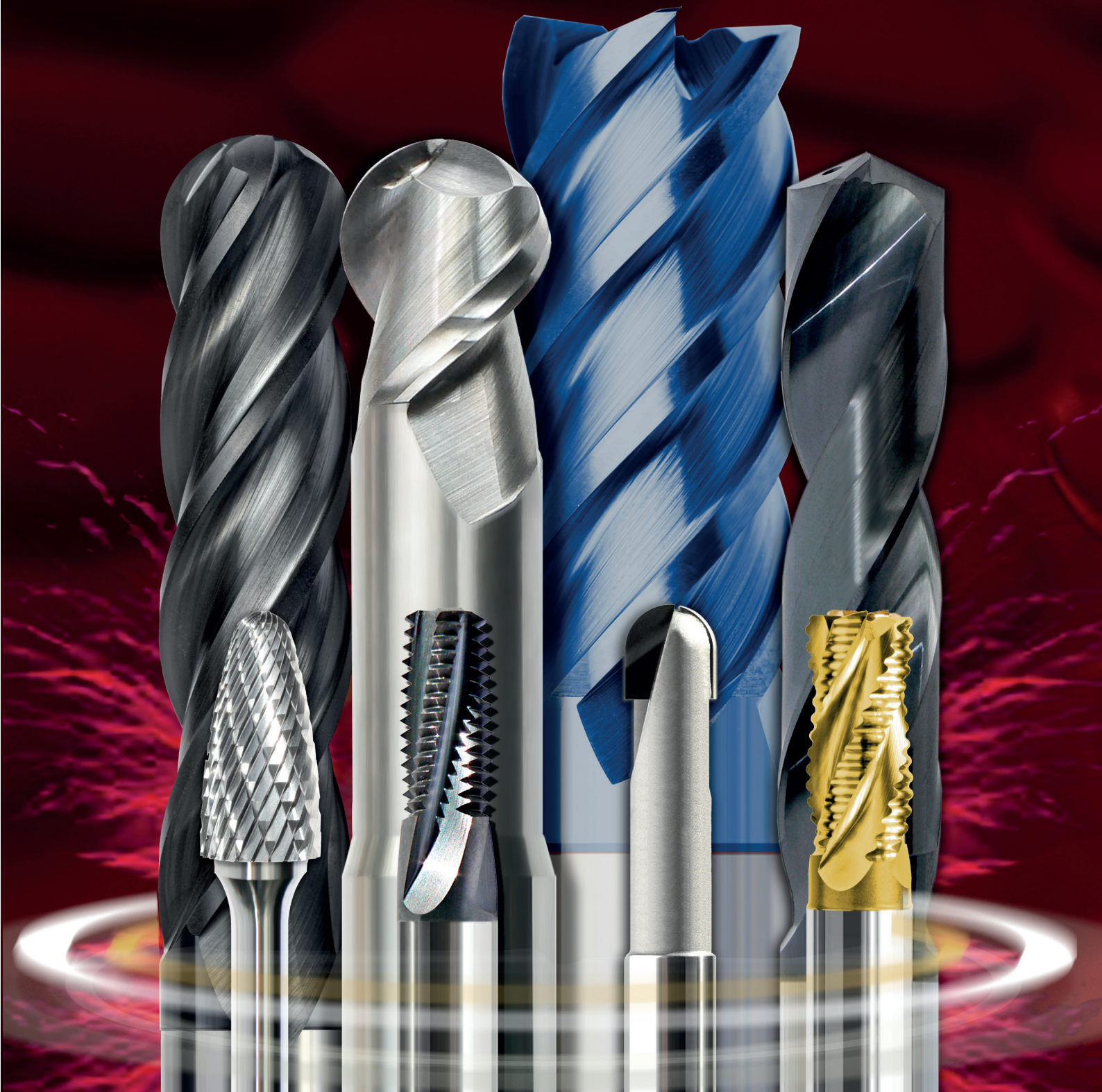
# Merlin Tools Ltd

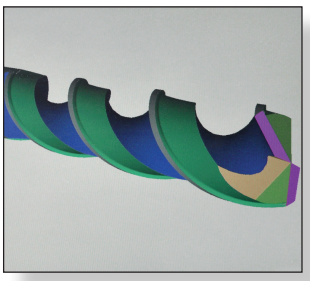
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Merlin Tools Ltd

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# Our Service



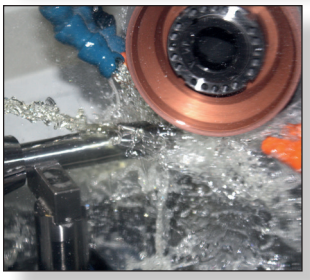
## Design

Our tools are designed using CAD then exported to 3D simulation software for virtual testing of the grinding process. Each grinding operation is highlighted in a different colour to give a full 3D representation of the tool. When the virtual model is perfected physical prototypes are ground to perfect the tool prior to full production



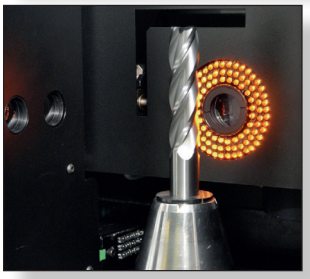
## Raw Material

All of our tools are manufactured using the highest quality raw materials with 90% tungsten and 10% cobalt micro-grain K30. The raw material passes through a centreless grinding system to ensure an exacting tolerance of h6.



## Manufacture

The Production System operates utilising simulators and measuring and grinding equipment to ensure our tools remain consistent across differing batch dates. The process starts with cyber grinding in a virtual environment before a test machine grinding is performed, once the stringent parameters are met full production is initiated.



## Inspection and Quality

Continuous batch testing on all the tools is performed using state of the art measurement diagnostics machines ensuring incredibly tight tolerances and products of the highest quality. A final manual inspection is performed during cleaning to ensure our tools are 100% quality controlled




## Despatch

We carry an extensive range of tools in stock ensuring a fast turn around on all orders with same day despatch on all standard products. Our Tools go through a final visual inspection before being carefully packed and despatched.

If you have any question regarding the production of our products please do not hesitate to call the team at Merlin Tools.

Merlin Tools Ltd

**Merlin Tools is committed to providing our customers with a cost effective solution to their cutting tool requirements.**
**In addition to our extensive range of tools we offer a comprehensive regrind, recoating and modification service.**
**Call our sales team to discuss your requirements.**

# 01509 610300

**Below are some visual aids to assist you with the understanding and navigation of this catalogue.**

Technical information for a tool can be found on the page indicated





Slotting, Side cut, Plunging


Plunging only


Plunging and Side cut


Slotting & Side cut


Side Cut only


Corner radius & Tolerance



International Specification



Coating


Edge pitch angle


Helix angle



Pitch Ripper finish



Shank type



Incident point angle



Material



Flutes


Coolant



Non Centre Cutting

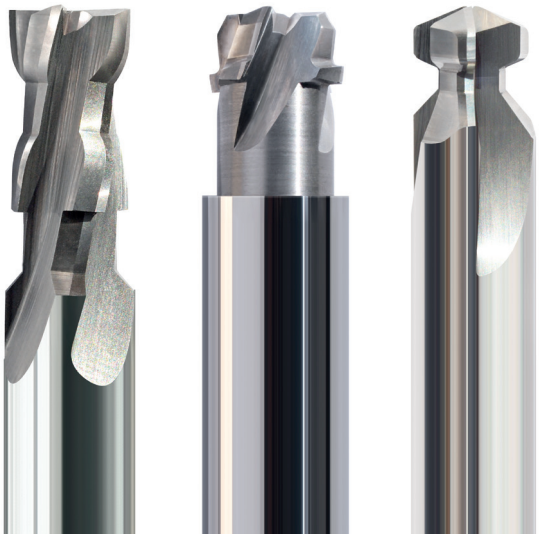


# Specials, Regrinds and Modification

**At Merlin Tools we pride ourselves on understanding the needs of our clients. We know you expect quality and precision not only from our impressive range of ex stock tooling but also when you need something special.**

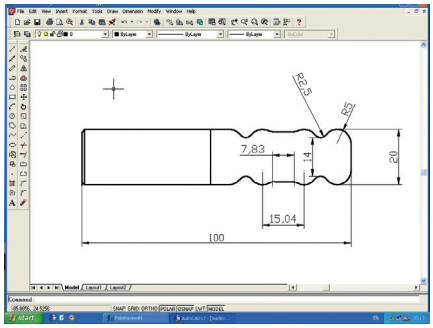
**Merlin Tools provides a full service capability that is dedicated to providing you with the highest quality in precision manufactured cutting tools to meet the most demanding requirements.**

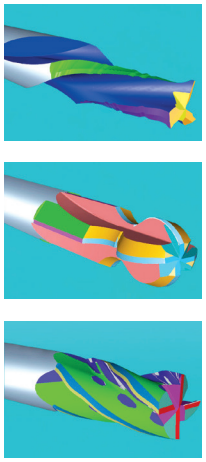
**Our bespoke tool manufacturing service builds on this reputation and provides you with the exacting precision performance tool tailored for your specific needs.**



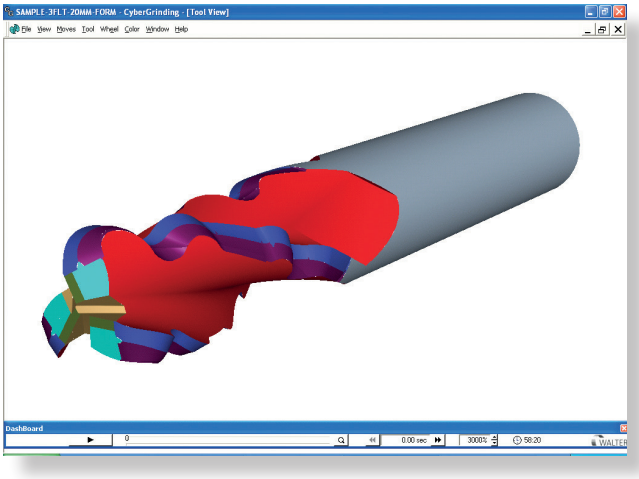
## Tool Design, Simulation and Manufacture

The tool development process in many ways is straight forward. The careful and precise interpretation of the component profile is transferred to CAD where adjustments can be more easily applied. Our knowledge of materials, machining speeds and tolerances are used to calculate a precise cutting profile ready to be transposed into full CAD simulation.

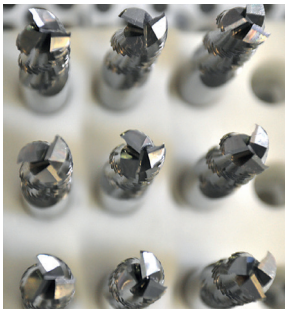


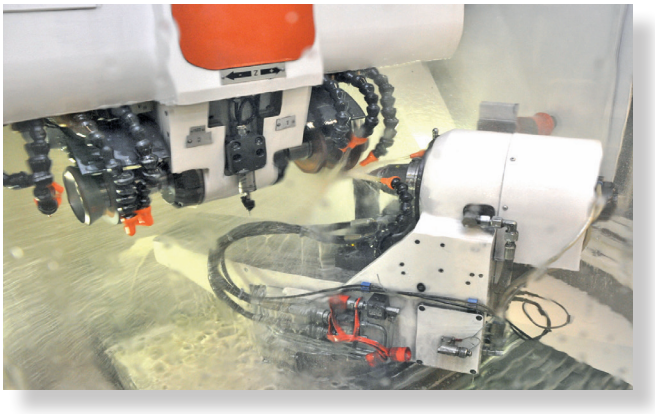



The CAD simulation is a full 3 dimensional image of the tool that can be rotated and positioned in a virtual spatial environment for client approval. It is fully colour coded for simple designation of depth and cutting angles. Working closely with our clients, we refine the design of the tool prior to manufacture.




Our CNC manufacturing equipment is state of the art. These machines calibrate perfectly with our CAD software to produce flawless precision grinding. The fully automated system can run 24/7 producing quantities of high quality, consistently accurate tools to your specification at highly competitive prices.





# Specials, Regrinds and Modification

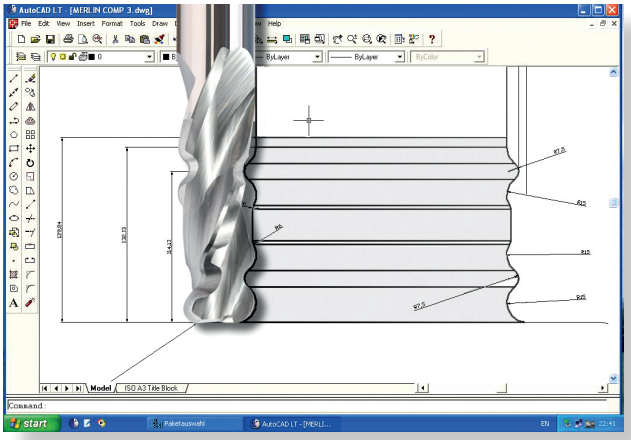
## Tool Inspection





Full inspection takes place at key stages in the production process. Careful assessment of the tool, both through state-of-the art automated inspection and traditional craftsman analysis, ensure that the level of precision we have come to be recognised for is achieved every time.

*FromDrawing to Tool*





## Modification of Standard Stock Tools

Merlin Tools will modify one of our existing stock tools to fit the job, if it's appropriate to do so, saving on the cost of our full design and manufacture service.
Call or email our technical team who will be happy to discuss your options with you.

**Radius modification**
**Chamfer modification**
**Steps added to standard drills**
**Profiles added to standard drills**
**Diameter modifications**
**Shank reduction**
**Neck Relief**



**A full coating service is available to all modified tools.**

## A Full Tool Rescue Service

Our special Tool Rescue service offers the opportunity for us to Regrind, Recondition and Repair your existing tools. This service will breath new life into those tools that have worked so hard for you and produce a cost effective machining solution, returning tools to you as new. Original coating can be re-applied to tools on request.

A Tool Rescue box is available upon request. Whenever you need to use the service give our sales team a call and we will arrange courier collection of your Tool Box for delivery to our technical department.







PAGE 21 Solid Carbide Endmills Bright Finish, TiALN Coated and Corner Radius

PAGE 69 Solid Carbide Aluminium, Ultra-High Performance and Corner Radius

PAGE 119 PCD & CVD Coated Crystalline Diamond Cutting Tools

PAGE 129 Powder Metal ASP52 HSSE 8% Cobalt

PAGE 157 Solid Carbide Drills & Application Tooling

PAGE 193 Solid Carbide Thread Mills & Machine Taps HSSE & Powder Metal ASP2023

PAGE 211 Tungsten Carbide Burrs Standard, Double, Aluminium Cut TiALN Coated and Sets

PAGE 225 ER Collets & Chucks Toolholders & Accessories

PAGE 259 Technical Information

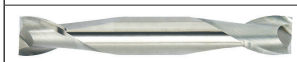
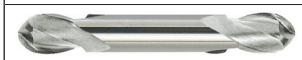
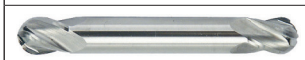
Merlin Tools Ltd

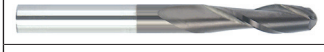
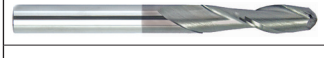
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# Product Range Index

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| **Solid Carbide Endmills Bright Finish *TiALN* and Corner Radius** | | | | | | | | | | |
|  | 2 Flute Standard Length | 211 | 22 | • | • | • | • | • | | • |
|  | 2 Flute Standard Length TiALN | 214 | 22 | • | • | • | • | • | • | • |
|  | 3 Flute Standard Length | 311 | 23 | • | • | • | • | • | | • |
|  | 3 Flute Standard Length TiALN | 314 | 23 | • | • | • | • | • | • | • |
|  | 4 Flute Standard Length | 411 | 24 | • | • | • | • | • | | • |
|  | 4 Flute Standard Length TiALN | 414 | 24 | • | • | • | • | • | • | • |
|  | 2 Flute Standard Length Imperial | 211 | 25 | • | • | • | • | • | | • |
|  | 2 Flute Standard Length Imperial TiALN | 214 | 25 | • | • | • | • | • | • | • |
|  | 3 Flute Standard Length Imperial | 311 | 26 | • | • | • | • | • | | • |
|  | 3 Flute Standard Length Imperial TiALN | 314 | 26 | • | • | • | • | • | • | • |
|  | 4 Flute Standard Length Imperial | 411 | 27 | • | • | • | • | • | | • |
|  | 4 Flute Standard Length Imperial TiALN | 414 | 27 | • | • | • | • | • | • | • |
|  | 2 Flute Corner Radius Standard Length TiALN | 214R | 28 | • | • | • | • | • | • | • |
|  | 3 Flute Corner Radius Standard Length TiALN | 314R | 29 | • | • | • | • | • | • | • |
|  | 4 Flute Corner Radius Standard Length TiALN | 414R | 30 | • | • | • | • | • | • | • |
|  | 2 Flute Corner Radius Long Length TiALN | 740R | 31 | • | • | • | • | • | • | • |
|  | 4 Flute Corner Radius Long Length TiALN | 745R | 32 | • | • | • | • | • | • | • |
|  | 2 Flute Corner Radius Long Length - Neck Relief TiALN | 750R | 33 | • | • | • | • | • | • | • |
|  | 4 Flute Corner Radius Long Length - Neck Relief TiALN | 755R | 34 | • | • | • | • | • | • | • |
|  | 2 Flute Ball Nosed Standard Length | 216 | 35 | • | • | • | • | • | | • |
|  | 2 Flute Ball Nosed Standard Length TiALN | 219 | 35 | • | • | • | • | • | • | • |
|  | 3 Flute Ball Nosed Standard Length | 316 | 36 | • | • | • | • | • | | • |
|  | 3 Flute Ball Nosed Standard Length TiALN | 319 | 36 | • | • | • | • | • | • | • |
|  | 4 Flute Ball Nosed Standard Length | 416 | 37 | • | • | • | • | • | | • |
|  | 4 Flute Ball Nosed Standard Length TiALN | 419 | 37 | • | • | • | • | • | • | • |
|  | 2 Flute Ball Nosed Standard Length Imperial | 216 | 38 | • | • | • | • | • | | • |
|  | 2 Flute Ball Nosed Standard Length Imperial TiALN | 219 | 38 | • | • | • | • | • | • | • |
|  | 3 Flute Ball Nosed Standard Length Imperial | 316 | 39 | • | • | • | • | • | | • |

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| **Solid Carbide Endmills Bright Finish *TiALN* and Corner Radius** | | | | | | | | | | |
|  | 3 Flute Ball Nosed Standard Length Imperial TiALN | 319 | 39 | • | • | • | • | • | • | • |
|  | 4 Flute Ball Nosed Standard Length Imperial | 416 | 40 | • | • | • | • | • | | • |
|  | 4 Flute Ball Nosed Standard Length Imperial TiALN | 419 | 40 | • | • | • | • | • | • | • |
|  | 2 Flute Stub Length | 211S | 41 | • | • | • | • | • | | • |
|  | 2 Flute Stub Length TiALN | 214S | 41 | • | • | • | • | • | • | • |
|  | 3 Flute Stub Length | 311S | 42 | • | • | • | • | • | | • |
|  | 3 Flute Stub Length TiALN | 314S | 42 | • | • | • | • | • | • | • |
|  | 4 Flute Stub Length | 411S | 43 | • | • | • | • | • | | • |
|  | 4 Flute Stub Length TiALN | 414S | 43 | • | • | • | • | • | • | • |
|  | 2 Flute Ball Nosed Stub Length | 216S | 44 | • | • | • | • | • | | • |
|  | 2 Flute Ball Nosed Stub Length TiALN | 219S | 44 | • | • | • | • | • | • | • |
|  | 3 Flute Ball Nosed Stub Length | 316S | 45 | • | • | • | • | • | | • |
|  | 3 Flute Ball Nosed Stub Length TiALN | 319S | 45 | • | • | • | • | • | • | • |
|  | 4 Flute Ball Nosed Stub Length | 416S | 46 | • | • | • | • | • | | • |
|  | 4 Flute Ball Nosed Stub Length TiALN | 419S | 46 | • | • | • | • | • | • | • |
|  | 2 Flute Double Ended Stub Length | 251 | 47 | • | • | • | • | • | | • |
|  | 2 Flute Double Ended Stub Length TiALN | 259 | 47 | • | • | • | • | • | • | • |
|  | 3 Flute Double Ended Stub Length | 351 | 48 | • | • | • | • | • | | • |
|  | 3 Flute Double Ended Stub Length TiALN | 359 | 48 | • | • | • | • | • | • | • |
|  | 4 Flute Double Ended Stub Length | 451 | 49 | • | • | • | • | • | | • |
|  | 4 Flute Double Ended Stub Length TiALN | 459 | 49 | • | • | • | • | • | • | • |
|  | 2 Flute Double Ended Stub Length Imperial | 251 | 50 | • | • | • | • | • | | • |
|  | 4 Flute Double Ended Stub Length Imperial | 451 | 50 | • | • | • | • | • | | • |
|  | 2 Flute Double Ended - Ball Nosed Stub Length | 261 | 51 | • | • | • | • | • | | • |
|  | 2 Flute Double Ended - Ball Nosed Stub Length TiALN | 269 | 51 | • | • | • | • | • | • | • |
|  | 3 Flute Double Ended - Ball Nosed Stub Length | 361 | 52 | • | • | • | • | • | | • |
|  | 3 Flute Double Ended - Ball Nosed Stub Length TiALN | 369 | 52 | • | • | • | • | • | • | • |
|  | 4 Flute Double Ended - Ball Nosed Stub Length | 461 | 53 | • | • | • | • | • | | • |

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| **Solid Carbide Endmills Bright Finish *TiALN* and Corner Radius** | | | | | | | | | | |
|  | 4 Flute Double Ended - Ball Nosed Stub Length TiALN | 469 | 53 | • | • | • | • | • | • | • |
|  | 2 Flute Long Length | 221 | 54 | • | • | • | • | • | | • |
|  | 2 Flute Long Length TiALN | 229 | 54 | • | • | • | • | • | • | • |
|  | 3 Flute Long Length | 321 | 55 | • | • | • | • | • | | • |
|  | 3 Flute Long Length TiALN | 329 | 55 | • | • | • | • | • | • | • |
|  | 4 Flute Long Length | 421 | 56 | • | • | • | • | • | | • |
|  | 4 Flute Long Length TiALN | 429 | 56 | • | • | • | • | • | • | • |
|  | 2 Flute Long Length Imperial | 221 | 57 | • | • | • | • | • | | • |
|  | 2 Flute Long Length Imperial TiALN | 229 | 57 | • | • | • | • | • | • | • |
|  | 4 Flute Long Length Imperial | 421 | 58 | • | • | • | • | • | | • |
|  | 4 Flute Long Length Imperial TiALN | 429 | 58 | • | • | • | • | • | • | • |
|  | 2 Flute Ball Nosed Long Length | 236 | 59 | • | • | • | • | • | | • |
|  | 2 Flute Ball Nosed Long Length TiALN | 239 | 59 | • | • | • | • | • | • | • |
|  | 3 Flute Ball Nosed Long Length | 336 | 60 | • | • | • | • | • | | • |
|  | 3 Flute Ball Nosed Long Length TiALN | 339 | 60 | • | • | • | • | • | • | • |
|  | 4 Flute Ball Nosed Long Length | 436 | 61 | • | • | • | • | • | | • |
|  | 4 Flute Ball Nosed Long Length TiALN | 439 | 61 | • | • | • | • | • | • | • |
|  | 2 Flute Ball Nosed Long Length Imperial | 236 | 62 | • | • | • | • | • | | • |
|  | 2 Flute Ball Nosed Long Length Imperial TiALN | 239 | 62 | • | • | • | • | • | • | • |
|  | 4 Flute Ball Nosed Long Length Imperial | 436 | 63 | • | • | • | • | • | | • |
|  | 4 Flute Ball Nosed Long Length Imperial TiALN | 439 | 63 | • | • | • | • | • | • | • |
|  | 2 Flute Extra Long Length | 222 | 64 | • | • | • | • | • | | • |
|  | 2 Flute Extra Long Length TiALN | 299 | 64 | • | • | • | • | • | • | • |
|  | 4 Flute Extra Long Length | 444 | 65 | • | • | • | • | • | | • |
|  | 4 Flute Extra Long Length TiALN | 499 | 65 | • | • | • | • | • | • | • |
|  | 2 Flute Ball Nosed Extra Long Length | 226 | 66 | • | • | • | • | • | | • |
|  | 2 Flute Ball Nosed Extra Long Length TiALN | 229 | 66 | • | • | • | • | • | • | • |
|  | 4 Flute Ball Nosed Extra Long Length | 446 | 67 | • | • | • | • | • | | • |
|  | 4 Flute Ball Nosed Extra Long Length TiALN | 449 | 67 | • | • | • | • | • | • | • |

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| **Solid Carbide Aluminium, Ultra-High Performance and Corner Radius Range.** | | | | | | | | | | |
|  | 3 Flute 60° Hi-Helix Standard Length | 650 | 70 | | • | • | • | | | |
|  | 3 Flute 60° Hi-Helix Standard Length TiALN | 659 | 70 | | • | • | • | | | |
|  | 5 Flute 45° Helix Standard Length | 520 | 71 | • | • | | • | • | | |
|  | 5 Flute 45° Helix Standard Length TiALN | 525 | 71 | • | • | | • | • | • | |
|  | 6 Flute 30° Helix Standard Length | 660 | 72 | • | • | | • | • | | |
|  | 6 Flute 30° Helix Standard Length TiALN | 665 | 72 | • | • | | • | • | • | |
|  | 2 Flute 15° Helix Pocket Mill Ball Nosed Long Length | 670 | 73 | • | • | • | • | • | | • |
|  | 2 Flute 15° Helix Pocket Mill Ball Nosed Long Length TiALN | 675 | 73 | • | • | • | • | • | • | • |
|  | 3 Flute Roughing Mill Standard Length | 530 | 74 | • | • | • | • | • | | • |
|  | 3 Flute Roughing Mill Standard Length TiALN | 539 | 74 | • | • | • | • | • | | • |
|  | 4 Flute Roughing Mill Standard Length | 600 | 75 | • | • | | • | • | | |
|  | 4 Flute Roughing Mill Standard Length TiALN | 609 | 75 | • | • | | • | • | • | |
|  | 3 Flute Roughing Mill for Aluminium Standard Length | 603 | 76 | • | • | • | • | • | | • |
|  | 3 Flute Roughing Mill for Aluminium Standard Length ZrN | 699 | 76 | • | • | • | • | • | | • |
|  | 2 Flute 55° Helix for Aluminium Standard Length | 254 | 77 | | | • | | | | |
|  | 3 Flute 55° Helix for Aluminium Standard Length | 356 | 77 | | | • | | | | |
|  | 3 Flute 55° Helix for Aluminium Long Length | 357 | 78 | | | • | | | | |
|  | 2 Flute 40° Helix for Aluminium Long Reach | 255 | 79 | | | • | | | | |
|  | 2 Flute 40° Helix for Aluminium Extra Long Reach | 255XL | 79 | | | • | | | | |
|  | 2 Flute 50° Helix for Aluminium Long Reduced Shank | 256 | 80 | | | • | | | | |
|  | 3 Flute 40° Helix for Aluminium Long Reach | 355 | 80 | | | • | | | | |
|  | 2 Flute 40° Helix for Aluminium Long Reach with Coolant | 255C | 81 | | | • | | | | |
|  | 2 Flute 40° Helix for Aluminium Long Reach Non Waterline | 255WL | 81 | | | • | | | | |
|  | 2 Flute 55° Helix for Aluminium Ball Nosed Standard Length | 260 | 82 | | | • | | | | |
|  | 2 Flute 50° Helix for Aluminium Ball Nosed Long Reach | 257 | 82 | | | • | | | | |
|  | 2 Flute 50° Helix for Aluminium Ball Nosed Extra Long Reach | 257XL | 83 | | | • | | | | |
|  | 2 Flute 50° Helix for Aluminium Ball Nosed Long Reach Reduced Shank | 258 | 83 | | | • | | | | |

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|---|---|---|---|---|---|---|---|---|---|---|
| **Solid Carbide Aluminium, Ultra-High Performance and Corner Radius Range.** | | | | | | | | | | |
|  | 2 Flute 55° Helix for Aluminium Corner Radius Standard Length | 254R | 84 | | | • | | | | |
|  | 3 Flute 55° for Aluminium Corner Radius Standard Length | 356R | 85 | | | • | | | | |
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|  | 2 Flute 40° Helix for Aluminium Corner Radius Long Reach | 255R | 87 | | | • | | | | |
|  | 2 Flute 45° Hi-Helix for Aluminium Standard Length | 625 | 88 | | | • | | | | |
|  | 2 Flute 40° Ali-Carb for Aluminium Standard Length | 253 | 88 | | | • | | | | |
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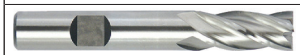
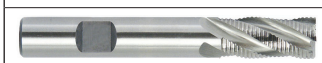
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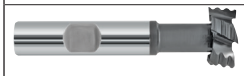
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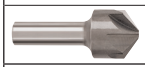
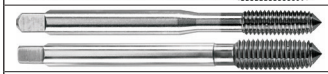
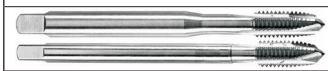
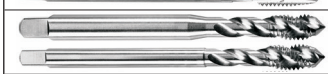
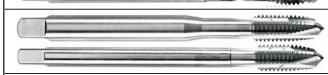
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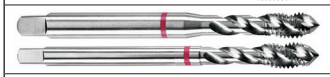
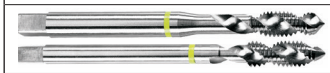
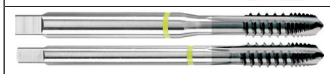
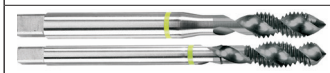
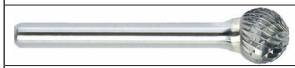
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|  | 3 Flute Drill 30° Helix Metric<br>130° Point Self Centering | 105 | **184** | • | • | • 6.1-6.3<br>7.1-8.2 | • | • | | |
|  | Solid Carbide Rod h6<br>Standard & Long Length | R | **185** | | | | | | | |

| | Description | Series | Page | P Steel | M Stainless Steel | N Aluminium & Non Ferrous | S Titanium & Heat Resistant Alloys | K Cast Iron | H Hardened Steel | Cermet |
|---|---|---|---|---|---|---|---|---|---|---|
| **Solid Carbide Drills & Application Tooling** | | | | | | | | | | |
|  | Straight Shank Reamer 10° Helix HSSE 5% | 2060 | 186 | • | • | • | • | • | • | • |
|  | Straight Shank Reamer 10° Helix HSSE 5% TiALN | 2060 | 187 | • | • | • | • | • | • | • |
|  | Straight Shank Reamer 45° Helix HSSE 5% | 2064 | 188 | • | • | • | • | • | • | • |
|  | Straight Shank Reamer 45° Helix HSSE 5% TiALN | 2064 | 188 | • | • | • | • | • | • | • |
|  | HSS Multi-Flute 60° Countersink Regular Length | 2550 | 189 | • | • | • | • | • | • | • |
|  | 90° Countersink | 2572 | 190 | • | • | • | • | • | • | • |
|  | 90° Countersink | 2573 | 190 | • | • | • | • | • | • | • |
|  | 3 Flute HSS 90° Countersink Regular Length | 2575 | 191 | • | • | • | • | • | • | • |
|  | HSS Multi-Flute Countersink 120° Regular Length | 2580 | 191 | • | • | • | • | • | • | • |
| **Solid Carbide Thread Mills & Machine Taps HSSE & ASP2023** | | | | | | | | | | |
|  | Thread Mill 15° Spiral Flute AlTiN NPT | 920 | 194 | • | • | • | • | • | • | |
|  | Thread Mill 15° Spiral Flute AlTiN NPTF | 930 | 194 | • | • | • | • | • | • | |
|  | Thread Mill 15° Spiral Flute AlTiN MF | 960 | 195 | • | • | • | • | • | • | |
|  | Thread Mill 15° Spiral Flute AlTiN M | 970 | 195 | • | • | • | • | • | • | |
|  | Thread Mill 15° Spiral Flute AlTiN UNF | 940 | 196 | • | • | • | • | • | • | |
|  | Thread Mill 15° Spiral Flute AlTiN UNC | 950 | 196 | • | • | • | • | • | • | |
|  | Spiral Point Metric HSSE (M35) | 8110 | 197 | • | | • | | • | | |
|  | Spiral Flute Metric HSSE (M35) | 8120 | 197 | • | | • | | • | | |
|  | Fluteless Metric HSSE (M35) TiCN | 8130 | 198 | Forming Taps for materials with Elongation >12% | | | | | | |
|  | Fluteless Metric HSSE (M35) TiCN | 8140 | 198 | | | | | | | |
|  | Spiral Point Metric HSSE (M35) FINE | 8150 | 199 | • | | • | | • | | |
|  | Spiral Flute Metric HSSE (M35) FINE | 8160 | 199 | • | | • | | • | | |
|  | Spiral Point UNC HSSE (M35) | 8170 | 200 | • | | • | | • | | |
|  | Spiral Flute UNC HSSE (M35) | 8180 | 200 | • | | • | | • | | |
|  | Spiral Point UNF HSSE (M35) | 8190 | 201 | • | | • | | • | | |
|  | Spiral Flute UNF HSSE (M35) | 8200 | 201 | • | | • | | • | | |
|  | Spiral Point G HSSE (M35) | 8210 | 202 | • | | • | | • | | |
|  | Spiral Flute G HSSE (M35) | 8220 | 202 | • | | • | | • | | |

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| Merlin Tools Ltd | Description | Series | Page | P Steel | M Stainless Steel | N Aluminium & Non Ferrous | S Titainum & Heat Resistant Alloys | K Cast Iron | H Hardened Steel | Cermet |
|---|---|---|---|---|---|---|---|---|---|---|
| **Machine Taps HSSE & ASP2023** | | | | | | | | | | |
|  | Straight Flute BSPT HSSE (M35) | 8230 | 203 | • | | • | | • | | |
|  | Straight Flute NPT HSSE (M35) | 8240 | 203 | • | | • | | • | | |
|  | Spiral Point Metric HSSEX (ASP2023) VAP | 9110 | 204 | • | • | | • | | | |
|  | Spiral Flute Metric HSSEX (ASP2023) VAP | 9120 | 204 | • | • | | • | | | |
|  | Spiral Point Metric HSSE (ASP2023) | 9130 | 205 | • | | | | • | | |
|  | Spiral Flute Metric HSSEX (ASP2023) | 9140 | 205 | • | | | | • | | |
|  | Spiral Point Metric HSSEX (ASP2023) TiALN | 9150 | 206 | • | • | | | • | | |
|  | Spiral Flute Metric HSSEX (ASP2023) TiALN | 9160 | 206 | • | • | | | • | | |
|  | Straight Flute Metric HSSE (M35) NIT | 9170 | 207 | | | | | • | | |
|  | Straight Flute Metric HSSE (M35) TiCN | 9180 | 207 | | | | | • | | |
|  | Straight Flute Metric HSSE (M35) | 9190 | 208 | | | • | | | | |
|  | Spiral Point Metric HSSE (M35) | 9200 | 209 | | | • | | | | |
|  | Spiral Flute Metric HSSE (M35) | 9210 | 209 | | | • | | | | |
|  | Spiral Point Metric HSSE (M35) CrN | 9220 | 210 | | | • | | | | |
|  | Spiral Flute Metric HSSE (M35) CrN | 9230 | 210 | | | • | | | | |
| **Tungsten Carbide Burrs** | | | | | | | | | | |
|  | Cylinder - No End Cut, Standard Double and Double-TiALN Cut | A | 212 | • | • | | • | • | • | |
|  | Cylinder - End Cut, Standard Double and Double-TiALN Cut | B | 212 | • | • | | • | • | • | |
|  | Cone - Standard, Double and Double-TiALN Cut | M | 213 | • | • | | • | • | • | |
|  | Ball Nosed Cylinder - Standard, Double and Double-TiALN Cut | C | 213 | • | • | | • | • | • | |
|  | Ball Nosed Cone - Standard, Double and Double-TiALN Cut | L | 214 | • | • | | • | • | • | |
|  | Oval - Standard, Double and Double-TiALN Cut | E | 214 | • | • | | • | • | • | |
|  | Tree - Standard, Double and Double-TiALN Cut | G | 215 | • | • | | • | • | • | |
|  | Ball - Standard, Double and Double-TiALN Cut | D | 215 | • | • | | • | • | • | |
|  | Ball Nosed Tree - Standard, Double and Double-TiALN Cut | F | 216 | • | • | | • | • | • | |
|  | Flame - Standard, Double and Double-TiALN Cut | H | 216 | • | • | | • | • | • | |

| Merlin Tools Ltd | Description | Series | Page | P Steel | M Stainless Steel | N Aluminium & Non Ferrous | S Titainum & Heat Resistant Alloys | K Cast Iron | H Hardened Steel | Cermet |
|---|---|---|---|---|---|---|---|---|---|---|
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|  | Ball Nosed Cylinder for Aluminium | C | 218 | | | • | | | | |
|  | Ball for Aluminium | D | 218 | | | • | | | | |
|  | Ball Nosed Cone for Aluminium | L | 218 | | | • | | | | |
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|  | Cylinder End Cut for Aluminium | B | 219 | | | • | | | | |
|  | Cylinder No End Cut for Aluminium | A | 219 | | | • | | | | |
|  | Extra long - Standard & Double Cut Burrs All shapes | XL | 219 | • | • | | • | • | • | |
|  | Tyre Burrs | TB | 220 | | | | | | | |
|  | 5 piece Burr Set - Double Cut & Double cut TiALN | MB | 221 | • | • | | • | • | • | |
| | 10 piece Burr Set - Double Cut & Double cut TiALN | MB | 222 | • | • | | • | • | • | |
| | 5 piece Burr Set for Aluminium | MB | 223 | | | • | | | | |
| | Miniature Burrs - 10 piece set Double Cut | MB | 223 | • | • | | • | • | • | |

**ER Collets & Chucks Toolholders & Accessories**

**ER Collets DIN 6499-B**



| | | | | | |
|---|---|---|---|---|---|
| ER 8 Collets General, High & Top Accuracy | ER 8 | 226 | ER 25 Collets General, High & Top Accuracy | ER 25 | 230 |
| ER 11 Collets General, High & Top Accuracy | ER 11 | 227 | ER 32 Collets General, High & Top Accuracy | ER 32 | 231 |
| ER 16 Collets General, High & Top Accuracy | ER 16 | 228 | ER 40 Collets General, High & Top Accuracy | ER 40 | 232 |
| ER 20 Collets General, High & Top Accuracy | ER 20 | 229 | ER 50 Collets General, High & Top Accuracy | ER 50 | 233 |

**ER Collet Sets**

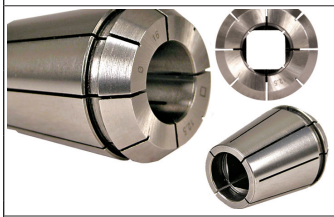


| | | | | | |
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**ER Collets & Chucks Toolholders & Accessories**

**ER Tapping Collets DIN 6499-B**



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| ER 20 Tapping Collets | ERT20 | 238 | ER 40 Tapping Collets | ERT40 | 239 |
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**ER Tapping Collet Sets**



| | | | | | |
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| ERT 16 - 10 Piece Set | ERT16 SET | 240 | ERT 32 - 18 Piece Set | ERT32 SET | 240 |
| ERT 20 - 13 Piece Set | ERT20 SET | 240 | ERT 40 - 19 Piece Set | ERT40 SET | 240 |
| ERT 25 - 15 Piece Set | ERT25 SET | 240 | | | |

**ER Through Coolant Sealed Collets**



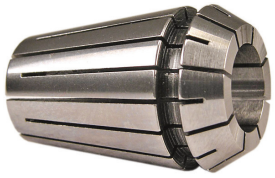
| | | | | | |
|---|---|---|---|---|---|
| Through Coolant Sealed Collets General purpose ER 16, 20, 25,32,40 | ERC | 241 | Through Coolant Sealed Collets TOPAC Top Accuracy ER 16, 20, 25,32,40 | ERC | 241 |
| Through Coolant Sealed Collets Higher Accuracy ER 16, 20, 25,32,40 | ERC | 241 | | | |

**ER Through Coolant Sealed Collet Sets**



| | | | | | |
|---|---|---|---|---|---|
| ERC 16 - 8 Piece Set | ERC16 SET | 242 | ERC 32 - 18 Piece Set | ERC32 SET | 242 |
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| | | | | | |
|---|---|---|---|---|---|
| Imperial Precision Collets General purpose ER 8, 11,16, 20, 25, 32, 40 | ER + size | 243 | Imperial Precision Collets TOPAC Top Accuracy ER 8, 11,16, 20, 25, 32, 40 | ER + size | 244 |
| Imperial Precision Collets Higher Accuracy ER 8, 11,16, 20, 25, 32, 40 | ER + size | 243 | | | |

**Imperial ER Through Coolant Sealed Collets**



| | | | | | |
|---|---|---|---|---|---|
| Imperial Through coolant sealed collets General purpose ER 16, 20, 25,32,40 | IMP ERC | 245 | Imperial Through coolant sealed collets TOPAC Top Accuracy ER 16, 20, 25,32,40 | IMP ERC | 245 |
| Imperial Through coolant sealed collets, Higher Accuracy ER 16, 20, 25,32,40 | IMP ERC | 245 | | | |

**Toolholders and Accessories**



| | | | | | |
|---|---|---|---|---|---|
| Locknuts | NER | 246 | Face Mill / Shell Mill Adaptors BT DIN ISO | FM | 252 253 |
| Spanners | SPER | 247 | Weldon Adaptors BT DIN ISO | W | 254 255 |
| Pull Studs | PS | 249 | Morse Taper Adaptors BT DIN ISO | MT | 256 |
| Collet Chucks, BT DIN ISO HSK | ER | 249 250 | Straight Shank Toolholders | ER | 257 |
| Drill Chuck adaptors, BT DIN ISO | B | 251 | Accessories | | 258 |

| | | | | | |
|---|---|---|---|---|---|
| Technical Information | TI PAGE | 259 | | | |

# Solid Carbide Endmills

## Range
Stub, Standard, Long Length, Extra Long Length and Double-Ended

## Size
Metric: 1mm through to 25mm
Imperial: 1/32" through to 1"

## Finish
All tools are avaliable in Bright Finish and TiALN Coated

## Options
Tools are available in 2, 3 and 4 Flute, Ball Nosed, Square End, Corner Radius and Neck Relief

## Delivery
Over 150,00 tools available from stock for Same-Day despatch



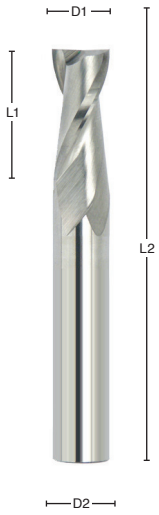
Series 211

# Solid Carbide General Purpose - Bright Finish
# Centre Cutting Slot-Drills 30° Helix
# Micro-grain K30 2-flute Standard



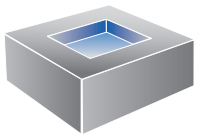

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**Tolerances:**
D1 +0.00/-0.051mm
D2 h6




| Cutter Dia-D1 | Shank Dia-D2 | FL L1 | OAL L2 | Part Number |
|---|---|---|---|---|
| 1 | 3 | 3 | 38 | 211 -10301 |
| 1.5 | 3 | 5 | 38 | 211 -10302 |
| 2 | 3 | 6 | 38 | 211 -10303 |
| 2.5 | 3 | 7 | 38 | 211 -10304 |
| 3 | 3 | 12 | 38 | 211 -10305 |
| 3.5 | 4 | 12 | 50 | 211 -10306 |
| 4 | 4 | 14 | 50 | 211 -10307 |
| 4.5 | 5 | 14 | 50 | 211 -10308 |
| 5 | 5 | 16 | 50 | 211 -10309 |
| 6 | 6 | 19 | 63 | 211 -10310 |
| 7 | 8 | 19 | 63 | 211 -10311 |
| 8 | 8 | 19 | 63 | 211 -10312 |
| 9 | 10 | 22 | 70 | 211 -10313 |
| 10 | 10 | 22 | 70 | 211 -10314 |
| 11 | 11 | 25 | 70 | 211 -10315 |
| 12 | 12 | 25 | 75 | 211 -10316 |
| 14 | 14 | 30 | 88 | 211 -10318 |
| 16 | 16 | 32 | 88 | 211 -10320 |
| 18 | 18 | 36 | 100 | 211 -10322 |
| 20 | 20 | 38 | 100 | 211 -10324 |
| 22 | 22 | 38 | 100 | 211 -10326 |
| 25 | 25 | 38 | 100 | 211 -10329 |

1.1 - 1.6 | 6.1 - 8.3
2.1 - 2.3 | 4.1 - 5.3
3.1 - 3.4 | 9.1





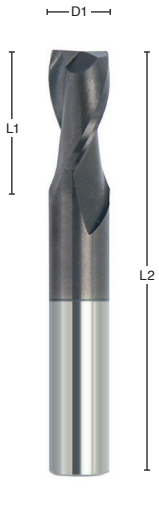
Series 214

# Performance Solid Carbide - *TiALN*
# Centre Cutting Slot-Drills 30° Helix
# Micro-grain K30 2-flute Standard




PAGE 260

**Tolerances:**
D1 +0.00/-0.051mm
D2 h6




| Cutter Dia-D1 | Shank Dia-D2 | FL L1 | OAL L2 | Part Number |
|---|---|---|---|---|
| 1 | 3 | 3 | 38 | 214 -10301 |
| 1.5 | 3 | 5 | 38 | 214 -10302 |
| 2 | 3 | 6 | 38 | 214 -10303 |
| 2.5 | 3 | 7 | 38 | 214 -10304 |
| 3 | 3 | 12 | 38 | 214 -10305 |
| 3.5 | 4 | 12 | 50 | 214 -10306 |
| 4 | 4 | 14 | 50 | 214 -10307 |
| 4.5 | 5 | 14 | 50 | 214 -10308 |
| 5 | 5 | 16 | 50 | 214 -10309 |
| 6 | 6 | 19 | 63 | 214 -10310 |
| 7 | 8 | 19 | 63 | 214 -10311 |
| 8 | 8 | 19 | 63 | 214 -10312 |
| 9 | 10 | 22 | 70 | 214 -10313 |
| 10 | 10 | 22 | 70 | 214 -10314 |
| 11 | 11 | 25 | 70 | 214 -10315 |
| 12 | 12 | 25 | 75 | 214 -10316 |
| 14 | 14 | 30 | 88 | 214 -10318 |
| 16 | 16 | 32 | 88 | 214 -10320 |
| 18 | 18 | 36 | 100 | 214 -10322 |
| 20 | 20 | 38 | 100 | 214 -10324 |
| 22 | 22 | 38 | 100 | 214 -10326 |
| 25 | 25 | 38 | 100 | 214 -10329 |

1.1 - 1.6 | 6.1 - 6.4
2.1 - 2.3 | 4.1 - 5.3
3.1 - 3.4 | 1.7 - 1.8
9.1

**Modifications**
**Regrinds, Re coat**
**Specials**

Merlin Tools Ltd manufactured


Tel: 01509 610300 • Fax: 01509 610400 • Email: sales@merlintools.co.uk • www.merlintools.co.uk

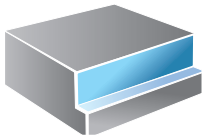
# Solid Carbide General Purpose - Bright Finish
# Centre Cutting Slot-Drills 30° Helix
# Micro-grain K30 3-flute Standard

Series 311

Ti PAGE 260

MG HM | 30° | 3 | PLAIN

1.1 - 1.6 | 6.1 - 8.3
2.1 - 2.3 | 4.1 - 5.3
3.1 - 3.4 | 9.1





| Cutter Dia-D1 | Shank Dia-D2 | FL L1 | OAL L2 | Part Number |
|---|---|---|---|---|
| 1 | 3 | 3 | 38 | 311 -10401 |
| 1.5 | 3 | 5 | 38 | 311 -10402 |
| 2 | 3 | 6 | 38 | 311 -10403 |
| 2.5 | 3 | 7 | 38 | 311 -10404 |
| 3 | 3 | 12 | 38 | 311 -10405 |
| 3.5 | 4 | 12 | 50 | 311 -10406 |
| 4 | 4 | 14 | 50 | 311 -10407 |
| 4.5 | 5 | 14 | 50 | 311 -10408 |
| 5 | 5 | 16 | 50 | 311 -10409 |
| 6 | 6 | 19 | 63 | 311 -10410 |
| 7 | 8 | 19 | 63 | 311 -10411 |
| 8 | 8 | 19 | 63 | 311 -10412 |
| 9 | 10 | 22 | 70 | 311 -10413 |
| 10 | 10 | 22 | 70 | 311 -10414 |
| 11 | 11 | 25 | 70 | 311 -10415 |
| 12 | 12 | 25 | 75 | 311 -10416 |
| 14 | 14 | 30 | 88 | 311 -10418 |
| 16 | 16 | 32 | 88 | 311 -10420 |
| 18 | 18 | 36 | 100 | 311 -10422 |
| 20 | 20 | 38 | 100 | 311 -10424 |
| 22 | 22 | 38 | 100 | 311 -10426 |
| 25 | 25 | 38 | 100 | 311 -10429 |

**Tolerances:**
D1 +0.00/-0.051mm
D2 h6




# Performance Solid Carbide - *TiALN*
# Centre Cutting Slot-Drills 30° Helix
# Micro-grain K30 3-flute Standard

Series 314

Ti PAGE 260

TiALN | MG HM | 30° | 3 | PLAIN

1.1 - 1.6 | 6.1 - 6.4
2.1 - 2.3 | 4.1 - 5.3
3.1 - 3.4 | 1.7 - 1.8
9.1

| Cutter Dia-D1 | Shank Dia-D2 | FL L1 | OAL L2 | Part Number |
|---|---|---|---|---|
| 1 | 3 | 3 | 38 | 314 -10401 |
| 1.5 | 3 | 5 | 38 | 314 -10402 |
| 2 | 3 | 6 | 38 | 314 -10403 |
| 2.5 | 3 | 7 | 38 | 314 -10404 |
| 3 | 3 | 12 | 38 | 314 -10405 |
| 3.5 | 4 | 12 | 50 | 314 -10406 |
| 4 | 4 | 14 | 50 | 314 -10407 |
| 4.5 | 5 | 14 | 50 | 314 -10408 |
| 5 | 5 | 16 | 50 | 314 -10409 |
| 6 | 6 | 19 | 63 | 314 -10410 |
| 7 | 8 | 19 | 63 | 314 -10411 |
| 8 | 8 | 19 | 63 | 314 -10412 |
| 9 | 10 | 22 | 70 | 314 -10413 |
| 10 | 10 | 22 | 70 | 314 -10414 |
| 11 | 11 | 25 | 70 | 314 -10415 |
| 12 | 12 | 25 | 75 | 314 -10416 |
| 14 | 14 | 30 | 88 | 314 -10418 |
| 16 | 16 | 32 | 88 | 314 -10420 |
| 18 | 18 | 36 | 100 | 314 -10422 |
| 20 | 20 | 38 | 100 | 314 -10424 |
| 22 | 22 | 38 | 100 | 314 -10426 |
| 25 | 25 | 38 | 100 | 314 -10429 |

**Tolerances:**
D1 +0.00/-0.051mm
D2 h6




**Modifications**
**Regrinds, Re coat**
**Specials**

Series 411

# Solid Carbide General Purpose - Bright Finish
# Centre Cutting End-Mills 30° Helix
# Micro-grain K30 4-flute Standard

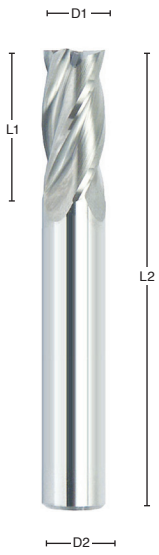



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**Tolerances:**

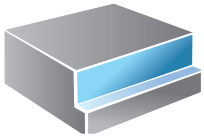
D1 +0.00/-0.051mm

D2 h6




| Cutter Dia-D1 | Shank Dia-D2 | FL L1 | OAL L2 | Part Number |
|---|---|---|---|---|
| 1 | 3 | 3 | 38 | 411 -10501 |
| 1.5 | 3 | 5 | 38 | 411 -10502 |
| 2 | 3 | 6 | 38 | 411 -10503 |
| 2.5 | 3 | 7 | 38 | 411 -10504 |
| 3 | 3 | 12 | 38 | 411 -10505 |
| 3.5 | 4 | 12 | 50 | 411 -10506 |
| 4 | 4 | 14 | 50 | 411 -10507 |
| 4.5 | 5 | 14 | 50 | 411 -10508 |
| 5 | 5 | 16 | 50 | 411 -10509 |
| 6 | 6 | 19 | 63 | 411 -10510 |
| 7 | 8 | 19 | 63 | 411 -10511 |
| 8 | 8 | 19 | 63 | 411 -10512 |
| 9 | 10 | 22 | 70 | 411 -10513 |
| 10 | 10 | 22 | 70 | 411 -10514 |
| 11 | 11 | 25 | 70 | 411 -10515 |
| 12 | 12 | 25 | 75 | 411 -10516 |
| 14 | 14 | 30 | 88 | 411 -10518 |
| 16 | 16 | 32 | 88 | 411 -10520 |
| 18 | 18 | 36 | 100 | 411 -10522 |
| 20 | 20 | 38 | 100 | 411 -10524 |
| 22 | 22 | 38 | 100 | 411 -10526 |
| 25 | 25 | 38 | 100 | 411 -10529 |

1.1 - 1.6 | 6.1 - 6.4
2.1 - 2.3 | 4.1 - 5.3
3.1 - 3.4 | 9.1





Series 414

# Performance Solid Carbide - *TiALN*
# Centre Cutting End-Mills 30° Helix
# Micro-grain K30 4-flute Standard




PAGE 260

**Tolerances:**

D1 +0.00/-0.051mm

D2 h6




| Cutter Dia-D1 | Shank Dia-D2 | FL L1 | OAL L2 | Part Number |
|---|---|---|---|---|
| 1 | 3 | 3 | 38 | 414 -10501 |
| 1.5 | 3 | 5 | 38 | 414 -10502 |
| 2 | 3 | 6 | 38 | 414 -10503 |
| 2.5 | 3 | 7 | 38 | 414 -10504 |
| 3 | 3 | 12 | 38 | 414 -10505 |
| 3.5 | 4 | 12 | 50 | 414 -10506 |
| 4 | 4 | 14 | 50 | 414 -10507 |
| 4.5 | 5 | 14 | 50 | 414 -10508 |
| 5 | 5 | 16 | 50 | 414 -10509 |
| 6 | 6 | 19 | 63 | 414 -10510 |
| 7 | 8 | 19 | 63 | 414 -10511 |
| 8 | 8 | 19 | 63 | 414 -10512 |
| 9 | 10 | 22 | 70 | 414 -10513 |
| 10 | 10 | 22 | 70 | 414 -10514 |
| 11 | 11 | 25 | 70 | 414 -10515 |
| 12 | 12 | 25 | 75 | 414 -10516 |
| 14 | 14 | 30 | 88 | 414 -10518 |
| 16 | 16 | 32 | 88 | 414 -10520 |
| 18 | 18 | 36 | 100 | 414 -10522 |
| 20 | 20 | 38 | 100 | 414 -10524 |
| 22 | 22 | 38 | 100 | 414 -10526 |
| 25 | 25 | 38 | 100 | 414 -10529 |

1.1 - 1.6 | 6.1 - 6.4
2.1 - 2.3 | 4.1 - 5.3
3.1 - 3.4 | 1.7 - 1.8
9.1

**Modifications**
**Regrinds, Re coat**
**Specials**

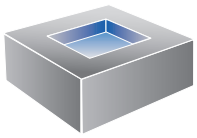
# Solid Carbide General Purpose - Bright Finish
# Centre Cutting Slot-Drills 30° Helix
# Micro-grain K30 2-flute Standard

Series 211

Ti PAGE 260

MG HM | 30° | 2 | PLAIN

1.1 - 1.6 | 6.1 - 8.3
2.1 - 2.3 | 4.1 - 5.3
3.1 - 3.4 | 9.1





| Cutter Dia-D1 | Shank Dia-D2 | FL L1 | OAL L2 | Part Number |
|---|---|---|---|---|
| 1/32" | 1/8" | 3/32" | 1-1/2" | 211 -00302 |
| 1/16" | 1/8" | 1/4" | 1-1/2" | 211 -00304 |
| 3/32" | 1/8" | 3/8" | 1-1/2" | 211 -00306 |
| 1/8" | 1/8" | 1/2" | 1-1/2" | 211 -00308 |
| 5/32" | 3/16" | 9/16" | 2" | 211 -00310 |
| 3/16" | 3/16" | 5/8" | 2" | 211 -00312 |
| 7/32" | 1/4" | 5/8" | 2-1/2" | 211 -00314 |
| 1/4" | 1/4" | 3/4" | 2-1/2" | 211 -00316 |
| 9/32" | 5/16" | 7/8" | 2-1/2" | 211 -00318 |
| 5/16" | 5/16" | 7/8" | 2-1/2" | 211 -00320 |
| 3/8" | 3/8" | 7/8" | 2-1/2" | 211 -00324 |
| 7/16" | 7/16" | 1" | 2-1/2" | 211 -00328 |
| 1/2" | 1/2" | 1" | 3" | 211 -00332 |
| 9/16" | 9/16" | 1-1/4" | 3-1/2" | 211 -00336 |
| 5/8" | 5/8" | 1-1/4" | 3-1/2" | 211 -00340 |
| 3/4" | 3/4" | 1-1/2" | 4" | 211 -00348 |
| 7/8" | 7/8" | 1-1/2" | 4" | 211 -00356 |
| 1" | 1" | 1-1/2" | 4" | 211 -00364 |

**Tolerances:**

| | |
|---|---|
| D1 | +0.00"-0.002" |
| D2 | h6 |




# Performance Solid Carbide - *TiALN*
# Centre Cutting Slot-Drills 30° Helix
# Micro-grain K30 2-flute Standard

Series 214

Ti PAGE 260

TiALN | 30° | MG HM | 2 | PLAIN

1.1 - 1.6 | 6.1 - 6.4
2.1 - 2.3 | 4.1 - 5.3
3.1 - 3.4 | 1.7 - 1.8
9.1

| Cutter Dia-D1 | Shank Dia-D2 | FL L1 | OAL L2 | Part Number |
|---|---|---|---|---|
| 1/32" | 1/8" | 3/32" | 1-1/2" | 214 -00302 |
| 1/16" | 1/8" | 1/4" | 1-1/2" | 214 -00304 |
| 3/32" | 1/8" | 3/8" | 1-1/2" | 214 -00306 |
| 1/8" | 1/8" | 1/2" | 1-1/2" | 214 -00308 |
| 5/32" | 3/16" | 9/16" | 2" | 214 -00310 |
| 3/16" | 3/16" | 5/8" | 2" | 214 -00312 |
| 7/32" | 1/4" | 5/8" | 2-1/2" | 214 -00314 |
| 1/4" | 1/4" | 3/4" | 2-1/2" | 214 -00316 |
| 9/32" | 5/16" | 7/8" | 2-1/2" | 214 -00318 |
| 5/16" | 5/16" | 7/8" | 2-1/2" | 214 -00320 |
| 3/8" | 3/8" | 7/8" | 2-1/2" | 214 -00324 |
| 7/16" | 7/16" | 1" | 2-1/2" | 214 -00328 |
| 1/2" | 1/2" | 1" | 3" | 214 -00332 |
| 9/16" | 9/16" | 1-1/4" | 3-1/2" | 214 -00336 |
| 5/8" | 5/8" | 1-1/4" | 3-1/2" | 214 -00340 |
| 3/4" | 3/4" | 1-1/2" | 4" | 214 -00348 |
| 7/8" | 7/8" | 1-1/2" | 4" | 214 -00356 |
| 1" | 1" | 1-1/2" | 4" | 214 -00364 |

**Tolerances:**

| | |
|---|---|
| D1 | +0.00"-0.002" |
| D2 | h6 |




**Modifications**
**Regrinds, Re coat**
**Specials**

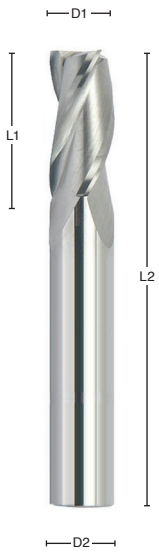
Series 311

# Solid Carbide General Purpose - Bright Finish
# Centre Cutting Slot-Drills 30° Helix
# Micro-grain K30 3-flute Standard



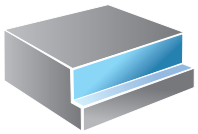

Ti PAGE 260

| Tolerances: | |
|---|---|
| D1 | +0.00"-0.002" |
| D2 | h6 |




| Cutter Dia-D1 | Shank Dia-D2 | FL L1 | OAL L2 | Part Number |
|---|---|---|---|---|
| 1/32" | 1/8" | 3/32" | 1-1/2" | 311 -00402 |
| 1/16" | 1/8" | 1/4" | 1-1/2" | 311 -00404 |
| 3/32" | 1/8" | 3/8" | 1-1/2" | 311 -00406 |
| 1/8" | 1/8" | 1/2" | 1-1/2" | 311 -00408 |
| 5/32" | 3/16" | 9/16" | 2" | 311 -00410 |
| 3/16" | 3/16" | 5/8" | 2" | 311 -00412 |
| 7/32" | 1/4" | 5/8" | 2-1/2" | 311 -00414 |
| 1/4" | 1/4" | 3/4" | 2-1/2" | 311 -00416 |
| 9/32" | 5/16" | 7/8" | 2-1/2" | 311 -00418 |
| 5/16" | 5/16" | 7/8" | 2-1/2" | 311 -00420 |
| 3/8" | 3/8" | 7/8" | 2-1/2" | 311 -00424 |
| 7/16" | 7/16" | 1" | 2-1/2" | 311 -00428 |
| 1/2" | 1/2" | 1" | 3" | 311 -00432 |
| 9/16" | 9/16" | 1-1/4" | 3-1/2" | 311 -00436 |
| 5/8" | 5/8" | 1-1/4" | 3-1/2" | 311 -00440 |
| 3/4" | 3/4" | 1-1/2" | 4" | 311 -00448 |
| 7/8" | 7/8" | 1-1/2" | 4" | 311 -00456 |
| 1" | 1" | 1-1/2" | 4" | 311 -00464 |

1.1 - 1.6 | 6.1 - 8.3
2.1 - 2.3 | 4.1 - 5.3
3.1 - 3.4 | 9.1





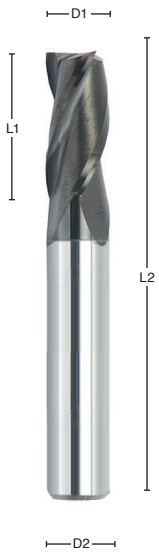
Series 314

# Performance Solid Carbide - *TiALN*
# Centre Cutting Slot-Drills 30° Helix
# Micro-grain K30 3-flute Standard




Ti PAGE 260

| Tolerances: | |
|---|---|
| D1 | +0.00"-0.002" |
| D2 | h6 |




| Cutter Dia-D1 | Shank Dia-D2 | FL L1 | OAL L2 | Part Number |
|---|---|---|---|---|
| 1/32" | 1/8" | 3/32" | 1-1/2" | 314 -00402 |
| 1/16" | 1/8" | 1/4" | 1-1/2" | 314 -00404 |
| 3/32" | 1/8" | 3/8" | 1-1/2" | 314 -00406 |
| 1/8" | 1/8" | 1/2" | 1-1/2" | 314 -00408 |
| 5/32" | 3/16" | 9/16" | 2" | 314 -00410 |
| 3/16" | 3/16" | 5/8" | 2" | 314 -00412 |
| 7/32" | 1/4" | 5/8" | 2-1/2" | 314 -00414 |
| 1/4" | 1/4" | 3/4" | 2-1/2" | 314 -00416 |
| 9/32" | 5/16" | 7/8" | 2-1/2" | 314 -00418 |
| 5/16" | 5/16" | 7/8" | 2-1/2" | 314 -00420 |
| 3/8" | 3/8" | 7/8" | 2-1/2" | 314 -00424 |
| 7/16" | 7/16" | 1" | 2-1/2" | 314 -00428 |
| 1/2" | 1/2" | 1" | 3" | 314 -00432 |
| 9/16" | 9/16" | 1-1/4" | 3-1/2" | 314 -00436 |
| 5/8" | 5/8" | 1-1/4" | 3-1/2" | 314 -00440 |
| 3/4" | 3/4" | 1-1/2" | 4" | 314 -00448 |
| 7/8" | 7/8" | 1-1/2" | 4" | 314 -00456 |
| 1" | 1" | 1-1/2" | 4" | 314 -00464 |

1.1 - 1.6 | 6.1 - 6.4
2.1 - 2.3 | 4.1 - 5.3
3.1 - 3.4 | 1.7 - 1.8
9.1

**Modifications**
**Regrinds, Re coat**
**Specials**

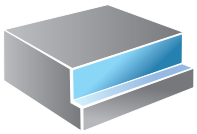
# Solid Carbide General Purpose - Bright Finish
# Centre Cutting End-Mills 30° Helix
# Micro-grain K30 4-flute Standard

Series 411

PAGE 260

30° | MG HM | 4 | PLAIN

1.1 - 1.6 | 6.1 - 6.4
2.1 - 2.3 | 4.1 - 5.3
3.1 - 3.4 | 9.1

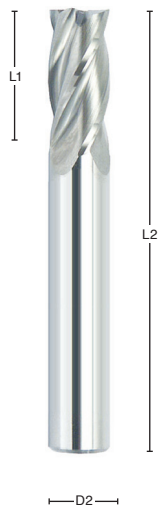




| Cutter Dia-D1 | Shank Dia-D2 | FL L1 | OAL L2 | Part Number |
|---|---|---|---|---|
| 1/32" | 1/8" | 3/32" | 1-1/2" | 411 -00502 |
| 1/16" | 1/8" | 1/4" | 1-1/2" | 411- 00504 |
| 3/32" | 1/8" | 3/8" | 1-1/2" | 411- 00506 |
| 1/8" | 1/8" | 1/2" | 1-1/2" | 411- 00508 |
| 5/32" | 3/16" | 9/16" | 2" | 411 -00510 |
| 3/16" | 3/16" | 5/8" | 2" | 411 -00512 |
| 7/32" | 1/4" | 5/8" | 2-1/2" | 411 -00514 |
| 1/4" | 1/4" | 3/4" | 2-1/2" | 411 -00516 |
| 9/32" | 5/16" | 7/8" | 2-1/2" | 411 -00518 |
| 5/16" | 5/16" | 7/8" | 2-1/2" | 411 -00520 |
| 3/8" | 3/8" | 7/8" | 2-1/2" | 411 -00524 |
| 7/16" | 7/16" | 1" | 2-1/2" | 411 -00528 |
| 1/2" | 1/2" | 1" | 3" | 411 -00532 |
| 9/16" | 9/16" | 1-1/4" | 3-1/2" | 411 -00536 |
| 5/8" | 5/8" | 1-1/4" | 3-1/2" | 411 -00540 |
| 3/4" | 3/4" | 1-1/2" | 4" | 411 -00548 |
| 7/8" | 7/8" | 1-1/2" | 4" | 411 -00556 |
| 1" | 1" | 1-1/2" | 4" | 411 -00564 |

**Tolerances:**

| | |
|---|---|
| D1 | +0.00"-0.002" |
| D2 | h6 |




# Performance Solid Carbide - *TiALN*
# Centre Cutting End-Mills 30° Helix
# Micro-grain K30 4-flute Standard

Series 414

PAGE 260

TiALN | 30° | MG HM | 4 | PLAIN

1.1 - 1.6 | 6.1 - 6.4
2.1 - 2.3 | 4.1 - 5.3
3.1 - 3.4 | 1.7 - 1.8
9.1

| Cutter Dia-D1 | Shank Dia-D2 | FL L1 | OAL L2 | Part Number |
|---|---|---|---|---|
| 1/32" | 1/8" | 3/32" | 1-1/2" | 414 -00502 |
| 1/16" | 1/8" | 1/4" | 1-1/2" | 414 -00504 |
| 3/32" | 1/8" | 3/8" | 1-1/2" | 414 -00506 |
| 1/8" | 1/8" | 1/2" | 1-1/2" | 414 -00508 |
| 5/32" | 3/16" | 9/16" | 2" | 414 -00510 |
| 3/16" | 3/16" | 5/8" | 2" | 414 -00512 |
| 7/32" | 1/4" | 5/8" | 2-1/2" | 414 -00514 |
| 1/4" | 1/4" | 3/4" | 2-1/2" | 414 -00516 |
| 9/32" | 5/16" | 7/8" | 2-1/2" | 414 -00518 |
| 5/16" | 5/16" | 7/8" | 2-1/2" | 414 -00520 |
| 3/8" | 3/8" | 7/8" | 2-1/2" | 414 -00524 |
| 7/16" | 7/16" | 1" | 2-1/2" | 414 -00528 |
| 1/2" | 1/2" | 1" | 3" | 414 -00532 |
| 9/16" | 9/16" | 1-1/4" | 3-1/2" | 414 -00536 |
| 5/8" | 5/8" | 1-1/4" | 3-1/2" | 414 -00540 |
| 3/4" | 3/4" | 1-1/2" | 4" | 414 -00548 |
| 7/8" | 7/8" | 1-1/2" | 4" | 414 -00556 |
| 1" | 1" | 1-1/2" | 4" | 414 -00564 |

**Tolerances:**

| | |
|---|---|
| D1 | +0.00"-0.002" |
| D2 | h6 |




**Modifications**
**Regrinds, Re coat**
**Specials**

Series 214R

# Performance Solid Carbide - *TiALN*
# Centre Cutting Slot-Drills 30° Helix
# Micro-grain K30 2-flute Corner Radius

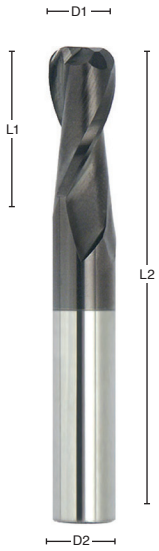



PAGE 260

**Tolerances:**

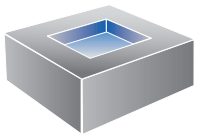
D1 +0.00/-0.051mm

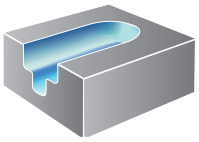
D2 h6




| Cutter Dia-D1 | Shank Dia-D2 | FL L1 | OAL L2 | Corner Radius | Part Number |
|---|---|---|---|---|---|
| 4 | 4 | 14 | 50 | 0.25 | 214 -10307-0.25R |
| 4 | 4 | 14 | 50 | 0.50 | 214 -10307-0.50R |
| 4 | 4 | 14 | 50 | 0.75 | 214 -10307-0.75R |
| 4 | 4 | 14 | 50 | 1.00 | 214 -10307-1.00R |
| 6 | 6 | 19 | 63 | 0.25 | 214 -10310-0.25R |
| 6 | 6 | 19 | 63 | 0.50 | 214 -10310-0.50R |
| 6 | 6 | 19 | 63 | 0.75 | 214 -10310-0.75R |
| 6 | 6 | 19 | 63 | 1.00 | 214 -10310-1.00R |
| 6 | 6 | 19 | 63 | 1.25 | 214 -10310-1.25R |
| 6 | 6 | 19 | 63 | 1.50 | 214 -10310-1.50R |
| 8 | 8 | 19 | 63 | 0.50 | 214 -10312-0.50R |
| 8 | 8 | 19 | 63 | 0.75 | 214 -10312-0.75R |
| 8 | 8 | 19 | 63 | 1.00 | 214 -10312-1.00R |
| 8 | 8 | 19 | 63 | 1.25 | 214 -10312-1.25R |
| 8 | 8 | 19 | 63 | 1.50 | 214 -10312-1.50R |
| 8 | 8 | 19 | 63 | 2.00 | 214 -10312-2.00R |
| 10 | 10 | 22 | 70 | 0.50 | 214 -10314-0.50R |
| 10 | 10 | 22 | 70 | 0.75 | 214 -10314-0.75R |
| 10 | 10 | 22 | 70 | 1.00 | 214 -10314-1.00R |
| 10 | 10 | 22 | 70 | 1.50 | 214 -10314-1.50R |
| 10 | 10 | 22 | 70 | 2.00 | 214 -10314-2.00R |
| 10 | 10 | 22 | 70 | 3.00 | 214 -10314-3.00R |
| 12 | 12 | 25 | 75 | 0.50 | 214 -10316-0.50R |
| 12 | 12 | 25 | 75 | 0.75 | 214 -10316-0.75R |
| 12 | 12 | 25 | 75 | 1.00 | 214 -10316-1.00R |
| 12 | 12 | 25 | 75 | 1.50 | 214 -10316-1.50R |
| 12 | 12 | 25 | 75 | 2.00 | 214 -10316-2.00R |
| 12 | 12 | 25 | 75 | 3.00 | 214 -10316-3.00R |
| 16 | 16 | 32 | 88 | 0.50 | 214 -10320-0.50R |
| 16 | 16 | 32 | 88 | 0.75 | 214 -10320-0.75R |
| 16 | 16 | 32 | 88 | 1.00 | 214 -10320-1.00R |
| 16 | 16 | 32 | 88 | 1.50 | 214 -10320-1.50R |
| 16 | 16 | 32 | 88 | 2.00 | 214 -10320-2.00R |
| 16 | 16 | 32 | 88 | 3.00 | 214 -10320-3.00R |
| 20 | 20 | 38 | 100 | 0.50 | 214 -10324-0.50R |
| 20 | 20 | 38 | 100 | 0.75 | 214 -10324-0.75R |
| 20 | 20 | 38 | 100 | 1.00 | 214 -10324-1.00R |
| 20 | 20 | 38 | 100 | 1.50 | 214 -10324-1.50R |
| 20 | 20 | 38 | 100 | 2.00 | 214 -10324-2.00R |
| 20 | 20 | 38 | 100 | 3.00 | 214 -10324-3.00R |

1.1 - 1.6 | 6.1 - 6.4
2.1 - 2.3 | 4.1 - 5.3
3.1 - 3.4 | 1.7 - 1.8
9.1





**Modifications**
**Regrinds, Re coat**
**Specials**


Tel: 01509 610300 • Fax: 01509 610400 • Email: sales@merlintools.co.uk • www.merlintools.co.uk

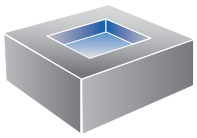
# Performance Solid Carbide - *TiALN*
# Centre Cutting Slot-Drills 30° Helix
# Micro-grain K30 3-flute Corner Radius

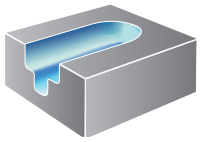
Series 314R

PAGE 260

+0.025 | TiALN | 30° | MG HM | 3 | PLAIN

1.1 - 1.6 | 6.1 - 6.4 | 2.1 - 2.3 | 4.1 - 5.3 | 3.1 - 3.4 | 1.7 - 1.8 | 9.1





| Cutter Dia-D1 | Shank Dia-D2 | FL L1 | OAL L2 | Corner Radius | Part Number |
|---|---|---|---|---|---|
| 4 | 4 | 14 | 50 | 0.25 | 314 -10407-0.25R |
| 4 | 4 | 14 | 50 | 0.50 | 314 -10407-0.50R |
| 4 | 4 | 14 | 50 | 0.75 | 314 -10407-0.75R |
| 4 | 4 | 14 | 50 | 1.00 | 314 -10407-1.00R |
| 6 | 6 | 19 | 63 | 0.25 | 314 -10410-0.25R |
| 6 | 6 | 19 | 63 | 0.50 | 314 -10410-0.50R |
| 6 | 6 | 19 | 63 | 0.75 | 314 -10410-0.75R |
| 6 | 6 | 19 | 63 | 1.00 | 314 -10410-1.00R |
| 6 | 6 | 19 | 63 | 1.25 | 314 -10410-1.25R |
| 6 | 6 | 19 | 63 | 1.50 | 314 -10410-1.50R |
| 8 | 8 | 19 | 63 | 0.50 | 314 -10412-0.50R |
| 8 | 8 | 19 | 63 | 0.75 | 314 -10412-0.75R |
| 8 | 8 | 19 | 63 | 1.00 | 314 -10412-1.00R |
| 8 | 8 | 19 | 63 | 1.25 | 314 -10412-1.25R |
| 8 | 8 | 19 | 63 | 1.50 | 314 -10412-1.50R |
| 8 | 8 | 19 | 63 | 2.00 | 314 -10412-2.00R |
| 10 | 10 | 22 | 70 | 0.50 | 314 -10414-0.50R |
| 10 | 10 | 22 | 70 | 0.75 | 314 -10414-0.75R |
| 10 | 10 | 22 | 70 | 1.00 | 314 -10414-1.00R |
| 10 | 10 | 22 | 70 | 1.50 | 314 -10414-1.50R |
| 10 | 10 | 22 | 70 | 2.00 | 314 -10414-2.00R |
| 10 | 10 | 22 | 70 | 3.00 | 314 -10414-3.00R |
| 12 | 12 | 25 | 75 | 0.50 | 314 -10416-0.50R |
| 12 | 12 | 25 | 75 | 0.75 | 314 -10416-0.75R |
| 12 | 12 | 25 | 75 | 1.00 | 314 -10416-1.00R |
| 12 | 12 | 25 | 75 | 1.50 | 314 -10416-1.50R |
| 12 | 12 | 25 | 75 | 2.00 | 314 -10416-2.00R |
| 12 | 12 | 25 | 75 | 3.00 | 314 -10416-3.00R |
| 16 | 16 | 32 | 88 | 0.50 | 314 -10420-0.50R |
| 16 | 16 | 32 | 88 | 0.75 | 314 -10420-0.75R |
| 16 | 16 | 32 | 88 | 1.00 | 314 -10420-1.00R |
| 16 | 16 | 32 | 88 | 1.50 | 314 -10420-1.50R |
| 16 | 16 | 32 | 88 | 2.00 | 314 -10420-2.00R |
| 16 | 16 | 32 | 88 | 3.00 | 314 -10420-3.00R |
| 20 | 20 | 38 | 100 | 0.50 | 314 -10424-0.50R |
| 20 | 20 | 38 | 100 | 0.75 | 314 -10424-0.75R |
| 20 | 20 | 38 | 100 | 1.00 | 314 -10424-1.00R |
| 20 | 20 | 38 | 100 | 1.50 | 314 -10424-1.50R |
| 20 | 20 | 38 | 100 | 2.00 | 314 -10424-2.00R |
| 20 | 20 | 38 | 100 | 3.00 | 314 -10424-3.00R |

**Tolerances:**

D1 +0.00/-0.051mm

D2 h6




**Modifications**
**Regrinds, Re coat**
**Specials**

Series 414R

# Performance Solid Carbide - *TiALN*
## Centre Cutting End-Mills 30° Helix
## Micro-grain K30 4-flute Corner Radius

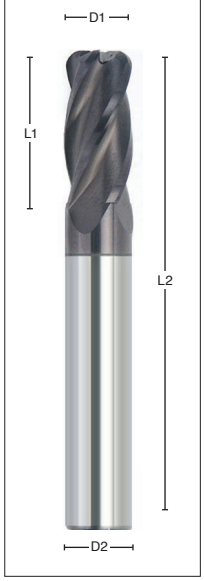



Ti PAGE 260

**Tolerances:**

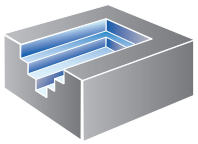
D1 +0.00/-0.051mm

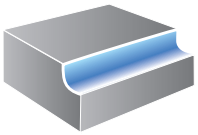
D2 h6




| Cutter Dia-D1 | Shank Dia-D2 | FL L1 | OAL L2 | Corner Radius | Part Number |
|---|---|---|---|---|---|
| 4 | 4 | 14 | 50 | 0.25 | 414 -10507-0.25R |
| 4 | 4 | 14 | 50 | 0.50 | 414 -10507-0.50R |
| 4 | 4 | 14 | 50 | 0.75 | 414 -10507-0.75R |
| 4 | 4 | 14 | 50 | 1.00 | 414 -10507-1.00R |
| 6 | 6 | 19 | 63 | 0.25 | 414 -10510-0.25R |
| 6 | 6 | 19 | 63 | 0.50 | 414 -10510-0.50R |
| 6 | 6 | 19 | 63 | 0.75 | 414 -10510-0.75R |
| 6 | 6 | 19 | 63 | 1.00 | 414 -10510-1.00R |
| 6 | 6 | 19 | 63 | 1.25 | 414 -10510-1.25R |
| 6 | 6 | 19 | 63 | 1.50 | 414 -10510-1.50R |
| 8 | 8 | 19 | 63 | 0.50 | 414 -10512-0.50R |
| 8 | 8 | 19 | 63 | 0.75 | 414 -10512-0.75R |
| 8 | 8 | 19 | 63 | 1.00 | 414 -10512-1.00R |
| 8 | 8 | 19 | 63 | 1.25 | 414 -10512-1.25R |
| 8 | 8 | 19 | 63 | 1.50 | 414 -10512-1.50R |
| 8 | 8 | 19 | 63 | 2.00 | 414 -10512-2.00R |
| 10 | 10 | 22 | 70 | 0.50 | 414 -10514-0.50R |
| 10 | 10 | 22 | 70 | 0.75 | 414 -10514-0.75R |
| 10 | 10 | 22 | 70 | 1.00 | 414 -10514-1.00R |
| 10 | 10 | 22 | 70 | 1.50 | 414 -10514-1.50R |
| 10 | 10 | 22 | 70 | 2.00 | 414 -10514-2.00R |
| 10 | 10 | 22 | 70 | 3.00 | 414 -10514-3.00R |
| 12 | 12 | 25 | 75 | 0.50 | 414 -10516-0.50R |
| 12 | 12 | 25 | 75 | 0.75 | 414 -10516-0.75R |
| 12 | 12 | 25 | 75 | 1.00 | 414 -10516-1.00R |
| 12 | 12 | 25 | 75 | 1.50 | 414 -10516-1.50R |
| 12 | 12 | 25 | 75 | 2.00 | 414 -10516-2.00R |
| 12 | 12 | 25 | 75 | 3.00 | 414 -10516-3.00R |
| 16 | 16 | 32 | 88 | 0.50 | 414 -10520-0.50R |
| 16 | 16 | 32 | 88 | 0.75 | 414 -10520-0.75R |
| 16 | 16 | 32 | 88 | 1.00 | 414 -10520-1.00R |
| 16 | 16 | 32 | 88 | 1.50 | 414 -10520-1.50R |
| 16 | 16 | 32 | 88 | 2.00 | 414 -10520-2.00R |
| 16 | 16 | 32 | 88 | 3.00 | 414 -10520-3.00R |
| 20 | 20 | 38 | 100 | 0.50 | 414 -10524-0.50R |
| 20 | 20 | 38 | 100 | 0.75 | 414 -10524-0.75R |
| 20 | 20 | 38 | 100 | 1.00 | 414 -10524-1.00R |
| 20 | 20 | 38 | 100 | 1.50 | 414 -10524-1.50R |
| 20 | 20 | 38 | 100 | 2.00 | 414 -10524-2.00R |
| 20 | 20 | 38 | 100 | 3.00 | 414 -10524-3.00R |

1.1 - 1.6 | 6.1 - 6.4
2.1 - 2.3 | 4.1 - 5.3
3.1 - 3.4 | 1.7 - 1.8
9.1





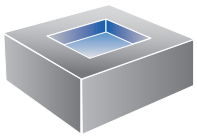
**Modifications**
**Regrinds, Re coat**
**Specials**

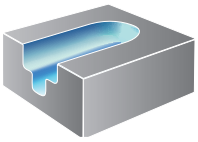
# Performance Solid Carbide - *TiALN*
# 30° Helix - Long
# Micro-grain K30 2-Flute Corner Radius

Series 740R

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1.1 - 1.6 | 6.1 - 6.4
2.1 - 2.3 | 4.1 - 5.3
3.1 - 3.4 | 1.7 - 1.8
9.1





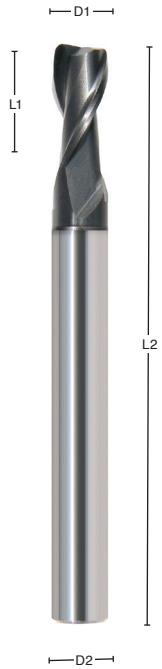
+0.025 | TiALN | 30° | MG HM | 2 | PLAIN

| Cutter Dia-D1 | Shank Dia-D2 | FL L1 | OAL L2 | Corner Radius | Part Number |
|---|---|---|---|---|---|
| 3 | 6 | 8 | 60 | 0.20 | 740 -25805-0.2R |
| 3 | 6 | 8 | 60 | 0.50 | 740 -25805-0.5R |
| 4 | 6 | 11 | 70 | 0.20 | 740 -25802-0.2R |
| 4 | 6 | 11 | 70 | 0.50 | 740 -25807-0.5R |
| 4 | 6 | 11 | 70 | 1.00 | 740 -25807-1.0R |
| 5 | 6 | 13 | 80 | 0.20 | 740 -25809-0.2R |
| 5 | 6 | 13 | 80 | 0.50 | 740 -25809-0.5R |
| 5 | 6 | 13 | 80 | 1.00 | 740 -25809-1.0R |
| 6 | 6 | 13 | 80 | 0.20 | 740 -25810-0.2R |
| 6 | 6 | 13 | 80 | 0.50 | 740 -25810-0.5R |
| 6 | 6 | 13 | 80 | 1.00 | 740 -25810-1.0R |
| 6 | 6 | 13 | 80 | 1.50 | 740 -25810-1.5R |
| 6 | 6 | 13 | 80 | 2.00 | 740 -25810-2.0R |
| 8 | 8 | 19 | 100 | 0.50 | 740 -25812-0.5R |
| 8 | 8 | 19 | 100 | 1.00 | 740 -25812-1.0R |
| 8 | 8 | 19 | 100 | 1.50 | 740 -25812-1.5R |
| 8 | 8 | 19 | 100 | 2.00 | 740 -25812-2.0R |
| 10 | 10 | 22 | 100 | 0.50 | 740 -25814-0.5R |
| 10 | 10 | 22 | 100 | 1.00 | 740 -25814-1.0R |
| 10 | 10 | 22 | 100 | 1.50 | 740 -25814-1.5R |
| 10 | 10 | 22 | 100 | 2.00 | 740 -25814-2.0R |
| 10 | 10 | 22 | 100 | 3.00 | 740 -25814-3.0R |
| 12 | 12 | 26 | 110 | 0.50 | 740 -25816-0.5R |
| 12 | 12 | 26 | 110 | 1.00 | 740 -25816-1.0R |
| 12 | 12 | 26 | 110 | 1.50 | 740 -25816-1.5R |
| 12 | 12 | 26 | 110 | 2.00 | 740 -25816-2.0R |
| 12 | 12 | 26 | 110 | 3.00 | 740 -25816-3.0R |

**Tolerances:**

D1 +0.00/-0.051mm

D2 h6




**Modifications**
**Regrinds, Re coat**
**Specials**

Series 745R

# Performance Solid Carbide - *TiALN*
## 30° Helix - Long
## Micro-grain K30 4-Flute Corner Radius

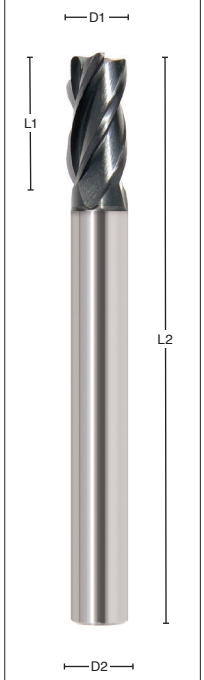



Ti PAGE 260

**Tolerances:**

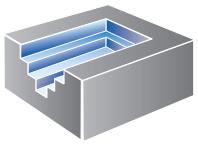
D1 +0.00/-0.051mm

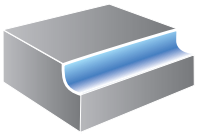
D2 h6




| Cutter Dia-D1 | Shank Dia-D2 | FL L1 | OAL L2 | Corner Radius | Part Number |
|---|---|---|---|---|---|
| 3 | 6 | 8 | 60 | 0.20 | 745 -26905-0.2R |
| 3 | 6 | 8 | 60 | 0.50 | 745 -26905-0.5R |
| 4 | 6 | 11 | 70 | 0.20 | 745 -26907-0.2R |
| 4 | 6 | 11 | 70 | 0.50 | 745 -26907-0.5R |
| 4 | 6 | 11 | 70 | 1.00 | 745 -26907-1.0R |
| 5 | 6 | 13 | 80 | 0.20 | 745 -26909-0.2R |
| 5 | 6 | 13 | 80 | 0.50 | 745 -26909-0.5R |
| 5 | 6 | 13 | 80 | 1.00 | 745 -26909-1.0R |
| 6 | 6 | 13 | 80 | 0.20 | 745 -26910-0.2R |
| 6 | 6 | 13 | 80 | 0.50 | 745 -26910-0.5R |
| 6 | 6 | 13 | 80 | 1.00 | 745 -26910-1.0R |
| 6 | 6 | 13 | 80 | 1.50 | 745 -26910-1.5R |
| 6 | 6 | 13 | 80 | 2.00 | 745 -26910-2.0R |
| 8 | 8 | 19 | 100 | 0.50 | 745 -26912-0.5R |
| 8 | 8 | 19 | 100 | 1.00 | 745 -26912-1.0R |
| 8 | 8 | 19 | 100 | 1.50 | 745 -26912-1.5R |
| 8 | 8 | 19 | 100 | 2.00 | 745 -26912-2.0R |
| 10 | 10 | 22 | 100 | 0.50 | 745 -26914-0.5R |
| 10 | 10 | 22 | 100 | 1.00 | 745 -26914-1.0R |
| 10 | 10 | 22 | 100 | 1.50 | 745 -26914-1.5R |
| 10 | 10 | 22 | 100 | 2.00 | 745 -26914-2.0R |
| 10 | 10 | 22 | 100 | 3.00 | 745 -26914-3.0R |
| 12 | 12 | 26 | 110 | 0.50 | 745 -26916-0.5R |
| 12 | 12 | 26 | 110 | 1.00 | 745 -26916-1.0R |
| 12 | 12 | 26 | 110 | 1.50 | 745 -26916-1.5R |
| 12 | 12 | 26 | 110 | 2.00 | 745 -26916-2.0R |
| 12 | 12 | 26 | 110 | 3.00 | 745 -26916-3.0R |

1.1 - 1.6 | 6.1 - 6.4
2.1 - 2.3 | 4.1 - 5.3
3.1 - 3.4 | 1.7 - 1.8
9.1





**Modifications**
**Regrinds, Re coat**
**Specials**

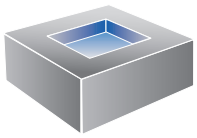
# Performance Solid Carbide - *TiALN*
# 30° Helix Neck Relief - Long
# Micro-grain K30 2-Flute Corner Radius

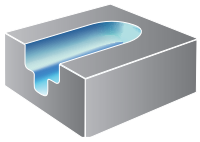
Series 750R

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1.1 - 1.6 | 6.1 - 6.4 | 2.1 - 2.3 | 4.1 - 5.3 | 3.1 - 3.4 | 1.7 - 1.8 | 9.1



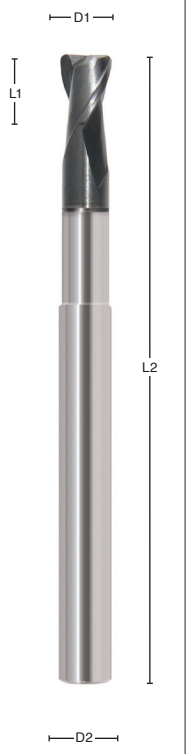


| Cutter Dia-D1 | Shank Dia-D2 | Neck Dia | FL L1 | OAL L2 | Reach | Corner Radius | Part Number |
|---|---|---|---|---|---|---|---|
| 3 | 6 | 2.8 | 4.5 | 60 | 14 | 0.20 | 750 -27605-0.2R |
| 3 | 6 | 2.8 | 4.5 | 60 | 14 | 0.50 | 750 -27605-0.5R |
| 4 | 6 | 3.7 | 6 | 70 | 25 | 0.20 | 750 -27607-0.2R |
| 4 | 6 | 3.7 | 6 | 70 | 25 | 0.50 | 750 -27607-0.5R |
| 4 | 6 | 3.7 | 6 | 70 | 25 | 1.00 | 750 -27607-1.0R |
| 5 | 6 | 4.6 | 6 | 80 | 30 | 0.20 | 750 -27609-0.2R |
| 5 | 6 | 4.6 | 7.5 | 80 | 30 | 0.50 | 750 -27609-0.5R |
| 5 | 6 | 4.6 | 7.5 | 80 | 30 | 1.00 | 750 -27609-1.0R |
| 6 | 6 | 5.5 | 9 | 80 | 35 | 0.20 | 750 -27610-0.2R |
| 6 | 6 | 5.5 | 9 | 80 | 35 | 0.50 | 750 -27610-0.5R |
| 6 | 6 | 5.5 | 9 | 80 | 35 | 1.00 | 750 -27610-1.0R |
| 6 | 6 | 5.5 | 9 | 80 | 35 | 1.50 | 750 -27610-1.5R |
| 6 | 6 | 5.5 | 9 | 80 | 35 | 2.00 | 750 -27610-2.0R |
| 8 | 8 | 7.4 | 12 | 100 | 40 | 0.50 | 750 -27612-0.5R |
| 8 | 8 | 7.4 | 12 | 100 | 40 | 1.00 | 750 -27612-1.0R |
| 8 | 8 | 7.4 | 12 | 100 | 40 | 1.50 | 750 -27612-1.5R |
| 8 | 8 | 7.4 | 12 | 100 | 40 | 2.00 | 750 -27612-2.0R |
| 10 | 10 | 9.2 | 15 | 100 | 45 | 0.50 | 750 -27614-0.5R |
| 10 | 10 | 9.2 | 15 | 100 | 45 | 1.00 | 750 -27614-1.0R |
| 10 | 10 | 9.2 | 15 | 100 | 45 | 1.50 | 750 -27614-1.5R |
| 10 | 10 | 9.2 | 15 | 100 | 45 | 2.00 | 750 -27614-2.0R |
| 10 | 10 | 9.2 | 15 | 100 | 45 | 3.00 | 750 -27614-3.0R |
| 12 | 12 | 11 | 18 | 110 | 50 | 0.50 | 750 -27616-0.5R |
| 12 | 12 | 11 | 18 | 110 | 50 | 1.00 | 750 -27616-1.0R |
| 12 | 12 | 11 | 18 | 110 | 50 | 1.50 | 750 -27616-1.5R |
| 12 | 12 | 11 | 18 | 110 | 50 | 2.00 | 750 -27616-2.0R |
| 12 | 12 | 11 | 18 | 110 | 50 | 3.00 | 750 -27616-3.0R |

**Tolerances:**

D1 +0.00/-0.051mm

D2 h6




**Modifications**
**Regrinds, Re coat**
**Specials**

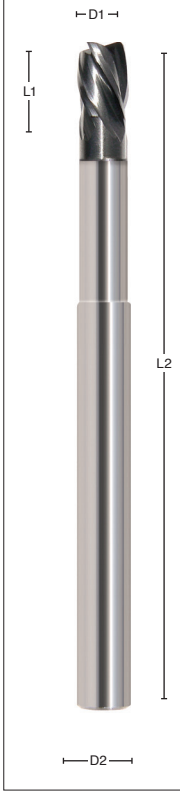
Series 755R

# Performance Solid Carbide - *TiALN*
## 30° Helix Neck Relief - Long
## Micro-grain K30 4-Flute Corner Radius



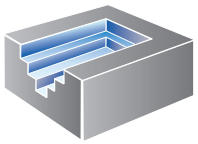

Ti PAGE 260

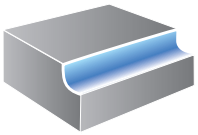
| Tolerances: |
|---|
| D1 +0.00/-0.051mm |
| D2 h6 |




| Cutter Dia-D1 | Shank Dia-D2 | Neck Dia | FL L1 | OAL L2 | Reach | Corner Radius | Part Number |
|---|---|---|---|---|---|---|---|
| 3 | 6 | 2.8 | 4.5 | 60 | 14 | 0.20 | 755 -28705-0.2R |
| 3 | 6 | 2.8 | 4.5 | 60 | 14 | 0.50 | 755 -28705-0.5R |
| 4 | 6 | 3.7 | 6 | 70 | 25 | 0.20 | 755 -28707-0.2R |
| 4 | 6 | 3.7 | 6 | 70 | 25 | 0.50 | 755 -28707-0.5R |
| 4 | 6 | 3.7 | 6 | 70 | 25 | 1.00 | 755 -28707-1.0R |
| 5 | 6 | 4.6 | 6 | 80 | 30 | 0.20 | 755 -28709-0.2R |
| 5 | 6 | 4.6 | 7.5 | 80 | 30 | 0.50 | 755 -28709-0.5R |
| 5 | 6 | 4.6 | 7.5 | 80 | 30 | 1.00 | 755 -28709-1.0R |
| 6 | 6 | 5.5 | 9 | 80 | 35 | 0.20 | 755 -28710-0.2R |
| 6 | 6 | 5.5 | 9 | 80 | 35 | 0.50 | 755 -28710-0.5R |
| 6 | 6 | 5.5 | 9 | 80 | 35 | 1.00 | 755 -28710-1.0R |
| 6 | 6 | 5.5 | 9 | 80 | 35 | 1.50 | 755 -28710-1.5R |
| 6 | 6 | 5.5 | 9 | 80 | 35 | 2.00 | 755 -28710-2.0R |
| 8 | 8 | 7.4 | 12 | 100 | 40 | 0.50 | 755 -28712-0.5R |
| 8 | 8 | 7.4 | 12 | 100 | 40 | 1.00 | 755 -28712-1.0R |
| 8 | 8 | 7.4 | 12 | 100 | 40 | 1.50 | 755 -28712-1.5R |
| 8 | 8 | 7.4 | 12 | 100 | 40 | 2.00 | 755 -28712-2.0R |
| 10 | 10 | 9.2 | 15 | 100 | 45 | 0.50 | 755 -28714-0.5R |
| 10 | 10 | 9.2 | 15 | 100 | 45 | 1.00 | 755 -28714-1.0R |
| 10 | 10 | 9.2 | 15 | 100 | 45 | 1.50 | 755 -28714-1.5R |
| 10 | 10 | 9.2 | 15 | 100 | 45 | 2.00 | 755 -28714-2.0R |
| 10 | 10 | 9.2 | 15 | 100 | 45 | 3.00 | 755 -28714-3.0R |
| 12 | 12 | 11 | 18 | 110 | 50 | 0.50 | 755 -28716-0.5R |
| 12 | 12 | 11 | 18 | 110 | 50 | 1.00 | 755 -28716-1.0R |
| 12 | 12 | 11 | 18 | 110 | 50 | 1.50 | 755 -28716-1.5R |
| 12 | 12 | 11 | 18 | 110 | 50 | 2.00 | 755 -28716-2.0R |
| 12 | 12 | 11 | 18 | 110 | 50 | 3.00 | 755 -28716-3.0R |

1.1 - 1.6 | 6.1 - 6.4
2.1 - 2.3 | 4.1 - 5.3
3.1 - 3.4 | 1.7 - 1.8
9.1





**Modifications**
**Regrinds, Re coat**
**Specials**

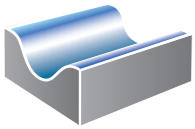
# Solid Carbide General Purpose - Bright Finish
# Centre Cutting Slot-Drills 30° Helix
# Micro-grain K30 2-flute Ball Nosed

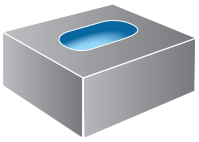
Series 216

PAGE 260

MG HM | 30° | 2 | PLAIN

1.1 - 1.6 | 6.1 - 8.3
2.1 - 2.3 | 4.1 - 5.3
3.1 - 3.4 | 9.1





| Cutter Dia-D1 | Shank Dia-D2 | FL L1 | OAL L2 | Part Number |
|---|---|---|---|---|
| 1 | 3 | 3 | 38 | 216 -17501 |
| 1.5 | 3 | 5 | 38 | 216 -17502 |
| 2 | 3 | 6 | 38 | 216 -17503 |
| 2.5 | 3 | 7 | 38 | 216 -17504 |
| 3 | 3 | 12 | 38 | 216 -17505 |
| 3.5 | 4 | 12 | 50 | 216 -17506 |
| 4 | 4 | 14 | 50 | 216 -17507 |
| 4.5 | 5 | 14 | 50 | 216 -17508 |
| 5 | 5 | 16 | 50 | 216 -17509 |
| 6 | 6 | 19 | 63 | 216 -17510 |
| 7 | 8 | 19 | 63 | 216 -17511 |
| 8 | 8 | 19 | 63 | 216 -17512 |
| 9 | 10 | 22 | 70 | 216 -17513 |
| 10 | 10 | 22 | 70 | 216 -17514 |
| 11 | 11 | 25 | 70 | 216 -17515 |
| 12 | 12 | 25 | 75 | 216 -17516 |
| 14 | 14 | 30 | 88 | 216 -17518 |
| 16 | 16 | 32 | 88 | 216 -17520 |
| 18 | 18 | 36 | 100 | 216 -17522 |
| 20 | 20 | 38 | 100 | 216 -17524 |
| 22 | 22 | 38 | 100 | 216 -17526 |
| 25 | 25 | 38 | 100 | 216 -17529 |

**Tolerances:**
D1 +0.00/-0.051mm
D2 h6




# Performance Solid Carbide - *TiALN*
# Centre Cutting Slot-Drills 30° Helix
# Micro-grain K30 2-flute Ball Nosed

Series 219

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TiALN | 30° | MG HM | 2 | PLAIN

1.1 - 1.6 | 6.1 - 6.4
2.1 - 2.3 | 4.1 - 5.3
3.1 - 3.4 | 1.7 - 1.8
9.1

| Cutter Dia-D1 | Shank Dia-D2 | FL L1 | OAL L2 | Part Number |
|---|---|---|---|---|
| 1 | 3 | 3 | 38 | 219 -17501 |
| 1.5 | 3 | 5 | 38 | 219 -17502 |
| 2 | 3 | 6 | 38 | 219 -17503 |
| 2.5 | 3 | 7 | 38 | 219 -17504 |
| 3 | 3 | 12 | 38 | 219 -17505 |
| 3.5 | 4 | 12 | 50 | 219 -17506 |
| 4 | 4 | 14 | 50 | 219 -17507 |
| 4.5 | 5 | 14 | 50 | 219 -17508 |
| 5 | 5 | 16 | 50 | 219 -17509 |
| 6 | 6 | 19 | 63 | 219 -17510 |
| 7 | 8 | 19 | 63 | 219 -17511 |
| 8 | 8 | 19 | 63 | 219 -17512 |
| 9 | 10 | 22 | 70 | 219 -17513 |
| 10 | 10 | 22 | 70 | 219 -17514 |
| 11 | 11 | 25 | 70 | 219 -17515 |
| 12 | 12 | 25 | 75 | 219 -17516 |
| 14 | 14 | 30 | 88 | 219 -17518 |
| 16 | 16 | 32 | 88 | 219 -17520 |
| 18 | 18 | 36 | 100 | 219 -17522 |
| 20 | 20 | 38 | 100 | 219 -17524 |
| 22 | 22 | 38 | 100 | 219 -17526 |
| 25 | 25 | 38 | 100 | 219 -17529 |

**Tolerances:**
D1 +0.00/-0.051mm
D2 h6




**Modifications**
**Regrinds, Re coat**
**Specials**

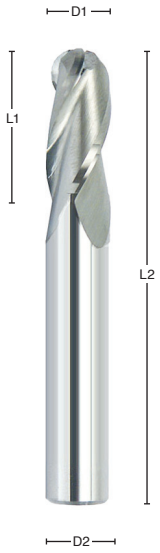
Series 316

# Solid Carbide General Purpose - Bright Finish
# Centre Cutting Slot-Drills 30° Helix
# Micro-grain K30 3-flute Ball Nosed



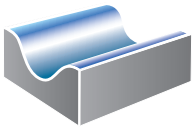

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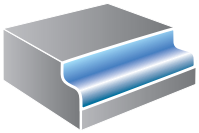
**Tolerances:**
D1 +0.00/-0.051mm
D2 h6




| Cutter Dia-D1 | Shank Dia-D2 | FL L1 | OAL L2 | Part Number |
|---|---|---|---|---|
| 1 | 3 | 3 | 38 | 316 -17601 |
| 1.5 | 3 | 5 | 38 | 316 -17602 |
| 2 | 3 | 6 | 38 | 316 -17603 |
| 2.5 | 3 | 7 | 38 | 316 -17604 |
| 3 | 3 | 12 | 38 | 316 -17605 |
| 3.5 | 4 | 12 | 50 | 316 -17606 |
| 4 | 4 | 14 | 50 | 316 -17607 |
| 4.5 | 5 | 14 | 50 | 316 -17608 |
| 5 | 5 | 16 | 50 | 316 -17609 |
| 6 | 6 | 19 | 63 | 316 -17610 |
| 7 | 8 | 19 | 63 | 316 -17611 |
| 8 | 8 | 19 | 63 | 316 -17612 |
| 9 | 10 | 22 | 70 | 316 -17613 |
| 10 | 10 | 22 | 70 | 316 -17614 |
| 11 | 11 | 25 | 70 | 316 -17615 |
| 12 | 12 | 25 | 75 | 316 -17616 |
| 14 | 14 | 30 | 88 | 316 -17618 |
| 16 | 16 | 32 | 88 | 316 -17620 |
| 18 | 18 | 36 | 100 | 316 -17622 |
| 20 | 20 | 38 | 100 | 316 -17624 |
| 22 | 22 | 38 | 100 | 316 -17626 |
| 25 | 25 | 38 | 100 | 316 -17629 |

1.1 - 1.6 | 6.1 - 8.3
2.1 - 2.3 | 4.1 - 5.3
3.1 - 3.4 | 9.1





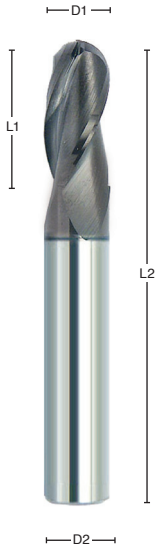
Series 319

# Performance Solid Carbide - *TiALN*
# Centre Cutting Slot-Drills 30° Helix
# Micro-grain K30 3-flute Ball Nosed




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**Tolerances:**
D1 +0.00/-0.051mm
D2 h6




| Cutter Dia-D1 | Shank Dia-D2 | FL L1 | OAL L2 | Part Number |
|---|---|---|---|---|
| 1 | 3 | 3 | 38 | 319 -17601 |
| 1.5 | 3 | 5 | 38 | 319 -17602 |
| 2 | 3 | 6 | 38 | 319 -17603 |
| 2.5 | 3 | 7 | 38 | 319 -17604 |
| 3 | 3 | 12 | 38 | 319 -17605 |
| 3.5 | 4 | 12 | 50 | 319 -17606 |
| 4 | 4 | 14 | 50 | 319 -17607 |
| 4.5 | 5 | 14 | 50 | 319 -17608 |
| 5 | 5 | 16 | 50 | 319 -17609 |
| 6 | 6 | 19 | 63 | 319 -17610 |
| 7 | 8 | 19 | 63 | 319 -17611 |
| 8 | 8 | 19 | 63 | 319 -17612 |
| 9 | 10 | 22 | 70 | 319 -17613 |
| 10 | 10 | 22 | 70 | 319 -17614 |
| 11 | 11 | 25 | 70 | 319 -17615 |
| 12 | 12 | 25 | 75 | 319 -17616 |
| 14 | 14 | 30 | 88 | 319 -17618 |
| 16 | 16 | 32 | 88 | 319 -17620 |
| 18 | 18 | 36 | 100 | 319 -17622 |
| 20 | 20 | 38 | 100 | 319 -17624 |
| 22 | 22 | 38 | 100 | 319 -17626 |
| 25 | 25 | 38 | 100 | 319 -17629 |

1.1 - 1.6 | 6.1 - 6.4
2.1 - 2.3 | 4.1 - 5.3
3.1 - 3.4 | 1.7 - 1.8
9.1

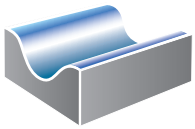
**Modifications**
**Regrinds, Re coat**
**Specials**

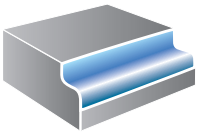
# Solid Carbide General Purpose - Bright Finish
# Centre Cutting End-Mills 30° Helix
# Micro-grain K30 4-flute Ball Nosed

Series 416

PAGE 260

1.1 - 1.6 | 6.1 - 6.4
2.1 - 2.3 | 4.1 - 5.3
3.1 - 3.4 | 9.1





MG HM | 4 | PLAIN | 30°

| Cutter Dia-D1 | Shank Dia-D2 | FL L1 | OAL L2 | Part Number |
|---|---|---|---|---|
| 1 | 3 | 3 | 38 | 416 -17701 |
| 1.5 | 3 | 5 | 38 | 416 -17702 |
| 2 | 3 | 6 | 38 | 416 -17703 |
| 2.5 | 3 | 7 | 38 | 416 -17704 |
| 3 | 3 | 12 | 38 | 416 -17705 |
| 3.5 | 4 | 12 | 50 | 416 -17706 |
| 4 | 4 | 14 | 50 | 416 -17707 |
| 4.5 | 5 | 14 | 50 | 416 -17708 |
| 5 | 5 | 16 | 50 | 416 -17709 |
| 6 | 6 | 19 | 63 | 416 -17710 |
| 7 | 8 | 19 | 63 | 416 -17711 |
| 8 | 8 | 19 | 63 | 416 -17712 |
| 9 | 10 | 22 | 70 | 416 -17713 |
| 10 | 10 | 22 | 70 | 416 -17714 |
| 11 | 11 | 25 | 70 | 416 -17715 |
| 12 | 12 | 25 | 75 | 416 -17716 |
| 14 | 14 | 30 | 88 | 416 -17718 |
| 16 | 16 | 32 | 88 | 416 -17720 |
| 18 | 18 | 36 | 100 | 416 -17722 |
| 20 | 20 | 38 | 100 | 416 -17724 |
| 22 | 22 | 38 | 100 | 416 -17726 |
| 25 | 25 | 38 | 100 | 416 -17729 |

**Tolerances:**
D1 +0.00/-0.051mm
D2 h6




# Performance Solid Carbide - *TiALN*
# Centre Cutting End-Mills 30° Helix
# Micro-grain K30 4-flute Ball Nosed

Series 419

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1.1 - 1.6 | 6.1 - 6.4
2.1 - 2.3 | 4.1 - 5.3
3.1 - 3.4 | 1.7 - 1.8
9.1

TiALN | 30° | MG HM | 4 | PLAIN

| Cutter Dia-D1 | Shank Dia-D2 | FL L1 | OAL L2 | Part Number |
|---|---|---|---|---|
| 1 | 3 | 3 | 38 | 419 -17701 |
| 1.5 | 3 | 5 | 38 | 419 -17702 |
| 2 | 3 | 6 | 38 | 419 -17703 |
| 2.5 | 3 | 7 | 38 | 419 -17704 |
| 3 | 3 | 12 | 38 | 419 -17705 |
| 3.5 | 4 | 12 | 50 | 419 -17706 |
| 4 | 4 | 14 | 50 | 419 -17707 |
| 4.5 | 5 | 14 | 50 | 419 -17708 |
| 5 | 5 | 16 | 50 | 419 -17709 |
| 6 | 6 | 19 | 63 | 419 -17710 |
| 7 | 8 | 19 | 63 | 419 -17711 |
| 8 | 8 | 19 | 63 | 419 -17712 |
| 9 | 10 | 22 | 70 | 419 -17713 |
| 10 | 10 | 22 | 70 | 419 -17714 |
| 11 | 11 | 25 | 70 | 419 -17715 |
| 12 | 12 | 25 | 75 | 419 -17716 |
| 14 | 14 | 30 | 88 | 419 -17718 |
| 16 | 16 | 32 | 88 | 419 -17720 |
| 18 | 18 | 36 | 100 | 419 -17722 |
| 20 | 20 | 38 | 100 | 419 -17724 |
| 22 | 22 | 38 | 100 | 419 -17726 |
| 25 | 25 | 38 | 100 | 419 -17729 |

**Tolerances:**
D1 +0.00/-0.051mm
D2 h6




**Modifications**
**Regrinds, Re coat**
**Specials**

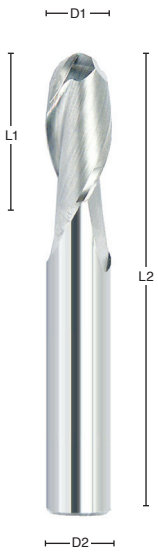
Series 216

# Solid Carbide General Purpose - Bright Finish
# Centre Cutting Slot-Drills 30° Helix
# Micro-grain K30 2-flute Ball Nosed



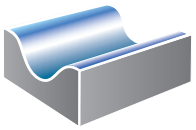

Ti PAGE 260

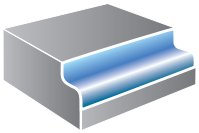
| Tolerances: | |
|---|---|
| D1 | +0.00"-0.002" |
| D2 | h6 |




| Cutter Dia-D1 | Shank Dia-D2 | FL L1 | OAL L2 | Part Number |
|---|---|---|---|---|
| 1/16" | 1/8" | 1/4" | 1-1/2" | 216 -07504 |
| 3/32" | 1/8" | 3/8" | 1-1/2" | 216 -07506 |
| 1/8" | 1/8" | 1/2" | 1-1/2" | 216 -07508 |
| 5/32" | 3/16" | 9/16" | 2" | 216 -07510 |
| 3/16" | 3/16" | 5/8" | 2" | 216 -07512 |
| 7/32" | 1/4" | 5/8" | 2-1/2" | 216 -07514 |
| 1/4" | 1/4" | 3/4" | 2-1/2" | 216 -07516 |
| 9/32" | 5/16" | 7/8" | 2-1/2" | 216 -07518 |
| 5/16" | 5/16" | 7/8" | 2-1/2" | 216 -07520 |
| 3/8" | 3/8" | 7/8" | 2-1/2" | 216 -07524 |
| 7/16" | 7/16" | 1" | 2-1/2" | 216 -07528 |
| 1/2" | 1/2" | 1" | 3" | 216 -07532 |
| 5/8" | 5/8" | 1-1/4" | 3-1/2" | 216 -07540 |
| 3/4" | 3/4" | 1-1/2" | 4" | 216 -07548 |
| 7/8" | 7/8" | 1-1/2" | 4" | 216 -07556 |
| 1" | 1" | 1-1/2" | 4" | 216 -07564 |

1.1 - 1.6 | 6.1 - 8.3
2.1 - 2.3 | 4.1 - 5.3
3.1 - 3.4 | 9.1





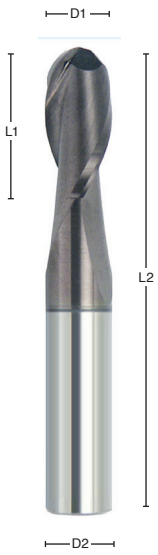
Series 219

# Performance Solid Carbide - *TiALN*
# Centre Cutting Slot-Drills 30° Helix
# Micro-grain K30 2-flute Ball Nosed




Ti PAGE 260

| Tolerances: | |
|---|---|
| D1 | +0.00"-0.002" |
| D2 | h6 |




| Cutter Dia-D1 | Shank Dia-D2 | FL L1 | OAL L2 | Part Number |
|---|---|---|---|---|
| 1/16" | 1/8" | 1/4" | 1-1/2" | 219 -07504 |
| 3/32" | 1/8" | 3/8" | 1-1/2" | 219 -07506 |
| 1/8" | 1/8" | 1/2" | 1-1/2" | 219 -07508 |
| 5/32" | 3/16" | 9/16" | 2" | 219 -07510 |
| 3/16" | 3/16" | 5/8" | 2" | 219 -07512 |
| 7/32" | 1/4" | 5/8" | 2-1/2" | 219 -07514 |
| 1/4" | 1/4" | 3/4" | 2-1/2" | 219 -07516 |
| 9/32" | 5/16" | 7/8" | 2-1/2" | 219 -07518 |
| 5/16" | 5/16" | 7/8" | 2-1/2" | 219 -07520 |
| 3/8" | 3/8" | 7/8" | 2-1/2" | 219 -07524 |
| 7/16" | 7/16" | 1" | 2-1/2" | 219 -07528 |
| 1/2" | 1/2" | 1" | 3" | 219 -07532 |
| 5/8" | 5/8" | 1-1/4" | 3-1/2" | 219 -07540 |
| 3/4" | 3/4" | 1-1/2" | 4" | 219 -07548 |
| 7/8" | 7/8" | 1-1/2" | 4" | 219 -07556 |
| 1" | 1" | 1-1/2" | 4" | 219 -07564 |

1.1 - 1.6 | 6.1 - 6.4
2.1 - 2.3 | 4.1 - 5.3
3.1 - 3.4 | 1.7 - 1.8
9.1

**Modifications**
**Regrinds, Re coat**
**Specials**

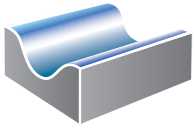
# Solid Carbide General Purpose - Bright Finish
# Centre Cutting Slot-Drills 30° Helix
# Micro-grain K30 3-flute Ball Nosed

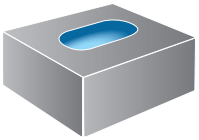
Series 316

PAGE 260

30° | MG HM | 3 | PLAIN

1.1 - 1.6 | 6.1 - 8.3
2.1 - 2.3 | 4.1 - 5.3
3.1 - 3.4 | 9.1





| Cutter Dia-D1 | Shank Dia-D2 | FL L1 | OAL L2 | Part Number |
|---|---|---|---|---|
| 1/16" | 1/8" | 1/4" | 1-1/2" | 316 -07604 |
| 3/32" | 1/8" | 3/8" | 1-1/2" | 316 -07606 |
| 1/8" | 1/8" | 1/2" | 1-1/2" | 316 -07608 |
| 5/32" | 3/16" | 9/16" | 2" | 316 -07610 |
| 3/16" | 3/16" | 5/8" | 2" | 316 -07612 |
| 7/32" | 1/4" | 5/8" | 2-1/2" | 316 -07614 |
| 1/4" | 1/4" | 3/4" | 2-1/2" | 316 -07616 |
| 9/32" | 5/16" | 7/8" | 2-1/2" | 316 -07618 |
| 5/16" | 5/16" | 7/8" | 2-1/2" | 316 -07620 |
| 3/8" | 3/8" | 7/8" | 2-1/2" | 316 -07624 |
| 7/16" | 7/16" | 1" | 2-1/2" | 316 -07628 |
| 1/2" | 1/2" | 1" | 3" | 316 -07632 |
| 5/8" | 5/8" | 1-1/4" | 3-1/2" | 316 -07640 |
| 3/4" | 3/4" | 1-1/2" | 4" | 316 -07648 |
| 7/8" | 7/8" | 1-1/2" | 4" | 316 -07656 |
| 1" | 1" | 1-1/2" | 4" | 316 -07664 |

**Tolerances:**

| | |
|---|---|
| D1 | +0.00"-0.002" |
| D2 | h6 |




# Performance Solid Carbide - *TiALN*
# Centre Cutting Slot-Drills 30° Helix
# Micro-grain K30 3-flute Ball Nosed

Series 319

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TiALN | 30° | MG HM | 3 | PLAIN

1.1 - 1.6 | 6.1 - 6.4
2.1 - 2.3 | 4.1 - 5.3
3.1 - 3.4 | 1.7 - 1.8
9.1

| Cutter Dia-D1 | Shank Dia-D2 | FL L1 | OAL L2 | Part Number |
|---|---|---|---|---|
| 1/16" | 1/8" | 1/4" | 1-1/2" | 319 -07604 |
| 3/32" | 1/8" | 3/8" | 1-1/2" | 319 -07606 |
| 1/8" | 1/8" | 1/2" | 1-1/2" | 319 -07608 |
| 5/32" | 3/16" | 9/16" | 2" | 319 -07610 |
| 3/16" | 3/16" | 5/8" | 2" | 319 -07612 |
| 7/32" | 1/4" | 5/8" | 2-1/2" | 319 -07614 |
| 1/4" | 1/4" | 3/4" | 2-1/2" | 319 -07616 |
| 9/32" | 5/16" | 7/8" | 2-1/2" | 319 -07618 |
| 5/16" | 5/16" | 7/8" | 2-1/2" | 319 -07620 |
| 3/8" | 3/8" | 7/8" | 2-1/2" | 319 -07624 |
| 7/16" | 7/16" | 1" | 2-1/2" | 319 -07628 |
| 1/2" | 1/2" | 1" | 3" | 319 -07632 |
| 5/8" | 5/8" | 1-1/4" | 3-1/2" | 319 -07640 |
| 3/4" | 3/4" | 1-1/2" | 4" | 319 -07648 |
| 7/8" | 7/8" | 1-1/2" | 4" | 319 -07656 |
| 1" | 1" | 1-1/2" | 4" | 319 -07664 |

**Tolerances:**

| | |
|---|---|
| D1 | +0.00"-0.002" |
| D2 | h6 |




**Modifications**
**Regrinds, Re coat**
**Specials**

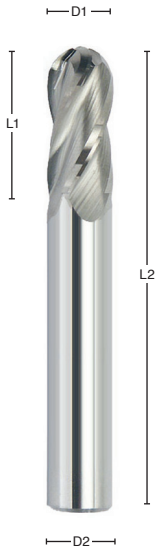
Series 416

# Solid Carbide General Purpose - Bright Finish
# Centre Cutting End-Mills 30° Helix
# Micro-grain K30 4-flute Ball Nosed



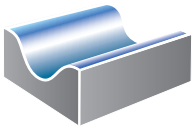

Ti PAGE 260

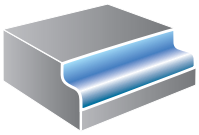
| Tolerances: | |
|---|---|
| D1 | +0.00"-0.002" |
| D2 | h6 |




| Cutter Dia-D1 | Shank Dia-D2 | FL L1 | OAL L2 | Part Number |
|---|---|---|---|---|
| 1/16" | 1/8" | 1/4" | 1-1/2" | 416 -07704 |
| 3/32" | 1/8" | 3/8" | 1-1/2" | 416 -07706 |
| 1/8" | 1/8" | 1/2" | 1-1/2" | 416 -07708 |
| 5/32" | 3/16" | 9/16" | 2" | 416 -07710 |
| 3/16" | 3/16" | 5/8" | 2" | 416 -07712 |
| 7/32" | 1/4" | 5/8" | 2-1/2" | 416 -07714 |
| 1/4" | 1/4" | 3/4" | 2-1/2" | 416 -07716 |
| 9/32" | 5/16" | 7/8" | 2-1/2" | 416 -07718 |
| 5/16" | 5/16" | 7/8" | 2-1/2" | 416 -07720 |
| 3/8" | 3/8" | 7/8" | 2-1/2" | 416 -07724 |
| 7/16" | 7/16" | 1" | 2-1/2" | 416 -07728 |
| 1/2" | 1/2" | 1" | 3" | 416 -07732 |
| 5/8" | 5/8" | 1-1/4" | 3-1/2" | 416 -07740 |
| 3/4" | 3/4" | 1-1/2" | 4" | 416 -07748 |
| 7/8" | 7/8" | 1-1/2" | 4" | 416 -07756 |
| 1" | 1" | 1-1/2" | 4" | 416 -07764 |

1.1 - 1.6 | 6.1 - 6.4
2.1 - 2.3 | 4.1 - 5.3
3.1 - 3.4 | 9.1





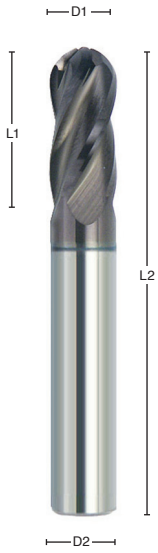
Series 419

# Performance Solid Carbide - *TiALN*
# Centre Cutting End-Mills 30° Helix
# Micro-grain K30 4-flute Ball Nosed




Ti PAGE 260

| Tolerances: | |
|---|---|
| D1 | +0.00"-0.002" |
| D2 | h6 |




| Cutter Dia-D1 | Shank Dia-D2 | FL L1 | OAL L2 | Part Number |
|---|---|---|---|---|
| 1/16" | 1/8" | 1/4" | 1-1/2" | 419 -07704 |
| 3/32" | 1/8" | 3/8" | 1-1/2" | 419 -07706 |
| 1/8" | 1/8" | 1/2" | 1-1/2" | 419 -07708 |
| 5/32" | 3/16" | 9/16" | 2" | 419 -07710 |
| 3/16" | 3/16" | 5/8" | 2" | 419 -07712 |
| 7/32" | 1/4" | 5/8" | 2-1/2" | 419 -07714 |
| 1/4" | 1/4" | 3/4" | 2-1/2" | 419 -07716 |
| 9/32" | 5/16" | 7/8" | 2-1/2" | 419 -07718 |
| 5/16" | 5/16" | 7/8" | 2-1/2" | 419 -07720 |
| 3/8" | 3/8" | 7/8" | 2-1/2" | 419 -07724 |
| 7/16" | 7/16" | 1" | 2-3/4" | 419 -07728 |
| 1/2" | 1/2" | 1" | 3" | 419 -07732 |
| 5/8" | 5/8" | 1-1/4" | 3-1/2" | 419 -07740 |
| 3/4" | 3/4" | 1-1/2" | 4" | 419 -07748 |
| 7/8" | 7/8" | 1-1/2" | 4" | 419 -07756 |
| 1" | 1" | 1-1/2" | 4" | 419 -07764 |

1.1 - 1.6 | 6.1 - 6.4
2.1 - 2.3 | 4.1 - 5.3
3.1 - 3.4 | 1.7 - 1.8
9.1

**Modifications**
**Regrinds, Re coat**
**Specials**

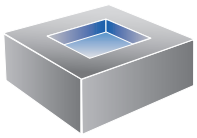
# Solid Carbide General Purpose - Bright Finish
# Centre Cutting Slot-Drills 30° Helix
# Micro-grain K30 2-flute Stub Mills

Series 211S

Ti PAGE 260

MG HM | 30° | 2 | PLAIN

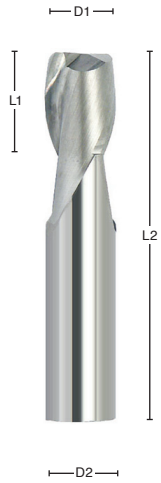
1.1 - 1.6 | 6.1 - 8.3
2.1 - 2.3 | 4.1 - 5.3
3.1 - 3.4 | 9.1





| Cutter Dia-D1 | Shank Dia-D2 | FL L1 | OAL L2 | Part Number |
|---|---|---|---|---|
| 1 | 3 | 2 | 38 | 211S -85001 |
| 1.5 | 3 | 3 | 38 | 211S -85051 |
| 2 | 3 | 4 | 38 | 211S -85101 |
| 2.5 | 3 | 5 | 38 | 211S -85151 |
| 3 | 3 | 6 | 38 | 211S -85201 |
| 3.5 | 4 | 7 | 50 | 211S -85251 |
| 4 | 4 | 8 | 50 | 211S -85301 |
| 4.5 | 5 | 9 | 50 | 211S -85351 |
| 5 | 5 | 10 | 50 | 211S -85401 |
| 6 | 6 | 12 | 50 | 211S -85451 |
| 8 | 8 | 12 | 50 | 211S -85501 |
| 10 | 10 | 14 | 50 | 211S -85551 |
| 12 | 12 | 16 | 63 | 211S -85601 |
| 16 | 16 | 20 | 75 | 211S -85651 |
| 20 | 20 | 25 | 75 | 211S -85701 |

**Tolerances:**
D1 +0.00/-0.051mm
D2 h6




# Performance Solid Carbide - *TiALN*
# Centre Cutting Slot-Drills 30° Helix
# Micro-grain K30 2-flute Stub Mills

Series 214S

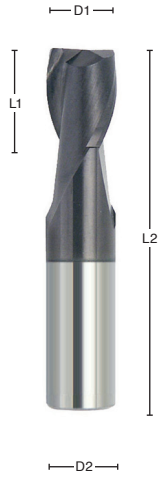
Ti PAGE 260

TiALN | 30° | MG HM | 2 | PLAIN

1.1 - 1.6 | 6.1 - 6.4
2.1 - 2.3 | 4.1 - 5.3
3.1 - 3.4 | 1.7 - 1.8
9.1

| Cutter Dia-D1 | Shank Dia-D2 | FL L1 | OAL L2 | Part Number |
|---|---|---|---|---|
| 1 | 3 | 2 | 38 | 214S -85001 |
| 1.5 | 3 | 3 | 38 | 214S -85051 |
| 2 | 3 | 4 | 38 | 214S -85101 |
| 2.5 | 3 | 5 | 38 | 214S -85151 |
| 3 | 3 | 6 | 38 | 214S -85201 |
| 3.5 | 4 | 7 | 50 | 214S -85251 |
| 4 | 4 | 8 | 50 | 214S -85301 |
| 4.5 | 5 | 9 | 50 | 214S -85351 |
| 5 | 5 | 10 | 50 | 214S -85401 |
| 6 | 6 | 12 | 50 | 214S -85451 |
| 8 | 8 | 12 | 50 | 214S -85501 |
| 10 | 10 | 14 | 50 | 214S -85551 |
| 12 | 12 | 16 | 63 | 214S -85601 |
| 16 | 16 | 20 | 75 | 214S -85651 |
| 20 | 20 | 25 | 75 | 214S -85701 |

**Tolerances:**
D1 +0.00/-0.051mm
D2 h6




**Modifications**
**Regrinds, Re coat**
**Specials**

Series 311S

# Solid Carbide General Purpose - Bright Finish
# Centre Cutting Slot-Drills 30° Helix
# Micro-grain K30 3-flute Stub Mills

MG HM | 30° | 3 | PLAIN

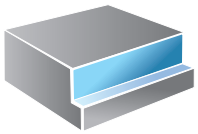
Ti PAGE 260

**Tolerances:**
D1 +0.00/-0.051mm
D2 h6




| Cutter Dia-D1 | Shank Dia-D2 | FL L1 | OAL L2 | Part Number |
|---|---|---|---|---|
| 1 | 3 | 2 | 38 | 311S -85002 |
| 1.5 | 3 | 3 | 38 | 311S -85052 |
| 2 | 3 | 4 | 38 | 311S -85102 |
| 2.5 | 3 | 5 | 38 | 311S -85152 |
| 3 | 3 | 6 | 38 | 311S -85202 |
| 3.5 | 4 | 7 | 50 | 311S -85252 |
| 4 | 4 | 8 | 50 | 311S -85302 |
| 4.5 | 5 | 9 | 50 | 311S -85352 |
| 5 | 5 | 10 | 50 | 311S -85402 |
| 6 | 6 | 12 | 50 | 311S -85452 |
| 8 | 8 | 12 | 50 | 311S -85502 |
| 10 | 10 | 14 | 50 | 311S -85552 |
| 12 | 12 | 16 | 63 | 311S -85602 |
| 16 | 16 | 20 | 75 | 311S -85652 |
| 20 | 20 | 25 | 75 | 311S -85702 |

1.1 - 1.6 | 6.1 - 8.3
2.1 - 2.3 | 4.1 - 5.3
3.1 - 3.4 | 9.1





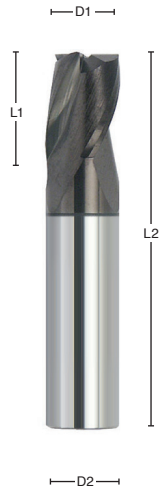
Series 314S

# Performance Solid Carbide - TiALN
# Centre Cutting Slot-Drills 30° Helix
# Micro-grain K30 3-flute Stub Mills

MG HM | 30° | 3 | PLAIN | TiALN

Ti PAGE 260

**Tolerances:**
D1 +0.00/-0.051mm
D2 h6




| Cutter Dia-D1 | Shank Dia-D2 | FL L1 | OAL L2 | Part Number |
|---|---|---|---|---|
| 1 | 3 | 2 | 38 | 314S -85002 |
| 1.5 | 3 | 3 | 38 | 314S -85052 |
| 2 | 3 | 4 | 38 | 314S -85102 |
| 2.5 | 3 | 5 | 38 | 314S -85152 |
| 3 | 3 | 6 | 38 | 314S -85202 |
| 3.5 | 4 | 7 | 50 | 314S -85252 |
| 4 | 4 | 8 | 50 | 314S -85302 |
| 4.5 | 5 | 9 | 50 | 314S -85352 |
| 5 | 5 | 10 | 50 | 314S -85402 |
| 6 | 6 | 12 | 50 | 314S -85452 |
| 8 | 8 | 12 | 50 | 314S -85502 |
| 10 | 10 | 14 | 50 | 314S -85552 |
| 12 | 12 | 16 | 63 | 314S -85602 |
| 16 | 16 | 20 | 75 | 314S -85652 |
| 20 | 20 | 25 | 75 | 314S -85702 |

1.1 - 1.6 | 6.1 - 6.4
2.1 - 2.3 | 4.1 - 5.3
3.1 - 3.4 | 1.7 - 1.8
9.1

**Modifications**
**Regrinds, Re coat**
**Specials**

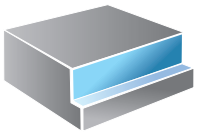
# Solid Carbide General Purpose - Bright Finish
# Centre Cutting End-Mills 30° Helix
# Micro-grain K30 4-flute Stub Mills

Series 411S

PAGE 260

MG HM | 30° | 4 | PLAIN

1.1 - 1.6 | 6.1 - 6.4 | 2.1 - 2.3 | 4.1 - 5.3 | 3.1 - 3.4 | 9.1



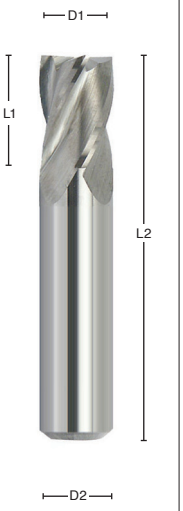


| Cutter Dia-D1 | Shank Dia-D2 | FL L1 | OAL L2 | Part Number |
|---|---|---|---|---|
| 1 | 3 | 2 | 38 | 411S -85000 |
| 1.5 | 3 | 3 | 38 | 411S -85050 |
| 2 | 3 | 4 | 38 | 411S -85100 |
| 2.5 | 3 | 5 | 38 | 411S -85150 |
| 3 | 3 | 6 | 38 | 411S -85200 |
| 3.5 | 4 | 7 | 50 | 411S -85250 |
| 4 | 4 | 8 | 50 | 411S -85300 |
| 4.5 | 5 | 9 | 50 | 411S -85350 |
| 5 | 5 | 10 | 50 | 411S -85400 |
| 6 | 6 | 12 | 50 | 411S -85450 |
| 8 | 8 | 12 | 50 | 411S -85500 |
| 10 | 10 | 14 | 50 | 411S -85550 |
| 12 | 12 | 16 | 63 | 411S -85600 |
| 16 | 16 | 20 | 75 | 411S -85650 |
| 20 | 20 | 25 | 75 | 411S -85700 |

**Tolerances:**

D1 +0.00/-0.051mm

D2 h6




# Performance Solid Carbide - *TiALN*
# Centre Cutting End-Mills 30° Helix
# Micro-grain K30 4-flute Stub Mills

Series 414S

PAGE 260

TiALN | 30° | MG HM | 4 | PLAIN

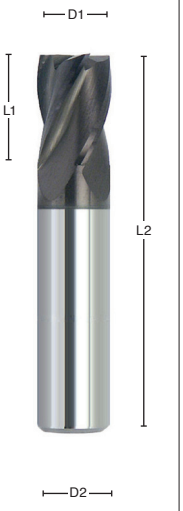
1.1 - 1.6 | 6.1 - 6.4 | 2.1 - 2.3 | 4.1 - 5.3 | 3.1 - 3.4 | 1.7 - 1.8 | 9.1

| Cutter Dia-D1 | Shank Dia-D2 | FL L1 | OAL L2 | Part Number |
|---|---|---|---|---|
| 1 | 3 | 2 | 38 | 414S -85000 |
| 1.5 | 3 | 3 | 38 | 414S -85050 |
| 2 | 3 | 4 | 38 | 414S -85100 |
| 2.5 | 3 | 5 | 38 | 414S -85150 |
| 3 | 3 | 6 | 38 | 414S -85200 |
| 3.5 | 4 | 7 | 50 | 414S -85250 |
| 4 | 4 | 8 | 50 | 414S -85300 |
| 4.5 | 5 | 9 | 50 | 414S -85350 |
| 5 | 5 | 10 | 50 | 414S -85400 |
| 6 | 6 | 12 | 50 | 414S -85450 |
| 8 | 8 | 12 | 50 | 414S -85500 |
| 10 | 10 | 14 | 50 | 414S -85550 |
| 12 | 12 | 16 | 63 | 414S -85600 |
| 16 | 16 | 20 | 75 | 414S -85650 |
| 20 | 20 | 25 | 75 | 414S -85700 |

**Tolerances:**

D1 +0.00/-0.051mm

D2 h6




**Modifications**
**Regrinds, Re coat**
**Specials**

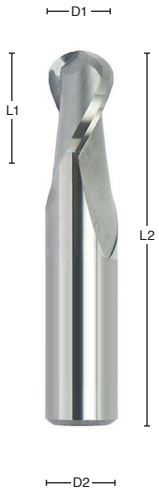
Series 216S

# Solid Carbide General Purpose - Bright Finish
# Centre Cutting Slot-Drills 30° Helix
# Micro-grain K30 2-flute Ball Nosed Stub Mills



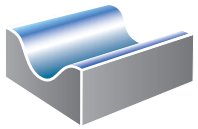

Ti PAGE 260

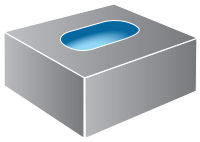
**Tolerances:**
D1 +0.00/-0.051mm
D2 h6




| Cutter Dia-D1 | Shank Dia-D2 | FL L1 | OAL L2 | Part Number |
|---|---|---|---|---|
| 1 | 3 | 2 | 38 | 216S -85005 |
| 1.5 | 3 | 3 | 38 | 216S -85055 |
| 2 | 3 | 4 | 38 | 216S -85105 |
| 2.5 | 3 | 5 | 38 | 216S -85155 |
| 3 | 3 | 6 | 38 | 216S -85205 |
| 3.5 | 4 | 7 | 50 | 216S -85255 |
| 4 | 4 | 8 | 50 | 216S -85305 |
| 4.5 | 5 | 9 | 50 | 216S -85355 |
| 5 | 5 | 10 | 50 | 216S -85405 |
| 6 | 6 | 12 | 50 | 216S -85455 |
| 8 | 8 | 12 | 50 | 216S -85505 |
| 10 | 10 | 14 | 50 | 216S -85555 |
| 12 | 12 | 16 | 63 | 216S -85605 |
| 16 | 16 | 20 | 75 | 216S -85655 |
| 20 | 20 | 25 | 75 | 216S -85705 |

1.1 - 1.6 | 6.1 - 8.3
2.1 - 2.3 | 4.1 - 5.3
3.1 - 3.4 | 9.1





Series 219S

# Performance Solid Carbide - *TiALN*
# Centre Cutting Slot-Drills 30° Helix
# Micro-grain K30 2-flute Ball Nosed Stub Mills




Ti PAGE 260

**Tolerances:**
D1 +0.00/-0.051mm
D2 h6




| Cutter Dia-D1 | Shank Dia-D2 | FL L1 | OAL L2 | Part Number |
|---|---|---|---|---|
| 1 | 3 | 2 | 38 | 219S -85005 |
| 1.5 | 3 | 3 | 38 | 219S -85055 |
| 2 | 3 | 4 | 38 | 219S -85105 |
| 2.5 | 3 | 5 | 38 | 219S -85155 |
| 3 | 3 | 6 | 38 | 219S -85205 |
| 3.5 | 4 | 7 | 50 | 219S -85255 |
| 4 | 4 | 8 | 50 | 219S -85305 |
| 4.5 | 5 | 9 | 50 | 219S -85355 |
| 5 | 5 | 10 | 50 | 219S -85405 |
| 6 | 6 | 12 | 50 | 219S -85455 |
| 8 | 8 | 12 | 50 | 219S -85505 |
| 10 | 10 | 14 | 50 | 219S -85555 |
| 12 | 12 | 16 | 63 | 219S -85605 |
| 16 | 16 | 20 | 75 | 219S -85655 |
| 20 | 20 | 25 | 75 | 219S -85705 |

1.1 - 1.6 | 6.1 - 6.4
2.1 - 2.3 | 4.1 - 5.3
3.1 - 3.4 | 1.7 - 1.8
9.1

**Modifications**
**Regrinds, Re coat**
**Specials**

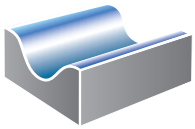
# Solid Carbide General Purpose - Bright Finish
# Centre Cutting Slot-Drills 30° Helix
# Micro-grain K30 3-flute Ball Nosed Stub Mills

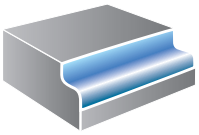
Series 316S

Ti PAGE 260

30° | MG HM | 3 | PLAIN

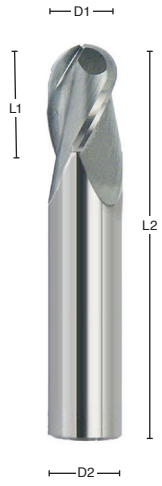
1.1 - 1.6 | 6.1 - 8.3
2.1 - 2.3 | 4.1 - 5.3
3.1 - 3.4 | 9.1





| Cutter Dia-D1 | Shank Dia-D2 | FL L1 | OAL L2 | Part Number |
|---|---|---|---|---|
| 1 | 3 | 2 | 38 | 316S -85006 |
| 1.5 | 3 | 3 | 38 | 316S -85056 |
| 2 | 3 | 4 | 38 | 316S -85106 |
| 2.5 | 3 | 5 | 38 | 316S -85156 |
| 3 | 3 | 6 | 38 | 316S -85206 |
| 3.5 | 4 | 7 | 50 | 316S -85256 |
| 4 | 4 | 8 | 50 | 316S -85306 |
| 4.5 | 5 | 9 | 50 | 316S -85356 |
| 5 | 5 | 10 | 50 | 316S -85406 |
| 6 | 6 | 12 | 50 | 316S -85456 |
| 8 | 8 | 12 | 50 | 316S -85506 |
| 10 | 10 | 14 | 50 | 316S -85556 |
| 12 | 12 | 16 | 63 | 316S -85606 |
| 16 | 16 | 20 | 75 | 316S -85656 |
| 20 | 20 | 25 | 75 | 316S -85706 |

**Tolerances:**
D1 +0.00/-0.051mm
D2 h6




# Performance Solid Carbide - *TiALN*
# Centre Cutting Slot-Drills 30° Helix
# Micro-grain K30 3-flute Ball Nosed Stub Mills

Series 319S

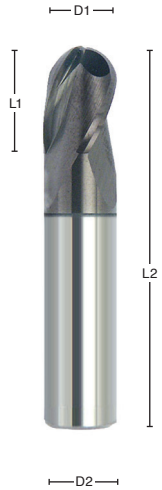
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TiALN | 30° | MG HM | 3 | PLAIN

1.1 - 1.6 | 6.1 - 6.4
2.1 - 2.3 | 4.1 - 5.3
3.1 - 3.4 | 1.7 - 1.8
9.1

| Cutter Dia-D1 | Shank Dia-D2 | FL L1 | OAL L2 | Part Number |
|---|---|---|---|---|
| 1 | 3 | 2 | 38 | 319S -85006 |
| 1.5 | 3 | 3 | 38 | 319S -85056 |
| 2 | 3 | 4 | 38 | 319S -85106 |
| 2.5 | 3 | 5 | 38 | 319S -85156 |
| 3 | 3 | 6 | 38 | 319S -85206 |
| 3.5 | 4 | 7 | 50 | 319S -85256 |
| 4 | 4 | 8 | 50 | 319S -85306 |
| 4.5 | 5 | 9 | 50 | 319S -85356 |
| 5 | 5 | 10 | 50 | 319S -85406 |
| 6 | 6 | 12 | 50 | 319S -85456 |
| 8 | 8 | 12 | 50 | 319S -85506 |
| 10 | 10 | 14 | 50 | 319S -85556 |
| 12 | 12 | 16 | 63 | 319S -85606 |
| 16 | 16 | 20 | 75 | 319S -85656 |
| 20 | 20 | 25 | 75 | 319S -85706 |

**Tolerances:**
D1 +0.00/-0.051mm
D2 h6




**Modifications**
**Regrinds, Re coat**
**Specials**

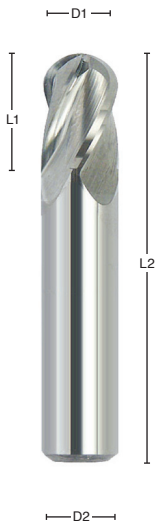
Series 416S

# Solid Carbide General Purpose - Bright Finish
# Centre Cutting End-Mills 30° Helix
# Micro-grain K30 4-flute Ball Nosed Stub Mills



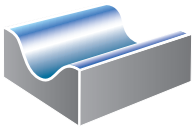

PAGE 260

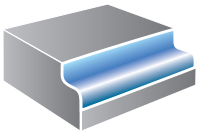
| Tolerances: |
|---|
| D1 +0.00/-0.051mm |
| D2 h6 |




| Cutter Dia-D1 | Shank Dia-D2 | FL L1 | OAL L2 | Part Number |
|---|---|---|---|---|
| 1 | 3 | 2 | 38 | 416S -85004 |
| 1.5 | 3 | 3 | 38 | 416S -85054 |
| 2 | 3 | 4 | 38 | 416S -85104 |
| 2.5 | 3 | 5 | 38 | 416S -85154 |
| 3 | 3 | 6 | 38 | 416S -85204 |
| 3.5 | 4 | 7 | 50 | 416S -85254 |
| 4 | 4 | 8 | 50 | 416S -85304 |
| 4.5 | 5 | 9 | 50 | 416S -85354 |
| 5 | 5 | 10 | 50 | 416S -85404 |
| 6 | 6 | 12 | 50 | 416S -85454 |
| 8 | 8 | 12 | 50 | 416S -85504 |
| 10 | 10 | 14 | 50 | 416S -85554 |
| 12 | 12 | 16 | 63 | 416S -85604 |
| 16 | 16 | 20 | 75 | 416S -85654 |
| 20 | 20 | 25 | 75 | 416S -85704 |

1.1 - 1.6 | 6.1 - 6.4
2.1 - 2.3 | 4.1 - 5.3
3.1 - 3.4 | 9.1





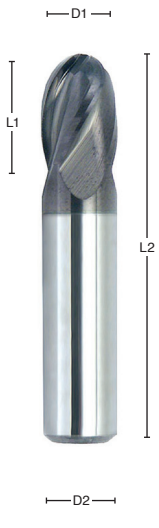
Series 419S

# Performance Solid Carbide - *TiALN*
# Centre Cutting End-Mills 30° Helix
# Micro-grain K30 4-flute Ball Nosed Stub Mills




PAGE 260

| Tolerances: |
|---|
| D1 +0.00/-0.051mm |
| D2 h6 |




| Cutter Dia-D1 | Shank Dia-D2 | FL L1 | OAL L2 | Part Number |
|---|---|---|---|---|
| 1 | 3 | 2 | 38 | 419S -85004 |
| 1.5 | 3 | 3 | 38 | 419S -85054 |
| 2 | 3 | 4 | 38 | 419S -85104 |
| 2.5 | 3 | 5 | 38 | 419S -85154 |
| 3 | 3 | 6 | 38 | 419S -85204 |
| 3.5 | 4 | 7 | 50 | 419S -85254 |
| 4 | 4 | 8 | 50 | 419S -85304 |
| 4.5 | 5 | 9 | 50 | 419S -85354 |
| 5 | 5 | 10 | 50 | 419S -85404 |
| 6 | 6 | 12 | 50 | 419S -85454 |
| 8 | 8 | 12 | 50 | 419S -85504 |
| 10 | 10 | 14 | 50 | 419S -85554 |
| 12 | 12 | 16 | 63 | 419S -85604 |
| 16 | 16 | 20 | 75 | 419S -85654 |
| 20 | 20 | 25 | 75 | 419S -85704 |

1.1 - 1.6 | 6.1 - 6.4
2.1 - 2.3 | 4.1 - 5.3
3.1 - 3.4 | 1.7 - 1.8
9.1

**Modifications**
**Regrinds, Re coat**
**Specials**

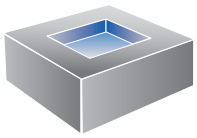
# Solid Carbide General Purpose - Bright Finish
# Centre Cutting Slot-Drills 30° Helix
# Micro-grain K30 2-flute DE Stub

Series 251

Ti PAGE 260

MG HM | 30° | 2 | PLAIN

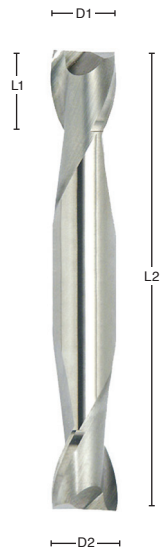
1.1 - 1.6 | 6.1 - 8.3
2.1 - 2.3 | 4.1 - 5.3
3.1 - 3.4 | 9.1





| Cutter Dia-D1 | Shank Dia-D2 | FL L1 | OAL L2 | Part Number |
|---|---|---|---|---|
| 2 | 3 | 4 | 38 | 251 -11503 |
| 2.5 | 3 | 5 | 38 | 251 -11504 |
| 3 | 3 | 6 | 38 | 251 -11505 |
| 3.5 | 4 | 7 | 50 | 251 -11506 |
| 4 | 4 | 8 | 50 | 251 -11507 |
| 5 | 5 | 10 | 50 | 251 -11509 |
| 6 | 6 | 12 | 63 | 251 -11510 |
| 8 | 8 | 12 | 63 | 251 -11512 |
| 10 | 10 | 12 | 70 | 251 -11514 |
| 12 | 12 | 16 | 75 | 251 -11516 |

**Tolerances:**
D1 +0.00/-0.051mm
D2 h6




# Performance Solid Carbide - *TiALN*
# Centre Cutting Slot-Drills 30° Helix
# Micro-grain K30 2-flute DE Stub

Series 259

Ti PAGE 260

TiALN | 30° | MG HM | 2 | PLAIN

1.1 - 1.6 | 6.1 - 6.4
2.1 - 2.3 | 4.1 - 5.3
3.1 - 3.4 | 1.7 - 1.8
9.1

| Cutter Dia-D1 | Shank Dia-D2 | FL L1 | OAL L2 | Part Number |
|---|---|---|---|---|
| 2 | 3 | 4 | 38 | 259 -11503 |
| 2.5 | 3 | 5 | 38 | 259 -11504 |
| 3 | 3 | 6 | 38 | 259 -11505 |
| 3.5 | 4 | 7 | 50 | 259 -11506 |
| 4 | 4 | 8 | 50 | 259 -11507 |
| 5 | 5 | 10 | 50 | 259 -11509 |
| 6 | 6 | 12 | 63 | 259 -11510 |
| 8 | 8 | 12 | 63 | 259 -11512 |
| 10 | 10 | 12 | 70 | 259 -11514 |
| 12 | 12 | 16 | 75 | 259 -11516 |

**Tolerances:**
D1 +0.00/-0.051mm
D2 h6




**Modifications**
**Regrinds, Re coat**
**Specials**

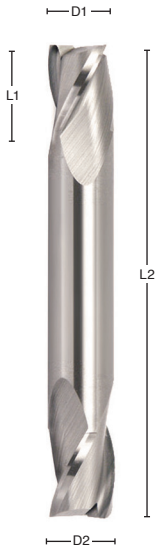
Series 351

# Solid Carbide General Purpose - Bright Finish
# Centre Cutting Slot-Drills 30° Helix
# Micro-grain K30 3-flute DE Stub

MG HM | 30° | 3 | PLAIN

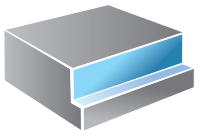
Ti PAGE 260

| Tolerances: |
|---|
| D1 +0.00/-0.051mm |
| D2 h6 |




| Cutter Dia-D1 | Shank Dia-D2 | FL L1 | OAL L2 | Part Number |
|---|---|---|---|---|
| 2 | 3 | 4 | 38 | 351 -11603 |
| 2.5 | 3 | 5 | 38 | 351 -11604 |
| 3 | 3 | 6 | 38 | 351 -11605 |
| 3.5 | 4 | 7 | 50 | 351 -11606 |
| 4 | 4 | 8 | 50 | 351 -11607 |
| 5 | 5 | 10 | 50 | 351 -11609 |
| 6 | 6 | 12 | 63 | 351 -11610 |
| 8 | 8 | 12 | 63 | 351 -11612 |
| 10 | 10 | 12 | 70 | 351 -11614 |
| 12 | 12 | 16 | 75 | 351 -11616 |

1.1 - 1.6 | 6.1 - 8.3
2.1 - 2.3 | 4.1 - 5.3
3.1 - 3.4 | 9.1





Series 359

# Performance Solid Carbide - *TiALN*
# Centre Cutting Slot-Drills 30° Helix
# Micro-grain K30 3-flute DE Stub

MG HM | 30° | 3 | PLAIN | TiALN

Ti PAGE 260

| Tolerances: |
|---|
| D1 +0.00/-0.051mm |
| D2 h6 |




| Cutter Dia-D1 | Shank Dia-D2 | FL L1 | OAL L2 | Part Number |
|---|---|---|---|---|
| 2 | 3 | 4 | 38 | 359 -11603 |
| 2.5 | 3 | 5 | 38 | 359 -11604 |
| 3 | 3 | 6 | 38 | 359 -11605 |
| 3.5 | 4 | 7 | 50 | 359 -11606 |
| 4 | 4 | 8 | 50 | 359 -11607 |
| 5 | 5 | 10 | 50 | 359 -11609 |
| 6 | 6 | 12 | 63 | 359 -11610 |
| 8 | 8 | 12 | 63 | 359 -11612 |
| 10 | 10 | 12 | 70 | 359 -11614 |
| 12 | 12 | 16 | 75 | 359 -11616 |

1.1 - 1.6 | 6.1 - 6.4
2.1 - 2.3 | 4.1 - 5.3
3.1 - 3.4 | 1.7 - 1.8
9.1

**Modifications**
**Regrinds, Re coat**
**Specials**

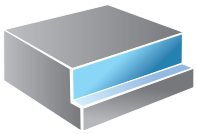
# Solid Carbide General Purpose - Bright Finish
# Centre Cutting End-Mills 30° Helix
# Micro-grain K30 4-flute DE Stub

Series 451

Ti PAGE 260

30° | MG HM | 4 | PLAIN

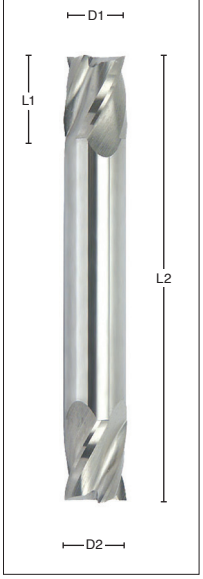
1.1 - 1.6 | 6.1 - 6.4
2.1 - 2.3 | 4.1 - 5.3
3.1 - 3.4 | 9.1





| Cutter Dia-D1 | Shank Dia-D2 | FL L1 | OAL L2 | Part Number |
|---|---|---|---|---|
| 2 | 3 | 4 | 38 | 451 -11703 |
| 2.5 | 3 | 5 | 38 | 451 -11704 |
| 3 | 3 | 6 | 38 | 451 -11705 |
| 3.5 | 4 | 7 | 50 | 451 -11706 |
| 4 | 4 | 8 | 50 | 451 -11707 |
| 5 | 5 | 10 | 50 | 451 -11709 |
| 6 | 6 | 12 | 63 | 451 -11710 |
| 8 | 8 | 12 | 63 | 451 -11712 |
| 10 | 10 | 12 | 70 | 451 -11714 |
| 12 | 12 | 16 | 75 | 451 -11716 |

**Tolerances:**
D1 +0.00/-0.051mm
D2 h6




# Performance Solid Carbide - *TiALN*
# Centre Cutting End-Mills 30° Helix
# Micro-grain K30 4-flute DE Stub

Series 459

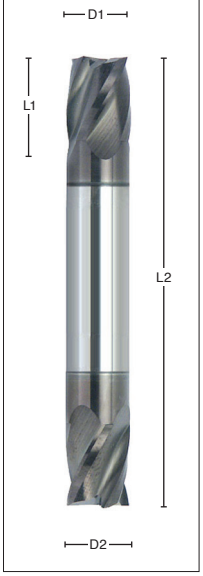
Ti PAGE 260

TiALN | 30° | MG HM | 4 | PLAIN

1.1 - 1.6 | 6.1 - 6.4
2.1 - 2.3 | 4.1 - 5.3
3.1 - 3.4 | 1.7 - 1.8
9.1

| Cutter Dia-D1 | Shank Dia-D2 | FL L1 | OAL L2 | Part Number |
|---|---|---|---|---|
| 2 | 3 | 4 | 38 | 459 -11703 |
| 2.5 | 3 | 5 | 38 | 459 -11704 |
| 3 | 3 | 6 | 38 | 459 -11705 |
| 3.5 | 4 | 7 | 50 | 459 -11706 |
| 4 | 4 | 8 | 50 | 459 -11707 |
| 5 | 5 | 10 | 50 | 459 -11709 |
| 6 | 6 | 12 | 63 | 459 -11710 |
| 8 | 8 | 12 | 63 | 459 -11712 |
| 10 | 10 | 12 | 70 | 459 -11714 |
| 12 | 12 | 16 | 75 | 459 -11716 |

**Tolerances:**
D1 +0.00/-0.051mm
D2 h6




**Modifications**
**Regrinds, Re coat**
**Specials**

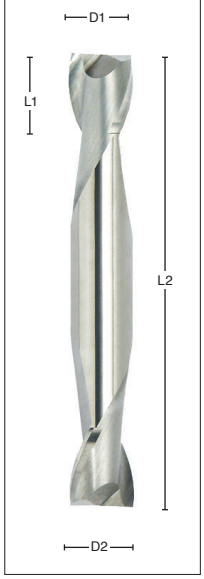
Series 251

# Solid Carbide General Purpose - Bright Finish
# Centre Cutting Slot-Drills 30° Helix
# Micro-grain K30 2-flute DE Stub



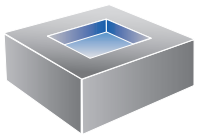

Ti PAGE 260

| Tolerances: | |
|---|---|
| D1 | +0.00"-0.002" |
| D2 | h6 |




| Cutter Dia-D1 | Shank Dia-D2 | FL L1 | OAL L2 | Part Number |
|---|---|---|---|---|
| 1/16" | 1/8" | 1/8" | 1-1/2" | 251 -01504 |
| 3/32" | 1/8" | 3/16" | 1-1/2" | 251 -01506 |
| 1/8" | 1/8" | 1/4" | 1-1/2" | 251 -01508 |
| 5/32" | 3/16" | 5/16" | 2" | 251 -01510 |
| 3/16" | 3/16" | 3/8" | 2" | 251 -01512 |
| 7/32" | 1/4" | 1/2" | 2-1/2" | 251 -01514 |
| 1/4" | 1/4" | 1/2" | 2-1/2" | 251 -01516 |
| 5/16" | 5/16" | 1/2" | 2-1/2" | 251 -01520 |
| 3/8" | 3/8" | 1/2" | 2-1/2" | 251 -01524 |
| 1/2" | 1/2" | 5/8" | 3" | 251 -01532 |

1.1 - 1.6 | 6.1 - 8.3
2.1 - 2.3 | 4.1 - 5.3
3.1 - 3.4 | 9.1





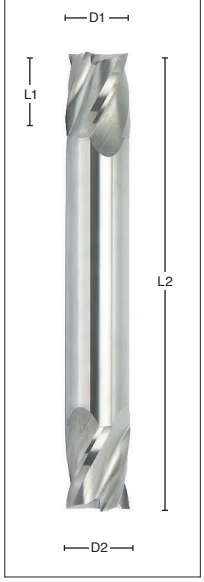
Series 451

# Solid Carbide General Purpose - Bright Finish
# Centre Cutting End-mills 30° Helix
# Micro-grain K30 4-flute DE Stub



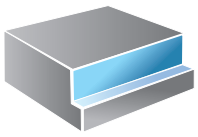

Ti PAGE 260

| Tolerances: | |
|---|---|
| D1 | +0.00"-0.002" |
| D2 | h6 |




| Cutter Dia-D1 | Shank Dia-D2 | FL L1 | OAL L2 | Part Number |
|---|---|---|---|---|
| 1/16" | 1/8" | 1/8" | 1-1/2" | 451 -01704 |
| 3/32" | 1/8" | 3/16" | 1-1/2" | 451 -01706 |
| 1/8" | 1/8" | 1/4" | 1-1/2" | 451 -01708 |
| 5/32" | 3/16" | 5/16" | 2" | 451 -01710 |
| 3/16" | 3/16" | 3/8" | 2" | 451 -01712 |
| 7/32" | 1/4" | 1/2" | 2-1/2" | 451 -01714 |
| 1/4" | 1/4" | 1/2" | 2-1/2" | 451 -01716 |
| 5/16" | 5/16" | 1/2" | 2-1/2" | 451 -01720 |
| 3/8" | 3/8" | 1/2" | 2-1/2" | 451 -01724 |
| 1/2" | 1/2" | 5/8" | 3" | 451 -01732 |

1.1 - 1.6 | 6.1 - 6.4
2.1 - 2.3 | 4.1 - 5.3
3.1 - 3.4 | 9.1





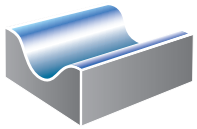
# Solid Carbide General Purpose - Bright Finish
# Centre Cutting Slot-Drills 30° Helix
# Micro-grain K30 2-flute DE-Ball Nosed Stub

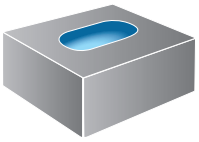
Series 261

Ti PAGE 260

30° | MG HM | 2 | PLAIN

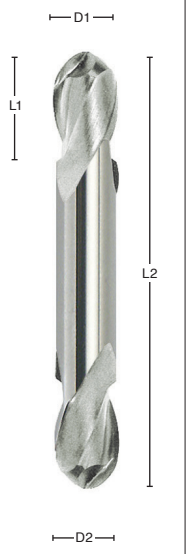
1.1 - 1.6 | 6.1 - 8.3
2.1 - 2.3 | 4.1 - 5.3
3.1 - 3.4 | 9.1





| Cutter Dia-D1 | Shank Dia-D2 | FL L1 | OAL L2 | Part Number |
|---|---|---|---|---|
| 3 | 3 | 6 | 38 | 261 -12505 |
| 3.5 | 4 | 6 | 50 | 261 -12506 |
| 4 | 4 | 7 | 50 | 261 -12507 |
| 4.5 | 5 | 7 | 50 | 261 -12508 |
| 5 | 5 | 8 | 50 | 261 -12509 |
| 6 | 6 | 10 | 63 | 261 -12510 |
| 7 | 7 | 10 | 63 | 261 -12511 |
| 8 | 8 | 11 | 63 | 261 -12512 |
| 9 | 9 | 11 | 63 | 261 -12513 |
| 10 | 10 | 13 | 70 | 261 -12514 |
| 11 | 11 | 13 | 76 | 261 -12515 |
| 12 | 12 | 13 | 76 | 261 -12516 |

**Tolerances:**
D1 +0.00/-0.051mm
D2 h6




# Performance Solid Carbide - *TiALN*
# Centre Cutting Slot-Drills 30° Helix
# Micro-grain K30 2-flute DE-Ball Nosed Stub

Series 269

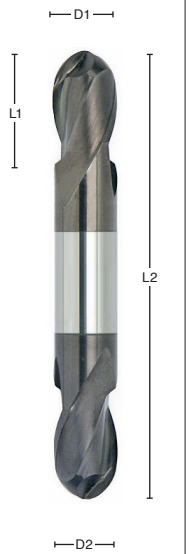
Ti PAGE 260

TiALN | 30° | MG HM | 2 | PLAIN

1.1 - 1.6 | 6.1 - 6.4
2.1 - 2.3 | 4.1 - 5.3
3.1 - 3.4 | 1.7 - 1.8
9.1

| Cutter Dia-D1 | Shank Dia-D2 | FL L1 | OAL L2 | Part Number |
|---|---|---|---|---|
| 3 | 3 | 6 | 38 | 269 -12505 |
| 3.5 | 4 | 6 | 50 | 269 -12506 |
| 4 | 4 | 7 | 50 | 269 -12507 |
| 4.5 | 5 | 7 | 50 | 269 -12508 |
| 5 | 5 | 8 | 50 | 269 -12509 |
| 6 | 6 | 10 | 63 | 269 -12510 |
| 7 | 7 | 10 | 63 | 269 -12511 |
| 8 | 8 | 11 | 63 | 269 -12512 |
| 9 | 9 | 11 | 63 | 269 -12513 |
| 10 | 10 | 13 | 70 | 269 -12514 |
| 11 | 11 | 13 | 76 | 269 -12515 |
| 12 | 12 | 13 | 76 | 269 -12516 |

**Tolerances:**
D1 +0.00/-0.051mm
D2 h6




**Modifications**
**Regrinds, Re coat**
**Specials**

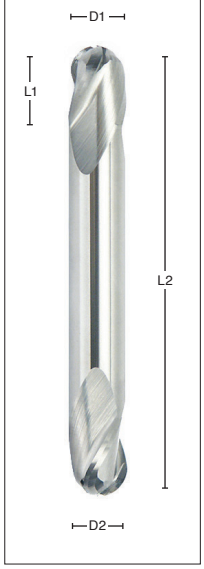
Series 361

# Solid Carbide General Purpose - Bright Finish
# Centre Cutting Slot-Drills 30° Helix
# Micro-grain K30 3-flute DE-Ball Nosed Stub



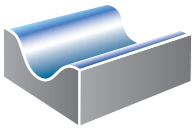

Ti PAGE 260

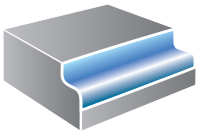
**Tolerances:**
D1 +0.00/-0.051mm
D2 h6




| Cutter Dia-D1 | Shank Dia-D2 | FL L1 | OAL L2 | Part Number |
|---|---|---|---|---|
| 3 | 3 | 6 | 38 | 361 -13505 |
| 3.5 | 4 | 6 | 50 | 361 -13506 |
| 4 | 4 | 7 | 50 | 361 -13507 |
| 4.5 | 5 | 7 | 50 | 361 -13508 |
| 5 | 5 | 8 | 50 | 361 -13509 |
| 6 | 6 | 10 | 63 | 361 -13510 |
| 7 | 7 | 10 | 63 | 361 -13511 |
| 8 | 8 | 11 | 63 | 361 -13512 |
| 9 | 9 | 11 | 63 | 361 -13513 |
| 10 | 10 | 13 | 70 | 361 -13514 |
| 11 | 11 | 13 | 76 | 361 -13515 |
| 12 | 12 | 13 | 76 | 361 -13516 |

1.1 - 1.6 | 6.1 - 8.3
2.1 - 2.3 | 4.1 - 5.3
3.1 - 3.4 | 9.1





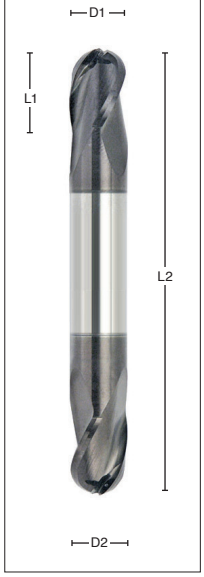
Series 369

# Performance Solid Carbide - *TiALN*
# Centre Cutting Slot-Drills 30° Helix
# Micro-grain K30 3-flute DE-Ball Nosed Stub




Ti PAGE 260

**Tolerances:**
D1 +0.00/-0.051mm
D2 h6




| Cutter Dia-D1 | Shank Dia-D2 | FL L1 | OAL L2 | Part Number |
|---|---|---|---|---|
| 3 | 3 | 6 | 38 | 369 -13505 |
| 3.5 | 4 | 6 | 50 | 369 -13506 |
| 4 | 4 | 7 | 50 | 369 -13507 |
| 4.5 | 5 | 7 | 50 | 369 -13508 |
| 5 | 5 | 8 | 50 | 369 -13509 |
| 6 | 6 | 10 | 63 | 369 -13510 |
| 7 | 7 | 10 | 63 | 369 -13511 |
| 8 | 8 | 11 | 63 | 369 -13512 |
| 9 | 9 | 11 | 63 | 369 -13513 |
| 10 | 10 | 13 | 70 | 369 -13514 |
| 11 | 11 | 13 | 76 | 369 -13515 |
| 12 | 12 | 13 | 76 | 369 -13516 |

1.1 - 1.6 | 6.1 - 6.4
2.1 - 2.3 | 4.1 - 5.3
3.1 - 3.4 | 1.7 - 1.8
9.1

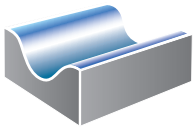
**Modifications**
**Regrinds, Re coat**
**Specials**

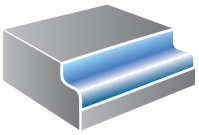
# Solid Carbide General Purpose - Bright Finish
# Centre Cutting End-Mills 30° Helix
# Micro-grain K30 4-flute DE-Ball Nosed Stub

Series 461

Ti PAGE 260

1.1 - 1.6 | 6.1 - 6.4
2.1 - 2.3 | 4.1 - 5.3
3.1 - 3.4 | 9.1

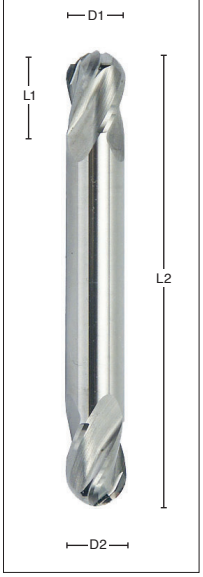




MG HM | 30° | 4 | PLAIN

| Cutter Dia-D1 | Shank Dia-D2 | FL L1 | OAL L2 | Part Number |
|---|---|---|---|---|
| 3 | 3 | 6 | 38 | 461 -14505 |
| 3.5 | 4 | 6 | 50 | 461 -14506 |
| 4 | 4 | 7 | 50 | 461 -14507 |
| 4.5 | 5 | 7 | 50 | 461 -14508 |
| 5 | 5 | 8 | 50 | 461 -14509 |
| 6 | 6 | 10 | 63 | 461 -14510 |
| 7 | 7 | 10 | 63 | 461 -14511 |
| 8 | 8 | 11 | 63 | 461 -14512 |
| 9 | 9 | 11 | 63 | 461 -14513 |
| 10 | 10 | 13 | 70 | 461 -14514 |
| 11 | 11 | 13 | 76 | 461 -14515 |
| 12 | 12 | 13 | 76 | 461 -14516 |

**Tolerances:**
D1 +0.00/-0.051mm
D2 h6




# Performance Solid Carbide - *TiALN*
# Centre Cutting End-Mills 30° Helix
# Micro-grain K30 4-flute DE-Ball Nosed Stub

Series 469

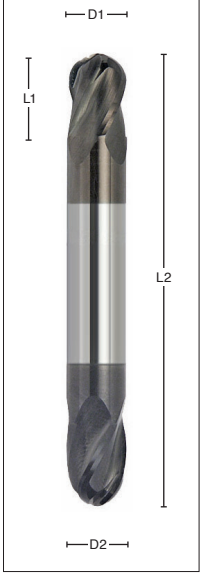
Ti PAGE 260

1.1 - 1.6 | 6.1 - 6.4
2.1 - 2.3 | 4.1 - 5.3
3.1 - 3.4 | 1.7 - 1.8
9.1

TiALN | 30° | MG HM | 4 | PLAIN

| Cutter Dia-D1 | Shank Dia-D2 | FL L1 | OAL L2 | Part Number |
|---|---|---|---|---|
| 3 | 3 | 6 | 38 | 469 -14505 |
| 3.5 | 4 | 6 | 50 | 469 -14506 |
| 4 | 4 | 7 | 50 | 469 -14507 |
| 4.5 | 5 | 7 | 50 | 469 -14508 |
| 5 | 5 | 8 | 50 | 469 -14509 |
| 6 | 6 | 10 | 63 | 469 -14510 |
| 7 | 7 | 10 | 63 | 469 -14511 |
| 8 | 8 | 11 | 63 | 469 -14512 |
| 9 | 9 | 11 | 63 | 469 -14513 |
| 10 | 10 | 13 | 70 | 469 -14514 |
| 11 | 11 | 13 | 76 | 469 -14515 |
| 12 | 12 | 13 | 76 | 469 -14516 |

**Tolerances:**
D1 +0.00/-0.051mm
D2 h6




**Modifications**
**Regrinds, Re coat**
**Specials**

Series 221

# Solid Carbide General Purpose - Bright Finish
# Centre Cutting Slot-Drills 30° Helix
# Micro-grain K30 2-flute Long

MG HM | 30° | 2 | PLAIN

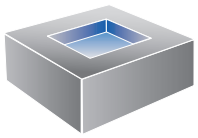
Ti PAGE 260

**Tolerances:**
D1 +0.00/-0.051mm
D2 h6




| Cutter Dia-D1 | Shank Dia-D2 | FL L1 | OAL L2 | Part Number |
|---|---|---|---|---|
| 3 | 3 | 25 | 65 | 221 -10605 |
| 4 | 4 | 25 | 65 | 221 -10607 |
| 5 | 5 | 25 | 75 | 221 -10609 |
| 6 | 6 | 25 | 75 | 221 -10610 |
| 8 | 8 | 25 | 75 | 221 -10612 |
| 10 | 10 | 38 | 100 | 221 -10614 |
| 12 | 12 | 50 | 100 | 221 -10616 |
| 16 | 16 | 75 | 150 | 221 -10618 |
| 18 | 18 | 75 | 150 | 221 -10622 |
| 20 | 20 | 75 | 150 | 221 -10624 |
| 25 | 25 | 75 | 150 | 221 -10629 |

1.1 - 1.6 | 6.1 - 8.3
2.1 - 2.3 | 4.1 - 5.3
3.1 - 3.4 | 9.1





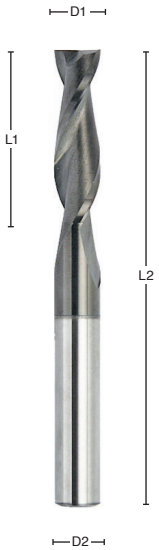
Series 229

# Performance Solid Carbide - *TiALN*
# Centre Cutting Slot-Drills 30° Helix
# Micro-grain K30 2-flute Long

MG HM | 30° | 2 | PLAIN | TiALN

Ti PAGE 260

**Tolerances:**
D1 +0.00/-0.051mm
D2 h6




| Cutter Dia-D1 | Shank Dia-D2 | FL L1 | OAL L2 | Part Number |
|---|---|---|---|---|
| 3 | 3 | 25 | 65 | 229 -10605 |
| 4 | 4 | 25 | 65 | 229 -10607 |
| 5 | 5 | 25 | 75 | 229 -10609 |
| 6 | 6 | 25 | 75 | 229 -10610 |
| 8 | 8 | 25 | 75 | 229 -10612 |
| 10 | 10 | 38 | 100 | 229 -10614 |
| 12 | 12 | 50 | 100 | 229 -10616 |
| 16 | 16 | 75 | 150 | 229 -10618 |
| 18 | 18 | 75 | 150 | 229 -10622 |
| 20 | 20 | 75 | 150 | 229 -10624 |
| 25 | 25 | 75 | 150 | 229 -10629 |

1.1 - 1.6 | 6.1 - 6.4
2.1 - 2.3 | 4.1 - 5.3
3.1 - 3.4 | 1.7 - 1.8
9.1

**Modifications**
**Regrinds, Re coat**
**Specials**

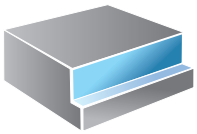
# Solid Carbide General Purpose - Bright Finish
# Centre Cutting Slot-Drills 30° Helix
# Micro-grain K30 3-flute Long

Series 321

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| 1.1 - 1.6 | 6.1 - 8.3 |
|---|---|
| 2.1 - 2.3 | 4.1 - 5.3 |
| 3.1 - 3.4 | 9.1 |



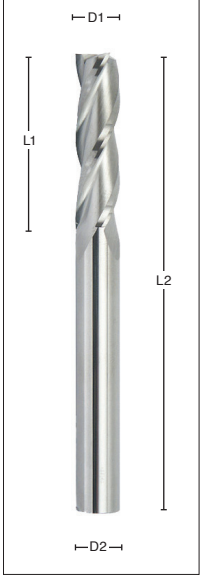


| Cutter Dia-D1 | Shank Dia-D2 | FL L1 | OAL L2 | Part Number |
|---|---|---|---|---|
| 3 | 3 | 25 | 65 | 321 -10705 |
| 4 | 4 | 25 | 65 | 321 -10707 |
| 5 | 5 | 25 | 75 | 321 -10709 |
| 6 | 6 | 25 | 75 | 321 -10710 |
| 8 | 8 | 25 | 75 | 321 -10712 |
| 10 | 10 | 38 | 100 | 321 -10714 |
| 12 | 12 | 50 | 100 | 321 -10716 |
| 16 | 16 | 75 | 150 | 321 -10718 |
| 18 | 18 | 75 | 150 | 321 -10722 |
| 20 | 20 | 75 | 150 | 321 -10724 |
| 25 | 25 | 75 | 150 | 321 -10729 |

**Tolerances:**

D1 +0.00/-0.051mm

D2 h6




# Performance Solid Carbide - *TiALN*
# Centre Cutting Slot-Drills 30° Helix
# Micro-grain K30 3-flute Long

Series 329

PAGE 260



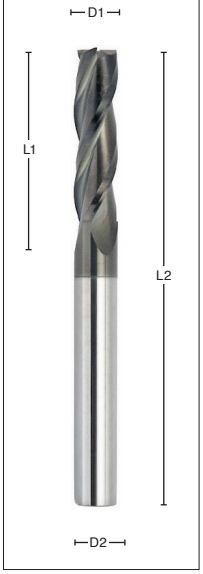

| 1.1 - 1.6 | 6.1 - 6.4 |
|---|---|
| 2.1 - 2.3 | 4.1 - 5.3 |
| 3.1 - 3.4 | 1.7 - 1.8 |
| | 9.1 |

| Cutter Dia-D1 | Shank Dia-D2 | FL L1 | OAL L2 | Part Number |
|---|---|---|---|---|
| 3 | 3 | 25 | 65 | 329 -10705 |
| 4 | 4 | 25 | 65 | 329 -10707 |
| 5 | 5 | 25 | 75 | 329 -10709 |
| 6 | 6 | 25 | 75 | 329 -10710 |
| 8 | 8 | 25 | 75 | 329 -10712 |
| 10 | 10 | 38 | 100 | 329 -10714 |
| 12 | 12 | 50 | 100 | 329 -10716 |
| 16 | 16 | 75 | 150 | 329 -10718 |
| 18 | 18 | 75 | 150 | 329 -10722 |
| 20 | 20 | 75 | 150 | 329 -10724 |
| 25 | 25 | 75 | 150 | 329 -10729 |

**Tolerances:**

D1 +0.00/-0.051mm

D2 h6




**Modifications**
**Regrinds, Re coat**
**Specials**

Series 421

# Solid Carbide General Purpose - Bright Finish
# Centre Cutting End-Mills 30° Helix
# Micro-grain K30 4-flute Long



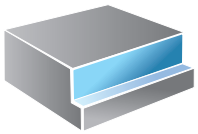

Ti PAGE 260

**Tolerances:**
D1 +0.00/-0.051mm
D2 h6




| Cutter Dia-D1 | Shank Dia-D2 | FL L1 | OAL L2 | Part Number |
|---|---|---|---|---|
| 3 | 3 | 25 | 65 | 421 -10805 |
| 4 | 4 | 25 | 65 | 421 -10807 |
| 5 | 5 | 25 | 75 | 421 -10809 |
| 6 | 6 | 25 | 75 | 421 -10810 |
| 8 | 8 | 25 | 75 | 421 -10812 |
| 10 | 10 | 38 | 100 | 421 -10814 |
| 12 | 12 | 50 | 100 | 421 -10816 |
| 16 | 16 | 75 | 150 | 421 -10818 |
| 18 | 18 | 75 | 150 | 421 -10822 |
| 20 | 20 | 75 | 150 | 421 -10824 |
| 25 | 25 | 75 | 150 | 421 -10829 |

1.1 - 1.6 | 6.1 - 6.4
2.1 - 2.3 | 4.1 - 5.3
3.1 - 3.4 | 9.1





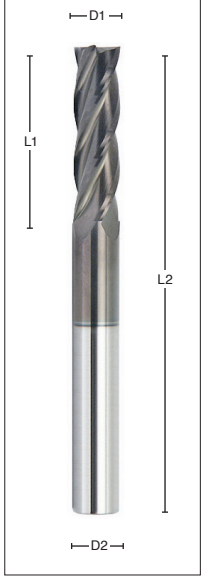
Series 429

# Performance Solid Carbide - *TiALN*
# Centre Cutting End-Mills 30° Helix
# Micro-grain K30 4-flute Long




Ti PAGE 260

**Tolerances:**
D1 +0.00/-0.051mm
D2 h6




| Cutter Dia-D1 | Shank Dia-D2 | FL L1 | OAL L2 | Part Number |
|---|---|---|---|---|
| 3 | 3 | 25 | 65 | 429 -10805 |
| 4 | 4 | 25 | 65 | 429 -10807 |
| 5 | 5 | 25 | 75 | 429 -10809 |
| 6 | 6 | 25 | 75 | 429 -10810 |
| 8 | 8 | 25 | 75 | 429 -10812 |
| 10 | 10 | 38 | 100 | 429 -10814 |
| 12 | 12 | 50 | 100 | 429 -10816 |
| 16 | 16 | 75 | 150 | 429 -10818 |
| 18 | 18 | 75 | 150 | 429 -10822 |
| 20 | 20 | 75 | 150 | 429 -10824 |
| 25 | 25 | 75 | 150 | 429 -10829 |

1.1 - 1.6 | 6.1 - 6.4
2.1 - 2.3 | 4.1 - 5.3
3.1 - 3.4 | 1.7 - 1.8
9.1

**Modifications**
**Regrinds, Re coat**
**Specials**

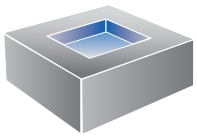
# Solid Carbide General Purpose - Bright Finish
# Centre Cutting Slot-Drills 30° Helix
# Micro-grain K30 2-flute Long

Series 221

PAGE 260

MG HM | 30° | 2 | PLAIN

1.1 - 1.6 | 6.1 - 8.3
2.1 - 2.3 | 4.1 - 5.3
3.1 - 3.4 | 9.1





| Cutter Dia-D1 | Shank Dia-D2 | FL L1 | OAL L2 | Part Number |
|---|---|---|---|---|
| 1/4" | 1/4" | 1-1/8" | 3" | 221 -00616 |
| 5/16" | 5/16" | 1-1/8" | 3" | 221 -00620 |
| 3/8" | 3/8" | 1-1/8" | 3" | 221 -00624 |
| 7/16" | 7/16" | 2" | 4" | 221 -00628 |
| 1/2" | 1/2" | 2" | 4" | 221 -00632 |
| 5/8" | 5/8" | 2-1/4" | 5" | 221 -00640 |
| 3/4" | 3/4" | 2-1/4" | 5" | 221 -00648 |
| 1" | 1" | 3" | 6" | 221 -00664 |

**Tolerances:**

| | |
|---|---|
| D1 | +0.00"-0.002" |
| D2 | h6 |




# Performance Solid Carbide - *TiALN*
# Centre Cutting End-Mills 30° Helix
# Micro-grain K30 2-flute Long

Series 229

PAGE 260

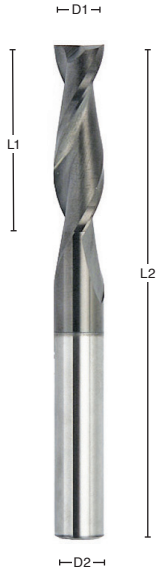
TiALN | 30° | MG HM | 2 | PLAIN

1.1 - 1.6 | 6.1 - 8.3
2.1 - 2.3 | 4.1 - 5.3
3.1 - 3.4 | 1.7 - 1.8
9.1

| Cutter Dia-D1 | Shank Dia-D2 | FL L1 | OAL L2 | Part Number |
|---|---|---|---|---|
| 1/4" | 1/4" | 1-1/8" | 3" | 229 -00616 |
| 5/16" | 5/16" | 1-1/8" | 3" | 229 -00620 |
| 3/8" | 3/8" | 1-1/8" | 3" | 229 -00624 |
| 7/16" | 7/16" | 2" | 4" | 229 -00628 |
| 1/2" | 1/2" | 2" | 4" | 229 -00632 |
| 5/8" | 5/8" | 2-1/4" | 5" | 229 -00640 |
| 3/4" | 3/4" | 2-1/4" | 5" | 229 -00648 |
| 1" | 1" | 3" | 6" | 229 -00664 |

**Tolerances:**

| | |
|---|---|
| D1 | +0.00"-0.002" |
| D2 | h6 |




**Modifications**
**Regrinds, Re coat**
**Specials**

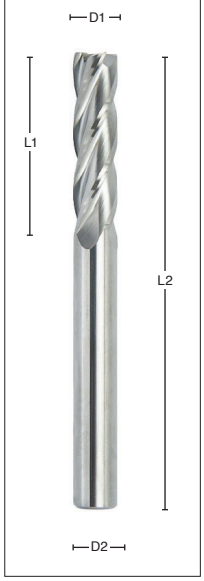
Series 421

# Solid Carbide General Purpose - Bright Finish
# Centre Cutting End-Mills 30° Helix
# Micro-grain K30 4-flute Long



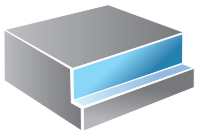

Ti PAGE 260

| Tolerances: | |
|---|---|
| D1 | +0.00"-0.002" |
| D2 | h6 |




| Cutter Dia-D1 | Shank Dia-D2 | FL L1 | OAL L2 | Part Number |
|---|---|---|---|---|
| 1/4" | 1/4" | 1-1/8" | 3" | 421 -00816 |
| 5/16" | 5/16" | 1-1/8" | 3" | 421 -00820 |
| 3/8" | 3/8" | 1-1/8" | 3" | 421 -00824 |
| 7/16" | 7/16" | 2" | 4" | 421 -00828 |
| 1/2" | 1/2" | 2" | 4" | 421 -00832 |
| 5/8" | 5/8" | 2-1/4" | 5" | 421 -00840 |
| 3/4" | 3/4" | 2-1/4" | 5" | 421 -00848 |
| 1" | 1" | 3" | 6" | 421 -00864 |

1.1 - 1.6 | 6.1 - 8.3
2.1 - 2.3 | 4.1 - 5.3
3.1 - 3.4 | 9.1





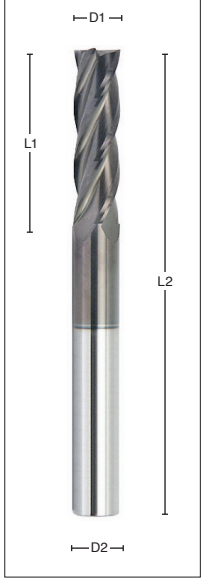
Series 429

# Performance Solid Carbide - *TiALN*
# Centre Cutting End-Mills 30° Helix
# Micro-grain K30 4-flute Long




Ti PAGE 260

| Tolerances: | |
|---|---|
| D1 | +0.00"-0.002" |
| D2 | h6 |




| Cutter Dia-D1 | Shank Dia-D2 | FL L1 | OAL L2 | Part Number |
|---|---|---|---|---|
| 1/4" | 1/4" | 1-1/8" | 3" | 429 -00816 |
| 5/16" | 5/16" | 1-1/8" | 3" | 429 -00820 |
| 3/8" | 3/8" | 1-1/8" | 3" | 429 -00824 |
| 7/16" | 7/16" | 2" | 4" | 429 -00828 |
| 1/2" | 1/2" | 2" | 4" | 429 -00832 |
| 5/8" | 5/8" | 2-1/4" | 5" | 429 -00840 |
| 3/4" | 3/4" | 2-1/4" | 5" | 429 -00848 |
| 1" | 1" | 3" | 6" | 429 -00864 |

1.1 - 1.6 | 6.1 - 6.4
2.1 - 2.3 | 4.1 - 5.3
3.1 - 3.4 | 1.7 - 1.8
9.1

**Modifications**
**Regrinds, Re coat**
**Specials**

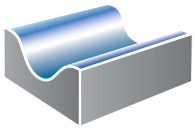
# Solid Carbide General Purpose - Bright Finish
# Centre Cutting Slot-Drills 30° Helix
# Micro-grain K30 2-flute Long Ball Nosed

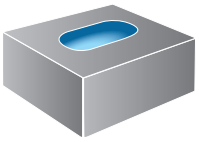
Series 236

Ti PAGE 260

MG HM | 30° | 2 | PLAIN

1.1 - 1.6 | 6.1 - 8.3
2.1 - 2.3 | 4.1 - 5.3
3.1 - 3.4 | 9.1





| Cutter Dia-D1 | Shank Dia-D2 | FL L1 | OAL L2 | Part Number |
|---|---|---|---|---|
| 3 | 3 | 25 | 65 | 236 -17505 |
| 4 | 4 | 25 | 65 | 236 -17507 |
| 5 | 5 | 25 | 75 | 236 -17509 |
| 6 | 6 | 25 | 75 | 236 -17510 |
| 8 | 8 | 25 | 75 | 236 -17512 |
| 10 | 10 | 38 | 100 | 236 -17514 |
| 12 | 12 | 50 | 100 | 236 -17516 |
| 16 | 16 | 75 | 150 | 236 -17520 |
| 20 | 20 | 75 | 150 | 236 -17524 |
| 25 | 25 | 75 | 150 | 236 -17529 |

**Tolerances:**
D1 +0.00/-0.051mm
D2 h6




# Performance Solid Carbide - *TiALN*
# Centre Cutting Slot-Drills 30° Helix
# Micro-grain K30 2-flute Long Ball Nosed

Series 239

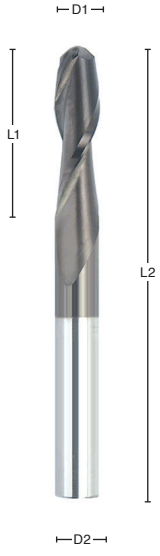
Ti PAGE 260

TiALN | 30° | MG HM | 2 | PLAIN

1.1 - 1.6 | 6.1 - 6.4
2.1 - 2.3 | 4.1 - 5.3
3.1 - 3.4 | 1.7 - 1.8
9.1

| Cutter Dia-D1 | Shank Dia-D2 | FL L1 | OAL L2 | Part Number |
|---|---|---|---|---|
| 3 | 3 | 25 | 65 | 239 -17505 |
| 4 | 4 | 25 | 65 | 239 -17507 |
| 5 | 5 | 25 | 75 | 239 -17509 |
| 6 | 6 | 25 | 75 | 239 -17510 |
| 8 | 8 | 25 | 75 | 239 -17512 |
| 10 | 10 | 38 | 100 | 239 -17514 |
| 12 | 12 | 50 | 100 | 239 -17516 |
| 16 | 16 | 75 | 150 | 239 -17520 |
| 20 | 20 | 75 | 150 | 239 -17524 |
| 25 | 25 | 75 | 150 | 239 -17529 |

**Tolerances:**
D1 +0.00/-0.051mm
D2 h6




**Modifications**
**Regrinds, Re coat**
**Specials**

Series 336

# Solid Carbide General Purpose - Bright Finish
# Centre Cutting Slot-Drills 30° Helix
# Micro-grain K30 3-flute Long Ball Nosed



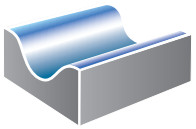

Ti PAGE 260

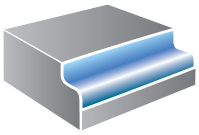
| Tolerances: |
|---|
| D1 +0.00/-0.051mm |
| D2 h6 |




| Cutter Dia-D1 | Shank Dia-D2 | FL L1 | OAL L2 | Part Number |
|---|---|---|---|---|
| 3 | 3 | 25 | 65 | 336 -17605 |
| 4 | 4 | 25 | 65 | 336 -17607 |
| 5 | 5 | 25 | 75 | 336 -17609 |
| 6 | 6 | 25 | 75 | 336 -17610 |
| 8 | 8 | 25 | 75 | 336 -17612 |
| 10 | 10 | 38 | 100 | 336 -17614 |
| 12 | 12 | 50 | 100 | 336 -17616 |
| 16 | 16 | 75 | 150 | 336 -17620 |
| 20 | 20 | 75 | 150 | 336 -17624 |
| 25 | 25 | 75 | 150 | 336 -17629 |

1.1 - 1.6 | 6.1 - 6.4
2.1 - 2.3 | 4.1 - 5.3
3.1 - 3.4 | 9.1





Series 339

# Performance Solid Carbide - *TiALN*
# Centre Cutting Slot-Drills 30° Helix
# Micro-grain K30 3-flute Long Ball Nosed




Ti PAGE 260

| Tolerances: |
|---|
| D1 +0.00/-0.051mm |
| D2 h6 |




| Cutter Dia-D1 | Shank Dia-D2 | FL L1 | OAL L2 | Part Number |
|---|---|---|---|---|
| 3 | 3 | 25 | 65 | 339 -17605 |
| 4 | 4 | 25 | 65 | 339 -17607 |
| 5 | 5 | 25 | 75 | 339 -17609 |
| 6 | 6 | 25 | 75 | 339 -17610 |
| 8 | 8 | 25 | 75 | 339 -17612 |
| 10 | 10 | 38 | 100 | 339 -17614 |
| 12 | 12 | 50 | 100 | 339 -17616 |
| 16 | 16 | 75 | 150 | 339 -17620 |
| 20 | 20 | 75 | 150 | 339 -17624 |
| 25 | 25 | 75 | 150 | 339 -17629 |

1.1 - 1.6 | 6.1 - 6.4
2.1 - 2.3 | 4.1 - 5.3
3.1 - 3.4 | 1.7 - 1.8
9.1

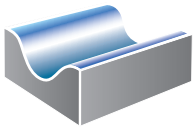
**Modifications**
**Regrinds, Re coat**
**Specials**

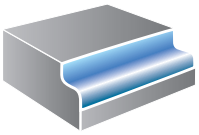
# Solid Carbide General Purpose - Bright Finish
# Centre Cutting End-Mills 30° Helix
# Micro-grain K30 4-flute Long Ball Nosed

Series 436

PAGE 260

1.1 - 1.6 | 6.1 - 6.4
2.1 - 2.3 | 4.1 - 5.3
3.1 - 3.4 | 9.1





MG HM | 30° | 4 | PLAIN

| Cutter Dia-D1 | Shank Dia-D2 | FL L1 | OAL L2 | Part Number |
|---|---|---|---|---|
| 3 | 3 | 25 | 65 | 436 -17705 |
| 4 | 4 | 25 | 65 | 436 -17707 |
| 5 | 5 | 25 | 75 | 436 -17709 |
| 6 | 6 | 25 | 75 | 436 -17710 |
| 8 | 8 | 25 | 75 | 436 -17712 |
| 10 | 10 | 38 | 100 | 436 -17714 |
| 12 | 12 | 50 | 100 | 436 -17716 |
| 16 | 16 | 75 | 150 | 436 -17720 |
| 20 | 20 | 75 | 150 | 436 -17724 |
| 25 | 25 | 75 | 150 | 436 -17729 |

**Tolerances:**
D1 +0.00/-0.051mm
D2 h6




# Performance Solid Carbide - *TiALN*
# Centre Cutting End-Mills 30° Helix
# Micro-grain K30 4-flute Long Ball Nosed

Series 439

PAGE 260

1.1 - 1.6 | 6.1 - 6.4
2.1 - 2.3 | 4.1 - 5.3
3.1 - 3.4 | 1.7 - 1.8
9.1

TiALN | 30° | MG HM | 4 | PLAIN

| Cutter Dia-D1 | Shank Dia-D2 | FL L1 | OAL L2 | Part Number |
|---|---|---|---|---|
| 3 | 3 | 25 | 65 | 439 -17705 |
| 4 | 4 | 25 | 65 | 439 -17707 |
| 5 | 5 | 25 | 75 | 439 -17709 |
| 6 | 6 | 25 | 75 | 439 -17710 |
| 8 | 8 | 25 | 75 | 439 -17712 |
| 10 | 10 | 38 | 100 | 439 -17714 |
| 12 | 12 | 50 | 100 | 439 -17716 |
| 16 | 16 | 75 | 150 | 439 -17720 |
| 20 | 20 | 75 | 150 | 439 -17724 |
| 25 | 25 | 75 | 150 | 439 -17729 |

**Tolerances:**
D1 +0.00/-0.051mm
D2 h6




**Modifications**
**Regrinds, Re coat**
**Specials**

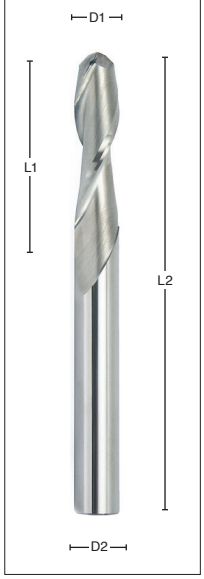
Series 236

# Solid Carbide General Purpose - Bright Finish
# Centre Cutting Slot-Drills 30° Helix
# Micro-grain K30 2-flute Long Ball Nosed



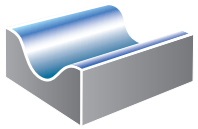

Ti PAGE 260

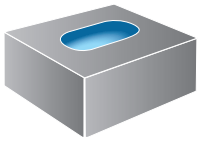
| Tolerances: | |
|---|---|
| D1 | +0.00"-0.002" |
| D2 | h6 |




| Cutter Dia-D1 | Shank Dia-D2 | FL L1 | OAL L2 | Part Number |
|---|---|---|---|---|
| 1/4" | 1/4" | 1-1/8" | 3" | 236 -00916 |
| 5/16" | 5/16" | 1-1/8" | 3" | 236 -00920 |
| 3/8" | 3/8" | 1-1/8" | 3" | 236 -00924 |
| 7/16" | 7/16" | 2" | 4" | 236 -00928 |
| 1/2" | 1/2" | 2" | 4" | 236 -00932 |
| 5/8" | 5/8" | 2-1/4" | 5" | 236 -00940 |
| 3/4" | 3/4" | 2-1/4" | 5" | 236 -00948 |
| 1" | 1" | 3" | 6" | 236 -00964 |

1.1 - 1.6 | 6.1 - 8.3
2.1 - 2.3 | 4.1 - 5.3
3.1 - 3.4 | 9.1





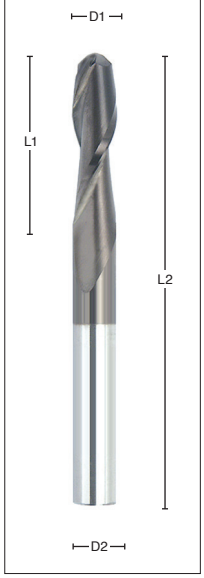
Series 239

# Performance Solid Carbide - *TiALN*
# Centre Cutting Slot-Drills 30° Helix
# Micro-grain K30 2-flute Long Ball Nosed




Ti PAGE 260

| Tolerances: | |
|---|---|
| D1 | +0.00"-0.002" |
| D2 | h6 |




| Cutter Dia-D1 | Shank Dia-D2 | FL L1 | OAL L2 | Part Number |
|---|---|---|---|---|
| 1/4" | 1/4" | 1-1/8" | 3" | 239 -00916 |
| 5/16" | 5/16" | 1-1/8" | 3" | 239 -00920 |
| 3/8" | 3/8" | 1-1/8" | 3" | 239 -00924 |
| 7/16" | 7/16" | 2" | 4" | 239 -00928 |
| 1/2" | 1/2" | 2" | 4" | 239 -00932 |
| 5/8" | 5/8" | 2-1/4" | 5" | 239 -00940 |
| 3/4" | 3/4" | 2-1/4" | 5" | 239 -00948 |
| 1" | 1" | 3" | 6" | 239 -00964 |

1.1 - 1.6 | 6.1 - 6.4
2.1 - 2.3 | 4.1 - 5.3
3.1 - 3.4 | 1.7 - 1.8
9.1

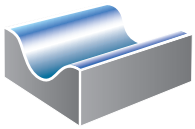
**Modifications**
**Regrinds, Re coat**
**Specials**

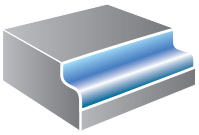
# Solid Carbide General Purpose - Bright Finish
# Centre Cutting End-Mills 30° Helix
# Micro-grain K30 4-flute Long Ball Nosed

Series 436

PAGE 260

1.1 - 1.6 | 6.1 - 6.4
2.1 - 2.3 | 4.1 - 5.3
3.1 - 3.4 | 9.1





| Cutter Dia-D1 | Shank Dia-D2 | FL L1 | OAL L2 | Part Number |
|---|---|---|---|---|
| 1/4" | 1/4" | 1-1/8" | 3" | 436 -01016 |
| 5/16" | 5/16" | 1-1/8" | 3" | 436 -01020 |
| 3/8" | 3/8" | 1-1/8" | 3" | 436 -01024 |
| 7/16" | 7/16" | 2" | 4" | 436 -01028 |
| 1/2" | 1/2" | 2" | 4" | 436 -01032 |
| 5/8" | 5/8" | 2-1/4" | 5" | 436 -01040 |
| 3/4" | 3/4" | 2-1/4" | 5" | 436 -01048 |
| 1" | 1" | 3" | 6" | 436 -01064 |

Tolerances:
D1 +0.00"-0.002"
D2 h6




# Performance Solid Carbide - *TiALN*
# Centre Cutting End-Mills 30° Helix
# Micro-grain K30 4-flute Long Ball Nosed

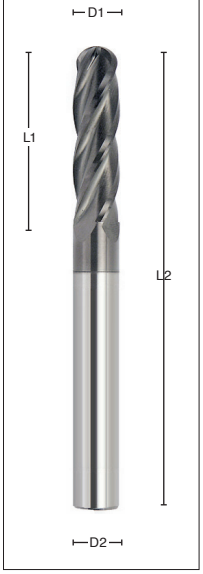
Series 439

PAGE 260

1.1 - 1.6 | 6.1 - 6.4
2.1 - 2.3 | 4.1 - 5.3
3.1 - 3.4 | 1.7 - 1.8
9.1

| Cutter Dia-D1 | Shank Dia-D2 | FL L1 | OAL L2 | Part Number |
|---|---|---|---|---|
| 1/4" | 1/4" | 1-1/8" | 3" | 439 -01016 |
| 5/16" | 5/16" | 1-1/8" | 3" | 439 -01020 |
| 3/8" | 3/8" | 1-1/8" | 3" | 439 -01024 |
| 7/16" | 7/16" | 2" | 4" | 439 -01028 |
| 1/2" | 1/2" | 2" | 4" | 439 -01032 |
| 5/8" | 5/8" | 2-1/4" | 5" | 439 -01040 |
| 3/4" | 3/4" | 2-1/4" | 5" | 439 -01048 |
| 1" | 1" | 3" | 6" | 439 -01064 |

Tolerances:
D1 +0.00"-0.002"
D2 h6




**Modifications**
**Regrinds, Re coat**
**Specials**

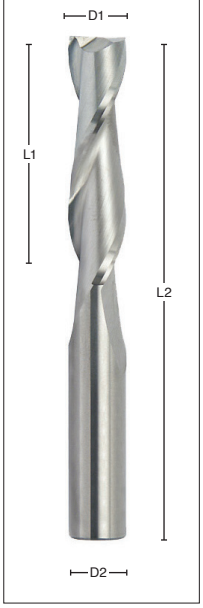
Series 222

# Solid Carbide General Purpose - Bright Finish
# Centre Cutting Slot-Drills 30° Helix
# Micro-grain K30 2-flute 'Extra Long" Length

MG HM | 30° | 2 | PLAIN

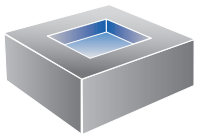
Ti PAGE 260

**Tolerances:**
D1 +0.00/-0.051mm
D2 h6




| Cutter Dia-D1 | Shank Dia-D2 | FL L1 | OAL L2 | Part Number |
|---|---|---|---|---|
| 6 | 6 | 38 | 100 | 222 -10061 |
| 6 | 6 | 75 | 150 | 222 -15061 |
| 6 | 8 | 75 | 200 | 222 -20061 |
| 8 | 8 | 42 | 100 | 222 -10062 |
| 8 | 8 | 75 | 150 | 222 -15062 |
| 8 | 8 | 75 | 200 | 222 -20062 |
| 8 | 10 | 75 | 200 | 222 -20063 |
| 10 | 10 | 75 | 150 | 222 -15064 |
| 10 | 10 | 75 | 200 | 222 -20064 |
| 12 | 12 | 75 | 150 | 222 -15065 |
| 12 | 12 | 75 | 200 | 222 -20065 |
| 14 | 14 | 62 | 125 | 222 -10066 |
| 14 | 14 | 75 | 150 | 222 -15066 |
| 14 | 16 | 75 | 200 | 222 -20066 |
| 16 | 16 | 75 | 200 | 222 -20067 |
| 18 | 18 | 75 | 200 | 222 -20068 |
| 20 | 20 | 75 | 200 | 222 -20069 |

1.1 - 1.6 | 6.1 - 6.4
2.1 - 2.3 | 4.1 - 5.3
3.1 - 3.4 | 9.1





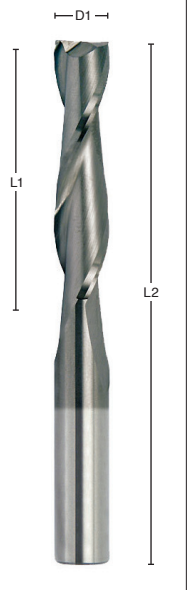
Series 299

# Performance Solid Carbide - *TiALN*
# Centre Cutting Slot-Drills 30° Helix
# Micro-grain K30 2-flute 'Extra Long" Length

MG HM | 30° | 2 | PLAIN | TiALN

Ti PAGE 260

**Tolerances:**
D1 +0.00/-0.051mm
D2 h6




| Cutter Dia-D1 | Shank Dia-D2 | FL L1 | OAL L2 | Part Number |
|---|---|---|---|---|
| 6 | 6 | 38 | 100 | 299 -10061 |
| 6 | 6 | 75 | 150 | 299 -15061 |
| 6 | 8 | 75 | 200 | 299 -20061 |
| 8 | 8 | 42 | 100 | 299 -10062 |
| 8 | 8 | 75 | 150 | 299 -15062 |
| 8 | 8 | 75 | 200 | 299 -20062 |
| 8 | 10 | 75 | 200 | 299 -20063 |
| 10 | 10 | 75 | 150 | 299 -15064 |
| 10 | 10 | 75 | 200 | 299 -20064 |
| 12 | 12 | 75 | 150 | 299 -15065 |
| 12 | 12 | 75 | 200 | 299 -20065 |
| 14 | 14 | 62 | 125 | 299 -10066 |
| 14 | 14 | 75 | 150 | 299 -15066 |
| 14 | 16 | 75 | 200 | 299 -20066 |
| 16 | 16 | 75 | 200 | 299 -20067 |
| 18 | 18 | 75 | 200 | 299 -20068 |
| 20 | 20 | 75 | 200 | 299 -20069 |

1.1 - 1.6 | 6.1 - 6.4
2.1 - 2.3 | 4.1 - 5.3
3.1 - 3.4 | 1.7 - 1.8
9.1

**Modifications**
**Regrinds, Re coat**
**Specials**

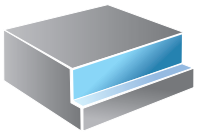
# Solid Carbide General Purpose - Bright Finish
# Centre Cutting End-Mills 30° Helix
# Micro-grain K30 4-flute 'Extra Long" Length

Series 444

Ti PAGE 260

30° | MG HM | 4 | PLAIN

1.1 - 1.6 | 6.1 - 8.3
2.1 - 2.3 | 4.1 - 5.3
3.1 - 3.4 | 9.1





| Cutter Dia-D1 | Shank Dia-D2 | FL L1 | OAL L2 | Part Number |
|---|---|---|---|---|
| 6 | 6 | 38 | 100 | 444 -10071 |
| 6 | 6 | 75 | 150 | 444 -15071 |
| 6 | 8 | 75 | 200 | 444 -20071 |
| 8 | 8 | 42 | 100 | 444 -10072 |
| 8 | 8 | 75 | 150 | 444 -15072 |
| 8 | 8 | 75 | 200 | 444 -20072 |
| 8 | 10 | 75 | 200 | 444 -20073 |
| 10 | 10 | 75 | 150 | 444 -15074 |
| 10 | 10 | 75 | 200 | 444 -20074 |
| 12 | 12 | 75 | 150 | 444 -15075 |
| 12 | 12 | 75 | 200 | 444 -20075 |
| 14 | 14 | 62 | 125 | 444 -10076 |
| 14 | 14 | 75 | 150 | 444 -15076 |
| 14 | 16 | 75 | 200 | 444 -20076 |
| 16 | 16 | 75 | 200 | 444 -20077 |
| 18 | 18 | 75 | 200 | 444 -20078 |
| 20 | 20 | 75 | 200 | 444 -20079 |

**Tolerances:**
D1 +0.00/-0.051mm
D2 h6




# Performance Solid Carbide - *TiALN*
# Centre Cutting End-Mills 30° Helix
# Micro-grain K30 4-flute 'Extra Long" Length

Series 499

Ti PAGE 260

TiALN | 30° | MG HM | 4 | PLAIN

1.1 - 1.6 | 6.1 - 6.4
2.1 - 2.3 | 4.1 - 5.3
3.1 - 3.4 | 1.7 - 1.8
9.1

| Cutter Dia-D1 | Shank Dia-D2 | FL L1 | OAL L2 | Part Number |
|---|---|---|---|---|
| 6 | 6 | 38 | 100 | 499 -10071 |
| 6 | 6 | 75 | 150 | 499 -15071 |
| 6 | 8 | 75 | 200 | 499 -20071 |
| 8 | 8 | 42 | 100 | 499 -10072 |
| 8 | 8 | 75 | 150 | 499 -15072 |
| 8 | 8 | 75 | 200 | 499 -20072 |
| 8 | 10 | 75 | 200 | 499 -20073 |
| 10 | 10 | 75 | 150 | 499 -15074 |
| 10 | 10 | 75 | 200 | 499 -20074 |
| 12 | 12 | 75 | 150 | 499 -15075 |
| 12 | 12 | 75 | 200 | 499 -20075 |
| 14 | 14 | 62 | 125 | 499 -10076 |
| 14 | 14 | 75 | 150 | 499 -15076 |
| 14 | 16 | 75 | 200 | 499 -20076 |
| 16 | 16 | 75 | 200 | 499 -20077 |
| 18 | 18 | 75 | 200 | 499 -20078 |
| 20 | 20 | 75 | 200 | 499 -20079 |

**Tolerances:**
D1 +0.00/-0.051mm
D2 h6




**Modifications**
**Regrinds, Re coat**
**Specials**

Merlin Tools Ltd manufactured

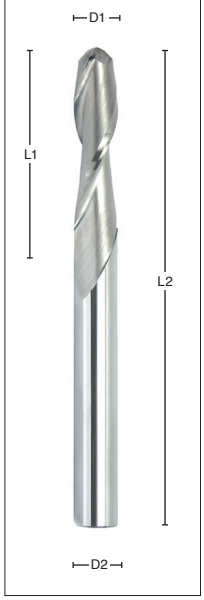
Series 226

# Solid Carbide General Purpose - Bright Finish
# Centre Cutting Slot-Drills 30° Helix
# Micro-grain K30 2-flute Ball Nosed 'Extra Long' Length



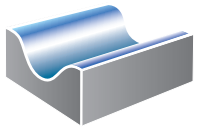

Ti PAGE 260

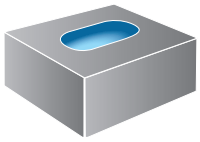
**Tolerances:**
D1 +0.00/-0.051mm
D2 h6




| Cutter Dia-D1 | Shank Dia-D2 | FL L1 | OAL L2 | Part Number |
|---|---|---|---|---|
| 6 | 6 | 38 | 100 | 226 -10081 |
| 6 | 6 | 75 | 150 | 226 -15081 |
| 6 | 8 | 75 | 200 | 226 -20081 |
| 8 | 8 | 42 | 100 | 226 -10082 |
| 8 | 8 | 75 | 150 | 226 -15082 |
| 8 | 8 | 75 | 200 | 226 -20082 |
| 8 | 10 | 75 | 200 | 226 -20083 |
| 10 | 10 | 75 | 150 | 226 -15084 |
| 10 | 10 | 75 | 200 | 226 -20084 |
| 12 | 12 | 75 | 150 | 226 -15085 |
| 12 | 12 | 75 | 200 | 226 -20085 |
| 14 | 14 | 62 | 125 | 226 -10086 |
| 14 | 14 | 75 | 150 | 226 -15086 |
| 14 | 16 | 75 | 200 | 226 -20086 |
| 16 | 16 | 75 | 200 | 226 -20087 |
| 18 | 18 | 75 | 200 | 226 -20088 |
| 20 | 20 | 75 | 200 | 226 -20089 |

1.1 - 1.6 | 6.1 - 8.3
2.1 - 2.3 | 4.1 - 5.3
3.1 - 3.4 | 9.1





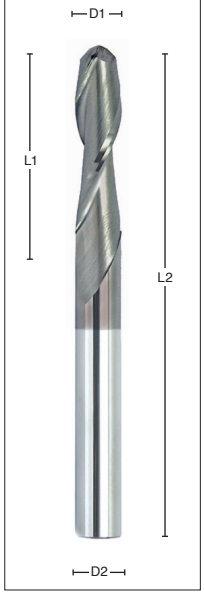
Series 229

# Performance Solid Carbide - *TiALN*
# Centre Cutting Slot-Drills 30° Helix
# Micro-grain K30 2-flute Ball Nosed 'Extra Long' Length




Ti PAGE 260

**Tolerances:**
D1 +0.00/-0.051mm
D2 h6




| Cutter Dia-D1 | Shank Dia-D2 | FL L1 | OAL L2 | Part Number |
|---|---|---|---|---|
| 6 | 6 | 38 | 100 | 229 -10081 |
| 6 | 6 | 75 | 150 | 229 -15081 |
| 6 | 8 | 75 | 200 | 229 -20081 |
| 8 | 8 | 42 | 100 | 229 -10082 |
| 8 | 8 | 75 | 150 | 229 -15082 |
| 8 | 8 | 75 | 200 | 229 -20082 |
| 8 | 10 | 75 | 200 | 229 -20083 |
| 10 | 10 | 75 | 150 | 229 -15084 |
| 10 | 10 | 75 | 200 | 229 -20084 |
| 12 | 12 | 75 | 150 | 229 -15085 |
| 12 | 12 | 75 | 200 | 229 -20085 |
| 14 | 14 | 62 | 125 | 229 -10086 |
| 14 | 14 | 75 | 150 | 229 -15086 |
| 14 | 16 | 75 | 200 | 229 -20086 |
| 16 | 16 | 75 | 200 | 229 -20087 |
| 18 | 18 | 75 | 200 | 229 -20088 |
| 20 | 20 | 75 | 200 | 229 -20089 |

1.1 - 1.6 | 6.1 - 6.4
2.1 - 2.3 | 4.1 - 5.3
3.1 - 3.4 | 1.7 - 1.8
9.1

**Modifications**
**Regrinds, Re coat**
**Specials**

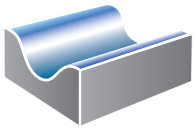
# Solid Carbide General Purpose - Bright Finish
# Centre Cutting End-Mills 30° Helix
# Micro-grain K30 4-flute Ball Nosed 'Extra Long' Length

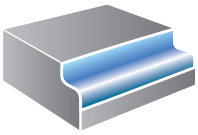
Series 446

Ti PAGE 260

MG HM | 30° | 4 | PLAIN

1.1 - 1.6 | 6.1 - 6.4
2.1 - 2.3 | 4.1 - 5.3
3.1 - 3.4 | 9.1





| Cutter Dia-D1 | Shank Dia-D2 | FL L1 | OAL L2 | Part Number |
|---|---|---|---|---|
| 6 | 6 | 38 | 100 | 446 -10091 |
| 6 | 6 | 75 | 150 | 446 -15091 |
| 6 | 8 | 75 | 200 | 446 -20091 |
| 8 | 8 | 42 | 100 | 446 -10092 |
| 8 | 8 | 75 | 150 | 446 -15092 |
| 8 | 8 | 75 | 200 | 446 -20092 |
| 8 | 10 | 75 | 200 | 446 -20093 |
| 10 | 10 | 75 | 150 | 446 -15094 |
| 10 | 10 | 75 | 200 | 446 -20094 |
| 12 | 12 | 75 | 150 | 446 -15095 |
| 12 | 12 | 75 | 200 | 446 -20095 |
| 14 | 14 | 62 | 125 | 446 -10096 |
| 14 | 14 | 75 | 150 | 446 -15096 |
| 14 | 16 | 75 | 200 | 446 -20096 |
| 16 | 16 | 75 | 200 | 446 -20097 |
| 18 | 18 | 75 | 200 | 446 -20098 |
| 20 | 20 | 75 | 200 | 446 -20099 |

**Tolerances:**
D1 +0.00/-0.051mm
D2 h6




# Performance Solid Carbide - *TiALN*
# Centre Cutting End-Mills 30° Helix
# Micro-grain K30 4-flute Ball Nosed 'Extra Long' Length

Series 449

Ti PAGE 260

TiALN | 30° | MG HM | 4 | PLAIN

1.1 - 1.6 | 6.1 - 6.4
2.1 - 2.3 | 4.1 - 5.3
3.1 - 3.4 | 1.7 - 1.8
9.1

| Cutter Dia-D1 | Shank Dia-D2 | FL L1 | OAL L2 | Part Number |
|---|---|---|---|---|
| 6 | 6 | 38 | 100 | 449 -10091 |
| 6 | 6 | 75 | 150 | 449 -15091 |
| 6 | 8 | 75 | 200 | 449 -20091 |
| 8 | 8 | 42 | 100 | 449 -10092 |
| 8 | 8 | 75 | 150 | 449 -15092 |
| 8 | 8 | 75 | 200 | 449 -20092 |
| 8 | 10 | 75 | 200 | 449 -20093 |
| 10 | 10 | 75 | 150 | 449 -15094 |
| 10 | 10 | 75 | 200 | 449 -20094 |
| 12 | 12 | 75 | 150 | 449 -15095 |
| 12 | 12 | 75 | 200 | 449 -20095 |
| 14 | 14 | 62 | 125 | 449 -10096 |
| 14 | 14 | 75 | 150 | 449 -15096 |
| 14 | 16 | 75 | 200 | 449 -20096 |
| 16 | 16 | 75 | 200 | 449 -20097 |
| 18 | 18 | 75 | 200 | 449 -20098 |
| 20 | 20 | 75 | 200 | 449 -20099 |

**Tolerances:**
D1 +0.00/-0.051mm
D2 h6




**Modifications**
**Regrinds, Re coat**
**Specials**



# Aluminium and Ultra High Performance Range

## Range
Aluminium, Variable Helix, Miniature, Multi-Flutes, Roughers, Corner Radius & Corner Rounding

## Size
Metric: 0.2mm through to 25mm
Imperial: 1/8" through to1"

## Finish
Bright Finish, TiALN Coated, ZrN Coated, nAco Coated

## Options
Tools are available from 1 to 10 Flutes Square End, Ball Nosed, Corner Radius and Neck Relief.
Helix available from straight flute through to 60°.
Variable Helix and variable pitch available in 4, 5 and 6 flute.

## Delivery
Over 150,00 tools available from stock for Same-Day despatch



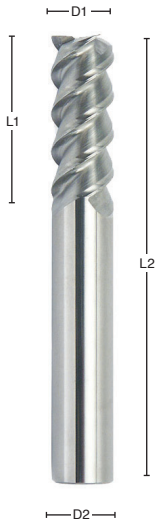
Series 650

# Performance Solid Carbide - Bright Finish
# Centre Cutting End-Mills 60° Helix
# Micro-grain K30 3-flute Hi-Helix



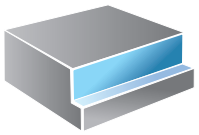

PAGE 260

| Tolerances: |
|---|
| D1 +0.00/-0.051mm |
| D2 h6 |




| Cutter Dia-D1 | Shank Dia-D2 | FL L1 | OAL L2 | Part Number |
|---|---|---|---|---|
| 6 | 6 | 20 | 63 | 650 -10410 |
| 8 | 8 | 22 | 63 | 650 -10412 |
| 10 | 10 | 25 | 70 | 650 -10414 |
| 12 | 12 | 25 | 75 | 650 -10416 |
| 16 | 16 | 30 | 88 | 650 -10420 |
| 20 | 20 | 38 | 100 | 650 -10424 |

2.1 - 2.3
6.2 -6.4
4.1 - 5.3





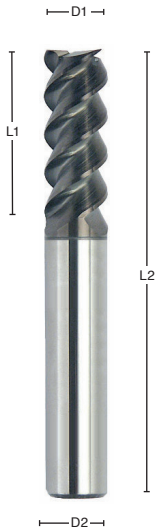
Series 659

# High-Performance Solid Carbide - *TiALN*
# Centre Cutting End-Mills 60° Helix
# Micro-grain K30 3-flute Hi-Helix




PAGE 260

| Tolerances: |
|---|
| D1 +0.00/-0.051mm |
| D2 h6 |




| Cutter Dia-D1 | Shank Dia-D2 | FL L1 | OAL L2 | Part Number |
|---|---|---|---|---|
| 6 | 6 | 20 | 63 | 659 -10410 |
| 8 | 8 | 22 | 63 | 659 -10412 |
| 10 | 10 | 25 | 70 | 659 -10414 |
| 12 | 12 | 25 | 75 | 659 -10416 |
| 16 | 16 | 30 | 88 | 659 -10420 |
| 20 | 20 | 38 | 100 | 659 -10424 |

1.1 - 1.6
2.1 - 2.3
6.2 -6.4
4.1 - 5.3

**Modifications**
**Regrinds, Recoat**
**Specials**

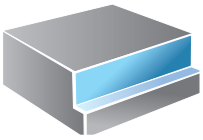
# Performance Solid Carbide - Bright Finish
# Centre Cutting End-Mills 45° Helix
# Micro-grain K30 5-Flute

Series 520

PAGE 262

45° | MG HM | 5 | PLAIN

1.1 - 1.6 | 4.1 - 5.3 | 2.1 - 2.3 | 3.1 - 3.4





| Cutter Dia-D1 | Shank Dia-D2 | FL L1 | OAL L2 | Part Number |
|---|---|---|---|---|
| 3 | 3 | 9 | 39 | 520 -25505 |
| 4 | 4 | 14 | 51 | 520 -25507 |
| 5 | 5 | 16 | 51 | 520 -25509 |
| 6 | 6 | 19 | 64 | 520 -25510 |
| 8 | 8 | 21 | 64 | 520 -25512 |
| 10 | 10 | 22 | 70 | 520 -25514 |
| 12 | 12 | 25 | 76 | 520 -25516 |
| 14 | 14 | 30 | 89 | 520 -25518 |
| 16 | 16 | 32 | 89 | 520 -25520 |
| 20 | 20 | 38 | 102 | 520 -25524 |
| 25 | 25 | 38 | 102 | 520 -25529 |

**Tolerances:**

D1 +0.00/-0.051mm

D2 h6




# High-Performance Solid Carbide - *TiALN*
# Centre Cutting End-Mills 45° Helix
# Micro-grain K30 5-Flute

Series 525

PAGE 262

TiALN | 45° | MG HM | 5 | PLAIN

1.1 - 1.6 | 4.1 - 5.3 | 2.1 - 2.3 | 1.7 - 1.8 | 3.1 - 3.4

| Cutter Dia-D1 | Shank Dia-D2 | FL L1 | OAL L2 | Part Number |
|---|---|---|---|---|
| 3 | 3 | 9 | 39 | 525 -25505 |
| 4 | 4 | 14 | 51 | 525 -25507 |
| 5 | 5 | 16 | 51 | 525 -25509 |
| 6 | 6 | 19 | 64 | 525 -25510 |
| 8 | 8 | 21 | 64 | 525 -25512 |
| 10 | 10 | 22 | 70 | 525 -25514 |
| 12 | 12 | 25 | 76 | 525 -25516 |
| 14 | 14 | 30 | 89 | 525 -25518 |
| 16 | 16 | 32 | 89 | 525 -25520 |
| 20 | 20 | 38 | 102 | 525 -25524 |
| 25 | 25 | 38 | 102 | 525 -25529 |

**Tolerances:**

D1 +0.00/-0.051mm

D2 h6




**Modifications**
**Regrinds, Recoat**
**Specials**

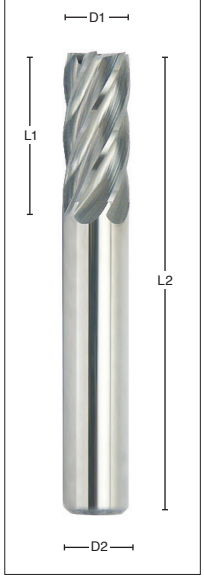
Series 660

# Performance Solid Carbide - Bright Finish Centre Cutting End-Mills 30° Helix RHS/RHC Micro-grain K30 6-Flute



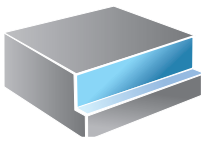

Ti PAGE 262

**Tolerances:**
D1 +0.00/-0.051mm
D2 h6




| Cutter Dia-D1 | Shank Dia-D2 | FL L1 | OAL L2 | Part Number |
|---|---|---|---|---|
| 3 | 3 | 12 | 38 | 660 -16605 |
| 4 | 4 | 14 | 50 | 660 -16607 |
| 5 | 5 | 16 | 50 | 660 -16609 |
| 6 | 6 | 19 | 63 | 660 -16610 |
| 8 | 8 | 21 | 63 | 660 -16612 |
| 10 | 10 | 25 | 70 | 660 -16614 |
| 12 | 12 | 25 | 75 | 660 -16616 |
| 16 | 16 | 32 | 88 | 660 -16620 |
| 20 | 20 | 38 | 100 | 660 -16624 |

1.6 4.3
2.3 5.3
3.1 - 3.4



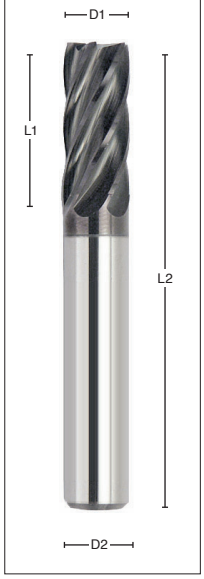
Series 665

# High-Performance Solid Carbide - *TiALN* Centre Cutting End-Mills 30° Helix RHS/RHC Micro-grain K30 6-Flute




Ti PAGE 262

**Tolerances:**
D1 +0.00/-0.051mm
D2 h6




| Cutter Dia-D1 | Shank Dia-D2 | FL L1 | OAL L2 | Part Number |
|---|---|---|---|---|
| 3 | 3 | 12 | 38 | 665 -16605 |
| 4 | 4 | 14 | 50 | 665 -16607 |
| 5 | 5 | 16 | 50 | 665 -16609 |
| 6 | 6 | 19 | 63 | 665 -16610 |
| 8 | 8 | 21 | 63 | 665 -16612 |
| 10 | 10 | 25 | 70 | 665 -16614 |
| 12 | 12 | 25 | 75 | 665 -16616 |
| 16 | 16 | 32 | 88 | 665 -16620 |
| 20 | 20 | 38 | 100 | 665 -16624 |

1.6 4.3
2.3 5.3
3.1 - 3.4 1.7 - 1.8

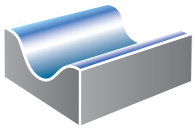
**Modifications**
**Regrinds, Recoat**
**Specials**

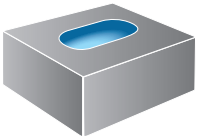
# Performance Solid Carbide - Bright Finish
# Centre Cutting 15° Helix Pocket Mill
# Micro-grain K30 2-flute Long Ball Nosed

Series 670

PAGE 262

1.1 - 1.6 | 6.1 - 8.3
2.1 - 2.3 | 4.1 - 5.3
3.1 - 3.4 | 9.1

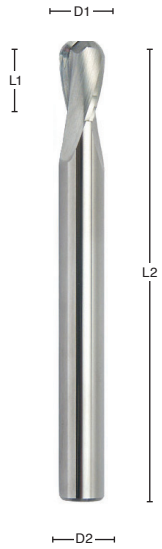




MG HM | 2 | PLAIN

| Cutter Dia-D1 | Shank Dia-D2 | FL L1 | OAL L2 | Part Number |
|---|---|---|---|---|
| 3 | 3 | 6 | 75 | 670 -10705 |
| 4 | 4 | 6 | 75 | 670 -10707 |
| 6 | 6 | 12 | 100 | 670 -10710 |
| 8 | 8 | 14 | 100 | 670 -10712 |
| 10 | 10 | 18 | 100 | 670 -10714 |
| 12 | 12 | 22 | 150 | 670 -10716 |
| 14 | 14 | 26 | 150 | 670 -10718 |
| 16 | 16 | 30 | 150 | 670 -10720 |
| 18 | 18 | 34 | 150 | 670 -10722 |
| 20 | 20 | 38 | 150 | 670 -10724 |

**Tolerances:**
D1 +0.00/-0.051mm
D2 h6




# High-Performance Solid Carbide - *TiALN*
# Centre Cutting 15° Helix Pocket Mill
# Micro-grain K30 2-flute Long Ball Nosed

Series 675

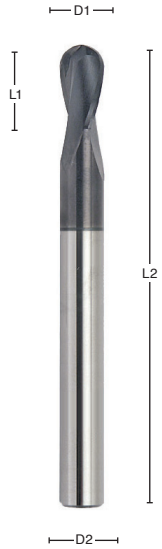
PAGE 262

1.1 - 1.6 | 6.4
2.1 - 2.3 | 4.1 - 5.3
3.1 - 3.4 | 9.1
1.7 - 1.8

TiALN | MG HM | 2 | PLAIN

| Cutter Dia-D1 | Shank Dia-D2 | FL L1 | OAL L2 | Part Number |
|---|---|---|---|---|
| 3 | 3 | 6 | 75 | 675 -10705 |
| 4 | 4 | 6 | 75 | 675 -10707 |
| 6 | 6 | 12 | 100 | 675 -10710 |
| 8 | 8 | 14 | 100 | 675 -10712 |
| 10 | 10 | 18 | 100 | 675 -10714 |
| 12 | 12 | 22 | 150 | 675 -10716 |
| 14 | 14 | 26 | 150 | 675 -10718 |
| 16 | 16 | 30 | 150 | 675 -10720 |
| 18 | 18 | 34 | 150 | 675 -10722 |
| 20 | 20 | 38 | 150 | 675 -10724 |

**Tolerances:**
D1 +0.00/-0.051mm
D2 h6




**Modifications**
**Regrinds, Recoat**
**Specials**

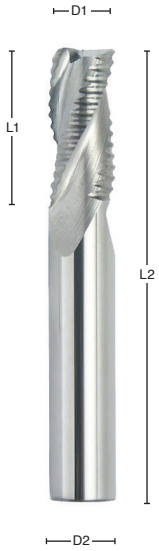
Series 530

# Performance Solid Carbide - Bright Finish
# Centre Cutting 30° Helix - Fine
# Micro-grain K30 3-Flute Roughing Mill



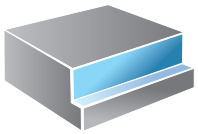

PAGE 262

| Tolerances: |
|---|
| D1 +0.00/-0.051mm |
| D2 h6 |




| Cutter Dia-D1 | Shank Dia-D2 | FL L1 | OAL L2 | Part Number |
|---|---|---|---|---|
| 6 | 6 | 19 | 63 | 530 -10410 |
| 8 | 8 | 19 | 63 | 530 -10412 |
| 10 | 10 | 22 | 70 | 530 -10414 |
| 12 | 12 | 25 | 75 | 530 -10416 |
| 16 | 16 | 32 | 88 | 530 -10420 |
| 20 | 20 | 38 | 100 | 530 -10424 |
| 25 | 25 | 38 | 100 | 530 -10429 |

1.1 - 1.6 | 6.1 - 8.3
2.1 - 2.3 | 4.1 - 5.3
3.1 - 3.4 | 9.1





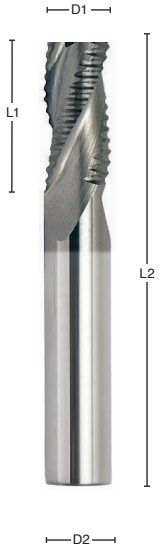
Series 539

# High-Performance Solid Carbide - *TiALN*
# Centre Cutting 30° Helix - Fine
# Micro-grain K30 3-Flute Roughing Mill




PAGE 262

| Tolerances: |
|---|
| D1 +0.00/-0.051mm |
| D2 h6 |




| Cutter Dia-D1 | Shank Dia-D2 | FL L1 | OAL L2 | Part Number |
|---|---|---|---|---|
| 6 | 6 | 19 | 63 | 539 -10410 |
| 8 | 8 | 19 | 63 | 539 -10412 |
| 10 | 10 | 22 | 70 | 539 -10414 |
| 12 | 12 | 25 | 75 | 539 -10416 |
| 16 | 16 | 32 | 88 | 539 -10420 |
| 20 | 20 | 38 | 100 | 539 -10424 |
| 25 | 25 | 38 | 100 | 539 -10429 |

1.1 - 1.6 | 6.1 - 6.4
2.1 - 2.3 | 4.1 - 5.3
3.1 - 3.4 | 9.1

**Modifications**
**Regrinds, Recoat**
**Specials**

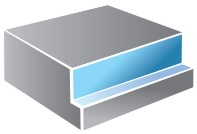
# Performance Solid Carbide - Bright Finish
# Centre Cutting 30° Helix - Fine
# Micro-grain K30 4-Flute Roughing Mill

Series 600

PAGE 262

MG HM | 4 | PLAIN | FINE

1.1 - 1.6 | 4.1 - 5.3 | 2.1 - 2.3 | 3.1 - 3.4



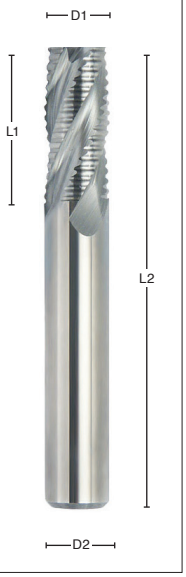


| Cutter Dia-D1 | Shank Dia-D2 | FL L1 | OAL L2 | Part Number |
|---|---|---|---|---|
| 6 | 6 | 19 | 63 | 600 -10510 |
| 8 | 8 | 19 | 63 | 600 -10512 |
| 10 | 10 | 22 | 70 | 600 -10514 |
| 12 | 12 | 25 | 75 | 600 -10516 |
| 16 | 16 | 32 | 88 | 600 -10520 |
| 20 | 20 | 38 | 100 | 600 -10524 |
| 25 | 25 | 38 | 100 | 600 -10529 |

**Tolerances:**

D1 +0.00/-0.051mm

D2 h6




# High-Performance Solid Carbide - *TiALN*
# Centre Cutting 30° Helix - Fine
# Micro-grain K30 4-Flute Roughing Mill

Series 609

PAGE 262

TiALN | MG HM | 4 | PLAIN | FINE

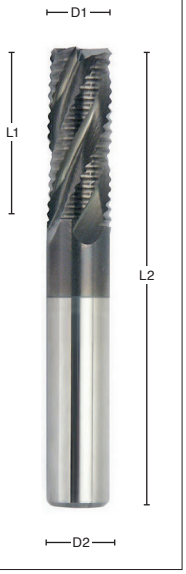
1.1 - 1.6 | 1.7 - 1.8 | 2.1 - 2.3 | 4.1 - 5.3 | 3.1 - 3.4

| Cutter Dia-D1 | Shank Dia-D2 | FL L1 | OAL L2 | Part Number |
|---|---|---|---|---|
| 6 | 6 | 19 | 63 | 609 -10510 |
| 8 | 8 | 19 | 63 | 609 -10512 |
| 10 | 10 | 22 | 70 | 609 -10514 |
| 12 | 12 | 25 | 75 | 609 -10516 |
| 16 | 16 | 32 | 88 | 609 -10520 |
| 20 | 20 | 38 | 100 | 609 -10524 |
| 25 | 25 | 38 | 100 | 609 -10529 |

**Tolerances:**

D1 +0.00/-0.051mm

D2 h6




**Modifications**
**Regrinds, Recoat**
**Specials**

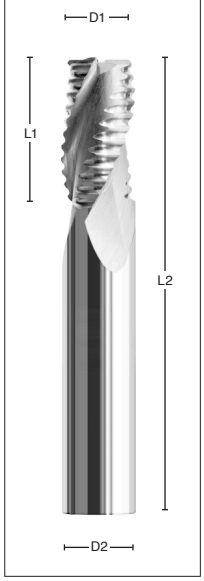
Series 603

# Performance Solid Carbide
# Centre Cutting 30° Helix - for Aluminium - Coarse
# Micro-grain K30 3-Flute Roughing Mill



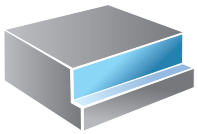

PAGE 262

| Tolerances: |
|---|
| D1 +0.00/-0.051mm |
| D2 h6 |




| Cutter Dia-D1 | Shank Dia-D2 | FL L1 | OAL L2 | Part Number |
|---|---|---|---|---|
| 6 | 6 | 19 | 63 | 603 -10410 |
| 8 | 8 | 19 | 63 | 603 -10412 |
| 10 | 10 | 22 | 70 | 603 -10414 |
| 12 | 12 | 25 | 75 | 603 -10416 |
| 16 | 16 | 32 | 88 | 603 -10420 |
| 20 | 20 | 38 | 100 | 603 -10424 |
| 25 | 25 | 38 | 100 | 603 -10429 |

| | |
|---|---|
| 1.1 - 1.6 | 6.1 - 8.3 |
| 2.1 - 2.3 | 4.1 - 5.3 |
| 3.1 - 3.4 | 9.1 |





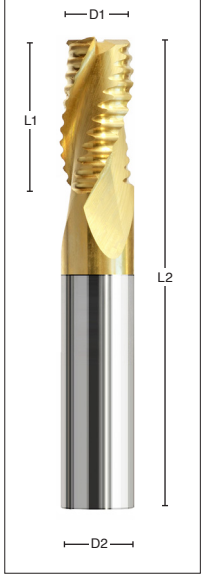
Series 699

# High-Performance Solid Carbide - *ZrN*
# Centre Cutting 30° Helix - for Aluminium - Coarse
# Micro-grain K30 3-Flute Roughing Mill




PAGE 262

| Tolerances: |
|---|
| D1 +0.00/-0.051mm |
| D2 h6 |




| Cutter Dia-D1 | Shank Dia-D2 | FL L1 | OAL L2 | Part Number |
|---|---|---|---|---|
| 6 | 6 | 19 | 63 | 699 -10410 |
| 8 | 8 | 19 | 63 | 699 -10412 |
| 10 | 10 | 22 | 70 | 699 -10414 |
| 12 | 12 | 25 | 75 | 699 -10416 |
| 16 | 16 | 32 | 88 | 699 -10420 |
| 20 | 20 | 38 | 100 | 699 -10424 |
| 25 | 25 | 38 | 100 | 699 -10429 |

| | |
|---|---|
| 1.1 - 1.6 | 6.1 - 8.3 |
| 2.1 - 2.3 | 4.1 - 5.3 |
| 3.1 - 3.4 | 9.1 |

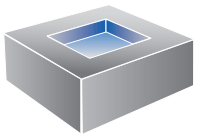
**Modifications**
**Regrinds, Recoat**
**Specials**

# Ultra-High Performance Solid Carbide Centre Cutting 55° Helix - for Aluminium Micro-grain K30 2-Flute Alumazip

Series 254

PAGE 264

7.1 - 8.2





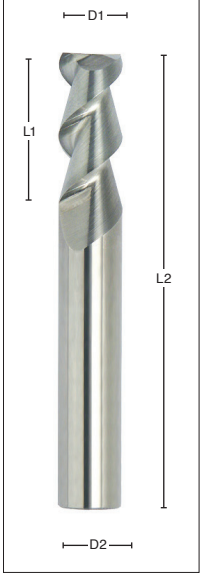
| Cutter Dia-D1 | Shank Dia-D2 | FL L1 | OAL L2 | Part Number |
|---|---|---|---|---|
| 3 | 3 | 12 | 38 | 254 -11305 |
| 4 | 4 | 14 | 50 | 254 -11307 |
| 5 | 5 | 19 | 50 | 254 -11309 |
| 6 | 6 | 19 | 63 | 254 -11310 |
| 8 | 8 | 19 | 63 | 254 -11312 |
| 10 | 10 | 22 | 70 | 254 -11314 |
| 12 | 12 | 25 | 83 | 254 -11316 |
| 14 | 14 | 30 | 88 | 254 -11318 |
| 16 | 16 | 32 | 88 | 254 -11320 |
| 20 | 20 | 38 | 100 | 254 -11324 |
| 25 | 25 | 38 | 100 | 254 -11329 |

55° MG HM 2 PLAIN

**Tolerances:**

D1 +0.00/-0.051mm

D2 h6



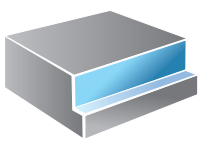

# Ultra-High Performance Solid Carbide Centre Cutting 55° Helix - for Aluminium Micro-grain K30 3-Flute Alumazip

Series 356

PAGE 264

7.1 - 8.2





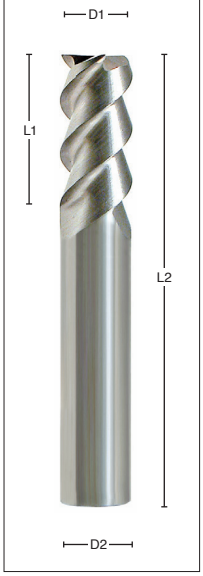
| Cutter Dia-D1 | Shank Dia-D2 | FL L1 | OAL L2 | Part Number |
|---|---|---|---|---|
| 3 | 3 | 12 | 38 | 356 -13505 |
| 4 | 4 | 15 | 50 | 356 -13507 |
| 5 | 5 | 20 | 50 | 356 -13509 |
| 6 | 6 | 20 | 64 | 356- 13510 |
| 8 | 8 | 22 | 64 | 356 -13512 |
| 10 | 10 | 25 | 70 | 356 -13514 |
| 12 | 12 | 25 | 76 | 356 -13516 |
| 14 | 14 | 30 | 90 | 356 -13518 |
| 16 | 16 | 35 | 90 | 356 -13520 |
| 18 | 18 | 35 | 90 | 356 -13522 |
| 20 | 20 | 40 | 100 | 356 -13524 |

55° MG HM 3 PLAIN

**Tolerances:**

D1 +0.00/-0.051mm

D2 h6



Series 357

# Ultra-High Performance Solid Carbide Centre Cutting 55° Helix - for Aluminium Micro-grain K30 3-Flute Long Alumazip



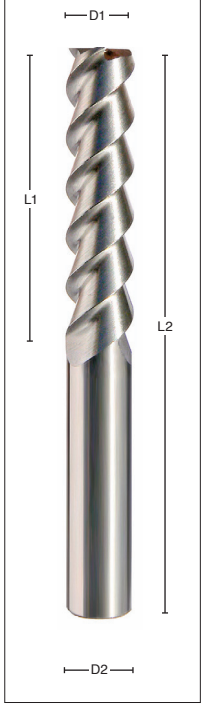

TI PAGE 264

7.1 - 8.2

**Tolerances:**

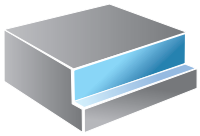
D1 +0.00/-0.051mm

D2 h6




| Cutter Dia-D1 | Shank Dia-D2 | FL L1 | OAL L2 | Part Number |
|---|---|---|---|---|
| 3 | 6 | 15 | 75 | 357 -13605 |
| 4 | 6 | 20 | 75 | 357 -13607 |
| 5 | 6 | 25 | 75 | 357 -13609 |
| 6 | 6 | 35 | 100 | 357 -13610 |
| 8 | 8 | 45 | 100 | 357 -13612 |
| 10 | 10 | 45 | 100 | 357 -13614 |
| 12 | 12 | 50 | 100 | 357 -13616 |
| 14 | 14 | 50 | 100 | 357 -13618 |
| 16 | 16 | 60 | 150 | 357 -13620 |
| 18 | 18 | 60 | 150 | 357 -13622 |
| 20 | 20 | 60 | 150 | 357 -13624 |





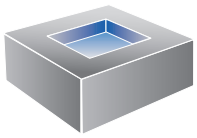
**Modifications Regrinds, Recoat Specials**

# Ultra-High Performance Solid Carbide Centre Cutting 40° Helix - for Aluminium Micro-grain K30 2-Flute Long Reach

Series 255

PAGE 264

7.1 - 8.2





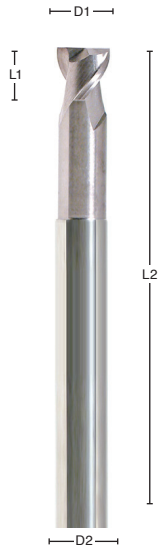
| Cutter Dia-D1 | Shank Dia-D2 | FL L1 | OAL L2 | Neck Dia | Reach | Part Number |
|---|---|---|---|---|---|---|
| 3 | 6 | 3 | 75 | 2.5 | 12 | 255 -12305 |
| 4 | 6 | 4 | 75 | 3.5 | 15 | 255 -12307 |
| 5 | 6 | 5 | 75 | 4.5 | 20 | 255 -12309 |
| 6 | 6 | 6 | 100 | 5 | 20 | 255 -12310 |
| 8 | 8 | 6 | 100 | 7 | 25 | 255 -12312 |
| 10 | 10 | 10 | 100 | 9 | 25 | 255 -12314 |
| 12 | 12 | 12 | 100 | 11 | 40 | 255 -12316 |
| 14 | 14 | 12 | 125 | 13 | 50 | 255 -12318 |
| 16 | 16 | 12 | 125 | 14 | 50 | 255 -12320 |
| 18 | 18 | 14 | 125 | 16 | 50 | 255 -12322 |
| 20 | 20 | 16 | 150 | 18 | 65 | 255 -12324 |

40° MG HM 2 PLAIN

**Tolerances:**

D1 +0.00/-0.051mm

D2 h6




# Ultra-High Performance Solid Carbide Centre Cutting 40° Helix - for Aluminium Micro-grain K30 2-Flute Extra Long Reach

Series 255XL

PAGE 264

7.1 - 8.2

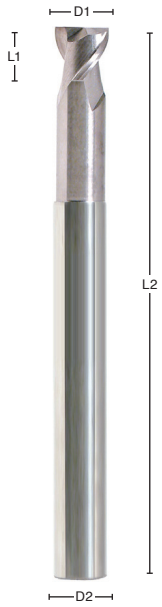
| Cutter Dia-D1 | Shank Dia-D2 | FL L1 | OAL L2 | Neck Dia | Reach | Part Number |
|---|---|---|---|---|---|---|
| 6 | 6 | 6 | 150 | 5 | 20 | 255 -12310XL |
| 8 | 8 | 8 | 150 | 7 | 25 | 255 -12312XL |
| 10 | 10 | 10 | 150 | 9 | 25 | 255 -12314XL |
| 12 | 12 | 12 | 150 | 11 | 40 | 255 -12316XL |
| 14 | 14 | 14 | 175 | 13 | 50 | 255 -12318XL |
| 16 | 16 | 16 | 200 | 14 | 50 | 255 -12320XL |
| 18 | 18 | 18 | 200 | 16 | 50 | 255 -12322XL |
| 20 | 20 | 20 | 200 | 18 | 65 | 255 -12324XL |

40° MG HM 2 PLAIN

**Tolerances:**

D1 +0.00/-0.051mm

D2 h6




**Modifications**
**Regrinds, Recoat**
**Specials**

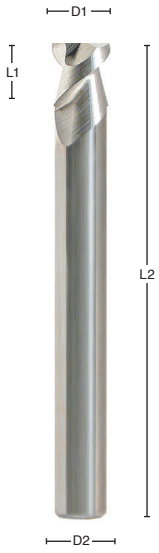
Series 256

# Ultra-High Performance Solid Carbide Centre Cutting 50° Helix - for Aluminium Micro-grain K30 2-Flute Long Reduced Shank

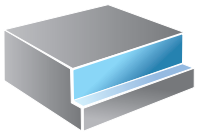



PAGE 264
7.1 - 8.2

**Tolerances:**
D1 +0.00/-0.051mm
D2 h6




| Cutter Dia-D1 | Shank Dia-D2 | FL L1 | OAL L2 | Part Number |
|---|---|---|---|---|
| 6 | 5 | 6 | 100 | 256 -14310 |
| 8 | 7 | 8 | 100 | 256 -14312 |
| 10 | 9 | 10 | 100 | 256 -14314 |
| 12 | 11 | 12 | 100 | 256 -14316 |
| 14 | 12 | 14 | 125 | 256 -14318 |
| 16 | 14 | 16 | 125 | 256 -14320 |
| 18 | 16 | 18 | 125 | 256 -14322 |
| 20 | 18 | 20 | 150 | 256 -14324 |





Series 355

# Ultra-High Performance Solid Carbide Centre Cutting 40° Helix - for Aluminium Micro-grain K30 3-Flute Long Reach




PAGE 264
7.1 - 8.2

**Tolerances:**
D1 +0.00/-0.051mm
D2 h6




| Cutter Dia-D1 | Shank Dia-D2 | FL L1 | OAL L2 | Neck Dia | Reach | Part Number |
|---|---|---|---|---|---|---|
| 6 | 6 | 6 | 100 | 5 | 20 | 355 -13310 |
| 8 | 8 | 6 | 100 | 7 | 25 | 355 -13312 |
| 10 | 10 | 10 | 100 | 9 | 25 | 355 -13314 |
| 12 | 12 | 12 | 100 | 11 | 40 | 355 -13316 |
| 14 | 14 | 12 | 125 | 13 | 50 | 355 -13318 |
| 16 | 16 | 12 | 125 | 14 | 50 | 355 -13320 |
| 18 | 18 | 14 | 125 | 16 | 50 | 355 -13322 |
| 20 | 20 | 16 | 150 | 18 | 65 | 355 -13324 |

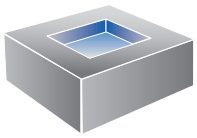
**Modifications Regrinds, Recoat Specials**

# Ultra-High Performance Solid Carbide Centre Cutting 40° Helix - for Aluminium *with coolant* Micro-grain K30 2-Flute Long-Reach

Series 255C

PAGE 264

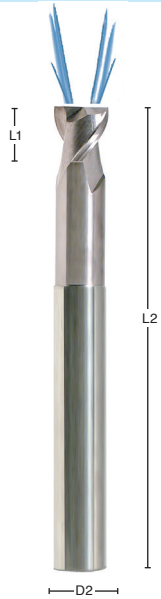
7.1 - 8.2





| Cutter Dia-D1 | Shank Dia-D2 | FL L1 | OAL L2 | Neck Dia | Reach | Part Number |
|---|---|---|---|---|---|---|
| 6 | 6 | 6 | 100 | 5 | 20 | 255 -12310-C |
| 8 | 8 | 8 | 100 | 7 | 25 | 255 -12312-C |
| 10 | 10 | 10 | 100 | 9 | 25 | 255 -12314-C |
| 12 | 12 | 12 | 100 | 11 | 40 | 255 -12316-C |
| 16 | 16 | 16 | 125 | 14 | 50 | 255 -12320-C |
| 20 | 20 | 20 | 150 | 18 | 65 | 255 -12324-C |

Tolerances:
D1 +0.00/-0.051mm
D2 h6




# Ultra-High Performance Solid Carbide Centre Cutting 40° Helix - for Aluminium *non waterline* Micro-grain K30 2-Flute Long-Reach

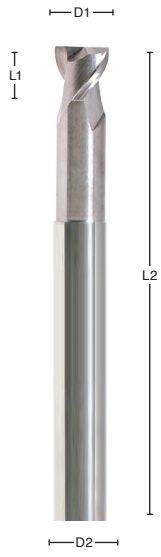
Series 255WL

PAGE 264

7.1 - 8.2

| Cutter Dia-D1 | Shank Dia-D2 | FL L1 | OAL L2 | Neck Dia | Reach | Part Number |
|---|---|---|---|---|---|---|
| 6 | 6 | 6 | 100 | 5 | 20 | 255 -12310-WL |
| 8 | 8 | 8 | 100 | 7 | 25 | 255 -12312-WL |
| 10 | 10 | 10 | 100 | 9 | 25 | 255 -12314-WL |
| 12 | 12 | 12 | 100 | 11 | 40 | 255 -12316-WL |
| 14 | 14 | 14 | 125 | 13 | 50 | 255 -12318-WL |
| 16 | 16 | 16 | 125 | 14 | 50 | 255 -12320-WL |
| 18 | 18 | 18 | 125 | 16 | 50 | 255 -12322-WL |
| 20 | 20 | 20 | 150 | 18 | 65 | 255 -12324-WL |
| 25 | 25 | 25 | 150 | 23 | 65 | 255 -12329-WL |

Tolerances:
D1 +0.00/-0.051mm
D2 h6




**Modifications Regrinds, Recoat Specials**

Series 260

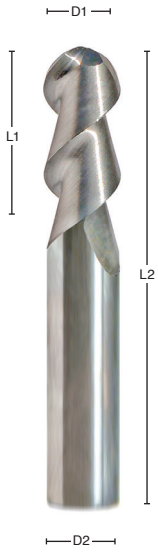
# Ultra-High Performance Solid Carbide Centre Cutting 55° Helix - for Aluminium Micro-grain K30 2-Flute Ball Nosed Alumazip

55° | MG HM | 2 | PLAIN

Ti PAGE 264

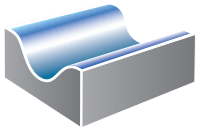
7.1 - 8.2

**Tolerances:**
D1 +0.00/-0.051mm
D2 h6




| Cutter Dia-D1 | Shank Dia-D2 | FL L1 | OAL L2 | Part Number |
|---|---|---|---|---|
| 3 | 3 | 12 | 38 | 260 -13905 |
| 4 | 4 | 14 | 50 | 260 -13907 |
| 5 | 5 | 19 | 50 | 260 -13909 |
| 6 | 6 | 19 | 63 | 260 -13910 |
| 8 | 8 | 19 | 63 | 260 -13912 |
| 10 | 10 | 22 | 70 | 260 -13914 |
| 12 | 12 | 25 | 83 | 260 -13916 |
| 14 | 14 | 30 | 83 | 260 -13918 |
| 16 | 16 | 32 | 88 | 260 -13920 |
| 18 | 18 | 35 | 90 | 260 -13922 |
| 20 | 20 | 38 | 100 | 260 -13924 |





Series 257

# Ultra-High Performance Solid Carbide Centre Cutting 50° Helix - for Aluminium Micro-grain K30 2-Flute Ball Nosed Long Reach

50° | MG HM | 2 | PLAIN

Ti PAGE 264

7.1 - 8.2

**Tolerances:**
D1 +0.00/-0.051mm
D2 h6




| Cutter Dia-D1 | Shank Dia-D2 | FL L1 | OAL L2 | Neck Dia | Reach | Part Number |
|---|---|---|---|---|---|---|
| 2 | 6 | 4 | 75 | 1.8 | 8 | 257 -13703 |
| 3 | 6 | 5 | 75 | 2.7 | 9 | 257 -13705 |
| 4 | 6 | 6 | 75 | 3.6 | 15 | 257 -13707 |
| 5 | 6 | 7 | 75 | 4.5 | 18 | 257 -13709 |
| 6 | 6 | 8 | 100 | 5 | 20 | 257 -13710 |
| 8 | 8 | 10 | 100 | 7 | 25 | 257 -13712 |
| 10 | 10 | 12 | 100 | 9 | 30 | 257 -13714 |
| 12 | 12 | 16 | 100 | 11 | 40 | 257 -13716 |
| 14 | 14 | 18 | 100 | 13 | 45 | 257 -13718 |
| 16 | 16 | 20 | 125 | 14 | 50 | 257 -13720 |
| 18 | 18 | 22 | 125 | 16 | 60 | 257 -13722 |
| 20 | 20 | 25 | 150 | 18 | 65 | 257 -13724 |

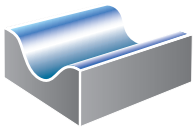
**Modifications Regrinds, Recoat Specials**

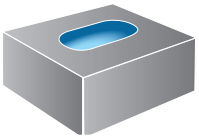
# Ultra-High Performance Solid Carbide Centre Cutting 50° Helix - for Aluminium Micro-grain K30 2-Flute Ball Nosed Extra Long-Reach

Series 257XL

Ti PAGE 264

7.1 - 8.2





| Cutter Dia-D1 | Shank Dia-D2 | FL L1 | OAL L2 | Neck Dia | Reach | Part Number |
|---|---|---|---|---|---|---|
| 6 | 6 | 8 | 150 | 5 | 20 | 257 -13710XL |
| 8 | 8 | 10 | 150 | 7 | 25 | 257 -13712XL |
| 10 | 10 | 12 | 150 | 9 | 25 | 257 -13714XL |
| 12 | 12 | 16 | 150 | 11 | 40 | 257 -13716XL |
| 14 | 14 | 18 | 175 | 13 | 50 | 257 -13718XL |
| 16 | 16 | 20 | 200 | 14 | 50 | 257 -13720XL |
| 18 | 18 | 22 | 200 | 16 | 50 | 257 -13722XL |
| 20 | 20 | 25 | 200 | 18 | 65 | 257 -13724XL |

MG HM | 2 | PLAIN

Tolerances:
D1 +0.00/-0.051mm
D2 h6




# Ultra-High Performance Solid Carbide Centre Cutting 50° Helix - for Aluminium Micro-grain K30 2-Flute Ball Nosed Long Reduced Shank

Series 258

Ti PAGE 264

7.1 - 8.2

| Cutter Dia-D1 | Shank Dia-D2 | FL L1 | OAL L2 | Part Number |
|---|---|---|---|---|
| 6 | 5 | 6 | 100 | 258 -13810 |
| 8 | 7 | 8 | 100 | 258 -13812 |
| 10 | 9 | 10 | 100 | 258 -13814 |
| 12 | 11 | 12 | 100 | 258 -13816 |
| 14 | 12 | 14 | 125 | 258 -13818 |
| 16 | 14 | 16 | 125 | 258 -13820 |
| 18 | 16 | 18 | 125 | 258 -13822 |
| 20 | 18 | 20 | 150 | 258 -13824 |

MG HM | 2 | PLAIN

Tolerances:
D1 +0.00/-0.051mm
D2 h6




**Modifications Regrinds, Recoat Specials**

Series 254R

# Ultra-High Performance Solid Carbide Centre Cutting 55° Helix - for Aluminium Micro-grain K30 2-Flute Alumazip Corner Radius



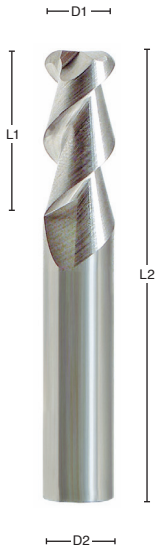

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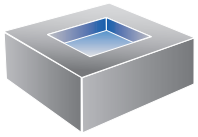
**Tolerances:**

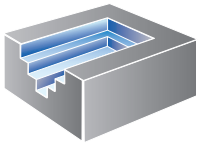
D1 +0.00/-0.051mm

D2 h6




| Cutter Dia-D1 | Shank Dia-D2 | FL L1 | OAL L2 | Corner Radius | Part Number |
|---|---|---|---|---|---|
| 3 | 3 | 12 | 38 | 0.5 | 254 -11305-0.5R |
| 3 | 3 | 12 | 38 | 1.0 | 254 -11305-1.0R |
| 4 | 4 | 14 | 50 | 0.5 | 254 -11307-0.5R |
| 4 | 4 | 14 | 50 | 1.0 | 254 -11307-1.0R |
| 5 | 5 | 19 | 50 | 0.5 | 254 -11309-0.5R |
| 5 | 5 | 19 | 50 | 1.0 | 254 -11309-1.0R |
| 6 | 6 | 19 | 63 | 0.5 | 254 -11310-0.5R |
| 6 | 6 | 19 | 63 | 1.0 | 254 -11310-1.0R |
| 6 | 6 | 19 | 63 | 1.5 | 254 -11310-1.5R |
| 6 | 6 | 19 | 63 | 2.0 | 254- 11310-2.0R |
| 6 | 6 | 19 | 63 | 2.5 | 254- 11310-2.5R |
| 8 | 8 | 19 | 63 | 0.5 | 254 -11312-0.5R |
| 8 | 8 | 19 | 63 | 1.0 | 254 -11312-1.0R |
| 8 | 8 | 19 | 63 | 1.5 | 254 -11312-1.5R |
| 8 | 8 | 19 | 63 | 2.0 | 254 -11312-2.0R |
| 8 | 8 | 19 | 63 | 2.5 | 254 -11312-2.5R |
| 8 | 8 | 19 | 63 | 3.0 | 254 -11312-3.0R |
| 10 | 10 | 22 | 70 | 0.5 | 254 -11314-0.5R |
| 10 | 10 | 22 | 70 | 1.0 | 254 -11314-1.0R |
| 10 | 10 | 22 | 70 | 1.5 | 254 -11314-1.5R |
| 10 | 10 | 22 | 70 | 2.0 | 254 -11314-2.0R |
| 10 | 10 | 22 | 70 | 2.5 | 254 -11314-2.5R |
| 10 | 10 | 22 | 70 | 3.0 | 254 -11314-3.0R |
| 12 | 12 | 25 | 83 | 0.5 | 254 -11316-0.5R |
| 12 | 12 | 25 | 83 | 1.0 | 254 -11316-1.0R |
| 12 | 12 | 25 | 83 | 1.5 | 254 -11316-1.5R |
| 12 | 12 | 25 | 83 | 2.0 | 254 -11316-2.0R |
| 12 | 12 | 25 | 83 | 2.5 | 254 -11316-2.5R |
| 12 | 12 | 25 | 83 | 3.0 | 254 -11316-3.0R |
| 14 | 14 | 30 | 83 | 0.5 | 254 -11318-0.5R |
| 14 | 14 | 30 | 83 | 1.0 | 254 -11318-1.0R |
| 16 | 16 | 32 | 88 | 0.5 | 254 -11320-0.5R |
| 16 | 16 | 32 | 88 | 1.0 | 254 -11320-1.0R |
| 16 | 16 | 32 | 88 | 1.5 | 254 -11320-1.5R |
| 16 | 16 | 32 | 88 | 2.0 | 254 -11320-2.0R |
| 16 | 16 | 32 | 88 | 2.5 | 254 -11320-2.5R |
| 16 | 16 | 32 | 88 | 3.0 | 254 -11320-3.0R |
| 16 | 16 | 32 | 88 | 4.0 | 254 -11320-4.0R |
| 18 | 18 | 35 | 88 | 0.5 | 254 -11322-0.5R |
| 18 | 18 | 35 | 88 | 1.0 | 254 -11322-1.0R |
| 20 | 20 | 38 | 100 | 0.5 | 254 -11324-0.5R |
| 20 | 20 | 38 | 100 | 1.0 | 254 -11324-1.0R |
| 20 | 20 | 38 | 100 | 1.5 | 254 -11324-1.5R |
| 20 | 20 | 38 | 100 | 2.0 | 254 -11324-2.0R |
| 20 | 20 | 38 | 100 | 2.5 | 254 -11324-2.5R |
| 20 | 20 | 38 | 100 | 3.0 | 254 -11324-3.0R |
| 20 | 20 | 38 | 100 | 4.0 | 254 -11324-4.0R |





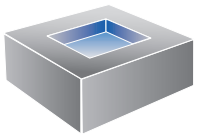
**Modifications**
**Regrinds, Recoat**
**Specials**

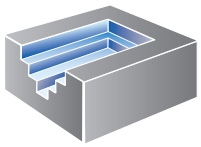
# Ultra-High Performance Solid Carbide
# Centre Cutting 55° Helix - for Aluminium
# Micro-grain K30 3-Flute Alumazip Corner Radius

Series 356R

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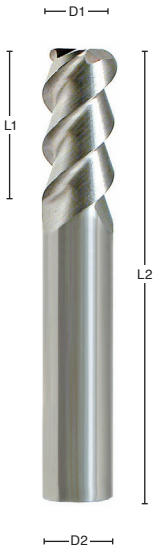
±0.025 | 55° | MG HM | 3 | PLAIN

| Cutter Dia-D1 | Shank Dia-D2 | FL L1 | OAL L2 | Corner Radius | Part Number |
|---|---|---|---|---|---|
| 3 | 3 | 12 | 38 | 0.5 | 356 -13505-0.5R |
| 3 | 3 | 12 | 38 | 1.0 | 356 -13505-1.0R |
| 4 | 4 | 15 | 50 | 0.5 | 356 -13507-0.5R |
| 4 | 4 | 15 | 50 | 1.0 | 356 -13507-1.0R |
| 5 | 5 | 20 | 50 | 0.5 | 356 -13509-0.5R |
| 5 | 5 | 20 | 50 | 1.0 | 356 -13509-1.0R |
| 6 | 6 | 20 | 64 | 0.5 | 356 -13510-0.5R |
| 6 | 6 | 20 | 64 | 1.0 | 356 -13510-1.0R |
| 6 | 6 | 20 | 64 | 1.5 | 356 -13510-1.5R |
| 6 | 6 | 20 | 64 | 2.0 | 356- 13510-2.0R |
| 6 | 6 | 20 | 64 | 2.5 | 356- 13510-2.5R |
| 8 | 8 | 22 | 64 | 0.5 | 356 -13512-0.5R |
| 8 | 8 | 22 | 64 | 1.0 | 356 -13512-1.0R |
| 8 | 8 | 22 | 64 | 1.5 | 356 -13512-1.5R |
| 8 | 8 | 22 | 64 | 2.0 | 356 -13512-2.0R |
| 8 | 8 | 22 | 64 | 2.5 | 356 -13512-2.5R |
| 8 | 8 | 22 | 64 | 3.0 | 356 -13512-3.0R |
| 10 | 10 | 25 | 70 | 0.5 | 356 -13514-0.5R |
| 10 | 10 | 25 | 70 | 1.0 | 356 -13514-1.0R |
| 10 | 10 | 25 | 70 | 1.5 | 356 -13514-1.5R |
| 10 | 10 | 25 | 70 | 2.0 | 356 -13514-2.0R |
| 10 | 10 | 25 | 70 | 2.5 | 356 -13514-2.5R |
| 10 | 10 | 25 | 70 | 3.0 | 356 -13514-3.0R |
| 12 | 12 | 25 | 76 | 0.5 | 356 -13516-0.5R |
| 12 | 12 | 25 | 76 | 1.0 | 356 -13516-1.0R |
| 12 | 12 | 25 | 76 | 1.5 | 356 -13516-1.5R |
| 12 | 12 | 25 | 76 | 2.0 | 356 -13516-2.0R |
| 12 | 12 | 25 | 76 | 2.5 | 356 -13516-2.5R |
| 12 | 12 | 25 | 76 | 3.0 | 356 -13516-3.0R |
| 14 | 14 | 30 | 90 | 0.5 | 356 -13518-0.5R |
| 14 | 14 | 30 | 90 | 1.0 | 356 -13518-1.0R |
| 16 | 16 | 35 | 90 | 0.5 | 356 -13520-0.5R |
| 16 | 16 | 35 | 90 | 1.0 | 356 -13520-1.0R |
| 16 | 16 | 35 | 90 | 1.5 | 356 -13520-1.5R |
| 16 | 16 | 35 | 90 | 2.0 | 356 -13520-2.0R |
| 16 | 16 | 35 | 90 | 2.5 | 356 -13520-2.5R |
| 16 | 16 | 35 | 90 | 3.0 | 356 -13520-3.0R |
| 16 | 16 | 35 | 90 | 4.0 | 356 -13520-4.0R |
| 18 | 18 | 35 | 90 | 0.5 | 356 -13522-0.5R |
| 18 | 18 | 35 | 90 | 1.0 | 356 -13522-1.0R |
| 20 | 20 | 40 | 100 | 0.5 | 356 -13524-0.5R |
| 20 | 20 | 40 | 100 | 1.0 | 356 -13524-1.0R |
| 20 | 20 | 40 | 100 | 1.5 | 356 -13524-1.5R |
| 20 | 20 | 40 | 100 | 2.0 | 356 -13524-2.0R |
| 20 | 20 | 40 | 100 | 2.5 | 356 -13524-2.5R |
| 20 | 20 | 40 | 100 | 3.0 | 356 -13524-3.0R |
| 20 | 20 | 40 | 100 | 4.0 | 356 -13524-4.0R |

**Tolerances:**

D1 +0.00/-0.051mm

D2 h6




**Modifications**
**Regrinds, Recoat**
**Specials**

Series 357R

# Ultra-High Performance Solid Carbide Centre Cutting 55° Helix - for Aluminium Micro-grain K30 3-Flute Long Alumazip Corner Radius



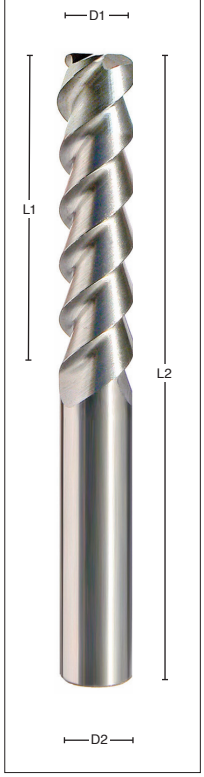

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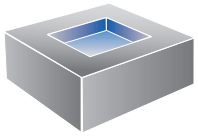
**Tolerances:**

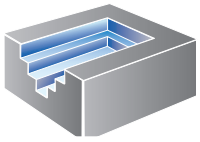
D1 +0.00/-0.051mm

D2 h6




| Cutter Dia-D1 | Shank Dia-D2 | FL L1 | OAL L2 | Corner Radius | Part Number |
|---|---|---|---|---|---|
| 3 | 6 | 15 | 75 | 0.5 | 357 -13605-0.5R |
| 3 | 6 | 15 | 75 | 1.0 | 357 -13605-1.0R |
| 4 | 6 | 20 | 75 | 0.5 | 357 -13607-0.5R |
| 4 | 6 | 20 | 75 | 1.0 | 357 -13607-1.0R |
| 5 | 6 | 25 | 75 | 0.5 | 357 -13609-0.5R |
| 5 | 6 | 25 | 75 | 1.0 | 357 -13609-1.0R |
| 6 | 6 | 35 | 100 | 0.5 | 357 -13610-0.5R |
| 6 | 6 | 35 | 100 | 1.0 | 357 -13610-1.0R |
| 6 | 6 | 35 | 100 | 1.5 | 357 -13610-1.5R |
| 6 | 6 | 35 | 100 | 2.0 | 357- 13610-2.0R |
| 6 | 6 | 35 | 100 | 2.5 | 357 -13610-2.5R |
| 8 | 8 | 45 | 100 | 0.5 | 357 -13612-0.5R |
| 8 | 8 | 45 | 100 | 1.0 | 357 -13612-1.0R |
| 8 | 8 | 45 | 100 | 1.5 | 357 -13612-1.5R |
| 8 | 8 | 45 | 100 | 2.0 | 357 -13612-2.0R |
| 8 | 8 | 45 | 100 | 2.5 | 357 -13612-2.5R |
| 8 | 8 | 45 | 100 | 3.0 | 357 -13612-3.0R |
| 10 | 10 | 45 | 100 | 0.5 | 357 -13614-0.5R |
| 10 | 10 | 45 | 100 | 1.0 | 357 -13614-1.0R |
| 10 | 10 | 45 | 100 | 1.5 | 357 -13614-1.5R |
| 10 | 10 | 45 | 100 | 2.0 | 357 -13614-2.0R |
| 10 | 10 | 45 | 100 | 2.5 | 357 -13614-2.5R |
| 10 | 10 | 45 | 100 | 3.0 | 357 -13614-3.0R |
| 12 | 12 | 50 | 100 | 0.5 | 357 -13616-0.5R |
| 12 | 12 | 50 | 100 | 1.0 | 357 -13616-1.0R |
| 12 | 12 | 50 | 100 | 1.5 | 357 -13616-1.5R |
| 12 | 12 | 50 | 100 | 2.0 | 357 -13616-2.0R |
| 12 | 12 | 50 | 100 | 2.5 | 357 -13616-2.5R |
| 12 | 12 | 50 | 100 | 3.0 | 357 -13616-3.0R |
| 14 | 14 | 50 | 100 | 0.5 | 357 -13618-0.5R |
| 14 | 14 | 50 | 100 | 1.0 | 357 -13618-1.0R |
| 16 | 16 | 60 | 150 | 0.5 | 357 -13620-0.5R |
| 16 | 16 | 60 | 150 | 1.0 | 357 -13620-1.0R |
| 16 | 16 | 60 | 150 | 1.5 | 357 -13620-1.5R |
| 16 | 16 | 60 | 150 | 2.0 | 357 -13620-2.0R |
| 16 | 16 | 60 | 150 | 2.5 | 357 -13620-2.5R |
| 16 | 16 | 60 | 150 | 3.0 | 357 -13620-3.0R |
| 16 | 16 | 60 | 150 | 4.0 | 357 -13620-4.0R |
| 18 | 18 | 60 | 150 | 0.5 | 357 -13622-0.5R |
| 18 | 18 | 60 | 150 | 1.0 | 357 -13622-1.0R |
| 20 | 20 | 60 | 150 | 0.5 | 357 -13624-0.5R |
| 20 | 20 | 60 | 150 | 1.0 | 357 -13624-1.0R |
| 20 | 20 | 60 | 150 | 1.5 | 357 -13624-1.5R |
| 20 | 20 | 60 | 150 | 2.0 | 357 -13624-2.0R |
| 20 | 20 | 60 | 150 | 2.5 | 357 -13624-2.5R |
| 20 | 20 | 60 | 150 | 3.0 | 357 -13624-3.0R |
| 20 | 20 | 60 | 150 | 4.0 | 357 -13624-4.0R |





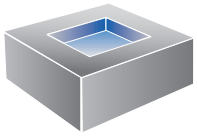
**Modifications Regrinds, Recoat Specials**

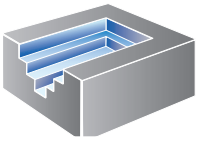
# Ultra-High Performance Solid Carbide
# Centre Cutting 40° Helix - for Aluminium
# Micro-grain K30 2-Flute Long-Reach Corner Radius

Series 255R

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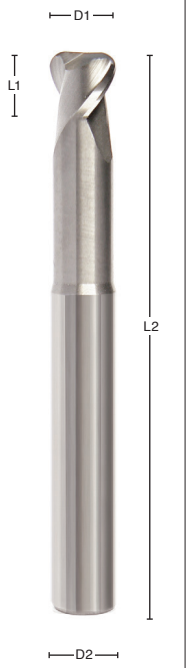


| Cutter Dia-D1 | Shank Dia-D2 | FL L1 | OAL L2 | Neck Dia | Reach | Corner Radius | Part Number |
|---|---|---|---|---|---|---|---|
| 3 | 6 | 3 | 75 | 2.5 | 12 | 0.5 | 255 -12305-0.5R |
| 3 | 6 | 3 | 75 | 2.5 | 12 | 1.0 | 255 -12305-1.0R |
| 4 | 6 | 4 | 75 | 3.5 | 15 | 0.5 | 255 -12307-0.5R |
| 4 | 6 | 4 | 75 | 3.5 | 15 | 1.0 | 255 -12307-1.0R |
| 5 | 6 | 5 | 75 | 4.5 | 20 | 0.5 | 255 -12309-0.5R |
| 5 | 6 | 5 | 75 | 4.5 | 20 | 1.0 | 255 -12309-1.0R |
| 6 | 6 | 6 | 100 | 5 | 20 | 0.5 | 255 -12310-0.5R |
| 6 | 6 | 6 | 100 | 5 | 20 | 1.0 | 255 -12310-1.0R |
| 6 | 6 | 6 | 100 | 5 | 20 | 1.5 | 255 -12310-1.5R |
| 6 | 6 | 6 | 100 | 5 | 20 | 2.0 | 255 -12310-2.0R |
| 6 | 6 | 6 | 100 | 5 | 20 | 2.5 | 255 -12310-2.5R |
| 8 | 8 | 8 | 100 | 7 | 25 | 0.5 | 255 -12312-0.5R |
| 8 | 8 | 8 | 100 | 7 | 25 | 1.0 | 255 -12312-1.0R |
| 8 | 8 | 8 | 100 | 7 | 25 | 1.5 | 255 -12312-1.5R |
| 8 | 8 | 8 | 100 | 7 | 25 | 2.0 | 255 -12312-2.0R |
| 8 | 8 | 8 | 100 | 7 | 25 | 2.5 | 255 -12312-2.5R |
| 8 | 8 | 8 | 100 | 7 | 25 | 3.0 | 255 -12312-3.0R |
| 10 | 10 | 10 | 100 | 9 | 25 | 0.5 | 255 -12314-0.5R |
| 10 | 10 | 10 | 100 | 9 | 25 | 1.0 | 255 -12314-1.0R |
| 10 | 10 | 10 | 100 | 9 | 25 | 1.5 | 255 -12314-1.5R |
| 10 | 10 | 10 | 100 | 9 | 25 | 2.0 | 255 -12314-2.0R |
| 10 | 10 | 10 | 100 | 9 | 25 | 2.5 | 255 -12314-2.5R |
| 10 | 10 | 10 | 100 | 9 | 25 | 3.0 | 255 -12314-3.0R |
| 12 | 12 | 12 | 100 | 11 | 40 | 0.5 | 255 -12316-0.5R |
| 12 | 12 | 12 | 100 | 11 | 40 | 1.0 | 255 -12316-1.0R |
| 12 | 12 | 12 | 100 | 11 | 40 | 1.5 | 255 -12316-1.5R |
| 12 | 12 | 12 | 100 | 11 | 40 | 2.0 | 255 -12316-2.0R |
| 12 | 12 | 12 | 100 | 11 | 40 | 2.5 | 255 -12316-2.5R |
| 12 | 12 | 12 | 100 | 11 | 40 | 3.0 | 255 -12316-3.0R |
| 14 | 14 | 14 | 125 | 13 | 50 | 0.5 | 255 -12318-0.5R |
| 14 | 14 | 14 | 125 | 13 | 50 | 1.0 | 255 -12318-1.0R |
| 16 | 16 | 16 | 125 | 14 | 50 | 0.5 | 255 -12320-0.5R |
| 16 | 16 | 16 | 125 | 14 | 50 | 1.0 | 255 -12320-1.0R |
| 16 | 16 | 16 | 125 | 14 | 50 | 1.5 | 255 -12320-1.5R |
| 16 | 16 | 16 | 125 | 14 | 50 | 2.0 | 255 -12320-2.0R |
| 16 | 16 | 16 | 125 | 14 | 50 | 2.5 | 255 -12320-2.5R |
| 16 | 16 | 16 | 125 | 14 | 50 | 3.0 | 255 -12320-3.0R |
| 16 | 16 | 16 | 125 | 14 | 50 | 4.0 | 255 -12320-4.0R |
| 20 | 20 | 20 | 150 | 18 | 65 | 0.5 | 255 -12324-0.5R |
| 20 | 20 | 20 | 150 | 18 | 65 | 1.0 | 255 -12324-1.0R |
| 20 | 20 | 20 | 150 | 18 | 65 | 1.5 | 255 -12324-1.5R |
| 20 | 20 | 20 | 150 | 18 | 65 | 2.0 | 255 -12324-2.0R |
| 20 | 20 | 20 | 150 | 18 | 65 | 2.5 | 255 -12324-2.5R |
| 20 | 20 | 20 | 150 | 18 | 65 | 3.0 | 255 -12324-3.0R |
| 20 | 20 | 20 | 150 | 18 | 65 | 4.0 | 255 -12324-4.0R |

**Tolerances:**

D1 +0.00/-0.051mm

D2 h6




**Modifications**
**Regrinds, Recoat**
**Specials**

Series 625

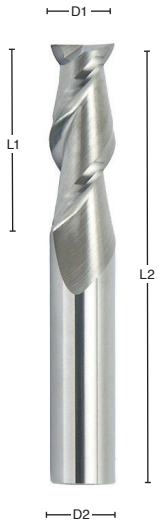
## Performance Solid Carbide
## Centre Cutting 45° Helix for Aluminium
## Micro-grain K30 2-Flute Hi-Helix



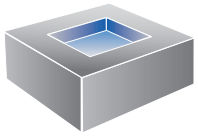

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| Tolerances: |
|---|
| D1 +0.00/-0.051mm |
| D2 h6 |




| Cutter Dia-D1 | Shank Dia-D2 | FL L1 | OAL L2 | Part Number |
|---|---|---|---|---|
| 6 | 6 | 25 | 63 | 625 -10310 |
| 8 | 8 | 25 | 63 | 625 -10312 |
| 10 | 10 | 25 | 70 | 625 -10314 |
| 12 | 12 | 32 | 75 | 625 -10316 |
| 16 | 16 | 42 | 88 | 625 -10320 |
| 20 | 20 | 48 | 100 | 625 -10324 |





Series 253

## Ultra-High Performance Solid Carbide
## Centre Cutting 40° Helix - for Aluminium
## Micro-grain K30 2-Flute Ali-Carb



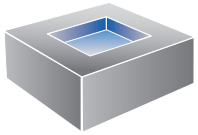

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| Tolerances: |
|---|
| D1 +0.00/-0.051mm |
| D2 h6 |




| Cutter Dia-D1 | Shank Dia-D2 | FL L1 | OAL L2 | Part Number |
|---|---|---|---|---|
| 6 | 6 | 19 | 63 | 253 -10310 |
| 8 | 8 | 21 | 63 | 253 -10312 |
| 10 | 10 | 25 | 70 | 253 -10314 |
| 12 | 12 | 26 | 76 | 253 -10316 |
| 16 | 16 | 32 | 89 | 253 -10320 |
| 20 | 20 | 38 | 102 | 253 -10324 |



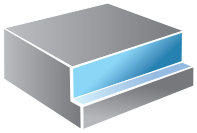


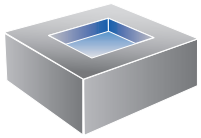
# Performance Solid Carbide
# Centre Cutting 30° Helix - for Aluminium & Plastics
# Micro-grain K30 Single-Flute Reinforced Shank

Series 153

PAGE 264

7.1 - 8.2



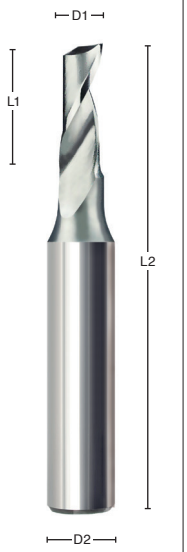


| Cutter Dia-D1 | Shank Dia-D2 | FL L1 | OAL L2 | Part Number |
|---|---|---|---|---|
| 2 | 6 | 7 | 50 | 153 -10103 |
| 2.5 | 6 | 8 | 50 | 153 -10104 |
| 3 | 6 | 10 | 50 | 153 -10105 |
| 3.5 | 6 | 10 | 50 | 153 -10106 |
| 4 | 6 | 10 | 50 | 153 -10107 |
| 4.5 | 6 | 12 | 50 | 153 -10108 |
| 5 | 6 | 12 | 50 | 153 -10109 |
| 5.5 | 6 | 14 | 50 | 153 -10010 |
| 6 | 6 | 14 | 50 | 153 -10110 |

MG HM | 30° | PLAIN

**Tolerances:**

| | |
|---|---|
| D1 | +0.00/-0.076 |
| D2 | h6 |




# Performance Solid Carbide
# Centre Cutting 30° Helix - for Aluminium & Plastics
# Micro-grain K30 Single-Flute Stub Length

Series 154

PAGE 264

7.1 - 8.2

| Cutter Dia-D1 | Shank Dia-D2 | FL L1 | OAL L2 | Part Number |
|---|---|---|---|---|
| 2 | 3 | 7 | 38 | 154 -10103 |
| 3 | 3 | 8 | 38 | 154 -10105 |
| 4 | 4 | 10 | 50 | 154 -10107 |
| 6 | 6 | 14 | 50 | 154 -10110 |

MG HM | 30° | PLAIN

**Tolerances:**

| | |
|---|---|
| D1 | +0.00/-0.076 |
| D2 | h6 |




**Modifications**
**Regrinds, Recoat**
**Specials**

Series 155

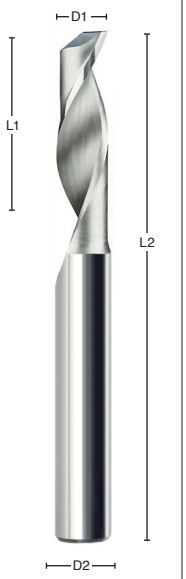
# Performance Solid Carbide
# Centre Cutting 30° Helix - for Aluminium & Plastics
# Micro-grain K30 Single-Flute Long Length



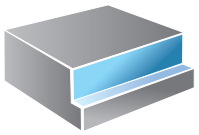

Ti PAGE 264

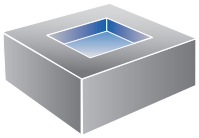
7.1 - 8.2

| Tolerances: |
|---|
| D1 +0.00/-0.076mm |
| D2 h6 |




| Cutter Dia-D1 | Shank Dia-D2 | FL L1 | OAL L2 | Part Number |
|---|---|---|---|---|
| 2 | 3 | 10 | 38 | 155 -10103 |
| 3 | 3 | 10 | 38 | 155 -10105 |
| 4 | 4 | 14 | 50 | 155 -10107 |
| 5 | 5 | 16 | 60 | 155 -10109 |
| 6 | 6 | 20 | 60 | 155 -10110 |
| 8 | 8 | 30 | 100 | 155 -10112 |
| 10 | 10 | 40 | 100 | 155 -10114 |
| 12 | 12 | 50 | 100 | 155 -10116 |





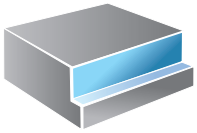
**Modifications**
**Regrinds, Recoat**
**Specials**

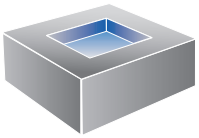
# Performance Solid Carbide
# Centre Cutting 45° Helix - for Aluminium & Plastics
# Micro-grain K30 Single-Flute

Series 151

PAGE 264

7.1 - 8.2





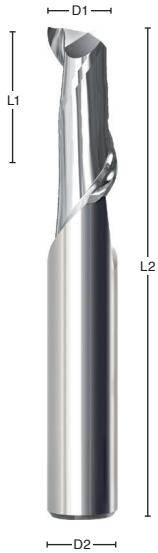
| Cutter Dia-D1 | Shank Dia-D2 | FL L1 | OAL L2 | Part Number |
|---|---|---|---|---|
| 1 | 3 | 3 | 38 | 151 -10101 |
| 1.5 | 3 | 4 | 38 | 151 -10102 |
| 2.5 | 3 | 7 | 38 | 151 -10104 |
| 3 | 3 | 8 | 38 | 151 -10105 |
| 4 | 4 | 11 | 50 | 151 -10107 |
| 5 | 5 | 13 | 50 | 151 -10109 |
| 6 | 6 | 13 | 63 | 151 -10110 |
| 8 | 8 | 19 | 63 | 151 -10112 |
| 10 | 10 | 22 | 70 | 151 -10114 |
| 12 | 12 | 26 | 75 | 151 -10116 |

MG HM | 45° | 1 | PLAIN

**Tolerances:**

D1 +0.00/-0.051mm

D2 h6




# Performance Solid Carbide
# Centre Cutting 45° Helix - for Aluminium & Plastics
# Micro-grain K30 Single-Flute Stub Length

Series 152

PAGE 264

7.1 - 8.2

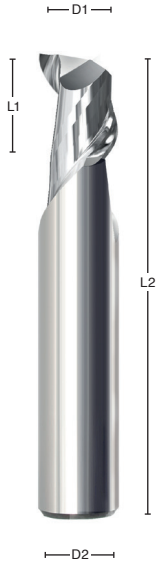
| Cutter Dia-D1 | Shank Dia-D2 | FL L1 | OAL L2 | Part Number |
|---|---|---|---|---|
| 3 | 3 | 5 | 38 | 152 -10105 |
| 4 | 4 | 6 | 50 | 152 -10107 |
| 5 | 5 | 7 | 50 | 152 -10109 |
| 6 | 6 | 8 | 50 | 152 -10110 |

MG HM | 45° | 1 | PLAIN

**Tolerances:**

D1 +0.00/-0.051mm

D2 h6




**Modifications**
**Regrinds, Recoat**
**Specials**

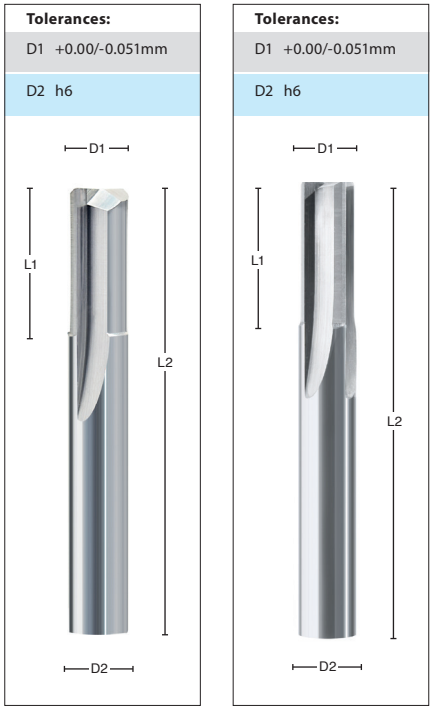
Series 271 and 471

# Performance Solid Carbide
# Centre Cutting - Straight Flute Cutters
# Micro-grain K30 2 & 4 Flute for Plastics

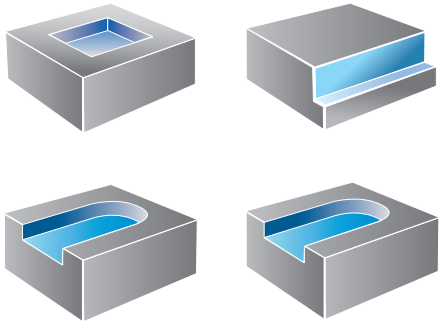



PAGE 264

8.0 - 8.3




| Cutter Dia-D1 | Shank Dia-D2 | FL L1 | OAL L2 | 2 Flute Part Number | 4 Flute Part Number |
|---|---|---|---|---|---|
| 3 | 3 | 12 | 38 | 271 -22005 | 471 -44005 |
| 4 | 4 | 14 | 50 | 271 -22007 | 471 -44007 |
| 5 | 5 | 16 | 50 | 271 -22009 | 471 -44009 |
| 6 | 6 | 19 | 63 | 271 -22010 | 471 -44010 |
| 8 | 8 | 19 | 63 | 271 -22012 | 471 -44012 |
| 10 | 10 | 22 | 70 | 271 -22014 | 471 -44014 |
| 12 | 12 | 25 | 75 | 271 -22016 | 471 -44016 |
| 16 | 16 | 32 | 88 | 271 -22020 | 471 -44020 |



2 Flute | 4 Flute

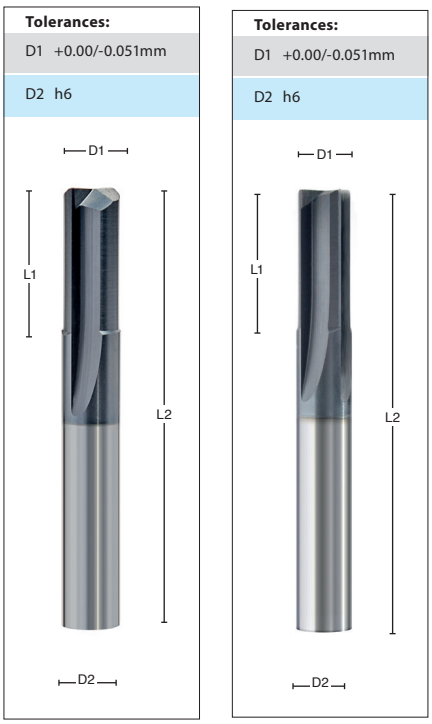
Series 279 and 479

# High-Performance Solid Carbide - *TiALN*
# Centre Cutting - Straight Flute Cutters
# Micro-grain K30 2 & 4 Flute for Plastics




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8.0 - 8.3




| Cutter Dia-D1 | Shank Dia-D2 | FL L1 | OAL L2 | 2 Flute Part Number | 4 Flute Part Number |
|---|---|---|---|---|---|
| 3 | 3 | 12 | 38 | 279 -22005 | 479 -44005 |
| 4 | 4 | 14 | 50 | 279 -22007 | 479 -44007 |
| 5 | 5 | 16 | 50 | 279 -22009 | 479 -44009 |
| 6 | 6 | 19 | 63 | 279 -22010 | 479 -44010 |
| 8 | 8 | 19 | 63 | 279 -22012 | 479 -44012 |
| 10 | 10 | 22 | 70 | 279 -22014 | 479 -44014 |
| 12 | 12 | 25 | 75 | 279 -22016 | 479 -44016 |
| 16 | 16 | 32 | 88 | 279 -22020 | 479 -44020 |

**Modifications**
**Regrinds, Recoat**
**Specials**

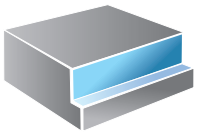
# Ultra-High Performance Solid Carbide - *TiALN*
## Centre Cutting - 35°/38° Variable Helix
## Micro-grain K30 4-Flute
## V4 Eccentric Relief

Series 691

PAGE 264

TiALN | 35/38° | MG HM | 4 | D2 3-12 | D2 14-25

1.1 - 1.6 | 4.1 - 5.3 | 2.1 - 2.3 | 1.7 - 1.8 | 3.1 - 3.4 | 9.1





| Cutter Dia-D1 | Shank Dia-D2 | FL L1 | OAL L2 | Part Number |
|---|---|---|---|---|
| 3 | 3 | 6 | 38 | 691 -25805 |
| 3 | 3 | 12 | 38 | 691 -25905 |
| 3 | 6 | 6 | 57 | 691 -25005 |
| 3.5 | 6 | 7 | 57 | 691 -25906 |
| 4 | 4 | 14 | 50 | 691 -25907 |
| 4 | 6 | 11 | 57 | 691 -25007 |
| 4.5 | 6 | 9 | 57 | 691 -25908 |
| 5 | 5 | 16 | 50 | 691 -25909 |
| 5 | 6 | 13 | 57 | 691 -25009 |
| 6 | 6 | 12 | 57 | 691 -25010 |
| 6 | 6 | 19 | 63 | 691 -25910 |
| 8 | 8 | 19 | 63 | 691 -25912 |
| 10 | 10 | 22 | 70 | 691 -25914 |
| 12 | 12 | 25 | 75 | 691 -25916 |
| 14 | 14 | 25 | 88 | 691 -25918 |
| 16 | 16 | 32 | 88 | 691 -25920 |
| 18 | 18 | 36 | 100 | 691 -25922 |
| 20 | 20 | 38 | 100 | 691 -25924 |
| 25 | 25 | 38 | 100 | 691 -25929 |

**Tolerances:**

D1 +0.00/-0.051mm

D2 h6




# Ultra-High Performance Solid Carbide - *TiALN*
## Centre Cutting - 35°/38° Variable Helix
## Micro-grain K30 4-Flute Long
## V4 Eccentric Relief

Series 692

PAGE 264

TiALN | 35/38° | MG HM | 4 | D2 3-12 | D2 14-25

1.1 - 1.6 | 4.1 - 5.3 | 2.1 - 2.3 | 1.7 - 1.8 | 3.1 - 3.4 | 9.1

| Cutter Dia-D1 | Shank Dia-D2 | FL L1 | OAL L2 | Part Number |
|---|---|---|---|---|
| 3 | 3 | 20 | 65 | 692-28905 |
| 4 | 4 | 20 | 65 | 692-28907 |
| 5 | 5 | 20 | 75 | 692-28909 |
| 6 | 6 | 25 | 75 | 692-28910 |
| 8 | 8 | 25 | 75 | 692-28912 |
| 10 | 10 | 38 | 100 | 692-28914 |
| 12 | 12 | 50 | 100 | 692-28916 |
| 14 | 14 | 56 | 125 | 692-28918 |
| 16 | 16 | 56 | 150 | 692-28920 |
| 18 | 18 | 56 | 150 | 692-28922 |
| 20 | 20 | 56 | 150 | 692-28924 |
| 25 | 25 | 70 | 150 | 692-28929 |

**Tolerances:**

D1 +0.00/-0.051mm

D2 h6




**Modifications**
**Regrinds, Recoat**
**Specials**

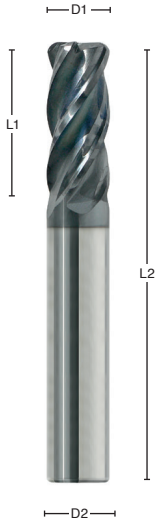
Series 691R

# Ultra-High Performance Solid Carbide - *TiALN*
## Centre Cutting - 35°/38° Variable Helix
## Micro-grain K30 4-Flute Corner Radius
## V4 Eccentric Relief



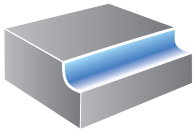

PAGE 264

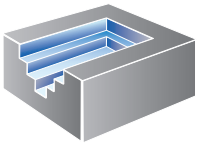
| Tolerances: |
|---|
| D1 +0.00/-0.051mm |
| D2 h6 |




| Cutter Dia-D1 | Shank Dia-D2 | FL L1 | OAL L2 | Corner Radius | Part Number |
|---|---|---|---|---|---|
| 3 | 6 | 8 | 57 | 0.25 | 691 -25005-0.25R |
| 3 | 6 | 8 | 57 | 0.50 | 691 -25005-0.50R |
| 4 | 6 | 11 | 57 | 0.25 | 691 -25007-0.25R |
| 4 | 6 | 11 | 57 | 0.50 | 691 -25007-0.50R |
| 4 | 6 | 11 | 57 | 1.00 | 691 -25007-1.00R |
| 5 | 6 | 13 | 57 | 0.25 | 691 -25009-0.25R |
| 5 | 6 | 13 | 57 | 0.50 | 691 -25009-0.50R |
| 5 | 6 | 13 | 57 | 1.00 | 691 -25009-1.00R |
| 6 | 6 | 13 | 57 | 0.25 | 691 -25010-0.25R |
| 6 | 6 | 13 | 57 | 0.50 | 691 -25010-0.50R |
| 6 | 6 | 13 | 57 | 1.00 | 691 -25010-1.00R |
| 6 | 6 | 13 | 57 | 1.50 | 691 -25010-1.50R |
| 6 | 6 | 13 | 57 | 2.00 | 691 -25010-2.00R |
| 6 | 6 | 13 | 57 | 2.50 | 691 -25010-2.50R |
| 8 | 8 | 19 | 63 | 0.50 | 691 -25912-0.50R |
| 8 | 8 | 19 | 63 | 1.00 | 691 -25912-1.00R |
| 8 | 8 | 19 | 63 | 1.50 | 691 -25912-1.50R |
| 8 | 8 | 19 | 63 | 2.00 | 691 -25912-2.00R |
| 8 | 8 | 19 | 63 | 2.50 | 691 -25912-2.50R |
| 8 | 8 | 19 | 63 | 3.00 | 691 -25912-3.00R |
| 10 | 10 | 22 | 70 | 0.50 | 691 -25914-0.50R |
| 10 | 10 | 22 | 70 | 1.00 | 691 -25914-1.00R |
| 10 | 10 | 22 | 70 | 1.50 | 691 -25914-1.50R |
| 10 | 10 | 22 | 70 | 2.00 | 691 -25914-2.00R |
| 10 | 10 | 22 | 70 | 2.50 | 691 -25914-2.50R |
| 10 | 10 | 22 | 70 | 3.00 | 691 -25914-3.00R |
| 12 | 12 | 26 | 75 | 0.50 | 691 -25916-0.50R |
| 12 | 12 | 26 | 75 | 1.00 | 691 -25916-1.00R |
| 12 | 12 | 26 | 75 | 1.50 | 691 -25916-1.50R |
| 12 | 12 | 26 | 75 | 2.00 | 691 -25916-2.00R |
| 12 | 12 | 26 | 75 | 2.50 | 691 -25916-2.50R |
| 12 | 12 | 26 | 75 | 3.00 | 691 -25916-3.00R |
| 12 | 12 | 26 | 75 | 4.00 | 691 -25916-4.00R |
| 14 | 14 | 26 | 88 | 0.75 | 691 -25918-0.75R |
| 16 | 16 | 32 | 88 | 0.50 | 691 -25920-0.50R |
| 16 | 16 | 32 | 88 | 1.00 | 691 -25920-1.00R |
| 16 | 16 | 32 | 88 | 1.50 | 691 -25920-1.50R |
| 16 | 16 | 32 | 88 | 2.00 | 691 -25920-2.00R |
| 16 | 16 | 32 | 88 | 2.50 | 691 -25920-2.50R |
| 16 | 16 | 32 | 88 | 3.00 | 691 -25920-3.00R |
| 16 | 16 | 32 | 88 | 4.00 | 691 -25920-4.00R |
| 18 | 18 | 36 | 100 | 1.00 | 691 -25922-1.00R |
| 20 | 20 | 38 | 100 | 1.00 | 691 -25924-1.00R |
| 20 | 20 | 38 | 100 | 1.50 | 691 -25924-1.50R |
| 20 | 20 | 38 | 100 | 2.00 | 691 -25924-2.00R |
| 20 | 20 | 38 | 100 | 3.00 | 691 -25924-3.00R |
| 20 | 20 | 38 | 100 | 4.00 | 691 -25924-4.00R |
| 20 | 20 | 38 | 100 | 5.00 | 691 -25924-5.00R |
| 20 | 20 | 38 | 100 | 6.00 | 691 -25924-6.00R |
| 25 | 25 | 38 | 100 | 1.00 | 691 -25929-1.00R |

1.1 - 1.6 | 4.1 - 5.3 | 2.1 - 2.3 | 1.7 - 1.8 | 3.1 - 3.4 | 9.1





**Modifications**
**Regrinds, Recoat**
**Specials**

# Ultra-High Performance Solid Carbide - *TiALN*
## Centre Cutting - 35°/38° Variable Helix
## Micro-grain K30 4-Flute Neck Relief - Long Reach Corner Radius
## V4 Eccentric Relief

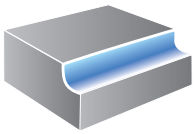
Series 601R

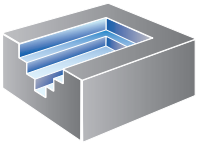
V4

PAGE 264

±0.025 | TiALN | 35/38° | MG HM | 4 | D2 3-12 | D2 14-25

1.1 - 1.6 | 4.1 - 5.3 | 2.1 - 2.3 | 1.7 - 1.8 | 3.1 - 3.4 | 9.1





| Cutter Dia-D1 | Shank Dia-D2 | Neck DIA | FL L1 | OAL L2 | Reach | Corner Radius | Part Number |
|---|---|---|---|---|---|---|---|
| 6 | 6 | 5.8 | 12 | 100 | 30 | 0.25 | 601 -24910-0.25R |
| 6 | 6 | 5.8 | 12 | 100 | 30 | 0.50 | 601 -24910-0.50R |
| 6 | 6 | 5.8 | 12 | 100 | 30 | 1.00 | 601 -24910-1.00R |
| 8 | 8 | 7.6 | 16 | 100 | 30 | 0.50 | 601 -24912-0.50R |
| 8 | 8 | 7.6 | 16 | 100 | 40 | 1.00 | 601 -24912-1.00R |
| 8 | 8 | 7.6 | 16 | 100 | 40 | 2.00 | 601 -24912-2.00R |
| 8 | 8 | 7.6 | 16 | 100 | 40 | 3.00 | 601 -24912-3.00R |
| 10 | 10 | 9.6 | 20 | 127 | 50 | 0.50 | 601 -24914-0.50R |
| 10 | 10 | 9.6 | 20 | 127 | 50 | 1.00 | 601 -24914-1.00R |
| 10 | 10 | 9.6 | 20 | 127 | 50 | 2.00 | 601 -24914-2.00R |
| 10 | 10 | 9.6 | 20 | 127 | 50 | 3.00 | 601 -24914-3.00R |
| 12 | 12 | 11.4 | 24 | 150 | 62 | 0.50 | 601 -24916-0.50R |
| 12 | 12 | 11.4 | 24 | 150 | 62 | 1.00 | 601 -24916-1.00R |
| 12 | 12 | 11.4 | 24 | 150 | 62 | 1.50 | 601 -24916-1.50R |
| 12 | 12 | 11.4 | 24 | 150 | 62 | 2.00 | 601 -24916-2.00R |
| 12 | 12 | 11.4 | 24 | 150 | 62 | 3.00 | 601 -24916-3.00R |
| 12 | 12 | 11.4 | 24 | 150 | 62 | 4.00 | 601 -24916-4.00R |
| 16 | 16 | 15.2 | 32 | 150 | 82 | 0.50 | 601 -24920-0.50R |
| 16 | 16 | 15.2 | 32 | 150 | 82 | 1.00 | 601 -24920-1.00R |
| 16 | 16 | 15.2 | 32 | 150 | 82 | 1.50 | 601 -24920-1.50R |
| 16 | 16 | 15.2 | 32 | 150 | 82 | 2.00 | 601 -24920-2.00R |
| 16 | 16 | 15.2 | 32 | 150 | 82 | 3.00 | 601 -24920-3.00R |
| 16 | 16 | 15.2 | 32 | 150 | 82 | 4.00 | 601 -24920-4.00R |
| 16 | 16 | 15.2 | 32 | 150 | 82 | 5.00 | 601 -24920-5.00R |
| 20 | 20 | 19.2 | 40 | 150 | 102 | 0.50 | 601 -24924-0.50R |
| 20 | 20 | 19.2 | 40 | 150 | 102 | 1.00 | 601 -24924-1.00R |
| 20 | 20 | 19.2 | 40 | 150 | 102 | 2.00 | 601 -24924-2.00R |
| 20 | 20 | 19.2 | 40 | 150 | 102 | 3.00 | 601 -24924-3.00R |
| 20 | 20 | 19.2 | 40 | 150 | 102 | 4.00 | 601 -24924-4.00R |
| 20 | 20 | 19.2 | 40 | 150 | 102 | 5.00 | 601 -24924-5.00R |
| 20 | 20 | 19.2 | 40 | 150 | 102 | 6.00 | 601 -24924-6.00R |

**Tolerances:**

D1 +0.00/-0.051mm

D2 h6




**Modifications**
**Regrinds, Recoat**
**Specials**

Series 691R

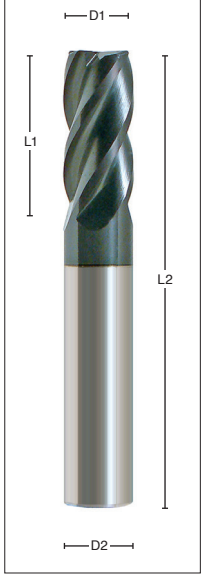
V4

# Ultra-High Performance Solid Carbide - *TiALN*
## Centre Cutting - 35°/38° Variable Helix
## Micro-grain K30 4-Flute Corner Radius
## V4 Eccentric Relief

35/38° | MG HM | 4 | D2 3-12 | D2 14-25 | TiALN | ±0.025

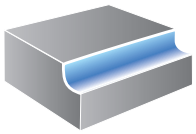
Ti PAGE 264

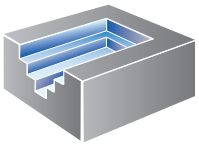
**Tolerances:**
D1 +0.00/-0.051mm
D2 h6




| Cutter Dia-D1 | Shank Dia-D2 | FL L1 | OAL L2 | Corner Radius | Part Number |
|---|---|---|---|---|---|
| 3 | 3 | 12 | 38 | .25-.38 | 691 -25905.25R |
| 4 | 4 | 14 | 50 | .25-.38 | 691 -25907.25R |
| 5 | 5 | 16 | 50 | .25-.38 | 691 -25909.25R |
| 6 | 6 | 19 | 63 | .38-.51 | 691 -25910.38R |
| 8 | 8 | 19 | 63 | .38-.51 | 691 -25912.38R |
| 10 | 10 | 22 | 70 | .38-.51 | 691 -25914.38R |
| 12 | 12 | 25 | 75 | .64-.76 | 691 -25916.64R |
| 14 | 14 | 25 | 88 | .64-.76 | 691 -25918.64R |
| 16 | 16 | 32 | 88 | .76-.89 | 691 -25920.76R |
| 18 | 18 | 36 | 100 | .76-.89 | 691 -25922.76R |
| 20 | 20 | 38 | 100 | .76-.89 | 691 -25924.76R |
| 25 | 25 | 38 | 100 | .76-.89 | 691 -25929.76R |

1.1 - 1.6 | 4.1 - 5.3
2.1 - 2.3 | 1.7 - 1.8
3.1 - 3.4 | 9.1





Series 692R

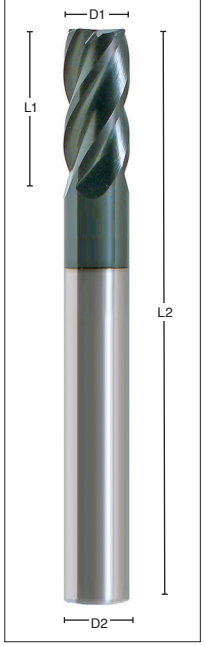
V4

# Ultra-High Performance Solid Carbide - *TiALN*
## Centre Cutting - 35°/38° Variable Helix
## Micro-grain K30 4-Flute Long Corner Radius
## V4 Eccentric Relief

35/38° | MG HM | 4 | D2 3-12 | D2 14-25 | TiALN | ±0.025

Ti PAGE 264

**Tolerances:**
D1 +0.00/-0.051mm
D2 h6




| Cutter Dia-D1 | Shank Dia-D2 | FL L1 | OAL L2 | Corner Radius | Part Number |
|---|---|---|---|---|---|
| 3 | 3 | 20 | 65 | .25-.38 | 692 -28905.25R |
| 4 | 4 | 20 | 65 | .25-.38 | 692 -28907.25R |
| 5 | 5 | 20 | 75 | .25-.38 | 692 -28909.25R |
| 6 | 6 | 25 | 75 | .38-.51 | 692 -28910.38R |
| 8 | 8 | 25 | 75 | .38-.51 | 692 -28912.38R |
| 10 | 10 | 38 | 100 | .38-.51 | 692 -28914.38R |
| 12 | 12 | 50 | 100 | .64-.76 | 692 -28916.64R |
| 14 | 14 | 56 | 125 | .64-.76 | 692 -28918.64R |
| 16 | 16 | 56 | 150 | .76-.89 | 692 -28920.76R |
| 18 | 18 | 56 | 150 | .76-.89 | 692 -28922.76R |
| 20 | 20 | 56 | 150 | .76-.89 | 692 -28924.76R |
| 25 | 25 | 70 | 150 | .76-.89 | 692 -28929.76R |

1.1 - 1.6 | 4.1 - 5.3
2.1 - 2.3 | 1.7 - 1.8
3.1 - 3.4 | 9.1

**Modifications**
**Regrinds, Recoat**
**Specials**

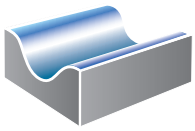
# Ultra-High Performance Solid Carbide - *TiALN*
## Centre Cutting - 35°/38° Variable Helix
## Micro-grain K30 4-Flute Ball Nosed
## V4 Eccentric Relief

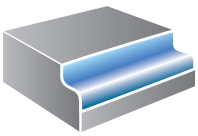
Series 693

PAGE 264

TiALN | 35/38° | MG HM | 4 | D2 3-12 | D2 14-25

1.1 - 1.6 | 4.1 - 5.3 | 2.1 - 2.3 | 1.7 - 1.8 | 3.1 - 3.4 | 9.1





| Cutter Dia-D1 | Shank Dia-D2 | FL L1 | OAL L2 | Part Number |
|---|---|---|---|---|
| 3 | 3 | 12 | 38 | 693 -27905 |
| 3 | 6 | 6 | 57 | 693 -27005 |
| 3.5 | 6 | 7 | 57 | 693 -27906 |
| 4 | 4 | 14 | 50 | 693 -27907 |
| 4 | 6 | 11 | 57 | 693 -27007 |
| 4.5 | 6 | 9 | 57 | 693 -27908 |
| 5 | 5 | 16 | 50 | 693 -27909 |
| 5 | 6 | 13 | 57 | 693 -27009 |
| 6 | 6 | 12 | 57 | 693 -27010 |
| 6 | 6 | 19 | 63 | 693 -27910 |
| 8 | 8 | 19 | 63 | 693 -27912 |
| 10 | 10 | 22 | 70 | 693 -27914 |
| 12 | 12 | 25 | 75 | 693 -27916 |
| 14 | 14 | 25 | 88 | 693 -27918 |
| 16 | 16 | 32 | 88 | 693 -27920 |
| 18 | 18 | 36 | 100 | 693 -27922 |
| 20 | 20 | 38 | 100 | 693 -27924 |
| 25 | 25 | 38 | 100 | 639 -27929 |

**Tolerances:**
D1 +0.00/-0.051mm
D2 h6




# Ultra-High Performance Solid Carbide - *TiALN*
## Centre Cutting - 35°/38° Variable Helix
## Micro-grain K30 4-Flute Ball Nosed Long
## V4 Eccentric Relief

Series 694

PAGE 264

TiALN | 35/38° | MG HM | 4 | D2 3-12 | D2 14-25

1.1 - 1.6 | 4.1 - 5.3 | 2.1 - 2.3 | 1.7 - 1.8 | 3.1 - 3.4 | 9.1

| Cutter Dia-D1 | Shank Dia-D2 | FL L1 | OAL L2 | Part Number |
|---|---|---|---|---|
| 3 | 3 | 20 | 65 | 694-26905 |
| 4 | 4 | 20 | 65 | 694-26907 |
| 5 | 5 | 20 | 75 | 694-26909 |
| 6 | 6 | 25 | 75 | 694-26910 |
| 8 | 8 | 25 | 75 | 694-26912 |
| 10 | 10 | 38 | 100 | 694-26914 |
| 12 | 12 | 50 | 100 | 694-26916 |
| 14 | 14 | 56 | 125 | 694-26918 |
| 16 | 16 | 56 | 150 | 694-26920 |
| 18 | 18 | 56 | 150 | 694-26922 |
| 20 | 20 | 56 | 150 | 694-26924 |
| 25 | 25 | 70 | 150 | 694-26929 |

**Tolerances:**
D1 +0.00/-0.051mm
D2 h6




**Modifications**
**Regrinds, Recoat**
**Specials**

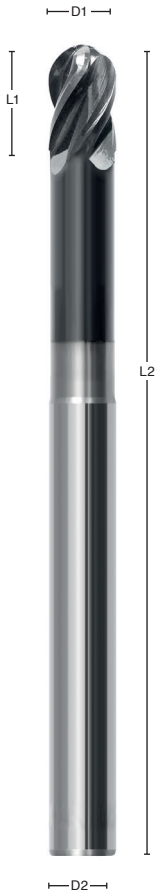
Series 602

# Ultra-High Performance Solid Carbide - *TiALN*
## Centre Cutting - 35°/38° Variable Helix
## Micro-grain K30 4-Flute Neck Relief - Ball Nosed Long
## V4 Eccentric Relief



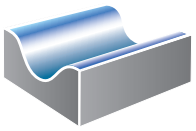

Ti PAGE 264

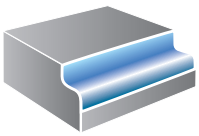
| Tolerances: |
|---|
| D1 +0.00/-0.051mm |
| D2 h6 |




| Cutter Dia-D1 | Shank Dia-D2 | Neck Dia | FL L1 | OAL L2 | Reach | Part Number |
|---|---|---|---|---|---|---|
| 3 | 6 | 2.9 | 1.5 | 75 | 17 | 602 -25905 |
| 4 | 6 | 3.9 | 6 | 75 | 22 | 602 -25907 |
| 5 | 6 | 4.9 | 7.5 | 75 | 27 | 602 -25909 |
| 6 | 6 | 5.8 | 9 | 100 | 32 | 602 -25910 |
| 8 | 8 | 7.6 | 12 | 100 | 42 | 602 -25912 |
| 10 | 10 | 9.6 | 15 | 127 | 52 | 602 -25914 |
| 12 | 12 | 11.4 | 18 | 150 | 62 | 602 -25916 |
| 16 | 16 | 15.2 | 24 | 150 | 82 | 602 -25920 |

1.1 - 1.6 | 4.1 - 5.3
2.1 - 2.3 | 1.7 - 1.8
3.1 - 3.4 | 9.1





**Modifications**
**Regrinds, Recoat**
**Specials**

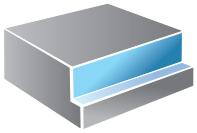
# Ultra-High Performance Solid Carbide - *TiALN*
## Centre Cutting - 35°/38° Variable Helix Micro-grain K30 4-Flute
## V4 Eccentric Relief

Series 695

PAGE 264

TiALN | 35/38° | MG HM | 4 | D2 1/8-1/2" | D2 9/16-1"

1.1 - 1.6 | 4.1 - 5.3 | 2.1 - 2.3 | 1.7 - 1.8 | 3.1 - 3.4 | 9.1





| Cutter Dia-D1 | Shank Dia-D2 | FL L1 | OAL L2 | Part Number |
|---|---|---|---|---|
| 1/8" | 1/8" | 3/8" | 1-1/2" | 695 -05908 |
| 3/16" | 3/16" | 7/16" | 2" | 695 -05912 |
| 1/4" | 1/4" | 5/8" | 2-1/2" | 695 -05916 |
| 5/16" | 5/16" | 13/16" | 2-1/2" | 695 -05920 |
| 3/8" | 3/8" | 7/8" | 2-1/2" | 695 -05924 |
| 7/16" | 7/16" | 1" | 2-3/4" | 695 -05928 |
| 1/2" | 1/2" | 1" | 3" | 695 -05932 |
| 9/16" | 9/16" | 1-1/8" | 3-1/2" | 695 -05936 |
| 5/8" | 5/8" | 1-1/4" | 3-1/2" | 695 -05940 |
| 3/4" | 3/4" | 1-1/2" | 4" | 695 -05948 |
| 1" | 1" | 1-1/2" | 4" | 695 -05964 |

**Tolerances:**

| | |
|---|---|
| D1 | +0.00"-0.002" |
| D2 | h6 |




# Ultra-High Performance Solid Carbide - *TiALN*
## Centre Cutting - 35°/38° Variable Helix
## Micro-grain K30 4-Flute Long
## V4 Eccentric Relief

Series 696

PAGE 264

TiALN | 35/38° | MG HM | 4 | D2 1/8-1/2" | D2 9/16-1"

1.1 - 1.6 | 4.1 - 5.3 | 2.1 - 2.3 | 1.7 - 1.8 | 3.1 - 3.4 | 9.1

| Cutter Dia-D1 | Shank Dia-D2 | FL L1 | OAL L2 | Part Number |
|---|---|---|---|---|
| 1/4" | 1/4" | 1-1/8" | 3" | 696 -08916 |
| 3/8" | 3/8" | 1-1/8" | 3" | 696 -08924 |
| 1/2" | 1/2" | 2" | 4" | 696 -08932 |
| 5/8" | 5/8" | 2-1/4" | 5" | 696 -08940 |
| 3/4" | 3/4" | 2-1/4" | 5" | 696 -08948 |

**Tolerances:**

| | |
|---|---|
| D1 | +0.00"-0.002" |
| D2 | h6 |




**Modifications**
**Regrinds, Recoat**
**Specials**

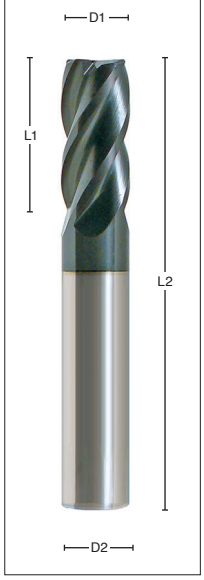
Series 695R

# Ultra-High Performance Solid Carbide - *TiALN*
## Centre Cutting - 35°/38° Variable Helix
## Micro-grain K30 4-Flute Corner Radius
## V4 Eccentric Relief

35/38° | MG HM | 4 | D2 1/8-1/2" | D2 9/16-1" | TiALN | ±0.001

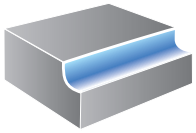
TiN PAGE 262

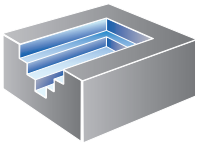
| Tolerances: | |
|---|---|
| D1 | +0.00"-0.002" |
| D2 | h6 |




| Cutter Dia-D1 | Shank Dia-D2 | FL L1 | OAL L2 | Corner Radius | Part Number |
|---|---|---|---|---|---|
| 1/8" | 1/8" | 3/8" | 1-1/2" | .010-.015 | 695 -05908.010R |
| 3/16" | 3/16" | 7/16" | 2" | .010-.015 | 695 -05912.010R |
| 1/4" | 1/4" | 5/8" | 2-1/2" | .015-.020 | 695 -05916.015R |
| 5/16" | 5/16" | 13/16" | 2-1/2" | .015-.020 | 695 -05920.015R |
| 3/8" | 3/8" | 7/8" | 2-1/2" | .015-.020 | 695 -05924.015R |
| 7/16" | 7/16" | 1" | 2-3/4" | .015-.020 | 695 -05928.015R |
| 1/2" | 1/2" | 1" | 3" | .025-.030 | 695 -05932.025R |
| 9/16" | 9/16" | 1-1/8" | 3-1/2" | .025-.030 | 695 -05936.025R |
| 5/8" | 5/8" | 1-1/4" | 3-1/2" | .035-.040 | 695 -05940.035R |
| 3/4" | 3/4" | 1-1/2" | 4" | .035-.040 | 695 -05948.035R |
| 1" | 1" | 1-1/2" | 4" | .035-.040 | 695 -05964.035R |

1.1 - 1.6 | 4.1 - 5.3 | 2.1 - 2.3 | 1.7 - 1.8 | 3.1 - 3.4 | 9.1





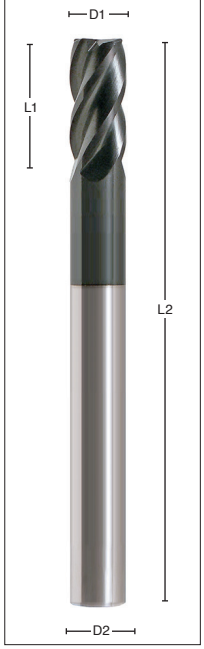
Series 696R

# Ultra-High Performance Solid Carbide - *TiALN*
## Centre Cutting - 35°/38° Variable Helix
## Micro-grain K30 4-Flute Long Corner Radius
## V4 Eccentric Relief

35/38° | MG HM | 4 | D2 1/8-1/2" | D2 9/16-1" | TiALN | ±0.001

TiN PAGE 262

| Tolerances: | |
|---|---|
| D1 | +0.00"-0.002" |
| D2 | h6 |




| Cutter Dia-D1 | Shank Dia-D2 | FL L1 | OAL L2 | Corner Radius | Part Number |
|---|---|---|---|---|---|
| 1/4" | 1/4" | 1-1/8" | 3" | .015-.020 | 696 -08916.015R |
| 3/8" | 3/8" | 1-1/8" | 3" | .015-.020 | 696 -08924.015R |
| 1/2" | 1/2" | 2" | 4" | .025-.030 | 696 -08932.025R |
| 5/8" | 5/8" | 2-1/4" | 5" | .030-.035 | 696 -08940.030R |
| 3/4" | 3/4" | 2-1/4" | 5" | .030-.035 | 696 -08948.030R |

1.1 - 1.6 | 4.1 - 5.3 | 2.1 - 2.3 | 1.7 - 1.8 | 3.1 - 3.4 | 9.1

**Modifications**
**Regrinds, Recoat**
**Specials**

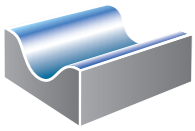
# Ultra-High Performance Solid Carbide - *TiALN*
# Centre Cutting - 35°/38° Variable Helix
# Micro-grain K30 4-Flute Ball Nosed
# V4 Eccentric Relief

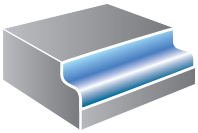
Series 697

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TiALN | 35/38° | MG HM | 4 | D2 1/8-1/2" | D2 9/16-1"

| 1.1 - 1.6 | 4.1 - 5.3 |
|---|---|
| 2.1 - 2.3 | 1.7 - 1.8 |
| 3.1 - 3.4 | 9.1 |

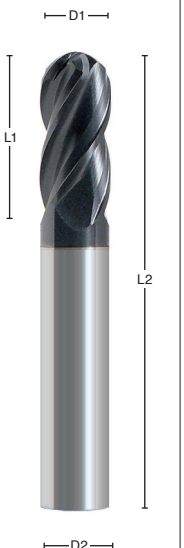




| Cutter Dia-D1 | Shank Dia-D2 | FL L1 | OAL L2 | Part Number |
|---|---|---|---|---|
| 1/8" | 1/8" | 3/8" | 1-1/2" | 697 -07908 |
| 3/16" | 3/16" | 7/16" | 2" | 697 -07912 |
| 1/4" | 1/4" | 5/8" | 2-1/2" | 697 -07916 |
| 5/16" | 5/16" | 13/16" | 2-1/2" | 697 -07920 |
| 3/8" | 3/8" | 7/8" | 2-1/2" | 697 -07924 |
| 7/16" | 7/16" | 1" | 2-3/4" | 697 -07928 |
| 1/2" | 1/2" | 1" | 3" | 697 -07932 |
| 9/16" | 9/16" | 1-1/8" | 3-1/2" | 697 -07936 |
| 5/8" | 5/8" | 1-1/4" | 3-1/2" | 697 -07940 |
| 3/4" | 3/4" | 1-1/2" | 4" | 697 -07948 |
| 1" | 1" | 1-1/2" | 4" | 697 -07964 |

**Tolerances:**

| | |
|---|---|
| D1 | +0.00"-0.002" |
| D2 | h6 |




# Ultra-High Performance Solid Carbide - *TiALN*
# Centre Cutting - 35°/38° Variable Helix
# Micro-grain K30 4-Flute Long Ball Nosed
# V4 Eccentric Relief

Series 698

PAGE 262

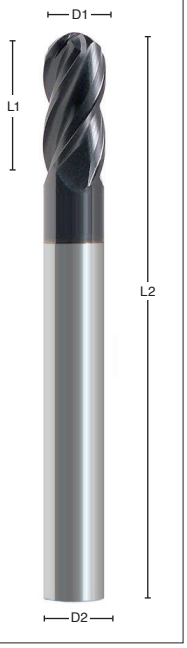
TiALN | 35/38° | MG HM | 4 | D2 1/8-1/2" | D2 9/16-1"

| 1.1 - 1.6 | 4.1 - 5.3 |
|---|---|
| 2.1 - 2.3 | 1.7 - 1.8 |
| 3.1 - 3.4 | 9.1 |

| Cutter Dia-D1 | Shank Dia-D2 | FL L1 | OAL L2 | Part Number |
|---|---|---|---|---|
| 1/4" | 1/4" | 1-1/8" | 3" | 698 -06916 |
| 3/8" | 3/8" | 1-1/8" | 3" | 698 -06924 |
| 1/2" | 1/2" | 2" | 4" | 698 -06932 |
| 5/8" | 5/8" | 2-1/4" | 5" | 698 -06940 |
| 3/4" | 3/4" | 2-1/4" | 5" | 698 -06948 |

**Tolerances:**

| | |
|---|---|
| D1 | +0.00"-0.002" |
| D2 | h6 |




**Modifications**
**Regrinds, Recoat**
**Specials**

Series 505

# Ultra-High Performance Solid Carbide - *Blue nAco* Coated
# Centre Cutting - 34°/37° Variable Helix - Hard Machining up to 70 HRc
# Micro-grain K30 5-Flute Long
## V5 - Eccentric Relief - For Dry Cutting or Misting

V5%



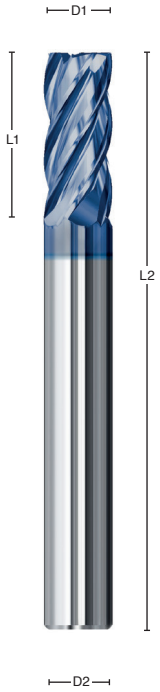

TI PAGE 262

| | |
|---|---|
| 1.1 - 1.6 | 4.1 - 5.3 |
| 2.1 - 2.3 | 1.7 - 1.9 |
| 3.1 - 3.4 | 9.1 |

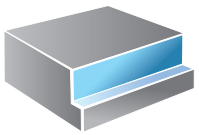
**Tolerances:**

D1 +0.00/-0.051mm

D2 h6




| Cutter Dia-D1 | Shank Dia-D2 | FL L1 | OAL L2 | Part Number |
|---|---|---|---|---|
| 3 | 6 | 9 | 63 | 505 -06958 |
| 4 | 6 | 12 | 63 | 505 -61258 |
| 5 | 6 | 14 | 63 | 505 -61458 |
| 6 | 6 | 15 | 75 | 505 -61575 |
| 8 | 8 | 25 | 75 | 505 -82575 |
| 10 | 10 | 38 | 100 | 505 -10100 |
| 12 | 12 | 25 | 100 | 505 -12100 |
| 16 | 16 | 56 | 150 | 505 -16150 |
| 20 | 20 | 56 | 150 | 505 -20150 |
| 25 | 25 | 75 | 150 | 505 -25150 |





**Modifications**
**Regrinds, Recoat**
**Specials**

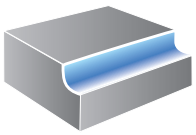
# Ultra-High Performance Solid Carbide - *Blue nAco* Coated
# Centre Cutting - 34°/37° Variable Helix - Hard Machining up to 70 HRc
# Micro-grain K30 5-Flute Long - Corner Radius
# V5 - Eccentric Relief - For Dry Cutting or Misting

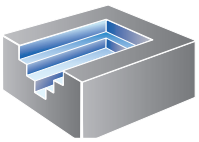
V5

Series 505R

PAGE 262

1.1 - 1.6 | 4.1 - 5.3 | 2.1 - 2.3 | 1.7 - 1.9 | 3.1 - 3.4 | 9.1





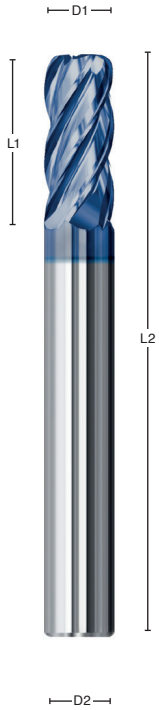
±0.025 | nAco | 34/37° | MG HM | 5 | D2 3-12 | D2 14-25

| Cutter Dia-D1 | Shank Dia-D2 | FL L1 | OAL L2 | Corner Radius | Part Number |
|---|---|---|---|---|---|
| 3 | 6 | 9 | 63 | 0.50 | 505 -06958-0.50R |
| 4 | 6 | 12 | 63 | 0.50 | 505 -61258-0.50R |
| 5 | 6 | 14 | 63 | 0.50 | 505 -61458-0.50R |
| 6 | 6 | 15 | 75 | 0.50 | 505 -61575-0.50R |
| 6 | 6 | 15 | 75 | 0.75 | 505 -61575-0.75R |
| 6 | 6 | 15 | 75 | 1.00 | 505 -61575-1.00R |
| 8 | 8 | 25 | 75 | 0.50 | 505 -82575-0.50R |
| 8 | 8 | 25 | 75 | 0.75 | 505 -82575-0.75R |
| 8 | 8 | 25 | 75 | 1.00 | 505 -82575-1.00R |
| 8 | 8 | 25 | 75 | 1.50 | 505 -82575-1.50R |
| 8 | 8 | 25 | 75 | 2.00 | 505 -82575-2.00R |
| 8 | 8 | 25 | 75 | 3.00 | 505 -82575-3.00R |
| 10 | 10 | 38 | 100 | 0.50 | 505 -10100-0.50R |
| 10 | 10 | 38 | 100 | 0.75 | 505 -10100-0.75R |
| 10 | 10 | 38 | 100 | 1.00 | 505 -10100-1.00R |
| 10 | 10 | 38 | 100 | 1.50 | 505 -10100-1.50R |
| 10 | 10 | 38 | 100 | 2.00 | 505 -10100-2.00R |
| 10 | 10 | 38 | 100 | 3.00 | 505 -10100-3.00R |
| 12 | 12 | 50 | 100 | 0.50 | 505 -12100-0.50R |
| 12 | 12 | 50 | 100 | 0.75 | 505 -12100-0.75R |
| 12 | 12 | 50 | 100 | 1.00 | 505 -12100-1.00R |
| 12 | 12 | 50 | 100 | 1.50 | 505 -12100-1.50R |
| 12 | 12 | 50 | 100 | 2.00 | 505 -12100-2.00R |
| 12 | 12 | 50 | 100 | 3.00 | 505 -12100-3.00R |
| 16 | 16 | 56 | 150 | 0.50 | 505 -16150-0.50R |
| 16 | 16 | 56 | 150 | 0.75 | 505 -16150-0.75R |
| 16 | 16 | 56 | 150 | 1.00 | 505 -16150-1.00R |
| 16 | 16 | 56 | 150 | 1.50 | 505 -16150-1.50R |
| 16 | 16 | 56 | 150 | 2.00 | 505 -16150-2.00R |
| 16 | 16 | 56 | 150 | 3.00 | 505 -16150-3.00R |
| 16 | 16 | 56 | 150 | 4.00 | 505 -16150-4.00R |
| 20 | 20 | 56 | 150 | 0.50 | 505 -20150-0.50R |
| 20 | 20 | 56 | 150 | 1.00 | 505 -20150-1.00R |
| 20 | 20 | 56 | 150 | 1.50 | 505 -20150-1.50R |
| 20 | 20 | 56 | 150 | 2.00 | 505 -20150-2.00R |
| 20 | 20 | 56 | 150 | 3.00 | 505 -20150-3.00R |
| 20 | 20 | 56 | 150 | 4.00 | 505 -20150-4.00R |

**Tolerances:**

D1 +0.00/-0.051mm

D2 h6




**Modifications**
**Regrinds, Recoat**
**Specials**

Series 605

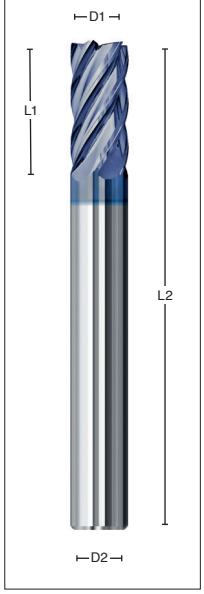
# Ultra-High Performance Solid Carbide - *Blue nAco* Coated
## Centre Cutting - 33°/35° Harmonic Variable Pitch - Hard Machining up to 70 HRc
## Micro-grain K30 6-Flute Long
## V6 - Eccentric Relief - For Dry Cutting or Misting

V6

MG HM | 33/35° | 6 | D1 3-12 | D1 14-25 | nAco

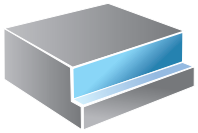
PAGE 262

| Tolerances: |
|---|
| D1 +0.00/-0.051mm |
| D2 h6 |




| Cutter Dia-D1 | Shank Dia-D2 | FL L1 | OAL L2 | Part Number |
|---|---|---|---|---|
| 6 | 6 | 18 | 75 | 605 -01875 |
| 8 | 8 | 24 | 75 | 605 -02475 |
| 10 | 10 | 30 | 100 | 605 -30100 |
| 12 | 12 | 36 | 100 | 605 -36100 |
| 16 | 16 | 50 | 125 | 605 -50125 |
| 20 | 20 | 60 | 150 | 605 -60150 |

1.1 - 1.6 | 4.1 - 5.3 | 2.1 - 2.3 | 1.7 - 1.9 | 3.1 - 3.4 | 9.1





Series 605R

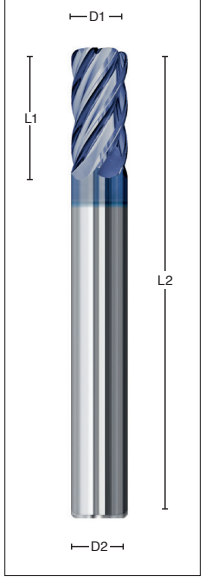
# Ultra-High Performance Solid Carbide - *Blue nAco* Coated
## Centre Cutting - 33°/35° Variable Pitch - Hard Machining up to 70 HRc
## Micro-grain K30 6-Flute Long Corner Radius
## V6 - Eccentric Relief - For Dry Cutting or Misting

V6

MG HM | 33/35° | 6 | D1 3-12 | D1 14-25 | nAco | ±0.025

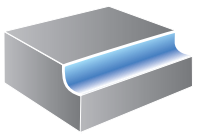
PAGE 262

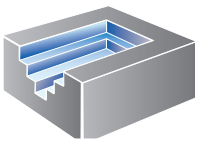
| Tolerances: |
|---|
| D1 +0.00/-0.051mm |
| D2 h6 |




| Cutter Dia-D1 | Shank Dia-D2 | FL L1 | OAL L2 | Corner Radius | Part Number |
|---|---|---|---|---|---|
| 6 | 6 | 18 | 75 | 0.50 | 605 -01875-0.50R |
| 6 | 6 | 18 | 75 | 0.75 | 605 -01875-0.75R |
| 6 | 6 | 18 | 75 | 1.00 | 605 -01875-1.00R |
| 8 | 8 | 24 | 75 | 0.50 | 605 -02475-0.50R |
| 8 | 8 | 24 | 75 | 0.75 | 605 -02475-0.75R |
| 8 | 8 | 24 | 75 | 1.00 | 605 -02475-1.00R |
| 10 | 10 | 30 | 100 | 0.50 | 605 -30100-0.50R |
| 10 | 10 | 30 | 100 | 0.75 | 605 -30100-0.75R |
| 10 | 10 | 30 | 100 | 1.00 | 605 -30100-1.00R |
| 12 | 12 | 36 | 100 | 0.50 | 605 -36100-0.50R |
| 12 | 12 | 36 | 100 | 0.75 | 605 -36100-0.75R |
| 12 | 12 | 36 | 100 | 1.00 | 605 -36100-1.00R |
| 16 | 16 | 50 | 125 | 0.50 | 605 -50125-0.50R |
| 16 | 16 | 50 | 125 | 0.75 | 605 -50125-0.75R |
| 16 | 16 | 50 | 125 | 1.00 | 605 -50125-1.00R |
| 20 | 20 | 60 | 150 | 0.50 | 605 -60150-0.50R |
| 20 | 20 | 60 | 150 | 0.75 | 605 -60150-0.75R |
| 20 | 20 | 60 | 150 | 1.00 | 605 -60150-1.00R |

1.1 - 1.6 | 4.1 - 5.3 | 2.1 - 2.3 | 1.7 - 1.9 | 3.1 - 3.4 | 9.1





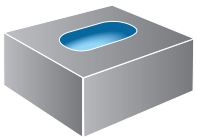
# Ultra-High Performance Solid Carbide - *Blue nAco* Coated Centre Cutting 30° Helix - Hard Machining up to 70 HRc Micro-grain K30 2-Flute Ball Nosed For Dry Cutting or Misting

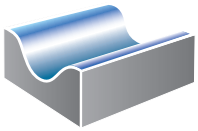
Series 671

PAGE 262

nAco | 30° | MG HM | 2 | PLAIN

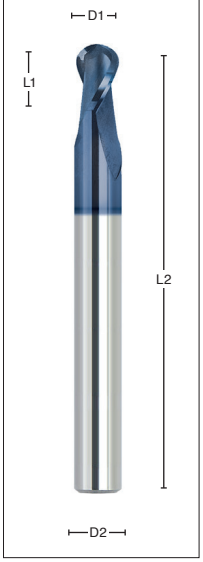
1.1 - 1.6 | 4.1 - 5.3 | 2.1 - 2.3 | 1.7 - 1.9 | 3.1 - 3.4 | 9.1





| Cutter Dia-D1 | Shank Dia-D2 | FL L1 | OAL L2 | Reach | Part Number |
|---|---|---|---|---|---|
| 1 | 6 | 3 | 50 | 7 | 671 -06350 |
| 2 | 6 | 4 | 50 | 8 | 671 -06450 |
| 3 | 6 | 5 | 50 | 9 | 671 -06550 |
| 4 | 6 | 6 | 50 | 12 | 671 -06650 |
| 5 | 6 | 7 | 50 | 15 | 671 -06750 |
| 6 | 6 | 8 | 50 | ~ | 671 -06850 |
| 8 | 8 | 10 | 63 | ~ | 671 -01063 |
| 10 | 10 | 12 | 75 | ~ | 671 -11275 |
| 12 | 12 | 16 | 75 | ~ | 671 -11675 |
| 16 | 16 | 20 | 100 | ~ | 671 -12100 |
| 20 | 20 | 25 | 100 | ~ | 671 -25100 |

**Tolerances:**
D1 +0.00/-0.051mm
D2 h6




# Ultra-High Performance Solid Carbide - *Blue nAco* Coated Centre Cutting 30° Helix - Hard Machining up to 70 HRc Micro-grain K30 2-Flute Long Ball Nosed For Dry Cutting or Misting

Series 672

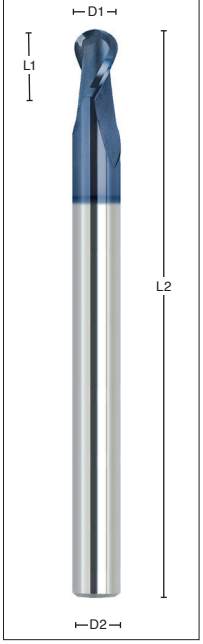
PAGE 262

nAco | 30° | MG HM | 2 | PLAIN

1.1 - 1.6 | 4.1 - 5.3 | 2.1 - 2.3 | 1.7 - 1.9 | 3.1 - 3.4 | 9.1

| Cutter Dia-D1 | Shank Dia-D2 | FL L1 | OAL L2 | Reach | Part Number |
|---|---|---|---|---|---|
| 1 | 6 | 3 | 75 | 7 | 672 -06353 |
| 2 | 6 | 4 | 75 | 8 | 672 -06453 |
| 3 | 6 | 5 | 75 | 9 | 672 -06553 |
| 4 | 6 | 6 | 75 | 15 | 672 -06653 |
| 5 | 6 | 7 | 75 | 18 | 672 -06753 |
| 6 | 6 | 8 | 75 | ~ | 672 -06853 |
| 8 | 8 | 10 | 100 | ~ | 672 -01064 |
| 10 | 10 | 12 | 100 | ~ | 672 -11264 |
| 12 | 12 | 16 | 100 | ~ | 672 -11680 |
| 16 | 16 | 20 | 150 | ~ | 672 -12080 |
| 20 | 20 | 25 | 150 | ~ | 672 -25105 |

**Tolerances:**
D1 +0.00/-0.051mm
D2 h6




**Modifications**
**Regrinds, Recoat**
**Specials**

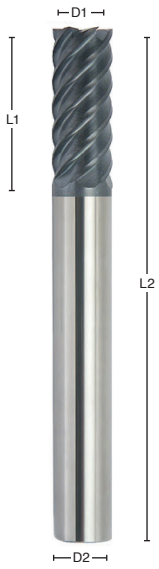
Series 680

# Ultra-High Performance Solid Carbide - *TiALN*
# Centre Cutting 50° Helix High Speed Machining
# Micro-grain K30 Multi-Flute



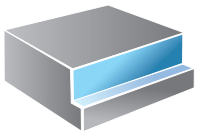

Ti PAGE 264

**Tolerances:**
D1 +0.00/-0.051mm
D2 h6




| Cutter Dia-D1 | Shank Dia-D2 | FL L1 | OAL L2 | No. Of Flutes | Part Number |
|---|---|---|---|---|---|
| 3 | 6 | 10 | 63 | 4 | 680 -10905 |
| 4 | 6 | 12 | 63 | 4 | 680 -10907 |
| 6 | 6 | 15 | 63 | 6 | 680 -10910 |
| 8 | 8 | 20 | 75 | 6 | 680 -10912 |
| 10 | 10 | 25 | 80 | 6 | 680 -10914 |
| 12 | 12 | 30 | 100 | 6 | 680 -10916 |
| 14 | 14 | 30 | 100 | 8 | 680 -10918 |
| 16 | 16 | 40 | 110 | 8 | 680 -10920 |
| 18 | 18 | 45 | 125 | 10 | 680 -10922 |
| 20 | 20 | 45 | 125 | 10 | 680 -10924 |
| 25 | 25 | 45 | 125 | 10 | 680 -10929 |

1.1 - 1.6 | 4.1 - 5.3
2.1 - 2.3 | 1.7 - 1.9
3.1 - 3.4 | 9.1



Series 610R

# Ultra-High Performance Solid Carbide - *TiALN*
# Centre Cutting 50° Helix High Speed Machining
# Micro-grain K30 Multi-Flute Corner Radius



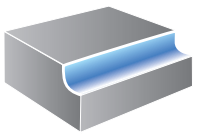

Ti PAGE 264

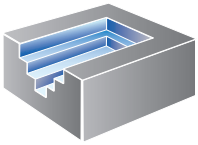
**Tolerances:**
D1 +0.00/-0.051mm
D2 h6




| Cutter Dia-D1 | Shank Dia-D2 | FL L1 | OAL L2 | Corner Radius | No. Of Flutes | Part Number |
|---|---|---|---|---|---|---|
| 6 | 6 | 18 | 58 | 0.5 | 6 | 610 -11710-0.5R |
| 6 | 6 | 18 | 58 | 1.0 | 6 | 610 -11710-1.5R |
| 8 | 8 | 24 | 63 | 0.5 | 6 | 610 -11712-0.5R |
| 8 | 8 | 24 | 63 | 1.0 | 6 | 610 -11712-1.5R |
| 10 | 10 | 30 | 75 | 0.5 | 6 | 610 -11714-0.5R |
| 10 | 10 | 30 | 75 | 1.0 | 6 | 610 -11714-1.5R |
| 12 | 12 | 36 | 84 | 0.5 | 6 | 610 -11716-0.5R |
| 12 | 12 | 36 | 84 | 1.0 | 6 | 610 -11716-1.5R |
| 14 | 14 | 42 | 84 | 0.5 | 6 | 610 -11718-0.5R |
| 14 | 14 | 42 | 84 | 1.0 | 6 | 610 -11718-1.5R |
| 16 | 16 | 48 | 93 | 0.5 | 8 | 610 -11720-0.5R |
| 16 | 16 | 48 | 93 | 1.0 | 8 | 610 -11720-1.5R |
| 18 | 18 | 54 | 100 | 0.5 | 8 | 610 -11722-0.5R |
| 18 | 18 | 54 | 100 | 1.0 | 8 | 610 -11722-1.5R |
| 20 | 20 | 60 | 105 | 0.5 | 8 | 610 -11724-0.5R |
| 20 | 20 | 60 | 105 | 1.0 | 8 | 610 -11724-1.5R |

1.1 - 1.6 | 4.1 - 5.3
2.1 - 2.3 | 1.7 - 1.9
3.1 - 3.4 | 9.1





**Modifications**
**Regrinds, Recoat**
**Specials**

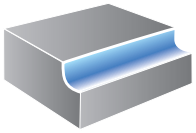
# Ultra-High Performance Solid Carbide - *TiALN*
## Centre Cutting 50° Helix High Speed Machining
## Micro-grain K30 Multi-Flute Long Corner Radius

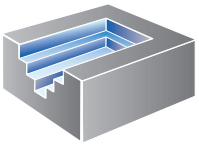
Series 620R

Ti PAGE 264

TiALN | +0.025 | 50° | MG HM | MULTI | PLAIN

1.1 - 1.6 | 4.1 - 5.3 | 2.1 - 2.3 | 1.7 - 1.9 | 3.1 - 3.4 | 9.1





| Cutter Dia-D1 | Shank Dia-D2 | FL L1 | OAL L2 | Corner Radius | No. Of Flutes | Part Number |
|---|---|---|---|---|---|---|
| 6 | 6 | 32 | 75 | 0.5 | 6 | 620 -11710-0.5R |
| 6 | 6 | 32 | 75 | 1.0 | 6 | 620 -11710-1.5R |
| 8 | 8 | 32 | 75 | 0.5 | 6 | 620 -11712-0.5R |
| 8 | 8 | 32 | 75 | 1.0 | 6 | 620 -11712-1.5R |
| 10 | 10 | 50 | 100 | 0.5 | 6 | 620 -11714-0.5R |
| 10 | 10 | 50 | 100 | 1.0 | 6 | 620 -11714-1.5R |
| 12 | 12 | 50 | 100 | 0.5 | 6 | 620 -11716-0.5R |
| 12 | 12 | 50 | 100 | 1.0 | 6 | 620 -11716-1.5R |
| 14 | 14 | 50 | 100 | 0.5 | 6 | 620 -11718-0.5R |
| 14 | 14 | 50 | 100 | 1.0 | 6 | 620 -11718-1.5R |
| 16 | 16 | 62 | 125 | 0.5 | 8 | 620 -11720-0.5R |
| 16 | 16 | 62 | 125 | 1.0 | 8 | 620 -11720-1.5R |
| 18 | 18 | 62 | 125 | 0.5 | 8 | 620 -11722-0.5R |
| 18 | 18 | 62 | 125 | 1.0 | 8 | 620 -11722-1.5R |
| 20 | 20 | 65 | 130 | 0.5 | 8 | 620 -11724-0.5R |
| 20 | 20 | 65 | 130 | 1.0 | 8 | 620 -11724-1.5R |

**Tolerances:**
D1 +0.00/-0.051mm
D2 h6



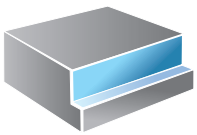

# Ultra-High Performance Solid Carbide - *TiALN*
## Centre Cutting 50° Helix Power Mill
## Micro-grain K30 4-Flute

Series 690

Ti PAGE 264

TiALN | 50° | MG HM | 4 | PLAIN

1.1 - 1.6 | 4.1 - 5.3 | 2.1 - 2.3 | 1.7 - 1.9 | 3.1 - 3.4 | 9.1





| Cutter Dia-D1 | Shank Dia-D2 | FL L1 | OAL L2 | Part Number |
|---|---|---|---|---|
| 4 | 6 | 12 | 60 | 690 -10107 |
| 6 | 6 | 15 | 60 | 690 -10110 |
| 8 | 8 | 20 | 75 | 690 -10112 |
| 10 | 10 | 25 | 80 | 690 -10114 |
| 12 | 12 | 30 | 102 | 690 -10116 |
| 16 | 16 | 40 | 110 | 690 -10120 |
| 20 | 20 | 45 | 125 | 690 -10124 |

**Tolerances:**
D1 +0.00/-0.051mm
D2 h6




**Modifications**
**Regrinds, Recoat**
**Specials**

Merlin Tools Ltd manufactured

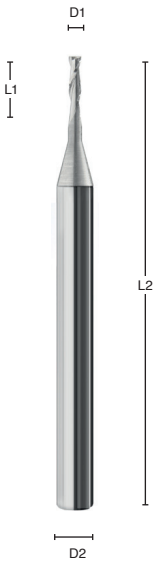
Series 200

# Performance Solid Carbide Centre Cutting 30° Helix Micro-grain K30 2-Flute Mini Mills



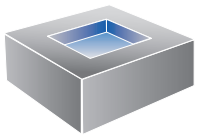

PAGE 264

| Tolerances: |
|---|
| D1 +0.00/-0.051mm |
| D2 h6 |




| Cutter Dia-D1 | Shank Dia-D2 | FL L1 | OAL L2 | Part Number |
|---|---|---|---|---|
| 0.2 | 3 | 0.6 | 38 | 200 -38302 |
| 0.3 | 3 | 0.9 | 38 | 200 -38303 |
| 0.4 | 3 | 1.2 | 38 | 200 -38304 |
| 0.5 | 3 | 1.5 | 38 | 200 -38305 |
| 0.6 | 3 | 1.8 | 38 | 200 -38306 |
| 0.7 | 3 | 2.1 | 38 | 200 -38307 |
| 0.8 | 3 | 2.4 | 38 | 200 -38308 |
| 0.9 | 3 | 2.7 | 38 | 200 -38309 |
| 1 | 3 | 3 | 38 | 200 -38301 |
| 1.1 | 3 | 3.3 | 38 | 200 -38311 |
| 1.2 | 3 | 3.6 | 38 | 200 -38312 |
| 1.3 | 3 | 3.9 | 38 | 200 -38313 |
| 1.4 | 3 | 4.2 | 38 | 200 -38314 |
| 1.5 | 3 | 4.5 | 38 | 200 -38315 |
| 1.6 | 3 | 4.8 | 38 | 200 -38316 |
| 1.7 | 3 | 5.1 | 38 | 200 -38317 |
| 1.8 | 3 | 5.4 | 38 | 200 -38318 |
| 1.9 | 3 | 5.7 | 38 | 200 -38319 |
| 2 | 3 | 6 | 38 | 200 -38312 |

1.1 - 1.6 | 6.1 - 6.4
2.1 - 2.3 | 4.1 - 5.3
3.1 - 3.4 | 9.1





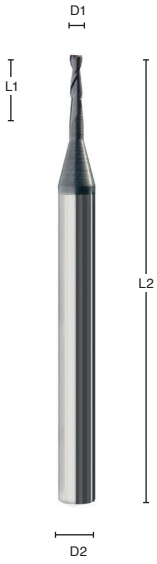
Series 204

# High Performance Solid Carbide - *TiALN* Centre Cutting 30° Helix Micro-grain K30 2-Flute Mini Mills




PAGE 264

| Tolerances: |
|---|
| D1 +0.00/-0.051mm |
| D2 h6 |




| Cutter Dia-D1 | Shank Dia-D2 | FL L1 | OAL L2 | Part Number |
|---|---|---|---|---|
| 0.2 | 3 | 0.6 | 38 | 204 -38302 |
| 0.3 | 3 | 0.9 | 38 | 204 -38303 |
| 0.4 | 3 | 1.2 | 38 | 204 -38304 |
| 0.5 | 3 | 1.5 | 38 | 204 -38305 |
| 0.6 | 3 | 1.8 | 38 | 204 -38306 |
| 0.7 | 3 | 2.1 | 38 | 204 -38307 |
| 0.8 | 3 | 2.4 | 38 | 204 -38308 |
| 0.9 | 3 | 2.7 | 38 | 204 -38309 |
| 1 | 3 | 3 | 38 | 204 -38301 |
| 1.1 | 3 | 3.3 | 38 | 204 -38315 |
| 1.2 | 3 | 3.6 | 38 | 204 -38312 |
| 1.3 | 3 | 3.9 | 38 | 204 -38313 |
| 1.4 | 3 | 4.2 | 38 | 204 -38314 |
| 1.5 | 3 | 4.5 | 38 | 204 -38315 |
| 1.6 | 3 | 4.8 | 38 | 204 -38316 |
| 1.7 | 3 | 5.1 | 38 | 204 -38317 |
| 1.8 | 3 | 5.4 | 38 | 204 -38318 |
| 1.9 | 3 | 5.7 | 38 | 204 -38319 |
| 2 | 3 | 6 | 38 | 204 -38312 |

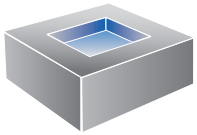
1.1 - 1.6 | 6.1 - 6.4
2.1 - 2.3 | 4.1 - 5.3
3.1 - 3.4 | 1.7 - 1.8
9.1

# Performance Solid Carbide
# Centre Cutting 30° Helix
# Micro-grain K30 4-Flute Mini Mills

Series 400

PAGE 264

1.1 - 1.6 | 6.1 - 6.4
2.1 - 2.3 | 4.1 - 5.3
3.1 - 3.4 | 9.1

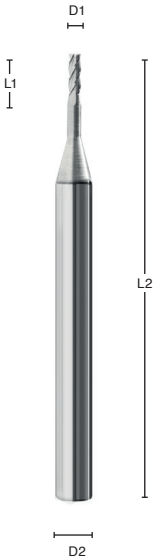




30° | MG HM | 4 | PLAIN

| Cutter Dia-D1 | Shank Dia-D2 | FL L1 | OAL L2 | Part Number |
|---|---|---|---|---|
| 0.2 | 3 | 0.6 | 38 | 400 -38302 |
| 0.3 | 3 | 0.9 | 38 | 400 -38303 |
| 0.4 | 3 | 1.2 | 38 | 400 -38304 |
| 0.5 | 3 | 1.5 | 38 | 400 -38305 |
| 0.6 | 3 | 1.8 | 38 | 400 -38306 |
| 0.7 | 3 | 2.1 | 38 | 400 -38307 |
| 0.8 | 3 | 2.4 | 38 | 400 -38308 |
| 0.9 | 3 | 2.7 | 38 | 400 -38309 |
| 1 | 3 | 3 | 38 | 400 -38301 |
| 1.1 | 3 | 3.3 | 38 | 400 -38311 |
| 1.2 | 3 | 3.6 | 38 | 400 -38312 |
| 1.3 | 3 | 3.9 | 38 | 400 -38313 |
| 1.4 | 3 | 4.2 | 38 | 400 -38314 |
| 1.5 | 3 | 4.5 | 38 | 400 -38315 |
| 1.6 | 3 | 4.8 | 38 | 400 -38316 |
| 1.7 | 3 | 5.1 | 38 | 400 -38317 |
| 1.8 | 3 | 5.4 | 38 | 400 -38318 |
| 1.9 | 3 | 5.7 | 38 | 400 -38319 |
| 2 | 3 | 6 | 38 | 400 -38312 |

**Tolerances:**
D1 +0.00/-0.051mm
D2 h6




# High Performance Solid Carbide - *TiALN*
# Centre Cutting 30° Helix
# Micro-grain K30 4-Flute Mini Mills

Series 404

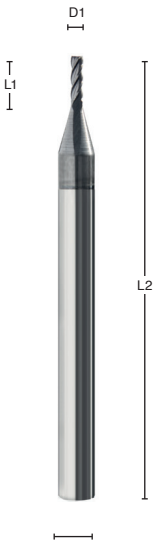
PAGE 264

1.1 - 1.6 | 6.1 - 6.4
2.1 - 2.3 | 4.1 - 5.3
3.1 - 3.4 | 1.7 - 1.8
9.1

TiALN | 30° | MG HM | 4 | PLAIN

| Cutter Dia-D1 | Shank Dia-D2 | FL L1 | OAL L2 | Part Number |
|---|---|---|---|---|
| 0.2 | 3 | 0.6 | 38 | 404 -38302 |
| 0.3 | 3 | 0.9 | 38 | 404 -38303 |
| 0.4 | 3 | 1.2 | 38 | 404 -38304 |
| 0.5 | 3 | 1.5 | 38 | 404 -38305 |
| 0.6 | 3 | 1.8 | 38 | 404 -38306 |
| 0.7 | 3 | 2.1 | 38 | 404 -38307 |
| 0.8 | 3 | 2.4 | 38 | 404 -38308 |
| 0.9 | 3 | 2.7 | 38 | 404 -38309 |
| 1 | 3 | 3 | 38 | 404 -38301 |
| 1.1 | 3 | 3.3 | 38 | 404 -38315 |
| 1.2 | 3 | 3.6 | 38 | 404 -38312 |
| 1.3 | 3 | 3.9 | 38 | 404 -38313 |
| 1.4 | 3 | 4.2 | 38 | 404 -38314 |
| 1.5 | 3 | 4.5 | 38 | 404 -38315 |
| 1.6 | 3 | 4.8 | 38 | 404 -38316 |
| 1.7 | 3 | 5.1 | 38 | 404 -38317 |
| 1.8 | 3 | 5.4 | 38 | 404 -38318 |
| 1.9 | 3 | 5.7 | 38 | 404 -38319 |
| 2 | 3 | 6 | 38 | 404 -38312 |

**Tolerances:**
D1 +0.00/-0.051mm
D2 h6



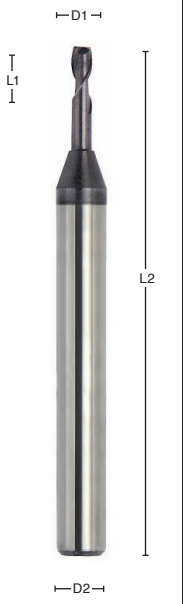
Series 700

# Ultra-High Performance Solid Carbide - *TiALN*
# Centre Cutting 30° Helix - Neck Relief - Long Reach
# Micro-grain K30 2-Flute



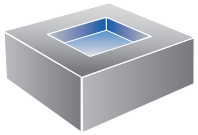

Ti PAGE 264

| Tolerances: |
|---|
| D1 +0.00/-0.025mm |
| D2 h6 |




| Cutter Dia-D1 | Shank Dia-D2 | Neck Dia | FL L1 | OAL L2 | Reach | Part Number |
|---|---|---|---|---|---|---|
| 0.50 | 6 | 0.45 | 0.70 | 60 | 2.50 | 700-20305 |
| 0.50 | 6 | 0.45 | 0.70 | 60 | 4.00 | 700-20405 |
| 0.50 | 6 | 0.45 | 0.70 | 60 | 6.00 | 700-20505 |
| 0.60 | 6 | 0.55 | 0.90 | 60 | 3.00 | 700-20306 |
| 0.60 | 6 | 0.55 | 0.90 | 60 | 6.00 | 700-20406 |
| 0.80 | 6 | 0.75 | 1.20 | 60 | 4.00 | 700-20308 |
| 0.80 | 6 | 0.75 | 1.20 | 60 | 6.00 | 700-20408 |
| 1.00 | 6 | 0.95 | 1.50 | 60 | 5.00 | 700-20301 |
| 1.00 | 6 | 0.95 | 1.50 | 60 | 8.00 | 700-20401 |
| 1.00 | 6 | 0.95 | 1.50 | 60 | 12.00 | 700-20501 |
| 1.20 | 6 | 1.15 | 1.80 | 60 | 6.00 | 700-20312 |
| 1.20 | 6 | 1.15 | 1.80 | 60 | 10.00 | 700-20412 |
| 1.40 | 6 | 1.35 | 2.10 | 60 | 7.00 | 700-20314 |
| 1.40 | 6 | 1.35 | 2.10 | 60 | 12.00 | 700-20414 |
| 1.40 | 6 | 1.35 | 2.10 | 60 | 16.00 | 700-20514 |
| 1.50 | 6 | 1.45 | 2.30 | 60 | 7.50 | 700-20315 |
| 1.50 | 6 | 1.45 | 2.30 | 60 | 10.00 | 700-20415 |
| 1.50 | 6 | 1.45 | 2.30 | 60 | 20.00 | 700-20515 |
| 1.60 | 6 | 1.55 | 2.40 | 60 | 8.00 | 700-20316 |
| 1.60 | 6 | 1.55 | 2.40 | 60 | 12.00 | 700-20416 |
| 1.60 | 6 | 1.55 | 2.40 | 60 | 20.00 | 700-20516 |
| 1.80 | 6 | 1.75 | 2.70 | 60 | 6.00 | 700-20218 |
| 1.80 | 6 | 1.75 | 2.70 | 60 | 9.00 | 700-20318 |
| 1.80 | 6 | 1.75 | 2.70 | 60 | 12.00 | 700-20418 |
| 1.80 | 6 | 1.75 | 2.70 | 60 | 20.00 | 700-20518 |
| 2.00 | 6 | 1.95 | 3.00 | 60 | 6.00 | 700-20220 |
| 2.00 | 6 | 1.95 | 3.00 | 60 | 10.00 | 700-20320 |
| 2.00 | 6 | 1.95 | 3.00 | 60 | 16.00 | 700-20420 |
| 2.00 | 6 | 1.95 | 3.00 | 60 | 20.00 | 700-20520 |
| 2.50 | 6 | 2.40 | 3.70 | 60 | 12.50 | 700-20325 |

1.1 - 1.6 | 6.1 - 6.4
2.1 - 2.3 | 4.1 - 5.3
3.1 - 3.4 | 1.7 - 1.8
9.1





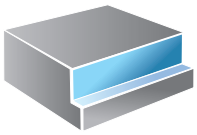
# Ultra-High Performance Solid Carbide - *TiALN*
# Centre Cutting 30° Helix - Short Length - Long Neck
# Micro-grain K30 4-Flute

Series 705

PAGE 264

TiALN | 30° | MG HM | 4 | PLAIN

1.1 - 1.6 | 6.1 - 6.4
2.1 - 2.3 | 4.1 - 5.3
3.1 - 3.4 | 1.7 - 1.8
9.1



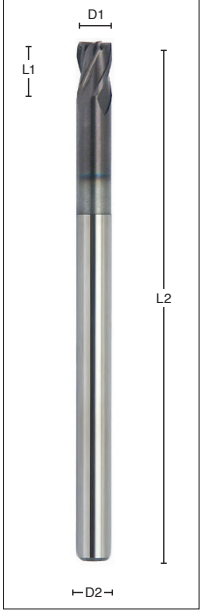


| Cutter Dia-D1 | Shank Dia-D2 | Neck Dia | FL L1 | OAL L2 | Reach | Part Number |
|---|---|---|---|---|---|---|
| 3 | 6 | 2.85 | 4.5 | 70 | 15 | 705 -20505 |
| 3.5 | 6 | 3.35 | 5.3 | 70 | 17.5 | 705 -20506 |
| 4 | 6 | 3.85 | 6 | 70 | 20 | 705 -20507 |
| 5 | 6 | 4.85 | 7.5 | 80 | 25 | 705 -20509 |
| 6 | 6 | 5.85 | 9 | 90 | 30 | 705 -20510 |

**Tolerances:**

D1 +0.00-0.038

D2 h6



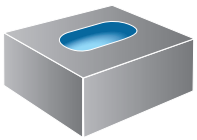

# Ultra-High Performance Solid Carbide - *TiALN*
# Centre Cutting 30° Helix
# Micro-grain K30 2-Flute Ball Nosed

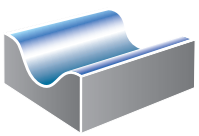
Series 710

PAGE 264

TiALN | 30° | MG HM | 2 | PLAIN

1.1 - 1.6 | 6.1 - 6.4
2.1 - 2.3 | 4.1 - 5.3
3.1 - 3.4 | 1.7 - 1.8
9.1





| Cutter Dia-D1 | Shank Dia-D2 | Neck Dia | FL L1 | OAL L2 | Reach | Part Number |
|---|---|---|---|---|---|---|
| 1.00 | 6 | 0.95 | 1.00 | 50 | 2.50 | 710-20601 |
| 1.20 | 6 | 1.15 | 1.20 | 50 | 3.00 | 710-20612 |
| 1.40 | 6 | 1.35 | 1.40 | 50 | 7.00 | 710-20614 |
| 1.50 | 6 | 1.45 | 1.50 | 50 | 3.80 | 710-20615 |
| 1.60 | 6 | 1.55 | 1.60 | 50 | 4.00 | 710-20616 |
| 1.80 | 6 | 1.75 | 1.80 | 50 | 4.50 | 710-20618 |
| 2.00 | 6 | 1.95 | 2.00 | 50 | 5.00 | 710-20620 |
| 2.50 | 6 | 2.4 | 2.50 | 50 | 5.00 | 710-20625 |
| 3.00 | 6 | 2.85 | 3.00 | 50 | 6.00 | 710-20630 |
| 3.50 | 6 | 3.35 | 3.50 | 50 | 6.00 | 710-20635 |
| 4.00 | 6 | 3.85 | 4.00 | 50 | 6.00 | 710-20640 |
| 5.00 | 6 | 4.85 | 5.00 | 50 | 7.50 | 710-20650 |
| 6.00 | 6 | 5.85 | 6.00 | 50 | 9.00 | 710-20660 |

**Tolerances:**

1mm thru 3mm
D1 +0.00-0.025mm
3.5 thru 6mm
D1 +0.00-0.038mm

D2 h6



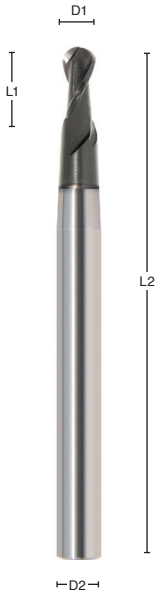
Series 720

# Ultra-High Performance Solid Carbide - *TiALN*
# Centre Cutting 30° Helix - Pencil Neck
# Micro-grain K30 2-Flute Ball Nosed



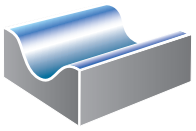

PAGE 264

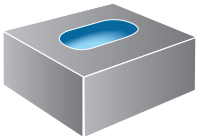
**Tolerances:**
1mm thru 3mm
D1 +0.00/-0.025mm
4mm thru 12mm
D1 +0.00/-0.038mm
D2 h6




| Cutter Dia | Shank Dia-D2 | FL L1 | OAL L2 | Neck Major Dia | Neck Length | Non-Taper Neck Length | Neck Incline | Part Number |
|---|---|---|---|---|---|---|---|---|
| 1 | 6 | 2.5 | 60 | 3.8 | 20 | 4 | 5° | 720 -27501 |
| 1 | 6 | 2.5 | 80 | 4.8 | 40 | 4 | 3° | 720 -27601 |
| 1 | 6 | 2.5 | 70 | 1.8 | 20 | 4 | 1° 30' | 720 -27701 |
| 2 | 6 | 5 | 60 | 4.3 | 20 | 7 | 5° | 720 -27503 |
| 2 | 6 | 5 | 80 | 5.5 | 40 | 7 | 3° | 720 -27603 |
| 2 | 6 | 5 | 70 | 2.7 | 20 | 7 | 1° 30' | 720 -27703 |
| 3 | 6 | 8 | 70 | 5 | 30 | 10.5 | 3° | 720 -27505 |
| 3 | 6 | 8 | 90 | 5.1 | 50 | 10.5 | 1° 30' | 720 -27605 |
| 4 | 6 | 8 | 70 | 6 | 28 | 10.5 | 3° | 720 -27507 |
| 4 | 6 | 8 | 90 | 6 | 48 | 10.5 | 1° 30' | 720 -27607 |
| 5 | 8 | 10 | 90 | 8 | 40 | 12.5 | 3° | 720 -27509 |
| 5 | 8 | 10 | 110 | 7.5 | 60 | 12.5 | 1° 30' | 720 -27609 |
| 6 | 8 | 12 | 90 | 8 | 33.5 | 14.5 | 3° | 720 -27510 |
| 6 | 8 | 12 | 110 | 8 | 52 | 14.5 | 1° 30' | 720 -27610 |
| 8 | 10 | 14 | 100 | 10 | 35.5 | 16.5 | 3° | 720 -27512 |
| 8 | 10 | 14 | 120 | 10 | 54.5 | 16.5 | 1° 30' | 720 -27612 |
| 10 | 12 | 18 | 110 | 12 | 39.5 | 20.5 | 3° | 720 -27514 |
| 10 | 12 | 18 | 130 | 12 | 58.5 | 20.5 | 1° 30' | 720 -27614 |
| 12 | 16 | 22 | 140 | 16 | 60 | 25 | 3° | 720 -27516 |
| 12 | 16 | 22 | 160 | 14.9 | 80 | 25 | 1° 30' | 720 -27616 |

1.1 - 1.6 | 6.1 - 8.3
2.1 - 2.3 | 4.1 - 5.3
3.1 - 3.4 | 1.7 - 1.8
9.1





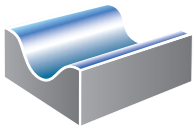
# Ultra-High Performance Solid Carbide - *TiALN*
# Centre Cutting 30° Helix - Neck Relief - Long Reach
# Micro-grain K30 2-Flute Ball Nosed

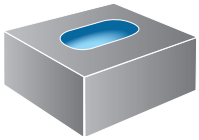
Series 715

PAGE 264

TiALN | 30° | MG HM | 2 | PLAIN

1.1 - 1.6 | 6.1 - 8.3 | 2.1 - 2.3 | 4.1 - 5.3 | 3.1 - 3.4 | 1.7 - 1.8 | 9.1





| Cutter Dia-D1 | Shank Dia-D2 | Neck Dia | FL L1 | OAL L2 | Reach | Part Number |
|---|---|---|---|---|---|---|
| 0.50 | 6 | 0.45 | 0.50 | 60 | 2.5 | 715-20705 |
| 0.60 | 6 | 0.55 | 0.60 | 60 | 3 | 715-20706 |
| 0.60 | 6 | 0.55 | 0.60 | 60 | 6 | 715-20806 |
| 0.80 | 6 | 0.75 | 0.80 | 60 | 4 | 715-20708 |
| 0.80 | 6 | 0.75 | 0.80 | 60 | 8 | 715-20808 |
| 1.00 | 6 | 0.95 | 1.00 | 60 | 5 | 715-20701 |
| 1.00 | 6 | 0.95 | 1.00 | 60 | 8 | 715-20801 |
| 1.00 | 6 | 0.95 | 1.00 | 60 | 10 | 715-20901 |
| 1.00 | 6 | 0.95 | 1.00 | 60 | 12 | 715-20710 |
| 1.00 | 6 | 0.95 | 1.00 | 60 | 16 | 715-20810 |
| 1.00 | 6 | 0.95 | 1.00 | 60 | 20 | 715-20910 |
| 1.20 | 6 | 1.15 | 1.20 | 60 | 6 | 715-20712 |
| 1.20 | 6 | 1.15 | 1.20 | 60 | 12 | 715-20812 |
| 1.40 | 6 | 1.35 | 1.40 | 60 | 7 | 715-20714 |
| 1.40 | 6 | 1.35 | 1.40 | 60 | 12 | 715-20814 |
| 1.50 | 6 | 1.45 | 1.50 | 60 | 6 | 715-20914 |
| 1.50 | 6 | 1.45 | 1.50 | 60 | 7.5 | 715-20715 |
| 1.50 | 6 | 1.45 | 1.50 | 60 | 10 | 715-20815 |
| 1.50 | 6 | 1.45 | 1.50 | 60 | 12 | 715-20915 |
| 1.50 | 6 | 1.45 | 1.50 | 60 | 20 | 715-20015 |
| 1.60 | 6 | 1.55 | 1.60 | 60 | 8 | 715-20716 |
| 1.60 | 6 | 1.55 | 1.60 | 60 | 16 | 715-20816 |
| 1.80 | 6 | 1.75 | 1.80 | 60 | 9 | 715-20718 |
| 1.80 | 6 | 1.75 | 1.80 | 60 | 16 | 715-20818 |
| 2.00 | 6 | 1.95 | 2.00 | 60 | 8 | 715-20918 |
| 2.00 | 6 | 1.95 | 2.00 | 60 | 10 | 715-20720 |
| 2.00 | 6 | 1.95 | 2.00 | 60 | 12 | 715-20820 |
| 2.00 | 6 | 1.95 | 2.00 | 60 | 16 | 715-20920 |
| 2.00 | 6 | 1.95 | 2.00 | 60 | 20 | 715-20702 |
| 2.00 | 6 | 1.95 | 2.00 | 60 | 25 | 715-20802 |
| 2.50 | 6 | 2.40 | 2.50 | 60 | 12.5 | 715-20725 |
| 2.50 | 6 | 2.40 | 2.50 | 60 | 16 | 715-20825 |
| 2.50 | 6 | 2.40 | 2.50 | 60 | 20 | 715-20925 |
| 3.00 | 6 | 2.85 | 3.00 | 70 | 10 | 715-20530 |
| 3.00 | 6 | 2.85 | 3.00 | 70 | 12 | 715-20630 |
| 3.00 | 6 | 2.85 | 3.00 | 70 | 15 | 715-20730 |
| 3.00 | 6 | 2.85 | 3.00 | 70 | 20 | 715-20830 |
| 3.00 | 6 | 2.85 | 3.00 | 70 | 25 | 715-20930 |
| 3.00 | 6 | 2.85 | 3.00 | 70 | 30 | 715-20603 |
| 3.00 | 6 | 2.85 | 3.00 | 70 | 35 | 715-20703 |
| 3.50 | 6 | 3.35 | 3.50 | 70 | 17.5 | 715-20735 |
| 4.00 | 6 | 3.85 | 4.00 | 70 | 8 | 715-20440 |
| 4.00 | 6 | 3.85 | 4.00 | 70 | 12 | 715-20540 |
| 4.00 | 6 | 3.85 | 4.00 | 70 | 16 | 715-20640 |
| 4.00 | 6 | 3.85 | 4.00 | 70 | 20 | 715-20740 |
| 4.00 | 6 | 3.85 | 4.00 | 70 | 25 | 715-20840 |
| 4.00 | 6 | 3.85 | 4.00 | 70 | 30 | 715-20940 |
| 5.00 | 6 | 4.85 | 5.00 | 80 | 25 | 715-20750 |
| 6.00 | 6 | 5.85 | 6.00 | 90 | 30 | 715-20760 |

**Tolerances:**
1mm thru 3mm
D1 +0.00-0.025mm
3.5 thru 6mm
D1 +0.00-0.038mm
D2 h6



Series 730R

# Ultra-High Performance Solid Carbide - *TiALN*
## Centre Cutting 30° Helix - Neck Relief - Long Reach
## Micro-grain K30 2-Flute Corner Radius



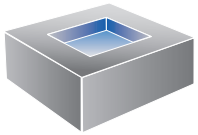

Ti PAGE 264

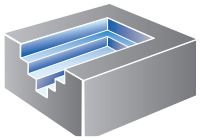
**Tolerances:**
0.5mm thru 3mm
D1 +0.00/-0.025mm
3.5mm thru 4.5mm
D1 +0.00/-0.038mm
D2 h6




| Cutter Dia-D1 | Shank Dia-D2 | Neck Dia | FL L1 | OAL L2 | Reach | Corner Radius | Part Number |
|---|---|---|---|---|---|---|---|
| 0.5 | 6 | 0.46 | 0.7 | 50 | 2 | 0.05 | 730 -27700-0.05R |
| 0.5 | 6 | 0.46 | 0.7 | 50 | 4 | 0.05 | 730 -27800-0.05R |
| 1 | 6 | 0.95 | 1.5 | 50 | 4 | 0.10 | 730 -27701-0.1R |
| 1 | 6 | 0.95 | 1.5 | 50 | 4 | 0.30 | 730 -27701-0.3R |
| 1 | 6 | 0.95 | 1.5 | 50 | 8 | 0.10 | 730 -27801-0.1R |
| 1 | 6 | 0.95 | 1.5 | 50 | 8 | 0.20 | 730 -27801-0.2R |
| 1 | 6 | 0.95 | 1.5 | 50 | 8 | 0.30 | 730 -27801-0.3R |
| 1 | 6 | 0.95 | 1.5 | 50 | 12 | 0.10 | 730 -27901-0.1R |
| 1 | 6 | 0.95 | 1.5 | 50 | 12 | 0.20 | 730 -27901-0.2R |
| 1 | 6 | 0.95 | 1.5 | 50 | 12 | 0.30 | 730 -27901-0.3R |
| 1.5 | 6 | 1.45 | 2.3 | 50 | 6 | 0.30 | 730 -27702-0.3R |
| 1.5 | 6 | 1.45 | 2.3 | 50 | 6 | 0.50 | 730 -27702-0.5R |
| 1.5 | 6 | 1.45 | 2.3 | 50 | 12 | 0.30 | 730 -27802-0.3R |
| 1.5 | 6 | 1.45 | 2.3 | 50 | 12 | 0.50 | 730 -27802-0.5R |
| 1.5 | 6 | 1.45 | 2.3 | 60 | 18 | 0.30 | 730 -27902-0.3R |
| 1.5 | 6 | 1.45 | 2.3 | 60 | 18 | 0.50 | 730 -27902-0.5R |
| 2 | 6 | 1.94 | 3 | 60 | 10 | 0.50 | 730 -27603-0.5R |
| 2 | 6 | 1.94 | 3 | 60 | 16 | 0.30 | 730 -27703-0.3R |
| 2 | 6 | 1.94 | 3 | 60 | 16 | 0.50 | 730 -27703-0.5R |
| 2 | 6 | 1.94 | 3 | 70 | 24 | 0.30 | 730 -27803-0.3R |
| 2 | 6 | 1.94 | 3 | 70 | 24 | 0.50 | 730 -27803-0.5R |
| 2 | 6 | 1.94 | 3 | 70 | 30 | 0.30 | 730 -27903-0.3R |
| 2 | 6 | 1.94 | 3 | 70 | 30 | 0.50 | 730 -27903-0.5R |
| 2.5 | 6 | 2.4 | 3.7 | 70 | 15 | 0.50 | 730 -27704-0.5R |
| 2.5 | 6 | 2.4 | 3.7 | 70 | 30 | 0.50 | 730 -27804-0.5R |
| 3 | 6 | 2.85 | 4.5 | 70 | 12 | 1.00 | 730 -27705-1.0R |
| 3 | 6 | 2.85 | 4.5 | 80 | 24 | 0.50 | 730 -27805-0.5R |
| 3 | 6 | 2.85 | 4.5 | 80 | 24 | 1.00 | 730 -27805-1.0R |
| 3 | 6 | 2.85 | 4.5 | 80 | 36 | 0.50 | 730 -27905-0.5R |
| 3 | 6 | 2.85 | 4.5 | 80 | 36 | 1.00 | 730 -27905-1.0R |
| 3.5 | 6 | 3.35 | 5 | 80 | 16 | 1.00 | 730 -27706-1.0R |
| 3.5 | 6 | 3.35 | 5 | 80 | 32 | 0.50 | 730 -27806-0.5R |
| 4 | 6 | 3.8 | 6 | 80 | 16 | 0.50 | 730 -27707-0.5R |
| 4 | 6 | 3.8 | 6 | 80 | 32 | 0.50 | 730 -27907-0.5R |
| 4 | 6 | 3.8 | 6 | 80 | 32 | 1.00 | 730 -27907-1.0R |
| 4.5 | 6 | 4.3 | 8 | 80 | 16 | 0.50 | 730 -27708-0.5R |
| 4.5 | 6 | 4.3 | 8 | 80 | 32 | 0.50 | 730 -27808-0.5R |

1.1 - 1.6
6.1 - 8.3
2.1 - 2.3
4.1 - 5.3
3.1 - 3.4
1.7 - 1.8
9.1



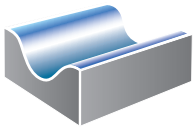


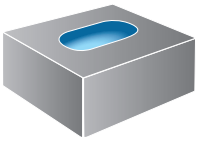
# Performance Solid Carbide
# Centre Cutting 30° Helix
# Micro-grain K30 2-Flute Mini Mills Ball Nosed

Series 206

PAGE 264

1.1 - 1.6 | 6.1 - 6.4
2.1 - 2.3 | 4.1 - 5.3
3.1 - 3.4 | 9.1

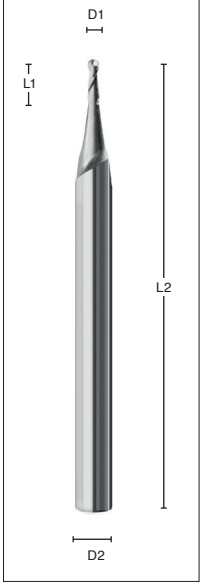




MG HM | 30° | 2 | PLAIN

| Cutter Dia-D1 | Shank Dia-D2 | FL L1 | OAL L2 | Part Number |
|---|---|---|---|---|
| 0.3 | 3 | 0.5 | 38 | 206 -38303 |
| 0.4 | 3 | 0.6 | 38 | 206 -38304 |
| 0.5 | 3 | 0.8 | 38 | 206 -38305 |
| 0.6 | 3 | 0.9 | 38 | 206 -38306 |
| 0.7 | 3 | 1.1 | 38 | 206 -38307 |
| 0.8 | 3 | 1.2 | 38 | 206 -38308 |
| 0.9 | 3 | 1.4 | 38 | 206 -38309 |
| 1 | 3 | 1.5 | 38 | 206 -38301 |
| 1.1 | 3 | 1.7 | 38 | 206 -38311 |
| 1.2 | 3 | 1.8 | 38 | 206 -38322 |
| 1.3 | 3 | 2 | 38 | 206 -38313 |
| 1.4 | 3 | 2.1 | 38 | 206 -38314 |
| 1.5 | 3 | 2.3 | 38 | 206 -38315 |
| 1.6 | 3 | 2.4 | 38 | 206 -38316 |
| 1.7 | 3 | 2.5 | 38 | 206 -38317 |
| 1.8 | 3 | 2.7 | 38 | 206 -38318 |
| 1.9 | 3 | 2.8 | 38 | 206 -38319 |
| 2 | 3 | 3 | 38 | 206 -38312 |

**Tolerances:**
D1 +0.00/-0.051mm
D2 h6




# High-Performance Solid Carbide - *TiALN*
# Centre Cutting 30° Helix
# Micro-grain K30 2-Flute Mini Mills Ball Nosed

Series 209

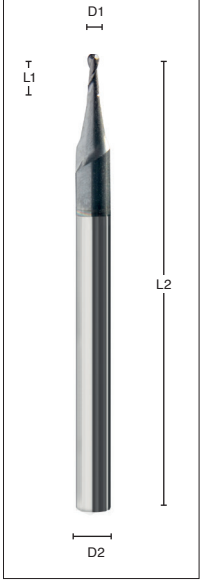
PAGE 264

1.1 - 1.6 | 6.1 - 6.4
2.1 - 2.3 | 4.1 - 5.3
3.1 - 3.4 | 1.7 - 1.8
9.1

TiALN | 30° | 2 | PLAIN

| Cutter Dia-D1 | Shank Dia-D2 | FL L1 | OAL L2 | Part Number |
|---|---|---|---|---|
| 0.3 | 3 | 0.5 | 38 | 209 -38303 |
| 0.4 | 3 | 0.6 | 38 | 209 -38304 |
| 0.5 | 3 | 0.8 | 38 | 209 -38305 |
| 0.6 | 3 | 0.9 | 38 | 209 -38306 |
| 0.7 | 3 | 1.1 | 38 | 209 -38307 |
| 0.8 | 3 | 1.2 | 38 | 209 -38308 |
| 0.9 | 3 | 1.4 | 38 | 209 -38309 |
| 1 | 3 | 1.5 | 38 | 209 -38301 |
| 1.1 | 3 | 1.7 | 38 | 209 -38311 |
| 1.2 | 3 | 1.8 | 38 | 209 -38322 |
| 1.3 | 3 | 2 | 38 | 209 -38313 |
| 1.4 | 3 | 2.1 | 38 | 209 -38314 |
| 1.5 | 3 | 2.3 | 38 | 209 -38315 |
| 1.6 | 3 | 2.4 | 38 | 209 -38316 |
| 1.7 | 3 | 2.5 | 38 | 209 -38317 |
| 1.8 | 3 | 2.7 | 38 | 209 -38318 |
| 1.9 | 3 | 2.8 | 38 | 209 -38319 |
| 2 | 3 | 3 | 38 | 209 -38312 |

**Tolerances:**
D1 +0.00/-0.051mm
D2 h6



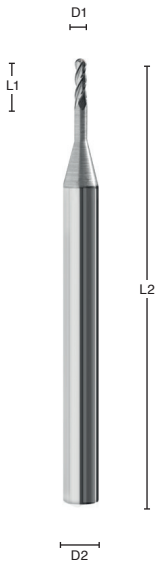
Series 406

# Performance Solid Carbide
# Centre Cutting 30° Helix
# Micro-grain K30 4-Flute Mini Mills Ball Nosed



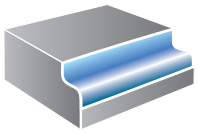

TiPAGE 264

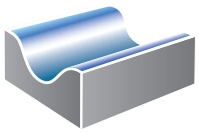
| Tolerances: |
|---|
| D1 +0.00/-0.051mm |
| D2 h6 |




| Cutter Dia-D1 | Shank Dia-D2 | FL L1 | OAL L2 | Part Number |
|---|---|---|---|---|
| 0.3 | 3 | 0.5 | 38 | 406 -38303 |
| 0.4 | 3 | 0.6 | 38 | 406 -38304 |
| 0.5 | 3 | 0.8 | 38 | 406 -38305 |
| 0.6 | 3 | 0.9 | 38 | 406 -38306 |
| 0.7 | 3 | 1.1 | 38 | 406 -38307 |
| 0.8 | 3 | 1.2 | 38 | 406 -38308 |
| 0.9 | 3 | 1.4 | 38 | 406 -38309 |
| 1 | 3 | 1.5 | 38 | 406 -38301 |
| 1.1 | 3 | 1.7 | 38 | 406 -38311 |
| 1.2 | 3 | 1.8 | 38 | 406 -38322 |
| 1.3 | 3 | 2 | 38 | 406 -38313 |
| 1.4 | 3 | 2.1 | 38 | 406 -38314 |
| 1.5 | 3 | 2.3 | 38 | 406 -38315 |
| 1.6 | 3 | 2.4 | 38 | 406 -38316 |
| 1.7 | 3 | 2.5 | 38 | 406 -38317 |
| 1.8 | 3 | 2.7 | 38 | 406 -38318 |
| 1.9 | 3 | 2.8 | 38 | 406 -38319 |
| 2 | 3 | 3 | 38 | 406 -38312 |

1.1 - 1.6 | 6.1 - 6.4
2.1 - 2.3 | 4.1 - 5.3
3.1 - 3.4 | 9.1





Series 409

# High-Performance Solid Carbide - *TiALN*
# Centre Cutting 30° Helix
# Micro-grain K30 4-Flute Mini Mills Ball Nosed




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| Tolerances: |
|---|
| D1 +0.00/-0.051mm |
| D2 h6 |




| Cutter Dia-D1 | Shank Dia-D2 | FL L1 | OAL L2 | Part Number |
|---|---|---|---|---|
| 0.3 | 3 | 0.5 | 38 | 409 -38303 |
| 0.4 | 3 | 0.6 | 38 | 409 -38304 |
| 0.5 | 3 | 0.8 | 38 | 409 -38305 |
| 0.6 | 3 | 0.9 | 38 | 409 -38306 |
| 0.7 | 3 | 1.1 | 38 | 409 -38307 |
| 0.8 | 3 | 1.2 | 38 | 409 -38308 |
| 0.9 | 3 | 1.4 | 38 | 409 -38309 |
| 1 | 3 | 1.5 | 38 | 409 -38301 |
| 1.1 | 3 | 1.7 | 38 | 409 -38311 |
| 1.2 | 3 | 1.8 | 38 | 409 -38322 |
| 1.3 | 3 | 2 | 38 | 409 -38313 |
| 1.4 | 3 | 2.1 | 38 | 409 -38314 |
| 1.5 | 3 | 2.3 | 38 | 409 -38315 |
| 1.6 | 3 | 2.4 | 38 | 409 -38316 |
| 1.7 | 3 | 2.5 | 38 | 409 -38317 |
| 1.8 | 3 | 2.7 | 38 | 409 -38318 |
| 1.9 | 3 | 2.8 | 38 | 409 -38319 |
| 2 | 3 | 3 | 38 | 409 -38312 |

1.1 - 1.6 | 6.1 - 6.4
2.1 - 2.3 | 4.1 - 5.3
3.1 - 3.4 | 1.7 - 1.8
9.1

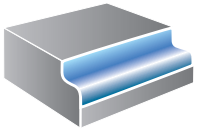
# Ultra-High Performance Solid Carbide - *TiALN*
# 30° Right Hand Helix
# Micro-grain K30 4-Flute 220° Ball Nosed

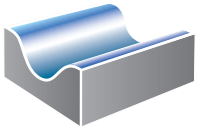
Series 722

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TiALN | 30° | MG HM | 4 | PLAIN

1.1 - 1.6 | 6.1 - 6.4 | 2.1 - 2.3 | 4.1 - 5.3 | 3.1 - 3.4 | 1.7 - 1.8 | 9.1



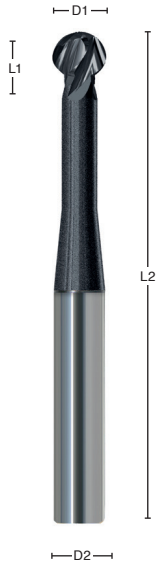


| Cutter Dia-D1 | Shank Dia-D2 | FL L1 | Neck Dia | Reach | OAL L2 | Part Number |
|---|---|---|---|---|---|---|
| 2 | 6 | 1.3 | 1.3 | 30 | 75 | 722 -27302 |
| 2 | 6 | 1.3 | 1.3 | 36 | 75 | 722 -27362 |
| 2 | 6 | 1.3 | 1.3 | 42 | 75 | 722 -27422 |
| 3 | 6 | 2 | 2 | 30 | 75 | 722 -27303 |
| 3 | 6 | 2 | 2 | 36 | 75 | 722 -27363 |
| 3 | 6 | 2 | 2 | 42 | 75 | 722 -27423 |
| 4 | 6 | 2.7 | 2.7 | 30 | 75 | 722 -27304 |
| 4 | 6 | 2.7 | 2.7 | 36 | 75 | 722 -27364 |
| 4 | 6 | 2.7 | 2.7 | 42 | 100 | 722 -27424 |
| 6 | 6 | 4 | 4 | 28 | 75 | 722 -27286 |
| 6 | 6 | 4 | 4 | 40 | 75 | 722 -27406 |
| 6 | 6 | 4 | 4 | 44 | 75 | 722 -27446 |
| 8 | 8 | 5.4 | 5.4 | 38 | 100 | 722 -27388 |
| 8 | 8 | 5.4 | 5.4 | 54 | 100 | 722 -27548 |
| 8 | 8 | 5.4 | 5.4 | 68 | 100 | 722 -27688 |
| 10 | 10 | 6.7 | 6.7 | 48 | 100 | 722 -24810 |
| 10 | 10 | 6.7 | 6.7 | 58 | 100 | 722 -25810 |
| 10 | 10 | 6.7 | 6.7 | 68 | 100 | 722 -26810 |
| 12 | 12 | 8 | 8 | 58 | 100 | 722 -25812 |
| 12 | 12 | 8 | 8 | 68 | 100 | 722 -26812 |
| 16 | 16 | 10.7 | 10.7 | 54 | 100 | 722 -25416 |
| 16 | 16 | 10.7 | 10.7 | 68 | 100 | 722 -26816 |

**Tolerances:**

D1 +0.00/-0.051mm

D2 h6




**Modifications**
**Regrinds, Recoat**
**Specials**

Series 725

# Ultra-High Performance Solid Carbide - *TiALN*
# Centre Cutting 30° Helix
# Micro-grain K30 2-Flute Ball Nosed



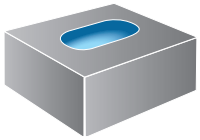

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**Tolerances:**
1mm thru 3mm
D1 +0.00/-0.025mm
3.5 thru 25mm
D1 +0.00/-0.038mm
D2 h6




| Cutter Dia-D1 | Shank Dia-D2 | FL L1 | OAL L2 | Part Number |
|---|---|---|---|---|
| 1 | 4 | 2.5 | 50 | 725 -27801 |
| 1.2 | 4 | 3 | 50 | 725 -27802 |
| 1.4 | 4 | 3.5 | 50 | 725 -27803 |
| 1.5 | 4 | 4 | 50 | 725 -27804 |
| 1.6 | 4 | 4 | 50 | 725 -27805 |
| 1.8 | 4 | 4.5 | 50 | 725 -27806 |
| 2 | 6 | 5 | 50 | 725 -27807 |
| 2.5 | 6 | 6 | 60 | 725 -27808 |
| 3 | 6 | 8 | 60 | 725 -27809 |
| 3.5 | 6 | 8 | 70 | 725 -27810 |
| 4 | 6 | 8 | 70 | 725 -27811 |
| 4 | 4 | 8 | 60 | 725 -27812 |
| 4.5 | 6 | 10 | 80 | 725 -27813 |
| 5 | 6 | 12 | 80 | 725 -27814 |
| 5.5 | 6 | 12 | 90 | 725 -27815 |
| 6 | 6 | 14 | 90 | 725 -27816 |
| 6.5 | 6 | 14 | 90 | 725 -27817 |
| 7 | 6 | 14 | 90 | 725 -27818 |
| 7.5 | 6 | 14 | 90 | 725 -27819 |
| 8 | 8 | 14 | 100 | 725 -27820 |
| 8.5 | 8 | 18 | 100 | 725 -27821 |
| 9 | 8 | 18 | 100 | 725 -27822 |
| 9.5 | 8 | 18 | 100 | 725 -27823 |
| 10 | 10 | 18 | 100 | 725 -27824 |
| 11 | 10 | 22 | 100 | 725 -27825 |
| 12 | 12 | 22 | 110 | 725 -27826 |
| 13 | 12 | 26 | 110 | 725 -27827 |
| 14 | 12 | 26 | 110 | 725 -27828 |
| 15 | 12 | 30 | 110 | 725 -27829 |
| 16 | 16 | 30 | 140 | 725 -27830 |
| 18 | 16 | 34 | 140 | 725 -27831 |
| 20 | 20 | 38 | 160 | 725 -27832 |
| 25 | 25 | 50 | 180 | 725 -27833 |

1.1 - 1.6 | 6.1 - 6.4
2.1 - 2.3 | 4.1 - 5.3
3.1 - 3.4 | 1.7 - 1.8
9.1



**Modifications**
**Regrinds, Recoat**
**Specials**

# PCD & CVD Diamond Range

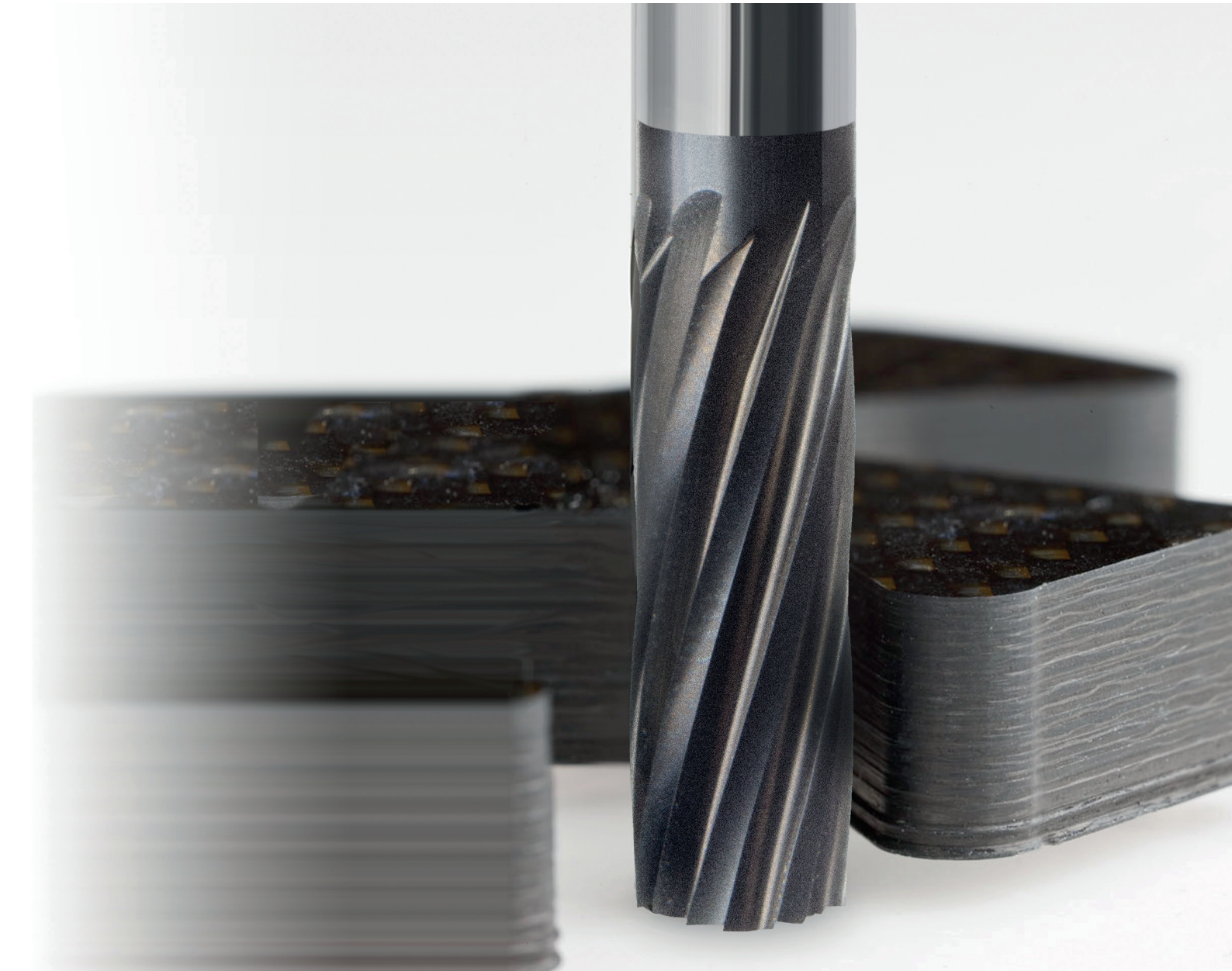
## Range
PCD Extreme Performance Range, Ball Nosed and Corner Radius, Standard and Long Length.
CVD Diamond Coated Square End, Ball Nosed and Corner Radius Range.
Metric and Imperial Diamond Cut Routers, CVD Multi-Flute Finishing and Roughing Routers.

## Size
Metric: 2mm through to 20mm
Imperial: 1/8" through to 1/2 "

## Finish
Bright Finish, PCD, CVD and Diamond Coated.

## Options
Ball Nosed and Long Ball Nosed, Corner Radius and Long Corner Radius. Plain End, Drill Point, End Mill Cut and Burr End Cut.

## Delivery
Over 150,00 tools available from stock for Same-Day despatch.



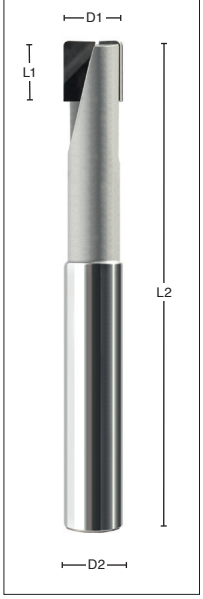
Series 800

# Extreme Performance PCD
## For Machining Graphite & Metal Matrix
## Solid Carbide Body - Corner Radius

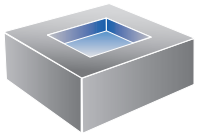
MG HM | 2 | PLAIN | ±0.025 | PCD

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**Tolerances:**
D1 +0.00/-0.051mm
D2 h6




| Cutter Dia-D1 | Shank Dia-D2 | FL L1 | Reach | No. of Teeth | Radius | OAL L2 | Part Number |
|---|---|---|---|---|---|---|---|
| 2 | 6 | 2 | 10 | 1 | 0.2 | 75 | 800 -20103 |
| 3 | 6 | 3 | 15 | 2 | 0.2 | 75 | 800 -20105 |
| 4 | 6 | 4 | 20 | 2 | 0.2 | 75 | 800 -20107 |
| 5 | 6 | 5 | 25 | 2 | 0.2 | 75 | 800 -20109 |
| 5 | 6 | 5 | 25 | 2 | 0.5 | 75 | 800 -20209 |
| 5 | 6 | 5 | 25 | 2 | 1.0 | 75 | 800 -20309 |
| 6 | 6 | 8 | 30 | 2 | 0.2 | 100 | 800 -20110 |
| 6 | 6 | 8 | 30 | 2 | 0.3 | 100 | 800 -20210 |
| 6 | 6 | 8 | 30 | 2 | 0.5 | 100 | 800 -20310 |
| 6 | 6 | 8 | 30 | 2 | 1.0 | 100 | 800 -20410 |
| 8 | 8 | 10 | 40 | 2 | 0.2 | 100 | 800 -20112 |
| 8 | 8 | 10 | 40 | 2 | 0.5 | 100 | 800 -20212 |
| 8 | 8 | 10 | 40 | 2 | 1.0 | 100 | 800 -20312 |
| 8 | 8 | 10 | 40 | 2 | 2.0 | 100 | 800 -20412 |
| 10 | 10 | 12 | 45 | 2 | 0.2 | 100 | 800 -20114 |
| 10 | 10 | 12 | 45 | 2 | 0.5 | 100 | 800 -20214 |
| 10 | 10 | 12 | 45 | 2 | 1.0 | 100 | 800 -20314 |
| 10 | 10 | 12 | 45 | 2 | 3.0 | 100 | 800 -20414 |
| 12 | 12 | 12 | 45 | 2 | 0.2 | 100 | 800 -20116 |
| 12 | 12 | 12 | 45 | 2 | 0.5 | 100 | 800 -20216 |
| 12 | 12 | 12 | 45 | 2 | 1.0 | 100 | 800 -20316 |
| 12 | 12 | 12 | 45 | 2 | 4.0 | 100 | 800 -20416 |
| 16 | 16 | 16 | 50 | 2 | 5.0 | 150 | 800 -20120 |
| 20 | 20 | 20 | 50 | 2 | 6.0 | 150 | 800 -20124 |





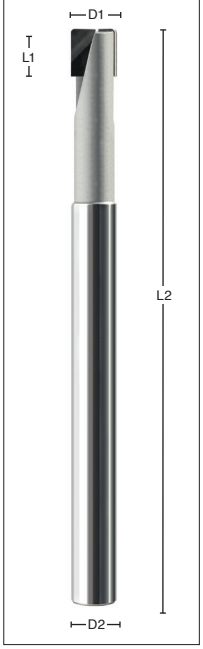
Series 801

# Extreme Performance PCD
## For Machining Graphite & Metal Matrix
## Solid Carbide Body 2-Flute - Extra Long Corner Radius

MG HM | 2 | PLAIN | ±0.025 | PCD

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**Tolerances:**
D1 +0.00/-0.051mm
D2 h6




| Cutter Dia-D1 | Shank Dia-D2 | FL L1 | Reach | Radius | OAL L2 | Part Number |
|---|---|---|---|---|---|---|
| 8 | 8 | 10 | 40 | 0.2 | 150 | 801 -30112 |
| 8 | 8 | 10 | 40 | 0.5 | 150 | 801 -30212 |
| 8 | 8 | 10 | 40 | 1.0 | 150 | 801 -30312 |
| 10 | 10 | 12 | 45 | 0.2 | 150 | 801 -30114 |
| 10 | 10 | 12 | 45 | 0.5 | 150 | 801 -30214 |
| 10 | 10 | 12 | 45 | 1.0 | 150 | 801 -30314 |
| 12 | 12 | 12 | 45 | 0.2 | 150 | 801 -30116 |
| 12 | 12 | 12 | 45 | 0.5 | 150 | 801 -30216 |
| 12 | 12 | 12 | 45 | 1.0 | 150 | 801 -30316 |

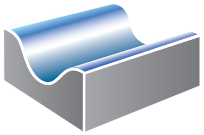
Re Tip & Specials Service

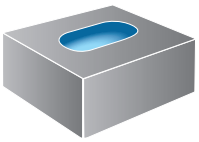
# Extreme Performance PCD
## For Machining Graphite & Metal Matrix
## Solid Carbide Body - Ball Nosed

Series 802

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PCD | MG HM | 2 | PLAIN





| Cutter Dia-D1 | Shank Dia-D2 | FL L1 | Reach | No. of Teeth | OAL L2 | Part Number |
|---|---|---|---|---|---|---|
| 2 | 6 | 2 | 10 | 1 | 75 | 802 -40103 |
| 3 | 6 | 3 | 15 | 2 | 75 | 802 -40105 |
| 4 | 6 | 4 | 20 | 2 | 75 | 802 -40107 |
| 5 | 6 | 5 | 25 | 2 | 75 | 802 -40109 |
| 6 | 6 | 8 | 30 | 2 | 100 | 802 -40110 |
| 8 | 8 | 10 | 40 | 2 | 100 | 802 -40112 |
| 10 | 10 | 12 | 45 | 2 | 100 | 802 -40114 |
| 12 | 12 | 12 | 45 | 2 | 100 | 802 -40116 |
| 16 | 16 | 16 | 50 | 2 | 150 | 802 -40120 |
| 20 | 20 | 20 | 50 | 2 | 150 | 802 -40124 |

**Tolerances:**

D1 +0.00/-0.051mm

D2 h6




# Extreme Performance PCD
## For Machining Graphite & Metal Matrix
## Solid Carbide Body - Extra Long Ball Nosed

Series 803

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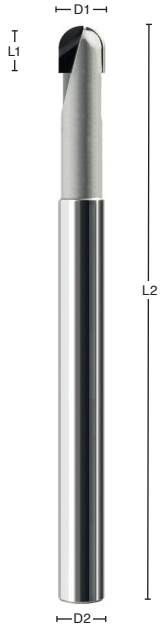
PCD | MG HM | 2 | PLAIN

| Cutter Dia-D1 | Shank Dia-D2 | FL L1 | Reach | OAL L2 | Part Number |
|---|---|---|---|---|---|
| 8 | 8 | 10 | 40 | 150 | 803- 50112 |
| 10 | 10 | 12 | 45 | 150 | 803 -50114 |
| 12 | 12 | 12 | 45 | 150 | 803 -50116 |

**Tolerances:**

D1 +0.00/-0.051mm

D2 h6




Re Tip & Specials Service

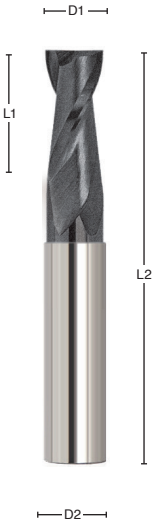
Series 804

# Extreme Performance Solid Carbide
## *CVD Nano Crystalline Diamond Coated*
## For Machining Graphite
## Micro-grain K20/K30 - 30° Helix 2-Flute

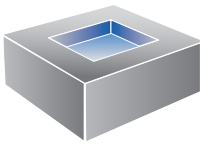
MG HM | 30° | 2 | PLAIN | CVD

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**Tolerances:**
D1 +0.00/-0.051mm
D2 h6




| Cutter Dia-D1 | Shank Dia-D2 | FL L1 | Reach | OAL L2 | Coating Thickness | Part Number |
|---|---|---|---|---|---|---|
| 2 | 6 | 7 | 8 | 75 | 8µm | 804 -60103 |
| 3 | 6 | 8 | 9 | 75 | 8µm | 804 -60105 |
| 4 | 6 | 11 | 15 | 75 | 8µm | 804 -60107 |
| 5 | 6 | 13 | 18 | 75 | 8µm | 804 -60109 |
| 6 | 6 | 13 | 20 | 100 | 8µm | 804 -60110 |
| 8 | 8 | 20 | 25 | 100 | 12µm | 804 -60112 |
| 10 | 10 | 22 | 30 | 100 | 12µm | 804 -60114 |
| 12 | 12 | 25 | 40 | 150 | 12µm | 804 -60116 |





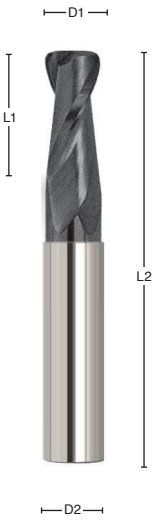
Series 805

# Extreme Performance Solid Carbide
## *CVD Nano Crystalline Diamond Coated*
## For Machining Graphite
## Micro-grain K20/K30 - 30° Helix 2-Flute Corner Radius

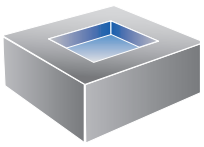
MG HM | 30° | 2 | PLAIN | ±0.025 | CVD

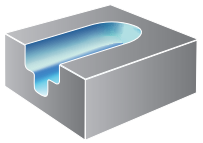
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**Tolerances:**
D1 +0.00/-0.051mm
D2 h6




| Cutter Dia-D1 | Shank Dia-D2 | FL L1 | Reach | Radius | OAL L2 | Coating Thickness | Part Number |
|---|---|---|---|---|---|---|---|
| 6 | 6 | 13 | 20 | 1.0 | 100 | 8µm | 805 -70110 |
| 8 | 8 | 20 | 25 | 1.0 | 100 | 12µm | 805 -70112 |
| 10 | 10 | 22 | 30 | 1.0 | 100 | 12µm | 805 -70114 |
| 12 | 12 | 25 | 40 | 1.0 | 100 | 12µm | 805 -70116 |





**Modifications**
**Regrinds, Re coat**
**Specials**

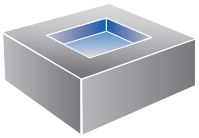
# Extreme Performance Solid Carbide
## *CVD Nano Crystalline Diamond Coated*
## For Machining Graphite
## Micro-grain K20/K30 - 30° Helix 2-Flute

Series 806

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CVD | 30° | MG HM | 2 | PLAIN



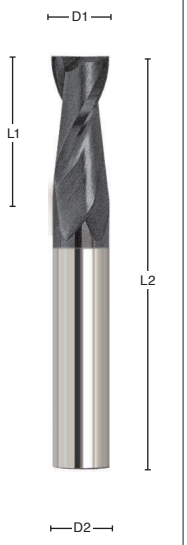


| Cutter Dia-D1 | Shank Dia-D2 | FL L1 | OAL L2 | Coating Thickness | Part Number |
|---|---|---|---|---|---|
| 2 | 3 | 7 | 75 | 8µm | 806 -80103 |
| 3 | 3 | 8 | 75 | 8µm | 806 -80105 |
| 4 | 4 | 11 | 75 | 8µm | 806 -80107 |
| 5 | 5 | 13 | 75 | 8µm | 806 -80109 |

**Tolerances:**

D1 +0.00/-0.051mm

D2 h6

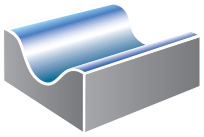


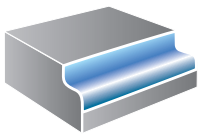

# Extreme Performance Solid Carbide
## *CVD Nano Crystalline Diamond Coated*
## For Machining Graphite
## Micro-grain K20/K30 - 30° Helix 4-Flute - Ball Nosed

Series 807

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CVD | 30° | MG HM | 4 | PLAIN



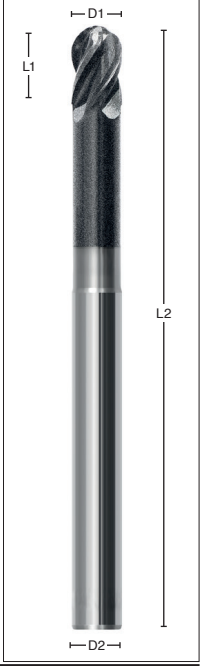


| Cutter Dia-D1 | Shank Dia-D2 | FL L1 | Reach | OAL L2 | Coating Thickness | Part Number |
|---|---|---|---|---|---|---|
| 2 | 3 | 4 | 8 | 75 | 8µm | 807 -90103 |
| 3 | 3 | 5 | 9 | 75 | 8µm | 807 -90105 |
| 4 | 4 | 6 | 15 | 75 | 8µm | 807 -90107 |
| 5 | 5 | 7 | 18 | 75 | 8µm | 807 -90109 |
| 6 | 6 | 8 | 20 | 100 | 8µm | 807 -90110 |
| 8 | 8 | 10 | 25 | 100 | 12µm | 807 -90112 |
| 10 | 10 | 12 | 30 | 100 | 12µm | 807 -90114 |
| 12 | 12 | 16 | 40 | 150 | 12µm | 807 -90116 |

**Tolerances:**

D1 +0.00/-0.051mm

D2 h6




**Modifications**
**Regrinds, Re coat**
**Specials**

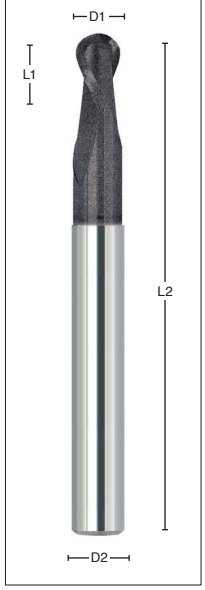
Series 809

# Extreme Performance Solid Carbide
## *CVD Nano Crystalline Diamond Coated*
## For Machining Graphite
## Micro-grain K20/K30 - 30° Helix 2-Flute - Ball Nosed

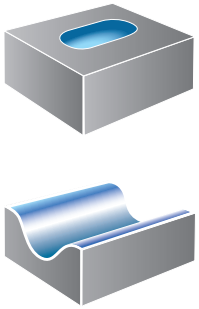



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**Tolerances:**
D1 +0.00/-0.051mm
D2 h6




| Cutter Dia-D1 | Shank Dia-D2 | FL L1 | Reach | OAL L2 | Coating Thickness | Part Number |
|---|---|---|---|---|---|---|
| 2 | 6 | 4 | 8 | 75 | 8µm | 809 -10103 |
| 3 | 6 | 5 | 9 | 75 | 8µm | 809 -10105 |
| 4 | 6 | 6 | 15 | 75 | 8µm | 809 -10107 |
| 5 | 6 | 7 | 18 | 75 | 8µm | 809 -10109 |
| 6 | 6 | 8 | 20 | 100 | 8µm | 809 -10110 |
| 8 | 8 | 10 | 25 | 100 | 12µm | 809 -10112 |
| 10 | 10 | 12 | 30 | 100 | 12µm | 809 -10114 |
| 12 | 12 | 16 | 40 | 150 | 12µm | 809 -10116 |



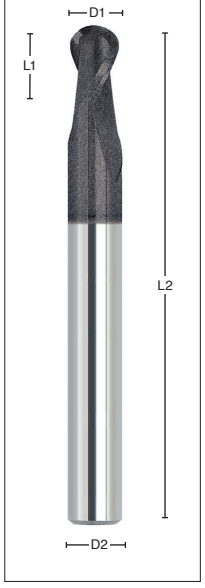
Series 810

# Extreme Performance Solid Carbide
## *CVD Nano Crystalline Diamond Coated*
## For Machining Graphite
## Micro-grain K20/K30 - 30° Helix 2-Flute - Ball Nosed

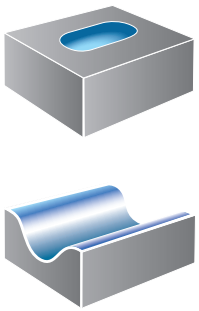



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**Tolerances:**
D1 +0.00/-0.051mm
D2 h6




| Cutter Dia-D1 | Shank Dia-D2 | FL L1 | OAL L2 | Coating Thickness | Part Number |
|---|---|---|---|---|---|
| 2 | 3 | 4 | 75 | 8µm | 810 -11103 |
| 3 | 3 | 5 | 75 | 8µm | 810 -11105 |
| 4 | 4 | 6 | 75 | 8µm | 810 -11107 |
| 5 | 5 | 7 | 75 | 8µm | 810 -11109 |



# Solid Carbide
# Diamond Cut - Fibreglass Routers
# Good Surface Finish on Both Hand & CNC Applications

Series FG

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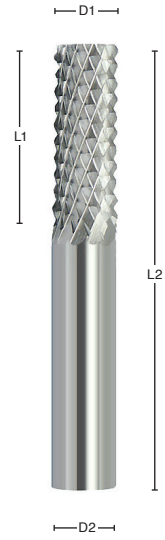


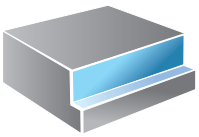
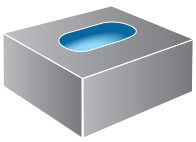



MULTI | MG HM | PLAIN

| Cutter Dia-D1 | Shank Dia-D2 | FL L1 | OAL L2 | No End Cut Part Number | Drill Point Part Number | End Mill Cut Part Number | Burr End Cut Part Number |
|---|---|---|---|---|---|---|---|
| 1.5 | 3 | 5 | 38 | FG1 -80100 | FG1 -80101 | FG1 -80102 | FG1 -80103 |
| 2 | 3 | 10 | 38 | FG2 -80200 | FG2 -80201 | FG2 -80202 | FG2 -80203 |
| 3 | 3 | 12 | 38 | FG3 -80300 | FG3 -80301 | FG3 -80302 | FG3 -80303 |
| 5 | 5 | 16 | 50 | FG4 -80400 | FG4 -80401 | FG4 -80402 | FG4 -80403 |
| 5 | 6 | 16 | 50 | FG5 -80500 | FG5 -80501 | FG5 -80502 | FG5 -80503 |
| 6 | 6 | 18 | 50 | FG6 -80600 | FG6 -80601 | FG6 -80602 | FG6 -80603 |
| 6 | 6 | 18 | 63 | FG7 -80700 | FG7 -80701 | FG7 -80702 | FG7 -80703 |
| 6 | 6 | 25 | 63 | FG8 -80800 | FG8 -80801 | FG8 -80802 | FG8 -80803 |
| 6 | 6 | 18 | 75 | FG9 -80900 | FG9 -80901 | FG9 -80902 | FG9 -80903 |
| 6 | 6 | 25 | 75 | FG10 -81000 | FG10 -81001 | FG10 -81002 | FG10 -81003 |
| 6 | 6 | 38 | 75 | FG11 -81100 | FG11 -81101 | FG11 -81102 | FG11 -82203 |
| 8 | 8 | 25 | 63 | FG12 -81200 | FG12 -81201 | FG12 -81202 | FG12 -81203 |
| 10 | 10 | 25 | 63 | FG13 -81300 | FG13 -81301 | FG13 -81302 | FG13 -81303 |
| 12 | 12 | 25 | 75 | FG14 -81400 | FG14 -81401 | FG14 -81402 | FG14 -81403 |

**Tolerances:**
D1 +0.00/-0.127mm
D2 h6




# Solid Carbide
# Diamond Cut - Fibreglass Routers
# Good Surface Finish on Both Hand & CNC Applications

Series FG

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MULTI | MG HM | PLAIN

| Cutter Dia-D1 | Shank Dia-D2 | FL L1 | OAL L2 | No End Cut Part Number | Drill Point Part Number | End Mill Cut Part Number | Burr End Cut Part Number |
|---|---|---|---|---|---|---|---|
| 1/16" | 1/8" | 3/16" | 1-1/2" | FG1 -70100 | FG1 -70101 | FG1 -70102 | FG1 -70103 |
| 3/32" | 1/8" | 3/8" | 1-1/2" | FG2 -70200 | FG2 -70201 | FG2 -70202 | FG2 -70203 |
| 1/8" | 1/8" | 1/2" | 1-1/2" | FG3 -70300 | FG3 -70301 | FG3 -70302 | FG3 -70303 |
| 3/16" | 3/16" | 5/8" | 2" | FG4 -70400 | FG4 -70401 | FG4 -70402 | FG4 -70403 |
| 3/16" | 1/4" | 5/8" | 2" | FG5 -70500 | FG5 -70501 | FG5 -70502 | FG5 -70503 |
| 1/4" | 1/4" | 3/4" | 2" | FG6 -70600 | FG6 -70601 | FG6 -70602 | FG6 -70603 |
| 1/4" | 1/4" | 3/4" | 2-1/2" | FG7 -70700 | FG7 -70701 | FG7 -70702 | FG7 -70703 |
| 1/4" | 1/4" | 1" | 2-1/2" | FG8 -70800 | FG8 -70801 | FG8 -70802 | FG8 -70803 |
| 1/4" | 1/4" | 3/4" | 3" | FG9 -70900 | FG9 -70901 | FG9 -70902 | FG9 -70903 |
| 1/4" | 1/4" | 1" | 3" | FG10 -71000 | FG10 -71001 | FG10 -71002 | FG10 -71003 |
| 1/4" | 1/4" | 1-1/2" | 3" | FG11 -71100 | FG11 -71101 | FG11 -71102 | FG11 -72203 |
| 5/16" | 5/16" | 1" | 2-1/2" | FG12 -71200 | FG12 -71201 | FG12 -71202 | FG12 -71203 |
| 3/8" | 3/8" | 1" | 2-1/2" | FG13 -71300 | FG13 -71301 | FG13 -71302 | FG13 -71303 |
| 1/2" | 1/2" | 1" | 3" | FG14 -71400 | FG14 -71401 | FG14 -71402 | FG14 -71403 |

**Tolerances:**
D1 +0.00/-0.005"
D2 h6



Series 811

# Extreme Performance Solid Carbide
## *CVD Nano Crystalline Diamond Coated*
## Fine Pitched Nicked Router - Composite Trimming
## Micro-grain K20/K30 - Multi-Flute

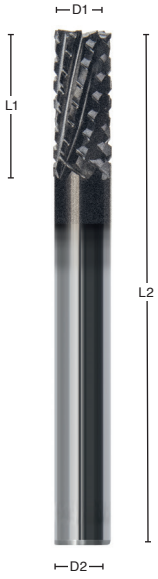
MG HM | MULTI | PLAIN | CVD





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**Tolerances:**
D1 +0.00/-0.0002"
D2 h6



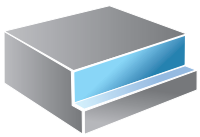

| | | | | | | Burr End Cut | End Mill Cut | No End Cut |
|---|---|---|---|---|---|---|---|---|
| Cutter Dia-D1 | Shank Dia-D2 | FL L1 | OAL L2 | Number of Flutes | Coating Thickness | Part Number | Part Number | Part Number |
| 1/8" | 1/8" | 1/4" | 1-1/2" | 6 | 12µm | 811 -00608 | ~ | ~ |
| 1/8" | 1/8" | 3/8" | 1-1/2" | 6 | 12µm | ~ | 812 -00608 | ~ |
| 1/8" | 1/8" | 1/2" | 1-1/2" | 8 | 12µm | ~ | 812 -00808 | ~ |
| 3/16" | 3/16" | 3/8" | 2" | 6 | 12µm | 811 -00632 | ~ | ~ |
| 3/16" | 3/16" | 9/16" | 2" | 6 | 12µm | ~ | 812 -00632 | ~ |
| 3/16" | 3/16" | 3/4" | 2" | 8 | 12µm | ~ | 812 -00832 | ~ |
| 1/4" | 1/4" | 1/2" | 2-1/2" | 8 | 12µm | 811 -00816 | ~ | ~ |
| 1/4" | 1/4" | 3/4" | 2-1/2" | 10 | 12µm | ~ | 812 -01016 | ~ |
| 1/4" | 1/4" | 3/4" | 2-1/2" | 10 | 12µm | 811 -01016 | ~ | ~ |
| 1/4" | 1/4" | 1" | 3" | 10 | 12µm | ~ | 812 -11016 | ~ |
| 1/4" | 1/4" | 1" | 3" | 10 | 12µm | 811 -11016 | ~ | ~ |
| 1/4" | 1/4" | 1-1/4" | 4" | 12 | 12µm | ~ | ~ | 813 -01216 |
| 5/16" | 5/16" | 1" | 2-1/2" | 10 | 12µm | ~ | 812 -01020 | ~ |
| 3/8" | 3/8" | 3/4" | 2-1/2" | 12 | 12µm | 811 -01224 | | ~ |
| 3/8" | 3/8" | 1-1/8" | 3" | 12 | 12µm | ~ | 812 -01224 | ~ |
| 3/8" | 3/8" | 1-1/8" | 3" | 12 | 12µm | 811 -11224 | ~ | ~ |
| 3/8" | 3/8" | 1-1/2" | 4" | 12 | 12µm | ~ | 812 -11224 | ~ |
| 3/8" | 3/8" | 1-1/2" | 4" | 12 | 12µm | 811 -12324 | ~ | ~ |
| 3/8" | 3/8" | 2" | 4" | 12 | 12µm | ~ | ~ | 813 -01224 |
| 1/2" | 1/2" | 1" | 3" | 14 | 12µm | ~ | 812 -01432 | ~ |
| 1/2" | 1/2" | 1" | 3" | 14 | 12µm | 811 -01432 | ~ | ~ |
| 1/2" | 1/2" | 2" | 4" | 16 | 12µm | 811 -01632 | ~ | ~ |

Series 815

# Extreme Performance Solid Carbide
## *CVD Nano Crystalline Diamond Coated*
## Herringbone Router - Composite Surface Finisher
## Micro-grain K20/K30 - 4-Flute

MG HM | 4 | PLAIN | CVD

Ti PAGE 266



**Tolerances:**
D1 +0.00/-0.0002"
D2 h6



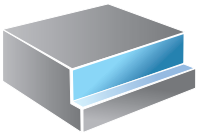

| Cutter Dia-D1 | Shank Dia-D2 | FL L1 | Compression Length | OAL L2 | Coating Thickness | Part Number |
|---|---|---|---|---|---|---|
| 1/8" | 1/8" | 3/8" | 0.125 | 1-1/2" | 12µm | 815 -00408 |
| 1/4" | 1/4" | 3/4" | 0.250 | 2-1/2" | 12µm | 815 -00416 |
| 3/8" | 3/8" | 1-1/8" | 0.375 | 3" | 12µm | 815 -00424 |
| 1/2" | 1/2" | 1-1/8" | 0.500 | 3" | 12µm | 815 -00432 |

# Extreme Performance Solid Carbide
## *CVD Nano Crystalline Diamond Coated*
## Roughing Router - Composite Semi Finishing
## Micro-grain K20/K30 - Multi-Flute

Series 816

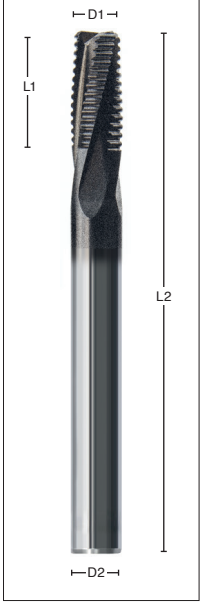
PAGE 266

CVD | FINE | MG HM | MULTI | PLAIN



| Cutter Dia-D1 | Shank Dia-D2 | FL L1 | OAL L2 | Number of Flutes | Coating Thickness | Part Number |
|---|---|---|---|---|---|---|
| 15/64" | 1/4" | 3/4" | 2-1/2" | 4 | 12µm | 816 -00410 |
| 1/4" | 1/4" | 1/2" | 2-1/2" | 4 | 12µm | 816 -00416 |
| 1/4" | 1/4" | 3/4" | 2-1/2" | 4 | 12µm | 816 -01416 |
| 11/32" | 3/8" | 1-1/8" | 3" | 6 | 12µm | 816 -00612 |
| 23/64" | 3/8" | 1-1/8" | 3" | 6 | 12µm | 816 -00613 |
| 3/8" | 3/8" | 3/4" | 3" | 6 | 12µm | 816 -00624 |
| 3/8" | 3/8" | 1-1/2" | 3" | 6 | 12µm | 816 -01624 |
| 7/16" | 1/2" | 1-1/2" | 3" | 8 | 12µm | 816 -00828 |
| 31/64" | 1/2" | 1-1/2" | 3" | 8 | 12µm | 816 -00831 |
| 1/2" | 1/2" | 1" | 3" | 8 | 12µm | 816 -00832 |
| 1/2" | 1/2" | 1-1/2" | 3" | 8 | 12µm | 816 -01832 |

**Tolerances:**
D1 +0.00/-0.0002"
D2 h6

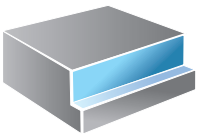



# Extreme Performance Solid Carbide
## *CVD Nano Crystalline Diamond Coated*
## Finishing Router - Composite High Accuracy Finisher
## Micro-grain K20/K30 - Multi-Flute

Series 817

PAGE 266

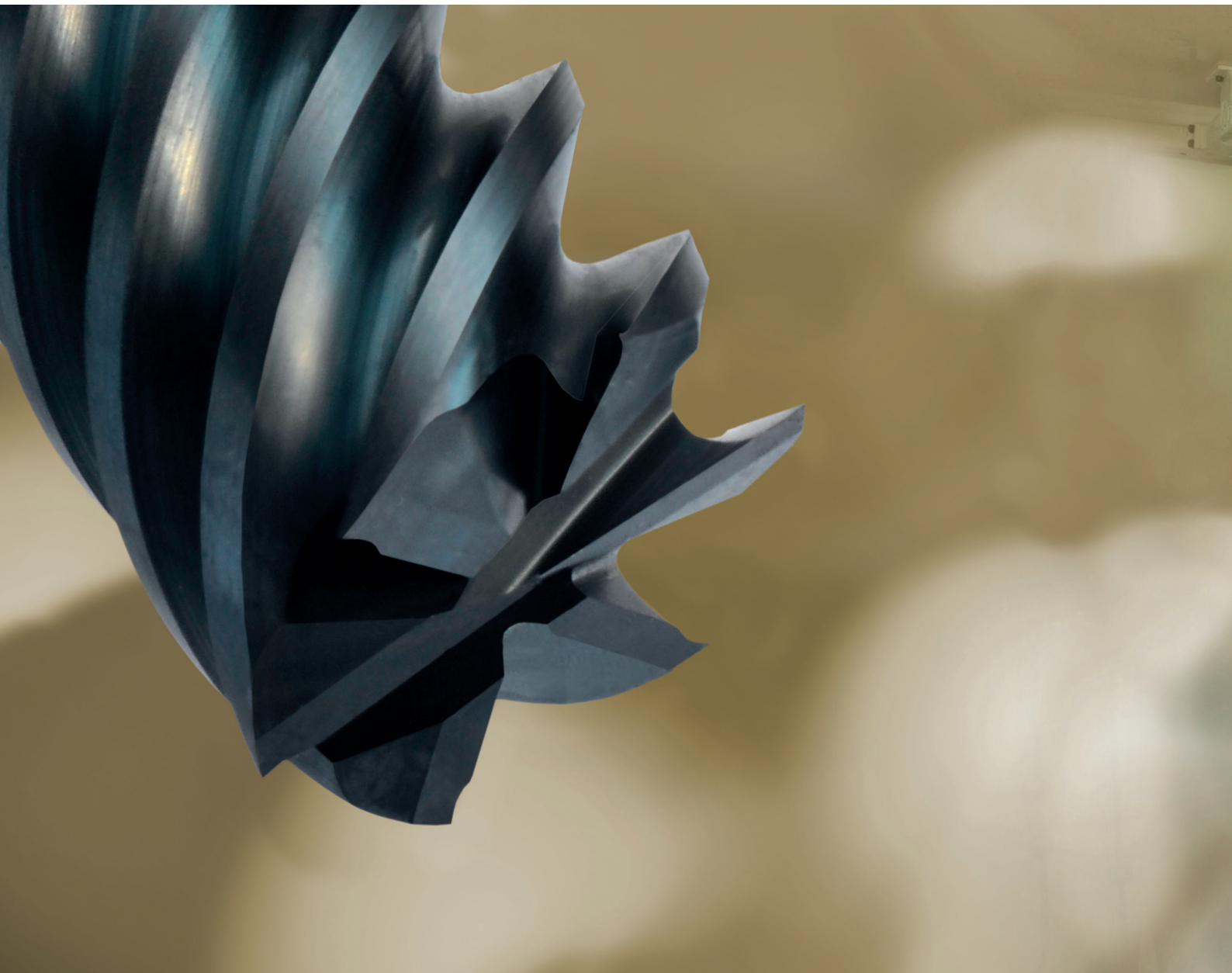
CVD | MG HM | MULTI | PLAIN



| Cutter Dia-D1 | Shank Dia-D2 | FL L1 | OAL L2 | Number of Flutes | Coating Thickness | Part Number |
|---|---|---|---|---|---|---|
| 1/4" | 1/4" | 3/4" | 2-1/2" | 8 | 12µm | 817 -00816 |
| 1/4" | 1/4" | 1" | 3" | 8 | 12µm | 817 -01816 |
| 3/8" | 3/8" | 1-1/8" | 3" | 12 | 12µm | 817 -01224 |
| 3/8" | 3/8" | 1-1/2" | 3" | 12 | 12µm | 817 -11224 |
| 1/2" | 1/2" | 1-1/2" | 4" | 14 | 12µm | 817 -01432 |
| 1/2" | 1/2" | 2" | 4" | 14 | 12µm | 817 -11432 |

**Tolerances:**
D1 +0.00/-0.0002"
D2 h6





# Powder Metal and Cobalt Endmills

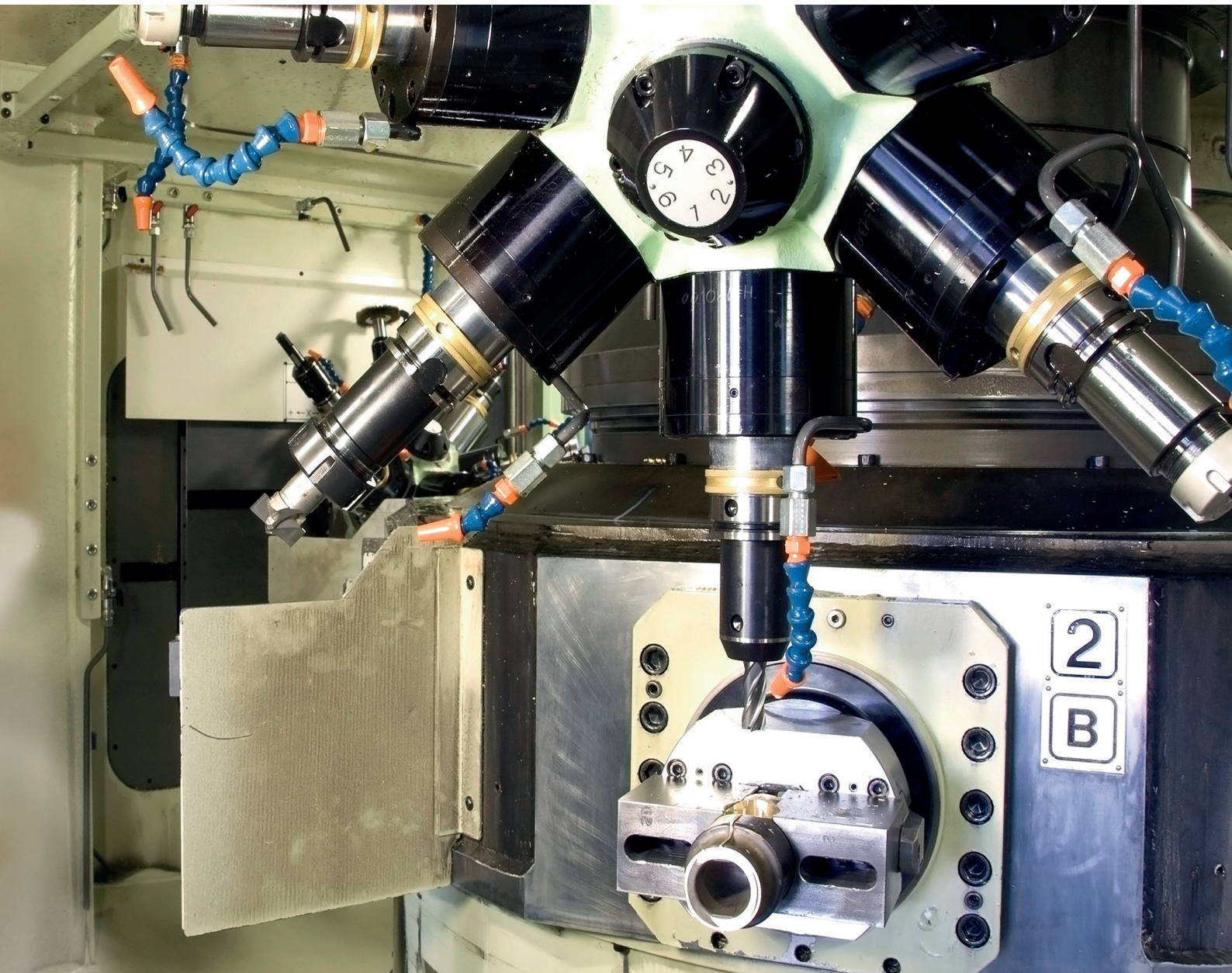
## Range
Standard and Long Length Finishers, Coarse and Fine Pitch Roughers, T-Slots, Woodruff, Corner Rounding and Dovetail Cutters.

## Size
Metric: 1mm through to 56mm

## Finish
Bright Finish and TiALN Coated

## Options
Tools are availabe in 2 flute through to 14 flute.
Square End, Ball Nosed, Corner Radius and Corner Rounding.
Protective Chamfers available,
Helix angles available from 10° to 60°

## Delivery
Over 150,00 tools available from stock for Same-Day despatch



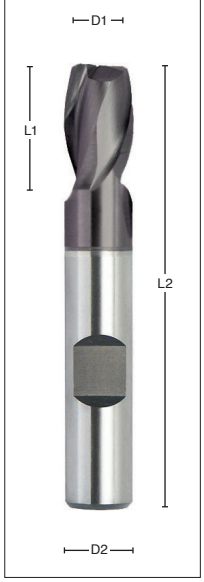
Series 6420

# High Performance PMX - Powder Metal - *TiALN*
## ASP 52 - DIN 327 N- 30° Helix
## 2-Flute Square End Regular Length - Finishing




PAGE 270

| Tolerances: | |
|---|---|
| D1 | e8 |
| D2 | h6 |




| Cutter Dia-D1 | Shank Dia-D2 | FL L1 | OAL L2 | Part Number |
|---|---|---|---|---|
| 4 | 6 | 7 | 51 | 6420 -45400 |
| 5 | 6 | 8 | 52 | 6420 -45401 |
| 6 | 6 | 8 | 52 | 6420 -45402 |
| 7 | 10 | 10 | 60 | 6420 -45403 |
| 8 | 10 | 11 | 61 | 6420 -45404 |
| 10 | 10 | 13 | 63 | 6420 -45405 |
| 12 | 12 | 16 | 73 | 6420 -45406 |
| 14 | 12 | 16 | 73 | 6420 -45408 |
| 16 | 16 | 19 | 79 | 6420 -45409 |
| 18 | 16 | 19 | 79 | 6420 -45410 |
| 20 | 20 | 22 | 88 | 6420 -45411 |

1.1 - 1.6 | 6.1 - 7.4 | 3.1 - 3.4 | 4.1 - 5.3



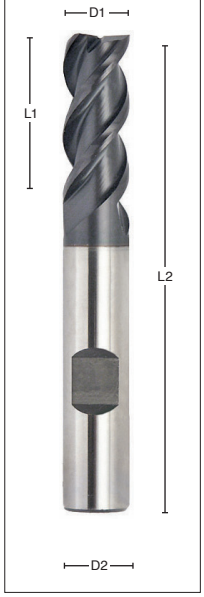
Series 6430

# High Performance PMX - Powder Metal - *TiALN*
## ASP 52 - DIN 844 W - 45° Helix
## 3-Flute Square End Regular Length - Finishing




PAGE 270

| Tolerances: | |
|---|---|
| D1 | e8 |
| D2 | h6 |




| Cutter Dia-D1 | Shank Dia-D2 | FL L1 | OAL L2 | Part Number |
|---|---|---|---|---|
| 4 | 6 | 11 | 55 | 6430 -45415 |
| 5 | 6 | 13 | 57 | 6430 -45417 |
| 6 | 6 | 13 | 57 | 6430 -45420 |
| 7 | 10 | 16 | 66 | 6430 -45423 |
| 8 | 10 | 19 | 69 | 6430 -45426 |
| 10 | 10 | 22 | 72 | 6430 -45429 |
| 12 | 12 | 26 | 83 | 6430 -45432 |
| 14 | 12 | 26 | 83 | 6430 -45438 |
| 16 | 16 | 32 | 92 | 6430 -45441 |
| 18 | 16 | 32 | 92 | 6430 -45444 |
| 20 | 20 | 38 | 104 | 6430 -45447 |

2.1 - 2.2 | 7.1 - 7.4

**Modifications**
**Regrinds, Re coat**
**Specials**

# High Performance PMX - Powder Metal - *TiALN*
# ASP 52 - DIN 844 N - 30° Helix
# 3-Flute Square End Regular Length - Finishing

Series 6439

PAGE 270

TiALN | PMX | DIN 844 N | 30° | 3 | FLAT

1.1 - 1.5

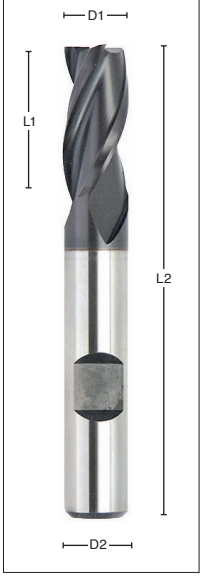
2.1 - 2.3



| Cutter Dia-D1 | Shank Dia-D2 | FL L1 | OAL L2 | Part Number |
|---|---|---|---|---|
| 2 | 6 | 7 | 51 | 6439 -45723 |
| 3 | 6 | 8 | 52 | 6439 -45453 |
| 4 | 6 | 11 | 55 | 6439 -45456 |
| 5 | 6 | 13 | 57 | 6439 -45459 |
| 6 | 6 | 13 | 57 | 6439 -45462 |
| 7 | 10 | 16 | 66 | 6439 -45463 |
| 8 | 10 | 19 | 69 | 6439 -45465 |
| 10 | 10 | 22 | 72 | 6439 -45468 |
| 12 | 12 | 26 | 83 | 6439 -45469 |
| 14 | 12 | 26 | 83 | 6439 -45471 |
| 16 | 16 | 32 | 92 | 6439 -45474 |
| 18 | 16 | 32 | 92 | 6439 -45475 |
| 20 | 20 | 38 | 104 | 6439 -45477 |
| 25 | 25 | 45 | 121 | 6439 -45478 |

**Tolerances:**

| | |
|---|---|
| D1 | e8 |
| D2 | h6 |



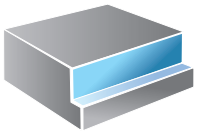

# High Performance PMX - Powder Metal - *TiALN*
# ASP 52 - DIN 844 N - 55° Helix
# 4-Flute Square End Regular Length - Finishing

Series 6604

PAGE 270

TiALN | PMX | DIN 844 N | 55° | 4 | FLAT

1.1 - 1.5 | 6.1 - 6.3 | 4.1 - 4.3



| Cutter Dia-D1 | Shank Dia-D2 | FL L1 | OAL L2 | Part Number |
|---|---|---|---|---|
| 6 | 6 | 13 | 57 | 6604 -45479 |
| 8 | 10 | 19 | 69 | 6604 -45480 |
| 10 | 10 | 22 | 72 | 6604 -45276 |
| 12 | 12 | 26 | 83 | 6604 -45345 |
| 14 | 12 | 26 | 83 | 6604 -45396 |
| 16 | 16 | 32 | 92 | 6604 -45484 |
| 18 | 16 | 32 | 92 | 6604 -45495 |
| 20 | 20 | 38 | 104 | 6604 -45509 |

**Tolerances:**

| | |
|---|---|
| D1 | k10 |
| D2 | h6 |




**Modifications**
**Regrinds, Re coat**
**Specials**

Series 6444

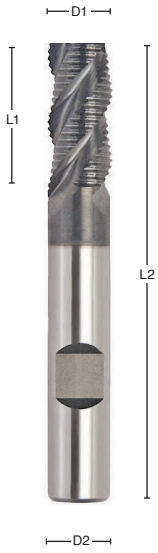
# High Performance PMX - Powder Metal - *TiALN*
## ASP 52 - DIN 844 NR-F - 30° Helix - Fine
## 3-Flute Square End Reg. Length-Roughers




PAGE 270

1.1 - 1.5
2.1 - 2.3

| Tolerances: | |
|---|---|
| D1 | k12 |
| D2 | h6 |




| Cutter Dia-D1 | Shank Dia-D2 | FL L1 | OAL L2 | Part Number |
|---|---|---|---|---|
| 4 | 6 | 11 | 55 | 6444 -21017 |
| 5 | 6 | 13 | 57 | 6444 -21018 |
| 6 | 6 | 13 | 57 | 6444 -21019 |
| 8 | 10 | 19 | 69 | 6444 -21020 |
| 10 | 10 | 22 | 72 | 6444 -21021 |
| 12 | 12 | 26 | 83 | 6444 -21022 |
| 14 | 12 | 26 | 83 | 6444 -21023 |
| 16 | 16 | 32 | 92 | 6444 -21024 |
| 18 | 16 | 32 | 92 | 6444 -21025 |
| 20 | 20 | 38 | 104 | 6444 -21026 |
| 25 | 25 | 45 | 121 | 6444 -21027 |
| 30 | 25 | 45 | 121 | 6444 -21028 |



Series 6647

# High Performance PMX - Powder Metal - *TiALN*
## ASP 52 - DIN 844 NR-F - 45° Helix - Fine
## Multi-Flute Square End Regular Length - Roughers



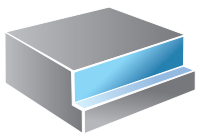

PAGE 270

2.1 - 2.2

| Tolerances: | |
|---|---|
| D1 | k12 |
| D2 | h6 |




| Cutter Dia-D1 | Shank Dia-D2 | FL L1 | OAL L2 | Part Number | No. of Flutes |
|---|---|---|---|---|---|
| 6 | 6 | 13 | 57 | 6647 -29139 | 4 |
| 8 | 10 | 19 | 69 | 6647 -29141 | 4 |
| 10 | 10 | 22 | 72 | 6647 -29143 | 4 |
| 12 | 12 | 26 | 83 | 6647 -29144 | 4 |
| 14 | 12 | 26 | 83 | 6647 -29145 | 4 |
| 16 | 16 | 32 | 92 | 6647 -29146 | 5 |
| 18 | 16 | 32 | 92 | 6647 -29147 | 5 |
| 20 | 20 | 38 | 104 | 6647 -29148 | 5 |
| 25 | 25 | 45 | 121 | 6647 -29152 | 5 |





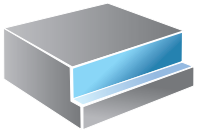
# High Performance PMX - Powder Metal - *TiALN*
# ASP 52 - DIN 844 N - 30° Helix
# Multi-Flute Square End Regular Length - Finishing

Series 6600

PAGE 270

TiALN | PMX | DIN 844 N | 30° | MULTI | FLAT

1.1 - 1.5 | 6.1 - 7.4 | 2.1 - 2.3 | 4.1 - 4.3 | 3.1 - 3.4

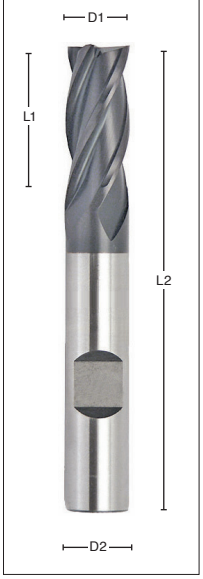




| Cutter Dia-D1 | Shank Dia-D2 | FL L1 | OAL L2 | Part Number | No. of Flutes |
|---|---|---|---|---|---|
| 2 | 6 | 7 | 51 | 6600 -45932 | 4 |
| 3 | 6 | 8 | 52 | 6600 -45481 | 4 |
| 4 | 6 | 11 | 55 | 6600 -45482 | 4 |
| 5 | 6 | 13 | 57 | 6600 -45483 | 4 |
| 6 | 6 | 13 | 57 | 6600 -45933 | 4 |
| 7 | 10 | 16 | 66 | 6600 -45496 | 4 |
| 8 | 10 | 19 | 69 | 6600 -45510 | 4 |
| 10 | 10 | 22 | 72 | 6600 -45522 | 4 |
| 12 | 12 | 26 | 83 | 6600 -45523 | 4 |
| 14 | 12 | 26 | 83 | 6600 -45525 | 4 |
| 16 | 16 | 32 | 92 | 6600 -45526 | 4 |
| 18 | 16 | 32 | 92 | 6600 -45528 | 4 |
| 20 | 20 | 38 | 104 | 6600 -45531 | 4 |
| 25 | 25 | 45 | 121 | 6600 -45534 | 6 |
| 32 | 32 | 53 | 133 | 6600 -45222 | 6 |

**Tolerances:**

| | |
|---|---|
| D1 | k10 |
| D2 | h6 |




# High Performance PMX - Powder Metal - *TiALN*
# ASP 52 - DIN 844 N - 30° Helix
# Multi-Flute Square End Long Length - Finishing

Series 6606

PAGE 270

TiALN | PMX | DIN 844 N | 30° | MULTI | FLAT

1.1 - 1.5 | 6.1 - 7.4 | 2.1 - 2.3 | 4.1 - 4.3 | 3.1 - 3.4

| Cutter Dia-D1 | Shank Dia-D2 | FL L1 | OAL L2 | Part Number | No. of Flutes |
|---|---|---|---|---|---|
| 6 | 6 | 24 | 68 | 6606 -45541 | 4 |
| 8 | 10 | 38 | 88 | 6606 -45544 | 4 |
| 10 | 10 | 45 | 95 | 6606 -45547 | 4 |
| 12 | 12 | 53 | 110 | 6606 -45550 | 4 |
| 14 | 12 | 53 | 110 | 6606 -45553 | 4 |
| 16 | 16 | 63 | 123 | 6606 -45555 | 4 |
| 18 | 16 | 63 | 123 | 6606 -45559 | 4 |
| 20 | 20 | 75 | 141 | 6606 -45562 | 4 |
| 25 | 25 | 90 | 166 | 6606 -45565 | 6 |
| 32 | 32 | 106 | 186 | 6606 -45726 | 6 |

**Tolerances:**

| | |
|---|---|
| D1 | k10 |
| D2 | h6 |



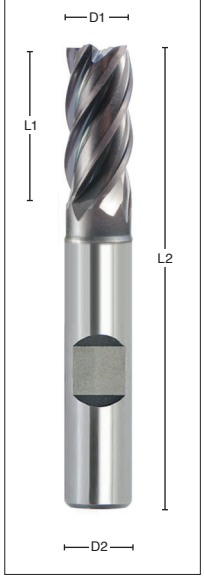

**Modifications**
**Regrinds, Re coat**
**Specials**

# High Performance PMX - Powder Metal - *TiALN*
## ASP 52 - DIN 844 N - 30°/40° Variable Helix
## Multi-Flute Square End Regular Length - Finishing



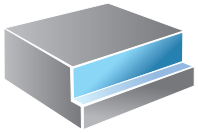

Ti PAGE 270

| Tolerances: | |
|---|---|
| D1 | k10 |
| D2 | h6 |




| Cutter Dia-D1 | Shank Dia-D2 | FL L1 | OAL L2 | Part Number | No. of Flutes | Helix |
|---|---|---|---|---|---|---|
| 6 | 6 | 13 | 57 | 6666 -28488 | 4 | 30 - 40 |
| 8 | 8 | 19 | 69 | 6666 -28489 | 4 | 30 - 40 |
| 10 | 10 | 22 | 72 | 6666 -28478 | 4 | 30 - 40 |
| 12 | 12 | 26 | 83 | 6666 -28479 | 4 | 30 - 40 |
| 16 | 16 | 32 | 92 | 6666 -28492 | 5 | 35 - 40 |
| 18 | 18 | 32 | 92 | 6666 -28494 | 5 | 35 - 40 |
| 20 | 20 | 38 | 104 | 6666 -28495 | 5 | 35 - 40 |
| 25 | 25 | 45 | 121 | 6666 -28484 | 6 | 35 - 40 |

1.1 - 1.5 | 6.1 - 7.4
2.1 - 2.3 | 4.1 - 4.3



**Modifications**
**Regrinds, Re coat**
**Specials**

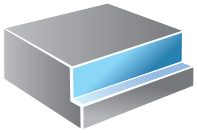
# High Performance PMX - Powder Metal - *TiALN*
# ASP 52 - DIN 844 NR-F - 30° Helix - Fine
# Multi-Flute Square End Regular Length - Roughers

Series 6644

PAGE 270

45° | FINE | TiALN | PMX | DIN 844 NR-F | 30° | MULTI | FLAT

1.1 - 1.5 | 4.1 - 5.2 | 2.1 - 2.3





| Cutter Dia-D1 | Shank Dia-D2 | FL L1 | OAL L2 | Part Number | No. of Flutes |
|---|---|---|---|---|---|
| 6 | 6 | 13 | 57 | 6644 -45529 | 4 |
| 8 | 10 | 19 | 69 | 6644 -45532 | 4 |
| 10 | 10 | 22 | 72 | 6644 -45535 | 5 |
| 12 | 12 | 26 | 83 | 6644 -45537 | 5 |
| 14 | 12 | 26 | 83 | 6644 -45538 | 5 |
| 16 | 16 | 32 | 92 | 6644 -45540 | 5 |
| 18 | 16 | 32 | 92 | 6644 -45543 | 5 |
| 20 | 20 | 38 | 104 | 6644 -45546 | 5 |
| 25 | 25 | 45 | 121 | 6644 -45549 | 5 |
| 32 | 32 | 53 | 133 | 6644 -45248 | 6 |

**Tolerances:**

| | |
|---|---|
| D1 | k12 |
| D2 | h6 |



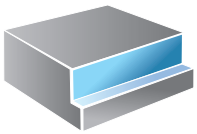

# High Performance PMX - Powder Metal - *TiALN*
# ASP 52 - DIN 844 NR-F - 30° Helix - Fine
# Multi-Flute Square End Long Length - Roughers

Series 6696

PAGE 270

45° | FINE | TiALN | PMX | DIN 844 NR-F | 30° | MULTI | FLAT

1.1 - 1.5 | 4.1 - 5.2 | 2.1 - 2.3



| Cutter Dia-D1 | Shank Dia-D2 | FL L1 | OAL L2 | Part Number | No. of Flutes |
|---|---|---|---|---|---|
| 6 | 6 | 24 | 68 | 6696 -45558 | 4 |
| 8 | 10 | 38 | 88 | 6696 -45561 | 4 |
| 10 | 10 | 45 | 95 | 6696 -45564 | 4 |
| 12 | 12 | 53 | 110 | 6696 -45567 | 4 |
| 14 | 12 | 53 | 110 | 6696 -45568 | 4 |
| 16 | 16 | 63 | 123 | 6696 -45570 | 4 |
| 18 | 16 | 63 | 123 | 6696 -45571 | 4 |
| 20 | 20 | 75 | 141 | 6696 -45573 | 4 |
| 25 | 25 | 90 | 166 | 6696 -45574 | 5 |
| 32 | 32 | 106 | 186 | 6696 -45261 | 6 |

**Tolerances:**

| | |
|---|---|
| D1 | k12 |
| D2 | h6 |




**Modifications**
**Regrinds, Re coat**
**Specials**

Series 4420

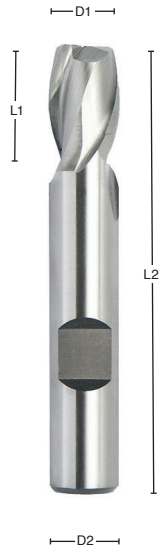
# HSSE 8% Co - Bright Finish
# DIN 327 N - ISO 1641/1 - 30° Helix
# 2-Flute Square End Regular Length - Finishing

30° | 2 | FLAT | DIN 327 N | HSSE 8%Co | ISO 1641/1

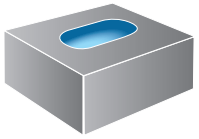
Ti PAGE 274

1.1 - 1.5 | 6.1 - 7.4 | 3.1 - 3.4

| Tolerances: | |
|---|---|
| D1 | e8 |
| D2 | h6 |




| Cutter Dia-D1 | Shank Dia-D2 | FL L1 | OAL L2 | Part Number |
|---|---|---|---|---|
| 2 | 6 | 4 | 48 | 4420 -44249 |
| 3 | 6 | 5 | 49 | 4420 -44255 |
| 4 | 6 | 7 | 51 | 4420 -44261 |
| 5 | 6 | 8 | 52 | 4420 -44267 |
| 6 | 6 | 8 | 52 | 4420 -44273 |
| 7 | 6 | 10 | 60 | 4420 -44279 |
| 8 | 10 | 11 | 61 | 4420 -44285 |
| 9 | 10 | 11 | 61 | 4420 -44291 |
| 10 | 10 | 13 | 63 | 4420 -44297 |
| 12 | 12 | 16 | 73 | 4420 -44306 |
| 14 | 12 | 16 | 73 | 4420 -44312 |
| 16 | 16 | 19 | 79 | 4420 -44318 |
| 18 | 16 | 19 | 79 | 4420 -44324 |
| 20 | 20 | 22 | 88 | 4420 -44330 |
| 25 | 25 | 26 | 102 | 4420 -44339 |





Series 4420

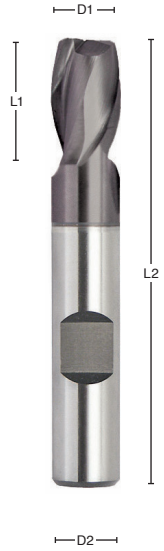
# Performance HSSE 8% Co - *TiALN*
# DIN 327 N - ISO 1641/1 - 30° Helix
# 2-Flute Square End Regular Length - Finishing

30° | 2 | FLAT | DIN 327 N | HSSE 8%Co | ISO 1641/1 | TiALN

Ti PAGE 274

1.1 - 1.5 | 6.1 - 7.4 | 3.1 - 3.4

| Tolerances: | |
|---|---|
| D1 | e8 |
| D2 | h6 |




| Cutter Dia-D1 | Shank Dia-D2 | FL L1 | OAL L2 | Part Number |
|---|---|---|---|---|
| 2 | 6 | 4 | 48 | 4420 -41613 |
| 3 | 6 | 5 | 49 | 4420 -41616 |
| 4 | 6 | 7 | 51 | 4420 -41619 |
| 5 | 6 | 8 | 52 | 4420 -41622 |
| 6 | 6 | 8 | 52 | 4420 -41625 |
| 7 | 6 | 10 | 60 | 4420 -41628 |
| 8 | 10 | 11 | 61 | 4420 -41631 |
| 9 | 10 | 11 | 61 | 4420 -41635 |
| 10 | 10 | 13 | 63 | 4420 -41638 |
| 12 | 12 | 16 | 73 | 4420 -41643 |
| 14 | 12 | 16 | 73 | 4420 -41646 |
| 16 | 16 | 19 | 79 | 4420 -41649 |
| 18 | 16 | 19 | 79 | 4420 -41652 |
| 20 | 20 | 22 | 88 | 4420 -41655 |
| 25 | 25 | 26 | 102 | 4420 -41661 |

**Modifications Regrinds, Re coat Specials**

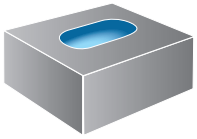
# HSSE 8% Co - Bright Finish
# 30° Helix
# 2-Flute Square End Long Length - Finishing

Series 4426

PAGE 274

HSSE 8%Co | 30° | 2 | FLAT

1.1 - 1.5 | 6.1 - 7.4 | 3.1 - 3.4





| Cutter Dia-D1 | Shank Dia-D2 | FL L1 | OAL L2 | Part Number |
|---|---|---|---|---|
| 2 | 6 | 7 | 54 | 4426 -44357 |
| 3 | 6 | 8 | 56 | 4426 -44363 |
| 4 | 6 | 11 | 63 | 4426 -44366 |
| 5 | 6 | 13 | 68 | 4426 -44369 |
| 6 | 6 | 24 | 68 | 4426 -44372 |
| 7 | 10 | 16 | 80 | 4426 -44375 |
| 8 | 10 | 19 | 88 | 4426 -44378 |
| 9 | 10 | 19 | 88 | 4426 -44381 |
| 10 | 10 | 22 | 95 | 4426 -44384 |
| 12 | 12 | 26 | 110 | 4426 -44390 |
| 14 | 12 | 26 | 110 | 4426 -44393 |
| 16 | 16 | 32 | 123 | 4426 -44396 |
| 18 | 16 | 32 | 123 | 4426 -44399 |
| 20 | 20 | 38 | 141 | 4426 -44402 |
| 25 | 25 | 45 | 166 | 4426 -44408 |

**Tolerances:**

| | |
|---|---|
| D1 | e8 |
| D2 | h6 |




# Performance HSSE 8% Co - *TiALN*
# 30° Helix
# 2-Flute Square End Long Length - Finishing

Series 4426

PAGE 274

TiALN | HSSE 8%Co | 30° | 2 | FLAT

1.1 - 1.5 | 6.1 - 7.4 | 3.1 - 3.4

| Cutter Dia-D1 | Shank Dia-D2 | FL L1 | OAL L2 | Part Number |
|---|---|---|---|---|
| 2 | 6 | 10 | 54 | 4426 -16074 |
| 3 | 6 | 12 | 56 | 4426 -45029 |
| 4 | 6 | 19 | 63 | 4426 -45030 |
| 5 | 6 | 24 | 68 | 4426 -45031 |
| 6 | 6 | 24 | 68 | 4426 -45032 |
| 7 | 10 | 16 | 80 | 4426 -17192 |
| 8 | 10 | 19 | 88 | 4426 -45034 |
| 9 | 10 | 19 | 88 | 4426 -15849 |
| 10 | 10 | 22 | 95 | 4426 -14538 |
| 12 | 12 | 26 | 110 | 4426 -14550 |
| 14 | 12 | 26 | 110 | 4426 -17194 |
| 16 | 16 | 32 | 123 | 4426 -17195 |
| 18 | 16 | 32 | 123 | 4426 -14562 |
| 20 | 20 | 38 | 141 | 4426 -17197 |
| 25 | 25 | 45 | 166 | 4426 -17199 |

**Tolerances:**

| | |
|---|---|
| D1 | e8 |
| D2 | h6 |




**Modifications**
**Regrinds, Re coat**
**Specials**

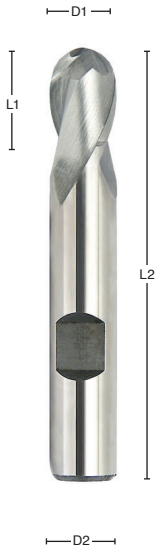
Series 4422

# HSSE 8% Co - Bright Finish
# DIN 327 N - 30° Helix
# 2-Flute Ball Nosed Regular Length - Finishing



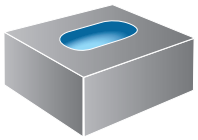

TiPAGE 274

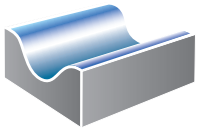
| Tolerances: | |
|---|---|
| D1 | e8 |
| D2 | h6 |




| Cutter Dia-D1 | Shank Dia-D2 | FL L1 | OAL L2 | Part Number |
|---|---|---|---|---|
| 2 | 6 | 4 | 48 | 4422 -69658 |
| 3 | 6 | 5 | 49 | 4422 -69625 |
| 4 | 6 | 7 | 51 | 4422 -69628 |
| 5 | 6 | 8 | 52 | 4422 -69631 |
| 6 | 6 | 8 | 52 | 4422 -69634 |
| 8 | 10 | 11 | 61 | 4422 -69640 |
| 10 | 10 | 13 | 63 | 4422 -69646 |
| 12 | 12 | 16 | 73 | 4422 -69651 |
| 14 | 12 | 16 | 73 | 4422 -69654 |
| 16 | 16 | 19 | 79 | 4422 -69657 |
| 18 | 16 | 19 | 79 | 4422 -69660 |
| 20 | 20 | 22 | 88 | 4422 -69663 |
| 25 | 25 | 26 | 102 | 4422 -69669 |

1.1 - 1.5 6.1 - 6.3





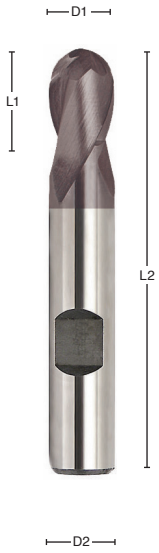
Series 4422

# Performance HSSE 8% Co - *TiALN*
# DIN 327 N - 30° Helix
# 2-Flute Ball Nosed Regular Length - Finishing




TiPAGE 274

| Tolerances: | |
|---|---|
| D1 | e8 |
| D2 | h6 |




| Cutter Dia-D1 | Shank Dia-D2 | FL L1 | OAL L2 | Part Number |
|---|---|---|---|---|
| 2 | 6 | 4 | 48 | 4422 -17181 |
| 3 | 6 | 5 | 49 | 4422 -17182 |
| 4 | 6 | 7 | 51 | 4422 -15427 |
| 5 | 6 | 8 | 52 | 4422 -17156 |
| 6 | 6 | 8 | 52 | 4422 -15428 |
| 8 | 10 | 11 | 61 | 4422 -16191 |
| 10 | 10 | 13 | 63 | 4422 -17158 |
| 12 | 12 | 16 | 73 | 4422 -17159 |
| 14 | 12 | 16 | 73 | 4422 -17161 |
| 16 | 16 | 19 | 79 | 4422 -17163 |
| 18 | 16 | 19 | 79 | 4422 -18061 |
| 20 | 20 | 22 | 88 | 4422 -17180 |
| 25 | 25 | 26 | 102 | 4422 -18243 |

1.1 - 1.5 6.1 - 6.3

**Modifications**
**Regrinds, Re coat**
**Specials**

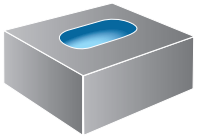
# HSSE 8% Co - *Bright Finish*
# 30° Helix
# 2-Flute Ball Nosed Long Length - Finishing

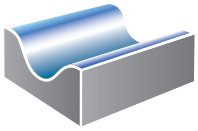
Series 4470

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HSSE 8%Co | 30° | 2 | FLAT

1.1 - 1.5 | 6.1 - 6.3

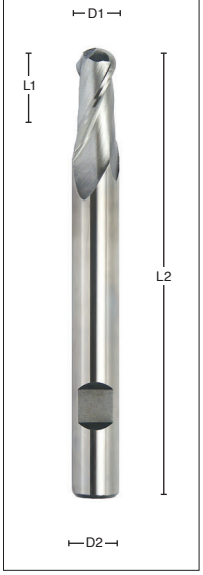




| Cutter Dia-D1 | Shank Dia-D2 | FL L1 | OAL L2 | Part Number |
|---|---|---|---|---|
| 3 | 6 | 8 | 56 | 4470 -45287 |
| 4 | 6 | 11 | 63 | 4470 -45290 |
| 5 | 6 | 13 | 68 | 4470 -45293 |
| 6 | 6 | 13 | 68 | 4470 -45296 |
| 8 | 10 | 19 | 88 | 4470 -45302 |
| 10 | 10 | 22 | 95 | 4470 -45308 |
| 12 | 12 | 26 | 110 | 4470 -45314 |
| 14 | 12 | 26 | 110 | 4470 -45317 |
| 16 | 16 | 32 | 123 | 4470 -45320 |
| 18 | 16 | 32 | 123 | 4470 -45323 |
| 20 | 20 | 38 | 141 | 4470 -45326 |
| 25 | 25 | 45 | 166 | 4470 -45332 |

**Tolerances:**

| | |
|---|---|
| D1 | e8 |
| D2 | h6 |




# Performance HSSE 8% Co - *TiALN*
# 30° Helix
# 2-Flute Ball Nosed Long Length - Finishing

Series 4470

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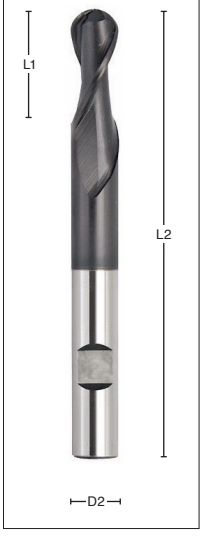
TiALN | HSSE 8%Co | 30° | 2 | FLAT

1.1 - 1.5 | 6.1 - 6.3

| Cutter Dia-D1 | Shank Dia-D2 | FL L1 | OAL L2 | Part Number |
|---|---|---|---|---|
| 3 | 6 | 8 | 56 | 4470 -18120 |
| 4 | 6 | 11 | 63 | 4470 -18121 |
| 5 | 6 | 13 | 68 | 4470 -18124 |
| 6 | 6 | 13 | 68 | 4470 -17252 |
| 8 | 10 | 19 | 88 | 4470 -17255 |
| 10 | 10 | 22 | 95 | 4470 -17257 |
| 12 | 12 | 26 | 110 | 4470 -17293 |
| 14 | 12 | 26 | 110 | 4470 -18130 |
| 16 | 16 | 32 | 123 | 4470 -18132 |
| 18 | 16 | 32 | 123 | 4470 -18133 |
| 20 | 20 | 38 | 141 | 4470 -18135 |
| 25 | 25 | 45 | 166 | 4470 -18139 |

**Tolerances:**

| | |
|---|---|
| D1 | e8 |
| D2 | h6 |




**Modifications**
**Regrinds, Re coat**
**Specials**

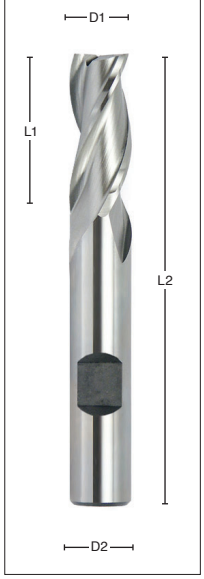
Series 4439

# HSSE 8% Co - Bright Finish
# DIN 844 N - 30° Helix
# 3-Flute Square End Regular Length - Finishing



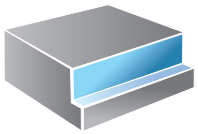

TiPAGE 274

| Tolerances: | |
|---|---|
| D1 | e8 |
| D2 | h6 |




| Cutter Dia-D1 | Shank Dia-D2 | FL L1 | OAL L2 | Part Number |
|---|---|---|---|---|
| 3 | 6 | 8 | 52 | 4439 -43149 |
| 4 | 6 | 11 | 55 | 4439 -43152 |
| 5 | 6 | 13 | 57 | 4439 -43154 |
| 6 | 6 | 13 | 57 | 4439 -43156 |
| 8 | 10 | 19 | 69 | 4439 -43160 |
| 10 | 10 | 22 | 72 | 4439 -43165 |
| 12 | 12 | 26 | 83 | 4439 -43168 |
| 14 | 12 | 26 | 83 | 4439 -43170 |
| 16 | 16 | 32 | 92 | 4439 -43172 |
| 18 | 16 | 32 | 92 | 4439 -43174 |
| 20 | 20 | 38 | 104 | 4439 -43176 |

1.1 - 1.5 | 6.1 - 6.3 | 3.1 - 3.4 | 4.1 - 4.3





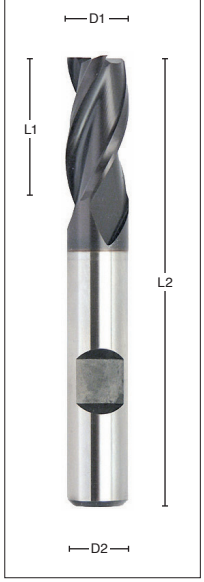
Series 4439

# Performance HSSE 8% Co - *TiALN*
# DIN 844 N - 30° Helix
# 3-Flute Square End Regular Length - Finishing




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| Tolerances: | |
|---|---|
| D1 | e8 |
| D2 | h6 |




| Cutter Dia-D1 | Shank Dia-D2 | FL L1 | OAL L2 | Part Number |
|---|---|---|---|---|
| 3 | 6 | 8 | 52 | 4439 -17604 |
| 4 | 6 | 11 | 55 | 4439 -17606 |
| 5 | 6 | 13 | 57 | 4439 -17221 |
| 6 | 6 | 13 | 57 | 4439 -17222 |
| 8 | 10 | 19 | 69 | 4439 -17612 |
| 10 | 10 | 22 | 72 | 4439 -17616 |
| 12 | 12 | 26 | 83 | 4439 -17617 |
| 14 | 12 | 26 | 83 | 4439 -17618 |
| 16 | 16 | 32 | 92 | 4439 -17620 |
| 18 | 16 | 32 | 92 | 4439 -17621 |
| 20 | 20 | 38 | 104 | 4439 -17622 |

1.1 - 1.5 | 6.1 - 6.3 | 3.1 - 3.4 | 4.1 - 4.3

**Modifications**
**Regrinds, Re coat**
**Specials**

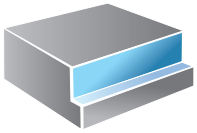
# HSSE 8% Co - Bright Finish
# 30° Helix - Throw Away - FC3
# 3-Flute Square End Regular Length - Finishing

Series 4435

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HSSE 8%Co | 30° | 3 | FLAT

1.1 - 1.5 | 7.1 - 7.4

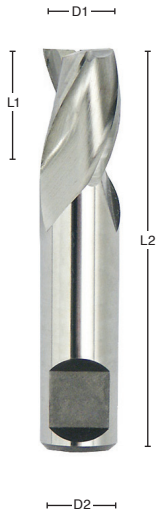




| Cutter Dia-D1 | Shank Dia-D2 | FL L1 | OAL L2 | Part Number |
|---|---|---|---|---|
| 1 | 6 | 2 | 34 | 4435 -63477 |
| 1.5 | 6 | 3 | 34 | 4435 -63458 |
| DIA 1mm & 1.5mm are 2 flutes | | | | |
| 2 | 6 | 4 | 35 | 4435 -63459 |
| 2.5 | 6 | 5 | 36 | 4435 -63460 |
| 3 | 6 | 5 | 36 | 4435 -63462 |
| 3.5 | 6 | 6 | 37 | 4435 -63463 |
| 4 | 6 | 7 | 38 | 4435 -63465 |
| 4.5 | 6 | 7 | 38 | 4435 -63466 |
| 5 | 6 | 8 | 39 | 4435 -63468 |
| 5.5 | 6 | 8 | 39 | 4435 -63469 |
| 6 | 6 | 8 | 39 | 4435 -63471 |
| 6.5 | 8 | 10 | 42 | 4435 -73768 |
| 7 | 8 | 10 | 42 | 4435 -63472 |
| 7.5 | 8 | 10 | 42 | 4435 -73770 |
| 8 | 8 | 11 | 43 | 4435 -63473 |
| 8.5 | 10 | 11 | 48 | 4435 -73771 |
| 9 | 10 | 11 | 48 | 4435 -63474 |
| 9.5 | 10 | 11 | 48 | 4435 -73773 |
| 10 | 10 | 13 | 50 | 4435 -63475 |

**Tolerances:**

| | |
|---|---|
| D1 | e8 |
| D2 | h6 |




**3-Flute Throw Away Set**
**FC3 10 piece**




**Set 4435-40378**

**Modifications**
**Regrinds, Re coat**
**Specials**

HSSE 8% Cobalt

Series 4430

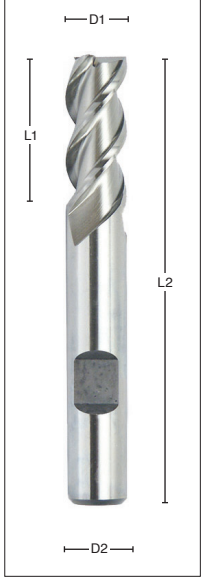
# HSSE 8% Co - Bright Finish
# DIN 844 W - ISO 1641 - 45° Helix - INOX
# 3-Flute Square End Regular Length - Finishing




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1.1 - 1.5 | 7.1 - 7.4

| Tolerances: | |
|---|---|
| D1 | e8 |
| D2 | h6 |




| Cutter Dia-D1 | Shank Dia-D2 | FL L1 | OAL L2 | Part Number |
|---|---|---|---|---|
| 2 | 6 | 7 | 51 | 4430 -44477 |
| 3 | 6 | 8 | 52 | 4430 -44483 |
| 4 | 6 | 11 | 55 | 4430 -44489 |
| 5 | 6 | 13 | 57 | 4430 -44495 |
| 6 | 6 | 13 | 57 | 4430 -44501 |
| 7 | 10 | 16 | 66 | 4430 -44504 |
| 8 | 10 | 19 | 69 | 4430 -44507 |
| 9 | 10 | 19 | 69 | 4430 -44510 |
| 10 | 10 | 22 | 72 | 4430 -44513 |
| 12 | 12 | 26 | 83 | 4430 -44519 |
| 14 | 12 | 26 | 83 | 4430 -44525 |
| 16 | 16 | 32 | 92 | 4430 -44531 |
| 18 | 16 | 32 | 92 | 4430 -44534 |
| 20 | 20 | 38 | 104 | 4430 -44537 |
| 25 | 25 | 45 | 121 | 4430 -44543 |



Series 4430

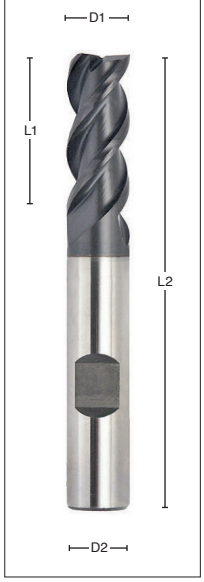
# Performance HSSE 8% Co - *TiALN*
# DIN 844 W - ISO 1641 - 45° Helix - INOX
# 3-Flute Square End Regular Length - Finishing




PAGE 274

1.1 - 1.5 | 7.1 - 7.4

| Tolerances: | |
|---|---|
| D1 | e8 |
| D2 | h6 |




| Cutter Dia-D1 | Shank Dia-D2 | FL L1 | OAL L2 | Part Number |
|---|---|---|---|---|
| 2 | 6 | 7 | 51 | 4430 -41665 |
| 3 | 6 | 8 | 52 | 4430 -41668 |
| 4 | 6 | 11 | 55 | 4430 -41671 |
| 5 | 6 | 13 | 57 | 4430 -41676 |
| 6 | 6 | 13 | 57 | 4430 -41679 |
| 7 | 10 | 16 | 66 | 4430 -41683 |
| 8 | 10 | 19 | 69 | 4430 -41686 |
| 9 | 10 | 19 | 69 | 4430 -41691 |
| 10 | 10 | 22 | 72 | 4430 -41694 |
| 12 | 12 | 26 | 83 | 4430 -41698 |
| 14 | 12 | 26 | 83 | 4430 -41701 |
| 16 | 16 | 32 | 92 | 4430 -41704 |
| 18 | 16 | 32 | 92 | 4430 -41707 |
| 20 | 20 | 38 | 104 | 4430 -41710 |
| 25 | 25 | 45 | 121 | 4430 -41713 |

**Modifications**
**Regrinds, Re coat**
**Specials**

# HSSE 8% Co - Bright Finish
# DIN 844 W - ISO 1641 - 45° Helix - INOX
# 3-Flute Square End Long Length - Finishing

Series 4432

PAGE 274

ISO 1641 | DIN 844 W | HSSE 8%Co | 45° | 3 | FLAT

1.1 - 1.5 | 7.1 - 7.4



| Cutter Dia-D1 | Shank Dia-D2 | FL L1 | OAL L2 | Part Number |
|---|---|---|---|---|
| 3 | 6 | 12 | 56 | 4432 -77455 |
| 4 | 6 | 19 | 63 | 4432 -77457 |
| 5 | 6 | 24 | 68 | 4432 -77459 |
| 6 | 6 | 24 | 68 | 4432 -44549 |
| 8 | 10 | 38 | 88 | 4432 -44552 |
| 10 | 10 | 45 | 95 | 4432 -44555 |
| 12 | 12 | 53 | 110 | 4432 -44558 |
| 16 | 16 | 63 | 123 | 4432 -44564 |
| 18 | 16 | 63 | 123 | 4432 -44567 |
| 20 | 20 | 75 | 141 | 4432 -44570 |
| 25 | 25 | 90 | 166 | 4432 -44576 |

Tolerances:
D1 e8
D2 h6




# Performance HSSE 8% Co - *TiALN*
# DIN 844 W - ISO 1641 - 45° Helix - INOX
# 3-Flute Square End Long Length - Finishing

Series 4432

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TiALN | DIN 844 W | HSSE 8%Co | 45° | 3 | FLAT

1.1 - 1.5 | 7.1 - 7.4

| Cutter Dia-D1 | Shank Dia-D2 | FL L1 | OAL L2 | Part Number |
|---|---|---|---|---|
| 3 | 6 | 12 | 56 | 4432 -18088 |
| 4 | 6 | 19 | 63 | 4432 -18093 |
| 5 | 6 | 24 | 68 | 4432 -18097 |
| 6 | 6 | 24 | 68 | 4432 -15049 |
| 8 | 10 | 38 | 88 | 4432 -15050 |
| 10 | 10 | 45 | 95 | 4432 -15051 |
| 12 | 12 | 53 | 110 | 4432 -15052 |
| 16 | 16 | 63 | 123 | 4432 -15046 |
| 18 | 16 | 63 | 123 | 4432 -18106 |
| 20 | 20 | 75 | 141 | 4432 -15047 |
| 25 | 25 | 90 | 166 | 4432 -18109 |

Tolerances:
D1 e8
D2 h6




**Modifications**
**Regrinds, Re coat**
**Specials**

Series 4447

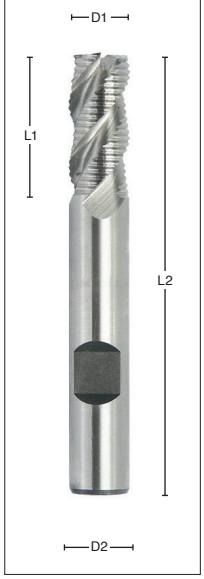
# HSSE 8% Co - Bright Finish
# DIN 844 WR - ISO 1641/1 - 40° Helix - Coarse
# 3-Flute Square End Regular Length - Roughers



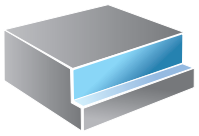

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1.1 - 1.5 7.1 - 7.4

| Tolerances: | |
|---|---|
| D1 | k12 |
| D2 | h6 |




| Cutter Dia-D1 | Shank Dia-D2 | FL L1 | OAL L2 | Part Number |
|---|---|---|---|---|
| 10 | 10 | 22 | 72 | 4447 -44747 |
| 12 | 12 | 26 | 83 | 4447 -44750 |
| 16 | 16 | 32 | 92 | 4447 -44756 |
| 20 | 20 | 38 | 104 | 4447 -44762 |
| 25 | 25 | 45 | 121 | 4447 -44768 |
| 30 | 25 | 45 | 121 | 4447 -40334 |





Series 4497

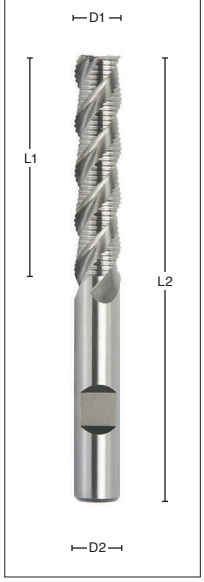
# HSSE 8% Co - Bright Finish
# DIN 844 WR - ISO 1641/1 - 40° Helix - Coarse
# 3-Flute Square End Long Length - Roughers




PAGE 274

1.1 - 1.5 7.1 - 7.4

| Tolerances: | |
|---|---|
| D1 | k12 |
| D2 | h6 |




| Cutter Dia-D1 | Shank Dia-D2 | FL L1 | OAL L2 | Part Number |
|---|---|---|---|---|
| 10 | 10 | 45 | 95 | 4497 -78863 |
| 12 | 12 | 53 | 110 | 4497 -78864 |
| 16 | 16 | 63 | 123 | 4497 -78866 |
| 20 | 20 | 75 | 141 | 4497 -78868 |
| 25 | 25 | 90 | 166 | 4497 -40338 |
| 30 | 30 | 90 | 166 | 4497 -40342 |

**Modifications**
**Regrinds, Re coat**
**Specials**

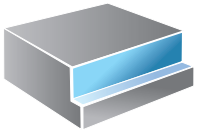
# HSSE 8% Co - Bright Finish
# DIN 844 N - ISO 1641 - 30° Helix
# Multi-Flute Square End Regular Length - Finishers

Series 4600

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ISO 1641 | DIN 844 N | HSSE 8%Co | 30° | MULTI | FLAT

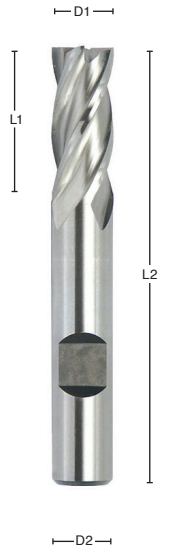
1.1 - 1.5 | 6.1 - 6.4 | 3.1 - 3.4



| Cutter Dia-D1 | Shank Dia-D2 | FL L1 | OAL L2 | Part Number | No. of Flutes |
|---|---|---|---|---|---|
| 2 | 6 | 7 | 51 | 4600 -46277 | 4 |
| 3 | 6 | 8 | 52 | 4600 -46283 | 4 |
| 4 | 6 | 11 | 55 | 4600 -46289 | 4 |
| 5 | 6 | 13 | 57 | 4600 -46295 | 4 |
| 6 | 6 | 13 | 57 | 4600 -46301 | 4 |
| 7 | 10 | 16 | 66 | 4600 -46307 | 4 |
| 8 | 10 | 19 | 69 | 4600 -46313 | 4 |
| 9 | 10 | 19 | 69 | 4600 -46319 | 4 |
| 10 | 10 | 22 | 72 | 4600 -46325 | 4 |
| 12 | 12 | 26 | 83 | 4600 -46334 | 4 |
| 14 | 12 | 26 | 83 | 4600 -46340 | 4 |
| 16 | 16 | 32 | 92 | 4600 -46346 | 4 |
| 18 | 16 | 32 | 92 | 4600 -46352 | 4 |
| 20 | 20 | 38 | 104 | 4600 -46358 | 4 |
| 25 | 25 | 45 | 121 | 4600 -46364 | 6 |

Tolerances:

| | |
|---|---|
| D1 | k10 |
| D2 | h6 |




# Performance HSSE 8% Co - *TiALN*
# DIN 844 N - ISO 1641 - 30° Helix
# Multi-Flute Square End Regular Length - Finishers

Series 4600

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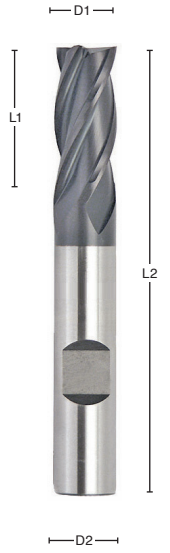
TiALN | ISO 1641 | DIN 844 N | HSSE 8%Co | 30° | MULTI | FLAT

1.1 - 1.5 | 6.1 - 6.4 | 3.1 - 3.4

| Cutter Dia-D1 | Shank Dia-D2 | FL L1 | OAL L2 | Part Number | No. of Flutes |
|---|---|---|---|---|---|
| 2 | 6 | 7 | 51 | 4600 -41718 | 4 |
| 3 | 6 | 8 | 52 | 4600 -41721 | 4 |
| 4 | 6 | 11 | 55 | 4600 -41724 | 4 |
| 5 | 6 | 13 | 57 | 4600 -41727 | 4 |
| 6 | 6 | 13 | 57 | 4600 -41730 | 4 |
| 7 | 10 | 16 | 66 | 4600 -41732 | 4 |
| 8 | 10 | 19 | 69 | 4600 -41734 | 4 |
| 9 | 10 | 19 | 69 | 4600 -41736 | 4 |
| 10 | 10 | 22 | 72 | 4600 -41738 | 4 |
| 12 | 12 | 26 | 83 | 4600 -41741 | 4 |
| 14 | 12 | 26 | 83 | 4600 -41743 | 4 |
| 16 | 16 | 32 | 92 | 4600 -41745 | 4 |
| 18 | 16 | 32 | 92 | 4600 -41747 | 4 |
| 20 | 20 | 38 | 104 | 4600 -41749 | 4 |
| 25 | 25 | 45 | 121 | 4600 -41752 | 6 |

Tolerances:

| | |
|---|---|
| D1 | k10 |
| D2 | h6 |




**Modifications**
**Regrinds, Re coat**
**Specials**

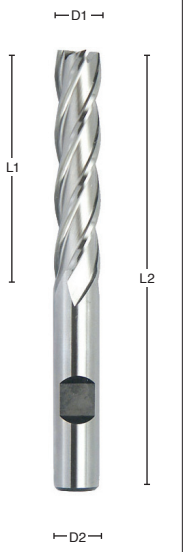
Series 4606

# HSSE 8% Co - Bright Finish
# DIN 844 N - ISO 1641 - 30° Helix
# Multi-Flute Square End Long Length - Finishing

30° | MULTI | FLAT | DIN 844 N | HSSE 8%Co | ISO 1641

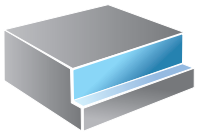
Ti PAGE 276

| Tolerances: | |
|---|---|
| D1 | k10 |
| D2 | h6 |




| Cutter Dia-D1 | Shank Dia-D2 | FL L1 | OAL L2 | Part Number | No. of Flutes |
|---|---|---|---|---|---|
| 3 | 6 | 12 | 56 | 4606 -46388 | 4 |
| 4 | 6 | 19 | 63 | 4606 -46391 | 4 |
| 5 | 6 | 24 | 68 | 4606 -46394 | 4 |
| 6 | 6 | 24 | 68 | 4606 -46397 | 4 |
| 8 | 10 | 38 | 88 | 4606 -46403 | 4 |
| 10 | 10 | 45 | 95 | 4606 -46409 | 4 |
| 12 | 12 | 53 | 110 | 4606 -46415 | 4 |
| 14 | 12 | 53 | 110 | 4606 -46418 | 4 |
| 16 | 16 | 63 | 123 | 4606 -46421 | 4 |
| 18 | 16 | 63 | 123 | 4606 -46424 | 4 |
| 20 | 20 | 75 | 141 | 4606 -46427 | 4 |
| 25 | 25 | 90 | 166 | 4606 -46433 | 6 |

1.1 - 1.5 | 6.1 - 6.4 | 3.1 - 3.4



Series 4606

# Performance HSSE 8% Co - *TiALN*
# DIN 844 N - ISO 1641 - 30° Helix
# Multi-Flute Square End Long Length - Finishing

30° | MULTI | FLAT | DIN 844 N | HSSE 8%Co | ISO 1641 | TiALN

Ti PAGE 276

| Tolerances: | |
|---|---|
| D1 | k10 |
| D2 | h6 |




| Cutter Dia-D1 | Shank Dia-D2 | FL L1 | OAL L2 | Part Number | No. of Flutes |
|---|---|---|---|---|---|
| 3 | 6 | 12 | 56 | 4606 -17890 | 4 |
| 4 | 6 | 19 | 63 | 4606 -17651 | 4 |
| 5 | 6 | 24 | 68 | 4606 -17891 | 4 |
| 6 | 6 | 24 | 68 | 4606 -18149 | 4 |
| 8 | 10 | 38 | 88 | 4606 -18150 | 4 |
| 10 | 10 | 45 | 95 | 4606 -17260 | 4 |
| 12 | 12 | 53 | 110 | 4606 -15399 | 4 |
| 14 | 12 | 53 | 110 | 4606 -18152 | 4 |
| 16 | 16 | 63 | 123 | 4606 -15264 | 4 |
| 18 | 16 | 63 | 123 | 4606 -18153 | 4 |
| 20 | 20 | 75 | 141 | 4606 -17219 | 4 |
| 25 | 25 | 90 | 166 | 4606 -18154 | 6 |

1.1 - 1.5 | 6.1 - 6.4 | 3.1 - 3.4

**Modifications**
**Regrinds, Re coat**
**Specials**

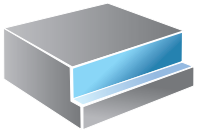
# HSSE 8% Co - Bright Finish
# DIN 844 NR-F - ISO 1641 - 30° Helix - Fine
# Multi-Flute Square End Regular Length - Roughers

Series 4644

PAGE 276

FINE | ISO 1641 | DIN 844 NR-F | HSSE 8%Co | 30° | MULTI | FLAT

1.1 - 1.5 | 6.1 - 6.4 | 3.1 - 3.4 | 4.1 - 4.3

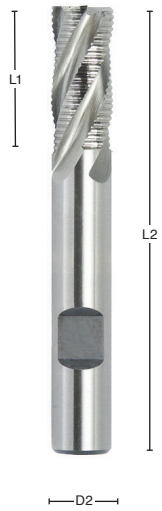




| Cutter Dia-D1 | Shank Dia-D2 | FL L1 | OAL L2 | Part Number | No. of Flutes |
|---|---|---|---|---|---|
| 6 | 6 | 13 | 57 | 4644 -46517 | 4 |
| 8 | 10 | 19 | 69 | 4644 -46523 | 4 |
| 10 | 10 | 22 | 72 | 4644 -46529 | 4 |
| 12 | 12 | 26 | 83 | 4644 -46532 | 4 |
| 14 | 12 | 26 | 83 | 4644 -46535 | 4 |
| 16 | 16 | 32 | 92 | 4644 -46538 | 4 |
| 18 | 16 | 32 | 92 | 4644 -46541 | 4 |
| 20 | 20 | 38 | 104 | 4644 -46544 | 4 |
| 25 | 25 | 45 | 121 | 4644 -52347 | 5 |
| 30 | 25 | 45 | 121 | 4644 -52362 | 5 |

**Tolerances:**

| | |
|---|---|
| D1 | k12 |
| D2 | h6 |




# Performance HSSE 8% Co - *TiALN*
# DIN 844 NR-F - ISO 1641 - 30° Helix - Fine
# Multi-Flute Square End Regular Length - Roughers

Series 4644

PAGE 276

FINE | TiALN | ISO 1641 | DIN 844 NR-F | HSSE 8%Co | 30° | MULTI | FLAT

1.1 - 1.5 | 6.1 - 6.4 | 3.1 - 3.4 | 4.1 - 4.3

| Cutter Dia-D1 | Shank Dia-D2 | FL L1 | OAL L2 | Part Number | No. of Flutes |
|---|---|---|---|---|---|
| 6 | 6 | 13 | 57 | 4644 -41780 | 4 |
| 8 | 10 | 19 | 69 | 4644 -41782 | 4 |
| 10 | 10 | 22 | 72 | 4644 -41784 | 4 |
| 12 | 12 | 26 | 83 | 4644 -41786 | 4 |
| 14 | 12 | 26 | 83 | 4644 -41788 | 4 |
| 16 | 16 | 32 | 92 | 4644 -41790 | 4 |
| 18 | 16 | 32 | 92 | 4644 -41792 | 4 |
| 20 | 20 | 38 | 104 | 4644 -41794 | 4 |
| 25 | 25 | 45 | 121 | 4644 -41795 | 5 |
| 30 | 25 | 45 | 121 | 4644 -41796 | 5 |

**Tolerances:**

| | |
|---|---|
| D1 | k12 |
| D2 | h6 |




**Modifications**
**Regrinds, Re coat**
**Specials**

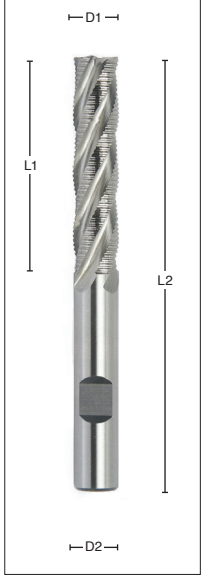
Series 4696

# HSSE 8% Co - Bright Finish
# DIN 844 NR-F - 30° Helix - Fine
# Multi-Flute Square End Long Length - Roughers



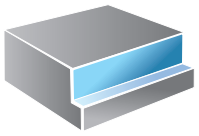

TiPAGE 276

| Tolerances: | |
|---|---|
| D1 | k12 |
| D2 | h6 |




| Cutter Dia-D1 | Shank Dia-D2 | FL L1 | OAL L2 | Part Number | No. of Flutes |
|---|---|---|---|---|---|
| 10 | 10 | 45 | 95 | 4696 -43272 | 4 |
| 12 | 12 | 53 | 110 | 4696 -43275 | 4 |
| 14 | 12 | 53 | 110 | 4696 -43276 | 4 |
| 16 | 16 | 63 | 123 | 4696 -43278 | 4 |
| 18 | 16 | 63 | 123 | 4696 -43281 | 4 |
| 20 | 20 | 75 | 141 | 4696 -43282 | 4 |
| 25 | 25 | 90 | 166 | 4696 -43287 | 5 |
| 30 | 25 | 90 | 166 | 4696 -43289 | 5 |

1.1 - 1.5 | 6.1 - 6.4 | 3.1 - 3.4 | 4.1 - 4.3



Series 4696

# Performance HSSE 8% Co - *TiALN*
# DIN 844 NR-F - 30° Helix - Fine
# Multi-Flute Square End Long Length - Roughers




TiPAGE 276

| Tolerances: | |
|---|---|
| D1 | k12 |
| D2 | h6 |




| Cutter Dia-D1 | Shank Dia-D2 | FL L1 | OAL L2 | Part Number | No. of Flutes |
|---|---|---|---|---|---|
| 10 | 10 | 45 | 95 | 4696 -18768 | 4 |
| 12 | 12 | 53 | 110 | 4696 -18770 | 4 |
| 14 | 12 | 53 | 110 | 4696 -17895 | 4 |
| 16 | 16 | 63 | 123 | 4696 -17896 | 4 |
| 18 | 16 | 63 | 123 | 4696 -18782 | 4 |
| 20 | 20 | 75 | 141 | 4696 -18778 | 4 |
| 25 | 25 | 90 | 166 | 4696 -18779 | 5 |
| 30 | 25 | 90 | 166 | 4696 -18780 | 5 |

1.1 - 1.5 | 6.1 - 6.4 | 3.1 - 3.4 | 4.1 - 4.3

**Modifications Regrinds, Re coat Specials**

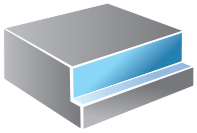
# HSSE 8% Co - Bright Finish
# DIN 844 NR - ISO 1641 - 30° Helix - Coarse
# Multi-Flute Square End Regular Length - Roughers

Series 4640

PAGE 276

Ø>25 | COARSE | ISO 1641 | DIN 844 NR | HSSE 8%Co | 30° | MULTI | FLAT

1.1 - 1.4 | 6.1 - 6.4 | 3.1 - 3.4





| Cutter Dia-D1 | Shank Dia-D2 | FL L1 | OAL L2 | Part Number | No. of Flutes |
|---|---|---|---|---|---|
| 6 | 6 | 13 | 57 | 4640 -46457 | 4 |
| 8 | 10 | 19 | 69 | 4640 -46460 | 4 |
| 10 | 10 | 22 | 72 | 4640 -46463 | 4 |
| 12 | 12 | 26 | 83 | 4640 -46466 | 4 |
| 14 | 12 | 26 | 83 | 4640 -46469 | 4 |
| 16 | 16 | 32 | 92 | 4640 -46472 | 4 |
| 18 | 16 | 32 | 92 | 4640 -46475 | 4 |
| 20 | 20 | 38 | 104 | 4640 -46478 | 4 |
| 25 | 25 | 45 | 121 | 4640 -46484 | 5 |
| 32 | 32 | 53 | 133 | 4640 -46493 | 6 |

**Tolerances:**

| | |
|---|---|
| D1 | k12 |
| D2 | h6 |




# Performance HSSE 8% Co - *TiALN*
# DIN 844 NR - ISO 1641 - 30° Helix - Coarse
# Multi-Flute Square End Regular Length - Roughers

Series 4640

PAGE 276

Ø>25 | COARSE | TiALN | ISO 1641 | DIN 844 NR | HSSE 8%Co | 30° | MULTI | FLAT

1.1 - 1.4 | 6.1 - 6.4 | 3.1 - 3.4

| Cutter Dia-D1 | Shank Dia-D2 | FL L1 | OAL L2 | Part Number | No. of Flutes |
|---|---|---|---|---|---|
| 6 | 6 | 13 | 57 | 4640 -41756 | 4 |
| 8 | 10 | 19 | 69 | 4640 -41758 | 4 |
| 10 | 10 | 22 | 72 | 4640 -41760 | 4 |
| 12 | 12 | 26 | 83 | 4640 -41762 | 4 |
| 14 | 12 | 26 | 83 | 4640 -41764 | 4 |
| 16 | 16 | 32 | 92 | 4640 -41766 | 4 |
| 18 | 16 | 32 | 92 | 4640 -41768 | 4 |
| 20 | 20 | 38 | 104 | 4640 -41770 | 4 |
| 25 | 25 | 45 | 121 | 4640 -41773 | 5 |
| 32 | 32 | 53 | 133 | 4640 -41777 | 6 |

**Tolerances:**

| | |
|---|---|
| D1 | k12 |
| D2 | h6 |




**Modifications**
**Regrinds, Re coat**
**Specials**

Series 4690

# HSSE 8% Co - Bright Finish
## DIN 844 NR - ISO 1641 - 30° Helix - Coarse
## Multi-Flute Square End Long Length - Roughers



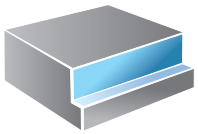

PAGE 276

| Tolerances: | |
|---|---|
| D1 | k12 |
| D2 | h6 |



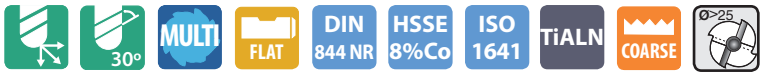

| Cutter Dia-D1 | Shank Dia-D2 | FL L1 | OAL L2 | Part Number | No. of Flutes |
|---|---|---|---|---|---|
| 10 | 10 | 45 | 95 | 4690 -46634 | 4 |
| 12 | 12 | 53 | 110 | 4690 -46637 | 4 |
| 14 | 12 | 53 | 110 | 4690 -46640 | 4 |
| 16 | 16 | 63 | 123 | 4690 -46643 | 4 |
| 18 | 16 | 63 | 123 | 4690 -46646 | 4 |
| 20 | 20 | 75 | 141 | 4690 -46649 | 4 |
| 25 | 25 | 90 | 166 | 4690 -46655 | 5 |
| 32 | 32 | 100 | 186 | 4690 -46661 | 6 |

1.1 - 1.4 | 6.1 - 6.4 | 3.1 - 3.4



Series 4690

# Performance HSSE 8% Co - *TiALN*
## DIN 844 NR - ISO 1641 - 30° Helix - Coarse
## Multi-Flute Square End Long Length - Roughers




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| Tolerances: | |
|---|---|
| D1 | k12 |
| D2 | h6 |




| Cutter Dia-D1 | Shank Dia-D2 | FL L1 | OAL L2 | Part Number | No. of Flutes |
|---|---|---|---|---|---|
| 10 | 10 | 45 | 95 | 4690 -43084 | 4 |
| 12 | 12 | 53 | 110 | 4690 -43086 | 4 |
| 14 | 12 | 53 | 110 | 4690 -43087 | 4 |
| 16 | 16 | 63 | 123 | 4690 -43089 | 4 |
| 18 | 16 | 63 | 123 | 4690 -43090 | 4 |
| 20 | 20 | 75 | 141 | 4690 -43092 | 4 |
| 25 | 25 | 90 | 166 | 4690 -18165 | 5 |
| 32 | 32 | 100 | 186 | 4690 -18180 | 6 |

1.1 - 1.4 | 6.1 - 6.4 | 3.1 - 3.4

**Modifications**
**Regrinds, Re coat**
**Specials**

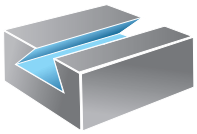
# HSSE 8% Co. - Bright Finish
# DIN 1833 A - ISO 3859 - 45° & 60°
# Dovetail Cutters

Series 4330

Ti PAGE 272

ISO 3859 | DIN 1833A | HSSE 8%Co | 45° 60° | MULTI | PLAIN

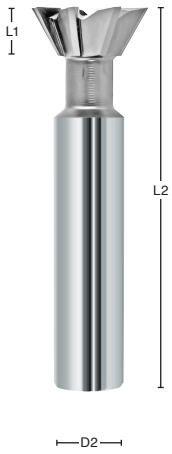
1.1 - 1.6 | 6.1 - 6.4 | 2.1 - 2.3 | 4.1 - 5.3 | 3.1 - 3.4 | 1.7 - 1.8 | 9.1



| Cutter Dia-D1 | Shank Dia-D2 | Cutter Width L1 | OAL L2 | No. FL | Part Number | Angle |
|---|---|---|---|---|---|---|
| 16 | 12 | 4 | 60 | 8 | 4330 -58656 | 45° |
| 20 | 12 | 5 | 63 | 8 | 4330 -58674 | 45° |
| 25 | 12 | 6.3 | 67 | 10 | 4330 -58701 | 45° |
| 32 | 16 | 8 | 71 | 12 | 4330 -58719 | 45° |
| 16 | 12 | 6.3 | 60 | 8 | 4330 -58665 | 60° |
| 20 | 12 | 8 | 63 | 8 | 4330 -58683 | 60° |
| 25 | 12 | 10 | 67 | 10 | 4330 -58710 | 60° |
| 32 | 16 | 12.5 | 71 | 12 | 4330 -58728 | 60° |

**Tolerances:**

| | |
|---|---|
| D1 | js16 |
| D2 | h8 |




# Performance HSSE 8% Co - *TiALN*
# DIN 1833 A - ISO 3859 - 45° & 60°
# Dovetail Cutters

Series 4330

Ti PAGE 272

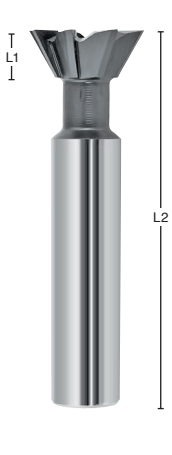
TiALN | ISO 3859 | DIN 1833A | HSSE 8%Co | 45° 60° | MULTI | PLAIN

1.1 - 1.6 | 6.1 - 6.4 | 2.1 - 2.3 | 4.1 - 5.3 | 3.1 - 3.4 | 1.7 - 1.8 | 9.1

| Cutter Dia-D1 | Shank Dia-D2 | Cutter Width L1 | OAL L2 | No. FL | Part Number | Angle |
|---|---|---|---|---|---|---|
| 16 | 12 | 4 | 60 | 8 | 4330 -19628 | 45° |
| 20 | 12 | 5 | 63 | 8 | 4330 -22407 | 45° |
| 25 | 12 | 6.3 | 67 | 10 | 4330 -22405 | 45° |
| 32 | 16 | 8 | 71 | 12 | 4330 -22406 | 45° |
| 16 | 12 | 6.3 | 60 | 8 | 4330 -21549 | 60° |
| 20 | 12 | 8 | 63 | 8 | 4330 -17857 | 60° |
| 25 | 12 | 10 | 67 | 10 | 4330 -17923 | 60° |
| 32 | 16 | 12.5 | 71 | 12 | 4330 -21469 | 60° |

**Tolerances:**

| | |
|---|---|
| D1 | js16 |
| D2 | h8 |




**Modifications**
**Regrinds, Re coat**
**Specials**

Series 4800

# HSSE 8% Co - Bright Finish
# DIN 851 A A N - ISO 3337 - 10°
# T-Slot Cutters

MULTI | 10° | PLAIN | DIN 851 A A N | HSSE 8%Co | ISO 3337

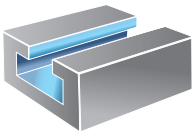
PAGE 272

1.1 - 1.6 | 6.1 - 8.1 | 2.1 - 2.3 | 4.1 - 5.3 | 3.1 - 3.4

| Tolerances: | |
|---|---|
| D1 | d11 |
| D2 | h8 |




| Cutter Dia-D1 | Shank Dia-D2 | Cutter Width L1 | OAL L2 | No. FL | Part Number |
|---|---|---|---|---|---|
| 11 | 10 | 4 | 53.5 | 6 | 4800 -68868 |
| 12.5 | 10 | 6 | 57 | 6 | 4800 -57822 |
| 16 | 10 | 8 | 62 | 6 | 4800 -57831 |
| 18 | 12 | 8 | 70 | 8 | 4800 -57840 |
| 21 | 12 | 9 | 74 | 8 | 4800 -57849 |
| 25 | 16 | 11 | 82 | 8 | 4800 -57858 |
| 32 | 16 | 14 | 90 | 10 | 4800 -57867 |
| 40 | 25 | 18 | 108 | 10 | 4800 -57876 |



Series 4800

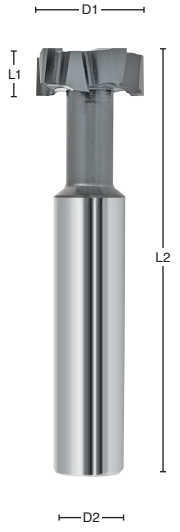
# Performance HSSE 8% Co - *TiALN*
# DIN 851 A A N - ISO 3337 - 10°
# T-Slot Cutters

MULTI | 10° | PLAIN | DIN 851 A A N | HSSE 8%Co | ISO 3337 | TiALN

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1.1 - 1.6 | 6.1 - 8.1 | 2.1 - 2.3 | 4.1 - 5.3 | 3.1 - 3.4

| Tolerances: | |
|---|---|
| D1 | d11 |
| D2 | h8 |




| Cutter Dia-D1 | Shank Dia-D2 | Cutter Width L1 | OAL L2 | No. FL | Part Number |
|---|---|---|---|---|---|
| 11 | 10 | 4 | 53.5 | 6 | 4800 -17164 |
| 12.5 | 10 | 6 | 57 | 6 | 4800 -17165 |
| 16 | 10 | 8 | 62 | 6 | 4800 -13120 |
| 18 | 12 | 8 | 70 | 8 | 4800 -17167 |
| 21 | 12 | 9 | 74 | 8 | 4800 -14929 |
| 25 | 16 | 11 | 82 | 8 | 4800 -15667 |
| 32 | 16 | 14 | 90 | 10 | 4800 -17168 |
| 40 | 25 | 18 | 108 | 10 | 4800 -17589 |

**Modifications**
**Regrinds, Re coat**
**Specials**

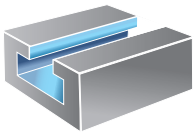
# HSSE 8% Co - Bright Finish
# DIN 851 AB NR - ISO 3337 - 30°
# T-Slot Roughing Cutters

Series 4802

PAGE 272

COARSE | DIN 851 ABNR | ISO 3337 | HSSE 8%Co | MULTI | 30° | FLAT

1.1 - 1.6 | 6.1 - 8.1 | 2.1 - 2.3 | 4.1 - 5.3 | 3.1 - 3.4



| Cutter Dia-D1 | Shank Dia-D2 | Cutter Width L1 | OAL L2 | No. FL | Part Number |
|---|---|---|---|---|---|
| 16 | 10 | 8 | 62 | 4 | 4802 -77751 |
| 18 | 12 | 8 | 70 | 4 | 4802 -77753 |
| 21 | 12 | 9 | 74 | 5 | 4802 -77756 |
| 25 | 16 | 11 | 82 | 5 | 4802 -77757 |
| 32 | 16 | 14 | 90 | 6 | 4802 -77758 |
| 40 | 25 | 18 | 108 | 6 | 4802 -77759 |

**Tolerances:**

| | |
|---|---|
| D1 | d11 |
| D2 | h8 |




# Performance HSSE 8% Co - *TiALN*
# DIN 851 AB NR - ISO 3337 - 30°
# T-Slot Roughing Cutters

Series 4802

PAGE 272

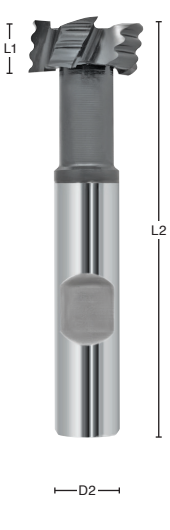
TiALN | COARSE | DIN 851 ABNR | ISO 3337 | HSSE 8%Co | MULTI | 30° | FLAT

1.1 - 1.6 | 6.1 - 8.1 | 2.1 - 2.3 | 4.1 - 5.3 | 3.1 - 3.4

| Cutter Dia-D1 | Shank Dia-D2 | Cutter Width L1 | OAL L2 | No. FL | Part Number |
|---|---|---|---|---|---|
| 16 | 10 | 8 | 62 | 4 | 4802 -22012 |
| 18 | 12 | 8 | 70 | 4 | 4802 -22013 |
| 21 | 12 | 9 | 74 | 5 | 4802 -21074 |
| 25 | 16 | 11 | 82 | 5 | 4802 -21075 |
| 32 | 16 | 14 | 90 | 6 | 4802 -18925 |
| 40 | 25 | 18 | 108 | 6 | 4802 -18928 |

**Tolerances:**

| | |
|---|---|
| D1 | d11 |
| D2 | h8 |



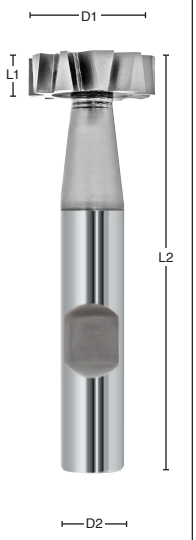

**Modifications**
**Regrinds, Re coat**
**Specials**

# HSSE 8% Co - Bright Finish
# DIN 850 D N
# Woodruff Cutters

MULTI | FLAT | DIN 850 D N | HSSE 8%Co

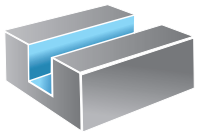
PAGE 272

| Tolerances: | |
|---|---|
| D1 | h11 |
| D2 | h8 |
| L1 | e8 |




| Cutter Dia-D1 | Cutting Edge L1 | Shank Dia-D2 | OAL L2 | No. FL | Part Number |
|---|---|---|---|---|---|
| 4.5 | 1 | 6 | 50 | 6 | 4834 -22506 |
| 7.5 | 1.5 | 6 | 50 | 6 | 4834 -22507 |
| 7.5 | 2 | 6 | 50 | 6 | 4834 -22509 |
| 10.5 | 2 | 6 | 50 | 8 | 4834 -22521 |
| 10.5 | 2.5 | 6 | 50 | 8 | 4834 -22523 |
| 10.5 | 3 | 6 | 50 | 8 | 4834 -22510 |
| 13.5 | 3 | 10 | 56 | 8 | 4834 -22512 |
| 13.5 | 4 | 10 | 56 | 8 | 4834 -22513 |
| 16.5 | 3 | 10 | 56 | 8 | 4834 -22514 |
| 16.5 | 4 | 10 | 56 | 8 | 4834 -22515 |
| 16.5 | 5 | 10 | 56 | 8 | 4834 -22516 |
| 19.5 | 4 | 10 | 63 | 10 | 4834 -22517 |
| 19.5 | 5 | 10 | 63 | 10 | 4834 -22518 |
| 19.5 | 6 | 10 | 63 | 10 | 4834 -22519 |
| 22.5 | 5 | 10 | 63 | 10 | 4834 -22520 |
| 22.5 | 6 | 10 | 63 | 10 | 4834 -22522 |
| 22.5 | 8 | 10 | 63 | 10 | 4834 -22524 |
| 25.5 | 6 | 10 | 63 | 10 | 4834 -22525 |
| 28.5 | 6 | 10 | 63 | 10 | 4834 -22527 |
| 28.5 | 8 | 10 | 63 | 10 | 4834 -22528 |
| 28.5 | 10 | 12 | 71 | 10 | 4834 -22373 |
| 32.5 | 7 | 12 | 71 | 12 | 4834 -22374 |
| 32.5 | 8 | 12 | 71 | 12 | 4834 -22530 |
| 32.5 | 10 | 12 | 71 | 12 | 4834 -22531 |
| 45.5 | 10 | 12 | 71 | 14 | 4834 -22532 |

1.1 - 1.6 | 6.1 - 8.1 | 2.1 - 2.3 | 4.1 - 5.3 | 3.1 - 3.4



**Modifications**
**Regrinds, Re coat**
**Specials**

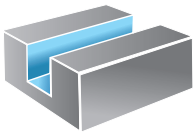
# Performance HSSE 8% Co - *TiALN*
# DIN 850 D N
# Woodruff Cutters

Series 4834

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TiALN | DIN 850 D N | HSSE 8%Co | MULTI | FLAT

1.1 - 1.6 | 6.1 - 8.1 | 2.1 - 2.3 | 4.1 - 5.3 | 3.1 - 3.4



| Cutter Dia-D1 | Cutting Edge L1 | Shank Dia-D2 | OAL L2 | No. FL | Part Number |
|---|---|---|---|---|---|
| 4.5 | 1 | 6 | 50 | 6 | 4834 -22533 |
| 7.5 | 1.5 | 6 | 50 | 6 | 4834 -22534 |
| 7.5 | 2 | 6 | 50 | 6 | 4834 -22536 |
| 10.5 | 2 | 6 | 50 | 8 | 4834 -22537 |
| 10.5 | 2.5 | 6 | 50 | 8 | 4834 -22539 |
| 10.5 | 3 | 6 | 50 | 8 | 4834 -22540 |
| 13.5 | 3 | 10 | 56 | 8 | 4834 -22542 |
| 13.5 | 4 | 10 | 56 | 8 | 4834 -22543 |
| 16.5 | 3 | 10 | 56 | 8 | 4834 -22545 |
| 16.5 | 4 | 10 | 56 | 8 | 4834 -22546 |
| 16.5 | 5 | 10 | 56 | 8 | 4834 -22547 |
| 19.5 | 4 | 10 | 63 | 10 | 4834 -22548 |
| 19.5 | 5 | 10 | 63 | 10 | 4834 -22549 |
| 19.5 | 6 | 10 | 63 | 10 | 4834 -22550 |
| 22.5 | 5 | 10 | 63 | 10 | 4834 -22551 |
| 22.5 | 6 | 10 | 63 | 10 | 4834 -22552 |
| 22.5 | 8 | 10 | 63 | 10 | 4834 -22553 |
| 25.5 | 6 | 10 | 63 | 10 | 4834 -22554 |
| 28.5 | 6 | 10 | 63 | 10 | 4834 -22555 |
| 28.5 | 8 | 10 | 63 | 10 | 4834 -22556 |
| 28.5 | 10 | 12 | 71 | 10 | 4834 -22357 |
| 32.5 | 7 | 12 | 71 | 12 | 4834 -22358 |
| 32.5 | 8 | 12 | 71 | 12 | 4834 -22560 |
| 32.5 | 10 | 12 | 71 | 12 | 4834 -22563 |
| 45.5 | 10 | 12 | 71 | 14 | 4834 -22564 |

**Tolerances:**

| | |
|---|---|
| D1 | h11 |
| D2 | h8 |
| L1 | e8 |




**Modifications**
**Regrinds, Re coat**
**Specials**

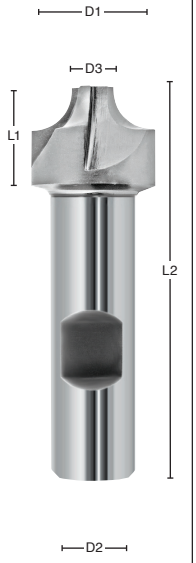
Series 5080

# HSSE 8% Co - Bright Finish
# DIN 6518 B N
# Corner Rounding Cutters

MULTI FLAT DIN 6518 B N HSSE 8%Co H11

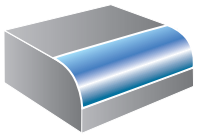
PAGE 272

Tolerances:
D2 h6




| Cutter Dia-D1 | Radius | Pilot D3 | Head Length L1 | Shank Dia-D2 | OAL L2 | No. FL | Part Number |
|---|---|---|---|---|---|---|---|
| 10 | 1 | 6 | 8 | 10 | 60 | 4 | 5080 -77762 |
| 10 | 1.6 | 6 | 8 | 10 | 60 | 4 | 5080 -77763 |
| 10 | 2 | 6 | 8 | 10 | 60 | 4 | 5080 -77764 |
| 11 | 2.5 | 6 | 8 | 10 | 60 | 4 | 5080 -77765 |
| 12 | 3 | 6 | 10 | 12 | 60 | 4 | 5080 -77766 |
| 14 | 4 | 6 | 10 | 12 | 60 | 4 | 5080 -77767 |
| 16 | 5 | 6 | 10 | 12 | 60 | 4 | 5080 -77768 |
| 20 | 6 | 8 | 12 | 16 | 67 | 4 | 5080 -77769 |
| 22 | 7 | 8 | 16 | 16 | 71 | 4 | 5080 -77770 |
| 24 | 8 | 8 | 16 | 16 | 71 | 4 | 5080 -77771 |
| 26 | 9 | 8 | 18 | 25 | 85 | 4 | 5080 -77772 |
| 28 | 10 | 8 | 18 | 25 | 85 | 4 | 5080 -77773 |
| 34 | 12 | 10 | 24 | 25 | 90 | 4 | 5080 -77774 |
| 41 | 12.5 | 16 | 28 | 25 | 100 | 6 | 5080 -77775 |
| 48 | 16 | 16 | 28 | 32 | 100 | 6 | 5080 -77776 |
| 56 | 20 | 16 | 32 | 35 | 112 | 6 | 5080 -77777 |

1.1 - 1.6 | 6.1 - 6.4
2.1 - 2.3 | 4.1 - 5.3
3.1 - 3.4 | 1.7 - 1.8
9.1



Series 5080

# Performance HSSE 8% Co. - *TiALN*
# DIN 6518 B N
# Corner Rounding Cutters

MULTI FLAT DIN 6518 B N HSSE 8%Co TiALN H11

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Tolerances:
D2 h6




| Cutter Dia-D1 | Radius | Pilot D3 | Head Length L1 | Shank Dia-D2 | OAL L2 | No. FL | Part Number |
|---|---|---|---|---|---|---|---|
| 10 | 1 | 6 | 8 | 10 | 60 | 4 | 5080 -19925 |
| 10 | 1.6 | 6 | 8 | 10 | 60 | 4 | 5080 -19379 |
| 10 | 2 | 6 | 8 | 10 | 60 | 4 | 5080 -18048 |
| 11 | 2.5 | 6 | 8 | 10 | 60 | 4 | 5080 -19928 |
| 12 | 3 | 6 | 10 | 12 | 60 | 4 | 5080 -18049 |
| 14 | 4 | 6 | 10 | 12 | 60 | 4 | 5080 -18052 |
| 16 | 5 | 6 | 10 | 12 | 60 | 4 | 5080 -17591 |
| 20 | 6 | 8 | 12 | 16 | 67 | 4 | 5080 -18056 |
| 22 | 7 | 8 | 16 | 16 | 71 | 4 | 5080 -19934 |
| 24 | 8 | 8 | 16 | 16 | 71 | 4 | 5080 -17593 |
| 26 | 9 | 8 | 18 | 25 | 85 | 4 | 5080 -19946 |
| 28 | 10 | 8 | 18 | 25 | 85 | 4 | 5080 -19952 |
| 34 | 12 | 10 | 24 | 25 | 90 | 4 | 5080 -19953 |
| 41 | 12.5 | 16 | 28 | 25 | 100 | 6 | 5080 -19954 |
| 48 | 16 | 16 | 28 | 32 | 100 | 6 | 5080 -19956 |
| 56 | 20 | 16 | 32 | 35 | 112 | 6 | 5080 -21999 |

1.1 - 1.6 | 6.1 - 6.4
2.1 - 2.3 | 4.1 - 5.3
3.1 - 3.4 | 1.7 - 1.8
9.1

**Modifications Regrinds, Re coat Specials**

# Carbide Drills & Application Tools

## Range
Standard, Performance & Application Drills, Reamers, Countersinks, Chamfer and Corner Rounding Tools. Engraving Tools, Drill Mills, Boring Tools and Carbide Rod.

## Size
Metric: 1mm through to 25mm
Imperial: 1/32" through to 1"
Wire: 70 through to 1
Letter: A through to Z

## Finish
Bright Finish, & TiALN Coated

## Options
Tools are available from 1 flute to 9 flute. Helix angle available from straight flute through to 120°.
3xD, 5xD and 8xD with & without coolant.
DIN, BS,US, and ISO specifications available.

## Delivery
Over 150,00 tools available from stock for Same-Day despatch.



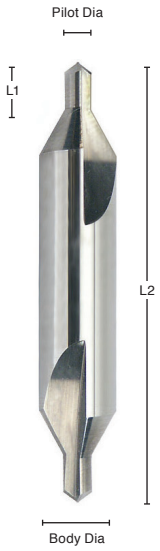
Series 106

# Solid Carbide General Purpose - Bright Finish
# 60° Included Point Angle
# Micro-grain K30 - Centre Drills



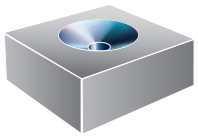

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**Tolerance :**
Pilot +0.003/-0.000"
Body h6




| Pilot Dia | Body Dia | FL L1 | OAL L2 | Part Number | Tool BS |
|---|---|---|---|---|---|
| 3/64" | 1/8" | 3/64" | 1-1/4" | 106 -01608 | 1 |
| 5/64" | 3/16" | 5/64" | 1-7/8" | 106 -01612 | 2 |
| 7/64" | 1/4" | 7/64" | 2" | 106 -01616 | 3 |
| 1/8" | 5/16" | 1/8" | 2-1/8" | 106 -01620 | 4 |
| 3/16" | 7/16" | 3/16" | 2-3/4" | 106 -01628 | 5 |
| 7/32" | 1/2" | 7/32" | 3" | 106 -01632 | 6 |

1.1 - 1.6 | 6.1 - 8.2
2.1 - 2.2 | 3.1 - 3.4
3.1 - 3.4



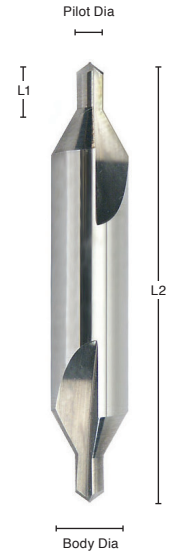
Series 107

# Solid Carbide General Purpose - Bright Finish
# 60° Included Point Angle
# Micro-grain K30 - Centre Drills




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**Tolerance :**
Pilot +0.0076/-0.000mm
Body h6




| Pilot Dia | Body Dia | FL L1 | OAL L2 | Part Number |
|---|---|---|---|---|
| 1.6 | 4 | 2.4 | 35.50 | 107 -01708 |
| 2 | 5 | 2.9 | 40 | 107 -01712 |
| 2.5 | 6.3 | 3.6 | 45 | 107 -01716 |
| 3.15 | 8 | 5.6 | 50 | 107 -01720 |
| 4 | 10 | 5.6 | 56 | 107 -01728 |
| 5 | 12.5 | 6.9 | 63 | 107 -01732 |

1.1 - 1.6 | 6.1 - 8.2
2.1 - 2.2 | 3.1 - 3.4
3.1 - 3.4

# Solid Carbide Multi Purpose
# 90° Included Angle Centre Cutting
# Micro-grain K30 - 2 & 4 Flute Drill Mills

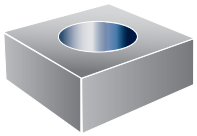
Series 288 and 488

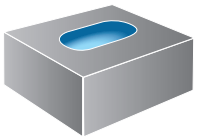
Ti PAGE 264

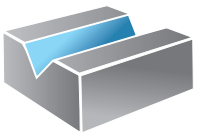
30° MG HM 2 4 PLAIN

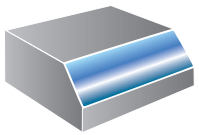
1.1 - 1.6 | 6.1 - 8.2 | 2.1 - 2.2 | 4.1 - 5.3 | 3.1 - 3.4

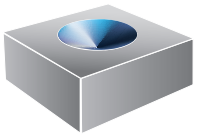
| Cutter Dia-D1 | FL L1 | OAL L2 | 2 Flute Part Number | 4 Flute Part Number |
|---|---|---|---|---|
| 3 | 12 | 38 | 288 -12505 | 488 -14505 |
| 4 | 14 | 50 | 288 -12507 | 488 -14507 |
| 5 | 16 | 50 | 288 -12509 | 488 -14509 |
| 6 | 19 | 63 | 288 -12510 | 488 -14510 |
| 8 | 19 | 63 | 288 -12512 | 488 -14512 |
| 10 | 22 | 70 | 288 -12514 | 488 -14514 |
| 12 | 25 | 75 | 288 -12516 | 488 -14516 |
| 16 | 32 | 88 | 288 -12520 | 488 -14520 |
| 20 | 45 | 100 | 288 -12524 | 488 -14524 |



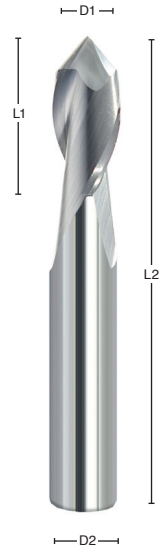




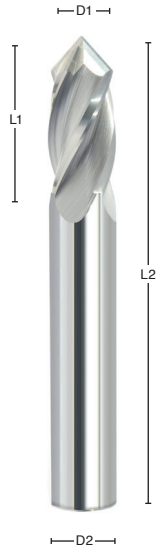




**Tolerances:**
D1 +0.00/-0.051mm
D2 h6




**Tolerances:**
D1 +0.00/-0.051mm
D2 h6




# Performance Solid Carbide Multi Purpose - *TiALN*
# 90° Included Angle Centre Cutting
# Micro-grain K30 - 2 & 4 Flute Drill Mills

Series 289 and 489

Ti PAGE 264

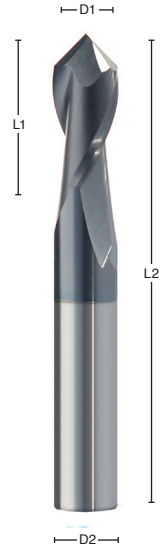
TiALN 30° MG HM 2 4 PLAIN

1.1 - 1.6 | 6.1 - 8.2 | 2.1 - 2.2 | 4.1 - 5.3 | 3.1 - 3.4

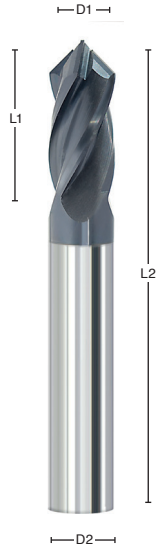
| Cutter Dia-D1 | FL L1 | OAL L2 | 2 Flute Part Number | 4 Flute Part Number |
|---|---|---|---|---|
| 3 | 12 | 38 | 289 -12505 | 489 -14505 |
| 4 | 14 | 50 | 289 -12507 | 489 -14507 |
| 5 | 16 | 50 | 289 -12509 | 489 -14509 |
| 6 | 19 | 63 | 289 -12510 | 489 -14510 |
| 8 | 19 | 63 | 289 -12512 | 489 -14512 |
| 10 | 22 | 70 | 289 -12514 | 489 -14514 |
| 12 | 25 | 75 | 289 -12516 | 489 -14516 |
| 16 | 32 | 88 | 289 -12520 | 489 -14520 |
| 20 | 45 | 100 | 289 -12524 | 489 -14524 |

**Modifications**
**Regrinds, Re coat**
**Specials**

**Tolerances:**
D1 +0.00/-0.051mm
D2 h6




**Tolerances:**
D1 +0.00/-0.051mm
D2 h6



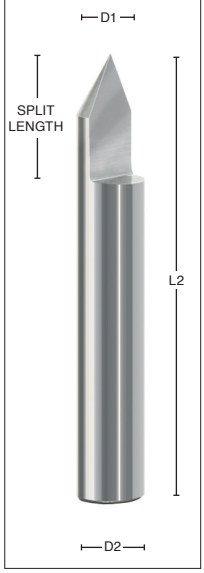
Series 001

# Solid Carbide General Engraving Centre Cutting 30°, 60°, 90° Inclusive Micro-grain K30 Engraving Tool



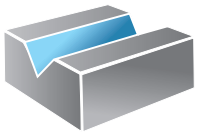

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| Tolerances: | |
|---|---|
| D1 | +0.00/-0.127mm +0.00/-0.005" |
| D2 | h6 |




| Cutter Dia-D1 | Shank Dia-D2 | Included Angle | Split Length | OAL L2 | Part Number |
|---|---|---|---|---|---|
| 3 | 3 | 30° | 8 | 38 | 001 -3305 |
| 6 | 6 | 30° | 12 | 50 | 001 -6308 |
| 3 | 3 | 60° | 8 | 38 | 001 -3605 |
| 6 | 6 | 60° | 12 | 50 | 001 -6608 |
| 3 | 3 | 90° | 8 | 38 | 001 -3905 |
| 6 | 6 | 90° | 12 | 50 | 001 -6908 |
| | | | | | |
| 1/8" | 1/8" | 60° | 3/8" | 1-1/2" | 001 -1860 |
| 1/4" | 1/4" | 60° | 3/8" | 2-1/2" | 001 -1460 |

1.1 - 1.6 | 6.1 - 6.4 | 2.1 - 2.3 | 4.1 - 5.3 | 3.1 - 3.4



| Cutter Dia-D1 | Shank Dia-D2 | Flat | Included Angle | Split Length | OAL L2 | Part Number |
|---|---|---|---|---|---|---|
| 6 | 6 | 0.25 | 60° | 8 | 50 | 002 -6025 |
| 6 | 6 | 0.50 | 60° | 8 | 50 | 002 -6050 |
| 6 | 6 | 0.75 | 60° | 8 | 50 | 002 -6075 |
| 6 | 6 | 1.00 | 60° | 8 | 50 | 002 -6010 |
| 6 | 6 | 1.25 | 60° | 8 | 50 | 002 -6012 |
| 6 | 6 | 1.50 | 60° | 8 | 50 | 002 -6015 |
| 6 | 6 | 2.00 | 60° | 8 | 50 | 002 -6020 |

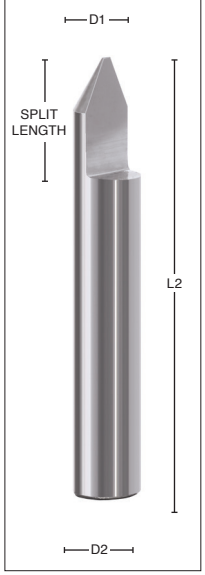
Series 002

# Solid Carbide General Engraving Centre Cutting 60° Inclusive Micro-grain K30 Engraving Tools with Flats



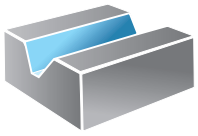

Ti PAGE 268

| Tolerances: | |
|---|---|
| D1 | +0.00/-0.127mm |
| D2 | h6 |




| Cutter Dia-D1 | Shank Dia-D2 | Flat | Included Angle | Split Length | OAL L2 | Part Number |
|---|---|---|---|---|---|---|
| 6 | 6 | 0.25 | 60° | 8 | 50 | 002 -6025 |
| 6 | 6 | 0.50 | 60° | 8 | 50 | 002 -6050 |
| 6 | 6 | 0.75 | 60° | 8 | 50 | 002 -6075 |
| 6 | 6 | 1.00 | 60° | 8 | 50 | 002 -6010 |
| 6 | 6 | 1.25 | 60° | 8 | 50 | 002 -6012 |
| 6 | 6 | 1.50 | 60° | 8 | 50 | 002 -6015 |
| 6 | 6 | 2.00 | 60° | 8 | 50 | 002 -6020 |

1.1 - 1.6 | 6.1 - 6.4 | 2.1 - 2.3 | 4.1 - 5.3 | 3.1 - 3.4



**Modifications**
**Regrinds, Re coat**
**Specials**

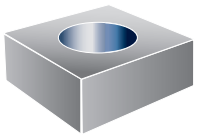
# Solid Carbide Straight Flute Reamer
# Right Hand Cutting
# Micro-grain K30 4-Flute

Series 108

TiN PAGE 268

MG HM | 4 | PLAIN

1.1 - 1.6 | 6.1 - 8.2 | 2.1 - 2.3 | 4.1 - 5.3 | 3.1 - 3.4 | 1.7 - 1.9



| Size Ref | Reamer Dia | FL L1 | OAL L2 | Shank Dia-D2 | No. of Flutes | Part Number |
|---|---|---|---|---|---|---|
| .80mm | .0315 | 10mm | 38mm | .70mm | 4 | 108 -00315 |
| .90mm | .0354 | 10mm | 38mm | .80mm | 4 | 108 -00354 |
| 1mm | .0394 | 10mm | 38mm | .80mm | 4 | 108 -00394 |
| 1.1mm | .0433 | 10mm | 38mm | 1mm | 4 | 108 -00433 |
| 56 | .0465 | 3/8" | 1-1/2" | .0410 | 4 | 108 -00465 |
| **3/64"** | .0469 | 3/8" | 1-1/2" | .0410 | 4 | 108 -00469 |
| 1.2mm | .0472 | 10mm | 38mm | 1.04mm | 4 | 108 -00472 |
| 1.3mm | .0512 | 10mm | 38mm | 1.04mm | 4 | 108 -00512 |
| 55 | .0520 | 3/8" | 1-1/2" | .0410 | 4 | 108 -00520 |
| 54 | .0550 | 3/8" | 1-1/2" | .0520 | 4 | 108 -00550 |
| 1.4mm | .0551 | 10mm | 38mm | 1.32mm | 4 | 108 -00551 |
| 1.5mm | .0591 | 10mm | 38mm | 1.32mm | 4 | 108 -00591 |
| 53 | .0595 | 3/8" | 1-1/2" | .0520 | 4 | 108 -00595 |
| **1/16"** | .0625 | 3/8" | 1-1/2" | .0520 | 4 | 108 -00625 |
| 1.6mm | .0630 | 10mm | 38mm | 1.32mm | 4 | 108 -00630 |
| 52 | .0635 | 3/8" | 1-1/2" | .0520 | 4 | 108 -00635 |
| 1.7mm | .0669 | 12mm | 44mm | 1.59mm | 4 | 108 -00669 |
| 51 | .0670 | 1/2" | 1-3/4" | .0625 | 4 | 108 -00670 |
| 50 | .0700 | 1/2" | 1-3/4" | .0625 | 4 | 108 -00700 |
| 1.8mm | .0709 | 12mm | 44mm | 1.59mm | 4 | 108 -00709 |
| 49 | .0730 | 1/2" | 1-3/4" | .0625 | 4 | 108 -00730 |
| 1.9mm | .0748 | 12mm | 44mm | 1.59mm | 4 | 108 -00748 |
| 48 | .0760 | 1/2" | 1-3/4" | .0625 | 4 | 108 -00760 |
| **5/64"** | .0781 | 1/2" | 1-3/4" | .0625 | 4 | 108 -00781 |
| 47 | .0785 | 1/2" | 1-3/4" | .0625 | 4 | 108 -00785 |
| 2mm | .0787 | 12mm | 44mm | 1.59mm | 4 | 108 -00787 |
| 46 | .0810 | 1/2" | 2" | .0781 | 4 | 108 -00810 |
| 45 | .0820 | 1/2" | 2" | .0781 | 4 | 108 -00820 |
| 2.1mm | .0827 | 12mm | 50mm | 1.98mm | 4 | 108 -00827 |
| 44 | .0860 | 1/2" | 2" | .0781 | 4 | 108 -00860 |
| 2.2mm | .0866 | 12mm | 50mm | 1.98mm | 4 | 108 -00866 |
| 43 | .0890 | 1/2" | 2" | .0781 | 4 | 108 -00890 |
| 2.3mm | .0906 | 12mm | 50mm | 1.98mm | 4 | 108 -00906 |
| 42 | .0935 | 1/2" | 2" | .0781 | 4 | 108 -00935 |
| **3/32"** | .0938 | 1/2" | 2" | .0781 | 4 | 108 -00938 |
| 2.4mm | .0945 | 12mm | 50mm | 1.98mm | 4 | 108 -00945 |
| 41 | .0960 | 5/8" | 2-1/4" | .0938 | 4 | 108 -00960 |
| 40 | .0980 | 5/8" | 2-1/4" | .0938 | 4 | 108 -00980 |
| 2.5mm | .0984 | 16mm | 57mm | 2.38mm | 4 | 108 -00984 |
| 39 | .0995 | 5/8" | 2-1/4" | .0938 | 4 | 108 -00995 |
| 38 | .1015 | 5/8" | 2-1/4" | .0938 | 4 | 108 -01015 |
| 2.6mm | .1024 | 16mm | 57mm | 2.38mm | 4 | 108 -01024 |
| 37 | .1040 | 5/8" | 2-1/4" | .0938 | 4 | 108 -01040 |
| 2.7mm | .1063 | 16mm | 57mm | 2.38mm | 4 | 108 -01063 |
| 36 | .1065 | 5/8" | 2-1/4" | .0938 | 4 | 108 -01065 |
| **7/64"** | .1094 | 5/8" | 2-1/4" | .0938 | 4 | 108 -01094 |
| 35 | .1100 | 5/8" | 2-1/4" | .0938 | 4 | 108 -01100 |
| 2.8mm | .1102 | 16mm | 57mm | 2.38mm | 4 | 108 -01102 |
| 34 | .1110 | 5/8" | 2-1/4" | .0938 | 4 | 108 -01110 |
| 33 | .1130 | 5/8" | 2-1/4" | .0938 | 4 | 108 -01130 |
| 2.9mm | .1142 | 16mm | 57mm | 2.78mm | 4 | 108 -01142 |
| 32 | .1160 | 5/8" | 2-1/4" | .1094 | 4 | 108 -01160 |
| 3mm | .1181 | 16mm | 57mm | 2.78mm | 4 | 108 -01181 |
| 31 | .1200 | 5/8" | 2-1/4" | .1094 | 4 | 108 -01200 |
| 3.1mm | .1220 | 16mm | 57mm | 2.78mm | 4 | 108 -01220 |
| **1/8"** | .1250 | 5/8" | 2-1/4" | .1094 | 4 | 108 -01250 |
| 3.2mm | .1260 | 16mm | 57mm | 2.78mm | 4 | 108 -01260 |
| 30 | .1285 | 5/8" | 2-1/4" | .1094 | 4 | 108 -01285 |
| 3.3mm | .1299 | 19mm | 64mm | 2.78mm | 4 | 108 -01299 |

**Tolerances:**

D1 +.0008/-0.000mm

D2 h6




**Modifications**
**Regrinds, Re coat**
**Specials**

# Solid Carbide Straight Flute Reamer
# Right Hand Cutting
# Micro-grain K30 4 Flute

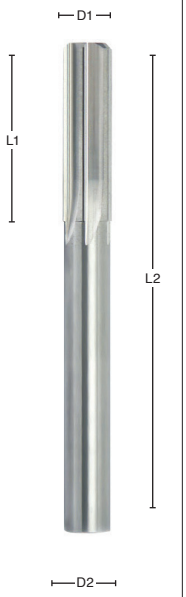
MG HM | 4 | PLAIN

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**Tolerances:**

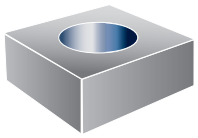
D1 +.0008/-0.000mm

D2 h6




| Size Ref | Reamer Dia | FL L1 | OAL L2 | Shank Dia-D2 | No. of Flutes | Part Number |
|---|---|---|---|---|---|---|
| 3.4mm | .1339 | 19mm | 64mm | 2.78mm | 4 | 108 -01339 |
| 29 | .1360 | 3/4" | 2-1/2" | .1250 | 4 | 108 -01360 |
| 3.5mm | .1378 | 19mm | 64mm | 3.18mm | 4 | 108 -01378 |
| 28 | .1405 | 3/4" | 2-1/2" | .1250 | 4 | 108 -01405 |
| **9/64"** | .1406 | 3/4" | 2-1/2" | .1250 | 4 | 108 -01406 |
| 3.6mm | .1417 | 19mm | 64mm | 3.57mm | 4 | 108 -01417 |
| 27 | .1440 | 3/4" | 2-1/2" | .1250 | 4 | 108 -01440 |
| 3.7mm | .1457 | 19mm | 64mm | 3.57mm | 4 | 108 -01547 |
| 26 | .1470 | 3/4" | 2-1/2" | .1406 | 4 | 108 -01470 |
| 25 | .1495 | 3/4" | 2-1/2" | .1406 | 4 | 108 -01495 |
| 3.8mm | .1496 | 19mm | 64mm | 3.57mm | 4 | 108 -01496 |
| 24 | .1520 | 3/4" | 2-1/2" | .1406 | 4 | 108 -01520 |
| 3.9mm | .1535 | 19mm | 64mm | 3.57mm | 4 | 108 -01535 |
| 23 | .1540 | 3/4" | 2-1/2" | .1406 | 4 | 108 -01540 |
| **5/32"** | .1562 | 3/4" | 2-1/2" | .1406 | 4 | 108 -01562 |
| 22 | .1570 | 3/4" | 2-1/2" | .1406 | 4 | 108 -01570 |
| 4mm | .1575 | 19mm | 64mm | 3.57mm | 4 | 108 -01575 |
| 21 | .1590 | 3/4" | 2-1/2" | .1406 | 4 | 108 -01590 |
| 20 | .1610 | 7/8" | 2-3/4" | .1562 | 4 | 108 -01610 |
| 4.1mm | .1614 | 22mm | 70mm | 3.97mm | 4 | 108 -01614 |
| 4.2mm | .1654 | 22mm | 70mm | 3.97mm | 4 | 108 -01654 |
| 19 | .1660 | 7/8" | 2-3/4" | .1562 | 4 | 108 -01660 |
| 4.3mm | .1693 | 22mm | 70mm | 3.97mm | 4 | 108 -01693 |
| 18 | .1695 | 7/8" | 2-3/4" | .1562 | 4 | 108 -01695 |
| **11/64"** | .1719 | 7/8" | 2-3/4" | .1562 | 4 | 108 -01719 |
| 17 | .1730 | 7/8" | 2-3/4" | .1562 | 4 | 108 -01730 |
| 4.4mm | .1732 | 22mm | 70mm | 3.97mm | 4 | 108 -01732 |
| 16 | .1770 | 7/8" | 2-3/4" | .1719 | 4 | 108 -01770 |
| 4.5mm | .1772 | 22mm | 70mm | 4.37mm | 4 | 108 -01772 |
| 15 | .1800 | 7/8" | 2-3/4" | .1719 | 4 | 108 -01800 |
| 4.6mm | .1811 | 22mm | 70mm | 4.37mm | 4 | 108 -01811 |
| 14 | .1820 | 7/8" | 2-3/4" | .1719 | 4 | 108 -01820 |
| 13 | .1850 | 7/8" | 2-3/4" | .1719 | 4 | 108 -01850 |
| **3/16"** | .1875 | 7/8" | 2-3/4" | .1719 | 4 | 108 -01875 |
| 12 | .1890 | 7/8" | 2-3/4" | .1719 | 4 | 108 -01890 |
| 11 | .1910 | 7/8" | 2-3/4" | .1875 | 4 | 108 -01910 |
| 4.9mm | .1929 | 22mm | 70mm | 4.76mm | 4 | 108 -01929 |
| 10 | .1935 | 7/8" | 2-3/4" | .1875 | 4 | 108 -01935 |
| 9 | .1960 | 1" | 3" | .1875 | 4 | 108 -01960 |
| 5mm | .1969 | 25mm | 76mm | 4.76mm | 4 | 108 -01969 |
| 8 | .1990 | 1" | 3" | .1875 | 4 | 108 -01990 |
| 5.1mm | .2008 | 25mm | 76mm | 4.76mm | 4 | 108 -02008 |
| 7 | .2010 | 1" | 3" | .1875 | 4 | 108 -02010 |
| **13/64"** | .2031 | 1" | 3" | .1875 | 4 | 108 -02031 |
| 6 | .2040 | 1" | 3" | .1875 | 4 | 108 -02040 |
| 5.2mm | .2047 | 25mm | 76mm | 4.76mm | 4 | 108 -02047 |
| 5 | .2055 | 1" | 3" | .1875 | 4 | 108 -02055 |
| 5.3mm | .2087 | 25mm | 76mm | 4.76mm | 4 | 108 -02087 |
| 4 | .2090 | 1" | 3" | .1875 | 4 | 108 -02090 |
| 5.4mm | .2126 | 25mm | 76mm | 4.76mm | 4 | 108 -02126 |
| 3 | .2130 | 1" | 3" | .1875 | 4 | 108 -02130 |
| 5.5mm | .2165 | 25mm | 76mm | 4.76mm | 4 | 108 -02165 |
| **7/32"** | .2188 | 1" | 3" | .1875 | 4 | 108 -02188 |
| 5.6mm | .2205 | 25mm | 76mm | 4.76mm | 4 | 108 -02205 |
| 2 | .2210 | 1" | 3" | .1875 | 4 | 108 -02210 |
| 5.7mm | .2244 | 25mm | 76mm | 5.56mm | 4 | 108 -02244 |
| 1 | .2280 | 1" | 3" | .2188 | 4 | 108 -02280 |
| 5.8mm | .2283 | 25mm | 76mm | 5.56mm | 4 | 108 -02283 |
| 5.9mm | .2323 | 25mm | 76mm | 5.56mm | 4 | 108 -02323 |

1.1 - 1.6 | 6.1 - 8.2 | 2.1 - 2.3 | 4.1 - 5.3 | 3.1 - 3.4 | 1.7 - 1.9



**Modifications**
**Regrinds, Re coat**
**Specials**

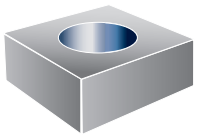
# Solid Carbide Straight Flute Reamer
# Right Hand Cutting
# Micro-grain K30 4 & 6 Flute

Series 108

TiN PAGE 268

MG HM | 4 | 6 | PLAIN

1.1 - 1.6 | 6.1 - 8.2 | 2.1 - 2.3 | 4.1 - 5.3 | 3.1 - 3.4 | 1.7 - 1.9



| Size Ref | Reamer Dia | FL L1 | OAL L2 | Shank Dia-D2 | No. of Flutes | Part Number |
|---|---|---|---|---|---|---|
| A | .2340 | 1" | 3" | .2188 | 4 | 108 -02340 |
| **15/64"** | .2344 | 1" | 3" | .2188 | 4 | 108 -02344 |
| 6mm | .2362 | 25mm | 76mm | 5.56mm | 4 | 108 -02362 |
| B | .2380 | 1" | 3" | .2188 | 4 | 108 -02380 |
| 6.1mm | .2402 | 25mm | 76mm | 5.56mm | 4 | 108 -02402 |
| C | .2420 | 1" | 3" | .2188 | 4 | 108 -02420 |
| 6.2mm | .2441 | 25mm | 76mm | 5.56mm | 4 | 108 -02441 |
| D | .2460 | 1" | 3" | .2188 | 4 | 108 -02460 |
| 6.3mm | .2480 | 25mm | 76mm | 5.56mm | 4 | 108 -02480 |
| **1/4" E** | .2500 | 1" | 3" | .2188 | 4 | 108 -02500 |
| 6.4mm | .2520 | 29mm | 83mm | 6.35mm | 4 | 108 -02520 |
| 6.5mm | .2559 | 29mm | 83mm | 6.35mm | 6 | 108 -02559 |
| F | .2570 | 1-1/8" | 3-1/4" | .2500 | 6 | 108 -02570 |
| 6.6mm | .2598 | 29mm | 83mm | 6.35mm | 6 | 108 -02598 |
| G | .2610 | 1-1/8" | 3-1/4" | .2500 | 6 | 108 -02610 |
| 6.7mm | .2638 | 29mm | 83mm | 6.35mm | 6 | 108 -02638 |
| **17/64"** | .2656 | 1-1/8" | 3-1/4" | .2500 | 6 | 108 -02656 |
| H | .2660 | 1-1/8" | 3-1/4" | .2500 | 6 | 108 -02660 |
| 6.8mm | .2677 | 29mm | 83mm | 6.35mm | 6 | 108 -02677 |
| 6.9mm | .2717 | 29mm | 83mm | 6.35mm | 6 | 108 -02717 |
| I | .2720 | 1-1/8" | 3-1/4" | .2500 | 6 | 108 -02720 |
| 7mm | .2756 | 29mm | 83mm | 6.35mm | 6 | 108 -02756 |
| J | .2770 | 1-1/8" | 3-1/4" | .2500 | 6 | 108 -02770 |
| 7.1mm | .2795 | 29mm | 83mm | 6.35mm | 6 | 108 -02795 |
| K | .2810 | 1-1/8" | 3-1/4" | .2500 | 6 | 108 -02810 |
| **9/32"** | .2812 | 1-1/8" | 3-1/4" | .2500 | 6 | 108 -02812 |
| 7.2mm | .2835 | 29mm | 83mm | 6.35mm | 6 | 108 -02835 |
| 7.3mm | .2874 | 29mm | 83mm | 7.14mm | 6 | 108 -02874 |
| L | .2900 | 1-1/8" | 3-1/4" | .2812 | 6 | 108 -02900 |
| 7.4mm | .2913 | 29mm | 83mm | 7.14mm | 6 | 108 -02913 |
| M | .2950 | 1-1/8" | 3-1/4" | .2812 | 6 | 108 -02950 |
| 7.5mm | .2953 | 29mm | 83mm | 7.14mm | 6 | 108 -02953 |
| **19/64"** | .2969 | 1-1/8" | 3-1/4" | .2812 | 6 | 108 -02969 |
| 7.6mm | .2992 | 29mm | 83mm | 7.14mm | 6 | 108 -02992 |
| N | .3020 | 1-1/8" | 3-1/4" | .2812 | 6 | 108 -03020 |
| 7.7mm | .3031 | 29mm | 83mm | 7.14mm | 6 | 108 -03031 |
| 7.8mm | .3071 | 29mm | 83mm | 7.14mm | 6 | 108 -03071 |
| 7.9mm | .3110 | 29mm | 83mm | 7.14mm | 6 | 108 -03110 |
| **5/16"** | .3125 | 1-1/8" | 3-1/4" | .2812 | 6 | 108 -03125 |
| 8mm | .3150 | 29mm | 83mm | 7.14mm | 6 | 108 -03150 |
| O | .3160 | 1-1/8" | 3-1/4" | .3125 | 6 | 108 -03160 |
| 8.1mm | .3189 | 32mm | 89mm | 7.94mm | 6 | 108 -03189 |
| 8.2mm | .3228 | 32mm | 89mm | 7.94mm | 6 | 108 -03228 |
| P | .3230 | 1-1/4" | 3-1/2" | .3125 | 6 | 108 -03230 |
| 8.3mm | .3268 | 32mm | 89mm | 7.94mm | 6 | 108 -03268 |
| **21/64"** | .3281 | 1-1/4" | 3-1/2" | .3125 | 6 | 108 -03281 |
| 8.4mm | .3307 | 32mm | 89mm | 7.94mm | 6 | 108 -03307 |
| Q | .3320 | 1-1/4" | 3-1/2" | .3125 | 6 | 108 -03320 |
| 8.5mm | .3346 | 32mm | 89mm | 7.94mm | 6 | 108 -03346 |
| 8.6mm | .3386 | 32mm | 89mm | 7.94mm | 6 | 108 -03386 |
| R | .3390 | 1-1/4" | 3-1/2" | .3125 | 6 | 108 -03390 |
| 8.7mm | .3425 | 32mm | 89mm | 7.94mm | 6 | 108 -03425 |
| **11/32"** | .3438 | 1-1/4" | 3-1/2" | .3125 | 6 | 108 -03438 |
| 8.8mm | .3465 | 32mm | 89mm | 7.94mm | 6 | 108 -03465 |
| S | .3480 | 1-1/4" | 3-1/2" | .3125 | 6 | 108 -03480 |
| 8.9mm | .3504 | 32mm | 89mm | 7.94mm | 6 | 108 -03504 |
| 9mm | .3543 | 32mm | 89mm | 7.94mm | 6 | 108 -03543 |
| T | .3580 | 1-1/4" | 3-1/2" | .3125 | 6 | 108 -03580 |
| 9.1mm | .3583 | 32mm | 89mm | 7.94mm | 6 | 108 -03583 |

**Tolerances:**

D1 +.0008/-0.000mm

D2 h6




**Modifications**
**Regrinds, Re coat**
**Specials**

# Solid Carbide Straight Flute Reamer
# Right Hand Cutting
# Micro-grain K30 6 Flute

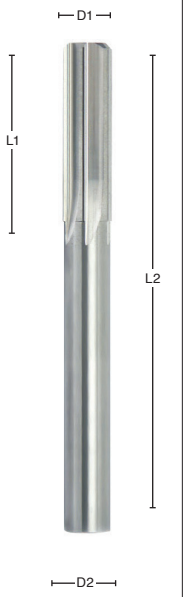
MG HM | 6 | PLAIN

Ti PAGE 268

**Tolerances:**

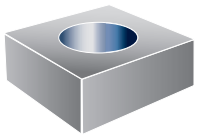
D1 +.0008/-0.000mm

D2 h6




| Size Ref | Reamer Dia | FL L1 | OAL L2 | Shank Dia-D2 | No. of Flutes | Part Number |
|---|---|---|---|---|---|---|
| **23/64"** | .3594 | 1-1/4" | 3-1/2" | .3125 | 6 | 108 -03594 |
| 9.2mm | .3622 | 32mm | 89mm | 9.13mm | 6 | 108 -03622 |
| 9.3mm | .3661 | 32mm | 89mm | 9.13mm | 6 | 108 -03661 |
| U | .3680 | 1-1/4" | 3-1/2" | .3594 | 6 | 108 -03680 |
| 9.4mm | .3701 | 32mm | 89mm | 9.13mm | 6 | 108 -03701 |
| 9.5mm | .3740 | 32mm | 89mm | 9.13mm | 6 | 108 -03740 |
| **3/8"** | .3750 | 1-1/4" | 3-1/2" | .3594 | 6 | 108 -03750 |
| V | .3770 | 1-1/4" | 3-1/2" | .3594 | 6 | 108 -03770 |
| 9.6mm | .3780 | 32mm | 89mm | 9.13mm | 6 | 108 -03780 |
| 9.7mm | .3819 | 32mm | 89mm | 9.13mm | 6 | 108 -03819 |
| 9.8mm | .3858 | 32mm | 89mm | 9.13mm | 6 | 108 -03858 |
| W | .3860 | 1-1/4" | 3-1/2" | .3594 | 6 | 108 -03860 |
| 9.9mm | .3898 | 32mm | 89mm | 9.53mm | 6 | 108 -03898 |
| **25/64"** | .3906 | 1-1/4" | 3-1/2" | .3750 | 6 | 108 -03906 |
| 10mm | .3937 | 32mm | 89mm | 9.53mm | 6 | 108 -03937 |
| X | .3970 | 1-1/4" | 3-1/2" | .3750 | 6 | 108 -03970 |
| 10.1mm | .3976 | 32mm | 89mm | 9.53mm | 6 | 108 -03976 |
| 10.2mm | .4016 | 32mm | 89mm | 9.53mm | 6 | 108 -04016 |
| Y | .4040 | 1-1/4" | 3-1/2" | .3750 | 6 | 108 -04040 |
| 10.3mm | .4050 | 32mm | 89mm | 9.53mm | 6 | 108 -04050 |
| **13/32"** | .4062 | 1-1/4" | 3-1/2" | .3750 | 6 | 108 -04062 |
| 10.4mm | .4094 | 32mm | 89mm | 9.53mm | 6 | 108 -04094 |
| Z | .4130 | 1-1/4" | 3-1/2" | .3750 | 6 | 108 -04130 |
| 10.5mm | .4134 | 32mm | 89mm | 9.53mm | 6 | 108 -04134 |
| 10.6mm | .4173 | 35mm | 95mm | 9.53mm | 6 | 108 -04173 |
| 10.7mm | .4213 | 35mm | 95mm | 9.53mm | 6 | 108 -04213 |
| **27/64"** | .4219 | 1-3/8" | 3-3/4" | .3750 | 6 | 108 -04219 |
| 10.8mm | .4252 | 35mm | 95mm | 9.53mm | 6 | 108 -04252 |
| 10.9mm | .4291 | 35mm | 95mm | 9.53mm | 6 | 108 -04291 |
| 11mm | .4331 | 35mm | 95mm | 9.53mm | 6 | 108 -04331 |
| 11.1mm | .4370 | 35mm | 95mm | 9.53mm | 6 | 108 -04370 |
| **7/16"** | .4375 | 1-3/8" | 3-3/4" | .3750 | 6 | 108 -04375 |
| 11.2mm | .4409 | 35mm | 95mm | 9.53mm | 6 | 108 -04409 |
| 11.3mm | .4449 | 35mm | 95mm | 9.53mm | 6 | 108 -04449 |
| 11.4mm | .4488 | 35mm | 95mm | 9.53mm | 6 | 108 -04488 |
| 11.5mm | .4528 | 35mm | 95mm | 9.53mm | 6 | 108 -04528 |
| **29/64"** | .4531 | 1-3/8" | 3-3/4" | .4375 | 6 | 108 -04531 |
| 11.6mm | .4567 | 35mm | 95mm | 11.11mm | 6 | 108 -04567 |
| 11.7mm | .4606 | 35mm | 95mm | 11.11mm | 6 | 108 -04606 |
| 11.8mm | .4646 | 35mm | 95mm | 11.11mm | 6 | 108 -04646 |
| 11.9mm | .4685 | 35mm | 95mm | 11.11mm | 6 | 108 -04685 |
| **15/32"** | .4688 | 1-3/8" | 3-3/4" | .4375 | 6 | 108 -04688 |
| 12mm | .4724 | 38mm | 102mm | 11.11mm | 6 | 108 -04724 |
| 12.1mm | .4764 | 38mm | 102mm | 11.11mm | 6 | 108 -04764 |
| 12.2mm | .4803 | 38mm | 102mm | 11.11mm | 6 | 108 -04803 |
| 12.3mm | .4843 | 38mm | 102mm | 11.11mm | 6 | 108 -04843 |
| **31/64"** | .4844 | 1-1/2" | 4" | .4375 | 6 | 108 -04844 |
| 12.4mm | .4882 | 38mm | 102mm | 11.11mm | 6 | 108 -04882 |
| 12.5mm | .4921 | 38mm | 102mm | 11.11mm | 6 | 108 -04921 |
| 12.6mm | .4961 | 38mm | 102mm | 11.11mm | 6 | 108 -04961 |
| **1/2"** | .5000 | 1-1/2" | 4" | .4375 | 6 | 108 -05000 |
| 12.8mm | .5039 | 38mm | 102mm | 11.11mm | 6 | 108 -05039 |
| 12.9mm | .5079 | 38mm | 102mm | 11.11mm | 6 | 108 -05079 |
| 13mm | .5118 | 38mm | 102mm | 11.11mm | 6 | 108 -05118 |

1.1 - 1.6 | 6.1 - 8.2 | 2.1 - 2.3 | 4.1 - 5.3 | 3.1 - 3.4 | 1.7 - 1.9



**Modifications**
**Regrinds, Re coat**
**Specials**

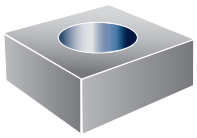
# Solid Carbide
# Single Point
# Micro-grain K30 - Boring Tools

Series 101

TiN PAGE 268

MG HM | PLAIN

1.1 - 1.6 | 6.1 - 8.3 | 2.1 - 2.3 | 4.1 - 5.3 | 3.1 - 3.4



| Mimimum Hole Dia | Maximum Depth of Hole | Shank Dia-D2 | OAL L2 | Part Number |
|---|---|---|---|---|
| .090” | 1/2" | 1/8" | 1-1/2" | 101 -0090 |
| .120” | 5/8" | 1/8" | 1-1/2" | 101 -0120 |
| .150” | 3/4" | 3/16" | 2" | 101 -0150 |
| .180” | 1" | 3/16" | 2" | 101 -0180 |
| .210” | 1-1/4" | 1/4" | 2" | 101 -0210 |
| .240” | 1-1/4" | 1/4" | 2" | 101 -0240 |
| .270” | 1-1/4" | 5/16" | 2-1/4" | 101 -0270 |
| .300” | 1-1/4" | 5/16" | 2-1/4" | 101 -0300 |
| .330” | 1-1/2" | 3/8" | 2-1/2" | 101 -0330 |
| .360” | 1-1/2" | 3/8" | 2-1/2" | 101 -0360 |

**Tolerances:**

| | |
|---|---|
| D1 | +.000”-002” |
| D2 | h6 |




# Solid Carbide General Purpose
# 118° Point
# Micro-grain K30 - Spade Drill

Series 111

TiN PAGE 268

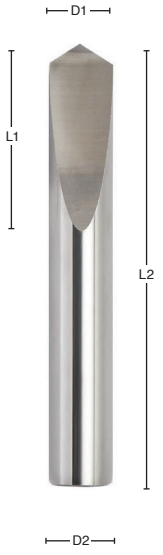
118° | MG HM | PLAIN

1.1 - 1.6 | 4.1 - 5.3 | 2.1 - 2.3 | 3.1 - 3.4

| Cutter Dia - D1 | Shank Dia-D2 | FL L1 | OAL L2 | Part Number |
|---|---|---|---|---|
| 3 | 3 | 12 | 38 | 111 -33305 |
| 4 | 4 | 17 | 50 | 111 -33307 |
| 6 | 6 | 20 | 50 | 111 -33310 |
| 8 | 8 | 22 | 63 | 111 -33312 |
| 10 | 10 | 28 | 63 | 111 -33314 |
| 12 | 12 | 32 | 75 | 111 -33316 |

**Tolerances:**

| | |
|---|---|
| D1 | +0.00-.051mm |
| D2 | h6 |




**Modifications**
**Regrinds, Re coat**
**Specials**

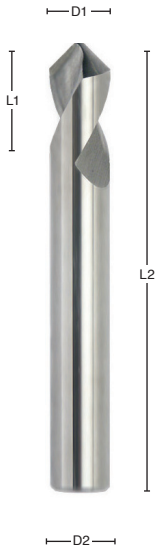
Series 109 and 110

# Solid Carbide General Purpose
# 90° & 120° Point - 30° Helix
# Micro-grain K30 - NC Spotting Drills




TiPAGE 268

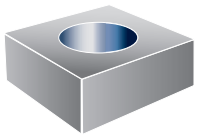
| Tolerances: | |
|---|---|
| D1 | h6 |
| D2 | h6 |




| Cutter Dia-D1 | Shank Dia-D2 | Degree Point | FL L1 | OAL L2 | Part Number |
|---|---|---|---|---|---|
| 3 | 3 | 90 | 10 | 38 | 109 -01903 |
| 4 | 4 | 90 | 18 | 63 | 109 -01904 |
| 5 | 5 | 90 | 15 | 63 | 109 -01905 |
| 6 | 6 | 90 | 20 | 63 | 109 -01906 |
| 8 | 8 | 90 | 20 | 63 | 109 -01908 |
| 10 | 10 | 90 | 25 | 75 | 109 -01910 |
| 12 | 12 | 90 | 25 | 75 | 109 -01912 |
| 14 | 14 | 90 | 26 | 88 | 109 -01914 |
| 16 | 16 | 90 | 28 | 100 | 109 -01916 |
| 20 | 20 | 90 | 30 | 102 | 109 -01920 |

| Cutter Dia-D1 | Shank Dia-D2 | Degree Point | FL L1 | OAL L2 | Part Number |
|---|---|---|---|---|---|
| 3 | 3 | 120 | 10 | 38 | 110 -01903 |
| 4 | 4 | 120 | 18 | 63 | 110 -01904 |
| 5 | 5 | 120 | 15 | 63 | 110 -01905 |
| 6 | 6 | 120 | 20 | 63 | 110 -01906 |
| 8 | 8 | 120 | 20 | 63 | 110 -01908 |
| 10 | 10 | 120 | 25 | 75 | 110 -01910 |
| 12 | 12 | 120 | 25 | 75 | 110 -01912 |
| 14 | 14 | 120 | 26 | 88 | 110 -01914 |
| 16 | 16 | 120 | 28 | 100 | 110 -01916 |
| 20 | 20 | 120 | 30 | 102 | 110 -01920 |

1.1 - 1.6 | 6.1 - 8.2 | 2.1 - 2.2 | 4.1 - 5.3 | 3.1 - 3.4



Series 199 and 119

# Performance Solid Carbide - *TiALN*
# 90° & 120° Point - 30° Helix
# Micro-grain K30 - NC Spotting Drills




TiPAGE 268

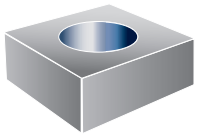
| Tolerances: | |
|---|---|
| D1 | h6 |
| D2 | h6 |




| Cutter Dia-D1 | Shank Dia-D2 | Degree Point | FL L1 | OAL L2 | Part Number |
|---|---|---|---|---|---|
| 3 | 3 | 90 | 10 | 38 | 199 -01903 |
| 4 | 4 | 90 | 18 | 63 | 199 -01904 |
| 5 | 5 | 90 | 15 | 63 | 199 -01905 |
| 6 | 6 | 90 | 20 | 63 | 199 -01906 |
| 8 | 8 | 90 | 20 | 63 | 199 -01908 |
| 10 | 10 | 90 | 25 | 75 | 199 -01910 |
| 12 | 12 | 90 | 25 | 75 | 199 -01912 |
| 14 | 14 | 90 | 26 | 88 | 199 -01914 |
| 16 | 16 | 90 | 28 | 100 | 199 -01916 |
| 20 | 20 | 90 | 30 | 102 | 199 -01920 |

| Cutter Dia-D1 | Shank Dia-D2 | Degree Point | FL L1 | OAL L2 | Part Number |
|---|---|---|---|---|---|
| 3 | 3 | 120 | 10 | 38 | 119 -01903 |
| 4 | 4 | 120 | 18 | 63 | 119 -01904 |
| 5 | 5 | 120 | 15 | 63 | 119 -01905 |
| 6 | 6 | 120 | 20 | 63 | 119 -01906 |
| 8 | 8 | 120 | 20 | 63 | 119 -01908 |
| 10 | 10 | 120 | 25 | 75 | 119 -01910 |
| 12 | 12 | 120 | 25 | 75 | 119 -01912 |
| 14 | 14 | 120 | 26 | 88 | 119 -01914 |
| 16 | 16 | 120 | 28 | 100 | 119 -01916 |
| 20 | 20 | 120 | 30 | 102 | 119 -01920 |

1.1 - 1.6 | 6.1 - 8.2 | 2.1 - 2.2 | 4.1 - 5.3 | 3.1 - 3.4 | 1.7 - 1.9



**Modifications**
**Regrinds, Re coat**
**Specials**

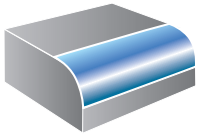
# Solid Carbide General Purpose
# 90° Radius Plus Run Out
# Micro-grain K30 4 Flute Corner Rounding

Series 112

PAGE 264

±0.025 | MG HM | 4 | PLAIN

1.1 - 1.6 | 6.1 - 8.2 | 2.1 - 2.3 | 4.1 - 5.3 | 3.1 - 3.4



| Radius | OAL L2 | Shank Dia-D2 | Part Number |
|---|---|---|---|
| 0.5 | 64 | 8 | 112 -41105 |
| 1.0 | 64 | 8 | 112 -41110 |
| 1.5 | 70 | 10 | 112 -41115 |
| 2.0 | 70 | 10 | 112 -41120 |
| 2.5 | 76 | 12 | 112 -41125 |
| 3.0 | 76 | 12 | 112 -41130 |
| 3.5 | 89 | 16 | 112 -41135 |
| 4.0 | 89 | 16 | 112 -41140 |
| 4.5 | 89 | 16 | 112 -41145 |
| 5.0 | 89 | 16 | 112 -41150 |
| 5.5 | 100 | 20 | 112 -41155 |
| 6.0 | 100 | 20 | 112 -41160 |

**Tolerances:**

D1 +0.00/-0.051mm

D2 h6




# Performance Solid Carbide - *TiALN*
# 90° Radius Plus Run Out
# Micro-grain K30 4-Flute Corner Rounding

Series 122

PAGE 264

±0.025 | TiALN | MG HM | 4 | PLAIN

1.1 - 1.6 | 6.1 - 6.4 | 2.1 - 2.3 | 4.1 - 5.3 | 3.1 - 3.4 | 1.7 - 1.9

| Radius | OAL L2 | Shank Dia-D2 | Part Number |
|---|---|---|---|
| 0.5 | 64 | 8 | 122 -41105 |
| 1.0 | 64 | 8 | 122 -41110 |
| 1.5 | 70 | 10 | 122 -41115 |
| 2.0 | 70 | 10 | 122 -41120 |
| 2.5 | 76 | 12 | 122 -41125 |
| 3.0 | 76 | 12 | 122 -41130 |
| 3.5 | 89 | 16 | 122 -41135 |
| 4.0 | 89 | 16 | 122 -41140 |
| 4.5 | 89 | 16 | 122 -41145 |
| 5.0 | 89 | 16 | 122 -41150 |
| 5.5 | 100 | 20 | 122 -41155 |
| 6.0 | 100 | 20 | 122 -41160 |

**Tolerances:**

D1 +0.00/-0.051mm

D2 h6




**Modifications**
**Regrinds, Re coat**
**Specials**

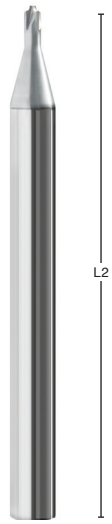
Series 112M

# Solid Carbide General Purpose
# 90° Radius Plus Run Out
# Micro-grain K30 4-Flute Miniature Corner Rounding

MG HM | 4 | PLAIN | ±0.025

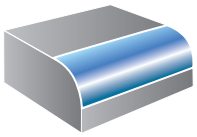
TiPAGE 264

**Tolerances:**
D1 +0.00/-0.051mm
D2 h6




| Radius | OAL L2 | Shank Dia-D2 | Part Number |
|---|---|---|---|
| 0.2 | 38 | 3 | 112 -M4102 |
| 0.25 | 38 | 3 | 112 -M4125 |
| 0.3 | 38 | 3 | 112 -M4103 |
| 0.4 | 38 | 3 | 112 -M4104 |
| 0.5 | 38 | 3 | 112 -M4105 |
| 0.6 | 38 | 3 | 112 -M4106 |
| 0.7 | 38 | 3 | 112 -M4107 |
| 0.75 | 38 | 3 | 112 -M4175 |
| 0.8 | 38 | 3 | 112 -M4108 |
| 0.9 | 38 | 3 | 112 -M4109 |
| 1 | 38 | 3 | 112 -M4110 |

1.1 - 1.6 | 6.1 - 8.2
2.1 - 2.3 | 4.1 - 5.3
3.1 - 3.4



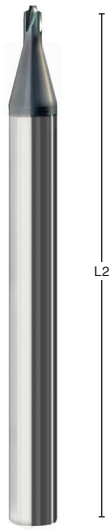
Series 122M

# Performance Solid Carbide - *TiALN*
# 90° Radius Plus Run Out
# Micro-grain K30 4-Flute Miniature Corner Rounding

MG HM | 4 | PLAIN | TiALN | ±0.025

TiPAGE 264

**Tolerances:**
D1 +0.00/-0.051mm
D2 h6




| Radius | OAL L2 | Shank Dia-D2 | Part Number |
|---|---|---|---|
| 0.2 | 38 | 3 | 122 -M4102 |
| 0.25 | 38 | 3 | 122 -M4125 |
| 0.3 | 38 | 3 | 122 -M4103 |
| 0.4 | 38 | 3 | 122 -M4104 |
| 0.5 | 38 | 3 | 122 -M4105 |
| 0.6 | 38 | 3 | 122 -M4106 |
| 0.7 | 38 | 3 | 122 -M4107 |
| 0.75 | 38 | 3 | 122 -M4175 |
| 0.8 | 38 | 3 | 122 -M4108 |
| 0.9 | 38 | 3 | 122 -M4109 |
| 1 | 38 | 3 | 122 -M4110 |

1.1 - 1.6 | 6.1 - 6.4
2.1 - 2.3 | 4.1 - 5.3
3.1 - 3.4 | 1.7 - 1.9

**Modifications**
**Regrinds, Re coat**
**Specials**

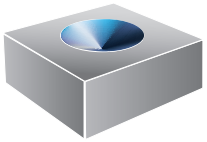
# Solid Carbide General Purpose - Bright Finish
# 60° 82° 90° Angle Chamfer Tool
# Micro-grain K30 4-Flute

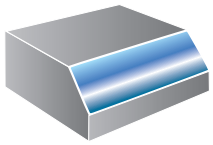
Series 113

PAGE 264

MG HM | 60° 82° 90° | 4 | PLAIN

1.1 - 1.6 | 6.1 - 8.2 | 2.1 - 2.3 | 4.1 - 5.3 | 3.1 - 3.4





| Cutter Dia-D1 | Shank Dia-D2 | OAL L2 | Angle | Part Number |
|---|---|---|---|---|
| 4 | 4 | 50 | 60° | 113 -42260 |
| 4 | 4 | 50 | 82° | 113 -42282 |
| 4 | 4 | 50 | 90° | 113 -42290 |
| 5 | 5 | 50 | 60° | 113 -52260 |
| 5 | 5 | 50 | 82° | 113 -52282 |
| 5 | 5 | 50 | 90° | 113 -52290 |
| 6 | 6 | 64 | 60° | 113 -62260 |
| 6 | 6 | 64 | 82° | 113 -62282 |
| 6 | 6 | 64 | 90° | 113 -62290 |
| 8 | 8 | 64 | 60° | 113 -82260 |
| 8 | 8 | 64 | 82° | 113 -82282 |
| 8 | 8 | 64 | 90° | 113 -82290 |
| 10 | 10 | 70 | 60° | 113 -10260 |
| 10 | 10 | 70 | 82° | 113 -10282 |
| 10 | 10 | 70 | 90° | 113 -10290 |
| 12 | 12 | 76 | 60° | 113 -12260 |
| 12 | 12 | 76 | 82° | 113 -12282 |
| 12 | 12 | 76 | 90° | 113 -12290 |

**Tolerances:**

D1 +0.00/-0.051mm

D2 h6




# Performance Solid Carbide - *TiALN*
# 60° 82° 90° Angle Chamfer Tool
# Micro-grain K30 4-Flute

Series 114

PAGE 264

MG HM | 4 | PLAIN | TiALN | 60° 82° 90°

1.1 - 1.6 | 6.1 - 6.4 | 2.1 - 2.3 | 4.1 - 5.3 | 3.1 - 3.4 | 1.7 - 1.9

| Cutter Dia-D1 | Shank Dia-D2 | OAL L2 | Angle | Part Number |
|---|---|---|---|---|
| 4 | 4 | 50 | 60° | 114 -42260 |
| 4 | 4 | 50 | 82° | 114 -42282 |
| 4 | 4 | 50 | 90° | 114 -42290 |
| 5 | 5 | 50 | 60° | 114 -52260 |
| 5 | 5 | 50 | 82° | 114 -52282 |
| 5 | 5 | 50 | 90° | 114 -52290 |
| 6 | 6 | 64 | 60° | 114 -62260 |
| 6 | 6 | 64 | 82° | 114 -62282 |
| 6 | 6 | 64 | 90° | 114 -62290 |
| 8 | 8 | 64 | 60° | 114 -82260 |
| 8 | 8 | 64 | 82° | 114 -82282 |
| 8 | 8 | 64 | 90° | 114 -82290 |
| 10 | 10 | 70 | 60° | 114 -10260 |
| 10 | 10 | 70 | 82° | 114 -10282 |
| 10 | 10 | 70 | 90° | 114 -10290 |
| 12 | 12 | 76 | 60° | 114 -12260 |
| 12 | 12 | 76 | 82° | 114 -12282 |
| 12 | 12 | 76 | 90° | 114 -12290 |

**Tolerances:**

D1 +0.00/-0.051mm

D2 h6




**Modifications**
**Regrinds, Re coat**
**Specials**

# Solid Carbide General Purpose - Countersinks
## 60° 82° 90° Included Point Angle
## Micro-grain K30 1, 3, 6-Flute





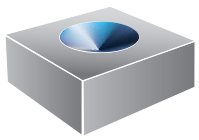


| Cutter Dia-D1 | Shank Dia-D2 | OAL L2 | No. Of Flutes | Point Angle | Part Number |
|---|---|---|---|---|---|
| 3 | 3 | 38 | 1 | 60° | C-018160 |
| 3 | 3 | 38 | 1 | 82° | C-018182 |
| 3 | 3 | 38 | 1 | 90° | C-018190 |
| 3 | 3 | 38 | 3 | 60° | C-018360 |
| 3 | 3 | 38 | 3 | 82° | C-018382 |
| 3 | 3 | 38 | 3 | 90° | C-018390 |
| 3 | 3 | 38 | 6 | 60° | C-018660 |
| 3 | 3 | 38 | 6 | 82° | C-018682 |
| 3 | 3 | 38 | 6 | 90° | C-018690 |
| 5 | 5 | 50 | 1 | 60° | C-316160 |
| 5 | 5 | 50 | 1 | 82° | C-316182 |
| 5 | 5 | 50 | 1 | 90° | C-316190 |
| 5 | 5 | 50 | 3 | 60° | C-316360 |
| 5 | 5 | 50 | 3 | 82° | C-316382 |
| 5 | 5 | 50 | 3 | 90° | C-316390 |
| 5 | 5 | 50 | 6 | 60° | C-316660 |
| 5 | 5 | 50 | 6 | 82° | C-316682 |
| 5 | 5 | 50 | 6 | 90° | C-316690 |
| 6 | 6 | 50 | 1 | 60° | C-014160 |
| 6 | 6 | 50 | 1 | 82° | C-014182 |
| 6 | 6 | 50 | 1 | 90° | C-014190 |
| 6 | 6 | 50 | 3 | 60° | C-014360 |
| 6 | 6 | 50 | 3 | 82° | C-014382 |
| 6 | 6 | 50 | 3 | 90° | C-014390 |
| 6 | 6 | 50 | 6 | 60° | C-014660 |
| 6 | 6 | 50 | 6 | 82° | C-014682 |
| 6 | 6 | 50 | 6 | 90° | C-014690 |
| 9.5 | 6 | 66 | 1 | 60° | C-038160 |
| 9.5 | 6 | 66 | 1 | 82° | C-038182 |
| 9.5 | 6 | 66 | 1 | 90° | C-038190 |
| 9.5 | 6 | 66 | 3 | 60° | C-038360 |
| 9.5 | 6 | 66 | 3 | 82° | C-038382 |
| 9.5 | 6 | 66 | 3 | 90° | C-038390 |
| 9.5 | 6 | 66 | 6 | 60° | C-038660 |
| 9.5 | 6 | 66 | 6 | 82° | C-038682 |
| 9.5 | 6 | 66 | 6 | 90° | C-038690 |

| Cutter Dia-D1 | Shank Dia-D2 | OAL L2 | No. Of Flutes | Point Angle | Part Number |
|---|---|---|---|---|---|
| 12.7 | 6 | 72 | 1 | 60° | C-012160 |
| 12.7 | 6 | 72 | 1 | 82° | C-012182 |
| 12.7 | 6 | 72 | 1 | 90° | C-012190 |
| 12.7 | 6 | 72 | 3 | 60° | C-012360 |
| 12.7 | 6 | 72 | 3 | 82° | C-012382 |
| 12.7 | 6 | 72 | 3 | 90° | C-012392 |
| 12.7 | 6 | 72 | 6 | 60° | C-012660 |
| 12.7 | 6 | 72 | 6 | 82° | C-012682 |
| 12.7 | 6 | 72 | 6 | 90° | C-012690 |
| 16 | 8 | 75 | 1 | 60° | C-058160 |
| 16 | 8 | 75 | 1 | 82° | C-058182 |
| 16 | 8 | 75 | 1 | 90° | C-058190 |
| 16 | 8 | 75 | 3 | 60° | C-058360 |
| 16 | 8 | 75 | 3 | 82° | C-058382 |
| 16 | 8 | 75 | 3 | 90° | C-058390 |
| 16 | 8 | 75 | 6 | 60° | C-058660 |
| 16 | 8 | 75 | 6 | 82° | C-058682 |
| 16 | 8 | 75 | 6 | 90° | C-058690 |
| 19 | 8 | 75 | 1 | 60° | C-034160 |
| 19 | 8 | 75 | 1 | 82° | C-034182 |
| 19 | 8 | 75 | 1 | 90° | C-034190 |
| 19 | 8 | 75 | 3 | 60° | C-034360 |
| 19 | 8 | 75 | 3 | 82° | C-034382 |
| 19 | 8 | 75 | 3 | 90° | C-034390 |
| 19 | 8 | 75 | 6 | 60° | C-034660 |
| 19 | 8 | 75 | 6 | 82° | C-034682 |
| 19 | 8 | 75 | 6 | 90° | C-034690 |
| 25 | 8 | 83 | 1 | 60° | C-001160 |
| 25 | 8 | 83 | 1 | 82° | C-001182 |
| 25 | 8 | 83 | 1 | 90° | C-001190 |
| 25 | 8 | 83 | 3 | 60° | C-001360 |
| 25 | 8 | 83 | 3 | 82° | C-001382 |
| 25 | 8 | 83 | 3 | 90° | C-001390 |
| 25 | 8 | 83 | 6 | 60° | C-001660 |
| 25 | 8 | 83 | 6 | 82° | C-001682 |
| 25 | 8 | 83 | 6 | 90° | C-001690 |

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1.1 - 1.6
6.1 - 8.3
2.1 - 2.3
4.1 - 5.3
3.1 - 3.4



**Modifications**
**Regrinds, Re coat**
**Specials**

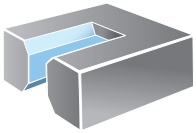
# Solid Carbide General Purpose
# 90° Angle Staggered Teeth
# Micro-grain K30 4-Flute Back Chamfering & Countersinking Tool

Series 140

PAGE 264

90° MG HM 4 PLAIN

1.1 - 1.6 | 6.1 - 6.4 | 2.1 - 2.3 | 4.1 - 5.3 | 3.1 - 3.4



| Cutter Dia-D1 | OAL L2 | FL L1 | Neck Length | Neck Dia | Max Chamfer | Part Number |
|---|---|---|---|---|---|---|
| 4 | 63 | 3 | 10 | 3 | 0.5 | 140 -12507 |
| 6 | 63 | 4 | 15 | 4 | 1 | 140 -12510 |
| 8 | 63 | 6 | 20 | 5 | 1.5 | 140 -12512 |
| 10 | 100 | 8 | 25 | 6 | 2 | 140 -12514 |
| 12 | 100 | 9 | 30 | 7 | 2.5 | 140 -12516 |

**Tolerances:**

D1 +0.00/-0.051mm

D2 h6




# Performance Solid Carbide - *TiALN*
# 90° Angle Staggered Teeth
# Micro-grain K30 4-Flute Back Chamfering & Countersinking Tool

Series 149

PAGE 264

TiALN 90° MG HM 4 PLAIN

1.1 - 1.6 | 6.1 - 6.4 | 2.1 - 2.3 | 4.1 - 5.3 | 3.1 - 3.4

| Cutter Dia-D1 | OAL L2 | FL L1 | Neck Length | Neck Dia | Max Chamfer | Part Number |
|---|---|---|---|---|---|---|
| 4 | 63 | 3 | 10 | 3 | 0.5 | 149 -12507 |
| 6 | 63 | 4 | 15 | 4 | 1 | 149 -12510 |
| 8 | 63 | 6 | 20 | 5 | 1.5 | 149 -12512 |
| 10 | 100 | 8 | 25 | 6 | 2 | 149 -12514 |
| 12 | 100 | 9 | 30 | 7 | 2.5 | 149 -12516 |

**Tolerances:**

D1 +0.00/-0.051mm

D2 h6




**Modifications**
**Regrinds, Re coat**
**Specials**

# Performance Solid Carbide Drills - *TiALN* - (DIN) 6537
## 3xD *without coolant* 140° Point - 30° Helix
## Micro-grain K30

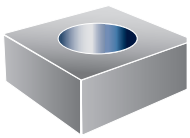



| Tolerances: | |
|---|---|
| D1 | m7 |
| D2 | h6 |




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| | |
|---|---|
| 1.1 - 1.6 | 6.1 - 7.4 |
| 2.1 - 2.3 | 4.1 - 3.3 |
| 3.1 - 3.4 | 1.7 - 1.9 |



| Drill Dia-D1 | FL L1 | OAL L2 | Shank Dia-D2 | Part Number |
|---|---|---|---|---|
| 3 | 20 | 62 | 6 | 123 -XD300 |
| 3.1 | 20 | 62 | 6 | 123 -XD310 |
| 3.2 | 20 | 62 | 6 | 123 -XD320 |
| 3.3 | 20 | 62 | 6 | 123 -XD330 |
| 3.4 | 20 | 62 | 6 | 123 -XD340 |
| 3.5 | 20 | 62 | 6 | 123 -XD350 |
| 3.6 | 20 | 62 | 6 | 123 -XD360 |
| 3.7 | 20 | 62 | 6 | 123 -XD370 |
| 3.8 | 24 | 66 | 6 | 123 -XD380 |
| 3.9 | 24 | 66 | 6 | 123 -XD390 |
| 4 | 24 | 66 | 6 | 123 -XD400 |
| 4.1 | 24 | 66 | 6 | 123 -XD410 |
| 4.2 | 24 | 66 | 6 | 123 -XD420 |
| 4.3 | 24 | 66 | 6 | 123 -XD430 |
| 4.4 | 24 | 66 | 6 | 123 -XD440 |
| 4.5 | 24 | 66 | 6 | 123 -XD450 |
| 4.6 | 24 | 66 | 6 | 123 -XD460 |
| 4.7 | 24 | 66 | 6 | 123 -XD470 |
| 4.8 | 28 | 66 | 6 | 123 -XD480 |
| 4.9 | 28 | 66 | 6 | 123 -XD490 |
| 5 | 28 | 66 | 6 | 123 -XD500 |
| 5.1 | 28 | 66 | 6 | 123 -XD510 |
| 5.2 | 28 | 66 | 6 | 123 -XD520 |
| 5.3 | 28 | 66 | 6 | 123 -XD530 |
| 5.4 | 28 | 66 | 6 | 123 -XD540 |
| 5.5 | 28 | 66 | 6 | 123 -XD550 |
| 5.6 | 28 | 66 | 6 | 123 -XD560 |
| 5.7 | 28 | 66 | 6 | 123 -XD570 |
| 5.8 | 28 | 66 | 6 | 123 -XD580 |
| 5.9 | 28 | 66 | 6 | 123 -XD590 |
| 6 | 28 | 66 | 6 | 123 -XD600 |
| 6.1 | 34 | 79 | 8 | 123 -XD610 |
| 6.2 | 34 | 79 | 8 | 123 -XD620 |
| 6.3 | 34 | 79 | 8 | 123 -XD630 |
| 6.4 | 34 | 79 | 8 | 123 -XD640 |
| 6.5 | 34 | 79 | 8 | 123 -XD650 |
| 6.6 | 34 | 79 | 8 | 123 -XD660 |
| 6.7 | 34 | 79 | 8 | 123 -XD670 |
| 6.8 | 34 | 79 | 8 | 123 -XD680 |
| 6.9 | 34 | 79 | 8 | 123 -XD690 |
| 7 | 34 | 79 | 8 | 123 -XD700 |
| 7.1 | 41 | 79 | 8 | 123 -XD710 |
| 7.2 | 41 | 79 | 8 | 123 -XD720 |
| 7.3 | 41 | 79 | 8 | 123 -XD730 |
| 7.4 | 41 | 79 | 8 | 123 -XD740 |
| 7.5 | 41 | 79 | 8 | 123 -XD750 |
| 7.6 | 41 | 79 | 8 | 123 -XD760 |
| 7.7 | 41 | 79 | 8 | 123 -XD770 |
| 7.8 | 41 | 79 | 8 | 123 -XD780 |
| 7.9 | 41 | 79 | 8 | 123 -XD790 |
| 8 | 41 | 79 | 8 | 123 -XD800 |
| 8.1 | 47 | 89 | 10 | 123 -XD810 |
| 8.2 | 47 | 89 | 10 | 123 -XD820 |
| 8.3 | 47 | 89 | 10 | 123 -XD830 |

| Drill Dia-D1 | FL L1 | OAL L2 | Shank Dia-D2 | Part Number |
|---|---|---|---|---|
| 8.4 | 47 | 89 | 10 | 123 -XD840 |
| 8.5 | 47 | 89 | 10 | 123 -XD850 |
| 8.6 | 47 | 89 | 10 | 123 -XD860 |
| 8.7 | 47 | 89 | 10 | 123 -XD870 |
| 8.8 | 47 | 89 | 10 | 123 -XD880 |
| 8.9 | 47 | 89 | 10 | 123 -XD890 |
| 9 | 47 | 89 | 10 | 123 -XD900 |
| 9.1 | 47 | 89 | 10 | 123 -XD910 |
| 9.2 | 47 | 89 | 10 | 123 -XD920 |
| 9.3 | 47 | 89 | 10 | 123 -XD930 |
| 9.4 | 47 | 89 | 10 | 123 -XD940 |
| 9.5 | 47 | 89 | 10 | 123 -XD950 |
| 9.6 | 47 | 89 | 10 | 123 -XD960 |
| 9.7 | 47 | 89 | 10 | 123 -XD970 |
| 9.8 | 47 | 89 | 10 | 123 -XD980 |
| 9.9 | 47 | 89 | 10 | 123 -XD990 |
| 10 | 47 | 89 | 10 | 123 -XD100 |
| 10.1 | 55 | 102 | 12 | 123 -XD101 |
| 10.2 | 55 | 102 | 12 | 123 -XD102 |
| 10.3 | 55 | 102 | 12 | 123 -XD103 |
| 10.4 | 55 | 102 | 12 | 123 -XD104 |
| 10.5 | 55 | 102 | 12 | 123 -XD105 |
| 10.6 | 55 | 102 | 12 | 123 -XD106 |
| 10.7 | 55 | 102 | 12 | 123 -XD107 |
| 10.8 | 55 | 102 | 12 | 123 -XD108 |
| 10.9 | 55 | 102 | 12 | 123 -XD109 |
| 11 | 55 | 102 | 12 | 123 -XD110 |
| 11.1 | 55 | 102 | 12 | 123 -XD111 |
| 11.2 | 55 | 102 | 12 | 123 -XD112 |
| 11.3 | 55 | 102 | 12 | 123 -XD113 |
| 11.4 | 55 | 102 | 12 | 123 -XD114 |
| 11.5 | 55 | 102 | 12 | 123- XD115 |
| 11.6 | 55 | 102 | 12 | 123 -XD116 |
| 11.7 | 55 | 102 | 12 | 123 -XD117 |
| 11.8 | 55 | 102 | 12 | 123 -XD118 |
| 11.9 | 55 | 102 | 12 | 123 -XD119 |
| 12 | 55 | 102 | 12 | 123 -XD120 |
| 12.5 | 60 | 107 | 14 | 123 -XD125 |
| 13 | 60 | 107 | 14 | 123 -XD130 |
| 13.5 | 60 | 107 | 14 | 123 -XD135 |
| 14 | 60 | 107 | 14 | 123 -XD140 |
| 14.5 | 65 | 115 | 16 | 123 -XD145 |
| 15 | 65 | 115 | 16 | 123 -XD150 |
| 15.5 | 65 | 115 | 16 | 123 -XD155 |
| 16 | 65 | 115 | 16 | 123 -XD160 |
| 16.5 | 73 | 123 | 18 | 123 -XD165 |
| 17 | 73 | 123 | 18 | 123 -XD170 |
| 17.5 | 73 | 123 | 18 | 123 -XD175 |
| 18 | 73 | 123 | 18 | 123 -XD180 |
| 18.5 | 79 | 131 | 20 | 123 -XD185 |
| 19 | 79 | 131 | 20 | 123 -XD190 |
| 19.5 | 79 | 131 | 20 | 123 -XD195 |
| 20 | 79 | 131 | 20 | 123 -XD200 |

**Modifications**
**Regrinds, Re coat**
**Specials**

# Performance Solid Carbide Drills - *TiALN* - (DIN) 6537
## 3xD Coolant 140° Point - 30° Helix
## Micro-grain K30

Series 133

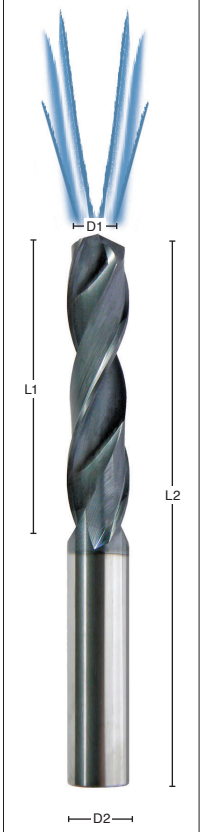
TiALN | DIN 6537 | 140° | 30° | MG HM | PLAIN

| Drill Dia-D1 | FL L1 | OAL L2 | Shank Dia-D2 | Part Number |
|---|---|---|---|---|
| 3.5 | 20 | 62 | 6 | 133 -XD350 |
| 3.6 | 20 | 62 | 6 | 133 -XD360 |
| 3.7 | 20 | 62 | 6 | 133 -XD370 |
| 3.8 | 24 | 66 | 6 | 133 -XD380 |
| 3.9 | 24 | 66 | 6 | 133 -XD390 |
| 4 | 24 | 66 | 6 | 133 -XD400 |
| 4.1 | 24 | 66 | 6 | 133 -XD410 |
| 4.2 | 24 | 66 | 6 | 133 -XD420 |
| 4.3 | 24 | 66 | 6 | 133 -XD430 |
| 4.4 | 24 | 66 | 6 | 133 -XD440 |
| 4.5 | 24 | 66 | 6 | 133 -XD450 |
| 4.6 | 24 | 66 | 6 | 133 -XD460 |
| 4.7 | 24 | 66 | 6 | 133 -XD470 |
| 4.8 | 28 | 66 | 6 | 133 -XD480 |
| 4.9 | 28 | 66 | 6 | 133 -XD490 |
| 5 | 28 | 66 | 6 | 133 -XD500 |
| 5.1 | 28 | 66 | 6 | 133 -XD510 |
| 5.2 | 28 | 66 | 6 | 133 -XD520 |
| 5.3 | 28 | 66 | 6 | 133 -XD530 |
| 5.4 | 28 | 66 | 6 | 133 -XD540 |
| 5.5 | 28 | 66 | 6 | 133 -XD550 |
| 5.6 | 28 | 66 | 6 | 133 -XD560 |
| 5.7 | 28 | 66 | 6 | 133 -XD570 |
| 5.8 | 28 | 66 | 6 | 133 -XD580 |
| 5.9 | 28 | 66 | 6 | 133 -XD590 |
| 6 | 28 | 66 | 6 | 133 -XD600 |
| 6.1 | 34 | 79 | 8 | 133 -XD610 |
| 6.2 | 34 | 79 | 8 | 133 -XD620 |
| 6.3 | 34 | 79 | 8 | 133 -XD630 |
| 6.4 | 34 | 79 | 8 | 133 -XD640 |
| 6.5 | 34 | 79 | 8 | 133 -XD650 |
| 6.6 | 34 | 79 | 8 | 133 -XD660 |
| 6.7 | 34 | 79 | 8 | 133 -XD670 |
| 6.8 | 34 | 79 | 8 | 133 -XD680 |
| 6.9 | 34 | 79 | 8 | 133 -XD690 |
| 7 | 34 | 79 | 8 | 133 -XD700 |
| 7.1 | 41 | 79 | 8 | 133 -XD710 |
| 7.2 | 41 | 79 | 8 | 133 -XD720 |
| 7.3 | 41 | 79 | 8 | 133 -XD730 |
| 7.4 | 41 | 79 | 8 | 133 -XD740 |
| 7.5 | 41 | 79 | 8 | 133 -XD750 |
| 7.6 | 41 | 79 | 8 | 133 -XD760 |
| 7.7 | 41 | 79 | 8 | 133 -XD770 |
| 7.8 | 41 | 79 | 8 | 133 -XD780 |
| 7.9 | 41 | 79 | 8 | 133 -XD790 |
| 8 | 41 | 79 | 8 | 133 -XD800 |
| 8.1 | 47 | 89 | 10 | 133 -XD810 |
| 8.2 | 47 | 89 | 10 | 133 -XD820 |
| 8.3 | 47 | 89 | 10 | 133 -XD830 |
| 8.4 | 47 | 89 | 10 | 133 -XD840 |
| 8.5 | 47 | 89 | 10 | 133 -XD850 |

| Drill Dia-D1 | FL L1 | OAL L2 | Shank Dia-D2 | Part Number |
|---|---|---|---|---|
| 8.6 | 47 | 89 | 10 | 133 -XD860 |
| 8.7 | 47 | 89 | 10 | 133 -XD870 |
| 8.8 | 47 | 89 | 10 | 133 -XD880 |
| 8.9 | 47 | 89 | 10 | 133 -XD890 |
| 9 | 47 | 89 | 10 | 133 -XD900 |
| 9.1 | 47 | 89 | 10 | 133 -XD910 |
| 9.2 | 47 | 89 | 10 | 133 -XD920 |
| 9.3 | 47 | 89 | 10 | 133 -XD930 |
| 9.4 | 47 | 89 | 10 | 133 -XD940 |
| 9.5 | 47 | 89 | 10 | 133 -XD950 |
| 9.6 | 47 | 89 | 10 | 133 -XD960 |
| 9.7 | 47 | 89 | 10 | 133 -XD970 |
| 9.8 | 47 | 89 | 10 | 133 -XD980 |
| 9.9 | 47 | 89 | 10 | 133 -XD990 |
| 10 | 47 | 89 | 10 | 133 -XD100 |
| 10.1 | 55 | 102 | 12 | 133 -XD101 |
| 10.2 | 55 | 102 | 12 | 133 -XD102 |
| 10.3 | 55 | 102 | 12 | 133 -XD103 |
| 10.4 | 55 | 102 | 12 | 133 -XD104 |
| 10.5 | 55 | 102 | 12 | 133 -XD105 |
| 10.6 | 55 | 102 | 12 | 133 -XD106 |
| 10.7 | 55 | 102 | 12 | 133 -XD107 |
| 10.8 | 55 | 102 | 12 | 133 -XD108 |
| 10.9 | 55 | 102 | 12 | 133 -XD109 |
| 11 | 55 | 102 | 12 | 133 -XD110 |
| 11.1 | 55 | 102 | 12 | 133 -XD111 |
| 11.2 | 55 | 102 | 12 | 133 -XD112 |
| 11.3 | 55 | 102 | 12 | 133 -XD113 |
| 11.4 | 55 | 102 | 12 | 133 -XD114 |
| 11.5 | 55 | 102 | 12 | 133- XD115 |
| 11.6 | 55 | 102 | 12 | 133 -XD116 |
| 11.7 | 55 | 102 | 12 | 133 -XD117 |
| 11.8 | 55 | 102 | 12 | 133 -XD118 |
| 11.9 | 55 | 102 | 12 | 133 -XD119 |
| 12 | 55 | 102 | 12 | 133 -XD120 |
| 12.5 | 60 | 107 | 14 | 133 -XD125 |
| 13 | 60 | 107 | 14 | 133 -XD130 |
| 13.5 | 60 | 107 | 14 | 133 -XD135 |
| 14 | 60 | 107 | 14 | 133 -XD140 |
| 14.5 | 65 | 115 | 16 | 133 -XD145 |
| 15 | 65 | 115 | 16 | 133 -XD150 |
| 15.5 | 65 | 115 | 16 | 133 -XD155 |
| 16 | 65 | 115 | 16 | 133 -XD160 |
| 16.5 | 73 | 123 | 18 | 133 -XD165 |
| 17 | 73 | 123 | 18 | 133 -XD170 |
| 17.5 | 73 | 123 | 18 | 133 -XD175 |
| 18 | 73 | 123 | 18 | 133 -XD180 |
| 18.5 | 79 | 131 | 20 | 133 -XD185 |
| 19 | 79 | 131 | 20 | 133 -XD190 |
| 19.5 | 79 | 131 | 20 | 133 -XD195 |
| 20 | 79 | 131 | 20 | 133 -XD200 |

**Tolerances:**

| | |
|---|---|
| D1 | m7 |
| D2 | h6 |




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1.1 - 1.6 | 6.1 - 7.4
2.1 - 2.3 | 4.1 - 5.3
3.1 - 3.4 | 1.7 - 1.9



**Modifications**
**Regrinds, Re coat**
**Specials**

# Performance Solid Carbide Drills - *TiALN* - (DIN) 6537
## 5xD *without coolant* 140° Point - 30° Helix
## Micro-grain K30




| Tolerances: | |
|---|---|
| D1 | m7 |
| D2 | h6 |

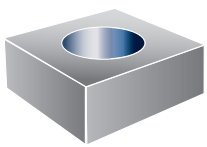



| Drill Dia-D1 | FL L1 | OAL L2 | Shank Dia-D2 | Part Number |
|---|---|---|---|---|
| 3 | 28 | 66 | 6 | 125 -XD300 |
| 3.1 | 28 | 66 | 6 | 125 -XD310 |
| 3.2 | 28 | 66 | 6 | 125 -XD320 |
| 3.3 | 28 | 66 | 6 | 125 -XD330 |
| 3.4 | 28 | 66 | 6 | 125 -XD340 |
| 3.5 | 28 | 66 | 6 | 125 -XD350 |
| 3.6 | 28 | 66 | 6 | 125 -XD360 |
| 3.7 | 28 | 66 | 6 | 125 -XD370 |
| 3.8 | 36 | 74 | 6 | 125 -XD380 |
| 3.9 | 36 | 74 | 6 | 125 -XD390 |
| 4 | 36 | 74 | 6 | 125 -XD400 |
| 4.1 | 36 | 74 | 6 | 125 -XD410 |
| 4.2 | 36 | 74 | 6 | 125 -XD420 |
| 4.3 | 36 | 74 | 6 | 125 -XD430 |
| 4.4 | 36 | 74 | 6 | 125 -XD440 |
| 4.5 | 36 | 74 | 6 | 125 -XD450 |
| 4.6 | 36 | 74 | 6 | 125 -XD460 |
| 4.7 | 44 | 82 | 6 | 125 -XD470 |
| 4.8 | 44 | 82 | 6 | 125 -XD480 |
| 4.9 | 44 | 82 | 6 | 125 -XD490 |
| 5 | 44 | 82 | 6 | 125 -XD500 |
| 5.1 | 44 | 82 | 6 | 125 -XD510 |
| 5.2 | 44 | 82 | 6 | 125 -XD520 |
| 5.3 | 44 | 82 | 6 | 125 -XD530 |
| 5.4 | 44 | 82 | 6 | 125 -XD540 |
| 5.5 | 44 | 82 | 6 | 125 -XD550 |
| 5.6 | 44 | 82 | 6 | 125 -XD560 |
| 5.7 | 44 | 82 | 6 | 125 -XD570 |
| 5.8 | 44 | 82 | 6 | 125 -XD580 |
| 5.9 | 44 | 82 | 6 | 125 -XD590 |
| 6 | 44 | 82 | 6 | 125 -XD600 |
| 6.1 | 53 | 91 | 8 | 125 -XD610 |
| 6.2 | 53 | 91 | 8 | 125 -XD620 |
| 6.3 | 53 | 91 | 8 | 125 -XD630 |
| 6.4 | 53 | 91 | 8 | 125 -XD640 |
| 6.5 | 53 | 91 | 8 | 125 -XD650 |
| 6.6 | 53 | 91 | 8 | 125 -XD660 |
| 6.7 | 53 | 91 | 8 | 125 -XD670 |
| 6.8 | 53 | 91 | 8 | 125 -XD680 |
| 6.9 | 53 | 91 | 8 | 125 -XD690 |
| 7 | 53 | 91 | 8 | 125 -XD700 |
| 7.1 | 53 | 91 | 8 | 125 -XD710 |
| 7.2 | 53 | 91 | 8 | 125 -XD720 |
| 7.3 | 53 | 91 | 8 | 125 -XD730 |
| 7.4 | 53 | 91 | 8 | 125 -XD740 |
| 7.5 | 53 | 91 | 8 | 125 -XD750 |
| 7.6 | 53 | 91 | 8 | 125 -XD760 |
| 7.7 | 53 | 91 | 8 | 125 -XD770 |
| 7.8 | 53 | 91 | 8 | 125 -XD780 |
| 7.9 | 53 | 91 | 8 | 125 -XD790 |
| 8 | 53 | 91 | 8 | 125 -XD800 |
| 8.1 | 61 | 103 | 10 | 125 -XD810 |
| 8.2 | 61 | 103 | 10 | 125 -XD820 |
| 8.3 | 61 | 103 | 10 | 125 -XD830 |

| Drill Dia-D1 | FL L1 | OAL L2 | Shank Dia-D2 | Part Number |
|---|---|---|---|---|
| 8.4 | 61 | 103 | 10 | 125 -XD840 |
| 8.5 | 61 | 103 | 10 | 125 -XD850 |
| 8.6 | 61 | 103 | 10 | 125 -XD860 |
| 8.7 | 61 | 103 | 10 | 125 -XD870 |
| 8.8 | 61 | 103 | 10 | 125 -XD880 |
| 8.9 | 61 | 103 | 10 | 125 -XD890 |
| 9 | 61 | 103 | 10 | 125 -XD900 |
| 9.1 | 61 | 103 | 10 | 125 -XD910 |
| 9.2 | 61 | 103 | 10 | 125 -XD920 |
| 9.3 | 61 | 103 | 10 | 125 -XD930 |
| 9.4 | 61 | 103 | 10 | 125 -XD940 |
| 9.5 | 61 | 103 | 10 | 125 -XD950 |
| 9.6 | 61 | 103 | 10 | 125 -XD960 |
| 9.7 | 61 | 103 | 10 | 125 -XD970 |
| 9.8 | 61 | 103 | 10 | 125 -XD980 |
| 9.9 | 61 | 103 | 10 | 125 -XD990 |
| 10 | 61 | 103 | 10 | 125 -XD100 |
| 10.1 | 71 | 118 | 12 | 125 -XD101 |
| 10.2 | 71 | 118 | 12 | 125 -XD102 |
| 10.3 | 71 | 118 | 12 | 125 -XD103 |
| 10.4 | 71 | 118 | 12 | 125 -XD104 |
| 10.5 | 71 | 118 | 12 | 125 -XD105 |
| 10.6 | 71 | 118 | 12 | 125 -XD106 |
| 10.7 | 71 | 118 | 12 | 125 -XD107 |
| 10.8 | 71 | 118 | 12 | 125 -XD108 |
| 10.9 | 71 | 118 | 12 | 125 -XD109 |
| 11 | 71 | 118 | 12 | 125 -XD110 |
| 11.1 | 71 | 118 | 12 | 125 -XD111 |
| 11.2 | 71 | 118 | 12 | 125 -XD112 |
| 11.3 | 71 | 118 | 12 | 125 -XD113 |
| 11.4 | 71 | 118 | 12 | 125 -XD114 |
| 11.5 | 71 | 118 | 12 | 125- XD115 |
| 11.6 | 71 | 118 | 12 | 125 -XD116 |
| 11.7 | 71 | 118 | 12 | 125 -XD117 |
| 11.8 | 71 | 118 | 12 | 125 -XD118 |
| 11.9 | 71 | 118 | 12 | 125 -XD119 |
| 12 | 71 | 118 | 12 | 125 -XD120 |
| 12.5 | 77 | 124 | 14 | 125 -XD125 |
| 13 | 77 | 124 | 14 | 125 -XD130 |
| 13.5 | 77 | 124 | 14 | 125 -XD135 |
| 14 | 77 | 124 | 14 | 125 -XD140 |
| 14.5 | 83 | 133 | 16 | 125 -XD145 |
| 15 | 83 | 133 | 16 | 125 -XD150 |
| 15.5 | 83 | 133 | 16 | 125 -XD155 |
| 16 | 83 | 133 | 16 | 125 -XD160 |
| 16.5 | 93 | 143 | 18 | 125 -XD165 |
| 17 | 93 | 143 | 18 | 125 -XD170 |
| 17.5 | 93 | 143 | 18 | 125 -XD175 |
| 18 | 93 | 143 | 18 | 125 -XD180 |
| 18.5 | 101 | 153 | 20 | 125 -XD185 |
| 19 | 101 | 153 | 20 | 125 -XD190 |
| 19.5 | 101 | 153 | 20 | 125 -XD195 |
| 20 | 101 | 153 | 20 | 125 -XD200 |

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| | |
|---|---|
| 1.1 - 1.6 | 6.1 - 7.4 |
| 2.1 - 2.3 | 4.1 - 5.3 |
| 3.1 - 3.4 | 1.7 - 1.9 |



**Modifications**
**Regrinds, Re coat**
**Specials**

# Performance Solid Carbide Drills - *TiALN* - (DIN) 6537
## 5xD Coolant 140° Point - 30° Helix
## Micro-grain K30

Series 135

TiALN | DIN 6537 | 30° | 140° | MG HM | PLAIN

| Drill Dia-D1 | FL L1 | OAL L2 | Shank Dia-D2 | Part Number |
|---|---|---|---|---|
| 3.5 | 28 | 66 | 6 | 135 -XD350 |
| 3.6 | 28 | 66 | 6 | 135 -XD360 |
| 3.7 | 28 | 66 | 6 | 135 -XD370 |
| 3.8 | 36 | 74 | 6 | 135 -XD380 |
| 3.9 | 36 | 74 | 6 | 135 -XD390 |
| 4 | 36 | 74 | 6 | 135 -XD400 |
| 4.1 | 36 | 74 | 6 | 135 -XD410 |
| 4.2 | 36 | 74 | 6 | 135 -XD420 |
| 4.3 | 36 | 74 | 6 | 135 -XD430 |
| 4.4 | 36 | 74 | 6 | 135 -XD440 |
| 4.5 | 36 | 74 | 6 | 135 -XD450 |
| 4.6 | 36 | 74 | 6 | 135 -XD460 |
| 4.7 | 44 | 82 | 6 | 135 -XD470 |
| 4.8 | 44 | 82 | 6 | 135 -XD480 |
| 4.9 | 44 | 82 | 6 | 135 -XD490 |
| 5 | 44 | 82 | 6 | 135 -XD500 |
| 5.1 | 44 | 82 | 6 | 135 -XD510 |
| 5.2 | 44 | 82 | 6 | 135 -XD520 |
| 5.3 | 44 | 82 | 6 | 135 -XD530 |
| 5.4 | 44 | 82 | 6 | 135 -XD540 |
| 5.5 | 44 | 82 | 6 | 135 -XD550 |
| 5.6 | 44 | 82 | 6 | 135 -XD560 |
| 5.7 | 44 | 82 | 6 | 135 -XD570 |
| 5.8 | 44 | 82 | 6 | 135 -XD580 |
| 5.9 | 44 | 82 | 6 | 135 -XD590 |
| 6 | 44 | 82 | 6 | 135 -XD600 |
| 6.1 | 53 | 91 | 8 | 135 -XD610 |
| 6.2 | 53 | 91 | 8 | 135 -XD620 |
| 6.3 | 53 | 91 | 8 | 135 -XD630 |
| 6.4 | 53 | 91 | 8 | 135 -XD640 |
| 6.5 | 53 | 91 | 8 | 135 -XD650 |
| 6.6 | 53 | 91 | 8 | 135 -XD660 |
| 6.7 | 53 | 91 | 8 | 135 -XD670 |
| 6.8 | 53 | 91 | 8 | 135 -XD680 |
| 6.9 | 53 | 91 | 8 | 135 -XD690 |
| 7 | 53 | 91 | 8 | 135 -XD700 |
| 7.1 | 53 | 91 | 8 | 135 -XD710 |
| 7.2 | 53 | 91 | 8 | 135 -XD720 |
| 7.3 | 53 | 91 | 8 | 135 -XD730 |
| 7.4 | 53 | 91 | 8 | 135 -XD740 |
| 7.5 | 53 | 91 | 8 | 135 -XD750 |
| 7.6 | 53 | 91 | 8 | 135 -XD760 |
| 7.7 | 53 | 91 | 8 | 135 -XD770 |
| 7.8 | 53 | 91 | 8 | 135 -XD780 |
| 7.9 | 53 | 91 | 8 | 135 -XD790 |
| 8 | 53 | 91 | 8 | 135 -XD800 |
| 8.1 | 61 | 103 | 10 | 135 -XD810 |
| 8.2 | 61 | 103 | 10 | 135 -XD820 |
| 8.3 | 61 | 103 | 10 | 135 -XD830 |
| 8.4 | 61 | 103 | 10 | 135 -XD840 |
| 8.5 | 61 | 103 | 10 | 135 -XD850 |

| Drill Dia-D1 | FL L1 | OAL L2 | Shank Dia-D2 | Part Number |
|---|---|---|---|---|
| 8.6 | 61 | 103 | 10 | 135 -XD860 |
| 8.7 | 61 | 103 | 10 | 135 -XD870 |
| 8.8 | 61 | 103 | 10 | 135 -XD880 |
| 8.9 | 61 | 103 | 10 | 135 -XD890 |
| 9 | 61 | 103 | 10 | 135 -XD900 |
| 9.1 | 61 | 103 | 10 | 135 -XD910 |
| 9.2 | 61 | 103 | 10 | 135 -XD920 |
| 9.3 | 61 | 103 | 10 | 135 -XD930 |
| 9.4 | 61 | 103 | 10 | 135 -XD940 |
| 9.5 | 61 | 103 | 10 | 135 -XD950 |
| 9.6 | 61 | 103 | 10 | 135 -XD960 |
| 9.7 | 61 | 103 | 10 | 135 -XD970 |
| 9.8 | 61 | 103 | 10 | 135 -XD980 |
| 9.9 | 61 | 103 | 10 | 135 -XD990 |
| 10 | 61 | 103 | 10 | 135 -XD100 |
| 10.1 | 71 | 118 | 12 | 135 -XD101 |
| 10.2 | 71 | 118 | 12 | 135 -XD102 |
| 10.3 | 71 | 118 | 12 | 135 -XD103 |
| 10.4 | 71 | 118 | 12 | 135 -XD104 |
| 10.5 | 71 | 118 | 12 | 135 -XD105 |
| 10.6 | 71 | 118 | 12 | 135 -XD106 |
| 10.7 | 71 | 118 | 12 | 135 -XD107 |
| 10.8 | 71 | 118 | 12 | 135 -XD108 |
| 10.9 | 71 | 118 | 12 | 135 -XD109 |
| 11 | 71 | 118 | 12 | 135 -XD110 |
| 11.1 | 71 | 118 | 12 | 135 -XD111 |
| 11.2 | 71 | 118 | 12 | 135 -XD112 |
| 11.3 | 71 | 118 | 12 | 135 -XD113 |
| 11.4 | 71 | 118 | 12 | 135 -XD114 |
| 11.5 | 71 | 118 | 12 | 135- XD115 |
| 11.6 | 71 | 118 | 12 | 135 -XD116 |
| 11.7 | 71 | 118 | 12 | 135 -XD117 |
| 11.8 | 71 | 118 | 12 | 135 -XD118 |
| 11.9 | 71 | 118 | 12 | 135 -XD119 |
| 12 | 71 | 118 | 12 | 135 -XD120 |
| 12.5 | 77 | 124 | 14 | 135 -XD125 |
| 13 | 77 | 124 | 14 | 135 -XD130 |
| 13.5 | 77 | 124 | 14 | 135 -XD135 |
| 14 | 77 | 124 | 14 | 135 -XD140 |
| 14.5 | 83 | 133 | 16 | 135 -XD145 |
| 15 | 83 | 133 | 16 | 135 -XD150 |
| 15.5 | 83 | 133 | 16 | 135 -XD155 |
| 16 | 83 | 133 | 16 | 135 -XD160 |
| 16.5 | 93 | 143 | 18 | 135 -XD165 |
| 17 | 93 | 143 | 18 | 135 -XD170 |
| 17.5 | 93 | 143 | 18 | 135 -XD175 |
| 18 | 93 | 143 | 18 | 135 -XD180 |
| 18.5 | 101 | 153 | 20 | 135 -XD185 |
| 19 | 101 | 153 | 20 | 135 -XD190 |
| 19.5 | 101 | 153 | 20 | 135 -XD195 |
| 20 | 101 | 153 | 20 | 135 -XD200 |

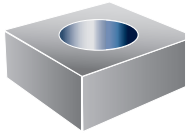
**Tolerances:**

| | |
|---|---|
| D1 | m7 |
| D2 | h6 |




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| | |
|---|---|
| 1.1 - 1.6 | 6.1 - 7.4 |
| 2.1 - 2.3 | 4.1 - 5.3 |
| 3.1 - 3.4 | 1.7 - 1.9 |

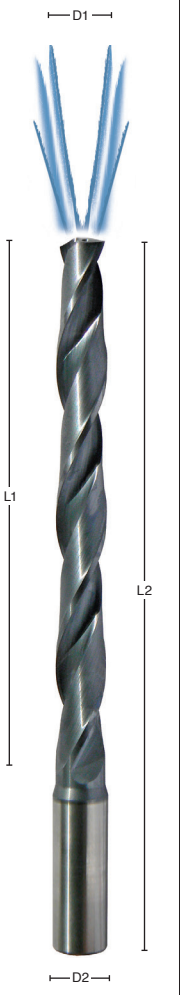


**Modifications**
**Regrinds, Re coat**
**Specials**

# Performance Solid Carbide Drills - *TiALN* - (DIN) 6537
## 8xD Coolant 140° Point - 30° Helix
## Micro-grain K30

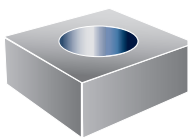



| Tolerances: | |
|---|---|
| D1 | m7 |
| D2 | h6 |




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1.1 - 1.6 | 6.1 - 7.4 | 2.1 - 2.3 | 4.1 - 5.3 | 3.1 - 3.4 | 1.7 - 1.9



| Drill Dia-D1 | FL L1 | OAL L2 | Shank Dia-D2 | Part Number |
|---|---|---|---|---|
| 3.5 | 34 | 72 | 6 | 138 -XD350 |
| 3.6 | 34 | 72 | 6 | 138 -XD360 |
| 3.7 | 34 | 72 | 6 | 138 -XD370 |
| 3.8 | 43 | 81 | 6 | 138 -XD380 |
| 3.9 | 43 | 81 | 6 | 138 -XD390 |
| 4 | 43 | 81 | 6 | 138 -XD400 |
| 4.1 | 43 | 81 | 6 | 138 -XD410 |
| 4.2 | 43 | 81 | 6 | 138 -XD420 |
| 4.3 | 43 | 81 | 6 | 138 -XD430 |
| 4.4 | 43 | 81 | 6 | 138 -XD440 |
| 4.5 | 43 | 81 | 6 | 138 -XD450 |
| 4.6 | 43 | 81 | 6 | 138 -XD460 |
| 4.7 | 43 | 81 | 6 | 138 -XD470 |
| 4.8 | 57 | 95 | 6 | 138 -XD480 |
| 4.9 | 57 | 95 | 6 | 138 -XD490 |
| 5 | 57 | 95 | 6 | 138 -XD500 |
| 5.1 | 57 | 95 | 6 | 138 -XD510 |
| 5.2 | 57 | 95 | 6 | 138 -XD520 |
| 5.3 | 57 | 95 | 6 | 138 -XD530 |
| 5.4 | 57 | 95 | 6 | 138 -XD540 |
| 5.5 | 57 | 95 | 6 | 138 -XD550 |
| 5.6 | 57 | 95 | 6 | 138 -XD560 |
| 5.7 | 57 | 95 | 6 | 138 -XD570 |
| 5.8 | 57 | 95 | 6 | 138 -XD580 |
| 5.9 | 57 | 95 | 6 | 138 -XD590 |
| 6 | 57 | 95 | 6 | 138 -XD600 |
| 6.1 | 76 | 114 | 8 | 138 -XD610 |
| 6.2 | 76 | 114 | 8 | 138 -XD620 |
| 6.3 | 76 | 114 | 8 | 138 -XD630 |
| 6.4 | 76 | 114 | 8 | 138 -XD640 |
| 6.5 | 76 | 114 | 8 | 138 -XD650 |
| 6.6 | 76 | 114 | 8 | 138 -XD660 |
| 6.7 | 76 | 114 | 8 | 138 -XD670 |
| 6.8 | 76 | 114 | 8 | 138 -XD680 |
| 6.9 | 76 | 114 | 8 | 138 -XD690 |
| 7 | 76 | 114 | 8 | 138 -XD700 |
| 7.1 | 76 | 114 | 8 | 138 -XD710 |
| 7.2 | 76 | 114 | 8 | 138 -XD720 |
| 7.3 | 76 | 114 | 8 | 138 -XD730 |
| 7.4 | 76 | 114 | 8 | 138 -XD740 |
| 7.5 | 76 | 114 | 8 | 138 -XD750 |
| 7.6 | 76 | 114 | 8 | 138 -XD760 |
| 7.7 | 76 | 114 | 8 | 138 -XD770 |
| 7.8 | 76 | 114 | 8 | 138 -XD780 |
| 7.9 | 76 | 114 | 8 | 138 -XD790 |
| 8 | 76 | 114 | 8 | 138 -XD800 |
| 8.1 | 95 | 142 | 10 | 138 -XD810 |
| 8.2 | 95 | 142 | 10 | 138 -XD820 |
| 8.3 | 95 | 142 | 10 | 138 -XD830 |
| 8.4 | 95 | 142 | 10 | 138 -XD840 |
| 8.5 | 95 | 142 | 10 | 138 -XD850 |

| Drill Dia-D1 | FL L1 | OAL L2 | Shank Dia-D2 | Part Number |
|---|---|---|---|---|
| 8.6 | 95 | 142 | 10 | 138 -XD860 |
| 8.7 | 95 | 142 | 10 | 138 -XD870 |
| 8.8 | 95 | 142 | 10 | 138 -XD880 |
| 8.9 | 95 | 142 | 10 | 138 -XD890 |
| 9 | 95 | 142 | 10 | 138 -XD900 |
| 9.1 | 95 | 142 | 10 | 138 -XD910 |
| 9.2 | 95 | 142 | 10 | 138 -XD920 |
| 9.3 | 95 | 142 | 10 | 138 -XD930 |
| 9.4 | 95 | 142 | 10 | 138 -XD940 |
| 9.5 | 95 | 142 | 10 | 138 -XD950 |
| 9.6 | 95 | 142 | 10 | 138 -XD960 |
| 9.7 | 95 | 142 | 10 | 138 -XD970 |
| 9.8 | 95 | 142 | 10 | 138 -XD980 |
| 9.9 | 95 | 142 | 10 | 138 -XD990 |
| 10 | 95 | 142 | 10 | 138 -XD100 |
| 10.1 | 114 | 162 | 12 | 138 -XD101 |
| 10.2 | 114 | 162 | 12 | 138 -XD102 |
| 10.3 | 114 | 162 | 12 | 138 -XD103 |
| 10.4 | 114 | 162 | 12 | 138 -XD104 |
| 10.5 | 114 | 162 | 12 | 138 -XD105 |
| 10.6 | 114 | 162 | 12 | 138 -XD106 |
| 10.7 | 114 | 162 | 12 | 138 -XD107 |
| 10.8 | 114 | 162 | 12 | 138 -XD108 |
| 10.9 | 114 | 162 | 12 | 138 -XD109 |
| 11 | 114 | 162 | 12 | 138 -XD110 |
| 11.1 | 114 | 162 | 12 | 138 -XD111 |
| 11.2 | 114 | 162 | 12 | 138 -XD112 |
| 11.3 | 114 | 162 | 12 | 138 -XD113 |
| 11.4 | 114 | 162 | 12 | 138 -XD114 |
| 11.5 | 114 | 162 | 12 | 138- XD115 |
| 11.6 | 114 | 162 | 12 | 138 -XD116 |
| 11.7 | 114 | 162 | 12 | 138 -XD117 |
| 11.8 | 114 | 162 | 12 | 138 -XD118 |
| 11.9 | 114 | 162 | 12 | 138 -XD119 |
| 12 | 114 | 162 | 12 | 138 -XD120 |
| 12.5 | 133 | 182 | 14 | 138 -XD125 |
| 13 | 133 | 182 | 14 | 138 -XD130 |
| 13.5 | 133 | 182 | 14 | 138 -XD135 |
| 14 | 133 | 182 | 14 | 138 -XD140 |
| 14.5 | 152 | 204 | 16 | 138 -XD145 |
| 15 | 152 | 204 | 16 | 138 -XD150 |
| 15.5 | 152 | 204 | 16 | 138 -XD155 |
| 16 | 152 | 204 | 16 | 138 -XD160 |
| 16.5 | 171 | 223 | 18 | 138 -XD165 |
| 17 | 171 | 223 | 18 | 138 -XD170 |
| 17.5 | 171 | 223 | 18 | 138 -XD175 |
| 18 | 171 | 223 | 18 | 138 -XD180 |
| 18.5 | 190 | 244 | 20 | 138 -XD185 |
| 19 | 190 | 244 | 20 | 138 -XD190 |
| 19.5 | 190 | 244 | 20 | 138 -XD195 |
| 20 | 190 | 244 | 20 | 138 -XD200 |

**Modifications**
**Regrinds, Re coat**
**Specials**

# Solid Carbide Jobber Drills
# 118° Four Facet Point - 25° Helix
# Micro-grain K30

Series 102




| Size Ref | Drill Dia | FL L1 | OAL L2 | Part Number |
|---|---|---|---|---|
| 70 | .0280 | 5/16" | 1-1/4" | 102 -00280 |
| 69 | .0292 | 5/16" | 1-1/4" | 102 -00292 |
| 68 | .0310 | 5/16" | 1-1/4" | 102 -00310 |
| **1/32"** | **.0312** | 5/16" | 1-1/4" | 102 -00402 |
| 67 | .0320 | 5/16" | 1-1/4" | 102 -00320 |
| 66 | .0330 | 5/16" | 1-1/4" | 102 -00330 |
| 65 | .0350 | 5/8" | 1-1/2" | 102 -00350 |
| 64 | .0360 | 5/8" | 1-1/2" | 102 -00360 |
| 63 | .0370 | 5/8" | 1-1/2" | 102 -00370 |
| 62 | .0380 | 5/8" | 1-1/2" | 102 -00380 |
| 61 | .0390 | 5/8" | 1-1/2" | 102 -00390 |
| 60 | .0400 | 3/4" | 1-1/2" | 102 -00400 |
| 59 | .0410 | 3/4" | 1-1/2" | 102 -04410 |
| 58 | .0420 | 3/4" | 1-1/2" | 102 -04420 |
| 57 | .0430 | 3/4" | 1-1/2" | 102 -00430 |
| 56 | .0465 | 3/4" | 1-1/2" | 102 -00465 |
| **3/64"** | **.0469** | 3/4" | 1-1/2" | 102 -00403 |
| 55 | .0520 | 3/4" | 1-1/2" | 102 -00520 |
| 54 | .0550 | 3/4" | 1-1/2" | 102 -00550 |
| 53 | .0595 | 3/4" | 1-1/2" | 102 -00595 |
| **1/16"** | **.0625** | 3/4" | 1-1/2" | 102 -00404 |
| 52 | .0635 | 3/4" | 1-3/4" | 102 -00635 |
| 51 | .0670 | 3/4" | 1-3/4" | 102 -00670 |
| 50 | .0700 | 7/8" | 1-3/4" | 102 -00700 |
| 49 | .0730 | 7/8" | 1-3/4" | 102 -00730 |
| 48 | .0760 | 7/8" | 1-3/4" | 102 -00760 |
| **5/64"** | **.0781** | 7/8" | 1-3/4" | 102 -00405 |
| 47 | .0785 | 7/8" | 1-3/4" | 102 -00785 |
| 46 | .0810 | 7/8" | 1-3/4" | 102 -00810 |
| 45 | .0820 | 7/8" | 1-3/4" | 102 -00820 |
| 44 | .0860 | 1" | 2" | 102 -00860 |
| 43 | .0890 | 1" | 2" | 102 -00890 |
| 42 | .0935 | 1" | 2" | 102 -00935 |
| **3/32"** | **.0938** | 1" | 2" | 102 -00406 |
| 41 | .0960 | 1" | 2" | 102 -00960 |
| 40 | .0980 | 1" | 2" | 102 -00980 |
| 39 | .0995 | 1-1/4" | 2-1/4" | 102 -00995 |
| 38 | .1015 | 1-1/4" | 2-1/4" | 102 -01015 |
| 37 | .1040 | 1-1/4" | 2-1/4" | 102 -01040 |
| 36 | .1065 | 1-1/4" | 2-1/4" | 102 -01065 |
| **7/64"** | **.1094** | 1-1/4" | 2-1/4" | 102 -00407 |
| 35 | .1100 | 1-1/4" | 2-1/4" | 102 -01100 |
| 34 | .1110 | 1-1/4" | 2-1/4" | 102 -01110 |
| 33 | .1130 | 1-1/4" | 2-1/4" | 102 -01130 |
| 32 | .1160 | 1-1/4" | 2-1/4" | 102 -01160 |
| 31 | .1200 | 1-1/4" | 2-1/4" | 102 -01200 |
| **1/8"** | **.1250** | 1-1/4" | 2-1/4" | 102 -00408 |
| 30 | .1285 | 1-3/8" | 2-1/2" | 102 -01285 |
| 29 | .1360 | 1-3/8" | 2-1/2" | 102 -01360 |
| 28 | .1405 | 1-3/8" | 2-1/2" | 102 -01405 |
| **9/64"** | **.1406** | 1-3/8" | 2-1/2" | 102- 00409 |
| 27 | .1440 | 1-3/8" | 2-1/2" | 102 -01440 |
| 26 | .1470 | 1-3/8" | 2-1/2" | 102 -01470 |
| 25 | .1495 | 1-3/8" | 2-1/2" | 102 -01495 |
| 24 | .1520 | 1-3/8" | 2-1/2" | 102 -01520 |
| 23 | .1540 | 1-3/8" | 2-1/2" | 102 -01540 |
| **5/32"** | **.1562** | 1-3/8" | 2-1/2" | 102 -00410 |
| 22 | .1570 | 1-3/8" | 2-1/2" | 102 -01570 |
| 21 | .1590 | 1-3/8" | 2-1/2" | 102 -01590 |
| 20 | .1610 | 1-3/8" | 2-1/2" | 102 -01610 |
| 19 | .1660 | 1-5/8" | 2-3/4" | 102 -01660 |
| 18 | .1695 | 1-5/8" | 2-3/4" | 102 -01695 |
| **11/64"** | **.1719** | 1-5/8" | 2-3/4" | 102 -00411 |
| 17 | .1730 | 1-5/8" | 2-3/4" | 102 -01730 |
| 16 | .1770 | 1-5/8" | 2-3/4" | 102 -01770 |
| 15 | .1800 | 1-5/8" | 2-3/4" | 102 -01800 |
| 14 | .1820 | 1-5/8" | 2-3/4" | 102 -01820 |
| 13 | .1850 | 1-5/8" | 2-3/4" | 102 -01850 |

| Size Ref | Drill Dia | FL L1 | OAL L2 | Part Number |
|---|---|---|---|---|
| **3/16"** | **.1875** | 1-5/8" | 2-3/4" | 102 -00412 |
| 12 | .1890 | 1-5/8" | 2-3/4" | 102 -01890 |
| 11 | .1910 | 1-5/8" | 2-3/4" | 102 -01910 |
| 10 | .1935 | 1-5/8" | 2-3/4" | 102 -01935 |
| 9 | .1960 | 1-3/4" | 3" | 102 -01960 |
| 8 | .1990 | 1-3/4" | 3" | 102 -01990 |
| 7 | .2010 | 1-3/4" | 3" | 102 -02010 |
| **13/64"** | **.2031** | 1-3/4" | 3" | 102 -00413 |
| 6 | .2040 | 1-3/4" | 3" | 102 -02040 |
| 5 | .2055 | 1-3/4" | 3" | 102 -02055 |
| 4 | .2090 | 1-3/4" | 3" | 102 -02090 |
| 3 | .2130 | 1-3/4" | 3" | 102 -02130 |
| **7/32"** | **.2188** | 1-3/4" | 3" | 102 -00414 |
| 2 | .2210 | 1-3/4" | 3" | 102 -02210 |
| 1 | .2280 | 1-3/4" | 3" | 102 -02280 |
| A | .2340 | 2" | 3-1/4" | 102 -02340 |
| **15/64"** | **.2344** | 2" | 3-1/4" | 102 -00415 |
| B | .2380 | 2" | 3-1/4" | 102 -02380 |
| C | .2420 | 2" | 3-1/4" | 102 -02420 |
| D | .2460 | 2" | 3-1/4" | 102 -02460 |
| **E - 1/4"** | **.2500** | 2" | 3-1/4" | 102 -00416 |
| F | .2570 | 2" | 3-1/4" | 102 -02570 |
| G | .2610 | 2-1/8" | 3-1/2" | 102 -02610 |
| **17/64"** | **.2656** | 2-1/8" | 3-1/2" | 102 -00417 |
| H | .2660 | 2-1/8" | 3-1/2" | 102 -02660 |
| I | .2720 | 2-1/8" | 3-1/2" | 102 -02720 |
| J | .2770 | 2-1/8" | 3-1/2" | 102 -02770 |
| K | .2810 | 2-1/8" | 3-1/2" | 102 -02810 |
| **9/32"** | **.2812** | 2-1/8" | 3-1/2" | 102 -00418 |
| L | .2900 | 2-3/8" | 3-1/2" | 102 -02900 |
| M | .2950 | 2-3/8" | 4" | 102 -02950 |
| **19/64"** | **.2969** | 2-3/8" | 4" | 102- 00419 |
| N | .3020 | 2-3/8" | 4" | 102 -03020 |
| **5/16"** | **.3125** | 2-3/8" | 4" | 102 -00420 |
| O | .3160 | 2-3/8" | 4" | 102 -03160 |
| P | .3230 | 2-3/8" | 4" | 102 -03230 |
| **21/64"** | **.3281** | 2-3/8" | 4" | 102 -00421 |
| Q | .3320 | 2-3/8" | 4" | 102 -03320 |
| R | .3390 | 2-3/8" | 4" | 102 -03390 |
| **11/32"** | **.3438** | 2-3/8" | 4" | 102 -00422 |
| S | .3480 | 2-3/8" | 4" | 102 -03480 |
| T | .3580 | 2-3/4" | 4-1/4" | 102 -03580 |
| **23/64"** | **.3594** | 2-3/4" | 4-1/4" | 102 -00423 |
| U | .3680 | 2-3/4" | 4-1/4" | 102 -03680 |
| **3/8"** | **.3750** | 2-3/4" | 4-1/4" | 102 -00424 |
| V | .3770 | 2-3/4" | 4-1/4" | 102 -03770 |
| W | .3860 | 2-7/8" | 4-1/2" | 102 -03860 |
| **25/64"** | **.3906** | 2-7/8" | 4-1/2" | 102 -00425 |
| X | .3970 | 2-7/8" | 4-1/2" | 102 -03970 |
| Y | .4040 | 2-7/8" | 4-1/2" | 102 -04040 |
| **13/32"** | **.4062** | 2-7/8" | 4-1/2" | 102 -00426 |
| Z | .4130 | 2-7/8" | 4-1/2" | 102 -04130 |
| **27/64"** | **.4219** | 2-7/8" | 4-1/2" | 102 -00427 |
| **7/16"** | **.4375** | 2-7/8" | 4-1/2" | 102 -00428 |
| **29/64"** | **.4531** | 3" | 4-3/4" | 102 -00429 |
| **15/32"** | **.4688** | 3" | 4-3/4" | 102 -00430 |
| **31/64"** | **.4844** | 3" | 4-3/4" | 102 -00431 |
| **1/2"** | **.5000** | 3" | 4-3/4" | 102 -00432 |
| **17/32"** | **.5312** | 4" | 6" | 102 -00433 |
| **9/16"** | **.5625** | 4" | 6" | 102 -00434 |
| **19/32"** | **.5938** | 4" | 6" | 102 -00435 |
| **5/8"** | **.6250** | 4" | 6" | 102 -00436 |
| **21/32"** | **.6562** | 4" | 6" | 102 -00437 |
| **11/16"** | **.6875** | 4" | 6" | 102 -00438 |
| **23/32"** | **.7188** | 4" | 6" | 102 -00439 |
| **3/4"** | **.7500** | 4" | 6" | 102 -00440 |
| **7/8"** | **.8750** | 4" | 6" | 102 -00441 |
| **1"** | **1.0000** | 4" | 6" | 102 -00442 |

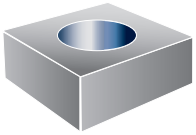
**Tolerances:**

| | |
|---|---|
| D1 | h6 |
| D2 | h6 |




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1.1 - 1.6 | 6.1 - 7.4 | 2.1 - 2.3 | 4.1 - 5.3 | 3.1 - 3.4



**Modifications**
**Regrinds, Re coat**
**Specials**

# Solid Carbide Jobber Drills - (DIN) 338
## 118° Four Facet Point - 27° Helix
## Micro-grain K30

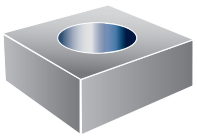



| Tolerances: | |
|---|---|
| D1 | h6 |
| D2 | h6 |




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1.1 - 1.6 | 6.1 - 7.4 | 2.1 - 2.3 | 4.1 - 5.3 | 3.1 - 3.4



| Drill Dia | FL L1 | OAL L2 | Part Number |
|---|---|---|---|
| 1 | 12 | 34 | 103 -00710 |
| 1.5 | 19 | 38 | 103 -00715 |
| 2 | 22 | 45 | 103 -00720 |
| 2.5 | 26 | 51 | 103 -00725 |
| 3 | 33 | 61 | 103 -00730 |
| 3.1 | 36 | 65 | 103 -00731 |
| 3.2 | 36 | 65 | 103 -00732 |
| 3.3 | 36 | 65 | 103 -00733 |
| 3.4 | 39 | 70 | 103 -00734 |
| 3.5 | 39 | 70 | 103 -00735 |
| 3.6 | 39 | 70 | 103 -00736 |
| 3.7 | 39 | 70 | 103 -00737 |
| 3.8 | 43 | 75 | 103 -00738 |
| 3.9 | 43 | 75 | 103 -00739 |
| 4 | 43 | 75 | 103 -00740 |
| 4.1 | 43 | 75 | 103 -00741 |
| 4.2 | 43 | 75 | 103 -00742 |
| 4.3 | 47 | 80 | 103 -00743 |
| 4.4 | 47 | 80 | 103 -00744 |
| 4.5 | 47 | 80 | 103 -00745 |
| 4.6 | 47 | 80 | 103 -00746 |
| 4.7 | 47 | 80 | 103 -00747 |
| 4.8 | 52 | 86 | 103 -00748 |
| 4.9 | 52 | 86 | 103 -00749 |
| 5 | 52 | 86 | 103 -00750 |
| 5.1 | 52 | 86 | 103 -00751 |
| 5.2 | 52 | 86 | 103 -00752 |
| 5.3 | 57 | 93 | 103 -00753 |
| 5.4 | 57 | 93 | 103 -00754 |
| 5.5 | 57 | 93 | 103 -00755 |
| 5.6 | 57 | 93 | 103 -00756 |
| 5.7 | 57 | 93 | 103 -00757 |
| 5.8 | 57 | 93 | 103 -00758 |
| 5.9 | 57 | 93 | 103 -00759 |
| 6 | 57 | 93 | 103 -00760 |
| 6.1 | 63 | 101 | 103 -00761 |
| 6.2 | 63 | 101 | 103 -00762 |
| 6.3 | 63 | 101 | 103 -00763 |
| 6.4 | 63 | 101 | 103 -00764 |
| 6.5 | 63 | 101 | 103 -00765 |
| 6.6 | 63 | 101 | 103 -00766 |
| 6.7 | 63 | 101 | 103 -00767 |
| 6.8 | 69 | 109 | 103 -00768 |
| 6.9 | 69 | 109 | 103 -00769 |

| Drill Dia | FL L1 | OAL L2 | Part Number |
|---|---|---|---|
| 7 | 69 | 109 | 103 -00770 |
| 7.1 | 69 | 109 | 103 -00771 |
| 7.2 | 69 | 109 | 103 -00772 |
| 7.3 | 69 | 109 | 103 -00773 |
| 7.4 | 69 | 109 | 103 -00774 |
| 7.5 | 69 | 109 | 103 -00775 |
| 7.6 | 69 | 109 | 103 -00776 |
| 7.7 | 75 | 117 | 103 -00777 |
| 7.8 | 75 | 117 | 103 -00778 |
| 7.9 | 75 | 117 | 103 -00779 |
| 8 | 75 | 117 | 103 -00780 |
| 8.1 | 75 | 117 | 103 -00781 |
| 8.2 | 75 | 117 | 103 -00782 |
| 8.3 | 75 | 117 | 103 -00783 |
| 8.4 | 75 | 117 | 103 -00784 |
| 8.5 | 75 | 117 | 103 -00785 |
| 8.6 | 81 | 125 | 103 -00786 |
| 8.7 | 81 | 125 | 103 -00787 |
| 8.8 | 81 | 125 | 103 -00788 |
| 8.9 | 81 | 125 | 103 -00789 |
| 9 | 81 | 125 | 103 -00790 |
| 9.1 | 81 | 125 | 103 -00791 |
| 9.2 | 81 | 125 | 103 -00792 |
| 9.3 | 81 | 125 | 103 -00793 |
| 9.4 | 81 | 125 | 103 -00794 |
| 9.5 | 81 | 125 | 103 -00795 |
| 9.6 | 87 | 133 | 103 -00796 |
| 9.7 | 87 | 133 | 103 -00797 |
| 9.8 | 87 | 133 | 103 -00798 |
| 9.9 | 87 | 133 | 103 -00799 |
| 10 | 87 | 133 | 103 -00800 |
| 10.2 | 87 | 133 | 103 -00802 |
| 10.5 | 87 | 133 | 103 -00805 |
| 11 | 94 | 142 | 103 -00810 |
| 11.5 | 94 | 142 | 103 -00815 |
| 12 | 101 | 151 | 103 -00820 |
| 12.5 | 101 | 151 | 103 -00825 |
| 13 | 101 | 151 | 103 -00830 |
| 13.5 | 108 | 160 | 103 -00835 |
| 14 | 108 | 160 | 103 -00840 |
| 14.5 | 114 | 169 | 103 -00845 |
| 15 | 114 | 169 | 103 -00850 |
| 15.5 | 120 | 178 | 103 -00855 |
| 16 | 120 | 178 | 103 -00860 |

**Modifications**
**Regrinds, Re coat**
**Specials**

# Solid Carbide Stub Length Drills
# 118° Four Facet Point - 27° Helix
# Micro-grain K30

Series 202

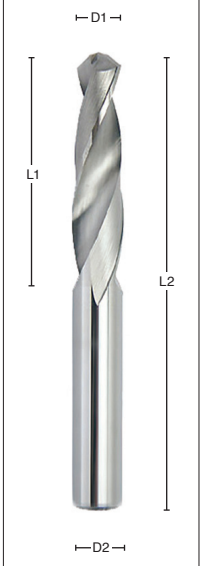



| Size Ref | Drill Dia | FL L1 | OAL L2 | Part Number |
|---|---|---|---|---|
| 56 | .0465 | 1/2" | 1-1/2" | 202 -00465 |
| **3/64"** | .0469 | 1/2" | 1-1/2" | 202 -00469 |
| 55 | .0520 | 1/2" | 1-1/2" | 202 -00520 |
| 54 | .0550 | 1/2" | 1-1/2" | 202 -00550 |
| 53 | .0595 | 1/2" | 1-1/2" | 202 -00595 |
| **1/16"** | .0625 | 5/8" | 2" | 202 -00625 |
| 52 | .0635 | 5/8" | 2" | 202 -00635 |
| 51 | .0670 | 5/8" | 2" | 202 -00670 |
| 50 | .0700 | 5/8" | 2" | 202 -00700 |
| 49 | .0730 | 5/8" | 2" | 202 -00730 |
| 48 | .0760 | 5/8" | 2" | 202 -00760 |
| **5/64"** | .0781 | 5/8" | 2" | 202 -00781 |
| 47 | .0785 | 5/8" | 2" | 202 -00785 |
| 46 | .0810 | 5/8" | 2" | 202 -00810 |
| 45 | .0820 | 5/8" | 2" | 202 -00820 |
| 44 | .0860 | 5/8" | 2" | 202 -00860 |
| 43 | .0890 | 5/8" | 2" | 202 -00890 |
| 42 | .0935 | 5/8" | 2" | 202 -00935 |
| **3/32"** | .0938 | 5/8" | 2" | 202 -00938 |
| 41 | .0960 | 5/8" | 2" | 202 -00960 |
| 40 | .0980 | 5/8" | 2" | 202 -00980 |
| 39 | .0995 | 5/8" | 2" | 202 -00995 |
| 38 | .1015 | 5/8" | 2" | 202 -01015 |
| 37 | .1040 | 5/8" | 2" | 202 -01040 |
| 36 | .1065 | 5/8" | 2" | 202 -01065 |
| **7/64"** | .1094 | 5/8" | 2" | 202 -01094 |
| 35 | .1100 | 5/8" | 2" | 202 -01100 |
| 34 | .1110 | 5/8" | 2" | 202 -01110 |
| 33 | .1130 | 5/8" | 2" | 202 -01130 |
| 32 | .1160 | 5/8" | 2" | 202 -01160 |
| 31 | .1200 | 5/8" | 2" | 202 -01200 |
| **1/8"** | .1250 | 5/8" | 2" | 202 -01250 |
| 30 | .1285 | 5/8" | 2" | 202 -01285 |
| 29 | .1360 | 5/8" | 2" | 202 -01360 |
| 28 | .1405 | 5/8" | 2" | 202 -01405 |
| **9/64"** | .1406 | 5/8" | 2" | 202 -01406 |
| 27 | .1440 | 5/8" | 2" | 202 -01440 |
| 26 | .1470 | 5/8" | 2" | 202 -01470 |
| 25 | .1495 | 3/4" | 2-1/2" | 202 -01495 |
| 24 | .1520 | 3/4" | 2-1/2" | 202 -01520 |
| 23 | .1540 | 3/4" | 2-1/2" | 202 -01540 |
| **5/32"** | .1562 | 3/4" | 2-1/2" | 202 -01562 |
| 22 | .1570 | 3/4" | 2-1/2" | 202 -01570 |
| 21 | .1590 | 3/4" | 2-1/2" | 202 -01590 |
| 20 | .1610 | 3/4" | 2-1/2" | 202 -01610 |
| 19 | .1660 | 3/4" | 2-1/2" | 202 -01660 |
| 18 | .1695 | 3/4" | 2-1/2" | 202 -01695 |
| **11/64"** | .1719 | 3/4" | 2-1/2" | 202 -01719 |
| 17 | .1730 | 3/4" | 2-1/2" | 202 -01730 |
| 16 | .1770 | 3/4" | 2-1/2" | 202 -01770 |
| 15 | .1800 | 3/4" | 2-1/2" | 202 -01800 |
| 14 | .1820 | 3/4" | 2-1/2" | 202 -01820 |
| 13 | .1850 | 3/4" | 2-1/2" | 202 -01850 |
| **3/16"** | .1875 | 3/4" | 2-1/2" | 202 -01875 |
| 12 | .1890 | 3/4" | 2-1/2" | 202 -01890 |
| 11 | .1910 | 3/4" | 2-1/2" | 202 -01910 |
| 10 | .1935 | 3/4" | 2-1/2" | 202 -01935 |
| 9 | .1960 | 3/4" | 2-1/2" | 202 -01960 |

| Size Ref | Drill Dia | FL L1 | OAL L2 | Part Number |
|---|---|---|---|---|
| **13/64"** | .2031 | 3/4" | 2-1/2" | 202 -02031 |
| 6 | .2040 | 3/4" | 2-1/2" | 202 -02040 |
| 5 | .2055 | 3/4" | 2-1/2" | 202 -02055 |
| 4 | .2090 | 3/4" | 2-1/2" | 202 -01090 |
| 3 | .2130 | 1" | 2-1/2" | 202 -02130 |
| **7/32"** | .2188 | 1" | 2-1/2" | 202 -02188 |
| 2 | .2210 | 1" | 2-1/2" | 202 -02210 |
| 1 | .2280 | 1" | 2-1/2" | 202 -02280 |
| A | .2340 | 1" | 2-1/2" | 202 -02340 |
| **15/64"** | .2344 | 1" | 2-1/2" | 202 -02344 |
| B | .2380 | 1" | 2-1/2" | 202 -02380 |
| C | .2420 | 1" | 2-1/2" | 202 -02420 |
| D | .2460 | 1" | 2-1/2" | 202 -02460 |
| **1/4" E** | .2500 | 1" | 2-1/2" | 202 -02500 |
| F | .2570 | 1" | 2-1/2" | 202 -02570 |
| G | .2610 | 1" | 2-1/2" | 202 -02610 |
| **17/64"** | .2656 | 1" | 2-1/2" | 202 -02656 |
| H | .2660 | 1" | 2-1/2" | 202 -02660 |
| I | .2720 | 1" | 2-1/2" | 202 -02720 |
| J | .2770 | 1" | 2-1/2" | 202 -02770 |
| K | .2810 | 1" | 2-1/2" | 202 -02810 |
| **9/32"** | .2812 | 1" | 2-1/2" | 202 -02812 |
| L | .2900 | 1" | 2-1/2" | 202 -02900 |
| M | .2950 | 1" | 2-1/2" | 202 -02950 |
| **19/64"** | .2969 | 1-1/4" | 2-3/4" | 202 -02969 |
| N | .3020 | 1-1/4" | 3" | 202 -03020 |
| **5/16"** | .3125 | 1-1/4" | 2-3/4" | 202 -03125 |
| O | .3160 | 1-1/4" | 3" | 202 -03160 |
| P | .3230 | 1-1/4" | 3" | 202 -03230 |
| **21/64"** | .3281 | 1-1/4" | 2-3/4" | 202 -03281 |
| Q | .3320 | 1-1/4" | 3" | 202 -03320 |
| R | .3390 | 1-1/4" | 3" | 202 -03390 |
| **11/32"** | .3438 | 1-1/4" | 3" | 202 -03438 |
| S | .3480 | 1-1/4" | 3" | 202 -03480 |
| T | .3580 | 1-1/4" | 3" | 202 -03580 |
| **23/64"** | .3594 | 1-1/4" | 3" | 202 -03594 |
| U | .3680 | 1-1/4" | 3" | 202 -03680 |
| **3/8"** | .3750 | 1-1/4" | 3" | 202 -03750 |
| V | .3770 | 1-1/4" | 3" | 202 -03770 |
| W | .3860 | 1-1/4" | 3" | 202 -03860 |
| **25/64"** | .3906 | 1-1/4" | 3" | 202 -03906 |
| X | .3970 | 1-1/4" | 3" | 202 -03970 |
| Y | .4040 | 1-1/4" | 3" | 202 -04040 |
| **13/32"** | .4062 | 1-1/4" | 3" | 202 -04062 |
| Z | .4130 | 1-1/4" | 3" | 202 -04130 |
| **27/64"** | .4219 | 1-1/4" | 3" | 202 -04219 |
| **7/16"** | .4375 | 1-1/4" | 3" | 202 -04375 |
| **29/64"** | .4531 | 1-1/4" | 3" | 202 -04531 |
| **15/32"** | .4688 | 1-1/4" | 3" | 202 -04688 |
| **31/64"** | .4844 | 1-1/4" | 3" | 202 -04844 |
| **1/2"** | .5000 | 1-1/4" | 3" | 202 -05000 |
| **9/16"** | .5625 | 1-1/4" | 3-1/2" | 202 -05625 |
| **5/8"** | .6250 | 1-1/2" | 3-1/2" | 202 -06250 |
| **3/4"** | .7500 | 1-1/2" | 4" | 202 -07500 |

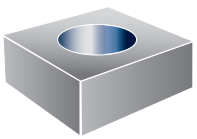
**Tolerances:**

| | |
|---|---|
| D1 | h6 |
| D2 | h6 |




TI PAGE 268

| | |
|---|---|
| 1.1 - 1.6 | 6.1 - 7.4 |
| 2.1 - 2.3 | 4.1 - 5.3 |
| 3.1 - 3.4 | |



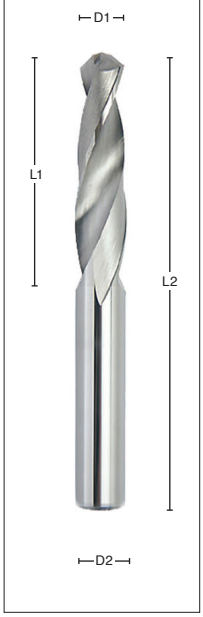
**Modifications**
**Regrinds, Re coat**
**Specials**

Series 203

# Solid Carbide Stub Drills - (DIN) 6539
## 118° Four Facet Point - 25° Helix
## Micro-grain K30

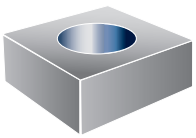



| Tolerances: | |
|---|---|
| D1 | h6 |
| D2 | h6 |




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1.1 - 1.6 | 6.1 - 7.4 | 2.1 - 2.3 | 4.1 - 5.3 | 3.1 - 3.4



| Drill Dia-D1 | FL L1 | OAL L2 | Part Number |
|---|---|---|---|
| 3 | 16 | 46 | 203 -30000 |
| 3.1 | 16 | 46 | 203 -31000 |
| 3.2 | 18 | 49 | 203 -32000 |
| 3.3 | 18 | 49 | 203 -33000 |
| 3.4 | 20 | 52 | 203 -34000 |
| 3.5 | 20 | 52 | 203 -35000 |
| 3.6 | 20 | 52 | 203 -36000 |
| 3.7 | 20 | 52 | 203 -37000 |
| 3.8 | 22 | 55 | 203 -38000 |
| 3.9 | 22 | 55 | 203 -39000 |
| 4 | 22 | 55 | 203 -40000 |
| 4.1 | 22 | 55 | 203 -41000 |
| 4.2 | 22 | 55 | 203 -42000 |
| 4.3 | 24 | 58 | 203 -43000 |
| 4.4 | 24 | 58 | 203 -44000 |
| 4.5 | 24 | 58 | 203 -45000 |
| 4.6 | 24 | 58 | 203 -46000 |
| 4.7 | 24 | 58 | 203 -47000 |
| 4.8 | 26 | 62 | 203 -48000 |
| 4.9 | 26 | 62 | 203 -49000 |
| 5 | 26 | 62 | 203 -50000 |
| 5.1 | 26 | 62 | 203 -51000 |
| 5.2 | 26 | 62 | 203 -52000 |
| 5.3 | 26 | 62 | 203 -53000 |
| 5.4 | 28 | 66 | 203 -54000 |
| 5.5 | 28 | 66 | 203 -55000 |
| 5.6 | 28 | 66 | 203 -56000 |
| 5.7 | 28 | 66 | 203 -57000 |
| 5.8 | 28 | 66 | 203 -58000 |
| 5.9 | 28 | 66 | 203 -59000 |
| 6 | 28 | 66 | 203 -60000 |
| 6.1 | 31 | 70 | 203 -61000 |
| 6.2 | 31 | 70 | 203 -62000 |
| 6.3 | 31 | 70 | 203 -63000 |
| 6.4 | 31 | 70 | 203 -64000 |
| 6.5 | 31 | 70 | 203 -65000 |
| 6.6 | 31 | 70 | 203 -66000 |
| 6.7 | 31 | 70 | 203 -67000 |
| 6.8 | 34 | 74 | 203 -68000 |
| 6.9 | 34 | 74 | 203 -69000 |
| 7 | 34 | 74 | 203 -70000 |
| 7.1 | 34 | 74 | 203 -71000 |
| 7.2 | 34 | 74 | 203 -72000 |
| 7.3 | 34 | 74 | 203 -73000 |
| 7.4 | 34 | 74 | 203 -74000 |
| 7.5 | 34 | 74 | 203 -75000 |
| 7.6 | 37 | 79 | 203 -76000 |
| 7.7 | 37 | 79 | 203 -77000 |
| 7.8 | 37 | 79 | 203 -78000 |
| 7.9 | 37 | 79 | 203 -79000 |

| Drill Dia-D1 | FL L1 | OAL L2 | Part Number |
|---|---|---|---|
| 8 | 37 | 79 | 203 -80000 |
| 8.1 | 37 | 79 | 203 -81000 |
| 8.2 | 37 | 79 | 203 -82000 |
| 8.3 | 37 | 79 | 203 -83000 |
| 8.4 | 37 | 79 | 203 -84000 |
| 8.5 | 37 | 79 | 203 -85000 |
| 8.6 | 40 | 84 | 203 -86000 |
| 8.7 | 40 | 84 | 203 -87000 |
| 8.8 | 40 | 84 | 203 -88000 |
| 8.9 | 40 | 84 | 203 -89000 |
| 9 | 40 | 84 | 203 -90000 |
| 9.1 | 40 | 84 | 203 -91000 |
| 9.2 | 40 | 84 | 203 -92000 |
| 9.3 | 40 | 84 | 203 -93000 |
| 9.4 | 40 | 84 | 203 -94000 |
| 9.5 | 40 | 84 | 203 -95000 |
| 9.6 | 43 | 89 | 203 -96000 |
| 9.7 | 43 | 89 | 203 -97000 |
| 9.8 | 43 | 89 | 203 -98000 |
| 9.9 | 43 | 89 | 203 -99000 |
| 10 | 43 | 89 | 203 -10000 |
| 10.1 | 43 | 89 | 203 -10100 |
| 10.2 | 43 | 89 | 203 -10200 |
| 10.3 | 43 | 89 | 203 -10300 |
| 10.4 | 43 | 89 | 203 -10400 |
| 10.5 | 43 | 89 | 203 -10500 |
| 10.6 | 43 | 89 | 203 -10600 |
| 10.7 | 43 | 89 | 203 -10700 |
| 10.8 | 43 | 89 | 203 -10800 |
| 11 | 47 | 95 | 203 -11000 |
| 11.2 | 47 | 95 | 203 -11200 |
| 11.5 | 47 | 95 | 203 -11500 |
| 11.8 | 47 | 95 | 203 -11800 |
| 12 | 51 | 102 | 203 -12000 |
| 12.5 | 51 | 102 | 203 -12500 |
| 13 | 51 | 102 | 203 -13000 |
| 13.5 | 51 | 102 | 203 -13500 |
| 14 | 56 | 111 | 203 -14000 |
| 14.5 | 56 | 111 | 203 -14500 |
| 15 | 56 | 111 | 203 -15000 |
| 15.5 | 58 | 115 | 203 -15500 |
| 16 | 58 | 115 | 203 -16000 |
| 16.5 | 60 | 119 | 203 -16500 |
| 17 | 60 | 119 | 203 -17000 |
| 17.5 | 62 | 123 | 203 -17500 |
| 18 | 62 | 123 | 203 -18000 |
| 18.5 | 64 | 127 | 203 -18500 |
| 19 | 64 | 127 | 203 -19000 |
| 19.5 | 66 | 131 | 203 -19500 |
| 20 | 66 | 131 | 203 -20000 |

**Modifications**
**Regrinds, Re coat**
**Specials**

# Solid Carbide Slow Spiral Drills
# 135° Point - 15° Helix
# Micro-grain K30

Series 104




| Drill Dia-D1 | FL L1 | OAL L2 | Part Number |
|---|---|---|---|
| 1 | 13 | 38 | 104 -00910 |
| 1.1 | 13 | 38 | 104 -00911 |
| 1.2 | 13 | 38 | 104 -00912 |
| 1.3 | 13 | 38 | 104 -00913 |
| 1.4 | 13 | 38 | 104 -00914 |
| 1.5 | 13 | 38 | 104 -00915 |
| 1.6 | 18 | 43 | 104 -00916 |
| 1.7 | 18 | 43 | 104 -00917 |
| 1.8 | 18 | 43 | 104 -00918 |
| 1.9 | 18 | 43 | 104 -00919 |
| 2 | 19 | 45 | 104 -00920 |
| 2.1 | 19 | 45 | 104 -00921 |
| 2.2 | 19 | 45 | 104 -00922 |
| 2.3 | 19 | 45 | 104 -00923 |
| 2.4 | 21 | 46 | 104 -00924 |
| 2.5 | 21 | 46 | 104 -00925 |
| 2.6 | 21 | 46 | 104 -00926 |
| 2.7 | 21 | 46 | 104 -00927 |
| 2.8 | 22 | 48 | 104 -00928 |
| 2.9 | 22 | 48 | 104 -00929 |
| 3 | 22 | 48 | 104 -00930 |
| 3.1 | 22 | 48 | 104 -00931 |
| 3.2 | 24 | 52 | 104 -00932 |
| 3.3 | 24 | 52 | 104 -00933 |
| 3.4 | 24 | 52 | 104 -00934 |
| 3.5 | 24 | 52 | 104 -00935 |
| 3.6 | 25 | 52 | 104 -00936 |
| 3.7 | 25 | 52 | 104 -00937 |
| 3.8 | 25 | 52 | 104 -00938 |
| 3.9 | 25 | 52 | 104 -00939 |
| 4 | 27 | 53 | 104 -00940 |
| 4.1 | 27 | 53 | 104 -00941 |
| 4.2 | 27 | 53 | 104 -00942 |
| 4.3 | 27 | 53 | 104 -00943 |
| 4.4 | 29 | 55 | 104 -00944 |
| 4.5 | 29 | 55 | 104 -00945 |
| 4.6 | 29 | 55 | 104 -00946 |
| 4.7 | 29 | 55 | 104 -00947 |
| 4.8 | 30 | 57 | 104 -00948 |
| 4.9 | 30 | 57 | 104 -00949 |
| 5 | 30 | 57 | 104 -00950 |
| 5.1 | 30 | 57 | 104 -00951 |
| 5.2 | 32 | 60 | 104 -00952 |
| 5.3 | 32 | 60 | 104 -00953 |
| 5.4 | 32 | 60 | 104 -00954 |
| 5.5 | 32 | 60 | 104 -00955 |
| 5.6 | 33 | 61 | 104 -00956 |
| 5.7 | 33 | 61 | 104 -00957 |
| 5.8 | 33 | 61 | 104 -00958 |
| 5.9 | 33 | 61 | 104 -00959 |
| 6 | 33 | 61 | 104 -00960 |
| 6.1 | 35 | 63 | 104 -00961 |
| 6.2 | 35 | 63 | 104 -00962 |
| 6.3 | 35 | 63 | 104 -00963 |
| 6.4 | 35 | 63 | 104 -00964 |
| 6.5 | 35 | 63 | 104 -00965 |

| Drill Dia-D1 | FL L1 | OAL L2 | Part Number |
|---|---|---|---|
| 6.6 | 37 | 67 | 104 -00966 |
| 6.7 | 37 | 67 | 104 -00967 |
| 6.8 | 38 | 68 | 104 -00968 |
| 6.9 | 38 | 68 | 104 -00969 |
| 7 | 38 | 68 | 104 -00970 |
| 7.1 | 38 | 68 | 104 -00971 |
| 7.2 | 40 | 70 | 104 -00972 |
| 7.3 | 40 | 70 | 104 -00973 |
| 7.4 | 40 | 70 | 104 -00974 |
| 7.5 | 40 | 70 | 104 -00975 |
| 7.6 | 41 | 71 | 104 -00976 |
| 7.7 | 41 | 71 | 104 -00977 |
| 7.8 | 41 | 71 | 104 -00978 |
| 7.9 | 41 | 71 | 104 -00979 |
| 8 | 41 | 71 | 104 -00980 |
| 8.1 | 43 | 75 | 104 -00981 |
| 8.2 | 43 | 75 | 104 -00982 |
| 8.3 | 43 | 75 | 104 -00983 |
| 8.4 | 43 | 76 | 104 -00984 |
| 8.5 | 43 | 76 | 104 -00985 |
| 8.6 | 43 | 76 | 104 -00986 |
| 8.7 | 43 | 76 | 104 -00987 |
| 8.8 | 44 | 78 | 104 -00988 |
| 8.9 | 44 | 78 | 104 -00989 |
| 9 | 44 | 78 | 104 -00990 |
| 9.1 | 44 | 78 | 104 -00991 |
| 9.2 | 46 | 79 | 104 -00992 |
| 9.3 | 46 | 79 | 104 -00993 |
| 9.4 | 46 | 79 | 104 -00994 |
| 9.5 | 46 | 79 | 104 -00995 |
| 9.6 | 48 | 83 | 104 -00996 |
| 9.7 | 48 | 83 | 104 -00997 |
| 9.8 | 48 | 83 | 104 -00998 |
| 9.9 | 48 | 83 | 104 -00999 |
| 10 | 48 | 83 | 104 -00100 |
| 10.1 | 49 | 84 | 104 -00101 |
| 10.2 | 49 | 84 | 104 -00102 |
| 10.3 | 49 | 84 | 104 -00103 |
| 10.4 | 51 | 86 | 104 -00104 |
| 10.5 | 51 | 86 | 104 -00105 |
| 10.6 | 51 | 86 | 104 -00106 |
| 10.7 | 51 | 86 | 104 -00107 |
| 10.8 | 52 | 87 | 104 -00108 |
| 10.9 | 52 | 87 | 104 -00109 |
| 11 | 52 | 87 | 104 -00110 |
| 11.1 | 52 | 87 | 104 -00111 |
| 11.2 | 54 | 90 | 104 -00112 |
| 11.3 | 54 | 90 | 104 -00113 |
| 11.4 | 54 | 90 | 104 -00114 |
| 11.5 | 54 | 90 | 104 -00115 |
| 11.6 | 54 | 92 | 104 -00116 |
| 11.7 | 54 | 92 | 104 -00117 |
| 11.8 | 54 | 92 | 104 -00118 |
| 11.9 | 54 | 92 | 104 -00119 |
| 12 | 54 | 92 | 104 -00120 |

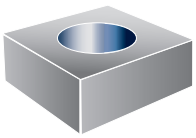
**Tolerances:**

| | |
|---|---|
| D1 | h6 |
| D2 | h6 |




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1.1 - 1.6
4.1 - 5.3
2.1 - 2.3
3.1 - 3.4

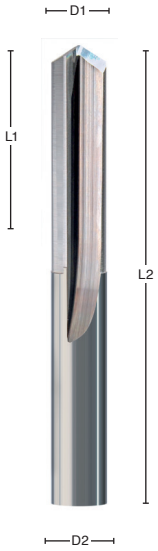


**Modifications**
**Regrinds, Re coat**
**Specials**

# Solid Carbide Straight Flute Drills
# 140° Inclusive Drill Point
# Micro-grain K30 2-Flute

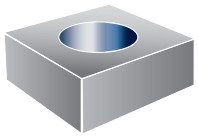



| Tolerances: | |
|---|---|
| D1 | h6 |
| D2 | h6 |




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| | |
|---|---|
| 1.5 - 1.6 | 6.4 |
| 2.1 - 2.3 | 4.1 - 5.3 |
| 3.1 - 3.4 | |



| Size Ref | Drill Dia-D1 | FL L1 | OAL L2 | Part Number |
|---|---|---|---|---|
| 56 | .0465 | 1/2" | 1-1/2" | 201 -00465 |
| **3/64"** | .0469 | 1/2" | 1-1/2" | 201 -00469 |
| 55 | .0520 | 1/2" | 1-1/2" | 201 -00520 |
| 54 | .0550 | 1/2" | 1-1/2" | 201 -00550 |
| **1.5mm** | .0591 | 13mm | 38mm | 201 -00591 |
| 53 | .0595 | 1/2" | 1-1/2" | 201 -00595 |
| **1/16"** | .0625 | 5/8" | 1-5/8" | 201 -00625 |
| 52 | .0635 | 11/16" | 1-11/16" | 201 -00635 |
| 51 | .0670 | 11/16" | 1-11/16" | 201 -00670 |
| 50 | .0700 | 11/16" | 1-11/16" | 201 -00700 |
| 49 | .0730 | 11/16" | 1-11/16" | 201 -00730 |
| 48 | .0760 | 11/16" | 1-11/16" | 201 -00760 |
| **5/64"** | .0781 | 11/16" | 1-11/16" | 201 -00781 |
| 47 | .0785 | 3/4" | 1-3/4" | 201 -00785 |
| **2mm** | .0787 | 19mm | 44mm | 201 -00787 |
| 46 | .0810 | 3/4" | 1-3/4" | 201 -00810 |
| 45 | .0820 | 3/4" | 1-3/4" | 201 -00820 |
| 44 | .0860 | 3/4" | 1-3/4" | 201 -00860 |
| 43 | .0890 | 3/4" | 1-3/4" | 201 -00890 |
| 42 | .0935 | 3/4" | 1-3/4" | 201 -00935 |
| **3/32"** | .0938 | 3/4" | 1-3/4" | 201 -00938 |
| 41 | .0960 | 13/16" | 1-13/16" | 201 -00960 |
| 40 | .0980 | 13/16" | 1-13/16" | 201 -00980 |
| **2.5mm** | .0984 | 21mm | 46mm | 201 -00984 |
| 39 | .0995 | 13/16" | 1-13/16" | 201 -00995 |
| 38 | .1015 | 13/16" | 1-13/16" | 201 -01015 |
| 37 | .1040 | 13/16" | 1-13/16" | 201 -01040 |
| 36 | .1065 | 13/16" | 1-13/16" | 201 -01065 |
| **7/64"** | .1094 | 13/16" | 1-13/16" | 201 -01094 |
| 35 | .1100 | 7/8" | 1-7/8" | 201 -01100 |
| 34 | .1110 | 7/8" | 1-7/8" | 201 -01110 |
| 33 | .1130 | 7/8" | 1-7/8" | 201 -01130 |
| 32 | .1160 | 7/8" | 1-7/8" | 201 -01160 |
| **3mm** | .1181 | 22mm | 48mm | 201 -01181 |
| 31 | .1200 | 7/8" | 1-7/8" | 201 -01200 |
| **1/8"** | .1250 | 7/8" | 1-7/8" | 201 -01250 |
| 30 | .1285 | 15/16" | 1-15/16" | 201 -01285 |
| 29 | .1360 | 15/16" | 1-15/16" | 201 -01360 |
| **3.5mm** | .1378 | 24mm | 49mm | 201 -01378 |
| 28 | .1405 | 15/16" | 1-15/16" | 201 -01405 |
| **9/64"** | .1406 | 15/16" | 1-15/16" | 201 -01406 |
| 27 | .1140 | 1" | 2-1/16" | 201 -01140 |
| 26 | .1470 | 1" | 2-1/16" | 201 -01470 |
| 25 | .1495 | 1" | 2-1/16" | 201 -01495 |
| 24 | .1520 | 1" | 2-1/16" | 201 -01520 |
| 23 | .1540 | 1" | 2-1/16" | 201 -01540 |
| **5/32"** | .1562 | 1" | 2-1/16" | 201 -01562 |
| 22 | .1570 | 1-1/16" | 2-1/8" | 201 -01570 |
| **4mm** | .1575 | 27mm | 54mm | 201 -01575 |
| 21 | .1590 | 1-1/16" | 2-1/8" | 201 -01590 |
| 20 | .1610 | 1-1/16" | 2-1/8" | 201 -01610 |

| Size Ref | Drill Dia-D1 | FL L1 | OAL L2 | Part Number |
|---|---|---|---|---|
| 19 | .1660 | 1-1/16" | 2-1/8" | 201 -01660 |
| 18 | .1695 | 1-1/16" | 2-1/8" | 201 -01695 |
| **11/64"** | .1719 | 1-1/16" | 2-1/8" | 201 -01719 |
| 17 | .1730 | 1-1/8" | 2-3/16" | 201 -01730 |
| 16 | .1770 | 1-1/8" | 2-3/16" | 201 -01770 |
| **4.5mm** | .1772 | 29mm | 56mm | 201 -01772 |
| 15 | .1800 | 1-1/8" | 2-3/16" | 201 -01800 |
| 14 | .1820 | 1-1/8" | 2-3/16" | 201 -01820 |
| 13 | .1850 | 1-1/8" | 2-3/16" | 201 -01850 |
| **3/16"** | .1875 | 1-1/8" | 2-3/16" | 201 -01875 |
| 12 | .1890 | 1-3/16" | 2-1/4" | 201 -01890 |
| 11 | .1910 | 1-3/16" | 2-1/4" | 201 -01910 |
| 10 | .1935 | 1-3/16" | 2-1/4" | 201 -01935 |
| 9 | .1960 | 1-3/16" | 2-1/4" | 201 -01960 |
| **5mm** | .1969 | 30mm | 57mm | 201 -01969 |
| 8 | .1990 | 1-3/16" | 2-1/4" | 201 -01990 |
| 7 | .2010 | 1-3/16" | 2-1/4" | 201 -02010 |
| **13/64"** | .2031 | 1-3/16" | 2-1/4" | 201 -02031 |
| 6 | .2040 | 1-1/4" | 2-3/8" | 201 -02040 |
| 5 | .2055 | 1-1/4" | 2-3/8" | 201 -02055 |
| 4 | .2090 | 1-1/4" | 2-3/8" | 201 -02090 |
| 3 | .2130 | 1-1/4" | 2-3/8" | 201 -02130 |
| **5.5mm** | .2165 | 32mm | 60mm | 201 -02165 |
| **7/32"** | .2188 | 1-1/4" | 2-3/8" | 201 -02188 |
| 2 | .2210 | 1-5/16" | 2-7/16" | 201 -02210 |
| 1 | .2280 | 1-5/16" | 2-7/16" | 201 -02280 |
| A | .2340 | 1-5/16" | 2-7/16" | 201 -02340 |
| **15/64"** | .2344 | 1-5/16" | 2-7/16" | 201 -02344 |
| **6mm** | .2362 | 33mm | 62mm | 201 -02362 |
| B | .2380 | 1-3/8" | 2-1/2" | 201 -02380 |
| C | .2420 | 1-3/8" | 2-1/2" | 201 -02420 |
| D | .2460 | 1-3/8" | 2-1/2" | 201 -02460 |
| **1/4" E** | .2500 | 1-3/8" | 2-1/2" | 201 -02500 |
| **6.5mm** | .2559 | 35mm | 64mm | 201 -02559 |
| F | .2570 | 1-7/16" | 2-5/8" | 201 -02570 |
| G | .2610 | 1-7/16" | 2-5/8" | 201 -02610 |
| **17/64"** | .2656 | 1-7/16" | 2-5/8" | 201 -02656 |
| H | .2660 | 1-1/2" | 2-11/16" | 201 -02660 |
| I | .2720 | 1-1/2" | 2-11/16" | 201 -02720 |
| **7mm** | .2756 | 38mm | 68mm | 201 -02756 |
| J | .2770 | 1-1/2" | 2-11/16" | 201 -02770 |
| K | .2810 | 1-1/2" | 2-11/16" | 201 -02810 |
| **9/32"** | .2812 | 1-1/2" | 2-11/16" | 201 -02812 |
| L | .2900 | 1-9/16" | 2-3/4" | 201 -02900 |
| M | .2950 | 1-9/16" | 2-3/4" | 201 -02950 |
| **7.5mm** | .2953 | 40mm | 70mm | 201 -02953 |
| **19/64"** | .2969 | 1-9/16" | 2-3/4" | 201 -02969 |
| N | .3020 | 1-5/8" | 2-13/16" | 201 -03020 |
| **5/16"** | .3125 | 1-5/8" | 2-13/16" | 201 -03125 |
| **8mm** | .3150 | 41mm | 71mm | 201 -03150 |
| O | .3160 | 1-11/16" | 2-15/16" | 201 -03160 |

**Modifications**
**Regrinds, Re coat**
**Specials**

# Solid Carbide Straight Flute Drills
# 140° Inclusive Drill Point
# Micro-grain K30 2-Flute

Series 201




| Size Ref | Drill Dia-D1 | FL L1 | OAL L2 | Part Number |
|---|---|---|---|---|
| P | .3230 | 1-11/16" | 2-15/16" | 201 -03230 |
| **21/64"** | .3281 | 1-11/16" | 2-15/16" | 201 -03281 |
| Q | .3320 | 1-11/16" | 3" | 201 -03320 |
| **8.5mm** | .3346 | 43mm | 76mm | 201 -03346 |
| R | .3390 | 1-11/16" | 3" | 201 -03390 |
| **11/32"** | .3438 | 1-11/16" | 3" | 201 -03438 |
| S | .3480 | 1-3/4" | 3-1/16" | 201 -03480 |
| **9mm** | .3543 | 44mm | 78mm | 201 -03543 |
| T | .3580 | 1-3/4" | 3-1/16" | 201 -03580 |
| **23/64"** | .3594 | 1-3/4" | 3-1/16" | 201 -03594 |
| U | .3680 | 1-13/16" | 3-1/8" | 201 -03680 |
| **9.5mm** | .3740 | 46mm | 79mm | 201 -03740 |
| **3/8"** | .3750 | 1-13/16" | 3-1/8" | 201 -03750 |
| V | .3770 | 1-7/8" | 3-1/4" | 201 -03770 |
| W | .3860 | 1-7/8" | 3-1/4" | 201 -03860 |
| **25/64"** | .3906 | 1-7/8" | 3-1/4" | 201 -03906 |

| Size Ref | Drill Dia-D1 | FL L1 | OAL L2 | Part Number |
|---|---|---|---|---|
| **10mm** | .3937 | 48mm | 83mm | 201 -03937 |
| X | .3970 | 1-15/16" | 3-5/16" | 201 -03970 |
| Y | .4040 | 1-15/16" | 3-5/16" | 201 -04040 |
| **13/32"** | .4062 | 1-15/16" | 3-5/16" | 201 -04062 |
| Z | .4130 | 2" | 3-3/8" | 201 -04130 |
| **10.5mm** | .4134 | 51mm | 86mm | 201 -04134 |
| **27/64"** | .4219 | 2" | 3-3/8" | 201 -04219 |
| **11mm** | .4331 | 52mm | 87mm | 201 -04331 |
| **7/16"** | .4375 | 2-1/16" | 3-7/16" | 201 -04375 |
| **11.5mm** | .4528 | 54mm | 90mm | 201 -04528 |
| **29/64"** | .4531 | 2-1/8" | 3-9/16" | 201 -04531 |
| **15/32"** | .4688 | 2-1/8" | 3-5/8" | 201 -04688 |
| **12mm** | .4724 | 54mm | 92mm | 201 -04724 |
| **31/64"** | .4844 | 2-3/16" | 3-11/16" | 201 -04844 |
| **1/2"** | .5000 | 2-1/4" | 3-3/4" | 201 -05000 |

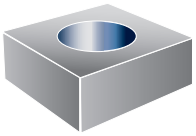
**Tolerances:**

| | |
|---|---|
| D1 | h6 |
| D2 | h6 |




Ti PAGE 268

| | |
|---|---|
| 1.5 - 1.6 | 6.4 |
| 2.1 - 2.3 | 4.1 - 5.3 |
| 3.1 - 3.4 | |



**Modifications**
**Regrinds, Re coat**
**Specials**

# Solid Carbide 3-Flute Drills - (DIN) 6539
## 130° Point - 30° Helix - Self Centring
## Micro-grain K30




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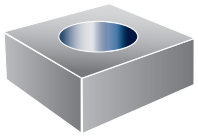
| Tolerances: | |
|---|---|
| D1 | h6 |
| D2 | h6 |




| Drill Dia-D1 | FL L1 | OAL L2 | Part Number |
|---|---|---|---|
| 4 | 22 | 55 | 105 -40000 |
| 4.1 | 22 | 55 | 105 -41000 |
| 4.2 | 22 | 55 | 105 -42000 |
| 4.3 | 24 | 58 | 105 -43000 |
| 4.4 | 24 | 58 | 105 -44000 |
| 4.5 | 24 | 58 | 105 -45000 |
| 4.6 | 24 | 58 | 105 -46000 |
| 4.7 | 24 | 58 | 105 -47000 |
| 4.8 | 26 | 62 | 105 -48000 |
| 4.9 | 26 | 62 | 105 -49000 |
| 5 | 26 | 62 | 105 -50000 |
| 5.1 | 26 | 62 | 105 -51000 |
| 5.2 | 26 | 62 | 105 -52000 |
| 5.3 | 28 | 66 | 105 -53000 |
| 5.4 | 28 | 66 | 105 -54000 |
| 5.5 | 28 | 66 | 105 -55000 |
| 5.6 | 28 | 66 | 105 -56000 |
| 5.7 | 28 | 66 | 105 -57000 |
| 5.8 | 28 | 66 | 105 -58000 |
| 5.9 | 28 | 66 | 105 -59000 |
| 6 | 31 | 66 | 105 -60000 |
| 6.1 | 31 | 70 | 105 -61000 |
| 6.2 | 31 | 70 | 105 -62000 |
| 6.3 | 31 | 70 | 105 -63000 |
| 6.4 | 31 | 70 | 105 -64000 |
| 6.5 | 31 | 70 | 105 -65000 |
| 6.6 | 31 | 70 | 105 -66000 |
| 6.7 | 31 | 70 | 105 -67000 |
| 6.8 | 34 | 74 | 105 -68000 |
| 6.9 | 34 | 74 | 105 -69000 |
| 7 | 34 | 74 | 105 -70000 |
| 7.1 | 34 | 74 | 105 -71000 |
| 7.2 | 34 | 74 | 105 -72000 |
| 7.3 | 34 | 74 | 105 -73000 |
| 7.4 | 34 | 74 | 105 -74000 |
| 7.5 | 34 | 74 | 105 -75000 |
| 7.6 | 37 | 79 | 105 -76000 |
| 7.7 | 37 | 79 | 105 -77000 |
| 7.8 | 37 | 79 | 105 -78000 |
| 7.9 | 37 | 79 | 105 -79000 |
| 8 | 37 | 79 | 105 -80000 |
| 8.1 | 37 | 79 | 105 -81000 |
| 8.2 | 37 | 79 | 105 -82000 |
| 8.3 | 37 | 79 | 105 -83000 |
| 8.4 | 37 | 79 | 105 -84000 |

| Drill Dia-D1 | FL L1 | OAL L2 | Part Number |
|---|---|---|---|
| 8.5 | 37 | 79 | 105 -85000 |
| 8.6 | 40 | 84 | 105 -86000 |
| 8.7 | 40 | 84 | 105 -87000 |
| 8.8 | 40 | 84 | 105 -88000 |
| 8.9 | 40 | 84 | 105 -89000 |
| 9 | 40 | 84 | 105 -90000 |
| 9.1 | 40 | 84 | 105 -91000 |
| 9.2 | 40 | 84 | 105 -92000 |
| 9.3 | 40 | 84 | 105 -93000 |
| 9.4 | 40 | 84 | 105 -94000 |
| 9.5 | 40 | 84 | 105 -95000 |
| 9.6 | 43 | 89 | 105 -96000 |
| 9.7 | 43 | 89 | 105 -97000 |
| 9.8 | 43 | 89 | 105 -98000 |
| 9.9 | 43 | 89 | 105 -99000 |
| 10 | 43 | 89 | 105 -10000 |
| 10.1 | 43 | 89 | 105 -10100 |
| 10.2 | 43 | 89 | 105 -10200 |
| 10.3 | 43 | 89 | 105 -10300 |
| 10.4 | 43 | 89 | 105 -10400 |
| 10.5 | 43 | 89 | 105 -10500 |
| 10.6 | 43 | 89 | 105 -10600 |
| 10.7 | 43 | 89 | 105 -10700 |
| 10.8 | 43 | 89 | 105 -10800 |
| 11 | 47 | 95 | 105 -11000 |
| 11.2 | 47 | 95 | 105 -11200 |
| 11.5 | 47 | 95 | 105 -11500 |
| 11.8 | 47 | 95 | 105 -11800 |
| 12 | 51 | 102 | 105 -12000 |
| 12.5 | 51 | 102 | 105 -12500 |
| 13 | 51 | 102 | 105 -13000 |
| 13.5 | 51 | 102 | 105 -13500 |
| 14 | 54 | 107 | 105 -14000 |
| 14.5 | 56 | 111 | 105 -14500 |
| 15 | 56 | 111 | 105 -15000 |
| 15.5 | 58 | 115 | 105 -15500 |
| 16 | 58 | 115 | 105 -16000 |
| 16.5 | 60 | 119 | 105 -16500 |
| 17 | 60 | 119 | 105 -17000 |
| 17.5 | 62 | 123 | 105 -17500 |
| 18 | 62 | 123 | 105 -18000 |
| 18.5 | 64 | 127 | 105 -18500 |
| 19 | 64 | 127 | 105 -19000 |
| 19.5 | 66 | 131 | 105 -19500 |
| 20 | 66 | 131 | 105 -20000 |

1.1 - 1.6 | 6.1 - 8.2 | 2.1 - 2.3 | 4.1 - 5.3 | 3.1 - 3.4



**Modifications**
**Regrinds, Re coat**
**Specials**

# Solid Carbide Ground Rod
# Tolerance h6
# Micro-grain K30 Standard & Long Length

Series Rod

MG HM

PLAIN

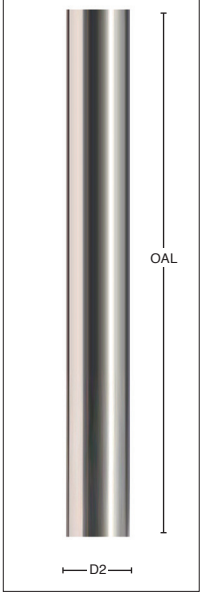
| Rod Dia-D2 | OAL | Part Number |
|---|---|---|
| 3/32" | 2" | R-1 |
| 1/8" | 1-1/2" | R-2 |
| 1/8" | 2" | R-3 |
| 1/8" | 2-1/4" | R-4 |
| 1/8" | 2-1/2" | R-5 |
| 1/8" | 3" | R-6 |
| 5/32" | 2" | R-7 |
| 5/32" | 2-1/2" | R-8 |
| 3/16" | 2" | R-9 |
| 3/16" | 2-1/2" | R-10 |
| 3/16" | 2-3/4" | R-11 |
| 3/16" | 3" | R-12 |
| 3/16" | 4" | R-13 |
| 1/4" | 1-1/2" | R-14 |
| 1/4" | 2" | R-15 |
| 1/4" | 2-1/2" | R-16 |
| 1/4" | 3" | R-17 |
| 1/4" | 3-1/2" | R-18 |
| 1/4" | 3-1/4" | R-19 |
| 1/4" | 4" | R-20 |
| 1/4" | 6" | R-21 |
| 5/16" | 2-1/2" | R-22 |
| 5/16" | 3" | R-23 |
| 5/16" | 4" | R-24 |
| 5/16" | 6" | R-25 |
| 3/8" | 2" | R-26 |
| 3/8" | 2-1/2" | R-27 |
| 3/8" | 3" | R-28 |
| 3/8" | 3-1/2" | R-29 |
| 3/8" | 4" | R-30 |
| 3/8" | 4-1/4" | R-31 |
| 3/8" | 4-1/2" | R-32 |
| 3/8" | 6" | R-33 |
| 7/16" | 2-1/2" | R-34 |
| 7/16" | 2-3/4 | R-35 |
| 1/2" | 3" | R-36 |
| 1/2" | 3-1/2" | R-37 |
| 1/2" | 4" | R-38 |
| 1/2" | 4-3/4" | R-39 |
| 1/2" | 5" | R-40 |
| 1/2" | 6" | R-41 |
| 9/16" | 3-1/2" | R-42 |
| 5/8" | 3-1/2" | R-43 |
| 5/8" | 3" | R-44 |
| 5/8" | 4" | R-45 |
| 5/8" | 5" | R-46 |
| 5/8" | 6" | R-47 |
| 3/4" | 3" | R-48 |
| 3/4" | 4" | R-49 |
| 3/4" | 5" | R-50 |
| 3/4" | 6" | R-51 |
| 7/8" | 4" | R-52 |
| 1" | 4" | R-53 |
| 1" | 3" | R-54 |
| 1" | 6" | R-55 |

| Rod Dia-D2 | OAL | Part Number |
|---|---|---|
| 3 | 38 | R-56 |
| 3 | 50 | R-57 |
| 3 | 75 | R-58 |
| 4 | 65 | R-59 |
| 4 | 50 | R-60 |
| 5 | 50 | R-61 |
| 5 | 75 | R-62 |
| 6 | 50 | R-63 |
| 6 | 63 | R-64 |
| 6 | 82 | R-65 |
| 6 | 100 | R-66 |
| 6 | 150 | R-67 |
| 6 | 75 | R-68 |
| 8 | 100 | R-69 |
| 8 | 150 | R-70 |
| 8 | 75 | R-71 |
| 8 | 63 | R-72 |
| 8 | 50 | R-73 |
| 10 | 100 | R-74 |
| 10 | 150 | R-75 |
| 10 | 70 | R-76 |
| 12 | 100 | R-77 |
| 12 | 150 | R-78 |
| 12 | 75 | R-79 |
| 14 | 88 | R-80 |
| 14 | 125 | R-81 |
| 16 | 100 | R-82 |
| 16 | 125 | R-83 |
| 16 | 150 | R-84 |
| 16 | 88 | R-85 |
| 18 | 100 | R-86 |
| 18 | 150 | R-87 |
| 20 | 100 | R-88 |
| 20 | 150 | R-89 |
| 25 | 100 | R-90 |

| Rod Dia-D2 | OAL | Part Number |
|---|---|---|
| 1/4" | 12-1/2" | R-91 |
| 7/32" | 12-1/2" | R-92 |
| 7/64" | 12-1/2" | R-93 |
| 1/8" | 12-1/2" | R-94 |
| 1/2" | 12-1/2" | R-95 |
| 11/32" | 12-1/2" | R-96 |
| 11/16" | 12-1/2" | R-97 |
| 13/64" | 12-1/2" | R-98 |
| 13/32" | 12-1/2" | R-99 |
| 17/32" | 12-1/2" | R-100 |
| 17/64" | 12-1/2" | R-101 |
| 3/8" | 12-1/2" | R-102 |
| 5/16" | 12-1/2" | R-103 |
| 5/8" | 12-1/2" | R-104 |
| 7/16" | 12-1/2" | R-105 |
| 9/16" | 12-1/2" | R-106 |
| 9/32" | 12-1/2" | R-107 |
| 10 | 317.5 | R-108 |
| 12 | 317.5 | R-109 |
| 18 | 317.5 | R-110 |
| 20 | 317.5 | R-111 |

**Tolerances:**

D2 h6

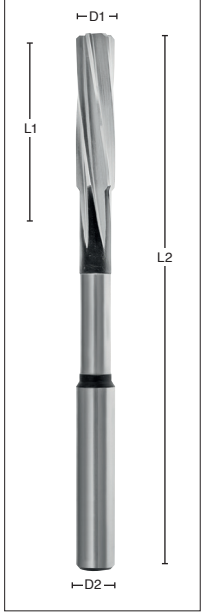



**Modifications**
**Regrinds, Re coat**
**Specials**

# HSSE 5% Co - Bright Finish
# DIN 212 D - ISO 521 - 10° Helix
# Straight Shank Machine Reamers

10° | MULTI | PLAIN | DIN 212 D | HSSE 5%Co

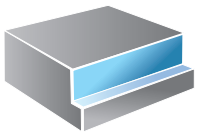
| Tolerances: | |
|---|---|
| D1 | e8 |
| D2 | h6 |

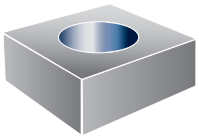



| Dia | Shank Dia-D2 | FL L1 | OAL L2 | Part Number | No. of Flutes |
|---|---|---|---|---|---|
| 2 | 2 | 11 | 49 | 2060 -74421 | 4 |
| 2.1 | 2.1 | 11 | 49 | 2060 -20699 | 4 |
| 2.2 | 2.2 | 12 | 53 | 2060 -20700 | 4 |
| 2.3 | 2.3 | 12 | 53 | 2060 -20701 | 4 |
| 2.4 | 2.4 | 14 | 57 | 2060 -19768 | 4 |
| 2.5 | 2.5 | 14 | 57 | 2060 -74424 | 4 |
| 2.6 | 2.6 | 14 | 57 | 2060 -19769 | 4 |
| 2.7 | 2.7 | 15 | 61 | 2060 -20702 | 4 |
| 2.8 | 2.8 | 15 | 61 | 2060 -20703 | 4 |
| 2.9 | 2.9 | 15 | 61 | 2060 -20704 | 4 |
| 3 | 3 | 15 | 61 | 2060 -74427 | 6 |
| 3.1 | 3.1 | 16 | 65 | 2060 -20705 | 6 |
| 3.2 | 3.2 | 16 | 65 | 2060 -20706 | 6 |
| 3.3 | 3.3 | 16 | 65 | 2060 -19771 | 6 |
| 3.4 | 3.4 | 18 | 70 | 2060 -20707 | 6 |
| 3.5 | 3.5 | 18 | 70 | 2060 -74430 | 6 |
| 3.6 | 3.6 | 18 | 70 | 2060 -20709 | 6 |
| 3.7 | 3.7 | 18 | 70 | 2060 -20710 | 6 |
| 3.8 | 4 | 19 | 75 | 2060 -20711 | 6 |
| 3.9 | 4 | 19 | 75 | 2060 -20712 | 6 |
| 4 | 4 | 19 | 75 | 2060 -74433 | 6 |
| 4.1 | 4 | 19 | 75 | 2060 -20713 | 6 |
| 4.2 | 4 | 19 | 75 | 2060 -80961 | 6 |
| 4.3 | 4.5 | 21 | 80 | 2060 -20714 | 6 |
| 4.4 | 4.5 | 21 | 80 | 2060 -45603 | 6 |
| 4.5 | 4.5 | 21 | 80 | 2060 -75363 | 6 |
| 4.6 | 4.5 | 21 | 80 | 2060 -20715 | 6 |
| 4.7 | 5 | 21 | 80 | 2060 -80962 | 6 |
| 4.8 | 5 | 23 | 86 | 2060 -20716 | 6 |
| 4.9 | 5 | 23 | 86 | 2060 -20717 | 6 |
| 5 | 5 | 23 | 86 | 2060 -26989 | 6 |
| 5.1 | 5 | 23 | 86 | 2060 -20718 | 6 |
| 5.2 | 5 | 23 | 86 | 2060 -80963 | 6 |
| 5.3 | 5 | 23 | 86 | 2060 -20719 | 6 |
| 5.4 | 5.6 | 26 | 93 | 2060 -20721 | 6 |
| 5.5 | 5.6 | 26 | 93 | 2060 -75364 | 6 |
| 5.6 | 5.6 | 26 | 93 | 2060 -20724 | 6 |
| 5.7 | 5.6 | 26 | 93 | 2060 -80964 | 6 |
| 5.8 | 5.6 | 26 | 93 | 2060 -20725 | 6 |
| 5.9 | 5.6 | 26 | 93 | 2060 -20726 | 6 |
| 6 | 5.6 | 26 | 93 | 2060 -74436 | 6 |
| 6.1 | 6.3 | 28 | 101 | 2060 -20727 | 6 |
| 6.2 | 6.3 | 28 | 101 | 2060 -20728 | 6 |
| 6.3 | 6.3 | 28 | 101 | 2060 -20729 | 6 |
| 6.4 | 6.3 | 28 | 101 | 2060 -20730 | 6 |
| 6.5 | 6.3 | 28 | 101 | 2060 -74439 | 6 |

| Dia | Shank Dia-D2 | FL L1 | OAL L2 | Part Number | No. of Flutes |
|---|---|---|---|---|---|
| 6.6 | 6.3 | 28 | 101 | 2060 -20731 | 6 |
| 6.7 | 6.3 | 28 | 101 | 2060 -20732 | 6 |
| 6.8 | 7.1 | 28 | 101 | 2060 -20733 | 6 |
| 6.9 | 7.1 | 28 | 101 | 2060 -20734 | 6 |
| 7 | 7.1 | 31 | 109 | 2060 -74442 | 6 |
| 7.1 | 7.1 | 31 | 109 | 2060 -20735 | 6 |
| 7.2 | 7.1 | 31 | 109 | 2060 -20736 | 6 |
| 7.3 | 7.1 | 31 | 109 | 2060 -20737 | 6 |
| 7.4 | 7.1 | 31 | 109 | 2060 -20739 | 6 |
| 7.5 | 7.1 | 31 | 109 | 2060 -74445 | 6 |
| 7.6 | 8 | 33 | 117 | 2060 -20745 | 6 |
| 7.7 | 8 | 33 | 117 | 2060 -20747 | 6 |
| 7.8 | 8 | 33 | 117 | 2060 -20748 | 6 |
| 7.9 | 8 | 33 | 117 | 2060 -20749 | 6 |
| 8 | 8 | 33 | 117 | 2060 -74448 | 6 |
| 8.1 | 8 | 33 | 117 | 2060 -20751 | 6 |
| 8.2 | 8 | 33 | 117 | 2060 -20753 | 6 |
| 8.3 | 8 | 33 | 117 | 2060 -20754 | 6 |
| 8.4 | 8 | 33 | 117 | 2060 -20755 | 6 |
| 8.5 | 8 | 33 | 117 | 2060 -74451 | 6 |
| 8.6 | 9 | 36 | 125 | 2060 -20757 | 6 |
| 8.7 | 9 | 36 | 125 | 2060 -20758 | 6 |
| 8.8 | 9 | 36 | 125 | 2060 -20760 | 6 |
| 8.9 | 9 | 36 | 125 | 2060 -20761 | 6 |
| 9 | 9 | 36 | 125 | 2060 -74930 | 6 |
| 9.1 | 9 | 36 | 125 | 2060 -20763 | 6 |
| 9.2 | 9 | 36 | 125 | 2060 -20764 | 6 |
| 9.3 | 9 | 36 | 125 | 2060 -20765 | 6 |
| 9.4 | 9 | 36 | 125 | 2060 -20766 | 6 |
| 9.5 | 9 | 36 | 125 | 2060 -74454 | 6 |
| 9.6 | 10 | 38 | 133 | 2060 -20767 | 6 |
| 9.7 | 10 | 38 | 133 | 2060 -20768 | 6 |
| 9.8 | 10 | 38 | 133 | 2060 -20769 | 6 |
| 9.9 | 10 | 38 | 133 | 2060 -20770 | 6 |
| 10 | 10 | 38 | 133 | 2060 -74933 | 6 |
| 11 | 10 | 41 | 142 | 2060 -74934 | 6 |
| 12 | 10 | 44 | 151 | 2060 -74457 | 6 |
| 13 | 10 | 44 | 151 | 2060 -74460 | 8 |
| 14 | 12.5 | 47 | 160 | 2060 -74463 | 8 |
| 15 | 12.5 | 50 | 162 | 2060 -74466 | 8 |
| 16 | 12.5 | 52 | 170 | 2060 -75160 | 8 |
| 17 | 14 | 54 | 175 | 2060 -74469 | 8 |
| 18 | 14 | 56 | 182 | 2060 -74935 | 8 |
| 19 | 16 | 58 | 189 | 2060 -74472 | 8 |
| 20 | 16 | 60 | 195 | 2060 -74475 | 8 |

1.1 - 1.6 | 6.1 - 6.4
2.1 - 2.3 | 4.1 - 5.3
3.1 - 3.4 | 1.7 - 1.8
9.1





**Modifications**
**Regrinds, Re coat**
**Specials**

# Performance HSSE 5% Co - *TiALN*
# DIN 212 B - ISO 521 - 10° Helix
# Straight Shank Machine Reamers

Series 2060

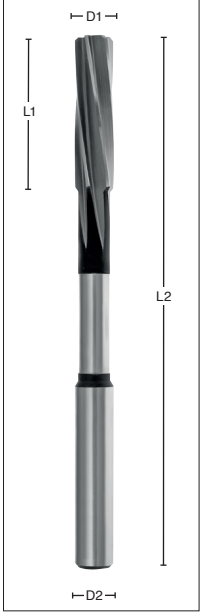
TiALN | DIN 212 B | HSSE 5%Co | 10° | MULTI | PLAIN

| Dia | Shank Dia-D2 | FL L1 | OAL L2 | Part Number | No. of Flutes |
|---|---|---|---|---|---|
| 2 | 2 | 11 | 49 | 2060 -56499 | 4 |
| 2.1 | 2.1 | 11 | 49 | 2060 -20795 | 4 |
| 2.2 | 2.2 | 12 | 53 | 2060 -20796 | 4 |
| 2.3 | 2.3 | 12 | 53 | 2060 -20797 | 4 |
| 2.4 | 2.4 | 14 | 57 | 2060 -20798 | 4 |
| 2.5 | 2.5 | 14 | 57 | 2060 -56502 | 4 |
| 2.6 | 2.6 | 14 | 57 | 2060 -20799 | 4 |
| 2.7 | 2.7 | 15 | 61 | 2060 -20800 | 4 |
| 2.8 | 2.8 | 15 | 61 | 2060 -20801 | 4 |
| 2.9 | 2.9 | 15 | 61 | 2060 -20802 | 4 |
| 3 | 3 | 15 | 61 | 2060 -56505 | 6 |
| 3.1 | 3.1 | 16 | 65 | 2060 -20803 | 6 |
| 3.2 | 3.2 | 16 | 65 | 2060 -20805 | 6 |
| 3.3 | 3.3 | 16 | 65 | 2060 -20806 | 6 |
| 3.4 | 3.4 | 18 | 70 | 2060 -20807 | 6 |
| 3.5 | 3.5 | 18 | 70 | 2060 -56508 | 6 |
| 3.6 | 3.6 | 18 | 70 | 2060 -20808 | 6 |
| 3.7 | 3.7 | 18 | 70 | 2060 -20809 | 6 |
| 3.8 | 4 | 19 | 75 | 2060 -20810 | 6 |
| 3.9 | 4 | 19 | 75 | 2060 -20811 | 6 |
| 4 | 4 | 19 | 75 | 2060 -56511 | 6 |
| 4.1 | 4 | 19 | 75 | 2060 -20812 | 6 |
| 4.2 | 4 | 19 | 75 | 2060 -20814 | 6 |
| 4.3 | 4.5 | 21 | 80 | 2060 -20815 | 6 |
| 4.4 | 4.5 | 21 | 80 | 2060 -20816 | 6 |
| 4.5 | 4.5 | 21 | 80 | 2060 -56514 | 6 |
| 4.6 | 4.5 | 21 | 80 | 2060 -20817 | 6 |
| 4.7 | 5 | 21 | 80 | 2060 -20818 | 6 |
| 4.8 | 5 | 23 | 86 | 2060 -20819 | 6 |
| 4.9 | 5 | 23 | 86 | 2060 -20820 | 6 |
| 5 | 5 | 23 | 86 | 2060 -10587 | 6 |
| 5.1 | 5 | 23 | 86 | 2060 -20821 | 6 |
| 5.2 | 5 | 23 | 86 | 2060 -20822 | 6 |
| 5.3 | 5 | 23 | 86 | 2060 -20823 | 6 |
| 5.4 | 5.6 | 26 | 93 | 2060 -20824 | 6 |
| 5.5 | 5.6 | 26 | 93 | 2060 -56517 | 6 |
| 5.6 | 5.6 | 26 | 93 | 2060 -20825 | 6 |
| 5.7 | 5.6 | 26 | 93 | 2060 -20826 | 6 |
| 5.8 | 5.6 | 26 | 93 | 2060 -20827 | 6 |
| 5.9 | 5.6 | 26 | 93 | 2060 -20828 | 6 |
| 6 | 5.6 | 26 | 93 | 2060 -56520 | 6 |
| 6.1 | 6.3 | 28 | 101 | 2060 -20829 | 6 |
| 6.2 | 6.3 | 28 | 101 | 2060 -20830 | 6 |
| 6.3 | 6.3 | 28 | 101 | 2060 -20832 | 6 |
| 6.4 | 6.3 | 28 | 101 | 2060 -20833 | 6 |
| 6.5 | 6.3 | 28 | 101 | 2060 -56523 | 6 |

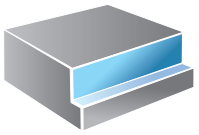
| Dia | Shank Dia-D2 | FL L1 | OAL L2 | Part Number | No. of Flutes |
|---|---|---|---|---|---|
| 6.6 | 6.3 | 28 | 101 | 2060 -20835 | 6 |
| 6.7 | 6.3 | 28 | 101 | 2060 -20836 | 6 |
| 6.8 | 7.1 | 28 | 101 | 2060 -20837 | 6 |
| 6.9 | 7.1 | 28 | 101 | 2060 -20838 | 6 |
| 7 | 7.1 | 31 | 109 | 2060 -56526 | 6 |
| 7.1 | 7.1 | 31 | 109 | 2060 -20839 | 6 |
| 7.2 | 7.1 | 31 | 109 | 2060 -20841 | 6 |
| 7.3 | 7.1 | 31 | 109 | 2060 -20842 | 6 |
| 7.4 | 7.1 | 31 | 109 | 2060 -20844 | 6 |
| 7.5 | 7.1 | 31 | 109 | 2060 -56529 | 6 |
| 7.6 | 8 | 33 | 117 | 2060 -20845 | 6 |
| 7.7 | 8 | 33 | 117 | 2060 -20847 | 6 |
| 7.8 | 8 | 33 | 117 | 2060 -20848 | 6 |
| 7.9 | 8 | 33 | 117 | 2060 -20849 | 6 |
| 8 | 8 | 33 | 117 | 2060 -56532 | 6 |
| 8.1 | 8 | 33 | 117 | 2060 -20850 | 6 |
| 8.2 | 8 | 33 | 117 | 2060 -20851 | 6 |
| 8.3 | 8 | 33 | 117 | 2060 -20852 | 6 |
| 8.4 | 8 | 33 | 117 | 2060 -20853 | 6 |
| 8.5 | 8 | 33 | 117 | 2060 -56535 | 6 |
| 8.6 | 9 | 36 | 125 | 2060 -20854 | 6 |
| 8.7 | 9 | 36 | 125 | 2060 -20856 | 6 |
| 8.8 | 9 | 36 | 125 | 2060 -20857 | 6 |
| 8.9 | 9 | 36 | 125 | 2060 -20859 | 6 |
| 9 | 9 | 36 | 125 | 2060 -56538 | 6 |
| 9.1 | 9 | 36 | 125 | 2060 -20860 | 6 |
| 9.2 | 9 | 36 | 125 | 2060 -20861 | 6 |
| 9.3 | 9 | 36 | 125 | 2060 -20862 | 6 |
| 9.4 | 9 | 36 | 125 | 2060 -20863 | 6 |
| 9.5 | 9 | 36 | 125 | 2060 -56541 | 6 |
| 9.6 | 10 | 38 | 133 | 2060 -20864 | 6 |
| 9.7 | 10 | 38 | 133 | 2060 -20865 | 6 |
| 9.8 | 10 | 38 | 133 | 2060 -20866 | 6 |
| 9.9 | 10 | 38 | 133 | 2060 -20868 | 6 |
| 10 | 10 | 38 | 133 | 2060 -56544 | 6 |
| 11 | 10 | 41 | 142 | 2060 -56547 | 6 |
| 12 | 10 | 44 | 151 | 2060 -56550 | 6 |
| 13 | 10 | 44 | 151 | 2060 -56553 | 8 |
| 14 | 12.5 | 47 | 160 | 2060 -56556 | 8 |
| 15 | 12.5 | 50 | 162 | 2060 -56559 | 8 |
| 16 | 12.5 | 52 | 170 | 2060 -56562 | 8 |
| 17 | 14 | 54 | 175 | 2060 -56565 | 8 |
| 18 | 14 | 56 | 182 | 2060 -56568 | 8 |
| 19 | 16 | 58 | 189 | 2060 -56571 | 8 |
| 20 | 16 | 60 | 195 | 2060 -56574 | 8 |

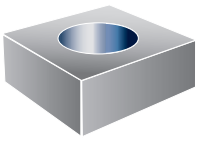
**Tolerances:**

| | |
|---|---|
| D1 | e8 |
| D2 | h6 |




1.1 - 1.6 | 6.1 - 6.4
2.1 - 2.3 | 4.1 - 5.3
3.1 - 3.4 | 1.7 - 1.8
9.1





**Modifications**
**Regrinds, Re coat**
**Specials**

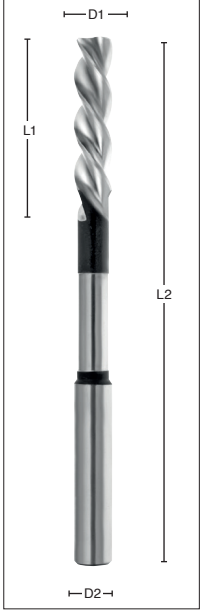
Solid Carbide Drills & Application Tools

Series 2064

# HSSE 5% Co - Bright Finish
# DIN 212 E - ISO 521 - 45° Helix
# Straight Shank Machine Reamers

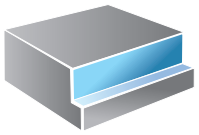
45° | MULTI | PLAIN | DIN 212 E | HSSE 5%Co

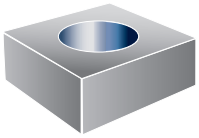
| Tolerances: | |
|---|---|
| D1 | e8 |
| D2 | h6 |




| Cutter Dia-D1 | Shank Dia-D2 | FL L1 | OAL L2 | Part Number | No. of Flutes |
|---|---|---|---|---|---|
| 3 | 3 | 15 | 61 | 2064 -40898 | 3 |
| 3.5 | 3.5 | 18 | 70 | 2064 -40901 | 3 |
| 4 | 4 | 19 | 75 | 2064 -40904 | 3 |
| 4.5 | 4.5 | 21 | 80 | 2064 -40907 | 3 |
| 5 | 5 | 23 | 86 | 2064 -40910 | 3 |
| 5.5 | 5.6 | 26 | 93 | 2064 -40913 | 3 |
| 6 | 5.6 | 26 | 93 | 2064 -40916 | 3 |
| 6.5 | 6.3 | 28 | 101 | 2064 -40919 | 3 |
| 7 | 7.1 | 31 | 109 | 2064 -40922 | 3 |
| 7.5 | 7.1 | 31 | 109 | 2064 -40925 | 3 |
| 8 | 8 | 33 | 117 | 2064 -40928 | 3 |
| 8.5 | 8 | 33 | 117 | 2064 -40931 | 3 |
| 9 | 9 | 36 | 125 | 2064 -40934 | 3 |
| 9.5 | 9 | 36 | 125 | 2064 -40937 | 3 |
| 10 | 10 | 38 | 133 | 2064 -40940 | 3 |
| 11 | 10 | 41 | 142 | 2064 -40946 | 3 |
| 12 | 10 | 44 | 151 | 2064 -40952 | 4 |
| 13 | 10 | 44 | 151 | 2064 -40958 | 4 |
| 14 | 12.5 | 47 | 160 | 2064 -40964 | 4 |
| 15 | 12.5 | 50 | 162 | 2064 -40970 | 4 |
| 16 | 12.5 | 52 | 170 | 2064 -40976 | 4 |

1.1 - 1.6 | 6.1 - 6.4
2.1 - 2.3 | 4.1 - 5.3
3.1 - 3.4 | 1.7 - 1.8
9.1



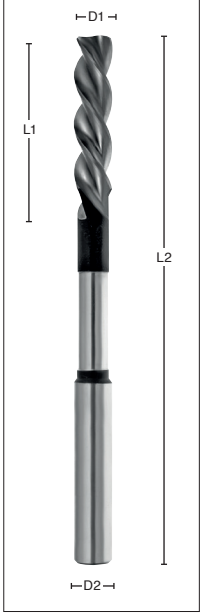


Series 2064

# Performance HSSE 5% Co - *TiALN*
# DIN 212 E - ISO 521 - 45° Helix
# Straight Shank Machine Reamers

45° | MULTI | FLAT | DIN 212 E | HSSE 5%Co | TiALN

| Tolerances: | |
|---|---|
| D1 | e8 |
| D2 | h6 |




| Cutter Dia-D1 | Shank Dia-D2 | FL L1 | OAL L2 | Part Number | No. of Flutes |
|---|---|---|---|---|---|
| 3 | 3 | 15 | 61 | 2064 -56577 | 3 |
| 3.5 | 3.5 | 18 | 70 | 2064 -56580 | 3 |
| 4 | 4 | 19 | 75 | 2064 -56586 | 3 |
| 4.5 | 4.5 | 21 | 80 | 2064 -56589 | 3 |
| 5 | 5 | 23 | 86 | 2064 -56592 | 3 |
| 5.5 | 5.6 | 26 | 93 | 2064 -56595 | 3 |
| 6 | 5.6 | 26 | 93 | 2064 -56598 | 3 |
| 6.5 | 6.3 | 28 | 101 | 2064 -56601 | 3 |
| 7 | 7.1 | 31 | 109 | 2064 -56604 | 3 |
| 7.5 | 7.1 | 31 | 109 | 2064 -56607 | 3 |
| 8 | 8 | 33 | 117 | 2064 -56610 | 3 |
| 8.5 | 8 | 33 | 117 | 2064 -56613 | 3 |
| 9 | 9 | 36 | 125 | 2064 -56616 | 3 |
| 9.5 | 9 | 36 | 125 | 2064 -56619 | 3 |
| 10 | 10 | 38 | 133 | 2064 -56625 | 3 |
| 11 | 10 | 41 | 142 | 2064 -56631 | 3 |
| 12 | 10 | 44 | 151 | 2064 -56637 | 4 |
| 13 | 10 | 44 | 151 | 2064 -56643 | 4 |
| 14 | 12.5 | 47 | 160 | 2064 -56649 | 4 |
| 15 | 12.5 | 50 | 162 | 2064 -56655 | 4 |
| 16 | 12.5 | 52 | 170 | 2064 -56661 | 4 |

1.1 - 1.6 | 6.1 - 6.4
2.1 - 2.3 | 4.1 - 5.3
3.1 - 3.4 | 1.7 - 1.8
9.1

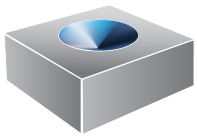
**Modifications**
**Regrinds, Re coat**
**Specials**

# HSS - Bright Finish
# DIN 334 A - ISO 3294 - 60°
# Straight Shank Countersinks

Series 2550

DIN 334 A | HSS | 60° | MULTI | PLAIN

1.1 - 1.6 | 6.1 - 6.4 | 2.1 - 2.3 | 4.1 - 5.3 | 3.1 - 3.4 | 1.7 - 1.8 | 9.1



| Cutter | Shank | Point | OAL L2 | No. FL | Part Number |
|---|---|---|---|---|---|
| 8 | 8 | 1.6 | 48 | 5 | 2550 -42119 |
| 10 | 8 | 2 | 50 | 5 | 2550 -42122 |
| 12.5 | 8 | 2.5 | 52 | 5 | 2550 -42125 |
| 16 | 10 | 3.2 | 60 | 7 | 2550 -42128 |
| 20 | 10 | 4 | 64 | 7 | 2550 -42131 |
| 25 | 10 | 7 | 69 | 9 | 2550 -42134 |



**Modifications**
**Regrinds, Re coat**
**Specials**

Series 2572

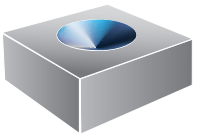
# HSSE 5% Bright Finish
# 90° Straight Shank Countersinks






| Cutter | Shank | OAL L2 | Applic. min/max | Part Number |
|---|---|---|---|---|
| 10 | 6 | 45 | 2-5 | 2572 -69183 |
| 14 | 8 | 48 | 5-10 | 2572 -69181 |
| 21 | 10 | 65 | 10-15 | 2572 -69184 |
| 28 | 12 | 84 | 15-20 | 2572 -69187 |
| 35 | 15 | 102 | 20-25 | 2572 -69186 |

1.1 - 1.6 | 6.1 - 6.4
2.1 - 2.3 | 4.1 - 5.3
3.1 - 3.4 | 1.7 - 1.8
9.1



Series 2573

# HSS - Bright Finish
# DIN 335 C - 90°
# Straight Shank Countersinks






| Cutter | Shank | OAL L2 | Applic. min/max | Part Number |
|---|---|---|---|---|
| 6 | 5 | 45 | 1/6 | 2573 -13281 |
| 8 | 6 | 48 | 1/8 | 2573 -13284 |
| 10 | 6 | 65 | 1/10 | 2573 -13286 |
| 12 | 8 | 84 | 2/12 | 2573 -13287 |
| 16 | 10 | 60 | 2/16 | 2573 -13290 |
| 20 | 10 | 63 | 2/20 | 2573 -13293 |
| 25 | 10 | 67 | 2/25 | 2573 -13294 |
| 30 | 12 | 71 | 3/30 | 2573 -13296 |

1.1 - 1.6 | 6.1 - 6.4
2.1 - 2.3 | 4.1 - 5.3
3.1 - 3.4 | 1.7 - 1.8
9.1

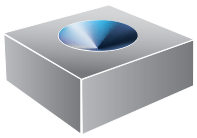
**Modifications**
**Regrinds, Re coat**
**Specials**

# HSS - Bright Finish
# DIN 335 C - 90°
# Straight Shank Countersinks - 3-Flute

Series 2575

DIN 335 C | HSS | 90° | 3 | PLAIN

1.1 - 1.6 | 6.1 - 6.4 | 2.1 - 2.3 | 4.1 - 5.3 | 3.1 - 3.4 | 1.7 - 1.8 | 9.1



| Cutter | Shank | Point | OAL L2 | Applic. min/max | Part Number |
|---|---|---|---|---|---|
| 4.3 | 4 | 1.3 | 40 | 1.5 / 4.3 | 2575 -74653 |
| 5 | 4 | 1.5 | 40 | 5 / 5 | 2575 -74654 |
| 5.3 | 4 | 1.5 | 40 | 2 / 5.3 | 2575 -74655 |
| 5.8 | 5 | 1.5 | 45 | 2 / 5.8 | 2575 -74656 |
| 6 | 5 | 1.5 | 45 | 2 / 6 | 2575 -74657 |
| 6.3 | 5 | 1.5 | 45 | 2 / 6.3 | 2575 -74658 |
| 7 | 6 | 1.8 | 50 | 2 / 7 | 2575 -74659 |
| 7.3 | 6 | 1.8 | 50 | 2 / 7.3 | 2575 -74660 |
| 8 | 6 | 2 | 50 | 2.5 / 8 | 2575 -74661 |
| 8.3 | 6 | 2 | 50 | 2.5 / 8.3 | 2575 -74662 |
| 9.4 | 6 | 2.2 | 50 | 3 / 9.4 | 2575 -74663 |
| 10 | 6 | 2.5 | 50 | 3 / 10 | 2575 -74664 |
| 10.4 | 6 | 2.5 | 50 | 3 / 10.4 | 2575 -74665 |
| 11.5 | 8 | 2.8 | 56 | 3 / 11.4 | 2575 -74666 |
| 12.4 | 8 | 2.8 | 56 | 3 / 12.4 | 2575 -74667 |
| 13.4 | 8 | 2.9 | 56 | 3 / 13.4 | 2575 -74668 |
| 15 | 10 | 3.2 | 60 | 4 / 15 | 2575 -74669 |
| 16.5 | 10 | 3.2 | 60 | 4 / 16.5 | 2575 -74670 |
| 19 | 10 | 3.5 | 63 | 4 / 19 | 2575 -74671 |
| 20.5 | 10 | 3.5 | 63 | 4 / 20.5 | 2575 -74672 |
| 23 | 10 | 3.8 | 67 | 4 / 23 | 2575 -74673 |
| 25 | 10 | 3.8 | 67 | 4 / 25 | 2575 -74674 |
| 28 | 12 | 4 | 71 | 4.5 / 28 | 2575 -42714 |
| 30 | 12 | 4.2 | 71 | 4.5 / 30 | 2575 -12588 |
| 31 | 12 | 4.2 | 71 | 4.5 / 31 | 2575 -42715 |
| 40 | 15 | 5 | 80 | 5.5 / 40 | 2575 -11061 |



# HSS - Bright Finish
# DIN 347 A ISO 3294 - 120°
# Straight Shank Countersinks

Series 2580

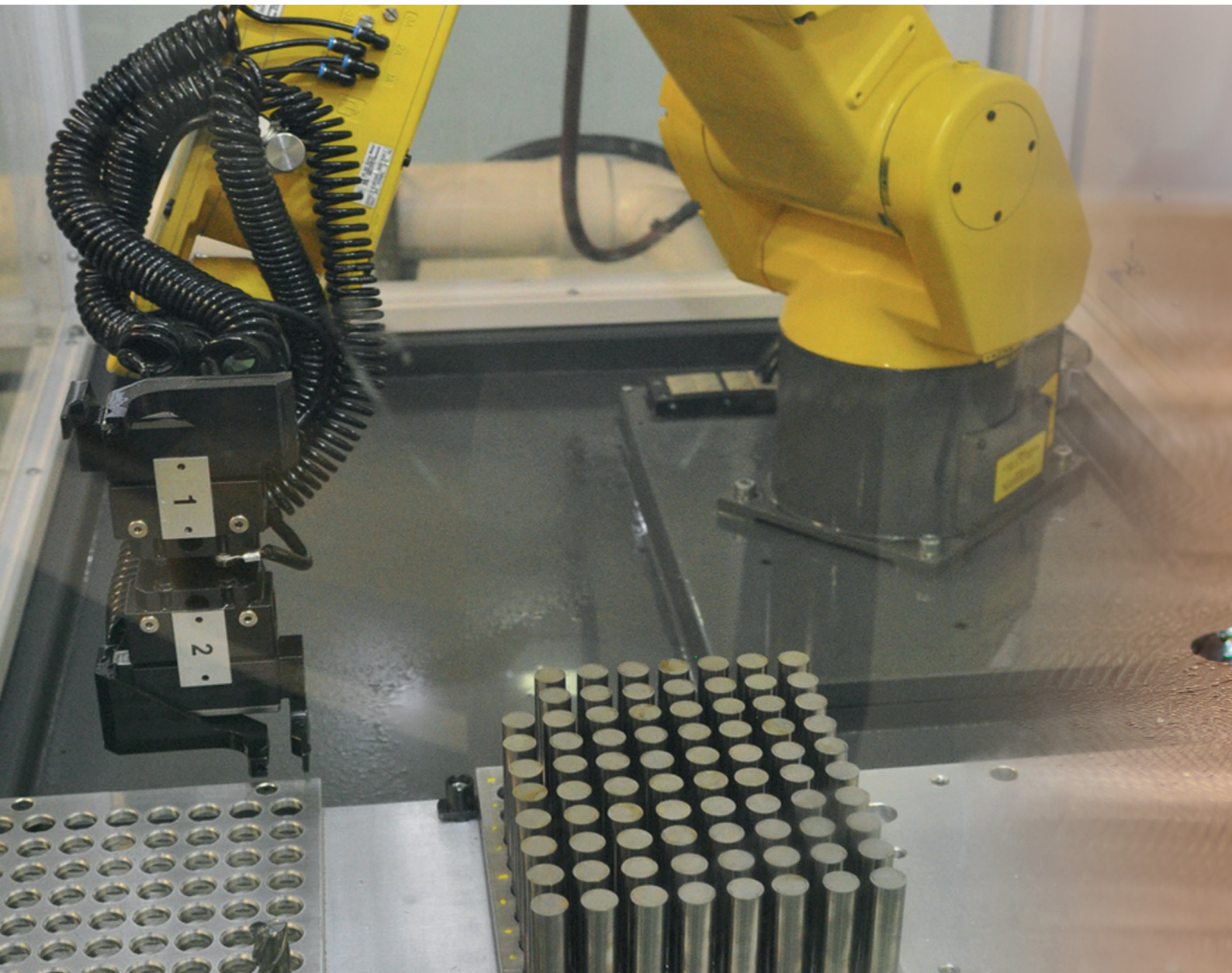
DIN 347A | HSS | 120° | MULTI | PLAIN

1.1 - 1.6 | 6.1 - 6.4 | 2.1 - 2.3 | 4.1 - 5.3 | 3.1 - 3.4 | 1.7 - 1.8 | 9.1

| Cutter | Shank | Point | OAL L2 | No. FL | Part Number |
|---|---|---|---|---|---|
| 8 | 8 | 1.6 | 44 | 5 | 2580 -42170 |
| 10 | 8 | 2 | 46 | 5 | 2580 -42173 |
| 12.5 | 8 | 2.5 | 48 | 5 | 2580 -42176 |
| 16 | 10 | 3.2 | 56 | 7 | 2580 -42179 |
| 20 | 10 | 4 | 60 | 7 | 2580 -42182 |
| 25 | 10 | 7 | 65 | 9 | 2580 -42185 |



**Modifications**
**Regrinds, Re coat**
**Specials**


1
2

# Tapping & Threading

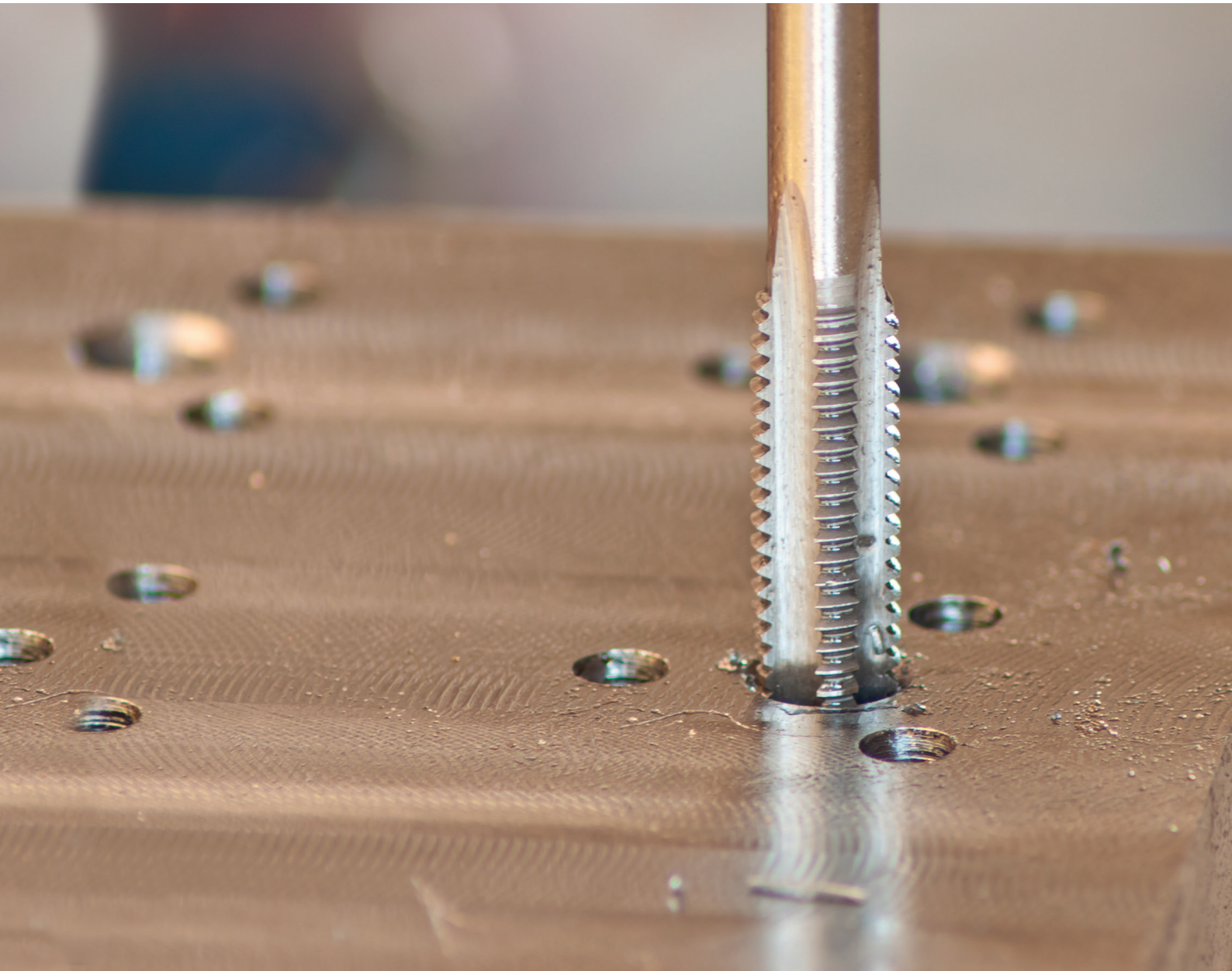
## Range
Solid Carbide Threadmills, Standard and High Performance Application Machine Taps in DIN 371, 374 and DIN 376. HSSE & Powder Metal

## Size
Metric Taps: M2 through to M24
Imperial Taps: 1/8" through to 1"
UN Taps: 10-32 through to 1-12
Metric Threadmills: M3 through to M24
Imperial Threadmills:1/16' through to 2-1/2"
UN Threadmills: 4-40 through to 1-8

## Finish
Bright Finish, TiALN Coated, VAP, TiCN and CrN

## Options
Threadmills M, MF, UNC, UNF, NPT and NPTF.
Machine Taps: M, MF, UNC, UNF, G, NPT, BSPT
Straight Flute, Spiral Flute and Fluteless styles.

## Delivery
Over 150,00 tools available from stock for Same-Day despatch

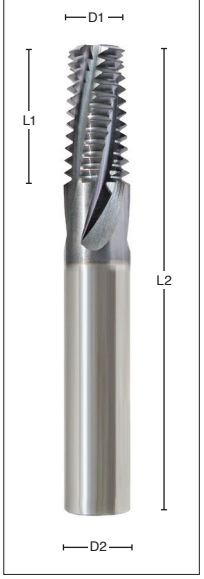


NPT

# Solid Carbide Thread Mills - *AlTiN*
## 15° Helix - Spiral Flute
## Micro-grain K20/25 Multi Flute

NPT | 15° | MG HM | MULTI | PLAIN | AlTiN

| Tolerances: | |
|---|---|
| D1 | h10 |
| D2 | h6 |




| Min Thread Dia/Pitch | Cutter Dia-D1 | Cut Length | Shank Dia-D2 | OAL L2 | Part Number | No of Flutes | No of Threads |
|---|---|---|---|---|---|---|---|
| 1/16-27 | 5.90 | 9.40 | 6 | 63 | 920 -00604 | 3 | 10 |
| 1/8-27 | 7.60 | 14.10 | 8 | 75 | 920 -00608 | 4 | 15 |
| 1/4-18 | 9.15 | 15.52 | 10 | 80 | 920 -00616 | 4 | 11 |
| 1/2-14 | 11.90 | 21.77 | 12 | 80 | 920 -00632 | 4 | 12 |
| 1-11.5 | 15.90 | 28.70 | 16 | 100 | 920 -00664 | 4 | 13 |
| 2.5-8 | 19.90 | 38.10 | 20 | 100 | 920 -00684 | 4 | 12 |

Ti PAGE 279

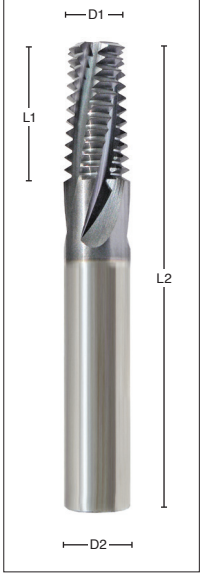
1.1 - 1.6 | 6.1 - 8.3 | 2.1 - 2.3 | 4.1 - 5.3 | 3.1 - 3.4 | 1.7 - 1.9

NPTF

# Solid Carbide Thread Mills - *AlTiN*
## 15° Helix - Spiral Flute
## Micro-grain K20/25 Multi Flute

NPTF | 15° | MG HM | MULTI | PLAIN | AlTiN

| Tolerances: | |
|---|---|
| D1 | h10 |
| D2 | h6 |




| Min Thread Dia/Pitch | Cutter Dia-D1 | Cut Length | Shank Dia-D2 | OAL L2 | Part Number | No of Flutes | No of Threads |
|---|---|---|---|---|---|---|---|
| 1/16-27 | 5.90 | 9.40 | 6 | 63 | 930 -00604 | 3 | 10 |
| 1/8-27 | 7.60 | 14.10 | 8 | 75 | 930 -00608 | 4 | 15 |
| 1/4-18 | 9.15 | 15.52 | 10 | 80 | 930 -00616 | 4 | 11 |
| 3/8-18 | 10.80 | 18.34 | 12 | 80 | 930 -00624 | 4 | 13 |
| 1/2-14 | 11.90 | 21.77 | 12 | 80 | 930 -00632 | 4 | 12 |
| 1-11.5 | 15.90 | 28.70 | 16 | 100 | 930 -00664 | 4 | 13 |
| 2.5-8 | 19.90 | 38.10 | 20 | 100 | 930 -00684 | 4 | 12 |

Ti PAGE 279

1.1 - 1.6 | 6.1 - 6.4 | 2.1 - 2.3 | 4.1 - 5.3 | 3.1 - 3.4 | 1.7 - 1.9

**Modifications**
**Regrinds, Re coat**
**Specials**

# Solid Carbide Thread Mills - *AlTiN*
## 15° Helix - Spiral Flute
## Micro-grain K20/25 Multi Flute

MF

AlTiN | 15° | MG HM | MULTI | PLAIN | MF

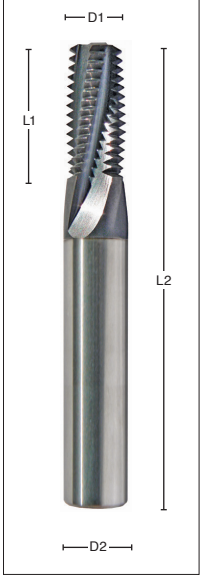
PAGE 279

1.1 - 1.6 | 6.1 - 6.4
2.1 - 2.3 | 4.1 - 5.3
3.1 - 3.4 | 1.7 - 1.9

| Min Thread Dia/Pitch | Cutter Dia-D1 | Cut Length | Shank Dia-D2 | OAL L2 | Part Number | No of Flutes | No of Threads |
|---|---|---|---|---|---|---|---|
| M6-.75 | 4.50 | 10.50 | 6 | 63 | 960 -10110 | 3 | 14 |
| M8-1.00 | 5.90 | 13.00 | 6 | 63 | 960 -10112 | 3 | 13 |
| M10-1.25 | 7.80 | 16.25 | 8 | 75 | 960 -10114 | 4 | 13 |
| M12-1.25 | 9.40 | 18.75 | 10 | 80 | 960 -10116 | 4 | 15 |
| M14-1.50 | 9.90 | 25.50 | 10 | 80 | 960 -10118 | 4 | 17 |
| M16-1.50 | 11.90 | 28.50 | 12 | 80 | 960 -10120 | 4 | 19 |
| M20-1.50 | 15.25 | 31.50 | 16 | 89 | 960 -10124 | 4 | 21 |

**Tolerances:**

| | |
|---|---|
| D1 | h10 |
| D2 | h6 |




# Solid Carbide Thread Mills - *AlTiN*
## 15° Helix - Spiral Flute
## Micro-grain K20/25 Multi Flute

M

AlTiN | 15° | MG HM | MULTI | PLAIN | M

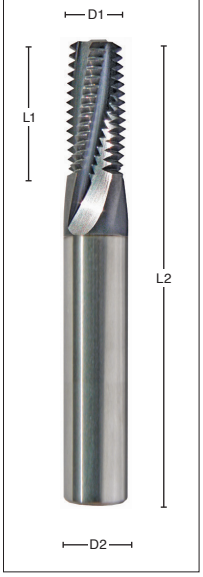
PAGE 279

1.1 - 1.6 | 6.1 - 6.4
2.1 - 2.3 | 4.1 - 5.3
3.1 - 3.4 | 1.7 - 1.9

| Min Thread Dia/Pitch | Cutter Dia-D1 | Cut Length | Shank Dia-D2 | OAL L2 | Part Number | No of Flutes | No of Threads |
|---|---|---|---|---|---|---|---|
| M3-.50 | 2.25 | 4.50 | 6 | 63 | 970 -10105 | 3 | 9 |
| M3.5-.60 | 2.60 | 5.40 | 6 | 63 | 970 -10106 | 3 | 9 |
| M4-.70 | 2.92 | 6.30 | 6 | 63 | 970 -10107 | 3 | 9 |
| M4.5-.75 | 3.30 | 7.50 | 6 | 63 | 970 -10108 | 3 | 10 |
| M5-.80 | 3.70 | 8.00 | 6 | 63 | 970 -10109 | 3 | 10 |
| M6-1.00 | 4.50 | 10.00 | 6 | 63 | 970 -10110 | 3 | 10 |
| M8-1.25 | 5.90 | 13.75 | 6 | 63 | 970 -10112 | 3 | 11 |
| M10-1.50 | 7.80 | 16.50 | 8 | 75 | 970 -10114 | 4 | 11 |
| M12-1.75 | 9.40 | 21.00 | 10 | 80 | 970 -10116 | 4 | 12 |
| M14-2.00 | 9.90 | 26.00 | 10 | 80 | 970 -10118 | 4 | 13 |
| M16-2.00 | 11.90 | 28.00 | 12 | 80 | 970 -10120 | 4 | 14 |
| M18-2.50 | 13.50 | 30.00 | 14 | 80 | 970 -10122 | 4 | 12 |
| M20-2.50 | 15.25 | 35.00 | 16 | 89 | 970 -10124 | 4 | 14 |
| M24-3.00 | 18.20 | 39.00 | 20 | 100 | 970 -10126 | 4 | 13 |

**Tolerances:**

| | |
|---|---|
| D1 | h10 |
| D2 | h6 |



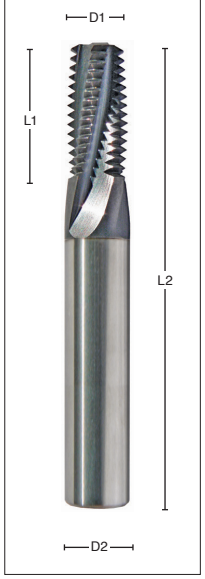

**Modifications**
**Regrinds, Re coat**
**Specials**

UNF

# Solid Carbide Thread Mills - *AlTiN*
## 15° Helix - Spiral Flute
## Micro-grain K20/25 Multi Flute

UNF | MG HM | 15° | PLAIN | MULTI | AlTiN

| Tolerances: | |
|---|---|
| D1 | h10 |
| D2 | h6 |




| Min Thread Dia/Pitch | Cutter Dia-D1 | Cut Length | Shank Dia-D2 | OAL L2 | Part Number | No of Flutes | No of Threads |
|---|---|---|---|---|---|---|---|
| 8-36 | 3.05 | 6.35 | 6 | 63 | 940 -00705 | 3 | 9 |
| 10-32 | 3.55 | 7.14 | 6 | 63 | 940 -00707 | 3 | 9 |
| 12-28 | 4.05 | 8.15 | 6 | 63 | 940 -00708 | 3 | 9 |
| 1/4-28 | 4.60 | 10.87 | 6 | 63 | 940 -00709 | 3 | 12 |
| 5/16-24 | 5.80 | 14.81 | 6 | 63 | 940 -00710 | 3 | 14 |
| 3/8-24 | 7.50 | 15.88 | 8 | 75 | 940 -00711 | 4 | 15 |
| 1/2-20 | 9.40 | 21.59 | 10 | 80 | 940 -00713 | 4 | 17 |
| 9/16-18 | 11.30 | 23.98 | 12 | 80 | 940 -00714 | 4 | 17 |
| 5/8-18 | 11.90 | 28.22 | 12 | 80 | 940 -00715 | 4 | 20 |
| 3/4-16 | 13.90 | 31.75 | 14 | 80 | 940 -00716 | 4 | 20 |
| 7/8-14 | 15.90 | 36.27 | 16 | 89 | 940 -00717 | 4 | 20 |
| 1-12 | 19.20 | 38.10 | 20 | 100 | 940 -00718 | 4 | 18 |

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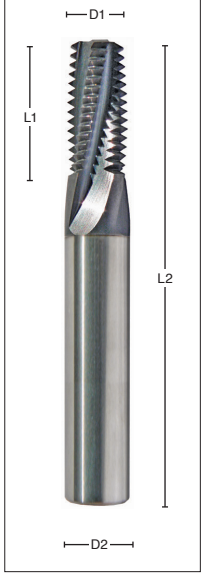
1.1 - 1.6 | 6.1 - 8.3 | 2.1 - 2.3 | 4.1 - 5.3 | 3.1 - 3.4 | 1.7 - 1.9

UNC

# Solid Carbide Thread Mills - *AlTiN*
## 15° Helix - Spiral Flute
## Micro-grain K20/25 Multi Flute

UNC | MG HM | PLAIN | MULTI | AlTiN

| Tolerances: | |
|---|---|
| D1 | h10 |
| D2 | h6 |



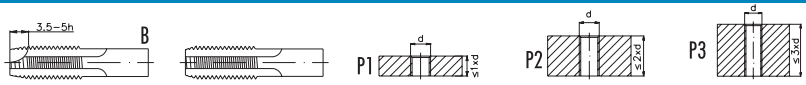

| Min Thread Dia/Pitch | Cutter Dia-D1 | Cut Length | Shank Dia-D2 | OAL L2 | Part Number | No of Flutes | No of Threads |
|---|---|---|---|---|---|---|---|
| 4-40 | 2.05 | 4.45 | 6 | 63 | 950 -00704 | 2 | 7 |
| 6-32 | 2.30 | 5.54 | 6 | 63 | 950 -00705 | 3 | 7 |
| 8-32 | 3.05 | 6.35 | 6 | 63 | 950 -00706 | 3 | 8 |
| 10-24 | 3.55 | 7.42 | 6 | 63 | 950 -00707 | 3 | 7 |
| 12-24 | 4.05 | 8.46 | 6 | 63 | 950 -00709 | 3 | 8 |
| 1/4-20 | 4.40 | 10.16 | 6 | 63 | 950 -00710 | 3 | 8 |
| 5/16-18 | 5.80 | 14.27 | 6 | 63 | 950 -00711 | 3 | 9 |
| 3/8-16 | 7.20 | 15.88 | 8 | 75 | 950 -00712 | 4 | 10 |
| 7/16-14 | 8.75 | 18.14 | 10 | 80 | 950 -00713 | 4 | 10 |
| 1/2-13 | 9.40 | 21.49 | 10 | 80 | 950 -00714 | 4 | 11 |
| 9/16-12 | 11.30 | 23.27 | 12 | 80 | 950 -00715 | 4 | 11 |
| 5/8-11 | 11.90 | 27.69 | 12 | 80 | 950 -00716 | 4 | 12 |
| 3/4-10 | 13.90 | 30.48 | 14 | 80 | 950 -00717 | 4 | 12 |
| 7/8-9 | 15.90 | 36.68 | 16 | 89 | 950 -00718 | 4 | 13 |
| 1-8 | 19.20 | 38.10 | 20 | 100 | 950 -00719 | 4 | 12 |

Ti PAGE 279

1.1 - 1.6 | 6.1 - 6.4 | 2.1 - 2.3 | 4.1 - 5.3 | 3.1 - 3.4 | 1.7 - 1.9

# Spiral Point - Machine Taps
## Standard Applications

Series 8110

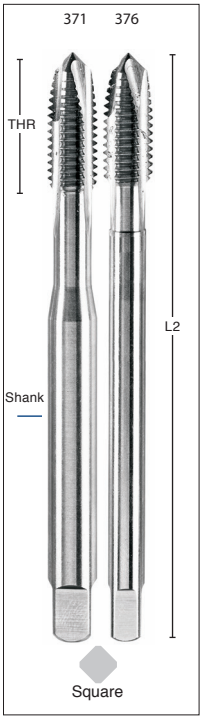



Tol. ISO 2 6H | HSSE (M35) | DIN 371/376 | M

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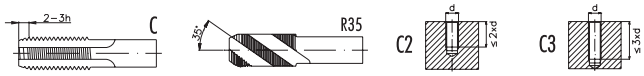
| Material | N/mm2 | V(m/min) | Coolant |
|---|---|---|---|
| 1.2 | <700 | 15-20 | Emulsion |
| 1.3 | <750 | 12-18 | Emulsion |
| 3.3 | <700 | 10-15 | Emulsion |
| 6.3 | <700 | 15-20 | Emulsion |
| 6.5 | <700 | 10-15 | Emulsion |

| Tap Dia | Pitch | Shank Dia mm | Thread mm | OAL mm | ⬡ mm | No. Flutes | Part Number |
|---|---|---|---|---|---|---|---|
| | | | | | | | DIN 371 |
| 2 | 0.40 | 2.8 | 8 | 45 | 2.1 | 3 | 8110 -61698 |
| 2.5 | 0.45 | 2.8 | 9 | 50 | 2.1 | 3 | 8110 -61704 |
| 3 | 0.50 | 3.5 | 11 | 56 | 2.7 | 3 | 8110 -61728 |
| 3.5 | 0.60 | 4 | 12 | 56 | 3 | 3 | 8110 -61742 |
| 4 | 0.70 | 4.5 | 13 | 63 | 3.4 | 3 | 8110 -61759 |
| 5 | 0.80 | 6 | 14 | 70 | 4,9 | 3 | 8110 -61780 |
| 6 | 1.00 | 6 | 16 | 80 | 4.9 | 3 | 8110 -61803 |
| 8 | 1.25 | 8 | 18 | 90 | 6.2 | 3 | 8110 -61827 |
| 10 | 1.50 | 10 | 22 | 100 | 8 | 3 | 8110 -61841 |
| | | | | | | | DIN 376 |
| 8 | 1.25 | 6 | 20 | 90 | 4.9 | 3 | 8110 -56410 |
| 10 | 1.50 | 7 | 22 | 100 | 5.5 | 3 | 8110 -56434 |
| 12 | 1.75 | 9 | 27 | 110 | 7 | 3 | 8110 -56458 |
| 14 | 2.00 | 11 | 30 | 110 | 9 | 3 | 8110 -56472 |
| 16 | 2.00 | 12 | 30 | 110 | 9 | 3 | 8110 -56496 |
| 18 | 2.50 | 14 | 34 | 125 | 11 | 4 | 8110 -56502 |
| 20 | 2.50 | 16 | 34 | 140 | 12 | 4 | 8110 -56519 |
| 22 | 2.50 | 18 | 34 | 140 | 14.5 | 4 | 8110 -56526 |
| 24 | 3.00 | 18 | 38 | 160 | 14.5 | 4 | 8110 -56533 |




# Spiral Flute - Machine Taps
## Standard Applications

Series 8120

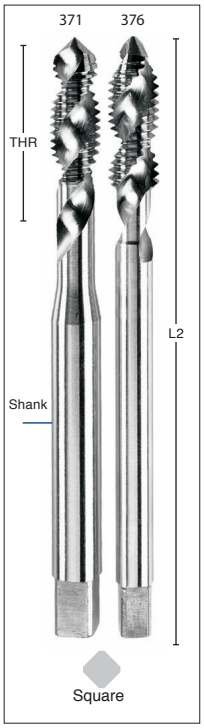



Tol. ISO 2 6H | HSSE (M35) | DIN 371/376 | M

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| Material | N/mm2 | V(m/min) | Coolant |
|---|---|---|---|
| 1.2 | <700 | 15-20 | Emulsion |
| 1.3 | <750 | 12-18 | Emulsion |
| 3.3 | <700 | 10-15 | Emulsion |
| 6.3 | <700 | 15-20 | Emulsion |
| 6.5 | <700 | 10-15 | Emulsion |

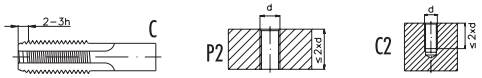
| Tap Dia | Pitch | Shank Dia mm | Thread mm | OAL mm | ⬡ mm | No. Flutes | Part Number |
|---|---|---|---|---|---|---|---|
| | | | | | | | DIN 371 |
| 2 | 0.40 | 2.8 | 5 | 45 | 2.1 | 3 | 8120 -62695 |
| 2.5 | 0.45 | 2.8 | 6 | 45 | 2.1 | 3 | 8120 -62701 |
| 3 | 0.50 | 3.5 | 6 | 56 | 2.7 | 3 | 8120 -62725 |
| 3.5 | 0.60 | 4 | 6 | 56 | 3 | 3 | 8120 -62749 |
| 4 | 0.70 | 4.5 | 7 | 63 | 3.4 | 3 | 8120 -62756 |
| 5 | 0.80 | 6 | 8 | 70 | 4.9 | 3 | 8120 -62763 |
| 6 | 1.00 | 6 | 10 | 80 | 4.9 | 3 | 8120 -62770 |
| 8 | 1.25 | 8 | 13 | 90 | 6.2 | 3 | 8120 -62794 |
| 10 | 1.50 | 10 | 15 | 100 | 8 | 3 | 8120 -62800 |
| | | | | | | | DIN 376 |
| 8 | 1.25 | 6 | 13 | 90 | 4.9 | 3 | 8120 -58858 |
| 10 | 1.50 | 7 | 15 | 100 | 5.5 | 3 | 8120 -58872 |
| 12 | 1.75 | 9 | 18 | 110 | 7 | 3 | 8120- 58896 |
| 14 | 2.00 | 11 | 20 | 110 | 9 | 3 | 8120 -58902 |
| 16 | 2.00 | 12 | 20 | 110 | 9 | 3 | 8120 -58919 |
| 18 | 2.50 | 14 | 25 | 125 | 11 | 4 | 8120 -58926 |
| 20 | 2.50 | 16 | 25 | 140 | 12 | 4 | 8120 -58933 |
| 22 | 2.50 | 18 | 25 | 140 | 14.5 | 4 | 8120 -58940 |
| 24 | 3.00 | 18 | 30 | 160 | 14.5 | 4 | 8120 -58957 |

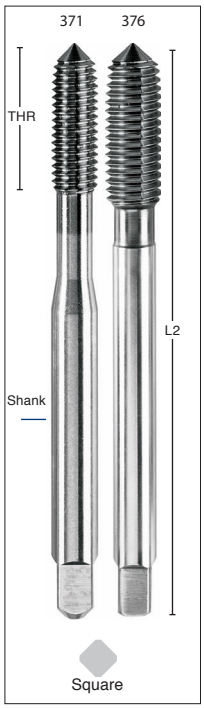


Series 8130

# Fluteless - Machine Taps
## Standard Applications

M | TiCN | DIN 13 | Tol. ISO 2 6HX | HSSE (M35) | DIN 371/376




| Tap Dia | Pitch | Shank Dia mm | Thread mm | OAL mm | ⬡ mm | No. Flutes | Part Number |
|---|---|---|---|---|---|---|---|
| | | | | | | | DIN 371 |
| 3 | 0.50 | 3.5 | 11 | 56 | 2.7 | - | 8130 -63739 |
| 4 | 0.70 | 4.5 | 13 | 63 | 3.4 | - | 8130 -63746 |
| 5 | 0.80 | 6 | 14 | 70 | 4.9 | - | 8130 -63753 |
| 6 | 1.00 | 6 | 16 | 80 | 4.9 | - | 8130 -63760 |
| 8 | 1.25 | 8 | 18 | 90 | 6 | - | 8130 -63784 |
| 10 | 1.50 | 10 | 22 | 100 | 8 | - | 8130 -63791 |
| | | | | | | | DIN 376 |
| 12 | 1.75 | 9 | 27 | 110 | 7 | - | 8130 -60127 |

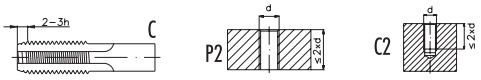
Ti PAGE 280-281

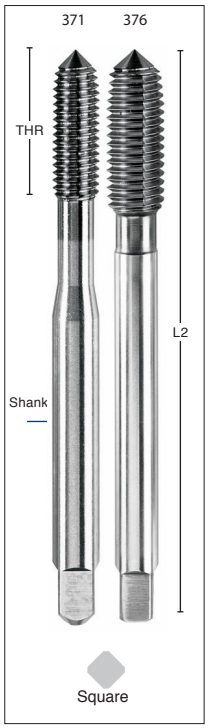
**Forming Taps for materials with Elongation >12%**

Series 8140

# Fluteless - Machine Taps
## Standard Applications

M | TiCN | DIN 13 | Tol. ISO 3 6GX | HSSE (M35) | DIN 371/376



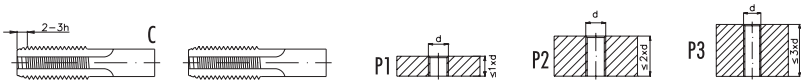

| Tap Dia | Pitch | Shank Dia mm | Thread mm | OAL mm | ⬡ mm | No. Flutes | Part Number |
|---|---|---|---|---|---|---|---|
| | | | | | | | DIN 371 |
| 3 | 0.50 | 3.5 | 11 | 56 | 2.7 | - | 8140 -64781 |
| 4 | 0.70 | 4.5 | 13 | 63 | 3.4 | - | 8140 -64798 |
| 5 | 0.80 | 6 | 14 | 70 | 4.9 | - | 8140 -64804 |
| 6 | 1.00 | 6 | 16 | 80 | 4.9 | - | 8140 -64811 |
| 8 | 1.25 | 8 | 18 | 90 | 6 | - | 8140 -64828 |
| 10 | 1.50 | 10 | 22 | 100 | 8 | - | 8140 -64835 |
| | | | | | | | DIN 376 |
| 12 | 1.75 | 9 | 27 | 110 | 7 | - | 8140 -64767 |

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**Forming Taps for materials with Elongation >12%**

# Spiral Point - Machine Taps
## Standard Applications

Series 8150

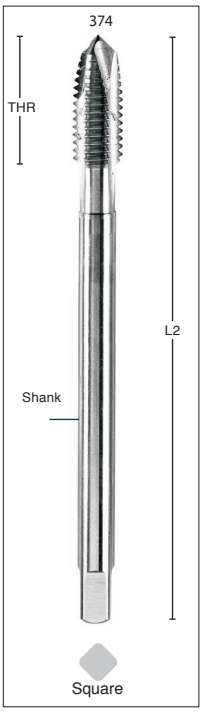



Tol. ISO 2 6H | HSSE (M35) | DIN 374 | MF

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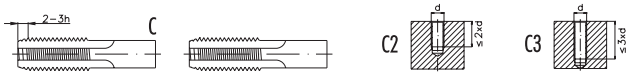
| Material | N/mm2 | V(m/min) | Coolant |
|---|---|---|---|
| 1.2 | <700 | 15-20 | Emulsion |
| 1.3 | <750 | 12-18 | Emulsion |
| 3.3 | <700 | 10-15 | Emulsion |
| 6.3 | <700 | 15-20 | Emulsion |
| 6.5 | <700 | 10-15 | Emulsion |

| Tap Dia | Pitch | Shank Dia mm | Thread mm | OAL mm | ⬡ mm | No. Flutes | Part Number |
|---|---|---|---|---|---|---|---|
| | | | | | | | DIN 374 |
| 8 | 1.00 | 6 | 20 | 90 | 4.9 | 3 | 8150 -56656 |
| 10 | 1.00 | 7 | 20 | 90 | 5.5 | 3 | 8150 -56687 |
| 10 | 1.25 | 7 | 22 | 100 | 5.5 | 3 | 8150 -56694 |
| 12 | 1.00 | 9 | 22 | 100 | 7 | 3 | 8150 -56724 |
| 12 | 1.50 | 9 | 22 | 100 | 7 | 3 | 8150 -56748 |
| 14 | 1.50 | 11 | 22 | 100 | 9 | 3 | 8150 -56809 |
| 16 | 1.50 | 12 | 22 | 100 | 9 | 3 | 8150 -56861 |
| 18 | 1.50 | 14 | 25 | 110 | 11 | 4 | 8150 -56885 |
| 20 | 1.50 | 16 | 25 | 125 | 12 | 4 | 8150 -56915 |
| 22 | 1.50 | 18 | 25 | 125 | 14.5 | 4 | 8150 -56946 |
| 24 | 1.50 | 18 | 28 | 125 | 14.5 | 4 | 8150 -56977 |




# Spiral Flute - Machine Taps
## Standard Applications

Series 8160

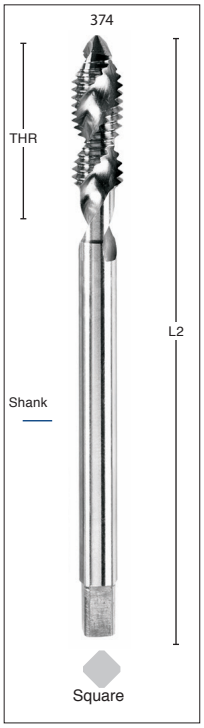



Tol. ISO 2 6H | HSSE (M35) | DIN 374 | MF

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| Material | N/mm2 | V(m/min) | Coolant |
|---|---|---|---|
| 1.2 | <700 | 15-20 | Emulsion |
| 1.3 | <750 | 12-18 | Emulsion |
| 3.3 | <700 | 10-15 | Emulsion |
| 6.3 | <700 | 15-20 | Emulsion |
| 6.5 | <700 | 10-15 | Emulsion |

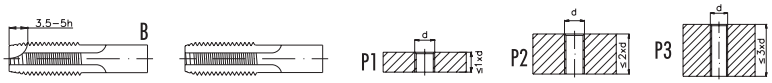
| Tap Dia | Pitch | Shank Dia mm | Thread mm | OAL mm | ⬡ mm | No. Flutes | Part Number |
|---|---|---|---|---|---|---|---|
| | | | | | | | DIN 374 |
| 8 | 1.00 | 6 | 13 | 90 | 4.9 | 3 | 8160 -59008 |
| 10 | 1.00 | 7 | 15 | 90 | 5.5 | 3 | 8160 -59022 |
| 10 | 1.25 | 7 | 18 | 100 | 5.5 | 3 | 8160 -59039 |
| 12 | 1.00 | 9 | 18 | 100 | 7 | 3 | 8160 -59060 |
| 12 | 1.50 | 9 | 18 | 100 | 7 | 3 | 8160 -59084 |
| 14 | 1.50 | 11 | 20 | 100 | 9 | 3 | 8160 -59114 |
| 16 | 1.50 | 12 | 20 | 100 | 9 | 3 | 8160 -59152 |
| 18 | 1.50 | 14 | 22 | 110 | 11 | 4 | 8160 -59169 |
| 20 | 1.50 | 16 | 22 | 125 | 12 | 4 | 8160 -59183 |
| 22 | 1.50 | 18 | 22 | 125 | 14.5 | 4 | 8160 -59190 |
| 24 | 1.50 | 18 | 25 | 125 | 14.5 | 4 | 8160 -59206 |

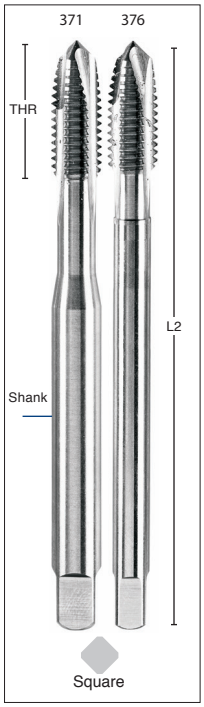


Series 8170

# Spiral Point - Machine Taps
## Standard Applications

UNC | ANSI B1.1 | Tol. 2B | HSSE (M35) | DIN 371/376




| Tap Dia | Pitch | Shank Dia mm | Thread mm | OAL mm | ◆ mm | No. Flutes | Part Number |
|---|---|---|---|---|---|---|---|
| | | | | | | | ~DIN 371 |
| Nº4 | 40 | 3.5 | 11 | 56 | 2.7 | 3 | 8170 -61896 |
| Nº5 | 40 | 3.5 | 11 | 56 | 2.7 | 3 | 8170 -61902 |
| Nº6 | 32 | 4 | 12 | 56 | 3 | 3 | 8170 -61919 |
| Nº8 | 32 | 4.5 | 13 | 63 | 3.4 | 3 | 8170 -61926 |
| Nº10 | 24 | 6 | 14 | 70 | 4.9 | 3 | 8170 -61933 |
| Nº12 | 24 | 6 | 19 | 80 | 4.9 | 3 | 8170 -61940 |
| | | | | | | | ~DIN 376 |
| 1/4" | 20 | 4.5 | 18 | 80 | 3.4 | 3 | 8170 -57271 |
| 5/16" | 18 | 6 | 20 | 90 | 4.9 | 3 | 8170 -57301 |
| 3/8" | 16 | 7 | 22 | 100 | 5.5 | 3 | 8170 -57295 |
| 7/16" | 14 | 8 | 22 | 100 | 6.2 | 3 | 8170 -57325 |
| 1/2" | 13 | 9 | 27 | 110 | 7 | 3 | 8170 -57264 |
| 9/16" | 12 | 11 | 30 | 110 | 9 | 3 | 8170 -57349 |
| 5/8" | 11 | 12 | 30 | 110 | 9 | 3 | 8170 -57318 |
| 3/4" | 10 | 14 | 34 | 125 | 11 | 4 | 8170 -57288 |
| 7/8" | 9 | 18 | 34 | 140 | 14.5 | 4 | 8170 -57332 |
| 1" | 8 | 20 | 38 | 160 | 16 | 4 | 8170 -57356 |

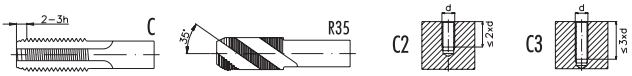
PAGE 280-281

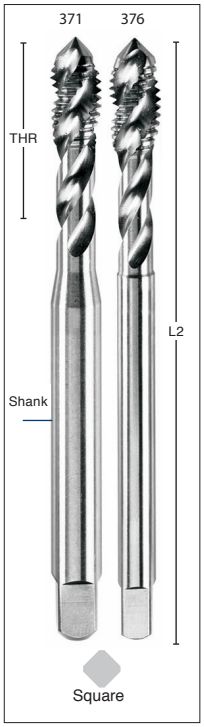
| Material | N/mm2 | V(m/min) | Coolant |
|---|---|---|---|
| 1.2 | <700 | 15-20 | Emulsion |
| 1.3 | <750 | 12-18 | Emulsion |
| 3.3 | <700 | 10-15 | Emulsion |
| 6.3 | <700 | 15-20 | Emulsion |
| 6.5 | <700 | 10-15 | Emulsion |

Series 8180

# Spiral Flute - Machine Taps
## Standard Applications

UNC | ANSI B1.1 | Tol. 2B | HSSE (M35) | DIN 371/376



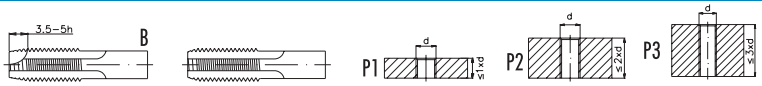

| Tap Dia | Pitch | Shank Dia mm | Thread mm | OAL mm | ◆ mm | No. Flutes | Part Number |
|---|---|---|---|---|---|---|---|
| | | | | | | | ~DIN 371 |
| Nº4 | 40 | 3.5 | 5 | 56 | 2.7 | 3 | 8180 -62848 |
| Nº5 | 40 | 3.5 | 5 | 56 | 2.7 | 3 | 8180 -62855 |
| Nº6 | 32 | 4 | 5 | 56 | 3 | 3 | 8180 -62862 |
| Nº8 | 32 | 4.5 | 7 | 63 | 3.4 | 3 | 8180 -62879 |
| Nº10 | 24 | 6 | 11 | 70 | 4.9 | 3 | 8180 -62886 |
| Nº12 | 24 | 6 | 11 | 80 | 4.9 | 3 | 8180 -62893 |
| | | | | | | | ~DIN 376 |
| 1/4" | 20 | 4.5 | 13 | 80 | 3.4 | 3 | 8180 -59275 |
| 5/16" | 18 | 6 | 13 | 90 | 4.9 | 3 | 8180 -59305 |
| 3/8" | 16 | 7 | 16 | 100 | 5.5 | 3 | 8180 -59299 |
| 7/16" | 14 | 8 | 16 | 100 | 6.2 | 3 | 8180 -59329 |
| 1/2" | 13 | 9 | 22 | 110 | 7 | 3 | 8180 -59268 |
| 9/16" | 12 | 11 | 22 | 110 | 9 | 3 | 8180 -59343 |
| 5/8" | 11 | 12 | 22 | 110 | 9 | 4 | 8180 -59312 |
| 3/4" | 10 | 14 | 25 | 125 | 11 | 4 | 8180 -59282 |
| 7/8" | 9 | 18 | 28 | 140 | 14.5 | 4 | 8180 -59336 |
| 1" | 8 | 20 | 32 | 160 | 16 | 4 | 8180 -59350 |

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| Material | N/mm2 | V(m/min) | Coolant |
|---|---|---|---|
| 1.2 | <700 | 15-20 | Emulsion |
| 1.3 | <750 | 12-18 | Emulsion |
| 3.3 | <700 | 10-15 | Emulsion |
| 6.3 | <700 | 15-20 | Emulsion |
| 6.5 | <700 | 10-15 | Emulsion |

# Spiral Point - Machine Taps
## Standard Applications

Series 8190

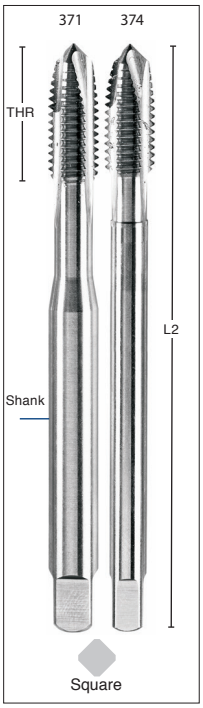



ANSI B1.1 | Tol. 2B | HSSE (M35) | DIN 371/374 | UNF

TiN PAGE 280-281

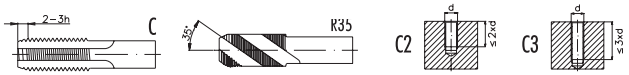
| Material | N/mm2 | V(m/min) | Coolant |
|---|---|---|---|
| 1.2 | <700 | 15-20 | Emulsion |
| 1.3 | <750 | 12-18 | Emulsion |
| 3.3 | <700 | 10-15 | Emulsion |
| 6.3 | <700 | 15-20 | Emulsion |
| 6.5 | <700 | 10-15 | Emulsion |

| Tap Dia | Pitch | Shank Dia mm | Thread mm | OAL mm | ◇ mm | No. Flutes | Part Number |
|---|---|---|---|---|---|---|---|
| | | | | | | | ~DIN 371 |
| N°10 | 32 | 6 | 14 | 70 | 4.9 | 3 | 8190 -61995 |
| N°12 | 28 | 6 | 14 | 80 | 4.9 | 3 | 8190 -62008 |
| | | | | | | | ~DIN 374 |
| 1/4" | 28 | 4.5 | 14 | 80 | 3.4 | 3 | 8190 -57370 |
| 5/16" | 24 | 6 | 20 | 90 | 4.9 | 3 | 8190 -57400 |
| 3/8" | 24 | 7 | 20 | 100 | 5.5 | 3 | 8190 -57394 |
| 7/16" | 20 | 8 | 20 | 100 | 6.2 | 3 | 8190 -57424 |
| 1/2" | 20 | 9 | 22 | 100 | 7 | 3 | 8190 -57363 |
| 9/16" | 18 | 11 | 22 | 100 | 9 | 3 | 8190 -57448 |
| 5/8" | 18 | 12 | 22 | 100 | 9 | 3 | 8190 -57417 |
| 3/4" | 16 | 14 | 25 | 110 | 11 | 4 | 8190 -57387 |
| 7/8" | 14 | 18 | 25 | 125 | 14.5 | 4 | 8190 -57431 |
| 1" | 12 | 18 | 28 | 140 | 14.5 | 4 | 8190 -57455 |




# Spiral Flute - Machine Taps
## Standard Applications

Series 8200

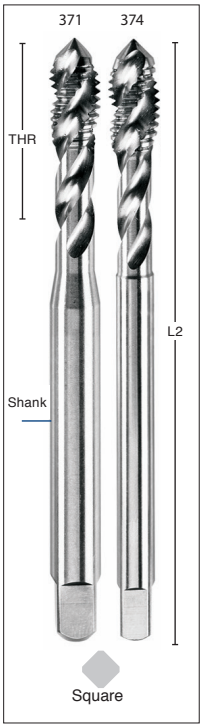



ANSI B1.1 | Tol. 2B | HSSE (M35) | DIN 371/374 | UNF

TiN PAGE 280-281

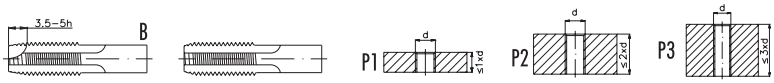
| Material | N/mm2 | V(m/min) | Coolant |
|---|---|---|---|
| 1.2 | <700 | 15-20 | Emulsion |
| 1.3 | <750 | 12-18 | Emulsion |
| 3.3 | <700 | 10-15 | Emulsion |
| 6.3 | <700 | 15-20 | Emulsion |
| 6.5 | <700 | 10-15 | Emulsion |

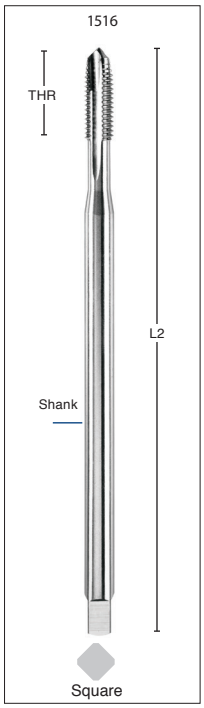
| Tap Dia | Pitch | Shank Dia mm | Thread mm | OAL mm | ◇ mm | No. Flutes | Part Number |
|---|---|---|---|---|---|---|---|
| | | | | | | | ~DIN 371 |
| N°10 | 32 | 6 | 11 | 70 | 4.9 | 3 | 8200 -62961 |
| N°12 | 28 | 6 | 11 | 80 | 4.9 | 3 | 8200 -62978 |
| | | | | | | | ~DIN 374 |
| 1/4" | 28 | 4.5 | 13 | 80 | 3.4 | 3 | 8200 -62909 |
| 5/16" | 24 | 6 | 13 | 90 | 4.9 | 3 | 8200 -59411 |
| 3/8" | 24 | 7 | 16 | 90 | 5.5 | 3 | 8200 -59404 |
| 7/16" | 20 | 8 | 16 | 90 | 6.2 | 3 | 8200 -59435 |
| 1/2" | 20 | 9 | 22 | 100 | 7 | 3 | 8200 -59381 |
| 9/16" | 18 | 11 | 22 | 100 | 9 | 3 | 8200 -59459 |
| 5/8" | 18 | 12 | 22 | 100 | 9 | 4 | 8200 -59428 |
| 3/4" | 16 | 14 | 25 | 110 | 11 | 4 | 8200 -59398 |
| 7/8" | 14 | 18 | 25 | 125 | 14.5 | 4 | 8200 -59442 |
| 1" | 12 | 18 | 28 | 140 | 14.5 | 4 | 8200 -59466 |



# Spiral Point - Machine Taps
## Standard Applications

G | ISO 228 | Class A | HSSE (M35) | DIN 5156




| Tap Dia | Pitch | Shank Dia mm | Thread mm | OAL mm | ◆ mm | No. Flutes | Part Number |
|---|---|---|---|---|---|---|---|
| 1/8" | 28 | 7 | 20 | 90 | 5.5 | 3 | 8210 -56250 |
| 1/4" | 19 | 11 | 22 | 100 | 9 | 3 | 8210 -56243 |
| 3/8" | 19 | 12 | 22 | 100 | 9 | 3 | 8210 -56274 |
| 1/2" | 14 | 16 | 25 | 125 | 12 | 4 | 8210 -56236 |
| 5/8" | 14 | 18 | 25 | 125 | 14.5 | 4 | 8210 -56281 |
| 3/4" | 14 | 20 | 28 | 140 | 16 | 4 | 8210 -56267 |
| 7/8" | 14 | 22 | 28 | 150 | 18 | 5 | 8210 -56298 |
| 1" | 11 | 25 | 30 | 160 | 20 | 5 | 8210 -56304 |

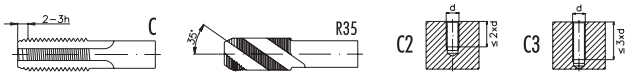
PAGE 280-281

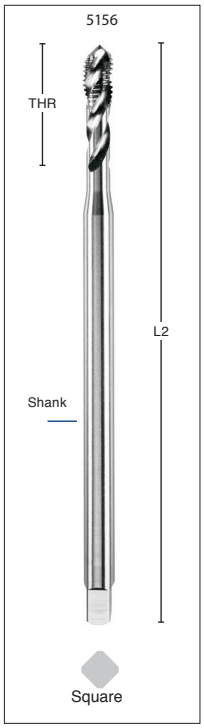
| Material | N/mm2 | V(m/min) | Coolant |
|---|---|---|---|
| 1.2 | <700 | 15-20 | Emulsion |
| 1.3 | <750 | 12-18 | Emulsion |
| 3.3 | <700 | 10-15 | Emulsion |
| 6.3 | <700 | 15-20 | Emulsion |
| 6.5 | <700 | 10-15 | Emulsion |



# Spiral Flute - Machine Taps
## Standard Applications

G | ISO 228 | Class A | HSSE (M35) | DIN 5156



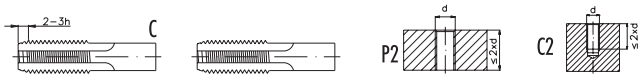

| Tap Dia | Pitch | Shank Dia mm | Thread mm | OAL mm | ◆ mm | No. Flutes | Part Number |
|---|---|---|---|---|---|---|---|
| 1/8" | 28 | 7 | 15 | 90 | 5.5 | 3 | 8220 -58728 |
| 1/4" | 19 | 11 | 18 | 100 | 9 | 3 | 8220 -58711 |
| 3/8" | 19 | 12 | 20 | 100 | 9 | 3 | 8220 -58742 |
| 1/2" | 14 | 16 | 25 | 125 | 12 | 4 | 8220 -58704 |
| 5/8" | 14 | 18 | 25 | 125 | 14.5 | 4 | 8220 -58759 |
| 3/4" | 14 | 20 | 28 | 140 | 16 | 4 | 8220 -58735 |
| 7/8" | 14 | 22 | 28 | 150 | 18 | 5 | 8220 -58766 |
| 1" | 11 | 25 | 30 | 160 | 20 | 5 | 8220 -58773 |

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| Material | N/mm2 | V(m/min) | Coolant |
|---|---|---|---|
| 1.2 | <700 | 15-20 | Emulsion |
| 1.3 | <750 | 12-18 | Emulsion |
| 3.3 | <700 | 10-15 | Emulsion |
| 6.3 | <700 | 15-20 | Emulsion |
| 6.5 | <700 | 10-15 | Emulsion |

# Straight Flute - Machine Taps
# Standard Applications

Series 8230

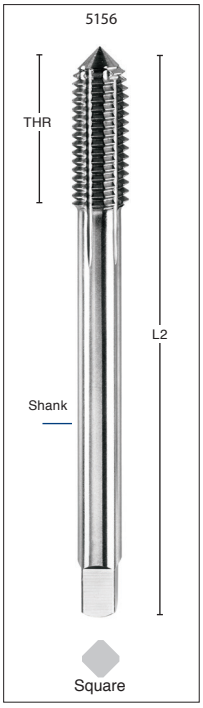



ISO 2999 | HSSE (M35) | DIN 5156 | Rc (BSPT)

TiN PAGE 280-281

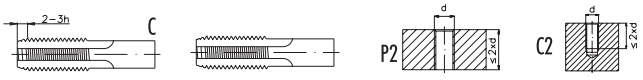
| Material | N/mm2 | V(m/min) | Coolant |
|---|---|---|---|
| 1.2 | <700 | 15-20 | Emulsion |
| 1.3 | <750 | 12-18 | Emulsion |
| 3.3 | <700 | 10-15 | Emulsion |
| 6.3 | <700 | 15-20 | Emulsion |
| 6.5 | <700 | 10-15 | Emulsion |

| Tap Dia | Pitch | Shank Dia mm | Thread mm | OAL mm | ⬡ mm | No. Flutes | Part Number |
|---|---|---|---|---|---|---|---|
| 1/8" | 28 | 7 | 28 | 90 | 5.5 | 3 | 8230 -52078 |
| 1/4" | 19 | 11 | 28 | 100 | 9 | 4 | 8230 -52061 |
| 3/8" | 19 | 12 | 28 | 100 | 9 | 5 | 8230 -52092 |
| 1/2" | 14 | 16 | 36 | 140 | 12 | 5 | 8230 -52054 |
| 3/4" | 14 | 20 | 36 | 140 | 16 | 5 | 8230 -52085 |
| 1" | 11 | 25 | 40 | 160 | 20 | 6 | 8230 -52122 |




# Straight Flute - Machine Taps
# Standard Applications

Series 8240

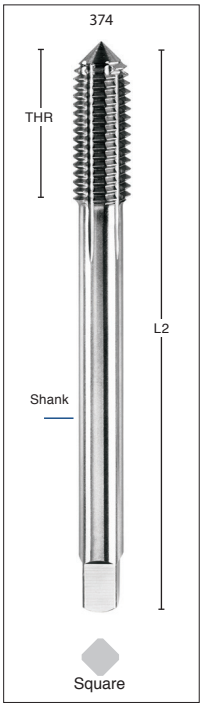



ISO 2999 | HSSE (M35) | DIN 5156 | NPT

TiN PAGE 280-281

| Material | N/mm2 | V(m/min) | Coolant |
|---|---|---|---|
| 1.2 | <700 | 15-20 | Emulsion |
| 1.3 | <750 | 12-18 | Emulsion |
| 3.3 | <700 | 10-15 | Emulsion |
| 6.3 | <700 | 15-20 | Emulsion |
| 6.5 | <700 | 10-15 | Emulsion |

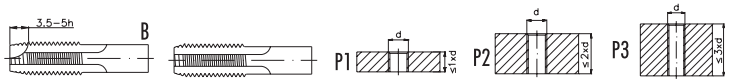
| Tap Dia | Pitch | Shank Dia mm | Thread mm | OAL mm | ⬡ mm | No. Flutes | Part Number |
|---|---|---|---|---|---|---|---|
| 1/8" | 27 | 8 | 18 | 90 | 6.2 | 4 | 8240 -51880 |
| 1/4" | 18 | 11 | 27 | 100 | 9 | 4 | 8240 -51873 |
| 3/8" | 18 | 14 | 27 | 110 | 11 | 5 | 8240 -51903 |
| 1/2" | 14 | 18 | 35 | 140 | 14.5 | 5 | 8240 -51866 |
| 3/4" | 14 | 20 | 35 | 140 | 18 | 5 | 8240 -51897 |
| 1" | 11.5 | 25 | 44.5 | 160 | 22 | 6 | 8240 -51910 |

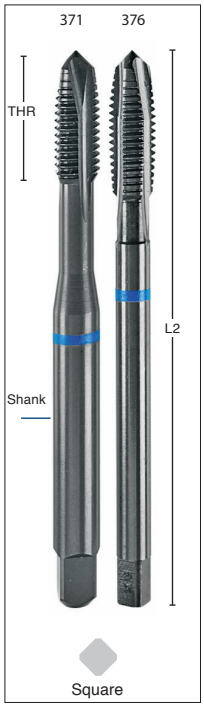


Series 9110

# Spiral Point - Machine Taps
# High Performance Special Applications

M | VAP | DIN 13 | Tol. ISO 2 6H | HSSEX (ASP2023) | DIN 371/376




| Tap Dia | Pitch | Shank Dia mm | Thread mm | OAL mm | ◆ mm | No. Flutes | Part Number |
|---|---|---|---|---|---|---|---|
| | | | | | | | DIN 371 |
| 3 | 0.50 | 3.5 | 11 | 56 | 2.7 | 3 | 9110 -62145 |
| 4 | 0.70 | 4.5 | 13 | 63 | 3.4 | 3 | 9110 -62152 |
| 5 | 0.80 | 6 | 14 | 70 | 4.9 | 3 | 9110 -62169 |
| 6 | 1.00 | 6 | 16 | 80 | 4.9 | 3 | 9110 -62176 |
| 8 | 1.25 | 8 | 18 | 90 | 6.2 | 3 | 9110 -62183 |
| 10 | 1.50 | 10 | 22 | 100 | 8 | 3 | 9110 -62190 |
| | | | | | | | DIN 376 |
| 8 | 1.25 | 6 | 20 | 90 | 4.9 | 3 | 9110 -57677 |
| 10 | 1.50 | 7 | 22 | 100 | 5.5 | 3 | 9110 -57684 |
| 12 | 1.75 | 9 | 27 | 110 | 7 | 3 | 9110 -57691 |
| 14 | 2.00 | 11 | 30 | 110 | 9 | 3 | 9110 -57707 |
| 16 | 2.00 | 12 | 30 | 110 | 9 | 3 | 9110 -57714 |
| 18 | 2.50 | 14 | 34 | 125 | 11 | 4 | 9110 -57721 |
| 20 | 2.50 | 16 | 34 | 140 | 12 | 4 | 9110 -57738 |

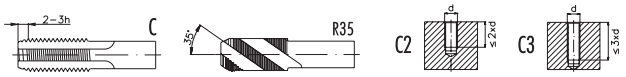
Ti PAGE 280-281

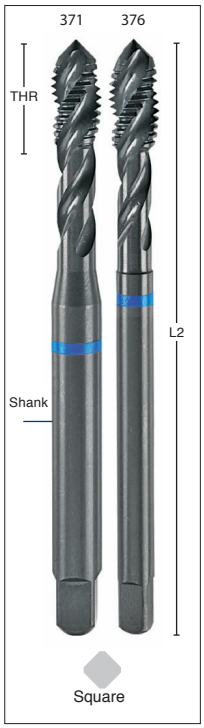
| Material | N/mm2 | V(m/min) | Coolant |
|---|---|---|---|
| 1.1 | <400 | 20-25 | Emulsion |
| 2.1 | <850 | 7-10 | Cutting Oil |
| 2.2 | <850 | 5-8 | Cutting Oil |
| 2.3 | <850 | 5-8 | Cutting Oil |
| 4.1 | <700 | 10-15 | Emulsion |
| 5.1 | <500 | 8-12 | Cutting Oil |

Series 9120

# Spiral Flute - Machine Taps
# High Performance Special Applications

M | VAP | DIN 13 | Tol. ISO 2 6H | HSSEX (ASP2023) | DIN 371/376




| Tap Dia | Pitch | Shank Dia mm | Thread mm | OAL mm | ◆ mm | No. Flutes | Part Number |
|---|---|---|---|---|---|---|---|
| | | | | | | | DIN 371 |
| 3 | 0.50 | 3.5 | 6 | 56 | 2.7 | 3 | 9120 -63098 |
| 4 | 0.70 | 4.5 | 7 | 63 | 3.4 | 3 | 9120 -63104 |
| 5 | 0.80 | 6 | 8 | 70 | 4.9 | 3 | 9120 -63111 |
| 6 | 1.00 | 6 | 10 | 80 | 4.9 | 3 | 9120 -63128 |
| 8 | 1.25 | 8 | 13 | 90 | 6.2 | 3 | 9120 -63135 |
| 10 | 1.50 | 10 | 15 | 100 | 8 | 3 | 9120 -63142 |
| | | | | | | | DIN 376 |
| 8 | 1.25 | 6 | 13 | 90 | 4.9 | 3 | 9120 -59633 |
| 10 | 1.50 | 7 | 15 | 100 | 5.5 | 3 | 9120 -59640 |
| 12 | 1.75 | 9 | 18 | 110 | 7 | 3 | 9120 -59657 |
| 14 | 2.00 | 11 | 20 | 110 | 9 | 3 | 9120 -59664 |
| 16 | 2.00 | 12 | 20 | 110 | 9 | 3 | 9120 -59671 |
| 18 | 2.50 | 14 | 25 | 125 | 11 | 4 | 9120 -59688 |
| 20 | 2.50 | 16 | 25 | 140 | 12 | 4 | 9120 -59695 |

Ti PAGE 280-281

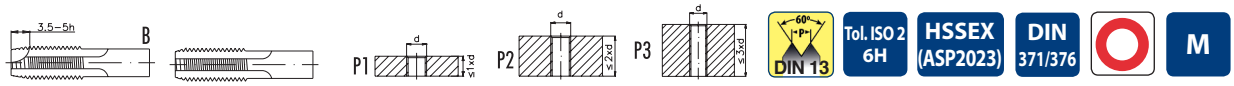
| Material | N/mm2 | V(m/min) | Coolant |
|---|---|---|---|
| 1.1 | <400 | 20-25 | Emulsion |
| 2.1 | <850 | 7-10 | Cutting Oil |
| 2.2 | <850 | 5-8 | Cutting Oil |
| 2.3 | <850 | 5-8 | Cutting Oil |
| 4.1 | <700 | 10-15 | Emulsion |
| 5.1 | <500 | 8-12 | Cutting Oil |

**Modifications**
**Regrinds, Re coat**
**Specials**

Merlin Tools Ltd manufactured

# Spiral Point - Machine Taps
# High Performance Special Applications

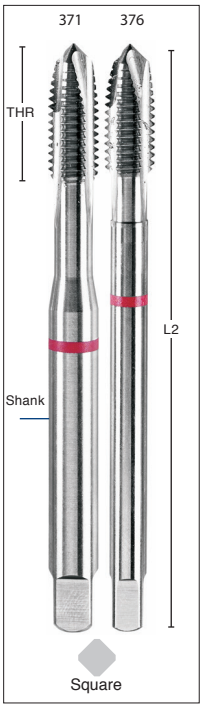
Series 9130




PAGE 280-281

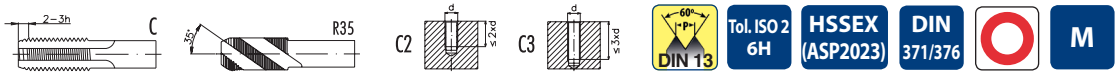
| Material | N/mm2 | V(m/min) | Coolant |
|---|---|---|---|
| 1.4 | <850 | 10-15 | Cutting Oil Emulsion |
| 1.5 | >850 <1200 | 6-10 | Cutting Oil Emulsion |
| 3.4 | >700 <1000 | 5-8 | Emulsion |

| Tap Dia | Pitch | Shank Dia mm | Thread mm | OAL mm | mm | No. Flutes | Part Number |
|---|---|---|---|---|---|---|---|
| | | | | | | | DIN 371 |
| 3 | 0.50 | 3.5 | 11 | 56 | 2.7 | 3 | 9130 -62077 |
| 4 | 0.70 | 4.5 | 13 | 63 | 3.4 | 3 | 9130 -62091 |
| 5 | 0.80 | 6 | 14 | 70 | 4.9 | 3 | 9130 -62107 |
| 6 | 1.00 | 6 | 16 | 80 | 4.9 | 3 | 9130 -62114 |
| 8 | 1.25 | 8 | 18 | 90 | 6.2 | 3 | 9130 -62121 |
| 10 | 1.50 | 10 | 22 | 100 | 8 | 3 | 9130 -62138 |
| | | | | | | | DIN 376 |
| 8 | 1.25 | 6 | 20 | 90 | 4.9 | 3 | 9130 -57592 |
| 10 | 1.50 | 7 | 22 | 100 | 5.5 | 3 | 9130 -57608 |
| 12 | 1.75 | 9 | 27 | 110 | 7 | 3 | 9130 -57615 |
| 14 | 2.00 | 11 | 30 | 110 | 9 | 3 | 9130 -57622 |
| 16 | 2.00 | 12 | 30 | 110 | 9 | 3 | 9130 -57639 |




# Spiral Flute - Machine Taps
# High Performance Special Applications

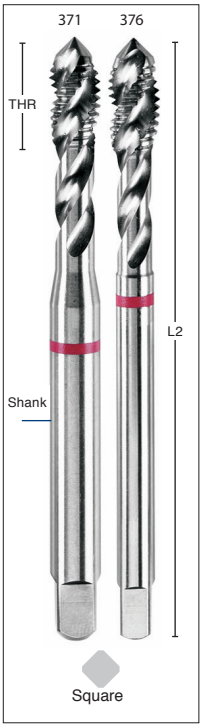
Series 9140




PAGE 280-281

| Material | N/mm2 | V(m/min) | Coolant |
|---|---|---|---|
| 1.4 | <850 | 10-15 | Cutting Oil Emulsion |
| 1.5 | >850 <1200 | 6-10 | Cutting Oil Emulsion |
| 3.4 | >700 <1000 | 5-8 | Emulsion |

| Tap Dia | Pitch | Shank Dia mm | Thread mm | OAL mm | mm | No. Flutes | Part Number |
|---|---|---|---|---|---|---|---|
| | | | | | | | DIN 371 |
| 3 | 0.50 | 3.5 | 6 | 56 | 2.7 | 3 | 9140 -63036 |
| 4 | 0.70 | 4.5 | 7 | 63 | 3.4 | 3 | 9140 -63043 |
| 5 | 0.80 | 6 | 8 | 70 | 4.9 | 3 | 9140 -63050 |
| 6 | 1.00 | 6 | 10 | 80 | 4.9 | 3 | 9140 -63067 |
| 8 | 1.25 | 8 | 13 | 90 | 6.2 | 3 | 9140 -63074 |
| 10 | 1.50 | 10 | 15 | 100 | 8 | 3 | 9140 -63081 |
| | | | | | | | DIN 376 |
| 8 | 1.25 | 6 | 13 | 90 | 4.9 | 3 | 9140 -59589 |
| 10 | 1.50 | 7 | 15 | 100 | 5.5 | 3 | 9140 -59596 |
| 12 | 1.75 | 9 | 18 | 110 | 7 | 3 | 9140 -59602 |
| 14 | 2.00 | 11 | 20 | 110 | 9 | 3 | 9140 -59619 |
| 16 | 2.00 | 12 | 20 | 110 | 9 | 3 | 9140 -59626 |

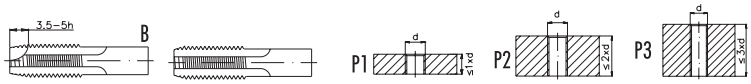


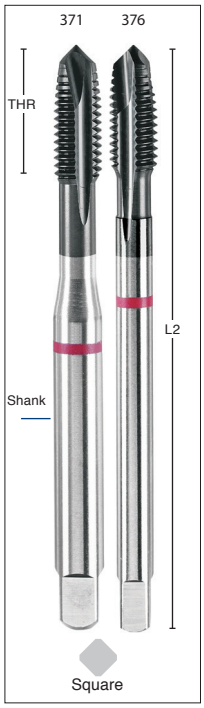

**Modifications**
**Regrinds, Re coat**
**Specials**

Series 9150

# Spiral Point - Machine Taps
# High Performance Special Applications

M | TiALN | DIN 13 | Tol. ISO 2 6H | HSSEX (ASP2023) | DIN 371/376




| Tap Dia | Pitch | Shank Dia mm | Thread mm | OAL mm | mm | No. Flutes | Part Number |
|---|---|---|---|---|---|---|---|
| | | | | | | | DIN 371 |
| 3 | 0.50 | 3.5 | 11 | 56 | 2.7 | 3 | 9150 -66501 |
| 4 | 0.70 | 4.5 | 13 | 63 | 3.4 | 3 | 9150 -66518 |
| 5 | 0.80 | 6 | 14 | 70 | 4.9 | 3 | 9150 -66525 |
| 6 | 1.00 | 6 | 16 | 80 | 4.9 | 3 | 9150 -66532 |
| 8 | 1.25 | 8 | 18 | 90 | 6.2 | 3 | 9150 -66549 |
| 10 | 1.50 | 10 | 22 | 100 | 8 | 3 | 9150 -66556 |
| | | | | | | | DIN 376 |
| 8 | 1.25 | 6 | 20 | 90 | 4.9 | 3 | 9150 -66211 |
| 10 | 1.50 | 7 | 22 | 100 | 5.5 | 3 | 9150 -66228 |
| 12 | 1.75 | 9 | 27 | 110 | 7 | 3 | 9150 -66235 |
| 14 | 2.00 | 11 | 30 | 110 | 9 | 3 | 9150 -66242 |
| 16 | 2.00 | 12 | 30 | 110 | 9 | 3 | 9150 -66259 |

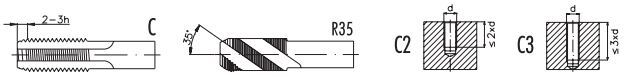
Ti PAGE 280-281

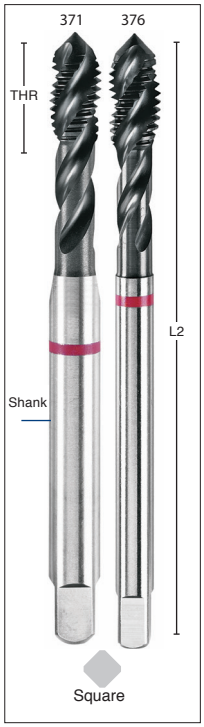
| Material | N/mm2 | V(m/min) | Coolant |
|---|---|---|---|
| 1.4 | >850 <1200 | 12-20 | Cutting Oil Emulsion |
| 1.6 | >850 <1400 | 8-12 | Cutting Oil Emulsion |
| 2.4 | >850 <1200 | 8-12 | Cutting Oil |
| 3.4 | >700 <1000 | 10-16 | Emulsion |

Series 9160

# Spiral Flute - Machine Taps
# High Performance Special Applications

M | TiALN | DIN 13 | Tol. ISO 2 6H | HSSEX (ASP2023) | DIN 371/376




| Tap Dia | Pitch | Shank Dia mm | Thread mm | OAL mm | mm | No. Flutes | Part Number |
|---|---|---|---|---|---|---|---|
| | | | | | | | DIN 371 |
| 3 | 0.50 | 3.5 | 6 | 56 | 2.7 | 3 | 9160 -66624 |
| 4 | 0.70 | 4.5 | 7 | 63 | 3.4 | 3 | 9160 -66631 |
| 5 | 0.80 | 6 | 8 | 70 | 4.9 | 3 | 9160 -66648 |
| 6 | 1.00 | 6 | 10 | 80 | 4.9 | 3 | 9160 -66655 |
| 8 | 1.25 | 8 | 13 | 90 | 6.2 | 3 | 9160 -66662 |
| 10 | 1.50 | 10 | 15 | 100 | 8 | 3 | 9160 -66679 |
| | | | | | | | DIN 376 |
| 8 | 1.25 | 6 | 13 | 90 | 4.9 | 3 | 9160 -66310 |
| 10 | 1.50 | 7 | 15 | 100 | 5.5 | 3 | 9160 -66327 |
| 12 | 1.75 | 9 | 18 | 110 | 7 | 3 | 9160 -66334 |
| 14 | 2.00 | 11 | 20 | 110 | 9 | 3 | 9160 -66341 |
| 16 | 2.00 | 12 | 20 | 110 | 9 | 3 | 9160 -66358 |

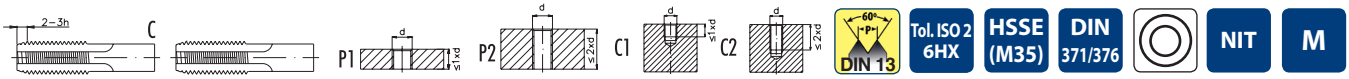
Ti PAGE 280-281

| Material | N/mm2 | V(m/min) | Coolant |
|---|---|---|---|
| 1.4 | >850 <1200 | 12-20 | Cutting Oil Emulsion |
| 1.6 | >850 <1400 | 8-12 | Cutting Oil Emulsion |
| 2.4 | >850 <1200 | 8-12 | Cutting Oil |
| 3.4 | >700 <1000 | 10-16 | Emulsion |

**Modifications**
**Regrinds, Re coat**
**Specials**

# Straight Flute - Machine Taps
# High Performance Special Applications

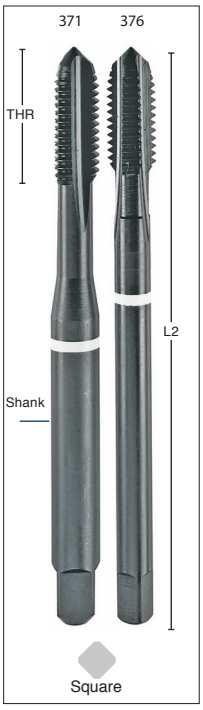
Series 9170




PAGE 280-281

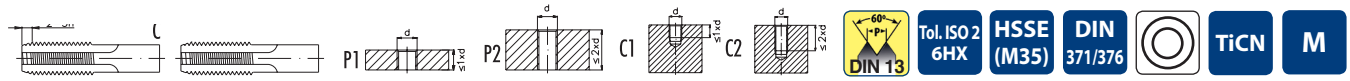
| Material | N/mm2 | V(m/min) | Coolant |
|---|---|---|---|
| 3.1 | <500 | 10-15 | Emulsion |

| Tap Dia | Pitch | Shank Dia mm | Thread mm | OAL mm | mm | No. Flutes | Part Number |
|---|---|---|---|---|---|---|---|
| | | | | | | | DIN 371 |
| 3 | 0.50 | 3.5 | 11 | 56 | 2.7 | 3 | 9170 -60936 |
| 4 | 0.70 | 4.5 | 13 | 63 | 3.4 | 3 | 9170 -60943 |
| 5 | 0.80 | 6 | 14 | 70 | 4.9 | 3 | 9170 -60950 |
| 6 | 1.00 | 6 | 16 | 80 | 4.9 | 4 | 9170 -60967 |
| 8 | 1.25 | 8 | 18 | 90 | 6.2 | 4 | 9170 -60974 |
| 10 | 1.50 | 10 | 22 | 100 | 8 | 4 | 9170 -60981 |
| | | | | | | | DIN 376 |
| 8 | 1.25 | 6 | 20 | 90 | 4.9 | 4 | 9170 -53259 |
| 10 | 1.50 | 7 | 22 | 100 | 5.5 | 4 | 9170 -53273 |
| 12 | 1.75 | 9 | 27 | 110 | 7 | 4 | 9170 -53280 |
| 14 | 2.00 | 11 | 30 | 110 | 9 | 5 | 9170 -53297 |
| 16 | 2.00 | 12 | 30 | 110 | 9 | 5 | 9170 -53303 |
| 18 | 2.50 | 14 | 34 | 125 | 11 | 5 | 9170 -64736 |
| 20 | 2.50 | 16 | 34 | 140 | 12 | 5 | 9170 -53310 |




# Straight Flute - Machine Taps
# High Performance Special Applications

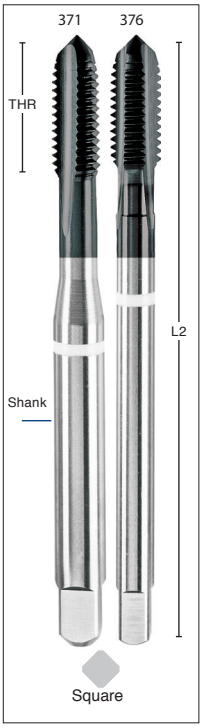
Series 9180




PAGE 280-281

| Material | N/mm2 | V(m/min) | Coolant |
|---|---|---|---|
| 3.1 | <500 | 10-15 | Emulsion |
| 3.2 | >500 <1000 | 10-16 | Emulsion |

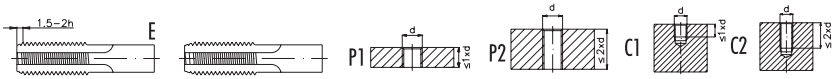
| Tap Dia | Pitch | Shank Dia mm | Thread mm | OAL mm | mm | No. Flutes | Part Number |
|---|---|---|---|---|---|---|---|
| | | | | | | | DIN 371 |
| 3 | 0.50 | 3.5 | 11 | 56 | 2.7 | 3 | 9180 -64903 |
| 4 | 0.70 | 4.5 | 13 | 63 | 3.4 | 3 | 9180 -64910 |
| 5 | 0.80 | 6 | 14 | 70 | 4.9 | 3 | 9180 -64927 |
| 6 | 1.00 | 6 | 16 | 80 | 4.9 | 4 | 9180 -64934 |
| 8 | 1.25 | 8 | 18 | 90 | 6.2 | 4 | 9180 -64941 |
| 10 | 1.50 | 10 | 22 | 100 | 8 | 4 | 9180 -64958 |
| | | | | | | | DIN 376 |
| 8 | 1.25 | 6 | 20 | 90 | 4.9 | 4 | 9180 -64965 |
| 10 | 1.50 | 7 | 22 | 100 | 5.5 | 4 | 9180 -64972 |
| 12 | 1.75 | 9 | 27 | 110 | 7 | 4 | 9180 -64989 |
| 14 | 2.00 | 11 | 30 | 110 | 9 | 5 | 9180 -64996 |
| 16 | 2.00 | 12 | 30 | 110 | 9 | 5 | 9180 -65009 |
| 18 | 2.50 | 14 | 34 | 125 | 11 | 5 | 9180 -65016 |
| 20 | 2.50 | 16 | 34 | 140 | 12 | 5 | 9180 -65023 |

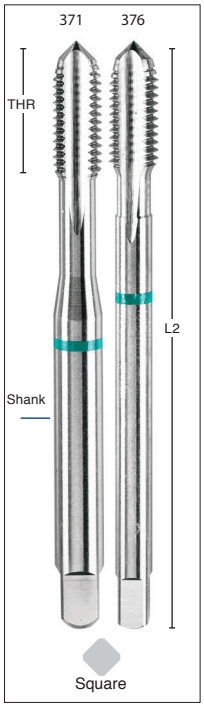



**Modifications**
**Regrinds, Re coat**
**Specials**

# Straight Flute - Machine Taps
# High Performance Special Applications

M | DIN 13 | Tol. ISO 2 6H | HSSE (M35) | DIN 371/376




| Tap Dia | Pitch | Shank Dia mm | Thread mm | OAL mm | ⬡ mm | No. Flutes | Part Number |
|---|---|---|---|---|---|---|---|
| | | | | | | | **DIN 371** |
| 3 | 0.50 | 3.5 | 11 | 56 | 2.7 | 3 | 9190 -66433 |
| 4 | 0.70 | 4.5 | 13 | 63 | 3.4 | 3 | 9190 -66440 |
| 5 | 0.80 | 6 | 14 | 70 | 4.9 | 3 | 9190 -66457 |
| 6 | 1.00 | 6 | 16 | 80 | 4.9 | 3 | 9190 -66464 |
| 8 | 1.25 | 8 | 18 | 90 | 6.2 | 3 | 9190 -66471 |
| 10 | 1.50 | 10 | 22 | 100 | 8 | 3 | 9190 -66488 |
| | | | | | | | **DIN 376** |
| 8 | 1.25 | 6 | 20 | 90 | 4.9 | 3 | 9190 -66082 |
| 10 | 1.50 | 7 | 22 | 100 | 5.5 | 3 | 9190 -66099 |
| 12 | 1.75 | 9 | 27 | 110 | 7 | 3 | 9190 -66105 |
| 14 | 2.00 | 11 | 30 | 110 | 9 | 3 | 9190 -66112 |
| 16 | 2.00 | 12 | 30 | 110 | 9 | 3 | 9190 -66129 |

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| Material | N/mm2 | V(m/min) | Coolant |
|---|---|---|---|
| 6.2 | <700 | 25-35 | Cutting Oil |
| 6.4 | <700 | 4-6 | Cutting Oil |

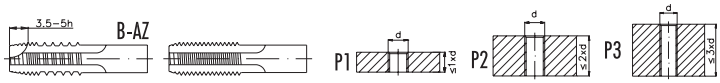
**Modifications**
**Regrinds, Re coat**
**Specials**




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# Spiral Point - Machine Taps
# High Performance Special Applications

Series 9200

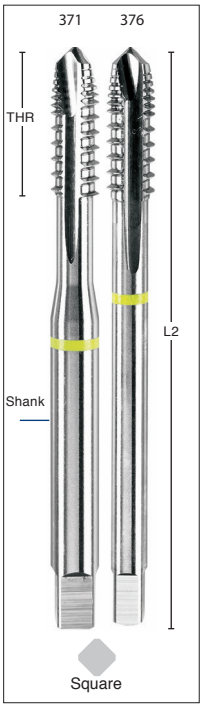



DIN 13 | Tol. ISO 2 6H | HSSE (M35) | DIN 371/376 | M

PAGE 280-281

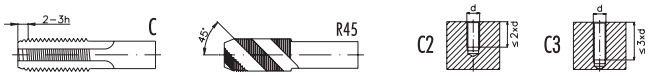
| Material | N/mm2 | V(m/min) | Coolant |
|---|---|---|---|
| 7.1 | <350 | 10-15 | Emulsion |
| 7.5 | <450 | 10-15 | Emulsion |

| Tap Dia | Pitch | Shank Dia mm | Thread mm | OAL mm | mm | No. Flutes | Part Number |
|---|---|---|---|---|---|---|---|
| | | | | | | | DIN 371 |
| 3 | 0.50 | 3.5 | 11 | 56 | 2.7 | 3 | 9200 -62442 |
| 4 | 0.70 | 4.5 | 13 | 63 | 3.4 | 3 | 9200 -62466 |
| 5 | 0.80 | 6 | 14 | 70 | 4.9 | 3 | 9200 -62473 |
| 6 | 1.00 | 6 | 16 | 80 | 4.9 | 3 | 9200 -62480 |
| 8 | 1.25 | 8 | 18 | 90 | 6.2 | 3 | 9200 -62497 |
| 10 | 1.50 | 10 | 22 | 100 | 8 | 3 | 9200 -62503 |
| | | | | | | | DIN 376 |
| 8 | 1.25 | 6 | 20 | 90 | 4.9 | 3 | 9200 -58117 |
| 10 | 1.50 | 7 | 22 | 100 | 5.5 | 3 | 9200 -58131 |
| 12 | 1.75 | 9 | 27 | 110 | 7 | 3 | 9200 -58148 |
| 14 | 2.00 | 11 | 30 | 110 | 9 | 3 | 9200 -58155 |
| 16 | 2.00 | 12 | 30 | 110 | 9 | 3 | 9200 -58162 |




# Spiral Flute - Machine Taps
# High Performance Special Applications

Series 9210

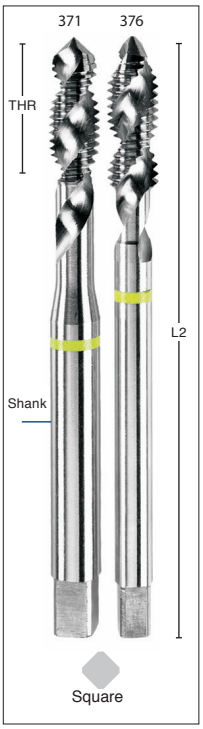



DIN 13 | Tol. ISO 2 6H | HSSE (M35) | DIN 371/376 | M

PAGE 280-281

| Material | N/mm2 | V(m/min) | Coolant |
|---|---|---|---|
| 7.1 | <350 | 10-15 | Emulsion |
| 7.5 | <450 | 10-15 | Emulsion |

| Tap Dia | Pitch | Shank Dia mm | Thread mm | OAL mm | mm | No. Flutes | Part Number |
|---|---|---|---|---|---|---|---|
| | | | | | | | DIN 371 |
| 3 | 0.50 | 3.5 | 11 | 56 | 2.7 | 2 | 9210 -63395 |
| 4 | 0.70 | 4.5 | 13 | 63 | 3.4 | 2 | 9210 -63418 |
| 5 | 0.80 | 6 | 14 | 70 | 4.9 | 2 | 9210 -63425 |
| 6 | 1.00 | 6 | 16 | 80 | 4.9 | 2 | 9210 -63432 |
| 8 | 1.25 | 8 | 18 | 90 | 6.2 | 2 | 9210 -63456 |
| 10 | 1.50 | 10 | 22 | 100 | 8 | 2 | 9210 -63463 |
| | | | | | | | DIN 376 |
| 8 | 1.25 | 6 | 20 | 90 | 4.9 | 2 | 9210 -59909 |
| 10 | 1.50 | 7 | 22 | 100 | 5.5 | 2 | 9210 -59923 |
| 12 | 1.75 | 9 | 27 | 110 | 7 | 2 | 9210 -59930 |
| 14 | 2.00 | 11 | 30 | 110 | 9 | 2 | 9210 -59947 |
| 16 | 2.00 | 12 | 30 | 110 | 9 | 2 | 9210 -65245 |

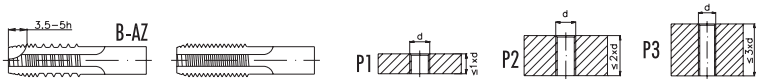


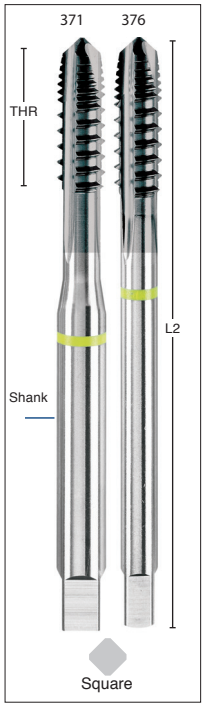

**Modifications**
**Regrinds, Re coat**
**Specials**

Series 9220

# Spiral Point - Machine Taps
# High Performance Special Applications

M | CrN | DIN 13 | Tol. ISO 2 6H | HSSE (M35) | DIN 371/376




| Tap Dia | Pitch | Shank Dia mm | Thread mm | OAL mm | ⬡ mm | No. Flutes | Part Number |
|---|---|---|---|---|---|---|---|
| | | | | | | | **DIN 371** |
| 3 | 0.50 | 3.5 | 11 | 56 | 2.7 | 3 | 9220 -66563 |
| 4 | 0.70 | 4.5 | 13 | 63 | 3.4 | 3 | 9220 -66570 |
| 5 | 0.80 | 6 | 14 | 70 | 4.9 | 3 | 9220 -66587 |
| 6 | 1.00 | 6 | 16 | 80 | 4.9 | 3 | 9220 -66594 |
| 8 | 1.25 | 8 | 18 | 90 | 6.2 | 3 | 9220 -66600 |
| 10 | 1.50 | 10 | 22 | 100 | 8 | 3 | 9220 -66617 |
| | | | | | | | **DIN 376** |
| 8 | 1.25 | 6 | 20 | 90 | 4.9 | 3 | 9220 -66266 |
| 10 | 1.50 | 7 | 22 | 100 | 5.5 | 3 | 9220 -66273 |
| 12 | 1.75 | 9 | 27 | 110 | 7 | 3 | 9220 -66280 |
| 14 | 2.00 | 11 | 30 | 110 | 9 | 3 | 9220 -66297 |
| 16 | 2.00 | 12 | 30 | 110 | 9 | 3 | 9220 -66303 |

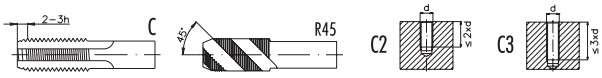
PAGE 280-281

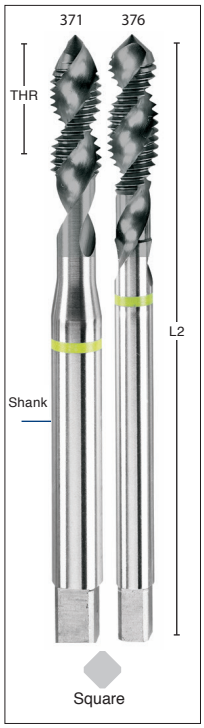
| Material | N/mm2 | V(m/min) | Coolant |
|---|---|---|---|
| 7.1 | <350 | 20-30 | Emulsion |
| 7.2 | <400 | 20-30 | Cutting Oil |
| 7.3 | <400 | 20-30 | Emulsion |
| 7.5 | <400 | 20-30 | Emulsion |

Series 9230

# Spiral Flute - Machine Taps
# High Performance Special Applications

M | CrN | DIN 13 | Tol. ISO 2 6H | HSSE (M35) | DIN 371/376




| Tap Dia | Pitch | Shank Dia mm | Thread mm | OAL mm | ⬡ mm | No. Flutes | Part Number |
|---|---|---|---|---|---|---|---|
| | | | | | | | **DIN 371** |
| 3 | 0.50 | 3.5 | 11 | 56 | 2.7 | 2 | 9230 -66693 |
| 4 | 0.70 | 4.5 | 13 | 63 | 3.4 | 2 | 9230 -66709 |
| 5 | 0.80 | 6 | 14 | 70 | 4.9 | 2 | 9230 -66716 |
| 6 | 1.00 | 6 | 16 | 80 | 4.9 | 2 | 9230 -66723 |
| 8 | 1.25 | 8 | 18 | 90 | 6.2 | 2 | 9230 -66730 |
| 10 | 1.50 | 10 | 22 | 100 | 8 | 2 | 9230 -66747 |
| | | | | | | | **DIN 376** |
| 8 | 1.25 | 6 | 20 | 90 | 4.9 | 2 | 9230 -66389 |
| 10 | 1.50 | 7 | 22 | 100 | 5.5 | 2 | 9230 -66396 |
| 12 | 1.75 | 9 | 27 | 110 | 7 | 2 | 9230 -66402 |
| 14 | 2.00 | 11 | 30 | 110 | 9 | 2 | 9230 -66419 |
| 16 | 2.00 | 12 | 30 | 110 | 9 | 2 | 9230 -66426 |

PAGE 192-197

| Material | N/mm2 | V(m/min) | Coolant |
|---|---|---|---|
| 7.1 | <350 | 20-30 | Emulsion |
| 7.2 | <400 | 20-30 | Cutting Oil |
| 7.3 | <400 | 20-30 | Emulsion |
| 7.5 | <400 | 20-30 | Emulsion |

7.2 - Alloys with Si < 0.5%
7.2 - Alloys with Si < 10%

**Modifications**
**Regrinds, Re coat**
**Specials**

# Tungsten Carbide Burrs

## Range
Standard Cut, Double Cut, Aluminium Cut and TiALN Coated available.
Standard Length and Extra Long Length available.

## Size
Metric 2.4mm through to19mm diameter.

## Finish
Bright Finish and TiALN Coated.

## Options
Tools are available in popular shapes from A Cylindrical through to N Inverted Cone Shape.
3mm and 6mm shanks available.
Individuals or Comprehensive Sets and Special Burrs available.

## Delivery
Over 150,00 tools available from stock for Same-Day despatch.



# Tungsten Carbide Burrs
## Cylinder - No End Cut
## Standard Cut & Double Cut

**Performance**
**Double Cut**
***TiALN***

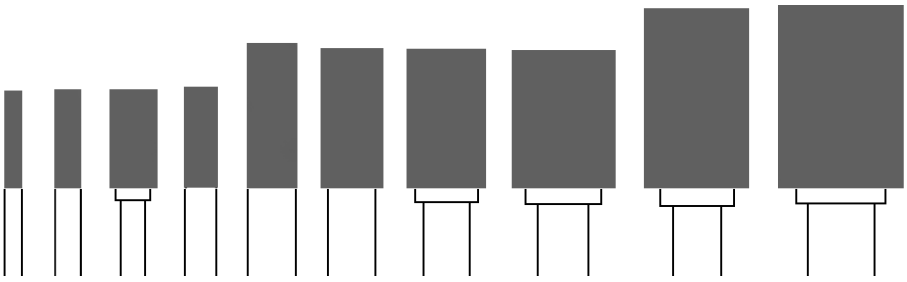
**A**

| Head Dia | Head Length | Shank | OAL | Part N° Standard | Part N° Double | Part N° TiALN |
|---|---|---|---|---|---|---|
| 2.4 | 13 | 2.4 | 38 | M0100 | M0101 | M0101Z |
| 3 | 13 | 3 | 38 | M0102 | M0103 | M0103Z |
| 6 | 13 | 3 | 50 | M0104 | M0105 | M0105Z |
| 4 | 13 | 4 | 50 | M0106 | M0107 | M0107Z |
| 6 | 19 | 6 | 50 | M0108 | M0109 | M0109Z |
| 8 | 19 | 6 | 63 | M0110 | M0111 | M0111Z |
| 10 | 19 | 6 | 63 | M0112 | M0113 | M0113Z |
| 12 | 19 | 6 | 69 | M0114 | M0115 | M0115Z |
| 12 | 25 | 6 | 69 | M0116 | M0117 | M0117Z |
| 16 | 25 | 6 | 69 | M0118 | M0119 | M0119Z |

Ti PAGE 266-267









1.1 - 1.6 | 6.1 - 6.4
2.1 - 2.3 | 4.1 - 5.3
3.1 - 3.4 | 1.7 - 1.8

# Tungsten Carbide Burrs
## Cylinder - End Cut
## Standard Cut & Double Cut

**Performance**
**Double Cut**
***TiALN***

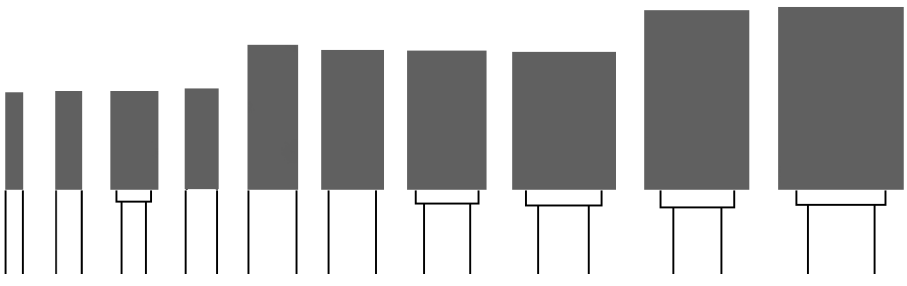
**B**

| Head Dia | Head Length | Shank | OAL | Part N° Standard | Part N° Double | Part N° TiALN |
|---|---|---|---|---|---|---|
| 2.4 | 13 | 2.4 | 38 | M0120 | M0121 | M0121Z |
| 3 | 13 | 3 | 38 | M0122 | M0123 | M0123Z |
| 6 | 13 | 3 | 50 | M0124 | M0125 | M0125Z |
| 4 | 13 | 4 | 50 | M0126 | M0127 | M0127Z |
| 6 | 19 | 6 | 50 | M0128 | M0129 | M0129Z |
| 8 | 19 | 6 | 63 | M0130 | M0131 | M0131Z |
| 10 | 19 | 6 | 63 | M0132 | M0133 | M0133Z |
| 12 | 19 | 6 | 70 | M0134 | M0135 | M0135Z |
| 12 | 25 | 6 | 69 | M0136 | M0137 | M0137Z |
| 16 | 25 | 6 | 69 | M0138 | M0139 | M0139Z |

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# Tungsten Carbide Burrs
## Cone - Included Angle
## Standard Cut & Double Cut

**Performance**
**Double Cut**
***TiALN***

Cone M

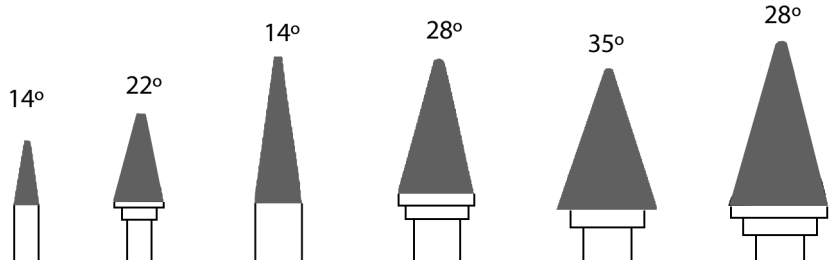
PAGE 266-267

M

| Head Dia | Head Length | Shank | OAL | Part N° Standard | Part N° Double | Part N° TiALN |
|---|---|---|---|---|---|---|
| 3 | 11 | 3 | 38 | M0140 | M0141 | M0141Z |
| 6 | 13 | 3 | 54 | M0142 | M0143 | M0143Z |
| 6 | 19 | 6 | 50 | M0144 | M0145 | M0145Z |
| 10 | 16 | 6 | 63 | M0146 | M0147 | M0147Z |
| 12 | 19 | 6 | 75 | M0148 | M0149 | M0149Z |
| 12 | 22 | 6 | 69 | M0160 | M0161 | M0161Z |








1.1 - 1.6 | 6.1 - 6.4
2.1 - 2.3 | 4.1 - 5.3
3.1 - 3.4 | 1.7 - 1.8

# Tungsten Carbide Burrs
## Ball Nosed Cylinder
## Standard Cut & Double Cut

**Performance**
**Double Cut**
***TiALN***

BN Cyl C

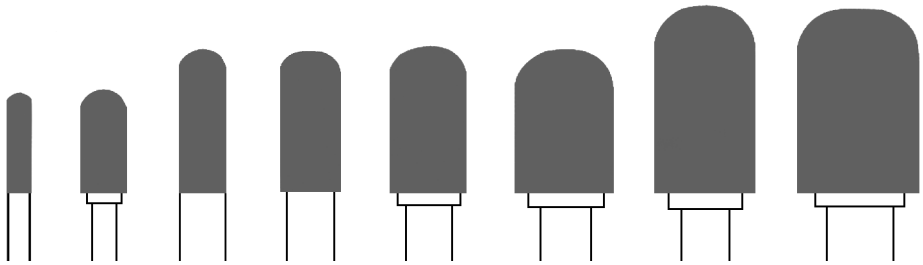
PAGE 266-267

C

| Head Dia | Head Length | Shank | OAL | Part N° Standard | Part N° Double | Part N° TiALN |
|---|---|---|---|---|---|---|
| 3 | 13 | 3 | 38 | M0162 | M0163 | M0163Z |
| 6 | 13 | 3 | 50 | M0164 | M0165 | M0165Z |
| 6 | 19 | 6 | 50 | M0166 | M0167 | M0167Z |
| 8 | 19 | 6 | 63 | M0168 | M0169 | M0169Z |
| 10 | 19 | 6 | 63 | M0170 | M0171 | M0171Z |
| 12 | 19 | 6 | 69 | M0172 | M0173 | M0173Z |
| 12 | 25 | 6 | 69 | M0174 | M0175 | M0175Z |
| 16 | 25 | 6 | 69 | M0176 | M0177 | M0177Z |







# Tungsten Carbide Burrs
## Ball Nosed Cone - Included Angle 14°
## Standard Cut & Double Cut

**Performance**
**Double Cut**
***TiALN***

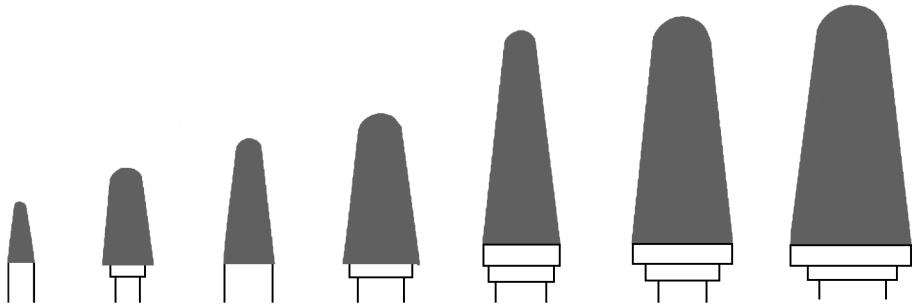
**L**

| Head Dia | Head Length | Shank | OAL | Part N° Standard | Part N° Double | Part N° TiALN |
|---|---|---|---|---|---|---|
| 3 | 8 | 3 | 38 | M0178 | M0179 | M0179Z |
| 6 | 13 | 3 | 53 | M0180 | M0181 | M0181Z |
| 6 | 16 | 6 | 50 | M0182 | M0183 | M0183Z |
| 10 | 19 | 6 | 68 | M0184 | M0185 | M0185Z |
| 10 | 27 | 6 | 74 | M0186 | M0187 | M0187Z |
| 12 | 30 | 6 | 76 | M0188 | M0189 | M0189Z |
| 16 | 33 | 6 | 80 | M0190 | M0191 | M0191Z |

Ti PAGE 266-267







1.1 - 1.6 | 6.1 - 6.4
2.1 - 2.3 | 4.1 - 5.3
3.1 - 3.4 | 1.7 - 1.8



# Tungsten Carbide Burrs
## Oval
## Standard Cut & Double Cut

**Performance**
**Double Cut**
***TiALN***

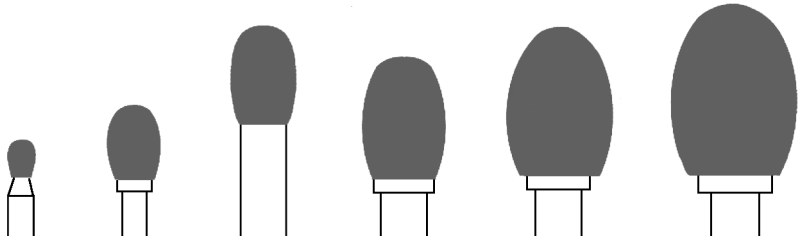
**E**

| Head Dia | Head Length | Shank | OAL | Part N° Standard | Part N° Double | Part N° TiALN |
|---|---|---|---|---|---|---|
| 3 | 6 | 3 | 38 | M0192 | M0193 | M0193Z |
| 6 | 10 | 3 | 47 | M0194 | M0195 | M0195Z |
| 8 | 13 | 6 | 68 | M0196 | M0197 | M0197Z |
| 10 | 16 | 6 | 60 | M0198 | M0199 | M0199Z |
| 12 | 22 | 6 | 66 | M0200 | M0201 | M0201Z |
| 16 | 25 | 6 | 69 | M0202 | M0203 | M0203Z |

Ti PAGE 266-267







# Tungsten Carbide Burrs
## Tree
## Standard Cut & Double Cut

**Performance**
**Double Cut**
***TiALN***

Tree G

PAGE 266-267

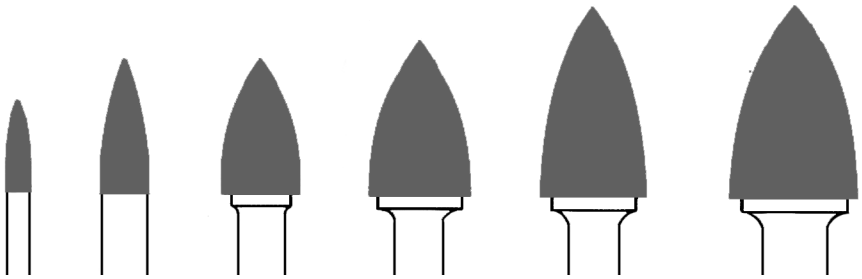
| Head Dia | Head Length | Shank | OAL | Part N° Standard | Part N° Double | Part N° TiALN |
|---|---|---|---|---|---|---|
| 3 | 13 | 3 | 38 | M0204 | M0205 | M0205Z |
| 6 | 16 | 6 | 50 | M0206 | M0207 | M0207Z |
| 10 | 19 | 6 | 63 | M0208 | M0209 | M0209Z |
| 12 | 19 | 6 | 63 | M0210 | M0211 | M0211Z |
| 12 | 25 | 6 | 69 | M0212 | M0213 | M0213Z |
| 16 | 25 | 6 | 69 | M0214 | M0215 | M0215Z |

G





1.1 - 1.6 | 6.1 - 6.4
2.1 - 2.3 | 4.1 - 5.3
3.1 - 3.4 | 1.7 - 1.8



# Tungsten Carbide Burrs
## Ball
## Standard Cut & Double Cut

**Performance**
**Double Cut**
***TiALN***

Ball D

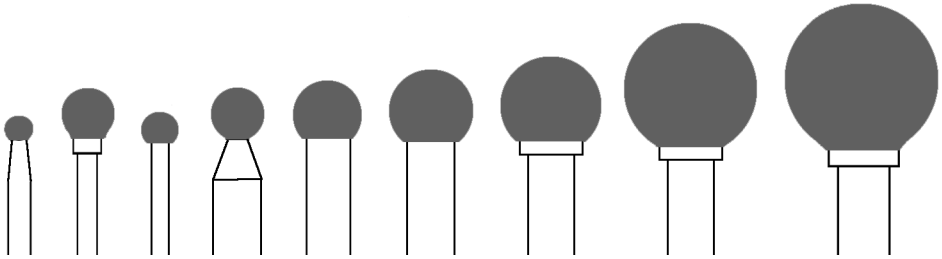
PAGE 266-267

| Head Dia | Head Length | Shank | OAL | Part N° Standard | Part N° Double | Part N° TiALN |
|---|---|---|---|---|---|---|
| 3 | 2.7 | 3 | 38 | M0216 | M0217 | M0217Z |
| 6 | 5.4 | 3 | 44 | M0218 | M0219 | M0219Z |
| 4 | 3.6 | 3 | 42 | M0220 | M0221 | M0221Z |
| 6 | 5.4 | 6 | 50 | M0222 | M0223 | M0223Z |
| 8 | 7.2 | 6 | 50 | M0224 | M0225 | M0225Z |
| 10 | 9 | 6 | 52 | M0226 | M0227 | M0227Z |
| 12 | 10.8 | 6 | 55 | M0228 | M0229 | M0229Z |
| 16 | 14.4 | 6 | 58 | M0230 | M0231 | M0231Z |
| 19 | 17.1 | 6 | 62 | M0232 | M0233 | M0233Z |

D







# Tungsten Carbide Burrs
## Ball Nosed Tree
## Standard Cut & Double Cut

**Performance**
**Double Cut**
***TiALN***

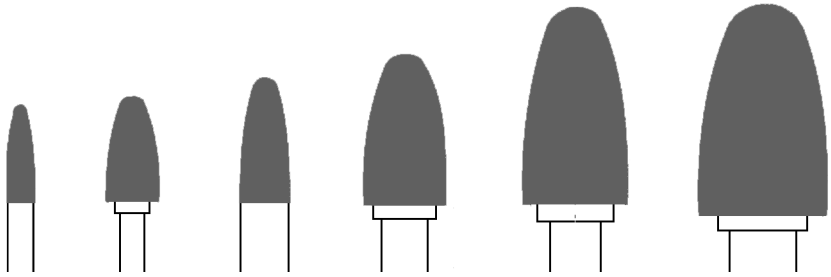
**F**

| Head Dia | Head Length | Shank | OAL | Part Nº Standard | Part Nº Double | Part Nº TiALN |
|---|---|---|---|---|---|---|
| 3 | 13 | 3 | 38 | M0234 | M0235 | M0235Z |
| 6 | 13 | 3 | 50 | M0236 | M0237 | M0237Z |
| 6 | 16 | 6 | 50 | M0238 | M0239 | M0239Z |
| 10 | 19 | 6 | 63 | M0240 | M0241 | M0241Z |
| 12 | 25 | 6 | 69 | M0242 | M0243 | M0243Z |
| 16 | 25 | 6 | 69 | M0244 | M0245 | M0245Z |

Ti PAGE 266-267







1.1 - 1.6 | 6.1 - 6.4
2.1 - 2.3 | 4.1 - 5.3
3.1 - 3.4 | 1.7 - 1.8



# Tungsten Carbide Burrs
## Flame
## Standard Cut & Double Cut

**Performance**
**Double Cut**
***TiALN***

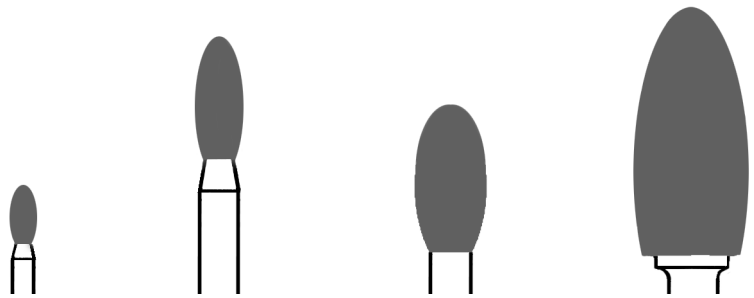
**H**

| Head Dia | Head Length | Shank | OAL | Part Nº Standard | Part Nº Double | Part Nº TiALN |
|---|---|---|---|---|---|---|
| 3 | 8 | 3 | 38 | M0246 | M0247 | M0247Z |
| 6 | 14 | 6 | 50 | M0248 | M0249 | M0249Z |
| 8 | 19 | 6 | 63 | M0250 | M0251 | M0251Z |
| 12 | 32 | 6 | 76 | M0252 | M0253 | M0253Z |

Ti PAGE 266-267







# Tungsten Carbide Burrs
# Countersink
# Standard Cut

Countersink

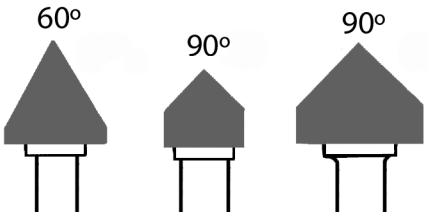
PAGE 266-267

1.1 - 1.6 | 6.1 - 6.4
2.1 - 2.3 | 4.1 - 5.3
3.1 - 3.4 | 1.7 - 1.8

| Head Dia | Head Length | Shank | OAL | Part N° Standard |
|---|---|---|---|---|
| 12 | 11 | 6 | 58 | M0254 |
| 10 | 5 | 6 | 52 | M0256 |
| 16 | 8 | 6 | 57 | M0258 |

J






# Tungsten Carbide Burrs
# Inverted Cone - No End Cut
# Standard Cut & Double Cut

# Performance
# Double Cut
# *TiALN*

Inverted Cone

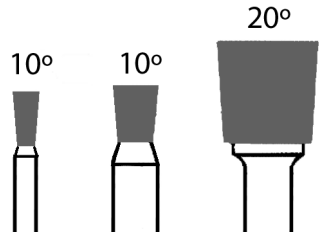
PAGE 266-267

| Head Dia | Head Length | Shank | OAL | Part N° Standard | Part N° Double | Part N° TiALN |
|---|---|---|---|---|---|---|
| 3 | 6 | 3 | 38 | M0260 | M0261 | M0261Z |
| 6 | 7 | 6 | 50 | M0262 | M0263 | M0263Z |
| 12 | 13 | 6 | 69 | M0264 | M0265 | M0265Z |

N







# Tungsten Carbide Burrs
# For Aluminium, Plastics & Zinc
# Aluminium Cut

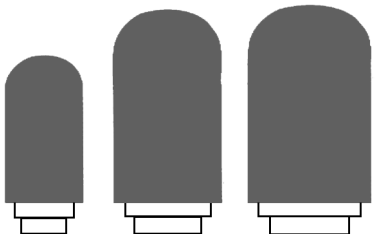
PAGE 266-267

7.0 - 8.3

## C — Ball Nosed Cylinder



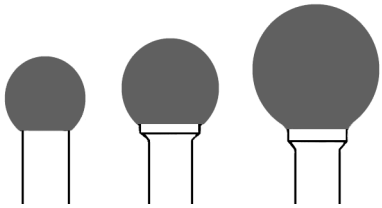
| Head Dia | Head Length | Shank | OAL | Part Number |
|---|---|---|---|---|
| 10 | 19 | 6 | 63 | M0300 |
| 12 | 25 | 6 | 69 | M0302 |
| 16 | 25 | 6 | 69 | M0304 |



## D — Ball



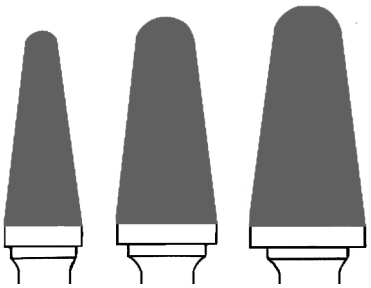
| Head Dia | Head Length | Shank | OAL | Part Number |
|---|---|---|---|---|
| 10 | 9 | 6 | 52 | M0306 |
| 12 | 10.8 | 6 | 55 | M0308 |
| 16 | 14.4 | 6 | 58 | M0310 |



## L — Ball Nosed Cone



| Head Dia | Head Length | Shank | OAL | Part Number |
|---|---|---|---|---|
| 10 | 25 | 6 | 74 | M0312 |
| 12 | 30 | 6 | 76 | M0314 |
| 16 | 33 | 6 | 80 | M0316 |



# Tungsten Carbide Burrs
# For Aluminium, Plastics & Zinc
# Aluminium Cut

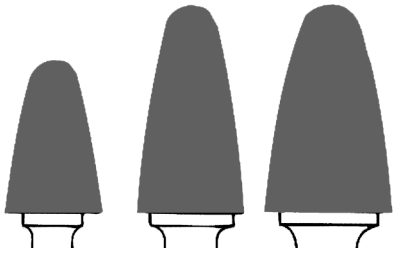


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7.0 - 8.3

## Ball Nosed Tree — F

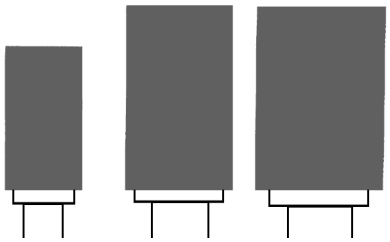
| Head Dia | Head Length | Shank | OAL | Part Number |
|---|---|---|---|---|
| 10 | 19 | 6 | 63 | M0318 |
| 12 | 25 | 6 | 69 | M0320 |
| 16 | 25 | 6 | 69 | M0322 |





## Cylinder End Cut — B

| Head Dia | Head Length | Shank | OAL | Part Number |
|---|---|---|---|---|
| 10 | 19 | 6 | 63 | M0324 |
| 12 | 25 | 6 | 69 | M0326 |
| 16 | 25 | 6 | 69 | M0328 |

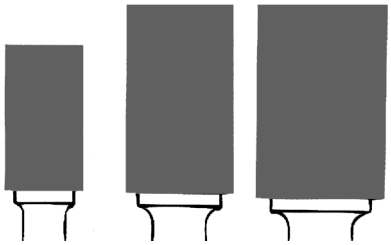






## Cylinder No-End Cut — A

| Head Dia | Head Length | Shank | OAL | Part Number |
|---|---|---|---|---|
| 10 | 19 | 6 | 63 | M0330 |
| 12 | 25 | 6 | 69 | M0332 |
| 16 | 25 | 6 | 69 | M0334 |





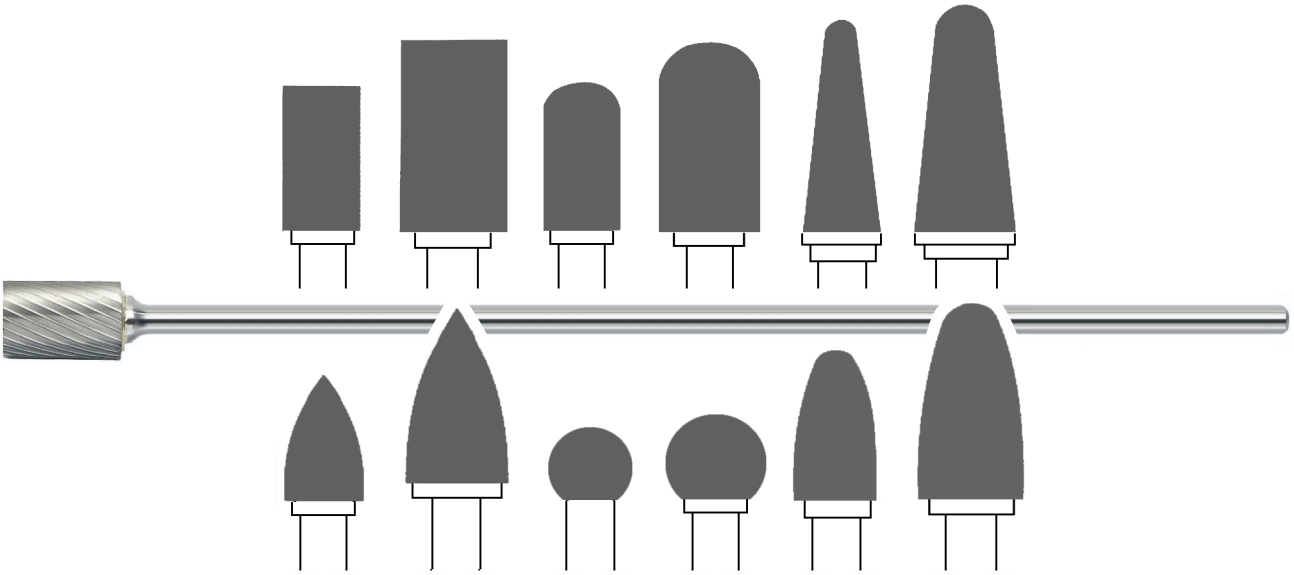


# Tungsten Carbide Burrs
## Extra-Long Length
## Standard Cut & Double Cut

| Shape | Head Dia | Head Length | Shank | OAL | Part N° Standard | Part N° Double |
|---|---|---|---|---|---|---|
| Cylinder No End Cut | 10 | 19 | 6 | 169 | M0112XL | M0113XL |
| Cylinder No End Cut | 12 | 25 | 6 | 175 | M0116XL | M0117XL |
| Ball Nosed Cylinder | 10 | 19 | 6 | 169 | M0170XL | M0171XL |
| Ball Nosed Cylinder | 12 | 25 | 6 | 175 | M0174XL | M0175XL |
| Ball Nosed Cone | 10 | 27 | 6 | 177 | M0186XL | M0187XL |
| Ball Nosed Cone | 12 | 30 | 6 | 178 | M0188XL | M0189XL |
| Tree | 10 | 19 | 6 | 169 | M0208XL | M0209XL |
| Tree | 12 | 25 | 6 | 175 | M0212XL | M0213XL |
| Ball | 10 | 9 | 6 | 158 | M0226XL | M0227XL |
| Ball | 12 | 10.8 | 6 | 161 | M0228XL | M0229XL |
| Ball Nosed Tree | 10 | 19 | 6 | 169 | M0240XL | M0241XL |
| Ball Nosed Tree | 12 | 25 | 6 | 175 | M0242XL | M0243XL |

Ti PAGE 266-267

1.1 - 1.6 | 6.1 - 6.4
2.1 - 2.3 | 4.1 - 5.3
3.1 - 3.4 | 1.7 - 1.8





# Tungsten Carbide Tyre-Burrs
## Tyre Routers
## Double Cut - Round Shank & 3 Flats



| Head Dia | Head Length | Shank | OAL | Part Number Round | Part Number 3 Flats |
|---|---|---|---|---|---|
| 3 | 25 | 3 | 50 | TB0M | TB0MT |
| 6 | 50 | 6 | 75 | TB1M | TB1MT |
| 8 | 53 | 8 | 100 | TB2M | TB2MT |
| 10 | 75 | 10 | 100 | TB3M | TB3MT |

Ti PAGE 266-267

# Tungsten Carbide Burrs
# 5 Piece Set
# Bright Finish Double Cut

SET 1

Ti PAGE 266-267

1.1 - 1.6 | 6.1 - 6.4 | 2.1 - 2.3 | 4.1 - 5.3 | 3.1 - 3.4 | 1.7 - 1.8

| Dimensions | Shape | Part Number MBSET1 |
|---|---|---|
| 12x25x6x69 | A | M0137 |
| 12x22x6x69 | M | M0161 |
| 12x25x6x69 | C | M0175 |
| 12x10.8x6x55 | D | M0229 |
| 12x25x6x69 | F | M0243 |




# Tungsten Carbide Burrs
# 5 Piece Set
# Double Cut - *TiALN*

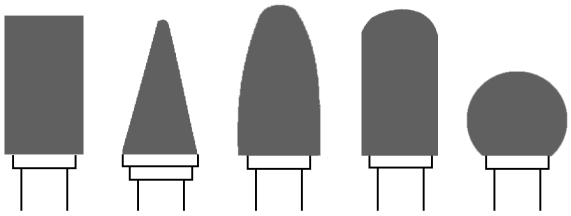
SET 1Z

Ti PAGE 266-267

1.1 - 1.6 | 6.1 - 6.4 | 2.1 - 2.3 | 4.1 - 5.3 | 3.1 - 3.4 | 1.7 - 1.8

| Dimensions | Shape | Part Number MBSET1Z |
|---|---|---|
| 12x25x6x69 | A | M0137Z |
| 12x22x6x69 | M | M0161Z |
| 12x25x6x69 | C | M0175Z |
| 12x10.8x6x55 | D | M0229Z |
| 12x25x6x69 | F | M0243Z |



SET 2

## Tungsten Carbide Burrs
## 10 Piece Set
## Bright Finish Double Cut

PAGE 266-267

1.1 - 1.6 | 6.1 - 6.4
2.1 - 2.3 | 4.1 - 5.3
3.1 - 3.4 | 1.7 - 1.8

| Dimensions | Shape | Part Number MBSET2 |
|---|---|---|
| 10x19x6x63 | B | M0133 |
| 12x25x6x69 | B | M0137 |
| 10x19x6x63 | C | M0171 |
| 12x25x6x69 | C | M0175 |
| 12x30x6x76 | L | M0189 |
| 10x16x6x60 | E | M0199 |
| 10x19x6x63 | G | M0209 |
| 12x25x6x69 | G | M0213 |
| 12x10.8x6x55 | D | M0229 |
| 12x25x6x69 | F | M0243 |

SET 2Z

## Tungsten Carbide Burrs
## 10 Piece Set
## Double Cut - *TiALN*

PAGE 266-267

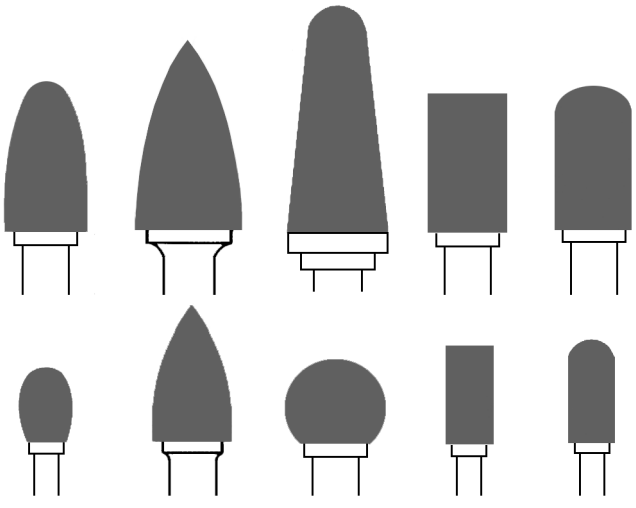
1.1 - 1.6 | 6.1 - 6.4
2.1 - 2.3 | 4.1 - 5.3
3.1 - 3.4 | 1.7 - 1.8

| Dimensions | Shape | Part Number MBSET2Z |
|---|---|---|
| 10x19x6x63 | B | M0133Z |
| 12x25x6x69 | B | M0137Z |
| 10x19x6x63 | C | M0171Z |
| 12x25x6x69 | C | M0175Z |
| 12x30x6x76 | L | M0189Z |
| 10x16x6x60 | E | M0199Z |
| 10x19x6x63 | G | M0209Z |
| 12x25x6x69 | G | M0213Z |
| 12x10.8x6x55 | D | M0229Z |
| 12x25x6x69 | F | M0243Z |









Merlin Tools Ltd manufactured

# Tungsten Carbide Burrs 5 Piece Set Bright Finish Aluminium Cut

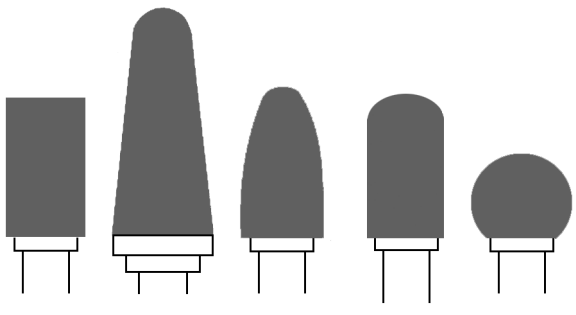
SET 3

Ti PAGE 266-267

7.0 - 8.3

| Dimensions | Shape | Part Number MBSET3 |
|---|---|---|
| 12x25x6x63 | C | M0302 |
| 12x10.8x6x58 | D | M0308 |
| 12x30x6x76 | L | M0314 |
| 12x25x6x69 | F | M0320 |
| 12x25x6x70 | B | M0326 |



# Tungsten Carbide Miniature Burr Set 10 Piece Set Bright Finish Double Cut

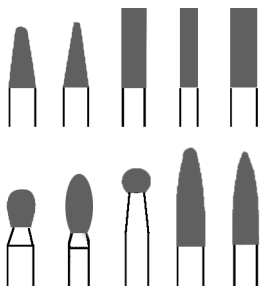
SET 4

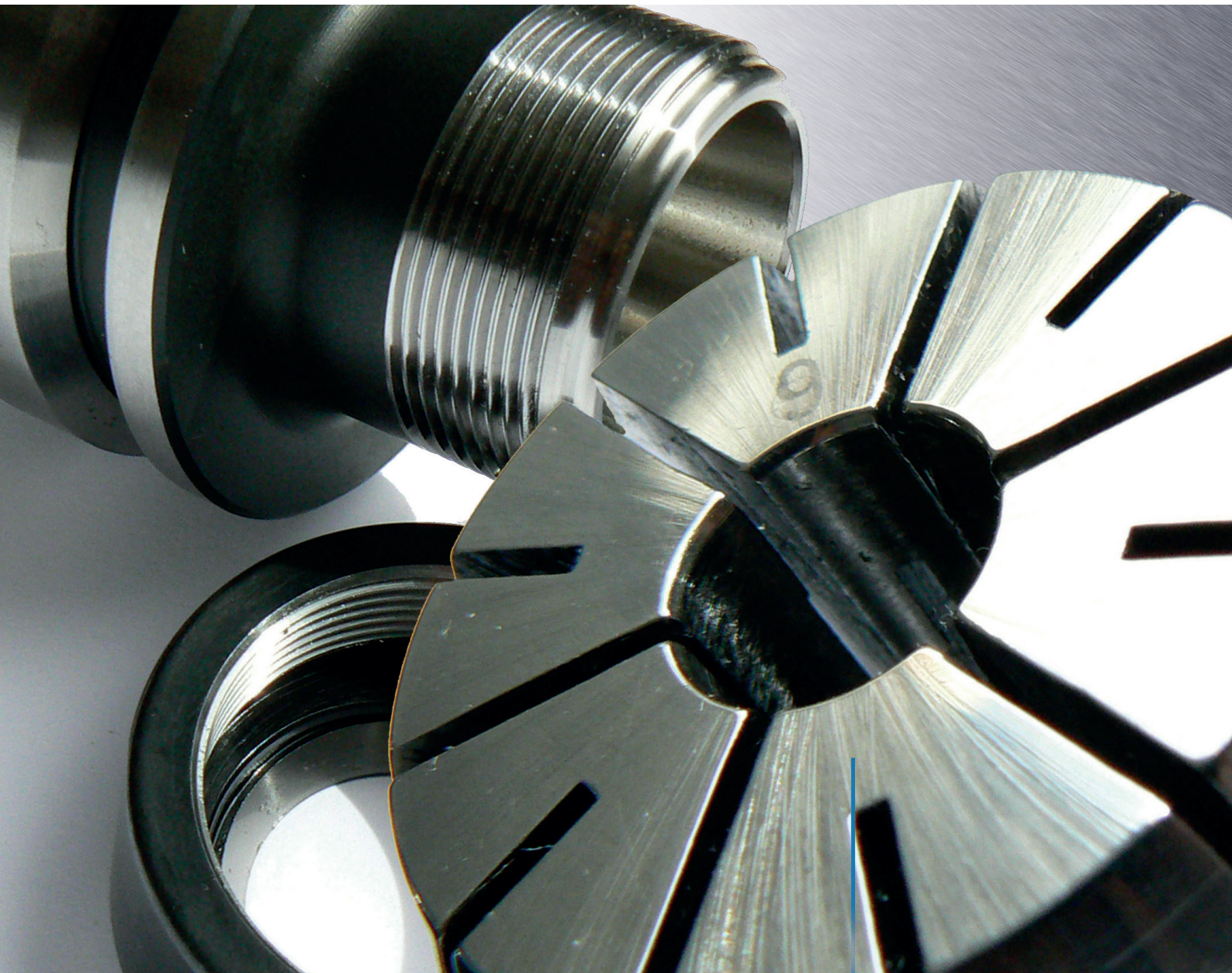
Ti PAGE 267-268

1.1 - 1.6 | 6.1 - 6.4 | 2.1 - 2.3 | 4.1 - 5.3 | 3.1 - 3.4 | 1.7 - 1.8

| Dimensions | Shape | Part Number MBSET4 |
|---|---|---|
| 3x13x3x38 | A | M0103 |
| 3x13x3x38 | B | M0123 |
| 3x11x3x38 | M | M0141 |
| 3x13x3x38 | C | M0163 |
| 3x8x3x38 | L | M0179 |
| 3x6x3x38 | E | M0193 |
| 3x13x3x38 | G | M0205 |
| 3x2.7x3x38 | D | M0217 |
| 3x13x3x38 | F | M0235 |
| 3x8x3x38 | H | M0247 |





# ER Collets, Chucks & Accessories

## Range
Standard, Through Coolant and Tapping ER Collets. ER, Weldon, Face Mill, Morse Taper, Drill Chuck Adaptors and Straight Shank Toolholders. Lock Nuts, Spanners, Pullstuds and Accessories.

## Size
Metric : ER8 1mm through to ER50 34mm
Imperial: ER8 1/16' through to ER40 1"'
BT, DIN, ISO and HSK in 30, 40 and 50 Tapers.

## Options
ER Collets available in 5 micron, 10 micron and 15-20 micron accuracy ER Collets available Individually or in Sets
ER8, ER11,ER16, ER20, ER25, ER32, ER40, and ER50.

## Delivery
Over 150,00 tools available from stock for Same-Day despatch.

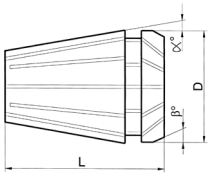


# ER 8 - Precision Collets
# DIN 6499-B
# 15-20 Micron General Purpose



| Clamping Range Ø | Part Number |
|---|---|
| 1.0 - 0.5 | ER08 -0102 |
| 1.5 - 1.0 | ER08 -0152 |
| 2.0 - 1.5 | ER08 -0202 |
| 2.5 - 2.0 | ER08 -0252 |
| 3.0 - 2.5 | ER08 -0302 |
| 3.5 - 3.0 | ER08 -0352 |
| 4.0 - 3.5 | ER08 -0402 |
| 4.5 - 4.0 | ER08 -0452 |
| 5.0 - 4.5 | ER08 -0502 |

| | |
|---|---|
| D | 8.5mm |
| L | 13mm |
| Clamping Range | 1.0-5.0mm |
| Clamping Steps | 0.5mm |



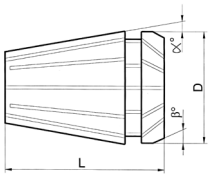



# ER 8 - Super Precision Collets
# DIN 6499-B
# 10 Micron Higher Accuracy



| Clamping Range Ø | Part Number |
|---|---|
| 1.0 - 0.5 | ER08 -0101 |
| 1.5 - 1.0 | ER08 -0151 |
| 2.0 - 1.5 | ER08 -0201 |
| 2.5 - 2.0 | ER08 -0251 |
| 3.0 - 2.5 | ER08 -0301 |
| 3.5 - 3.0 | ER08 -0351 |
| 4.0 - 3.5 | ER08 -0401 |
| 4.5 - 4.0 | ER08 -0451 |
| 5.0 - 4.5 | ER08 -0501 |

| | |
|---|---|
| D | 8.5mm |
| L | 13mm |
| Clamping Range | 1.0-5.0mm |
| Clamping Steps | 0.5mm |



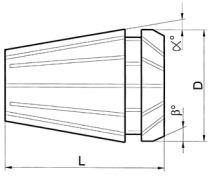



# ER 8 - Ultra Precision Collets
# TOPAC
# 5 Micron Top Accuracy



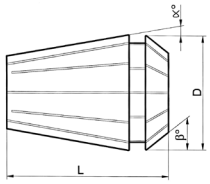
| Clamping Range Ø | Part Number |
|---|---|
| 1.0 - 0.5 | ER08 -010T |
| 1.5 - 1.0 | ER08 -015T |
| 2.0 - 1.5 | ER08 -020T |
| 2.5 - 2.0 | ER08 -025T |
| 3.0 - 2.5 | ER08 -030T |
| 3.5 - 3.0 | ER08 -035T |
| 4.0 - 3.5 | ER08 -040T |
| 4.5 - 4.0 | ER08 -045T |
| 5.0 - 4.5 | ER08 -050T |

| | |
|---|---|
| D | 8.5mm |
| L | 13mm |
| Clamping Range | 1.0-5.0mm |
| Clamping Steps | 0.5mm |



# ER 11 - Precision Collets
# DIN 6499-B
# 15-20 Micron General Purpose

| | |
|---|---|
| D | 11.5mm |
| L | 18mm |
| Clamping Range | 1.0-7.0mm |
| Clamping Steps | 0.5mm |



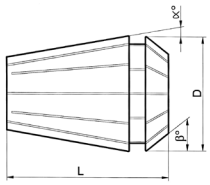

| Clamping Range Ø | Part Number | Clamping Range Ø | Part Number |
|---|---|---|---|
| 1.0 - 0.5 | ER11 -0102 | 4.5 - 4.0 | ER11 -0452 |
| 1.5 - 1.0 | ER11 -0152 | 5.0 - 4.5 | ER11 -0502 |
| 2.0 - 1.5 | ER11 -0202 | 5.5 - 5.0 | ER11 -0552 |
| 2.5 - 2.0 | ER11 -0252 | 6.0 - 5.5 | ER11 -0602 |
| 3.0 - 2.5 | ER11 -0302 | 6.5 - 6.0 | ER11 -0652 |
| 3.5 - 3.0 | ER11 -0352 | 7.0 - 6.5 | ER11 -0702 |
| 4.0 - 3.5 | ER11 -0402 | | |



ER 11

# ER 11 - Super Precision Collets
# DIN 6499-B
# 10 Micron Higher Accuracy

| | |
|---|---|
| D | 11.5mm |
| L | 18mm |
| Clamping Range | 1.0-7.0mm |
| Clamping Steps | 0.5mm |



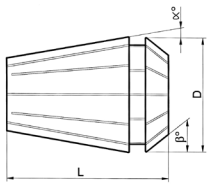

| Clamping Range Ø | Part Number | Clamping Range Ø | Part Number |
|---|---|---|---|
| 1.0 - 0.5 | ER11 -0101 | 4.5 - 4.0 | ER11 -0451 |
| 1.5 - 1.0 | ER11 -0151 | 5.0 - 4.5 | ER11 -0501 |
| 2.0 - 1.5 | ER11 -0201 | 5.5 - 5.0 | ER11 -0551 |
| 2.5 - 2.0 | ER11 -0251 | 6.0 - 5.5 | ER11 -0601 |
| 3.0 - 2.5 | ER11 -0301 | 6.5 - 6.0 | ER11 -0651 |
| 3.5 - 3.0 | ER11 -0351 | 7.0 - 6.5 | ER11 -0701 |
| 4.0 - 3.5 | ER11 -0401 | | |



ER 11

# ER 11 - Ultra Precision Collets
# TOPAC
# 5 Micron Top Accuracy

| | |
|---|---|
| D | 11.5mm |
| L | 18mm |
| Clamping Range | 1.0-7.0mm |
| Clamping Steps | 0.5mm |




| Clamping Range Ø | Part Number | Clamping Range Ø | Part Number |
|---|---|---|---|
| 1.0 - 0.5 | ER11 -010T | 4.5 - 4.0 | ER11 -045T |
| 1.5 - 1.0 | ER11 -015T | 5.0 - 4.5 | ER11 -050T |
| 2.0 - 1.5 | ER11 -020T | 5.5 - 5.0 | ER11 -055T |
| 2.5 - 2.0 | ER11 -025T | 6.0 - 5.5 | ER11 -060T |
| 3.0 - 2.5 | ER11 -030T | 6.5 - 6.0 | ER11 -065T |
| 3.5 - 3.0 | ER11 -035T | 7.0 - 6.5 | ER11 -070T |
| 4.0 - 3.5 | ER11 -040T | | |

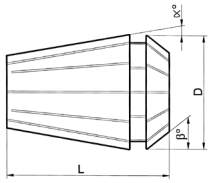


# ER 16 - Precision Collets
# DIN 6499-B
# 15-20 Micron General Purpose



| Clamping Range Ø | Part Number | Clamping Range Ø | Part Number |
|---|---|---|---|
| 1.0 - 0.5 | ER16 -0102 | 6.0 - 5.0 | ER16 -0602 |
| 1.5 - 1.0 | ER16 -0152 | 6.5 - 5.5 | ER16 -0652 |
| 2.0 - 1.5 | ER16 -0202 | 7.0 - 6.0 | ER16 -0702 |
| 2.5 - 2.0 | ER16 -0252 | 7.5 - 6.5 | ER16 -0752 |
| 3.0 - 2.5 | ER16 -0302 | 8.0 - 7.0 | ER16 -0802 |
| 3.5 - 2.5 | ER16 -0352 | 8.5 - 7.5 | ER16 -0852 |
| 4.0 - 3.0 | ER16 -0402 | 9.0 - 8.0 | ER16 -0902 |
| 4.5 - 3.5 | ER16 -0452 | 9.5 - 8.5 | ER16 -0952 |
| 5.0 - 4.0 | ER16 -0502 | 10.0 - 9.0 | ER16 -1002 |
| 5.5 - 4.5 | ER16 -0552 | | |

| | |
|---|---|
| D | 17mm |
| L | 27.5mm |
| Clamping Range | 1.0-10mm |
| Clamping Steps | 1.0mm |




*Up to Ø3mm the collapsing capacity is 0.5mm*

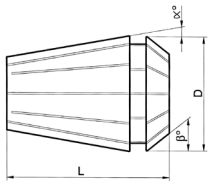
ER 16

# ER 16 - Super Precision Collets
# DIN 6499-B
# 10 Micron Higher Accuracy



| Clamping Range Ø | Part Number | Clamping Range Ø | Part Number |
|---|---|---|---|
| 1.0 - 0.5 | ER16 -0101 | 6.0 - 5.0 | ER16 -0601 |
| 1.5 - 1.0 | ER16 -0151 | 6.5 - 5.5 | ER16 -0651 |
| 2.0 - 1.5 | ER16 -0201 | 7.0 - 6.0 | ER16 -0701 |
| 2.5 - 2.0 | ER16 -0251 | 7.5 - 6.5 | ER16 -0751 |
| 3.0 - 2.5 | ER16 -0301 | 8.0 - 7.0 | ER16 -0801 |
| 3.5 - 2.5 | ER16 -0351 | 8.5 - 7.5 | ER16 -0851 |
| 4.0 - 3.0 | ER16 -0401 | 9.0 - 8.0 | ER16 -0901 |
| 4.5 - 3.5 | ER16 -0451 | 9.5 - 8.5 | ER16 -0951 |
| 5.0 - 4.0 | ER16 -0501 | 10.0 - 9.0 | ER16 -1001 |
| 5.5 - 4.5 | ER16 -0551 | | |

| | |
|---|---|
| D | 17mm |
| L | 27.5mm |
| Clamping Range | 1.0-10mm |
| Clamping Steps | 1.0mm |



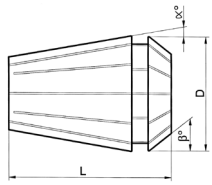

ER 16

# ER 16 - Ultra Precision Collets
# TOPAC
# 5 Micron Top Accuracy



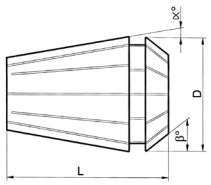
| Clamping Range Ø | Part Number | Clamping Range Ø | Part Number |
|---|---|---|---|
| 1.0 - 0.5 | ER16 -010T | 6.0 - 5.0 | ER16 -060T |
| 1.5 - 1.0 | ER16 -015T | 6.5 - 5.5 | ER16 -065T |
| 2.0 - 1.5 | ER16 -020T | 7.0 - 6.0 | ER16 -070T |
| 2.5 - 2.0 | ER16 -025T | 7.5 - 6.5 | ER16 -075T |
| 3.0 - 2.5 | ER16 -030T | 8.0 - 7.0 | ER16 -080T |
| 3.5 - 2.5 | ER16 -035T | 8.5 - 7.5 | ER16 -085T |
| 4.0 - 3.0 | ER16 -040T | 9.0 - 8.0 | ER16 -090T |
| 4.5 - 3.5 | ER16 -045T | 9.5 - 8.5 | ER16 -095T |
| 5.0 - 4.0 | ER16 -050T | 10.0 - 9.0 | ER16 -100T |
| 5.5 - 4.5 | ER16 -055T | | |

| | |
|---|---|
| D | 17mm |
| L | 27.5mm |
| Clamping Range | 1.0-10mm |
| Clamping Steps | 1.0mm |



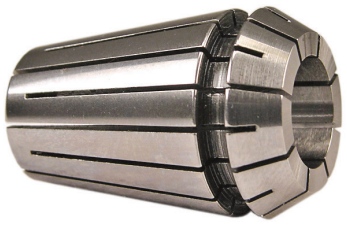
# ER 20 - Precision Collets
# DIN 6499-B
# 15-20 Micron General Purpose

| | |
|---|---|
| D | 21mm |
| L | 31.5mm |
| Clamping Range | 1.0-13mm |
| Clamping Steps | 1.0mm |




| Clamping Range Ø | Part Number |
|---|---|
| 1.0 - 0.5 | ER20 -0102 |
| 1.5 - 1.0 | ER20 -0152 |
| 2.0 - 1.5 | ER20 -0202 |
| 2.5 - 2.0 | ER20 -0252 |
| 3.0 - 2.5 | ER20 -0302 |
| 3.5 - 2.5 | ER20 -0352 |
| 4.0 - 3.0 | ER20 -0402 |
| 4.5 - 3.5 | ER20 -0452 |
| 5.0 - 4.0 | ER20 -0502 |

| Clamping Range Ø | Part Number |
|---|---|
| 6.0 - 5.0 | ER20 -0602 |
| 7.0 - 6.0 | ER20 -0702 |
| 8.0 - 7.0 | ER20 -0802 |
| 9.0 - 8.0 | ER20 -0902 |
| 10.0 - 9.0 | ER20 -1002 |
| 11.0 - 10.0 | ER20 -1102 |
| 12.0 - 11.0 | ER20 -1202 |
| 13.0 - 12.0 | ER20 -1302 |

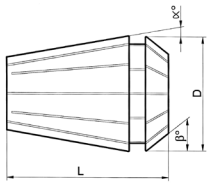


*Up to Ø3mm the collapsing capacity is 0.5mm*

# ER 20 - Super Precision Collets
# DIN 6499-B
# 10 Micron Higher Accuracy

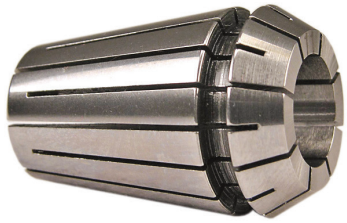
ER 20

| | |
|---|---|
| D | 21mm |
| L | 31.5mm |
| Clamping Range | 1.0-13mm |
| Clamping Steps | 1.0mm |




| Clamping Range Ø | Part Number |
|---|---|
| 1.0 - 0.5 | ER20 -0101 |
| 1.5 - 1.0 | ER20 -0151 |
| 2.0 - 1.5 | ER20 -0201 |
| 2.5 - 2.0 | ER20 -0251 |
| 3.0 - 2.5 | ER20 -0301 |
| 3.5 - 2.5 | ER20 -0351 |
| 4.0 - 3.0 | ER20 -0401 |
| 4.5 - 3.5 | ER20 -0451 |
| 5.0 - 4.0 | ER20 -0501 |

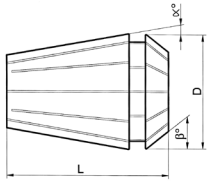
| Clamping Range Ø | Part Number |
|---|---|
| 6.0 - 5.0 | ER20 -0601 |
| 7.0 - 6.0 | ER20 -0701 |
| 8.0 - 7.0 | ER20 -0801 |
| 9.0 - 8.0 | ER20 -0901 |
| 10.0 - 9.0 | ER20 -1001 |
| 11.0 - 10.0 | ER20 -1101 |
| 12.0 - 11.0 | ER20 -1201 |
| 13.0 - 12.0 | ER20 -1301 |



# ER 20 - Ultra Precision Collets
# TOPAC
# 5 Micron Top Accuracy

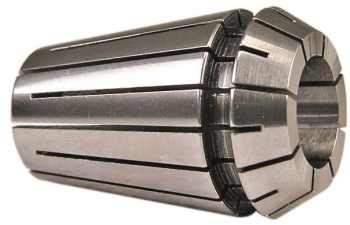
ER 20

| | |
|---|---|
| D | 21mm |
| L | 31.5mm |
| Clamping Range | 1.0-13mm |
| Clamping Steps | 1.0mm |

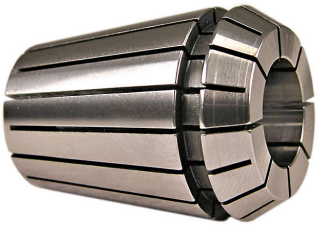



| Clamping Range Ø | Part Number |
|---|---|
| 1.0 - 0.5 | ER20 -010T |
| 1.5 - 1.0 | ER20 -015T |
| 2.0 - 1.5 | ER20 -020T |
| 2.5 - 2.0 | ER20 -025T |
| 3.0 - 2.5 | ER20 -030T |
| 3.5 - 2.5 | ER20 -035T |
| 4.0 - 3.0 | ER20 -040T |
| 4.5 - 3.5 | ER20 -045T |
| 5.0 - 4.0 | ER20 -050T |

| Clamping Range Ø | Part Number |
|---|---|
| 6.0 - 5.0 | ER20 -060T |
| 7.0 - 6.0 | ER20 -070T |
| 8.0 - 7.0 | ER20 -080T |
| 9.0 - 8.0 | ER20 -090T |
| 10.0 - 9.0 | ER20 -100T |
| 11.0 - 10.0 | ER20 -110T |
| 12.0 - 11.0 | ER20 -120T |
| 13.0 - 12.0 | ER20 -130T |

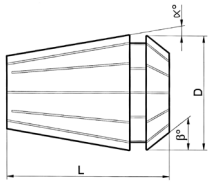


# ER 25 - Precision Collets
# DIN 6499-B
# 15-20 Micron General Purpose



| Clamping Range Ø | Part Number | Clamping Range Ø | Part Number |
|---|---|---|---|
| 1.0 - 0.5 | ER25 -0102 | 7.0 - 6.0 | ER25 -0702 |
| 1.5 - 1.0 | ER25 -0152 | 8.0 - 7.0 | ER25 -0802 |
| 2.0 - 1.5 | ER25 -0202 | 9.0 - 8.0 | ER25 -0902 |
| 2.5 - 2.0 | ER25 -0252 | 10.0 - 9.0 | ER25 -1002 |
| 3.0 - 2.5 | ER25 -0302 | 11.0 -10.0 | ER25 -1102 |
| 3.5 - 2.5 | ER25 -0352 | 12.0 - 11.0 | ER25 -1202 |
| 4.0 - 3.0 | ER25 -0402 | 13.0 - 12.0 | ER25 -1302 |
| 4.5 - 3.5 | ER25 -0452 | 14.0 - 13.0 | ER25 -1402 |
| 5.0 - 4.0 | ER25 -0502 | 15.0 - 14.0 | ER25 -1502 |
| 6.0 - 5.0 | ER25 -0602 | 16.0 - 15.0 | ER25 -1602 |

| | |
|---|---|
| D | 26mm |
| L | 34mm |
| Clamping Range | 1.0-16mm |
| Clamping Steps | 1.0mm |




*Up to Ø3mm the collapsing capacity is 0.5mm*

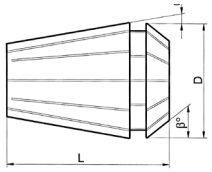


# ER 25 - Super Precision Collets
# DIN 6499-B
# 10 Micron Higher Accuracy



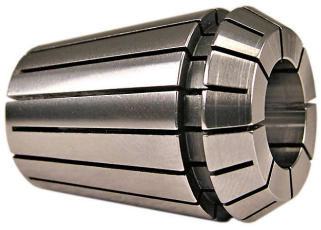
| Clamping Range Ø | Part Number | Clamping Range Ø | Part Number |
|---|---|---|---|
| 1.0 - 0.5 | ER25 -0101 | 7.0 - 6.0 | ER25 -0701 |
| 1.5 - 1.0 | ER25 -0151 | 8.0 - 7.0 | ER25 -0801 |
| 2.0 - 1.5 | ER25 -0201 | 9.0 - 8.0 | ER25 -0901 |
| 2.5 - 2.0 | ER25 -0251 | 10.0 - 9.0 | ER25 -1001 |
| 3.0 - 2.5 | ER25 -0301 | 11.0 -10.0 | ER25 -1101 |
| 3.5 - 2.5 | ER25 -0351 | 12.0 - 11.0 | ER25 -1201 |
| 4.0 - 3.0 | ER25 -0401 | 13.0 - 12.0 | ER25 -1301 |
| 4.5 - 3.5 | ER25 -0451 | 14.0 - 13.0 | ER25 -1401 |
| 5.0 - 4.0 | ER25 -0501 | 15.0 - 14.0 | ER25 -1501 |
| 6.0 - 5.0 | ER25 -0601 | 16.0 - 15.0 | ER25 -1601 |

| | |
|---|---|
| D | 26mm |
| L | 34mm |
| Clamping Range | 1.0-16mm |
| Clamping Steps | 1.0mm |



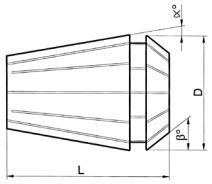



# ER 25 - Ultra Precision Collets
# TOPAC
# 5 Micron Top Accuracy



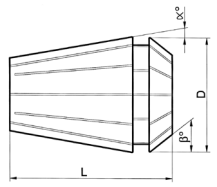
| Clamping Range Ø | Part Number | Clamping Range Ø | Part Number |
|---|---|---|---|
| 1.0 - 0.5 | ER25 -010T | 7.0 - 6.0 | ER25 -070T |
| 1.5 - 1.0 | ER25 -015T | 8.0 - 7.0 | ER25 -080T |
| 2.0 - 1.5 | ER25 -020T | 9.0 - 8.0 | ER25 -090T |
| 2.5 - 2.0 | ER25 -025T | 10.0 - 9.0 | ER25 -100T |
| 3.0 - 2.5 | ER25 -030T | 11.0 - 10.0 | ER25 -110T |
| 3.5 - 2.5 | ER25 -035T | 12.0 - 11.0 | ER25 -120T |
| 4.0 - 3.0 | ER25 -040T | 13.0 - 12.0 | ER25 -130T |
| 4.5 - 3.5 | ER25 -045T | 14.0 - 13.0 | ER25 -140T |
| 5.0 - 4.0 | ER25 -050T | 15.0 - 14.0 | ER25 -150T |
| 6.0 - 5.0 | ER25 -060T | 16.0 - 15.0 | ER25 -160T |

| | |
|---|---|
| D | 26mm |
| L | 34mm |
| Clamping Range | 1.0-16mm |
| Clamping Steps | 1.0mm |



# ER 32 - Precision Collets
# DIN 6499-B
# 15-20 Micron General Purpose

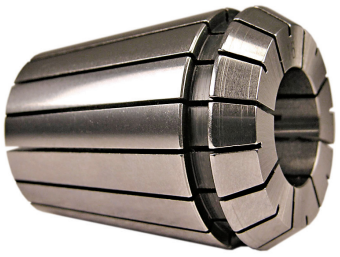
| | |
|---|---|
| D | 33mm |
| L | 40mm |
| Clamping Range | 1.0-25mm |
| Clamping Steps | 1.0mm |




*Up to Ø3mm the collapsing capacity is 0.5mm*

| Clamping Range Ø | Part Number |
|---|---|
| 1.0 - 0.5 | ER32 -0102 |
| 1.5 - 1.0 | ER32 -0152 |
| 2.0 - 1.5 | ER32 -0202 |
| 2.5 - 2.0 | ER32 -0252 |
| 3.0 - 2.5 | ER32 -0302 |
| 3.5 - 2.5 | ER32 -0352 |
| 4.0 - 3.0 | ER32 -0402 |
| 4.5 - 3.5 | ER32 -0452 |
| 5.0 - 4.0 | ER32 -0502 |
| 6.0 - 5.0 | ER32 -0602 |
| 7.0 - 6.0 | ER32 -0702 |
| 8.0 - 7.0 | ER32 -0802 |
| 9.0 - 8.0 | ER32 -0902 |

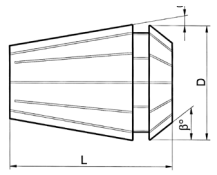
| Clamping Range Ø | Part Number |
|---|---|
| 10.0 - 9.0 | ER32 -1002 |
| 11.0 - 10.0 | ER32 -1102 |
| 12.0 - 11.0 | ER32 -1202 |
| 13.0 - 12.0 | ER32 -1302 |
| 14.0 - 13.0 | ER32 -1402 |
| 15.0 - 14.0 | ER32 -1502 |
| 16.0 - 15.0 | ER32 -1602 |
| 17.0 - 16.0 | ER32 -1702 |
| 18.0 - 17.0 | ER32 -1802 |
| 19.0 - 18.0 | ER32 -1902 |
| 20.0 - 19.0 | ER32 -2002 |
| 25.0 - 24.0 | ER32 -2502 |



ER 32

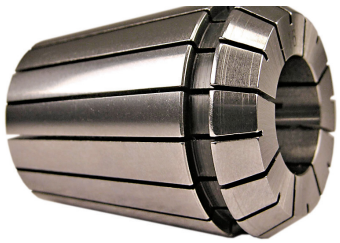
# ER 32 - Super Precision Collets
# DIN 6499-B
# 10 Micron Higher Accuracy

| | |
|---|---|
| D | 33mm |
| L | 40mm |
| Clamping Range | 1.0-25mm |
| Clamping Steps | 1.0mm |




| Clamping Range Ø | Part Number |
|---|---|
| 1.0 - 0.5 | ER32 -0101 |
| 1.5 - 1.0 | ER32 -0151 |
| 2.0 - 1.5 | ER32 -0201 |
| 2.5 - 2.0 | ER32 -0251 |
| 3.0 - 2.5 | ER32 -0301 |
| 3.5 - 2.5 | ER32 -0351 |
| 4.0 - 3.0 | ER32 -0401 |
| 4.5 - 3.5 | ER32 -0451 |
| 5.0 - 4.0 | ER32 -0501 |
| 6.0 - 5.0 | ER32 -0601 |
| 7.0 - 6.0 | ER32 -0701 |
| 8.0 - 7.0 | ER32 -0801 |
| 9.0 - 8.0 | ER32 -0901 |

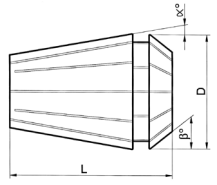
| Clamping Range Ø | Part Number |
|---|---|
| 10.0 - 9.0 | ER32 -1001 |
| 11.0 - 10.0 | ER32 -1101 |
| 12.0 - 11.0 | ER32 -1201 |
| 13.0 - 12.0 | ER32 -1301 |
| 14.0 - 13.0 | ER32 -1401 |
| 15.0 - 14.0 | ER32 -1501 |
| 16.0 - 15.0 | ER32 -1601 |
| 17.0 - 16.0 | ER32 -1701 |
| 18.0 - 17.0 | ER32 -1801 |
| 19.0 - 18.0 | ER32 -1901 |
| 20.0 - 19.0 | ER32 -2001 |
| 25.0 - 24.0 | ER32 -2501 |



ER 32

# ER 32 - Ultra Precision Collets
# TOPAC
# 5 Micron Top Accuracy

| | |
|---|---|
| D | 33mm |
| L | 40mm |
| Clamping Range | 1.0-25mm |
| Clamping Steps | 1.0mm |




| Clamping Range Ø | Part Number |
|---|---|
| 1.0 - 0.5 | ER32 -010T |
| 1.5 - 1.0 | ER32 -015T |
| 2.0 - 1.5 | ER32 -020T |
| 2.5 - 2.0 | ER32 -025T |
| 3.0 - 2.5 | ER32 -030T |
| 3.5 - 2.5 | ER32 -035T |
| 4.0 - 3.0 | ER32 -040T |
| 4.5 - 3.5 | ER32 -045T |
| 5.0 - 4.0 | ER32 -050T |
| 6.0 - 5.0 | ER32 -060T |
| 7.0 - 6.0 | ER32 -070T |
| 8.0 - 7.0 | ER32 -080T |
| 9.0 - 8.0 | ER32 -090T |

| Clamping Range Ø | Part Number |
|---|---|
| 10.0 - 9.0 | ER32 -100T |
| 11.0 - 10.0 | ER32 -110T |
| 12.0 - 11.0 | ER32 -120T |
| 13.0 - 12.0 | ER32 -130T |
| 14.0 - 13.0 | ER32 -140T |
| 15.0 - 14.0 | ER32 -150T |
| 16.0 - 15.0 | ER32 -160T |
| 17.0 - 16.0 | ER32 -170T |
| 18.0 - 17.0 | ER32 -180T |
| 19.0 - 18.0 | ER32 -190T |
| 20.0 - 19.0 | ER32 -200T |
| 25.0 - 24.0 | ER32 -250T |

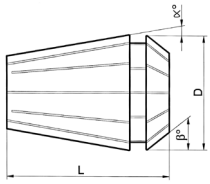


# ER 40 - Precision Collets
# DIN 6499-B
# 15-20 Micron General Purpose



| Clamping Range Ø | Part Number | Clamping Range Ø | Part Number |
|---|---|---|---|
| 2.0 - 1.5 | ER40 -0202 | 14.0 - 13.0 | ER40 -1402 |
| 2.5 - 2.0 | ER40 -0252 | 15.0 - 14.0 | ER40 -1502 |
| 3.0 - 2.5 | ER40 -0302 | 16.0 - 15.0 | ER40 -1602 |
| 3.5 - 2.5 | ER40 -0352 | 17.0 - 16.0 | ER40 -1702 |
| 4.0 - 3.0 | ER40 -0402 | 18.0 - 17.0 | ER40 -1802 |
| 4.5 - 3.5 | ER40 -0452 | 19.0 - 18.0 | ER40 -1902 |
| 5.0 - 4.0 | ER40 -0502 | 20.0 - 19.0 | ER40 -2002 |
| 6.0 - 5.0 | ER40 -0602 | 21.0 - 20.0 | ER40 -2102 |
| 7.0 - 6.0 | ER40 -0702 | 22.0 - 21.0 | ER40 -2202 |
| 8.0 - 7.0 | ER40 -0802 | 23.0 - 22.0 | ER40 -2302 |
| 9.0 - 8.0 | ER40 -0902 | 24.0 - 23.0 | ER40 -2402 |
| 10.0 - 9.0 | ER40 -1002 | 25.0 - 24.0 | ER40 -2502 |
| 11.0 - 10.0 | ER40 -1102 | 26.0 - 25.0 | ER40 -2602 |
| 12.0 - 11.0 | ER40 -1202 | 30.0 - 29.0 | ER40 -3002 |
| 13.0 - 12.0 | ER40 -1302 | 32.0 - 31.0 | ER40 -3202 |

| | |
|---|---|
| D | 41mm |
| L | 46mm |
| Clamping Range | 2.0-32mm |
| Clamping Steps | 1.0mm |




*Up to Ø3mm the collapsing capacity is 0.5mm*

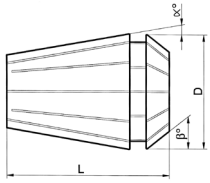
ER 40

# ER 40 - Super Precision Collets
# DIN 6499-B
# 10 Micron Higher Accuracy



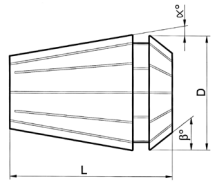
| Clamping Range Ø | Part Number | Clamping Range Ø | Part Number |
|---|---|---|---|
| 2.0 - 1.5 | ER40 -0201 | 14.0 - 13.0 | ER40 -1401 |
| 2.5 - 2.0 | ER40 -0251 | 15.0 - 14.0 | ER40 -1501 |
| 3.0 - 2.5 | ER40 -0301 | 16.0 - 15.0 | ER40 -1601 |
| 3.5 - 2.5 | ER40 -0351 | 17.0 - 16.0 | ER40 -1701 |
| 4.0 - 3.0 | ER40 -0401 | 18.0 - 17.0 | ER40 -1801 |
| 4.5 - 3.5 | ER40 -0451 | 19.0 - 18.0 | ER40 -1901 |
| 5.0 - 4.0 | ER40 -0501 | 20.0 - 19.0 | ER40 -2001 |
| 6.0 - 5.0 | ER40 -0601 | 21.0 - 20.0 | ER40 -2101 |
| 7.0 - 6.0 | ER40 -0701 | 22.0 - 21.0 | ER40 -2201 |
| 8.0 - 7.0 | ER40 -0801 | 23.0 - 22.0 | ER40 -2301 |
| 9.0 - 8.0 | ER40 -0901 | 24.0 - 23.0 | ER40 -2401 |
| 10.0 - 9.0 | ER40 -1001 | 25.0 - 24.0 | ER40 -2501 |
| 11.0 - 10.0 | ER40 -1101 | 26.0 - 25.0 | ER40 -2601 |
| 12.0 - 11.0 | ER40 -1201 | 30.0 - 29.0 | ER40 -3001 |
| 13.0 - 12.0 | ER40 -1301 | 32.0 - 31.0 | ER40 -3201 |

| | |
|---|---|
| D | 41mm |
| L | 46mm |
| Clamping Range | 2.0-32mm |
| Clamping Steps | 1.0mm |



# ER 40 - Precision Collets
# TOPAC
# 5 Micron Top Accuracy

| | |
|---|---|
| D | 41mm |
| L | 46mm |
| Clamping Range | 2.0-32mm |
| Clamping Steps | 1.0mm |




| Clamping Range Ø | Part Number | Clamping Range Ø | Part Number |
|---|---|---|---|
| 2.0 - 1.5 | ER40 -020T | 14.0 - 13.0 | ER40 -140T |
| 2.5 - 2.0 | ER40 -025T | 15.0 - 14.0 | ER40 -150T |
| 3.0 - 2.5 | ER40 -030T | 16.0 - 15.0 | ER40 -160T |
| 3.5 - 2.5 | ER40 -035T | 17.0 - 16.0 | ER40 -170T |
| 4.0 - 3.0 | ER40 -040T | 18.0 - 17.0 | ER40 -180T |
| 4.5 - 3.5 | ER40 -045T | 19.0 - 18.0 | ER40 -190T |
| 5.0 - 4.0 | ER40 -050T | 20.0 - 19.0 | ER40 -200T |
| 6.0 - 5.0 | ER40 -060T | 21.0 - 20.0 | ER40 -210T |
| 7.0 - 6.0 | ER40 -070T | 22.0 - 21.0 | ER40 -220T |
| 8.0 - 7.0 | ER40 -080T | 23.0 - 22.0 | ER40 -230T |
| 9.0 - 8.0 | ER40 -090T | 24.0 - 23.0 | ER40 -240T |
| 10.0 - 9.0 | ER40 -100T | 25.0 - 24.0 | ER40 -250T |
| 11.0 - 10.0 | ER40 -110T | 26.0 - 25.0 | ER40 -260T |
| 12.0 - 11.0 | ER40 -120T | 30.0 - 29.0 | ER40 -300T |
| 13.0 - 12.0 | ER40 -130T | 32.0 - 31.0 | ER40 -320T |



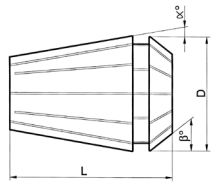
*Up to Ø3mm the collapsing capacity is 0.5mm*

The length of ER40 30mm collet is 39mm
The length of ER40 32mm collet is 33mm

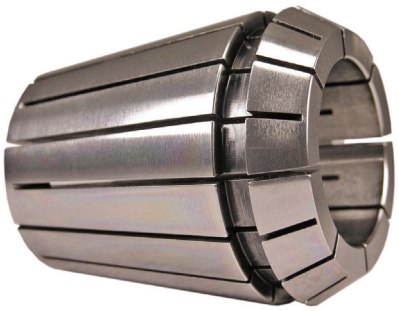


# ER 50 - Precision Collets
# DIN 6499-B
# 15-20 Micron General Purpose

| | |
|---|---|
| D | 52mm |
| L | 60mm |
| Clamping Range | 12.0-34mm |
| Clamping Steps | 2.0mm |




| Clamping Range Ø | Part Number |
|---|---|
| 12.0 - 10.0 | ER50 - 1202 |
| 14.0 - 12.0 | ER50 - 1402 |
| 16.0 - 14.0 | ER50 - 1602 |
| 18.0 - 16.0 | ER50 - 1802 |
| 20.0 - 18.0 | ER50 - 2002 |
| 22.0 - 20.0 | ER50 - 2202 |
| 24.0 - 22.0 | ER50 - 2402 |
| 25.0 - 23.0 | ER50 - 2502 |
| 26.0 - 24.0 | ER50 - 2602 |
| 28.0 - 26.0 | ER50 - 2802 |
| 30.0 - 28.0 | ER50 - 3002 |
| 32.0 - 30.0 | ER50 - 3202 |
| 34.0 - 32.0 | ER50 - 3402 |



ER8 SET2

## ER 8 - Collet Set - 9pcs
## DIN 6499-B 15-20 Micron General Purpose

| Clamping Range Ø | Part Number |
|---|---|
| 9pcs ER8 collets | |
| Ø1 to 5mm in | ER08 - SET2 |
| 0.5mm increment | |



ER8 SET1

## ER 8 - Collet Set - 9pcs
## DIN 6499-B 10 Micron Higher Accuracy

| Clamping Range Ø | Part Number |
|---|---|
| 9pcs ER8 collets | |
| Ø1 to 5mm in | ER08 - SET1 |
| 0.5mm increment | |

ER8 SETT

## ER 8 - Collet Set - 9pcs
## TOPAC 5 Micron Top Accuracy

| Clamping Range Ø | Part Number |
|---|---|
| 9pcs ER8 collets | |
| Ø1 to 5mm in | ER08 - SETT |
| 0.5mm increment | |

ER11 SET2

## ER 11 - Collet Set - 13pcs
## DIN 6499-B 15-20 Micron General Purpose

| Clamping Range Ø | Part Number |
|---|---|
| 13pcs ER11 collets | |
| Ø1 to 7mm in | ER11 - SET2 |
| 0.5mm increment | |



ER11 SET1

## ER 11 - Collet Set - 13pcs
## DIN 6499-B 10 Micron Higher Accuracy

| Clamping Range Ø | Part Number |
|---|---|
| 13pcs ER11 collets | |
| Ø1 to 7mm in | ER11 - SET1 |
| 0.5mm increment | |

ER11 SETT

## ER 11 - Collet Set - 13pcs
## TOPAC 5 Micron Top Accuracy

| Clamping Range Ø | Part Number |
|---|---|
| 13pcs ER11 collets | |
| Ø1 to 7mm in | ER11 - SETT |
| 0.5mm increment | |

## ER 16 - Collet Set - 10pcs
## DIN 6499-B 15-20 Micron General Purpose

ER 16 SET2

| Clamping Range Ø | Part Number |
|---|---|
| 10pcs ER16 collets Ø1 to 10mm in 1.0mm increment | ER16 - SET2 |

## ER 16 - Collet Set - 10pcs
## DIN 6499-B 10 Micron Higher Accuracy

ER 16 SET1

| Clamping Range Ø | Part Number |
|---|---|
| 10pcs ER16 collets Ø1 to 10mm in 1.0mm increment | ER16 - SET1 |



## ER 16 - Collet Set - 10pcs
## TOPAC 5 Micron Top Accuracy

ER 16 SETT

| Clamping Range Ø | Part Number |
|---|---|
| 10pcs ER16 collets Ø1 to 10mm in 1.0mm increment | ER16 - SETT |

## ER 20 - Collet Set - 12pcs
## DIN 6499-B 15-20 Micron General Purpose

ER 20 SET2

| Clamping Range Ø | Part Number |
|---|---|
| 12pcs ER20 collets Ø2 to 13mm in 1.0mm increment | ER20 - SET2 |

## ER 20 - Collet Set - 12pcs
## DIN 6499-B 10 Micron Higher Accuracy

ER 20 SET1

| Clamping Range Ø | Part Number |
|---|---|
| 12pcs ER20 collets Ø2 to 13mm in 1.0mm increment | ER20 - SET1 |



## ER 20 - Collet Set - 12pcs
## TOPAC 5 Micron Top Accuracy

ER 20 SETT

| Clamping Range Ø | Part Number |
|---|---|
| 12pcs ER20 collets Ø2 to 13mm in 1.0mm increment | ER20 - SETT |

ER25 SET2

## ER 25 - Collet Set - 15pcs
## DIN 6499-B 15-20 Micron General Purpose

| Clamping Range Ø | Part Number |
|---|---|
| 15pcs ER25 collets Ø2 to 16mm in 1.0mm increment | ER25 - SET2 |



ER25 SET1

## ER 25 - Collet Set - 15pcs
## DIN 6499-B 10 Micron Higher Accuracy

| Clamping Range Ø | Part Number |
|---|---|
| 15pcs ER25 collets Ø2 to 16mm in 1.0mm increment | ER25 - SET1 |

ER25 SETT

## ER 25 - Collet Set - 15pcs
## TOPAC 5 Micron Top Accuracy

| Clamping Range Ø | Part Number |
|---|---|
| 15pcs ER25 collets Ø2 to 16mm in 1.0mm increment | ER25 - SETT |

ER32 SET2

## ER 32 - Collet Set - 18pcs
## DIN 6499-B 15-20 Micron General Purpose

| Clamping Range Ø | Part Number |
|---|---|
| 18pcs ER32 collets Ø3 to 20mm in 1.0mm increment | ER32 - SET2 |



ER32 SET1

## ER 32 - Collet Set - 18pcs
## DIN 6499-B 10 Micron Higher Accuracy

| Clamping Range Ø | Part Number |
|---|---|
| 18pcs ER32 collets Ø3 to 20mm in 1.0mm increment | ER32 - SET1 |

ER32 SETT

## ER 32 - Collet Set - 18pcs
## TOPAC 5 Micron Top Accuracy

| Clamping Range Ø | Part Number |
|---|---|
| 18pcs ER32 collets Ø3 to 20mm in 1.0mm increment | ER32 - SETT |

## ER 40 - Collet Set - 23pcs
## DIN 6499-B 15-20 Micron General Purpose

ER 40 SET2

| Clamping Range Ø | Part Number |
|---|---|
| 23pcs ER40 collets | |
| Ø4 to 26mm in | ER40 - SET2 |
| 1.0mm increment | |

## ER 40 - Collet Set - 23pcs
## DIN 6499-B 10 Micron Higher Accuracy

ER 40 SET1

| Clamping Range Ø | Part Number |
|---|---|
| 23pcs ER40 collets | |
| Ø4 to 26mm in | ER40 - SET1 |
| 1.0mm increment | |



## ER 40 - Collet Set - 23pcs
## TOPAC 5 Micron Top Accuracy

ER 40 SETT

| Clamping Range Ø | Part Number |
|---|---|
| 23pcs ER40 collets | |
| Ø4 to 26mm in | ER40 - SETT |
| 1.0mm increment | |

## ER 50 - Collet Set - 12pcs
## DIN 6499-B 15-20 Micron General Purpose

ER 50 SET2

| Clamping Range Ø | Part Number |
|---|---|
| 12pcs ER50 collets | |
| Ø12 to 34mm in | ER50 - SET2 |
| 2.0mm increment | |



# Tapping ER 16 - Super Precision Collets
## 10 Micron Higher Accuracy
## DIN ISO JIS

ER16
D=16.5 L=27.5



| Part Number | d1 | Tap Specifications | | Square A (mm) |
|---|---|---|---|---|
| ERT16 -028 | 2.8 | DIN371 M2-M2.5 | DIN376 M4 | 2.1 |
| ERT16 -035 | 3.5 | DIN371 M3 | DIN376 M5 | 2.7 |
| ERT16 -040 | 4 | ISO M4/M5 | JIS M3/M3.5 | 3.15 / 3.2 |
| ERT16 -045 | 4.5 | DIN371 M4 | DIN376 M6 | 3.4 |
| ERT16 -050 | 5 | ISO M5 | JIS M4 | 4 |
| ERT16 -055 | 5.5 | DIN374/376 M7 | | 4.3 |
| ERT16 -060 | 6 | DIN371 M4.5/M5/M6 | DIN374/376 M8 | 4.9 |
| ERT16 -063 | 6.3 | ISO M6-M8-1/4-5/16 | | 5 |
| ERT16 -070 | 7 | DIN371 M7 | DIN374/376 M9-M10 JIS M9-M10 | 5.5 |
| ERT16 -080 | 8 | DIN371 M8 | ISO M8-M10-7/16-5/16 | 6.2 / 6.3 |



# Tapping ER 20 - Super Precision Collets
## 10 Micron Higher Accuracy
## DIN ISO JIS

ER20
D=20.5 L=32.5



| Part Number | d1 | Tap Specifications | | Square A (mm) |
|---|---|---|---|---|
| ERT20 -035 | 3.5 | DIN371 M3 | DIN376 M5 | 2.7 |
| ERT20 -040 | 4 | ISO M4/M5 | JIS M3/M3.5 | 3.15 / 3.2 |
| ERT20 -045 | 4.5 | DIN371 M4 | DIN376 M6 | 3.4 |
| ERT20 -050 | 5 | ISO M5 | JIS M4 | 4 |
| ERT20 -055 | 5.5 | DIN374/376 M7 | | 4.3 |
| ERT20 -060 | 6 | DIN371 M4.5/M5/M6 | DIN374/376 M8 | 4.9 |
| ERT20 -063 | 6.3 | ISO M6-M8-1/4-5/16 | | 5 |
| ERT20 -070 | 7 | DIN371 M7 | DIN374/376 M9-M10 JIS M9-M10 | 5.5 |
| ERT20 -080 | 8 | DIN371 M8 | ISO M8-M10-7/16-5/16 | 6.2 / 6.3 |
| ERT20 -090 | 9 | DIN374/376 M12 | ISO M12 -1/2 | 7.0 / 7.1 |
| ERT20 -100 | 10 | DIN371 M10 | ISO M10 -3/8 | 8 |
| ERT20 -110 | 11 | DIN374/376 M14 -9/16 | | 9 |
| ERT20 -120 | 12 | DIN374/376 M16 -5/8 | | 9 |



# Tapping ER 25 - Super Precision Collets
## 10 Micron Higher Accuracy
## DIN ISO JIS

ER25
D=25.5 L=34



| Part Number | d1 | Tap Specifications | | Square A (mm) |
|---|---|---|---|---|
| ERT25 -035 | 3.5 | DIN371 M3 | DIN376 M5 | 2.7 |
| ERT25 -040 | 4 | ISO M4/M5 | JIS M3/M3.5 | 3.15 / 3.2 |
| ERT25 -045 | 4.5 | DIN371 M4 | DIN376 M6 | 3.4 |
| ERT25 -050 | 5 | ISO M5 | JIS M4 | 4 |
| ERT25 -055 | 5.5 | DIN374/376 M7 | | 4.3 |
| ERT25 -060 | 6 | DIN371 M4.5/M5/M6 | DIN374/376 M8 | 4.9 |
| ERT25 -063 | 6.3 | ISO M6-M8-1/4-5/16 | | 5 |
| ERT25 -070 | 7 | DIN371 M7 | DIN374/376 M9-M10 JIS M9-M10 | 5.5 |
| ERT25 -080 | 8 | DIN371 M8 | ISO M8-M10-7/16-5/16 | 6.2 / 6.3 |
| ERT25 -090 | 9 | DIN374/376 | ISO M12 -1/2 | 7.0 / 7.1 |
| ERT25 -100 | 10 | DIN371 M10 | ISO M10 -3/8 | 8 |
| ERT25 -110 | 11 | DIN374/376 M14 -9/16 | | 9 |
| ERT25 -120 | 12 | DIN374/376 M16 -5/8 | | 9 |
| ERT25 -125 | 12.5 | ISO M16 -5/8 | JIS M16 | 10 |
| ERT25 -140 | 14 | DIN374/376 M18 | JIS M18 ISO M18/M20 3/4 | 11.0 / 11.2 |
| ERT25 -160 | 16 | DIN374/376 M20 | | 12 |

# Tapping ER 32 - Super Precision Collets
## 10 Micron Higher Accuracy
## DIN ISO JIS

| Part Number | d1 | Tap Specifications | | Square A (mm) |
|---|---|---|---|---|
| ERT32 -035 | 3.5 | DIN371 M3 | DIN376 M5 | 2.7 |
| ERT32 -040 | 4 | ISO M4/M5 | JIS M3/M3.5 | 3.15/3.2 |
| ERT32 -045 | 4.5 | DIN371 M4 | DIN376 M6 | 3.4 |
| ERT32 -050 | 5 | ISO M5 | JIS M4 | 4 |
| ERT32 -055 | 5.5 | DIN374/376 M7 | | 4.3 |
| ERT32 -060 | 6 | DIN371 M4.5/M5/M6 | DIN374/376 M8 | 4.9 |
| ERT32 -063 | 6.3 | ISO M6-M8-1/4-5/16 | | 5 |
| ERT32 -070 | 7 | DIN371 M7 | DIN374/376 M9-M10 JIS M9-M10 | 5.5 |
| ERT32 -080 | 8 | DIN371 M8 | ISO M8-M10-7/16-5/16 | 6.2/6.3 |
| ERT32 -090 | 9 | DIN374/376 | ISO M12 -1/2 | 7.0/7.1 |
| ERT32 -100 | 10 | DIN371 M10 | ISO M10 -3/8 | 8 |
| ERT32 -110 | 11 | DIN374/376 M14 -9/16 | | 9 |
| ERT32 -120 | 12 | DIN374/376 M16 -5/8 | | 9 |
| ERT32 -125 | 12.5 | ISO M16 -5/8 | JIS M16 | 10 |
| ERT32 -140 | 14 | DIN374/376 M18 | JIS M18 ISO M18/M20 3/4 | 11.0/11.2 |
| ERT32 -160 | 16 | DIN374/376 M20 | | 12 |
| ERT32 -180 | 18 | DIN374/376 M27-1 | ISO M27-M30 - 1-1/8" | 14.0/14.5 |
| ERT32 -200 | 20 | DIN374/376 M22-M24-7/8 | ISO M24 - 1" | 16 |

ER32
D=32.5 L=40



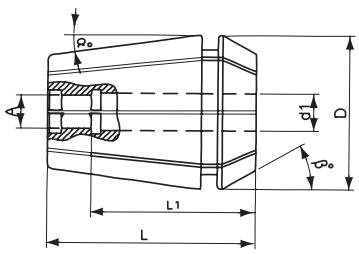


# Tapping ER 40 - Super Precision Collets
## 10 Micron Higher Accuracy
## DIN ISO JIS

| Part Number | d1 | Tap Specifications | | Square A (mm) |
|---|---|---|---|---|
| ERT40 -040 | 4 | ISO M4/M5 | JIS M3/M3.5 | 3.15/3.2 |
| ERT40 -045 | 4.5 | DIN371 M4 | DIN376 M6 | 3.4 |
| ERT40 -050 | 5 | ISO M5 | JIS M4 | 4 |
| ERT40 -055 | 5.5 | DIN374/376 M7 | | 4.3 |
| ERT40 -060 | 6 | DIN371 M4.5/M5/M6 | DIN374/376 M8 | 4.9 |
| ERT40 -063 | 6.3 | ISO M6-M8 1/4-5/16 | | 5 |
| ERT40 -070 | 7 | DIN371 M7 | DIN374/376 M9-M10 JIS M9-M10 | 5.5 |
| ERT40 -080 | 8 | DIN371 M8 | ISO M8-M10-7/16-5/16 | 6.2/6.3 |
| ERT40 -090 | 9 | DIN374/376 M12 | ISO M12-1/2 | 7.0/7.1 |
| ERT40 -100 | 10 | DIN371 M10 | ISO M10-3/8 | 8 |
| ERT40 -110 | 11 | DIN374/376 M14-9/16 | | 9 |
| ERT40 -120 | 12 | DIN374/376 M16-5/8 | | 9 |
| ERT40 -125 | 12.5 | ISO M16-5/8 | JIS M16 | 10 |
| ERT40 -140 | 14 | DIN374/376 M18 | JIS M18-M20 3/4 | 11.0/11.2 |
| ERT40 -160 | 16 | DIN374/376 M20 | | 12 |
| ERT40 -170 | 17 | JIS M22 7/8 | | 13 |
| ERT40 -180 | 18 | DIN374/376 M22-M24-7/8 | ISO M24-1 | 14.0/14.5 |
| ERT40 -200 | 20 | DIN374/376 M27-1 | ISO M27-M30-1-1/8 | 16 |
| ERT40 -220 | 22 | DIN374/376 M30-1-1/8 | | 18 |
| ERT40 -250 | 25 | DIN374/376 M33-1-1/4 | ISO M36 | 20 |

ER40
D=40.5 L=46





ERT16 SET

## Tapping ERT 16 - Super Precision Collet Set - 10pcs
## 10 Micron Higher Accuracy
## suitable for taps with shank Ø2.8 - 8.0 - in plastic case



| Content | Part Number |
|---|---|
| All the ERT 16 Tapping Collets | ERT16 - SET |

ERT20 SET

## Tapping ERT 20 - Super Precision Collet Set - 13pcs
## 10 Micron Higher Accuracy
## suitable for taps with shank Ø3.5 - 12.0 - in plastic case



| Content | Part Number |
|---|---|
| All the ERT20 Tapping Collets | ERT20 - SET |

ERT25 SET

## Tapping ERT 25 - Super Precision Collet Set - 15pcs
## 10 Micron Higher Accuracy
## suitable for taps with shank Ø3.5 - 16 - in plastic case



| Content | Part Number |
|---|---|
| All the ERT25 Except 12.5mm | ERT25 - SET |

ERT32 SET

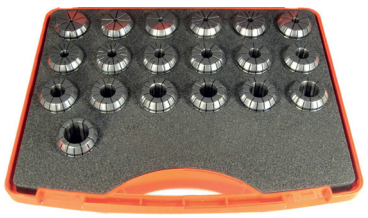
## Tapping ERT 32 - Super Precision Collet Set - 18pcs
## 10 Micron Higher Accuracy
## suitable for taps with shank Ø3.5 - 20.0 - in plastic case



| Content | Part Number |
|---|---|
| All the ERT32 Tapping Collets | ERT32 - SET |

ERT40 SET

## Tapping ERT 40 - Super Precision Collet Set - 19pcs
## 10 Micron Higher Accuracy
## suitable for taps with shank Ø4.0 - 25.0 - in plastic case



| Content | Part Number |
|---|---|
| All the ERT40 Except 17mm | ERT40 - SET |

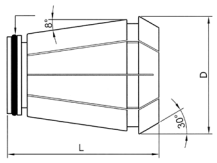
# Through Coolant Sealed - ER Precision Collets
## DIN 6499-B
## 15-20 Micron General Purpose

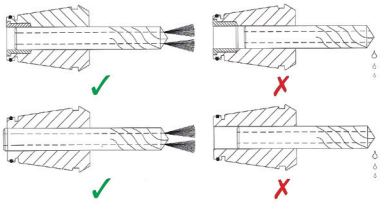
Thru Coolant

| Clamping Ømm | Part # ERC 16 | Part # ERC 20 | Part # ERC 25 | Part # ERC 32 | Part # ERC 40 |
|---|---|---|---|---|---|
| 3 | ERC16 -0302 | ERC20 -0302 | ERC25 -0302 | ERC32 -0302 | ERC40 -0302 |
| 4 | ERC16 -0402 | ERC20 -0402 | ERC25 -0402 | ERC32 -0402 | ERC40 -0402 |
| 5 | ERC16 -0502 | ERC20 -0502 | ERC25 -0502 | ERC32 -0502 | ERC40 -0502 |
| 6 | ERC16 -0602 | ERC20 -0602 | ERC25 -0602 | ERC32 -0602 | ERC40 -0602 |
| 7 | ERC16 -0702 | ERC20 -0702 | ERC25 -0702 | ERC32 -0702 | ERC40 -0702 |
| 8 | ERC16 -0802 | ERC20 -0802 | ERC25 -0802 | ERC32 -0802 | ERC40 -0802 |
| 9 | ERC16 -0902 | ERC20 -0902 | ERC25 -0902 | ERC32 -0902 | ERC40 -0902 |
| 10 | ERC16 -1002 | ERC20 -1002 | ERC25 -1002 | ERC32 -1002 | ERC40 -1002 |
| 11 | ERC16 -1102 | ERC20 -1102 | ERC25 -1102 | ERC32 -1102 | ERC40 -1102 |
| 12 | ~ | ERC20 -1202 | ERC25 -1202 | ERC32 -1202 | ERC40 -1202 |
| 13 | ~ | ERC20 -1302 | ERC25 -1302 | ERC32 -1302 | ERC40 -1302 |
| 14 | ~ | ~ | ERC25 -1402 | ERC32 -1402 | ERC40 -1402 |
| 15 | ~ | ~ | ERC25 -1502 | ERC32 -1502 | ERC40 -1502 |
| 16 | ~ | ~ | ERC25 -1602 | ERC32 -1602 | ERC40 -1602 |
| 17 | ~ | ~ | ~ | ERC32 -1702 | ERC40 -1702 |
| 18 | ~ | ~ | ~ | ERC32 -1802 | ERC40 -1802 |
| 19 | ~ | ~ | ~ | ERC32 -1902 | ERC40 -1902 |
| 20 | ~ | ~ | ~ | ERC32 -2002 | ERC40 -2002 |
| 21 | ~ | ~ | ~ | ~ | ERC40 -2102 |
| 22 | ~ | ~ | ~ | ~ | ERC40 -2202 |
| 23 | ~ | ~ | ~ | ~ | ERC40 -2302 |
| 24 | ~ | ~ | ~ | ~ | ERC40 -2402 |
| 25 | ~ | ~ | ~ | ~ | ERC40 -2502 |
| 26 | ~ | ~ | ~ | ~ | ERC40 -2602 |



| ER Range | D (mm) | L (mm) |
|---|---|---|
| ER 16 | 17 | 27.5 |
| ER 20 | 21 | 31.5 |
| ER 25 | 26 | 34 |
| ER 32 | 40 | 33 |
| ER 40 | 41 | 46 |



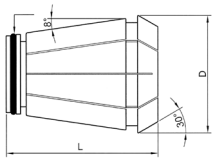

# Through Coolant Sealed - ER Super Precision Collets
## DIN 6499-B
## 10 Micron Higher Accuracy

Thru Coolant

| Clamping Ømm | Part # ERC 16 | Part # ERC 20 | Part # ERC 25 | Part # ERC 32 | Part # ERC 40 |
|---|---|---|---|---|---|
| 3 | ERC16 -0301 | ERC20 -0301 | ERC25 -0301 | ERC32 -0301 | ERC40 -0301 |
| 4 | ERC16 -0401 | ERC20 -0401 | ERC25 -0401 | ERC32 -0401 | ERC40 -0401 |
| 5 | ERC16 -0501 | ERC20 -0501 | ERC25 -0501 | ERC32 -0501 | ERC40 -0501 |
| 6 | ERC16 -0601 | ERC20 -0601 | ERC25 -0601 | ERC32 -0601 | ERC40 -0601 |
| 7 | ERC16 -0701 | ERC20 -0701 | ERC25 -0701 | ERC32 -0701 | ERC40 -0701 |
| 8 | ERC16 -0801 | ERC20 -0801 | ERC25 -0801 | ERC32 -0801 | ERC40 -0801 |
| 9 | ERC16 -0901 | ERC20 -0901 | ERC25 -0901 | ERC32 -0901 | ERC40 -0901 |
| 10 | ERC16 -1001 | ERC20 -1001 | ERC25 -1001 | ERC32 -1001 | ERC40 -1001 |
| 11 | ERC16 -1101 | ERC20 -1101 | ERC25 -1101 | ERC32 -1101 | ERC40 -1101 |
| 12 | ~ | ERC20 -1201 | ERC25 -1201 | ERC32 -1201 | ERC40 -1201 |
| 13 | ~ | ERC20 -1301 | ERC25 -1301 | ERC32 -1301 | ERC40 -1301 |
| 14 | ~ | ~ | ERC25 -1401 | ERC32 -1401 | ERC40 -1401 |
| 15 | ~ | ~ | ERC25 -1501 | ERC32 -1501 | ERC40 -1501 |
| 16 | ~ | ~ | ERC25 -1601 | ERC32 -1601 | ERC40 -1601 |
| 17 | ~ | ~ | ~ | ERC32 -1701 | ERC40 -1701 |
| 18 | ~ | ~ | ~ | ERC32 -1801 | ERC40 -1801 |
| 19 | ~ | ~ | ~ | ERC32 -1901 | ERC40 -1901 |
| 20 | ~ | ~ | ~ | ERC32 -2001 | ERC40 -2001 |
| 21 | ~ | ~ | ~ | ~ | ERC40 -2101 |
| 22 | ~ | ~ | ~ | ~ | ERC40 -2201 |
| 23 | ~ | ~ | ~ | ~ | ERC40 -2301 |
| 24 | ~ | ~ | ~ | ~ | ERC40 -2401 |
| 25 | ~ | ~ | ~ | ~ | ERC40 -2501 |
| 26 | ~ | ~ | ~ | ~ | ERC40 -2601 |



| ER Range | D (mm) | L (mm) |
|---|---|---|
| ER 16 | 17 | 27.5 |
| ER 20 | 21 | 31.5 |
| ER 25 | 26 | 34 |
| ER 32 | 40 | 33 |
| ER 40 | 41 | 46 |



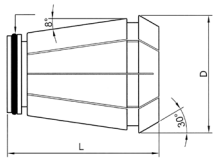

Coolant Sealed performance only when clamped to the nominal diameter.
The shank should be inserted to the back end of the collet as shown in the diagram.
Suitable for all types of ER collet holders.
Apply slightly higher clamping torque than standard ER application for better grip & precision.

Thru Coolant

# Through Coolant Sealed - ER Ultra Precision Collets
# TOPAC
# 5 Micron Top Accuracy



| ER Range | D (mm) | L (mm) |
|---|---|---|
| ER 16 | 17 | 27.5 |
| ER 20 | 21 | 31.5 |
| ER 25 | 26 | 34 |
| ER 32 | 40 | 33 |
| ER 40 | 41 | 46 |




| Clamping Ømm | Part # ERC 16 | Part # ERC 20 | Part # ERC 25 | Part # ERC 32 | Part # ERC 40 |
|---|---|---|---|---|---|
| 3 | ERC16 -030T | ERC20 -030T | ERC25 -030T | ERC32 -030T | ERC40 -030T |
| 4 | ERC16 -040T | ERC20 -040T | ERC25 -040T | ERC32 -040T | ERC40 -040T |
| 5 | ERC16 -050T | ERC20 -050T | ERC25 -050T | ERC32 -050T | ERC40 -050T |
| 6 | ERC16 -060T | ERC20 -060T | ERC25 -060T | ERC32 -060T | ERC40 -060T |
| 7 | ERC16 -070T | ERC20 -070T | ERC25 -070T | ERC32 -070T | ERC40 -070T |
| 8 | ERC16 -080T | ERC20 -080T | ERC25 -080T | ERC32 -080T | ERC40 -080T |
| 9 | ERC16 -090T | ERC20 -090T | ERC25 -090T | ERC32 -090T | ERC40 -090T |
| 10 | ERC16 -100T | ERC20 -100T | ERC25 -100T | ERC32 -100T | ERC40 -100T |
| 11 | ERC16 -110T | ERC20 -110T | ERC25 -110T | ERC32 -110T | ERC40 -110T |
| 12 | ~ | ERC20 -120T | ERC25 -120T | ERC32 -120T | ERC40 -120T |
| 13 | ~ | ERC20 -130T | ERC25 -130T | ERC32 -130T | ERC40 -130T |
| 14 | ~ | ~ | ERC25 -140T | ERC32 -140T | ERC40 -140T |
| 15 | ~ | ~ | ERC25 -150T | ERC32 -150T | ERC40 -150T |
| 16 | ~ | ~ | ERC25 -160T | ERC32 -160T | ERC40 -160T |
| 17 | ~ | ~ | ~ | ERC32 -170T | ERC40 -170T |
| 18 | ~ | ~ | ~ | ERC32 -180T | ERC40 -180T |
| 19 | ~ | ~ | ~ | ERC32 -190T | ERC40 -190T |
| 20 | ~ | ~ | ~ | ERC32 -200T | ERC40 -200T |
| 21 | ~ | ~ | ~ | ~ | ERC40 -210T |
| 22 | ~ | ~ | ~ | ~ | ERC40 -220T |
| 23 | ~ | ~ | ~ | ~ | ERC40 -230T |
| 24 | ~ | ~ | ~ | ~ | ERC40 -240T |
| 25 | ~ | ~ | ~ | ~ | ERC40 -250T |
| 26 | ~ | ~ | ~ | ~ | ERC40 -260T |

Coolant Seal Sets

# Through Coolant Sealed - ER Precision Collet Sets
# DIN 6499-B 15-20 Micron Higher Accuracy - in plastic case



| | Part # ERC16-SET2 8pcs | Part # ERC20-SET2 11pcs | Part # ERC25-SET2 14pcs | Part # ERC32-SET2 18pcs | Part # ERC40-SET2 19pcs |
|---|---|---|---|---|---|
| Contents | All the ERC 16 Coolant Collets | All the ERC 20 Coolant Collets | All the ERC 25 Coolant Collets | All the ERC 32 Coolant Collets | All the ERC 40 Coolant Collets Excluding 21,22,23,24,26 |
| | 3.0-10.0mm | 3.0-13.0mm | 3.0-16.0mm | 3.0-20.0mm | 3.0-25.0mm |

# Through Coolant Sealed - ER Super Precision Collet Sets
# DIN 6499-B 10 Micron Higher Accuracy - in plastic case



| | Part # ERC16-SET1 8pcs | Part # ERC20-SET1 11pcs | Part # ERC25-SET1 14pcs | Part # ERC32-SET1 18pcs | Part # ERC40-SET1 19pcs |
|---|---|---|---|---|---|
| Contents | All the ERC16 Coolant Collets | All the ERC20 Coolant Collets | All the ERC25 Coolant Collets | All the ERC32 Coolant Collets | All the ERC40 Coolant Collets Excluding 21,22,23,24,26 |
| | 3.0-10.0mm | 3.0-13.0mm | 3.0-16.0mm | 3.0-20.0mm | 3.0-25.0mm |

# Through Coolant Sealed - ER Ultra Precision Collet Sets
# TOPAC 5 Micron Top Accuracy - in plastic case

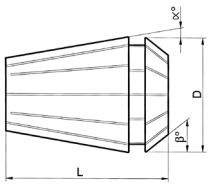
| | Part # ERC16-SETT 8pcs | Part # ERC20-SETT 11pcs | Part # ERC25-SETT 14pcs | Part # ERC32-SETT 18pcs | Part # ERC40-SETT 19pcs |
|---|---|---|---|---|---|
| Contents | All the ERC16 Coolant Collets | All the ERC20 Coolant Collets | All the ERC25 Coolant Collets | All the ERC32 Coolant Collets | All the ERC40 Coolant Collets Excluding 21,22,23,24,26 |
| | 3.0-10.0mm | 3.0-13.0mm | 3.0-16.0mm | 3.0-20.0mm | 3.0-25.0mm |

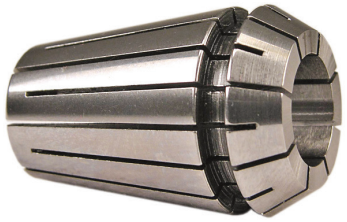
# ER Precision Collets - Imperial
# DIN 6499-B
# 15-20 Micron General Purpose

Imperial

| Clamping Ø inch | Part # ER 8 | Part # ER 11 | Part # ER 16 | Part # ER 20 | Part # ER 25 | Part # ER 32 | Part # ER 40 |
|---|---|---|---|---|---|---|---|
| 1/16" | ER08 -01592 | ER11 -01592 | ER16 -01592 | ER20 -01592 | ER25 -01592 | ~ | ~ |
| 1/8" | ER08 -03182 | ER11 -03182 | ER16 -03182 | ER20 -03182 | ER25 -03182 | ER32 -03182 | ER40 -03182 |
| 3/16" | ER08 -04762 | ER11 -04762 | ER16 -04762 | ER20 -04762 | ER25 -04762 | ER32 -04762 | ER40 -04762 |
| 1/4" | ~ | ER11 -06352 | ER16 -06352 | ER20 -06352 | ER25 -06352 | ER32 -06352 | ER40 -06352 |
| 5/16" | ~ | ~ | ER16 -07942 | ER20 -07942 | ER25 -07942 | ER32 -07942 | ER40 -07942 |
| 3/8" | ~ | ~ | ER16 -09532 | ER20 -09532 | ER25 -09532 | ER32 -09532 | ER40 -09532 |
| 7/16" | ~ | ~ | ~ | ER20 -11112 | ER25 -11112 | ER32 -11112 | ER40 -11112 |
| 1/2" | ~ | ~ | ~ | ER20 -12702 | ER25 -12702 | ER32 -12702 | ER40 -12702 |
| 9/16" | ~ | ~ | ~ | ~ | ER25 -14292 | ER32 -14292 | ER40 -14292 |
| 5/8" | ~ | ~ | ~ | ~ | ER25 -15882 | ER32 -15882 | ER40 -15882 |
| 11/16" | ~ | ~ | ~ | ~ | ~ | ER32 -17642 | ER40 -17642 |
| 3/4" | ~ | ~ | ~ | ~ | ~ | ER32 -19052 | ER40 -19052 |
| 7/8" | ~ | ~ | ~ | ~ | ~ | ~ | ER40 -22232 |
| 15/16" | ~ | ~ | ~ | ~ | ~ | ~ | ER40 -23812 |
| 1" | ~ | ~ | ~ | ~ | ~ | ~ | ER40 -25402 |

Clamping capacity for inch sized collects are the same as the metric sized ER collets:
That is for ER8 and ER11 clamping capacity down to 0.5mm (0.0197inch) and for ER16-ER20-ER25-ER32-ER40 it is 1.0mm (0.0394 inch).



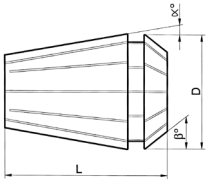



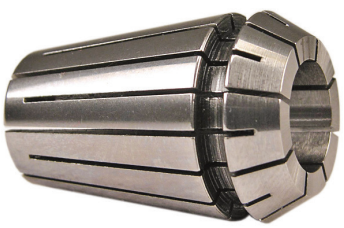
# ER Super Precision Collets - Imperial
# DIN 6499-B
# 10 Micron Higher Accuracy

Imperial

| Clamping Ø inch | Part # ER 8 | Part # ER 11 | Part # ER 16 | Part # ER 20 | Part # ER 25 | Part # ER 32 | Part # ER 40 |
|---|---|---|---|---|---|---|---|
| 1/16" | ER08 -01591 | ER11 -01591 | ER16 -01591 | ER20 -01591 | ER25 -01591 | ~ | ~ |
| 1/8" | ER08 -03181 | ER11 -03181 | ER16 -03181 | ER20 -03181 | ER25 -03181 | ER32 -03181 | ER40 -03181 |
| 3/16" | ER08 -04761 | ER11 -04761 | ER16 -04761 | ER20 -04761 | ER25 -04761 | ER32 -04761 | ER40 -04761 |
| 1/4" | ~ | ER11 -06351 | ER16 -06351 | ER20 -06351 | ER25 -06351 | ER32 -06351 | ER40 -06351 |
| 5/16" | ~ | ~ | ER16 -07941 | ER20 -07941 | ER25 -07941 | ER32 -07941 | ER40 -07941 |
| 3/8" | ~ | ~ | ER16 -09531 | ER20 -09531 | ER25 -09531 | ER32 -09531 | ER40 -09531 |
| 7/16" | ~ | ~ | ~ | ER20 -11111 | ER25 -11111 | ER32 -11111 | ER40 -11111 |
| 1/2" | ~ | ~ | ~ | ER20 -12701 | ER25 -12701 | ER32 -12701 | ER40 -12701 |
| 9/16" | ~ | ~ | ~ | ~ | ER25 -14291 | ER32 -14291 | ER40 -14291 |
| 5/8" | ~ | ~ | ~ | ~ | ER25 -15881 | ER32 -15881 | ER40 -15881 |
| 11/16" | ~ | ~ | ~ | ~ | ~ | ER32 -17641 | ER40 -17641 |
| 3/4" | ~ | ~ | ~ | ~ | ~ | ER32 -19051 | ER40 -19051 |
| 7/8" | ~ | ~ | ~ | ~ | ~ | ~ | ER40 -22231 |
| 15/16" | ~ | ~ | ~ | ~ | ~ | ~ | ER40 -23811 |
| 1" | ~ | ~ | ~ | ~ | ~ | ~ | ER40 -25401 |

Clamping capacity for inch sized collects are the same as the metric sized ER collets:
That is for ER8 and ER11 clamping capacity down to 0.5mm (0.0197inch) and for ER16-ER20-ER25-ER32-ER40 it is 1.0mm (0.0394 inch).

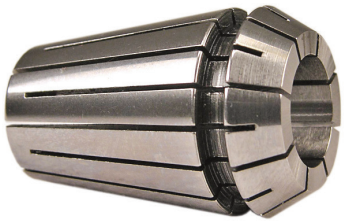


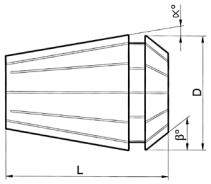



Imperial

# ER Ultra Precision Collets - Imperial
# TOPAC
# 5 Micron Top Accuracy

| Clamping Ø inch | Part # ER 8 | Part # ER 11 | Part # ER 16 | Part # ER 20 | Part # ER 25 | Part # ER 32 | Part # ER 40 |
|---|---|---|---|---|---|---|---|
| 1/16" | ER08 -0159T | ER11 -0159T | ER16 -0159T | ER20 -0159T | ER25 -0159T | ~ | ~ |
| 1/8" | ER08 -0318T | ER11 -0318T | ER16 -0318T | ER20 -0318T | ER25 -0318T | ER32 -0318T | ER40 -0318T |
| 3/16" | ER08 -0476T | ER11 -0476T | ER16 -0476T | ER20 -0476T | ER25 -0476T | ER32 -0476T | ER40 -0476T |
| 1/4" | ~ | ER11 -0635T | ER16 -0635T | ER20 -0635T | ER25 -0635T | ER32 -0635T | ER40 -0635T |
| 5/16" | ~ | ~ | ER16 -0794T | ER20 -0794T | ER25 -0794T | ER32 -0794T | ER40 -0794T |
| 3/8" | ~ | ~ | ER16 -0953T | ER20 -0953T | ER25 -0953T | ER32 -0953T | ER40 -0953T |
| 7/16" | ~ | ~ | ~ | ER20 -1111T | ER25 -1111T | ER32 -1111T | ER40 -1111T |
| 1/2" | ~ | ~ | ~ | ER20 -1270T | ER25 -1270T | ER32 -1270T | ER40 -1270T |
| 9/16" | ~ | ~ | ~ | ~ | ER25 -1429T | ER32 -1429T | ER40 -1429T |
| 5/8" | ~ | ~ | ~ | ~ | ER25 -1588T | ER32 -1588T | ER40 -1588T |
| 11/16" | ~ | ~ | ~ | ~ | ~ | ER32 -1764T | ER40 -1764T |
| 3/4" | ~ | ~ | ~ | ~ | ~ | ER32 -1905T | ER40 -1905T |
| 7/8" | ~ | ~ | ~ | ~ | ~ | ~ | ER40 -2223T |
| 15/16" | ~ | ~ | ~ | ~ | ~ | ~ | ER40 -2381T |
| 1" | ~ | ~ | ~ | ~ | ~ | ~ | ER40 -2540T |





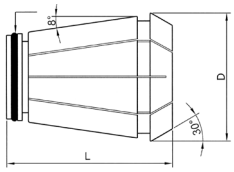

Clamping capacity for inch sized collects are the same as the metric sized ER collets:
That is for ER8 and ER11 clamping capacity down to 0.5mm (0.0197inch) and for ER16-ER20-ER25-ER32-ER40 it is 1.0mm (0.0394 inch).

## Through Coolant Sealed - ER Precision Collets Imperial
## DIN 6499-B
## 15-20 Micron General Purpose

Imperial Thru Coolant

| Clamping Ø inch | Part # ERC 16 | Part # ERC 20 | Part # ERC 25 | Part # ERC 32 | Part # ERC 40 |
|---|---|---|---|---|---|
| 1/4" | ERC16 -06352 | ERC20 -06352 | ERC25 -06352 | ERC32 -06352 | ERC40 -06352 |
| 5/16" | ERC16 -07942 | ERC20 -07942 | ERC25 -07942 | ERC32 -07942 | ERC40 -07942 |
| 3/8" | ERC16 -09532 | ERC20 -09532 | ERC25 -09532 | ERC32 -09532 | ERC40 -09532 |
| 7/16" | ~ | ERC20 -11112 | ERC25 -11112 | ERC32 -11112 | ERC40 -11112 |
| 1/2" | ~ | ~ | ERC25 -12702 | ERC32 -12702 | ERC40 -12702 |
| 9/16" | ~ | ~ | ERC25 -14292 | ERC32 -14292 | ERC40 -14292 |
| 5/8" | ~ | ~ | ERC25 -15882 | ERC32 -15882 | ERC40 -15882 |
| 3/4" | ~ | ~ | ~ | ERC32 -19502 | ERC40 -19502 |
| 1" | ~ | ~ | ~ | ~ | ERC40 -25402 |



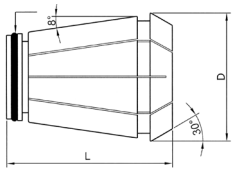



## Through Coolant Sealed - ER Super Precision Collets Imperial
## DIN 6499-B
## 10 Micron Higher Accuracy

Imperial Thru Coolant

| Clamping Ø inch | Part # ERC 16 | Part # ERC 20 | Part # ERC 25 | Part # ERC 32 | Part # ERC 40 |
|---|---|---|---|---|---|
| 1/4" | ERC16 -06351 | ERC20 -06351 | ERC25 -06351 | ERC32 -06351 | ERC40 -06351 |
| 5/16" | ERC16 -07941 | ERC20 -07941 | ERC25 -07941 | ERC32 -07941 | ERC40 -07941 |
| 3/8" | ERC16 -09531 | ERC20 -09531 | ERC25 -09531 | ERC32 -09531 | ERC40 -09531 |
| 7/16" | ~ | ERC20 -11111 | ERC25 -11111 | ERC32 -11111 | ERC40 -11111 |
| 1/2" | ~ | ~ | ERC25 -12701 | ERC32 -12701 | ERC40 -12701 |
| 9/16" | ~ | ~ | ERC25 -14291 | ERC32 -14291 | ERC40 -14291 |
| 5/8" | ~ | ~ | ERC25 -15881 | ERC32 -15881 | ERC40 -15881 |
| 3/4" | ~ | ~ | ~ | ERC32 -19501 | ERC40 -19501 |
| 1" | ~ | ~ | ~ | ~ | ERC40 -25401 |



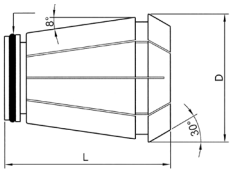



## Through Coolant Sealed - ER Ultra Precision Collets Imperial
## TOPAC
## 5 Micron Top Accuracy

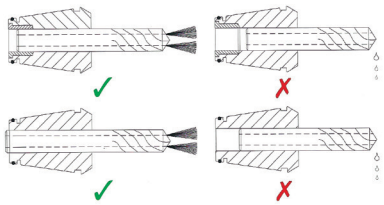
Imperial Thru Coolant

| Clamping Ø inch | Part # ERC 16 | Part # ERC 20 | Part # ERC 25 | Part # ERC 32 | Part # ERC 40 |
|---|---|---|---|---|---|
| 1/4" | ERC16 -0635T | ERC20 -0635T | ERC25 -0635T | ERC32 -0635T | ERC40 -0635T |
| 5/16" | ERC16 -0794T | ERC20 -0794T | ERC25 -0794T | ERC32 -0794T | ERC40 -0794T |
| 3/8" | ERC16 -0953T | ERC20 -0953T | ERC25 -0953T | ERC32 -0953T | ERC40 -0953T |
| 7/16" | ~ | ERC20 -1111T | ERC25 -1111T | ERC32 -1111T | ERC40 -1111T |
| 1/2" | ~ | ~ | ERC25 -1270T | ERC32 -1270T | ERC40 -1270T |
| 9/16" | ~ | ~ | ERC25 -1429T | ERC32 -1429T | ERC40 -1429T |
| 5/8" | ~ | ~ | ERC25 -1588T | ERC32 -1588T | ERC40 -1588T |
| 3/4" | ~ | ~ | ~ | ERC32 -1950T | ERC40 -1950T |
| 1" | ~ | ~ | ~ | ~ | ERC40 -2540T |



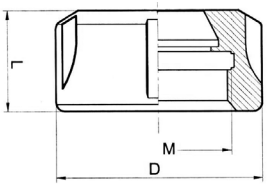



Coolant Sealed performance only when clamped to the nominal diameter.
The shank should be inserted to the back end of the collet as shown in the diagram.
Suitable for all types of ER collet holders.
Apply slightly higher clamping torque than standard ER application for better grip & precision.



# Locknuts
# ER Standard

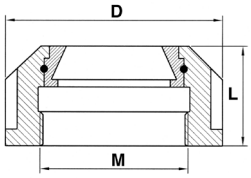





| ER Type | Part Number | D | L | M |
|---|---|---|---|---|
| ER 16 | NER -16S | 32 | 17.5 | M 22 x 1.5 |
| ER 20 | NER -20S | 35 | 19 | M 25 x 1.5 |
| ER 25 | NER -25S | 42 | 20 | M 32 x 1.5 |
| ER 32 | NER -32S | 50 | 22.5 | M 40 x 1.5 |
| ER 40 | NER -40S | 63 | 25.5 | M 50 x 1.5 |
| ER 50 | NER -50S | 78 | 35 | M 64 x 2.0 |

# Locknuts
# ER Standard with bearing

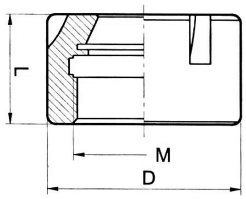





| ER Type | Part Number | D | L | M |
|---|---|---|---|---|
| ER 25 | NER -25B | 42 | 23 | M 32 x 1.5 |
| ER 32 | NER -32B | 50 | 25 | M 40 x 1.5 |
| ER 40 | NER -40B | 63 | 28.5 | M 50 x 1.5 |

# Locknuts
# ER Mini

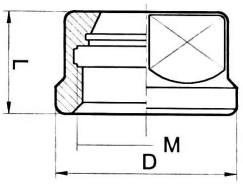





| ER Type | Part Number | D | L | M |
|---|---|---|---|---|
| ER 8 mini | NER -08M | 12 | 11 | M 10 x 0.75 |
| ER 11 mini | NER -11M | 16 | 11.8 | M 13 x 0.75 |
| ER 16 mini | NER -16M | 22 | 19 | M 19 x 1 |
| ER 20 mini | NER -20M | 28 | 19 | M 24 x 1 |
| ER 25 mini | NER -25M | 35 | 20 | M 30 x 1 |

# Locknuts
# ER Hexagon






| ER Type | Part Number | D | L | M |
|---|---|---|---|---|
| ER 11 | NER -11H | 19 | 13.5 | M 14 x 0.75 |
| ER 16 | NER -16H | 28 | 17 | M 22 x 1.5 |
| ER 20 | NER -20H | 34 | 19 | M 25 x 1.5 |

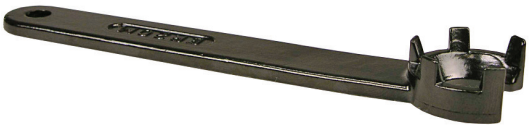
# Spanners
# ER Standard

| ER Type | Part Number |
|---|---|
| ER 16 | SPER -16S |
| ER 20 | SPER -20S |
| ER 25 | SPER -25S |
| ER 32 | SPER -32S |
| ER 40 | SPER -40S |
| ER 50 | SPER -50S |



# Spanners
# ER Mini

| ER Type | Part Number |
|---|---|
| ER 8 | SPER -08M |
| ER 11 | SPER -11M |
| ER 16 | SPER -16M |
| ER 20 | SPER -20M |
| ER 25 | SPER -25M |
| ER 50 | SPER -50S |



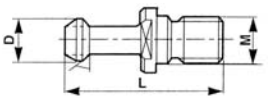
# Spanners
# ER Hexagon

| ER Type | Part Number |
|---|---|
| ER 11 | SPER -11H |
| ER 16 | SPER -16H |
| ER 20 | SPER -20H |



## Pull Studs
## Type BT - Without internal coolant

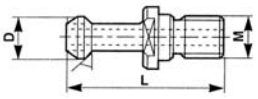





| Part Number | M | D | D1 | L | L1 | Tool Holder Type | α |
|---|---|---|---|---|---|---|---|
| PSBT -3045 | M12 | 16.5 | 11 | 43 | 23 | BT30 | 45° |
| PSBT -4045 | M16 | 23 | 15 | 60 | 35 | BT40 | 45° |
| PSBT -4060 | M16 | 23 | 15 | 60 | 35 | BT40 | 60° |
| PSBT -4090 | M16 | 23 | 15 | 60 | 35 | BT40 | 90° |
| PSBT -5045 | M24 | 38 | 23 | 85 | 45 | BT50 | 45° |

## Pull Studs
## Type BT - With internal coolant

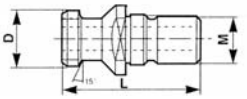





| Part Number | M | D | D1 | L | L1 | Tool Holder Type | α |
|---|---|---|---|---|---|---|---|
| PSBT -4045B | M16 | 23 | 15 | 60 | 35 | BT40 | 45° |
| PSBT -5045B | M24 | 38 | 23 | 85 | 40 | BT50 | 45° |

## Pull Studs
## Type 69872A - With internal coolant

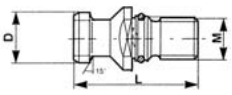





| Part Number | M | D | D1 | L | L1 | Tool Holder Type | α |
|---|---|---|---|---|---|---|---|
| PS -698724A | M16 | 23 | 19 | 54 | 26 | DIN40 (69871) | 15° |
| PS -698725A | M24 | 36 | 28 | 74 | 34 | DIN50 (69871) | 15° |

## Pull Studs
## Type 69872B - Without internal coolant

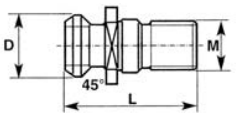





| Part Number | M | D | D1 | L | L1 | Tool Holder Type | α |
|---|---|---|---|---|---|---|---|
| PS -698724B | M16 | 23 | 19 | 54 | 26 | DIN40 (69871) | 15° |
| PS -698725B | M24 | 36 | 28 | 74 | 34 | DIN50 (69871) | 15° |

## Pull Studs
## Type ISO 7388-2 (1984/B) - With internal coolant

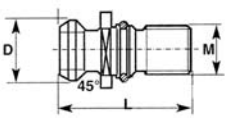





| Part Number | M | D | D1 | L | L1 | Tool Holder Type | α |
|---|---|---|---|---|---|---|---|
| PS -738841A | M16 | 22.5 | 18.9 | 44.5 | 16.3 | DIN40 (69871) | 45° |
| PS -738851A | M24 | 36 | 29.1 | 65.5 | 25.6 | DIN50 (69871) | 45° |

## Pull Studs
## Type ISO 7388-2 (1984/B) - Without internal coolant

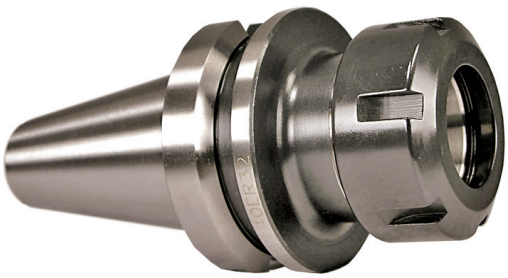


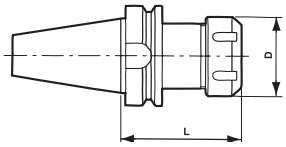



| Part Number | M | D | D1 | L | L1 | Tool Holder Type | α |
|---|---|---|---|---|---|---|---|
| PS -738840B | M16 | 22.5 | 18.9 | 44.5 | 16.3 | DIN40 (69871) | 45° |
| PS -738850B | M24 | 36 | 29.1 | 65.5 | 25.6 | DIN50 (69871) | 45° |

# Precision Collets Chucks Type ER
# MAS 403 BT BT 30 - BT 40 - BT 50
# Pre-balanced AD/B - G6.3 12,000 RPM

| Part Number BT30 | L | D | Collet Type Ø Clamping Range |
|---|---|---|---|
| BT30 - ER16 | 60 | 28 | ER16 Ø1 - 10mm |
| BT30 - ER25 | 60 | 42 | ER25 Ø2 - 16mm |
| BT30 - ER32 | 60 | 50 | ER32 Ø3 - 20mm |
| **BT40** | | | |
| BT40 - ER16 | 60 | 28 | ER16 Ø1 - 10mm |
| BT40 - ER16 - 100 | 100 | 28 | ER16 Ø1 - 10mm |
| BT40 - ER16 - 130M | 130 | 22 | ER16 Ø1 - 10mm |
| BT40 - ER20 | 70 | 34 | ER20 Ø2 - 13mm |
| BT40 - ER20 - 100 | 100 | 34 | ER20 Ø2 - 13mm |
| BT40 - ER25 | 70 | 42 | ER25 Ø2 - 16mm |
| BT40 - ER25 - 100 | 100 | 42 | ER25 Ø2 - 16mm |
| BT40 - ER32 | 70 | 50 | ER32 Ø3 - 20mm |
| BT40 - ER32 - 100 | 100 | 50 | ER32 Ø3 - 20mm |
| BT40 - ER40 | 70 | 63 | ER40 Ø4 - 26mm |
| BT40 - ER40 - 100 | 100 | 63 | ER40 Ø4 - 26mm |
| **BT50** | | | |
| BT50 - ER25 | 70 | 42 | ER25 Ø2 - 16mm |
| BT50 - ER32 | 70 | 50 | ER32 Ø2 - 20mm |
| BT50 - ER40 | 80 | 63 | ER40 Ø4 - 26mm |
| BT50 - ER40 - 150 | 150 | 63 | ER40 Ø4 - 26mm |
| BT50 - ER50 | 100 | 78 | ER50 Ø12 -34mm |



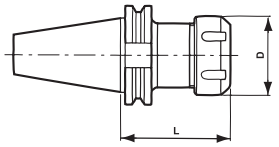





# Precision Collets Chucks Type ER
# DIN 69871 DIN 30 - DIN 40 - DIN 50
# Pre-balanced AD/B - G6.3 12,000 RPM

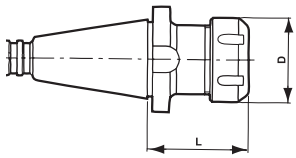
| Part Number DIN30 | L | D | Collet Type Ø Clamping Range |
|---|---|---|---|
| DIN30 - ER16 | 60 | 28 | ER16 Ø1 - 10mm |
| DIN30 - ER25 | 60 | 42 | ER25 Ø2 - 16mm |
| DIN30 - ER32 | 60 | 50 | ER32 Ø3 - 20mm |
| **DIN40** | | | |
| DIN40 - ER16 | 60 | 28 | ER16 Ø1 - 10mm |
| DIN40 - ER16 - 100 | 100 | 28 | ER16 Ø1 - 10mm |
| DIN40 - ER16 - 130M | 130 | 22 | ER16 Ø1 - 10mm |
| DIN40 - ER20 | 70 | 34 | ER20 Ø2 - 13mm |
| DIN40 - ER20 - 100 | 100 | 34 | ER20 Ø2 - 13mm |
| DIN40 - ER25 | 70 | 42 | ER25 Ø2 - 16mm |
| DIN40 - ER25 - 100 | 100 | 42 | ER25 Ø2 - 16mm |
| DIN40 - ER32 | 70 | 50 | ER32 Ø3 - 20mm |
| DIN40 - ER32 - 100 | 100 | 50 | ER32 Ø3 - 20mm |
| DIN40 - ER40 | 70 | 63 | ER40 Ø4 - 26mm |
| DIN40 - ER40 - 100 | 100 | 63 | ER40 Ø4 - 26mm |
| **DIN50** | | | |
| DIN50 - ER32 | 70 | 50 | ER32 Ø3 - 20mm |
| DIN50 - ER40 | 80 | 63 | ER40 Ø4 - 26mm |
| DIN50 - ER40 - 150 | 150 | 63 | ER40 Ø4 - 26mm |
| DIN50 - ER50 | 100 | 78 | ER50 Ø12 - 34mm |





# Precision Collets Chucks Type ER
# DIN 2080 (ISO) ISO 30 - ISO 40 - ISO 50
# Pre-balanced AD/B - G6.3 12,000 RPM



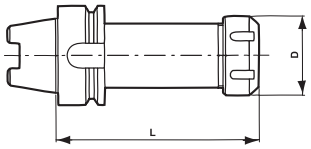



| Part Number ISO30 | L | D | Collet Type Ø Clamping Range |
|---|---|---|---|
| ISO30 - ER16 | 50 | 28 | ER16 Ø2 - 10mm |
| ISO30 - ER25 | 50 | 42 | ER25 Ø2 - 16mm |
| ISO30 - ER32 | 50 | 50 | ER32 Ø3 - 20mm |
| **ISO40** | | | |
| ISO40 - ER25 | 50 | 42 | ER25 Ø2 - 16mm |
| ISO40 - ER32 | 60 | 50 | ER32 Ø2 - 20mm |
| ISO40 - ER40 | 60 | 63 | ER40 Ø4 - 26mm |
| **ISO50** | | | |
| ISO50 - ER32 | 70 | 50 | ER32 Ø3 - 20mm |
| ISO50 - ER40 | 70 | 63 | ER40 Ø4 - 26mm |
| ISO50 - ER50 | 90 | 78 | ER50 Ø12 - 34mm |



# Precision Collets Chucks Type ER
# DIN 69893 HSK 63
# Pre-balanced AD/B - G6.3 12,000 RPM



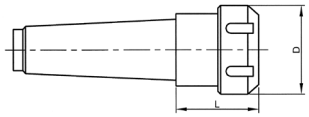



| Part Number HSK63 | L | D | Collet Type Ø Clamping Range |
|---|---|---|---|
| HSK63 - ER16 | 100 | 28 | ER16 Ø1 - 10mm |
| HSK63 - ER25 | 100 | 42 | ER25 Ø2 - 16mm |
| HSK63 - ER32 | 100 | 50 | ER32 Ø3 - 20mm |
| HSK63 - ER40 | 100 | 63 | ER40 Ø4 - 26mm |



# Precision Collet Chucks Type ER
# DIN 228
# Morse Taper Shank



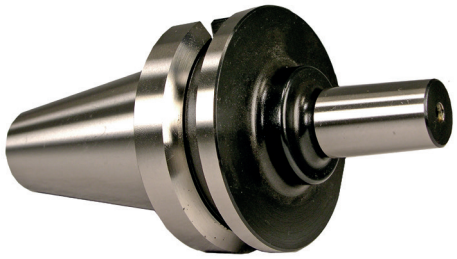


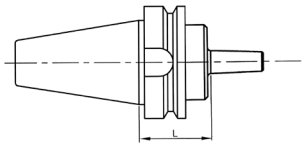

| Part Number DIN 228 | L | D | Collet Type Ø Clamping Range |
|---|---|---|---|
| MT2 - ER25 | 50 | 42 | ER25 Ø1 - 16mm |
| MT3 - ER32 | 60 | 50 | ER32 Ø3 - 20mm |
| MT4 - ER40 | 80 | 63 | ER40 Ø4 - 26mm |

# Precision Drill Chuck Adaptors
# BT 40



| Part Number | D | L |
|---|---|---|
| BT40 - B12 | B12 | 25 |
| BT40 - B16 | B16 | 25 |
| BT40 - B18 | B18 | 25 |



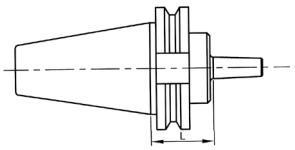


# Precision Drill Chuck Adaptors
# DIN 40



| Part Number | D | L |
|---|---|---|
| DIN40 - B12 | B12 | 25 |
| DIN40 - B16 | B16 | 25 |
| DIN40 - B18 | B18 | 25 |



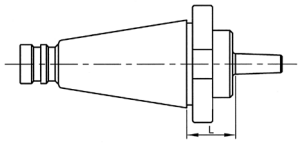


# Precision Drill Chuck Adaptors
# ISO 40



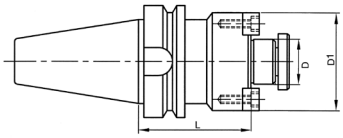
| Part Number | D | L |
|---|---|---|
| ISO40 - B16 | B16 | 25 |
| ISO40 - B18 | B18 | 25 |



# Precision Face Mill / Shell Mill Adaptors
# MAS 403 BT
# BT30 - BT40 - BT50

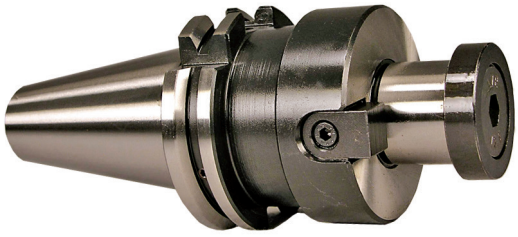


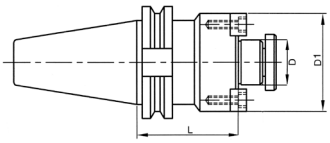



| Part Number BT30 | D | D1 | L |
|---|---|---|---|
| BT30 - FM16 | 16 | 40 | 40 |
| BT30 - FM22 | 22 | 48 | 40 |
| **BT40** | | | |
| BT40 - FM16 | 16 | 40 | 40 |
| BT40 - FM22 | 22 | 48 | 45 |
| BT40 - FM27 | 27 | 60 | 45 |
| BT40 - FM32 | 32 | 78 | 50 |
| BT40 - FM40 | 40 | 89 | 55 |
| **BT50** | | | |
| BT50 - FM16 | 16 | 40 | 55 |
| BT50 - FM22 | 22 | 48 | 55 |
| BT50 - FM27 | 27 | 60 | 55 |
| BT50 - FM32 | 32 | 78 | 55 |
| BT50 - FM40 | 40 | 89 | 55 |



# Precision Face Mill / Shell Mill Adaptors
# DIN 69871
# DIN 30 - DIN 40 - DIN 50





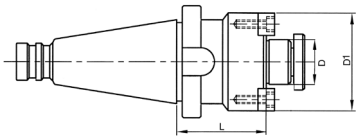

| Part Number DIN30 | D | D1 | L |
|---|---|---|---|
| DIN30 - FM16 | 16 | 40 | 35 |
| DIN30 - FM22 | 22 | 50 | 40 |
| **DIN40** | | | |
| DIN40 - FM16 | 16 | 40 | 35 |
| DIN40 - FM22 | 22 | 50 | 35 |
| DIN40 - FM27 | 27 | 60 | 40 |
| DIN40 - FM32 | 32 | 78 | 50 |
| DIN40 - FM40 | 40 | 89 | 50 |
| **DIN50** | | | |
| DIN50 - FM16 | 16 | 40 | 35 |
| DIN50 - FM22 | 22 | 50 | 35 |
| DIN50 - FM27 | 27 | 60 | 40 |
| DIN50 - FM32 | 32 | 78 | 50 |
| DIN50 - FM40 | 40 | 89 | 50 |

# Precision Face Mill / Shell Mill Adaptors
# DIN 2080 (ISO)
# ISO 30 - ISO 40 - ISO 50



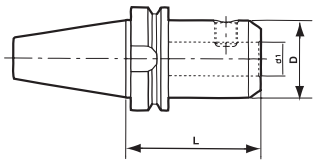
| Part Number ISO30 | D | D1 | L |
|---|---|---|---|
| ISO30 - FM16 | 16 | 40 | 30 |
| ISO30 - FM22 | 22 | 50 | 30 |
| **ISO40** | | | |
| ISO40 - FM16 | 16 | 40 | 30 |
| ISO40 - FM22 | 22 | 50 | 30 |
| ISO40 - FM27 | 27 | 60 | 30 |
| ISO40 - FM32 | 32 | 78 | 30 |
| ISO40 - FM40 | 40 | 89 | 30 |
| **ISO50** | | | |
| ISO50 - FM16 | 16 | 40 | 30 |
| ISO50 - FM22 | 22 | 50 | 35 |
| ISO50 - FM27 | 27 | 60 | 35 |
| ISO50 - FM32 | 32 | 78 | 35 |
| ISO50 - FM40 | 40 | 89 | 40 |



# Precision Weldon Adaptors
## MAS 403 BT BT40 - BT50
## Pre-balanced AD/B - G6.3 12,000 RPM

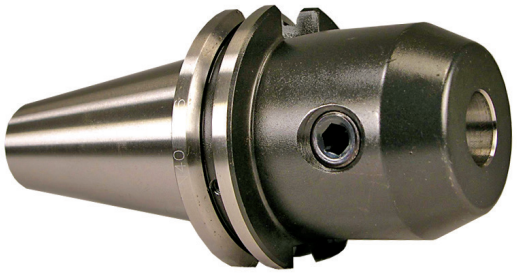


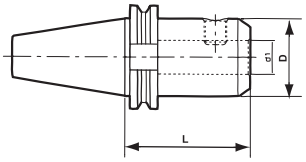




| Part Number BT40 | D1 | D | L |
|---|---|---|---|
| BT40 - W06 | 6 | 25 | 50 |
| BT40 - W08 | 8 | 28 | 50 |
| BT40 - W10 | 10 | 35 | 63 |
| BT40 - W12 | 12 | 42 | 63 |
| BT40 - W14 | 14 | 44 | 50 |
| BT40 - W16 | 16 | 48 | 63 |
| BT40 - W20 | 20 | 52 | 63 |
| BT40 - W25 | 25 | 65 | 90 |
| BT40 - W32 | 32 | 72 | 100 |
| BT40 - W40 | 40 | 80 | 120 |
| **BT50** | | | |
| BT50 - W10 | 10 | 35 | 63 |
| BT50 - W12 | 12 | 42 | 80 |
| BT50 - W16 | 16 | 48 | 80 |
| BT50 - W20 | 20 | 52 | 80 |
| BT50 - W25 | 25 | 65 | 100 |
| BT50 - W32 | 32 | 72 | 105 |
| BT50 - W40 | 40 | 80 | 120 |



# Precision Weldon Adaptors
## DIN 69871 DIN 40 - DIN 50
## Pre-balanced AD/B - G6.3 12,000 RPM





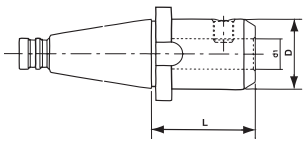

| Part Number DIN40 | D1 | D | L |
|---|---|---|---|
| DIN40 - W06 | 6 | 25 | 50 |
| DIN40 - W08 | 8 | 28 | 50 |
| DIN40 - W10 | 10 | 35 | 50 |
| DIN40 - W12 | 12 | 42 | 50 |
| DIN40 - W14 | 14 | 44 | 50 |
| DIN40 - W16 | 16 | 48 | 63 |
| DIN40 - W20 | 20 | 52 | 63 |
| DIN40 - W25 | 25 | 65 | 100 |
| DIN40 - W32 | 32 | 72 | 100 |
| DIN40 - W40 | 40 | 80 | 120 |
| **DIN50** | | | |
| DIN50 - W10 | 10 | 35 | 63 |
| DIN50 - W12 | 12 | 42 | 63 |
| DIN50 - W16 | 16 | 48 | 63 |
| DIN50 - W20 | 20 | 52 | 63 |
| DIN50 - W25 | 25 | 65 | 80 |
| DIN50 - W32 | 32 | 72 | 100 |
| DIN50 - W40 | 40 | 80 | 120 |

# Precision Weldon Adaptors
# DIN 2080 (ISO) ISO 40 - ISO 50
# Pre-balanced AD/B - G6.3 12,000 RPM



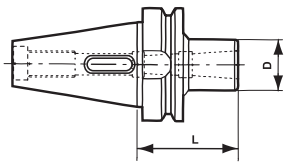
| Part Number ISO40 | D1 | D | L |
|---|---|---|---|
| ISO40 - W12 | 12 | 42 | 50 |
| ISO40 - W16 | 16 | 48 | 63 |
| ISO40 - W20 | 20 | 52 | 63 |
| ISO40 - W25 | 25 | 65 | 80 |
| ISO40 - W32 | 32 | 72 | 80 |
| ISO40 - W40 | 40 | 80 | 90 |
| **ISO50** | | | |
| ISO50 - W16 | 16 | 48 | 63 |
| ISO50 - W20 | 20 | 52 | 63 |
| ISO50 - W25 | 25 | 65 | 80 |
| ISO50 - W32 | 32 | 72 | 80 |
| ISO50 - W40 | 40 | 90 | 90 |





# Precision Morse Taper Adaptors
## MAS 403 BT BT40 - BT50
## AD/B



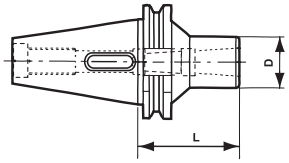



| Part Number BT40 | MT | D | L |
|---|---|---|---|
| BT40 - MT1 | 1 | 25 | 50 |
| BT40 - MT2 | 2 | 32 | 50 |
| BT40 - MT3 | 3 | 40 | 70 |
| BT40 - MT4 | 4 | 48 | 95 |
| **BT50** | | | |
| BT50 - MT2 | 2 | 32 | 60 |
| BT50 - MT3 | 3 | 40 | 65 |
| BT50 - MT4 | 4 | 48 | 95 |
| BT50 - MT5 | 5 | 63 | 105 |



# Precision Morse Taper Adaptors
## DIN 69871 DIN 40 - DIN 50
## AD/B



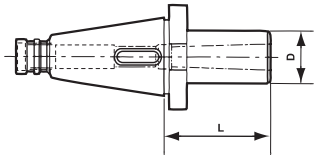



| Part Number DIN40 | MT | D | L |
|---|---|---|---|
| DIN40 - MT1 | 1 | 25 | 50 |
| DIN40 - MT2 | 2 | 32 | 50 |
| DIN40 - MT3 | 3 | 40 | 70 |
| DIN40 - MT4 | 4 | 48 | 95 |
| **DIN50** | | | |
| DIN50 - MT2 | 2 | 32 | 60 |
| DIN50 - MT3 | 3 | 40 | 65 |
| DIN50 - MT4 | 4 | 48 | 95 |
| DIN50 - MT5 | 5 | 63 | 105 |



# Precision Morse Taper Adaptors
## DIN 2080 (ISO) ISO 40 - ISO 50
## AD/B



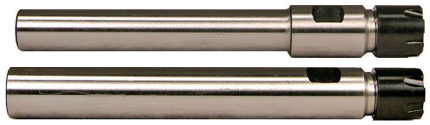



| Part Number ISO40 | MT | D | L |
|---|---|---|---|
| ISO40 - MT1 | 1 | 32 | 50 |
| ISO40 - MT2 | 2 | 32 | 50 |
| ISO40 - MT3 | 3 | 40 | 65 |
| ISO40 - MT4 | 4 | 40 | 95 |
| **ISO50** | | | |
| ISO50 - MT2 | 2 | 32 | 60 |
| ISO50 - MT3 | 3 | 40 | 65 |
| ISO50 - MT4 | 4 | 48 | 70 |
| ISO50 - MT5 | 5 | 63 | 105 |

# Precision ER Straight Shank Collet Holders

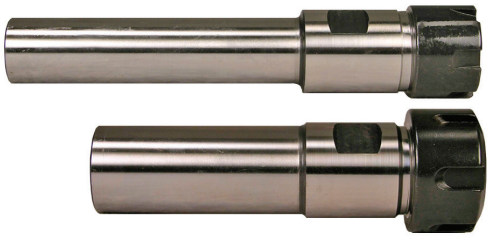


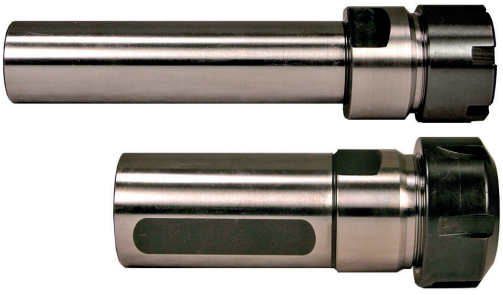
| Part Number ER08 | D | D1 | L | Collet Type Ø Clamping Range |
|---|---|---|---|---|
| ER08 - 08085M | 8 | 12 | 85 | ER8 Ø1 - 5mm |
| ER08 - 10095M | 10 | 12 | 95 | ER8 Ø1 - 5mm |
| ER08 - 12095M | 12 | 12 | 95 | ER8 Ø1 - 5mm |
| **ER11** | | | | |
| ER11 - 12100M | 12 | 16 | 100 | ER11 Ø1 - 7mm |
| ER11 - 16115M | 16 | 16 | 115 | ER11 Ø1 - 7mm |
| ER11 - 16165M | 16 | 16 | 165 | ER11 Ø1 - 7mm |
| ER11 - 16115H | 16 | 19 | 115 | ER11 Ø1 - 7mm |
| **ER16** | | | | |
| ER16 - 20130M | 20 | 22 | 130 | ER16 Ø1 - 10mm |
| ER16 - 20200M | 20 | 22 | 200 | ER16 Ø1 - 10mm |
| ER16 - 20130H | 20 | 28 | 130 | ER16 Ø1 - 10mm |
| ER16 - 20130S | 20 | 32 | 130 | ER16 Ø1 - 10mm |
| **ER20** | | | | |
| ER20 - 20140M | 20 | 28 | 140 | ER20 Ø2 - 13mm |
| ER20 - 20140H | 20 | 34 | 140 | ER20 Ø2 - 13mm |
| ER20 - 20140S | 20 | 35 | 140 | ER20 Ø2 - 13mm |
| ER20 - 25110H | 25 | 34 | 110 | ER20 Ø2 - 13mm |
| ER20 - 25110S | 25 | 35 | 110 | ER20 Ø2 - 13mm |
| ER20 - 25200M | 25 | 28 | 200 | ER20 Ø2 - 13mm |
| **ER25** | | | | |
| ER25 - 20145M | 20 | 35 | 145 | ER25 Ø2 - 16mm |
| ER25 - 25145M | 25 | 35 | 145 | ER25 Ø2 - 16mm |
| ER25 - 25200M | 25 | 35 | 200 | ER25 Ø2 - 16mm |
| ER25 - 254200M | 25.4 | 35 | 200 | ER25 Ø2 - 16mm |
| ER25 - 32105S | 32 | 42 | 105 | ER25 Ø2 - 16mm |
| **ER32** | | | | |
| ER32 - 25110S | 25 | 50 | 110 | ER32 Ø3 - 20mm |
| ER32 - 32110S | 32 | 50 | 110 | ER32 Ø3 - 20mm |
| ER32 - 40110S | 40 | 50 | 110 | ER32 Ø3 - 20mm |
| **ER40** | | | | |
| ER40 - 32140S | 32 | 63 | 140 | ER40 Ø4 - 26mm |
| ER40 - 40140S | 40 | 63 | 140 | ER40 Ø4 - 26mm |

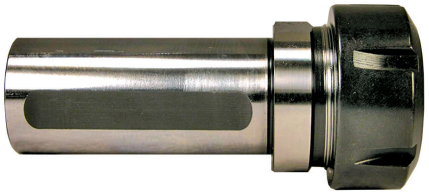


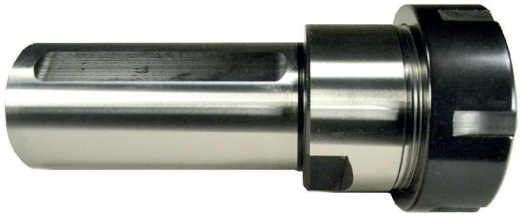




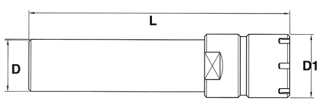




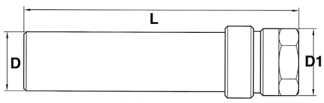




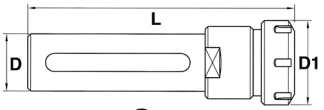
Suffix on the codes shows:
**M** = WITH ER MINI LOCKNUT
**H** = WITH HEXAGON LOCKNUT
**S** = WITH ER STANDARD LOCKNUT




**M**

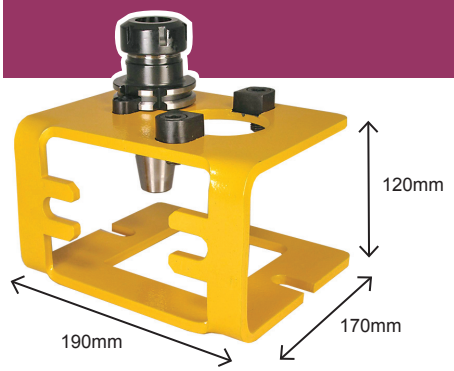



**H**




**S**

# Tool Clamping Stand




| Tapers to be Stored | Part Number |
|---|---|
| BT40-BT50 (DIN69871) DIN40-DIN50 (DIN2080) ISO40-ISO50 | TBA - 4050 |

**All mentioned 40 and 50 taper holders can be clamped in the same stand.**



# Wooden Collet Stands



| Part Number | Collet to Fit |
|---|---|
| WCS - 08 | ER8 |
| WCS - 11 | ER11 |
| WCS - 16 | ER16 |
| WCS - 20 | ER20 |
| WCS - 25 | ER25 |
| WCS - 32 | ER32 |
| WCS - 40 | ER40 |
| WCS - 50 | ER50 |



# Face Mill Adaptor Lock Screw



| Part Number | Tool Holder Reference | Size |
|---|---|---|
| SCF - M16 | FACE MILL 16mm | M8 |
| SCF - M22 | FACE MILL 22mm | M10 |
| SCF - M27 | FACE MILL 27mm | M12 |
| SCF - M32 | FACE MILL 32mm | M16 |
| SCF - M40 | FACE MILL 40mm | M20 |



# Weldon Adaptor Side Lock Screw



| Part Number | Tool Holder Reference | Size |
|---|---|---|
| SCW - 06 | WELDON 6mm | M6x10 |
| SCW - 08 | WELDON 8mm | M8x10 |
| SCW - 10 | WELDON 10mm | M10x12 |
| SCW - 12 | WELDON 12mm | M12x16 |
| SCW - 14 | WELDON 14mm | M12x16 |
| SCW - 16 | WELDON 16mm | M14x16 |
| SCW - 20 | WELDON 20mm | M16x20 |
| SCW - 25 | WELDON 25mm | M18x2x20 |
| SCW - 32 | WELDON 32mm | M20x2x20 |
| SCW - 40 | WELDON 40mm | M20x2x25 |

# Technical Information Material Grouping

| Material Group | Material type | Hardness (HB) | Tensile Strength (N/mm²) | BS | EN & other standards |
|---|---|---|---|---|---|
| 1 - Steel | | | | | |
| 1.1 | Magnetic Soft | <120 | <400 | 230M07, 050A12 | EN1, EN2 Leadloy |
| 1.2 | Structural, case carburising | <200 | <700 | 060A35, 080M40, 4360-50B | EM3A, 4,6,7,8, EN207, S62 |
| 1.3 | Plain carbon | <250 | <850 | 080M46, 080A62 | EN9, 10, 43, S70 |
| 1.4 | Alloyed | 250 - 230 | <850 | 708M40/42, 817M40, 534A99, BM2, BT42 | EN16,17, 19(R,S) EN31, S2-10-1-8 (Soft) |
| 1.5 | Alloyed | 350 | 850 - 1200 | B01, BM2, BT42, 826M40, 830M32 | EN24, 25,26(T,U,V) S95, S97, S98 (annealed) |
| 1.6 | Alloyed | | | 801, 826M40, 830M31 | EN25, 26, 27,(W,X,Z,) S97, S98, (H&T) |
| 1.7 | Alloyed - hardened 48-55 HRc | | | B01, BD3, BH13 | |
| 1.8 | Alloyed - hardened 56-60 HRc | | | BM2, BH13 | |
| 1.9 | Alloyed - hardened >60 HRc | | | | |
| 2 - Stainless steel | | | | | |
| 2.1 | Free machining | <250 | <850 | 303 S21 416 S37 | EN56, EN60 |
| 2.2 | Austenitic | <250 | <850 | 304 S15, 321 S17 316 S, 320 S12 | EN80, EN58 + EN8J, 316 |
| 2.3 | Ferritic + Austenitic, Ferretic, Martensitic | <300 | <1000 | 317 S16, 316 S16 | EN58 b,e,t,j, Duplex alloys |
| 3 - Cast iron | | | | | |
| 3.1 | Lameller graphite | <150 | <500 | grade 150, grade 400 | Cast iron Soft |
| 3.2 | Lameller graphite | 150 - 300 | 500 - 1000 | grade 200, grade 400 | Cast iron Hard |
| 3.3 | Nodular graphite, malleable | <200 | <700 | 420/12, P440/7 700/2. 30g/72 | S.G. iron Mehanite Black & White Heart |
| 3.4 | Nodular graphite, malleable | 200 - 300 | 700 - 1000 | 420/12, P440/7 700/2, 30g/72 | S.G. iron Mehanite Black & White Heart |
| 4 - Titanium | | | | | |
| 4.1 | Unalloyed | <200 | <700 | TA1-9 | Ti 99.0 |
| 4.2 | Alloyed | <270 | <900 | TA10-14, TA17, TA28 | Ti 2AL |
| 4.3 | Alloyed | 270 - 350 | 900 - 1250 | TA10-13, TA28 | Ti AL |
| 5 - Nickel | | | | | |
| 5.1 | Unalloyed | <150 | <500 | NA 11, NA 12 | Nickel 200, Nickel 270 |
| 5.2 | Alloyed | <270 | <900 | HR203 3027-76 | Nimonic 75, Hastelloy C Monel 400, Inconel 600 Haynes Alloys 263 |
| 5.3 | Alloyed | 270 - 350 | 900 - 1260 | HR8 HR401, 601 | Inconel 718, Waspalloy, Nimonic 80, Rene 41 |
| 6 - Copper | | | | | |
| 6.1 | Unalloyed | <100 | <350 | C101 | Commercially pure |
| 6.2 | ß - Brass, bronze | <200 | <700 | CZ120, CZ109, PB104 | 2.1030, 2.1080 |
| 6.3 | ¥ - Brass | <200 | <700 | CZ108, CZ106 | |
| 6.4 | High strength bronze | <470 | <1500 | AB1 type | Ampco 18, Ampco 26 |
| 7 - Aluminium / Magnesium | | | | | |
| 7.1 | Al, Mg, unalloyed | 50 - 80 | 50 - 80 | LMO, 1B, (1050A) | Magnesium Extruded Aluminium |
| 7.2 | Al alloyed, Si < 0.5% | 200 - 250 | 200 - 250 | LM5, 10, 12, N4 (5251) | Low Silicon wrought & cast Aluminium |
| 7.3 | Al alloyed, Si > 0.5 - <10% | <200 | <700 | LM2, 4, 16, 21, 22, 24, 25, 26, 27, L109 | Silicon Alluminium |
| 7.4 | Al alloyed, Si > 10%, Whisker reinforced, Mg | <470 | <1500 | LM6, 12, 13, 20, 28, 29, 30 | Higi Silicon Alluminium |
| 8 - Plastics | | | | | |
| 8.1 | Thermoplastics | | | Polystyrene, Nylon, PVC Cellulose Acetate & Nitrate | Nylon, Hostalen Makrolon |
| 8.2 | Thermosetting | | | Ebonite, Tufnol, Bakelite | Bakelite, Pertinax |
| 8.3 | Reinforced plastics | | | Kevlar, Printed circuit board | CFK, GFK, AFK |
| 9 - Cermet | | | | | |
| 9.1 | Cermet (metal ceramics) | | | | |

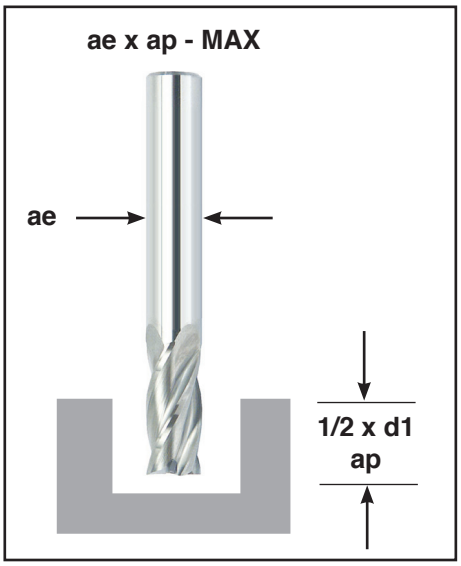
# Suggested Technical Information Solid Carbide

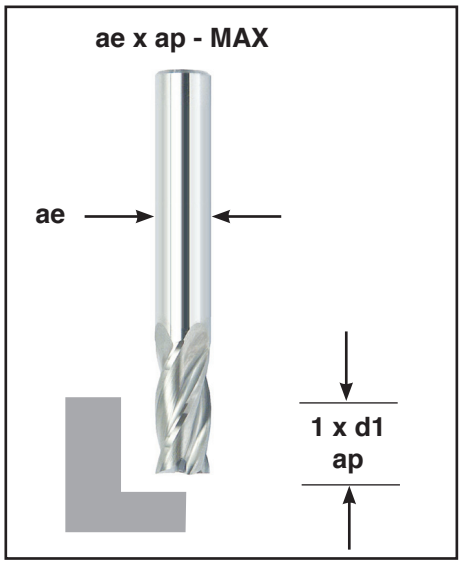


| Series | 211 216 211S 216S 251 261 | 311 316 311S 316S 351 361 | 411 416 411S 416S 451 461 | 214 219 214S 219S 259 269 214R | 314 319 314S 319S 359 369 314R | 414 419 414S 419S 459 469 414R 722 | 221 236 | 321 336 | 421 436 | 229, 239 | 329 339 | 429 439 | 740R 745R 750R 755R | 650 | 659 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Material Group** | **Surface Speed vc m/min** | | | | | | | | | | | | | | |
| 1.1 | 80 - 120 | 80 - 120 | 80 - 120 | 160 - 240 | 160 - 240 | 160 - 240 | 50 - 70 | 50 - 70 | 50 - 70 | 100 - 140 | 100 - 140 | 100 - 140 | 100 - 140 | | 80 - 240 |
| 1.2 | 80 - 120 | 80 - 120 | 80 - 120 | 160 - 240 | 160 - 240 | 160 - 240 | 50 - 70 | 50 - 70 | 50 - 70 | 100 - 140 | 100 - 140 | 100 - 140 | 100 - 140 | | 80 - 240 |
| 1.3 | 60 - 80 | 60 - 80 | 60 - 80 | 120 - 160 | 120 - 160 | 120 - 160 | 35 - 50 | 35 - 50 | 35 - 50 | 70 - 100 | 70 - 100 | 70 - 100 | 70 - 100 | | 60 - 120 |
| 1.4 | 60 - 80 | 60 - 80 | 60 - 80 | 120 - 160 | 120 - 160 | 120 - 160 | 35 - 50 | 35 - 50 | 35 - 50 | 70 - 100 | 70 - 100 | 70 - 100 | 70 - 100 | | |
| 1.5 | 40 - 60 | 40 - 60 | 40 - 60 | 80 - 120 | 80 - 160 | 80 - 160 | 25 - 35 | 25 - 35 | 25 - 35 | 50 - 70 | 50 - 70 | 50 - 70 | 50 - 70 | | |
| 1.6 | 20 - 40 | 20 - 40 | 20 - 40 | 40 - 80 | 40 - 80 | 40 - 80 | 15 - 20 | 15 - 20 | 15 - 20 | 30 - 50 | 30 - 50 | 30 - 50 | 30 - 50 | | |
| 1.7 | | | | 40 - 80 | 40 - 80 | 40 - 80 | | | | 30 - 50 | 30 - 50 | 30 - 50 | 30 - 50 | | |
| 1.8 | | | | 40 - 80 | 40 - 80 | 40 - 80 | | | | 30 - 50 | 30 - 50 | 30 - 50 | 30 - 50 | | |
| 1.9 | | | | | | | | | | | | | | | |
| 2.1 | 40 - 80 | 40 - 80 | 40 - 80 | 80 - 160 | 80 - 160 | 80 - 160 | 25 - 50 | 25 - 50 | 25 - 50 | 50 - 100 | 50 - 100 | 50 - 100 | 50 - 100 | 50 - 100 | 50 - 150 |
| 2.2 | 30 - 50 | 30 - 50 | 30 - 50 | 60 - 100 | 60 - 100 | 60 - 100 | 20 - 30 | 20 - 30 | 20 - 30 | 40 - 60 | 40 - 60 | 40 - 60 | 40 - 60 | 40 - 60 | 40 - 120 |
| 2.3 | 25 - 40 | 25 - 40 | 25 - 40 | 50 - 80 | 50 - 80 | 50 - 80 | 15 - 25 | 15 - 25 | 15 - 25 | 30 - 50 | 30 - 50 | 30 - 50 | 30 - 50 | 35 - 55 | 35 - 105 |
| 3.1 | 50 - 80 | 50 - 80 | 50 - 80 | 100 - 160 | 100 - 160 | 100 - 160 | 35 - 60 | 35 - 60 | 35 - 60 | 70 - 120 | 70 - 120 | 70 - 120 | 70 - 120 | | |
| 3.2 | 40 - 70 | 40 - 70 | 40 - 70 | 80 - 140 | 80 - 140 | 80 - 140 | 30 - 50 | 30 - 50 | 30 - 50 | 60 - 100 | 60 - 100 | 60 - 100 | 60 - 100 | | |
| 3.3 | 35 - 50 | 35 - 50 | 35 - 50 | 70 - 100 | 70 - 100 | 70 - 100 | 25 - 35 | 25 - 35 | 25 - 35 | 50 - 70 | 50 - 70 | 50 - 70 | 50 - 70 | | |
| 3.4 | 25 - 40 | 25 - 40 | 25 - 40 | 50 - 80 | 50 - 80 | 50 - 80 | 20 - 30 | 20 - 30 | 20 - 30 | 40 - 60 | 40 - 60 | 40 - 60 | 40 - 60 | | |
| 4.1 | 60 - 100 | 60 - 100 | 60 - 100 | 120 - 200 | 120 - 200 | 120 - 200 | 35 - 60 | 35 - 60 | 35 - 60 | 70 - 120 | 70 - 120 | 70 - 120 | 70 - 120 | 80 - 130 | 80 - 240 |
| 4.2 | 40 - 60 | 40 - 60 | 40 - 60 | 80 - 120 | 80 - 120 | 80 - 120 | 25 - 35 | 25 - 35 | 25 - 35 | 50 - 70 | 50 - 70 | 50 - 70 | 50 - 70 | 50 - 80 | 50 - 150 |
| 4.3 | 20 - 30 | 20 - 30 | 20 - 30 | 40 - 60 | 40 - 60 | 40 - 60 | 15 - 20 | 15 - 20 | 15 - 20 | 30 - 40 | 30 - 40 | 30 - 40 | 30 - 40 | 25 - 40 | 40 - 120 |
| 5.1 | 60 - 100 | 60 - 100 | 60 - 100 | 120 - 200 | 120 - 200 | 120 - 200 | 35 - 60 | 35 - 60 | 35 - 60 | 70 - 120 | 70 - 120 | 70 - 120 | 70 - 120 | 80 - 130 | 120 - 360 |
| 5.2 | 30 - 60 | 30 - 60 | 30 - 60 | 60 - 120 | 60 - 120 | 60 - 120 | 20 - 35 | 20 - 35 | 20 - 35 | 40 - 70 | 40 - 70 | 40 - 70 | 40 - 70 | 40 - 80 | 60 - 180 |
| 5.3 | 20 - 50 | 20 - 50 | 20 - 50 | 40 - 100 | 40 - 100 | 40 - 100 | 15 - 30 | 15 - 30 | 15 - 30 | 30 - 60 | 30 - 60 | 30 - 60 | 30 - 60 | 25 - 70 | 25 - 75 |
| 6.1 | 100 - 200 | 100 - 200 | 100 - 200 | 200 - 400 | 200 - 400 | 200 - 400 | 60 - 120 | 60 - 120 | 60 - 120 | 120 - 240 | 120 - 240 | 120 - 240 | 120 - 240 | | 200 - 300 |
| 6.2 | 130 - 170 | 130 - 170 | 130 - 170 | 260 - 340 | 260 - 340 | 260 - 340 | 100 - 120 | 100 - 120 | 100 - 120 | 200 - 240 | 200 - 240 | 200 - 240 | 200 - 240 | 200 - 260 | 200 - 300 |
| 6.3 | 130 - 170 | 130 - 170 | 130 - 170 | 260 - 340 | 260 - 340 | 260 - 340 | 100 - 120 | 100 - 120 | 100 - 120 | 200 - 240 | 200 - 240 | 200 - 240 | 200 - 240 | 200 - 260 | 200 - 300 |
| 6.4 | 20 - 50 | 25 - 50 | 25 - 50 | 40 - 100 | 50 - 100 | 50 - 100 | 20 - 35 | 20 - 35 | 20 - 35 | 40 - 70 | 40 - 70 | 40 - 70 | 40 - 70 | 40 - 80 | 40 - 120 |
| 7.1 | 50 - 450 | 150 - 450 | | | | | 100 - 300 | 100 - 300 | | | | | | | |
| 7.2 | 150 - 450 | 150 - 450 | | | | | 100 - 300 | 100 - 300 | | | | | | | |
| 7.3 | 40 - 80 | 40 - 80 | | | | | 30 - 60 | 30 - 60 | | | | | | | |
| 7.4 | 35 - 50 | 35 - 50 | | | | | 25 - 35 | | | | | | | | |
| 8.1 | 80 - 160 | 80 - 160 | | | | | 60 - 120 | 60 - 120 | | | | | | | |
| 8.2 | 70 - 130 | 70 - 130 | | | | | 50 - 100 | 50 - 100 | | | | | | | |
| 8.3 | 70 - 130 | 70 - 130 | | | | | 50 - 100 | 50 - 100 | | | | | | | |
| 9.1 | 4 - 8 | 4 - 8 | 4 - 8 | 8 - 16 | 8 - 16 | 8 - 16 | | | | | | | | | |

# Suggested Technical Information Solid Carbide

| | |
|---|---|
| vc | Surface speed |
| f | Feed per rev |
| fz | Feed per tooth |
| fr | Feed rate |
| d1 | Tool diameter |
| n | Revolutions per min |
| z | Number of teeth |
| ap | Axial cut depth |
| ae | Radial cut depth |




$$RPM = \frac{vc \times 1000}{dia \times \pi}$$

$$fr = fz \times z \times RPM$$

| Material Group | Feed per tooth chart ( fz ) | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 0.4-1 mm | 1-2mm | 3mm | 4mm | 5mm | 6mm | 7-8mm | 9-10mm | 11-15mm | 16-20mm | 25mm |
| 1.1 | 0.010 | 0.014 | 0.017 | 0.021 | 0.025 | 0.030 | 0.045 | 0.055 | 0.070 | 0.090 | 0.130 |
| 1.2 | 0.010 | 0.014 | 0.017 | 0.021 | 0.025 | 0.030 | 0.045 | 0.055 | 0.070 | 0.090 | 0.130 |
| 1.3 | 0.010 | 0.014 | 0.017 | 0.021 | 0.025 | 0.030 | 0.045 | 0.055 | 0.070 | 0.090 | 0.130 |
| 1.4 | 0.010 | 0.014 | 0.017 | 0.021 | 0.025 | 0.030 | 0.045 | 0.055 | 0.070 | 0.090 | 0.130 |
| 1.5 | 0.008 | 0.010 | 0.013 | 0.016 | 0.018 | 0.022 | 0.030 | 0.038 | 0.052 | 0.060 | 0.100 |
| 1.6 | 0.008 | 0.010 | 0.013 | 0.016 | 0.018 | 0.022 | 0.030 | 0.038 | 0.052 | 0.060 | 0.100 |
| 1.7 | 0.008 | 0.010 | 0.013 | 0.016 | 0.018 | 0.022 | 0.030 | 0.038 | 0.052 | 0.060 | 0.100 |
| 1.8 | 0.008 | 0.010 | 0.013 | 0.016 | 0.018 | 0.022 | 0.030 | 0.038 | 0.052 | 0.060 | 0.100 |
| 1.9 | | | | | | | | | | | |
| 2.1 | 0.008 | 0.010 | 0.013 | 0.016 | 0.018 | 0.022 | 0.030 | 0.038 | 0.052 | 0.075 | 0.100 |
| 2.2 | 0.008 | 0.010 | 0.013 | 0.016 | 0.018 | 0.022 | 0.030 | 0.038 | 0.052 | 0.075 | 0.100 |
| 2.3 | 0.008 | 0.010 | 0.013 | 0.016 | 0.018 | 0.022 | 0.030 | 0.038 | 0.052 | 0.075 | 0.100 |
| 3.1 | 0.012 | 0.018 | 0.022 | 0.027 | 0.035 | 0.045 | 0.060 | 0.075 | 0.095 | 0.130 | 0.150 |
| 3.2 | 0.012 | 0.018 | 0.022 | 0.027 | 0.035 | 0.045 | 0.060 | 0.075 | 0.095 | 0.130 | 0.150 |
| 3.3 | 0.010 | 0.014 | 0.017 | 0.021 | 0.025 | 0.030 | 0.045 | 0.055 | 0.070 | 0.090 | 0.130 |
| 3.4 | 0.010 | 0.014 | 0.017 | 0.021 | 0.025 | 0.030 | 0.045 | 0.055 | 0.070 | 0.090 | 0.130 |
| 4.1 | 0.010 | 0.014 | 0.017 | 0.021 | 0.025 | 0.030 | 0.045 | 0.055 | 0.070 | 0.090 | 0.130 |
| 4.2 | 0.010 | 0.014 | 0.017 | 0.021 | 0.025 | 0.030 | 0.045 | 0.055 | 0.070 | 0.090 | 0.130 |
| 4.3 | 0.008 | 0.010 | 0.013 | 0.016 | 0.018 | 0.022 | 0.030 | 0.038 | 0.052 | 0.075 | 0.100 |
| 5.1 | 0.008 | 0.010 | 0.013 | 0.016 | 0.018 | 0.022 | 0.030 | 0.038 | 0.052 | 0.075 | 0.100 |
| 5.2 | 0.008 | 0.010 | 0.013 | 0.016 | 0.018 | 0.022 | 0.030 | 0.038 | 0.052 | 0.075 | 0.100 |
| 5.3 | 0.008 | 0.010 | 0.013 | 0.016 | 0.018 | 0.022 | 0.030 | 0.038 | 0.052 | 0.075 | 0.100 |
| 6.1 | 0.012 | 0.018 | 0.022 | 0.027 | 0.035 | 0.045 | 0.060 | 0.075 | 0.095 | 0.130 | 0.150 |
| 6.2 | 0.012 | 0.018 | 0.022 | 0.027 | 0.035 | 0.045 | 0.060 | 0.075 | 0.095 | 0.130 | 0.150 |
| 6.3 | 0.012 | 0.018 | 0.022 | 0.027 | 0.035 | 0.045 | 0.060 | 0.075 | 0.095 | 0.130 | 0.150 |
| 6.4 | 0.008 | 0.010 | 0.013 | 0.016 | 0.018 | 0.022 | 0.030 | 0.038 | 0.052 | 0.075 | 0.100 |
| 7.1 | 0.012 | 0.018 | 0.022 | 0.027 | 0.035 | 0.045 | 0.060 | 0.075 | 0.095 | 0.130 | 0.150 |
| 7.2 | 0.012 | 0.018 | 0.022 | 0.027 | 0.035 | 0.045 | 0.060 | 0.075 | 0.950 | 0.130 | 0.150 |
| 7.3 | 0.012 | 0.018 | 0.022 | 0.027 | 0.035 | 0.045 | 0.060 | 0.075 | 0.095 | 0.130 | 0.150 |
| 7.4 | 0.012 | 0.018 | 0.022 | 0.027 | 0.035 | 0.045 | 0.060 | 0.075 | 0.095 | 0.130 | 0.150 |
| 8.1 | 0.012 | 0.018 | 0.022 | 0.027 | 0.035 | 0.045 | 0.060 | 0.075 | 0.095 | 0.130 | 0.150 |
| 8.2 | 0.012 | 0.018 | 0.022 | 0.027 | 0.035 | 0.045 | 0.060 | 0.075 | 0.095 | 0.130 | 0.150 |
| 8.3 | 0.012 | 0.018 | 0.022 | 0.027 | 0.035 | 0.045 | 0.060 | 0.075 | 0.095 | 0.130 | 0.150 |
| 9.1 | 0.010 | 0.014 | 0.017 | 0.021 | 0.025 | 0.030 | 0.045 | 0.055 | 0.070 | 0.090 | 0.130 |

NOTE: Series 222, 226, 229, 299, 444, 446, 449, 499 metal removal rates to suit application

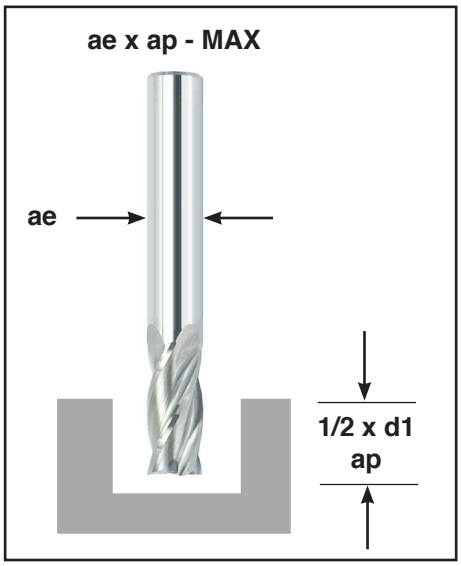
# Suggested Technical Information Solid Carbide

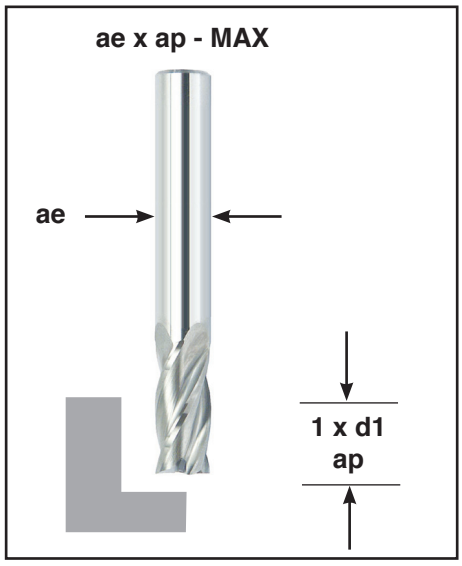


| Series | 520 660 | 525 665 | 691<br>691R<br>695 695R<br>693 697 | 692 696<br>696R 698<br>694 | 601R<br>602 | 505<br>505R | 605<br>605R | 671 672 | 670 | 675 | 530 603 | 600 | 609 | 539, 699 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Material Group** | **Surface Speed vc m/min** | | | | | | | | | | | | | |
| 1.1 | 80 - 120 | 150 - 450 | 160 - 240 | 100 - 140 | 100 - 140 | 160 - 240 | 160 - 240 | 160 - 240 | 80 - 120 | 120 - 360 | 80 - 120 | 80 - 120 | 160 - 240 | 160 - 240 |
| 1.2 | 80 - 120 | 150 - 450 | 160 - 240 | 100 - 140 | 100 - 140 | 160 - 240 | 160 - 240 | 160 - 240 | 80 - 120 | 120 - 360 | 80 - 120 | 80 - 120 | 160 - 240 | 160 - 240 |
| 1.3 | 60 - 80 | 100 - 300 | 120 - 160 | 70 - 100 | 70 - 100 | 120 - 160 | 120 - 160 | 120 - 160 | 60 - 80 | 80 - 240 | 60 - 80 | 60 - 80 | 120 - 160 | 120 - 160 |
| 1.4 | 60 - 80 | 100 - 300 | 120 - 160 | 70 - 100 | 70 - 100 | 120 - 160 | 120 - 160 | 120 - 160 | 60 - 80 | 80 - 240 | 60 - 80 | 60 - 80 | 120 - 160 | 120 - 160 |
| 1.5 | 40 - 60 | 100 - 200 | 80 - 120 | 50 - 70 | 50 - 70 | 80 - 120 | 80 - 120 | 80 - 120 | 40 - 60 | 60 - 200 | 40 - 60 | 40 - 60 | 80 - 120 | 80 - 120 |
| 1.6 | 20 - 40 | 100 - 200 | 40 - 80 | 30 - 50 | 30 - 50 | 40 - 80 | 40 - 80 | 40 - 80 | 20 - 40 | 40 - 200 | 20 - 40 | 20 - 40 | 40 - 80 | 40 - 80 |
| 1.7 | | 100 - 200 | 40 - 80 | 30 - 50 | 30 - 50 | 40 - 80 | 40 - 80 | 300 - 470 | | 40 - 200 | | | 40 - 80 | |
| 1.8 | | 100 - 200 | 40 - 80 | 30 - 50 | 30 - 50 | 40 - 80 | 40 - 80 | 200 - 340 | | 40 - 200 | | | 40 - 80 | |
| 1.9 | | 100 - 200 | | | | | | 150 - 250 | | 40 - 200 | | | | |
| 2.1 | 40 - 80 | 80 - 240 | 80 - 160 | 50 - 100 | 50 - 100 | 80 - 160 | 80 - 160 | 80 - 160 | 40 - 80 | 80 - 200 | 40 - 80 | 40 - 80 | 80 - 160 | 80 - 160 |
| 2.2 | 30 - 50 | 60 - 180 | 60 - 100 | 40 - 60 | 40 - 60 | 60 - 100 | 60 - 100 | 60 - 100 | 30 - 50 | 50 - 150 | 30 - 50 | 30 - 50 | 60 - 100 | 60 - 100 |
| 2.3 | 25 - 40 | 30 - 90 | 50 - 80 | 30 - 50 | 30 - 50 | 50 - 80 | 50 - 80 | 50 - 80 | 25 - 40 | 40 - 120 | 25 - 40 | 25 - 40 | 50 - 80 | 50 - 80 |
| 3.1 | 50 - 80 | 65 - 200 | 100 - 160 | 70 - 120 | 70 - 120 | 100 - 160 | 100 - 160 | 100 - 160 | 50 - 80 | 80 - 240 | 50 - 80 | 50 - 80 | 100 - 160 | 100 - 160 |
| 3.2 | 40 - 70 | 55 - 170 | 80 - 140 | 60 - 100 | 60 - 100 | 80 - 140 | 80 - 140 | 80 - 140 | 40 - 70 | 70 - 120 | 40 - 70 | 40 - 70 | 80 - 140 | 80 - 140 |
| 3.3 | 35 - 50 | 45 - 140 | 70 - 100 | 50 - 70 | 50 - 70 | 70 - 100 | 70 - 100 | 70 - 100 | 35 - 50 | 50 - 150 | 35 - 50 | 35 - 50 | 70 - 100 | 70 - 100 |
| 3.4 | 25 - 40 | 35 - 100 | 50 - 80 | 40 - 60 | 40 - 60 | 50 - 80 | 50 - 80 | 50 - 80 | 25 - 40 | 40 - 120 | 25 - 40 | 25 - 40 | 50 - 80 | 50 - 80 |
| 4.1 | 60 - 100 | 100 - 300 | 120 - 200 | 70 - 120 | 70 - 120 | 120 - 200 | 120 - 200 | 120 - 200 | 60 - 100 | 100 - 300 | 60 - 100 | 60 - 100 | 120 - 200 | 120 - 200 |
| 4.2 | 40 - 60 | 80 - 240 | 80 - 120 | 50 - 70 | 50 - 70 | 80 - 120 | 80 - 120 | 80 - 120 | 40 - 60 | 60 - 180 | 40 - 60 | 40 - 60 | 80 - 120 | 80 - 120 |
| 4.3 | 20 - 30 | 40 - 120 | 40 - 60 | 30 - 40 | 30 - 40 | 40 - 60 | 40 - 60 | 40 - 60 | 20 - 30 | 30 - 90 | 20 - 30 | 20 - 30 | 40 - 60 | 40 - 60 |
| 5.1 | 60 - 100 | 100 - 300 | 120 - 200 | 70 - 120 | 70 - 120 | 120 - 200 | 120 - 200 | 120 - 200 | 60 - 100 | 100 - 300 | 60 - 100 | 60 - 100 | 120 - 200 | 120 - 200 |
| 5.2 | 30 - 60 | 80 - 240 | 60 - 120 | 40 - 70 | 40 - 70 | 60 - 120 | 60 - 120 | 60 - 120 | 30 - 60 | 60 - 180 | 30 - 60 | 30 - 60 | 60 - 120 | 60 - 120 |
| 5.3 | 20 - 50 | 40 - 120 | 40 - 100 | 30 - 60 | 30 - 60 | 40 - 100 | 40 - 100 | 40 - 100 | 20 - 50 | 50 - 150 | 20 - 50 | 20 - 50 | 40 - 100 | 40 - 100 |
| 6.1 | | | | | | | | | 100 - 200 | 200 - 600 | 100 - 200 | | | 200 - 400 |
| 6.2 | | | | | | | | | 130 - 170 | 170 - 500 | 130 - 170 | | | 260 - 340 |
| 6.3 | | | | | | | | | 130 - 170 | 170 - 500 | 130 - 170 | | | 260 - 340 |
| 6.4 | | | | | | | | | 20 - 50 | 50 - 150 | 20 - 50 | | | 40 - 100 |
| 7.1 | | | | | | | | | 50 - 450 | | 50 - 450 | | | 100 - 900 |
| 7.2 | | | | | | | | | 150 - 450 | | 150 - 450 | | | 300 - 900 |
| 7.3 | | | | | | | | | 40 - 80 | | 40 - 80 | | | 80 - 160 |
| 7.4 | | | | | | | | | 35 - 50 | | 35 - 50 | | | 70 - 100 |
| 8.1 | | | | | | | | | 80 - 160 | | 80 - 160 | | | 160 - 320 |
| 8.2 | | | | | | | | | 70 - 130 | | 70 - 130 | | | 140 - 260 |
| 8.3 | | | | | | | | | 70 - 130 | 70 - 210 | 70 - 130 | | | 140 - 260 |
| 9.1 | | | | | | | | | 4 - 8 | 8 - 24 | 4 - 8 | | | 8 - 16 |

# Suggested Technical Information Solid Carbide

| | |
|---|---|
| vc | Surface speed |
| f | Feed per rev |
| fz | Feed per tooth |
| fr | Feed rate |
| d1 | Tool diameter |
| n | Revolutions per min |
| z | Number of teeth |
| ap | Axial cut depth |
| ae | Radial cut depth |




$$RPM = \frac{vc \times 1000}{dia \times \pi}$$

$$fr = fz \times z \times RPM$$

| Material Group | Feed per tooth chart ( fz ) | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 0.4-1 mm | 1-2mm | 3mm | 4mm | 5mm | 6mm | 7-8mm | 9-10mm | 11-15mm | 16-20mm | 25mm |
| 1.1 | 0.010 | 0.014 | 0.017 | 0.021 | 0.025 | 0.030 | 0.045 | 0.055 | 0.070 | 0.090 | 0.130 |
| 1.2 | 0.010 | 0.014 | 0.017 | 0.021 | 0.025 | 0.030 | 0.045 | 0.055 | 0.070 | 0.090 | 0.130 |
| 1.3 | 0.010 | 0.014 | 0.017 | 0.021 | 0.025 | 0.030 | 0.045 | 0.055 | 0.070 | 0.090 | 0.130 |
| 1.4 | 0.010 | 0.014 | 0.017 | 0.021 | 0.025 | 0.030 | 0.045 | 0.055 | 0.070 | 0.090 | 0.130 |
| 1.5 | 0.008 | 0.010 | 0.013 | 0.016 | 0.018 | 0.022 | 0.030 | 0.038 | 0.052 | 0.060 | 0.100 |
| 1.6 | 0.008 | 0.010 | 0.013 | 0.016 | 0.018 | 0.022 | 0.030 | 0.038 | 0.052 | 0.060 | 0.100 |
| 1.7 | 0.008 | 0.010 | 0.013 | 0.016 | 0.018 | 0.022 | 0.030 | 0.038 | 0.052 | 0.060 | 0.100 |
| 1.8 | 0.008 | 0.010 | 0.013 | 0.016 | 0.018 | 0.022 | 0.030 | 0.038 | 0.052 | 0.060 | 0.100 |
| 1.9 | 0.008 | 0.010 | 0.013 | 0.016 | 0.018 | 0.022 | 0.030 | 0.038 | 0.052 | 0.060 | 0.100 |
| 2.1 | 0.008 | 0.010 | 0.013 | 0.016 | 0.018 | 0.022 | 0.030 | 0.038 | 0.052 | 0.075 | 0.100 |
| 2.2 | 0.008 | 0.010 | 0.013 | 0.016 | 0.018 | 0.022 | 0.030 | 0.038 | 0.052 | 0.075 | 0.100 |
| 2.3 | 0.008 | 0.010 | 0.013 | 0.016 | 0.018 | 0.022 | 0.030 | 0.038 | 0.052 | 0.075 | 0.100 |
| 3.1 | 0.012 | 0.018 | 0.022 | 0.027 | 0.035 | 0.045 | 0.060 | 0.075 | 0.095 | 0.130 | 0.150 |
| 3.2 | 0.012 | 0.018 | 0.022 | 0.027 | 0.035 | 0.045 | 0.060 | 0.075 | 0.095 | 0.130 | 0.150 |
| 3.3 | 0.010 | 0.014 | 0.017 | 0.021 | 0.025 | 0.030 | 0.045 | 0.055 | 0.070 | 0.090 | 0.130 |
| 3.4 | 0.010 | 0.014 | 0.017 | 0.021 | 0.025 | 0.030 | 0.045 | 0.055 | 0.070 | 0.090 | 0.130 |
| 4.1 | 0.010 | 0.014 | 0.017 | 0.021 | 0.025 | 0.030 | 0.045 | 0.055 | 0.070 | 0.090 | 0.130 |
| 4.2 | 0.010 | 0.014 | 0.017 | 0.021 | 0.025 | 0.030 | 0.045 | 0.055 | 0.070 | 0.090 | 0.130 |
| 4.3 | 0.008 | 0.010 | 0.013 | 0.016 | 0.018 | 0.022 | 0.030 | 0.038 | 0.052 | 0.075 | 0.100 |
| 5.1 | 0.008 | 0.010 | 0.013 | 0.016 | 0.018 | 0.022 | 0.030 | 0.038 | 0.052 | 0.075 | 0.100 |
| 5.2 | 0.008 | 0.010 | 0.013 | 0.016 | 0.018 | 0.022 | 0.030 | 0.038 | 0.052 | 0.075 | 0.100 |
| 5.3 | 0.008 | 0.010 | 0.013 | 0.016 | 0.018 | 0.022 | 0.030 | 0.038 | 0.052 | 0.075 | 0.100 |
| 6.1 | 0.012 | 0.018 | 0.022 | 0.027 | 0.035 | 0.045 | 0.060 | 0.075 | 0.095 | 0.130 | 0.150 |
| 6.2 | 0.012 | 0.018 | 0.022 | 0.027 | 0.035 | 0.045 | 0.060 | 0.075 | 0.095 | 0.130 | 0.150 |
| 6.3 | 0.012 | 0.018 | 0.022 | 0.027 | 0.035 | 0.045 | 0.060 | 0.075 | 0.095 | 0.130 | 0.150 |
| 6.4 | 0.008 | 0.010 | 0.013 | 0.016 | 0.018 | 0.022 | 0.030 | 0.038 | 0.052 | 0.075 | 0.100 |
| 7.1 | 0.024 | 0.036 | 0.044 | 0.054 | 0.070 | 0.090 | 0.120 | 0.150 | 0.190 | 0.260 | 0.300 |
| 7.2 | 0.024 | 0.036 | 0.044 | 0.054 | 0.070 | 0.090 | 0.120 | 0.150 | 0.190 | 0.260 | 0.300 |
| 7.3 | 0.024 | 0.036 | 0.044 | 0.054 | 0.070 | 0.090 | 0.120 | 0.150 | 0.190 | 0.260 | 0.300 |
| 7.4 | 0.024 | 0.036 | 0.044 | 0.054 | 0.070 | 0.090 | 0.120 | 0.150 | 0.190 | 0.260 | 0.300 |
| 8.1 | 0.024 | 0.036 | 0.044 | 0.054 | 0.070 | 0.090 | 0.120 | 0.150 | 0.190 | 0.260 | 0.300 |
| 8.2 | 0.024 | 0.036 | 0.044 | 0.054 | 0.070 | 0.090 | 0.120 | 0.150 | 0.190 | 0.260 | 0.300 |
| 8.3 | 0.012 | 0.018 | 0.022 | 0.027 | 0.035 | 0.045 | 0.060 | 0.075 | 0.095 | 0.130 | 0.150 |
| 9.1 | 0.010 | 0.014 | 0.017 | 0.021 | 0.025 | 0.030 | 0.045 | 0.055 | 0.070 | 0.090 | 0.130 |

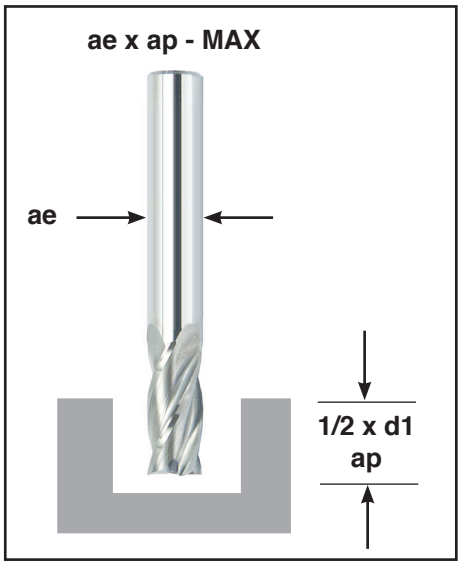
# Suggested Technical Information Solid Carbide

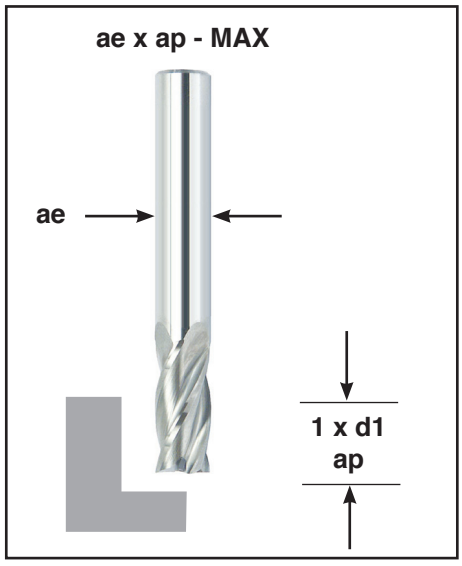


| Series | 254 356 357 260 254R 356R 357R 625 253 | 255 256 355 255C 255WL 257 258 255R | 153 154 155 151 152 271 471 279 479 | 680 610R 620R profile only | 690 profile & slots | 200 400 206 406 | 204 404 209 409 | 700, 705 730R | 710 715 720 | 725 | 288 488 | 289 489 | 112 112M | 122 122M | 113 114 | 140 149 | 001 002 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Material Group** | **Surface Speed vc m/min** | | | | | | | | | | | | | | | | |
| 1.1 | | | | 150 - 450 | 150 - 450 | 80 - 120 | 160 - 240 | 80 - 120 | 80 - 750 | 80 - 250 | 80 - 120 | 160 - 240 | 80 - 120 | 160 - 240 | 80 - 120 | 80 - 120 | 80 - 120 |
| 1.2 | | | | 150 - 450 | 150 - 450 | 80 - 120 | 160 - 240 | 80 - 120 | 80 - 280 | 80 - 280 | 80 - 120 | 160 - 240 | 80 - 120 | 160 - 240 | 80 - 120 | 80 - 120 | 80 - 120 |
| 1.3 | | | | 100 - 300 | 100 - 300 | 60 - 80 | 120 - 160 | 60 - 80 | 60 - 225 | 60 - 225 | 60 - 80 | 120 - 160 | 60 - 80 | 120 - 160 | 60 - 80 | 60 - 80 | 60 - 80 |
| 1.4 | | | | 100 - 300 | 100 - 300 | 60 - 80 | 120 - 160 | 60 - 80 | 60 - 225 | 60 - 225 | 60 - 80 | 120 - 160 | 60 - 80 | 120 - 160 | 60 - 80 | 60 - 80 | 60 - 80 |
| 1.5 | | | | 100 - 200 | 100 - 200 | 40 - 60 | 80 - 120 | 40 - 60 | 40 - 200 | 40 - 200 | 40 - 60 | 80 - 160 | 40 - 60 | 80 - 160 | 40 - 60 | 40 - 60 | 40 - 60 |
| 1.6 | | | | 100 - 200 | 100 - 200 | 20 - 40 | 40 - 80 | 40 - 60 | 40 - 200 | 40 - 200 | 20 - 40 | 40 - 80 | 20 - 40 | 40 - 80 | 20 - 40 | 20 - 40 | 20 - 40 |
| 1.7 | | | | 100 - 200 | 100 - 200 | | 40 - 80 | 30 - 50 | 30 - 120 | 30 - 120 | | 40 - 80 | | 40 - 80 | | | |
| 1.8 | | | | 100 - 200 | 100 - 200 | | 40 - 80 | 30 - 50 | 30 - 120 | 30 - 120 | | 40 - 80 | | 40 - 80 | | | |
| 1.9 | | | | 100 - 200 | 100 - 200 | | | | | | | | | | | | |
| 2.1 | | | | 80 - 240 | 80 - 240 | 40 - 80 | 80 - 160 | 40 - 80 | 40 - 180 | 40 - 180 | 40 - 80 | 80 - 160 | 40 - 80 | 80 - 160 | 40 - 80 | 40 - 80 | 40 - 80 |
| 2.2 | | | | 60 - 180 | 60 - 180 | 30 - 50 | 60 - 100 | 30 - 50 | 30 - 160 | 30 - 160 | 30 - 50 | 60 - 100 | 30 - 50 | 60 - 100 | 30 - 50 | 30 - 50 | 30 - 50 |
| 2.3 | | | | 30 - 90 | 30 - 90 | 25 - 40 | 50 - 80 | 25 - 40 | 25 - 150 | 25 - 150 | 25 - 40 | 50 - 80 | 25 - 40 | 50 - 80 | 25 - 40 | 25 - 40 | 25 - 40 |
| 3.1 | | | | 65 - 200 | 65 - 200 | 50 - 80 | 100 - 160 | 70 - 120 | 70 - 290 | 70 - 290 | 50 - 80 | 100 - 160 | 50 - 80 | 100 - 160 | 50 - 80 | 50 - 80 | 50 - 80 |
| 3.2 | | | | 55 - 170 | 55 - 170 | 40 - 70 | 80 - 140 | 60 - 100 | 60 - 270 | 60 - 270 | 40 - 70 | 80 - 140 | 40 - 70 | 80 - 140 | 40 - 70 | 40 - 70 | 40 - 70 |
| 3.3 | | | | 45 - 140 | 45 - 140 | 35 - 50 | 70 - 100 | 50 - 70 | 50 - 250 | 50 - 250 | 35 - 50 | 70 - 100 | 35 - 50 | 70 - 100 | 35 - 50 | 35 - 50 | 35 - 50 |
| 3.4 | | | | 35 - 100 | 35 - 100 | 25 - 40 | 50 - 80 | 40 - 60 | 40 - 250 | 40 - 250 | 25 - 40 | 50 - 80 | 25 - 40 | 50 - 80 | 25 - 40 | 25 - 40 | 25 - 40 |
| 4.1 | | | | 100 - 300 | 100 - 300 | 60 - 100 | 120 - 200 | 60 - 100 | 60 -750 | 60 -750 | 60 - 100 | 120 - 200 | 60 - 100 | 120 - 200 | 60 - 100 | 60 - 100 | 60 - 100 |
| 4.2 | | | | 80 - 240 | 80 - 240 | 40 - 60 | 80 - 120 | 40 - 100 | 40 - 250 | 40 - 250 | 40 - 60 | 80 - 120 | 40 - 60 | 80 - 120 | 40 - 60 | 40 - 60 | 40 - 60 |
| 4.3 | | | | 40 - 120 | 40 - 120 | 20 - 30 | 40 - 60 | 20 - 30 | 20 - 200 | 20 - 200 | 20 - 30 | 40 - 60 | 20 - 30 | 40 - 60 | 20 - 30 | 20 - 30 | 20 - 30 |
| 5.1 | | | | 100 - 300 | 100 - 300 | 60 - 100 | 120 - 200 | 60 - 100 | 60 - 180 | 60 - 180 | 60 - 100 | 120 - 200 | 60 - 100 | 120 - 200 | 60 - 100 | 60 - 100 | 60 - 100 |
| 5.2 | | | | 80 - 240 | 80 - 240 | 30 - 60 | 60 - 120 | 30 - 60 | 30 - 160 | 30 - 160 | 30 - 60 | 60 - 120 | 30 - 60 | 60 - 120 | 30 - 60 | 30 - 60 | 30 - 60 |
| 5.3 | | | | 40 - 120 | 40 - 120 | 20 - 50 | 40 - 100 | 20 - 50 | 20 - 155 | 20 - 155 | 20 - 50 | 40 - 100 | 20 - 50 | 40 - 100 | 20 - 50 | 20 - 50 | 20 - 50 |
| 6.1 | | | | | | 100 - 200 | 200 - 400 | | | | 100 - 200 | 200 - 400 | 100 - 200 | 200 - 400 | 100 - 200 | 100 - 200 | 100 - 200 |
| 6.2 | | | | | | 130 - 170 | 260 - 340 | | | | 130 - 170 | 260 - 340 | 130 - 170 | 260 - 340 | 130 - 170 | 130 - 170 | 130 - 170 |
| 6.3 | | | | | | 130 - 170 | 260 - 340 | | | | 130 - 170 | 260 - 340 | 130 - 170 | 260 - 340 | 130 - 170 | 130 - 170 | 130 - 170 |
| 6.4 | | | | | | 20 - 50 | 40 - 100 | | | | 25 - 50 | 50 - 100 | 25 - 50 | 50 - 100 | 25 - 50 | 25 - 50 | 25 - 50 |
| 7.1 | 450 - 1350 | 450 - 1350 | 450 - 1350 | | | 50 - 450 | | | | | | | | | | | |
| 7.2 | 450 - 1350 | 450 - 1350 | 450 - 1350 | | | 150 - 450 | | | | | | | | | | | |
| 7.3 | 300 - 1000 | 300 - 1000 | 300 - 1000 | | | 40 - 80 | | | | | | | | | | | |
| 7.4 | 100 - 450 | 100 - 450 | 100 - 450 | | | 35 - 50 | | | | | | | | | | | |
| 8.1 | 200 - 600 | 200 - 600 | 200 - 600 | | | 80 - 160 | | | | | | | | | | | |
| 8.2 | 100 - 300 | 100 - 300 | 100 - 300 | | | 70 - 130 | | | | | | | | | | | |
| 8.3 | | | | | | 70 - 130 | | | | | | | | | | | |
| 9.1 | | | | | | 4 - 8 | 8 - 16 | | | | 4 - 8 | 8 - 16 | 4 - 8 | 8 - 16 | 4 - 8 | 4 - 8 | 4 - 8 |

# Suggested Technical Information Solid Carbide

| | |
|---|---|
| vc | Surface speed |
| f | Feed per rev |
| fz | Feed per tooth |
| fr | Feed rate |
| d1 | Tool diameter |
| n | Revolutions per min |
| z | Number of teeth |
| ap | Axial cut depth |
| ae | Radial cut depth |




$$RPM = \frac{vc \times 1000}{dia \times \pi}$$

$$fr = fz \times z \times RPM$$

| Material Group | Feed per tooth chart ( fz ) | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 0.4-1 mm | 1-2mm | 3mm | 4mm | 5mm | 6mm | 7-8mm | 9-10mm | 11-15mm | 16-20mm | 25mm |
| 1.1 | 0.010 | 0.014 | 0.017 | 0.021 | 0.025 | 0.030 | 0.045 | 0.055 | 0.070 | 0.090 | 0.130 |
| 1.2 | 0.010 | 0.014 | 0.017 | 0.021 | 0.025 | 0.030 | 0.045 | 0.055 | 0.070 | 0.090 | 0.130 |
| 1.3 | 0.010 | 0.014 | 0.017 | 0.021 | 0.025 | 0.030 | 0.045 | 0.055 | 0.070 | 0.090 | 0.130 |
| 1.4 | 0.010 | 0.014 | 0.017 | 0.021 | 0.025 | 0.030 | 0.045 | 0.055 | 0.070 | 0.090 | 0.130 |
| 1.5 | 0.008 | 0.010 | 0.013 | 0.016 | 0.018 | 0.022 | 0.030 | 0.038 | 0.052 | 0.060 | 0.100 |
| 1.6 | 0.008 | 0.010 | 0.013 | 0.016 | 0.018 | 0.022 | 0.030 | 0.038 | 0.052 | 0.060 | 0.100 |
| 1.7 | 0.008 | 0.010 | 0.013 | 0.016 | 0.018 | 0.022 | 0.030 | 0.038 | 0.052 | 0.060 | 0.100 |
| 1.8 | 0.008 | 0.010 | 0.013 | 0.016 | 0.018 | 0.022 | 0.030 | 0.038 | 0.052 | 0.060 | 0.100 |
| 1.9 | 0.008 | 0.010 | 0.013 | 0.016 | 0.018 | 0.022 | 0.030 | 0.038 | 0.052 | 0.060 | 0.100 |
| 2.1 | 0.008 | 0.010 | 0.013 | 0.016 | 0.018 | 0.022 | 0.030 | 0.038 | 0.052 | 0.075 | 0.100 |
| 2.2 | 0.008 | 0.010 | 0.013 | 0.016 | 0.018 | 0.022 | 0.030 | 0.038 | 0.052 | 0.075 | 0.100 |
| 2.3 | 0.008 | 0.010 | 0.013 | 0.016 | 0.018 | 0.022 | 0.030 | 0.038 | 0.052 | 0.075 | 0.100 |
| 3.1 | 0.012 | 0.018 | 0.022 | 0.027 | 0.035 | 0.045 | 0.060 | 0.075 | 0.095 | 0.130 | 0.150 |
| 3.2 | 0.012 | 0.018 | 0.022 | 0.027 | 0.035 | 0.045 | 0.060 | 0.075 | 0.095 | 0.130 | 0.150 |
| 3.3 | 0.010 | 0.014 | 0.017 | 0.021 | 0.025 | 0.030 | 0.045 | 0.055 | 0.070 | 0.090 | 0.130 |
| 3.4 | 0.010 | 0.014 | 0.017 | 0.021 | 0.025 | 0.030 | 0.045 | 0.055 | 0.070 | 0.090 | 0.130 |
| 4.1 | 0.010 | 0.014 | 0.017 | 0.021 | 0.025 | 0.030 | 0.045 | 0.055 | 0.070 | 0.090 | 0.130 |
| 4.2 | 0.010 | 0.014 | 0.017 | 0.021 | 0.025 | 0.030 | 0.045 | 0.055 | 0.070 | 0.090 | 0.130 |
| 4.3 | 0.008 | 0.010 | 0.013 | 0.016 | 0.018 | 0.022 | 0.030 | 0.038 | 0.052 | 0.075 | 0.100 |
| 5.1 | 0.008 | 0.010 | 0.013 | 0.016 | 0.018 | 0.022 | 0.030 | 0.038 | 0.052 | 0.075 | 0.100 |
| 5.2 | 0.008 | 0.010 | 0.013 | 0.016 | 0.018 | 0.022 | 0.030 | 0.038 | 0.052 | 0.075 | 0.100 |
| 5.3 | 0.008 | 0.010 | 0.013 | 0.016 | 0.018 | 0.022 | 0.030 | 0.038 | 0.052 | 0.075 | 0.100 |
| 6.1 | 0.012 | 0.018 | 0.022 | 0.027 | 0.035 | 0.045 | 0.060 | 0.075 | 0.095 | 0.130 | 0.150 |
| 6.2 | 0.012 | 0.018 | 0.022 | 0.027 | 0.035 | 0.045 | 0.060 | 0.075 | 0.095 | 0.130 | 0.150 |
| 6.3 | 0.012 | 0.018 | 0.022 | 0.027 | 0.035 | 0.045 | 0.060 | 0.075 | 0.095 | 0.130 | 0.150 |
| 6.4 | 0.008 | 0.010 | 0.013 | 0.016 | 0.018 | 0.022 | 0.030 | 0.038 | 0.052 | 0.075 | 0.100 |
| 7.1 | 0.024 | 0.036 | 0.044 | 0.054 | 0.070 | 0.090 | 0.120 | 0.150 | 0.190 | 0.260 | 0.300 |
| 7.2 | 0.024 | 0.036 | 0.044 | 0.054 | 0.070 | 0.090 | 0.120 | 0.150 | 0.190 | 0.260 | 0.300 |
| 7.3 | 0.024 | 0.036 | 0.044 | 0.054 | 0.070 | 0.090 | 0.120 | 0.150 | 0.190 | 0.260 | 0.300 |
| 7.4 | 0.024 | 0.036 | 0.044 | 0.054 | 0.070 | 0.090 | 0.120 | 0.150 | 0.190 | 0.260 | 0.300 |
| 8.1 | 0.024 | 0.036 | 0.044 | 0.054 | 0.070 | 0.090 | 0.120 | 0.150 | 0.190 | 0.260 | 0.300 |
| 8.2 | 0.012 | 0.018 | 0.022 | 0.027 | 0.035 | 0.045 | 0.060 | 0.075 | 0.095 | 0.130 | 0.150 |
| 8.3 | 0.012 | 0.018 | 0.022 | 0.027 | 0.035 | 0.045 | 0.060 | 0.075 | 0.095 | 0.130 | 0.150 |
| 9.1 | 0.010 | 0.014 | 0.017 | 0.021 | 0.025 | 0.030 | 0.045 | 0.055 | 0.070 | 0.090 | 0.130 |

NOTE: Series 255XL, 257XL metal removal rates to suit application

# Suggested Technical Information PCD & CVD Coated











| Series | 800, 802 | 801, 803 | 804, 805 806, 809, 810 | 807 | FG | 811 | 815 | 816 | 817 |
|---|---|---|---|---|---|---|---|---|---|
| **Material Group** | **Surface Speed vc m/min** | | | | | | | | |
| Fiberglass | | | 400-1000 | 400-1000 | 200-300 | 130-250 | 130-250 | 130-250 | |
| Graphite | 600-1200 | 600-1200 | 600-1200 | 600-1200 | 200-300 | 130-250 | | | 130-250 |
| Composite | 450-100 | 450-100 | 450-100 | 450-100 | 200-300 | | 130-250 | 130-250 | |
| Metal Matrix | 450-100 | 450-100 | 450-100 | 450-100 | | 130-250 | | 130-250 | |
| Carbon Fibre | 600-1200 | 600-1200 | 600-1200 | 600-1200 | | 130-250 | | | 130-250 |
| Plastics | 450-100 | 450-100 | 450-100 | 450-100 | 200-300 | 130-250 | | 130-250 | 130-250 |
| Carbon & Honeycombe | | | 400-1000 | 400-1000 | | 130-250 | 130-250 | | 130-250 |

# Suggested Technical Information Tungsten Carbide Burrs

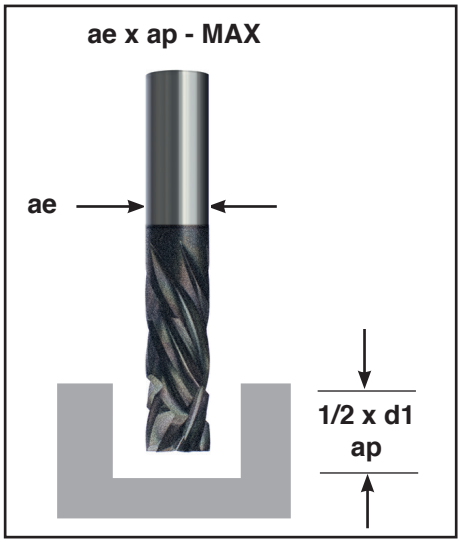
## Burr Application Data

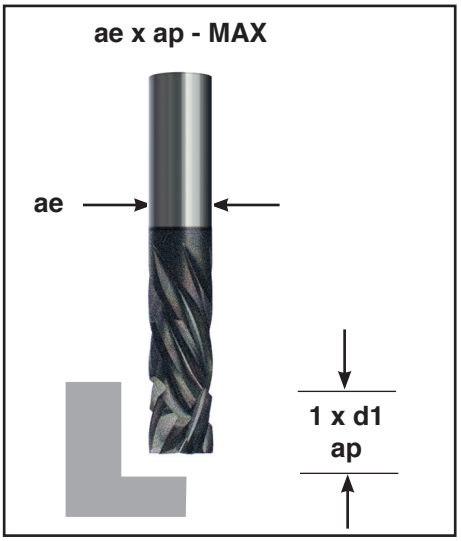
| Material Group | Single Cut | Double Cut | Aluminium Cut |
|---|---|---|---|
| Aluminimum | | | O |
| Brass, Bronze, Copper | O | O | |
| Cast Iron | O | O | |
| Plastics | | | O |
| Steel, 40 - 55rc | O | O | |
| Steel, 40 - 60rc | O | O | |
| Steel, Carbon | O | O | |
| Steel Nickel, Chrome | O | O | |
| Stainless Steel | O | O | |
| Steel Weldments | O | O | |
| Titanium | O | O | |
| Zinc | | | O |

Suitable for use = **O**

# Suggested Technical Information PCD & CVD Coated

| | |
|---|---|
| vc | Surface speed |
| f | Feed per rev |
| fz | Feed per tooth |
| fr | Feed rate |
| d1 | Tool diameter |
| n | Revolutions per min |
| z | Number of teeth |
| ap | Axial cut depth |
| ae | Radial cut depth |




RPM = $\frac{vc \times 1000}{dia \times \pi}$

fr = fz x z x RPM

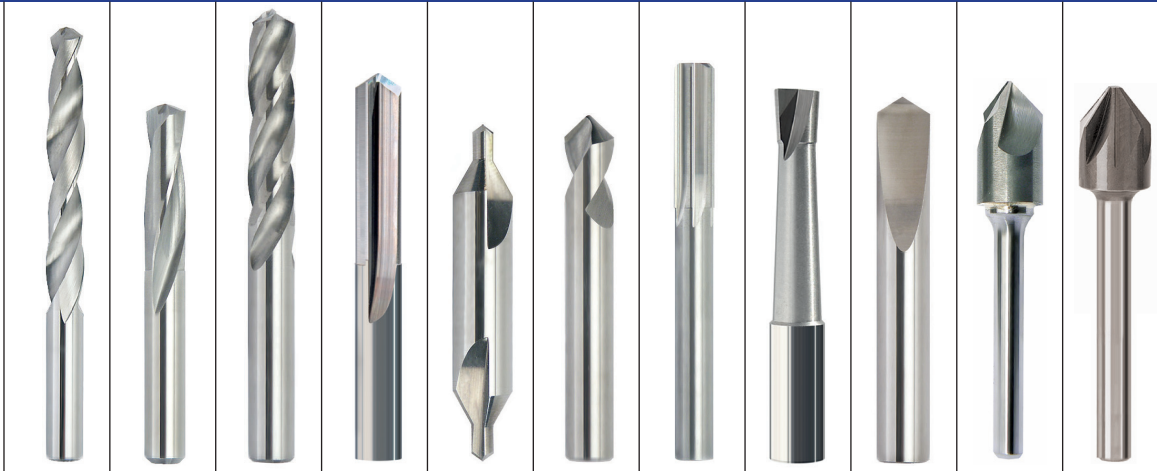
| Material Group | Feed per tooth chart ( fz ) | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 0.4-1 mm | 1-2mm | 3mm | 4mm | 5mm | 6mm | 7-8mm | 9-10mm | 11-15mm | 16-20mm | 25mm |
| Fiberglass | 0.010 | 0.014 | 0.017 | 0.021 | 0.025 | 0.030 | 0.045 | 0.055 | 0.070 | 0.090 | 0.130 |
| Graphite | 0.010 | 0.014 | 0.017 | 0.021 | 0.025 | 0.030 | 0.045 | 0.055 | 0.070 | 0.090 | 0.130 |
| Composite | 0.010 | 0.014 | 0.017 | 0.021 | 0.025 | 0.030 | 0.045 | 0.055 | 0.070 | 0.090 | 0.130 |
| Metal Matrix | 0.010 | 0.014 | 0.017 | 0.021 | 0.025 | 0.030 | 0.045 | 0.055 | 0.070 | 0.090 | 0.130 |
| Carbon Fibre | 0.008 | 0.010 | 0.013 | 0.016 | 0.018 | 0.022 | 0.030 | 0.038 | 0.052 | 0.060 | 0.100 |
| Plastics | 0.008 | 0.010 | 0.013 | 0.016 | 0.018 | 0.022 | 0.030 | 0.038 | 0.052 | 0.060 | 0.100 |
| Carbon & Honeycombe | 0.008 | 0.010 | 0.013 | 0.016 | 0.018 | 0.022 | 0.030 | 0.038 | 0.052 | 0.060 | 0.100 |

# Suggested Technical Information Tungsten Carbide Burrs

## Burr Recommended R.P.M. Guide

| Bur Diameter | R.P.M. |
|---|---|
| 3mm Solid Carbide | 45,000 - 55,000 |
| 6mm Solid Carbide | 30,000 - 35,000 |
| 6mm Carbide Head Brazed to 3mm Steel Shank | 25,000 - 30,000 |
| 8mm Carbide Head Brazed to 6mm Steel Shank | 25,000 - 30,000 |
| 10mm Carbide Head Brazed to 6mm Steel Shank | 25,000 - 30,000 |
| 12mm Carbide Head Brazed to 6mm Steel Shank | 20,000 - 25,000 |
| 16mm Carbide Head Brazed to 6mm Steel Shank | 15,000 - 20,000 |
| 25mm Carbide Head Brazed to 6mm Steel Shank | 12,000 - 18,000 |

# Suggested Technical Information Solid Carbide



| Series | 102, 103 202, 203 | 104 | 105 | 201 | 106 107 | 109 110 199 119 | 108 | 101 | 111 | Countersink single | Countersink multi |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Material Group** | **Surface Speed vc m/min** | | | | | | | | | | |
| 1.1 | 70 - 100 | 70 - 100 | 70 - 100 | | 70 - 100 | 100 - 140 | 50 - 70 | 70 - 100 | 70 - 100 | 70 - 100 | 70 - 100 |
| 1.2 | 60 - 90 | 60 - 90 | 60 - 90 | | 60 - 90 | 100 - 140 | 50 - 60 | 60 - 90 | 60 - 90 | 60 - 90 | 60 - 90 |
| 1.3 | 60 - 90 | 60 - 90 | 60 - 90 | | 60 - 90 | 70 - 100 | 50 - 60 | 60 - 90 | 60 - 90 | 60 - 90 | 60 - 90 |
| 1.4 | 60 - 80 | 60 - 80 | 60 - 80 | | 60 - 80 | 70 - 100 | 40 - 55 | 60 - 80 | 60 - 80 | 60 - 80 | 60 - 80 |
| 1.5 | 40 - 50 | 40 - 50 | 40 - 50 | 40 - 50 | 40 - 50 | 50 - 70 | 30 - 35 | 40 - 50 | 40 - 50 | 40 - 50 | 40 - 50 |
| 1.6 | 40 - 50 | 40 - 50 | 40 - 50 | 40 - 50 | 40 - 50 | 30 - 50 | 30 - 35 | 40 - 50 | 40 - 50 | 40 - 50 | 40 - 50 |
| 1.7 | | | | | | 30 - 50 | 30 - 35 | | | | |
| 1.8 | | | | | | 30 - 50 | 30 - 35 | | | | |
| 1.9 | | | | | | | 25 - 30 | | | | |
| 2.1 | 35 - 70 | 35 - 70 | 35 - 70 | | 35 - 70 | 50 - 100 | 25 - 50 | 35 - 70 | 35 - 70 | 35 - 70 | 35 - 70 |
| 2.2 | 30 - 60 | 30 - 60 | 30 - 60 | 30 - 60 | 30 - 60 | 40 - 60 | 20 - 40 | 30 - 60 | 30 - 60 | 30 - 60 | 30 - 60 |
| 2.3 | 20 - 30 | 20 - 30 | | 20 - 30 | | 30 - 50 | 15 - 20 | 15 - 25 | 20 - 30 | | 15 - 25 |
| 3.1 | 60 - 90 | 60 - 90 | 60 - 90 | 60 - 90 | 60 - 90 | 70 - 120 | 40 - 60 | 60 - 90 | 60 - 90 | 60 - 90 | 60 - 90 |
| 3.2 | 60 - 90 | 60 - 90 | 60 - 90 | 60 - 90 | 60 - 90 | 60 - 100 | 40 - 60 | 60 - 90 | 60 - 90 | 60 - 90 | 60 - 90 |
| 3.3 | 40 - 70 | 40 - 70 | 40 - 70 | 40 - 70 | 40 - 70 | 50 - 70 | 30 - 50 | 40 - 70 | 40 - 70 | 40 - 70 | 40 - 70 |
| 3.4 | 40 - 70 | 40 - 70 | 40 - 70 | 40 - 70 | 40 - 70 | 40 - 60 | 30 - 50 | 40 - 70 | 40 - 70 | 40 - 70 | 40 - 70 |
| 4.1 | 40 - 50 | 40 - 50 | 40 - 50 | 40 - 50 | 40 - 50 | 70 - 120 | 30 - 55 | 40 - 50 | 40 - 50 | 40 - 50 | 40 - 50 |
| 4.2 | 30 - 40 | 30 - 40 | 30 - 40 | 30 - 40 | 30 - 40 | 50 - 70 | 20 - 30 | 30 - 40 | 30 - 40 | | 30 - 40 |
| 4.3 | 20 - 30 | 20 - 30 | 20 - 30 | 20 - 30 | 20 - 30 | 30 - 40 | 15 - 20 | 20 - 30 | 20 - 30 | | 20 - 30 |
| 5.1 | 30 - 50 | 30 - 50 | 30 - 60 | 30 - 60 | 30 - 60 | 70 - 120 | 20 - 35 | 30 - 60 | 30 - 50 | 30 - 60 | 30 - 60 |
| 5.2 | 20 - 40 | 20 - 40 | 20 - 40 | 20 - 40 | 20 - 40 | 40 - 70 | 15 - 30 | 20 - 40 | 20 - 40 | | 20 - 40 |
| 5.3 | 15 - 25 | 15 - 25 | 15 - 25 | 15 - 25 | 15 - 25 | 30 - 60 | 10 - 20 | 15 - 25 | 15 - 25 | | 15 - 25 |
| 6.1 | | | 100 - 450 | | 100 - 450 | 120 - 240 | 70 - 300 | 100 - 450 | | 100 - 450 | 100 - 450 |
| 6.2 | | | 100 - 450 | | 100 - 450 | 200 - 240 | 70 - 300 | 100 - 400 | | 100 - 400 | 100 - 400 |
| 6.3 | | | 100 - 400 | | 100 - 400 | 200 - 240 | 70 - 300 | 100 - 400 | | 100 - 400 | 100 - 400 |
| 6.4 | | | 40 - 100 | 40 - 100 | 40 - 100 | 40 - 70 | 30 - 70 | 40 - 100 | | 40 - 100 | 40 - 100 |
| 7.1 | | | 100 - 300 | | 100 - 300 | | 70 - 200 | 100 - 300 | | 100 - 300 | 100 - 300 |
| 7.2 | | | 100 - 300 | | 100 - 300 | | 70 - 200 | 100 - 300 | | 100 - 300 | 100 - 300 |
| 7.3 | | | 75 - 150 | | 75 - 150 | | 50 - 100 | 100 - 300 | | 75 - 150 | 75 - 150 |
| 7.4 | | | 50 - 70 | | 50 - 70 | | 35 - 50 | 50 - 70 | | 50 - 70 | 50 - 70 |
| 8.1 | | | 40 - 80 | | 40 - 80 | | 30 - 60 | 40 - 80 | | 40 - 80 | |
| 8.2 | | | 80 - 120 | | 80 - 120 | | 55 - 85 | 80 - 120 | | 80 - 120 | |
| 8.3 | | | | | | | | 80 - 120 | | 80 - 120 | |
| 9.1 | | | | 25 - 35 | | | | | | | |

# Suggested Technical Information Solid Carbide

**RPM = vc x 1000 / dia x π**

**fr = f/rev x RPM**

**•f numbers not applicable**

| Material Group | Feed per rev ( f mm ) | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1-2mm | 3mm | 4mm | 5mm | 6mm | 7-8mm | 9-10mm | 11-12mm | 13mm | 14-16mm | 20mm |
| 1.1 | 0.027 | 0.030 | 0.038 | 0.045 | 0.054 | 0.070 | 0.095 | 0.110 | 0.125 | 0.160 | 0.200 |
| 1.2 | 0.027 | 0.030 | 0.038 | 0.045 | 0.054 | 0.070 | 0.095 | 0.110 | 0.125 | 0.160 | 0.200 |
| 1.3 | 0.027 | 0.030 | 0.038 | 0.045 | 0.054 | 0.070 | 0.095 | 0.110 | 0.125 | 0.160 | 0.200 |
| 1.4 | 0.027 | 0.030 | 0.038 | 0.045 | 0.054 | 0.070 | 0.095 | 0.110 | 0.125 | 0.160 | 0.200 |
| 1.5 | 0.027 | 0.030 | 0.038 | 0.045 | 0.054 | 0.070 | 0.095 | 0.110 | 0.125 | 0.160 | 0.200 |
| 1.6 | 0.027 | 0.030 | 0.038 | 0.045 | 0.054 | 0.070 | 0.095 | 0.110 | 0.125 | 0.160 | 0.200 |
| 1.7 | | | | | | | | | | | |
| 1.8 | | | | | | | | | | | |
| 1.9 | | | | | | | | | | | |
| 2.1 | 0.032 | 0.045 | 0.053 | 0.060 | 0.074 | 0.090 | 0.120 | 0.143 | 0.165 | 0.190 | 0.230 |
| 2.2 | 0.032 | 0.045 | 0.053 | 0.060 | 0.074 | 0.090 | 0.120 | 0.143 | 0.165 | 0.190 | 0.230 |
| 2.3 | 0.032 | 0.045 | 0.053 | 0.060 | 0.074 | 0.090 | 0.120 | 0.143 | 0.165 | 0.190 | 0.230 |
| 3.1 | 0.040 | 0.055 | 0.065 | 0.075 | 0.090 | 0.110 | 0.133 | 0.160 | 0.180 | 0.220 | 0.280 |
| 3.2 | 0.040 | 0.055 | 0.065 | 0.075 | 0.090 | 0.110 | 0.133 | 0.160 | 0.180 | 0.220 | 0.280 |
| 3.3 | 0.040 | 0.055 | 0.065 | 0.075 | 0.090 | 0.110 | 0.133 | 0.160 | 0.180 | 0.220 | 0.280 |
| 3.4 | 0.040 | 0.055 | 0.065 | 0.075 | 0.090 | 0.110 | 0.133 | 0.160 | 0.180 | 0.220 | 0.280 |
| 4.1 | 0.040 | 0.055 | 0.065 | 0.075 | 0.090 | 0.110 | 0.133 | 0.160 | 0.180 | 0.220 | 0.280 |
| 4.2 | 0.040 | 0.055 | 0.065 | 0.075 | 0.090 | 0.110 | 0.133 | 0.160 | 0.180 | 0.220 | 0.280 |
| 4.3 | 0.040 | 0.055 | 0.065 | 0.075 | 0.090 | 0.110 | 0.133 | 0.160 | 0.180 | 0.220 | 0.280 |
| 5.1 | 0.040 | 0.055 | 0.065 | 0.075 | 0.090 | 0.110 | 0.133 | 0.160 | 0.180 | 0.220 | 0.280 |
| 5.2 | 0.040 | 0.055 | 0.065 | 0.075 | 0.090 | 0.110 | 0.133 | 0.160 | 0.180 | 0.220 | 0.280 |
| 5.3 | 0.040 | 0.055 | 0.065 | 0.075 | 0.090 | 0.110 | 0.133 | 0.160 | 0.180 | 0.220 | 0.280 |
| 6.1 | 0.055 | 0.100 | 0.120 | 0.130 | 0.150 | 0.190 | 0.240 | 0.280 | 0.300 | 0.350 | 0.400 |
| 6.2 | 0.055 | 0.100 | 0.120 | 0.130 | 0.150 | 0.190 | 0.240 | 0.280 | 0.300 | 0.350 | 0.400 |
| 6.3 | 0.055 | 0.100 | 0.120 | 0.130 | 0.150 | 0.190 | 0.240 | 0.280 | 0.300 | 0.350 | 0.400 |
| 6.4 | 0.055 | 0.100 | 0.120 | 0.130 | 0.150 | 0.190 | 0.240 | 0.280 | 0.300 | 0.350 | 0.400 |
| 7.1 | 0.063 | 0.115 | 0.135 | 0.150 | 0.185 | 0.220 | 0.278 | 0.320 | 0.350 | 0.400 | 0.450 |
| 7.2 | 0.063 | 0.115 | 0.135 | 0.150 | 0.185 | 0.220 | 0.278 | 0.320 | 0.350 | 0.400 | 0.450 |
| 7.3 | 0.063 | 0.115 | 0.135 | 0.150 | 0.185 | 0.220 | 0.278 | 0.320 | 0.350 | 0.400 | 0.450 |
| 7.4 | 0.063 | 0.115 | 0.135 | 0.150 | 0.185 | 0.220 | 0.278 | 0.320 | 0.350 | 0.400 | 0.450 |
| 8.1 | 0.080 | 0.180 | 0.220 | 0.260 | 0.350 | 0.420 | 0.520 | 0.600 | 0.650 | 0.750 | 0.850 |
| 8.2 | 0.055 | 0.100 | 0.120 | 0.130 | 0.150 | 0.190 | 0.240 | 0.370 | 0.400 | 0.500 | 0.600 |
| 8.3 | | | | | | | | | | | |
| 9.1 | | | | | | | | | | | |

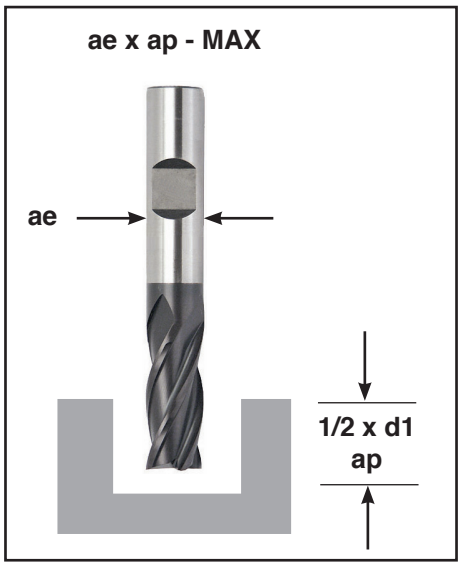
# Suggested Technical Information ASP 52

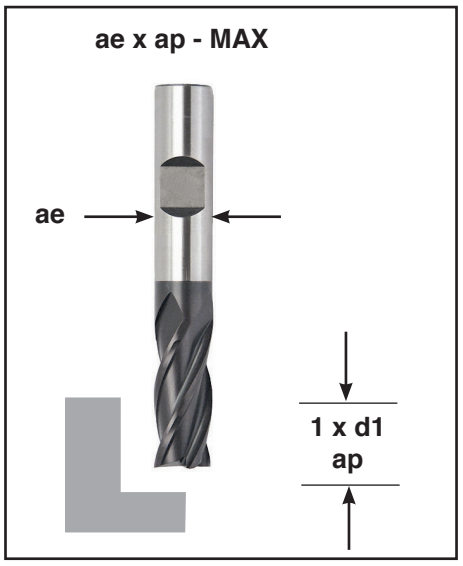


| Series | 6420 | 6439 | 6430 | 6604 | 6600 | 6666 | 6644 | 6606 | 6696 | 6444<br>6647 |
|---|---|---|---|---|---|---|---|---|---|---|
| **Material Group** | **Surface Speed vc m/min** | | | | | | | | | |
| 1.1 | 55 - 85 | 55 - 85 | | 55 - 85 | 55 - 85 | 55 - 85 | 55 - 85 | 55 - 85 | 55 - 85 | 55 - 85 |
| 1.2 | 45 - 75 | 45 - 75 | | 45 - 75 | 45 - 75 | 45 - 75 | 45 - 75 | 45 - 75 | 45 - 75 | 45 - 75 |
| 1.3 | 45 - 75 | 45 - 75 | | 45 - 75 | 45 - 75 | 45 - 75 | 45 - 75 | 45 - 75 | 45 - 75 | 45 - 75 |
| 1.4 | 45 - 65 | 45 - 65 | | 45 - 65 | 45 - 65 | 45 - 65 | 45 - 65 | 45 - 65 | 45 - 65 | 45 - 65 |
| 1.5 | 20 - 35 | 20 - 35 | | 20 - 35 | 20 - 35 | 20 - 35 | 20 - 35 | 20 - 35 | 20 - 35 | 20 - 35 |
| 1.6 | 20 - 35 | 20 - 35 | | 20 - 35 | 20 - 35 | 20 - 35 | 20 - 35 | 20 - 35 | 20 - 35 | 20 - 35 |
| 1.7 | | | | | | | | | | |
| 1.8 | | | | | | | | | | |
| 1.9 | | | | | | | | | | |
| 2.1 | | 30 - 45 | 30 - 45 | | 30 - 45 | 30 - 45 | 30 - 45 | 30 - 45 | 30 - 45 | 30 - 45 |
| 2.2 | | 30 - 45 | 30 - 45 | | 30 - 45 | 30 - 45 | 30 - 45 | 30 - 45 | 30 - 45 | 30 - 45 |
| 2.3 | | 30 - 45 | 30 - 45 | | 30 - 45 | 30 - 45 | 30 - 45 | 30 - 45 | 30 - 45 | 30 - 45 |
| 3.1 | 35 - 55 | | | | 35 - 55 | | | 35 - 55 | | |
| 3.2 | 30 - 45 | | | | 30 - 45 | | | 30 - 45 | | |
| 3.3 | 35 - 55 | | | | 35 - 55 | | | 35 - 55 | | |
| 3.4 | 30 - 45 | | | | 30 - 45 | | | 30 - 45 | | |
| 4.1 | 30 - 45 | | | 30 - 45 | 30 - 45 | 30 - 45 | 30 - 45 | 30 - 45 | 30 - 45 | |
| 4.2 | 30 - 45 | | | 30 - 45 | 30 - 45 | 30 - 45 | 30 - 45 | 30 - 45 | 30 - 45 | |
| 4.3 | 15 - 35 | | | 15 - 35 | 15 - 35 | 15 - 35 | 15 - 35 | 15 - 35 | 15 - 35 | |
| 5.1 | 30 - 45 | | | 30 - 45 | 30 - 45 | 30 - 45 | 30 - 45 | 30 - 45 | 30 - 45 | |
| 5.2 | 15 - 35 | | | 15 - 35 | 15 - 35 | 15 - 35 | 15 - 35 | 15 - 35 | 15 - 35 | |
| 5.3 | 15 - 35 | | | 15 - 35 | 15 - 35 | 15 - 35 | 15 - 35 | 15 - 35 | 15 - 35 | |
| 6.1 | 110 - 210 | | 110 - 210 | 110 - 210 | 110 - 210 | 110 - 210 | | 110 - 210 | | |
| 6.2 | 90 - 190 | | 90 - 190 | 90 - 190 | 90 - 190 | 90 - 190 | | 90 - 190 | | |
| 6.3 | 90 - 190 | | 90 - 190 | 90 - 190 | 90 - 190 | 90 - 190 | | 90 - 190 | | |
| 6.4 | | | | | | | | | | |
| 7.1 | 290 - 420 | | 290 - 420 | 290 - 420 | 290 - 420 | 290 - 420 | | 290 - 420 | | |
| 7.2 | 210 - 280 | | 210 - 280 | 210 - 280 | 210 - 280 | 210 - 280 | | 210 - 280 | | |
| 7.3 | 210 - 280 | | 210 - 280 | 210 - 280 | 210 - 280 | 210 - 280 | | 210 - 280 | | |
| 7.4 | 90 - 170 | | 90 - 170 | 90 - 170 | 90 - 170 | 90 - 170 | | 90 - 170 | | |
| 8.1 | 300 - 450 | | 300 - 450 | 300 - 450 | 300 - 450 | 300 - 450 | | 300 - 450 | | |
| 8.2 | | | | | | | | | | |
| 8.3 | | | | | | | | | | |
| 9.1 | | | | | | | | | | |

# Suggested Technical Information ASP 52

| | |
|---|---|
| vc | Surface speed |
| f | Feed per rev |
| fz | Feed per tooth |
| fr | Feed rate |
| d1 | Tool diameter |
| n | Revolutions per min |
| z | Number of teeth |
| ap | Axial cut depth |
| ae | Radial cut depth |




$$RPM = \frac{vc \times 1000}{dia \times \pi}$$

$$fr = fz \times z \times RPM$$

| Material Group | Feed per rev (f mm) | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1-2mm | 3mm | 4mm | 5mm | 6mm | 7-8mm | 9-10mm | 11-12mm | 13mm | 14-16mm | 20mm |
| 1.1 | 0.020 | 0.030 | 0.035 | 0.058 | 0.069 | 0.115 | 0.115 | 0.115 | 0.115 | 0.115 | 0.115 |
| 1.2 | 0.020 | 0.030 | 0.035 | 0.058 | 0.069 | 0.115 | 0.115 | 0.115 | 0.115 | 0.115 | 0.115 |
| 1.3 | 0.020 | 0.030 | 0.035 | 0.058 | 0.069 | 0.115 | 0.115 | 0.115 | 0.115 | 0.115 | 0.115 |
| 1.4 | 0.020 | 0.030 | 0.035 | 0.058 | 0.069 | 0.115 | 0.115 | 0.115 | 0.115 | 0.115 | 0.115 |
| 1.5 | 0.012 | 0.025 | 0.030 | 0.052 | 0.052 | 0.075 | 0.075 | 0.075 | 0.075 | 0.075 | 0.075 |
| 1.6 | 0.012 | 0.025 | 0.030 | 0.052 | 0.052 | 0.075 | 0.075 | 0.075 | 0.075 | 0.075 | 0.075 |
| 1.7 | | | | | | | | | | | |
| 1.8 | | | | | | | | | | | |
| 1.9 | | | | | | | | | | | |
| 2.1 | 0.012 | 0.025 | 0.030 | 0.052 | 0.052 | 0.075 | 0.075 | 0.075 | 0.075 | 0.075 | 0.075 |
| 2.2 | 0.012 | 0.025 | 0.030 | 0.052 | 0.052 | 0.075 | 0.075 | 0.075 | 0.075 | 0.075 | 0.075 |
| 2.3 | 0.012 | 0.025 | 0.030 | 0.052 | 0.052 | 0.075 | 0.075 | 0.075 | 0.075 | 0.075 | 0.075 |
| 3.1 | 0.020 | 0.030 | 0.035 | 0.058 | 0.069 | 0.115 | 0.115 | 0.115 | 0.115 | 0.115 | 0.115 |
| 3.2 | 0.020 | 0.030 | 0.035 | 0.058 | 0.069 | 0.115 | 0.115 | 0.115 | 0.115 | 0.115 | 0.115 |
| 3.3 | 0.020 | 0.030 | 0.035 | 0.058 | 0.069 | 0.115 | 0.115 | 0.115 | 0.115 | 0.115 | 0.115 |
| 3.4 | 0.020 | 0.030 | 0.035 | 0.058 | 0.069 | 0.115 | 0.115 | 0.115 | 0.115 | 0.115 | 0.115 |
| 4.1 | 0.025 | 0.042 | 0.062 | 0.077 | 0.092 | 0.127 | 0.150 | 0.150 | 0.150 | 0.150 | 0.150 |
| 4.2 | 0.025 | 0.042 | 0.062 | 0.077 | 0.092 | 0.127 | 0.150 | 0.150 | 0.150 | 0.150 | 0.150 |
| 4.3 | 0.014 | 0.021 | 0.029 | 0.044 | 0.054 | 0.081 | 0.104 | 0.104 | 0.104 | 0.104 | 0.104 |
| 5.1 | 0.014 | 0.021 | 0.029 | 0.044 | 0.054 | 0.081 | 0.104 | 0.104 | 0.104 | 0.104 | 0.104 |
| 5.2 | 0.014 | 0.021 | 0.029 | 0.044 | 0.054 | 0.081 | 0.104 | 0.104 | 0.104 | 0.104 | 0.104 |
| 5.3 | 0.014 | 0.021 | 0.029 | 0.044 | 0.054 | 0.081 | 0.104 | 0.104 | 0.104 | 0.104 | 0.104 |
| 6.1 | 0.020 | 0.030 | 0.035 | 0.058 | 0.069 | 0.115 | 0.115 | 0.115 | 0.115 | 0.115 | 0.115 |
| 6.2 | 0.020 | 0.030 | 0.035 | 0.058 | 0.069 | 0.115 | 0.115 | 0.115 | 0.115 | 0.115 | 0.115 |
| 6.3 | 0.020 | 0.030 | 0.035 | 0.058 | 0.069 | 0.115 | 0.115 | 0.115 | 0.115 | 0.115 | 0.115 |
| 6.4 | | | | | | | | | | | |
| 7.1 | 0.020 | 0.030 | 0.035 | 0.058 | 0.069 | 0.115 | 0.115 | 0.115 | 0.115 | 0.115 | 0.115 |
| 7.2 | 0.025 | 0.042 | 0.062 | 0.077 | 0.092 | 0.127 | 0.150 | 0.150 | 0.150 | 0.150 | 0.150 |
| 7.3 | 0.020 | 0.030 | 0.035 | 0.058 | 0.069 | 0.115 | 0.115 | 0.115 | 0.115 | 0.115 | 0.115 |
| 7.4 | 0.020 | 0.030 | 0.035 | 0.058 | 0.069 | 0.115 | 0.115 | 0.115 | 0.115 | 0.115 | 0.115 |
| 8.1 | 0.020 | 0.030 | 0.035 | 0.058 | 0.069 | 0.115 | 0.115 | 0.115 | 0.115 | 0.115 | 0.115 |
| 8.2 | | | | | | | | | | | |
| 8.3 | | | | | | | | | | | |
| 9.1 | | | | | | | | | | | |

NOTE: On 55° Helix endmill 6604 max radial cut = D x 0.05
NOTE: For LONG SERIES cutters fz = fz x 0.5

# Suggested Technical Information HSS & HSSE 8% Co



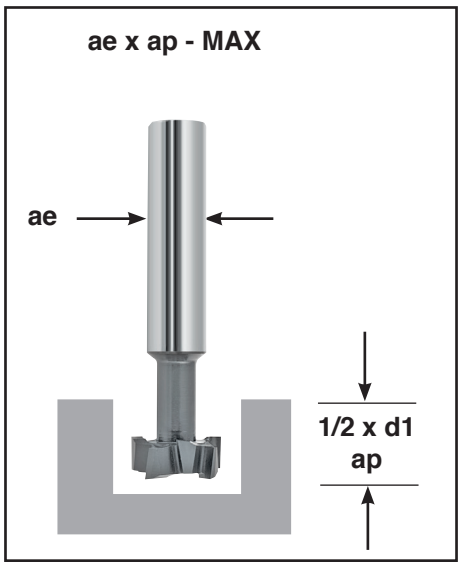


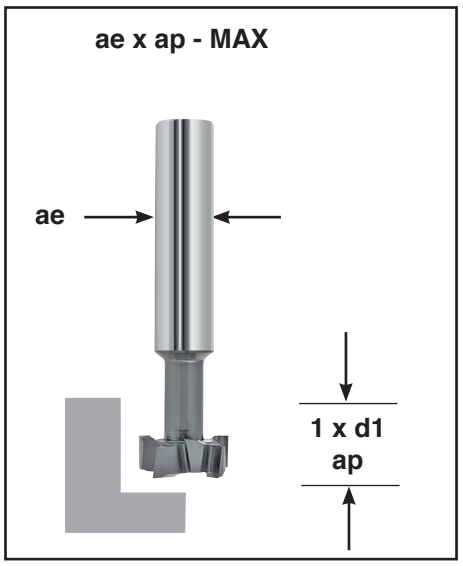


| Series | 4330 | 4800 | 4802 | 4834 | 5080 |
|---|---|---|---|---|---|
| **Material Group** | **Surface Speed vc m/min** | | | | |
| 1.1 | 55 - 85 | 55 - 85 | 55 - 85 | 55 - 85 | 55 - 85 |
| 1.2 | 45 - 75 | 45 - 75 | 45 - 75 | 45 - 75 | 45 - 75 |
| 1.3 | 45 - 75 | 45 - 75 | 45 - 75 | 45 - 75 | 45 - 75 |
| 1.4 | 45 - 65 | 45 - 65 | 45 - 65 | 45 - 65 | 45 - 65 |
| 1.5 | 20 - 35 | 20 - 35 | 20 - 35 | 20 - 35 | 20 - 35 |
| 1.6 | 20 - 35 | 20 - 35 | | 20 - 35 | 20 - 35 |
| 1.7 | | | | | |
| 1.8 | | | | | |
| 1.9 | | | | | |
| 2.1 | 30 - 45 | 30 - 45 | 30 - 45 | 30 - 45 | 30 - 45 |
| 2.2 | 30 - 45 | 30 - 45 | 30 - 45 | 30 - 45 | 30 - 45 |
| 2.3 | 30 - 45 | 30 - 45 | 30 - 45 | 30 - 45 | 30 - 45 |
| 3.1 | 35 - 55 | 35 - 55 | 35 - 55 | 35 - 55 | 35 - 55 |
| 3.2 | 30 - 45 | 30 - 45 | 30 - 45 | 30 - 45 | 30 - 45 |
| 3.3 | 35 - 55 | 35 - 55 | 35 - 55 | 35 - 55 | 35 - 55 |
| 3.4 | 30 - 45 | 30 - 45 | 30 - 45 | 30 - 45 | 30 - 45 |
| 4.1 | 30 - 45 | 30 - 45 | 30 - 45 | 30 - 45 | 30 - 45 |
| 4.2 | 30 - 45 | 30 - 45 | 30 - 45 | 30 - 45 | 30 - 45 |
| 4.3 | 15 - 35 | 15 - 35 | 15 - 35 | 15 - 35 | 15 - 35 |
| 5.1 | 30 - 45 | 30 - 45 | 30 - 45 | 30 - 45 | 30 - 45 |
| 5.2 | 15 - 35 | 15 - 35 | 15 - 35 | 15 - 35 | 15 - 35 |
| 5.3 | 15 - 35 | 15 - 35 | 15 - 35 | 15 - 35 | 15 - 35 |
| 6.1 | 110 - 210 | 110 - 210 | 110 - 210 | 110 - 210 | 110 - 210 |
| 6.2 | 90 - 190 | 90 - 190 | 90 - 190 | 90 - 190 | 90 - 190 |
| 6.3 | 90 - 190 | 90 - 190 | 90 - 190 | 90 - 190 | 90 - 190 |
| 6.4 | | | | | |
| 7.1 | 290 - 420 | 290 - 420 | 290 - 420 | 290 - 420 | 290 - 420 |
| 7.2 | 210 - 280 | 210 - 280 | 210 - 280 | 210 - 280 | 210 - 280 |
| 7.3 | 210 - 280 | 210 - 280 | 210 - 280 | 210 - 280 | 210 - 280 |
| 7.4 | 90 - 170 | 90 - 170 | 90 - 170 | 90 - 170 | 90 - 170 |
| 8.1 | 300 - 450 | 300 - 450 | 300 - 450 | 300 - 450 | 300 - 450 |
| 8.2 | | | | | |
| 8.3 | | | | | |
| 9.1 | | | | | |

# Suggested Technical Information HSS & HSSE 8% Cobalt

| | |
|---|---|
| vc | Surface speed |
| f | Feed per rev |
| fz | Feed per tooth |
| fr | Feed rate |
| d1 | Tool diameter |
| n | Revolutions per min |
| z | Number of teeth |
| ap | Axial cut depth |
| ae | Radial cut depth |




$$RPM = \frac{vc \times 1000}{dia \times \pi}$$

$$fr = fz \times z \times RPM$$

| Material Group | Feed per rev (f mm) | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1-2mm | 3mm | 4mm | 5mm | 6mm | 7-8mm | 9-10mm | 11-12mm | 13mm | 14-16mm | 20mm |
| 1.1 | 0.020 | 0.030 | 0.035 | 0.058 | 0.069 | 0.115 | 0.115 | 0.115 | 0.115 | 0.115 | 0.115 |
| 1.2 | 0.020 | 0.030 | 0.035 | 0.058 | 0.069 | 0.115 | 0.115 | 0.115 | 0.115 | 0.115 | 0.115 |
| 1.3 | 0.020 | 0.030 | 0.035 | 0.058 | 0.069 | 0.115 | 0.115 | 0.115 | 0.115 | 0.115 | 0.115 |
| 1.4 | 0.020 | 0.030 | 0.035 | 0.058 | 0.069 | 0.115 | 0.115 | 0.115 | 0.115 | 0.115 | 0.115 |
| 1.5 | 0.012 | 0.025 | 0.030 | 0.052 | 0.052 | 0.075 | 0.075 | 0.075 | 0.075 | 0.075 | 0.075 |
| 1.6 | 0.012 | 0.025 | 0.030 | 0.052 | 0.052 | 0.075 | 0.075 | 0.075 | 0.075 | 0.075 | 0.075 |
| 1.7 | | | | | | | | | | | |
| 1.8 | | | | | | | | | | | |
| 1.9 | | | | | | | | | | | |
| 2.1 | 0.012 | 0.025 | 0.030 | 0.052 | 0.052 | 0.075 | 0.075 | 0.075 | 0.075 | 0.075 | 0.075 |
| 2.2 | 0.012 | 0.025 | 0.030 | 0.052 | 0.052 | 0.075 | 0.075 | 0.075 | 0.075 | 0.075 | 0.075 |
| 2.3 | 0.012 | 0.025 | 0.030 | 0.052 | 0.052 | 0.075 | 0.075 | 0.075 | 0.075 | 0.075 | 0.075 |
| 3.1 | 0.020 | 0.030 | 0.035 | 0.058 | 0.069 | 0.115 | 0.115 | 0.115 | 0.115 | 0.115 | 0.115 |
| 3.2 | 0.020 | 0.030 | 0.035 | 0.058 | 0.069 | 0.115 | 0.115 | 0.115 | 0.115 | 0.115 | 0.115 |
| 3.3 | 0.020 | 0.030 | 0.035 | 0.058 | 0.069 | 0.115 | 0.115 | 0.115 | 0.115 | 0.115 | 0.115 |
| 3.4 | 0.020 | 0.030 | 0.035 | 0.058 | 0.069 | 0.115 | 0.115 | 0.115 | 0.115 | 0.115 | 0.115 |
| 4.1 | 0.025 | 0.042 | 0.062 | 0.077 | 0.092 | 0.127 | 0.150 | 0.150 | 0.150 | 0.150 | 0.150 |
| 4.2 | 0.025 | 0.042 | 0.062 | 0.077 | 0.092 | 0.127 | 0.150 | 0.150 | 0.150 | 0.150 | 0.150 |
| 4.3 | 0.014 | 0.021 | 0.029 | 0.044 | 0.054 | 0.081 | 0.104 | 0.104 | 0.104 | 0.104 | 0.104 |
| 5.1 | 0.014 | 0.021 | 0.029 | 0.044 | 0.054 | 0.081 | 0.104 | 0.104 | 0.104 | 0.104 | 0.104 |
| 5.2 | 0.014 | 0.021 | 0.029 | 0.044 | 0.054 | 0.081 | 0.104 | 0.104 | 0.104 | 0.104 | 0.104 |
| 5.3 | 0.014 | 0.021 | 0.029 | 0.044 | 0.054 | 0.081 | 0.104 | 0.104 | 0.104 | 0.104 | 0.104 |
| 6.1 | 0.020 | 0.030 | 0.035 | 0.058 | 0.069 | 0.115 | 0.115 | 0.115 | 0.115 | 0.115 | 0.115 |
| 6.2 | 0.020 | 0.030 | 0.035 | 0.058 | 0.069 | 0.115 | 0.115 | 0.115 | 0.115 | 0.115 | 0.115 |
| 6.3 | 0.020 | 0.030 | 0.035 | 0.058 | 0.069 | 0.115 | 0.115 | 0.115 | 0.115 | 0.115 | 0.115 |
| 6.4 | | | | | | | | | | | |
| 7.1 | 0.020 | 0.030 | 0.035 | 0.058 | 0.069 | 0.115 | 0.115 | 0.115 | 0.115 | 0.115 | 0.115 |
| 7.2 | 0.025 | 0.042 | 0.062 | 0.077 | 0.092 | 0.127 | 0.150 | 0.150 | 0.150 | 0.150 | 0.150 |
| 7.3 | 0.020 | 0.030 | 0.035 | 0.058 | 0.069 | 0.115 | 0.115 | 0.115 | 0.115 | 0.115 | 0.115 |
| 7.4 | 0.020 | 0.030 | 0.035 | 0.058 | 0.069 | 0.115 | 0.115 | 0.115 | 0.115 | 0.115 | 0.115 |
| 8.1 | 0.020 | 0.030 | 0.035 | 0.058 | 0.069 | 0.115 | 0.115 | 0.115 | 0.115 | 0.115 | 0.115 |
| 8.2 | | | | | | | | | | | |
| 8.3 | | | | | | | | | | | |
| 9.1 | | | | | | | | | | | |

NOTE: On 55° Helix endmill 6604 max radial cut = D x 0.05
NOTE: For LONG SERIES cutters fz = fz x 0.5

# Suggested Technical Information HSSE 8% Cobalt

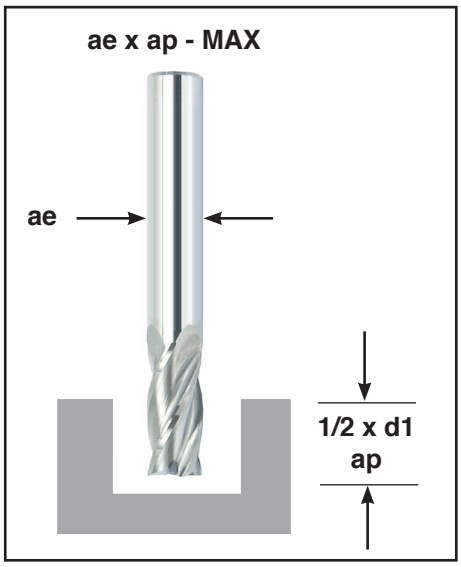


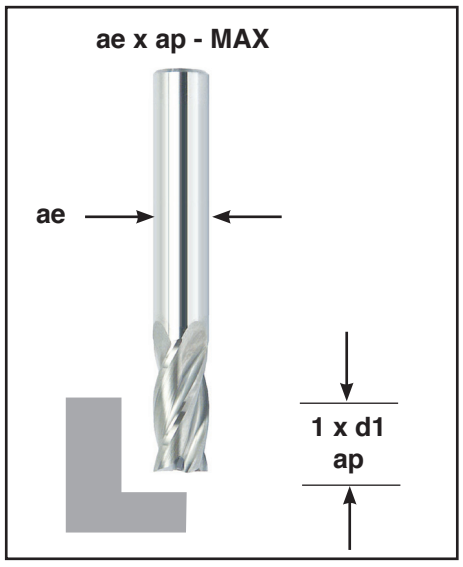
| Series | 4420 | 4426 | 4422 | 4470 | 4439 | 4435 | 4430 | 4432 | 4447 | 4497 |
|---|---|---|---|---|---|---|---|---|---|---|
| **Material Group** | **Surface Speed vc m/min** | | | | | | | | | |
| 1.1 | 30 - 40 | 30 - 40 | 30 - 40 | 30 - 40 | 30 - 40 | 30 - 40 | 30 - 40 | 30 - 40 | 30 - 40 | 30 - 40 |
| 1.2 | 25 - 30 | 25 - 30 | 25 - 30 | 25 - 30 | 25 - 30 | 25 - 30 | 25 - 30 | 25 - 30 | 25 - 30 | 25 - 30 |
| 1.3 | 25 - 30 | 25 - 30 | 25 - 30 | 25 - 30 | 25 - 30 | 25 - 30 | 25 - 30 | 25 - 30 | 25 - 30 | 25 - 30 |
| 1.4 | 20 - 25 | 20 - 25 | 20 - 25 | 20 - 25 | 20 - 25 | 20 - 25 | 20 - 25 | 20 - 25 | 20 - 25 | 20 - 25 |
| 1.5 | 10 - 15 | 10 - 15 | 10 - 15 | 10 - 15 | | | | | | |
| 1.6 | 10 - 15 | 10 - 15 | 10 - 15 | 10 - 15 | | | | | | |
| 1.7 | | | | | | | | | | |
| 1.8 | | | | | | | | | | |
| 1.9 | | | | | | | | | | |
| 2.1 | | | | | | | | | | |
| 2.2 | | | | | | | | | | |
| 2.3 | | | | | | | | | | |
| 3.1 | 20 - 30 | 20 - 30 | | | 20 - 30 | | | | | |
| 3.2 | 15 - 20 | 15 - 20 | | | 15 - 20 | | | | | |
| 3.3 | 20 - 30 | 20 - 30 | | | 20 - 30 | | | | | |
| 3.4 | 15 - 20 | 15 - 20 | | | 15 - 20 | | | | | |
| 4.1 | | | | | 15 - 20 | | | | | |
| 4.2 | | | | | 15 - 20 | | | | | |
| 4.3 | | | | | 8 - 15 | | | | | |
| 5.1 | | | | | 15 - 20 | | | | | |
| 5.2 | | | | | 8 - 15 | | | | | |
| 5.3 | | | | | 8 - 15 | | | | | |
| 6.1 | 60 - 100 | 60 - 100 | 60 - 100 | 60 - 100 | 60 - 100 | 60 - 100 | 60 - 100 | 60 - 100 | 60 - 100 | 60 - 100 |
| 6.2 | 50 - 90 | 50 - 90 | 50 - 90 | 50 - 90 | 50 - 90 | 50 - 90 | 50 - 90 | 50 - 90 | 50 - 90 | 50 - 90 |
| 6.3 | 50 - 90 | 50 - 90 | 50 - 90 | 50 - 90 | 50 - 90 | 50 - 90 | 50 - 90 | 50 - 90 | 50 - 90 | 50 - 90 |
| 6.4 | 30 - 50 | 30 - 50 | 30 - 50 | 30 - 50 | 30 - 50 | 30 - 50 | 30 - 50 | 30 - 50 | 30 - 50 | 30 - 50 |
| 7.1 | 160 - 200 | 160 - 200 | 160 - 200 | 160 - 200 | 160 - 200 | 160 - 200 | 160 - 200 | 160 - 200 | 160 - 200 | 160 - 200 |
| 7.2 | 100 - 150 | 100 - 150 | 100 - 150 | 100 - 150 | 100 - 150 | 100 - 150 | 100 - 150 | 100 - 150 | 100 - 150 | 100 - 150 |
| 7.3 | 100 - 150 | 100 - 150 | 100 - 150 | 100 - 150 | 100 - 150 | 100 - 150 | 100 - 150 | 100 - 150 | 100 - 150 | 100 - 150 |
| 7.4 | 50 - 80 | 50 - 80 | 50 - 80 | 50 - 80 | 50 - 80 | 50 - 80 | 50 - 80 | 50 - 80 | 50 - 80 | 50 - 80 |
| 8.1 | 200 - 250 | 200 - 250 | 200 - 250 | 200 - 250 | 200 - 250 | 200 - 250 | 200 - 250 | 200 - 250 | 200 - 250 | 200 - 250 |
| 8.2 | | | | | | | | | | |
| 8.3 | | | | | | | | | | |
| 9.1 | | | | | | | | | | |

For TiALN coated endmills, cutting speed should be increased by 50% to 70%

# Suggested Technical Information HSSE 8% Cobalt

| | |
|---|---|
| vc | Surface speed |
| f | Feed per rev |
| fz | Feed per tooth |
| fr | Feed rate |
| d1 | Tool diameter |
| n | Revolutions per min |
| z | Number of teeth |
| ap | Axial cut depth |
| ae | Radial cut depth |




$$RPM = \frac{vc \times 1000}{dia \times \pi}$$

$$fr = fz \times z \times RPM$$

| Material Group | Feed per tooth chart ( fz ) | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 2-4mm | 5-6mm | 7-8mm | 9-10mm | 12mm | 14-16mm | 18-20mm | 25mm | 30-32mm | 40mm | 50mm |
| 1.1 | 0.020 | 0.030 | 0.035 | 0.058 | 0.069 | 0.115 | 0.115 | 0.115 | 0.115 | 0.115 | 0.115 |
| 1.2 | 0.020 | 0.030 | 0.035 | 0.058 | 0.069 | 0.115 | 0.115 | 0.115 | 0.115 | 0.115 | 0.115 |
| 1.3 | 0.020 | 0.030 | 0.035 | 0.058 | 0.069 | 0.115 | 0.115 | 0.115 | 0.115 | 0.115 | 0.115 |
| 1.4 | 0.020 | 0.030 | 0.035 | 0.058 | 0.069 | 0.115 | 0.115 | 0.115 | 0.115 | 0.115 | 0.115 |
| 1.5 | 0.012 | 0.025 | 0.030 | 0.052 | 0.052 | 0.075 | 0.075 | 0.075 | 0.075 | 0.075 | 0.075 |
| 1.6 | 0.012 | 0.025 | 0.030 | 0.052 | 0.052 | 0.075 | 0.075 | 0.075 | 0.075 | 0.075 | 0.075 |
| 1.7 | | | | | | | | | | | |
| 1.8 | | | | | | | | | | | |
| 1.9 | | | | | | | | | | | |
| 2.1 | | | | | | | | | | | |
| 2.2 | | | | | | | | | | | |
| 2.3 | | | | | | | | | | | |
| 3.1 | 0.020 | 0.030 | 0.035 | 0.058 | 0.069 | 0.115 | 0.115 | 0.115 | 0.115 | 0.115 | 0.115 |
| 3.2 | 0.020 | 0.030 | 0.035 | 0.058 | 0.069 | 0.115 | 0.115 | 0.115 | 0.115 | 0.115 | 0.115 |
| 3.3 | 0.020 | 0.030 | 0.035 | 0.058 | 0.069 | 0.115 | 0.115 | 0.115 | 0.115 | 0.115 | 0.115 |
| 3.4 | 0.020 | 0.030 | 0.035 | 0.058 | 0.069 | 0.115 | 0.115 | 0.115 | 0.115 | 0.115 | 0.115 |
| 4.1 | 0.025 | 0.042 | 0.062 | 0.077 | 0.092 | 0.127 | 0.150 | 0.150 | 0.150 | 0.150 | 0.150 |
| 4.2 | 0.025 | 0.042 | 0.062 | 0.077 | 0.092 | 0.127 | 0.150 | 0.150 | 0.150 | 0.150 | 0.150 |
| 4.3 | 0.014 | 0.021 | 0.029 | 0.044 | 0.054 | 0.081 | 0.104 | 0.104 | 0.104 | 0.104 | 0.104 |
| 5.1 | 0.014 | 0.021 | 0.029 | 0.044 | 0.054 | 0.081 | 0.104 | 0.104 | 0.104 | 0.104 | 0.104 |
| 5.2 | 0.014 | 0.021 | 0.029 | 0.044 | 0.054 | 0.081 | 0.104 | 0.104 | 0.104 | 0.104 | 0.104 |
| 5.3 | 0.014 | 0.021 | 0.029 | 0.044 | 0.054 | 0.081 | 0.104 | 0.104 | 0.104 | 0.104 | 0.104 |
| 6.1 | 0.020 | 0.030 | 0.035 | 0.058 | 0.069 | 0.115 | 0.115 | 0.115 | 0.115 | 0.115 | 0.115 |
| 6.2 | 0.020 | 0.030 | 0.035 | 0.058 | 0.069 | 0.115 | 0.115 | 0.115 | 0.115 | 0.115 | 0.115 |
| 6.3 | 0.020 | 0.030 | 0.035 | 0.058 | 0.069 | 0.115 | 0.115 | 0.115 | 0.115 | 0.115 | 0.115 |
| 6.4 | | | | | | | | | | | |
| 7.1 | 0.020 | 0.030 | 0.035 | 0.058 | 0.069 | 0.115 | 0.115 | 0.115 | 0.115 | 0.115 | 0.115 |
| 7.2 | 0.025 | 0.042 | 0.062 | 0.077 | 0.092 | 0.127 | 0.150 | 0.150 | 0.150 | 0.150 | 0.150 |
| 7.3 | 0.020 | 0.030 | 0.035 | 0.058 | 0.069 | 0.115 | 0.115 | 0.115 | 0.115 | 0.115 | 0.115 |
| 7.4 | 0.020 | 0.030 | 0.035 | 0.058 | 0.069 | 0.115 | 0.115 | 0.115 | 0.115 | 0.115 | 0.115 |
| 8.1 | 0.020 | 0.030 | 0.035 | 0.058 | 0.069 | 0.115 | 0.115 | 0.115 | 0.115 | 0.115 | 0.115 |
| 8.2 | | | | | | | | | | | |
| 8.3 | | | | | | | | | | | |
| 9.1 | | | | | | | | | | | |

NOTE: For LONG SERIES cutters fz = fz x 0.5

# Suggested Technical Information HSSE 8% Cobalt





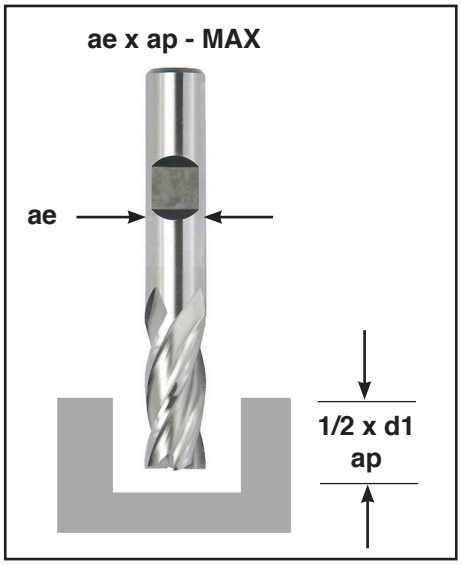


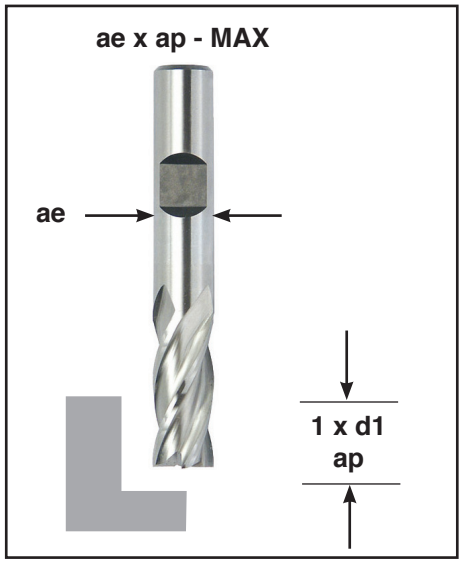

| Series | 4600 | 4606 | 4644 | 4696 | 4640 | 4690 |
|---|---|---|---|---|---|---|
| **Material Group** | **Surface Speed vc m/min** | | | | | |
| 1.1 | 30 - 40 | 30 - 40 | 30 - 40 | 30 - 40 | 30 - 40 | 30 - 40 |
| 1.2 | 25 - 30 | 25 - 30 | 25 - 30 | 25 - 30 | 25 - 30 | 25 - 30 |
| 1.3 | 25 - 30 | 25 - 30 | 25 - 30 | 25 - 30 | 25 - 30 | 25 - 30 |
| 1.4 | 20 - 25 | 20 - 25 | 20 - 25 | 20 - 25 | 20 - 25 | 20 - 25 |
| 1.5 | 10 - 15 | 10 - 15 | 10 - 15 | 10 - 15 | 10 - 15 | 10 - 15 |
| 1.6 | 10 - 15 | 10 - 15 | 10 - 15 | 10 - 15 | 10 - 15 | 10 - 15 |
| 1.7 | | | | | | |
| 1.8 | | | | | | |
| 1.9 | | | | | | |
| 2.1 | | | | | | |
| 2.2 | | | | | | |
| 2.3 | | | | | | |
| 3.1 | 20 - 30 | 20 - 30 | 20 - 30 | 20 - 30 | 20 - 30 | 20 - 30 |
| 3.2 | 15 - 20 | 15 - 20 | 15 - 20 | 15 - 20 | 15 - 20 | 15 - 20 |
| 3.3 | 20 - 30 | 20 - 30 | 20 - 30 | 20 - 30 | 20 - 30 | 20 - 30 |
| 3.4 | 15 - 20 | 15 - 20 | 15 - 20 | 15 - 20 | 15 - 20 | 15 - 20 |
| 4.1 | | | 15 - 20 | 15 - 20 | | |
| 4.2 | | | 15 - 20 | 15 - 20 | | |
| 4.3 | | | 8 - 15 | 8 - 15 | | |
| 5.1 | | | 15 - 20 | 15 - 20 | | |
| 5.2 | | | 8 - 15 | 8 - 15 | | |
| 5.3 | | | 8 - 15 | 8 - 15 | | |
| 6.1 | 60 - 100 | 60 - 100 | 60 - 100 | 60 - 100 | 60 - 100 | 60 - 100 |
| 6.2 | 50 - 90 | 50 - 90 | 50 - 90 | 50 - 90 | 50 - 90 | 50 - 90 |
| 6.3 | 50 - 90 | 50 - 90 | 50 - 90 | 50 - 90 | 50 - 90 | 50 - 90 |
| 6.4 | 30 - 50 | 30 - 50 | 30 - 50 | 30 - 50 | 30 - 50 | 30 - 50 |
| 7.1 | 160 - 200 | 160 - 200 | | | | |
| 7.2 | 100 - 150 | 100 - 150 | | | | |
| 7.3 | 100 - 150 | 100 - 150 | | | | |
| 7.4 | 50 - 80 | 50 - 80 | | | | |
| 8.1 | 200 - 250 | 200 - 250 | | | | |
| 8.2 | | | | | | |
| 8.3 | | | | | | |
| 9.1 | | | | | | |

For TiALN coated endmills, cutting speed should be increased by 50% to 70%

# Suggested Technical Information HSSE 8% Cobalt

| | |
|---|---|
| vc | Surface speed |
| f | Feed per rev |
| fz | Feed per tooth |
| fr | Feed rate |
| d1 | Tool diameter |
| n | Revolutions per min |
| z | Number of teeth |
| ap | Axial cut depth |
| ae | Radial cut depth |




$$RPM = \frac{vc \times 1000}{dia \times \pi}$$

$$fr = fz \times z \times RPM$$

| Material Group | Feed per tooth chart ( fz ) | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 2-4mm | 5-6mm | 7-8mm | 9-10mm | 12mm | 14-16mm | 18-20mm | 25mm | 30-32mm | 40mm | 50mm |
| 1.1 | 0.020 | 0.030 | 0.035 | 0.050 | 0.060 | 0.100 | 0.100 | 0.100 | 0.100 | 0.100 | 0.100 |
| 1.2 | 0.020 | 0.030 | 0.035 | 0.050 | 0.060 | 0.100 | 0.100 | 0.100 | 0.100 | 0.100 | 0.100 |
| 1.3 | 0.020 | 0.030 | 0.035 | 0.050 | 0.060 | 0.100 | 0.100 | 0.100 | 0.100 | 0.100 | 0.100 |
| 1.4 | 0.020 | 0.030 | 0.035 | 0.050 | 0.060 | 0.100 | 0.100 | 0.100 | 0.100 | 0.100 | 0.100 |
| 1.5 | 0.012 | 0.025 | 0.030 | 0.045 | 0.045 | 0.065 | 0.065 | 0.065 | 0.065 | 0.065 | 0.065 |
| 1.6 | 0.012 | 0.025 | 0.030 | 0.045 | 0.045 | 0.065 | 0.065 | 0.065 | 0.065 | 0.065 | 0.065 |
| 1.7 | | | | | | | | | | | |
| 1.8 | | | | | | | | | | | |
| 1.9 | | | | | | | | | | | |
| 2.1 | | | | | | | | | | | |
| 2.2 | | | | | | | | | | | |
| 2.3 | | | | | | | | | | | |
| 3.1 | 0.020 | 0.030 | 0.035 | 0.050 | 0.060 | 0.100 | 0.100 | 0.100 | 0.100 | 0.100 | 0.100 |
| 3.2 | 0.020 | 0.030 | 0.035 | 0.050 | 0.060 | 0.100 | 0.100 | 0.100 | 0.100 | 0.100 | 0.100 |
| 3.3 | 0.020 | 0.030 | 0.035 | 0.050 | 0.060 | 0.100 | 0.100 | 0.100 | 0.100 | 0.100 | 0.100 |
| 3.4 | 0.020 | 0.030 | 0.035 | 0.050 | 0.060 | 0.100 | 0.100 | 0.100 | 0.100 | 0.100 | 0.100 |
| 4.1 | 0.025 | 0.042 | 0.062 | 0.067 | 0.08 | 0.110 | 0.130 | 0.130 | 0.130 | 0.130 | 0.130 |
| 4.2 | 0.025 | 0.042 | 0.062 | 0.067 | 0.08 | 0.110 | 0.130 | 0.130 | 0.130 | 0.130 | 0.130 |
| 4.3 | 0.014 | 0.021 | 0.029 | 0.038 | 0.047 | 0.07 | 0.090 | 0.090 | 0.090 | 0.090 | 0.090 |
| 5.1 | 0.014 | 0.021 | 0.029 | 0.038 | 0.047 | 0.07 | 0.090 | 0.090 | 0.090 | 0.090 | 0.090 |
| 5.2 | 0.014 | 0.021 | 0.029 | 0.038 | 0.047 | 0.07 | 0.090 | 0.090 | 0.090 | 0.090 | 0.090 |
| 5.3 | 0.014 | 0.021 | 0.029 | 0.038 | 0.047 | 0.07 | 0.090 | 0.090 | 0.090 | 0.090 | 0.090 |
| 6.1 | 0.020 | 0.030 | 0.035 | 0.050 | 0.060 | 0.100 | 0.100 | 0.100 | 0.100 | 0.100 | 0.100 |
| 6.2 | 0.020 | 0.030 | 0.035 | 0.050 | 0.060 | 0.100 | 0.100 | 0.100 | 0.100 | 0.100 | 0.100 |
| 6.3 | 0.020 | 0.030 | 0.035 | 0.050 | 0.060 | 0.100 | 0.100 | 0.100 | 0.100 | 0.100 | 0.100 |
| 6.4 | 0.020 | 0.030 | 0.035 | 0.050 | 0.060 | 0.100 | 0.100 | 0.100 | 0.100 | 0.100 | 0.100 |
| 7.1 | 0.020 | 0.030 | 0.035 | 0.050 | 0.060 | 0.100 | 0.100 | 0.100 | 0.100 | 0.100 | 0.100 |
| 7.2 | 0.025 | 0.042 | 0.062 | 0.067 | 0.080 | 0.110 | 0.130 | 0.130 | 0.130 | 0.130 | 0.130 |
| 7.3 | 0.020 | 0.030 | 0.035 | 0.050 | 0.060 | 0.100 | 0.100 | 0.100 | 0.100 | 0.100 | 0.100 |
| 7.4 | 0.020 | 0.030 | 0.035 | 0.050 | 0.060 | 0.100 | 0.100 | 0.100 | 0.100 | 0.100 | 0.100 |
| 8.1 | 0.020 | 0.030 | 0.035 | 0.050 | 0.060 | 0.100 | 0.100 | 0.100 | 0.100 | 0.100 | 0.100 |
| 8.2 | | | | | | | | | | | |
| 8.3 | | | | | | | | | | | |
| 9.1 | | | | | | | | | | | |

NOTE: For LONG SERIES cutters fz = fz x 0.5

# Suggested Technical Information 3xD, 5xD, 8xD Drills







| Series | 123 | | 125 | | 133 | | 135 | | 138 | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Material Group** | **vc m/min** | **fr code** | **vc m/min** | **fr code** | **vc m/min** | **fr code** | **vc m/min** | **fr code** | **vc m/min** | **fr code** |
| 1.1 | 130 | 7 | 145 | 7 | 130 | 7 | 145 | 7 | 145 | 6 |
| 1.2 | 110 | 6 | 120 | 6 | 110 | 6 | 120 | 6 | 120 | 5 |
| 1.3 | 145 | 8 | 170 | 8 | 145 | 8 | 170 | 8 | 170 | 7 |
| 1.4 | 110 | 8 | 145 | 8 | 110 | 7 | 145 | 8 | 145 | 7 |
| 1.5 | 100 | 7 | 105 | 7 | 100 | 6 | 105 | 7 | 105 | 6 |
| 1.6 | 85 | 5 | 85 | 5 | 85 | 5 | 85 | 5 | 85 | 4 |
| 1.7 | 45 | 3 | 55 | 3 | 45 | 3 | 55 | 3 | 55 | 2 |
| 1.8 | 25 | 2 | 35 | 2 | 25 | 2 | 35 | 2 | 35 | 1 |
| 1.9 | 55 | 4 | 60 | 5 | 55 | 4 | 60 | 5 | 60 | 4 |
| 2.1 | 45 | 4 | 55 | 5 | 45 | 4 | 55 | 5 | 55 | 4 |
| 2.2 | 45 | 3 | 45 | 5 | 45 | 3 | 45 | 5 | 45 | 4 |
| 2.3 | 195 | 8 | 210 | 9 | 195 | 8 | 210 | 9 | 210 | 8 |
| 3.1 | 155 | 8 | 160 | 9 | 155 | 8 | 160 | 9 | 195 | 8 |
| 3.2 | 155 | 7 | 140 | 9 | 145 | 7 | 140 | 9 | 160 | 8 |
| 3.3 | 125 | 7 | 130 | 8 | 125 | 7 | 130 | 8 | 130 | 7 |
| 3.4 | 40 | 4 | 45 | 4 | 40 | 4 | 45 | 4 | 40 | 3 |
| 4.1 | 40 | 4 | 45 | 4 | 40 | 4 | 45 | 4 | 40 | 3 |
| 4.2 | 35 | 3 | 40 | 3 | 35 | 3 | 40 | 3 | 40 | 2 |
| 4.3 | 105 | 7 | 125 | 7 | 105 | 7 | 125 | 7 | 125 | 6 |
| 5.1 | 270 | 8 | 325 | 8 | 270 | 8 | 325 | 8 | 325 | 7 |
| 5.2 | 180 | 7 | 220 | 7 | 180 | 7 | 220 | 7 | 220 | 6 |
| 5.3 | 80 | 5 | 90 | 6 | 80 | 5 | 90 | 6 | 90 | 5 |
| 6.1 | 260 | 9 | 310 | 9 | 260 | 9 | 310 | 9 | 240 | 7 |
| 6.2 | 220 | 9 | 260 | 9 | 220 | 8 | 260 | 9 | 220 | 8 |
| 6.3 | 180 | 8 | 220 | 9 | 170 | 8 | 220 | 9 | 200 | 8 |
| 6.4 | 260 | 8 | 280 | 8 | 260 | 8 | 280 | 8 | 280 | 7 |

| Diameter | Feed Rate Code f(mm/rev) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Diameter | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | |
| 3mm | 0.03 | 0.04 | 0.05 | 0.06 | 0.08 | 0.10 | 0.12 | 0.16 | 0.16 | |
| 4mm | 0.04 | 0.05 | 0.06 | 0.08 | 0.10 | 0.12 | 0.16 | 0.20 | 0.20 | |
| 5mm | 0.04 | 0.05 | 0.06 | 0.08 | 0.10 | 0.12 | 0.16 | 0.20 | 0.25 | |
| 6mm | 0.05 | 0.06 | 0.08 | 0.10 | 0.12 | 0.16 | 0.20 | 0.25 | 0.32 | |
| 8mm | 0.06 | 0.08 | 0.10 | 0.12 | 0.16 | 0.20 | 0.25 | 0.32 | 0.32 | |
| 10mm | 0.08 | 0.10 | 0.12 | 0.16 | 0.20 | 0.25 | 0.32 | 0.40 | 0.40 | |
| 12mm | 0.08 | 0.10 | 0.12 | 0.16 | 0.20 | 0.25 | 0.32 | 0.40 | 0.50 | |
| 16mm | 0.10 | 0.12 | 0.16 | 0.20 | 0.25 | 0.32 | 0.40 | 0.50 | 0.60 | |
| 20mm | 0.12 | 0.16 | 0.20 | 0.25 | 0.32 | 0.40 | 0.50 | 0.60 | 0.60 | |

# Suggested Technical Information Solid Carbide Thread Mills







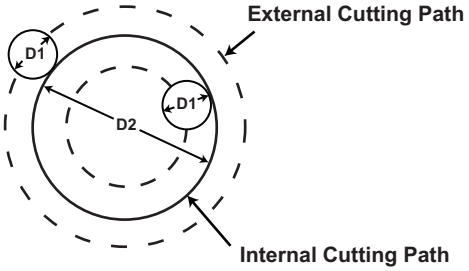

| Series | 920 | 930 | 960 | 970 | 940 | 950 |
|---|---|---|---|---|---|---|

## Technical Information Solid Carbide Thread Mills - AlTiN Coated

**Feed min/per Flute by Shank Diameter**

| Specification | SMPM | 6mm | 8mm | 10mm | 12mm | 16mm | 20mm |
|---|---|---|---|---|---|---|---|
| Steel | 75-180 | 0.013 | 0.015 | 0.018 | 0.025 | 0.038 | 0.045 |
| Stainless Steel | 45-150 | 0.013 | 0.015 | 0.018 | 0.025 | 0.038 | 0.045 |
| Aluminimum | 250+ | 0.02 | 0.03 | 0.038 | 0.05 | 0.064 | 0.075 |
| Titanium | 25-40 | 0.01 | 0.013 | 0.018 | 0.018 | 0.02 | 0.02 |
| Brass | 150-250 | 0.02 | 0.03 | 0.038 | 0.05 | 0.064 | 0.075 |
| Cast Iron | 75-150 | 0.013 | 0.018 | 0.018 | 0.025 | 0.038 | 0.045 |

## Feed Rate Compensation




**D1 = Tool Cutting Diameter**
**D2 = Thread Diameter**

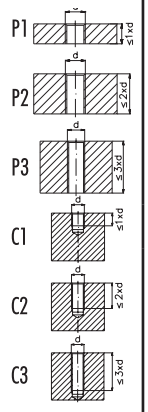
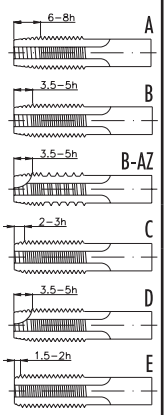
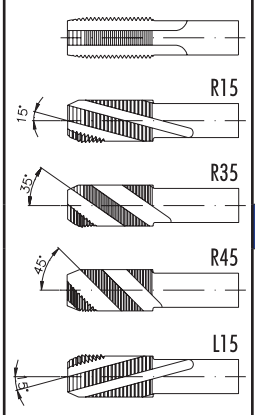
$$\text{Internal} = \frac{D2-D1}{D2}$$

$$\text{External} = \frac{D2+D1}{D2}$$

**To obtain the correct feed rate for the centerline of the tool, multipy the desired feed rate at the cutting edge by the appropriate factor.**

This chart shows suggested speed and feed information only. This information should be used as a starting point only and a guideline for calculation of your own formulas.
Material variations, part and tool fixturing, coolant flow and the actual cutting conditions of your specific job may impact our suggested speed and feed recommendations.

# Suggested Technical Information Machine Taps

| Hole | Chamfer | Flutes | Surface | Material |
|---|---|---|---|---|
|  |  |  | TiCN<br>TiALN<br>CrN<br>NIT<br>VAP | HSSE<br>HSSEX<br>M35<br>ASP2023 |

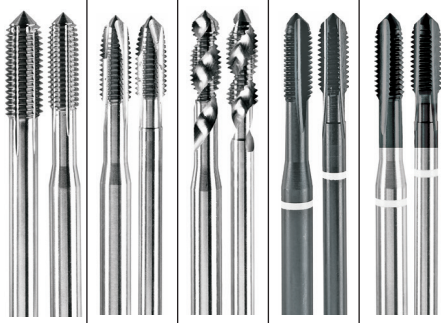
| Coolant | |
|---|---|
| Cutting Oil | 1 |
| Oil with Additive | 2 |
| Emulsion | 3 |
| Dry | 4 |

**Application**

| | | | | | |
|---|---|---|---|---|---|
| Hole | P,C,-1,2 | P1,2,3 | C2,3 | P,C-1,2 | P,C-1,2 |
| Chamfer | C | B | C | C | C |
| Flute | | | R35 | | |
| Surface | | | | NiT | TiCN |
| Material | HSSE | HSSE | HSSE | HSSE | HSSE |
| Tolerance | 6H | 6H | 6H | 6HX | 6HX |

● OK

❍ OK with previous transformation



| Material Group | Material type | Hardness (HB) | Tensile Strength (N/mm²) | V (m/min) Without Coating VAP / NIT | V (m/min) With Coating TiALN/TiCN/CrN | 8240 8230 | 8110, 8170 8210, 8190 8150 | 8120, 8200 8160, 8180 8220 | 9170 | 9180 |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 - Steel | | | | | | | | | | |
| 1.1 | Magnetic Soft | <120 | <400 | 20 - 25 | 40 -50 | ❍ 3 | ❍ 3 | ❍ 3 | | |
| 1.2 | Structural, case carburising | <200 | <700 | 15 - 20 | 30 - 40 | ● 3 | ● 3 | ● 3 | | |
| 1.3 | Plain carbon | <220 | <850 | 12 - 18 | 24 - 36 | ● 3 | ● 3 | ● 3 | | |
| 1.4 | Alloyed | <250 | <850 | 10 - 15 | 20 - 30 | ❍ 1,3 | ❍ 1,3 | ❍ 1,3 | | |
| 1.5 | Treated & Alloyed | >250- <350 | >850 - <1200 | 6 - 10 | 12 - 20 | | | | | |
| 1.6 | Alloyed | >250- <410 | >850 - <1400 | 4 - 6 | 8 - 12 | | | | | |
| 2 - Stainless steel | | | | | | | | | | |
| 2.1 | Free machining | <250 | <850 | 7 - 10 | 14 - 20 | | | | | |
| 2.2 | Austenitic | <250 | <850 | 5 -8 | 10 - 16 | | | | | |
| 2.3 | Ferretic, Martensitic | <250 | <1000 | 5 - 8 | 10 - 16 | | | | | |
| 2.4 | Ferretic, Martensitic | >250- <350 | >850 - <1200 | 4 -6 | 8 - 12 | | | | | |
| 3 - Cast iron | | | | | | | | | | |
| 3.1 | Lameller graphite | <150 | <500 | 10 - 15 | 20 - 30 | | | | ● 3 | ● 3 |
| 3.2 | Lameller graphite | >150 - <300 | 500 - 1000 | 5 - 8 | 10 - 16 | | | | ❍ 3 | ● 3 |
| 3.3 | Nodular graphite, malleable | <200 | <700 | 10 - 15 | 20 - 30 | ❍ 3 | ● 3 | ● 3 | | |
| 3.4 | Nodular graphite, malleable | >200 - <300 | >700 - <1000 | 5 - 8 | 10 - 16 | | | | | |
| 4 - Titanium | | | | | | | | | | |
| 4.1 | Unalloyed | <200 | <700 | 10 - 15 | 20 - 30 | | | | | |
| 4.2 | Alloyed | <270 | <900 | 8 - 12 | 16 - 24 | | | | | |
| 4.3 | Alloyed | >270 - <350 | >900 - <1250 | 4 - 6 | 4 - 8 | | | | | |
| 5 - Nickel | | | | | | | | | | |
| 5.1 | Unalloyed | <150 | <500 | 8 - 12 | 16 - 24 | | | | | |
| 5.2 | Alloyed | <270 | <900 | 3 - 5 | 6 - 10 | | | | | |
| 5.3 | Alloyed | >270 - <350 | >900 - <1260 | 2 - 4 | 4 - 8 | | | | | |
| 6 - Copper | | | | | | | | | | |
| 6.1 | Unalloyed | <100 | <350 | 6 - 8 | 12 - 16 | | | | | |
| 6.2 | ß - Brass, bronze | <200 | <700 | 25 - 35 | 50 - 70 | | | | ❍ 1 | ❍ 1 |
| 6.3 | ¥ - Brass | <200 | <700 | 15 - 20 | 30 - 40 | ❍ 3 | ● 3 | ● 3 | | |
| 6.4 | High strength bronze | <200 | <700 | 4 - 6 | 8 - 12 | | | | ❍ 1 | ❍ 1 |
| 6.5 | Bronze | <200 | <700 | 10 - 15 | 20 - 30 | ❍ 3 | ● 3 | ● 3 | | |
| 7 - Aluminium / Magnesium | | | | | | | | | | |
| 7.1 | Al, Mg, unalloyed | <100 | <350 | 10 - 15 | 20 - 30 | | | | | |
| 7.2 | Al alloyed, Si < 0.5% | <120 | <400 | 10 - 15 | 20 - 30 | | | | | |
| 7.3 | Al alloyed, Si > 0.5 - <10% | <120 | <400 | 10 - 15 | 20 - 30 | | ❍ 3 | ❍ 3 | | |
| 7.4 | Al alloyed, Si > 10%, Whisker reinforced, Mg | <120 | <400 | 10 - 15 | 20 - 30 | | ❍ 3 | ❍ 3 | | |
| 7.5 | Magnesium Alloy | <120 | <400 | 10 - 15 | 20 - 30 | | | | | |
| 8 - Plastics | | | | | | | | | | |
| 8.1 | Thermoplastics | | 50 | 10 - 15 | 20 - 30 | | ❍ 4,5 | ❍ 4,5 | | |
| 8.2 | Thermosetting | | 80 | 10 - 15 | 20 - 30 | | | | | |

# Suggested Technical Information Machine Taps

| P,C-1,2 | P1,2,3 | C2,3 | P1,2,3 | P1,2,3 | C2,3 | C2,3 | P1,2,3 | P1,2,3 | C2,3 | C2,3 | P,C-1,2,3 | P,C-1,2,3 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| E | B | C | B | B | C | C | B-AZ | B-AZ | C | C | C | C | | |
| | | R35 | | | R35 | R35 | | | R45 | R45 | NO | NO | | |
| | VAP | VAP | | TiALN | | TiALN | | CrN | | CrN | | | | |
| HSSE | HSSEX | HSSEX | HSSEX | HSSEX | HSSEX | HSSEX | HSSE | HSSE | HSSE | HSSE | HSSE | HSSE | | |
| 6H | 6H | 6H | 6H | 6H | 6H | 6H | 6H | 6H | 6H | 6H | 6HX | 6GX | | |
|  |  |  |  |  |  |  |  |  |  |  |  |  | | |
| 9190 | 9110 | 9120 | 9130 | 9150 | 9140 | 9160 | 9200 | 9220 | 9210 | 9230 | 8130 | 8140 | V (m/min) Without coating VAP/NIT | V (m/min) With Coating TiCN TiLAN/CrN |
| | | | | | | | | | | | | | | |
| | ● 3 | ● 3 | | | | | | | | | ❍ 3 | ❍ 3 | 20 - 25 | 40 -50 |
| | ❍ 3 | ❍ 3 | | | | | | | | | ❍ 3 | ❍ 3 | 15 - 20 | 30 - 40 |
| | | | | | | | | | | | ❍ 3 | ❍ 3 | 12 - 18 | 24 - 36 |
| | | | | | | | | | | | ❍ 1 | ❍ 1 | 10 - 15 | 20 - 30 |
| | | | | | | | | | | | | | 6 - 10 | 12 - 20 |
| | | | | | | | | | | | | | 4 - 6 | 8 - 12 |
| | | | | | | | | | | | | | | |
| | ● 1 | ● 1 | | | | | | | | | ❍ 1 | ❍ 1 | 7 - 10 | 14 - 20 |
| | ● 1 | ● 1 | | | | | | | | | ❍ 1,3 | ❍ 1,3 | 5 -8 | 10 - 16 |
| | ● 1 | ● 1 | ❍ 1 | ❍ 1 | ❍ 1 | ❍ 1 | | | | | | | 5 - 8 | 10 - 16 |
| | ❍ 1 | ❍ 1 | ❍ 1 | ● 1 | ❍ 1 | ● 1 | | | | | | | 4 -6 | 8 - 12 |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | 10 - 15 | 20 - 30 |
| | | | | | | | | | | | | | 5 - 8 | 10 - 16 |
| | | | | | | | | | | | | | 10 - 15 | 20 - 30 |
| | | | ● 3 | ● 3 | ● 3 | ● 3 | | | | | | | 5 - 8 | 10 - 16 |
| | | | | | | | | | | | | | | |
| | ● 3 | ● 3 | | | | | | | | | ❍ 3 | ❍ 3 | 10 - 15 | 20 - 30 |
| | | | ❍ 1 | ❍ 1 | ❍ 1 | ❍ 1 | | | | | | | 8 - 12 | 16 - 24 |
| | | | ❍ 1 | ❍ 1 | ❍ 1 | ❍ 1 | | | | | | | 4 - 6 | 4 - 8 |
| | | | | | | | | | | | | | | |
| | ● 1 | ● 1 | | | | | | | | | ❍ 1 | ❍ 1 | 8 - 12 | 16 - 24 |
| | | | ❍ 1 | ❍ 1 | ❍ 1 | ❍ 1 | | | | | | | 3 - 5 | 6 - 10 |
| | | | ❍ 1 | ❍ 1 | ❍ 1 | ❍ 1 | | | | | | | 2 - 4 | 4 - 8 |
| | | | | | | | | | | | | | | |
| | ❍ 3 | ❍ 3 | | | | | ❍ 3 | ❍ 3 | ❍ 3 | ❍ 3 | ❍ 3 | ❍ 3 | 6 - 8 | 12 - 16 |
| ● 1 | | | | | | | | | | | | | 25 - 35 | 50 - 70 |
| | | | | | | | | | | | | | 15 - 20 | 30 - 40 |
| ● 1 | | | | | | | | | | | | | 4 - 6 | 8 - 12 |
| | | | | | | | | | | | | | 10 - 15 | 20 - 30 |
| | | | | | | | | | | | | | | |
| | | | | | | | ● 3 | ● 3 | ● 3 | ● 3 | ❍ 3 | ❍ 3 | 10 - 15 | 20 - 30 |
| | | | | | | | | | | | ❍ 1 | ❍ 1 | 10 - 15 | 20 - 30 |
| | | | | | | | | | | | | | 10 - 15 | 20 - 30 |
| | | | | | | | | | | | | | 10 - 15 | 20 - 30 |
| | | | | | | | ● 3 | ● 3 | ● 3 | ● 3 | ❍ 3 | ❍ 3 | 10 - 15 | 20 - 30 |
| | | | | | | | | | | | | | | |
| | | | | | | | ❍ 4,5 | ❍ 4,5 | | | | | 10 - 15 | 20 - 30 |
| | | | ❍ 1 | ● 1 | ❍ 1 | ● 1 | | | | | | | 10 - 15 | 20 - 30 |

# Conversion Chart

| Size | MM | Decimal Equivalent | Size | MM | Decimal Equivalent | Size | MM | Decimal Equivalent | Size | MM | Decimal Equivalent | Size | MM | Decimal Equivalent |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| - | 0.10 | 0.0039 | 53 | 1.51 | 0.0595 | - | 4.00 | 0.1575 | J | 7.04 | .2770 | - | 14.00 | 0.5512 |
| - | 0.20 | 0.0079 | 1/16 | 1.59 | 0.0625 | 21 | 4.04 | .1590 | K | 7.14 | .2810 | 9/16 | 14.29 | 0.5625 |
| - | 0.25 | 0.0098 | 52 | 1.61 | 0.0635 | 20 | 4.09 | .1610 | 9/32 | 7.14 | 0.2812 | 37/64 | 14.68 | 0.5781 |
| - | 0.30 | 0.0118 | 51 | 1.70 | .0670 | 19 | 422 | ,1660 | L | 7.37 | .2900 | - | 15.00 | 0.5906 |
| 80 | 0,34 | 0.0135 | 50 | 1.78 | .0700 | 18 | 4.31 | 0.1695 | M | 7.49 | .2950 | 19/32 | 15.08 | 0.5938 |
| 79 | 0.37 | 0.0145 | 49 | 1.85 | .0730 | 11/64 | 4.37 | 0.1719 | 19/64 | 7.54 | 0.2969 | 39/64 | 15.48 | 0.6094 |
| 1/64 | 0.40 | 0.0156 | 48 | 1.93 | .0760 | 17 | 4.39 | .1730 | N | 7.67 | .3020 | 5/8 | 15.88 | .6250 |
| 78 | 0.41 | .0160 | 5/64 | 1.98 | 0.0781 | 16 | 4.50 | .1770 | 5/16 | 7.94 | 0.3125 | - | 16.00 | 0.6299 |
| 77 | 0.46 | .0180 | 47 | 1.99 | 0.0785 | 15 | 4.57 | .1800 | - | 8.00 | .3150 | 41/64 | 16,27 | 0.6406 |
|  | 0.50 | 0.0197 | - | 2.00 | 0.0787 | 14 | 4.62 | .1820 | 0 | 8.03 | .3160 | 21/32 | 16.67 | 0.6562 |
| 76 | 0.51 | .0200 | 46 | 2.06 | .0810 | 13 | 4.70 | .1850 | P | 8.20 | .3230 | - | 17.00 | 0.6693 |
| 75 | 0.53 | .0210 | 45 | 2.08 | .0820 | 3/16 | 4.76 | 0.1875 | 21/64 | 8.33 | 0.3281 | 43/64 | 17.07 | 0.6719 |
| 74 | 0.57 | 0.0225 | 44 | 2.18 | .0860 | 12 | 4.80 | .1890 | Q | 8.43 | .3320 | 11/16 | 17.46 | 0.6875 |
| - | 0.60 | 0.0236 | 43 | 2.26 | .0890 | 11 | 4.85 | .1910 | R | 8.61 | .3390 | 45/64 | 17.86 | 0.7031 |
| 73 | 0.61 | .0240 | 42 | 2.37 | 0.0935 | 10 | 4.91 | 0.1935 | 11/32 | 8.73 | 0.3438 | - | 18.00 | 0.7087 |
| 72 | 0.64 | .0250 | 3/32 | 2.38 | 0.0938 | 9 | 4.98 | .1960 | S | 8.84 | .3480 | 23/32 | 18.26 | 0.7188 |
| 71 | 0.66 | .0260 | 41 | 2.44 | .0960 | - | 5.00 | 0.1968 | - | 9.00 | 0.3543 | 47/64 | 18.65 | 0.7344 |
| - | 0.70 | 0.0276 | 40 | 2.50 | .0980 | 8 | 5.05 | .1990 | T | 9.09 | .3580 | - | 19.00 | .7480 |
| 70 | 0.71 | .0280 | 39 | 2.53 | 0.0995 | 7 | 5.11 | .2010 | 23/64 | 9.13 | 0.3594 | 3/4 | 19.05 | .7500 |
| 69 | 0.74 | 0.0292 | 38 | 2.58 | 0.1015 | 13/64 | 5.16 | 0.2031 | U | 9.35 | .3680 | 49/64 | 19.45 | 0.7656 |
|  | 0.75 | 0.0295 | 37 | 2.64 | .1040 | 6 | 5.18 | .2040 | 3/8 | 9.53 | .3750 | 25/32 | 19.84 | 0.7812 |
| 68 | 0.79 | .0310 | 36 | 2.71 | 0.1065 | 5 | 5.22 | 0.2055 | V | 9.56 | .3770 | - | 20.00 | 0.7874 |
| 1/32 | 0.79 | 0.0313 | 7/64 | 2.78 | 0.1094 | 4 | 5.31 | .2090 | W | 9.80 | .3860 | 51/64 | 20.24 | 0.7969 |
| - | 0.80 | 0.0315 | 35 | 2.79 | .1100 | 3 | 5.41 | .2130 | 25/64 | 9.92 | 0.3906 | 13/16 | 20.64 | 0.8125 |
| 67 | 0.81 | .0320 | 34 | 2.82 | .1110 | 7/32 | 5.56 | 0.2188 | - | 10.00 | 0.3937 | - | 21.00 | 0.8268 |
| 66 | 0.84 | .0330 | 33 | 2.87 | .1130 | 2 | 5.61 | .2210 | X | 10.08 | .3970 | 53/64 | 21.03 | 0.8281 |
| 65 | 0.89 | .0350 | 32 | 2.95 | .1160 | 1 | 5.79 | .2280 | Y | 10.26 | .4040 | 27/32 | 21.43 | 0.8438 |
| - | 0.90 | 0.0354 | - | 3.00 | 0.1181 | A | 5.94 | .2340 | 13/32 | 10.32 | 0.4062 | 55/64 | 21.84 | 0.8594 |
| 64 | 0.91 | .0360 | 31 | 3.05 | .1200 | 15/64 | 5.95 | 0.2344 | Z | 10.49 | .4130 | - | 22.00 | 0.8661 |
| 63 | 0.94 | .0370 | 1/8 | 3.18 | .1250 | - | 6.00 | 0.2362 | 27/64 | 10.72 | 0.4219 | 7/8 | 22.23 | .8750 |
| 62 | 0.97 | .0380 | 30 | 3.26 | 0.1285 | B | 6.05 | .2380 | - | 11.00 | 0.4331 | 57/64 | 22.62 | 0.8906 |
| 61 | 0.99 | .0390 | 29 | 3.45 | .1360 | C | 6.15 | .2420 | 7/16 | 11.11 | 0.4375 | - | 23.00 | 0.9055 |
| - | 1.00 | 0.0394 | 28 | 3.57 | 0.1405 | 0 | 625 | .2460 | 29/64 | 11.51 | 0.4531 | 29/32 | 23.02 | 0.9062 |
| 60 | 1.02 | .0400 | 9/64 | 3.57 | 0.1406 | 1/4 | 6.35 | .2500 | 15/32 | 11.91 | 0.4688 | 59/64 | 23.42 | 0.9219 |
| 59 | 1.04 | .0410 | 27 | 3.66 | .1440 | E | 6.35 | .2500 | - | 12.00 | 0.4724 | 15/16 | 23.81 | 0.9375 |
| 58 | 1.07 | .0420 | 26 | 3.73 | .1470 | F | 6.53 | .2570 | 31/64 | 12.30 | 0.4844 | - | 24.00 | 0.9449 |
| 57 | 1.09 | .0430 | 25 | 3.80 | 0.1495 | G | 6.63 | .2610 | 1/2 | 12.70 | .5000 | 61/64 | 24.21 | 0.9531 |
| 56 | 1.18 | 0.0465 | 24 | 3.86 | .1520 | 17/64 | 6.75 | 0.2656 | - | 13.00 | 0.5118 | 31/32 | 24.61 | 0.9688 |
| 3/64 | 1.19 | 0.0469 | 23 | 3.91 | .1540 | H | 6.76 | .2660 | 33/64 | 13.10 | 0.5156 | - | 25.00 | 0.9842 |
| 55 | 1.32 | .0520 | 5/32 | 3.97 | 0.1562 | I | 6.91 | .2720 | 17/32 | 13.49 | 0.5312 | 63/64 | 25.00 | 0.9844 |
| 54 | 1.40 | .0550 | 22 | 3.99 | .1570 | - | 7.00 | 0.2756 | 35/64 | 13.89 | 0.5469 | I | 25.40 | 1.0000 |

Merlin Tools Ltd

Quality • Precision • Performance

## MERLIN TOOLS LIMITED

(Hereinafter referred to as “The Company”)

1. All orders are subject to our Conditions of Sale as detailed below:
All quotations given and all sales made are upon the express condition that, although the goods supplied are of sound commercial quality and every care has been taken in manufacture, there is no guarantee as to their suitability for any specific purpose, even if that purpose is known to The Company. The buyer must therefore satisfy himself that the goods conform to his requirements before use.

2. The Company’s liability is respect of goods furnished shall be limited to the purchase price of the goods in respect of which damages are claimed.

3. The buyer shall inspect the goods furnished immediately after delivery. The buyer shall give to the seller immediate written notice of any claim that any of the goods are not of stated quality and the buyer’s failure to give notice of any claim within fourteen days from date of advice of despatch or delivery shall constitute an unqualified acceptance of such goods by the buyer. Slight imperfections in colour, appearance and measurements are not to be the subject of complaint. If the purchaser wishes to make a complaint on a later date because of defects hidden at the time of receipt despite a careful examination, the purchaser has a right to demand alteration, substitution, further delivery from the Company’s Works if any defect is found by the Company.

4. Owing to fluctuations in the cost of raw materials and labour it may be necessary to alter prices. Every effort will be made to keep customers informed. No responsibility will be accepted for such alterations and prices charged will be those current at time of despatch.

5. Payment terms are strictly nett at the end of the month following month of invoice.

6. The title and ownership of the goods supplied would only be transferred to the purchaser when the amount has been paid in full. Nothing shall prevent the buyer reselling or transferring the goods to a third party in the ordinary course of business, but in such event the buyer will be deemed to sell or transfer the goods as agents for us, and will be deemed to receive and hold any price received thereof for the account of ourselves. The buyer undertakes to pay to us all monies received by the buyer in respect of any sale or transfer of the goods to a third party, until the price of goods sold by us to the buyer has been paid in full.

7. The Company reserves the right to select the means of transportation. Any extra cost incurred by reason of using such other means of transport as the buyer shall select shall be paid by the buyer.

8. In the event of the buyer not receiving the goods within fourteen days of receipt of an advice note he shall notify the Company in writing. Shortages or damages must be reported to the Carrier and to The Company within three days.

9. Any date given for delivery is to be considered as approximate only and cannot be guaranteed. The Company cannot be made responsible for any delays due to strikes, lockouts, accidents on land or on sea, government interference or for any other unforeseen circumstances and no claims for damage or compensation will be accepted.

10. In the event that The Company is compelled to withdraw from any contract due to circumstances mentioned in paragraph 9 this does not affect the right to demand payment in respect of all deliveries made before the date on which the contract is cancelled.

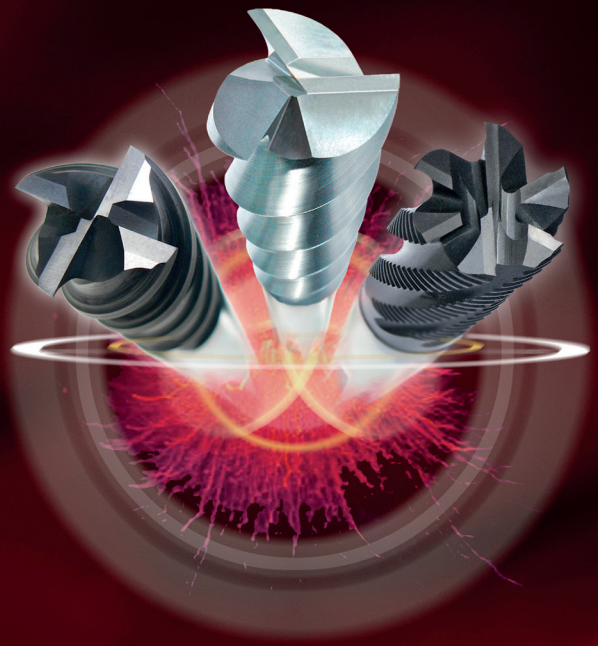
11. Orders accepted by us cannot be cancelled without our consent in writing and on terms that will indemnify against loss. Only in exceptional circumstances and subject to our specific written agreement in each instance, will we accept back for credit goods already delivered. If returned goods are accepted in these circumstances they will be subject to a handling charge.

12. Special non-standard products cannot be cancelled, exchanged or credited. We reserve the right to over or under produce each item by up to 10%.

13. Any dispute arising hereunder shall be referred to arbitration by an arbitrator to be mutually agreed between the parties or failing agreement to any arbitrator to be appointed by the President of the Law Society.

**Terms of Trading**
All UK orders are subject to our Terms of trading as detailed below:

Orders valued at over £100 nett are Carriage Paid.
No minimum order value.
Orders up to £99.99 nett will incur carriage charge of £6.50
Orders requiring Royal Mail Special Delivery guaranteed next working day before 1.00pm is carriage at cost starting from £8.70 depending upon weight. This must be specified when ordering.
A redirection charge of £4.00 plus VAT will be made where items are sent direct to a Distributor’s End User.



# Merlin Tools Ltd

**Quality • Precision • Performance**

Distributed by

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