerichtsstand ist Solothurn.

## Conditions de vente générales

### Domaine d'application

Les conditions ci-après sont uniquement valables pour les commandes. Les exceptions ou suppléments des conditions générales de vente, en particulier les conditions générales des clients, sont uniquement valable par convention écrite.

### Prix

En francs suisses et par pièce sans TVA et emballage.

### Délai de livraison

En général du stock, sinon pour les articles non-stockés selon le délai confirmé. Si exceptionnellement nous ne pouvons respecter le délai confirmé, ceci n'autorise pas l'annulation de la commande ni dédommagement.

### Expédition / Transport

Départ d'usine Derendingen sans emballage, aux risques et frais du client. Sur demande nous vous offrons l'assurance de transport aux prix de revient.

### Tolérances de quantité

Toute commande nécessitant une exécution spéciale sera considérée comme étant soldée, selon le résultat de la fabrication à

< 20 pièces =  $\pm 2$  pièces

$\geq 20$  pièces =  $\pm 10\%$

de la quantité commandée.

La facturation de ces quantités à plus ou moins est sur la base des prix valables pour cette commande.

### Réserve de propriété

La marchandise livrée reste la propriété de la Sphinx Outils SA jusqu'à son paiement intégral.

### Réclamations

Elles doivent nous parvenir par écrit dans les 8 jours après réception de la marchandise. Les outils défectueux seront remplacés ou crédités suivant notre option. Toute autre revendications ne pourront être prises en considération.

### Paiement

30 jours net en francs suisses sauf autre convention.

La facturation minimale est de CHF 50.–. Commandes au-dessous de CHF 100.– sans rabais.

### Dispositions spéciales

Dessins: chez Sphinx Outils SA, les outils présentés dans le catalogue sont totalement développés par notre département technique et nous en prenons la responsabilité.

Pour les outils spéciaux, en particulier, les outils médicaux, le client porte la responsabilité du développement technique.

### Modifications

Nous nous réservons le droit de procéder aux modifications techniques de nos produits à l'occasion de perfectionnements.

Pour les exécutions spéciales, les modifications nous parviennent par le client, sinon la fabrication s'effectue d'après les derniers dessins. Des modifications peuvent entraîner des frais.

### Recherche

Sans autre convention, la recherche est par notre numéro d'article et de fabrication.

### Droit applicable

Le droit suisse est applicable.

Lieu de juridiction: Soleure





## Condizioni generali di vendita

### Ambito di applicazione

Per tutti gli ordini prevenuti sono valide solo le seguenti condizioni. Eccezioni o modifiche alle condizioni generali della vendita, in particolare condizioni specifiche dei clienti, sono valide solo se concordate per iscritto.

### Prezzi

In franchi svizzeri e per unità, IVA ed imballaggio non compresi.

### Tempi di consegna

La consegna avviene dallo stock, e per gli articoli non disponibili a magazzino, secondo quanto indicato nella conferma d'ordine. Eventuali inosservanze dei termini di consegna non autorizzano l'annullamento dell'ordine o diritto al risarcimento del danno.

### Spedizione / Trasporto

Franco partenza dalla fabbrica a Derendingen, imballo non compreso, a spese e rischio del cliente. A richiesta, offriamo l'assicurazione del trasporto al prezzo di costo.

### Tolleranza sulla quantità

Tutti gli ordini che prevedono un'esecuzione speciale risulteranno saldati sulla base di quanto uscito dalla fabbricazione, ossia

< 20 pezzi = ± 2 pezzi

≥ 20 pezzi = ± 10 %

in più o in meno dalla quantità ordinata.

La fatturazione di queste quantità in più o meno avvera sulla base del prezzo stabilito nell'ordine.

### Riserva della proprietà

La Sphinx Utensili Spa si riserva la piena proprietà della merce fornita sino al completo pagamento della stessa.

### Reclamazioni

Devono essere presentate scritte entro 8 giorni dopo il ricevimento della merce. Utensili difettosi verranno sostituiti o accreditati a nostra scelta. Non vengono prese in considerazioni ulteriori pretese di risarcimento.

### Pagamento

Se non concordato diversamente, s'intende a 30 giorni netto. Il fatturato minimo è di CHF 50.-. Per ordini inferiori a CHF 100.- senza sconto.

### Disposizioni particolari

Disegni: per gli articoli del catalogo Sphinx la responsabilità del design spetta alla ditta Sphinx. Per utensili speciali, in particolare per gli utensili medicali la responsabilità è del cliente.

### Modifiche

Con riserva di modifiche tecniche nel quadro dello sviluppo ulteriore del prodotto.

Per esecuzioni speciali, le eventuali modifiche devono pervenire dal cliente, altrimenti la fabbricazione viene effettuata secondo gli ultimi disegni. Le modifiche possono comportare dei costi supplementari

### Rintracciabilità

In assenza di particolari accordi, la ricerca avviene con il numero d'articolo Sphinx e del lotto di fabbricazione.

### Controversie

Per ogni controversia si applica il diritto svizzero. Luogo di competenza: Soletta.

## General Terms

### Validity

The terms mentioned hereafter are valid for all orders. Any purchasing or other terms from our partners are waved if not expressly agreed in writing.

### Prices

Are given in Swiss Francs per piece, ex works. Packing and transport not included.

### Delivery

For catalog items ex stock or as per our acknowledgement. If a confirmed delivery date is late, the seller cannot be held responsible for any subsequent costs nor cancellation.

### Shipment / Transport

Ex our works Derendingen, unpacked at buyers risk and peril. On request we cover transport insurance at customers costs.

### Quantity tolerances

For manufacturing orders of special executions, a quantity tolerance of

< 20 pieces = ± 2 pieces

≥ 20 pieces = ± 10 %

will be reserved.

Invoicing of such over-/ under-deliveries is based on the agreed price for the original order.

### Reservation of title

The goods delivered shall remain the property of Sphinx Tools Ltd. until they have been paid for in full.

### Complaints

Have to be made in writing at latest 8 days after receipt of goods. We either replace or credit any faulty tool at our choice. We do not accept any further liability.

### Payments

If not agreed otherwise, terms are 30 days net in Swiss Francs. Minimum amount per order is CHF 50.-. Order below CHF 100.- without discount.

### Special Terms

Drawings: For catalog items as per SPHINX specification. For any specials and all medical tools, responsibility for design is with purchaser.

### Alterations

We reserve the right to make technical alterations to our products as part of their development.

For special tools we manufacture to latest drawing in our possession. Any subsequent alterations are made at customers costs.

### Retraceability

Subject to other agreements, the retraceability is as per our article and manufacturing number system.

### Place of arbitration

For all commitments Swiss law is applied at Solothurn.

Notizen  
Notes  
Appunti  
Notes





Notizen  
Notes  
Appunti  
Notes



