



Wo Präzision Massstäbe setzt.

Где качество устанавливает стандарты.

Dove la precisione mette nuovi limiti.

Where precision sets standards.

SPHINX

 **Swissmade tools**

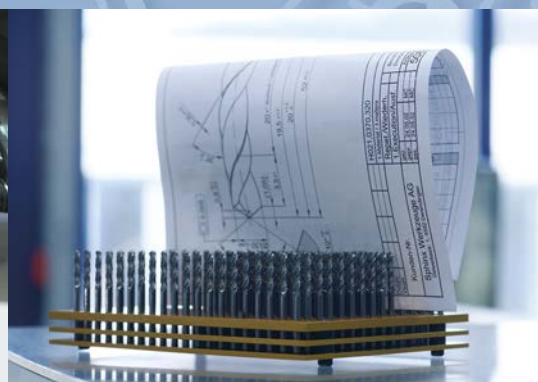
Your partner



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!

Компания Sphinx является ведущим производителем прецизионного инструмента для металлообработки. Постоянный рост, инвестиции в производство дают нашей компании большие преимущества на международном рынке. Потребности наших клиентов всегда находятся для нас на первом месте при разработке инновационных продуктов. Поэтому нашему качеству и опыту доверяют наши клиенты из различных отраслей промышленности, в том числе и из медицины. Благодаря нашим близким отношениям с клиентами и нашим фундаментальным знаниям мы готовы решать сложные производственные задачи, часто предлагаем уникальные решения, тем самым наши клиенты обладают неоспоримыми преимуществами на мировом рынке. Также наша цель и на будущие времена - успешное удовлетворение требований рынка.

Sphinx ist der richtige Partner.
Sphinx - идеальный партнер.
Sphinx è il partner ideale.
Sphinx is the right partner.



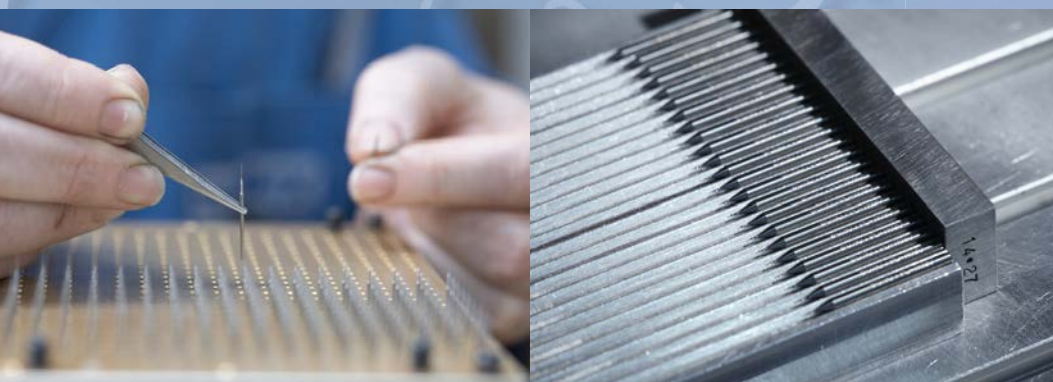
La Sphinx Utensili srl è un'azienda leader nella fabbricazione e vendita di utensili di precisione per la lavorazione a taglio.

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 fondato know-how, siamo in grado di risolvere richieste complesse, offrendo delle soluzioni spesso uniche e contribuendo al successo del mercato delle aziende più rinomate.

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

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





Mikrobohren ≤ ø 3.00 mm

Микросверление ≤ ø 3.00 mm

Micro foratura ≤ ø 3.00 mm

Micro drilling ≤ ø 3.00 mm

4

Mikrofräsen ≤ ø 3.00 mm

Микрофрезерование ≤ ø 3.00 mm

Micro fresatura ≤ ø 3.00 mm

Micro milling ≤ ø 3.00 mm

42

Bohren – Reiben

Сверление - развертывание

Forare – Alesare

Drilling – Reaming

78

Fräsen

Фрезерование

Fresare

Milling

132

Sonderwerkzeuge

Специнструменты

Utensili speciali

Special tools

147

Anwendungstechnik / Schnittdaten

Области применения / Режимы резания

Applicazione della tecnologia / Parametri di lavoro

Application technology / Cutting data

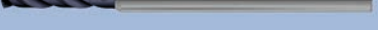
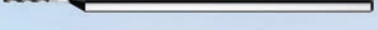
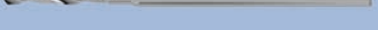
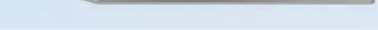
158

Mikrobohren ≤ Ø 3.00 mm

Микросверление ≤ Ø 3.00 mm

Micro foratura ≤ Ø 3.00 mm

Micro drilling ≤ Ø 3.00 mm

	Artikel Арт.	Durchmesser-Bereich Диаметры	Abstufung Шаг	Bohrtiefe Реж. длина	Spitzen- winkel Угол в плане	Spiral- winkel Угол спирали	
Mikro NC-Anbohrer, Pilotbohrer mit verstärktem Schaft ohne Innenkühlung Micro foret à pointer, foret de préperçage avec manche renforcé sans trou d'huile							
	50806	0.50–3.00	0.10		60° +/- 1°	20°	
	50809	0.50–1.90	0.10		90° +/- 1°	20°	
	56005	0.10–1.50	0.05	2–4×Ø	130°	20°	
	56030	0.10–1.00	0.01	2×Ø	130°	30°	
	56033	0.03–2.00	0.01	2×Ø	130°	30°	
	56036	0.40–3.00	0.05	2×Ø	140°/90°	30°	
	16004	0.10–1.50	0.05	2–3×Ø	130°	20°	
Mikrobohrer mit verstärktem Schaft ohne Innenkühlung Micro foret avec manche renforcé sans trou d'huile							
	50695	0.20–1.50	0.01	6×Ø	118°	30°	
	50699	0.05–2.00	0.01	6×Ø	118°	30°	
	51200	0.03–3.00	0.01	6×Ø	130°	35°	
	51201	0.20–3.00	0.01	6×Ø	130°	35°	
	50620	0.50–1.60	0.50	10–15×Ø	118°	25°	
	50621	0.20–3.00	0.01	12×Ø	130°	25°	
	50622	0.20–3.00	0.01	12×Ø	130°	25°	
	50941	0.50–2.40	0.05	6×Ø	140°	30°	
	55652	0.20–2.99	0.01	5×Ø	140°	35°	
	12604	0.05–3.175	0.01	5–8×Ø	118°	25°	
	11654	0.50–2.30	0.05	6×Ø	120°	30°	

* siehe Legende S. 192 + 193
см. информацию на стр. 192 + 193

- ✓ hervorragend / 1-й выбор
- geeignet / 2-й выбор

Материал инструмента	Werkstoffgruppe* Обрабатываемый материал*							Anwendung* Применение*			Seite Стр.
	P	M	K	S	N	H	O				
Микро центровочные сверла, пилотные сверла с усиленным хвостовиком, без внутр. подвода СОЖ Micro NC spotting drill, pilot drill with reinforced shank without internal coolant											
VHM/MD/SC	✓	✓	✓	•	✓		✓				9
VHM/MD/SC	✓	✓	✓	•	✓		✓				10
VHM/MD/SC	✓	•	✓	•	✓		✓				11
VHM/MD/SC	✓	✓	✓	✓	✓		✓				12
VHM/MD/SC	✓	✓	✓	✓	✓		✓				13
VHM/MD/SC; AlCrN	✓	✓	✓	✓	✓	•	•				15
HSS-E	✓	•	✓		•		•				16
Микро сверла с усиленным хвостовиком, без внутр. подвода СОЖ Micro drill with reinforced shank without internal coolant											
VHM/MD/SC	✓	•	✓		✓		•				18
VHM/MD/SC	✓	•	✓		✓		•				19
VHM/MD/SC	✓	✓	✓	✓	✓		•				21
VHM/MD/SC; TiAlN	✓	✓	✓	✓	✓	•	•				23
VHM/MD/SC	✓	•	✓		✓		•				25
VHM/MD/SC	✓	•	✓		✓		•				26
VHM/MD/SC; TiAlN	✓	•	✓	•	✓	•	•				28
VHM/MD/SC; TiAlN	✓	✓	✓	✓	✓	•	✓				30
VHM/MD/SC	✓	•	✓	•	✓		•				31
HSS-E	✓	•	✓		•		•				33
HSS-E	✓	•	✓		•						34

	Artikel Арт.	Durchmesser-Bereich Диаметры	Abstufung Шаг	Bohrtiefe Реж. длина	Spitzen- winkel Угол в плане	Spiral- winkel Угол спирали	
Mikro Hochleistungsbohrer Phoenix-TC2 mit verstärktem Schaft mit Innenkühlung Micro foret à grand rendement Phoenix-TC2 avec manche renforcé avec trou d'huile							
	52903	1.00–3.00	0.05	3×Ø	140°	30°	
	52906	1.00–3.00	0.05	6×Ø	140°	30°	
	52909	1.00–3.00	0.10	9×Ø	140°	30°	
	52912	1.00–3.00	0.10	12×Ø	137°	30°	
	52916	1.00–3.00	0.10	16×Ø	137°	30°	

$K=1.8^{+0.1}_{0}$

* siehe Legende S. 192 + 193
см. информацию на стр. 192 + 193

- ✓ hervorragend / 1-й выбор
- geeignet / 2-й выбор

Материал инструмента	Werkstoffgruppe* Обрабатываемый материал*							Anwendung* Применение*	Seite Стр.
	P	M	K	S	N	H	O		
Микро высокопроизводительные сверла с усиленным хвостовиком серии Phoenix-TC2, с внутр. подводом СОЖ Micro high performance drill Phoenix-TC2 with reinforced shank with internal coolant									
VHM / MD / SC; AlTiCrN+S	✓	✓	✓	✓	✓	•	•		36
VHM / MD / SC; AlTiCrN+S	✓	✓	✓	✓	✓	•	•		37
VHM / MD / SC; AlTiCrN+S	✓	✓	✓	✓	✓	•	•		38
VHM / MD / SC; AlCrTin	✓	✓	✓	✓	✓	•	•		39
VHM / MD / SC; AlCrTin	✓	✓	✓	✓	✓	•	•		40



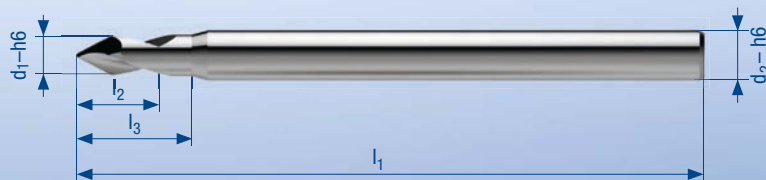
Mikro-NC-Anbohrer und Anfaser 60°

Арт. 50806

Микроцентровочное и фасочное сверло 60°

Micro punta a centrare e smusso NC 60°

Micro NC spotting drill and chamfering 60°



Vc → S./p. 160

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

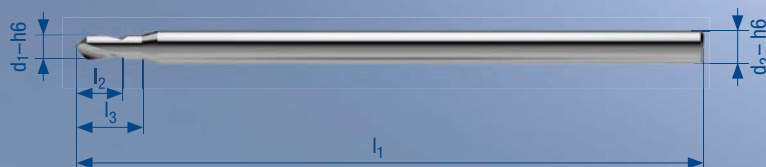
Mikro-NC-Anbohrer 90°

Микроцентровочное сверло 90°

Micro punta a centrare NC 90°

Micro NC spotting drill 90°

Арт. 50809



In Packungen zu 10 Stück
В упаковках по 10 штук.
In contenitori da 10 pezzi
Packaged in quantities of 10 pieces

Vc → S./p. 160

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
2.00	5.00	6.00	38	3.00
2.50	6.50	8.00	38	3.00
3.00	7.50	7.50	38	3.00

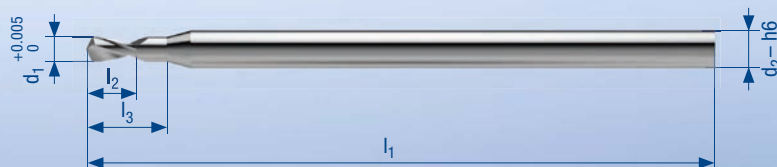
Mikro-NC-Anbohrer 130°

Микроцентровочное сверло 130°

Micro punta a centrare NC 130°

Micro NC spotting drill 130°

Арт. 56005



In Packungen zu 10 Stück
В упаковках по 10 штук.
In contenitori da 10 pezzi
Packaged in quantities of 10 pieces

Vc → S./p. 160

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

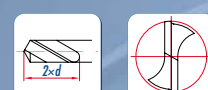
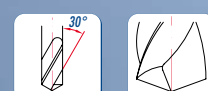
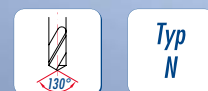
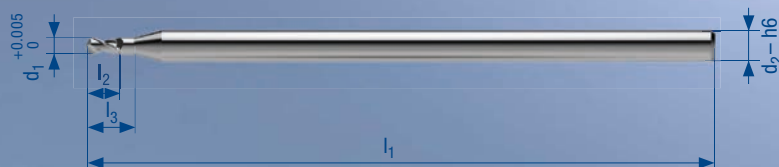
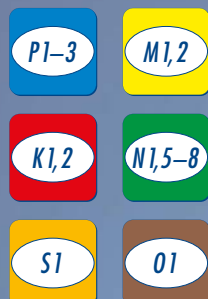
Mikrobohrer Spirec Plus 2 × d

Микросверла серии Spirec Plus 2 × d

Micro punta Spirec Plus 2 × d

Micro drill Spirec Plus 2 × d

Арт. 56030



In Packungen zu 10 Stück
В упаковках по 10 штук.
In contenitori da 10 pezzi
Packaged in quantities of 10 pieces

Vc → S./p. 161



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

Mikro Pilotbohrer Plus 2 × d

Микро пилотное сверло Plus 2 × d

Micro punta per preforo Plus 2 × d

Micro pilot drill Plus 2 × d

Арт. 56033

PI-3

M1,2

N1,5-8

S1

01



VHM
MD/SC

SPHINX
NORM



Typ
N

Z
2

d1
+ 0.005
0



Vc → S./p. 161

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

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

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

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

d ₁	l ₂	l ₃	l ₁	d ₂
mm	mm	mm	mm	mm
1.55	3.10	5.10	38	3.00
1.56	3.12	5.20	38	3.00
1.57	3.14	5.20	38	3.00
1.58	3.16	5.20	38	3.00
1.59	3.18	5.20	38	3.00
1.60	3.20	5.20	38	3.00
1.61	3.22	5.30	38	3.00
1.62	3.24	5.30	38	3.00
1.63	3.26	5.30	38	3.00
1.64	3.28	5.30	38	3.00
1.65	3.30	5.30	38	3.00
1.66	3.32	5.40	38	3.00

d ₁	l ₂	l ₃	l ₁	d ₂
mm	mm	mm	mm	mm
1.67	3.34	5.40	38	3.00
1.68	3.36	5.40	38	3.00
1.69	3.38	5.40	38	3.00
1.70	3.40	5.40	38	3.00
1.71	3.42	5.50	38	3.00
1.72	3.44	5.50	38	3.00
1.73	3.46	5.50	38	3.00
1.74	3.48	5.50	38	3.00
1.75	3.50	5.50	38	3.00
1.76	3.52	5.60	38	3.00
1.77	3.54	5.60	38	3.00
1.78	3.56	5.60	38	3.00

d ₁	l ₂	l ₃	l ₁	d ₂
mm	mm	mm	mm	mm
1.79	3.58	5.60	38	3.00
1.80	3.60	5.60	38	3.00
1.81	3.62	5.70	38	3.00
1.82	3.64	5.70	38	3.00
1.83	3.66	5.70	38	3.00
1.84	3.68	5.70	38	3.00
1.85	3.70	5.70	38	3.00
1.86	3.72	5.80	38	3.00
1.87	3.74	5.80	38	3.00
1.88	3.76	5.80	38	3.00
1.89	3.78	5.80	38	3.00
1.90	3.80	5.80	38	3.00

d ₁	l ₂	l ₃	l ₁	d ₂
mm	mm	mm	mm	mm
1.91	3.82	5.90	38	3.00
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



Mikro Pilot-Stufenbohrer Plus

Арт. 56036

Микро пилотное ступенчатое сверло Plus

Micro punta a diametri multipli per preforo Plus

Micro pilot step drill Plus

PI-3

M1,2

K1,2

N1-5

S1

H1



VHM
MD/SC

SPHINX
NORM

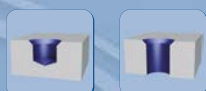


Typ
N

Z
2



AlCrN



Vc → S./p. 161

d1	d2	l2	l3	l1	d3
mm	mm	mm	mm	mm	mm
0.40	1.00	0.80	3.00	50	4.00
0.50	1.20	1.00	3.50	50	4.00
0.55	1.30	1.10	3.50	50	4.00
0.60	1.40	1.20	4.30	50	4.00
0.65	1.50	1.30	4.30	50	4.00
0.70	1.80	1.40	5.30	50	4.00
0.75	1.80	1.50	5.30	50	4.00
0.80	2.00	1.60	6.00	50	4.00
0.85	2.00	1.70	6.00	50	4.00
0.90	2.00	1.80	6.00	50	4.00
0.95	2.00	1.90	6.00	50	4.00
1.00	2.20	2.00	7.00	50	4.00
1.05	2.20	2.10	7.00	50	4.00
1.10	2.20	2.20	7.00	50	4.00
1.15	2.20	2.30	7.00	50	4.00
1.20	2.20	2.40	7.00	50	4.00
1.25	2.50	2.50	8.00	50	4.00
1.30	2.50	2.60	8.00	50	4.00
1.35	2.50	2.70	8.00	50	4.00
1.40	2.50	2.80	8.00	50	4.00
1.45	2.70	2.90	9.00	50	4.00
1.50	2.70	3.00	9.00	50	4.00
1.55	2.70	3.10	9.00	50	4.00
1.60	2.70	3.20	9.00	50	4.00
1.65	2.80	3.30	9.50	50	4.00
1.70	2.80	3.40	9.50	50	4.00
1.75	2.80	3.50	9.50	50	4.00
1.80	2.80	3.60	9.50	50	4.00
1.85	3.00	3.70	10.20	50	4.00
1.90	3.00	3.80	10.20	50	4.00
1.95	3.00	3.90	10.20	50	4.00
2.00	3.00	4.00	10.20	50	4.00
2.05	3.20	4.10	11.00	50	4.00
2.10	3.20	4.20	11.00	50	4.00
2.15	3.20	4.30	11.00	50	4.00
2.20	3.20	4.40	11.00	50	4.00

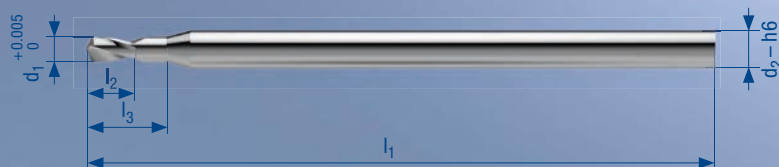
d1	d2	l2	l3	l1	d3
mm	mm	mm	mm	mm	mm
2.25	3.40	4.50	12.00	50	4.00
2.30	3.40	4.60	12.00	50	4.00
2.35	3.40	4.70	12.00	50	4.00
2.40	3.40	4.80	12.00	50	4.00
2.45	3.60	4.90	12.70	50	4.00
2.50	3.60	5.00	12.70	50	4.00
2.55	3.60	5.10	12.70	50	4.00
2.60	3.60	5.20	12.70	50	4.00
2.65	3.80	5.30	13.50	50	4.00
2.70	3.80	5.40	13.50	50	4.00
2.75	3.80	5.50	13.50	50	4.00
2.80	3.80	5.60	13.50	50	4.00
2.85	4.00	5.70	14.10	50	4.00
2.90	4.00	5.80	14.10	50	4.00
2.95	4.00	5.90	14.10	50	4.00
3.00	4.00	6.00	14.10	50	4.00

Mikro Pilotbohrer Spirec Plus aus HSS-E Арт. 16004

Микро пилотное сверло серии Spirec Plus из HSS-E

Micro punta per preforo Spirec Plus in HSS-E

Micro Pilot drill Spirec Plus in HSS-E



HSS-E
Co 8%

SPHINX
NORM



d_1
 $+0.005$
 0

Z
2



In Packungen zu 10 Stück
В упаковках по 10 штук.
In contenitori da 10 pezzi
Packaged in quantities of 10 pieces

Vc → S./p. 162



d_1 mm	l_2 mm	l_3 mm	l_1 mm	d_2 mm
0.10	0.40	0.60	25	1.50
0.15	0.40	0.60	25	1.50
0.20	0.60	0.90	25	1.50
0.25	0.60	0.90	25	1.50
0.30	0.90	1.20	25	1.50
0.35	0.90	1.20	25	1.50
0.40	0.90	1.60	25	1.50
0.45	0.90	1.60	25	1.50
0.50	1.00	1.80	25	1.50
0.55	1.00	1.80	25	1.50
0.60	1.20	2.00	25	1.50
0.65	1.20	2.00	25	1.50
0.70	1.50	2.50	25	1.50
0.75	1.50	2.50	25	1.50
0.80	1.50	2.50	25	1.50
0.85	1.50	2.50	25	1.50
0.90	1.60	2.60	25	1.50
0.95	1.60	2.60	25	1.50
1.00	2.00	3.20	25	1.50
1.05	2.00	3.20	25	1.50
1.10	2.30	3.50	25	1.50
1.15	2.30	3.50	25	1.50
1.20	2.30	3.50	25	1.50
1.25	2.30	3.50	25	1.50
1.30	2.70	4.20	25	1.50
1.35	2.70	4.20	25	1.50
1.40	2.70	4.20	25	1.50
1.45	2.70	4.20	25	1.50
1.50	3.00	4.20	25	1.50



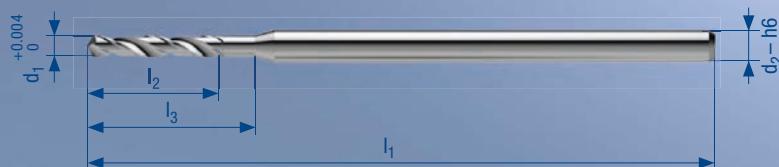
Mikrobohrer Spirec Plus 6 x d

Микросверло серии Spirec Plus 6 x d

Micro punta Spirec Plus 6 x d

Micro drill Spirec Plus 6 x d

Арт. 50695



In Packungen zu 10 Stück
В упаковках по 10 штук.
In contenitori da 10 pezzi
Packaged in quantities of 10 pieces

Vc → S./p. 162

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

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

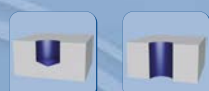
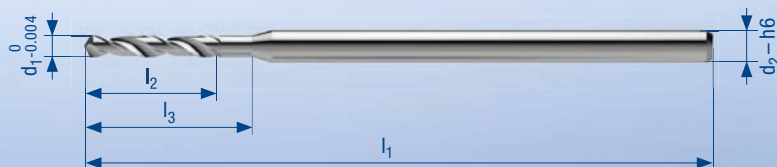
Mikrobohrer Spirec 6 x d

Микросверло серии Spirec Plus 6 x d

Micro punta Spirec 6 x d

Micro drill Spirec 6 x d

Арт. 50699



In Packungen zu 10 Stück
В упаковках по 10 штук.
In contenitori da 10 pezzi
Packaged in quantities of 10 pieces

Vc → S./p. 162

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	11.20	25	1.50
1.51	11.20	13.40	38	2.00
1.52	11.20	13.40	38	2.00
1.53	11.20	13.40	38	2.00
1.54	11.20	13.40	38	2.00
1.55	11.20	13.40	38	2.00
1.56	11.20	13.40	38	2.00

d ₁	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	13.40	38	2.00



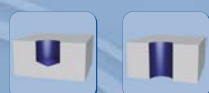
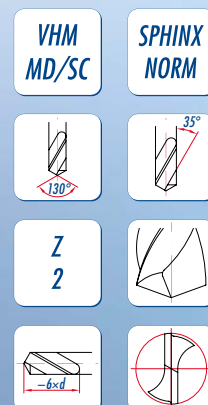
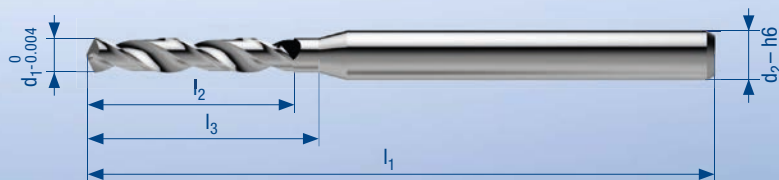
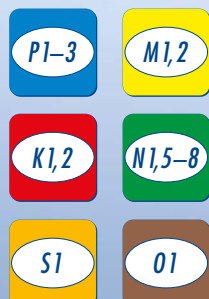
Mikrobohrer 6 × d

Микросверло 6 × d

Micro punta 6 × d

Micro drill 6 × d

Арт. 51200



Vc → S./p. 163

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

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

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

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

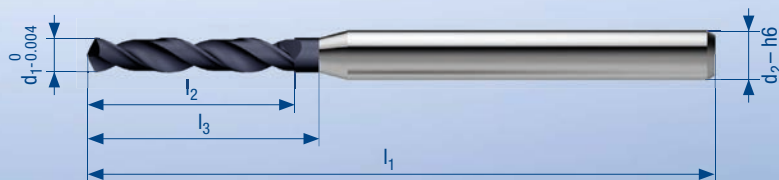
Mikrobohrer 6 × d

Микросверло 6 × d

Micro punta 6 × d

Micro drill 6 × d

Арт. 51201



Vc → S./p. 163

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

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

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

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

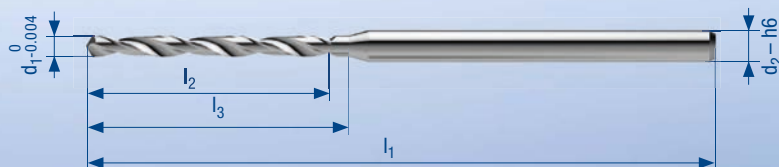
Mikrobohrer Tipdrill 10 × d

Микросверло Tipdrill 10 × d

Micro punta Tipdrill 10 × d

Micro drill Tipdrill 10 × d

Арт. 50620



In Packungen zu 10 Stück
В упаковках по 10 штук.
In contenitori da 10 pezzi
Packaged in quantities of 10 pieces

Vc → S./p. 164

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

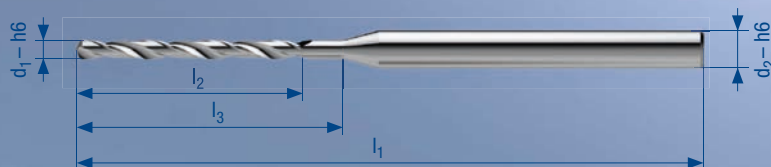
Mikrobohrer 12 × d

Микросверло 12 × d

Micro punta 12 × d

Micro drill 12 × d

Арт. 50621



Vc → S./p. 164

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

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

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

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

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

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

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

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

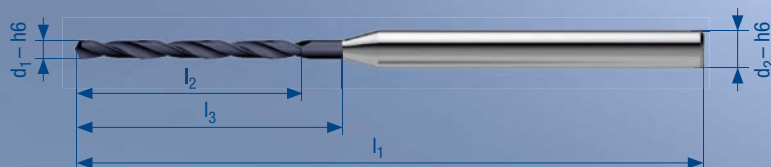
Mikrobohrer 12 × d

Микросверло 12 × d

Micro punta 12 × d

Micro drill 12 × d

Арт. 50622



Vc → S./p. 164

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

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

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

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

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

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

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

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

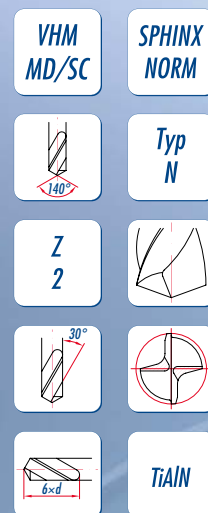
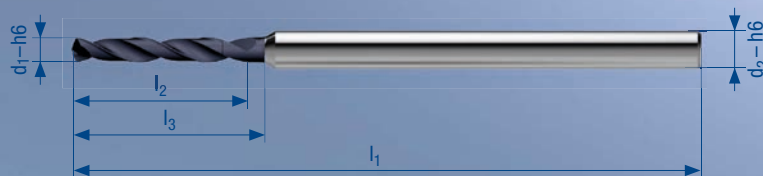
Mikro Hochleistungsbohrer 6 × d

Арт. 50941

Микро высокопроизводительное сверло серии Phoenix 6 × d

Micro punta ad alto rendimento Phoenix 6 × d

Micro high performance drill Phoenix 6 × d



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

Vc → S./p. 165

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

Mikrotricut 5 × d

Microtricut 5 × d

Microtricut 5 × d

Microtricut 5 × d

Apt. 55652



Vc → S./p. 165

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

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

d ₁	l ₂	l ₃	l ₁	d ₂
mm	mm	mm	mm	mm
0.96	4.80	5.30	38	3.00
0.97	4.85	5.30	38	3.00
0.98	4.90	5.40	38	3.00
0.99	4.95	5.40	38	3.00
1.00	5.00	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	l ₂	l ₃	l ₁	d ₂
mm	mm	mm	mm	mm
1.34	6.70	9.50	38	3.00
1.35	6.75	9.50	38	3.00
1.36	6.80	9.50	38	3.00
1.37	6.85	9.50	38	3.00
1.38	6.90	9.50	38	3.00
1.39	6.95	9.50	38	3.00
1.40	7.00	9.50	38	3.00
1.41	7.05	9.50	38	3.00
1.42	7.10	9.50	38	3.00
1.43	7.15	9.50	38	3.00
1.44	7.20	9.50	38	3.00
1.45	7.25	9.50	38	3.00
1.46	7.30	9.50	38	3.00
1.47	7.35	9.50	38	3.00
1.48	7.40	9.50	38	3.00
1.49	7.45	9.50	38	3.00
1.50	7.50	9.50	38	3.00
1.51	7.55	10.50	38	3.00
1.52	7.60	10.50	38	3.00
1.53	7.65	10.50	38	3.00
1.54	7.70	10.50	38	3.00
1.55	7.75	10.50	38	3.00
1.56	7.80	10.50	38	3.00
1.57	7.85	10.50	38	3.00
1.58	7.90	10.50	38	3.00
1.59	7.95	10.50	38	3.00
1.60	8.00	10.50	38	3.00
1.61	8.05	10.50	38	3.00
1.62	8.10	10.50	38	3.00
1.63	8.15	10.50	38	3.00
1.64	8.20	10.50	38	3.00
1.65	8.25	10.50	38	3.00
1.66	8.30	10.50	38	3.00
1.67	8.35	10.50	38	3.00
1.68	8.40	10.50	38	3.00
1.69	8.45	10.50	38	3.00
1.70	8.50	10.50	38	3.00
1.71	8.55	11.50	38	3.00

d 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	16.50	38	3.00
2.98	14.90	16.50	38	3.00
2.99	14.95	16.50	38	3.00



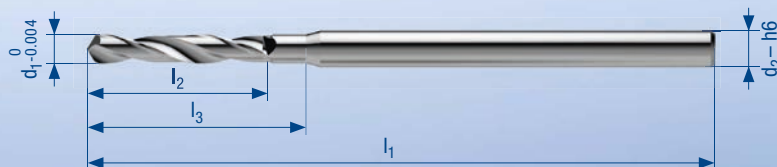
Mikrobohrer Spirec 6 × d aus HSS-E

Арт. 12604

Микросверло серии Spirec 6 × d из HSS-E

Micro punta Spirec 6 × d in HSS-E

Micro drill Spirec 6 × d in HSS-E



HSS-E
Co 8%

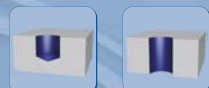
DIN
1899-A



SPHINX
NORM

Z
2

Typ
N



In Packungen zu 10 Stück
В упаковках по 10 штук.
In contenitori da 10 pezzi
Packaging in quantities of 10 pieces

Vc → S./p. 166

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	23.00	46	3.00
3.175	19.70	23.00	46	3.175

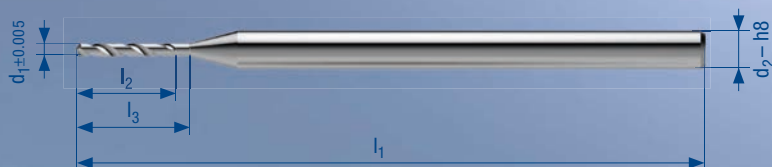
Juwelierbohrer 6 × d aus HSS-E

Ювелирные сверла 6 × d из HSS-E

Punta per gioielleria 6 × d in HSS-E

Jeweller drill 6 × d in HSS-E

Арт. 11654



In Packungen zu 10 Stück
В упаковках по 10 штук.
In contenitori da 10 pezzi
Packaged in quantities of 10 pieces

Vc → S./p. 166



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

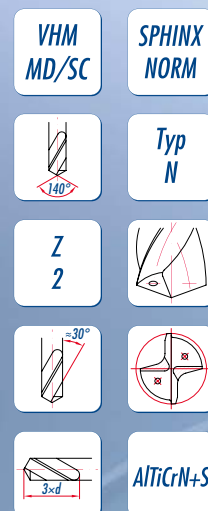
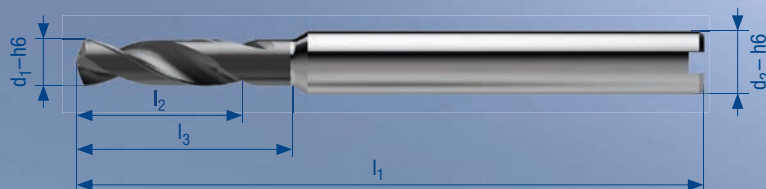
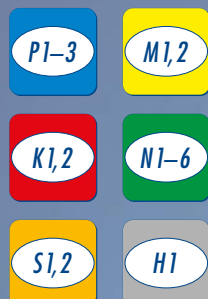


Hochleistungsbohrer Phoenix-TC2 3 × d Apt. 52903

Высокопроизводительные сверла серии Phoenix-TC2 3 × d

Punta ad alto rendimento Phoenix-TC2 3 × d

High performance drill Phoenix-TC2 3 × d



mit 2 Führungsfasen
с 2 направляющими фасками
con 2 pattini di guida
with 2 guide margins

Vc → S./p. 179



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

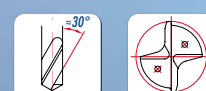
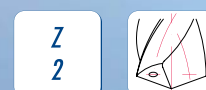
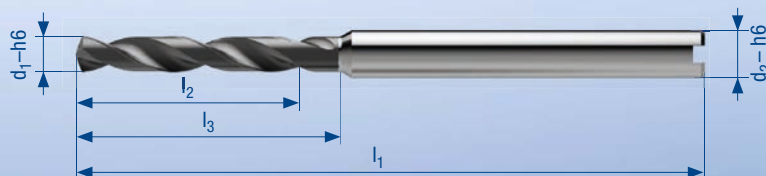
d ₁ mm	l ₂ mm	l ₃ mm	l ₁ mm	d ₂ mm
2.90	8.70	12.00	50	3.00
2.95	8.85	12.00	50	3.00
3.00	9.00	12.50	50	3.00

Hochleistungsbohrer Phoenix-TC2 6 × d Apt. 52906

Высокопроизводительные сверла серии Phoenix-TC2 6 × d

Punta ad alto rendimento Phoenix-TC2 6 × d

High performance drill Phoenix-TC2 6 × d



mit 2 Führungsfasen
с 2 направляющими фасками
con 2 pattini di guida
with 2 guide margins

Vc → S./p. 179

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

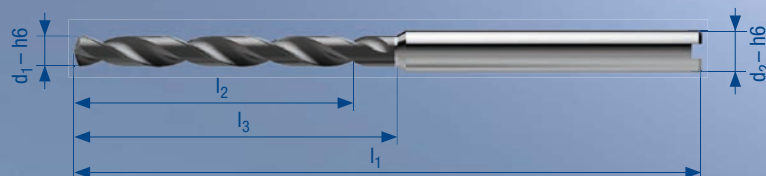
d ₁	l ₂	l ₃	l ₁	d ₂
mm	mm	mm	mm	mm
2.90	17.40	20.40	50	3.00
2.95	17.70	20.70	50	3.00
3.00	18.00	20.70	50	3.00

Hochleistungsbohrer Phoenix-TC2 9 × d Apt. 52909

Высокопроизводительные сверла серии Phoenix-TC2 9 × d

Punta ad alto rendimento Phoenix-TC2 9 × d

High performance drill Phoenix-TC2 9 × d



mit 2 Führungsfasen
с 2 направляющими фасками
con 2 pattini di guida
with 2 guide margins

Vc → S./p. 179

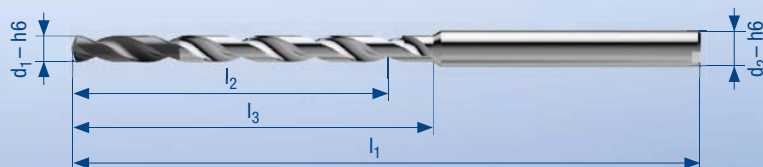
d ₁ mm	l ₂ mm	l ₃ mm	l ₁ mm	d ₂ mm
1.00	9.00	11.00	51	3.00
1.10	9.90	12.00	51	3.00
1.20	10.80	13.00	51	3.00
1.30	11.70	14.00	51	3.00
1.40	12.60	15.00	51	3.00
1.50	13.50	16.50	51	3.00
1.60	14.40	17.50	51	3.00
1.70	15.30	18.50	51	3.00
1.80	16.20	19.00	51	3.00
1.90	17.10	20.00	51	3.00
2.00	18.00	21.00	51	3.00
2.10	18.90	22.00	61	3.00
2.20	19.80	23.00	61	3.00
2.30	20.70	24.00	61	3.00
2.40	21.60	24.50	61	3.00
2.50	22.50	25.50	61	3.00
2.60	23.40	26.50	61	3.00
2.70	24.30	27.50	61	3.00
2.80	25.20	28.00	61	3.00
2.90	26.10	29.00	61	3.00
3.00	27.00	31.00	61	3.00

Hochleistungsbohrer Phoenix-TC2 12 × d Apt. 52912

Высокопроизводительные сверла серии Phoenix-TC2 12 × d

Punta ad alto rendimento Phoenix-TC2 12 × d

High performance drill Phoenix-TC2 12 × d



mit 2 Führungsfasen
с 2 направляющими фасками
con 2 pattini di guida
with 2 guide margins

Vc → S./p. 179

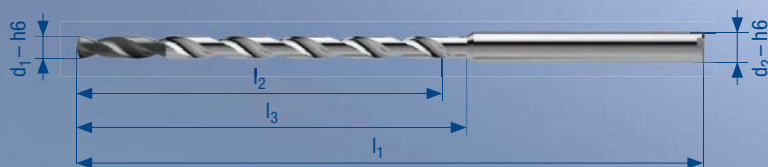
d ₁	l ₂	l ₃	l ₁	d ₂
mm	mm	mm	mm	mm
1.00	12.00	14.00	50	3.00
1.10	13.20	15.50	50	3.00
1.20	14.40	16.50	50	3.00
1.30	15.60	17.50	50	3.00
1.40	16.80	19.00	50	3.00
1.50	18.00	21.00	50	3.00
1.60	19.20	22.50	50	3.00
1.70	20.40	23.50	50	3.00
1.80	21.60	24.50	50	3.00
1.90	22.80	26.00	55	3.00
2.00	24.00	27.00	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	34.50	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

Hochleistungsbohrer Phoenix-TC2 16 × d Apt. 52916

Высокопроизводительные сверла серии Phoenix-TC2 16 × d

Punta ad alto rendimento Phoenix-TC2 16 × d

High performance drill Phoenix-TC2 16 × d



mit 2 Führungsfasen
с 2 направляющими фасками
con 2 pattini di guida
with 2 guide margins

Vc → S./p. 179



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



Mikrofräsen ≤ Ø 3.00 mm

Микрофрезерование ≤ Ø 3.00 mm

Micro fresatura ≤ Ø 3.00 mm

Micro milling ≤ Ø 3.00 mm

	Artikel Арт.	Durchmesser-Bereich Диаметры	Abstufung Шар	Bohrtiefe Реж. длина	Spitzen- winkel Угол в плане	Spiral- winkel Угол спирали	
Gravierfräser mit verstärktem Schaft Fraise à graver avec manche renforcé							
	70030	0.02–0.15	0.01		30°	0°	
	70040	0.02–0.15	0.01		40°	0°	
	70050	0.02–0.15	0.01		50°	0°	
	70060	0.02–0.15	0.01		60°	0°	
	70090	0.02–0.15	0.01		90°	0°	
	70130	0.04–0.10	0.01		30°	0°	
	70140	0.04–0.10	0.01		40°	0°	
	70150	0.04–0.10	0.01		50°	0°	
	70160	0.04–0.10	0.01		60°	0°	
	70190	0.04–0.10	0.01		90°	0°	
Mikrofräser mit verstärktem Schaft Micro fraise avec manche renforcé							
	72075	0.20–2.00	0.10	0.75×Ø		30°	
	72150	0.10–2.00	0.10	1.5×Ø		30°	
	42000	0.10–3.00	0.10	3×Ø		30°	
	72500	0.30–2.50	0.10	5×Ø		30°	
	72800	0.40–2.50	0.10	8×Ø		30°	
	73130	0.30–2.90	0.10	1.3×Ø		30°	
	73200	0.30–2.90	0.10	2×Ø		30°	
	73300	0.30–2.90	0.10	3×Ø		30°	

* siehe Legende S. 192 + 193
см. информацию на стр. 192 + 193

- ✓ hervorragend / 1-й выбор
- geeignet / 2-й выбор

Материал инструмента	Werkstoffgruppe* Обрабатываемый материал*							Anwendung* Применение*	Seite Стр.
	P	M	K	S	N	H	O		
Граверные фрезы с усиленным хвостовиком Engraving mill with reinforced shank									
VHM/MD/SC	✓	✓	✓	✓	✓		✓		47
VHM/MD/SC	✓	✓	✓	✓	✓		✓		48
VHM/MD/SC	✓	✓	✓	✓	✓		✓		49
VHM/MD/SC	✓	✓	✓	✓	✓		✓		50
VHM/MD/SC	✓	✓	✓	✓	✓		✓		51
VHM/MD/SC	✓	✓	✓	✓	✓		✓		52
VHM/MD/SC	✓	✓	✓	✓	✓		✓		53
VHM/MD/SC	✓	✓	✓	✓	✓		✓		54
VHM/MD/SC	✓	✓	✓	✓	✓		✓		55
VHM/MD/SC	✓	✓	✓	✓	✓		✓		56
Микрофрезы с усиленным хвостовиком Micro end mill with reinforced shank									
VHM/MD/SC	✓	•	✓	•	✓		•	      	58
VHM/MD/SC	✓	•	✓	•	✓		•	      	59
VHM/MD/SC	✓	•	✓	•	✓		•	      	60
VHM/MD/SC	✓	•	✓	•	✓		•	      	61
VHM/MD/SC	✓	•	✓	•	✓		•	      	62
VHM/MD/SC	✓	•	✓	•	•			      	63
VHM/MD/SC	✓	•	✓	•	•			      	64
VHM/MD/SC	✓	•	✓	•	•			      	65

	Artikel Арт.	Durchmesser-Bereich Диаметры	Abstufung Шаг	Bohrtiefe Рез. длина	Spitzen- winkel Угол в плане	Spiral- winkel Угол спирали
	43105	0.30–3.00	0.10	1×Ø		35°
	43305	0.30–3.00	0.10	3×Ø		35°

Radiusfräser mit verstärktem Schaft
Fraise hémisphérique avec manche renforcé

	74075	0.20–1.00	0.10	0.75×Ø		30°
	74150	0.20–2.00	0.10	1.5×Ø		30°
	74300	0.20–2.80	0.10	3×Ø		30°

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

	73000	0.50–3.00	0.50		90°	0°
	47330	0.30–3.00	0.10			0°
	47344	0.50–8.00	0.10			0°



* siehe Legende S. 192 + 193
см. информацию на стр. 192 + 193

- ✓ hervorragend / 1-й выбор
- geeignet / 2-й выбор

Материал инструмента	Werkstoffgruppe* Обрабатываемый материал*							Anwendung* Применение*	Seite Стр.
	P	M	K	S	N	H	O		
VHM / MD / SC; Cro-Nova	✓	✓	•	✓	✓	•	•		66
VHM / MD / SC; Cro-Nova	✓	✓	•	✓	✓	•	•		67
Микро радиусные фрезы с усиленным хвостовиком Ball nose end mill with reinforced shank									
VHM / MD / SC	✓	•	✓	•	✓		•		69
VHM / MD / SC	✓	•	✓	•	✓		•		70
VHM / MD / SC	✓	•	✓	•	✓		•		71
Фасочные и однозубые фрезы с усиленным хвостовиком Chamfering tool and end mill 1 tooth with reinforced shank									
VHM / MD / SC	✓	•	✓	•	✓				73
VHM / MD / SC	•	•	•		✓				74
VHM / MD / SC	•	•	•		✓				75



Gravierfräser 30°, mit Fläche

Граверные фрезы 30°, с плоскостью

Fresa per incidere 30°, con faccia

Engraving mill 30°, with flat

Apt. 70030

P1-3

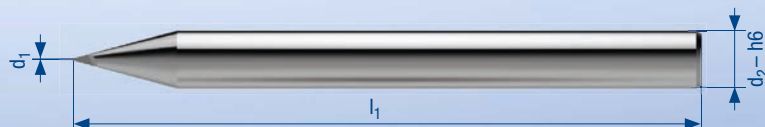
M1,2

K1,2

N1-8

S1

01



VHM
MD/SC

Z
1



Vc → S./p. 167

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

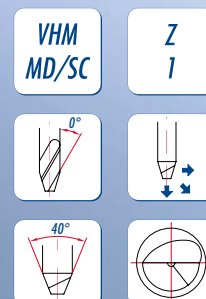
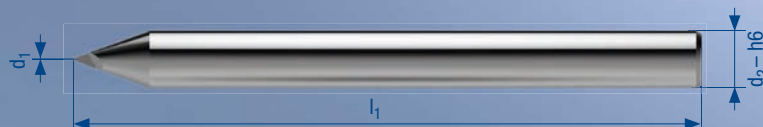
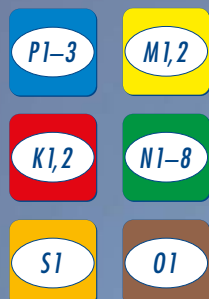
Gravierfräser 40°, mit Fläche

Граверные фрезы 40°, с плоскостью

Fresa per incidere 40°, con faccia

Engraving mill 40°, with flat

Apt. 70040



Vc → S./p. 167

d_1 mm	α °	l_1 mm	d_2 mm
0.02	40	33	3.00
0.03	40	33	3.00
0.04	40	33	3.00
0.05	40	33	3.00
0.06	40	33	3.00
0.07	40	33	3.00
0.08	40	33	3.00
0.09	40	33	3.00
0.10	40	33	3.00
0.12	40	33	3.00
0.15	40	33	3.00

$K=1.8^{+0.1}_{0.0}$

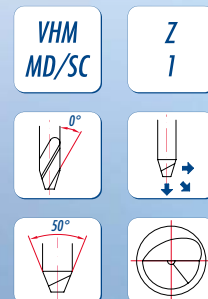
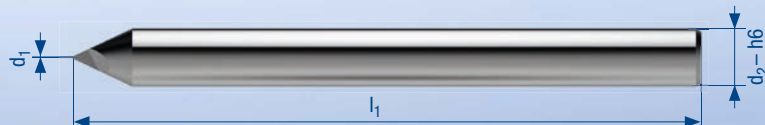
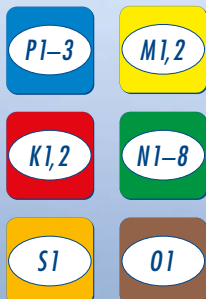
Gravierfräser 50°, mit Fläche

Граверные фрезы 50°, с плоскостью

Fresa per incidere 50°, con faccia

Engraving mill 50°, with flat

Арт. 70050



Vc → S./p. 167

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

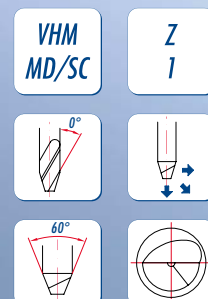
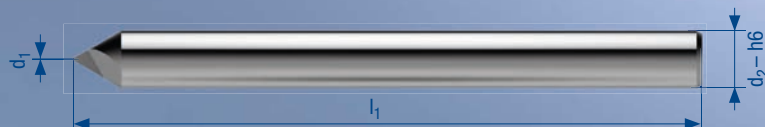
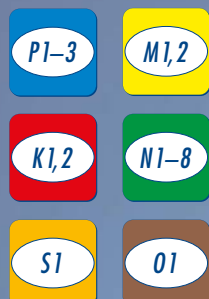
Gravierfräser 60°, mit Fläche

Граверные фрезы 60°, с плоскостью

Fresa per incidere 60°, con faccia

Engraving mill 60°, with flat

Apt. 70060



Vc → S./p. 167

d_1 mm	α °	l_1 mm	d_2 mm
0.02	60	33	3.00
0.03	60	33	3.00
0.04	60	33	3.00
0.05	60	33	3.00
0.06	60	33	3.00
0.07	60	33	3.00
0.08	60	33	3.00
0.09	60	33	3.00
0.10	60	33	3.00
0.12	60	33	3.00
0.15	60	33	3.00

$K=1.8^{+0.1}_{0}$

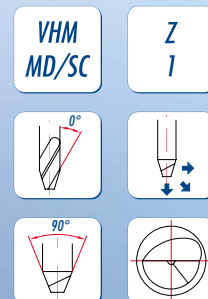
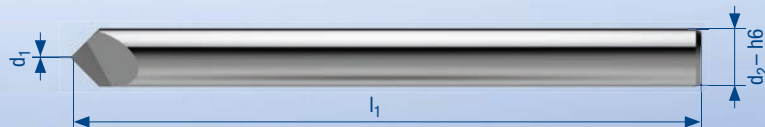
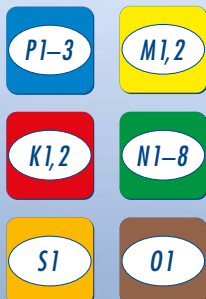
Gravierfräser 90°, mit Fläche

Граверные фрезы 90°, с плоскостью

Fresa per incidere 90°, con faccia

Engraving mill 90°, with flat

Арт. 70090



Vc → S./p. 167

d_1 mm	α °	l_1 mm	d_2 mm
0.02	90	33	3.00
0.03	90	33	3.00
0.04	90	33	3.00
0.05	90	33	3.00
0.06	90	33	3.00
0.07	90	33	3.00
0.08	90	33	3.00
0.09	90	33	3.00
0.10	90	33	3.00
0.12	90	33	3.00
0.15	90	33	3.00

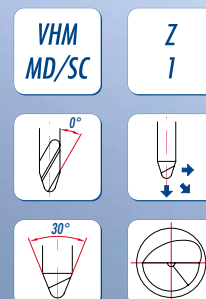
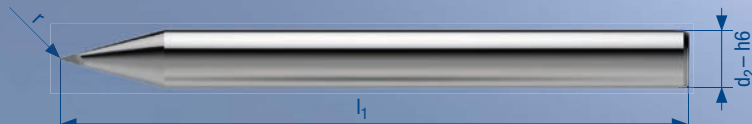
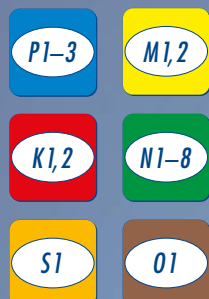
Gravierfräser 30°, mit Radius

Граверные фрезы 30°, с радиусом

Fresa per incidere 30°, con raggio

Engraving mill 30°, with radius

Арт. 70130



Vc → S./p. 167

r	α	l_1	d_2
mm	°	mm	mm
0.04	30	33	3.00
0.05	30	33	3.00
0.06	30	33	3.00
0.07	30	33	3.00
0.08	30	33	3.00
0.09	30	33	3.00
0.10	30	33	3.00

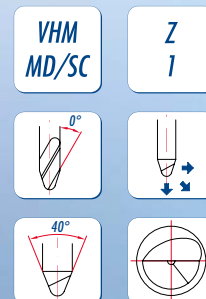
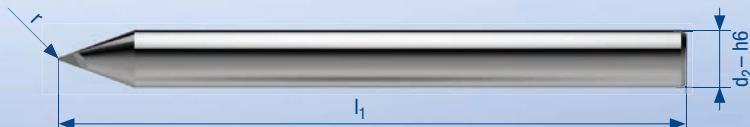
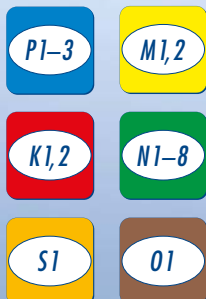
Gravierfräser 40°, mit Radius

Граверные фрезы 40°, с радиусом

Fresa per incidere 40°, con raggio

Engraving mill 40°, with radius

Apt. 70140



Vc → S./p. 167

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

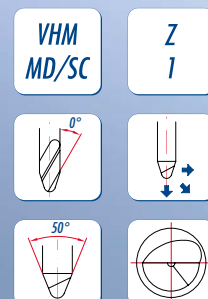
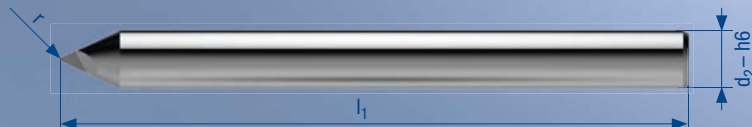
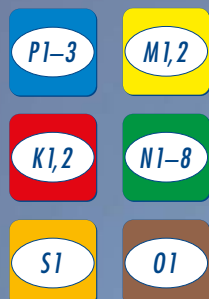
Gravierfräser 50°, mit Radius

Граверные фрезы 50°, с радиусом

Fresa per incidere 50°, con raggio

Engraving mill 50°, with radius

Apt. 70150



Vc → S./p. 167

r	α	l_1	d_2
mm	°	mm	mm
0.04	50	33	3.00
0.05	50	33	3.00
0.06	50	33	3.00
0.07	50	33	3.00
0.08	50	33	3.00
0.09	50	33	3.00
0.10	50	33	3.00

$K=1.8^{+0.1}_{0}$

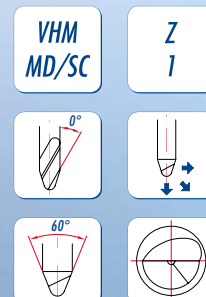
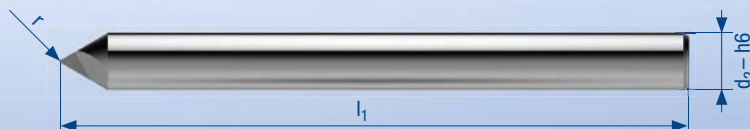
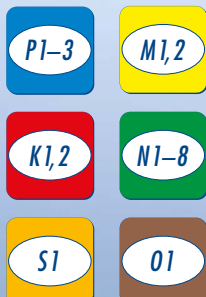
Gravierfräser 60°, mit Radius

Граверные фрезы 60°, с радиусом

Fresa per incidere 60°, con raggio

Engraving mill 60°, with radius

Арт. 70160



Vc → S./p. 167

r	α	l ₁	d ₂
mm	°	mm	mm
0.04	60	33	3.00
0.05	60	33	3.00
0.06	60	33	3.00
0.07	60	33	3.00
0.08	60	33	3.00
0.09	60	33	3.00
0.10	60	33	3.00

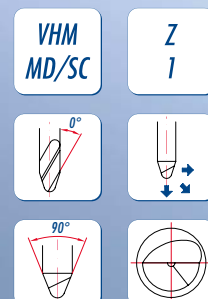
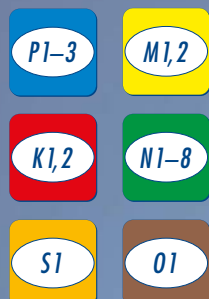
Gravierfräser 90°, mit Radius

Граверные фрезы 90°, с радиусом

Fresa per incidere 90°, con raggio

Engraving mill 90°, with radius

Apt. 70190



Vc → S./p. 167

r	α	l_1	d_2
mm	°	mm	mm
0.04	90	33	3.00
0.05	90	33	3.00
0.06	90	33	3.00
0.07	90	33	3.00
0.08	90	33	3.00
0.09	90	33	3.00
0.10	90	33	3.00

$K=1.8^{+0.1}_{0}$



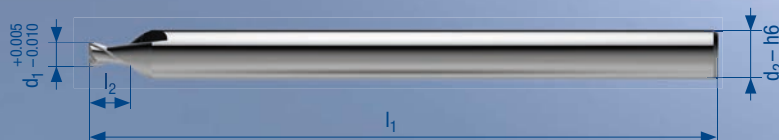
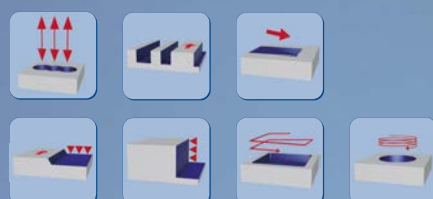
Mikrofräser 0.75 × d 30°

Микрофрезы 0.75 × d 30°

Micro fresa 0.75 × d 30°

Micro end mill 0.75 × d 30°

Арт. 72075



Vc → S./p. 167

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

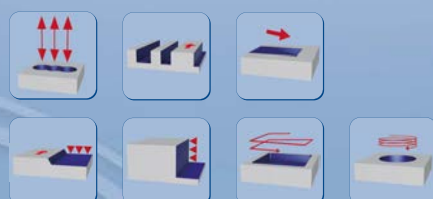
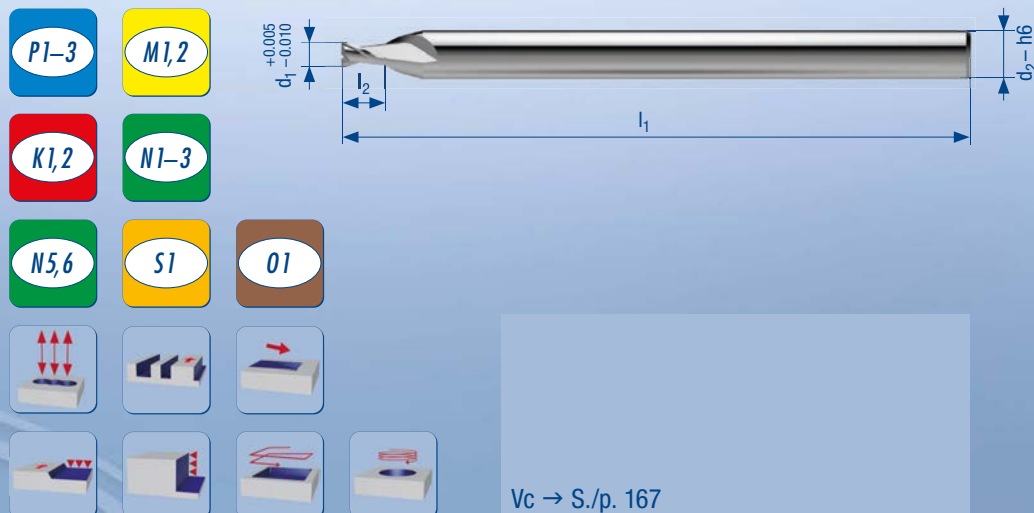
Mikrofräser 1.5 × d 30°

Микрофрезы 1.5 × d 30°

Micro fresa 1.5 × d 30°

Micro end mill 1.5 × d 30°

Арт. 72150



Vc → S./p. 167

d_1 mm	l_2 mm	l_1 mm	d_2 mm
0.10	0.15	39	3.00
0.15	0.20	39	3.00
0.20	0.30	39	3.00
0.25	0.35	39	3.00
0.30	0.45	39	3.00
0.40	0.60	39	3.00
0.50	0.75	39	3.00
0.60	0.90	39	3.00
0.70	1.05	39	3.00
0.80	1.20	39	3.00
0.90	1.35	39	3.00
1.00	1.50	39	3.00
1.10	1.65	39	3.00
1.20	1.80	39	3.00
1.30	1.95	39	3.00
1.40	2.10	39	3.00
1.50	2.25	39	3.00
1.60	2.40	39	3.00
1.70	2.55	39	3.00
1.80	2.70	39	3.00
1.90	2.85	39	3.00
2.00	3.00	39	3.00

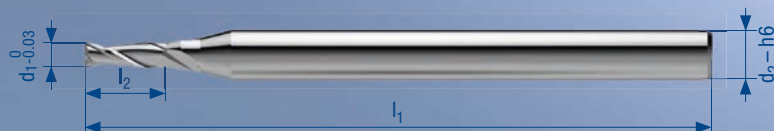
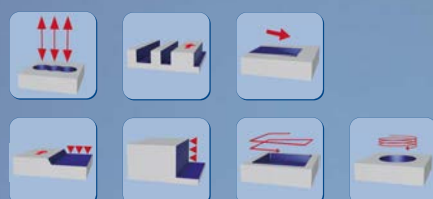
Mikrofräser 3 × d 30°

Микрофрезы 3 × d 30°

Micro fresa 3 × d 30°

Micro end mill 3 × d 30°

Арт. 42000



Vc → S./p. 168

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

d ₁ mm	l ₂ mm	l ₁ mm	d ₂ mm
2.00	6.00	45	3.00
2.10	6.30	45	3.00
2.20	6.60	45	3.00
2.30	6.90	45	3.00
2.40	7.20	45	3.00
2.50	7.50	45	3.00
2.60	7.80	45	3.00
2.70	8.10	45	3.00
2.80	8.40	45	3.00
2.90	8.70	45	3.00
3.00	9.00	45	3.00

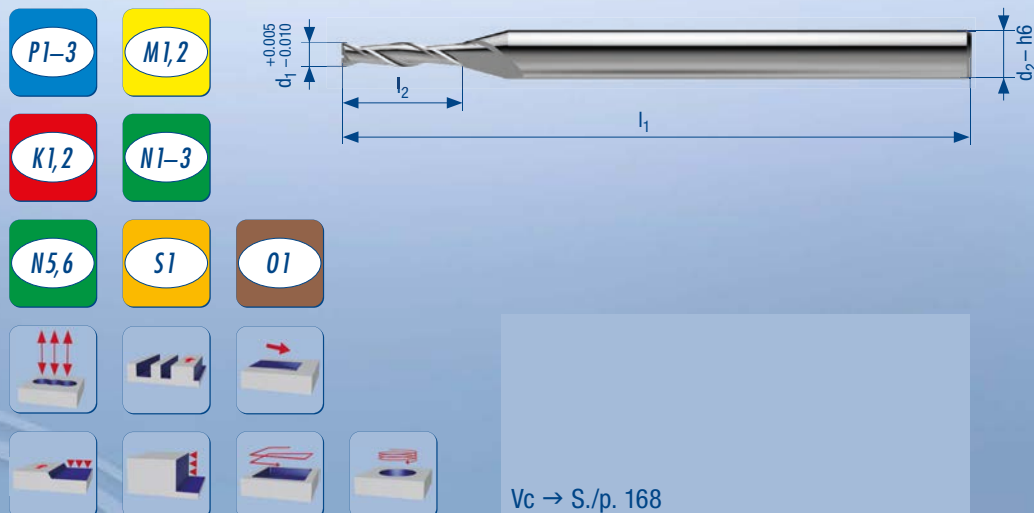
Mikrofräser 5 × d 30°

Микрофрезы 5 × d 30°

Micro fresa 5 × d 30°

Micro end mill 5 × d 30°

Арт. 72500



Vc → S./p. 168

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

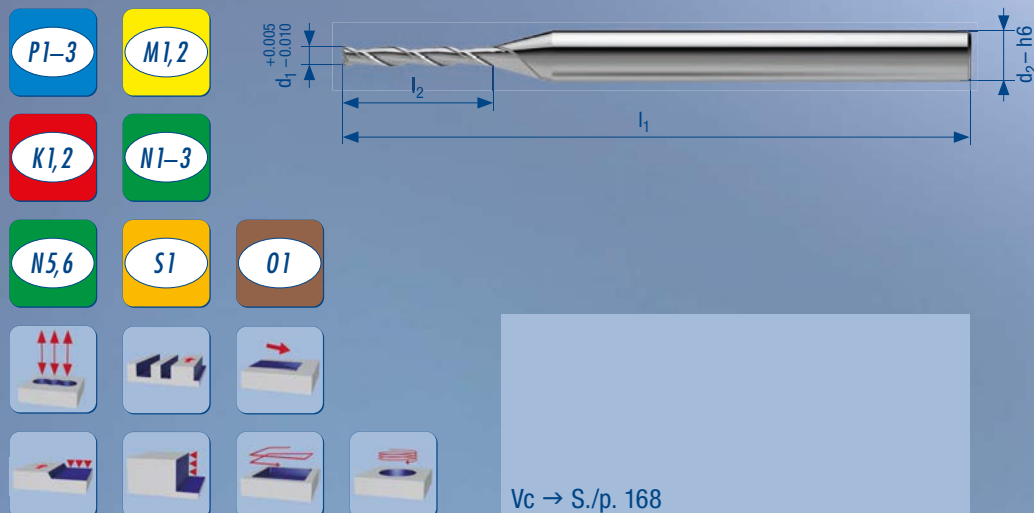
Mikrofräser 8 × d 30°

Микрофрезы 8 × d 30°

Micro fresa 8 × d 30°

Micro end mill 8 × d 30°

Арт. 72800



Vc → S./p. 168

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

Mikrofräser 1.30 × d 30°

Микрофрезы 1.30 × d 30°

Micro fresa 1.30 × d 30°

Micro end mill 1.30 × d 30°

Арт. 73130

PI-3

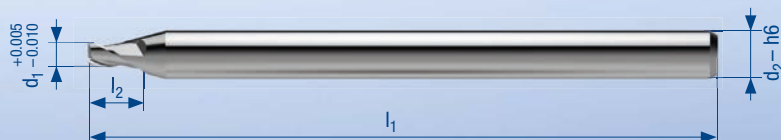
M1,2

K1,2

N2,3

N5,6

S1



VHM
MD/SC

Z
3



Vc → S./p. 169

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

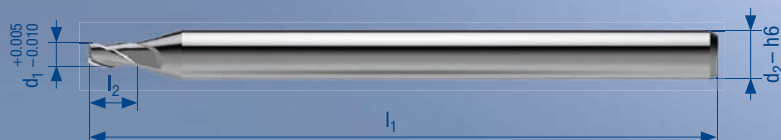
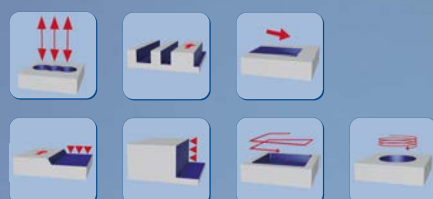
Mikrofräser 2 × d 30°

Микрофрезы 2 × d 30°

Micro fresa 2 × d 30°

Micro end mill 2 × d 30°

Арт. 73200



Vc → S./p. 169

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

Mikrofräser 3 × d 30°

Микрофрезы 3 × d 30°

Micro fresa 3 × d 30°

Micro end mill 3 × d 30°

Арт. 73300

PI-3

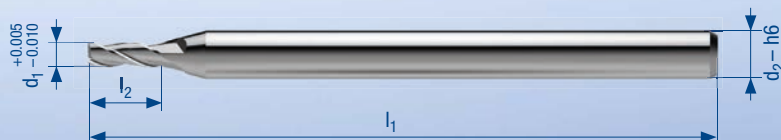
M1,2

K1,2

N2,3

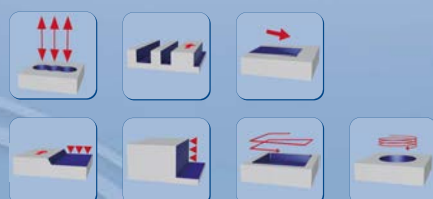
N5,6

S1



VHM
MD/SC

Z
3



Vc → S./p. 169

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

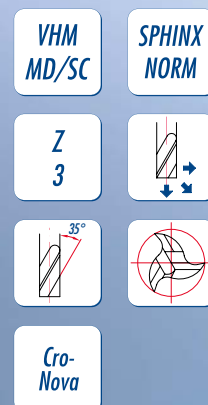
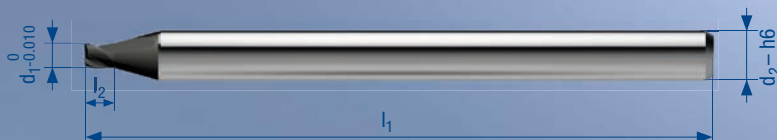
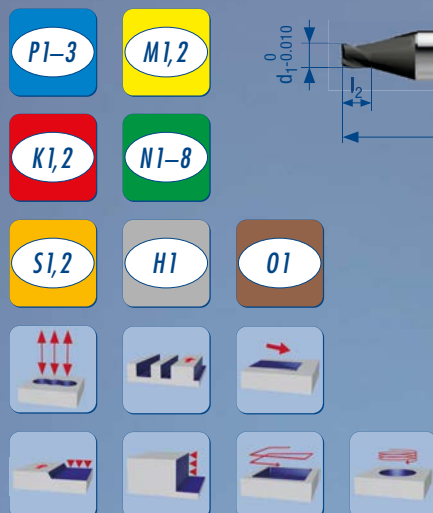
Mikrofräser 1 × d 35°

Микрофрезы 1 × d 35°

Micro fresa 1 × d 35°

Micro end mill 1 × d 35°

Арт. 43105



Vc → S./p. 169

d ₁ mm	l ₂ mm	l ₁ mm	d ₂ mm
0.30	0.30	38.00	3.00
0.40	0.40	38.00	3.00
0.50	0.50	38.00	3.00
0.60	0.60	38.00	3.00
0.70	0.70	38.00	3.00
0.80	0.80	38.00	3.00
0.90	0.90	38.00	3.00
1.00	1.00	38.00	3.00
1.10	1.10	38.00	3.00
1.20	1.20	38.00	3.00
1.30	1.30	38.00	3.00
1.40	1.40	38.00	3.00
1.50	1.50	38.00	3.00
1.60	1.60	38.00	3.00
1.70	1.70	38.00	3.00
1.80	1.80	38.00	3.00
1.90	1.90	38.00	3.00
2.00	2.00	38.00	3.00
2.10	2.10	38.00	3.00
2.20	2.20	38.00	3.00
2.30	2.30	38.00	3.00
2.40	2.40	38.00	3.00
2.50	2.50	38.00	3.00
2.60	2.60	38.00	3.00
2.70	2.70	38.00	3.00
2.80	2.80	38.00	3.00
2.90	2.90	38.00	3.00
3.00	3.00	38.00	3.00

Mikrofräser 3 × d 35°

Микрофрезы 3 × d 35°

Micro fresa 3 × d 35°

Micro end mill 3 × d 35°

Арт. 43305

PI-3

M1,2

K1,2

N1-8

S1,2

H1

O1



VHM
MD/SC

SPHINX
NORM

Z
3



Cra-
Nova

Vc → S./p. 170

d ₁ mm	d ₂ mm	l ₁ mm	l ₂ mm	l ₃ mm
0.30	0.30	0.90	38.00	3.00
0.40	0.40	1.20	38.00	3.00
0.50	0.50	1.50	38.00	3.00
0.60	0.60	1.80	38.00	3.00
0.70	0.70	2.10	38.00	3.00
0.80	0.80	2.40	38.00	3.00
0.90	0.90	2.70	38.00	3.00
1.00	1.00	3.00	38.00	3.00
1.10	1.10	3.30	38.00	3.00
1.20	1.20	3.60	38.00	3.00
1.30	1.30	3.90	38.00	3.00
1.40	1.40	4.20	38.00	3.00
1.50	1.50	4.50	38.00	3.00
1.60	1.60	4.80	38.00	3.00
1.70	1.70	5.10	38.00	3.00
1.80	1.80	5.40	38.00	3.00
1.90	1.90	5.70	38.00	3.00
2.00	2.00	6.00	38.00	3.00
2.10	2.10	6.30	38.00	3.00
2.20	2.20	6.60	38.00	3.00
2.30	2.30	6.90	38.00	3.00
2.40	2.40	7.20	38.00	3.00
2.50	2.50	7.50	38.00	3.00
2.60	2.60	7.80	38.00	3.00
2.70	2.70	8.10	38.00	3.00
2.80	2.80	8.40	38.00	3.00
2.90	2.90	8.70	38.00	3.00
3.00	3.00	9.00	38.00	3.00



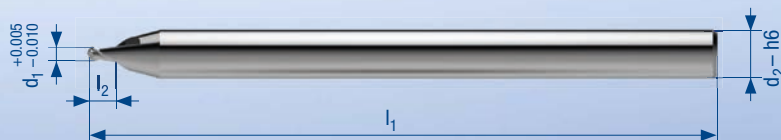
Radiusfräser 0.75 × d

Радиусные фрезы 0.75 × d

Fresa a raggio 0.75 × d

Ball nose end mill 0.75 × d

Арт. 74075



Vc → S./p. 170

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

Radiusfräser 1.5 × d

Радиусные фрезы 1.5 × d

Fresa a raggio 1.5 × d

Ball nose end mill 1.5 × d

Арт. 74150

PI-3

M1,2

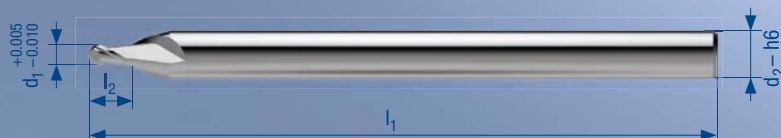
K1,2

N1-3

N5,6

S1

01



VHM
MD/SC

SPHINX
NORM

Z
2



Vc → S./p. 170

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

Radiusfräser 3 × d

Радиусные фрезы 3 × d

Fresa a raggio 3 × d

Ball nose end mill 3 × d

Арт. 74300

PI-3

M1,2

K1,2

N1-3

N5,6

S1

01



VHM
MD/SC

SPHINX
NORM

Z
2



Vc → S./p. 170

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



Entgratfräser 90°

Фасочная фреза 90°

Fresa a smusso 90°

Chamfering tool 90°

Арт. 73000

P1-3

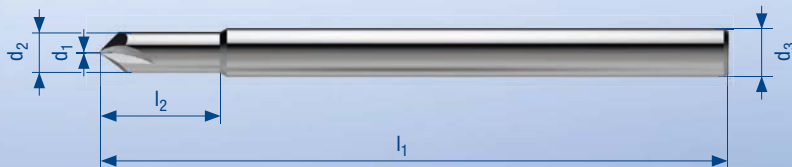
M1,2

K1,2

N1-3,5

S1

01



VHM
MD/SC

Z
3



Vc → S./p. 171

d ₁ mm	d ₂ mm	l ₂ mm	l ₁ mm	d ₃ mm
0.10	0.50	3.00	39	3.00
0.10	1.00	3.00	39	3.00
0.10	1.50	4.50	39	3.00
0.10	2.00	6.00	39	3.00
0.10	2.50	7.50	39	3.00
0.10	3.00	7.50	39	3.00

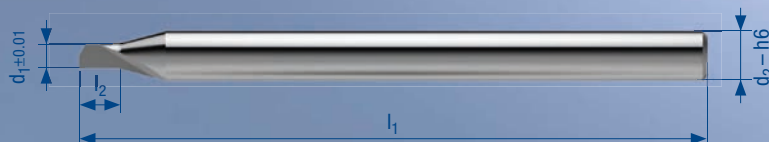
Gerade genuteter Fräser – 1 Zahn $\frac{3}{4}$

Арт. 47330

Фреза прямая – 1 зуб $\frac{3}{4}$

Fresa taglio diritto – 1 dente $\frac{3}{4}$

Straight fluted end mill – 1 tooth $\frac{3}{4}$



Vc → S./p. 171

d ₁ mm	l ₂ mm	l ₁ mm	d ₂ mm
0.30	1.20	38	3.00
0.40	1.20	38	3.00
0.50	1.50	38	3.00
0.60	1.50	38	3.00
0.70	1.50	38	3.00
0.80	1.50	38	3.00
0.90	1.50	38	3.00
1.00	2.00	38	3.00
1.05	2.00	38	3.00
1.10	2.00	38	3.00
1.15	2.00	38	3.00
1.20	2.00	38	3.00
1.25	2.00	38	3.00
1.30	2.00	38	3.00
1.35	2.00	38	3.00
1.40	2.00	38	3.00
1.45	2.00	38	3.00
1.50	2.00	38	3.00
1.55	2.50	38	3.00
1.60	2.50	38	3.00
1.65	2.50	38	3.00
1.70	2.50	38	3.00
1.75	2.50	38	3.00
1.80	2.50	38	3.00
1.85	2.50	38	3.00
1.90	2.50	38	3.00
1.95	2.50	38	3.00
2.00	2.50	38	3.00
2.10	3.00	38	3.00
2.20	3.00	38	3.00
2.30	3.00	38	3.00
2.40	3.00	38	3.00
2.50	3.50	38	3.00
2.60	3.50	38	3.00
2.70	3.50	38	3.00
2.80	3.50	38	3.00
2.90	3.50	38	3.00
3.00	4.00	38	3.00

Gerade genuteter Fräser – 1 Zahn

Фреза прямая – 1 зуб

Fresa taglio diritto – 1 dente

Straight fluted end mill – 1 tooth

Арт. 47344



Fläche poliert
Поверхность полированная
Superficie lucidata
Surface polished

Vc → S./p. 172

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





Bohren – Reiben

Сверление - Развертывание

Forare – Alesare

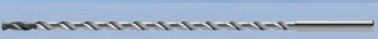
Drilling – Reaming

	Artikel Арт.	Durchmesser-Bereich Диаметры	Abstufung Шаг	Bohrtiefe Рез. длина	Spitzen- winkel Угол в плане	Spiral- winkel Угол спирали	
NC-Anbohrer und Zentriersenker Foret à pointer et chanfrainer							
	50806	0.50–6.00	0.10		60° +/- 1°	20°	
	50810	2.00–20.00	1.00		90° +/- 1°	20°	
	50812	2.00–20.00	1.00		120°	20°	
	50814	2.00–20.00	1.00		142°	20°	
	50818	1.60–12.00	0.40		142°/90°	20°	
Spiralbohrer ohne Innenkühlung Foret hélicoïdal sans trou d'huile							
	50950	3.00–20.00	0.10	3xØ	140°	30°	
	50830	0.30–20.00	0.10	5xØ	118°	35°	
	50838	0.30–6.00	0.05	6xØ	118°	30°–35°	
	50820	0.70–14.00	0.10	10xØ	130°	35°–15°	
Hochleistungsbohrer mit verstärktem Schaft mit Innenkühlung Foret à grand rendement avec manche renforcé avec trou d'huile							
	50938	1.00–12.70	0.10	3xØ	140°	30°	
	50940	1.00–12.70	0.05	6xØ	140°	30°	
	50942	1.00–12.70	0.10	12xØ	140°	30°	
	52100	3.00–20.00	0.50	6xØ	140°	0°	
	52200	3.00–20.00	0.50	12xØ	140°	0°	
	52150	4.00–20.00	0.50	6xØ	140°	15°	

* siehe Legende S. 192 + 193
см. информацию на стр. 192 + 193

- ✓ hervorragend / 1-й выбор
- geeignet / 2-й выбор

Материал инструмента	Werkstoffgruppe* Обрабатываемый материал*							Anwendung* Применение*	Seite Стр.	
	P	M	K	S	N	H	O			
Центровочное сверло и зенкер NC spotting drill and chamfering drill										
VHM/MD/SC	✓	✓	✓	•	✓		✓			85
VHM/MD/SC	✓	✓	✓	•	✓		✓			86
VHM/MD/SC	✓	✓	✓	•	✓		✓			87
VHM/MD/SC	✓	✓	✓	•	✓		✓			88
VHM/MD/SC	✓	✓	✓	•	✓		✓			89
Спиральные сверла без внутреннего подвода СОЖ Twist drill without internal coolant										
VHM/MD/SC; TiAlN	✓	•	✓	•	•	•	•			91
VHM/MD/SC	✓	✓	•	•	✓		✓			92
VHM/MD/SC	✓	✓	•	•	✓		✓			93
VHM/MD/SC	✓		✓		•					94
Сверла с усиленным хвостовиком и внутр. подводом СОЖ High performance drill with reinforced shank with internal coolant										
VHM/MD/SC; AlCrN	✓	✓	✓	•	•					96
VHM/MD/SC; TiAlN	✓	✓	✓	•	•					97
VHM/MD/SC; AlCrN	✓	•	✓	•	•					99
VHM/MD/SC			✓		✓		•			100
VHM/MD/SC			✓		✓		•			101
VHM/MD/SC; TiAlN	✓		✓		•	•				102

	Artikel Арт.	Durchmesser-Bereich Диаметры	Abstufung Шаг	Bohrtiefe Рез. длина	Spitzen- winkel Угол в плане	Spiral- winkel Угол спирали	
Hochleistungsbohrer Power Phoenix mit verstärktem Schaft mit Innenkühlung Foret à grand rendement Power-Phoenix avec manche renforcé avec trou d'huile							
	50909	1.00–12.70	0.10	9×Ø	140°	30°	
	50912	1.00–12.70	0.10	12×Ø	137°	30°	
	50916	1.00–12.70	0.10	16×Ø	137°	30°	
	50920	3.00–10.00	1.00	20×Ø	137°	30°	
	50925	3.00–10.00	1.00	25×Ø	137°	30°	
	50930	3.00–10.00	1.00	30×Ø	137°	30°	
Hochleistungsbohrer Phoenix-TC2 mit verstärktem Schaft mit Innenkühlung Foret à grand rendement Phoenix-TC2 avec manche renforcé avec trou d'huile							
	52903	1.00–10.00	0.05	3×Ø	140°	30°	
	52906	1.00–10.00	0.05	6×Ø	140°	30°	
	52909	1.00–10.00	0.10	9×Ø	140°	30°	
	52912	1.00–10.00	0.10	12×Ø	137°	30°	
	52916	1.00–10.00	0.10	16×Ø	137°	30°	
	52920	3.00–10.00	1.00	20×Ø	137°	30°	
	52930	3.00–10.00	1.00	30×Ø	137°	30°	
Hochleistungsbohrer Phoenix-TC4 mit verstärktem Schaft mit Innenkühlung Foret à grand rendement Phoenix-TC4 avec manche renforcé avec trou d'huile							
	54906	3.00–10.00	0.10	6×Ø	140°	30°	
	54909	3.00–10.00	0.10	9×Ø	140°	30°	
	54912	3.00–10.00	0.10	12×Ø	137°	30°	
	54916	3.00–10.00	0.10	16×Ø	137°	30°	

* siehe Legende S. 192 + 193
см. информацию на стр. 192 + 193

- ✓ hervorragend / 1-й выбор
- geeignet / 2-й выбор

Материал инструмента	Werkstoffgruppe* Обрабатываемый материал*							Anwendung* Применение*	Seite Стр.				
	P	M	K	S	N	H	O						
Высокопроизводительные сверла серии Power-Phoenix с усиленным хвостовиком и внутр. СОЖ High performance drill Power-Phoenix with reinforced shank with internal coolant													
VHM / MD / SC; AlCrN	✓	✓	✓	•	✓		•				104		
VHM / MD / SC; AlCrN	✓		✓		•						105		
VHM / MD / SC; AlCrN	✓		✓		•						106		
VHM / MD / SC; AlCrN	✓		✓		•						107		
VHM / MD / SC; AlCrN	✓		✓		•						108		
VHM / MD / SC; AlCrN	✓		✓		•						109		
Высокопроизводительные сверла серии Phoenix-TC2 с усиленным хвостовиком и внутр. СОЖ High performance drill Phoenix-TC2 with reinforced shank with internal coolant													
VHM / MD / SC; AlTiCrN+S	✓	✓	✓	✓	✓	•	•						111
VHM / MD / SC; AlTiCrN+S	✓	✓	✓	✓	✓	•	•						112
VHM / MD / SC; AlTiCrN+S	✓	✓	✓	✓	✓	•	•						113
VHM / MD / SC; AlCrN; AlCrTiN	✓	✓	✓	✓	✓	•	•						114
VHM / MD / SC; AlCrN; AlCrTiN	✓	✓	✓	✓	✓	•	•						115
VHM / MD / SC; AlCrTiN	•	✓	•	✓	✓	•	•						116
VHM / MD / SC; AlCrTiN	•	✓	•	✓	✓	•	•						117
Высокопроизводительные сверла серии Phoenix-TC4 с усиленным хвостовиком и внутр. СОЖ High performance drill Phoenix-TC4 with reinforced shank with internal coolant													
VHM / MD / SC; AlTiCrN+S	✓		✓		•								119
VHM / MD / SC; AlTiCrN+S	✓		✓		•								120
VHM / MD / SC; AlCrTiN	✓		✓		•								121
VHM / MD / SC; AlCrTiN	✓		✓		•								122

	Artikel Арт.	Durchmesser-Bereich Диаметры	Abstufung Шар	Bohrtiefe Рез. длина	Spitzen- winkel Угол в плане	Spiral- winkel Угол спирали	
	54920	3.00–10.00	1.00 und M	20×Ø	137°	30°	
	54930	3.00–10.00	1.00 und M	30×Ø	137°	30°	

Bohrreibahlen und Reibahlen Foret alésoir et alésoir

	50840	2.00–14.00	0.10	–5×Ø	118°	35°	
	55654	1.00–14.00	0.10	–5×Ø	118°	35°	
	55338	1.00–14.00	0.10	–10×Ø	118°	35°	
	58000	0.99–6.00	0.01	–8×Ø		10°	
	58500	0.99–6.00	0.01	–8×Ø		10°	

$K=1.8^{+0.1}_{0}$

* siehe Legende S. 192 + 193
см. информацию на стр. 192 + 193

- ✓ hervorragend / 1-й выбор
- geeignet / 2-й выбор

Материал инструмента	Werkstoffgruppe* Обрабатываемый материал*							Anwendung* Применение*	Seite Стр.
	P	M	K	S	N	H	O		
VHM/MD/SC; AlCrTiN	✓		✓		•			   	123
VHM/MD/SC; AlCrTiN	✓		✓		•			   	124
Трехперые сверла и развертки Drill reamer and reamer									
VHM/MD/SC	•	•	•	•	✓			 	126
VHM/MD/SC	✓	•	✓	•	•			    	127
VHM/MD/SC	✓	•	✓	•	•			    	128
VHM/MD/SC	✓	✓	✓	•	✓			 	129
VHM/MD/SC	✓	✓	✓	•	✓				130



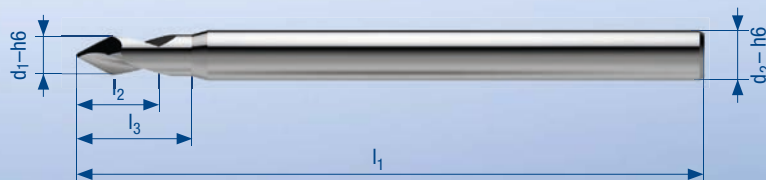
NC-Anbohrer und Anfaser 60°

Центровочное и фасочное сверло 60°

Punta a centrare NC e smusso 60°

NC spotting drill and chamfering 60°

Арт. 50806



Vc → S./p. 160

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

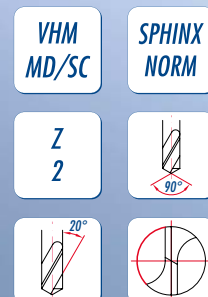
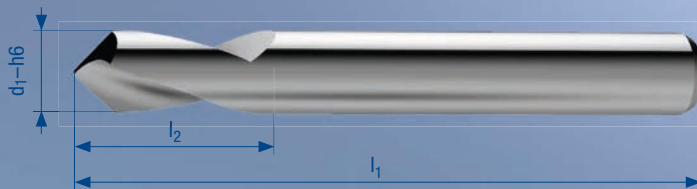
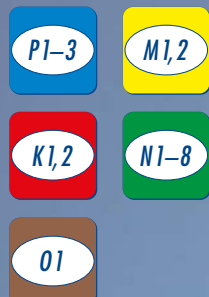
NC-Anbohrer 90°

Центровочное сверло 90°

Punta a centrare NC 90°

NC spotting drill 90°

Арт. 50810



Vc → S./p. 172

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

NC-Anbohrer 120°

Центровочное сверло 120°
Punta a centrare NC 120°
NC spotting drill 120°

Арт. 50812

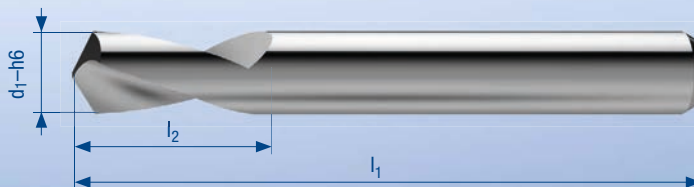
PI-3

M1,2

K1,2

N1-8

01



VHM
MD/SC

SPHINX
NORM

Z
2



Vc → S./p. 172

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 142°

Центровочное сверло 142°
Punta a centrare NC 142°
NC spotting drill 142°

Арт. 50814

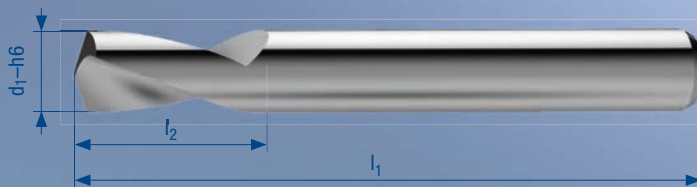
P1-3

M1,2

K1,2

N1-8

01



VHM
MD/SC

SPHINX
NORM

Z
2



Vc → S./p. 172

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

Zentriersenker 142°/90°

Центровочное и фасочное сверло 142°/90°

Punta da centro e smusso 142°/90°

Spotting and chamfering drill 142°/90°

Арт. 50818

P1-3

M1,2

K1,2

N1-8

01



VHM
MD/SC

SPHINX
NORM

Z
2



Vc → S./p. 172

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	20.00	60	8.00
6.00	20.00	60	8.00
6.80	22.00	70	10.00
7.00	22.00	70	10.00
8.00	22.00	70	10.00

d ₁ mm	l ₂ mm	l ₁ mm	d ₂ mm
8.50	22.00	70	12.00
9.00	22.00	70	12.00
10.00	22.00	70	12.00
10.20	25.00	75	14.00
11.00	25.00	75	14.00
12.00	25.00	75	16.00



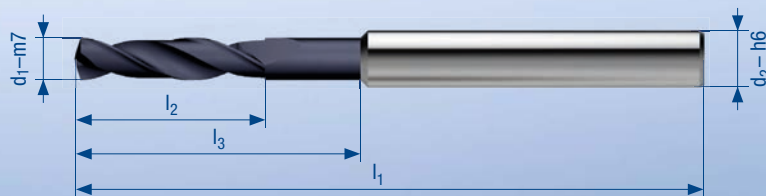
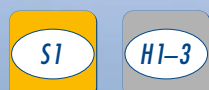
Spiralbohrer Fastcut 3 × d

Спиральное сверло серии Fastcut 3 × d

Punta elicoidale Fastcut 3 × d

Twist drill Fastcut 3 × d

Арт. 50950



Vc → S./p. 173

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

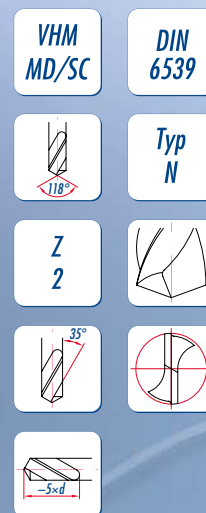
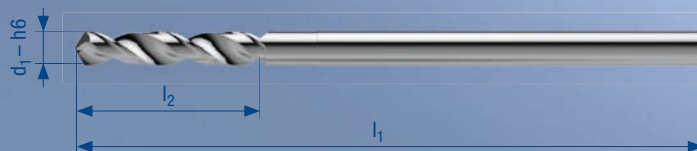
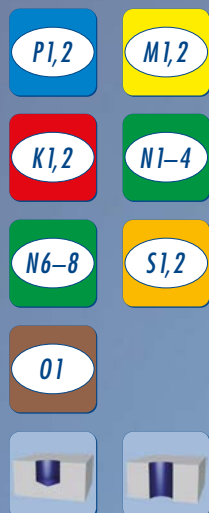
Spiralbohrer Posicut 5 × d

Спиральное сверло серии Posicut 5 × d

Punta elicoidal Posicut 5 × d

Twist drill Posicut 5 × d

Арт. 50830



Vc → S./p. 173

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

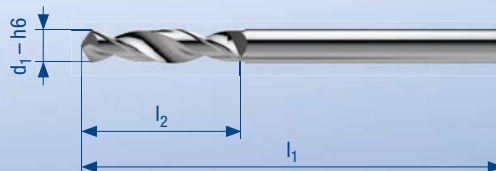
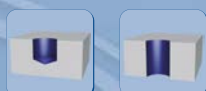
Spiralbohrer Spirec 5 × d

Спиральное сверло серии Spirec 5 × d

Punta elicoidale Spirec 5 × d

Twist drill Spirec 5 × d

Арт. 50838



Vc → S./p. 174

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

Spiralbohrer Spicut 10 × d

Спиральное сверло серии Spicut 10 × d

Punta elicoidale Spicut 10 × d

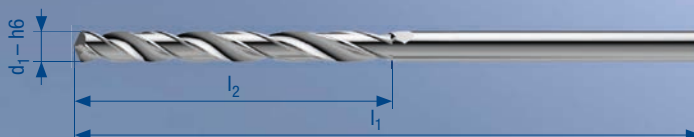
Twist drill Spicut 10 × d

Арт. 50820

P1,2

K1,2

N2,3,5



VHM
MD/SC

DIN
338



H7 – H9

Z
2



Ab ø 2 mm mit 4 Führungsfasen
От ø 2 мм с 4 направляющими фасками
A partire da ø 2 mm con 4 pattini di guida
From ø 2 mm with 4 guide margins

Vc → S./p. 174



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



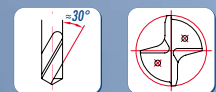
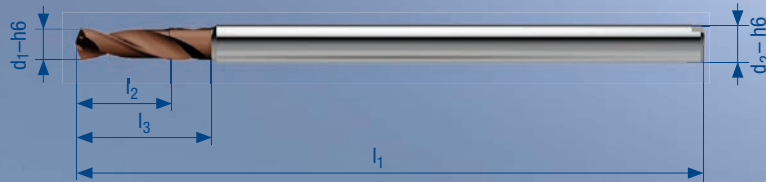
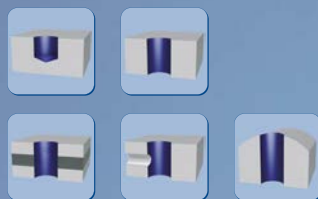
Hochleistungsbohrer Phoenix 3 × d

Арт. 50938

Высокопроизводительные сверла серии Phoenix 3 × d

Punta ad alto rendimento Phoenix 3 × d

High performance drill Phoenix 3 × d



Innenkühlung ab $\varnothing$ 2.50 mm
внутр. подвод СОЖ от $\varnothing$ 2.50 mm
Fori di lubrificazione a partire dal $\varnothing$ 2.50 mm
Internal coolant from $\varnothing$ 2.50 mm

Vc → S./p. 175

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

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

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

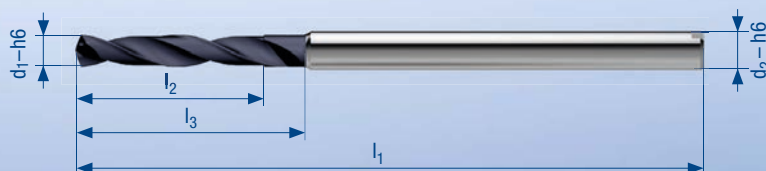
Hochleistungsbohrer Phoenix 6 × d

Арт. 50940

Высокопроизводительные сверла серии Phoenix 6 × d

Punta ad alto rendimento Phoenix 6 × d

High performance drill Phoenix 6 × d



Vc → S./p. 175

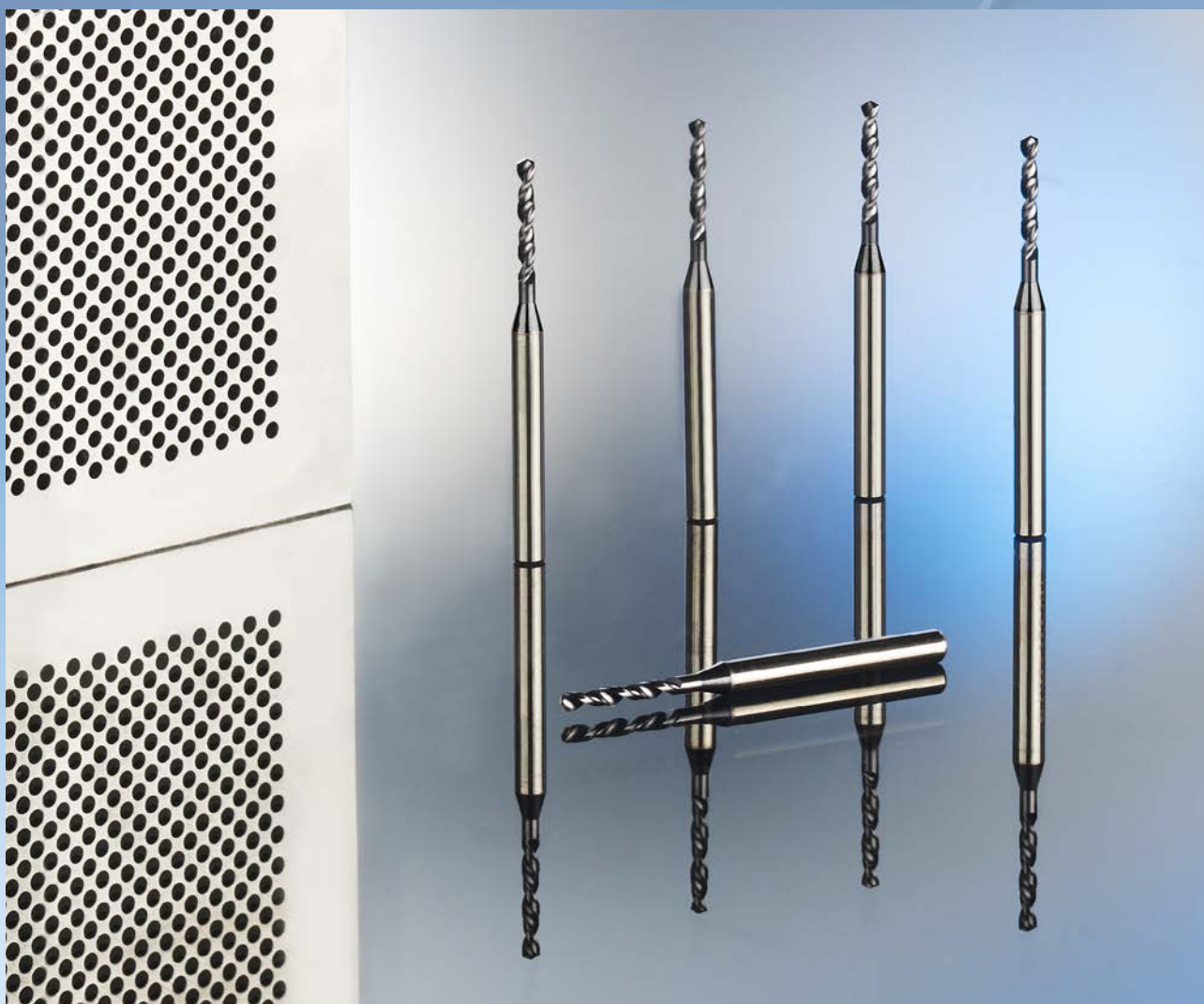
d ₁ mm	l ₂ mm	l ₃ mm	l ₁ mm	d ₂ mm
1.00	6.00	8.00	38	3.00
1.05	6.30	8.30	38	3.00
1.10	6.60	8.60	38	3.00
1.15	6.90	8.90	38	3.00
1.20	7.20	9.20	38	3.00
1.25	7.50	9.50	38	3.00
1.30	7.80	9.80	38	3.00
1.35	8.10	10.10	38	3.00
1.40	8.40	10.40	38	3.00
1.45	8.70	10.70	38	3.00
1.50	9.00	11.00	38	3.00
1.55	9.30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

d ₁ mm	l ₂ mm	l ₃ mm	l ₁ mm	d ₂ mm
2.90	17.40	20.40	50	3.00
2.95	17.70	20.70	50	3.00
3.00	18.00		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 mm	l ₂ mm	l ₃ mm	l ₁ mm	d ₂ 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 mm	l ₂ mm	l ₃ mm	l ₁ mm	d ₂ 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

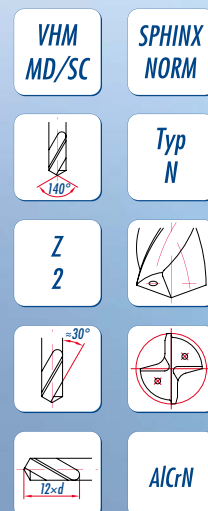
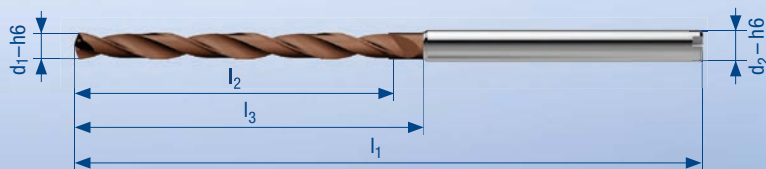


Hochleistungsbohrer Phoenix 12 × d

Высокопроизводительные сверла серии Phoenix 12 × d

Punta ad alto rendimento Phoenix 12 × d

High performance drill Phoenix 12 × d



Innenkühlung ab $\varnothing$ 2.50 mm
 внутр. подвод СОЖ от $\varnothing$ 2.50 mm
 Fori di lubrificazione a partire dal $\varnothing$ 2.50 mm
 Internal coolant from $\varnothing$ 2.50 mm

Vc → S./p. 176

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	34.50	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	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

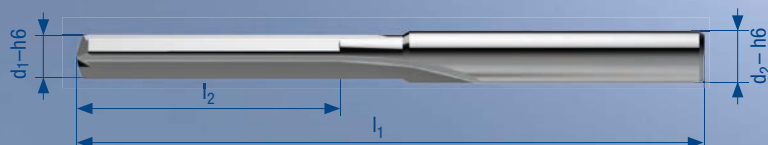
d ₁	l ₂	l ₃	l ₁	d ₂
mm	mm	mm	mm	mm
8.60	103.20	114.50	162	10.00
8.70	104.40	115.50	162	10.00
8.80	105.60	116.50	162	10.00
8.90	106.80	118.00	162	10.00
9.00	108.00	119.00	162	10.00
9.10	109.20	120.50	175	10.00
9.20	110.40	121.50	175	10.00
9.30	111.60	122.50	175	10.00
9.40	112.80	124.00	175	10.00
9.50	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

Hochleistungsbohrer Quadro Plus 6 × d Apt. 52100

Высокопроизводительные сверла серии Quadro Plus 6 × d

Punta ad alto rendimento Quadro Plus 6 × d

High performance drill Quadro Plus 6 × d



Vc → S./p. 176

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

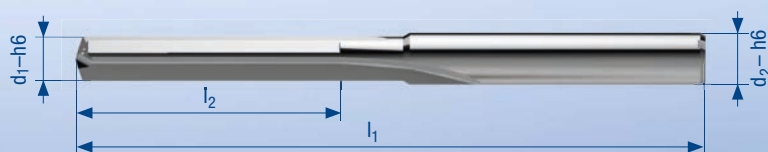
d ₁ mm	l ₂ mm	l ₁ mm	d ₂ mm
20.00	120.00	207	20.00

Hochleistungsbohrer Quadro Plus 12 × d Apt. 52200

Высокопроизводительные сверла серии Quadro Plus 12 × d

Punta ad alto rendimento Quadro Plus 12 × d

High performance drill Quadro Plus 12 × d



Vc → S./p. 176

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

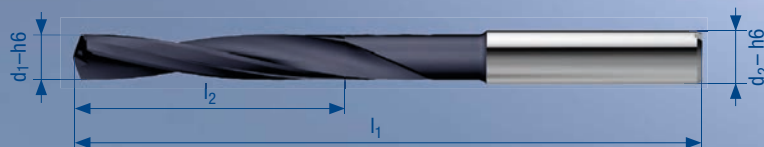
d ₁ mm	l ₂ mm	l ₁ mm	d ₂ mm
17.00	204.00	300	18.00
17.50	210.00	300	18.00
18.00	216.00	300	18.00
18.50	222.00	327	20.00
19.00	228.00	327	20.00
19.50	234.00	327	20.00
20.00	240.00	327	20.00

Hochleistungsbohrer Quadro 15 Plus 6×d Apt. 52150

Высокопроизводительные сверла Quadro 15 Plus 6×d

Punta ad alto rendimento Quadro 15 Plus 6×d

High performance drill Quadro 15 Plus 6×d



Vc → S./p. 177

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

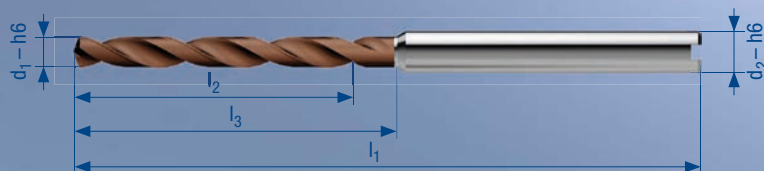


Hochleistungsbohrer Power-Phoenix 9 × d Apt. 50909

Высокопроизводительные сверла Power-Phoenix 9 × d

Punta ad alto rendimento Power-Phoenix 9 × d

High performance drill Power-Phoenix 9 × d



Vc → S./p. 177

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

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

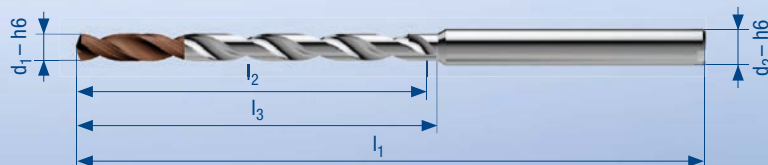
d ₁ mm	l ₂ mm	l ₃ mm	l ₁ mm	d ₂ mm
8.60	77.40	88.50	134	10.00
8.70	78.30	89.50	134	10.00
8.80	79.20	90.00	134	10.00
8.90	80.10	91.00	134	10.00
9.00	81.00	92.00	134	10.00
9.10	81.90	93.00	144	10.00
9.20	82.80	94.00	144	10.00
9.30	83.70	95.00	144	10.00
9.40	84.60	95.50	144	10.00
9.50	85.50	96.50	144	10.00
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

Hochleistungsbohrer Power-Phoenix 12 × d Арт. 50912

Высокопроизводительные сверла Power-Phoenix 12 × d

Punta ad alto rendimento Power-Phoenix 12 × d

High performance drill Power-Phoenix 12 × d



Ab $\varnothing$ 2.00 mm mit 4 Führungsfasen
 От $\varnothing$ 2.00 mm с 4 направ. фасками
 A partire da $\varnothing$ 2.00 mm con 4 pattini di guida
 From $\varnothing$ 2.00 mm with 4 guide margins

Vc → S./p. 178

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	34.50	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	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

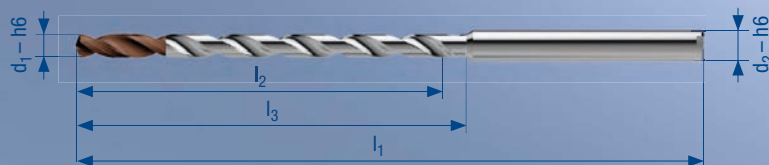
d ₁	l ₂	l ₃	l ₁	d ₂
mm	mm	mm	mm	mm
8.60	103.20	114.50	162	10.00
8.70	104.40	115.50	162	10.00
8.80	105.60	116.50	162	10.00
8.90	106.80	118.00	162	10.00
9.00	108.00	119.00	162	10.00
9.10	109.20	120.50	175	10.00
9.20	110.40	121.50	175	10.00
9.30	111.60	122.50	175	10.00
9.40	112.80	124.00	175	10.00
9.50	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

Hochleistungsbohrer Power-Phoenix 16 × d Арт. 50916

Высокопроизводительные сверла Power-Phoenix 16 × d

Punta ad alto rendimento Power-Phoenix 16 × d

High performance drill Power-Phoenix 16 × d



Ab $\varnothing$ 2.00 mm mit 4 Führungsfasen
 От $\varnothing$ 2.00 mm с 4 направ. фасками
 A partire da $\varnothing$ 2.00 mm con 4 pattini di guida
 From $\varnothing$ 2.00 mm with 4 guide margins

Vc → S./p. 178

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

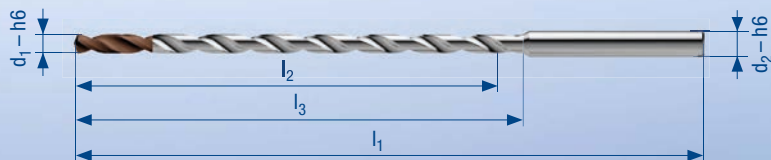
d ₁ mm	l ₂ mm	l ₃ mm	l ₁ mm	d ₂ mm
8.60	137.60	148.50	197	10.00
8.70	139.20	150.00	197	10.00
8.80	140.80	152.00	197	10.00
8.90	142.40	153.50	197	10.00
9.00	144.00	155.00	197	10.00
9.10	145.60	156.50	214	10.00
9.20	147.20	158.00	214	10.00
9.30	148.80	160.00	214	10.00
9.40	150.40	161.50	214	10.00
9.50	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

Hochleistungsbohrer Power-Phoenix 20 × d Арт. 50920

Высокопроизводительные сверла Power-Phoenix 20 × d

Punta ad alto rendimento Power-Phoenix 20 × d

High performance drill Power-Phoenix 20 × d



Anwendung
Применение
Applicazione
Application } S./p. 199

Vc → S./p. 178

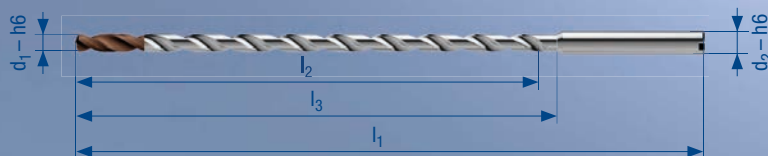
d ₁	l ₂	l ₃	l ₁	d ₂
mm	mm	mm	mm	mm
3.00	60.00	69.00	108	6.00
3.30	66.00	75.00	113	6.00
4.00	80.00	94.00	132	6.00
4.20	84.00	98.00	136	6.00
5.00	100.00	107.00	145	6.00
6.00	120.00	138.00	176	6.00
6.80	136.00	156.00	196	8.00
7.00	140.00	161.00	201	8.00
8.00	160.00	182.00	222	8.00
8.50	170.00	195.00	240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

Hochleistungsbohrer Power-Phoenix 25 × d Арт. 50925

Высокопроизводительные сверла Power-Phoenix 25 × d

Punta ad alto rendimento Power-Phoenix 25 × d

High performance drill Power-Phoenix 25 × d



Anwendung
Применение
Applicazione
Application } S./p. 199

Vc → S./p. 178

d ₁	l ₂	l ₃	l ₁	d ₂
mm	mm	mm	mm	mm
3.00	75.00	84.00	123	6.00
3.30	83.00	92.00	128	6.00
4.00	100.00	114.00	152	6.00
4.20	105.00	119.00	157	6.00
5.00	125.00	132.00	170	6.00
6.00	150.00	168.00	206	6.00
6.80	170.00	190.00	230	8.00
7.00	175.00	196.00	236	8.00
8.00	200.00	222.00	262	8.00
8.50	213.00	238.00	283	10.00
9.00	225.00	252.00	297	10.00
10.00	250.00	280.00	325	10.00

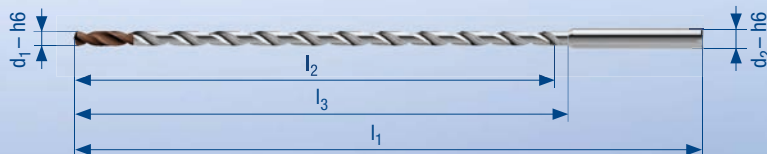
K=1.8
+0.1
0

Hochleistungsbohrer Power-Phoenix 30 × d Арт. 50930

Высокопроизводительные сверла Power-Phoenix 30 × d

Punta ad alto rendimento Power-Phoenix 30 × d

High performance drill Power-Phoenix 30 × d



Anwendung
Применение
Applicazione
Application } S./p. 199

Vc → S./p. 178

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

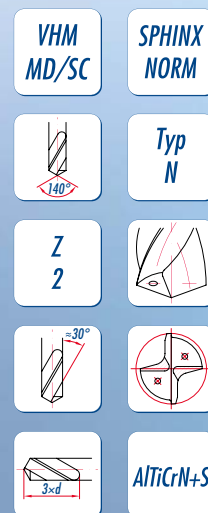
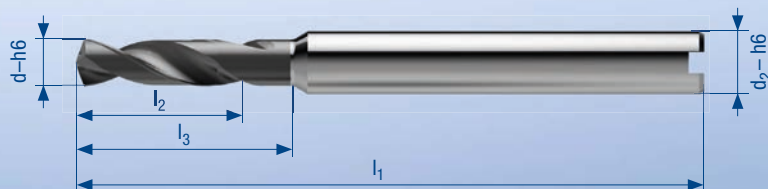


Hochleistungsbohrer Phoenix-TC2 3 × d Apt. 52903

Высокопроизводительные сверла Phoenix-TC2 3 × d

Punta ad alto rendimento Phoenix-TC2 3 × d

High performance drill Phoenix-TC2 3 × d



mit 2 Führungsfasen
с 2-мя направляющими фасками
con 2 pattini di guida
with 2 guide margins

Vc → S./p. 179

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

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

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

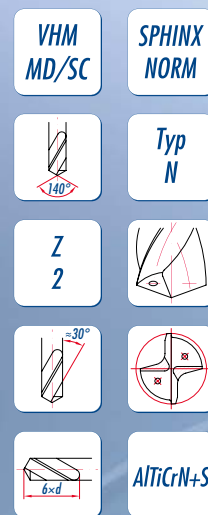
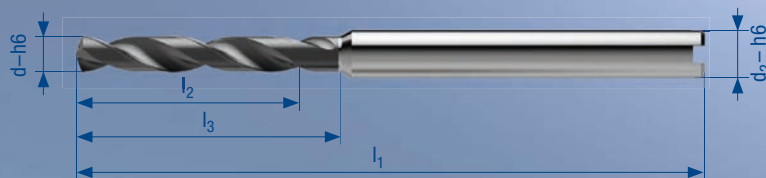
d ₁ mm	l ₂ mm	l ₃ mm	l ₁ mm	d ₂ mm
7.40	22.20	32.00	72	8.00
7.50	22.50	32.50	72	8.00
7.60	22.80	32.50	72	8.00
7.70	23.10	33.50	72	8.00
7.80	23.40	33.50	72	8.00
7.90	23.70	34.00	72	8.00
8.00	24.00	34.00	72	8.00
8.50	25.50	36.50	79	10.00
9.00	27.00	38.00	79	10.00
9.50	28.50	40.00	85	10.00
10.00	30.00	42.00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

Hochleistungsbohrer Phoenix-TC2 6 × d Apt. 52906

Высокопроизводительные сверла Phoenix-TC2 6 × d

Punta ad alto rendimento Phoenix-TC2 6 × d

High performance drill Phoenix-TC2 6 × d



mit 2 Führungsfasen
с 2-мя направляющими фасками
con 2 pattini di guida
with 2 guide margins

Vc → S./p. 179

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

d ₁ mm	l ₂ mm	l ₃ mm	l ₁ mm	d ₂ mm
2.90	17.40	20.40	50	3.00
2.95	17.70	20.70	50	3.00
3.00	18.00	21.00	50	3.00
3.05	18.30	22.30	66	6.00
3.10	18.60	22.60	66	6.00
3.15	18.90	22.90	66	6.00
3.20	19.20	23.20	66	6.00
3.25	19.50	23.50	66	6.00
3.30	19.80	23.80	66	6.00
3.35	20.10	24.10	66	6.00
3.40	20.40	24.40	66	6.00
3.45	20.70	24.70	66	6.00
3.50	21.00	25.00	66	6.00
3.55	21.30	25.30	66	6.00
3.60	21.60	25.60	66	6.00
3.65	21.90	25.90	66	6.00
3.70	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 mm	l ₂ mm	l ₃ mm	l ₁ mm	d ₂ 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	44.00	81	6.00
6.10	36.60	45.50	89	8.00
6.20	37.20	46.00	89	8.00
6.30	37.80	47.00	89	8.00
6.40	38.40	47.50	89	8.00
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

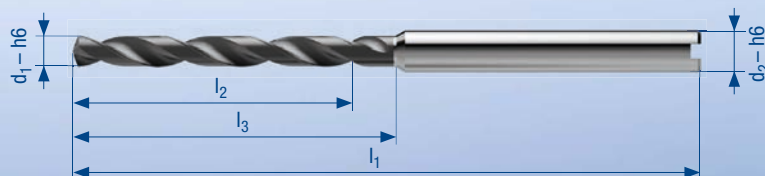
d ₁ mm	l ₂ mm	l ₃ mm	l ₁ mm	d ₂ mm
7.40	44.40	54.50	95	8.00
7.50	45.00	55.00	95	8.00
7.60	45.60	55.50	95	8.00
7.70	46.20	56.00	95	8.00
7.80	46.80	57.00	95	8.00
7.90	47.40	57.50	95	8.00
8.00	48.00	58.00	95	8.00
8.50	51.00	62.00	106	10.00
9.00	54.00	65.00	106	10.00
9.50	57.00	68.00	113	10.00
10.00	60.00	72.00	113	10.00

Hochleistungsbohrer Phoenix-TC2 9 × d Арт. 52909

Высокопроизводительные сверла Phoenix-TC2 9 × d

Punta ad alto rendimento Phoenix-TC2 9 × d

High performance drill Phoenix-TC2 9 × d



mit 2 Führungsfasen
с 2-мя направляющими фасками
con 2 pattini di guida
with 2 guide margins

Vc → S./p. 179



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

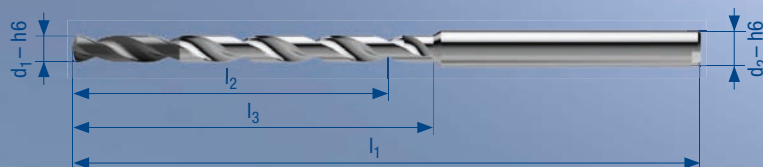
d ₁ mm	l ₂ mm	l ₃ mm	l ₁ mm	d ₂ mm
4.80	43.20	51.00	91	6.00
4.90	44.10	52.00	91	6.00
5.00	45.00	53.00	91	6.00
5.10	45.90	54.00	100	6.00
5.20	46.80	55.00	100	6.00
5.30	47.70	56.00	100	6.00
5.40	48.60	57.00	100	6.00
5.50	49.50	57.50	100	6.00
5.60	50.40	58.50	100	6.00
5.70	51.30	59.50	100	6.00
5.80	52.20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

Hochleistungsbohrer Phoenix-TC2 12 × d Apt. 52912

Высокопроизводительные сверла Phoenix-TC2 12 × d

Punta ad alto rendimento Phoenix-TC2 12 × d

High performance drill Phoenix-TC2 12 × d



mit 2 Führungsfasen
с 2-мя направляющими фасками
con 2 pattini di guida
with 2 guide margins

Vc → S./p. 179



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

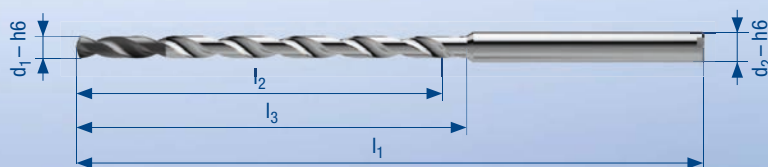
d ₁ mm	l ₂ mm	l ₃ mm	l ₁ mm	d ₂ mm
4.80	57.60	65.50	105	6.00
4.90	58.80	67.00	105	6.00
5.00	60.00	68.00	105	6.00
5.10	61.20	69.50	118	6.00
5.20	62.40	70.50	118	6.00
5.30	63.60	71.50	118	6.00
5.40	64.80	73.00	118	6.00
5.50	66.00	74.00	118	6.00
5.60	67.20	75.50	118	6.00
5.70	68.40	76.50	118	6.00
5.80	69.60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

Hochleistungsbohrer Phoenix-TC2 16 × d Apt. 52916

Высокопроизводительные сверла Phoenix-TC2 16 × d

Punta ad alto rendimento Phoenix-TC2 16 × d

High performance drill Phoenix-TC2 16 × d



mit 2 Führungsfasen
с 2-мя направляющими фасками
con 2 pattini di guida
with 2 guide margins

Vc → S./p. 179



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

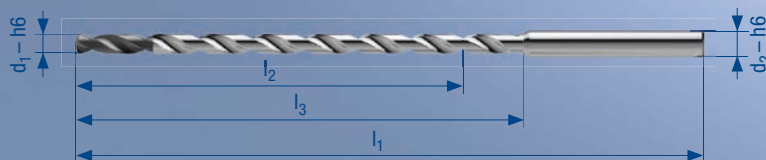
d ₁	l ₂	l ₃	l ₁	d ₂
mm	mm	mm	mm	mm
4.80	76.80	85.00	126	6.00
4.90	78.40	86.50	126	6.00
5.00	80.00	88.00	126	6.00
5.10	81.60	89.50	142	6.00
5.20	83.20	91.00	142	6.00
5.30	84.80	93.00	142	6.00
5.40	86.40	94.50	142	6.00
5.50	88.00	96.00	142	6.00
5.60	89.60	97.50	142	6.00
5.70	91.20	99.00	142	6.00
5.80	92.80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

Hochleistungsbohrer Phoenix-TC2 20 × d Apt. 52920

Высокопроизводительные сверла Phoenix-TC2 20 × d

Punta ad alto rendimento Phoenix-TC2 20 × d

High performance drill Phoenix-TC2 20 × d



mit 2 Führungsfasen / с 2-мя фасками
con 2 pattini di guida / with 2 guide margins

Anwendung / Применение } S./p. 199
Applicazione / Application }



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

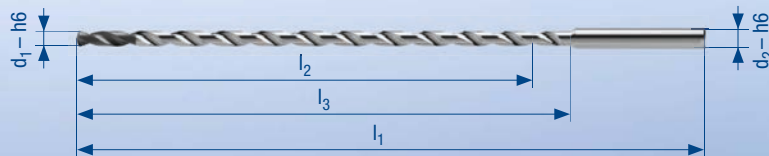
K=1.8 +0.1
0

Hochleistungsbohrer Phoenix-TC2 30 × d Apt. 52930

Высокопроизводительные сверла Phoenix-TC2 30 × d

Punta ad alto rendimento Phoenix-TC2 30 × d

High performance drill Phoenix-TC2 30 × d



mit 2 Führungsfasen / с 2-мя фасками
con 2 pattini di guida / with 2 guide margins

Anwendung / Применение } S./p. 199
Applicazione / Application }

Vc → S./p. 180



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



Hochleistungsbohrer Phoenix-TC4 6 × d Apt. 54906

Высокопроизводительные сверла Phoenix-TC4 6 × d

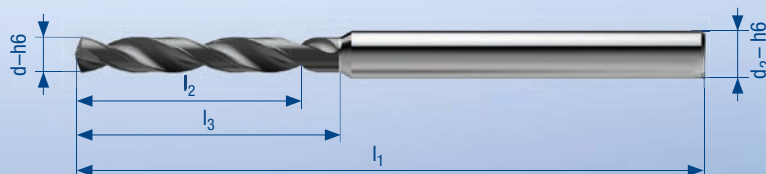
Punta ad alto rendimento Phoenix-TC4 6 × d

High performance drill Phoenix-TC4 6 × d

P1,2

K1,2

N3,5



VHM
MD/SC

SPHINX
NORM



Typ
N

Z
2



AlTiCrN+S



mit 4 Führungsfasen
с 4-мя фасками
con 4 pattini di guida
with 4 guide margins

Vc → S./p. 180

d ₁ mm	l ₂ mm	l ₃ mm	l ₁ mm	d ₂ mm
3.00	18.00	18.00	50	3.00
3.10	18.60	22.60	66	6.00
3.20	19.20	23.20	66	6.00
3.30	19.80	23.80	66	6.00
3.40	20.40	24.40	66	6.00
3.50	21.00	25.00	66	6.00
3.60	21.60	25.60	66	6.00
3.70	22.20	26.20	66	6.00
3.80	22.80	26.80	66	6.00
3.90	23.40	27.40	66	6.00
4.00	24.00	28.00	66	6.00
4.10	24.60	30.50	79	6.00
4.20	25.20	31.00	79	6.00
4.30	25.80	32.00	79	6.00
4.40	26.40	32.50	79	6.00
4.50	27.00	33.00	79	6.00
4.60	27.60	35.50	79	6.00
4.70	28.20	36.00	79	6.00
4.80	28.80	37.00	79	6.00
4.90	29.40	37.50	79	6.00
5.00	30.00	38.00	79	6.00
5.10	30.60	38.50	79	6.00
5.20	31.20	39.00	79	6.00
5.30	31.80	40.00	79	6.00
5.40	32.40	40.50	79	6.00
5.50	33.00	41.00	79	6.00
5.60	33.60	41.50	81	6.00
5.70	34.20	42.00	81	6.00
5.80	34.80	43.00	81	6.00
5.90	35.40	43.50	81	6.00
6.00	36.00	44.00	81	6.00
6.10	36.60	45.50	89	8.00
6.20	37.20	46.00	89	8.00
6.30	37.80	47.00	89	8.00
6.40	38.40	47.50	89	8.00
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

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

Hochleistungsbohrer Phoenix-TC4 9 × d Apt. 54909

Высокопроизводительные сверла Phoenix-TC4 9 × d

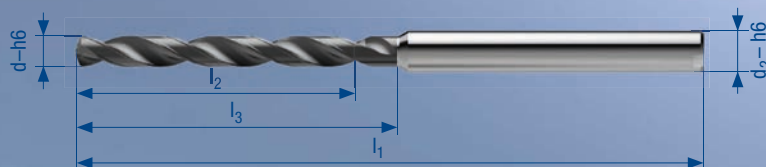
Punta ad alto rendimento Phoenix-TC4 9 × d

High performance drill Phoenix-TC4 9 × d

P1,2

K1,2

N3,5



VHM
MD/SC

SPHINX
NORM



Typ
N

Z
2



AlTiCrN+S



mit 4 Führungsfasen
с 4-мя фасками
con 4 pattini di guida
with 4 guide margins

Vc → S./p. 180

d ₁ mm	l ₂ mm	l ₃ mm	l ₁ mm	d ₂ mm
3.00	27.00	31.00	61	3.00
3.10	27.90	32.00	79	6.00
3.20	28.80	33.00	79	6.00
3.30	29.70	34.00	79	6.00
3.40	30.60	35.00	79	6.00
3.50	31.50	36.50	79	6.00
3.60	32.40	37.50	79	6.00
3.70	33.30	38.50	79	6.00
3.80	34.20	39.00	79	6.00
3.90	35.10	40.00	79	6.00
4.00	36.00	41.00	79	6.00
4.10	36.90	43.00	91	6.00
4.20	37.80	44.00	91	6.00
4.30	38.70	45.00	91	6.00
4.40	39.60	45.50	91	6.00
4.50	40.50	46.50	91	6.00
4.60	41.40	49.50	91	6.00
4.70	42.30	50.50	91	6.00
4.80	43.20	51.00	91	6.00
4.90	44.10	52.00	91	6.00
5.00	45.00	53.00	91	6.00
5.10	45.90	54.00	100	6.00
5.20	46.80	55.00	100	6.00
5.30	47.70	56.00	100	6.00
5.40	48.60	57.00	100	6.00
5.50	49.50	57.50	100	6.00
5.60	50.40	58.50	100	6.00
5.70	51.30	59.50	100	6.00
5.80	52.20	60.00	100	6.00
5.90	53.10	61.00	100	6.00
6.00	54.00	62.00	100	6.00
6.10	54.90	64.00	111	8.00
6.20	55.80	65.00	111	8.00
6.30	56.70	66.00	111	8.00
6.40	57.60	66.50	111	8.00
6.50	58.50	67.50	111	8.00
6.60	59.40	68.50	111	8.00
6.70	60.30	69.50	111	8.00

d ₁ mm	l ₂ mm	l ₃ mm	l ₁ mm	d ₂ mm
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
8.50	76.50	87.50	134	10.00
9.00	81.00	92.00	134	10.00
9.50	85.50	96.50	144	10.00
10.00	90.00	102.00	144	10.00

Hochleistungsbohrer Phoenix-TC4 12 × d Apt. 54912

Высокопроизводительные сверла Phoenix-TC4 12 × d

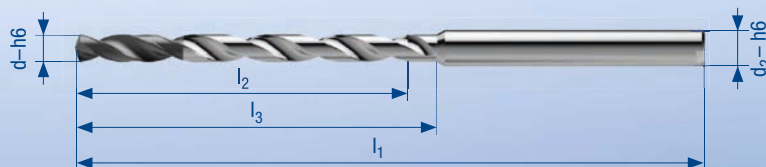
Punta ad alto rendimento Phoenix-TC4 12 × d

High performance drill Phoenix-TC4 12 × d

P1,2

K1,2

N3,5



VHM
MD/SC

SPHINX
NORM



Typ
N

Z
2



AlCrTiN



mit 4 Führungsfasen
с 4-мя фасками
con 4 pattini di guida
with 4 guide margins

Vc → S./p. 181

d ₁	l ₂	l ₃	l ₁	d ₂
mm	mm	mm	mm	mm
3.00	36.00	40.00	60	3.00
3.10	37.20	41.50	80	6.00
3.20	38.40	42.50	80	6.00
3.30	39.60	43.50	80	6.00
3.40	40.80	45.00	85	6.00
3.50	42.00	47.00	85	6.00
3.60	43.20	48.50	85	6.00
3.70	44.40	49.50	90	6.00
3.80	45.60	50.50	90	6.00
3.90	46.80	52.00	90	6.00
4.00	48.00	53.00	90	6.00
4.10	49.20	55.50	105	6.00
4.20	50.40	56.50	105	6.00
4.30	51.60	57.50	105	6.00
4.40	52.80	59.00	105	6.00
4.50	54.00	60.00	105	6.00
4.60	55.20	63.50	105	6.00
4.70	56.40	64.50	105	6.00
4.80	57.60	65.50	105	6.00
4.90	58.80	67.00	105	6.00
5.00	60.00	68.00	105	6.00
5.10	61.20	69.50	118	6.00
5.20	62.40	70.50	118	6.00
5.30	63.60	71.50	118	6.00
5.40	64.80	73.00	118	6.00
5.50	66.00	74.00	118	6.00
5.60	67.20	75.50	118	6.00
5.70	68.40	76.50	118	6.00
5.80	69.60	77.50	118	6.00
5.90	70.80	79.00	118	6.00
6.00	72.00	80.00	118	6.00
6.10	73.20	82.50	136	8.00
6.20	74.40	83.50	136	8.00
6.30	75.60	84.50	136	8.00
6.40	76.80	86.00	136	8.00
6.50	78.00	87.50	136	8.00
6.60	79.20	88.50	136	8.00
6.70	80.40	89.50	136	8.00

d ₁	l ₂	l ₃	l ₁	d ₂
mm	mm	mm	mm	mm
6.80	81.60	90.50	136	8.00
6.90	82.80	92.00	136	8.00
7.00	84.00	94.00	136	8.00
7.10	85.20	95.50	148	8.00
7.20	86.40	96.50	148	8.00
7.30	87.60	97.50	148	8.00
7.40	88.80	99.00	148	8.00
7.50	90.00	100.00	148	8.00
7.60	91.20	101.50	148	8.00
7.70	92.40	102.50	148	8.00
7.80	93.60	103.50	148	8.00
7.90	94.80	105.00	148	8.00
8.00	96.00	106.00	148	8.00
8.50	102.00	113.00	162	10.00
9.00	108.00	119.00	162	10.00
9.50	114.00	125.00	175	10.00
10.00	120.00	132.00	175	10.00

Hochleistungsbohrer Phoenix-TC4 16 × d Apt. 54916

Высокопроизводительные сверла Phoenix-TC4 6 × d

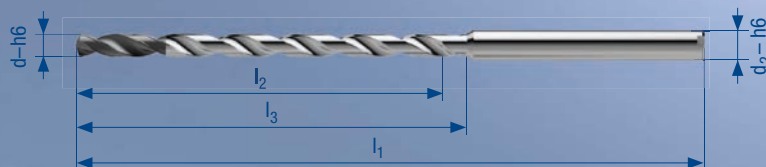
Punta ad alto rendimento Phoenix-TC4 16 × d

High performance drill Phoenix-TC4 16 × d

P1,2

K1,2

N3,5



VHM
MD/SC

SPHINX
NORM



Typ
N

Z
2



AlCrTiN



mit 4 Führungsfasen
с 4-мя фасками
con 4 pattini di guida
with 4 guide margins

Vc → S./p. 181

d ₁ mm	l ₂ mm	l ₃ mm	l ₁ mm	d ₂ mm
3.00	48.00	52.00	82	3.00
3.10	49.60	53.50	107	6.00
3.20	51.20	55.00	107	6.00
3.30	52.80	57.00	107	6.00
3.40	54.40	58.50	107	6.00
3.50	56.00	61.00	107	6.00
3.60	57.60	62.50	107	6.00
3.70	59.20	64.00	107	6.00
3.80	60.80	66.00	107	6.00
3.90	62.40	67.50	107	6.00
4.00	64.00	69.00	107	6.00
4.10	65.60	71.50	126	6.00
4.20	67.20	73.00	126	6.00
4.30	68.80	75.00	126	6.00
4.40	70.40	76.50	126	6.00
4.50	72.00	78.00	126	6.00
4.60	73.60	81.50	126	6.00
4.70	75.20	83.00	126	6.00
4.80	76.80	85.00	126	6.00
4.90	78.40	86.50	126	6.00
5.00	80.00	88.00	126	6.00
5.10	81.60	89.50	142	6.00
5.20	83.20	91.00	142	6.00
5.30	84.80	93.00	142	6.00
5.40	86.40	94.50	142	6.00
5.50	88.00	96.00	142	6.00
5.60	89.60	97.50	142	6.00
5.70	91.20	99.00	142	6.00
5.80	92.80	101.00	142	6.00
5.90	94.40	102.50	142	6.00
6.00	96.00	104.00	142	6.00
6.10	97.60	106.50	160	8.00
6.20	99.20	108.00	160	8.00
6.30	100.80	110.00	160	8.00
6.40	102.40	111.50	160	8.00
6.50	104.00	113.00	160	8.00
6.60	105.60	114.50	160	8.00
6.70	107.20	116.00	160	8.00

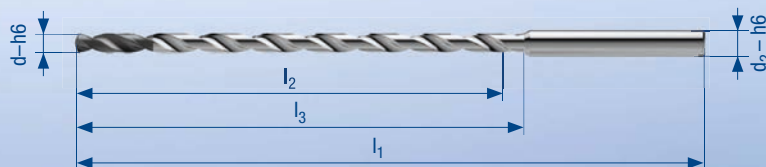
d ₁ mm	l ₂ mm	l ₃ mm	l ₁ mm	d ₂ mm
6.80	108.80	118.00	160	8.00
6.90	110.40	119.50	160	8.00
7.00	112.00	122.00	160	8.00
7.10	113.60	123.50	176	8.00
7.20	115.20	125.00	176	8.00
7.30	116.80	127.00	176	8.00
7.40	118.40	128.50	176	8.00
7.50	120.00	130.00	176	8.00
7.60	121.60	131.50	176	8.00
7.70	123.20	133.00	176	8.00
7.80	124.80	135.00	176	8.00
7.90	126.40	136.50	176	8.00
8.00	128.00	138.00	176	8.00
8.50	136.00	147.00	197	10.00
9.00	144.00	155.00	197	10.00
9.50	152.00	163.00	214	10.00
10.00	160.00	172.00	214	10.00

Hochleistungsbohrer Phoenix-TC4 20 × d Apt. 54920

Высокопроизводительные сверла Phoenix-TC4 20 × d

Punta ad alto rendimento Phoenix-TC4 20 × d

High performance drill Phoenix-TC4 20 × d



mit 4 Führungsfasen / с 4-мя фасками
con 4 pattini di guida / with 4 guide margins

Anwendung / Применение } S./p. 199
Applicazione / Application }

Vc → S./p. 181



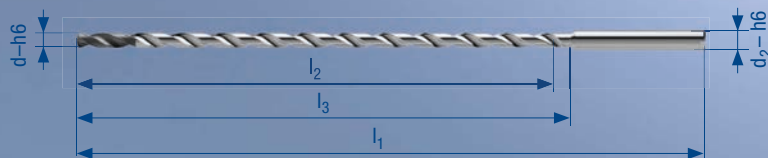
d ₁	l ₂	l ₃	l ₁	d ₂
mm	mm	mm	mm	mm
3.00	60.00	69.00	108	6.00
3.30	66.00	75.00	113	6.00
4.00	80.00	94.00	132	6.00
4.20	84.00	98.00	136	6.00
5.00	100.00	107.00	145	6.00
6.00	120.00	138.00	176	6.00
6.80	136.00	156.00	196	8.00
7.00	140.00	161.00	201	8.00
8.00	160.00	182.00	222	8.00
8.50	170.00	195.00	240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

Hochleistungsbohrer Phoenix-TC4 30 × d Apt. 54930

Высокопроизводительные сверла Phoenix-TC4 30 × d

Punta ad alto rendimento Phoenix-TC4 30 × d

High performance drill Phoenix-TC4 30 × d



mit 4 Führungsfasen / с 4-мя фасками
con 4 pattini di guida / with 4 guide margins

Anwendung / Применение } S./p. 199
Applicazione / Application }

Vc → S./p. 181



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

K=1.8 +0.1
0



Bohrreibahle Asycut 5 × d

Сверло-развертка Asycut 5 × d

Punta alesatore Asycut 5 × d

Drill reamer Asycut 5 × d

Арт. 50840



Vc → S./p. 182

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

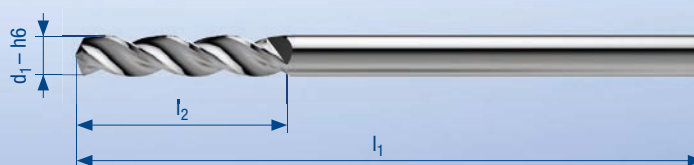
Bohrreibahle Tricut 5 × d

Трехперое сверло серии Tricut 5 × d

Punta alesatore Tricut 5 × d

Drill reamer Tricut 5 × d

Арт. 55654



Zwischenmasse erhältlich
Возможны другие диаметры по запросу
Quote intermediaire disponibili
Intermediate sizes available

Vc → S./p. 182



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

Bohrreibahle Tricut long 10 × d

Трехперое сверло серии Tricut 10 × d

Punta alesatore Tricut long 10 × d

Drill reamer Tricut long 10 × d

Арт. 55338



Zwischenmasse erhältlich
Dimensions intermédiaire disponible
Quote intermediaire disponibili
Intermediate sizes available

Vc → S./p. 182



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

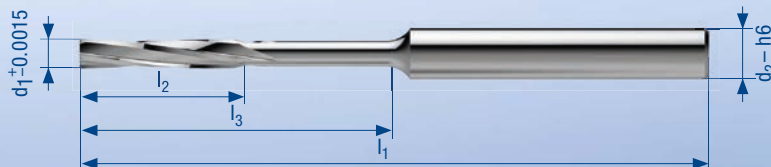
Reibahle mit verstärktem Schaft

Арт. 58000

Развертка с усиленным хвостовиком

Alesatore con gambo rinforzato

Reamer with reinforced shank



Zwischenmasse erhältlich
Возможны другие диаметры по запросу
Quote intermediarie disponibili
Intermediate sizes available

Vc → S./p. 183

Nr.	Ø	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
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
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

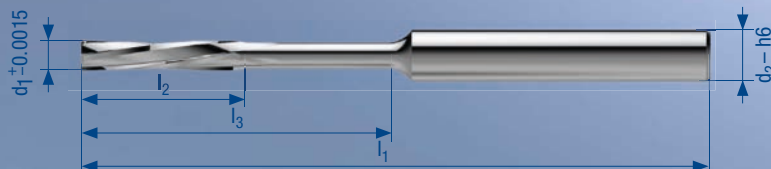
Reibahle mit verstärktem Schaft

Арт. 58500

Развертка с усиленным хвостовиком

Alesatore con gambo rinforzato

Reamer with reinforced shank



Zwischenmasse erhältlich
Возможны другие диаметры по запросу
Quote intermedie disponibili
Intermediate sizes available

Vc → S./p. 183



Nr.	Ø	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
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
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

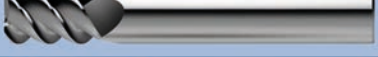
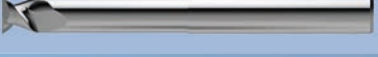


Fräsen

Fraisage

Fresare

Milling

	Artikel Арт.	Durchmesser-Bereich Диаметры	Abstufung Шар	Bohrtiefe Реж. длина	Spitzen- winkel Угол в плане	Spiral- winkel Угол спирали	
Fräser Fraise							
	40000	2.00–20.00	0.50	DIN 6528		30°	
	40600	2.00–20.00	0.50	DIN 6529		30°	
	40002	2.00–20.00	0.50	DIN 6530		30°	
	40602	2.00–20.00	0.50	DIN 6531		30°	
	40004	2.00–20.00	0.50	DIN 6532		30°	
	40604	2.00–20.00	0.50	DIN 6533		30°	
	40006	4.00–20.00	0.50	DIN 6534		45°	
	40008	4.00–20.00	0.50	DIN 6535		55°	
	47000	3.00–20.00	1.00	1.5–4×Ø		55°	
	47500	6.00–20.00	2.00	4.5–8×Ø		55°	
	47344	0.50–8.00	0.10	1–3×Ø		0°	

* siehe Legende S. 192 + 193
см. информацию на стр. 192 + 193

- ✓ hervorragend / 1-й выбор
- geeignet / 2-й выбор

Материал инструмента	Werkstoffgruppe* Обрабатываемый материал*							Anwendung* Применение*	Seite Стр.
	P	M	K	S	N	H	O		
Фрезы End mill									
VHM / MD / SC	•		•		✓		•		135
VHM / MD / SC; TiAlN+AlCrN	✓	•	✓		✓	✓			136
VHM / MD / SC	✓	•	✓		✓				137
VHM / MD / SC; TiAlN+AlCrN	✓	•	✓		✓	✓			138
VHM / MD / SC	✓	•	✓						139
VHM / MD / SC; TiAlN+AlCrN	✓	•	✓	•		✓			140
VHM / MD / SC	✓	✓	✓	•					141
VHM / MD / SC	✓	✓	✓	•					142
VHM / MD / SC					✓		•		143
VHM / MD / SC					✓		•		144
VHM / MD / SC	•	•	•		✓				145



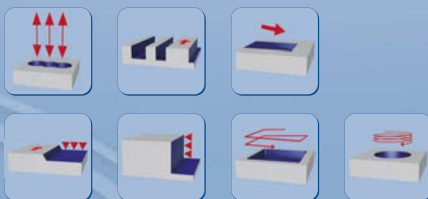
Schaftfräser 2Z 30°

Фреза 2z 30°

Fresa 2d 30°

End mill 2t 30°

Арт. 40000



Vc → S./p. 183

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 2Z 30°

Фреза 2z 30°

Fresa 2d 30°

End mill 2t 30°

Арт. 40600

PI-3

M1

K1,2

N2,3,5



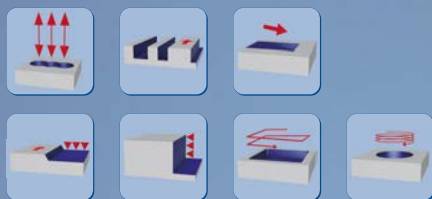
VHM
MD/SC

DIN
6528

Z
2



TiAlN+
AlCrN



Vc → S./p. 184

d ₁ mm	l ₂ mm	l ₁ mm	d ₂ mm
2.00	8.00	50	2.00
2.50	8.00	50	2.50
3.00	8.00	50	3.00
3.50	8.00	50	3.50
4.00	8.00	50	4.00
4.50	8.00	50	4.50
5.00	10.00	50	5.00
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

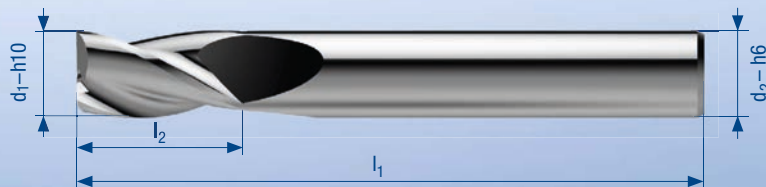
Schaftfräser 3Z 30°

Фреза 3z 30°

Fresa 3d 30°

End mill 3t 30°

ApT. 40002



Vc → S./p. 184

d ₁ mm	l ₂ mm	l ₁ mm	d ₂ mm
2.00	8.00	50	2.00
2.50	8.00	50	2.50
3.00	8.00	50	3.00
3.50	8.00	50	3.50
4.00	8.00	50	4.00
4.50	8.00	50	4.50
5.00	10.00	50	5.00
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

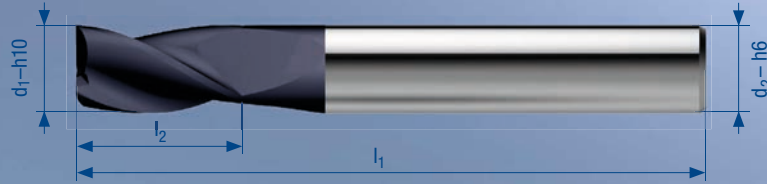
Schaftfräser 3Z 30°

Фреза 3z 30°

Fresa 3d 30°

End mill 3t 30°

Арт. 40602



Vc → S./p. 185

d ₁ mm	l ₂ mm	l ₁ mm	d ₂ mm
2.00	8.00	50	2.00
2.50	8.00	50	2.50
3.00	8.00	50	3.00
3.50	8.00	50	3.50
4.00	8.00	50	4.00
4.50	8.00	50	4.50
5.00	10.00	50	5.00
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

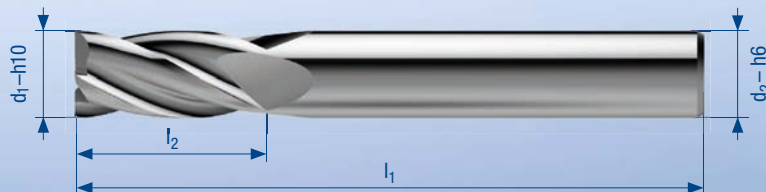
Schaftfräser 4Z 30°

Фреза 4z 30°

Fresa 4d 30°

End mill 4t 30°

Арт. 40004



Vc → S./p. 185

d ₁ mm	l ₂ mm	l ₁ mm	d ₂ 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

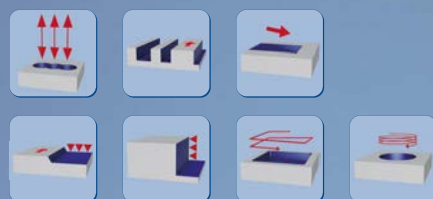
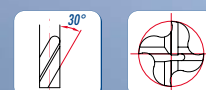
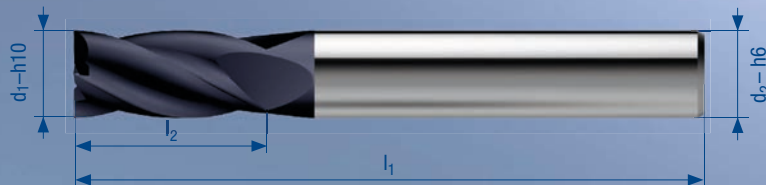
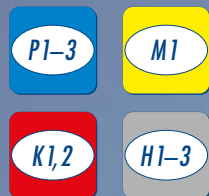
Schaftfräser 4Z 30°

Фреза 4z 30°

Fresa 4d 30°

End mill 4t 30°

Арт. 40604



Vc → S./p. 186

d ₁ mm	l ₂ mm	l ₁ mm	d ₂ 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

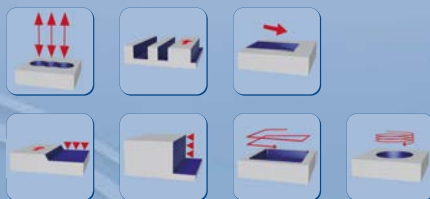
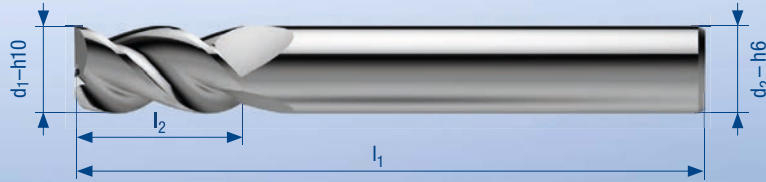
Schaftfräser 3Z 45°

Фреза 3z 45°

Fresa 3d 45°

End mill 3t 45°

Арт. 40006



Vc → S./p. 186

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

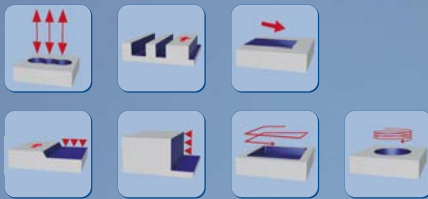
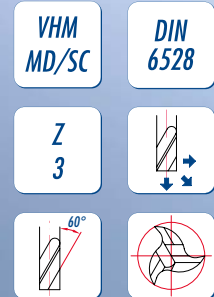
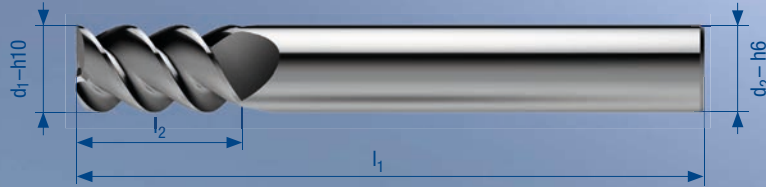
Schaftfräser 3Z 60°

Φρεζα 3z 60°

Fresa 3d 60°

End mill 3t 60°

Арт. 40008



Vc → S./p. 186

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

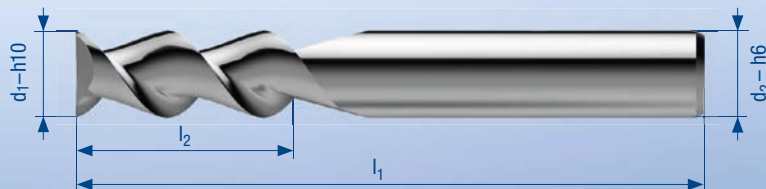
Schaftfräser AC2 55°

Фреза серии AC2 55°

Fresa AC2 55°

End mill AC2 55°

Арт. 47000



Vc → S./p. 187

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

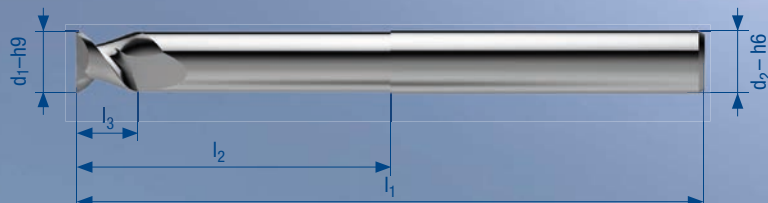
Schaftfräser ACL2 55°

Фреза серии ACL2 55°

Fresa ACL2 55°

End mill ACL2 55°

Арт. 47500



Vc → S./p. 187

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

K=1.8 ^{+0.1}₀

Gerade genuteter Fräser – 1 Zahn

Арт. 47344

Фреза прямая - 1 зуб

Fresa taglio diritto – 1 dente

Straight fluted end mill – 1 tooth



VHM
MD/SC

SPHINX
NORM



Z
1



Fläche poliert
Face polie miroir
Superficie lucidata
Surface polished

Vc → S./p. 172



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



Inhaltsverzeichnis Sonderwerkzeuge

Содержание - Специнструменты

Indice utensili speciali

Table of contents special tools

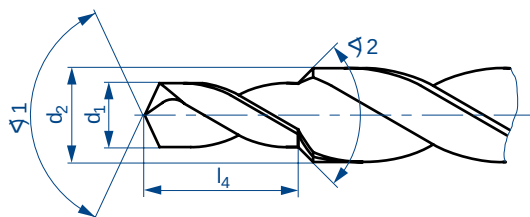
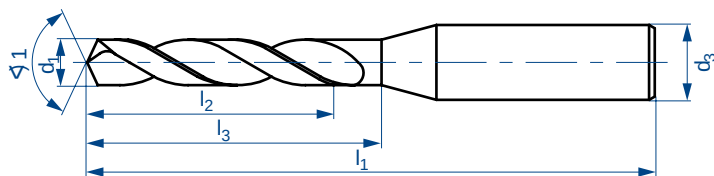
Microbohrer Микросверла Micro punta Micro drill	148
Stufenbohrer Ступенчатые сверла Punta a diametri multipli Step drill	149
Stufenbohrer – 3 Stufen 3-ступенчатые сверла Punta a diametri multipli – 3 gradini Step drill – 3 steps	150
Quadro – Stufenbohrer Quadro – ступенчатые сверла Quadro – Punta a diametri multipli Quadro – Step drill	151
Quadro – Stufenbohrer – 3 Stufen Quadro – 3-хступенчатые сверла Quadro – Punta a diametri multipli – 3 gradini Quadro – Step drill – 3 steps	152
Reibahle Развертки Alesatore Reamer	153
Stufenreibahle Ступенчатые развертки Alesatore a diametri multipli Step reamer	154
Pilotbohrer und Bohrer Extra-Long Пилотные сверла и спиральные сверла экстрадлинные Punta per preforo e Punta Extra-Long Pilot drill and Drill Extra-Long	156

Microbohrer

Микросверла

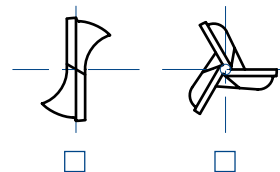
Micro punta

Micro drill



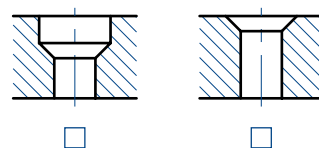
Schneidenanzahl:

Число зубьев:



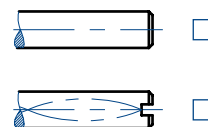
Bohrungsart:

Тип отверстия:



Kühlmittelezuführung:

СОЖ:



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

Zu bearbeitender Werkstoff:

Обрабатываемый материал: _____

Schneidrichtung:

☐ rechts

☐ links

Направление резания:

☐ правое

☐ левое

Beschichtung:

☐ keine

Покрытие:

☐ нет

Stückzahl:

☐ Anfrage

☐ Bestellung

Количество:

☐ Запрос

☐ Заказ

Bemerkung:

Примечания:

Firma

Фирма

Strasse/Nr.

Адрес

Postleitzahl/Ort

Индекс/город

Тел.

Kontaktperson

Контактное лицо

Факс

Datum/Unterschrift

Дата/Подпись

E-Mail

Stufenbohrer

Ступенчатые сверла

Punta a diametri multipli

Step drill

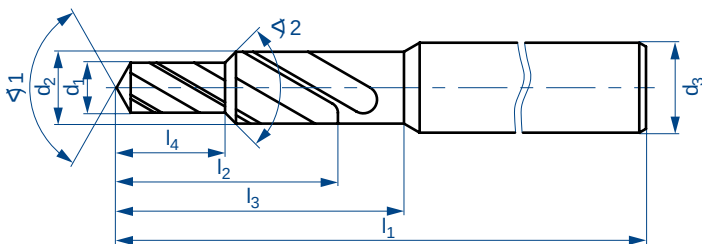
Spiralbohrer / Спиральное сверло



Bohrreibahle / Трехперое сверло



Hochleistungsbohrer / Высокопроизводит. сверло



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

Kühlmittelzuführung:

☐ mit Innenkühlung

☐ ohne Innenkühlung

СОЖ:

☐ с внутр. подводом

☐ без внутр. подвода

Zu bearbeitender Werkstoff:

Обрабатываемый материал: _____

Schneidrichtung:

☐ rechts

☐ links

Направление резания:

☐ правое

☐ левое

Beschichtung:

☐ keine

Покрытие:

☐ нет

Stückzahl:

☐ Anfrage

☐ Bestellung

Количество:

☐ Запрос

☐ Заказ

Bemerkung:

Примечания:

Firma

Фирма

Strasse/Nr.

Адрес

Postleitzahl/Ort

Индекс/город

Тел.

Kontaktperson

Контактное лицо

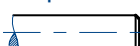
Факс

Datum/Unterschrift

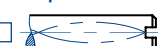
Дата/Подпись

E-Mail

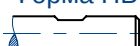
Форма НА



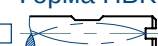
Форма НАК



Форма НВ



Форма НВК



Форма НЕ

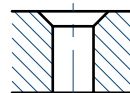
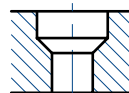


Форма НЕК



Bohrungsart:

Тип отверстия:



Stufenbohrer – 3 Stufen

3-хступенчатые сверла

Punta a diametri multipli – 3 gradini

Step drill – 3 steps

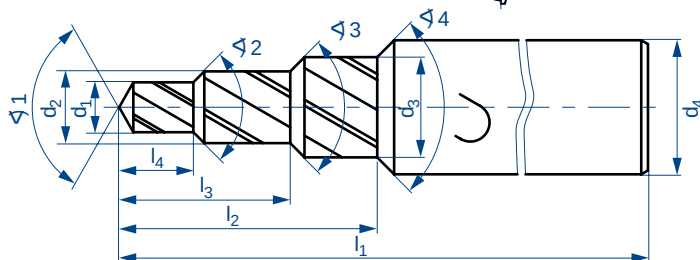
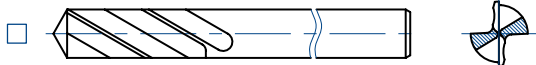
Spiralbohrer / Спиральные сверла



Bohrreibahle / Трехперые сверла



Hochleistungsbohrer / Высокопроизвод. сверла



d ₁ = _____	Tol. = _____	∠ 1 = _____	l ₁ = _____
d ₂ = _____	Tol. = _____	∠ 2 = _____	l ₂ = _____
d ₃ = _____	Tol. = _____	∠ 3 = _____	l ₃ = _____
d ₄ = _____	Tol. = _____	∠ 4 = _____	l ₄ = _____

Kühlmittelezuführung:

☐ mit Innenkühlung

☐ ohne Innenkühlung

СОЖ:

☐ с внутр. подводом

☐ без внутр. подвода

Zu bearbeitender Werkstoff:

Обрабатываемый материал: _____

Schneidrichtung:

☐ rechts

☐ links

Направление резания:

☐ правое

☐ левое

Beschichtung:

☐ keine

Покрытие:

☐ нет

Stückzahl:

☐ Anfrage

☐ Bestellung

Количество:

☐ Запрос

☐ Заказ

Bemerkung:

Примечания:

Firma

Фирма

Strasse/Nr.

Адрес

Postleitzahl/Ort

Индекс/город

Тел.

Kontaktperson

Контактное лицо

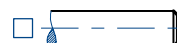
Факс

Datum/Unterschrift

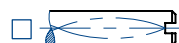
Дата/Подпись

E-Mail

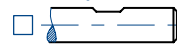
Форма НА



Форма НАК



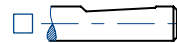
Форма НВ



Форма НВК



Форма НЕ

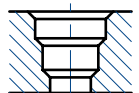
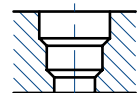


Форма НЕК



Bohrungsart:

Тип отверстия:



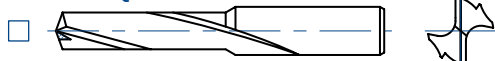
Quadro – Stufenbohrer

Quadro – ступенчатые сверла

Quadro – Punta a diametri multipli

Quadro – Step drill

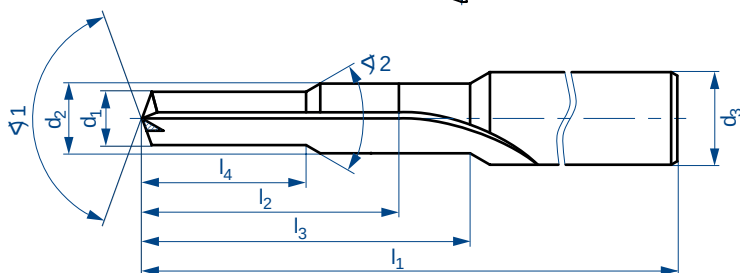
52150 – Quadro 15



52200 – Quadro Plus



52000 – Quadro



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

Kühlmittelzuführung:

☐ mit Innenkühlung

☐ ohne Innenkühlung

СОЖ:

☐ с внутр. подводом

☐ без внутр. подвода

Zu bearbeitender Werkstoff:

Обрабатываемый материал:

Schneidrichtung:

☐ rechts

☐ links

Направление резания:

☐ правое

☐ левое

Beschichtung:

☐ keine

Покрытие:

☐ нет

Stückzahl:

☐ Anfrage

☐ Bestellung

Количество:

☐ Запрос

☐ Заказ

Bemerkung:

Примечания:

Firma

Фирма

Strasse/Nr.

Адрес

Postleitzahl/Ort

Индекс/город

Тел.

Kontaktperson

Контактное лицо

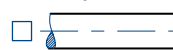
Факс

Datum/Unterschrift

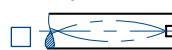
Дата/Подпись

E-Mail

Форма HA



Форма HAK



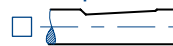
Форма HB



Форма HBK



Форма HE

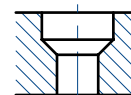


Форма HEK

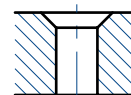


Bohrungsart:

Тип отверстия:



☐



☐

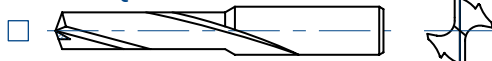
Quadro – Stufenbohrer – 3 Stufen

Quadro – 3-хступенчатые сверла

Quadro – Punta a diametri multipli – 3 gradini

Quadro – Step drill – 3 steps

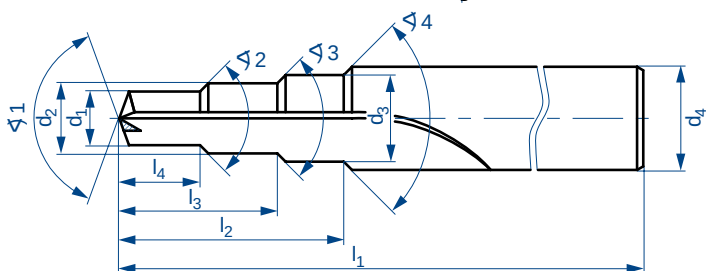
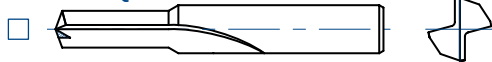
52150 – Quadro 15



52200 – Quadro Plus



52000 – Quadro



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

Kühlmittelzuführung:

☐ mit Innenkühlung

☐ ohne Innenkühlung

СОЖ:

☐ с внутр. подводом

☐ без внутр. подвода

Zu bearbeitender Werkstoff:

Обрабатываемый материал:

Schneidrichtung:

☐ rechts

☐ links

Направление резания:

☐ правое

☐ левое

Beschichtung:

☐ keine

Покрытие:

☐ нет

Stückzahl:

☐ Anfrage

☐ Bestellung

Количество:

☐ Запрос

☐ Заказ

Bemerkung:

Примечания:

Firma

Фирма

Strasse/Nr.

Адрес

Postleitzahl/Ort

Индекс/город

Тел.

Kontaktperson

Контактное лицо

Факс

Datum/Unterschrift

Дата/Подпись

E-Mail

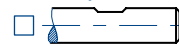
Форма HA



Форма HAK



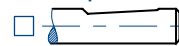
Форма HB



Форма HBK



Форма HE

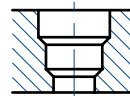


Форма HEK

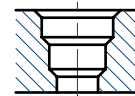


Bohrungsart:

Тип отверстия:



☐



☐

Reibahle

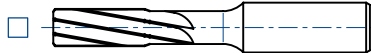
Развертки

Alesatore

Reamer

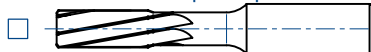
58000

rechtsspiralisiert / правая спираль
rechtsschneidend / правое резание



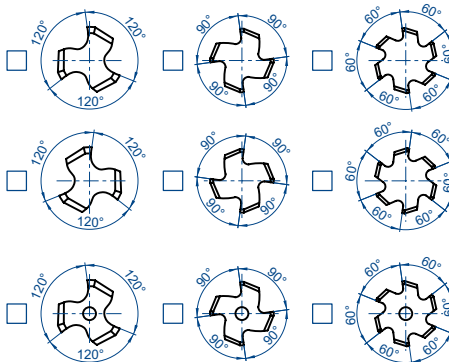
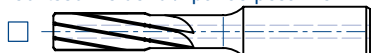
58500

linksspiralisiert / левая спираль
rechtsschneidend / правое резание



mit IKZ / с внутр. подводом СОЖ:

rechtsspiralisiert / правая спираль
rechtsschneidend / правое резание



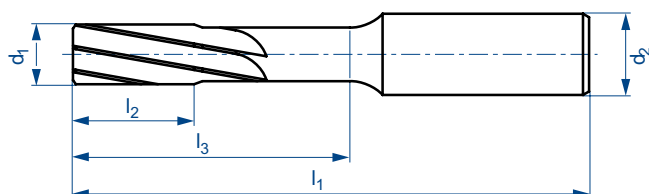
Sackloch/Глухое отверстие



Durchgangslot/Сквоз.отв.

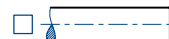


Sackloch/Глухое отверстие

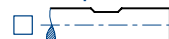


$d_1 =$ _____ Tol. = _____ $l_1 =$ _____ $l_3 =$ _____
 $d_2 =$ _____ Tol. = _____ $l_2 =$ _____

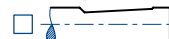
ФормаНА



ФормаНВ



ФормаНЕ



Zu bearbeitender Werkstoff:

Обрабатываемый материал: _____

Schneidrichtung:

☐ rechts

☐ links

Направление резания:

☐ правое

☐ левое

Beschichtung:

☐ keine

Покрывание:

☐ нет

Stückzahl:

☐ Anfrage

☐ Bestellung

Количество:

☐ Запрос

☐ Заказ

Bemerkung:

Примечания:

Firma

Фирма

Strasse/Nr.

Адрес

Postleitzahl/Ort

Индекс/город

Тел.

Kontaktperson

Контактное лицо

Факс

Datum/Unterschrift

Дата/Подпись

E-Mail

Stufenreibahle

Ступенчатые развертки

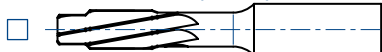
Alesatore a diametri multipli

Step reamer

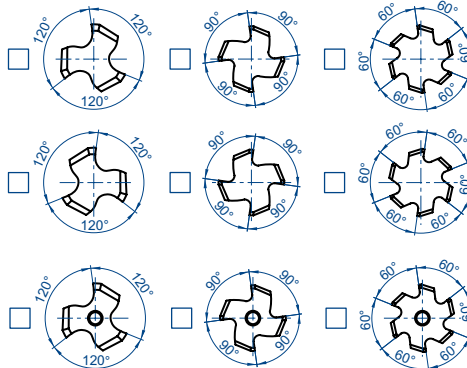
rechtsspiralisiert / правая спираль
rechtsschneidend / правое резание



linksspiralisiert / левая спираль
rechtsschneidend / правое резание



mit IKZ ϕ внутр. подводом СОЖ:
rechtsspiralisiert / правая спираль
rechtsschneidend / правое резание



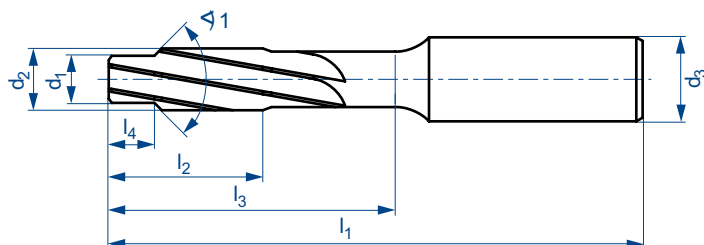
Sackloch / Глухое отв.



Durchgangsloch / Сквоз. отв.



Sackloch / Глухое отв.



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



Форма HA



Форма HB



Форма HE

Zu bearbeitender Werkstoff:

Обрабатываемый материал: _____

Schneidrichtung: ☐ rechts ☐ links
Направление резания: ☐ правое ☐ левое

Beschichtung: ☐ keine ☐ нет
Покрывание: _____

Stückzahl: _____ ☐ Anfrage ☐ Bestellung
Количество: _____ ☐ Запрос ☐ Заказ

Bemerkung:
Примечания: _____

Firma
Фирма _____

Strasse/Nr.
Адрес _____

Postleitzahl/Ort
Индекс/город _____

Тел. _____

Kontaktperson
Контактное лицо _____

Факс _____

Datum/Unterschrift
Дата/Подпись _____

E-Mail _____



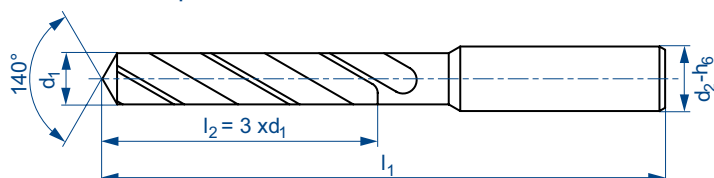
Pilotbohrer und Bohrer Extra-Long

Пилотные и спиральные сверла экстрадлинные

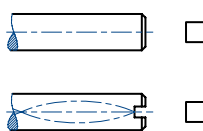
Punta per preforo e Punta Extra-Long

Pilot drill and Drill Extra-Long

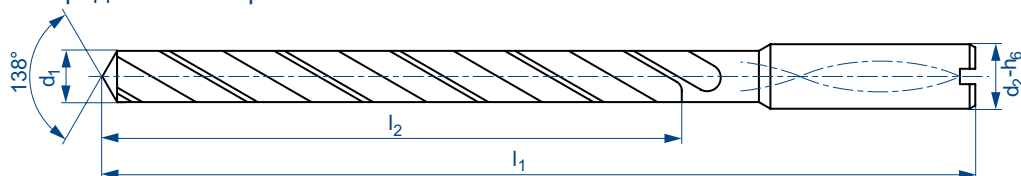
Pilotbohrer
Пилотное сверло



Kühlmittelezuführung:
Подвод СОЖ:



Bohrer Extra-Long
Экстрадлинные сверло



Pilotbohrer
Пилотное

d₁ = _____
d₂ = _____
l₁ = _____
l₂ = 3 x d₁

Bohrer Extra-Long
спиральное

d₁ = _____ Tol. = _____
d₂ = _____
l₁ = _____
l₂ = _____

Zu bearbeitender Werkstoff:

Обрабатываемый материал: _____

Schneidrichtung:

☐ rechts

☐ links

Направление резания:

☐ правое

☐ левое

Beschichtung:

☐ keine

Покрывание:

☐ нет

Stückzahl:

☐ Anfrage

☐ Bestellung

Количество:

☐ Запрос

☐ Заказ

Bemerkung:

Примечания:

Firma

Фирма

Strasse/Nr.

Адрес

Postleitzahl/Ort

Индекс/город

Тел.

Kontaktperson

Контактное лицо

Факс

Datum/Unterschrift

Дата/Подпись

E-Mail



Anwendungstechnik

Технология применения

Applicazione della tecnologia

Application technology

Schnittdaten

159

Режимы резания

Parametri di lavoro

Cutting data

Anwendungen und Werkstoffgruppen

192

Применение по материалам

Applicazioni e gruppi di materiali

Applications and workpiece materials

Spiralbohrer

195

Спиральные сверла

Punta elicoidale

Twist drill

Bearbeitungsverfahren Mikrobohren

196

Инструкция по микросверлению

Metodo di lavorazione per micro forature

Machining process for micro drilling

Zentrierbohren

197

Центрование

Centraggio

Center drill

Bohreraustritt und Kühlung

198

Выход сверла из отверстия и СОЖ

Uscita punta e raffreddamento

Drill exit and cooling

Bearbeitungsverfahren Tieflochbohren, Schritt für Schritt

199

Глубокое сверление, шаг за шагом

Metodo di lavorazione per foratura profonda, passo per passo

Machining process for deep-hole drilling, step by step

Erklärung Schnittdaten

Разъяснение режимов резания

Spiegazione parametri di lavoro

Explication cutting data

Formel Schnittgeschwindigkeit v:

Вычисление скорости v:

Formula velocità di taglio v:

Formula cutting speed v:

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

Formel Drehzahl n:

Вычисление числа оборотов n:

Formula giri n:

Formula spindle speed n:

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

Bohrer, Reibahlen

Сверла, развертки

Punte, alesatore

Drill, reamer

Vc = Schnittgeschwindigkeit in m/min

Скорост в м/мин

Velocità di taglio in m/min

Cutting speed in m/min

Vf = Vorschubgeschwindigkeit mm/U

Подача в мм/об

Avanzamento in mm/g

Cutting feed in mm/rev

Fräser

Фрезы

Frese

End mill

Vc = Schnittgeschwindigkeit in m/min

Скорость в м/мин

Velocità di taglio in m/min

Cutting speed in m/min

fz = Vorschubgeschwindigkeit in mm/Zahn

Подача в мм/зуб

Avanzamento in mm/tagliente

Cutting speed in mm/tooth

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

Подача в мм/об = fz × d × n

Avanzamento in mm/g = fz × d × n

Cutting speed in mm/rev = fz × t × n

ap = Schnitttiefe

Глубина резания

Profondità di taglio

Cutting depth

ae = Schnittbreite

Ширина резания

Larghezza di taglio

Cutting width

Schnittdaten

Режимы резания

Parametri di lavoro

Cutting data

Арт. 50806 / 50809

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

Арт. 56005

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

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

Все указанные режимы резания являются расчетными и подлежат корректировке в процессе обработки.

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

Режимы резания

Parametri di lavoro

Cutting data

Арт. 56030 / 56033

Mat.		ø 0.03–0.10	ø 0.11–0.50	ø 0.51–0.80	ø 0.81–1.50	ø 1.51–2.00
P1	V _c	1.5–5	4–10	10–30	30–60	30–60
	f _z	0.001–0.003	0.002–0.010	0.008–0.0015	0.012–0.025	0.020–0.035
P2	V _c	1.2–4	3.5–8	8–25	25–50	25–50
	f _z	0.001–0.002	0.002–0.008	0.007–0.013	0.010–0.022	0.018–0.032
P3	V _c	1–3	3–6	6–20	20–45	20–45
	f _z	0.001–0.002	0.002–0.007	0.006–0.012	0.009–0.020	0.016–0.030
M1	V _c	1.2–4	3.5–8	8–20	20–45	20–45
	f _z	0.001–0.002	0.002–0.007	0.005–0.010	0.008–0.018	0.016–0.025
M2	V _c	1–3	3–6	5–15	15–30	15–30
	f _z	0.001–0.002	0.002–0.005	0.005–0.008	0.007–0.015	0.013–0.020
K1	V _c	1.5–5	4–10	10–30	30–60	30–60
	f _z	0.001–0.004	0.003–0.008	0.006–0.012	0.010–0.022	0.018–0.035
K2	V _c	1.2–4	3.5–8	8–25	25–50	25–50
	f _z	0.001–0.003	0.002–0.007	0.005–0.011	0.009–0.020	0.016–0.030
N1	V _c	2–6	5–15	15–40	40–70	40–70
	f _z	0.001–0.003	0.002–0.006	0.005–0.010	0.008–0.018	0.015–0.028
N2	V _c	1.8–5.5	5–15	15–40	40–65	40–65
	f _z	0.001–0.003	0.002–0.007	0.006–0.012	0.011–0.020	0.018–0.030
N3	V _c	1.5–5	4–12	12–30	30–60	30–60
	f _z	0.001–0.002	0.002–0.006	0.005–0.010	0.009–0.018	0.016–0.025
N4	V _c	1.5–5	4–12	12–30	30–60	30–60
	f _z	0.001–0.002	0.002–0.005	0.004–0.008	0.007–0.015	0.013–0.020
N5	V _c	2–6	5–15	15–35	35–65	35–65
	f _z	0.001–0.003	0.002–0.006	0.005–0.010	0.009–0.018	0.016–0.025
N6	V _c	1.5–5	4–12	12–30	30–60	30–60
	f _z	0.001–0.003	0.002–0.005	0.004–0.009	0.008–0.015	0.013–0.018
N7	V _c	1.5–5	4–12	12–30	30–60	30–60
	f _z	0.001–0.002	0.002–0.004	0.003–0.008	0.006–0.013	0.012–0.020
N8	V _c	1–3	3–6	6–20	20–45	20–45
	f _z	0.001–0.002	0.002–0.004	0.006–0.006	0.005–0.011	0.010–0.016
S1	V _c	0.8–5	4–7	7–15	15–30	15–30
	f _z	0.001–0.002	0.002–0.004	0.003–0.008	0.007–0.015	0.013–0.020
S2	V _c					
	f _z					
H1	V _c					
	f _z					
H2	V _c					
	f _z					
H3	V _c					
	f _z					
01	V _c	1.5–5	4–10	10–25	20–35	30–60
	f _z	0.001–0.003	0.003–0.008	0.007–0.015	0.013–0.025	0.022–0.040
02	V _c					
	f _z					
03	V _c					
	f _z					

Арт. 56036

Mat.		ø 0.40–0.90	ø 1.00–1.90	ø 2.00–3.00
P1	V _c	40–80	80–130	80–130
	f _z	0.020–0.050	0.050–0.090	0.090–0.150
P2	V _c	35–75	70–100	70–100
	f _z	0.015–0.040	0.040–0.080	0.080–0.140
P3	V _c	35–50	50–90	50–90
	f _z	0.010–0.020	0.020–0.060	0.060–0.100
M1	V _c	30–40	40–80	40–80
	f _z	0.005–0.008	0.008–0.040	0.040–0.080
M2	V _c	20–30	30–70	30–70
	f _z	0.005–0.008	0.008–0.040	0.040–0.080
K1	V _c	50–100	100–150	100–150
	f _z	0.020–0.050	0.040–0.100	0.100–0.150
K2	V _c	40–80	80–130	80–130
	f _z	0.015–0.040	0.040–0.080	0.080–0.120
N1	V _c	60–90	90–140	90–140
	f _z	0.020–0.040	0.030–0.070	0.070–0.120
N2	V _c	60–120	120–150	120–150
	f _z	0.020–0.040	0.040–0.090	0.090–0.150
N3	V _c	60–120	120–150	120–150
	f _z	0.020–0.040	0.040–0.090	0.090–0.150
N4	V _c	40–70	70–100	70–100
	f _z	0.018–0.035	0.035–0.070	0.070–0.120
N5	V _c	60–120	120–150	120–150
	f _z	0.025–0.050	0.050–0.100	0.100–0.200
N6	V _c			
	f _z			
N7	V _c			
	f _z			
N8	V _c			
	f _z			
S1	V _c	30–40	40–80	40–80
	f _z	0.015–0.030	0.025–0.080	0.070–0.120
S2	V _c			
	f _z			
H1	V _c	15–25	20–35	20–35
	f _z	0.005–0.015	0.015–0.030	0.030–0.050
H2	V _c			
	f _z			
H3	V _c			
	f _z			
01	V _c			
	f _z			
02	V _c			
	f _z			
03	V _c			
	f _z			

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

Все указанные режимы резания являются расчетными и подлежат корректировке в процессе обработки.

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

Режимы резания

Parametri di lavoro

Cutting data

Арт. 16004

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

Арт. 50695 / 50699

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

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

Все указанные режимы резания являются расчетными и подлежат корректировке в процессе обработки.

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

Режимы резания

Parametri di lavoro

Cutting data

Арт. 51200

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

Арт. 51201

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

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

Все указанные режимы резания являются расчетными и подлежат корректировке в процессе обработки.

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

Режимы резания

Parametri di lavoro

Cutting data

Арт. 50620 / 50621

Mat.		ø 0.20–0.50	ø 0.51–1.00	ø 1.01–2.00
P1	V _c	6–15	15–35	15–35
	f _z	0.001–0.007	0.006–0.012	0.011–0.021
P2	V _c	5–13	13–30	13–30
	f _z	0.001–0.005	0.004–0.008	0.007–0.012
P3	V _c	4–10	10–25	10–25
	f _z	0.001–0.004	0.003–0.007	0.006–0.010
M1	V _c	4–10	10–25	10–25
	f _z	0.001–0.004	0.003–0.007	0.006–0.010
M2	V _c			
	f _z			
K1	V _c	6–15	15–35	15–35
	f _z	0.001–0.007	0.006–0.012	0.011–0.021
K2	V _c	5–13	13–30	13–30
	f _z	0.001–0.005	0.004–0.008	0.007–0.012
N1	V _c			
	f _z			
N2	V _c	8–20	20–50	20–50
	f _z	0.001–0.007	0.006–0.012	0.011–0.022
N3	V _c	6.5–18	18–45	18–45
	f _z	0.001–0.007	0.006–0.011	0.010–0.020
N4	V _c			
	f _z			
N5	V _c	6.5–18	18–45	18–45
	f _z	0.001–0.008	0.007–0.014	0.013–0.025
N6	V _c			
	f _z			
N7	V _c			
	f _z			
N8	V _c			
	f _z			
S1	V _c			
	f _z			
S2	V _c			
	f _z			
H1	V _c			
	f _z			
H2	V _c			
	f _z			
H3	V _c			
	f _z			
O1	V _c			
	f _z			
O2	V _c			
	f _z			
O3	V _c			
	f _z			

Арт. 50622

Mat.		ø 0.20–0.50	ø 0.51–1.00	ø 1.01–2.00
P1	V _c	6.5–17	17–40	17–40
	f _z	0.001–0.007	0.006–0.012	0.011–0.021
P2	V _c	6–15	15–35	15–35
	f _z	0.001–0.005	0.004–0.008	0.007–0.012
P3	V _c	5–13	13–28	13–28
	f _z	0.001–0.004	0.003–0.007	0.006–0.010
M1	V _c	5–13	13–28	13–28
	f _z	0.001–0.004	0.003–0.007	0.006–0.010
M2	V _c			
	f _z			
K1	V _c	6.5–17	17–40	17–40
	f _z	0.001–0.007	0.006–0.012	0.011–0.021
K2	V _c	6–15	15–35	15–35
	f _z	0.001–0.005	0.004–0.008	0.007–0.012
N1	V _c			
	f _z			
N2	V _c	9–25	25–55	25–55
	f _z	0.001–0.007	0.006–0.012	0.011–0.022
N3	V _c	8–22	22–50	22–50
	f _z	0.001–0.007	0.006–0.011	0.010–0.020
N4	V _c			
	f _z			
N5	V _c	8–22	22–50	22–50
	f _z	0.001–0.008	0.007–0.014	0.013–0.025
N6	V _c			
	f _z			
N7	V _c			
	f _z			
N8	V _c			
	f _z			
S1	V _c			
	f _z			
S2	V _c			
	f _z			
H1	V _c	2–5	5–12	5–12
	f _z	0.001–0.004	0.003–0.010	0.009–0.020
H2	V _c			
	f _z			
H3	V _c			
	f _z			
O1	V _c			
	f _z			
O2	V _c			
	f _z			
O3	V _c			
	f _z			

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

Все указанные режимы резания являются расчетными и подлежат корректировке в процессе обработки.

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

Режимы резания

Parametri di lavoro

Cutting data

Арт. 50941

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

Арт. 55652

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

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

Все указанные режимы резания являются расчетными и подлежат корректировке в процессе обработки.

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

Режимы резания

Parametri di lavoro

Cutting data

Арт. 12604

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

Арт. 11654

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

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

Все указанные режимы резания являются расчетными и подлежат корректировке в процессе обработки.

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

Режимы резания

Parametri di lavoro

Cutting data

Арт. 70030–70090/70130–70190

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

Арт. 72075/72150

Mat.		ø 0.10–0.30	ø 0.40–1.50	ø 1.50–3.0	a _e	a _p
P1	V _c	60–80	60–80	60–80		
	f _z	0.001–0.005	0.004–0.020	0.018–0.040	1 × d1	0.5 × d1
P2	V _c	50–70	50–70	50–70		
	f _z	0.001–0.005	0.004–0.020	0.018–0.040	1 × d1	0.3 × d1
P3	V _c	40–60	40–60	40–60		
	f _z	0.001–0.004	0.003–0.20	0.015–0.035	1 × d1	0.2 × d1
M1	V _c	30–50	30–50	30–50		
	f _z	0.001–0.004	0.003–0.020	0.015–0.035	1 × d1	0.4 × d1
M2	V _c	25–40	25–40	25–40		
	f _z	0.001–0.004	0.003–0.016	0.014–0.028	1 × d1	0.25 × d1
K1	V _c	40–70	40–70	40–70		
	f _z	0.001–0.005	0.004–0.020	0.018–0.040	1 × d1	1 × d1
K2	V _c	30–60	30–60	30–60		
	f _z	0.001–0.004	0.003–0.020	0.015–0.035	1 × d1	0.4 × d1
N1	V _c	70–100	70–100	70–100		
	f _z	0.001–0.004	0.003–0.020	0.015–0.035	1 × d1	1 × d1
N2	V _c	80–120	80–120	80–120		
	f _z	0.001–0.005	0.004–0.020	0.018–0.040	1 × d1	0.9 × d1
N3	V _c	60–100	60–100	60–100		
	f _z	0.001–0.005	0.004–0.020	0.018–0.040	1 × d1	0.9 × d1
N4	V _c					
	f _z					
N5	V _c	40–80	40–80	40–80		
	f _z	0.001–0.005	0.004–0.020	0.018–0.040	1 × d1	1 × d1
N6	V _c	25–50	25–50	25–50		
	f _z	0.001–0.004	0.003–0.020	0.015–0.035	1 × d1	0.5 × d1
N7	V _c					
	f _z					
N8	V _c					
	f _z					
S1	V _c	25–50	25–50	25–50		
	f _z	0.001–0.003	0.002–0.015	0.012–0.030	1 × d1	0.4 × d1
S2	V _c					
	f _z					
H1	V _c					
	f _z					
H2	V _c					
	f _z					
H3	V _c					
	f _z					
O1	V _c	80–120	80–120	80–120		
	f _z	0.001–0.006	0.005–0.025	0.020–0.045	1 × d1	1 × d1
O2	V _c					
	f _z					
O3	V _c					
	f _z					

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

Все указанные режимы резания являются расчетными и подлежат корректировке в процессе обработки.

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

Режимы резания

Parametri di lavoro

Cutting data

Арт. 42000

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

Арт. 72500/72800

Mat.		ø 0.30–0.70	ø 0.70–1.50	ø 1.50–2.50	a _e	a _p
P1	V _c	60–80	60–80	60–80		
	f _z	0.005–0.010	0.008–0.020	0.018–0.040	1 × d1	0.45 × d1
P2	V _c	50–70	50–70	50–70		
	f _z	0.005–0.010	0.008–0.020	0.018–0.040	1 × d1	0.25 × d1
P3	V _c	40–60	40–60	40–60		
	f _z	0.004–0.010	0.006–0.020	0.0015–0.035	1 × d1	0.15 × d1
M1	V _c	30–50	30–50	30–50		
	f _z	0.004–0.010	0.006–0.020	0.015–0.035	1 × d1	0.35 × d1
M2	V _c	25–40	25–40	25–40		
	f _z	0.004–0.008	0.005–0.016	0.014–0.028	1 × d1	0.2 × d1
K1	V _c	40–70	40–70	40–70		
	f _z	0.005–0.010	0.008–0.020	0.018–0.040	1 × d1	0.8 × d1
K2	V _c	30–60	30–60	30–60		
	f _z	0.004–0.010	0.006–0.020	0.015–0.035	1 × d1	0.35 × d1
N1	V _c	70–100	70–100	70–100		
	f _z	0.004–0.01	0.006–0.020	0.015–0.035	1 × d1	0.8 × d1
N2	V _c	80–120	80–120	80–120		
	f _z	0.005–0.010	0.008–0.020	0.018–0.040	1 × d1	0.7 × d1
N3	V _c	60–100	60–100	60–100		
	f _z	0.005–0.010	0.008–0.020	0.018–0.040	1 × d1	0.7 × d1
N4	V _c					
	f _z					
N5	V _c	40–80	40–80	40–80		
	f _z	0.005–0.010	0.008–0.020	0.018–0.040	1 × d1	0.8 × d1
N6	V _c	25–50	25–50	25–50		
	f _z	0.004–0.010	0.006–0.020	0.015–0.035	1 × d1	0.45 × d1
N7	V _c					
	f _z					
N8	V _c					
	f _z					
S1	V _c	25–50	25–50	25–50		
	f _z	0.003–0.008	0.006–0.015	0.012–0.030	1 × d1	0.3 × d1
S2	V _c					
	f _z					
H1	V _c					
	f _z					
H2	V _c					
	f _z					
H3	V _c					
	f _z					
O1	V _c	80–120	80–120	80–120		
	f _z	0.006–0.012	0.010–0.025	0.020–0.045	1 × d1	0.9 × d1
O2	V _c					
	f _z					
O3	V _c					
	f _z					

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

Все указанные режимы резания являются расчетными и подлежат корректировке в процессе обработки.

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

Режимы резания

Parametri di lavoro

Cutting data

Арт. 73130 / 73200 / 73300

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

Арт. 43105

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

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

Все указанные режимы резания являются расчетными и подлежат корректировке в процессе обработки.

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

Режимы резания

Parametri di lavoro

Cutting data

Арт. 43305

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

Арт. 74075/74150/74300

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

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

Все указанные режимы резания являются расчетными и подлежат корректировке в процессе обработки.

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

Режимы резания

Parametri di lavoro

Cutting data

Арт. 73000

Mat.		ø 0.50–1.50	ø 1.50–3.00
P1	V _c	70–120	70–120
	f _z	0.004–0.015	0.013–0.030
P2	V _c	60–100	60–100
	f _z	0.003–0.012	0.010–0.025
P3	V _c	50–90	50–90
	f _z	0.002–0.012	0.010–0.023
M1	V _c	50–90	50–90
	f _z	0.002–0.012	0.010–0.016
M2	V _c	40–70	40–70
	f _z	0.001–0.010	0.008–0.013
K1	V _c	120–150	120–150
	f _z	0.004–0.014	0.012–0.028
K2	V _c	100–130	100–130
	f _z	0.003–0.012	0.010–0.025
N1	V _c	150–200	150–200
	f _z	0.005–0.015	0.013–0.030
N2	V _c	150–200	150–200
	f _z	0.006–0.018	0.016–0.035
N3	V _c	150–200	150–200
	f _z	0.005–0.015	0.013–0.030
N4	V _c		
	f _z		
N5	V _c	150–200	150–200
	f _z	0.006–0.018	0.016–0.035
N6	V _c		
	f _z		
N7	V _c		
	f _z		
N8	V _c		
	f _z		
S1	V _c	40–70	40–70
	f _z	0.002–0.010	0.008–0.023
S2	V _c		
	f _z		
H1	V _c		
	f _z		
H2	V _c		
	f _z		
H3	V _c		
	f _z		
O1	V _c		
	f _z		
O2	V _c		
	f _z		
O3	V _c		
	f _z		

Арт. 47330

Mat.		ø 0.50–2.00	ø 2.10–5.00	a _e	a _p
P1	V _c	40–60	40–60		
	f _z	0.005–0.025	0.015–0.035	0.2×d1	1×d1
P2	V _c	30–50	30–50		
	f _z	0.004–0.020	0.013–0.030	0.2×d1	1×d1
P3	V _c				
	f _z				
M1	V _c	25–40	25–40		
	f _z	0.004–0.020	0.013–0.030	0.1×d1	1×d1
M2	V _c	20–35	20–35		
	f _z	0.003–0.015	0.012–0.020	0.1×d1	1×d1
K1	V _c	40–60	40–60		
	f _z	0.005–0.025	0.015–0.035	0.2×d1	1×d1
K2	V _c	35–55	35–55		
	f _z	0.004–0.020	0.013–0.030	0.2×d1	1×d1
N1	V _c				
	f _z				
N2	V _c				
	f _z				
N3	V _c				
	f _z				
N4	V _c				
	f _z				
N5	V _c	100–130	100–130		
	f _z	0.006–0.030	0.015–0.060	0.2×d1	1×d1
N6	V _c				
	f _z				
N7	V _c	120–150	120–150		
	f _z	0.006–0.030	0.015–0.060	0.2×d1	1×d1
N8	V _c	120–150	120–150		
	f _z	0.005–0.025	0.010–0.050	0.1×d1	1×d1
S1	V _c				
	f _z				
S2	V _c				
	f _z				
H1	V _c				
	f _z				
H2	V _c				
	f _z				
H3	V _c				
	f _z				
O1	V _c				
	f _z				
O2	V _c				
	f _z				
O3	V _c				
	f _z				

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

Все указанные режимы резания являются расчетными и подлежат корректировке в процессе обработки.

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

Режимы резания

Parametri di lavoro

Cutting data

Арт. 47344

Mat.		ø 0.50–2.00	ø 2.10–5.00	ø 5.10–8.00	a _e	a _p
P1	V _c					
	f _z					
P2	V _c					
	f _z					
P3	V _c					
	f _z					
M1	V _c					
	f _z					
M2	V _c					
	f _z					
K1	V _c					
	f _z					
K2	V _c					
	f _z					
N1	V _c					
	f _z					
N2	V _c					
	f _z					
N3	V _c					
	f _z					
N4	V _c					
	f _z					
N5	V _c	100–130	100–130	100–130	0.2 × d ₁	1 × d ₁
	f _z	0.006–0.030	0.015–0.060	0.040–0.100		
N6	V _c					
	f _z					
N7	V _c	120–150	120–150	120–150	0.2 × d ₁	1 × d ₁
	f _z	0.006–0.030	0.015–0.060	0.040–0.100		
N8	V _c	120–150	120–150	120–150	0.1 × d ₁	1 × d ₁
	f _z	0.005–0.025	0.010–0.050	0.040–0.090		
S1	V _c					
	f _z					
S2	V _c					
	f _z					
H1	V _c					
	f _z					
H2	V _c					
	f _z					
H3	V _c					
	f _z					
O1	V _c					
	f _z					
O2	V _c					
	f _z					
O3	V _c					
	f _z					

Арт. 50810/50812/50814/50818

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

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

Все указанные режимы резания являются расчетными и подлежат корректировке в процессе обработки.

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

Режимы резания

Parametri di lavoro

Cutting data

Арт. 50950

Mat.		ø 3.00–5.00	ø 5.10–8.00	ø 8.10–12.00	ø 12.10–16.00	ø 16.10–20.00
	V _c	80–120	80–120	80–120	80–120	80–120
	f _z	0.060–0.150	0.120–0.250	0.220–0.350	0.320–0.450	0.400–0.500
	V _c	60–80	60–80	60–80	60–80	60–80
	f _z	0.050–0.120	0.100–0.220	0.200–0.300	0.280–0.360	0.340–0.450
	V _c	50–70	50–70	50–70	50–70	50–70
	f _z	0.040–0.100	0.090–0.180	0.160–0.260	0.240–0.320	0.300–0.380
	V _c	40–60	40–60	40–60	40–60	40–60
	f _z	0.030–0.080	0.070–0.150	0.140–0.180	0.170–0.250	0.230–0.320
	V _c	30–50	30–50	30–50	30–50	30–50
	f _z	0.030–0.080	0.070–0.130	0.120–0.160	0.150–0.220	0.200–0.300
	V _c	100–130	100–130	100–130	100–130	100–130
	f _z	0.100–0.250	0.230–0.350	0.320–0.450	0.400–0.500	0.450–0.600
	V _c	60–80	60–80	60–80	60–80	60–80
	f _z	0.060–0.200	0.180–0.280	0.250–0.350	0.320–0.450	0.420–0.500
	V _c					
	f _z					
	V _c	130–160	130–160	130–160	130–160	130–160
	f _z	0.100–0.250	0.220–0.320	0.300–0.380	0.360–0.450	0.420–0.500
	V _c	150–200	150–200	150–200	150–200	150–200
	f _z	0.100–0.270	0.250–0.350	0.330–0.400	0.380–0.480	0.460–0.55
	V _c					
	f _z					
	V _c					
	f _z					
	V _c					
	f _z					
	V _c					
	f _z					
	V _c					
	f _z					
	V _c	30–60	30–60	30–60	30–60	30–60
	f _z	0.005–0.040	0.030–0.070	0.060–0.110	0.100–0.150	0.140–0.180
	V _c					
	f _z					
	V _c	60–90	60–90	60–90	60–90	60–90
	f _z	0.050–0.120	0.100–0.220	0.200–0.300	0.280–0.360	0.340–0.400
	V _c	40–60	40–60	40–60	40–60	40–60
	f _z	0.030–0.070	0.060–0.130	0.110–0.180	0.160–0.240	0.200–0.260
	V _c	15–35	15–35	15–35	15–35	15–35
	f _z	0.005–0.030	0.020–0.050	0.040–0.070	0.060–0.100	0.080–0.120
	V _c					
	f _z					
	V _c					
	f _z					
	V _c					
	f _z					

Арт. 50830

Mat.		ø 0.30–1.00	ø 1.10–5.00	ø 5.10–10.00	ø 10.10–15.00	ø 15.10–20.00
	V _c	30–60	50–90	50–90	50–90	50–90
	f _z	0.010–0.040	0.038–0.080	0.076–0.110	0.100–0.180	0.170–0.260
	V _c	20–35	30–60	30–60	30–60	30–60
	f _z	0.010–0.030	0.028–0.070	0.065–0.090	0.085–0.160	0.150–0.230
	V _c	15–30	25–50	25–50	25–50	25–50
	f _z	0.005–0.020	0.018–0.060	0.057–0.085	0.080–0.130	0.125–0.200
	V _c	15–30	25–50	25–50	25–50	25–50
	f _z	0.005–0.020	0.018–0.060	0.057–0.085	0.080–0.130	0.125–0.200
	V _c	10–20	15–40	15–40	15–40	15–40
	f _z	0.004–0.018	0.016–0.050	0.048–0.090	0.085–0.120	0.110–0.160
	V _c	40–80	70–120	70–120	70–120	70–120
	f _z	0.010–0.060	0.055–0.090	0.085–0.110	0.100–0.280	0.260–0.500
	V _c	30–50	40–80	40–80	40–80	40–80
	f _z	0.010–0.030	0.028–0.070	0.067–0.100	0.095–0.180	0.170–0.300
	V _c	30–60	50–90	50–90	50–90	50–90
	f _z	0.012–0.045	0.042–0.085	0.080–0.140	0.135–0.250	0.230–0.300
	V _c	40–80	70–120	70–120	70–120	70–120
	f _z	0.015–0.050	0.048–0.100	0.095–0.180	0.170–0.280	0.260–0.450
	V _c	30–70	60–110	60–110	60–110	60–110
	f _z	0.010–0.045	0.040–0.085	0.080–0.160	0.150–0.260	0.240–0.400
	V _c	20–40	30–70	30–70	30–70	30–70
	f _z	0.005–0.030	0.028–0.070	0.065–0.090	0.085–0.160	0.150–0.230
	V _c					
	f _z					
	V _c	15–30	25–50	25–50	25–50	25–50
	f _z	0.012–0.045	0.042–0.085	0.080–0.140	0.135–0.250	0.230–0.300
	V _c	15–30	25–50	25–50	25–50	25–50
	f _z	0.012–0.045	0.042–0.085	0.080–0.140	0.135–0.250	0.230–0.300
	V _c	10–20	15–35	15–35	15–35	15–35
	f _z	0.004–0.018	0.016–0.050	0.048–0.090	0.085–0.120	0.110–0.180
	V _c	20–30	25–50	25–50	25–50	25–50
	f _z	0.020–0.040	0.038–0.070	0.065–0.100	0.095–0.150	0.145–0.200
	V _c	10–20	15–35	15–35	15–35	15–35
	f _z	0.004–0.018	0.016–0.050	0.048–0.090	0.085–0.120	0.110–0.180
	V _c					
	f _z					
	V _c					
	f _z					
	V _c					
	f _z					
	V _c	20–40	30–70	30–70	30–70	30–70
	f _z	0.015–0.050	0.048–0.100	0.095–0.180	0.170–0.280	0.260–0.450
	V _c					
	f _z					
	V _c					
	f _z					

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

Все указанные режимы резания являются расчетными и подлежат корректировке в процессе обработки.

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

Режимы резания

Parametri di lavoro

Cutting data

Арт. 50838

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

Арт. 50820

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

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

Все указанные режимы резания являются расчетными и подлежат корректировке в процессе обработки.

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

Режимы резания

Parametri di lavoro

Cutting data

Арт. 50938

Mat.		ø 1.00–2.40	ø 2.50–5.00	ø 5.10–8.00	ø 8.10–12.70
 P1	V _c	50–80	120–180	120–180	120–180
	f _z	0.050–0.150	0.120–0.250	0.200–0.300	0.280–0.400
 P2	V _c	45–70	100–160	100–160	100–160
	f _z	0.040–0.140	0.100–0.220	0.180–0.280	0.260–0.380
 P3	V _c	40–60	90–150	90–150	90–150
	f _z	0.020–0.100	0.080–0.200	0.180–0.250	0.230–0.350
 M1	V _c	30–50	80–130	80–130	80–130
	f _z	0.010–0.080	0.060–0.150	0.130–0.200	0.180–0.260
 M2	V _c	25–45	70–120	70–120	70–120
	f _z	0.010–0.070	0.060–0.140	0.130–0.180	0.170–0.240
 K1	V _c	60–80	150–200	120–200	120–200
	f _z	0.040–0.150	0.120–0.220	0.200–0.350	0.300–0.500
 K2	V _c	50–70	130–180	130–180	130–180
	f _z	0.040–0.120	0.100–0.230	0.200–0.310	0.280–0.450
 N1	V _c				
	f _z				
 N2	V _c	80–110	150–200	150–200	150–200
	f _z	0.400–0.150	0.130–0.280	0.250–0.330	0.310–0.500
 N3	V _c	90–130	200–250	200–250	200–250
	f _z	0.400–0.150	0.130–0.300	0.280–0.400	0.380–0.550
 N4	V _c				
	f _z				
 N5	V _c				
	f _z				
 N6	V _c				
	f _z				
 N7	V _c				
	f _z				
 N8	V _c				
	f _z				
 S1	V _c	20–40	40–60	40–60	40–60
	f _z	0.010–0.030	0.025–0.050	0.040–0.070	0.060–0.100
 S2	V _c				
	f _z				
 H1	V _c				
	f _z				
 H2	V _c				
	f _z				
 H3	V _c				
	f _z				
 O1	V _c				
	f _z				
 O2	V _c				
	f _z				
 O3	V _c				
	f _z				

Арт. 50940

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

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

Все указанные режимы резания являются расчетными и подлежат корректировке в процессе обработки.

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

Режимы резания

Parametri di lavoro

Cutting data

Арт. 50942

Mat.		ø 1.00–2.40	ø 2.50–5.00	ø 5.10–8.00	ø 8.10–12.70
P1	V _c	50–80	120–180	120–180	120–180
	f _z	0.040–0.080	0.060–0.150	0.130–0.220	0.200–0.330
P2	V _c	45–70	100–160	100–160	100–160
	f _z	0.040–0.075	0.070–0.190	0.130–0.200	0.180–0.300
P3	V _c	40–60	90–150	90–150	90–150
	f _z	0.030–0.070	0.060–0.130	0.120–0.190	0.170–0.260
M1	V _c	30–50	80–130	80–130	80–130
	f _z	0.010–0.050	0.040–0.120	0.100–0.160	0.150–0.220
M2	V _c	25–45	70–120	70–120	70–120
	f _z	0.010–0.045	0.040–0.100	0.080–0.140	0.130–0.200
K1	V _c	60–80	150–200	120–200	120–200
	f _z	0.050–0.100	0.090–0.230	0.210–0.320	0.300–0.400
K2	V _c	50–70	130–180	130–180	130–180
	f _z	0.040–0.080	0.070–0.180	0.160–0.280	0.250–0.350
N1	V _c				
	f _z				
N2	V _c	80–110	150–200	150–200	150–200
	f _z	0.040–0.130	0.120–0.260	0.240–0.360	0.320–0.450
N3	V _c	90–130	200–250	200–250	200–250
	f _z	0.040–0.140	0.130–0.280	0.260–0.380	0.350–0.480
N4	V _c				
	f _z				
N5	V _c				
	f _z				
N6	V _c				
	f _z				
N7	V _c				
	f _z				
N8	V _c				
	f _z				
S1	V _c	20–40	40–60	40–60	40–60
	f _z	0.010–0.030	0.025–0.040	0.035–0.070	0.060–0.120
S2	V _c				
	f _z				
H1	V _c				
	f _z				
H2	V _c				
	f _z				
H3	V _c				
	f _z				
O1	V _c				
	f _z				
O2	V _c				
	f _z				
O3	V _c				
	f _z				

Арт. 52100 / 52200

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

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

Все указанные режимы резания являются расчетными и подлежат корректировке в процессе обработки.

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

Режимы резания

Parametri di lavoro

Cutting data

Арт. 52150

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

Арт. 50909

Mat.		ø 1.00–2.40	ø 2.50–5.00	ø 5.10–8.00	ø 8.10–12.70
P1	V _c	120–180	120–180	120–180	120–180
	f _z	0.040–0.080	0.060–0.150	0.130–0.220	0.200–0.330
P2	V _c	110–160	100–160	100–160	100–160
	f _z	0.040–0.075	0.070–0.190	0.130–0.200	0.180–0.300
P3	V _c	100–150	90–150	90–150	90–150
	f _z	0.030–0.070	0.060–0.130	0.120–0.190	0.170–0.260
M1	V _c	80–130	80–130	80–130	80–130
	f _z	0.010–0.050	0.040–0.120	0.100–0.160	0.150–0.220
M2	V _c	70–120	70–120	70–120	70–120
	f _z	0.010–0.045	0.040–0.100	0.080–0.140	0.130–0.200
K1	V _c	150–200	150–200	120–200	120–200
	f _z	0.050–0.100	0.090–0.230	0.210–0.320	0.300–0.400
K2	V _c	130–180	130–180	130–180	130–180
	f _z	0.040–0.080	0.070–0.180	0.160–0.280	0.250–0.350
N1	V _c				
	f _z				
N2	V _c	150–200	150–200	150–200	150–200
	f _z	0.040–0.130	0.120–0.260	0.240–0.360	0.320–0.450
N3	V _c	200–250	200–250	200–250	200–250
	f _z	0.040–0.140	0.130–0.280	0.260–0.380	0.350–0.480
N4	V _c				
	f _z				
N5	V _c	90–150	90–150	90–150	90–150
	f _z	0.050–0.100	0.090–0.230	0.210–0.320	0.300–0.400
N6	V _c				
	f _z				
N7	V _c				
	f _z				
N8	V _c				
	f _z				
S1	V _c	40–70	40–70	40–70	40–70
	f _z	0.010–0.030	0.025–0.040	0.035–0.070	0.060–0.120
S2	V _c				
	f _z				
H1	V _c	40–80	40–80	40–80	40–80
	f _z	0.010–0.020	0.018–0.035	0.030–0.060	0.050–0.100
H2	V _c				
	f _z				
H3	V _c				
	f _z				
O1	V _c				
	f _z				
O2	V _c				
	f _z				
O3	V _c				
	f _z				

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

Все указанные режимы резания являются расчетными и подлежат корректировке в процессе обработки.

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

Режимы резания

Parametri di lavoro

Cutting data

Арт. 50912/50916

Mat.		Ø 1.00–1.90	Ø 2.00–5.00	Ø 5.10–8.00	Ø 8.10–12.70
P1	V _c	70–130	70–130	70–130	70–130
	f _z	0.040–0.060	0.050–0.120	0.110–0.250	0.240–0.400
P2	V _c	60–120	60–120	60–120	60–120
	f _z	0.030–0.050	0.045–0.100	0.090–0.220	0.200–0.350
P3	V _c	50–100			
	f _z	0.030–0.050			
M1	V _c	50–70			
	f _z	0.030–0.050			
M2	V _c	35–60			
	f _z	0.025–0.045			
K1	V _c	80–120	80–120	80–120	80–120
	f _z	0.050–0.080	0.070–0.150	0.140–0.300	0.280–0.500
K2	V _c	60–100	60–100	60–100	60–100
	f _z	0.040–0.070	0.060–0.130	0.120–0.260	0.250–0.450
N1	V _c				
	f _z				
N2	V _c				
	f _z				
N3	V _c				
	f _z				
N4	V _c				
	f _z				
N5	V _c				
	f _z				
N6	V _c				
	f _z				
N7	V _c				
	f _z				
N8	V _c				
	f _z				
S1	V _c	30–60			
	f _z	0.010–0.040			
S2	V _c				
	f _z				
H1	V _c				
	f _z				
H2	V _c				
	f _z				
H3	V _c				
	f _z				
O1	V _c				
	f _z				
O2	V _c				
	f _z				
O3	V _c				
	f _z				

Арт. 50920/50925/50930

Mat.		Ø 3.00–5.00	Ø 5.10–8.00	Ø 8.00–10.00
P1	V _c	70–120	70–120	70–120
	f _z	0.050–0.150	0.140–0.250	0.240–0.380
P2	V _c	70–110	70–110	70–110
	f _z	0.040–0.130	0.120–0.230	0.220–0.360
P3	V _c			
	f _z			
M1	V _c			
	f _z			
M2	V _c			
	f _z			
K1	V _c	70–110	70–110	70–110
	f _z	0.050–0.170	0.160–0.280	0.260–0.450
K2	V _c	60–100	60–100	60–100
	f _z	0.050–0.140	0.130–0.250	0.240–0.400
N1	V _c			
	f _z			
N2	V _c			
	f _z			
N3	V _c			
	f _z			
N4	V _c			
	f _z			
N5	V _c			
	f _z			
N6	V _c			
	f _z			
N7	V _c			
	f _z			
N8	V _c			
	f _z			
S1	V _c			
	f _z			
S2	V _c			
	f _z			
H1	V _c			
	f _z			
H2	V _c			
	f _z			
H3	V _c			
	f _z			
O1	V _c			
	f _z			
O2	V _c			
	f _z			
O3	V _c			
	f _z			

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

Все указанные режимы резания являются расчетными и подлежат корректировке в процессе обработки.

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

Режимы резания

Parametri di lavoro

Cutting data

Арт. 52903/52906/52909

Mat.		ø 1.00–1.90	ø 2.00–5.00	ø 5.10–8.00	ø 8.10–12.70
	V _c	70–110	70–110	70–110	70–110
	f _z	0.025–0.055	0.050–0.130	0.125–0.170	0.165–0.215
	V _c	60–100	60–100	60–100	60–100
	f _z	0.020–0.050	0.045–0.120	0.115–0.150	0.140–0.190
	V _c	60–100	60–100	60–100	60–100
	f _z	0.020–0.050	0.045–0.120	0.115–0.150	0.140–0.190
	V _c	60–100	60–100	60–100	60–100
	f _z	0.020–0.050	0.045–0.120	0.115–0.150	0.140–0.190
	V _c	50–90	50–90	50–90	50–90
	f _z	0.015–0.045	0.040–0.100	0.090–0.130	0.120–0.150
	V _c	90–140	90–140	90–140	90–140
	f _z	0.050–0.110	0.100–0.270	0.260–0.340	0.320–0.420
	V _c	80–120	80–120	80–120	80–120
	f _z	0.040–0.100	0.090–0.250	0.240–0.300	0.280–0.360
	V _c	120–170	120–170	120–170	120–170
	f _z	0.050–0.110	0.100–0.250	0.240–0.340	0.320–0.420
	V _c	150–200	150–200	150–200	150–200
	f _z	0.050–0.110	0.100–0.250	0.240–0.340	0.320–0.420
	V _c	200–250	200–250	200–250	200–250
	f _z	0.050–0.110	0.100–0.250	0.240–0.340	0.320–0.420
	V _c	90–130	90–130	90–130	90–130
	f _z	0.050–0.110	0.100–0.250	0.240–0.340	0.320–0.420
	V _c	150–200	150–200	150–200	150–200
	f _z	0.050–0.110	0.100–0.250	0.240–0.340	0.320–0.420
	V _c	60–100	60–100	60–100	60–100
	f _z	0.020–0.050	0.045–0.120	0.115–0.150	0.140–0.190
	V _c				
	f _z				
	V _c				
	f _z				
	V _c	30–60	30–60	30–60	30–60
	f _z	0.015–0.035	0.030–0.085	0.080–0.110	0.100–0.135
	V _c	20–50	20–50	20–50	20–50
	f _z	0.020–0.050	0.045–0.120	0.115–0.150	0.140–0.190
	V _c	70–110	70–110	70–110	70–110
	f _z	0.010–0.020	0.018–0.050	0.045–0.065	0.060–0.080
	V _c				
	f _z				
	V _c				
	f _z				
	V _c	70–110	70–110	70–110	70–110
	f _z	0.025–0.055	0.050–0.130	0.125–0.170	0.165–0.215
	V _c				
	f _z				
	V _c				
	f _z				

Арт. 52912/52916

Mat.		ø 1.00–1.90	ø 2.00–5.00	ø 5.10–8.00	ø 8.10–10.00
	V _c	70–110	70–110	70–110	70–110
	f _z	0.020–0.060	0.050–0.130	0.125–0.170	0.165–0.190
	V _c	60–100	60–100	60–100	60–100
	f _z	0.015–0.050	0.045–0.120	0.115–0.150	0.140–0.160
	V _c	50–90	50–90	50–90	50–90
	f _z	0.015–0.045	0.040–0.100	0.090–0.130	0.120–0.120
	V _c	60–100	60–100	60–100	60–100
	f _z	0.020–0.050	0.045–0.120	0.115–0.150	0.140–0.160
	V _c	50–90	50–90	50–90	50–90
	f _z	0.015–0.045	0.040–0.100	0.090–0.130	0.120–0.120
	V _c	90–140	90–140	90–140	90–140
	f _z	0.050–0.110	0.100–0.270	0.260–0.340	0.320–0.350
	V _c	80–120	80–120	80–120	80–120
	f _z	0.040–0.100	0.090–0.250	0.240–0.300	0.280–0.300
	V _c	90–130	90–130	90–130	90–130
	f _z	0.050–0.110	0.100–0.250	0.240–0.340	0.320–0.350
	V _c	150–200	150–200	150–200	150–200
	f _z	0.050–0.110	0.100–0.250	0.240–0.340	0.320–0.350
	V _c	170–220	170–220	170–220	170–220
	f _z	0.050–0.110	0.100–0.250	0.240–0.340	0.320–0.350
	V _c	90–130	90–130	90–130	90–130
	f _z	0.025–0.055	0.050–0.130	0.125–0.170	0.165–0.195
	V _c	150–200	150–200	150–200	1050–200
	f _z	0.040–0.100	0.090–0.250	0.240–0.300	0.280–0.300
	V _c	60–100	60–100	60–100	60–100
	f _z	0.015–0.045	0.040–0.100	0.090–0.130	0.120–0.110
	V _c				
	f _z				
	V _c				
	f _z				
	V _c	30–60	30–60	30–60	30–60
	f _z	0.015–0.035	0.030–0.085	0.080–0.110	0.100–0.100
	V _c	20–50	20–50	20–50	20–50
	f _z	0.010–0.040	0.030–0.100	0.080–0.130	0.10–0.110
	V _c	60–100	60–100	60–100	60–100
	f _z	0.010–0.020	0.018–0.050	0.045–0.065	0.060–0.080
	V _c				
	f _z				
	V _c				
	f _z				
	V _c	70–110	70–110	70–110	70–110
	f _z	0.020–0.060	0.050–0.130	0.125–0.170	0.165–0.190
	V _c				
	f _z				
	V _c				
	f _z				

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

Все указанные режимы резания являются расчетными и подлежат корректировке в процессе обработки

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

Режимы резания

Parametri di lavoro

Cutting data

Арт. 52920 / 52930

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

Арт. 54906 / 54909

Mat.		ø 3.00–5.00	ø 5.10–8.00	ø 8.10–12.70
P1	V _c	70–110	70–110	70–110
	f _z	0.050–0.130	0.125–0.170	0.165–0.215
P2	V _c	60–100	60–100	60–100
	f _z	0.045–0.120	0.115–0.150	0.140–0.190
P3	V _c			
	f _z			
M1	V _c			
	f _z			
M2	V _c			
	f _z			
K1	V _c	90–140	90–140	90–140
	f _z	0.100–0.270	0.260–0.340	0.320–0.420
K2	V _c	80–120	80–120	80–120
	f _z	0.090–0.250	0.240–0.300	0.280–0.360
N1	V _c			
	f _z			
N2	V _c			
	f _z			
N3	V _c	170–220	170–220	170–220
	f _z	0.100–0.250	0.240–0.340	0.320–0.420
N4	V _c			
	f _z			
N5	V _c	150–200	150–200	150–200
	f _z	0.100–0.250	0.240–0.340	0.320–0.420
N6	V _c			
	f _z			
N7	V _c			
	f _z			
N8	V _c			
	f _z			
S1	V _c			
	f _z			
S2	V _c			
	f _z			
H1	V _c			
	f _z			
H2	V _c			
	f _z			
H3	V _c			
	f _z			
O1	V _c			
	f _z			
O2	V _c			
	f _z			
O3	V _c			
	f _z			

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

Все указанные режимы резания являются расчетными и подлежат корректировке в процессе обработки

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

Режимы резания

Parametri di lavoro

Cutting data

Арт. 54912/54916

Mat.		ø 3.00–5.00	ø 5.10–8.00	ø 8.10–10.00
 P1	V _c	70–110	70–110	70–110
	f _z	0.050–0.130	0.125–0.170	0.165–0.190
 P2	V _c	60–100	60–100	60–100
	f _z	0.045–0.120	0.115–0.150	0.140–0.160
 P3	V _c			
	f _z			
 M1	V _c			
	f _z			
 M2	V _c			
	f _z			
 K1	V _c	90–130	90–130	90–130
	f _z	0.100–0.250	0.240–0.340	0.320–0.350
 K2	V _c	150–200	150–200	150–200
	f _z	0.100–0.250	0.240–0.340	0.320–0.350
 N1	V _c			
	f _z			
 N2	V _c			
	f _z			
 N3	V _c	170–220	170–220	170–220
	f _z	0.100–0.250	0.240–0.340	0.320–0.350
 N4	V _c			
	f _z			
 N5	V _c	150–200	150–200	150–200
	f _z	0.100–0.250	0.240–0.340	0.320–0.350
 N6	V _c			
	f _z			
 N7	V _c			
	f _z			
 N8	V _c			
	f _z			
 S1	V _c			
	f _z			
 S2	V _c			
	f _z			
 H1	V _c			
	f _z			
 H2	V _c			
	f _z			
 H3	V _c			
	f _z			
 O1	V _c			
	f _z			
 O2	V _c			
	f _z			
 O3	V _c			
	f _z			

Арт. 54920/54930

Mat.		ø 3.00–5.00	ø 5.10–8.00	ø 8.10–10.00
 P1	V _c	70–120	70–120	70–120
	f _z	0.050–0.150	0.140–0.250	0.240–0.380
 P2	V _c	70–110	70–110	70–110
	f _z	0.040–0.130	0.120–0.230	0.220–0.360
 P3	V _c			
	f _z			
 M1	V _c			
	f _z			
 M2	V _c			
	f _z			
 K1	V _c	70–110	70–110	70–110
	f _z	0.050–0.170	0.160–0.280	0.260–0.450
 K2	V _c	60–100	60–100	60–100
	f _z	0.050–0.140	0.130–0.250	0.240–0.400
 N1	V _c			
	f _z			
 N2	V _c			
	f _z			
 N3	V _c	70–110	70–110	70–110
	f _z	0.050–0.170	0.160–0.280	0.260–0.450
 N4	V _c			
	f _z			
 N5	V _c	50–100	50–100	50–100
	f _z	0.050–0.130	0.120–0.230	0.220–0.360
 N6	V _c			
	f _z			
 N7	V _c			
	f _z			
 N8	V _c			
	f _z			
 S1	V _c			
	f _z			
 S2	V _c			
	f _z			
 H1	V _c			
	f _z			
 H2	V _c			
	f _z			
 H3	V _c			
	f _z			
 O1	V _c			
	f _z			
 O2	V _c			
	f _z			
 O3	V _c			
	f _z			

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

Все указанные режимы резания являются расчетными и подлежат корректировке в процессе обработки

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

Режимы резания

Parametri di lavoro

Cutting data

Арт. 50840

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

Арт. 55654/55338

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

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

Все указанные режимы резания являются расчетными и подлежат корректировке в процессе обработки

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

Режимы резания

Parametri di lavoro

Cutting data

Арт. 58000 / 58500

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

Арт. 40000

Mat.		ø 2.00–5.00	ø 6.00–12.00	ø 13.00–20.00	a _e	a _p
P1	V _c	60–90	60–90	60–90		
	f _z	0.015–0.060	0.050–0.100	0.060–0.140	1 × d1	0.5 × d1
P2	V _c	50–80	50–80	50–80		
	f _z	0.015–0.060	0.050–0.100	0.060–0.140	1 × d1	0.3 × d1
P3	V _c					
	f _z					
M1	V _c					
	f _z					
M2	V _c					
	f _z					
K1	V _c	40–60	40–60	40–60		
	f _z	0.020–0.070	0.050–0.110	0.060–0.140	1 × d1	1 × d1
K2	V _c	30–50	30–50	30–50		
	f _z	0.015–0.060	0.050–0.100	0.060–0.140	1 × d1	0.4 × d1
N1	V _c	100–150	100–150	100–150		
	f _z	0.015–0.060	0.040–0.120	0.060–0.200	1 × d1	1 × d1
N2	V _c	200–250	200–250	200–250		
	f _z	0.020–0.070	0.050–0.120	0.070–0.200	1 × d1	1 × d1
N3	V _c	180–220	180–220	180–220		
	f _z	0.020–0.070	0.050–0.120	0.070–0.200	1 × d1	1 × d1
N4	V _c	50–100	50–100	50–100		
	f _z	0.015–0.050	0.030–0.080	0.060–0.120	1 × d1	0.5 × d1
N5	V _c	100–150	100–150	100–150		
	f _z	0.020–0.070	0.050–0.120	0.070–0.200	1 × d1	1 × d1
N6	V _c	30–60	30–60	30–60		
	f _z	0.015–0.050	0.040–0.100	0.060–0.140	1 × d1	0.7 × d1
N7	V _c					
	f _z					
N8	V _c					
	f _z					
S1	V _c					
	f _z					
S2	V _c					
	f _z					
H1	V _c					
	f _z					
H2	V _c					
	f _z					
H3	V _c					
	f _z					
O1	V _c					
	f _z					
O2	V _c					
	f _z					
O3	V _c					
	f _z					

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

Все указанные режимы резания являются расчетными и подлежат корректировке в процессе обработки

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

Режимы резания

Parametri di lavoro

Cutting data

Арт. 40600

Mat.		ø 2.00–5.00	ø 6.00–12.00	ø 13.00–20.00	a _e	a _p
P1	V _c	80–100	80–100	80–100		
	f _z	0.015–0.060	0.050–0.100	0.060–0.140	1 × d1	0.5 × d1
P2	V _c	70–90	70–90	70–90		
	f _z	0.015–0.060	0.050–0.100	0.060–0.140	1 × d1	0.3 × d1
P3	V _c	60–80	60–80	60–80		
	f _z					
M1	V _c	40–60	40–60	40–60		
	f _z	0.015–0.050	0.050–0.080	0.080–0.120	1 × d1	0.3 × d1
M2	V _c					
	f _z					
K1	V _c	60–80	60–80	60–80		
	f _z	0.020–0.070	0.050–0.110	0.060–0.140	1 × d1	1 × d1
K2	V _c	40–60	40–60	40–60		
	f _z	0.015–0.060	0.050–0.100	0.060–0.140	1 × d1	0.4 × d1
N1	V _c					
	f _z					
N2	V _c	230–280	230–280	230–280		
	f _z	0.020–0.070	0.050–0.120	0.070–0.200	1 × d1	1 × d1
N3	V _c	200–250	200–250	200–250		
	f _z	0.020–0.070	0.050–0.120	0.070–0.200	1 × d1	1 × d1
N4	V _c					
	f _z					
N5	V _c	120–170	120–170	120–170		
	f _z	0.020–0.070	0.050–0.120	0.070–0.200	1 × d1	1 × d1
N6	V _c					
	f _z					
N7	V _c					
	f _z					
N8	V _c					
	f _z					
S1	V _c					
	f _z					
S2	V _c					
	f _z					
H1	V _c					
	f _z					
H2	V _c					
	f _z					
H3	V _c					
	f _z					
O1	V _c					
	f _z					
O2	V _c					
	f _z					
O3	V _c					
	f _z					

Арт. 40002

Mat.		ø 2.00–5.00	ø 6.00–12.00	ø 13.00–20.00	a _e	a _p
P1	V _c	60–80	60–80	60–80		
	f _z	0.015–0.060	0.030–0.110	0.060–0.140	1 × d1	1 × d1
P2	V _c	50–70	50–70	50–70		
	f _z	0.015–0.060	0.030–0.110	0.050–0.130	1 × d1	0.6 × d1
P3	V _c	40–60	40–60	40–60		
	f _z	0.010–0.050	0.020–0.100	0.040–0.120	1 × d1	0.5 × d1
M1	V _c	40–60	40–60	40–60		
	f _z	0.010–0.050	0.020–0.100	0.040–0.120	1 × d1	0.5 × d1
M2	V _c					
	f _z					
K1	V _c	60–80	60–80	60–80		
	f _z	0.015–0.060	0.030–0.110	0.060–0.140	1 × d1	1 × d1
K2	V _c	50–70	60–80	60–80		
	f _z	0.015–0.060	0.030–0.100	0.050–0.130	1 × d1	0.6 × d1
N1	V _c					
	f _z					
N2	V _c					
	f _z					
N3	V _c					
	f _z					
N4	V _c					
	f _z					
N5	V _c					
	f _z					
N6	V _c					
	f _z					
N7	V _c					
	f _z					
N8	V _c					
	f _z					
S1	V _c					
	f _z					
S2	V _c					
	f _z					
H1	V _c					
	f _z					
H2	V _c					
	f _z					
H3	V _c					
	f _z					
O1	V _c					
	f _z					
O2	V _c					
	f _z					
O3	V _c					
	f _z					

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

Все указанные режимы резания являются расчетными и подлежат корректировке в процессе обработки

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

Режимы резания

Parametri di lavoro

Cutting data

Арт. 40602

Mat.		ø 2.00–5.00	ø 6.00–12.00	ø 13.00–20.00	a _e	a _p
P1	V _c	70–100	70–100	70–100		
	f _z	0.015–0.060	0.030–0.110	0.060–0.140	1 × d1	1 × d1
P2	V _c	60–90	60–90	60–90		
	f _z	0.015–0.060	0.030–0.110	0.050–0.130	1 × d1	0.6 × d1
P3	V _c	50–80	50–80	50–80		
	f _z	0.010–0.050	0.020–0.100	0.040–0.120	1 × d1	0.5 × d1
M1	V _c	50–80	50–80	50–80		
	f _z	0.010–0.050	0.020–0.100	0.040–0.120	1 × d1	0.5 × d1
M2	V _c					
	f _z					
K1	V _c	70–10	70–10	70–10		
	f _z	0.015–0.060	0.030–0.110	0.060–0.140	1 × d1	1 × d1
K2	V _c	60–90	60–90	60–90		
	f _z	0.015–0.060	0.030–0.100	0.050–0.130	1 × d1	0.6 × d1
N1	V _c					
	f _z					
N2	V _c					
	f _z					
N3	V _c					
	f _z					
N4	V _c					
	f _z					
N5	V _c					
	f _z					
N6	V _c					
	f _z					
N7	V _c					
	f _z					
N8	V _c					
	f _z					
S1	V _c					
	f _z					
S2	V _c					
	f _z					
H1	V _c	60–90	60–90	60–90		
	f _z	0.010–0.050	0.020–0.060	0.040–0.070	1 × d1	0.05 × d1
H2	V _c	50–70	50–70	50–70		
	f _z	0.010–0.040	0.020–0.050	0.030–0.060	1 × d1	0.05 × d1
H3	V _c	40–60	40–60	40–60		
	f _z	0.005–0.030	0.015–0.035	0.030–0.050	1 × d1	0.05 × d1
O1	V _c					
	f _z					
O2	V _c					
	f _z					
O3	V _c					
	f _z					

Арт. 40004

Mat.		ø 2.00–5.00	ø 6.00–12.00	ø 13.00–20.00	a _e	a _p
P1	V _c	60–80	60–80	60–80		
	f _z	0.020–0.060	0.030–0.110	0.060–0.140	1 × d1	0.5 × d1
P2	V _c	50–70	50–70	50–70		
	f _z	0.015–0.060	0.030–0.110	0.050–0.130	1 × d1	0.5 × d1
P3	V _c	40–60	40–60	40–60		
	f _z	0.010–0.050	0.020–0.100	0.040–0.120	1 × d1	0.4 × d1
M1	V _c	40–60	40–60	40–60		
	f _z	0.010–0.050	0.020–0.100	0.040–0.120	1 × d1	0.4 × d1
M2	V _c					
	f _z					
K1	V _c	60–80	60–80	60–80		
	f _z	0.020–0.060	0.030–0.110	0.060–0.140	1 × d1	0.80 × d1
K2	V _c	50–70	50–70	50–70		
	f _z	0.150–0.050	0.030–0.100	0.060–0.130	1 × d1	0.70 × d1
N1	V _c					
	f _z					
N2	V _c					
	f _z					
N3	V _c					
	f _z					
N4	V _c					
	f _z					
N5	V _c					
	f _z					
N6	V _c					
	f _z					
N7	V _c					
	f _z					
N8	V _c					
	f _z					
S1	V _c					
	f _z					
S2	V _c					
	f _z					
H1	V _c					
	f _z					
H2	V _c					
	f _z					
H3	V _c					
	f _z					
O1	V _c					
	f _z					
O2	V _c					
	f _z					
O3	V _c					
	f _z					

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

Все указанные режимы резания являются расчетными и подлежат корректировке в процессе обработки

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

Режимы резания

Parametri di lavoro

Cutting data

Арт. 40604

Mat.		ø 2.00–5.00	ø 6.00–12.00	ø 13.00–20.00	a _e	a _p
P1	V _c	70–100	70–100	70–100		
	f _z	0.020–0.060	0.030–0.110	0.060–0.140	1 × d1	0.5 × d1
P2	V _c	60–90	60–90	60–90		
	f _z	0.015–0.060	0.030–0.110	0.050–0.130	1 × d1	0.5 × d1
P3	V _c	50–80	50–80	50–80		
	f _z	0.010–0.050	0.020–0.100	0.040–0.120	1 × d1	0.4 × d1
M1	V _c	50–80	50–80	50–80		
	f _z	0.010–0.050	0.020–0.100	0.040–0.120	1 × d1	0.4 × d1
M2	V _c					
	f _z					
K1	V _c	70–100	70–100	70–100		
	f _z	0.020–0.060	0.030–0.110	0.060–0.140	1 × d1	0.80 × d1
K2	V _c	60–90	60–90	60–90		
	f _z	0.150–0.050	0.030–0.100	0.060–0.130	1 × d1	0.70 × d1
N1	V _c					
	f _z					
N2	V _c					
	f _z					
N3	V _c					
	f _z					
N4	V _c					
	f _z					
N5	V _c					
	f _z					
N6	V _c					
	f _z					
N7	V _c					
	f _z					
N8	V _c					
	f _z					
S1	V _c					
	f _z					
S2	V _c					
	f _z					
H1	V _c	60–90	60–90	60–90		
	f _z	0.010–0.050	0.020–0.060	0.040–0.070	1 × d1	0.05 × d1
H2	V _c	50–70	50–70	50–70		
	f _z	0.010–0.040	0.020–0.050	0.030–0.060	1 × d1	0.05 × d1
H3	V _c	40–60	40–60	40–60		
	f _z	0.005–0.030	0.015–0.035	0.030–0.050	1 × d1	0.05 × d1
01	V _c					
	f _z					
02	V _c					
	f _z					
03	V _c					
	f _z					

Арт. 40006 / 40008

Mat.		ø 2.00–5.00	ø 6.00–12.00	ø 13.00–20.00	a _e	a _p
P1	V _c	60–80	60–80	60–80		
	f _z	0.010–0.020	0.015–0.070	0.060–0.110	0.5 × d1	1.5 × d1
P2	V _c	50–70	50–70	50–70		
	f _z	0.010–0.020	0.015–0.070	0.060–0.110	0.5 × d1	1.5 × d1
P3	V _c	40–60	40–60	40–60		
	f _z	0.010–0.020	0.015–0.060	0.050–0.090	0.4 × d1	1.5 × d1
M1	V _c	50–70	50–70	50–70		
	f _z	0.010–0.020	0.015–0.060	0.050–0.090	0.4 × d1	1.5 × d1
M2	V _c	40–60	40–60	40–60		
	f _z	0.005–0.150	0.010–0.050	0.040–0.080	0.3 × d1	1.5 × d1
K1	V _c	50–70	50–70	50–70		
	f _z	0.010–0.020	0.015–0.070	0.060–0.110	0.5 × d1	1.5 × d1
K2	V _c	40–60	40–60	40–60		
	f _z	0.010–0.020	0.015–0.060	0.050–0.090	0.4 × d1	1.5 × d1
N1	V _c					
	f _z					
N2	V _c					
	f _z					
N3	V _c					
	f _z					
N4	V _c					
	f _z					
N5	V _c					
	f _z					
N6	V _c					
	f _z					
N7	V _c					
	f _z					
N8	V _c					
	f _z					
S1	V _c	50–70	50–70	50–70		
	f _z	0.010–0.020	0.015–0.060	0.050–0.090	0.4 × d1	1.5 × d1
S2	V _c					
	f _z					
H1	V _c					
	f _z					
H2	V _c					
	f _z					
H3	V _c					
	f _z					
01	V _c					
	f _z					
02	V _c					
	f _z					
03	V _c					
	f _z					

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

Все указанные режимы резания являются расчетными и подлежат корректировке в процессе обработки

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

Режимы резания

Parametri di lavoro

Cutting data

Арт. 47000 / 47500

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

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

Все указанные режимы резания являются расчетными и подлежат корректировке в процессе обработки

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.

Der Webshop der Sphinx Werkzeuge AG

Интернет-магазин фирмы Sphinx (в разработке)
Il webshop della Sphinx Utensili srl
The webshop of Sphinx Tools Ltd.

Dank unseres Webshops können Sie sich nun unsere Produkte online ansehen und direkt bestellen (Bestellungen nur in der Schweiz).
Благодаря нашему интернет-магазину Вы можете заказывать и видеть наши продукты он-лайн (заказы только для Швейцарии)
Grazie al nostro webshop avete la possibilità di guardare ed ordinare i nostri prodotti online (ordinazioni solamente in Svizzera).
Thanks to our webshop you can have a look at our tools online and place an order directly (ordering only in Switzerland).

3

+0.10

0

Swissmade tools

Your partner

[Startseite](#)
[Abmelden](#)
[Ihr Konto](#)
[Warenkorb](#)
[AGB](#)

Kategorien

- Kleinstbohrer mit verstärktem Schaft
- Hochleistungsbohrer
- Power-Phoenix Hochleistungsbohrer
- Spiralbohrer mit zylindrischem Schaft
- Bohrreibahlen und Reibahlen
- Fräser
- Rundstab

Schnellsuche

Verwenden Sie Stichworte, um ein Produkt zu finden.
erweiterte Suche

Kleinstbohrer

M1,2

P1,2

S1

N1,5,6

Bitte wählen Sie den gewünschten Durchmesser:

0.03

Stückanzahl:

1

Preise nur, wenn eingeloggt

Art. Nr.	d1	l2	l3	l1	d2	Abstufung
51200	0.03	0.25	0.35	38	3.00	0.01

Zusätzliche Angaben:

Schnittdaten PDF:

Detaillierte Informationen:

Details

Zusatzangaben:

-

Art. 51200

VHM MD/SC

35°

130°

SPHINX NORM

Z 2

-6xd

Preise nur, wenn eingeloggt

pro Stück

Swiss made by

SPHINX

Sphinx Werkzeuge AG

Gewerbstrasse 1

CH-4552 Derendingen

Tel. +41 32 671 21 00

Fax +41 32 671 21 11

188

Swiss made by **SPHINX**

Notizen

Записи
Appunti
Notes



Записи
Appunti
NotesЗаписи
Appunti
Notes

Notizen
Записи
Appunti
Notes



Anwendungen

Применение

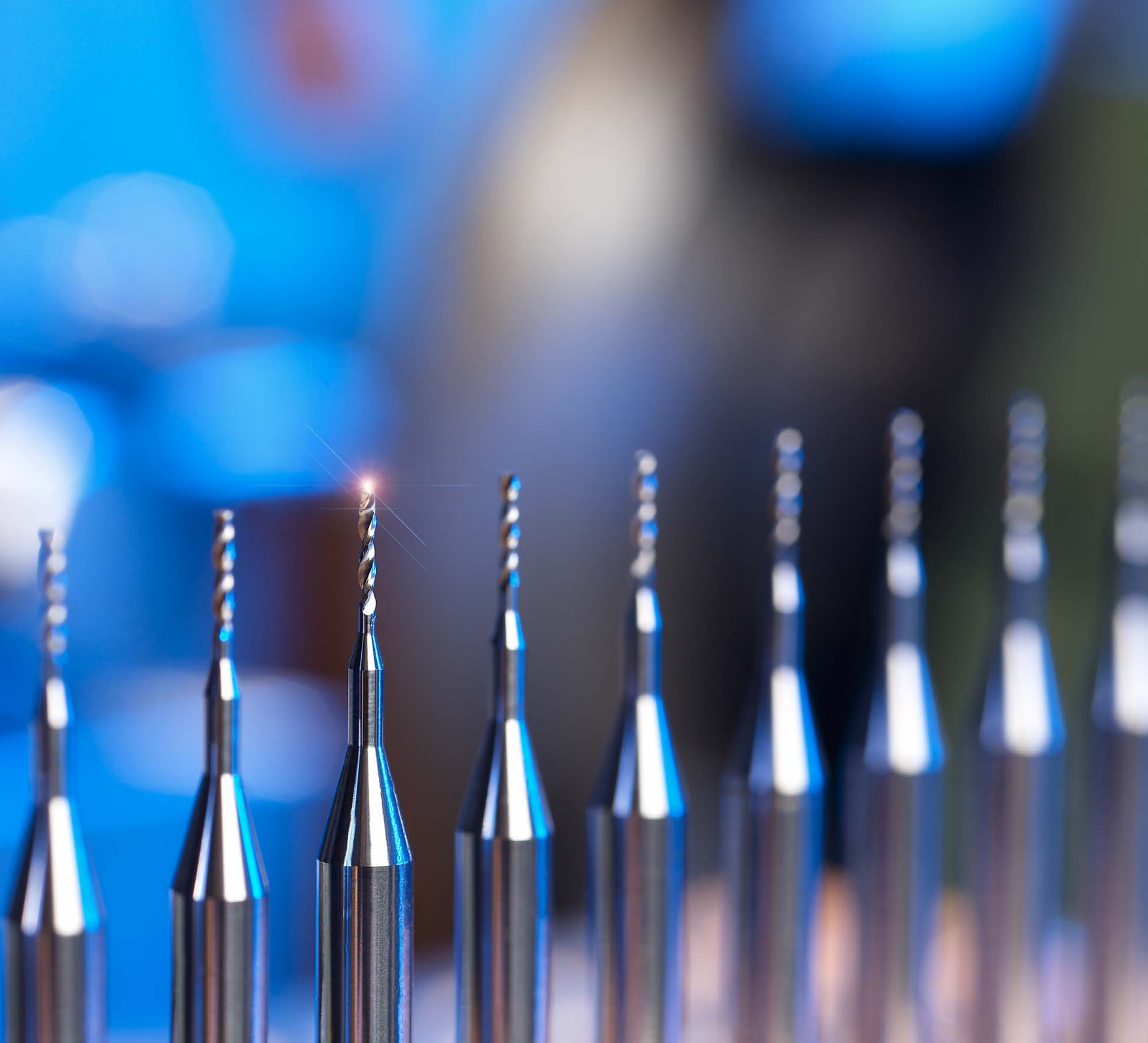
	Sackloch Глухое отверстие
	Sackloch mit Senkung Глухое отверстие с фаской
	Stufenbohrung Ступенчатое отверстие
	Gravierstichel flach Гравирование с плоскостью
	Gravierstichel rund Гравирование с радиусом
	Radius einstechen Радиусная плунжерная обработка
	Radius längs Радиусный паз
	Durchgangsbohrung Сквозное отверстие
	Durchgang mit Senkung Сквозное отверстие с фаской
	Mehrere Schichten Многослойный материал
	Querbohrung Пересекающиеся отверстия
	In Rundung Выпуклая поверхность
	In Schräge Поверхность под углом
	Kantenbruch 60° Фаска 60°
	Kantenbruch 90° Фаска 90°

	Kantenbruch 120° Фаска 120°
	Senkung 60° Зенкование 60°
	Senkung 90° Зенкование 90°
	Senkung 120° Зенкование 120°
	Senkung 130° Зенкование 130°
	Senkung 140° Зенкование 140°
	Senkung 90° – 140° Зенкование двойное 90° – 140°
	Einstecken Врезание
	Nuten normal Обработка паза по длине
	Nuten schräg Врезание под углом
	Schlichten Stirnseite Обработка поверхности
	Schlichten mit Umfang Обработка торца
	Schruppen Stirnseite Обработка поверхности черновая
	Zyklisch eckig Фрезерование под углом
	Zyklisch rund Циркулярная обработка

Werkstoffgruppen

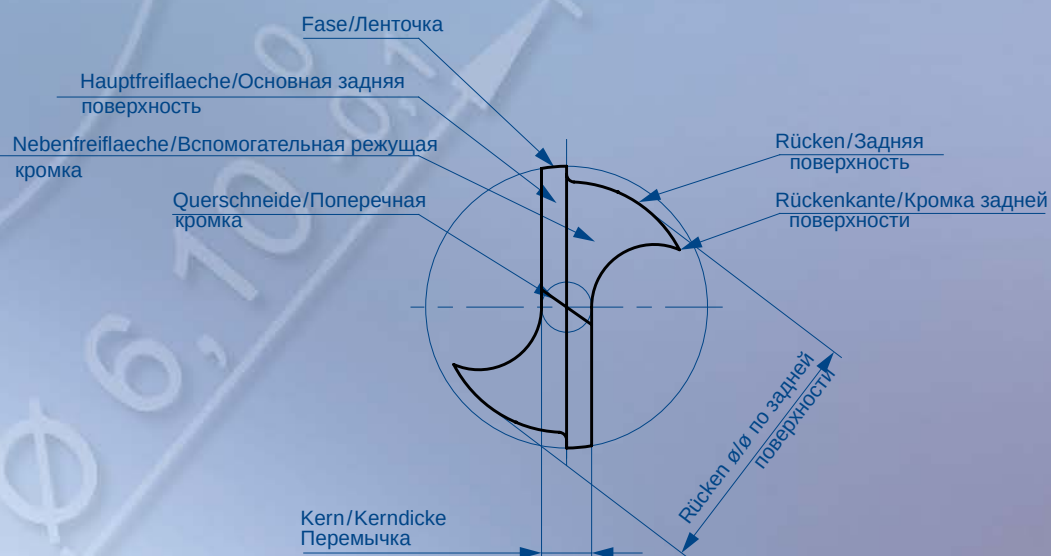
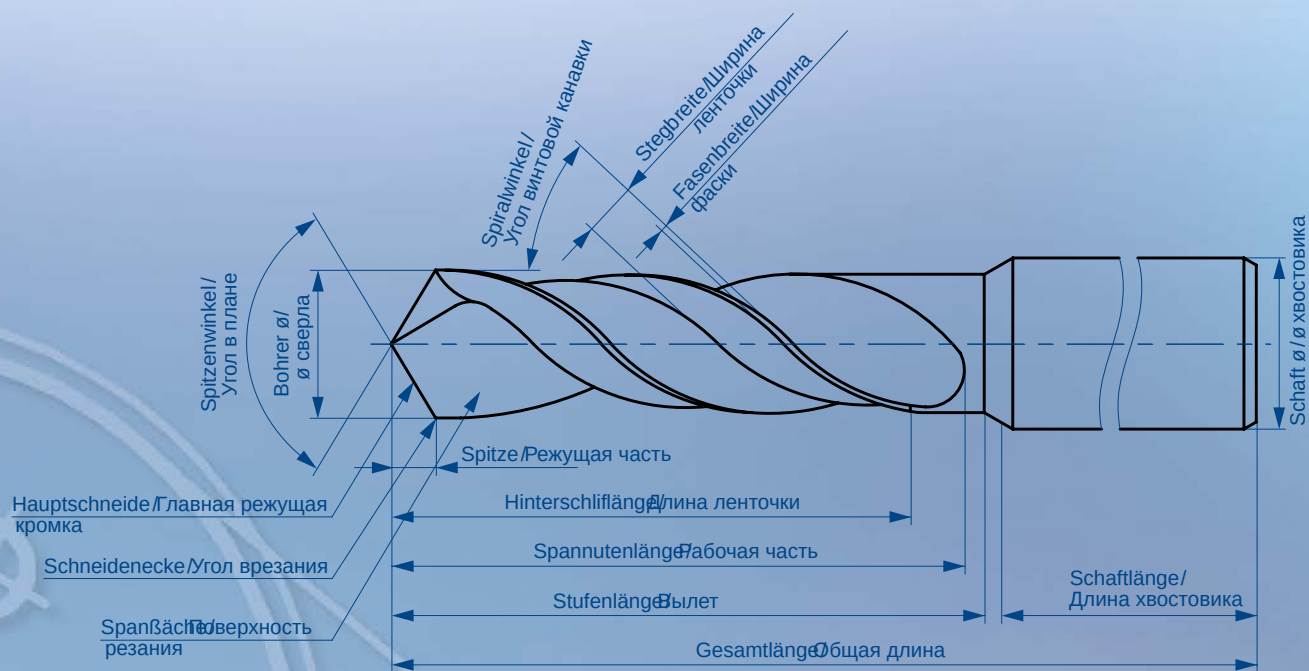
Обрабатываемые материалы по группам

		Material Материал	Прочность (Н/мм²) Твердость	Beispiel Примеры			Material Материал
P	P1	unlegierte Stähle, Stahlguss нелегированная сталь, литая сталь	bis up to 700 N/mm²	St37, St42, C22, GS38, St50, St60, C35, GS52	P	P1	unlegierte Stähle, Stahlguss нелегированная сталь, литая сталь
	P2	legierte Stähle легированная сталь	bis up to 700– 1000 N/mm²	St70, C45, GS62, 16MnCr5, 42CrMo4, 90MnCrV8, 100Cr6		P2	legierte Stähle легированная сталь
	P3	hochlegierte Stähle высоколегированная сталь	bis/up to 1400 N/mm²	S210Cr12, 34CrAlNi7		P3	hochlegierte Stähle высоколегированная сталь
M	M1	nichtrostender Stahl ferritische / martensitische ферритно/мартенситные нержавеющие стали			M	M1	nichtrostender Stahl ferritische / martensitische ферритно/мартенситные нержавеющие стали
	M2	nichtrostender Stahl austenitisch аустенитные нержавеющие стали				M2	nichtrostender Stahl austenitisch аустенитные нержавеющие стали
K	K1	Grauguss серый чугун			K	K1	Grauguss серый чугун
	K2	Gusseisen mit Kugelgraphit ferritisch, perlitisch чугун с шаровидным графитом				K2	Gusseisen mit Kugelgraphit ferritisch, perlitisch чугун с шаровидным графитом
N	N1	Alu-Knetlegierungen чистый алюминий	bis до 350 N/mm²	Al99.5, AlMg1, AlCuSiPb, G-AlCu5Ni1,5, AlZnMgCu0,5	N	N1	Alu-Knetlegierungen чистый алюминий
	N2	Alu-Gusslegierung <10% Si алюмо-кремниевые сплавы <10% Si	bis до 300 N/mm²	G-AlCu4TiMg, G-AlSi7Mg, G-AlSi9Mg, G-AlSi10Mg, G-AlSi12		N2	Alu-Gusslegierung <10% Si алюмо-кремниевые сплавы <10% Si
	N3	Alu-Gusslegierung >10% Si алюмо-кремниевые сплавы >10% Si	bis до 450 N/mm²	G-AlSi17Cu4, G-AlSi21CuNiMg		N3	Alu-Gusslegierung >10% Si алюмо-кремниевые сплавы >10% Si
	N4	Magnesiumlegierungen Магний и его сплавы				N4	Magnesiumlegierungen Магний и его сплавы
	N5	Kupfer und Kupferlegierungen kurzspanend Медь и медные сплавы, короткая стружка				N5	Kupfer und Kupferlegierungen kurzspanend Медь и медные сплавы, короткая стружка
	N6	Kupfer und Kupferlegierungen langspanend Медь и медные сплавы, длинная стружка				N6	Kupfer und Kupferlegierungen langspanend Медь и медные сплавы, длинная стружка
	N7	Silber Серебро				N7	Silber Серебро
	N8	Gold Золото				N8	Gold Золото
S	S1	Titan, Titanlegierungen Титан и его сплавы	über свыше 700 N/mm²	Ti6Al4V, Ti-4Al-4Mo-2Sn	S	S1	Titan, Titanlegierungen Титан и его сплавы
	S2	Warmfeste Legierungen Ni- oder Co-Basis Ni/Co жаропрочные сплавы				S2	Warmfeste Legierungen Ni- oder Co-Basis Ni/Co жаропрочные сплавы
H	H1	gehärtete Stähle, 50– 55 HRC закаленные стали 50– 55 HRC			H	H1	gehärtete Stähle, 50– 55 HRC закаленные стали 50– 55 HRC
	H2	gehärtete Stähle, 55– 60 HRC закаленные стали 55– 60 HRC				H2	gehärtete Stähle, 55– 60 HRC закаленные стали 55– 60 HRC
	H3	gehärtete Stähle, > 60 HRC закаленные стали > 60 HRC				H3	gehärtete Stähle, > 60 HRC закаленные стали > 60 HRC
O	O1	Thermoplaste, Duroplaste ohne abrasive Füllstoffe Термо-/ дуропласты без абразивного наполнителя			O	O1	Thermoplaste, Duroplaste ohne abrasive Füllstoffe Термо-/ дуропласты без абразивного наполнителя
	O2	Kunststoffe Faserverstärkt Оргстекло, Стеклотекстолит				O2	Kunststoffe Faserverstärkt Оргстекло, Стеклотекстолит
	O3	Graphit Графит		EDM36		O3	Graphit Графит



Spiralbohrer

Спиральное сверло



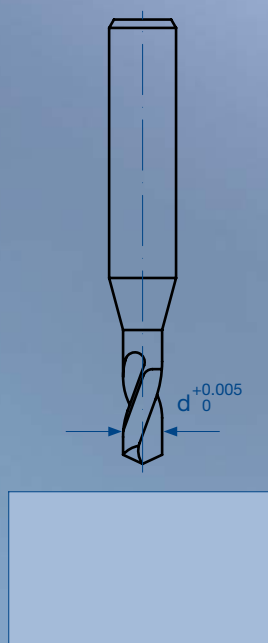
Bearbeitungsverfahren Mikrobohren

Процесс микросверления

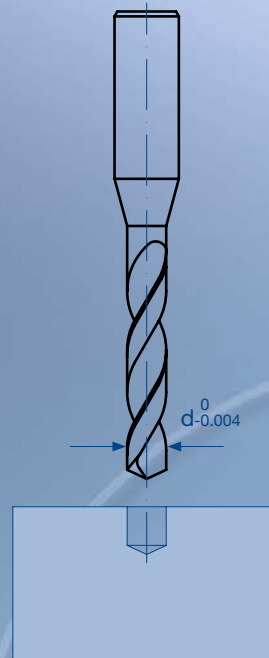
Zentrier- oder Pilotbohrung
wird bei Bohr- $\varnothing < 1.00$ mm empfohlen.

Для отверстий $\varnothing < 1.00$ mm
рекомендуется центровочное или
пилотное отверстие.

Art. 56033 – $\varnothing 0.50$



Art. 51200 – $\varnothing 0.50$



Tieflochbohrzyklus für
langspanende Werkstoffe

Глубокое сверление материалов со
сливной стружкой



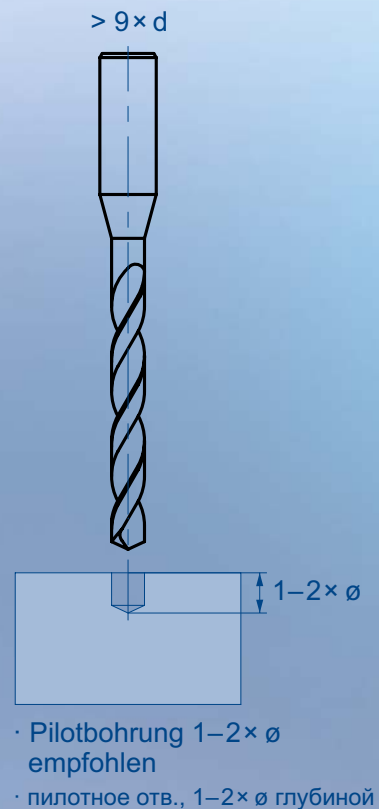
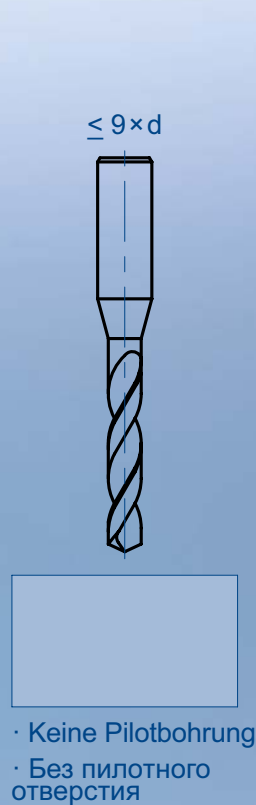
Entspänen
Цикл отводов

Zentrierbohren

Центрование

Saubere Eintrittsfläche

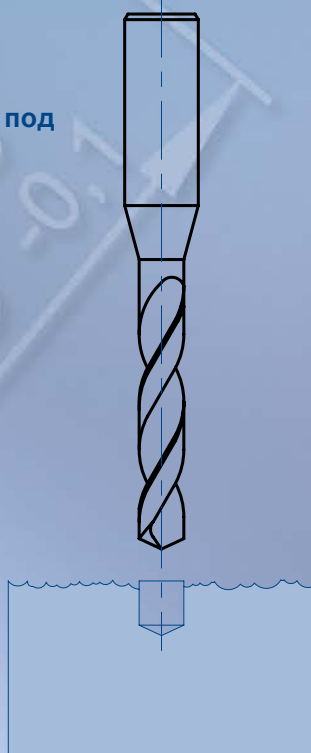
Чистая поверхность для входа сверла



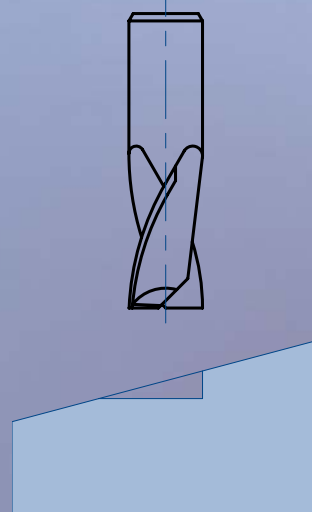
Zentrieren auf rauer/schräger Eintrittsfläche

Центрование на неровной поверхности или на поверхности под углом

Pilotbohrung/Пилотное отв.



Fräsen einer Fläche/
Фрезерование плоскости

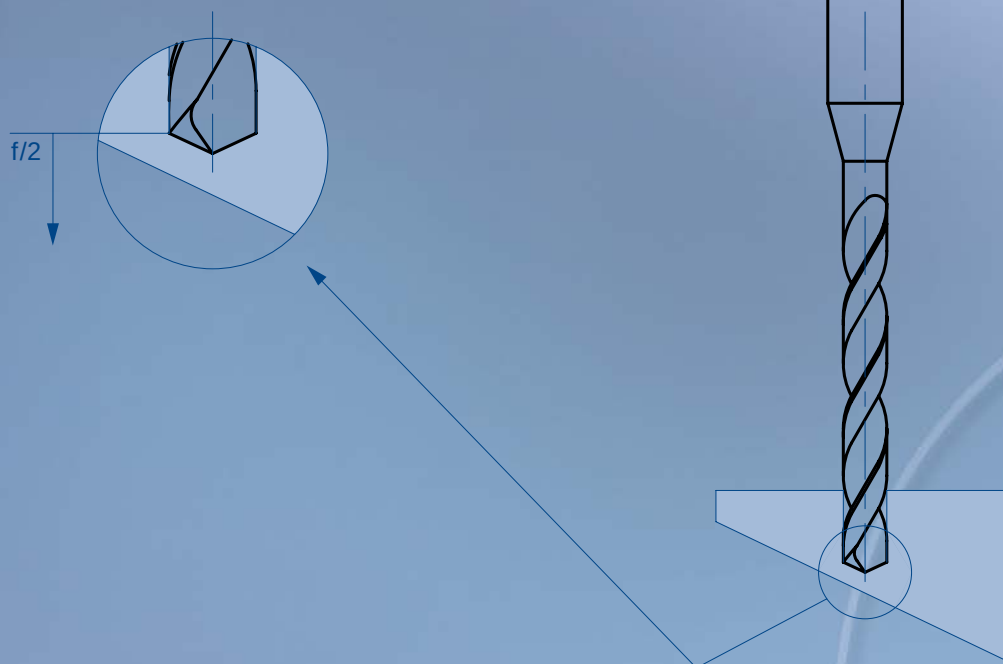


Bohreraustritt und Kühlung

Выход сверла и СОЖ

Bohreraustritt in schräger Fläche/Выход сверла на угловой поверхности

Vorschub reduzieren/СНИЗИТЬ ПОДАЧУ!

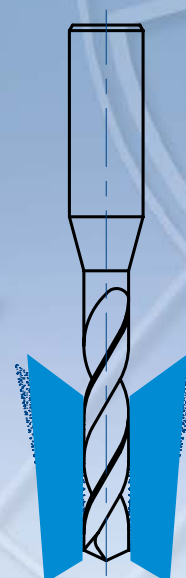


Kühlung/СОЖ

$\leq 5 \times d$ мин. 10 бар
 $> 6 \times d$ мин. 20 бар



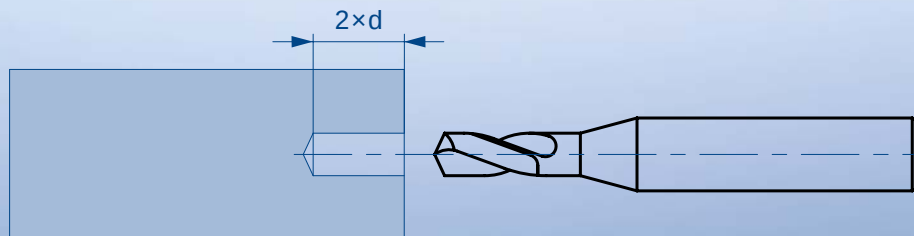
$\leq 5 \times d$



Bearbeitungsverfahren Tieflochbohren

Schritt für Schritt

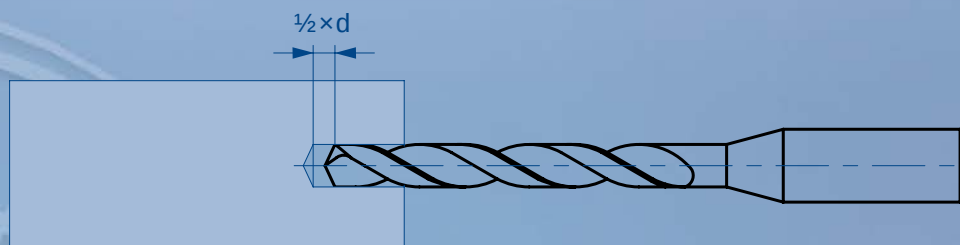
Глубокое сверление, шаг за шагом



< $\varnothing$ 3.00mm Art. 56033
 $\geq$ $\varnothing$ 3.00mm Art. 50950

1. Pilotloch bohren

1. Сверление пилотного отверстия



n = макс. 500 об/мин
 v_f = 25%

2. Phoenix Bohrer bei langsamdrehender Spindel einführen.

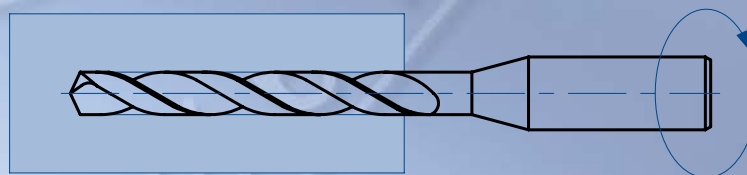
2. Введите сверло серии Phoenix в пилотное отверстие с пониженной подачей.



v_f = 100%
 v_c = 100%

3. Spindeldrehzahl auf Nennwert, Kühlmittel in Betrieb setzen, ohne entspannen auf gewünschte Tiefe bohren.

3. Увеличьте обороты до номинального значения, включите подачу СОЖ и сверлите за 1 проход на всю длину.



n = макс. 500 об/мин
 v_f = 25%

4. Nach Erreichen der gewünschten Tiefe die Spindeldrehzahl reduzieren, Kühlmittel ausschalten und Bohrer herausziehen.

4. После того, как отверстие просверлено, снизьте обороты, выключите СОЖ и выведите сверло из отверстия.



Notizen

Записи

Appunti

Notes

Notizen
Записи
Appunti
Notes



ОБЩЕСТВО С ОГРАНИЧЕННОЙ ОТВЕТСТВЕННОСТЬЮ

“ДВЛ - Инжиниринг”

Наши координаты:

Россия, г. Москва, ул. Новгородская, д. 1, стр.Г, офис Г213

Тел.: (495) 585-0665, 585-5465

Тел./факс: (495) 223-4039

e-mail: info@dwl-e.ru

[Http://www.dwl-e.ru](http://www.dwl-e.ru)

Региональный дистрибьютор: