

# Tungsten Carbide Burrs





### **OUR SERVICE**











#### Design

Merlin Tool's rotary carbide burrs combine time-proven geometries assuring the perfect balance between cutting action and tool life. The "attention-to-detail" includes effective, segmental nose radius designs combined with deeper gullets to maximize tool performance, while low TIR values insure consistently smooth operation and impressive tool life. A full range of qualified, industry-accepted standard shapes for workpiece materials ranging from hardened steels to non-ferrous materials.

#### **Brazed Carbide Burrs**

Induction-brazed shanks are 100% QA tested via computerized "Harmonic Resonance" test equipment to ensure solder-joint integrity prior to grinding finish, along with a sampling of destructive tests during the production process.

#### **Raw Material**

Merlin Tool single-sources both carbide components and steel shanking in order to achieve the most consistent long-term quality objectives. Carbide components are made from micrograin K-40 grade tungsten that delivers the ideal combination of hardness and shock resistance, whereas all steel shank options are SAE 8740 Alloy steel, hardened to 46-48 Rockwell "C" with a grind finish of Ra 32 or better."

#### Manufacture

The Production System operates utilising simulators and measuring and grinding equipment to ensure our tools remain consistent across differing batch dates. All of Merlin Burrs are produced using C.N.C. "state-of-the-art" grinding machines.

#### **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.



### Specials Service

Merlin Tools is committed to providing our customers with a cost effective solution to their requirements.

Call our sales team to discuss your needs:

## 01509 610300

#### **Special Application & Non-Standard Burrs**

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.

If we do not offer a burr as standard from our range, we can offer it as a special order item to meet your exact requirements. We can modify one of our existing burrs or also offer a full design service from drawing to finished product.

Please contact our sales team who will be happy to discuss your options with you.

All of our Carbide Burrs are also available in Blue nAco Coating which considerably improves performance and tool life.

#### Blue nAco Coated

Our Blue nAco coating provides up to 2.5 times regular tool life.

Colour: varying shade of blue-grey. Blue-based colour dissipates immediately upon use. Vickers Hardness: approximately 4,500 Vickers.
Outstanding performance in super alloys & hard material machining with high heat applications.



# **Tungsten Carbide Burrs**

#### Range

Standard Cut, Double Cut, Aluminium Cut and AITiN Coated available. Standard Length and Extra Long Length available

#### Size

Metric 1.5mm through to 25.4mm diameter.

#### **Finish**

**Bright Finish and AITIN Coated.** 

#### **Options**

Tools are available in popular shapes from A (Cylindrical) through to N (Inverted Cone) Shape. 3mm and 6mm shanks available. Individual Burrs or Comprehensive Sets and Special Burrs available.

#### **Delivery**

Over 150,000 tools available from stock for Same-Day despatch.



| Tungsten Carbide Burrs |                       |                   |   |    |   |   |   |   |   |   |  |
|------------------------|-----------------------|-------------------|---|----|---|---|---|---|---|---|--|
|                        | Cylinder - No End Cut |                   |   |    |   |   |   |   |   |   |  |
|                        | Standard Cut          |                   |   |    | • | • |   | • | • | • |  |
|                        | Double Cut            | 1.5mm to 25.4mm   | Α | 6  | • | • |   | • | • | • |  |
|                        | Aluminium Cut         |                   |   |    |   |   | • |   |   |   |  |
|                        | Double Cut AITiN      |                   |   |    | • | • |   | • | • | • |  |
|                        | Cylinder - End Cut    |                   |   |    |   |   |   |   |   |   |  |
|                        | Standard Cut          |                   |   |    | • | • |   | • | • | • |  |
|                        | Double Cut            | 1.5 mm to 25.4 mm | В | 7  | • | • |   | • | • | • |  |
|                        | Aluminium Cut         |                   |   |    |   |   | • |   |   |   |  |
|                        | Double Cut AITiN      |                   |   |    | • | • |   | • | • | • |  |
|                        | Ball Nosed Cylinder   |                   |   |    |   |   |   |   |   |   |  |
|                        | Standard Cut          |                   |   |    | • | • |   | • | • | • |  |
|                        | Double Cut            | 2.5 mm to 25.4 mm | С | 8  | • | • |   | • | • | • |  |
|                        | Aluminium Cut         |                   |   |    |   |   | • |   |   |   |  |
|                        | Double Cut AITiN      |                   |   |    | • | • |   | • | • | • |  |
|                        | Ball                  |                   |   |    |   |   |   |   |   |   |  |
|                        | Standard Cut          |                   |   |    | • | • |   | • | • | • |  |
|                        | Double Cut            | 1.5 mm to 25.4 mm | D | 9  | • | • |   | • | • | • |  |
| 7 ,4                   | Aluminium Cut         |                   |   |    |   |   | • |   |   |   |  |
|                        | Double Cut AITiN      |                   |   |    | • | • |   | • | • | • |  |
|                        | Oval                  |                   |   |    |   |   |   |   |   |   |  |
|                        | Standard Cut          |                   |   |    | • | • |   | • | • | • |  |
|                        | Double Cut            | 3mm to 19mm       | Е | 10 | • | • |   | • | • | • |  |
|                        | Aluminium Cut         |                   |   |    |   |   | • |   |   |   |  |
|                        | Double Cut AITiN      |                   |   |    | • | • |   | • | • | • |  |
|                        | Ball Nosed Tree       |                   |   |    |   |   |   |   |   |   |  |
|                        | Standard Cut          |                   |   |    | • | • |   | • | • | • |  |
|                        | Double Cut            | 3mm to 19mm       | F | 11 | • | • |   | • | • | • |  |
|                        | Aluminium Cut         |                   |   |    |   |   | • |   |   |   |  |
|                        | Double Cut AITiN      |                   |   |    | • | • |   | • | • | • |  |
|                        |                       |                   |   |    |   |   |   |   |   |   |  |





| Tungsten Carbide Burrs   |   |    |    |   |   |   |   |   |   |  |
|--|---|----|----|---|---|---|---|---|---|--|
|  | Tree  |    |    |   |   |   |   |   |   |  |
|  | Standard Cut                                    |    |    | • | • |   | • | • | • |  |
|  | Double Cut 3mm to 19mm                          | G  | 12 | • | • |   | • | • | • |  |
|  | Aluminium Cut                                   |    |    |   |   | • |   |   |   |  |
|  | Double Cut AlTiN                                |    |    | • | • |   | • | • | • |  |
|  | Flame   |    |    |   |   |   |   |   |   |  |
|  | Standard Cut                                    |    |    | • | • |   | • | • | • |  |
|  | Double Cut 3mm to 19mm                          | Н  | 13 | • | • |   | • | • | • |  |
|  | Aluminium Cut                                   |    |    |   |   | • |   |   |   |  |
|  | Double Cut AITiN                                |    | •  | • |   | • | • | • |   |  |
|  | Countersink - 60°                               |    |    |   |   |   |   |   |   |  |
|  | Standard Cut                                    |    |    | • | • |   | • | • | • |  |
|  | Double Cut 3mm to 25mm                          | J  | 14 | • | • |   | • | • | • |  |
|  | Aluminium Cut                                   |    |    |   |   | • |   |   |   |  |
|  | Double Cut AlTiN                                |    | •  | • |   | • | • | • |   |  |
|  | Countersink - 90°                               |    |    |   |   |   |   |   |   |  |
|  | Standard Cut                                    |    |    | • | • |   | • | • | • |  |
|  | Double Cut 3mm to 25mm                          | K  | 15 | • |   |   | • | • | • |  |
|  | Aluminium Cut                                   |    |    |   |   |   |   |   |   |  |
|  | Double Cut AlTiN                                |    |    | • |   |   | • | • | • |  |
|  | Ball Nosed Cone                                 |    |    |   |   |   |   |   |   |  |
|  | Standard Cut                                    |    |    | • |   |   | • | • | • |  |
|  | Double Cut 3mm to 19mm                          | L  | 16 |   |   |   |   | • |   |  |
|  | Aluminium Cut                                   | _  | '  |   |   |   |   |   |   |  |
|  | Double Cut AlTiN                                |    |    | • |   |   |   |   |   |  |
|  | Cone  |    |    |   |   |   |   |   |   |  |
|  | Standard Cut                                    |    |    | • |   |   | • | • |   |  |
|  | Double Cut 3mm to 16mm                          | М  | 17 |   |   |   |   |   |   |  |
| A STATE OF THE PARTY OF THE PAR | Aluminium Cut                                   |    | '' |   |   |   |   |   |   |  |
|  | Double Cut AlTiN                                |    |    |   |   |   |   |   |   |  |
|  | Inverted Cone                                   |    |    |   |   |   |   |   |   |  |
|  | Standard Cut                                    |    |    | • |   |   | • | • | • |  |
|  | Double Cut 2.5mm to 19mm                        | N  | 18 |   |   |   |   |   |   |  |
|  | Aluminium Cut                                   | ., | 10 |   |   |   |   |   |   |  |
|  | Double Cut AITiN                                |    |    | • |   |   | • |   |   |  |
|  | Tyre Burrs                                      |    |    |   |   |   |   |   |   |  |
|  | Round Shank 3mm to 10mm                         | ТВ | 19 | • |   |   | • | • | • |  |
| A CONTRACTOR OF THE PARTY OF TH | 3 Flat Shank                                    | 10 | .5 |   |   | • |   |   |   |  |
|  | Burr Sets                                       |    |    |   |   |   |   |   |   |  |
| CUL  | 5 piece burr set                                |    |    |   |   |   |   |   |   |  |
|  | Double Cut & Double Cut AITiN                   |    | 20 | • |   |   | • | • |   |  |
|  | 10 piece burr set Double Cut & Double Cut AlTiN |    |    | • | • |   | • | • | • |  |
|  | 5 piece burr set for Aluminium                  |    | 22 |   |   |   |   |   |   |  |
|  | 10 piece miniature burr set - Double Cut        |    | 23 | • |   |   |   |   |   |  |
|  | 10 piece miniature buit set - Double Cut        |    | 23 |   |   |   |   |   |   |  |
|  |   |    |    |   |   |   |   |   |   |  |





## **Cylinder - No End Cut**

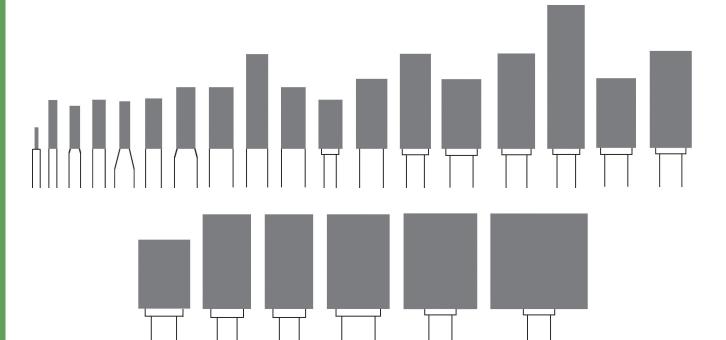
| Head<br>Dia. | Head<br>Length | Shank<br>Dia. | OAL | Solid<br>Carbide | Single Cut | Double Cut | Aluminium<br>Cut | Performance<br>Double Cut<br>AITiN |
|--------------|----------------|---------------|-----|------------------|------------|------------|------------------|------------------------------------|
| 1.5          | 6              | 3             | 38  | •                | MA-41SC    | MA-41DC    | MA-41AC          | MA-41DC-Z                          |
| 2.4          | 13             | 2.4           | 38  | •                | MA-61SC    | MA-61DC    |                  | MA-61DC-Z                          |
| 2.5          | 11             | 3             | 38  | •                | MA-42SC    | MA-42DC    | MA-42AC          | MA-42DC-Z                          |
| 3            | 14             | 3             | 38  | •                | MA-43SC    | MA-43DC    | MA-43AC          | MA-43DC-Z                          |
| 3            | 12.7           | 6             | 50  | •                | MA-12SC    | MA-12DC    | MA-12AC          | MA-12DC-Z                          |
| 4            | 13             | 4             | 50  | •                | MA-72SC    | MA-72DC    |                  | MA-72DC-Z                          |
| 5            | 16             | 6             | 50  | •                | MA-14SC    | MA-14DC    | MA-14AC          | MA-14DC-Z                          |
| 6            | 16             | 6             | 50  | •                | MA-1SC     | MA-1DC     | MA-1AC           | MA-1DC-Z                           |
| 6            | 25             | 6             | 50  | •                | MA-1ASC    | MA-1ADC    | MA-1AAC          | MA-1ADC-Z                          |
| 6            | 16             | 6             | 162 |                  | MA-1L6SC   | MA-1L6DC   | MA-1L6AC         | MA-1L6DC-Z                         |
| 6.3          | 12.7           | 3             | 50  |                  | MA-51SC    | MA-51DC    | MA-51AC          | MA-51DC-Z                          |
| 8            | 19             | 6             | 64  |                  | MA-2SC     | MA-2DC     | MA-2AC           | MA-2DC-Z                           |
| 8            | 25             | 6             | 70  |                  | MA-2ASC    | MA-2ADC    | MA-2AAC          | MA-2ADC-Z                          |
| 9.5          | 19             | 6             | 64  |                  | MA-3SC     | MA-3DC     | MA-3AC           | MA-3DC-Z                           |
| 9.5          | 25             | 6             | 70  |                  | MA-3ASC    | MA-3ADC    | MA-3AAC          | MA-3ADC-Z                          |
| 9.5          | 38             | 6             | 83  |                  | MA-3BSC    | MA-3BDC    | MA-3BAC          | MA-3BDC-Z                          |
| 9.5          | 19             | 6             | 169 |                  | MA-3L6SC   | MA-3L6DC   | MA-3L6AC         | MA-3L6DC-Z                         |
| 11           | 25             | 6             | 70  |                  | MA-4SC     | MA-4DC     | MA-4AC           | MA-4DC-Z                           |
| 12           | 19             | 6             | 69  |                  | MA-32SC    | MA-32DC    |                  | MA-32DC-Z                          |
| 12.7         | 25             | 6             | 70  |                  | MA-5SC     | MA-5DC     | MA-5AC           | MA-5DC-Z                           |
| 12.7         | 25             | 6             | 178 |                  | MA-5L6SC   | MA-5L6DC   | MA-5L6AC         | MA-5L6DC-Z                         |
| 16           | 25             | 6             | 70  |                  | MA-6SC     | MA-6DC     | MA-6AC           | MA-6DC-Z                           |
| 19           | 25             | 6             | 70  |                  | MA-7SC     | MA-7DC     | MA-7AC           | MA-7DC-Z                           |
| 25.4         | 25             | 6             | 70  |                  | MA-9SC     | MA-9DC     | MA-9AC           | MA-9DC-Z                           |



Suitable Material Groups
For technical information,
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1.1 - 1.6 1.7 - 1.8 2.1 - 2.3 3.1 - 3.4 4.1 - 5.3 1.1 - 1.6 1.7 - 1.8 2.1 - 2.3 3.1 - 3.4 4.1 - 5.3 6.1 - 8.3 1.1 - 1.6 1.7 - 1.8 2.1 - 2.3 3.1 - 3.4 4.1 - 5.3







Up to 2.5 times regular tool life



### MB

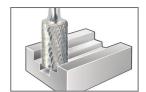
# **Cylinder - End Cut**

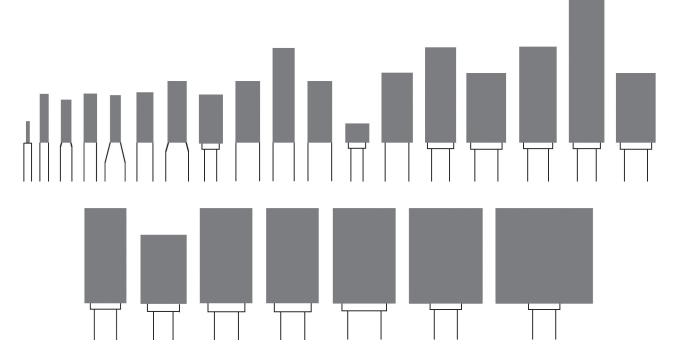
| Head<br>Dia. | Head<br>Length | Shank<br>Dia. | OAL | Solid<br>Carbide | Single Cut | Double Cut | Aluminium<br>Cut | Performance<br>Double Cut<br>AITIN |
|--------------|----------------|---------------|-----|------------------|------------|------------|------------------|------------------------------------|
| 1.5          | 6              | 3             | 38  | •                | MB-41SC    | MB-41DC    | MB-41AC          | MB-41DC-Z                          |
| 2.4          | 13             | 2.4           | 38  | •                | MB-61SC    | MB-61DC    |                  | MB-61DC-Z                          |
| 2.5          | 11             | 3             | 38  | •                | MB-42SC    | MB-42DC    | MB-42AC          | MB-42DC-Z                          |
| 3            | 14             | 3             | 38  | •                | MB-43SC    | MB-43DC    | MB-43AC          | MB-43DC-Z                          |
| 3            | 12.7           | 6             | 50  | •                | MB-12SC    | MB-12DC    | MB-12AC          | MB-12DC-Z                          |
| 4            | 13             | 4             | 50  | •                | MB-72SC    | MB-72DC    |                  | MB-72DC-Z                          |
| 5            | 16             | 6             | 50  | •                | MB-14SC    | MB-14DC    | MB-14AC          | MB-14DC-Z                          |
| 6            | 13             | 3             | 50  | •                | MB-51ASC   | MB-51ADC   |                  | MB-51ADC-Z                         |
| 6            | 16             | 6             | 50  | •                | MB-1SC     | MB-1DC     | MB-1AC           | MB-1DC-Z                           |
| 6            | 25             | 6             | 50  | •                | MB-1ASC    | MB-1ADC    | MB-1AAC          | MB-1ADC-Z                          |
| 6            | 16             | 6             | 162 |                  | MB-1L6SC   | MB-1L6DC   | MB-1L6AC         | MB-1L6DC-Z                         |
| 6.3          | 4.7            | 3             | 43  |                  | MB-51SC    | MB-51DC    | MB-51AC          | MB-51DC-Z                          |
| 8            | 19             | 6             | 64  |                  | MB-2SC     | MB-2DC     | MB-2AC           | MB-2DC-Z                           |
| 8            | 25             | 6             | 70  |                  | MB-2ASC    | MB-2ADC    | MB-2AAC          | MB-2ADC-Z                          |
| 9.5          | 19             | 6             | 64  |                  | MB-3SC     | MB-3DC     | MB-3AC           | MB-3DC-Z                           |
| 9.5          | 25             | 6             | 70  |                  | MB-3ASC    | MB-3ADC    | MB-3AAC          | MB-3ADC-Z                          |
| 9.5          | 38             | 6             | 83  |                  | MB-3BSC    | MB-3BDC    | MB-3BAC          | MB-3BDC-Z                          |
| 9.5          | 19             | 6             | 169 |                  | MB-3L6SC   | MB-3L6DC   | MB-3L6AC         | MB-3L6DC-Z                         |
| 11           | 25             | 6             | 70  |                  | MB-4SC     | MB-4DC     | MB-4AC           | MB-4DC-Z                           |
| 12           | 19             | 6             | 70  |                  | MB-32SC    | MB-32DC    |                  | MB-32DC-Z                          |
| 12.7         | 25             | 6             | 70  |                  | MB-5SC     | MB-5DC     | MB-5AC           | MB-5DC-Z                           |
| 12.7         | 25             | 6             | 175 |                  | MB-5L6SC   | MB-5L6DC   | MB-5L6AC         | MB-5L6DC-Z                         |
| 16           | 25             | 6             | 70  |                  | MB-6SC     | MB-6DC     | MB-6AC           | MB-6DC-Z                           |
| 19           | 25             | 6             | 70  |                  | MB-7SC     | MB-7DC     | MB-7AC           | MB-7DC-Z                           |
| 25.4         | 25             | 6             | 70  |                  | MB-9SC     | MB-9DC     | MB-9AC           | MB-9DC-Z                           |



Suitable Material Groups
For technical information,
see page: CPAGE
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1.1 - 1.6 1.7 - 1.8 2.1 - 2.3 3.1 - 3.4 4.1 - 5.3 1.1 - 1.6 1.7 - 1.8 2.1 - 2.3 3.1 - 3.4 4.1 - 5.3 6.1 - 8.3 1.1 - 1 1.7 - 1 2.1 - 2 3.1 - 3 4.1 - 5







Up to 2.5 times regular tool life



### MC

# **Ball Nosed Cylinder**

| Head<br>Dia. | Head<br>Length | Shank<br>Dia. | OAL | Solid<br>Carbide | Single Cut | Double Cut | Aluminium<br>Cut | Performance<br>Double Cut<br>AITIN |
|--------------|----------------|---------------|-----|------------------|------------|------------|------------------|------------------------------------|
| 2.5          | 11             | 3             | 38  | •                | MC-41SC    | MC-41DC    | MC-41AC          | MC-41DC-Z                          |
| 3            | 14             | 3             | 38  | •                | MC-42SC    | MC-42DC    | MC-42AC          | MC-42DC-Z                          |
| 3            | 14             | 3             | 50  | •                | MC-42L2SC  | MC-42L2DC  | MC-42L2AC        | MC-42L2DC-Z                        |
| 3            | 16             | 6             | 60  | •                | MC-12SC    | MC-12DC    | MC-12AC          | MC-12DC-Z                          |
| 3            | 14             | 3             | 75  | •                | MC-42L3SC  | MC-42L3DC  | MC-42L3AC        | MC-42L3DC-Z                        |
| 4            | 16             | 6             | 50  | •                | MC-13SC    | MC-13DC    |                  | MC-13DC-Z                          |
| 5            | 16             | 6             | 50  | •                | MC-14SC    | MC-14DC    | MC-14AC          | MC-14DC-Z                          |
| 6            | 16             | 6             | 50  | •                | MC-1SC     | MC-1DC     | MC-1AC           | MC-1DC-Z                           |
| 6            | 25             | 6             | 50  | •                | MC-1ASC    | MC-1ADC    | MC-1AAC          | MC-1ADC-Z                          |
| 6            | 16             | 6             | 162 |                  | MC-1L6SC   | MC-1L6DC   | MC-1L6AC         | MC-1L6DC-Z                         |
| 6.3          | 12.7           | 3             | 50  |                  | MC-51SC    | MC-51DC    | MC-51AC          | MC-51DC-Z                          |
| 8            | 19             | 6             | 64  |                  | MC-2SC     | MC-2DC     | MC-2AC           | MC-2DC-Z                           |
| 8            | 25             | 6             | 70  |                  | MC-2ASC    | MC-2ADC    | MC-2AAC          | MC-2ADC-Z                          |
| 9.5          | 19             | 6             | 64  |                  | MC-3SC     | MC-3DC     | MC-3AC           | MC-3DC-Z                           |
| 9.5          | 25             | 6             | 70  |                  | MC-3ASC    | MC-3ADC    | MC-3AAC          | MC-3ADC-Z                          |
| 9.5          | 19             | 6             | 169 |                  | MC-3L6SC   | MC-3L6DC   | MC-3L6AC         | MC-3L6DC-Z                         |
| 11           | 25             | 6             | 70  |                  | MC-4SC     | MC-4DC     | MC-4AC           | MC-4DC-Z                           |
| 12           | 19             | 6             | 69  |                  | MC-22SC    | MC-22DC    |                  | MC-22DC-Z                          |
| 12.7         | 25             | 6             | 70  |                  | MC-5SC     | MC-5DC     | MC-5AC           | MC-5DC-Z                           |
| 12.7         | 25             | 6             | 175 |                  | MC-5L6SC   | MC-5L6DC   | MC-5L6AC         | MC-5L6DC-Z                         |
| 16           | 25             | 6             | 70  |                  | MC-6SC     | MC-6DC     | MC-6AC           | MC-6DC-Z                           |
| 19           | 25             | 6             | 70  |                  | MC-7SC     | MC-7DC     | MC-7AC           | MC-7DC-Z                           |
| 25.4         | 25             | 6             | 70  |                  | MC-9SC     | MC-9DC     | MC-9AC           | MC-9DC-Z                           |

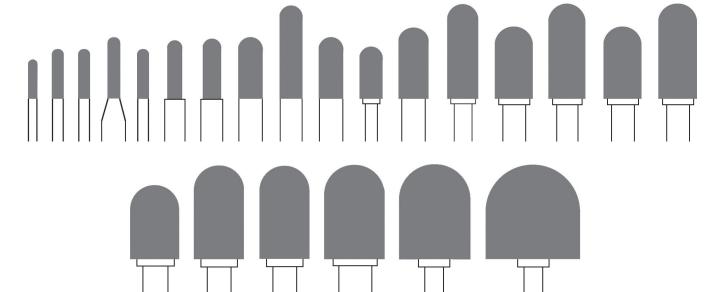


Suitable Material Groups
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see page: CPAGE
24-25

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

6.1 - 8.3 1.1 - 1.6 1.7 - 1.8 2.1 - 2.3 3.1 - 3.4







Up to 2.5 times regular tool life





## Ball

| Head<br>Dia. | Head<br>Length | Shank<br>Dia. | OAL | Solid<br>Carbide | Single Cut | Double Cut | Aluminium<br>Cut | Performance<br>Double Cut<br>AITiN |
|--------------|----------------|---------------|-----|------------------|------------|------------|------------------|------------------------------------|
| 2.5          | 2.3            | 3             | 38  | •                | MD-41SC    | MD-41DC    | MD-41AC          | MD-41DC-Z                          |
| 3            | 2.5            | 3             | 38  | •                | MD-42SC    | MD-42DC    | MD-42AC          | MD-42DC-Z                          |
| 3            | 2.5            | 3             | 50  | •                | MD-42L2SC  | MD-42L2DC  | MD-42L2AC        | MD-42L2DC-Z                        |
| 3            | 2              | 6             | 50  | •                | MD-12SC    | MD-12DC    | MD-12AC          | MD-12DC-Z                          |
| 3            | 2.5            | 3             | 75  | •                | MD-42L3SC  | MD-42L3DC  | MD-42L3AC        | MD-42L3DC-Z                        |
| 4            | 3.6            | 3             | 42  | •                | MD-52SC    | MD-52DC    |                  | MD-52DC-Z                          |
| 5            | 4              | 6             | 50  | •                | MD-14SC    | MD-14DC    | MD-14AC          | MD-14DC-Z                          |
| 6            | 5              | 6             | 50  | •                | MD-1SC     | MD-1DC     | MD-1AC           | MD-1DC-Z                           |
| 6            | 5              | 6             | 155 |                  | MD-1L6SC   | MD-1L6DC   | MD-1L6AC         | MD-1L6DC-Z                         |
| 6.3          | 5              | 3             | 44  |                  | MD-51SC    | MD-51DC    | MD-51AC          | MD-51DC-Z                          |
| 8            | 6.4            | 6             | 51  |                  | MD-2SC     | MD-2DC     | MD-2AC           | MD-2DC-Z                           |
| 9.5          | 8              | 6             | 53  |                  | MD-3SC     | MD-3DC     | MD-3AC           | MD-3DC-Z                           |
| 9.5          | 8              | 6             | 158 |                  | MD-3L6SC   | MD-3L6DC   | MD-3L6AC         | MD-3L6DC-Z                         |
| 11           | 9.5            | 6             | 54  |                  | MD-4SC     | MD-4DC     | MD-4AC           | MD-4DC-Z                           |
| 12.7         | 11             | 6             | 56  |                  | MD-5SC     | MD-5DC     | MD-5AC           | MD-5DC-Z                           |
| 12.7         | 11             | 6             | 161 |                  | MD-5L6SC   | MD-5L6DC   | MD-5L6AC         | MD-5L6DC-Z                         |
| 16           | 14             | 6             | 59  |                  | MD-6SC     | MD-6DC     | MD-6AC           | MD-6DC-Z                           |
| 19           | 16             | 6             | 61  |                  | MD-7SC     | MD-7DC     | MD-7AC           | MD-7DC-Z                           |
| 25.4         | 21             | 6             | 66  |                  | MD-9SC     | MD-9DC     | MD-9AC           | MD-9DC-Z                           |
|              |                |               |     |                  |            |            |                  |                                    |

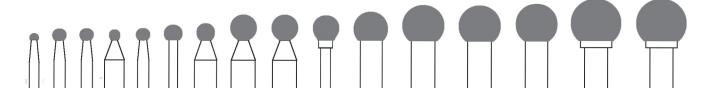


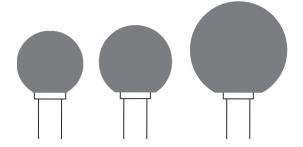
Suitable Material Groups For technical information, see page: PAGE 24-25 1.1 - 1.6 1.7 - 1.8 2.1 - 2.3 3.1 - 3.4 4.1 - 5.3 1.1 - 1.6 1.7 - 1.8 2.1 - 2.3 3.1 - 3.4 4.1 - 5.3

6.1 - 8.3

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









Up to 2.5 times regular tool life



## ME

## Oval

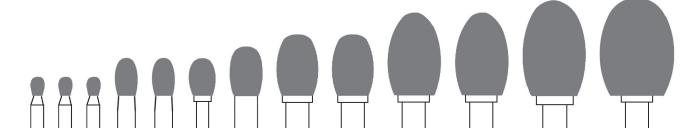
| ium Performance Double Cut AlTiN |
|----------------------------------|
| AC ME-41DC-Z                     |
| .2AC ME-41L2DC-Z                 |
| .3AC ME-41L3DC-Z                 |
| C ME-1DC-Z                       |
| SAC ME-1L6DC-Z                   |
| AC ME-51DC-Z                     |
| ME-2DC-Z                         |
| C ME-3DC-Z                       |
| SAC ME-3L6DC-Z                   |
| C ME-5DC-Z                       |
| SAC ME-5L6DC-Z                   |
| C ME-6DC-Z                       |
| C ME-7DC-Z                       |
|                                  |



Suitable Material Groups For technical information, see page:

6.1 - 8.3







Up to 2.5 times regular tool life



### MF

## **Ball Nosed Tree**

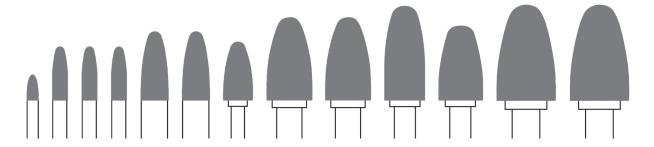
| Head<br>Dia. | Head<br>Length | Shank<br>Dia. | OAL | Solid<br>Carbide | Single Cut | Double Cut | Aluminium<br>Cut | Performance<br>Double Cut<br>AITIN |
|--------------|----------------|---------------|-----|------------------|------------|------------|------------------|------------------------------------|
| 3            | 6              | 3             | 38  | •                | MF-41SC    | MF-41DC    | MF-41AC          | MF-41DC-Z                          |
| 3            | 12.7           | 3             | 38  | •                | MF-42SC    | MF-42DC    | MF-42AC          | MF-42DC-Z                          |
| 3            | 12.7           | 3             | 50  | •                | MF-42L2SC  | MF-42L2DC  | MF-42L2AC        | MF-42L2DC-Z                        |
| 3            | 12.7           | 3             | 75  | •                | MF-42L3SC  | MF-42L3DC  | MF-42L3AC        | MF-42L3DC-Z                        |
| 6            | 16             | 6             | 50  | •                | MF-1SC     | MF-1DC     | MF-1AC           | MF-1DC-Z                           |
| 6            | 16             | 6             | 172 |                  | MF-1L6SC   | MF-1L6DC   | MF-1L6AC         | MF-1L6DC-Z                         |
| 6.3          | 12.7           | 3             | 50  |                  | MF-51SC    | MF-51DC    | MF-51AC          | MF-51DC-Z                          |
| 9.5          | 19             | 6             | 64  |                  | MF-3SC     | MF-3DC     | MF-3AC           | MF-3DC-Z                           |
| 9.5          | 19             | 6             | 169 |                  | MF-3L6SC   | MF-3L6DC   | MF-3L6AC         | MF-3L6DC-Z                         |
| 11           | 25             | 6             | 70  |                  | MF-4SC     | MF-4DC     | MF-4AC           | MF-4DC-Z                           |
| 12.7         | 19             | 6             | 64  |                  | MF-13SC    | MF-13DC    | MF-13AC          | MF-13DC-Z                          |
| 12.7         | 25             | 6             | 70  |                  | MF-5SC     | MF-5DC     | MF-5AC           | MF-5DC-Z                           |
| 12.7         | 25             | 6             | 175 |                  | MF-5L6SC   | MF-5L6DC   | MF-5L6AC         | MF-5L6DC-Z                         |
| 16           | 25             | 6             | 70  |                  | MF-6SC     | MF-6DC     | MF-6AC           | MF-6DC-Z                           |
| 19           | 25             | 6             | 70  |                  | MF-7SC     | MF-7DC     | MF-7AC           | MF-7DC-Z                           |
| 19           | 32             | 6             | 77  |                  | MF-14SC    | MF-14DC    | MF-14AC          | MF-14DC-Z                          |
| 19           | 38             | 6             | 83  |                  | MF-15SC    | MF-15DC    | MF-15AC          | MF-15DC-Z                          |

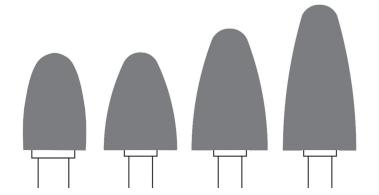


Suitable Material Groups For technical information, see page: PAGE 24-25 1.1 - 1.6 1.7 - 1.8 2.1 - 2.3 3.1 - 3.4 4.1 - 5.3 1.1 - 1.6 1.7 - 1.8 2.1 - 2.3 3.1 - 3.4 4.1 - 5.3

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









Up to 2.5 times regular tool life



## MG

## **Tree**

| Head<br>Dia. | Head<br>Length | Shank<br>Dia. | OAL | Solid<br>Carbide | Single Cut | Double Cut | Aluminium<br>Cut | Performance<br>Double Cut<br>AITiN |
|--------------|----------------|---------------|-----|------------------|------------|------------|------------------|------------------------------------|
| 3            | 6              | 3             | 38  | •                | MG-41SC    | MG-41DC    | MG-41AC          | MG-41DC-Z                          |
| 3            | 9.5            | 3             | 38  | •                | MG-43SC    | MG-43DC    | MG-43AC          | MG-43DC-Z                          |
| 3            | 12.7           | 3             | 38  | •                | MG-44SC    | MG-44DC    | MG-44AC          | MG-44DC-Z                          |
| 3            | 12.7           | 3             | 50  | •                | MG-44L2SC  | MG-44L2DC  | MG-44L2AC        | MG-44L2DC-Z                        |
| 3            | 12.7           | 3             | 75  | •                | MG-44L3SC  | MG-44L3DC  | MG-44L3AC        | MG-44L3DC-Z                        |
| 6            | 16             | 6             | 50  | •                | MG-1SC     | MG-1DC     | MG-1AC           | MG-1DC-Z                           |
| 6            | 16             | 6             | 163 |                  | MG-1L6SC   | MG-1L6DC   | MG-1L6AC         | MG-1L6DC-Z                         |
| 6.3          | 12.7           | 3             | 50  |                  | MG-51SC    | MG-51DC    | MG-51AC          | MG-51DC-Z                          |
| 8            | 19             | 6             | 64  |                  | MG-2SC     | MG-2DC     | MG-2AC           | MG-2DC-Z                           |
| 9.5          | 19             | 6             | 64  |                  | MG-3SC     | MG-3DC     | MG-3AC           | MG-3DC-Z                           |
| 9.5          | 19             | 6             | 169 |                  | MG-3L6SC   | MG-3L6DC   | MG-3L6AC         | MG-3L6DC-Z                         |
| 12.7         | 19             | 6             | 64  |                  | MG-13SC    | MG-13DC    | MG-13AC          | MG-13DC-Z                          |
| 12.7         | 25             | 6             | 70  |                  | MG-5SC     | MG-5DC     | MG-5AC           | MG-5DC-Z                           |
| 12.7         | 25             | 6             | 175 |                  | MG-5L6SC   | MG-5L6DC   | MG-5L6AC         | MG-5L6DC-Z                         |
| 16           | 25             | 6             | 70  |                  | MG-6SC     | MG-6DC     | MG-6AC           | MG-6DC-Z                           |
| 19           | 25             | 6             | 70  |                  | MG-7SC     | MG-7DC     | MG-7AC           | MG-7DC-Z                           |

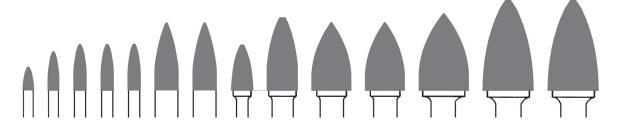


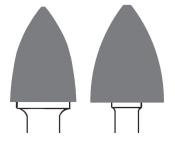
Suitable Material Groups For technical information, see page: PAGE 24-25 1.1 - 1.6 1.7 - 1.8 2.1 - 2.3 3.1 - 3.4 4.1 - 5.3 1.1 - 1.6 1.7 - 1.8 2.1 - 2.3 3.1 - 3.4 4.1 - 5.3

6.1 - 8.3

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









Up to 2.5 times regular tool life





## **Flame**

| Head<br>Dia. | Head<br>Length | Shank<br>Dia. | OAL | Solid<br>Carbide | Single Cut | Double Cut | Aluminium<br>Cut | Performance<br>Double Cut<br>AITiN |
|--------------|----------------|---------------|-----|------------------|------------|------------|------------------|------------------------------------|
| 3            | 6.3            | 3             | 38  | •                | MH-41SC    | MH-41DC    | MH-41AC          | MH-41DC-Z                          |
| 3            | 6.3            | 3             | 50  | •                | MH-41L2SC  | MH-41L2DC  | MH-41L2AC        | MH-41L2DC-Z                        |
| 3            | 6.3            | 3             | 75  | •                | MH-41L3SC  | MH-41L3DC  | MH-41L3AC        | MH-41L3DC-Z                        |
| 6            | 12.7           | 6             | 50  | •                | MH-1SC     | MH-1DC     | MH-1AC           | MH-1DC-Z                           |
| 6            | 12.7           | 6             | 160 |                  | MH-1L6SC   | MH-1L6DC   | MH-1L6AC         | MH-1L6DC-Z                         |
| 8            | 19             | 6             | 64  |                  | MH-2SC     | MH-2DC     | MH-2AC           | MH-2DC-Z                           |
| 8            | 19             | 6             | 169 |                  | MH-2L6SC   | MH-2L6DC   | MH-2L6AC         | MH-2L6DC-Z                         |
| 12.7         | 32             | 6             | 77  |                  | MH-5SC     | MH-5DC     | MH-5AC           | MH-5DC-Z                           |
| 12.7         | 32             | 6             | 182 |                  | MH-5L6SC   | MH-5L6DC   | MH-5L6AC         | MH-5L6DC-Z                         |
| 16           | 36             | 6             | 81  |                  | MH-6SC     | MH-6DC     | MH-6AC           | MH-6DC-Z                           |
| 19           | 41             | 6             | 86  |                  | MH-7SC     | MH-7DC     | MH-7AC           | MH-7DC-Z                           |



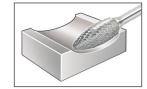
Suitable Material Groups
For technical information,
see page:

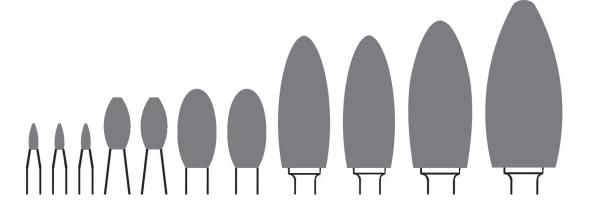
CPAGE
24-25

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

6.1 - 8.3

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







Up to 2.5 times regular tool life



### MJ

## 60° Countersink

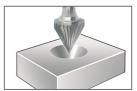
| Head<br>Dia. | Head<br>Length | Shank<br>Dia. | OAL  | Solid<br>Carbide | Double<br>Ended | Single Cut | Double Cut | Aluminium<br>Cut | Performance<br>Double Cut<br>AITIN |
|--------------|----------------|---------------|------|------------------|-----------------|------------|------------|------------------|------------------------------------|
| 3            | 2.5            | 3             | 38   | •                |                 | MJ-42SC    | MJ-42DC    | MJ-42AC          | MJ-42DC-Z                          |
| 3            | 2.5            | 3             | 38   | •                | •               | MJ-42DESC  | MJ-42DEDC  | MJ-42DEAC        | MJ-42DEDC-Z                        |
| 6            | 4              | 6             | 50   | •                |                 | MJ-1SC     | MJ-1DC     | MJ-1AC           | MJ-1DC-Z                           |
| 6            | 4              | 6             | 50   | •                | •               | MJ-1DESC   | MJ-1DEDC   | MJ-1DEAC         | MJ-1DEDC-Z                         |
| 9.5          | 8              | 6             | 53   |                  |                 | MJ-3SC     | MJ-3DC     | MJ-3AC           | MJ-3DC-Z                           |
| 12.7         | 11             | 6             | 56   |                  |                 | MJ-5SC     | MJ-5DC     | MJ-5AC           | MJ-5DC-Z                           |
| 16           | 14.5           | 6             | 59.5 |                  |                 | MJ-6SC     | MJ-6DC     | MJ-6AC           | MJ-6DC-Z                           |
| 19           | 17.5           | 6             | 62.5 |                  |                 | MJ-7SC     | MJ-7DC     | MJ-7AC           | MJ-7DC-Z                           |
| 25           | 24.5           | 6             | 69.5 |                  |                 | MJ-9SC     | MJ-9DC     | MJ-9AC           | MJ-9DC-Z                           |

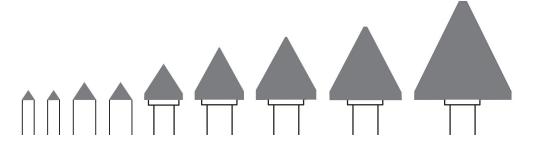


Suitable Material Groups For technical information, see page: PAGE 1.1 - 1.6 1.7 - 1.8 2.1 - 2.3 3.1 - 3.4 4.1 - 5.3 1.1 - 1.6 1.7 - 1.8 2.1 - 2.3 3.1 - 3.4 4.1 - 5.3

6.1 - 8.3

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







Up to 2.5 times regular tool life



## 90° Countersink

| Head<br>Dia. | Head<br>Length | Shank<br>Dia. | OAL  | Solid<br>Carbide | Double<br>Ended | Single Cut | Double Cut | Aluminium<br>Cut | Performance<br>Double Cut<br>AITIN |
|--------------|----------------|---------------|------|------------------|-----------------|------------|------------|------------------|------------------------------------|
| 3            | 1.5            | 3             | 38   | •                |                 | MK-42SC    | MK-42DC    | MK-42AC          | MK-42DC-Z                          |
| 3            | 1.5            | 3             | 38   | •                | •               | MK-42DESC  | MK-42DEDC  | MK-42DEAC        | MK-42DEDC-Z                        |
| 6            | 3              | 6             | 50   | •                |                 | MK-1SC     | MK-1DC     | MK-1AC           | MK-1DC-Z                           |
| 6            | 3              | 6             | 50   | •                | •               | MK-1DESC   | MK-1DEDC   | MK-1DEAC         | MK-1DEDC-Z                         |
| 9.5          | 4.7            | 6             | 49.7 |                  |                 | MK-3SC     | MK-3DC     | MK-3AC           | MK-3DC-Z                           |
| 12.7         | 6.3            | 6             | 51.3 |                  |                 | MK-5SC     | MK-5DC     | MK-5AC           | MK-5DC-Z                           |
| 16           | 8              | 6             | 53   |                  |                 | MK-6SC     | MK-6DC     | MK-6AC           | MK-6DC-Z                           |
| 19           | 9.5            | 6             | 54.5 |                  |                 | MK-7SC     | MK-7DC     | MK-7AC           | MK-7DC-Z                           |
| 25           | 12.7           | 6             | 57.7 |                  |                 | MK-9SC     | MK-9DC     | MK-9AC           | MK-9DC-Z                           |

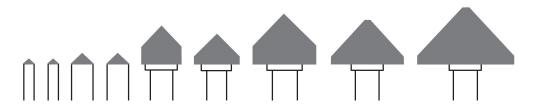


Suitable Material Groups For technical information, see page: PAGE

6.1 - 8.3









Up to 2.5 times regular tool life



### ML

## **Ball Nosed Cone - Included Angle - 14°**

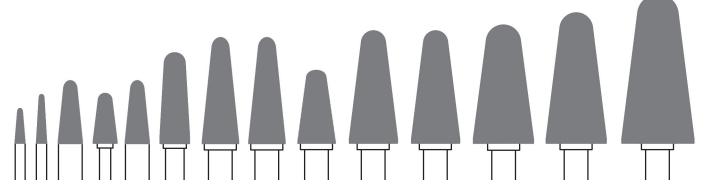
| Head<br>Dia. | Head<br>Length | Shank<br>Dia. | OAL | Solid<br>Carbide | Degree<br>Angle | Single Cut | Double Cut | Aluminium<br>Cut | Performance<br>Double Cut<br>AITiN |
|--------------|----------------|---------------|-----|------------------|-----------------|------------|------------|------------------|------------------------------------|
| 3            | 9.5            | 3             | 38  | •                | 8°              | ML-41SC    | ML-41DC    | ML-41AC          | ML-41DC-Z                          |
| 3            | 12.7           | 3             | 38  | •                | 8°              | ML-42SC    | ML-42DC    | ML-42AC          | ML-42DC-Z                          |
| 6            | 16             | 6             | 50  | •                | 14°             | ML-1SC     | ML-1DC     | ML-1AC           | ML-1DC-Z                           |
| 6            | 13             | 3             | 53  |                  | 14°             | ML-51SC    | ML-51DC    |                  | ML-51DC-Z                          |
| 6            | 16             | 6             | 166 |                  | 14°             | ML-1L6SC   | ML-1L6DC   | ML-1L6AC         | ML-1L6DC-Z                         |
| 8            | 22             | 6             | 67  |                  | 14°             | ML-2SC     | ML-2DC     | ML-2AC           | ML-2DC-Z                           |
| 9.5          | 27             | 6             | 72  |                  | 14°             | ML-3SC     | ML-3DC     | ML-3AC           | ML-3DC-Z                           |
| 9.5          | 27             | 6             | 177 |                  | 14°             | ML-3L6SC   | ML-3L6DC   | ML-3L6AC         | ML-3L6DC-Z                         |
| 10           | 19             | 6             | 68  |                  | 14°             | ML-32SC    | ML-32DC    |                  | ML-32DC-Z                          |
| 12.7         | 28             | 6             | 73  |                  | 14°             | ML-4SC     | ML-4DC     | ML-4AC           | ML-4DC-Z                           |
| 12.7         | 28             | 6             | 178 |                  | 14°             | ML-4L6SC   | ML-4L6DC   | ML-4L6AC         | ML-4L6DC-Z                         |
| 16           | 30             | 6             | 75  |                  | 14°             | ML-5SC     | ML-5DC     | ML-5AC           | ML-5DC-Z                           |
| 16           | 33             | 6             | 78  |                  | 14°             | ML-6SC     | ML-6DC     | ML-6AC           | ML-6DC-Z                           |
| 19           | 38             | 6             | 83  |                  | 14°             | ML-7SC     | ML-7DC     | ML-7AC           | ML-7DC-Z                           |
|              |                |               |     |                  |                 |            |            |                  |                                    |



Suitable Material Groups For technical information, see page: CPAGE 24-25 1.1 - 1.6 1.7 - 1.8 2.1 - 2.3 3.1 - 3.4 4.1 - 5.3 1.1 - 1.6 1.7 - 1.8 2.1 - 2.3 3.1 - 3.4

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





6.1 - 8.3



Up to 2.5 times regular tool life



## MM

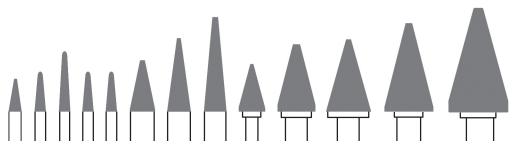
## **Cone - Included Angle**

| Head<br>Dia. | Head<br>Length | Shank<br>Dia. | OAL | Solid<br>Carbide | Degree<br>Angle | Single Cut | Double Cut | Aluminium<br>Cut | Performance<br>Double Cut<br>AITiN |
|--------------|----------------|---------------|-----|------------------|-----------------|------------|------------|------------------|------------------------------------|
| 3            | 8.9            | 3             | 38  | •                | 12°             | MM-41SC    | MM-41DC    | MM-41AC          | MM-41DC-Z                          |
| 3            | 11             | 3             | 38  |                  | 12°             | MM-42SC    | MM-42DC    | MM-42AC          | MM-42DC-Z                          |
| 3            | 16             | 3             | 38  |                  | 7°              | MM-43SC    | MM-43DC    | MM-43AC          | MM-43DC-Z                          |
| 3            | 11             | 3             | 50  |                  | 14°             | MM-42L2SC  | MM-42L2DC  | MM-42L2AC        | MM-42L2DC-Z                        |
| 3            | 11             | 3             | 75  |                  | 14°             | MM-42L3SC  | MM-42L3DC  | MM-42L3AC        | MM-42L3DC-Z                        |
| 6            | 12.7           | 6             | 50  | •                | 12°             | MM-1SC     | MM-1DC     | MM-1AC           | MM-1DC-Z                           |
| 6            | 19             | 6             | 50  | •                | 12°             | MM-2SC     | MM-2DC     | MM-2AC           | MM-2DC-Z                           |
| 6            | 25             | 6             | 50  |                  | 12°             | MM-3SC     | MM-3DC     | MM-3AC           | MM-3DC-Z                           |
| 6.3          | 12.7           | 3             | 54  |                  | 22°             | MM-51SC    | MM-51DC    | MM-51AC          | MM-51DC-Z                          |
| 9.5          | 16             | 6             | 61  |                  | 28°             | MM-4SC     | MM-4DC     | MM-4AC           | MM-4DC-Z                           |
| 12           | 19             | 6             | 75  |                  | 35°             | MM-5ASC    | MM-5ADC    |                  | MM-5ADC-Z                          |
| 12.7         | 22             | 6             | 67  |                  | 28°             | MM-5SC     | MM-5DC     | MM-5AC           | MM-5DC-Z                           |
| 16           | 25             | 6             | 70  |                  | 31°             | MM-6SC     | MM-6DC     | MM-6AC           | MM-6DC-Z                           |



Suitable Material Groups For technical information, see page: PAGE 24-25 1.1 - 1.6 1.7 - 1.8 2.1 - 2.3 3.1 - 3.4 4.1 - 5.3 1.1 - 1.6 1.7 - 1.8 2.1 - 2.3 3.1 - 3.4 4.1 - 5.3







Up to 2.5 times regular tool life



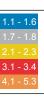


## **Inverted Cone - No End Cut**

| Head<br>Dia. | Head<br>Length | Shank<br>Dia. | OAL  | Solid<br>Carbide |     | Single Cut | Double Cut | Aluminium<br>Cut | Performance<br>Double Cut<br>AITiN |
|--------------|----------------|---------------|------|------------------|-----|------------|------------|------------------|------------------------------------|
| 2.5          | 3              | 3             | 38   |                  | 10° | MN-41SC    | MN-41DC    | MN-41AC          | MN-41DC-Z                          |
| 3            | 4              | 3             | 38   |                  | 10° | MN-42SC    | MN-42DC    | MN-42AC          | MN-42DC-Z                          |
| 6            | 8              | 6             | 50   |                  | 10° | MN-1SC     | MN-1DC     | MN-1AC           | MN-1DC-Z                           |
| 6.3          | 6              | 3             | 44   |                  | 10° | MN-51SC    | MN-51DC    | MN-51AC          | MN-51DC-Z                          |
| 9.5          | 9.5            | 6             | 54.5 |                  | 13° | MN-2SC     | MN-2DC     | MN-2AC           | MN-2DC-Z                           |
| 12           | 13             | 6             | 69   |                  | 20° | MN-3SC     | MN-3DC     |                  | MN-3DC-Z                           |
| 12.7         | 12.7           | 6             | 57.7 |                  | 28° | MN-4SC     | MN-4DC     | MN-4AC           | MN-4DC-Z                           |
| 16           | 19             | 6             | 64   |                  | 18° | MN-6SC     | MN-6DC     | MN-6AC           | MN-6DC-Z                           |
| 19           | 16             | 6             | 61   |                  | 30° | MN-7SC     | MN-7DC     | MN-7AC           | MN-7DC-Z                           |



















Up to 2.5 times regular tool life



# **Tungsten Carbide Tyre Burrs Double Cut - Round Shank**



C PAGE 24-25

| Head<br>Dia. | Head<br>Length | Shank<br>Dia. | OAL | Part<br>Number |
|--------------|----------------|---------------|-----|----------------|
| 3            | 25             | 3             | 50  | TB0M           |
| 6            | 50             | 5             | 75  | TB1M           |
| 8            | 53             | 3             | 100 | TB2M           |
| 10           | 75             | 10            | 100 | TR3M           |







# **Tungsten Carbide Tyre Burrs Double Cut - 3 Flats Shank**

| Head<br>Dia. | Head<br>Length |    | OAL | Part<br>Number |
|--------------|----------------|----|-----|----------------|
| 3            | 25             | 3  | 38  | TB0MT          |
| 6            | 50             | 5  | 75  | TB1MT          |
| 8            | 53             | 3  | 100 | TB2MT          |
| 10           | 50             | 10 | 100 | TB3MT          |









# Tungsten Carbide Burrs 5 Piece Set - Double Cut - Bright Finish



| Dimension          | Shape | Part Number<br>MBSET 1 |
|--------------------|-------|------------------------|
| 12 x 25 x 6 x 69   | В     | MB-5DC                 |
| 12 x 22 x 6 x 69   | М     | MM-5DC                 |
| 12 x 25 x 6 x 69   | С     | MC-5DC                 |
| 12 x 10.8 x 6 x 55 | D     | MD-5DC                 |
| 12 x 25 x 6 x 69   | F     | MF-5DC                 |

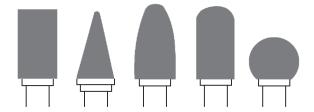


# **Tungsten Carbide Burrs 5 Piece Set - Double Cut -** *AITIN*

SET 1Z

| Dimension          | Shape | Part Number<br>MBSET 1Z |
|--------------------|-------|-------------------------|
| 12 x 25 x 6 x 69   | В     | MB-5DC-Z                |
| 12 x 22 x 6 x 69   | М     | MM-5DC-Z                |
| 12 x 25 x 6 x 69   | С     | MC-5DC-Z                |
| 12 x 10.8 x 6 x 55 | D     | MD-5DC-Z                |
| 12 x 25 x 6 x 69   | F     | MF-5DC-Z                |









# SET 2

# Tungsten Carbide Burrs 10 Piece Set - Double Cut - Bright Finish

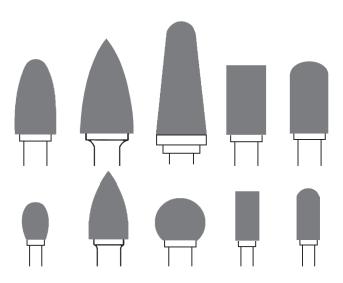
| Dimension          | Shape | Part Number<br>MBSET 2 |
|--------------------|-------|------------------------|
| 10 x 19 x 6 x 63   | В     | MB-3DC                 |
| 12 x 25 x 6 x 69   | В     | MB-5DC                 |
| 10 x 19 x 6 x 63   | С     | MC-3DC                 |
| 12 x 25 x 6 x 69   | С     | MC-5DC                 |
| 12 x 30 x 6 x 76   | L     | ML-4DC                 |
| 10 x 16 x 6 x 60   | E     | ME-3DC                 |
| 10 x 19 x 6 x 63   | G     | MG-3DC                 |
| 12 x 25 x 6 x 69   | G     | MG-5DC                 |
| 12 x 10.8 x 6 x 55 | D     | MD-5DC                 |
| 12 x 25 x 6 x 69   | F     | MF-5DC                 |



# Tungsten Carbide Burrs 10 Piece Set - Double Cut - *AITIN*

SET 2Z

| Dimension          | Shape | Part Number<br>MBSET 2Z |
|--------------------|-------|-------------------------|
| 10 x 19 x 6 x 63   | В     | MB-3DC-Z                |
| 12 x 25 x 6 x 69   | В     | MB-5DC-Z                |
| 10 x 19 x 6 x 63   | С     | MC-3DC-Z                |
| 12 x 25 x 6 x 69   | С     | MC-5DC-Z                |
| 12 x 30 x 6 x 76   | L     | ML-4DC-Z                |
| 10 x 16 x 6 x 60   | E     | ME-3DC-Z                |
| 10 x 19 x 6 x 63   | G     | MG-3DC-Z                |
| 12 x 25 x 6 x 69   | G     | MG-5DC-Z                |
| 12 x 10.8 x 6 x 55 | D     | MD-5DC-Z                |
| 12 x 25 x 6 x 69   | F     | MF-5DC-Z                |







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

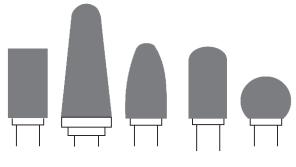


# Tungsten Carbide Burrs 5 Piece Set - Aluminium Cut



| Dimension          | Shape | Part Number<br>MBSET 3 |
|--------------------|-------|------------------------|
| 12 x 25 x 6 x 63   | С     | MC-5AC                 |
| 12 x 10.8 x 6 x 58 | D     | MD-5AC                 |
| 12 x 30 x 6 x 76   | L     | ML-4AC                 |
| 12 x 25 x 6 x 69   | F     | MF-5AC                 |
| 12 x 25 x 6 x 70   | В     | MB-5AC                 |







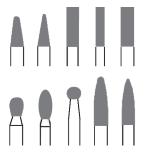


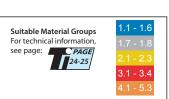
## Tungsten Carbide Miniature Burr 10 Piece Set - Double Cut - Bright Finish



| Dimension        | Shape | Part Number<br>MBSET 2Z |
|------------------|-------|-------------------------|
| 3 x 13 x 3 x 38  | А     | MA-43DC                 |
| 3 x 13 x 3 x 38  | В     | MB-43DC                 |
| 3 x 11 x 3 x 38  | M     | MM-41DC                 |
| 3 x 13 x 3 x 38  | С     | MC-42DC                 |
| 3 x 8 x 3 x 38   | L     | ML-41DC                 |
| 3 x 6 x 3 x 38   | E     | ME-41DC                 |
| 3 x 13 x 3 x 38  | G     | MG-44DC                 |
| 3 x 2.7 x 3 x 38 | D     | MD-42DC                 |
| 3 x 13 x 3 x 38  | F     | MF-42DC                 |
| 3 x 8 x 3 x 38   | Н     | MH-41DC                 |









## **Technical Information - Material Grouping**

| Material<br>Group | Material type                                | Hardness<br>(HB) | Tensile<br>Strength<br>(N/mm²) | BS   | EN & other<br>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                            |  |
| 1.3               | Plain carbon                                 | <250             | <850                           | 080M46, 080A62   | EN9, 10, 43, S70   |
| 1.4               | Alloyed                                      | 250 - 230        | <850                           | 708M40/42, 817M40, 534A99,<br>BM2, BT42 EN16,17, 19(R,S) EN31,<br>(Soft) |  |
| 1.5               | Alloyed                                      | 350              | 850 - 1200                     | B01, BM2, BT42, 826M40,<br>830M32  | EN24, 25,26(T,U,V) S95, S97, S98 (annealed)                            |
| 1.6               | Alloyed                                      |                  |                                | 801, 826M40, 830M31 EN25, 26, 27,(W,X,Z,) S97, S97, S97                  |  |
| 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 - Stai         | nless 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<br>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 - C            | 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 - 7            | itanium                        |  |  |
| 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<br>400, Inconel 600 Haynes Alloys<br>263 |
| 5.3               | Alloyed                                      | 270 - 350        | 900 - 1260                     | HR8 HR401, 601   | Inconel 718, Waspalloy, Nimonic<br>80, Rene 41                         |
|                   |  | 6 - 1            | Copper                         |  | ,  |
| 6.1               | Unalloyed                                    | <100             | <350                           | C101   | Commercially pure  |
| 6.2               | β - 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 - Aluminiu     | m / 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<br>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  |
| 0.1               | Thermonlectics                               | 8-1              | Plastics                       | Polyetyrone Mylen BVC Cellin   | Nylon Hostolon Makralan  |
| 8.1               | Thermoplastics                               |                  |                                | Polystyrene, Nylon, PVC Cellu-<br>lose 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                         | I  |  |
| 9.1               | Cermet (metal ceramics)                      |                  |                                |  |  |



#### **Technical Information - Application & Speed Data**

| Burr Application Data |            |            |                     |               |  |
|-----------------------|------------|------------|---------------------|---------------|--|
| Material<br>Group     | Single Cut | Double Cut | Double Cut<br>AlTiN | Aluminium Cut |  |
| Aluminium             |            |            |                     | •             |  |
| Brass, Bronze, Copper |            |            |                     | •             |  |
| Cast Iron             | •          | •          | •                   |               |  |
| Plastics              |            |            |                     | •             |  |
| Steel, <48 HRc        | •          | •          | •                   |               |  |
| Steel, 48-60 HRc      | •          | •          | •                   |               |  |
| Steel, Carbon         | •          | •          | •                   |               |  |
| Steel, Chrome         | •          | •          | •                   |               |  |
| Stainless Steel       | •          | •          | •                   |               |  |
| Steel Weldments       | •          | •          | •                   |               |  |
| Titanium              | •          | •          | •                   |               |  |
| Zinc                  |            |            |                     | •             |  |

Suitable for use = ●

| Burr Recommended R.P.M. Guide               |                 |  |  |  |
|---|-----------------|--|--|--|
| Burr Diameter                               | R.P.M.          |  |  |  |
| 3mm Solid Carbide                           | 45,000 - 60,000 |  |  |  |
| 5mm Solid Carbide                           | 35,000 - 40,000 |  |  |  |
| 5mm Carbide Head Brazed to 3mm Steel Shank  | 30,000 - 35,000 |  |  |  |
| 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 |  |  |  |
| 11mm Carbide Head Brazed to 6mm Steel Shank | 20,000 - 25,000 |  |  |  |
| 12mm Carbide Head Brazed to 6mm Steel Shank | 20,000 - 25,000 |  |  |  |
| 16mm Carbide Head Brazed to 6mm Steel Shank | 15,000 - 20,000 |  |  |  |
| 18mm Carbide Head Brazed to 6mm Steel Shank | 15,000 - 20,000 |  |  |  |
| 25mm Carbide Head Brazed to 6mm Steel Shank | 12,000 - 18,000 |  |  |  |

When working with long shank burrs, the burr must be in contact with the workpiece (or inserted in the bore or slot to be machined) before the machine is turned on. As a rule, the tool must remain in contact with the workpiece for as long as the machine is running.

Failure to observe this procedure may result in shank failure and hence an increased accident risk. If the continuous contact between the tool and

the workpiece is not guaranteed, the maximum idling speeds stated in the table should not be exceeded.  $\label{eq:condition}$ 

For safety reasons, the maximum application speeds with contact to the workpiece require a reduction in the recommended standard shank burr speed. The reduced speeds are stated in the table below. To determine the recommended rotational speed range, please proceed as follows:

|                    | ≥ 75mm<br>Shank                      | Overall<br>Length | ≥ 150mm Overall<br>Shank Length |                           |  |
|--------------------|--------------------------------------|-------------------|---------------------------------|---------------------------|--|
| Burr Diameter (mm) | Disengaged Engaged (without contact) |                   | Disengaged (without contact)    | Engaged<br>(with contact) |  |
| 3                  | 10,000                               | 30,000            | N/A                             | N/A                       |  |
| 6                  | 6,000                                | 15,000            | 9,500                           | 13,500                    |  |
| 9.5                | N/A                                  | N/A               | 6,000                           | 11,000                    |  |
| 12                 | N/A                                  | N/A               | 3,000                           | 7,000                     |  |



| Notes |
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(Hereinafter referred to as "The Company")

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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.
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- 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.
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No minimum order value.

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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.



## **Tungsten Carbide Burrs**



**Quality** • Precision • Performance

Distributed by

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