



**Wo Präzision Maßstäbe setzt.
Quand la précision repousse ses limites.
Dove la precisione mette nuovi limiti.
Where Precision sets standards.**

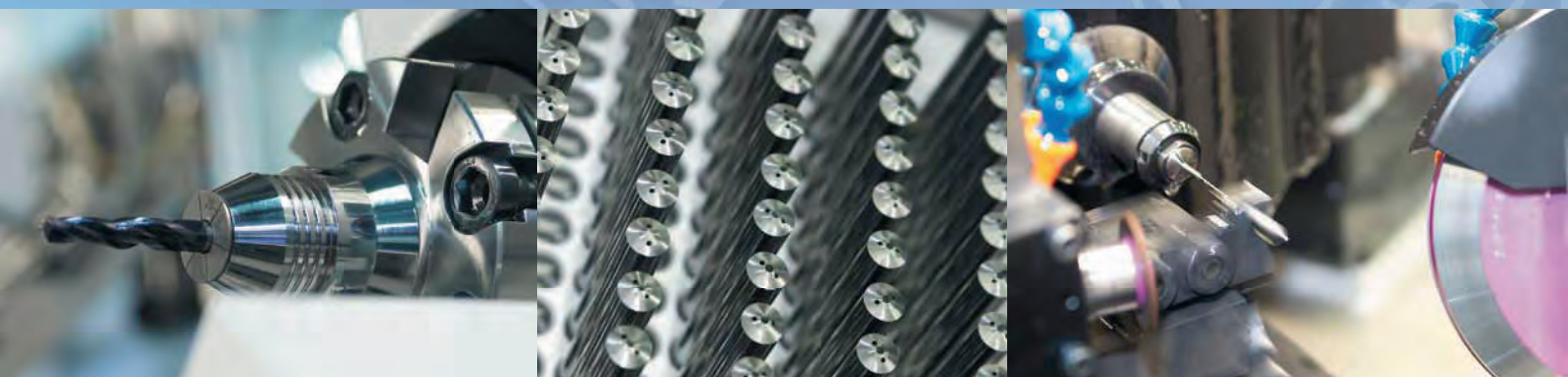
SPHINX
 **Swissmade tools**
Your partner 

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!

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



La Sphinx Utensili srl 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

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 leitmotif 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.



fondato know-how, siamo in grado di risolvere richieste complesse, offrendo delle soluzioni spesso uniche e contribuendo al successo del mercato delle aziende più rinomate. Anche nel futuro le costanti esigenze del mercato saranno la nostra sfida quotidiana.



Sphinx ist der richtige Partner.

Sphinx est le partenaire idéal.

Sphinx è il partner ideale.

Sphinx is the right partner.

Bohrerauswahl

Selection des forets

Scelta delle punte

Drill selection

Kleinstbohrer mit verstärktem Schaft

Micro foret avec manche renforcé

Micro punta con gambo rinforzato

Microdrill with reinforced shank

Hochleistungsbohrer

Foret à grand rendement

Punta ad alto rendimento

High performance drill

Power-Phoenix Hochleistungsbohrer

Power-Phoenix foret à grand rendement

Power-Phoenix punta ad alto rendimento

Power-Phoenix high performance drill

Spiralbohrer mit zylindrischem Schaft

Foret hélicoïdal avec manche cylindrique

Punta elicoidale con gambo cilindrico

Twist drill with cylindrical shank

Bohrreibahlen und Reibahlen

Foret alésoir et alésoir

Punta alesatore ed alesatore

Drill reamer and reamer

Fräser

Fraise

Fresa

End mill

Rundstab

Barreau cylindrique

Cilindretto

Round rod

Sonderwerkzeuge

Outils spéciaux

Utensili speciali

Special tools

Anwendungstechnik

Application de la technologie

Applicazione della tecnologia

Application technology

















Bohrerauswahl

Selection des forets





















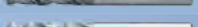



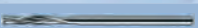

Scelta delle punte

Drill selection














- ✓ hervorragend / outstanding
- geeignet / able
- X nicht geeignet / unable

	Artikel / Article	Durchmesser-Bereich / Dia range	Abstufung / Increments	Merkmale / Characteristics	Nutzlänge / Cutting length	Schneidenzahl / No. of cutting edges	VHM / SC	Kühlmittelzufuhr / coolant supply	P	M	K	S	N	H	99
									Stahl / Steel	Rostfreier Stahl / Stainless Steel	Gusseisen / Cast iron	Superlegierungen / Ni / Ti alloys	Nichteisenmetalle / Nonferrous metals	Gehärteter Stahl / Hardened steel	
Kleinstbohrer mit verstärktem Schaft / Microdrill with reinforced shank															
	50806	0.50–6.00	0.10	60°		2	X	Ext.	✓	•	✓	X	✓	X	10
	50809	0.50–1.90	0.10	90°	3–4x∅	2	X	Ext.	✓	•	✓	X	✓	X	11
	56005	0.10–1.50	0.05	130°	2–4x∅	2	X	Ext.	✓	•	✓	X	✓	X	12
	56030	0.10–1.00	0.01	0/+0,005	2x∅	2	X	Ext.	✓	✓	✓	•	✓	X	13
	56033	0.10–2.00	0.01	Schaft-∅3.0	2x∅	2	X	Ext.	✓	✓	✓	•	✓	X	14
	50695	0.20–1.50	0.01	0/+0,004	–6x∅	2	X	Ext.	✓	•	✓	X	✓	X	16
	50699	0.05–2.00	0.01	0/ -0,004	–8x∅	2	X	Ext.	✓	•	✓	X	✓	X	17
	50620	0.50–1.60	0.05	15x∅	–15x∅	2	X	Ext.	✓	•	✓	X	✓	X	19
	50621	0.20–2.00	0.01	12x∅	12x∅	2	X	Ext.	✓	•	✓	X	✓	X	20
	51200	0.10–2.00	0.01	Schaft-∅3.0	–6x∅	2	X	Ext.	✓	✓	✓	•	✓	X	22
	55652	0.20–2.99	0.01	H7/Schaft-∅3.0	5x∅	3	X	Ext.	✓	•	✓	•	✓	X	24
	16004	0.10–1.50	0.05	HSS-E/130°	2–4x∅	2		Ext.	✓	•	✓	X	•	X	26
	12604	0.05–3.175	0.01	HSS-E	–8x∅	2		Ext.	✓	•	✓	X	•	X	27
	11654	0.50–2.30	0.05	HSS-E/Juwelier	–6x∅	2		Ext.	✓	•	✓	X	•	X	28
	12610	0.50–1.40	0.10	HSS-E/Satz	–8x∅	2		Ext.	✓	•	✓	X	•	X	29
	12613	0.25–2.50	0.05	HSS-E/Satz	–8x∅	2		Ext.	✓	•	✓	X	•	X	29

- ✓ hervorragend / outstanding
- geeignet / able
- X nicht geeignet / unable

	Artikel / Article	Durchmesser-Bereich / Dia range	Abstufung / Increments	Merkmale / Characteristics	Nutzlänge / Cutting length	Schneidenzahl / No. of cutting edges	Führungsfasen / margins	VHM / SC	Kühlmittelzufuhr / coolant supply	P	M	K	S	N	H	99
										Stahl / Steel	Rostfreier Stahl / Stainless Steel	Gusseisen / Cast iron	Superlegierungen / Ni / Ti alloys	Nichteisenmetalle / Nonferrous metals	Gehärteter Stahl / Hardened steel	
Hochleistungsbohrer / High performance drill																
	50941	0.50–2.40	0.10	ohne IKZ	6×Ø	2	X	Ext.	✓	✓	✓	•	•	X		33
	50938	1.00–12.70	0.10	mit IKZ	3×Ø	2	X	Int.	✓	✓	✓	•	•	X		34
	50940	1.00–12.70	0.10	mit IKZ	6×Ø	2	X	Int.	✓	✓	✓	•	•	X		35
	50942	1.00–12.70	0.10	mit IKZ	12×Ø	2	X	Int.	✓	✓	✓	•	•	X		37
	50950	3.00–20.00	0.10	ohne IKZ	3×Ø	2	X	Ext.	✓	✓	✓	•	•	•		38
	52100	3.00–20.00	0.10	mit IKZ	6×Ø	2+2	X	Int.	X	X	•	X	✓	X		39
	52200	3.00–20.00	0.10	mit IKZ	12×Ø	2+2	X	Int.	X	X	•	X	✓	X		40
	52150	4.00–20.00	0.10	mit IKZ	6×Ø	2+2	X	Int.	✓	X	✓	X	•	X		41
Power-Phoenix Hochleistungsbohrer / Power-Phoenix high performance drill																
	50909	1.00–12.70	0.10	Polish	9×D	2	X	Int.	✓	✓	✓	X	•	X		46
	50912	1.00–12.70	0.10	Polish	12×D	2+2	X	Int.	✓	✓	✓	X	•	X		47
	50916	1.00–12.70	0.10	Polish	16×D	2+2	X	Int.	✓	✓	✓	X	•	X		48
	50920	3.00–10.00		Polish	20×D	2+2	X	Int.	✓	✓	✓	X	•	X		49
	50925	3.00–10.00		Polish	25×D	2+2	X	Int.	✓	✓	✓	X	•	X		50
	50930	3.00–10.00		Polish	30×D	2+2	X	Int.	✓	✓	✓	X	•	X		51
Spiralbohrer mit zylindrischem Schaft / Twist drill with cylindrical shank																
	50810	2.00–20.00	1.00	90°		2	X	Ext.	✓	✓	✓	•	✓	X		55
	50812	2.00–20.00	1.00	120°		2	X	Ext.	✓	✓	✓	•	✓	X		56
	50814	2.00–20.00	1.00	140°		2	X	Ext.	✓	✓	✓	•	✓	X		57
	50818	1.60–12.00		142°/90°					✓	✓	✓	•	✓	X		58
	50820	0.70–14.00	0.10	Degr. Flute	–10×Ø	2+2	X	Ext.	✓	X	✓	X	•	X		59
	50830	0.30–20.00	0.10	Allrounder	–5×Ø	2	X	Ext.	✓	✓	✓	•	•	X		60
	50838	0.30–6.00	0.05	Allrounder	4–12×Ø	2	X	Ext.	✓	✓	✓	•	•	X		61
Bohrreibahnen und Reibahnen / Drill reamer and reamer																
	50840	2.00–14.00	0.10	H7	5×Ø	2+1	X	Ext.	✓	•	✓	•	✓	X		65
	55654	1.00–14.00	0.10	H7	5×Ø	3	X	Ext.	✓	•	✓	•	✓	X		66
	55338	1.00–14.00	0.10	H7	10×Ø	3	X	Ext.	✓	•	✓	•	✓	X		67
	58000	0.99–6.01	0.01	H7/F7/P7	8×Ø	3/4/6	X	Ext.	✓	✓	✓	•	✓	X		68
	58500	0.99–6.01	0.01	H7/F7/P7	8×Ø	3/4/6	X	Ext.	✓	✓	✓	•	✓	X		68

- ✓ hervorragend / outstanding
- geeignet / able
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	Artikel / Article	Durchmesser-Bereich / Dia range	Abstufung / Increments	Merkmale / Characteristics	Nutzlänge / Cutting length	Schneidenzahl / No. of cutting edges	VHM / SC	Kühlmittelzufuhr / coolant supply	P	M	K	S	N	H	99
									Stahl / Steel	Rostfreier Stahl / Stainless Steel	Gusseisen / Cast iron	Superlegierungen / Ni / Ti alloys	Nichteisenmetalle / Nonferrous metals	Gehärteter Stahl / Hardened steel	
Fräser / End mill															
	42000	0.30–2.50	0.10	30°		2	X	Ext.	✓	•	•	•	✓	X	72
	40000	2.00–20.00	0.50	30°		2	X	Ext.	•	•	✓	X	✓	X	73
	40600	2.00–20.00	0.50	ALDURA		2	X	Ext.	✓	•	✓	X	X	✓	73
	40002	2.00–20.00	0.50	30°		3	X	Ext.	✓	•	✓	X	X	X	74
	40602	2.00–20.00	0.50	ALDURA		3	X	Ext.	✓	•	✓	X	X	✓	74
	40004	2.00–20.00	0.50	30°		4	X	Ext.	✓	•	✓	X	X	X	75
	40604	2.00–20.00	0.50	ALDURA		4	X	Ext.	✓	•	✓	X	X	✓	75
	40006	4.00–20.00	0.50	45°		3	X	Ext.	✓	✓	•	X	X	X	76
	40008	4.00–20.00	0.50	60°		3	X	Ext.	✓	✓	•	X	X	X	77
	47000	3.00–20.00	1.00	55°		2	X	Ext.	X	X	X	X	✓	X	78
	47500	6.00–20.00	1.00	55° / Long		2	X	Ext.	X	X	X	X	✓	X	79
	47344	0.50–7.90	0.10	0° Polish		1	X	Ext.	•	•	•	X	•	X	80
Rundstab / Round rod															
	59100	1.00–20.00	0.50	h6/100 mm											84
	59305	1.00–20.00	0.50	h6/320 mm											85
Sonderwerkzeuge / Special tools															
Mikrobohrer / Micro drill															89
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Reibahle / Reamer															94
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Bohrer Extra-Long und Pilotbohrer / Drill Extra long and Pilot drill															97



Kleinst-NC-Anbohrer 60°

Micro foret à pointer CNC 60°

Micro punta a centrare CNC 60°

Micro NC spotting drill 60°

Art. 50806

St

**EN-GJL
EN-GJS**

CuZn

Inox



**VHM
MD/SC**

**SPHINX
NORM**



**Typ
N**

**Z
2**



Vc → S./p. 31

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		38	3.00
4.00	10.50		40	4.00
5.00	16.00		50	5.00
6.00	16.00		50	6.00

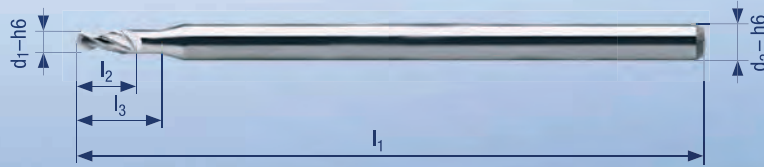
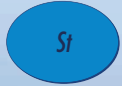
Kleinst-NC-Anbohrer 90°

Micro foret à pointer CNC 90°

Micro punta a centrare CNC 90°

Micro NC spotting drill 90°

Art. 50809



In Packungen zu 10 Stück
En boîtes de 10 pièces
In contenitori da 10 pezzi
Packaged in quantities of 10 pieces

Vc → S./p. 30

d ₁ mm	l ₂ mm	l ₃ mm	l ₁ mm	d ₂ 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

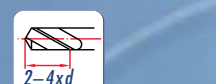
Kleinst-NC-Anbohrer 130°

Micro foret à pointer CNC 130°

Micro punta a centrare CNC 130°

Micro NC spotting drill 130°

Art. 56005



In Packungen zu 10 Stück
En boîtes de 10 pièces
In contenitori da 10 pezzi
Packaged in quantities of 10 pieces

Vc → S./p. 30

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

Kleinstbohrer Spirec® 2xd

Micro foret Spirec® 2xd

Micro punta Spirec® 2xd

Micro drill Spirec® 2xd

Art. 56030

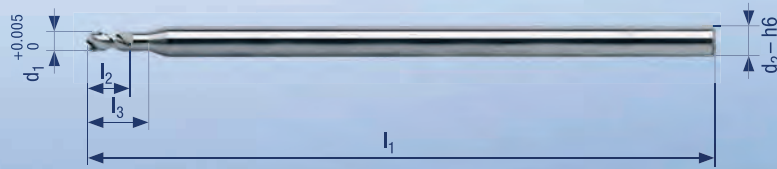
Inox

St

Ti

Al

Cu



VHM
MD/SC

SPHINX
NORM



Typ
N

Z
2

d₁
+0.005
0



In Packungen zu 10 Stück
En boîtes de 10 pièces
In contenitori da 10 pezzi
Packaged in quantities of 10 pieces

Vc → S./p. 30

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

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

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

Pilotbohrer

Foret de préperçage

Punta per preforo

Pilot drill

Art. 56033

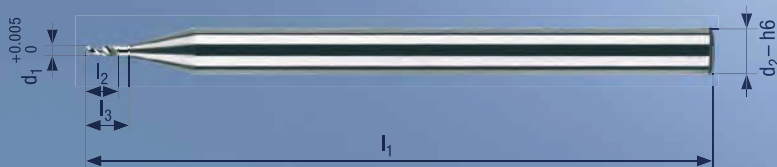
Inox

St

Ti

Al

Cu



VHM MD/SC SPHINX NORM



Z 2 d1 +0.005 0



Vc → S./p. 30

d ₁ mm	l ₂ mm	l ₃ mm	l ₁ mm	d ₂ mm
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
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

d ₁ mm	l ₂ mm	l ₃ mm	l ₁ mm	d ₂ mm
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
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

d ₁ mm	l ₂ mm	l ₃ mm	l ₁ mm	d ₂ mm
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
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

d ₁ mm	l ₂ mm	l ₃ mm	l ₁ mm	d ₂ mm
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
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



d ₁	l ₂	l ₃	l ₁	d ₂
mm	mm	mm	mm	mm
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

d ₁	l ₂	l ₃	l ₁	d ₂
mm	mm	mm	mm	mm
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

d ₁	l ₂	l ₃	l ₁	d ₂
mm	mm	mm	mm	mm
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

d ₁	l ₂	l ₃	l ₁	d ₂
mm	mm	mm	mm	mm
1.92	3.84	5.90	38	3.00
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



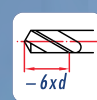
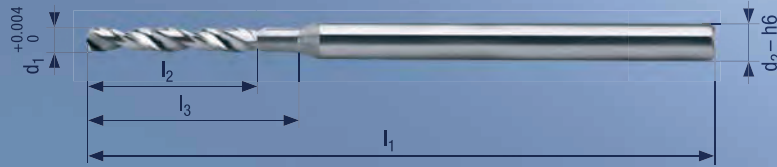
Kleinstbohrer Spirec®-Plus

Micro foret Spirec®-Plus

Micro punta Spirec®-Plus

Micro drill Spirec®-Plus

Art. 50695



In Packungen zu 10 Stück
En boîtes de 10 pièces
In contenitori da 10 pezzi
Packaged in quantities of 10 pieces

Vc → S./p. 30

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

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

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

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

Kleinstbohrer Spirec®

Micro foret Spirec®

Micro punta Spirec®

Micro drill Spirec®

Art. 50699

St

**EN-GJL
EN-GJS**

Al

CuZn

Inox



**VHM
MD/SC**

**DIN
1899-A**



**Typ
N**

**Z
2**



In Packungen zu 10 Stück
En boîtes de 10 pièces
In contenitori da 10 pezzi
Packaging in quantities of 10 pieces

Vc → S./p. 30

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

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

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

d ₁	l ₂	l ₃	l ₁	d ₂
mm	mm	mm	mm	mm
1.19	8.20	10.00	25	1.50
1.20	8.20	10.00	25	1.50
1.21	8.20	10.00	25	1.50
1.22	8.20	10.00	25	1.50
1.23	8.20	10.00	25	1.50
1.24	8.20	10.00	25	1.50
1.25	8.20	10.00	25	1.50
1.26	8.20	10.00	25	1.50
1.27	8.20	10.00	25	1.50
1.28	8.20	10.00	25	1.50
1.29	8.20	10.00	25	1.50
1.30	8.20	10.00	25	1.50
1.31	9.20	11.20	25	1.50
1.32	9.20	11.20	25	1.50
1.33	9.20	11.20	25	1.50
1.34	9.20	11.20	25	1.50
1.35	9.20	11.20	25	1.50
1.36	9.20	11.20	25	1.50
1.37	9.20	11.20	25	1.50
1.38	9.20	11.20	25	1.50
1.39	9.20	11.20	25	1.50
1.40	9.20	11.20	25	1.50
1.41	9.20	11.20	25	1.50
1.42	9.20	11.20	25	1.50
1.43	9.20	11.20	25	1.50
1.44	9.20	11.20	25	1.50
1.45	9.20	11.20	25	1.50
1.46	9.20	11.20	25	1.50
1.47	9.20	11.20	25	1.50
1.48	9.20	11.20	25	1.50
1.49	9.20	11.20	25	1.50
1.50	9.20		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	l ₂	l ₃	l ₁	d ₂
mm	mm	mm	mm	mm
1.57	11.20	13.40	38	2.00
1.58	11.20	13.40	38	2.00
1.59	11.20	13.40	38	2.00
1.60	11.20	13.40	38	2.00
1.61	11.20	13.40	38	2.00
1.62	11.20	13.40	38	2.00
1.63	11.20	13.40	38	2.00
1.64	11.20	13.40	38	2.00
1.65	11.20	13.40	38	2.00
1.66	11.20	13.40	38	2.00
1.67	11.20	13.40	38	2.00
1.68	11.20	13.40	38	2.00

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

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

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



Kleinstbohrer Tipdrill 10×d

Art. 50620

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

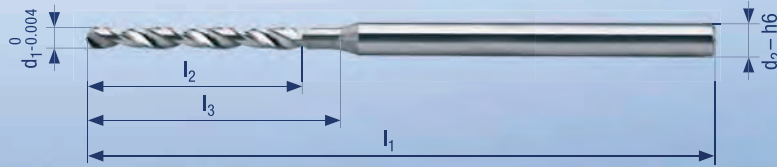
St

CuZn

CuSn

EN-GJL
 EN-GJS

Inox



VHM
 MD/SC

SPHINX
 NORM



Typ
 N

Z
 2



In Packungen zu 10 Stück
 En boîtes de 10 pièces
 In contenitori da 10 pezzi
 Packaged in quantities of 10 pieces

Vc → S./p. 30

d ₁	l ₂	l ₃	l ₁	d ₂
mm	mm	mm	mm	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

Kleinstbohrer 12xd

Micro foret 12xd

Micro punta 12xd

Micro drill 12xd

Art. 50621

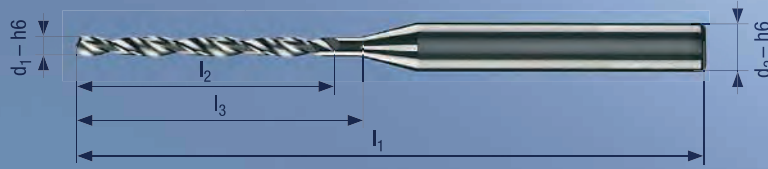
St

CuZn

CuSn

**EN-GJL
EN-GJS**

Inox



**VHM
MD/SC**

**SPHINX
NORM**



**Typ
N**

**Z
2**



Vc → S./p. 30

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	2.52	3.50	38	3.00
0.22	2.64	3.50	38	3.00
0.23	2.76	3.50	38	3.00
0.24	2.88	4.00	38	3.00
0.25	3.00	4.00	38	3.00
0.26	3.12	4.00	38	3.00
0.27	3.24	4.00	38	3.00
0.28	3.36	4.50	38	3.00
0.29	3.48	4.50	38	3.00
0.30	3.60	4.50	38	3.00
0.31	3.72	4.50	38	3.00
0.32	3.84	5.00	38	3.00
0.33	3.96	5.00	38	3.00
0.34	4.08	5.00	38	3.00
0.35	4.20	5.00	38	3.00
0.36	4.32	5.50	38	3.00
0.37	4.44	5.50	38	3.00
0.38	4.56	5.50	38	3.00
0.39	4.68	5.50	38	3.00
0.40	4.80	6.00	38	3.00
0.41	4.92	6.00	38	3.00
0.42	5.04	6.00	38	3.00
0.43	5.16	6.00	38	3.00
0.44	5.28	6.50	38	3.00
0.45	5.40	6.50	38	3.00
0.46	5.52	6.50	38	3.00
0.47	5.64	6.50	38	3.00
0.48	5.76	7.00	38	3.00
0.49	5.88	7.00	38	3.00
0.50	6.00	7.00	38	3.00
0.51	6.12	7.00	38	3.00
0.52	6.24	7.50	38	3.00
0.53	6.36	7.50	38	3.00
0.54	6.48	7.50	38	3.00
0.55	6.60	7.50	38	3.00
0.56	6.72	8.00	38	3.00
0.57	6.84	8.00	38	3.00

d ₁ mm	l ₂ mm	l ₃ mm	l ₁ mm	d ₂ mm
0.58	6.96	8.00	38	3.00
0.59	7.08	8.00	38	3.00
0.60	7.20	9.00	38	3.00
0.61	7.32	9.00	38	3.00
0.62	7.44	9.00	38	3.00
0.63	7.56	9.00	38	3.00
0.64	7.68	9.50	38	3.00
0.65	7.80	9.50	38	3.00
0.66	7.92	9.50	38	3.00
0.67	8.04	9.50	38	3.00
0.68	8.16	10.00	38	3.00
0.69	8.28	10.00	38	3.00
0.70	8.40	10.00	38	3.00
0.71	8.52	10.00	38	3.00
0.72	8.64	10.50	38	3.00
0.73	8.76	10.50	38	3.00
0.74	8.88	10.50	38	3.00
0.75	9.00	10.50	38	3.00
0.76	9.12	11.00	38	3.00
0.77	9.24	11.00	38	3.00
0.78	9.36	11.00	38	3.00
0.79	9.48	11.00	38	3.00
0.80	9.60	11.50	38	3.00
0.81	9.72	11.50	38	3.00
0.82	9.84	11.50	38	3.00
0.83	9.96	11.50	38	3.00
0.84	10.08	12.00	38	3.00
0.85	10.20	12.00	38	3.00
0.86	10.32	12.00	38	3.00
0.87	10.44	12.00	38	3.00
0.88	10.56	12.50	38	3.00
0.89	10.68	12.50	38	3.00
0.90	10.80	12.50	38	3.00
0.91	10.92	12.50	38	3.00
0.92	11.04	13.00	38	3.00
0.93	11.16	13.00	38	3.00
0.94	11.28	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	11.52	13.50	38	3.00
0.97	11.64	13.50	38	3.00
0.98	11.76	13.50	38	3.00
0.99	11.88	13.50	38	3.00
1.00	12.00	14.50	38	3.00
1.01	12.12	14.50	38	3.00
1.02	12.24	14.50	38	3.00
1.03	12.36	14.50	38	3.00
1.04	12.48	15.00	38	3.00
1.05	12.60	15.00	38	3.00
1.06	12.72	15.00	38	3.00
1.07	12.84	15.00	38	3.00
1.08	12.96	15.50	38	3.00
1.09	13.08	15.50	38	3.00
1.10	13.20	15.50	38	3.00
1.11	13.32	15.50	38	3.00
1.12	13.44	16.00	38	3.00
1.13	13.56	16.00	38	3.00
1.14	13.68	16.00	38	3.00
1.15	13.80	16.00	38	3.00
1.16	13.92	16.50	38	3.00
1.17	14.04	16.50	38	3.00
1.18	14.16	16.50	38	3.00
1.19	14.28	16.50	38	3.00
1.20	14.40	17.00	38	3.00
1.21	14.52	17.00	38	3.00
1.22	14.64	17.00	38	3.00
1.23	14.76	17.00	38	3.00
1.24	14.88	17.50	38	3.00
1.25	15.00	17.50	38	3.00
1.26	15.12	17.50	50	3.00
1.27	15.24	17.50	50	3.00
1.28	15.36	18.00	50	3.00
1.29	15.48	18.00	50	3.00
1.30	15.60	18.00	50	3.00
1.31	15.72	18.00	50	3.00
1.32	15.84	18.50	50	3.00
1.33	15.96	18.50	50	3.00

d ₁ mm	l ₂ mm	l ₃ mm	l ₁ mm	d ₂ mm
1.34	16.08	18.50	50	3.00
1.35	16.20	18.50	50	3.00
1.36	16.32	19.00	50	3.00
1.37	16.44	19.00	50	3.00
1.38	16.56	19.00	50	3.00
1.39	16.68	19.00	50	3.00
1.40	16.80	19.50	50	3.00
1.41	16.92	19.50	50	3.00
1.42	17.04	19.50	50	3.00
1.43	17.16	19.50	50	3.00
1.44	17.28	20.00	50	3.00
1.45	17.40	20.00	50	3.00
1.46	17.52	20.00	50	3.00
1.47	17.64	20.00	50	3.00
1.48	17.76	20.50	50	3.00
1.49	17.88	20.50	50	3.00
1.50	18.00	21.00	50	3.00
1.51	18.12	21.00	50	3.00
1.52	18.24	21.00	50	3.00
1.53	18.36	21.00	50	3.00
1.54	18.48	21.50	50	3.00
1.55	18.60	21.50	50	3.00
1.56	18.72	21.50	50	3.00
1.57	18.84	21.50	50	3.00
1.58	18.96	22.00	50	3.00
1.59	19.08	22.00	50	3.00
1.60	19.20	22.00	50	3.00
1.61	19.32	22.00	50	3.00
1.62	19.44	22.50	50	3.00
1.63	19.56	22.50	50	3.00
1.64	19.68	22.50	50	3.00
1.65	19.80	22.50	50	3.00
1.66	19.92	23.00	50	3.00
1.67	20.04	23.00	50	3.00
1.68	20.16	23.00	50	3.00
1.69	20.28	23.00	50	3.00
1.70	20.40	23.50	50	3.00
1.71	20.52	23.50	50	3.00



d ₁ mm	l ₂ mm	l ₃ mm	l ₁ mm	d ₂ mm
1.72	20.64	23.50	50	3.00
1.73	20.76	23.50	50	3.00
1.74	20.88	24.00	50	3.00
1.75	21.00	24.00	50	3.00
1.76	21.12	24.00	50	3.00
1.77	21.24	24.00	50	3.00
1.78	21.36	24.50	50	3.00
1.79	21.48	24.50	50	3.00

d ₁ mm	l ₂ mm	l ₃ mm	l ₁ mm	d ₂ mm
1.80	21.60	25.00	50	3.00
1.81	21.72	25.00	50	3.00
1.82	21.84	25.00	50	3.00
1.83	21.96	25.00	50	3.00
1.84	22.08	25.50	50	3.00
1.85	22.20	25.50	50	3.00
1.86	22.32	25.50	50	3.00
1.87	22.44	25.50	50	3.00

d ₁ mm	l ₂ mm	l ₃ mm	l ₁ mm	d ₂ mm
1.88	22.56	26.00	50	3.00
1.89	22.68	26.00	50	3.00
1.90	22.80	26.00	50	3.00
1.91	22.92	26.00	50	3.00
1.92	23.04	26.50	50	3.00
1.93	23.16	26.50	50	3.00
1.94	23.28	26.50	50	3.00
1.95	23.40	26.50	50	3.00

d ₁ mm	l ₂ mm	l ₃ mm	l ₁ mm	d ₂ mm
1.96	23.52	27.00	50	3.00
1.97	23.64	27.00	50	3.00
1.98	23.76	27.00	50	3.00
1.99	23.88	27.00	50	3.00
2.00	24.00	27.00	50	3.00

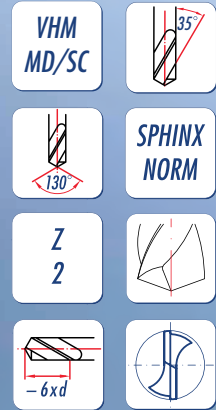


Kleinstbohrer

Micro foret
Micro punta
Micro drill

Art. 51200

- Inox
- St
- Ti
- Al
- Cu



Vc → S./p. 30

d ₁	l ₂	l ₃	l ₁	d ₂
mm	mm	mm	mm	mm
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
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

d ₁	l ₂	l ₃	l ₁	d ₂
mm	mm	mm	mm	mm
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
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

d ₁	l ₂	l ₃	l ₁	d ₂
mm	mm	mm	mm	mm
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
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

d ₁	l ₂	l ₃	l ₁	d ₂
mm	mm	mm	mm	mm
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
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

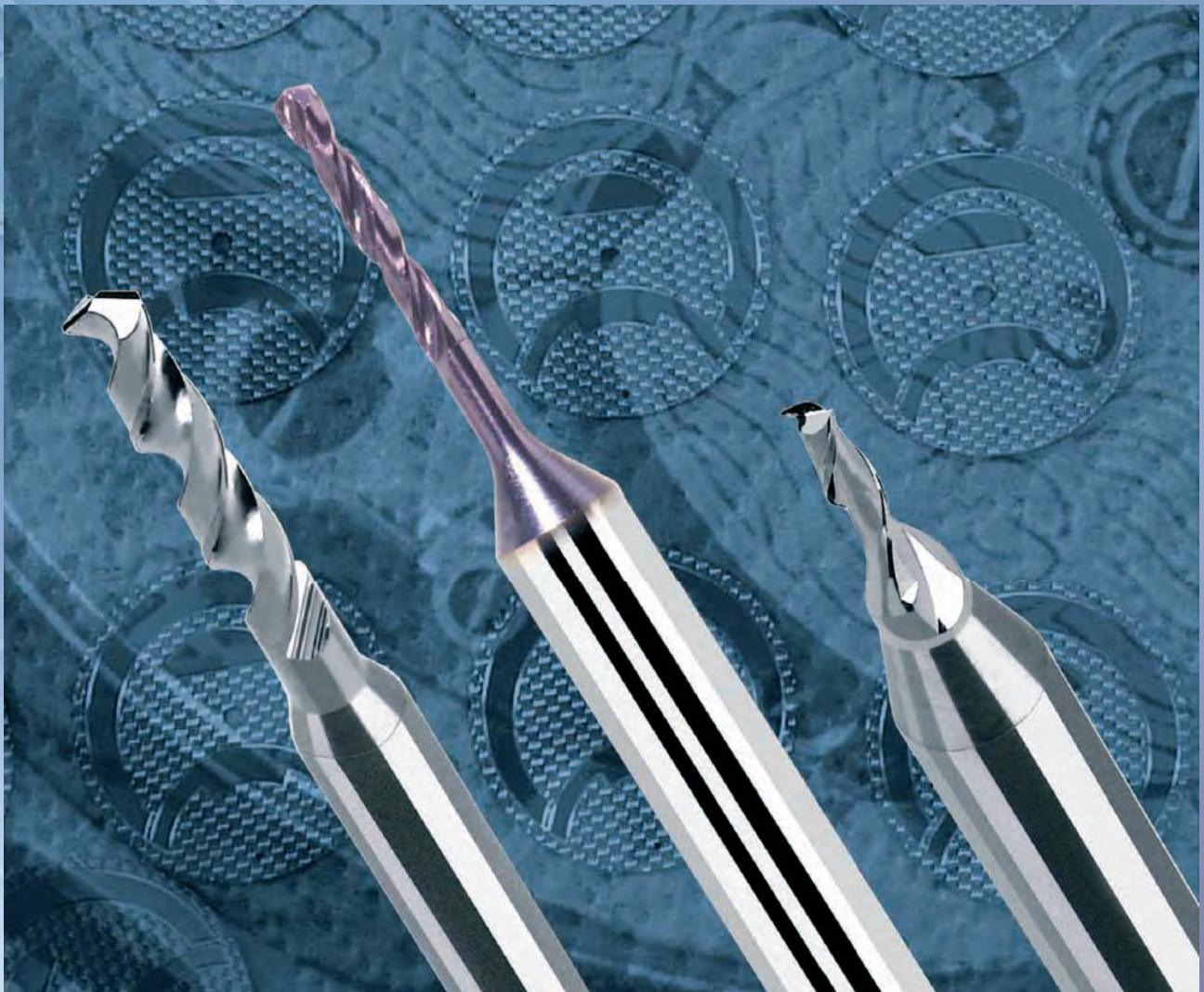


d ₁	l ₂	l ₃	l ₁	d ₂
mm	mm	mm	mm	mm
1.62	11.20	13.40	38	3.00
1.63	11.20	13.40	38	3.00
1.64	11.20	13.40	38	3.00
1.65	11.20	13.40	38	3.00
1.66	11.20	13.40	38	3.00
1.67	11.20	13.40	38	3.00
1.68	11.20	13.40	38	3.00
1.69	11.20	13.40	38	3.00
1.70	11.20	13.40	38	3.00
1.71	11.20	13.40	38	3.00

d ₁	l ₂	l ₃	l ₁	d ₂
mm	mm	mm	mm	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

d ₁	l ₂	l ₃	l ₁	d ₂
mm	mm	mm	mm	mm
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

d ₁	l ₂	l ₃	l ₁	d ₂
mm	mm	mm	mm	mm
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



Mikrotricut

Microtricut

Microtricut

Microtricut

Art. 55652

St

EN-GJL
EN-GJS

Ti

Al

Inox



VHM
MD/SC

SPHINX
NORM



Z
3



Vc → S./p. 30

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

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

d ₁ mm	l ₂ mm	l ₃ mm	l ₁ mm	d ₂ 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

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



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

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

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

d ₁	l ₂	l ₃	l ₁	d ₂
mm	mm	mm	mm	mm
2.68	13.40	16.50	38	3.00
2.69	13.45	16.50	38	3.00
2.70	13.50	16.50	38	3.00
2.71	13.55	16.50	38	3.00
2.72	13.60	16.50	38	3.00
2.73	13.65	16.50	38	3.00
2.74	13.70	16.50	38	3.00
2.75	13.75	16.50	38	3.00
2.76	13.80	16.50	38	3.00
2.77	13.85	16.50	38	3.00
2.78	13.90	16.50	38	3.00
2.79	13.95	16.50	38	3.00
2.80	14.00	16.50	38	3.00
2.81	14.05	16.50	38	3.00
2.82	14.10	16.50	38	3.00
2.83	14.15	16.50	38	3.00
2.84	14.20	16.50	38	3.00
2.85	14.25	16.50	38	3.00
2.86	14.30	16.50	38	3.00
2.87	14.35	16.50	38	3.00
2.88	14.40	16.50	38	3.00
2.89	14.45	16.50	38	3.00
2.90	14.50	16.50	38	3.00
2.91	14.55	16.50	38	3.00
2.92	14.60	16.50	38	3.00
2.93	14.65	16.50	38	3.00
2.94	14.70	16.50	38	3.00
2.95	14.75	16.50	38	3.00
2.96	14.80	16.50	38	3.00
2.97	14.85	15.50	38	3.00
2.98	14.90	16.50	38	3.00
2.99	14.95	16.50	38	3.00



Kleinst-NC-Anbohrer aus HSS-E

Art. 16004

Micro foret à pointer CNC en HSS-E

Micro punta a centrare CNC in HSS-E

Micro NC spotting drill in HSS-E

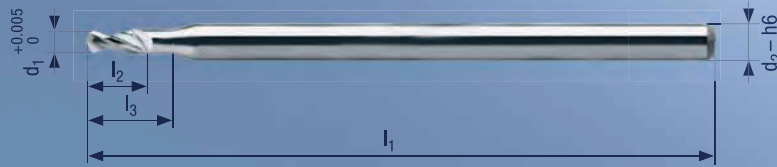
St

CuZn

EN-GJL
EN-GJS

Al

CuSn



HSS-E
Co 8%

SPHINX
NORM



d_1
+0.005
0

Z
2



In Packungen zu 10 Stück
En boîtes de 10 pièces
In contenitori da 10 pezzi
Packaged in quantities of 10 pieces

Vc → S./p. 31

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		25	1.50

Kleinstbohrer Spirec® aus HSS-E

Micro foret Spirec® en HSS-E

Micro punta Spirec® in HSS-E

Micro drill Spirec® in HSS-E

Art. 12604

St

CuZn

EN-GJL
EN-GJS

Al

CuSn



HSS-E
Co 8%

DIN
1899-A



SPHINX
NORM

Z
2

Typ
N



In Packungen zu 10 Stück
En boîtes de 10 pièces
In contenitori da 10 pezzi
Packaged in quantities of 10 pieces

Vc → S./p. 31

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

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

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

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

Juwelierbohrer aus HSS-E

Foret pour la joaillerie en HSS-E

Punta per gioielleria in HSS-E

Jeweller drill in HSS-E

Art. 11654

Ag

Au

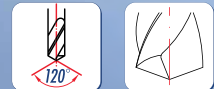
St

CuZn

EN-GJL
EN-GJS



HSS-E SPHINX
NORM



Z
2

In Packungen zu 10 Stück
En boîtes de 10 pièces
In contenitori da 10 pezzi
Packaged in quantities of 10 pieces

Vc → S./p. 31

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

Kleinstbohrersatz Spirec® aus HSS-E

Art. 12610

Jeu de micro forets Spirec® en HSS-E

Set di micro punte Spirec® in HSS-E

Micro drill set Spirec® in HSS-E



Art.
12 604

HSS-E
Co 8%



Ø 0.50–1.40 mm		Total 60 Stück	
Abstufung	0.10 mm	6 Stück/Ø	
Gradation	0.10 mm	6 pièces/Ø	
Gradazione	0.10 mm	6 pezzi/Ø	
In steps of	0.10 mm	6 pieces/Ø	

Kleinstbohrersatz Spirec® aus HSS-E

Art. 12613

Jeu de micro forets Spirec® en HSS-E

Set di micro punte Spirec® in HSS-E

Micro drill set Spirec® in HSS-E



Art.
12 604

HSS-E
Co 8%



Ø 0.25–2.50 mm		Total 100 Stück	
Ø 0.25–0.50	Abstufung	0.05 mm	6 Stück/Ø
Ø 0.60–0.90	Gradation	0.10 mm	6 pièces/Ø
Ø 1.00–1.70	Gradazione	0.10 mm	3 pezzi/Ø
Ø 1.80–2.50	In steps of	0.10 mm	2 pieces/Ø

Schnittdaten

Données de coupe

Parametri di lavoro

Cutting data

Art. 50809 / 56005 / 56030 / 56033 /
50695 / 50699 / 50620 / 50621 / 51200

Material Matière Materiale Material	Durchmesser mm Diamètre mm Diametro mm Diameter mm	v=m/min	f=mm/U f=mm/t f=mm/g f=mm/r
St	0.10 – 0.30	1.0 – 6.0	0.001 – 0.002
	0.30 – 0.50	6.0 – 15	0.004 – 0.007
	0.50 – 0.80	10 – 23	0.007 – 0.011
	0.80 – 1.20	16 – 23	0.011 – 0.015
	1.20 – 2.00	23 – 60	0.015 – 0.021
St <1000 N/mm ²	0.10 – 0.30	1.0 – 6.0	0.001 – 0.002
	0.30 – 0.50	2.0 – 10	0.002 – 0.004
	0.50 – 0.80	3.5 – 16	0.004 – 0.006
	0.80 – 1.10	5.0 – 22	0.006 – 0.008
	1.10 – 2.00	7.0 – 30	0.008 – 0.012
St >1000 N/mm ²	0.10 – 0.30	0.5 – 5.0	0.001 – 0.002
	0.30 – 0.50	1.0 – 8.0	0.002 – 0.003
	0.50 – 0.80	2.5 – 13	0.003 – 0.005
	0.80 – 1.10	3.5 – 18	0.005 – 0.007
	1.10 – 2.00	5.0 – 25	0.007 – 0.010
Inox	0.10 – 0.30	0.5 – 3.0	0.001 – 0.002
	0.30 – 0.50	0.8 – 5.0	0.002 – 0.003
	0.50 – 0.80	2.0 – 10	0.003 – 0.005
	0.80 – 1.10	3.0 – 12	0.005 – 0.007
	1.10 – 2.00	4.0 – 18	0.007 – 0.010
EN-GJL	0.10 – 0.30	2.0 – 8.0	0.001 – 0.004
	0.30 – 0.50	6.0 – 15	0.004 – 0.007
	0.50 – 0.80	10 – 23	0.007 – 0.011
	0.80 – 1.10	16 – 36	0.011 – 0.015
	1.10 – 2.00	23 – 60	0.015 – 0.021
EN-GJS	0.10 – 0.30	1.0 – 6.0	0.001 – 0.002
	0.30 – 0.50	2.0 – 10	0.002 – 0.004
	0.50 – 0.80	3.5 – 16	0.004 – 0.006
	0.80 – 1.10	5.0 – 22	0.006 – 0.008
	1.10 – 2.00	7.0 – 30	0.008 – 0.012
Al <9% Si	0.10 – 0.30	3.0 – 16	0.001 – 0.004
	0.30 – 0.50	8.0 – 26	0.004 – 0.007
	0.50 – 0.80	13 – 55	0.007 – 0.011
	0.80 – 1.10	22 – 85	0.011 – 0.016
	1.10 – 2.00	30 – 160	0.016 – 0.022
Al >9% Si	0.10 – 0.30	2.5 – 13	0.001 – 0.004
	0.30 – 0.50	6.0 – 22	0.004 – 0.007
	0.50 – 0.80	10 – 40	0.007 – 0.011
	0.80 – 1.10	16 – 70	0.011 – 0.015
	1.10 – 2.00	20 – 120	0.015 – 0.021
Ti	0.10 – 0.30	0.5 – 6.0	0.001 – 0.003
	0.30 – 0.50	2.0 – 8.0	0.003 – 0.006
	0.50 – 0.80	3.0 – 15	0.006 – 0.009
	0.80 – 1.10	6.0 – 26	0.009 – 0.013
	1.10 – 2.00	7.5 – 40	0.013 – 0.018

Art. 55652

Material Matière Materiale Material	Durchmesser mm Diamètre mm Diametro mm Diameter mm	v=m/min	f=mm/U f=mm/t f=mm/g f=mm/r
St <1000 N/mm ²	0.20 – 0.45	10 – 25	0.005 – 0.007
	0.46 – 0.70	25 – 40	0.007 – 0.010
	0.71 – 0.99	40 – 60	0.010 – 0.015
	1.00 – 2.00	40 – 60	0.015 – 0.040
	2.01 – 3.00	40 – 60	0.035 – 0.050
St >1000 N/mm ²	0.20 – 0.45	10 – 20	0.004 – 0.006
	0.46 – 0.70	20 – 30	0.006 – 0.010
	0.71 – 0.99	30 – 50	0.010 – 0.015
	1.00 – 2.00	30 – 50	0.015 – 0.040
	2.01 – 3.00	30 – 50	0.035 – 0.050
Inox martensit	0.20 – 0.45	8.0 – 15	0.003 – 0.005
	0.46 – 0.70	15 – 25	0.005 – 0.007
	0.71 – 0.99	25 – 40	0.007 – 0.010
	1.00 – 2.00	25 – 40	0.010 – 0.030
	2.01 – 3.00	25 – 40	0.025 – 0.045
Inox austenit	0.20 – 0.45	5.0 – 10	0.002 – 0.004
	0.46 – 0.70	10 – 20	0.004 – 0.006
	0.71 – 0.99	20 – 35	0.006 – 0.008
	1.00 – 2.00	20 – 35	0.008 – 0.025
	2.01 – 3.00	20 – 35	0.020 – 0.035
EN-GJL	0.20 – 0.45	20 – 45	0.004 – 0.007
	0.46 – 0.70	45 – 60	0.007 – 0.010
	0.71 – 0.99	60 – 100	0.010 – 0.020
	1.00 – 2.00	60 – 100	0.020 – 0.050
	2.01 – 3.00	60 – 100	0.040 – 0.065
EN-GJS	0.20 – 0.45	15 – 30	0.002 – 0.005
	0.46 – 0.70	30 – 40	0.005 – 0.008
	0.71 – 0.99	40 – 80	0.008 – 0.015
	1.00 – 2.00	40 – 80	0.015 – 0.040
	2.01 – 3.00	40 – 80	0.035 – 0.060
Al <9% Si	0.20 – 0.45	20 – 50	0.005 – 0.008
	0.46 – 0.70	50 – 80	0.008 – 0.013
	0.71 – 0.99	80 – 120	0.013 – 0.020
	1.00 – 2.00	80 – 120	0.020 – 0.060
	2.01 – 3.00	80 – 120	0.050 – 0.080
Ti	0.20 – 0.45	10 – 20	0.002 – 0.004
	0.46 – 0.70	20 – 30	0.004 – 0.007
	0.71 – 0.99	30 – 50	0.007 – 0.010
	1.00 – 2.00	30 – 50	0.010 – 0.030
	2.01 – 3.00	30 – 50	0.025 – 0.045

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. 16004/12604/11654

Material Matière Materiale Material	Durchmesser mm Diamètre mm Diametro mm Diameter mm	v=m/min	f=mm/U f=mm/t f=mm/g f=mm/r
St	0.10 – 0.30	1.0 – 2.0	0.001 – 0.005
	0.30 – 0.50	2.0 – 5.5	0.005 – 0.007
	0.50 – 0.80	3.5 – 11	0.007 – 0.011
	0.80 – 1.50	9.0 – 15	0.011 – 0.015
	1.50 – 3.175	7.0 – 20	0.015 – 0.021
St <1000 N/mm ²	0.10 – 0.30	0.5 – 1.2	0.001 – 0.002
	0.30 – 0.50	1.0 – 3.5	0.002 – 0.004
	0.50 – 0.80	2.0 – 5.0	0.004 – 0.006
	0.80 – 1.50	3.0 – 7.5	0.006 – 0.009
	1.50 – 3.175	6.0 – 10	0.009 – 0.012
CuZn	0.10 – 0.30	1.0 – 4.0	0.002 – 0.003
	0.30 – 0.50	4.0 – 11	0.002 – 0.003
	0.50 – 0.80	11 – 26	0.004 – 0.005
	0.80 – 1.50	26 – 52	0.005 – 0.020
	1.50 – 3.175	52 – 60	0.020 – 0.060
EN-GJL	0.10 – 0.30	1.0 – 4.0	0.001 – 0.005
	0.30 – 0.50	2.0 – 5.5	0.005 – 0.007
	0.50 – 0.80	3.5 – 11	0.007 – 0.011
	0.80 – 1.50	9.0 – 15	0.011 – 0.015
	1.50 – 3.175	7.0 – 20	0.015 – 0.021
EN-GJS	0.10 – 0.30	0.5 – 1.5	0.001 – 0.002
	0.30 – 0.50	1.0 – 3.5	0.002 – 0.004
	0.50 – 0.80	2.0 – 5.0	0.004 – 0.006
	0.80 – 1.50	3.0 – 7.5	0.006 – 0.009
	1.50 – 3.175	6.0 – 10	0.009 – 0.012
Al	0.10 – 0.30	2.0 – 7.0	0.002 – 0.004
	0.30 – 0.50	4.0 – 13	0.004 – 0.007
	0.50 – 0.80	7.0 – 21	0.007 – 0.012
	0.80 – 1.50	18 – 30	0.012 – 0.016
	1.50 – 3.175	30 – 50	0.016 – 0.022
Inox	0.10 – 0.30	0.5 – 1.0	0.001 – 0.002
	0.30 – 0.50	1.0 – 3.0	0.002 – 0.004
	0.50 – 0.80	2.0 – 4.0	0.004 – 0.006
	0.80 – 1.50	3.0 – 6.0	0.006 – 0.009
	1.50 – 3.175	4.0 – 8.0	0.009 – 0.012
Ti	0.10 – 0.30	0.5 – 1.5	0.001 – 0.003
	0.30 – 0.50	1.0 – 3.5	0.003 – 0.004
	0.50 – 0.80	2.0 – 5.0	0.004 – 0.006
	0.80 – 1.50	3.0 – 7.5	0.006 – 0.009
	1.50 – 3.175	6.0 – 10	0.009 – 0.012

Art. 50806

Material Matière Materiale Material	Durchmesser mm Diamètre mm Diametro mm Diameter mm	v=m/min	f=mm/U f=mm/t f=mm/g f=mm/r
St	0.50 – 1.00	10 – 20	0.008 – 0.025
	1.10 – 2.90	15 – 40	0.025 – 0.060
	3.00 – 6.00	35 – 60	0.060 – 0.100
St <1000 N/mm ²	0.50 – 1.00	6 – 18	0.007 – 0.022
	1.10 – 2.90	16 – 35	0.022 – 0.050
	3.00 – 6.00	30 – 55	0.050 – 0.090
St >1000 N/mm ²	0.50 – 1.00	4 – 15	0.006 – 0.020
	1.10 – 2.90	13 – 22	0.020 – 0.040
	3.00 – 6.00	20 – 50	0.040 – 0.080
Inox martensit	0.50 – 1.00	2.0 – 12	0.004 – 0.016
	1.10 – 2.90	12 – 18	0.016 – 0.030
	3.00 – 6.00	18 – 35	0.030 – 0.060
EN-GJL	0.50 – 1.00	10 – 23	0.008 – 0.030
	1.10 – 2.90	20 – 60	0.030 – 0.070
	3.00 – 6.00	60 – 80	0.070 – 0.130
EN-GJS	0.50 – 1.00	8 – 20	0.007 – 0.025
	1.10 – 2.90	18 – 45	0.025 – 0.060
	3.00 – 6.00	40 – 60	0.060 – 0.100
Al <9% Si	0.50 – 1.00	10 – 25	0.007 – 0.025
	1.10 – 2.90	23 – 60	0.025 – 0.050
	3.00 – 6.00	50 – 90	0.050 – 0.090
Al >9% Si	0.50 – 1.00	8.0 – 20	0.006 – 0.022
	1.10 – 2.90	18 – 50	0.022 – 0.045
	3.00 – 6.00	50 – 80	0.045 – 0.080
Ti	0.50 – 1.00	3.0 – 10	0.003 – 0.015
	1.10 – 2.90	8.0 – 18	0.015 – 0.030
	3.00 – 6.00	15 – 40	0.030 – 0.070

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.



Kleinst-Hochleistungsbohrer PHOENIX 6xd Art. 50941

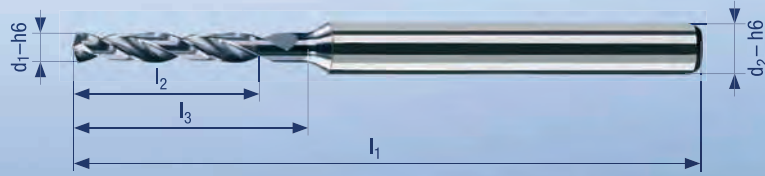
Micro foret à grand rendement PHOENIX 6xd
 Micro punta ad alto rendimento PHOENIX 6xd
 Micro high performance drill PHOENIX 6xd

St

Inox

EN-GJL
EN-GJS

Al



VHM
MD/SC

SPHINX
NORM



Typ
N

Z
2



FUTURA
Nano Top

Ohne Innenkühlung
 Sans trou d'huile
 Senza fori di lubrificazione
 Without internal coolant

Vc → S./p. 42

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

Hochleistungsbohrer PHOENIX 3xd

Art. 50938

Foret à grand rendement PHOENIX 3xd

Punta ad alto rendimento PHOENIX 3xd

High performance drill PHOENIX 3xd

Sf

Inox

**EN-GJL
EN-GJS**

Al



**VHM
MD/SC**

**SPHINX
NORM**



**Typ
N**

**Z
2**



Helica

Innenkühlung ab \varnothing 2.50 mm
 Trou d'huile à partir du \varnothing 2.50 mm
 Fori di lubrificazione a partire dal \varnothing 2.50 mm
 Internal coolant from \varnothing 2.50 mm

Vc → S./p. 42

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 6xd

Art. 50940

Foret à grand rendement PHOENIX 6xd

Punta ad alto rendimento PHOENIX 6xd

High performance drill PHOENIX 6xd



Vc → S./p. 42

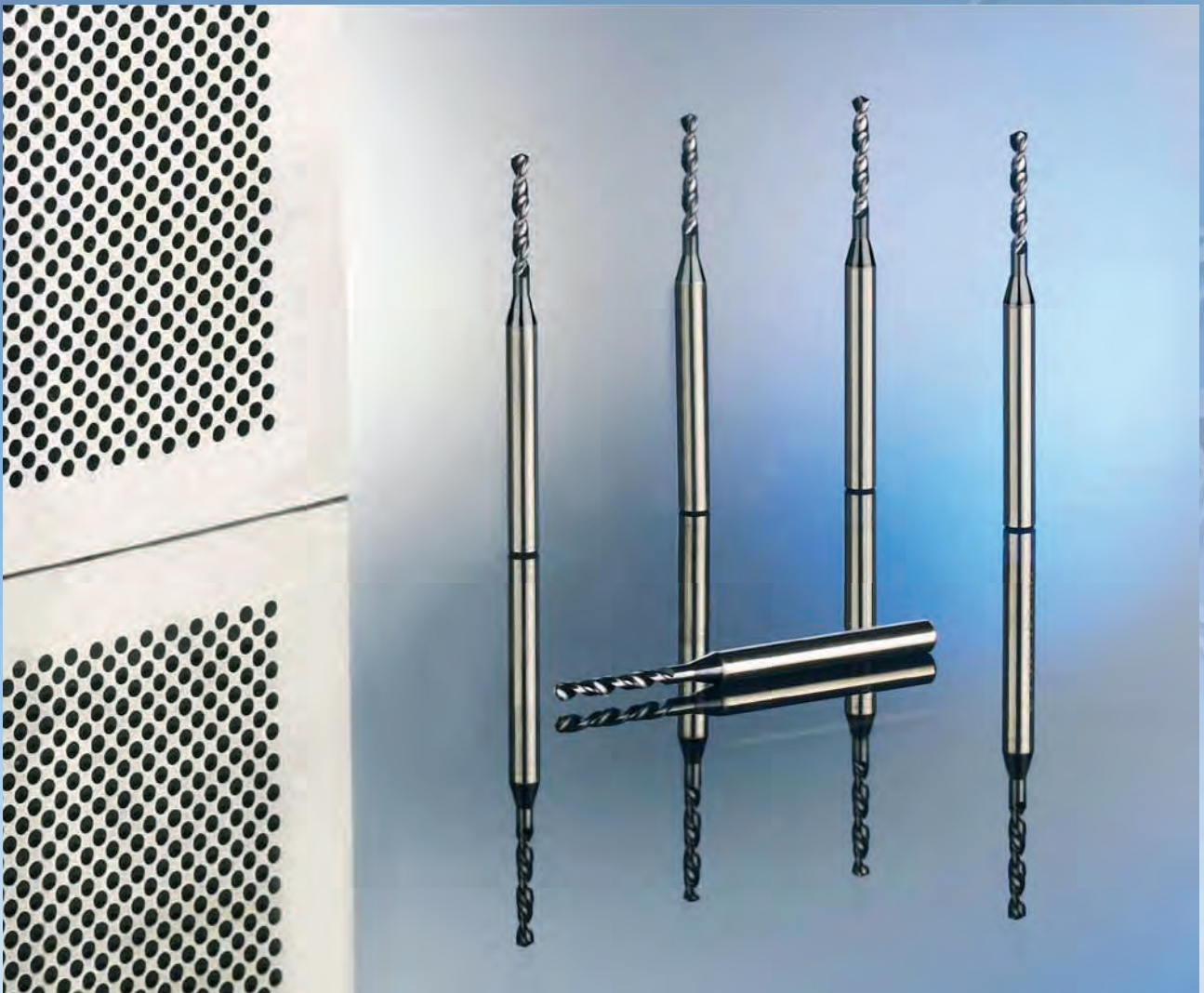
d ₁	l ₂	l ₃	l ₁	d ₂
mm	mm	mm	mm	mm
1.00	6.00	8.00	38	3.00
1.05	6.30	8.30	38	3.00
1.10	6.60	8.60	38	3.00
1.15	6.90	8.90	38	3.00
1.20	7.20	9.20	38	3.00
1.25	7.50	9.50	38	3.00
1.30	7.80	9.80	38	3.00
1.35	8.10	10.10	38	3.00
1.40	8.40	10.40	38	3.00
1.45	8.70	10.70	38	3.00
1.50	9.00	11.00	38	3.00
1.55	9.30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

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

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

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

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



Hochleistungsbohrer PHOENIX 12xd

Art. 50942

Foret à grand rendement PHOENIX 12xd

Punta ad alto rendimento PHOENIX 12xd

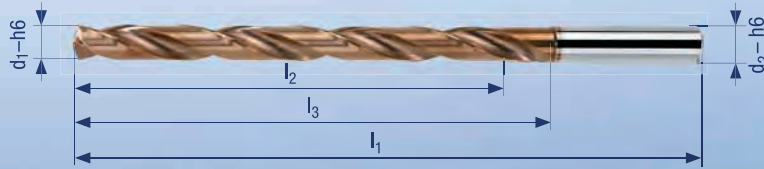
High performance drill PHOENIX 12xd

St

Inox

EN-GJL
EN-GJS

Al



VHM
MD/SC

SPHINX
NORM



Typ
N

Z
2



Helica

Innenkühlung ab \varnothing 2.50 mm
Trou d'huile à partir du \varnothing 2.50 mm
Fori di lubrificazione a partire dal \varnothing 2.50 mm
Internal coolant from \varnothing 2.50 mm

Vc → S./p. 43

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

Spiralbohrer FASTCUT 3xd

Foret hélicoïdal FASTCUT 3xd

Punta elicoidale FASTCUT 3xd

Twist drill FASTCUT 3xd

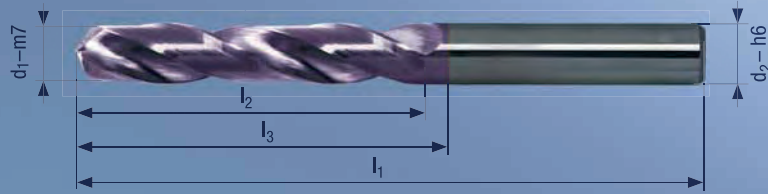
Art. 50950

St

Inox

**EN-GJL
EN-GJS**

Al



**VHM
MD/SC**

**DIN
6537**



**Typ
N**

**Z
2**



**FUTURA
Nano Top**

Vc → S./p. 43

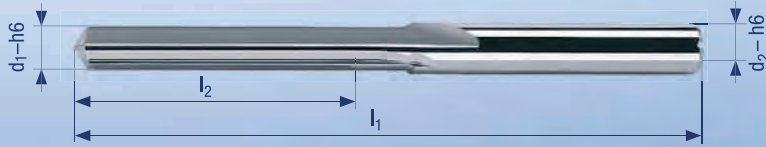
d ₁ mm	l ₂ mm	l ₃ mm	l ₁ mm	d ₂ mm
3.00	14.00	20.00	62	6.00
3.10	14.00	20.00	62	6.00
3.20	14.00	20.00	62	6.00
3.30	14.00	20.00	62	6.00
3.40	14.00	20.00	62	6.00
3.50	14.00	20.00	62	6.00
3.60	14.00	20.00	62	6.00
3.70	14.00	20.00	62	6.00
3.80	17.00	24.00	66	6.00
3.90	17.00	24.00	66	6.00
4.00	17.00	24.00	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

Hochleistungsbohrer QUADRO PLUS 6xd Art. 52100

Foret à grand rendement QUADRO PLUS 6xd
 Punta ad alto rendimento QUADRO PLUS 6xd
 High performance drill QUADRO PLUS 6xd



Vc → S./p. 44

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

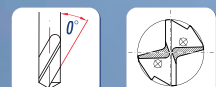
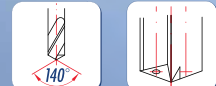
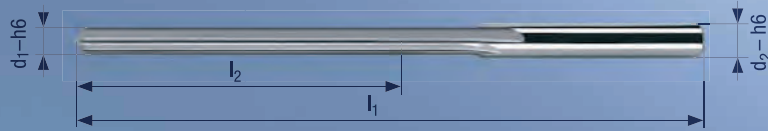
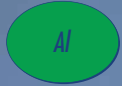
d ₁ mm	l ₂ mm	l ₁ mm	d ₂ mm
20.00	120.00	207	20.00

Hochleistungsbohrer QUADRO PLUS 12xd Art. 52200

Foret à grand rendement QUADRO PLUS 12xd

Punta ad alto rendimento QUADRO PLUS 12xd

High performance drill QUADRO PLUS 12xd



Vc → S./p. 44

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

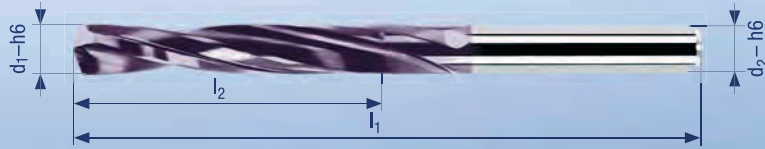
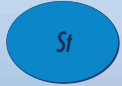
d ₁ mm	l ₂ mm	l ₁ mm	d ₂ mm
17.00	204.00	300	18.00
17.50	210.00	300	18.00
18.00	216.00	300	18.00
18.50	222.00	327	20.00
19.00	228.00	327	20.00
19.50	234.00	327	20.00
20.00	240.00	327	20.00

Hochleistungsbohrer QUADRO 15 PLUS 6xd Art. 52150

Foret à grand rendement QUADRO 15 PLUS 6xd

Punta ad alto rendimento QUADRO 15 PLUS 6xd

High performance drill QUADRO 15 PLUS 6xd



Vc → S./p. 44

d ₁ mm	l ₂ mm	l ₁ mm	d ₂ 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


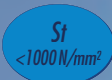
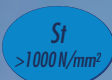




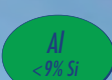
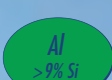
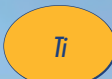
Schnittdaten

Données de coupe




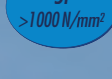






Parametri di lavoro

Cutting data

Art. 50941

	Balinit Helica/ Futura Nano Top		
Material Matière Materiale Material	Durchmesser mm Diamètre mm Diametro mm Diameter mm	v=m/min	f=mm/U f=mm/t f=mm/g f=mm/r
	0.5 – 0.9	40 – 80	0.02 – 0.05
	1.0 – 1.6	80 – 130	0.05 – 0.09
	1.7 – 2.4	80 – 130	0.09 – 0.15
	0.5 – 0.9	35 – 75	0.015 – 0.04
	1.0 – 1.6	70 – 100	0.04 – 0.08
	1.7 – 2.4	70 – 100	0.08 – 0.14
	0.5 – 0.9	35 – 50	0.01 – 0.02
	1.0 – 1.6	50 – 90	0.02 – 0.06
	1.7 – 2.4	50 – 90	0.06 – 0.10
	0.5 – 0.9	30 – 40	0.005 – 0.008
	1.0 – 1.6	40 – 80	0.008 – 0.04
	1.7 – 2.4	40 – 80	0.04 – 0.08
	0.5 – 0.9	20 – 30	0.005 – 0.008
	1.0 – 1.6	30 – 70	0.008 – 0.04
	1.7 – 2.4	30 – 70	0.04 – 0.08
	0.5 – 0.9	50 – 100	0.02 – 0.05
	1.0 – 1.6	100 – 150	0.04 – 0.10
	1.7 – 2.4	100 – 150	0.10 – 0.15
	0.5 – 0.9	40 – 80	0.015 – 0.04
	1.0 – 1.6	80 – 130	0.04 – 0.08
	1.7 – 2.4	80 – 130	0.08 – 0.12
	0.5 – 0.9	60 – 120	0.02 – 0.04
	1.0 – 1.6	120 – 150	0.04 – 0.09
	1.7 – 2.4	120 – 150	0.09 – 0.15
	0.5 – 0.9	60 – 120	0.02 – 0.04
	1.0 – 1.6	120 – 180	0.04 – 0.09
	1.7 – 2.4	120 – 180	0.09 – 0.15
	0.5 – 0.9	20 – 30	0.003 – 0.005
	1.0 – 1.6	30 – 60	0.005 – 0.015
	1.7 – 2.4	30 – 60	0.015 – 0.03

Art. 50938 / 50940

	Balinit Helica/ Futura Nano Top		
Material Matière Materiale Material	Durchmesser mm Diamètre mm Diametro mm Diameter mm	v=m/min	f=mm/U f=mm/t f=mm/g f=mm/r
	1.0 – 2.4	80 – 130	0.05 – 0.15
	2.5 – 5.0	120 – 180	0.12 – 0.25
	5.1 – 8.0	120 – 180	0.20 – 0.30
	8.1 – 12.7	120 – 180	0.28 – 0.40
	1.0 – 2.4	70 – 100	0.04 – 0.14
	2.5 – 5.0	100 – 160	0.10 – 0.22
	5.1 – 8.0	100 – 160	0.18 – 0.28
	8.1 – 12.7	100 – 160	0.26 – 0.38
	1.0 – 2.4	50 – 100	0.02 – 0.10
	2.5 – 5.0	90 – 150	0.08 – 0.20
	5.1 – 8.0	90 – 150	0.17 – 0.25
	8.1 – 12.7	90 – 150	0.23 – 0.35
	1.0 – 2.4	40 – 80	0.008 – 0.08
	2.5 – 5.0	80 – 130	0.06 – 0.15
	5.1 – 8.0	80 – 130	0.10 – 0.20
	8.1 – 12.7	80 – 130	0.18 – 0.26
	1.0 – 2.4	30 – 70	0.008 – 0.08
	2.5 – 5.0	70 – 120	0.06 – 0.15
	5.1 – 8.0	70 – 120	0.10 – 0.20
	8.1 – 12.7	70 – 120	0.18 – 0.26
	1.0 – 2.4	100 – 150	0.04 – 0.15
	2.5 – 5.0	150 – 200	0.12 – 0.22
	5.1 – 8.0	150 – 200	0.20 – 0.35
	8.1 – 12.7	150 – 200	0.30 – 0.50
	1.0 – 2.4	80 – 130	0.04 – 0.12
	2.5 – 5.0	130 – 200	0.10 – 0.23
	5.1 – 8.0	130 – 200	0.23 – 0.35
	8.1 – 12.7	130 – 200	0.28 – 0.45
	1.0 – 2.4	120 – 150	0.04 – 0.15
	2.5 – 5.0	150 – 200	0.13 – 0.28
	5.1 – 8.0	150 – 200	0.25 – 0.33
	8.1 – 12.7	150 – 200	0.31 – 0.50
	1.0 – 2.4	150 – 200	0.04 – 0.15
	2.5 – 5.0	200 – 250	0.15 – 0.30
	5.1 – 8.0	200 – 250	0.28 – 0.40
	8.1 – 12.7	200 – 250	0.38 – 0.55
	1.0 – 2.4	30 – 60	0.005 – 0.03
	2.5 – 5.0	40 – 60	0.03 – 0.05
	5.1 – 8.0	40 – 60	0.04 – 0.06
	8.1 – 12.7	40 – 60	0.06 – 0.08

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.

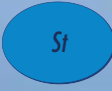
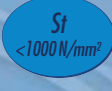
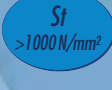




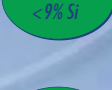


Schnittdaten

Données de coupe

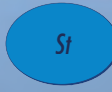
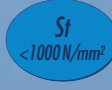
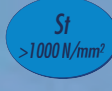




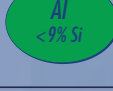
Parametri di lavoro

Cutting data

Art. 50942

Balinit Helica			
Material Matière Materiale Material	Durchmesser mm Diamètre mm Diametro mm Diameter mm	v=m/min	f=mm/U f=mm/t f=mm/g f=mm/r
	1.0 – 2.4	80 – 130	0.04 – 0.08
	2.5 – 5.0	120 – 160	0.06 – 0.15
	5.1 – 8.0	120 – 160	0.13 – 0.22
	8.1 – 12.7	120 – 160	0.18 – 0.30
	1.0 – 2.4	70 – 100	0.04 – 0.08
	2.5 – 5.0	110 – 150	0.06 – 0.15
	5.1 – 8.0	110 – 150	0.13 – 0.22
	8.1 – 12.7	110 – 150	0.20 – 0.30
	1.0 – 2.4	50 – 90	0.03 – 0.07
	2.5 – 5.0	100 – 140	0.05 – 0.13
	5.1 – 8.0	100 – 140	0.12 – 0.19
	8.1 – 12.7	100 – 140	0.17 – 0.26
	1.0 – 2.4	40 – 80	0.01 – 0.05
	2.5 – 5.0	80 – 120	0.05 – 0.12
	5.1 – 8.0	80 – 120	0.08 – 0.16
	8.1 – 12.7	80 – 120	0.14 – 0.22
	1.0 – 2.4	30 – 70	0.01 – 0.05
	2.5 – 5.0	70 – 110	0.05 – 0.12
	5.1 – 8.0	70 – 110	0.08 – 0.16
	8.1 – 12.7	70 – 110	0.14 – 0.22
	1.0 – 2.4	100 – 140	0.05 – 0.10
	2.5 – 5.0	150 – 190	0.08 – 0.23
	5.1 – 8.0	150 – 190	0.21 – 0.32
	8.1 – 12.7	150 – 190	0.30 – 0.40
	1.0 – 2.4	80 – 130	0.04 – 0.08
	2.5 – 5.0	130 – 190	0.08 – 0.18
	5.1 – 8.0	130 – 190	0.18 – 0.28
	8.1 – 12.7	130 – 190	0.28 – 0.35
	1.0 – 2.4	120 – 140	0.04 – 0.13
	2.5 – 5.0	150 – 190	0.11 – 0.26
	5.1 – 8.0	150 – 190	0.23 – 0.36
	8.1 – 12.7	150 – 190	0.30 – 0.45
	1.0 – 2.4	150 – 190	0.04 – 0.14
	2.5 – 5.0	200 – 240	0.13 – 0.28
	5.1 – 8.0	200 – 240	0.26 – 0.38
	8.1 – 12.7	200 – 240	0.30 – 0.48
	1.0 – 2.4	30 – 60	0.005 – 0.03
	2.5 – 5.0	40 – 70	0.025 – 0.04
	5.1 – 8.0	40 – 70	0.035 – 0.06
	8.1 – 12.7	40 – 70	0.050 – 0.07

Art. 50950

Balinit Helica/ TiAlN			
Material Matière Materiale Material	Durchmesser mm Diamètre mm Diametro mm Diameter mm	v=m/min	f=mm/U f=mm/t f=mm/g f=mm/r
	3.0 – 5.0	80 – 110	0.06 – 0.15
	5.1 – 8.0	80 – 110	0.10 – 0.25
	8.1 – 12.0	80 – 110	0.20 – 0.35
	12.1 – 16.0	80 – 110	0.25 – 0.37
	16.1 – 20.0	80 – 110	0.28 – 0.45
	3.0 – 5.0	60 – 80	0.06 – 0.15
	5.1 – 8.0	60 – 80	0.10 – 0.20
	8.1 – 12.0	60 – 80	0.15 – 0.28
	12.1 – 16.0	60 – 80	0.18 – 0.36
	16.1 – 20.0	60 – 80	0.25 – 0.45
	3.0 – 5.0	50 – 70	0.06 – 0.13
	5.1 – 8.0	50 – 70	0.08 – 0.18
	8.1 – 12.0	50 – 70	0.14 – 0.28
	12.1 – 16.0	50 – 70	0.18 – 0.30
	16.1 – 20.0	50 – 70	0.24 – 0.37
	3.0 – 5.0	40 – 60	0.03 – 0.08
	5.1 – 8.0	40 – 60	0.08 – 0.15
	8.1 – 12.0	40 – 60	0.14 – 0.18
	12.1 – 16.0	40 – 60	0.16 – 0.24
	16.1 – 20.0	40 – 60	0.23 – 0.30
	3.0 – 5.0	30 – 45	0.03 – 0.08
	5.1 – 8.0	30 – 45	0.08 – 0.14
	8.1 – 12.0	30 – 45	0.12 – 0.16
	12.1 – 16.0	30 – 45	0.14 – 0.22
16.1 – 20.0	30 – 45	0.20 – 0.28	
	3.0 – 5.0	100 – 120	0.10 – 0.25
	5.1 – 8.0	100 – 120	0.25 – 0.35
	8.1 – 12.0	100 – 120	0.30 – 0.45
	12.1 – 16.0	100 – 120	0.40 – 0.50
	16.1 – 20.0	100 – 120	0.45 – 0.60
	3.0 – 5.0	60 – 80	0.06 – 0.20
	5.1 – 8.0	60 – 80	0.16 – 0.28
	8.1 – 12.0	60 – 80	0.25 – 0.35
	12.1 – 16.0	60 – 80	0.32 – 0.45
	16.1 – 20.0	60 – 80	0.40 – 0.50
	3.0 – 5.0	150 – 200	0.10 – 0.25
	5.1 – 8.0	150 – 200	0.20 – 0.35
	8.1 – 12.0	150 – 200	0.30 – 0.40
	12.1 – 16.0	150 – 200	0.35 – 0.45
16.1 – 20.0	150 – 200	0.40 – 0.50	

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.



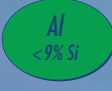
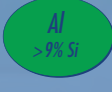


Schnittdaten

Données de coupe


Parametri di lavoro

Cutting data

Art. 52100/52200

Material Matière Materiale Material	Durchmesser mm Diamètre mm Diametro mm Diameter mm	v=m/min	f=mm/U f=mm/t f=mm/g f=mm/r
	3.0 – 4.0	60 – 110	0.04 – 0.06
	4.1 – 8.0	60 – 110	0.06 – 0.20
	8.1 – 12.0	60 – 110	0.15 – 0.30
	12.1 – 16.0	60 – 110	0.25 – 0.40
	16.1 – 20.0	60 – 110	0.35 – 0.50
	3.0 – 4.0	50 – 100	0.02 – 0.05
	4.1 – 8.0	50 – 100	0.05 – 0.16
	8.1 – 12.0	50 – 100	0.14 – 0.25
	12.1 – 16.0	50 – 100	0.20 – 0.35
	16.1 – 20.0	50 – 100	0.30 – 0.40
	3.0 – 4.0	200 – 250	0.04 – 0.06
	4.1 – 8.0	200 – 250	0.06 – 0.15
	8.1 – 12.0	200 – 250	0.15 – 0.25
	12.1 – 16.0	200 – 250	0.25 – 0.40
	3.0 – 4.0	220 – 280	0.04 – 0.06
	4.1 – 8.0	220 – 280	0.06 – 0.15
	8.1 – 12.0	220 – 280	0.15 – 0.25
	12.1 – 16.0	220 – 280	0.25 – 0.40
	3.0 – 4.0	100 – 200	0.04 – 0.06
	4.1 – 8.0	100 – 200	0.06 – 0.15
	8.1 – 12.0	100 – 200	0.15 – 0.25
	12.1 – 16.0	100 – 200	0.25 – 0.35
	16.1 – 20.0	100 – 200	0.35 – 0.45
	3.0 – 4.0	80 – 120	0.04 – 0.05
	4.1 – 8.0	80 – 120	0.05 – 0.12
	8.1 – 12.0	80 – 120	0.12 – 0.22
	12.1 – 16.0	80 – 120	0.22 – 0.33
	16.1 – 20.0	80 – 120	0.33 – 0.45

Art. 52150

Balinit Futura Nano Top TiAlN			
Material Matière Materiale Material	Durchmesser mm Diamètre mm Diametro mm Diameter mm	v=m/min	f=mm/U f=mm/t f=mm/g f=mm/r
	4.0 – 7.0	90 – 170	0.08 – 0.20
	7.0 – 10.0	90 – 170	0.18 – 0.35
	10.0 – 13.0	90 – 170	0.30 – 0.40
	13.0 – 16.0	90 – 170	0.35 – 0.45
	16.0 – 20.0	90 – 170	0.40 – 0.60
	4.0 – 7.0	80 – 150	0.05 – 0.18
	7.0 – 10.0	80 – 150	0.15 – 0.25
	10.0 – 13.0	80 – 150	0.20 – 0.35
	13.0 – 16.0	80 – 150	0.30 – 0.40
	16.0 – 20.0	80 – 150	0.35 – 0.55
	4.0 – 7.0	60 – 120	0.05 – 0.15
	7.0 – 10.0	60 – 120	0.12 – 0.25
	10.0 – 13.0	60 – 120	0.18 – 0.30
	13.0 – 16.0	60 – 120	0.25 – 0.35
	16.0 – 20.0	60 – 120	0.30 – 0.45
	4.0 – 7.0	200 – 250	0.10 – 0.25
	7.0 – 10.0	200 – 250	0.20 – 0.35
	10.0 – 13.0	200 – 250	0.30 – 0.45
	13.0 – 16.0	200 – 250	0.40 – 0.55
	16.0 – 20.0	200 – 250	0.50 – 0.70
	4.0 – 7.0	160 – 200	0.08 – 0.18
	7.0 – 10.0	160 – 200	0.15 – 0.25
	10.0 – 13.0	160 – 200	0.23 – 0.35
	13.0 – 16.0	160 – 200	0.33 – 0.50
	16.0 – 20.0	160 – 200	0.40 – 0.60
	4.0 – 7.0	180 – 250	0.05 – 0.15
	7.0 – 10.0	180 – 250	0.13 – 0.25
	10.0 – 13.0	180 – 250	0.23 – 0.35
	13.0 – 16.0	180 – 250	0.32 – 0.55
	16.0 – 20.0	180 – 250	0.50 – 0.60
	4.0 – 7.0	250 – 300	0.05 – 0.15
	7.0 – 10.0	250 – 300	0.13 – 0.25
	10.0 – 13.0	250 – 300	0.23 – 0.35
	13.0 – 16.0	250 – 300	0.32 – 0.55
	16.0 – 20.0	250 – 300	0.50 – 0.60

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.



Power-Phoenix Hochleistungsbohrer 9xd Art. 50909

Power-Phoenix foret à grand rendement 9xd

Power-Phoenix punta ad alto rendimento 9xd

Power-Phoenix high performance drill 9xd

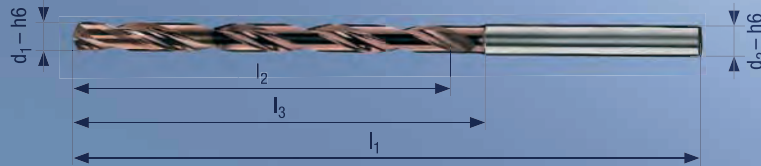
St

EN-GJL
EN-GJS

Inox

Al

Ti



VHM
MD/SC

SPHINX
NORM



Typ
N

Z
2



Helica

Vc → S./p. 52

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

d ₁	l ₂	l ₃	l ₁	d ₂
mm	mm	mm	mm	mm
4.80	43.20	51.00	91	6.00
4.90	44.10	52.00	91	6.00
5.00	45.00	53.00	91	6.00
5.10	45.90	54.00	100	6.00
5.20	46.80	55.00	100	6.00
5.30	47.70	56.00	100	6.00
5.40	48.60	57.00	100	6.00
5.50	49.50	57.50	100	6.00
5.60	50.40	58.50	100	6.00
5.70	51.30	59.50	100	6.00
5.80	52.20	60.00	100	6.00
5.90	53.10	61.00	100	6.00
6.00	54.00	62.00	100	6.00
6.10	54.90	64.00	111	8.00
6.20	55.80	65.00	111	8.00
6.30	56.70	66.00	111	8.00
6.40	57.60	66.50	111	8.00
6.50	58.50	67.50	111	8.00
6.60	59.40	68.50	111	8.00
6.70	60.30	69.50	111	8.00
6.80	61.20	70.00	111	8.00
6.90	62.10	71.00	111	8.00
7.00	63.00	73.00	111	8.00
7.10	63.90	74.00	120	8.00
7.20	64.80	75.00	120	8.00
7.30	65.70	76.00	120	8.00
7.40	66.60	76.50	120	8.00
7.50	67.50	77.50	120	8.00
7.60	68.40	78.50	120	8.00
7.70	69.30	79.50	120	8.00
7.80	70.20	80.00	120	8.00
7.90	82.00	81.00	120	8.00
8.00	72.00	82.00	120	8.00
8.10	72.90	84.00	134	10.00
8.20	73.80	85.00	134	10.00
8.30	74.70	86.00	134	10.00
8.40	75.60	86.50	134	10.00
8.50	76.50	87.50	134	10.00

d ₁	l ₂	l ₃	l ₁	d ₂
mm	mm	mm	mm	mm
8.60	77.40	88.50	134	10.00
8.70	78.30	89.50	134	10.00
8.80	79.20	90.00	134	10.00
8.90	80.10	91.00	134	10.00
9.00	81.00	92.00	134	10.00
9.10	81.90	93.00	144	10.00
9.20	82.80	94.00	144	10.00
9.30	83.70	95.00	144	10.00
9.40	84.60	95.50	144	10.00
9.50	85.50	96.50	144	10.00
9.60	86.40	97.50	144	10.00
9.70	87.30	98.50	144	10.00
9.80	88.20	99.00	144	10.00
9.90	89.10	100.00	144	10.00
10.00	90.00	102.00	144	10.00
10.10	90.90	103.00	159	12.00
10.20	91.80	104.00	159	12.00
10.30	92.70	105.00	159	12.00
10.40	93.60	105.50	159	12.00
10.50	94.50	106.50	159	12.00
10.60	95.40	107.50	159	12.00
10.70	96.30	108.50	159	12.00
10.80	97.20	109.00	159	12.00
10.90	98.10	110.00	159	12.00
11.00	99.00	112.00	159	12.00
11.10	99.90	113.00	169	12.00
11.20	100.80	114.00	169	12.00
11.30	101.70	115.00	169	12.00
11.40	102.60	115.50	169	12.00
11.50	103.50	116.50	169	12.00
11.60	104.40	117.50	169	12.00
11.70	105.30	118.50	169	12.00
11.80	106.20	119.00	169	12.00
11.90	107.10	120.00	169	12.00
12.00	108.00	122.00	169	12.00
12.50	112.50	126.50	179	14.00
12.70	114.30	128.50	179	14.00

Power-Phoenix Hochleistungsbohrer 12xd Art. 50912

Power-Phoenix foret à grand rendement 12xd

Power-Phoenix punta ad alto rendimento 12xd

Power-Phoenix high performance drill 12xd

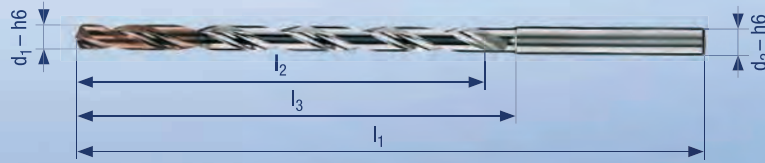
St

EN-GJL
EN-GJS

Inox

Al

Ti



VHM
MD/SC

SPHINX
NORM



Typ
N

Z
2



Helica

Ab \varnothing 2.00 mm mit 4-Führungsfasen
A partir de \varnothing 2.00 mm avec 4 listel
A partire da \varnothing 2.00 mm con 4 pattini
From \varnothing 2.00 mm with 4 margin

Vc \rightarrow S./p. 52

d ₁	l ₂	l ₃	l ₁	d ₂
mm	mm	mm	mm	mm
1.00	12.00	14.00	50	3.00
1.10	13.20	15.50	50	3.00
1.20	14.40	16.50	50	3.00
1.30	15.60	17.50	50	3.00
1.40	16.80	19.00	50	3.00
1.50	18.00	21.00	50	3.00
1.60	19.20	22.50	50	3.00
1.70	20.40	23.50	50	3.00
1.80	21.60	24.50	50	3.00
1.90	22.80	26.00	55	3.00
2.00	24.00	27.00	55	3.00
2.10	25.20	28.50	55	3.00
2.20	26.40	29.50	55	3.00
2.30	27.60	30.50	55	3.00
2.40	28.80	32.00	55	3.00
2.50	30.00	33.00	60	3.00
2.60	31.20	34.40	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	l ₂	l ₃	l ₁	d ₂
mm	mm	mm	mm	mm
4.80	57.60	65.50	105	6.00
4.90	58.80	67.00	105	6.00
5.00	60.00	68.00	105	6.00
5.10	61.20	69.50	118	6.00
5.20	62.40	70.50	118	6.00
5.30	63.60	71.50	118	6.00
5.40	64.80	73.00	118	6.00
5.50	66.00	74.00	118	6.00
5.60	67.20	75.50	118	6.00
5.70	68.40	76.50	118	6.00
5.80	69.60	77.50	118	6.00
5.90	70.80	79.00	118	6.00
6.00	72.00	80.00	118	6.00
6.10	73.20	82.50	136	8.00
6.20	74.40	83.50	136	8.00
6.30	75.60	84.50	136	8.00
6.40	76.80	86.00	136	8.00
6.50	78.00	87.50	136	8.00
6.60	79.20	88.50	136	8.00
6.70	80.40	89.50	136	8.00
6.80	81.60	90.50	136	8.00
6.90	82.80	92.00	136	8.00
7.00	84.00	94.00	136	8.00
7.10	85.20	95.50	148	8.00
7.20	86.40	96.50	148	8.00
7.30	87.60	97.50	148	8.00
7.40	88.80	99.00	148	8.00
7.50	90.00	100.00	148	8.00
7.60	91.20	101.50	148	8.00
7.70	92.40	102.50	148	8.00
7.80	93.60	103.50	148	8.00
7.90	94.80	105.00	148	8.00
8.00	96.00	106.00	148	8.00
8.10	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	l ₂	l ₃	l ₁	d ₂
mm	mm	mm	mm	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

Power-Phoenix Hochleistungsbohrer 16xd Art. 50916

Power-Phoenix foret à grand rendement 16xd

Power-Phoenix punta ad alto rendimento 16xd

Power-Phoenix high performance drill 16xd

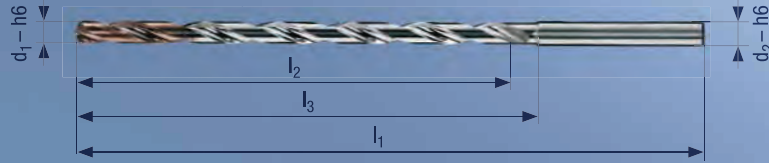
St

EN-GJL
EN-GJS

Inox

Al

Ti



VHM
MD/SC

SPHINX
NORM



Typ
N

Z
2



Helica

Ab \varnothing 2.00 mm mit 4-Führungsfasen
A partir de \varnothing 2.00 mm avec 4 listel
A partire da \varnothing 2.00 mm con 4 pattini
From \varnothing 2.00 mm with 4 margin

Vc \rightarrow S./p. 52

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
8.10	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

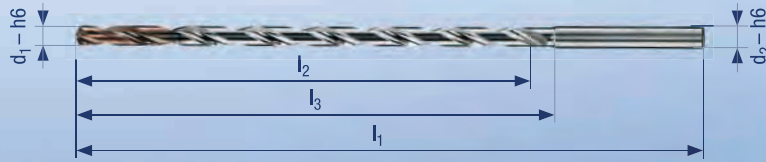
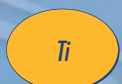
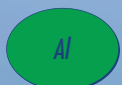
d_1 mm	l_2 mm	l_3 mm	l_1 mm	d_2 mm
8.60	137.60	148.50	197	10.00
8.70	139.20	150.00	197	10.00
8.80	140.80	152.00	197	10.00
8.90	142.40	153.50	197	10.00
9.00	144.00	155.00	197	10.00
9.10	145.60	156.50	214	10.00
9.20	147.20	158.00	214	10.00
9.30	148.80	160.00	214	10.00
9.40	150.40	161.50	214	10.00
9.50	152.00	163.00	214	10.00
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

Power-Phoenix Hochleistungsbohrer 20×d Art. 50920

Power-Phoenix foret à grand rendement 20×d

Power-Phoenix punta ad alto rendimento 20×d

Power-Phoenix high performance drill 20×d



Anwendung }
 Application } S./p. 104
 Applicazione }
 Application }

Vc → S./p. 53

d ₁	l ₂	l ₃	l ₁	d ₂
mm	mm	mm	mm	mm
3.00	60.00	66.00	105	6.00
3.30	66.00	72.00	110	6.00
4.00	80.00	90.00	128	6.00
4.20	84.00	94.00	132	6.00
5.00	100.00	102.00	140	6.00
6.00	120.00	133.00	171	6.00
6.80	136.00	150.00	190	8.00
7.00	140.00	155.00	195	8.00
8.00	160.00	176.00	216	8.00
8.50	170.00	188.00	233	10.00
9.00	180.00	200.00	245	10.00
10.00	200.00	222.00	267	10.00

Power-Phoenix Hochleistungsbohrer 25xd Art. 50925

Power-Phoenix foret à grand rendement 25xd
 Power-Phoenix punta ad alto rendimento 25xd
 Power-Phoenix high performance drill 25xd

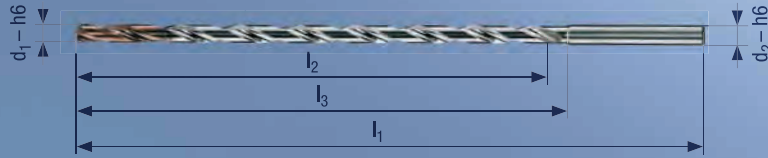
St

EN-GJL
EN-GJS

Inox

Al

Ti



VHM
MD/SC

SPHINX
NORM



Typ
N

Z
2



Helica

Anwendung }
 Application } S./p. 104
 Applicazione }
 Application }

Vc → S./p. 53

d_1 mm	l_2 mm	l_3 mm	l_1 mm	d_2 mm
3.00	75.00	81.00	120	6.00
3.30	83.00	89.00	125	6.00
4.00	100.00	110.00	148	6.00
4.20	105.00	115.00	153	6.00
5.00	125.00	127.00	165	6.00
6.00	150.00	163.00	201	6.00
6.80	170.00	184.00	224	8.00
7.00	175.00	190.00	230	8.00
8.00	200.00	216.00	256	8.00
8.50	213.00	231.00	276	10.00
9.00	225.00	245.00	290	10.00
10.00	250.00	272.00	317	10.00



Power-Phoenix Hochleistungsbohrer 30xd Art. 50930

Power-Phoenix foret à grand rendement 30xd
 Power-Phoenix punta ad alto rendimento 30xd
 Power-Phoenix high performance drill 30xd

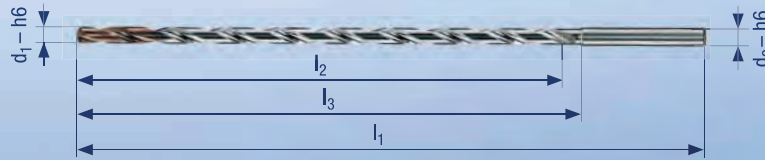
St

EN-GJL
EN-GJS

Inox

Al

Ti



VHM
MD/SC

SPHINX
NORM



Typ
N

Z
2



Helica

Anwendung }
 Application }
 Applicazione }
 Application } S./p. 104

Vc → S./p. 53

d_1	l_2	l_3	l_1	d_2
mm	mm	mm	mm	mm
3.00	90.00	96.00	135	6.00
3.30	99.00	105.00	143	6.00
4.00	120.00	130.00	168	6.00
4.20	126.00	136.00	174	6.00
5.00	150.00	162.00	200	6.00
6.00	180.00	193.00	231	6.00
6.80	204.00	218.00	258	8.00
7.00	210.00	225.00	265	8.00
8.00	240.00	256.00	296	8.00
8.50	255.00	273.00	318	10.00
9.00	270.00	290.00	335	10.00
10.00	285.00	300.00	345	10.00

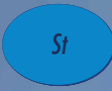
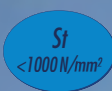
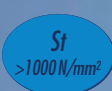




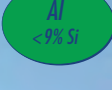
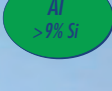
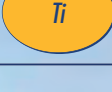
Schnittdaten

Données de coupe

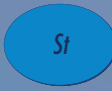
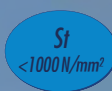
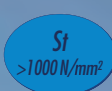




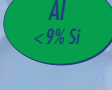
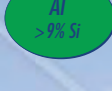
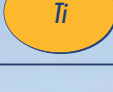
Parametri di lavoro

Cutting data

Art. 50909/50912

Material Matière Materiale Material	Durchmesser mm Diamètre mm Diametro mm Diameter mm	v=m/min	f=mm/U f=mm/t f=mm/g f=mm/r
	1.0 – 2.4	120 – 160	0.04 – 0.08
	2.5 – 5.0	120 – 160	0.06 – 0.15
	5.1 – 8.0	120 – 160	0.13 – 0.22
	8.1 – 12.7	120 – 160	0.18 – 0.30
	1.0 – 2.4	110 – 150	0.04 – 0.08
	2.5 – 5.0	110 – 150	0.06 – 0.15
	5.1 – 8.0	110 – 150	0.13 – 0.22
	8.1 – 12.7	110 – 150	0.20 – 0.30
	1.0 – 2.4	100 – 140	0.03 – 0.07
	2.5 – 5.0	100 – 140	0.05 – 0.13
	5.1 – 8.0	100 – 140	0.12 – 0.19
	8.1 – 12.7	100 – 140	0.17 – 0.26
	1.0 – 2.4	80 – 120	0.01 – 0.05
	2.5 – 5.0	80 – 120	0.05 – 0.12
	5.1 – 8.0	80 – 120	0.08 – 0.16
	8.1 – 12.7	80 – 120	0.14 – 0.22
	1.0 – 2.4	70 – 110	0.01 – 0.05
	2.5 – 5.0	70 – 110	0.05 – 0.12
	5.1 – 8.0	70 – 110	0.08 – 0.16
	8.1 – 12.7	70 – 110	0.14 – 0.22
	1.0 – 2.4	150 – 190	0.05 – 0.10
	2.5 – 5.0	150 – 190	0.08 – 0.23
	5.1 – 8.0	150 – 190	0.21 – 0.32
	8.1 – 12.7	150 – 190	0.30 – 0.40
	1.0 – 2.4	130 – 190	0.04 – 0.08
	2.5 – 5.0	130 – 190	0.08 – 0.18
	5.1 – 8.0	130 – 190	0.18 – 0.28
	8.1 – 12.7	130 – 190	0.28 – 0.35
	1.0 – 2.4	150 – 190	0.04 – 0.13
	2.5 – 5.0	150 – 190	0.11 – 0.26
	5.1 – 8.0	150 – 190	0.23 – 0.36
	8.1 – 12.7	150 – 190	0.30 – 0.45
	1.0 – 2.4	200 – 240	0.04 – 0.14
	2.5 – 5.0	200 – 240	0.13 – 0.28
	5.1 – 8.0	200 – 240	0.26 – 0.38
	8.1 – 12.7	200 – 240	0.30 – 0.48
	1.0 – 2.4	40 – 70	0.005 – 0.03
	2.5 – 5.0	40 – 70	0.025 – 0.04
	5.1 – 8.0	40 – 70	0.035 – 0.06
	8.1 – 12.7	40 – 70	0.050 – 0.07

Art. 50916

Material Matière Materiale Material	Durchmesser mm Diamètre mm Diametro mm Diameter mm	v=m/min	f=mm/U f=mm/t f=mm/g f=mm/r
	1.0 – 2.4	70 – 130	0.04 – 0.06
	2.5 – 5.0	70 – 130	0.06 – 0.12
	5.1 – 8.0	70 – 130	0.12 – 0.25
	8.1 – 12.7	70 – 130	0.25 – 0.40
	1.0 – 2.4	60 – 120	0.03 – 0.05
	2.5 – 5.0	60 – 120	0.05 – 0.10
	5.1 – 8.0	60 – 120	0.10 – 0.22
	8.1 – 12.7	60 – 120	0.22 – 0.35
	1.0 – 2.4	60 – 100	0.03 – 0.05
	2.5 – 5.0	60 – 100	0.05 – 0.09
	5.1 – 8.0	60 – 100	0.09 – 0.20
	8.1 – 12.7	60 – 100	0.20 – 0.30
	1.0 – 2.4	50 – 70	0.03 – 0.05
	2.5 – 5.0	50 – 70	0.05 – 0.09
	5.1 – 8.0	50 – 70	0.09 – 0.20
	8.1 – 12.7	50 – 70	0.20 – 0.30
	1.0 – 2.4	35 – 60	0.03 – 0.05
	2.5 – 5.0	35 – 60	0.05 – 0.08
	5.1 – 8.0	35 – 60	0.08 – 0.18
	8.1 – 12.7	35 – 60	0.18 – 0.28
	1.0 – 2.4	80 – 120	0.05 – 0.08
	2.5 – 5.0	80 – 120	0.08 – 0.15
	5.1 – 8.0	80 – 120	0.15 – 0.30
	8.1 – 12.7	80 – 120	0.30 – 0.50
	1.0 – 2.4	60 – 100	0.04 – 0.07
	2.5 – 5.0	60 – 100	0.07 – 0.13
	5.1 – 8.0	60 – 100	0.13 – 0.26
	8.1 – 12.7	60 – 100	0.26 – 0.45
	1.0 – 2.4	100 – 160	0.04 – 0.07
	2.5 – 5.0	100 – 160	0.07 – 0.13
	5.1 – 8.0	100 – 160	0.13 – 0.28
	8.1 – 12.7	100 – 160	0.28 – 0.46
	1.0 – 2.4	110 – 180	0.05 – 0.08
	2.5 – 5.0	110 – 180	0.08 – 0.15
	5.1 – 8.0	110 – 180	0.15 – 0.30
	8.1 – 12.7	110 – 180	0.30 – 0.50
	1.0 – 2.4	30 – 60	0.005 – 0.03
	2.5 – 5.0	30 – 60	0.03 – 0.07
	5.1 – 8.0	30 – 60	0.07 – 0.11
	8.1 – 12.7	30 – 60	0.11 – 0.18

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. 50920/50925/50930

Material Matière Materiale Material	Durchmesser mm Diamètre mm Diametro mm Diameter mm	v=m/min	f=mm/U f=mm/t f=mm/g f=mm/r
St	2.5 – 5.0	70 – 120	0.05 – 0.15
	5.1 – 8.0	70 – 120	0.15 – 0.25
	8.1 – 10.0	70 – 120	0.25 – 0.38
St <1000 N/mm ²	2.5 – 5.0	70 – 110	0.04 – 0.13
	5.1 – 8.0	70 – 110	0.13 – 0.23
	8.1 – 10.0	70 – 110	0.23 – 0.36
St >1000 N/mm ²	2.5 – 5.0	60 – 100	0.03 – 0.12
	5.1 – 8.0	60 – 100	0.12 – 0.22
	8.1 – 10.0	60 – 100	0.22 – 0.35
Inox austenit	2.5 – 5.0	40 – 70	0.03 – 0.09
	5.1 – 8.0	40 – 70	0.09 – 0.15
	8.1 – 10.0	40 – 70	0.15 – 0.25
Inox martensit	2.5 – 5.0	35 – 55	0.03 – 0.07
	5.1 – 8.0	35 – 55	0.07 – 0.13
	8.1 – 10.0	35 – 55	0.13 – 0.22
EN-GJL	2.5 – 5.0	70 – 110	0.05 – 0.17
	5.1 – 8.0	70 – 110	0.17 – 0.28
	8.1 – 10.0	70 – 110	0.28 – 0.45
EN-GJS	2.5 – 5.0	60 – 100	0.05 – 0.14
	5.1 – 8.0	60 – 100	0.14 – 0.25
	8.1 – 10.0	60 – 100	0.25 – 0.40
Al <9% Si	2.5 – 5.0	80 – 140	0.05 – 0.15
	5.1 – 8.0	80 – 140	0.15 – 0.25
	8.1 – 10.0	80 – 140	0.25 – 0.35
Al >9% Si	2.5 – 5.0	90 – 150	0.05 – 0.17
	5.1 – 8.0	90 – 150	0.17 – 0.29
	8.1 – 10.0	90 – 150	0.29 – 0.45
Ti	2.5 – 5.0	30 – 50	0.01 – 0.05
	5.1 – 8.0	30 – 50	0.05 – 0.09
	8.1 – 10.0	30 – 50	0.09 – 0.15

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.



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

Art. 50810

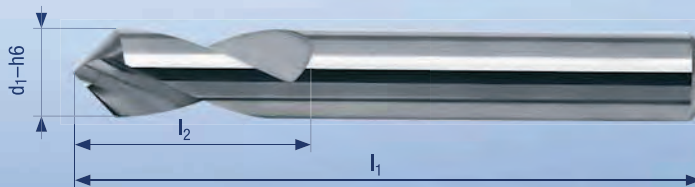
St

Inox

**EN-GJL
EN-GJS**

Al

CuZn



**VHM
MD/SC**

**SPHINX
NORM**

**Z
2**



Vc → S./p. 62

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 120°
Foret à pointer CNC 120°
Punta a centrare CNC 120°
NC spotting drill 120°

Art. 50812

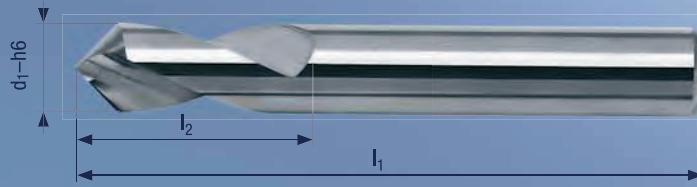
St

Inox

**EN-GJL
EN-GJS**

Al

CuZn



**VHM
MD/SC**

**SPHINX
NORM**

**Z
2**



Vc → S./p. 62

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

K=1.8
+0.1
0 -0.1

NC-Anbohrer 140°
Foret à pointer CNC 140°
Punta a centrare CNC 140°
NC spotting drill 140°

Art. 50814

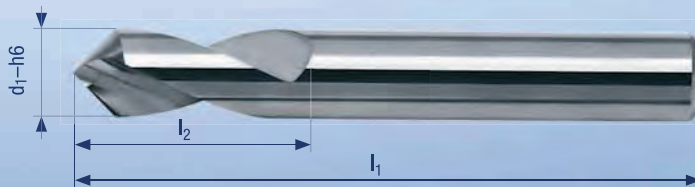
St

Inox

**EN-GJL
EN-GJS**

Al

CuZn



**VHM
MD/SC**

**SPHINX
NORM**

**Z
2**



Vc → S./p. 62

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

Zentriersenker

Foret à pointer et chanfreiner

Punta da centro e smusso

Spotting and chamfering drill

Art. 50818

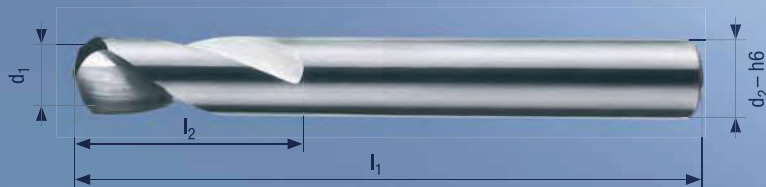
Sf

Inox

**EN-GJL
EN-GJS**

Al

Cu



**VHM
MD/SC**

**SPHINX
NORM**

**Z
2**

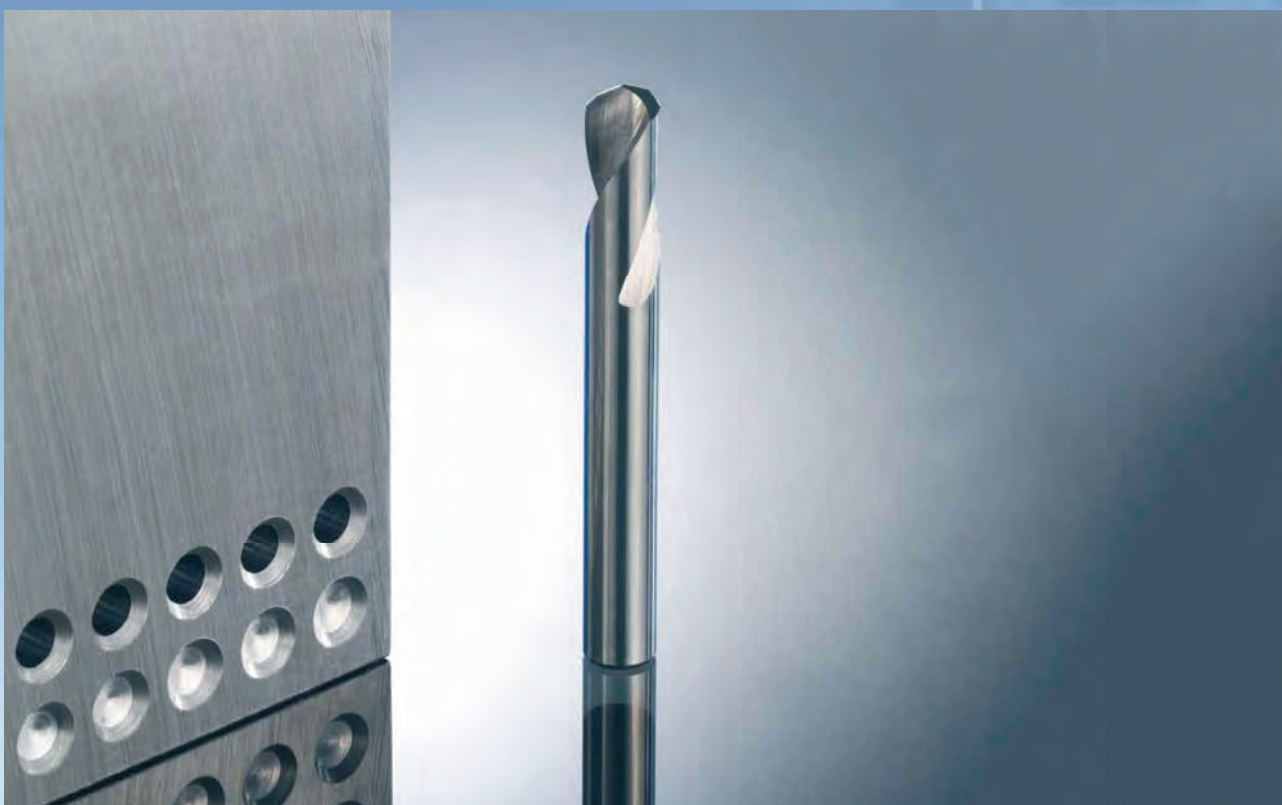


Vc → S./p. 62

d ₁ mm	l ₂ mm	l ₁ mm	d ₂ 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

d ₁ mm	l ₂ mm	l ₁ mm	d ₂ mm
4.20	16.00	50	6.00
5.00	16.00	50	6.00
6.00	20.00	60	8.00
6.80	20.00	60	8.00
7.00	20.00	60	8.00
8.00	22.00	70	10.00

d ₁ mm	l ₂ mm	l ₁ mm	d ₂ mm
8.50	22.00	70	10.00
9.00	22.00	70	10.00
10.00	22.00	70	12.00
10.20	22.00	70	12.00
11.00	25.00	75	14.00
12.00	25.00	75	14.00



Spiralbohrer SPICUT

Foret hélicoïdal SPICUT

Punta elicoidale SPICUT

Twist drill SPICUT

Art. 50820



Ab \varnothing 2 mm mit 4-Führungsfasen
 A partir de \varnothing 2 mm avec 4 listel
 A partire da \varnothing 2 mm con 4 pattini
 From \varnothing 2 mm with 4 margin

Vc \rightarrow S./p. 62

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

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

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

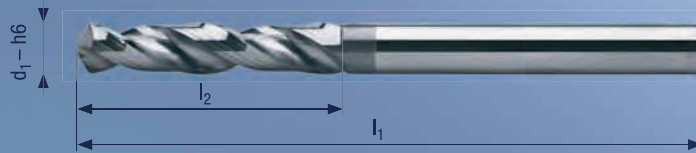
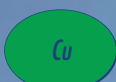
Spiralbohrer POSICUT

Foret hélicoïdal POSICUT

Punta elicoidale POSICUT

Twist drill POSICUT

Art. 50830



Vc → S./p. 63

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

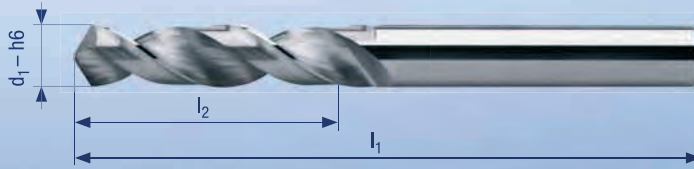
St

Inox

**EN-GJL
EN-GJS**

Al

Ti



**VHM
MD/SC**

**SPHINX
NORM**



**Typ
N**

**Z
2**



Vc → S./p. 63

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

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

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

Schnittdaten

Données de coupe

Parametri di lavoro

Cutting data

Art. 50810/50812/50814/50818

Material Matière Materiale Material	Durchmesser mm Diamètre mm Diametro mm Diameter mm	v=m/min	f=mm/U f=mm/t f=mm/g f=mm/r
St	3.0 – 6.0	60 – 90	0.03 – 0.07
	8.0 – 12.0	60 – 90	0.06 – 0.14
	14.0 – 20.0	60 – 90	0.12 – 0.25
St <1000N/mm ²	3.0 – 6.0	35 – 60	0.03 – 0.06
	8.0 – 12.0	35 – 60	0.05 – 0.12
	14.0 – 20.0	35 – 60	0.12 – 0.23
St >1000N/mm ²	3.0 – 6.0	30 – 50	0.02 – 0.06
	8.0 – 12.0	30 – 50	0.06 – 0.10
	14.0 – 20.0	30 – 50	0.10 – 0.20
Inox	3.0 – 6.0	30 – 50	0.02 – 0.06
	8.0 – 12.0	30 – 50	0.06 – 0.10
	14.0 – 20.0	30 – 50	0.10 – 0.20
EN-GJL	3.0 – 6.0	80 – 120	0.04 – 0.08
	8.0 – 12.0	80 – 120	0.08 – 0.16
	14.0 – 20.0	80 – 120	0.16 – 0.50
EN-GJS	3.0 – 6.0	50 – 80	0.03 – 0.06
	8.0 – 12.0	50 – 80	0.06 – 0.12
	14.0 – 20.0	50 – 80	0.12 – 0.30
Al <9% Si	3.0 – 6.0	100 – 150	0.04 – 0.10
	8.0 – 12.0	100 – 150	0.10 – 0.20
	14.0 – 20.0	100 – 150	0.20 – 0.45
Al >9% Si	3.0 – 6.0	100 – 150	0.04 – 0.10
	8.0 – 12.0	100 – 150	0.10 – 0.18
	14.0 – 20.0	100 – 150	0.18 – 0.40
Ti	3.0 – 6.0	70 – 120	0.03 – 0.08
	8.0 – 12.0	70 – 120	0.08 – 0.12
	14.0 – 20.0	70 – 120	0.12 – 0.20

Art. 50820

Material Matière Materiale Material	Durchmesser mm Diamètre mm Diametro mm Diameter mm	v=m/min	f=mm/U f=mm/t f=mm/g f=mm/r
St	0.7 – 2.5	25 – 60	0.004 – 0.007
	2.6 – 6.0	60 – 90	0.007 – 0.012
	6.1 – 9.0	60 – 90	0.010 – 0.025
	9.1 – 11.0	60 – 90	0.020 – 0.040
	11.1 – 14.0	60 – 90	0.040 – 0.070
St <1000N/mm ²	0.7 – 2.5	10 – 35	0.003 – 0.005
	2.6 – 6.0	35 – 60	0.004 – 0.010
	6.1 – 9.0	35 – 60	0.010 – 0.020
	9.1 – 11.0	35 – 60	0.020 – 0.035
	11.1 – 14.0	35 – 60	0.035 – 0.060
Al <9% Si	0.7 – 2.5	80 – 160	0.004 – 0.007
	2.6 – 6.0	80 – 180	0.007 – 0.015
	6.1 – 9.0	80 – 180	0.015 – 0.030
	9.1 – 11.0	80 – 180	0.030 – 0.080
	11.1 – 14.0	80 – 180	0.080 – 0.150
Al >9% Si	0.7 – 2.5	60 – 100	0.004 – 0.007
	2.6 – 6.0	60 – 120	0.007 – 0.015
	6.1 – 9.0	60 – 120	0.015 – 0.030
	9.1 – 11.0	60 – 120	0.030 – 0.080
	11.1 – 14.0	60 – 120	0.080 – 0.150
CuZn	0.7 – 2.5	40 – 80	0.005 – 0.020
	2.6 – 6.0	80 – 160	0.020 – 0.040
	6.1 – 9.0	80 – 160	0.040 – 0.080
	9.1 – 11.0	80 – 160	0.080 – 0.120
	11.1 – 14.0	80 – 160	0.120 – 0.180
Kunststoff Plastic	0.7 – 2.5	30 – 50	0.005 – 0.020
	2.6 – 6.0	30 – 100	0.020 – 0.040
	6.1 – 9.0	30 – 100	0.040 – 0.080
	9.1 – 11.0	30 – 100	0.060 – 0.120
	11.1 – 14.0	30 – 100	0.100 – 0.150

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.


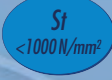
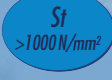




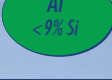
Schnittdaten



Données de coupe

Parametri di lavoro

Cutting data

Art. 50830/50838

Material Matière Materiale Material	Durchmesser mm Diamètre mm Diametro mm Diameter mm	v=m/min	f=mm/U f=mm/t f=mm/g f=mm/r
	0.3 – 4.0	30 – 90	0.01 – 0.04
	4.1 – 8.0	60 – 90	0.04 – 0.08
	8.1 – 12.0	60 – 90	0.08 – 0.14
	12.1 – 16.0	60 – 90	0.14 – 0.20
	16.1 – 20.0	60 – 90	0.20 – 0.26
	0.3 – 4.0	20 – 35	0.01 – 0.03
	4.1 – 8.0	35 – 60	0.03 – 0.07
	8.1 – 12.0	35 – 60	0.07 – 0.12
	12.1 – 16.0	35 – 60	0.12 – 0.18
	16.1 – 20.0	35 – 60	0.18 – 0.23
	0.3 – 4.0	15 – 30	0.005 – 0.02
	4.1 – 8.0	30 – 50	0.02 – 0.06
	8.1 – 12.0	30 – 50	0.06 – 0.10
	12.1 – 16.0	30 – 50	0.10 – 0.15
	16.1 – 20.0	30 – 50	0.15 – 0.20
	0.3 – 4.0	15 – 30	0.005 – 0.02
	4.1 – 8.0	30 – 50	0.02 – 0.06
	8.1 – 12.0	30 – 50	0.06 – 0.10
	12.1 – 16.0	30 – 50	0.10 – 0.15
	16.1 – 20.0	30 – 50	0.15 – 0.20
	0.3 – 4.0	10 – 20	0.004 – 0.02
	4.1 – 8.0	20 – 40	0.02 – 0.06
	8.1 – 12.0	20 – 40	0.06 – 0.10
	12.1 – 16.0	20 – 40	0.10 – 0.14
	16.1 – 20.0	20 – 40	0.14 – 0.18
	0.3 – 4.0	40 – 80	0.01 – 0.06
	4.1 – 8.0	80 – 120	0.06 – 0.10
	8.1 – 12.0	80 – 120	0.10 – 0.16
	12.1 – 16.0	80 – 120	0.16 – 0.30
	16.1 – 20.0	80 – 120	0.30 – 0.50
	0.3 – 4.0	20 – 50	0.01 – 0.03
	4.1 – 8.0	50 – 80	0.03 – 0.08
	8.1 – 12.0	50 – 80	0.08 – 0.13
	12.1 – 16.0	50 – 80	0.13 – 0.18
	16.1 – 20.0	50 – 80	0.18 – 0.30
	0.3 – 4.0	60 – 100	0.015 – 0.05
	4.1 – 8.0	100 – 150	0.05 – 0.12
	8.1 – 12.0	100 – 150	0.12 – 0.20
	12.1 – 16.0	100 – 150	0.20 – 0.30
	16.1 – 20.0	100 – 150	0.30 – 0.45

Material Matière Materiale Material	Durchmesser mm Diamètre mm Diametro mm Diameter mm	v=m/min	f=mm/U f=mm/t f=mm/g f=mm/r
	0.3 – 4.0	30 – 70	0.01 – 0.05
	4.1 – 8.0	70 – 120	0.05 – 0.11
	8.1 – 12.0	70 – 120	0.11 – 0.18
	12.1 – 16.0	70 – 120	0.18 – 0.28
	16.1 – 20.0	70 – 120	0.28 – 0.40
	0.3 – 4.0	20 – 30	0.02 – 0.04
	4.1 – 8.0	30 – 50	0.04 – 0.08
	8.1 – 12.0	30 – 50	0.08 – 0.12
	12.1 – 16.0	30 – 50	0.12 – 0.16
	16.1 – 20.0	30 – 50	0.16 – 0.20

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.



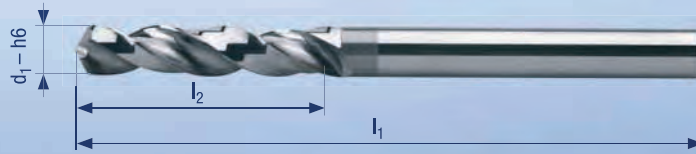
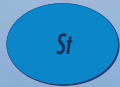
Bohrreibahle ASYCUT

Foret alésoir ASYCUT

Punta alesatore ASYCUT

Drill reamer ASYCUT

Art. 50840



Vc → S./p. 69

d ₁ mm	l ₂ mm	l ₁ 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

d ₁ mm	l ₂ mm	l ₁ 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

d ₁ mm	l ₂ mm	l ₁ 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

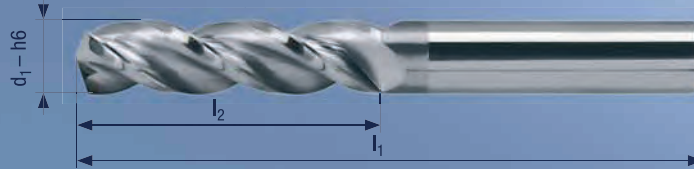
Art. 55654

Sf

EN-GJL
EN-GJS

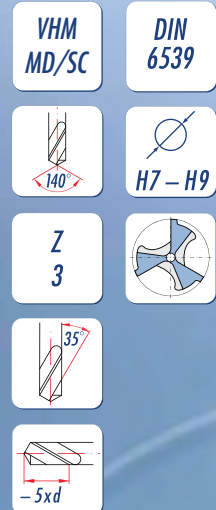
Ti

Al



Zwischenmasse erhältlich
Dimensions intermédiaire disponible
Quote intermediaire disponibili
Intermediate sizes available

Vc → S./p. 69



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

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

d ₁ mm	l ₂ mm	l ₁ mm
7.938	5/16"	34.0
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
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
11.50	43.0	95
12.00	47.0	102
12.50	47.0	102
12.700	1/2"	47.0
13.00	47.0	102
13.50	50.0	107
14.00	50.0	107

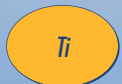
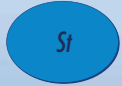
Bohrreibahle TRICUT LONG

Foret alésoir TRICUT LONG

Punta alesatore TRICUT LONG

Drill reamer TRICUT LONG

Art. 55338



Zwischenmasse erhältlich
Dimensions intermédiaire disponible
Quote intermediarie disponibili
Intermediate sizes available

Vc → S./p. 69



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

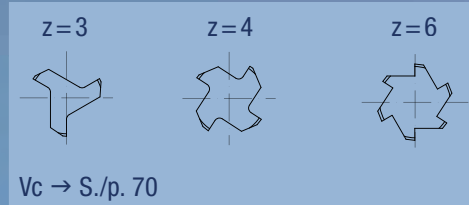
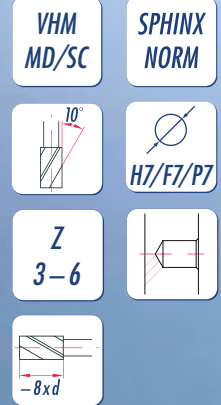
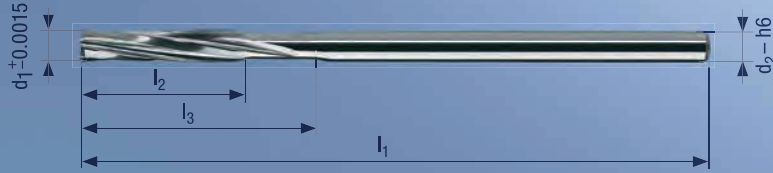
d ₁ mm	l ₂ mm	l ₁ mm
4.80	50.0	86
4.90	50.0	86
5.00	50.0	86
5.10	50.0	86
5.20	50.0	86
5.30	50.0	86
5.40	55.0	93
5.50	55.0	93
5.60	55.0	93
5.70	55.0	93
5.80	55.0	93
5.90	55.0	93
6.00	55.0	93
6.10	60.0	101
6.20	60.0	101
6.30	60.0	101
6.40	60.0	101
6.50	60.0	101
6.60	60.0	101
6.70	60.0	101
6.80	66.0	109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

d ₁ mm	l ₂ mm	l ₁ mm
8.60	78.0	125
8.70	78.0	125
8.80	78.0	125
8.90	78.0	125
9.00	78.0	125
9.10	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

Reibahlen mit verstärktem Schaft

Art. 58000

Alésoir avec manche renforcé
Alesatore con gambo rinforzato
Reamer with reinforced shank



Nr.	∅	d ₁ mm	l ₂ mm	l ₃ mm	l ₁ mm	d ₂ mm	z
099	1.0-P7	0.987	8.00	16.00	48	3.00	3
100	1.0-H7	1.005	8.00	16.00	48	3.00	3
101	1.0-F7	1.011	8.00	16.00	48	3.00	3
199	2.0-P7	1.987	11.00	22.00	54	3.00	4
200	2.0-H7	2.005	11.00	22.00	54	3.00	4
201	2.0-F7	2.011	11.00	22.00	54	3.00	4

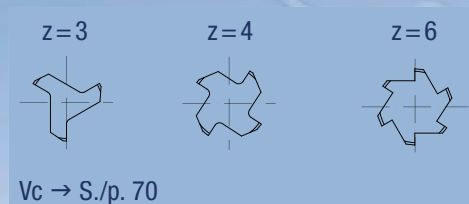
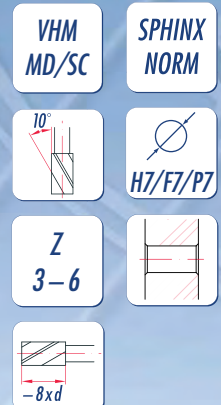
Nr.	∅	d ₁ mm	l ₂ mm	l ₃ mm	l ₁ mm	d ₂ mm	z
299	3.0-P7	2.987	15.00	30.00	60	3.00	4
300	3.0-H7	3.005	15.00	30.00	60	3.00	4
301	3.0-F7	3.011	15.00	30.00	60	3.00	4
399	4.0-P7	3.986	19.00	38.00	76	6.00	6
400	4.0-H7	4.006	19.00	38.00	76	6.00	6
401	4.0-F7	4.016	19.00	38.00	76	6.00	6

Nr.	∅	d ₁ mm	l ₂ mm	l ₃ mm	l ₁ mm	d ₂ mm	z
499	5.0-P7	4.986	23.00	46.00	84	6.00	6
500	5.0-H7	5.006	23.00	46.00	84	6.00	6
501	5.0-F7	5.018	23.00	46.00	84	6.00	6
599	6.0-P7	5.986	26.00	52.00	90	6.00	6
600	6.0-H7	6.006	26.00	52.00	90	6.00	6
601	6.0-F7	6.018	26.00	52.00	90	6.00	6

Reibahlen mit verstärktem Schaft

Art. 58500

Alésoir avec manche renforcé
Alesatore con gambo rinforzato
Reamer with reinforced shank



Nr.	∅	d ₁ mm	l ₂ mm	l ₃ mm	l ₁ mm	d ₂ mm	z
099	1.0-P7	0.987	8.00	16.00	48	3.00	3
100	1.0-H7	1.005	8.00	16.00	48	3.00	3
101	1.0-F7	1.011	8.00	16.00	48	3.00	3
199	2.0-P7	1.987	11.00	22.00	54	3.00	4
200	2.0-H7	2.005	11.00	22.00	54	3.00	4
201	2.0-F7	2.011	11.00	22.00	54	3.00	4

Nr.	∅	d ₁ mm	l ₂ mm	l ₃ mm	l ₁ mm	d ₂ mm	z
299	3.0-P7	2.987	15.00	30.00	60	3.00	4
300	3.0-H7	3.005	15.00	30.00	60	3.00	4
301	3.0-F7	3.011	15.00	30.00	60	3.00	4
399	4.0-P7	3.986	19.00	38.00	76	6.00	6
400	4.0-H7	4.006	19.00	38.00	76	6.00	6
401	4.0-F7	4.016	19.00	38.00	76	6.00	6

Nr.	∅	d ₁ mm	l ₂ mm	l ₃ mm	l ₁ mm	d ₂ mm	z
499	5.0-P7	4.986	23.00	46.00	84	6.00	6
500	5.0-H7	5.006	23.00	46.00	84	6.00	6
501	5.0-F7	5.018	23.00	46.00	84	6.00	6
599	6.0-P7	5.986	26.00	52.00	90	6.00	6
600	6.0-H7	6.006	26.00	52.00	90	6.00	6
601	6.0-F7	6.018	26.00	52.00	90	6.00	6

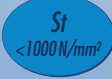
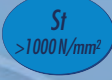




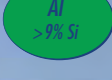

Schnittdaten

Données de coupe

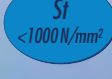


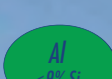
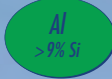
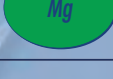

Parametri di lavoro

Cutting data

Art. 55654 / 55338

Material Matière Materiale Material	Durchmesser mm Diamètre mm Diametro mm Diameter mm	v=m/min	f=mm/U f=mm/t f=mm/g f=mm/r
	1.0 – 2.0	40 – 60	0.015 – 0.040
	2.1 – 5.0	40 – 60	0.035 – 0.080
	5.1 – 8.0	40 – 60	0.070 – 0.170
	8.1 – 11.0	40 – 60	0.150 – 0.230
	11.1 – 14.0	40 – 60	0.200 – 0.300
	1.0 – 2.0	30 – 50	0.015 – 0.040
	2.1 – 5.0	30 – 50	0.035 – 0.080
	5.1 – 8.0	30 – 50	0.070 – 0.170
	8.1 – 11.0	30 – 50	0.150 – 0.230
	11.1 – 14.0	30 – 50	0.200 – 0.300
	1.0 – 2.0	25 – 40	0.010 – 0.030
	2.1 – 5.0	25 – 40	0.025 – 0.070
	5.1 – 8.0	25 – 40	0.060 – 0.130
	8.1 – 11.0	25 – 40	0.110 – 0.180
	11.1 – 14.0	25 – 40	0.150 – 0.230
	1.0 – 2.0	20 – 35	0.008 – 0.025
	2.1 – 5.0	20 – 35	0.020 – 0.060
	5.1 – 8.0	20 – 35	0.050 – 0.011
	8.1 – 11.0	20 – 35	0.100 – 0.160
	11.1 – 14.0	20 – 35	0.140 – 0.200
	1.0 – 2.0	60 – 100	0.020 – 0.050
	2.1 – 5.0	60 – 100	0.040 – 0.090
	5.1 – 8.0	60 – 100	0.080 – 0.180
	8.1 – 11.0	60 – 100	0.160 – 0.280
	11.1 – 14.0	60 – 100	0.250 – 0.350
	1.0 – 2.0	40 – 80	0.015 – 0.040
	2.1 – 5.0	40 – 80	0.035 – 0.080
	5.1 – 8.0	40 – 80	0.070 – 0.170
	8.1 – 11.0	40 – 80	0.150 – 0.230
	11.1 – 14.0	40 – 80	0.200 – 0.300
	1.0 – 2.0	80 – 120	0.020 – 0.060
	2.1 – 5.0	80 – 120	0.050 – 0.120
	5.1 – 8.0	80 – 120	0.100 – 0.230
	8.1 – 11.0	80 – 120	0.210 – 0.340
	11.1 – 14.0	80 – 120	0.330 – 0.450
	1.0 – 2.0	30 – 50	0.010 – 0.030
	2.1 – 5.0	30 – 50	0.025 – 0.070
	5.1 – 8.0	30 – 50	0.060 – 0.130
	8.1 – 11.0	30 – 50	0.100 – 0.160
	11.1 – 14.0	30 – 50	0.150 – 0.200

Art. 50840

Material Matière Materiale Material	Durchmesser mm Diamètre mm Diametro mm Diameter mm	v=m/min	f=mm/U f=mm/t f=mm/g f=mm/r
	2.0 – 5.0	30 – 60	0.020 – 0.050
	5.1 – 8.0	30 – 60	0.040 – 0.090
	8.1 – 11.0	30 – 60	0.070 – 0.150
	11.1 – 14.0	30 – 60	0.130 – 0.200
	2.0 – 5.0	30 – 50	0.020 – 0.050
	5.1 – 8.0	30 – 50	0.040 – 0.080
	8.1 – 11.0	30 – 50	0.070 – 0.140
	11.1 – 14.0	30 – 50	0.120 – 0.180
	2.0 – 5.0	25 – 45	0.015 – 0.040
	5.1 – 8.0	25 – 45	0.030 – 0.070
	8.1 – 11.0	25 – 45	0.060 – 0.120
	11.1 – 14.0	25 – 45	0.100 – 0.180
	2.0 – 5.0	20 – 40	0.015 – 0.040
	5.1 – 8.0	20 – 40	0.030 – 0.070
	8.1 – 11.0	20 – 40	0.060 – 0.120
	11.1 – 14.0	20 – 40	0.100 – 0.180
	2.0 – 5.0	60 – 100	0.030 – 0.100
	5.1 – 8.0	60 – 100	0.080 – 0.180
	8.1 – 11.0	60 – 100	0.160 – 0.280
	11.1 – 14.0	60 – 100	0.260 – 0.350
	2.0 – 5.0	60 – 100	0.030 – 0.100
	5.1 – 8.0	60 – 100	0.080 – 0.180
	8.1 – 11.0	60 – 100	0.160 – 0.280
	11.1 – 14.0	60 – 100	0.260 – 0.350
	2.0 – 5.0	50 – 90	0.030 – 0.130
	5.1 – 8.0	50 – 90	0.100 – 0.200
	8.1 – 11.0	50 – 90	0.180 – 0.280
	11.1 – 14.0	50 – 90	0.260 – 0.350

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. 58000 / 58500

Material Matière Materiale Material	Durchmesser mm Diamètre mm Diametro mm Diameter mm	v=m/min	f=mm/U f=mm/t f=mm/g f=mm/r
St <1000 N/mm ²	1.0 – 2.0	20 – 25	0.050 – 0.100
	2.0 – 3.0	20 – 25	0.080 – 0.150
	3.0 – 4.0	20 – 25	0.140 – 0.220
	4.0 – 6.0	20 – 25	0.200 – 0.280
St >1000 N/mm ²	1.0 – 2.0	15 – 20	0.040 – 0.080
	2.0 – 3.0	15 – 20	0.070 – 0.130
	3.0 – 4.0	15 – 20	0.120 – 0.190
	4.0 – 6.0	15 – 20	0.180 – 0.240
Inox martensit	1.0 – 2.0	10 – 15	0.040 – 0.080
	2.0 – 3.0	10 – 15	0.070 – 0.130
	3.0 – 4.0	10 – 15	0.120 – 0.190
	4.0 – 6.0	10 – 15	0.180 – 0.240
Inox austenit	1.0 – 2.0	10 – 15	0.040 – 0.070
	2.0 – 3.0	10 – 15	0.060 – 0.110
	3.0 – 4.0	10 – 15	0.100 – 0.160
	4.0 – 6.0	10 – 15	0.150 – 0.220
EN-GJL	1.0 – 2.0	20 – 25	0.050 – 0.100
	2.0 – 3.0	20 – 25	0.080 – 0.150
	3.0 – 4.0	20 – 25	0.140 – 0.220
	4.0 – 6.0	20 – 25	0.200 – 0.280
EN-GJS	1.0 – 2.0	15 – 20	0.050 – 0.100
	2.0 – 3.0	15 – 20	0.080 – 0.150
	3.0 – 4.0	15 – 20	0.140 – 0.220
	4.0 – 6.0	15 – 20	0.200 – 0.280
Al >9% Si	1.0 – 2.0	30 – 35	0.060 – 0.120
	2.0 – 3.0	30 – 35	0.110 – 0.160
	3.0 – 4.0	30 – 35	0.150 – 0.220
	4.0 – 6.0	30 – 35	0.200 – 0.300
Ti	1.0 – 2.0	10 – 15	0.030 – 0.060
	2.0 – 3.0	10 – 15	0.050 – 0.100
	3.0 – 4.0	10 – 15	0.090 – 0.140
	4.0 – 6.0	10 – 15	0.130 – 0.180

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.



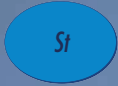
Micro Fräser

Micro fraise

Micro fresa

Micro end mill

Art. 42000



Vc → S./p. 81

d ₁ mm	l ₂ mm	l ₁ mm	d ₂ mm
0.30	0.70	38	3.00
0.40	1.10	38	3.00
0.50	1.50	38	3.00
0.60	1.70	38	3.00
0.70	2.20	38	3.00
0.80	2.40	38	3.00
0.90	2.50	38	3.00
1.00	3.00	38	3.00
1.10	3.40	38	3.00
1.20	3.80	38	3.00
1.30	3.80	38	3.00
1.40	4.20	38	3.00
1.50	4.50	38	3.00
1.60	4.80	38	3.00
1.70	5.00	38	3.00
1.80	5.40	38	3.00
1.90	5.70	38	3.00
2.00	6.00	38	3.00
2.50	7.00	38	3.00

K=1.18
+0.1
0

Schaftfräser

Fraise

Fresa

End mill

Art. 40000



Art. 40100

Art. 40600



Vc → S./p. 81

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
5.50	10.00	57	5.50
6.00	10.00	57	6.00
7.00	13.00	60	7.00
8.00	16.00	63	8.00
9.00	16.00	67	9.00
10.00	19.00	72	10.00
11.00	22.00	83	11.00
12.00	22.00	83	12.00
14.00	22.00	83	14.00
16.00	26.00	92	16.00
18.00	26.00	92	18.00
20.00	32.00	104	20.00

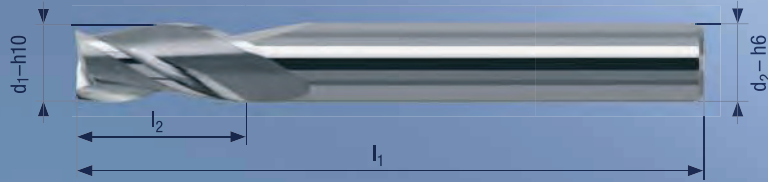
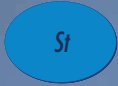
Schaftfräser

Fraise

Fresa

End mill

Art. 40002



Art. 40102



Art. 40602



Vc → S./p. 82

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
5.50	10.00	57	5.50
6.00	10.00	57	6.00
7.00	13.00	60	7.00
8.00	16.00	63	8.00
9.00	16.00	67	9.00
10.00	19.00	72	10.00
11.00	22.00	83	11.00
12.00	22.00	83	12.00
14.00	22.00	83	14.00
16.00	26.00	92	16.00
18.00	26.00	92	18.00
20.00	32.00	104	20.00

K=1.8
+0.1
0 -0.1

Schaftfräser

Fraise

Fresa

End mill

Art. 40004

Sf
 $< 1000 \text{ N/mm}^2$

EN-GJL
EN-GJS



VHM
MD/SC

DIN
6528

Z
4



Art. 40104

Art. 40604



DIN 6535
Form HB

ALDURA



HRC

Vc → S./p. 82

d ₁	l ₂	l ₁	d ₂
mm	mm	mm	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
5.50	13.00	57	5.50
6.00	13.00	57	6.00
7.00	16.00	60	7.00
8.00	19.00	63	8.00
9.00	19.00	67	9.00
10.00	22.00	72	10.00
11.00	26.00	83	11.00
12.00	26.00	83	12.00
14.00	26.00	83	14.00
16.00	32.00	92	16.00
18.00	32.00	92	18.00
20.00	38.00	104	20.00

Schaftfräser

Fraise

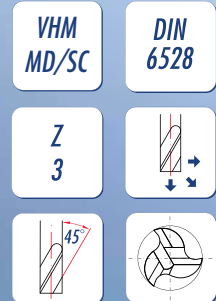
Fresa

End mill

Art. 40006

Inox

St



Art. 40106



Vc → S./p. 83

d ₁ mm	l ₂ mm	l ₁ mm	d ₂ mm
4.00	8.00	50	4.00
4.50	8.00	50	4.50
5.00	10.00	50	5.00
5.50	10.00	57	5.50
6.00	10.00	57	6.00
7.00	13.00	60	7.00
8.00	16.00	63	8.00
9.00	16.00	67	9.00
10.00	19.00	72	10.00
11.00	22.00	83	11.00
12.00	22.00	83	12.00
14.00	22.00	83	14.00
16.00	26.00	92	16.00
18.00	26.00	92	18.00
20.00	32.00	104	20.00

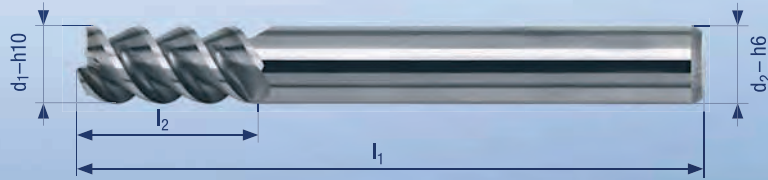
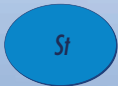
Schaftfräser

Fraise

Fresa

End mill

Art. 40008



Art. 40108



Vc → S./p. 83

d ₁ mm	l ₂ mm	l ₁ mm	d ₂ mm
4.00	8.00	50	4.00
4.50	8.00	50	4.50
5.00	10.00	50	5.00
5.50	10.00	57	5.50
6.00	10.00	57	6.00
7.00	13.00	60	7.00
8.00	16.00	63	8.00
9.00	16.00	67	9.00
10.00	19.00	72	10.00
11.00	22.00	83	11.00
12.00	22.00	83	12.00
14.00	22.00	83	14.00
16.00	26.00	92	16.00
18.00	26.00	92	18.00
20.00	32.00	104	20.00

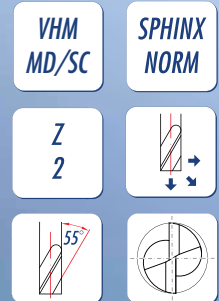
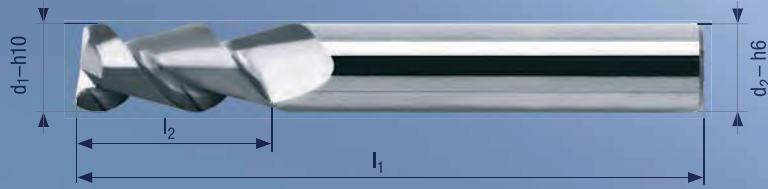
Schaftfräser AC 2

Fraise AC 2

Fresa AC 2

End mill AC 2

Art. 47000



Vc → S./p. 83

d ₁ mm	l ₂ mm	l ₁ mm	d ₂ 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

K=1.8
+0.1
0 -0.1

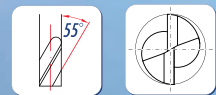
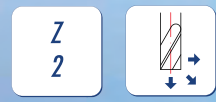
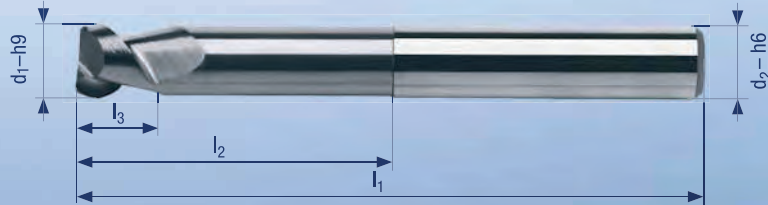
Schaftfräser ACL 2

Fraise ACL 2

Fresa ACL 2

End mill ACL 2

Art. 47500



Vc → S./p. 83

d ₁	l ₂	l ₃	l ₁	d ₂
mm	mm	mm	mm	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

Gerade genuteter Fräser – 1 Zahn

Art. 47344

Fraise taille droite – 1 dent

Fresa taglio diritto – 1 dente

Straight fluted end mill – 1 tooth



Fläche poliert
Face polie miroir
Superficie lucidata
Surface polished

Vc → S./p. 83

d ₁ mm	l ₂ mm	l ₁ mm	d ₂ mm
0.50	1.50	30	3.00
0.60	1.50	30	3.00
0.70	1.50	30	3.00
0.80	2.00	30	3.00
0.90	2.00	30	3.00
1.00	2.00	30	3.00
1.10	2.00	30	3.00
1.20	2.00	30	3.00
1.30	2.00	30	3.00
1.40	2.00	30	3.00
1.50	2.00	30	3.00
1.60	2.50	30	3.00
1.70	2.50	30	3.00
1.80	2.50	30	3.00
1.90	2.50	30	3.00
2.00	2.50	30	3.00
2.10	3.00	30	3.00
2.20	3.00	30	3.00
2.30	3.00	30	3.00
2.40	3.00	30	3.00
2.50	3.00	30	3.00
2.60	3.00	30	3.00
2.70	3.00	30	3.00
2.80	3.00	30	3.00
2.90	3.00	30	3.00
3.00	4.00	35	4.00
3.10	4.00	35	4.00
3.20	4.00	35	4.00
3.30	4.00	35	4.00
3.40	4.00	35	4.00
3.50	4.00	35	4.00
3.60	4.00	35	4.00
3.70	4.00	35	4.00
3.80	4.00	35	4.00
3.90	4.00	35	4.00
4.00	5.00	35	5.00
4.10	5.00	35	5.00
4.20	5.00	35	5.00

d ₁ mm	l ₂ mm	l ₁ mm	d ₂ mm
4.30	5.00	35	5.00
4.40	5.00	35	5.00
4.50	5.00	35	5.00
4.60	5.00	35	5.00
4.70	5.00	35	5.00
4.80	5.00	35	5.00
4.90	5.00	35	5.00
5.00	6.00	35	6.00
5.10	6.00	35	6.00
5.20	6.00	35	6.00
5.30	6.00	35	6.00
5.40	6.00	35	6.00
5.50	6.00	35	6.00
5.60	6.00	35	6.00
5.70	6.00	35	6.00
5.80	6.00	35	6.00
5.90	6.00	35	6.00
6.00	7.00	35	7.00
6.10	7.00	35	7.00
6.20	7.00	35	7.00
6.30	7.00	35	7.00
6.40	7.00	35	7.00
6.50	7.00	35	7.00
6.60	7.00	35	7.00
6.70	7.00	35	7.00
6.80	7.00	35	7.00
6.90	7.00	35	7.00
7.00	8.00	35	8.00
7.10	8.00	35	8.00
7.20	8.00	35	8.00
7.30	8.00	35	8.00
7.40	8.00	35	8.00
7.50	8.00	35	8.00
7.60	8.00	35	8.00
7.70	8.00	35	8.00
7.80	8.00	35	8.00
7.90	8.00	35	8.00

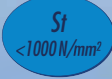
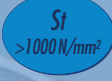


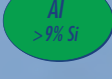

Schnittdaten

Données de coupe

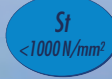
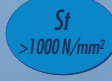
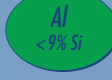
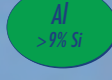

Parametri di lavoro

Cutting data

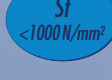
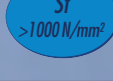
Art. 42000

Material Matière Materiale Material	Durchmesser mm Diamètre mm Diametro mm Diameter mm	v=m/min	f=mm/U f=mm/t f=mm/g f=mm/r
	0.30 – 0.60	60 – 80	0.003 – 0.006
	0.70 – 1.00	60 – 80	0.005 – 0.010
	1.10 – 1.50	60 – 80	0.008 – 0.015
	1.60 – 2.00	60 – 80	0.013 – 0.018
	2.10 – 2.50	60 – 80	0.015 – 0.025
	0.30 – 0.60	50 – 70	0.003 – 0.005
	0.70 – 1.00	50 – 70	0.004 – 0.008
	1.10 – 1.50	50 – 70	0.006 – 0.012
	1.60 – 2.00	50 – 70	0.010 – 0.015
	2.10 – 2.50	50 – 70	0.014 – 0.020
	0.30 – 0.60	30 – 50	0.003 – 0.005
	0.70 – 1.00	30 – 50	0.004 – 0.008
	1.10 – 1.50	30 – 50	0.006 – 0.012
	1.60 – 2.00	30 – 50	0.010 – 0.015
	2.10 – 2.50	30 – 50	0.014 – 0.020
	0.30 – 0.60	25 – 40	0.002 – 0.004
	0.70 – 1.00	25 – 40	0.003 – 0.007
	1.10 – 1.50	25 – 40	0.005 – 0.010
	1.60 – 2.00	25 – 40	0.008 – 0.013
	2.10 – 2.50	25 – 40	0.011 – 0.016
	0.30 – 0.60	85 – 160	0.003 – 0.008
	0.70 – 1.00	85 – 160	0.007 – 0.012
	1.10 – 1.50	140 – 180	0.011 – 0.018
	1.60 – 2.00	140 – 180	0.016 – 0.022
	2.10 – 2.50	140 – 180	0.020 – 0.028
	0.30 – 0.60	85 – 140	0.003 – 0.008
	0.70 – 1.00	85 – 140	0.007 – 0.012
	1.10 – 1.50	140 – 180	0.011 – 0.018
	1.60 – 2.00	140 – 180	0.016 – 0.022
	2.10 – 2.50	140 – 180	0.020 – 0.028
	0.30 – 0.60	85 – 120	0.003 – 0.008
	0.70 – 1.00	85 – 120	0.007 – 0.012
	1.10 – 1.50	100 – 140	0.011 – 0.018
	1.60 – 2.00	100 – 140	0.016 – 0.022
	2.10 – 2.50	100 – 140	0.020 – 0.028
	0.30 – 0.60	30 – 45	0.002 – 0.004
	0.70 – 1.00	30 – 45	0.003 – 0.007
	1.10 – 1.50	30 – 45	0.005 – 0.010
	1.60 – 2.00	30 – 45	0.008 – 0.013
	2.10 – 2.50	30 – 45	0.011 – 0.016

Art. 40000 / 40100

Material Matière Materiale Material	Durchmesser mm Diamètre mm Diametro mm Diameter mm	v=m/min	f=mm/U f=mm/t f=mm/g f=mm/r
	2.0 – 5.0	60 – 90	0.015 – 0.060
	6.0 – 9.0	60 – 90	0.050 – 0.090
	10.0 – 13.0	60 – 90	0.080 – 0.120
	14.0 – 17.0	60 – 90	0.110 – 0.150
	18.0 – 20.0	60 – 90	0.140 – 0.180
	2.0 – 5.0	50 – 80	0.010 – 0.050
	6.0 – 9.0	50 – 80	0.040 – 0.080
	10.0 – 13.0	50 – 80	0.070 – 0.110
	14.0 – 17.0	50 – 80	0.100 – 0.140
	18.0 – 20.0	50 – 80	0.130 – 0.170
	2.0 – 5.0	220 – 250	0.020 – 0.070
	6.0 – 9.0	220 – 250	0.060 – 0.120
	10.0 – 13.0	220 – 250	0.110 – 0.170
	14.0 – 17.0	220 – 250	0.160 – 0.200
	18.0 – 20.0	220 – 250	0.180 – 0.250
	2.0 – 5.0	150 – 180	0.015 – 0.060
	6.0 – 9.0	150 – 180	0.050 – 0.090
	10.0 – 13.0	150 – 180	0.080 – 0.140
	14.0 – 17.0	150 – 180	0.130 – 0.180
	18.0 – 20.0	150 – 180	0.170 – 0.220
	2.0 – 5.0	140 – 160	0.015 – 0.060
	6.0 – 9.0	140 – 160	0.050 – 0.090
	10.0 – 13.0	140 – 160	0.080 – 0.140
	14.0 – 17.0	140 – 160	0.130 – 0.180
	18.0 – 20.0	140 – 160	0.170 – 0.220

Art. 40600

Balnit Aldura			
Material Matière Materiale Material	Durchmesser mm Diamètre mm Diametro mm Diameter mm	v=m/min	f=mm/U f=mm/t f=mm/g f=mm/r
	2.0 – 5.0	80 – 100	0.015 – 0.060
	6.0 – 9.0	80 – 100	0.050 – 0.090
	10.0 – 13.0	80 – 100	0.080 – 0.120
	14.0 – 17.0	80 – 100	0.110 – 0.150
	18.0 – 20.0	80 – 100	0.140 – 0.180
	2.0 – 5.0	70 – 90	0.010 – 0.050
	6.0 – 9.0	70 – 90	0.040 – 0.080
	10.0 – 13.0	70 – 90	0.070 – 0.110
	14.0 – 17.0	70 – 90	0.100 – 0.140
	18.0 – 20.0	70 – 90	0.130 – 0.170

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 them may have to be adapted yet.

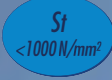
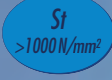


Schnittdaten

Données de coupe

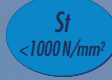
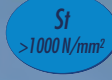


Parametri di lavoro

Cutting data

Art. 40002/40102

Material Matière Materiale Material	Durchmesser mm Diamètre mm Diametro mm Diameter mm	v=m/min	f=mm/U f=mm/t f=mm/g f=mm/r
	2.0 – 5.0	60 – 80	0.01 – 0.02
	6.0 – 9.0	60 – 80	0.02 – 0.03
	10.0 – 13.0	60 – 80	0.03 – 0.04
	14.0 – 17.0	60 – 80	0.05 – 0.06
	18.0 – 20.0	60 – 80	0.07 – 0.08
	2.0 – 5.0	50 – 70	0.01 – 0.02
	6.0 – 9.0	50 – 70	0.02 – 0.03
	10.0 – 13.0	50 – 70	0.03 – 0.04
	14.0 – 17.0	50 – 70	0.05 – 0.06
	18.0 – 20.0	50 – 70	0.06 – 0.07
	2.0 – 5.0	60 – 80	0.01 – 0.02
	6.0 – 9.0	60 – 80	0.02 – 0.03
	10.0 – 13.0	60 – 80	0.03 – 0.04
	14.0 – 17.0	60 – 80	0.05 – 0.06
	18.0 – 20.0	60 – 80	0.07 – 0.08
	2.0 – 5.0	50 – 70	0.01 – 0.02
	6.0 – 9.0	50 – 70	0.02 – 0.03
	10.0 – 13.0	50 – 70	0.03 – 0.04
	14.0 – 17.0	50 – 70	0.05 – 0.06
	18.0 – 20.0	50 – 70	0.06 – 0.07




Art. 40004/40104

Material Matière Materiale Material	Durchmesser mm Diamètre mm Diametro mm Diameter mm	v=m/min	f=mm/U f=mm/t f=mm/g f=mm/r
	2.0 – 5.0	60 – 80	0.01 – 0.02
	6.0 – 9.0	60 – 80	0.02 – 0.03
	10.0 – 13.0	60 – 80	0.03 – 0.04
	14.0 – 17.0	60 – 80	0.05 – 0.06
	18.0 – 20.0	60 – 80	0.07 – 0.08
	2.0 – 5.0	50 – 70	0.01 – 0.02
	6.0 – 9.0	50 – 70	0.02 – 0.03
	10.0 – 13.0	50 – 70	0.03 – 0.04
	14.0 – 17.0	50 – 70	0.05 – 0.06
	18.0 – 20.0	50 – 70	0.06 – 0.07
	2.0 – 5.0	60 – 80	0.01 – 0.02
	6.0 – 9.0	60 – 80	0.02 – 0.03
	10.0 – 13.0	60 – 80	0.03 – 0.04
	14.0 – 17.0	60 – 80	0.05 – 0.06
	18.0 – 20.0	60 – 80	0.07 – 0.08
	2.0 – 5.0	50 – 70	0.01 – 0.02
	6.0 – 9.0	50 – 70	0.02 – 0.03
	10.0 – 13.0	50 – 70	0.03 – 0.04
	14.0 – 17.0	50 – 70	0.05 – 0.06
	18.0 – 20.0	50 – 70	0.06 – 0.07

Art. 40602

Balinit Aldura			
Material Matière Materiale Material	Durchmesser mm Diamètre mm Diametro mm Diameter mm	v=m/min	f=mm/U f=mm/t f=mm/g f=mm/r
	2.0 – 5.0	60 – 80	0.01 – 0.03
	6.0 – 9.0	60 – 80	0.02 – 0.04
	10.0 – 13.0	60 – 80	0.03 – 0.05
	14.0 – 17.0	60 – 80	0.04 – 0.07
	18.0 – 20.0	60 – 80	0.06 – 0.08
	2.0 – 5.0	50 – 70	0.01 – 0.02
	6.0 – 9.0	50 – 70	0.02 – 0.03
	10.0 – 13.0	50 – 70	0.03 – 0.04
	14.0 – 17.0	50 – 70	0.04 – 0.05
	18.0 – 20.0	50 – 70	0.06 – 0.07
	2.0 – 5.0	40 – 60	0.01 – 0.02
	6.0 – 9.0	40 – 60	0.02 – 0.03
	10.0 – 13.0	40 – 60	0.03 – 0.04
	14.0 – 17.0	40 – 60	0.04 – 0.05
	18.0 – 20.0	40 – 60	0.05 – 0.06

Art. 40604

Balinit Aldura			
Material Matière Materiale Material	Durchmesser mm Diamètre mm Diametro mm Diameter mm	v=m/min	f=mm/U f=mm/t f=mm/g f=mm/r
	2.0 – 5.0	60 – 80	0.01 – 0.03
	6.0 – 9.0	60 – 80	0.02 – 0.04
	10.0 – 13.0	60 – 80	0.03 – 0.05
	14.0 – 17.0	60 – 80	0.04 – 0.07
	18.0 – 20.0	60 – 80	0.06 – 0.08
	2.0 – 5.0	50 – 70	0.01 – 0.02
	6.0 – 9.0	50 – 70	0.02 – 0.03
	10.0 – 13.0	50 – 70	0.03 – 0.04
	14.0 – 17.0	50 – 70	0.04 – 0.05
	18.0 – 20.0	50 – 70	0.06 – 0.07
	2.0 – 5.0	40 – 60	0.01 – 0.02
	6.0 – 9.0	40 – 60	0.02 – 0.03
	10.0 – 13.0	40 – 60	0.03 – 0.04
	14.0 – 17.0	40 – 60	0.04 – 0.05
	18.0 – 20.0	40 – 60	0.05 – 0.06

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.




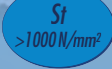
Schnittdaten

Données de coupe




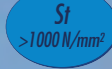
Parametri di lavoro

Cutting data

Art. 40006/40106

Material Matière Materiale Material	Durchmesser mm Diamètre mm Diametro mm Diameter mm	v=m/min	f=mm/U f=mm/t f=mm/g f=mm/r
	4.0 – 6.0	60 – 80	0.01 – 0.02
	7.0 – 9.0	60 – 80	0.02 – 0.03
	10.0 – 13.0	60 – 80	0.03 – 0.04
	14.0 – 17.0	60 – 80	0.05 – 0.06
	18.0 – 20.0	60 – 80	0.07 – 0.08
	4.0 – 6.0	50 – 70	0.01 – 0.02
	7.0 – 9.0	50 – 70	0.02 – 0.03
	10.0 – 13.0	50 – 70	0.03 – 0.04
	14.0 – 17.0	50 – 70	0.05 – 0.06
	18.0 – 20.0	50 – 70	0.06 – 0.07
	4.0 – 6.0	60 – 80	0.01 – 0.02
	7.0 – 9.0	60 – 80	0.02 – 0.03
	10.0 – 13.0	60 – 80	0.03 – 0.04
	14.0 – 17.0	60 – 80	0.05 – 0.06
	18.0 – 20.0	60 – 80	0.07 – 0.08
	4.0 – 6.0	50 – 70	0.01 – 0.02
	7.0 – 9.0	50 – 70	0.02 – 0.03
	10.0 – 13.0	50 – 70	0.03 – 0.04
	14.0 – 17.0	50 – 70	0.05 – 0.06
	18.0 – 20.0	50 – 70	0.06 – 0.07




Art. 40008/40108

Material Matière Materiale Material	Durchmesser mm Diamètre mm Diametro mm Diameter mm	v=m/min	f=mm/U f=mm/t f=mm/g f=mm/r
	4.0 – 6.0	60 – 80	0.01 – 0.02
	7.0 – 9.0	60 – 80	0.02 – 0.03
	10.0 – 13.0	60 – 80	0.03 – 0.04
	14.0 – 17.0	60 – 80	0.05 – 0.06
	18.0 – 20.0	60 – 80	0.07 – 0.08
	4.0 – 6.0	50 – 70	0.01 – 0.02
	7.0 – 9.0	50 – 70	0.02 – 0.03
	10.0 – 13.0	50 – 70	0.03 – 0.04
	14.0 – 17.0	50 – 70	0.05 – 0.06
	18.0 – 20.0	50 – 70	0.06 – 0.07
	4.0 – 6.0	60 – 80	0.01 – 0.02
	7.0 – 9.0	60 – 80	0.02 – 0.03
	10.0 – 13.0	60 – 80	0.03 – 0.04
	14.0 – 17.0	60 – 80	0.05 – 0.06
	18.0 – 20.0	60 – 80	0.07 – 0.08
	4.0 – 6.0	50 – 70	0.01 – 0.02
	7.0 – 9.0	50 – 70	0.02 – 0.03
	10.0 – 13.0	50 – 70	0.03 – 0.04
	14.0 – 17.0	50 – 70	0.05 – 0.06
	18.0 – 20.0	50 – 70	0.06 – 0.07

Art. 47000/47500

Material Matière Materiale Material	Durchmesser mm Diamètre mm Diametro mm Diameter mm	v=m/min	f=mm/U f=mm/t f=mm/g f=mm/r
	3.0 – 4.0	bis 1000	0.04 – 0.05
	5.0 – 8.0	bis 1000	0.06 – 0.10
	10.0 – 12.0	bis 1000	0.12 – 0.15
	14.0 – 16.0	bis 1000	0.16 – 0.17
	18.0 – 20.0	bis 1000	0.17 – 0.20
	3.0 – 4.0	bis 1000	0.04 – 0.05
	5.0 – 8.0	bis 1000	0.06 – 0.10
	10.0 – 12.0	bis 1000	0.12 – 0.15
	13.0 – 16.0	bis 1000	0.16 – 0.17
	18.0 – 20.0	bis 1000	0.17 – 0.20

Art. 47344

Material Matière Materiale Material	Durchmesser mm Diamètre mm Diametro mm Diameter mm	v=m/min	f=mm/U f=mm/t f=mm/g f=mm/r
	0.5 – 2.0	100 – 130	0.003 – 0.005
	2.1 – 4.0	100 – 130	0.010 – 0.030
	4.1 – 6.0	100 – 130	0.020 – 0.070
	6.1 – 8.0	100 – 130	0.030 – 0.100
	0.5 – 2.0	120 – 150	0.003 – 0.005
	2.1 – 4.0	120 – 150	0.010 – 0.030
	4.1 – 6.0	120 – 150	0.020 – 0.070
	6.1 – 8.0	120 – 150	0.030 – 0.100
	0.5 – 2.0	120 – 150	0.003 – 0.005
	2.1 – 4.0	120 – 150	0.010 – 0.030
	4.1 – 6.0	120 – 150	0.020 – 0.070
	6.1 – 7.9	120 – 150	0.030 – 0.100

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.

Rundstab
Barreau cylindrique
Cilindretto
Round rod

Art. 59100



VHM
 MD/SC

Andere Durchmesser und Längen auf Kundenwunsch
 Autres diamètres et longueurs selon demande du client
 Altri diametri e lunghezze secondo richiesta del cliente
 Other diameters and lengths at customer request

d_1 mm
1.00
1.50
2.00
2.50
3.00
3.50
4.00
4.50
5.00
5.50
6.00
6.50
7.00
7.50
8.00
8.50
9.00
9.50
10.00
11.00
12.00
13.00
14.00
15.00
16.00
17.00
18.00
19.00
20.00



Rundstab
Barreau cylindrique
Cilindretto
Round rod

Art. 59305



VHM
MD/SC

Andere Durchmesser und Längen auf Kundenwunsch
 Autres diamètres et longueurs selon demande du client
 Altri diametri e lunghezze secondo richiesta del cliente
 Other diameters and lengths at customer request

d ₁ mm
1.00
1.50
2.00
2.50
3.00
3.50
4.00
4.50
5.00
5.50
6.00
6.50
7.00
7.50
8.00
8.50
9.00
9.50
10.00
11.00
12.00
13.00
14.00
15.00
16.00
17.00
18.00
19.00
20.00





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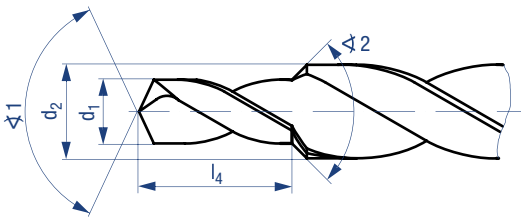
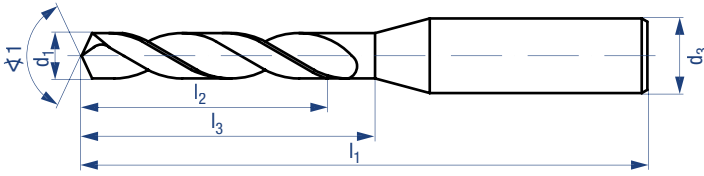
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Microbohrer

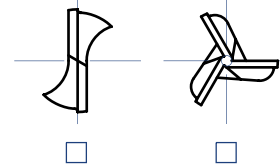
Micro foret

Micro punta

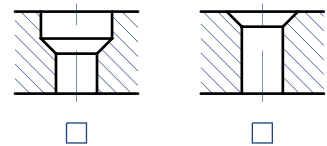
Micro drill



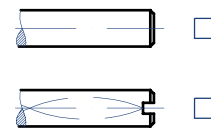
Schneidenanzahl:
No. of flutes:



Bohrungsart:
Type of hole:



Kühlmittelezuführung:
Coolant:



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

Zu bearbeitender Werkstoff:

Material to be cut: _____

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

Beschichtung: keine without
 Coating: _____

Stückzahl: Anfrage Bestellung
 Quantity: _____ Enquiry Order

Bemerkung: _____
 Remarks: _____

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

Postleitzahl/Ort _____ Phone _____
 ZIP-Code/City _____

Kontaktperson _____ Fax _____
 Contact _____

Datum/Unterschrift _____ E-Mail _____
 Date/Signature _____

Stufenbohrer

Foret étagé

Punta a diametri multipli

Step drill

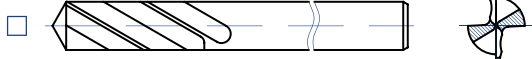
Spiralbohrer / Twist drill



Bohrreibahle / Drill reamer



Hochleistungsbohrer / High performance drill



Form HA



Form HAK



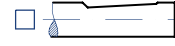
Form HB



Form HBK



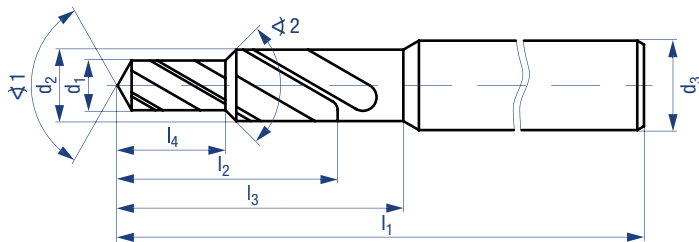
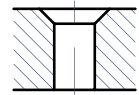
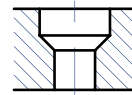
Form HE



Form HEK



Bohrungsart:
Type of hole:



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

Kühlmitteleinführung:

mit Innenkühlung

ohne Innenkühlung

Coolant:

with internal coolant

without internal coolant

Zu bearbeitender Werkstoff:

Material to be cut: _____

Schneidrichtung:

rechts

links

Direction of cutting:

right hand

left hand

Beschichtung:

keine

Coating:

without

Stückzahl:

Anfrage

Bestellung

Quantity:

Enquiry

Order

Bemerkung:

Remarks:

Firma

Company

Strasse/Nr.

Street/No.

Postleitzahl/Ort

ZIP-Code/City

Phone

Kontaktperson

Contact

Fax

Datum/Unterschrift

Date/Signature

E-Mail

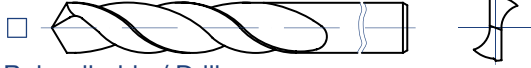
Stufenbohrer – 3 Stufen

Foret étagé – 3 étages

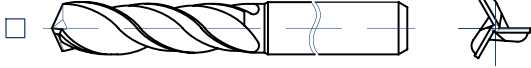
Punta a diametri multipli – 3 gradini

Step drill – 3 steps

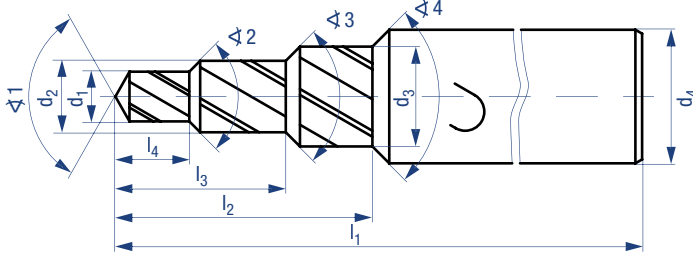
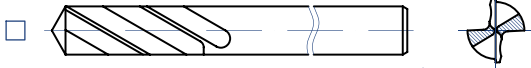
Spiralbohrer / Twist drill



Bohrreibahle / Drill reamer



Hochleistungsbohrer / High performance drill



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

Kühlmitteleinführung:

mit Innenkühlung

ohne Innenkühlung

Coolant:

with internal coolant

without internal coolant

Zu bearbeitender Werkstoff:

Material to be cut: _____

Schneidrichtung:

rechts

links

Direction of cutting:

right hand

left hand

Beschichtung:

keine

Coating:

without

Stückzahl:

Anfrage

Bestellung

Quantity:

Enquiry

Order

Bemerkung:

Remarks:

Firma

Company

Strasse/Nr.

Street/No.

Postleitzahl/Ort

ZIP-Code/City

Phone

Kontaktperson

Contact

Fax

Datum/Unterschrift

Date/Signature

E-Mail

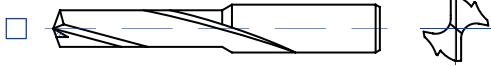
Quadro – Stufenbohrer

Quadro – Foret étagé

Quadro – Punta a diametri multipli

Quadro – Step drill

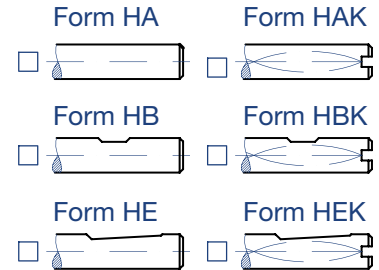
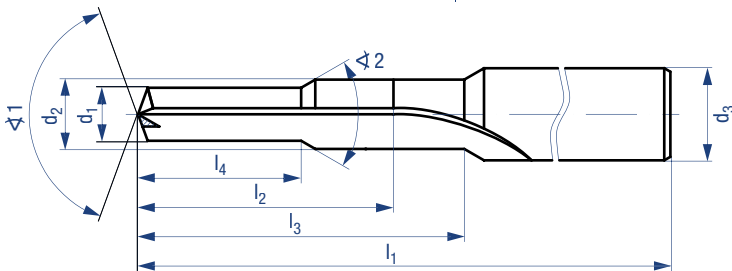
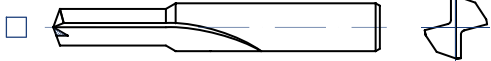
52150 – Quadro 15



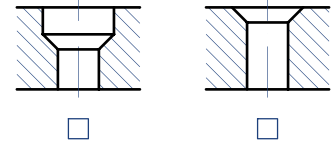
52200 – Quadro Plus



52000 – Quadro



Bohrungsart:
Type of hole:



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

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 _____ Strasse/Nr. _____
 Company _____ Street/No. _____

Postleitzahl/Ort _____ Phone _____
 ZIP-Code/City _____

Kontaktperson _____ Fax _____
 Contact _____

Datum/Unterschrift _____ E-Mail _____
 Date/Signature _____

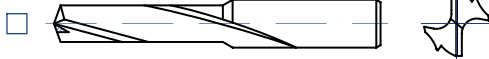
Quadro – Stufenbohrer – 3 Stufen

Quadro – Foret étagé – 3 étages

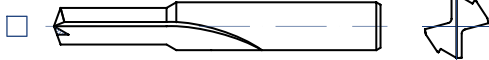
Quadro – Punta a diametri multipli – 3 gradini

Quadro – Step drill – 3 steps

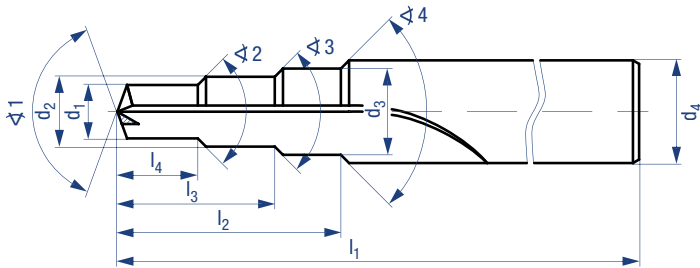
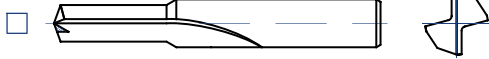
52150 – Quadro 15



52200 – Quadro Plus



52000 – Quadro



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

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

Zu bearbeitender Werkstoff:

Material to be cut: _____

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

Beschichtung: keine
 Coating: _____ without

Stückzahl: Anfrage Bestellung
 Quantity: _____ Enquiry Order

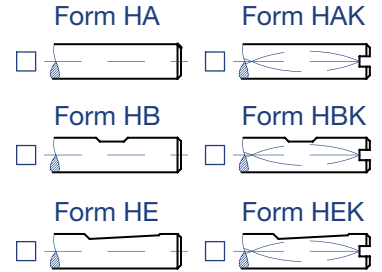
Bemerkung: _____
 Remarks: _____

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

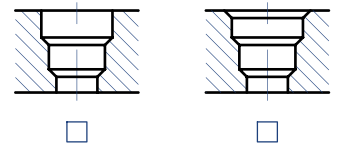
Postleitzahl/Ort _____ Phone _____
 ZIP-Code/City _____

Kontaktperson _____ Fax _____
 Contact _____

Datum/Unterschrift _____ E-Mail _____
 Date/Signature _____



Bohrungsart:
Type of hole:



Reibahle

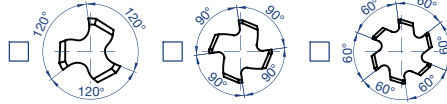
Alésoir

Alesatore

Reamer

58000

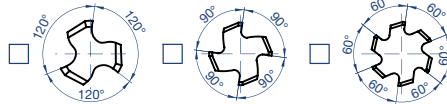
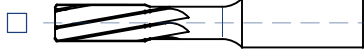
rechtsspiralisiert / right hand helix
rechtsschneidend / right hand cut



Sackloch/Blind hole

58500

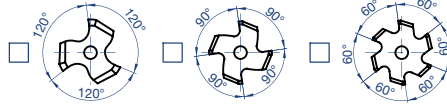
linksspiralisiert / left hand helix
rechtsschneidend / right hand cut



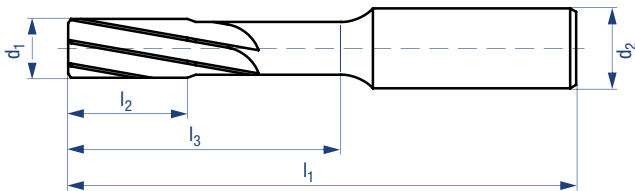
Durchgangsloch/Trough hole

mit IKZ / with coolant through

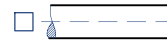
rechtsspiralisiert / right hand helix
rechtsschneidend / right hand cut



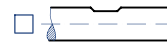
Sackloch/Blind hole



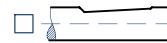
Form HA



Form HB



Form HE



$d_1 =$ _____ Tol. = _____ | $l_1 =$ _____ $l_3 =$ _____
 $d_2 =$ _____ Tol. = _____ | $l_2 =$ _____

Zu bearbeitender Werkstoff:

Material to be cut: _____

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

Beschichtung: keine ohne
 Coating: _____ without

Stückzahl: _____ Anfrage Bestellung
 Quantity: _____ Enquiry Order

Bemerkung: _____
 Remarks: _____

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

Postleitzahl/Ort _____ Phone _____
 ZIP-Code/City _____

Kontaktperson _____ Fax _____
 Contact _____

Datum/Unterschrift _____ E-Mail _____
 Date/Signature _____

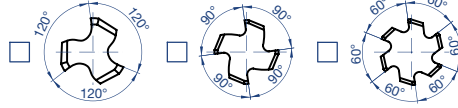
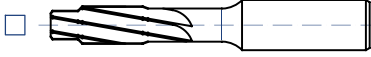
Stufenreibahle

Alésoir étagé

Alesatore a diametri multipli

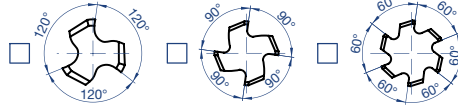
Step reamer

rechtsspiralisiert / right hand helix
rechtsschneidend / right hand cut



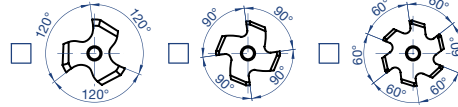
Sackloch/Blind hole

linksspiralisiert / left hand helix
rechtsschneidend / right hand cut

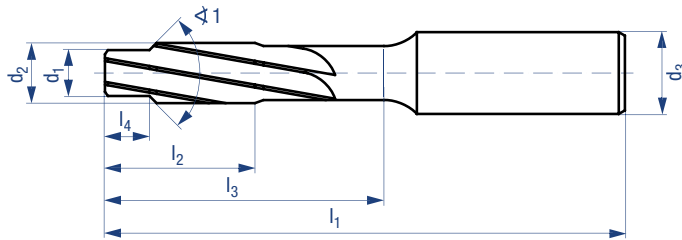


Durchgangslloch/Trough hole

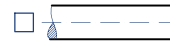
mit IKZ / with coolant through
rechtsspiralisiert / right hand helix
rechtsschneidend / right hand cut



Sackloch/Blind hole



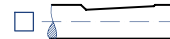
Form HA



Form HB



Form HE



d₁ = _____ Tol. = _____ $\sphericalangle 1 =$ _____ | l₁ = _____ l₃ = _____
 d₂ = _____ Tol. = _____ | l₂ = _____ l₄ = _____
 d₃ = _____ Tol. = _____

Zu bearbeitender Werkstoff:

Material to be cut: _____

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

Beschichtung: keine ohne
 Coating: _____ without

Stückzahl: _____ Anfrage Bestellung
 Quantity: _____ Enquiry Order

Bemerkung: _____
 Remarks: _____

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

Postleitzahl/Ort _____ Phone _____
 ZIP-Code/City _____

Kontaktperson _____ Fax _____
 Contact _____

Datum/Unterschrift _____ E-Mail _____
 Date/Signature _____



Swiss made by SPINX

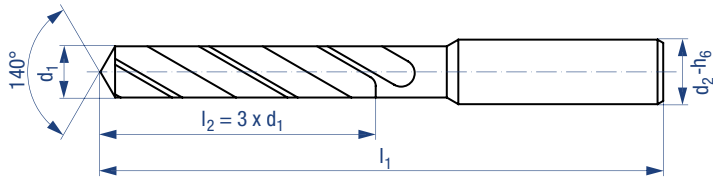
Bohrer Extra-Long und Pilotbohrer

Foret Extra-Long et Foret de préperçage

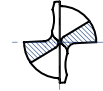
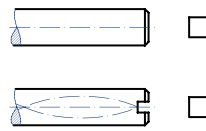
Punta Extra-Long e Punta per perforo

Drill Extra-Long and Pilot drill

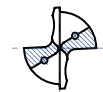
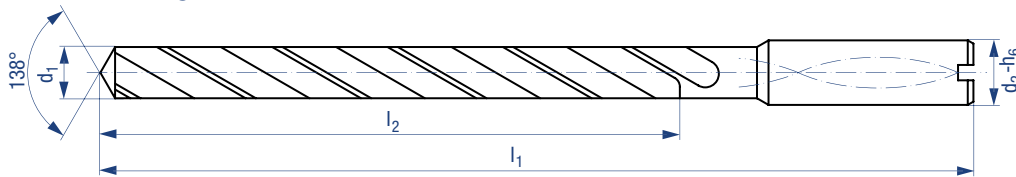
Pilotbohrer
Pilot drill



Kühlmittelezuführung:
Coolant supply:



Bohrer Extra-Long
Drill Extra-Long



Pilotbohrer
Pilot drill

d₁ = _____

d₂ = _____

l₁ = _____

l₂ = 3 x d₁

Bohrer Extra-Long
Drill Extra-Long

d₁ = _____ Tol. = _____

d₂ = _____

l₁ = _____

l₂ = _____

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 _____

Anwendungstechnik

Application de la technologie
Applicazione della tecnologia
Application technology

Materialgruppen 99
Groupe des matériaux
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Punta elicoidale
Twist drill

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Center drill

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Uscita punta e raffreddamento
Drill exit and cooling

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Procédures d'usinage pour perçage profond, pas à pas
Metodo di lavorazione per foratura profonda, passo per passo
Machining process for deep-hole drilling, step by step

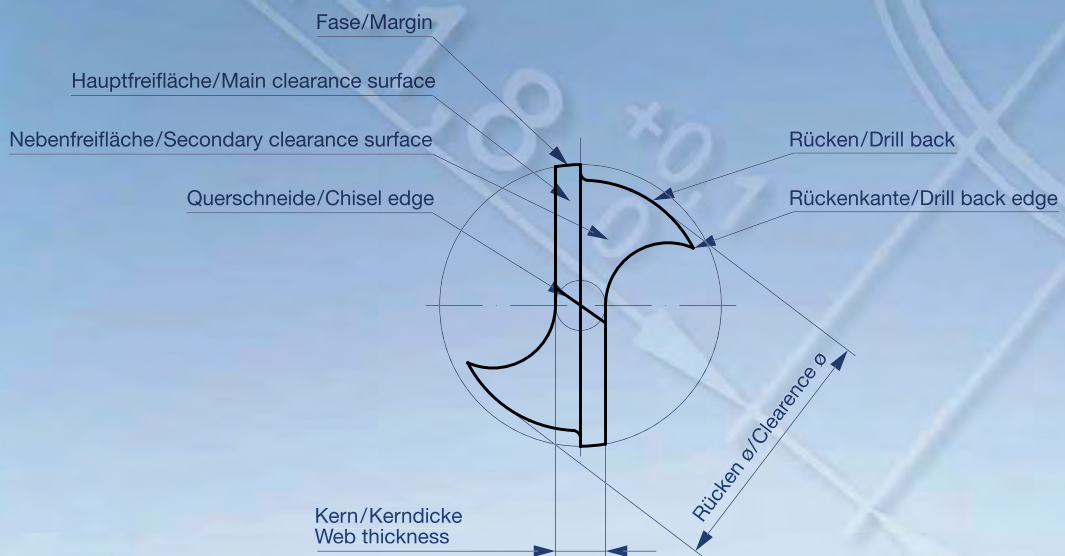
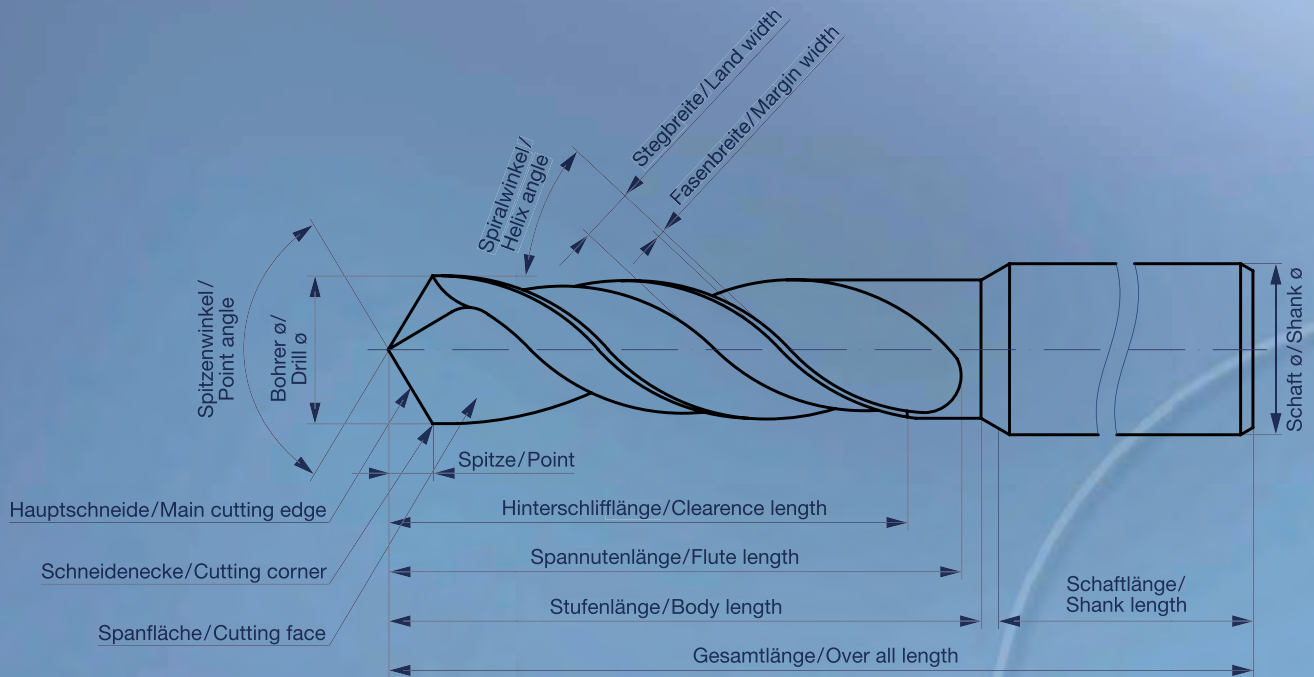
Materialgruppen

Material groups

	Material Material	Festigkeit (N/mm ²) Härte hardness	Beispiel example
P	unlegierte Stähle, Stahlguss unalloyed steels, steel casting	bis up to 700 N/mm²	St37, St42, C22, GS38, St50, St60, C35, GS52
	legierte Stähle alloyed steels	bis up to 700–1000 N/mm²	St70, C45, GS62, 16MnCr5, 42CrMo4, 90MnCrV8, 100Cr6
		bis / up to 1400 N/mm²	S210Cr12, 34CrAlNi7
M	Inox Stainless steels	bis up to 800 N/mm²	X5CrNi189 (V2A), X10CrNiMoTi 1810
	rost- und säurebeständige Stähle (CR-Ni-legiert) corrosion- and acid-proof steels (Cr-Ni-alloys)	über over 800 N/mm²	G-X40CrNi274
K	Grauguss, legierter Grauguss grey cast iron, alloyed grey cast iron	bis up to 200 HB	GG20, GG25, GTS45, GG30, GTW40
		über over 250 HB	GG40, GTS70
	Sphäroguss, Temperguss spheroidal graphite, malleable cast iron	bis up to 600 N/mm²	GGG40, GGG50
		bis up to 600 N/mm²	GGG60, GGG70, GGV
N	Alu-Knetlegierungen malleable alu alloy	bis up to 350 N/mm²	Al99.5, AlMg1, AlCuSiPb, G-AlCu5Ni1,5, AlZnMgCu0,5
	Alu-Gusslegierung <10% Si cast alu alloy <10% Si	bis up to 300 N/mm²	G-AlCu4TiMg, G-AlSi7Mg, G-AlSi9Mg, G-AlSi10Mg, G-AlSi12
	Alu-Gusslegierung >10% Si cast alu alloy >10% Si	bis up to 450 N/mm²	G-AlSi17Cu4, G-AlSi21CuNiMg
	Kupfer langspanend copper long chipping		
	Kupfer, Bronze, Messing, kurzspanend copper, bronze, brass, short-chipping		CuZn15, CuZn30, G-CuZn2Al2, CuCrZr, G-CuPb20Sn
	Kupfer, bleifreies Kupfer, Elektrolytkupfer (kurzsp.) copper, lead-free copper, electrolytic copper (short-chip.)		CuAl10Ni5Fe4, G-CuAl10Ni, G-CuSn10, G-CuSn12
	Duroplaste, Thermoplaste duroplastics, thermoplastics		Bakelit, Responal, Novodur, Pertinax
	Faserverstärkte Kunststoffe fiber-reinforced plastic, composites		CFK, GFK, AFK
	Graphit graphite		EDM36
	Gold gold		
	Silber silver		
S	Titanlegierungen titanium alloys	über over 700 N/mm²	Ti6Al4V, Ti-4Al-4Mo-2Sn
	Nickellegierungen nickel alloys	über over 600 N/mm²	Inconel, Monel, Hasteloy
H	gehärtete Stähle hardened steels	40–48 HRC	
		48–56 HRC	
		56–64 HRC	
		über over 64 HRC	

Spiralbohrer

Twist drill



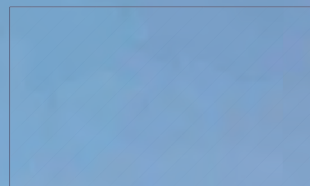
Bearbeitungsverfahren Mikrobohren

Machining process for micro drilling

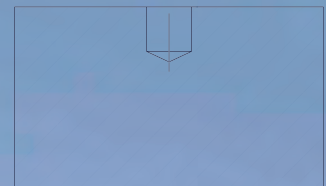
Zentrier- oder Pilotbohrung
wird bei Bohr- $\varnothing < 1.00\text{mm}$ empfohlen.

For holes $\varnothing < 1.00\text{mm}$ a center- or pilothole
is recommended.

56033 – $\varnothing 0.50$

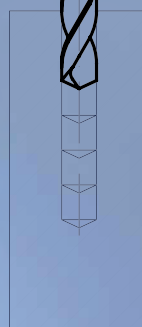


51200 – $\varnothing 0.50$



Tieflochbohrzyklus für
langspanende Werkstoffe

Deep-hole drilling cycle for
long-chipping materials



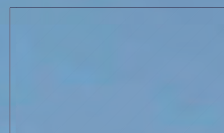
Zentrierbohren

Center drilling

Saubere Eintrittsfläche

Smooth entering surface

$3-9 \times \varnothing$



- Keine Pilotbohrung
- No pilothole

$> 9 \times \varnothing$

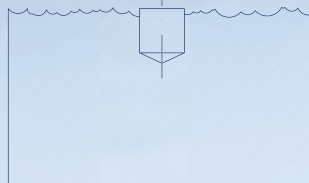


- Pilotbohrung $1-2 \times \varnothing$ empfohlen
- Pilothole, $1-2 \times \varnothing$ deep, recommended

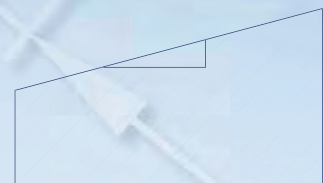
Zentrieren auf rauer/schräger
Eintrittsfläche

Centering on a rough or inclined
entering surface

Pilotbohrung/Pilothole



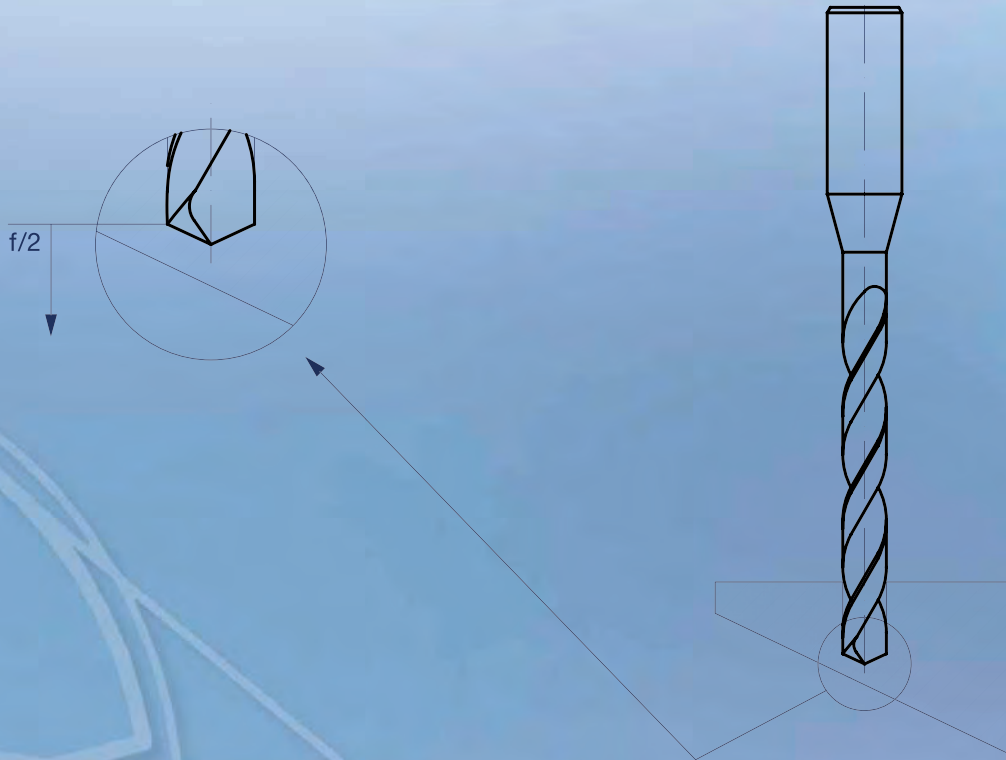
Fräsen einer Fläche/
Milling a flat



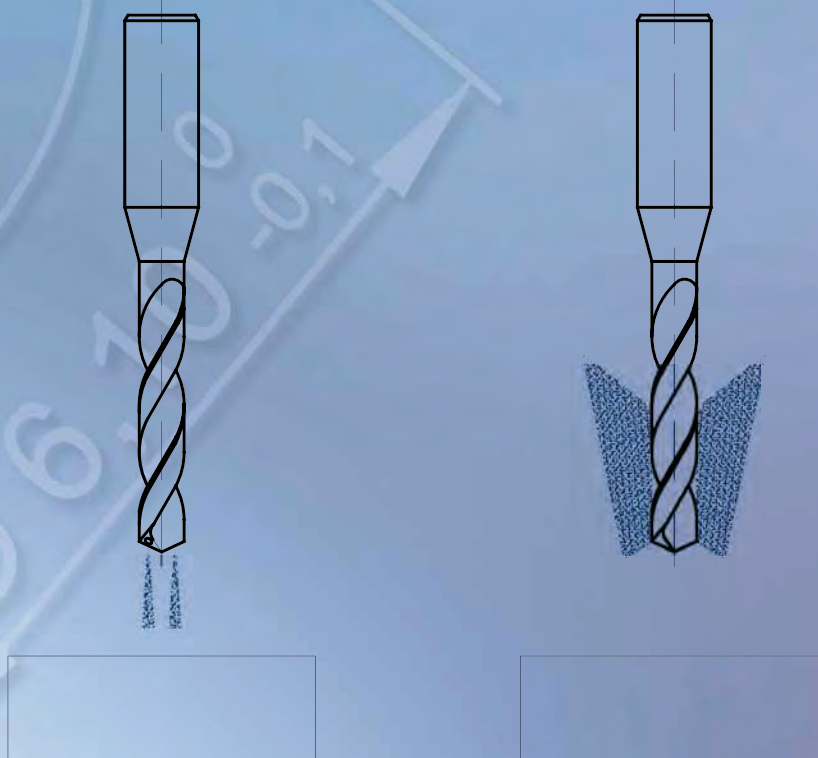
Bohreraustritt und Kühlung

Drill exit and cooling

Bohreraustritt in schräger Fläche/Drill exit in an inclined surface



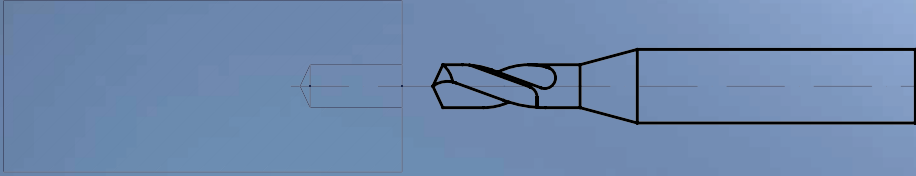
Kühlung/Cooling



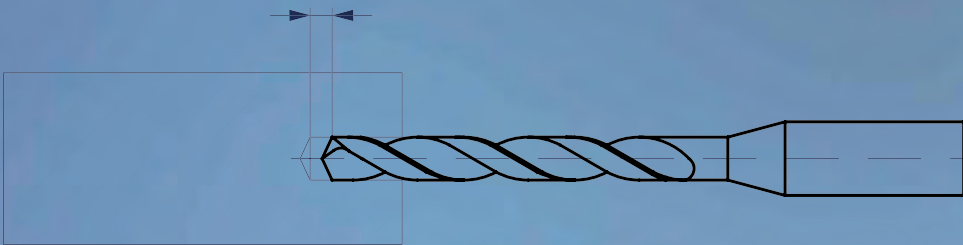
Bearbeitungsverfahren Tieflochbohren

Schritt für Schritt

Machining process deep-hole drilling, step by step



1. Pilotlochbohren
1. Pilothele drilling



2. Bohrer bei langsamdrehender Spindel einführen.
2. Insert the drill with reduced rpm into the pilot hole.



3. Spindel und Kühlmittel in Betrieb setzen.
3. Increase the rpm to the nominal value and switch on the coolant.



4. Nach Erreichen der gewünschten Tiefe, Spindel und Kühlmittel ausschalten und Bohrer herausziehen.
4. After reaching the required drilling depth, switch off the spindle and coolant, retract the drill.

Allgemeine Verkaufsbedingungen

Geltungsbereich

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

Preise

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

Lieferfrist

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

Versand / Transport

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

Mengentoleranzen

Mehr- oder Minderlieferungen bis zu 10% der bestellten Mengen bleiben bei Sonderanfertigungen vorbehalten und müssen vom Auftraggeber akzeptiert werden. Die Verrechnung dieser Mehr- oder Mindermengen erfolgt auf Basis des für den Auftrag abgeschlossenen Preises.

Eigentumsvorbehalt

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

Reklamationen

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

Zahlung

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

Besondere Bestimmungen

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

Änderungen

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

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

Rückverfolgbarkeit

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

Anwendbares Recht

Anwendbar ist das schweizerische Recht. Gerichtsstand ist Solothurn.

Conditions de vente générales

Domaine d'application

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

Prix

En francs suisses et par pièce sans TVA et emballage.

Délai de livraison

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

Expédition / Transport

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

Tolérances de quantité

Toute commande nécessitant une exécution spéciale sera considérée comme étant soldée, selon le résultat de la fabrication à plus ou moins 10% de la quantité commandée.

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

Réserve de propriété

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

Réclamations

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

Paiement

30 jours net en francs suisses sauf autre convention. La facturation minimale est de CHF 50.–. Commandes au-dessous de CHF 100.– sans rabais.

Dispositions spéciales

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

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

Modifications

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

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

Recherche

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

Droit applicable

Le droit suisse est applicable. Lieu de juridiction: Soleure

Condizioni generali di vendita

Ambito di applicazione

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

Prezzi

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

Tempi di consegna

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

Spedizione / Trasporto

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

Tolleranza sulla quantità

Tutti gli ordini che prevedono un'esecuzione speciale risulteranno saldati sulla base di quanto uscito dalla fabbricazione, ossia 10% in più o in meno dalla quantità ordinata. La fatturazione di queste quantità in più o meno avverrà sulla base del prezzo stabilito nell'ordine.

Riserva della proprietà

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

Reclamazioni

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

Pagamento

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

Disposizioni particolari

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

Modifiche

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

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

Rintracciabilità

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

Controversie

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

General Terms

Validity

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

Prices

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

Delivery

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

Shipment / Transport

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

Quantity

For special manufacture the ordered quantity may vary + / - 10% maximum.

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.

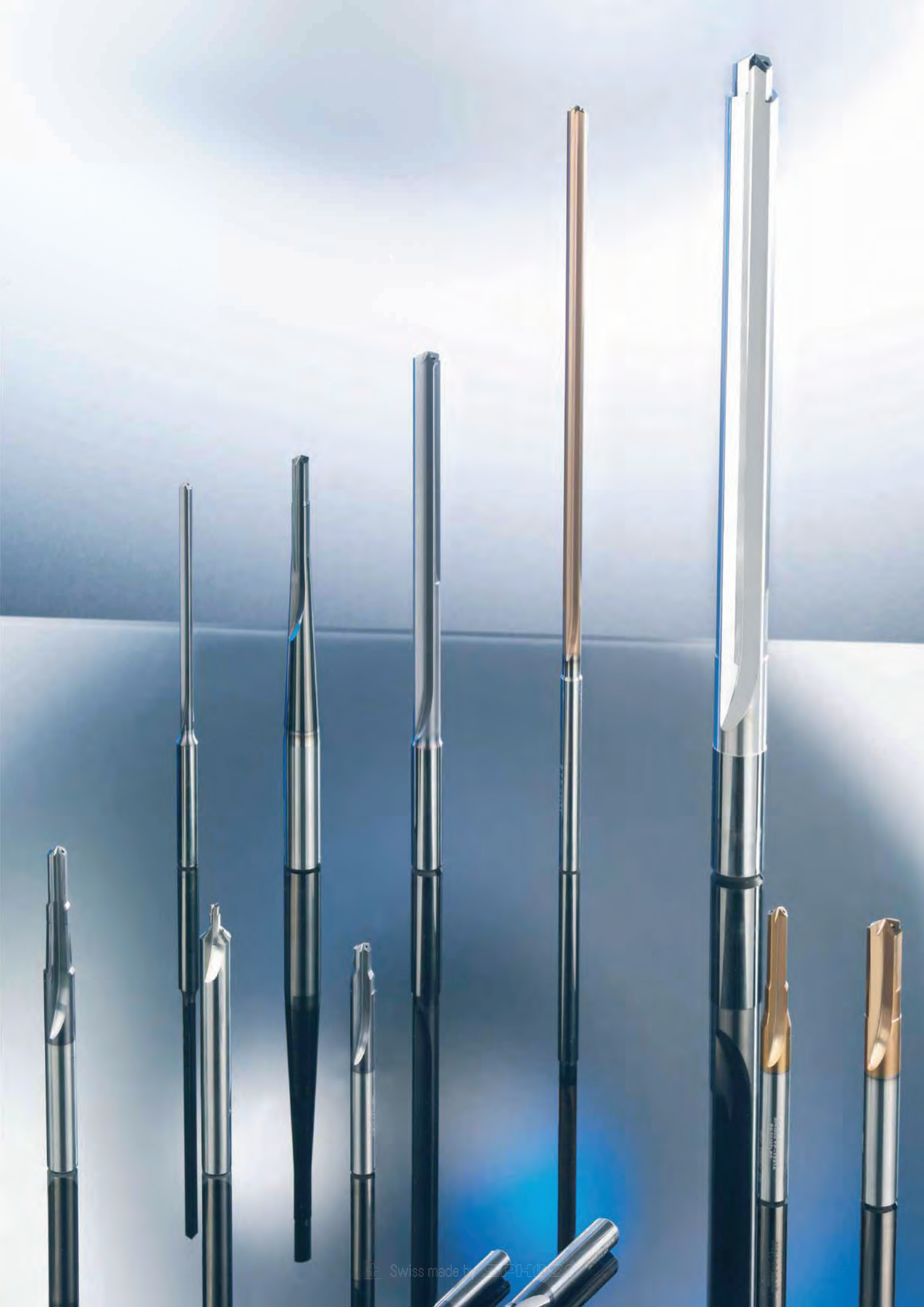
For special tools we manufacture to latest drawing in our possession. Any subsequent alterations are made at customers costs.

Retraceability

Subject to others agreements the retraceability is as per our article and number manuf. number system.

Place of arbitration

For all commitments Swiss law is applied at Solothurn.

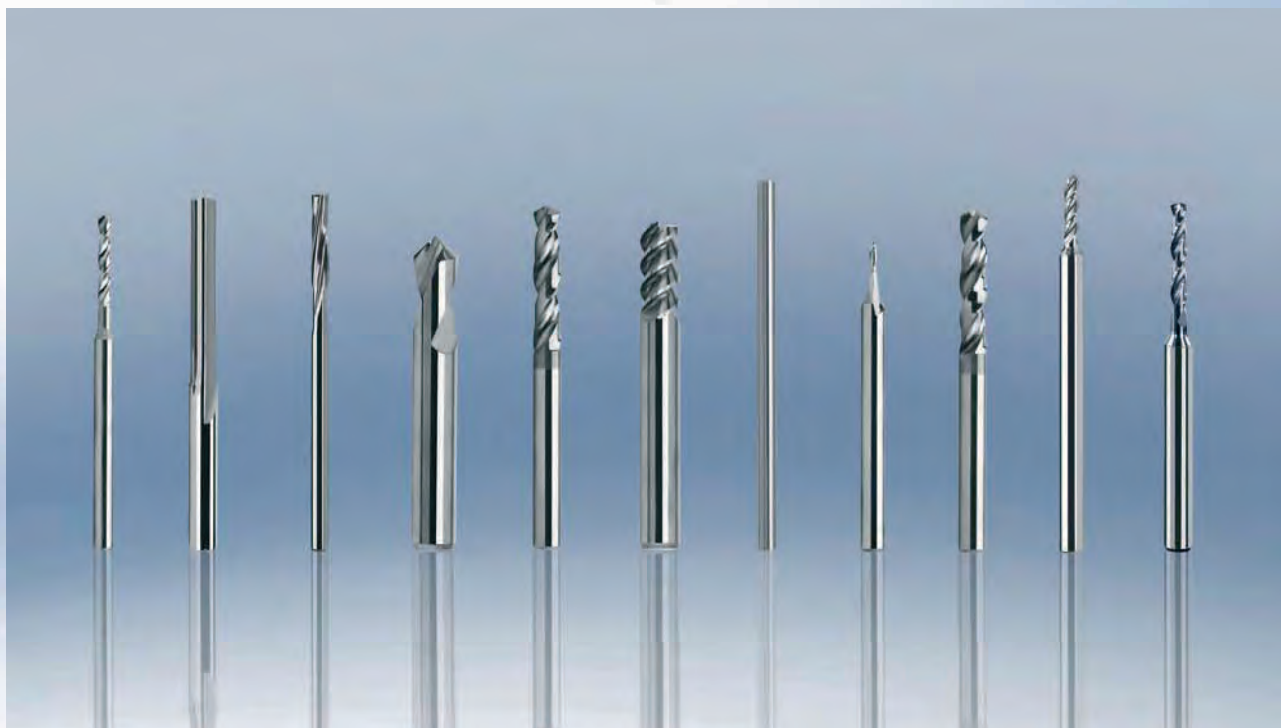


Produkteübersicht

Gamme d'outils

Programma di fabbricazione

Product overview



Die Fertigungsstätten in Derendingen und Porrentruy, eine Referenz für «Made in Switzerland».
Les ateliers de fabrication à Derendingen et Porrentruy, une référence «Made in Switzerland».
Gli stabilimenti di produzione a Derendingen e Porrentruy, una referenza di «Made in Switzerland».
Production facilities in Derendingen and Porrentruy, a reference for «Made in Switzerland».

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