



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

SPHINX
 **Swissmade tools**
Your partner 

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

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

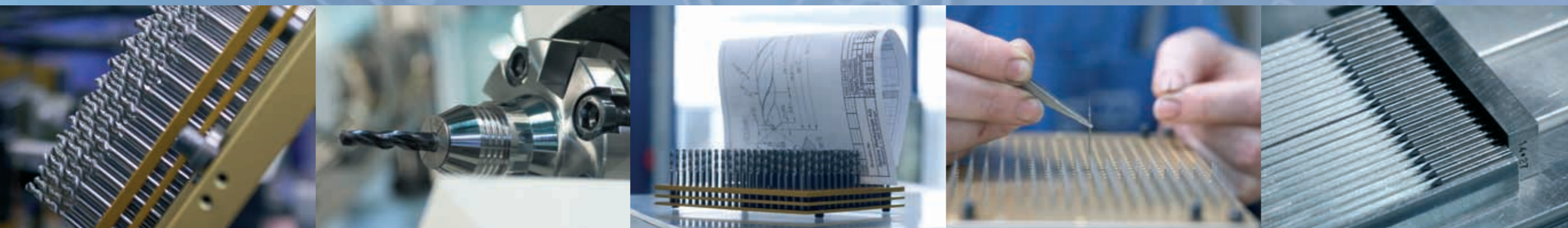
Grâce à notre proximité avec la clientèle et à notre savoir-faire, nous résolvons des tâches complexes, offrons des solutions souvent uniques et contribuons ainsi largement au succès de nombreuses d'entreprises de renom. Les exigences croissantes du marché sont notre défi quotidien!

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.

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





Mikrobohren ≤ ø 3.00 mm

Micro perçage ≤ ø 3.00 mm

Micro foratura ≤ ø 3.00 mm

Micro drilling ≤ ø 3.00 mm

4

Mikrofräsen ≤ ø 3.00 mm

Micro fraisage ≤ ø 3.00 mm

Micro fresatura ≤ ø 3.00 mm

Micro milling ≤ ø 3.00 mm

42

Bohren – Reiben

Perçage – Alesage

Forare – Alesare

Drilling – Reaming

78

Fräsen

Fraisage

Fresare

Milling

132

Sonderwerkzeuge

Outils spéciaux

Utensili speciali

Special tools

147

Anwendungstechnik / Schnittdaten

Application de la technologie / Données de coupe

Applicazione della tecnologia / Parametri di lavoro

Application technology / Cutting data

158

Mikrobohren ≤ Ø 3.00 mm




Micro perçage ≤ Ø 3.00 mm

Micro foratura ≤ Ø 3.00 mm

Micro drilling ≤ Ø 3.00 mm

* siehe Legende S. 192 + 193
see legend p. 192 + 193

✓ hervorragend / outstanding
• geeignet / able

| | Artikel Article | Durchmesser-Bereich Diameter range | Abstufung Increments | Bohrtiefe Cutting length | Spitzen- winkel Point angle | Spiral- winkel Helix angle | Material | Werkstoffgruppe* Workpiece material* | | | | | | | Anwendung* Application* | Seite Page |
|--|--------------------|---------------------------------------|-------------------------|-----------------------------|-----------------------------------|----------------------------------|--|---|---|---|---|---|---|---|---|---------------|
| | | | | | | | | P | M | K | S | N | H | O | | |
| Mikro NC-Anbohrer, Pilotbohrer mit verstärktem Schaft ohne Innenkühlung Micro foret à pointer, foret de préperçage avec manche renforcé sans trou d'huile | | | | | | | Micro punta a centrare, punta per preforo con gambo rinforzato senza fori di lubrificazione Micro NC spotting drill, pilot drill with reinforced shank without internal coolant | | | | | | | | | |
|  | 50806 | 0.50 – 3.00 | 0.10 | | 60° +/- 1° | 20° | VHM / MD / SC | ✓ | ✓ | ✓ | • | ✓ | ✓ | ✓ |  | 9 |
|  | 50809 | 0.50 – 1.90 | 0.10 | | 90° +/- 1° | 20° | VHM / MD / SC | ✓ | ✓ | ✓ | • | ✓ | ✓ | ✓ |  | 10 |
|  | 56005 | 0.10 – 1.50 | 0.05 | 2 – 4×Ø | 130° | 20° | VHM / MD / SC | ✓ | • | ✓ | • | ✓ | ✓ | ✓ |  | 11 |
|  | 56030 | 0.10 – 1.00 | 0.01 | 2×Ø | 130° | 30° | VHM / MD / SC | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |  | 12 |
|  | 56033 | 0.03 – 2.00 | 0.01 | 2×Ø | 130° | 30° | VHM / MD / SC | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |  | 13 |
|  | 56036 | 0.40 – 3.00 | 0.05 | 2×Ø | 140° / 90° | 30° | VHM / MD / SC;AlCrN | ✓ | ✓ | ✓ | ✓ | ✓ | • | • |  | 15 |
|  | 16004 | 0.10 – 1.50 | 0.05 | 2 – 3×Ø | 130° | 20° | HSS-E | ✓ | • | ✓ | • | • | • | • |  | 16 |
| Mikrobohrer mit verstärktem Schaft ohne Innenkühlung Micro foret avec manche renforcé sans trou d'huile | | | | | | | Micro punta con gambo rinforzato senza fori di lubrificazione Micro drill with reinforced shank without internal coolant | | | | | | | | | |
|  | 50695 | 0.20 – 1.50 | 0.01 | 6×Ø | 118° | 30° | VHM / MD / SC | ✓ | • | ✓ | • | ✓ | • | • |  | 18 |
|  | 50699 | 0.05 – 2.00 | 0.01 | 6×Ø | 118° | 30° | VHM / MD / SC | ✓ | • | ✓ | • | ✓ | • | • |  | 19 |
|  | 51200 | 0.03 – 3.00 | 0.01 | 6×Ø | 130° | 35° | VHM / MD / SC | ✓ | ✓ | ✓ | ✓ | ✓ | • | • |  | 21 |
|  | 51201 | 0.20 – 3.00 | 0.01 | 6×Ø | 130° | 35° | VHM / MD / SC;TiAlN | ✓ | ✓ | ✓ | ✓ | ✓ | • | • |  | 23 |
|  | 50620 | 0.50 – 1.60 | 0.50 | 10 – 15×Ø | 118° | 25° | VHM / MD / SC | ✓ | • | ✓ | • | ✓ | • | • |  | 25 |
|  | 50621 | 0.20 – 3.00 | 0.01 | 12×Ø | 130° | 25° | VHM / MD / SC | ✓ | • | ✓ | • | ✓ | • | • |  | 26 |
|  | 50622 | 0.20 – 3.00 | 0.01 | 12×Ø | 130° | 25° | VHM / MD / SC;TiAlN | ✓ | • | ✓ | • | ✓ | • | • |  | 28 |
|  | 50941 | 0.50 – 2.40 | 0.05 | 6×Ø | 140° | 30° | VHM / MD / SC;TiAlN | ✓ | ✓ | ✓ | ✓ | ✓ | • | ✓ |  | 30 |
|  | 55652 | 0.20 – 2.99 | 0.01 | 5 × Ø | 140° | 35° | VHM / MD / SC | ✓ | • | ✓ | • | ✓ | • | • |  | 31 |
|  | 12604 | 0.05 – 3.175 | 0.01 | 5 – 8×Ø | 118° | 25° | HSS-E | ✓ | • | ✓ | • | • | • | • |  | 33 |
|  | 11654 | 0.50 – 2.30 | 0.05 | 6×Ø | 120° | 30° | HSS-E | ✓ | • | ✓ | • | • | • | • |  | 34 |

* siehe Legende S. 192+193
see legend p. 192+193

- ✓ hervorragend / outstanding
- geeignet / able

| | Artikel Article | Durchmesser-Bereich Diameter range | Abstufung Increments | Bohrtiefe Cutting length | Spitzen- winkel Point angle | Spiral- winkel Helix angle | Material | Werkstoffgruppe* Workpiece material* | | | | | | | | Anwendung* Application* | Seite Page |
|---|--------------------|---------------------------------------|-------------------------|-----------------------------|-----------------------------------|----------------------------------|-------------------------|--|---|---|---|---|---|---|---|----------------------------|---------------|
| | | | | | | | | P | M | K | S | N | H | O | | | |
| Mikro Hochleistungsbohrer Phoenix-TC2 mit verstärktem Schaft mit Innenkühlung Micro foret à grand rendement Phoenix-TC2 avec manche renforcé avec trou d'huile | | | | | | | | Micro punta ad alto rendimento Phoenix-TC2 con gambo rinforzato con fori di lubrificazione Micro high performance drill Phoenix-TC2 with reinforced shank with internal coolant | | | | | | | | | |
|  | 52903 | 1.00–3.00 | 0.05 | 3×Ø | 140° | 30° | VHM / MD / SC;AlTiCrN+S | ✓ | ✓ | ✓ | ✓ | ✓ | • | • |  | 36 | |
|  | 52906 | 1.00–3.00 | 0.05 | 6×Ø | 140° | 30° | VHM / MD / SC;AlTiCrN+S | ✓ | ✓ | ✓ | ✓ | ✓ | • | • |  | 37 | |
|  | 52909 | 1.00–3.00 | 0.10 | 9×Ø | 140° | 30° | VHM / MD / SC;AlTiCrN+S | ✓ | ✓ | ✓ | ✓ | ✓ | • | • |  | 38 | |
|  | 52912 | 1.00–3.00 | 0.10 | 12×Ø | 137° | 30° | VHM / MD / SC;AlCrTin | ✓ | ✓ | ✓ | ✓ | ✓ | • | • |  | 39 | |
|  | 52916 | 1.00–3.00 | 0.10 | 16×Ø | 137° | 30° | VHM / MD / SC;AlCrTin | ✓ | ✓ | ✓ | ✓ | ✓ | • | • |  | 40 | |

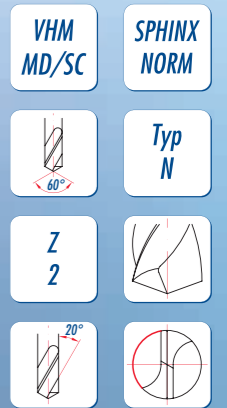
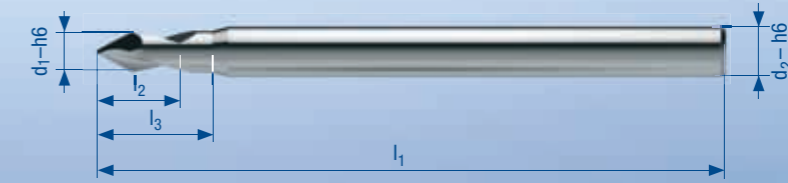
Mikro-NC-Anbohrer und Anfaser 60°

Art. 50806

Micro foret à pointer NC et chanfreiner 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°

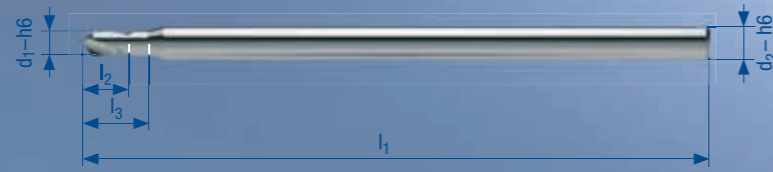
Micro foret à pointer NC 90°

Micro punta a centrare NC 90°

Micro NC spotting drill 90°

Art. 50809

P1-3 M1,2
K1,2 N1-5
N7,8 S1
01



VHM **SPHINX**
MD/SC **NORM**
Typ
N
Z
2

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

Vc → S./p. 160

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

Mikro-NC-Anbohrer 130°

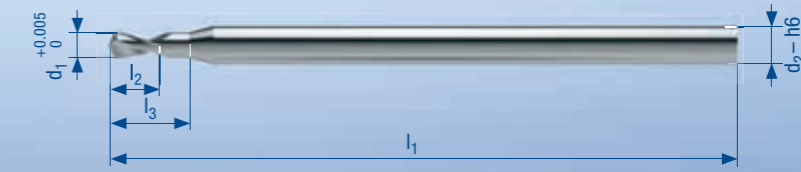
Micro foret à pointer NC 130°

Micro punta a centrare NC 130°

Micro NC spotting drill 130°

Art. 56005

P1-3 M1
K1,2 N1-5
N7,8 S1
01



VHM **SPHINX**
MD/SC **NORM**
d₁
+0.005
0
Z
2

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

Vc → S./p. 160

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

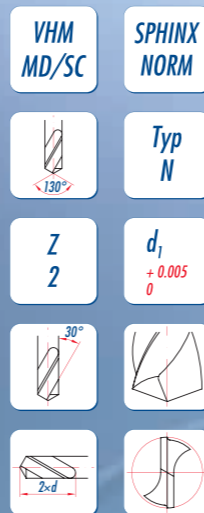
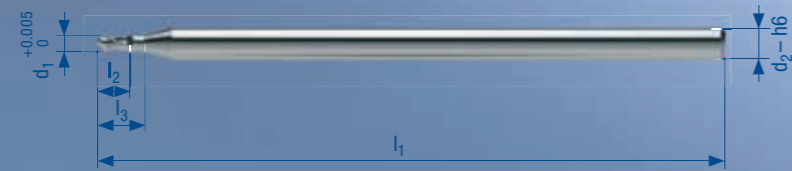
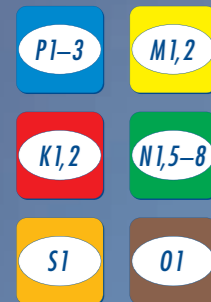
Mikrobohrer Spirec Plus 2 × d

Micro foret Spirec Plus 2 × d

Micro punta Spirec Plus 2 × d

Micro drill Spirec Plus 2 × d

Art. 56030



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



Vc → S./p. 161

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

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

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

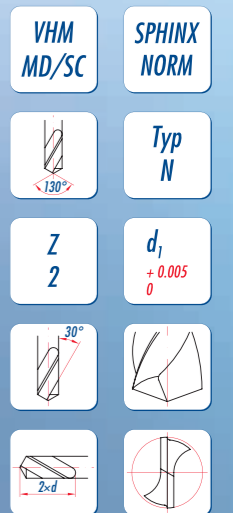
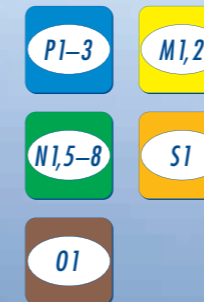
Mikro Pilotbohrer Plus 2 × d

Micro foret de préperçage Plus 2 × d

Micro punta per preforo Plus 2 × d

Micro pilot drill Plus 2 × d

Art. 56033



Vc → S./p. 161



| d ₁ | l ₂ | l ₃ | l ₁ | d ₂ |
|----------------|----------------|----------------|----------------|----------------|
| 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 |

| d ₁ | l ₂ | l ₃ | l ₁ | d ₂ |
|----------------|----------------|----------------|----------------|----------------|
| 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 |

| d ₁ | l ₂ | l ₃ | l ₁ | d ₂ |
|----------------|----------------|----------------|----------------|----------------|
| 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 |

| d ₁ | l ₂ | l ₃ | l ₁ | d ₂ |
|----------------|----------------|----------------|----------------|----------------|
| 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 |
| 1.2 | | | | |

| 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 |

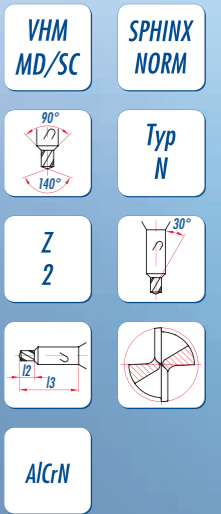
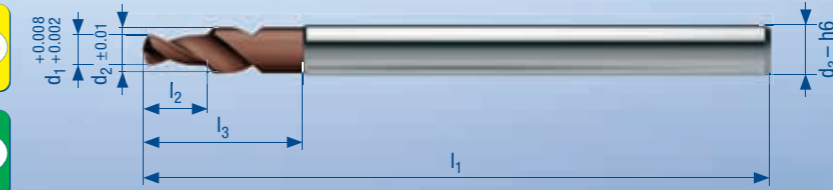
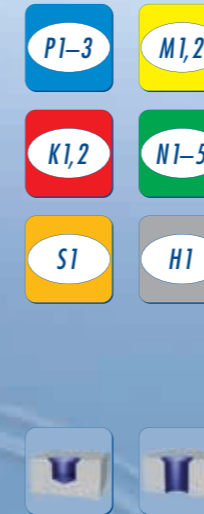
Mikro Pilot-Stufenbohrer Plus

Micro foret étagé de préperçage Plus

Micro punta a diametri multipli per preforo Plus

Micro pilot step drill Plus

Art. 56036



Vc → S./p. 161



| d ₁ | d ₂ | l ₂ | l ₃ | l ₁ | d ₃ |
|----------------|----------------|----------------|----------------|----------------|----------------|
| 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 |

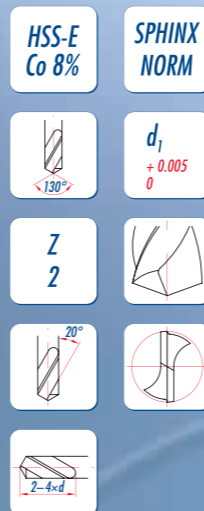
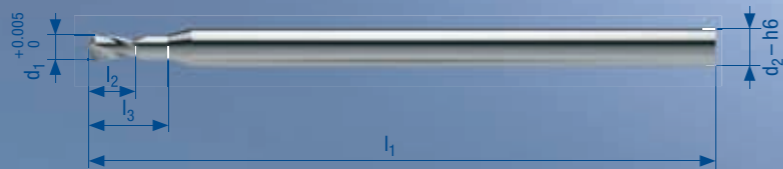
| d ₁ | d ₂ | l ₂ | l ₃ | l ₁ | d ₃ |
|----------------|----------------|----------------|----------------|----------------|----------------|
| mm | mm | mm | mm | mm | mm |
| 2.25 | 3.40 | 4.50 | 12.00 | 50 | 4.00 |
| 2.30 | 3.40 | 4.60 | 12.00 | 50 | 4.00 |
| 2.35 | 3.40 | 4.70 | 12.00 | 50 | 4.00 |
| 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 Art. 16004

Micro foret de préperçage Spirec Plus en HSS-E

Micro punta per preforo Spirec Plus in HSS-E

Micro Pilot drill Spirec Plus in HSS-E



In Packungen zu 10 Stück
En boîtes de 10 pièces
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 |



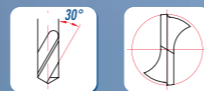
Mikrobohrer Spirec Plus 6 × d

Micro foret Spirec Plus 6 × d

Micro punta Spirec Plus 6 × d

Micro drill Spirec Plus 6 × d

Art. 50695



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

Vc → S./p. 162



| d ₁ | l ₂ | l ₃ | l ₁ | d ₂ |
|----------------|----------------|----------------|----------------|----------------|
| mm | mm | mm | mm | mm |
| 0.20 | 1.50 | 1.80 | 30 | 1.00 |
| 0.21 | 1.50 | 1.80 | 30 | 1.00 |
| 0.22 | 1.50 | 1.80 | 30 | 1.00 |
| 0.23 | 1.50 | 1.80 | 30 | 1.00 |
| 0.24 | 1.50 | 1.80 | 30 | 1.00 |
| 0.25 | 1.90 | 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 | l ₂ | l ₃ | l ₁ | d ₂ |
|----------------|----------------|----------------|----------------|----------------|
| mm | mm | mm | mm | mm |
| 0.58 | 3.60 | 4.50 | 30 | 1.00 |
| 0.59 | 3.60 | 4.50 | 30 | 1.00 |
| 0.60 | 3.60 | 4.50 | 30 | 1.00 |
| 0.61 | 3.90 | 5.00 | 30 | 1.00 |
| 0.62 | 3.90 | 5.00 | 30 | 1.00 |
| 0.63 | 3.90 | 5.00 | 30 | 1.00 |
| 0.64 | 3.90 | 5.00 | 30 | 1.00 |
| 0.65 | 3.90 | 5.00 | 30 | 1.00 |
| 0.66 | 3.90 | 5.00 | 30 | 1.00 |
| 0.67 | 3.90 | 5.00 | 30 | 1.00 |
| 0.68 | 4.50 | 5.60 | 30 | 1.00 |
| 0.69 | 4.50 | 5.60 | 30 | 1.00 |
| 0.70 | 4.50 | 5.60 | 30 | 1.00 |
| 0.71 | 4.50 | 5.60 | 30 | 1.00 |
| 0.72 | 4.50 | 5.60 | 30 | 1.00 |
| 0.73 | 4.50 | 5.60 | 30 | 1.00 |
| 0.74 | 4.50 | 5.60 | 30 | 1.00 |
| 0.75 | 4.50 | 5.60 | 30 | 1.00 |
| 0.76 | 5.00 | 6.30 | 30 | 1.00 |
| 0.77 | 5.00 | 6.30 | 30 | 1.00 |
| 0.78 | 5.00 | 6.30 | 30 | 1.00 |
| 0.79 | 5.00 | 6.30 | 30 | 1.00 |
| 0.80 | 5.00 | 6.30 | 30 | 1.50 |
| 0.81 | 5.00 | 6.30 | 30 | 1.50 |
| 0.82 | 5.00 | 6.30 | 30 | 1.50 |
| 0.83 | 5.00 | 6.30 | 30 | 1.50 |
| 0.84 | 5.00 | 6.30 | 30 | 1.50 |
| 0.85 | 5.00 | 6.30 | 30 | 1.50 |
| 0.86 | 5.70 | 7.10 | 30 | 1.50 |
| 0.87 | 5.70 | 7.10 | 30 | 1.50 |
| 0.88 | 5.70 | 7.10 | 30 | 1.50 |
| 0.89 | 5.70 | 7.10 | 30 | 1.50 |
| 0.90 | 5.70 | 7.10 | 30 | 1.50 |
| 0.91 | 5.70 | 7.10 | 30 | 1.50 |
| 0.92 | 5.70 | 7.10 | 30 | 1.50 |
| 0.93 | 5.70 | 7.10 | 30 | 1.50 |
| 0.94 | 5.70 | 7.10 | 30 | 1.50 |
| 0.95 | 5.70 | 7.10 | 30 | 1.50 |

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

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

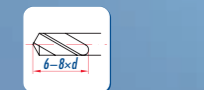
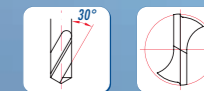
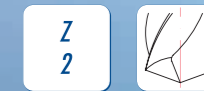
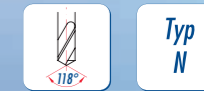
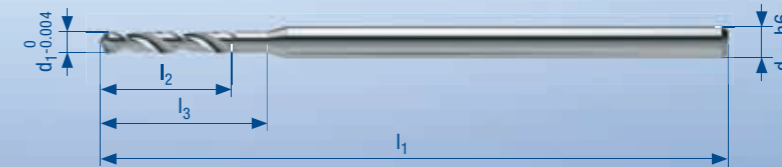
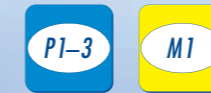
Mikrobohrer Spirec 6 × d

Micro foret Spirec 6 × d

Micro punta Spirec 6 × d

Micro drill Spirec 6 × d

Art. 50699



In Packungen zu 10 Stück
En boîtes de 10 pièces
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 | |

| 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 |

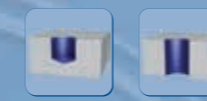
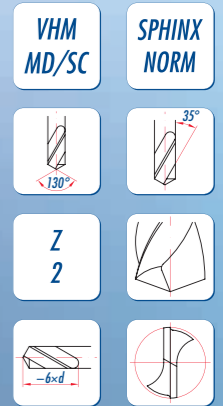
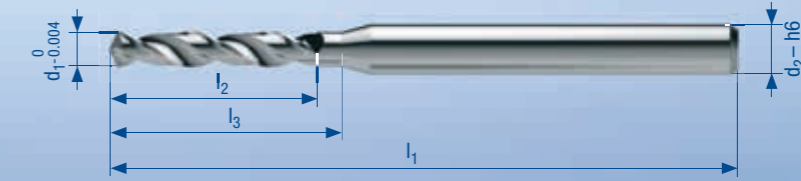
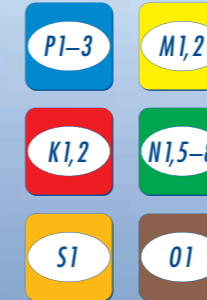
Mikrobohrer 6 x d

Micro foret 6 x d

Micro punta 6 x d

Micro drill 6 x d

Art. 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 |

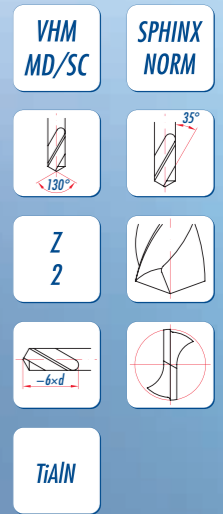
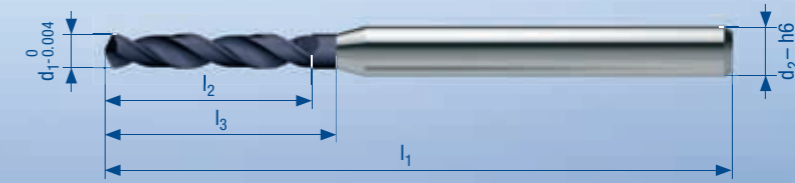
| d ₁ | l ₂ | l ₃ | l ₁ | d ₂ |
|----------------|----------------|----------------|----------------|----------------|
| mm | mm | mm | mm | mm |
| 1.55 | 11.20 | 13.40 | 38 | 3.00 |
| 1.56 | 11.20 | 13.40 | 38 | 3.00 |
| 1.57 | 11.20 | 13.40 | 38 | 3.00 |
| 1.58 | 11.20 | 13.40 | 38 | 3.00 |
| 1.59 | 11.20 | 13.40 | 38 | 3.00 |
| 1.60 | 11.20 | 13.40 | 38 | 3.00 |
| 1.61 | 11.20 | 13.40 | 38 | 3.00 |
| 1.62 | 11.20 | 13.40 | 38 | 3.00 |
| 1.63 | 11.20 | 13.40 | 38 | 3.00 |
| 1.64 | 11.20 | 13.40 | 38 | 3.00 |
| 1.65 | 11.20 | 13.40 | 38 | 3.00 |
| 1.66 | 11.20 | 13.40 | 38 | 3.00 |
| 1.67 | 11.20 | 13.40 | 38 | 3.00 |
| 1.68 | 11.20 | 13.40 | 38 | 3.00 |
| 1.69 | 11.20 | 13.40 | 38 | 3.00 |
| 1.70 | 11.20 | 13.40 | 38 | 3.00 |
| 1.71 | 11.20 | 13.40 | 38 | 3.00 |
| 1.72 | 11.20 | 13.40 | 38 | 3.00 |
| 1.73 | 11.20 | 13.40 | 38 | 3.00 |
| 1.74 | 11.20 | 13.40 | 38 | 3.00 |
| 1.75 | 11.20 | 13.40 | 38 | 3.00 |
| 1.76 | 11.20 | 13.40 | 38 | 3.00 |
| 1.77 | 11.20 | 13.40 | 38 | 3.00 |
| 1.78 | 11.20 | 13.40 | 38 | 3.00 |
| 1.79 | 11.20 | 13.40 | 38 | 3.00 |
| 1.80 | 11.20 | 13.40 | 38 | 3.00 |
| 1.81 | 11.20 | 13.40 | 38 | 3.00 |
| 1.82 | 11.20 | 13.40 | 38 | 3.00 |
| 1.83 | 11.20 | 13.40 | 38 | 3.00 |
| 1.84 | 11.20 | 13.40 | 38 | 3.00 |
| 1.85 | 11.20 | 13.40 | 38 | 3.00 |
| 1.86 | 11.20 | 13.40 | 38 | 3.00 |
| 1.87 | 11.20 | 13.40 | 38 | 3.00 |
| 1.88 | 11.20 | 13.40 | 38 | 3.00 |
| 1.89 | 11.20 | 13.40 | 38 | 3.00 |
| 1.90 | 11.20 | 13.40 | 38 | 3.00 |
| 1.91 | 11.20 | 13.40 | 38 | 3.00 |
| 1.92 | 11.20 | 13.40 | 38 | 3.00 |

| d ₁ | l ₂ | l ₃ | l ₁ | d ₂ |
|----------------|----------------|----------------|----------------|----------------|
| mm | mm | mm | mm | mm |
| 1.93 | 11.20 | 13.40 | 38 | 3.00 |
| 1.94 | 11.20 | 13.40 | 38 | 3.00 |
| 1.95 | 11.20 | 13.40 | 38 | 3.00 |
| 1.96 | 11.20 | 13.40 | 38 | 3.00 |
| 1.97 | 11.20 | 13.40 | 38 | 3.00 |
| 1.98 | 11.20 | 13.40 | 38 | 3.00 |
| 1.99 | 11.20 | 13.40 | 38 | 3.00 |
| 2.00 | 11.20 | 13.40 | 38 | 3.00 |
| 2.01 | 12.50 | 14.00 | 38 | 3.00 |
| 2.02 | 12.50 | 14.00 | 38 | 3.00 |
| 2.03 | 12.50 | 14.00 | 38 | 3.00 |
| 2.04 | 12.50 | 14.00 | 38 | 3.00 |
| 2.05 | 12.50 | 14.00 | 38 | 3.00 |
| 2.06 | 12.50 | 14.00 | 38 | 3.00 |
| 2.07 | 12.50 | 14.00 | 38 | 3.00 |
| 2.08 | 12.50 | 14.00 | 38 | 3.00 |
| 2.09 | 12.50 | 14.00 | 38 | 3.00 |
| 2.10 | 12.50 | 14.00 | 38 | 3.00 |
| 2.11 | 12.50 | 14.00 | 38 | 3.00 |
| 2.12 | 12.50 | 14.00 | 38 | 3.00 |
| 2.13 | 12.50 | 14.00 | 38 | 3.00 |
| 2.14 | 12.50 | 14.00 | 38 | 3.00 |
| 2.15 | 12.50 | 14.00 | 38 | 3.00 |
| 2.16 | 12.50 | 14.00 | 38 | 3.00 |
| 2.17 | 12.50 | 14.00 | 38 | 3.00 |
| 2.18 | 12.50 | 14.00 | 38 | 3.00 |
| 2.19 | 12.50 | 14.00 | 38 | 3.00 |
| 2.20 | 12.50 | 14.00 | 38 | 3.00 |
| 2.22 | 12.50 | 14.00 | 38 | 3.00 |
| 2.23 | 12.50 | 14.00 | 38 | 3.00 |
| 2.24 | 12.50 | 14.00 | 38 | 3.00 |
| 2.25 | 12.50 | 14.00 | 38 | 3.00 |
| 2.26 | 12.50 | 14.00 | 38 | 3.00 |
| 2.27 | 12.50 | 14.00 | 38 | 3.00 |
| 2.28 | 12.50 | 14.00 | 38 | 3.00 |
| 2.29 | 12.50 | 14.00 | 38 | 3.00 |
| 2.30 | 12.50 | 14.00 | 38 | 3.00 |

| d ₁ | l ₂ | l ₃ | l ₁ | d ₂ |
|----------------|----------------|----------------|----------------|----------------|
| mm | mm | mm | mm | mm |
| 2.31 | 12.50 | 14.00 | 38 | 3.00 |
| 2.32 | 12.50 | 14.00 | 38 | 3.00 |
| 2.33 | 12.50 | 14.00 | 38 | 3.00 |
| 2.34 | 12.50 | 14.00 | 38 | 3.00 |
| 2.35 | 12.50 | 14.00 | 38 | 3.00 |
| 2.36 | 12.50 | 14.00 | 38 | 3.00 |
| 2.37 | 12.50 | 14.00 | 38 | 3.00 |
| 2.38 | 12.50 | 14.00 | 38 | 3.00 |
| 2.39 | 12.50 | 14.00 | 38 | 3.00 |
| 2.40 | 12.50 | 14.00 | 38 | 3.00 |
| 2.41 | 12.50 | 14.00 | 38 | 3.00 |
| 2.42 | 12.50 | 14.00 | 38 | 3.00 |
| 2.43 | 12.50 | 14.00 | 38 | 3.00 |
| 2.44 | 12.50 | 14.00 | 38 | 3.00 |
| 2.45 | 12.50 | 14.00 | 38 | 3.00 |
| 2.46 | 12.50 | 14.00 | 38 | 3.00 |
| 2.47 | 12.50 | 14.00 | 38 | 3.00 |
| 2.48 | 12.50 | 14.00 | 38 | 3.00 |
| 2.49 | 12.50 | 14.00 | 38 | 3.00 |
| 2.50 | 14.00 | 17.00 | 38 | 3.00 |
| 2.51 | 14.00 | 17.00 | 38 | 3.00 |
| 2.52 | 14.00 | 17.00 | 38 | 3.00 |
| 2.53 | 14.00 | 17.00 | 38 | 3.00 |
| 2.54 | 14.00 | 17.00 | 38 | 3.00 |
| 2.55 | 14.00 | 17.00 | 38 | 3.00 |
| 2.56 | 14.00 | 17.00 | 38 | 3.00 |
| 2.57 | 14.00 | 17.00 | 38 | 3.00 |
| 2.58 | 14.00 | 17.00 | 38 | 3.00 |
| 2.59 | 14.00 | 17.00 | 38 | 3.00 |
| 2.60 | 14.00 | 17.00 | 38 | 3.00 |
| 2.61 | 14.00 | 17.00 | 38 | 3.00 |
| 2.62 | 14.00 | 17.00 | 38 | 3.00 |
| 2.63 | 14.00 | 17.00 | 38 | 3.00 |
| 2.64 | 14.00 | 17.00 | 38 | 3.00 |
| 2.65 | 14.00 | 17.00 | 38 | 3.00 |
| 2.66 | 14.00 | 17.00 | 38 | 3.00 |
| 2.67 | 14.00 | 17.00 | 38 | 3.00 |
| 2.68 | 14.00 | 17.00 | 38 | 3.00 |

| d ₁ | l ₂ | l ₃ | l ₁ | d ₂ |
|----------------|----------------|----------------|----------------|----------------|
| mm | mm | mm | mm | mm |
| 2.69 | 14.00 | 17.00 | 38 | 3.00 |
| 2.70 | 14.00 | 17.00 | 38 | 3.00 |
| 2.71 | 14.00 | 17.00 | 38 | 3.00 |
| 2.72 | 14.00 | 17.00 | 38 | 3.00 |
| 2.73 | 14.00 | 17.00 | 38 | 3.00 |
| 2.74 | 14.00 | 17.00 | 38 | 3.00 |
| 2.75 | 14.00 | 17.00 | 38 | 3.00 |
| 2.76 | 14.00 | 17.00 | 38 | 3.00 |
| 2.77 | 14.00 | 17.00 | 38 | 3.00 |
| 2.78 | 14.00 | 17.00 | 38 | 3.00 |
| 2.79 | 14.00 | 17.00 | 38 | 3.00 |
| 2.80 | 14.00 | 17.00 | 38 | 3.00 |
| 2.81 | 14.00 | 17.00 | 38 | 3.00 |
| 2.82 | 14.00 | 17.00 | 38 | 3.00 |
| 2.83 | 14.00 | 17.00 | 38 | 3.00 |
| 2.84 | 14.00 | 17.00 | 38 | 3.00 |
| 2.85 | 14.00 | 17.00 | 38 | 3.00 |
| 2.86 | 14.00 | 17.00 | 38 | 3.00 |
| 2.87 | 14.00 | 17.00 | 38 | 3.00 |
| 2.88 | 14.00 | 17.00 | 38 | 3.00 |
| 2.89 | 14.00 | 17.00 | 38 | 3.00 |
| 2.90 | 14.00 | 17.00 | 38 | 3.00 |
| 2.91 | 14.00 | 17.00 | 38 | 3.00 |
| 2.92 | 14.00 | 17.00 | 38 | 3.00 |
| 2.93 | 14.00 | 17.00 | 38 | 3.00 |
| 2.94 | 14.00 | 17.00 | 38 | 3.00 |
| 2.95 | 14.00 | 17.00 | 38 | 3.00 |
| 2.96 | 14.00 | 17.00 | 38 | 3.00 |
| 2.97 | 14.00 | 17.00 | 38 | 3.00 |
| 2.98 | 14.00 | 17.00 | 38 | 3.00 |
| 2.99 | 14.00 | 17.00 | 38 | 3.00 |
| 3.00 | 14.00 | 17.00 | 38 | 3.00 |

Mikrobohrer 6 x d
Micro foret 6 x d
Micro punta 6 x d
Micro drill 6 x d



Vc → S./p. 163

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

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

| d ₁ | l ₂ | l ₃ | l ₁ | d ₂ |
|----------------|----------------|----------------|----------------|----------------|
| mm | mm | mm | mm | mm |
| 1.72 | 11.20 | 13.40 | 38 | 3.00 |
| 1.73 | 11.20 | 13.40 | 38 | 3.00 |
| 1.74 | 11.20 | 13.40 | 38 | 3.00 |
| 1.75 | 11.20 | 13.40 | 38 | 3.00 |
| 1.76 | 11.20 | 13.40 | 38 | 3.00 |
| 1.77 | 11.20 | 13.40 | 38 | 3.00 |
| 1.78 | 11.20 | 13.40 | 38 | 3.00 |
| 1.79 | 11.20 | 13.40 | 38 | 3.00 |
| 1.80 | 11.20 | 13.40 | 38 | 3.00 |
| 1.81 | 11.20 | 13.40 | 38 | 3.00 |
| 1.82 | 11.20 | 13.40 | 38 | 3.00 |
| 1.83 | 11.20 | 13.40 | 38 | 3.00 |
| 1.84 | 11.20 | 13.40 | 38 | 3.00 |
| 1.85 | 11.20 | 13.40 | 38 | 3.00 |
| 1.86 | 11.20 | 13.40 | 38 | 3.00 |
| 1.87 | 11.20 | 13.40 | 38 | 3.00 |
| 1.88 | 11.20 | 13.40 | 38 | 3.00 |
| 1.89 | 11.20 | 13.40 | 38 | 3.00 |
| 1.90 | 11.20 | 13.40 | 38 | 3.00 |
| 1.91 | 11.20 | 13.40 | 38 | 3.00 |
| 1.92 | 11.20 | 13.40 | 38 | 3.00 |
| 1.93 | 11.20 | 13.40 | 38 | 3.00 |
| 1.94 | 11.20 | 13.40 | 38 | 3.00 |
| 1.95 | 11.20 | 13.40 | 38 | 3.00 |
| 1.96 | 11.20 | 13.40 | 38 | 3.00 |
| 1.97 | 11.20 | 13.40 | 38 | 3.00 |
| 1.98 | 11.20 | 13.40 | 38 | 3.00 |
| 1.99 | 11.20 | 13.40 | 38 | 3.00 |
| 2.00 | 11.20 | 13.40 | 38 | 3.00 |
| 2.01 | 12.50 | 14.00 | 38 | 3.00 |
| 2.02 | 12.50 | 14.00 | 38 | 3.00 |
| 2.03 | 12.50 | 14.00 | 38 | 3.00 |
| 2.04 | 12.50 | 14.00 | 38 | 3.00 |
| 2.05 | 12.50 | 14.00 | 38 | 3.00 |

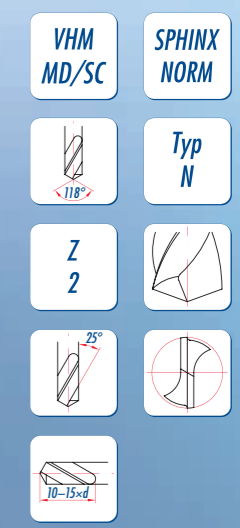
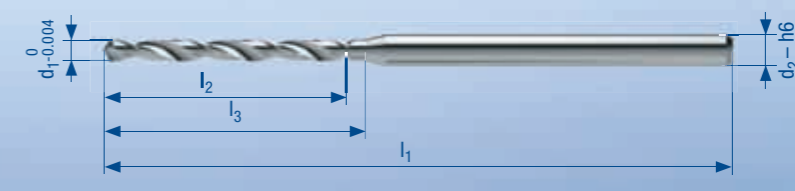
| d ₁ | l ₂ | l ₃ | l ₁ | d ₂ |
|----------------|----------------|----------------|----------------|----------------|
| mm | mm | mm | mm | mm |
| 2.06 | 12.50 | 14.00 | 38 | 3.00 |
| 2.07 | 12.50 | 14.00 | 38 | 3.00 |
| 2.08 | 12.50 | 14.00 | 38 | 3.00 |
| 2.09 | 12.50 | 14.00 | 38 | 3.00 |
| 2.10 | 12.50 | 14.00 | 38 | 3.00 |
| 2.11 | 12.50 | 14.00 | 38 | 3.00 |
| 2.12 | 12.50 | 14.00 | 38 | 3.00 |
| 2.13 | 12.50 | 14.00 | 38 | 3.00 |
| 2.14 | 12.50 | 14.00 | 38 | 3.00 |
| 2.15 | 12.50 | 14.00 | 38 | 3.00 |
| 2.16 | 12.50 | 14.00 | 38 | 3.00 |
| 2.17 | 12.50 | 14.00 | 38 | 3.00 |
| 2.18 | 12.50 | 14.00 | 38 | 3.00 |
| 2.19 | 12.50 | 14.00 | 38 | 3.00 |
| 2.20 | 12.50 | 14.00 | 38 | 3.00 |
| 2.21 | 12.50 | 14.00 | 38 | 3.00 |
| 2.22 | 12.50 | 14.00 | 38 | 3.00 |
| 2.23 | 12.50 | 14.00 | 38 | 3.00 |
| 2.24 | 12.50 | 14.00 | 38 | 3.00 |
| 2.25 | 12.50 | 14.00 | 38 | 3.00 |
| 2.26 | 12.50 | 14.00 | 38 | 3.00 |
| 2.27 | 12.50 | 14.00 | 38 | 3.00 |
| 2.28 | 12.50 | 14.00 | 38 | 3.00 |
| 2.29 | 12.50 | 14.00 | 38 | 3.00 |
| 2.30 | 12.50 | 14.00 | 38 | 3.00 |
| 2.31 | 12.50 | 14.00 | 38 | 3.00 |
| 2.32 | 12.50 | 14.00 | 38 | 3.00 |
| 2.33 | 12.50 | 14.00 | 38 | 3.00 |
| 2.34 | 12.50 | 14.00 | 38 | 3.00 |
| 2.35 | 12.50 | 14.00 | 38 | 3.00 |
| 2.36 | 12.50 | 14.00 | 38 | 3.00 |
| 2.37 | 12.50 | 14.00 | 38 | 3.00 |
| 2.38 | 12.50 | 14.00 | 38 | 3.00 |
| 2.39 | 12.50 | 14.00 | 38 | 3.00 |

| d ₁ | l ₂ | l ₃ | l ₁ | d ₂ |
|----------------|----------------|----------------|----------------|----------------|
| mm | mm | mm | mm | mm |
| 2.40 | 12.50 | 14.00 | 38 | 3.00 |
| 2.41 | 12.50 | 14.00 | 38 | 3.00 |
| 2.42 | 12.50 | 14.00 | 38 | 3.00 |
| 2.43 | 12.50 | 14.00 | 38 | 3.00 |
| 2.44 | 12.50 | 14.00 | 38 | 3.00 |
| 2.45 | 12.50 | 14.00 | 38 | 3.00 |
| 2.46 | 12.50 | 14.00 | 38 | 3.00 |
| 2.47 | 12.50 | 14.00 | 38 | 3.00 |
| 2.48 | 12.50 | 14.00 | 38 | 3.00 |
| 2.49 | 12.50 | 14.00 | 38 | 3.00 |
| 2.50 | 14.00 | 17.00 | 38 | 3.00 |
| 2.51 | 14.00 | 17.00 | 38 | 3.00 |
| 2.52 | 14.00 | 17.00 | 38 | 3.00 |
| 2.53 | 14.00 | 17.00 | 38 | 3.00 |
| 2.54 | 14.00 | 17.00 | 38 | 3.00 |
| 2.55 | 14.00 | 17.00 | 38 | 3.00 |
| 2.56 | 14.00 | 17.00 | 38 | 3.00 |
| 2.57 | 14.00 | 17.00 | 38 | 3.00 |
| 2.58 | 14.00 | 17.00 | 38 | 3.00 |
| 2.59 | 14.00 | 17.00 | 38 | 3.00 |
| 2.60 | 14.00 | 17.00 | 38 | 3.00 |
| 2.61 | 14.00 | 17.00 | 38 | 3.00 |
| 2.62 | 14.00 | 17.00 | 38 | 3.00 |
| 2.63 | 14.00 | 17.00 | 38 | 3.00 |
| 2.64 | 14.00 | 17.00 | 38 | 3.00 |
| 2.65 | 14.00 | 17.00 | 38 | 3.00 |
| 2.66 | 14.00 | 17.00 | 38 | 3.00 |
| 2.67 | 14.00 | 17.00 | 38 | 3.00 |
| 2.68 | 14.00 | 17.00 | 38 | 3.00 |
| 2.69 | 14.00 | 17.00 | 38 | 3.00 |
| 2.70 | 14.00 | 17.00 | 38 | 3.00 |
| 2.71 | 14.00 | 17.00 | 38 | 3.00 |
| 2.72 | 14.00 | 17.00 | 38 | 3.00 |
| 2.73 | 14.00 | 17.00 | 38 | 3.00 |

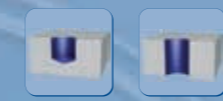
| d ₁ | l ₂ | l ₃ | l ₁ | d ₂ |
|----------------|----------------|----------------|----------------|----------------|
| mm | mm | mm | mm | mm |
| 2.74 | 14.00 | 17.00 | 38 | 3.00 |
| 2.75 | 14.00 | 17.00 | 38 | 3.00 |
| 2.76 | 14.00 | 17.00 | 38 | 3.00 |
| 2.77 | 14.00 | 17.00 | 38 | 3.00 |
| 2.78 | 14.00 | 17.00 | 38 | 3.00 |
| 2.79 | 14.00 | 17.00 | 38 | 3.00 |
| 2.80 | 14.00 | 17.00 | 38 | 3.00 |
| 2.81 | 14.00 | 17.00 | 38 | 3.00 |
| 2.82 | 14.00 | 17.00 | 38 | 3.00 |
| 2.83 | 14.00 | 17.00 | 38 | 3.00 |
| 2.84 | 14.00 | 17.00 | 38 | 3.00 |
| 2.85 | 14.00 | 17.00 | 38 | 3.00 |
| 2.86 | 14.00 | 17.00 | 38 | 3.00 |
| 2.87 | 14.00 | 17.00 | 38 | 3.00 |
| 2.88 | 14.00 | 17.00 | 38 | 3.00 |
| 2.89 | 14.00 | 17.00 | 38 | 3.00 |
| 2.90 | 14.00 | 17.00 | 38 | 3.00 |
| 2.91 | 14.00 | 17.00 | 38 | 3.00 |
| 2.92 | 14.00 | 17.00 | 38 | 3.00 |
| 2.93 | 14.00 | 17.00 | 38 | 3.00 |
| 2.94 | 14.00 | 17.00 | 38 | 3.00 |
| 2.95 | 14.00 | 17.00 | 38 | 3.00 |
| 2.96 | 14.00 | 17.00 | 38 | 3.00 |
| 2.97 | 14.00 | 17.00 | 38 | 3.00 |
| 2.98 | 14.00 | 17.00 | 38 | 3.00 |
| 2.99 | 14.00 | 17.00 | 38 | 3.00 |
| 3.00 | 14.00 | 17.00 | 38 | 3.00 |

Mikrobohrer Tipdrill 10 × d

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



In Packungen zu 10 Stück
En boîtes de 10 pièces
In contenitori da 10 pezzi
Packaged in quantities of 10 pieces
Vc → S./p. 164



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

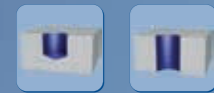
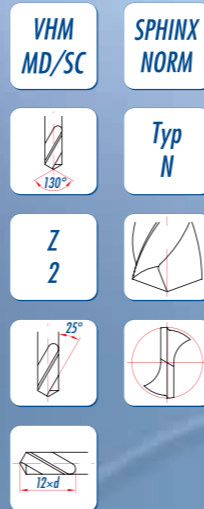
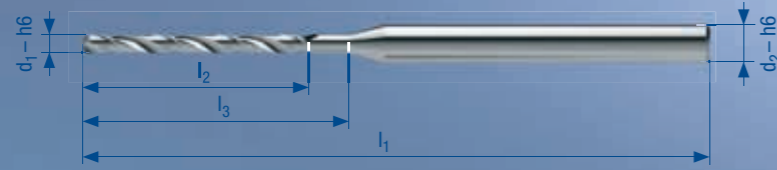
Mikrobohrer 12 x d

Microforet 12 x d

Micro punta 12 x d

Micro drill 12 x d

Art. 50621



Vc → S.p. 164

| d1 | l2 | l3 | l1 | d2 |
|------|------|------|----|------|
| 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 |

| d1 | l2 | l3 | l1 | d2 |
|------|-------|-------|----|------|
| 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 |

| d1 | l2 | l3 | l1 | d2 |
|------|-------|-------|----|------|
| 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 |

| d1 | l2 | l3 | l1 | d2 |
|------|-------|-------|----|------|
| 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 |

| d1 | l2 | l3 | l1 | d2 |
|------|-------|-------|----|------|
| mm | mm | mm | mm | 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 |

| d1 | l2 | l3 | l1 | d2 |
|------|-------|-------|----|------|
| mm | mm | mm | mm | 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 |

| d1 | l2 | l3 | l1 | d2 |
|------|-------|-------|----|------|
| mm | mm | mm | mm | mm |
| 2.40 | 28.80 | 32.00 | 65 | 3.00 |
| 2.41 | 28.90 | | | |

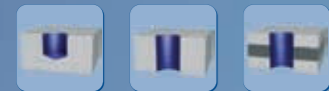
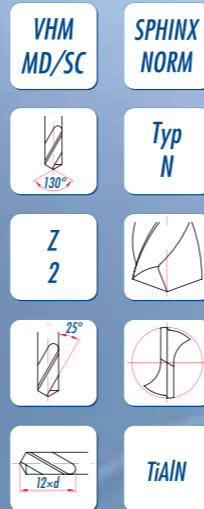
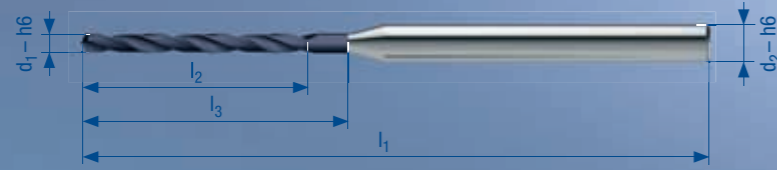
Mikrobohrer 12 x d

Microforet 12 x d

Micro punta 12 x d

Micro drill 12 x d

Art. 50622



Vc → S.p. 164

| d1 | l2 | l3 | l1 | d2 |
|------|------|------|----|------|
| 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 |

| d1 | l2 | l3 | l1 | d2 |
|------|-------|-------|----|------|
| 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 |

| d1 | l2 | l3 | l1 | d2 |
|------|-------|-------|----|------|
| 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 |

| d1 | l2 | l3 | l1 | d2 |
|------|-------|-------|----|------|
| 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 |

| d1 | l2 | l3 | l1 | d2 |
|------|-------|-------|----|------|
| mm | mm | mm | mm | 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 |

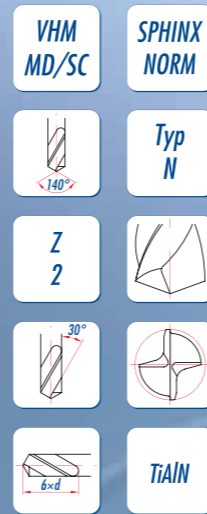
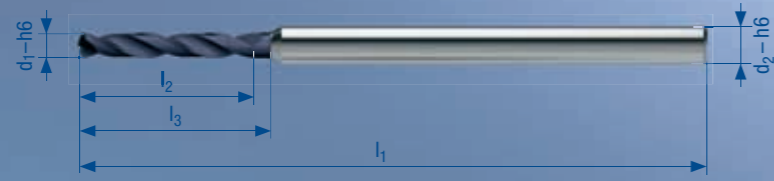
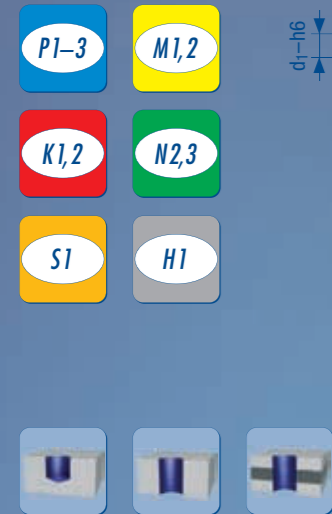
| d1 | l2 | l3 | l1 | d2 |
|------|-------|-------|----|------|
| mm | mm | mm | mm | mm |
| 2.06 | 24.70 | 28.00 | 60 | 3.00 |
| 2.07 | 24.80 | 28.00 | 60 | 3.00 |
| 2.08 | 25.00 | 28.00 | 60 | 3.00 |
| 2.09 | 25.10 | 28.50 | 60 | 3.00 |
| 2.10 | 25.20 | 28.50 | 60 | 3.00 |
| 2.11 | 24.40 | 28.50 | 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 |

| d1 | l2 | l3 | l1 | d2 |
|------|-------|-------|----|------|
| mm | mm | mm | mm | mm |
| 2.40 | 28.80 | 32.00 | 65 | 3.00 |
| 2.41 | 28.90 | 33.00 | | |

Mikro Hochleistungsbohrer 6 × d

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

Art. 50941



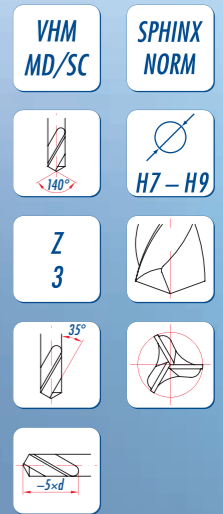
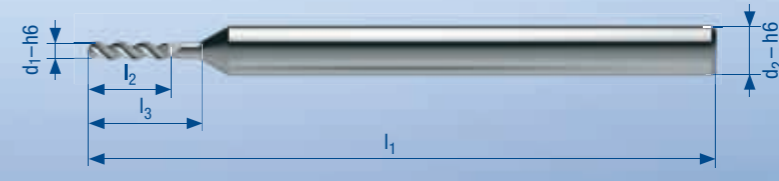
Ohne Innenkühlung
 Sans trou d'huile
 Senza fori di lubrificazione
 Without internal coolant
 Vc → S./p. 165

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

Mikrotricut 5 × d

Microtricut 5 × d
 Microtricut 5 × d
 Microtricut 5 × d

Art. 55652



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 |

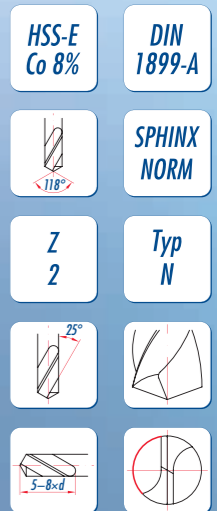
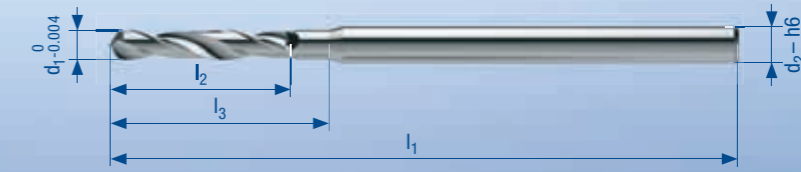
Mikrobohrer Spirec 6 × d aus HSS-E

Micro foret Spirec 6 × d en HSS-E

Micro punta Spirec 6 × d in HSS-E

Micro drill Spirec 6 × d in HSS-E

Art. 12604



In Packungen zu 10 Stück
En boîtes de 10 pièces
In contenitori da 10 pezzi
Packaged 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 | | | | |

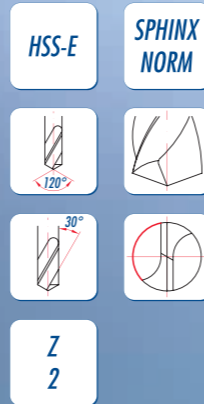
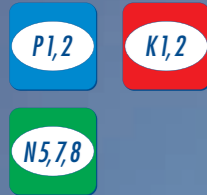
Juwelierbohrer 6 × d aus HSS-E

Foret pour la joaillerie 6 × d en HSS-E

Punta per gioielleria 6 × d in HSS-E

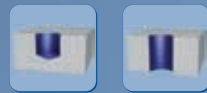
Jeweller drill 6 × d in HSS-E

Art. 11654



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

Vc → S./p. 166

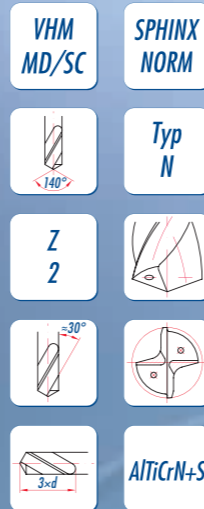
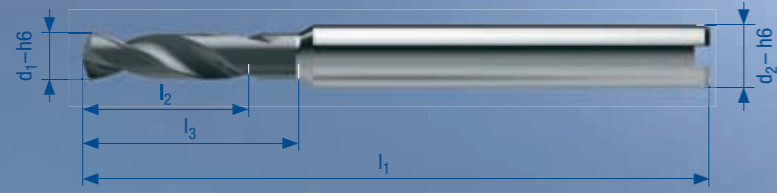
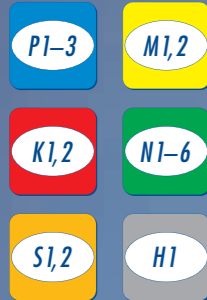


| d ₁ mm | l ₂ mm | l ₃ mm | l ₁ mm | d ₂ mm |
|----------------------|----------------------|----------------------|----------------------|----------------------|
| 0.50 | 4.00 | 4.50 | 25 | 1.50 |
| 0.55 | 4.00 | 4.50 | 25 | 1.50 |
| 0.60 | 4.50 | 5.00 | 25 | 1.50 |
| 0.65 | 5.00 | 5.50 | 25 | 1.50 |
| 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 Art. 52903

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



mit 2 Führungsfasen
 avec 2 listels
 con 2 pattini di guida
 with 2 guide margins
 Vc → S./p. 179

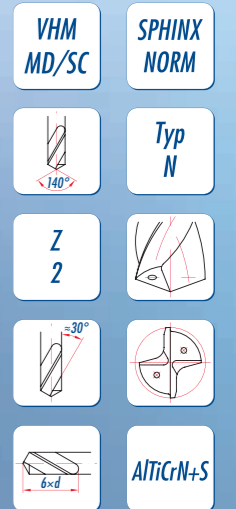
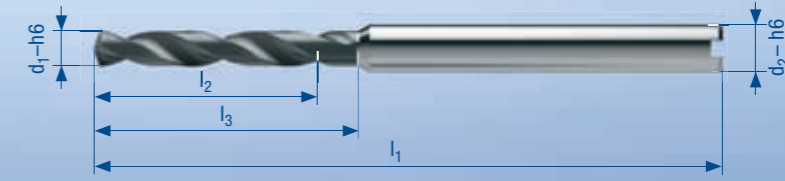


| d ₁ | l ₂ | l ₃ | l ₁ | d ₂ |
|----------------|----------------|----------------|----------------|----------------|
| mm | mm | mm | mm | mm |
| 1.00 | 3.00 | 5.00 | 38 | 3.00 |
| 1.05 | 3.15 | 5.25 | 38 | 3.00 |
| 1.10 | 3.30 | 5.50 | 38 | 3.00 |
| 1.15 | 3.45 | 5.50 | 38 | 3.00 |
| 1.20 | 3.60 | 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 |

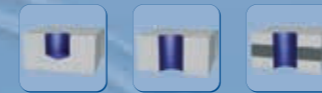
| d ₁ | l ₂ | l ₃ | l ₁ | d ₂ |
|----------------|----------------|----------------|----------------|----------------|
| mm | mm | mm | mm | mm |
| 2.90 | 8.70 | 12.00 | 50 | 3.00 |
| 2.95 | 8.85 | 12.00 | 50 | 3.00 |
| 3.00 | 9.00 | 12.50 | 50 | 3.00 |

Hochleistungsbohrer Phoenix-TC2 6 × d Art. 52906

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



mit 2 Führungsfasen
 avec 2 listels
 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 Art. 52909

Foret à grand rendement Phoenix-TC2 9 × d

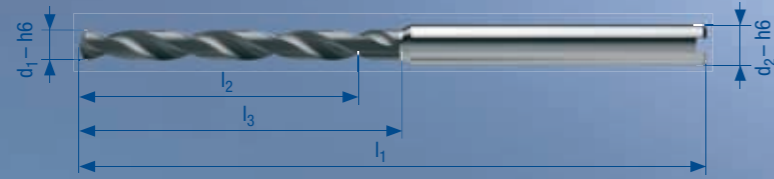
Punta ad alto rendimento Phoenix-TC2 9 × d

High performance drill Phoenix-TC2 9 × d

P1-3 M1,2

K1,2 N1-6

S1,2 H1



VHM MD/SC SPHINX NORM

Typ N

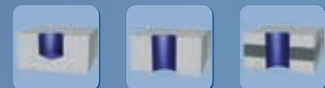
Z 2

30°

9 × d ALTiCrN+S

mit 2 Führungsfasen
avec 2 listels
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 Art. 52912

Foret à grand rendement Phoenix-TC2 12 × d

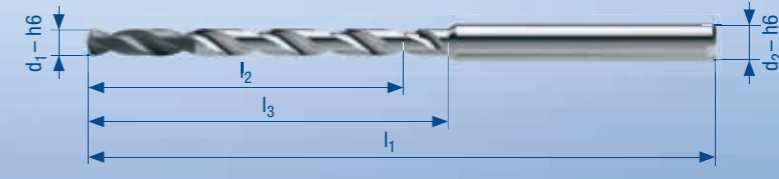
Punta ad alto rendimento Phoenix-TC2 12 × d

High performance drill Phoenix-TC2 12 × d

P1-3 M1,2

K1,2 N1-6

S1,2 H1



VHM MD/SC SPHINX NORM

Typ N

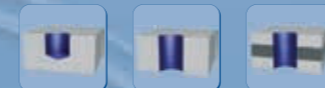
Z 2

30°

12 × d ALTiCrN

mit 2 Führungsfasen
avec 2 listels
con 2 pattini di guida
with 2 guide margins

Vc → S./p. 179



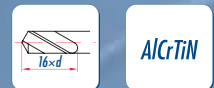
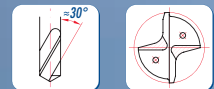
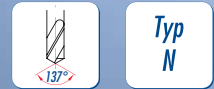
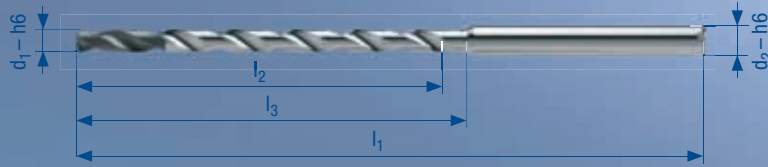
| d ₁ mm | l ₂ mm | l ₃ mm | l ₁ mm | d ₂ mm |
|----------------------|----------------------|----------------------|----------------------|----------------------|
| 1.00 | 12.00 | 14.00 | 50 | 3.00 |
| 1.10 | 13.20 | 15.50 | 50 | 3.00 |
| 1.20 | 14.40 | 16.50 | 50 | 3.00 |
| 1.30 | 15.60 | 17.50 | 50 | 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 |

Hochleistungsbohrer Phoenix-TC2 16 × d Art. 52916

Foret à grand rendement Phoenix-TC2 16 × d

Punta ad alto rendimento Phoenix-TC2 16 × d

High performance drill Phoenix-TC2 16 × d



mit 2 Führungsfasen
avec 2 listels
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




























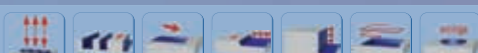



Micro fraise ≤ Ø 3.00 mm

Micro fresatura ≤ Ø 3.00 mm

Micro milling ≤ Ø 3.00 mm

* siehe Legende S. 192 + 193
see legend p. 192 + 193

✓ hervorragend / outstanding
• geeignet / able

| | Artikel Article | Durchmesser-Bereich Diameter range | Abstufung Increments | Bearbeitungs- tiefe Cutting length | Spitzen- winkel Point angle | Spiral- winkel Helix angle | Material | Werkstoffgruppe* Workpiece material* | | | | | | | | Anwendung* Application* | Seite Page |
|--|--------------------|---------------------------------------|-------------------------|---|-----------------------------------|----------------------------------|---|---|---|---|---|---|---|---|---|----------------------------|---------------|
| | | | | | | | | P | M | K | S | N | H | O | | | |
| Gravierfräser mit verstärktem Schaft Fraise à graver avec manche renforcé | | | | | | | Fresa per incidere con gambo rinforzato Engraving mill with reinforced shank | | | | | | | | | | |
|  | 70030 | 0.02–0.15 | 0.01 | | 30° | 0° | VHM/ MD/ SC | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |  | 47 | |
|  | 70040 | 0.02–0.15 | 0.01 | | 40° | 0° | VHM/ MD/ SC | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |  | 48 | |
|  | 70050 | 0.02–0.15 | 0.01 | | 50° | 0° | VHM/ MD/ SC | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |  | 49 | |
|  | 70060 | 0.02–0.15 | 0.01 | | 60° | 0° | VHM/ MD/ SC | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |  | 50 | |
|  | 70090 | 0.02–0.15 | 0.01 | | 90° | 0° | VHM/ MD/ SC | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |  | 51 | |
|  | 70130 | 0.04–0.10 | 0.01 | | 30° | 0° | VHM/ MD/ SC | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |  | 52 | |
|  | 70140 | 0.04–0.10 | 0.01 | | 40° | 0° | VHM/ MD/ SC | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |  | 53 | |
|  | 70150 | 0.04–0.10 | 0.01 | | 50° | 0° | VHM/ MD/ SC | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |  | 54 | |
|  | 70160 | 0.04–0.10 | 0.01 | | 60° | 0° | VHM/ MD/ SC | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |  | 55 | |
|  | 70190 | 0.04–0.10 | 0.01 | | 90° | 0° | VHM/ MD/ SC | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |  | 56 | |
| Mikrofräser mit verstärktem Schaft Micro fraise avec manche renforcé | | | | | | | Micro fresa con gambo rinforzato Micro end mill with reinforced shank | | | | | | | | | | |
|  | 72075 | 0.20–2.00 | 0.10 | 0.75×Ø | 30° | | VHM/ MD/ SC | ✓ | • | ✓ | • | ✓ | • | • |  | 58 | |
|  | 72150 | 0.10–2.00 | 0.10 | 1.5×Ø | 30° | | VHM/ MD/ SC | ✓ | • | ✓ | • | ✓ | • | • |  | 59 | |
|  | 42000 | 0.10–3.00 | 0.10 | 3×Ø | 30° | | VHM/ MD/ SC | ✓ | • | ✓ | • | ✓ | • | • |  | 60 | |
|  | 72500 | 0.30–2.50 | 0.10 | 5×Ø | 30° | | VHM/ MD/ SC | ✓ | • | ✓ | • | ✓ | • | • |  | 61 | |
|  | 72800 | 0.40–2.50 | 0.10 | 8×Ø | 30° | | VHM/ MD/ SC | ✓ | • | ✓ | • | ✓ | • | • |  | 62 | |
|  | 73130 | 0.30–2.90 | 0.10 | 1.3×Ø | 30° | | VHM/ MD/ SC | ✓ | • | ✓ | • | • | • | • |  | 63 | |
|  | 73200 | 0.30–2.90 | 0.10 | 2×Ø | 30° | | VHM/ MD/ SC | ✓ | • | ✓ | • | • | • | • |  | 64 | |
|  | 73300 | 0.30–2.90 | 0.10 | 3×Ø | 30° | | VHM/ MD/ SC | ✓ | • | ✓ | • | • | • | • |  | 65 | |

* siehe Legende S. 192 + 193
see legend p. 192 + 193

✓ hervorragend / outstanding
• geeignet / able

| | Artikel Article | Durchmesser-Bereich Diameter range | Abstufung Increments | Bearbeitungs- tiefe Cutting length | Spitzen- winkel Point angle | Spiral- winkel Helix angle | Material | Werkstoffgruppe* Workpiece material* | | | | | | | Anwendung* Application* | Seite Page |
|---|--------------------|---------------------------------------|-------------------------|---|-----------------------------------|----------------------------------|-----------------------|---|---|---|---|---|---|---|---|---------------|
| | | | | | | | | P | M | K | S | N | H | O | | |
|  | 43105 | 0.30– 3.00 | 0.10 | 1× \emptyset | | 35° | VHM/ MD/ SC; Cro-Nova | ✓ | ✓ | • | ✓ | ✓ | • | • |  | 66 |
|  | 43305 | 0.30– 3.00 | 0.10 | 3× \emptyset | | 35° | VHM/ MD/ SC; Cro-Nova | ✓ | ✓ | • | ✓ | ✓ | • | • |  | 67 |
| Radiusfräser mit verstärktem Schaft Fraise hémisphérique avec manche renforcé | | | | | | | | Fresa a raggio con gambo rinforzato Ball nose end mill with reinforced shank | | | | | | | | |
|  | 74075 | 0.20– 1.00 | 0.10 | 0.75× \emptyset | | 30° | VHM/ MD/ SC | ✓ | • | ✓ | • | ✓ | • | • |  | 69 |
|  | 74150 | 0.20– 2.00 | 0.10 | 1.5× \emptyset | | 30° | VHM/ MD/ SC | ✓ | • | ✓ | • | ✓ | • | • |  | 70 |
|  | 74300 | 0.20– 2.80 | 0.10 | 3× \emptyset | | 30° | VHM/ MD/ SC | ✓ | • | ✓ | • | ✓ | • | • |  | 71 |
| Entgrat- und 1 Zahnfräser mit verstärktem Schaft Fraise à angler et fraise 1 dent avec manche renforcé | | | | | | | | Fresa a smusso e fresa 1 dente con gambo rinforzato Chamfering tool and end mill 1 tooth with reinforced shank | | | | | | | | |
|  | 73000 | 0.50– 3.00 | 0.50 | | 90° | 0° | VHM/ MD/ SC | ✓ | • | ✓ | • | ✓ | | |  | 73 |
|  | 47330 | 0.30– 3.00 | 0.10 | | | 0° | VHM/ MD/ SC | • | • | • | | ✓ | | |  | 74 |
|  | 47344 | 0.50– 8.00 | 0.10 | | | 0° | VHM/ MD/ SC | • | • | • | | ✓ | | |  | 75 |

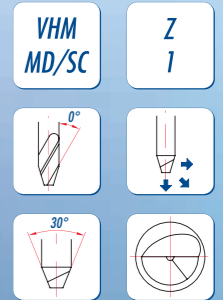
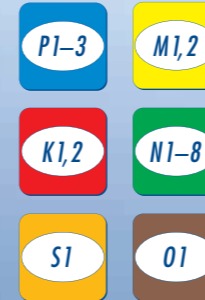
Gravierfräser 30°, mit Fläche

Fraise à graver 30°, avec plat

Fresa per incidere 30°, con faccia

Engraving mill 30°, with flat

Art. 70030



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 |



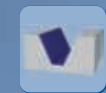
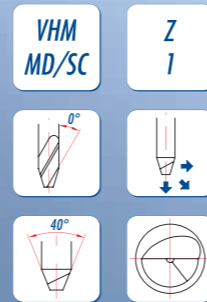
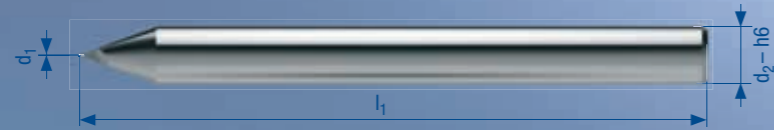
Gravierfräser 40°, mit Fläche

Fraise à graver 40°, avec plat

Fresa per incidere 40°, con faccia

Engraving mill 40°, with flat

Art. 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 |

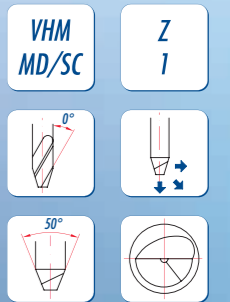
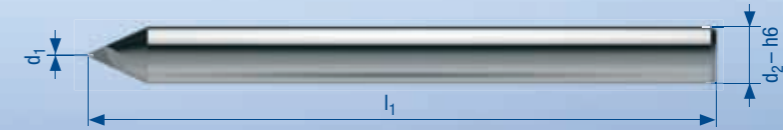
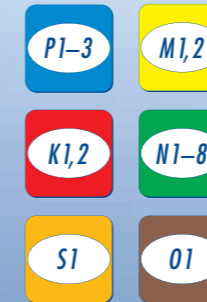
Gravierfräser 50°, mit Fläche

Fraise à graver 50°, avec plat

Fresa per incidere 50°, con faccia

Engraving mill 50°, with flat

Art. 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 |

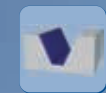
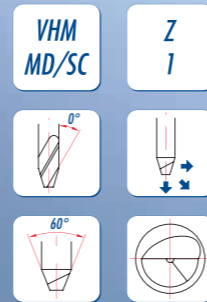
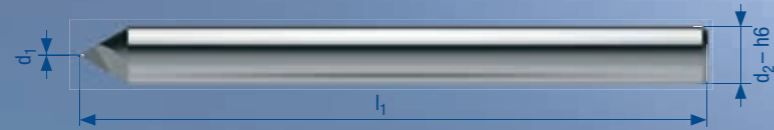
Gravierfräser 60°, mit Fläche

Fraise à graver 60°, avec plat

Fresa per incidere 60°, con faccia

Engraving mill 60°, with flat

Art. 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 |

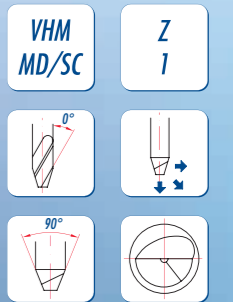
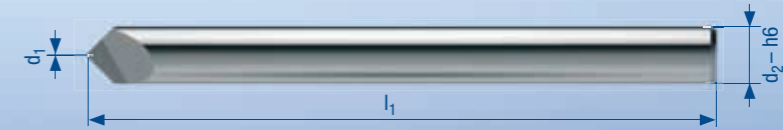
Gravierfräser 90°, mit Fläche

Fraise à graver 90°, avec plat

Fresa per incidere 90°, con faccia

Engraving mill 90°, with flat

Art. 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 |

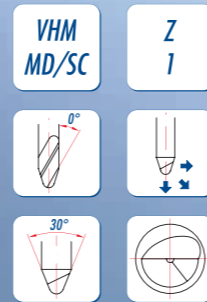
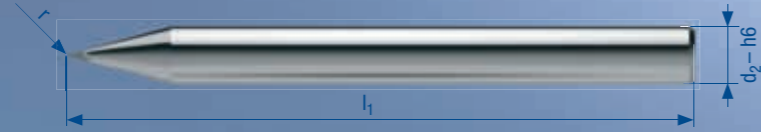
Gravierfräser 30°, mit Radius

Fraise à graver 30°, à rayon

Fresa per incidere 30°, con raggio

Engraving mill 30°, with radius

Art. 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 |

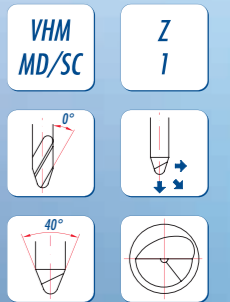
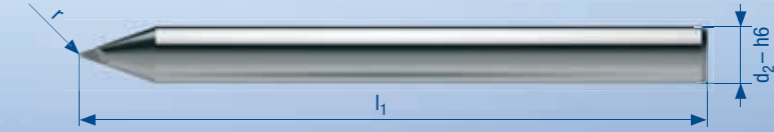
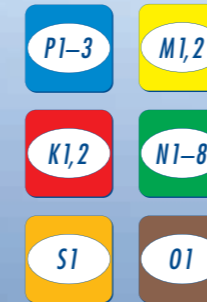
Gravierfräser 40°, mit Radius

Fraise à graver 40°, à rayon

Fresa per incidere 40°, con raggio

Engraving mill 40°, with radius

Art. 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 |

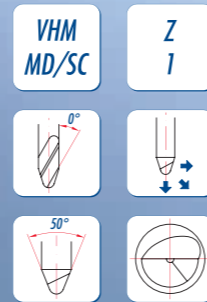
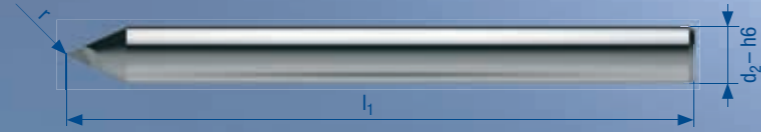
Gravierfräser 50°, mit Radius

Fraise à graver 50°, à rayon

Fresa per incidere 50°, con raggio

Engraving mill 50°, with radius

Art. 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 |

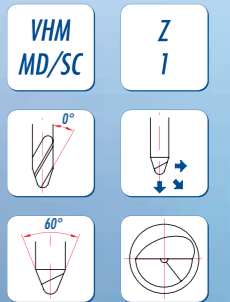
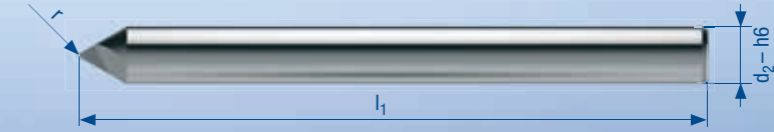
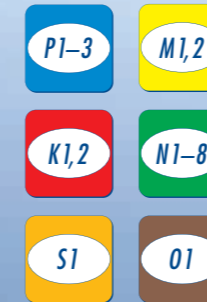
Gravierfräser 60°, mit Radius

Fraise à graver 60°, à rayon

Fresa per incidere 60°, con raggio

Engraving mill 60°, with radius

Art. 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

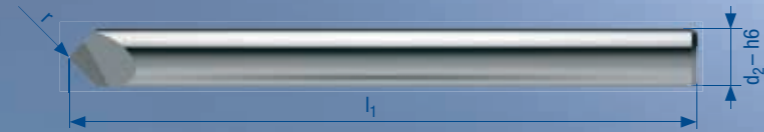
Fraise à graver 90°, à rayon

Fresa per incidere 90°, con raggio

Engraving mill 90°, with radius

Art. 70190

| | |
|------|------|
| P1-3 | M1,2 |
| K1,2 | N1-8 |
| S1 | O1 |



| | |
|-------|---|
| VHM | Z |
| MD/SC | 1 |
| | |
| | |



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 |



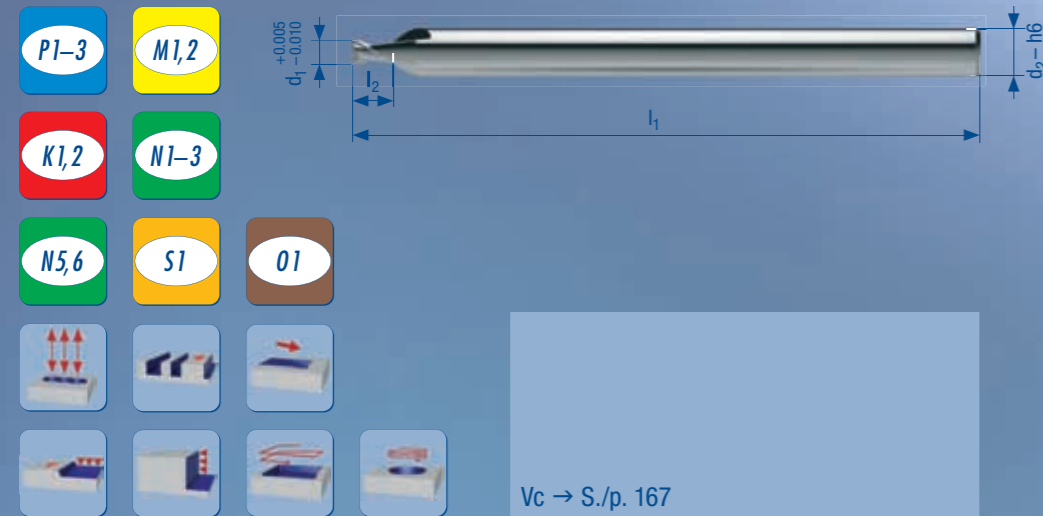
Mikrofräser 0.75 × d30°

Micro fraise 0.75 × d30°

Micro fresa 0.75 × d30°

Micro end mill 0.75 × d30°

Art. 72075



| d ₁ | l ₂ | l ₁ | d ₂ |
|----------------|----------------|----------------|----------------|
| mm | mm | mm | 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 |

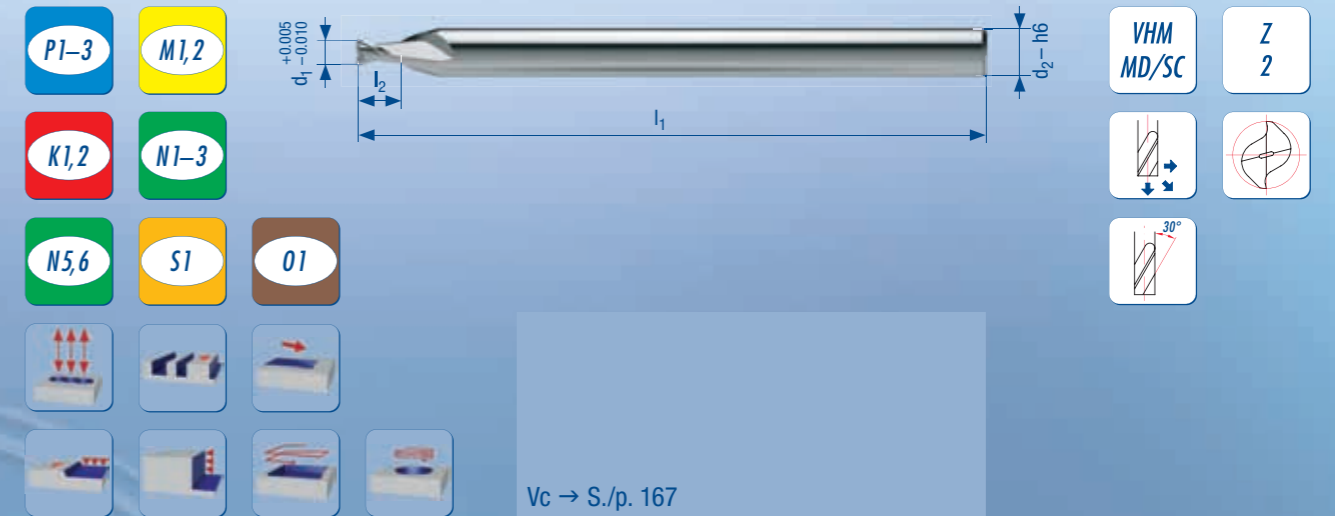
Mikrofräser 1.5 × d30°

Micro fraise 1.5 × d30°

Micro fresa 1.5 × d30°

Micro end mill 1.5 × d30°

Art. 72150



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

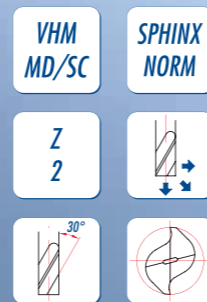
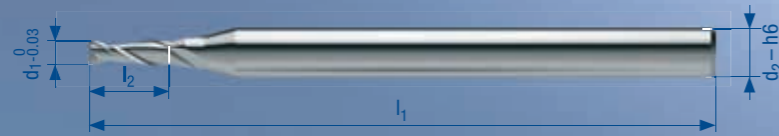
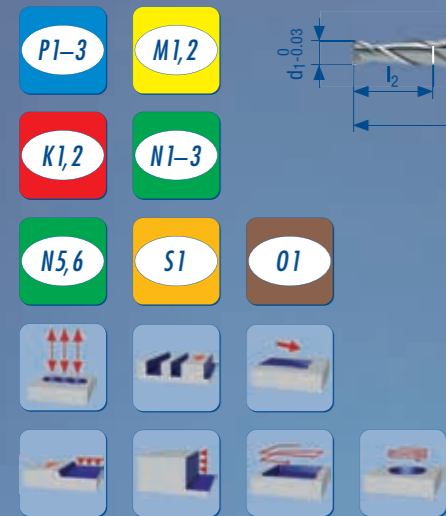
Mikrofräser 3 × d 30°

Micro fraise 3 × d 30°

Micro fresa 3 × d 30°

Micro end mill 3 × d 30°

Art. 42000



Vc → S./p. 168

| d ₁ mm | l ₂ mm | l ₁ mm | d ₂ mm |
|----------------------|----------------------|----------------------|----------------------|
| 0.10 | 0.15 | 38 | 3.00 |
| 0.20 | 0.30 | 38 | 3.00 |
| 0.25 | 0.40 | 38 | 3.00 |
| 0.30 | 0.45 | 38 | 3.00 |
| 0.35 | 0.55 | 38 | 3.00 |
| 0.40 | 0.60 | 38 | 3.00 |
| 0.45 | 0.70 | 38 | 3.00 |
| 0.50 | 0.75 | 38 | 3.00 |
| 0.55 | 0.85 | 38 | 3.00 |
| 0.60 | 0.90 | 38 | 3.00 |
| 0.65 | 1.00 | 38 | 3.00 |
| 0.70 | 1.05 | 38 | 3.00 |
| 0.75 | 1.15 | 38 | 3.00 |
| 0.80 | 1.20 | 38 | 3.00 |
| 0.85 | 1.30 | 38 | 3.00 |
| 0.90 | 1.35 | 38 | 3.00 |
| 0.95 | 1.45 | 38 | 3.00 |
| 1.00 | 1.50 | 38 | 3.00 |
| 1.05 | 1.60 | 38 | 3.00 |
| 1.10 | 1.65 | 38 | 3.00 |
| 1.15 | 1.75 | 38 | 3.00 |
| 1.20 | 1.80 | 38 | 3.00 |
| 1.25 | 1.90 | 38 | 3.00 |
| 1.30 | 1.95 | 38 | 3.00 |
| 1.35 | 2.05 | 38 | 3.00 |
| 1.40 | 2.10 | 38 | 3.00 |
| 1.45 | 2.20 | 38 | 3.00 |
| 1.50 | 2.25 | 38 | 3.00 |
| 1.55 | 2.35 | 38 | 3.00 |
| 1.60 | 2.40 | 38 | 3.00 |
| 1.65 | 2.50 | 38 | 3.00 |
| 1.70 | 2.55 | 38 | 3.00 |
| 1.75 | 2.65 | 38 | 3.00 |
| 1.80 | 2.70 | 38 | 3.00 |
| 1.85 | 2.80 | 38 | 3.00 |
| 1.90 | 2.85 | 38 | 3.00 |
| 1.95 | 2.95 | 38 | 3.00 |
| 2.00 | 3.00 | 45 | 3.00 |

| d ₁ mm | l ₂ mm | l ₁ mm | d ₂ mm |
|----------------------|----------------------|----------------------|----------------------|
| 2.10 | 3.15 | 45 | 3.00 |
| 2.20 | 3.30 | 45 | 3.00 |
| 2.30 | 3.45 | 45 | 3.00 |
| 2.40 | 3.60 | 45 | 3.00 |
| 2.50 | 3.75 | 45 | 3.00 |
| 2.60 | 3.90 | 45 | 3.00 |
| 2.70 | 4.05 | 45 | 3.00 |
| 2.80 | 4.20 | 45 | 3.00 |
| 2.90 | 4.35 | 45 | 3.00 |
| 3.00 | 4.50 | 45 | 3.00 |

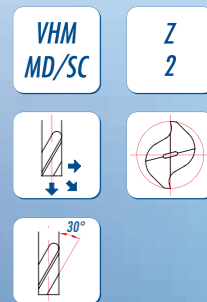
Mikrofräser 5 × d 30°

Micro fraise 5 × d 30°

Micro fresa 5 × d 30°

Micro end mill 5 × d 30°

Art. 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 |

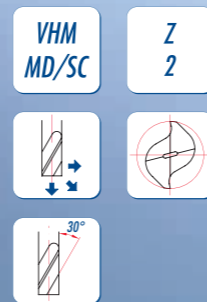
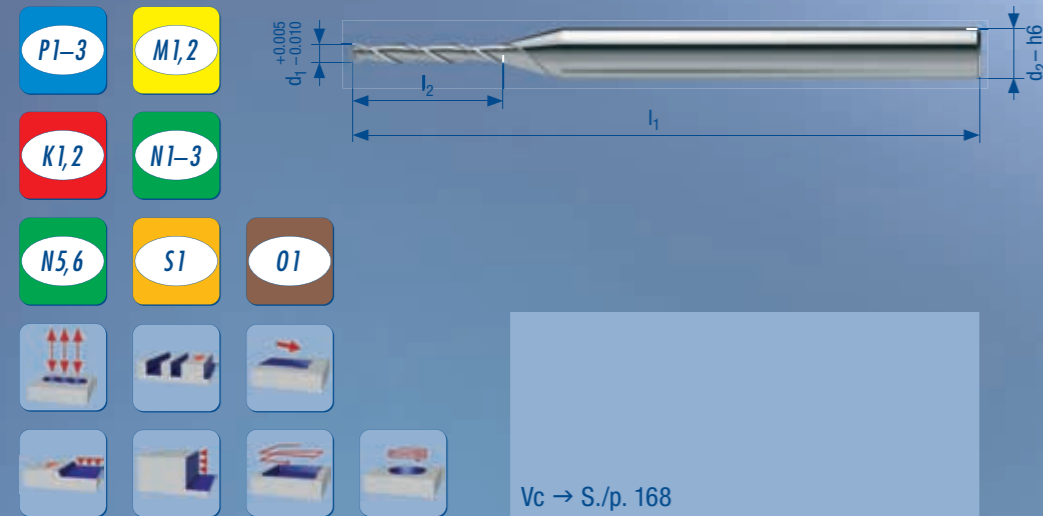
Mikrofräser 8 × d 30°

Micro fraise 8 × d 30°

Micro fresa 8 × d 30°

Micro end mill 8 × d 30°

Art. 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 |

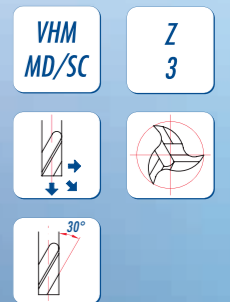
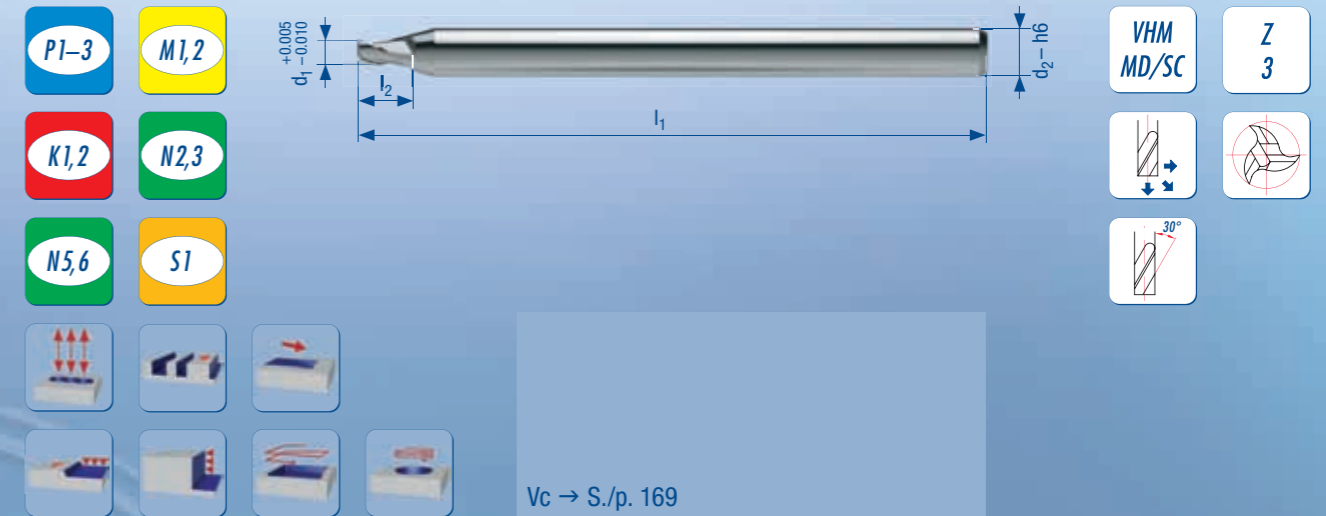
Mikrofräser 1.30 × d 30°

Micro fraise 1.30 × d 30°

Micro fresa 1.30 × d 30°

Micro end mill 1.30 × d 30°

Art. 73130



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 |

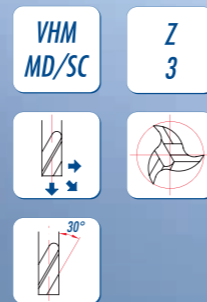
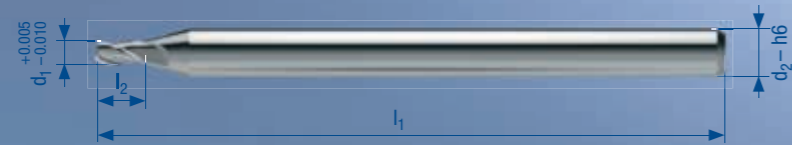
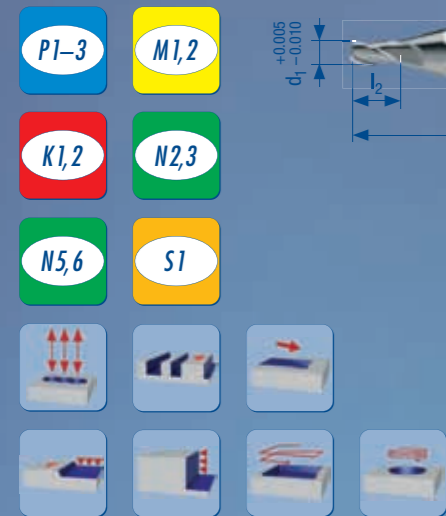
Mikrofräser 2 × d 30°

Micro fraise 2 × d 30°

Micro fresa 2 × d 30°

Micro end mill 2 × d 30°

Art. 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 |

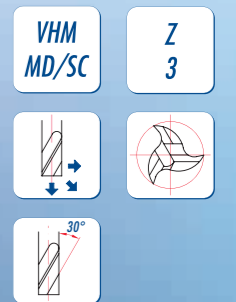
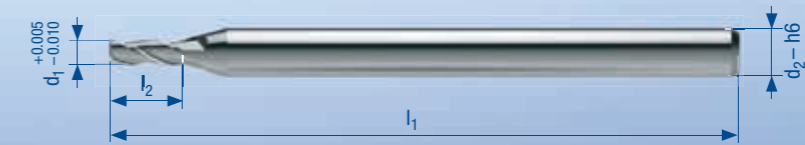
Mikrofräser 3 × d 30°

Micro fraise 3 × d 30°

Micro fresa 3 × d 30°

Micro end mill 3 × d 30°

Art. 73300



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 |

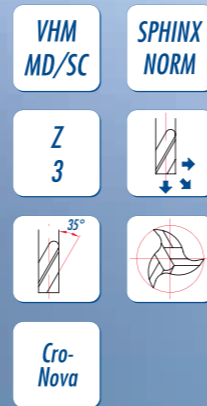
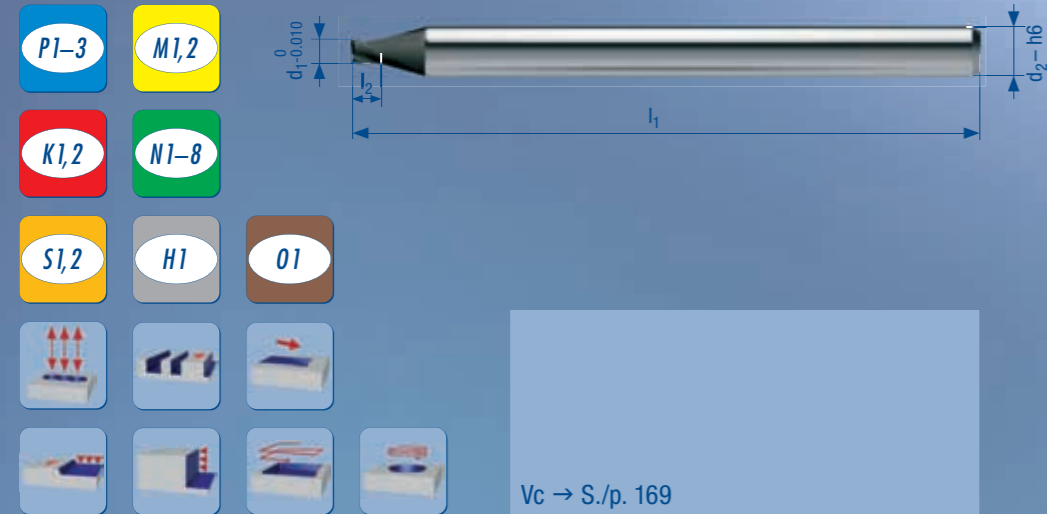
Mikrofräser 1 x d 35°

Micro fraise 1 x d 35°

Micro fresa 1 x d 35°

Micro end mill 1 x d 35°

Art. 43105



| 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 |

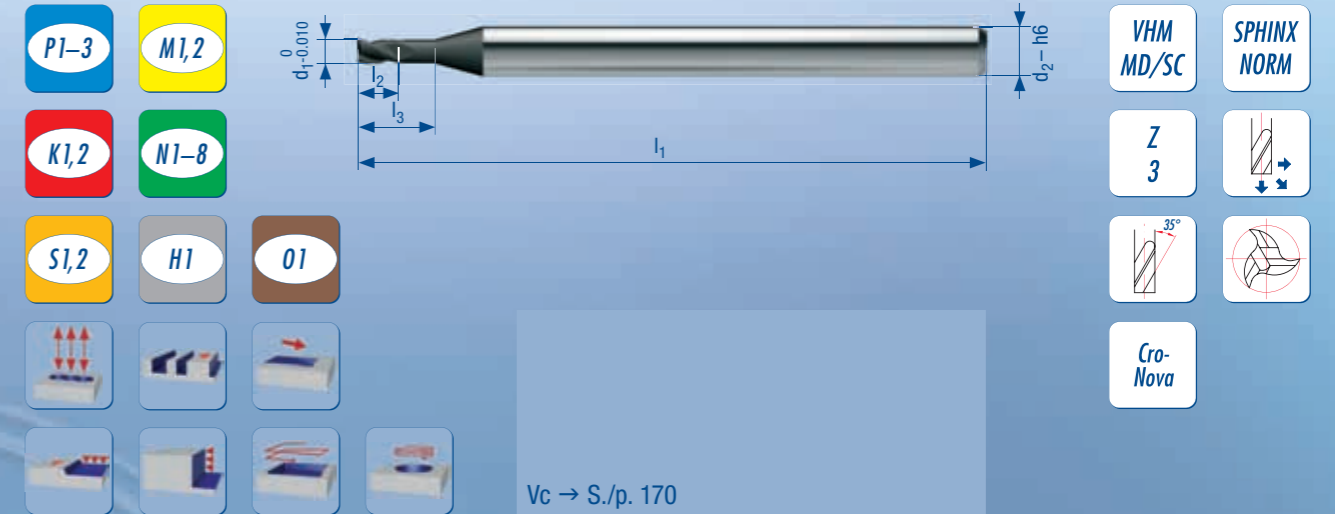
Mikrofräser 3 x d 35°

Micro fraise 3 x d 35°

Micro fresa 3 x d 35°

Micro end mill 3 x d 35°

Art. 43305

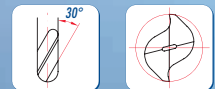
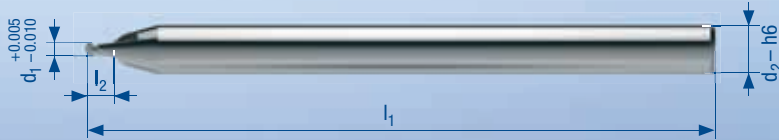


| d ₁ mm | l ₂ mm | l ₃ mm | l ₁ mm | d ₂ mm |
|----------------------|----------------------|----------------------|----------------------|----------------------|
| 0.30 | 0.30 | 0.90 | 38.00 | 3.00 |
| 0.40 | 0.40 | 1.20 | 38.00 | 3.00 |
| 0.50 | 0.50 | 1.50 | 38.00 | 3.00 |
| 0.60 | 0.60 | 1.80 | 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
Fraise hémisphérique 0.75 × d
Fresa a raggio 0.75 × d
Ball nose end mill 0.75 × d

Art. 74075

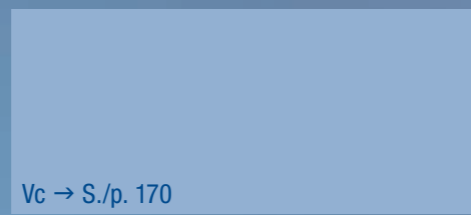
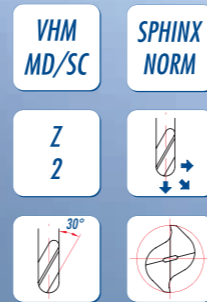
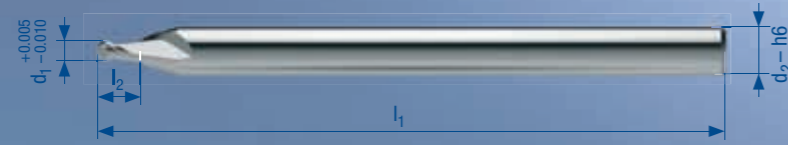
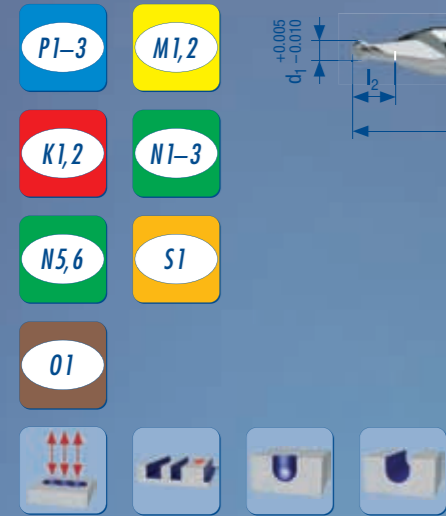


Vc → S./p. 170

| 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
Fraise hémisphérique 1.5 × d
Fresa a raggio 1.5 × d
Ball nose end mill 1.5 × d

Art. 74150

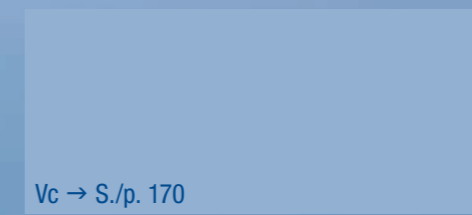
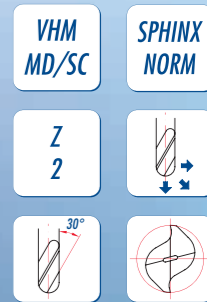
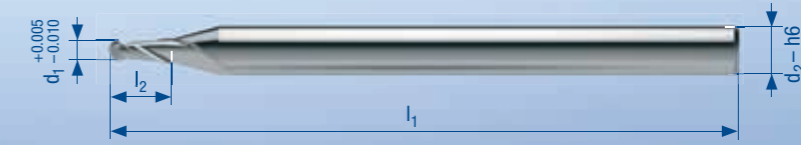
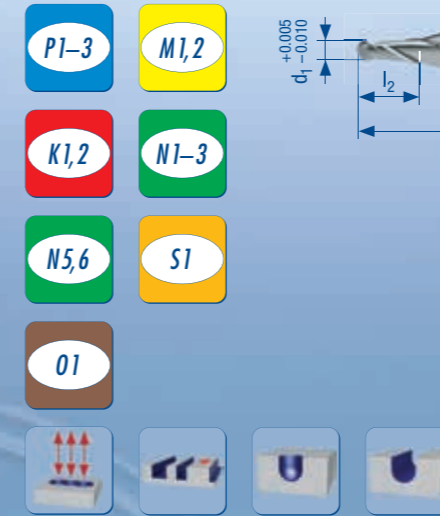


Vc → S./p. 170

| 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
Fraise hémisphérique 3 × d
Fresa a raggio 3 × d
Ball nose end mill 3 × d

Art. 74300



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

Art. 73000

- P1-3
- M1,2
- K1,2
- N1-3,5
- S1
- O1



- VHM
MD/SC
- Z
3
-
-
-



Vc → S./p. 171

| d ₁ | d ₂ | l ₂ | l ₁ | d ₃ |
|----------------|----------------|----------------|----------------|----------------|
| mm | mm | mm | mm | 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 |

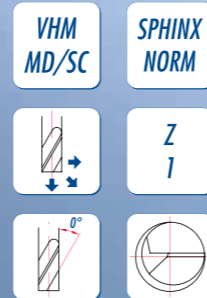
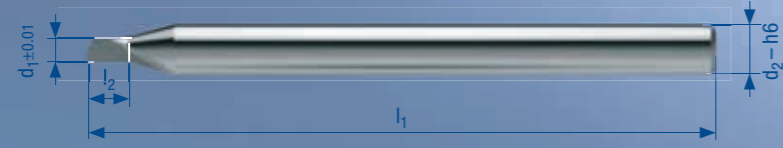
Gerade genuteter Fräser – 1 Zahn $\frac{3}{4}$

Fraise taille droite – 1 dent $\frac{3}{4}$

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

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

Art. 47330



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 |

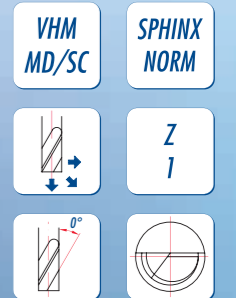
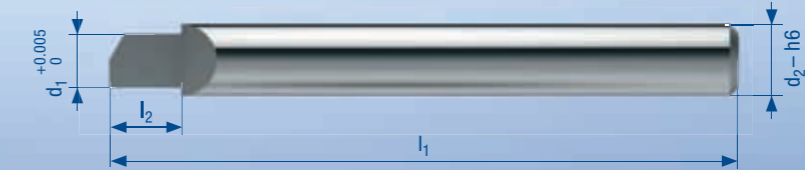
Gerade genuteter Fräser – 1 Zahn

Fraise taille droite – 1 dent

Fresa taglio diritto – 1 dente

Straight fluted end mill – 1 tooth

Art. 47344



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 |

















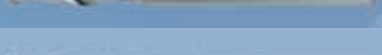















Bohren – Reiben

Perçage – Alesage
Forare – Alesare
Drilling – Reaming


















* siehe Legende S. 192+193
see legend p. 192+193

✓ hervorragend / outstanding
• geeignet / able

| | Artikel Article | Durchmesser-Bereich Diameter range | Abstufung Increments | Bohrtiefe Cutting length | Spitzen- winkel Point angle | Spiral- winkel Helix angle | Material | Werkstoffgruppe* Workpiece material* | | | | | | | | Anwendung* Application* | Seite Page |
|--|--------------------|---------------------------------------|-------------------------|-----------------------------|-----------------------------------|----------------------------------|---|---|---|---|---|---|---|---|---|----------------------------|---------------|
| | | | | | | | | P | M | K | S | N | H | O | | | |
| NC-Anbohrer und Zentriersenker Foret à pointer et chanfrainer | | | | | | | Punta a centrare e smusso NC spotting drill and chamfering drill | | | | | | | | | | |
|  | 50806 | 0.50–6.00 | 0.10 | | 60°+/- 1° | 20° | VHM/ MD/ SC | ✓ | ✓ | ✓ | • | ✓ | | ✓ |  | 85 | |
|  | 50810 | 2.00–20.00 | 1.00 | | 90°+/- 1° | 20° | VHM/ MD/ SC | ✓ | ✓ | ✓ | • | ✓ | | ✓ |  | 86 | |
|  | 50812 | 2.00–20.00 | 1.00 | | 120° | 20° | VHM/ MD/ SC | ✓ | ✓ | ✓ | • | ✓ | | ✓ |  | 87 | |
|  | 50814 | 2.00–20.00 | 1.00 | | 142° | 20° | VHM/ MD/ SC | ✓ | ✓ | ✓ | • | ✓ | | ✓ |  | 88 | |
|  | 50818 | 1.60–12.00 | 0.40 | | 142°/90° | 20° | VHM/ MD/ SC | ✓ | ✓ | ✓ | • | ✓ | | ✓ |  | 89 | |
| Spiralbohrer ohne Innenkühlung Foret hélicoïdal sans trou d'huile | | | | | | | Punta elicoidale senza fori di lubrificazione Twist drill without internal coolant | | | | | | | | | | |
|  | 50950 | 3.00–20.00 | 0.10 | 3×Ø | 140° | 30° | VHM/ MD/ SC; TiAlN | ✓ | • | ✓ | • | • | • | • |  | 91 | |
|  | 50830 | 0.30–20.00 | 0.10 | 5×Ø | 118° | 35° | VHM/ MD/ SC | ✓ | ✓ | • | • | ✓ | | ✓ |  | 92 | |
|  | 50838 | 0.30–6.00 | 0.05 | 6×Ø | 118° | 30°–35° | VHM/ MD/ SC | ✓ | ✓ | • | • | ✓ | | ✓ |  | 93 | |
|  | 50820 | 0.70–14.00 | 0.10 | 10×Ø | 130° | 35°–15° | VHM/ MD/ SC | ✓ | | ✓ | • | | | |  | 94 | |
| Hochleistungsbohrer mit verstärktem Schaft mit Innenkühlung Foret à grand rendement avec manche renforcé avec trou d'huile | | | | | | | Punta ad alto rendimento con gambo rinforzato con fori di lubrificazione High performance drill with reinforced shank with internal coolant | | | | | | | | | | |
|  | 50938 | 1.00–12.70 | 0.10 | 3×Ø | 140° | 30° | VHM/ MD/ SC; AlCrN | ✓ | ✓ | ✓ | • | • | | |  | 96 | |
|  | 50940 | 1.00–12.70 | 0.05 | 6×Ø | 140° | 30° | VHM/ MD/ SC; TiAlN | ✓ | ✓ | ✓ | • | • | | |  | 97 | |
|  | 50942 | 1.00–12.70 | 0.10 | 12×Ø | 140° | 30° | VHM/ MD/ SC; AlCrN | ✓ | • | ✓ | • | • | | |  | 99 | |
|  | 52100 | 3.00–20.00 | 0.50 | 6×Ø | 140° | 0° | VHM/ MD/ SC | | | ✓ | | ✓ | • | |  | 100 | |
|  | 52200 | 3.00–20.00 | 0.50 | 12×Ø | 140° | 0° | VHM/ MD/ SC | | | ✓ | | ✓ | • | |  | 101 | |
|  | 52150 | 4.00–20.00 | 0.50 | 6×Ø | 140° | 15° | VHM/ MD/ SC; TiAlN | ✓ | | ✓ | • | • | | |  | 102 | |


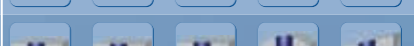
* siehe Legende S. 192 + 193
see legend p. 192 + 193

✓ hervorragend / outstanding
• geeignet / able

| | Artikel Article | Durchmesser-Bereich Diameter range | Abstufung Increments | Bohrtiefe Cutting length | Spitzen- winkel Point angle | Spiral- winkel Helix angle | Material | Werkstoffgruppe* Workpiece material* | | | | | | | | Anwendung* Application* | Seite Page |
|---|--------------------|---------------------------------------|-------------------------|-----------------------------|-----------------------------------|----------------------------------|-------------------------------|--|---|---|---|---|---|---|---|----------------------------|---------------|
| | | | | | | | | P | M | K | S | N | H | O | | | |
| Hochleistungsbohrer Power Phoenix mit verstärktem Schaft mit Innenkühlung Foret à grand rendement Power-Phoenix avec manche renforcé avec trou d'huile | | | | | | | | Punta ad alto rendimento Power-Phoenix con gambo rinforzato con fori di lubrificazione High performance drill Power-Phoenix with reinforced shank with internal coolant | | | | | | | | | |
|  | 50909 | 1.00 – 12.70 | 0.10 | 9×Ø | 140° | 30° | VHM / MD / SC; AlCrN | ✓ | ✓ | ✓ | • | ✓ | • |  | 104 | | |
|  | 50912 | 1.00 – 12.70 | 0.10 | 12×Ø | 137° | 30° | VHM / MD / SC; AlCrN | ✓ | | ✓ | | • | |  | 105 | | |
|  | 50916 | 1.00 – 12.70 | 0.10 | 16×Ø | 137° | 30° | VHM / MD / SC; AlCrN | ✓ | | ✓ | | • | |  | 106 | | |
|  | 50920 | 3.00 – 10.00 | 1.00 | 20×Ø | 137° | 30° | VHM / MD / SC; AlCrN | ✓ | | ✓ | | • | |  | 107 | | |
|  | 50925 | 3.00 – 10.00 | 1.00 | 25×Ø | 137° | 30° | VHM / MD / SC; AlCrN | ✓ | | ✓ | | • | |  | 108 | | |
|  | 50930 | 3.00 – 10.00 | 1.00 | 30×Ø | 137° | 30° | VHM / MD / SC; AlCrN | ✓ | | ✓ | | • | |  | 109 | | |
| Hochleistungsbohrer Phoenix-TC2 mit verstärktem Schaft mit Innenkühlung Foret à grand rendement Phoenix-TC2 avec manche renforcé avec trou d'huile | | | | | | | | Punta ad alto rendimento Phoenix-TC2 con gambo rinforzato con fori di lubrificazione High performance drill Phoenix-TC2 with reinforced shank with internal coolant | | | | | | | | | |
|  | 52903 | 1.00 – 10.00 | 0.05 | 3×Ø | 140° | 30° | VHM / MD / SC; AlTiCrN+S | ✓ | ✓ | ✓ | ✓ | ✓ | • | • |  | 111 | |
|  | 52906 | 1.00 – 10.00 | 0.05 | 6×Ø | 140° | 30° | VHM / MD / SC; AlTiCrN+S | ✓ | ✓ | ✓ | ✓ | ✓ | • | • |  | 112 | |
|  | 52909 | 1.00 – 10.00 | 0.10 | 9×Ø | 140° | 30° | VHM / MD / SC; AlTiCrN+S | ✓ | ✓ | ✓ | ✓ | ✓ | • | • |  | 113 | |
|  | 52912 | 1.00 – 10.00 | 0.10 | 12×Ø | 137° | 30° | VHM / MD / SC; AlCrN; AlCrTiN | ✓ | ✓ | ✓ | ✓ | ✓ | • | • |  | 114 | |
|  | 52916 | 1.00 – 10.00 | 0.10 | 16×Ø | 137° | 30° | VHM / MD / SC; AlCrN; AlCrTiN | ✓ | ✓ | ✓ | ✓ | ✓ | • | • |  | 115 | |
|  | 52920 | 3.00 – 10.00 | 1.00 | 20×Ø | 137° | 30° | VHM / MD / SC; AlCrTiN | • | ✓ | • | ✓ | ✓ | • | • |  | 116 | |
|  | 52930 | 3.00 – 10.00 | 1.00 | 30×Ø | 137° | 30° | VHM / MD / SC; AlCrTiN | • | ✓ | • | ✓ | ✓ | • | • |  | 117 | |
| Hochleistungsbohrer Phoenix-TC4 mit verstärktem Schaft mit Innenkühlung Foret à grand rendement Phoenix-TC4 avec manche renforcé avec trou d'huile | | | | | | | | Punta ad alto rendimento Phoenix-TC4 con gambo rinforzato con fori di lubrificazione High performance drill Phoenix-TC4 with reinforced shank with internal coolant | | | | | | | | | |
|  | 54906 | 3.00 – 10.00 | 0.10 | 6×Ø | 140° | 30° | VHM / MD / SC; AlTiCrN+S | ✓ | | ✓ | | • | |  | 119 | | |
|  | 54909 | 3.00 – 10.00 | 0.10 | 9×Ø | 140° | 30° | VHM / MD / SC; AlTiCrN+S | ✓ | | ✓ | | • | |  | 120 | | |
|  | 54912 | 3.00 – 10.00 | 0.10 | 12×Ø | 137° | 30° | VHM / MD / SC; AlCrTiN | ✓ | | ✓ | | • | |  | 121 | | |
|  | 54916 | 3.00 – 10.00 | 0.10 | 16×Ø | 137° | 30° | VHM / MD / SC; AlCrTiN | ✓ | | ✓ | | • | |  | 122 | | |

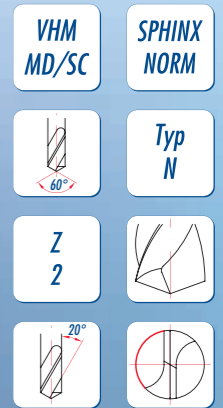
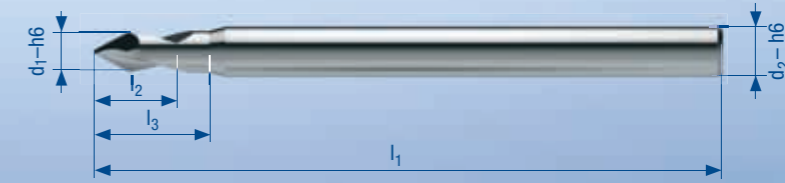
* siehe Legende S. 192 + 193
see legend p. 192 + 193

✓ hervorragend / outstanding
• geeignet / able

| | Artikel Article | Durchmesser-Bereich Diameter range | Abstufung Increments | Bohrtiefe Cutting length | Spitzen- winkel Point angle | Spiral- winkel Helix angle | Material | Werkstoffgruppe* Workpiece material* | | | | | | | | Anwendung* Application* | Seite Page |
|---|--------------------|---------------------------------------|-------------------------|--|-----------------------------------|----------------------------------|------------------------|---|---|---|---|---|---|---|--|---|---------------|
| | | | | | | | | P | M | K | S | N | H | O | | | |
|  | 54920 | 3.00 – 10.00 | 1.00 und M | 20× \varnothing | 137° | 30° | VHM / MD / SC; AlCrTiN | ✓ | | ✓ | | • | | | |  | 123 |
|  | 54930 | 3.00 – 10.00 | 1.00 und M | 30× \varnothing | 137° | 30° | VHM / MD / SC; AlCrTiN | ✓ | | ✓ | | • | | | |  | 124 |
| Bohrreibahlen und Reibahlen Foret alésoir et alésoir | | | | Punta alesatore e alesatore Drill reamer and reamer | | | | | | | | | | | | | |
|  | 50840 | 2.00 – 14.00 | 0.10 | –5× \varnothing | 118° | 35° | VHM / MD / SC | • | • | • | • | ✓ | | | |  | 126 |
|  | 55654 | 1.00 – 14.00 | 0.10 | –5× \varnothing | 118° | 35° | VHM / MD / SC | ✓ | • | ✓ | • | • | | | |  | 127 |
|  | 55338 | 1.00 – 14.00 | 0.10 | –10× \varnothing | 118° | 35° | VHM / MD / SC | ✓ | • | ✓ | • | • | | | |  | 128 |
|  | 58000 | 0.99 – 6.00 | 0.01 | –8× \varnothing | | 10° | VHM / MD / SC | ✓ | ✓ | ✓ | • | ✓ | | | |  | 129 |
|  | 58500 | 0.99 – 6.00 | 0.01 | –8× \varnothing | | 10° | VHM / MD / SC | ✓ | ✓ | ✓ | • | ✓ | | | |  | 130 |

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

Art. 50806



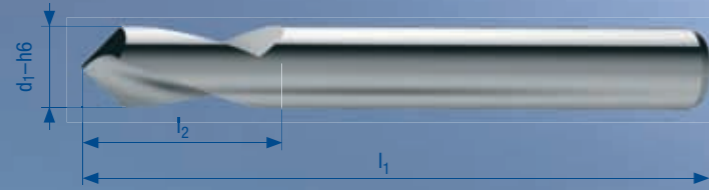
Vc → S./p. 160

| 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°
 Foret à pointer NC 90°
 Punta a centrare NC 90°
 NC spotting drill 90°

P1-3 M1,2
K1,2 N1-8
01



VHM **SPHINX**
MD/SC **NORM**
Z
2



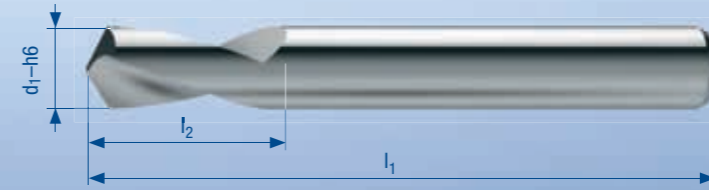
Vc → S./p. 172

| 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 |

Art. 50810

NC-Anbohrer 120°
 Foret à pointer NC 120°
 Punta a centrare NC 120°
 NC spotting drill 120°

P1-3 M1,2
K1,2 N1-8
01



VHM **SPHINX**
MD/SC **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°

Foret à pointer NC 142°

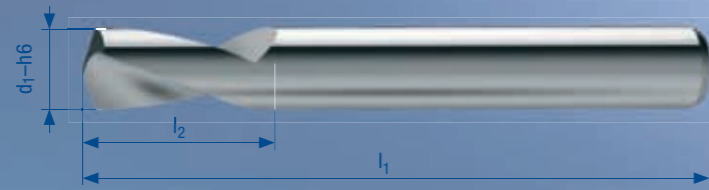
Punta a centrare NC 142°

NC spotting drill 142°

P1-3 M1,2

K1,2 N1-8

01



Art. 50814

VHM MD/SC SPHINX NORM

Z 2

20° 142°

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 |

Zentriersenker 142°/90°

Foret à pointer et chanfreiner 142°/90°

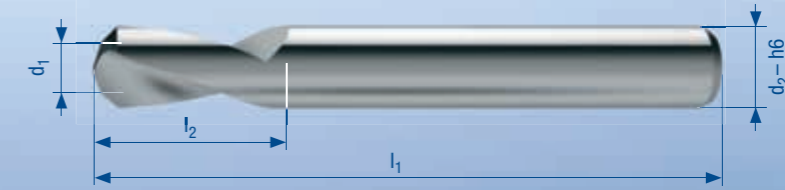
Punta da centro e smusso 142°/90°

Spotting and chamfering drill 142°/90°

P1-3 M1,2

K1,2 N1-8

01



VHM MD/SC SPHINX NORM

Z 2

20° 90° 142°

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 |

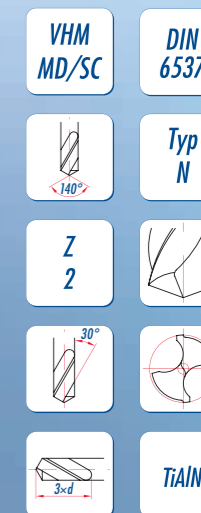
| d ₁ mm | l ₂ mm | l ₁ mm | d ₂ mm |
|----------------------|----------------------|----------------------|----------------------|
| 8.50 | 22.00 | 70 | 12.00 |
| 9.00 | 22.00 | 70 | 12.00 |
| 10.00 | 22.00 | 70 | 12.00 |
| 10.20 | 25.00 | 75 | 14.00 |
| 11.00 | 25.00 | 75 | 14.00 |
| 12.00 | 25.00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

Spiralbohrer Fastcut 3 × d
Foret hélicoïdal Fastcut 3 × d
Punta elicoidal Fastcut 3 × d
Twist drill Fastcut 3 × d

Art. 50950

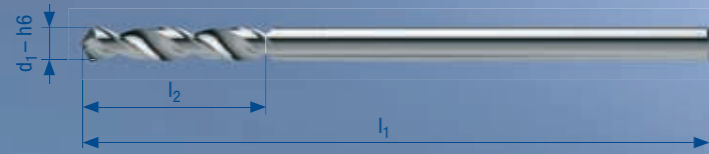
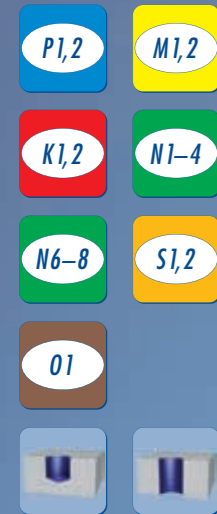


Vc → S./p. 173



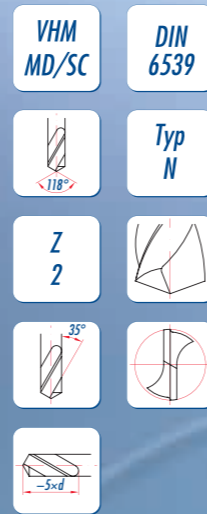
| d ₁ | l ₂ | l ₃ | l ₁ | d ₂ | d ₁ | l ₂ | l ₃ | l ₁ | d ₂ | d ₁ | l ₂ | l ₃ | l ₁ | d ₂ |
|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm |
| 3.00 | 14.00 | 20.00 | 62 | 6.00 | 6.80 | 24.00 | 34.00 | 79 | 8.00 | 10.60 | 40.00 | 55.00 | 102 | 12.00 |
| 3.10 | 14.00 | 20.00 | 62 | 6.00 | 6.90 | 24.00 | 34.00 | 79 | 8.00 | 10.70 | 40.00 | 55.00 | 102 | 12.00 |
| 3.20 | 14.00 | 20.00 | 62 | 6.00 | 7.00 | 24.00 | 34.00 | 79 | 8.00 | 10.80 | 40.00 | 55.00 | 102 | 12.00 |
| 3.30 | 14.00 | 20.00 | 62 | 6.00 | 7.10 | 29.00 | 41.00 | 79 | 8.00 | 10.90 | 40.00 | 55.00 | 102 | 12.00 |
| 3.40 | 14.00 | 20.00 | 62 | 6.00 | 7.20 | 29.00 | 41.00 | 79 | 8.00 | 11.00 | 40.00 | 55.00 | 102 | 12.00 |
| 3.50 | 14.00 | 20.00 | 62 | 6.00 | 7.30 | 29.00 | 41.00 | 79 | 8.00 | 11.10 | 40.00 | 55.00 | 102 | 12.00 |
| 3.60 | 14.00 | 20.00 | 62 | 6.00 | 7.40 | 29.00 | 41.00 | 79 | 8.00 | 11.20 | 40.00 | 55.00 | 102 | 12.00 |
| 3.70 | 14.00 | 20.00 | 62 | 6.00 | 7.50 | 29.00 | 41.00 | 79 | 8.00 | 11.30 | 40.00 | 55.00 | 102 | 12.00 |
| 3.80 | 17.00 | 24.00 | 66 | 6.00 | 7.60 | 29.00 | 41.00 | 79 | 8.00 | 11.40 | 40.00 | 55.00 | 102 | 12.00 |
| 3.90 | 17.00 | 24.00 | 66 | 6.00 | 7.70 | 29.00 | 41.00 | 79 | 8.00 | 11.50 | 40.00 | 55.00 | 102 | 12.00 |
| 4.00 | 17.00 | 24.00 | 66 | 6.00 | 7.80 | 29.00 | 41.00 | 79 | 8.00 | 11.60 | 40.00 | 55.00 | 102 | 12.00 |
| 4.10 | 17.00 | 24.00 | 66 | 6.00 | 7.90 | 29.00 | 41.00 | 79 | 8.00 | 11.70 | 40.00 | 55.00 | 102 | 12.00 |
| 4.20 | 17.00 | 24.00 | 66 | 6.00 | 8.00 | 29.00 | 41.00 | 79 | 8.00 | 11.80 | 40.00 | 55.00 | 102 | 12.00 |
| 4.30 | 17.00 | 24.00 | 66 | 6.00 | 8.10 | 35.00 | 47.00 | 89 | 10.00 | 11.90 | 40.00 | 55.00 | 102 | 12.00 |
| 4.40 | 17.00 | 24.00 | 66 | 6.00 | 8.20 | 35.00 | 47.00 | 89 | 10.00 | 12.00 | 40.00 | 55.00 | 102 | 12.00 |
| 4.50 | 17.00 | 24.00 | 66 | 6.00 | 8.30 | 35.00 | 47.00 | 89 | 10.00 | 12.50 | 43.00 | 60.00 | 107 | 14.00 |
| 4.60 | 17.00 | 24.00 | 66 | 6.00 | 8.40 | 35.00 | 47.00 | 89 | 10.00 | 12.80 | 43.00 | 60.00 | 107 | 14.00 |
| 4.70 | 17.00 | 24.00 | 66 | 6.00 | 8.50 | 35.00 | 47.00 | 89 | 10.00 | 13.00 | 43.00 | 60.00 | 107 | 14.00 |
| 4.80 | 20.00 | 28.00 | 66 | 6.00 | 8.60 | 35.00 | 47.00 | 89 | 10.00 | 13.50 | 43.00 | 60.00 | 107 | 14.00 |
| 4.90 | 20.00 | 28.00 | 66 | 6.00 | 8.70 | 35.00 | 47.00 | 89 | 10.00 | 13.80 | 43.00 | 60.00 | 107 | 14.00 |
| 5.00 | 20.00 | 28.00 | 66 | 6.00 | 8.80 | 35.00 | 47.00 | 89 | 10.00 | 14.00 | 43.00 | 60.00 | 107 | 14.00 |
| 5.10 | 20.00 | 28.00 | 66 | 6.00 | 8.90 | 35.00 | 47.00 | 89 | 10.00 | 14.50 | 45.00 | 65.00 | 115 | 16.00 |
| 5.20 | 20.00 | 28.00 | 66 | 6.00 | 9.00 | 35.00 | 47.00 | 89 | 10.00 | 14.80 | 45.00 | 65.00 | 115 | 16.00 |
| 5.30 | 20.00 | 28.00 | 66 | 6.00 | 9.10 | 35.00 | 47.00 | 89 | 10.00 | 15.00 | 45.00 | 65.00 | 115 | 16.00 |
| 5.40 | 20.00 | 28.00 | 66 | 6.00 | 9.20 | 35.00 | 47.00 | 89 | 10.00 | 15.50 | 45.00 | 65.00 | 115 | 16.00 |
| 5.50 | 20.00 | 28.00 | 66 | 6.00 | 9.30 | 35.00 | 47.00 | 89 | 10.00 | 15.80 | 45.00 | 65.00 | 115 | 16.00 |
| 5.60 | 20.00 | 28.00 | 66 | 6.00 | 9.40 | 35.00 | 47.00 | 89 | 10.00 | 16.00 | 45.00 | 65.00 | 115 | 16.00 |
| 5.70 | 20.00 | 28.00 | 66 | 6.00 | 9.50 | 35.00 | 47.00 | 89 | 10.00 | 16.50 | 51.00 | 73.00 | 123 | 18.00 |
| 5.80 | 20.00 | 28.00 | 66 | 6.00 | 9.60 | 35.00 | 47.00 | 89 | 10.00 | 17.00 | 51.00 | 73.00 | 123 | 18.00 |
| 5.90 | 20.00 | 28.00 | 66 | 6.00 | 9.70 | 35.00 | 47.00 | 89 | 10.00 | 17.50 | 51.00 | 73.00 | 123 | 18.00 |
| 6.00 | 20.00 | 28.00 | 66 | 6.00 | 9.80 | 35.00 | 47.00 | 89 | 10.00 | 18.00 | 51.00 | 73.00 | 123 | 18.00 |
| 6.10 | 24.00 | 34.00 | 79 | 8.00 | 9.90 | 35.00 | 47.00 | 89 | 10.00 | 18.50 | 55.00 | 79.00 | 131 | 20.00 |
| 6.20 | 24.00 | 34.00 | 79 | 8.00 | 10.00 | 35.00 | 47.00 | 89 | 10.00 | 18.80 | 55.00 | 79.00 | 131 | 20.00 |
| 6.30 | 24.00 | 34.00 | 79 | 8.00 | 10.10 | 40.00 | 55.00 | 102 | 12.00 | 19.00 | 55.00 | 79.00 | 131 | 20.00 |
| 6.40 | 24.00 | 34.00 | 79 | 8.00 | 10.20 | 40.00 | 55.00 | 102 | 12.00 | 19.50 | 55.00 | 79.00 | 131 | 20.00 |
| 6.50 | 24.00 | 34.00 | 79 | 8.00 | 10.30 | 40.00 | 55.00 | 102 | 12.00 | 19.80 | 55.00 | 79.00 | 131 | 20.00 |
| 6.60 | 24.00 | 34.00 | 79 | 8.00 | 10.40 | 40.00 | 55.00 | 102 | 12.00 | 20.00 | 55.00 | 79.00 | 131 | 20.00 |
| 6.70 | 24.00 | 34.00 | 79 | 8.00 | 10.50 | 40.00 | 55.00 | 102 | 12.00 | | | | | |

Spiralbohrer Posicut 5 × d
 Foret hélicoïdal Posicut 5 × d
 Punta elicoidale Posicut 5 × d
 Twist drill Posicut 5 × d

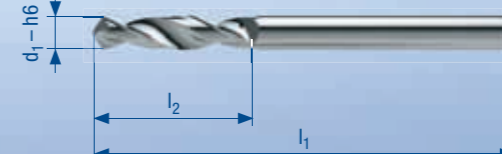
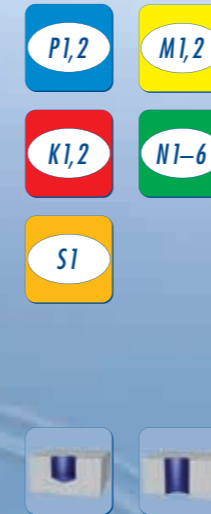


Vc → S./p. 173

Art. 50830

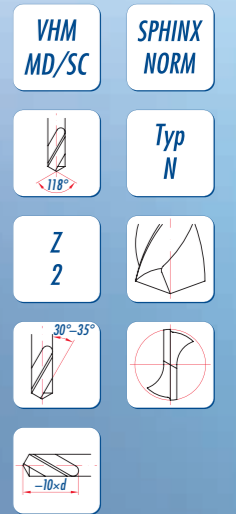


Spiralbohrer Spirec 5 × d
 Foret hélicoïdal Spirec 5 × d
 Punta elicoidale Spirec 5 × d
 Twist drill Spirec 5 × d



Vc → S./p. 174

Art. 50838



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

| d ₁ mm | l ₂ mm | l ₁ mm | d ₁ mm | l ₂ mm | l ₁ mm | d ₁ mm | l ₂ mm | l ₁ mm |
|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|
| 0.30 | 3.70 | 38 | 2.20 | 14.70 | 38 | 4.90 | 24.70 | 50 |
| 0.35 | 3.70 | 38 | 2.25 | 14.70 | 38 | 5.00 | 24.70 | 50 |
| 0.40 | 4.70 | 38 | 2.30 | 14.70 | 38 | 5.10 | 24.70 | 50 |
| 0.45 | 4.70 | 38 | 2.35 | 14.70 | 38 | 5.20 | 24.70 | 50 |
| 0.50 | 5.70 | 38 | 2.40 | 14.70 | 38 | 5.30 | 24.70 | 50 |
| 0.55 | 5.70 | 38 | 2.45 | 14.70 | 38 | 5.40 | 24.70 | 50 |
| 0.60 | 7.70 | 38 | 2.50 | 14.70 | 38 | 5.50 | 24.70 | 50 |
| 0.65 | 7.70 | 38 | 2.55 | 14.70 | 38 | 5.60 | 24.70 | 50 |
| 0.70 | 9.70 | 38 | 2.60 | 14.70 | 38 | 5.70 | 24.70 | 50 |
| 0.75 | 9.70 | 38 | 2.65 | 14.70 | 38 | 5.80 | 24.70 | 50 |
| 0.80 | 11.70 | 38 | 2.70 | 14.70 | 38 | 5.90 | 24.70 | 50 |
| 0.85 | 11.70 | 38 | 2.75 | 14.70 | 38 | 6.00 | 24.70 | 50 |
| 0.90 | 14.70 | 38 | 2.80 | 14.70 | 38 | | | |
| 0.95 | 14.70 | 38 | 2.85 | 14.70 | 38 | | | |
| 1.00 | 14.70 | 38 | 2.90 | 14.70 | 38 | | | |
| 1.05 | 14.70 | 38 | 2.95 | 14.70 | 38 | | | |
| 1.10 | 14.70 | 38 | 3.00 | 14.70 | 38 | | | |
| 1.15 | 14.70 | 38 | 3.05 | 14.70 | 38 | | | |
| 1.20 | 14.70 | 38 | 3.10 | 14.70 | 38 | | | |
| 1.25 | 14.70 | 38 | 3.15 | 14.70 | 38 | | | |
| 1.30 | 14.70 | 38 | 3.175 | 14.70 | 38 | | | |
| 1.35 | 14.70 | 38 | 3.20 | 19.70 | 50 | | | |
| 1.40 | 14.70 | 38 | 3.30 | 19.70 | 50 | | | |
| 1.45 | 14.70 | 38 | 3.40 | 19.70 | 50 | | | |
| 1.50 | 14.70 | 38 | 3.50 | 19.70 | 50 | | | |
| 1.55 | 14.70 | 38 | 3.60 | 19.70 | 50 | | | |
| 1.60 | 14.70 | 38 | 3.70 | 19.70 | 50 | | | |
| 1.65 | 14.70 | 38 | 3.80 | 19.70 | 50 | | | |
| 1.70 | 14.70 | 38 | 3.90 | 19.70 | 50 | | | |
| 1.75 | 14.70 | 38 | 4.00 | 19.70 | 50 | | | |
| 1.80 | 14.70 | 38 | 4.10 | 24.70 | 50 | | | |
| 1.85 | 14.70 | 38 | 4.20 | 24.70 | 50 | | | |
| 1.90 | 14.70 | 38 | 4.30 | 24.70 | 50 | | | |
| 1.95 | 14.70 | 38 | 4.40 | 24.70 | 50 | | | |
| 2.00 | 14.70 | 38 | 4.50 | 24.70 | 50 | | | |
| 2.05 | 14.70 | 38 | 4.60 | 24.70 | 50 | | | |
| 2.10 | 14.70 | 38 | 4.70 | 24.70 | 50 | | | |
| 2.15 | 14.70 | 38 | 4.80 | 24.70 | 50 | | | |

Spiralbohrer Spicut 10 × d

Foret hélicoïdal Spicut 10 × d

Punta elicoidale Spicut 10 × d

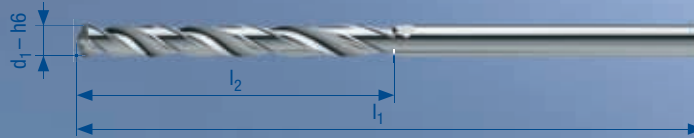
Twist drill Spicut 10 × d

Art. 50820

P1,2

K1,2

N2,3,5



VHM
MD/SC

DIN
338



H7 - H9

Z
2



Ab ø 2 mm mit 4 Führungsfasen
A partir de ø 2 mm avec 4 listel
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 |

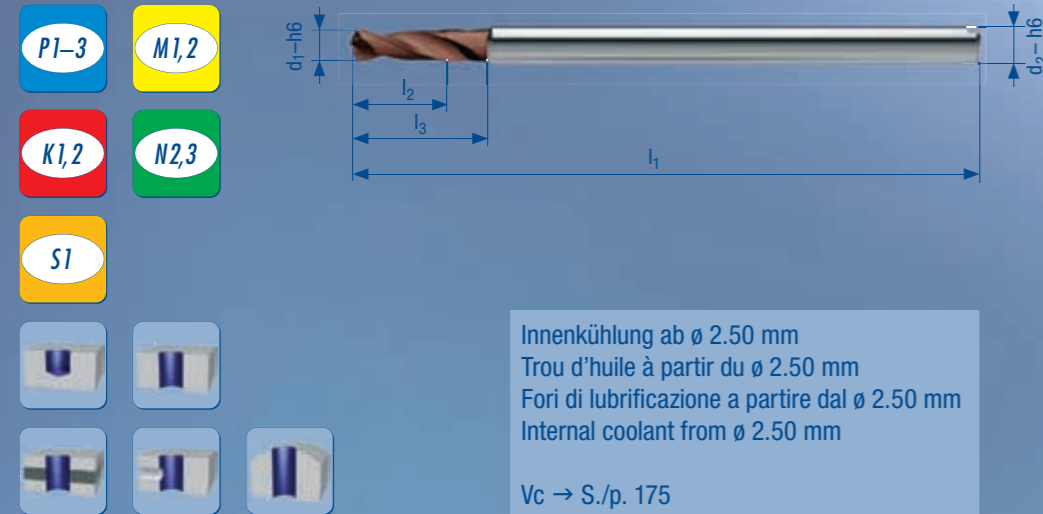
| d ₁ mm | l ₂ mm | l ₁ mm |
|----------------------|----------------------|----------------------|
| 8.30 | 73 | 117 |
| 8.40 | 73 | 117 |
| 8.50 | 73 | 117 |
| 8.60 | 78 | 125 |
| 8.70 | 78 | 125 |
| 8.80 | 78 | 125 |
| 8.90 | 78 | 125 |
| 9.00 | 78 | 125 |
| 9.10 | 78 | 125 |
| 9.20 | 78 | 125 |
| 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

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

Art. 50938



P1-3 M1,2
K1,2 N2,3
S1

VHM MD/SC SPHINX NORM
Typ N
Z 2
30°
3×d AlCrN

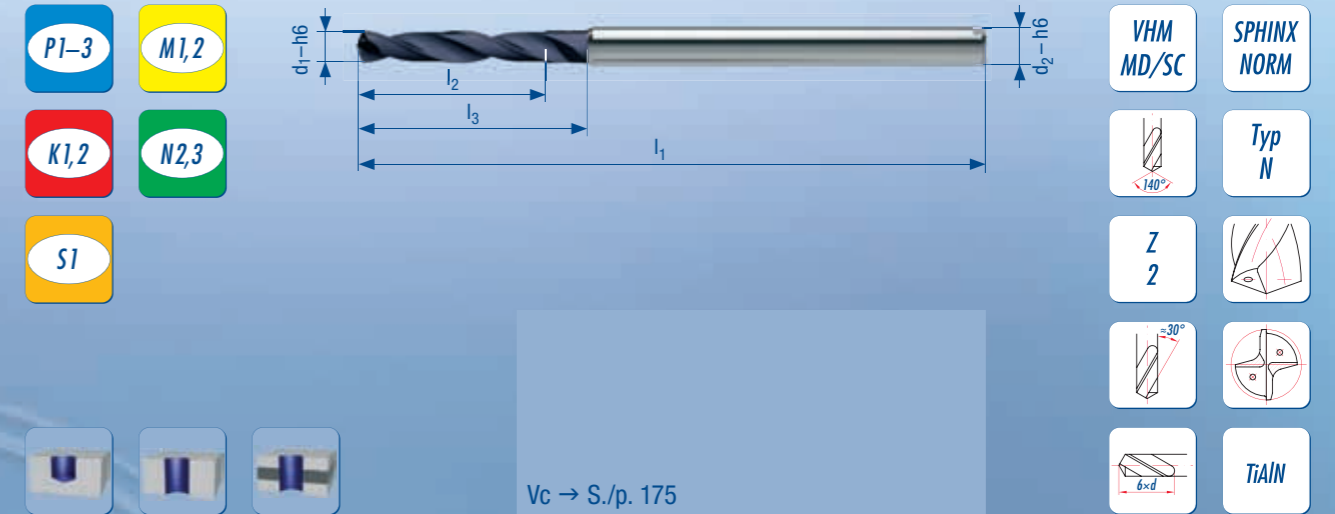
Innenkühlung ab ø 2.50 mm
 Trou d'huile à partir du ø 2.50 mm
 Fori di lubrificazione a partire dal ø 2.50 mm
 Internal coolant from ø 2.50 mm
 Vc → S./p. 175

| d1 | l2 | l3 | l1 | d2 | d1 | l2 | l3 | l1 | d2 | d1 | l2 | l3 | l1 | d2 |
|------|-------|-------|----|------|------|-------|-------|----|-------|-------|-------|-------|-----|-------|
| mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm |
| 1.00 | 3.00 | 5.00 | 38 | 3.00 | 4.80 | 14.40 | 22.50 | 60 | 6.00 | 8.60 | 25.80 | 37.00 | 79 | 10.00 |
| 1.10 | 3.30 | 5.50 | 38 | 3.00 | 4.90 | 14.70 | 22.50 | 60 | 6.00 | 8.70 | 26.10 | 37.00 | 79 | 10.00 |
| 1.20 | 3.60 | 5.50 | 38 | 3.00 | 5.00 | 15.00 | 23.00 | 60 | 6.00 | 8.80 | 26.40 | 37.50 | 79 | 10.00 |
| 1.30 | 3.90 | 6.00 | 38 | 3.00 | 5.10 | 15.30 | 23.50 | 64 | 6.00 | 8.90 | 26.70 | 37.50 | 79 | 10.00 |
| 1.40 | 4.20 | 6.00 | 38 | 3.00 | 5.20 | 15.60 | 23.50 | 64 | 6.00 | 9.00 | 27.00 | 38.00 | 79 | 10.00 |
| 1.50 | 4.50 | 6.50 | 38 | 3.00 | 5.30 | 15.90 | 24.00 | 64 | 6.00 | 9.10 | 27.30 | 38.50 | 85 | 10.00 |
| 1.60 | 4.80 | 7.50 | 38 | 3.00 | 5.40 | 16.20 | 24.00 | 64 | 6.00 | 9.20 | 27.60 | 38.50 | 85 | 10.00 |
| 1.70 | 5.10 | 8.00 | 38 | 3.00 | 5.50 | 16.50 | 24.50 | 64 | 6.00 | 9.30 | 27.90 | 39.00 | 85 | 10.00 |
| 1.80 | 5.40 | 8.50 | 38 | 3.00 | 5.60 | 16.80 | 24.50 | 64 | 6.00 | 9.40 | 28.20 | 39.00 | 85 | 10.00 |
| 1.90 | 5.70 | 8.50 | 38 | 3.00 | 5.70 | 17.10 | 25.50 | 64 | 6.00 | 9.50 | 28.50 | 40.00 | 85 | 10.00 |
| 2.00 | 6.00 | 9.00 | 38 | 3.00 | 5.80 | 17.40 | 25.50 | 64 | 6.00 | 9.60 | 28.80 | 40.00 | 85 | 10.00 |
| 2.10 | 6.30 | 9.50 | 38 | 3.00 | 5.90 | 17.70 | 25.50 | 64 | 6.00 | 9.70 | 29.10 | 40.50 | 85 | 10.00 |
| 2.20 | 6.60 | 9.50 | 38 | 3.00 | 6.00 | 18.00 | 27.00 | 64 | 6.00 | 9.80 | 29.40 | 40.50 | 85 | 10.00 |
| 2.30 | 6.90 | 10.00 | 38 | 3.00 | 6.10 | 18.30 | 27.50 | 68 | 8.00 | 9.90 | 29.70 | 41.00 | 85 | 10.00 |
| 2.40 | 7.20 | 10.00 | 38 | 3.00 | 6.20 | 18.60 | 27.50 | 68 | 8.00 | 10.00 | 30.00 | 42.00 | 85 | 10.00 |
| 2.50 | 7.50 | 10.50 | 50 | 3.00 | 6.30 | 18.90 | 28.00 | 68 | 8.00 | 10.10 | 30.30 | 42.50 | 93 | 12.00 |
| 2.60 | 7.80 | 11.00 | 50 | 3.00 | 6.40 | 19.20 | 28.00 | 68 | 8.00 | 10.20 | 30.60 | 42.50 | 93 | 12.00 |
| 2.70 | 8.10 | 11.50 | 50 | 3.00 | 6.50 | 19.50 | 28.50 | 68 | 8.00 | 10.30 | 30.90 | 43.00 | 93 | 12.00 |
| 2.80 | 8.40 | 11.50 | 50 | 3.00 | 6.60 | 19.80 | 29.00 | 68 | 8.00 | 10.40 | 31.20 | 43.00 | 93 | 12.00 |
| 2.90 | 8.70 | 12.00 | 50 | 3.00 | 6.70 | 20.10 | 29.50 | 68 | 8.00 | 10.50 | 31.50 | 43.50 | 93 | 12.00 |
| 3.00 | 9.00 | 12.50 | 50 | 3.00 | 6.80 | 20.40 | 29.50 | 68 | 8.00 | 10.60 | 31.80 | 44.00 | 93 | 12.00 |
| 3.10 | 9.30 | 13.50 | 55 | 6.00 | 6.90 | 20.70 | 30.00 | 68 | 8.00 | 10.70 | 32.10 | 44.00 | 93 | 12.00 |
| 3.20 | 9.60 | 13.50 | 55 | 6.00 | 7.00 | 21.00 | 31.00 | 68 | 8.00 | 10.80 | 32.40 | 44.50 | 93 | 12.00 |
| 3.30 | 9.90 | 13.50 | 55 | 6.00 | 7.10 | 21.30 | 31.50 | 72 | 8.00 | 10.90 | 32.70 | 44.50 | 93 | 12.00 |
| 3.40 | 10.20 | 14.00 | 55 | 6.00 | 7.20 | 21.60 | 31.50 | 72 | 8.00 | 11.00 | 33.00 | 46.00 | 93 | 12.00 |
| 3.50 | 10.50 | 14.50 | 55 | 6.00 | 7.30 | 21.90 | 32.00 | 72 | 8.00 | 11.10 | 33.30 | 46.50 | 97 | 12.00 |
| 3.60 | 10.80 | 15.00 | 55 | 6.00 | 7.40 | 22.20 | 32.00 | 72 | 8.00 | 11.20 | 33.60 | 46.50 | 97 | 12.00 |
| 3.70 | 11.10 | 15.00 | 55 | 6.00 | 7.50 | 22.50 | 32.50 | 72 | 8.00 | 11.30 | 33.90 | 47.00 | 97 | 12.00 |
| 3.80 | 11.40 | 15.50 | 55 | 6.00 | 7.60 | 22.80 | 32.50 | 72 | 8.00 | 11.40 | 34.20 | 47.00 | 97 | 12.00 |
| 3.90 | 11.70 | 15.50 | 55 | 6.00 | 7.70 | 23.10 | 33.50 | 72 | 8.00 | 11.50 | 34.50 | 48.00 | 97 | 12.00 |
| 4.00 | 12.00 | 16.00 | 55 | 6.00 | 7.80 | 23.40 | 33.50 | 72 | 8.00 | 11.60 | 34.80 | 48.00 | 97 | 12.00 |
| 4.10 | 12.30 | 18.50 | 60 | 6.00 | 7.90 | 23.70 | 34.00 | 72 | 8.00 | 11.70 | 35.10 | 48.00 | 97 | 12.00 |
| 4.20 | 12.60 | 18.50 | 60 | 6.00 | 8.00 | 24.00 | 34.00 | 72 | 8.00 | 11.80 | 35.40 | 48.50 | 97 | 12.00 |
| 4.30 | 12.90 | 19.00 | 60 | 6.00 | 8.10 | 24.30 | 35.50 | 79 | 10.00 | 11.90 | 35.70 | 48.50 | 97 | 12.00 |
| 4.40 | 13.20 | 19.00 | 60 | 6.00 | 8.20 | 24.60 | 35.50 | 79 | 10.00 | 12.00 | 36.00 | 50.00 | 97 | 12.00 |
| 4.50 | 13.50 | 20.50 | 60 | 6.00 | 8.30 | 24.90 | 36.00 | 79 | 10.00 | 12.50 | 37.80 | 53.00 | 100 | 14.00 |
| 4.60 | 13.80 | 22.00 | 60 | 6.00 | 8.40 | 25.20 | 36.00 | 79 | 10.00 | 12.70 | 38.10 | 53.00 | 100 | 14.00 |
| 4.70 | 14.10 | 22.00 | 60 | 6.00 | 8.50 | 25.50 | 36.50 | 79 | 10.00 | | | | | |

Hochleistungsbohrer Phoenix 6 × d

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

Art. 50940



P1-3 M1,2
K1,2 N2,3
S1

VHM MD/SC SPHINX NORM
Typ N
Z 2
30°
6×d TiAlN

Vc → S./p. 175

| d1 | l2 | l3 | l1 | d2 | d1 | l2 | l3 | l1 | d2 | d1 | l2 | l3 | l1 | d2 | d1 | l2 | l3 | l1 | d2 | |
|------|-------|-------|----|------|------|-------|-------|----|------|------|-------|-------|----|------|-------|-------|-------|-----|-------|----|
| mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm |
| 1.00 | 6.00 | 8.00 | 38 | 3.00 | 2.90 | 17.40 | 20.40 | 50 | 3.00 | 4.80 | 28.80 | 37.00 | 79 | 6.00 | 7.40 | 44.40 | 54.50 | 95 | 8.00 | |
| 1.05 | 6.30 | 8.30 | 38 | 3.00 | 2.95 | 17.70 | 20.70 | 50 | 3.00 | 4.85 | 29.10 | 37.50 | 79 | 6.00 | 7.50 | 45.00 | 55.00 | 95 | 8.00 | |
| 1.10 | 6.60 | 8.60 | 38 | 3.00 | 3.00 | 18.00 | | 50 | 3.00 | 4.90 | 29.40 | 37.50 | 79 | 6.00 | 7.60 | 45.60 | 55.50 | 95 | 8.00 | |
| 1.15 | 6.90 | 8.90 | 38 | 3.00 | 3.05 | 18.30 | 22.30 | 66 | 6.00 | 4.95 | 29.70 | 38.00 | 79 | 6.00 | 7.70 | 46.20 | 56.00 | 95 | 8.00 | |
| 1.20 | 7.20 | 9.20 | 38 | 3.00 | 3.10 | 18.60 | 22.60 | 66 | 6.00 | 5.00 | 30.00 | 38.00 | 79 | 6.00 | 7.80 | 46.80 | 57.00 | 95 | 8.00 | |
| 1.25 | 7.50 | 9.50 | 38 | 3.00 | 3.15 | 18.90 | 22.90 | 66 | 6.00 | 5.05 | 30.30 | 38.50 | 79 | 6.00 | 7.90 | 47.40 | 57.50 | 95 | 8.00 | |
| 1.30 | 7.80 | 9.80 | 38 | 3.00 | 3.20 | 19.20 | 23.20 | 66 | 6.00 | 5.10 | 30.60 | 38.50 | 79 | 6.00 | 8.00 | 48.00 | 58.00 | 95 | 8.00 | |
| 1.35 | 8.10 | 10.10 | 38 | 3.00 | 3.25 | 19.50 | 23.50 | 66 | 6.00 | 5.15 | 30.90 | 39.00 | 79 | 6.00 | 8.10 | 48.60 | 59.50 | 106 | 10.00 | |
| 1.40 | 8.40 | 10.40 | 38 | 3.00 | 3.30 | 19.80 | 23.80 | 66 | 6.00 | 5.20 | 31.20 | 39.00 | 79 | 6.00 | 8.20 | 49.20 | 60.00 | 106 | 10.00 | |
| 1.45 | 8.70 | 10.70 | 38 | 3.00 | 3.35 | 20.10 | 24.10 | 66 | 6.00 | 5.25 | 31.50 | 40.00 | 79 | 6.00 | 8.30 | 49.80 | 61.00 | 106 | 10.00 | |
| 1.50 | 9.00 | 11.00 | 38 | 3.00 | 3.40 | 20.40 | 24.40 | 66 | 6.00 | 5.30 | 31.80 | 40.00 | 79 | 6.00 | 8.40 | 50.40 | 61.50 | 106 | 10.00 | |
| 1.55 | 9.30 | 11.30 | 38 | 3.00 | 3.45 | 20.70 | 24.70 | 66 | 6.00 | 5.35 | 32.10 | 40.50 | 79 | 6.00 | 8.50 | 51.00 | 62.00 | 106 | 10.00 | |
| 1.60 | 9.60 | 12.60 | 38 | 3.00 | 3.50 | 21.00 | 25.00 | 66 | 6.00 | 5.40 | 32.40 | 40.50 | 79 | 6.00 | 8.60 | 51.60 | 62.50 | 106 | 10.00 | |
| 1.65 | 9.90 | 12.90 | 38 | 3.00 | 3.55 | 21.30 | 25.30 | 66 | 6.00 | 5.45 | 32.70 | 41.00 | 79 | 6.00 | 8.70 | 52.20 | 63.00 | 106 | 10.00 | |
| 1.70 | 10.20 | 13.20 | 38 | 3.00 | 3.60 | 21.60 | 25.60 | 66 | 6.00 | 5.50 | 33.00 | 41.00 | 79 | 6.00 | 8.80 | 52.80 | 64.00 | 106 | 10.00 | |
| 1.75 | 10.50 | 13.50 | 38 | 3.00 | 3.65 | 21.90 | 25.90 | 66 | 6.00 | 5.55 | 33.30 | 41.50 | 81 | 6.00 | 8.90 | 53.40 | 64.50 | 106 | 10.00 | |
| 1.80 | 10.80 | 13.80 | 38 | 3.00 | 3.70 | 22.20 | 26.20 | 66 | 6.00 | 5.60 | 33.60 | 41.50 | 81 | 6.00 | 9.00 | 54.00 | 65.00 | 106 | 10.00 | |
| 1.85 | 11.10 | 14.10 | 38 | 3.00 | 3.75 | 22.50 | 26.50 | 66 | 6.00 | 5.65 | 33.90 | 42.00 | 81 | 6.00 | 9.10 | 54.60 | 65.50 | 113 | 10.00 | |
| 1.90 | 11.40 | 14.40 | 38 | 3.00 | 3.80 | 22.80 | 26.80 | 66 | 6.00 | 5.70 | 34.20 | 42.00 | 81 | 6.00 | 9.20 | 55.20 | 66.00 | 113 | 10.00 | |
| 1.95 | 11.70 | 14.70 | 38 | 3.00 | 3.85 | 23.10 | 27.10 | 66 | 6.00 | 5.75 | 34.50 | 43.00 | 81 | 6.00 | 9.30 | 55.80 | 67.00 | 113 | 10.00 | |
| 2.00 | 12.00 | 15.00 | 50 | 3.00 | 3.90 | 23.40 | 27.40 | 66 | 6.00 | 5.80 | 34.80 | 43.00 | 81 | 6.00 | 9.40 | 56.40 | 67.50 | 113 | 10.00 | |
| 2.05 | 12.30 | 15.30 | 50 | 3.00 | 3.95 | 23.70 | 27.70 | 66 | 6.00 | 5.85 | 35.10 | 43.50 | 81 | 6.00 | 9.50 | 57.00 | 68.00 | 113 | 10.00 | |
| 2.10 | 12.60 | 15.60 | 50 | 3.00 | 4.00 | 24.00 | 28.00 | 66 | 6.00 | 5.90 | 35.40 | 43.50 | 81 | 6.00 | 9.60 | 57.60 | 68.50 | 113 | 10.00 | |
| 2.15 | 12.90 | 15.90 | 50 | 3.00 | 4.05 | 24.30 | 30.20 | 79 | 6.00 | 5.95 | 35.70 | 44.00 | 81 | 6.00 | 9.70 | 58.20 | 69.00 | 113 | 10.00 | |
| 2.20 | 13.20 | 16.20 | 50 | 3.00 | 4.10 | 24.60 | 30.50 | 79 | 6.00 | 6.00 | 36.00 | | 81 | 6.00 | 9.80 | 58.80 | 70.00 | 113 | 10.00 | |
| 2.25 | 13.50 | 16.50 | 50 | 3.00 | 4.15 | 24.90 | 30.80 | 79 | 6.00 | 6.10 | 36.60 | 45.50 | 89 | 8.00 | 9.90 | 59.40 | 70.50 | 113 | 10.00 | |
| 2.30 | 13.80 | 16.80 | 50 | 3.00 | 4.20 | 25.20 | 31.00 | 79 | 6.00 | 6.20 | 37.20 | 46.00 | 89 | 8.00 | 10.00 | 60.00 | 72.00 | 113 | 10.00 | |
| 2.35 | 14.10 | 17.10 | 50 | 3.00 | 4.25 | 25.50 | 31.50 | 79 | 6.00 | 6.30 | 37.80 | 47.00 | 89 | 8.00 | 10.10 | 60.60 | 72.50 | 125 | 12.00 | |
| 2.40 | 14.40 | 17.40 | 50 | 3.00 | 4.30 | 25.80 | 32.00 | 79 | 6.00 | 6.40 | 38.40 | 47.50 | 89 | 8.00 | 10.20 | 61.20 | 73.00 | 125 | 12.00 | |
| 2.45 | 14.70 | 17.70 | 50 | 3.00 | 4.35 | 26.10 | 32.50 | 79 | 6.00 | 6.50 | 39. | | | | | | | | | |

| 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 |

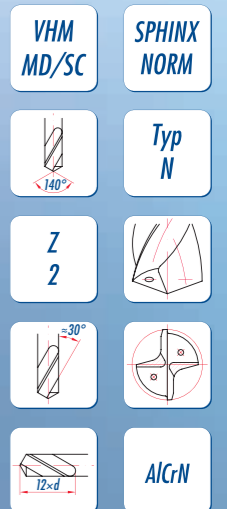
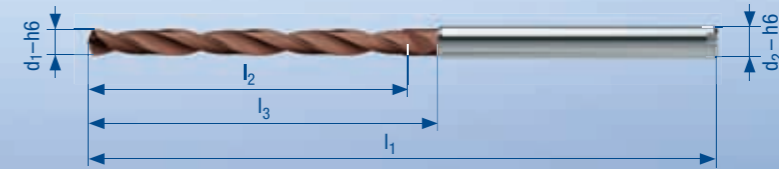
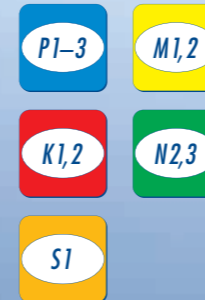
Hochleistungsbohrer Phoenix 12 × d

Foret à grand rendement Phoenix 12 × d

Punta ad alto rendimento Phoenix 12 × d

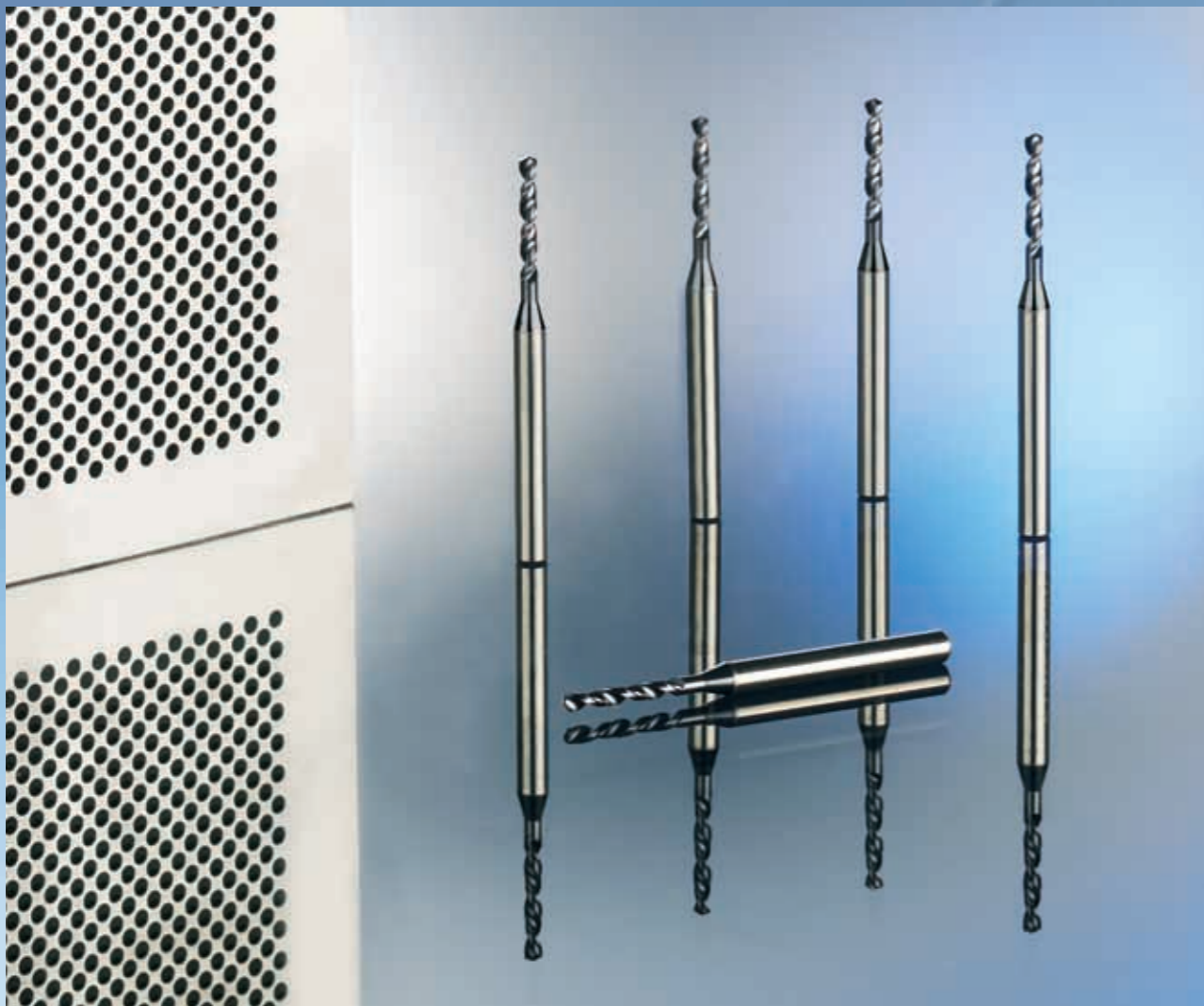
High performance drill Phoenix 12 × d

Art. 50942



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

Vc → S./p. 176



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

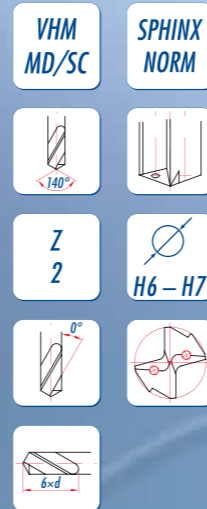
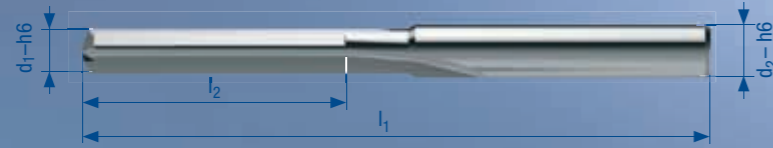
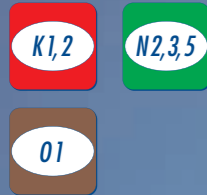
| d ₁ mm | l ₂ mm | l ₃ mm | l ₁ mm | d ₂ mm |
|----------------------|----------------------|----------------------|----------------------|----------------------|
| 4.80 | 57.60 | 65.50 | 105 | 6.00 |
| 4.90 | 58.80 | 67.00 | 105 | 6.00 |
| 5.00 | 60.00 | 68.00 | 105 | 6.00 |
| 5.10 | 61.20 | 69.50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

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

Hochleistungsbohrer Quadro Plus 6 × d

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

Art. 52100



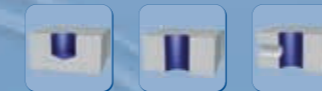
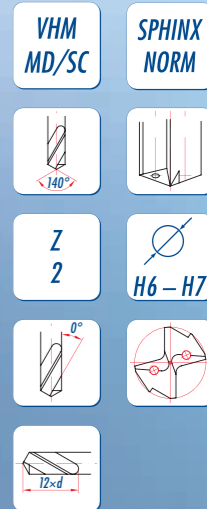
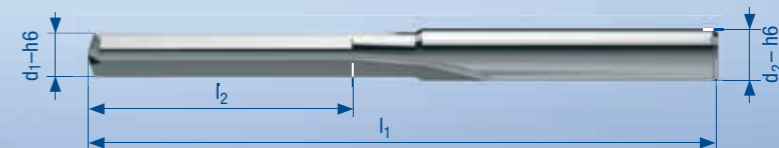
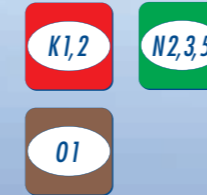
Vc → S./p. 176

| 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

Foret à grand rendement 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 x d Art. 52150

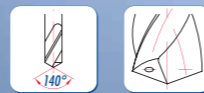
Foret à grand rendement Quadro 15 Plus 6 x d

Punta ad alto rendimento Quadro 15 Plus 6 x d

High performance drill Quadro 15 Plus 6 x d



VHM
MD/SC SPHINX
NORM



Z
2 TiAlN



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 |

K=1.8
0 +0.1

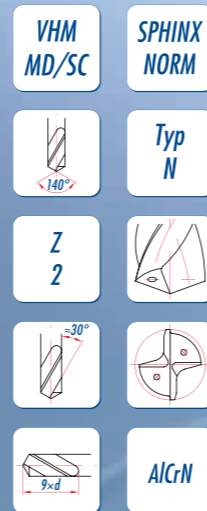
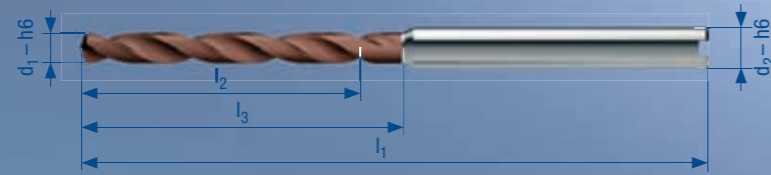


Hochleistungsbohrer Power-Phoenix 9 x d Art. 50909

Foret à grand rendement Power-Phoenix 9 x d

Punta ad alto rendimento Power-Phoenix 9 x d

High performance drill Power-Phoenix 9 x d



Vc → S./p. 177

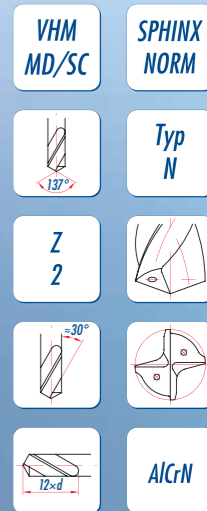
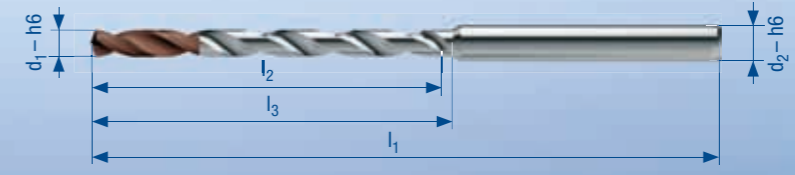
| d ₁ | l ₂ | l ₃ | l ₁ | d ₂ | d ₁ | l ₂ | l ₃ | l ₁ | d ₂ | d ₁ | l ₂ | l ₃ | l ₁ | d ₂ |
|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm |
| 1.00 | 9.00 | 11.00 | 51 | 3.00 | 4.80 | 43.20 | 51.00 | 91 | 6.00 | 8.60 | 77.40 | 88.50 | 134 | 10.00 |
| 1.10 | 9.90 | 12.00 | 51 | 3.00 | 4.90 | 44.10 | 52.00 | 91 | 6.00 | 8.70 | 78.30 | 89.50 | 134 | 10.00 |
| 1.20 | 10.80 | 13.00 | 51 | 3.00 | 5.00 | 45.00 | 53.00 | 91 | 6.00 | 8.80 | 79.20 | 90.00 | 134 | 10.00 |
| 1.30 | 11.70 | 14.00 | 51 | 3.00 | 5.10 | 45.90 | 54.00 | 100 | 6.00 | 8.90 | 80.10 | 91.00 | 134 | 10.00 |
| 1.40 | 12.60 | 15.00 | 51 | 3.00 | 5.20 | 46.80 | 55.00 | 100 | 6.00 | 9.00 | 81.00 | 92.00 | 134 | 10.00 |
| 1.50 | 13.50 | 16.50 | 51 | 3.00 | 5.30 | 47.70 | 56.00 | 100 | 6.00 | 9.10 | 81.90 | 93.00 | 144 | 10.00 |
| 1.60 | 14.40 | 17.50 | 51 | 3.00 | 5.40 | 48.60 | 57.00 | 100 | 6.00 | 9.20 | 82.80 | 94.00 | 144 | 10.00 |
| 1.70 | 15.30 | 18.50 | 51 | 3.00 | 5.50 | 49.50 | 57.50 | 100 | 6.00 | 9.30 | 83.70 | 95.00 | 144 | 10.00 |
| 1.80 | 16.20 | 19.00 | 51 | 3.00 | 5.60 | 50.40 | 58.50 | 100 | 6.00 | 9.40 | 84.60 | 95.50 | 144 | 10.00 |
| 1.90 | 17.10 | 20.00 | 51 | 3.00 | 5.70 | 51.30 | 59.50 | 100 | 6.00 | 9.50 | 85.50 | 96.50 | 144 | 10.00 |
| 2.00 | 18.00 | 21.00 | 51 | 3.00 | 5.80 | 52.20 | 60.00 | 100 | 6.00 | 9.60 | 86.40 | 97.50 | 144 | 10.00 |
| 2.10 | 18.90 | 22.00 | 61 | 3.00 | 5.90 | 53.10 | 61.00 | 100 | 6.00 | 9.70 | 87.30 | 98.50 | 144 | 10.00 |
| 2.20 | 19.80 | 23.00 | 61 | 3.00 | 6.00 | 54.00 | 62.00 | 100 | 6.00 | 9.80 | 88.20 | 99.00 | 144 | 10.00 |
| 2.30 | 20.70 | 24.00 | 61 | 3.00 | 6.10 | 54.90 | 64.00 | 111 | 8.00 | 9.90 | 89.10 | 100.00 | 144 | 10.00 |
| 2.40 | 21.60 | 24.50 | 61 | 3.00 | 6.20 | 55.80 | 65.00 | 111 | 8.00 | 10.00 | 90.00 | 102.00 | 144 | 10.00 |
| 2.50 | 22.50 | 25.50 | 61 | 3.00 | 6.30 | 56.70 | 66.00 | 111 | 8.00 | 10.10 | 90.90 | 103.00 | 159 | 12.00 |
| 2.60 | 23.40 | 26.50 | 61 | 3.00 | 6.40 | 57.60 | 66.50 | 111 | 8.00 | 10.20 | 91.80 | 104.00 | 159 | 12.00 |
| 2.70 | 24.30 | 27.50 | 61 | 3.00 | 6.50 | 58.50 | 67.50 | 111 | 8.00 | 10.30 | 92.70 | 105.00 | 159 | 12.00 |
| 2.80 | 25.20 | 28.00 | 61 | 3.00 | 6.60 | 59.40 | 68.50 | 111 | 8.00 | 10.40 | 93.60 | 105.50 | 159 | 12.00 |
| 2.90 | 26.10 | 29.00 | 61 | 3.00 | 6.70 | 60.30 | 69.50 | 111 | 8.00 | 10.50 | 94.50 | 106.50 | 159 | 12.00 |
| 3.00 | 27.00 | 31.00 | 61 | 3.00 | 6.80 | 61.20 | 70.00 | 111 | 8.00 | 10.60 | 95.40 | 107.50 | 159 | 12.00 |
| 3.10 | 27.90 | 32.00 | 79 | 6.00 | 6.90 | 62.10 | 71.00 | 111 | 8.00 | 10.70 | 96.30 | 108.50 | 159 | 12.00 |
| 3.20 | 28.80 | 33.00 | 79 | 6.00 | 7.00 | 63.00 | 73.00 | 111 | 8.00 | 10.80 | 97.20 | 109.00 | 159 | 12.00 |
| 3.30 | 29.70 | 34.00 | 79 | 6.00 | 7.10 | 63.90 | 74.00 | 120 | 8.00 | 10.90 | 98.10 | 110.00 | 159 | 12.00 |
| 3.40 | 30.60 | 35.00 | 79 | 6.00 | 7.20 | 64.80 | 75.00 | 120 | 8.00 | 11.00 | 99.00 | 112.00 | 159 | 12.00 |
| 3.50 | 31.50 | 36.50 | 79 | 6.00 | 7.30 | 65.70 | 76.00 | 120 | 8.00 | 11.10 | 99.90 | 113.00 | 169 | 12.00 |
| 3.60 | 32.40 | 37.50 | 79 | 6.00 | 7.40 | 66.60 | 76.50 | 120 | 8.00 | 11.20 | 100.80 | 114.00 | 169 | 12.00 |
| 3.70 | 33.30 | 38.50 | 79 | 6.00 | 7.50 | 67.50 | 77.50 | 120 | 8.00 | 11.30 | 101.70 | 115.00 | 169 | 12.00 |
| 3.80 | 34.20 | 39.00 | 79 | 6.00 | 7.60 | 68.40 | 78.50 | 120 | 8.00 | 11.40 | 102.60 | 115.50 | 169 | 12.00 |
| 3.90 | 35.10 | 40.00 | 79 | 6.00 | 7.70 | 69.30 | 79.50 | 120 | 8.00 | 11.50 | 103.50 | 116.50 | 169 | 12.00 |
| 4.00 | 36.00 | 41.00 | 79 | 6.00 | 7.80 | 70.20 | 80.00 | 120 | 8.00 | 11.60 | 104.40 | 117.50 | 169 | 12.00 |
| 4.10 | 36.90 | 43.00 | 91 | 6.00 | 7.90 | 82.00 | 81.00 | 120 | 8.00 | 11.70 | 105.30 | 118.50 | 169 | 12.00 |
| 4.20 | 37.80 | 44.00 | 91 | 6.00 | 8.00 | 82.00 | 82.00 | 120 | 8.00 | 11.80 | 106.20 | 119.00 | 169 | 12.00 |
| 4.30 | 38.70 | 45.00 | 91 | 6.00 | 8.10 | 82.00 | 84.00 | 134 | 10.00 | 11.90 | 107.10 | 120.00 | 169 | 12.00 |
| 4.40 | 39.60 | 45.50 | 91 | 6.00 | 8.20 | 83.80 | 85.00 | 134 | 10.00 | 12.00 | 108.00 | 122.00 | 169 | 12.00 |
| 4.50 | 40.50 | 46.50 | 91 | 6.00 | 8.30 | 84.70 | 86.00 | 134 | 10.00 | 12.50 | 112.50 | 126.50 | 179 | 14.00 |
| 4.60 | 41.40 | 49.50 | 91 | 6.00 | 8.40 | 85.60 | 86.50 | 134 | 10.00 | 12.70 | 114.30 | 128.50 | 179 | 14.00 |
| 4.70 | 42.30 | 50.50 | 91 | 6.00 | 8.50 | 86.50 | 87.50 | 134 | 10.00 | | | | | |

Hochleistungsbohrer Power-Phoenix 12 x d Art. 50912

Foret à grand rendement Power-Phoenix 12 x d

Punta ad alto rendimento Power-Phoenix 12 x d

High performance drill Power-Phoenix 12 x d



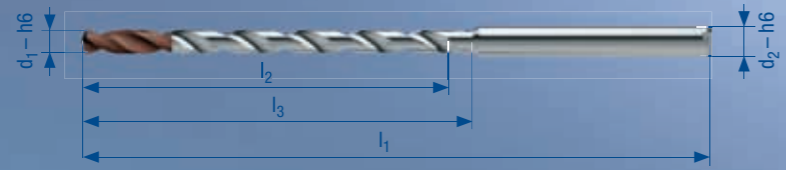
Ab ø 2.00 mm mit 4 Führungfasen
A partir de ø 2.00 mm avec 4 listel
A partire da ø 2.00 mm con 4 pattini di guida
From ø 2.00 mm with 4 guide margins

Vc → S./p. 178

| d ₁ | l ₂ | l ₃ | l ₁ | d ₂ | d ₁ | l ₂ | l ₃ | l ₁ | d ₂ | d ₁ | l ₂ | l ₃ | l ₁ | d ₂ |
|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm |
| 1.00 | 12.00 | 14.00 | 50 | 3.00 | 4.80 | 57.60 | 65.50 | 105 | 6.00 | 8.60 | 103.20 | 114.50 | 162 | 10.00 |
| 1.10 | 13.20 | 15.50 | 50 | 3.00 | 4.90 | 58.80 | 67.00 | 105 | 6.00 | 8.70 | 104.40 | 115.50 | 162 | 10.00 |
| 1.20 | 14.40 | 16.50 | 50 | 3.00 | 5.00 | 60.00 | 68.00 | 105 | 6.00 | 8.80 | 105.60 | 116.50 | 162 | 10.00 |
| 1.30 | 15.60 | 17.50 | 50 | 3.00 | 5.10 | 61.20 | 69.50 | 118 | 6.00 | 8.90 | 106.80 | 118.00 | 162 | 10.00 |
| 1.40 | 16.80 | 19.00 | 50 | 3.00 | 5.20 | 62.40 | 70.50 | 118 | 6.00 | 9.00 | 108.00 | 119.00 | 162 | 10.00 |
| 1.50 | 18.00 | 21.00 | 50 | 3.00 | 5.30 | 63.60 | 71.50 | 118 | 6.00 | 9.10 | 109.20 | 120.50 | 175 | 10.00 |
| 1.60 | 19.20 | 22.50 | 50 | 3.00 | 5.40 | 64.80 | 73.00 | 118 | 6.00 | 9.20 | 110.40 | 121.50 | 175 | 10.00 |
| 1.70 | 20.40 | 23.50 | 50 | 3.00 | 5.50 | 66.00 | 74.00 | 118 | 6.00 | 9.30 | 111.60 | 122.50 | 175 | 10.00 |
| 1.80 | 21.60 | 24.50 | 50 | 3.00 | 5.60 | 67.20 | 75.50 | 118 | 6.00 | 9.40 | 112.80 | 124.00 | 175 | 10.00 |
| 1.90 | 22.80 | 26.00 | 55 | 3.00 | 5.70 | 68.40 | 76.50 | 118 | 6.00 | 9.50 | 114.00 | 125.00 | 175 | 10.00 |
| 2.00 | 24.00 | 27.00 | 55 | 3.00 | 5.80 | 69.60 | 77.50 | 118 | 6.00 | 9.60 | 115.20 | 126.50 | 175 | 10.00 |
| 2.10 | 25.20 | 28.50 | 55 | 3.00 | 5.90 | 70.80 | 79.00 | 118 | 6.00 | 9.70 | 116.40 | 127.50 | 175 | 10.00 |
| 2.20 | 26.40 | 29.50 | 55 | 3.00 | 6.00 | 72.00 | 80.00 | 118 | 6.00 | 9.80 | 117.60 | 128.50 | 175 | 10.00 |
| 2.30 | 27.60 | 30.50 | 55 | 3.00 | 6.10 | 73.20 | 82.50 | 136 | 8.00 | 9.90 | 118.80 | 130.00 | 175 | 10.00 |
| 2.40 | 28.80 | 32.00 | 55 | 3.00 | 6.20 | 74.40 | 83.50 | 136 | 8.00 | 10.00 | 120.00 | 132.00 | 175 | 10.00 |
| 2.50 | 30.00 | 33.00 | 60 | 3.00 | 6.30 | 75.60 | 84.50 | 136 | 8.00 | 10.10 | 121.20 | 133.50 | 193 | 12.00 |
| 2.60 | 31.20 | 34.50 | 60 | 3.00 | 6.40 | 76.80 | 86.00 | 136 | 8.00 | 10.20 | 122.40 | 134.50 | 193 | 12.00 |
| 2.70 | 32.40 | 35.50 | 60 | 3.00 | 6.50 | 78.00 | 87.50 | 136 | 8.00 | 10.30 | 123.60 | 135.50 | 193 | 12.00 |
| 2.80 | 33.60 | 36.50 | 60 | 3.00 | 6.60 | 79.20 | 88.50 | 136 | 8.00 | 10.40 | 124.80 | 137.00 | 193 | 12.00 |
| 2.90 | 34.80 | 38.00 | 60 | 3.00 | 6.70 | 80.40 | 89.50 | 136 | 8.00 | 10.50 | 126.00 | 138.00 | 193 | 12.00 |
| 3.00 | 36.00 | 40.00 | 60 | 3.00 | 6.80 | 81.60 | 90.50 | 136 | 8.00 | 10.60 | 127.20 | 139.50 | 193 | 12.00 |
| 3.10 | 37.20 | 41.50 | 80 | 6.00 | 6.90 | 82.80 | 92.00 | 136 | 8.00 | 10.70 | 128.40 | 140.50 | 193 | 12.00 |
| 3.20 | 38.40 | 42.50 | 80 | 6.00 | 7.00 | 84.00 | 94.00 | 136 | 8.00 | 10.80 | 129.60 | 141.50 | 193 | 12.00 |
| 3.30 | 39.60 | 43.50 | 80 | 6.00 | 7.10 | 85.20 | 95.50 | 148 | 8.00 | 10.90 | 130.80 | 143.00 | 193 | 12.00 |
| 3.40 | 40.80 | 45.00 | 85 | 6.00 | 7.20 | 86.40 | 96.50 | 148 | 8.00 | 11.00 | 132.00 | 145.00 | 193 | 12.00 |
| 3.50 | 42.00 | 47.00 | 85 | 6.00 | 7.30 | 87.60 | 97.50 | 148 | 8.00 | 11.10 | 133.20 | 146.50 | 205 | 12.00 |
| 3.60 | 43.20 | 48.50 | 85 | 6.00 | 7.40 | 88.80 | 99.00 | 148 | 8.00 | 11.20 | 134.40 | 147.50 | 205 | 12.00 |
| 3.70 | 44.40 | 49.50 | 90 | 6.00 | 7.50 | 90.00 | 100.00 | 148 | 8.00 | 11.30 | 135.60 | 148.50 | 205 | 12.00 |
| 3.80 | 45.60 | 50.50 | 90 | 6.00 | 7.60 | 91.20 | 101.50 | 148 | 8.00 | 11.40 | 136.80 | 150.00 | 205 | 12.00 |
| 3.90 | 46.80 | 52.00 | 90 | 6.00 | 7.70 | 92.40 | 102.50 | 148 | 8.00 | 11.50 | 138.00 | 151.00 | 205 | 12.00 |
| 4.00 | 48.00 | 53.00 | 90 | 6.00 | 7.80 | 93.60 | 103.50 | 148 | 8.00 | 11.60 | 139.20 | 152.50 | 205 | 12.00 |
| 4.10 | 49.20 | 55.50 | 105 | 6.00 | 7.90 | 94.80 | 105.00 | 148 | 8.00 | 11.70 | 140.40 | 153.50 | 205 | 12.00 |
| 4.20 | 50.40 | 56.50 | 105 | 6.00 | 8.00 | 96.00 | 106.00 | 148 | 8.00 | 11.80 | 141.60 | 154.50 | 205 | 12.00 |
| 4.30 | 51.60 | 57.50 | 105 | 6.00 | 8.10 | 97.20 | 108.50 | 162 | 10.00 | 11.90 | 142.80 | 156.00 | 205 | 12.00 |
| 4.40 | 52.80 | 59.00 | 105 | 6.00 | 8.20 | 98.40 | 109.50 | 162 | 10.00 | 12.00 | 144.00 | 158.00 | 205 | 12.00 |

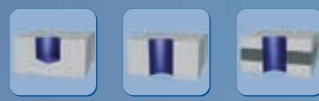
Hochleistungsbohrer Power-Phoenix 16×d Art. 50916

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



VHM MD/SC SPHINX NORM
 Typ N
 Z 2
 AIGrN

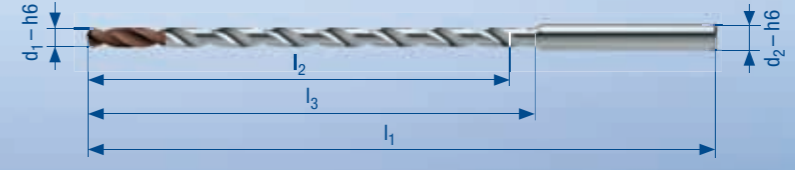
Ab ø 2.00 mm mit 4 Führungsfasen
 A partir de ø 2.00 mm avec 4 listel
 A partire da ø 2.00 mm con 4 pattini di guida
 From ø 2.00 mm with 4 guide margins
 Vc → S./p. 178



| d ₁ | l ₂ | l ₃ | l ₁ | d ₂ | d ₁ | l ₂ | l ₃ | l ₁ | d ₂ | d ₁ | l ₂ | l ₃ | l ₁ | d ₂ |
|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | 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 | | | | | | | | | | |
| 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 | | | | | | | | | | |
| 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 | | | | | | | | | | |

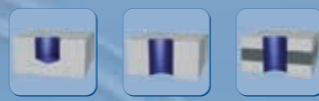
Hochleistungsbohrer Power-Phoenix 20×d Art. 50920

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



VHM MD/SC SPHINX NORM
 Typ N
 Z 2
 AIGrN

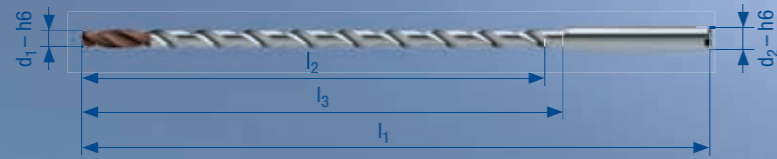
Anwendung } S./p. 199
 Application }
 Applicazione }
 Application }
 Vc → S./p. 178



| 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 Art. 50925

Foret à grand rendement Power-Phoenix 25 × d
 Punta ad alto rendimento Power-Phoenix 25 × d
 High performance drill Power-Phoenix 25 × d



VHM MD/SC SPHINX NORM
 Typ N
 Z 2
 AICrN

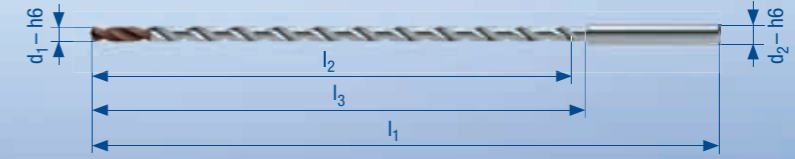
Anwendung Application Applicazione Application } S./p. 199
 Vc → S./p. 178



| d ₁ mm | l ₂ mm | l ₃ mm | l ₁ mm | d ₂ 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 |

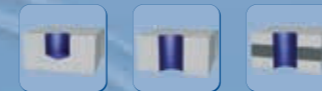
Hochleistungsbohrer Power-Phoenix 30 × d Art. 50930

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



VHM MD/SC SPHINX NORM
 Typ N
 Z 2
 AICrN

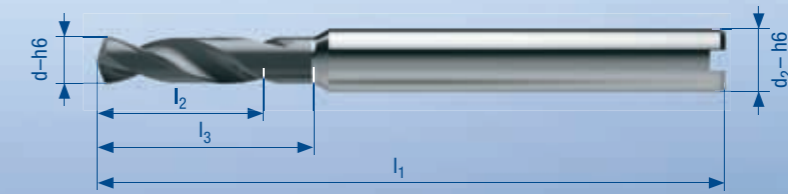
Anwendung Application Applicazione Application } S./p. 199
 Vc → S./p. 178



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

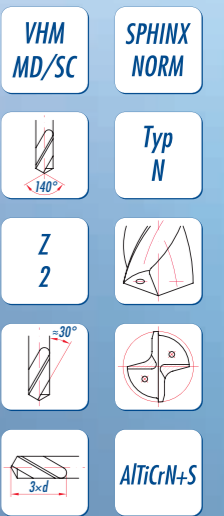
Hochleistungsbohrer Phoenix-TC2 3 × d Art. 52903

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



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

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

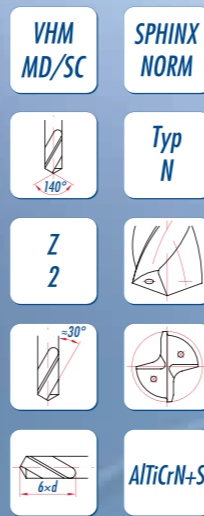
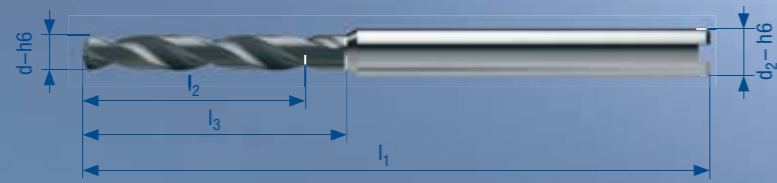
| d ₁ | l ₂ | l ₃ | l ₁ | d ₂ |
|----------------|----------------|----------------|----------------|----------------|
| mm | mm | mm | mm | mm |
| 7.40 | 22.20 | 32.00 | 72 | 8.00 |
| 7.50 | 22.50 | 32.50 | 72 | 8.00 |
| 7.60 | 22.80 | 32.50 | 72 | 8.00 |
| 7.70 | 23.10 | 33.50 | 72 | 8.00 |
| 7.80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

Hochleistungsbohrer Phoenix-TC2 6 × d Art. 52906

Foret à grand rendement Phoenix-TC2 6 × d

Punta ad alto rendimento Phoenix-TC2 6 × d

High performance drill Phoenix-TC2 6 × d



mit 2 Führungsfasen
avec 2 listels
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 | 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 | l ₂ | l ₃ | l ₁ | d ₂ |
|----------------|----------------|----------------|----------------|----------------|
| mm | mm | mm | mm | mm |
| 4.80 | 28.80 | 37.00 | 79 | 6.00 |
| 4.85 | 29.10 | 37.50 | 79 | 6.00 |
| 4.90 | 29.40 | 37.50 | 79 | 6.00 |
| 4.95 | 29.70 | 38.00 | 79 | 6.00 |
| 5.00 | 30.00 | 38.00 | 79 | 6.00 |
| 5.05 | 30.30 | 38.50 | 79 | 6.00 |
| 5.10 | 30.60 | 38.50 | 79 | 6.00 |
| 5.15 | 30.90 | 39.00 | 79 | 6.00 |
| 5.20 | 31.20 | 39.00 | 79 | 6.00 |
| 5.25 | 31.50 | 40.00 | 79 | 6.00 |
| 5.30 | 31.80 | 40.00 | 79 | 6.00 |
| 5.35 | 32.10 | 40.50 | 79 | 6.00 |
| 5.40 | 32.40 | 40.50 | 79 | 6.00 |
| 5.45 | 32.70 | 41.00 | 79 | 6.00 |
| 5.50 | 33.00 | 41.00 | 79 | 6.00 |
| 5.55 | 33.30 | 41.50 | 81 | 6.00 |
| 5.60 | 33.60 | 41.50 | 81 | 6.00 |
| 5.65 | 33.90 | 42.00 | 81 | 6.00 |
| 5.70 | 34.20 | 42.00 | 81 | 6.00 |
| 5.75 | 34.50 | 43.00 | 81 | 6.00 |
| 5.80 | 34.80 | 43.00 | 81 | 6.00 |
| 5.85 | 35.10 | 43.50 | 81 | 6.00 |
| 5.90 | 35.40 | 43.50 | 81 | 6.00 |
| 5.95 | 35.70 | 44.00 | 81 | 6.00 |
| 6.00 | 36.00 | 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 |

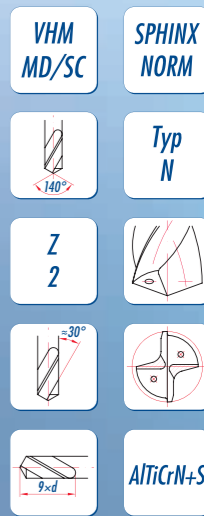
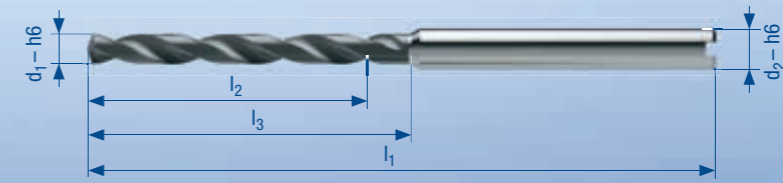
| d ₁ | l ₂ | l ₃ | l ₁ | d ₂ |
|----------------|----------------|----------------|----------------|----------------|
| mm | mm | mm | mm | mm |
| 7.40 | 44.40 | 54.50 | 95 | 8.00 |
| 7.50 | 45.00 | 55.00 | 95 | 8.00 |
| 7.60 | 45.60 | 55.50 | 95 | 8.00 |
| 7.70 | 46.20 | 56.00 | 95 | 8.00 |
| 7.80 | 46.80 | 57.00 | 95 | 8.00 |
| 7.90 | 47.40 | 57.50 | 95 | 8.00 |
| 8.00 | 48.00 | 58.00 | 95 | 8.00 |
| 8.50 | 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 Art. 52909

Foret à grand rendement Phoenix-TC2 9 × d

Punta ad alto rendimento Phoenix-TC2 9 × d

High performance drill Phoenix-TC2 9 × d



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

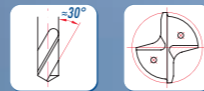
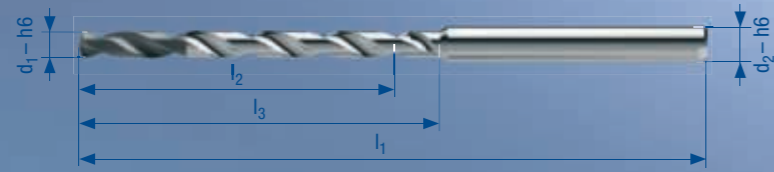
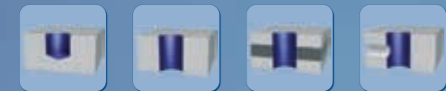
| d ₁ | l ₂ | l ₃ | l ₁ | d ₂ |
|----------------|----------------|----------------|----------------|----------------|
| mm | mm | mm | mm | mm |
| 4.80 | 43.20 | 51.00 | 91 | 6.00 |
| 4.90 | 44.10 | 52.00 | 91 | 6.00 |
| 5.00 | 45.00 | 53.00 | 91 | 6.00 |
| 5.10 | 45.90 | 54.00 | 100 | 6.00 |
| 5.20 | 46.80 | 55.00 | 100 | 6.00 |
| 5.30 | 47.70 | 56.00 | 100 | 6.00 |
| 5.40 | 48.60 | 57.00 | 100 | 6.00 |
| 5.50 | 49.50 | 57.50 | 100 | 6.00 |
| 5.60 | 50.40 | 58.50 | 100 | 6.00 |
| 5.70 | 51.30 | 59.50 | 100 | 6.00 |
| 5.80 | 52.20 | 60.00 | 100 | 6.00 |
| 5.90 | 53.10 | 61.00 | 100 | 6.00 |
| 6.00 | 54.00 | 62.00 | 100 | 6.00 |
| 6.10 | 54.90 | 64.00 | 111 | 8.00 |
| 6.20 | 55.80 | 65.00 | 111 | 8.00 |
| 6.30 | 56.70 | 66.00 | 111 | 8.00 |
| 6.40 | 57.60 | 66.50 | 111 | 8.00 |
| 6.50 | 58.50 | 67.50 | 111 | 8.00 |
| 6.60 | 59.40 | 68.50 | 111 | 8.00 |
| 6.70 | 60.30 | 69.50 | 111 | 8.00 |
| 6.80 | 61.20 | 70.00 | 111 | 8.00 |
| 6.90 | 62.10 | 71.00 | 111 | 8.00 |
| 7.00 | 63.00 | 73.00 | 111 | 8.00 |
| 7.10 | 63.90 | 74.00 | 120 | 8.00 |
| 7.20 | 64.80 | 75.00 | 120 | 8.00 |
| 7.30 | 65.70 | 76.00 | 120 | 8.00 |
| 7.40 | 66.60 | 76.50 | 120 | 8.00 |
| 7.50 | 67.50 | 77.50 | 120 | 8.00 |
| 7.60 | 68.40 | 78.50 | 120 | 8.00 |
| 7.70 | 69.30 | 79.50 | 120 | 8.00 |
| 7.80 | 70.20 | 80.00 | 120 | 8.00 |
| 7.90 | 82.00 | 81.00 | 120 | 8.00 |
| 8.00 | 72.00 | 82.00 | 120 | 8.00 |
| 8.50 | 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 Art. 52912

Foret à grand rendement Phoenix-TC2 12 × d

Punta ad alto rendimento Phoenix-TC2 12 × d

High performance drill Phoenix-TC2 12 × d



mit 2 Führungsfasen
avec 2 listels
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 |
| 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 |

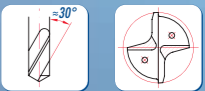
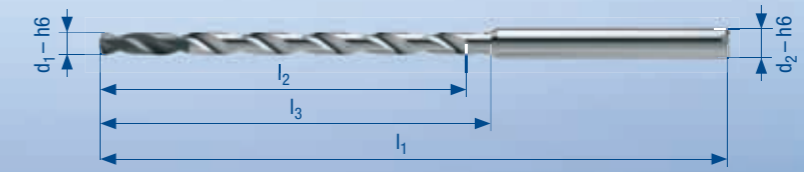
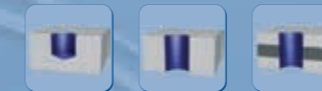
| d ₁ | l ₂ | l ₃ | l ₁ | d ₂ |
|----------------|----------------|----------------|----------------|----------------|
| mm | mm | mm | mm | mm |
| 4.80 | 57.60 | 65.50 | 105 | 6.00 |
| 4.90 | 58.80 | 67.00 | 105 | 6.00 |
| 5.00 | 60.00 | 68.00 | 105 | 6.00 |
| 5.10 | 61.20 | 69.50 | 118 | 6.00 |
| 5.20 | 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 |
| 8.50 | 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 Art. 52916

Foret à grand rendement Phoenix-TC2 16 × d

Punta ad alto rendimento Phoenix-TC2 16 × d

High performance drill Phoenix-TC2 16 × d



mit 2 Führungsfasen
avec 2 listels
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 Art. 52920

Foret à grand rendement Phoenix-TC2 20 × d

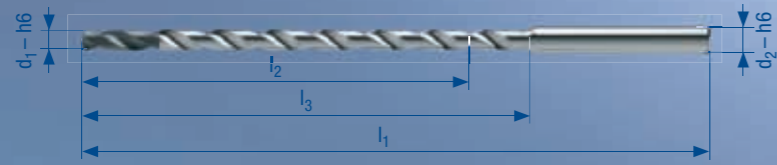
Punta ad alto rendimento Phoenix-TC2 20 × d

High performance drill Phoenix-TC2 20 × d

P3 M1,2

N1-3 S1

01



VHM MD/SC SPHINX NORM

Typ N

Z 2

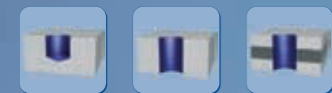
30°

20-d AlCrTiN

mit 2 Führungsfasen / avec 2 listels
con 2 pattini di guida / with 2 guide margins

Anwendung / Application } 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 | 60.00 | 69.00 | 108 | 6.00 |
| 3.30 | 66.00 | 75.00 | 113 | 6.00 |
| 4.00 | 80.00 | 94.00 | 132 | 6.00 |
| 4.20 | 84.00 | 98.00 | 136 | 6.00 |
| 5.00 | 100.00 | 107.00 | 145 | 6.00 |
| 6.00 | 120.00 | 138.00 | 176 | 6.00 |
| 6.80 | 136.00 | 156.00 | 196 | 8.00 |
| 7.00 | 140.00 | 161.00 | 201 | 8.00 |
| 8.00 | 160.00 | 182.00 | 222 | 8.00 |
| 8.50 | 170.00 | 195.00 | 240 | 10.00 |
| 9.00 | 180.00 | 207.00 | 252 | 10.00 |
| 10.00 | 200.00 | 230.00 | 275 | 10.00 |

Hochleistungsbohrer Phoenix-TC2 30 × d Art. 52930

Foret à grand rendement Phoenix-TC2 30 × d

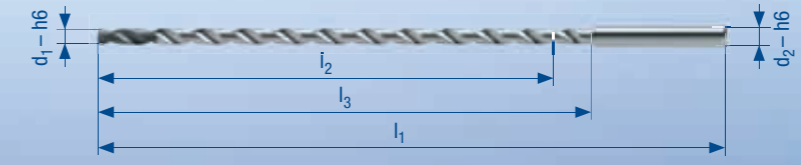
Punta ad alto rendimento Phoenix-TC2 30 × d

High performance drill Phoenix-TC2 30 × d

P3 M1,2

N1-3 S1

01



VHM MD/SC SPHINX NORM

Typ N

Z 2

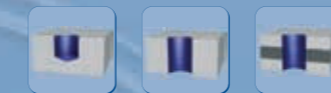
30°

30-d AlCrTiN

mit 2 Führungsfasen / avec 2 listels
con 2 pattini di guida / with 2 guide margins

Anwendung / Application } 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 |

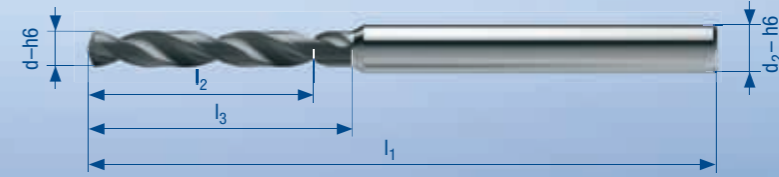
Hochleistungsbohrer Phoenix-TC4 6 × d Art. 54906

Foret à grand rendement 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

mit 4 Führungsfasen
avec 4 listels
con 4 pattini di guida
with 4 guide margins

Vc → S./p. 180

AlTiCrN+S



| d ₁ | l ₂ | l ₃ | l ₁ | d ₂ |
|----------------|----------------|----------------|----------------|----------------|
| mm | mm | mm | mm | 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 |

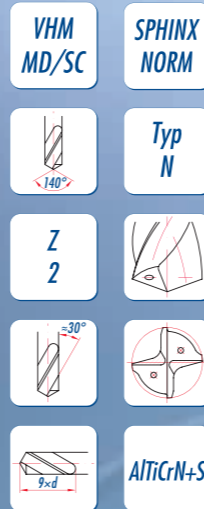
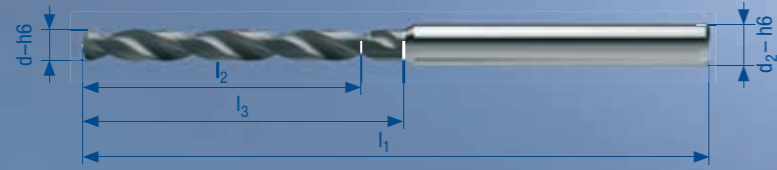
| d ₁ | l ₂ | l ₃ | l ₁ | d ₂ |
|----------------|----------------|----------------|----------------|----------------|
| mm | mm | mm | mm | mm |
| 6.80 | 40.80 | 50.00 | 89 | 8.00 |
| 6.90 | 41.40 | 50.50 | 89 | 8.00 |
| 7.00 | 42.00 | 52.00 | 89 | 8.00 |
| 7.10 | 42.60 | 52.50 | 95 | 8.00 |
| 7.20 | 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 Art. 54909

Foret à grand rendement Phoenix-TC4 9 × d

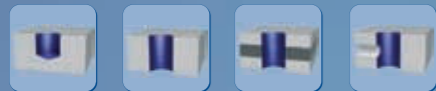
Punta ad alto rendimento Phoenix-TC4 9 × d

High performance drill Phoenix-TC4 9 × d



mit 4 Führungsfasen
avec 4 listels
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 |

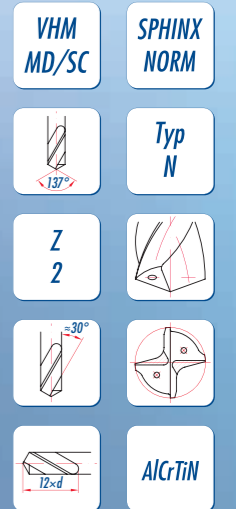
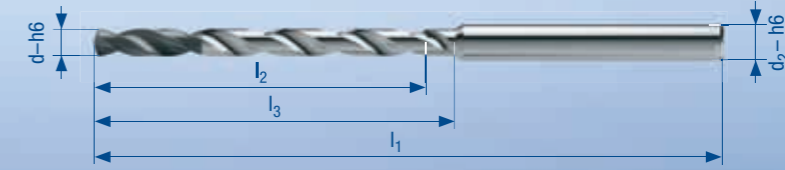
| d ₁ mm | l ₂ mm | l ₃ mm | l ₁ mm | d ₂ mm |
|----------------------|----------------------|----------------------|----------------------|----------------------|
| 6.80 | 61.20 | 70.00 | 111 | 8.00 |
| 6.90 | 62.10 | 71.00 | 111 | 8.00 |
| 7.00 | 63.00 | 73.00 | 111 | 8.00 |
| 7.10 | 63.90 | 74.00 | 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 Art. 54912

Foret à grand rendement Phoenix-TC4 12 × d

Punta ad alto rendimento Phoenix-TC4 12 × d

High performance drill Phoenix-TC4 12 × d



mit 4 Führungsfasen
avec 4 listels
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 | 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 |

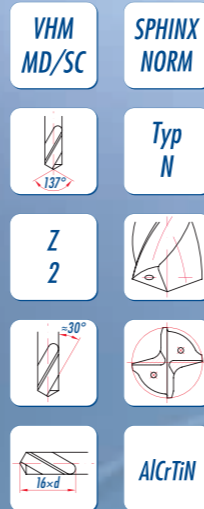
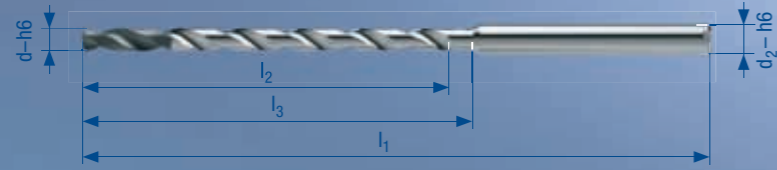
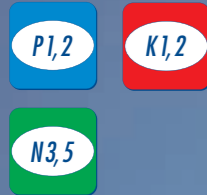
| d ₁ mm | l ₂ mm | l ₃ mm | l ₁ mm | d ₂ mm |
|----------------------|----------------------|----------------------|----------------------|----------------------|
| 6.80 | 81.60 | 90.50 | 136 | 8.00 |
| 6.90 | 82.80 | 92.00 | 136 | 8.00 |
| 7.00 | 84.00 | 94.00 | 136 | 8.00 |
| 7.10 | 85.20 | 95.50 | 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 Art. 54916

Foret à grand rendement Phoenix-TC4 16 × d

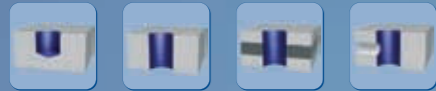
Punta ad alto rendimento Phoenix-TC4 16 × d

High performance drill Phoenix-TC4 16 × d



mit 4 Führungsfasen
avec 4 listels
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 |

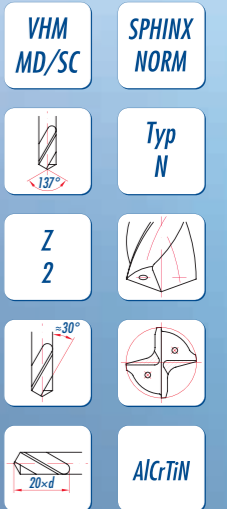
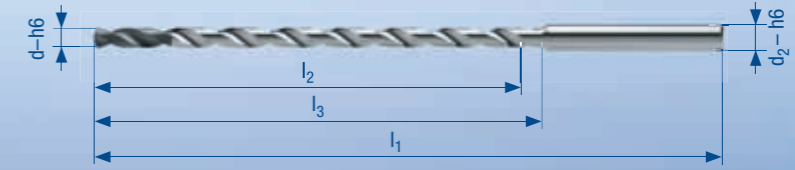
| d ₁ mm | l ₂ mm | l ₃ mm | l ₁ mm | d ₂ mm |
|----------------------|----------------------|----------------------|----------------------|----------------------|
| 6.80 | 108.80 | 118.00 | 160 | 8.00 |
| 6.90 | 110.40 | 119.50 | 160 | 8.00 |
| 7.00 | 112.00 | 122.00 | 160 | 8.00 |
| 7.10 | 113.60 | 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 Art. 54920

Foret à grand rendement Phoenix-TC4 20 × d

Punta ad alto rendimento Phoenix-TC4 20 × d

High performance drill Phoenix-TC4 20 × d



mit 4 Führungsfasen / avec 4 listels
con 4 pattini di guida / with 4 guide margins

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

Vc → S./p. 181



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

Hochleistungsbohrer Phoenix-TC4 30 × d Art. 54930

Foret à grand rendement Phoenix-TC4 30 × d

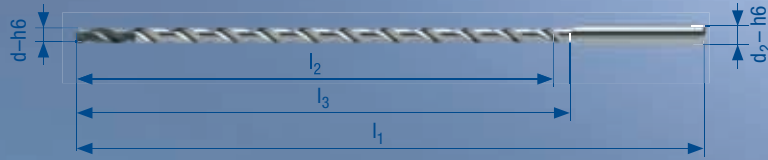
Punta ad alto rendimento Phoenix-TC4 30 × d

High performance drill Phoenix-TC4 30 × d

P1,2

K1,2

N3,5



VHM
MD/SC

SPHINX
NORM



Typ
N

Z
2

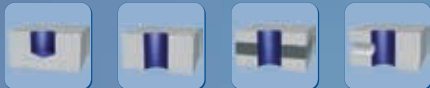


AlCrTiN

mit 4 Führungsfasen / avec 4 listels
con 4 pattini di guida / with 4 guide margins

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

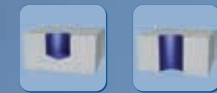
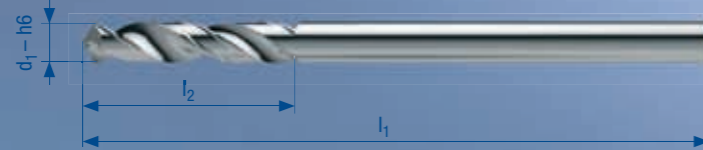
Vc → S./p. 181



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

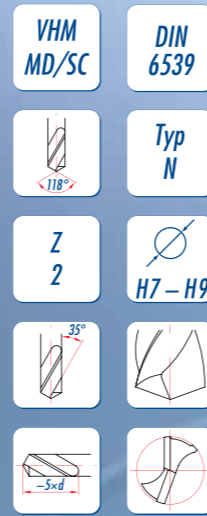


Bohrreibahle Asycut 5 × d
 Foret alésoir Asycut 5 × d
 Punta alesatore Asycut 5 × d
 Drill reamer Asycut 5 × d



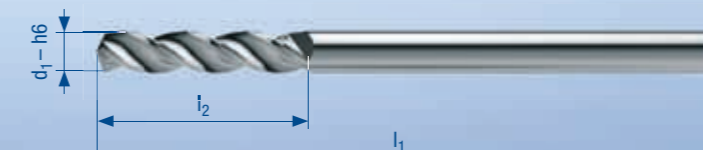
Vc → S./p. 182

Art. 50840



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

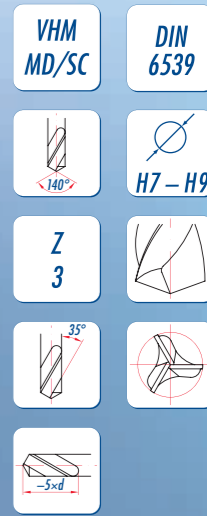
Bohrreibahle Tricut 5 × d
 Foret alésoir Tricut 5 × d
 Punta alesatore Tricut 5 × d
 Drill reamer Tricut 5 × d



Zwischenmasse erhältlich
 Dimensions intermédiaire disponible
 Quote intermediarie disponibili
 Intermediate sizes available

Vc → S./p. 182

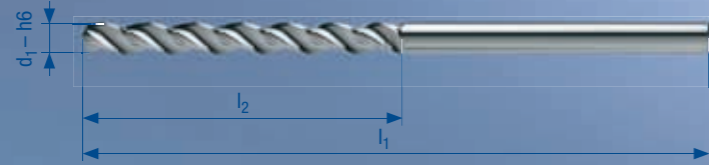
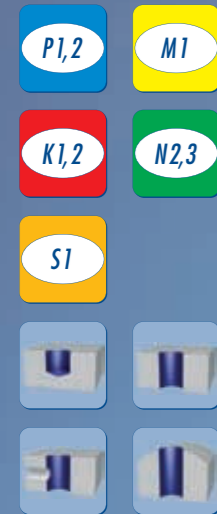
Art. 55654



| d ₁ mm | l ₂ mm | l ₁ mm | d ₁ mm | l ₂ mm | l ₁ mm | d ₁ mm | l ₂ mm | l ₁ mm | |
|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|-----|
| 1.00 | 6.0 | 26 | 4.60 | 22.5 | 58 | 7.938 | 5/16" | 34.0 | 79 |
| 1.10 | 6.5 | 28 | 4.70 | 22.5 | 58 | 8.00 | | 34.0 | 79 |
| 1.20 | 7.5 | 30 | 4.763 | 3/16" | 24.5 | 8.10 | | 34.0 | 79 |
| 1.30 | 7.5 | 30 | 4.80 | | 24.5 | 8.20 | | 34.0 | 79 |
| 1.40 | 8.5 | 32 | 4.90 | | 24.5 | 8.30 | | 34.0 | 79 |
| 1.50 | 8.5 | 32 | 5.00 | | 24.5 | 8.40 | | 34.0 | 79 |
| 1.60 | 9.5 | 34 | 5.10 | | 24.5 | 8.50 | | 34.0 | 79 |
| 1.70 | 9.5 | 34 | 5.20 | | 24.5 | 8.60 | | 36.5 | 84 |
| 1.80 | 10.5 | 36 | 5.30 | | 24.5 | 8.70 | | 36.5 | 84 |
| 1.90 | 10.5 | 36 | 5.40 | | 26.0 | 8.80 | | 36.5 | 84 |
| 2.00 | 11.5 | 38 | 5.50 | | 26.0 | 8.90 | | 36.5 | 84 |
| 2.10 | 11.5 | 38 | 5.556 | 7/32" | 26.0 | 9.00 | | 36.5 | 84 |
| 2.20 | 12.5 | 40 | 5.60 | | 26.0 | 9.10 | | 36.5 | 84 |
| 2.30 | 12.5 | 40 | 5.70 | | 26.0 | 9.20 | | 36.5 | 84 |
| 2.40 | 13.5 | 43 | 5.80 | | 26.0 | 9.30 | | 36.5 | 84 |
| 2.50 | 13.5 | 43 | 5.90 | | 26.0 | 9.40 | | 36.5 | 84 |
| 2.60 | 13.5 | 43 | 6.00 | | 26.0 | 9.50 | | 36.5 | 84 |
| 2.70 | 15.5 | 46 | 6.10 | | 28.5 | 9.525 | 3/8" | 39.0 | 89 |
| 2.80 | 15.5 | 46 | 6.20 | | 28.5 | 9.60 | | 39.0 | 89 |
| 2.90 | 15.5 | 46 | 6.30 | | 28.5 | 9.70 | | 39.0 | 89 |
| 3.00 | 15.5 | 46 | 6.350 | 1/4" | 28.5 | 9.80 | | 39.0 | 89 |
| 3.10 | 17.0 | 49 | 6.40 | | 28.5 | 9.90 | | 39.0 | 89 |
| 3.175 | 1/8" | 17.0 | 6.50 | | 28.5 | 10.00 | | 39.0 | 89 |
| 3.20 | 17.0 | 49 | 6.60 | | 28.5 | 10.20 | | 39.0 | 89 |
| 3.30 | 17.0 | 49 | 6.70 | | 28.5 | 10.50 | | 39.0 | 89 |
| 3.40 | 19.0 | 52 | 6.80 | | 31.0 | 11.00 | | 43.0 | 95 |
| 3.50 | 19.0 | 52 | 6.90 | | 31.0 | 11.113 | 7/16" | 43.0 | 95 |
| 3.60 | 19.0 | 52 | 7.00 | | 31.0 | 11.50 | | 43.0 | 95 |
| 3.70 | 19.0 | 52 | 7.10 | | 31.0 | 12.00 | | 47.0 | 102 |
| 3.80 | 21.0 | 55 | 7.144 | 9/32" | 31.0 | 12.50 | | 47.0 | 102 |
| 3.90 | 21.0 | 55 | 7.20 | | 31.0 | 12.700 | 1/2" | 47.0 | 102 |
| 3.969 | 5/32" | 21.0 | 7.30 | | 31.0 | 13.00 | | 47.0 | 102 |
| 4.00 | 21.0 | 55 | 7.40 | | 31.0 | 13.50 | | 50.0 | 107 |
| 4.10 | 21.0 | 55 | 7.50 | | 31.0 | 14.00 | | 50.0 | 107 |
| 4.20 | 21.0 | 55 | 7.60 | | 34.0 | | | | |
| 4.30 | 22.5 | 58 | 7.70 | | 34.0 | | | | |
| 4.40 | 22.5 | 58 | 7.80 | | 34.0 | | | | |
| 4.50 | 22.5 | 58 | 7.90 | | 34.0 | | | | |

Bohrreibahle Tricut long 10 × d

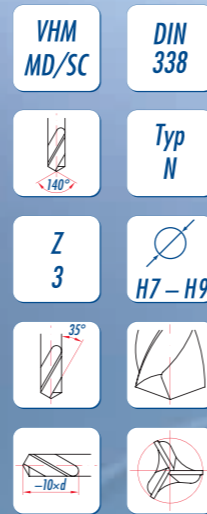
Foret alésoir Tricut long 10 × d
Punta alesatore Tricut long 10 × d
Drill reamer Tricut long 10 × d



Zwischenmasse erhältlich
Dimensions intermédiaire disponible
Quote intermediaire disponibili
Intermediate sizes available

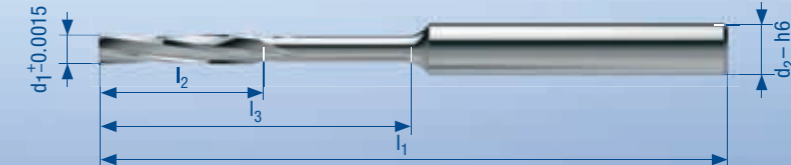
Vc → S./p. 182

Art. 55338



Reibahle mit verstärktem Schaft

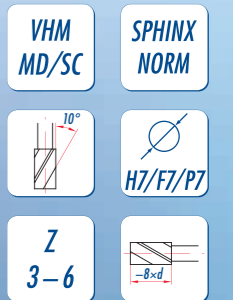
Alésoir avec manche renforcé
Alesatore con gambo rinforzato
Reamer with reinforced shank



Zwischenmasse erhältlich
Dimensions intermédiaire disponible
Quote intermediaire disponibili
Intermediate sizes available

Vc → S./p. 183

Art. 58000



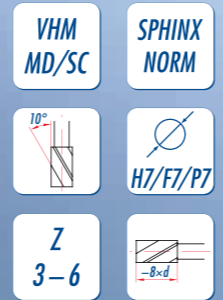
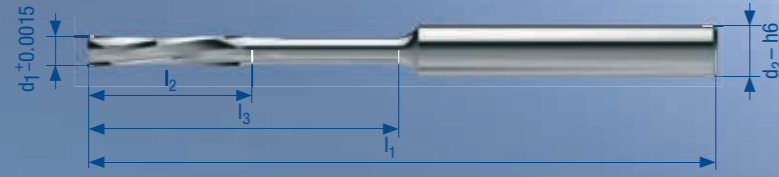
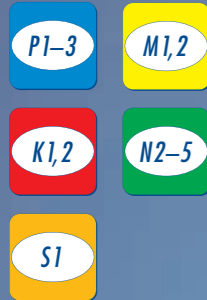
| d ₁ mm | l ₂ mm | l ₁ mm | d ₁ mm | l ₂ mm | l ₁ mm | d ₁ mm | l ₂ mm | l ₁ mm |
|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|
| 1.00 | 11.5 | 34 | 4.80 | 50.0 | 86 | 8.60 | 78.0 | 125 |
| 1.10 | 13.0 | 36 | 4.90 | 50.0 | 86 | 8.70 | 78.0 | 125 |
| 1.20 | 15.0 | 38 | 5.00 | 50.0 | 86 | 8.80 | 78.0 | 125 |
| 1.30 | 15.0 | 38 | 5.10 | 50.0 | 86 | 8.90 | 78.0 | 125 |
| 1.40 | 17.0 | 40 | 5.20 | 50.0 | 86 | 9.00 | 78.0 | 125 |
| 1.50 | 17.0 | 40 | 5.30 | 50.0 | 86 | 9.10 | 78.0 | 125 |
| 1.60 | 19.0 | 43 | 5.40 | 55.0 | 93 | 9.20 | 78.0 | 125 |
| 1.70 | 19.0 | 43 | 5.50 | 55.0 | 93 | 9.30 | 78.0 | 125 |
| 1.80 | 21.0 | 46 | 5.60 | 55.0 | 93 | 9.40 | 78.0 | 125 |
| 1.90 | 21.0 | 46 | 5.70 | 55.0 | 93 | 9.50 | 78.0 | 125 |
| 2.00 | 22.0 | 49 | 5.80 | 55.0 | 93 | 9.60 | 84.0 | 133 |
| 2.10 | 22.0 | 49 | 5.90 | 55.0 | 93 | 9.70 | 84.0 | 133 |
| 2.20 | 25.0 | 53 | 6.00 | 55.0 | 93 | 9.80 | 84.0 | 133 |
| 2.30 | 25.0 | 53 | 6.10 | 60.0 | 101 | 9.90 | 84.0 | 133 |
| 2.40 | 28.0 | 57 | 6.20 | 60.0 | 101 | 10.00 | 84.0 | 133 |
| 2.50 | 28.0 | 57 | 6.30 | 60.0 | 101 | 10.20 | 84.0 | 133 |
| 2.60 | 28.0 | 57 | 6.40 | 60.0 | 101 | 10.50 | 84.0 | 133 |
| 2.70 | 31.0 | 61 | 6.50 | 60.0 | 101 | 11.00 | 91.0 | 142 |
| 2.80 | 31.0 | 61 | 6.60 | 60.0 | 101 | 11.50 | 91.0 | 142 |
| 2.90 | 31.0 | 61 | 6.70 | 60.0 | 101 | 12.00 | 98.0 | 151 |
| 3.00 | 31.0 | 61 | 6.80 | 66.0 | 109 | 12.50 | 98.0 | 151 |
| 3.10 | 34.0 | 65 | 6.90 | 66.0 | 109 | 13.00 | 98.0 | 151 |
| 3.20 | 34.0 | 65 | 7.00 | 66.0 | 109 | 13.50 | 105.0 | 160 |
| 3.30 | 34.0 | 65 | 7.10 | 66.0 | 109 | 14.00 | 105.0 | 160 |
| 3.40 | 37.0 | 70 | 7.20 | 66.0 | 109 | | | |
| 3.50 | 37.0 | 70 | 7.30 | 66.0 | 109 | | | |
| 3.60 | 37.0 | 70 | 7.40 | 66.0 | 109 | | | |
| 3.70 | 37.0 | 70 | 7.50 | 66.0 | 109 | | | |
| 3.80 | 41.0 | 75 | 7.60 | 72.0 | 117 | | | |
| 3.90 | 41.0 | 75 | 7.70 | 72.0 | 117 | | | |
| 4.00 | 41.0 | 75 | 7.80 | 72.0 | 117 | | | |
| 4.10 | 41.0 | 75 | 7.90 | 72.0 | 117 | | | |
| 4.20 | 41.0 | 75 | 8.00 | 72.0 | 117 | | | |
| 4.30 | 45.0 | 80 | 8.10 | 72.0 | 117 | | | |
| 4.40 | 45.0 | 80 | 8.20 | 72.0 | 117 | | | |
| 4.50 | 45.0 | 80 | 8.30 | 72.0 | 117 | | | |
| 4.60 | 45.0 | 80 | 8.40 | 72.0 | 117 | | | |
| 4.70 | 45.0 | 80 | 8.50 | 72.0 | 117 | | | |

| 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

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

Art. 58500



Zwischenmasse erhältlich
Dimensions intermédiaire disponible
Quote intermediaire 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

* siehe Legende S. 192+193
see legend p. 192+193

✓ hervorragend / outstanding
• geeignet / able

| | Artikel Article | Durchmesser-Bereich Diameter range | Abstufung Increments | Bearbeitungs- tiefe Cutting length | Spitzen- winkel Point angle | Spiral- winkel Helix angle | Material | Werkstoffgruppe* Workpiece material* | | | | | | | Anwendung* Application* | Seite Page |
|---|--------------------|---------------------------------------|-------------------------|---|-----------------------------------|----------------------------------|---------------------------------|---|---|---|---|---|---|---|---|---------------|
| | | | | | | | | P | M | K | S | N | H | O | | |
| Fräser Fraise | | | | | | | Fresa End mill | | | | | | | | | |
|  | 40000 | 2.00–20.00 | 0.50 | DIN 6528 | | 30° | VHM/ MD/ SC | • | | • | | ✓ | | • |  | 135 |
|  | 40600 | 2.00–20.00 | 0.50 | DIN 6529 | | 30° | VHM/ MD/ SC; TiAlN+AlCrN | ✓ | • | ✓ | | ✓ | ✓ | |  | 136 |
|  | 40002 | 2.00–20.00 | 0.50 | DIN 6530 | | 30° | VHM/ MD/ SC | ✓ | • | ✓ | | ✓ | | |  | 137 |
|  | 40602 | 2.00–20.00 | 0.50 | DIN 6531 | | 30° | VHM/ MD/ SC; TiAlN+AlCrN | ✓ | • | ✓ | | ✓ | ✓ | |  | 138 |
|  | 40004 | 2.00–20.00 | 0.50 | DIN 6532 | | 30° | VHM/ MD/ SC | ✓ | • | ✓ | | | | |  | 139 |
|  | 40604 | 2.00–20.00 | 0.50 | DIN 6533 | | 30° | VHM/ MD/ SC; TiAlN+AlCrN | ✓ | • | ✓ | • | | ✓ | |  | 140 |
|  | 40006 | 4.00–20.00 | 0.50 | DIN 6534 | | 45° | VHM/ MD/ SC | ✓ | ✓ | ✓ | • | | | |  | 141 |
|  | 40008 | 4.00–20.00 | 0.50 | DIN 6535 | | 55° | VHM/ MD/ SC | ✓ | ✓ | ✓ | • | | | |  | 142 |
|  | 47000 | 3.00–20.00 | 1.00 | 1.5–4×Ø | | 55° | VHM/ MD/ SC | | | | | ✓ | • | |  | 143 |
|  | 47500 | 6.00–20.00 | 2.00 | 4.5–8×Ø | | 55° | VHM/ MD/ SC | | | | | ✓ | • | |  | 144 |
|  | 47344 | 0.50–8.00 | 0.10 | 1–3×Ø | | 0° | VHM/ MD/ SC | • | • | • | | ✓ | | |  | 145 |

Schaftfräser 2Z 30°

Fraise 2d 30°

Fresa 2d 30°

End mill 2t 30°

Art. 40000

P1,2

K1,2

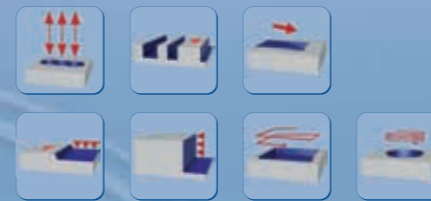
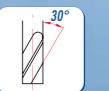
N1-6



VHM
MD/SC

DIN
6528

Z
2



Vc → S./p. 183

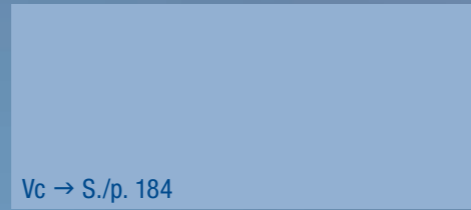
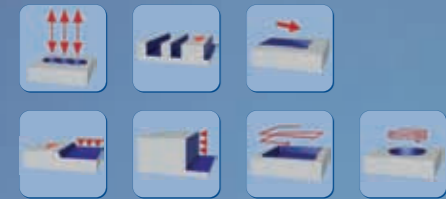
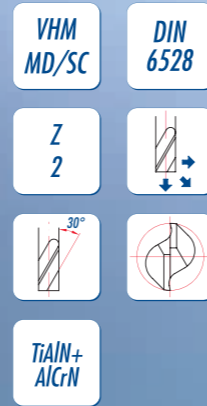
| d ₁ mm | l ₂ mm | l ₁ mm | d ₂ mm |
|----------------------|----------------------|----------------------|----------------------|
| 2.00 | 8.00 | 50 | 2.00 |
| 2.50 | 8.00 | 50 | 2.50 |
| 3.00 | 8.00 | 50 | 3.00 |
| 3.50 | 8.00 | 50 | 3.50 |
| 4.00 | 8.00 | 50 | 4.00 |
| 4.50 | 8.00 | 50 | 4.50 |
| 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°

Fraise 2d 30°
Fresa 2d 30°
End mill 2t 30°

Art. 40600

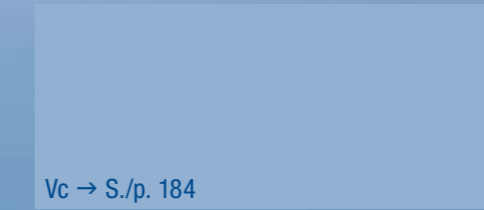
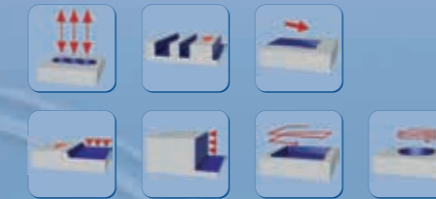
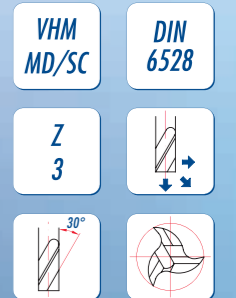


| d ₁ mm | l ₂ mm | l ₁ mm | d ₂ mm |
|----------------------|----------------------|----------------------|----------------------|
| 2.00 | 8.00 | 50 | 2.00 |
| 2.50 | 8.00 | 50 | 2.50 |
| 3.00 | 8.00 | 50 | 3.00 |
| 3.50 | 8.00 | 50 | 3.50 |
| 4.00 | 8.00 | 50 | 4.00 |
| 4.50 | 8.00 | 50 | 4.50 |
| 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°

Fraise 3d 30°
Fresa 3d 30°
End mill 3t 30°

Art. 40002



| 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 |

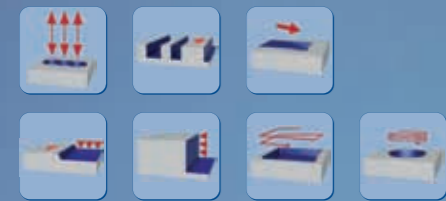
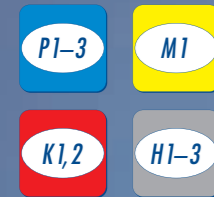
Schaftfräser 3Z 30°

Fraise 3d 30°

Fresa 3d 30°

End mill 3t 30°

Art. 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 |

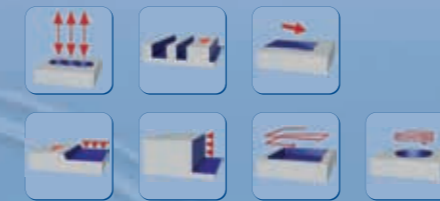
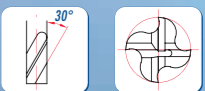
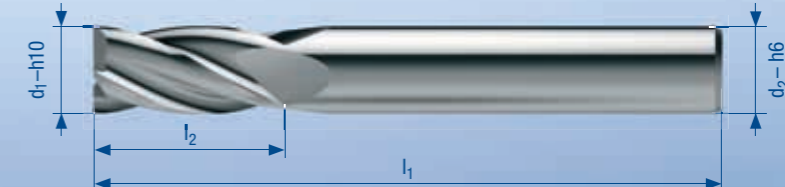
Schaftfräser 4Z 30°

Fraise 4d 30°

Fresa 4d 30°

End mill 4t 30°

Art. 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 |

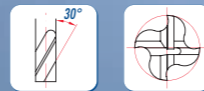
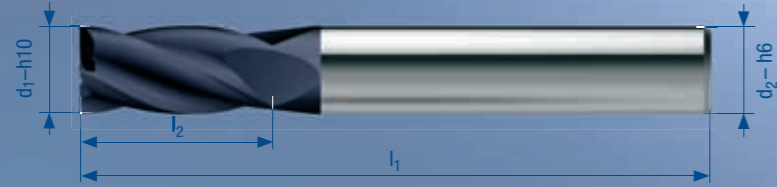
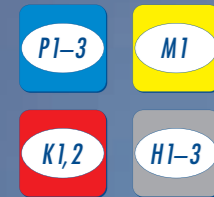
Schaftfräser 4Z 30°

Fraise 4d 30°

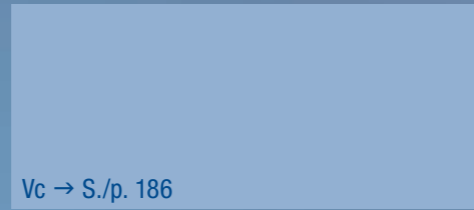
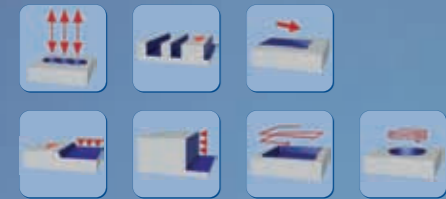
Fresa 4d 30°

End mill 4t 30°

Art. 40604



TiAlN+AlCrN



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 |

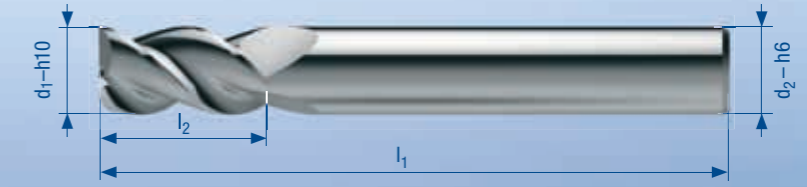
Schaftfräser 3Z 45°

Fraise 3d 45°

Fresa 3d 45°

End mill 3t 45°

Art. 40006



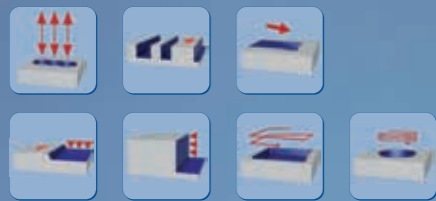
Vc → S./p. 186

| 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°

Fraise 3d 60°
Fresa 3d 60°
End mill 3t 60°

Art. 40008



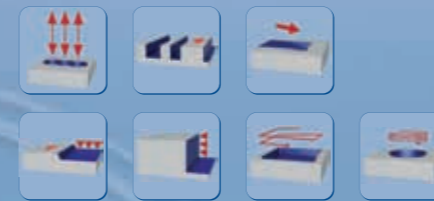
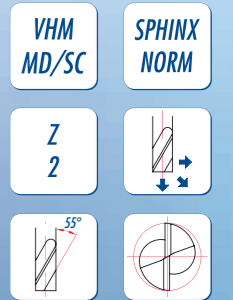
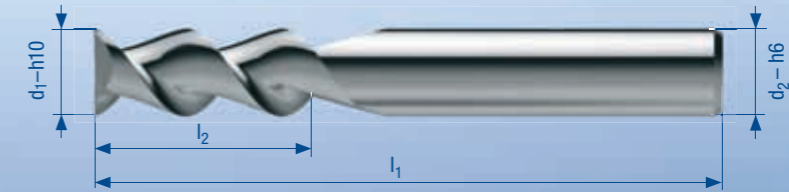
Vc → S./p. 186

| 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°

Fraise AC2 55°
Fresa AC2 55°
End mill AC2 55°

Art. 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°

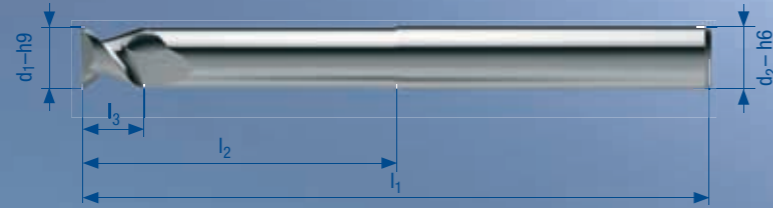
Fraise ACL2 55°

Fresa ACL2 55°

End mill ACL2 55°

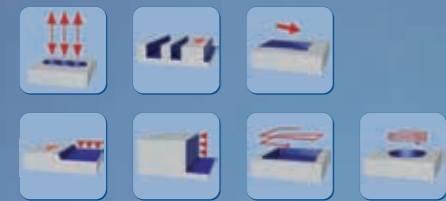
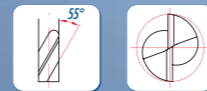
Art. 47500

N1-3 01



VHM MD/SC SPHINX NORM

Z 2



Vc → S./p. 187

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

Gerade genuteter Fräser – 1 Zahn

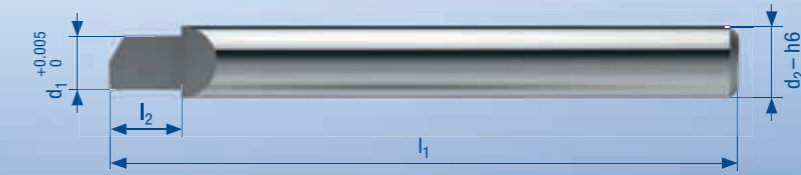
Fraise taille droite – 1 dent

Fresa taglio diritto – 1 dente

Straight fluted end mill – 1 tooth

Art. 47344

N5,7,8



VHM MD/SC SPHINX NORM

Z 1

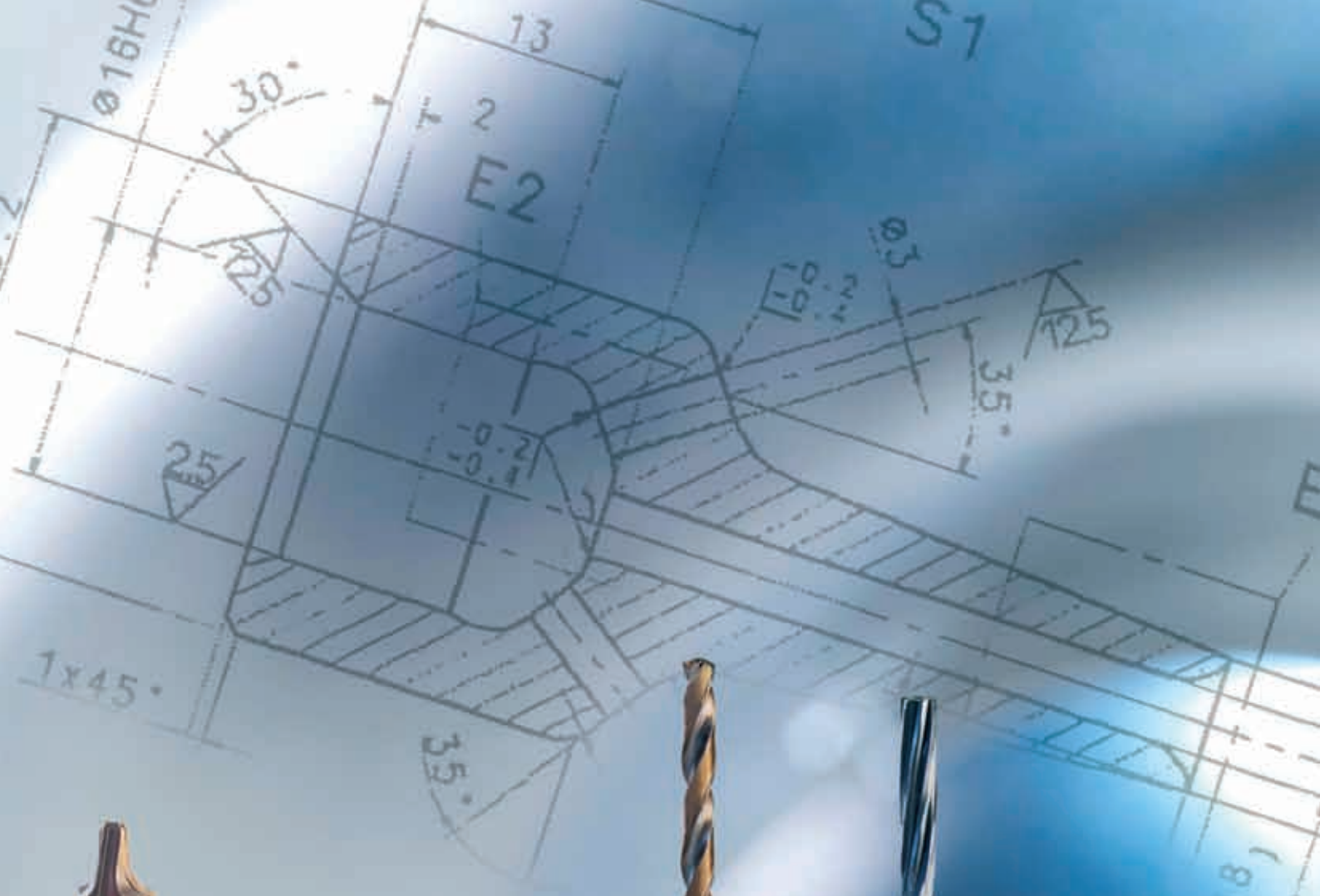


Fläche poliert
Face polie miroir
Superficie lucidata
Surface polished

Vc → S./p. 172

| d ₁ | l ₂ | l ₁ | d ₂ |
|----------------|----------------|----------------|----------------|
| mm | mm | mm | 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 | l ₂ | l ₁ | d ₂ |
|----------------|----------------|----------------|----------------|
| mm | mm | mm | 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

Table des matières outils spéciaux

Indice utensili speciali

Table of contents special tools

| | |
|--|-----|
| Microbohrer Micro foret Micro punta Micro drill | 148 |
|--|-----|

| | |
|--|-----|
| Stufenbohrer Foret étagé Punta a diametri multipli Step drill | 149 |
|--|-----|

| | |
|--|-----|
| Stufenbohrer – 3 Stufen Foret étagé – 3 étages Punta a diametri multipli – 3 gradini Step drill – 3 steps | 150 |
|--|-----|

| | |
|--|-----|
| Quadro – Stufenbohrer Quadro – Foret étagé Quadro – Punta a diametri multipli Quadro – Step drill | 151 |
|--|-----|

| | |
|--|-----|
| Quadro – Stufenbohrer – 3 Stufen Quadro – Foret étagé – 3 étages Quadro – Punta a diametri multipli – 3 gradini Quadro – Step drill – 3 steps | 152 |
|--|-----|

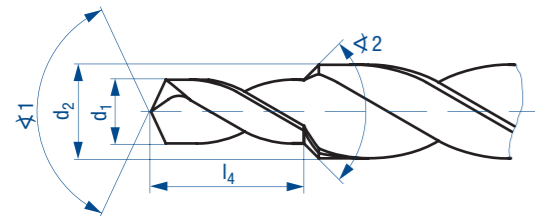
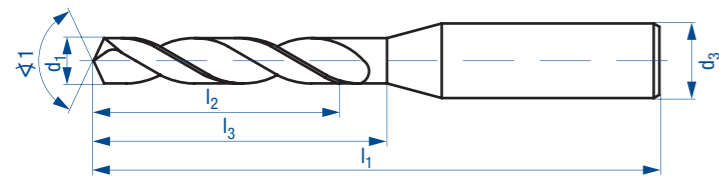
| | |
|--|-----|
| Reibahle Alésoir Alesatore Reamer | 153 |
|--|-----|

| | |
|---|-----|
| Stufenreibahle Alésoir étagé Alesatore a diametri multipli Step reamer | 154 |
|---|-----|

| | |
|--|-----|
| Pilotbohrer und Bohrer Extra-Long Foret de préperçage et Foret Extra-Long Punta per preforo e Punta Extra-Long Pilot drill and Drill Extra-Long | 156 |
|--|-----|

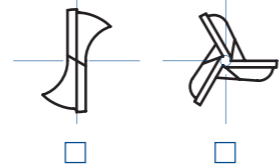
Microbohrer

Micro foret
Micro punta
Micro drill

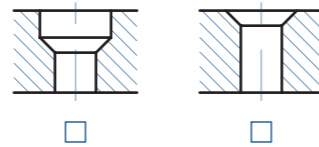


d₁ = _____ Tol. = _____ $\angle 1$ = _____ | l₁ = _____ l₃ = _____
 d₂ = _____ Tol. = _____ $\angle 2$ = _____ | l₂ = _____ l₄ = _____
 d₃ = _____ Tol. = _____

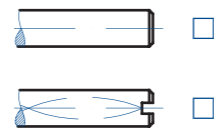
Schneidenanzahl:
No. of flutes:



Bohrungsart:
Type of hole:



Kühlmitteleinführung:
Coolant:



Zu bearbeitender Werkstoff:
Material to be cut: _____

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

Beschichtung: keine
 Coating: _____ without

Stückzahl: Anfrage Bestellung
 Quantity: _____ Enquiry Order

Bemerkung:
 Remarks: _____

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

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

Kontaktperson _____ Fax _____
 Contact _____

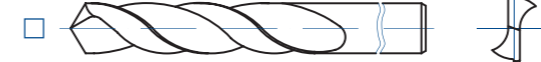
Datum/Unterschrift _____ E-Mail _____
 Date/Signature _____

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

Stufenbohrer

Foret étagé
Punta a diametri multipli
Step drill

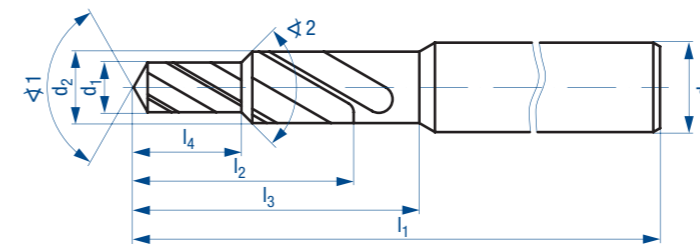
Spiralbohrer / Twist drill



Bohrreibahle / Drill reamer



Hochleistungsbohrer / High performance drill



d₁ = _____ Tol. = _____ $\angle 1$ = _____ | l₁ = _____
 d₂ = _____ Tol. = _____ $\angle 2$ = _____ | l₂ = _____
 d₃ = _____ Tol. = _____ | l₃ = _____
 | l₄ = _____

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

Zu bearbeitender Werkstoff:
Material to be cut: _____

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

Beschichtung: keine
 Coating: _____ without

Stückzahl: Anfrage Bestellung
 Quantity: _____ Enquiry Order

Bemerkung:
 Remarks: _____

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

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

Kontaktperson _____ Fax _____
 Contact _____

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

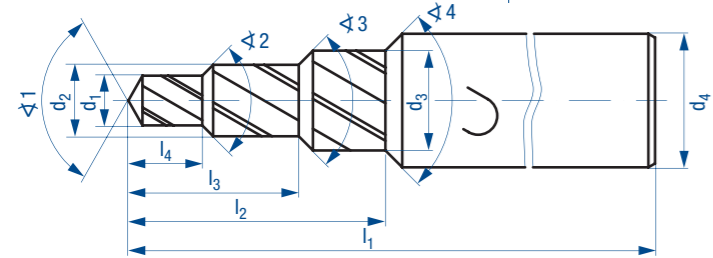
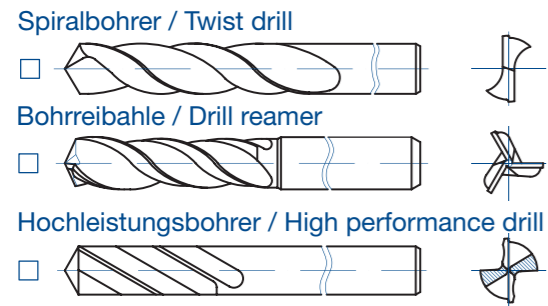
www.sphinx-tools.ch
Fax +41 32 671 21 11

Stufenbohrer – 3 Stufen

Foret étagé – 3 étages

Punta a diametri multipli – 3 gradini

Step drill – 3 steps



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

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

Zu bearbeitender Werkstoff:
 Material to be cut: _____

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

Beschichtung: keine
 Coating: _____ without

Stückzahl: Anfrage Bestellung
 Quantity: _____ Enquiry Order

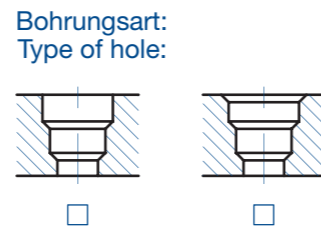
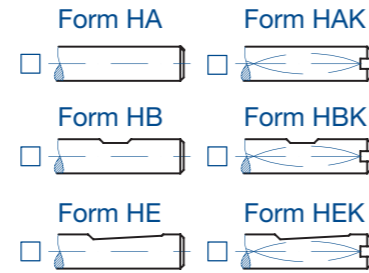
Bemerkung:
 Remarks: _____

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

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

Kontaktperson _____ Fax _____
 Contact _____

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

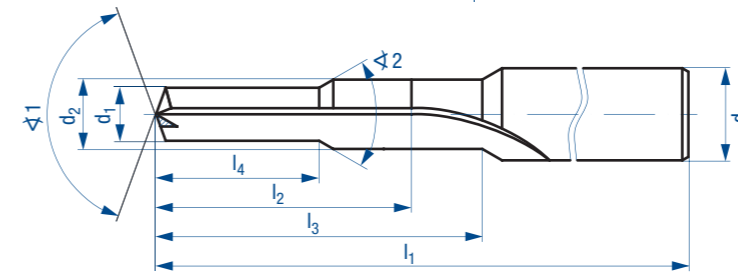
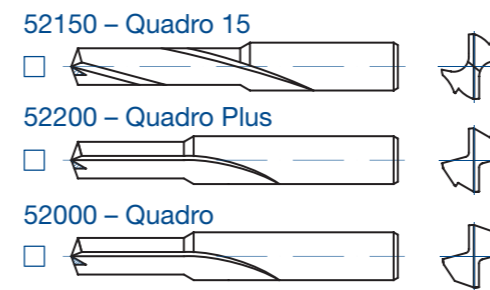


Quadro – Stufenbohrer

Quadro – Foret étagé

Quadro – Punta a diametri multipli

Quadro – Step drill



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

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

Zu bearbeitender Werkstoff:
 Material to be cut: _____

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

Beschichtung: keine
 Coating: _____ without

Stückzahl: Anfrage Bestellung
 Quantity: _____ Enquiry Order

Bemerkung:
 Remarks: _____

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

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

Kontaktperson _____ Fax _____
 Contact _____

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

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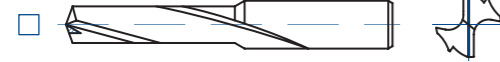
Quadro – Stufenbohrer – 3 Stufen

Quadro – Foret étagé – 3 étages

Quadro – Punta a diametri multipli – 3 gradini

Quadro – Step drill – 3 steps

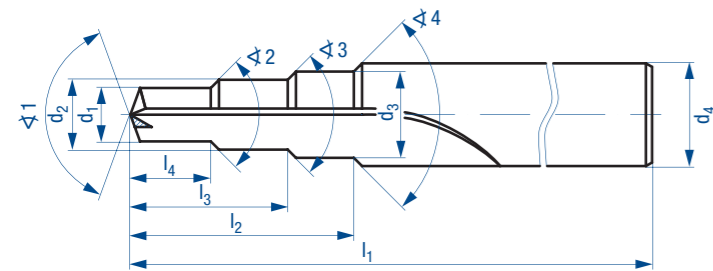
52150 – Quadro 15



52200 – Quadro Plus



52000 – Quadro



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

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

Zu bearbeitender Werkstoff:
 Material to be cut: _____

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

Beschichtung: keine
 Coating: _____ without

Stückzahl: Anfrage Bestellung
 Quantity: _____ Enquiry Order

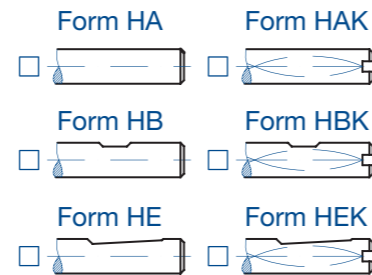
Bemerkung:
 Remarks: _____

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

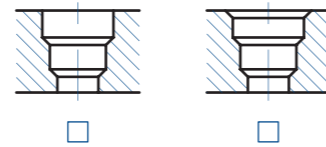
Postleitzahl/Ort _____ Phone _____
 ZIP-Code/City _____

Kontaktperson _____ Fax _____
 Contact _____

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



Bohrungsart:
Type of hole:



Reibahle

Alésoir

Alesatore

Reamer

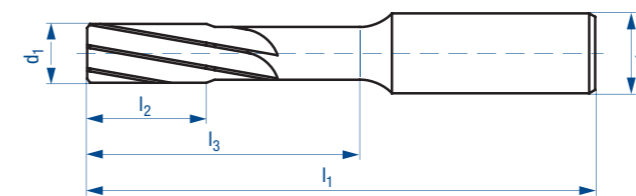
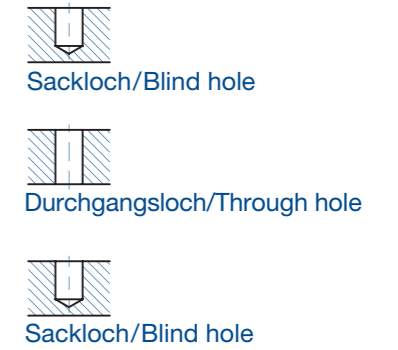
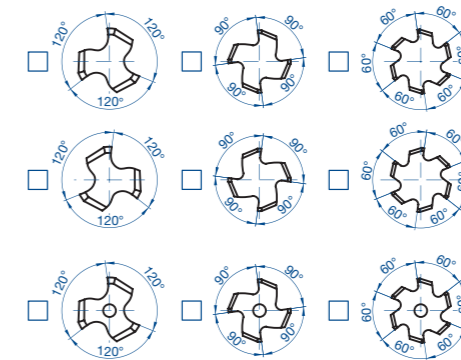
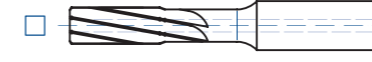
58000
rechtsspiralisiert / right hand helix
rechtsschneidend / right hand cut



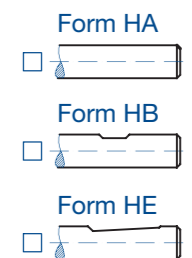
58500
linksspiralisiert / left hand helix
rechtsschneidend / right hand cut



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



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



Zu bearbeitender Werkstoff:
 Material to be cut: _____

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

Beschichtung: keine
 Coating: _____ without

Stückzahl: Anfrage Bestellung
 Quantity: _____ Enquiry Order

Bemerkung:
 Remarks: _____

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

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

Kontaktperson _____ Fax _____
 Contact _____

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

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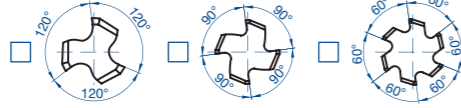
Stufenreibahle

Alésoir étagé

Alesatore a diametri multipli

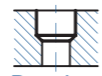
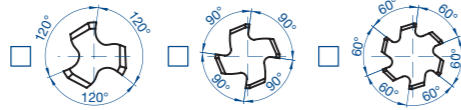
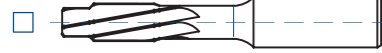
Step reamer

rechtsspiralisiert / right hand helix
rechtsschneidend / right hand cut



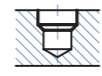
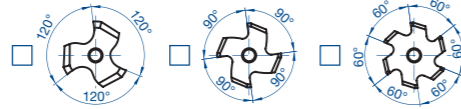
Sackloch/Blind hole

linksspiralisiert / left hand helix
rechtsschneidend / right hand cut

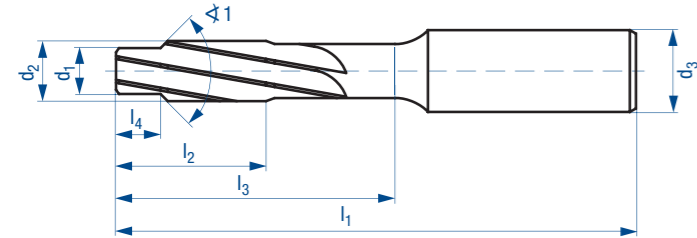


Durchgangsloch/Through hole

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



Sackloch/Blind hole



Form HA



Form HB



Form HE

d₁ = _____ Tol. = _____ α 1 = _____ | l₁ = _____ l₃ = _____
 d₂ = _____ Tol. = _____ | l₂ = _____ l₄ = _____
 d₃ = _____ Tol. = _____

Zu bearbeitender Werkstoff:

Material to be cut: _____

Schneidrichtung:

rechts links
 right hand left hand

Beschichtung:

_____ keine
 without

Stückzahl:

Quantity: _____ Anfrage Bestellung
 Enquiry Order

Bemerkung:

Remarks: _____

Firma
 Company

_____ Strasse/Nr.
 Street/No. _____

Postleitzahl/Ort
 ZIP-Code/City

_____ Phone _____

Kontaktperson
 Contact

_____ Fax _____

Datum/Unterschrift
 Date/Signature

_____ E-Mail _____

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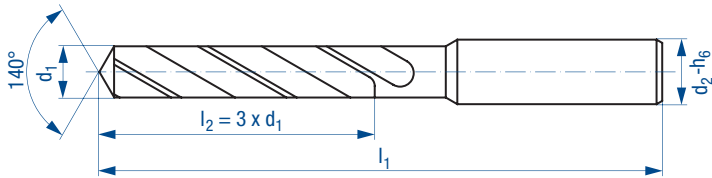
Pilotbohrer und Bohrer Extra-Long

Foret de préperçage et Foret Extra-Long

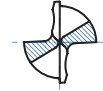
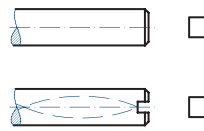
Punta per preforo e Punta Extra-Long

Pilot drill and Drill Extra-Long

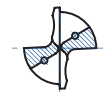
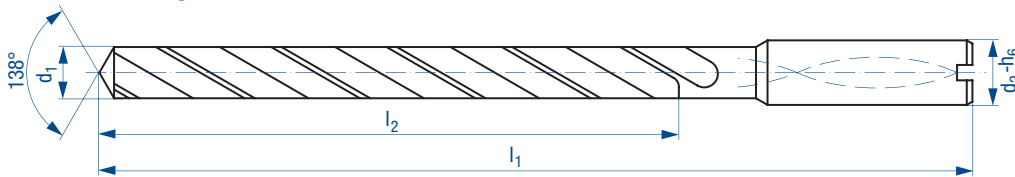
Pilotbohrer
Pilot drill



Kühlmittelezuführung:
Coolant supply:



Bohrer Extra-Long
Drill Extra-Long



Pilotbohrer
Pilot drill

d₁ = _____

d₂ = _____

l₁ = _____

l₂ = 3 x d₁

Bohrer Extra-Long
Drill Extra-Long

d₁ = _____ Tol. = _____

d₂ = _____

l₁ = _____

l₂ = _____

Zu bearbeitender Werkstoff:
Material to be cut: _____

Stückzahl:
Quantity: _____

Anfrage
 Enquiry

Bestellung
 Order

Bemerkung:
Remarks: _____

Firma
Company _____

Strasse/Nr.
Street/No. _____

Postleitzahl/Ort
ZIP-Code/City _____

Phone _____

Kontaktperson
Contact _____

Fax _____

Datum/Unterschrift
Date/Signature _____

E-Mail _____



| | | | |
|--|------------|--|---|
| Schnittdaten Données de coupe Parametri di lavoro Cutting data | 159 | Formel Schnittgeschwindigkeit v: Formule vitesse de coupe v: Formula velocità di taglio v: Formula cutting speed v: | $v = \frac{d \times \pi \times n}{1000}$ |
| Anwendungen und Werkstoffgruppen Applications et groupe des matériaux Applicazioni e gruppi di materiali Applications and workpiece materials | 192 | Formel Drehzahl n: Formule vitesse n: Formula giri n: Formula spindle speed n: | $n = \frac{v \times 1000}{d \times \pi}$ |
| Spiralbohrer Foret hélicoïdal Punta elicoidale Twist drill | 195 | Bohrer, Reibahlen Forets, alésoir Punte, alesatore Drill, reamer | Vc = Schnittgeschwindigkeit in m/min Vitesse de coupe en m/min Velocità di taglio in m/min Cutting speed in m/min Vf = Vorschubgeschwindigkeit mm/U Avance en mm/t Avanzamento in mm/g Cutting feed in mm/rev |
| Bearbeitungsverfahren Mikrobohren Procédures d'usinage pour micro perçage Metodo di lavorazione per micro forature Machining process for micro drilling | 196 | Fräser Fraises Frese End mill | Vc = Schnittgeschwindigkeit in m/min Vitesse de coupe en m/min Velocità di taglio in m/min Cutting speed in m/min fz = Vorschubgeschwindigkeit in mm/Zahn Avance en mm/dent Avanzamento in mm/tagliente Cutting speed in mm/tooth Vf = Vorschubgeschwindigkeit mm/U = fz × Z × n Avance en mm/t = fz × d × n Avanzamento in mm/g = fz × d × n Cutting speed in mm/rev = fz × t × n |
| Zentrierbohren Centre de perçage Centraggio Center drill | 197 | | |
| Bohreraustritt und Kühlung Sortie de foret et refroidissement Uscita punta e raffreddamento Drill exit and cooling | 198 | | |
| Bearbeitungsverfahren Tieflochbohren, Schritt für Schritt Procédures d'usinage pour perçage profond, pas à pas Metodo di lavorazione per foratura profonda, passo per passo Machining process for deep-hole drilling, step by step | 199 | | ap = Schnitttiefe Profondeur de coupe Profondità di taglio Cutting depth ae = Schnittbreite Largeur de coupe Larghezza di taglio Cutting width |

Schnittdaten

Données de coupe
Parametri di lavoro
Cutting data

50806 / 50809

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

56005

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

Genannte Werte sind Richtwerte, die je nach Maschine, Aufspannung, Kühlschmierstoff usw. noch angepasst werden müssen.
Les valeurs mentionnées sont des valeurs recommandées qui doivent être adaptées selon les conditions de la machine, du serrage, du lubrifiant etc.
Questi valori sono valori raccomandati che devono essere adattati secondo le condizioni della macchina, del serraggio, del lubrificante etc.
These are recommended values that depend on the condition of the machine, fixture, coolant etc., and they may have to be adapted yet.

Schnittdaten

Données de coupe
Parametri di lavoro
Cutting data

Art. 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 | Vc: 1.5-5 fz: 0.001-0.003 | Vc: 4-10 fz: 0.002-0.010 | Vc: 10-30 fz: 0.008-0.0015 | Vc: 30-60 fz: 0.012-0.025 | Vc: 30-60 fz: 0.020-0.035 |
| P2 | Vc: 1.2-4 fz: 0.001-0.002 | Vc: 3.5-8 fz: 0.002-0.008 | Vc: 8-25 fz: 0.007-0.013 | Vc: 25-50 fz: 0.010-0.022 | Vc: 25-50 fz: 0.018-0.032 |
| P3 | Vc: 1-3 fz: 0.001-0.002 | Vc: 3-6 fz: 0.002-0.007 | Vc: 6-20 fz: 0.006-0.012 | Vc: 20-45 fz: 0.009-0.020 | Vc: 20-45 fz: 0.016-0.030 |
| M1 | Vc: 1.2-4 fz: 0.001-0.002 | Vc: 3.5-8 fz: 0.002-0.007 | Vc: 8-20 fz: 0.005-0.010 | Vc: 20-45 fz: 0.008-0.018 | Vc: 20-45 fz: 0.016-0.025 |
| M2 | Vc: 1-3 fz: 0.001-0.002 | Vc: 3-6 fz: 0.002-0.005 | Vc: 5-15 fz: 0.005-0.008 | Vc: 15-30 fz: 0.007-0.015 | Vc: 15-30 fz: 0.013-0.020 |
| K1 | Vc: 1.5-5 fz: 0.001-0.004 | Vc: 4-10 fz: 0.003-0.008 | Vc: 10-30 fz: 0.006-0.012 | Vc: 30-60 fz: 0.010-0.022 | Vc: 30-60 fz: 0.018-0.035 |
| K2 | Vc: 1.2-4 fz: 0.001-0.003 | Vc: 3.5-8 fz: 0.002-0.007 | Vc: 8-25 fz: 0.005-0.011 | Vc: 25-50 fz: 0.009-0.020 | Vc: 25-50 fz: 0.016-0.030 |
| N1 | Vc: 2-6 fz: 0.001-0.003 | Vc: 5-15 fz: 0.002-0.006 | Vc: 15-40 fz: 0.005-0.010 | Vc: 40-70 fz: 0.008-0.018 | Vc: 40-70 fz: 0.015-0.028 |
| N2 | Vc: 1.8-5.5 fz: 0.001-0.003 | Vc: 5-15 fz: 0.002-0.007 | Vc: 15-40 fz: 0.006-0.012 | Vc: 40-65 fz: 0.011-0.020 | Vc: 40-65 fz: 0.018-0.030 |
| N3 | Vc: 1.5-5 fz: 0.001-0.002 | Vc: 4-12 fz: 0.002-0.006 | Vc: 12-30 fz: 0.005-0.010 | Vc: 30-60 fz: 0.009-0.018 | Vc: 30-60 fz: 0.016-0.025 |
| N4 | Vc: 1.5-5 fz: 0.001-0.002 | Vc: 4-12 fz: 0.002-0.005 | Vc: 12-30 fz: 0.004-0.008 | Vc: 30-60 fz: 0.007-0.015 | Vc: 30-60 fz: 0.013-0.020 |
| N5 | Vc: 2-6 fz: 0.001-0.003 | Vc: 5-15 fz: 0.002-0.006 | Vc: 15-35 fz: 0.005-0.010 | Vc: 35-65 fz: 0.009-0.018 | Vc: 35-65 fz: 0.016-0.025 |
| N6 | Vc: 1.5-5 fz: 0.001-0.003 | Vc: 4-12 fz: 0.002-0.005 | Vc: 12-30 fz: 0.004-0.009 | Vc: 30-60 fz: 0.008-0.015 | Vc: 30-60 fz: 0.013-0.018 |
| N7 | Vc: 1.5-5 fz: 0.001-0.002 | Vc: 4-12 fz: 0.002-0.004 | Vc: 12-30 fz: 0.003-0.008 | Vc: 30-60 fz: 0.006-0.013 | Vc: 30-60 fz: 0.012-0.020 |
| N8 | Vc: 1-3 fz: 0.001-0.002 | Vc: 3-6 fz: 0.002-0.004 | Vc: 6-20 fz: 0.006-0.006 | Vc: 20-45 fz: 0.005-0.011 | Vc: 20-45 fz: 0.010-0.016 |
| S1 | Vc: 0.8-5 fz: 0.001-0.002 | Vc: 4-7 fz: 0.002-0.004 | Vc: 7-15 fz: 0.003-0.008 | Vc: 15-30 fz: 0.007-0.015 | Vc: 15-30 fz: 0.013-0.020 |
| S2 | | | | | |
| H1 | | | | | |
| H2 | | | | | |
| H3 | | | | | |
| O1 | Vc: 1.5-5 fz: 0.001-0.003 | Vc: 4-10 fz: 0.003-0.008 | Vc: 10-25 fz: 0.007-0.015 | Vc: 20-35 fz: 0.013-0.025 | Vc: 30-60 fz: 0.022-0.040 |
| O2 | | | | | |
| O3 | | | | | |

Genannte Werte sind Richtwerte, die je nach Maschine, Aufspannung, Kühlschmierstoff usw. noch angepasst werden müssen.
Les valeurs mentionnées sont des valeurs recommandées qui doivent être adaptées selon les conditions de la machine, du serrage, du lubrifiant etc.
Questi valori sono valori raccomandati che devono essere adattati secondo le condizioni della macchina, del serraggio, del lubrificante etc.
These are recommended values that depend on the condition of the machine, fixture, coolant etc., and they may have to be adapted yet.

Art. 56036

| Mat. | ø 0.40-0.90 | ø 1.00-1.90 | ø 2.00-3.00 |
|------|-------------------------------|--------------------------------|--------------------------------|
| P1 | Vc: 40-80 fz: 0.020-0.050 | Vc: 80-130 fz: 0.050-0.090 | Vc: 80-130 fz: 0.090-0.150 |
| P2 | Vc: 35-75 fz: 0.015-0.040 | Vc: 70-100 fz: 0.040-0.080 | Vc: 70-100 fz: 0.080-0.140 |
| P3 | Vc: 35-50 fz: 0.010-0.020 | Vc: 50-90 fz: 0.020-0.060 | Vc: 50-90 fz: 0.060-0.100 |
| M1 | Vc: 30-40 fz: 0.005-0.008 | Vc: 40-80 fz: 0.008-0.040 | Vc: 40-80 fz: 0.040-0.080 |
| M2 | Vc: 20-30 fz: 0.005-0.008 | Vc: 30-70 fz: 0.008-0.040 | Vc: 30-70 fz: 0.040-0.080 |
| K1 | Vc: 50-100 fz: 0.020-0.050 | Vc: 100-150 fz: 0.040-0.100 | Vc: 100-150 fz: 0.100-0.150 |
| K2 | Vc: 40-80 fz: 0.015-0.040 | Vc: 80-130 fz: 0.040-0.080 | Vc: 80-130 fz: 0.080-0.120 |
| N1 | Vc: 60-90 fz: 0.020-0.040 | Vc: 90-140 fz: 0.030-0.070 | Vc: 90-140 fz: 0.070-0.120 |
| N2 | Vc: 60-120 fz: 0.020-0.040 | Vc: 120-150 fz: 0.040-0.090 | Vc: 120-150 fz: 0.090-0.150 |
| N3 | Vc: 60-120 fz: 0.020-0.040 | Vc: 120-150 fz: 0.040-0.090 | Vc: 120-150 fz: 0.090-0.150 |
| N4 | Vc: 40-70 fz: 0.018-0.035 | Vc: 70-100 fz: 0.035-0.070 | Vc: 70-100 fz: 0.070-0.120 |
| N5 | Vc: 60-120 fz: 0.025-0.050 | Vc: 120-150 fz: 0.050-0.100 | Vc: 120-150 fz: 0.100-0.200 |
| N6 | | | |
| N7 | | | |
| N8 | | | |
| S1 | Vc: 30-40 fz: 0.015-0.030 | Vc: 40-80 fz: 0.025-0.080 | Vc: 40-80 fz: 0.070-0.120 |
| S2 | | | |
| H1 | Vc: 15-25 fz: 0.005-0.015 | Vc: 20-35 fz: 0.015-0.030 | Vc: 20-35 fz: 0.030-0.050 |
| H2 | | | |
| H3 | | | |
| O1 | | | |
| O2 | | | |
| O3 | | | |

Schnittdaten

Données de coupe
Parametri di lavoro
Cutting data

Art. 16004

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

Genannte Werte sind Richtwerte, die je nach Maschine, Aufspannung, Kühlschmierstoff usw. noch angepasst werden müssen.
Les valeurs mentionnées sont des valeurs recommandées qui doivent être adaptées selon les conditions de la machine, du serrage, du lubrifiant etc.
Questi valori sono valori raccomandati che devono essere adattati secondo le condizioni della macchina, del serraggio, del lubrificante etc.
These are recommended values that depend on the condition of the machine, fixture, coolant etc., and they may have to be adapted yet.

Schnittdaten

Données de coupe
Parametri di lavoro
Cutting data

Art. 51200

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

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Schnittdaten

Données de coupe
Parametri di lavoro
Cutting data

Art. 50620/50621

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

Art. 50622

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

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Schnittdaten

Données de coupe
Parametri di lavoro
Cutting data

Art. 50941

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

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Art. 55652

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

Schnittdaten

Données de coupe
Parametri di lavoro
Cutting data

Art. 12604

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

Art. 11654

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

Schnittdaten

Données de coupe
Parametri di lavoro
Cutting data

Art. 70030–70090/70130–70190

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

Art. 72075/72150

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

Genannte Werte sind Richtwerte, die je nach Maschine, Aufspannung, Kühlschmierstoff usw. noch angepasst werden müssen.
Les valeurs mentionnées sont des valeurs recommandées qui doivent être adaptées selon les conditions de la machine, du serrage, du lubrifiant etc.
Questi valori sono valori raccomandati che devono essere adattati secondo le condizioni della macchina, del serraggio, del lubrificante etc.
These are recommended values that depend on the condition of the machine, fixture, coolant etc., and they may have to be adapted yet.

Genannte Werte sind Richtwerte, die je nach Maschine, Aufspannung, Kühlschmierstoff usw. noch angepasst werden müssen.
Les valeurs mentionnées sont des valeurs recommandées qui doivent être adaptées selon les conditions de la machine, du serrage, du lubrifiant etc.
Questi valori sono valori raccomandati che devono essere adattati secondo le condizioni della macchina, del serraggio, del lubrificante etc.
These are recommended values that depend on the condition of the machine, fixture, coolant etc., and they may have to be adapted yet.

Schnittdaten

Données de coupe

Parametri di lavoro

Cutting data

Art. 42000

| Mat. | ϕ 0.10-0.30 | ϕ 0.40-1.50 | ϕ 1.50-3.0 | a_e | a_p |
|------|------------------|------------------|-----------------|--------|-----------|
| P1 | 60-80 | 60-80 | 60-80 | 1 x d1 | 0.5 x d1 |
| P2 | 50-70 | 50-70 | 50-70 | 1 x d1 | 0.3 x d1 |
| P3 | 40-60 | 40-60 | 40-60 | 1 x d1 | 0.2 x d1 |
| M1 | 30-50 | 30-50 | 30-50 | 1 x d1 | 0.4 x d1 |
| M2 | 25-40 | 25-40 | 25-40 | 1 x d1 | 0.25 x d1 |
| K1 | 40-70 | 40-70 | 40-70 | 1 x d1 | 1 x d1 |
| K2 | 30-60 | 30-60 | 30-60 | 1 x d1 | 0.4 x d1 |
| N1 | 70-100 | 70-100 | 70-100 | 1 x d1 | 1 x d1 |
| N2 | 80-120 | 80-120 | 80-120 | 1 x d1 | 0.9 x d1 |
| N3 | 60-100 | 60-100 | 60-100 | 1 x d1 | 0.9 x d1 |
| N4 | | | | | |
| N5 | 40-80 | 40-80 | 40-80 | 1 x d1 | 1 x d1 |
| N6 | 25-50 | 25-50 | 25-50 | 1 x d1 | 0.5 x d1 |
| N7 | | | | | |
| N8 | | | | | |
| S1 | 25-50 | 25-50 | 25-50 | 1 x d1 | 0.4 x d1 |
| S2 | | | | | |
| H1 | | | | | |
| H2 | | | | | |
| H3 | | | | | |
| O1 | 80-120 | 80-120 | 80-120 | 1 x d1 | 1 x d1 |
| O2 | | | | | |
| O3 | | | | | |

Art. 72500/72800

| Mat. | ϕ 0.30-0.70 | ϕ 0.70-1.50 | ϕ 1.50-2.50 | a_e | a_p |
|------|------------------|------------------|------------------|--------|-----------|
| P1 | 60-80 | 60-80 | 60-80 | 1 x d1 | 0.45 x d1 |
| P2 | 50-70 | 50-70 | 50-70 | 1 x d1 | 0.25 x d1 |
| P3 | 40-60 | 40-60 | 40-60 | 1 x d1 | 0.15 x d1 |
| M1 | 30-50 | 30-50 | 30-50 | 1 x d1 | 0.35 x d1 |
| M2 | 25-40 | 25-40 | 25-40 | 1 x d1 | 0.2 x d1 |
| K1 | 40-70 | 40-70 | 40-70 | 1 x d1 | 0.8 x d1 |
| K2 | 30-60 | 30-60 | 30-60 | 1 x d1 | 0.35 x d1 |
| N1 | 70-100 | 70-100 | 70-100 | 1 x d1 | 0.8 x d1 |
| N2 | 80-120 | 80-120 | 80-120 | 1 x d1 | 0.7 x d1 |
| N3 | 60-100 | 60-100 | 60-100 | 1 x d1 | 0.7 x d1 |
| N4 | | | | | |
| N5 | 40-80 | 40-80 | 40-80 | 1 x d1 | 0.8 x d1 |
| N6 | 25-50 | 25-50 | 25-50 | 1 x d1 | 0.45 x d1 |
| N7 | | | | | |
| N8 | | | | | |
| S1 | 25-50 | 25-50 | 25-50 | 1 x d1 | 0.3 x d1 |
| S2 | | | | | |
| H1 | | | | | |
| H2 | | | | | |
| H3 | | | | | |
| O1 | 80-120 | 80-120 | 80-120 | 1 x d1 | 0.9 x d1 |
| O2 | | | | | |
| O3 | | | | | |

Schnittdaten

Données de coupe

Parametri di lavoro

Cutting data

Art. 73130/73200/73300

| Mat. | ϕ 0.30-0.70 | ϕ 0.70-1.50 | ϕ 1.50-2.90 | a_e | a_p |
|------|------------------|------------------|------------------|--------|----------|
| P1 | 60-80 | 60-80 | 60-80 | 1 x d1 | 0.9 x d1 |
| P2 | 50-70 | 50-70 | 50-70 | 1 x d1 | 0.8 x d1 |
| P3 | 40-60 | 40-60 | 40-60 | 1 x d1 | 0.7 x d1 |
| M1 | 30-50 | 30-50 | 30-50 | 1 x d1 | 0.6 x d1 |
| M2 | 25-40 | 25-40 | 25-40 | 1 x d1 | 0.5 x d1 |
| K1 | 40-70 | 40-70 | 40-70 | 1 x d1 | 1.0 x d1 |
| K2 | 30-60 | 30-60 | 30-60 | 1 x d1 | 0.9 x d1 |
| N1 | 70-100 | 70-100 | 70-100 | 1 x d1 | 0.9 x d1 |
| N2 | 80-120 | 80-120 | 80-120 | 1 x d1 | 0.9 x d1 |
| N3 | 60-100 | 60-100 | 60-100 | 1 x d1 | 0.9 x d1 |
| N4 | | | | | |
| N5 | 40-80 | 40-80 | 40-80 | 1 x d1 | 1 x d1 |
| N6 | 25-50 | 25-50 | 25-50 | 1 x d1 | 0.8 x d1 |
| N7 | | | | | |
| N8 | | | | | |
| S1 | 25-50 | 25-50 | 25-50 | 1 x d1 | 0.7 x d1 |
| S2 | | | | | |
| H1 | | | | | |
| H2 | | | | | |
| H3 | | | | | |
| O1 | | | | | |
| O2 | | | | | |
| O3 | | | | | |

Art. 43105

| Mat. | ϕ 0.30-0.70 | ϕ 0.80-1.50 | ϕ 1.60-3.00 | a_e | a_p |
|------|------------------|------------------|------------------|--------|----------|
| P1 | 80-120 | 80-120 | 80-120 | 1 x d1 | 0.8 x d1 |
| P2 | 70-100 | 70-100 | 70-100 | 1 x d1 | 0.6 x d1 |
| P3 | 40-70 | 40-70 | 40-70 | 1 x d1 | 0.5 x d1 |
| M1 | 60-90 | 60-90 | 60-90 | 1 x d1 | 0.5 x d1 |
| M2 | 30-60 | 30-60 | 30-60 | 1 x d1 | 0.4 x d1 |
| K1 | 150-200 | 150-200 | 150-200 | 1 x d1 | 0.8 x d1 |
| K2 | 60-100 | 60-100 | 60-100 | 1 x d1 | 0.8 x d1 |
| N1 | 150-300 | 150-300 | 150-300 | 1 x d1 | 1 x d1 |
| N2 | 150-300 | 150-300 | 150-300 | 1 x d1 | 1 x d1 |
| N3 | 130-250 | 130-250 | 130-250 | 1 x d1 | 2 x d1 |
| N4 | 60-100 | 60-100 | 60-100 | 1 x d1 | 0.8 x d1 |
| N5 | 100-250 | 100-250 | 100-250 | 1 x d1 | 1 x d1 |
| N6 | 80-150 | 80-150 | 80-150 | 1 x d1 | 0.8 x d1 |
| N7 | 80-130 | 80-130 | 80-130 | 1 x d1 | 1 x d1 |
| N8 | 80-130 | 80-130 | 80-130 | 1 x d1 | 1 x d1 |
| S1 | 40-70 | 40-70 | 40-70 | 1 x d1 | 0.8 x d1 |
| S2 | 20-40 | 20-40 | 20-40 | 1 x d1 | 0.2 x d1 |
| H1 | 20-45 | 20-45 | 20-45 | 1 x d1 | 0.2 x d1 |
| H2 | | | | | |
| H3 | | | | | |
| O1 | 100-150 | 100-150 | 100-150 | 1 x d1 | 2 x d1 |
| O2 | | | | | |
| O3 | | | | | |

Genannte Werte sind Richtwerte, die je nach Maschine, Aufspannung, Kühlschmierstoff usw. noch angepasst werden müssen.
 Les valeurs mentionnées sont des valeurs recommandées qui doivent être adaptées selon les conditions de la machine, du serrage, du lubrifiant etc.
 Questi valori sono valori raccomandati che devono essere adattati secondo le condizioni della macchina, del serraggio, del lubrificante etc.
 These are recommended values that depend on the condition of the machine, fixture, coolant etc., and they may have to be adapted yet.

Genannte Werte sind Richtwerte, die je nach Maschine, Aufspannung, Kühlschmierstoff usw. noch angepasst werden müssen.
 Les valeurs mentionnées sont des valeurs recommandées qui doivent être adaptées selon les conditions de la machine, du serrage, du lubrifiant etc.
 Questi valori sono valori raccomandati che devono essere adattati secondo le condizioni della macchina, del serraggio, del lubrificante etc.
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Schnittdaten

Données de coupe

Parametri di lavoro

Cutting data

Art. 43305

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

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 Les valeurs mentionnées sont des valeurs recommandées qui doivent être adaptées selon les conditions de la machine, du serrage, du lubrifiant etc.
 Questi valori sono valori raccomandati che devono essere adattati secondo le condizioni della macchina, del serraggio, del lubrificante etc.
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Schnittdaten

Données de coupe

Parametri di lavoro

Cutting data

Art. 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 | | |

Genannte Werte sind Richtwerte, die je nach Maschine, Aufspannung, Kühlschmierstoff usw. noch angepasst werden müssen.
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 These are recommended values that depend on the condition of the machine, fixture, coolant etc., and they may have to be adapted yet.

Art. 74075/74150/74300

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

Schnittdaten

Données de coupe
Parametri di lavoro
Cutting data

Art. 47344

| Mat. | ∅ 0.50-2.00 | ∅ 2.10-5.00 | ∅ 5.10-8.00 | a _e | a _p |
|------|------------------------|------------------------|------------------------|----------------|----------------|
| P1 | | | | | |
| P2 | | | | | |
| P3 | | | | | |
| M1 | | | | | |
| M2 | | | | | |
| K1 | | | | | |
| K2 | | | | | |
| N1 | | | | | |
| N2 | | | | | |
| N3 | | | | | |
| N4 | | | | | |
| N5 | 100-130 0.006-0.030 | 100-130 0.015-0.060 | 100-130 0.040-0.100 | 0.2x d1 | 1 x d1 |
| N6 | | | | | |
| N7 | 120-150 0.006-0.030 | 120-150 0.015-0.060 | 120-150 0.040-0.100 | 0.2x d1 | 1 x d1 |
| N8 | 120-150 0.005-0.025 | 120-150 0.010-0.050 | 120-150 0.040-0.090 | 0.1x d1 | 1 x d1 |
| S1 | | | | | |
| S2 | | | | | |
| H1 | | | | | |
| H2 | | | | | |
| H3 | | | | | |
| O1 | | | | | |
| O2 | | | | | |
| O3 | | | | | |

Art. 50810/50812/50814/50818

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

Genannte Werte sind Richtwerte, die je nach Maschine, Aufspannung, Kühlschmierstoff usw. noch angepasst werden müssen.
Les valeurs mentionnées sont des valeurs recommandées qui doivent être adaptées selon les conditions de la machine, du serrage, du lubrifiant etc.
Questi valori sono valori raccomandati che devono essere adattati secondo le condizioni della macchina, del serraggio, del lubrificante etc.
These are recommended values that depend on the condition of the machine, fixture, coolant etc., and they may have to be adapted yet.

Schnittdaten

Données de coupe
Parametri di lavoro
Cutting data

Art. 50950

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

Genannte Werte sind Richtwerte, die je nach Maschine, Aufspannung, Kühlschmierstoff usw. noch angepasst werden müssen.
Les valeurs mentionnées sont des valeurs recommandées qui doivent être adaptées selon les conditions de la machine, du serrage, du lubrifiant etc.
Questi valori sono valori raccomandati che devono essere adattati secondo le condizioni della macchina, del serraggio, del lubrificante etc.
These are recommended values that depend on the condition of the machine, fixture, coolant etc., and they may have to be adapted yet.

Art. 50830

| Mat. | ∅ 0.30-1.00 | ∅ 1.10-5.00 | ∅ 5.10-10.00 | ∅ 10.10-15.00 | ∅ 15.10-20.00 |
|------|----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| P1 | 30-60 0.010-0.040 | 50-90 0.038-0.080 | 50-90 0.076-0.110 | 50-90 0.100-0.180 | 50-90 0.170-0.260 |
| P2 | 20-35 0.010-0.030 | 30-60 0.028-0.070 | 30-60 0.065-0.090 | 30-60 0.085-0.160 | 30-60 0.150-0.230 |
| P3 | 15-30 0.005-0.020 | 25-50 0.018-0.060 | 25-50 0.057-0.085 | 25-50 0.080-0.130 | 25-50 0.125-0.200 |
| M1 | 15-30 0.005-0.020 | 25-50 0.018-0.060 | 25-50 0.057-0.085 | 25-50 0.080-0.130 | 25-50 0.125-0.200 |
| M2 | 10-20 0.004-0.018 | 15-40 0.016-0.050 | 15-40 0.048-0.090 | 15-40 0.085-0.120 | 15-40 0.110-0.160 |
| K1 | 40-80 0.010-0.060 | 70-120 0.055-0.090 | 70-120 0.085-0.110 | 70-120 0.100-0.280 | 70-120 0.260-0.500 |
| K2 | 30-50 0.010-0.030 | 40-80 0.028-0.070 | 40-80 0.067-0.100 | 40-80 0.095-0.180 | 40-80 0.170-0.300 |
| N1 | 30-60 0.012-0.045 | 50-90 0.042-0.085 | 50-90 0.080-0.140 | 50-90 0.135-0.250 | 50-90 0.230-0.300 |
| N2 | 40-80 0.015-0.050 | 70-120 0.480-0.100 | 70-120 0.095-0.180 | 70-120 0.170-0.280 | 70-120 0.260-0.450 |
| N3 | 30-70 0.010-0.045 | 60-110 0.040-0.085 | 60-110 0.080-0.160 | 60-110 0.150-0.260 | 60-110 0.240-0.400 |
| N4 | 20-40 0.005-0.030 | 30-70 0.028-0.070 | 30-70 0.065-0.090 | 30-70 0.085-0.160 | 30-70 0.150-0.230 |
| N5 | | | | | |
| N6 | 15-30 0.012-0.045 | 25-50 0.042-0.085 | 25-50 0.080-0.140 | 25-50 0.135-0.250 | 25-50 0.230-0.300 |
| N7 | 15-30 0.012-0.045 | 25-50 0.042-0.085 | 25-50 0.080-0.140 | 25-50 0.135-0.250 | 25-50 0.230-0.300 |
| N8 | 10-20 0.004-0.018 | 15-35 0.016-0.050 | 15-35 0.048-0.090 | 15-35 0.085-0.120 | 15-35 0.110-0.180 |
| S1 | 20-30 0.020-0.040 | 25-50 0.038-0.070 | 25-50 0.065-0.100 | 25-50 0.095-0.150 | 25-50 0.145-0.200 |
| S2 | 10-20 0.004-0.018 | 15-35 0.016-0.050 | 15-35 0.048-0.090 | 15-35 0.085-0.120 | 15-35 0.110-0.180 |
| H1 | | | | | |
| H2 | | | | | |
| H3 | | | | | |
| O1 | 20-40 0.015-0.050 | 30-70 0.048-0.100 | 30-70 0.095-0.180 | 30-70 0.170-0.280 | 30-70 0.260-0.450 |
| O2 | | | | | |
| O3 | | | | | |

Schnittdaten

Données de coupe
Parametri di lavoro
Cutting data

Art. 50838

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

Art. 50820

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

Genannte Werte sind Richtwerte, die je nach Maschine, Aufspannung, Kühlschmierstoff usw. noch angepasst werden müssen.
Les valeurs mentionnées sont des valeurs recommandées qui doivent être adaptées selon les conditions de la machine, du serrage, du lubrifiant etc.
Questi valori sono valori raccomandati che devono essere adattati secondo le condizioni della macchina, del serraggio, del lubrificante etc.
These are recommended values that depend on the condition of the machine, fixture, coolant etc., and they may have to be adapted yet.

Schnittdaten

Données de coupe
Parametri di lavoro
Cutting data

Art. 50938

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

Genannte Werte sind Richtwerte, die je nach Maschine, Aufspannung, Kühlschmierstoff usw. noch angepasst werden müssen.
Les valeurs mentionnées sont des valeurs recommandées qui doivent être adaptées selon les conditions de la machine, du serrage, du lubrifiant etc.
Questi valori sono valori raccomandati che devono essere adattati secondo le condizioni della macchina, del serraggio, del lubrificante etc.
These are recommended values that depend on the condition of the machine, fixture, coolant etc., and they may have to be adapted yet.

Art. 50940

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

Schnittdaten

Données de coupe
Parametri di lavoro
Cutting data

Art. 50942

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

Art. 52100/52200

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

Genannte Werte sind Richtwerte, die je nach Maschine, Aufspannung, Kühlschmierstoff usw. noch angepasst werden müssen.
Les valeurs mentionnées sont des valeurs recommandées qui doivent être adaptées selon les conditions de la machine, du serrage, du lubrifiant etc.
Questi valori sono valori raccomandati che devono essere adattati secondo le condizioni della macchina, del serraggio, del lubrificante etc.
These are recommended values that depend on the condition of the machine, fixture, coolant etc., and they may have to be adapted yet.

Schnittdaten

Données de coupe
Parametri di lavoro
Cutting data

Art. 52150

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

Genannte Werte sind Richtwerte, die je nach Maschine, Aufspannung, Kühlschmierstoff usw. noch angepasst werden müssen.
Les valeurs mentionnées sont des valeurs recommandées qui doivent être adaptées selon les conditions de la machine, du serrage, du lubrifiant etc.
Questi valori sono valori raccomandati che devono essere adattati secondo le condizioni della macchina, del serraggio, del lubrificante etc.
These are recommended values that depend on the condition of the machine, fixture, coolant etc., and they may have to be adapted yet.

Art. 50909

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

Schnittdaten

Données de coupe

Parametri di lavoro

Cutting data

Art. 50912/50916

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

Art. 50920/50925/50930

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

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

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

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

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

Schnittdaten

Données de coupe

Parametri di lavoro

Cutting data

Art. 52903/52906/52909

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

Art. 52912/52916

| Mat. | | ø 1.00-1.90 | ø 2.00-5.00 | ø 5.10-8.00 | ø 8.10-10.00 |
|------|----|-------------|-------------|-------------|--------------|
| P1 | Vc | 70-110 | 70-110 | 70-110 | 70-110 |
| | fz | 0.020-0.060 | 0.050-0.130 | 0.125-0.170 | 0.165-0.190 |
| P2 | Vc | 60-100 | 60-100 | 60-100 | 60-100 |
| | fz | 0.015-0.050 | 0.045-0.120 | 0.115-0.150 | 0.140-0.160 |
| P3 | Vc | 50-90 | 50-90 | 50-90 | 50-90 |
| | fz | 0.015-0.045 | 0.040-0.100 | 0.090-0.130 | 0.120-0.120 |
| M1 | Vc | 60-100 | 60-100 | 60-100 | 60-100 |
| | fz | 0.020-0.050 | 0.045-0.120 | 0.115-0.150 | 0.140-0.160 |
| M2 | Vc | 50-90 | 50-90 | 50-90 | 50-90 |
| | fz | 0.015-0.045 | 0.040-0.100 | 0.090-0.130 | 0.120-0.120 |
| K1 | Vc | 90-140 | 90-140 | 90-140 | 90-140 |
| | fz | 0.050-0.110 | 0.100-0.270 | 0.260-0.340 | 0.320-0.350 |
| K2 | Vc | 80-120 | 80-120 | 80-120 | 80-120 |
| | fz | 0.040-0.100 | 0.090-0.250 | 0.240-0.300 | 0.280-0.300 |
| N1 | Vc | 90-130 | 90-130 | 90-130 | 90-130 |
| | fz | 0.050-0.110 | 0.100-0.250 | 0.240-0.340 | 0.320-0.350 |
| N2 | Vc | 150-200 | 150-200 | 150-200 | 150-200 |
| | fz | 0.050-0.110 | 0.100-0.250 | 0.240-0.340 | 0.320-0.350 |
| N3 | Vc | 170-220 | 170-220 | 170-220 | 170-220 |
| | fz | 0.050-0.110 | 0.100-0.250 | 0.240-0.340 | 0.320-0.350 |
| N4 | Vc | 90-130 | 90-130 | 90-130 | 90-130 |
| | fz | 0.025-0.055 | 0.050-0.130 | 0.125-0.170 | 0.165-0.195 |
| N5 | Vc | 150-200 | 150-200 | 150-200 | 1050-200 |
| | fz | 0.040-0.100 | 0.090-0.250 | 0.240-0.300 | 0.280-0.300 |
| N6 | Vc | 60-100 | 60-100 | 60-100 | 60-100 |
| | fz | 0.015-0.045 | 0.040-0.100 | 0.090-0.130 | 0.120-0.110 |
| N7 | Vc | | | | |
| | fz | | | | |
| N8 | Vc | | | | |
| | fz | | | | |
| S1 | Vc | 30-60 | 30-60 | 30-60 | 30-60 |
| | fz | 0.015-0.035 | 0.030-0.085 | 0.080-0.110 | 0.100-0.100 |
| S2 | Vc | 20-50 | 20-50 | 20-50 | 20-50 |
| | fz | 0.010-0.040 | 0.030-0.100 | 0.080-0.130 | 0.10-0.110 |
| H1 | Vc | 60-100 | 60-100 | 60-100 | 60-100 |
| | fz | 0.010-0.020 | 0.018-0.050 | 0.045-0.065 | 0.060-0.080 |
| H2 | Vc | | | | |
| | fz | | | | |
| H3 | Vc | | | | |
| | fz | | | | |
| O1 | Vc | 70-110 | 70-110 | 70-110 | 70-110 |
| | fz | 0.020-0.060 | 0.050-0.130 | 0.125-0.170 | 0.165-0.190 |
| O2 | Vc | | | | |
| | fz | | | | |
| O3 | Vc | | | | |
| | fz | | | | |

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

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

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

Schnittdaten

Données de coupe
Parametri di lavoro
Cutting data

Art. 52920/52930

| Mat. | ø 3.00-5.00 | ø 5.10-8.00 | ø 8.10-10.00 |
|------|-------------|-------------|--------------|
| P1 | | | |
| P2 | | | |
| P3 | 40-80 | 40-80 | 40-80 |
| M1 | 30-70 | 30-70 | 30-70 |
| M2 | 25-55 | 25-55 | 25-55 |
| K1 | 70-110 | 70-110 | 70-110 |
| K2 | 60-100 | 60-100 | 60-100 |
| N1 | 60-100 | 60-100 | 60-100 |
| N2 | 65-100 | 65-100 | 65-100 |
| N3 | 70-110 | 70-110 | 70-110 |
| N4 | | | |
| N5 | | | |
| N6 | | | |
| N7 | | | |
| N8 | | | |
| S1 | 30-60 | 30-60 | 30-60 |
| S2 | 20-50 | 20-50 | 20-50 |
| H1 | 20-40 | 20-40 | 20-40 |
| H2 | | | |
| H3 | | | |
| O1 | 60-100 | 60-100 | 60-100 |
| O2 | | | |
| O3 | | | |

Art. 54906/54909

| Mat. | ø 3.00-5.00 | ø 5.10-8.00 | ø 8.10-12.70 |
|------|-------------|-------------|--------------|
| P1 | 70-110 | 70-110 | 70-110 |
| P2 | 60-100 | 60-100 | 60-100 |
| P3 | | | |
| M1 | | | |
| M2 | | | |
| K1 | 90-140 | 90-140 | 90-140 |
| K2 | 80-120 | 80-120 | 80-120 |
| N1 | | | |
| N2 | | | |
| N3 | 170-220 | 170-220 | 170-220 |
| N4 | | | |
| N5 | 150-200 | 150-200 | 150-200 |
| N6 | | | |
| N7 | | | |
| N8 | | | |
| S1 | | | |
| S2 | | | |
| H1 | | | |
| H2 | | | |
| H3 | | | |
| O1 | | | |
| O2 | | | |
| O3 | | | |

Schnittdaten

Données de coupe
Parametri di lavoro
Cutting data

Art. 54912/54916

| Mat. | ø 3.00-5.00 | ø 5.10-8.00 | ø 8.10-10.00 |
|------|-------------|-------------|--------------|
| P1 | 70-110 | 70-110 | 70-110 |
| P2 | 60-100 | 60-100 | 60-100 |
| P3 | | | |
| M1 | | | |
| M2 | | | |
| K1 | 90-130 | 90-130 | 90-130 |
| K2 | 150-200 | 150-200 | 150-200 |
| N1 | | | |
| N2 | | | |
| N3 | 170-220 | 170-220 | 170-220 |
| N4 | | | |
| N5 | 150-200 | 150-200 | 150-200 |
| N6 | | | |
| N7 | | | |
| N8 | | | |
| S1 | | | |
| S2 | | | |
| H1 | | | |
| H2 | | | |
| H3 | | | |
| O1 | | | |
| O2 | | | |
| O3 | | | |

Art. 54920/54930

| Mat. | ø 3.00-5.00 | ø 5.10-8.00 | ø 8.10-10.00 |
|------|-------------|-------------|--------------|
| P1 | 70-120 | 70-120 | 70-120 |
| P2 | 70-110 | 70-110 | 70-110 |
| P3 | | | |
| M1 | | | |
| M2 | | | |
| K1 | 70-110 | 70-110 | 70-110 |
| K2 | 60-100 | 60-100 | 60-100 |
| N1 | | | |
| N2 | | | |
| N3 | 70-110 | 70-110 | 70-110 |
| N4 | | | |
| N5 | 50-100 | 50-100 | 50-100 |
| N6 | | | |
| N7 | | | |
| N8 | | | |
| S1 | | | |
| S2 | | | |
| H1 | | | |
| H2 | | | |
| H3 | | | |
| O1 | | | |
| O2 | | | |
| O3 | | | |

Genannte Werte sind Richtwerte, die je nach Maschine, Aufspannung, Kühlschmierstoff usw. noch angepasst werden müssen.
Les valeurs mentionnées sont des valeurs recommandées qui doivent être adaptées selon les conditions de la machine, du serrage, du lubrifiant etc.
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Questi valori sono valori raccomandati che devono essere adattati secondo le condizioni della macchina, del serraggio, del lubrificante etc.
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Schnittdaten

Données de coupe
Parametri di lavoro
Cutting data

Art. 50840

| Mat. | ø 2.00-5.00 | ø 5.10-8.00 | ø 8.10-11.00 | ø 11.10-14.00 |
|------|-----------------------------|-----------------------------|-----------------------------|-----------------------------|
| P1 | Vc 30-60 fz 0.020-0.050 | Vc 30-60 fz 0.045-0.090 | Vc 30-60 fz 0.080-0.150 | Vc 30-60 fz 0.130-0.200 |
| P2 | Vc 25-50 fz 0.015-0.045 | Vc 25-50 fz 0.040-0.080 | Vc 25-50 fz 0.075-0.120 | Vc 25-50 fz 0.100-0.150 |
| P3 | | | | |
| M1 | Vc 20-45 fz 0.15-0.040 | Vc 20-45 fz 0.035-0.070 | Vc 20-45 fz 0.065-0.100 | Vc 20-45 fz 0.090-0.130 |
| M2 | Vc 15-35 fz 0.010-0.035 | Vc 15-35 fz 0.030-0.060 | Vc 15-35 fz 0.055-0.085 | Vc 15-35 fz 0.080-0.110 |
| K1 | Vc 30-60 fz 0.020-0.050 | Vc 30-60 fz 0.45-0.090 | Vc 30-60 fz 0.080-0.150 | Vc 30-60 fz 0.130-0.200 |
| K2 | Vc 25-50 fz 0.015-0.045 | Vc 25-50 fz 0.040-0.080 | Vc 25-50 fz 0.075-0.120 | Vc 25-50 fz 0.100-0.150 |
| N1 | Vc 30-60 fz 0.020-0.050 | Vc 30-60 fz 0.045-0.090 | Vc 30-60 fz 0.080-0.150 | Vc 30-60 fz 0.130-0.200 |
| N2 | Vc 60-100 fz 0.030-0.080 | Vc 60-100 fz 0.070-0.150 | Vc 60-100 fz 0.140-0.220 | Vc 60-100 fz 0.200-0.300 |
| N3 | Vc 50-90 fz 0.025-0.070 | Vc 50-90 fz 0.060-0.130 | Vc 50-90 fz 0.120-0.190 | Vc 50-90 fz 0.180-0.250 |
| N4 | Vc 50-90 fz 0.030-0.090 | Vc 50-90 fz 0.080-0.150 | Vc 50-90 fz 0.130-0.200 | Vc 50-90 fz 0.180-0.300 |
| N5 | | | | |
| N6 | | | | |
| N7 | | | | |
| N8 | | | | |
| S1 | Vc 30-50 fz 0.010-0.030 | Vc 30-50 fz 0.025-0.070 | Vc 30-50 fz 0.060-0.130 | Vc 30-50 fz 0.100-0.160 |
| S2 | | | | |
| H1 | | | | |
| H2 | | | | |
| H3 | | | | |
| O1 | | | | |
| O2 | | | | |
| O3 | | | | |

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Schnittdaten

Données de coupe
Parametri di lavoro
Cutting data

Art. 58000 / 58500

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

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Art. 40000

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

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Schnittdaten

Données de coupe
Parametri di lavoro
Cutting data

Art. 40600

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

Art. 40002

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

Genannte Werte sind Richtwerte, die je nach Maschine, Aufspannung, Kühlschmierstoff usw. noch angepasst werden müssen.
Les valeurs mentionnées sont des valeurs recommandées qui doivent être adaptées selon les conditions de la machine, du serrage, du lubrifiant etc.
Questi valori sono valori raccomandati che devono essere adattati secondo le condizioni della macchina, del serraggio, del lubrificante etc.
These are recommended values that depend on the condition of the machine, fixture, coolant etc., and they may have to be adapted yet.

Schnittdaten

Données de coupe
Parametri di lavoro
Cutting data

Art. 40602

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

Genannte Werte sind Richtwerte, die je nach Maschine, Aufspannung, Kühlschmierstoff usw. noch angepasst werden müssen.
Les valeurs mentionnées sont des valeurs recommandées qui doivent être adaptées selon les conditions de la machine, du serrage, du lubrifiant etc.
Questi valori sono valori raccomandati che devono essere adattati secondo le condizioni della macchina, del serraggio, del lubrificante etc.
These are recommended values that depend on the condition of the machine, fixture, coolant etc., and they may have to be adapted yet.

Art. 40004

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

Schnittdaten

Données de coupe
Parametri di lavoro
Cutting data

Art. 40604

| Mat. | ø 2.00-5.00 | ø 6.00-12.00 | ø 13.00-20.00 | a _e | a _p |
|------|-----------------------------|-----------------------------|-----------------------------|----------------|----------------|
| P1 | Vc 70-100 fz 0.020-0.060 | Vc 70-100 fz 0.030-0.110 | Vc 70-100 fz 0.060-0.140 | 1 x d1 | 0.5 x d1 |
| P2 | Vc 60-90 fz 0.015-0.060 | Vc 60-90 fz 0.030-0.110 | Vc 60-90 fz 0.050-0.130 | 1 x d1 | 0.5 x d1 |
| P3 | Vc 50-80 fz 0.010-0.050 | Vc 50-80 fz 0.020-0.100 | Vc 50-80 fz 0.040-0.120 | 1 x d1 | 0.4 x d1 |
| M1 | Vc 50-80 fz 0.010-0.050 | Vc 50-80 fz 0.020-0.100 | Vc 50-80 fz 0.040-0.120 | 1 x d1 | 0.4 x d1 |
| M2 | | | | | |
| K1 | Vc 70-100 fz 0.020-0.060 | Vc 70-100 fz 0.030-0.110 | Vc 70-100 fz 0.060-0.140 | 1 x d1 | 0.80 x d1 |
| K2 | Vc 60-90 fz 0.150-0.050 | Vc 60-90 fz 0.030-0.100 | Vc 60-90 fz 0.060-0.130 | 1 x d1 | 0.70 x d1 |
| N1 | | | | | |
| N2 | | | | | |
| N3 | | | | | |
| N4 | | | | | |
| N5 | | | | | |
| N6 | | | | | |
| N7 | | | | | |
| N8 | | | | | |
| S1 | | | | | |
| S2 | | | | | |
| H1 | Vc 60-90 fz 0.010-0.050 | Vc 60-90 fz 0.020-0.060 | Vc 60-90 fz 0.040-0.070 | 1 x d1 | 0.05 x d1 |
| H2 | Vc 50-70 fz 0.010-0.040 | Vc 50-70 fz 0.020-0.050 | Vc 50-70 fz 0.030-0.060 | 1 x d1 | 0.05 x d1 |
| H3 | Vc 40-60 fz 0.005-0.030 | Vc 40-60 fz 0.015-0.035 | Vc 40-60 fz 0.030-0.050 | 1 x d1 | 0.05 x d1 |
| O1 | | | | | |
| O2 | | | | | |
| O3 | | | | | |

Genannte Werte sind Richtwerte, die je nach Maschine, Aufspannung, Kühlschmierstoff usw. noch angepasst werden müssen.
Les valeurs mentionnées sont des valeurs recommandées qui doivent être adaptées selon les conditions de la machine, du serrage, du lubrifiant etc.
Questi valori sono valori raccomandati che devono essere adattati secondo le condizioni della macchina, del serraggio, del lubrificante etc.
These are recommended values that depend on the condition of the machine, fixture, coolant etc., and they may have to be adapted yet.

Art. 40006/40008

| Mat. | ø 2.00-5.00 | ø 6.00-12.00 | ø 13.00-20.00 | a _e | a _p |
|------|----------------------------|----------------------------|----------------------------|----------------|----------------|
| P1 | Vc 60-80 fz 0.010-0.020 | Vc 60-80 fz 0.015-0.070 | Vc 60-80 fz 0.060-0.110 | 0.5 x d1 | 1.5 x d1 |
| P2 | Vc 50-70 fz 0.010-0.020 | Vc 50-70 fz 0.015-0.070 | Vc 50-70 fz 0.060-0.110 | 0.5 x d1 | 1.5 x d1 |
| P3 | Vc 40-60 fz 0.010-0.020 | Vc 40-60 fz 0.015-0.060 | Vc 40-60 fz 0.050-0.090 | 0.4 x d1 | 1.5 x d1 |
| M1 | Vc 50-70 fz 0.010-0.020 | Vc 50-70 fz 0.015-0.060 | Vc 50-70 fz 0.050-0.090 | 0.4 x d1 | 1.5 x d1 |
| M2 | Vc 40-60 fz 0.005-0.150 | Vc 40-60 fz 0.010-0.050 | Vc 40-60 fz 0.040-0.080 | 0.3 x d1 | 1.5 x d1 |
| K1 | Vc 50-70 fz 0.010-0.020 | Vc 50-70 fz 0.015-0.070 | Vc 50-70 fz 0.060-0.110 | 0.5 x d1 | 1.5 x d1 |
| K2 | Vc 40-60 fz 0.010-0.020 | Vc 40-60 fz 0.015-0.060 | Vc 40-60 fz 0.050-0.090 | 0.4 x d1 | 1.5 x d1 |
| N1 | | | | | |
| N2 | | | | | |
| N3 | | | | | |
| N4 | | | | | |
| N5 | | | | | |
| N6 | | | | | |
| N7 | | | | | |
| N8 | | | | | |
| S1 | Vc 50-70 fz 0.010-0.020 | Vc 50-70 fz 0.015-0.060 | Vc 50-70 fz 0.050-0.090 | 0.4 x d1 | 1.5 x d1 |
| S2 | | | | | |
| H1 | | | | | |
| H2 | | | | | |
| H3 | | | | | |
| O1 | | | | | |
| O2 | | | | | |
| O3 | | | | | |

Genannte Werte sind Richtwerte, die je nach Maschine, Aufspannung, Kühlschmierstoff usw. noch angepasst werden müssen.
Les valeurs mentionnées sont des valeurs recommandées qui doivent être adaptées selon les conditions de la machine, du serrage, du lubrifiant etc.
Questi valori sono valori raccomandati che devono essere adattati secondo le condizioni della macchina, del serraggio, del lubrificante etc.
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Schnittdaten

Données de coupe
Parametri di lavoro
Cutting data

Art. 47000/47500

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

Genannte Werte sind Richtwerte, die je nach Maschine, Aufspannung, Kühlschmierstoff usw. noch angepasst werden müssen.
Les valeurs mentionnées sont des valeurs recommandées qui doivent être adaptées selon les conditions de la machine, du serrage, du lubrifiant etc.
Questi valori sono valori raccomandati che devono essere adattati secondo le condizioni della macchina, del serraggio, del lubrificante etc.
These are recommended values that depend on the condition of the machine, fixture, coolant etc., and they may have to be adapted yet.

Der Webshop der Sphinx Werkzeuge AG

Le shop internet Sphinx Outils SA
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).
Grâce à notre shop internet vous avez la possibilité de consulter et commander nos produits online (commandes seulement en Suisse).
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).

Notizen

Notes
Appunti
Notes

Kleinstbohrer Art. 51200
















Bitte wählen Sie den gewünschten Durchmesser: Stückanzahl:

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

Zusätzliche Angaben:
Schnittdaten PDF: [Details](#)
Detaillierte Informationen: [Details](#)
Zusatzangaben:

pro Stück

Anwendungen Applications

| | |
|---|--|
|  | Sackloch Blind hole |
|  | Sackloch mit Senkung Blind hole with countersink |
|  | Stufenbohrung Step hole |
|  | Gravierstichel flach Graver for groove, flat bottom |
|  | Gravierstichel rund Graver for groove, full bottom radius |
|  | Radius einstechen Plunge radius |
|  | Radius längs Straight radius milling |
|  | Durchgangsbohrung Through hole |
|  | Durchgang mit Senkung Through hole with countersink |
|  | Mehrere Schichten Multi-composite material |
|  | Querbohrung Cross hole |
|  | In Rundung Round surface |
|  | In Schräge Inclined surface |
|  | Kantenbruch 60° Chamfer 60° |
|  | Kantenbruch 90° Chamfer 90° |

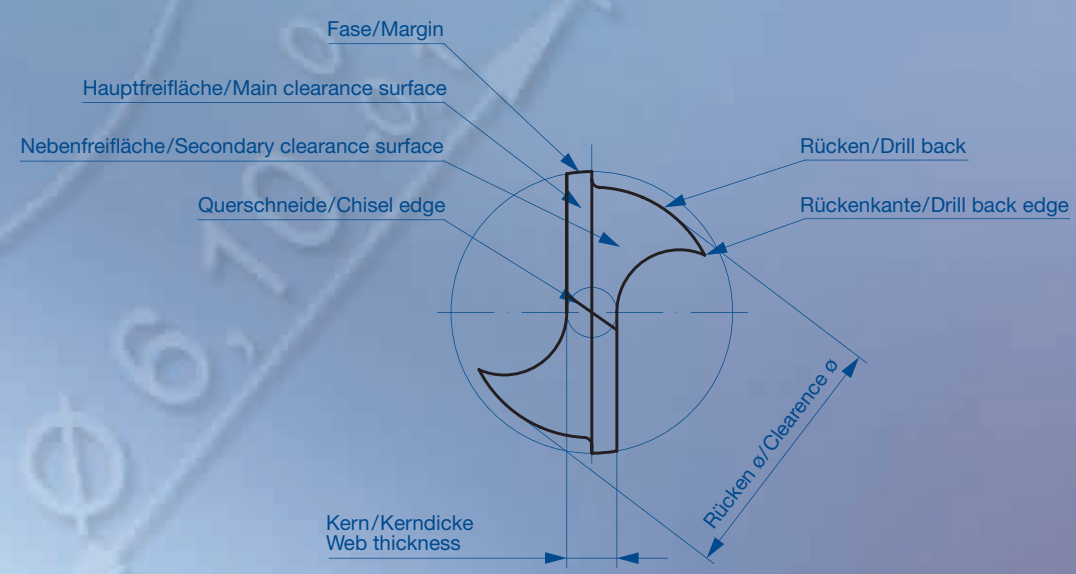
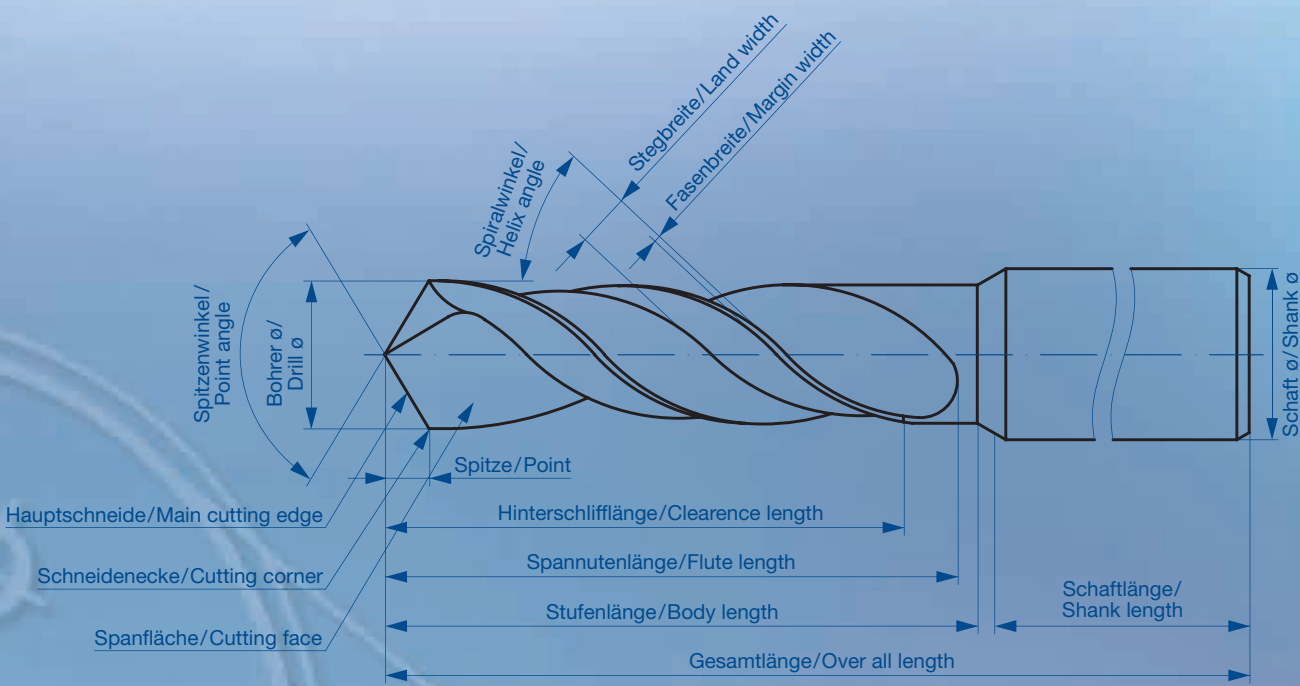
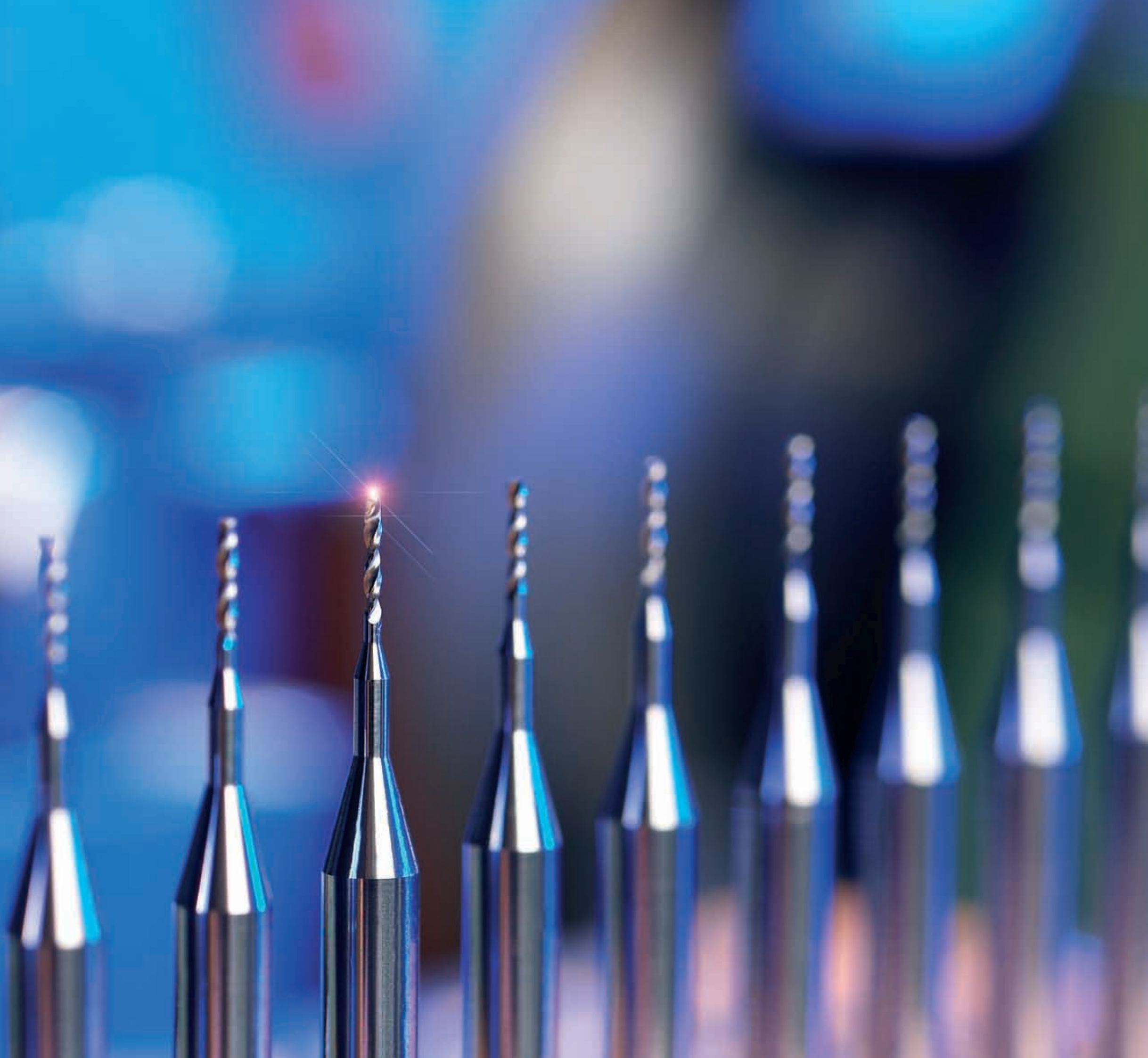
| | |
|---|---|
|  | Kantenbruch 120° Chamfer 120° |
|  | Senkung 60° Countersink 60° |
|  | Senkung 90° Countersink 90° |
|  | Senkung 120° Countersink 120° |
|  | Senkung 130° Countersink 130° |
|  | Senkung 140° Countersink 140° |
|  | Senkung 90° – 140° Double angle countersink 90° – 140° |
|  | Einstechen Plunge |
|  | Nuten normal Straight groove milling |
|  | Nuten schräg Angular groove milling |
|  | Schlichten Stirnseite Front side finishing |
|  | Schlichten mit Umfang Side finishing |
|  | Schuppen Stirnseite Front side roughing |
|  | Zyklisch eckig Angular milling |
|  | Zyklisch rund Circular milling |

Werkstoffgruppen Workpiece materials

| | Material Material | Festigkeit (N/mm²) Härte hardness | Beispiel example | | Material Material |
|---|---|--------------------------------------|--|---|---|
| P | P1 unlegierte Stähle, Stahlguss unalloyed steels, steel casting | bis up to 700 N/mm² | St37, St42, C22, GS38, St50, St60, C35, GS52 | P | P1 unlegierte Stähle, Stahlguss unalloyed steels, steel casting |
| | P2 legierte Stähle alloyed steels | bis up to 700–1000 N/mm² | St70, C45, GS62, 16MnCr5, 42CrMo4, 90MnCrV8, 100Cr6 | | P2 legierte Stähle alloyed steels |
| | P3 hochlegierte Stähle High alloyed / high-grade steels | bis / up to 1400 N/mm² | S210Cr12, 34CrAlNi7 | | P3 hochlegierte Stähle High alloyed / high-grade steels |
| M | M1 nichtrostender Stahl ferritische / martensitische Ferritic / martensitic stainless steels | | | M | M1 nichtrostender Stahl ferritische / martensitische Ferritic / martensitic stainless steels |
| | M2 nichtrostender Stahl austenitisch Austenitic stainless steels | | | | M2 nichtrostender Stahl austenitisch Austenitic stainless steels |
| K | K1 Grauguss grey cast iron | | | K | K1 Grauguss grey cast iron |
| | K2 Gusseisen mit Kugelgraphit ferritisch, perlitisch Spheroidal / ductile cast iron | | | | K2 Gusseisen mit Kugelgraphit ferritisch, perlitisch Spheroidal / ductile cast iron |
| N | N1 Alu-Knetlegierungen malleable alu alloy | bis up to 350 N/mm² | Al99.5, AlMg1, AlCuSiPb, G-AlCu5Ni1.5, AlZnMgCu0.5 | N | N1 Alu-Knetlegierungen malleable alu alloy |
| | N2 Alu-Gusslegierung <10% Si cast alu alloy <10% Si | bis up to 300 N/mm² | G-AlCu4TiMg, G-AlSi7Mg, G-AlSi9Mg, G-AlSi10Mg, G-AlSi12 | | N2 Alu-Gusslegierung <10% Si cast alu alloy <10% Si |
| | N3 Alu-Gusslegierung >10% Si cast alu alloy >10% Si | bis up to 450 N/mm² | G-AlSi17Cu4, G-AlSi21CuNiMg | | N3 Alu-Gusslegierung >10% Si cast alu alloy >10% Si |
| | N4 Magnesiumlegierungen Magnesium, magnesium alloys | | | | N4 Magnesiumlegierungen Magnesium, magnesium alloys |
| | N5 Kupfer und Kupferlegierungen kurzspanend Copper nickel alloys, brass | | | | N5 Kupfer und Kupferlegierungen kurzspanend Copper nickel alloys, brass |
| | N6 Kupfer und Kupferlegierungen langspanend Copper, forging copper alloys | | | | N6 Kupfer und Kupferlegierungen langspanend Copper, forging copper alloys |
| | N7 Silber Silver | | | | N7 Silber Silver |
| | N8 Gold Gold | | | | N8 Gold Gold |
| S | S1 Titan, Titanlegierungen Titanium, titanium alloys | über over 700 N/mm² | Ti6Al4V, Ti-4Al-4Mo-2Sn | S | S1 Titan, Titanlegierungen Titanium, titanium alloys |
| | S2 Warmfeste Legierungen Ni- oder Co-Basis Ni / Co based super alloys | | | | S2 Warmfeste Legierungen Ni- oder Co-Basis Ni / Co based super alloys |
| H | H1 gehärtete Stähle, 50–55 HRC Hardened steels 50–55 HRC | | | H | H1 gehärtete Stähle, 50–55 HRC Hardened steels 50–55 HRC |
| | H2 gehärtete Stähle, 55–60 HRC Hardened steels 55–60 HRC | | | | H2 gehärtete Stähle, 55–60 HRC Hardened steels 55–60 HRC |
| | H3 gehärtete Stähle, >60 HRC Hardened steels >60 HRC | | | | H3 gehärtete Stähle, >60 HRC Hardened steels >60 HRC |
| O | O1 Thermoplaste, Duroplaste ohne abrasive Füllstoffe Thermoplast, thermosetting plastics | | | O | O1 Thermoplaste, Duroplaste ohne abrasive Füllstoffe Thermoplast, thermosetting plastics |
| | O2 Kunststoffe Faserverstärkt Fiber-reinforced plastics | | | | O2 Kunststoffe Faserverstärkt Fiber-reinforced plastics |
| | O3 Graphit Graphite | | EDM36 | | O3 Graphit Graphite |

Spiralbohrer

Twist drill

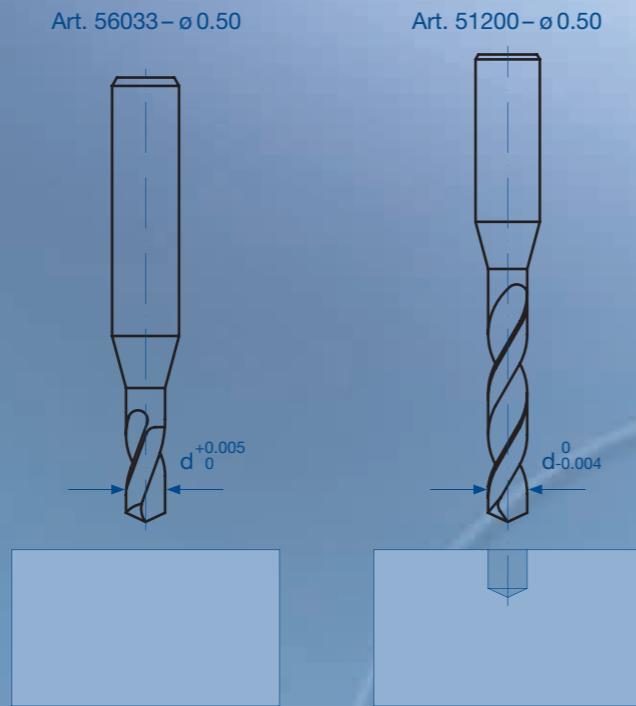


Bearbeitungsverfahren Mikrobohren

Machining process for micro drilling

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

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

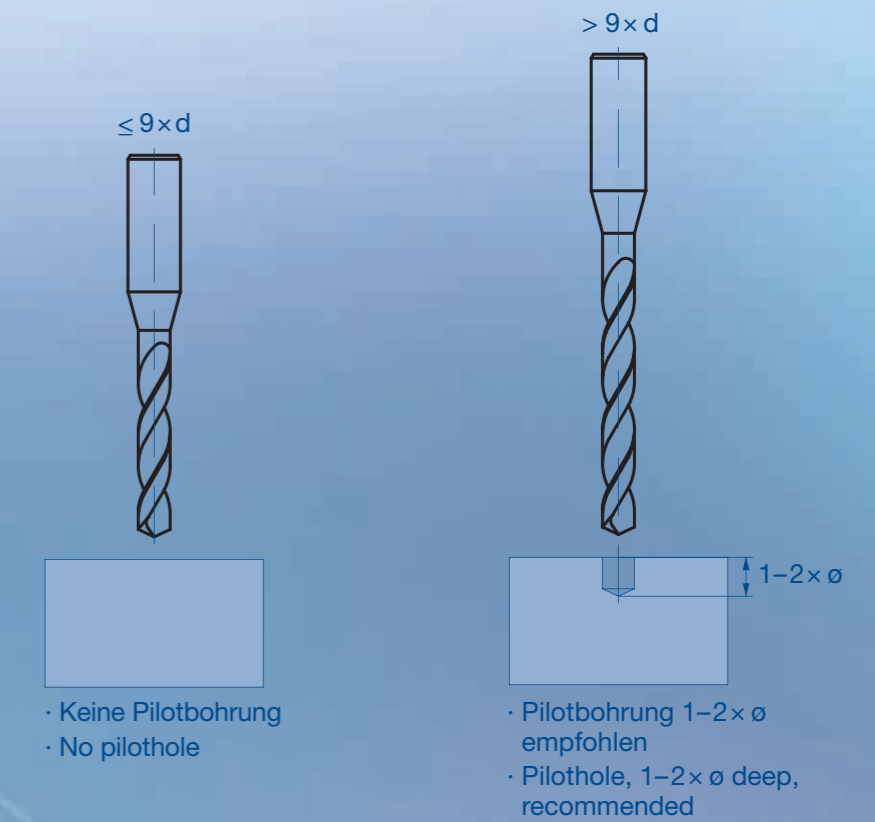


Zentrierbohren

Center drilling

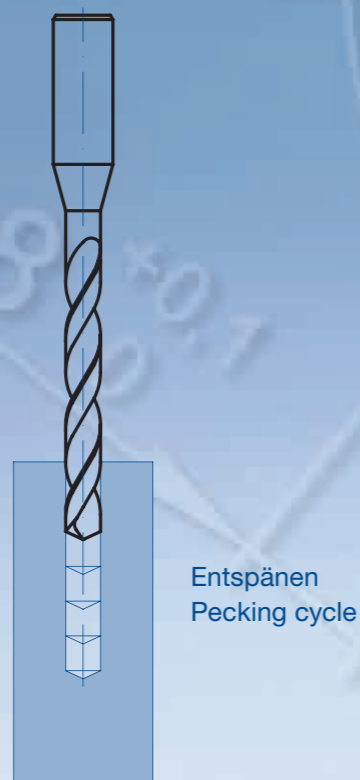
Saubere Eintrittsfläche

Smooth entering surface



Tieflochbohrzyklus für langspanende Werkstoffe

Deep-hole drilling cycle for long-chipping materials



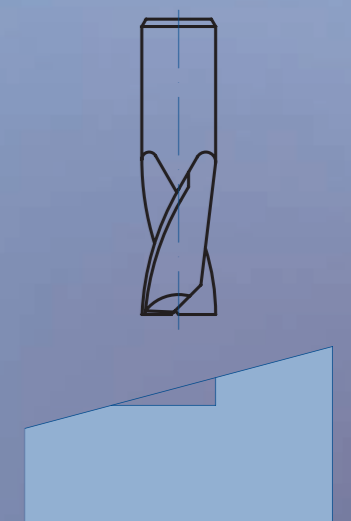
Zentrieren auf rauer / schräger Eintrittsfläche

Centering on a rough or inclined entering surface

Pilotbohrung/Pilothe



Fräsen einer Fläche / Milling a flat

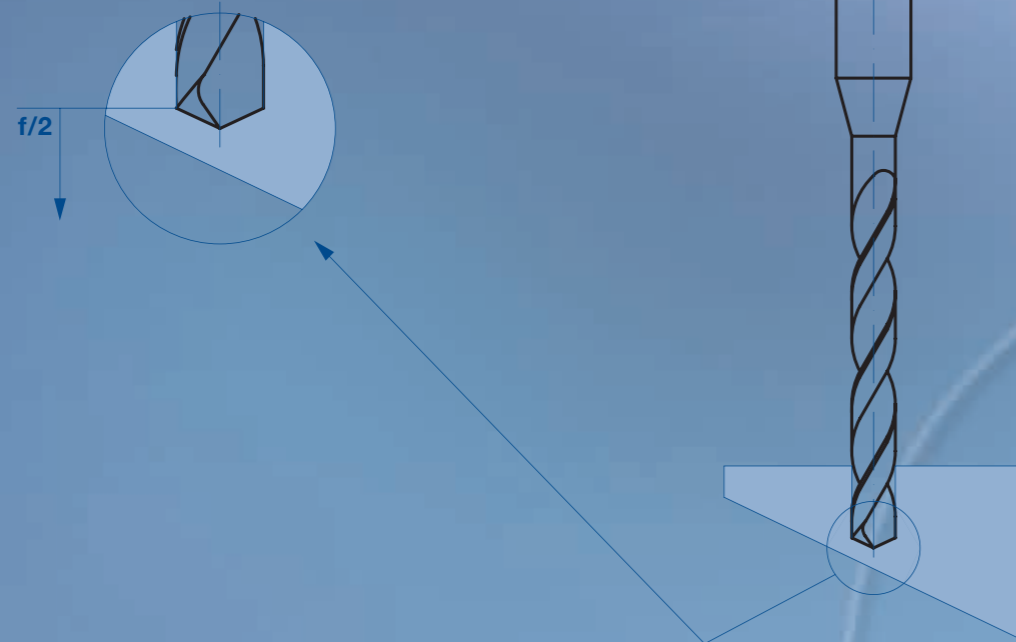


Bohreraustritt und Kühlung

Drill exit and cooling

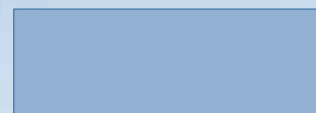
Bohreraustritt in schräger Fläche/Drill exit in an inclined surface

Vorschub reduzieren/Reduce feed!

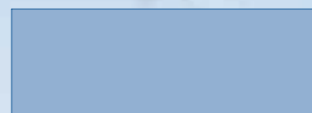
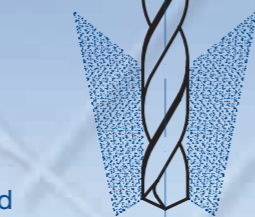


Kühlung/Cooling

$\leq 5 \times d$ min. 10 bar
 $> 6 \times d$ min. 20 bar



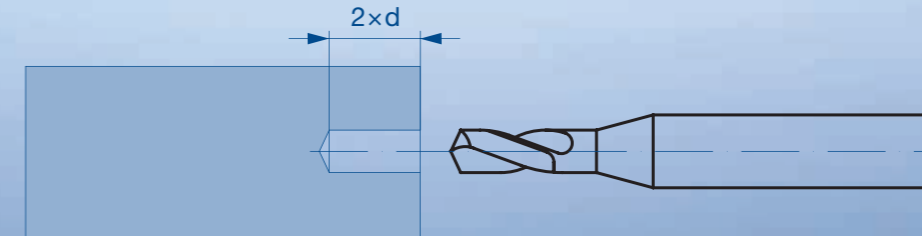
$\leq 5 \times d$



Bearbeitungsverfahren Tieflochbohren

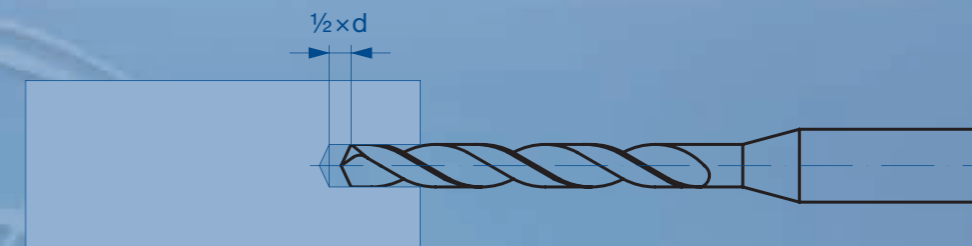
Schritt für Schritt

Machining process deep-hole drilling, step by step



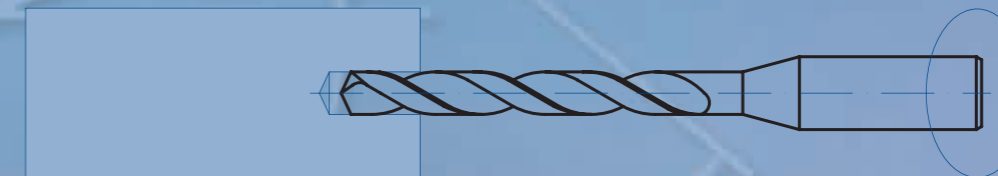
1. Pilotloch bohren
1. Pilothole drilling

$< \varnothing 3.00\text{mm}$ Art. 56033
 $\geq \varnothing 3.00\text{mm}$ Art. 50950



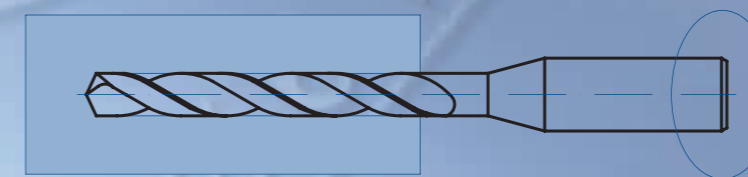
2. Phoenix Bohrer bei langsamdrehender Spindel einführen.
2. Insert the Phoenix drill with reduced rpm into the pilothole.

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



3. Spindeldrehzahl auf Nennwert, Kühlmittel in Betrieb setzen, ohne entspänen auf gewünschte Tiefe bohren.
3. Increase the rpm to the nominal value and switch ON the coolant, drilling full depth without pecking cycle.

$v_f = 100\%$
 $v_c = 100\%$



4. Nach Erreichen der gewünschten Tiefe die Spindeldrehzahl reduzieren, Kühlmittel ausschalten und Bohrer herausziehen.
4. After reaching the required drilling depth, reduce the spindle speed, switch OFF the coolant and retract the drill.

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



Allgemeine Verkaufsbedingungen

Geltungsbereich

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

Preise

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

Lieferfrist

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

Versand / Transport

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

Mengentoleranzen

Mengentoleranzen bei Bestellmenge von
< 20 Stück = ± 2 Stück
 ≥ 20 Stück = $\pm 10\%$

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

Eigentumsvorbehalt

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

Reklamationen

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

Zahlung

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

Besondere Bestimmungen

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

Änderungen

Technische Änderungen unserer Produkte im Zuge der Weiterentwicklung behalten wir uns vor. Bei Sonderanfertigungen erfolgen Aenderungsmittelungen durch die Kunden, ansonsten wird nach dem letzten Zeichnungsstand gefertigt. Aenderungen können kostenbeeinflussend wirken.

Rückverfolgbarkeit

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

Anwendbares Recht

Anwendbar ist das schweizerische Recht. Gerichtsstand ist Solothurn.

Conditions de vente générales

Domaine d'application

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

Prix

En francs suisses et par pièce sans TVA et emballage.

Délai de livraison

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

Expédition / Transport

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

Tolérances de quantité

Toute commande nécessitant une exécution spéciale sera considérée comme étant soldée, selon le résultat de la fabrication à
< 20 pièces = ± 2 pièces
 ≥ 20 pièces = $\pm 10\%$

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

Réserve de propriété

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

Réclamations

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

Paieiment

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

Dispositions spéciales

Dessins: chez Sphinx Outils SA, les outils présentés dans le catalogue sont totalement développés par notre département technique et nous en prenons la responsabilité. Pour les outils spéciaux, en particulier, les outils médicaux, le client porte la responsabilité du développement technique.

Modifications

Nous nous réservons le droit de procéder aux modifications techniques de nos produits à l'occasion de perfectionnements. Pour les exécutions spéciales, les modifications nous parviennent par le client, sinon la fabrication s'effectue d'après les derniers dessins. Des modifications peuvent entraîner des frais.

Recherche

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

Droit applicable

Le droit suisse est applicable. Lieu de juridiction: Soleure

Condizioni generali di vendita

Ambito di applicazione

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

Prezzi

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

Tempi di consegna

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

Spedizione / Trasporto

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

Tolleranza sulla quantità

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

< 20 pezzi = ± 2 pezzi

≥ 20 pezzi = ± 10 %

in più o in meno dalla quantità ordinata.

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

Riserva della proprietà

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

Reclamazioni

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

Pagamento

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

Disposizioni particolari

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

Modifiche

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

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

Rintracciabilità

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

Controversie

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

General Terms

Validity

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

Prices

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

Delivery

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

Shipment / Transport

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

Quantity tolerances

For manufacturing orders of special executions, a quantity tolerance of

< 20 pieces = ± 2 pieces

≥ 20 pieces = ± 10 %

will be reserved.

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

Reservation of title

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

Complaints

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

Payments

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

Special Terms

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

Alterations

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

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

Retraceability

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

Place of arbitration

For all commitments Swiss law is applied at Solothurn.

Produkteübersicht

Gamme d'outils

Programma di fabbricazione

Product overview



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

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