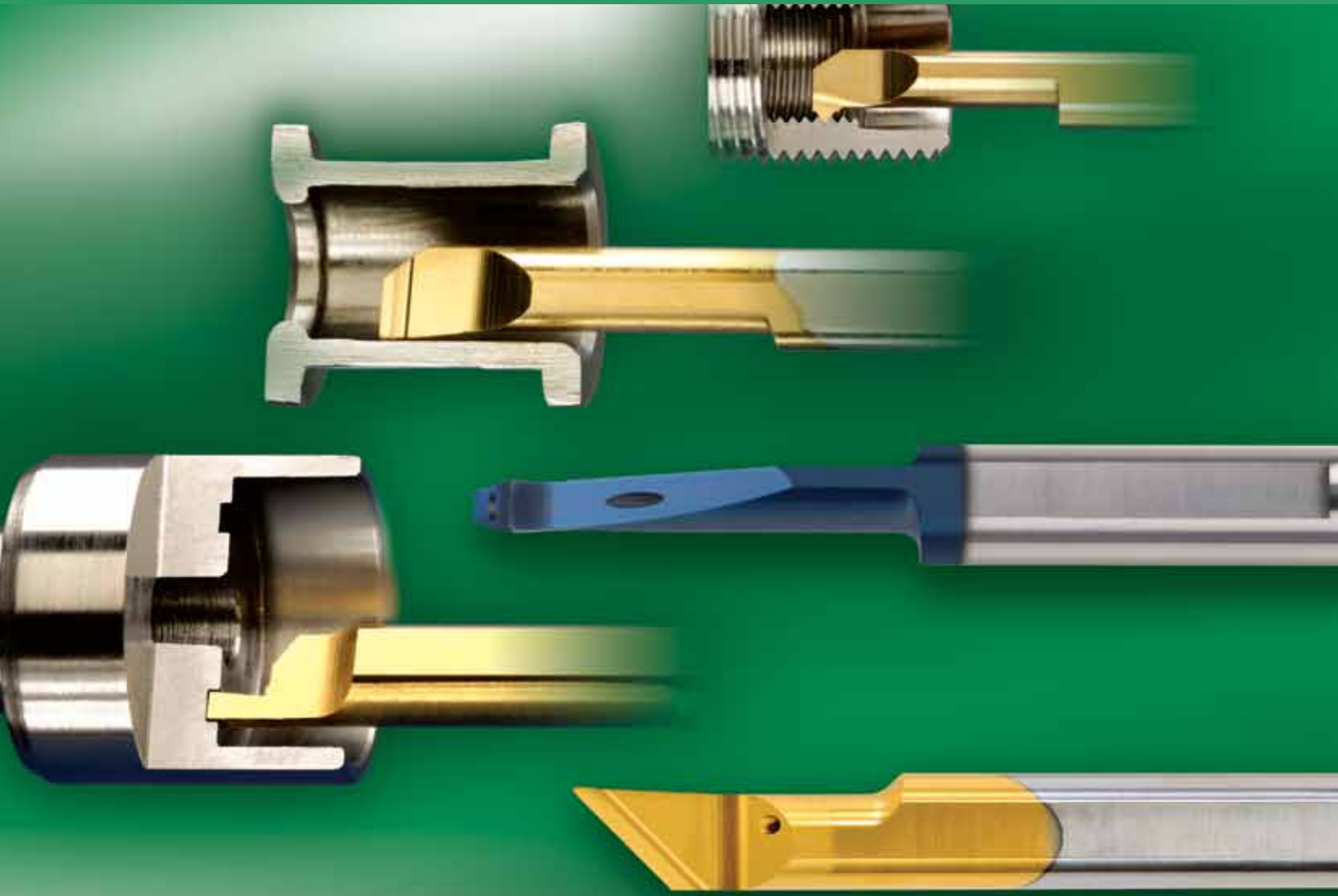


# Tiny Tools



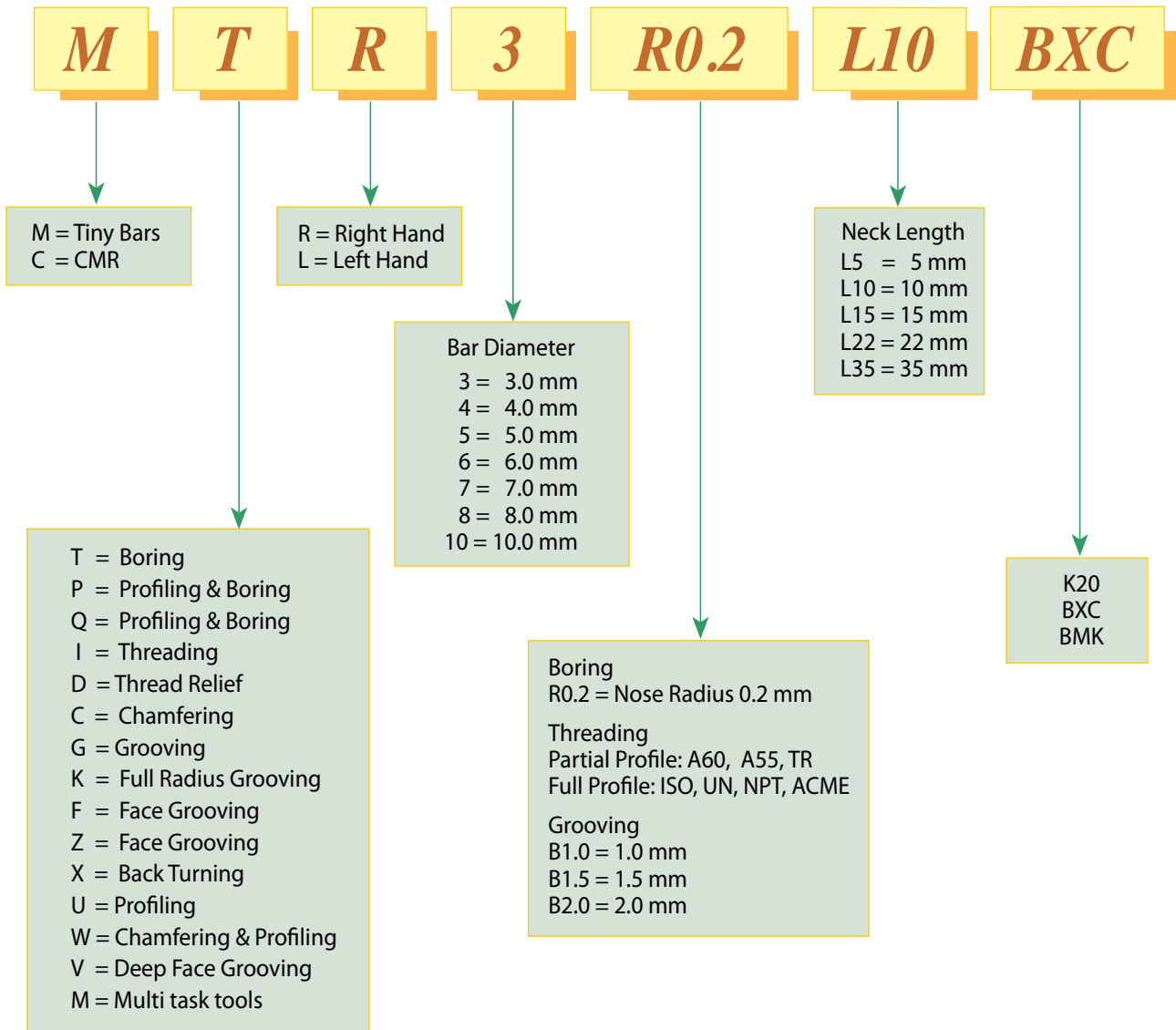
## Solid Carbide tools for working in small bores

These tools are made for the high-tech, medical and small component industry. All tools include through coolant enabling the cooling fluid to reach the cutting edge efficiently, for easy chip removal and smooth cutting operations.

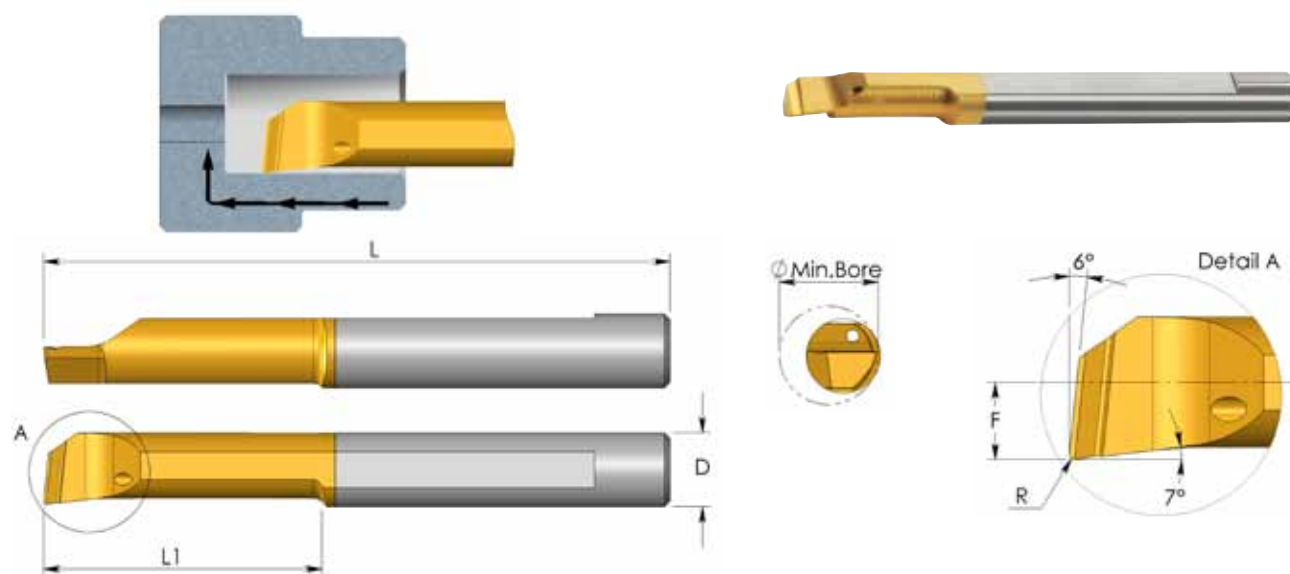
| Contents:                                  | Page: | Contents:                    | Page:   |
|--------------------------------------------|-------|------------------------------|---------|
| Product Identification                     | 74    | MFR Face Grooving Bars       | 91      |
| MTR Boring Bars                            | 75-76 | MFL Face Grooving Bars       | 92      |
| MXR Back Turning Bars                      | 77    | MVR Deep Face Grooving Bars  | 93      |
| MPR Profiling and Boring Bars              | 78-79 | MZR Face Grooving Bars       | 94      |
| MUR Profiling, 90° Face Cutting Bars       | 80    | MZL Face Grooving Bars       | 95      |
| MQR Profiling and Boring Bars              | 81    | CMR                          | 96      |
| MIR Threading Bars                         | 82-85 | HK                           | 97      |
| MDR Thread Relief, Chamfering and Grooving | 86    | Tiny Tools Bar Holders       | 98-99   |
| MCR Chamfering and Boring Bars             | 87    | Square Shank Holders         | 100     |
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| MGR Grooving Bars                          | 89    | Tiny Tools Technical Section | 102-104 |
| MKR Full Radius Grooving Bars              | 90    |                              |         |

## Product Identification

### Tiny Bars Ordering Codes



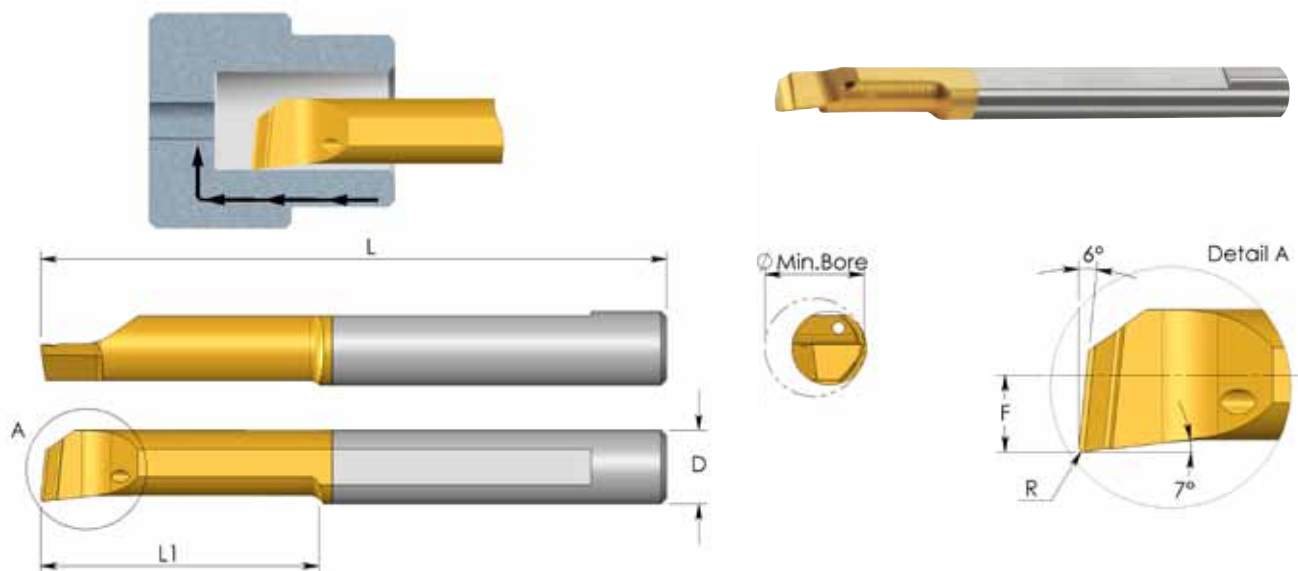
## MTR Bars Boring



| D   | Ordering Code          | L  | L1 | R    | F   | Min. Bore Dia. | Holder*    |
|-----|------------------------|----|----|------|-----|----------------|------------|
| 3.0 | <b>MTR 1 R0.05 L4</b>  | 39 | 4  | 0.05 | 0.5 | 1.0            | SIM ... H3 |
|     | <b>MTR 1 R0.05 L6</b>  | 39 | 6  | 0.05 | 0.5 | 1.0            |            |
|     | <b>MTR 1.5 R0.1 L6</b> | 39 | 6  | 0.10 | 0.7 | 1.5            |            |
| 3.0 | <b>MTR 2 R0.05 L10</b> | 39 | 10 | 0.05 | 0.8 | 2.1            | SIM ... H3 |
|     | <b>MTR 2 R0.15 L5</b>  | 39 | 5  | 0.15 | 0.8 | 2.1            |            |
|     | <b>MTR 2 R0.15 L10</b> | 39 | 10 | 0.15 | 0.8 | 2.1            |            |
| 3.0 | <b>MTR 3 R0.05 L10</b> | 39 | 10 | 0.05 | 1.3 | 3.1            | SIM ... H3 |
|     | <b>MTR 3 R0.05 L15</b> | 39 | 15 | 0.05 | 1.3 | 3.1            |            |
|     | <b>MTR 3 R0.1 L10</b>  | 39 | 10 | 0.10 | 1.3 | 3.1            |            |
|     | <b>MTR 3 R0.1 L15</b>  | 39 | 15 | 0.10 | 1.3 | 3.1            |            |
|     | <b>MTR 3 R0.2 L10</b>  | 39 | 10 | 0.20 | 1.3 | 3.1            |            |
|     | <b>MTR 3 R0.2 L15</b>  | 39 | 15 | 0.20 | 1.3 | 3.1            |            |
| 4.0 | <b>MTR 4 R0.05 L15</b> | 51 | 15 | 0.05 | 1.7 | 4.1            | SIM ... H4 |
|     | <b>MTR 4 R0.1 L10</b>  | 51 | 10 | 0.10 | 1.7 | 4.1            |            |
|     | <b>MTR 4 R0.1 L15</b>  | 51 | 15 | 0.10 | 1.7 | 4.1            |            |
|     | <b>MTR 4 R0.1 L22</b>  | 51 | 22 | 0.10 | 1.7 | 4.1            |            |
|     | <b>MTR 4 R0.2 L10</b>  | 51 | 10 | 0.20 | 1.7 | 4.1            |            |
|     | <b>MTR 4 R0.2 L15</b>  | 51 | 15 | 0.20 | 1.7 | 4.1            |            |
|     | <b>MTR 4 R0.2 L22</b>  | 51 | 22 | 0.20 | 1.7 | 4.1            |            |
|     | <b>MTR 4 R0.2 L30</b>  | 59 | 30 | 0.20 | 1.7 | 4.1            |            |

\* For additional holders see page 100

## MTR Bars Boring



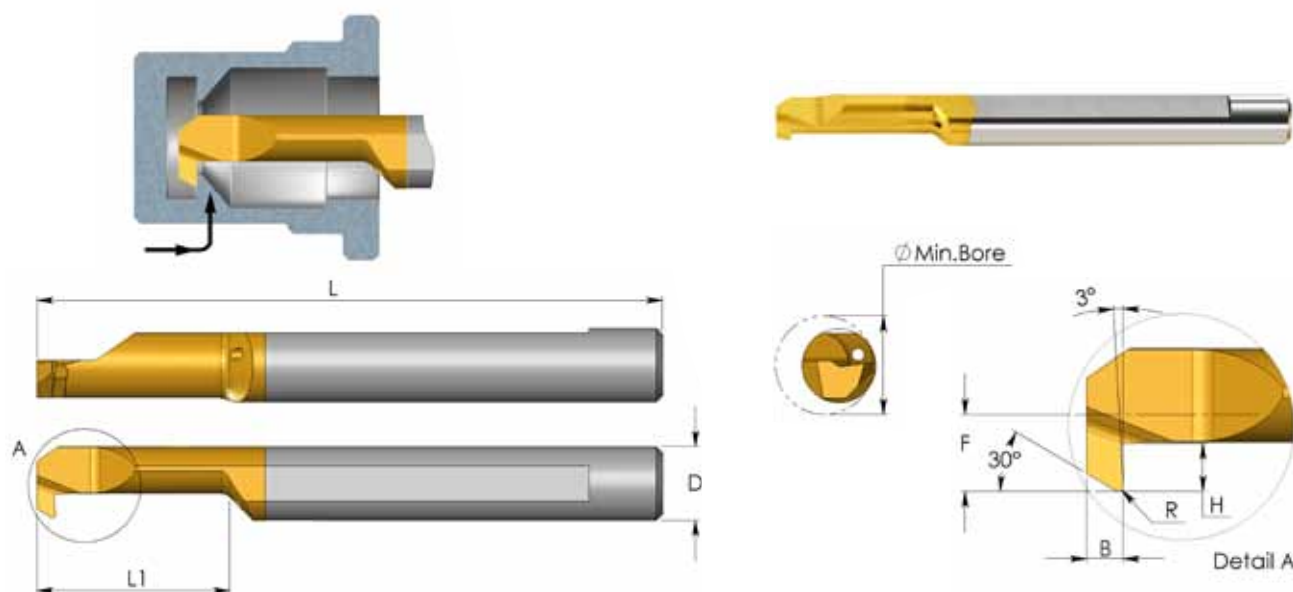
| D    | Ordering Code          | L  | L1 | R    | F   | Min. Bore Dia. | Holder*     |
|------|------------------------|----|----|------|-----|----------------|-------------|
| 5.0  | <b>MTR 5 R0.05 L15</b> | 51 | 15 | 0.05 | 2.1 | 5.1            | SIM ... H5  |
|      | <b>MTR 5 R0.1 L15</b>  | 51 | 15 | 0.10 | 2.1 | 5.1            |             |
|      | <b>MTR 5 R0.1 L22</b>  | 51 | 22 | 0.10 | 2.1 | 5.1            |             |
|      | <b>MTR 5 R0.1 L30</b>  | 76 | 30 | 0.10 | 2.1 | 5.1            |             |
|      | <b>MTR 5 R0.2 L15</b>  | 51 | 15 | 0.20 | 2.1 | 5.1            |             |
|      | <b>MTR 5 R0.2 L22</b>  | 51 | 22 | 0.20 | 2.1 | 5.1            |             |
|      | <b>MTR 5 R0.2 L30</b>  | 76 | 30 | 0.20 | 2.1 | 5.1            |             |
| 6.0  | <b>MTR 6 R0.05 L15</b> | 51 | 15 | 0.05 | 2.8 | 6.1            | SIM ... H6  |
|      | <b>MTR 6 R0.05 L22</b> | 51 | 22 | 0.05 | 2.8 | 6.1            |             |
|      | <b>MTR 6 R0.1 L15</b>  | 51 | 15 | 0.10 | 2.8 | 6.1            |             |
|      | <b>MTR 6 R0.1 L22</b>  | 51 | 22 | 0.10 | 2.8 | 6.1            |             |
|      | <b>MTR 6 R0.2 L15</b>  | 51 | 15 | 0.20 | 2.8 | 6.1            |             |
|      | <b>MTR 6 R0.2 L22</b>  | 51 | 22 | 0.20 | 2.8 | 6.1            |             |
|      | <b>MTR 6 R0.2 L30</b>  | 58 | 30 | 0.20 | 2.8 | 6.1            |             |
| 7.0  | <b>MTR 7 R0.2 L22</b>  | 62 | 22 | 0.20 | 3.3 | 7.1            | SIM ... H7  |
|      | <b>MTR 7 R0.2 L30</b>  | 62 | 30 | 0.20 | 3.3 | 7.1            |             |
| 8.0  | <b>MTR 8 R0.2 L15</b>  | 64 | 15 | 0.20 | 3.8 | 8.1            | SIM ... H8  |
|      | <b>MTR 8 R0.2 L22</b>  | 64 | 22 | 0.20 | 3.8 | 8.1            |             |
|      | <b>MTR 8 R0.2 L35</b>  | 76 | 35 | 0.20 | 3.8 | 8.1            |             |
| 10.0 | <b>MTR10R0.2 L35</b>   | 73 | 35 | 0.20 | 4.8 | 10.1           | SIM ... H10 |

Order example: MTR 4 R0.2 L15 BXC

For L.H. bars specify **MTL** instead of **MTR**

\* For additional holders see page 100

## MXR Bars Back Turning



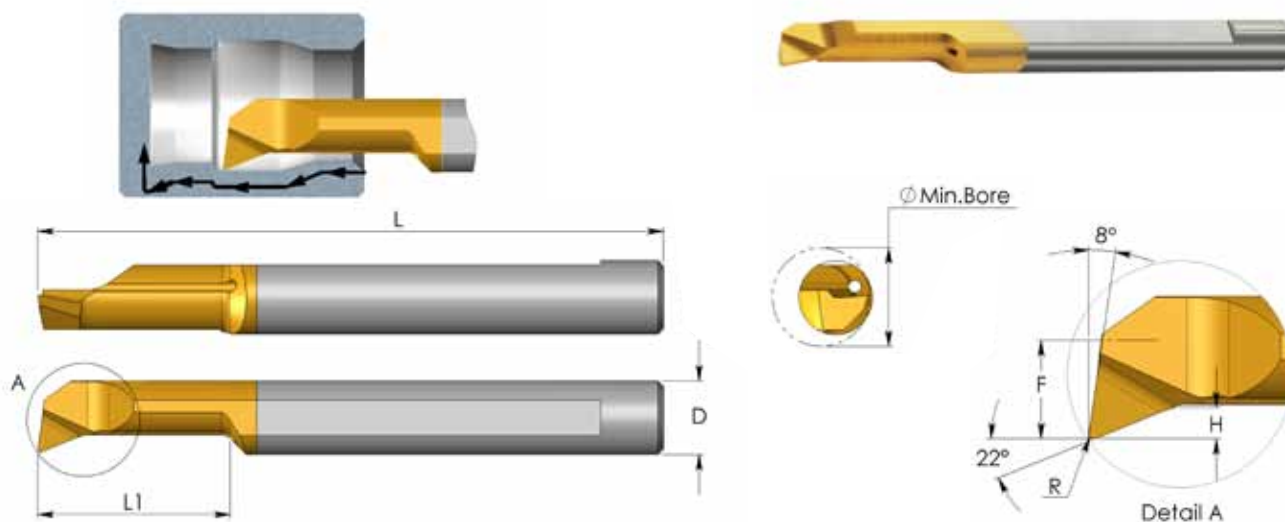
| D   | Ordering Code          | L  | L1 | B   | R    | H   | F   | Min. Bore Dia. | Holder*    |
|-----|------------------------|----|----|-----|------|-----|-----|----------------|------------|
| 4.0 | <b>MXR 4 R0.1 L10</b>  | 51 | 10 | 1.3 | 0.10 | 0.5 | 1.3 | 3.1            | SIM ... H4 |
| 4.0 | <b>MXR 4 R0.15 L10</b> | 51 | 10 | 1.3 | 0.15 | 0.8 | 1.7 | 4.1            | SIM ... H4 |
| 4.0 | <b>MXR 4 R0.15 L15</b> | 51 | 15 | 1.3 | 0.15 | 0.8 | 1.7 | 4.1            | SIM ... H4 |
| 5.0 | <b>MXR 5 R0.2 L15</b>  | 51 | 15 | 1.5 | 0.20 | 1.0 | 2.3 | 5.1            | SIM ... H5 |
| 5.0 | <b>MXR 5 R0.2 L22</b>  | 51 | 22 | 1.5 | 0.20 | 1.0 | 2.3 | 5.1            | SIM ... H5 |
| 6.0 | <b>MXR 6 R0.2 L15</b>  | 51 | 15 | 1.5 | 0.20 | 1.8 | 2.8 | 6.1            | SIM ... H6 |
| 6.0 | <b>MXR 6 R0.2 L22</b>  | 51 | 22 | 1.5 | 0.20 | 1.8 | 2.8 | 6.1            | SIM ... H6 |

Order example: MXR 4 R0.15 L15 BXC

For L.H. bars specify **MXL** instead of **MXR**

\* For additional holders see page 100

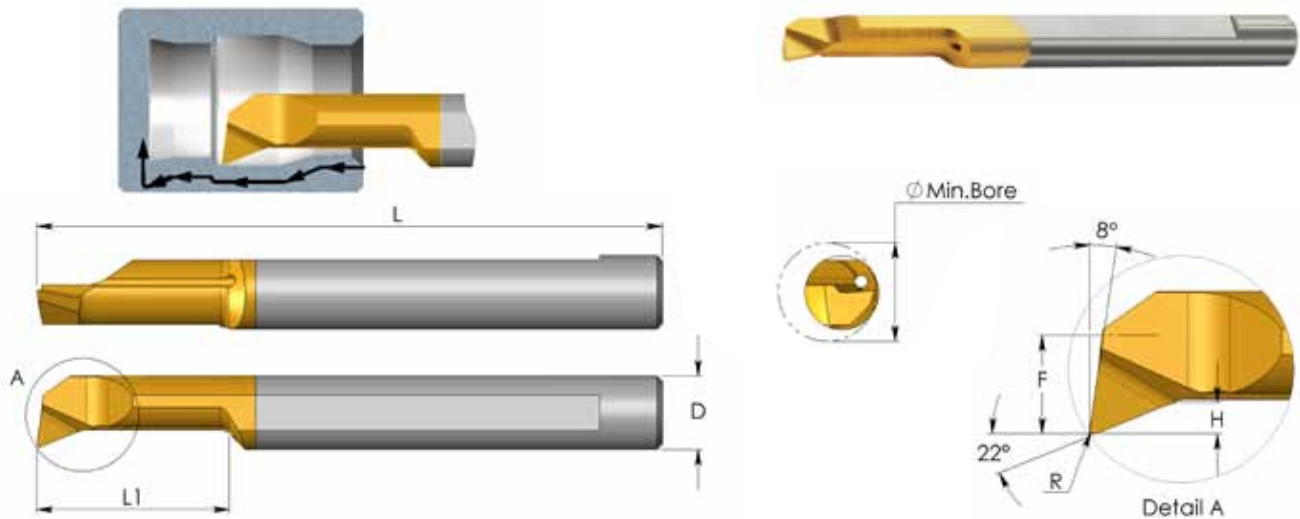
## MPR Bars Profiling and Boring



| D   | Ordering Code            | L  | L1 | R    | H   | F   | Min. Bore Dia. | Holder*    |
|-----|--------------------------|----|----|------|-----|-----|----------------|------------|
| 3.0 | <b>MPR 1 R0.05 L4</b>    | 39 | 4  | 0.05 | 0.2 | 0.5 | 1.0            | SIM ... H3 |
|     | <b>MPR 1 R0.05 L8</b>    | 39 | 8  | 0.05 | 0.2 | 0.5 | 1.0            |            |
| 3.0 | <b>MPR 1.5 R0.05 L10</b> | 39 | 10 | 0.05 | 0.3 | 0.7 | 1.5            | SIM ... H3 |
|     | <b>MPR 1.5 R0.1 L6</b>   | 39 | 6  | 0.10 | 0.3 | 0.7 | 1.5            |            |
|     | <b>MPR 1.5 R0.1 L10</b>  | 39 | 10 | 0.10 | 0.3 | 0.7 | 1.5            |            |
| 3.0 | <b>MPR 2 R0.05 L10</b>   | 39 | 10 | 0.05 | 0.5 | 0.8 | 2.1            | SIM ... H3 |
|     | <b>MPR 2 R0.1 L10</b>    | 39 | 10 | 0.10 | 0.5 | 0.8 | 2.1            |            |
|     | <b>MPR 2 R0.15 L5</b>    | 39 | 5  | 0.15 | 0.5 | 0.8 | 2.1            |            |
|     | <b>MPR 2 R0.15 L10</b>   | 39 | 10 | 0.15 | 0.5 | 0.8 | 2.1            |            |
|     | <b>MPR 2 R0.15 L15</b>   | 39 | 15 | 0.15 | 0.5 | 0.8 | 2.1            |            |
| 3.0 | <b>MPR 3 R0.05 L10</b>   | 39 | 10 | 0.05 | 0.7 | 1.3 | 3.1            | SIM ... H3 |
|     | <b>MPR 3 R0.05 L15</b>   | 39 | 15 | 0.05 | 0.7 | 1.3 | 3.1            |            |
|     | <b>MPR 3 R0.1 L15</b>    | 39 | 15 | 0.10 | 0.7 | 1.3 | 3.1            |            |
|     | <b>MPR 3 R0.1 L22</b>    | 47 | 22 | 0.10 | 0.7 | 1.3 | 3.1            |            |
|     | <b>MPR 3 R0.2 L10</b>    | 39 | 10 | 0.20 | 0.7 | 1.3 | 3.1            |            |
|     | <b>MPR 3 R0.2 L15</b>    | 39 | 15 | 0.20 | 0.7 | 1.3 | 3.1            |            |
|     | <b>MPR 3 R0.2 L22</b>    | 47 | 22 | 0.20 | 0.7 | 1.3 | 3.1            |            |
| 4.0 | <b>MPR 4 R0.1 L10</b>    | 51 | 10 | 0.10 | 0.8 | 1.7 | 4.1            | SIM ... H4 |
|     | <b>MPR 4 R0.1 L15</b>    | 51 | 15 | 0.10 | 0.8 | 1.7 | 4.1            |            |
|     | <b>MPR 4 R0.1 L22</b>    | 51 | 22 | 0.10 | 0.8 | 1.7 | 4.1            |            |
|     | <b>MPR 4 R0.2 L10</b>    | 51 | 10 | 0.20 | 0.8 | 1.7 | 4.1            |            |
|     | <b>MPR 4 R0.2 L15</b>    | 51 | 15 | 0.20 | 0.8 | 1.7 | 4.1            |            |
|     | <b>MPR 4 R0.2 L22</b>    | 51 | 22 | 0.20 | 0.8 | 1.7 | 4.1            |            |

\* For additional holders see page 100

## MPR Bars Profiling and Boring



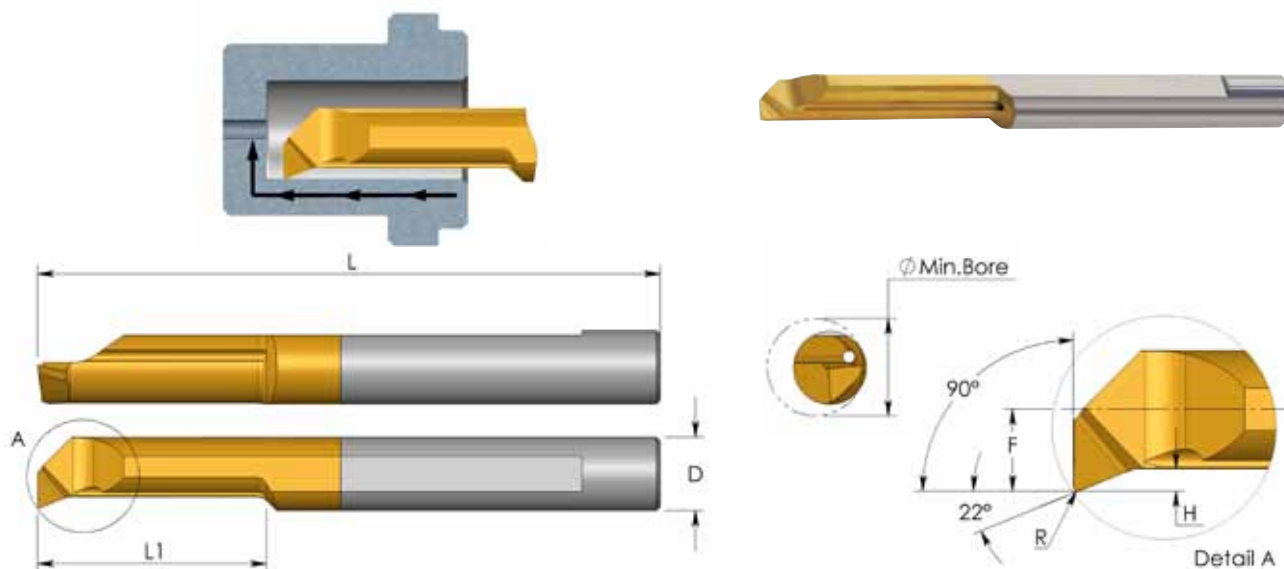
| D    | Ordering Code          | L  | L1 | R    | H   | F   | Min. Bore Dia. | Holder*     |
|------|------------------------|----|----|------|-----|-----|----------------|-------------|
| 5.0  | <b>MPR 5 R0.1 L22</b>  | 51 | 22 | 0.10 | 1.2 | 2.1 | 5.1            | SIM ... H5  |
|      | <b>MPR 5 R0.1 L30</b>  | 76 | 30 | 0.10 | 1.2 | 2.1 | 5.1            |             |
|      | <b>MPR 5 R0.2 L10</b>  | 51 | 10 | 0.20 | 1.2 | 2.1 | 5.1            |             |
|      | <b>MPR 5 R0.2 L15</b>  | 51 | 15 | 0.20 | 1.2 | 2.1 | 5.1            |             |
|      | <b>MPR 5 R0.2 L22</b>  | 51 | 22 | 0.20 | 1.2 | 2.1 | 5.1            |             |
|      | <b>MPR 5 R0.2 L30</b>  | 76 | 30 | 0.20 | 1.2 | 2.1 | 5.1            |             |
| 6.0  | <b>MPR 6 R0.2 L15</b>  | 51 | 15 | 0.20 | 1.4 | 2.8 | 6.1            | SIM ... H6  |
|      | <b>MPR 6 R0.2 L22</b>  | 51 | 22 | 0.20 | 1.4 | 2.8 | 6.1            |             |
|      | <b>MPR 6 R0.2 L30</b>  | 76 | 30 | 0.20 | 1.4 | 2.8 | 6.1            |             |
| 7.0  | <b>MPR 7 R0.2 L22</b>  | 62 | 22 | 0.20 | 1.5 | 3.3 | 7.1            | SIM ... H7  |
|      | <b>MPR 7 R0.2 L30</b>  | 62 | 30 | 0.20 | 1.5 | 3.3 | 7.1            |             |
|      | <b>MPR 7 R0.2 L35</b>  | 62 | 35 | 0.20 | 1.5 | 3.3 | 7.1            |             |
| 8.0  | <b>MPR 8 R0.2 L15</b>  | 64 | 15 | 0.20 | 1.6 | 3.8 | 8.1            | SIM ... H8  |
|      | <b>MPR 8 R0.2 L22</b>  | 64 | 22 | 0.20 | 1.6 | 3.8 | 8.1            |             |
|      | <b>MPR 8 R0.2 L35</b>  | 76 | 35 | 0.20 | 1.6 | 3.8 | 8.1            |             |
| 10.0 | <b>MPR 10 R0.2 L35</b> | 73 | 35 | 0.20 | 2.0 | 4.8 | 10.1           | SIM ... H10 |

Order example: MPR 4 R0.2 L15 BXC

For L.H. Bars specify MPL instead of MPR

\* For additional holders see page 100

## MUR Bars Profiling, 90° Face Cutting



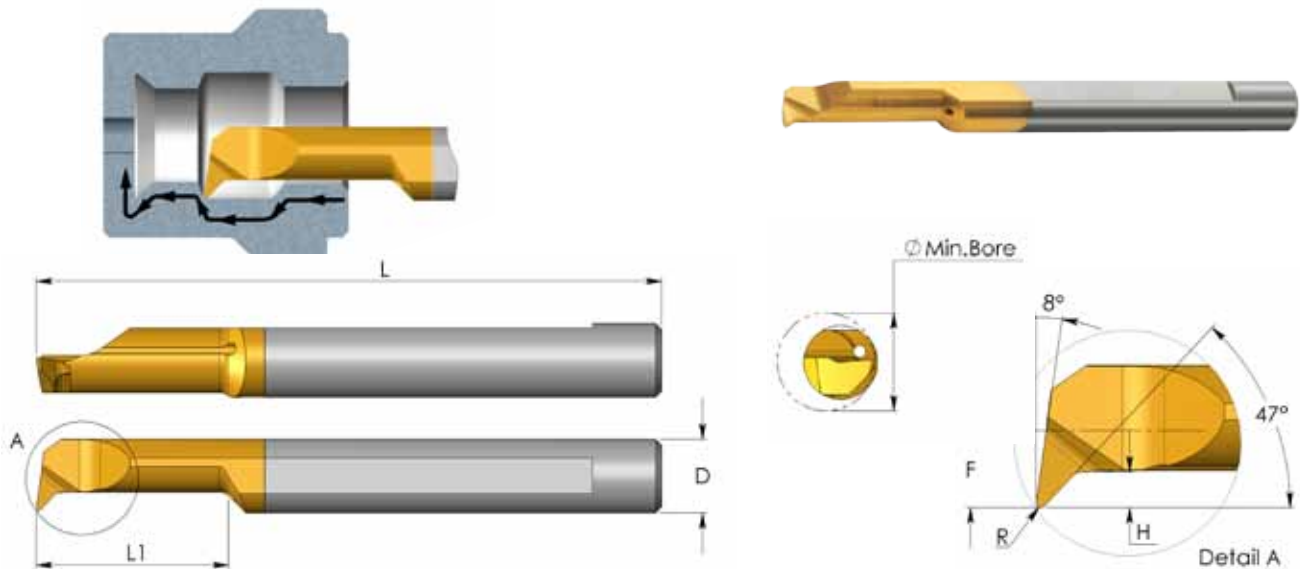
| D   | Ordering Code          | L  | L1 | R    | H   | F   | Min. Bore Dia. | Holder*    |
|-----|------------------------|----|----|------|-----|-----|----------------|------------|
| 3.0 | <b>MUR 3 R0.05 L10</b> | 39 | 10 | 0.05 | 0.4 | 1.3 | 3.1            | SIM ... H3 |
|     | <b>MUR 3 R0.05 L15</b> | 39 | 15 | 0.05 | 0.4 | 1.3 | 3.1            |            |
| 4.0 | <b>MUR 4 R0.1 L10</b>  | 51 | 10 | 0.10 | 0.5 | 1.7 | 4.1            | SIM ... H4 |
|     | <b>MUR 4 R0.1 L15</b>  | 51 | 15 | 0.10 | 0.5 | 1.7 | 4.1            |            |
| 5.0 | <b>MUR 5 R0.15 L15</b> | 51 | 15 | 0.15 | 0.7 | 2.1 | 5.1            | SIM ... H5 |
|     | <b>MUR 5 R0.15 L22</b> | 51 | 22 | 0.15 | 0.7 | 2.1 | 5.1            |            |
| 6.0 | <b>MUR 6 R0.15 L15</b> | 51 | 15 | 0.15 | 0.9 | 2.8 | 6.1            | SIM ... H6 |
|     | <b>MUR 6 R0.15 L22</b> | 51 | 22 | 0.15 | 0.9 | 2.8 | 6.1            |            |
| 8.0 | <b>MUR 8 R0.2 L22</b>  | 64 | 22 | 0.20 | 1.1 | 3.8 | 8.1            | SIM ... H8 |

Order example: MUR 5 R0.15 L15 BXC

For L.H. bars specify MUL instead of MUR

\* For additional holders see page 100

## MQR Bars Profiling and Boring



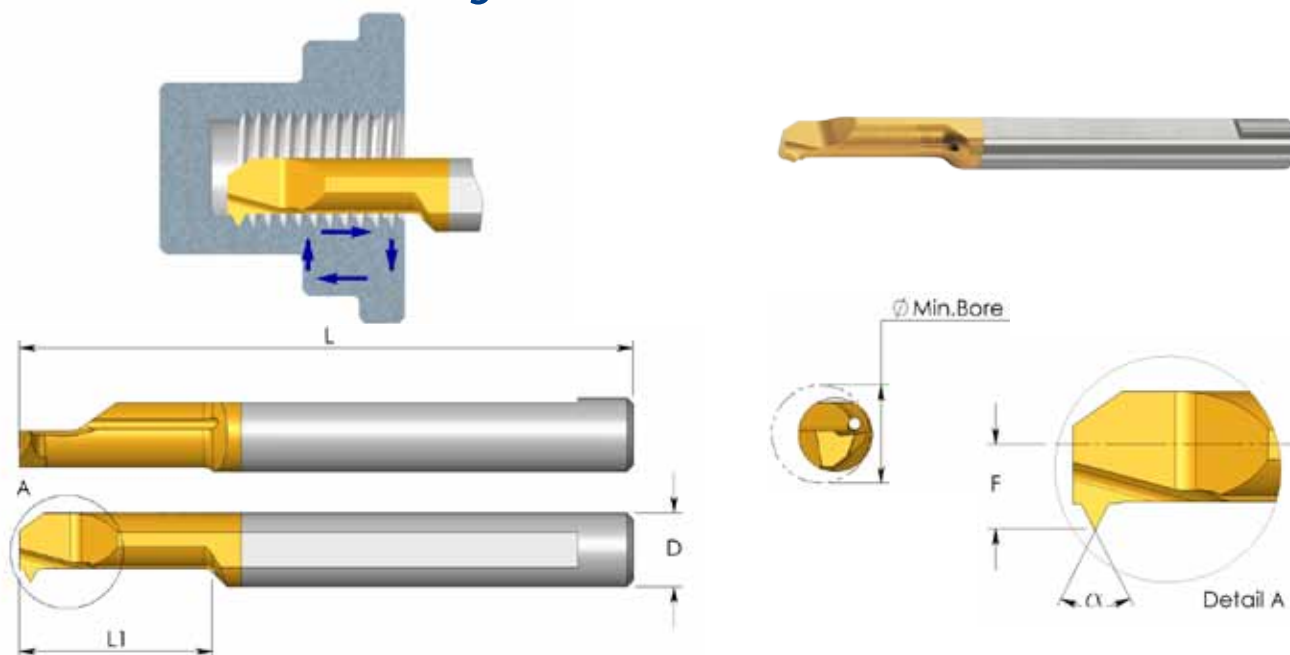
| D   | Ordering Code         | L  | L1 | R    | H   | F   | Min. Bore Dia. | Holder*    |
|-----|-----------------------|----|----|------|-----|-----|----------------|------------|
| 4.0 | <b>MQR 4 R0.1 L22</b> | 51 | 22 | 0.10 | 0.8 | 1.8 | 4.1            | SIM ... H4 |
|     | <b>MQR 4 R0.2 L10</b> | 51 | 10 | 0.20 | 0.8 | 1.8 | 4.1            |            |
|     | <b>MQR 4 R0.2 L15</b> | 51 | 15 | 0.20 | 0.8 | 1.8 | 4.1            |            |
|     | <b>MQR 4 R0.2 L22</b> | 51 | 22 | 0.20 | 0.8 | 1.8 | 4.1            |            |
| 5.0 | <b>MQR 5 R0.2 L15</b> | 51 | 15 | 0.20 | 1.0 | 2.3 | 5.1            | SIM ... H5 |
|     | <b>MQR 5 R0.2 L22</b> | 51 | 22 | 0.20 | 1.0 | 2.3 | 5.1            |            |
| 6.0 | <b>MQR 6 R0.2 L15</b> | 51 | 15 | 0.20 | 1.4 | 2.8 | 6.1            | SIM ... H6 |
|     | <b>MQR 6 R0.2 L22</b> | 51 | 22 | 0.20 | 1.4 | 2.8 | 6.1            |            |
|     | <b>MQR 6 R0.2 L30</b> | 58 | 30 | 0.20 | 1.4 | 2.8 | 6.1            |            |
| 8.0 | <b>MQR 8 R0.2 L22</b> | 64 | 22 | 0.20 | 1.6 | 3.8 | 8.1            | SIM ... H8 |
|     | <b>MQR 8 R0.2 L27</b> | 64 | 27 | 0.20 | 2.0 | 3.8 | 8.1            |            |

Order example: MQR 5 R0.2 L15 BXC

For L.H. bars specify MQR instead of MQL

\* For additional holders see page 100

## MIR Bars Threading



### Partial Profile 55°

| D   | Ordering Code        | L  | L1 | α  | Pitch Range |         | F   | Min. Bore Dia. | Holder*    |
|-----|----------------------|----|----|----|-------------|---------|-----|----------------|------------|
|     |                      |    |    |    | mm          | TPI     |     |                |            |
| 3.0 | <b>MIR 3 L15 A55</b> | 39 | 15 | 55 | 0.5 - 1.0   | 48 - 24 | 1.4 | 3.2            | SIM ... H3 |
| 4.0 | <b>MIR 4 L15 A55</b> | 51 | 15 | 55 | 0.5 - 1.0   | 48 - 24 | 1.8 | 4.1            | SIM ... H4 |
| 5.0 | <b>MIR 5 L15 A55</b> | 51 | 15 | 55 | 0.5 - 1.25  | 48 - 20 | 2.3 | 5.1            | SIM ... H5 |
|     | <b>MIR 5 L22 A55</b> | 51 | 22 | 55 | 0.5 - 1.25  | 48 - 20 | 2.3 | 5.1            |            |
| 6.0 | <b>MIR 6 L15 A55</b> | 51 | 15 | 55 | 0.5 - 1.5   | 48 - 16 | 2.6 | 6.0            | SIM ... H6 |
|     | <b>MIR 6 L22 A55</b> | 51 | 22 | 55 | 0.5 - 1.5   | 48 - 16 | 2.6 | 6.0            |            |

Order example: MIR 5 L15 A55 BXC

### Partial Profile 60°

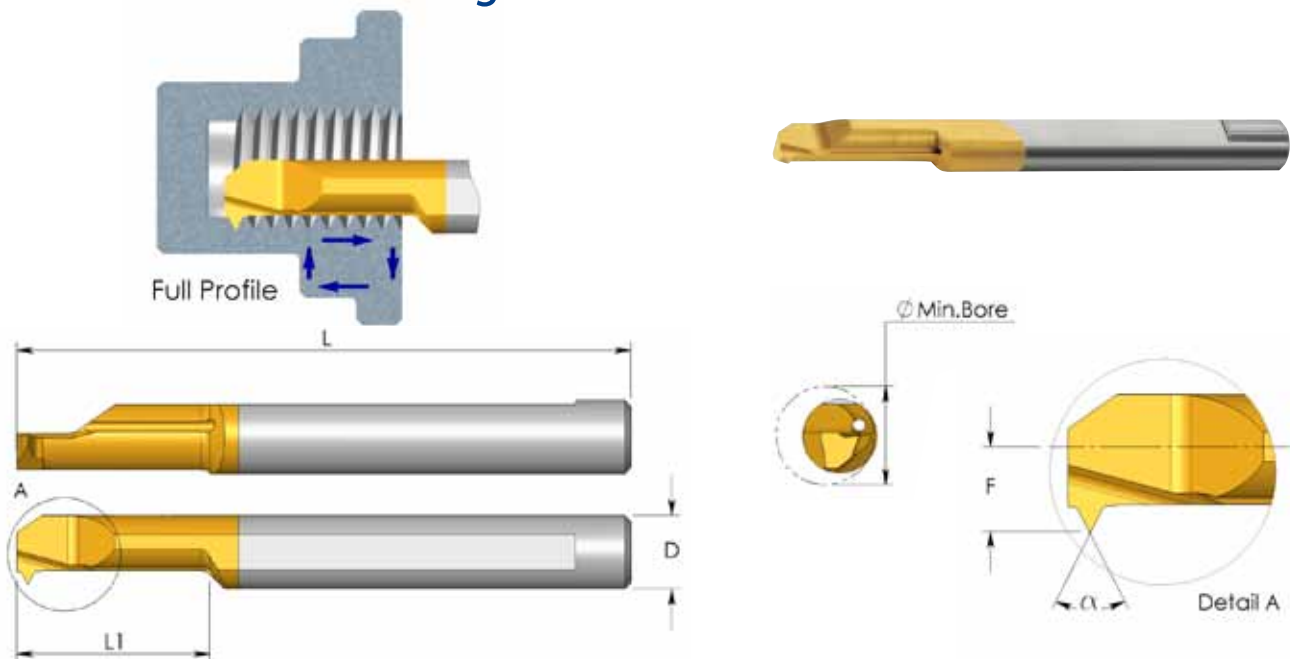
| D   | Ordering Code         | L  | L1  | α  | Pitch Range |          | F    | Min. Bore Dia. | Holder*    |
|-----|-----------------------|----|-----|----|-------------|----------|------|----------------|------------|
|     |                       |    |     |    | mm          | TPI      |      |                |            |
| 3.0 | <b>MIR 1 L5 A60</b>   | 39 | 4.8 | 60 | 0.25 - 0.35 | 100 - 72 | 0.55 | 1.2            | SIM ... H3 |
|     | <b>MIR 1.5 L6 A60</b> | 39 | 6.3 | 60 | 0.35 - 0.45 | 72 - 56  | 0.65 | 1.4            |            |
| 3.0 | <b>MIR 2 L8 A60</b>   | 39 | 8   | 60 | 0.45 - 0.7  | 56 - 32  | 1.0  | 2.1            | SIM ... H3 |
| 3.0 | <b>MIR 3 L15 A60</b>  | 39 | 15  | 60 | 0.7 - 1.0   | 32 - 24  | 1.4  | 3.2            | SIM ... H3 |
| 4.0 | <b>MIR 4 L15 A60</b>  | 51 | 15  | 60 | 0.8 - 1.0   | 32 - 24  | 1.8  | 4.1            | SIM ... H4 |
| 5.0 | <b>MIR 5 L15 A60</b>  | 51 | 15  | 60 | 1.0 - 1.25  | 24 - 20  | 2.3  | 5.1            | SIM ... H5 |
|     | <b>MIR 5 L22 A60</b>  | 51 | 22  | 60 | 1.0 - 1.25  | 24 - 20  | 2.3  | 5.1            |            |
| 6.0 | <b>MIR 6 L15 A60</b>  | 51 | 15  | 60 | 1.0 - 1.5   | 24 - 16  | 2.6  | 6.0            | SIM ... H6 |
|     | <b>MIR 6 L22 A60</b>  | 51 | 22  | 60 | 1.0 - 1.5   | 24 - 16  | 2.6  | 6.0            |            |
| 8.0 | <b>MIR 8 L22 A60</b>  | 64 | 22  | 60 | 1.0 - 2.0   | 24 - 13  | 3.6  | 8.0            | SIM ... H8 |

Order example: MIR 5 L15 A60 BXC

For L.H. bars specify MIL instead of MIR

\* For additional holders see page 100

## MIR Bars Threading



### Full Profile - ISO 60°

| D   | Ordering Code                      | Thread      | L  | L1 | F   | Min. Bore Dia. | Holder*    |
|-----|------------------------------------|-------------|----|----|-----|----------------|------------|
| 3.0 | <a href="#">MIR 3 L10 0.5ISO</a>   | M3x0.5      | 39 | 10 | 1.0 | 2.4            | SIM ... H3 |
| 3.0 | <a href="#">MIR 3 L15 0.5 ISO</a>  | M4 x 0.5    | 39 | 15 | 1.4 | 3.2            |            |
|     | <a href="#">MIR 3 L15 0.7 ISO</a>  | M4 x 0.7    | 39 | 15 | 1.4 | 3.2            |            |
|     | <a href="#">MIR 3 L15 0.75 ISO</a> | M4.5 x 0.75 | 39 | 15 | 1.4 | 3.2            |            |
| 4.0 | <a href="#">MIR 4 L15 0.5 ISO</a>  | M5 x 0.5    | 51 | 15 | 1.8 | 4.1            | SIM ... H4 |
|     | <a href="#">MIR 4 L15 0.75 ISO</a> | M5 x 0.75   | 51 | 15 | 1.8 | 4.1            |            |
|     | <a href="#">MIR 4 L15 0.8 ISO</a>  | M5 x 0.8    | 51 | 15 | 1.8 | 4.1            |            |
| 5.0 | <a href="#">MIR 5 L15 1.0 ISO</a>  | M6 x 1.0    | 51 | 15 | 2.2 | 4.9            | SIM ... H5 |
| 6.0 | <a href="#">MIR 6 L22 1.25 ISO</a> | M8 x 1.25   | 51 | 22 | 2.8 | 6.1            | SIM ... H6 |

Order example: MIR 5 L15 1.0 ISO BXC

### Full Profile - UN 60°

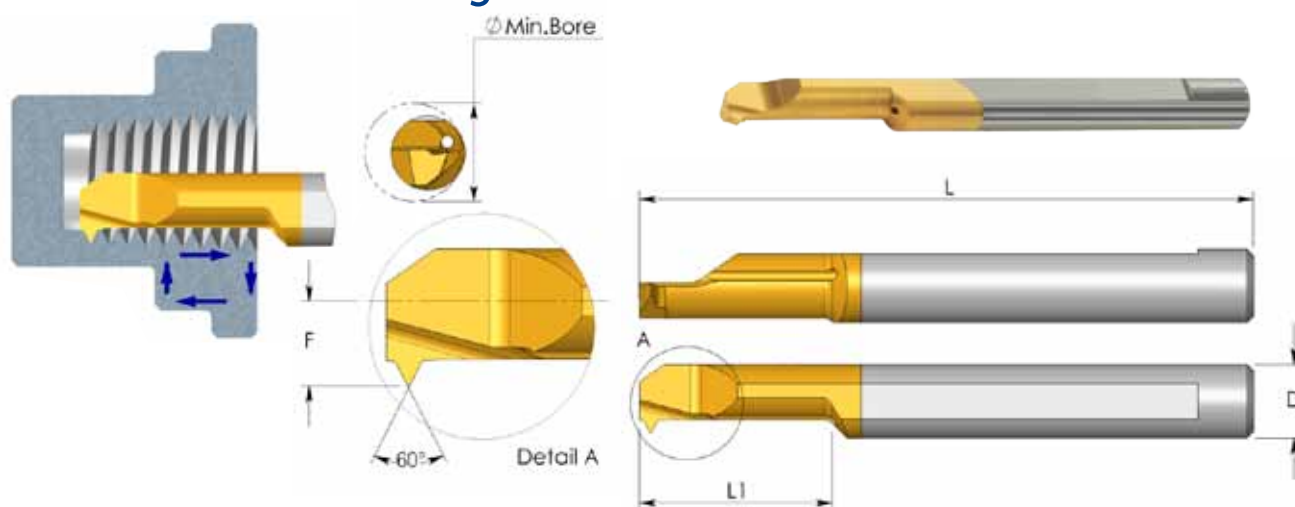
| D   | Ordering Code                   | Thread     | L  | L1 | F   | Min. Bore Dia. | Holder*    |
|-----|---------------------------------|------------|----|----|-----|----------------|------------|
| 3.0 | <a href="#">MIR 3 L10 32 UN</a> | 6-32 UNC   | 39 | 10 | 1.0 | 2.7            | SIM ... H3 |
| 3.0 | <a href="#">MIR 3 L15 36 UN</a> | 8-36 UNF   | 39 | 15 | 1.4 | 3.2            |            |
|     | <a href="#">MIR 3 L15 32 UN</a> | 8-32 UNC   | 39 | 15 | 1.4 | 3.2            |            |
| 4.0 | <a href="#">MIR 4 L15 36 UN</a> | 12-36 UNS  | 51 | 15 | 1.8 | 4.1            | SIM ... H4 |
|     | <a href="#">MIR 4 L15 32 UN</a> | 12-32 UNEF | 51 | 15 | 1.8 | 4.1            |            |
| 5.0 | <a href="#">MIR 5 L15 28 UN</a> | 1/4-28 UNF | 51 | 15 | 2.2 | 4.9            | SIM ... H5 |
|     | <a href="#">MIR 5 L18 20 UN</a> | 1/4-20 UNC | 51 | 18 | 2.3 | 5.0            |            |
| 6.0 | <a href="#">MIR 6 L18 24 UN</a> | 5/16-24UNF | 51 | 18 | 2.8 | 6.5            | SIM ... H6 |
|     | <a href="#">MIR 6 L18 18 UN</a> | 5/16-18UNC | 51 | 18 | 2.8 | 6.2            |            |

Order example: MIR 4 L15 36 UN BXC

For L.H. bars specify MIL instead of MIR

\* For additional holders see page 100

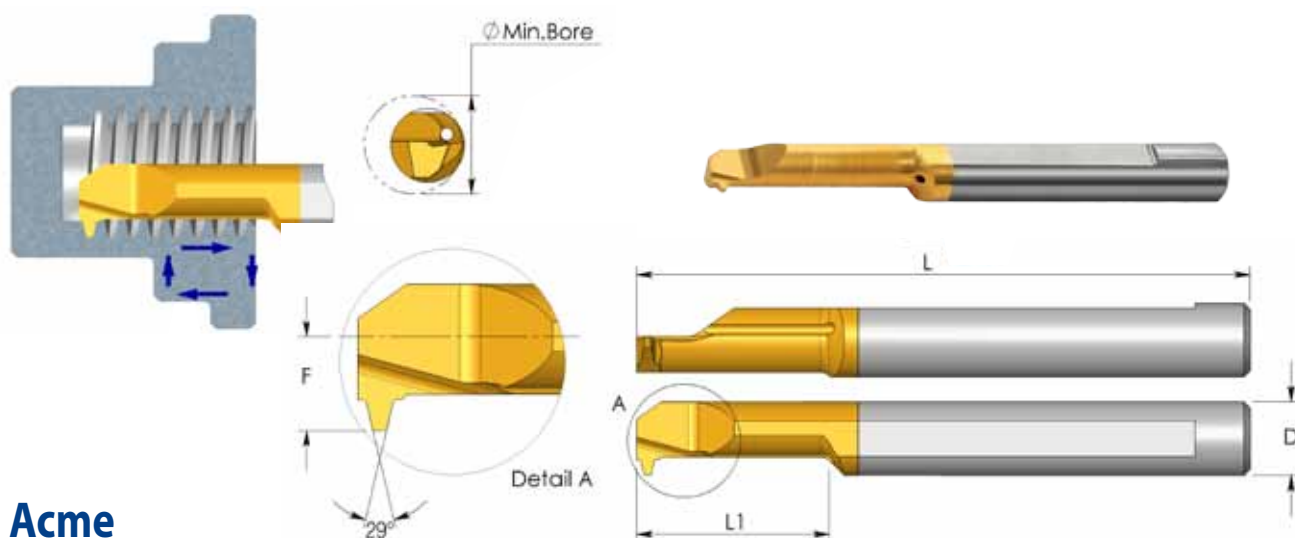
## MIR Bars Threading



### Full Profile - NPT 60°

| D   | Ordering Code           | Pitch TPI | Thread Size                   | L  | L1 | F   | Min. Bore Dia. | Holder*    |
|-----|-------------------------|-----------|-------------------------------|----|----|-----|----------------|------------|
| 6.0 | <b>MIR 6 L15 27 NPT</b> | 27        | 1/16 x 27 NPT<br>1/8 x 27 NPT | 51 | 15 | 2.8 | 5.9            | SIM ... H6 |

Order example: MIR 6 L15 27 NPT BXC



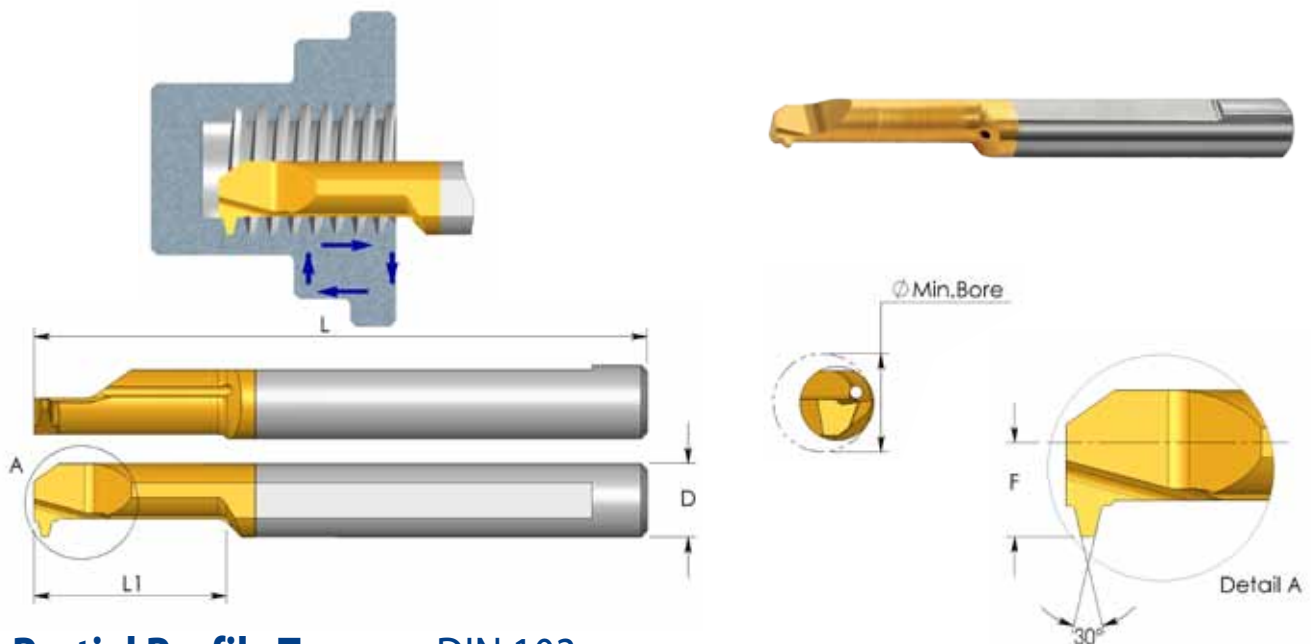
### Acme

| D    | Ordering Code            | Pitch TPI | Thread Size           | L   | L1 | F   | Min. Bore Dia. | Holder*     |
|------|--------------------------|-----------|-----------------------|-----|----|-----|----------------|-------------|
| 4.0  | <b>MIR 4 L15 16 ACME</b> | 16        | 1/4 x 16              | 51  | 15 | 1.8 | 4.6            | SIM ... H4  |
| 6.0  | <b>MIR 6 L20 14 ACME</b> | 14        | 5/16 x 14             | 51  | 20 | 2.8 | 6.0            | SIM ... H6  |
| 7.0  | <b>MIR 7 L22 12 ACME</b> | 12        | 3/8 x 12<br>7/16 x 12 | 62  | 22 | 3.3 | 7.2            | SIM ... H7  |
| 8.0  | <b>MIR 8 L30 10 ACME</b> | 10        | 1/2 x 10              | 76  | 30 | 3.8 | 10.0           | SIM ... H8  |
| 10.0 | <b>MIR 10 L35 8 ACME</b> | 8         | 5/8 x 8               | 73  | 35 | 4.8 | 12.5           | SIM ... H10 |
| 10.0 | <b>MIR 10 L45 6 ACME</b> | 6         | 3/4 x 6<br>7/8 x 6    | 105 | 45 | 4.8 | 14.6           | SIM ... H10 |
| 10.0 | <b>MIR 10 L52 5 ACME</b> | 5         | 1x5                   | 105 | 52 | 4.8 | 20.0           | SIM ... H10 |

Order example: MIR 6 L 20 14 ACME BXC

\* For additional holders see page 100

## MIR Bars Threading



### Partial Profile Trapez - DIN 103

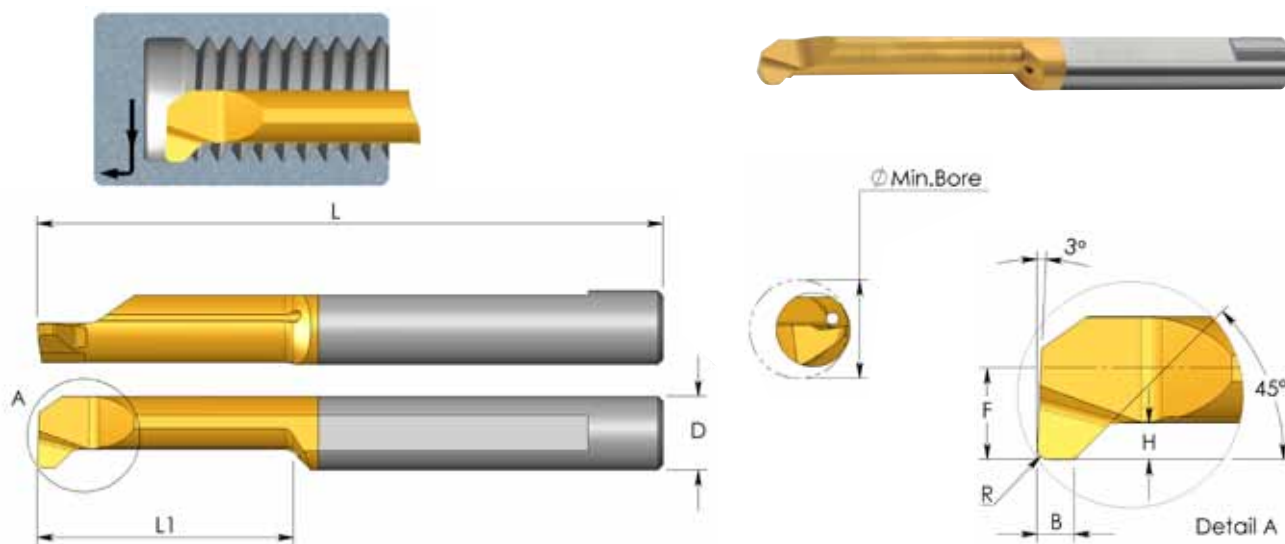
| D    | Ordering Code           | Pitch mm | Thread Size                                              | L   | L1 | F   | Min. Bore Dia. | Holder*     |
|------|-------------------------|----------|----------------------------------------------------------|-----|----|-----|----------------|-------------|
| 6.0  | <b>MIR 6 L22 1.5 TR</b> | 1.5      | Tr8x1.5<br>Tr9x1.5<br>Tr10x1.5                           | 51  | 22 | 2.8 | 6.4            | SIM ... H6  |
| 7.0  | <b>MIR 7 L25 2 TR</b>   | 2        | Tr 9 x 2<br>Tr10 x 2<br>Tr11 x 2<br>Tr12 x 2             | 62  | 25 | 3.2 | 6.9            | SIM ... H7  |
| 10.0 | <b>MIR 10 L35 2 TR</b>  | 2        | Tr14 x 2<br>Tr16 x 2<br>Tr18 x 2<br>Tr20 x 2             | 73  | 35 | 4.8 | 11.0           | SIM ... H10 |
| 7.0  | <b>MIR 7 L35 3 TR</b>   | 3        | Tr11 x 3<br>Tr12 x 3                                     | 62  | 35 | 3.3 | 7.5            | SIM ... H7  |
| 10.0 | <b>MIR 10 L35 3 TR</b>  | 3        | Tr14 x 3<br>Tr22 x 3<br>Tr24 x 3<br>Tr26 x 3<br>Tr28 x 3 | 73  | 35 | 4.8 | 10.5           | SIM ... H10 |
| 10.0 | <b>MIR 10 L45 4 TR</b>  | 4        | Tr16 x 4<br>Tr18 x 4<br>Tr20 x 4                         | 105 | 45 | 4.8 | 11.5           | SIM ... H10 |
| 10.0 | <b>MIR 10 L55 5 TR</b>  | 5        | Tr22 x 5<br>Tr24 x 5<br>Tr28 x 5                         | 105 | 55 | 4.8 | 11.0           | SIM ... H10 |

Order example: MIR 10 L35 3 TR BXC

For L.H. bars specify MIL instead of MIR

\* For additional holders see page 100

## MDR Bars Thread Relief, Chamfering and Grooving



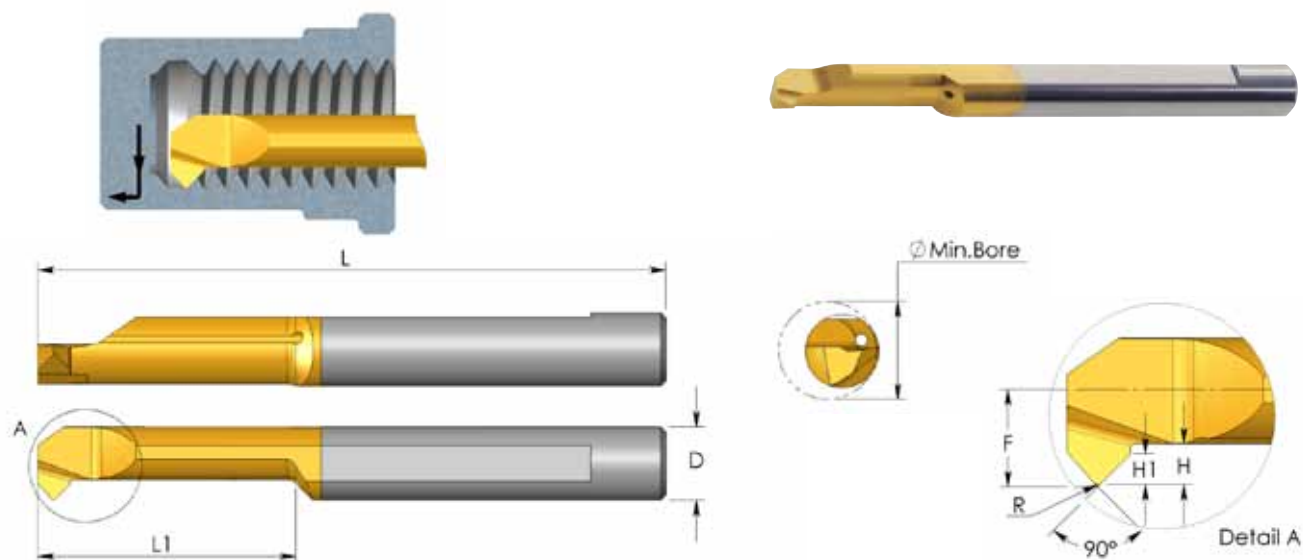
| D   | Ordering Code         | L  | L1 | B   | R   | H   | F   | Min. Bore Dia. | Holder*    |
|-----|-----------------------|----|----|-----|-----|-----|-----|----------------|------------|
| 4.0 | <b>MDR 4 R0.5 L18</b> | 51 | 18 | 1.5 | 0.5 | 0.8 | 1.8 | 4.1            | SIM ... H4 |
| 5.0 | <b>MDR 5 R0.5 L24</b> | 51 | 24 | 1.5 | 0.5 | 1.2 | 2.3 | 5.1            | SIM ... H5 |
| 6.0 | <b>MDR 6 R0.5 L27</b> | 58 | 27 | 1.5 | 0.5 | 1.4 | 2.8 | 6.1            | SIM ... H6 |

Order example: MDR 5 R0.5 L24 BXC

For L.H. bars specify MDL instead of MDR

\* For additional holders see page 100

## MCR Bars Chamfering and Boring

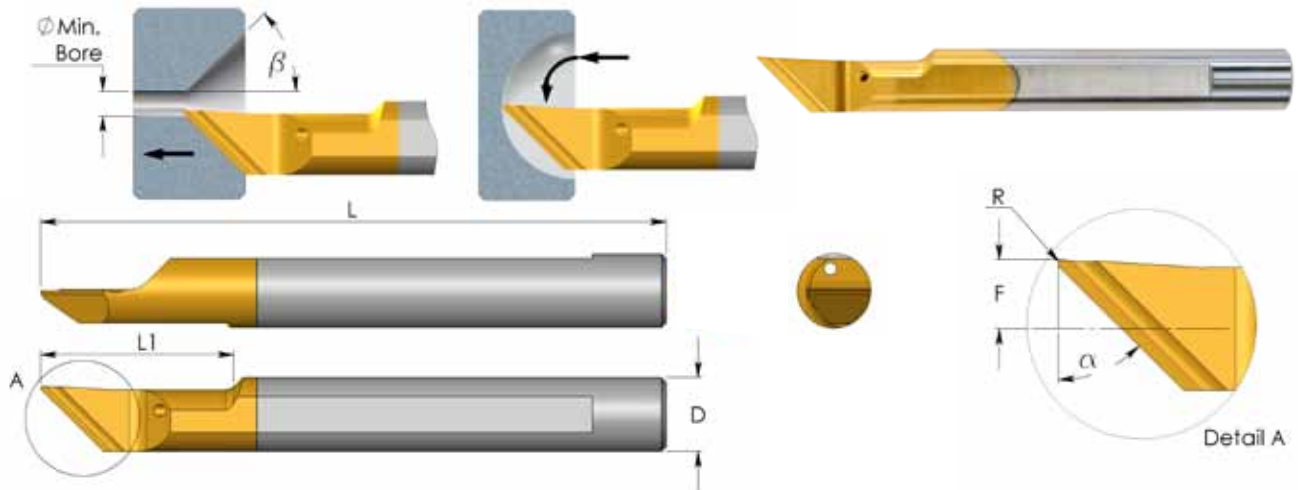


| D   | Ordering Code         | L  | L1 | R   | H   | H1  | F   | Min. Bore Dia. | Holder*    |
|-----|-----------------------|----|----|-----|-----|-----|-----|----------------|------------|
| 3.0 | <b>MCR 3 R0.2 L10</b> | 39 | 10 | 0.2 | 0.7 | 0.3 | 1.3 | 3.1            | SIM ... H3 |
| 4.0 | <b>MCR 4 R0.2 L15</b> | 51 | 15 | 0.2 | 0.8 | 0.4 | 1.7 | 4.1            | SIM ... H4 |
| 5.0 | <b>MCR 5 R0.2 L15</b> | 51 | 15 | 0.2 | 1.2 | 0.7 | 2.1 | 5.1            | SIM ... H5 |
| 6.0 | <b>MCR 6 R0.2 L15</b> | 51 | 15 | 0.2 | 1.4 | 0.7 | 2.8 | 6.1            | SIM ... H6 |
| 7.0 | <b>MCR 7 R0.2 L20</b> | 62 | 20 | 0.2 | 1.5 | 0.8 | 3.3 | 7.1            | SIM ... H7 |

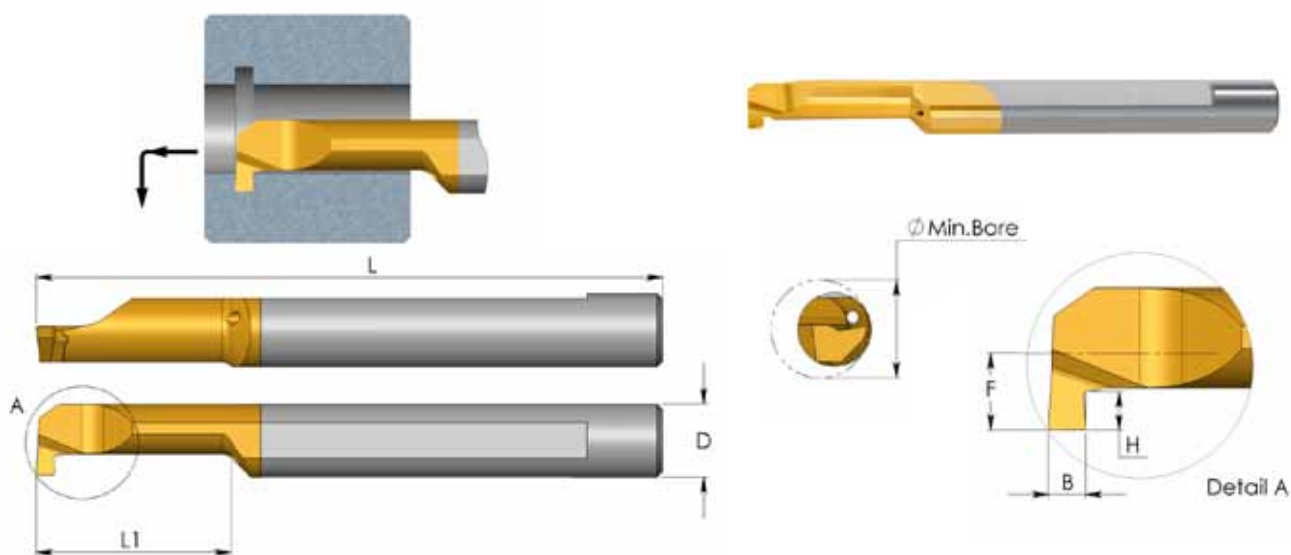
Order example: MCR 4 R0.2 L15 BXC

For L.H. bars specify MCL instead of MCR

\* For additional holders see page 100



## MGR Bars Grooving

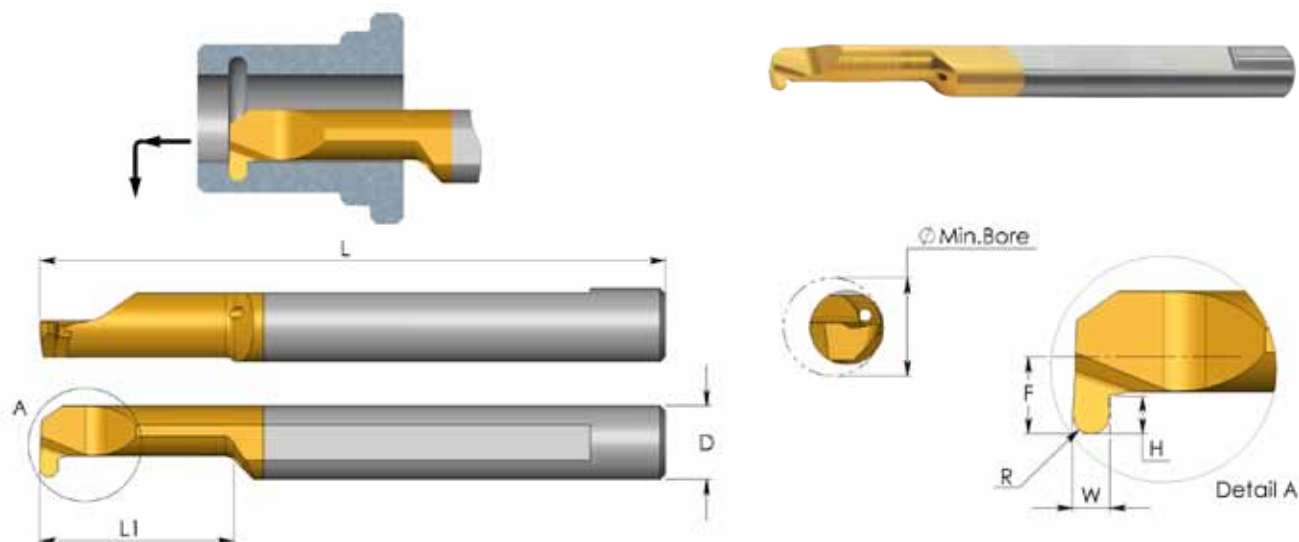


| D   | Ordering Code         | L  | L1 | B   | H   | F   | Min. Bore Dia. | Holder*    |
|-----|-----------------------|----|----|-----|-----|-----|----------------|------------|
| 3.0 | <b>MGR 3 B0.7 L10</b> | 39 | 10 | 0.7 | 0.6 | 1.3 | 3.1            | SIM ... H3 |
| 4.0 | <b>MGR 4 B0.5 L10</b> | 51 | 10 | 0.5 | 0.5 | 1.7 | 4.1            | SIM ... H4 |
|     | <b>MGR 4 B0.7 L10</b> | 51 | 10 | 0.7 | 0.6 | 1.7 | 4.1            |            |
|     | <b>MGR 4 B1.0 L10</b> | 51 | 10 | 1.0 | 1.0 | 1.7 | 4.1            |            |
|     | <b>MGR 4 B1.0 L15</b> | 51 | 15 | 1.0 | 1.0 | 1.7 | 4.1            |            |
|     | <b>MGR 4 B1.5 L10</b> | 51 | 10 | 1.5 | 1.0 | 1.7 | 4.1            |            |
| 5.0 | <b>MGR 5 B1.0 L15</b> | 51 | 15 | 1.0 | 1.2 | 2.3 | 5.1            | SIM ... H5 |
|     | <b>MGR 5 B1.0 L22</b> | 51 | 22 | 1.0 | 1.2 | 2.3 | 5.1            |            |
|     | <b>MGR 5 B1.5 L15</b> | 51 | 15 | 1.5 | 1.2 | 2.3 | 5.1            |            |
|     | <b>MGR 5 B1.5 L22</b> | 51 | 22 | 1.5 | 1.2 | 2.3 | 5.1            |            |
|     | <b>MGR 5 B2.0 L15</b> | 51 | 15 | 2.0 | 1.2 | 2.3 | 5.1            |            |
|     | <b>MGR 5 B2.0 L22</b> | 51 | 22 | 2.0 | 1.2 | 2.3 | 5.1            |            |
| 6.0 | <b>MGR 6 B1.0 L15</b> | 51 | 15 | 1.0 | 1.4 | 2.8 | 6.1            | SIM ... H6 |
|     | <b>MGR 6 B1.0 L22</b> | 51 | 22 | 1.0 | 1.4 | 2.8 | 6.1            |            |
|     | <b>MGR 6 B1.5 L15</b> | 51 | 15 | 1.5 | 1.4 | 2.8 | 6.1            |            |
|     | <b>MGR 6 B1.5 L22</b> | 51 | 22 | 1.5 | 1.4 | 2.8 | 6.1            |            |
|     | <b>MGR 6 B2.0 L15</b> | 51 | 15 | 2.0 | 1.4 | 2.8 | 6.1            |            |
|     | <b>MGR 6 B2.0 L22</b> | 51 | 22 | 2.0 | 1.4 | 2.8 | 6.1            |            |
| 6.0 | <b>MGR 6 B1.0 L17</b> | 51 | 17 | 1.0 | 1.8 | 2.8 | 6.1            | SIM ... H6 |
|     | <b>MGR 6 B1.5 L17</b> | 51 | 17 | 1.5 | 1.8 | 2.8 | 6.1            |            |
|     | <b>MGR 6 B2.0 L17</b> | 51 | 17 | 2.0 | 1.8 | 2.8 | 6.1            |            |
| 7.0 | <b>MGR 7 B1.0 L15</b> | 62 | 15 | 1.0 | 2.5 | 3.3 | 7.1            | SIM ... H7 |
|     | <b>MGR 7 B1.0 L22</b> | 62 | 22 | 1.0 | 2.5 | 3.3 | 7.1            |            |
|     | <b>MGR 7 B1.0 L30</b> | 62 | 30 | 1.0 | 2.5 | 3.3 | 7.1            |            |
|     | <b>MGR 7 B1.5 L15</b> | 62 | 15 | 1.5 | 2.5 | 3.3 | 7.1            |            |
|     | <b>MGR 7 B1.5 L22</b> | 62 | 22 | 1.5 | 2.5 | 3.3 | 7.1            |            |
|     | <b>MGR 7 B1.5 L30</b> | 62 | 30 | 1.5 | 2.5 | 3.3 | 7.1            |            |
|     | <b>MGR 7 B2.0 L15</b> | 62 | 15 | 2.0 | 2.5 | 3.3 | 7.1            |            |
|     | <b>MGR 7 B2.0 L22</b> | 62 | 22 | 2.0 | 2.5 | 3.3 | 7.1            |            |
| 8.0 | <b>MGR 8 B1.0 L22</b> | 64 | 22 | 1.0 | 1.7 | 3.8 | 8.1            | SIM ... H8 |
|     | <b>MGR 8 B1.5 L22</b> | 64 | 22 | 1.5 | 1.7 | 3.8 | 8.1            |            |
|     | <b>MGR 8 B2.0 L22</b> | 64 | 22 | 2.0 | 2.6 | 3.8 | 8.1            |            |

Order example: MGR 5 B1.5 L15 BXC  
 \* For additional holders see page 100

For L.H. bars specify MGL instead of MGR

## MKR Bars Full Radius Grooving



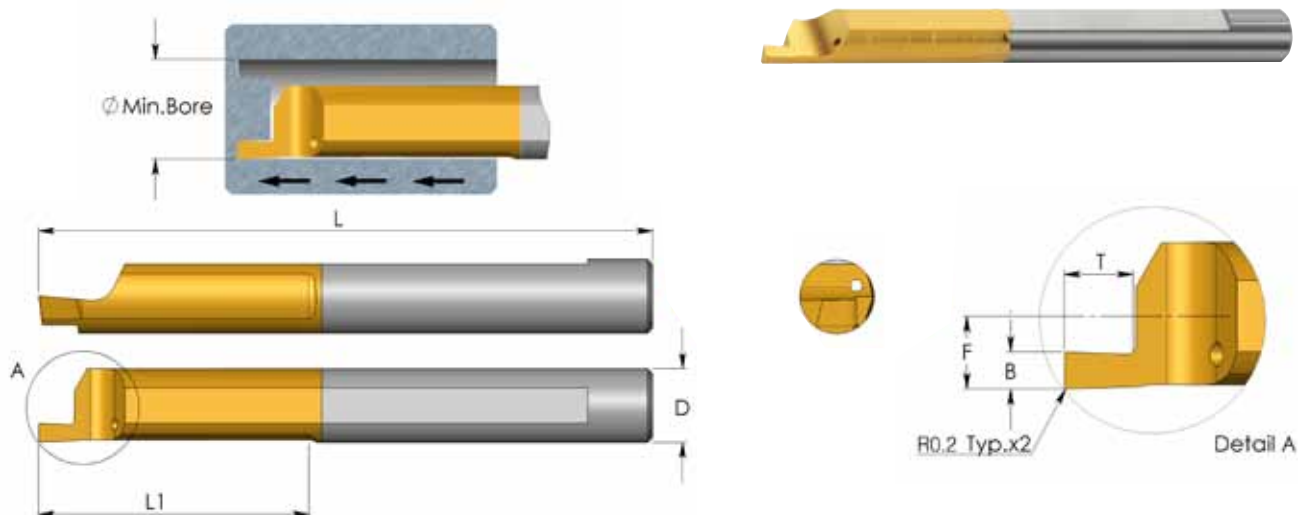
| D   | Ordering Code          | L  | L1 | R    | W   | H   | F   | Min. Bore Dia. | Holder*    |
|-----|------------------------|----|----|------|-----|-----|-----|----------------|------------|
| 4.0 | <b>MKR 4 R0.5 L10</b>  | 51 | 10 | 0.50 | 1.0 | 1.0 | 1.7 | 4.1            | SIM ... H4 |
|     | <b>MKR 4 R0.75 L10</b> | 51 | 10 | 0.75 | 1.5 | 1.0 | 1.7 | 4.1            |            |
| 5.0 | <b>MKR 5 R0.5 L15</b>  | 51 | 15 | 0.50 | 1.0 | 1.2 | 2.3 | 5.1            | SIM ... H5 |
|     | <b>MKR 5 R0.75 L15</b> | 51 | 15 | 0.75 | 1.5 | 1.2 | 2.3 | 5.1            |            |
|     | <b>MKR 5 R1.0 L15</b>  | 51 | 15 | 1.00 | 2.0 | 1.2 | 2.3 | 5.1            |            |
| 6.0 | <b>MKR 6 R0.5 L15</b>  | 51 | 15 | 0.50 | 1.0 | 1.6 | 2.8 | 6.1            | SIM ... H6 |
|     | <b>MKR 6 R0.75 L15</b> | 51 | 15 | 0.75 | 1.5 | 1.6 | 2.8 | 6.1            |            |
|     | <b>MKR 6 R1.0 L15</b>  | 51 | 15 | 1.00 | 2.0 | 1.6 | 2.8 | 6.1            |            |
| 7.0 | <b>MKR 7 R0.5 L22</b>  | 62 | 22 | 0.50 | 1.0 | 2.5 | 3.3 | 7.1            | SIM ... H7 |
|     | <b>MKR 7 R0.75 L22</b> | 62 | 22 | 0.75 | 1.5 | 2.5 | 3.3 | 7.1            |            |
|     | <b>MKR 7 R1.0 L22</b>  | 62 | 22 | 1.00 | 2.0 | 2.5 | 3.3 | 7.1            |            |

Order example: MKR 5 R1.0 L15 BXC

For L.H. bars specify MKL instead of MKR

\* For additional holders see page 100

## MFR Bars Face Grooving

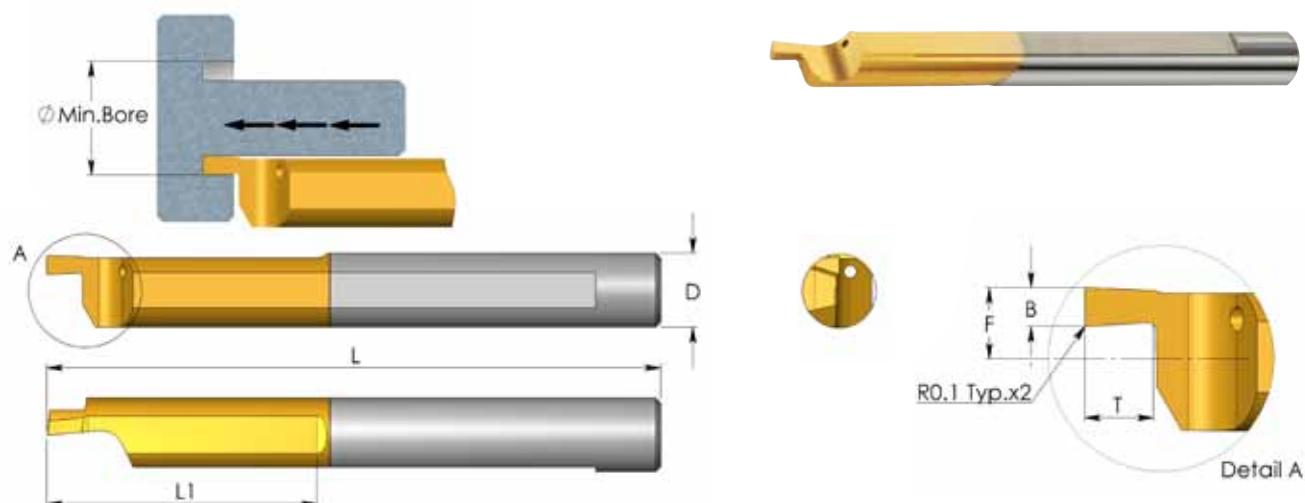


| D   | Ordering Code          | L  | L1 | B    | T   | F    | Min. Bore Dia. | Holder*    |
|-----|------------------------|----|----|------|-----|------|----------------|------------|
| 4.0 | <b>MFR 4 B0.75 L15</b> | 51 | 15 | 0.75 | 1.2 | 1.95 | 5.0            | SIM ... H4 |
|     | <b>MFR 4 B1.0 L15</b>  | 51 | 15 | 1.0  | 1.5 | 1.95 | 5.0            |            |
|     | <b>MFR 4 B1.5 L15</b>  | 51 | 15 | 1.5  | 2.8 | 1.95 | 5.0            |            |
| 5.0 | <b>MFR 5 B0.75 L22</b> | 51 | 22 | 0.75 | 1.2 | 2.45 | 6.0            | SIM ... H5 |
|     | <b>MFR 5 B1.0 L22</b>  | 51 | 22 | 1.0  | 1.5 | 2.45 | 6.0            |            |
|     | <b>MFR 5 B1.5 L22</b>  | 51 | 22 | 1.5  | 2.5 | 2.45 | 6.0            |            |
|     | <b>MFR 5 B2.0 L22</b>  | 51 | 22 | 2.0  | 3.8 | 2.45 | 6.0            |            |
| 6.0 | <b>MFR 6 B1.0 L22</b>  | 51 | 22 | 1.0  | 1.5 | 2.95 | 8.0            | SIM ... H6 |
|     | <b>MFR 6 B1.5 L22</b>  | 51 | 22 | 1.5  | 2.5 | 2.95 | 8.0            |            |
|     | <b>MFR 6 B2.0 L22</b>  | 51 | 22 | 2.0  | 3.0 | 2.95 | 8.0            |            |
|     | <b>MFR 6 B2.5 L22</b>  | 51 | 22 | 2.5  | 4.8 | 2.95 | 8.0            |            |
|     | <b>MFR 6 B3.0 L30</b>  | 58 | 30 | 3.0  | 6.0 | 2.95 | 8.0            |            |
| 8.0 | <b>MFR 8 B2.5 L22</b>  | 64 | 22 | 2.5  | 3.5 | 3.95 | 10.0           | SIM ... H8 |

Order example: MFR 5 B1.0 L22 BXC

\* For additional holders see page 100

## MFL Bars Face Grooving

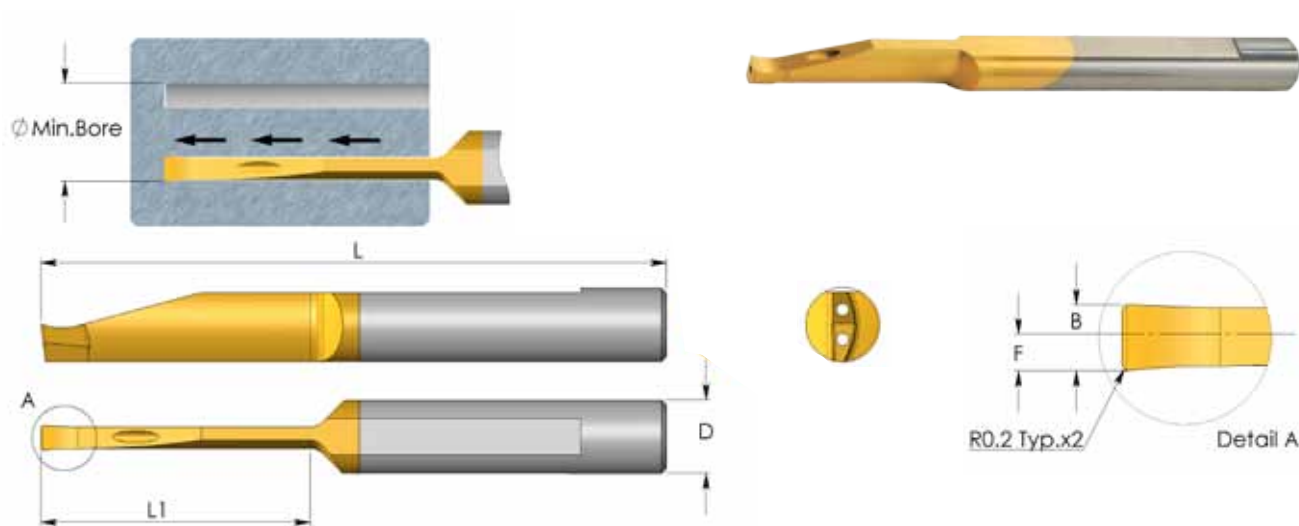


| D   | Ordering Code          | L  | L1 | B    | T   | F    | Min. Bore Dia. | Holder*    |
|-----|------------------------|----|----|------|-----|------|----------------|------------|
| 4.0 | <b>MFL 4 B0.75 L15</b> | 51 | 15 | 0.75 | 1.2 | 1.75 | 5.0            | SIM ... H4 |
|     | <b>MFL 4 B1.0 L15</b>  | 51 | 15 | 1.0  | 1.5 | 1.75 | 5.0            |            |
|     | <b>MFL 4 B1.5 L15</b>  | 51 | 15 | 1.5  | 2.8 | 1.75 | 5.0            |            |
| 5.0 | <b>MFL 5 B0.75 L22</b> | 51 | 22 | 0.75 | 1.2 | 2.25 | 6.0            | SIM ... H5 |
|     | <b>MFL 5 B1.0 L22</b>  | 51 | 22 | 1.0  | 1.5 | 2.25 | 6.0            |            |
|     | <b>MFL 5 B1.5 L22</b>  | 51 | 22 | 1.5  | 2.5 | 2.25 | 6.0            |            |
|     | <b>MFL 5 B2.0 L22</b>  | 51 | 22 | 2.0  | 3.8 | 2.25 | 6.0            |            |
| 6.0 | <b>MFL 6 B1.0 L22</b>  | 51 | 22 | 1.0  | 1.5 | 2.75 | 8.0            | SIM ... H6 |
|     | <b>MFL 6 B1.5 L22</b>  | 51 | 22 | 1.5  | 2.5 | 2.75 | 8.0            |            |
|     | <b>MFL 6 B2.0 L22</b>  | 51 | 22 | 2.0  | 3.0 | 2.75 | 8.0            |            |
|     | <b>MFL 6 B2.5 L22</b>  | 51 | 22 | 2.5  | 4.8 | 2.75 | 8.0            |            |
|     | <b>MFL 6 B3.0 L30</b>  | 58 | 30 | 3.0  | 6.0 | 2.75 | 8.0            |            |
| 8.0 | <b>MFL 8 B2.5 L22</b>  | 64 | 22 | 2.5  | 3.5 | 3.75 | 10.0           | SIM ... H8 |

Order example: MFL 6 B1.0 L22 BXC

\* For additional holders see page 100

## MVR Bars Deep Face Grooving - with 2 Coolant Bores

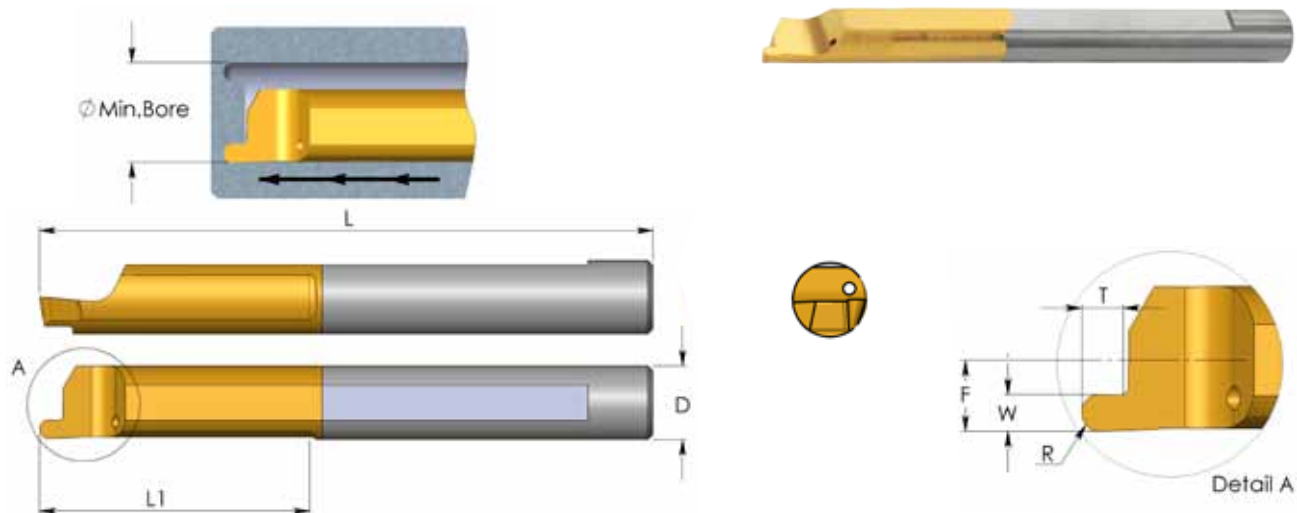


| D   | Ordering Code         | L  | L1 | B   | F   | Min. Bore Dia. | Holder*    |
|-----|-----------------------|----|----|-----|-----|----------------|------------|
| 6.0 | <b>MVR 6 B2.0 L15</b> | 64 | 15 | 2.0 | 1.1 | 12.0           | SIM ... H6 |
|     | <b>MVR 6 B2.0 L22</b> | 64 | 22 | 2.0 | 1.1 | 12.0           |            |
|     | <b>MVR 6 B2.5 L22</b> | 64 | 22 | 2.5 | 1.4 | 12.0           |            |
| 8.0 | <b>MVR 8 B3.0 L27</b> | 64 | 27 | 3.0 | 1.6 | 15.0           | SIM ... H8 |
|     | <b>MVR 8 B3.0 L43</b> | 80 | 43 | 3.0 | 1.6 | 15.0           |            |
| 8.0 | <b>MVR 8 B4.0 L43</b> | 80 | 43 | 4.0 | 2.1 | 20.0           | SIM ... H8 |

Order example: MVR 6 B2.0 L22 BXC

\* For additional holders see page 100

## MZR Bars Face Grooving

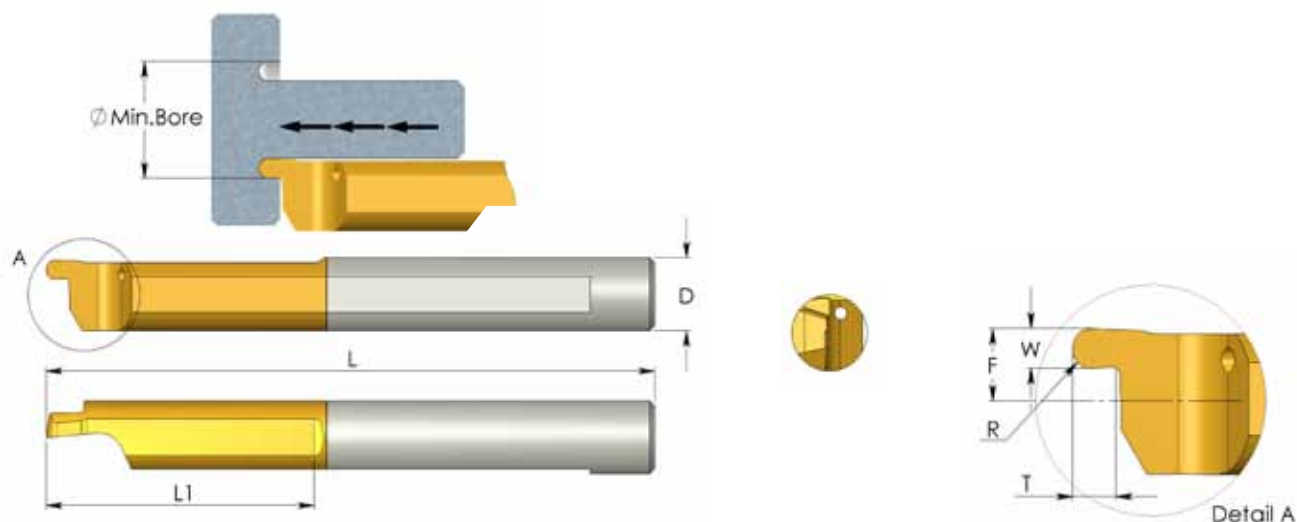


| D   | Ordering Code          | L  | L1 | R    | W   | T   | F    | Min. Bore Dia. | Holder*    |
|-----|------------------------|----|----|------|-----|-----|------|----------------|------------|
| 4.0 | <b>MZR 4 R0.5 L15</b>  | 51 | 15 | 0.50 | 1.0 | 1.2 | 1.95 | 5.0            | SIM ... H4 |
|     | <b>MZR 4 R0.75 L15</b> | 51 | 15 | 0.75 | 1.5 | 1.5 | 1.95 | 5.0            |            |
| 5.0 | <b>MZR 5 R0.5 L22</b>  | 51 | 22 | 0.50 | 1.0 | 1.2 | 2.45 | 6.0            | SIM ... H5 |
|     | <b>MZR 5 R0.75 L22</b> | 51 | 22 | 0.75 | 1.5 | 1.5 | 2.45 | 6.0            |            |
|     | <b>MZR 5 R1.0 L22</b>  | 51 | 22 | 1.00 | 2.0 | 2.5 | 2.45 | 6.0            |            |
| 6.0 | <b>MZR 6 R0.5 L22</b>  | 51 | 22 | 0.50 | 1.0 | 1.2 | 2.95 | 8.0            | SIM ... H6 |
|     | <b>MZR 6 R0.75 L22</b> | 51 | 22 | 0.75 | 1.5 | 1.5 | 2.95 | 8.0            |            |
|     | <b>MZR 6 R1.0 L22</b>  | 51 | 22 | 1.00 | 2.0 | 2.5 | 2.95 | 8.0            |            |

Order example: MZR 5 R0.5 L22 BXC

\* For additional holders see page 100

## MZL Bars Face Grooving

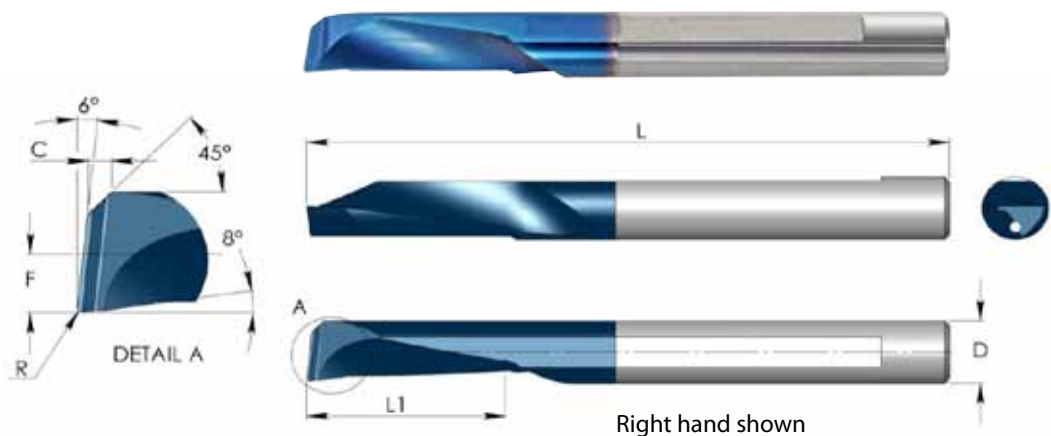


| D   | Ordering Code          | L  | L1 | R    | W   | T   | F    | Min. Bore Dia. | Holder*    |
|-----|------------------------|----|----|------|-----|-----|------|----------------|------------|
| 4.0 | <b>MZL 4 R0.5 L15</b>  | 51 | 15 | 0.50 | 1.0 | 1.2 | 1.75 | 5.0            | SIM ... H4 |
|     | <b>MZL 4 R0.75 L15</b> | 51 | 15 | 0.75 | 1.5 | 1.5 | 1.75 | 5.0            |            |
| 5.0 | <b>MZL 5 R0.5 L22</b>  | 51 | 22 | 0.50 | 1.0 | 1.2 | 2.25 | 6.0            | SIM ... H5 |
|     | <b>MZL 5 R0.75 L22</b> | 51 | 22 | 0.75 | 1.5 | 1.5 | 2.25 | 6.0            |            |
|     | <b>MZL 5 R1.0 L22</b>  | 51 | 22 | 1.00 | 2.0 | 2.5 | 2.25 | 6.0            |            |
| 6.0 | <b>MZL 6 R0.5 L22</b>  | 51 | 22 | 0.50 | 1.0 | 1.2 | 2.75 | 8.0            | SIM ... H6 |
|     | <b>MZL 6 R0.75 L22</b> | 51 | 22 | 0.75 | 1.5 | 1.5 | 2.75 | 8.0            |            |
|     | <b>MZL 6 R1.0 L22</b>  | 51 | 22 | 1.00 | 2.0 | 2.5 | 2.75 | 8.0            |            |

Order example: MZL 5 R0.5 L22 BXC

\* For additional holders see page 100

## CMR Carmex Multi-Task Tiny Tools



### Right hand

| D | Ordering Code         | L  | L1 | R   | F   | C   | Hole Dia.* | Holder ** |
|---|-----------------------|----|----|-----|-----|-----|------------|-----------|
| 4 | <b>CMR 4 R0.1 L10</b> | 51 | 10 | 0.1 | 1.8 | 1.1 | 4          | SIM...H4  |
|   | <b>CMR 4 R0.1 L15</b> | 51 | 15 | 0.1 | 1.8 | 1.1 | 4          |           |
| 5 | <b>CMR 5 R0.2 L10</b> | 51 | 10 | 0.2 | 2.3 | 1.3 | 5          | SIM...H5  |
|   | <b>CMR 5 R0.2 L15</b> | 51 | 15 | 0.2 | 2.3 | 1.3 | 5          |           |
| 6 | <b>CMR 6 R0.2 L12</b> | 58 | 12 | 0.2 | 2.8 | 1.5 | 6          | SIM...H6  |
|   | <b>CMR 6 R0.2 L18</b> | 58 | 18 | 0.2 | 2.8 | 1.5 | 6          |           |

|   |     |   |
|---|-----|---|
| P | BMK | * |
| M |     | * |
| K |     | * |
| N |     | * |
| S |     | * |
| H |     |   |

\* The minimum diameter the tool can produce from full material

### Left hand

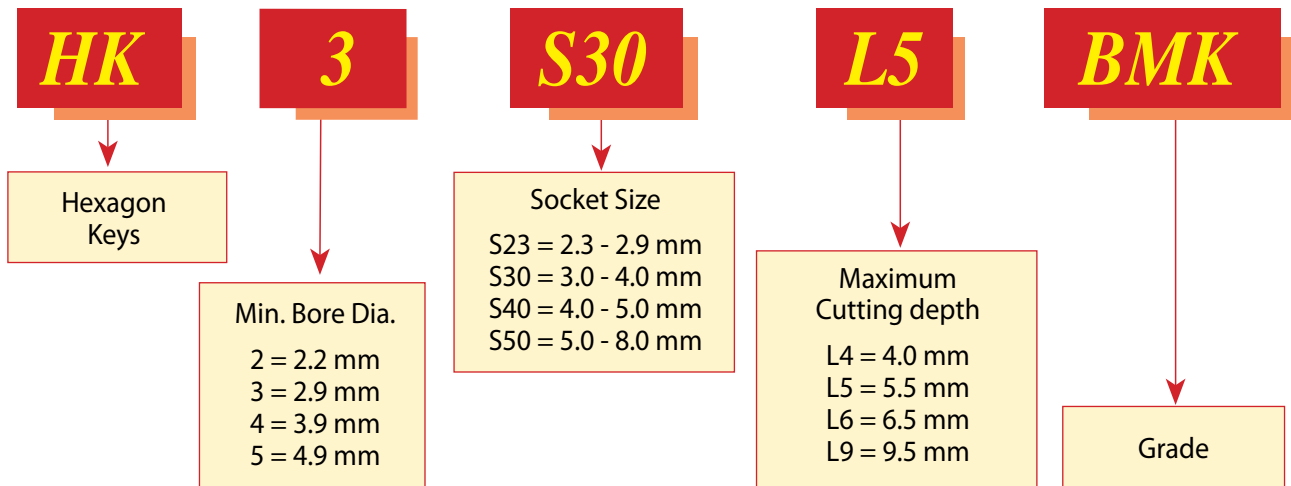
| D | Ordering Code         | L  | L1 | R   | F   | C   | Hole Dia.* | Holder ** |
|---|-----------------------|----|----|-----|-----|-----|------------|-----------|
| 4 | <b>CML 4 R0.1 L10</b> | 51 | 10 | 0.1 | 1.8 | 1.1 | 4          | SIM...H4  |
|   | <b>CML 4 R0.1 L15</b> | 51 | 15 | 0.1 | 1.8 | 1.1 | 4          |           |
| 5 | <b>CML 5 R0.2 L10</b> | 51 | 10 | 0.2 | 2.3 | 1.3 | 5          | SIM...H5  |
|   | <b>CML 5 R0.2 L15</b> | 51 | 15 | 0.2 | 2.3 | 1.3 | 5          |           |
| 6 | <b>CML 6 R0.2 L12</b> | 58 | 12 | 0.2 | 2.8 | 1.5 | 6          | SIM...H6  |
|   | <b>CML 6 R0.2 L18</b> | 58 | 18 | 0.2 | 2.8 | 1.5 | 6          |           |

|   |     |   |
|---|-----|---|
| P | BMK | * |
| M |     | * |
| K |     | * |
| N |     | * |
| S |     | * |
| H |     |   |

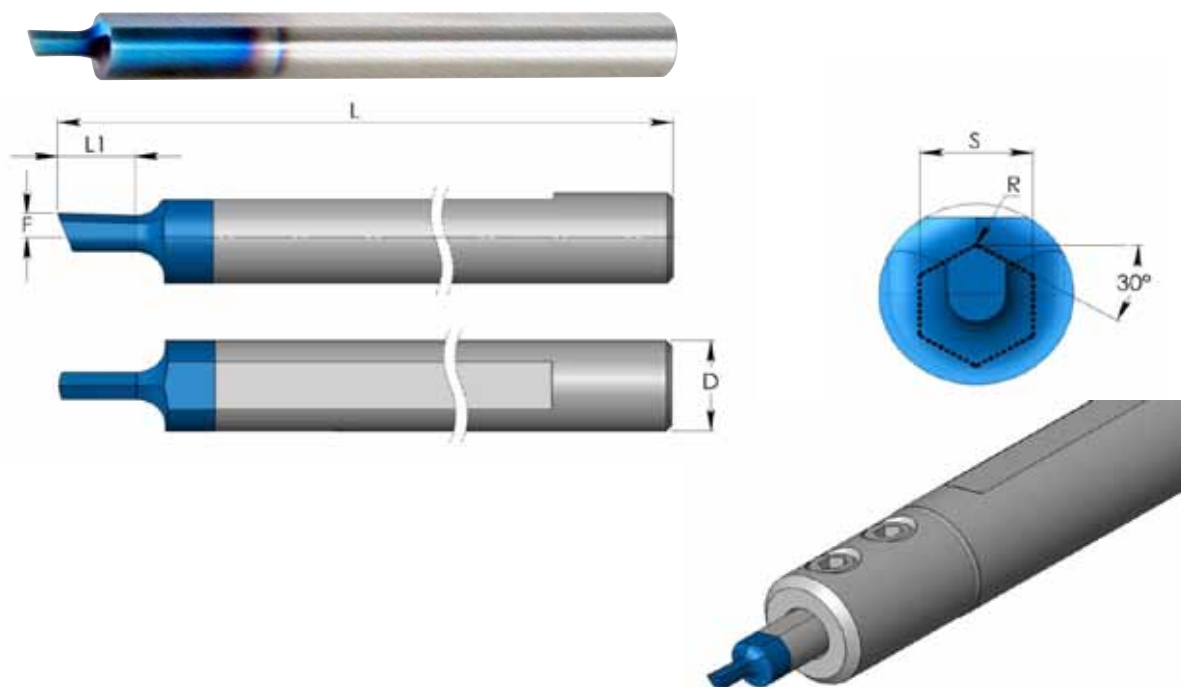
\* The minimum diameter the tool can produce from full material

\*\* For additional holders see page 100

## Product Identification



## HK Broaching Tools for Hexagon Keys



| D   | S       | Ordering Code      | L  | L1  | R    | F    | Min. Bore Dia. | Holder * |
|-----|---------|--------------------|----|-----|------|------|----------------|----------|
| 5.0 | 2.3-2.9 | <b>HK 2 S23 L4</b> | 51 | 4.0 | 0.05 | 1.35 | 2.2            | SIM...H5 |
|     | 3.0-4.0 | <b>HK 3 S30 L5</b> | 51 | 5.5 | 0.05 | 1.35 | 2.9            |          |
|     | 4.0-5.0 | <b>HK 4 S40 L6</b> | 51 | 6.5 | 0.10 | 1.35 | 3.9            |          |
| 7.0 | 5.0-8.0 | <b>HK 5 S50 L9</b> | 62 | 9.5 | 0.10 | 1.35 | 4.9            | SIM...H7 |

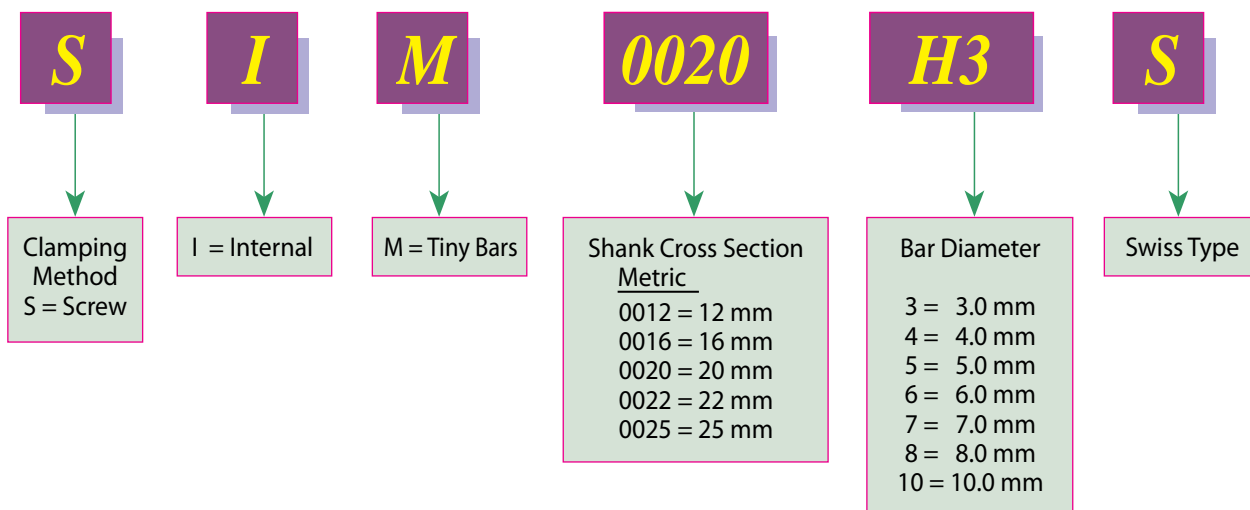
|          |            |   |
|----------|------------|---|
| <b>P</b> | <b>BMK</b> | * |
| <b>M</b> |            | * |
| <b>K</b> |            | * |
| <b>N</b> |            | * |
| <b>S</b> |            | * |
| <b>H</b> |            |   |

S = Socket Size

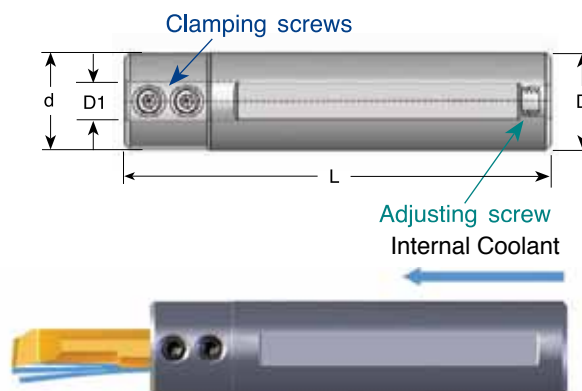
\* For additional holders see page 100

## Product Identification

### Tiny Bar Holders Ordering Codes



## Tiny Tools Bar Holders

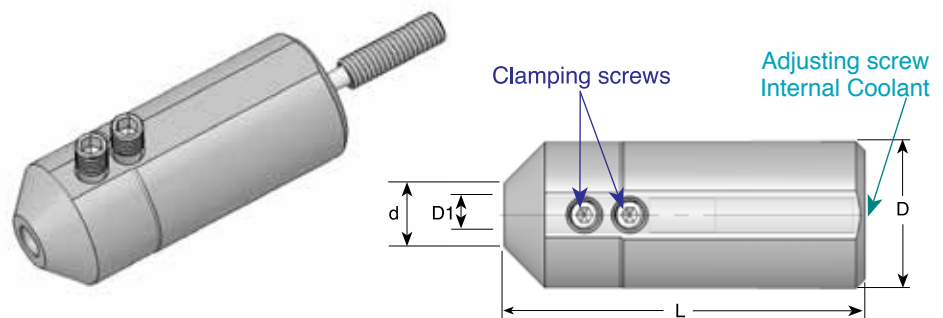


| D1  | Ordering Code       | L  | D  | d  | Key | Clamping Screw | Adjusting Screw |
|-----|---------------------|----|----|----|-----|----------------|-----------------|
| 3.0 | <b>SIM 0012 H3</b>  | 88 | 12 | 12 | K25 | S24            | S35             |
|     | <b>SIM 0016 H3S</b> | 75 | 16 | 20 | K25 | S25            | S35S            |
|     | <b>SIM 0016 H3</b>  | 88 | 16 | 20 | K25 | S25            | S35             |
|     | <b>SIM 0020 H3</b>  | 88 | 20 | 20 | K25 | S25            | S35             |
|     | <b>SIM 0022 H3</b>  | 88 | 22 | 22 | K25 | S25            | S35             |
| 4.0 | <b>SIM 0012 H4</b>  | 88 | 12 | 12 | K25 | S24            | S35             |
|     | <b>SIM 0016 H4S</b> | 75 | 16 | 20 | K25 | S25            | S35S            |
|     | <b>SIM 0016 H4</b>  | 88 | 16 | 20 | K25 | S25            | S35             |
|     | <b>SIM 0020 H4</b>  | 88 | 20 | 20 | K25 | S25            | S35             |
|     | <b>SIM 0022 H4</b>  | 88 | 22 | 22 | K25 | S25            | S35             |

## Tiny Tools Bar Holders

| D1   | Ordering Code       | L  | D  | d  | Key | Clamping Screw | Adjusting Screw |
|------|---------------------|----|----|----|-----|----------------|-----------------|
| 5.0  | <b>SIM 0012 H5</b>  | 88 | 12 | 12 | K25 | S24            | S35             |
|      | <b>SIM 0016 H5S</b> | 75 | 16 | 20 | K25 | S25            | S35S            |
|      | <b>SIM 0016 H5</b>  | 88 | 16 | 20 | K25 | S25            | S35             |
|      | <b>SIM 0020 H5</b>  | 88 | 20 | 20 | K25 | S25            | S35             |
|      | <b>SIM 0022 H5</b>  | 88 | 22 | 22 | K25 | S25            | S35             |
| 6.0  | <b>SIM 0016 H6S</b> | 75 | 16 | 20 | K25 | S25            | S35S            |
|      | <b>SIM 0016 H6</b>  | 88 | 16 | 20 | K25 | S25            | S35             |
|      | <b>SIM 0020 H6</b>  | 88 | 20 | 20 | K25 | S25            | S35             |
|      | <b>SIM 0022 H6</b>  | 88 | 22 | 22 | K25 | S25            | S35             |
| 7.0  | <b>SIM 0016 H7</b>  | 88 | 16 | 20 | K25 | S25            | S35             |
|      | <b>SIM 0020 H7</b>  | 88 | 20 | 20 | K25 | S25            | S35             |
|      | <b>SIM 0022 H7</b>  | 88 | 22 | 22 | K25 | S25            | S35             |
| 8.0  | <b>SIM 0016 H8</b>  | 88 | 16 | 20 | K25 | S25            | S35             |
|      | <b>SIM 0020 H8</b>  | 88 | 20 | 20 | K25 | S25            | S35             |
|      | <b>SIM 0022 H8</b>  | 88 | 22 | 22 | K25 | S25            | S35             |
| 10.0 | <b>SIM 0016 H10</b> | 88 | 16 | 20 | K25 | S25S           | S35             |
|      | <b>SIM 0020 H10</b> | 88 | 20 | 20 | K25 | S25S           | S35             |
|      | <b>SIM 0022 H10</b> | 88 | 22 | 22 | K25 | S25            | S35             |

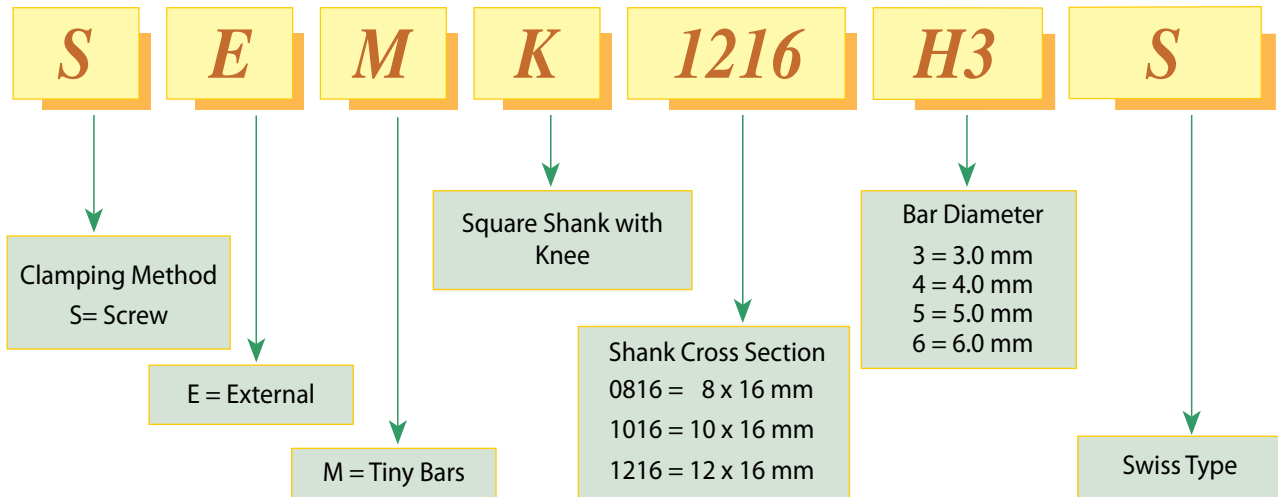
## Tiny Tools Bar Holders



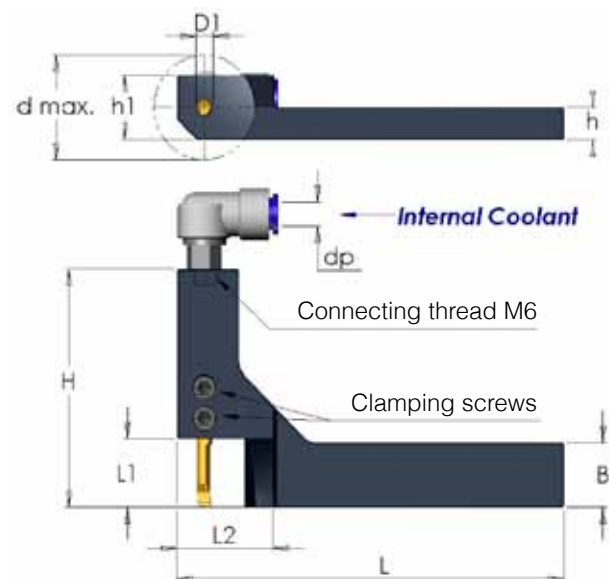
| D1  | Ordering Code      | D  | d    | L  | Key | Clamping Screw | Adjusting Screw |
|-----|--------------------|----|------|----|-----|----------------|-----------------|
| 3.0 | <b>SIM 0025 H3</b> | 25 | 10.8 | 62 | K25 | S25            | S35M            |
| 4.0 | <b>SIM 0025 H4</b> | 25 | 10.8 | 62 | K25 | S25            | S35M            |
| 5.0 | <b>SIM 0025 H5</b> | 25 | 10.8 | 62 | K25 | S25            | S35M            |
| 6.0 | <b>SIM 0025 H6</b> | 25 | 10.8 | 62 | K25 | S25            | S35M            |
| 8.0 | <b>SIM 0025 H8</b> | 25 | 10.8 | 62 | K25 | S25            | S35M            |

## Product Identification

### Tiny Bar Holders Ordering Codes



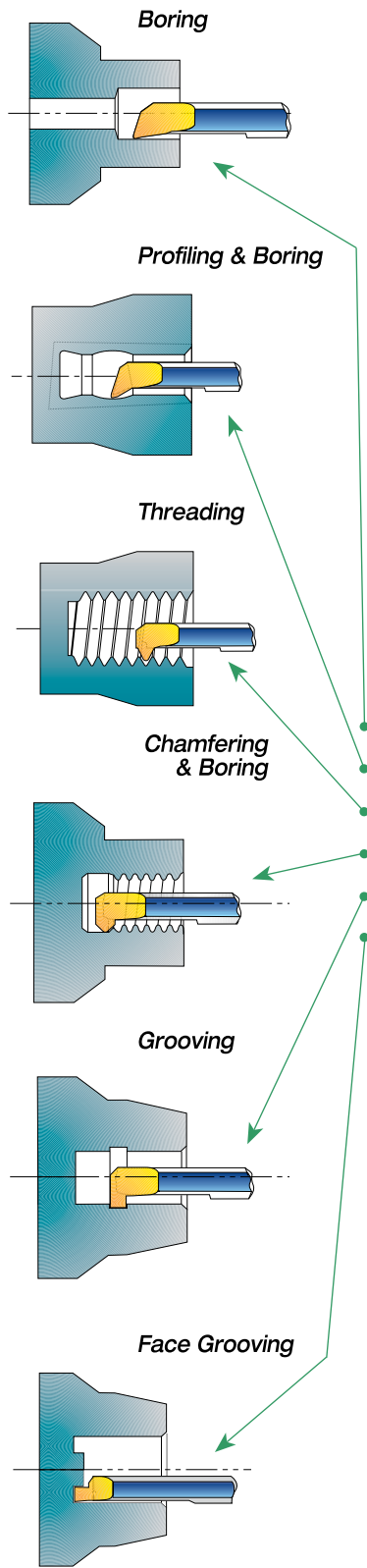
## Square Shank Holders



| D1  | Ordering Code                 | B  | L   | L1 | L2 | H  | h  | h1 | d max. | *dp | Key | Clamping Screw |
|-----|-------------------------------|----|-----|----|----|----|----|----|--------|-----|-----|----------------|
| 3.0 | <a href="#">SEMK 0816 H3S</a> | 16 | 100 | 17 | 25 | 46 | 8  | 16 | 26     | 4/6 | K25 | S25            |
|     | <a href="#">SEMK 1016 H3S</a> | 16 | 100 | 17 | 25 | 46 | 10 | 18 | 26     | 4/6 | K25 |                |
|     | <a href="#">SEMK 1216 H3S</a> | 16 | 100 | 17 | 25 | 46 | 12 | 20 | 26     | 4/6 | K25 |                |
| 4.0 | <a href="#">SEMK 0816 H4S</a> | 16 | 100 | 17 | 25 | 58 | 8  | 16 | 26     | 4/6 | K25 | S25            |
|     | <a href="#">SEMK 1016 H4S</a> | 16 | 100 | 17 | 25 | 58 | 10 | 18 | 26     | 4/6 | K25 |                |
|     | <a href="#">SEMK 1216 H4S</a> | 16 | 100 | 17 | 25 | 58 | 12 | 20 | 26     | 4/6 | K25 |                |
| 5.0 | <a href="#">SEMK 0816 H5S</a> | 16 | 100 | 17 | 25 | 58 | 8  | 16 | 26     | 4/6 | K25 | S25            |
|     | <a href="#">SEMK 1016 H5S</a> | 16 | 100 | 17 | 25 | 58 | 10 | 18 | 26     | 4/6 | K25 |                |
|     | <a href="#">SEMK 1216 H5S</a> | 16 | 100 | 17 | 25 | 58 | 12 | 20 | 26     | 4/6 | K25 |                |
| 6.0 | <a href="#">SEMK 0816 H6S</a> | 16 | 100 | 17 | 25 | 58 | 8  | 16 | 26     | 4/6 | K25 | S25            |
|     | <a href="#">SEMK 1016 H6S</a> | 16 | 100 | 17 | 25 | 58 | 10 | 18 | 26     | 4/6 | K25 |                |
|     | <a href="#">SEMK 1216 H6S</a> | 16 | 100 | 17 | 25 | 58 | 12 | 20 | 26     | 4/6 | K25 |                |

\* Optional

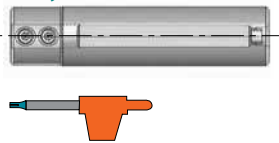
# Tiny Tools Kits



| KT4-20         | KT5-20         |
|----------------|----------------|
| MTR 4 R0.2 L10 | MTR 5 R0.2 L15 |
| MPR 4 R0.2 L10 | MPR 5 R0.2 L15 |
| MIR 4 L15 A60  | MIR 5 L15 A60  |
| MCR 4 R0.2 L15 | MCR 5 R0.2 L15 |
| MGR 4 B1.5 L10 | MGR 5 B1.5 L15 |
| MFR 4 B1.0 L15 | MFR 5 B1.0 L22 |
| SIM 0020 H4    | SIM 0020 H5    |
| K25            | K25            |

-  Boring
-  Profiling
-  Threading
-  Chamfering
-  Grooving
-  Face Grooving

**Tiny Tools Bar Holder**



Order example: KT4-20

Also available are kits with a 16mm or 22mm shank diameter bar holder.  
Order example: KT4-16

## Technical Section

### Carbide Grades:

#### BXC (P30 - P50, K25 - K40)

PVD TiN coated grade for low cutting speed.  
Works well with a wide range of stainless steels.

#### BMK (K10 - K20)

Sub-micron grade with advanced PVD triple coating. Extremely high heat resistant and smooth cutting operation, for high performance, and normal machining conditions. General purpose for all materials.

#### K20 (K10 - K30)

Uncoated Carbide grade for non ferrous metals, aluminum and cast iron.



### Cutting speed for Tiny Tools\*

| ISO<br>Standard                                 | Material                                                           |                       | Condition               | Cutting Speed<br>m/min |        |       |
|-------------------------------------------------|--------------------------------------------------------------------|-----------------------|-------------------------|------------------------|--------|-------|
|                                                 |                                                                    |                       |                         | BXC                    | BMK    | K20   |
| P                                               | Non-Alloy steel and<br>cast steel, free<br>cutting steel           | <0.25%C               | Annealed                | 25-70                  | 30-80  | 15-30 |
|                                                 |                                                                    | ≥0.25%C               | Annealed                |                        |        |       |
|                                                 |                                                                    | < 0.55%C              | Quenched and tempered   |                        |        |       |
|                                                 |                                                                    | ≥0.55%C               | Annealed                |                        |        |       |
|                                                 |                                                                    | ≥0.55%C               | Quenched and tempered   |                        |        |       |
|                                                 | Low alloy steel and cast steel (less<br>than 5% alloying elements) | Annealed              | 20-40                   | 25-50                  | 10-20  |       |
|                                                 |                                                                    | Quenched and tempered |                         |                        |        |       |
| High alloy steel, cast steel, and tool<br>steel | Annealed                                                           | 20-40                 | 25-50                   | 10-20                  |        |       |
|                                                 | Quenched and tempered                                              |                       |                         |                        |        |       |
| M                                               | Stainless steel and cast steel                                     |                       | Ferritic/martensitic    | 25-40                  | 30-60  | 15-25 |
|                                                 |                                                                    |                       | Martensitic             |                        |        |       |
|                                                 |                                                                    |                       | Austenitic              |                        |        |       |
| K                                               | Cast iron nodular (GGG)                                            |                       | Ferritic/pearlitic      | 25-60                  | 30-80  | 15-30 |
|                                                 |                                                                    |                       | Pearlitic               |                        |        |       |
|                                                 | Grey cast iron (GG)                                                |                       | Ferritic                | 30-70                  | 30-80  | 20-40 |
|                                                 |                                                                    |                       | Pearlitic               |                        |        |       |
|                                                 | Malleable cast iron                                                |                       | Ferritic                | 20-40                  | 20-50  | 10-20 |
| Pearlitic                                       |                                                                    |                       |                         |                        |        |       |
| N                                               | Aluminum-wrought alloy                                             |                       | Not cureable            | 50-100                 | 60-120 | 30-50 |
|                                                 |                                                                    |                       | Cured                   |                        |        |       |
|                                                 | Aluminum-cast,<br>alloyed                                          | <=12% Si              | Not cureable            | 40-80                  | 50-90  | 20-40 |
|                                                 |                                                                    |                       | Cured                   |                        |        |       |
|                                                 | Copper alloys                                                      | >12% Si               | High temperature        | 30-60                  | 30-70  | 20-40 |
|                                                 |                                                                    | >1% Pb                | Free cutting            |                        |        |       |
|                                                 |                                                                    |                       | Brass                   |                        |        |       |
|                                                 | Non metallic                                                       |                       | Electrolytic copper     | 40-80                  |        | 20-40 |
| Duroplastics, fiber plastics                    |                                                                    |                       |                         |                        |        |       |
| S                                               | High temp.<br>alloys, Super alloys                                 | Fe based              | Annealed                | 15-30                  | 15-40  | 10-20 |
|                                                 |                                                                    |                       | Cured                   |                        |        |       |
|                                                 |                                                                    | Ni or Co<br>based     | Annealed                |                        |        |       |
|                                                 |                                                                    |                       | Cured                   |                        |        |       |
|                                                 |                                                                    |                       | Cast                    |                        |        |       |
|                                                 | Titanium alloys                                                    |                       | Alpha+beta alloys cured | 10-30                  | 10-30  | 5-15  |
|                                                 | H                                                                  | Hardened steel        |                         | Hardened 45-50 HRc     | 10-30  | 15-40 |
| Hardened 51-55 HRc                              |                                                                    |                       |                         |                        |        |       |
| Hardened 56-62 HRc                              |                                                                    |                       |                         |                        |        |       |
| Chilled cast iron                               |                                                                    | Cast                  | 10-30                   | 10-30                  | 5-15   |       |
| Cast iron                                       |                                                                    | Hardened              | 10-20                   | 10-20                  | 5-15   |       |

\* For CMR see page 104

**Recommended Feed Rate: 0.01 - 0.03 mm/rev**

## Threading Passes

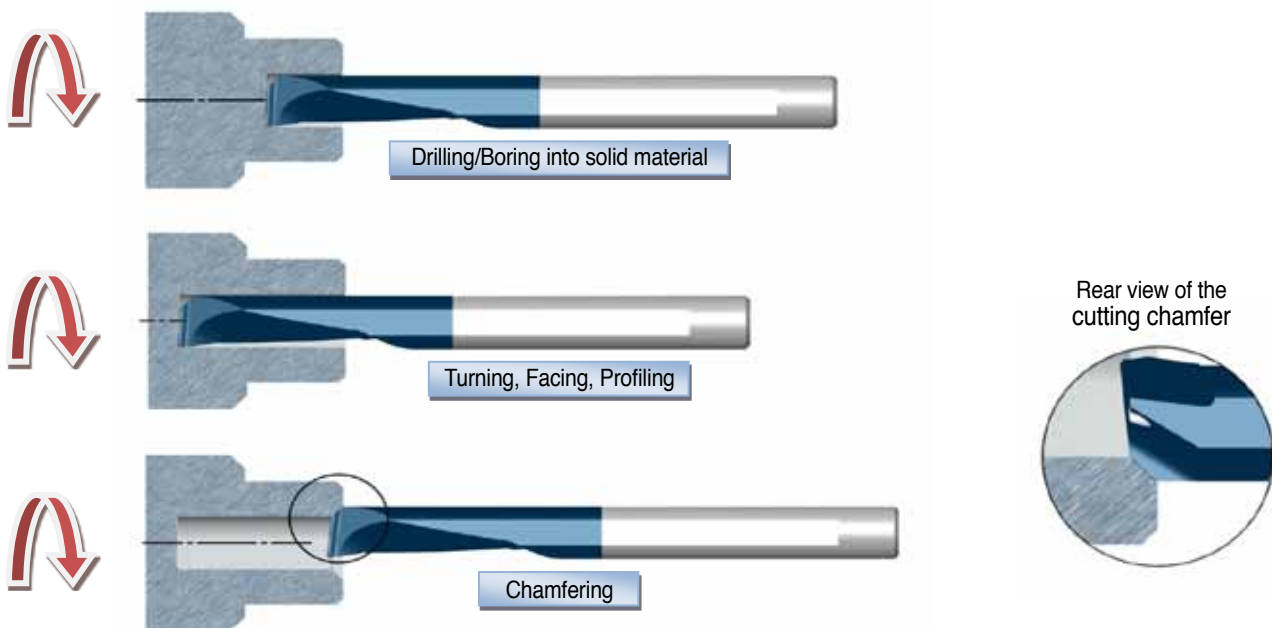
|                  |           |           |           |           |           |            |           |             |
|------------------|-----------|-----------|-----------|-----------|-----------|------------|-----------|-------------|
| Pitch:           | mm<br>TPI | 0.5<br>48 | 0.7<br>36 | 0.8<br>32 | 1.0<br>24 | 1.25<br>20 | 1.5<br>16 | 2-5<br>14-5 |
| Number of Passes |           | 6-12      | 7-14      | 7-16      | 8-18      | 8-20       | 10-22     | 20-38       |

## CMR Carmex Multi-Task Tiny Tools

- Carmex is introducing a new and innovative Multi-Task Tiny Tool **CMR** for Boring, Turning, Facing and Chamfering with a single tool.
- The unique design enables machining of the material without the need for a pilot hole.
- The new tool shortens the machining cycle time and the number of tools required - providing **High Productivity**.
- Effective through coolant hole with a spiral flute, evacuates the chips out of the hole uninterrupted.
- Unique chip breaker and flute design.
- To use with standard SIM toolholders on Swiss Type or CNC lathe machines.
- Available in **BMK** Grade only.

## Working Method

- The tool penetrates the work piece and produces the hole compliant with the minimum diameter the tool allows.
- The tool can penetrate the material in one pass or several passes depending on the work piece material, coolant pressure, machine power etc.
- The hole can be enlarged by multi radial passes.



The tool is equipped with an additional cutting edge, which is located across the main front edge. This allows production of an additional 45° chamfer on the work piece without the need to stop the spindle or processing operation.

## CMR Cutting Data and General Recommendations

### Coolant fluid

Dry machining should not be performed under any circumstances.  
It is necessary to use an internal coolant in all applications.  
Oil or Emulsion lubricants are recommended for best performance.  
In the event of low coolant pressure, adding an external coolant can improve the tool operation.

The cooling stream is designed to provide three benefits:

1. Cooling the cutting edge of the tool, and the contact area.
2. Pushing the chip away from the tool quickly, thereby reducing wear of the edge.
3. Helping to break the chip into smaller pieces and evacuating them from the cutting area.

| ISO Standard | Materials                                | Cutting Speed m/min |
|--------------|------------------------------------------|---------------------|
| <b>P</b>     | Low and Medium Carbon Steels <0.55%C     | 20- 75              |
|              | High Carbon Steels ≥0.55%C               | 20- 75              |
|              | Alloy Steels, Treated Steels             | 20- 60              |
| <b>M</b>     | Stainless Steels - Free Cutting          | 20- 60              |
|              | Stainless Steels - Austenitic            | 20- 50              |
|              | Cast Steels                              | 20- 70              |
| <b>K</b>     | Cast Iron                                | 20- 90              |
| <b>N</b>     | Aluminum ≤12%Si, Copper                  | 40-150              |
|              | Aluminum >12% Si                         | 20-100              |
|              | Synthetics, Duroplastics, Thermoplastics | 40-150              |
| <b>S</b>     | Nickel Alloys, Titanium Alloys           | 15- 60              |
| <b>H</b>     | Hardened Steels                          |                     |

**Recommended Feed Rate: 0.01 - 0.03 mm/rev**

## HK Broaching Tools for Hexagon Keys

The HK broaching system have been developed to machine internal keyways inside blind or through holes, using CNC machines.

### Working Demo

- To use with Carmex standard SIM Bar Holders
- The holder can be located directly in the turret or the machine spindle
- Holder with rear clamping screw for full support during operation
- Available in **BMK** Grade only.

