Ihr Partner für höchste Präzision
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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 Medizinaltechnik 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.

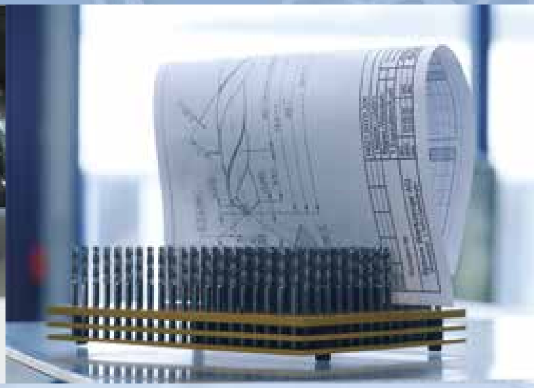
Grâce à notre proximité avec la clientèle et à notre savoir-faire, nous résolvons des tâches complexes, offrons des solutions souvent uniques et contribuons ainsi largement au succès de nombreuses d'entreprises de renom. Les exigences croissantes du marché sont notre défi quotidien!

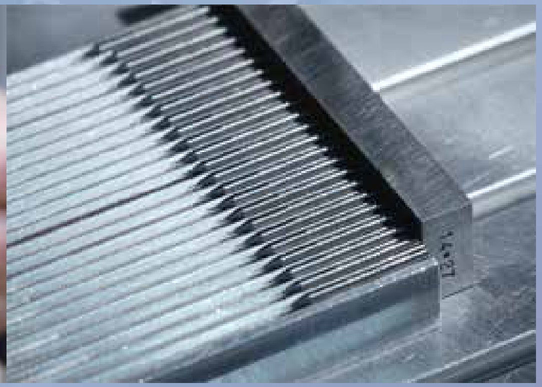
La Sphinx Utensili SpA è un'azienda leader nella fabbricazione e vendita di utensili di precisione per la lavorazione a taglio.
Una crescita continua, conseguenti reinvestizioni nell'impianto di produzione come l'impegno personale dei collaboratori ci permette di avere una forte posizione sul mercato 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 constante 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.

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







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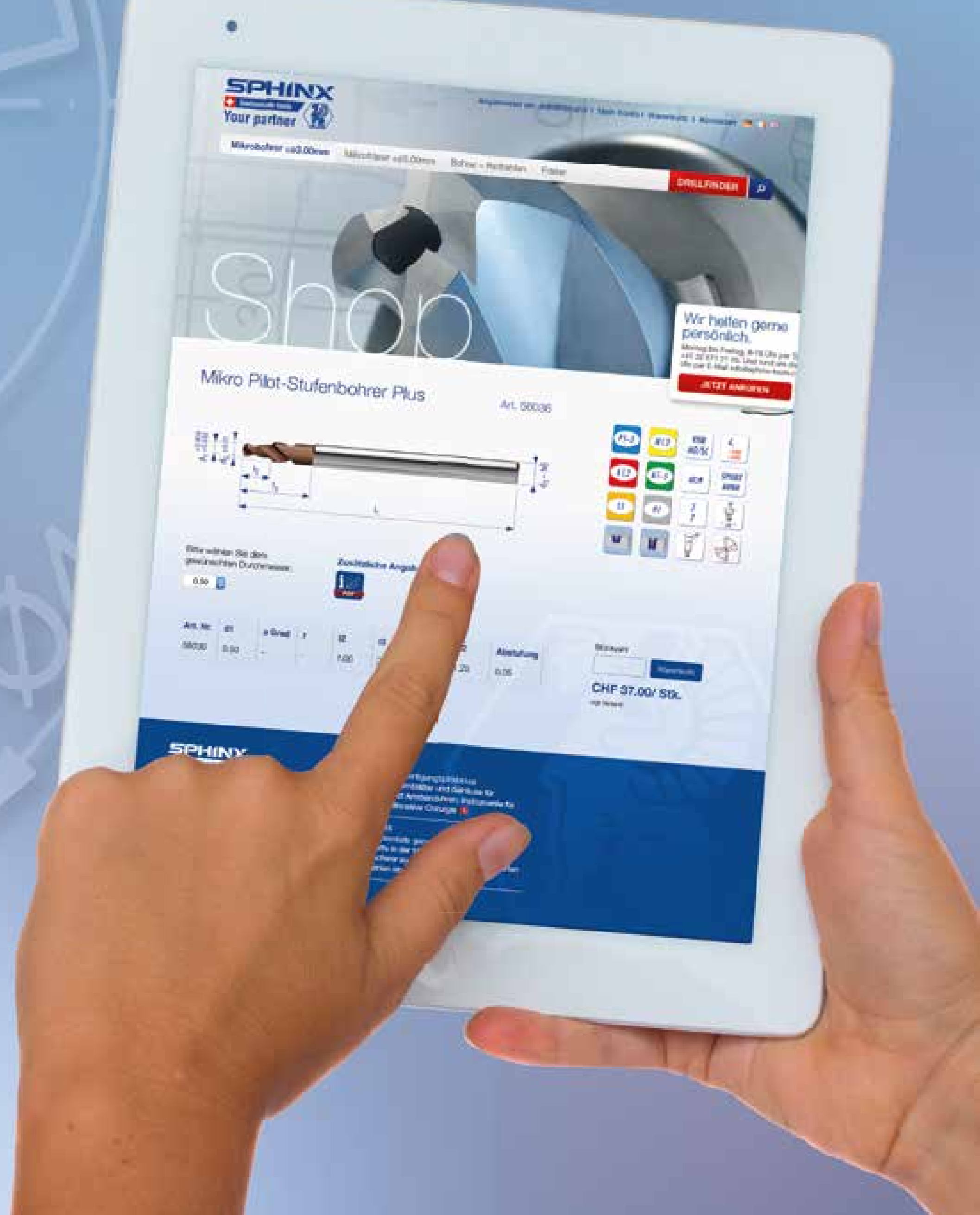
Le nouveau E-Shop
Il nuovo E-Shop
The new E-Shop

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.

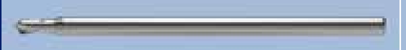
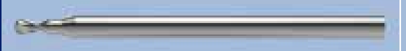
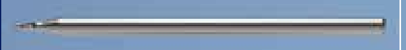
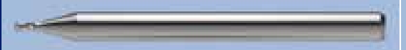
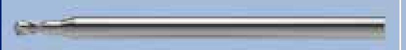
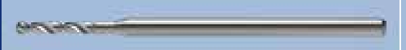
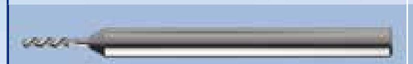


Mikrobohrer ≤ ø 3.00 mm **Micro Foret ≤ ø 3.00 mm** **Micro Punta ≤ ø 3.00 mm** **Micro Drill ≤ ø 3.00 mm**	**8**
Mikrofräser ≤ ø 3.00 mm **Micro Fraise ≤ ø 3.00 mm** **Micro Fresa ≤ ø 3.00 mm** **Micro Endmill ≤ ø 3.00 mm**	**52**
Bohrer – Reibahlen **Foret – Alésoir** **Punta – Alesatore** **Drill – Reamer**	**90**
Fräser **Fraise** **Fresa** **Endmill**	**138**
Sonderwerkzeuge **Outils spéciaux** **Utensili speciali** **Special tools**	**148**
Anwendungstechnik **Application de la technologie** **Applicazione della tecnologia** **Application technology**	**157**

Mikrobohrer ≤ ø 3.00 mm
Micro Foret ≤ ø 3.00 mm
Micro Punta ≤ ø 3.00 mm
Micro Drill ≤ ø 3.00 mm

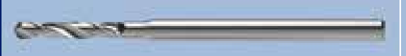
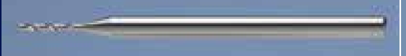
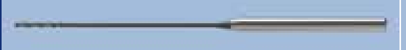
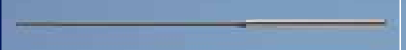
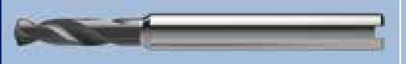
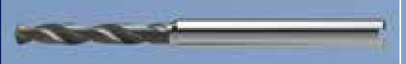
* S. 187 + 189
p. 187 + 189

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

	Artikel Article	Durchmesser-Bereich Diameter range	Abstufung Increments	Bohrtiefe Cutting length	Spitzenwinkel Point angle	Spiralwinkel Helix angle	Material	Werkstoffgruppe* Workpiece material* P	M	K	S	N	H	O	Anwendung* Application*	Seite Page
Mikro NC-Anbohrer, Pilotbohrer mit verstärktem Schaft ohne Innenkühlung / Micro foret à pointer, foret de préperçage avec manche renforcée sans trou d'huile							**Micro punta a centrare, punta per preforo con gambo rinforzato senza fori di lubrificazione / Micro NC spotting drill, pilot drill with reinforced shank without internal coolant**									
	50806	0.50 – 6.00	0.10		60° +/- 1°	20°	VHM / MD / SC	✓	✓	✓	•	✓		✓		13
	50809	0.50 – 3.00	0.10		90° +/- 1°	20°	VHM / MD / SC	✓	✓	✓	•	✓		✓		14
	50808	0.50 – 3.00	0.10		90° +/- 1°	20°	VHM / MD / SC, TiAlSiN	✓	✓	✓	✓	✓	✓	✓		15
	56005	0.10 – 1.50	0.05	2 – 4×ø	130°	20°	VHM / MD / SC	✓	•	✓	✓	✓		✓		16
	56030	0.10 – 1.00	0.01	2×ø	130°	30°	VHM / MD / SC	✓	✓	✓	✓	✓		✓		17
	56033	0.03 – 2.99	0.01	2×ø	130°	30°	VHM / MD / SC	✓	✓	✓	✓	✓		✓		18
	56036	0.30 – 6.00	0.05	2×ø	140° / 90°	30°	VHM / MD / SC; AlCrN	✓	✓	✓	✓	✓	•	•		20
	16004	0.10 – 1.50	0.05	2 – 3×ø	130°	20°	HSS-E	✓	•	✓		•		•		21
Mikrobohrer mit verstärktem Schaft ohne Innenkühlung / Micro foret avec manche renforcée sans trou d'huile							**Micro punta con gambo rinforzato senza fori di lubrificazione / Micro drill with reinforced shank without internal coolant**									
	50695	0.20 – 1.50	0.01	6×ø	118°	30°	VHM / MD / SC	✓	•	✓		✓		•		23
	50699	0.05 – 2.00	0.01	6×ø	118°	30°	VHM / MD / SC	✓	•	✓		✓		•		24
	51200	0.03 – 3.00	0.01	6×ø	130°	35°	VHM / MD / SC	✓	✓	✓	✓	✓		•		26
	51201	0.20 – 3.00	0.01	6×ø	130°	35°	VHM / MD / SC; TiAlN	✓	✓	✓	✓	✓	•	•		28
	50620	0.50 – 1.60	0.50	10 – 15×ø	118°	25°	VHM / MD / SC	✓	•	✓		✓		•		30
	50621	0.15 – 3.00	0.01	12×ø	130°	25°	VHM / MD / SC	✓	•	✓		✓		•		31
	50622	0.20 – 3.00	0.01	12×ø	130°	25°	VHM / MD / SC; TiAlN	✓	•	✓	•	✓	•	•		33
	50941	0.50 – 2.40	0.01	6×ø	140°	30°	VHM / MD / SC; TiAlN	✓	✓	✓	✓	✓	•	✓		35
	55652	0.20 – 2.99	0.01	5×ø	140°	35°	VHM / MD / SC	✓	•	✓	•	✓		•		36

* S. 187 + 189
p. 187 + 189

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

	Artikel Article	Durchmesser-Bereich Diameter range	Abstufung Increments	Bohrtiefe Cutting length	Spitzenwinkel Point angle	Spiralwinkel Helix angle	Material	Werkstoffgruppe* Workpiece material* P	M	K	S	N	H	O	Anwendung* Application*	Seite Page
	12604	0.05–3.175	0.01	5–8×ø	118°	25°	HSS-E	✓	•	✓		•		•		38
	11654	0.50–2.30	0.05	6×ø	120°	30°	HSS-E	✓	•	✓		•				39
Mikro-Tieflochbohrer Micro-foret de perçage profond							**Micro punta per foro profondo Micro deep hole drill**									
	50720	0.20–1.50	0.05	20×ø	129°	30°	VHM / MD / SC; Mi-Nova	✓	•	✓	•	✓	•	✓		41
	50740	0.40–1.50	0.05	40×ø	126°	30°	VHM / MD / SC; Mi-Nova	✓	•	✓	•	✓	•	✓		42
	50760	0.40–1.50	0.05	60×ø	126°	30°	VHM / MD / SC; Mi-Nova	✓	•	✓	•	✓	•	✓		43
	50780	0.40–1.50	0.05	80×ø	126°	30°	VHM / MD / SC; Mi-Nova	✓	•	✓	•	✓	•	✓		44
Mikro Hochleistungsbohrer Phoenix-TC2 mit verstärktem Schaft mit Innenkühlung Micro foret à grand rendement Phoenix-TC2 avec manche renforcée avec trou d'huile							**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**									
	52903	1.00–10.00	0.05	3×ø	140°	30°	VHM / MD / SC; AlTiCrN+S	✓	✓	✓	✓	✓	•	•		46
	52906	1.00–10.00	0.05	6×ø	140°	30°	VHM / MD / SC; AlTiCrN+S	✓	✓	✓	✓	✓	•	•		47
	52909	1.00–10.00	0.10	9×ø	140°	30°	VHM / MD / SC; AlTiCrN+S	✓	✓	✓	✓	✓	•	•		48
	52912	1.00–10.00	0.10	12×ø	137°	30°	VHM / MD / SC; AlCrTiN	✓	✓	✓	✓	✓	•	•		49
	52916	1.00–10.00	0.10	16×ø	137°	30°	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

P1–3 M1,2 K1,2 N1–5 N7,8 S1 O1

VHM MD/SC
SPHINX NORM
Z 2
60°
20°

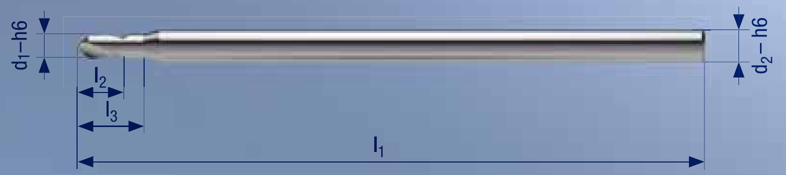
i 159

d_1 mm	l_2 mm	l_3 mm	l_1 mm	d_2 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

P1–3 | M1,2 | K1,2 | N1–5 | N7,8 | S1 | O1



VHM MD/SC | SPHINX NORM | Z 2 | 90° | 20°

159 | 10

d1 mm	l2 mm	l3 mm	l1 mm	d2 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

P1–3 | M1,2 | K1,2 | N1–8 | S1 | H1 | O1,2

VHM MD/SC | TiAlSiN | SPHINX NORM | Z 2 | 90° | 20°

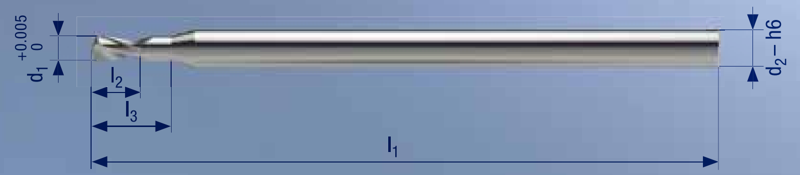
159 | 10

d1 mm	l2 mm	l3 mm	l1 mm	d2 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

P1–3 M1 K1,2 N1–5 N7,8 S1 O1



VHM MD/SC

d_1 + 0.005 0

SPHINX NORM

Z 2

130°

2–4×d

i 160

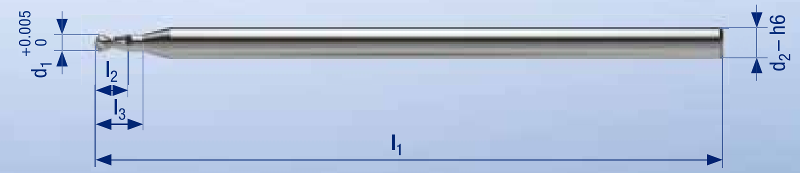
10

d_1 mm	l_2 mm	l_3 mm	l_1 mm	d_2 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×d
Micro foret de préperçage Spirec Plus 2×d
Micro punta per preforo Spirec Plus 2×d
Micro pilot drill Spirec Plus 2×d

Art. 56030

P1–3 M1,2 K1,2 N1,5–8 S1 O1



VHM MD/SC

d_1 + 0.005 0

SPHINX NORM

Z 2

130°

30°

2×d

i 160

10

d_1 mm	l_2 mm	l_3 mm	l_1 mm	d_2 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
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
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

P1–3 | M1,2 | N1,5–8 | S1 | O1

VHM MD/SC | d1 +0.005 0 | SPHINX NORM | Z 2 | 130° | 30° | 2×d

i 160

d1 mm	l2 mm	l3 mm	l1 mm	d2 mm
0.03	0.15	0.30	38	3.00
0.04	0.15	0.30	38	3.00
0.05	0.20	0.40	38	3.00
0.06	0.20	0.40	38	3.00
0.07	0.25	0.45	38	3.00
0.08	0.25	0.45	38	3.00
0.09	0.30	0.50	38	3.00
0.10	0.35	0.55	38	3.00
0.11	0.35	0.55	38	3.00
0.12	0.35	0.55	38	3.00
0.13	0.40	0.60	38	3.00
0.14	0.40	0.60	38	3.00
0.15	0.40	0.60	38	3.00
0.16	0.40	0.60	38	3.00
0.17	0.50	0.70	38	3.00
0.18	0.50	0.70	38	3.00
0.19	0.50	0.70	38	3.00
0.20	0.55	0.75	38	3.00
0.21	0.55	0.75	38	3.00
0.22	0.60	0.80	38	3.00
0.23	0.60	0.80	38	3.00
0.24	0.60	0.80	38	3.00
0.25	0.70	0.90	38	3.00
0.26	0.70	0.90	38	3.00
0.27	0.70	0.90	38	3.00
0.28	0.80	1.00	38	3.00
0.29	0.80	1.00	38	3.00
0.30	0.90	1.20	38	3.00
0.31	0.90	1.20	38	3.00
0.32	0.90	1.20	38	3.00
0.33	0.90	1.20	38	3.00
0.34	0.90	1.35	38	3.00
0.35	0.90	1.35	38	3.00
0.36	0.95	1.35	38	3.00
0.37	0.95	1.35	38	3.00
0.38	0.95	1.50	38	3.00
0.39	0.95	1.50	38	3.00
0.40	0.80	1.60	38	3.00

d1 mm	l2 mm	l3 mm	l1 mm	d2 mm
0.41	0.82	1.60	38	3.00
0.42	0.84	1.60	38	3.00
0.43	0.86	1.60	38	3.00
0.44	0.88	1.60	38	3.00
0.45	0.90	1.60	38	3.00
0.46	0.92	1.70	38	3.00
0.47	0.94	1.70	38	3.00
0.48	0.96	1.70	38	3.00
0.49	0.98	1.70	38	3.00
0.50	1.00	1.70	38	3.00
0.51	1.02	1.80	38	3.00
0.52	1.04	1.80	38	3.00
0.53	1.06	1.80	38	3.00
0.54	1.08	1.80	38	3.00
0.55	1.10	1.80	38	3.00
0.56	1.12	1.90	38	3.00
0.57	1.14	1.90	38	3.00
0.58	1.16	1.90	38	3.00
0.59	1.18	1.90	38	3.00
0.60	1.20	1.90	38	3.00
0.61	1.22	2.00	38	3.00
0.62	1.24	2.00	38	3.00
0.63	1.26	2.00	38	3.00
0.64	1.28	2.00	38	3.00
0.65	1.30	2.00	38	3.00
0.66	1.32	2.10	38	3.00
0.67	1.34	2.10	38	3.00
0.68	1.36	2.10	38	3.00
0.69	1.38	2.10	38	3.00
0.70	1.40	2.10	38	3.00
0.71	1.42	2.20	38	3.00
0.72	1.44	2.20	38	3.00
0.73	1.46	2.20	38	3.00
0.74	1.48	2.20	38	3.00
0.75	1.50	2.20	38	3.00
0.76	1.52	2.30	38	3.00
0.77	1.54	2.30	38	3.00
0.78	1.56	2.30	38	3.00

d1 mm	l2 mm	l3 mm	l1 mm	d2 mm
0.79	1.58	2.30	38	3.00
0.80	1.60	2.30	38	3.00
0.81	1.62	2.40	38	3.00
0.82	1.64	2.40	38	3.00
0.83	1.66	2.40	38	3.00
0.84	1.68	2.40	38	3.00
0.85	1.70	2.40	38	3.00
0.86	1.72	2.50	38	3.00
0.87	1.74	2.50	38	3.00
0.88	1.76	2.50	38	3.00
0.89	1.78	2.50	38	3.00
0.90	1.80	2.50	38	3.00
0.91	1.82	2.60	38	3.00
0.92	1.84	2.60	38	3.00
0.93	1.86	2.60	38	3.00
0.94	1.88	2.60	38	3.00
0.95	1.90	2.60	38	3.00
0.96	1.92	2.70	38	3.00
0.97	1.94	2.70	38	3.00
0.98	1.96	2.70	38	3.00
0.99	1.98	2.70	38	3.00
1.00	2.00	2.70	38	3.00
1.01	2.02	3.50	38	3.00
1.02	2.04	3.50	38	3.00
1.03	2.06	3.50	38	3.00
1.04	2.08	3.50	38	3.00
1.05	2.10	3.50	38	3.00
1.06	2.12	3.60	38	3.00
1.07	2.14	3.60	38	3.00
1.08	2.16	3.60	38	3.00
1.09	2.18	3.60	38	3.00
1.10	2.20	3.60	38	3.00
1.11	2.22	3.70	38	3.00
1.12	2.24	3.70	38	3.00
1.13	2.26	3.70	38	3.00
1.14	2.28	3.70	38	3.00
1.15	2.30	3.70	38	3.00
1.16	2.32	3.80	38	3.00

d1 mm	l2 mm	l3 mm	l1 mm	d2 mm
1.17	2.34	3.80	38	3.00
1.18	2.36	3.80	38	3.00
1.19	2.38	3.80	38	3.00
1.20	2.40	3.80	38	3.00
1.21	2.42	4.20	38	3.00
1.22	2.44	4.20	38	3.00
1.23	2.46	4.20	38	3.00
1.24	2.48	4.20	38	3.00
1.25	2.50	4.20	38	3.00
1.26	2.52	4.30	38	3.00
1.27	2.54	4.30	38	3.00
1.28	2.56	4.30	38	3.00
1.29	2.58	4.30	38	3.00
1.30	2.60	4.30	38	3.00
1.31	2.62	4.40	38	3.00
1.32	2.64	4.40	38	3.00
1.33	2.66	4.40	38	3.00
1.34	2.68	4.40	38	3.00
1.35	2.70	4.40	38	3.00
1.36	2.72	4.50	38	3.00
1.37	2.74	4.50	38	3.00
1.38	2.76	4.50	38	3.00
1.39	2.78	4.50	38	3.00
1.40	2.80	4.50	38	3.00
1.41	2.82	4.60	38	3.00
1.42	2.84	4.60	38	3.00
1.43	2.86	4.60	38	3.00
1.44	2.88	4.60	38	3.00
1.45	2.90	4.60	38	3.00
1.46	2.92	4.70	38	3.00
1.47	2.94	4.70	38	3.00
1.48	2.96	4.70	38	3.00
1.49	2.98	4.70	38	3.00
1.50	3.00	4.70	38	3.00
1.51	3.02	5.10	38	3.00
1.52	3.04	5.10	38	3.00
1.53	3.06	5.10	38	3.00
1.54	3.08	5.10	38	3.00

d1 mm	l2 mm	l3 mm	l1 mm	d2 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

d1 mm	l2 mm	l3 mm	l1 mm	d2 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

d1 mm	l2 mm	l3 mm	l1 mm	d2 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

d1 mm	l2 mm	l3 mm	l1 mm	d2 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

P1–3 M1,2 K1,2 N1–5 S1 H1

VHM MD/SC

d_1 + 0.008 + 0.002

AlCrN

SPHINX NORM

Z 2

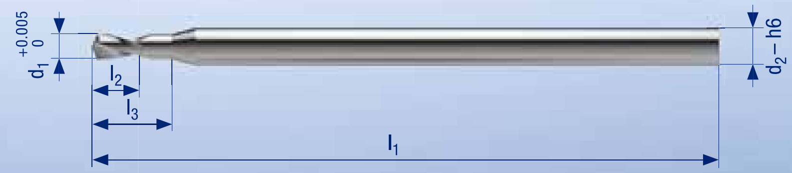
161

d_1 mm	d_2 mm	l_2 mm	l_3 mm	l_1 mm	d_3 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
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
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
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

P1,2 M1,2 K1,2 N1,2,5



HSS-E

d_1 + 0.005 0

SPHINX NORM

Z 2

161

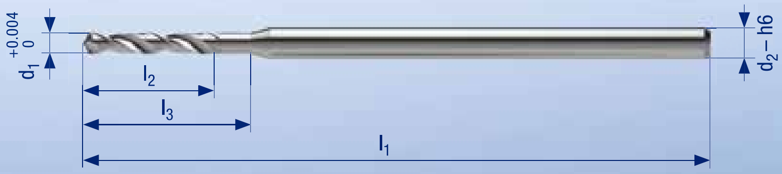
d_1 mm	l_2 mm	l_3 mm	l_1 mm	d_2 mm
0.10	0.40	0.60	25	1.50
0.15	0.40	0.60	25	1.50
0.20	0.60	0.90	25	1.50
0.25	0.60	0.90	25	1.50
0.30	0.90	1.20	25	1.50
0.35	0.90	1.20	25	1.50
0.40	0.90	1.60	25	1.50
0.45	0.90	1.60	25	1.50
0.50	1.00	1.80	25	1.50
0.55	1.00	1.80	25	1.50
0.60	1.20	2.00	25	1.50
0.65	1.20	2.00	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


Swiss made by SPHINX

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

P1–3
M1
K1,2
N2–5
N7,8



VHM MD/SC
d_1 + 0.004 0
SPHINX NORM
Z 2
118°
30°
6–8×d

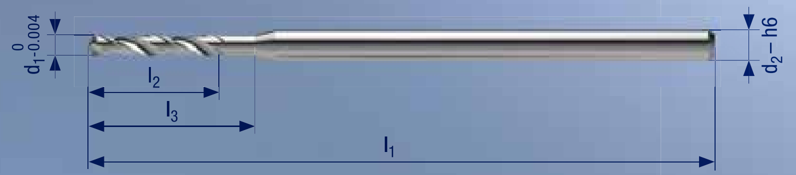
i 162
10

d_1 mm	l_2 mm	l_3 mm	l_1 mm	d_2 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
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
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
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

P1–3 | M1 | K1,2 | N2–5 | N7,8



VHM MD/SC | DIN 1899-A | Z 2 | 118° | 30° | 6–8×d

i 162 | 10

d_1 mm	l_2 mm	l_3 mm	l_1 mm	d_2 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_1 mm	l_2 mm	l_3 mm	l_1 mm	d_2 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_1 mm	l_2 mm	l_3 mm	l_1 mm	d_2 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_1 mm	l_2 mm	l_3 mm	l_1 mm	d_2 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_1 mm	l_2 mm	l_3 mm	l_1 mm	d_2 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_1 mm	l_2 mm	l_3 mm	l_1 mm	d_2 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

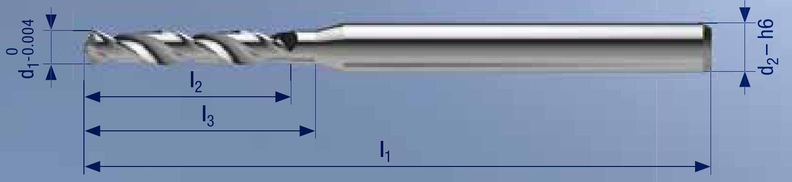
d_1 mm	l_2 mm	l_3 mm	l_1 mm	d_2 mm
1.81	11.20	13.40	38	2.00
1.82	11.20	13.40	38	2.00
1.83	11.20	13.40	38	2.00
1.84	11.20	13.40	38	2.00
1.85	11.20	13.40	38	2.00
1.86	11.20	13.40	38	2.00
1.87	11.20	13.40	38	2.00
1.88	11.20	13.40	38	2.00
1.89	11.20	13.40	38	2.00
1.90	11.20	13.40	38	2.00
1.91	11.20	13.40	38	2.00
1.92	11.20	13.40	38	2.00

d_1 mm	l_2 mm	l_3 mm	l_1 mm	d_2 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

P1–3 | M1,2 | K1,2 | N1,5–8 | S1 | O1



VHM MD/SC | SPHINX NORM | Z 2 | 130° | 35° | ~6×d

i 162

d1 mm	l2 mm	l3 mm	l1 mm	d2 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

d1 mm	l2 mm	l3 mm	l1 mm	d2 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

d1 mm	l2 mm	l3 mm	l1 mm	d2 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

d1 mm	l2 mm	l3 mm	l1 mm	d2 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

d1 mm	l2 mm	l3 mm	l1 mm	d2 mm
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
1.72	11.20	13.40	38	3.00
1.73	11.20	13.40	38	3.00
1.74	11.20	13.40	38	3.00
1.75	11.20	13.40	38	3.00
1.76	11.20	13.40	38	3.00
1.77	11.20	13.40	38	3.00
1.78	11.20	13.40	38	3.00
1.79	11.20	13.40	38	3.00
1.80	11.20	13.40	38	3.00
1.81	11.20	13.40	38	3.00
1.82	11.20	13.40	38	3.00
1.83	11.20	13.40	38	3.00
1.84	11.20	13.40	38	3.00
1.85	11.20	13.40	38	3.00
1.86	11.20	13.40	38	3.00
1.87	11.20	13.40	38	3.00
1.88	11.20	13.40	38	3.00
1.89	11.20	13.40	38	3.00
1.90	11.20	13.40	38	3.00
1.91	11.20	13.40	38	3.00
1.92	11.20	13.40	38	3.00

d1 mm	l2 mm	l3 mm	l1 mm	d2 mm
1.93	11.20	13.40	38	3.00
1.94	11.20	13.40	38	3.00
1.95	11.20	13.40	38	3.00
1.96	11.20	13.40	38	3.00
1.97	11.20	13.40	38	3.00
1.98	11.20	13.40	38	3.00
1.99	11.20	13.40	38	3.00
2.00	11.20	13.40	38	3.00
2.01	12.50	14.00	38	3.00
2.02	12.50	14.00	38	3.00
2.03	12.50	14.00	38	3.00
2.04	12.50	14.00	38	3.00
2.05	12.50	14.00	38	3.00
2.06	12.50	14.00	38	3.00
2.07	12.50	14.00	38	3.00
2.08	12.50	14.00	38	3.00
2.09	12.50	14.00	38	3.00
2.10	12.50	14.00	38	3.00
2.11	12.50	14.00	38	3.00
2.12	12.50	14.00	38	3.00
2.13	12.50	14.00	38	3.00
2.14	12.50	14.00	38	3.00
2.15	12.50	14.00	38	3.00
2.16	12.50	14.00	38	3.00
2.17	12.50	14.00	38	3.00
2.18	12.50	14.00	38	3.00
2.19	12.50	14.00	38	3.00
2.20	12.50	14.00	38	3.00
2.21	12.50	14.00	38	3.00
2.22	12.50	14.00	38	3.00
2.23	12.50	14.00	38	3.00
2.24	12.50	14.00	38	3.00
2.25	12.50	14.00	38	3.00
2.26	12.50	14.00	38	3.00
2.27	12.50	14.00	38	3.00
2.28	12.50	14.00	38	3.00
2.29	12.50	14.00	38	3.00
2.30	12.50	14.00	38	3.00

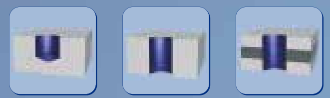
d1 mm	l2 mm	l3 mm	l1 mm	d2 mm
2.31	12.50	14.00	38	3.00
2.32	12.50	14.00	38	3.00
2.33	12.50	14.00	38	3.00
2.34	12.50	14.00	38	3.00
2.35	12.50	14.00	38	3.00
2.36	12.50	14.00	38	3.00
2.37	12.50	14.00	38	3.00
2.38	12.50	14.00	38	3.00
2.39	12.50	14.00	38	3.00
2.40	12.50	14.00	38	3.00
2.41	12.50	14.00	38	3.00
2.42	12.50	14.00	38	3.00
2.43	12.50	14.00	38	3.00
2.44	12.50	14.00	38	3.00
2.45	12.50	14.00	38	3.00
2.46	12.50	14.00	38	3.00
2.47	12.50	14.00	38	3.00
2.48	12.50	14.00	38	3.00
2.49	12.50	14.00	38	3.00
2.50	14.00	17.00	38	3.00
2.51	14.00	17.00	38	3.00
2.52	14.00	17.00	38	3.00
2.53	14.00	17.00	38	3.00
2.54	14.00	17.00	38	3.00
2.55	14.00	17.00	38	3.00
2.56	14.00	17.00	38	3.00
2.57	14.00	17.00	38	3.00
2.58	14.00	17.00	38	3.00
2.59	14.00	17.00	38	3.00
2.60	14.00	17.00	38	3.00
2.61	14.00	17.00	38	3.00
2.62	14.00	17.00	38	3.00
2.63	14.00	17.00	38	3.00
2.64	14.00	17.00	38	3.00
2.65	14.00	17.00	38	3.00
2.66	14.00	17.00	38	3.00
2.67	14.00	17.00	38	3.00
2.68	14.00	17.00	38	3.00

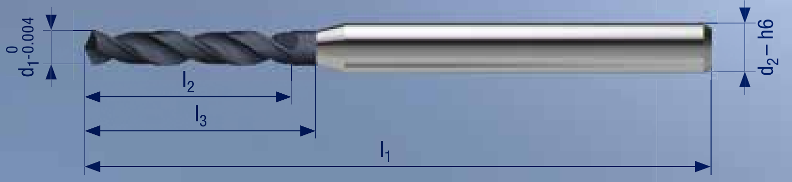
d1 mm	l2 mm	l3 mm	l1 mm	d2 mm
2.69	14.00	17.00	38	3.00
2.70	14.00	17.00	38	3.00
2.71	14.00	17.00	38	3.00
2.72	14.00	17.00	38	3.00
2.73	14.00	17.00	38	3.00
2.74	14.00	17.00	38	3.00
2.75	14.00	17.00	38	3.00
2.76	14.00	17.00	38	3.00
2.77	14.00	17.00	38	3.00
2.78	14.00	17.00	38	3.00
2.79	14.00	17.00	38	3.00
2.80	14.00	17.00	38	3.00
2.81	14.00	17.00	38	3.00
2.82	14.00	17.00	38	3.00
2.83	14.00	17.00	38	3.00
2.84	14.00	17.00	38	3.00
2.85	14.00	17.00	38	3.00
2.86	14.00	17.00	38	3.00
2.87	14.00	17.00	38	3.00
2.88	14.00	17.00	38	3.00
2.89	14.00	17.00	38	3.00
2.90	14.00	17.00	38	3.00
2.91	14.00	17.00	38	3.00
2.92	14.00	17.00	38	3.00
2.93	14.00	17.00	38	3.00
2.94	14.00	17.00	38	3.00
2.95	14.00	17.00	38	3.00
2.96	14.00	17.00	38	3.00
2.97	14.00	17.00	38	3.00
2.98	14.00	17.00	38	3.00
2.99	14.00	17.00	38	3.00
3.00	14.00	17.00	38	3.00

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

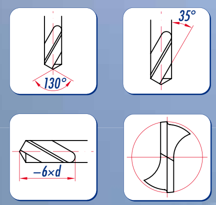
Art. 51201

P1–3 | M1,2 | K1,2 | N1,5–8 | S1 | H1 | O1,2





VHM MD/SC | TiAlN | SPHINX NORM | Z 2



i 163

d_1 mm	l_2 mm	l_3 mm	l_1 mm	d_2 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_1 mm	l_2 mm	l_3 mm	l_1 mm	d_2 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_1 mm	l_2 mm	l_3 mm	l_1 mm	d_2 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_1 mm	l_2 mm	l_3 mm	l_1 mm	d_2 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

d_1 mm	l_2 mm	l_3 mm	l_1 mm	d_2 mm
1.72	11.20	13.40	38	3.00
1.73	11.20	13.40	38	3.00
1.74	11.20	13.40	38	3.00
1.75	11.20	13.40	38	3.00
1.76	11.20	13.40	38	3.00
1.77	11.20	13.40	38	3.00
1.78	11.20	13.40	38	3.00
1.79	11.20	13.40	38	3.00
1.80	11.20	13.40	38	3.00
1.81	11.20	13.40	38	3.00
1.82	11.20	13.40	38	3.00
1.83	11.20	13.40	38	3.00
1.84	11.20	13.40	38	3.00
1.85	11.20	13.40	38	3.00
1.86	11.20	13.40	38	3.00
1.87	11.20	13.40	38	3.00
1.88	11.20	13.40	38	3.00
1.89	11.20	13.40	38	3.00
1.90	11.20	13.40	38	3.00
1.91	11.20	13.40	38	3.00
1.92	11.20	13.40	38	3.00
1.93	11.20	13.40	38	3.00
1.94	11.20	13.40	38	3.00
1.95	11.20	13.40	38	3.00
1.96	11.20	13.40	38	3.00
1.97	11.20	13.40	38	3.00
1.98	11.20	13.40	38	3.00
1.99	11.20	13.40	38	3.00
2.00	11.20	13.40	38	3.00
2.01	12.50	14.00	38	3.00
2.02	12.50	14.00	38	3.00
2.03	12.50	14.00	38	3.00
2.04	12.50	14.00	38	3.00
2.05	12.50	14.00	38	3.00

d_1 mm	l_2 mm	l_3 mm	l_1 mm	d_2 mm
2.06	12.50	14.00	38	3.00
2.07	12.50	14.00	38	3.00
2.08	12.50	14.00	38	3.00
2.09	12.50	14.00	38	3.00
2.10	12.50	14.00	38	3.00
2.11	12.50	14.00	38	3.00
2.12	12.50	14.00	38	3.00
2.13	12.50	14.00	38	3.00
2.14	12.50	14.00	38	3.00
2.15	12.50	14.00	38	3.00
2.16	12.50	14.00	38	3.00
2.17	12.50	14.00	38	3.00
2.18	12.50	14.00	38	3.00
2.19	12.50	14.00	38	3.00
2.20	12.50	14.00	38	3.00
2.21	12.50	14.00	38	3.00
2.22	12.50	14.00	38	3.00
2.23	12.50	14.00	38	3.00
2.24	12.50	14.00	38	3.00
2.25	12.50	14.00	38	3.00
2.26	12.50	14.00	38	3.00
2.27	12.50	14.00	38	3.00
2.28	12.50	14.00	38	3.00
2.29	12.50	14.00	38	3.00
2.30	12.50	14.00	38	3.00
2.31	12.50	14.00	38	3.00
2.32	12.50	14.00	38	3.00
2.33	12.50	14.00	38	3.00
2.34	12.50	14.00	38	3.00
2.35	12.50	14.00	38	3.00
2.36	12.50	14.00	38	3.00
2.37	12.50	14.00	38	3.00
2.38	12.50	14.00	38	3.00
2.39	12.50	14.00	38	3.00

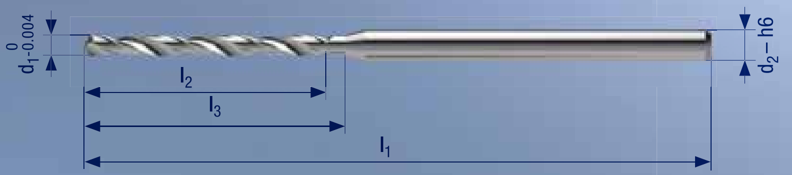
d_1 mm	l_2 mm	l_3 mm	l_1 mm	d_2 mm
2.40	12.50	14.00	38	3.00
2.41	12.50	14.00	38	3.00
2.42	12.50	14.00	38	3.00
2.43	12.50	14.00	38	3.00
2.44	12.50	14.00	38	3.00
2.45	12.50	14.00	38	3.00
2.46	12.50	14.00	38	3.00
2.47	12.50	14.00	38	3.00
2.48	12.50	14.00	38	3.00
2.49	12.50	14.00	38	3.00
2.50	14.00	17.00	38	3.00
2.51	14.00	17.00	38	3.00
2.52	14.00	17.00	38	3.00
2.53	14.00	17.00	38	3.00
2.54	14.00	17.00	38	3.00
2.55	14.00	17.00	38	3.00
2.56	14.00	17.00	38	3.00
2.57	14.00	17.00	38	3.00
2.58	14.00	17.00	38	3.00
2.59	14.00	17.00	38	3.00
2.60	14.00	17.00	38	3.00
2.61	14.00	17.00	38	3.00
2.62	14.00	17.00	38	3.00
2.63	14.00	17.00	38	3.00
2.64	14.00	17.00	38	3.00
2.65	14.00	17.00	38	3.00
2.66	14.00	17.00	38	3.00
2.67	14.00	17.00	38	3.00
2.68	14.00	17.00	38	3.00
2.69	14.00	17.00	38	3.00
2.70	14.00	17.00	38	3.00
2.71	14.00	17.00	38	3.00
2.72	14.00	17.00	38	3.00
2.73	14.00	17.00	38	3.00

d_1 mm	l_2 mm	l_3 mm	l_1 mm	d_2 mm
2.74	14.00	17.00	38	3.00
2.75	14.00	17.00	38	3.00
2.76	14.00	17.00	38	3.00
2.77	14.00	17.00	38	3.00
2.78	14.00	17.00	38	3.00
2.79	14.00	17.00	38	3.00
2.80	14.00	17.00	38	3.00
2.81	14.00	17.00	38	3.00
2.82	14.00	17.00	38	3.00
2.83	14.00	17.00	38	3.00
2.84	14.00	17.00	38	3.00
2.85	14.00	17.00	38	3.00
2.86	14.00	17.00	38	3.00
2.87	14.00	17.00	38	3.00
2.88	14.00	17.00	38	3.00
2.89	14.00	17.00	38	3.00
2.90	14.00	17.00	38	3.00
2.91	14.00	17.00	38	3.00
2.92	14.00	17.00	38	3.00
2.93	14.00	17.00	38	3.00
2.94	14.00	17.00	38	3.00
2.95	14.00	17.00	38	3.00
2.96	14.00	17.00	38	3.00
2.97	14.00	17.00	38	3.00
2.98	14.00	17.00	38	3.00
2.99	14.00	17.00	38	3.00
3.00	14.00	17.00	38	3.00

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

Art. 50620

P1–3 M1 K1,2 N2,3,5



VHM MD/SC | SPHINX NORM | Z 2 | 118° | 25° | 10–15×d

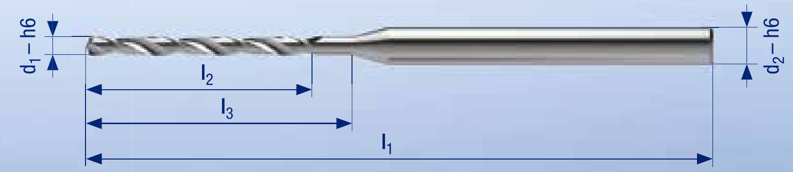
163 | 10

d_1 mm	l_2 mm	l_3 mm	l_1 mm	d_2 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

P1–3 M1 K1,2 N2,3,5



VHM MD/SC | SPHINX NORM | Z 2 | 130° | 25° | 12×d

163

d_1 mm	l_2 mm	l_3 mm	l_1 mm	d_2 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_1 mm	l_2 mm	l_3 mm	l_1 mm	d_2 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_1 mm	l_2 mm	l_3 mm	l_1 mm	d_2 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_1 mm	l_2 mm	l_3 mm	l_1 mm	d_2 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_1 mm	l_2 mm	l_3 mm	l_1 mm	d_2 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_1 mm	l_2 mm	l_3 mm	l_1 mm	d_2 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

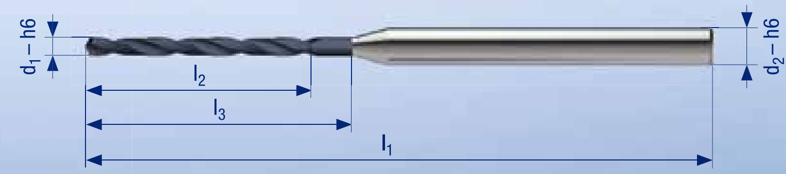
d_1 mm	l_2 mm	l_3 mm	l_1 mm	d_2 mm
2.35	28.20	31.50	65	3.00
2.36	28.30	31.50	65	3.00
2.37	28.40	32.00	65	3.00
2.38	28.60	32.00	65	3.00
2.39	28.70	32.00	65	3.00
2.40	28.80	32.00	65	3.00
2.41	28.90	33.00	65	3.00
2.42	29.00	33.00	65	3.00
2.43	29.20	33.00	65	3.00
2.44	29.30	33.00	65	3.00
2.45	29.40	33.00	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_1 mm	l_2 mm	l_3 mm	l_1 mm	d_2 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

P1–3
M1
K1,2
N2,3,5
H1



VHM MD/SC
TiAlN
SPHINX NORM
Z 2
130°
25°
12×d

i 164

d_1 mm	l_2 mm	l_3 mm	l_1 mm	d_2 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_1 mm	l_2 mm	l_3 mm	l_1 mm	d_2 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_1 mm	l_2 mm	l_3 mm	l_1 mm	d_2 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_1 mm	l_2 mm	l_3 mm	l_1 mm	d_2 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_1 mm	l_2 mm	l_3 mm	l_1 mm	d_2 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_1 mm	l_2 mm	l_3 mm	l_1 mm	d_2 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

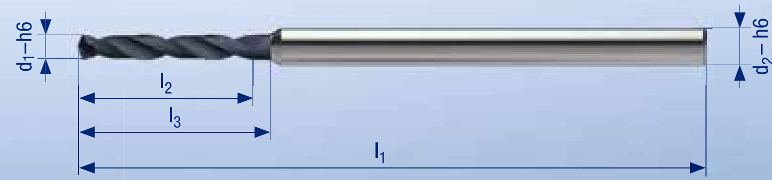
d_1 mm	l_2 mm	l_3 mm	l_1 mm	d_2 mm
2.40	28.80	32.00	65	3.00
2.41	28.90	33.00	65	3.00
2.42	29.00	33.00	65	3.00
2.43	29.20	33.00	65	3.00
2.44	29.30	33.00	65	3.00
2.45	29.40	33.00	65	3.00
2.46	29.50	33.50	65	3.00
2.47	29.60	33.50	65	3.00
2.48	29.80	33.50	65	3.00
2.49	29.90	33.50	65	3.00
2.50	30.00	34.00	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_1 mm	l_2 mm	l_3 mm	l_1 mm	d_2 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

P1–3
M1,2
K1,2
N2,3
S1
H1



VHM MD/SC
TiAlN
SPHINX NORM
Z 2

i 164

d_1 mm	l_2 mm	l_3 mm	l_1 mm	d_2 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

P1,2 M1 K1,2 N2,3,6,7 S1 O1

VHM MD/SC

SPHINX NORM

Z 3

140°

35°

~5×d

i 165

d1 mm	l2 mm	l3 mm	l1 mm	d2 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

d1 mm	l2 mm	l3 mm	l1 mm	d2 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

d1 mm	l2 mm	l3 mm	l1 mm	d2 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	6.50	38	3.00
1.01	5.05	6.50	38	3.00
1.02	5.10	6.50	38	3.00
1.03	5.15	6.50	38	3.00
1.04	5.20	6.50	38	3.00
1.05	5.25	6.50	38	3.00
1.06	5.30	6.50	38	3.00
1.07	5.35	7.50	38	3.00
1.08	5.40	7.50	38	3.00
1.09	5.45	7.50	38	3.00
1.10	5.50	7.50	38	3.00
1.11	5.55	7.50	38	3.00
1.12	5.60	7.50	38	3.00
1.13	5.65	7.50	38	3.00
1.14	5.70	7.50	38	3.00
1.15	5.75	7.50	38	3.00
1.16	5.80	7.50	38	3.00
1.17	5.85	7.50	38	3.00
1.18	5.90	8.50	38	3.00
1.19	5.95	8.50	38	3.00
1.20	6.00	8.50	38	3.00
1.21	6.05	8.50	38	3.00
1.22	6.10	8.50	38	3.00
1.23	6.15	8.50	38	3.00
1.24	6.20	8.50	38	3.00
1.25	6.25	8.50	38	3.00
1.26	6.30	8.50	38	3.00
1.27	6.35	8.50	38	3.00
1.28	6.40	8.50	38	3.00
1.29	6.45	8.50	38	3.00
1.30	6.50	8.50	38	3.00
1.31	6.55	8.50	38	3.00
1.32	6.60	8.50	38	3.00
1.33	6.65	9.50	38	3.00

d1 mm	l2 mm	l3 mm	l1 mm	d2 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

d1 mm	l2 mm	l3 mm	l1 mm	d2 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

d1 mm	l2 mm	l3 mm	l1 mm	d2 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

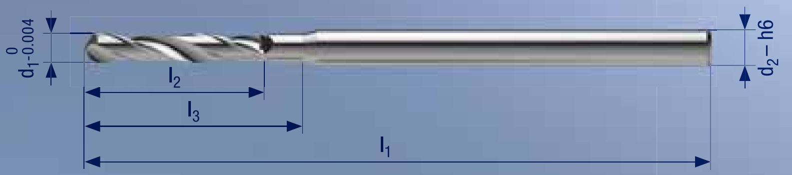
d1 mm	l2 mm	l3 mm	l1 mm	d2 mm
2.36	11.80	13.50	38	3.00
2.37	11.85	14.50	38	3.00
2.38	11.90	14.50	38	3.00
2.39	11.95	14.50	38	3.00
2.40	12.00	14.50	38	3.00
2.41	12.05	14.50	38	3.00
2.42	12.10	14.50	38	3.00
2.43	12.15	14.50	38	3.00
2.44	12.20	14.50	38	3.00
2.45	12.25	14.50	38	3.00
2.46	12.30	14.50	38	3.00
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

d1 mm	l2 mm	l3 mm	l1 mm	d2 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

P1,2 M1,2 K1,2 N1,2,5



HSS-E
SPHINX NORM
DIN 1899-A
Z 2
118°
25°
5–8×d

165

d_1 mm	l_2 mm	l_3 mm	l_1 mm	d_2 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_1 mm	l_2 mm	l_3 mm	l_1 mm	d_2 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

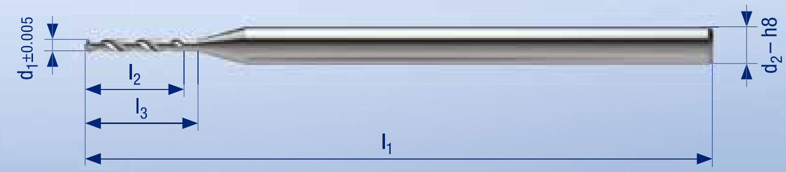
d_1 mm	l_2 mm	l_3 mm	l_1 mm	d_2 mm
0.81	5.00	6.30	25	1.50
0.82	5.00	6.30	25	1.50
0.83	5.00	6.30	25	1.50
0.84	5.00	6.30	25	1.50
0.85	5.00	6.30	25	1.50
0.86	5.70	7.10	25	1.50
0.87	5.70	7.10	25	1.50
0.88	5.70	7.10	25	1.50
0.89	5.70	7.10	25	1.50
0.90	5.70	7.10	25	1.50
0.91	5.70	7.10	25	1.50
0.92	5.70	7.10	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_1 mm	l_2 mm	l_3 mm	l_1 mm	d_2 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

P1,2 K1,2 N5,7,8



HSS-E
SPHINX NORM
Z 2
120°
30°

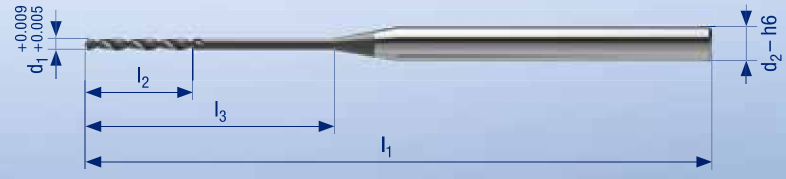
166

d_1 mm	l_2 mm	l_3 mm	l_1 mm	d_2 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

P1–3 | M1,2 | K1,2 | N1–8 | S1 | H1 | O1,2



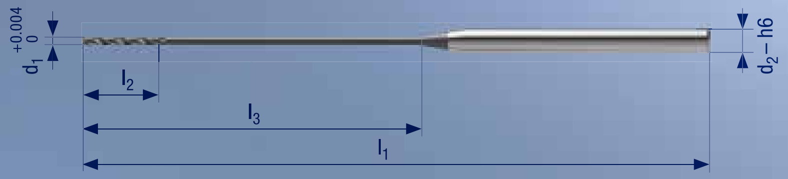
i 166 | i 194

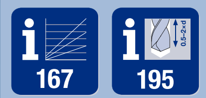
VHM MD/SC | Mi-Nova | SPHINX NORM | Z 2 | 129° | 30° | 10×d | 20×d

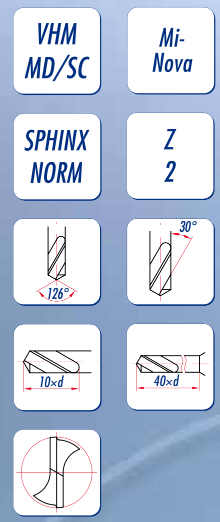
d_1 mm	l_2 mm	l_3 mm	l_1 mm	d_2 mm
0.20	2.50	4.00	38	3.00
0.25	3.00	5.00	38	3.00
0.30	3.50	6.00	38	3.00
0.35	4.00	7.00	38	3.00
0.40	4.50	8.00	38	3.00
0.45	5.00	9.00	38	3.00
0.50	5.50	10.00	50	3.00
0.55	6.00	11.00	50	3.00
0.60	6.50	12.00	50	3.00
0.65	7.00	13.00	50	3.00
0.70	7.50	14.00	50	3.00
0.75	8.00	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



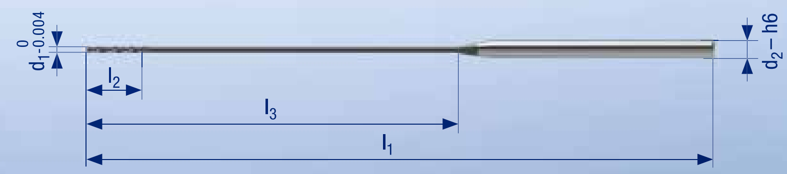


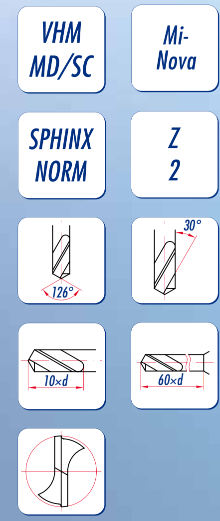


d_1 mm	l_2 mm	l_3 mm	l_1 mm	d_2 mm
0.40	4.50	16.00	50	3.00
0.45	5.00	18.00	50	3.00
0.50	5.50	20.00	70	3.00
0.55	6.00	22.00	70	3.00
0.60	6.50	24.00	70	3.00
0.65	7.00	26.00	70	3.00
0.70	7.50	28.00	70	3.00
0.75	8.00	30.00	70	3.00
0.80	8.50	32.00	78	3.00
0.85	9.00	34.00	78	3.00
0.90	9.50	36.00	78	3.00
0.95	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



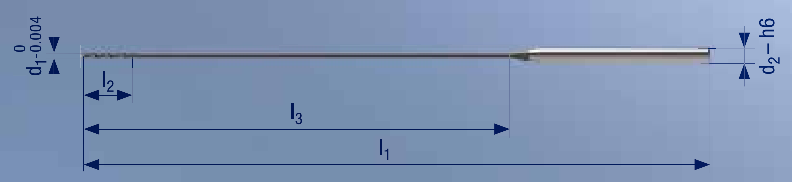


d_1 mm	l_2 mm	l_3 mm	l_1 mm	d_2 mm
0.40	4.50	24.00	60	3.00
0.45	5.00	27.00	60	3.00
0.50	5.50	30.00	85	3.00
0.55	6.00	33.00	85	3.00
0.60	6.50	36.00	85	3.00
0.65	7.00	39.00	85	3.00
0.70	7.50	42.00	85	3.00
0.75	8.00	45.00	85	3.00
0.80	8.50	48.00	100	3.00
0.85	9.00	51.00	100	3.00
0.90	9.50	54.00	100	3.00
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

P1–3 | M1,2 | K1,2 | N1–8 | S1 | H1 | O1,2



VHM MD/SC | Mi-Nova | SPHINX NORM | Z 2

126° | 30° | 10×d | 80×d

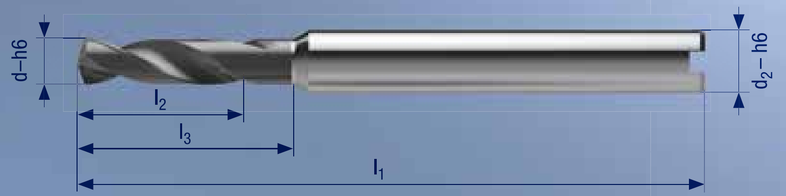
167 | 195

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

P1–3 M1,2
K1,2 N1–6
S1,2 H1 O1



VHM MD/SC AlTiCrN+S
SPHINX NORM Z 2

i 181 i 196

d_1 mm	l_2 mm	l_3 mm	l_1 mm	d_2 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_1 mm	l_2 mm	l_3 mm	l_1 mm	d_2 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	3.00
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

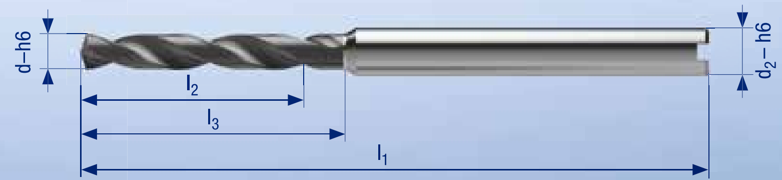
d_1 mm	l_2 mm	l_3 mm	l_1 mm	d_2 mm
4.80	14.40	22.50	60	6.00
4.85	14.55	22.50	60	6.00
4.90	14.70	22.50	60	6.00
4.95	14.85	23.00	60	6.00
5.00	15.00	23.00	60	6.00
5.05	15.15	23.00	64	6.00
5.10	15.30	23.50	64	6.00
5.15	15.45	23.50	64	6.00
5.20	15.60	23.50	64	6.00
5.25	15.75	23.50	64	6.00
5.30	15.90	24.00	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_1 mm	l_2 mm	l_3 mm	l_1 mm	d_2 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

P1–3 M1,2
K1,2 N1–6
S1,2 H1 O1



VHM MD/SC AlTiCrN+S
SPHINX NORM Z 2

i 181 i 196

d_1 mm	l_2 mm	l_3 mm	l_1 mm	d_2 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_1 mm	l_2 mm	l_3 mm	l_1 mm	d_2 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

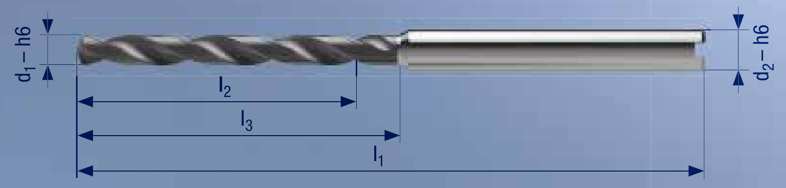
d_1 mm	l_2 mm	l_3 mm	l_1 mm	d_2 mm
4.63	27.90	36.00	79	6.00
4.65	27.90	36.00	79	6.00
4.67	28.10	36.00	79	6.00
4.69	28.20	36.00	79	6.00
4.70	28.20	36.00	79	6.00
4.75	28.50	37.00	79	6.00
4.80	28.80	37.00	79	6.00
4.85	29.10	37.50	79	6.00
4.90	29.40	37.50	79	6.00
4.95	29.70	38.00	79	6.00
5.00	30.00	38.00	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_1 mm	l_2 mm	l_3 mm	l_1 mm	d_2 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	8.00
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

P1–3 M1,2 K1,2 N1–6 S1,2 H1 01



VHM MD/SC AlTiCrN+S SPHINX NORM Z 2

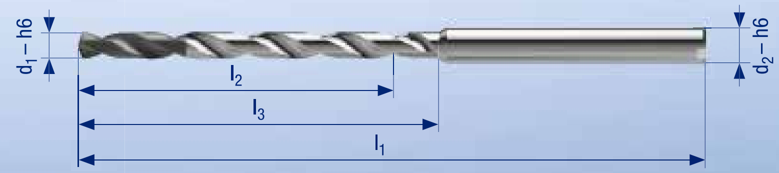
181 196

d_1 mm	l_2 mm	l_3 mm	l_1 mm	d_2 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
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

P1–3 M1,2 K1,2 N1–6 S1,2 H1 01



VHM MD/SC AlCrTiN SPHINX NORM Z 2

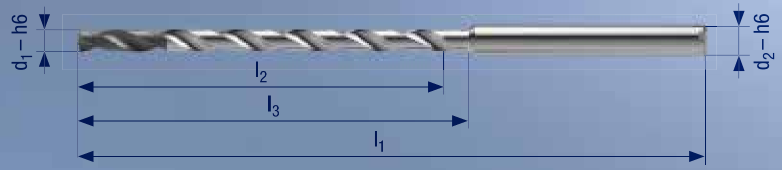
182 197

d_1 mm	l_2 mm	l_3 mm	l_1 mm	d_2 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
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

P3 | M1,2 | N1–3 | S1 | O1



VHM MD/SC | AlCrTiN | SPHINX NORM | Z 2 | 137° | ≈30° | 16×d

i 182 | i 197

d_1 mm	l_2 mm	l_3 mm	l_1 mm	d_2 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

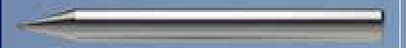
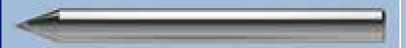
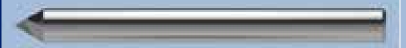
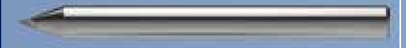
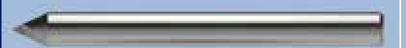
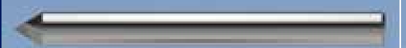
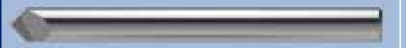
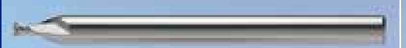
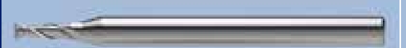
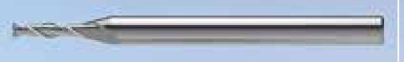
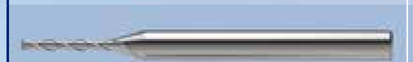
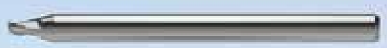
d_1 mm	l_2 mm	l_3 mm	l_1 mm	d_2 mm
4.80	76.80	85.00	126	6.00
4.90	78.40	86.50	126	6.00
5.00	80.00	88.00	126	6.00
5.10	81.60	89.50	142	6.00
5.20	83.20	91.00	142	6.00
5.30	84.80	93.00	142	6.00
5.40	86.40	94.50	142	6.00
5.50	88.00	96.00	142	6.00
5.60	89.60	97.50	142	6.00
5.70	91.20	99.00	142	6.00
5.80	92.80	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


Swiss made by SPHINX

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

* S. 187 + 189
p. 187 + 189

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

	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	Material	Werkstoffgruppe* Workpiece material* P	M	K	S	N	H	O	Anwendung* Application*	Seite Page
Gravierfräser mit verstärktem Schaft / Fraise à graver avec manche renforcée								**Fresa per incidere con gambo rinforzato / Engraving mill with reinforced shank**									
	70030	0.02 – 0.15	0.01		30°	0°	1	VHM / MD / SC	✓	✓	✓	✓	✓		✓		57
	70040	0.02 – 0.15	0.01		40°	0°	1	VHM / MD / SC	✓	✓	✓	✓	✓		✓		58
	70050	0.02 – 0.15	0.01		50°	0°	1	VHM / MD / SC	✓	✓	✓	✓	✓		✓		59
	70060	0.02 – 0.15	0.01		60°	0°	1	VHM / MD / SC	✓	✓	✓	✓	✓		✓		60
	70090	0.02 – 0.15	0.01		90°	0°	1	VHM / MD / SC	✓	✓	✓	✓	✓		✓		61
	70130	0.04 – 0.10	0.01		30°	0°	1	VHM / MD / SC	✓	✓	✓	✓	✓		✓		62
	70140	0.04 – 0.10	0.01		40°	0°	1	VHM / MD / SC	✓	✓	✓	✓	✓		✓		63
	70150	0.04 – 0.10	0.01		50°	0°	1	VHM / MD / SC	✓	✓	✓	✓	✓		✓		64
	70160	0.04 – 0.10	0.01		60°	0°	1	VHM / MD / SC	✓	✓	✓	✓	✓		✓		65
	70190	0.04 – 0.10	0.01		90°	0°	1	VHM / MD / SC	✓	✓	✓	✓	✓		✓		66
Mikrofräser mit verstärktem Schaft / Micro fraise avec manche renforcée								**Micro fresa con gambo rinforzato / Micro Endmill with reinforced shank**									
	72075	0.20 – 2.00	0.10	0.75×ø		30°	2	VHM / MD / SC	✓	•	✓	•	✓		•		68
	72150	0.10 – 2.00	0.10	1.5×ø		30°	2	VHM / MD / SC	✓	•	✓	•	✓		•		69
	42000	0.10 – 3.00	0.10	3×ø		30°	2	VHM / MD / SC	✓	•	✓	•	✓		•		70
	72500	0.30 – 2.50	0.10	5×ø		30°	2	VHM / MD / SC	✓	•	✓	•	✓		•		71
	72800	0.40 – 2.50	0.10	8×ø		30°	2	VHM / MD / SC	✓	•	✓	•	✓		•		72
	73130	0.30 – 2.90	0.10	1.3×ø		30°	3	VHM / MD / SC	✓	•	✓	•	•				73
	73200	0.30 – 2.90	0.10	2×ø		30°	3	VHM / MD / SC	✓	•	✓	•	•				74
	73300	0.30 – 2.90	0.10	3×ø		30°	3	VHM / MD / SC	✓	•	✓	•	•				75

* S. 187 + 189
p. 187 + 189

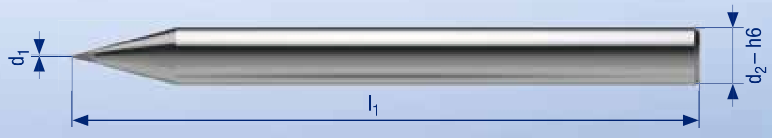
✓ hervorragend / excellent / ottimamente / outstanding
• geeignet / approprié / adatto / suitable

	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	Material	Werkstoffgruppe* Workpiece material* P	M	K	S	N	H	O	Anwendung* Application*	Seite Page
	73800	0.50 – 2.50	0.10	8×ø		30°	3	VHM / MD / SC	✓	•	✓	•	✓				76
	73725	0.30 – 2.90	0.10	2.5×ø		45°	3	VHM / MD / SC	✓	✓	✓	✓	•				77
	43105	0.30 – 3.00	0.10	1×ø		35°	3	VHM / MD / SC; Cro-Nova	✓	✓	•	✓	✓	•	•		78
	43305	0.30 – 3.00	0.10	3×ø		35°	3	VHM / MD / SC; Cro-Nova	✓	✓	•	✓	✓	•	•		79
	74720	0.30 – 2.90	0.10	2×ø		40°	4	VHM / MD / SC	✓	✓	✓	•	•				80
	74740	0.40 – 2.90	0.10	4×ø		40°	4	VHM / MD / SC	✓	✓	✓	•	•				81
Radiusfräser mit verstärktem Schaft Fraise hémisphérique avec manche renforcée								**Fresa a raggio con gambo rinforzato Ball nose Endmill with reinforced shank**									
	74075	0.20 – 1.00	0.10	0.75×ø		30°	2	VHM / MD / SC	✓	•	✓	•	✓		•		83
	74150	0.20 – 2.00	0.10	1.5×ø		30°	2	VHM / MD / SC	✓	•	✓	•	✓		•		84
	74300	0.20 – 2.80	0.10	3×ø		30°	2	VHM / MD / SC	✓	•	✓	•	✓		•		85
Entgrat- und 1 Zahnfräser mit verstärktem Schaft Fraise à angler et fraise 1 dent avec manche renforcée								**Fresa a smusso e fresa 1 dente con gambo rinforzato Chamfering tool and Endmill 1 tooth with reinforced shank**									
	73000	0.50 – 8.00	0.50		90°	0°	3 – 4	VHM / MD / SC	✓	•	✓	•	✓				87
	71330	0.20 – 3.00	0.10			0°	1	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

P1–3 | M1,2 | K1,2 | N1–8 | S1 | O1



VHM MD/SC | Z 1

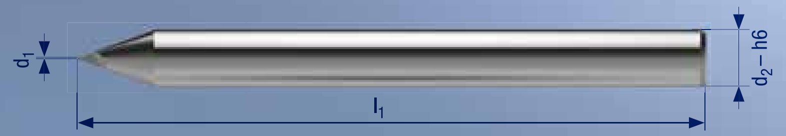
167

d_1 mm	α °	l_1 mm	d_2 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

P1–3 M1,2 K1,2 N1–8 S1 O1



VHM MD/SC

Z 1

40°

0°

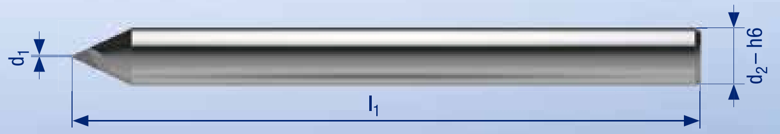
167

d_1 mm	α °	l_1 mm	d_2 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

P1–3 M1,2 K1,2 N1–8 S1 O1



VHM MD/SC

Z 1

50°

0°

167

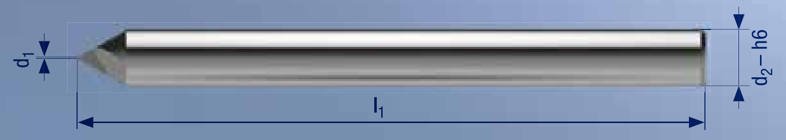
d_1 mm	α °	l_1 mm	d_2 mm
0.02	50	33	3.00
0.03	50	33	3.00
0.04	50	33	3.00
0.05	50	33	3.00
0.06	50	33	3.00
0.07	50	33	3.00
0.08	50	33	3.00
0.09	50	33	3.00
0.10	50	33	3.00
0.12	50	33	3.00
0.15	50	33	3.00

Swiss made by SPHINX

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

Art. 70060

P1–3 | M1,2 | K1,2 | N1–8 | S1 | O1



VHM MD/SC | Z 1

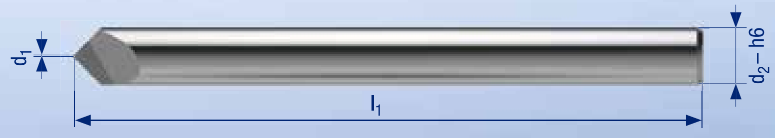
167

d1 mm	α °	l1 mm	d2 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

P1–3 | M1,2 | K1,2 | N1–8 | S1 | O1



VHM MD/SC | Z 1

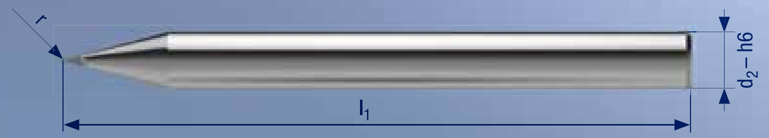
167

d1 mm	α °	l1 mm	d2 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

P1–3 | M1,2 | K1,2 | N1–8 | S1 | O1



VHM MD/SC | Z 1

30° | 0°

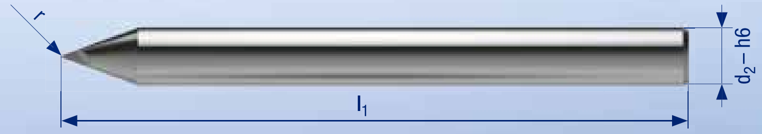
167

r mm	α °	l1 mm	d2 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

P1–3 | M1,2 | K1,2 | N1–8 | S1 | O1



VHM MD/SC | Z 1

40° | 0°

167

r mm	α °	l1 mm	d2 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

P1–3 | M1,2 | K1,2 | N1–8 | S1 | O1

VHM MD/SC | Z 1

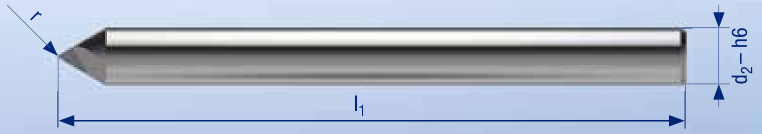
167

r mm	α °	l_1 mm	d_2 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

P1–3 | M1,2 | K1,2 | N1–8 | S1 | O1



VHM MD/SC | Z 1

167

r mm	α °	l_1 mm	d_2 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

P1–3 | M1,2 | K1,2 | N1–8 | S1 | O1

VHM MD/SC | Z 1

i 167

r mm	α °	l_1 mm	d_2 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

P1–3 | M1,2 | K1,2 | N1–3 | N5,6 | S1 | O1

VHM MD/SC | SPHINX NORM | Z 2 | 30°

i 168

d_1 mm	l_2 mm	l_1 mm	d_2 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

P1–3 | M1,2 | K1,2 | N1–3 | N5,6 | S1 | O1

VHM MD/SC | SPHINX NORM | Z 2 | 30°

i 168

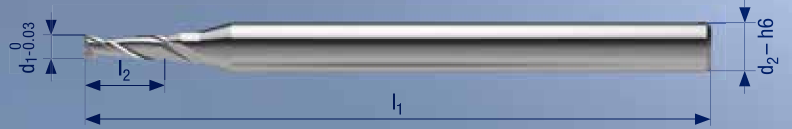
d_1 mm	l_2 mm	l_1 mm	d_2 mm
0.10	0.15	39	3.00
0.15	0.20	39	3.00
0.20	0.30	39	3.00
0.25	0.35	39	3.00
0.30	0.45	39	3.00
0.40	0.60	39	3.00
0.50	0.75	39	3.00
0.60	0.90	39	3.00
0.70	1.05	39	3.00
0.80	1.20	39	3.00
0.90	1.35	39	3.00
1.00	1.50	39	3.00
1.10	1.65	39	3.00
1.20	1.80	39	3.00
1.30	1.95	39	3.00
1.40	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

P1–3 | M1,2 | K1,2 | N1–3 | N5,6 | S1 | O1

VHM MD/SC | SPHINX NORM | Z 2 | 30°



i 168

d1 mm	l2 mm	l1 mm	d2 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

d1 mm	l2 mm	l1 mm	d2 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

P1–3 | M1,2 | K1,2 | N1–3 | N5,6 | S1 | O1

VHM MD/SC | SPHINX NORM | Z 2 | 30°

i 169

d1 mm	l2 mm	l1 mm	d2 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

P1–3 M1,2
K1,2 N1–3
N5,6 S1 O1

VHM MD/SC | SPHINX NORM
Z 2

169

d_1 mm	l_2 mm	l_1 mm	d_2 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

P1–3 M1,2
K1,2 N2,3
N5,6 S1

VHM MD/SC | SPHINX NORM
Z 3

169

d_1 mm	l_2 mm	l_1 mm	d_2 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

P1–3 | M1,2 | K1,2 | N2,3 | N5,6 | S1

VHM MD/SC | SPHINX NORM | Z 3 | 30°

i 170

d_1 mm	l_2 mm	l_1 mm	d_2 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

P1–3 | M1,2 | K1,2 | N2,3 | N5,6 | S1

VHM MD/SC | SPHINX NORM | Z 3 | 30°

i 170

d_1 mm	l_2 mm	l_1 mm	d_2 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

P1–3 M1,2 K1,2 N1–3 N5,6 S1

VHM MD/SC | SPHINX NORM | Z 3 | 30°

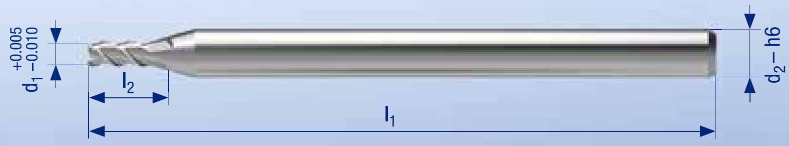
170

d_1 mm	l_2 mm	l_1 mm	d_2 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

P1–3 M1,2 K1,2 N1–3 N5,6 S1



VHM MD/SC | SPHINX NORM | Z 3 | 45°

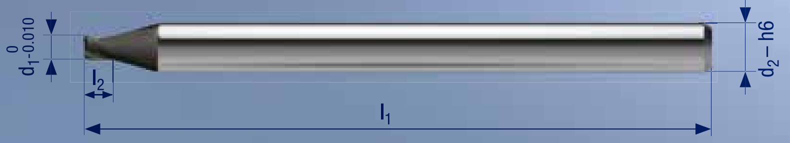
171

d_1 mm	l_2 mm	l_1 mm	d_2 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

P1–3 M1,2 K1,2 N1–8 S1,2 H1 O1



VHM MD/SC | Cro-Nova | SPHINX NORM | Z 3

171

d_1 mm	l_2 mm	l_1 mm	d_2 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

P1–3 M1,2 K1,2 N1–8 S1,2 H1 O1

VHM MD/SC | Cro-Nova | SPHINX NORM | Z 3

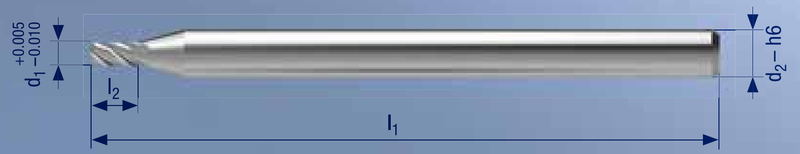
172

d_1 mm	l_2 mm	l_3 mm	l_1 mm	d_2 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

P1–3 | M1,2 | K1,2 | N1–3 | N5,6 | S1



VHM MD/SC | SPHINX NORM | Z 4 | 40°

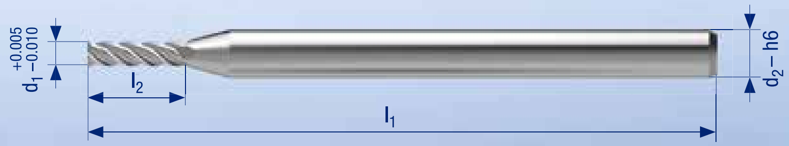
172

d_1 mm	l_2 mm	l_1 mm	d_2 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

P1–3 | M1,2 | K1,2 | N1–3 | N5,6 | S1



VHM MD/SC | SPHINX NORM | Z 4 | 40°

173

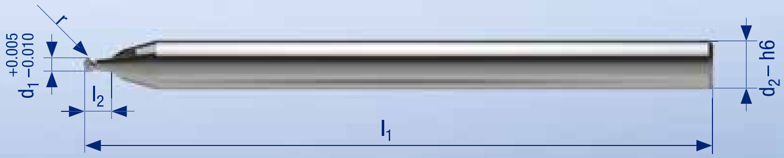
d_1 mm	l_2 mm	l_1 mm	d_2 mm
0.40	1.60	39	3.00
0.50	2.00	39	3.00
0.60	2.40	39	3.00
0.70	2.80	39	3.00
0.80	3.20	39	3.00
0.90	3.60	39	3.00
1.00	4.00	39	3.00
1.10	4.40	39	3.00
1.20	4.80	39	3.00
1.30	5.20	39	3.00
1.40	5.60	39	3.00
1.50	6.00	39	3.00
1.60	6.40	39	3.00
1.70	6.80	39	3.00
1.80	7.20	39	3.00
1.90	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


Swiss made by SPHINX

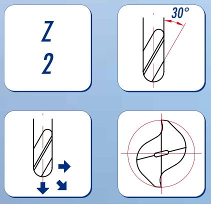
Radiusfräser 0.75 × d
Fraise hémisphérique 0.75 × d
Fresa a raggio 0.75 × d
Ball nose Endmill 0.75 × d

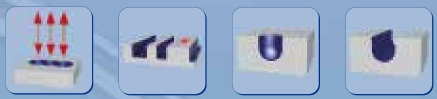
Art. 74075

P1–3 | M1,2 | K1,2 | N1–3 | N5,6 | S1 | 01



VHM MD/SC | SPHINX NORM | Z 2





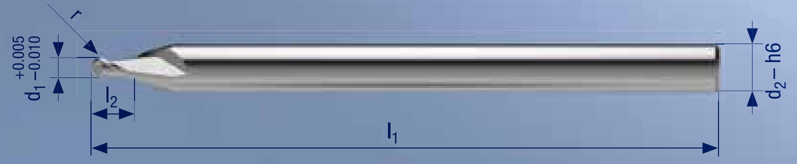
i 173

d_1 mm	r mm	l_2 mm	l_1 mm	d_2 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 raggio 1.5 × d
Ball nose Endmill 1.5 × d

Art. 74150

P1–3 M1,2 K1,2 N1–3 N5,6 S1 O1



VHM MD/SC SPHINX NORM Z 2 30°

173

d_1 mm	r mm	l_2 mm	l_1 mm	d_2 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

P1–3 M1,2 K1,2 N1–3 N5,6 S1 O1

VHM MD/SC SPHINX NORM Z 2 30°

173

d_1 mm	r mm	l_2 mm	l_1 mm	d_2 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

P1–3 | M1,2 | K1,2 | N1–3,5 | S1 | O1

VHM MD/SC | SPHINX NORM | Z 3/4 | 90°

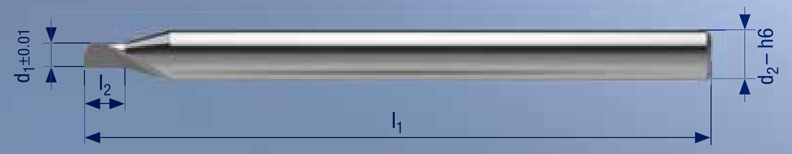
174

d_1 mm	d_2 mm	l_2 mm	l_1 mm	d_3 mm	z
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 ¾
Fraise taille droite – 1 dent ¾
Fresa taglio diritto – 1 dente ¾
Straight fluted Endmill – 1 tooth ¾

Art. 71330

P1,2 M1,2 K1,2 N5,7,8



VHM MD/SC

SPHINX NORM

Z 1

174

d_1 mm	l_2 mm	l_1 mm	d_2 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

* S. 187 + 189
p. 187 + 189

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

Artikel Article	Durchmesser-Bereich Diameter range	Abstufung Increments	Bohrtiefe Cutting length	Spitzen-winkel Point angle	Spiral-winkel Helix angle	Material	Werkstoffgruppe* Workpiece material* P	M	K	S	N	H	O	Anwendung* Application*	Seite Page
NC-Anbohrer, Pilotbohrer und Zentriersenker / Foret à pointer, foret de préperçage et chanfreiner						**Punta a centrare, punta per preforo e smusso / NC spotting drill, pilotdrill and chamfering drill**									
50806	0.50 – 6.00	0.10		60 ° +/- 1 °	20 °	VHM / MD / SC	✓	✓	✓	•	✓		✓		97
50810	2.00 – 20.00	1.00		90 ° +/- 1 °	20 °	VHM / MD / SC	✓	✓	✓	•	✓		✓		98
50811	2.00 – 12.00	1.00		90 ° +/- 1 °	20 °	VHM / MD / SC; TiAlSiN	✓	✓	✓	•	✓	✓	✓		99
50812	2.00 – 20.00	1.00		123 °	20 °	VHM / MD / SC	✓	✓	✓	•	✓		✓		100
50813	2.00 – 10.00	1.00		123°	20 °	VHM / MD / SC; TiAlSiN	✓	✓	✓	•	✓	✓	✓		101
50814	2.00 – 20.00	1.00		142 °	20 °	VHM / MD / SC	✓	✓	✓	•	✓		✓		102
50815	2.00 – 10.00	1.00		142 °	20 °	VHM / MD / SC; TiAlSiN	✓	✓	✓	•	✓	✓	✓		103
50818	1.60 – 12.00	0.40		142 ° / 90 °	20 °	VHM / MD / SC	✓	✓	✓	•	✓		✓		104
56036	0.30 – 6.00	0.05	2×ø	140 ° / 90 °	30 °	VHM / MD / SC; AlCrN	✓	✓	✓	✓	✓	•	•		105
Spiralbohrer ohne Innenkühlung / Foret hélicoïdal sans trou d'huile						**Punta elicoidale senza fori di lubrificazione / Twist drill without internal coolant**									
50950	3.00 – 20.00	0.10	DIN 6537	140 °	30 °	VHM / MD / SC; TiAlN	✓	•	✓	•	•	•	•		106
50830	0.30 – 20.00	0.10	DIN 6539	118 °	35 °	VHM / MD / SC	✓	✓	•	•	✓		✓		107
50838	0.30 – 6.00	0.05	SPHINX NORM	118 °	30 °	VHM / MD / SC	✓	✓	•	•	✓		✓		108
50820	0.70 – 14.00	0.10	DIN 338	130 °	35 ° – 15 °	VHM / MD / SC	✓		✓		•				109

* S. 187 + 189
p. 187 + 189

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• geeignet / approprié / adatto / suitable

Hochleistungsbohrer mit verstärktem Schaft mit Innenkühlung
Foret à grand rendement avec manche renforcée avec trou d'huile
Punta ad alto rendimento con gambo rinforzato con fori di lubrificazione
High performance drill with reinforced shank with internal coolant

Artikel Article	Durchmesser-Bereich Diameter range	Abstufung Increments	Bohrtiefe Cutting length	Spitzenwinkel Point angle	Spiralwinkel Helix angle	Material	P	M	K	S	N	H	O	Anwendung* Application*	Seite Page
50938	1.00–12.70	0.10	3×ø	140°	30°	VHM / MD / SC; AlCrN	✓	✓	✓	•	•				111
50940	1.00–12.70	0.05	6×ø	140°	30°	VHM / MD / SC; TiAlN	✓	✓	✓	•	•				112
50942	1.00–12.70	0.10	12×ø	140°	30°	VHM / MD / SC; AlCrN	✓	•	✓	•	•				114
52100	3.00–20.00	0.50	6×ø	140°	0°	VHM / MD / SC			✓		✓		•		115
52200	3.00–20.00	0.50	12×ø	140°	0°	VHM / MD / SC			✓		✓		•		116
52150	4.00–20.00	0.50	6×ø	140°	15°	VHM / MD / SC; TiAlN	✓		✓		•	•			117

Hochleistungsbohrer Power Phoenix mit verstärktem Schaft mit Innenkühlung
Foret à grand rendement Power-Phoenix avec manche renforcée avec trou d'huile
Punta ad alto rendimento Power-Phoenix con gambo rinforzato con fori di lubrificazione
High performance drill Power-Phoenix with reinforced shank with internal coolant

Artikel Article	Durchmesser-Bereich Diameter range	Abstufung Increments	Bohrtiefe Cutting length	Spitzenwinkel Point angle	Spiralwinkel Helix angle	Material	P	M	K	S	N	H	O	Anwendung* Application*	Seite Page
50912	2.00–12.70	0.10	12×ø	137°	30°	VHM / MD / SC; AlCrN	✓		✓		•				119
50916	2.00–12.70	0.10	16×ø	137°	30°	VHM / MD / SC; AlCrN	✓		✓		•				120
50920	3.00–10.00	1.00	20×ø	137°	30°	VHM / MD / SC; AlCrN	✓		✓		•				121
50930	3.00–10.00	1.00	30×ø	137°	30°	VHM / MD / SC; AlCrN	✓		✓		•				122

Hochleistungsbohrer Phoenix-TC2 mit verstärktem Schaft mit Innenkühlung
Foret à grand rendement Phoenix-TC2 avec manche renforcée avec trou d'huile
Punta ad alto rendimento Phoenix-TC2 con gambo rinforzato con fori di lubrificazione
High performance drill Phoenix-TC2 with reinforced shank with internal coolant

Artikel Article	Durchmesser-Bereich Diameter range	Abstufung Increments	Bohrtiefe Cutting length	Spitzenwinkel Point angle	Spiralwinkel Helix angle	Material	P	M	K	S	N	H	O	Anwendung* Application*	Seite Page
52903	1.00–10.00	0.05	3×ø	140°	30°	VHM / MD / SC; AlTiCrN+S	✓	✓	✓	✓	✓	•	•		124
52906	1.00–10.00	0.05	6×ø	140°	30°	VHM / MD / SC; AlTiCrN+S	✓	✓	✓	✓	✓	•	•		125
52909	1.00–10.00	0.10	9×ø	140°	30°	VHM / MD / SC; AlTiCrN+S	✓	✓	✓	✓	✓	•	•		126
52912	1.00–10.00	0.10	12×ø	137°	30°	VHM / MD / SC; AlCrTiN	✓	✓	✓	✓	✓	•	•		127
52916	1.00–10.00	0.10	16×ø	137°	30°	VHM / MD / SC; AlCrTiN	✓	✓	✓	✓	✓	•	•		128
52920	3.00–10.00	1.00	20×ø	137°	30°	VHM / MD / SC; AlCrTiN	•	✓	•	✓	✓	•	•		129
52930	3.00–10.00	1.00	30×ø	137°	30°	VHM / MD / SC; AlCrTiN	•	✓	•	✓	✓	•	•		130

* S. 187 + 189
p. 187 + 189

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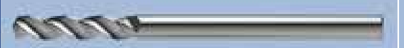
• geeignet / approprié / adatto / suitable

	Artikel Article	Durchmesser-Bereich Diameter range	Abstufung Increments	Bohrtiefe Cutting length	Spitzen-winkel Point angle	Spiral-winkel Helix angle	Material	Werkstoffgruppe* Workpiece material* P	M	K	S	N	H	O	Anwendung* Application*	Seite Page
Bohrreibahlen und Reibahlen **Foret alésoir et alésoir**							**Punta alesatore e alesatore** **Drill reamer and reamer**									
	50840	2.00 – 14.00	0.10	DIN 6539	118°	35°	VHM / MD / SC	•	•	•	•	✓				132
	55654	1.00 – 14.00	0.10	DIN 6539	140°	35°	VHM / MD / SC	✓	•	✓	•	•				133
	55338	1.00 – 14.00	0.10	DIN 338	140°	35°	VHM / MD / SC	✓	•	✓	•	•				134
	58000	0.99 – 6.00	0.01	– 8×ø		10°	VHM / MD / SC	✓	✓	✓	•	✓				135
	58500	0.99 – 6.00	0.01	– 8×ø		10°	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

P1–3 | M1,2 | K1,2 | N1–5 | N7,8 | S1 | O1

VHM MD/SC | SPHINX NORM | Z 2

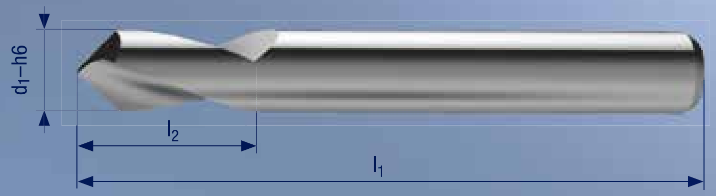
i 159

d_1 mm	l_2 mm	l_3 mm	l_1 mm	d_2 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

P1–3 M1,2 K1,2 N1–8 O1



VHM MD/SC | SPHINX NORM | Z 2

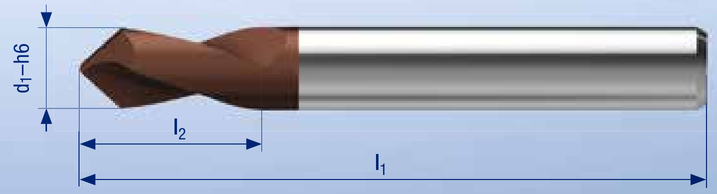
175

d_1 mm	l_2 mm	l_1 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

P1–3 M1,2 K1,2 N1–8 S1 H1 O1,2



VHM MD/SC | TiAlSiN | SPHINX NORM | Z 2

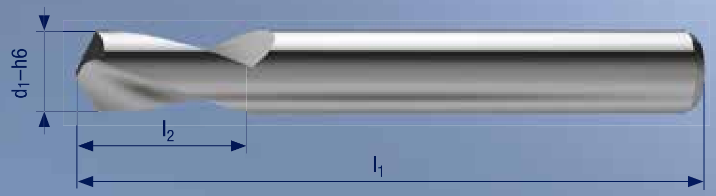
175

d_1 mm	l_2 mm	l_1 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

P1–3 | M1,2 | K1,2 | N1–8 | O1



VHM MD/SC | SPHINX NORM | Z 2

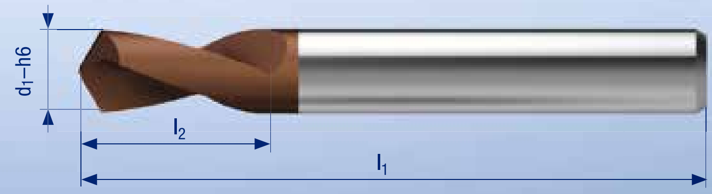
175

d1 mm	l2 mm	l1 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

P1–3 | M1,2 | K1,2 | N1–8 | S1 | H1 | O1,2



VHM MD/SC | TiAlSiN | SPHINX NORM | Z 2

175

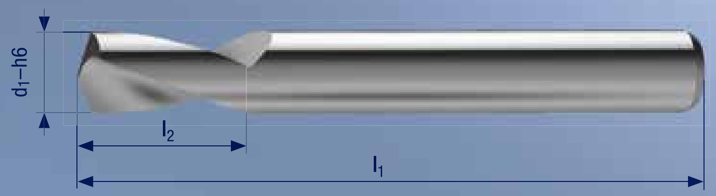
d1 mm	l2 mm	l1 mm
2.00	8.50	25
3.00	9.50	32
4.00	10.50	40
5.00	16.00	50
6.00	16.00	50
8.00	20.00	60
10.00	22.00	70

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

Art. 50814

P1–3 | M1,2 | K1,2 | N1–8 | O1

VHM MD/SC | SPHINX NORM | Z 2



175

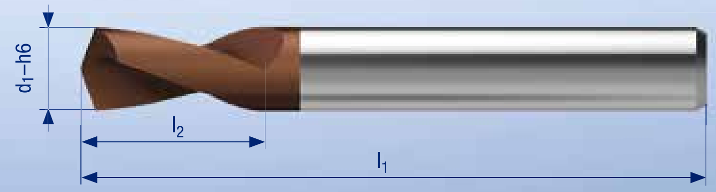
d1 mm	l2 mm	l1 mm
2.00	8.50	25
3.00	9.50	32
4.00	10.50	40
5.00	16.00	50
6.00	16.00	50
8.00	20.00	60
10.00	22.00	70
12.00	22.00	70
14.00	25.00	75
16.00	25.00	75
20.00	35.00	75

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

Art. 50815

P1–3 | M1,2 | K1,2 | N1–8 | S1 | H1 | O1,2

VHM MD/SC | TiAlSiN | SPHINX NORM | Z 2



175

d1 mm	l2 mm	l1 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

P1–3 M1,2 K1,2 N1–8 O1

VHM MD/SC
SPHINX NORM
Z 2

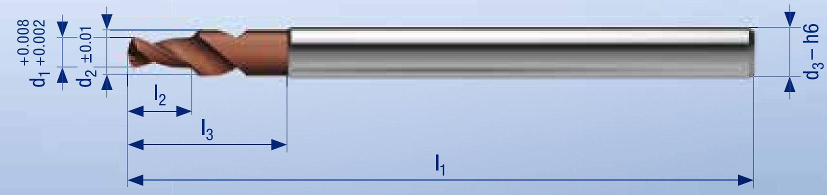
175

d1 mm	l2 mm	l1 mm	d2 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

P1–3 M1,2 K1,2 N1–5 S1 H1



VHM MD/SC
d_1 + 0.008 + 0.002
AlCrN
SPHINX NORM
Z 2

161

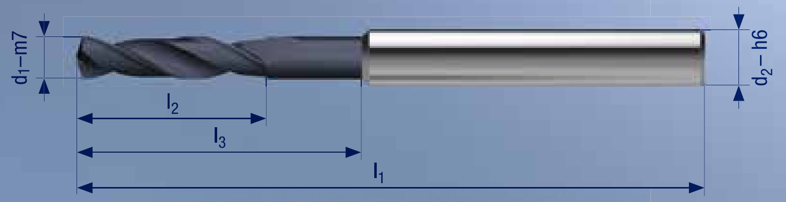
d1 mm	d2 mm	l2 mm	l3 mm	l1 mm	d3 mm
0.30	0.70	0.60	2.50	50	4.00
0.35	0.70	0.70	2.50	50	4.00
0.40	1.00	0.80	3.00	50	4.00
0.45	1.00	0.90	3.00	50	4.00
0.50	1.20	1.00	3.50	50	4.00
0.55	1.30	1.10	3.50	50	4.00
0.60	1.40	1.20	4.30	50	4.00
0.65	1.50	1.30	4.30	50	4.00
0.70	1.80	1.40	5.30	50	4.00
0.75	1.80	1.50	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
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
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
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 elicoidale Fastcut Plus
Twist drill Fastcut Plus

Art. 50950

P1–3 | M1,2 | K1,2 | N2,3 | S1 | H1–3

VHM MD/SC | TiAlN | d1 m7 | DIN 6537 | Z 2 | 140° | 30° | 3×d



176

d_1 mm	l_2 mm	l_3 mm	l_1 mm	d_2 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_1 mm	l_2 mm	l_3 mm	l_1 mm	d_2 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

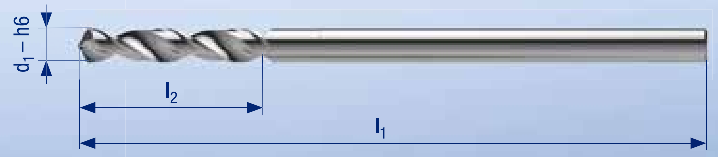
d_1 mm	l_2 mm	l_3 mm	l_1 mm	d_2 mm
10.60	40.00	55.00	102	12.00
10.70	40.00	55.00	102	12.00
10.80	40.00	55.00	102	12.00
10.90	40.00	55.00	102	12.00
11.00	40.00	55.00	102	12.00
11.10	40.00	55.00	102	12.00
11.20	40.00	55.00	102	12.00
11.30	40.00	55.00	102	12.00
11.40	40.00	55.00	102	12.00
11.50	40.00	55.00	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

P1,2 | M1,2 | K1,2 | N1–4 | N6–8 | S1,2 | O1

VHM MD/SC | DIN 6539 | Z 2 | 118° | 35° | 5×d



176

d_1 mm	l_2 mm	l_1 mm
0.30	1.50	19
0.40	2.30	19
0.50	2.80	20
0.60	3.30	21
0.70	4.30	23
0.80	4.80	24
0.90	5.30	25
1.00	5.70	26
1.10	6.70	28
1.20	7.70	30
1.30	7.70	30
1.40	8.70	32
1.50	8.70	32
1.60	9.70	34
1.70	9.70	34
1.80	10.70	36
1.90	10.70	36
2.00	11.50	38
2.10	11.50	38
2.20	12.50	40
2.30	12.50	40
2.40	13.50	43
2.50	13.50	43
2.60	13.50	43
2.70	15.50	46
2.80	15.50	46
2.90	15.50	46
3.00	15.50	46
3.10	17.50	49
3.20	17.50	49
3.30	17.50	49
3.40	19.50	52
3.50	19.50	52
3.60	19.50	52
3.70	19.50	52
3.80	21.50	55
3.90	21.50	55
4.00	21.50	55

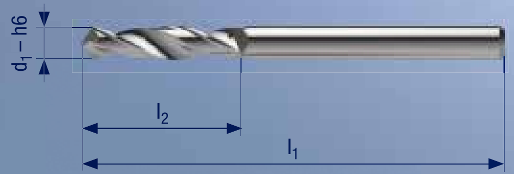
d_1 mm	l_2 mm	l_1 mm
4.10	21.50	55
4.20	21.50	55
4.30	23.00	58
4.40	23.00	58
4.50	23.00	58
4.60	23.00	58
4.70	23.00	58
4.80	25.00	62
4.90	25.00	62
5.00	25.00	62
5.10	25.00	62
5.20	25.00	62
5.30	25.00	62
5.40	27.00	66
5.50	27.00	66
5.60	27.00	66
5.70	27.00	66
5.80	27.00	66
5.90	27.00	66
6.00	27.00	66
6.10	30.00	70
6.20	30.00	70
6.30	30.00	70
6.40	30.00	70
6.50	30.00	70
6.60	30.00	70
6.70	30.00	70
6.80	33.00	74
6.90	33.00	74
7.00	33.00	74
7.10	33.00	74
7.20	33.00	74
7.30	33.00	74
7.40	33.00	74
7.50	33.00	74
7.60	36.00	79
7.70	36.00	79
7.80	36.00	79

d_1 mm	l_2 mm	l_1 mm
7.90	36.00	79
8.00	36.00	79
8.10	36.00	79
8.20	36.00	79
8.30	36.00	79
8.40	36.00	79
8.50	36.00	79
8.60	39.00	84
8.70	39.00	84
8.80	39.00	84
8.90	39.00	84
9.00	39.00	84
9.10	39.00	84
9.20	39.00	84
9.30	39.00	84
9.40	39.00	84
9.50	39.00	84
9.60	41.00	89
9.70	41.00	89
9.80	41.00	89
9.90	41.00	89
10.00	41.00	89
10.20	41.00	89
10.50	41.00	89
11.00	45.00	95
11.50	45.00	95
12.00	49.00	102
12.50	49.00	102
13.00	49.00	102
13.50	52.00	107
14.00	52.00	107
15.00	54.00	111
16.00	56.00	115
17.00	58.00	119
18.00	60.00	123
19.00	62.00	127
20.00	64.00	131

Spiralbohrer Spirec
Foret hélicoïdal Spirec
Punta elicoidale Spirec
Twist drill Spirec

Art. 50838

P1,2 | M1,2 | K1,2 | N1–6 | S1



VHM MD/SC | SPHINX NORM | Z 2 | 118° | 30° | ~10×d

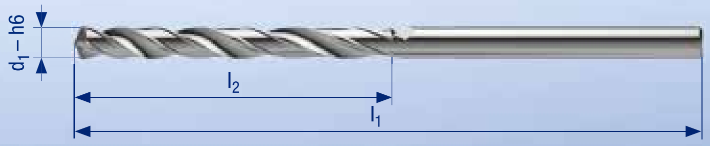
i 177

d_1 mm	l_2 mm	l_1 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
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
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 elicoidale Spicut
Twist drill Spicut

Art. 50820

P1,2 | K1,2 | N2,3,5



VHM MD/SC | DIN 338 | Z 2 | 130° | 35°–15° | ~10×d

i 177

d_1 mm	l_2 mm	l_1 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
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
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

P1–3 | M1,2 | K1,2 | N2,3 | S1

VHM MD/SC | AlCrN | SPHINX NORM | Z 2

140°

30°

3×d

> 2.5 mm

i 178

d_1 mm	l_2 mm	l_3 mm	l_1 mm	d_2 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

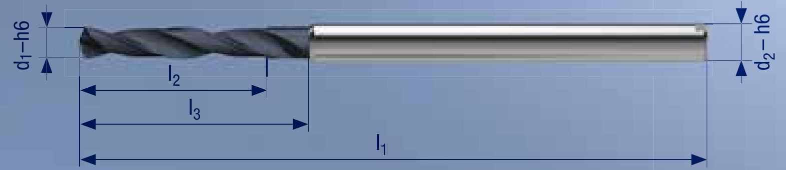
d_1 mm	l_2 mm	l_3 mm	l_1 mm	d_2 mm
4.80	14.40	22.50	60	6.00
4.90	14.70	22.50	60	6.00
5.00	15.00	23.00	60	6.00
5.10	15.30	23.50	64	6.00
5.20	15.60	23.50	64	6.00
5.30	15.90	24.00	64	6.00
5.40	16.20	24.00	64	6.00
5.50	16.50	24.50	64	6.00
5.60	16.80	24.50	64	6.00
5.70	17.10	25.50	64	6.00
5.80	17.40	25.50	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_1 mm	l_2 mm	l_3 mm	l_1 mm	d_2 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

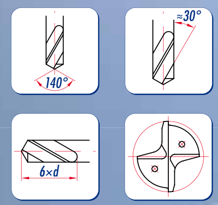
Hochleistungsbohrer Phoenix 6 × d
Foret à grand rendement Phoenix 6 × d
Punta ad alto rendimento Phoenix 6 × d
High performance drill Phoenix 6 × d

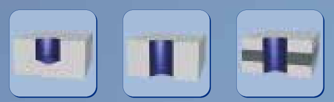
Art. 50940

P1–3 | M1,2 | K1,2 | N2,3 | S1



VHM MD/SC | TiAlN | SPHINX NORM | Z 2





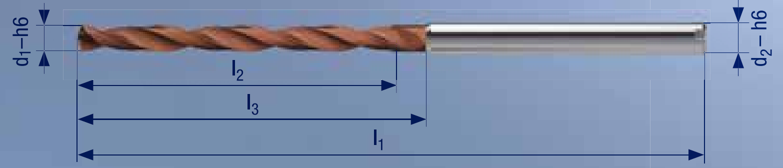
178

d_1 mm	l_2 mm	l_3 mm	l_1 mm	d_2 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
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
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
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
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

P1–3 | M1,2 | K1,2 | N2,3 | S1



VHM MD/SC | AlCrN | SPHINX NORM | Z 2 | 140° | 30° | 12×d | > 2.5 mm

i 179

d_1 mm	l_2 mm	l_3 mm	l_1 mm	d_2 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

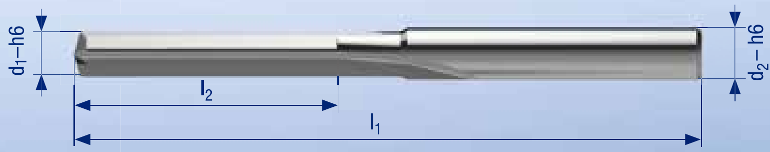
d_1 mm	l_2 mm	l_3 mm	l_1 mm	d_2 mm
4.80	57.60	65.50	105	6.00
4.90	58.80	67.00	105	6.00
5.00	60.00	68.00	105	6.00
5.10	61.20	69.50	118	6.00
5.20	62.40	70.50	118	6.00
5.30	63.60	71.50	118	6.00
5.40	64.80	73.00	118	6.00
5.50	66.00	74.00	118	6.00
5.60	67.20	75.50	118	6.00
5.70	68.40	76.50	118	6.00
5.80	69.60	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_1 mm	l_2 mm	l_3 mm	l_1 mm	d_2 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

K1,2 | N2,3,5 | 01



VHM MD/SC | SPHINX NORM | Z 2 | 140° | 0° | 6×d

i 179

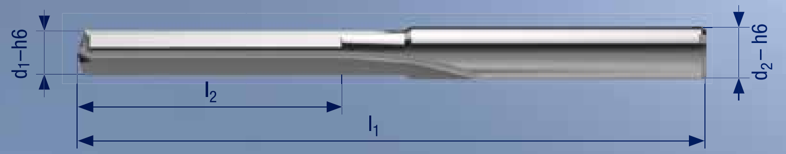
d_1 mm	l_2 mm	l_1 mm	d_2 mm
3.00	18.00	82	6.00
3.30	20.00	82	6.00
3.50	21.00	82	6.00
4.00	24.00	82	6.00
4.20	26.00	88	6.00
4.50	27.00	88	6.00
5.00	30.00	88	6.00
5.50	33.00	94	6.00
6.00	36.00	94	6.00
6.50	39.00	102	8.00
6.80	41.00	102	8.00
7.00	42.00	102	8.00
7.50	45.00	108	8.00
8.00	48.00	108	8.00
8.50	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_1 mm	l_2 mm	l_1 mm	d_2 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

K1,2 | N2,3,5 | 01



VHM MD/SC | SPHINX NORM | Z 2

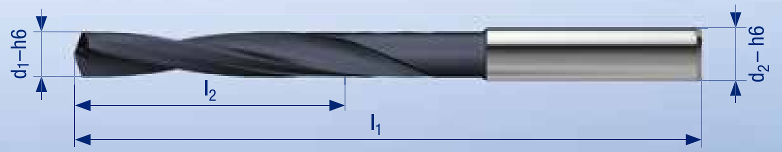
179

d1 mm	l2 mm	l1 mm	d2 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
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

P1,2 | K1,2 | N3,5 | H1



VHM MD/SC | TiAlN | SPHINX NORM | Z 2

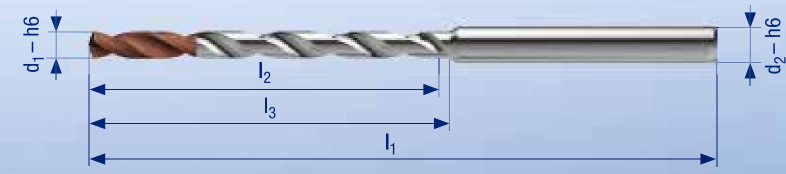
180

d1 mm	l2 mm	l1 mm	d2 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

P1,2 K1,2



VHM MD/SC | AlCrN | SPHINX NORM | Z 2

137° | 30° | 12×d

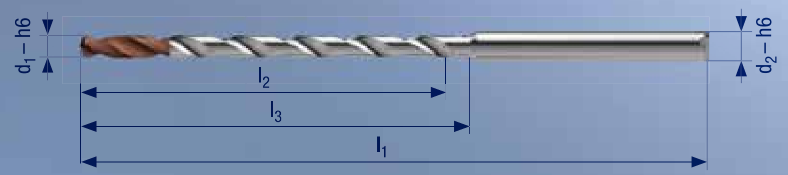
180 | 197

d_1 mm	l_2 mm	l_3 mm	l_1 mm	d_2 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
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
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 x d
Foret à grand rendement Power-Phoenix 16 x d
Punta ad alto rendimento Power-Phoenix 16 x d
High performance drill Power-Phoenix 16 x d

Art. 50916

P1,2 K1,2



VHM MD/SC | AlCrN | SPHINX NORM | Z 2

137° | 30° | 16×d

i 180 | i 197

d_1 mm	l_2 mm	l_3 mm	l_1 mm	d_2 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_1 mm	l_2 mm	l_3 mm	l_1 mm	d_2 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_1 mm	l_2 mm	l_3 mm	l_1 mm	d_2 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 x d
Foret à grand rendement Power-Phoenix 20 x d
Punta ad alto rendimento Power-Phoenix 20 x d
High performance drill Power-Phoenix 20 x d

Art. 50920

P1,2 K1,2

VHM MD/SC | AlCrN | SPHINX NORM | Z 2

137° | 30° | 20×d

i 181 | i 197

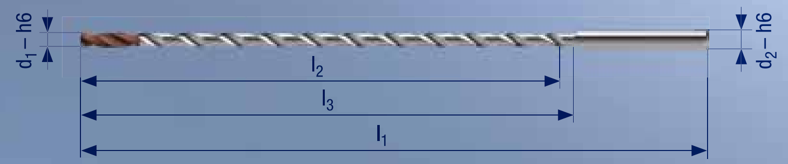
d_1 mm	l_2 mm	l_3 mm	l_1 mm	d_2 mm
3.00	60.00	69.00	108	6.00
3.30	66.00	75.00	113	6.00
4.00	80.00	94.00	132	6.00
4.20	84.00	98.00	136	6.00
5.00	100.00	107.00	145	6.00
6.00	120.00	138.00	176	6.00
6.80	136.00	156.00	196	8.00
7.00	140.00	161.00	201	8.00
8.00	160.00	182.00	222	8.00
8.50	170.00	195.00	240	10.00
9.00	180.00	207.00	252	10.00
10.00	200.00	230.00	275	10.00

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

Art. 50930

P1,2

K1,2



VHM MD/SC

AlCrN

SPHINX NORM

Z 2

137°

30°

30×d

181

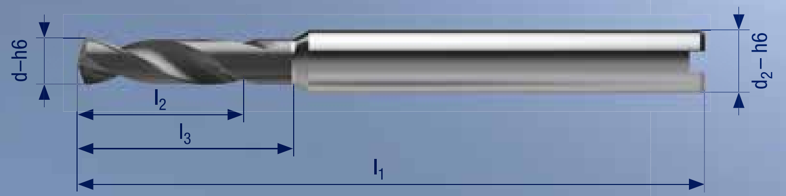
197

d_1 mm	l_2 mm	l_3 mm	l_1 mm	d_2 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

P1–3 | M1,2 | K1,2 | N1–6 | S1,2 | H1 | O1



VHM MD/SC | AlTiCrN+S | SPHINX NORM | Z 2

i 181 | i 196

d_1 mm	l_2 mm	l_3 mm	l_1 mm	d_2 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_1 mm	l_2 mm	l_3 mm	l_1 mm	d_2 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_1 mm	l_2 mm	l_3 mm	l_1 mm	d_2 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

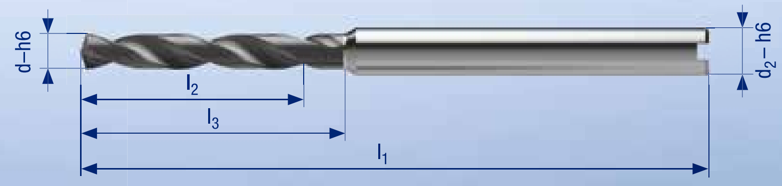
d_1 mm	l_2 mm	l_3 mm	l_1 mm	d_2 mm
7.40	22.20	32.00	72	8.00
7.50	22.50	32.50	72	8.00
7.60	22.80	32.50	72	8.00
7.70	23.10	33.50	72	8.00
7.80	23.40	33.50	72	8.00
7.90	23.70	34.00	72	8.00
8.00	24.00	34.00	72	8.00
8.50	25.50	36.50	79	10.00
9.00	27.00	38.00	79	10.00
9.50	28.50	40.00	85	10.00
10.00	30.00	42.00	85	10.00

Swiss made by SPHINX

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

P1–3 | M1,2 | K1,2 | N1–6 | S1,2 | H1 | O1



VHM MD/SC | AlTiCrN+S | SPHINX NORM | Z 2

i 181 | i 196

d_1 mm	l_2 mm	l_3 mm	l_1 mm	d_2 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_1 mm	l_2 mm	l_3 mm	l_1 mm	d_2 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_1 mm	l_2 mm	l_3 mm	l_1 mm	d_2 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

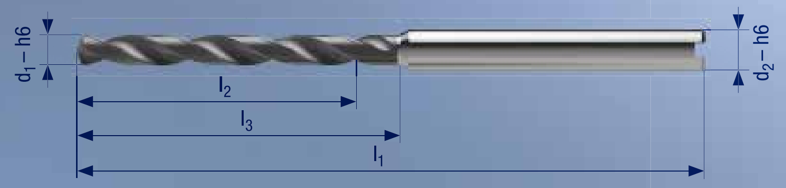
d_1 mm	l_2 mm	l_3 mm	l_1 mm	d_2 mm
6.50	39.00	48.00	89	8.00
6.60	39.60	48.50	89	8.00
6.70	40.20	49.00	89	8.00
6.80	40.80	50.00	89	8.00
6.90	41.40	50.50	89	8.00
7.00	42.00	52.00	89	8.00
7.10	42.60	52.50	95	8.00
7.20	43.20	53.50	95	8.00
7.30	43.80	54.00	95	8.00
7.40	44.40	54.50	95	8.00
7.50	45.00	55.00	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

Swiss made by SPHINX

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

P1–3 | M1,2 | K1,2 | N1–6 | S1,2 | H1 | 01



VHM MD/SC | AlTiCrN+S | SPHINX NORM | Z 2 | 140° | 30° | 9×d

i 181 | i 196

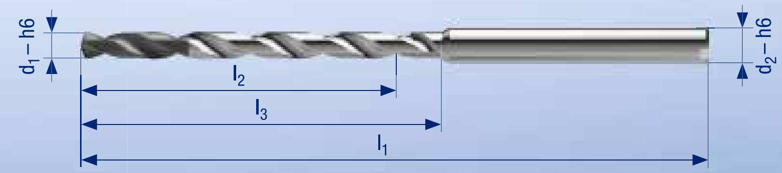
d_1 mm	l_2 mm	l_3 mm	l_1 mm	d_2 mm
1.00	9.00	11.00	51	3.00
1.10	9.90	12.00	51	3.00
1.20	10.80	13.00	51	3.00
1.30	11.70	14.00	51	3.00
1.40	12.60	15.00	51	3.00
1.50	13.50	16.50	51	3.00
1.60	14.40	17.50	51	3.00
1.70	15.30	18.50	51	3.00
1.80	16.20	19.00	51	3.00
1.90	17.10	20.00	51	3.00
2.00	18.00	21.00	51	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_1 mm	l_2 mm	l_3 mm	l_1 mm	d_2 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

P1–3 | M1,2 | K1,2 | N1–6 | S1,2 | H1 | 01



VHM MD/SC | AlCrTiN | SPHINX NORM | Z 2 | 137° | 30° | 12×d

i 182 | i 197

d_1 mm	l_2 mm	l_3 mm	l_1 mm	d_2 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_1 mm	l_2 mm	l_3 mm	l_1 mm	d_2 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

P3 | M1,2 | N1–3 | S1 | O1

VHM MD/SC | AlCrTiN | SPHINX NORM | Z 2

137° | 30° | 16×d

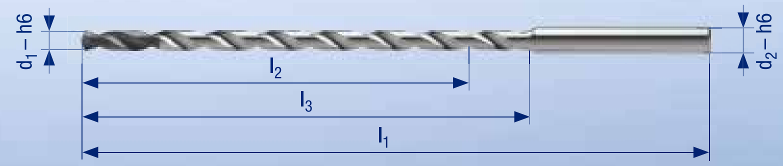
182 | 197

d_1 mm	l_2 mm	l_3 mm	l_1 mm	d_2 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
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

P3 | M1,2 | N1–3 | S1 | O1



VHM MD/SC | AlCrTiN | SPHINX NORM | Z 2

137° | 30° | 20×d

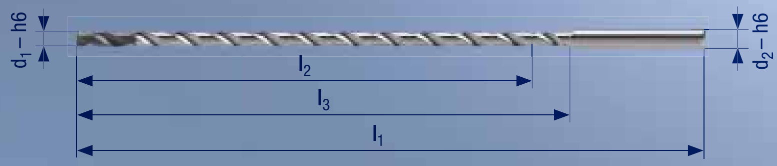
182 | 197

d_1 mm	l_2 mm	l_3 mm	l_1 mm	d_2 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

P3 | M1,2 | N1–3 | S1 | O1



VHM MD/SC | AlCrTiN | SPHINX NORM | Z 2 | 137° | ≈30° | 30×d

i 182 | i 197

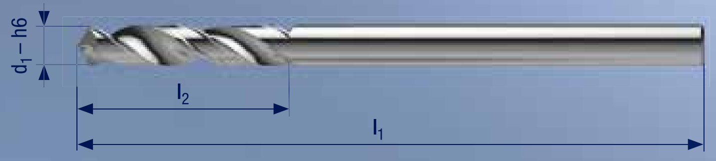
d_1 mm	l_2 mm	l_3 mm	l_1 mm	d_2 mm
3.00	90.00	99.00	138	6.00
3.30	99.00	108.00	146	6.00
4.00	120.00	134.00	172	6.00
4.20	126.00	140.00	178	6.00
5.00	150.00	167.00	205	6.00
6.00	180.00	198.00	236	6.00
6.80	204.00	224.00	264	8.00
7.00	210.00	231.00	271	8.00
8.00	240.00	262.00	302	8.00
8.50	255.00	280.00	325	10.00
9.00	270.00	297.00	342	10.00
10.00	285.00	300.00	345	10.00


Swiss made by SPHINX

Bohrreibahle Asycut
Foret alésoir Asycut
Punta alesatore Asycut
Drill reamer Asycut

Art. 50840

P1,2 M1,2 K1,2 N1–4



VHM MD/SC
DIN 6539
Z 2
118°
35°
~5×d

183

d1 mm	l2 mm	l1 mm
2.00	11.50	38
2.10	11.50	38
2.20	12.50	40
2.30	12.50	40
2.40	13.50	43
2.50	13.50	43
2.60	13.50	43
2.70	15.50	46
2.80	15.50	46
2.90	15.50	46
3.00	15.50	46
3.10	17.50	49
3.20	17.50	49
3.30	17.50	49
3.40	19.50	52
3.50	19.50	52
3.60	19.50	52
3.70	19.50	52
3.80	21.50	55
3.90	21.50	55
4.00	21.50	55
4.10	21.50	55
4.20	21.50	55
4.30	23.00	58
4.40	23.00	58
4.50	23.00	58
4.60	23.00	58
4.70	23.00	58
4.80	25.00	62
4.90	25.00	62
5.00	25.00	62
5.10	25.00	62
5.20	25.00	62
5.30	25.00	62
5.40	27.00	66
5.50	27.00	66
5.60	27.00	66
5.70	27.00	66

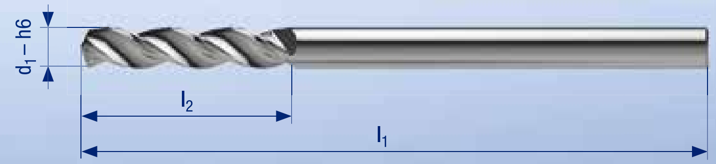
d1 mm	l2 mm	l1 mm
5.80	27.00	66
5.90	27.00	66
6.00	27.00	66
6.10	30.00	70
6.20	30.00	70
6.30	30.00	70
6.40	30.00	70
6.50	30.00	70
6.60	30.00	70
6.70	30.00	70
6.80	33.00	74
6.90	33.00	74
7.00	33.00	74
7.10	33.00	74
7.20	33.00	74
7.30	33.00	74
7.40	33.00	74
7.50	33.00	74
7.60	36.00	79
7.70	36.00	79
7.80	36.00	79
7.90	36.00	79
8.00	36.00	79
8.10	36.00	79
8.20	36.00	79
8.30	36.00	79
8.40	36.00	79
8.50	36.00	79
8.60	39.00	84
8.70	39.00	84
8.80	39.00	84
8.90	39.00	84
9.00	39.00	84
9.10	39.00	84
9.20	39.00	84
9.30	39.00	84
9.40	39.00	84
9.50	39.00	84

d1 mm	l2 mm	l1 mm
9.60	41.00	89
9.70	41.00	89
9.80	41.00	89
9.90	41.00	89
10.00	41.00	89
10.20	41.00	89
10.50	41.00	89
11.00	45.00	95
11.50	45.00	95
12.00	49.00	102
12.50	49.00	102
13.00	49.00	102
13.50	52.00	107
14.00	52.00	107

Bohrreibahle Tricut
Foret alésoir Tricut
Punta alesatore Tricut
Drill reamer Tricut

Art. 55654

P1,2 M1 K1,2 N2,3 S1



VHM MD/SC
DIN 6539
Z 3
140°
35°
~5×d

183

d1 mm		l2 mm	l1 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"	17.0	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"	21.0	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

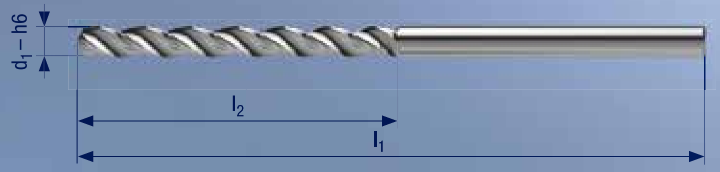
d1 mm		l2 mm	l1 mm
4.60		22.5	58
4.70		22.5	58
4.763	3/16"	24.5	62
4.80		24.5	62
4.90		24.5	62
5.00		24.5	62
5.10		24.5	62
5.20		24.5	62
5.30		24.5	62
5.40		26.0	66
5.50		26.0	66
5.556	7/32"	26.0	66
5.60		26.0	66
5.70		26.0	66
5.80		26.0	66
5.90		26.0	66
6.00		26.0	66
6.10		28.5	70
6.20		28.5	70
6.30		28.5	70
6.350	1/4"	28.5	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"	31.0	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

d1 mm		l2 mm	l1 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

P1,2 M1 K1,2 N2,3 S1



VHM MD/SC | DIN 338 | Z 3 | 140° | 35° | ~10×d

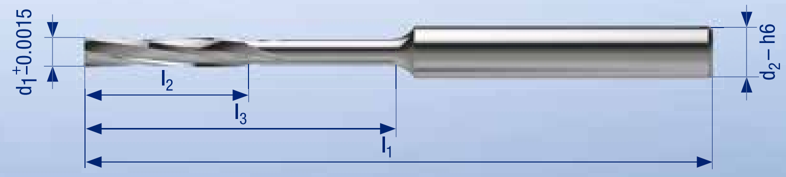
i 183

d1 mm	l2 mm	l1 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
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
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
9.10	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

P1–3 M1,2 K1,2 N2–5 S1



VHM MD/SC | SPHINX NORM | Z 3–6 | 10° | ~8×d

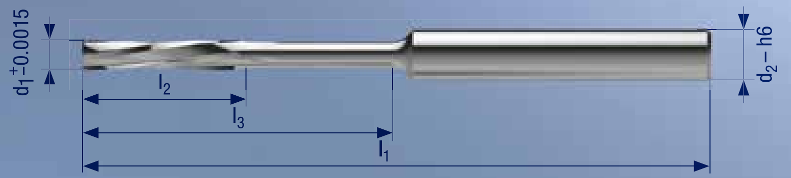
i 184

ø	d1 mm	l2 mm	l3 mm	l1 mm	d2 mm	z
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

P1–3 M1,2 K1,2 N2–5 S1



VHM MD/SC

SPHINX NORM

Z 3–6

10°

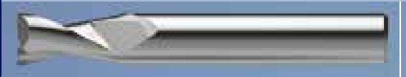
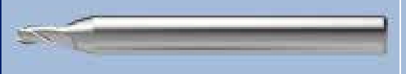
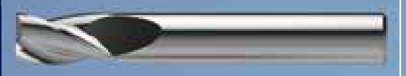
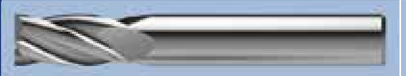
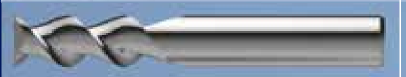
~8×d

184

ø	d_1 mm	l_2 mm	l_3 mm	l_1 mm	d_2 mm	z
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

* S. 187 + 189
p. 187 + 189

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

	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	Material	Werkstoffgruppe* Workpiece material* P	M	K	S	N	H	O	Anwendung* Application*	Seite Page
Fräser Fraise								**Fresa Endmill**									
	40000	2.00 – 12.00	0.50	DIN 6528		30°	2	VHM / MD / SC	•		•		✓		•		141
	76300	1.50 – 6.00	0.50			30°	3	VHM / MD / SC	✓	•	✓						142
	40002	2.00 – 12.00	0.50	DIN 6528		30°	3	VHM / MD / SC	✓	•	✓		✓				143
	40004	2.00 – 12.00	0.50	DIN 6528		30°	4	VHM / MD / SC	✓	•	✓						144
	47000	3.00 – 20.00	1.00	1.5 – 4×ø		55°	2	VHM / MD / SC					✓		•		145
	47500	6.00 – 20.00	2.00	4.5 – 8×ø		55°	2	VHM / MD / SC					✓		•		146

Schaftfräser 30°
Fraise 30°
Fresa 30°
Endmill 30°

Art. 40000

P1,2 | K1,2 | N1–6

VHM MD/SC | DIN 6528 | Z 2

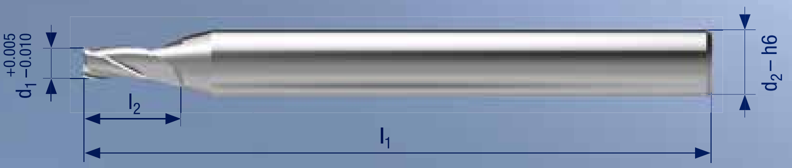
184

d_1 mm	l_2 mm	l_1 mm	d_2 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

Schaftfräser 30°
Fraise 30°
Fresa 30°
Endmill 30°

Art. 76300

P1–3
M1,2
K1,2



VHM MD/SC
SPHINX NORM
Z 3
30°

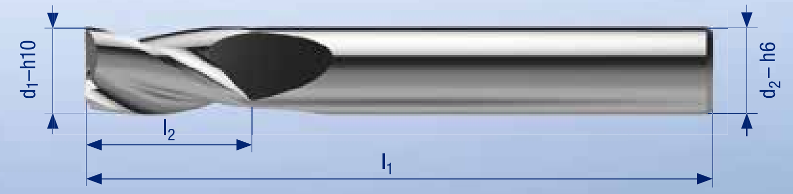
i 185

d_1 mm	l_2 mm	l_1 mm	d_2 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

Schaftfräser 30°
Fraise 30°
Fresa 30°
Endmill 30°

Art. 40002

P1–3
M1
K1,2



VHM MD/SC
DIN 6528
Z 3
30°

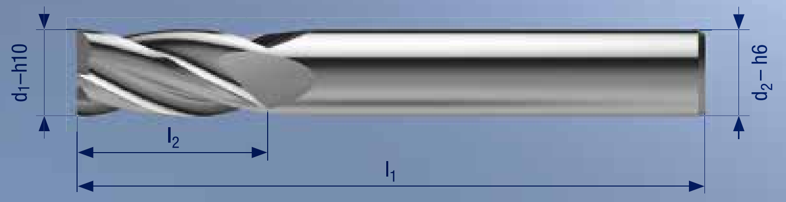
i 185

d_1 mm	l_2 mm	l_1 mm	d_2 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

Schaftfräser 30°
Fraise 30°
Fresa 30°
Endmill 30°

Art. 40004

P1–3 | M1 | K1,2



VHM MD/SC | DIN 6528 | Z 4 | 30°

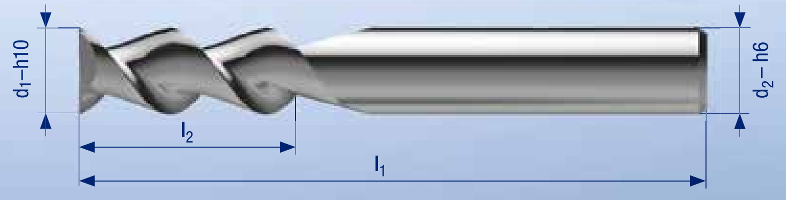
186

d1 mm	l2 mm	l1 mm	d2 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

Schaftfräser AC2 55°
Fraise AC2 55°
Fresa AC2 55°
Endmill AC2 55°

Art. 47000

N1–3 | O1



VHM MD/SC | SPHINX NORM | Z 2 | 55°

186

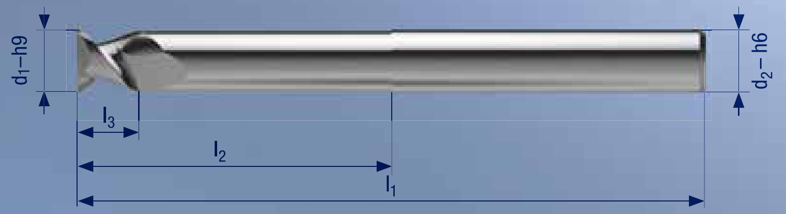
d1 mm	l2 mm	l1 mm	d2 mm
3.00	12.00	50	3.00
4.00	15.00	50	4.00
5.00	20.00	50	5.00
6.00	20.00	57	6.00
8.00	20.00	63	8.00
10.00	25.00	72	10.00
12.00	25.00	83	12.00
14.00	30.00	90	14.00
16.00	30.00	92	16.00
20.00	38.00	104	20.00

Schaftfräser ACL2 55°
Fraise ACL2 55°
Fresa ACL2 55°
Endmill ACL2 55°

Art. 47500

N1–3

01



VHM MD/SC

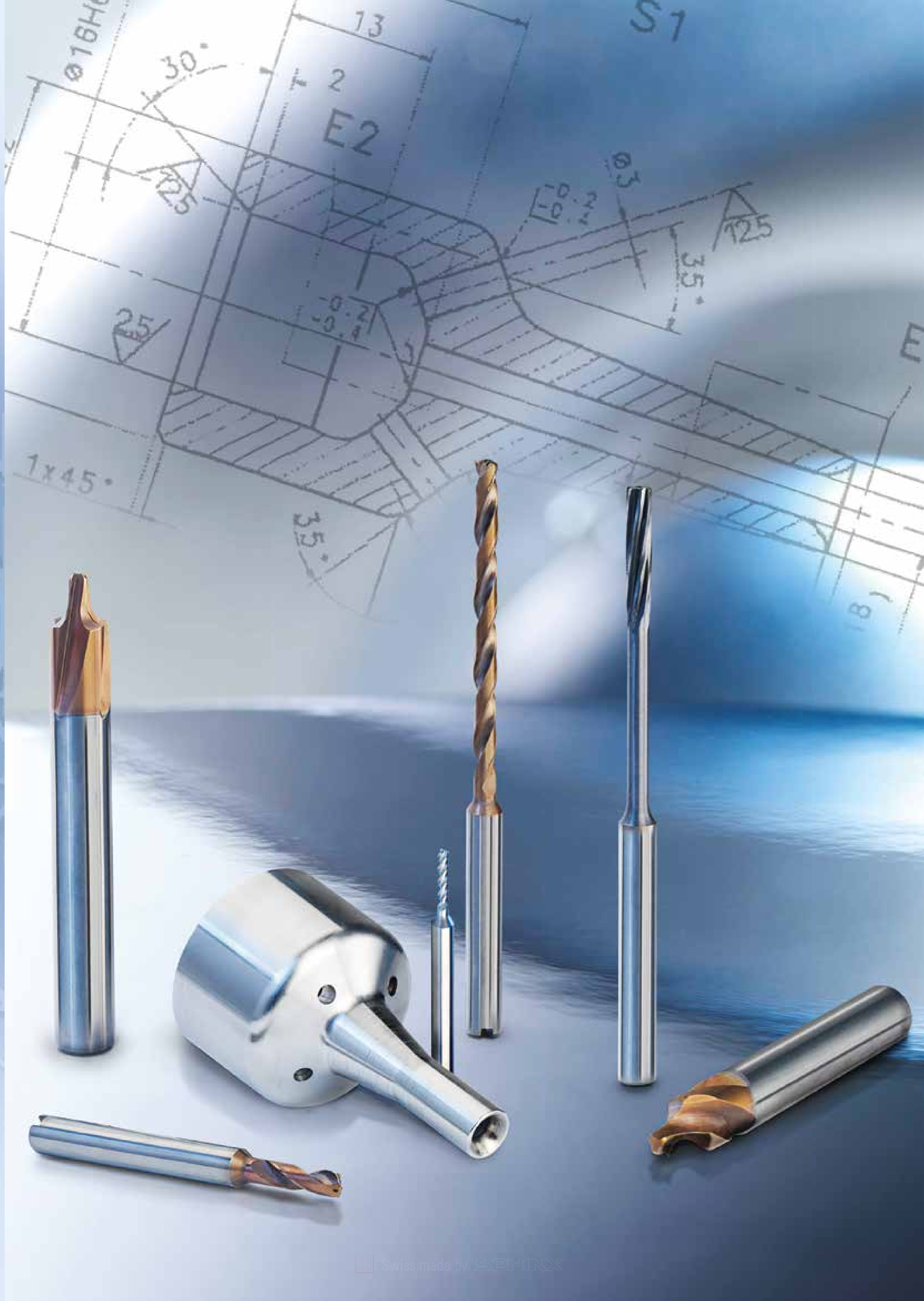
SPHINX NORM

Z 2

55°

186

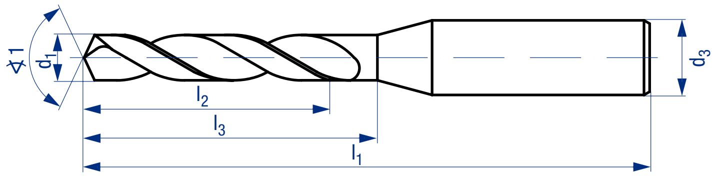
d_1 mm	l_2 mm	l_3 mm	l_1 mm	d_2 mm
6.00	50.00	6.00	100	6.00
8.00	50.00	8.00	100	8.00
10.00	50.00	10.00	100	10.00
12.00	50.00	12.00	100	12.00
16.00	75.00	16.00	125	16.00
20.00	75.00	20.00	125	20.00

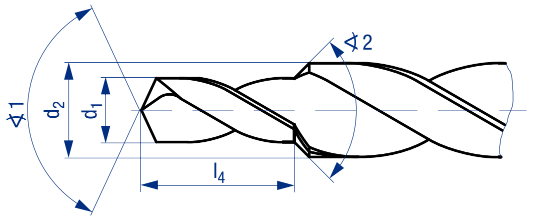


Inhaltsverzeichnis Sonderwerkzeuge
Table des matières outils spéciaux
Indice utensili speciali
Table of contents special tools

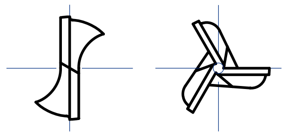
Mikrobohrer Micro foret Micro punta Micro drill	149
Stufenbohrer Foret étagé Punta a diametri multipli Step drill	150
Stufenbohrer – 3 Stufen Foret étagé – 3 étages Punta a diametri multipli – 3 gradini Step drill – 3 steps	151
Quadro – Stufenbohrer Quadro – Foret étagé Quadro – Punta a diametri multipli Quadro – Step drill	152
Quadro – Stufenbohrer – 3 Stufen Quadro – Foret étagé – 3 étages Quadro – Punta a diametri multipli – 3 gradini Quadro – Step drill – 3 steps	153
Reibahle Alésoir Alesatore Reamer	154
Stufenreibahle Alésoir étagé Alesatore a diametri multipli Step reamer	155
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	156

Mikrobohrer
Micro foret
Micro punta
Micro drill



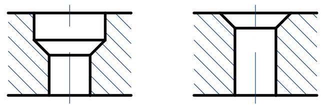


Schneidenanzahl:
Number of flutes:



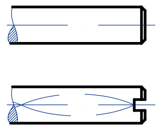
☐ ☐

Bohrungsart:
Type of hole:



☐ ☐

Kühlmittelzuführung:
Coolant:



☐
☐

d_1 = ______ Tol. = ______ ∢1 = ______ l_1 = ______ l_3 = ______
d_2 = ______ Tol. = ______ ∢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
Company ______
Strasse/Nr.
Street/No. ______

Postleitzahl/Ort
ZIP-Code/City ______
Phone ______

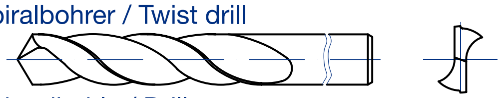
Kontaktperson
Contact ______
Fax ______

Datum/Unterschrift
Date/Signature ______
E-Mail ______

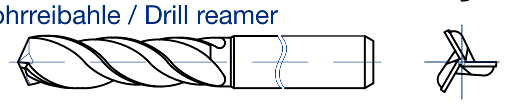
Fax +41 32 671 21 11 www.sphinx-tools.ch

Stufenbohrer
Foret étagé
Punta a diametri multipli
Step drill

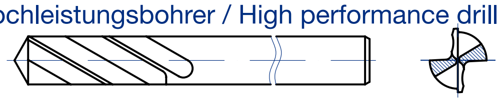
Spiralbohrer / Twist drill

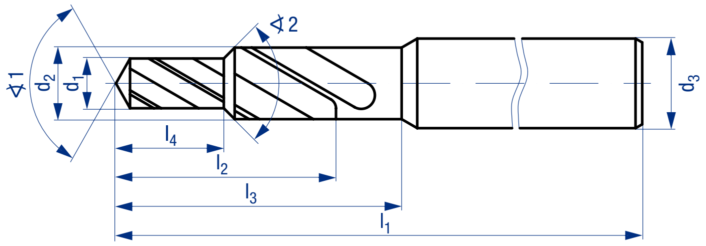
☐ 

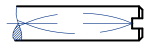
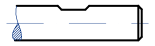
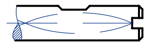
Bohrreibahle / Drill reamer

☐ 

Hochleistungsbohrer / High performance drill

☐ 



Form HA	Form HAK
☐ 	☐ 
Form HB	**Form HBK**
☐ 	☐ 
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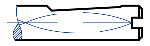
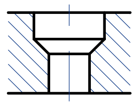
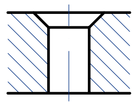
☐ 	☐ 

Bohrungsart:
Type of hole:

☐ ☐

d_1 = ______ Tol. = ______ ∢1 = ______ | l_1 = ______
d_2 = ______ Tol. = ______ ∢2 = ______ | l_2 = ______
d_3 = ______ Tol. = ______ | l_3 = ______
| l_4 = ______

Kühlmittelzuführung: ☐ 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
Company ______ Strasse/Nr.
Street/No. ______

Postleitzahl/Ort
ZIP-Code/City ______ Phone ______

Kontaktperson
Contact ______ Fax ______

Datum/Unterschrift
Date/Signature ______ E-Mail ______

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

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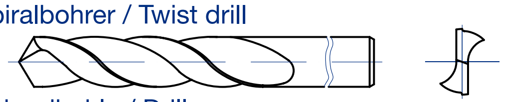
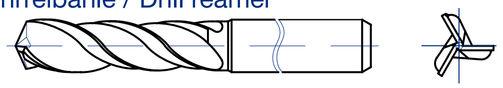
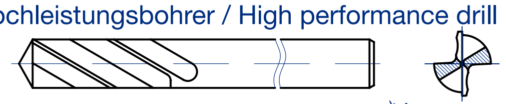
Spiralbohrer / Twist drill

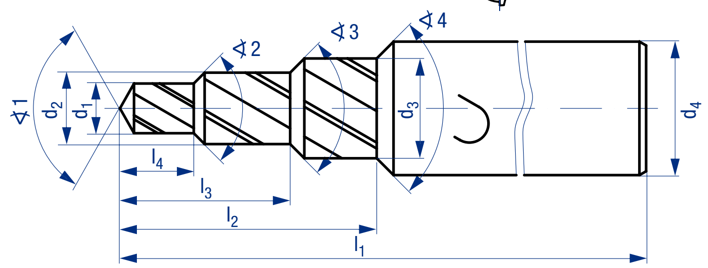
☐ 

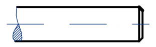
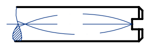
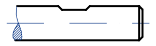
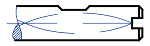
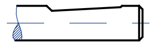
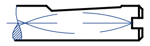
Bohrreibahle / Drill reamer

☐ 

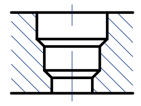
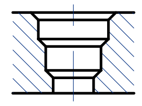
Hochleistungsbohrer / High performance drill

☐ 



Form HA	Form HAK
☐ 	☐ 
Form HB	**Form HBK**
☐ 	☐ 
Form HE	**Form HEK**
☐ 	☐ 

Bohrungsart:
Type of hole:

☐ ☐

d_1 = ______ Tol. = ______ ∢1 = ______ | l_1 = ______
d_2 = ______ Tol. = ______ ∢2 = ______ | l_2 = ______
d_3 = ______ Tol. = ______ ∢3 = ______ | l_3 = ______
d_4 = ______ Tol. = ______ ∢4 = ______ | l_4 = ______

Kühlmittelzuführung: ☐ 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
Company ______ Strasse/Nr.
Street/No. ______

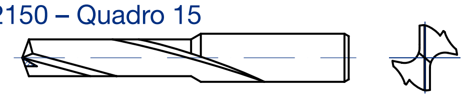
Postleitzahl/Ort
ZIP-Code/City ______ Phone ______

Kontaktperson
Contact ______ Fax ______

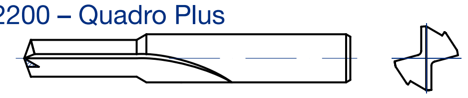
Datum/Unterschrift
Date/Signature ______ E-Mail ______

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

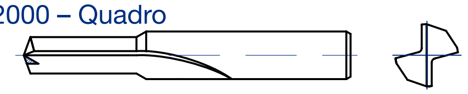
52150 – Quadro 15

☐ 

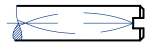
52200 – Quadro Plus

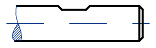
☐ 

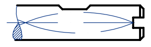
52000 – Quadro

☐ 

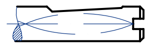
Form HA ☐ 

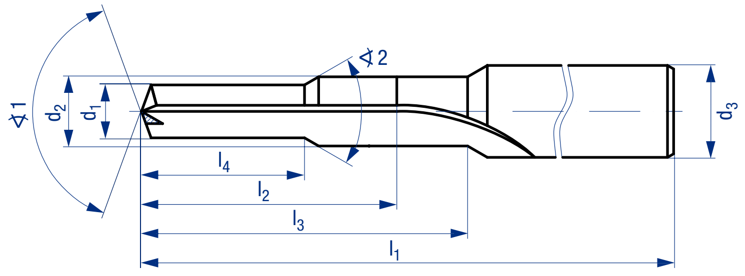
Form HAK ☐ 

Form HB ☐ 

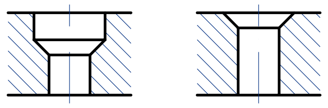
Form HBK ☐ 

Form HE ☐ 

Form HEK ☐ 



Bohrungsart:
Type of hole:



☐ ☐

d_1 = ______ Tol. = ______ ∢1 = ______ | l_1 = ______ l_3 = ______

d_2 = ______ Tol. = ______ ∢2 = ______ | l_2 = ______ l_4 = ______

d_3 = ______ Tol. = ______

Kühlmittelzuführung: ☐ 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
Company ______

Strasse/Nr.
Street/No. ______

Postleitzahl/Ort
ZIP-Code/City ______

Phone ______

Kontaktperson
Contact ______

Fax ______

Datum/Unterschrift
Date/Signature ______

E-Mail ______

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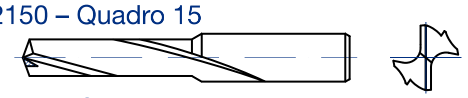
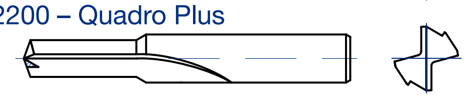
Quadro – Stufenbohrer – 3 Stufen
Quadro – Foret étagé – 3 étages
Quadro – Punta a diametri multipli – 3 gradini
Quadro – Step drill – 3 steps

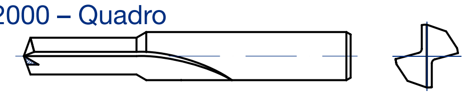
52150 – Quadro 15

☐ 

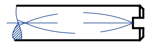
52200 – Quadro Plus

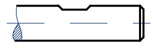
☐ 

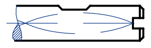
52000 – Quadro

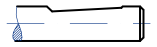
☐ 

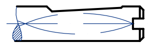
Form HA ☐ 

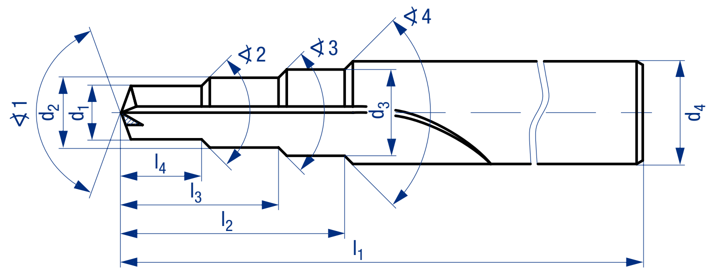
Form HAK ☐ 

Form HB ☐ 

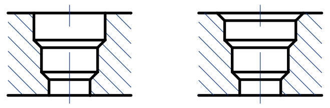
Form HBK ☐ 

Form HE ☐ 

Form HEK ☐ 



Bohrungsart:
Type of hole:



☐ ☐

d_1 = ______ Tol. = ______ ∢1 = ______ | l_1 = ______

d_2 = ______ Tol. = ______ ∢2 = ______ | l_2 = ______

d_3 = ______ Tol. = ______ ∢3 = ______ | l_3 = ______

d_4 = ______ Tol. = ______ ∢4 = ______ | l_4 = ______

Kühlmittelzuführung: ☐ 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
Company ______

Strasse/Nr.
Street/No. ______

Postleitzahl/Ort
ZIP-Code/City ______

Phone ______

Kontaktperson
Contact ______

Fax ______

Datum/Unterschrift
Date/Signature ______

E-Mail ______

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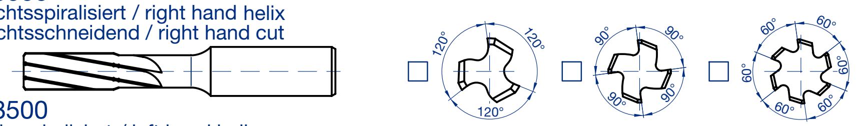
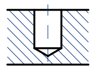
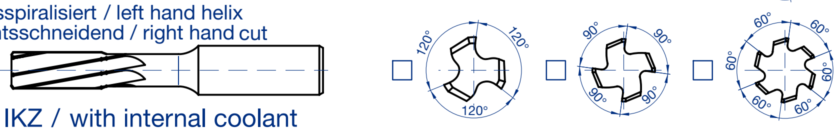
Reibahle
Alésoir
Alesatore
Reamer

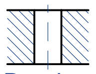
58000
rechtsspiralisiert / right hand helix
rechtsschneidend / right hand cut

☐ 

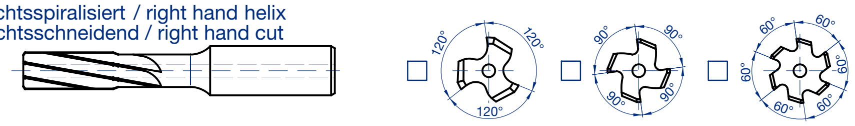

Sackloch/Blind hole

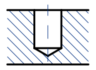
58500
linksspiralisiert / left hand helix
rechtsschneidend / right hand cut

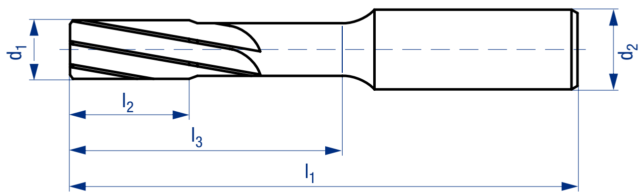
☐ 

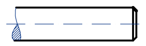

Durchgangsloch/Through hole

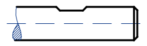
mit IKZ / with internal coolant
rechtsspiralisiert / right hand helix
rechtsschneidend / right hand cut

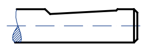
☐ 


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
Coating: ______ ☐ without

Stückzahl: ☐ Anfrage ☐ Bestellung
Quantity: ______ ☐ Enquiry ☐ Order

Bemerkung:
Remarks: ____________________
____

Firma
Company ______
Strasse/Nr.
Street/No. ______

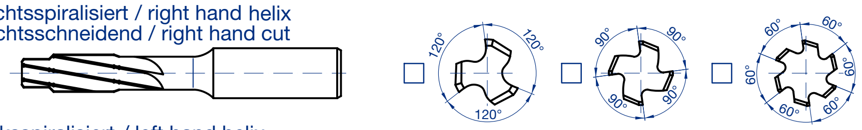
Postleitzahl/Ort
ZIP-Code/City ______
Phone ______

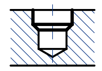
Kontaktperson
Contact ______
Fax ______

Datum/Unterschrift
Date/Signature ______
E-Mail ______

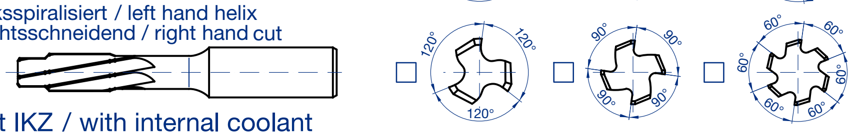
Stufenreibahle
Alésoir étagé
Alesatore a diametri multipli
Step reamer

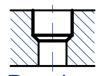
rechtsspiralisiert / right hand helix
rechtsschneidend / right hand cut

☐ 

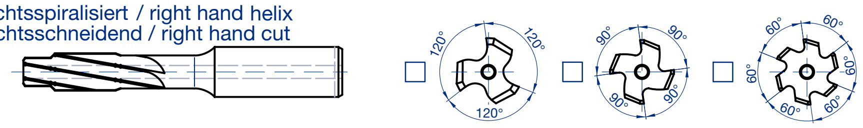

Sackloch/Blind hole

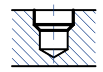
linksspiralisiert / left hand helix
rechtsschneidend / right hand cut

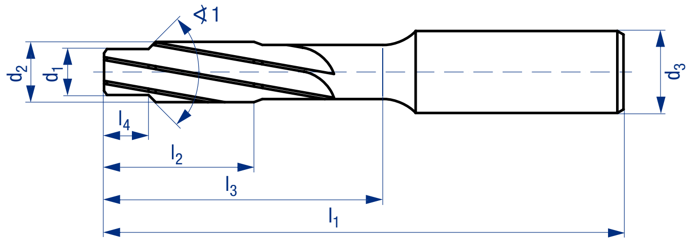
☐ 


Durchgangsloch/Through hole

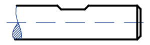
mit IKZ / with internal coolant
rechtsspiralisiert / right hand helix
rechtsschneidend / right hand cut

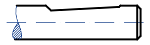
☐ 


Sackloch/Blind hole



Form HA
☐ 

Form HB
☐ 

Form HE
☐ 

d_1 = ______ Tol. = ______ ∢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
Coating: ______ ☐ without

Stückzahl: ☐ Anfrage ☐ Bestellung
Quantity: ______ ☐ Enquiry ☐ Order

Bemerkung:
Remarks: ____________________
____

Firma
Company ______
Strasse/Nr.
Street/No. ______

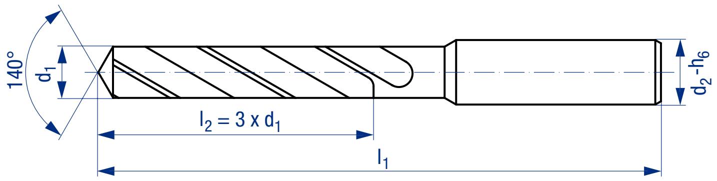
Postleitzahl/Ort
ZIP-Code/City ______
Phone ______

Kontaktperson
Contact ______
Fax ______

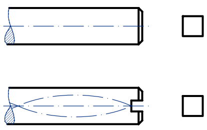
Datum/Unterschrift
Date/Signature ______
E-Mail ______

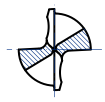
Pilotbohrer und Bohrer Extra-Long
Foret de préperçage et Foret Extra-Long
Punta per preforo e Punta Extra-Long
Pilot drill and drill Extra-Long

Pilotbohrer
Pilot drill

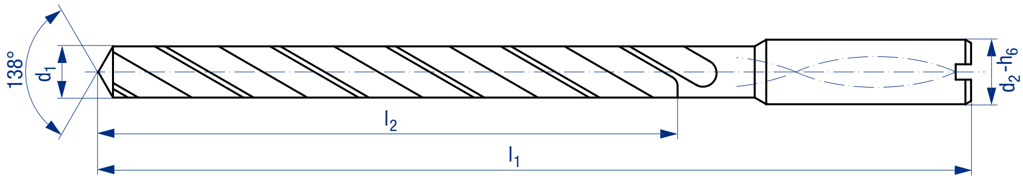


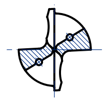
Kühlmittelzuführung:
Coolant supply:





Bohrer Extra-Long
Drill Extra-Long





Pilotbohrer **Pilot drill**	**Bohrer Extra-Long** **Drill Extra-Long**	
d_1 = ________	d_1 = ________	Tol. = ________
d_2 = ________	d_2 = ________	
l_1 = ________	l_1 = ________	
l_2 = $3 \times d_1$	l_2 = ________	

Zu bearbeitender Werkstoff:
Material to be cut: ______________________________

Stückzahl:
Quantity: ________________ ☐ Anfrage ☐ Enquiry ☐ Bestellung ☐ 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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Application de la technologie
Applicazione della tecnologia
Application technology

Formeln 158
Formules
Formule
Formulas

Schnittdaten 159
Données de coupe
Parametri di lavoro
Cutting data

Werkstoffgruppen 187
Groupe des matériaux
Gruppi di materiali
Workpiece materials

Anwendungen 189
Applications
Applicazioni
Applications

Bearbeitungsverfahren allgemein 190
Procédures d'usinage générales
Metodo di lavorazione generalmente
General machining process

Bearbeitungsverfahren Mirkobohren 193
Procédé d'usinage pour micro perçage
Procedura d'usinaggio per micro foratura
Machining process for micro drilling

Bearbeitungsverfahren Hochleistungsbohren 196
Procédé d'usinage à grand rendement
Procedura d'usinaggio per foratura ad alto rendimento
Machining process for high performance drilling

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 / tagliente
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			

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Schnittdaten
Données de coupe
Parametri di lavoro
Cutting data

56005

Mat.		ø 0.10–0.30	ø 0.35–0.80	ø 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.		ø 0.03–0.10	ø 0.11–0.50	ø 0.51–1.00	ø 1.01–2.00	ø 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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Schnittdaten
Données de coupe
Parametri di lavoro
Cutting data

Art. 56036

Mat.		ø 0.40–0.95	ø 1.00–1.95	ø 2.00–02.95	ø 3.00–3.95	ø 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	0.036–0.0.50	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.		ø 0.10–0.30	ø 0.35–0.50	ø 0.55–0.80	ø 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.		ø 0.05–0.30	ø 0.31–0.50	ø 0.51–0.80	ø 0.81–1.20	ø 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.		ø 0.03–0.30	ø 0.31–0.50	ø 0.51–1.00	ø 1.01–2.00	ø 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					

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Questi valori sono valori raccomandati che devono essere adattati secondo le condizioni della macchina, del serraggio, del lubrificante etc.
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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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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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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
P1	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
P2	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
P3	Vc				
	f				
M1	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
M2	Vc				
	f				
K1	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
K2	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
N1	Vc				
	f				
N2	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
N3	Vc	20–40	30–70	60–100	60–100
	f				
N4	Vc				
	vf				
N5	Vc				
	f				
N6	Vc	20–40	30–70	60–100	60–100
	f				
N7	Vc				
	f				
N8	Vc				
	f				
S1	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
S2	Vc				
	f				
H1	Vc				
	f				
H2	Vc				
	f				
H3	Vc				
	f				
O1	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
O2	Vc				
	f				
O3	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
P1	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
P2	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
P3	Vc				
	f				
M1	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
M2	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
K1	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
K2	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
N1	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
N2	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
N3	Vc				
	f				
N4	Vc				
	f				
N5	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
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. 11654

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

Art. 50720

Mat.		ø 0.20–0.50	ø 0.55–0.80	ø 0.85–1.20	ø 1.25–1.50
P1	V_c	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	V_c	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	V_c	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	V_c	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	V_c	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	V_c	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	V_c	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	V_c	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	V_c	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	V_c	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	V_c	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	V_c	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	V_c	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	V_c				
	f				
N8	V_c				
	f				
S1	V_c	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	V_c				
	f				
H1	V_c				
	f				
H2	V_c				
	f				
H3	V_c				
	f				
O1	V_c				
	f				
O2	V_c				
	f				
O3	V_c				
	f				

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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	V_c	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	V_c	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	V_c	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	V_c	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	V_c	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	V_c	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	V_c	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	V_c	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	V_c	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	V_c	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	V_c	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	V_c	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	V_c	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	V_c				
	f				
N8	V_c				
	f				
S1	V_c	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	V_c				
	f				
H1	V_c				
	f				
H2	V_c				
	f				
H3	V_c				
	f				
O1	V_c				
	f				
O2	V_c				
	f				
O3	V_c				
	f				

Art. 70030–70090/70130–70190

Mat.			
P1	V_c	180–280	
	f_z	80–180	mm/min
P2	V_c	180–280	
	f_z	70–160	mm/min
P3	V_c	180–280	
	f_z	70–150	mm/min
M1	V_c	180–280	
	f_z	70–150	mm/min
M2	V_c	180–280	
	f_z	70–150	mm/min
K1	V_c	180–280	
	f_z	80–180	mm/min
K2	V_c	180–280	
	f_z	70–160	mm/min
N1	V_c	180–280	
	f_z	60–140	mm/min
N2	V_c	180–280	
	f_z	80–180	mm/min
N3	V_c	180–280	
	f_z	70–160	mm/min
N4	V_c	180–280	
	f_z	60–120	mm/min
N5	V_c	180–280	
	f_z	80–200	mm/min
N6	V_c	180–280	
	f_z	60–150	mm/min
N7	V_c	180–280	
	f_z	80–200	mm/min
N8	V_c	180–280	
	f_z	80–200	mm/min
S1	V_c	180–280	
	f_z	50–120	mm/min
S2	V_c		
	f_z		
H1	V_c		
	f_z		
H2	V_c		
	f_z		
H3	V_c		
	f_z		
O1	V_c	180–280	
	f_z	80–200	mm/min
O2	V_c		
	f_z		
O3	V_c		
	f_z		

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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_e	a_p
P1	V_c	60–80	60–80	60–80		
	f_z	0.001–0.005	0.004–0.020	0.018–0.040	1×d1	0.5×d1
P2	V_c	50–70	50–70	50–70		
	f_z	0.001–0.005	0.004–0.020	0.018–0.040	1×d1	0.3×d1
P3	V_c	40–60	40–60	40–60		
	f_z	0.001–0.004	0.003–0.20	0.015–0.035	1×d1	0.2×d1
M1	V_c	30–50	30–50	30–50		
	f_z	0.001–0.004	0.003–0.020	0.015–0.035	1×d1	0.4×d1
M2	V_c	25–40	25–40	25–40		
	f_z	0.001–0.004	0.003–0.016	0.014–0.028	1×d1	0.25×d1
K1	V_c	40–70	40–70	40–70		
	f_z	0.001–0.005	0.004–0.020	0.018–0.040	1×d1	1×d1
K2	V_c	30–60	30–60	30–60		
	f_z	0.001–0.004	0.003–0.020	0.015–0.035	1×d1	0.4×d1
N1	V_c	70–100	70–100	70–100		
	f_z	0.001–0.004	0.003–0.020	0.015–0.035	1×d1	1×d1
N2	V_c	80–120	80–120	80–120		
	f_z	0.001–0.005	0.004–0.020	0.018–0.040	1×d1	0.9×d1
N3	V_c	60–100	60–100	60–100		
	f_z	0.001–0.005	0.004–0.020	0.018–0.040	1×d1	0.9×d1
N4	V_c					
	f_z					
N5	V_c	40–80	40–80	40–80		
	f_z	0.001–0.005	0.004–0.020	0.018–0.040	1×d1	1×d1
N6	V_c	25–50	25–50	25–50		
	f_z	0.001–0.004	0.003–0.020	0.015–0.035	1×d1	0.5×d1
N7	V_c					
	f_z					
N8	V_c					
	f_z					
S1	V_c	25–50	25–50	25–50		
	f_z	0.001–0.003	0.002–0.015	0.012–0.030	1×d1	0.4×d1
S2	V_c					
	f_z					
H1	V_c					
	f_z					
H2	V_c					
	f_z					
H3	V_c					
	f_z					
O1	V_c	80–120	80–120	80–120		
	f_z	0.001–0.006	0.005–0.025	0.020–0.045	1×d1	1×d1
O2	V_c					
	f_z					
O3	V_c					
	f_z					

Art. 42000

Mat.		ø 0.30–0.70	ø 0.70–1.50	ø 1.50–2.50	a_e	a_p
P1	V_c	60–80	60–80	60–80		
	f_z	0.005–0.010	0.008–0.020	0.018–0.040	1 x d1	0.30 x d1
P2	V_c	50–70	50–70	50–70		
	f_z	0.005–0.010	0.008–0.020	0.018–0.040	1 x d1	0.15 x d1
P3	V_c	40–60	40–60	40–60		
	f_z	0.004–0.010	0.006–0.020	0.0015–0.035	1 x d1	0.10 x d1
M1	V_c	30–50	30–50	30–50		
	f_z	0.004–0.010	0.006–0.020	0.015–0.035	1 x d1	0.10 x d1
M2	V_c	25–40	25–40	25–40		
	f_z	0.004–0.008	0.005–0.016	0.014–0.028	1 x d1	0.10 x d1
K1	V_c	40–70	40–70	40–70		
	f_z	0.005–0.010	0.008–0.020	0.018–0.040	1 x d1	0.40 x d1
K2	V_c	30–60	30–60	30–60		
	f_z	0.004–0.010	0.006–0.020	0.015–0.035	1 x d1	0.20 x d1
N1	V_c	70–100	70–100	70–100		
	f_z	0.004–0.01	0.006–0.020	0.015–0035	1 x d1	0.40 x d1
N2	V_c	80–120	80–120	80–120		
	f_z	0.005–0.010	0.008–0.020	0.018–0.040	1 x d1	0.25 x d1
N3	V_c	60–100	60–100	60–100		
	f_z	0.005–0.010	0.008–0.020	0.018–0.040	1 x d1	0.25 x d1
N4	V_c					
	f_z					
N5	V_c	40–80	40–80	40–80		
	f_z	0.005–0.010	0.008–0.020	0.018–0.040	1 x d1	0.40 x d1
N6	V_c	25–50	25–50	25–50		
	f_z	0.004–0.010	0.006–0.020	0.015–0.035	1 x d1	0.20 x d1
N7	V_c					
	f_z					
N8	V_c					
	f_z					
S1	V_c	25–50	25–50	25–50		
	f_z	0.003–0.008	0.006–0.015	0.012–0.030	1 x d1	0.20 x d1
S2	V_c					
	f_z					
H1	V_c					
	f_z					
H2	V_c					
	f_z					
H3	V_c					
	f_z					
O1	V_c	80–120	80–120	80–120		
	f_z	0.006–0.012	0.010–0.025	0.020–0.045	1 x d1	0.20 x d1
O2	V_c					
	f_z					
O3	V_c					
	f_z					

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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_e	a_p
P1	V_c	60–80	60–80	60–80		
	f_z	0.005–0.010	0.008–0.020	0.018–0.040	1 × d1	0.30 × d1
P2	V_c	50–70	50–70	50–70		
	f_z	0.005–0.010	0.008–0.020	0.018–0.040	1 × d1	0.15 × d1
P3	V_c	40–60	40–60	40–60		
	f_z	0.004–0.010	0.006–0.020	0.0015–0.035	1 × d1	0.10 × d1
M1	V_c	30–50	30–50	30–50		
	f_z	0.004–0.010	0.006–0.020	0.015–0.035	1 × d1	0.10 × d1
M2	V_c	25–40	25–40	25–40		
	f_z	0.004–0.008	0.005–0.016	0.014–0.028	1 × d1	0.10 × d1
K1	V_c	40–70	40–70	40–70		
	f_z	0.005–0.010	0.008–0.020	0.018–0.040	1 × d1	0.40 × d1
K2	V_c	30–60	30–60	30–60		
	f_z	0.004–0.010	0.006–0.020	0.015–0.035	1 × d1	0.20 × d1
N1	V_c	70–100	70–100	70–100		
	f_z	0.004–0.01	0.006–0.020	0.015–0035	1 × d1	0.40 × d1
N2	V_c	80–120	80–120	80–120		
	f_z	0.005–0.010	0.008–0.020	0.018–0.040	1 × d1	0.25 × d1
N3	V_c	60–100	60–100	60–100		
	f_z	0.005–0.010	0.008–0.020	0.018–0.040	1 × d1	0.25 × d1
N4	V_c					
	f_z					
N5	V_c	40–80	40–80	40–80		
	f_z	0.005–0.010	0.008–0.020	0.018–0.040	1 × d1	0.40 × d1
N6	V_c	25–50	25–50	25–50		
	f_z	0.004–0.010	0.006–0.020	0.015–0.035	1 × d1	0.20 × d1
N7	V_c					
	f_z					
N8	V_c					
	f_z					
S1	V_c	25–50	25–50	25–50		
	f_z	0.003–0.008	0.006–0.015	0.012–0.030	1 × d1	0.20 × d1
S2	V_c					
	f_z					
H1	V_c					
	f_z					
H2	V_c					
	f_z					
H3	V_c					
	f_z					
O1	V_c	80–120	80–120	80–120		
	f_z	0.006–0.012	0.010–0.025	0.020–0.045	1 × d1	0.20 × d1
O2	V_c					
	f_z					
O3	V_c					
	f_z					

Art. 73130

Mat.		ø 0.30–0.70	ø 0.70–1.50	ø 1.50–2.90	a_e	a_p
P1	V_c	60–80	60–80	60–80		
	f_z	0.005–0.010	0.008–0.020	0.018–0.040	1 x d1	0.80 x d1
P2	V_c	50–70	50–70	50–70		
	f_z	0.005–0.010	0.008–0.020	0.018–0.040	1 x d1	0.60 x d1
P3	V_c	40–60	40–60	40–60		
	f_z	0.004–0.010	0.006–0.020	0.0015–0.035	1 x d1	0.50 x d1
M1	V_c	30–50	30–50	30–50		
	f_z	0.004–0.010	0.006–0.020	0.015–0.035	1 x d1	0.50 x d1
M2	V_c	25–40	25–40	25–40		
	f_z	0.004–0.008	0.005–0.016	0.014–0.028	1 x d1	0.40 x d1
K1	V_c	40–70	40–70	40–70		
	f_z	0.005–0.010	0.008–0.020	0.018–0.040	1 x d1	0.80 x d1
K2	V_c	30–60	30–60	30–60		
	f_z	0.004–0.010	0.006–0.020	0.015–0.035	1 x d1	0.80 x d1
N1	V_c	70–100	70–100	70–100		
	f_z	0.004–0.01	0.006–0.020	0.015–0035	1 x d1	1.00 x d1
N2	V_c	80–120	80–120	80–120		
	f_z	0.005–0.010	0.008–0.020	0.018–0.040	1 x d1	1.00 x d1
N3	V_c	60–100	60–100	60–100		
	f_z	0.005–0.010	0.008–0.020	0.018–0.040	1 x d1	1.30 x d1
N4	V_c					
	f_z					
N5	V_c	40–80	40–80	40–80		
	f_z	0.005–0.010	0.008–0.020	0.018–0.040	1 x d1	1.00 x d1
N6	V_c	25–50	25–50	25–50		
	f_z	0.004–0.010	0.006–0.020	0.015–0.035	1 x d1	0.80 x d1
N7	V_c					
	f_z					
N8	V_c					
	f_z					
S1	V_c	25–50	25–50	25–50		
	f_z	0.003–0.008	0.006–0.015	0.012–0.030	1 x d1	0.80 x d1
S2	V_c					
	f_z					
H1	V_c					
	f_z					
H2	V_c					
	f_z					
H3	V_c					
	f_z					
O1	V_c					
	f_z					
O2	V_c					
	f_z					
O3	V_c					
	f_z					

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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_e	a_p
P1	v_c	60–80	60–80	60–80		
	f_z	0.005–0.010	0.008–0.020	0.018–0.040	1×d1	0.9×d1
P2	v_c	50–70	50–70	50–70		
	f_z	0.005–0.010	0.008–0.020	0.018–0.040	1×d1	0.8×d1
P3	v_c	40–60	40–60	40–60		
	f_z	0.004–0.010	0.006–0.020	0.0015–0.035	1×d1	0.7×d1
M1	v_c	30–50	30–50	30–50		
	f_z	0.004–0.010	0.006–0.020	0.015–0.035	1×d1	0.6×d1
M2	v_c	25–40	25–40	25–40		
	f_z	0.004–0.008	0.005–0.016	0.014–0.028	1×d1	0.5×d1
K1	v_c	40–70	40–70	40–70		
	f_z	0.005–0.010	0.008–0.020	0.018–0.040	1×d1	1.0×d1
K2	v_c	30–60	30–60	30–60		
	f_z	0.004–0.010	0.006–0.020	0.015–0.035	1×d1	0.9×d1
N1	v_c	70–100	70–100	70–100		
	f_z	0.004–0.01	0.006–0.020	0.015–0035	1×d1	0.9×d1
N2	v_c	80–120	80–120	80–120		
	f_z	0.005–0.010	0.008–0.020	0.018–0.040	1×d1	0.9×d1
N3	v_c	60–100	60–100	60–100		
	f_z	0.005–0.010	0.008–0.020	0.018–0.040	1×d1	0.9×d1
N4	v_c					
	f_z					
N5	v_c	40–80	40–80	40–80		
	f_z	0.005–0.010	0.008–0.020	0.018–0.040	1×d1	1×d1
N6	v_c	25–50	25–50	25–50		
	f_z	0.004–0.010	0.006–0.020	0.015–0.035	1×d1	0.8×d1
N7	v_c					
	f_z					
N8	v_c					
	f_z					
S1	v_c	25–50	25–50	25–50		
	f_z	0.003–0.008	0.006–0.015	0.012–0.030	1×d1	0.7×d1
S2	v_c					
	f_z					
H1	v_c					
	f_z					
H2	v_c					
	f_z					
H3	v_c					
	f_z					
O1	v_c					
	f_z					
O2	v_c					
	f_z					
O3	v_c					
	f_z					

Art. 73800

Mat.		ø 0.50–1.00	ø 1.00–2.00	ø 2.00–2.50	a_e	a_p
P1	v_c	60–80	60–80	60–80		
	f_z	0.003–0.008	0.008–0.016	0.016–0.030	1 × d1	0.30 × d1
P2	v_c	50–70	50–70	50–70		
	f_z	0.003–0.008	0.008–0.016	0.016–0.030	1 × d1	0.15 × d1
P3	v_c	40–60	40–60	40–60		
	f_z	0.002–0.007	0.007–0.014	0.014–0.026	1 × d1	0.10 × d1
M1	v_c	30–50	30–50	30–50		
	f_z	0.002–0.007	0.007–0.014	0.014–0.026	1 × d1	0.20 × d1
M2	v_c	25–40	25–40	25–40		
	f_z	0.002–0.006	0.006–0.012	0.012–0.022	1 × d1	0.10 × d1
K1	v_c	40–70	40–70	40–70		
	f_z	0.003–0.008	0.008–0.016	0.016–0.030	1 × d1	0.40 × d1
K2	v_c	30–60	30–60	30–60		
	f_z	0.002–0.007	0.007–0.014	0.014–0.026	1 × d1	0.20 × d1
N1	v_c	70–100	70–100	70–100		
	f_z	0.002–0.007	0.007–0.014	0.014–0.026	1 × d1	0.40 × d1
N2	v_c	80–120	80–120	80–120		
	f_z	0.003–0.008	0.008–0.016	0.016–0.030	1 × d1	0.25 × d1
N3	v_c	60–100	60–100	60–100		
	f_z	0.003–0.008	0.008–0.016	0.016–0.030	1 × d1	0.25 × d1
N4	v_c					
	f_z					
N5	v_c	40–80	40–80	40–80		
	f_z	0.003–0.008	0.008–0.016	0.016–0.030	1 × d1	0.40 × d1
N6	v_c	25–50	25–50	25–50		
	f_z	0.002–0.007	0.007–0.014	0.014–0.026	1 × d1	0.20 × d1
N7	v_c					
	f_z					
N8	v_c					
	f_z					
S1	v_c	25–50	25–50	25–50		
	f_z	0.002–0.006	0.006–0.012	0.012–0.020	1 × d1	0.20 × d1
S2	v_c					
	f_z					
H1	v_c					
	f_z					
H2	v_c					
	f_z					
H3	v_c					
	f_z					
O1	v_c					
	f_z					
O2	v_c					
	f_z					
O3	v_c					
	f_z					

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_e	a_p
P1	v_c	60–80	60–80	60–80		
	f_z	0.003–0.008	0.008–0.016	0.016–0.030	1 × d1	0.45 × d1
P2	v_c	50–70	50–70	50–70		
	f_z	0.003–0.008	0.008–0.016	0.016–0.030	1 × d1	0.25 × d1
P3	v_c	40–60	40–60	40–60		
	f_z	0.002–0.007	0.007–0.014	0.014–0.026	1 × d1	0.15 × d1
M1	v_c	30–50	30–50	30–50		
	f_z	0.002–0.007	0.007–0.014	0.014–0.026	1 × d1	0.35 × d1
M2	v_c	25–40	25–40	25–40		
	f_z	0.002–0.006	0.006–0.012	0.012–0.022	1 × d1	0.2 × d1
K1	v_c	40–70	40–70	40–70		
	f_z	0.003–0.008	0.008–0.016	0.016–0.030	1 × d1	0.8 × d1
K2	v_c	30–60	30–60	30–60		
	f_z	0.002–0.007	0.007–0.014	0.014–0.026	1 × d1	0.35 × d1
N1	v_c	70–100	70–100	70–100		
	f_z	0.002–0.007	0.007–0.014	0.014–0.026	1 × d1	0.8 × d1
N2	v_c	80–120	80–120	80–120		
	f_z	0.003–0.008	0.008–0.016	0.016–0.030	1 × d1	0.7 × d1
N3	v_c	60–100	60–100	60–100		
	f_z	0.003–0.008	0.008–0.016	0.016–0.030	1 × d1	0.7 × d1
N4	v_c					
	f_z					
N5	v_c	40–80	40–80	40–80		
	f_z	0.003–0.008	0.008–0.016	0.016–0.030	1 × d1	0.8 × d1
N6	v_c	25–50	25–50	25–50		
	f_z	0.002–0.007	0.007–0.014	0.014–0.026	1 × d1	0.45 × d1
N7	v_c					
	f_z					
N8	v_c					
	f_z					
S1	v_c	25–50	25–50	25–50		
	f_z	0.002–0.006	0.006–0.012	0.012–0.020	1 × d1	0.3 × d1
S2	v_c					
	f_z					
H1	v_c					
	f_z					
H2	v_c					
	f_z					
H3	v_c					
	f_z					
O1	v_c					
	f_z					
O2	v_c					
	f_z					
O3	v_c					
	f_z					

Art. 43105

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

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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_e	a_p
P1	v_c	80–120	80–120	80–120		
	f_z	0.001–0.004	0.002–0.012	0.004–0.025	1×d1	0.6×d1
P2	v_c	70–100	70–100	70–100		
	f_z	0.001–0.003	0.002–0.008	0.003–0.020	1×d1	0.4×d1
P3	v_c	40–70	40–70	40–70		
	f_z	0.001–0.003	0.001–0.010	0.002–0.015	1×d1	0.3×d1
M1	v_c	60–90	60–90	60–90		
	f_z	0.001–0.003	0.002–0.008	0.002–0.012	1×d1	0.3×d1
M2	v_c	30–60	30–60	30–60		
	f_z	0.001–0.003	0.002–0.008	0.002–0.009	1×d1	0.2×d1
K1	v_c	150–200	150–200	150–200		
	f_z	0.001–0.004	0.001–0.010	0.002–0.023	1×d1	0.6×d1
K2	v_c	60–100	60–100	60–100		
	f_z	0.001–0.005	0.002–0.010	0.003–0.019	1×d1	0.6×d1
N1	v_c	150–300	150–300	150–300		
	f_z	0.001–0.003	0.001–0.010	0.002–0.020	1×d1	0.8×d1
N2	v_c	150–300	150–300	150–300		
	f_z	0.001–0.005	0.002–0.011	0.003–0.024	1×d1	0.8×d1
N3	v_c	130–250	130–250	130–250		
	f_z	0.001–0.012	0.002–0.025	0.003–0.050	1×d1	1.5×d1
N4	v_c	60–100	60–100	60–100		
	f_z	0.001–0.007	0.001–0.016	0.002–0.032	1×d1	0.6×d1
N5	v_c	100–250	100–250	100–250		
	f_z	0.001–0.008	0.002–0.018	0.003–0.030	1×d1	0.8×d1
N6	v_c	80–150	80–150	80–150		
	f_z	0.001–0.006	0.001–0.015	0.002–0.030	1×d1	0.6×d1
N7	v_c	80–130	80–130	80–130		
	f_z	0.001–0.008	0.001–0.015	0.002–0.035	1×d1	0.8×d1
N8	v_c	80–130	80–130	80–130		
	f_z	0.001–0.008	0.001–0.016	0.003–0.040	1×d1	0.8×d1
S1	v_c	40–70	40–70	40–70		
	f_z	0.001–0.003	0.002–0.008	0.003–0.018	1×d1	0.6×d1
S2	v_c	20–40	20–40	20–40		
	f_z	0.001–0.002	0.001–0.003	0.002–0.005	1×d1	0.1×d1
H1	v_c	20–45	20–45	20–45		
	f_z	0.001–0.002	0.001–0.003	0.002–0.006	1×d1	0.1×d1
H2	v_c					
	f_z					
H3	v_c					
	f_z					
O1	v_c	100–150	100–150	100–150		
	f_z	0.002–0.020	0.005–0.050	0.008–0.090	1×d1	1.5×d1
O2	v_c					
	f_z					
O3	v_c					
	f_z					

Art. 74720

Mat.		ø 0.30–0.70	ø 0.70–1.50	ø 1.50–2.90	a_e	a_p
P1	v_c	60–80	60–80	60–80		
	f_z	0.003–0.008	0.008–0.016	0.016–0.030	1 x d1	0.45 x d1
P2	v_c	50–70	50–70	50–70		
	f_z	0.003–0.008	0.008–0.016	0.016–0.030	1 x d1	0.25 x d1
P3	v_c	40–60	40–60	40–60		
	f_z	0.002–0.007	0.007–0.014	0.014–0.026	1 x d1	0.20 x d1
M1	v_c	30–50	30–50	30–50		
	f_z	0.002–0.007	0.007–0.014	0.014–0.026	1 x d1	0.15 x d1
M2	v_c	25–40	25–40	25–40		
	f_z	0.002–0.006	0.006–0.012	0.012–0.022	1 x d1	0.20 x d1
K1	v_c	40–70	40–70	40–70		
	f_z	0.003–0.008	0.008–0.016	0.016–0.030	1 x d1	0.70 x d1
K2	v_c	30–60	30–60	30–60		
	f_z	0.002–0.007	0.007–0.014	0.014–0.026	1 x d1	0.35 x d1
N1	v_c	70–100	70–100	70–100		
	f_z	0.002–0.007	0.007–0.014	0.014–0.026	1 x d1	0.80 x d1
N2	v_c	80–120	80–120	80–120		
	f_z	0.003–0.008	0.008–0.016	0.016–0.030	1 x d1	0.70 x d1
N3	v_c	60–100	60–100	60–100		
	f_z	0.003–0.008	0.008–0.016	0.016–0.030	1 x d1	0.70 x d1
N4	v_c					
	f_z					
N5	v_c	40–80	40–80	40–80		
	f_z	0.003–0.008	0.008–0.016	0.016–0.030	1 x d1	0.80 x d1
N6	v_c	25–50	25–50	25–50		
	f_z	0.002–0.007	0.007–0.014	0.014–0.026	1 x d1	0.45 x d1
N7	v_c					
	f_z					
N8	v_c					
	f_z					
S1	v_c	25–50	25–50	25–50		
	f_z	0.002–0.006	0.006–0.012	0.012–0.020	1 x d1	0.30 x d1
S2	v_c					
	f_z					
H1	v_c					
	f_z					
H2	v_c					
	f_z					
H3	v_c					
	f_z					
O1	v_c					
	f_z					
O2	v_c					
	f_z					
O3	v_c					
	f_z					

Genannte Werte sind Richtwerte, die je nach Maschine, Aufspannung, Kühlschmierstoff usw. noch angepasst werden müssen.
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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_e	a_p
P1	v_c	60–80	60–80	60–80		
	f_z	0.003–0.008	0.008–0.016	0.016–0.030	1 x d1	0.40 x d1
P2	v_c	50–70	50–70	50–70		
	f_z	0.003–0.008	0.008–0.016	0.016–0.030	1 x d1	0.20 x d1
P3	v_c	40–60	40–60	40–60		
	f_z	0.002–0.007	0.007–0.014	0.014–0.026	1 x d1	0.12 x d1
M1	v_c	30–50	30–50	30–50		
	f_z	0.002–0.007	0.007–0.014	0.014–0.026	1 x d1	0.30 x d1
M2	v_c	25–40	25–40	25–40		
	f_z	0.002–0.006	0.006–0.012	0.012–0.022	1 x d1	0.15 x d1
K1	v_c	40–70	40–70	40–70		
	f_z	0.003–0.008	0.008–0.016	0.016–0.030	1 x d1	0.65 x d1
K2	v_c	30–60	30–60	30–60		
	f_z	0.002–0.007	0.007–0.014	0.014–0.026	1 x d1	0.30 x d1
N1	v_c	70–100	70–100	70–100		
	f_z	0.002–0.007	0.007–0.014	0.014–0.026	1 x d1	0.65 x d1
N2	v_c	80–120	80–120	80–120		
	f_z	0.003–0.008	0.008–0.016	0.016–0.030	1 x d1	0.5 x d1
N3	v_c	60–100	60–100	60–100		
	f_z	0.003–0.008	0.008–0.016	0.016–0.030	1 x d1	0.5 x d1
N4	v_c					
	f_z					
N5	v_c	40–80	40–80	40–80		
	f_z	0.003–0.008	0.008–0.016	0.016–0.030	1 x d1	0.65 x d1
N6	v_c	25–50	25–50	25–50		
	f_z	0.002–0.007	0.007–0.014	0.014–0.026	1 x d1	0.40 x d1
N7	v_c					
	f_z					
N8	v_c					
	f_z					
S1	v_c	25–50	25–50	25–50		
	f_z	0.002–0.006	0.006–0.012	0.012–0.020	1 x d1	0.3 x d1
S2	v_c					
	f_z					
H1	v_c					
	f_z					
H2	v_c					
	f_z					
H3	v_c					
	f_z					
O1	v_c					
	f_z					
O2	v_c					
	f_z					
O3	v_c					
	f_z					

Art. 74075/74150/74300

Mat.		ø 0.20–0.70	ø 0.70–1.50	ø 1.50–2.80	a_e	a_p
P1	v_c	60–80	60–80	60–80		
	f_z	0.004–0.010	0.008–0.020	0.018–0.040	1×d1	0.45×d1
P2	v_c	50–70	50–70	50–70		
	f_z	0.004–0.010	0.008–0.020	0.018–0.040	1×d1	0.25×d1
P3	v_c	40–60	40–60	40–60		
	f_z	0.003–0.010	0.006–0.020	0.0015–0.035	1×d1	0.15×d1
M1	v_c	30–50	30–50	30–50		
	f_z	0.003–0.010	0.006–0.020	0.015–0.035	1×d1	0.35×d1
M2	v_c	25–40	25–40	25–40		
	f_z	0.003–0.008	0.005–0.016	0.014–0.028	1×d1	0.2×d1
K1	v_c	40–70	40–70	40–70		
	f_z	0.004–0.010	0.008–0.020	0.018–0.040	1×d1	0.8×d1
K2	v_c	30–60	30–60	30–60		
	f_z	0.003–0.010	0.006–0.020	0.015–0.035	1×d1	0.35×d1
N1	v_c	70–100	70–100	70–100		
	f_z	0.003–0.01	0.006–0.020	0.015–0035	1×d1	0.8×d1
N2	v_c	80–120	80–120	80–120		
	f_z	0.004–0.010	0.008–0.020	0.018–0.040	1×d1	0.7×d1
N3	v_c	60–100	60–100	60–100		
	f_z	0.004–0.010	0.008–0.020	0.018–0.040	1×d1	0.7×d1
N4	v_c					
	f_z					
N5	v_c	40–80	40–80	40–80		
	f_z	0.004–0.010	0.008–0.020	0.018–0.040	1×d1	0.8×d1
N6	v_c	25–50	25–50	25–50		
	f_z	0.004–0.010	0.006–0.020	0.015–0.035	1×d1	0.45×d1
N7	v_c					
	f_z					
N8	v_c					
	f_z					
S1	v_c	25–50	25–50	25–50		
	f_z	0.002–0.008	0.006–0.015	0.012–0.030	1×d1	0.3×d1
S2	v_c					
	f_z					
H1	v_c					
	f_z					
H2	v_c					
	f_z					
H3	v_c					
	f_z					
O1	v_c	80–120	80–120	80–120		
	f_z	0.005–0.012	0.010–0.025	0.020–0.045	1×d1	0.9×d1
O2	v_c					
	f_z					
O3	v_c					
	f_z					

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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	0.090–0.012
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	0.480–0.100	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.		ø 0.30–1.00	ø 1.05–3.00	ø 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.		ø 0.70–2.50	ø 2.60–6.00	ø 6.10–9.00	ø 9.10–11.00	ø 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.		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				
	f				
H2	Vc				
	f				
H3	Vc				
	f				
O1	Vc				
	f				
O2	Vc				
	f				
O3	Vc				
	f				

Art. 52100 / 52200

Mat.		ø 3.00–4.00	ø 4.10–8.00	ø 8.10–12.00	ø 12.10–16.00	ø 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	V_c	90–120	90–120	90–120	90–120	90–120
	f	0.080–0.200	0.180–0.350	0.300–0.400	0350–0.450	0.400–0.600
P2	V_c	80–150	80–150	80–150	80–150	80–150
	f	0.050–0.180	0.160–0.250	0.220–0.350	0.330–0.400	0.380–0.550
P3	V_c					
	f					
M1	V_c					
	f					
M2	V_c					
	f					
K1	V_c	200–250	200–250	200–250	200–250	200–250
	f	0.100–0.250	0.220–0.350	0.330–0.450	0.420–0.550	0.520–0.70
K2	V_c	160–200	160–200	160–200	160–200	160–200
	f	0.080–0.180	0.160–0.250	0.230–0.350	0.330–0.500	0.450–0.550
N1	V_c					
	f					
N2	V_c					
	f					
N3	V_c	250–300	250–300	250–300	250–300	250–300
	f	0.050–0.150	0.130–0.250	0.230–0.350	0.330–0.450	0.430–0.550
N4	V_c					
	f					
N5	V_c	80–120	80–120	80–120	80–120	80–120
	f	0.050–0.120	0.100–0.220	0.200–0.320	0.300–0.400	0.380–0.450
N6	V_c					
	f					
N7	V_c					
	f					
N8	V_c					
	f					
S1	V_c					
	f					
S2	V_c					
	f					
H1	V_c	70–100	70–100	70–100	70–100	70–100
	f	0.050–0.100	0.080–0.180	0.160–0.260	0.240–0.300	0.280–0.350
H2	V_c					
	f					
H3	V_c					
	f					
O1	V_c					
	f					
O2	V_c					
	f					
O3	V_c					
	f					

Art. 50912 / 50916

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

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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	V_c	80–120	80–120	80–120
	f_z	0.050–0.150	0.140–0.250	0.240–0.380
P2	V_c	60–100	60–100	60–100
	f_z	0.050–0.130	0.120–0.230	0.220–0.360
P3	V_c			
	f_z			
M1	V_c			
	f_z			
M2	V_c			
	f_z			
K1	V_c	70–110	70–110	70–110
	f_z	0.050–0.170	0.160–0.280	0.260–0.450
K2	V_c	60–100	60–100	60–100
	f_z	0.050–0.140	0.130–0.250	0.240–0.400
N1	V_c			
	f_z			
N2	V_c	80–140	80–140	80–140
	f_z	0.050–0.150	0.140–0.250	0.240–0.350
N3	V_c	90–150	90–150	90–150
	f_z	0.050–0.170	0.160–0.290	0.280–0.450
N4	V_c			
	f_z			
N5	V_c	50–100	50–100	50–100
	f_z	0.050–0.130	0.120–0.230	0.220–0.360
N6	V_c			
	f_z			
N7	V_c			
	f_z			
N8	V_c			
	f_z			
S1	V_c			
	f_z			
S2	V_c			
	f_z			
H1	V_c			
	f_z			
H2	V_c			
	f_z			
H3	V_c			
	f_z			
O1	V_c			
	f_z			
O2	V_c			
	f_z			
O3	V_c			
	f_z			

Art. 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	V_c	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	V_c	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	V_c	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	V_c	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	V_c	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	V_c	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	V_c	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	V_c	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	V_c	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	V_c	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	V_c	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	V_c	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	V_c	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	V_c				
	f				
N8	V_c				
	f				
S1	V_c	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	V_c	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	V_c	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	V_c				
	f				
H3	V_c				
	f				
O1	V_c	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	V_c				
	f				
O3	V_c				
	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.		ø 2.00–5.00	ø 5.10–8.00	ø 8.10–11.00	ø 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.		ø 1.00–2.00	ø 2.10–5.00	ø 5.10–8.00	ø 8.10–11.00	ø 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_c	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_c	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_c	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_c	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_c	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_c	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_c	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_c					
	f					
N2	V_c	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_c	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_c	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_c	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_c					
	f					
N7	V_c					
	f					
N8	V_c					
	f					
S1	V_c	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_c					
	f					
H1	V_c					
	f					
H2	V_c					
	f					
H3	V_c					
	f					
O1	V_c					
	f					
O2	V_c					
	f					
O3	V_c					
	f					

Art. 40000

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

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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_e	a_p
P1	V_c	60–80	60–80	60–80		
	f_z	0.010–0.020	0.020–0.040	0.040–0.060	1 × d1	1 × d1
P2	V_c	50–70	50–70	50–70		
	f_z	0.010–0.020	0.020–0.040	0.040–0.060	1 × d1	0.6 × d1
P3	V_c	40–60	40–60	40–60		
	f_z	0.008–0.015	0.015–0.035	0.035–0.050	1 × d1	0.5 × d1
M1	V_c	40–60	40–60	40–60		
	f_z	0.008–0.015	0.015–0.035	0.035–0.050	1 × d1	0.5 × d1
M2	V_c					
	f_z					
K1	V_c	60–80	60–80	60–80		
	f_z	0.010–0.020	0.020–0.040	0.040–0.060	1 × d1	1 × d1
K2	V_c	50–70	50–70	50–70		
	f_z	0.010–0.020	0.020–0.040	0.040–0.060	1 × d1	0.6 × d1
N1	V_c					
	f_z					
N2	V_c					
	f_z					
N3	V_c					
	f_z					
N4	V_c					
	f_z					
N5	V_c					
	f_z					
N6	V_c					
	f_z					
N7	V_c					
	f_z					
N8	V_c					
	f_z					
S1	V_c					
	f_z					
S2	V_c					
	f_z					
H1	V_c					
	f_z					
H2	V_c					
	f_z					
H3	V_c					
	f_z					
O1	V_c					
	f_z					
O2	V_c					
	f_z					
O3	V_c					
	f_z					

Art. 40002

Mat.		ø 2.00–5.00	ø 6.00–12.00	a_e	a_p
P1	V_c	60–80	60–80		
	f_z	0.015–0.060	0.030–0.110	1×d1	1×d1
P2	V_c	50–70	50–70		
	f_z	0.015–0.060	0.030–0.110	1×d1	0.6×d1
P3	V_c	40–60	40–60		
	f_z	0.010–0.050	0.020–0.100	1×d1	0.5×d1
M1	V_c	40–60	40–60		
	f_z	0.010–0.050	0.020–0.100	1×d1	0.5×d1
M2	V_c				
	f_z				
K1	V_c	60–80	60–80		
	f_z	0.015–0.060	0.030–0.110	1×d1	1×d1
K2	V_c	50–70	60–80		
	f_z	0.015–0.060	0.030–0.100	1×d1	0.6×d1
N1	V_c				
	f_z				
N2	V_c				
	f_z				
N3	V_c				
	f_z				
N4	V_c				
	f_z				
N5	V_c				
	f_z				
N6	V_c				
	f_z				
N7	V_c				
	f_z				
N8	V_c				
	f_z				
S1	V_c				
	f_z				
S2	V_c				
	f_z				
H1	V_c				
	f_z				
H2	V_c				
	f_z				
H3	V_c				
	f_z				
O1	V_c				
	f_z				
O2	V_c				
	f_z				
O3	V_c				
	f_z				

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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_e	a_p
P1	v_c	60–80	60–80		
	f_z	0.020–0.060	0.030–0.110	1 × d1	0.5 × d1
P2	v_c	50–70	50–70		
	f_z	0.015–0.060	0.030–0.110	1 × d1	0.5 × d1
P3	v_c	40–60	40–60		
	f_z	0.010–0.050	0.020–0.100	1 × d1	0.4 × d1
M1	v_c	40–60	40–60		
	f_z	0.010–0.050	0.020–0.100	1 × d1	0.4 × d1
M2	v_c				
	f_z				
K1	v_c	60–80	60–80		
	f_z	0.020–0.060	0.030–0.110	1 × d1	0.80 × d1
K2	v_c	50–70	50–70		
	f_z	0.150–0.050	0.030–0.100	1 × d1	0.70 × d1
N1	v_c				
	f_z				
N2	v_c				
	f_z				
N3	v_c				
	f_z				
N4	v_c				
	f_z				
N5	v_c				
	f_z				
N6	v_c				
	f_z				
N7	v_c				
	f_z				
N8	v_c				
	f_z				
S1	v_c				
	f_z				
S2	v_c				
	f_z				
H1	v_c				
	f_z				
H2	v_c				
	f_z				
H3	v_c				
	f_z				
O1	v_c				
	f_z				
O2	v_c				
	f_z				
O3	v_c				
	f_z				

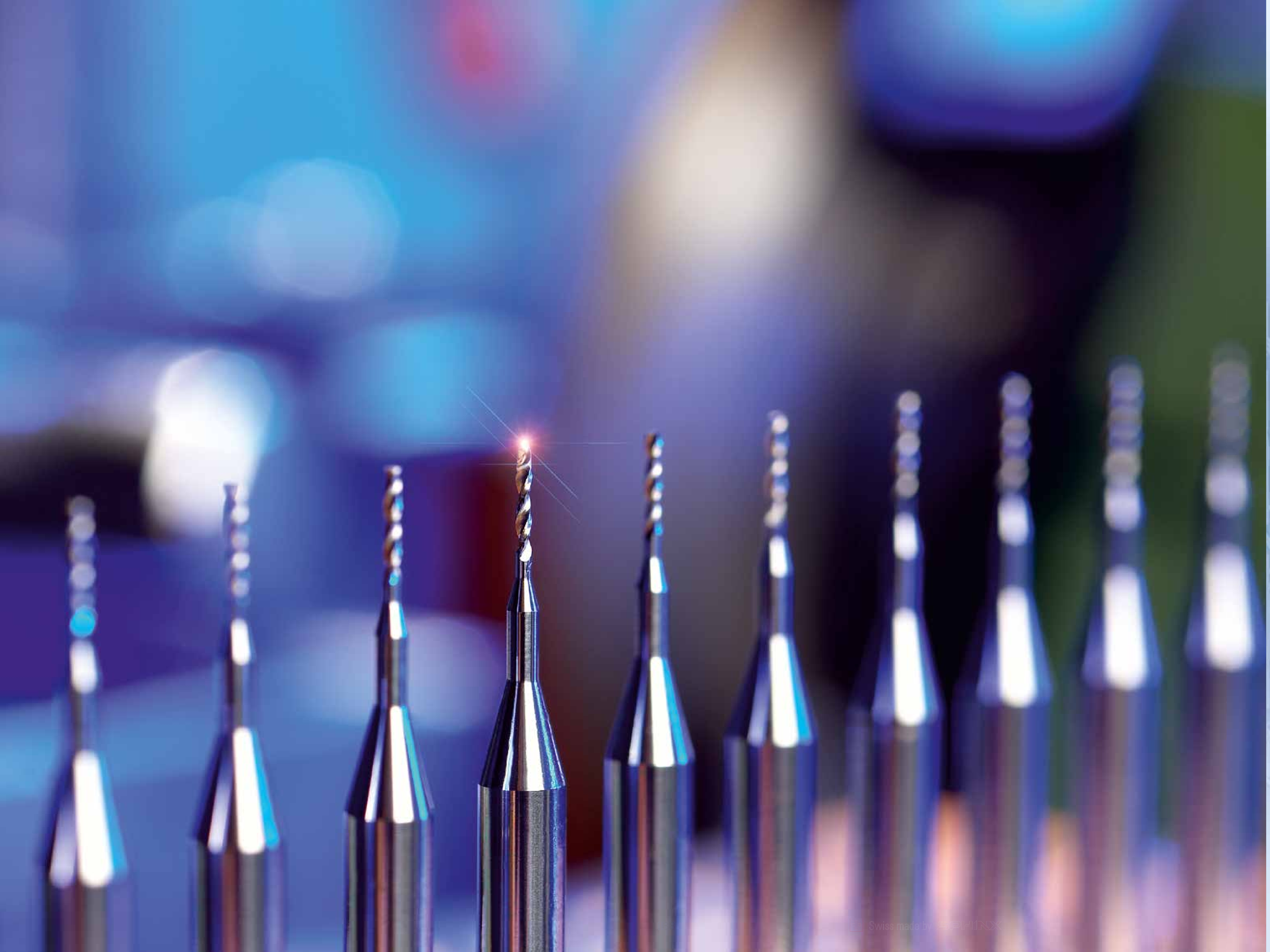
Art. 47000 / 47500

Mat.		ø 2.00–5.00	ø 6.00–12.00	ø 13.00–20.00	a_e	a_p
P1	v_c					
	f_z					
P2	v_c					
	f_z					
P3	v_c					
	f_z					
M1	v_c					
	f_z					
M2	v_c					
	f_z					
K1	v_c					
	f_z					
K2	v_c					
	f_z					
N1	v_c	300–600	300–600	300–600		
	f_z	0.030–0.050	0.050–0.120	0.120–0.200	1 × d1	0.5 × d1
N2	v_c	300–1000	300–1000	300–1000		
	f_z	0.030–0.060	0.060–0.140	0.140–0.250	1 × d1	0.5 × d1
N3	v_c	300–1000	300–1000	300–1000		
	f_z	0.030–0.060	0.060–0.140	0.140–0.250	1 × d1	0.5 × d1
N4	v_c					
	f_z					
N5	v_c					
	f_z					
N6	v_c					
	f_z					
N7	v_c					
	f_z					
N8	v_c					
	f_z					
S1	v_c					
	f_z					
S2	v_c					
	f_z					
H1	v_c					
	f_z					
H2	v_c					
	f_z					
H3	v_c					
	f_z					
O1	v_c	300–600	300–600	300–600		
	f_z	0.030–0.050	0.050–0.120	0.120–0.200	1 × d1	0.5 × d1
O2	v_c					
	f_z					
O3	v_c					
	f_z					

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.

Werkstoffgruppen
Groupe des matériaux
Gruppi di materiali
Workpiece materials

		Festigkeit (N/mm²), Härte Force (N/mm²), dureté	Resistenza (N/mm²), durezza Strength (N/mm²), hardness	Beispiel Esempio Exemple Example			Material Matière	Materiale Material
P	P1	bis/jusqu'à 700 N/mm²	sino/up to 700 N/mm²	1.0037, 1.0050, 1.0060, 1.0718,	P	P1	Unlegierte Stähle, Stahlguss Aciers non-alliés	Acciai non legati Unalloyed steels, steel casting
P	P2	bis/jusqu'à 1000 N/mm²	sino/up to 1000 N/mm²	1.1191, 1.7225, 1.7131, 1.8509, 1.4104, 1.4021, 1.3505, 1.2067	P	P2	Legierte Stähle Aciers alliés	Acciai legati Alloyed steels
P	P3	bis/jusqu'à 1400 N/mm²	sino/up to 1400 N/mm²	1.6582, 1.8519, 1.2344, 1.2721, 1.3243	P	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
M	M2			1.4435, 1.4571, 1.4301, 1.4404, 1.4301, 1.4306, 1.4401	M	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
K	K2			0.8035, 0.8040, 0.8135, 0.8155, 0.8165, 0.8170	K	K2	Gusseisen mit Kugelgraphit ferritisch, perrlitisch Fonte sphéroïdale	Ghisa sferoidale ferritica, perlitica Spheroidal/ductile cast iron
N	N1	bis/jusqu'à 350 N/mm²	sino/up to 350 N/mm²	3.0255, 3.3315, 3.4345	N	N1	Alu-Knetlegierungen Aluminium malléable	Alluminio estruso Malleable alu alloy
N	N2	bis/jusqu'à 300 N/mm²	sino/up to 300 N/mm²	3.1371, 3.2371, 3.2373, 3.2581	N	N2	Alu-Gusslegierung <10% Si Aluminium <10% Si	Leghe d'alluminio per getto <10% Si Cast alu alloy <10% Si
N	N3	bis/jusqu'à 450 N/mm²	sino/up to 450 N/mm²	3.2581, 3.2582, 3.2583	N	N3	Alu-Gusslegierung >10% Si Aluminium >10% Si	Leghe d'alluminio per getto >10% Si Cast alu alloy >10% Si
N	N4			3.5101, 3.5103, 3.5106, 3.5161, 3.5200, 3.5312, 3.5470, 3.5612, 3.5632, 3.5812	N	N4	Magnesiumlegierungen Alliages au magnésium	Leghe di magnesio Magnesium, magnesium alloys
N	N5			2.0240, 2.0265, 2.0321, 2.0592, 2.0596, 2.0966, 2.0975, 2.1050, 2.1052, 2.1293	N	N5	Kupfer und Kupferlegierungen kurzspanend Alliages CuNi-Laiton	Rame e leghe di rame, trucioli corti Copper nickel alloys, brass
N	N6			2.1090, 2.1096, 2.1176, 2.1182, 2.1188	N	N6	Kupfer und Kupferlegierungen langspanend Alliages CuBe-Cuivre	Rame e leghe di rame, trucioli lunghi Copper, forging copper alloys
N	N7				N	N7	Silber Argent	Argento Silver
N	N8				N	N8	Gold Or	Oro Gold
S	S1	über/au-dessus 450 N/mm²	oltre/over 450 N/mm²	3.7025, 3.7124, 3.7164, 3.7165	S	S1	Titan, Titanlegierungen Titane	Titanio, leghe di titanio Titanium, titanium alloys
S	S2			2.4360, 2.4375, 2.4630, 2.4642, 2.4668, 2.4669, 2.4856, 2.4858	S	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
H	H2				H	H2	Gehärtete Stähle, 55–60 HRC Ac. trempé 55–60 HRC	Acciai temperati, 55–60 HRC Hardened steels 55–60 HRC
H	H3				H	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
O	O2			EP, Epoxid, Epoxy, Bakelite, Pertinax	O	O2	Kunststoffe Faserverstärkt Fibres synthétiques	Plastiche rinforzate con fibre Fiber-reinforced plastics
O	O3				O	O3	Graphit Graphite	Grafite Graphite



Anwendungen
Application
Applicazioni
Applications

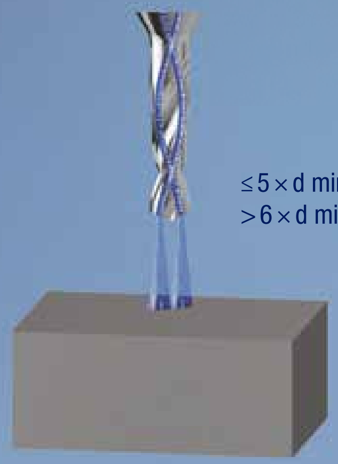
Sackloch Trou borgne	Foro cieco Blind hole
Sackloch mit Senkung Trou borgne avec chanfrein	Foro cieco con smusso Blind hole with countersink
Stufenbohrung Trou étagé	Foro a gradino Step hole
Gravierstichel flach Graveur avec plat	Bulino piatto Graver for groove, flat bottom
Gravierstichel rund Graveur 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	Superfice a raggio Round surface
In Schräge Surface inclinée	Superfice 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 countersink 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



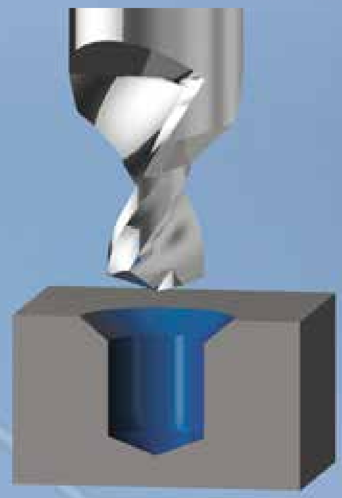
Aussenkühlung
Refroidissement extérieur
Lubrificazione esterna
External coolant

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

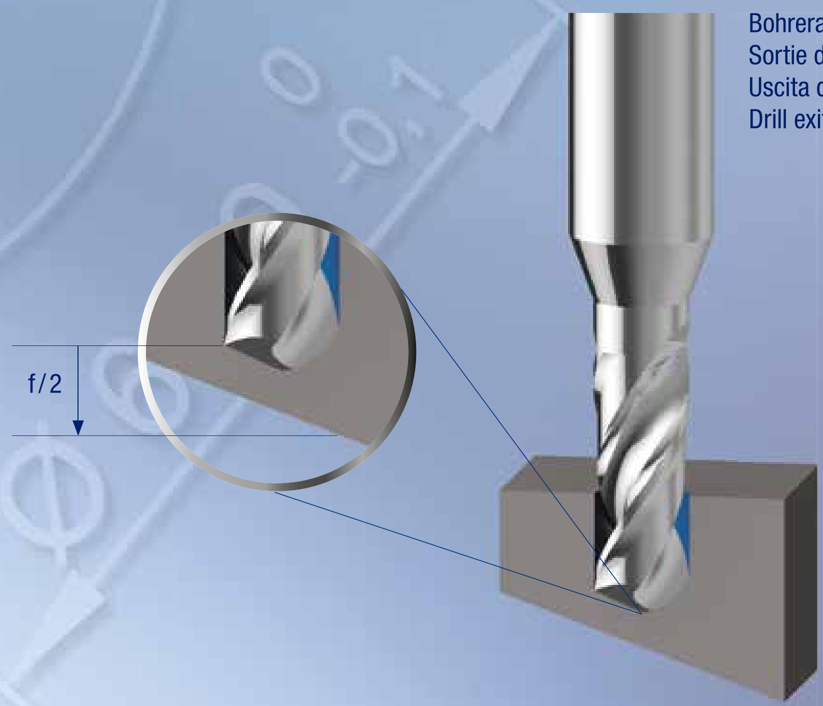
Anbohrerstrategie Eintritt und Bohreraustritt
Stratégie de perçage entrée et sortie du foret
Strategia di foratura con entrata ed uscita della punta
Spot drilling strategy drill entering and exit

Zentrieren
Centrer
Centrare
Centering

Pilotloch
Trou pilote
Preforo
Pilothole



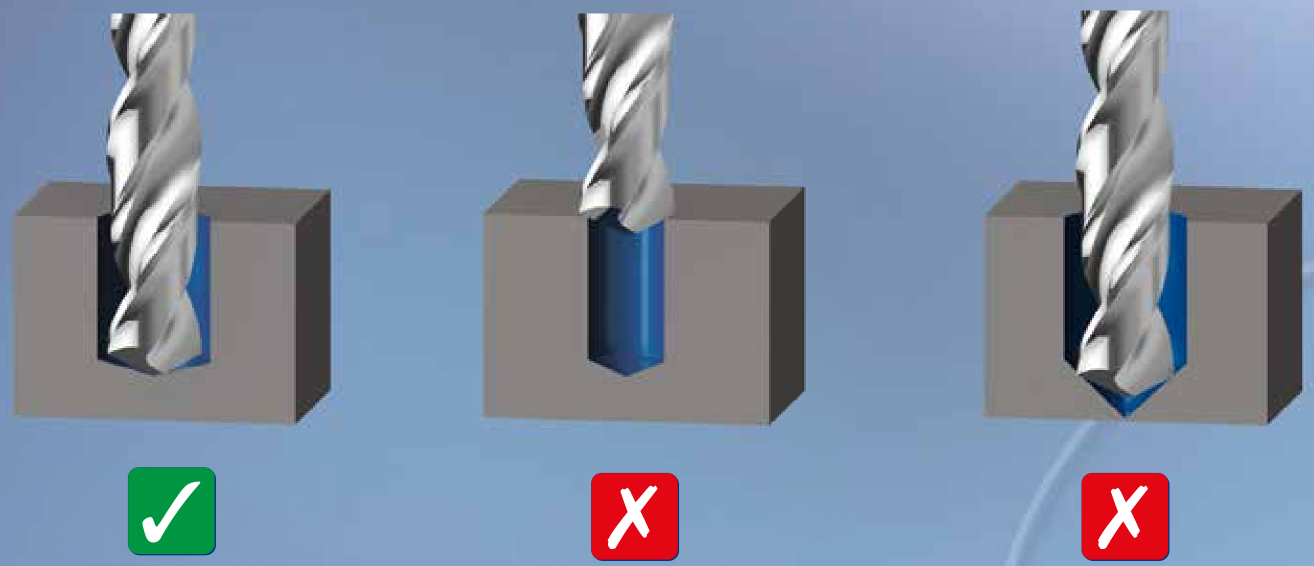
Fräsen einer Fläche
Graver une surface
Fresatura di una superficie
Milling a flat



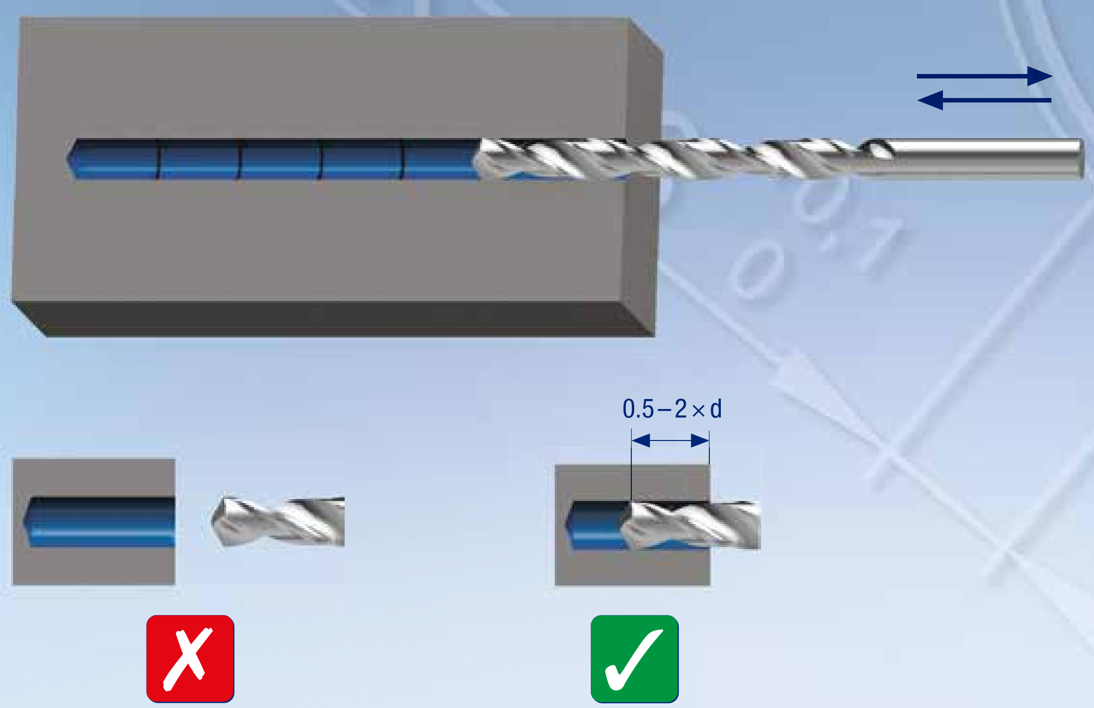
Bohreraustritt in schräger Fläche
Sortie du foret d'une surface inclinée
Uscita della punta in superficie inclinata
Drill exit in an inclined surface

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

Folgewerkzeug
Outil progressif
Utensile seguente
Subsequent tool

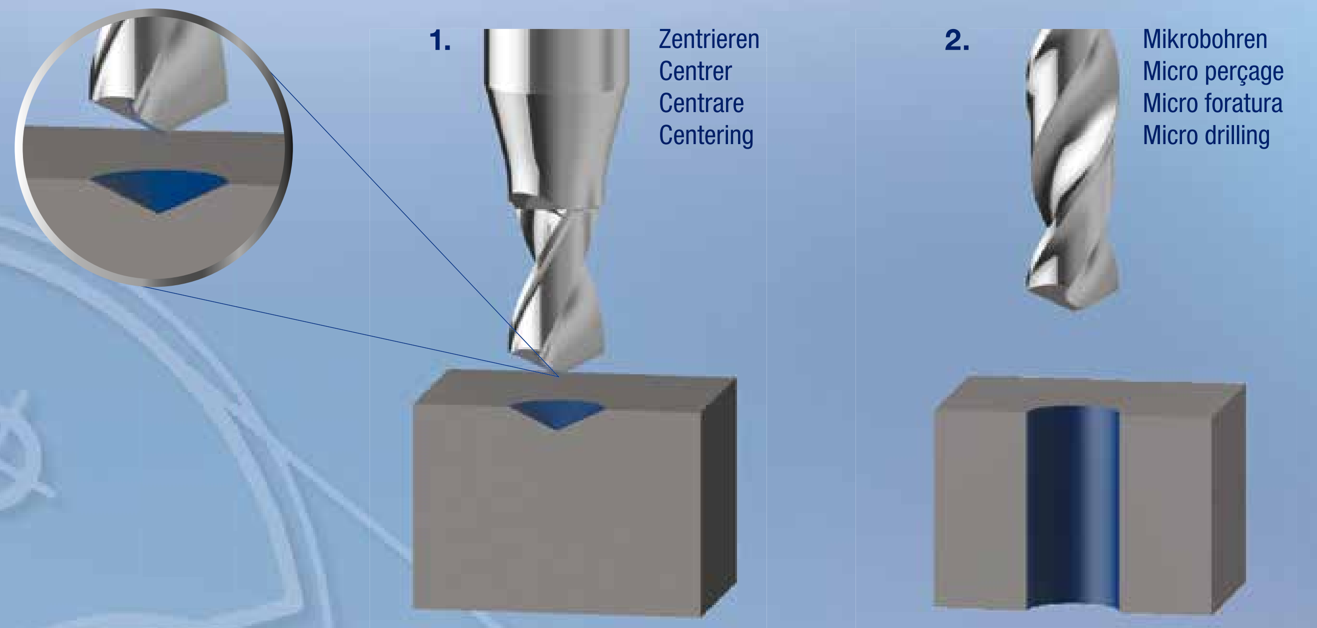


Entspänenzyklus
Cycle de débourrage
Ciclo evacuazione trucioli
Pecking cycle

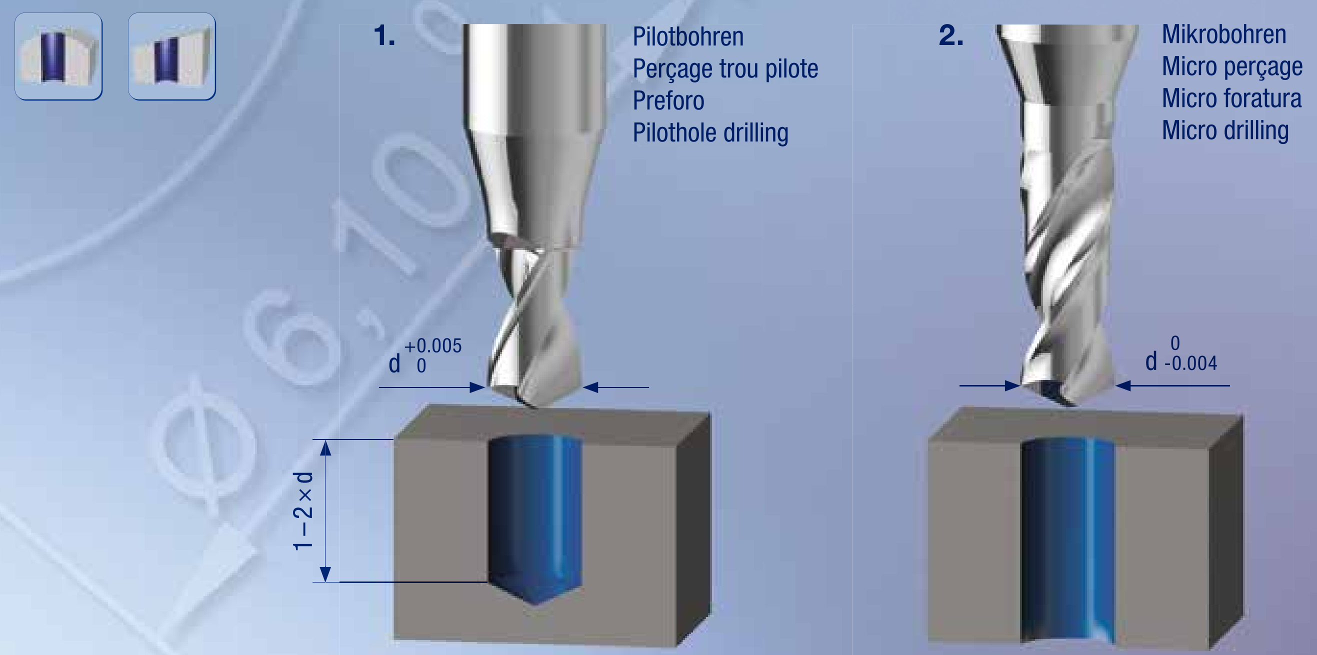


Bearbeitungsverfahren Mikrobohren
Procédé d’usinage pour micro perçage
Procedura d’usinaggio per micro foratura
Machining process for micro drilling

Zentrieren ≤ 6 × d
Centrer ≤ 6 × d
Centrare ≤ 6 × d
Centering ≤ 6 × d



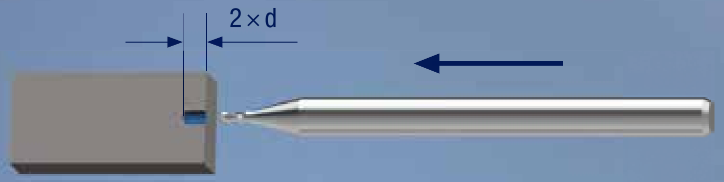
Pilotbohren ≥ 6 × d
Perçage trou pilote ≥ 6 × d
Preforo ≥ 6 × d
Pilothole drilling ≥ 6 × d



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

1.

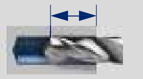


Art. 56033 d +0.01

2.

$n = max. 500 min^{-1}$ | $v_f = 25\% – 50\%$

3.

$v_c = 100\%$ | $v_f = 100\%$ | 0.5 – 2 × d  | $v_c = 100\%$ | $v_f = 200\% – 500\%$ | $v_c = 100\%$ | $v_f = 100\%$

4.

$v_c = 100\%$ | $v_f = 200\% – 500\%$

5.

$n = max. 500 min^{-1}$ | $v_f = max.$

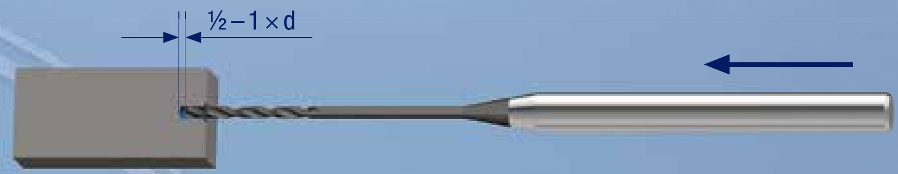
Bearbeitungsverfahren Mikrobohren
Procédé d’usinage pour micro perçage
Procedura d’usinaggio per micro foratura
Machining process for micro drilling

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

1.

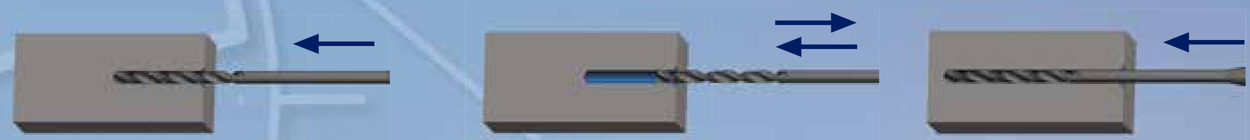
Art. 56036

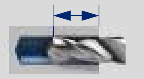
2.



$n = max. 500 min^{-1}$ | $v_f = 25\% – 50\%$

3.



$v_c = 100\%$ | $v_f = 100\%$ | 0.5 – 2 × d  | $v_c = 100\%$ | $v_f = 200\% – 500\%$ | $v_c = 100\%$ | $v_f = 100\%$

4.

$v_c = 100\%$ | $v_f = 200\% – 500\%$

5.

$n = max. 500 min^{-1}$ | $v_f = max.$

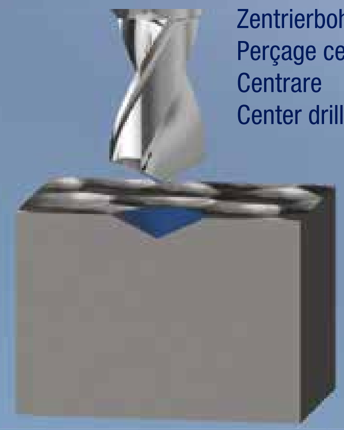
Bearbeitungsverfahren Hochleistungsbohren
Procédé d'usinage à grand rendement
Procedura d'usinaggio per foratura ad alto rendimento
Machining process for high performance drilling

Zentrierung ≤ 9 × d
Centrer ≤ 9 × d
Centrare ≤ 9 × d
Centering ≤ 9 × d

Ohne Zentrierung
Sans centrage
Senza centrino
Without centering

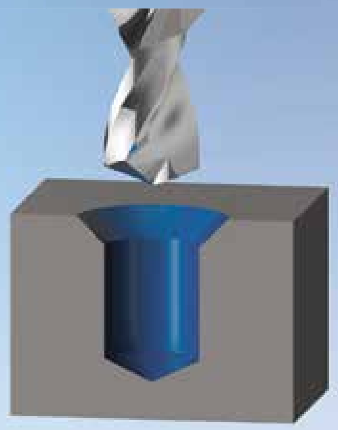
Saubere Eintrittsfläche
Surface plate
Superficie liscia
Smooth entering surface

Zentrierbohren
Perçage centrage
Centrare
Center drilling

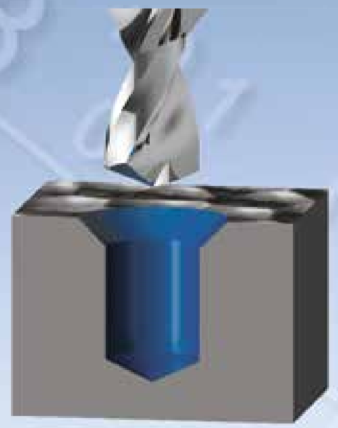


Raue oder unebene Eintrittsfläche
Surface rugueuse ou inégale
Superficie greeza
Rough or uneven entering surface

Pilotbohrung > 9 × d
Perçage trou pilote > 9 × d
Preforo > 9 × d
Pilothole drilling > 9 × 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

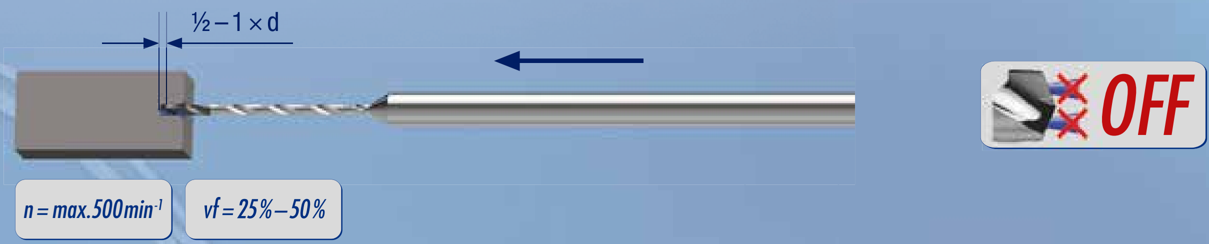
Bearbeitungsverfahren Hochleistungsbohren
Procédé d'usinage à grand rendement
Procedura d'usinaggio per foratura ad alto rendimento
Machining process for high performance drilling

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

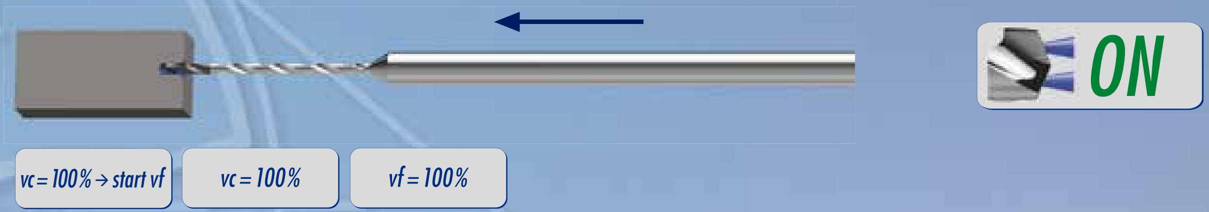
Art. 56036

1.

2.

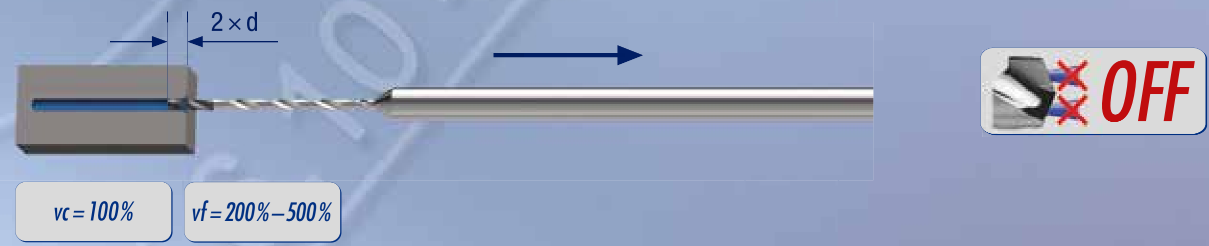


3.



4.

5.



6.

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 Annullation 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 = ± 2 Stück
≥ 20 Stück = ± 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 livrasion
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 = ± 2 pièces
≥ 20 pièces = ± 10 %
de la quantité commandée.
La facturation de ces quantités à plus ou mois 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.

Toleranza 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 é 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 dittta Sphinx. Per utensili speciali, in particolare per gli utensili medicali la responsabilità é 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.

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