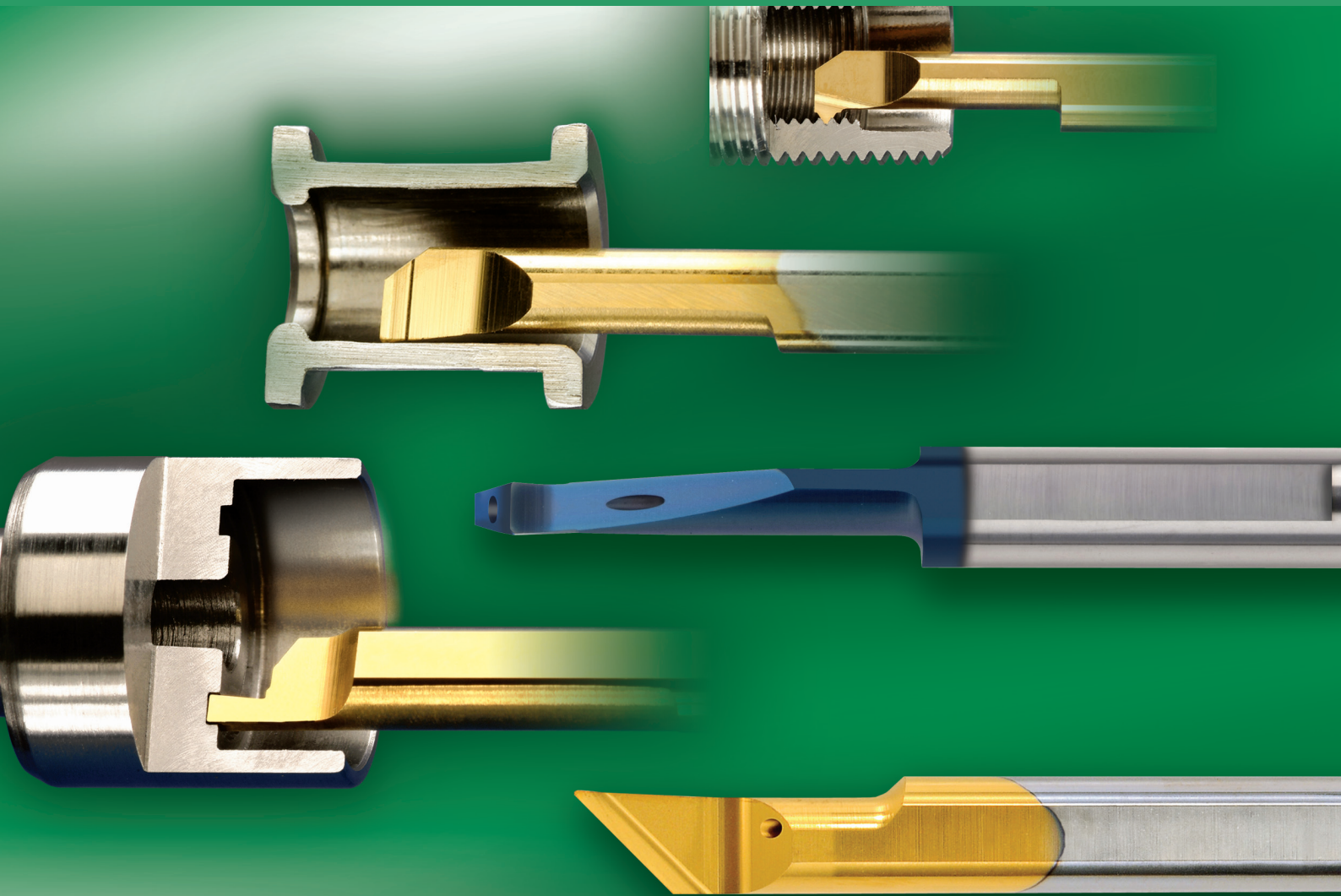


# Tiny Tools



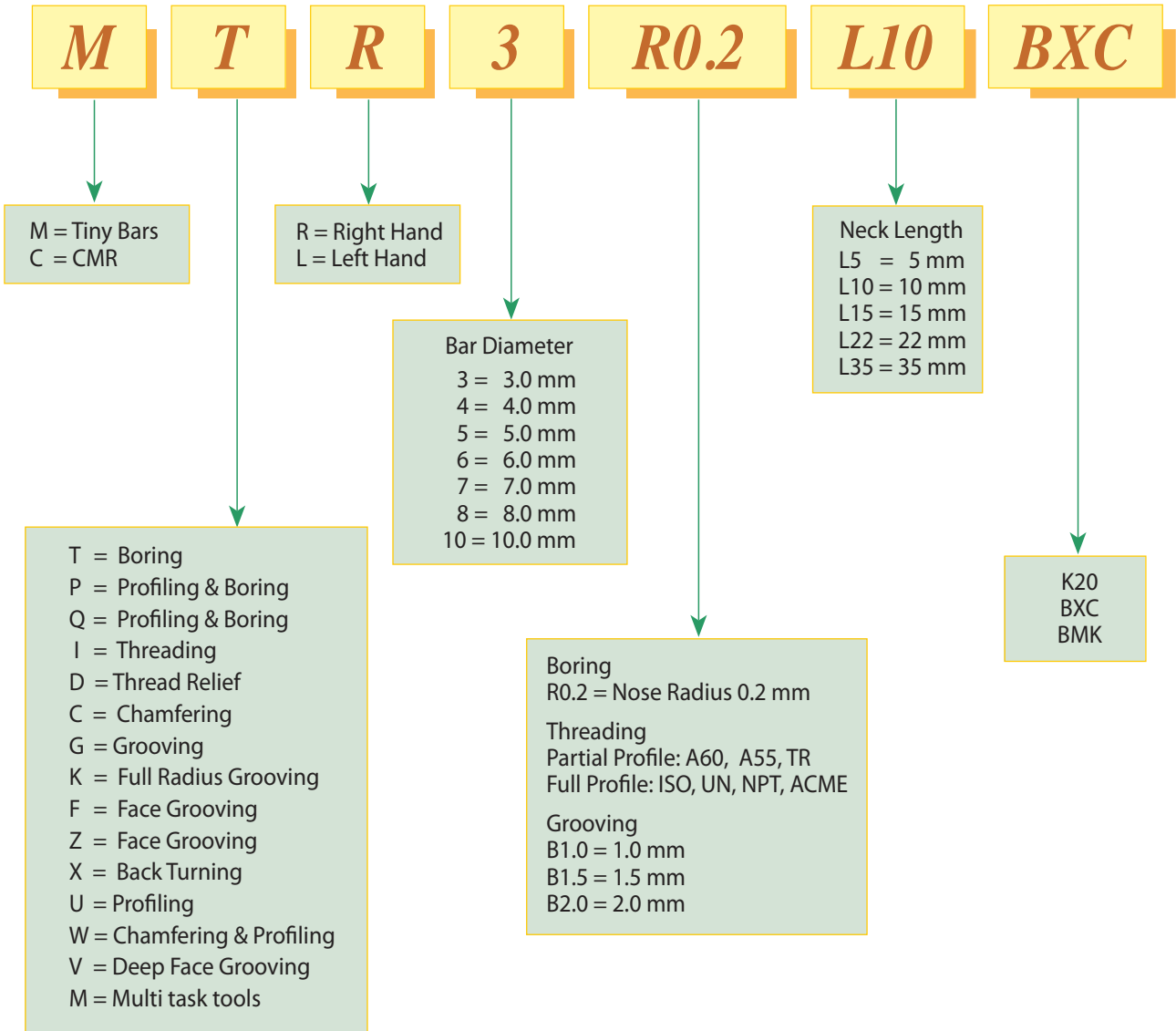
## Solid Carbide tools for working in small bores

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.

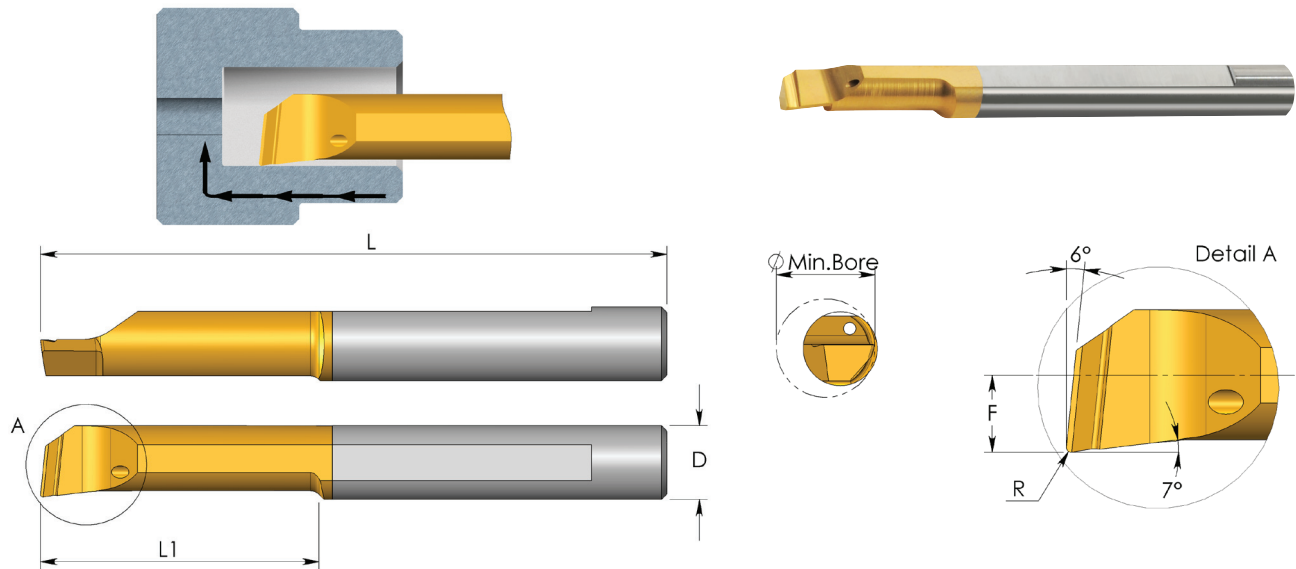
Contents:	Page:	Contents:	Page:
Product Identification	74	MFR Face Grooving Bars	91
MTR Boring Bars	75-76	MFL Face Grooving Bars	92
MXR Back Turning Bars	77	MVR Deep Face Grooving Bars	93
MPR Profiling and Boring Bars	78-79	MZR Face Grooving Bars	94
MUR Profiling, 90° Face Cutting Bars	80	MZL Face Grooving 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
MWR Chamfering and Profiling Bars	88	Tiny Tools Kits	101
MGR Grooving Bars	89	Tiny Tools Technical Section	102-104
MKR Full Radius Grooving Bars	90		

# Product Identification

## Tiny Bars Ordering Codes



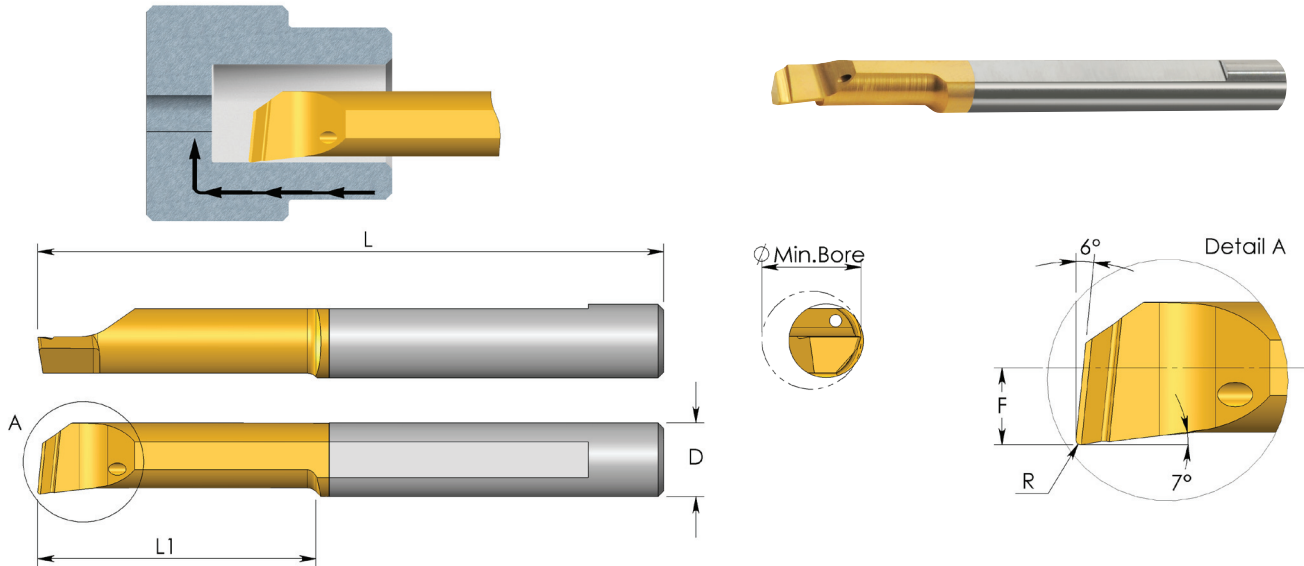
## MTR Bars Boring



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



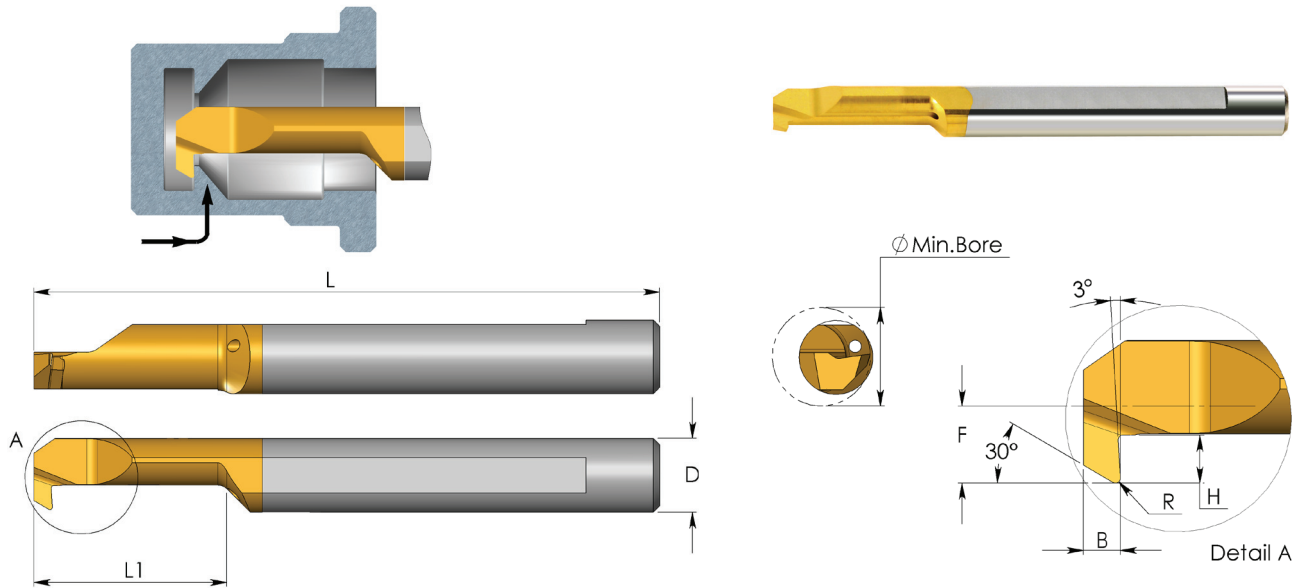
D	Ordering Code	L	L1	R	F	Min. Bore Dia.	Holder*
5.0	<b>MTR 5 R0.05 L15</b>	51	15	0.05	2.1	5.1	SIM ... H5
	<b>MTR 5 R0.1 L15</b>	51	15	0.10	2.1	5.1	
	<b>MTR 5 R0.1 L22</b>	51	22	0.10	2.1	5.1	
	<b>MTR 5 R0.1 L30</b>	76	30	0.10	2.1	5.1	
	<b>MTR 5 R0.2 L15</b>	51	15	0.20	2.1	5.1	
	<b>MTR 5 R0.2 L22</b>	51	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



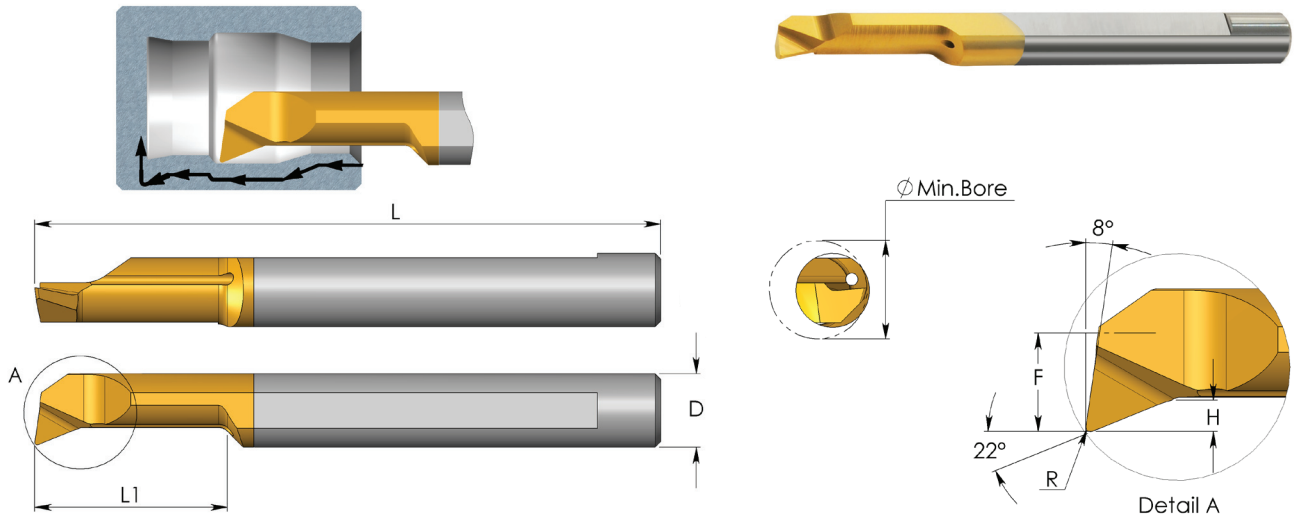
D	Ordering Code	L	L1	B	R	H	F	Min. Bore Dia.	Holder*
4.0	<b>MXR 4 R0.1 L10</b>	51	10	1.3	0.10	0.5	1.3	3.1	SIM ... H4
4.0	<b>MXR 4 R0.15 L10</b>	51	10	1.3	0.15	0.8	1.7	4.1	SIM ... H4
	<b>MXR 4 R0.15 L15</b>	51	15	1.3	0.15	0.8	1.7	4.1	
5.0	<b>MXR 5 R0.2 L15</b>	51	15	1.5	0.20	1.0	2.3	5.1	SIM ... H5
	<b>MXR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

Order example: MXR 4 R0.15 L15 BXC

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

\* For additional holders see page 100

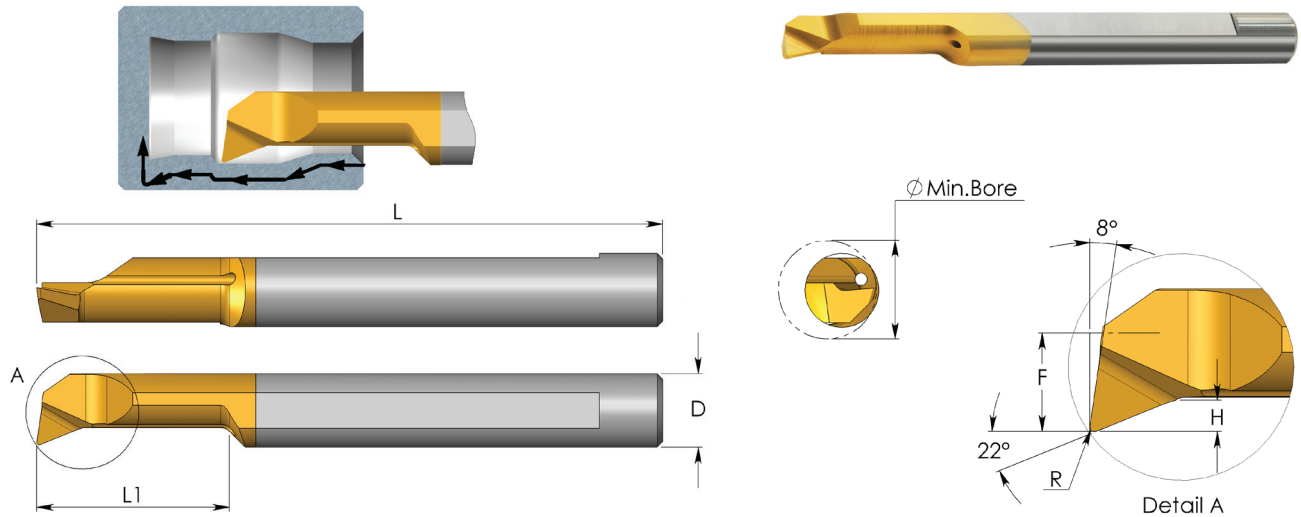
## MPR Bars Profiling and Boring



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	
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



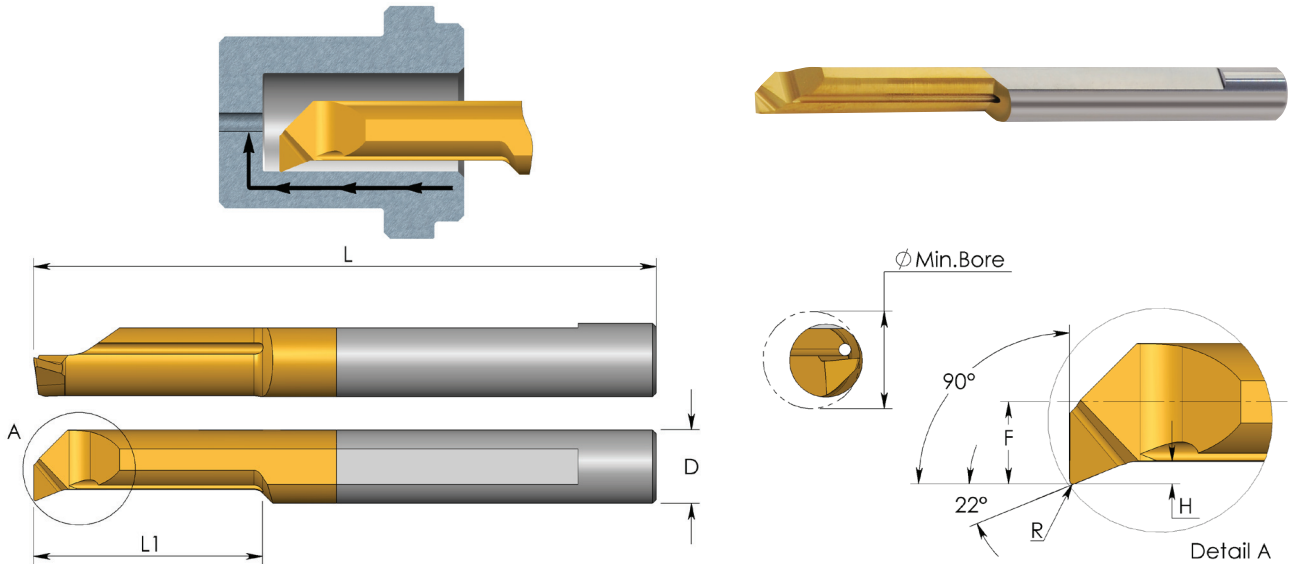
D	Ordering Code	L	L1	R	H	F	Min. Bore Dia.	Holder*
5.0	<b>MPR 5 R0.1 L22</b>	51	22	0.10	1.2	2.1	5.1	SIM ... H5
	<b>MPR 5 R0.1 L30</b>	76	30	0.10	1.2	2.1	5.1	
	<b>MPR 5 R0.2 L10</b>	51	10	0.20	1.2	2.1	5.1	
	<b>MPR 5 R0.2 L15</b>	51	15	0.20	1.2	2.1	5.1	
	<b>MPR 5 R0.2 L22</b>	51	22	0.20	1.2	2.1	5.1	
	<b>MPR 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

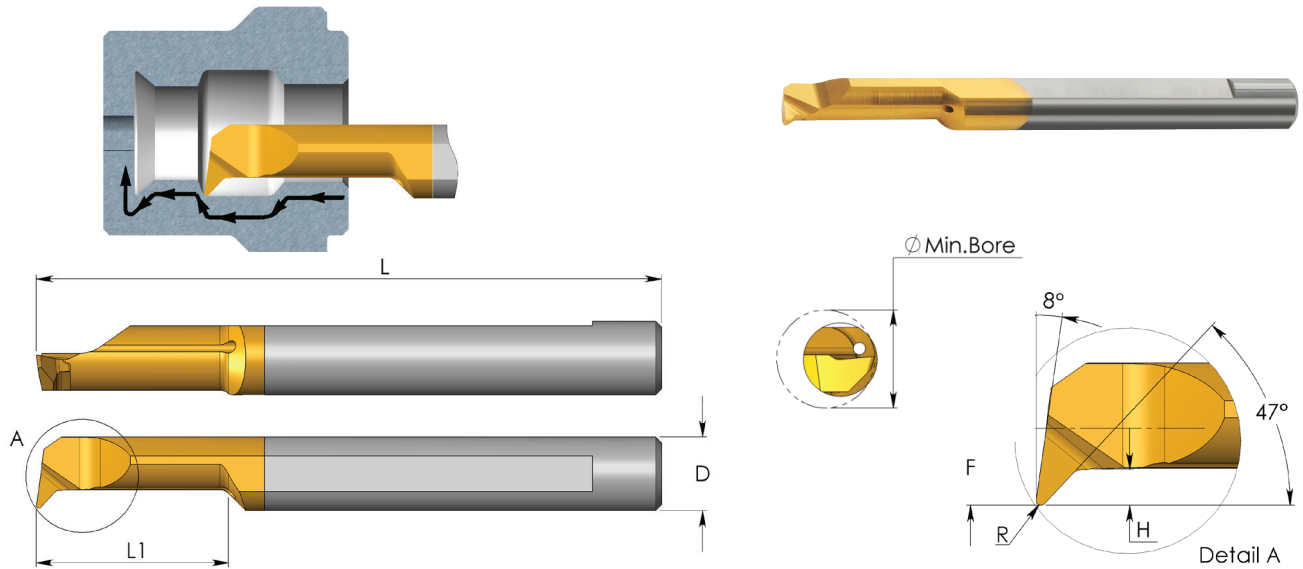
Order example: MUR 5 R0.15 L15 BXC

For L.H. bars specify MUL instead of MUR

\* For additional holders see page 100



## MQR Bars Profiling and Boring



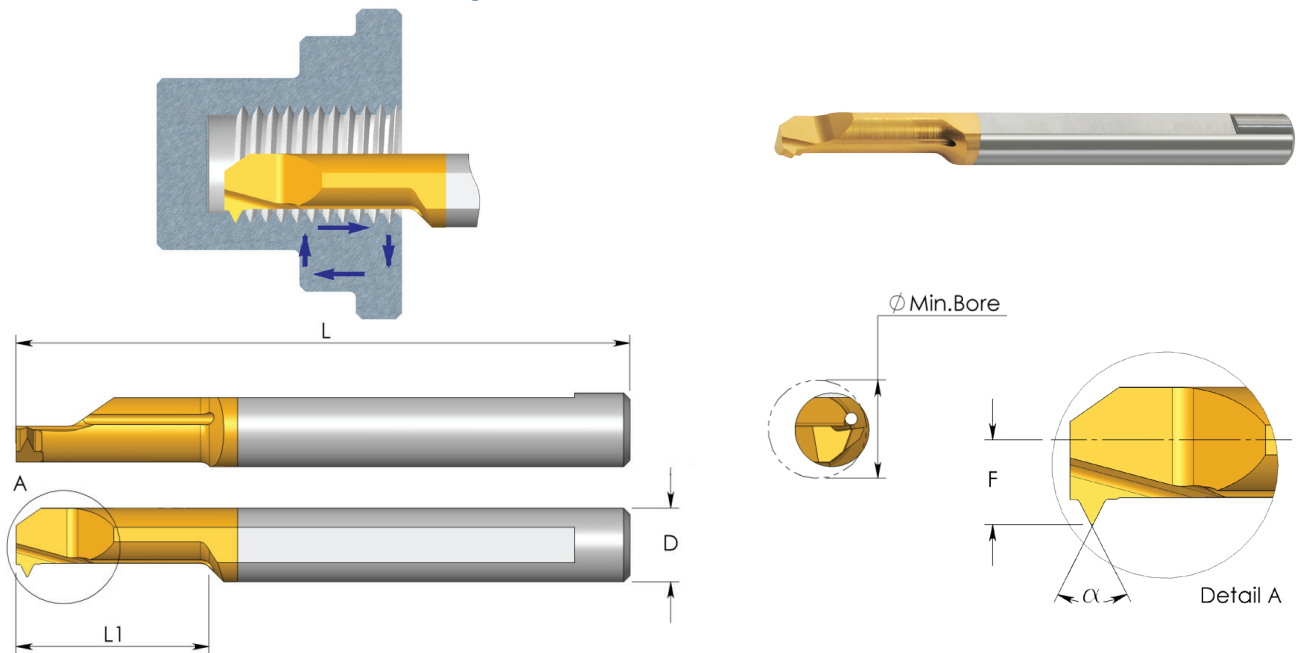
D	Ordering Code	L	L1	R	H	F	Min. Bore Dia.	Holder*
4.0	<b>MQR 4 R0.1 L22</b>	51	22	0.10	0.8	1.8	4.1	SIM ... H4
	<b>MQR 4 R0.2 L10</b>	51	10	0.20	0.8	1.8	4.1	
	<b>MQR 4 R0.2 L15</b>	51	15	0.20	0.8	1.8	4.1	
5.0	<b>MQR 5 R0.2 L15</b>	51	15	0.20	1.0	2.3	5.1	SIM ... H5
	<b>MQR 5 R0.2 L22</b>	51	22	0.20	1.0	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	$\alpha$	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°

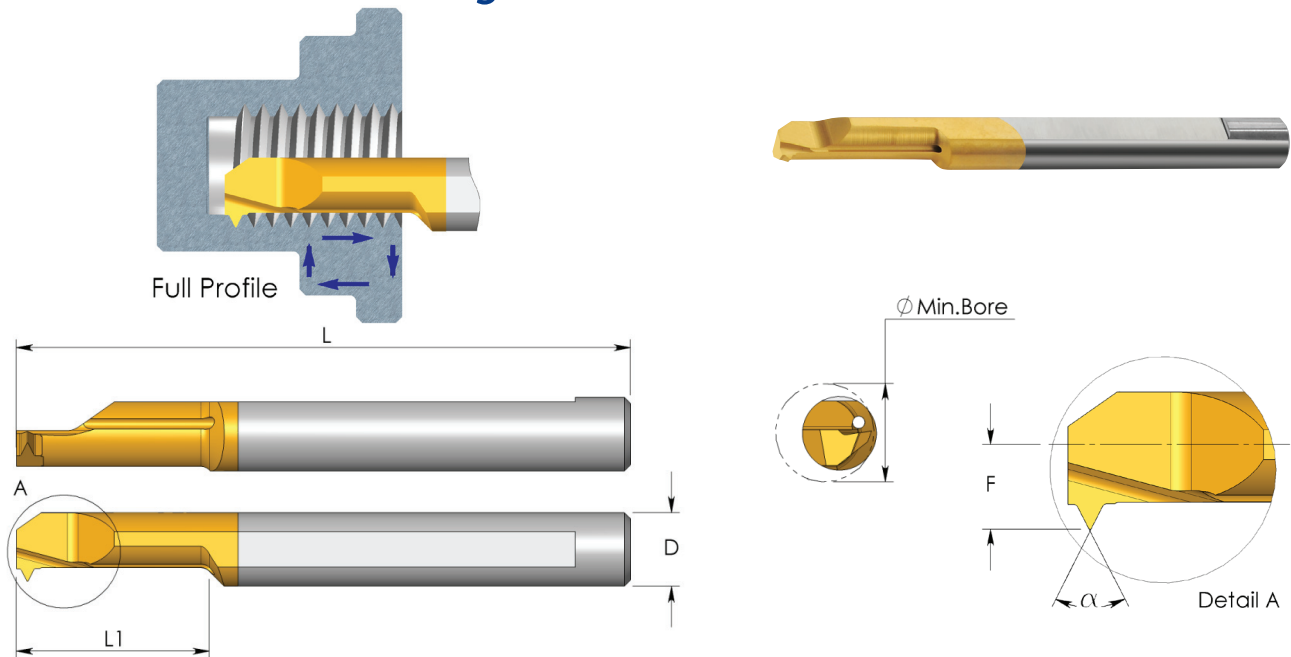
D	Ordering Code	L	L1	$\alpha$	Pitch Range		F	Min. Bore Dia.	Holder*
					mm	TPI			
3.0	<b>MIR 1 L5 A60</b>	39	4.8	60	0.25 - 0.35	100 - 72	0.55	1.2	SIM ... H3
	<b>MIR 1.5 L6 A60</b>	39	6.3	60	0.35 - 0.45	72 - 56	0.65	1.4	
3.0	<b>MIR 2 L8 A60</b>	39	8	60	0.45 - 0.7	56 - 32	1.0	2.1	SIM ... H3
3.0	<b>MIR 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°

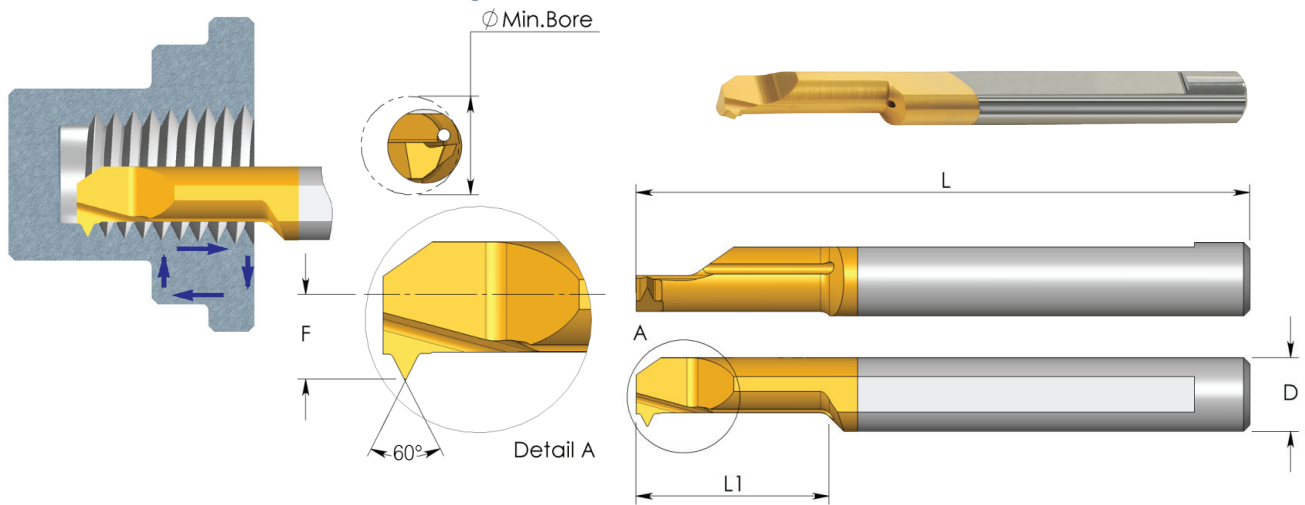
D	Ordering Code	Thread	L	L1	F	Min. Bore Dia.	Holder*
3.0	<a href="#">MIR 3 L10 32 UN</a>	6-32 UNC	39	10	1.0	2.7	SIM ... H3
3.0	<a href="#">MIR 3 L15 36 UN</a>	8-36 UNF	39	15	1.4	3.2	
	<a href="#">MIR 3 L15 32 UN</a>	8-32 UNC	39	15	1.4	3.2	
4.0	<a href="#">MIR 4 L15 36 UN</a>	12-36 UNS	51	15	1.8	4.1	SIM ... 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

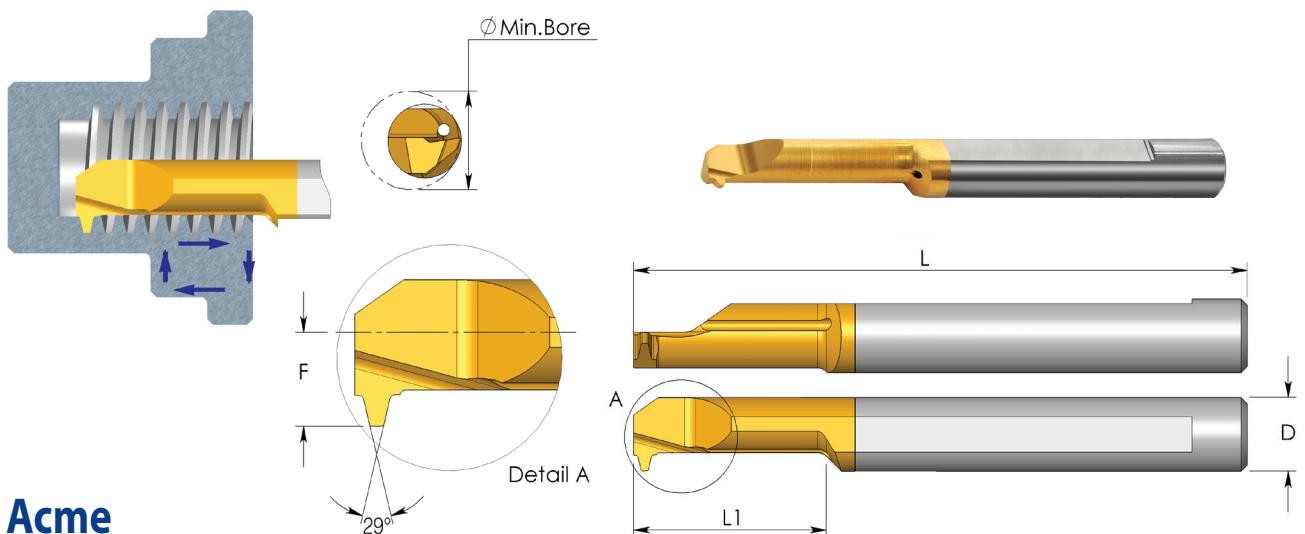
## MIR Bars Threading



### 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 1/8 x 27 NPT	51	15	2.8	5.9	SIM ... H6

Order example: MIR 6 L15 27 NPT BXC



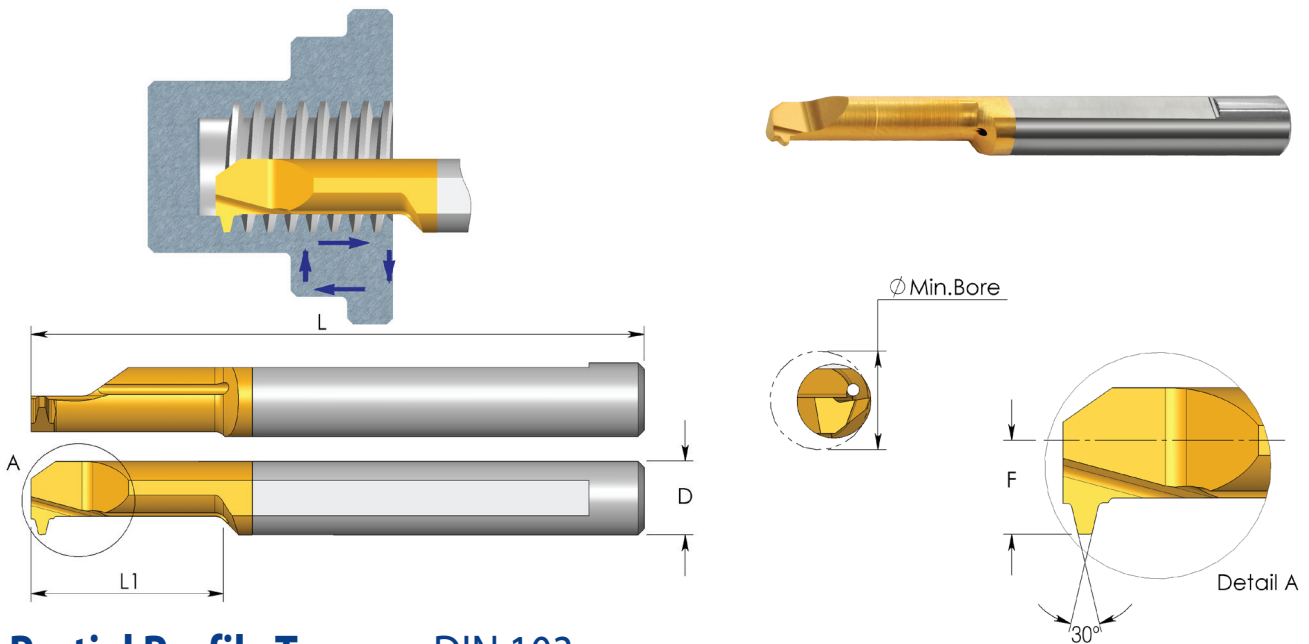
### Acme

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 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 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

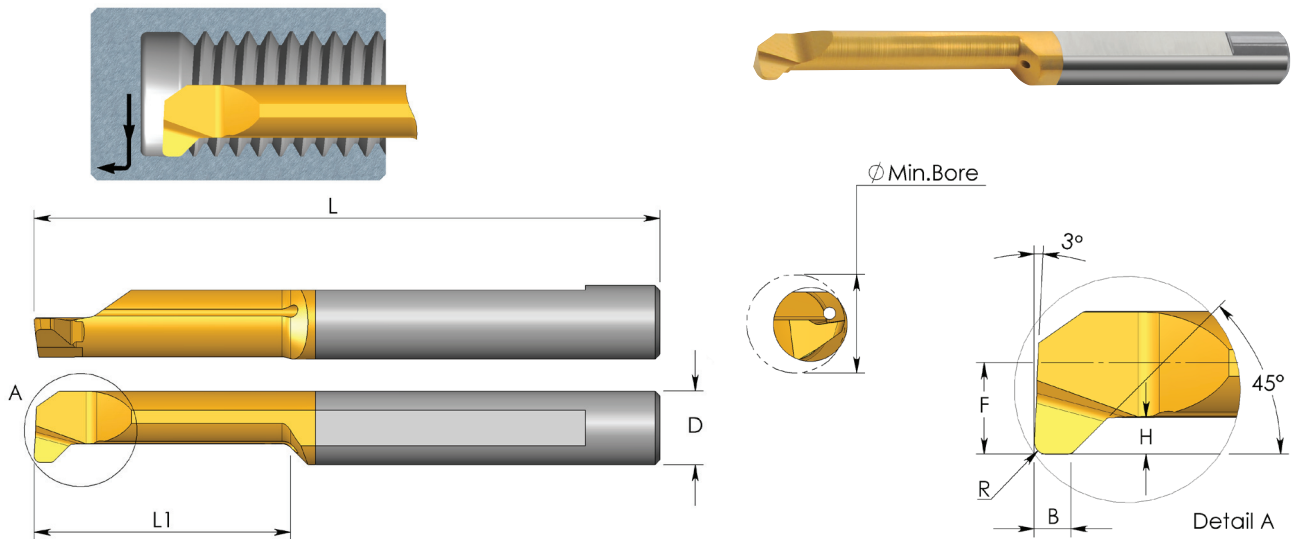
D	Ordering Code	Pitch mm	Thread Size	L	L1	F	Min. Bore Dia.	Holder*
6.0	<b>MIR 6 L22 1.5 TR</b>	1.5	Tr8x1.5 Tr9x1.5 Tr10x1.5	51	22	2.8	6.4	SIM ... H6
7.0	<b>MIR 7 L25 2 TR</b>	2	Tr 9 x 2 Tr10 x 2 Tr11 x 2 Tr12 x 2	62	25	3.2	6.9	SIM ... H7
10.0	<b>MIR 10 L35 2 TR</b>	2	Tr14 x 2 Tr16 x 2 Tr18 x 2 Tr20 x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



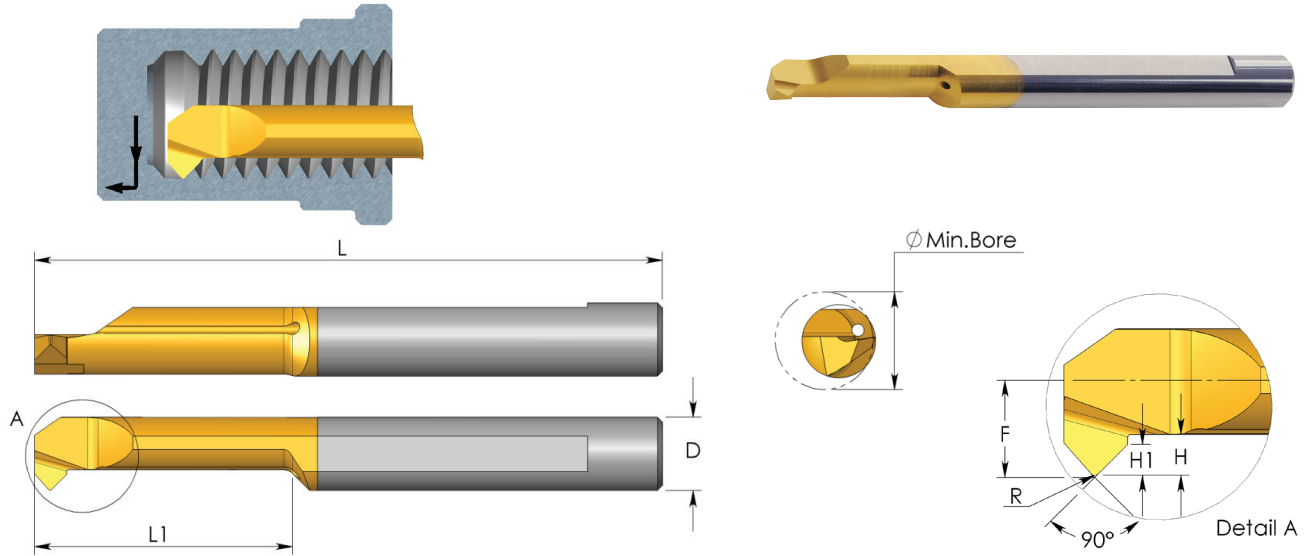
D	Ordering Code	L	L1	B	R	H	F	Min. Bore Dia.	Holder*
4.0	<b>MDR 4 R0.5 L18</b>	51	18	1.5	0.5	0.8	1.8	4.1	SIM ... H4
5.0	<b>MDR 5 R0.5 L24</b>	51	24	1.5	0.5	1.2	2.3	5.1	SIM ... H5
6.0	<b>MDR 6 R0.5 L27</b>	58	27	1.5	0.5	1.4	2.8	6.1	SIM ... H6

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



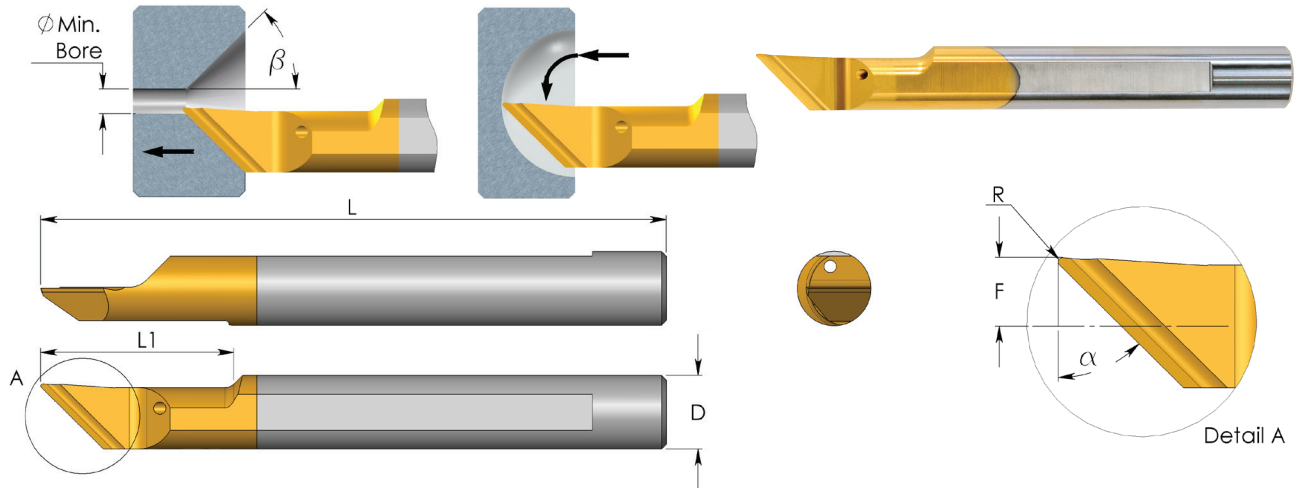
D	Ordering Code	L	L1	R	H	H1	F	Min. Bore Dia.	Holder*
3.0	<b>MCR 3 R0.2 L10</b>	39	10	0.2	0.7	0.3	1.3	3.1	SIM ... H3
4.0	<b>MCR 4 R0.2 L15</b>	51	15	0.2	0.8	0.4	1.7	4.1	SIM ... H4
5.0	<b>MCR 5 R0.2 L15</b>	51	15	0.2	1.2	0.7	2.1	5.1	SIM ... H5
6.0	<b>MCR 6 R0.2 L15</b>	51	15	0.2	1.4	0.7	2.8	6.1	SIM ...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

## MWR Bars Chamfering and Profiling



D	Ordering Code	L	L1	R			F	Min. Bore Dia.	Holder*
6.0	<b>MWR 6 R0.2 A90</b>	51	15.0	0.2	45°	45°	2.3	1.0	SIM ... H6
	<b>MWR 6 R0.2 A60</b>	51	15.0	0.2	60°	30°	2.3	1.0	
	* <b>MWR 6 R0.4 A90</b>	51	22.0	0.4	45°	45°	2.3	6.0	
	* <b>MWR 6 R0.4 A60</b>	51	22.0	0.4	60°	30°	2.3	6.0	

Order example: MWR 6 R0.2 A90 BXC

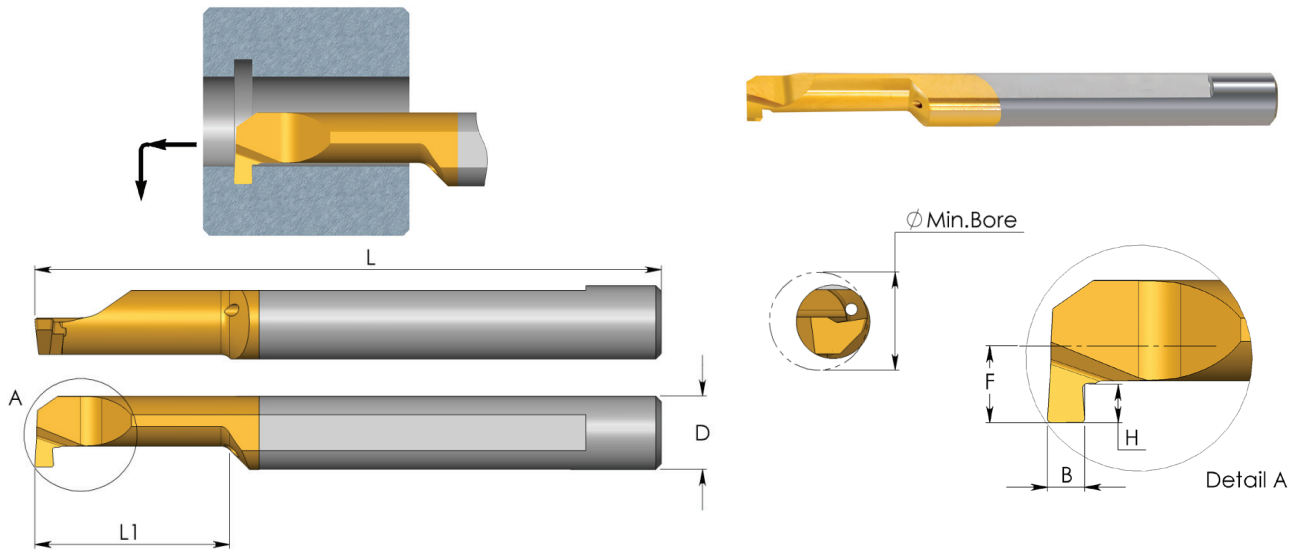
For L.H. bars specify MWL instead of MWR

\*Can be used also for boring

\*\* For additional holders see page 100



## MGR Bars Grooving

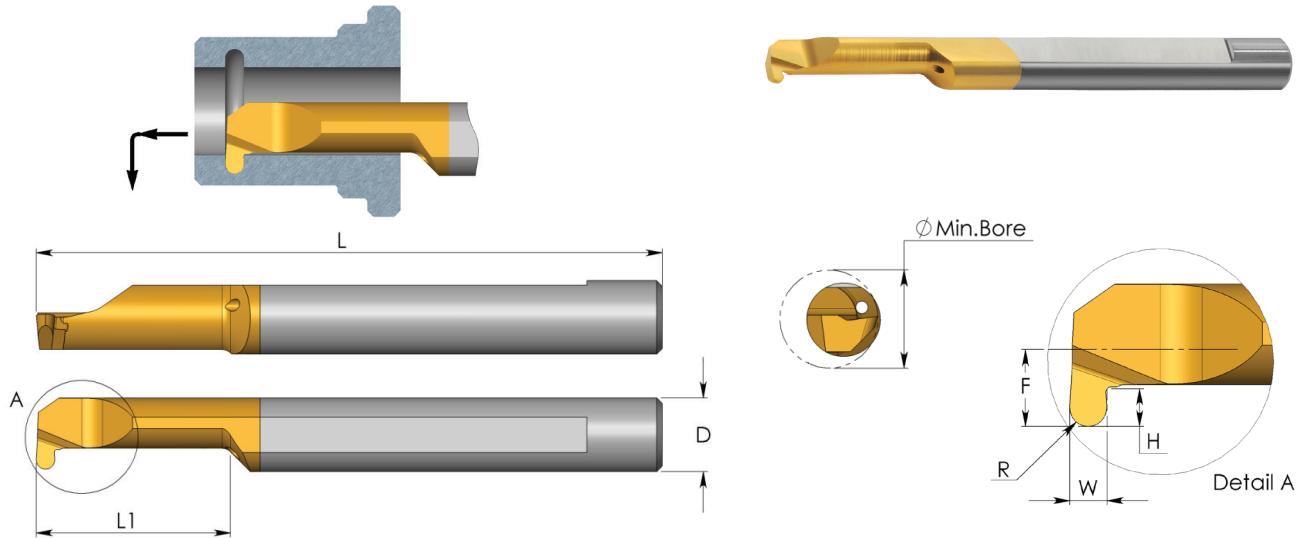


D	Ordering Code	L	L1	B	H	F	Min. Bore Dia.	Holder*
3.0	<b>MGR 3 B0.7 L10</b>	39	10	0.7	0.6	1.3	3.1	SIM ... H3
	<b>MGR 4 B0.5 L10</b>	51	10	0.5	0.5	1.7	4.1	SIM ... H4
4.0	<b>MGR 4 B0.7 L10</b>	51	10	0.7	0.6	1.7	4.1	
	<b>MGR 4 B1.0 L10</b>	51	10	1.0	1.0	1.7	4.1	
	<b>MGR 4 B1.0 L15</b>	51	15	1.0	1.0	1.7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



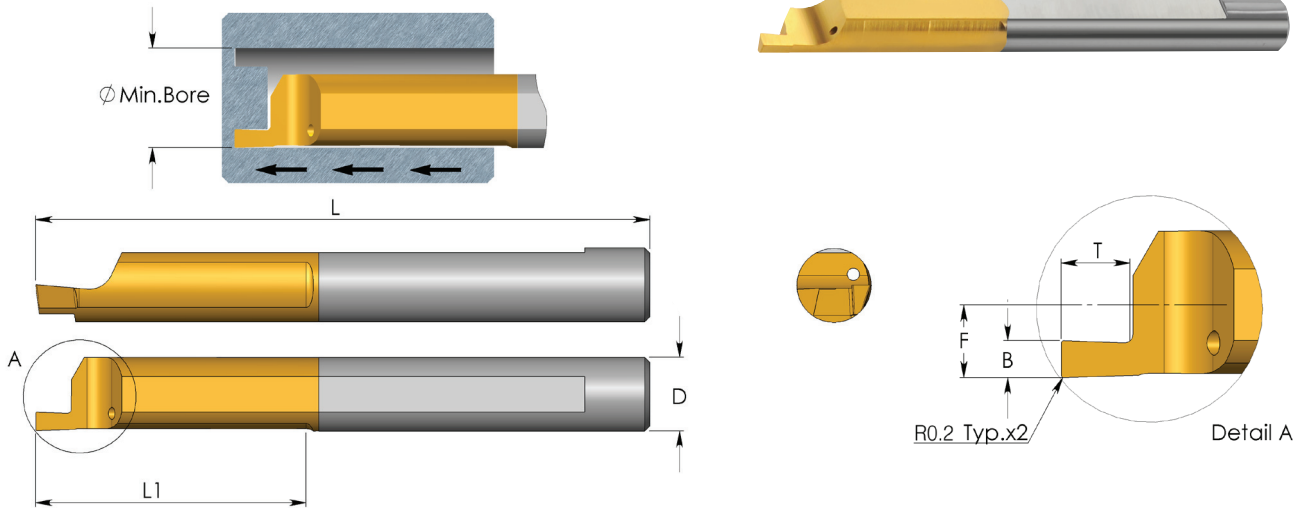
D	Ordering Code	L	L1	R	W	H	F	Min. Bore Dia.	Holder*
4.0	<b>MKR 4 R0.5 L10</b>	51	10	0.50	1.0	1.0	1.7	4.1	SIM ... H4
	<b>MKR 4 R0.75 L10</b>	51	10	0.75	1.5	1.0	1.7	4.1	
5.0	<b>MKR 5 R0.5 L15</b>	51	15	0.50	1.0	1.2	2.3	5.1	SIM ... H5
	<b>MKR 5 R0.75 L15</b>	51	15	0.75	1.5	1.2	2.3	5.1	
	<b>MKR 5 R1.0 L15</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

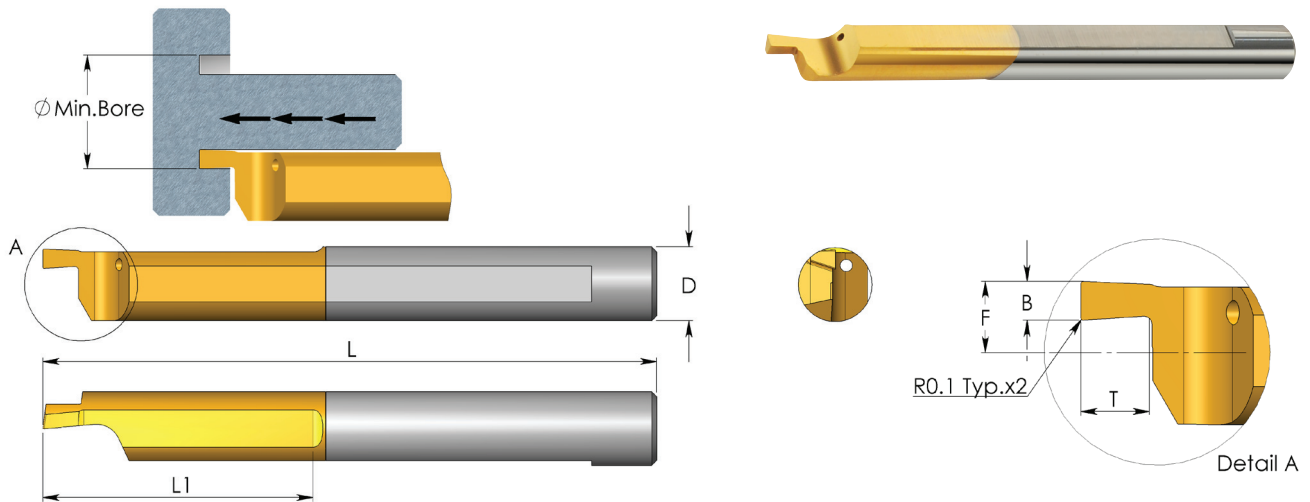


D	Ordering Code	L	L1	B	T	F	Min. Bore Dia.	Holder*
4.0	<b>MFR 4 B0.75 L15</b>	51	15	0.75	1.2	1.95	5.0	SIM ... H4
	<b>MFR 4 B1.0 L15</b>	51	15	1.0	1.5	1.95	5.0	
	<b>MFR 4 B1.5 L15</b>	51	15	1.5	2.8	1.95	5.0	
5.0	<b>MFR 5 B0.75 L22</b>	51	22	0.75	1.2	2.45	6.0	SIM ... H5
	<b>MFR 5 B1.0 L22</b>	51	22	1.0	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

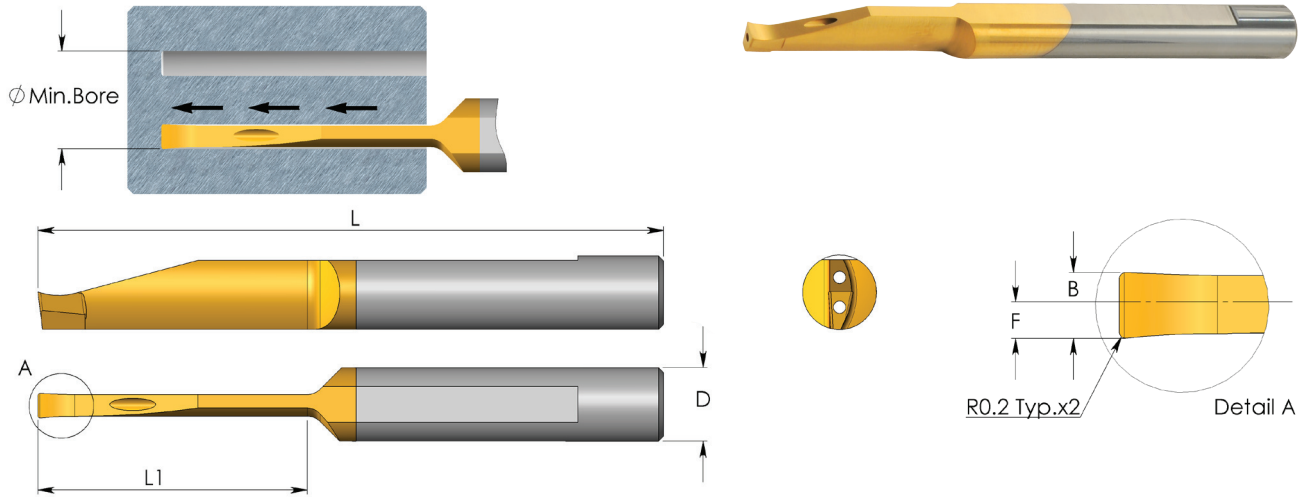


D	Ordering Code	L	L1	B	T	F	Min. Bore Dia.	Holder*
4.0	<b>MFL 4 B0.75 L15</b>	51	15	0.75	1.2	1.75	5.0	SIM ... H4
	<b>MFL 4 B1.0 L15</b>	51	15	1.0	1.5	1.75	5.0	
	<b>MFL 4 B1.5 L15</b>	51	15	1.5	2.8	1.75	5.0	
5.0	<b>MFL 5 B0.75 L22</b>	51	22	0.75	1.2	2.25	6.0	SIM ... H5
	<b>MFL 5 B1.0 L22</b>	51	22	1.0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

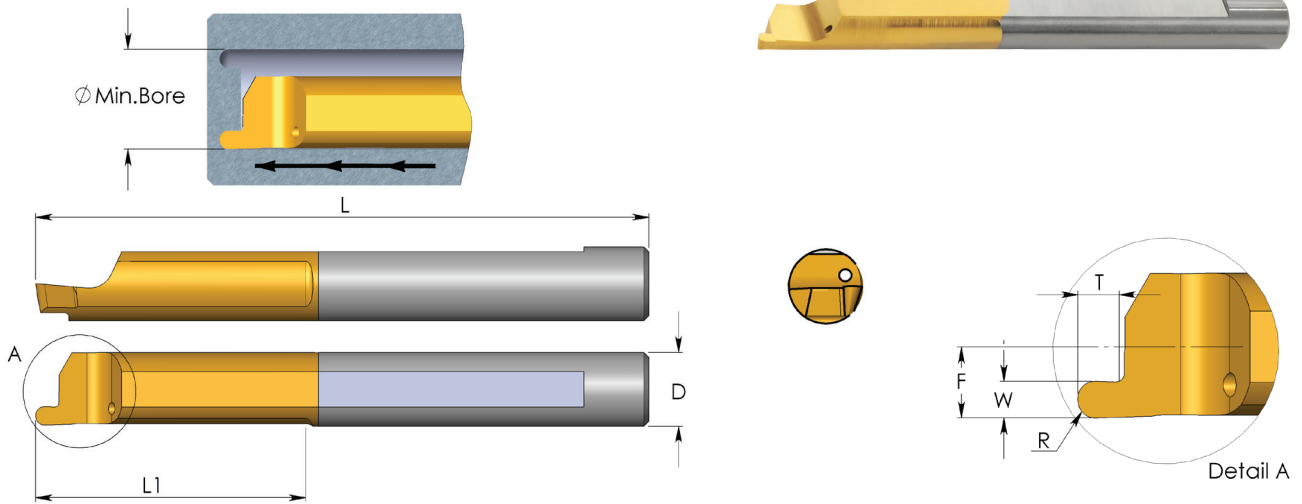


D	Ordering Code	L	L1	B	F	Min. Bore Dia.	Holder*
6.0	<b>MVR 6 B2.0 L15</b>	64	15	2.0	1.1	12.0	SIM ... H6
	<b>MVR 6 B2.0 L22</b>	64	22	2.0	1.1	12.0	
	<b>MVR 6 B2.5 L22</b>	64	22	2.5	1.4	12.0	
8.0	<b>MVR 8 B3.0 L27</b>	64	27	3.0	1.6	15.0	SIM ... H8
	<b>MVR 8 B3.0 L43</b>	80	43	3.0	1.6	15.0	
8.0	<b>MVR 8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

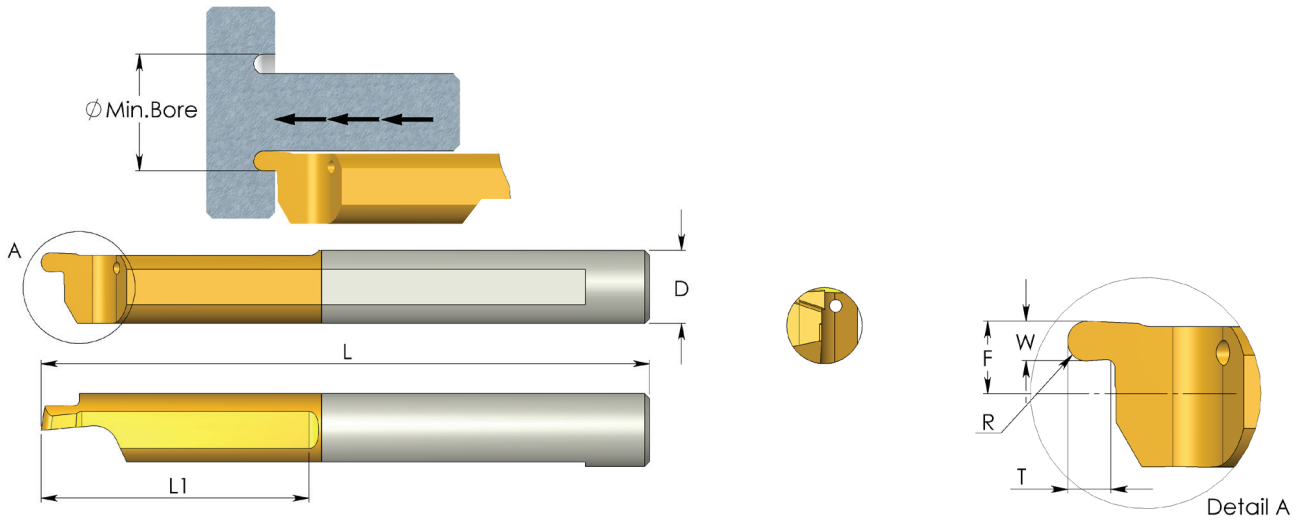


D	Ordering Code	L	L1	R	W	T	F	Min. Bore Dia.	Holder*
4.0	<b>MZR 4 R0.5 L15</b>	51	15	0.50	1.0	1.2	1.95	5.0	SIM ... H4
	<b>MZR 4 R0.75 L15</b>	51	15	0.75	1.5	1.5	1.95	5.0	
5.0	<b>MZR 5 R0.5 L22</b>	51	22	0.50	1.0	1.2	2.45	6.0	SIM ... H5
	<b>MZR 5 R0.75 L22</b>	51	22	0.75	1.5	1.5	2.45	6.0	
	<b>MZR 5 R1.0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

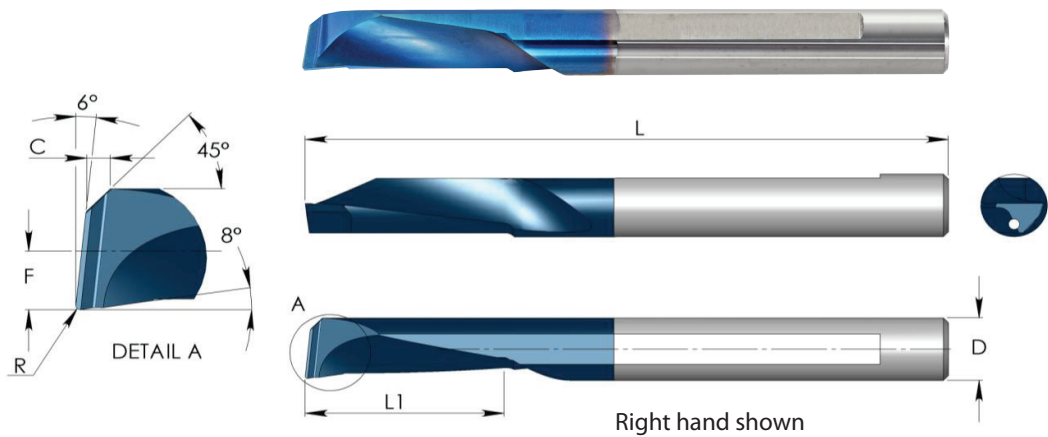


D	Ordering Code	L	L1	R	W	T	F	Min. Bore Dia.	Holder*
4.0	<b>MZL 4 R0.5 L15</b>	51	15	0.50	1.0	1.2	1.75	5.0	SIM ... H4
	<b>MZL 4 R0.75 L15</b>	51	15	0.75	1.5	1.5	1.75	5.0	
5.0	<b>MZL 5 R0.5 L22</b>	51	22	0.50	1.0	1.2	2.25	6.0	SIM ... H5
	<b>MZL 5 R0.75 L22</b>	51	22	0.75	1.5	1.5	2.25	6.0	
	<b>MZL 5 R1.0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

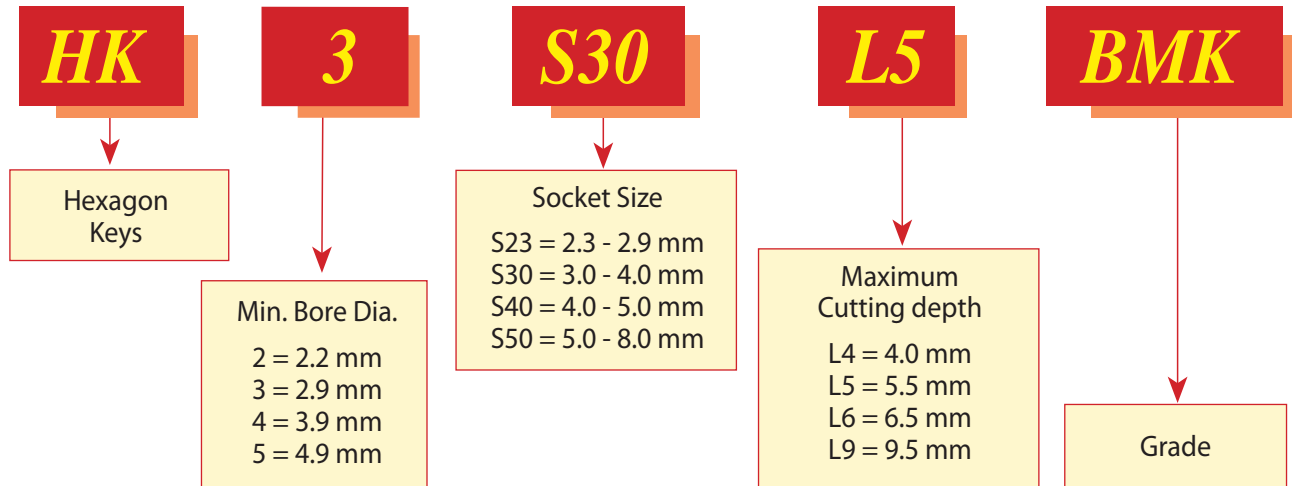
P	BMK	*
M		*
K		*
N		*
S		*
H		

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

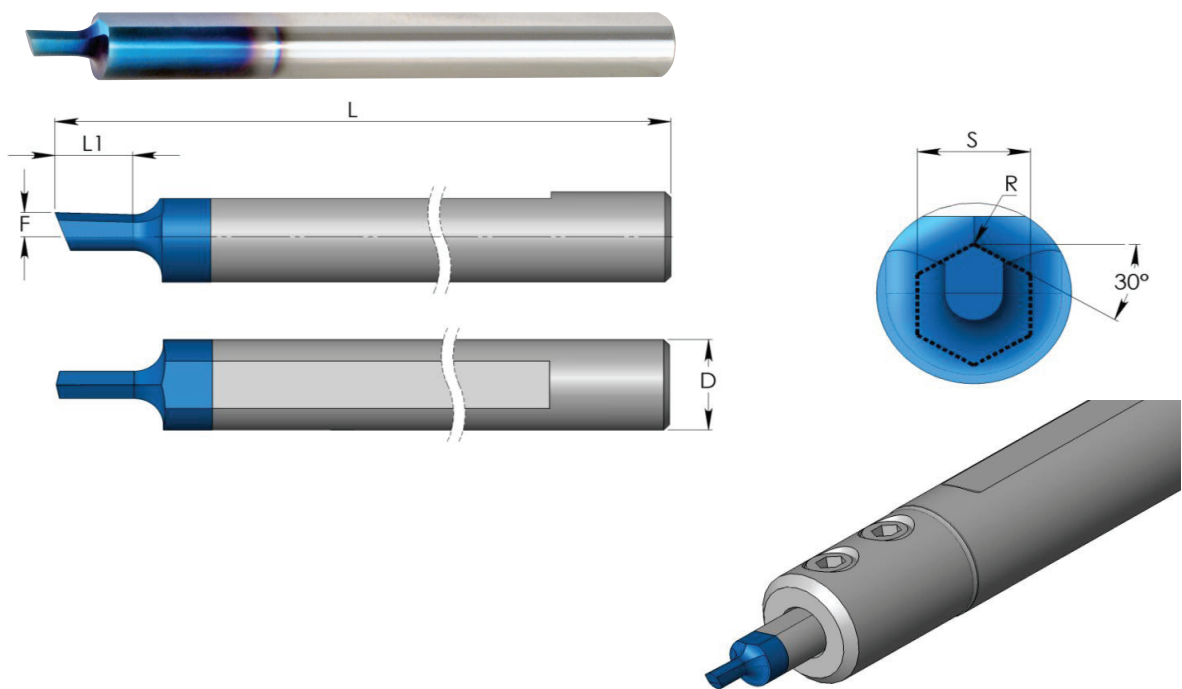
\*\* For additional holders see page 100



## Product Identification



## HK Broaching Tools for Hexagon Keys



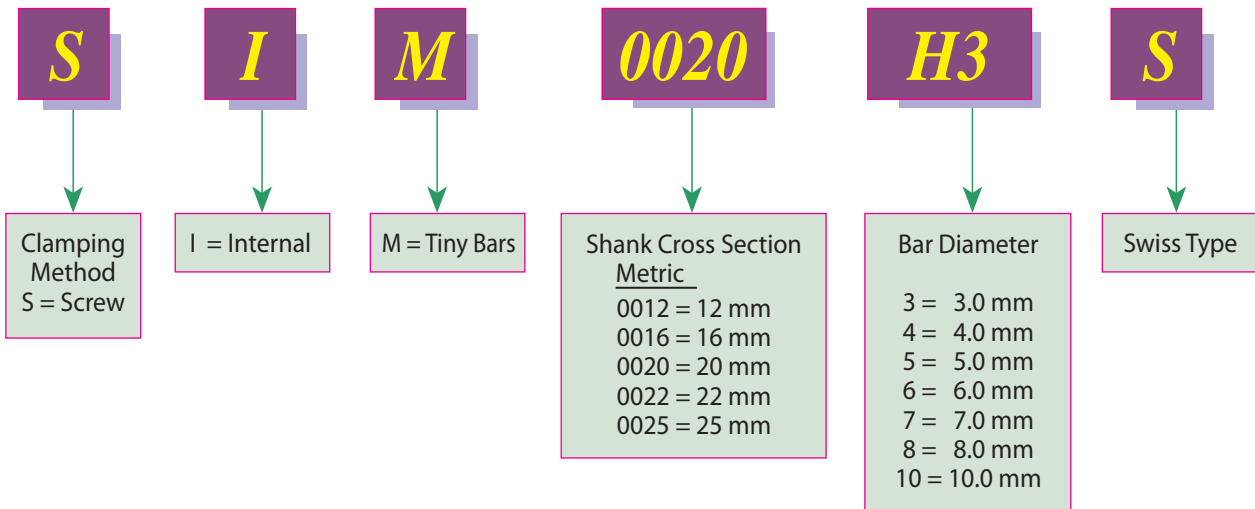
D	S	Ordering Code	L	L1	R	F	Min. Bore Dia.	Holder *
5.0	2.3-2.9	<b>HK 2 S23 L4</b>	51	4.0	0.05	1.35	2.2	SIM...H5
	3.0-4.0	<b>HK 3 S30 L5</b>	51	5.5	0.05	1.35	2.9	
	4.0-5.0	<b>HK 4 S40 L6</b>	51	6.5	0.10	1.35	3.9	
7.0	5.0-8.0	<b>HK 5 S50 L9</b>	62	9.5	0.10	1.35	4.9	SIM...H7

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

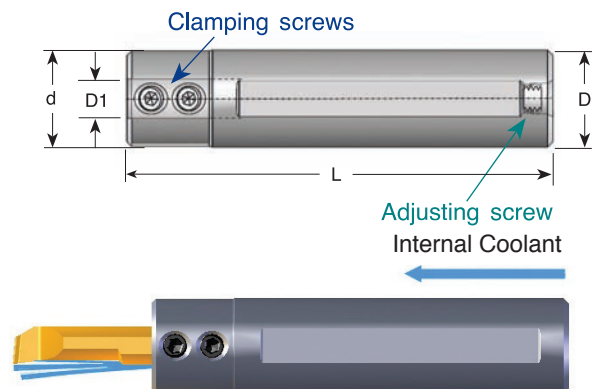
S = Socket Size

\* For additional holders see page 100

## Product Identification Tiny Bar Holders Ordering Codes



## Tiny Tools Bar Holders

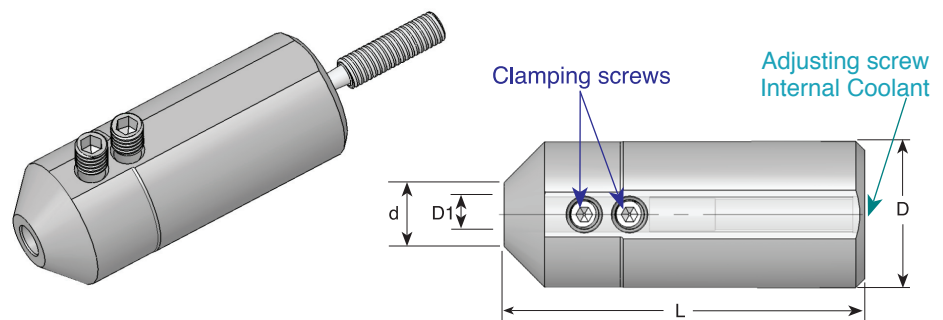


D1	Ordering Code	L	D	d	Key	Clamping Screw	Adjusting Screw
3.0	<b>SIM 0012 H3</b>	88	12	12	K25	S24	S35
	<b>SIM 0016 H3S</b>	75	16	20	K25	S25	S35S
	<b>SIM 0016 H3</b>	88	16	20	K25	S25	S35
	<b>SIM 0020 H3</b>	88	20	20	K25	S25	S35
	<b>SIM 0022 H3</b>	88	22	22	K25	S25	S35
4.0	<b>SIM 0012 H4</b>	88	12	12	K25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

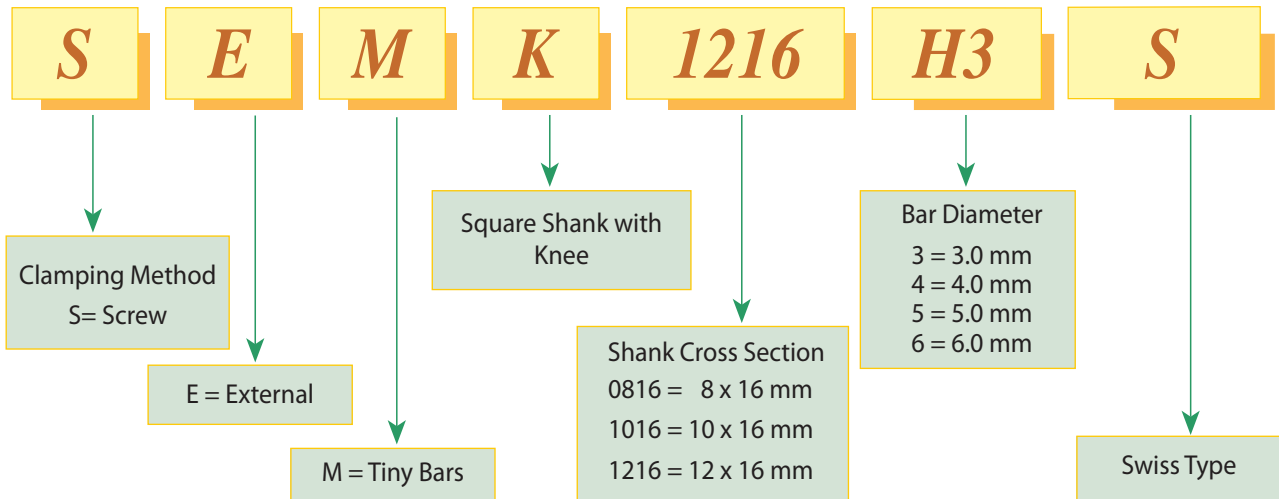
## Tiny Tools Bar Holders



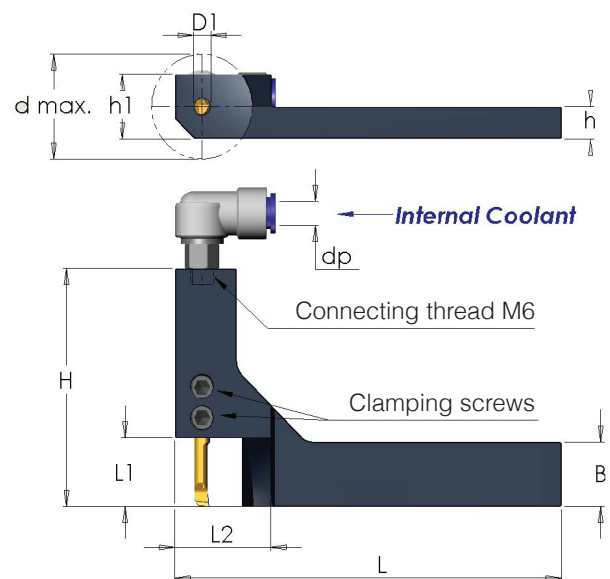
D1	Ordering Code	D	d	L	Key	Clamping Screw	Adjusting Screw
3.0	<b>SIM 0025 H3</b>	25	10.8	62	K25	S25	S35M
4.0	<b>SIM 0025 H4</b>	25	10.8	62	K25	S25	S35M
5.0	<b>SIM 0025 H5</b>	25	10.8	62	K25	S25	S35M
6.0	<b>SIM 0025 H6</b>	25	10.8	62	K25	S25	S35M
8.0	<b>SIM 0025 H8</b>	25	10.8	62	K25	S25	S35M

# Product Identification

## Tiny Bar Holders Ordering Codes



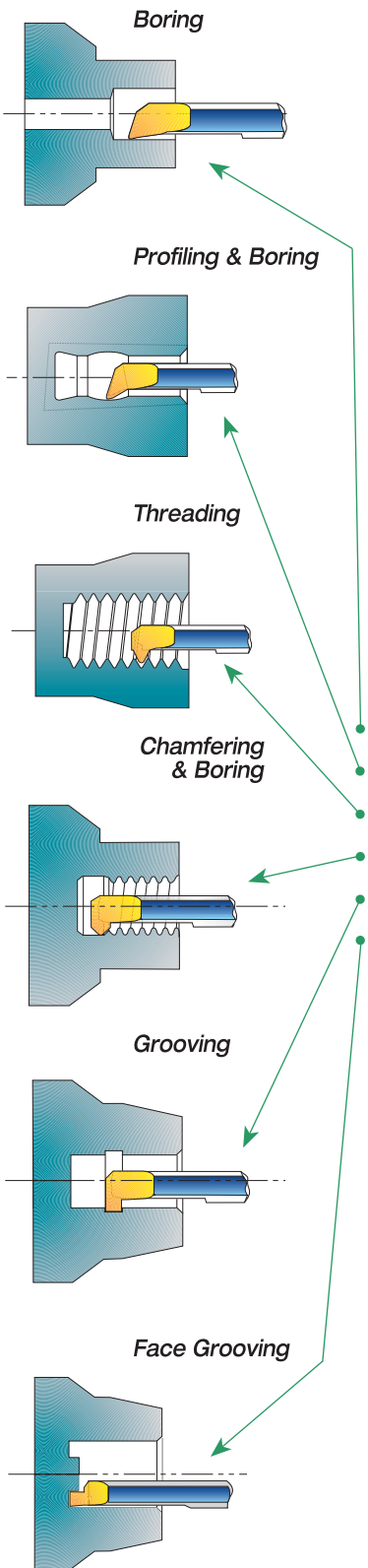
## Square Shank Holders



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

\* Optional

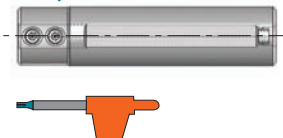
## Tiny Tools Kits



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
MGR4 B1.5 L10	MGR5 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)

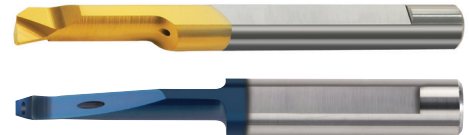
PVD TiN coated grade for low cutting speed.  
Works well with a wide range of stainless steels.

#### 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 Standard	Material		Condition	Cutting Speed m/min		
				BXC	BMK	K20
P	Non-Alloy steel and cast steel, free 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 than 5% alloying elements)		Annealed	20-40	25-50	10-20
High alloy steel, cast steel, and tool steel		Quenched and tempered	20-40	25-50	10-20	
		Annealed	20-40	25-50	10-20	
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, 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				
		Hard rubber				
S	High temp. alloys, Super alloys	Fe based	Annealed	15-30	15-40	10-20
		Ni or Co based	Annealed			
			Cured			
	Titanium alloys		Cast	10-30	10-30	5-15
H	Hardened steel		Alpha+beta alloys cured	10-30	15-40	5-15
			Hardened 45-50 HRC			
			Hardened 51-55 HRC			
	Chilled cast iron		Hardened 56-62 HRC	10-30	10-30	5-15
Cast iron			Cast	10-30	10-30	5-15
			Hardened	10-20	10-20	5-15

\* For CMR see page 104

Recommended Feed Rate: 0.01 - 0.03 mm/rev

## Threading Passes

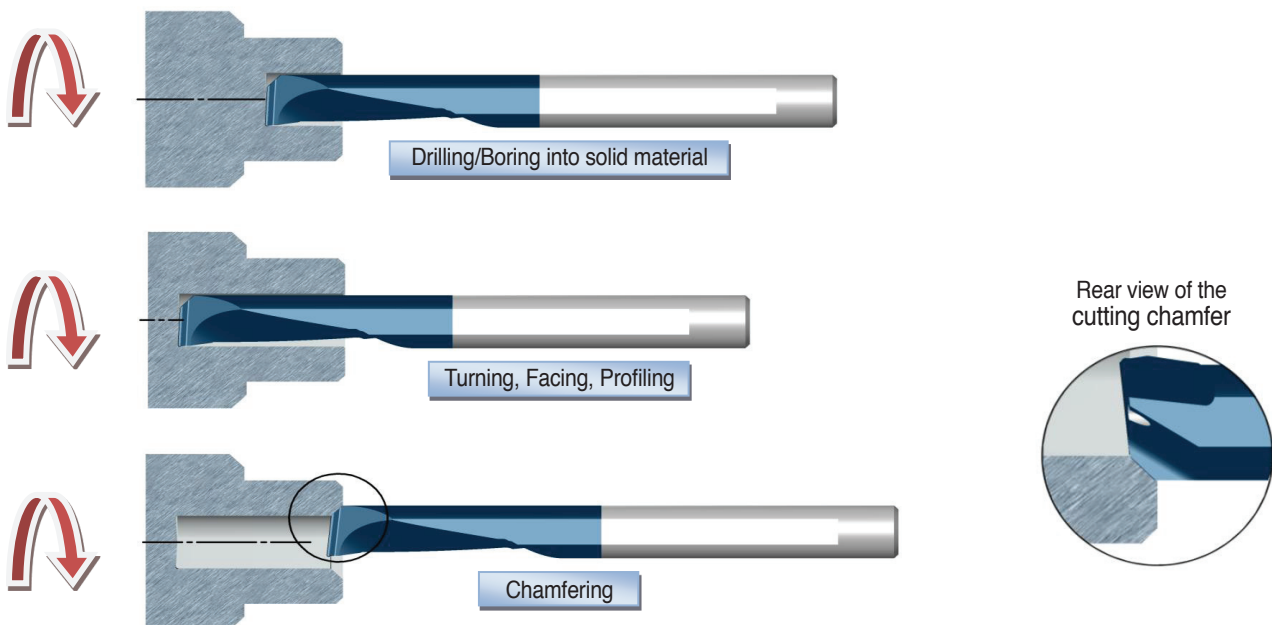
Pitch:	mm TPI	0.5 48	0.7 36	0.8 32	1.0 24	1.25 20	1.5 16	2-5 14-5
Number of Passes		6-12	7-14	7-16	8-18	8-20	10-22	20-38

## 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 uninterruptedly.
- 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.

