

# PROGRAMMA DI FRESATURA

in metallo duro integrale



SOLID CARBIDE END MILLS



VHM FRÄSER



FRAISES CARBURE MONOBLOC



FRESAS EN METAL DURO



2015

**Tallicarb**





# Talicarb



Angelo Ghezzi & C SpA

# Talicarb

# TALICARB - La nostra storia

OUR HISTORY  
UNSERE GESCHICHTE  
NOTRE HISTOIRE  
NUESTRA HISTORIA



**TALICARB**, società appartenente dal 1990 al gruppo Angleo Ghezzi & C. S.p.A., è specializzata nella progettazione e realizzazione di utensili in metallo duro saldobrasato ed integrale. Produce dal 1962 frese per cave, frese per sgrossatura e finitura, alesatori, utensili monotaglienti secondo le normative ISO e ha intensificato in questi ultimi anni il suo programma di prodotti per stampisti ad alto rendimento e di utensili speciali a disegno. A seguito di continui investimenti in nuove tecnologie, ha ulteriormente arricchito il proprio assortimento di frese "POWER" con l'aumento della gamma di diametri e di molte nuove tipologie di utensili particolarmente adatti al settore stampista e per l'alta velocità. Sono utensili realizzati dopo un'accurata ricerca e uno studio particolare, finalizzati a proporre all'utilizzatore finale una scelta tecnicamente idonea al tipo di lavorazione da eseguire e alle caratteristiche del materiale da lavorare. La Talicarb, infatti, da sempre si impegna ad indirizzare il proprio consumatore verso la giusta scelta dell'utensile. Per lavorazioni particolari ricordiamo la presenza nel catalogo delle sezioni relative alle frese Power Graphite con rivestimento Diamond e frese Power PKD - PCD con riporto in policristallino.



**TALICARB**, which is part of Angleo Ghezzi & C. S.p.A. group since 1990, is specialized in designing and manufacturing of solid carbide and carbide tipped tools. Since 1962 the company has been producing slot milling cutters, roughing and finishing end mills, reamers and turning tools in accordance with ISO standards. During the last few years, Talicarb has intensified its range of products in diesinking field and special tools according to drawing. After constant investments in new technologies, Talicarb has increased its range of POWER end mills with more diameters and lots of new types of tools that are especially suitable in diesinking and high speed fields. Thanks to a careful research and study, these tools are meant to be the best technical choice for the kind of machining and material the customer

has to work: Talicarb has always been leading its customer to the correct choice of the tool. For less ordinary machinings we point out the section of Power Graphite end mills with Diamond coating and Power PKD - PCD with polycrystalline diamond.



Die Firma **TALICARB**, die seit 1990 zur Gruppe Angleo Ghezzi & C. S.p.A. gehört, ist auf die Entwicklung und Herstellung von Werkzeugen in Vollhartmetall sowie Hartmetall-bestückt spezialisiert. Seit 1962 stellt sie Nutenfräser, Schrupp- und Schlichtfräser, Reibahlen, einschneidige Werkzeuge nach ISO Normen her und hat in den letzten Jahren ihre Palette von Hochleistungsformenfräser sowie Sonderwerkzeuge nach Zeichnung ziemlich verbreitet. Infolge ständiger Investitionen in neuen Technologien hat Talicarb ihre Palette von „POWER“ Fräser mit weiteren Durchmessern sowie mit vielen neuen Werkzeugen verbreitet, die besonders geeignet für den Formenbereich und für die Hochgeschwindigkeitsbearbeitungen sind. Diese Werkzeuge werden nach einer sorgfältigen und vertieften Forschung hergestellt so dass der Endbenutzer die geeignetsten Werkzeuge für seine Bearbeitung und für das entsprechende Material zur Verfügung hat. Talicarb verpflichtet sich seit immer dem Benutzer das passende Werkzeug zu empfehlen. Für besondere Bearbeitungen bitte schauen Sie in den Kapiteln über Graphite Powerfräser mit Diamond Beschichtung und PKD Powerfräser mit Polykristallinauflage nach





# TALICARB - La nostra storia

OUR HISTORY  
UNSERE GESCHICHTE  
NOTRE HISTOIRE  
NUESTRA HISTORIA



**TALICARB**, société qui fait partie depuis le 1990 du group Angleo Ghezzi & C. S.p.A., est spécialisée dans le projet et réalisation d'outils en carbure monobloc, carbure brasé. Talicarb produise depuis le 1962 fraises à rainurer, fraises à ébaucher et à finir, alesoirs, outils monocoupes suivant les normatives ISO et elle a augmenté dans ces derniers années sa gamme de produits pour moulistes à haute performance et d'outils spéciaux sur plan. Grâce à l'engagement soutenu dans les nouvelles technologies, Talicarb a de plus en plus enrichi sa gamme de fraises "POWER" avec l'introduction d'autres diamètres et de nouvelles typologies d'outils particulièrement indiqués dans le secteur mouleur et pour l'haute vitesse.

Ils sont des outils réalisés, après une recherche soignée et un étude particulier, finalisés à proposer à l'utilisateur final un choix techniquement approprié au type d'usinage à réaliser et aux caractéristiques de la matière à travailler.

En effet Talicarb depuis toujours s'engage à adresser ses consommateurs pour un bon choix de l'outil. Pour usinages particuliers nous vous rappelons la présence dans le catalogue des sessions qui correspondent aux fraises Power Graphite avec revêtement Diamond et fraises Power PKD - PCD avec rechargement en polycristallin.



**TALICARB**, empresa del grupo Angleo Ghezzi y C. S.p. A. desde 1990, está especializada en el diseño y la fabricación de herramientas en metal duro soldado e integral. Desde 1962 la compañía produce fresas de ranurado, desbaste y acabado, escariadores y herramientas de torno conformes a normas ISO. Durante los últimos años Talicarb ha intensificado su gama de productos para moldes de alto rendimiento y herramientas especiales según plano. A través de constantes inversiones en investigación y nuevas tecnologías, Talicarb ha llegado a aumentar su gama de fresado POWER con más diámetros y muchas nuevas tipologías de fresas particularmente adaptadas al sector del molde de alta velocidad.

Después de una investigación cuidadosa y los estudios realizados, proponemos al cliente final estas herramientas como la opción técnica más conveniente para el tipo de trabajo a realizar y el material a trabajar: Talicarb siempre guía a su cliente cerca de la elección correcta de la herramienta. Para trabajos particulares subrayamos de las secciones del catálogo relativas a las fresas Power Grafito con recubrimiento de diamante y las fresas Power PKD - PCD en policristalino.



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# PROGRAMMA DI PRODUZIONE

PRODUCTION PROGRAMME  
HERSTELLUNGS PROGRAMM  
PROGRAMME DE PRODUCTION  
PROGRAMMA DE PRODUCCIÓN

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General purpose end mills - Universellen schaftfräser für allgemeine anwendungen - Fraise à queue universels - Fresas de mango cilíndrico para empleos generales



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## FRESE A CANDELA CON TESTA SEMISFERICA

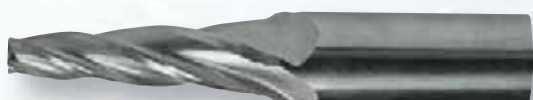
Ball nose copy end mills - Radiuskopier fräser - Fraise hémisphérique pour copiage - Fresas esféricas de copiado



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## FRESE CONICHE CON TESTA PIANA

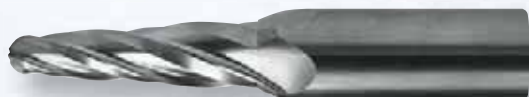
Taper mills - Kegelige gesenkfräser - Fraises coniques - Fresas cónicas



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# PROGRAMMA DI PRODUZIONE

PRODUCTION PROGRAMME  
HERSTELLUNGS PROGRAMM  
PROGRAMME DE PRODUCTION  
PROGRAMMA DE PRODUCCIÓN

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## FRESE A CANDELA POWER CON TESTA PIANA E TORICHE

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## FRESE POWER SEMISFERICHE

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## FRESE POWER TORICHE

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# PROGRAMMA DI PRODUZIONE

PRODUCTION PROGRAMME  
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|-------------------------------------------------------------------------------------|--------------------|--------------------------|----------------------------------------|-------------------------------------|-----------------------------------|-------------------------------|
|    | 1012               | Talicarb<br>Norm.        | 3-25                                   | 2                                   | 35°                               | TFNEW<br>COATING              |
|    | 1212TF             | Normale<br>Normal        | 1,5-20                                 | 2                                   | 35°                               | TFNEW<br>COATING              |
|    | 1032               | Lunga<br>Long            | 3-20                                   | 2                                   | 35°                               | TFNEW<br>COATING              |
|     | 1042               | Extralunga<br>Extra-Long | 3-20                                   | 2                                   | 35°                               | TFNEW<br>COATING              |
|    | 1013               | Talicarb<br>Norm.        | 3-25                                   | 3                                   | 35°                               | TFNEW<br>COATING              |
|   | 1213TF             | Normale<br>Normal        | 1,5-20                                 | 3                                   | 45°                               | TFNEW<br>COATING              |
|  | 1033               | Lunga<br>Long            | 3-20                                   | 3                                   | 35°                               | TFNEW<br>COATING              |
|   | 1043               | Extralunga<br>Extra-Long | 3-20                                   | 3                                   | 35°                               | TFNEW<br>COATING              |
|  | 1273               | Normale<br>Normal        | 3-20                                   | 3                                   | 45°                               | TFNEW<br>COATING              |
|  | 1053               | Talicarb<br>Norm.        | 3-20                                   | 3                                   | 60°                               | TFNEW<br>COATING              |
|  | 1014               | Talicarb<br>Norm.        | 3-25                                   | 4                                   | 35°                               | TFNEW<br>COATING              |
|  | 1214TF             | Normale<br>Normal        | 1,5-20                                 | 4                                   | 35°                               | TFNEW<br>COATING              |
|  | 1034               | Lunga<br>Long            | 3-20                                   | 4                                   | 35°                               | TFNEW<br>COATING              |
|   | 1044               | Extralunga<br>Extra-Long | 3-20                                   | 4                                   | 35°                               | TFNEW<br>COATING              |
|  | 1012R              | Talicarb<br>Norm.        | 3-20                                   | 2                                   | 35°                               | TFNEW<br>COATING              |
|  | 212RTF             | Normale<br>Normal        | 1.5-20                                 | 2                                   | 35°                               | TFNEW<br>COATING              |
|  | 1032R              | Lunga<br>Long            | 3-20                                   | 2                                   | 35°                               | TFNEW<br>COATING              |
|   | 1042R              | Extralunga<br>Extra-Long | 3-20                                   | 2                                   | 35°                               | TFNEW<br>COATING              |
|  | 1013R              | Talicarb<br>Norm.        | 3-20                                   | 3                                   | 30°                               | TFNEW<br>COATING              |
|  | 213RTF             | Talicarb<br>Norm.        | 1.5-20                                 | 3                                   | 35°                               | TFNEW<br>COATING              |

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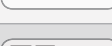
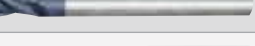
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|                                                                                     | CODICE<br>Item no. | SERIE<br>Series          | GAMMA<br>DIAMETRI<br>Diameter<br>Range | NUMERO<br>ELICHE<br>Flute<br>Number | ANGOLO<br>ELICA<br>Flute<br>Angle | RIVESTI-<br>MENTI<br>Coatings                                                       |
|-------------------------------------------------------------------------------------|--------------------|--------------------------|----------------------------------------|-------------------------------------|-----------------------------------|-------------------------------------------------------------------------------------|
|    | <b>1033R</b>       | Lunga<br>Long            | 3-20                                   | 3                                   | 35°                               |  |
|     | <b>1043R</b>       | Extralunga<br>Extra-Long | 3-20                                   | 3                                   | 35°                               |  |
|    | <b>1014R</b>       | Talcarb<br>Norm.         | 3-20                                   | 4                                   | 35°                               |  |
|    | <b>214RTF</b>      | Normale<br>Normal        | 1,5-20                                 | 4                                   | 45°                               |  |
|    | <b>1034R</b>       | Lunga<br>Long            | 3-20                                   | 4                                   | 35°                               |  |
|     | <b>1044R</b>       | Extralunga<br>Extra-Long | 3-20                                   | 4                                   | 35°                               |  |
|   | <b>1505</b>        | Talcarb<br>Norm.         | 2.5-16                                 | 3/4                                 | *30'                              |                                                                                     |
|  | <b>1510</b>        | Talcarb<br>Norm.         | 2.5-16                                 | 3/4                                 | *1°                               |                                                                                     |
|  | <b>1515</b>        | Talcarb<br>Norm.         | 2.5-12                                 | 3/4                                 | *1° 30'                           |                                                                                     |
|  | <b>1520</b>        | Talcarb<br>Norm.         | 2.5-12                                 | 3/4                                 | *2°                               |                                                                                     |
|  | <b>1530</b>        | Talcarb<br>Norm.         | 2.5-12                                 | 3/4                                 | *3°                               |                                                                                     |
|  | <b>1540</b>        | Talcarb<br>Norm.         | 2.5-12                                 | 3/4                                 | *4°                               |                                                                                     |
|  | <b>1550</b>        | Talcarb<br>Norm.         | 2.5-12                                 | 3/4                                 | *5°                               |                                                                                     |
|  | <b>1505R</b>       | Talcarb<br>Norm.         | 2.5-12                                 | 3/4                                 | *30'                              |                                                                                     |
|  | <b>1510R</b>       | Talcarb<br>Norm.         | 2.5-12                                 | 3/4                                 | *1°                               |                                                                                     |
|  | <b>1515R</b>       | Talcarb<br>Norm.         | 2.5-12                                 | 3/4                                 | *1° 30'                           |                                                                                     |
|  | <b>1520R</b>       | Talcarb<br>Norm.         | 2.5-12                                 | 3/4                                 | *2°                               |                                                                                     |
|  | <b>1530R</b>       | Talcarb<br>Norm.         | 2.5-12                                 | 3/4                                 | *3°                               |                                                                                     |
|  | <b>1540R</b>       | Talcarb<br>Norm.         | 2.5-12                                 | 3/4                                 | *4°                               |                                                                                     |
|  | <b>1550R</b>       | Talcarb<br>Norm.         | 2.5-12                                 | 3/4                                 | *5°                               |                                                                                     |

\* (α/2)



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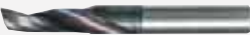
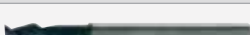
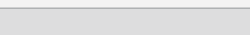
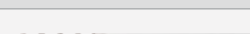
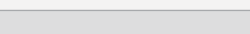
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|------------|-------------------------------------------------------------------------------------|---------------------------|------------------------|-----------------------------------------------|--------------------------------------------|------------------------------------------|---------------------------------------|
|            |    | <b>1011</b>               | Talicarb<br>Norm.      | 3-12                                          | 1                                          | 25°                                      | <b>CR</b>                             |
|            |    | <b>1282</b>               | Talicarb<br>Norm.      | 6-16                                          | 2                                          | 50°                                      |                                       |
|            |    | <b>1263</b>               | Normale<br>Normal      | 3-20                                          | 2                                          | 50°                                      | <b>TFNEW</b><br>COATING               |
| <b>NEW</b> |    | <b>1265</b>               | Talicarb<br>Norm.      | 6-20                                          | 3                                          | 40°                                      |                                       |
| <b>NEW</b> |    | <b>1266</b>               | Talicarb<br>Norm.      | 3-20                                          | 3                                          | 42/45°                                   |                                       |
| <b>NEW</b> |    | <b>1318TF</b>             | Talicarb<br>Norm.      | 3-20                                          | 4                                          | 36/41°                                   | <b>TFNEW</b><br>COATING               |
|            |  | <b>1320TF</b>             | Talicarb<br>Norm.      | 3-20                                          | 4                                          | 38/41°                                   | <b>TFNEW</b><br>COATING               |
|            |  | <b>1321TF</b>             | Talicarb<br>Norm.      | 3-20                                          | 4                                          | 38/41°                                   | <b>TFNEW</b><br>COATING               |
|            |  | <b>1374</b>               | Normale<br>Normal      | 6-18                                          | 4                                          | 45°                                      |                                       |
|            |  | <b>1376</b>               | Normale<br>Normal      | 6-18                                          | 4                                          | 45°                                      |                                       |
|            |  | <b>1314R</b>              | Normale<br>Normal      | 8,12                                          | 4                                          | 30°                                      |                                       |
|            |  | <b>1060</b>               | Talicarb<br>Norm.      | 6-20                                          | 4/6                                        | 30°                                      | <b>TFNEW</b><br>COATING               |
|            |  | <b>1061TF</b>             | Talicarb<br>Norm.      | 6-20                                          | 4                                          | 30°                                      | <b>TFNEW</b><br>COATING               |
|            |  | <b>1062TF</b>             | Talicarb<br>Norm.      | 6-20                                          | 3                                          | 38°                                      | <b>TFNEW</b><br>COATING               |
|            |  | <b>1330TF</b>             | Talicarb<br>Norm.      | 3-20                                          | 3                                          | 40°                                      | <b>TFNEW</b><br>COATING               |
|            |  | <b>1331TF</b>             | Talicarb<br>Norm.      | 3-20                                          | 3                                          | 40°                                      | <b>TFNEW</b><br>COATING               |
|            |  | <b>1340XT</b>             | Normale<br>Normal      | 3-20                                          | 6                                          | 45°                                      | <b>XT</b>                             |
|            |  | <b>1341XT</b>             | Normale<br>Normal      | 3-20                                          | 6                                          | 45°                                      | <b>XT</b>                             |
|            |  | <b>1351XT</b>             | Talicarb<br>Norm.      | 3-20                                          | 6                                          | 45°                                      | <b>XT</b>                             |
|            |  | <b>1352XT</b>             | Normale<br>Normal      | 3-20                                          | 6                                          | 45°                                      | <b>XT</b>                             |

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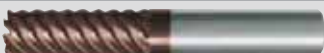
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|                                                                                   | <b>CODICE</b><br>Item no. | <b>SERIE</b><br>Series | <b>GAMMA</b><br><b>DIAMETRI</b><br>Diameter<br>Range | <b>NUMERO</b><br><b>ELICHE</b><br>Flute<br>Number | <b>ANGOLO</b><br><b>ELICA</b><br>Flute<br>Angle | <b>RIVESTI-</b><br><b>MENTI</b><br>Coatings |
|-----------------------------------------------------------------------------------|---------------------------|------------------------|------------------------------------------------------|---------------------------------------------------|-------------------------------------------------|---------------------------------------------|
|  | <b>1350XT</b>             | Normale<br>Normal      | 3-20                                                 | 4/6                                               | 50°                                             | <b>XT</b>                                   |
|  | <b>1360XT</b>             | Lunga<br>Long          | 3-20                                                 | 4/6                                               | 50°                                             | <b>XT</b>                                   |

|                                                                                     | <b>CODICE</b><br>Item no. | <b>SERIE</b><br>Series | <b>GAMMA</b><br><b>DIAMETRI</b><br>Diameter<br>Range | <b>NUMERO</b><br><b>ELICHE</b><br>Flute<br>Number | <b>ANGOLO</b><br><b>ELICA</b><br>Flute<br>Angle | <b>RIVESTI-</b><br><b>MENTI</b><br>Coatings |
|-------------------------------------------------------------------------------------|---------------------------|------------------------|------------------------------------------------------|---------------------------------------------------|-------------------------------------------------|---------------------------------------------|
|  | <b>1417XT</b>             | Normale<br>Normal      | 0.3-3                                                | 2                                                 | 30°                                             | <b>XT</b>                                   |
|  | <b>1412XT</b>             | Normale<br>Normal      | 1-25                                                 | 2                                                 | 35°                                             | <b>XT</b>                                   |
|  | <b>1432XT</b>             | Normale<br>Normal      | 3-25                                                 | 2                                                 | 35°                                             | <b>XT</b>                                   |
|  | <b>1422XT</b>             | Lunga<br>Long          | 3-12                                                 | 2                                                 | 30°                                             | <b>XT</b>                                   |
|  | <b>1414XT</b>             | Normale<br>Normal      | 1-25                                                 | 4                                                 | 35°                                             | <b>XT</b>                                   |
|  | <b>1434XT</b>             | Normale<br>Normal      | 3-20                                                 | 4                                                 | 35°                                             | <b>XT</b>                                   |
|  | <b>1424XT</b>             | Lunga<br>Long          | 3-12                                                 | 4                                                 | 30°                                             | <b>XT</b>                                   |
|  | <b>1452XT</b>             | Normale<br>Normal      | 3-20                                                 | 4                                                 | 45°                                             | <b>XT</b>                                   |
|  | <b>1451XT</b>             | Lunga<br>Long          | 4-20                                                 | 4                                                 | 50°                                             | <b>XT</b>                                   |
|  | <b>417RXT</b>             | Normale<br>Normal      | 0.4-3                                                | 2                                                 | 30°                                             | <b>XT</b>                                   |
|  | <b>412RXT</b>             | Normale<br>Normal      | 1-25                                                 | 2                                                 | 35°                                             | <b>XT</b>                                   |
|  | <b>432RXT</b>             | Lunga<br>Long          | 1-10                                                 | 2                                                 | 35°                                             | <b>XT</b>                                   |
|  | <b>402RXT</b>             | Lunga<br>Long          | 1-12                                                 | 2                                                 | 30°                                             | <b>XT</b>                                   |
|  | <b>497RXT</b>             | Normale<br>Normal      | 3-25                                                 | 2                                                 | 35°                                             | <b>XT</b>                                   |



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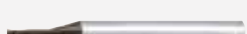
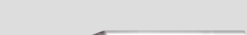
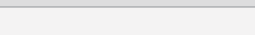
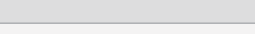
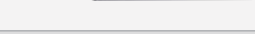
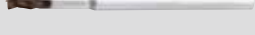
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RACCOMANDATO - Suggested - Empfohlen - Conseillé - Aconsejado: ●  
POSSIBILE - Possible - Möglich - Possible - Posible: ○

Tallicarb

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|                                                                                                | CODICE<br>Item no. | SERIE<br>Series   | GAMMA<br>DIAMETRI<br>Diameter<br>Range | NUMERO<br>ELICHE<br>Flute<br>Number | ANGOLO<br>ELICA<br>Flute<br>Angle | RIVESTI-<br>MENTI<br>Coatings |
|------------------------------------------------------------------------------------------------|--------------------|-------------------|----------------------------------------|-------------------------------------|-----------------------------------|-------------------------------|
|               | <b>416RXT</b>      | Normale<br>Normal | 1-25                                   | 2                                   | 30°                               | <b>XT</b>                     |
|               | <b>130RXT</b>      | Normale<br>Normal | 3-12                                   | 2                                   | 0°                                | <b>XT</b>                     |
|               | <b>302RXT</b>      | Lunga<br>Long     | 3-10                                   | 2                                   | 0°                                | <b>XT</b>                     |
|               | <b>493RXT</b>      | Normale<br>Normal | 2-20                                   | 3                                   | 30°                               | <b>XT</b>                     |
|               | <b>414RXT</b>      | Normale<br>Normal | 1-25                                   | 4                                   | 35°                               | <b>XT</b>                     |
|               | <b>491HXT</b>      | Normale<br>Normal | 2-16                                   | 3/4                                 | 0°                                | <b>XT</b>                     |
|             | <b>1450XT</b>      | Normale<br>Normal | 6-20                                   | 6                                   | 50°                               | <b>XT</b>                     |
|             | <b>1460XT</b>      | Lunga<br>Long     | 6-20                                   | 6                                   | 50°                               | <b>XT</b>                     |
|             | <b>1410XT</b>      | Normale<br>Normal | 0,5-2,5                                | 2                                   | 30°                               | <b>XT</b>                     |
|             | <b>1430XT</b>      | Normale<br>Normal | 0,4-3,0                                | 2                                   | 30°                               | <b>XT</b>                     |
| <b>NEW</b>  | <b>1431XT</b>      | Normale<br>Normal | 0,2-6,0                                | 2                                   | 30°                               | <b>XT</b>                     |
| <b>NEW</b>  | <b>1433XT</b>      | Normale<br>Normal | 0,5-4,0                                | 2                                   | 30°                               | <b>XT</b>                     |
|             | <b>1411XT</b>      | Normale<br>Normal | 3-6                                    | 4                                   | 30°                               | <b>XT</b>                     |
|             | <b>1415XT</b>      | Normale<br>Normal | 3-6                                    | 4                                   | 30°                               | <b>XT</b>                     |
|             | <b>419RXT</b>      | Lunga<br>Long     | 0,5-6                                  | 2                                   | 30°                               | <b>XT</b>                     |
| <b>NEW</b>  | <b>431RXT</b>      | Normale<br>Normal | 0,3-5                                  | 2                                   | 30°                               | <b>XT</b>                     |
|             | <b>433RXT</b>      | Normale<br>Normal | 0,2-6                                  | 2                                   | 30°                               | <b>XT</b>                     |
|             | <b>413RXT</b>      | Normale<br>Normal | 0,3-6                                  | 3                                   | 30°                               | <b>XT</b>                     |

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**POSSIBILE** - Possible - Möglich - Possible - Posible: ○

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|                                                                                     | CODICE<br>Item no. | SERIE<br>Series          | GAMMA<br>DIAMETRI<br>Diameter<br>Range | NUMERO<br>ELICHE<br>Flute<br>Number | ANGOLO<br>ELICA<br>Flute<br>Angle | RIVESTI-<br>MENTI<br>Coatings                                                        |
|-------------------------------------------------------------------------------------|--------------------|--------------------------|----------------------------------------|-------------------------------------|-----------------------------------|--------------------------------------------------------------------------------------|
|     | <b>1436D</b>       | Extralunga<br>Extra-Long | 2-12                                   | 4                                   | 35°                               |   |
|    | <b>1420RD</b>      | Lunga<br>Long            | 1-12                                   | 2                                   | 30°                               |   |
|     | <b>1421RD</b>      | Extralunga<br>Extra-Long | 2-12                                   | 2                                   | 30°                               |   |
|    | <b>1425RD</b>      | Lunga<br>Long            | 3-10                                   | 4                                   | 35°                               |   |
|    | <b>1437D</b>       | Normale<br>Normal        | 0,2-6,0                                | 2                                   | 35°                               |   |
|   | <b>1434RD</b>      | Normale<br>Normal        | 0,2-6,0                                | 2                                   | 35°                               |  |
|  | <b>1601DT</b>      | Normale<br>Normal        | 4-10                                   | 1                                   | -                                 | <b>*PCD</b>                                                                          |
|  | <b>1602DT</b>      | Normale<br>Normal        | 6-20                                   | 2                                   | -                                 | <b>*PCD</b>                                                                          |
|  | <b>602RDT</b>      | Normale<br>Normal        | 4-20                                   | 2                                   | -                                 | <b>*PCD</b>                                                                          |
|  | <b>603RDT</b>      | Normale<br>Normal        | 4-20                                   | 2                                   | -                                 | <b>*PCD</b>                                                                          |

|                                                                                     | CODICE<br>Item no. | SERIE<br>Series | GAMMA<br>DIAMETRI<br>Diameter<br>Range | NUMERO<br>ELICHE<br>Flute<br>Number | MATERIALE<br>Material         | RIVESTI-<br>MENTI<br>Coatings |
|-------------------------------------------------------------------------------------|--------------------|-----------------|----------------------------------------|-------------------------------------|-------------------------------|-------------------------------|
|  | <b>1100</b>        | DIN<br>6539     | 0,5-20                                 | 2                                   | Metallo Duro<br>Solid Carbide | <b>TN TF</b>                  |
|  | <b>1101</b>        | Norm            | 0,5-16                                 | 2                                   | Metallo Duro<br>Solid Carbide | <b>TN TF</b>                  |
|  | <b>1099</b>        | Norm            | 1,25-6,3                               | 2                                   | Metallo Duro<br>Solid Carbide |                               |
|                                                                                     |                    |                 |                                        |                                     |                               |                               |
|                                                                                     |                    |                 |                                        |                                     |                               |                               |
|                                                                                     |                    |                 |                                        |                                     |                               |                               |

\* PCD (Con riporto in policristallino) / (Solid carbide with polycrystalline diamond)



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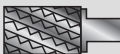
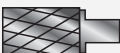
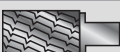
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RACCOMANDATO - Suggested - Empfohlen - Conseillé - Aconsejado: ●  
POSSIBILE - Possible - Möglich - Possible - Posible: ○

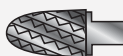
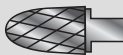
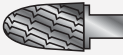
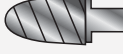
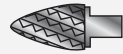
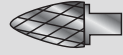
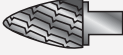
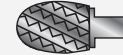
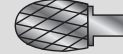
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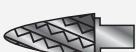
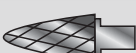
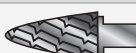
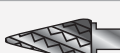
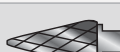
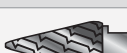
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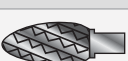
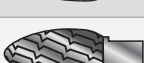
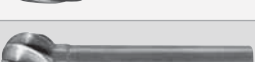
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|  |  | 2072 | Norm.              | 3-16            | 217                                    |                |
|  |  | 2073 | Norm.              | 3-16            | 217                                    |                |
|  |  | 2074 | Norm.              | 3-16            | 217                                    |                |
|  |  | 2075 | Norm.              | 3-16            | 217                                    |                |
|  |  | 2076 | Norm.              | 3-16            | 217                                    |                |
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|  |  | 2511 | Norm.              | 3-25,4          | 218                                    |                |

# INDICE ILLUSTRATO

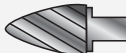
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ILLUSTRIERT VERZEICHNIS  
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|                                                                                     |    |    | <b>2083</b>               | Norm.                  | 2,5-19                                               | 219                   |
|                                                                                     |    |    | <b>2084</b>               | Norm.                  | 2,3-19                                               | 219                   |
|                                                                                     |    |    | <b>2085</b>               | Norm.                  | 2,3-19                                               | 219                   |
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# INDICE ILLUSTRATO

ILLUSTRATED CONTENTS  
ILLUSTRIERT VERZEICHNIS  
INDEX ILLUSTRÉ  
ÍNDICE ILUSTRADO

|                                                                                     |   |       | CODICE<br>Item no.                 | SERIE<br>Series | GAMMA<br>DIAMETRI<br>Diameter<br>Range | PAGINA<br>Page |
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|  | 1 | 2211  | Lunga/Extralunga<br>Long/Extralong | 3-12,7          | 224                                    |                |
|  | 1 | 2121  | Lunga/Extralunga<br>Long/Extralong | 3-12,7          | 225                                    |                |
|  | 1 | 2221  | Lunga/Extralunga<br>Long/Extralong | 3-12,7          | 225                                    |                |
|  | 1 | 2131  | Lunga/Extralunga<br>Long/Extralong | 3-12,7          | 226                                    |                |
|  | 1 | 2231  | Lunga/Extralunga<br>Long/Extralong | 3-12,7          | 226                                    |                |
|  | 1 | 2141  | Lunga/Extralunga<br>Long/Extralong | 3-12,7          | 227                                    |                |
|  | 1 | 2241  | Lunga/Extralunga<br>Long/Extralong | 3-12,7          | 227                                    |                |
|  | 1 | 2151  | Lunga/Extralunga<br>Long/Extralong | 3-12,7          | 228                                    |                |
|  | 1 | 2251  | Lunga/Extralunga<br>Long/Extralong | 3-12,7          | 228                                    |                |
|  | 1 | 2161  | Lunga/Extralunga<br>Long/Extralong | 3-12,7          | 229                                    |                |
|  | 1 | 2261  | Lunga/Extralunga<br>Long/Extralong | 3-12,7          | 229                                    |                |
|  | 1 | 2191  | Lunga/Extralunga<br>Long/Extralong | 3-12,7          | 230                                    |                |
|  | 1 | 2291  | Lunga/Extralunga<br>Long/Extralong | 3-12,7          | 230                                    |                |
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angeloghezzi.it

# ISTRUZIONI PER L'USO E LA CONSULTAZIONE DEL LISTINO

PRICE LIST INSTRUCTIONS  
PREIS LISTE ANWEISUNGEN  
INSTRUCTIONS POUR L'UTILISATION DU TARIF  
INSTRUCCIONES PARA EL USO DE LA LISTA PRECIOS

**01**

**FRESE A CANDELA**  
A 2 TAGLI IN METALLO DURO INTEGRALE

SOLID CARBIDE END MILLS - 2 FLUTES  
VOLLHARTMETALL FRÄSER - 2 SCHNEIDEN  
FRAISES EN CARBURE MONOBLOC - 2 DENTS  
FRESAS DE METAL DURO INTEGRAL - 2 DIENTES

**02**

**TALICARB NORM.**

TALICARB NORM.  
TALICARB NORM.  
TALICARB NORM.  
TALICARB NORM.

**03**

## 01 DESCRIZIONE PRODOTTO:

Product description  
Produkt Beschreibung  
Description produit  
Descripción producto

## 02 NORMATIVA

Norm  
Norm  
Norme  
Norma

## 03 ICONE DESCRITTIVE

Descriptive icons  
Beschreibende Symbolen  
Icones descriptives  
Iconos descriptivos

**04**

**1012 - 1012TF**

**06**

| Ø mm<br>e8 | L<br>mm | L <sub>1</sub><br>mm | d<br>mm | Z | 1012<br>€ | 1012TF<br>€ |
|------------|---------|----------------------|---------|---|-----------|-------------|
| 3          | 38      | 12                   | 3       | 2 | 8,11      | 12,33       |

**05**

**TFNEW**  
COATING

**05**

## 04 CODICE PRODOTTO

Item code  
Katalogsnummer  
Reference produit  
Código referencia

## 05 TIPO ATTACCO

Shank type  
Schaft-typologie  
Typologie de attachement  
Tipo de mango

## 06 DIMENSIONI

Dimensions  
Abmessungen  
Dimensions  
Dimensiones

**07**

**P M K N S OH**

**08**

**09**

## 07 GRUPPO MATERIALI LAVORABILI

Group of working material  
Bearbeitungsmaterialien Gruppe  
Groupe de matériaux a usiner  
Grupo de materiales a mecanizar

## 08 ESEMPI DI APPLICAZIONE

Application examples  
Anwendungsbeispiele  
Exemple d'application  
Ejemplos de aplicaciones

## 09 DISEGNO

Drawing  
Zeichnung  
Plano  
Plan



# LEGENDA

KEY TO SYMBOLS  
ZEICHENERKLÄRUNG  
LÉGENDE  
LEYENDA



## **SERIE CORTA**

Short series  
Kurze Ausführung  
Série courte  
Serie corta



## **SERIE NORMALE**

Normal series  
Normale Ausführung  
Série normale  
Serie normal



## **SERIE NORMALE "codolo scaricato"**

Normal series  
"tapered shank"  
Normale Ausführung  
"Verjungter schaft"  
Série normale  
"Queue fuselée"  
Serie normal  
"Mango rabajadi"



## **SERIE LUNGA**

Long series  
Lange Ausführung  
Série longue  
Serie larga



## **SERIE EXTRALUNGA**

Extralong series  
Extralange Ausführung  
Série extralongue  
Serie extralarga



## **N°1 TAGLIENTE**

Number of flute  
Zähnezahl  
Nombre de dents  
Número de Labios



## **N°2 TAGLIENTI**

Number of flutes  
Zähnezahl  
Nombre de dents  
Número de Labios



## **N°3 TAGLIENTI**

Number of flutes  
Zähnezahl  
Nombre de dents  
Número de Labios



## **N°4 TAGLIENTI**

Number of flutes  
Zähnezahl  
Nombre de dents  
Número de Labios



## **N°6 TAGLIENTI**

Number of flutes  
Zähnezahl  
Nombre de dents  
Número de Labios



## **FRESA MULTITAGLIO**

Multi-flutes end mills  
Fräser Multi-Schneiden  
Fraises Multi-dents  
Fresas Multi-Labios



## **FRESE CILINDRICHE**

End mills with cylindrical shank  
Schaftfräser mit zylinderschaft  
Fraise à queue cylindrique  
Fresas de mango cilíndrico



## **FRESE TORICHE**

Toric end mills  
Torusfräser  
Fraises toriques  
Fresas tóricas



## **FRESE SEMISFERICHE**

Ball nose end mills  
Radiusfräser  
Fraises hémisphériques  
Fresas de cabeza esférica



## **FRESE CONICHE**

Taper mills  
Kegelige Gesenkräser  
Fraises coniques  
Fresas cónicas



## **FRESE CONICHE "con testa raggiata"**

Taper mills with ball nose  
Kegelige Gesenkräser mit Radius  
Fraises coniques à bout hémisphérique  
Fresas cónicas de cabeza esférica



## **POSSIBILITÀ DI PENETRAZIONE**

Penetration possibility  
Senkrechteindringung Möglichkeit  
Possibilité de pénétration  
Posibilidad de penetración



## **TRASLAZIONE LATERALE**

Lateral Translation  
Seitlichverschiebung  
Translation latérale  
Traslado lateral



## **TRASLAZIONE IN 3D**

Tridimensional Translation  
3-D Verschiebung  
Translation en 3D  
Traslado en 3D





## TAGLIO AL CENTRO -Z1

Center Cutting - Z1  
Zentrumschnitt - Z1  
Coupe au centre - Z1  
Corte al centro - Z1



## TAGLIO AL CENTRO -Z2

Center Cutting - Z2  
Zentrumschnitt - Z2  
Coupe au centre - Z2  
Corte al centro - Z2



## TAGLIO AL CENTRO -Z3

Center Cutting - Z3  
Zentrumschnitt - Z3  
Coupe au centre - Z3  
Corte al centro - Z3



## TAGLIO AL CENTRO -Z4

Center Cutting - Z4  
Zentrumschnitt - Z4  
Coupe au centre - Z4  
Corte al centro - Z4



## TAGLIO AL CENTRO -Z6

Center Cutting - Z6  
Zentrumschnitt - Z6  
Coupe au centre - Z6  
Corte al centro - Z6



## ANGOLO ELICA

Helix angle  
Drallwinkel  
Angle d'hélice  
Ángulo de hélice



## ATTACCO DIN 6535 HA

Shank DIN 6535 HA  
Schaft DIN 6535 HA  
Queue DIN 6535 HA  
Mango DIN 6535 HA



## ATTACCO DIN 6535 HB

Shank DIN 6535 HB  
Schaft DIN 6535 HB  
Queue DIN 6535 HB  
Mango DIN 6535 HB



## INFORMAZIONI TECNICHE

Technical instructions  
Technische Hinweise  
Instructions technique  
Informaciones técnicas



## ANGOLO DI INCLINAZIONE

Angle of inclination  
Neigungswinkel  
Angles d'inclinaison  
Ángulo de inclinación



## RIVESTIMENTO TiAlN

Coating TiAlN  
Beschichtung TiAlN  
Revetement TiAlN  
Recubrimiento TiAlN



## RIVESTIMENTO X-TREME

Coating X-Treme  
Beschichtung X-Treme  
Revetement X-Treme  
Recubrimiento X-Treme



## RIVESTIMENTO CrN

Coating CrN  
Beschichtung CrN  
Revetement CrN  
Recubrimiento CrN

## GRUPPO DI MATERIALI

Material Groups  
Material-Beispiele  
Groupes de Matériaux  
Grupos de Materiales



**ACCIAI**  
Steel  
Stahl  
Acier  
Acero



**ACC. INOSSIDABILI**  
Stainless steel  
Rostbeständiger Stahl  
Acier inoxydable  
Acero inoxidable



**GHISA**  
Cast iron  
Guß  
Fonte  
Fundición



**NON FERROSI**  
Non ferrous materials  
Nichteisenmetall  
Métaux non ferreux  
Materiales no férricos



**SUPERLEGHE**  
Superalloys  
Superlegierung  
Superalliages  
Speraleaciones



**ACCIAI TEMPRATI**  
Hardened steel  
Gehärtete Stahl  
Acier trempé  
Acero templado

## ESEMPI D'APPLICAZIONE

Application examples  
Bearbeitungsbeispiele  
Exemple d'application  
Ejemplos de aplicaciones



**SGROSSATURA**  
Roughing  
Schruppen  
Ebauche  
Desbaste



**FINITURA**  
Finishing  
Schlichten  
Finition  
Acabado



**CAVA**  
Slotting  
Schlitz-Bearbeitung  
Rainurage  
Ranura



**COPIATURA**  
Copying  
Kopieren  
Copiage  
Copia

# LEGENDA

KEY TO SYMBOLS  
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Short series  
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Normale Ausführung  
Série normale  
Serie normal



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Long series  
Lange Ausführung  
Série longue  
Serie larga



## SERIE EXTRALUNGA

Extralong series  
Extralange Ausführung  
Série extralongue  
Serie extralarga



## N°1 TAGLIENTE

Number of flute  
Zähnezahl  
Nombre de dent  
Número de Labio



## N°2 TAGLIENTI

Number of flutes  
Zähnezahl  
Nombre de dents  
Número de Labios



## N°3 TAGLIENTI

Number of flutes  
Zähnezahl  
Nombre de dents  
Número de Labios



## N°4 TAGLIENTI

Number of flutes  
Zähnezahl  
Nombre de dents  
Número de Labios



## N°6 TAGLIENTI

Number of flutes  
Zähnezahl  
Nombre de dents  
Número de Labios



## FRESA MULTITAGLIO

Multi-flutes end mills  
Fräser Multi-Schneiden  
Fraises Multi-dents  
Fresas Multi-Labios



## FRESE CILINDRICHE

End mills with cylindrical shank  
Schaftfräser mit zylinderschaft  
Fraise à queue cylindrique  
Fresas de mango cilíndrico



## FRESE TORICHE

Toric end mills  
Torusfräser  
Fraises toriques  
Fresas tóricas



## FRESE SEMISFERICHE

Ball nose end mills  
Radiusfräser  
Fraises hémisphériques  
Fresas de cabeza esférica



## FRESE SEMISFERICHE 220° E 250°

Ball nose end mills 220° and 250°  
Power Radiusfräser 220° und 250°  
Fraises Power hémisphériques 220° et 250°  
Fresas Power esféricas 220° y 250°



## POSSIBILITÀ DI PENETRAZIONE

Penetration possibility  
Senkrechteindringung Möglichkeit  
Possibilité de pénétration  
Posibilidad de penetración



## TRASLAZIONE LATERALE

Lateral Translation  
Seitlichverschiebung  
Translation latérale  
Traslado lateral



## TRASLAZIONE IN 3D

Tridimensional Translation  
3-D Verschiebung  
Translation en 3D  
Traslado en 3D



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Zentrumschnitt - Z1  
Coupe au centre - Z1  
Corte al centro - Z1



## TAGLIO AL CENTRO -Z2

Center Cutting - Z2  
Zentrumschnitt - Z2  
Coupe au centre - Z2  
Corte al centro - Z2



## TAGLIO AL CENTRO -Z3

Center Cutting - Z3  
Zentrumschnitt - Z3  
Coupe au centre - Z3  
Corte al centro - Z3



## TAGLIO AL CENTRO -Z4

Center Cutting - Z4  
Zentrumschnitt - Z4  
Coupe au centre - Z4  
Corte al centro - Z4



## TAGLIO AL CENTRO -Z3/Z4

Center Cutting - Z3/Z4  
Zentrumschnitt - Z3/Z4  
Coupe au centre - Z3/Z4  
Corte al centro - Z3/Z4



## ANGOLO ELICA

Helix angle  
Drallwinkel  
Angle d'hélice  
Ángulo de hélice



## ATTACCO DIN 6535 HA

Shank DIN 6535 HA  
Schaft DIN 6535 HA  
Queue DIN 6535 HA  
Mango DIN 6535 HA



## ATTACCO DIN 6535 HB

Shank DIN 6535 HB  
Schaft DIN 6535 HB  
Queue DIN 6535 HB  
Mango DIN 6535 HB



## RIVESTIMENTO DIAMOND

Diamond coating  
Beschichtung Diamond  
Revêtement Diamond  
Recubrimiento Diamante



## RIVESTIMENTO X-TREME

X-Treme Coating  
X-Treme-Beschichtung  
Revêtement X-Treme  
Recubrimiento X-Treme

## GRUPPO DI MATERIALI

Material Groups  
Material-Beispiele  
Groupes de Matériaux  
Grupos de Materiales



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Acero



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Acier inoxydable  
Acero inoxidable



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Cast iron  
Guß  
Fonte  
Fundición



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Materiales no férricos



**SUPERLEGHE**  
Superalloys  
Superlegierung  
Superalliages  
Speraleaciones



**ACCIAI TEMPRATI**  
Hardened steel  
Gehärtete Stahl  
Acier trempé  
Acero templado

## ESEMPI D'APPLICAZIONE

Application examples  
Bearbeitungsbeispiele  
Exemple d'application  
Ejemplos de aplicaciones



**SGROSSATURA**  
Roughing  
Schruppen  
Ebauche  
Desbaste



**FINITURA**  
Finishing  
Schlichten  
Finition  
Acabado



**CAVA**  
Slotting  
Schlitz-Bearbeitung  
Rainurage  
Ranura



**COPIATURA**  
Copying  
Kopieren  
Copiage  
Copia





Taticarb

# FRESE A CANDELA

per impieghi generici



GENERAL PURPOSE END MILLS



UNIVERSELLEN SCHAFTFRÄSER FÜR ALLGEMEINE ANWENDUNGEN



FRAISE À QUEUE UNIVERSELS



FRESAS DE MANGO CILÍNDRICO PARA EMPLEOS GENERALES





SOLID CARBIDE END MILLS - 2 FLUTES  
VOLLHARTMETALL FRÄSER - 2 SCHNEIDEN  
FRAISES EN CARBURE MONOBLOC - 2 DENTS  
FRESAS DE METAL DURO INTEGRAL - 2 LABIOS

TALICARB NORM.  
TALICARB NORM.  
TALICARB NORM.  
TALICARB NORM.



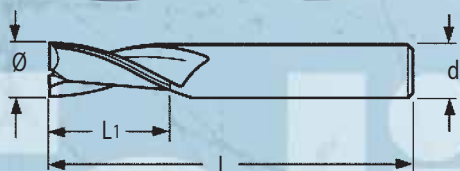
**TFNEW**  
COATING

[illegible]

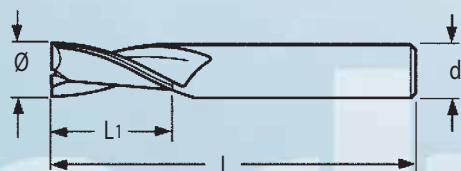


SOLID CARBIDE END MILLS - 2 FLUTES  
VOLLHARTMETALL FRÄSER - 2 SCHNEIDEN  
FRAISES EN CARBURE MONOBLOC - 2 DENTS  
FRESAS DE METAL DURO INTEGRAL - 2 LABIOS

LONG SERIES, EXTRALONG SERIES  
LANGE AUSFÜHRUNG, EXTRALANGE AUSFÜHRUNG  
SÉRIE LONGUE, SÉRIE EXTRALONGUE  
SERIE LARGA, SERIE EXTRALARGA

[illegible]

**TFNEW**  
COATING

[illegible]





SOLID CARBIDE END MILLS - 3 FLUTES  
VOLLHARTMETALL FRÄSER - 3 SCHNEIDEN  
FRAISES EN CARBURE MONOBLOC - 3 DENTS  
FRESAS DE METAL DURO INTEGRAL - 3 LABIOS

NORMAL SERIES  
NORMAL AUSFÜHRUNG  
SÉRIE NORMALE  
SERIE NORMAL



**TFNEW**  
COATING

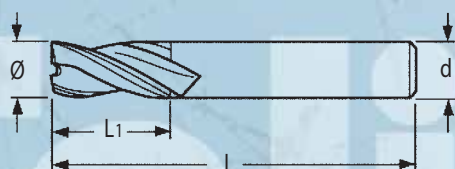


| Ø mm<br>e8 | L<br>mm | L <sub>1</sub><br>mm | d<br>mm | Z | 1213TF<br>€ |
|------------|---------|----------------------|---------|---|-------------|
| 1.5        | 50      | 4                    | 6       | 3 | 18,40       |
| *1.5A      | 50      | 4                    | 4       | 3 | 12,56       |
| 2          | 50      | 6                    | 6       | 3 | 18,40       |
| *2A        | 50      | 6                    | 4       | 3 | 12,56       |
| 2.5        | 50      | 8                    | 6       | 3 | 18,40       |
| *2.5A      | 50      | 8                    | 4       | 3 | 12,56       |
| 3          | 50      | 8                    | 6       | 3 | 18,40       |
| *3A        | 50      | 8                    | 4       | 3 | 12,56       |
| 3.5        | 50      | 10                   | 6       | 3 | 18,40       |
| 4          | 50      | 11                   | 6       | 3 | 18,40       |
| *4A        | 50      | 11                   | 4       | 3 | 14,02       |
| 4.5        | 50      | 11                   | 6       | 3 | 14,73       |
| 5          | 50      | 13                   | 6       | 3 | 14,73       |
| 5.5        | 50      | 13                   | 6       | 3 | 16,35       |
| 6          | 50      | 16                   | 6       | 3 | 16,35       |
| 6.5        | 60      | 16                   | 8       | 3 | 26,40       |
| 7          | 60      | 16                   | 8       | 3 | 26,40       |
| 7.5        | 60      | 19                   | 8       | 3 | 26,40       |
| 8          | 60      | 20                   | 8       | 3 | 26,40       |
| 8.5        | 75      | 20                   | 10      | 3 | 39,85       |
| 9          | 75      | 20                   | 10      | 3 | 39,85       |
| 9.5        | 75      | 25                   | 10      | 3 | 39,85       |
| 10         | 75      | 25                   | 10      | 3 | 39,85       |
| 11         | 75      | 25                   | 12      | 3 | 54,50       |
| 12         | 75      | 30                   | 12      | 3 | 54,50       |
| 13         | 83      | 40                   | 14      | 3 | 71,30       |
| 14         | 83      | 40                   | 14      | 3 | 71,30       |

→ 1-2

[illegible]

→2-2





**A 3 TAGLI** IN METALLO DURO INTEGRALE

SOLID CARBIDE END MILLS - 3 FLUTES  
VOLLHARTMETALL FRÄSER - 3 SCHNEIDEN  
FRAISES EN CARBURE MONOBLOC - 3 DENTS  
FRESAS DE METAL DURO INTEGRAL - 3 LABIOS

NORMAL SERIES  
NORMAL AUSFÜHRUNG  
SÉRIE NORMALE  
SERIE NORMAL

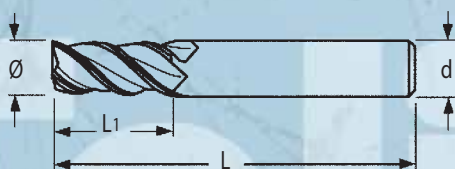


| Ø mm<br>h10 | L<br>mm | L <sub>i</sub><br>mm | d<br>mm | Z | 1273<br>€ | 1273TF<br>€ |
|-------------|---------|----------------------|---------|---|-----------|-------------|
| 3           | 57      | 7                    | 6       | 3 | 22,10     | 26,30       |
| 3.5         | 57      | 7                    | 6       | 3 | 22,10     | 26,30       |
| 4           | 57      | 8                    | 6       | 3 | 22,10     | 26,30       |
| 4.5         | 57      | 8                    | 6       | 3 | 22,10     | 26,30       |
| 4.8         | 57      | 6                    | 6       | 3 | 22,10     | 26,30       |
| 5           | 57      | 10                   | 6       | 3 | 22,10     | 26,30       |
| 5.5         | 57      | 10                   | 6       | 3 | 22,10     | 26,30       |
| 5.75        | 57      | 7                    | 6       | 3 | 22,10     | 26,30       |
| 6           | 57      | 10                   | 6       | 3 | 22,10     | 26,30       |
| 6.5         | 63      | 13                   | 8       | 3 | 30,55     | 32,00       |
| 7           | 63      | 13                   | 8       | 3 | 30,55     | 32,00       |
| 7.5         | 63      | 16                   | 8       | 3 | 30,55     | 32,00       |
| 7.75        | 63      | 9                    | 8       | 3 | 30,55     | 32,00       |
| 8           | 63      | 16                   | 8       | 3 | 30,55     | 32,00       |
| 8.5         | 72      | 16                   | 10      | 3 | 52,50     | 55,00       |
| 9           | 72      | 16                   | 10      | 3 | 52,50     | 55,00       |
| 9.5         | 72      | 19                   | 10      | 3 | 52,50     | 55,00       |
| 9.75        | 72      | 11                   | 10      | 3 | 52,50     | 55,00       |
| 10          | 72      | 19                   | 10      | 3 | 47,20     | 49,50       |
| 11          | 83      | 22                   | 12      | 3 | 70,50     | 73,90       |
| 11.7        | 83      | 12                   | 12      | 3 | 70,50     | 73,90       |
| 12          | 83      | 22                   | 12      | 3 | 64,40     | 67,50       |
| 13          | 83      | 22                   | 14      | 3 | 113,00    | 113,00      |
| 13.7        | 83      | 14                   | 14      | 3 | 113,00    | 113,00      |
| 14          | 83      | 22                   | 14      | 3 | 102,50    | 102,50      |
| 15          | 92      | 26                   | 16      | 3 | 139,50    | 139,50      |
| 15.7        | 92      | 16                   | 16      | 3 | 139,50    | 139,50      |

→ 1-2

[illegible]

→2-2







SOLID CARBIDE END MILLS - 4 FLUTES  
VOLLHARTMETALL FRÄSER - 4 SCHNEIDEN  
FRAISES EN CARBURE MONOBLOC - 4 DENTS  
FRESAS DE METAL DURO INTEGRAL - 4 LABIOS

TALICARB NORM.  
TALICARB NORM.  
TALICARB NORM.  
TALICARB NORM.



**TFNEW**  
COATING

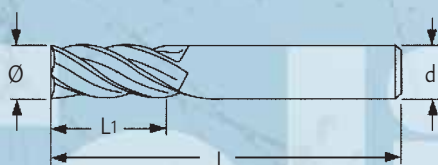
[illegible]



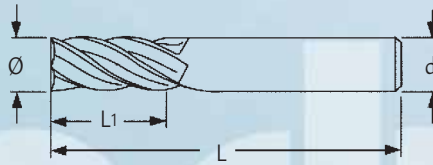
**A 4 TAGLI** IN METALLO DURO INTEGRALE

SOLID CARBIDE END MILLS - 4 FLUTES  
VOLLHARTMETALL FRÄSER - 4 SCHNEIDEN  
FRAISES EN CARBURE MONOBLOC - 4 DENTS  
FRESAS DE METAL DURO INTEGRAL - 4 LABIOS

LONG SERIES, EXTRALONG SERIES  
LANGE AUSFÜHRUNG, EXTRALANGE AUSFÜHRUNG  
SÉRIE LONGUE, SÉRIE EXTRALONGUE  
SERIE LARGA, SERIE EXTRALARGA

[illegible]

**TFNEW**  
COATING

[illegible]

## FATTORE DI CORREZIONE FRESE\*

End mills correction factor - Fräser Berichtigungsfaktor  
Facteur de correction fraises - Factor de corrección fresas

### PER FRESE SENZA RIVESTIMENTO = $V_c \text{ e } F_z \times 0,8$

For end mill without coating - Für Fräser ohne Beschichtung  
Pour fraises sans revêtement - Para fresas sin recubrimiento

## PARAMETRI DI TAGLIO



CUTTING PARAMETERS  
SCHNITTDATEN  
PARAMÈTRES DE COUPE  
PARAMETROS DE CORTE

### FRESE A CANDELA: 2/3/4 Tagli

Solid carbide end mills - Vollhartmetall fräser - Schneiden fraises en carbure monobloc - Fresas de metal duro integral:  
2/3/4 Flutes - Schneiden - Dents - Labios

1032\* =  $V_c \text{ e } F_z \times 0,8$

1042\* =  $V_c \text{ e } F_z \times 0,7$

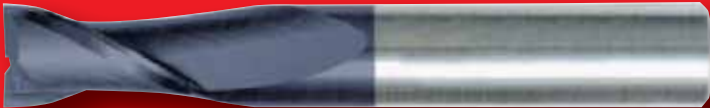
CAVA DAL PIENO:  $V_c \text{ e } F_z$  - 20%

Slotting:  $V_c \text{ e } F_z$  - 20%

Bohrnuten:  $V_c \text{ e } F_z$  - 20%

Rainurage:  $V_c \text{ e } F_z$  - 20%

Ranura:  $V_c \text{ e } F_z$  - 20%

| GRUPPO MATERIALI<br>Material Groups<br>Material-Beispiele<br>Groupes de Matériaux<br>Grupos de Materiales |                          |                                                                                   |       |                                                                                   | VC<br>m/min |                                  |                |              |              |              |              |              |              |              |              |              |              |
|-----------------------------------------------------------------------------------------------------------|--------------------------|-----------------------------------------------------------------------------------|-------|-----------------------------------------------------------------------------------|-------------|--------------------------------------------------------------------------------------------------------------------|----------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|
|                                                                                                           |                          |  |       |  |             | <b>Fz [mm]</b><br><b>AVANZAMENTO AL DENTE</b><br>Tooth Feed - Zahnvorschub - Avancement au dent - Avance al Labios |                |              |              |              |              |              |              |              |              |              |              |
|                                                                                                           |                          |                                                                                   |       |                                                                                   |             |                                                                                                                    |                |              |              |              |              |              |              |              |              |              |              |
|                                                                                                           |                          | ap                                                                                | ae    | ap                                                                                |             | 2                                                                                                                  | 4              | 6            | 8            | 10           | 12           | 14           | 16           | 18           | 20           | 22           | 25           |
|                          | < 800 N/mm <sup>2</sup>  | 1xØ                                                                               | 0,5xØ | 0,5xØ                                                                             | 80 - 110    | 0,005<br>0,010                                                                                                     | 0,02<br>0,04   | 0,04<br>0,06 | 0,06<br>0,08 | 0,08<br>0,10 | 0,10<br>0,12 | 0,12<br>0,14 | 0,14<br>0,16 | 0,16<br>0,18 | 0,18<br>0,20 | 0,20<br>0,22 | 0,22<br>0,25 |
|                         | < 1100 N/mm <sup>2</sup> | 1xØ                                                                               | 0,5xØ | 0,5xØ                                                                             | 70 - 100    | 0,005<br>0,010                                                                                                     | 0,02<br>0,04   | 0,04<br>0,06 | 0,06<br>0,08 | 0,08<br>0,10 | 0,10<br>0,12 | 0,12<br>0,14 | 0,14<br>0,16 | 0,16<br>0,18 | 0,18<br>0,20 | 0,20<br>0,22 | 0,22<br>0,25 |
|                        | < 1300 N/mm <sup>2</sup> | 1xØ                                                                               | 0,5xØ | 0,5xØ                                                                             | 60 - 90     | 0,003<br>0,005                                                                                                     | 0,005<br>0,020 | 0,02<br>0,04 | 0,04<br>0,06 | 0,06<br>0,08 | 0,08<br>0,10 | 0,10<br>0,12 | 0,12<br>0,14 | 0,14<br>0,16 | 0,16<br>0,18 | 0,18<br>0,20 | 0,20<br>0,22 |
|                        | > 800 N/mm <sup>2</sup>  | 1xØ                                                                               | 0,5xØ | 0,5xØ                                                                             | 40 - 60     | 0,01<br>0,03                                                                                                       | 0,03<br>0,05   | 0,05<br>0,07 | 0,07<br>0,09 | 0,09<br>0,11 | 0,11<br>0,13 | 0,13<br>0,15 | 0,15<br>0,17 | 0,17<br>0,19 | 0,19<br>0,21 | 0,21<br>0,23 | 0,23<br>0,25 |
|                        | GG                       | 1xØ                                                                               | 0,5xØ | 0,5xØ                                                                             | 100 - 140   | 0,03<br>0,05                                                                                                       | 0,05<br>0,07   | 0,07<br>0,09 | 0,09<br>0,11 | 0,11<br>0,13 | 0,13<br>0,15 | 0,17<br>0,19 | 0,19<br>0,21 | 0,21<br>0,23 | 0,23<br>0,25 | 0,25<br>0,27 | 0,27<br>0,30 |
|                        | GGG                      | 1xØ                                                                               | 0,5xØ | 0,5xØ                                                                             | 80 - 110    | 0,005<br>0,01                                                                                                      | 0,02<br>0,04   | 0,04<br>0,06 | 0,06<br>0,08 | 0,08<br>0,10 | 0,10<br>0,12 | 0,12<br>0,14 | 0,14<br>0,16 | 0,16<br>0,18 | 0,18<br>0,20 | 0,20<br>0,22 | 0,22<br>0,25 |
|                        | Alluminio                | 1xØ                                                                               | 0,5xØ | 0,5xØ                                                                             | 110 - 150   | 0,03<br>0,05                                                                                                       | 0,05<br>0,07   | 0,07<br>0,09 | 0,09<br>0,11 | 0,11<br>0,13 | 0,13<br>0,15 | 0,17<br>0,19 | 0,19<br>0,21 | 0,21<br>0,23 | 0,23<br>0,25 | 0,25<br>0,27 | 0,27<br>0,30 |
|                        | Non metalli              | 1xØ                                                                               | 0,5xØ | 0,5xØ                                                                             | 110 - 150   | 0,005<br>0,010                                                                                                     | 0,02<br>0,04   | 0,04<br>0,06 | 0,06<br>0,08 | 0,08<br>0,10 | 0,10<br>0,12 | 0,12<br>0,14 | 0,14<br>0,16 | 0,16<br>0,18 | 0,18<br>0,20 | 0,20<br>0,22 | 0,22<br>0,25 |
|                        | Titanio                  | -                                                                                 | -     | -                                                                                 | -           | -                                                                                                                  | -              | -            | -            | -            | -            | -            | -            | -            | -            | -            | -            |
|                        | Leghe speciali a base Ni | -                                                                                 | -     | -                                                                                 | -           | -                                                                                                                  | -              | -            | -            | -            | -            | -            | -            | -            | -            | -            | -            |
|                        | Temprati 38 / 48 HRC     | -                                                                                 | -     | -                                                                                 | -           | -                                                                                                                  | -              | -            | -            | -            | -            | -            | -            | -            | -            | -            | -            |
|                        | Temprati 48 / 58 HRC     | -                                                                                 | -     | -                                                                                 | -           | -                                                                                                                  | -              | -            | -            | -            | -            | -            | -            | -            | -            | -            | -            |
|                        | Temprati 58 / 68 HRC     | -                                                                                 | -     | -                                                                                 | -           | -                                                                                                                  | -              | -            | -            | -            | -            | -            | -            | -            | -            | -            | -            |





Taticarb

# FRESE A CANDELA

con testa

# SEMISFERICA

per lavorazioni di  
copiatura



BALL NOSE COPY END MILLS



RADIUSKOPIER FRÄSER



FRAISE HÉMISPHERIQUE POUR COPIAGE



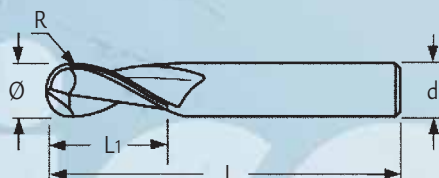
FRESAS ÉSFERICAS DE COPIADO





SOLID CARBIDE BALL-NOSE END MILLS - 2 FLUTES  
VOLLHARTMETALL RADIIUSKOPIERFRÄSERR - 2 SCHNEIDEN  
FRAISES HÉMISPÉRIQUES EN CARBURE MONOBLOC - 2 DENTS  
FRESAS DE CABEZA ESFÉRICA DE METAL DURO INTEGRAL - 2 LABIOS

TALICARB NORM.  
TALICARB NORM.  
TALICARB NORM.  
TALICARB NORM.

[illegible]



## SERIE NORMALE

NORMAL SERIES  
NORMAL AUSFÜHRUNG  
SÉRIE NORMALE  
SERIE NORMAL

# FRESE SEMISFERICHE A 2 TAGLI IN METALLO DURO INTEGRALE

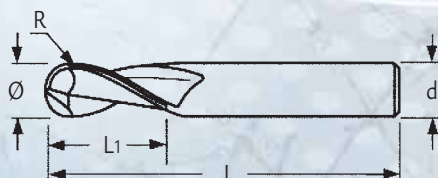
SOLID CARBIDE BALL-NOSE END MILLS - 2 FLUTES  
VOLLHARTMETALL RADIUSKOPIERFRÄSER - 2 SCHNEIDEN  
FRAISES HÉMISPÉRIQUES EN CARBURE MONOBLOC - 2 DENTS  
FRESAS DE CABEZA ESFÉRICA DE METAL DURO INTEGRAL - 2 LABIOS

## 212RTF

TF<sup>NEW</sup>  
COATING



| Ø mm<br>h10 | L<br>mm | L <sub>1</sub><br>mm | d<br>mm | Z | 212RTF<br>€ |
|-------------|---------|----------------------|---------|---|-------------|
| 1.5         | 50      | 3                    | 4       | 2 | 15,60       |
| 2           | 50      | 4                    | 4       | 2 | 15,60       |
| 2.5         | 50      | 5                    | 4       | 2 | 15,60       |
| 3           | 50      | 6                    | 4       | 2 | 15,60       |
| 3.5         | 50      | 7                    | 4       | 2 | 16,65       |
| 4           | 50      | 8                    | 4       | 2 | 16,65       |
| 4.5         | 50      | 9                    | 6       | 2 | 17,65       |
| 5           | 50      | 10                   | 6       | 2 | 17,65       |
| 5.5         | 50      | 11                   | 6       | 2 | 19,50       |
| 6           | 50      | 12                   | 6       | 2 | 19,50       |
| 7           | 60      | 14                   | 8       | 2 | 30,25       |
| 8           | 60      | 16                   | 8       | 2 | 29,30       |
| 9           | 75      | 18                   | 10      | 2 | 48,30       |
| 10          | 75      | 20                   | 10      | 2 | 48,30       |
| 11          | 75      | 22                   | 12      | 2 | 62,10       |
| 12          | 75      | 24                   | 12      | 2 | 62,10       |
| 13          | 83      | 24                   | 14      | 2 | 103,00      |
| 14          | 83      | 28                   | 14      | 2 | 103,00      |
| 15          | 92      | 30                   | 16      | 2 | 130,00      |
| 16          | 92      | 32                   | 16      | 2 | 130,00      |
| 18          | 92      | 36                   | 18      | 2 | 195,00      |
| 20          | 104     | 40                   | 20      | 2 | 222,00      |
|             |         |                      |         |   |             |
|             |         |                      |         |   |             |
|             |         |                      |         |   |             |
|             |         |                      |         |   |             |



Tallicarb

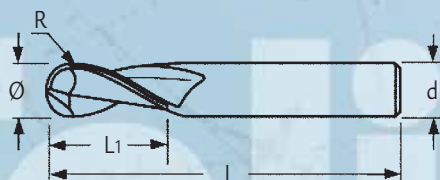
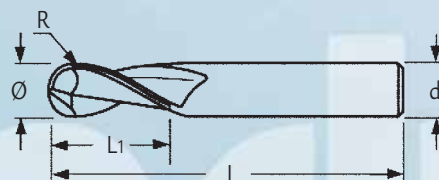


SOLID CARBIDE BALL-NOSE END MILLS - 2 FLUTES  
VOLLHARTMETALL RADIUSKOPIERFRÄSER - 2 SCHNEIDEN  
FRAISES HÉMISPÉRIQUES EN CARBURE MONOBLOC - 2 DENTS  
FRESAS DE CABEZA ESFÉRICA DE METAL DURO INTEGRAL - 2 LABIOS

LONG SERIES, EXTRALONG SERIES  
LANGE AUSFÜHRUNG, EXTRALANGE AUSFÜHRUNG  
SÉRIE LONGUE, SÉRIE EXTRALONGUE  
SERIE LARGA, SERIE EXTRALARGA



**TFNEW**  
COATING

[illegible][illegible]



# FRESE SEMISFERICHE A 3 TAGLI IN METALLO DURO INTEGRALE

SOLID CARBIDE BALL-NOSE END MILLS - 3 FLUTES  
VOLLHARTMETALL RADIUSKOPIERFRÄSER - 3 SCHNEIDEN  
FRAISES HÉMISPÉRIQUES EN CARBURE MONOBLOC - 3 DENTS  
FRESAS DE CABEZA ESFÉRICA DE METAL DURO INTEGRAL - 3 LABIOS

## TALICARB NORM.

TALICARB NORM.  
TALICARB NORM.  
TALICARB NORM.  
TALICARB NORM.

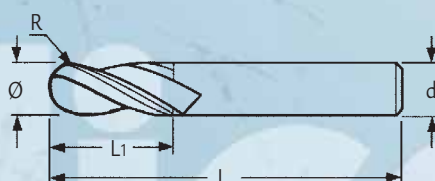


# 213RTF

TF<sup>NEW</sup>  
COATING



| Ø mm<br>h10 | L<br>mm | L <sub>1</sub><br>mm | d<br>mm | Z | 213RTF<br>€ |
|-------------|---------|----------------------|---------|---|-------------|
| 1.5         | 50      | 3                    | 4       | 3 | 15,60       |
| 2           | 50      | 4                    | 4       | 3 | 15,60       |
| 2.5         | 50      | 5                    | 4       | 3 | 15,60       |
| 3           | 50      | 6                    | 4       | 3 | 15,60       |
| 3.5         | 50      | 7                    | 4       | 3 | 16,65       |
| 4           | 50      | 8                    | 4       | 3 | 16,65       |
| 4.5         | 50      | 9                    | 6       | 3 | 17,65       |
| 5           | 50      | 10                   | 6       | 3 | 17,65       |
| 5.5         | 50      | 11                   | 6       | 3 | 19,50       |
| 6           | 50      | 12                   | 6       | 3 | 19,50       |
| 7           | 60      | 14                   | 8       | 3 | 30,25       |
| 8           | 60      | 16                   | 8       | 3 | 29,30       |
| 9           | 75      | 18                   | 10      | 3 | 48,30       |
| 10          | 75      | 20                   | 10      | 3 | 48,30       |
| 11          | 75      | 22                   | 12      | 3 | 62,10       |
| 12          | 75      | 24                   | 12      | 3 | 62,10       |
| 13          | 83      | 24                   | 14      | 3 | 103,00      |
| 14          | 83      | 28                   | 14      | 3 | 103,00      |
| 15          | 92      | 30                   | 16      | 3 | 130,00      |
| 16          | 92      | 32                   | 16      | 3 | 130,00      |
| 18          | 92      | 36                   | 18      | 3 | 195,00      |
| 20          | 104     | 40                   | 20      | 3 | 222,00      |
|             |         |                      |         |   |             |
|             |         |                      |         |   |             |
|             |         |                      |         |   |             |
|             |         |                      |         |   |             |





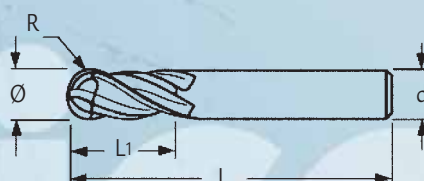


SOLID CARBIDE BALL-NOSE END MILLS - 4 FLUTES  
VOLLHARTMETALL RADIIUSKOPIERFRÄSER - 4 SCHNEIDEN  
FRAISES HÉMISPÉRIQUES EN CARBURE MONOBLOC - 4 DENTS  
FRESAS DE CABEZA ESFÉRICA DE METAL DURO INTEGRAL - 4 LABIOS

TALICARB NORM.  
TALICARB NORM.  
TALICARB NORM.  
TALICARB NORM.



**TFNEW**  
COATING





## SERIE NORMALE

NORMAL SERIES  
NORMAL AUSFÜHRUNG  
SÉRIE NORMALE  
SERIE NORMAL

# FRESE SEMISFERICHE A 4 TAGLI IN METALLO DURO INTEGRALE

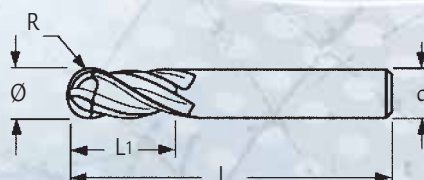
SOLID CARBIDE BALL-NOSE END MILLS - 4 FLUTES  
VOLLHARTMETALL RADIUSKOPIERFRÄSER - 4 SCHNEIDEN  
FRAISES HÉMISPÉRIQUES EN CARBURE MONOBLOC - 4 DENTS  
FRESAS DE CABEZA ESFÉRICA DE METAL DURO INTEGRAL - 4 LABIOS

## 214RTF

TF<sup>NEW</sup>  
COATING



| Ø mm<br>h10 | L<br>mm | L <sub>1</sub><br>mm | d<br>mm | Z | 214RTF<br>€ |
|-------------|---------|----------------------|---------|---|-------------|
| 1.5         | 50      | 3                    | 4       | 4 | 15,60       |
| 2           | 50      | 4                    | 4       | 4 | 15,60       |
| 2.5         | 50      | 5                    | 4       | 4 | 15,60       |
| 3           | 50      | 6                    | 4       | 4 | 15,60       |
| 3.5         | 50      | 7                    | 4       | 4 | 16,65       |
| 4           | 50      | 8                    | 4       | 4 | 16,65       |
| 4.5         | 50      | 9                    | 6       | 4 | 17,65       |
| 5           | 50      | 10                   | 6       | 4 | 17,65       |
| 5.5         | 50      | 11                   | 6       | 4 | 19,50       |
| 6           | 50      | 12                   | 6       | 4 | 19,50       |
| 7           | 60      | 14                   | 8       | 4 | 30,25       |
| 8           | 60      | 16                   | 8       | 4 | 29,30       |
| 9           | 75      | 18                   | 10      | 4 | 48,30       |
| 10          | 75      | 20                   | 10      | 4 | 48,30       |
| 11          | 75      | 22                   | 12      | 4 | 62,10       |
| 12          | 75      | 24                   | 12      | 4 | 62,10       |
| 13          | 83      | 24                   | 14      | 4 | 103,00      |
| 14          | 83      | 28                   | 14      | 4 | 103,00      |
| 15          | 92      | 30                   | 16      | 4 | 130,00      |
| 16          | 92      | 32                   | 16      | 4 | 130,00      |
| 18          | 92      | 36                   | 18      | 4 | 195,00      |
| 20          | 104     | 40                   | 20      | 4 | 222,00      |
|             |         |                      |         |   |             |
|             |         |                      |         |   |             |
|             |         |                      |         |   |             |
|             |         |                      |         |   |             |



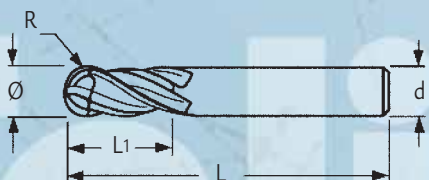
Tallicarb

SOLID CARBIDE BALL-NOSE END MILLS - 4 FLUTES  
VOLLHARTMETALL RADIUSKOPIERFRÄSER - 4 SCHNEIDEN  
FRAISES HÉMISPÉRIQUES EN CARBURE MONOBLOC - 4 DENTS  
FRESAS DE CABEZA ESFÉRICA DE METAL DURO INTEGRAL - 4 LABIOS

LONG SERIES, EXTRALONG SERIES  
LANGE AUSFÜHRUNG, EXTRALANGE AUSFÜHRUNG  
SÉRIE LONGUE, SÉRIE EXTRALONGUE  
SERIE LARGA, SERIE EXTRALARGA



**TFNEW**  
COATING

[illegible][illegible]

# PARAMETRI DI TAGLIO

## PER FRESE SENZA RIVESTIMENTO = $V_c$ e $F_z \times 0,8$

For end mill without coating - Für Fräser ohne Beschichtung  
Pour fraises sans revêtement - Para fresas sin recubrimiento



CUTTING PARAMETERS  
SCHNITTDATEN  
PARAMÈTRES DE COUPE  
PARAMETROS DE CORTE

### FRESE SEMISFERICHE: 2/3/4 Tagli

Solid carbide ball-nose end mills - Vollhartmetall radiuskopierfräser - Fraises hémisphériques en carbure monobloc - Fresas de cabeza esférica de metal duro integral:  
2/3/4 Flutes - Schneiden - Dents - Labios

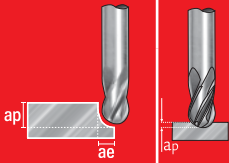
CAVA DAL PIENO:  $V_c$  e  $F_z$  - 20%

Slotting:  $V_c$  e  $F_z$  - 20%

Bohrnuten:  $V_c$  e  $F_z$  - 20%

Rainurage:  $V_c$  e  $F_z$  - 20%

Ranura:  $V_c$  e  $F_z$  - 20%

| GRUPPO MATERIALI<br>Material Groups<br>Material-Beispiele<br>Groupes de Matériaux<br>Grupos de Materiales |                              |  |       |  | VC<br>m/min | <br><b>Fz [mm]</b><br><b>AVANZAMENTO AL DENTE</b><br>Tooth Feed - Zahnvorschub - Avancement au dent - Avance al labio |                |                |              |              |              |              |              |              |              |    |    |    |
|-----------------------------------------------------------------------------------------------------------|------------------------------|-----------------------------------------------------------------------------------|-------|-----------------------------------------------------------------------------------|-------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|----------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|----|----|----|
|                                                                                                           |                              | ap                                                                                | ae    |                                                                                   |             | ap                                                                                                                                                                                                      | 2              | 4              | 6            | 8            | 10           | 12           | 14           | 16           | 18           | 20 | 22 | 25 |
|                                                                                                           |                              |                                                                                   |       |                                                                                   |             |                                                                                                                                                                                                         |                |                |              |              |              |              |              |              |              |    |    |    |
|                          | < 800 N/mm <sup>2</sup>      | 0,03<br>0,05<br>xØ                                                                | 0,2xØ | -                                                                                 | 90 - 130    | 0,01<br>0,02                                                                                                                                                                                            | 0,02<br>0,03   | 0,03<br>0,04   | 0,04<br>0,05 | 0,05<br>0,06 | 0,06<br>0,07 | 0,07<br>0,08 | 0,08<br>0,10 | 0,10<br>0,12 | 0,12<br>0,14 | -  | -  |    |
|                        | < 1100 N/<br>mm <sup>2</sup> | 0,03<br>0,05<br>xØ                                                                | 0,2xØ | -                                                                                 | 80 - 120    | 0,010<br>0,015                                                                                                                                                                                          | 0,015<br>0,020 | 0,02<br>0,03   | 0,03<br>0,04 | 0,04<br>0,05 | 0,05<br>0,06 | 0,06<br>0,07 | 0,07<br>0,08 | 0,08<br>0,09 | 0,09<br>0,10 | -  | -  |    |
|                        | < 1300 N/<br>mm <sup>2</sup> | 0,03<br>0,05<br>xØ                                                                | 0,2xØ | -                                                                                 | 70 - 110    | 0,005<br>0,010                                                                                                                                                                                          | 0,010<br>0,015 | 0,015<br>0,020 | 0,02<br>0,03 | 0,03<br>0,04 | 0,05<br>0,06 | 0,06<br>0,07 | 0,07<br>0,08 | 0,08<br>0,09 | 0,09<br>0,10 | -  | -  |    |
|                        | > 800 N/mm <sup>2</sup>      | 0,03<br>0,05<br>xØ                                                                | 0,2xØ | -                                                                                 | 50 - 80     | 0,010<br>0,015                                                                                                                                                                                          | 0,015<br>0,020 | 0,02<br>0,03   | 0,03<br>0,04 | 0,04<br>0,05 | 0,05<br>0,06 | 0,06<br>0,07 | 0,07<br>0,08 | 0,08<br>0,09 | 0,09<br>0,10 | -  | -  |    |
|                        | GG                           | 0,03<br>0,05<br>xØ                                                                | 0,2xØ | -                                                                                 | 110 - 150   | 0,005<br>0,010                                                                                                                                                                                          | 0,02<br>0,04   | 0,04<br>0,06   | 0,06<br>0,08 | 0,08<br>0,10 | 0,10<br>0,12 | 0,12<br>0,14 | 0,14<br>0,16 | 0,16<br>0,18 | 0,18<br>0,20 | -  | -  |    |
|                        | GGG                          | 0,03<br>0,05<br>xØ                                                                | 0,2xØ | -                                                                                 | 90 - 130    | 0,01<br>0,02                                                                                                                                                                                            | 0,02<br>0,03   | 0,03<br>0,04   | 0,04<br>0,05 | 0,05<br>0,06 | 0,06<br>0,07 | 0,07<br>0,08 | 0,08<br>0,10 | 0,10<br>0,12 | 0,12<br>0,14 | -  | -  |    |
|                        | Alluminio                    | 0,03<br>0,05<br>xØ                                                                | 0,2xØ | -                                                                                 | 110 - 150   | 0,02<br>0,04                                                                                                                                                                                            | 0,04<br>0,06   | 0,06<br>0,08   | 0,08<br>0,10 | 0,10<br>0,12 | 0,12<br>0,14 | 0,14<br>0,16 | 0,16<br>0,18 | 0,18<br>0,20 | 0,20<br>0,22 | -  | -  |    |
|                        | Non metalli                  | 0,03<br>0,05<br>xØ                                                                | 0,2xØ | -                                                                                 | 120 - 160   | 0,01<br>0,02                                                                                                                                                                                            | 0,02<br>0,03   | 0,03<br>0,04   | 0,04<br>0,05 | 0,05<br>0,06 | 0,06<br>0,07 | 0,07<br>0,08 | 0,08<br>0,10 | 0,10<br>0,12 | 0,12<br>0,14 | -  | -  |    |
|                        | Titanio                      | -                                                                                 | -     | -                                                                                 | -           | -                                                                                                                                                                                                       | -              | -              | -            | -            | -            | -            | -            | -            | -            | -  | -  |    |
|                        | Leghe speciali a base Ni     | -                                                                                 | -     | -                                                                                 | -           | -                                                                                                                                                                                                       | -              | -              | -            | -            | -            | -            | -            | -            | -            | -  | -  |    |
|                        | Temprati 38 / 48 HRC         | 0,03<br>0,05<br>xØ                                                                | 0,2xØ | -                                                                                 | 40 - 60     | 0,005<br>0,010                                                                                                                                                                                          | 0,010<br>0,015 | 0,015<br>0,020 | 0,02<br>0,03 | 0,03<br>0,04 | 0,05<br>0,06 | 0,06<br>0,07 | 0,07<br>0,08 | 0,08<br>0,09 | 0,09<br>0,10 | -  | -  |    |
|                        | Temprati 48 / 58 HRC         | -                                                                                 | -     | -                                                                                 | -           | -                                                                                                                                                                                                       | -              | -              | -            | -            | -            | -            | -            | -            | -            | -  | -  |    |
|                        | Temprati 58 / 68 HRC         | -                                                                                 | -     | -                                                                                 | -           | -                                                                                                                                                                                                       | -              | -              | -            | -            | -            | -            | -            | -            | -            | -  | -  |    |





Talicaadb

# FRESE CONICHE

## con Testa Piana



TAPER MILLS



KEGELIGE GESENKFRÄSER



FRAISES CONIQUES



FRESAS CÓNICAS





FRESAS CÓNICAS DE METAL DURO INTEGRAL - INCLINACIÓN \*

TALICARB NORM.  
TALICARB NORM.  
TALICARB NORM.  
TALICARB NORM.



The diagram shows a shaft with a conical section of length  $L_1$  and a cylindrical section of length  $L$ . The conical section has a half-angle  $\alpha/2$  and a diameter  $O$  at the base. The cylindrical section has a diameter  $d$ .





CONICITÀ \* ( $\alpha/2 = 3^\circ$  e  $\alpha/2 = 4^\circ$ )

FRASES CONÍQUES POUR MATRICES EN CARBURE MONOBLOC - INCLINAISON \*  
FRESAS CÓNICAS DE METAL DURO INTEGRAL - INCLINACIÓN \*

TALICARB NORM.  
TALICARB NORM.  
TALICARB NORM.  
TALICARB NORM.





# PARAMETRI DI TAGLIO

CUTTING PARAMETERS  
SCHNITTDATEN  
PARAMÈTRES DE COUPE  
PARAMETROS DE CORTE



**PER FRESE SENZA RIVESTIMENTO =  $V_c$  e  $F_z$  x 0,8**

For end mill without coating - Für Fräser ohne Beschichtung  
Pour fraises sans revêtement - Para fresas sin recubrimiento

## FRESE CONICHE CON TESTA PIANA : 2/3/4 Tagli

Taper mills - Kegelige gesenckfräser - Fraises coniques - Fresas cónicas:  
2/3/4 Flutes - Schneiden - Dents - Labios

**CAVA DAL PIENO:  $V_c$  e  $F_z$  : - 20%**

Slotting:  $V_c$  e  $F_z$  : - 20%

Bohrnuten:  $V_c$  e  $F_z$  : - 20%

Rainurage:  $V_c$  e  $F_z$  : - 20%

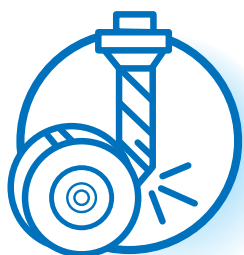
Ranura:  $V_c$  e  $F_z$  : - 20%

| GRUPPO MATERIALI<br>Material Groups<br>Material-Beispiele<br>Groupes de Matériaux<br>Grupos de Materiales |                              |  |       |  | VC<br>m/min | <br><b>Fz [mm]</b><br><b>AVANZAMENTO AL DENTE</b><br>Tooth Feed - Zahnvorschub - Avancement au dent - Avance al labio |                |              |              |              |              |    |              |    |    |    |    |    |
|-----------------------------------------------------------------------------------------------------------|------------------------------|-----------------------------------------------------------------------------------|-------|-----------------------------------------------------------------------------------|-------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|--------------|--------------|--------------|--------------|----|--------------|----|----|----|----|----|
|                                                                                                           |                              | ap                                                                                | ae    |                                                                                   |             | ap                                                                                                                                                                                                      | 2              | 4            | 6            | 8            | 10           | 12 | 14           | 16 | 18 | 20 | 22 | 25 |
|                                                                                                           |                              |                                                                                   |       |                                                                                   |             |                                                                                                                                                                                                         |                |              |              |              |              |    |              |    |    |    |    |    |
|                           | < 800 N/mm <sup>2</sup>      | 1xØ                                                                               | 0,5xØ | 0,5xØ                                                                             | 80 - 110    | 0,005<br>0,010                                                                                                                                                                                          | 0,02<br>0,04   | 0,04<br>0,06 | 0,06<br>0,08 | 0,08<br>0,10 | 0,10<br>0,12 | -  | 0,14<br>0,16 | -  | -  | -  | -  |    |
|                          | < 1100 N/<br>mm <sup>2</sup> | 1xØ                                                                               | 0,5xØ | 0,5xØ                                                                             | 70 - 100    | 0,005<br>0,01                                                                                                                                                                                           | 0,02<br>0,04   | 0,04<br>0,06 | 0,06<br>0,08 | 0,08<br>0,10 | 0,10<br>0,12 | -  | 0,14<br>0,16 | -  | -  | -  | -  |    |
|                         | < 1300 N/<br>mm <sup>2</sup> | 1xØ                                                                               | 0,5xØ | 0,5xØ                                                                             | 60 - 90     | 0,003<br>0,005                                                                                                                                                                                          | 0,005<br>0,020 | 0,02<br>0,04 | 0,04<br>0,06 | 0,06<br>0,08 | 0,08<br>0,10 | -  | 0,12<br>0,14 | -  | -  | -  | -  |    |
|                         | > 800 N/mm <sup>2</sup>      | 1xØ                                                                               | 0,5xØ | 0,5xØ                                                                             | 40 - 60     | 0,01<br>0,03                                                                                                                                                                                            | 0,03<br>0,05   | 0,05<br>0,07 | 0,07<br>0,09 | 0,09<br>0,11 | 0,11<br>0,13 | -  | 0,15<br>0,17 | -  | -  | -  | -  |    |
|                         | GG                           | 1xØ                                                                               | 0,5xØ | 0,5xØ                                                                             | 100 - 140   | 0,03<br>0,05                                                                                                                                                                                            | 0,05<br>0,07   | 0,07<br>0,09 | 0,09<br>0,11 | 0,11<br>0,13 | 0,13<br>0,15 | -  | 0,19<br>0,21 | -  | -  | -  | -  |    |
|                         | GGG                          | 1xØ                                                                               | 0,5xØ | 0,5xØ                                                                             | 80 - 110    | 0,005<br>0,010                                                                                                                                                                                          | 0,02<br>0,04   | 0,04<br>0,06 | 0,06<br>0,08 | 0,08<br>0,10 | 0,10<br>0,12 | -  | 0,14<br>0,16 | -  | -  | -  | -  |    |
|                         | Alluminio                    | 1xØ                                                                               | 0,5xØ | 0,5xØ                                                                             | 110 - 150   | 0,03<br>0,05                                                                                                                                                                                            | 0,05<br>0,07   | 0,07<br>0,09 | 0,09<br>0,11 | 0,11<br>0,13 | 0,13<br>0,15 | -  | 0,19<br>0,21 | -  | -  | -  | -  |    |
|                         | Non metalli                  | 1xØ                                                                               | 0,5xØ | 0,5xØ                                                                             | 110 - 150   | 0,005<br>0,01                                                                                                                                                                                           | 0,02<br>0,04   | 0,04<br>0,06 | 0,06<br>0,08 | 0,08<br>0,10 | 0,10<br>0,12 | -  | 0,14<br>0,16 | -  | -  | -  | -  |    |
|                         | Titanio                      | -                                                                                 | -     | -                                                                                 | -           | -                                                                                                                                                                                                       | -              | -            | -            | -            | -            | -  | -            | -  | -  | -  | -  |    |
|                         | Leghe speciali a base Ni     | -                                                                                 | -     | -                                                                                 | -           | -                                                                                                                                                                                                       | -              | -            | -            | -            | -            | -  | -            | -  | -  | -  | -  |    |
|                         | Temprati 38 / 48 HRC         | -                                                                                 | -     | -                                                                                 | -           | -                                                                                                                                                                                                       | -              | -            | -            | -            | -            | -  | -            | -  | -  | -  | -  |    |
|                         | Temprati 48 / 58 HRC         | -                                                                                 | -     | -                                                                                 | -           | -                                                                                                                                                                                                       | -              | -            | -            | -            | -            | -  | -            | -  | -  | -  | -  |    |
|                         | Temprati 58 / 68 HRC         | -                                                                                 | -     | -                                                                                 | -           | -                                                                                                                                                                                                       | -              | -            | -            | -            | -            | -  | -            | -  | -  | -  | -  |    |



## **SERVIZIO DI RIAFFILATURA E RIVESTIMENTO**

Re-sharpening and coating service  
Nachschleif - und beschichtungservice  
Service de affûtage à nouveau et revêtement  
Servicio de afilado y recubrimiento



## **UTENSILI SPECIALI**

Special tools department  
Abteilung für Sonderwerkzeuge  
Outils spéciaux  
Herramientas especiales

# **I NOSTRI SERVIZI SEMPRE A DISPOSIZIONE**

Our prompt services always ready for you  
Unser prompter Service ist immer für Sie da  
Nos services toujours à votre Disposition  
Nuestro rápido servicio siempre listo para usted





Taticarb

# FRESE CONICHE

## con Testa Raggiata



TAPER MILLS WITH BALL NOSE



KEGELIGE GESENKFRÄSER MIT RADIUS



FRAISES CONIQUES BOUT HÉMISPHERIQUE



FRESAS CÓNICAS DE CABEZA ESFÉRICA





IN METALLO DURO INTEGRALE CONICITÀ\* ( $\alpha/2 = 30'$  e  $\alpha/2 = 1^\circ$ )

FRESAS CÓNICAS DE CABAÇA ESFÉRICA DE METAL DURO INTEGRAL - INCLINACIÓN\*

TALICARB NORM.  
TALICARB NORM.  
TALICARB NORM.  
TALICARB NORM.







IN METALLO DURO INTEGRALE CONICITÀ\* ( $\alpha/2 = 3^\circ$  e  $\alpha/2 = 4^\circ$ )

FRESAS CÓNICAS DE CABEZA ESFÉRICA DE METAL DURO INTEGRAL - INCLINACIÓN\*

TALICARB NORM.  
TALICARB NORM.  
TALICARB NORM.  
TALICARB NORM.





TALICARB NORM.  
TALICARB NORM.  
TALICARB NORM.  
TALICARB NORM.

# FRESE CONICHE CON TESTA RAGGIATA

IN METALLO DURO INTEGRALE CONICITÀ\* ( $\alpha/2 = 5^\circ$ )

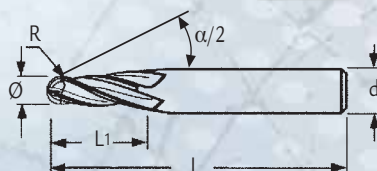
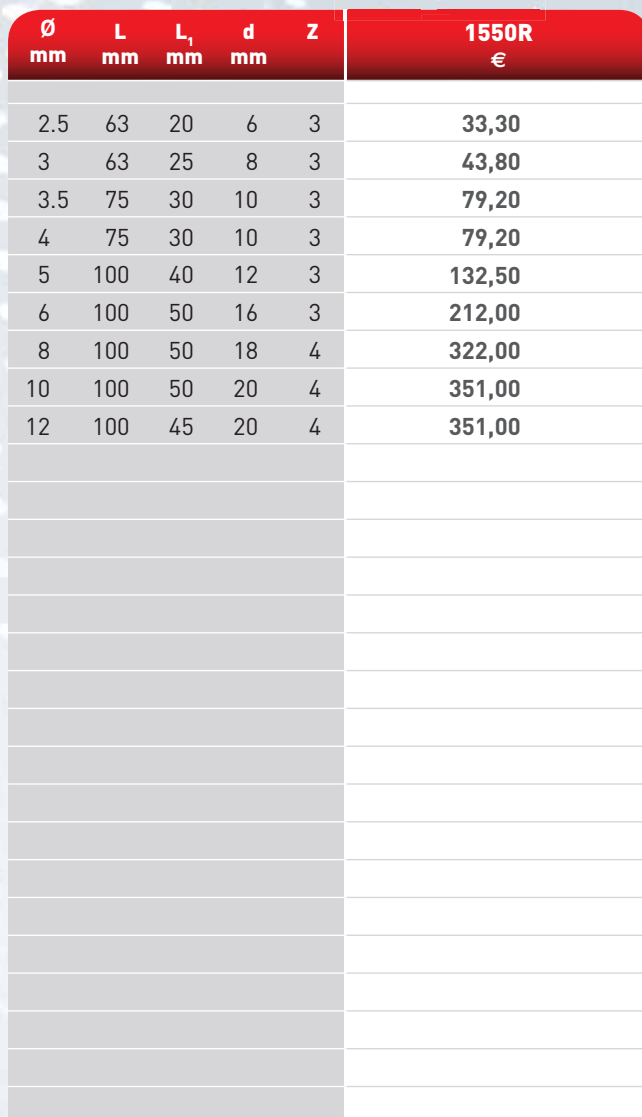
SOLID CARBIDE TAPER MILLS WITH BALL-NOSE - INCLINATION\*

VHM-KEGELIG GESENKFRÄSER MIT RADIUS - NEIGUNG\*

FRAISES CONIQUES BOUT HÉMISPHERIQUE EN CARBURE MONOBLOC - INCLINAISON\*

FRESAS CÓNICAS DE CABEZA ESFÉRICA DE METAL DURO INTEGRAL - INCLINACIÓN\*

# 1550R



# PARAMETRI DI TAGLIO

CUTTING PARAMETERS  
SCHNITTDATEN  
PARAMÈTRES DE COUPE  
PARAMETROS DE CORTE



**PER FRESE SENZA RIVESTIMENTO =  $V_c \text{ e } F_z \times 0,8$**

For end mill without coating - Für Fräser ohne Beschichtung  
Pour fraises sans revêtement - Para fresas sin recubrimiento

## FRESE CONICHE CON TESTA RAGIATA : 2/3/4 Tagli

Taper mills with ball nose - Kegelige gesenkfräser mit radius - Fraises coniques bout hémisphérique  
Fresas cónicas de cabeza esférica: 2/3/4 Flutes - Schneiden - Dents - Labios

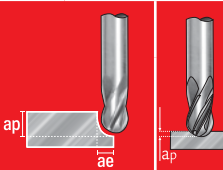
**CAVA DAL PIENO:  $V_c \text{ e } F_z$  : - 20%**

Slotting:  $V_c \text{ e } F_z$  : - 20%

Bohrnuten:  $V_c \text{ e } F_z$  : - 20%

Rainurage:  $V_c \text{ e } F_z$  : - 20%

Ranura:  $V_c \text{ e } F_z$  : - 20%

| GRUPPO MATERIALI<br>Material Groups<br>Material-Beispiele<br>Groupes de Matériaux<br>Grupos de Materiales |                          |  |       | VC<br>m/min | <br><b>Fz [mm]</b><br><b>AVANZAMENTO AL DENTE</b><br>Tooth Feed - Zahnvorschub - Avancement au dent - Avance al labio |                |               |              |              |              |    |              |    |    |    |    |
|-----------------------------------------------------------------------------------------------------------|--------------------------|-----------------------------------------------------------------------------------|-------|-------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|---------------|--------------|--------------|--------------|----|--------------|----|----|----|----|
|                                                                                                           |                          |                                                                                   |       |             |                                                                                                                                                                                                         |                |               |              |              |              |    |              |    |    |    |    |
|                                                                                                           |                          | ap                                                                                | ae    |             | 2                                                                                                                                                                                                       | 4              | 6             | 8            | 10           | 12           | 14 | 16           | 18 | 20 | 22 | 25 |
|                           | < 800 N/mm <sup>2</sup>  | 0,03<br>0,05<br>xØ                                                                | 0,2xØ | 90 - 130    | 0,01<br>0,02                                                                                                                                                                                            | 0,02<br>0,03   | 0,03<br>0,04  | 0,04<br>0,05 | 0,05<br>0,06 | 0,06<br>0,07 | -  | 0,08<br>0,10 | -  | -  | -  | -  |
|                          | < 1100 N/mm <sup>2</sup> | 0,03<br>0,05<br>xØ                                                                | 0,2xØ | 80 - 120    | 0,010<br>0,015                                                                                                                                                                                          | 0,015<br>0,02  | 0,02<br>0,03  | 0,03<br>0,04 | 0,04<br>0,05 | 0,05<br>0,06 | -  | 0,07<br>0,08 | -  | -  | -  | -  |
|                         | < 1300 N/mm <sup>2</sup> | 0,03<br>0,05<br>xØ                                                                | 0,2xØ | 70 - 110    | 0,005<br>0,010                                                                                                                                                                                          | 0,010<br>0,015 | 0,015<br>0,02 | 0,02<br>0,03 | 0,03<br>0,04 | 0,05<br>0,06 | -  | 0,07<br>0,08 | -  | -  | -  | -  |
|                         | > 800 N/mm <sup>2</sup>  | 0,03<br>0,05<br>xØ                                                                | 0,2xØ | 50 - 80     | 0,010<br>0,015                                                                                                                                                                                          | 0,015<br>0,02  | 0,02<br>0,03  | 0,03<br>0,04 | 0,04<br>0,05 | 0,05<br>0,06 | -  | 0,07<br>0,08 | -  | -  | -  | -  |
|                         | GG                       | 0,03<br>0,05<br>xØ                                                                | 0,2xØ | 110 - 150   | 0,005<br>0,010                                                                                                                                                                                          | 0,02<br>0,04   | 0,04<br>0,06  | 0,06<br>0,08 | 0,08<br>0,10 | 0,10<br>0,12 | -  | 0,14<br>0,16 | -  | -  | -  | -  |
|                         | GGG                      | 0,03<br>0,05<br>xØ                                                                | 0,2xØ | 90 - 130    | 0,01<br>0,02                                                                                                                                                                                            | 0,02<br>0,03   | 0,03<br>0,04  | 0,04<br>0,05 | 0,05<br>0,06 | 0,06<br>0,07 | -  | 0,08<br>0,10 | -  | -  | -  | -  |
|                         | Alluminio                | 0,03<br>0,05<br>xØ                                                                | 0,2xØ | 110 - 150   | 0,02<br>0,04                                                                                                                                                                                            | 0,04<br>0,06   | 0,06<br>0,08  | 0,08<br>0,10 | 0,10<br>0,12 | 0,12<br>0,14 | -  | 0,16<br>0,18 | -  | -  | -  | -  |
|                         | Non metalli              | 0,03<br>0,05<br>xØ                                                                | 0,2xØ | 120 - 160   | 0,01<br>0,02                                                                                                                                                                                            | 0,02<br>0,03   | 0,03<br>0,04  | 0,04<br>0,05 | 0,05<br>0,06 | 0,06<br>0,07 | -  | 0,08<br>0,10 | -  | -  | -  | -  |
|                         | Titanio                  | -                                                                                 | -     | -           | -                                                                                                                                                                                                       | -              | -             | -            | -            | -            | -  | -            | -  | -  | -  | -  |
|                         | Leghe speciali a base Ni | -                                                                                 | -     | -           | -                                                                                                                                                                                                       | -              | -             | -            | -            | -            | -  | -            | -  | -  | -  | -  |
|                         | Temprati 38 / 48 HRC     | -                                                                                 | -     | -           | -                                                                                                                                                                                                       | -              | -             | -            | -            | -            | -  | -            | -  | -  | -  | -  |
|                         | Temprati 48 / 58 HRC     | -                                                                                 | -     | -           | -                                                                                                                                                                                                       | -              | -             | -            | -            | -            | -  | -            | -  | -  | -  | -  |
|                         | Temprati 58 / 68 HRC     | -                                                                                 | -     | -           | -                                                                                                                                                                                                       | -              | -             | -            | -            | -            | -  | -            | -  | -  | -  | -  |



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## **I NOSTRI SERVIZI SEMPRE A DISPOSIZIONE**

Our prompt services always ready for you  
Unser prompter Service ist immer für Sie da  
Nos services toujours à votre Disposition  
Nuestro rápido servicio siempre listo para usted





Taticarb

# FRESE A CANDELA

specifiche per

# ALLUMINIO



END MILLS FOR ALUMINIUM



FRÄSER FÜR ALUMINIUM



FRAISES POUR L'USINAGE DE L' ALUMINIUM



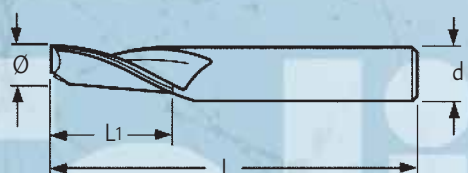
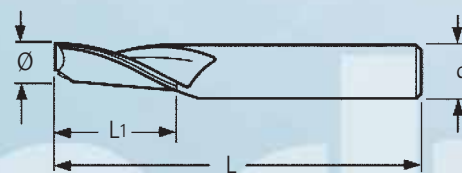
FRESAS PARA ALUMINIO





SOLID CARBIDE END MILLS - 1 FLUTE  
VOLLHARTMETALL FRÄSER - 1 SCHNEID  
FRAISES EN CARBURE MONOBLOC - 1 DENT  
FRESAS DE METAL DURO INTEGRAL - 1 LABIO

TALICARB NORM.  
TALICARB NORM.  
TALICARB NORM.  
TALICARB NORM.

[illegible][illegible]





SOLID CARBIDE END MILLS - 2 FLUTES  
VOLLHARTMETALL FRÄSER - 2 SCHNEIDEN  
FRAISES EN CARBURE MONOBLOC - 2 DENTS  
FRESAS DE METAL DURO INTEGRAL - 2 LABIOS

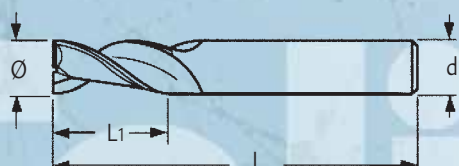
NORMAL SERIES  
NORMAL AUSFÜHRUNG  
SÉRIE NORMALE  
SERIE NORMAL



| Ø mm<br>h10 | L<br>mm | L <sub>1</sub><br>mm | d<br>mm | Z | 1263<br>€ | 1263TF<br>€ |
|-------------|---------|----------------------|---------|---|-----------|-------------|
| 3           | 57      | 7                    | 6       | 2 | 22,10     | 27,60       |
| 3.5         | 57      | 7                    | 6       | 2 | 22,10     | 27,60       |
| 4           | 57      | 8                    | 6       | 2 | 22,10     | 27,60       |
| 4.5         | 57      | 8                    | 6       | 2 | 22,10     | 27,60       |
| 4.8         | 57      | 6                    | 6       | 2 | 22,10     | 27,60       |
| 5           | 57      | 10                   | 6       | 2 | 22,10     | 27,60       |
| 5.5         | 57      | 10                   | 6       | 2 | 22,10     | 27,60       |
| 5.75        | 57      | 7                    | 6       | 2 | 22,10     | 27,60       |
| 6           | 57      | 10                   | 6       | 2 | 22,10     | 27,60       |
| 6.5         | 63      | 13                   | 8       | 2 | 30,55     | 33,60       |
| 7           | 63      | 13                   | 8       | 2 | 30,55     | 33,60       |
| 7.5         | 63      | 16                   | 8       | 2 | 30,55     | 33,60       |
| 7.75        | 63      | 9                    | 8       | 2 | 30,55     | 33,60       |
| 8           | 63      | 16                   | 8       | 2 | 30,55     | 33,60       |
| 8.5         | 72      | 16                   | 10      | 2 | 52,50     | 57,70       |
| 9           | 72      | 16                   | 10      | 2 | 52,50     | 57,70       |
| 9.5         | 72      | 19                   | 10      | 2 | 52,50     | 57,70       |
| 9.75        | 72      | 11                   | 10      | 2 | 52,50     | 57,70       |
| 10          | 72      | 19                   | 10      | 2 | 47,20     | 52,00       |
| 11          | 83      | 22                   | 12      | 2 | 70,50     | 77,60       |
| 11.7        | 83      | 12                   | 12      | 2 | 70,50     | 77,60       |
| 12          | 83      | 22                   | 12      | 2 | 64,40     | 70,80       |
| 13          | 83      | 22                   | 14      | 2 | 113,00    | 118,50      |
| 13.7        | 83      | 14                   | 14      | 2 | 113,00    | 118,50      |
| 14          | 83      | 22                   | 14      | 2 | 102,50    | 108,00      |
| 15          | 92      | 26                   | 16      | 2 | 139,50    | 146,50      |
| 15.7        | 92      | 16                   | 16      | 2 | 139,50    | 146,50      |

[illegible]

→2-2





# FRESE A CANDELA A 3 TAGLI

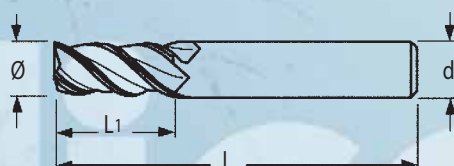
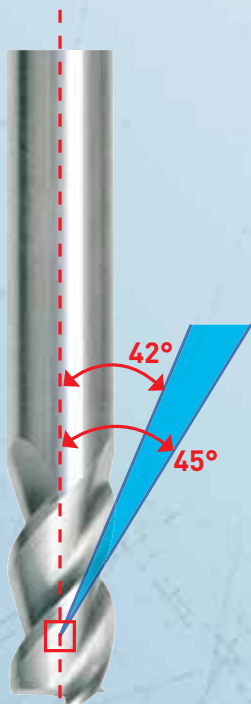
SOLID CARBIDE VARIABLE PITCH END MILLS - 3 FLUTES  
VHM FRÄSER MIT VARIABLEM STEIGUNG - 3 SCHNEIDEN  
FRAISES CARBURE À PAS VARIABLE - 3 DENTS  
FRESAS DE METAL DURO INTEGRAL HÉLICE VARIABLE - 3 LABIOS

**TALICARB NORM.**

TALICARB NORM.  
TALICARB NORM.  
TALICARB NORM.  
TALICARB NORM.



1266

[illegible]

# PARAMETRI DI TAGLIO

**PER FRESE SENZA RIVESTIMENTO =  $V_c$  e  $F_z \times 0,8$**

For end mill without coating - Für Fräser ohne Beschichtung  
Pour fraises sans revêtement - Para fresas sin recubrimiento



CUTTING PARAMETERS  
SCHNITTDATEN  
PARAMÈTRES DE COUPE  
PARAMETROS DE CORTE

## FRESE A CANDELA SPECIFICHE PER ALLUMINIO : 1/2/3 Tagli

End mills for aluminium - Fräser für aluminium - Fraises pour l'usinage de l'aluminium  
Fresas para aluminio: 1/2/3 Flutes - Schneiden - Dents - Labios

**CAVA DAL PIENO:  $V_c$  e  $F_z$  : - 20%**

Slotting:  $V_c$  e  $F_z$  : - 20%

Bohrnuten:  $V_c$  e  $F_z$  : - 20%

Rainurage:  $V_c$  e  $F_z$  : - 20%

Ranura:  $V_c$  e  $F_z$  : - 20%

| GRUPPO MATERIALI<br>Material Groups<br>Material-Beispiele<br>Groupes de Matériaux<br>Grupos de Materiales |                                                                                   |    |                                                                                   | VC<br>m/min | Fz [mm]<br>AVANZAMENTO AL DENTE<br>Tooth Feed - Zahnvorschub - Avancement au dent - Avance al labio |   |   |   |    |    |    |    |    |    |    |    |  |
|-----------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|----|-----------------------------------------------------------------------------------|-------------|-----------------------------------------------------------------------------------------------------|---|---|---|----|----|----|----|----|----|----|----|--|
|                                                                                                           |  |    |  |             |                                                                                                     |   |   |   |    |    |    |    |    |    |    |    |  |
|                                                                                                           | ap                                                                                | ae | ap                                                                                |             | 2                                                                                                   | 4 | 6 | 8 | 10 | 12 | 14 | 16 | 18 | 20 | 22 | 25 |  |



**1011CR-1263TF**

|  |             |       |       |     |           |              |              |              |              |              |              |              |              |              |              |   |   |
|--|-------------|-------|-------|-----|-----------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|---|---|
|  | Alluminio   | 1,5xØ | 0,5xØ | 1xØ | 110 - 140 | 0,02<br>0,04 | 0,04<br>0,06 | 0,06<br>0,08 | 0,08<br>0,10 | 0,10<br>0,12 | 0,12<br>0,14 | 0,14<br>0,16 | 0,16<br>0,18 | 0,18<br>0,20 | 0,20<br>0,22 | - | - |
|  | Non metalli | 1,5xØ | 0,5xØ | 1xØ | 80 - 120  | 0,01<br>0,02 | 0,02<br>0,03 | 0,03<br>0,04 | 0,04<br>0,05 | 0,05<br>0,06 | 0,06<br>0,07 | 0,07<br>0,08 | 0,08<br>0,10 | 0,10<br>0,12 | 0,12<br>0,14 | - | - |



**1265**

|  |             |       |       |     |           |   |   |              |              |              |              |   |              |   |              |   |   |
|--|-------------|-------|-------|-----|-----------|---|---|--------------|--------------|--------------|--------------|---|--------------|---|--------------|---|---|
|  | Alluminio   | 1,5xØ | 0,5xØ | 1xØ | 180 - 250 | - | - | 0,08<br>0,10 | 0,10<br>0,13 | 0,13<br>0,16 | 0,16<br>0,19 | - | 0,22<br>0,25 | - | 0,20<br>0,22 | - | - |
|  | Non metalli | 1,5xØ | 0,5xØ | 1xØ | 140 - 200 | - | - | 0,04<br>0,06 | 0,06<br>0,08 | 0,08<br>0,10 | 0,10<br>0,12 | - | 0,14<br>0,16 | - | 0,12<br>0,14 | - | - |



**1266**

|  |             |       |       |     |           |              |              |              |              |              |              |   |              |   |              |   |   |
|--|-------------|-------|-------|-----|-----------|--------------|--------------|--------------|--------------|--------------|--------------|---|--------------|---|--------------|---|---|
|  | Alluminio   | 1,5xØ | 0,5xØ | 1xØ | 300 - 400 | 0,02<br>0,04 | 0,04<br>0,06 | 0,06<br>0,08 | 0,08<br>0,1  | 0,1<br>0,12  | 0,12<br>0,14 | - | 0,16<br>0,18 | - | 0,20<br>0,22 | - | - |
|  | Non metalli | 1,5xØ | 0,5xØ | 1xØ | 200 - 300 | 0,01<br>0,02 | 0,02<br>0,03 | 0,03<br>0,04 | 0,04<br>0,05 | 0,05<br>0,06 | 0,06<br>0,07 | - | 0,08<br>0,10 | - | 0,12<br>0,14 | - | - |





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Pour tout renseignement contactez-nous  
Para más informaciones llámenos

# FRESE A PASSO VARIABILE

VARIABLE PITCH END MILLS  
FRÄSER MIT VARIABLE STEIGUNG  
FRAISES À PAS VARIABLE  
FRESAS DE HÉLICE VARIABLE



## FRESE A PASSO VARIABILE

Le frese a passo variabile, dedicate alle lavorazioni senza vibrazioni e ad alte prestazioni, consentono un ottimo rendimento e possono essere usate su una vasta gamma di materiali.



## VARIABLE PITCH END MILLS

Variable pitch end mills, dedicated to vibration free and high performance works, lead on good results and can be used on a great variety of materials.



## FRÄSER MIT VARIABLE STEIGUNG

Die ungleiche Schneidreihenteilung Fräser, für Vibrationsfreie- und Hochleistungsbearbeitungen verwendet, erlauben hohe Leistungen und für eine ganze Reihe von Materialien anwendet.



## FRAISES À PAS VARIABLE

Les fraises a pas variable, utilises pour usinages sans vibrations et hautes performances, permettent une tres bonne performance et on peut les utiliser sur une vaste gamme de materiaux.



## FRESAS DE HÉLICE VARIABLE

Las fresas de hélice variable, dedicadas a los trabajos sin vibraciones y de alto rendimiento, permiten conseguir resultados excelentes y pueden utilizarse con una gran variedad de materiales.



## PASSO VARIABILE IN METALLO DURO INTEGRALE

SOLID CARBIDE VARIABLE PITCH END MILLS - 4 FLUTES

VHM FRÄSER MIT VARIABLE STEIGUNG - 4 SCHNEIDEN

FRAISES CARBURE À PAS VARIABLE - 4 DENTS

FRESAS DE METAL DURO INTEGRAL HÉLICE VARIABLE - 4 LABIOS

TALICARB NORM.  
TALICARB NORM.  
TALICARB NORM.  
TALICARB NORM.



**TF NEW COATING**



A diagram of a double-flute drill bit. A vertical dashed red line indicates the axis of symmetry. Two red curved arrows indicate angles: 36° for the first flute and 41° for the second flute. A blue shaded area highlights the cutting edge geometry.



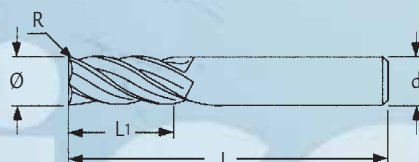






TORIC VARIABLE PITCH END MILLS - 4 FLUTES  
WHM TORUSFRÄSER MIT VARIABLE STEIGUNG - 4 SCHNEIDEN  
FRAISES TORIQUES HELICOIDALES À PAS VARIABLE - 4 DENTS  
FRESAS TÓRICAS DE METAL DURO INTEGRAL HÉLICE VARIABLE - 4 LABIOS

NORMAL SERIES  
NORMAL AUSFÜHRUNG  
SÉRIE NORMALE  
SERIE NORMAL



# PARAMETRI DI TAGLIO

## PER FRESE SENZA RIVESTIMENTO = $V_c$ e $F_z \times 0,8$

For end mill without coating - Für Fräser ohne Beschichtung  
Pour fraises sans revêtement - Para fresas sin recubrimiento



CUTTING PARAMETERS  
SCHNITTDATEN  
PARAMÈTRES DE COUPE  
PARAMETROS DE CORTE

### FRESE A PASSO VARIABILE:

Variable pitch end mills - Fräser mit variabler steigung - Fraises à pas variable - Fresas hélice variable

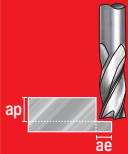
**CAVA DAL PIENO:**  $V_c$  e  $F_z$ : - 20%

Slotting:  $V_c$  e  $F_z$ : - 20%

Bohrnuten:  $V_c$  e  $F_z$ : - 20%

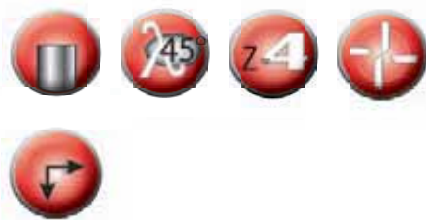
Rainurage:  $V_c$  e  $F_z$ : - 20%

Ranura:  $V_c$  e  $F_z$ : - 20%

| GRUPPO MATERIALI<br>Material Groups<br>Material-Beispiele<br>Groupes de Matériaux<br>Grupos de Materiales |  |         |  | VC<br>m/min | <br><b>Fz [mm]</b><br><b>AVANZAMENTO AL DENTE</b><br>Tooth Feed - Zahnvorschub - Avancement au dent - Avance al labio |       |                |              |              |              |              |    |              |              |              |              |              |
|-----------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|---------|-----------------------------------------------------------------------------------|-------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|----------------|--------------|--------------|--------------|--------------|----|--------------|--------------|--------------|--------------|--------------|
|                                                                                                           | ap                                                                                | ae      | ap                                                                                |             | 3                                                                                                                                                                                                       | 4     | 6              | 8            | 10           | 12           | 14           | 16 | 18           | 20           | 22           | 25           |              |
|                                                                                                           | ap                                                                                | ae      | ap                                                                                |             |                                                                                                                                                                                                         |       |                |              |              |              |              |    |              |              |              |              |              |
|  P                       | < 800 N/mm <sup>2</sup>                                                           | 1,5 x Ø | 0,5xØ                                                                             | -           | 100 - 150                                                                                                                                                                                               | 0,015 | 0,015<br>0,030 | 0,03<br>0,04 | 0,05<br>0,06 | 0,07<br>0,08 | 0,08<br>0,09 | -  | 0,10<br>0,12 | -            | 0,14<br>0,15 | -            | -            |
|  P                     | < 1100 N/<br>mm <sup>2</sup>                                                      | 1,5 x Ø | 0,5xØ                                                                             | 0,5xØ       | 90 - 140                                                                                                                                                                                                | 0,015 | 0,015<br>0,030 | 0,03<br>0,04 | 0,05<br>0,06 | 0,07<br>0,08 | 0,08<br>0,09 | -  | 0,10<br>0,12 | -            | 0,14<br>0,15 | -            | -            |
|  P                     | < 1300 N/<br>mm <sup>2</sup>                                                      | 1,5 x Ø | 0,5xØ                                                                             | 0,5xØ       | 80 - 130                                                                                                                                                                                                | 0,01  | 0,01<br>0,02   | 0,02<br>0,03 | 0,03<br>0,04 | 0,04<br>0,05 | 0,05<br>0,06 | -  | 0,08<br>0,09 | -            | 0,11<br>0,12 | -            | -            |
|  M                     | > 800 N/mm <sup>2</sup>                                                           | 1,5 x Ø | 0,3xØ                                                                             | 0,3xØ       | 80 - 120                                                                                                                                                                                                | 0,015 | 0,015<br>0,030 | 0,03<br>0,04 | 0,05<br>0,06 | 0,07<br>0,08 | 0,08<br>0,09 | -  | 0,10<br>0,12 | -            | 0,14<br>0,15 | -            | -            |
|  K                     | GG                                                                                | 1,5 x Ø | 0,5xØ                                                                             | 0,5xØ       | 110 - 170                                                                                                                                                                                               | 0,03  | 0,03<br>0,05   | 0,05<br>0,07 | 0,07<br>0,09 | 0,09<br>0,11 | 0,11<br>0,13 | -  | 0,17<br>0,19 | -            | 0,21<br>0,22 | -            | -            |
|  K                     | GGG                                                                               | 1,5 x Ø | 0,5xØ                                                                             | 0,5xØ       | 90 - 140                                                                                                                                                                                                | 0,01  | 0,01<br>0,02   | 0,02<br>0,03 | 0,03<br>0,04 | 0,04<br>0,05 | 0,05<br>0,06 | -  | 0,08<br>0,09 | -            | 0,11<br>0,12 | 0,14<br>0,16 | 0,16<br>0,18 |
|  N                     | Alluminio                                                                         | -       | -                                                                                 | -           | -                                                                                                                                                                                                       | -     | -              | -            | -            | -            | -            | -  | -            | -            | -            | -            | -            |
|  N                     | Non metalli                                                                       | -       | -                                                                                 | -           | -                                                                                                                                                                                                       | -     | -              | -            | -            | -            | -            | -  | -            | -            | -            | -            | -            |
|  S                     | Titanio                                                                           | 1,5 x Ø | 0,3xØ                                                                             | 0,3xØ       | 50 - 60                                                                                                                                                                                                 | 0,01  | 0,01<br>0,02   | 0,02<br>0,03 | 0,03<br>0,04 | 0,04<br>0,05 | 0,05<br>0,06 | -  | 0,08<br>0,09 | 0,09<br>0,10 | 0,11<br>0,12 | -            | -            |
|  S                     | Leghe speciali a base Ni                                                          | -       | -                                                                                 | -           | -                                                                                                                                                                                                       | -     | -              | -            | -            | -            | -            | -  | -            | -            | -            | -            | -            |
|  H                     | Temprati 38 / 48 HRC                                                              | 1,5 x Ø | 0,2xØ                                                                             | 0,2xØ       | 20 - 35                                                                                                                                                                                                 | 0,015 | 0,015<br>0,030 | 0,03<br>0,04 | 0,05<br>0,06 | 0,07<br>0,08 | 0,08<br>0,09 | -  | 0,10<br>0,12 | 0,12<br>0,14 | 0,14<br>0,15 | -            | -            |
|  H                     | Temprati 48 / 58 HRC                                                              | -       | -                                                                                 | -           | -                                                                                                                                                                                                       | -     | -              | -            | -            | -            | -            | -  | -            | -            | -            | -            | -            |
|  H                     | Temprati 58 / 68 HRC                                                              | -       | -                                                                                 | -           | -                                                                                                                                                                                                       | -     | -              | -            | -            | -            | -            | -  | -            | -            | -            | -            | -            |

CERMET END MILLS - 4 FLUTES  
CERMET-FRÄSER - 4 SCHNEIDEN  
FRAISES CERMET - 4 DENTS  
FRESAS DE CERMET - 4 LABIOS

NORMAL SERIES  
NORMAL AUSFÜHRUNG  
SÉRIE NORMALE  
SERIE NORMAL

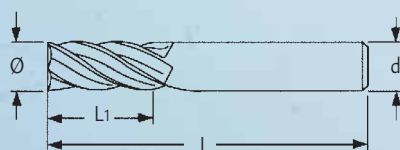


# CERMET

1374

[illegible]

**Ad esaurimento scorte** - Subject to availability until sold out - Solange der vorrat reicht - Jusqu'Épuisement de stock - Hasta agotamiento del stock



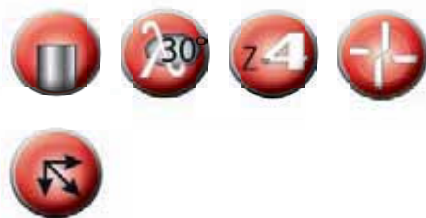




**A 4 TAGLI** IN CERMET

CERMET END MILLS - 4 FLUTES  
CERMET-FRÄSER - 4 SCHNEIDEN  
FRAISES CERMET- 4 DENTS  
FRESAS DE CERMET - 4 LABIOS

NORMAL SERIES  
NORMAL AUSFÜHRUNG  
SÉRIE NORMALE  
SERIE NORMAL

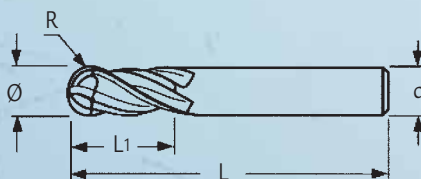


# CERMET

1314R

[illegible]

**Ad esaurimento scorte** - Subject to availability until sold out - Solange der vorrat reicht - Jusqu'Épuisement de stock - Hasta agotamiento del stock



# FRESE A CANDELA "CON ROMPITRUCIOLO" A SGROSSARE

ROUGHING END MILLS WITH CHEAP BREAKER  
SCHRUPPFRÄSER MIT SPANBRECHER  
FRAISES D'EBAUCHE AVEC BRISE-COPEAUX  
FRESAS PARA DESBASTE CON ROMPEVIRUTAS



## FRESE CON ROMPITRUCIOLO A SGROSSARE

Le frese di sgrossatura sono progettate per asportare un elevato volume di truciolo.



## ROUGHING END MILLS WITH CHEAP BREAKER

Roughing end mills are designed for removing a big cheap volume.



## SCHRUPPFRÄSER MIT SPANBRECHER

Die Schruppenfräser entworfen für die Entfernung von einer großen Menge von Span.



## FRAISES D'EBAUCHE AVEC BRISE-COPEAUX

Fraises d'ébauche projetées pour enlèvement d'un volume élevé de copeau.



## FRESAS PARA DESBASTE CON ROMPEVIRUTAS

Fresas para desbaste proyectadas para quitar una elevada cantidad de viruta.



SOLID CARBIDE END MILLS WITH CHIP BREAKER  
VHM FRAESER MIT SPANBRECHER  
FRAISES AVEC BRISE-COPEAU EN CARBURE MONOBLOC  
FRESAS DE METAL DURO INTEGRAL CON ROMPEVIRUTAS

TALICARB NORM.  
TALICARB NORM.  
TALICARB NORM.  
TALICARB NORM.



**TFNEW**  
COATING

[illegible]







# PARAMETRI DI TAGLIO

CUTTING PARAMETERS  
SCHNITTDATEN  
PARAMÈTRES DE COUPE  
PARAMETROS DE CORTE



## PER FRESE SENZA RIVESTIMENTO = $V_c \text{ e } F_z \times 0,8$

For end mill without coating - Für Fräser ohne Beschichtung  
Pour fraises sans revêtement - Para fresas sin recubrimiento

### FRESE A SGROSSARE CON ROMPI TRUCIOLO:

Roughing end mills with cheap breaker - Schrappfräser mit Spanbrecher - Fraises d'ébauche avec brise-copeaux - Fresas para desbaste con rompevirutas

CAVA DAL PIENO:  $V_c \text{ e } F_z: - 20\%$

Slotting:  $V_c \text{ e } F_z: - 20\%$

Bohrnuten:  $V_c \text{ e } F_z: - 20\%$

Rainurage:  $V_c \text{ e } F_z: - 20\%$

Ranura:  $V_c \text{ e } F_z: - 20\%$

| GRUPPO MATERIALI<br>Material Groups<br>Material-Beispiele<br>Groupes de Matériaux<br>Grupos de Materiales |                          |  |       |  | VC<br>m/min | <br>Fz [mm]<br>AVANZAMENTO AL DENTE<br>Tooth Feed - Zahnvorschub - Avancement au dent - Avance al labio |                |               |              |              |              |              |              |              |              |    |    |
|-----------------------------------------------------------------------------------------------------------|--------------------------|-----------------------------------------------------------------------------------|-------|-----------------------------------------------------------------------------------|-------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|---------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|----|----|
|                                                                                                           |                          | ap                                                                                | ae    |                                                                                   |             | ap                                                                                                                                                                                        | 2              | 4             | 6            | 8            | 10           | 12           | 14           | 16           | 18           | 20 | 22 |
|                                                                                                           |                          | ap                                                                                | ae    | ap                                                                                |             | 2                                                                                                                                                                                         | 4              | 6             | 8            | 10           | 12           | 14           | 16           | 18           | 20           | 22 | 25 |
|  P                        | < 800 N/mm <sup>2</sup>  | 1,5xØ                                                                             | 0,2xØ | -                                                                                 | 90 - 130    | -                                                                                                                                                                                         | 0,02<br>0,03   | 0,03<br>0,04  | 0,04<br>0,05 | 0,05<br>0,06 | 0,06<br>0,07 | 0,07<br>0,08 | 0,08<br>0,10 | 0,10<br>0,12 | 0,12<br>0,14 | -  | -  |
|  P                       | < 1100 N/mm <sup>2</sup> | 1,5xØ                                                                             | 0,2xØ | -                                                                                 | 80 - 120    | -                                                                                                                                                                                         | 0,015<br>0,02  | 0,02<br>0,03  | 0,03<br>0,04 | 0,04<br>0,05 | 0,05<br>0,06 | 0,06<br>0,07 | 0,07<br>0,08 | 0,08<br>0,09 | 0,09<br>0,10 | -  | -  |
|  P                      | < 1300 N/mm <sup>2</sup> | 1,0xØ                                                                             | 0,2xØ | -                                                                                 | 70 - 110    | -                                                                                                                                                                                         | 0,010<br>0,015 | 0,015<br>0,02 | 0,02<br>0,03 | 0,03<br>0,04 | 0,05<br>0,06 | 0,06<br>0,07 | 0,07<br>0,08 | 0,08<br>0,09 | 0,09<br>0,10 | -  | -  |
|  M                      | > 800 N/mm <sup>2</sup>  | 1,0xØ                                                                             | 0,2xØ | -                                                                                 | 50 - 80     | -                                                                                                                                                                                         | 0,015<br>0,02  | 0,02<br>0,03  | 0,03<br>0,04 | 0,04<br>0,05 | 0,05<br>0,06 | 0,06<br>0,07 | 0,07<br>0,08 | 0,08<br>0,09 | 0,09<br>0,10 | -  | -  |
|  K                      | GG                       | 1,0xØ                                                                             | 0,2xØ | -                                                                                 | 110 - 150   | -                                                                                                                                                                                         | 0,02<br>0,04   | 0,04<br>0,06  | 0,06<br>0,08 | 0,08<br>0,10 | 0,10<br>0,12 | 0,12<br>0,14 | 0,14<br>0,16 | 0,16<br>0,18 | 0,18<br>0,20 | -  | -  |
|  K                      | GGG                      | 1,0xØ                                                                             | 0,2xØ | -                                                                                 | 90 - 130    | -                                                                                                                                                                                         | 0,02<br>0,03   | 0,03<br>0,04  | 0,04<br>0,05 | 0,05<br>0,06 | 0,06<br>0,07 | 0,07<br>0,08 | 0,08<br>0,10 | 0,10<br>0,12 | 0,12<br>0,14 | -  | -  |
|  N                      | Alluminio                | -                                                                                 | -     | -                                                                                 | -           | -                                                                                                                                                                                         | -              | -             | -            | -            | -            | -            | -            | -            | -            | -  | -  |
|  N                      | Non metalli              | -                                                                                 | -     | -                                                                                 | -           | -                                                                                                                                                                                         | -              | -             | -            | -            | -            | -            | -            | -            | -            | -  | -  |
|  S                      | Titanio                  | -                                                                                 | -     | -                                                                                 | -           | -                                                                                                                                                                                         | -              | -             | -            | -            | -            | -            | -            | -            | -            | -  | -  |
|  S                      | Leghe speciali a base NI | -                                                                                 | -     | -                                                                                 | -           | -                                                                                                                                                                                         | -              | -             | -            | -            | -            | -            | -            | -            | -            | -  | -  |
|  H                      | Temprati 38 / 48 HRC     | -                                                                                 | -     | -                                                                                 | -           | -                                                                                                                                                                                         | -              | -             | -            | -            | -            | -            | -            | -            | -            | -  | -  |
|  H                      | Temprati 48 / 58 HRC     | -                                                                                 | -     | -                                                                                 | -           | -                                                                                                                                                                                         | -              | -             | -            | -            | -            | -            | -            | -            | -            | -  | -  |
|  H                      | Temprati 58 / 68 HRC     | -                                                                                 | -     | -                                                                                 | -           | -                                                                                                                                                                                         | -              | -             | -            | -            | -            | -            | -            | -            | -            | -  | -  |



angeloghezzi.it



Talicaadb



# FRESE A CANDELA

## con Testa Piana e Toriche



END MILLS FOR SPECIAL APPLICATIONS, FLAT HEAD OR WITH RADIUS



FRÄSER FÜR SPEZIELLE ANWENDUNGEN MIT FLACHER STIRNSCHNEIDE  
ODER MIT RADIUS



FRAISES POUR APPLICATIONS SPÉCIFIQUES À BOUT PLAT OU AVEC RAYON  
HEMISPHERIQUE



FRESAS PARA APLICACIONES ESPECÍFICAS DE CABEZA LLANA O TÓRICAS





# FRESE DI FINITURA IN METALLO DURO A ELEVATE PRESTAZIONI

SOLID CARBIDE END MILLS FOR FINISHING WITH HIGH PERFORMANCES

HOCHLEISTUNGS-SCHLICHTFRÄSER

FRAISES CARBURE MONOBLOC, HAUTE PERFORMANCES POUR LA FINITION

FRESAS DE ACABADO DE METAL DURO INTEGRAL, ALTO RENDIMIENTO

## FRESE DI FINITURA IN METALLO DURO A ELEVATE PRESTAZIONI

Le frese a candela e le frese toriche Talicarb in metallo duro offrono prestazioni superiori, affidabili e mirate.

- Geometrie specifiche per acciaio, acciaio inossidabile, leghe resistenti al calore.
- Tagliente standard, lungo, extra lungo ed extra corto per lavorazioni su fondo tasche.
- Design specifici con elevato numero di taglienti per applicazioni di finitura eccellenti.

## SOLID CARBIDE END MILLS FOR FINISHING WITH HIGH PERFORMANCES

Talicarb solid carbide end mills and toric end mills offer advanced, reliable and focused performances.

- Specific geometries for steel, stainless steel, high-temperature alloys.
- Standard cutting edge, long and extra-long series, stub length series for pocketing.
- Special design with a high number of flutes for excellent finishing applications.

## HOCHLEISTUNGS-SCHLICHTFRÄSER

Die Talicarb vhm und torusfräser bieten höhere, zuverlässige und genaue Leistungen.

- Bestimmte Geometrie für Stahl, rostbeständiger Stahl, wärmebeständige Legierungen.
- Standard Schneiden, lange und extra-lange Ausführung. Extra-kurze Ausführung für Taschenfräsen.

## FRAISES CARBURE MONOBLOC, HAUTE PERFORMANCES POUR LA FINITION

Les fraises carbure monobloc et fraises toriques Talicarb présentent d'excellentes performances de façon fiable et régulière.

- Geometries spécifiques pour l'acier, l'inox, les alliages réfractaires.
- Taille standard, disponibles en série longue, extra-longue. Extra courte pour usinage en poche.
- Design spécifiques avec un élevé numero de tailles pour applications de finition.

## FRESAS DE ACABADO DE METAL DURO INTEGRAL, ALTO RENDIMIENTO

Las fresas de metal duro integral y fresas tóricas de Talicarb ofrecen un rendimiento superior, específico y fiable.

- Geometrías específicas diseñadas para aceros, aceros inoxidables, aleaciones a altas temperaturas.
- Longitud estándar, larga, extralarga y extra corta para fresado de cajera.
- Diseños especiales con más labios para un acabado perfecto.



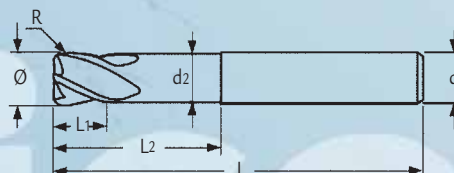


SOLID CARBIDE TORIC END MILLS - 3 FLUTES  
VOLLHARTMETALL TORUSFRÄSER - 3 SCHNEIDEN  
FRAISES TORIQUES EN CARBURE MONOBLOC - 3 DENTS  
FRESAS TÓRICAS DE METAL DURO INTEGRAL - 3 LABIOS

TALICARB NORM.  
TALICARB NORM.  
TALICARB NORM.  
TALICARB NORM.

[illegible]

■ **Ad esaurimento scorte** - Subject to availability until sold out - Solange der vorrat reicht - Jusqu'à Épuisement de stock - Hasta agotamiento del stock



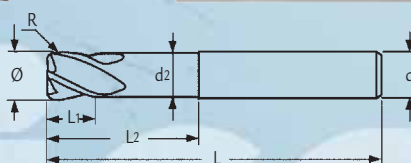






SOLID CARBIDE TORIC END MILLS - 6 FLUTES  
VOLLHARTMETALL TORUSFRÄSER - 6 SCHNEIDEN  
FRAISES TORIQUES EN CARBURE MONOBLOC - 6 DENTS  
FRESAS TÓRICAS DE METAL DURO INTEGRAL - 6 LABIOS

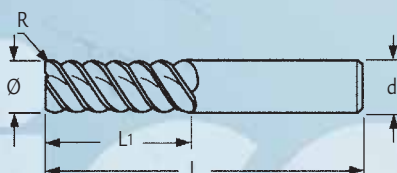
NORMAL SERIES  
NORMAL AUSFÜHRUNG  
SÉRIE NORMALE  
SERIE NORMAL

[illegible]



SOLID CARBIDE TORIC END MILLS - 6 FLUTES  
VOLLHARTMETALL TORUSFRÄSER - 6 SCHNEIDEN  
FRAISES TORIQUES EN CARBURE MONOBLOC - 6 DENTS  
FRESAS TÓRICAS DE METAL DURO INTEGRAL - 6 LABIOS

NORMAL SERIES  
NORMAL AUSFÜHRUNG  
SÉRIE NORMALE  
SERIE NORMAL

[illegible]

## SERIE NORMALE

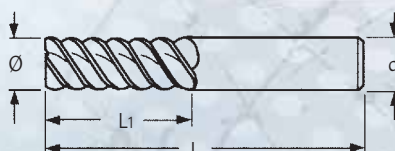
NORMAL SERIES  
NORMAL AUSFÜHRUNG  
SÉRIE NORMALE  
SERIE NORMAL

# FRESE A CANDELA

## MULTITAGLIENTE IN METALLO DURO INTEGRALE

SOLID CARBIDE END MILLS - MULTI-FLUTES  
VOLLHARTMETALL FRÄSER - MULTI-SCHNEIDEN  
FRAISES EN CARBURE MONOBLOC - MULTI-DENTS  
FRESAS DE METAL DURO INTEGRAL - LABIOS MÚLTIPLES

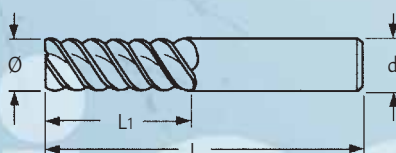
# 1350XT

[illegible]



SOLID CARBIDE END MILLS - MULTI-FLUTES  
VOLLHARTMETALL FRÄSER - MULTI-SCHNEIDEN  
FRAISES EN CARBURE MONOBLOC - MULTI-DENTS  
FRESAS DE METAL DURO INTEGRAL - LABIOS MÚLTIPLES

LONG SERIES  
LANGE AUSFÜHRUNG  
SÉRIE LONGUE  
SERIE LARGA  
SERIE LUNGA

[illegible]

# PARAMETRI DI TAGLIO

**PER FRESE SENZA RIVESTIMENTO =  $V_c$  e  $F_z \times 0,8$**

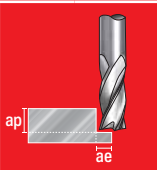
For end mill without coating - Für Fräser ohne Beschichtung  
Pour fraises sans revêtement - Para fresas sin recubrimiento



CUTTING PARAMETERS  
SCHNITTDATEN  
PARAMÈTRES DE COUPE  
PARAMETROS DE CORTE

## FRESE A CANDELA CON TESTA PIANA E TORICHE: 3/6 TAGLI

End mills with flat head and with radius - Fräser mit flacher Stirnschneide oder mit Radius - Fraises à bout plat ou avec rayon semisphérique  
Fresas de cabeza llana o tóricas: 3/6 Flutes - Schneiden - Dents - Labios

| GRUPPO MATERIALI<br>Material Groups<br>Material-Beispiele<br>Groupes de Matériaux<br>Grupos de Materiales |  |        |  | VC<br>m/min | <br><b>Fz [mm]</b><br><b>AVANZAMENTO AL DENTE</b><br>Tooth Feed - Zahnvorschub - Avancement au dent - Avance al labio |                |                |              |              |              |              |              |              |              |              |    |   |
|-----------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|--------|-----------------------------------------------------------------------------------|-------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|----------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|----|---|
|                                                                                                           | ap                                                                                | ae     | ap                                                                                |             | 2                                                                                                                                                                                                       | 4              | 6              | 8            | 10           | 12           | 14           | 16           | 18           | 20           | 22           | 25 |   |
|                                                                                                           | ap                                                                                | ae     | ap                                                                                |             |                                                                                                                                                                                                         |                |                |              |              |              |              |              |              |              |              |    |   |
|                          | < 800 N/mm <sup>2</sup>                                                           | 1,25xØ | 0,3xØ                                                                             | -           | 90 - 130                                                                                                                                                                                                | 0,015          | 0,015<br>0,030 | 0,03<br>0,04 | 0,05<br>0,06 | 0,07<br>0,08 | 0,08<br>0,09 | 0,09<br>0,10 | 0,10<br>0,12 | 0,12<br>0,14 | 0,14<br>0,15 | -  | - |
|                         | < 1100 N/<br>mm <sup>2</sup>                                                      | 1,25xØ | 0,2xØ                                                                             | -           | 80 - 120                                                                                                                                                                                                | 0,005<br>0,010 | 0,02<br>0,04   | 0,04<br>0,06 | 0,06<br>0,08 | 0,08<br>0,10 | 0,10<br>0,12 | 0,12<br>0,14 | 0,14<br>0,16 | 0,16<br>0,18 | 0,18<br>0,20 | -  | - |
|                        | < 1300 N/<br>mm <sup>2</sup>                                                      | 1,25xØ | 0,2xØ                                                                             | -           | 70 - 100                                                                                                                                                                                                | 0,003<br>0,005 | 0,005<br>0,020 | 0,02<br>0,04 | 0,04<br>0,06 | 0,06<br>0,08 | 0,08<br>0,10 | 0,10<br>0,12 | 0,12<br>0,14 | 0,14<br>0,16 | 0,16<br>0,18 | -  | - |
|                        | > 800 N/mm <sup>2</sup>                                                           | 1xØ    | 0,25xØ                                                                            | -           | 60 - 80                                                                                                                                                                                                 | 0,01           | 0,01<br>0,02   | 0,02<br>0,03 | 0,03<br>0,04 | 0,04<br>0,05 | 0,05<br>0,06 | 0,07<br>0,08 | 0,08<br>0,09 | 0,09<br>0,10 | 0,11<br>0,12 | -  | - |
|                        | GG                                                                                | 1,5xØ  | 0,3xØ                                                                             | -           | 90 - 130                                                                                                                                                                                                | 0,015          | 0,015<br>0,030 | 0,03<br>0,04 | 0,05<br>0,06 | 0,07<br>0,08 | 0,08<br>0,09 | 0,09<br>0,1  | 0,10<br>0,12 | 0,12<br>0,14 | 0,14<br>0,15 | -  | - |
|                        | GGG                                                                               | 1,25xØ | 0,3xØ                                                                             | -           | 80 - 110                                                                                                                                                                                                | 0,01           | 0,01<br>0,02   | 0,02<br>0,03 | 0,03<br>0,04 | 0,04<br>0,05 | 0,05<br>0,06 | 0,07<br>0,08 | 0,08<br>0,09 | 0,09<br>0,10 | 0,11<br>0,12 | -  | - |
|                        | Alluminio                                                                         | -      | -                                                                                 | -           | -                                                                                                                                                                                                       | -              | -              | -            | -            | -            | -            | -            | -            | -            | -            | -  | - |
|                        | Non metalli                                                                       | -      | -                                                                                 | -           | -                                                                                                                                                                                                       | -              | -              | -            | -            | -            | -            | -            | -            | -            | -            | -  | - |
|                        | Titanio                                                                           | 1xØ    | 0,25xØ                                                                            | -           | 40 - 60                                                                                                                                                                                                 | 0,01           | 0,01<br>0,02   | 0,02<br>0,03 | 0,03<br>0,04 | 0,04<br>0,05 | 0,05<br>0,06 | 0,07<br>0,08 | 0,08<br>0,09 | 0,09<br>0,1  | 0,11<br>0,12 | -  | - |
|                        | Leghe speciali a base Ni                                                          | -      | -                                                                                 | -           | -                                                                                                                                                                                                       | -              | -              | -            | -            | -            | -            | -            | -            | -            | -            | -  | - |
|                        | Temprati 38 / 48 HRC                                                              | 1xd    | 0,25xd                                                                            | -           | 15 - 40                                                                                                                                                                                                 | 0,005<br>0,01  | 0,02<br>0,04   | 0,04<br>0,06 | 0,06<br>0,08 | 0,08<br>0,1  | 0,1<br>0,12  | 0,12<br>0,14 | 0,14<br>0,16 | 0,16<br>0,18 | 0,18<br>0,2  | -  | - |
|                        | Temprati 48 / 58 HRC                                                              | 1,5xd  | 0,2xd                                                                             | -           | 20 - 50                                                                                                                                                                                                 | 0,01           | 0,01           | 0,02         | 0,03         | 0,04         | 0,05         | 0,07         | 0,08         | 0,09         | 0,11         | -  | - |
|                        | Temprati 58 / 68 HRC                                                              | -      | -                                                                                 | -           | -                                                                                                                                                                                                       | -              | -              | -            | -            | -            | -            | -            | -            | -            | -            | -  | - |

#### **FRESE POWER:**

- Ridurre il numero di utensili necessari
- Offrire un'eccellente evacuazione dei trucioli
- Ottenere la massima produttività
- Aumentare i volumi di trucioli asportati
- Aumentare la velocità di taglio
- Garantire precisione
- Ridurre i costi di produzione
- Fornire una lunga durata dell'utensile

#### **POWER END MILLS:**

- Reducing the number of necessary tools
- Offering an excellent chip evacuation
- Obtaining maximum productivity
- Increasing the volumes of eliminated chips
- Increasing cutting speed
- Guaranteeing precision
- Reducing production costs
- Allowing a long tool life

#### **POWER FRÄSER:**

- Reduziert die Anzahl der benötigten Werkzeuge
- Bietet eine ausgezeichnete Spanabfuhr
- Erhalten Sie die maximale Produktivität
- Erhöhung die Volumens der Spanabfuhr
- Erhöhung der Schnittgeschwindigkeit
- Gewährleistung der Genauigkeit
- Reduzierung der Produktionskosten
- Ermöglichen eine lange Lebensdauer

#### **FRAISES POWER:**

- Réduire le numéro des outils pas nécessaires
- Offrir une très bonne évacuation du copeau
- Obtenir la meilleure productivité
- Augmenter les volumes du copeau évacué
- Augmenter la vitesse de coupe

- Assurer precision
- Réduire le coût de production
- Permettre une longue durée de vie l'outil

#### **FRESAS POWER:**

- Reducir el numero de herramientas innecesarias
- Ofrecer una excelente evacuación de viruta
- Obtener la máxima productividad
- Incrementar el volumen de evacuación de virutas
- Incrementar (aumentando) la velocidad de corte
- Asegurar precision
- Reducir los costes de produccion
- Permitir una larga vida de herramienta

# Frese Power



2015





# FRESE A CANDELA POWER con testa Piana e Toriche



POWER END MILLS WITH FLAT HEAD OR TORIC



POWER FRÄSER MIT FLACHER STIRNSCHNEIDE ODER TORUS



FRAISES POWER À BOUT PLAT OU TORIQUES



FRESAS POWER DE CABEZA LLANA O TÓRICAS



# FRESE POWER A CANDELA

## A 2 TAGLI IN MICROGRANA ULTRAFINE

POWER END MILLS - 2 FLUTES - SUB-MICROGRAIN  
 POWER FRÄSER - 2 NUTEN - HARTMETALLQUALITÄT: ULTRA-FEINSTKORN  
 FRAISES POWER - 2 DENTS - MICRO-GRAIN ULTRAFIN  
 FRESAS POWER - 2 LABIOS - SUB-MICROGRANO

### SERIE NORMALE

NORMAL SERIES  
 NORMAL AUSFÜHRUNG  
 SÉRIE NORMALE  
 SERIE NORMAL



## 1417XT



| Ø<br>mm | L<br>mm | L <sub>1</sub><br>mm | d<br>mm | Z | 1417XT<br>€ |
|---------|---------|----------------------|---------|---|-------------|
| 0.3     | 38      | 1                    | 3       | 2 | 23,65       |
| 0.4     | 38      | 2.5                  | 3       | 2 | 23,65       |
| 0.5     | 38      | 2.5                  | 3       | 2 | 23,65       |
| 0.6     | 38      | 3                    | 3       | 2 | 23,65       |
| 0.8     | 38      | 4                    | 3       | 2 | 23,65       |
| 1       | 38      | 5                    | 3       | 2 | 23,65       |
| 1.2     | 38      | 5                    | 3       | 2 | 23,65       |
| 1.5     | 38      | 5                    | 3       | 2 | 23,65       |
| 1.6     | 38      | 6                    | 3       | 2 | 23,65       |
| 1.8     | 38      | 6                    | 3       | 2 | 23,65       |
| 2       | 38      | 9                    | 3       | 2 | 23,65       |
| 2.4     | 38      | 10                   | 3       | 2 | 23,65       |
| 2.5     | 38      | 10                   | 3       | 2 | 23,65       |
| 2.8     | 38      | 10                   | 3       | 2 | 23,65       |
| 3       | 38      | 12                   | 3       | 2 | 23,65       |

## 1412XT



| Ø<br>mm | L<br>mm | L <sub>1</sub><br>mm | d<br>mm | Z | 1412XT<br>€ |
|---------|---------|----------------------|---------|---|-------------|
| 1       | 39      | 3                    | 3       | 2 | 18,85       |
| 1.5     | 39      | 5                    | 3       | 2 | 17,40       |
| 2       | 39      | 7                    | 3       | 2 | 17,40       |
| 2.5     | 39      | 8                    | 3       | 2 | 17,40       |
| 3       | 39      | 10                   | 3       | 2 | 17,40       |
| 4       | 51      | 14                   | 6       | 2 | 23,20       |
| 5       | 51      | 16                   | 6       | 2 | 25,60       |
| 6       | 64      | 19                   | 6       | 2 | 33,45       |
| 7       | 64      | 19                   | 8       | 2 | 43,10       |
| 8       | 64      | 21                   | 8       | 2 | 47,20       |
| 9       | 70      | 22                   | 10      | 2 | 64,70       |
| 10      | 70      | 25                   | 10      | 2 | 64,70       |
| 12      | 76      | 25                   | 12      | 2 | 89,40       |
| 14      | 89      | 30                   | 14      | 2 | 121,50      |
| 16      | 89      | 32                   | 16      | 2 | 140,00      |
| 18      | 102     | 35                   | 18      | 2 | 198,00      |
| 20      | 102     | 38                   | 20      | 2 | 238,50      |
| 22      | 102     | 38                   | 22      | 2 | 301,00      |
| 25      | 102     | 38                   | 25      | 2 | 347,00      |



**Rivestimento X-Treme**  
 X-Treme coating  
 X-Treme-Beschichtung  
 Revêtement X-Treme  
 Recubrimiento X-Treme

### TOLLERANZA - TOLERANCE - TOLERANZ - TOLÉRANCE - TOLERANCIA

| Diametri<br>Diameters | Tolleranza del diametro<br>Diameter tolerance | Tolleranza del gambo<br>Shank tolerance |
|-----------------------|-----------------------------------------------|-----------------------------------------|
| da 1 mm a 3 mm        | +0.000 mm -0.025 mm                           | +0.000 mm -0.013 mm                     |
| da 4 mm a 25 mm       | +0.000 mm -0.038 mm                           | +0.000 mm -0.013 mm                     |





## SERIE NORMALE

NORMAL SERIES  
NORMAL AUSFÜHRUNG  
SÉRIE NORMALE  
SERIE NORMAL

# FRESE POWER TORICHE

## A 2 TAGLI IN MICROGRANA ULTRAFINE

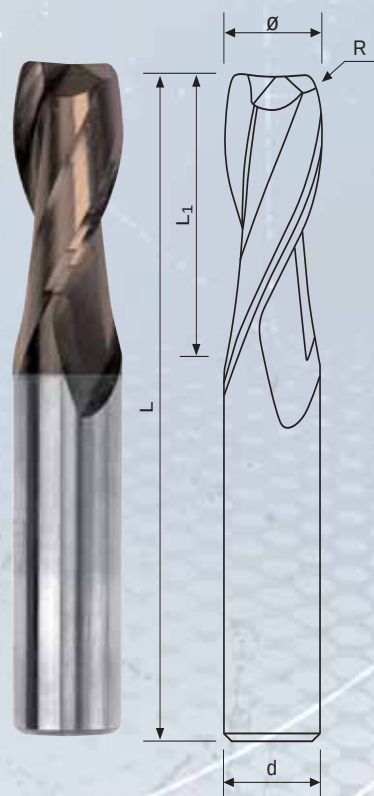
POWER TORIC END MILLS - 2 FLUTES - SUB-MICROGRAIN  
POWER TORUSFRÄSER - 2 NUTEN - HARTMETALLQUALITÄT: ULTRA-FEINSTKORN  
FRAISES POWER TORIQUE À 2 DENTS - MICRO-GRAIN ULTRAFIN  
FRESAS POWER TÓRICAS - 2 LABIOS - SUB-MICROGRANO

## 1432XT



| Ø<br>mm | R   | L<br>mm | L <sub>1</sub><br>mm | d<br>mm | Z | 1432XT<br>€ |
|---------|-----|---------|----------------------|---------|---|-------------|
| 3       | 0.2 | 39      | 10                   | 3       | 2 | 23,25       |
| 3       | 0.5 | 39      | 10                   | 3       | 2 | 23,25       |
| 4       | 0.2 | 51      | 14                   | 6       | 2 | 30,95       |
| 4       | 0.5 | 51      | 14                   | 6       | 2 | 30,95       |
| 4       | 1   | 51      | 14                   | 6       | 2 | 30,95       |
| 5       | 0.2 | 51      | 16                   | 6       | 2 | 34,15       |
| 5       | 0.5 | 51      | 16                   | 6       | 2 | 34,15       |
| 5       | 1   | 51      | 16                   | 6       | 2 | 34,15       |
| 6       | 0.2 | 64      | 19                   | 6       | 2 | 44,50       |
| 6       | 0.5 | 64      | 19                   | 6       | 2 | 44,50       |
| 6       | 1   | 64      | 19                   | 6       | 2 | 44,50       |
| 6       | 1.5 | 64      | 19                   | 6       | 2 | 44,50       |
| 6       | 2   | 64      | 19                   | 6       | 2 | 44,50       |
| 8       | 0.5 | 64      | 21                   | 8       | 2 | 62,90       |
| 8       | 1   | 64      | 21                   | 8       | 2 | 62,90       |
| 8       | 1.5 | 64      | 21                   | 8       | 2 | 62,90       |
| 8       | 2   | 64      | 21                   | 8       | 2 | 62,90       |
| 10      | 0.5 | 70      | 25                   | 10      | 2 | 86,20       |
| 10      | 1   | 70      | 25                   | 10      | 2 | 86,20       |
| 10      | 1.5 | 70      | 25                   | 10      | 2 | 86,20       |
| 10      | 2   | 70      | 25                   | 10      | 2 | 86,20       |
| 10      | 3   | 70      | 25                   | 10      | 2 | 86,20       |
| 12      | 0.5 | 76      | 25                   | 12      | 2 | 119,50      |
| 12      | 1   | 76      | 25                   | 12      | 2 | 119,50      |
| 12      | 1.5 | 76      | 25                   | 12      | 2 | 119,50      |
| 12      | 2   | 76      | 25                   | 12      | 2 | 119,50      |

→1-2



**Rivestimento X-Treme**  
X-Treme coating  
X-Treme-Beschichtung  
Revêtement X-Treme  
Recubrimiento X-Treme

## TOLLERANZA - TOLERANCE - TOLERANZ - TOLÉRANCE - TOLERANCIA

| Diametri<br>Diameters | Tolleranza del diametro<br>Diameter tolerance | Tolleranza del gambo<br>Shank tolerance |
|-----------------------|-----------------------------------------------|-----------------------------------------|
| da 3 mm a 25 mm       | +0.000 mm -0.038 mm                           | +0.000 mm -0.013 mm                     |



# FRESE POWER TORICHE

A 2 TAGLI IN MICROGRANA ULTRAFINE

POWER TORIC END MILLS - 2 FLUTES - SUB-MICROGRAIN  
POWER TORUSFRÄSER - 2 NUTEN - HARTMETALLQUALITÄT: ULTRA-FEINSTKORN  
FRAISES POWER TORIQUE À 2 DENTS - MICRO-GRAIN ULTRAFIN  
FRESAS POWER TÓRICAS - 2 LABIOS - SUB-MICROGRANO

## SERIE NORMALE

NORMAL SERIES  
NORMAL AUSFÜHRUNG  
SÉRIE NORMALE  
SERIE NORMAL

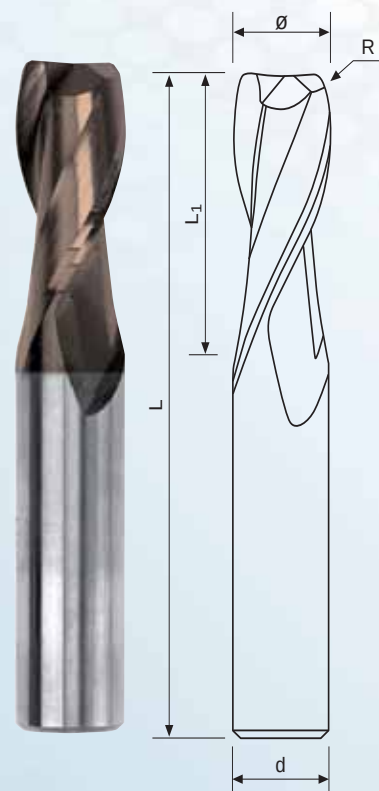


## 1432XT



| Ø<br>mm | R   | L<br>mm | L <sub>1</sub><br>mm | d<br>mm | Z | 1432XT<br>€ |
|---------|-----|---------|----------------------|---------|---|-------------|
| 12      | 3   | 76      | 25                   | 12      | 2 | 119,50      |
| 14      | 0.5 | 89      | 30                   | 14      | 2 | 162,00      |
| 14      | 1   | 89      | 30                   | 14      | 2 | 162,00      |
| 14      | 1.5 | 89      | 30                   | 14      | 2 | 162,00      |
| 14      | 2   | 89      | 30                   | 14      | 2 | 162,00      |
| 16      | 0.5 | 89      | 32                   | 16      | 2 | 186,50      |
| 16      | 1   | 89      | 32                   | 16      | 2 | 186,50      |
| 16      | 1.5 | 89      | 32                   | 16      | 2 | 186,50      |
| 16      | 2   | 89      | 32                   | 16      | 2 | 186,50      |
| 18      | 0.5 | 102     | 35                   | 18      | 2 | 264,00      |
| 18      | 1   | 102     | 35                   | 18      | 2 | 264,00      |
| 18      | 1.5 | 102     | 35                   | 18      | 2 | 264,00      |
| 18      | 2   | 102     | 35                   | 18      | 2 | 264,00      |
| 20      | 0.5 | 102     | 38                   | 20      | 2 | 318,00      |
| 20      | 1   | 102     | 38                   | 20      | 2 | 318,00      |
| 20      | 1.5 | 102     | 38                   | 20      | 2 | 318,00      |
| 20      | 2   | 102     | 38                   | 20      | 2 | 318,00      |
| 22      | 0.5 | 102     | 38                   | 22      | 2 | 400,00      |
| 22      | 1   | 102     | 38                   | 22      | 2 | 400,00      |
| 22      | 1.5 | 102     | 38                   | 22      | 2 | 400,00      |
| 22      | 2   | 102     | 38                   | 22      | 2 | 400,00      |
| 25      | 0.5 | 102     | 38                   | 25      | 2 | 463,00      |
| 25      | 1   | 102     | 38                   | 25      | 2 | 463,00      |
| 25      | 1.5 | 102     | 38                   | 25      | 2 | 463,00      |
| 25      | 2   | 102     | 38                   | 25      | 2 | 463,00      |

→2-2



### Rivestimento X-Treme

X-Treme coating  
X-Treme-Beschichtung  
Revêtement X-Treme  
Recubrimiento X-Treme



### TOLLERANZA - TOLERANCE - TOLERANZ - TOLÉRANCE - TOLERANCIA

| Diametri<br>Diameters | Tolleranza del diametro<br>Diameter tolerance | Tolleranza del gambo<br>Shank tolerance |
|-----------------------|-----------------------------------------------|-----------------------------------------|
| da 3 mm a 25 mm       | +0.000 mm -0.038 mm                           | +0.000 mm -0.013 mm                     |



## SERIE LUNGA

LONG SERIES  
LANGE AUSFÜHRUNG  
SÉRIE LONGUE  
SERIE LARGA

# FRESE POWER TORICHE

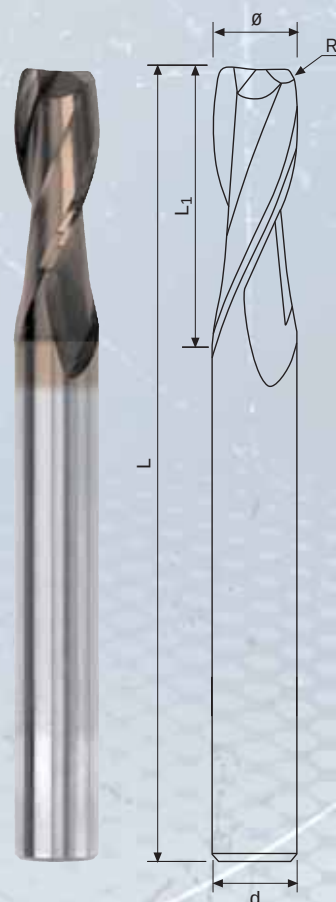
## A 2 TAGLI IN MICROGRANA ULTRAFINE

POWER TORIC END MILLS - 2 FLUTES - SUB-MICROGRAIN  
POWER TORUSFRÄSER - 2 NUTEN - HARTMETALLQUALITÄT: ULTRA-FEINSTKORN  
FRAISES POWER TORIQUE À 2 DENTS - MICRO-GRAIN ULTRAFIN  
FRESAS POWER TÓRICAS - 2 LABIOS - SUB-MICROGRANO

## 1422XT



| Ø<br>mm | R   | L<br>mm | L <sub>1</sub><br>mm | d<br>mm | Z | 1422XT<br>€ |
|---------|-----|---------|----------------------|---------|---|-------------|
| 3       | 0.2 | 60      | 8                    | 6       | 2 | 26,25       |
| 3       | 0.5 | 60      | 8                    | 6       | 2 | 26,25       |
| 4       | 0.2 | 70      | 11                   | 6       | 2 | 33,95       |
| 4       | 0.5 | 70      | 11                   | 6       | 2 | 33,95       |
| 4       | 1   | 70      | 11                   | 6       | 2 | 33,95       |
| 5       | 0.2 | 80      | 13                   | 6       | 2 | 37,80       |
| 5       | 0.5 | 80      | 13                   | 6       | 2 | 37,80       |
| 5       | 1   | 80      | 13                   | 6       | 2 | 37,80       |
| 6       | 0.2 | 90      | 20                   | 6       | 2 | 48,20       |
| 6       | 0.5 | 90      | 20                   | 6       | 2 | 48,20       |
| 6       | 1   | 90      | 20                   | 6       | 2 | 48,20       |
| 6       | 1.5 | 90      | 20                   | 6       | 2 | 48,20       |
| 6       | 2   | 90      | 20                   | 6       | 2 | 48,20       |
| 8       | 0.5 | 100     | 28                   | 8       | 2 | 68,80       |
| 8       | 1   | 100     | 28                   | 8       | 2 | 68,80       |
| 8       | 1.5 | 100     | 28                   | 8       | 2 | 68,80       |
| 8       | 2   | 100     | 28                   | 8       | 2 | 68,80       |
| 10      | 0.5 | 100     | 34                   | 10      | 2 | 94,00       |
| 10      | 1   | 100     | 34                   | 10      | 2 | 94,00       |
| 10      | 1.5 | 100     | 34                   | 10      | 2 | 94,00       |
| 10      | 2   | 100     | 34                   | 10      | 2 | 94,00       |
| 12      | 0.5 | 110     | 40                   | 12      | 2 | 128,00      |
| 12      | 1   | 110     | 40                   | 12      | 2 | 128,00      |
| 12      | 1.5 | 110     | 40                   | 12      | 2 | 128,00      |
| 12      | 2   | 110     | 40                   | 12      | 2 | 128,00      |
| 12      | 3   | 110     | 40                   | 12      | 2 | 128,00      |



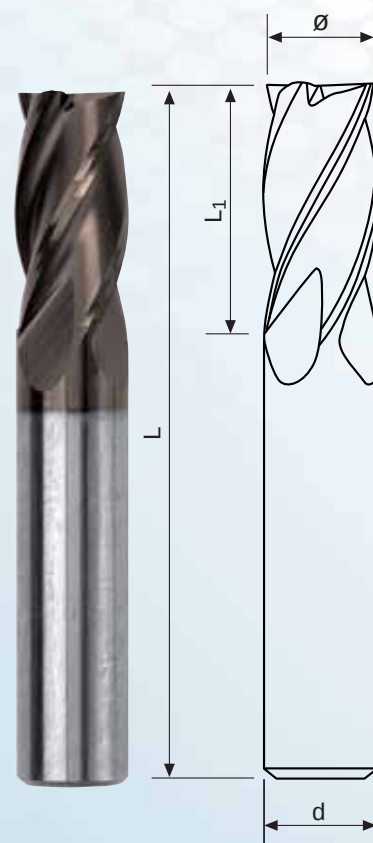
**Rivestimento X-Treme**  
X-Treme coating  
X-Treme-Beschichtung  
Revêtement X-Treme  
Recubrimiento X-Treme

### TOLLERANZA - TOLERANCE - TOLERANZ - TOLÉRANCE - TOLERANCIA

| Diametri<br>Diameters | Tolleranza del diametro<br>Diameter tolerance | Tolleranza del gambo<br>Shank tolerance |
|-----------------------|-----------------------------------------------|-----------------------------------------|
| da 3 mm a 12 mm       | +0.000 mm -0.038 mm                           | +0.000 mm -0.013 mm                     |

POWER END MILLS - 4 FLUTES - SUB-MICROGRAIN  
POWER FRÄSER - 4 NUTEN - HARTMETALLQUALITÄT: ULTRA-FEINSTKORN  
FRAISES POWER - 4 DENTS - MICRO-GRAIN ULTRAFIN  
FRESAS POWER - 4 LABIOS - SUB-MICROGRANO

NORMAL SERIES  
NORMAL AUSFÜHRUNG  
SÉRIE NORMALE  
SERIE NORMAL

[illegible]

X-Treme coating  
X-Treme-Beschichtung  
Revêtement X-Treme  
Recubrimiento X-Treme

| Diametri<br>Diameters | Tolleranza del diametro<br>Diameter tolerance | Tolleranza del gambo<br>Shank tolerance |
|-----------------------|-----------------------------------------------|-----------------------------------------|
| da 1 mm a 3 mm        | +0.000 mm -0.025 mm                           | +0.000 mm -0.013 mm                     |
| da 4 mm a 25 mm       | +0.000 mm -0.038 mm                           | +0.000 mm -0.013 mm                     |



## SERIE NORMALE

NORMAL SERIES  
NORMAL AUSFÜHRUNG  
SÉRIE NORMALE  
SERIE NORMAL

# FRESE POWER TORICHE

## A 4 TAGLI IN MICROGRANA ULTRAFINE

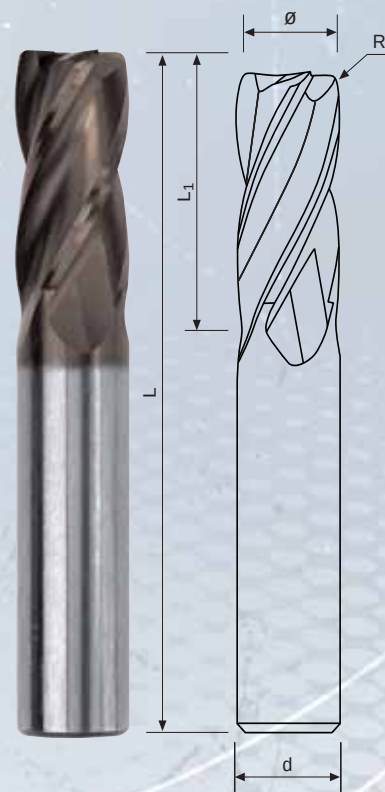
POWER TORIC END MILLS - 4 FLUTES - SUB-MICROGRAIN  
POWER TORUSFRÄSER - 4 NUTEN - HARTMETALLQUALITÄT: ULTRA-FEINSTKORN  
FRAISES POWER TORIQUE À 4 DENTS - MICRO-GRAIN ULTRAFIN  
FRESAS POWER TÓRICAS - 4 LABIOS - SUB-MICROGRANO

## 1434XT



| Ø<br>mm | R   | L<br>mm | L <sub>1</sub><br>mm | d<br>mm | Z | 1434XT<br>€ |
|---------|-----|---------|----------------------|---------|---|-------------|
| 3       | 0.2 | 39      | 10                   | 3       | 4 | 23,25       |
| 3       | 0.5 | 39      | 10                   | 3       | 4 | 23,25       |
| 4       | 0.2 | 51      | 14                   | 6       | 4 | 30,95       |
| 4       | 0.5 | 51      | 14                   | 6       | 4 | 30,95       |
| 4       | 1   | 51      | 14                   | 6       | 4 | 30,95       |
| 5       | 0.2 | 51      | 16                   | 6       | 4 | 34,15       |
| 5       | 0.5 | 51      | 16                   | 6       | 4 | 34,15       |
| 5       | 1   | 51      | 16                   | 6       | 4 | 34,15       |
| 6       | 0.2 | 64      | 19                   | 6       | 4 | 44,50       |
| 6       | 0.5 | 64      | 19                   | 6       | 4 | 44,50       |
| 6       | 1   | 64      | 19                   | 6       | 4 | 44,50       |
| 6       | 1.5 | 64      | 19                   | 6       | 4 | 44,50       |
| 6       | 2   | 64      | 19                   | 6       | 4 | 44,50       |
| 8       | 0.5 | 64      | 21                   | 8       | 4 | 62,90       |
| 8       | 1   | 64      | 21                   | 8       | 4 | 62,90       |
| 8       | 1.5 | 64      | 21                   | 8       | 4 | 62,90       |
| 8       | 2   | 64      | 21                   | 8       | 4 | 62,90       |
| 10      | 0.5 | 70      | 25                   | 10      | 4 | 86,20       |
| 10      | 1   | 70      | 25                   | 10      | 4 | 86,20       |
| 10      | 1.5 | 70      | 25                   | 10      | 4 | 86,20       |
| 10      | 2   | 70      | 25                   | 10      | 4 | 86,20       |
| 10      | 3   | 70      | 25                   | 10      | 4 | 86,20       |
| 12      | 0.5 | 76      | 25                   | 12      | 4 | 119,50      |
| 12      | 1   | 76      | 25                   | 12      | 4 | 119,50      |
| 12      | 1.5 | 76      | 25                   | 12      | 4 | 119,50      |
| 12      | 2   | 76      | 25                   | 12      | 4 | 119,50      |

→1-2



**Rivestimento X-Treme**  
X-Treme coating  
X-Treme-Beschichtung  
Revêtement X-Treme  
Recubrimiento X-Treme

## TOLLERANZA - TOLERANCE - TOLERANZ - TOLÉRANCE - TOLERANCIA

| Diametri<br>Diameters | Tolleranza del diametro<br>Diameter tolerance | Tolleranza del gambo<br>Shank tolerance |
|-----------------------|-----------------------------------------------|-----------------------------------------|
| da 3 mm a 25 mm       | +0.000 mm -0.038 mm                           | +0.000 mm -0.013 mm                     |

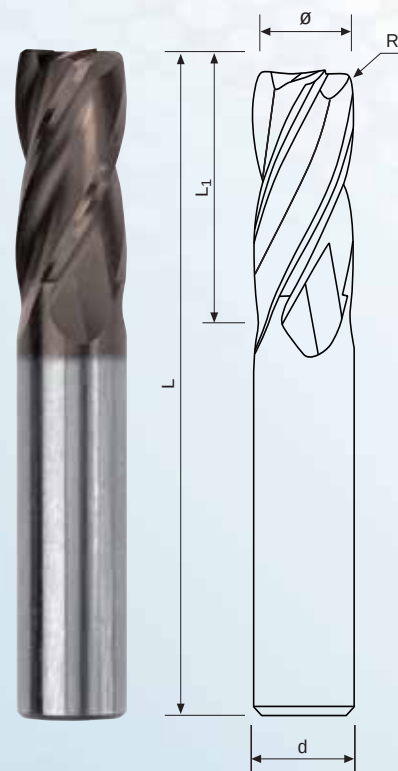


POWER TORIC END MILLS - 4 FLUTES - SUB-MICROGRAIN  
POWER TORUSFRÄSER - 4 NUTEN - HARTMETALLQUALITÄT: ULTRA-FEINSTKORN  
FRAISES POWER TORIQUE À 4 DENTS - MICRO-GRAIN ULTRAFIN  
FRESAS POWER TÓRICAS - 4 LABIOS - SUB-MICROGRANO

NORMAL SERIES  
NORMAL AUSFÜHRUNG  
SÉRIE NORMALE  
SERIE NORMAL

[illegible]

→ 2-2



**Rivestimento X-Treme**  
X-Treme coating  
X-Treme-Beschichtung  
Revêtement X-Treme  
Recubrimiento X-Treme

## Diametri

da 3 mm a 25 mm

### Tolleranza del diametro

+.000 mm -.038 mm

### Tolleranza del gambo

+0.000 mm -0.013 mm



## SERIE LUNGA

EXTENDED LENGTH  
SÉRIE LONGUE  
ÜBERLÄNGE  
SERIE LARGA

# FRESE POWER TORICHE

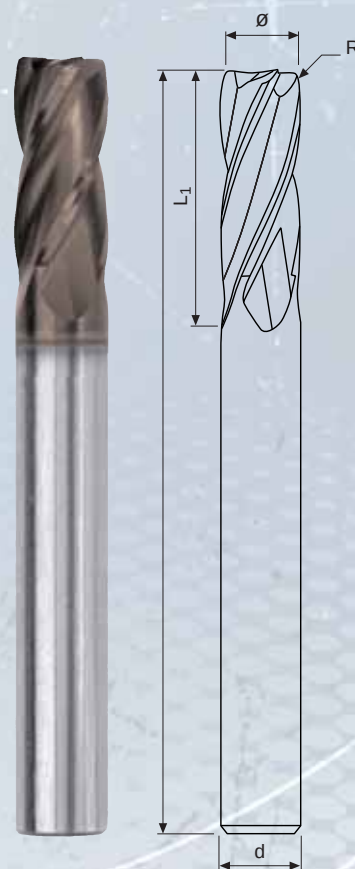
## A 4 TAGLI IN MICROGRANA ULTRAFINE

POWER TORIC END MILLS - 4 FLUTES - SUB-MICROGRAIN  
POWER TORUSFRÄSER - 4 NUTEN - HARTMETALLQUALITÄT: ULTRA-FEINKORN  
FRAISES POWER TORIQUE À 4 DENTS - MICRO-GRAIN ULTRAFIN  
FRESAS POWER TÓRICAS - 4 LABIOS - SUB-MICROGRANO

## 1424XT



| Ø<br>mm | R   | L<br>mm | L <sub>1</sub><br>mm | d<br>mm | Z | 1424XT<br>€ |
|---------|-----|---------|----------------------|---------|---|-------------|
| 3       | 0.2 | 60      | 8                    | 6       | 4 | 26,25       |
| 3       | 0.5 | 60      | 8                    | 6       | 4 | 26,25       |
| 4       | 0.2 | 70      | 11                   | 6       | 4 | 33,95       |
| 4       | 0.5 | 70      | 11                   | 6       | 4 | 33,95       |
| 4       | 1   | 70      | 11                   | 6       | 4 | 33,95       |
| 5       | 0.2 | 80      | 13                   | 6       | 4 | 37,80       |
| 5       | 0.5 | 80      | 13                   | 6       | 4 | 37,80       |
| 5       | 1   | 80      | 13                   | 6       | 4 | 37,80       |
| 6       | 0.2 | 90      | 20                   | 6       | 4 | 47,50       |
| 6       | 0.5 | 90      | 20                   | 6       | 4 | 47,50       |
| 6       | 1   | 90      | 20                   | 6       | 4 | 47,50       |
| 6       | 1.5 | 90      | 20                   | 6       | 4 | 47,50       |
| 6       | 2   | 90      | 20                   | 6       | 4 | 47,50       |
| 8       | 0.5 | 100     | 28                   | 8       | 4 | 68,80       |
| 8       | 1   | 100     | 28                   | 8       | 4 | 68,80       |
| 8       | 1.5 | 100     | 28                   | 8       | 4 | 68,80       |
| 8       | 2   | 100     | 28                   | 8       | 4 | 68,80       |
| 10      | 0.5 | 100     | 34                   | 10      | 4 | 94,00       |
| 10      | 1   | 100     | 34                   | 10      | 4 | 94,00       |
| 10      | 1.5 | 100     | 34                   | 10      | 4 | 94,00       |
| 10      | 2   | 100     | 34                   | 10      | 4 | 94,00       |
| 10      | 3   | 100     | 34                   | 10      | 4 | 94,00       |
| 12      | 0.5 | 110     | 40                   | 12      | 4 | 128,00      |
| 12      | 1   | 110     | 40                   | 12      | 4 | 122,00      |
| 12      | 1.5 | 110     | 40                   | 12      | 4 | 128,00      |
| 12      | 2   | 110     | 40                   | 12      | 4 | 128,00      |
| 12      | 3   | 110     | 40                   | 12      | 4 | 128,00      |



**Rivestimento X-Treme**  
X-Treme coating  
X-Treme-Beschichtung  
Revêtement X-Treme  
Recubrimiento X-Treme

### TOLLERANZA - TOLERANCE - TOLERANZ - TOLÉRANCE - TOLERANCIA

| Diametri<br>Diameters | Tolleranza del diametro<br>Diameter tolerance | Tolleranza del gambo<br>Shank tolerance |
|-----------------------|-----------------------------------------------|-----------------------------------------|
| da 3 mm a 12 mm       | +0.000 mm -0.038 mm                           | +0.000 mm -0.013 mm                     |

# FRESE POWER TORICHE

## A 4 TAGLI IN MICROGRANA ULTRAFINE

POWER TORIC END MILLS - 4 FLUTES - SUB-MICROGRAIN  
 POWER TORUSFRÄSER - 4 NUTEN - HARTMETALLQUALITÄT: ULTRA-FEINSTKORN  
 FRAISES POWER TORIQUE À 4 DENTS - MICRO-GRAIN ULTRAFIN  
 FRESAS POWER TÓRICAS - 4 LABIOS - SUB-MICROGRANO

### SERIE LUNGA

LONG SERIES  
 LANGE AUSFÜHRUNG  
 SÉRIE LONGUE  
 SERIE LARGA

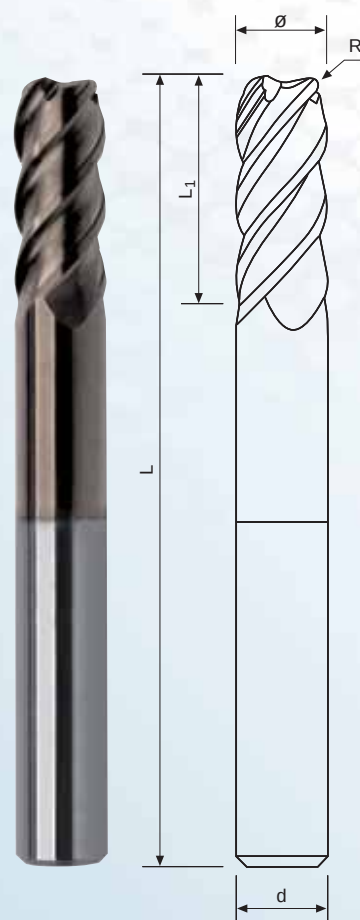


## 1452XT



| Ø<br>mm | R   | L<br>mm | L <sub>1</sub><br>mm | d<br>mm | Z | 1452XT<br>€ |
|---------|-----|---------|----------------------|---------|---|-------------|
| 3       | 0.2 | 60      | 8                    | 6       | 4 | 77,70       |
| 3       | 0.5 | 60      | 8                    | 6       | 4 | 77,70       |
| 4       | 0.2 | 60      | 11                   | 6       | 4 | 77,40       |
| 4       | 0.5 | 60      | 11                   | 6       | 4 | 77,70       |
| 4       | 1   | 60      | 11                   | 6       | 4 | 77,70       |
| 5       | 0.2 | 60      | 13                   | 6       | 4 | 77,70       |
| 5       | 0.5 | 60      | 13                   | 6       | 4 | 77,70       |
| 5       | 1   | 60      | 13                   | 6       | 4 | 77,70       |
| 6       | 0.3 | 60      | 13                   | 6       | 4 | 77,70       |
| 6       | 0.5 | 60      | 13                   | 6       | 4 | 77,40       |
| 6       | 1   | 60      | 13                   | 6       | 4 | 77,70       |
| 8       | 0.3 | 80      | 19                   | 8       | 4 | 105,00      |
| 8       | 0.5 | 80      | 19                   | 8       | 4 | 105,00      |
| 8       | 1   | 80      | 19                   | 8       | 4 | 105,00      |
| 8       | 1.5 | 80      | 19                   | 8       | 4 | 105,00      |
| 8       | 2   | 80      | 19                   | 8       | 4 | 105,00      |
| 10      | 0.3 | 80      | 22                   | 10      | 4 | 143,00      |
| 10      | 0.5 | 80      | 22                   | 10      | 4 | 143,00      |
| 10      | 1   | 80      | 22                   | 10      | 4 | 143,00      |
| 10      | 1.5 | 80      | 22                   | 10      | 4 | 143,00      |
| 10      | 2   | 80      | 22                   | 10      | 4 | 143,00      |
| 10      | 3   | 80      | 22                   | 10      | 4 | 143,00      |
| 12      | 0.5 | 100     | 26                   | 12      | 4 | 190,00      |
| 12      | 1   | 100     | 26                   | 12      | 4 | 190,00      |
| 12      | 1.5 | 100     | 26                   | 12      | 4 | 190,00      |

→1-2



**Rivestimento X-Treme**  
 X-Treme coating  
 X-Treme-Beschichtung  
 Revêtement X-Treme  
 Recubrimiento X-Treme

### TOLLERANZA - TOLERANCE - TOLERANZ - TOLÉRANCE - TOLERANCIA

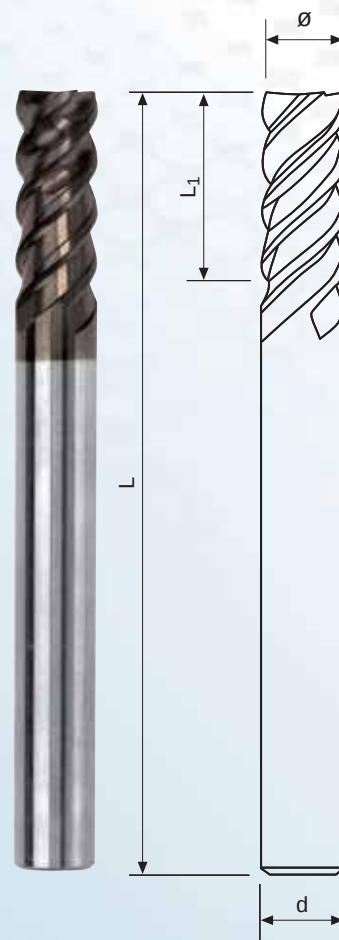
| Diametri<br>Diameters | Tolleranza del diametro<br>Diameter tolerance | Tolleranza del gambo<br>Shank tolerance |
|-----------------------|-----------------------------------------------|-----------------------------------------|
| da 3 mm a 20 mm       | +0.000 mm -0.038 mm                           | +0.000 mm -0.013 mm                     |





POWER END MILLS - 4 FLUTES - SUB-MICROGRAIN  
POWER FRÄSER - 4 NUTEN - HARTMETALLQUALITÄT: ULTRA-FEINSTKORN  
FRAISES POWER À 4 DENTS - MICRO-GRAIN ULTRAFIN  
FRESAS POWER - 4 LABIOS - SUB-MICROGRANO

EXTENDED LENGTH  
SÉRIE LONGUE  
ÜBERLÄNGE  
SERIE LARGA

[illegible]

**Rivestimento X-Treme**  
X-Treme coating  
X-Treme-Beschichtung  
Revêtement X-Treme  
Recubrimiento X-Treme

| Diametri        | Tolleranza del diametro | Tolleranza del gambo |
|-----------------|-------------------------|----------------------|
| Diameters       | Diameter tolerance      | Shank tolerance      |
| da 4 mm a 20 mm | +0.00 mm -0.038 mm      | +0.00 mm -0.013 mm   |

# PARAMETRI DI TAGLIO



CUTTING PARAMETERS  
SCHNITTDATEN  
PARAMÈTRES DE COUPE  
PARAMETROS DE CORTE

## FRESE POWER A CANDELA CON TESTA PIANA E TORICHE: 2/4 TAGLI

Power end mills with flat head or toric - Power fräser mit flacher stirnschneide oder torus - Fraises power à bout plat ou toriques - Fresas power de cabeza llana o tóricas: 2/4 Flutes - Schneiden - Dents - Labios

CAVA DAL PIENO: Vc e Fz: - 20%

Slotting: Vc e Fz: - 20%

Bohrnuten: Vc e Fz: - 20%

Rainurage: Vc e Fz: - 20%

Ranura: Vc e Fz: - 20%

| GRUPPO MATERIALI<br>Material Groups<br>Material-Beispiele<br>Groupes de Matériaux<br>Grupos de Materiales |                          |  |         |  | VC<br>m/min | <br><b>Fz [mm]</b><br><b>AVANZAMENTO AL DENTE</b><br>Tooth Feed - Zahnvorschub - Avancement au dent - Avance al labio |                |                |              |              |              |              |              |              |              |              |              |              |    |
|-----------------------------------------------------------------------------------------------------------|--------------------------|-----------------------------------------------------------------------------------|---------|-----------------------------------------------------------------------------------|-------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|----------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|----|
|                                                                                                           |                          | ap                                                                                | ae      |                                                                                   |             | ap                                                                                                                                                                                                      | 1              | 2              | 4            | 6            | 8            | 10           | 12           | 14           | 16           | 18           | 20           | 22           | 25 |
|                                                                                                           |                          |                                                                                   |         | ap                                                                                |             |                                                                                                                                                                                                         |                |                |              |              |              |              |              |              |              |              |              |              |    |
|                                                                                                           |                          |                                                                                   |         |                                                                                   |             |                                                                                                                                                                                                         |                |                |              |              |              |              |              |              |              |              |              |              |    |
|                          | < 800 N/mm <sup>2</sup>  | 1xØ                                                                               | 0,5xØ   | 0,5xØ                                                                             | 100 - 130   | 0,003<br>0,005                                                                                                                                                                                          | 0,005<br>0,010 | 0,02<br>0,04   | 0,04<br>0,06 | 0,06<br>0,08 | 0,08<br>0,10 | 0,10<br>0,12 | 0,12<br>0,14 | 0,14<br>0,16 | 0,16<br>0,18 | 0,18<br>0,20 | 0,20<br>0,22 | 0,22<br>0,25 |    |
|                         | < 1100 N/mm <sup>2</sup> | 1xØ                                                                               | 0,5xØ   | 0,5xØ                                                                             | 100 - 130   | 0,003<br>0,005                                                                                                                                                                                          | 0,005<br>0,010 | 0,02<br>0,04   | 0,04<br>0,06 | 0,06<br>0,08 | 0,08<br>0,10 | 0,10<br>0,12 | 0,12<br>0,14 | 0,14<br>0,16 | 0,16<br>0,18 | 0,18<br>0,20 | 0,20<br>0,22 | 0,22<br>0,25 |    |
|                        | < 1300 N/mm <sup>2</sup> | 1xØ                                                                               | 0,5xØ   | 0,5xØ                                                                             | 80 - 100    | 0,0015<br>0,0030                                                                                                                                                                                        | 0,003<br>0,005 | 0,005<br>0,020 | 0,02<br>0,04 | 0,04<br>0,06 | 0,06<br>0,08 | 0,08<br>0,10 | 0,10<br>0,12 | 0,12<br>0,14 | 0,14<br>0,16 | 0,16<br>0,18 | 0,18<br>0,20 | 0,20<br>0,22 |    |
|                        | > 800 N/mm <sup>2</sup>  | -                                                                                 | -       | -                                                                                 | -           | -                                                                                                                                                                                                       | -              | -              | -            | -            | -            | -            | -            | -            | -            | -            | -            | -            |    |
|                        | GG                       | 1xØ                                                                               | 0,5xØ   | 0,5xØ                                                                             | 120 - 150   | -                                                                                                                                                                                                       | 0,03<br>0,05   | 0,05<br>0,07   | 0,07<br>0,09 | 0,09<br>0,11 | 0,11<br>0,13 | 0,13<br>0,15 | 0,17<br>0,19 | 0,19<br>0,21 | 0,21<br>0,23 | 0,23<br>0,25 | 0,25<br>0,27 | 0,27<br>0,3  |    |
|                        | GGG                      | 1xØ                                                                               | 0,5xØ   | 0,5xØ                                                                             | 100 - 130   | -                                                                                                                                                                                                       | 0,005<br>0,010 | 0,02<br>0,04   | 0,04<br>0,06 | 0,06<br>0,08 | 0,08<br>0,10 | 0,10<br>0,12 | 0,12<br>0,14 | 0,14<br>0,16 | 0,16<br>0,18 | 0,18<br>0,20 | 0,20<br>0,22 | 0,22<br>0,25 |    |
|                        | Alluminio                | -                                                                                 | -       | -                                                                                 | -           | -                                                                                                                                                                                                       | -              | -              | -            | -            | -            | -            | -            | -            | -            | -            | -            | -            |    |
|                        | Non metalli              | -                                                                                 | -       | -                                                                                 | -           | -                                                                                                                                                                                                       | -              | -              | -            | -            | -            | -            | -            | -            | -            | -            | -            | -            |    |
|                        | Titanio                  | -                                                                                 | -       | -                                                                                 | -           | -                                                                                                                                                                                                       | -              | -              | -            | -            | -            | -            | -            | -            | -            | -            | -            | -            |    |
|                        | Leghe speciali a base Ni | -                                                                                 | -       | -                                                                                 | -           | -                                                                                                                                                                                                       | -              | -              | -            | -            | -            | -            | -            | -            | -            | -            | -            | -            |    |
|                        | Temprati 38 / 48 HRC     | 1xØ                                                                               | 0,2 X Ø | -                                                                                 | 40 - 60     | 0,0015<br>0,0030                                                                                                                                                                                        | 0,003<br>0,005 | 0,005<br>0,02  | 0,02<br>0,04 | 0,04<br>0,06 | 0,06<br>0,08 | 0,08<br>0,10 | 0,10<br>0,12 | 0,12<br>0,14 | 0,14<br>0,16 | 0,16<br>0,18 | 0,18<br>0,20 | 0,20<br>0,22 |    |
|                        | Temprati 48 / 58 HRC     | 1xØ                                                                               | 0,2xØ   | -                                                                                 | 25 - 40     | 0,0015<br>0,0030                                                                                                                                                                                        | 0,003<br>0,005 | 0,005<br>0,020 | 0,02<br>0,04 | 0,04<br>0,06 | 0,06<br>0,08 | 0,08<br>0,10 | 0,10<br>0,12 | 0,12<br>0,14 | 0,14<br>0,16 | 0,16<br>0,18 | 0,18<br>0,20 | 0,20<br>0,22 |    |
|                        | Temprati 58 / 68 HRC     | -                                                                                 | -       | -                                                                                 | -           | -                                                                                                                                                                                                       | -              | -              | -            | -            | -            | -            | -            | -            | -            | -            | -            | -            |    |



# FRESE POWER SEMISFERICHE



POWER BALL NOSE END MILLS



POWER RADIUSFRÄSER



FRAISES POWER HÉMISPHERIQUES



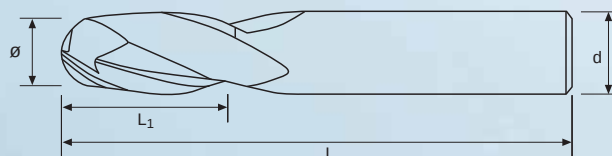
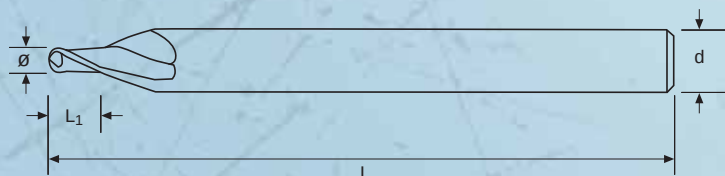
FRESAS POWER ESFÉRICAS





POWER BALL NOSE END MILLS - 2 FLUTES - SUB-MICROGRAIN  
POWER RADIUSFRÄSER - 2 NUTEN - HARTMETALLQUALITÄT: ULTRA-FEINSTKORN  
FRAISES POWER HÉMISPHÉRIQUES À 2 DENTS - MICRO-GRAIN ULTRAFIN  
FRESAS POWER ESFÉRICAS - 2 LABIOS - SUB-MICROGRANO

NORMAL/LONG SERIES  
NORMAL/LANGE AUSFÜHRUNG  
SÉRIE NORMALE/LONGUE  
SERIE NORMAL/LARGA



**Rivestimento X-Treme**  
X-Treme coating  
X-Treme-Beschichtung  
Revêtement X-Treme  
Recubrimiento X-Treme

## Diametri

### Tolleranza del diametro

### Tolleranza del gambo

|                 |                     |                     |
|-----------------|---------------------|---------------------|
| da 1 mm a 3 mm  | +0.000 mm -0.025 mm | +0.000 mm -0.013 mm |
| da 4 mm a 25 mm | +0.000 mm -0.038 mm | +0.000 mm -0.013 mm |

## SERIE LUNGA

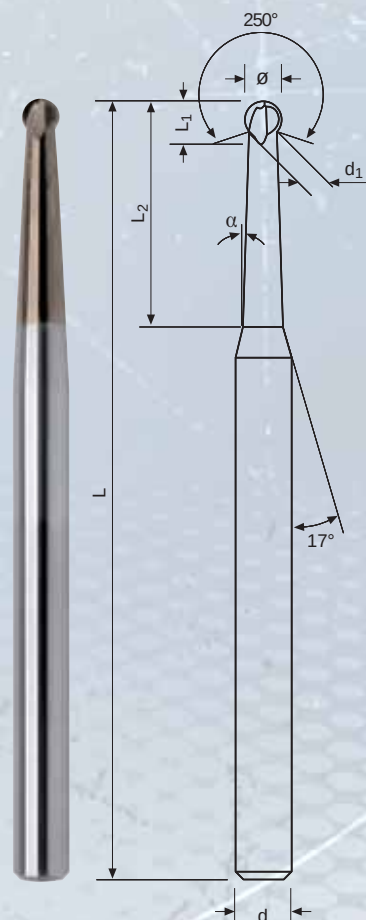
EXTENDED LENGTH  
SÉRIE LONGUE  
ÜBERLÄNGE  
SERIE LARGA

# FRESE POWER SEMISFERICHE

## 250° A 2 TAGLI IN MICROGRANA ULTRAFINE

BALL NOSE 250° POWER END MILLS - 2 FLUTES - SUB-MICROGRAIN  
POWER RADIUSFRÄSER 250° - 2 NUTEN - HARTMETALLQUALITÄT: ULTRA-FEINSTKORN  
FRAISES POWER HÉMISPHÉRIQUES 250° À 2 DENTS - MICRO-GRAIN ULTRAFIN  
FRESAS POWER ESFÉRICAS 250° - 2 LABIOS - SUB-MICROGRANO

## 432RXT

[illegible]

## Rivestimento X-Treme

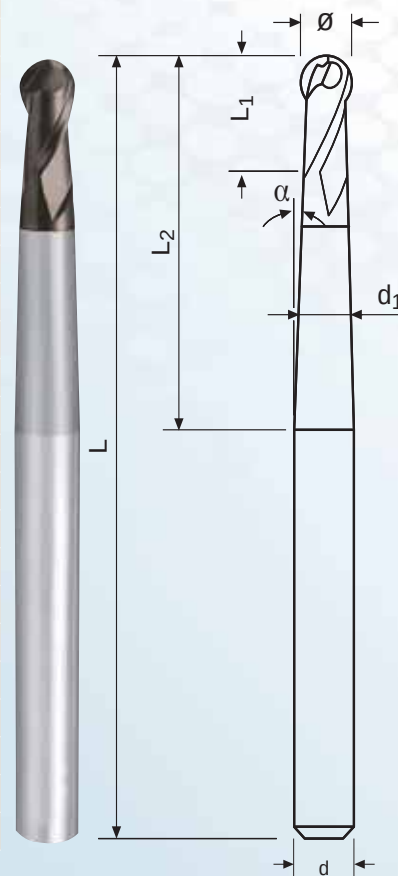
X-Treme coating  
X-Treme-Beschichtung  
Revêtement X-Treme  
Recubrimiento X-Treme

**TOLLERANZA** - TOLERANCE - TOLERANZ - TOLÉRANCE - TOLERANCIA

| Diametri<br>Diameters | Tolleranza del diametro<br>Diameter tolerance | Tolleranza del gambo<br>Shank tolerance |
|-----------------------|-----------------------------------------------|-----------------------------------------|
| da 1 mm a 10 mm       | f8                                            | h6                                      |

BALL NOSE POWER END MILLS - 2 FLUTES - SUB-MICROGRAIN  
POWER RADIUSFRÄSER - 2 NUTEN - HARTMETALQUALITÄT: ULTRA-FEINSTKORN  
FRAISES POWER HÉMISPHÉRIQUES À 2 DENTS - MICRO-GRAIN ULTRAFIN  
FRÉSES POWER ESFÉRICAS - 2 LÁBIOS - SUB-MICROGRANO

LONG/EXTRALONG SERIES  
LANGE/EXTRALANGE AUSFÜHRUNG  
SÉRIE LONGUE/EXTRALONGUE  
SERIE LARGA/EXTRALARGA

[illegible]

X-Treme coating  
X-Treme-Beschichtung  
Revêtement X-Treme  
Recubrimiento X-Treme

## Diametri

### Tolleranza del diametro

**Tolleranza del gambo**  
Shank tolerance

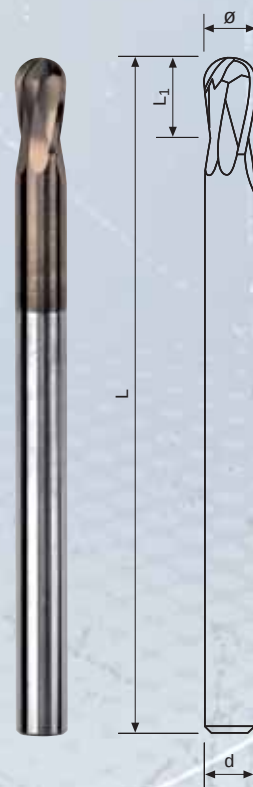
| Diametro        | Diametro tolleranze | Chamfer tolleranze  |
|-----------------|---------------------|---------------------|
| da 1 mm a 3 mm  | +0.000 mm -0.025 mm | +0.000 mm -0.013 mm |
| da 4 mm a 12 mm | +0.000 mm -0.038 mm | +0.000 mm -0.013 mm |



NORMAL SERIES  
NORMAL AUSFÜHRUNG  
SÉRIE NORMALE  
SERIE NORMAL

**A 2 TAGLI** IN MICROGRANA ULTRAFINE

BALL NOSE POWER END MILLS 2 FLUTES - SUB-MICROGRAIN  
POWER RADIUSFRÄSER - 2 NUTEN - HARTMETALLQUALITÄT: ULTRA-FEINSTKORN  
FRAISES POWER HÉMISPHÉRIQUES À 2 DENTS - MICRO-GRAIN ULTRAFIN  
FRESAS POWER ESFÉRICAS - 2 LABIOS - SUB-MICROGRANO



**Rivestimento X-Treme**  
X-Treme coating  
X-Treme-Beschichtung  
Revêtement X-Treme  
Recubrimiento X-Treme

| Diametri        | Tolleranza del diametro | Tolleranza del gambo |
|-----------------|-------------------------|----------------------|
| Diameters       | Diameter tolerance      | Shank tolerance      |
| da 3 mm a 25 mm | +0.00 mm -0.038 mm      | +0.00 mm -0.013 mm   |



# FRESE POWER SEMISFERICHE A 2 TAGLI IN MICROGRANA ULTRAFINE

BALL NOSE POWER END MILLS - 2 FLUTES - SUB-MICROGRAIN  
POWER RADIUSFRÄSER - 2 NUTEN - HARTMETALLQUALITÄT: ULTRA-FEINSTKORN  
FRAISES POWER HÉMISPHERIQUES À 2 DENTS - MICRO-GRAIN ULTRAFIN  
FRESAS POWER ESFÉRICAS - 2 LABIOS - SUB-MICROGRANO

## SERIE LUNGA

LONG SERIES  
LANGE AUSFÜHRUNG  
SÉRIE LONGUE  
SERIE LARGA



## 416RXT



| Ø<br>mm | L<br>mm | L <sub>1</sub><br>mm | d<br>mm | Z | 416RXT<br>€ |
|---------|---------|----------------------|---------|---|-------------|
| 1       | 50      | 2.5                  | 4       | 2 | 46,00       |
| 1.2     | 50      | 3                    | 4       | 2 | 48,90       |
| 1.4     | 50      | 3.5                  | 4       | 2 | 48,90       |
| 1.5     | 50      | 4                    | 4       | 2 | 48,90       |
| 1.6     | 50      | 4                    | 4       | 2 | 48,90       |
| 1.8     | 50      | 4.5                  | 4       | 2 | 48,90       |
| 2       | 50      | 5                    | 6       | 2 | 43,90       |
| 2.5     | 60      | 6                    | 6       | 2 | 53,50       |
| 3       | 60      | 8                    | 6       | 2 | 44,80       |
| 4       | 60      | 8                    | 4       | 2 | 44,50       |
| 4       | 70      | 8                    | 6       | 2 | 44,80       |
| 5       | 80      | 10                   | 6       | 2 | 52,30       |
| 6       | 90      | 12                   | 6       | 2 | 50,60       |
| 7       | 90      | 14                   | 6       | 2 | 67,40       |
| 8       | 100     | 14                   | 8       | 2 | 66,20       |
| 9       | 100     | 18                   | 10      | 2 | 96,10       |
| 10      | 100     | 18                   | 10      | 2 | 83,80       |
| 12      | 110     | 22                   | 12      | 2 | 109,00      |
| 13      | 110     | 26                   | 12      | 2 | 133,50      |
| 14      | 110     | 26                   | 12      | 2 | 186,50      |
| 15      | 110     | 30                   | 12      | 2 | 190,50      |
| 16      | 140     | 30                   | 16      | 2 | 243,00      |
| 18      | 140     | 34                   | 16      | 2 | 304,00      |
| 20      | 160     | 38                   | 20      | 2 | 380,00      |
| 25      | 180     | 50                   | 25      | 2 | 705,00      |



**Rivestimento X-Treme**  
X-Treme coating  
X-Treme-Beschichtung  
Revêtement X-Treme  
Recubrimiento X-Treme

### TOLLERANZA - TOLERANCE - TOLERANZ - TOLÉRANCE - TOLERANCIA

| Diametri<br>Diameters | Tolleranza del diametro<br>Diameter tolerance | Tolleranza del gambo<br>Shank tolerance |
|-----------------------|-----------------------------------------------|-----------------------------------------|
| da 1 mm a 3 mm        | +0.00 mm -0.025 mm                            | +0.00 mm -0.013 mm                      |
| da 4 mm a 25 mm       | +0.00 mm -0.038 mm                            | +0.00 mm -0.013 mm                      |

## SERIE NORMALE

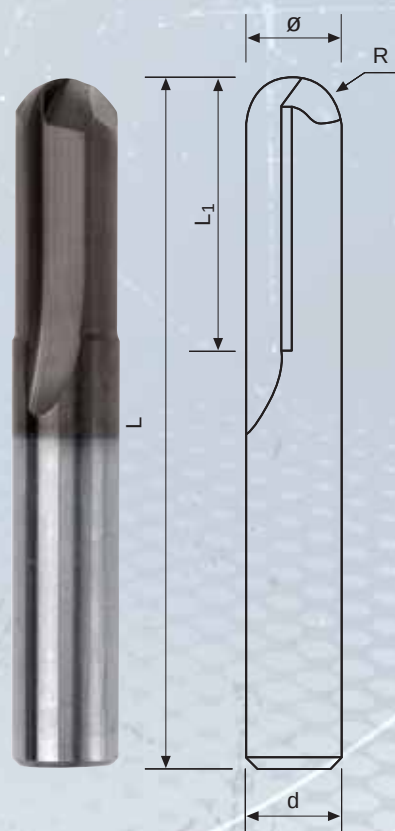
NORMAL SERIES  
NORMAL AUSFÜHRUNG  
SÉRIE NORMALE  
SERIE NORMAL

## FRESE POWER SEMISFERICHE

A 2 TAGLI PER COPIATURA IN MICROGRANA ULTRAFINE

POWER BALL NOSE COPY END MILLS - 2 FLUTES - SUB-MICROGRAIN  
POWER RADIUSKOPIERFRÄSER - 2 NUTEN - HARTMETALLQUALITÄT: ULTRA-FEINSTKORN  
FRAISES POWER HÉMISPHÉRIQUES À 2 DENTS POUR COPIAGE - MICRO-GRAIN ULTRAFIN  
FRESAS POWER ESFÉRICAS DE COPIADO - 2 LABIOS - SUB-MICROGRANO

# 130RXT

[illegible]

## Rivestimento X-Treme

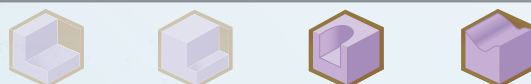
X-Treme coating  
X-Treme-Beschichtung  
Revêtement X-Treme  
Recubrimiento X-Treme

**TOLLERANZA** - TOLERANCE - TOLERANZ - TOLÉRANCE - TOLERANCIA

| <b>Diametri</b><br>Diameters | <b>Tolleranza del diametro</b><br>Diameter tolerance | <b>Tolleranza del gambo</b><br>Shank tolerance |
|------------------------------|------------------------------------------------------|------------------------------------------------|
| da 3 mm a 6 mm               | +0.010 mm -0.028 mm                                  | +0.000 mm -0.008 mm                            |
| da 6 mm a 12 mm              | +0.013 mm -0.035 mm                                  | +0.000 mm -0.009 mm                            |

POWER BALL NOSE COPY END MILLS - 2 FLUTES - SUB-MICROGRAIN  
POWER RADIUSKOPIERFRÄSER - 2 NUTEN - HARTMETALLQUALITÄT: ULTRA-FEINSTKORN  
FRAISES POWER HÉMISPHÉRIQUES À 2 DENTS POUR COPIAGE - MICRO-GRAIN ULTRAFIN  
FRESAS POWER ESFÉRICAS DE COPIADO - 2 LABIOS - SUB-MICROGRANO

LONG/EXTRALONG SERIES  
LANGE/ EXTRALANGE AUSFÜHRUNG  
SÉRIE LONGUE/EXTRALONGUE  
SERIE LARGA/EXTRALARGA



X-Treme coating  
X-Treme-Beschichtung  
Revêtement X-Treme  
Recubrimiento X-Treme

| <b>Diametri</b><br>Diameters | <b>Tolleranza del diametro</b><br>Diameter tolerance | <b>Tolleranza del gambo</b><br>Shank tolerance |
|------------------------------|------------------------------------------------------|------------------------------------------------|
| da 3 mm a 6 mm               | +0.000 mm -0.018 mm                                  | +0.000 mm -0.008 mm                            |
| da 6 mm a 10 mm              | +0.000 mm -0.035 mm                                  | +0.000 mm -0.009 mm                            |

## SERIE NORMALE

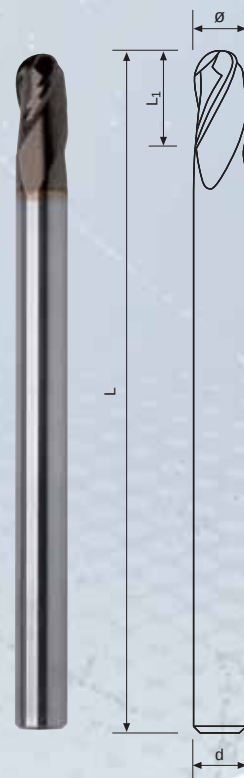
NORMAL SERIES  
NORMAL AUSFÜHRUNG  
SÉRIE NORMALE  
SERIE NORMAL

## FRESE POWER SEMISFERICHE

**A 3 TAGLI** IN MICROGRANA ULTRAFINE

POWER BALL NOSE END MILLS - 3 FLUTES - SUB-MICROGRAIN  
POWER RADIUSFRÄSER - 3 NUTEN - HARTMETALLQUALITÄT: ULTRA-FEINSTKORN  
FRAISES POWER HÉMISPÉRIQUES À 3 DENTS - MICRO-GRAIN ULTRAFIN  
FRESAS POWER ESFÉRICAS - 3 LABIOS - SUB-MICROGRANO

# 493RXT

[illegible]

## Rivestimento X-Treme

X-Treme coating  
X-Treme-Beschichtung  
Revêtement X-Treme  
Recubrimiento X-Treme

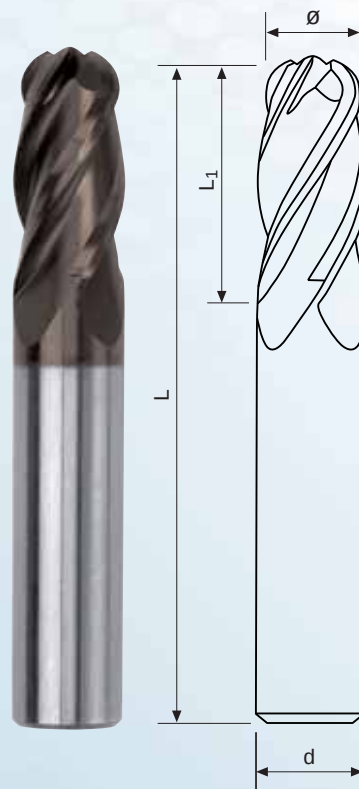
**TOLLERANZA** - TOLERANCE - TOLERANZ - TOLÉRANCE - TOLERANCIA

| Diametri<br>Diameters | Tolleranza del diametro<br>Diameter tolerance | Tolleranza del gambo<br>Shank tolerance |
|-----------------------|-----------------------------------------------|-----------------------------------------|
| da 2 mm a 20 mm       | f8                                            | h6                                      |



POWER BALL NOSE END MILLS - 4 FLUTES - SUB-MICROGRAIN  
POWER RADIUSFRÄSER - 4 NUTEN - HARTMETALLQUALITÄT: ULTRA-FEINSTKORN  
FRAISES POWER HÉMISPHÉRIQUES À 4 DENTS - MICRO-GRAIN ULTRAFIN  
FRESAS POWER ESFÉRICAS - 4 LABIOS - SUB-MICROGRANO

NORMAL SERIES  
NORMAL AUSFÜHRUNG  
SÉRIE NORMALE  
SERIE NORMAL

[illegible]

X-Treme coating  
X-Treme-Beschichtung  
Revêtement X-Treme  
Recubrimiento X-Treme

| Diametri<br>Diameters | Tolleranza del diametro<br>Diameter tolerance | Tolleranza del gambo<br>Shank tolerance |
|-----------------------|-----------------------------------------------|-----------------------------------------|
| da 1 mm a 3 mm        | +0.00 mm -0.025 mm                            | +0.00 mm -0.013 mm                      |
| da 4 mm a 25 mm       | +0.00 mm -0.038 mm                            | +0.00 mm -0.013 mm                      |

## SERIE NORMALE

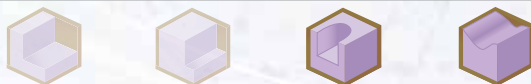
NORMAL SERIES  
NORMAL AUSFÜHRUNG  
SÉRIE NORMALE  
SERIE NORMAL

# FRESE POWER TORICHE

## A 3/4 TAGLI IN MICROGRANA ULTRAFINE

POWER TORIC END MILLS 3/4 FLUTES - SUB-MICROGRAIN  
POWER TORUSFRÄSER 3/4 NUTEN - HARTMETALLQUALITÄT: ULTRA-FEINSTKORN  
FRAISES POWER TORIQUES À 3/4 DENTS - MICRO-GRAIN ULTRAFIN  
FRESAS POWER TÓRICAS - 3/4 LABIOS - SUB-MICROGRANO

# 491HXT

[illegible]

## Rivestimento X-Treme

X-Treme coating  
X-Treme-Beschichtung  
Revêtement X-Treme  
Recubrimiento X-Treme

**TOLLERANZA** - TOLERANCE - TOLERANZ - TOLÉRANCE - TOLERANCIA

| Diametri        | Tolleranza del diametro | Tolleranza del gambo |
|-----------------|-------------------------|----------------------|
| Diameters       | Diameter tolerance      | Shank tolerance      |
| da 2 mm a 16 mm | e8                      | h6                   |

# PARAMETRI DI TAGLIO

CUTTING PARAMETERS  
SCHNITTDATEN  
PARAMÈTRES DE COUPE  
PARAMETROS DE CORTE



## FRESE POWER SEMISFERICHE: 2/3/4 TAGLI

Power ball nose end mills - Power radiusfräser - Fraises power hémisphériques -  
Fresas power esféricas: 2/3/4 Flutes - Schneiden - Dents - Labios

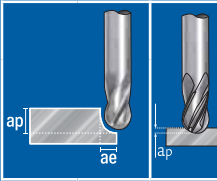
**CAVA DAL PIENO:** Vc e Fz: - 20%

Slotting: Vc e Fz: - 20%

Bohrnuten: Vc e Fz: - 20%

Rainurage: Vc e Fz: - 20%

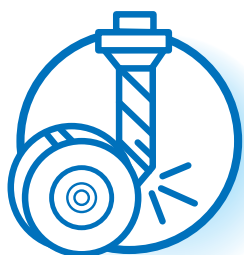
Ranura: Vc e Fz: - 20%

| GRUPPO MATERIALI<br>Material Groups<br>Material-Beispiele<br>Groupes de Matériaux<br>Grupos de Materiales |                          |  |         | VC<br>m/min | <br><b>Fz [mm]</b><br><b>AVANZAMENTO AL DENTE</b><br>Tooth Feed - Zahnvorschub - Avancement au dent - Avance al labio |                  |                |                |              |              |              |              |              |              |              |              |              |              |
|-----------------------------------------------------------------------------------------------------------|--------------------------|-----------------------------------------------------------------------------------|---------|-------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|----------------|----------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|
|                                                                                                           |                          | ap                                                                                | ae      |             | ap                                                                                                                                                                                                      | 1                | 2              | 4              | 6            | 8            | 10           | 12           | 14           | 16           | 18           | 20           | 22           | 25           |
|                                                                                                           |                          |                                                                                   |         |             |                                                                                                                                                                                                         |                  |                |                |              |              |              |              |              |              |              |              |              |              |
|                           | < 800 N/mm²              | -                                                                                 | -       | -           | -                                                                                                                                                                                                       | -                | -              | -              | -            | -            | -            | -            | -            | -            | -            | -            | -            | -            |
|                         | < 1100 N/mm²             | 0,03xd                                                                            | 0,2xd   | 0,2xd       | 100 - 140                                                                                                                                                                                               | 0,02<br>0,03     | 0,05<br>0,06   | 0,07<br>0,08   | 0,08<br>0,09 | 0,09<br>0,10 | 0,11<br>0,12 | 0,13<br>0,14 | 0,15<br>0,17 | 0,17<br>0,18 | 0,18<br>0,19 | 0,20<br>0,21 | 0,21<br>0,22 | 0,22<br>0,25 |
|                         | < 1300 N/mm²             | -                                                                                 | -       | -           | 80 - 120                                                                                                                                                                                                | 0,02<br>0,03     | 0,05<br>0,06   | 0,07<br>0,08   | 0,08<br>0,09 | 0,09<br>0,10 | 0,11<br>0,12 | 0,13<br>0,14 | 0,15<br>0,17 | 0,17<br>0,18 | 0,18<br>0,19 | 0,20<br>0,21 | -            | -            |
|                         | > 800 N/mm²              | -                                                                                 | -       | -           | -                                                                                                                                                                                                       | -                | -              | -              | -            | -            | -            | -            | -            | -            | -            | -            | -            | -            |
|                         | GG                       | 0,03xd                                                                            | 0,2xd   | 0,2xd       | 120 - 160                                                                                                                                                                                               | 0,03<br>0,04     | 0,06<br>0,08   | 0,10<br>0,12   | 0,14<br>0,16 | 0,18<br>0,19 | 0,20<br>0,21 | 0,22<br>0,23 | 0,23<br>0,24 | 0,24<br>0,25 | 0,26<br>0,27 | 0,27<br>0,28 | 0,29<br>0,30 | 0,31<br>0,32 |
|                         | GGG                      | 0,03xd                                                                            | 0,2xd   | 0,2xd       | 80 - 120                                                                                                                                                                                                | 0,02<br>0,03     | 0,05<br>0,06   | 0,07<br>0,08   | 0,08<br>0,09 | 0,09<br>0,10 | 0,11<br>0,12 | 0,13<br>0,14 | 0,15<br>0,17 | 0,17<br>0,18 | 0,18<br>0,19 | 0,20<br>0,21 | 0,22<br>0,23 | 0,24<br>0,25 |
|                         | Alluminio                | -                                                                                 | -       | -           | -                                                                                                                                                                                                       | -                | -              | -              | -            | -            | -            | -            | -            | -            | -            | -            | -            | -            |
|                         | Non metalli              | -                                                                                 | -       | -           | -                                                                                                                                                                                                       | -                | -              | -              | -            | -            | -            | -            | -            | -            | -            | -            | -            | -            |
|                         | Titanio                  | -                                                                                 | -       | -           | -                                                                                                                                                                                                       | -                | -              | -              | -            | -            | -            | -            | -            | -            | -            | -            | -            | -            |
|                         | Leghe speciali a base NI | -                                                                                 | -       | -           | -                                                                                                                                                                                                       | -                | -              | -              | -            | -            | -            | -            | -            | -            | -            | -            | -            | -            |
|                         | Temprati 38 / 48 HRC     | 0,03xd                                                                            | 0,2 X d | 0,2xd       | 60 - 100                                                                                                                                                                                                | 0,01<br>0,02     | 0,02<br>0,03   | 0,03<br>0,04   | 0,04<br>0,05 | 0,05<br>0,06 | 0,06<br>0,07 | 0,07<br>0,08 | 0,09<br>0,10 | 0,11<br>0,12 | 0,12<br>0,13 | 0,14<br>0,15 | 0,16<br>0,17 | 0,18<br>0,19 |
|                         | Temprati 48 / 58 HRC     | 1xØ                                                                               | 0,2xØ   | -           | 25 - 40                                                                                                                                                                                                 | 0,0015<br>0,0030 | 0,003<br>0,005 | 0,005<br>0,020 | 0,02<br>0,04 | 0,04<br>0,06 | 0,06<br>0,08 | 0,08<br>0,10 | 0,10<br>0,12 | 0,12<br>0,14 | 0,14<br>0,16 | 0,16<br>0,18 | 0,18<br>0,20 | 0,20<br>0,22 |
|                         | Temprati 58 / 68 HRC     | -                                                                                 | -       | -           | -                                                                                                                                                                                                       | -                | -              | -              | -            | -            | -            | -            | -            | -            | -            | -            | -            | -            |



## **SERVIZIO DI RIAFFILATURA E RIVESTIMENTO**

Re-sharpening and coating service  
Nachschleif - und beschichtungservice  
Service de affûtage à nouveau et revêtement  
Servicio de afilado y recubrimiento



## **UTENSILI SPECIALI**

Special tools department  
Abteilung für Sonderwerkzeuge  
Outils spéciaux  
Herramientas especiales

# **I NOSTRI SERVIZI SEMPRE A DISPOSIZIONE**

Our prompt services always ready for you  
Unser prompter Service ist immer für Sie da  
Nos services toujours à votre Disposition  
Nuestro rápido servicio siempre listo para usted





Tolicead

# FRESE POWER TORICHE



POWER TORIC MULTI-FLUTES END MILLS



POWER TORUSFRÄSER MEHRSCHEIDEN



FRAISES POWER TORIQUES MULTICOUPES



FRESAS POWER TÓRICAS MULTILABIO

## Multitagli



POWER MULTI-FLUTES TORIC END MILLS - SUB-MICROGRAIN  
POWER MEHRNUTIGE TORUSFRÄSER - HARTMETALLQUALITÄT: ULTRA-FEINSTKORN  
FRAISES POWER TORIQUES MULTICOUPEES - MICRO-GRAIN ULTRAFIN  
FRESAS POWER TÓRICAS MULTILABIOS - SUB-MICROGRANO

NORMAL SERIES  
NORMAL AUSFÜHRUNG  
SÉRIE NORMALE  
SERIE NORMAL



The technical drawing illustrates the geometry of a double-flute drill bit. The left side shows a 3D perspective view of the bit, highlighting its two flutes and the cutting edge. The right side shows a 2D cross-sectional view with the following dimensions:

- $\varnothing$ : Diameter of the drill bit.
- $R$ : Radius of the cutting edge.
- $L_1$ : Length of the cutting edge.
- $L$ : Total length of the drill bit.
- $d$ : Diameter of the drill bit at the base.



X-Treme coating  
X-Treme-Beschichtung  
Revêtement X-Treme  
Recubrimiento X-Treme

| <b>Diametri</b><br>Diameters | <b>Tolleranza del diametro</b><br>Diameter tolerance | <b>Tolleranza del gambo</b><br>Shank tolerance |
|------------------------------|------------------------------------------------------|------------------------------------------------|
| da 6 mm a 10 mm              | +0.000 mm -0.022 mm                                  | +0.000 mm -0.009 mm                            |
| da 10 mm a 18 mm             | +0.000 mm -0.027 mm                                  | +0.000 mm -0.011 mm                            |
| da 18 mm a 20 mm             | +0.000 mm -0.033 mm                                  | +0.000 mm -0.013 mm                            |





## SERIE LUNGA

EXTENDED LENGTH  
SÉRIE LONGUE  
ÜBERLÄNGE  
SERIE LARGA

# FRESE POWER TORICHE

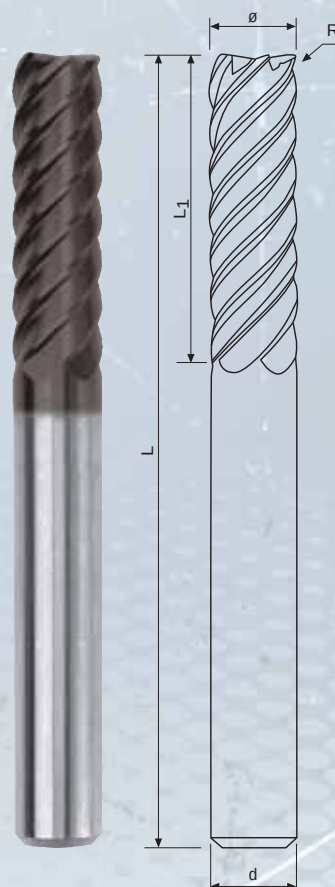
## MULTITAGLI IN MICROGRANA ULTRAFINE

POWER MULTI-FLUTES TORIC END MILLS - SUB-MICROGRAIN  
POWER MEHRNUTIGE TORUSFRÄSER - HARTMETALLQUALITÄT: ULTRA-FEINSTKORN  
FRAISES POWER TORIQUES MULTICOUPES - MICRO-GRAIN ULTRAFIN  
FRESAS POWER TÓRICAS MULTILABIOS - SUB-MICROGRANO

## 1460XT



| Ø<br>mm | R   | L<br>mm | L <sub>1</sub><br>mm | d<br>mm | Z | 1460XT<br>€ |
|---------|-----|---------|----------------------|---------|---|-------------|
| 6       | 0.5 | 62      | 18                   | 6       | 6 | 57,80       |
| 6       | 1   | 62      | 18                   | 6       | 6 | 57,80       |
| 8       | 0.5 | 68      | 24                   | 8       | 6 | 79,80       |
| 8       | 1   | 68      | 24                   | 8       | 6 | 79,80       |
| 10      | 0.5 | 80      | 30                   | 10      | 6 | 116,00      |
| 10      | 1   | 80      | 30                   | 10      | 6 | 116,00      |
| 10      | 1.5 | 80      | 30                   | 10      | 6 | 116,00      |
| 12      | 0.5 | 93      | 36                   | 12      | 6 | 161,00      |
| 12      | 1   | 93      | 36                   | 12      | 6 | 161,00      |
| 12      | 1.5 | 93      | 36                   | 12      | 6 | 161,00      |
| 14      | 1   | 99      | 42                   | 14      | 6 | 221,00      |
| 14      | 2   | 99      | 42                   | 14      | 6 | 221,00      |
| 16      | 1   | 108     | 48                   | 16      | 6 | 286,00      |
| 16      | 2   | 108     | 48                   | 16      | 6 | 286,00      |
| 18      | 1   | 114     | 54                   | 18      | 6 | 356,00      |
| 18      | 2   | 114     | 54                   | 18      | 6 | 356,00      |
| 20      | 1   | 125     | 60                   | 20      | 6 | 449,00      |
| 20      | 2   | 125     | 60                   | 20      | 6 | 449,00      |
|         |     |         |                      |         |   |             |
|         |     |         |                      |         |   |             |
|         |     |         |                      |         |   |             |
|         |     |         |                      |         |   |             |
|         |     |         |                      |         |   |             |
|         |     |         |                      |         |   |             |
|         |     |         |                      |         |   |             |
|         |     |         |                      |         |   |             |
|         |     |         |                      |         |   |             |



**Rivestimento X-Treme**  
X-Treme coating  
X-Treme-Beschichtung  
Revêtement X-Treme  
Recubrimiento X-Treme

## TOLLERANZA - TOLERANCE - TOLERANZ - TOLÉRANCE - TOLERANCIA

| Diametri<br>Diameters | Tolleranza del diametro<br>Diameter tolerance | Tolleranza del gambo<br>Shank tolerance |
|-----------------------|-----------------------------------------------|-----------------------------------------|
| da 6 mm a 10 mm       | +0.00 mm -0.022 mm                            | +0.00 mm -0.009 mm                      |
| da 10 mm a 18 mm      | +0.00 mm -0.027 mm                            | +0.00 mm -0.011 mm                      |
| da 18 mm a 20 mm      | +0.00 mm -0.033 mm                            | +0.00 mm -0.013 mm                      |



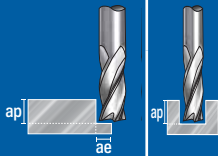
# PARAMETRI DI TAGLIO

CUTTING PARAMETERS  
SCHNITTDATEN  
PARAMÈTRES DE COUPE  
PARAMETROS DE CORTE



## FRESE POWER CON TESTA TORICHE: MULTITAGLI

Power end mills multi flutes with flat head and toric - Power mehrnutzige fräser mit flacher stirnschneide oder torus - Fraises power multicoups à bout plat ou toriques - Fresas power multilabios de cabeza llana o tóricas: Multi flutes - Mehrnutzige - Multicoups - Multilabios

| GRUPPO MATERIALI<br>Material Groups<br>Material-Beispiele<br>Groupes de Matériaux<br>Grupos de Materiales |                          |  |         | VC<br>m/min | <br><b>Fz [mm]</b><br><b>AVANZAMENTO AL DENTE</b><br>Tooth Feed - Zahnvorschub - Avancement au dent - Avance al labio |   |   |                |                |                |                |                |                |                |                |    |    |    |
|-----------------------------------------------------------------------------------------------------------|--------------------------|-----------------------------------------------------------------------------------|---------|-------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|---|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----|----|----|
|                                                                                                           |                          | ap                                                                                | ae      |             | ap                                                                                                                                                                                                      | 3 | 4 | 6              | 8              | 10             | 12             | 14             | 16             | 18             | 20             | 22 | 24 | 26 |
|                                                                                                           |                          | ap                                                                                | ae      |             | ap                                                                                                                                                                                                      |   |   |                |                |                |                |                |                |                |                |    |    |    |
|  P                        | < 800 N/mm²              | 1xØ                                                                               | 0,5xØ   | 0,5xØ       | 100 - 130                                                                                                                                                                                               | - | - | -              | -              | -              | -              | -              | -              | -              | -              | -  | -  |    |
|  P                       | < 1100 N/mm²             | 1xØ                                                                               | 0,5xØ   | 0,5xØ       | 100 - 130                                                                                                                                                                                               | - | - | -              | -              | -              | -              | -              | -              | -              | -              | -  | -  |    |
|  P                      | < 1300 N/mm²             | 0,03xd                                                                            | 0,2xd   | -           | 90 - 100                                                                                                                                                                                                | - | - | 0,05<br>0,06   | 0,07<br>0,08   | 0,09<br>0,10   | 0,10<br>0,11   | 0,12<br>0,13   | 0,14<br>0,15   | 0,12<br>0,14   | 0,14<br>0,16   | -  | -  |    |
|  M                      | > 800 N/mm²              | -                                                                                 | -       | -           | -                                                                                                                                                                                                       | - | - | -              | -              | -              | -              | -              | -              | -              | -              | -  | -  |    |
|  K                      | GG                       | 0,03xd                                                                            | 0,2xd   | -           | 120 - 180                                                                                                                                                                                               | - | - | 0,05<br>0,06   | 0,06<br>0,07   | 0,08<br>0,09   | 0,09<br>0,10   | 0,11<br>0,12   | 0,12<br>0,13   | 0,19<br>0,21   | 0,21<br>0,23   | -  | -  |    |
|  K                      | GGG                      | 0,03xd                                                                            | 0,2xd   | -           | 90 - 110                                                                                                                                                                                                | - | - | 0,05<br>0,06   | 0,07<br>0,08   | 0,09<br>0,10   | 0,10<br>0,11   | 0,12<br>0,13   | 0,14<br>0,15   | 0,14<br>0,16   | 0,16<br>0,18   | -  | -  |    |
|  N                      | Alluminio                | -                                                                                 | -       | -           | -                                                                                                                                                                                                       | - | - | -              | -              | -              | -              | -              | -              | -              | -              | -  | -  |    |
|  N                      | Non metalli              | -                                                                                 | -       | -           | -                                                                                                                                                                                                       | - | - | -              | -              | -              | -              | -              | -              | -              | -              | -  | -  |    |
|  S                      | Titanio                  | -                                                                                 | -       | -           | -                                                                                                                                                                                                       | - | - | -              | -              | -              | -              | -              | -              | -              | -              | -  | -  |    |
|  S                      | Leghe speciali a base Ni | -                                                                                 | -       | -           | -                                                                                                                                                                                                       | - | - | -              | -              | -              | -              | -              | -              | -              | -              | -  | -  |    |
|  H                      | Temprati 38 / 48 HRC     | 0,03xd                                                                            | 0,2 X d |             | 60 - 100                                                                                                                                                                                                | - | - | 0,05<br>0,06   | 0,07<br>0,08   | 0,09<br>0,10   | 0,10<br>0,11   | 0,12<br>0,13   | 0,14<br>0,15   | 0,12<br>0,14   | 0,14<br>0,16   | -  | -  |    |
|  H                      | Temprati 48 / 58 HRC     | 0,03xd                                                                            | 0,2xd   |             | 60 - 100                                                                                                                                                                                                | - | - | 0,05<br>0,06   | 0,07<br>0,08   | 0,09<br>0,10   | 0,10<br>0,11   | 0,12<br>0,13   | 0,14<br>0,15   | 0,12<br>0,14   | 0,14<br>0,16   | -  | -  |    |
|  H                      | Temprati 58 / 68 HRC     | 0,02xd                                                                            | 0,2xd   |             | 30 - 60                                                                                                                                                                                                 | - | - | 0,007<br>0,009 | 0,009<br>0,010 | 0,010<br>0,012 | 0,012<br>0,014 | 0,014<br>0,016 | 0,016<br>0,018 | 0,018<br>0,020 | 0,020<br>0,022 | -  | -  |    |



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# Frese Power



## FRESE POWER: 🇮🇹

- Ridurre il numero di utensili necessari
- Offrire un'eccellente evacuazione dei trucioli
- Ottenere la massima produttività
- Aumentare i volumi di trucioli asportati
- Aumentare la velocità di taglio
- Garantire precisione
- Ridurre i costi di produzione
- Fornire una lunga durata dell'utensile

## POWER END MILLS: 🇬🇧

- Reducing the number of necessary tools
- Offering an excellent chip evacuation
- Obtaining maximum productivity
- Increasing the volumes of eliminated chips
- Increasing cutting speed
- Guaranteeing precision
- Reducing production costs
- Allowing a long tool life

## POWER FRÄSER: 🇩🇪

- Reduziert die Anzahl der benötigten Werkzeuge
- Bietet eine ausgezeichnete Spanabfuhr
- Erhalten Sie die maximale Produktivität
- Erhöhung die Volumens der Spanabfuhr
- Erhöhung der Schnittgeschwindigkeit
- Gewährleistung der Genauigkeit
- Reduzierung der Produktionskosten
- Ermöglichen eine lange Lebensdauer

## FRAISES POWER: 🇫🇷

- Réduire le numéro des outils pas nécessaires
- Offrir une très bonne évacuation du copeau
- Obtenir la meilleure productivité
- Augmenter les volumes du copeau évacué
- Augmenter la vitesse de coupe

- Assurer précision
- Réduire le coût de production
- Permettre une longue durée de vie l'outil

## FRESAS POWER: 🇪🇸

- Reducir el numero de herramientas innecesarias
- Ofrecer una excelente evacuación de viruta
- Obtener la máxima productividad
- Incrementar el volumen de evacuación de virutas
- Incrementar (aumentando) la velocidad de corte
- Asegurar precisión
- Reducir los costes de producción
- Permitir una larga vida de herramienta



### **SERVIZIO TECNICO**

Technical Help  
Technische Hilfe  
Service technique  
Ayuda técnica



### **E-COMMERCE**

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## **I NOSTRI SERVIZI SEMPRE A DISPOSIZIONE**

Our prompt services always ready for you  
Unser prompter Service ist immer für Sie da  
Nos services toujours à votre Disposition  
Nuestro rápido servicio siempre listo para usted





Tolicead

# MICRO POWER HPM-HCM



MICRO POWER HPM-HCM



MICRO POWER HPM-HCM



FRAISES MICRO POWER HPM-HCM



FRESAS POWER MICRO HPM-HCM



MICRO POWER END MILLS - 2 FLUTES - SUB-MICROGRAIN  
MICRO POWER FRÄSER - 2 NUTEN - HARTMETALLQUALITÄT: ULTRA-FEINSTKORN  
FRAISES MICRO POWER - 2 DENTS - MICRO-GRAIN ULTRAFIN  
FRESAS POWER MICRO - 2 LABIOS - SUB-MICROGRANO

NORMAL SERIES  
NORMAL AUSFÜHRUNG  
SÉRIE NORMALE  
SERIE NORMAL



X-Treme coating  
Revêtement X-Treme  
X-Treme-Beschichtung  
Recubrimiento X-Treme

**Tolleranza del gambo**  
Shank tolerance

+0.000 mm -0.013 mm



## SERIE NORMALE & LUNGA

NORMAL/EXTENDED SERIES  
NORMAL/ÜBERLÄNGE AUSFÜHRUNG  
SÉRIE NORMALE/LONGUE  
SERIE NORMAL/LARGA



# FRESE MICRO POWER A CANDELA A 2 TAGLI IN MICROGRANA ULTRAFINE

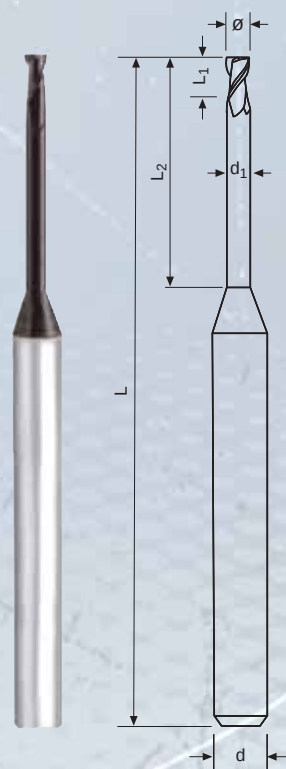
MICRO POWER END MILLS - 2 FLUTES - SUB-MICROGRAIN  
MICRO POWER FRÄSER - 2 NUTEN - HARTMETALLQUALITÄT: ULTRA-FEINSTKORN  
FRAISES MICRO POWER - 2 DENTS - MICRO-GRAIN ULTRAFIN  
FRESAS POWER MICRO - 2 LABIOS - SUB-MICROGRANO

## 1430XT



| Ø<br>mm | d <sub>1</sub><br>mm | L<br>mm | L <sub>1</sub><br>mm | L <sub>2</sub><br>mm | d<br>mm | Z | 1430XT<br>€ |
|---------|----------------------|---------|----------------------|----------------------|---------|---|-------------|
| 0.4     | 0.36                 | 35      | 0.6                  | 4                    | 3       | 2 | 48,30       |
| 0.5     | 0.45                 | 35      | 0.7                  | 6                    | 3       | 2 | 45,20       |
| 0.6     | 0.55                 | 35      | 0.9                  | 6                    | 3       | 2 | 45,20       |
| 0.7     | 0.65                 | 45      | 1                    | 6                    | 4       | 2 | 45,20       |
| 0.8     | 0.75                 | 45      | 1.2                  | 8                    | 4       | 2 | 45,20       |
| 0.9     | 0.85                 | 45      | 1.35                 | 10                   | 4       | 2 | 45,20       |
| 1       | 0.97                 | 45      | 1.5                  | 6                    | 4       | 2 | 45,20       |
| 1       | 0.95                 | 45      | 1.5                  | 8                    | 4       | 2 | 45,20       |
| 1       | 0.93                 | 45      | 1.5                  | 12                   | 4       | 2 | 45,20       |
| 1.2     | 1.15                 | 45      | 1.8                  | 8                    | 4       | 2 | 45,20       |
| 1.2     | 1.13                 | 45      | 1.8                  | 12                   | 4       | 2 | 45,20       |
| 1.4     | 1.33                 | 45      | 2.1                  | 12                   | 4       | 2 | 45,20       |
| 1.4     | 1.31                 | 50      | 2.1                  | 16                   | 4       | 2 | 45,20       |
| 1.5     | 1.45                 | 45      | 2.3                  | 8                    | 4       | 2 | 45,20       |
| 1.5     | 1.45                 | 45      | 2.3                  | 10                   | 4       | 2 | 45,20       |
| 1.5     | 1.43                 | 45      | 2.3                  | 12                   | 4       | 2 | 45,20       |
| 1.5     | 1.41                 | 50      | 2.3                  | 16                   | 4       | 2 | 45,20       |
| 1.5     | 1.39                 | 55      | 2.3                  | 20                   | 4       | 2 | 45,20       |
| 1.6     | 1.53                 | 45      | 2.4                  | 12                   | 4       | 2 | 45,20       |
| 1.6     | 1.49                 | 55      | 2.4                  | 20                   | 4       | 2 | 45,20       |
| 1.7     | 1.64                 | 45      | 2.6                  | 8                    | 4       | 2 | 45,20       |
| 1.7     | 1.63                 | 45      | 2.6                  | 12                   | 4       | 2 | 45,20       |
| 1.7     | 1.59                 | 55      | 2.6                  | 20                   | 4       | 2 | 45,20       |
| 1.8     | 1.73                 | 45      | 2.7                  | 12                   | 4       | 2 | 45,20       |
| 1.8     | 1.69                 | 55      | 2.7                  | 20                   | 4       | 2 | 45,20       |
| 1.9     | 1.85                 | 45      | 2.8                  | 8                    | 4       | 2 | 45,20       |

→1-2



### Rivestimento X-Treme

X-Treme coating  
X-Treme-Beschichtung  
Revêtement X-Treme  
Recubrimiento X-Treme



### TOLLERANZA - TOLERANCE - TOLERANZ - TOLÉRANCE - TOLERANCIA

| Diametri<br>Diameters | Tolleranza del diametro<br>Diameter tolerance | Tolleranza del gambo<br>Shank tolerance |
|-----------------------|-----------------------------------------------|-----------------------------------------|
| da 0.4 mm a 3 mm      | +0.000 mm -0.025 mm                           | +0.000 mm -0.013 mm                     |



# FRESE MICRO POWER A CANDELA A 2 TAGLI IN MICROGRANA ULTRAFINE

MICRO POWER END MILLS - 2 FLUTES - SUB-MICROGRAIN  
MICRO POWER FRÄSER - 2 NUTEN - HARTMETALLQUALITÄT: ULTRA-FEINSTKORN  
FRAISES MICRO POWER - 2 DENTS - MICRO-GRAIN ULTRAFIN  
FRESAS POWER MICRO - 2 LABIOS - SUB-MICROGRANO

**SERIE NORMALE  
& LUNGA**

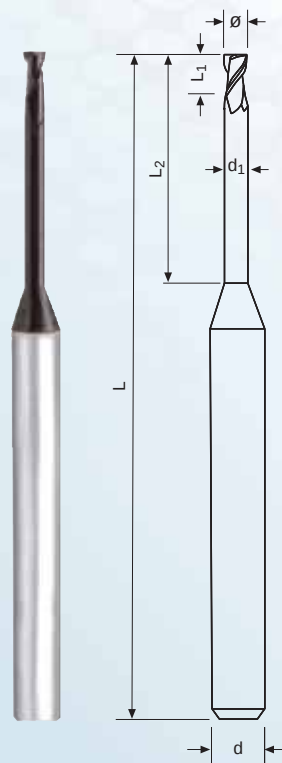
NORMAL/EXTENDED SERIES  
NORMAL/ÜBERLÄNGE AUSFÜHRUNG  
SÉRIE NORMALE/LONGUE  
SERIE NORMAL/LARGA



# 1430XT

[illegible]

→ 2-2



**Rivestimento X-Treme**  
X-Treme coating  
X-Treme-Beschichtung  
Revêtement X-Treme  
Recubrimiento X-Treme

**TOLLERANZA** - TOLERANCE - TOLERANZ - TOLÉRANCE - TOLERANCIA

| Diametri         | Tolleranza del diametro | Tolleranza del gambo |
|------------------|-------------------------|----------------------|
| Diameters        | Diameter tolerance      | Shank tolerance      |
| da 0.4 mm a 3 mm | +0.00 mm -0.025 mm      | +0.00 mm -0.013 mm   |



## SERIE NORMALE

NORMAL SERIES  
NORMAL AUSFÜHRUNG  
SÉRIE NORMALE  
SERIE NORMAL

# FRESE MICRO POWER TORICHE A 2 TAGLI IN MICROGRANA ULTRAFINE

MICRO POWER TORIC END MILLS - 2 FLUTES - SUB-MICROGRAIN  
MICRO POWER TORUSFRÄSER - 2 NUTEN - HARTMETALLQUALITÄT: ULTRA-FEINSTKORN  
FRAISES MICRO POWER TORIQUES - 2 DENTS - MICRO-GRAIN ULTRAFIN  
FRESAS POWER MICRO TÓRICAS - 2 LABIOS - SUB-MICROGRANO

## 1431XT

**NEW** Ø



| Ø/R<br>mm | d <sub>1</sub><br>mm | L<br>mm | L <sub>1</sub><br>mm | L <sub>2</sub><br>mm | d<br>mm | Z | 1431XT<br>€ |
|-----------|----------------------|---------|----------------------|----------------------|---------|---|-------------|
| 0.2/0.05  | 0.18                 | 45      | 0.3                  | 0.5                  | 4       | 2 | 70,70       |
| 0.2/0.05  | 0.18                 | 45      | 0.3                  | 1                    | 4       | 2 | 70,70 ■     |
| 0.2/0.05  | 0.18                 | 45      | 0.3                  | 1.5                  | 4       | 2 | 70,70       |
| 0.3/0.05  | 0.28                 | 45      | 0.45                 | 1                    | 4       | 2 | 70,70       |
| 0.3/0.05  | 0.28                 | 45      | 0.45                 | 2                    | 4       | 2 | 70,70 ■     |
| 0.3/0.05  | 0.28                 | 45      | 0.45                 | 3                    | 4       | 2 | 70,70       |
| 0.4/0.05  | 0.37                 | 45      | 0.6                  | 2                    | 4       | 2 | 70,70 ■     |
| 0.4/0.1   | 0.37                 | 45      | 0.6                  | 2                    | 4       | 2 | 70,70       |
| 0.4/0.1   | 0.37                 | 45      | 0.6                  | 3                    | 4       | 2 | 70,70       |

>>1-6

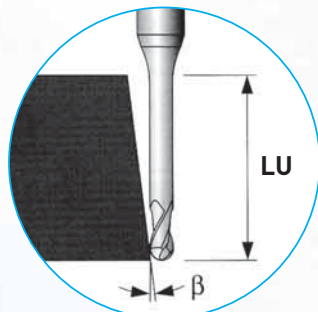
| Ø/R<br>mm | L <sub>2</sub><br>mm | β    |      |        |      |        |      |
|-----------|----------------------|------|------|--------|------|--------|------|
|           |                      | 0.5° | 1°   | 1° 30' | 2°   | 2° 30' | 3°   |
|           |                      | LU   |      |        |      |        |      |
| 0.2/0.05  | 0.5                  | 1.09 | 1.27 | 1.45   | 1.62 | 1.8    | 1.97 |
| 0.2/0.05  | 1                    | 1.52 | 1.79 | 2.02   | 2.24 | 2.45   | 2.65 |
| 0.2/0.05  | 1.5                  | 1.93 | 2.3  | 2.59   | 2.84 | 3.07   | 3.30 |
| 0.3/0.05  | 1                    | 1.58 | 1.83 | 2.06   | 2.27 | 2.48   | 2.68 |
| 0.3/0.05  | 2                    | 2.42 | 2.86 | 3.18   | 3.46 | 3.71   | 3.95 |
| 0.3/0.05  | 3                    | 2.72 | 3.88 | 4.29   | 4.62 | 4.91   | 5.18 |
| 0.4/0.05  | 2                    | 2.57 | 2.94 | 3.24   | 3.51 | 3.76   | 3.99 |
| 0.4/0.1   | 2                    | 2.60 | 2.96 | 3.25   | 3.51 | 3.76   | 3.99 |
| 0.4/0.1   | 3                    | 3.44 | 3.98 | 4.35   | 4.67 | 4.95   | 5.22 |

→1-6

## INFORMAZIONI TECNICHE

### ANGOLO DI COLLISIONE β

TECHNICAL DATA - INCLINED ANGLE β  
TECHNISCHE HILFE - NEIGUNGSWINKEL β  
SERVICE TECHNIQUE - ANGLE DE COLLISION β  
INFORMACIÓN TÉCNICA - ANGULO INCLINADO β



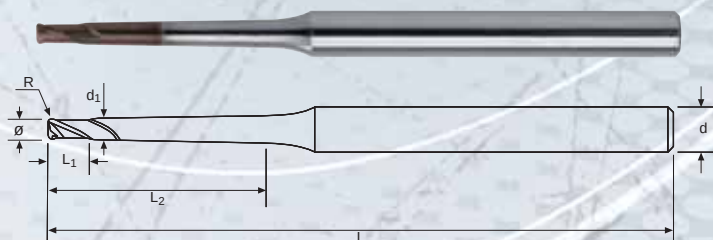
### Effettiva lunghezza utile di lavoro legata all'inclinazione β del pezzo da lavorare

Effective machining depth depending on inclined angle β of workpiece  
Die effektive Arbeitstiefe hängt vom Neigungswinkel β des Werkstückes ab  
Longueur utile effective d'usinage liée à l'inclinaison β de la pièce à usiner  
Largo útil de trabajo depende del ángulo de inclinación de la pieza



■ **Ad esaurimento scorte** - Subject to availability until sold out - Solange der vorrat reicht - Jusqu'à Épuisement de stock - Hasta agotamiento del stock

**GAMBO RASTREMATO**  
TAPERED SHANK  
VERJÜNGTER SCHAFT  
QUEUE FUSELÉE  
MANGO REBAJADO



**L2 = LUNGHEZZA UTILE DI LAVORO**  
L2 = MACHINING DEPTH  
L2 = ARBEITSTIEFE  
L2 = LONGUEUR UTILE  
L2 = LARGO ÚTIL DE TRABAJO



**Rivestimento X-Treme**  
X-Treme coating  
X-Treme-Beschichtung  
Revêtement X-Treme  
Recubrimiento X-Treme

### TOLLERANZA - TOLERANCE - TOLERANZ - TOLÉRANCE - TOLERANCIA

| Diametri<br>Diameters | Tolleranza del diametro<br>Diameter tolerance | Tolleranza del gambo<br>Shank tolerance |
|-----------------------|-----------------------------------------------|-----------------------------------------|
| da 0.2 mm a 6 mm      | +0.000 mm -0.001 mm                           | h6                                      |

# FRESE MICRO POWER TORICHE A 2 TAGLI IN MICROGRANA ULTRAFINE

MICRO POWER TORIC END MILLS - 2 FLUTES - SUB-MICROGRAIN  
MICRO POWER TORUSFRÄSER - 2 NUTEN - HARTMETALLQUALITÄT: ULTRA-FEINSTKORN  
FRAISES MICRO POWER TORIQUES - 2 DENTS - MICRO-GRAIN ULTRAFIN  
FRESAS POWER MICRO TÓRICAS - 2 LABIOS - SUB-MICROGRANO

## SERIE NORMALE

NORMAL SERIES  
NORMAL AUSFÜHRUNG  
SÉRIE NORMALE  
SERIE NORMAL



# 1431XT

NEW



| Ø/R<br>mm | d <sub>1</sub><br>mm | L<br>mm | L <sub>1</sub><br>mm | L <sub>2</sub><br>mm | d<br>mm | Z | 1431XT<br>€ |
|-----------|----------------------|---------|----------------------|----------------------|---------|---|-------------|
| 0.4/0.1   | 0.37                 | 45      | 0.6                  | 4                    | 4       | 2 | 70,70       |
| 0.5/0.05  | 0.45                 | 45      | 0.7                  | 2                    | 4       | 2 | 70,70 ■     |
| 0.5/0.1   | 0.45                 | 45      | 0.7                  | 2                    | 4       | 2 | 70,70       |
| 0.5/0.1   | 0.45                 | 45      | 0.7                  | 4                    | 4       | 2 | 70,70       |
| 0.5/0.1   | 0.45                 | 45      | 0.7                  | 6                    | 4       | 2 | 70,70       |
| 0.5/0.1   | 0.45                 | 45      | 0.7                  | 8                    | 4       | 2 | 70,70       |
| 0.6/0.06  | 0.55                 | 45      | 0.9                  | 2                    | 4       | 2 | 70,70 ■     |
| 0.6/0.1   | 0.55                 | 45      | 0.9                  | 2                    | 4       | 2 | 70,70       |
| 0.6/0.1   | 0.55                 | 45      | 0.9                  | 4                    | 4       | 2 | 70,70       |
| 0.6/0.1   | 0.55                 | 45      | 0.9                  | 6                    | 4       | 2 | 70,70       |
| 0.6/0.1   | 0.55                 | 45      | 0.9                  | 8                    | 4       | 2 | 70,70       |
| 0.6/0.1   | 0.55                 | 45      | 0.9                  | 10                   | 4       | 2 | 70,70       |
| 0.7/0.07  | 0.65                 | 45      | 1                    | 2                    | 4       | 2 | 70,70 ■     |
| 0.7/0.1   | 0.65                 | 45      | 1                    | 2                    | 4       | 2 | 70,70       |
| 0.7/0.1   | 0.65                 | 45      | 1                    | 4                    | 4       | 2 | 70,70       |
| 0.7/0.1   | 0.65                 | 45      | 1                    | 6                    | 4       | 2 | 70,70       |
| 0.7/0.1   | 0.65                 | 45      | 1                    | 8                    | 4       | 2 | 70,70       |
| 0.7/0.1   | 0.65                 | 45      | 1                    | 10                   | 4       | 2 | 70,70       |
| 0.8/0.08  | 0.75                 | 45      | 1.2                  | 4                    | 4       | 2 | 70,70 ■     |
| 0.8/0.1   | 0.75                 | 45      | 1.2                  | 4                    | 4       | 2 | 70,70       |
| 0.8/0.1   | 0.75                 | 45      | 1.2                  | 6                    | 4       | 2 | 70,70       |
| 0.8/0.1   | 0.75                 | 45      | 1.2                  | 8                    | 4       | 2 | 70,70       |
| 0.8/0.1   | 0.75                 | 45      | 1.2                  | 10                   | 4       | 2 | 70,70       |
| 0.8/0.1   | 0.75                 | 45      | 1.2                  | 12                   | 4       | 2 | 70,70       |
| 0.9/0.2   | 0.85                 | 45      | 1.35                 | 6                    | 4       | 2 | 70,70       |
| 0.9/0.2   | 0.85                 | 45      | 1.35                 | 8                    | 4       | 2 | 70,70       |
| 0.9/0.2   | 0.85                 | 45      | 1.35                 | 10                   | 4       | 2 | 70,70       |
| 0.9/0.2   | 0.85                 | 50      | 1.35                 | 15                   | 4       | 2 | 70,70       |
| 1.0/0.2   | 0.95                 | 45      | 1.5                  | 6                    | 4       | 2 | 65,00       |
| 1.0/0.1   | 0.95                 | 45      | 1.5                  | 8                    | 4       | 2 | 65,00 ■     |
| 1.0/0.1   | 0.95                 | 45      | 1.5                  | 10                   | 4       | 2 | 65,00 ■     |
| 1.0/0.2   | 0.95                 | 45      | 1.5                  | 8                    | 4       | 2 | 65,00       |
| 1.0/0.2   | 0.95                 | 45      | 1.5                  | 10                   | 4       | 2 | 65,00       |
| 1.0/0.2   | 0.95                 | 45      | 1.5                  | 12                   | 4       | 2 | 65,00       |
| 1.0/0.2   | 0.95                 | 50      | 1.5                  | 14                   | 4       | 2 | 65,00       |
| 1.0/0.1   | 0.95                 | 50      | 1.5                  | 16                   | 4       | 2 | 65,00 ■     |

→2-6

■ Ad esaurimento scorte - Subject to availability until sold out - Solange der vorrat reicht - Jusqu'à Épuisement de stock - Hasta agotamiento del stock

| Ø/R<br>mm | L <sub>2</sub><br>mm | β    |       |        |       |        |       |
|-----------|----------------------|------|-------|--------|-------|--------|-------|
|           |                      | 0.5° | 1°    | 1° 30' | 2°    | 2° 30' | 3°    |
|           |                      | LU   |       |        |       |        |       |
| 0.4/0.1   | 4                    | 3.82 | 5     | 5.44   | 5.8   | 6.12   | 6.41  |
| 0.5/0.05  | 2                    | 2.79 | 3.1   | 3.37   | 3.62  | 3.86   | 4.08  |
| 0.5/0.1   | 2                    | 2.81 | 3.11  | 3.38   | 3.62  | 3.85   | 4.07  |
| 0.5/0.1   | 4                    | 4.58 | 5.15  | 5.55   | 5.89  | 6.2    | 6.48  |
| 0.5/0.1   | 6                    | 5.71 | 7.18  | 7.7    | 8.12  | 8.48   | 8.81  |
| 0.5/0.1   | 8                    | 5.71 | 9.22  | 9.84   | 10.32 | 10.73  | 11.1  |
| 0.6/0.06  | 2                    | 2.84 | 3.14  | 3.4    | 3.64  | 3.88   | 4.1   |
| 0.6/0.1   | 2                    | 2.85 | 3.14  | 3.4    | 3.64  | 3.87   | 4.09  |
| 0.6/0.1   | 4                    | 4.64 | 5.18  | 5.57   | 5.91  | 6.21   | 6.49  |
| 0.6/0.1   | 6                    | 6.26 | 7.21  | 7.72   | 8.13  | 8.49   | 8.82  |
| 0.6/0.1   | 8                    | 6.16 | 9.24  | 9.86   | 10.33 | 10.74  | 11.11 |
| 0.6/0.1   | 10                   | 6.16 | 11.28 | 11.98  | 12.51 | 12.96  | 13.36 |
| 0.7/0.07  | 2                    | 2.88 | 3.17  | 3.43   | 3.67  | 3.9    | 4.12  |
| 0.7/0.1   | 2                    | 2.89 | 3.17  | 3.43   | 3.67  | 3.9    | 4.11  |
| 0.7/0.1   | 4                    | 4.7  | 5.21  | 5.6    | 5.93  | 6.23   | 6.51  |
| 0.7/0.1   | 6                    | 6.39 | 7.24  | 7.74   | 8.15  | 8.51   | 8.84  |
| 0.7/0.1   | 8                    | 6.61 | 9.27  | 9.87   | 10.35 | 10.75  | 11.12 |
| 0.7/0.1   | 10                   | 6.61 | 11.3  | 12     | 12.52 | 12.97  | 13.37 |
| 0.8/0.08  | 4                    | 4.68 | 5.2   | 5.2    | 5.93  | 6.23   | 6.51  |
| 0.8/0.1   | 4                    | 4.73 | 5.22  | 5.6    | 5.93  | 6.22   | 6.5   |
| 0.8/0.1   | 6                    | 6.46 | 7.25  | 7.75   | 8.15  | 8.5    | 8.83  |
| 0.8/0.1   | 8                    | 6.93 | 9.29  | 9.88   | 10.34 | 10.75  | 11.11 |
| 0.8/0.1   | 10                   | 6.93 | 11.32 | 12     | 12.52 | 12.97  | 13.36 |
| 0.8/0.1   | 12                   | 6.93 | 13.35 | 14.11  | 14.69 | 15.17  | 15.59 |
| 0.9/0.2   | 6                    | 6.53 | 7.28  | 7.77   | 8.16  | 8.52   | 8.84  |
| 0.9/0.2   | 8                    | 7.38 | 9.31  | 9.9    | 10.36 | 10.76  | 11.12 |
| 0.9/0.2   | 10                   | 7.38 | 11.34 | 12.02  | 12.54 | 12.98  | 13.37 |
| 0.9/0.2   | 15                   | 7.38 | 16.42 | 17.29  | 17.92 | 18.45  | 18.92 |
| 1.0/0.2   | 6                    | 6.6  | 7.31  | 7.79   | 8.18  | 8.53   | 8.85  |
| 1.1/0.1   | 8                    | 6.76 | 9.26  | 9.26   | 10.34 | 10.75  | 11.12 |
| 1.1/0.1   | 10                   | 6.76 | 11.26 | 11.26  | 12.5  | 12.96  | 13.36 |
| 1.0/0.2   | 8                    | 7.83 | 9.34  | 9.92   | 10.37 | 10.77  | 11.13 |
| 1.0/0.2   | 10                   | 7.83 | 11.37 | 12.03  | 12.55 | 12.99  | 13.38 |
| 1.0/0.2   | 12                   | 7.83 | 13.4  | 14.15  | 14.71 | 15.19  | 15.61 |
| 1.0/0.2   | 14                   | 7.83 | 15.43 | 16.25  | 16.86 | 17.37  | 17.82 |
| 1.1/0.1   | 16                   | 6.76 | 17.26 | 18.25  | 18.93 | 19.49  | 19.97 |

→2-6





## SERIE NORMALE

NORMAL SERIES  
NORMAL AUSFÜHRUNG  
SÉRIE NORMALE  
SERIE NORMAL

# FRESE MICRO POWER TORICHE A 2 TAGLI IN MICROGRANA ULTRAFINE

MICRO POWER TORIC END MILLS - 2 FLUTES - SUB-MICROGRAIN  
MICRO POWER TORUSFRÄSER - 2 NUTEN - HARTMETALLQUALITÄT: ULTRA-FEINSTKORN  
FRAISES MICRO POWER TORIQUES - 2 DENTS - MICRO-GRAIN ULTRAFIN  
FRESAS POWER MICRO TÓRICAS - 2 LABIOS - SUB-MICROGRANO

## 1431XT

**NEW** Ø



| Ø/R<br>mm | d <sub>1</sub><br>mm | L<br>mm | L <sub>1</sub><br>mm | L <sub>2</sub><br>mm | d<br>mm | Z | 1431XT<br>€ |
|-----------|----------------------|---------|----------------------|----------------------|---------|---|-------------|
| 1.0/0.2   | 0.95                 | 50      | 1.5                  | 16                   | 4       | 2 | 65,00       |
| 1.2/0.2   | 1.15                 | 45      | 1.8                  | 6                    | 4       | 2 | 65,00       |
| 1.2/0.2   | 1.15                 | 45      | 1.8                  | 8                    | 4       | 2 | 65,00       |
| 1.2/0.2   | 1.15                 | 45      | 1.8                  | 10                   | 4       | 2 | 65,00       |
| 1.2/0.2   | 1.15                 | 45      | 1.8                  | 12                   | 4       | 2 | 65,00       |
| 1.4/0.14  | 1.35                 | 45      | 2.1                  | 6                    | 4       | 2 | 65,00 ■     |
| 1.4/0.2   | 1.35                 | 45      | 2.1                  | 6                    | 4       | 2 | 65,00       |
| 1.4/0.2   | 1.35                 | 45      | 2.1                  | 8                    | 4       | 2 | 65,00       |
| 1.4/0.2   | 1.35                 | 45      | 2.1                  | 10                   | 4       | 2 | 65,00       |
| 1.4/0.2   | 1.35                 | 45      | 2.1                  | 12                   | 4       | 2 | 65,00       |
| 1.4/0.2   | 1.35                 | 50      | 2.1                  | 14                   | 4       | 2 | 65,00       |
| 1.4/0.2   | 1.35                 | 50      | 2.1                  | 16                   | 4       | 2 | 65,00       |
| 1.5/0.2   | 1.45                 | 45      | 2.3                  | 6                    | 4       | 2 | 65,00       |
| 1.5/0.2   | 1.45                 | 45      | 2.3                  | 8                    | 4       | 2 | 65,00       |
| 1.5/0.15  | 1.45                 | 45      | 2.3                  | 10                   | 4       | 2 | 65,00 ■     |
| 1.5/0.15  | 1.45                 | 45      | 2.3                  | 12                   | 4       | 2 | 65,00 ■     |
| 1.5/0.2   | 1.45                 | 45      | 2.3                  | 10                   | 4       | 2 | 65,00       |
| 1.5/0.2   | 1.45                 | 45      | 2.3                  | 12                   | 4       | 2 | 65,00       |
| 1.5/0.2   | 1.45                 | 50      | 2.3                  | 14                   | 4       | 2 | 65,00       |
| 1.5/0.15  | 1.45                 | 50      | 2.3                  | 16                   | 4       | 2 | 65,00 ■     |
| 1.5/0.2   | 1.45                 | 50      | 2.3                  | 16                   | 4       | 2 | 65,00       |
| 1.5/0.2   | 1.45                 | 55      | 2.3                  | 18                   | 4       | 2 | 65,00       |
| 1.5/0.15  | 1.45                 | 55      | 2.3                  | 20                   | 4       | 2 | 65,00 ■     |
| 1.6/0.15  | 1.55                 | 45      | 2.4                  | 6                    | 4       | 2 | 65,00 ■     |
| 1.5/0.2   | 1.45                 | 55      | 2.3                  | 20                   | 4       | 2 | 65,00       |
| 1.6/0.2   | 1.55                 | 45      | 2.4                  | 6                    | 4       | 2 | 65,00       |
| 1.6/0.2   | 1.55                 | 45      | 2.4                  | 8                    | 4       | 2 | 65,00       |
| 1.6/0.2   | 1.55                 | 45      | 2.4                  | 10                   | 4       | 2 | 65,00       |
| 1.6/0.2   | 1.55                 | 45      | 2.4                  | 12                   | 4       | 2 | 65,00       |
| 1.6/0.2   | 1.55                 | 50      | 2.4                  | 14                   | 4       | 2 | 65,00       |
| 1.6/0.2   | 1.55                 | 50      | 2.4                  | 16                   | 4       | 2 | 65,00       |
| 1.6/0.2   | 1.55                 | 55      | 2.4                  | 18                   | 4       | 2 | 65,00       |
| 1.6/0.2   | 1.55                 | 55      | 2.4                  | 20                   | 4       | 2 | 65,00       |
| 1.6/0.18  | 1.75                 | 45      | 2.7                  | 6                    | 4       | 2 | 65,00 ■     |
| 1.8/0.2   | 1.75                 | 45      | 2.7                  | 6                    | 4       | 2 | 65,00       |
| 1.8/0.2   | 1.75                 | 45      | 2.7                  | 8                    | 4       | 2 | 65,00       |

→3-6

■ Ad esaurimento scorte - Subject to availability until sold out - Solange der vorrat reicht - Jusqu'à Épuisement de stock - Hasta agotamiento del stock

| Ø/R<br>mm | L <sub>2</sub><br>mm | β     |       |        |       |        |       |
|-----------|----------------------|-------|-------|--------|-------|--------|-------|
|           |                      | 0.5°  | 1°    | 1° 30' | 2°    | 2° 30' | 3°    |
|           |                      | LU    |       |        |       |        |       |
| 1.0/0.2   | 16                   | 7.83  | 17.45 | 18.35  | 19    | 19.55  | 20.02 |
| 1.2/0.2   | 6                    | 6.71  | 7.36  | 7.83   | 8.31  | 8.56   | 8.88  |
| 1.2/0.2   | 8                    | 8.42  | 9.39  | 9.95   | 10.4  | 10.8   | 11.16 |
| 1.2/0.2   | 10                   | 8.73  | 11.42 | 12.07  | 12.58 | 13.01  | 13.38 |
| 1.2/0.2   | 12                   | 8.73  | 13.45 | 14.18  | 14.74 | 15.21  | 15.63 |
| 1.4/0.14  | 6                    | 6.73  | 7.38  | 7.84   | 8.23  | 8.58   | 8.89  |
| 1.4/0.2   | 6                    | 6.8   | 7.42  | 7.86   | 8.25  | 8.59   | 8.9   |
| 1.4/0.2   | 8                    | 8.57  | 9.44  | 9.99   | 10.43 | 10.82  | 11.18 |
| 1.4/0.2   | 10                   | 9.63  | 11.47 | 12.1   | 12.6  | 13.04  | 13.43 |
| 1.4/0.2   | 12                   | 9.63  | 13.5  | 14.21  | 14.76 | 15.23  | 15.65 |
| 1.4/0.2   | 14                   | 9.63  | 15.52 | 16.31  | 16.91 | 17.41  | 17.86 |
| 1.4/0.2   | 16                   | 9.63  | 17.55 | 18.41  | 19.05 | 19.58  | 20.05 |
| 1.5/0.2   | 6                    | 6.85  | 7.44  | 7.88   | 8.26  | 8.6    | 8.92  |
| 1.5/0.2   | 8                    | 8.63  | 9.47  | 10.01  | 10.45 | 10.84  | 11.19 |
| 1.5/0.15  | 10                   | 8.71  | 11.41 | 12.06  | 12.57 | 13.01  | 13.4  |
| 1.5/0.15  | 12                   | 8.71  | 13.41 | 14.15  | 14.72 | 15.2   | 15.62 |
| 1.5/0.2   | 10                   | 10.22 | 11.49 | 12.12  | 12.62 | 13.05  | 13.44 |
| 1.5/0.2   | 12                   | 10.08 | 13.52 | 14.23  | 14.77 | 15.24  | 15.66 |
| 1.5/0.2   | 14                   | 10.08 | 15.54 | 16.33  | 16.92 | 17.42  | 17.87 |
| 1.5/0.15  | 16                   | 8.71  | 17.41 | 18.32  | 18.98 | 19.53  | 20.01 |
| 1.5/0.2   | 16                   | 10.08 | 17.57 | 18.42  | 19.06 | 19.59  | 20.06 |
| 1.5/0.2   | 18                   | 10.08 | 19.59 | 20.51  | 21.19 | 21.75  | 22.24 |
| 1.5/0.15  | 20                   | 8.71  | 21.41 | 22.48  | 23.22 | 23.83  | -     |
| 1.6/0.16  | 6                    | 6.83  | 7.43  | 7.88   | 8.26  | 8.6    | 8.92  |
| 1.5/0.2   | 20                   | 10.08 | 21.62 | 22.6   | 23.31 | 23.9   | -     |
| 1.6/0.2   | 6                    | 6.89  | 7.46  | 7.9    | 8.28  | 8.62   | 8.93  |
| 1.6/0.2   | 8                    | 8.69  | 9.49  | 10.02  | 10.46 | 10.85  | 11.2  |
| 1.6/0.2   | 10                   | 10.37 | 11.52 | 12.14  | 12.63 | 13.06  | 13.45 |
| 1.6/0.2   | 12                   | 10.53 | 13.54 | 14.24  | 14.79 | 15.25  | 15.67 |
| 1.6/0.2   | 14                   | 10.53 | 15.57 | 16.34  | 16.93 | 17.43  | 17.88 |
| 1.6/0.2   | 16                   | 10.53 | 17.59 | 18.44  | 19.07 | 19.6   | 20.07 |
| 1.6/0.2   | 18                   | 10.53 | 19.62 | 20.53  | 21.2  | 21.76  | 22.25 |
| 1.6/0.2   | 20                   | 10.53 | 21.64 | 22.62  | 23.32 | 23.91  | -     |
| 1.8/0.18  | 6                    | 6.91  | 7.48  | 7.92   | 8.29  | 8.63   | 8.94  |
| 1.8/0.2   | 6                    | 6.96  | 7.51  | 7.94   | 8.31  | 8.64   | 8.95  |
| 1.8/0.2   | 8                    | 8.78  | 9.54  | 10.06  | 10.49 | 10.87  | 11.22 |

→3-6



# FRESE MICRO POWER TORICHE A 2 TAGLI IN MICROGRANA ULTRAFINE

MICRO POWER TORIC END MILLS - 2 FLUTES - SUB-MICROGRAIN  
MICRO POWER TORUSFRÄSER - 2 NUTEN - HARTMETALLQUALITÄT: ULTRA-FEINSTKORN  
FRAISES MICRO POWER TORIQUES - 2 DENTS - MICRO-GRAIN ULTRAFIN  
FRESAS POWER MICRO TÓRICAS - 2 LABIOS - SUB-MICROGRANO

## SERIE NORMALE

NORMAL SERIES  
NORMAL AUSFÜHRUNG  
SÉRIE NORMALE  
SERIE NORMAL



# 1431XT

NEW



| Ø/R<br>mm | d <sub>1</sub><br>mm | L<br>mm | L <sub>1</sub><br>mm | L <sub>2</sub><br>mm | d<br>mm | Z | 1431XT<br>€ |
|-----------|----------------------|---------|----------------------|----------------------|---------|---|-------------|
| 1.8/0.2   | 1.75                 | 45      | 2.7                  | 10                   | 4       | 2 | 65,00       |
| 1.8/0.2   | 1.75                 | 45      | 2.7                  | 12                   | 4       | 2 | 65,00       |
| 1.8/0.2   | 1.75                 | 50      | 2.7                  | 14                   | 4       | 2 | 65,00       |
| 1.8/0.2   | 1.75                 | 50      | 2.7                  | 16                   | 4       | 2 | 65,00       |
| 1.8/0.2   | 1.75                 | 55      | 2.7                  | 18                   | 4       | 2 | 65,00       |
| 1.8/0.2   | 1.75                 | 55      | 2.7                  | 20                   | 4       | 2 | 65,00       |
| 2.0/0.2   | 1.95                 | 45      | 3                    | 6                    | 4       | 2 | 60,50 ■     |
| 2.0/0.2   | 1.95                 | 45      | 3                    | 8                    | 4       | 2 | 60,50 ■     |
| 2.0/0.2   | 1.95                 | 45      | 3                    | 10                   | 4       | 2 | 60,50 ■     |
| 2.0/0.2   | 1.95                 | 45      | 3                    | 12                   | 4       | 2 | 60,50 ■     |
| 2.0/0.2   | 1.95                 | 50      | 3                    | 14                   | 4       | 2 | 60,50 ■     |
| 2.0/0.2   | 1.95                 | 50      | 3                    | 16                   | 4       | 2 | 60,50       |
| 2.0/0.2   | 1.95                 | 55      | 3                    | 18                   | 4       | 2 | 60,50       |
| 2.0/0.2   | 1.95                 | 55      | 3                    | 20                   | 4       | 2 | 60,50 ■     |
| 2.0/0.2   | 1.95                 | 60      | 3                    | 25                   | 4       | 2 | 60,50       |
| 2.0/0.2   | 1.95                 | 70      | 3                    | 30                   | 4       | 2 | 60,50 ■     |
| 2.0/0.5   | 1.95                 | 45      | 3                    | 6                    | 4       | 2 | 60,50       |
| 2.0/0.5   | 1.95                 | 45      | 3                    | 8                    | 4       | 2 | 60,50       |
| 2.0/0.5   | 1.95                 | 45      | 3                    | 10                   | 4       | 2 | 60,50       |
| 2.0/0.5   | 1.95                 | 45      | 3                    | 12                   | 4       | 2 | 60,50       |
| 2.0/0.5   | 1.95                 | 50      | 3                    | 14                   | 4       | 2 | 60,50       |
| 2.0/0.5   | 1.95                 | 50      | 3                    | 16                   | 4       | 2 | 60,50       |
| 2.0/0.5   | 1.95                 | 55      | 3                    | 18                   | 4       | 2 | 60,50       |
| 2.0/0.5   | 1.95                 | 55      | 3                    | 20                   | 4       | 2 | 60,50       |
| 2.0/0.5   | 1.95                 | 60      | 3                    | 25                   | 4       | 2 | 60,50       |
| 2.0/0.5   | 1.95                 | 70      | 3                    | 30                   | 4       | 2 | 60,50       |
| 2.5/0.25  | 2.4                  | 45      | 3.7                  | 8                    | 4       | 2 | 60,50 ■     |
| 2.5/0.25  | 2.4                  | 45      | 1.2                  | 10                   | 4       | 2 | 60,50       |
| 2.5/0.25  | 2.4                  | 45      | 1.2                  | 12                   | 4       | 2 | 60,50       |
| 2.5/0.25  | 2.4                  | 50      | 1.2                  | 14                   | 4       | 2 | 60,50       |
| 2.5/0.25  | 2.4                  | 55      | 1.35                 | 16                   | 4       | 2 | 60,50       |
| 2.5/0.25  | 2.4                  | 55      | 1.35                 | 18                   | 4       | 2 | 60,50       |
| 2.5/0.25  | 2.4                  | 60      | 1.35                 | 20                   | 4       | 2 | 60,50       |
| 2.5/0.25  | 2.4                  | 70      | 1.35                 | 25                   | 4       | 2 | 60,50       |
| 2.5/0.25  | 2.4                  | 80      | 1.5                  | 30                   | 4       | 2 | 60,50       |
| 3.0/0.2   | 2.85                 | 45      | 4.5                  | 8                    | 6       | 2 | 60,50       |

→4-6

| Ø/R<br>mm | L <sub>2</sub><br>mm | β     |       |        |       |        |       |
|-----------|----------------------|-------|-------|--------|-------|--------|-------|
|           |                      | 0.5°  | 1°    | 1° 30' | 2°    | 2° 30' | 3°    |
|           |                      | LU    |       |        |       |        |       |
| 1.8/0.2   | 10                   | 10.54 | 11.56 | 12.17  | 12.66 | 13.08  | 13.47 |
| 1.8/0.2   | 12                   | 11.43 | 13.59 | 14.27  | 14.81 | 15.27  | 15.69 |
| 1.8/0.2   | 14                   | 11.43 | 15.61 | 16.37  | 16.96 | 17.45  | 17.89 |
| 1.8/0.2   | 16                   | 11.43 | 17.63 | 18.46  | 19.09 | 19.62  | 20.08 |
| 1.8/0.2   | 18                   | 11.43 | 19.66 | 20.55  | 21.22 | 21.78  | -     |
| 1.8/0.2   | 20                   | 11.43 | 21.68 | 22.64  | 23.4  | 23.93  | -     |
| 2.0/0.2   | 6                    | 7.03  | 7.56  | 7.98   | 8.34  | 8.67   | 8.98  |
| 2.0/0.2   | 8                    | 8.87  | 9.58  | 10.09  | 10.52 | 10.9   | 11.24 |
| 2.0/0.2   | 10                   | 10.66 | 11.61 | 12.2   | 12.68 | 13.1   | 13.49 |
| 2.0/0.2   | 12                   | 12.32 | 13.63 | 14.3   | 14.84 | 15.29  | 15.71 |
| 2.0/0.2   | 14                   | 12.33 | 15.65 | 16.4   | 16.98 | 17.47  | 17.91 |
| 2.0/0.2   | 16                   | 12.33 | 17.68 | 18.49  | 19.11 | 19.64  | -     |
| 2.0/0.2   | 18                   | 12.33 | 19.7  | 20.58  | 21.24 | 21.79  | -     |
| 2.0/0.2   | 20                   | 12.33 | 21.72 | 22.67  | 23.36 | -      | -     |
| 2.0/0.2   | 25                   | 12.33 | 26.78 | 27.87  | 28.65 | -      | -     |
| 2.0/0.2   | 30                   | 12.33 | 31.83 | 33.05  | -     | -      | -     |
| 2.0/0.5   | 6                    | 7     | 7.52  | 7.93   | 8.29  | 8.61   | 8.92  |
| 2.0/0.5   | 8                    | 8.83  | 9.54  | 10.05  | 10.47 | 10.85  | 11.19 |
| 2.0/0.5   | 10                   | 10.62 | 11.57 | 12.16  | 12.64 | 13.06  | 13.44 |
| 2.0/0.5   | 12                   | 12.12 | 13.59 | 14.26  | 14.79 | 15.25  | 15.66 |
| 2.0/0.5   | 14                   | 11.95 | 15.62 | 16.36  | 16.94 | 17.43  | 17.87 |
| 2.0/0.5   | 16                   | 11.95 | 17.64 | 18.46  | 19.08 | 19.6   | -     |
| 2.0/0.5   | 18                   | 11.95 | 19.67 | 20.55  | 21.21 | 21.76  | -     |
| 2.0/0.5   | 20                   | 11.95 | 21.69 | 22.63  | 23.33 | -      | -     |
| 2.0/0.5   | 25                   | 12.33 | 26.78 | 27.87  | 28.65 | -      | -     |
| 2.0/0.5   | 30                   | 12.33 | 31.83 | 33.05  | -     | -      | -     |
| 2.5/0.25  | 8                    | 9.28  | 9.84  | 10.29  | 10.69 | 11.04  | 11.37 |
| 2.5/0.25  | 10                   | 11.15 | 11.86 | 12.39  | 12.84 | 13.24  | 13.6  |
| 2.5/0.25  | 12                   | 13.01 | 13.88 | 14.48  | 14.98 | 15.42  | -     |
| 2.5/0.25  | 14                   | 14.85 | 15.9  | 16.57  | 17.12 | -      | -     |
| 2.5/0.25  | 16                   | 16.64 | 17.92 | 18.66  | 19.24 | -      | -     |
| 2.5/0.25  | 18                   | 18.23 | 19.94 | 20.74  | 21.36 | -      | -     |
| 2.5/0.25  | 20                   | 18.1  | 21.96 | 22.82  | -     | -      | -     |
| 2.5/0.25  | 25                   | 18.1  | 27    | 28.01  | -     | -      | -     |
| 2.5/0.25  | 30                   | 18.1  | 32.05 | -      | -     | -      | -     |
| 3.0/0.2   | 8                    | 9.58  | 10.07 | 10.48  | 10.85 | 11.19  | 11.51 |

→4-6

■ **Ad esaurimento scorte** - Subject to availability until sold out - Solange der vorrat reicht - Jusqu'à Épuisement de stock - Hasta agotamiento del stock



## SERIE NORMALE

NORMAL SERIES  
NORMAL AUSFÜHRUNG  
SÉRIE NORMALE  
SERIE NORMAL

# FRESE MICRO POWER TORICHE A 2 TAGLI IN MICROGRANA ULTRAFINE

MICRO POWER TORIC END MILLS - 2 FLUTES - SUB-MICROGRAIN  
MICRO POWER TORUSFRÄSER - 2 NUTEN - HARTMETALLQUALITÄT: ULTRA-FEINSTKORN  
FRAISES MICRO POWER TORIQUES - 2 DENTS - MICRO-GRAIN ULTRAFIN  
FRESAS POWER MICRO TÓRICAS - 2 LABIOS - SUB-MICROGRANO

## 1431XT

**NEW** Ø



| Ø/R<br>mm | d <sub>1</sub><br>mm | L<br>mm | L <sub>1</sub><br>mm | L <sub>2</sub><br>mm | d<br>mm | Z | 1431XT<br>€ |
|-----------|----------------------|---------|----------------------|----------------------|---------|---|-------------|
| 3.0/0.2   | 2.85                 | 45      | 4.5                  | 10                   | 6       | 2 | 60,50       |
| 3.0/0.2   | 2.85                 | 45      | 4.5                  | 12                   | 6       | 2 | 60,50       |
| 3.0/0.2   | 2.85                 | 50      | 4.5                  | 14                   | 6       | 2 | 60,50       |
| 3.0/0.3   | 2.85                 | 55      | 4.5                  | 16                   | 6       | 2 | 60,50 ■     |
| 3.0/0.2   | 2.85                 | 55      | 4.5                  | 16                   | 6       | 2 | 60,50       |
| 3.0/0.2   | 2.85                 | 55      | 4.5                  | 18                   | 6       | 2 | 60,50       |
| 3.0/0.3   | 2.85                 | 60      | 4.5                  | 20                   | 6       | 2 | 60,50 ■     |
| 3.0/0.2   | 2.85                 | 60      | 4.5                  | 20                   | 6       | 2 | 60,50       |
| 3.0/0.2   | 2.85                 | 65      | 4.5                  | 25                   | 6       | 2 | 60,50       |
| 3.0/0.2   | 2.85                 | 80      | 4.5                  | 30                   | 6       | 2 | 60,50       |
| 3.0/0.2   | 2.85                 | 90      | 4.5                  | 35                   | 6       | 2 | 60,50       |
| 3.0/0.2   | 2.85                 | 90      | 4.5                  | 40                   | 6       | 2 | 60,50       |
| 3.0/0.5   | 2.85                 | 45      | 4.5                  | 8                    | 6       | 2 | 60,50       |
| 3.0/0.5   | 2.85                 | 45      | 4.5                  | 10                   | 6       | 2 | 60,50       |
| 3.0/0.5   | 2.85                 | 45      | 4.5                  | 12                   | 6       | 2 | 60,50       |
| 3.0/0.5   | 2.85                 | 45      | 4.5                  | 14                   | 6       | 2 | 60,50       |
| 3.0/0.5   | 2.85                 | 50      | 4.5                  | 16                   | 6       | 2 | 60,50       |
| 3.0/0.5   | 2.85                 | 55      | 4.5                  | 18                   | 6       | 2 | 60,50       |
| 3.0/0.5   | 2.85                 | 55      | 4.5                  | 20                   | 6       | 2 | 60,50       |
| 3.0/0.5   | 2.85                 | 60      | 4.5                  | 25                   | 6       | 2 | 60,50       |
| 3.0/0.5   | 2.85                 | 65      | 4.5                  | 30                   | 6       | 2 | 60,50       |
| 3.0/0.5   | 2.85                 | 80      | 4.5                  | 35                   | 6       | 2 | 60,50       |
| 3.0/0.5   | 2.85                 | 90      | 4.5                  | 40                   | 6       | 2 | 60,50       |
| 4.0/0.5   | 3.85                 | 50      | 6                    | 12                   | 6       | 2 | 65,00       |
| 4.0/0.5   | 3.85                 | 60      | 6                    | 16                   | 6       | 2 | 65,00       |
| 4.0/0.5   | 3.85                 | 60      | 6                    | 20                   | 6       | 2 | 65,00       |
| 4.0/0.5   | 3.85                 | 70      | 6                    | 25                   | 6       | 2 | 65,00       |
| 4.0/0.5   | 3.85                 | 80      | 6                    | 30                   | 6       | 2 | 65,00       |
| 4.0/0.5   | 3.85                 | 90      | 6                    | 35                   | 6       | 2 | 65,00       |
| 4.0/0.5   | 3.85                 | 90      | 6                    | 40                   | 6       | 2 | 65,00       |
| 4.0/0.5   | 3.85                 | 100     | 6                    | 45                   | 6       | 2 | 65,00       |
| 4.0/0.5   | 3.85                 | 100     | 6                    | 50                   | 6       | 2 | 65,00       |
| 5.0/0.5   | 4.85                 | 60      | 7,5                  | 16                   | 6       | 2 | 65,00       |
| 5.0/0.5   | 4.85                 | 70      | 7,5                  | 25                   | 6       | 2 | 65,00 ■     |
| 5.0/0.5   | 4.85                 | 90      | 7,5                  | 35                   | 6       | 2 | 65,00 ■     |
| 5.0/0.5   | 4.85                 | 110     | 7,5                  | 50                   | 6       | 2 | 65,00       |

→5-6

■ Ad esaurimento scorte - Subject to availability until sold out - Solange der vorrat reicht - Jusqu'à Épuisement de stock - Hasta agotamiento del stock

| Ø/R<br>mm | L <sub>2</sub><br>mm | β     |       |        |       |        |       |
|-----------|----------------------|-------|-------|--------|-------|--------|-------|
|           |                      | 0.5°  | 1°    | 1° 30' | 2°    | 2° 30' | 3°    |
|           |                      | LU    |       |        |       |        |       |
| 3.0/0.2   | 10                   | 11.48 | 12.08 | 12.57  | 12.99 | 13.38  | 13.73 |
| 3.0/0.2   | 12                   | 13.38 | 14.1  | 14.66  | 15.13 | 15.55  | 15.93 |
| 3.0/0.2   | 14                   | 15.27 | 16.12 | 16.74  | 17.26 | 17.71  | 18.12 |
| 3.0/0.3   | 16                   | 16.94 | 18.02 | 18.72  | 19.29 | 19.78  | 20.22 |
| 3.0/0.2   | 16                   | 17.15 | 18.14 | 18.82  | 19.38 | 19.86  | 20.3  |
| 3.0/0.2   | 18                   | 19    | 20.15 | 20.9   | 21.49 | 22.01  | 22.47 |
| 3.0/0.3   | 20                   | 20.24 | 22.02 | 22.85  | 23.5  | 24.06  | 24.54 |
| 3.0/0.2   | 20                   | 20.84 | 22.17 | 22.97  | 23.6  | 24.15  | 24.63 |
| 3.0/0.2   | 25                   | 23.99 | 27.21 | 28.15  | 28.87 | 29.47  | -     |
| 3.0/0.2   | 30                   | 23.99 | 32.25 | 33.31  | 34.11 | -      | -     |
| 3.0/0.2   | 35                   | 23.99 | 37.3  | 38.47  | 39.33 | -      | -     |
| 3.0/0.2   | 40                   | 23.99 | 42.33 | 43.62  | -     | -      | -     |
| 3.0/0.5   | 8                    | 9.56  | 10.04 | 10.45  | 10.81 | 11.15  | 11.46 |
| 3.0/0.5   | 10                   | 11.46 | 12.06 | 12.54  | 12.96 | 13.34  | 13.64 |
| 3.0/0.5   | 12                   | 13.36 | 14.08 | 14.62  | 15.09 | 15.51  | 15.89 |
| 3.0/0.5   | 14                   | 15.25 | 16.09 | 16.71  | 17.22 | 17.67  | 18.08 |
| 3.0/0.5   | 16                   | 17.12 | 18.11 | 18.79  | 19.34 | 19.83  | 20.26 |
| 3.0/0.5   | 18                   | 18.95 | 20.13 | 20.87  | 21.46 | 21.98  | 22.43 |
| 3.0/0.5   | 20                   | 20.08 | 22.15 | 22.94  | 23.57 | 24.12  | 24.59 |
| 3.0/0.5   | 25                   | 23.62 | 27.19 | 28.12  | 28.84 | 29.44  | -     |
| 3.0/0.5   | 30                   | 23.62 | 32.23 | 33.29  | 34.08 | 34.74  | -     |
| 3.0/0.5   | 35                   | 23.62 | 37.27 | 38.45  | 39.31 | -      | -     |
| 3.0/0.5   | 40                   | 23.62 | 42.31 | 43.6   | -     | -      | -     |
| 4.0/0.5   | 12                   | 13.58 | 14.23 | 14.75  | 15.2  | 15.6   | 15.97 |
| 4.0/0.5   | 16                   | 17.39 | 18.26 | 18.91  | 19.44 | 19.91  | -     |
| 4.0/0.5   | 20                   | 21.15 | 22.3  | 23.05  | 23.66 | -      | -     |
| 4.0/0.5   | 25                   | 25.75 | 27.33 | 28.22  | 22.92 | -      | -     |
| 4.0/0.5   | 30                   | 28.12 | 32.37 | 33.39  | -     | -      | -     |
| 4.0/0.5   | 35                   | 28.12 | 37.41 | 38.54  | -     | -      | -     |
| 4.0/0.5   | 40                   | 28.12 | 42.45 | -      | -     | -      | -     |
| 4.0/0.5   | 45                   | 28.12 | 47.49 | -      | -     | -      | -     |
| 4.0/0.5   | 50                   | 28.12 | 52.52 | -      | -     | -      | -     |
| 5.0/0.5   | 16                   | 17.61 | 18.4  | 19.02  | -     | -      | -     |
| 5.0/0.5   | 25                   | 26.12 | 27.47 | -      | -     | -      | -     |
| 5.0/0.5   | 35                   | 32.61 | -     | -      | -     | -      | -     |
| 5.0/0.5   | 50                   | 32.61 | -     | -      | -     | -      | -     |

→5-6

# FRESE MICRO POWER TORICHE A 2 TAGLI IN MICROGRANA ULTRAFINE

MICRO POWER TORIC END MILLS - 2 FLUTES - SUB-MICROGRAIN  
MICRO POWER TORUSFRÄSER - 2 NUTEN - HARTMETALLQUALITÄT: ULTRA-FEINSTKORN  
FRAISES MICRO POWER TORIQUES - 2 DENTS - MICRO-GRAIN ULTRAFIN  
FRESAS POWER MICRO TÓRICAS - 2 LABIOS - SUB-MICROGRANO

## SERIE NORMALE

NORMAL SERIES  
NORMAL AUSFÜHRUNG  
SÉRIE NORMALE  
SERIE NORMAL



# 1431XT

NEW Ø

[illegible]

→6-6

[illegible]

→6-6



## SERIE NORMALE & LUNGA

NORMAL/EXTENDED SERIES  
NORMAL/ÜBERLÄNGE AUSFÜHRUNG  
SÉRIE NORMALE/LONGUE  
SERIE NORMAL/LARGA

# FRESE MICRO POWER TORICHE A 2 TAGLI IN MICROGRANA ULTRAFINE

MICRO POWER TORIC END MILLS - 2 FLUTES - SUB-MICROGRAIN  
MICRO POWER TORUSFRÄSER - 2 NUTEN - HARTMETALLQUALITÄT: ULTRA-FEINSTKORN  
FRAISES MICRO POWER TORIQUES - 2 DENTS - MICRO-GRAIN ULTRAFIN  
FRESAS POWER MICRO TÓRICAS - 2 LABIOS - SUB-MICROGRANO

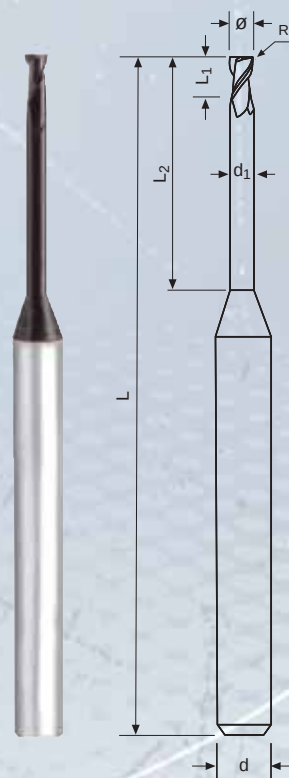


## 1433XT



| Ø/R<br>mm | d <sub>1</sub><br>mm | L<br>mm | L <sub>1</sub><br>mm | L <sub>2</sub><br>mm | d<br>mm | Z | 1433XT<br>€ |
|-----------|----------------------|---------|----------------------|----------------------|---------|---|-------------|
| 0.5/0.1   | 0.45                 | 50      | 0.4                  | 2                    | 4       | 2 | 37,50       |
| 0.5/0.1   | 0.45                 | 50      | 0.4                  | 4                    | 4       | 2 | 37,50       |
| 0.5/0.1   | 0.45                 | 50      | 0.4                  | 6                    | 4       | 2 | 37,50       |
| 0.6/0.1   | 0.55                 | 50      | 0.5                  | 2                    | 4       | 2 | 37,50       |
| 0.6/0.1   | 0.55                 | 50      | 0.5                  | 4                    | 4       | 2 | 37,50       |
| 0.6/0.1   | 0.55                 | 50      | 0.5                  | 6                    | 4       | 2 | 37,50       |
| 0.8/0.1   | 0.75                 | 50      | 0.65                 | 4                    | 4       | 2 | 37,50       |
| 0.8/0.1   | 0.75                 | 50      | 0.65                 | 6                    | 4       | 2 | 37,50       |
| 0.8/0.1   | 0.75                 | 50      | 0.65                 | 8                    | 4       | 2 | 29,15       |
| 1.0/0.2   | 0.95                 | 50      | 0.8                  | 4                    | 4       | 2 | 29,15       |
| 1.0/0.2   | 0.95                 | 50      | 0.8                  | 6                    | 4       | 2 | 29,15       |
| 1.0/0.2   | 0.95                 | 50      | 0.8                  | 8                    | 4       | 2 | 29,15       |
| 1.0/0.2   | 0.95                 | 50      | 0.8                  | 10                   | 4       | 2 | 29,15       |
| 1.0/0.2   | 0.95                 | 50      | 0.8                  | 12                   | 4       | 2 | 29,15       |
| 1.2/0.2   | 1.15                 | 50      | 1                    | 6                    | 4       | 2 | 29,15       |
| 1.2/0.2   | 1.15                 | 50      | 1                    | 10                   | 4       | 2 | 29,15       |
| 1.5/0.2   | 1.45                 | 50      | 1.2                  | 4                    | 4       | 2 | 29,15       |
| 1.5/0.2   | 1.45                 | 50      | 1.2                  | 6                    | 4       | 2 | 29,15       |
| 1.5/0.2   | 1.45                 | 50      | 1.2                  | 8                    | 4       | 2 | 29,15       |
| 1.5/0.2   | 1.45                 | 50      | 1.2                  | 10                   | 4       | 2 | 29,15       |
| 1.5/0.2   | 1.45                 | 50      | 1.2                  | 12                   | 4       | 2 | 29,15       |
| 1.5/0.2   | 1.45                 | 50      | 1.2                  | 16                   | 4       | 2 | 29,15       |
| 2.0/0.2   | 1.95                 | 50      | 1.6                  | 6                    | 4       | 2 | 29,15       |
| 2.0/0.2   | 1.95                 | 50      | 1.6                  | 8                    | 4       | 2 | 29,15       |
| 2.0/0.2   | 1.95                 | 50      | 1.6                  | 10                   | 4       | 2 | 29,15       |
| 2.0/0.2   | 1.95                 | 50      | 1.6                  | 12                   | 4       | 2 | 29,15       |

→1-3



### Rivestimento X-Treme

X-Treme coating  
X-Treme-Beschichtung  
Revêtement X-Treme  
Recubrimiento X-Treme

### TOLLERANZA - TOLERANCE - TOLERANZ - TOLÉRANCE - TOLERANCIA

| Diametri<br>Diameters | Tolleranza del diametro<br>Diameter tolerance | Tolleranza del gambo<br>Shank tolerance |
|-----------------------|-----------------------------------------------|-----------------------------------------|
| da 0.4 mm a 4 mm      | +0.000 mm -0.025 mm                           | +0.000 mm -0.013 mm                     |



# FRESE MICRO POWER TORICHE A 2 TAGLI IN MICROGRANA ULTRAFINE

MICRO POWER TORIC END MILLS - 2 FLUTES - SUB-MICROGRAIN  
MICRO POWER TORUSFRÄSER - 2 NUTEN - HARTMETALLQUALITÄT: ULTRA-FEINSTKORN  
FRAISES MICRO POWER TORIQUES - 2 DENTS - MICRO-GRAIN ULTRA-FIN  
FRESAS POWER MICRO TÓRICAS - 2 LABIOS - SUB-MICROGRANO

## SERIE NORMALE & LUNGA

NORMAL/EXTENDED SERIES  
NORMAL/ÜBERLÄNGE AUSFÜHRUNG  
SÉRIE NORMALE/LONGUE  
SERIE NORMAL/ LARGA

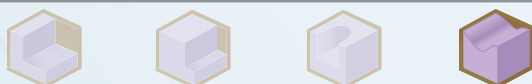
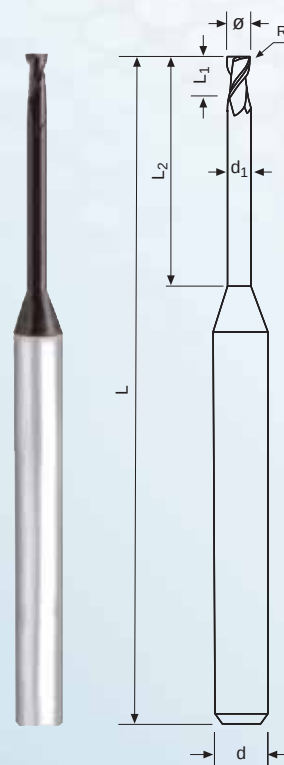


## 1433XT



| Ø<br>mm | d <sub>1</sub><br>mm | L<br>mm | L <sub>1</sub><br>mm | L <sub>2</sub><br>mm | d<br>mm | Z | 1433XT<br>€ |
|---------|----------------------|---------|----------------------|----------------------|---------|---|-------------|
| 2.0/0.2 | 1.95                 | 50      | 1.6                  | 16                   | 4       | 2 | 29,15       |
| 2.0/0.2 | 1.95                 | 60      | 1.6                  | 20                   | 4       | 2 | 33,35       |
| 2.0/0.5 | 1.95                 | 50      | 1.6                  | 6                    | 4       | 2 | 29,15       |
| 2.0/0.5 | 1.95                 | 50      | 1.6                  | 8                    | 4       | 2 | 29,15       |
| 2.0/0.5 | 1.95                 | 50      | 1.6                  | 10                   | 4       | 2 | 29,15       |
| 2.0/0.5 | 1.95                 | 50      | 1.6                  | 12                   | 4       | 2 | 29,15       |
| 2.0/0.5 | 1.95                 | 50      | 1.6                  | 16                   | 4       | 2 | 29,15       |
| 2.0/0.5 | 2.85                 | 60      | 1.6                  | 20                   | 4       | 2 | 33,35       |
| 3.0/0.2 | 2.85                 | 50      | 2.5                  | 8                    | 6       | 2 | 37,50       |
| 3.0/0.2 | 2.85                 | 50      | 2.5                  | 12                   | 6       | 2 | 37,50       |
| 3.0/0.2 | 2.85                 | 60      | 2.5                  | 16                   | 6       | 2 | 39,60       |
| 3.0/0.2 | 2.85                 | 60      | 2.5                  | 20                   | 6       | 2 | 39,60       |
| 3.0/0.2 | 2.85                 | 70      | 2.5                  | 25                   | 6       | 2 | 43,80       |
| 3.0/0.2 | 2.85                 | 70      | 2.5                  | 30                   | 6       | 2 | 43,80       |
| 3.0/0.5 | 2.85                 | 50      | 2.5                  | 8                    | 6       | 2 | 37,50       |
| 3.0/0.5 | 2.85                 | 50      | 2.5                  | 12                   | 6       | 2 | 37,50       |
| 3.0/0.5 | 2.85                 | 60      | 2.5                  | 16                   | 6       | 2 | 39,60       |
| 3.0/0.5 | 2.85                 | 60      | 2.5                  | 20                   | 6       | 2 | 39,60       |
| 3.0/0.5 | 2.85                 | 70      | 2.5                  | 25                   | 6       | 2 | 43,80       |
| 3.0/0.5 | 2.85                 | 70      | 2.5                  | 30                   | 6       | 2 | 43,80       |
| 4.0/0.2 | 3.85                 | 60      | 4                    | 12                   | 6       | 2 | 39,60       |
| 4.0/0.2 | 3.85                 | 60      | 4                    | 16                   | 6       | 2 | 39,60       |
| 4.0/0.2 | 3.85                 | 70      | 4                    | 20                   | 6       | 2 | 43,80       |
| 4.0/0.2 | 3.85                 | 70      | 4                    | 25                   | 6       | 2 | 43,80       |
| 4.0/0.2 | 3.85                 | 80      | 4                    | 30                   | 6       | 2 | 47,90       |
| 4.0/0.2 | 3.85                 | 90      | 4                    | 40                   | 6       | 2 | 56,30       |

→2-3



### Rivestimento X-Treme

X-Treme coating  
X-Treme-Beschichtung  
Revêtement X-Treme  
Recubrimiento X-Treme



### TOLLERANZA - TOLERANCE - TOLERANZ - TOLÉRANCE - TOLERANCIA

| Diametri<br>Diameters | Tolleranza del diametro<br>Diameter tolerance | Tolleranza del gambo<br>Shank tolerance |
|-----------------------|-----------------------------------------------|-----------------------------------------|
| da 0.4 mm a 4 mm      | +0.00 mm -0.025 mm                            | +0.00 mm -0.013 mm                      |



NORMAL/EXTENDED SERIES  
NORMAL/ ÜBERLÄNGE AUSFÜHRUNG  
SÉRIE NORMALE/LONGUE  
SERIE NORMAL/ LARGA

MICRO POWER TORIC END MILLS - 2 FLUTES - SUB-MICROGRAIN  
MICRO POWER TORUSFRÄSER - 2 NUTEN - HARTMETALLQUALITÄT: ULTRA-FEINSTKORN  
FRAISES MICRO POWER TORIQUES - 2 DENTS - MICRO-GRAIN ULTRAFIN  
FRESAS POWER MICRO TÓRICAS - 2 LABIOS - SUB-MICROGRANO



# FRESE POWER A CANDELA E TORICHE A 4 TAGLI IN MICROGRANA ULTRAFINE

POWER TWIST AND TORIC END MILLS - 4 FLUTES - SUB-MICROGRAIN  
POWER DRALLNUTIGE UND TORUS-FRÄSER - 4 NUTEN - HARTMETALLQUALITÄT: ULTRA-FEINKORN  
FRAISES POWER HÉLICOÏDALES ET TORIQUES À 4 DENTS - MICRO-GRAIN ULTRAFIN  
FRESAS POWER HÉLICOIDALES Y TÓRICAS - 4 LABIOS - SUB-MICROGRANO

## SERIE NORMALE

NORMAL SERIES  
NORMAL AUSFÜHRUNG  
SÉRIE NORMALE  
SERIE NORMAL



## 1411XT

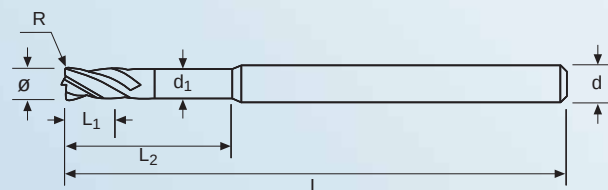


| Ø<br>mm | d <sub>1</sub><br>mm | L<br>mm | L <sub>1</sub><br>mm | L <sub>2</sub><br>mm | d<br>mm | Z | 1411XT<br>€ |
|---------|----------------------|---------|----------------------|----------------------|---------|---|-------------|
| 3       | 2.85                 | 70      | 4.5                  | 15                   | 6       | 4 | 39,45       |
| 3.5     | 3.35                 | 70      | 5.3                  | 17.5                 | 6       | 4 | 41,60       |
| 4       | 3.85                 | 70      | 6                    | 20                   | 6       | 4 | 40,80       |
| 5       | 4.85                 | 80      | 7.5                  | 25                   | 6       | 4 | 43,90       |
| 6       | 5.85                 | 90      | 9                    | 30                   | 6       | 4 | 45,80       |
|         |                      |         |                      |                      |         |   |             |
|         |                      |         |                      |                      |         |   |             |
|         |                      |         |                      |                      |         |   |             |
|         |                      |         |                      |                      |         |   |             |
|         |                      |         |                      |                      |         |   |             |

## 1415XT



| Ø<br>mm | R   | d <sub>1</sub><br>mm | L<br>mm | L <sub>1</sub><br>mm | L <sub>2</sub><br>mm | d<br>mm | Z | 1415XT<br>€ |
|---------|-----|----------------------|---------|----------------------|----------------------|---------|---|-------------|
| 3       | 0.5 | 2.85                 | 70      | 4.5                  | 15                   | 6       | 4 | 42,60       |
| 3.5     | 0.5 | 3.35                 | 70      | 5.3                  | 17.5                 | 6       | 4 | 45,00       |
| 4       | 0.5 | 3.85                 | 70      | 6                    | 20                   | 6       | 4 | 44,10       |
| 5       | 0.5 | 4.85                 | 80      | 7.5                  | 25                   | 6       | 4 | 47,40       |
| 6       | 0.5 | 5.85                 | 90      | 9                    | 30                   | 6       | 4 | 49,40       |
|         |     |                      |         |                      |                      |         |   |             |
|         |     |                      |         |                      |                      |         |   |             |
|         |     |                      |         |                      |                      |         |   |             |
|         |     |                      |         |                      |                      |         |   |             |
|         |     |                      |         |                      |                      |         |   |             |



## 1411XT



**Rivestimento X-Treme**  
X-Treme coating  
X-Treme-Beschichtung  
Revêtement X-Treme  
Recubrimiento X-Treme

### TOLLERANZA - TOLERANCE - TOLERANZ - TOLÉRANCE - TOLERANCIA

| Diametri<br>Diameters | Tolleranza del diametro<br>Diameter tolerance | Tolleranza del gambo<br>Shank tolerance |
|-----------------------|-----------------------------------------------|-----------------------------------------|
| da 3 mm a 6 mm        | +0.000 mm -0.025 mm                           | +0.000 mm -0.013 mm                     |

## 1415XT



**Rivestimento X-Treme**  
X-Treme coating  
X-Treme-Beschichtung  
Revêtement X-Treme  
Recubrimiento X-Treme

### TOLLERANZA - TOLERANCE - TOLERANZ - TOLÉRANCE - TOLERANCIA

| Diametri<br>Diameters | Tolleranza del diametro<br>Diameter tolerance | Tolleranza del gambo<br>Shank tolerance |
|-----------------------|-----------------------------------------------|-----------------------------------------|
| da 3 mm a 6 mm        | +0.000 mm -0.025 mm                           | +0.000 mm -0.013 mm                     |

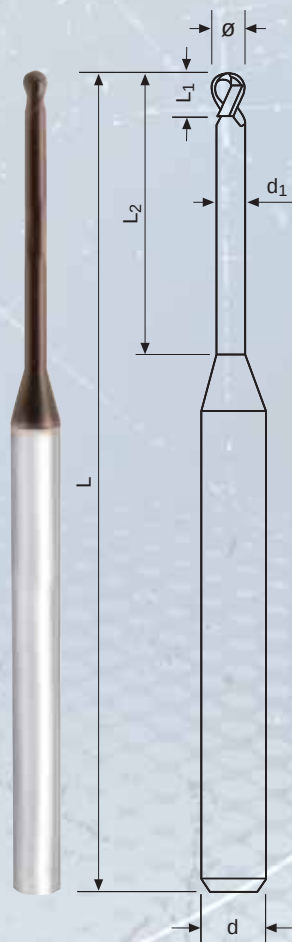
## SERIE LUNGA

EXTENDED LENGTH  
SÉRIE LONGUE  
ÜBERLÄNGE  
SERIE LARGA

**FRESE MICRO POWER**  
**SEMISFERICHE** A 2 TAGLI IN MICROGRANA ULTRAFINE

MICRO POWER BALL NOSE END MILLS - 2 FLUTES - SUB-MICROGRAIN  
MICRO POWER RADIUSFRÄSER - 2 NUTEN - HARTMETALLQUALITÄT: ULTRA-FEINSTKORN  
FRAISES MICRO POWER HÉMISPHÉRIQUES À 2 DENTS - MICRO-GRAIN ULTRAFIN  
FRESAS MICRO POWER ESFÉRICAS - 2 LABIOS - SUB-MICROGRANO

# 419RXT

[illegible]

## Rivestimento X-Treme

X-Treme coating  
X-Treme-Beschichtung  
Revêtement X-Treme  
Recubrimiento X-Treme

**TOLLERANZA** - TOLERANCE - TOLERANZ - TOLÉRANCE - TOLERANCIA

| <b>Diametri</b><br>Diameters | <b>Tolleranza del diametro</b><br>Diameter tolerance | <b>Tolleranza del gambo</b><br>Shank tolerance |
|------------------------------|------------------------------------------------------|------------------------------------------------|
| da 0.5 mm a 3 mm             | +0.000 mm -0.025 mm                                  | +0.000 mm -0.013 mm                            |
| da 3.5 mm a 6 mm             | +0.000 mm -0.038 mm                                  | +0.000 mm -0.013 mm                            |



# FRESE MICRO POWER SEMISFERICHE A 2 TAGLI IN MICROGRANA ULTRAFINE

MICRO POWER BALL NOSE END MILLS - 2 FLUTES - SUB-MICROGRAIN  
MICRO POWER RADIUSFRÄSER - 2 NUTEN - HARTMETALLQUALITÄT: ULTRA-FEINSTKORN  
FRAISES MICRO POWER HÉMISPHERIQUES À 2 DENTS - MICRO-GRAIN ULTRAFIN  
FRESAS MICRO POWER ESFÉRICAS - 2 LABIOS - SUB-MICROGRANO

## SERIE NORMALE LUNGA & EXTRA L.

NORMAL/LONG/EXTRALONG SERIES  
NORMAL/LANGE/EXTRALANGE AUSFÜHRUNG  
SÉRIE NORMALE/LONGUE/EXTRALONGUE  
SERIE NORMAL/LARGA/EXTRALARGA



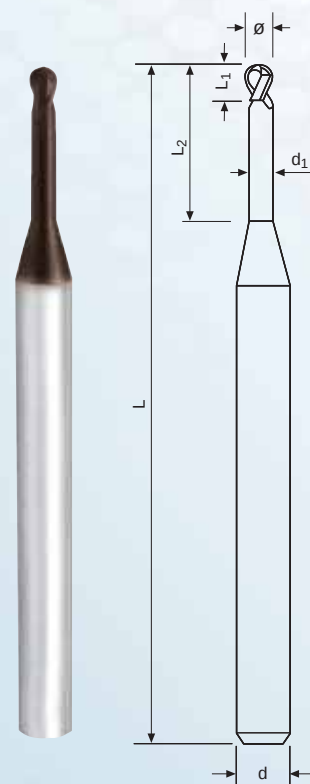
### 431RXT

NEW Ø



| Ø mm | d <sub>1</sub> mm | L mm | L <sub>1</sub> mm | L <sub>2</sub> mm | d mm | Z | 431RXT € |
|------|-------------------|------|-------------------|-------------------|------|---|----------|
| 0.3  | 0.27              | 50   | 0.24              | 1                 | 4    | 2 | 71,00    |
| 0.3  | 0.27              | 50   | 0.24              | 2                 | 4    | 2 | 71,00    |
| 0.3  | 0.27              | 50   | 0.24              | 3                 | 4    | 2 | 71,00    |
| 0.4  | 0.37              | 50   | 0.3               | 1                 | 4    | 2 | 62,10    |
| 0.4  | 0.37              | 50   | 0.3               | 2                 | 4    | 2 | 62,10    |
| 0.4  | 0.37              | 50   | 0.3               | 3                 | 4    | 2 | 62,10    |
| 0.4  | 0.37              | 50   | 0.3               | 4                 | 4    | 2 | 62,10    |
| 0.4  | 0.37              | 50   | 0.3               | 5                 | 4    | 2 | 73,90    |
| 0.5  | 0.45              | 50   | 0.4               | 2                 | 4    | 2 | 50,30    |
| 0.5  | 0.45              | 50   | 0.4               | 3                 | 4    | 2 | 50,30    |
| 0.5  | 0.45              | 50   | 0.4               | 4                 | 4    | 2 | 50,30    |
| 0.5  | 0.45              | 50   | 0.4               | 5                 | 4    | 2 | 50,30    |
| 0.5  | 0.45              | 50   | 0.4               | 6                 | 4    | 2 | 50,30    |
| 0.5  | 0.45              | 50   | 0.4               | 8                 | 4    | 2 | 62,10    |
| 0.6  | 0.55              | 50   | 0.5               | 2                 | 4    | 2 | 50,30    |
| 0.6  | 0.55              | 50   | 0.5               | 3                 | 4    | 2 | 50,30    |
| 0.6  | 0.55              | 50   | 0.5               | 4                 | 4    | 2 | 50,30    |
| 0.6  | 0.55              | 50   | 0.5               | 5                 | 4    | 2 | 50,30    |
| 0.6  | 0.55              | 50   | 0.5               | 6                 | 4    | 2 | 50,30    |
| 0.6  | 0.55              | 50   | 0.5               | 8                 | 4    | 2 | 62,10    |
| 0.8  | 0.75              | 50   | 0.6               | 2                 | 4    | 2 | 50,30    |
| 0.8  | 0.75              | 50   | 0.6               | 3                 | 4    | 2 | 50,30    |
| 0.8  | 0.75              | 50   | 0.6               | 4                 | 4    | 2 | 50,30    |
| 0.8  | 0.75              | 50   | 0.6               | 5                 | 4    | 2 | 50,30    |
| 0.8  | 0.75              | 50   | 0.6               | 6                 | 4    | 2 | 50,30    |
| 0.8  | 0.75              | 50   | 0.6               | 8                 | 4    | 2 | 50,30    |

→1-3



#### Rivestimento X-Treme

X-Treme coating  
X-Treme-Beschichtung  
Revêtement X-Treme  
Recubrimiento X-Treme

#### TOLLERANZA - TOLERANCE - TOLERANZ - TOLÉRANCE - TOLERANCIA

| Diametri<br>Diameters | Tolleranza del diametro<br>Diameter tolerance | Tolleranza del gambo<br>Shank tolerance |
|-----------------------|-----------------------------------------------|-----------------------------------------|
| da 0.3 mm a 3 mm      | +0.000 mm -0.025 mm                           | +0.000 mm -0.013 mm                     |
| da 3.5 mm a 6 mm      | +0.000 mm -0.038 mm                           | +0.000 mm -0.013 mm                     |



## SERIE NORMALE LUNGA & EXTRA L.

NORMAL/LONG/EXTRALONG SERIES  
NORMAL/LANGE/ EXTRALANGE AUSFÜHRUNG  
SÉRIE NORMALE/LONGUE/EXTRALONGUE  
SERIE NORMAL/LARGA/EXTRALARGA



# FRESE MICRO POWER SEMISFERICHE A 2 TAGLI IN MICROGRANA ULTRAFINE

MICRO POWER BALL NOSE END MILLS - 2 FLUTES - SUB-MICROGRAIN  
MICRO POWER RADIUSFRÄSER - 2 NUTEN - HARTMETALLQUALITÄT: ULTRA-FEINSTKORN  
FRAISES MICRO POWER HÉMISPÉRIQUES À 2 DENTS - MICRO-GRAIN ULTRAFIN  
FRESAS MICRO POWER ESFÉRICAS - 2 LABIOS - SUB-MICROGRANO

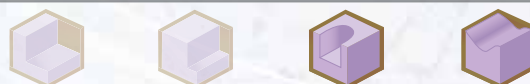
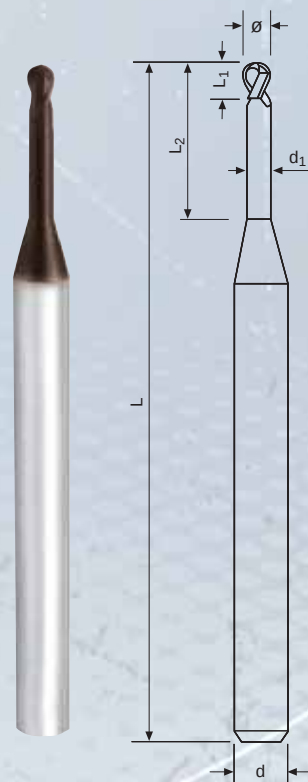
## 431RXT

NEW Ø



| Ø<br>mm | d <sub>1</sub><br>mm | L<br>mm | L <sub>1</sub><br>mm | L <sub>2</sub><br>mm | d<br>mm | Z | 431RXT<br>€ |
|---------|----------------------|---------|----------------------|----------------------|---------|---|-------------|
| 0.8     | 0.75                 | 50      | 0.6                  | 10                   | 4       | 2 | 62,10       |
| 1.0     | 0.95                 | 50      | 0.8                  | 3                    | 4       | 2 | 50,30       |
| 1.0     | 0.95                 | 50      | 0.8                  | 4                    | 4       | 2 | 50,30       |
| 1.0     | 0.95                 | 50      | 0.8                  | 5                    | 4       | 2 | 50,30       |
| 1.0     | 0.95                 | 50      | 0.8                  | 6                    | 4       | 2 | 50,30       |
| 1.0     | 0.95                 | 50      | 0.8                  | 8                    | 4       | 2 | 50,30       |
| 1.0     | 0.95                 | 50      | 0.8                  | 10                   | 4       | 2 | 50,30       |
| 1.0     | 0.95                 | 50      | 0.8                  | 12                   | 4       | 2 | 50,30       |
| 1.0     | 0.95                 | 50      | 0.8                  | 16                   | 4       | 2 | 62,80       |
| 1.0     | 0.95                 | 60      | 0.8                  | 20                   | 4       | 2 | 83,70       |
| 1.2     | 1.15                 | 50      | 1.0                  | 4                    | 4       | 2 | 50,30       |
| 1.2     | 1.15                 | 50      | 1.0                  | 6                    | 4       | 2 | 50,30       |
| 1.2     | 1.15                 | 50      | 1.0                  | 8                    | 4       | 2 | 50,30       |
| 1.2     | 1.15                 | 50      | 1.0                  | 10                   | 4       | 2 | 50,30       |
| 1.2     | 1.15                 | 50      | 1.0                  | 12                   | 4       | 2 | 50,30       |
| 1.4     | 1.33                 | 45      | 2.1                  | 12                   | 4       | 2 | 50,30       |
| 1.5     | 1.45                 | 50      | 1.2                  | 4                    | 4       | 2 | 50,30       |
| 1.5     | 1.45                 | 50      | 1.2                  | 6                    | 4       | 2 | 50,30       |
| 1.5     | 1.45                 | 50      | 1.2                  | 8                    | 4       | 2 | 50,30       |
| 1.5     | 1.45                 | 50      | 1.2                  | 10                   | 4       | 2 | 50,30       |
| 1.5     | 1.45                 | 50      | 1.2                  | 12                   | 4       | 2 | 50,30       |
| 1.5     | 1.45                 | 50      | 1.2                  | 16                   | 4       | 2 | 50,30       |
| 1.5     | 1.45                 | 60      | 1.2                  | 20                   | 4       | 2 | 50,30       |
| 1.6     | 1.51                 | 50      | 2.4                  | 16                   | 4       | 2 | 63,90       |
| 1.8     | 2.71                 | 50      | 2.7                  | 16                   | 4       | 2 | 73,50       |
| 2.0     | 1.95                 | 50      | 1.6                  | 4                    | 4       | 2 | 62,80       |

→2-3



### Rivestimento X-Treme

X-Treme coating  
X-Treme-Beschichtung  
Revêtement X-Treme  
Recubrimiento X-Treme



### TOLLERANZA - TOLERANCE - TOLERANZ - TOLÉRANCE - TOLERANCIA

| Diametri<br>Diameters | Tolleranza del diametro<br>Diameter tolerance | Tolleranza del gambo<br>Shank tolerance |
|-----------------------|-----------------------------------------------|-----------------------------------------|
| da 0.3 mm a 3 mm      | +0.000 mm -0.025 mm                           | +0.000 mm -0.013 mm                     |
| da 3.5 mm a 6 mm      | +0.000 mm -0.038 mm                           | +0.000 mm -0.013 mm                     |

# FRESE MICRO POWER SEMISFERICHE A 2 TAGLI IN MICROGRANA ULTRAFINE

MICRO POWER BALL NOSE END MILLS - 2 FLUTES - SUB-MICROGRAIN  
MICRO POWER RADIUSFRÄSER - 2 NUTEN - HARTMETALLQUALITÄT: ULTRA-FEINSTKORN  
FRAISES MICRO POWER HÉMISPÉRIQUES À 2 DENTS - MICRO-GRAIN ULTRAFIN  
FRESAS MICRO POWER ESFÉRICAS - 2 LABIOS - SUB-MICROGRANO

## SERIE NORMALE LUNGA & EXTRA L.

NORMAL/LONG/EXTRALONG SERIES  
NORMAL/LANGE/EXTRALANGE AUSFÜHRUNG  
SÉRIE NORMALE/LONGUE/EXTRALONGUE  
SERIE NORMAL/LARGA/EXTRALARGA



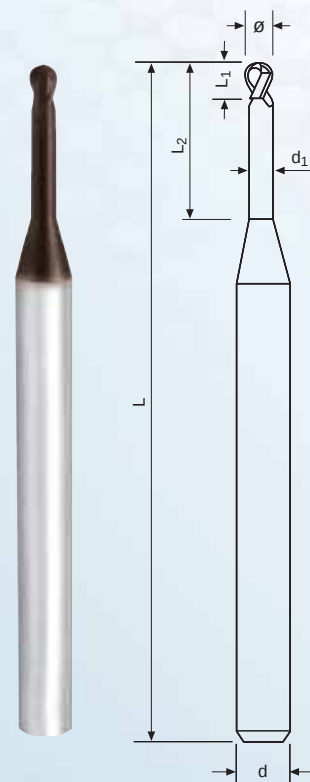
### 431RXT

**NEW** Ø



| Ø<br>mm | d <sub>1</sub><br>mm | L<br>mm | L <sub>1</sub><br>mm | L <sub>2</sub><br>mm | d<br>mm | Z | 431RXT<br>€ |
|---------|----------------------|---------|----------------------|----------------------|---------|---|-------------|
| 2.0     | 1.95                 | 50      | 1.6                  | 6                    | 4       | 2 | 50,30       |
| 2.0     | 1.95                 | 50      | 1.6                  | 8                    | 4       | 2 | 50,30       |
| 2.0     | 1.95                 | 50      | 1.6                  | 10                   | 4       | 2 | 50,30       |
| 2.0     | 1.95                 | 50      | 1.6                  | 12                   | 4       | 2 | 50,30       |
| 2.0     | 1.95                 | 50      | 1.6                  | 16                   | 4       | 2 | 50,30       |
| 2.0     | 1.95                 | 60      | 1.6                  | 20                   | 4       | 2 | 50,30       |
| 2.0     | 1.95                 | 60      | 1.6                  | 25                   | 4       | 2 | 50,30       |
| 2.0     | 1.95                 | 70      | 1.6                  | 30                   | 4       | 2 | 50,30       |
| 3.0     | 2.85                 | 50      | 2.4                  | 6                    | 6       | 2 | 48,00       |
| 3.0     | 2.85                 | 50      | 2.4                  | 8                    | 6       | 2 | 51,20       |
| 3.0     | 2.85                 | 50      | 2.4                  | 10                   | 6       | 2 | 54,40       |
| 3.0     | 2.85                 | 50      | 2.4                  | 12                   | 6       | 2 | 54,40       |
| 3.0     | 2.85                 | 60      | 2.4                  | 16                   | 6       | 2 | 54,40       |
| 3.0     | 2.85                 | 60      | 2.4                  | 20                   | 6       | 2 | 54,40       |
| 3.0     | 2.85                 | 70      | 2.4                  | 25                   | 6       | 2 | 57,60       |
| 3.0     | 2.85                 | 70      | 2.4                  | 30                   | 6       | 2 | 57,60       |
| 3.0     | 2.85                 | 80      | 2.4                  | 35                   | 6       | 2 | 63,90       |
| 4.0     | 3.85                 | 60      | 3.2                  | 8                    | 6       | 2 | 57,60       |
| 4.0     | 3.85                 | 60      | 3.2                  | 10                   | 6       | 2 | 57,60       |
| 4.0     | 3.85                 | 60      | 3.2                  | 12                   | 6       | 2 | 57,60       |
| 4.0     | 3.85                 | 60      | 3.2                  | 16                   | 6       | 2 | 57,60       |
| 4.0     | 3.85                 | 70      | 3.2                  | 20                   | 6       | 2 | 57,60       |
| 4.0     | 3.85                 | 70      | 3.2                  | 25                   | 6       | 2 | 57,60       |
| 4.0     | 3.85                 | 80      | 3.2                  | 30                   | 6       | 2 | 73,50       |
| 4.0     | 3.85                 | 80      | 3.2                  | 35                   | 6       | 2 | 73,50       |
| 4.0     | 3.85                 | 90      | 3.2                  | 40                   | 6       | 2 | 83,10       |
| 4.0     | 3.85                 | 100     | 3.2                  | 45                   | 6       | 2 | 99,10       |
| 4.0     | 3.85                 | 100     | 3.2                  | 50                   | 6       | 2 | 99,10       |
| 5.0     | 4.85                 | 70      | 5                    | 25                   | 6       | 2 | 137,00      |

→3-3



#### Rivestimento X-Treme

X-Treme coating  
X-Treme-Beschichtung  
Revêtement X-Treme  
Recubrimiento X-Treme

#### TOLLERANZA - TOLERANCE - TOLERANZ - TOLÉRANCE - TOLERANCIA

| Diametri<br>Diameters | Tolleranza del diametro<br>Diameter tolerance | Tolleranza del gambo<br>Shank tolerance |
|-----------------------|-----------------------------------------------|-----------------------------------------|
| da 0.3 mm a 3 mm      | +0.000 mm -0.025 mm                           | +0.000 mm -0.013 mm                     |
| da 3.5 mm a 6 mm      | +0.000 mm -0.038 mm                           | +0.000 mm -0.013 mm                     |

XT





## SERIE CORTA NORMALE & LUNGA

SHORT /NORMAL/LONG SERIES  
KURZE /NORMAL/LANGE AUSFÜHRUNG  
SÉRIE COURTE /NORMALE/LONGUE  
SERIE CORTA /NORMAL/LARGA

# FRESE MICRO POWER SEMISFERICHE A 2 TAGLI IN MICROGRANA ULTRAFINE

MICRO POWER BALL NOSE END MILLS - 2 FLUTES - SUB-MICROGRAIN  
MICRO POWER RADIUSFRÄSER - 2 NUTEN - HARTMETALLQUALITÄT: ULTRA-FEINSTKORN  
FRAISES MICRO POWER HÉMISPHÉRIQUES À 2 DENTS - MICRO-GRAIN ULTRAFIN  
FRESAS MICRO POWER ESFÉRICAS - 2 LABIOS - SUB-MICROGRANO

## 433RXT



| Ø/R<br>mm | d <sub>1</sub><br>mm | L<br>mm | L <sub>1</sub><br>mm | L <sub>2</sub><br>mm | d<br>mm | Z | 433RXT<br>€ |
|-----------|----------------------|---------|----------------------|----------------------|---------|---|-------------|
| 0.2       | 0.18                 | 45      | 0.16                 | 0.5                  | 4       | 2 | 62,60       |
| 0.2       | 0.18                 | 45      | 0.16                 | 1                    | 4       | 2 | 62,60       |
| 0.2       | 0.18                 | 45      | 0.16                 | 1.5                  | 4       | 2 | 62,60       |
| 0.3       | 0.28                 | 45      | 0.24                 | 1                    | 4       | 2 | 62,60       |
| 0.3       | 0.28                 | 45      | 0.24                 | 1.5                  | 4       | 2 | 62,60       |
| 0.3       | 0.28                 | 45      | 0.24                 | 2                    | 4       | 2 | 62,60       |
| 0.4       | 0.37                 | 45      | 0.3                  | 1                    | 4       | 2 | 62,60       |
| 0.4       | 0.37                 | 45      | 0.3                  | 1.5                  | 4       | 2 | 62,60       |
| 0.4       | 0.37                 | 45      | 0.3                  | 2                    | 4       | 2 | 62,60       |

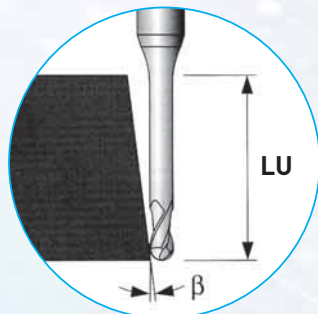
→1-4

| Ø/R<br>mm | L <sub>2</sub><br>mm | β    |      |       |      |       |      |
|-----------|----------------------|------|------|-------|------|-------|------|
|           |                      | 0.5° | 1°   | 1°30' | 2°   | 2°30' | 3°   |
|           |                      | LU   |      |       |      |       |      |
| 0.2       | 0.5                  | 1.08 | 1.25 | 1.43  | 1.6  | 1.77  | 1.94 |
| 0.2       | 1                    | 1.48 | 1.75 | 1.99  | 2.21 | 2.41  | 2.62 |
| 0.2       | 1.5                  | 1.85 | 2.25 | 2.55  | 2.8  | 3.04  | 3.26 |
| 0.3       | 1                    | 1.55 | 1.8  | 2.02  | 2.23 | 2.43  | 2.62 |
| 0.3       | 1.5                  | 1.95 | 2.3  | 2.57  | 2.82 | 3.05  | 3.27 |
| 0.3       | 2                    | 2.29 | 2.8  | 3.12  | 3.41 | 3.66  | 3.9  |
| 0.4       | 1                    | 1.70 | 1.91 | 2.11  | 2.30 | 2.49  | 2.67 |
| 0.4       | 1.5                  | 2.13 | 2.41 | 2.66  | 2.89 | 3.10  | 3.31 |
| 0.4       | 2                    | 2.54 | 2.91 | 3.2   | 3.47 | 3.71  | 3.94 |

→1-4

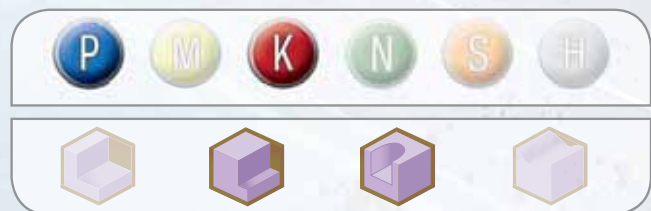
## INFORMAZIONI TECNICHE ANGOLO DI COLLISIONE β

TECHNICAL DATA - INCLINED ANGLE β  
TECHNISCHE HILFE - NEIGUNGSWINKEL β  
SERVICE TECHNIQUE - ANGLE DE COLLISION β  
INFORMACIÓN TÉCNICA - ANGULO INCLINADO β

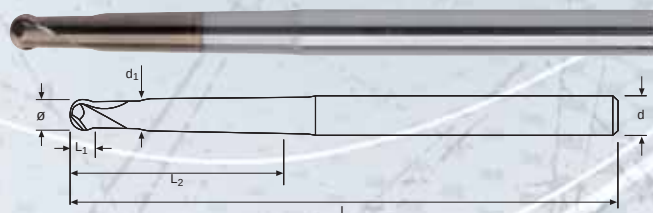


### Effettiva lunghezza utile di lavoro legata all'inclinazione β del pezzo da lavorare

Effective machining depth depending on inclined angle β of workpiece  
Die effektive Arbeitstiefe hängt vom Neigungswinkel β des Werkstückes ab  
Longueur utile effective d'usinage liée à l'inclinaison β de la pièce à usiner  
Largo útil de trabajo depende del ángulo de inclinación de la pieza



**GAMBO RASTREMATO**  
TAPERED SHANK  
VERJÜNGTER SCHAFT  
QUEUE FUSELÉE  
MANGO REBAJADO



**L2 = LUNGHEZZA UTILE DI LAVORO**  
L2 = MACHINING DEPTH  
L2 = ARBEITSTIEFE  
L2 = LONGUEUR UTILE  
L2 = LARGO ÚTIL DE TRABAJO



**Rivestimento X-Treme**  
X-Treme coating  
X-Treme-Beschichtung  
Revêtement X-Treme  
Recubrimiento X-Treme

### TOLLERANZA - TOLERANCE - TOLERANZ - TOLÉRANCE - TOLERANCIA

| Diametri<br>Diameters | Tolleranza del diametro<br>Diameter tolerance | Tolleranza del gambo<br>Shank tolerance |
|-----------------------|-----------------------------------------------|-----------------------------------------|
| da 0.2 mm a 6 mm      | +0.000 mm -0.001 mm                           | h6                                      |



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MICRO POWER BALL NOSE END MILLS - 2 FLUTES - SUB-MICROGRAIN  
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## SERIE CORTA NORMALE & LUNGA

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KURZE /NORMAL/ LANGE AUSFÜHRUNG  
SÉRIE COURTE /NORMALE/ LONGUE  
SERIE CORTA /NORMAL/ LARGA



## 433RXT



| Ø/R<br>mm | d <sub>1</sub><br>mm | L<br>mm | L <sub>1</sub><br>mm | L <sub>2</sub><br>mm | d<br>mm | Z | 433RXT<br>€ |
|-----------|----------------------|---------|----------------------|----------------------|---------|---|-------------|
| 0.4       | 0.37                 | 45      | 0.3                  | 2.5                  | 4       | 2 | 62,60       |
| 0.4       | 0.37                 | 45      | 0.3                  | 3                    | 4       | 2 | 62,60       |
| 0.5       | 0.45                 | 45      | 0.4                  | 2                    | 4       | 2 | 62,60       |
| 0.5       | 0.45                 | 45      | 0.4                  | 3                    | 4       | 2 | 62,60       |
| 0.5       | 0.45                 | 45      | 0.4                  | 4                    | 4       | 2 | 62,60       |
| 0.5       | 0.45                 | 45      | 0.4                  | 5                    | 4       | 2 | 62,60       |
| 0.5       | 0.45                 | 45      | 0.4                  | 6                    | 4       | 2 | 62,60       |
| 0.5       | 0.45                 | 45      | 0.4                  | 8                    | 4       | 2 | 62,60       |
| 0.6       | 0.55                 | 45      | 0.5                  | 2                    | 4       | 2 | 62,60       |
| 0.6       | 0.55                 | 45      | 0.5                  | 3                    | 4       | 2 | 62,60       |
| 0.6       | 0.55                 | 45      | 0.5                  | 4                    | 4       | 2 | 62,60       |
| 0.6       | 0.55                 | 45      | 0.5                  | 5                    | 4       | 2 | 62,60       |
| 0.6       | 0.55                 | 45      | 0.5                  | 6                    | 4       | 2 | 62,60       |
| 0.6       | 0.55                 | 45      | 0.5                  | 8                    | 4       | 2 | 62,60       |
| 0.8       | 0.75                 | 45      | 0.6                  | 2                    | 4       | 2 | 62,60       |
| 0.8       | 0.75                 | 45      | 0.6                  | 4                    | 4       | 2 | 62,60       |
| 0.8       | 0.75                 | 45      | 0.6                  | 5                    | 4       | 2 | 62,60       |
| 0.8       | 0.75                 | 45      | 0.6                  | 6                    | 4       | 2 | 62,60       |
| 0.8       | 0.75                 | 45      | 0.6                  | 7                    | 4       | 2 | 62,60       |
| 0.8       | 0.75                 | 45      | 0.6                  | 8                    | 4       | 2 | 62,60       |
| 0.8       | 0.75                 | 45      | 0.6                  | 10                   | 4       | 2 | 62,60       |
| 1         | 0.95                 | 45      | 0.8                  | 3                    | 4       | 2 | 57,80       |
| 1         | 0.85                 | 45      | 0.8                  | 4                    | 4       | 2 | 57,80       |
| 1         | 0.95                 | 45      | 0.8                  | 5                    | 4       | 2 | 57,80       |
| 1         | 0.95                 | 45      | 0.8                  | 6                    | 4       | 2 | 57,80       |
| 1         | 0.95                 | 45      | 0.8                  | 7                    | 4       | 2 | 57,80       |
| 1         | 0.95                 | 45      | 0.8                  | 8                    | 4       | 2 | 57,80       |
| 1         | 0.95                 | 45      | 0.8                  | 9                    | 4       | 2 | 57,80       |
| 1         | 0.95                 | 45      | 0.8                  | 10                   | 4       | 2 | 57,80       |
| 1         | 0.95                 | 45      | 0.8                  | 12                   | 4       | 2 | 57,80       |
| 1         | 0.95                 | 50      | 0.8                  | 14                   | 4       | 2 | 57,80       |
| 1         | 0.95                 | 50      | 0.8                  | 16                   | 4       | 2 | 57,80       |
| 1         | 0.95                 | 55      | 0.8                  | 20                   | 4       | 2 | 57,80       |
| 1.2       | 1.15                 | 45      | 1                    | 6                    | 4       | 2 | 57,80       |
| 1.2       | 1.15                 | 45      | 1                    | 8                    | 4       | 2 | 57,80       |
| 1.2       | 1.15                 | 45      | 1                    | 10                   | 4       | 2 | 57,80       |

→2-4

| Ø/R<br>mm | L <sub>2</sub><br>mm | β    |       |       |       |       |       |
|-----------|----------------------|------|-------|-------|-------|-------|-------|
|           |                      | 0.5° | 1°    | 1°30' | 2°    | 2°30' | 3°    |
|           |                      | LU   |       |       |       |       |       |
| 0.4       | 2.5                  | 2.93 | 3.41  | 3.75  | 4.04  | 4.31  | 4.56  |
| 0.4       | 3                    | 3.26 | 3.91  | 4.29  | 4.61  | 4.9   | 5.16  |
| 0.5       | 2                    | 2.77 | 3.06  | 3.32  | 3.57  | 3.79  | 4.01  |
| 0.5       | 3                    | 3.62 | 4.06  | 4.4   | 4.7   | 4.97  | 5.23  |
| 0.5       | 4                    | 4.43 | 5.06  | 5.48  | 5.82  | 6.13  | 5.51  |
| 0.5       | 5                    | 4.61 | 6.06  | 6.54  | 6.93  | 7.27  | 6.75  |
| 0.5       | 6                    | 4.61 | 7.06  | 7.61  | 8.04  | 8.41  | 7.99  |
| 0.5       | 8                    | 4.61 | 9.06  | 9.73  | 10.23 | 10.65 | 10.48 |
| 0.6       | 2                    | 2.81 | 3.09  | 3.34  | 3.58  | 3.8   | 4.02  |
| 0.6       | 3                    | 3.68 | 4.09  | 4.42  | 4.71  | 4.98  | 5.23  |
| 0.6       | 4                    | 4.51 | 5.09  | 5.49  | 5.83  | 6.14  | 6.42  |
| 0.6       | 5                    | 5.12 | 6.09  | 6.56  | 6.94  | 7.28  | 7.59  |
| 0.6       | 6                    | 4.96 | 7.09  | 7.63  | 8.05  | 8.41  | 8.74  |
| 0.6       | 8                    | 4.96 | 9.09  | 9.75  | 10.24 | 10.65 | 11.02 |
| 0.8       | 2                    | 2.89 | 3.15  | 3.38  | 3.61  | 3.82  | 4.03  |
| 0.8       | 4                    | 4.63 | 5.15  | 5.53  | 5.86  | 6.15  | 6.43  |
| 0.8       | 5                    | 5.44 | 6.15  | 6.59  | 6.96  | 7.29  | 7.6   |
| 0.8       | 6                    | 5.66 | 7.15  | 7.66  | 8.07  | 8.43  | 8.75  |
| 0.8       | 7                    | 5.66 | 8.15  | 8.72  | 9.16  | 9.55  | 9.9   |
| 0.8       | 8                    | 5.66 | 9.15  | 9.77  | 10.25 | 10.66 | 11.03 |
| 0.8       | 10                   | 5.66 | 11.15 | 11.88 | 12.42 | 12.88 | 13.28 |
| 1         | 3                    | 3.86 | 4.2   | 4.49  | 4.76  | 5.01  | 5.25  |
| 1         | 4                    | 4.74 | 5.2   | 5.56  | 5.88  | 6.17  | 6.44  |
| 1         | 5                    | 5.58 | 6.2   | 6.63  | 6.93  | 7.31  | 7.6   |
| 1         | 6                    | 6.35 | 7.2   | 7.69  | 7.99  | 8.44  | 8.76  |
| 1         | 7                    | 6.36 | 8.2   | 8.75  | 9.16  | 9.56  | 9.9   |
| 1         | 8                    | 6.36 | 9.2   | 9.8   | 10.2  | 10.68 | 11.04 |
| 1         | 9                    | 6.36 | 10.2  | 10.86 | 11.2  | 11.78 | 12.17 |
| 1         | 10                   | 6.36 | 11.2  | 11.91 | 12.4  | 12.89 | 13.29 |
| 1         | 12                   | 6.36 | 13.2  | 14.01 | 14.6  | 15.08 | 15.51 |
| 1         | 14                   | 6.36 | 15.2  | 16.11 | 16.7  | 17.26 | 17.72 |
| 1         | 16                   | 6.36 | 17.2  | 18.2  | 18.8  | 19.43 | 19.91 |
| 1         | 20                   | 6.36 | 21.2  | 22.36 | 23.0  | 23.74 | 24.27 |
| 1.2       | 6                    | 6.53 | 7.25  | 7.72  | 8.06  | 8.45  | 8.77  |
| 1.2       | 8                    | 7.06 | 9.25  | 9.83  | 10.2  | 10.69 | 11.04 |
| 1.2       | 10                   | 7.06 | 11.25 | 11.94 | 12.4  | 12.9  | 13.29 |

→2-4



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FRESAS MICRO POWER ESFÉRICAS - 2 LABIOS - SUB-MICROGRANO

### 433RXT



| Ø/R<br>mm | d <sub>1</sub><br>mm | L<br>mm | L <sub>1</sub><br>mm | L <sub>2</sub><br>mm | d<br>mm | Z | 433RXT<br>€ |
|-----------|----------------------|---------|----------------------|----------------------|---------|---|-------------|
| 1.2       | 1.15                 | 45      | 1                    | 12                   | 4       | 2 | 57,80       |
| 1.4       | 1.35                 | 45      | 1.1                  | 8                    | 4       | 2 | 57,80       |
| 1.4       | 1.35                 | 45      | 1.1                  | 12                   | 4       | 2 | 57,80       |
| 1.4       | 1.35                 | 50      | 1.1                  | 16                   | 4       | 2 | 57,80       |
| 1.5       | 1.45                 | 45      | 1.2                  | 8                    | 4       | 2 | 57,80       |
| 1.5       | 1.45                 | 45      | 1.2                  | 12                   | 4       | 2 | 57,80       |
| 1.5       | 1.45                 | 50      | 1.2                  | 16                   | 4       | 2 | 57,80       |
| 1.5       | 1.45                 | 55      | 1.2                  | 20                   | 4       | 2 | 57,80       |
| 1.6       | 1.55                 | 45      | 1.3                  | 8                    | 4       | 2 | 57,80       |
| 1.6       | 1.55                 | 45      | 1.3                  | 12                   | 4       | 2 | 57,80       |
| 1.6       | 1.55                 | 50      | 1.3                  | 16                   | 4       | 2 | 57,80       |
| 1.6       | 1.55                 | 55      | 1.3                  | 20                   | 4       | 2 | 57,80       |
| 1.8       | 1.75                 | 45      | 1.4                  | 8                    | 4       | 2 | 57,80       |
| 1.8       | 1.75                 | 45      | 1.4                  | 12                   | 4       | 2 | 57,80       |
| 1.8       | 1.75                 | 50      | 1.4                  | 16                   | 4       | 2 | 57,80       |
| 1.8       | 1.95                 | 55      | 1.4                  | 20                   | 4       | 2 | 57,80       |
| 2         | 1.95                 | 45      | 1.6                  | 6                    | 4       | 2 | 55,40       |
| 2         | 1.95                 | 45      | 1.6                  | 8                    | 4       | 2 | 55,40       |
| 2         | 1.95                 | 45      | 1.6                  | 10                   | 4       | 2 | 55,40       |
| 2         | 1.95                 | 45      | 1.6                  | 12                   | 4       | 2 | 55,40       |
| 2         | 1.95                 | 50      | 1.6                  | 14                   | 4       | 2 | 55,40       |
| 2         | 1.95                 | 50      | 1.6                  | 16                   | 4       | 2 | 55,40       |
| 2         | 1.95                 | 55      | 1.6                  | 18                   | 4       | 2 | 55,40       |
| 2         | 1.95                 | 55      | 1.6                  | 20                   | 4       | 2 | 55,40       |
| 2         | 1.95                 | 60      | 1.6                  | 22                   | 4       | 2 | 55,40       |
| 2         | 1.95                 | 65      | 1.6                  | 25                   | 4       | 2 | 55,40       |
| 2         | 1.95                 | 70      | 1.6                  | 30                   | 4       | 2 | 55,40       |
| 3         | 2.85                 | 50      | 2.4                  | 8                    | 6       | 2 | 55,40       |
| 3         | 2.85                 | 50      | 2.4                  | 10                   | 6       | 2 | 55,40       |
| 3         | 2.85                 | 55      | 2.4                  | 16                   | 6       | 2 | 55,40       |
| 3         | 2.85                 | 60      | 2.4                  | 20                   | 6       | 2 | 55,40       |
| 3         | 2.85                 | 65      | 2.4                  | 25                   | 6       | 2 | 55,40       |
| 3         | 2.85                 | 70      | 2.4                  | 30                   | 6       | 2 | 55,40       |
| 3         | 2.85                 | 80      | 2.4                  | 35                   | 6       | 2 | 55,40       |
| 4         | 3.85                 | 60      | 3.2                  | 10                   | 6       | 2 | 57,80       |
| 4         | 3.85                 | 60      | 3.2                  | 16                   | 6       | 2 | 57,80       |

→3-4

| Ø/R<br>mm | L <sub>2</sub><br>mm | β     |       |       |       |       |       |
|-----------|----------------------|-------|-------|-------|-------|-------|-------|
|           |                      | 0.5°  | 1°    | 1°30' | 2°    | 2°30' | 3°    |
|           |                      | LU    |       |       |       |       |       |
| 1.2       | 12                   | 7.06  | 13.25 | 14.03 | 14.61 | 15.09 | 15.52 |
| 1.4       | 8                    | 7.76  | 9.3   | 9.86  | 10.31 | 10.7  | 11.05 |
| 1.4       | 12                   | 7.76  | 13.3  | 14.06 | 14.63 | 15.1  | 15.52 |
| 1.4       | 16                   | 7.76  | 17.3  | 18.24 | 18.9  | 19.45 | 19.92 |
| 1.5       | 8                    | 8.25  | 9.32  | 9.87  | 10.32 | 10.7  | 11.05 |
| 1.5       | 12                   | 8.11  | 13.32 | 14.07 | 14.63 | 15.11 | 15.53 |
| 1.5       | 16                   | 8.11  | 17.32 | 18.25 | 18.91 | 19.45 | 19.93 |
| 1.5       | 20                   | 8.11  | 21.32 | 22.41 | 23.15 | 23.76 | 24.38 |
| 1.6       | 8                    | 8.38  | 9.34  | 9.88  | 10.32 | 10.71 | 11.06 |
| 1.6       | 12                   | 8.46  | 13.34 | 14.08 | 14.64 | 15.11 | 15.53 |
| 1.6       | 16                   | 8.46  | 17.34 | 18.26 | 18.91 | 19.46 | 19.93 |
| 1.6       | 20                   | 8.46  | 21.34 | 22.42 | 23.16 | 23.76 | -     |
| 1.8       | 8                    | 8.55  | 9.38  | 9.91  | 10.34 | 10.72 | 11.06 |
| 1.8       | 12                   | 9.16  | 13.38 | 14.11 | 14.65 | 15.12 | 15.53 |
| 1.8       | 16                   | 9.16  | 17.38 | 18.28 | 18.93 | 19.46 | 19.93 |
| 1.8       | 20                   | 9.16  | 21.38 | 22.44 | 23.17 | 23.77 | -     |
| 2         | 6                    | 6.91  | 7.43  | 7.83  | 8.18  | 8.5   | 8.8   |
| 2         | 8                    | 8.66  | 9.43  | 9.94  | 10.36 | 10.73 | 11.07 |
| 2         | 10                   | 9.86  | 11.43 | 12.03 | 12.52 | 12.94 | 13.32 |
| 2         | 12                   | 9.86  | 13.43 | 14.13 | 14.67 | 15.13 | 15.54 |
| 2         | 14                   | 9.86  | 15.43 | 16.22 | 16.81 | 17.31 | 17.75 |
| 2         | 16                   | 9.86  | 17.43 | 18.3  | 18.94 | 19.47 | 19.94 |
| 2         | 18                   | 9.86  | 19.43 | 20.38 | 21.07 | 21.63 | -     |
| 2         | 20                   | 9.86  | 21.43 | 22.46 | 23.18 | 23.78 | -     |
| 2         | 22                   | 9.86  | 23.43 | 24.54 | 25.3  | -     | -     |
| 2         | 25                   | 9.86  | 26.43 | 27.65 | 28.46 | -     | -     |
| 2         | 30                   | 9.86  | 31.43 | 32.81 | -     | -     | -     |
| 3         | 8                    | 9.48  | 9.93  | 10.31 | 10.66 | 10.98 | 11.28 |
| 3         | 10                   | 11.35 | 11.93 | 12.39 | 12.8  | 13.17 | 13.5  |
| 3         | 16                   | 16.83 | 17.93 | 18.62 | 19.18 | 19.66 | 20.09 |
| 3         | 20                   | 19.09 | 21.93 | 22.76 | 23.4  | 23.94 | 24.42 |
| 3         | 25                   | 19.09 | 26.93 | 27.92 | 28.65 | 29.27 | 29.8  |
| 3         | 30                   | 19.09 | 31.93 | 33.07 | 33.89 | 34.56 | -     |
| 3         | 35                   | 19.09 | 36.93 | 38.21 | 39.11 | -     | -     |
| 4         | 10                   | 11.57 | 12.07 | 12.49 | 12.87 | 13.21 | 13.53 |
| 4         | 16                   | 17.16 | 18.07 | 18.7  | 19.23 | 19.7  | 20.11 |

→3-4

MICRO POWER BALL NOSE END MILLS - 2 FLUTES - SUB-MICROGRAIN  
MICRO POWER RADIUSFRÄSER - 2 NUTEN - HARTMETALLQUALITÄT: ULTRA-FEINSTKORN  
FRAISES MICRO POWER HÉMISPÉRIQUES À 2 DENTS - MICRO-GRAIN ULTRAFIN  
FRESAS MICRO POWER ESFÉRICAS - 2 LABIOS - SUB-MICROGRANO

MICRO POWER BALL NOSE END MILLS - 2 FLUTES - SUB-MICROGRAIN  
MICRO POWER RADIUSFRÄSER - 2 NUTEN - HARTMETALLQUALITÄT: ULTRA-FEINSTKORN  
FRAISES MICRO POWER HÉMISPÉRIQUES À 2 DENTS - MICRO-GRAIN ULTRAFIN  
FRESAS MICRO POWER ESFÉRICAS - 2 LABIOS - SUB-MICROGRANO

SHORT /NORMAL/LONG SERIES  
KURZE /NORMAL/LANGE AUSFÜHRUNG  
SÉRIE COURTE /NORMALE/ LONGUE  
SERIE CORTA /NORMAL/LARGA



→ 4-4

→ 4-4

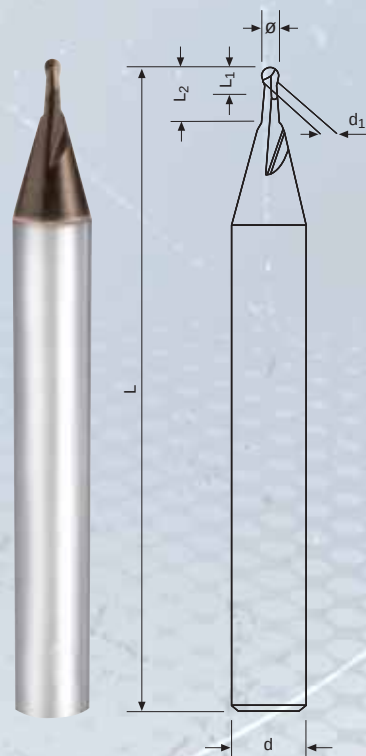
## SERIE NORMALE

NORMAL SERIES  
NORMAL AUSFÜHRUNG  
SÉRIE NORMALE  
SERIE NORMAL

# FRESE MICRO POWER SEMISFERICHE A 2 TAGLI IN MICROGRANA ULTRAFINE

MICRO POWER BALL NOSE END MILLS - 2 FLUTES - SUB-MICROGRAIN  
MICRO POWER RADIUSFRÄSER - 2 NUTEN - HARTMETALLQUALITÄT: ULTRA-FEINSTKORN  
FRAISES MICRO POWER HÉMISPHÉRIQUES À 2 DENTS - MICRO-GRAIN ULTRAFIN  
FRESAS MICRO POWER ESFÉRICAS - 2 LABIOS - SUB-MICROGRANO

# 413RXT

[illegible]

## Rivestimento X-Treme

X-Treme coating  
X-Treme-Beschichtung  
Revêtement X-Treme  
Recubrimiento X-Treme

**TOLLERANZA** - TOLERANCE - TOLERANZ - TOLÉRANCE - TOLERANCIA

| <b>Diametri</b><br>Diameters | <b>Tolleranza del diametro</b><br>Diameter tolerance | <b>Tolleranza del gambo</b><br>Shank tolerance |
|------------------------------|------------------------------------------------------|------------------------------------------------|
| da 0.3 mm a 3 mm             | +0.000 mm -0.025 mm                                  | +0.000 mm -0.013 mm                            |
| da 3.5 mm a 6 mm             | +0.000 mm -0.038 mm                                  | +0.000 mm -0.013 mm                            |



# PARAMETRI DI TAGLIO

CUTTING PARAMETERS  
SCHNITTDATEN  
PARAMÈTRES DE COUPE  
PARAMETROS DE CORTE



## FRESE MICRO POWER A CANDELA: 2/4 TAGLI

Micro power end mills, Micro power Fräser, Fraises micro power,  
Fresas power micro: 2/4 Flutes - Schneiden - Dents - Labios

**CAVA DAL PIENO:** Vc e Fz: - 20%

Slotting: Vc e Fz: - 20%

Bohrnuten: Vc e Fz: - 20%

Rainurage: Vc e Fz: - 20%

Ranura: Vc e Fz: - 20%

| GRUPPO MATERIALI<br>Material Groups<br>Material-Beispiele<br>Groupes de Matériaux<br>Grupos de Materiales |                          |       |         | VC<br>m/min | <br><b>Fz [mm]</b><br><b>AVANZAMENTO AL DENTE</b><br>Tooth Feed - Zahnvorschub - Avancement au dent - Avance al labio |                |                |                |                |                |                |                |                |                |                |   |   |   |
|-----------------------------------------------------------------------------------------------------------|--------------------------|-------|---------|-------------|-----------------------------------------------------------------------------------------------------------------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|---|---|---|
|                                                                                                           |                          | ap    | ae      |             | ap                                                                                                                    | 0.5            | 1              | 1.5            | 2              | 2.5            | 3              | 3.5            | 4              | 5              | 6              |   |   |   |
|                                                                                                           |                          | ap    | ae      |             | ap                                                                                                                    |                |                |                |                |                |                |                |                |                |                |   |   |   |
|                                                                                                           | < 800 N/mm²              | 1xD   | 0,5xD   | 0,2         | 60 - 80                                                                                                               | 0,005<br>0,007 | 0,007<br>0,009 | 0,009<br>0,011 | 0,011<br>0,013 | 0,013<br>0,014 | 0,014<br>0,016 | 0,016<br>0,018 | 0,018<br>0,020 | 0,20<br>0,22   | 0,22<br>0,24   | - | - | - |
|                                                                                                           | < 1100 N/mm²             | 1xD   | 0,5xD   | 0,2         | 60-80                                                                                                                 | 0,003<br>0,005 | 0,005<br>0,007 | 0,007<br>0,009 | 0,009<br>0,010 | 0,010<br>0,012 | 0,012<br>0,014 | 0,014<br>0,016 | 0,016<br>0,018 | 0,18<br>0,20   | 0,20<br>0,22   | - | - | - |
|                                                                                                           | < 1300 N/mm²             | 1xD   | 0,5xD   | 0,2         | 50- 60                                                                                                                | 0,003<br>0,005 | 0,005<br>0,007 | 0,007<br>0,009 | 0,009<br>0,010 | 0,010<br>0,012 | 0,012<br>0,014 | 0,014<br>0,016 | 0,016<br>0,018 | 0,18<br>0,20   | 0,20<br>0,22   | - | - | - |
|                                                                                                           | > 800 N/mm²              | -     | -       | -           | -                                                                                                                     | -              | -              | -              | -              | -              | -              | -              | -              | -              | -              | - | - | - |
|                                                                                                           | GG                       | 1xD   | 0,5xD   | 0,2         | -                                                                                                                     | 0,005<br>0,007 | 0,007<br>0,009 | 0,009<br>0,011 | 0,011<br>0,013 | 0,013<br>0,014 | 0,014<br>0,016 | 0,016<br>0,018 | 0,018<br>0,02  | 0,020<br>0,022 | 0,022<br>0,024 | - | - | - |
|                                                                                                           | GGG                      | 1xD   | 0,5xD   | 0,2         | 80 - 100                                                                                                              | 0,003<br>0,005 | 0,005<br>0,007 | 0,007<br>0,009 | 0,009<br>0,010 | 0,010<br>0,012 | 0,012<br>0,014 | 0,014<br>0,016 | 0,016<br>0,018 | 0,018<br>0,020 | 0,020<br>0,024 | - | - | - |
|                                                                                                           | Alluminio                | -     | -       | -           | -                                                                                                                     | -              | -              | -              | -              | -              | -              | -              | -              | -              | -              | - | - | - |
|                                                                                                           | Non metalli              | -     | -       | -           | -                                                                                                                     | -              | -              | -              | -              | -              | -              | -              | -              | -              | -              | - | - | - |
|                                                                                                           | Titanio                  | -     | -       | -           | -                                                                                                                     | -              | -              | -              | -              | -              | -              | -              | -              | -              | -              | - | - | - |
|                                                                                                           | Leghe speciali a base NI | -     | -       | -           | -                                                                                                                     | -              | -              | -              | -              | -              | -              | -              | -              | -              | -              | - | - | - |
|                                                                                                           | Temprati 38 / 48 HRC     | 0,5xd | 0,2 X d | 0,2         | 40 - 50                                                                                                               | 0,005<br>0,007 | 0,007<br>0,009 | 0,009<br>0,011 | 0,011<br>0,013 | 0,013<br>0,014 | 0,014<br>0,016 | 0,016<br>0,018 | 0,018<br>0,020 | 0,020<br>0,022 | 0,022<br>0,024 | - | - | - |
|                                                                                                           | Temprati 48 / 58 HRC     | 0,5xd | 0,2xd   | 0,2         | 30 - 50                                                                                                               | 0,003<br>0,005 | 0,005<br>0,007 | 0,007<br>0,009 | 0,009<br>0,010 | 0,010<br>0,012 | 0,012<br>0,014 | 0,014<br>0,016 | 0,016<br>0,018 | 0,018<br>0,020 | 0,020<br>0,022 | - | - | - |
|                                                                                                           | Temprati 58 / 68 HRC     | 0,5xd | 0,2xd   | 0,2         | 30 - 40                                                                                                               | 0,003<br>0,005 | 0,005<br>0,007 | 0,007<br>0,009 | 0,009<br>0,010 | 0,010<br>0,012 | 0,012<br>0,014 | 0,014<br>0,016 | 0,016<br>0,018 | 0,018<br>0,020 | 0,020<br>0,022 | - | - | - |

# PARAMETRI DI TAGLIO



CUTTING PARAMETERS  
SCHNITTDATEN  
PARAMÈTRES DE COUPE  
PARAMETROS DE CORTE

## FRESE MICRO POWER SEMISFERICHE: 2/4 TAGLI

Micro power ball nose end mills, Micro power Radiusfräser, Fraises micro power HÉMISPHERIQUES, Fresas micro power esféricas: 2/4 Flutes - Schneiden - Dents - Labios

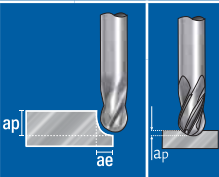
CAVA DAL PIENO: Vc e Fz: - 20%

Slotting: Vc e Fz: - 20%

Bohrnuten: Vc e Fz: - 20%

Rainurage: Vc e Fz: - 20%

Ranura: Vc e Fz: - 20%

| GRUPPO MATERIALI<br>Material Groups<br>Material-Beispiele<br>Groupes de Matériaux<br>Grupos de Materiales |                          |  |         | VC<br>m/min | <br><b>Fz [mm]</b><br><b>AVANZAMENTO AL DENTE</b><br>Tooth Feed - Zahnvorschub - Avancement au dent - Avance al labio |                |                |                |                |                |                |                |                |                |                |   |   |   |
|-----------------------------------------------------------------------------------------------------------|--------------------------|-----------------------------------------------------------------------------------|---------|-------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|---|---|---|
|                                                                                                           |                          | ap                                                                                | ae      |             | ap                                                                                                                                                                                                      | 0.5            | 1              | 1.5            | 2              | 2.5            | 3              | 3.5            | 4              | 5              | 6              |   |   |   |
|                                                                                                           |                          |                                                                                   |         |             |                                                                                                                                                                                                         |                |                |                |                |                |                |                |                |                |                |   |   |   |
|                                                                                                           |                          |                                                                                   |         |             |                                                                                                                                                                                                         |                |                |                |                |                |                |                |                |                |                |   |   |   |
|                          | < 800 N/mm <sup>2</sup>  | 0,03xd                                                                            | 0,2xd   | 0,2xd       | 50 - 60                                                                                                                                                                                                 | 0,005<br>0,007 | 0,007<br>0,009 | 0,009<br>0,011 | 0,011<br>0,013 | 0,013<br>0,014 | 0,014<br>0,016 | 0,016<br>0,018 | 0,018<br>0,020 | 0,20<br>0,22   | 0,22<br>0,24   | - | - | - |
|                         | < 1100 N/mm <sup>2</sup> | 0,03xd                                                                            | 0,2xd   | 0,2xd       | 50 - 60                                                                                                                                                                                                 | 0,003<br>0,005 | 0,005<br>0,007 | 0,007<br>0,009 | 0,009<br>0,010 | 0,010<br>0,012 | 0,012<br>0,014 | 0,014<br>0,016 | 0,016<br>0,018 | 0,18<br>0,20   | 0,20<br>0,22   | - | - | - |
|                        | < 1300 N/mm <sup>2</sup> | 0,03xd                                                                            | 0,2xd   | 0,2xd       | 40 - 60                                                                                                                                                                                                 | 0,003<br>0,005 | 0,005<br>0,007 | 0,007<br>0,009 | 0,009<br>0,010 | 0,010<br>0,012 | 0,012<br>0,014 | 0,014<br>0,016 | 0,016<br>0,018 | 0,18<br>0,20   | 0,20<br>0,22   | - | - | - |
|                        | > 800 N/mm <sup>2</sup>  | -                                                                                 | -       | -           | -                                                                                                                                                                                                       | -              | -              | -              | -              | -              | -              | -              | -              | -              | -              | - | - | - |
|                        | GG                       | 0,03xd                                                                            | 0,2xd   | 0,2xd       | 50 - 60                                                                                                                                                                                                 | 0,005<br>0,007 | 0,007<br>0,009 | 0,009<br>0,011 | 0,011<br>0,013 | 0,013<br>0,014 | 0,014<br>0,016 | 0,016<br>0,018 | 0,018<br>0,02  | 0,020<br>0,022 | 0,022<br>0,024 | - | - | - |
|                        | GGG                      | 0,03xd                                                                            | 0,2xd   | 0,2xd       | 40 - 60                                                                                                                                                                                                 | 0,003<br>0,005 | 0,005<br>0,007 | 0,007<br>0,009 | 0,009<br>0,01  | 0,01<br>0,012  | 0,012<br>0,014 | 0,014<br>0,016 | 0,016<br>0,018 | 0,018<br>0,020 | 0,020<br>0,022 | - | - | - |
|                        | Alluminio                | -                                                                                 | -       | -           | -                                                                                                                                                                                                       | -              | -              | -              | -              | -              | -              | -              | -              | -              | -              | - | - | - |
|                        | Non metalli              | -                                                                                 | -       | -           | -                                                                                                                                                                                                       | -              | -              | -              | -              | -              | -              | -              | -              | -              | -              | - | - | - |
|                        | Titanio                  | -                                                                                 | -       | -           | -                                                                                                                                                                                                       | -              | -              | -              | -              | -              | -              | -              | -              | -              | -              | - | - | - |
|                        | Leghe speciali a base Ni | -                                                                                 | -       | -           | -                                                                                                                                                                                                       | -              | -              | -              | -              | -              | -              | -              | -              | -              | -              | - | - | - |
|                        | Temprati 38 / 48 HRC     | 0,03xd                                                                            | 0,2 X d | 0,2xd       | 40 - 50                                                                                                                                                                                                 | 0,005<br>0,007 | 0,007<br>0,009 | 0,009<br>0,011 | 0,011<br>0,013 | 0,013<br>0,014 | 0,014<br>0,016 | 0,016<br>0,018 | 0,018<br>0,020 | 0,020<br>0,022 | 0,022<br>0,024 | - | - | - |
|                        | Temprati 48 / 58 HRC     | 0,03xd                                                                            | 0,2xd   | 0,2xd       | 30 - 50                                                                                                                                                                                                 | 0,003<br>0,005 | 0,005<br>0,007 | 0,007<br>0,009 | 0,009<br>0,01  | 0,01<br>0,012  | 0,012<br>0,014 | 0,014<br>0,016 | 0,016<br>0,018 | 0,018<br>0,020 | 0,020<br>0,022 | - | - | - |
|                        | Temprati 58 / 68 HRC     | 0,02xd                                                                            | 0,2xd   | 0,2xd       | 30 - 40                                                                                                                                                                                                 | 0,003<br>0,005 | 0,005<br>0,007 | 0,007<br>0,009 | 0,009<br>0,01  | 0,01<br>0,012  | 0,012<br>0,014 | 0,014<br>0,016 | 0,016<br>0,018 | 0,018<br>0,020 | 0,020<br>0,022 | - | - | - |



Tolicead

# FRESE POWER GRAPHITE



POWER GRAPHITE END MILLS



POWER GRAPHIT FRÄSER



FRAISES POWER GRAPHITE



FRESAS POWER GRAFITO





# FRESE POWER GRAPHITE TORICHE A 4 TAGLI IN MICROGRANA ULTRAFINE

POWER GRAPHITE TORIC END MILLS - 4 FLUTES - SUB-MICROGRAIN  
 POWER GRAPHIT TORUSFRÄSER - 4 NUTEN - HARTMETALLQUALITÄT: ULTRA-FEINSTKORN  
 FRAISES POWER GRAPHITE TORIQUES À 4 DENTS - MICRO-GRAIN ULTRAFIN  
 FRESAS POWER GRAFITO TÓRICAS - 4 LABIOS - SUB-MICROGRANO

## SERIE EXTRALUNGA

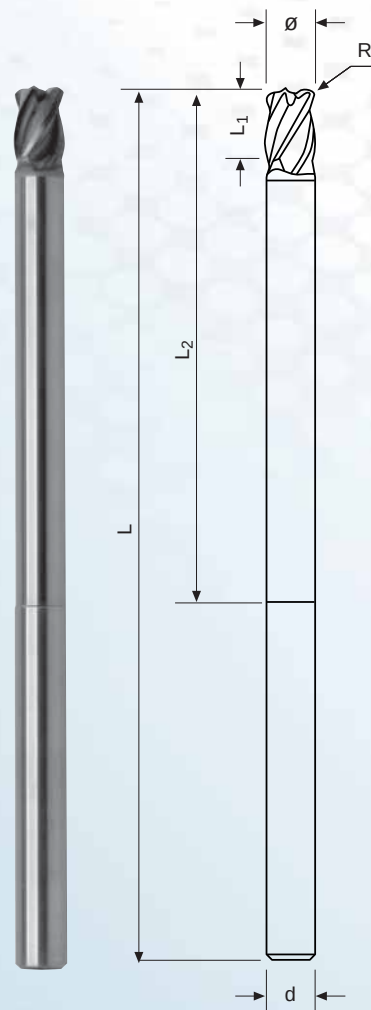
EXTRALONG SERIES  
 EXTRALANGE AUSFÜHRUNG  
 SÉRIE EXTRALONGUE  
 SERIE EXTRALARGA



### 1436D



| ø/R<br>mm | d <sub>1</sub><br>mm | L<br>mm | L <sub>1</sub><br>mm | L <sub>2</sub><br>mm | d<br>mm | Z | 1436D<br>€ |
|-----------|----------------------|---------|----------------------|----------------------|---------|---|------------|
| 2/0.2     | 1.92                 | 65      | 3                    | 30                   | 4       | 4 | 98,60      |
| 2/0.5     | 1.92                 | 65      | 3                    | 30                   | 4       | 4 | 98,60      |
| 3/0.3     | 2.9                  | 65      | 4                    | 40                   | 4       | 4 | 95,20      |
| 3/0.5     | 2.9                  | 65      | 4                    | 40                   | 4       | 4 | 95,20      |
| 4/0.3     | 3.9                  | 80      | 5                    | 50                   | 4       | 4 | 105,50     |
| 4/0.5     | 3.9                  | 80      | 5                    | 50                   | 4       | 4 | 105,50     |
| 6/0.3     | 5.8                  | 100     | 8                    | 60                   | 6       | 4 | 125,00     |
| 6/0.5     | 5.8                  | 100     | 8                    | 60                   | 6       | 4 | 125,00     |
| 6/1       | 5.8                  | 100     | 8                    | 60                   | 6       | 4 | 125,00     |
| 8/1       | 7.8                  | 120     | 10                   | 84                   | 8       | 4 | 219,00     |
| 8/2       | 7.8                  | 120     | 10                   | 84                   | 8       | 4 | 219,00     |
| 10/1      | 9.8                  | 130     | 12                   | 88                   | 10      | 4 | 255,00     |
| 10/2      | 9.8                  | 130     | 12                   | 88                   | 10      | 4 | 255,00     |
| 12/1      | 11.8                 | 140     | 15                   | 93                   | 12      | 4 | 309,00     |
| 12/2      | 11.8                 | 140     | 15                   | 93                   | 12      | 4 | 309,00     |
| 12/3      | 11.8                 | 140     | 15                   | 93                   | 12      | 4 | 309,00     |
|           |                      |         |                      |                      |         |   |            |
|           |                      |         |                      |                      |         |   |            |
|           |                      |         |                      |                      |         |   |            |
|           |                      |         |                      |                      |         |   |            |
|           |                      |         |                      |                      |         |   |            |
|           |                      |         |                      |                      |         |   |            |
|           |                      |         |                      |                      |         |   |            |
|           |                      |         |                      |                      |         |   |            |
|           |                      |         |                      |                      |         |   |            |
|           |                      |         |                      |                      |         |   |            |



#### Rivestimento Diamond

Diamond coating  
 Beschichtung Diamond  
 Revêtement Diamond  
 Recubrimiento Diamante

#### TOLLERANZA - TOLERANCE - TOLERANZ - TOLÉRANCE - TOLERANCIA

| Diametri<br>Diameters | Tolleranza del diametro<br>Diameter tolerance | Tolleranza del gambo<br>Shank tolerance |
|-----------------------|-----------------------------------------------|-----------------------------------------|
| da 2 mm a 12 mm       | +0.000 mm -0.01 mm                            | h6                                      |

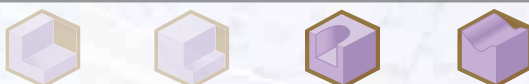
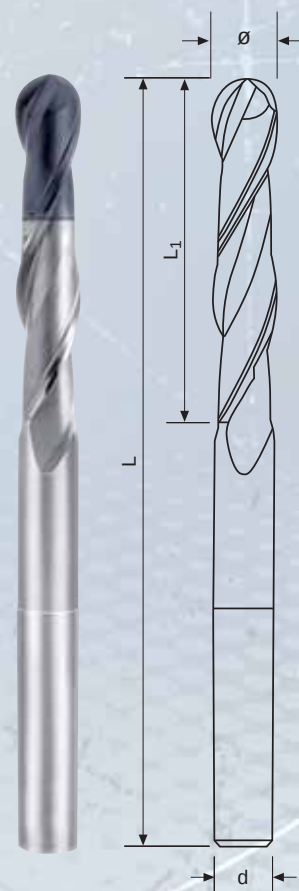
## SERIE LUNGA

LONG SERIES  
LANGE AUSFÜHRUNG  
SÉRIE LONGUE  
SERIE LARGA

# FRESE POWER GRAPHITE SEMISFERICHE A 2 TAGLI IN MICROGRANA ULTRAFINE

POWER GRAPHITE BALL NOSE END MILLS - 2 FLUTES - SUB-MICROGRAIN  
POWER GRAPHIT RADIUSFRÄSER - 2 NUTEN - HARTMETALLQUALITÄT: ULTRA-FEINSTKORN  
FRAISES POWER GRAPHITE HÉMISPHÉRIQUES À 2 DENTS - MICRO-GRAIN ULTRAFIN  
FRESAS POWER GRAFITO ESFÉRICA 2 LABIOS - SUB-MICROGRANO

## 1420RD

[illegible]

## Rivestimento Diamond

Diamond coating  
Beschichtung Diamond  
Revêtement Diamond  
Recubrimiento Diamante

**TOLLERANZA** - TOLERANCE - TOLERANZ - TOLÉRANCE - TOLERANCIA

| <b>Diametri</b><br>Diameters | <b>Tolleranza del diametro</b><br>Diameter tolerance | <b>Tolleranza del gambo</b><br>Shank tolerance |
|------------------------------|------------------------------------------------------|------------------------------------------------|
| da 1 mm a 3 mm               | +0.000 mm -0.025 mm                                  | +0.000 mm -0.013 mm                            |
| da 4 mm a 12 mm              | +0.000 mm -0.038 mm                                  | +0.000 mm -0.013 mm                            |

# FRESE POWER GRAPHITE SEMISFERICHE A 2 TAGLI IN MICROGRANA ULTRAFINE

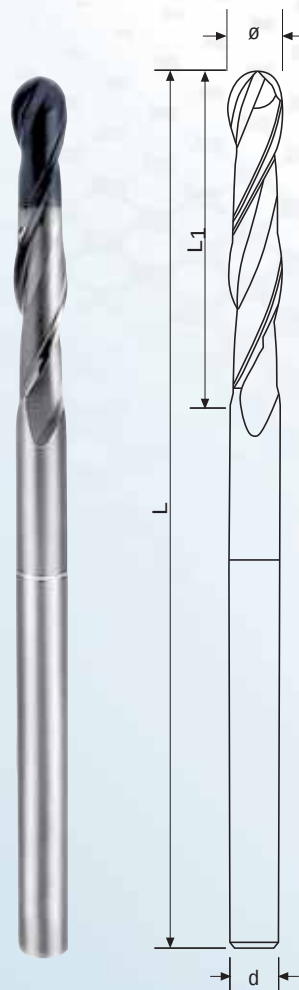
POWER GRAPHITE BALL NOSE END MILLS - 2 FLUTES - SUB-MICROGRAIN  
 POWER GRAPHIT RADIUSFRÄSER - 2 NUTEN - HARTMETALLQUALITÄT: ULTRA-FEINSTKORN  
 FRAISES POWER GRAPHITE HÉMISPÉRIQUES À 2 DENTS - MICRO-GRAIN ULTRAFIN  
 FRESAS POWER GRAFITO ESFÉRICA 2 LABIOS - SUB-MICROGRANO

## SERIE EXTRALUNGA

EXTRALONG SERIES  
EXTRALANGE AUSFÜHRUNG  
SÉRIE EXTRALONGUE  
SERIE EXTRALARGA



# 1421RD

[illegible]

## Rivestimento Diamond

Diamond coating  
Beschichtung Diamond  
Revêtement Diamond  
Recubrimiento Diamante

**TOLLERANZA** - TOLERANCE - TOLERANZ - TOLÉRANCE - TOLERANCIA

| <b>Diametri</b><br>Diameters | <b>Tolleranza del diametro</b><br>Diameter tolerance | <b>Tolleranza del gambo</b><br>Shank tolerance |
|------------------------------|------------------------------------------------------|------------------------------------------------|
| da 2 mm a 3 mm               | +0.000 mm -0.025 mm                                  | +0.000 mm -0.013 mm                            |
| da 4 mm a 12 mm              | +0.000 mm -0.038 mm                                  | +0.000 mm -0.013 mm                            |

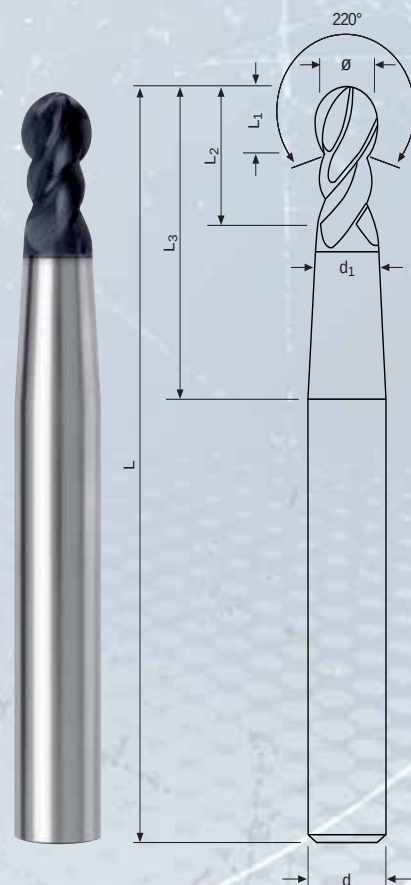
## SERIE LUNGA

LONG SERIES  
LANGE AUSFÜHRUNG  
SÉRIE LONGUE  
SERIE LARGA

**FRESE POWER GRAPHITE**  
**SEMISFERICHE** A 4 TAGLI IN MICROGRANA ULTRAFINE  
**220°**

POWER GRAPHITE BALL NOSE 220° - 4 FLUTES - SUB-MICROGRAIN  
POWER GRAPHITE RADIUSFRÄSER 220° - 4 NUTEN - HARTMETALLQUALITÄT: ULTRA-FEINSTKORN  
FRAISES POWER GRAPHITE HÉMISPÉRIQUES 220° À 4 DENTS - MICRO-GRAIN ULTRAFIN  
FRESAS POWER GRAFITO ESFÉRICAS 220° - 4 LABIOS - SUB-MICROGRANO

# 1425RD

[illegible]

### Rivestimento Diamond

Diamond coating  
Beschichtung Diamond  
Revêtement Diamond  
Recubrimiento Diamante

**TOLLERANZA** - TOLERANCE - TOLERANZ - TOLÉRANCE - TOLERANCIA

| <b>Diametri</b> | <b>Tolleranza del diametro</b> | <b>Tolleranza del gambo</b> |
|-----------------|--------------------------------|-----------------------------|
| Diameters       | Diameter tolerance             | Shank tolerance             |
| da 3 mm a 10 mm | +0.00 mm -0.01 mm              | h6                          |



# FRESE POWER GRAPHITE TORICHE A 2 TAGLI IN MICROGRANA ULTRAFINE

POWER GRAPHITE TORIC END MILLS - 2 FLUTES - SUB-MICROGRAIN  
 POWER GRAPHIT TORUSFRÄSER - 2 NUTEN - HARTMETALLQUALITÄT: ULTRA-FEINSTKORN  
 FRAISES POWER GRAPHITE TORIQUES À 2 DENTS - MICRO-GRAIN ULTRAFIN  
 FRESAS POWER GRAFITO TÓRICAS - 2 LABIOS - SUB-MICROGRANO

## SERIE NORMALE LUNGA & EXTRA L.

NORMAL/LONG/EXTRALONG SERIES  
 NORMAL/LANGE/EXTRALANGE AUSFÜHRUNG  
 SÉRIE NORMALE/LONGUE/EXTRALONGUE  
 SERIE NORMAL/LARGA/EXTRALARGA



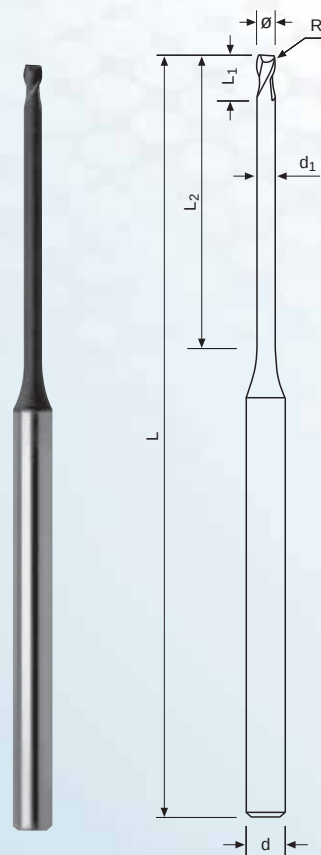
### 1437D

**NEW** Ø



| Ø/R<br>mm | d <sub>1</sub><br>mm | L<br>mm | L <sub>1</sub><br>mm | L <sub>2</sub><br>mm | d<br>mm | Z | 1437D<br>€ |
|-----------|----------------------|---------|----------------------|----------------------|---------|---|------------|
| 0.2/0.05  | 0.18                 | 55      | 0.3                  | 0.5                  | 4       | 2 | 101,00     |
| 0.2/0.05  | 0.18                 | 55      | 0.3                  | 1                    | 4       | 2 | 101,00     |
| 0.2/0.05  | 0.18                 | 55      | 0.3                  | 1.5                  | 4       | 2 | 101,00     |
| 0.3/0.05  | 0.28                 | 55      | 0.45                 | 1                    | 4       | 2 | 101,00     |
| 0.3/0.05  | 0.28                 | 55      | 0.45                 | 2                    | 4       | 2 | 101,00     |
| 0.3/0.05  | 0.28                 | 55      | 0.45                 | 2                    | 4       | 2 | 101,00     |
| 0.4/0.1   | 0.37                 | 55      | 0.6                  | 2                    | 4       | 2 | 101,00     |
| 0.4/0.1   | 0.37                 | 55      | 0.6                  | 3                    | 4       | 2 | 101,00     |
| 0.4/0.1   | 0.37                 | 55      | 0.6                  | 4                    | 4       | 2 | 101,00     |
| 0.5/0.1   | 0.47                 | 55      | 0.7                  | 3                    | 4       | 2 | 101,00     |
| 0.5/0.1   | 0.47                 | 55      | 0.7                  | 5                    | 4       | 2 | 101,00     |
| 0.5/0.1   | 0.47                 | 55      | 0.7                  | 8                    | 4       | 2 | 101,00     |
| 0.6/0.1   | 0.57                 | 55      | 0.9                  | 3                    | 4       | 2 | 101,00     |
| 0.6/0.1   | 0.57                 | 55      | 0.9                  | 5                    | 4       | 2 | 101,00     |
| 0.6/0.1   | 0.57                 | 55      | 0.9                  | 8                    | 4       | 2 | 101,00     |
| 0.8/0.2   | 0.76                 | 55      | 1.1                  | 4                    | 4       | 2 | 101,00     |
| 0.8/0.2   | 0.76                 | 55      | 1.1                  | 6                    | 4       | 2 | 101,00     |
| 0.8/0.2   | 0.76                 | 55      | 1.1                  | 8                    | 4       | 2 | 101,00     |
| 0.8/0.2   | 0.76                 | 55      | 1.1                  | 10                   | 4       | 2 | 101,00     |
| 1/0.1     | 0.95                 | 55      | 1.5                  | 18                   | 4       | 2 | 101,00     |
| 1/0.2     | 0.95                 | 55      | 1.5                  | 6                    | 4       | 2 | 101,00     |
| 1/0.2     | 0.95                 | 55      | 1.5                  | 10                   | 4       | 2 | 101,00     |
| 1/0.2     | 0.95                 | 55      | 1.5                  | 14                   | 4       | 2 | 101,00     |
| 1/0.2     | 0.95                 | 55      | 1.5                  | 18                   | 4       | 2 | 101,00     |
| 1/0.2     | 0.95                 | 60      | 1.5                  | 24                   | 4       | 2 | 101,00     |
| 1.2/0.2   | 1.15                 | 55      | 1.6                  | 6                    | 4       | 2 | 101,00     |

→1-3



#### Rivestimento Diamond

Diamond coating  
 Beschichtung Diamond  
 Revêtement Diamond  
 Recubrimiento Diamante

#### TOLLERANZA - TOLERANCE - TOLERANZ - TOLÉRANCE - TOLERANCIA

| Diametri<br>Diameters | Tolleranza del diametro<br>Diameter tolerance | Tolleranza del gambo<br>Shank tolerance |
|-----------------------|-----------------------------------------------|-----------------------------------------|
| da 0.2 mm a 6.0 mm    | +0.00 mm -0.01 mm                             | h6                                      |



## SERIE NORMALE LUNGA & EXTRA L.

NORMAL/LONG/EXTRALONG SERIES  
NORMAL/LANGE/ EXTRALANGE AUSFÜHRUNG  
SÉRIE NORMALE/LONGUE/EXTRALONGUE  
SERIE NORMAL/LARGA/EXTRALARGA

# FRESE POWER GRAPHITE TORICHE A 2 TAGLI IN MICROGRANA ULTRAFINE

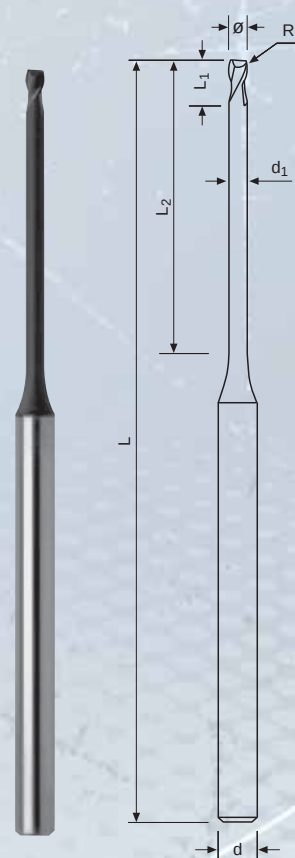
POWER GRAPHITE TORIC END MILLS - 2 FLUTES - SUB-MICROGRAIN  
POWER GRAPHIT TORUSFRÄSER - 2 NUTEN - HARTMETALLQUALITÄT: ULTRA-FEINSTKORN  
FRAISES POWER GRAPHITE TORIQUES À 2 DENTS - MICRO-GRAIN ULTRAFIN  
FRESAS POWER GRAFITO TÓRICAS - 2 LABIOS - SUB-MICROGRANO

# 1437D

**NEW** Ø



| Ø/R<br>mm | d <sub>1</sub><br>mm | L<br>mm | L <sub>1</sub><br>mm | L <sub>2</sub><br>mm | d<br>mm | Z | 1437D<br>€ |
|-----------|----------------------|---------|----------------------|----------------------|---------|---|------------|
| 1.2/0.2   | 1.15                 | 55      | 1.6                  | 10                   | 4       | 2 | 101,00     |
| 1.2/0.2   | 1.15                 | 55      | 1.6                  | 14                   | 4       | 2 | 101,00     |
| 1.2/0.2   | 1.15                 | 55      | 1.6                  | 18                   | 4       | 2 | 101,00     |
| 1.2/0.2   | 1.15                 | 60      | 1.6                  | 24                   | 4       | 2 | 101,00     |
| 1.2/0.2   | 1.44                 | 55      | 2                    | 6                    | 4       | 2 | 101,00     |
| 1.5/0.2   | 1.44                 | 55      | 2                    | 10                   | 4       | 2 | 101,00     |
| 1.5/0.2   | 1.44                 | 55      | 2                    | 14                   | 4       | 2 | 101,00     |
| 1.5/0.2   | 1.44                 | 55      | 2                    | 18                   | 4       | 2 | 101,00     |
| 1.5/0.2   | 1.44                 | 60      | 2                    | 24                   | 4       | 2 | 101,00     |
| 2/0.2     | 1.92                 | 65      | 2.5                  | 6                    | 4       | 2 | 101,00     |
| 2/0.2     | 1.92                 | 65      | 2.5                  | 10                   | 4       | 2 | 101,00     |
| 2/0.2     | 1.92                 | 65      | 2.5                  | 14                   | 4       | 2 | 101,00     |
| 2/0.2     | 1.92                 | 65      | 2.5                  | 18                   | 4       | 2 | 101,00     |
| 2/0.2     | 1.92                 | 75      | 2.5                  | 24                   | 4       | 2 | 101,00     |
| 2/0.2     | 1.92                 | 75      | 2.5                  | 30                   | 4       | 2 | 101,00     |
| 2/0.5     | 1.92                 | 65      | 2.5                  | 6                    | 4       | 2 | 101,00     |
| 2/0.5     | 1.92                 | 65      | 2.5                  | 10                   | 4       | 2 | 101,00     |
| 2/0.5     | 1.92                 | 65      | 2.5                  | 14                   | 4       | 2 | 101,00     |
| 2/0.5     | 1.92                 | 65      | 2.5                  | 18                   | 4       | 2 | 101,00     |
| 2/0.5     | 1.92                 | 75      | 2.5                  | 24                   | 4       | 2 | 101,00     |
| 2/0.5     | 1.92                 | 75      | 2.5                  | 30                   | 4       | 2 | 101,00     |
| 2.5/0.25  | 2.4                  | 65      | 3.5                  | 10                   | 4       | 2 | 101,00     |
| 2.5/0.25  | 2.4                  | 65      | 3.5                  | 20                   | 4       | 2 | 101,00     |
| 2.5/0.25  | 2.4                  | 75      | 3.5                  | 30                   | 4       | 2 | 101,00     |
| 3/0.2     | 2.9                  | 65      | 5                    | 6                    | 4       | 2 | 101,00     |
| 3/0.2     | 2.9                  | 65      | 5                    | 10                   | 4       | 2 | 101,00     |
| 3/0.2     | 2.9                  | 65      | 5                    | 14                   | 4       | 2 | 101,00     |
| 3/0.2     | 2.9                  | 65      | 5                    | 18                   | 4       | 2 | 101,00     |
| 3/0.2     | 2.9                  | 75      | 5                    | 24                   | 4       | 2 | 101,00     |
| 3/0.2     | 2.9                  | 75      | 5                    | 30                   | 4       | 2 | 101,00     |
| 3.0/0.5   | 2.9                  | 65      | 5                    | 6                    | 4       | 2 | 101,00     |
| 3.0/0.5   | 2.9                  | 65      | 5                    | 10                   | 4       | 2 | 101,00     |
| 3.0/0.5   | 2.9                  | 65      | 5                    | 14                   | 4       | 2 | 101,00     |
| 3.0/0.5   | 2.9                  | 65      | 5                    | 18                   | 4       | 2 | 101,00     |
| 3.0/0.5   | 2.9                  | 75      | 5                    | 24                   | 4       | 2 | 101,00     |
| 3.0/0.5   | 2.9                  | 75      | 5                    | 30                   | 4       | 2 | 101,00     |
| 4/0.5     | 3.9                  | 65      | 6                    | 10                   | 4       | 2 | 108,50     |



→2-3

**A 2 TAGLI** IN MICROGRANA ULTRAFINE

FRESAS POWER GRAFITO TÓRICAS - 2 LABIOS - SUB-MICROGRANO

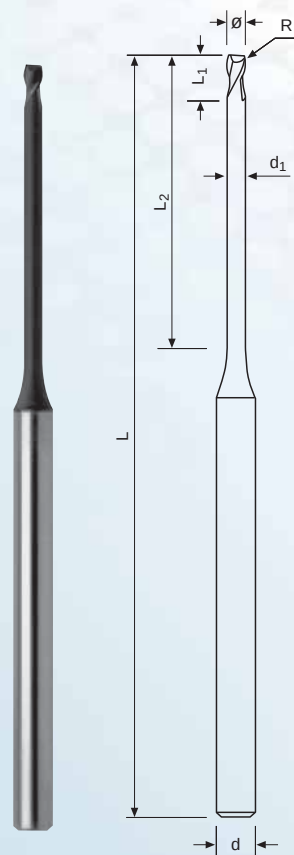
NORMAL/LONG/EXTRALONG SERIES  
NORMAL/LANGE/ EXTRALANGE AUSFÜHRUNG  
SÉRIE NORMALE/LONGUE/EXTRALONGUE  
SERIE NORMAL/LARGA/EXTRALARGA



**NEW Ø**



→3-3



Diamond coating  
Beschichtung Diamond  
Revêtement Diamond  
Recubrimiento Diamante

| Diametri<br>Diameters | Tolleranza del diametro<br>Diameter tolerance | Tolleranza del gambo<br>Shank tolerance |
|-----------------------|-----------------------------------------------|-----------------------------------------|
| da 0.2 mm a 6.0 mm    | +0.00 mm -0.01 mm                             | h6                                      |



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# FRESE POWER GRAPHITE SEMISFERICHE A 2 TAGLI IN MICROGRANA ULTRAFINE

POWER GRAPHITE BALL NOSE END MILLS - 2 FLUTES - SUB-MICROGRAIN  
 POWER GRAPHIT RADIUSFRÄSER - 2 NUTEN - HARTMETALLQUALITÄT: ULTRA-FEINSTKORN  
 FRAISES POWER GRAPHITE HÉMISPHERIQUES À 2 DENTS - MICRO-GRAIN ULTRAFIN  
 FRESAS POWER GRAFITO ESFÉRICA 2 LABIOS - SUB-MICROGRANO

## SERIE NORMALE LUNGA & EXTRA L.

NORMAL/LONG/EXTRALONG SERIES  
 NORMAL/LANGE/EXTRALANGE AUSFÜHRUNG  
 SÉRIE NORMALE/LONGUE/EXTRALONGUE  
 SERIE NORMAL/LARGA/EXTRALARGA

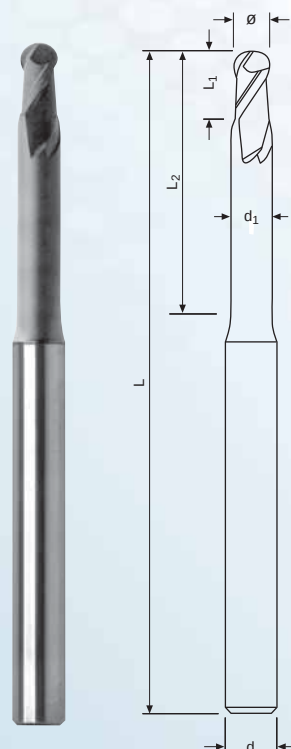


## 1434RD



| Ø mm | d <sub>1</sub> mm | L mm | L <sub>1</sub> mm | L <sub>2</sub> mm | d mm | Z | 1434RD € |
|------|-------------------|------|-------------------|-------------------|------|---|----------|
| 0.2  | 0.18              | 55   | 0.3               | 0.5               | 4    | 2 | 121,50   |
| 0.2  | 0.18              | 55   | 0.3               | 1                 | 4    | 2 | 121,50   |
| 0.2  | 0.18              | 55   | 0.3               | 1.5               | 4    | 2 | 121,50   |
| 0.3  | 0.28              | 55   | 0.45              | 1                 | 4    | 2 | 121,50   |
| 0.3  | 0.28              | 55   | 0.45              | 2                 | 4    | 2 | 121,50   |
| 0.3  | 0.28              | 55   | 0.45              | 3                 | 4    | 2 | 121,50   |
| 0.4  | 0.37              | 55   | 0.6               | 2                 | 4    | 2 | 121,50   |
| 0.4  | 0.37              | 55   | 0.6               | 3                 | 4    | 2 | 121,50   |
| 0.4  | 0.37              | 55   | 0.6               | 4                 | 4    | 2 | 121,50   |
| 0.5  | 0.47              | 55   | 0.7               | 3                 | 4    | 2 | 121,50   |
| 0.5  | 0.47              | 55   | 0.7               | 5                 | 4    | 2 | 121,50   |
| 0.5  | 0.47              | 55   | 0.7               | 8                 | 4    | 2 | 121,50   |
| 0.6  | 0.57              | 55   | 0.9               | 3                 | 4    | 2 | 121,50   |
| 0.6  | 0.57              | 55   | 0.9               | 5                 | 4    | 2 | 121,50   |
| 0.6  | 0.57              | 55   | 0.9               | 8                 | 4    | 2 | 121,50   |
| 0.8  | 0.76              | 55   | 1.1               | 4                 | 4    | 2 | 121,50   |
| 0.8  | 0.76              | 55   | 1.1               | 6                 | 4    | 2 | 121,50   |
| 0.8  | 0.76              | 55   | 1.1               | 8                 | 4    | 2 | 121,50   |
| 0.8  | 0.76              | 55   | 1.1               | 10                | 4    | 2 | 121,50   |
| 1    | 0.95              | 55   | 1.5               | 6                 | 4    | 2 | 121,50   |
| 1    | 0.95              | 55   | 1.5               | 10                | 4    | 2 | 121,50   |
| 1    | 0.95              | 55   | 1.5               | 14                | 4    | 2 | 121,50   |
| 1    | 0.95              | 55   | 1.5               | 18                | 4    | 2 | 121,50   |
| 1    | 0.95              | 60   | 1.5               | 24                | 4    | 2 | 121,50   |
| 1.2  | 1.15              | 55   | 1.6               | 6                 | 4    | 2 | 121,50   |
| 1.2  | 1.15              | 55   | 1.6               | 10                | 4    | 2 | 121,50   |

→1-2



### Rivestimento Diamond

Diamond coating  
 Beschichtung Diamond  
 Revêtement Diamond  
 Recubrimiento Diamante

### TOLLERANZA - TOLERANCE - TOLERANZ - TOLÉRANCE - TOLERANCIA

| Diametri<br>Diameters | Tolleranza del diametro<br>Diameter tolerance | Tolleranza del gambo<br>Shank tolerance |
|-----------------------|-----------------------------------------------|-----------------------------------------|
| da 0.2 mm a 6.0 mm    | +0.000 mm -0.010 mm                           | h6                                      |



## SERIE NORMALE LUNGA & EXTRA L.

NORMAL/LONG/EXTRALONG SERIES  
NORMAL/LANGE/ EXTRALANGE AUSFÜHRUNG  
SÉRIE NORMALE/LONGUE/EXTRALONGUE  
SERIE NORMAL/LARGA/EXTRALARGA

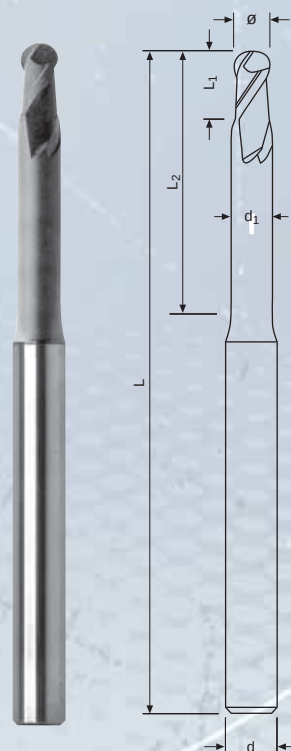
# FRESE POWER GRAPHITE SEMISFERICHE A 2 TAGLI IN MICROGRANA ULTRAFINE

POWER GRAPHITE BALL NOSE END MILLS - 2 FLUTES - SUB-MICROGRAIN  
POWER GRAPHIT RADIUSFRÄSER - 2 NUTEN - HARTMETALLQUALITÄT: ULTRA-FEINSTKORN  
FRAISES POWER GRAPHITE HÉMISPHERIQUES À 2 DENTS - MICRO-GRAIN ULTRAFIN  
FRESAS POWER GRAFITO ESFÉRICA 2 LABIOS - SUB-MICROGRANO

## 1434RD



| Ø<br>mm | d <sub>1</sub><br>mm | L<br>mm | L <sub>1</sub><br>mm | L <sub>2</sub><br>mm | d<br>mm | Z | 1434RD<br>€ |
|---------|----------------------|---------|----------------------|----------------------|---------|---|-------------|
| 1.2     | 1.15                 | 55      | 1.6                  | 14                   | 4       | 2 | 121,50      |
| 1.2     | 1.15                 | 55      | 1.6                  | 18                   | 4       | 2 | 121,50      |
| 1.2     | 1.15                 | 60      | 1.6                  | 24                   | 4       | 2 | 121,50      |
| 1.5     | 1.44                 | 55      | 2                    | 6                    | 4       | 2 | 121,50      |
| 1.5     | 1.44                 | 55      | 2                    | 10                   | 4       | 2 | 121,50      |
| 1.5     | 1.44                 | 55      | 2                    | 14                   | 4       | 2 | 121,50      |
| 1.5     | 1.44                 | 55      | 2                    | 18                   | 4       | 2 | 121,50      |
| 1.5     | 1.44                 | 60      | 2                    | 24                   | 4       | 2 | 121,50      |
| 2       | 1.92                 | 65      | 2.5                  | 6                    | 4       | 2 | 121,50      |
| 2       | 1.92                 | 65      | 2.5                  | 10                   | 4       | 2 | 121,50      |
| 2       | 1.92                 | 65      | 2.5                  | 14                   | 4       | 2 | 121,50      |
| 2       | 1.92                 | 65      | 2.5                  | 18                   | 4       | 2 | 121,50      |
| 2       | 1.92                 | 75      | 2.5                  | 24                   | 4       | 2 | 121,50      |
| 2       | 1.92                 | 75      | 2.5                  | 30                   | 4       | 2 | 121,50      |
| 2.5     | 2.4                  | 65      | 3.5                  | 10                   | 4       | 2 | 121,50      |
| 2.5     | 2.4                  | 65      | 3.5                  | 20                   | 4       | 2 | 121,50      |
| 2.5     | 2.4                  | 75      | 3.5                  | 30                   | 4       | 2 | 121,50      |
| 3       | 2.9                  | 65      | 5                    | 6                    | 4       | 2 | 121,50      |
| 3       | 2.9                  | 65      | 5                    | 10                   | 4       | 2 | 121,50      |
| 3       | 2.9                  | 65      | 5                    | 14                   | 4       | 2 | 121,50      |
| 3       | 2.9                  | 65      | 5                    | 18                   | 4       | 2 | 121,50      |
| 3       | 2.9                  | 75      | 5                    | 24                   | 4       | 2 | 121,50      |
| 3       | 2.9                  | 75      | 5                    | 30                   | 4       | 2 | 121,50      |
| 4       | 3.9                  | 65      | 6                    | 10                   | 6       | 2 | 130,50      |
| 4       | 3.9                  | 65      | 6                    | 14                   | 6       | 2 | 130,50      |
| 4       | 3.9                  | 65      | 6                    | 18                   | 6       | 2 | 130,50      |
| 4       | 3.9                  | 75      | 6                    | 24                   | 6       | 2 | 130,50      |
| 4       | 3.9                  | 75      | 6                    | 30                   | 6       | 2 | 130,50      |
| 5       | 4.9                  | 65      | 7.5                  | 10                   | 6       | 2 | 143,00      |
| 5       | 4.9                  | 65      | 7.5                  | 20                   | 6       | 2 | 143,00      |
| 5       | 4.9                  | 75      | 7.5                  | 30                   | 6       | 2 | 143,00      |
| 5       | 4.9                  | 90      | 7.5                  | 40                   | 6       | 2 | 143,00      |
| 6       | 5.9                  | 65      | 10                   | 10                   | 6       | 2 | 148,00      |
| 6       | 5.9                  | 65      | 10                   | 20                   | 6       | 2 | 148,00      |
| 6       | 5.9                  | 75      | 10                   | 30                   | 6       | 2 | 148,00      |
| 6       | 5.9                  | 90      | 10                   | 40                   | 6       | 2 | 148,00      |
| 6       | 5.9                  | 90      | 10                   | 50                   | 6       | 2 | 148,00      |



→2-2

# PARAMETRI DI TAGLIO

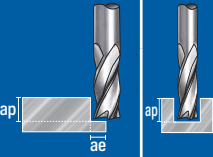
CUTTING PARAMETERS  
SCHNITTDATEN  
PARAMÈTRES DE COUPE  
PARAMETROS DE CORTE



## FRESE POWER GRAPHITE: 2/4 TAGLI

Power graphite end mills - Power graphit fräser - Fraises power graphite - Fresas power grafito:  
2/4 Flutes - Schneiden - Dents - Labios

**CAVA DAL PIENO: Vc e Fz: - 20%**  
Slotting: Vc e Fz: - 20%  
Bohrnuten: Vc e Fz: - 20%  
Rainurage: Vc e Fz: - 20%  
Ranura: Vc e Fz: - 20%

| GRUPPO MATERIALI<br>Material Groups<br>Material-Beispiele<br>Groupes de Matériaux<br>Grupos de Materiales |                          |                                                                                   |         |       | VC<br>m/min |                   |       |       |       |       |       |       |       |   |   |   |   |  |  |
|-----------------------------------------------------------------------------------------------------------|--------------------------|-----------------------------------------------------------------------------------|---------|-------|-------------|-----------------------------------------------------------------------------------------------------|-------|-------|-------|-------|-------|-------|-------|---|---|---|---|--|--|
|                                                                                                           |                          |  |         |       |             | Fz [mm]<br>AVANZAMENTO AL DENTE<br>Tooth Feed - Zahnvorschub - Avancement au dent - Avance al labio |       |       |       |       |       |       |       |   |   |   |   |  |  |
|                                                                                                           |                          | ap                                                                                | ae      | ap    |             | 1                                                                                                   | 2     | 3     | 4     | 6     | 8     | 10    | 12    |   |   |   |   |  |  |
|                                                                                                           |                          |                                                                                   |         |       |             | ap                                                                                                  | ae    | ap    |       |       |       |       |       |   |   |   |   |  |  |
|  P                        | < 800 N/mm²              | -                                                                                 | -       | -     | -           | -                                                                                                   | -     | -     | -     | -     | -     | -     | -     | - | - | - | - |  |  |
|  P                      | < 1100 N/mm²             | -                                                                                 | -       | -     | -           | -                                                                                                   | -     | -     | -     | -     | -     | -     | -     | - | - | - | - |  |  |
|  P                      | < 1300 N/mm²             | -                                                                                 | -       | -     | -           | -                                                                                                   | -     | -     | -     | -     | -     | -     | -     | - | - | - | - |  |  |
|  M                      | > 800 N/mm²              | -                                                                                 | -       | -     | -           | -                                                                                                   | -     | -     | -     | -     | -     | -     | -     | - | - | - | - |  |  |
|  K                      | GG                       | -                                                                                 | -       | -     | -           | -                                                                                                   | -     | -     | -     | -     | -     | -     | -     | - | - | - | - |  |  |
|  K                      | GGG                      | -                                                                                 | -       | -     | -           | -                                                                                                   | -     | -     | -     | -     | -     | -     | -     | - | - | - | - |  |  |
|  N                      | Si >12%                  | 1,2xØ                                                                             | 0,5 X Ø | 1 X Ø | 400-750     | 0,010                                                                                               | 0,013 | 0,015 | 0,020 | 0,029 | 0,039 | 0,049 | 0,059 | - | - | - | - |  |  |
|  N                      | Si >14%                  | 1,2xØ                                                                             | 0,5 X Ø | 1 X Ø | 750-1200    | 0,015                                                                                               | 0,018 | 0,021 | 0,028 | 0,042 | 0,056 | 0,070 | 0,084 | - | - | - | - |  |  |
|  S                      | Titanio                  | -                                                                                 | -       | -     | -           | -                                                                                                   | -     | -     | -     | -     | -     | -     | -     | - | - | - | - |  |  |
|  S                      | Leghe speciali a base Ni | -                                                                                 | -       | -     | -           | -                                                                                                   | -     | -     | -     | -     | -     | -     | -     | - | - | - | - |  |  |
|  H                      | Temprati 38 / 48 HRC     | -                                                                                 | -       | -     | -           | -                                                                                                   | -     | -     | -     | -     | -     | -     | -     | - | - | - | - |  |  |
|  H                      | Temprati 48 / 58 HRC     | -                                                                                 | -       | -     | -           | -                                                                                                   | -     | -     | -     | -     | -     | -     | -     | - | - | - | - |  |  |
|  H                      | Temprati 58 / 68 HRC     | -                                                                                 | -       | -     | -           | -                                                                                                   | -     | -     | -     | -     | -     | -     | -     | - | - | - | - |  |  |



### **SERVIZIO TECNICO**

Technical Help  
Technische Hilfe  
Service technique  
Ayuda técnica

## **PER ULTERIORI INFORMAZIONI CONTATTATECI**

For more information please contact us  
Für weitere Informationen bitten wir um Kontaktaufnahme  
Pour tout renseignement contactez-nous  
Para más informaciones llámenos





# FRESE POWER BRASATE in PCD



PCD BRAZED POWER END MILLS



PKD BESTÜCKTE POWER FRÄSER



FRAISES POWER PCD BRASÉES



FRESAS POWER DE PCD SOLDADO



## MONO TAGLIO

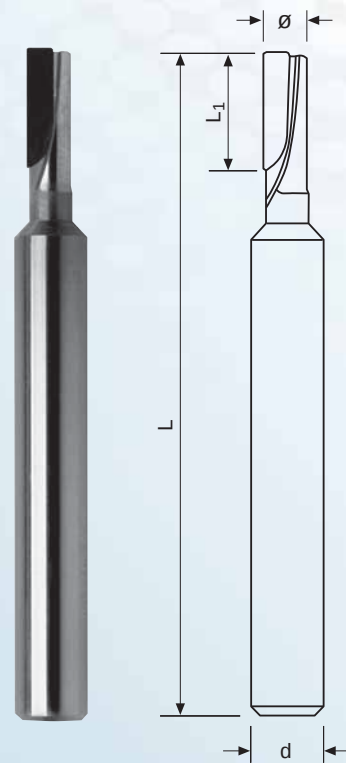
POWER PCD END MILLS - 1 FLUTE  
POWER PCD FRÄSER MIT - 1 NUTE  
FRAISES POWER PKD MONO - 1 DENT  
FRESAS POWER PCD - 1 LABIO

**CON RIPOrTO IN  
POLICRISTALLINO**

SOLID CARBIDE WITH POLYCRYSTALLINE DIAMOND  
VOLLHARTMETALL PKD  
AVEC RECHARGEMENT EN POLYCRISTALLIN  
METAL DURO PCD



# 1601DT

[illegible]

**CORPO IN MICROGRANA ULTRAFINE**  
SUB-MICROGRAIN BODY  
ULTRA FEINSTKORN KÖRPER  
CORPS EN MICRO-GRAIN ULTRAFIN  
CUERPO DE SUB-MICROGRANO

**TOLLERANZA** - TOLERANCE - TOLERANZ - TOLÉRANCE - TOLERANCIA

| Diametri<br>Diameters | Tolleranza del diametro<br>Diameter tolerance | Tolleranza del gambo<br>Shank tolerance |
|-----------------------|-----------------------------------------------|-----------------------------------------|
| da 4 mm a 20 mm       | h10                                           | h6                                      |



**CON RIPORETO IN  
POLICRISTALLINO**  
SOLID CARBIDE WITH POLYCRYSTALLINE DIAMOND  
VOLLHARTMETALL PKD  
AVEC RECHARGEMENT EN POLYCRISTALLIN  
METAL DURO PCD

# FRESE POWER PCD

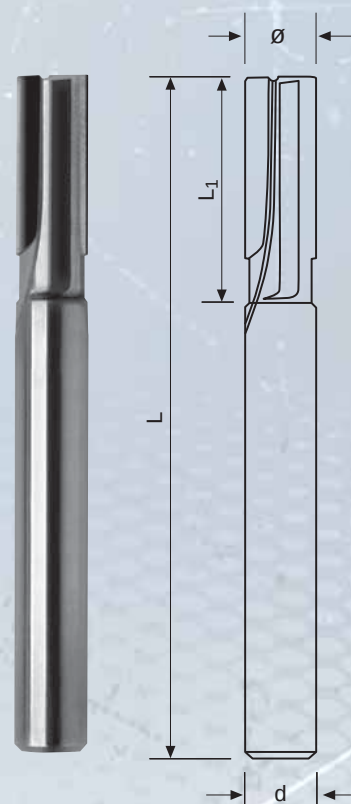
**A 2 TAGLI**

POWER PCD END MILLS - 2 FLUTES  
POWER PCD FRÄSER - 2 NUTEN  
FRAISES POWER PKD - 2 DENTS  
FRESAS POWER PCD - 2 LABIOS

## 1602DT



| Ø<br>mm | L<br>mm | L <sub>1</sub><br>mm | d<br>mm | Z | 1602DT<br>€ |
|---------|---------|----------------------|---------|---|-------------|
| 6       | 54      | 7                    | 6       | 2 | 424,00      |
| 6       | 54      | 15                   | 6       | 2 | 584,00      |
| 6       | 54      | 20                   | 6       | 2 | 684,00      |
| 8       | 58      | 7                    | 8       | 2 | 440,00      |
| 8       | 58      | 15                   | 8       | 2 | 601,00      |
| 8       | 58      | 20                   | 8       | 2 | 708,00      |
| 10      | 66      | 7                    | 10      | 2 | 481,00      |
| 10      | 66      | 15                   | 10      | 2 | 652,00      |
| 10      | 66      | 20                   | 10      | 2 | 765,00      |
| 12      | 73      | 7                    | 12      | 2 | 506,00      |
| 12      | 73      | 15                   | 12      | 2 | 673,00      |
| 12      | 73      | 20                   | 12      | 2 | 796,00      |
| 14      | 75      | 15                   | 14      | 2 | 730,00      |
| 14      | 75      | 20                   | 14      | 2 | 864,00      |
| 16      | 82      | 15                   | 16      | 2 | 757,00      |
| 16      | 82      | 20                   | 16      | 2 | 897,00      |
| 18      | 88      | 15                   | 18      | 2 | 818,00      |
| 18      | 88      | 20                   | 18      | 2 | 956,00      |
| 20      | 92      | 15                   | 20      | 2 | 845,00      |
| 20      | 92      | 20                   | 20      | 2 | 995,00      |
|         |         |                      |         |   |             |
|         |         |                      |         |   |             |
|         |         |                      |         |   |             |
|         |         |                      |         |   |             |



**CORPO IN MICROGRANA ULTRAFINE**  
SUB-MICROGRAIN BODY  
ULTRA FEINSTKORN KÖRPER  
CORPS EN MICRO-GRAIN ULTRAFIN  
CUERPO DE SUB-MICROGRANO

### TOLLERANZA - TOLERANCE - TOLERANZ - TOLÉRANCE - TOLERANCIA

| Diametri<br>Diameters | Tolleranza del diametro<br>Diameter tolerance | Tolleranza del gambo<br>Shank tolerance |
|-----------------------|-----------------------------------------------|-----------------------------------------|
| da 4 mm a 20 mm       | h10                                           | h6                                      |



# FRESE POWER PCD TORICHE A 2 TAGLI

POWER TORIC PCD END MILLS 2 FLUTES  
POWER PCD TORUSFRÄSER - 2 NUTEN  
FRAISES POWER PDK TORIQUES À 2 DENTS  
FRESAS POWER TÓRICAS PCD - 2 LABIOS

## CON RIPORE IN POLICRISTALLINO

SOLID CARBIDE WITH POLYCRYSTALLINE DIAMOND  
AVEC RECHARGEMENT EN POLYCRISTALLIN  
VOLLHARTMETALL PCD  
METAL DURO PCD



## 602RDT



| Ø / R<br>mm | L<br>mm | L <sub>1</sub><br>mm | L <sub>2</sub><br>mm | d<br>mm | Z | 602RDT<br>€ |
|-------------|---------|----------------------|----------------------|---------|---|-------------|
| 4/0.3       | 75      | 2.5                  | 12                   | 6       | 2 | 431,00      |
| 4/0.3       | 75      | 2.5                  | 20                   | 6       | 2 | 431,00      |
| 4/0.3       | 75      | 2.5                  | 28                   | 6       | 2 | 431,00      |
| 4/0.3       | 75      | 2.5                  | 35                   | 6       | 2 | 431,00      |
| 4/0.5       | 75      | 2.5                  | 20                   | 6       | 2 | 431,00      |
| 5/0.3       | 75      | 3                    | 15                   | 6       | 2 | 431,00      |
| 5/0.3       | 75      | 3                    | 25                   | 6       | 2 | 431,00      |
| 5/0.3       | 75      | 3                    | 35                   | 6       | 2 | 431,00      |
| 5/0.5       | 75      | 3                    | 25                   | 6       | 2 | 431,00      |
| 6/0.5       | 100     | 6                    | 18                   | 6       | 2 | 431,00      |
| 6/0.5       | 100     | 6                    | 30                   | 6       | 2 | 431,00      |
| 6/0.5       | 100     | 6                    | 42                   | 6       | 2 | 431,00      |
| 6/1         | 100     | 6                    | 18                   | 6       | 2 | 431,00      |
| 8/0.5       | 100     | 7                    | 24                   | 8       | 2 | 481,00      |
| 8/0.5       | 100     | 7                    | 40                   | 8       | 2 | 481,00      |
| 8/1         | 100     | 7                    | 24                   | 8       | 2 | 481,00      |
| 8/1         | 100     | 7                    | 40                   | 8       | 2 | 481,00      |
| 8/2         | 100     | 7                    | 40                   | 8       | 2 | 481,00      |
| 10/0.5      | 100     | 8                    | 30                   | 10      | 2 | 541,00      |
| 10/0.5      | 100     | 8                    | 50                   | 10      | 2 | 541,00      |
| 10/1        | 100     | 8                    | 30                   | 10      | 2 | 541,00      |
| 10/1        | 100     | 8                    | 50                   | 10      | 2 | 541,00      |
| 10/1.5      | 100     | 8                    | 30                   | 10      | 2 | 541,00      |
| 10/1.5      | 100     | 8                    | 50                   | 10      | 2 | 541,00      |
| 10/2        | 100     | 8                    | 30                   | 10      | 2 | 541,00      |

→1-2



**CORPO IN MICROGRANA ULTRAFINE**  
SUB-MICROGRAIN BODY  
ULTRA FEINSTKORN KÖRPER  
CORPS EN MICRO-GRAIN ULTRAFIN  
CUERPO DE SUB-MICROGRANO

### TOLLERANZA - TOLERANCE - TOLERANZ - TOLÉRANCE - TOLERANCIA

| Diametri<br>Diameters | Tolleranza del diametro<br>Diameter tolerance | Tolleranza del gambo<br>Shank tolerance |
|-----------------------|-----------------------------------------------|-----------------------------------------|
| da 4 mm a 20 mm       | f8                                            | h6                                      |



POWER TORIC PCD END MILLS 2 FLUTES  
POWER PKD TORUSFRÄSER - 2 NUTEN  
FRAISES POWER PCD TORIQUES À 2 DENTS  
FRESAS POWER TÓRICAS PCD - 2 LABIOS



**Talicarb**

# FRESE POWER PCD SEMISFERICHE A 2 TAGLI

POWER BALL NOSE PCD END MILLS - 2 FLUTES  
POWER PKD RADIUSFRÄSER - 2 NUTEN  
FRAISES POWER PCD HÉMISPHERIQUES À 2 DENTS  
FRESAS POWER ESFÉRICAS PCD - 2 LABIOS

CON RIPORE IN  
POLICRISTALLINO

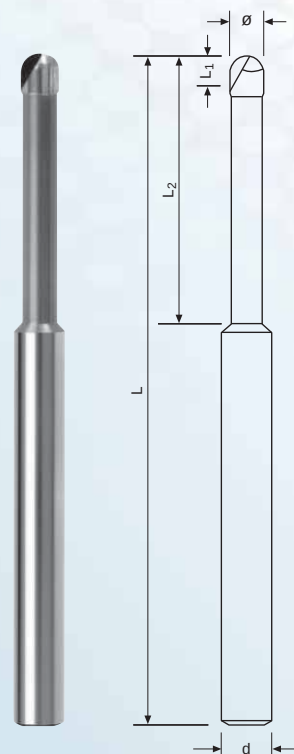
SOLID CARBIDE WITH POLYCRYSTALLINE DIAMOND  
AVEC RECHARGEMENT EN POLYCRYSTALLIN  
VOLLHARTMETALL PCD  
METAL DURO PCD



## 603RDT



| Ø<br>mm | L<br>mm | L <sub>1</sub><br>mm | L <sub>2</sub><br>mm | d<br>mm | Z | 603RDT<br>€ |
|---------|---------|----------------------|----------------------|---------|---|-------------|
| 4       | 75      | 2.5                  | 12                   | 6       | 2 | 431,00      |
| 4       | 75      | 2.5                  | 20                   | 6       | 2 | 431,00      |
| 4       | 75      | 2.5                  | 28                   | 6       | 2 | 431,00      |
| 4       | 75      | 2.5                  | 35                   | 6       | 2 | 431,00      |
| 5       | 75      | 3                    | 15                   | 6       | 2 | 431,00      |
| 5       | 75      | 3                    | 25                   | 6       | 2 | 431,00      |
| 5       | 75      | 3                    | 35                   | 6       | 2 | 431,00      |
| 6       | 100     | 6                    | 18                   | 6       | 2 | 431,00      |
| 6       | 100     | 6                    | 30                   | 6       | 2 | 431,00      |
| 6       | 100     | 6                    | 42                   | 6       | 2 | 431,00      |
| 8       | 100     | 7                    | 24                   | 8       | 2 | 481,00      |
| 8       | 100     | 7                    | 40                   | 8       | 2 | 481,00      |
| 10      | 100     | 8                    | 30                   | 10      | 2 | 541,00      |
| 10      | 100     | 8                    | 50                   | 10      | 2 | 541,00      |
| 12      | 105     | 9                    | 36                   | 12      | 2 | 607,00      |
| 12      | 105     | 9                    | 60                   | 12      | 2 | 607,00      |
| 16      | 130     | 11                   | 50                   | 16      | 2 | 744,00      |
| 20      | 160     | 13                   | 60                   | 20      | 2 | 923,00      |
|         |         |                      |                      |         |   |             |
|         |         |                      |                      |         |   |             |
|         |         |                      |                      |         |   |             |
|         |         |                      |                      |         |   |             |
|         |         |                      |                      |         |   |             |
|         |         |                      |                      |         |   |             |
|         |         |                      |                      |         |   |             |
|         |         |                      |                      |         |   |             |
|         |         |                      |                      |         |   |             |
|         |         |                      |                      |         |   |             |



**CORPO IN MICROGRANA ULTRAFINE**  
SUB-MICROGRAIN BODY  
ULTRA FEINSTKORN KÖRPER  
CORPS EN MICRO-GRAIN ULTRAFIN  
CUERPO DE SUB-MICROGRANO

**TOLLERANZA - TOLERANCE - TOLERANZ - TOLÉRANCE - TOLERANCIA**

| Diametri<br>Diameters | Tolleranza del diametro<br>Diameter tolerance | Tolleranza del gambo<br>Shank tolerance |
|-----------------------|-----------------------------------------------|-----------------------------------------|
| da 4 mm a 20 mm       | f8                                            | h6                                      |



# PARAMETRI DI TAGLIO

CUTTING PARAMETERS  
SCHNITTDATEN  
PARAMÈTRES DE COUPE  
PARAMETROS DE CORTE

## FRESE POWER PKD: 1/2 TAGLI

Pcd brazed power end mills - Pkd bestückte power fräser - Fraises power pcd brasées - Fresas power de pcd soldado: 1/2 Flutes - Schneiden - Dents - Labios

**CAVA DAL PIENO: Vc e Fz: - 20%**

Slotting: Vc e Fz: - 20%

Bohrnuten: Vc e Fz: - 20%

Rainurage: Vc e Fz: - 20%

Ranura: Vc e Fz: - 20%

| GRUPPO MATERIALI<br>Material Groups<br>Material-Beispiele<br>Groupes de Matériaux<br>Grupos de Materiales |     |         |         | VC<br>m/min |                                                                                                     |       |       |       |       |       |       |       |    |   |   |   |   |  |
|-----------------------------------------------------------------------------------------------------------|-----|---------|---------|-------------|-----------------------------------------------------------------------------------------------------|-------|-------|-------|-------|-------|-------|-------|----|---|---|---|---|--|
|                                                                                                           |     |         |         |             | Fz [mm]<br>AVANZAMENTO AL DENTE<br>Tooth Feed - Zahnvorschub - Avancement au dent - Avance al labio |       |       |       |       |       |       |       |    |   |   |   |   |  |
|                                                                                                           |     | ap      | ae      |             | ap                                                                                                  | 3     | 4     | 6     | 8     | 10    | 12    | 16    | 20 |   |   |   |   |  |
|                                                                                                           |     |         |         |             |                                                                                                     |       |       |       |       |       |       |       |    |   |   |   |   |  |
| < 800 N/mm²                                                                                               | -   | -       | -       | -           | -                                                                                                   | -     | -     | -     | -     | -     | -     | -     | -  | - | - | - | - |  |
| < 1100 N/mm²                                                                                              | -   | -       | -       | -           | -                                                                                                   | -     | -     | -     | -     | -     | -     | -     | -  | - | - | - | - |  |
| < 1300 N/mm²                                                                                              | -   | -       | -       | -           | -                                                                                                   | -     | -     | -     | -     | -     | -     | -     | -  | - | - | - | - |  |
| > 800 N/mm²                                                                                               | -   | -       | -       | -           | -                                                                                                   | -     | -     | -     | -     | -     | -     | -     | -  | - | - | - | - |  |
| GG                                                                                                        | -   | -       | -       | -           | -                                                                                                   | -     | -     | -     | -     | -     | -     | -     | -  | - | - | - | - |  |
| GGG                                                                                                       | -   | -       | -       | -           | -                                                                                                   | -     | -     | -     | -     | -     | -     | -     | -  | - | - | - | - |  |
| Si >12%                                                                                                   | 1xØ | 0,5 X Ø | 0,7 X Ø | 500-3000    | 0,055                                                                                               | 0,075 | 0,095 | 0,100 | 0,130 | 0,150 | 0,180 | 0,200 | -  | - | - | - | - |  |
| Si >14%                                                                                                   | 1xØ | 0,5 X Ø | 0,7 X Ø | 400-800     | 0,055                                                                                               | 0,075 | 0,095 | 0,100 | 0,130 | 0,150 | 0,180 | 0,200 | -  | - | - | - | - |  |
| Titanio                                                                                                   | -   | -       | -       | -           | -                                                                                                   | -     | -     | -     | -     | -     | -     | -     | -  | - | - | - | - |  |
| Leghe speciali a base NI                                                                                  | -   | -       | -       | -           | -                                                                                                   | -     | -     | -     | -     | -     | -     | -     | -  | - | - | - | - |  |
| Temprati 38 / 48 HRC                                                                                      | -   | -       | -       | -           | -                                                                                                   | -     | -     | -     | -     | -     | -     | -     | -  | - | - | - | - |  |
| Temprati 48 / 58 HRC                                                                                      | -   | -       | -       | -           | -                                                                                                   | -     | -     | -     | -     | -     | -     | -     | -  | - | - | - | - |  |
| Temprati 58 / 68 HRC                                                                                      | -   | -       | -       | -           | -                                                                                                   | -     | -     | -     | -     | -     | -     | -     | -  | - | - | - | - |  |





Talicaadb

# PUNTE ELICOIDALI TIPO N in metallo duro integrale



SOLID CARBIDE TWIST DRILLS - TYPE N



HARTMETALL SPIRALBOHRER - TYP N



FORETS HÉLICOÏDAUX EN CARBURE MONOBLOC - TYPE N



BROCAS HELICOIDALES DE METAL DURO INTEGRAL - TIPOLOGIA N



# PUNTE ELICOIDALI

IN METALLO DURO INTEGRALE

SOLID CARBIDE TWIST DRILLS

VHM SPIRALBOHRER

FORETS HÉLICOÏDAUX EN CARBURE MONOBLOC

BROCAS HELICOIDALES DE METAL DURO INTEGRAL

## DIN 6539

SIMILARE A 1897 - SERIE EXTRA CORTA

DIN 6539 - SIMILAR TO DIN 1897 - EXTRA SHORT SERIES

DIN 6539 - ÄHNLICH DIN 1897 - EXTRA KURZE AUSFÜHRUNG

DIN 6539 - SIMILAIRE DIN 1897 - SÉRIE EXTRA COURTE

DIN 6539 - SIMILAR A DIN 1897 - SERIE EXTRA CORTA

## 1100 - 1100TN - 1100TF



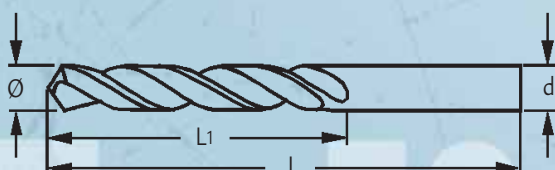
| Ø mm<br>h7 | L<br>mm | L <sub>1</sub><br>mm | d mm<br>h6 | 1100<br>€ | 1100TN<br>€ | 1100TF<br>€ |
|------------|---------|----------------------|------------|-----------|-------------|-------------|
| 0.5        | 20      | 3                    | 0.5        | 4,91      | 8,33*       | 9,68*       |
| 0.6        | 21      | 3.5                  | 0.6        | 4,91      | 8,33*       | 9,68*       |
| 0.7        | 23      | 4.5                  | 0.7        | 4,91      | 8,33*       | 9,68*       |
| 0.8        | 24      | 5                    | 0.8        | 4,91      | 8,33*       | 9,68*       |
| 0.9        | 25      | 5.5                  | 0.9        | 4,91      | 8,33*       | 9,68*       |
| 1.0        | 26      | 6                    | 1.0        | 4,91      | 8,33*       | 9,68*       |
| 1.1        | 28      | 7                    | 1.1        | 4,91      | 8,33*       | 9,68*       |
| 1.2        | 30      | 8                    | 1.2        | 4,91      | 8,33*       | 9,68*       |
| 1.3        | 30      | 8                    | 1.3        | 4,91      | 8,33*       | 9,68*       |
| 1.4        | 32      | 9                    | 1.4        | 4,91      | 8,33*       | 9,68*       |
| 1.5        | 32      | 9                    | 1.5        | 4,91      | 8,33*       | 9,68*       |
| 1.6        | 34      | 10                   | 1.6        | 4,91      | 8,33*       | 9,68*       |
| 1.7        | 34      | 10                   | 1.7        | 4,91      | 8,33*       | 9,68*       |
| 1.8        | 36      | 11                   | 1.8        | 4,91      | 8,33*       | 9,68*       |
| 1.9        | 36      | 11                   | 1.9        | 4,91      | 8,33*       | 9,68*       |
| 2.0        | 38      | 12                   | 2.0        | 4,91      | 7,31*       | 8,29*       |
| 2.1        | 38      | 12                   | 2.1        | 5,44      | 7,85*       | 8,80*       |
| 2.2        | 40      | 13                   | 2.2        | 5,44      | 7,85*       | 8,80*       |
| 2.3        | 40      | 13                   | 2.3        | 5,44      | 7,85*       | 8,80*       |
| 2.4        | 43      | 14                   | 2.4        | 5,44      | 7,85*       | 8,80*       |
| 2.5        | 43      | 14                   | 2.5        | 5,44      | 7,85*       | 8,80*       |
| 2.6        | 43      | 14                   | 2.6        | 5,44      | 7,85*       | 8,80*       |
| 2.7        | 46      | 16                   | 2.7        | 7,25      | 9,68*       | 10,67*      |
| 2.8        | 46      | 16                   | 2.8        | 7,25      | 9,68*       | 10,67*      |
| 2.9        | 46      | 16                   | 2.9        | 7,25      | 9,68*       | 10,67*      |
| 3.0        | 46      | 16                   | 3.0        | 7,25      | 9,68*       | 10,67*      |
| 3.1        | 49      | 18                   | 3.1        | 8,29      | 10,74*      | 11,70*      |

\* A richiesta - On Request - Auf Anfrage - Sur Demande - A Pedido

→1-4

| Ø mm<br>h7 | L<br>mm | L <sub>1</sub><br>mm | d mm<br>h6 | 1100<br>€ | 1100TN<br>€ | 1100TF<br>€ |
|------------|---------|----------------------|------------|-----------|-------------|-------------|
| 3.2        | 49      | 18                   | 3.2        | 8,29      | 10,74*      | 11,70*      |
| 3.3        | 49      | 18*                  | 3.3        | 8,29      | 11,46*      | 12,69*      |
| 3.4        | 52      | 20                   | 3.4        | 8,89      | 12,01*      | 13,28*      |
| 3.5        | 52      | 20                   | 3.5        | 8,89      | 12,01*      | 13,28*      |
| 3.6        | 52      | 20                   | 3.6        | 9,80      | 12,97*      | 14,20*      |
| 3.7        | 52      | 20                   | 3.7        | 9,80      | 12,97*      | 14,20*      |
| 3.8        | 55      | 22                   | 3.8        | 10,60     | 13,72*      | 14,99*      |
| 3.9        | 55      | 22                   | 3.9        | 10,60     | 13,72*      | 14,99*      |
| 4.0        | 55      | 22                   | 4.0        | 10,64     | 13,76*      | 14,99*      |
| 4.1        | 55      | 22                   | 4.1        | 11,18     | 14,48*      | 15,80*      |
| 4.2        | 55      | 22                   | 4.2        | 11,18     | 14,48*      | 15,80*      |
| 4.3        | 58      | 24                   | 4.3        | 11,84     | 15,15*      | 16,50*      |
| 4.4        | 58      | 24                   | 4.4        | 11,84     | 15,15*      | 16,50*      |
| 4.5        | 58      | 24                   | 4.5        | 11,84     | 15,15*      | 16,50*      |
| 4.6        | 58      | 24                   | 4.6        | 11,84     | 15,15*      | 16,50*      |
| 4.7        | 58      | 24                   | 4.7        | 12,76     | 16,05*      | 17,40*      |
| 4.8        | 62      | 26                   | 4.8        | 12,76     | 16,05*      | 17,40*      |
| 4.9        | 62      | 26                   | 4.9        | 12,76     | 16,05*      | 17,40*      |
| 5.0        | 62      | 26                   | 5.0        | 12,76     | 16,05*      | 17,40*      |
| 5.1        | 62      | 26                   | 5.1        | 12,76     | 16,05*      | 17,40*      |
| 5.2        | 62      | 26                   | 5.2        | 16,65     | 19,90*      | 21,25*      |
| 5.3        | 62      | 26                   | 5.3        | 16,65     | 19,90*      | 21,25*      |
| 5.4        | 66      | 28                   | 5.4        | 16,65     | 19,90*      | 21,25*      |
| 5.5        | 66      | 28                   | 5.5        | 16,65     | 19,90*      | 21,25*      |
| 5.6        | 66      | 28                   | 5.6        | 17,70     | 21,00*      | 22,30*      |
| 5.7        | 66      | 28                   | 5.7        | 17,70     | 21,00*      | 22,30*      |
| 5.8        | 66      | 28                   | 5.8        | 17,70     | 21,00*      | 22,30*      |

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**DIN 6539**

SIMILARE A 1897 - SERIE EXTRA CORTA

DIN 6539 - SIMILAR TO DIN 1897 - EXTRA SHORT SERIES

DIN 6539 - ÄHNLICH DIN 1897 - EXTRA KURZE AUSFÜHRUNG

DIN 6539 - SIMILAIRE DIN 1897 - SÉRIE EXTRA COURTE

DIN 6539 - SIMILAR A DIN 1897 - SERIE EXTRA CORTA

**PUNTE ELICOIDALI**

IN METALLO DURO INTEGRALE

SOLID CARBIDE TWIST DRILLS

VHM SPIRALBOHRER

FORETS HÉLICOÏDAUX EN CARBURE MONOBLOC

BROCAS HELICOIDALES DE METAL DURO INTEGRAL

**1100 - 1100TN - 1100TF**

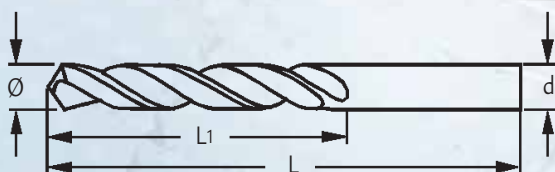
| Ø mm<br>h7 | L<br>mm | L <sub>1</sub><br>mm | d mm<br>h6 | 1100<br>€ | 1100TN<br>€ | 1100TF<br>€ |
|------------|---------|----------------------|------------|-----------|-------------|-------------|
| 5.9        | 66      | 28                   | 5.9        | 17,70     | 21,00*      | 22,30*      |
| 6.0        | 66      | 28                   | 6.0        | 17,70     | 21,00*      | 22,30*      |
| 6.1        | 70      | 31                   | 6.1        | 22,05     | 26,50*      | 28,25*      |
| 6.2        | 70      | 31                   | 6.2        | 22,05     | 26,50*      | 28,25*      |
| 6.3        | 70      | 31                   | 6.3        | 22,05     | 26,50*      | 28,25*      |
| 6.4        | 70      | 31                   | 6.4        | 22,05     | 26,50*      | 28,25*      |
| 6.5        | 70      | 31                   | 6.5        | 21,40     | 25,80*      | 27,55*      |
| 6.6        | 70      | 31                   | 6.6        | 26,05     | 30,40*      | 32,30*      |
| 6.7        | 70      | 31                   | 6.7        | 26,05     | 30,40*      | 32,30*      |
| 6.8        | 74      | 34                   | 6.8        | 26,05     | 30,40*      | 32,30*      |
| 6.9        | 74      | 34                   | 6.9        | 26,05     | 30,40*      | 32,30*      |
| 7.0        | 74      | 34                   | 7.0        | 25,75     | 30,30*      | 31,95*      |
| 7.1        | 74      | 34                   | 7.1        | 31,20     | 35,65*      | 37,65*      |
| 7.2        | 74      | 34                   | 7.2        | 31,20     | 35,65*      | 37,65*      |
| 7.3        | 74      | 34                   | 7.3        | 31,20     | 35,65*      | 37,65*      |
| 7.4        | 74      | 34                   | 7.4        | 31,20     | 35,65*      | 37,65*      |
| 7.5        | 74      | 34                   | 7.5        | 31,05     | 35,45*      | 37,30*      |
| 7.6        | 79      | 37                   | 7.6        | 35,25     | 40,30*      | 42,10*      |
| 7.7        | 79      | 37                   | 7.7        | 35,25     | 40,30*      | 42,10*      |
| 7.8        | 79      | 37                   | 7.8        | 35,25     | 40,30*      | 42,10*      |
| 7.9        | 79      | 37                   | 7.9        | 35,25     | 40,30*      | 42,10*      |
| 8.0        | 79      | 37                   | 8.0        | 34,70     | 39,90*      | 41,70*      |
| 8.1        | 79      | 37                   | 8.1        | 43,20     | 48,70*      | 51,00*      |
| 8.2        | 79      | 37                   | 8.2        | 43,20     | 48,70*      | 51,00*      |
| 8.3        | 79      | 37                   | 8.3        | 43,20     | 48,70*      | 51,00*      |
| 8.4        | 79      | 37                   | 8.4        | 43,20     | 48,70*      | 51,00*      |
| 8.5        | 79      | 37                   | 8.5        | 44,00     | 49,50*      | 51,60*      |

| Ø mm<br>h7 | L<br>mm | L <sub>1</sub><br>mm | d mm<br>h6 | 1100<br>€ | 1100TN<br>€ | 1100TF<br>€ |
|------------|---------|----------------------|------------|-----------|-------------|-------------|
| 8.6        | 84      | 40                   | 8.6        | 46,90     | 52,40*      | 54,60*      |
| 8.7        | 84      | 40                   | 8.7        | 46,90     | 52,40*      | 54,60*      |
| 8.8        | 84      | 40                   | 8.8        | 46,90     | 52,40*      | 54,60*      |
| 8.9        | 84      | 40                   | 8.9        | 46,90     | 52,40*      | 54,60*      |
| 9.0        | 84      | 40                   | 9.0        | 44,30     | 49,80*      | 52,10*      |
| 9.1        | 84      | 40                   | 9.1        | 51,30     | 56,80*      | 59,10*      |
| 9.2        | 84      | 40                   | 9.2        | 51,30     | 56,80*      | 59,10*      |
| 9.3        | 84      | 40                   | 9.3        | 51,30     | 56,80*      | 59,10*      |
| 9.4        | 84      | 40                   | 9.4        | 51,30     | 56,80*      | 59,10*      |
| 9.5        | 84      | 40                   | 9.5        | 49,10     | 54,60*      | 56,80*      |
| 9.6        | 89      | 43                   | 9.6        | 52,70     | 58,30*      | 60,50*      |
| 9.7        | 89      | 43                   | 9.7        | 52,70     | 58,30*      | 60,50*      |
| 9.8        | 89      | 43                   | 9.8        | 52,70     | 58,30*      | 60,50*      |
| 9.9        | 89      | 43                   | 9.9        | 52,70     | 58,30*      | 60,50*      |
| 10.0       | 89      | 43                   | 10.0       | 50,60     | 56,10*      | 58,30*      |
| 10.2       | 89      | 43                   | 10.2       | 59,80     | 66,40*      | 69,00*      |
| 10.5       | 89      | 43                   | 10.5       | 59,80     | 66,40*      | 69,00*      |
| 11.0       | 95      | 47                   | 11.0       | 66,40     | 73,10*      | 75,90*      |
| 11.5       | 95      | 47                   | 11.5       | 77,90     | 84,40*      | 87,20*      |
| 12.0       | 102     | 51                   | 12.0       | 77,90     | 84,40*      | 87,20*      |
| 13.0       | 102     | 51                   | 13.0       | 94,40     | 102,00*     | 104,00*     |
| 14.0       | 107     | 54                   | 14.0       | 125,50    | 132,50*     | 135,00*     |
| 15.0       | 111     | 56                   | 15.0       | 137,00    | 145,50*     | 148,50*     |
| 16.0       | 115     | 58                   | 16.0       | 155,50    | 163,50*     | 167,00*     |
| 18.0       | 123     | 62                   | 18.0       | 214,50    | 226,00*     | 230,00*     |
| 20.0       | 131     | 66                   | 20.0       | 287,00    | 300,00*     | 304,00*     |

\* A richiesta - On Request - Auf Anfrage - Sur Demande - A Pedido

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→4-4





# PUNTE ELICOIDALI

IN METALLO DURO INTEGRALE

SOLID CARBIDE TWIST DRILLS  
VHM SPIRALBOHRER  
FORETS HÉLICOÏDAUX EN CARBURE MONOBLOC  
BROCAS HELICOIDALES DE METAL DURO INTEGRAL

## TALICARB NORM

SIMILARE A DIN 338 - SERIE CORTA

TALICARB NORM - SIMILAR TO DIN 338 - SHORT SERIES  
TALICARB NORM - ÄHNLICH DIN 338 - KURZE AUSFÜHRUNG  
TALICARB NORM - SIMILAIRE DIN 338 - SERIE COURTE  
TALICARB NORM - SIMILAR A DIN 338 - SERIE CORTA

## 1101 - 1101 TN - 1101 TF

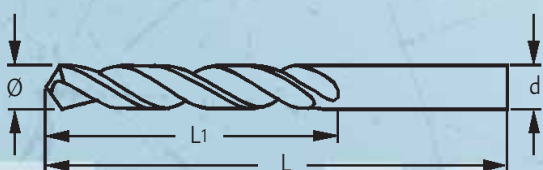
| Ø mm<br>h7 | L<br>mm | L <sub>1</sub><br>mm | d mm<br>h6 | 1101<br>€ | 1101TN<br>€ | 1101TF<br>€ |
|------------|---------|----------------------|------------|-----------|-------------|-------------|
| 0.5        | 22      | 6                    | 0.5        | 4,63      | 8,07*       | 9,42*       |
| 0.6        | 24      | 7                    | 0.6        | 4,63      | 8,07*       | 9,42*       |
| 0.7        | 28      | 9                    | 0.7        | 4,63      | 8,07*       | 9,42*       |
| 0.8        | 30      | 10                   | 0.8        | 4,63      | 8,07*       | 9,42*       |
| 0.9        | 32      | 11                   | 0.9        | 4,63      | 8,07*       | 9,42*       |
| 1.0        | 34      | 12                   | 1.0        | 4,63      | 8,07*       | 9,42*       |
| 1.1        | 36      | 14                   | 1.1        | 5,28      | 8,41*       | 9,66*       |
| 1.2        | 38      | 16                   | 1.2        | 5,28      | 8,41*       | 9,66*       |
| 1.3        | 38      | 16                   | 1.3        | 5,28      | 8,41*       | 9,66*       |
| 1.4        | 40      | 18                   | 1.4        | 5,28      | 8,41*       | 9,66*       |
| 1.5        | 40      | 18                   | 1.5        | 5,28      | 8,41*       | 9,66*       |
| 1.6        | 43      | 20                   | 1.6        | 5,28      | 8,41*       | 9,66*       |
| 1.7        | 43      | 20                   | 1.7        | 5,92      | 8,89*       | 9,33*       |
| 1.8        | 46      | 22                   | 1.8        | 6,42      | 9,36*       | 9,80*       |
| 1.9        | 46      | 22                   | 1.9        | 6,42      | 9,36*       | 9,80*       |
| 2.0        | 49      | 24                   | 2.0        | 6,42      | 9,36*       | 9,80*       |
| 2.1        | 49      | 24                   | 2.1        | 7,55      | 10,50*      | 10,91*      |
| 2.2        | 53      | 27                   | 2.2        | 8,21      | 10,88*      | 11,94*      |
| 2.3        | 53      | 27                   | 2.3        | 8,21      | 10,88*      | 11,94*      |
| 2.4        | 57      | 30                   | 2.4        | 8,21      | 10,88*      | 11,94*      |
| 2.5        | 57      | 30                   | 2.5        | 8,07      | 10,74*      | 11,80*      |
| 2.6        | 57      | 30                   | 2.6        | 9,33      | 11,97*      | 13,04*      |
| 2.7        | 61      | 33                   | 2.7        | 10,84     | 13,48*      | 14,58*      |
| 2.8        | 61      | 33                   | 2.8        | 11,46     | 14,10*      | 15,15*      |
| 2.9        | 61      | 33                   | 2.9        | 11,46     | 14,10*      | 15,15*      |
| 3.0        | 61      | 33                   | 3.0        | 10,53     | 13,21*      | 14,27*      |
| 3.1        | 65      | 36                   | 3.1        | 11,94     | 14,62*      | 15,70*      |

| Ø mm<br>h7 | L<br>mm | L <sub>1</sub><br>mm | d mm<br>h6 | 1101<br>€ | 1101TN<br>€ | 1101TF<br>€ |
|------------|---------|----------------------|------------|-----------|-------------|-------------|
| 3.2        | 65      | 36                   | 3.2        | 11,94     | 14,62*      | 15,70*      |
| 3.3        | 65      | 36                   | 3.3        | 12,11     | 15,25*      | 16,55*      |
| 3.4        | 70      | 39                   | 3.4        | 13,41     | 16,55*      | 17,85*      |
| 3.5        | 70      | 39                   | 3.5        | 13,17     | 16,30*      | 17,55*      |
| 3.6        | 70      | 39                   | 3.6        | 14,17     | 17,30*      | 18,55*      |
| 3.7        | 70      | 39                   | 3.7        | 14,17     | 17,30*      | 18,55*      |
| 3.8        | 75      | 43                   | 3.8        | 14,99     | 18,80*      | 19,40*      |
| 3.9        | 75      | 43                   | 3.9        | 14,99     | 18,80*      | 19,40*      |
| 4.0        | 75      | 43                   | 4.0        | 14,86     | 18,65*      | 19,25*      |
| 4.1        | 75      | 43                   | 4.1        | 15,35     | 18,60*      | 19,90*      |
| 4.2        | 75      | 43                   | 4.2        | 15,35     | 18,60*      | 19,90*      |
| 4.3        | 80      | 47                   | 4.3        | 20,25     | 24,20*      | 25,75*      |
| 4.4        | 80      | 47                   | 4.4        | 20,25     | 24,20*      | 25,75*      |
| 4.5        | 80      | 47                   | 4.5        | 18,40     | 22,35*      | 23,95*      |
| 4.6        | 80      | 47                   | 4.6        | 21,05     | 25,00*      | 26,55*      |
| 4.7        | 80      | 47                   | 4.7        | 21,05     | 25,00*      | 26,55*      |
| 4.8        | 86      | 52                   | 4.8        | 21,70     | 25,65*      | 27,25*      |
| 4.9        | 86      | 52                   | 4.9        | 21,70     | 25,65*      | 27,25*      |
| 5.0        | 86      | 52                   | 5.0        | 20,20     | 24,15*      | 25,70*      |
| 5.1        | 86      | 52                   | 5.1        | 24,40     | 28,45*      | 30,10*      |
| 5.2        | 86      | 52                   | 5.2        | 24,40     | 28,45*      | 30,10*      |
| 5.3        | 86      | 52                   | 5.3        | 24,40     | 28,45*      | 30,10*      |
| 5.4        | 93      | 57                   | 5.4        | 27,90     | 31,95*      | 33,60*      |
| 5.5        | 93      | 57                   | 5.5        | 26,70     | 30,65*      | 32,30*      |
| 5.6        | 93      | 57                   | 5.6        | 29,20     | 33,25*      | 34,70*      |
| 5.7        | 93      | 57                   | 5.7        | 29,20     | 33,25*      | 34,70*      |
| 5.8        | 93      | 57                   | 5.8        | 29,20     | 33,25*      | 34,70*      |

\* A richiesta - On Request - Auf Anfrage - Sur Demande - A Pedido

→1-4

→2-4



## TALICARB NORM SIMILARE A DIN 338 - SERIE CORTA

TALICARB NORM - SIMILAR TO DIN 338 - SHORT SERIES  
TALICARB NORM - ÄHNLICH DIN 338 - KURZE AUSFÜHRUNG  
TALICARB NORM - SIMILAIRE DIN 338 - SERIE COURTE  
TALICARB NORM - SIMILAR A DIN 338 - SERIE CORTA

## PUNTE ELICOIDALI IN METALLO DURO INTEGRALE

SOLID CARBIDE TWIST DRILLS  
VHM SPIRALBOHRER  
FORETS HÉLICOÏDAUX EN CARBURE MONOBLOC  
BROCAS HELICOIDALES DE METAL DURO INTEGRAL

### 1101 - 1101 TN - 1101 TF

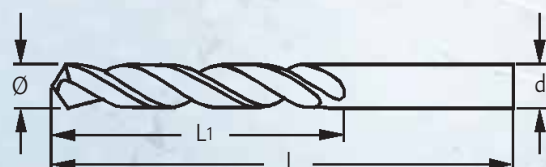
| Ø mm<br>h7 | L<br>mm | L <sub>1</sub><br>mm | d mm<br>h6 | 1101<br>€ | 1101TN<br>€ | 1101TF<br>€ |
|------------|---------|----------------------|------------|-----------|-------------|-------------|
| 5.9        | 93      | 57                   | 5.9        | 29,20     | 33,25*      | 34,70*      |
| 6.0        | 93      | 57                   | 6.0        | 28,45     | 32,50*      | 34,15*      |
| 6.1        | 101     | 63                   | 6.1        | 36,20     | 42,50*      | 44,70*      |
| 6.2        | 101     | 63                   | 6.2        | 36,20     | 42,50*      | 44,70*      |
| 6.3        | 101     | 63                   | 6.3        | 36,20     | 42,50*      | 44,70*      |
| 6.4        | 101     | 63                   | 6.4        | 36,20     | 42,50*      | 44,70*      |
| 6.5        | 101     | 63                   | 6.5        | 35,10     | 41,40*      | 43,60*      |
| 6.6        | 101     | 63                   | 6.6        | 42,50     | 48,70*      | 51,00*      |
| 6.7        | 101     | 63                   | 6.7        | 42,50     | 48,70*      | 51,00*      |
| 6.8        | 109     | 69                   | 6.8        | 42,50     | 48,70*      | 51,00*      |
| 6.9        | 109     | 69                   | 6.9        | 42,10     | 48,40*      | 50,60*      |
| 7.0        | 109     | 69                   | 7.0        | 42,10     | 48,40*      | 50,60*      |
| 7.1        | 109     | 69                   | 7.1        | 44,70     | 51,00*      | 53,20*      |
| 7.2        | 109     | 69                   | 7.2        | 44,70     | 51,00*      | 53,20*      |
| 7.3        | 109     | 69                   | 7.3        | 44,70     | 51,00*      | 53,20*      |
| 7.4        | 109     | 69                   | 7.4        | 44,70     | 51,00*      | 53,20*      |
| 7.5        | 109     | 69                   | 7.5        | 44,70     | 51,00*      | 53,20*      |
| 7.6        | 117     | 75                   | 7.6        | 49,80     | 56,10*      | 58,30*      |
| 7.7        | 117     | 75                   | 7.7        | 49,80     | 56,10*      | 58,30*      |
| 7.8        | 117     | 75                   | 7.8        | 49,80     | 56,10*      | 58,30*      |
| 7.9        | 117     | 75                   | 7.9        | 49,80     | 56,10*      | 58,30*      |
| 8.0        | 117     | 75                   | 8.0        | 49,80     | 56,10*      | 58,30*      |
| 8.1        | 117     | 75                   | 8.1        | 58,30     | 64,60*      | 67,20*      |
| 8.2        | 117     | 75                   | 8.2        | 58,30     | 64,60*      | 67,20*      |
| 8.3        | 117     | 75                   | 8.3        | 58,30     | 64,60*      | 67,20*      |
| 8.4        | 117     | 75                   | 8.4        | 58,30     | 64,60*      | 67,20*      |
| 8.5        | 117     | 75                   | 8.5        | 58,30     | 64,60*      | 67,20*      |

| Ø mm<br>h7 | L<br>mm | L <sub>1</sub><br>mm | d mm<br>h6 | 1101<br>€ | 1101TN<br>€ | 1101TF<br>€ |
|------------|---------|----------------------|------------|-----------|-------------|-------------|
| 8.6        | 125     | 81                   | 8.6        | 62,70     | 71,40*      | 74,50*      |
| 8.7        | 125     | 81                   | 8.7        | 62,70     | 71,40*      | 74,50*      |
| 8.8        | 125     | 81                   | 8.8        | 62,70     | 71,40*      | 74,50*      |
| 8.9        | 125     | 81                   | 8.9        | 62,70     | 71,40*      | 74,50*      |
| 9.0        | 125     | 81                   | 9.0        | 62,70     | 71,40*      | 74,50*      |
| 9.1        | 125     | 81                   | 9.1        | 69,70     | 78,30*      | 81,70*      |
| 9.2        | 125     | 81                   | 9.2        | 69,70     | 78,30*      | 81,70*      |
| 9.3        | 125     | 81                   | 9.3        | 69,70     | 78,30*      | 81,70*      |
| 9.4        | 125     | 81                   | 9.4        | 69,70     | 78,30*      | 81,70*      |
| 9.5        | 125     | 81                   | 9.5        | 69,70     | 78,30*      | 81,70*      |
| 9.6        | 133     | 87                   | 9.6        | 73,50     | 82,00*      | 85,50*      |
| 9.7        | 133     | 87                   | 9.7        | 73,50     | 82,00*      | 85,50*      |
| 9.8        | 133     | 87                   | 9.8        | 73,50     | 82,00*      | 85,50*      |
| 9.9        | 133     | 87                   | 9.9        | 73,50     | 82,00*      | 85,50*      |
| 10.0       | 133     | 87                   | 10.0       | 73,50     | 82,00*      | 85,50*      |
| 10.2       | 133     | 87                   | 10.2       | 88,90     | 97,10*      | 101,00*     |
| 10.5       | 133     | 87                   | 10.5       | 89,30     | 97,50*      | 101,00*     |
| 10.8       | 142     | 94                   | 10.8       | 110,50    | 119,50*     | 123,50*     |
| 11.0       | 142     | 94                   | 11.0       | 110,50    | 119,50*     | 123,50*     |
| 11.2       | 142     | 94                   | 11.2       | 118,50    | 128,00*     | 131,50*     |
| 11.5       | 142     | 94                   | 11.5       | 118,50    | 128,00*     | 131,50*     |
| 11.8       | 142     | 94                   | 11.8       | 128,00    | 137,00*     | 141,00*     |
| 12.0       | 151     | 101                  | 12.0       | 128,00    | 137,00*     | 141,00*     |
| 13.0       | 151     | 101                  | 13.0       | 153,50    | 163,00*     | 167,50*     |
| 14.0       | 160     | 108                  | 14.0       | 165,00    | 174,50*     | 178,50*     |
| 16.0       | 178     | 120                  | 16.0       | 225,50    | 240,50*     | 246,00*     |

\* A richiesta - On Request - Auf Anfrage - Sur Demande - A Pedido

→3-4

→4-4



IN METALLO DURO INTEGRALE

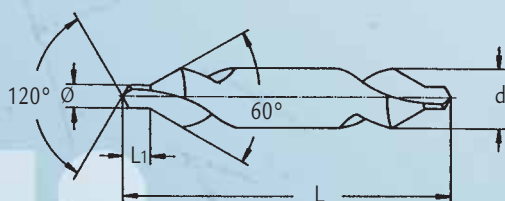
SOLID CARBIDE CENTER DRILLS  
VOLLHARTMETALL - ZENTRIERBOHRER  
FORETS À CENTRER EN CARBURE MONOBLOC  
BROCAS DE CENTRAR DE METAL DURO INTEGRAL

## TALICARB NORM

SERIE NORMALE - DIN 6333

TALICARB NORM - NORMAL SERIES - DIN 6333  
TALICARB NORM - NORMALE AUSFÜHRUNG - DIN 6333  
TALICARB NORM - SÉRIE NORMALE - DIN 6333  
TALICARB NORM - SERIE NORMAL - DIN 6333

1099

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angeloghezzi.it





Talicaadb

# LIME ROTATIVE

## in metallo duro integrale



CARBIDE BURRS



HARTMETALL-ROTIERFRÄSER



FRAISES ROTATIVES EN CARBURE



LIMAS ROTATIVAS DE METAL DURO INTEGRAL





1

### TAGLIO 1 - Standard

La geometria del tagliente è adatta per lavorazioni di ferro, ferro saldato, acciaio comune. E' la lima di uso universale.

### Cut # 1 - Standard

The geometry of this flute pattern is designed for use on iron, wrought iron and steel. It is a worldwide burr.

### Schnitt # 1 - Standard

Die Schneidegeometrie ist für die Bearbeitung vom Eisen, Luppeneisen und Massenstahl geeignet. Das ist den Allzweckbenutzung Rotierfräser.

### Coupe # 1 - Standard

La géométrie du coupant est conseillé pour usinages du fer, fer soudé, acier commun. Elle est la lime d'emploi universel.

### Dentado 1 - Estándar

Esta geometría de labio se utiliza para trabajar hierro, hierro soldado y acero común. Es una lima rotativa de uso universal



2

### Taglio 2 - Diamante

L'utensile è specifico per lavorazioni di acciaio altamente legato, acciaio al cromo-nichel, acciaio inossidabile, ghise grigie e sferoidali.

### Cut # 2 - Diamond

This type of tool is recommended for use on steel, highly alloyed steel, chrome-nickel steel, stainless steel, grey and spheroidal cast iron.

### Schnitt # 2 - Diamant

Das Werkzeug ist für die Bearbeitung der hochlegierter Stahl, Chromonickelstahl, rostfreier Stahl, Grauguss und Sphäroguss geeignet.

### Coupe # 2 - Diamant

Cet outil est spécifique pour usinages d'acier hautement lié, acier au chrome-nickel, acier inoxydable, fonte grise et sphéroïdale

### Dentado 2 - Diamante

Esta herramienta es específica para trabajar acero muy aleado, acero al cromo-nichel, acero inoxidable, fusión gris y nodular



3

### Taglio 3 - Incrociato

E' il tagliente idoneo ad un vasto campo di materiali, ferrosi e non ferrosi. La particolare affilatura evita l'incollamento del materiale.

### Cut # 3 - Double cut

The double cut is suitable for a wide range of ferrous and non-ferrous materials. The flute geometry avoids the sticking of chips to the cutting edge.

### Schnitt # 3 - Kreuzhieb

Das ist der geeignete Schnitt an einem weiten Eisen und Nicht-eisen Werkstoffbereich. Die eigene Anschliff vermeidet den Festfressen dem Span auf dem Schneidteil.

### Coupe # 3 - Croisé

Le coupe croisé est adaptable à une très vaste gamme de matériaux, ferreux et non ferreux. L'affûtage particulier permet de éviter le collage du matériel.

### Dentado 3 - Cruzado

Este labio es idoneo para varios tipos de materiales, ferrosos y no ferrosos. Su particular picadura evita el encolamiento de material.



4

### Taglio 4 - Rompitruciolo

L'esecuzione del rompitruciolo consente di produrre trucioli più corti con un miglior controllo dell'utensile.

### Cut # 4 - Chip breaker

The chip breaker cut produce small chips allowing easier tool handling and good finishing quality.

### Schnitt # 4 - Spanbrecher

Die Spanbrecherschnitt Ausführung erlaubt Kurzspan zusammen mit ein besser Werkzeugsteuerung.

### Coupe # 4 - Brise-copeau

L'utilisation du brise-copeau permet de produire copeaux plus courts avec une meilleure maîtrise de l'outil.

### Dentado 4 - Rompevirutas

Esta ejecución de rompevirutas permite de producir virutas más cortas y un mejor control de la lima



5

### Taglio 5 - Fine

Il taglio fine è specifico per materiali temprati, per acciaio altamente legato, in fusioni, stampato. E' idoneo per ghise dure e saldature di materiali tecnici.

### Cut # 5 - Fine cut

The fine cut is specifically designed for use on hardened materials, highly alloyed steel, cast steel and pressed steel. It is also suitable to machine hard cast iron and welds on tough materials.

### Schnitt # 5 - Fein

Das Feinschnitt ist für die gehärtete Werkstoffen, für hochlegierter Stahl, Stahlguss und Gesenkstahl gezeichnet. Es ist fuer Starkguss und technische Werkstoff-Schweißen geeignet.

### Coupe # 5 - Mince

Le coupe mince est spécifique pour aciers trempés, pour acier hautement liés, en fusions, imprimé. Il est conseillé pour fontes dures et soudages de matériaux.

### Dentado 5 - Fin

El labio fin es específico para materiales templados, para acero altamente aleado, en fusión y moldeado. Es idóneo para fundición duras y soldaduras de materiales técnicos



6

### Taglio 6 - Grosso

E' la fresa intermedia tra il taglio tipo Alluminio e Standard. Ha un'ottima evacuazione del truciolo dovuta alle gole ampie ed un maggior rendimento ad un numero di giri elevato.

### Cut # 6 - Coarse Cut

It is the intermediate burr between Aluminium and Standard cut burrs. Thanks to the deep flutes, quick chip removal is achieved.

### Schnitt # 6 - Groß

Das ist den Zwischen-Aluminium und Standard Schnitt Fräser. Dank an dem breiten Nuten, es hat ein gut Späneentsorgung und höhere Leistung zu höhere Drehzahl.

### Coupe # 6 - Coupe gros

Est la fraise intermédiaire parmi le coupe Aluminium et Standard. Elle a une très bonne évacuation du copeau due aux vastes rainures et une remarquable performance à nr de tours élevés.

### Dentado 6 - Grueso

Es una fresa intermedia entre el labio de tipo aluminio y estándar. Tiene una perfecta evacuación de la viruta gracias a ranuras anchas y permite un mayor rendimiento a número de vueltas elevado.



7

### Taglio - Alluminio

E' la fresa specifica per lavorazioni su materiali con truciolo molto lungo come alluminio dolce, zama, magnesio, plastiche, gomme dure, legno.

### Aluminium Cut

The Aluminium cut burr is indicated to machine materials that produce long chips such as soft aluminium, zinc-aluminium alloys, magnesium, plastics, hard rubber, wood.

### Aluminium Schnitt

Das ist den geeignete Fräser für die Bearbeitung auf Werkstoffen die sehr lange Span erzeugt wie Weichaluminium, Zamak, Magnesium, Kunststoffen, hart Acrylkautschuk, Holz.

### Coupe Aluminium

Cette fraise est spécifique pour usinages sur matériaux avec un copeau très long tel que aluminium doux, zamak, magnésium, plastiques, gomme dure, bois.

### Dentado - Aluminio

Es una fresa específica para empleos sobre materiales con viruta muy larga como aluminio dulce, aleación de cinc, aluminio, magnesio y cobre, plásticos, magnesio y gomas duras y madera.



### Con taglienti in testa

Burr End Cut  
Stirverzahnung  
Denture en bout  
Con labios frontales



### Fresa a forare con 2 taglienti in testa

End Mill End Cut  
Mit Stirnschneiden  
Taille de fraise en bout  
Fresas para taladrar con 2 labios



### Fresa a forare con angolo 135°

135° Drill Point  
135° Bohrspitze  
Poite de foret de 135°  
Fresas para taladrar con ángulo de 135°



## TALICARB NORM.

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# FRESA PER RETTIFICA DI INTERNI IN METALLO DURO

SOLID CARBIDE GRINDING-IN TOOLS  
VOLLHARTMETALL-INNENSCHLEIFFRÄSER  
FRAISES POUR RECTIFICATION INTÉRIEURE EN CARBURE MONOBLOC  
FRESAS PARA RECTIFICADO INTERIOR DE METAL DURO INTEGRAL

## 1092



| Ø<br>mm | L <sub>1</sub><br>mm | L<br>mm | L <sub>2</sub><br>mm | d<br>mm | 1092<br>€ |
|---------|----------------------|---------|----------------------|---------|-----------|
| 1x3x3   | 3                    | 38      | 9.5                  | 3       | 20,15 ■   |
| 4x4x6   | 4                    | 50      | 19                   | 6       | 29,50 ■   |
| 5x5x6   | 5                    | 50      | 19                   | 6       | 32,80 ■   |
| 6x6x6   | 6                    | 50      | 19                   | 6       | 25,75 ■   |
| 7x7x6   | 7                    | 63      | -                    | 6       | 43,10 ■   |
| 9x9x6   | 9                    | 63      | -                    | 6       | 54,90 ■   |
| 10x10x6 | 10                   | 63      | -                    | 6       | 62,90 ■   |
| 11x11x6 | 11                   | 63      | -                    | 6       | 73,00 ■   |
| 12x12x6 | 12                   | 63      | -                    | 6       | 90,50 ■   |
|         |                      |         |                      |         |           |
|         |                      |         |                      |         |           |
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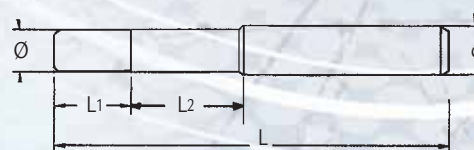


■ **Ad esaurimento scorte** - Subject to availability until sold out -  
Solange der vorrat reicht - Jusqu'à Épuisement de stock -  
Hasta agotamiento del stock

**A richiesta**  
On Request  
Auf Anfrage  
Sur Demande  
A Pedido



**1091** □





# FRESA PER FIBRE DI VETRO

IN METALLO DURO INTEGRALE

SOLIDE CARBIDE FIBERGLASS ROUTERS

FRÄSER FÜR GFK

FRAISES POUR USINAGE DE LA FIBRE DE VERRE

FRESAS DE METAL DURO INTEGRAL PARA FIBRA DE VIDRIO

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## 2400



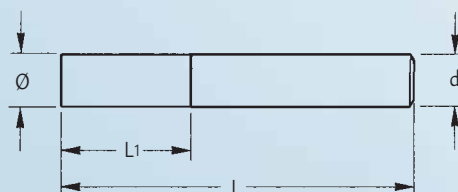
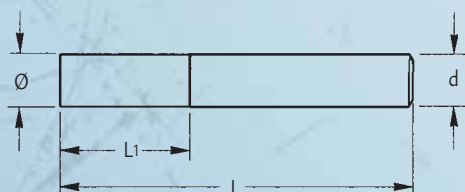
| Ø<br>mm  | L <sub>1</sub><br>mm | L<br>mm | d<br>mm | 2400<br>€ |
|----------|----------------------|---------|---------|-----------|
| 3x12x3   | 12                   | 38      | 3       | 9,44      |
| 4x16x4   | 16                   | 50      | 4       | 15,20     |
| 6x25x6   | 25                   | 63      | 6       | 17,35     |
| 6x25x6   | 25                   | 76      | 6       | 22,05     |
| 8x25x8   | 25                   | 63      | 8       | 34,15     |
| 10x25x10 | 25                   | 70      | 10      | 42,40     |
| 12x25x12 | 25                   | 76      | 12      | 59,70     |
|          |                      |         |         |           |
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## 2401



| Ø<br>mm  | L <sub>1</sub><br>mm | L<br>mm | d<br>mm | 2401<br>€ |
|----------|----------------------|---------|---------|-----------|
| 2x6x3    | 6                    | 38      | 3       | 10,97     |
| 3x12x3   | 12                   | 38      | 3       | 10,49     |
| 4x16x4   | 16                   | 50      | 4       | 16,80     |
| 6x25x6   | 25                   | 63      | 6       | 19,65     |
| 6x25x6   | 25                   | 76      | 6       | 23,95     |
| 8x25x8   | 25                   | 63      | 8       | 36,40     |
| 10x25x10 | 25                   | 70      | 10      | 46,20     |
| 12x25x12 | 25                   | 76      | 12      | 65,70     |
|          |                      |         |         |           |
|          |                      |         |         |           |
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■ Ad esaurimento scorte - Subject to availability until sold out - Solange der vorrat reicht - Jusqu'à Épuisement de stock - Hasta agotamiento del stock



## TALICARB NORM.

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# FRESA PER FIBRE DI VETRO

IN METALLO DURO INTEGRALE

SOLIDE CARBIDE FIBERGLASS ROUTERS  
FRÄSER FÜR GFK  
FRAISES POUR USINAGE DE LA FIBRE DE VERRE  
FRESAS DE METAL DURO INTEGRAL PARA FIBRA DE VIDRIO

## 2402



|  |  |         |         |           |   |
|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|---------|---------|-----------|---|
| Ø<br>mm                                                                           | L <sub>1</sub><br>mm                                                              | L<br>mm | d<br>mm | 2402<br>€ |   |
| 2x6x3                                                                             | 6                                                                                 | 38      | 3       | 11,87     | ■ |
| 3x12x3                                                                            | 12                                                                                | 38      | 3       | 11,44     |   |
| 4x16x4                                                                            | 16                                                                                | 50      | 4       | 18,35     |   |
| 6x25x6                                                                            | 25                                                                                | 63      | 6       | 20,70     |   |
| 6x25x6                                                                            | 25                                                                                | 76      | 6       | 25,10     |   |
| 8x25x8                                                                            | 25                                                                                | 63      | 8       | 37,75     |   |
| 10x25x10                                                                          | 25                                                                                | 70      | 10      | 47,90     |   |
| 12x25x12                                                                          | 25                                                                                | 76      | 12      | 68,80     |   |
|                                                                                   |                                                                                   |         |         |           |   |
|                                                                                   |                                                                                   |         |         |           |   |
|                                                                                   |                                                                                   |         |         |           |   |
|                                                                                   |                                                                                   |         |         |           |   |
|                                                                                   |                                                                                   |         |         |           |   |
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■ **Ad esaurimento scorte** - Subject to availability until sold out - Solange der vorrat reicht - Jusqu'à Épuisement de stock - Hasta agotamiento del stock

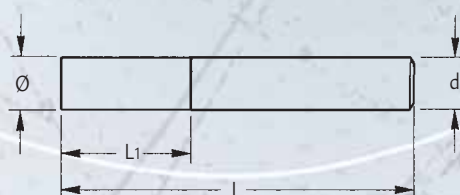


## 2403



|  |  |         |         |           |   |
|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|---------|---------|-----------|---|
| Ø<br>mm                                                                            | L <sub>1</sub><br>mm                                                                | L<br>mm | d<br>mm | 2403<br>€ |   |
| 2x6x3                                                                              | 6                                                                                   | 38      | 3       | 12,55     | ■ |
| 3x12x3                                                                             | 12                                                                                  | 38      | 3       | 12,11     |   |
| 4x16x4                                                                             | 16                                                                                  | 50      | 4       | 19,05     |   |
| 6x25x6                                                                             | 25                                                                                  | 63      | 6       | 21,45     |   |
| 6x25x6                                                                             | 25                                                                                  | 76      | 6       | 25,95     |   |
| 8x25x8                                                                             | 25                                                                                  | 63      | 8       | 38,85     |   |
| 10x25x10                                                                           | 25                                                                                  | 70      | 10      | 49,80     |   |
| 12x25x12                                                                           | 25                                                                                  | 76      | 12      | 72,10     |   |
|                                                                                    |                                                                                     |         |         |           |   |
|                                                                                    |                                                                                     |         |         |           |   |
|                                                                                    |                                                                                     |         |         |           |   |
|                                                                                    |                                                                                     |         |         |           |   |
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|                                                                                    |                                                                                     |         |         |           |   |
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|                                                                                    |                                                                                     |         |         |           |   |
|                                                                                    |                                                                                     |         |         |           |   |

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# FRESA CILINDRICA

IN METALLO DURO

CARBIDE CYLINDRICAL BURRS  
HARTMETALLZYLINDERFRÄSER  
FRAISE CYLINDRIQUE EN CARBURE  
FRESAS CILINDRICA DE METAL DURO

TALICARB NORM.

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## 2001



| Ø<br>mm   | L <sub>1</sub><br>mm | L<br>mm | d<br>mm | 2001<br>€ |
|-----------|----------------------|---------|---------|-----------|
| 1.5X6X3   | 6                    | 38      | 3       | 7,65      |
| 2.5X11X3  | 11                   | 38      | 3       | 7,65      |
| 3X14X3    | 14                   | 38      | 3       | 7,65      |
| 4.7x16x6  | 16                   | 50      | 6       | 14,13     |
| 6x16x6    | 16                   | 50      | 6       | 14,13     |
| 8x20x6    | 20                   | 63      | 6       | 17,80     |
| 9.5x19x6  | 19                   | 63      | 6       | 18,55     |
| 12.7X25X6 | 25                   | 68      | 6       | 28,40     |
| 16X25X6   | 25                   | 68      | 6       | 37,25     |
| 16X25X8   | 25                   | 76      | 8       | 41,40     |
| 19X25X6   | 25                   | 68      | 6       | 55,40     |
| 19X25X8   | 25                   | 76      | 8       | 56,40 ■   |
| 25X25X6   | 25                   | 68      | 6       | 78,10     |
| 25X25X8   | 25                   | 76      | 8       | 77,70 ■   |

## 2002



| Ø<br>mm   | L <sub>1</sub><br>mm | L<br>mm | d<br>mm | 2002<br>€ |
|-----------|----------------------|---------|---------|-----------|
| 1.5X6X3   | 6                    | 38      | 3       | 9,19      |
| 2.5X11X3  | 11                   | 38      | 3       | 9,19      |
| 3X14X3    | 14                   | 38      | 3       | 9,19      |
| 4.7x16x6  | 16                   | 50      | 6       | 17,00     |
| 6.3x12x3  | 12                   | 50      | 3       | 15,30     |
| 6x16x6    | 16                   | 50      | 6       | 17,00     |
| 8x20x6    | 20                   | 63      | 6       | 21,35     |
| 9.5x19x6  | 19                   | 63      | 6       | 22,20     |
| 12.7X25X6 | 25                   | 68      | 6       | 34,20     |
| 16X25X6   | 25                   | 68      | 6       | 44,80     |
| 16X25X8   | 25                   | 76      | 8       | 47,10 ■   |
| 19X25X6   | 25                   | 68      | 6       | 63,30 ■   |
| 19X25X8   | 25                   | 76      | 8       | 67,30 ■   |
| 25X25X6   | 25                   | 68      | 6       | 89,20 ■   |
| 25X25X8   | 25                   | 76      | 8       | 93,60 ■   |

## 2003



| Ø<br>mm    | L <sub>1</sub><br>mm | L<br>mm | d<br>mm | 2003<br>€ |
|------------|----------------------|---------|---------|-----------|
| 1.5X6X3    | 6                    | 38      | 3       | 7,65      |
| 2.5X11X3   | 11                   | 38      | 3       | 7,65      |
| 3X14X3     | 14                   | 38      | 3       | 7,65      |
| 4.7x16x6   | 16                   | 50      | 6       | 14,13     |
| 6.3X5X3    | 5                    | 43      | 3       | 10,21 ■   |
| 6.3x12.7x3 | 12.7                 | 50      | 3       | 12,71     |
| 6x16x6     | 16                   | 50      | 6       | 14,13     |
| 8x20x6     | 20                   | 63      | 6       | 17,80     |
| 9.5x19x6   | 19                   | 63      | 6       | 18,55     |
| 12.7X25X6  | 25                   | 68      | 6       | 28,40     |
| 16X25X6    | 25                   | 68      | 6       | 37,25     |
| 16X25X8    | 25                   | 76      | 8       | 39,45 ■   |
| 19X25X6    | 25                   | 68      | 6       | 55,40     |
| 19X25X8    | 25                   | 76      | 8       | 56,40 ■   |
| 25.4x25x6  | 25                   | 68      | 6       | 78,10     |
| 25X25X8    | 25                   | 76      | 8       | 77,70 ■   |

**A richiesta**  
On Request  
Auf Anfrage  
Sur Demande  
A Pedido



## 2004■



## 2005

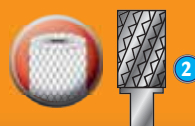


## 2006

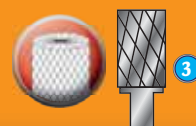
**A richiesta**  
On Request  
Auf Anfrage  
Sur Demande  
A Pedido



## 2001F

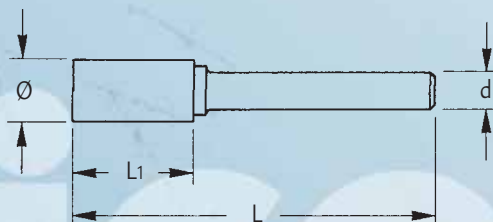


## 2002F



## 2003F

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## TALICARB NORM.

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# FRESA CILINDRICA

IN METALLO DURO

CARBIDE CYLINDRICAL BURRS  
HARTMETALLZYLINDERFRÄSER  
FRAISE CYLINDRIQUE EN CARBURE  
FRESAS CILINDRICA DE METAL DURO

## 2011



| Ø<br>mm    | L <sub>1</sub><br>mm | L<br>mm | d<br>mm | 2011<br>€ |
|------------|----------------------|---------|---------|-----------|
| 2.5X11X3   | 11                   | 38      | 3       | 7,65      |
| 3X14X3     | 14                   | 38      | 3       | 7,65      |
| 4.7X16X6   | 16                   | 50      | 6       | 16,10     |
| 6.3X12.7X3 | 12.7                 | 50      | 3       | 12,71     |
| 6X16X6     | 16                   | 50      | 6       | 16,10     |
| 8X20X6     | 20                   | 63      | 6       | 20,45     |
| 9.5X19X6   | 19                   | 63      | 6       | 21,00     |
| 12.7X25X6  | 25                   | 68      | 6       | 32,85     |
| 16X25X6    | 25                   | 68      | 6       | 42,20     |
| 16X25X8    | 25                   | 76      | 8       | 45,60     |
| 19X25X6    | 25                   | 68      | 6       | 61,10     |
| 19X25X8    | 25                   | 76      | 8       | 61,90 ■   |
|            |                      |         |         |           |
|            |                      |         |         |           |
|            |                      |         |         |           |
|            |                      |         |         |           |

## 2012



| Ø<br>mm    | L <sub>1</sub><br>mm | L<br>mm | d<br>mm | 2012<br>€ |
|------------|----------------------|---------|---------|-----------|
| 2.5X11X3   | 11                   | 38      | 3       | 9,19      |
| 3X14X3     | 14                   | 38      | 3       | 9,19      |
| 4.7X16X6   | 16                   | 50      | 6       | 19,25     |
| 6.3X12.7X3 | 12.7                 | 50      | 3       | 15,30     |
| 6X16X6     | 16                   | 50      | 6       | 19,25     |
| 8X20X6     | 20                   | 63      | 6       | 24,55     |
| 9.5X19X6   | 19                   | 63      | 6       | 25,15     |
| 12.7X25X6  | 25                   | 68      | 6       | 39,50     |
| 19X25X6    | 25                   | 68      | 6       | 73,50     |
| 19X25X8    | 25                   | 76      | 8       | 74,00 ■   |
|            |                      |         |         |           |
|            |                      |         |         |           |
|            |                      |         |         |           |
|            |                      |         |         |           |

## 2013



| Ø<br>mm    | L <sub>1</sub><br>mm | L<br>mm | d<br>mm | 2013<br>€ |
|------------|----------------------|---------|---------|-----------|
| 2.5X11X3   | 11                   | 38      | 3       | 7,65      |
| 3X14X3     | 14                   | 38      | 3       | 7,65      |
| 4.7X16X6   | 16                   | 50      | 6       | 16,10     |
| 6.3X12.7X3 | 12.7                 | 50      | 3       | 12,71     |
| 6X16X6     | 16                   | 50      | 6       | 16,10     |
| 8X20X6     | 20                   | 63      | 6       | 20,45     |
| 9.5X19X6   | 19                   | 63      | 6       | 21,00     |
| 12.7X25X6  | 25                   | 68      | 6       | 32,85     |
| 16X25X6    | 25                   | 68      | 6       | 42,20     |
| 16X25X8    | 25                   | 76      | 8       | 43,40 ■   |
| 19X25X6    | 25                   | 68      | 6       | 61,10     |
| 19X25X8    | 25                   | 76      | 8       | 61,90 ■   |
|            |                      |         |         |           |
|            |                      |         |         |           |
|            |                      |         |         |           |
|            |                      |         |         |           |

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A Pedido



## 2014 ■

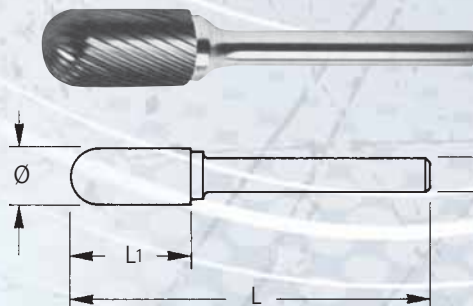


## 2015



## 2016

■ **Ad esaurimento scorte** - Subject to availability until sold out - Solange der vorrat reicht - Jusqu'à Épuisement de stock - Hasta agotamiento del stock



**Talcarb**



# FRESA OGIVA

CON TESTA SFERICA IN METALLO DURO

CARBIDE OGIVAL BURR - BALL NOSE  
HARTMETALLSPITZBOGENFRÄSER - STIRNRADIUS  
FRAISE OGIVE EN CARBURE - BOUT HÉMISPHERIQUE  
FRESAS EN FORMA DE ÁRBOL CON CABEZA ESFÉRICA DE METAL DURO

TALICARB NORM.

TALICARB NORM.  
TALICARB NORM.  
TALICARB NORM.  
TALICARB NORM.

## 2021



| Ø<br>mm   | L <sub>1</sub><br>mm | L<br>mm | d<br>mm | 2021<br>€ |
|-----------|----------------------|---------|---------|-----------|
| 3X6.3X3   | 6.3                  | 38      | 3       | 7,65      |
| 3X13X3    | 13                   | 38      | 3       | 7,65      |
| 6.3X13X3  | 13                   | 50      | 3       | 12,71     |
| 6X19X6    | 19                   | 50      | 6       | 17,30     |
| 9.5X19X6  | 19                   | 63      | 6       | 19,75     |
| 12.7X25X6 | 25                   | 68      | 6       | 30,05     |
| 16X25X6   | 25                   | 68      | 6       | 44,10     |
| 16X25X8   | 25                   | 76      | 8       | 45,30     |
| 19X32X6   | 32                   | 76      | 6       | 69,60     |
| 19X32X8   | 32                   | 82      | 8       | 71,00 ■   |
| 19X38X6   | 38                   | 82      | 6       | 82,30     |
| 19X38X8   | 38                   | 89      | 8       | 81,40 ■   |
|           |                      |         |         |           |
|           |                      |         |         |           |
|           |                      |         |         |           |
|           |                      |         |         |           |

## 2022



| Ø<br>mm   | L <sub>1</sub><br>mm | L<br>mm | d<br>mm | 2022<br>€ |
|-----------|----------------------|---------|---------|-----------|
| 3X12X3    | 13                   | 38      | 3       | 9,19      |
| 6.3X13X3  | 13                   | 50      | 3       | 15,30     |
| 6X19X6    | 19                   | 50      | 6       | 20,70     |
| 9.5X19X6  | 19                   | 63      | 6       | 23,70     |
| 12.7X25X6 | 25                   | 68      | 6       | 35,90     |
| 16X25X6   | 25                   | 68      | 6       | 52,80     |
| 16X25X8   | 25                   | 76      | 8       | 54,60 ■   |
| 19X32X6   | 32                   | 76      | 6       | 80,10 ■   |
| 19X32X8   | 32                   | 82      | 8       | 85,50 ■   |
| 19X38X6   | 38                   | 82      | 6       | 93,60 ■   |
| 19X38X8   | 38                   | 89      | 8       | 102,50    |
|           |                      |         |         |           |
|           |                      |         |         |           |
|           |                      |         |         |           |
|           |                      |         |         |           |

## 2023



| Ø<br>mm   | L <sub>1</sub><br>mm | L<br>mm | d<br>mm | 2023<br>€ |
|-----------|----------------------|---------|---------|-----------|
| 3X6.3X3   | 6.3                  | 38      | 3       | 7,65      |
| 3X13X3    | 13                   | 38      | 3       | 7,65      |
| 6.3X13X3  | 13                   | 50      | 3       | 12,71     |
| 6X19X6    | 19                   | 50      | 6       | 17,30     |
| 9.5X19X6  | 19                   | 63      | 6       | 19,75     |
| 12.7X25X6 | 25                   | 68      | 6       | 30,05     |
| 16X25X6   | 25                   | 68      | 6       | 44,10     |
| 16X25X8   | 25                   | 76      | 8       | 45,30 ■   |
| 19X32X6   | 32                   | 76      | 6       | 69,60     |
| 19X32X8   | 32                   | 82      | 8       | 71,00 ■   |
| 19X38X6   | 38                   | 82      | 6       | 82,30     |
| 19X38X8   | 38                   | 89      | 8       | 85,50     |
|           |                      |         |         |           |
|           |                      |         |         |           |
|           |                      |         |         |           |
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## 2024 ■

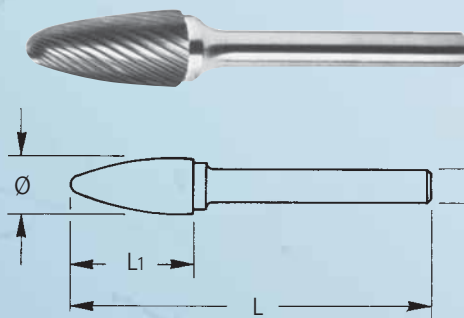


## 2025



## 2026

■ **Ad esaurimento scorte** - Subject to availability until sold out - Solange der vorrat reicht - Jusqu'à Épuisement de stock - Hasta agotamiento del stock



## TALICARB NORM.

TALICARB NORM.  
TALICARB NORM.  
TALICARB NORM.  
TALICARB NORM.

## FRESA OGIVA

A PUNTA IN METALLO DURO

CARBIDE OGIVAL BURR - POINTED NOSE  
HARTMETALLSPITZBOGENFRÄSER - STIRNRADIUS  
FRAISE OGIVE EN CARBURE - BOUT POINTU  
FRESAS DE FORMA OJIVAL DE METAL DURO

### 2031



| Ø<br>mm   | L <sub>1</sub><br>mm | L<br>mm | d<br>mm | 2031<br>€ |
|-----------|----------------------|---------|---------|-----------|
| 3x6.3x3   | 6.3                  | 38      | 3       | 7,65      |
| 3x9.5x3   | 9.5                  | 38      | 3       | 7,65      |
| 3x13x3    | 13                   | 38      | 3       | 7,65      |
| 6.3x13x3  | 13                   | 50      | 3       | 12,71     |
| 6x19x6    | 19                   | 50      | 6       | 17,30     |
| 8X19X6    | 19                   | 63      | 6       | 19,00     |
| 9.5x19x6  | 19                   | 63      | 6       | 20,30     |
| 12.7X25X6 | 25                   | 68      | 6       | 30,05     |
| 16X25X6   | 25                   | 68      | 6       | 41,80     |
| 16X25X8   | 25                   | 76      | 8       | 43,10 ■   |
| 19X38X6   | 38                   | 82      | 6       | 82,30     |
| 19X38X8   | 38                   | 89      | 8       | 81,40 ■   |
|           |                      |         |         |           |
|           |                      |         |         |           |
|           |                      |         |         |           |
|           |                      |         |         |           |
|           |                      |         |         |           |

### 2032



| Ø<br>mm   | L <sub>1</sub><br>mm | L<br>mm | d<br>mm | 2032<br>€ |
|-----------|----------------------|---------|---------|-----------|
| 3x6.3x3   | 6.3                  | 38      | 3       | 9,19      |
| 3x9.5x3   | 9.5                  | 38      | 3       | 9,19      |
| 3x13x3    | 13                   | 38      | 3       | 8,75 ■    |
| 6.3x13x3  | 13                   | 50      | 3       | 15,30     |
| 6x19x6    | 19                   | 50      | 6       | 20,70     |
| 8X19X6    | 19                   | 63      | 6       | 22,85     |
| 9.5x19x6  | 19                   | 63      | 6       | 24,35     |
| 12.7X25X6 | 25                   | 68      | 6       | 35,90     |
| 16X25X6   | 25                   | 68      | 6       | 50,10     |
| 19X38X6   | 38                   | 82      | 6       | 93,60 ■   |
| 19X38X8   | 38                   | 89      | 8       | 97,30 ■   |
|           |                      |         |         |           |
|           |                      |         |         |           |
|           |                      |         |         |           |
|           |                      |         |         |           |
|           |                      |         |         |           |

### 2033



| Ø<br>mm   | L <sub>1</sub><br>mm | L<br>mm | d<br>mm | 2033<br>€ |
|-----------|----------------------|---------|---------|-----------|
| 3x6.3x3   | 6.3                  | 38      | 3       | 7,65      |
| 3x9.5x3   | 9.5                  | 38      | 3       | 7,65      |
| 3x13x3    | 13                   | 38      | 3       | 7,65      |
| 6.3x13x3  | 13                   | 50      | 3       | 12,71     |
| 6x19x6    | 19                   | 50      | 6       | 17,30     |
| 8x19x6    | 19                   | 63      | 6       | 19,00     |
| 9.5x19x6  | 19                   | 63      | 6       | 20,30     |
| 12.7x25x6 | 25                   | 68      | 6       | 30,05     |
| 16X25X6   | 25                   | 68      | 6       | 41,80     |
| 16X25X8   | 25                   | 76      | 8       | 43,10 ■   |
| 19X38X6   | 38                   | 82      | 6       | 82,30     |
| 19X38X8   | 38                   | 89      | 8       | 81,40 ■   |
|           |                      |         |         |           |
|           |                      |         |         |           |
|           |                      |         |         |           |
|           |                      |         |         |           |
|           |                      |         |         |           |

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Sur Demande  
A Pedido



### 2034 ■

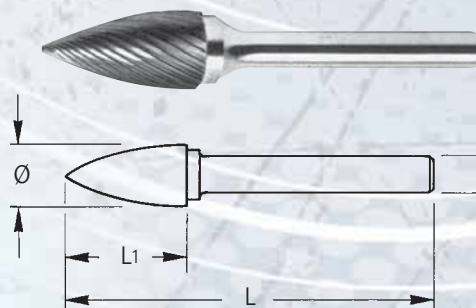


### 2035



### 2036

■ **Ad esaurimento scorte** - Subject to availability until sold out - Solange der vorrat reicht - Jusqu'à Épuisement de stock - Hasta agotamiento del stock



# FRESA OVALE

IN METALLO DURO

CARBIDE OVAL BURR  
HARTMETALLTROPFENFRÄSER  
FRAISE OVALE EN CARBURE  
FRESAS DE FORMA OVALADA DE METAL DURO

TALICARB NORM.

TALICARB NORM.  
TALICARB NORM.  
TALICARB NORM.  
TALICARB NORM.

## 2041



| Ø<br>mm   | L <sub>1</sub><br>mm | L<br>mm | d<br>mm | 2041<br>€ |
|-----------|----------------------|---------|---------|-----------|
| 3X5X3     | 5                    | 38      | 3       | 7,65      |
| 6.3X9.5X3 | 9.5                  | 47      | 3       | 12,71     |
| 6X10X6    | 10                   | 50      | 6       | 18,45     |
| 9.5X16X6  | 16                   | 60      | 6       | 21,00     |
| 12.7X22X6 | 22                   | 66      | 6       | 30,75     |
| 16X25X6   | 25                   | 68      | 6       | 41,80     |
| 16X25X8   | 25                   | 76      | 8       | 43,40 ■   |
| 19X25X6   | 25                   | 68      | 6       | 56,60     |
| 19X25X8   | 25                   | 76      | 8       | 57,50 ■   |
|           |                      |         |         |           |
|           |                      |         |         |           |
|           |                      |         |         |           |
|           |                      |         |         |           |
|           |                      |         |         |           |
|           |                      |         |         |           |
|           |                      |         |         |           |
|           |                      |         |         |           |

## 2042



| Ø<br>mm   | L <sub>1</sub><br>mm | L<br>mm | d<br>mm | 2042<br>€ |
|-----------|----------------------|---------|---------|-----------|
| 3X5X3     | 5                    | 38      | 3       | 9,19      |
| 6.3X9.5X3 | 9.5                  | 47      | 3       | 15,30     |
| 6X10X6    | 10                   | 50      | 6       | 22,15     |
| 9.5X16X6  | 16                   | 60      | 6       | 25,15     |
| 12.7X22X6 | 22                   | 66      | 6       | 37,05     |
| 16X25X6   | 25                   | 68      | 6       | 50,10     |
| 16X25X8   | 25                   | 76      | 8       | 51,70 ■   |
| 19X25X6   | 25                   | 68      | 6       | 64,80 ■   |
| 19X25X8   | 25                   | 76      | 8       | 69,30 ■   |
|           |                      |         |         |           |
|           |                      |         |         |           |
|           |                      |         |         |           |
|           |                      |         |         |           |
|           |                      |         |         |           |
|           |                      |         |         |           |
|           |                      |         |         |           |
|           |                      |         |         |           |

## 2043



| Ø<br>mm   | L <sub>1</sub><br>mm | L<br>mm | d<br>mm | 2043<br>€ |
|-----------|----------------------|---------|---------|-----------|
| 3X5X3     | 5                    | 38      | 3       | 7,65      |
| 6.3X9.5X3 | 9.5                  | 47      | 3       | 12,71     |
| 6X10X6    | 10                   | 50      | 6       | 18,45     |
| 9.5X16X6  | 16                   | 60      | 6       | 21,00     |
| 12.7X22X6 | 22                   | 66      | 6       | 30,75     |
| 16X25X6   | 25                   | 68      | 6       | 41,80     |
| 16X25X8   | 25                   | 76      | 8       | 44,20 ■   |
| 19X25X6   | 25                   | 68      | 6       | 56,60     |
| 19X25X8   | 25                   | 76      | 8       | 58,30 ■   |
|           |                      |         |         |           |
|           |                      |         |         |           |
|           |                      |         |         |           |
|           |                      |         |         |           |
|           |                      |         |         |           |
|           |                      |         |         |           |
|           |                      |         |         |           |
|           |                      |         |         |           |

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A Pedido



## 2044 ■

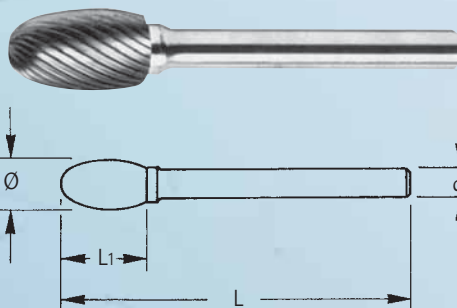


## 2045



## 2046

■ **Ad esaurimento scorte** - Subject to availability until sold out - Solange der vorrat reicht - Jusqu'à Épuisement de stock - Hasta agotamiento del stock



## TALICARB NORM.

TALICARB NORM.  
TALICARB NORM.  
TALICARB NORM.  
TALICARB NORM.

## FRESA SFERICA IN METALLO DURO

CARBIDE BALL BURR  
VHM KUGELFRÄSER  
FRAISE CARBURE À BOUT SPHÉRIQUE  
FRESAS ESFÉRICA DE METAL DURO

### 2051



| Ø<br>mm   | L <sub>1</sub><br>mm | L<br>mm | d<br>mm | 2051<br>€ |
|-----------|----------------------|---------|---------|-----------|
| 2.3X2X3   | 2                    | 38      | 3       | 7,65      |
| 3X2X3     | 2                    | 38      | 3       | 7,65      |
| 4.7X4.5X6 | 4.5                  | 50      | 6       | 14,94     |
| 6.3X5X3   | 5                    | 43      | 3       | 12,71     |
| 6x5x6     | 5                    | 50      | 6       | 14,94     |
| 8x7x6     | 7                    | 50      | 6       | 15,70     |
| 9.5x8x6   | 8                    | 52      | 6       | 17,30     |
| 12.7x11x6 | 11                   | 54      | 6       | 22,50     |
| 16x14x6   | 14                   | 58      | 6       | 28,40     |
| 16x14x8   | 14                   | 66      | 8       | 32,30     |
| 19x16x6   | 16                   | 60      | 6       | 40,70     |
| 19x17x8   | 17                   | 70      | 8       | 44,10     |
| 25.4x24x6 | 24                   | 68      | 6       | 66,40     |
|           |                      |         |         |           |
|           |                      |         |         |           |
|           |                      |         |         |           |

### 2052



| Ø<br>mm   | L <sub>1</sub><br>mm | L<br>mm | d<br>mm | 2052<br>€ |
|-----------|----------------------|---------|---------|-----------|
| 2.3X2X3   | 2                    | 38      | 3       | 9,19      |
| 3X2X3     | 2                    | 38      | 3       | 9,19      |
| 4.7X4.5X6 | 4.5                  | 50      | 6       | 17,95     |
| 6.3X5X3   | 5                    | 45      | 3       | 15,30     |
| 6x5x6     | 5                    | 50      | 6       | 17,95     |
| 8x7x6     | 7                    | 50      | 6       | 18,85     |
| 9.5x8x6   | 8                    | 52      | 6       | 20,70     |
| 12.7X11X6 | 11                   | 54      | 6       | 26,95     |
| 16X14X6   | 14                   | 58      | 6       | 34,20     |
| 16X14X8   | 14                   | 66      | 8       | 36,90     |
| 25X24X8   | 24                   | 76      | 8       | 80,40     |
|           |                      |         |         |           |
|           |                      |         |         |           |
|           |                      |         |         |           |

### 2053



| Ø<br>mm   | L <sub>1</sub><br>mm | L<br>mm | d<br>mm | 2053<br>€ |
|-----------|----------------------|---------|---------|-----------|
| 2.3X2X3   | 2                    | 38      | 3       | 7,65      |
| 3X3X3     | 2                    | 38      | 3       | 7,65      |
| 4.7X4.5X6 | 4.5                  | 50      | 6       | 14,94     |
| 6.3X5X3   | 5                    | 45      | 3       | 12,71     |
| 6x5x6     | 5                    | 50      | 6       | 14,94     |
| 8x7x6     | 7                    | 50      | 6       | 15,70     |
| 9.5x8x6   | 8                    | 52      | 6       | 17,30     |
| 12.7X11X6 | 11                   | 54      | 6       | 22,50     |
| 16X14X6   | 14                   | 58      | 6       | 28,40     |
| 16X14X8   | 14                   | 66      | 8       | 30,75     |
| 19X17X6   | 16                   | 60      | 6       | 40,70     |
| 19X17X8   | 17                   | 70      | 8       | 42,00     |
| 25X24X6   | 24                   | 68      | 6       | 66,40     |
|           |                      |         |         |           |
|           |                      |         |         |           |
|           |                      |         |         |           |

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Sur Demande  
A Pedido



### 2054

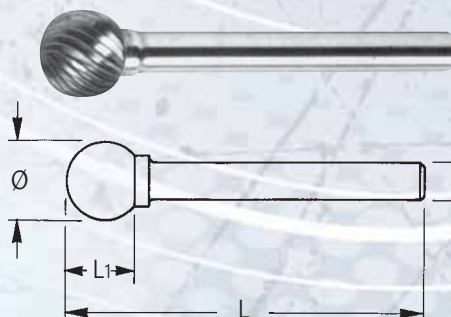


### 2055



### 2056

■ **Ad esaurimento scorte** - Subject to availability until sold out - Solange der vorrat reicht - Jusqu'à Épuisement de stock - Hasta agotamiento del stock





# FRESA CONICA A 14°

CON TESTA SFERICA IN METALLO DURO

CARBIDE 14° TAPER BURR - BALL NOSE

14° VHM FRÄSER - STIRNRADIUS

FRAISE CONIQUE 14° EN CARBURE - BOUT SPHÉRIQUE

FRESAS CÓNICA A 14° CON CABEZA ESFÉRICA DE METAL DURO

TALICARB NORM.

TALICARB NORM.

TALICARB NORM.

TALICARB NORM.

## 2061



| Ø<br>mm   | L <sub>1</sub><br>mm | L<br>mm | d<br>mm | 2061<br>€ |
|-----------|----------------------|---------|---------|-----------|
| 3X12X3    | 12                   | 38      | 3       | 7,65      |
| 6x16x6    | 16                   | 50      | 6       | 17,30     |
| 8X22X6    | 22                   | 66      | 6       | 21,95     |
| 9.5x27x6  | 27                   | 71      | 6       | 24,95     |
| 12.7X28X6 | 28                   | 72      | 6       | 33,10     |
| 16x30x6   | 30                   | 76      | 6       | 58,90     |
| 16X33X8   | 33                   | 84      | 8       | 59,30 ■   |
| 19X38X6   | 38                   | 82      | 6       | 84,10     |
| 19X38X8   | 38                   | 89      | 8       | 83,80 ■   |
|           |                      |         |         |           |
|           |                      |         |         |           |
|           |                      |         |         |           |
|           |                      |         |         |           |
|           |                      |         |         |           |
|           |                      |         |         |           |
|           |                      |         |         |           |

## 2062



| Ø<br>mm   | L <sub>1</sub><br>mm | L<br>mm | d<br>mm | 2062<br>€ |
|-----------|----------------------|---------|---------|-----------|
| 3X12X3    | 12                   | 38      | 3       | 9,19      |
| 6x16x6    | 16                   | 50      | 6       | 20,70     |
| 8X22X6    | 22                   | 66      | 6       | 26,35     |
| 9.5x27x6  | 27                   | 71      | 6       | 30,05     |
| 12.7X28X6 | 28                   | 72      | 6       | 39,50     |
| 16X33X6   | 30                   | 76      | 6       | 66,90 ■   |
| 16X33x8   | 33                   | 84      | 8       | 71,40 ■   |
| 19X38X6   | 38                   | 82      | 6       | 95,90 ■   |
| 19X38X8   | 38                   | 89      | 8       | 100,50 ■  |
|           |                      |         |         |           |
|           |                      |         |         |           |
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|           |                      |         |         |           |
|           |                      |         |         |           |

## 2063



| Ø<br>mm   | L <sub>1</sub><br>mm | L<br>mm | d<br>mm | 2063<br>€ |
|-----------|----------------------|---------|---------|-----------|
| 3X12X3    | 12                   | 38      | 3       | 7,65      |
| 6x16x6    | 16                   | 50      | 6       | 17,30     |
| 8X22X6    | 22                   | 66      | 6       | 21,95     |
| 9.5x27x6  | 27                   | 71      | 6       | 24,95     |
| 12.7X28X6 | 28                   | 72      | 6       | 33,10     |
| 16x30x6   | 30                   | 76      | 6       | 58,90     |
| 16X33X8   | 33                   | 84      | 8       | 59,30 ■   |
| 19X38X6   | 38                   | 82      | 6       | 84,10     |
| 19X38X8   | 38                   | 89      | 8       | 83,80 ■   |
|           |                      |         |         |           |
|           |                      |         |         |           |
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**A richiesta**

On Request

Auf Anfrage

Sur Demande

A Pedido



## 2064 ■

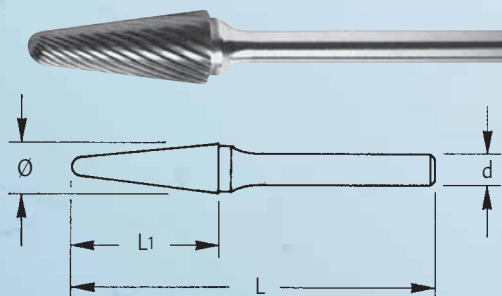


## 2065



## 2066

■ **Ad esaurimento scorte** - Subject to availability until sold out - Solange der vorrat reicht - Jusqu'à Épuisement de stock - Hasta agotamiento del stock



## TALICARB NORM.

TALICARB NORM.  
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TALICARB NORM.

## FRESA SFERICA IN METALLO DURO

CARBIDE BALL BURR  
VHM KUGELFRÄSER  
FRAISE CARBURE À BOUT SPHÉRIQUE  
FRESAS ESFÉRICA DE METAL DURO

### 2071



| Ø<br>mm    | L <sub>1</sub><br>mm | L<br>mm | d<br>mm | 2071<br>€ |
|------------|----------------------|---------|---------|-----------|
| 3X8.7X3    | 8.7                  | 38      | 3       | 7,65      |
| 3X11X3     | 11                   | 38      | 3       | 7,65      |
| 3X16X3     | 16                   | 38      | 3       | 7,65      |
| 6.3X12.7X3 | 12.7                 | 50      | 3       | 12,71     |
| 6X12.7X6   | 12.7                 | 50      | 6       | 16,65     |
| 6X18X6     | 18                   | 50      | 6       | 17,60     |
| 6X25X6     | 25                   | 50      | 6       | 18,75     |
| 9.5X16X6   | 16                   | 60      | 6       | 23,15     |
| 12.7X22X6  | 22                   | 66      | 6       | 30,05     |
| 16X25X6    | 25                   | 68      | 6       | 43,70     |
| 16X25X8    | 25                   | 76      | 8       | 45,30 ■   |
|            |                      |         |         |           |
|            |                      |         |         |           |
|            |                      |         |         |           |
|            |                      |         |         |           |
|            |                      |         |         |           |

### 2072

| Ø<br>mm    | L <sub>1</sub><br>mm | L<br>mm | d<br>mm | 2072<br>€ |
|------------|----------------------|---------|---------|-----------|
| 3X8.7X3    | 8.7                  | 38      | 3       | 9,19      |
| 3X11X3     | 11                   | 38      | 3       | 9,19      |
| 3X16X3     | 16                   | 38      | 3       | 9,19      |
| 6.3X12.7X3 | 12.7                 | 50      | 3       | 15,30     |
| 6X12.7X6   | 12.7                 | 50      | 6       | 19,95     |
| 6X18X6     | 18                   | 50      | 6       | 21,10     |
| 6X25X6     | 25                   | 50      | 6       | 22,50     |
| 9.5X16X6   | 16                   | 60      | 6       | 27,70     |
| 12.7X22X6  | 22                   | 66      | 6       | 35,90     |
| 16X25X6    | 25                   | 68      | 6       | 52,50     |
| 16X25X8    | 25                   | 76      | 8       | 54,30 ■   |
|            |                      |         |         |           |
|            |                      |         |         |           |
|            |                      |         |         |           |
|            |                      |         |         |           |
|            |                      |         |         |           |

### 2073



| Ø<br>mm    | L <sub>1</sub><br>mm | L<br>mm | d<br>mm | 2073<br>€ |
|------------|----------------------|---------|---------|-----------|
| 3X8.7X3    | 8.7                  | 38      | 3       | 7,65      |
| 3X11X3     | 11                   | 38      | 3       | 7,65      |
| 3X16X3     | 16                   | 38      | 3       | 7,65      |
| 6.3X12.7X3 | 12.7                 | 50      | 3       | 12,71     |
| 6X12.7X6   | 12.7                 | 50      | 6       | 16,65     |
| 6X18X6     | 18                   | 50      | 6       | 17,60     |
| 6X25X6     | 25                   | 50      | 6       | 18,75     |
| 9.5X16X6   | 16                   | 60      | 6       | 23,15     |
| 12.7X22X6  | 22                   | 66      | 6       | 30,05     |
| 16X25X6    | 25                   | 68      | 6       | 43,70     |
| 16X25X8    | 25                   | 76      | 8       | 45,30 ■   |
|            |                      |         |         |           |
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**A richiesta**  
On Request  
Auf Anfrage  
Sur Demande  
A Pedido



**2074 ■**

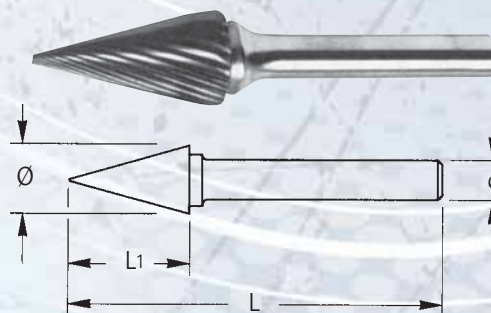


**2075**



**2076**

■ **Ad esaurimento scorte** - Subject to availability until sold out - Solange der vorrat reicht - Jusqu'à Épuisement de stock - Hasta agotamiento del stock



# FRESA CONICA A 14°

CON TESTA SFERICA IN METALLO DURO

CARBIDE 14° TAPER BURR - BALL NOSE

14° VHM FRÄSER - STIRNRADIUS

FRAISE CONIQUE 14° EN CARBURE - BOUT SPHÉRIQUE

FRESAS CÓNICA A 14° CON CABEZA ESFÉRICA DE METAL DURO

TALICARB NORM.

TALICARB NORM.

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TALICARB NORM.

## 2501/2503

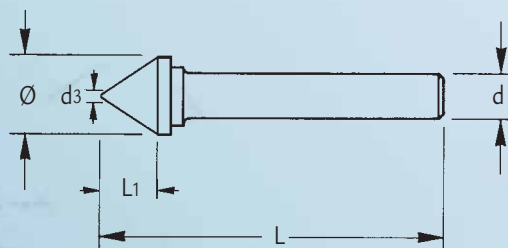


| Ø<br>mm   | L <sub>1</sub><br>mm | L<br>mm | d<br>mm | d <sub>3</sub><br>mm |  1<br>2501<br>€ |  3<br>2503<br>€ |
|-----------|----------------------|---------|---------|----------------------|--------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------|
|           |                      |         |         |                      |                                                                                                  |                                                                                                  |
| 3x2x3     | 2                    | 38      | 3       | To point             | 7,65                                                                                             | 7,65                                                                                             |
| 6x5x6     | 5                    | 50      | 6       | To point             | 15,20                                                                                            | 15,20                                                                                            |
| 9.5x8x6   | 8                    | 55      | 6       | 1                    | 18,45                                                                                            | 18,45                                                                                            |
| 12.7x11x6 | 11                   | 58      | 6       | 1                    | 24,80                                                                                            | 24,80                                                                                            |
| 16x14x6   | 14                   | 60      | 6       | 1.5                  | 32,30                                                                                            | 32,30                                                                                            |
| 19x16x6   | 16                   | 64      | 6       | 1.5                  | 41,00                                                                                            | 41,00                                                                                            |
| 25.4x23x6 | 23                   | 68      | 6       | 3                    | 66,10                                                                                            | 66,10                                                                                            |
|           |                      |         |         |                      |                                                                                                  |                                                                                                  |
|           |                      |         |         |                      |                                                                                                  |                                                                                                  |
|           |                      |         |         |                      |                                                                                                  |                                                                                                  |
|           |                      |         |         |                      |                                                                                                  |                                                                                                  |
|           |                      |         |         |                      |                                                                                                  |                                                                                                  |
|           |                      |         |         |                      |                                                                                                  |                                                                                                  |
|           |                      |         |         |                      |                                                                                                  |                                                                                                  |
|           |                      |         |         |                      |                                                                                                  |                                                                                                  |
|           |                      |         |         |                      |                                                                                                  |                                                                                                  |

## 2511/2513



| Ø<br>mm     | L <sub>1</sub><br>mm | L<br>mm | d<br>mm | d <sub>3</sub><br>mm |  1<br>2511<br>€ |  3<br>2513<br>€ |
|-------------|----------------------|---------|---------|----------------------|----------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------|
|             |                      |         |         |                      |                                                                                                    |                                                                                                    |
| 3x1x3       | 1                    | 38      | 3       | To point             | 7,65                                                                                               | 7,65                                                                                               |
| 6x3x6       | 3                    | 50      | 6       | To point             | 15,20                                                                                              | 15,20                                                                                              |
| 9.5x4.7x6   | 4.7                  | 52      | 6       | 1                    | 18,45                                                                                              | 18,45                                                                                              |
| 12.7x6.3x6  | 6.3                  | 52      | 6       | 1                    | 24,80                                                                                              | 24,80                                                                                              |
| 16x8x6      | 8                    | 56      | 6       | 1.5                  | 32,30                                                                                              | 32,30                                                                                              |
| 19x9x6      | 9                    | 58      | 6       | 1.5                  | 41,00                                                                                              | 41,00                                                                                              |
| 25.4x12.7x6 | 12.7                 | 60      | 6       | 3                    | 66,10                                                                                              | 66,10                                                                                              |
|             |                      |         |         |                      |                                                                                                    |                                                                                                    |
|             |                      |         |         |                      |                                                                                                    |                                                                                                    |
|             |                      |         |         |                      |                                                                                                    |                                                                                                    |
|             |                      |         |         |                      |                                                                                                    |                                                                                                    |
|             |                      |         |         |                      |                                                                                                    |                                                                                                    |
|             |                      |         |         |                      |                                                                                                    |                                                                                                    |
|             |                      |         |         |                      |                                                                                                    |                                                                                                    |
|             |                      |         |         |                      |                                                                                                    |                                                                                                    |



## TALICARB NORM.

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TALICARB NORM.

# FRESE A CONO INVERTITO

IN METALLO DURO

CARBIDE INVERTED CONE BURR  
VERKEHRT KONISCHE VHM FRÄSER  
FRAISE À CONE INVERSE EN CARBURE  
FRESAS CÓNICA INVERTIDA DE METAL DURO

### 2081



| Ø<br>mm     | L <sub>1</sub><br>mm | L<br>mm | d<br>mm | Angolo<br>Angle<br>Winkel<br>Angle<br>Ángulo | 2081<br>€ |
|-------------|----------------------|---------|---------|----------------------------------------------|-----------|
| 2.3X3X3     | 3                    | 38      | 3       | 10                                           | 7,65      |
| 3X5X3       | 5                    | 38      | 3       | 10                                           | 7,65      |
| 6.3X6.3X6   | 6.3                  | 44      | 3       | 10                                           | 12,71     |
| 6X8X6       | 8                    | 50      | 6       | 10                                           | 15,50     |
| 9.5X9.5X6   | 9.5                  | 52      | 6       | 13                                           | 23,35     |
| 12.7X12.7X6 | 12.7                 | 56      | 6       | 16                                           | 29,60     |
| 16X16X6     | 16                   | 60      | 6       | 19                                           | 39,15     |
| 16X16X8     | 16                   | 70      | 8       | 19                                           | 41,30     |
| 19X19X6     | 19                   | 63      | 6       | 21                                           | 50,60     |
| 19X19X8     | 19                   | 66      | 8       | 21                                           | 51,40     |
|             |                      |         |         |                                              |           |
|             |                      |         |         |                                              |           |
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|             |                      |         |         |                                              |           |

### 2082



| Ø<br>mm     | L <sub>1</sub><br>mm | L<br>mm | d<br>mm | Angolo<br>Angle<br>Winkel<br>Angle<br>Ángulo | 2082<br>€ |
|-------------|----------------------|---------|---------|----------------------------------------------|-----------|
| 2.5X3X3     | 3                    | 38      | 3       | 10                                           | 8,75      |
| 3X5X3       | 5                    | 38      | 3       | 10                                           | 9,19      |
| 6.3x6.3x6   | 6                    | 44      | 6       | 10                                           | 15,30     |
| 6x8x6       | 8                    | 50      | 6       | 10                                           | 18,55     |
| 9.5x9.5x6   | 9.5                  | 52      | 6       | 13                                           | 23,70     |
| 12.7x12.7x6 | 12.7                 | 56      | 6       | 16                                           | 33,80     |
| 16X16X8     | 16                   | 70      | 8       | 19                                           | 49,20     |
| 19X19X6     | 19                   | 63      | 6       | 21                                           | 57,50     |
| 19X19X8     | 19                   | 66      | 8       | 21                                           | 61,90     |
|             |                      |         |         |                                              |           |
|             |                      |         |         |                                              |           |
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|             |                      |         |         |                                              |           |
|             |                      |         |         |                                              |           |

### 2083



| Ø<br>mm     | L <sub>1</sub><br>mm | L<br>mm | d<br>mm | Angolo<br>Angle<br>Winkel<br>Angle<br>Ángulo | 2083<br>€ |
|-------------|----------------------|---------|---------|----------------------------------------------|-----------|
| 2.5X3X3     | 3                    | 38      | 3       | 10                                           | 7,65      |
| 3X5X3       | 5                    | 38      | 3       | 10                                           | 7,65      |
| 6.3x6.3x6   | 6.3                  | 44      | 3       | 10                                           | 12,71     |
| 6.3X8X6     | 8                    | 50      | 6       | 10                                           | 15,50     |
| 9.5x9.5x6   | 9.5                  | 52      | 6       | 13                                           | 19,75     |
| 12.7x12.7x6 | 12.7                 | 56      | 6       | 16                                           | 29,60     |
| 16x16x6     | 16                   | 60      | 6       | 19                                           | 39,15     |
| 16x16x8     | 16                   | 70      | 8       | 19                                           | 41,30     |
| 19X19X6     | 19                   | 63      | 6       | 21                                           | 50,60     |
| 19X19X8     | 19                   | 66      | 8       | 21                                           | 51,40     |
|             |                      |         |         |                                              |           |
|             |                      |         |         |                                              |           |
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**A richiesta**  
On Request  
Auf Anfrage  
Sur Demande  
A Pedido



### 2084



### 2085



### 2086

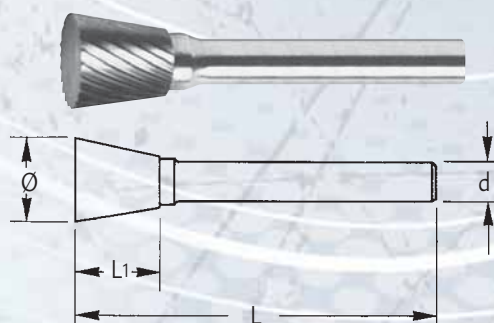


### 2081F



### 2082F

**Ad esaurimento scorte** - Subject to availability until sold out - Solange der vorrat reicht - Jusqu'à Épuisement de stock - Hasta agotamiento del stock





# FRESE A FIAMMA

IN METALLO DURO

CARBIDE BURR FLAME SHAPE  
FLAMMEFORME VHM FRÄSER  
FRAISE FORME DE FLAMME CARBURE MONOBLOC  
FRESAS EN FORMA DE LLAMA DE METAL DURO

## TALICARB NORM.

TALICARB NORM.  
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TALICARB NORM.

### 2091



2091  
€

| Ø<br>mm   | L <sub>1</sub><br>mm | L<br>mm | d<br>mm |         |
|-----------|----------------------|---------|---------|---------|
| 3X6X3     | 6                    | 38      | 3       | 7,65    |
| 6X16X6    | 16                   | 50      | 6       | 18,55   |
| 8X19X6    | 19                   | 63      | 6       | 19,90   |
| 12.7X32X6 | 32                   | 75      | 6       | 43,30   |
| 16X36X6   | 36                   | 79      | 6       | 61,90   |
| 16X36X8   | 36                   | 87      | 8       | 62,60 ■ |
| 19X41X6   | 41                   | 84      | 6       | 84,80   |
| 19X41X8   | 41                   | 92      | 8       | 84,50 ■ |
|           |                      |         |         |         |
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|           |                      |         |         |         |

### 2092



2092  
€

| Ø<br>mm   | L <sub>1</sub><br>mm | L<br>mm | d<br>mm |          |
|-----------|----------------------|---------|---------|----------|
| 6X16X6    | 16                   | 50      | 6       | 21,15 ■  |
| 8X19X6    | 19                   | 63      | 6       | 23,95    |
| 12.7X32X6 | 32                   | 75      | 6       | 52,00    |
| 16X36X6   | 36                   | 79      | 6       | 71,00 ■  |
| 16X36X8   | 36                   | 87      | 8       | 75,10 ■  |
| 19X41X6   | 41                   | 84      | 6       | 96,60 ■  |
| 19X41X8   | 41                   | 92      | 8       | 101,00 ■ |
|           |                      |         |         |          |
|           |                      |         |         |          |
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|           |                      |         |         |          |

### 2093



2093  
€

| Ø<br>mm   | L <sub>1</sub><br>mm | L<br>mm | d<br>mm |         |
|-----------|----------------------|---------|---------|---------|
| 3X6X3     | 6                    | 38      | 3       | 7,65    |
| 6X16X6    | 16                   | 50      | 6       | 18,55   |
| 8X19X6    | 19                   | 63      | 6       | 19,90   |
| 12.7X32X6 | 32                   | 75      | 6       | 43,30   |
| 16X36X6   | 36                   | 79      | 6       | 61,90   |
| 16X36X8   | 36                   | 84      | 8       | 62,60 ■ |
| 19X41X6   | 41                   | 86      | 6       | 84,80   |
| 19X41X8   | 41                   | 92      | 8       | 84,50 ■ |
|           |                      |         |         |         |
|           |                      |         |         |         |
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**A richiesta**  
On Request  
Auf Anfrage  
Sur Demande  
A Pedido



2094 ■

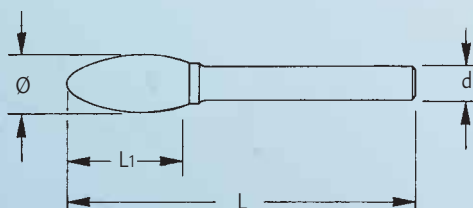


2095



2096

■ **Ad esaurimento scorte** - Subject to availability until sold out - Solange der vorrat reicht - Jusqu'à Épuisement de stock - Hasta agotamiento del stock



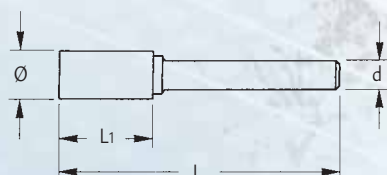
TALICARB NORM.  
TALICARB NORM.  
TALICARB NORM.  
TALICARB NORM.

IN METALLO DURO

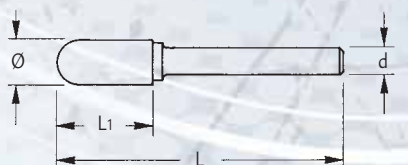
CARBIDE BURR FOR LIGHT ALLOYS  
VHM FRÄSER FÜR LEICHTMETALL  
FRAISES EN CARBURE POUR ALLIAGES LÉGERS  
FRESAS PARA ALEACIONES LIGERAS

[illegible][illegible][illegible]

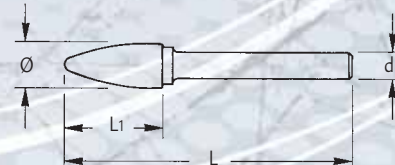
CYLINDRICAL BURR  
ZYLINDERFRÄSER  
FRAISE CYLINDRIQUE  
FRESE CILINDRICA



CYLINDRICAL BURR - BALL NOSE  
ZYLINDERFRÄSER - STIRNRADIUS  
FRAISE CYLINDRIQUE - BOUT HÉMISPHERIQUE  
FRESA CILÍNDRICA CON CABEZA ESFÉRICA



OGIVAL BURR - BALL NOSE  
SPITZBOGENFRÄSER - STIRNRADIUS  
FRAISE OGIVE - BOUT HÉMISPHERIQUE  
FRESA EN FORMA DE ÁRBOL CON CABEZA ESFÉRICA



# FRESA PER LEGHE LEGGERE

IN METALLO DURO

CARBIDE BURRS - LIGHT ALLOYS  
HARTMETALLFRÄSER - LEICHTMETALL  
FRAISES EN CARBURE POUR ALLIAGES LÉGERS  
FRESAS DE METAL DURO PARA ALEACIONES LIGERAS

TALICARB NORM.

TALICARB NORM.  
TALICARB NORM.  
TALICARB NORM.  
TALICARB NORM.

## 2330



| Ø<br>mm   | L <sub>1</sub><br>mm | L<br>mm | d<br>mm | 2330<br>€ |
|-----------|----------------------|---------|---------|-----------|
| 6X10X6    | 10                   | 50      | 6       | 24,45     |
| 9.5X16X6  | 16                   | 60      | 6       | 27,35     |
| 12.7X22X6 | 22                   | 66      | 6       | 33,80     |
| 16X25X6   | 25                   | 68      | 6       | 60,80     |
| 19X25X6   | 25                   | 68      | 6       | 81,30     |
|           |                      |         |         |           |
|           |                      |         |         |           |
|           |                      |         |         |           |
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|           |                      |         |         |           |
|           |                      |         |         |           |
|           |                      |         |         |           |

## 2340



| Ø<br>mm   | L <sub>1</sub><br>mm | L<br>mm | d<br>mm | 2340<br>€ |
|-----------|----------------------|---------|---------|-----------|
| 6X5X6     | 5                    | 50      | 6       | 18,65     |
| 9.5X8X6   | 8                    | 52      | 6       | 20,75     |
| 12.7X11X6 | 11                   | 54      | 6       | 29,85     |
| 16X14X6   | 14                   | 58      | 6       | 53,90     |
| 19X16X6   | 16                   | 60      | 6       | 91,20     |
|           |                      |         |         |           |
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|           |                      |         |         |           |

## 2350



| Ø<br>mm   | L <sub>1</sub><br>mm | L<br>mm | d<br>mm | 2350<br>€ |
|-----------|----------------------|---------|---------|-----------|
| 6X16X6    | 16                   | 50      | 6       | 22,20     |
| 9.5X27X6  | 27                   | 71      | 6       | 34,40     |
| 12.7X28X6 | 28                   | 72      | 6       | 47,50     |
| 16X30X6   | 30                   | 76      | 6       | 78,10     |
| 19X38X6   | 38                   | 82      | 6       | 101,50    |
|           |                      |         |         |           |
|           |                      |         |         |           |
|           |                      |         |         |           |
|           |                      |         |         |           |
|           |                      |         |         |           |
|           |                      |         |         |           |
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|           |                      |         |         |           |
|           |                      |         |         |           |
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|           |                      |         |         |           |
|           |                      |         |         |           |

### FRESA OVALE

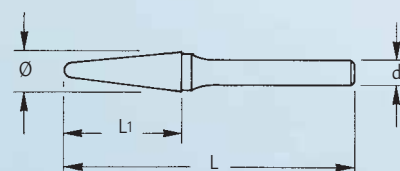
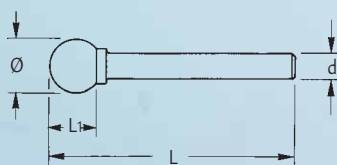
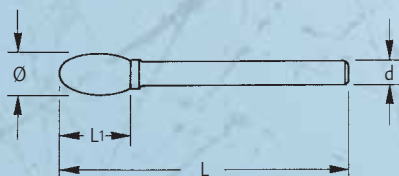
OVAL BURR  
TROPFENFRÄSER  
FRAISE OVALE  
FRESA DE FORMA OVALADA

### FRESA SFERICA

BALL BURR  
KUGELFRÄSER  
FRAISE Á BOUT SPHÉRIQUE  
FRESA ESFÉRICA

### FRESA CONICA A 14° CON TESTA SFERICA

14° TAPER BURR - BALL NOSE  
14° KONISCHFRÄSER - STIRNRADIUS  
FRAISE CONIQUE 14°- BOUT SPHÉRIQUE  
FRESA CÓNICA A 14° CON CABEZA ESFÉRICA



TALICARB NORM.  
TALICARB NORM.  
TALICARB NORM.  
TALICARB NORM.

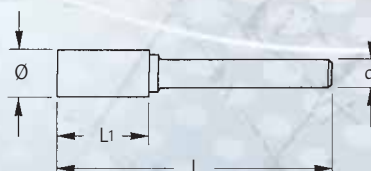
CARBIDE BURRS - LONG AND EXTRALONG SERIES  
HARTMETALLFRÄSER LANGE - EXTRALANGE AUSFÜHRUNG  
FRAISES EN CARBURE - SÉRIE LONGUE - EXTRALONGUE  
FRESAS DE METAL DURO - SERIE LARGA - EXTRALARGA

[illegible][illegible]

2101F

2201F

CYLINDRICAL BURR - ZYLINDERFRÄSER  
FRAISE CYLINDRIQUE - FRESA CILÌNDRICA



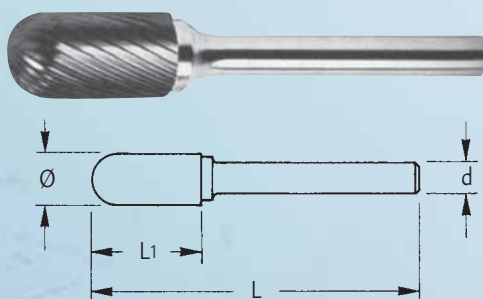


CARBIDE BURRS - LONG AND EXTRALONG SERIES  
VHM FRÄSER LANGE - EXTRALANGE AUSFÜHRUNG  
FRAISES EN CARBURE - SÉRIE LONGUE - EXTRALONGUE  
FRESAS DE METAL DURO - SERIE LARGA - EXTRALARGA

TALICARB NORM.  
TALICARB NORM.  
TALICARB NORM.  
TALICARB NORM.



CYLINDRICAL BURR - BALL NOSE - ZYLINDERFRÄSER - STIRNRADIUS  
FRAISE CYLINDRIQUE - BOUT HÉMISPHERIQUE - FRESA CILÍNDRICA CON CABEZA ESFÉRICA



TALICARB NORM.  
TALICARB NORM.  
TALICARB NORM.  
TALICARB NORM.

CARBIDE BURRS - LONG AND EXTRALONG SERIES  
VHM FRÄSER LANGE - EXTRALANGE AUSFÜHRUNG  
FRAISES EN CARBURE - SÉRIE LONGUE - EXTRALONGUE  
FRESAS DE METAL DURO - SERIE LARGA - EXTRALARGA

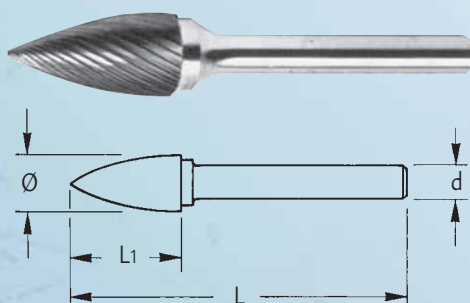



CARBIDE BURRS - LONG AND EXTRALONG SERIES  
VHM FRÄSER LANGE - EXTRALANGE AUSFÜHRUNG  
FRAISES EN CARBURE - SÉRIE LONGUE - EXTRALONGUE  
FRESAS DE METAL DURO - SERIE LARGA - EXTRA LARGA

TALICARB NORM.  
TALICARB NORM.  
TALICARB NORM.  
TALICARB NORM.



OGIVAL BURR - POINTED NOSE - SPITZBOGENFRÄSER - STIRNRADIUS  
FRAISE OGIVE - BOUT POINTU - FRESA DE FORMA OJIVAL

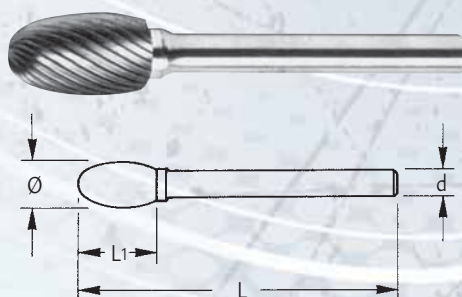


TALICARB NORM.  
TALICARB NORM.  
TALICARB NORM.  
TALICARB NORM.

CARBIDE BURRS - LONG AND EXTRALONG SEIRES  
VHM FRÄSER LANGE - EXTRALANGE AUSFÜHRUNG  
FRAISES EN CARBURE - SÉRIE LONGUE - EXTRALONGUE  
FRESAS DE METAL DURO - SERIE LARGA - EXTRALARGA




OVAL BURR - TROPFENFRÄSER  
FRAISE OVALE - FRESA DE FORMA OVALADA



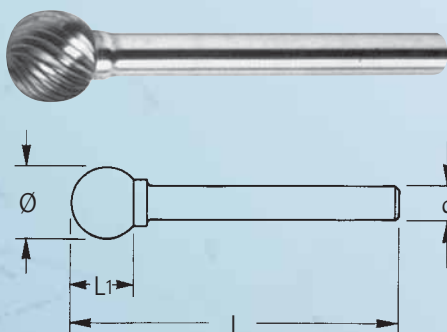


CARBIDE BURRS - LONG AND EXTRALONG SERIES  
VHM FRÄSER LANGE - EXTRALANGE AUSFÜHRUNG  
FRAISES EN CARBURE - SÉRIE LONGUE - EXTRALONGUE  
FRESAS DE METAL DURO - SERIE LARGA - EXTRALARGA

TALICARB NORM.  
TALICARB NORM.  
TALICARB NORM.  
TALICARB NORM.



BALL BURR - KUGELFRÄSER  
FRAISE Á BOUT SPHÉRIQUE - FRESA ESFÉRICA

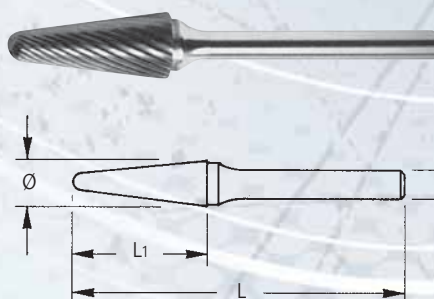


TALICARB NORM.  
TALICARB NORM.  
TALICARB NORM.  
TALICARB NORM.

CARBIDE BURRS - LONG AND EXTRALONG SEIRES  
VHM FRÄSER LANGE - EXTRALANGE AUSFÜHRUNG  
FRAISES EN CARBURE - SÉRIE LONGUE - EXTRALONGUE  
FRESAS DE METAL DURO - SERIE LARGA - EXTRALARGA




14° TAPER BURR - BALL NOSE - 14° KONISCHFRÄSER - STIRNRADIUS  
FRAISE CONIQUE 14° - BOUT HÉMISPHERIQUE - FRESA CÓNICA A 14° CON CABEZA ESFÉRICA

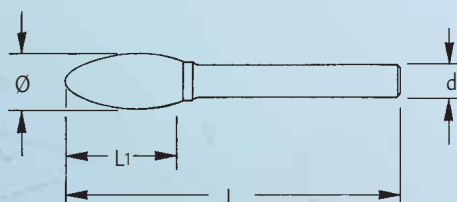


CARBIDE BURRS - LONG AND EXTRALONG SERIES  
VHM FRÄSER LANGE - EXTRALANGE AUSFÜHRUNG  
FRAISES EN CARBURE - SÉRIE LONGUE - EXTRALONGUE  
FRESAS DE METAL DURO - SERIE LARGA - EXTRALARGA

TALICARB NORM.  
TALICARB NORM.  
TALICARB NORM.  
TALICARB NORM.

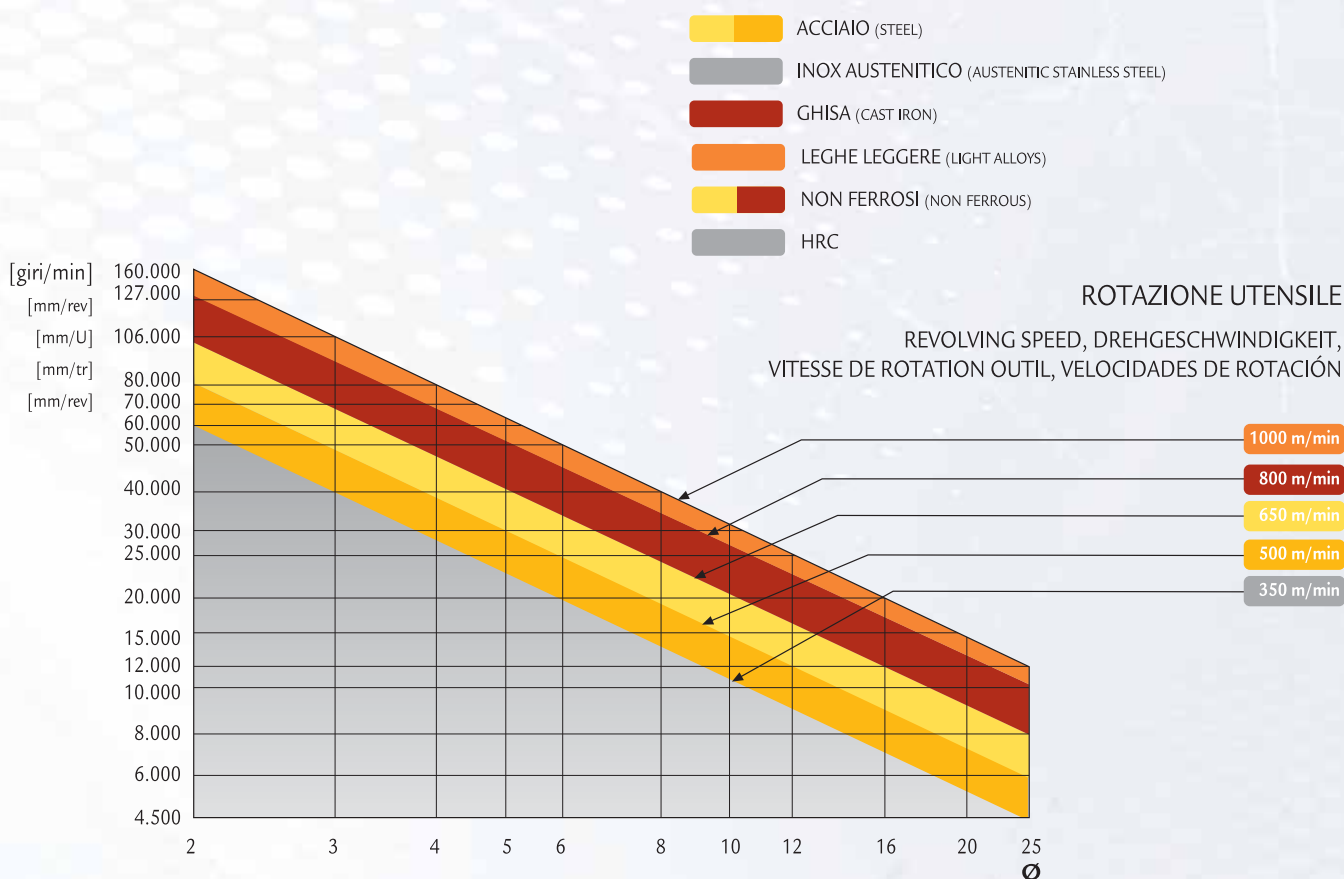


CARBIDE BURR FLAME SHAPE - FLAMMEFORME VHM FRÄSER  
FRAISE FORME DE FLAMME EN CARBURE MONOBLOC - FRESA EN FORMA DE LLAMA DE METAL DURO



# INFORMAZIONI TECNICHE:

Technical instructions Technische Hinweise  
Instructions techniques Informaciones técnicas



## TAGLIO

Cut, schnitt, coupe, dentado

Vc (m/min)



**TAGLIO - Alluminio**  
Aluminium Cut  
Aluminium Schnitt  
Coupe Aluminium  
Dentado - Aluminio

800 ÷ 1000



**TAGLIO 6 - Grosso**  
Cut # 6 - Coarse Cut  
Schnitt # 6 - Groß  
Coupe # 6 - Coupe gros  
Dentado 6 - Grueso

650 ÷ 800



**TAGLIO 1 - Standard**  
Cut # 1 - Standard  
Schnitt # 1 - Standard  
Coupe # 1 - Standard  
Dentado 1 - Estandar

**TAGLIO 4 - Rompitruciolo**  
Cut # 4 - Chip breaker  
Schnitt # 4 - Spanbrecher  
Coupe # 4 - Brise-copeau  
Dentado 4 - Rompevirutas

**TAGLIO 5 - Fine**  
Cut # 5 - Fine cut  
Schnitt # 5 - Fein  
Coupe # 5 - Mince  
Dentado 5 - Fin

500 ÷ 650



**TAGLIO 2 - Diamante**  
Cut # 2 - Diamond  
Schnitt # 2 - Diamant  
Coupe # 2 - Diamant  
Dentado 2 - Diamante

**TAGLIO 3 - Incrociato**  
Cut # 3 - Double cut  
Schnitt # 3 - Kreuzhieb  
Coupe # 3 - Croisé  
Dentado 3 - Cruzado

500 ÷ 800





Talicaadb

# BARRETTE RETTIFICATE/BULINO

in metallo duro integrale



SOLID CARBIDE RODS / ENGRAVING CUTTER



VHM - WERKZEUGE / GRAVIERSTICHEL



OUTILS EN CARBURE MONOBLOC / FRAISES À GRAVER



HERRAMIENTAS DE METAL DURO INTEGRAL / FRESAS DE GRABADO





**TALICARB NORM.**

TALICARB NORM.  
TALICARB NORM.  
TALICARB NORM.  
TALICARB NORM.

**BARRETTE RETTIFICATE****1 TAGLIENTE IN METALLO DURO**

SOLID CARBIDE RODS - 1 FLUTE  
VHM-RUNDSTÄBE - 1 NUTE  
BARREAUX CYLINDRIQUES EN CARBURE MONOBLOC - 1 DENT  
BARRAS DE METAL DURO INTEGRAL - 1 LABIO

**1086**

| Ø mm<br>h7 | L<br>mm | L <sub>1</sub><br>mm | 1086<br>€ |
|------------|---------|----------------------|-----------|
| 3.0        | 40      | 4.5                  | 6,35      |
| 3.0        | 100     | 4.5                  | 9,97      |
| 4.0        | 50      | 6                    | 8,58      |
| 4.0        | 60      | 6                    | 9,48      |
| 4.0        | 80      | 6                    | 11,37     |
| 4.0        | 100     | 6                    | 11,83     |
| 5.0        | 100     | 7.5                  | 14,30     |
| 6.0        | 80      | 9                    | 17,10     |
| 6.0        | 100     | 9                    | 19,55     |
| 8.0        | 80      | 12                   | 24,05     |
| 8.0        | 100     | 12                   | 26,15     |
| 10.0       | 100     | 15                   | 35,35     |
| 10.0       | 150     | 15                   | 53,90     |
| 12.0       | 100     | 18                   | 47,90     |
| 12.0       | 150     | 18                   | 73,20     |
| 14.0       | 150     | 21                   | 98,60     |
| 16.0       | 150     | 24                   | 125,50    |
| 18.0       | 150     | 27                   | 155,50    |
| 20.0       | 150     | 30                   | 194,00    |
|            |         |                      |           |
|            |         |                      |           |
|            |         |                      |           |
|            |         |                      |           |
|            |         |                      |           |
|            |         |                      |           |
|            |         |                      |           |





Engraving cutter  
Gravierstichel  
Fraise à graver  
Fresa de grabado

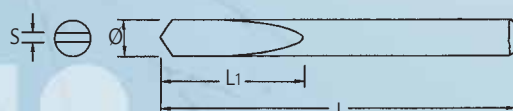
## SERIE NORMALE - DIN 6333

TALICARB NORM - NORMAL SERIES - DIN 6333  
TALICARB NORM - NORMALE AUSFÜHRUNG - DIN 6333  
TALICARB NORM - SÉRIE NORMALE - DIN 6333  
TALICARB NORM - SERIE NORMAL - DIN 6333

1098

[illegible]

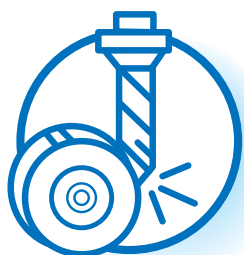
■ **Ad esaurimento scorte** - Subject to availability until sold out  
Solange der vorrat reicht - Jusqu'à Épuisement de stock  
Hasta agotamiento del stock





## **SERVIZIO DI RIAFFILATURA E RIVESTIMENTO**

Re-sharpening and coating service  
Nachschleif - und beschichtungservice  
Service de affûtage à nouveau et revêtement  
Servicio de afilado y recubrimiento



## **UTENSILI SPECIALI**

Special tools department  
Abteilung für Sonderwerkzeuge  
Outils spéciaux  
Herramientas especiales

# **I NOSTRI SERVIZI SEMPRE A DISPOSIZIONE**

Our prompt services always ready for you  
Unser prompter Service ist immer für Sie da  
Nos services toujours à votre Disposition  
Nuestro rápido servicio siempre listo para usted



# INFORMAZIONI TECNICHE



TECHNICAL INSTRUCTIONS



TECHNISCHE HINWEISE



INSTRUCTIONS TECHNIQUES



INFORMACIONES TÉCNICAS







### **SERVIZIO TECNICO**

Technical Help  
Technische Hilfe  
Service technique  
Ayuda técnica



### **E-COMMERCE**

[www.angeloghezzi.it](http://www.angeloghezzi.it)

## **I NOSTRI SERVIZI SEMPRE A DISPOSIZIONE**

Our prompt services always ready for you  
Unser prompter Service ist immer für Sie da  
Nos services toujours à votre Disposition  
Nuestro rápido servicio siempre listo para usted

## Vc

### VELOCITÀ DI TAGLIO [M/MIN]

Cutting speed [m/min]  
Schnittgeschwindigkeit [m/min]  
Vitesse de coupe [m/min]  
Velocidad de corte [m/min]

## f

### AVANZAMENTO AL GIRO [MM/GIRO]

Feed [mm/rev]  
Vorschub [mm/U]  
Avance [mm/tr]  
Avances [mm/rev]

## Fz [mm]

### AVANZAMENTO AL DENTE

Tooth Feed  
Zahnvorschub  
Avancement au dent  
Avance al LABIOS

## Vf [mm]

### VELOCITÀ DI AVANZAMENTO

Feed rate  
Vorschubgeschwindigkeit  
Vitesse d'avance  
Factor de avance

## Vfm [mm/min]

### VELOCITÀ DI AVANZAMENTO MODIFICATA

Modified feed rate  
Veraenderte  
Vorschubgeschwindigkeit  
Vitesse d'avance modifiée  
Factor de avance modificado

## FCF

### FATTORE DI CORREZIONE AVANZAMENTO

Correction Feed Factor  
Vorschubberichtigungsfaktor  
Facteur de correction  
avancement  
Factor de corrección avance

## N/mm<sup>2</sup> [R]

### RESISTENZA ALLA TRAZIONE

Resistance to Tensile Stress  
Antriebsstandfestigkeit  
Resistance à la traction  
Resistencia a la tracción

## Øe

### DIAMETRO EFFETTIVO DI LAVORO

Actual Working Diameter  
Tatsächliche  
Arbeitsdurchmesser  
Diamètre effectif de usinage  
Diámetro efectivo de trabajo

## HB

### DUREZZA BRINELL

Brinell Hardness  
Brinellhärte  
Dureté Brinell  
Dureza Brinell

## Z

### NUMERO DEI TAGLIENTI

Cutting Edges Number  
Schneidenzahl  
Numéros des coupants  
Número de los labios

## Ø

### DIAMETRO UTENSILE

Tool's diameter  
Werkzeugsdurchmesser  
Diamètre de l'outil  
Diámetro herramienta

## VcF

### FATTORE DI CORREZIONE VELOCITÀ DI TAGLIO RIVESTIMENTI

Coating correction cutting speed  
factor  
Berichtigungsfaktor der  
Schnittgeschwindigkeit  
Beschichtungen  
Facteur de correction vitesse de  
coupe revêtements  
Factor de corrección des corte de  
recubrimientos

## ap

### PROFONDITÀ ASSIALE

Axial Depth  
Axiale Tiefe  
Profondeur axial  
Profundidad axiall

## ae

### PROFONDITÀ RADIALE

Radial Depth  
Radiale Tiefe  
Profondeur radiale  
Profundidad radial

# PARAMETRI DI TAGLIO

## FRESATURA CILINDRICA FRONTALE

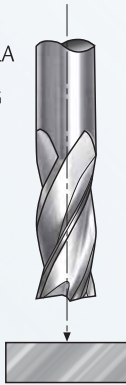
CUTTING PARAMETER - FACE MILLING  
 SCHNITTEDATEN - WALZSTIRNFRÄSEN  
 PARAMÈTRES DE COUPE - FRAISAGE CYLINDRIQUE FRONTALE  
 PARÁMETROS DE CORTE - FRESADO CILÍNDRICO FRONTAL

# INFORMAZIONI

Technical instructions  
 Instructions techniques

## FCF

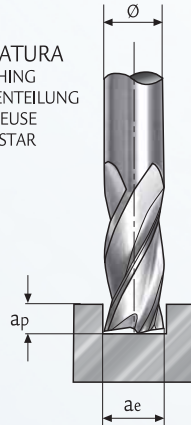
FORATURA  
 DRILLING  
 BOHRUNG  
 PERCER  
 TALADRO



[FCF] = 0,3

$f_{z_{FCF}} = 0,3 \times f_z$

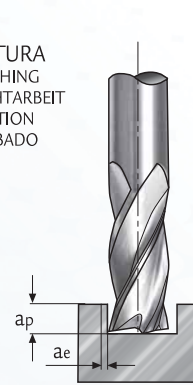
SGROSSATURA  
 ROUGHING  
 GROBE RILLENTILUNG  
 RAVAGEUSE  
 DESBASTAR



$a_e = 1,0 \times \varnothing$   
 $a_p = 0,5 \times \varnothing$  [FCF] = 1,0

$f_{z_{FCF}} = 1,0 \times f_z$

FINITURA  
 FINISHING  
 SCHLICHTARBEIT  
 FINITION  
 ACABADO



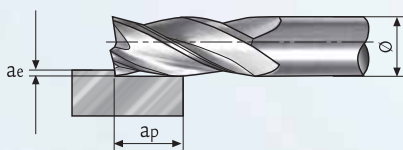
$a_e = 0,1 \times \varnothing$   
 $a_p = 0,5 \times \varnothing$  [FCF] = 2,0

$f_{z_{FCF}} = 2,0 \times f_z$

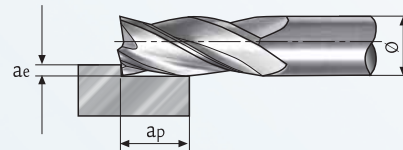
### FATTORE DI CORREZIONE:

End mills correction factor - Fräser Berichtigungsfaktor - Facteur de correction fraises - Factor de corrección fresas

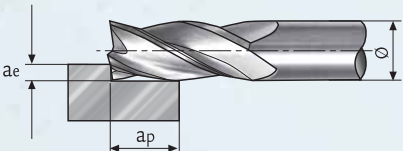
$a_e = 0,1 \text{ mm}$   
 $a_p = 1,5 \times \varnothing$  [FCF] = 2,0  $f_{z_{FCF}} = 2,0 \times f_z$



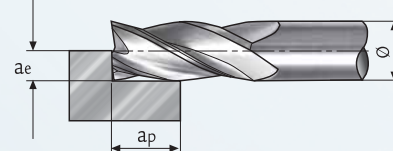
$a_e = 0,15 \times \varnothing$   
 $a_p = 1,5 \times \varnothing$  [FCF] = 1,5  $f_{z_{FCF}} = 1,5 \times f_z$



$a_e = 0,2 \times \varnothing$   
 $a_p = 1,0 \times \varnothing$  [FCF] = 1,0  $f_{z_{FCF}} = 1,0 \times f_z$



$a_e = 0,3 \times \varnothing$   
 $a_p = 1,0 \times \varnothing$  [FCF] = 0,7  $f_{z_{FCF}} = 0,7 \times f_z$



### FATTORE DI CORREZIONE:

End mills correction factor - Fräser Berichtigungsfaktor - Facteur de correction fraises - Factor de corrección fresas

# TECNICHE:

Technische Hinweise  
Informaciones técnicas

## PARAMETRI DI TAGLIO FRESE CILINDRICHE FRONTALI - MATERIALI DURI

CUTTING PARAMETER - STRAIGHT END MILLS - SOLID CARBIDE  
SCHNITTEDATEN - ZYLINDRISCHEN SCHAFTFRÄSERN - VHM  
PARAMÈTRES DE COUPE - FRAISES CYLINDRIQUES FRONTALES - CARBURE MONOBLOC  
PARÁMETROS DE CORTE - FRESAS FRONTALES DE MANGO CILÍNDRICO - METAL DURO INTEGRAL

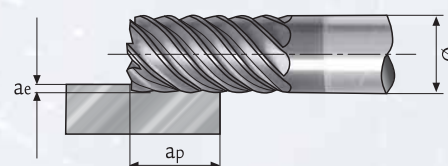
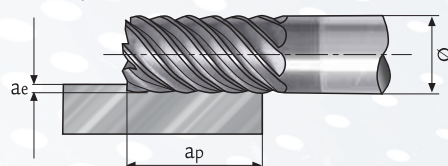
### Impegno utensile per fresatura laterale (ae)

Operating conditions of the tools when extent milling (ae)

Einsatzbedingungen der Werkzeuge beim Umfangsfräsen (ae)

Engagement outil pour fraisage latéral (ae)

Empeño herramienta para fresadura lateral (ae)



|      | ~35HRc   | ~45HRc   | ~55HRc   | ~65HRc   |
|------|----------|----------|----------|----------|
| ae = | 0,08 x Ø | 0,05 x Ø | 0,02 x Ø | 0,01 x Ø |
| ap = | 1,5 x Ø  | 1,0 x Ø  | 1,0 x Ø  | 1,0 x Ø  |

### FRESATURA LATERALE:

Extent milling, umfangsfräsen, fraisage latéral, fresado lateral

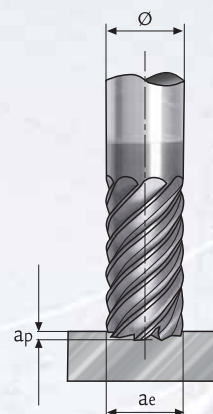
### Impegno utensile per fresatura frontale

Operating conditions of the tools with front milling

Einsatzbedingungen der Werkzeuge beim Stirnfräsen

Engagement outil pour fraisage en bout

Empeño herramienta para fresadura frontal



|      | 45 ~ 65HRc |
|------|------------|
| ae = | 1,0 x Ø    |
| ap = | 0,05 x Ø   |

### FRESATURA FRONTALE:

Front milling, Stirnfräsen, fraisage en bout, fresado frontal



# PARAMETRI DI TAGLIO

## Frese semisferiche e toriche - MATERIALI DURI

CUTTING PARAMETERS - Ball-nose and toric end mills - Hard materials  
 SCHNITTDATEN - Radiuskopierfräser und torusfräser - Hartstoffe  
 PARAMÈTRES DE COUPE - Fraise hémisphérique et fraise torique - Matières dures  
 PARÁMETROS DE CORTE - Fresas hemisféricas y tóricas - Materiales duros

# INFORMAZIONI

Technical instructions  
 Instructions techniques

## Valori per frese raggiate per operazioni standard

Values for taper mills with ball nose for standard applications

Anfangswert für Radiusfräser bei Standard Anwendungen

Valeurs pour fraises avec rayon pour opérations standard

Valores para fresas de cabeza esférica para empleos estándar

2

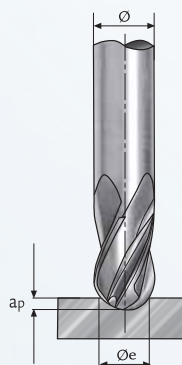
3

4

$$Z2 \text{ } a_p = < 0,03 \times \varnothing$$

$$Z3 \text{ } a_p = < 0,02 \times \varnothing$$

$$Z4 \text{ } a_p = < 0,015 \times \varnothing$$



### CALCOLO DEL DIAMETRO EFFETTIVO (Øe) FRESA SEMISFERICA

$$\varnothing_e = 2 \sqrt{a_p (\varnothing - a_p)}$$

Calculation of the effective cutting diameter (Øe) for ball-nose end mill  
 Berechnung des effektiven Schneiddurchmessers (Øe) für Radiuskopierfräser  
 Estimation du diamètre effectif (Øe) fraise hémisphérique  
 Cálculo de diámetro efectivo (Øe) para fresa hemisférica

## FRESATURA CON TESTA SEMISFERICA:

Front milling with ball-nose end mill, Stirnfräsen für Radiuskopierfräser, fraisage en bout fraise hémisphérique, fresado frontal de fresa esférica

## Valori per frese toriche per operazioni standard

Values for toric end mills for standard applications

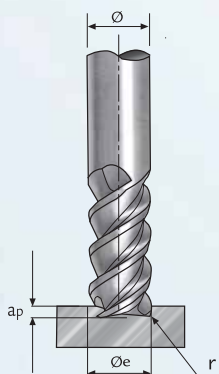
Anfangswert für Torusfräser bei Standard Anwendungen

Valeurs pour fraises torique pour opérations standard

Valores para fresas tóricas para empleos estándar

$$a_p = 0,02 \times \varnothing$$

r = Raggio fresa  
 End mill radius  
 Ø = Diametro fresa  
 End mill diameter  
 Øe = Diametro effettivo fresa  
 Real end mill diameter



### CALCOLO DEL DIAMETRO EFFETTIVO (Øe) FRESA TORICA

$$\varnothing_e = (\varnothing - 2r) + 2 \sqrt{a_p (2r - a_p)}$$

Calculation of the effective cutting diameter (Øe) for end mills with corner radius  
 Berechnung des effektiven Schneiddurchmessers (Øe) für Schaftfräser mit Eckenradius  
 Estimation du diamètre effectif (Øe) fraise torique  
 Cálculo de diámetro efectivo (Øe) para fresa tórica

## FRESATURA CON TESTA TORICA:

Front milling with toric end mills, Stirnfräsen für Torusfräser, fraisage en bout fraise torique, fresado frontal con fresa tórica

# TECNICHE:

Technische Hinweise  
Informaciones técnicas

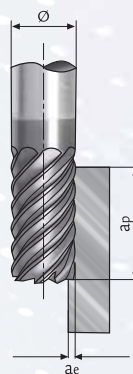
## PARAMETRI DI TAGLIO CERMET

CUTTING PARAMETERS - CERMET  
SCHNITTDATEN - CERMET  
PARAMÈTRES DE COUPE - CERMET  
PARAMETROS DE CORTE - CERMET

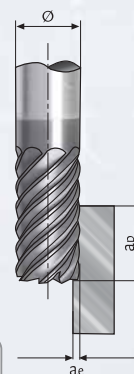


### Impegno utensile per fresatura laterale

Operating conditions of the tools when extent milling  
Einsatzbedingungen der Werkzeuge beim Umfangsfräsen  
Engagement outil pour fraisage latéral  
Empeño herramienta para fresadura lateral



$$\text{multi} \quad \begin{array}{l} a_e = 0,25 \text{ mm} \\ a_p = 1,5 \times \varnothing \end{array}$$



$$\text{Z4} \quad \begin{array}{l} a_e = 0,05 \text{ mm} \times \varnothing \\ a_p = 1,5 \times \varnothing \end{array}$$

### FRESATURA LATERALE:

Extent milling, Umfangsfräsen, fraisage latéral, fresado lateral

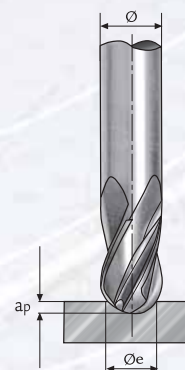
### Impegno utensile per fresatura frontale

Operating conditions of the tools with front milling  
Einsatzbedingungen der Werkzeuge beim Stirnfräsen  
Engagement outil pour fraisage en bout  
Empeño herramienta para fresadura frontal



$$\text{Z4} \quad a_p = < 0,15 \times \varnothing$$

$$\varnothing_e = 2 \sqrt{a_p (\varnothing - a_p)}$$



### FRESATURA CON TESTA SEMISFERICA:

Front milling with ball-nose end mill, Stirnfräsen für Radiuskopierfräser, fraisage en bout fraise hémisphérique, fresado frontal de fresa esférica

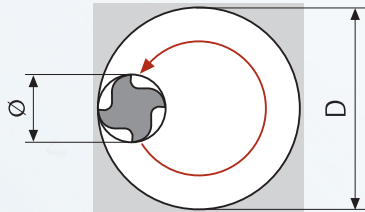
# PARAMETRI DI TAGLIO

## INFORMAZIONI GENERALI

CUTTING PARAMETERS - General Information  
 SCHNITTDATEN - Allgemeine Informationen  
 PARAMÈTRES DE COUPE - Informations générales  
 PARAMETROS DE CORTE - Informaciones generales

# INFORMAZIONI

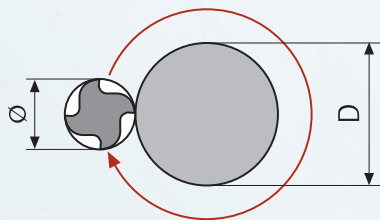
Technical instructions  
 Instructions techniques



$$V_{fM} = \frac{V_f \times (D - \varnothing)}{D} \text{ [mm/min]}$$

## CONTORNATURA INTERNA:

Internal contour, Innenkontour, contournage intérieur, interpolación interior



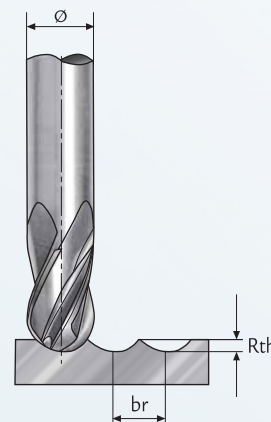
$$V_{fM} = \frac{V_f \times (D + \varnothing)}{D} \text{ [mm/min]}$$

## CONTORNATURA ESTERNA:

External contour, Außenkontour, contournage extérieur, interpolación exterior

$$R_{th} = \frac{\varnothing}{2} \sqrt{\frac{\varnothing^2 - br^2}{4}}$$

$$br = 2 \sqrt{R_{th} (\varnothing - R_{th})}$$



[Rth] = rugosità ottenuta in mm  
 Depth of roughness (mm), Rautiefe in mm, rugosité obtenue en mm, rugosidad obtenida en mm

[br] = passo o ampiezza tra i solchi  
 Line offset (mm), Zeilensprung in mm, pas ou amplitude entre les rainures, división o amplitud entre las ranuras

## CALCOLO DELLA RUGOSITÀ [RTH]:

Calculation of roughness depth, Berechnung der Rautiefe, calcul de la rugosité (Rth), cálculo de la rugosidad

# TECNICHE:

Technische Hinweise  
Informaciones tècnicas

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## NOTE

NOTES  
NOTIZEN  
NOTES  
NOTAS



# NOTE

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NOTAS



# Talicaarb

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