C.P.T.
Präzisions Werkzeuge
The optimal tools for your industry™

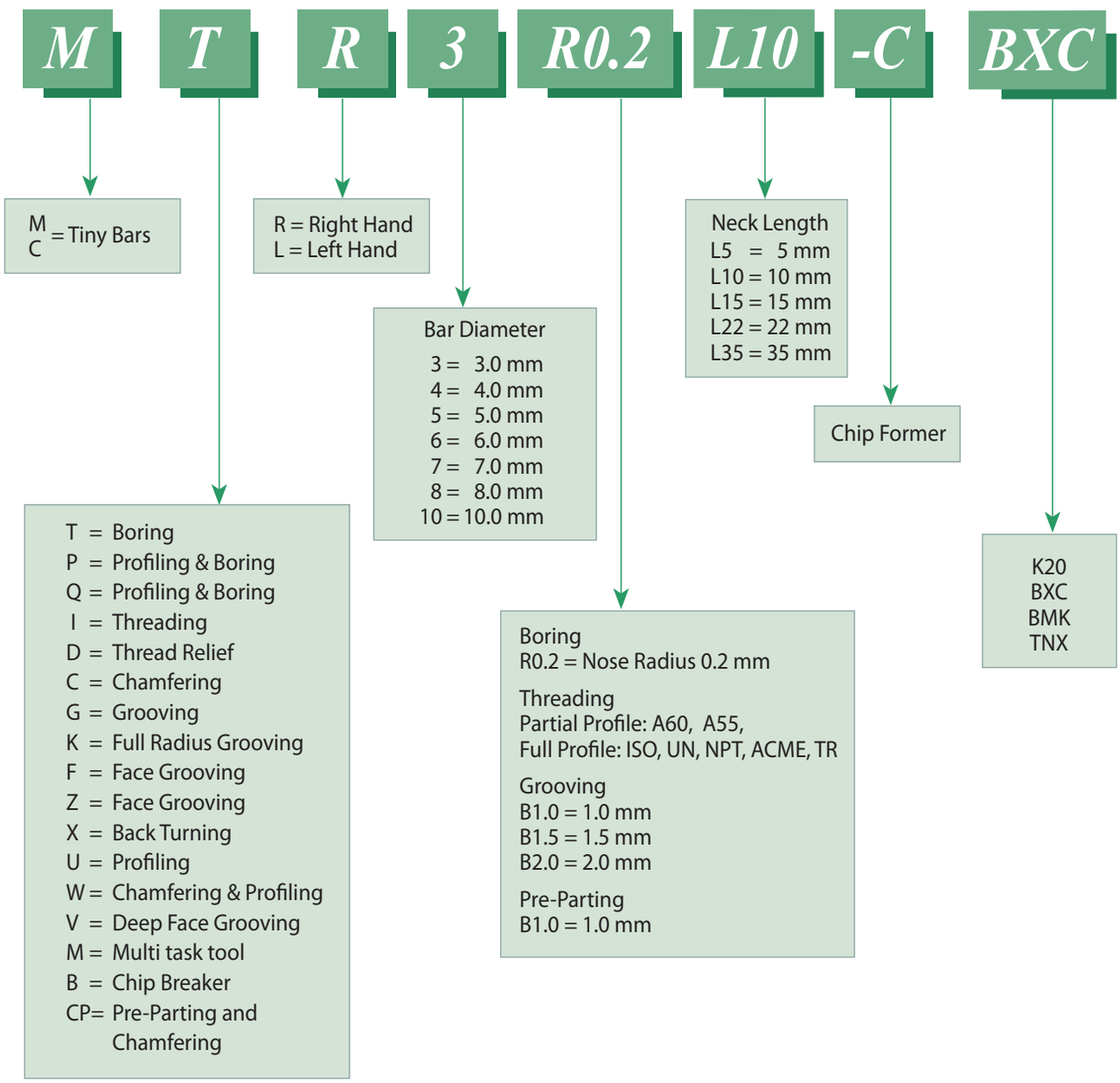
Tiny Tools

English

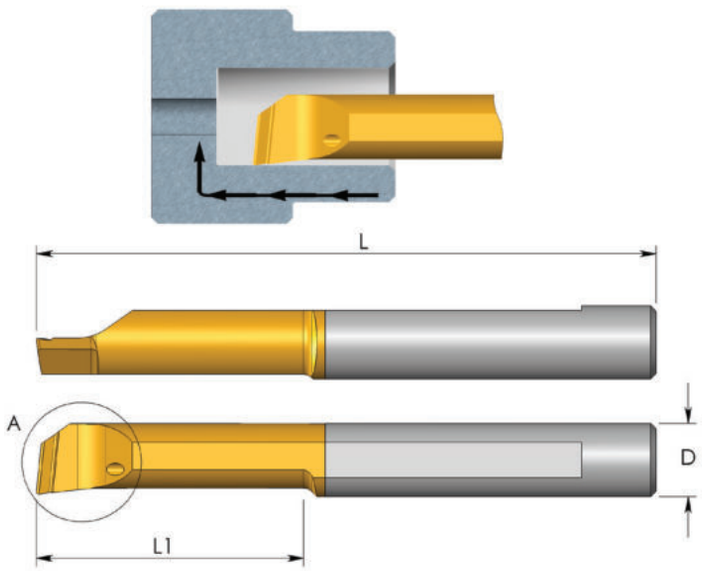
Contents:

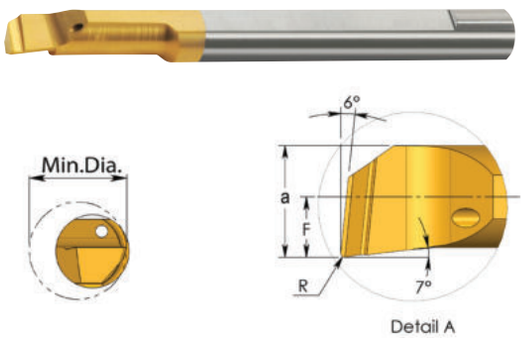
Product Identification

Tiny Bars Ordering Codes



MTR Bars *Boring*





Grade	P	M	K	N	S	H
K20		○	○	●	○	
BXC	●	●	●	○	●	○
BMK	●	●	●	○	●	○
TNX	●	●	●	○	●	●

● First choice ○ Alternative

For L.H. bars specify MTL instead of MTR

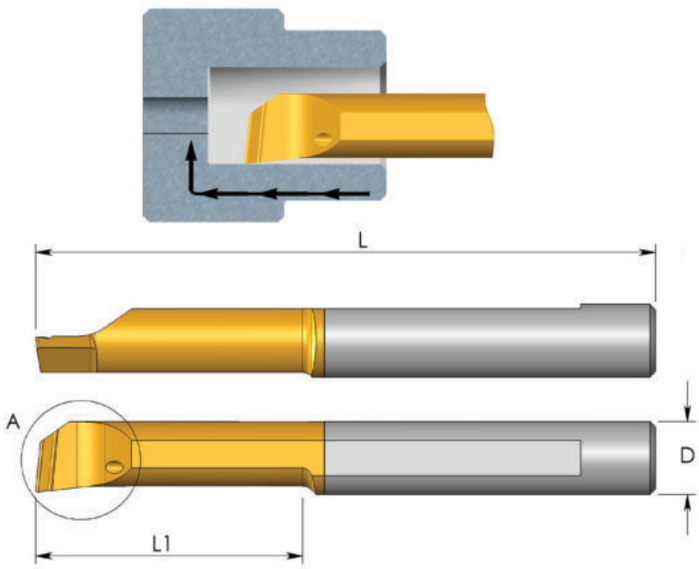
D	Ordering Code	L	L1	R	F	a	Min. Dia.	K20	BXC	BMK	TNX	Holder
3.0	**MTR 0.3 R0 L1**	39	1.2	0	0.1	0.25	0.3	●	●	●		SIM ... H3
New 3.0	**MTR 0.5 R0.05 L2**	39	2.0	0.05	0.2	0.45	0.5	●	●	●		SIM ... H3
3.0	**MTR 1 R0 L6**	39	6	0	0.45	0.95	1.0	●	●	●		SIM ... H3
3.0	**MTR 1 R0.05 L4**	39	4	0.05	0.45	0.95	1.0	●	●	●	●	SIM ... H3
3.0	**MTR 1 R0.05 L6**	39	6	0.05	0.45	0.95	1.0	●	●	●		SIM ... H3
3.0	**MTR 1.2 R0 L7**	39	7	0	0.55	1.15	1.2	●	●	●		SIM ... H3
3.0	**MTR 1.2 R0 L9**	39	9	0	0.55	1.15	1.2	●	●	●		SIM ... H3
New 3.0	**MTR 1.2 R0.05 L9**	39	9	0.05	0.55	1.15	1.2	●	●	●		SIM ... H3
3.0	**MTR 1.5 R0 L6**	39	6	0	0.7	1.4	1.5	●	●	●		SIM ... H3
3.0	**MTR 1.5 R0.1 L6**	39	6	0.10	0.7	1.4	1.5	●	●	●	●	SIM ... H3
New 3.0	**MTR 1.5 R0.1 L10**	39	10	0.10	0.7	1.4	1.5	●	●	●		SIM ... H3
3.0	**MTR 2 R0 L10**	39	10	0	0.8	1.8	2.1	●	●	●		SIM ... H3
3.0	**MTR 2 R0.05 L5**	39	5	0.05	0.8	1.8	2.1	●	●	●	●	SIM ... H3
3.0	**MTR 2 R0.05 L10**	39	10	0.05	0.8	1.8	2.1	●	●	●	●	SIM ... H3
3.0	**MTR 2 R0.1 L10**	39	10	0.10	0.8	1.8	2.1	●	●	●		SIM ... H3
3.0	**MTR 2 R0.1 L15**	39	15	0.10	0.8	1.8	2.1	●	●	●	●	SIM ... H3
3.0	**MTR 2 R0.15 L5**	39	5	0.15	0.8	1.8	2.1	●	●	●	●	SIM ... H3
3.0	**MTR 2 R0.15 L10**	39	10	0.15	0.8	1.8	2.1	●	●	●	●	SIM ... H3
4.0	**MTR 2.5 R0 L10**	51	10	0	1.0	2.3	2.5	●	●	●		SIM ... H4
4.0	**MTR 2.5 R0.1 L10**	51	10	0.10	1.0	2.3	2.5	●	●	●		SIM ... H4
4.0	**MTR 2.5 R0.1 L15**	51	15	0.10	1.0	2.3	2.5	●	●	●		SIM ... H4
New 4.0	**MTR 2.5 R0.15 L10**	51	10	0.15	1.0	2.3	2.5	●	●	●		SIM ... H4
3.0	**MTR 3 R0.05 L10**	39	10	0.05	1.3	2.8	3.1	●	●	●	●	SIM ... H3
3.0	**MTR 3 R0.05 L15**	39	15	0.05	1.3	2.8	3.1	●	●	●	●	SIM ... H3
3.0	**MTR 3 R0.1 L10**	39	10	0.10	1.3	2.8	3.1	●	●	●	●	SIM ... H3
3.0	**MTR 3 R0.1 L15**	39	15	0.10	1.3	2.8	3.1	●	●	●	●	SIM ... H3
3.0	**MTR 3 R0.2 L10**	39	10	0.20	1.3	2.8	3.1	●	●	●	●	SIM ... H3
3.0	**MTR 3 R0.2 L15**	39	15	0.20	1.3	2.8	3.1	●	●	●	●	SIM ... H3

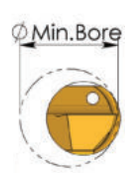
See pages 40-54 for holders

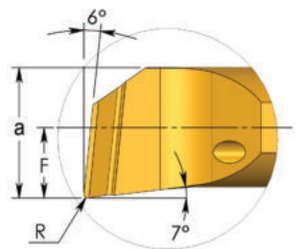
● Available.

Other items available upon request

MTR Bars *Boring*

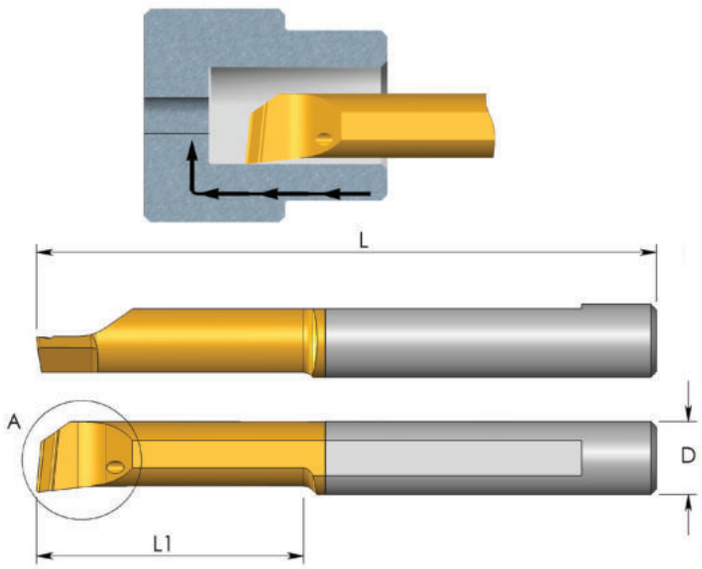


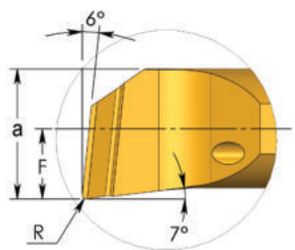




D	Ordering Code	L	L1	R	F	a	Min. Dia.	K20	BXC	BMK	TNX	Holder
New	**MTR 3.7 R0.1 L10**	51	10	0.10	1.6	3.5	3.7	●	●	●		SIM ... H4
New 4.0	**MTR 3.7 R0.1 L15**	51	15	0.10	1.6	3.5	3.7	●	●	●		
New	**MTR 3.7 R0.15 L15**	51	15	0.15	1.6	3.5	3.7	●	●	●		
	MTR 4 R0.05 L15	51	15	0.05	1.7	3.7	4.1	●	●	●	●	SIM ... H4
	MTR 4 R0.05 L22	51	22	0.05	1.7	3.7	4.1	●	●	●		
	MTR 4 R0.1 L10	51	10	0.10	1.7	3.7	4.1	●	●	●		
	MTR 4 R0.1 L15	51	15	0.10	1.7	3.7	4.1	●	●	●	●	
4.0	**MTR 4 R0.1 L22**	51	22	0.10	1.7	3.7	4.1	●	●	●	●	
	MTR 4 R0.2 L10	51	10	0.20	1.7	3.7	4.1	●	●	●	●	
	MTR 4 R0.2 L15	51	15	0.20	1.7	3.7	4.1	●	●	●	●	
	MTR 4 R0.2 L22	51	22	0.20	1.7	3.7	4.1	●	●	●	●	
	MTR 4 R0.2 L30	62	30	0.20	1.7	3.7	4.1	●	●	●	●	
	MTR 5 R0.05 L15	51	15	0.05	2.1	4.6	5.1	●	●	●		SIM ... H5
New	**MTR 5 R0.05 L22**	51	22	0.05	2.1	4.6	5.1	●	●	●		
	MTR 5 R0.1 L15	51	15	0.10	2.1	4.6	5.1	●	●	●	●	
	MTR 5 R0.1 L22	51	22	0.10	2.1	4.6	5.1	●	●	●	●	
	MTR 5 R0.1 L30	76	30	0.10	2.1	4.6	5.1	●	●	●		
5.0	**MTR 5 R0.2 L10**	51	10	0.20	2.1	4.6	5.1	●	●	●		
	MTR 5 R0.2 L15	51	15	0.20	2.1	4.6	5.1	●	●	●	●	
	MTR 5 R0.2 L22	51	22	0.20	2.1	4.6	5.1	●	●	●	●	
	MTR 5 R0.2 L30	76	30	0.20	2.1	4.6	5.1	●	●	●	●	
	MTR 5 R0.2 L40	76	40	0.20	2.1	4.6	5.1	●	●	●		

● Available.
Other items available upon request





Detail A

D	Ordering Code	L	L1	R	F	a	Min. Dia.	K20	BXC	BMK	TNX	Holder
6.0	**MTR 6 R0.05 L15**	51	15	0.05	2.8	5.8	6.1	●	●	●		SIM ... H6
	MTR 6 R0.05 L22	51	22	0.05	2.8	5.8	6.1	●	●	●		
	MTR 6 R0.1 L15	51	15	0.10	2.8	5.8	6.1	●	●	●	●	
	MTR 6 R0.1 L22	51	22	0.10	2.8	5.8	6.1	●	●	●		
	MTR 6 R0.2 L15	51	15	0.20	2.8	5.8	6.1	●	●	●	●	
	MTR 6 R0.2 L22	51	22	0.20	2.8	5.8	6.1	●	●	●	●	
	MTR 6 R0.2 L30	58	30	0.20	2.8	5.8	6.1	●	●	●	●	
	MTR 6 R0.2 L35	76	35	0.20	2.8	5.8	6.1	●	●	●	●	
	MTR 6 R0.2 L40	76	40	0.20	2.8	5.8	6.1	●	●	●		
7.0	**MTR 7 R0.2 L22**	62	22	0.20	3.3	6.8	7.1	●	●	●	●	SIM ... H7
	MTR 7 R0.2 L30	62	30	0.20	3.3	6.8	7.1	●	●	●	●	
8.0	**MTR 8 R0.2 L15**	64	15	0.20	3.8	7.8	8.1	●	●	●	●	SIM ... H8
	MTR 8 R0.2 L22	64	22	0.20	3.8	7.8	8.1	●	●	●	●	
	MTR 8 R0.2 L35	76	35	0.20	3.8	7.8	8.1	●	●	●	●	
10.0	**MTR 10 R0.2 L35**	73	35	0.20	4.8	9.8	10.1	●	●	●		SIM ... H10

Order example: MTR 4 R0.2 L15 BXC

See pages 40-54 for holders

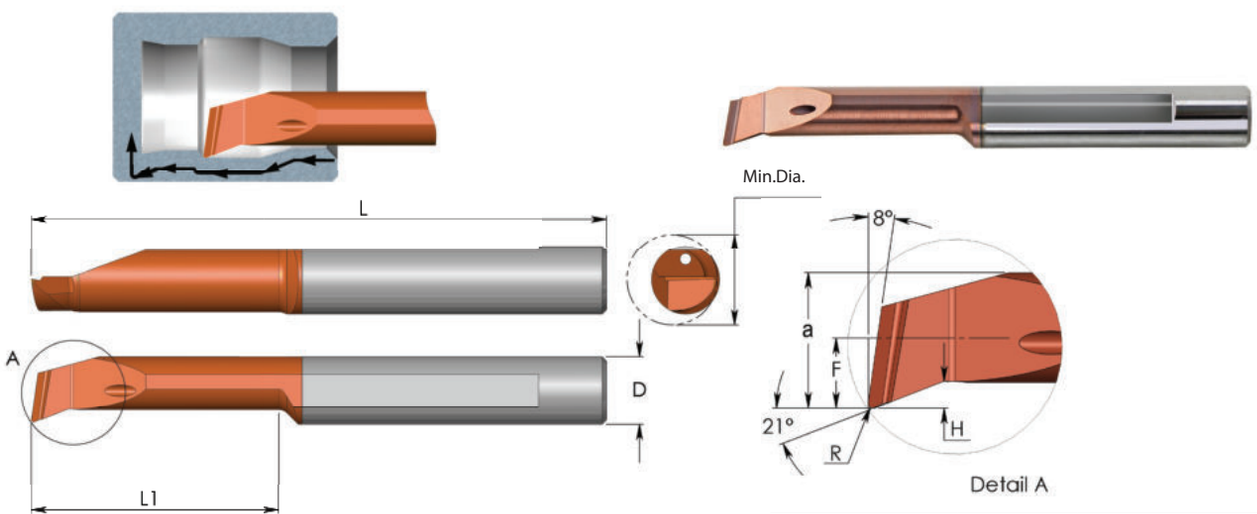
● Available.
Other items available upon request

CBR Bars *Profiling and Boring*

With advanced Chip Breaker

Chip evacuation is achieved thanks to an advanced Chip Breaker and internal coolant through the tool, pushing the chips out of the bore.

Excellent solution for machining stainless steels, super alloys, and other advanced materials that create curly chips around the tool and the application. Can also be used as general purpose for a wide range of materials.



Grade	P	M	K	N	S	H
TNX	●	●	●	●	●	●

● First choice ○ Alternative

For L.H. bars specify CBL instead of CBR

D	Ordering Code	L	L1	R	H	F	a	Min. Dia.	TNX	Holder
	CBR 4 R0.1 L10	51	10	0.1	0.4	1.8	3.8	4.1	●	
	CBR 4 R0.2 L10	51	10	0.2	0.4	1.8	3.8	4.1	●	
4.0	**CBR 4 R0.1 L15**	51	15	0.1	0.4	1.8	3.8	4.1	●	SIM ... H4
	CBR 4 R0.2 L15	51	15	0.2	0.4	1.8	3.8	4.1	●	
	CBR 4 R0.2 L22	51	22	0.2	0.4	1.8	3.8	4.1	●	
	CBR 5 R0.2 L10	51	10	0.2	0.8	2.3	4.8	5.1	●	
	CBR 5 R0.1 L15	51	15	0.1	0.8	2.3	4.8	5.1	●	
	CBR 5 R0.2 L15	51	15	0.2	0.8	2.3	4.8	5.1	●	
5.0	**CBR 5 R0.1 L22**	51	22	0.1	0.8	2.3	4.8	5.1	●	SIM ... H5
	CBR 5 R0.2 L22	51	22	0.2	0.8	2.3	4.8	5.1	●	
	CBR 5 R0.2 L30	76	30	0.2	0.8	2.3	4.8	5.1	●	
	CBR 6 R0.1 L15	51	15	0.1	1.0	2.8	5.8	6.1	●	
	CBR 6 R0.2 L15	51	15	0.2	1.0	2.8	5.8	6.1	●	
6.0	**CBR 6 R0.1 L22**	51	22	0.1	1.0	2.8	5.8	6.1	●	SIM ... H6
	CBR 6 R0.2 L22	51	22	0.2	1.0	2.8	5.8	6.1	●	

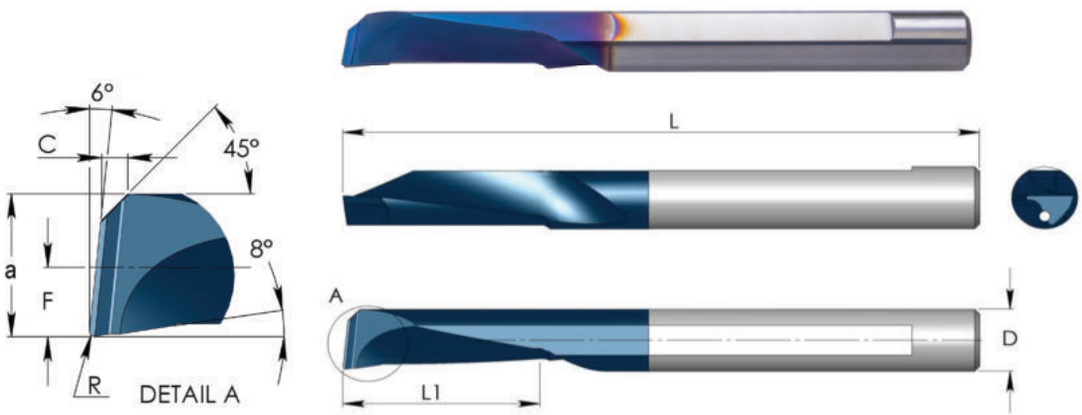
Order example: CBR 5 R0.2 L15 TNX

See pages 40-54 for holders

● Available.
Other items available upon request

CMR *Multi-Task Tiny Bars*

Multi-Task Tiny Tool CMR for Boring, Turning, Facing and Chamfering



Grade	P	M	K	N	S	H
BMK	●	●	●	○	●	●

● First choice ○ Alternative

For L.H. bars specify CML instead of CMR

D	Ordering Code	L	L1	R	F	a	C	Hole Dia.*	BMK	Holder
4.0	**CMR 4 R0.1 L10**	51	10	0.1	1.8	3.8	1.1	4.0	●	SIM...H4
	CMR 4 R0.1 L15	51	15	0.1	1.8	3.8	1.1	4.0	●	
5.0	**CMR 5 R0.2 L10**	51	10	0.2	2.3	4.8	1.3	5.0	●	SIM...H5
	CMR 5 R0.2 L15	51	15	0.2	2.3	4.8	1.3	5.0	●	
6.0	**CMR 6 R0.2 L12**	58	12	0.2	2.8	5.8	1.5	6.0	●	SIM...H6
	CMR 6 R0.2 L18	58	18	0.2	2.8	5.8	1.5	6.0	●	

Order example: CMR 6 R0.2 L12 BMK

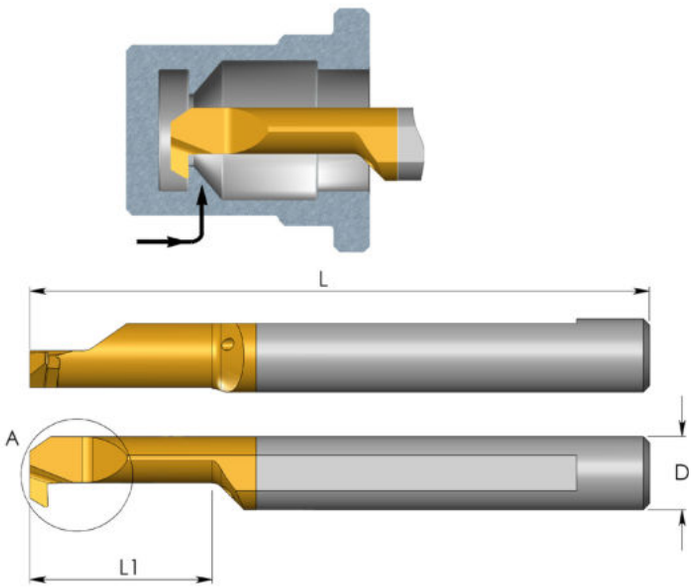
* The minimum diameter the tool can produce from full material

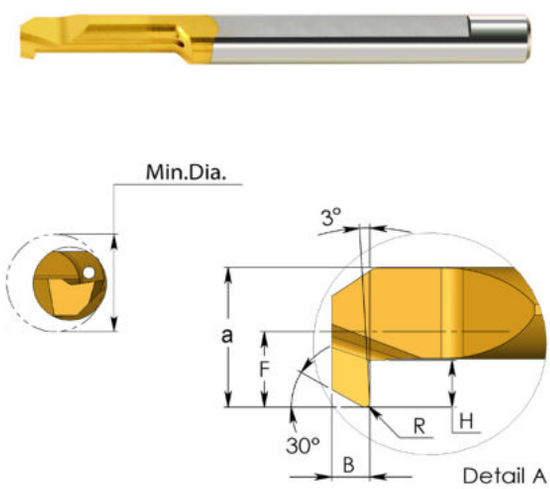
See pages 40-54 for holders

● Available.
Other items available upon request

Demonstration

MXR Bars *Back Turning*





Grade	P	M	K	N	S	H
K20		○	○	●	○	
BXC	●	●	●	○	●	○
BMK	●	●	●	○	●	○
TNX	●	●	●	○	●	●

● First choice ○ Alternative

For L.H. bars specify MXL instead of MXR

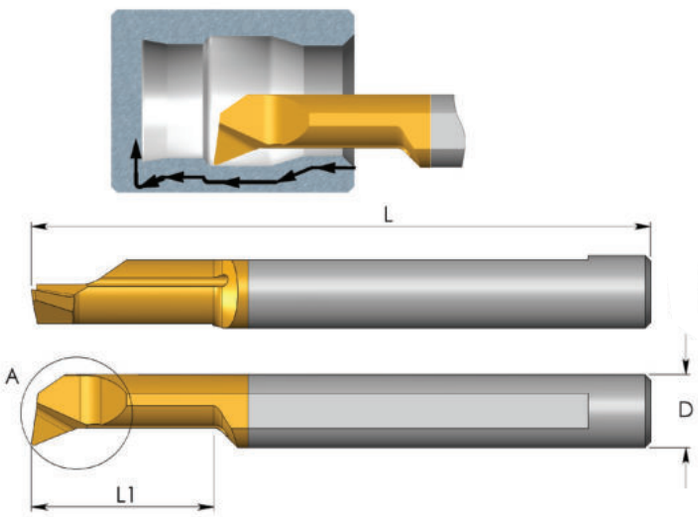
D	Ordering Code	L	L1	B	R	H	F	a	Min. Dia.	K20	BXC	BMK	TNX	Holder
4.0	**MXR 4 R0.1 L10**	51	10	1.3	0.10	0.5	1.3	2.8	3.1	●	●	●		SIM ... H4
4.0	**MXR 4 R0.15 L10**	51	10	1.3	0.15	0.8	1.7	3.7	4.1	●	●	●		SIM ... H4
	MXR 4 R0.15 L15	51	15	1.3	0.15	0.8	1.7	3.7	4.1	●	●	●	●	
New	**MXR 4 R0.15 L22**	51	22	1.3	0.15	0.8	1.7	3.7	4.1	●	●	●		
5.0	**MXR 5 R0.2 L15**	51	15	1.5	0.20	1.0	2.3	4.8	5.1	●	●	●		SIM ... H5
	MXR 5 R0.2 L22	51	22	1.5	0.20	1.0	2.3	4.8	5.1	●	●	●		
6.0	**MXR 6 R0.2 L15**	51	15	1.5	0.20	1.8	2.8	5.8	6.1	●	●	●		SIM ... H6
	MXR 6 R0.2 L22	51	22	1.5	0.20	1.8	2.8	5.8	6.1	●	●	●	●	
New	7.0 **MXR 7 R0.2 L30**	62	30	3.0	0.20	2.5	3.3	6.8	7.1	●	●	●		SIM ... H7

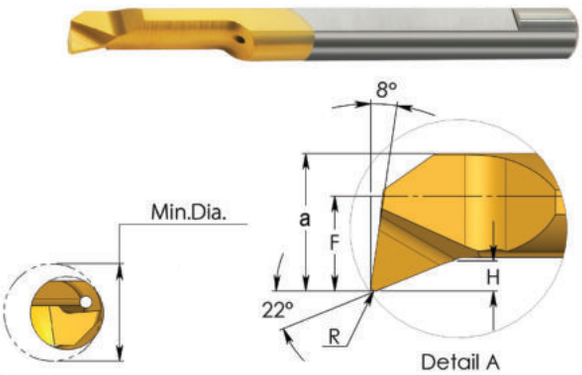
Order example: MXR 4 R0.15 L15 BXC

See pages 40-54 for holders

● Available.
Other items available upon request

MPR Bars *Profiling and Boring*





Grade	P	M	K	N	S	H
K20		○	○	●	○	
BXC	●	●	●	○	●	○
BMK	●	●	●	○	●	○
TNX	●	●	●	○	●	●

● First choice ○ Alternative

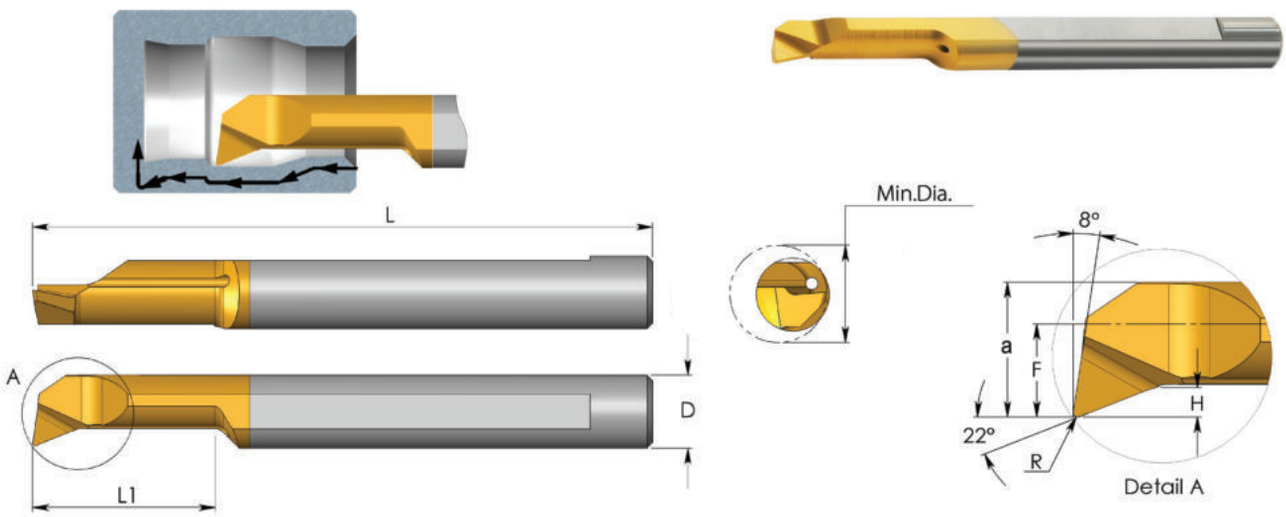
For L.H. Bars specify MPL instead of MPR

D	Ordering Code	L	L1	R	H	F	a	Min. Dia.	K20	BXC	BMK	TNX	Holder
3.0	**MPR 1 R0.05 L4**	39	4	0.05	0.2	0.45	0.95	1.0	●	●	●		SIM ... H3
	MPR 1 R0.05 L8	39	8	0.05	0.2	0.45	0.95	1.0	●	●	●		
3.0	**MPR 1.2 R0.1 L5**	39	5	0.10	0.3	0.55	1.15	1.2	●	●	●		SIM ... H3
	MPR 1.2 R0.1 L9	39	9	0.10	0.3	0.55	1.15	1.2	●	●	●		
3.0	**MPR 1.5 R0.05 L10**	39	10	0.05	0.3	0.7	1.4	1.5	●	●	●		SIM ... H3
	MPR 1.5 R0.1 L6	39	6	0.10	0.3	0.7	1.4	1.5	●	●	●	●	
	MPR 1.5 R0.1 L10	39	10	0.10	0.3	0.7	1.4	1.5	●	●	●	●	
3.0	**MPR 2 R0.05 L10**	39	10	0.05	0.5	0.8	1.8	2.1	●	●	●		SIM ... H3
	MPR 2 R0.1 L10	39	10	0.10	0.5	0.8	1.8	2.1	●	●	●	●	
	MPR 2 R0.15 L5	39	5	0.15	0.5	0.8	1.8	2.1	●	●	●	●	
	MPR 2 R0.15 L10	39	10	0.15	0.5	0.8	1.8	2.1	●	●	●	●	
	MPR 2 R0.15 L15	39	15	0.15	0.5	0.8	1.8	2.1	●	●	●	●	
4.0	**MPR 2.5 R0.1 L10**	51	10	0.10	0.6	1.0	2.3	2.5	●	●	●		SIM ... H4
	MPR 2.5 R0.1 L15	51	15	0.10	0.6	1.0	2.3	2.5	●	●	●		
3.0	**MPR 3 R0.05 L10**	39	10	0.05	0.7	1.3	2.8	3.1	●	●	●	●	SIM ... H3
	MPR 3 R0.05 L15	39	15	0.05	0.7	1.3	2.8	3.1	●	●	●		
	MPR 3 R0.1 L10	39	10	0.10	0.7	1.3	2.8	3.1	●	●	●		
	MPR 3 R0.1 L15	39	15	0.10	0.7	1.3	2.8	3.1	●	●	●	●	
	MPR 3 R0.1 L22	47	22	0.10	0.7	1.3	2.8	3.1	●	●	●		
	MPR 3 R0.2 L10	39	10	0.20	0.7	1.3	2.8	3.1	●	●	●	●	
	MPR 3 R0.2 L15	39	15	0.20	0.7	1.3	2.8	3.1	●	●	●	●	
	MPR 3 R0.2 L22	47	22	0.20	0.7	1.3	2.8	3.1	●	●	●	●	
4.0	**MPR 4 R0.1 L10**	51	10	0.10	0.8	1.7	3.8	4.1	●	●	●	●	SIM ... H4
	MPR 4 R0.1 L15	51	15	0.10	0.8	1.7	3.8	4.1	●	●	●	●	
	MPR 4 R0.1 L22	51	22	0.10	0.8	1.7	3.8	4.1	●	●	●		
	MPR 4 R0.2 L10	51	10	0.20	0.8	1.7	3.8	4.1	●	●	●	●	
	MPR 4 R0.2 L15	51	15	0.20	0.8	1.7	3.8	4.1	●	●	●	●	
	MPR 4 R0.2 L22	51	22	0.20	0.8	1.7	3.8	4.1	●	●	●	●	
	MPR 4 R0.2 L30	62	30	0.20	0.8	1.7	3.8	4.1	●	●	●		

See pages 40-54 for holders

● Available. Other items available upon request

MPR Bars *Profiling and Boring*



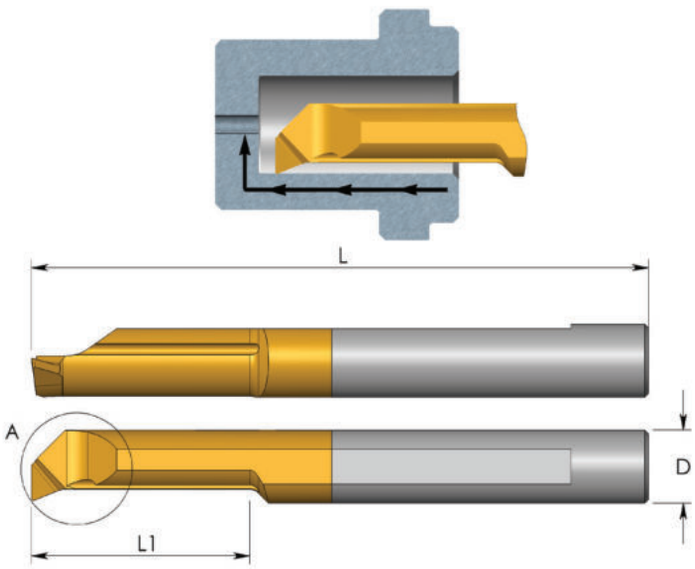
D	Ordering Code	L	L1	R	H	F	a	Min. Dia.	K20	BXC	BMK	TNX	Holder
5.0	**MPR 5 R0.1 L22**	51	22	0.10	1.2	2.1	4.6	5.1	●	●	●	●	SIM ... H5
	MPR 5 R0.1 L30	76	30	0.10	1.2	2.1	4.6	5.1	●	●	●		
	MPR 5 R0.2 L10	51	10	0.20	1.2	2.1	4.6	5.1	●	●	●	●	
	MPR 5 R0.2 L15	51	15	0.20	1.2	2.1	4.6	5.1	●	●	●	●	
	MPR 5 R0.2 L22	51	22	0.20	1.2	2.1	4.6	5.1	●	●	●	●	
	MPR 5 R0.2 L30	76	30	0.20	1.2	2.1	4.6	5.1	●	●	●	●	
	MPR 5 R0.2 L40	76	40	0.20	0.9	2.1	4.6	5.1	●	●	●		
6.0	New **MPR 6 R0.05 L15**	51	15	0.05	1.4	2.8	5.8	6.1	●	●	●		SIM ... H6
	New **MPR 6 R0.1 L15**	51	15	0.10	1.4	2.8	5.8	6.1	●	●	●		
	New **MPR 6 R0.1 L22**	51	22	0.10	1.4	2.8	5.8	6.1	●	●	●		
	MPR 6 R0.2 L10	51	10	0.20	1.4	2.8	5.8	6.1	●	●	●		
	MPR 6 R0.2 L15	51	15	0.20	1.4	2.8	5.8	6.1	●	●	●	●	
	MPR 6 R0.2 L22	51	22	0.20	1.4	2.8	5.8	6.1	●	●	●	●	
	MPR 6 R0.2 L30	76	30	0.20	1.4	2.8	5.8	6.1	●	●	●	●	
	MPR 6 R0.2 L40	76	40	0.20	1.0	2.8	5.8	6.1	●	●	●		
7.0	**MPR 7 R0.2 L22**	62	22	0.20	1.5	3.3	6.8	7.1	●	●	●		SIM ... H7
	New **MPR 7 R0.2 L25**	62	25	0.20	1.5	3.3	6.8	7.1	●	●	●		
	MPR 7 R0.2 L30	62	30	0.20	1.5	3.3	6.8	7.1	●	●	●	●	
	MPR 7 R0.2 L35	62	35	0.20	1.5	3.3	6.8	7.1	●	●	●		
8.0	**MPR 8 R0.2 L15**	64	15	0.20	1.6	3.8	7.8	8.1	●	●	●	●	SIM ... H8
	MPR 8 R0.2 L22	64	22	0.20	1.6	3.8	7.8	8.1	●	●	●	●	
	MPR 8 R0.2 L35	76	35	0.20	1.6	3.8	7.8	8.1	●	●	●	●	
10.0	**MPR 10 R0.2 L35**	73	35	0.20	2.0	4.8	9.8	10.1	●	●	●		SIM ... H10

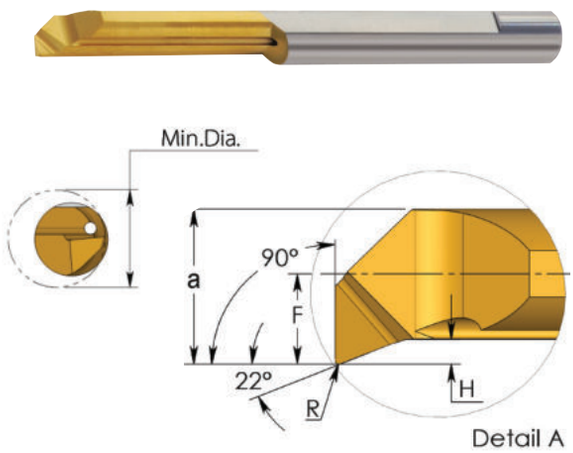
Order example: MPR 4 R0.2 L15 BXC

See pages 40-54 for holders

● Available.
Other items available upon request

MUR Bars *Profiling, 90° Face Cutting*





Grade	P	M	K	N	S	H
K20		○	○	●	○	
BXC	●	●	●	○	●	○
BMK	●	●	●	○	●	○
TNX	●	●	●	○	●	●

● First choice ○ Alternative

For L.H. bars specify MUL instead of MUR

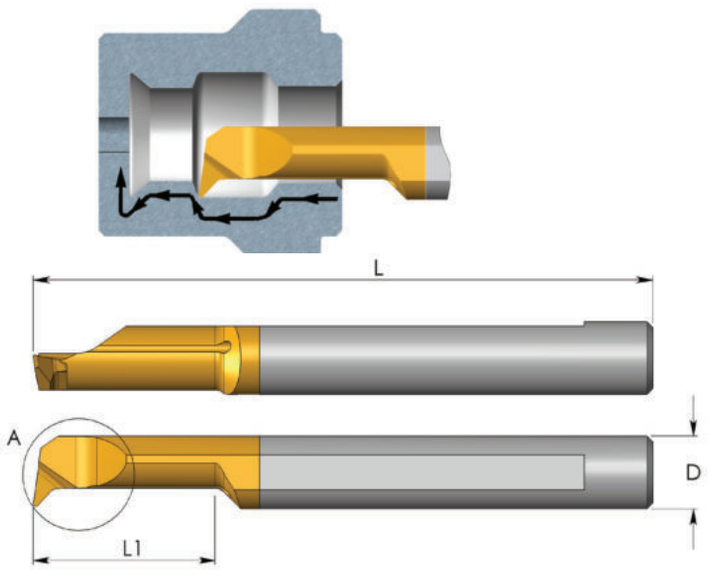
D	Ordering Code	L	L1	R	H	F	a	Min. Dia.	K20	BXC	BMK	TNX	Holder
3.0	**MUR 3 R0.05 L10**	39	10	0.05	0.4	1.3	2.8	3.1	•	•	•		SIM ... H3
	MUR 3 R0.05 L15	39	15	0.05	0.4	1.3	2.8	3.1	•	•	•	•	
4.0	**MUR 4 R0.1 L10**	51	10	0.10	0.5	1.7	3.7	4.1	•	•	•		SIM ... H4
	MUR 4 R0.1 L15	51	15	0.10	0.5	1.7	3.7	4.1	•	•	•	•	
New	**MUR 4 R0.1 L22**	51	22	0.10	0.5	1.7	3.7	4.1	•	•	•		
5.0	**MUR 5 R0.15 L15**	51	15	0.15	0.7	2.1	4.6	5.1	•	•	•		SIM ... H5
	MUR 5 R0.15 L22	51	22	0.15	0.7	2.1	4.6	5.1	•	•	•		
6.0	**MUR 6 R0.15 L15**	51	15	0.15	0.9	2.8	5.8	6.1	•	•	•		SIM ... H6
	MUR 6 R0.15 L22	51	22	0.15	0.9	2.8	5.8	6.1	•	•	•	•	
New	**MUR 6 R0.15 L30**	76	30	0.15	0.9	2.8	5.8	6.1	•	•	•		
8.0	**MUR 8 R0.2 L22**	64	22	0.20	1.1	3.8	7.8	8.1	•	•	•		SIM ... H8

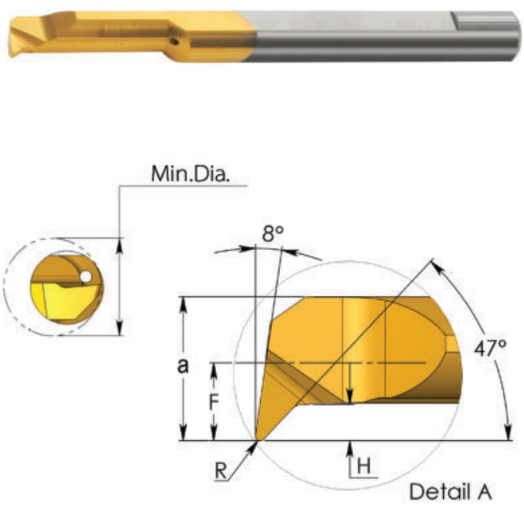
Order example: MUR 5 R0.15 L15 BXC

See pages 40-54 for holders

• Available.
Other items available upon request

MQR Bars *Profiling and Boring*





Grade	P	M	K	N	S	H
K20		○	○	●	○	
BXC	●	●	●	○	●	○
BMK	●	●	●	○	●	○
TNX	●	●	●	○	●	●

● First choice ○ Alternative

For L.H. bars specify MQL instead of MQR

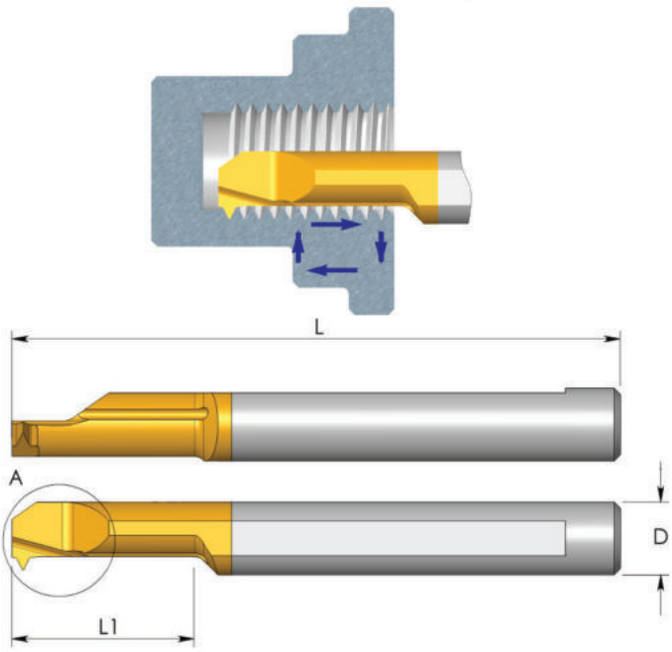
D	Ordering Code	L	L1	R	H	F	a	Min. Dia.	K20	BXC	BMK	TNX	Holder
3.0	**MQR 3 R0.1 L10**	39	10	0.10	0.6	1.3	2.8	3.1	●	●	●		SIM ... H3
	MQR 3 R0.1 L15	39	15	0.10	0.6	1.3	2.8	3.1	●	●	●		
4.0	**MQR 4 R0.1 L22**	51	22	0.10	0.8	1.8	3.8	4.1	●	●	●		SIM ... H4
	MQR 4 R0.2 L10	51	10	0.20	0.8	1.8	3.8	4.1	●	●	●	●	
	MQR 4 R0.2 L15	51	15	0.20	0.8	1.8	3.8	4.1	●	●	●	●	
	MQR 4 R0.2 L22	51	22	0.20	0.8	1.8	3.8	4.1	●	●	●		
5.0	**MQR 5 R0.2 L15**	51	15	0.20	1.0	2.3	4.8	5.1	●	●	●	●	SIM ... H5
	MQR 5 R0.2 L22	51	22	0.20	1.0	2.3	4.8	5.1	●	●	●	●	
6.0	**MQR 6 R0.2 L15**	51	15	0.20	1.4	2.8	5.8	6.1	●	●	●	●	SIM ... H6
	MQR 6 R0.2 L22	51	22	0.20	1.4	2.8	5.8	6.1	●	●	●	●	
	MQR 6 R0.2 L30	58	30	0.20	1.4	2.8	5.8	6.1	●	●	●		
New	**MQR 7 R0.2 L22**	62	22	0.20	1.8	3.3	6.8	7.1	●	●	●		SIM ... H7
New 7.0	**MQR 7 R0.2 L30**	62	30	0.20	1.8	3.3	6.8	7.1	●	●	●		
8.0	**MQR 8 R0.2 L22**	64	22	0.20	1.6	3.8	7.8	8.1	●	●	●		SIM ... H8
	MQR 8 R0.2 L27	64	27	0.20	2.0	3.8	7.8	8.1	●	●	●	●	

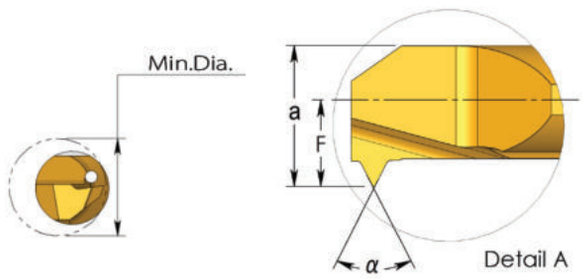
Order example: MQR 5 R0.2 L15 BXC

See pages 40-54 for holders

● Available.
Other items available upon request

MIR Bars *Threading*





Grade	P	M	K	N	S	H
K20		○	○	●	○	
BXC	●	●	●	○	●	○
BMK	●	●	●	○	●	○
TNX	●	●	●	○	●	●

● First choice ○ Alternative

Partial Profile 55°

For L.H. bars specify MIL instead of MIR

D	Ordering Code	Pitch Range mm	Pitch Range TPI	L	L1	α	F	a	Min. Dia.	K20	BXC	BMK	TNX	Holder
3.0	**MIR 3 L15 A55**	0.5 - 1.0	48 - 24	39	15	55	1.4	2.9	3.2	●	●	●		SIM ... H3
4.0	**MIR 4 L15 A55**	0.5 - 1.0	48 - 24	51	15	55	1.8	3.8	4.1	●	●	●		SIM ... H4
5.0	**MIR 5 L15 A55**	0.5 - 1.25	48 - 20	51	15	55	2.3	4.8	5.1	●	●	●		SIM ... H5
	MIR 5 L22 A55	0.5 - 1.25	48 - 20	51	22	55	2.3	4.8	5.1	●	●	●		
6.0	**MIR 6 L15 A55**	0.5 - 1.5	48 - 16	51	15	55	2.6	5.6	6.0	●	●	●	●	SIM ... H6
	MIR 6 L22 A55	0.5 - 1.5	48 - 16	51	22	55	2.6	5.6	6.0	●	●	●	●	

Order example: MIR 5 L15 A55 BXC

Partial Profile 60°

For L.H. bars specify MIL instead of MIR

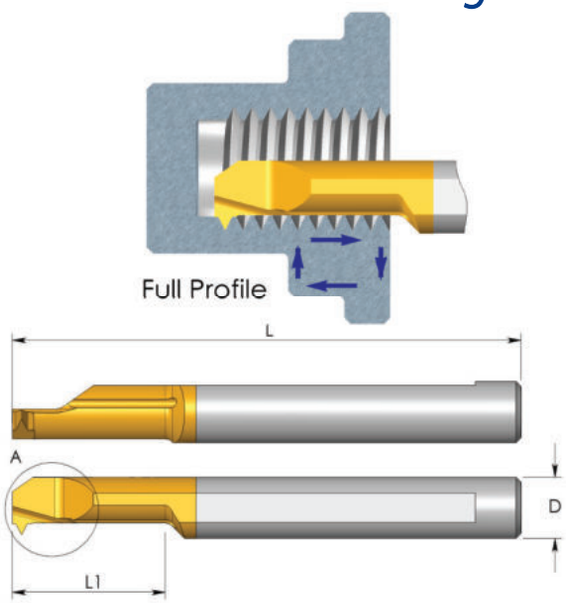
D	Ordering Code	Pitch Range mm	Pitch Range TPI	L	L1	α	F	a	Min. Dia.	K20	BXC	BMK	TNX	Holder
3.0	**MIR 1 L5 A60**	0.25 - 0.35	100 - 72	39	4.8	60	0.55	1.15	1.2	●	●	●		SIM ... H3
	MIR 1.5 L6 A60	0.35 - 0.45	72 - 56	39	6.3	60	0.65	1.35	1.4	●	●	●		
3.0	**MIR 2 L8 A60**	0.45 - 0.7	56 - 32	39	8	60	1.0	2.0	2.1	●	●	●		SIM ... H3
New 3.0	**MIR 3 L14 A60**	0.25 - 0.35	100 - 72	39	14	60	1.4	2.9	3.2	●	●	●		SIM ... H3
	MIR 3 L15 A60	0.7 - 1.0	32 - 24	39	15	60	1.4	2.9	3.2	●	●	●	●	
4.0	**MIR 4 L17 A60**	0.35 - 0.45	72 - 56	51	17	60	1.8	3.8	4.1	●	●	●		SIM ... H4
	MIR 4 L15 A60	0.8 - 1.0	32 - 24	51	15	60	1.8	3.8	4.1	●	●	●	●	
5.0	**MIR 5 L15 A60**	1.0 - 1.25	24 - 20	51	15	60	2.3	4.8	5.1	●	●	●	●	SIM ... H5
	MIR 5 L22 A60	1.0 - 1.25	24 - 20	51	22	60	2.3	4.8	5.1	●	●	●	●	
6.0	**MIR 6 L15 A60**	1.0 - 1.5	24 - 16	51	15	60	2.6	5.6	6.0	●	●	●	●	SIM ... H6
	MIR 6 L22 A60	1.0 - 1.5	24 - 16	51	22	60	2.6	5.6	6.0	●	●	●	●	
8.0	**MIR 8 L22 A60**	1.0 - 2.0	24 - 13	64	22	60	3.8	7.8	8.0	●	●	●	●	SIM ... H8

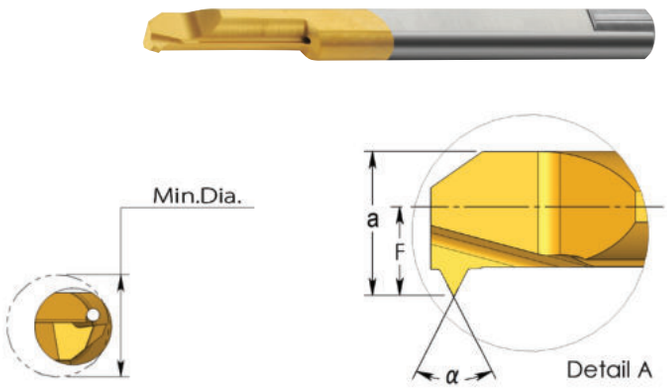
Order example: MIR 5 L15 A60 BXC

See pages 40-54 for holders

● Available.
Other items available upon request

MIR Bars *Threading*





Grade	P	M	K	N	S	H
K20		○	○	●	○	
BXC	●	●	●	○	●	○
BMK	●	●	●	○	●	○
TNX	●	●	●	○	●	●

● First choice ○ Alternative

Full Profile – ISO 60°

For L.H. bars specify MIL instead of MIR

D	Ordering Code	Pitch mm	M Coarse	M Fine	L	L1	α	F	a	Min. Dia.	K20	BXC	BMK	TNX	Holder
3.0	**MIR 3 L10 0.5 ISO**	0.5	M3	M3.5	39	10	60	1.0	2.3	2.4	●	●	●		SIM ... H3
3.0	**MIR 3 L15 0.5 ISO**	0.5		M4	39	15	60	1.4	2.9	3.2	●	●	●		SIM ... H3
	MIR 3 L15 0.7 ISO	0.7	M4		39	15	60	1.4	2.9	3.2	●	●	●		
	MIR 3 L15 0.75 ISO	0.75	M4.5		39	15	60	1.4	2.9	3.2	●	●	●		
4.0	**MIR 4 L15 0.5 ISO**	0.5		M5	51	15	60	1.8	3.8	4.1	●	●	●	●	SIM ... H4
	MIR 4 L15 0.75 ISO	0.75		M5	51	15	60	1.8	3.8	4.1	●	●	●	●	
	MIR 4 L15 0.8 ISO	0.8	M5		51	15	60	1.8	3.8	4.1	●	●	●		
5.0	**MIR 5 L15 1.0 ISO**	1.0	M6, M7	M8	51	15	60	2.2	4.7	4.9	●	●	●	●	SIM ... H5
6.0	**MIR 6 L22 1.25 ISO**	1.25	M8, M9	M10	51	22	60	2.8	5.8	6.1	●	●	●	●	SIM ... H6
	MIR 6 L22 1.5 ISO	1.5	M10, M11		51	22	60	2.8	5.8	6.1	●	●	●		

Order example: MIR 5 L15 1.0 ISO BXC

Full Profile – UN 60°

For L.H. bars specify MIL instead of MIR

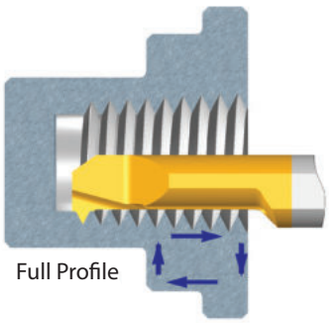
D	Ordering Code	Pitch TPI	UNC	UNF	UNEF	UNS	L	L1	α	F	a	Min. Dia.	K20	BXC	BMK	TNX	Holder
3.0	**MIR 3 L10 32 UN**	32	6				39	10	60	1.0	2.5	2.7	●	●	●		SIM...H3
3.0	**MIR 3 L15 32 UN**	32	8	10			39	15	60	1.4	2.9	3.2	●	●	●	●	SIM...H3
	MIR 3 L15 36 UN	36		8		10	39	15	60	1.4	2.9	3.2	●	●	●		
4.0	**MIR 4 L15 36 UN**	36				12	51	15	60	1.8	3.8	4.1	●	●	●		SIM...H4
	MIR 4 L15 32 UN	32			12		51	15	60	1.8	3.8	4.1	●	●	●		
New 5.0	**MIR 5 L15 28 UN**	28		1/4			51	15	60	2.2	4.7	4.9	●	●	●	●	SIM...H5
	MIR 5 L15 24 UN	24				1/4	51	15	60	2.3	4.8	5.1	●	●	●		
	MIR 5 L18 20 UN	20	1/4				51	18	60	2.3	4.8	5.0	●	●	●		
6.0	**MIR 6 L18 24 UN**	24		5/16			51	18	60	2.8	5.8	6.5	●	●	●		SIM...H6
	MIR 6 L18 18 UN	18	5/16			3/8	51	18	60	2.8	5.8	6.2	●	●	●		

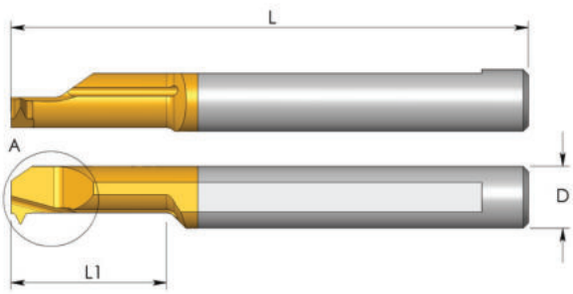
Order example: MIR 4 L15 36 UN BXC

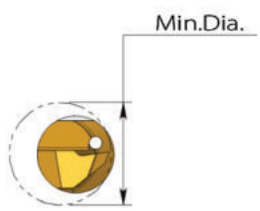
See pages 40-54 for holders

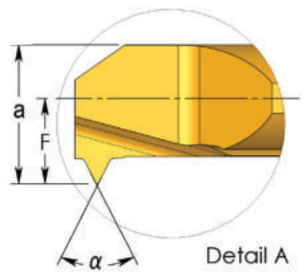
● Available.
Other items available upon request

MIR Bars *Threading*









Grade	P	M	K	N	S	H
K20		○	○	●	○	
BXC	●	●	●	○	●	○
BMK	●	●	●	○	●	○
TNX	●	●	●	○	●	●

● First choice ○ Alternative

Full Profile – MJ 60°

For L.H. bars specify MIL instead of MIR

D	Ordering Code	Thread Size	L	L1	α	F	a	Min. Dia.	K20	BXC	BMK	TNX	Holder
3.0	**MIR 3 L15 0.7 MJ**	MJ4x0.7	39	15	60	1.4	2.9	3.2	●	●	●		SIM ... H3
4.0	**MIR 4 L15 0.8 MJ**	MJ5x0.8	51	15	60	1.8	3.8	4.1	●	●	●		SIM ... H4
5.0	**MIR 5 L15 1.0 MJ**	MJ6x1.0	51	15	60	2.2	4.7	4.9	●	●	●		SIM ... H5

Order example: MIR 4 L15 0.8 MJ BXC

Full Profile – UNJ 60°

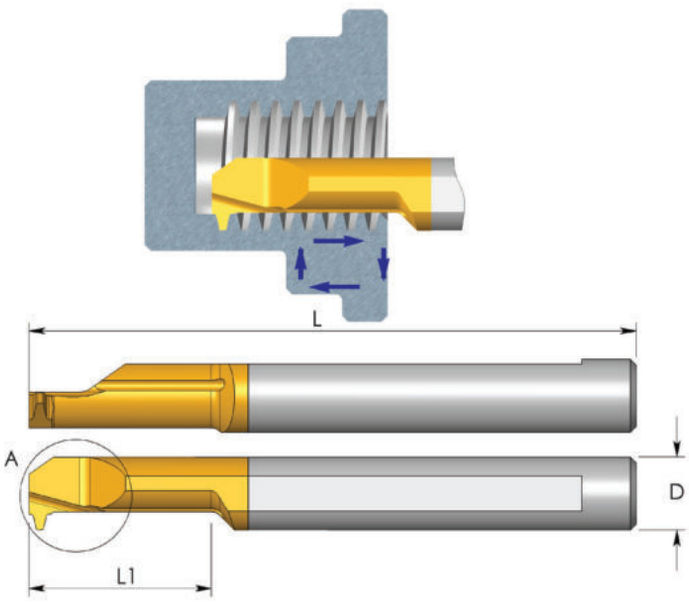
For L.H. bars specify MIL instead of MIR

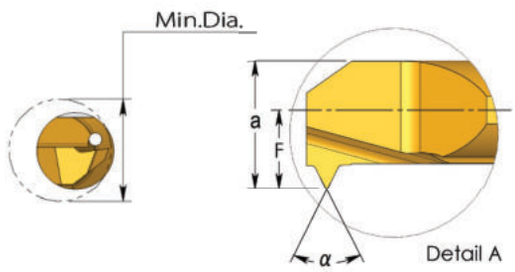
D mm	Ordering Code	Thread Size	L	L1	α	F	a	Min. Dia.	K20	BXC	BMK	TNX	Holder
3.0	**MIR 3 L15 32 UNJ**	8-32 UNJC	39	15	60	1.4	2.9	3.2	●	●	●		SIM...H3
5.0	**MIR 5 L15 28 UNJ**	1/4-28 UNJF	51	15	60	2.2	4.7	4.9	●	●	●	●	SIM...H5
	MIR 5 L18 20 UNJ	1/4-20 UNJC	51	18	60	2.3	4.8	5.0	●	●	●		SIM...H5

Order example: MIR 3 L15 32 UNJ BXC
See pages 40-54 for holders

• Available.
Other items available upon request

MIR Bars *Threading*





Grade	P	M	K	N	S	H
K20		○	○	●	○	
BXC	●	●	●	○	●	○
BMK	●	●	●	○	●	○
TNX	●	●	●	○	●	●

● First choice ○ Alternative

Full Profile – G 55° BSP

For L.H. bars specify MIL instead of MIR

D	Ordering Code	Thread Size	L	L1	α	F	a	Min. Dia.	K20	BXC	BMK	TNX	Holder
6.0	**MIR 6 L17 28 W**	1/16-28 BSP	51	17	55	2.8	5.8	6.5	●	●	●	●	SIM ... H6
	MIR 6 L17 19 W	1/4-19 BSP	51	17	55	2.8	5.8	7.0	●	●	●		

Full Profile – Whitworth 55° BSW

For L.H. bars specify MIL instead of MIR

D	Ordering Code	Thread Size	L	L1	α	F	a	Min. Dia.	K20	BXC	BMK	TNX	Holder
5.0	**MIR 5 L17 20 W**	1/4-20 BSW	51	17	55	2.0	4.5	4.7	●	●	●		SIM ... H5

Full Profile – BSPT

For L.H. bars specify MIL instead of MIR

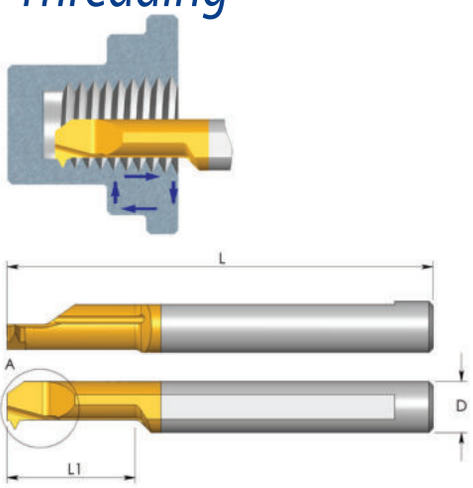
D	Ordering Code	Thread Size	L	L1	α	F	a	Min. Dia.	K20	BXC	BMK	TNX	Holder
New 6.0	**MIR 6 L15 28 BSPT**	1/16 - 28 BSPT 1/8 - 28 BSPT	51	15	55	2.8	5.8	6.1	●	●	●		SIM ... H6

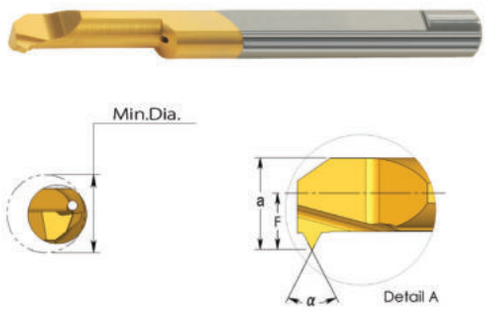
Order example: MIR 6 L17 28 W BMK

See pages 40-54 for holders

● Available.
Other items available upon request

MIR Bars *Threading*





Grade	P	M	K	N	S	H
K20		○	○	●	○	
BXC	●	●	●	○	●	○
BMK	●	●	●	○	●	○
TNX	●	●	●	○	●	●

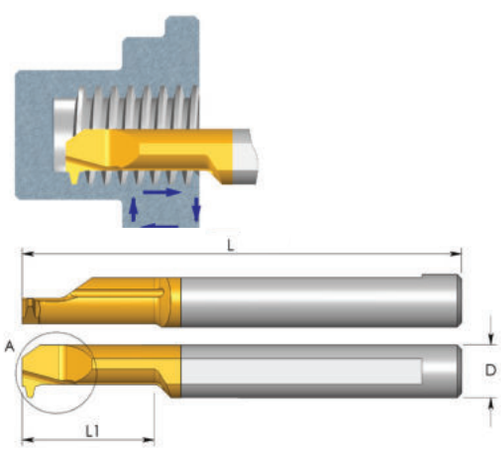
● First choice ○ Alternative

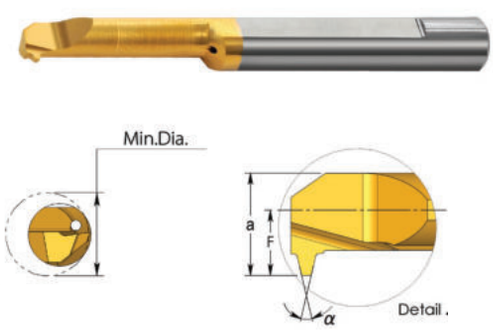
Full Profile – NPT 60°

For L.H. bars specify MIL instead of MIR

D	Ordering Code	Pitch TPI	Thread Size	L	L1	α	F	a	Min. Dia.	K20	BXC	BMK	TNX	Holder
6.0	**MIR 6 L15 27 NPT**	27	1/16 x 27 NPT 1/8 x 27 NPT	51	15	60	2.8	5.8	5.9	●	●	●	●	SIM ... H6

Order example: MIR 6 L15 27 NPT BXC





Acme

For L.H. bars specify MIL instead of MIR

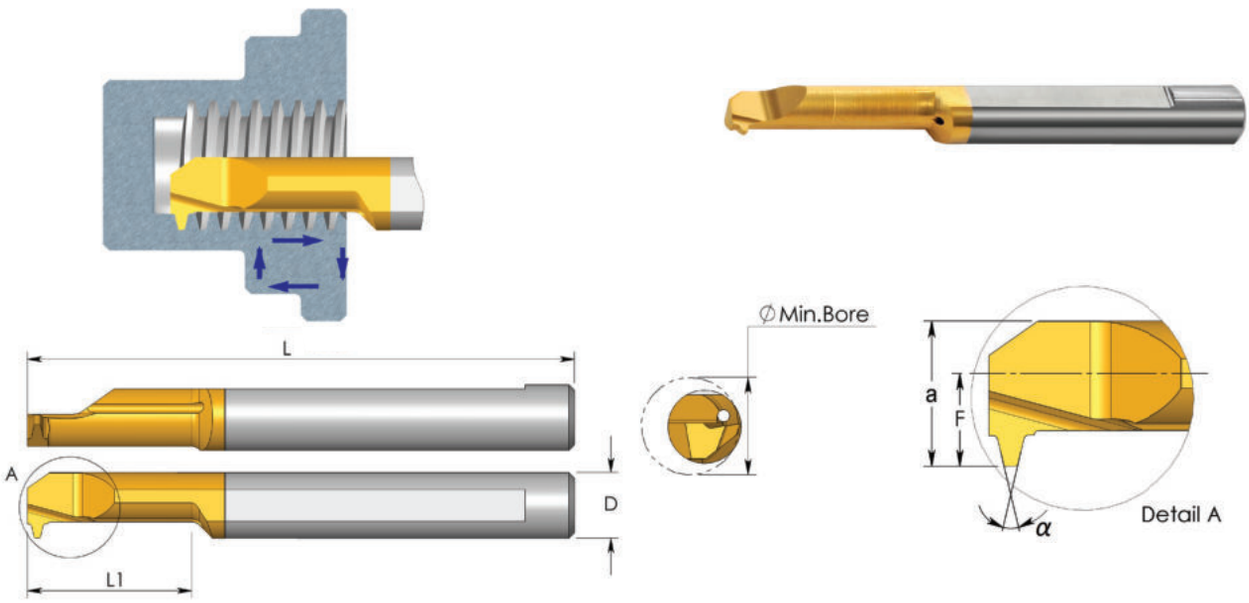
D	Ordering Code	Pitch TPI	Thread Size	L	L1	α	F	a	Min. Dia.	K20	BXC	BMK	TNX	Holder
4.0	**MIR 4 L15 16 ACME**	16	1/4 x 16	51	15	29	1.8	3.8	4.6	●	●	●		SIM ... H4
6.0	**MIR 6 L20 14 ACME**	14	5/16 x 14	51	20	29	2.8	5.8	6.0	●	●	●		SIM ... H6
7.0	**MIR 7 L22 12 ACME**	12	3/8 x 12 7/16 x 12	62	22	29	3.3	6.8	7.2	●	●	●		SIM ... H7
8.0	**MIR 8 L30 10 ACME**	10	1/2 x 10	76	30	29	3.8	7.8	10.0	●	●	●	●	SIM ... H8
10.0	**MIR 10 L35 8 ACME**	8	5/8 x 8	73	35	29	4.8	9.8	12.5	●	●	●		SIM ... H10
10.0	**MIR 10 L45 6 ACME**	6	3/4 x 6 7/8 x 6	105	45	29	4.8	9.8	14.6	●	●	●	●	SIM ... H10
10.0	**MIR 10 L52 5 ACME**	5	1x5	105	52	29	4.8	9.8	20.0	●	●	●		SIM ... H10

Order example: MIR 6 L 20 14 ACME BXC

See pages 40-54 for holders

• Available.
Other items available upon request

MIR Bars *Threading*



Stub Acme

For L.H. bars specify MIL instead of MIR

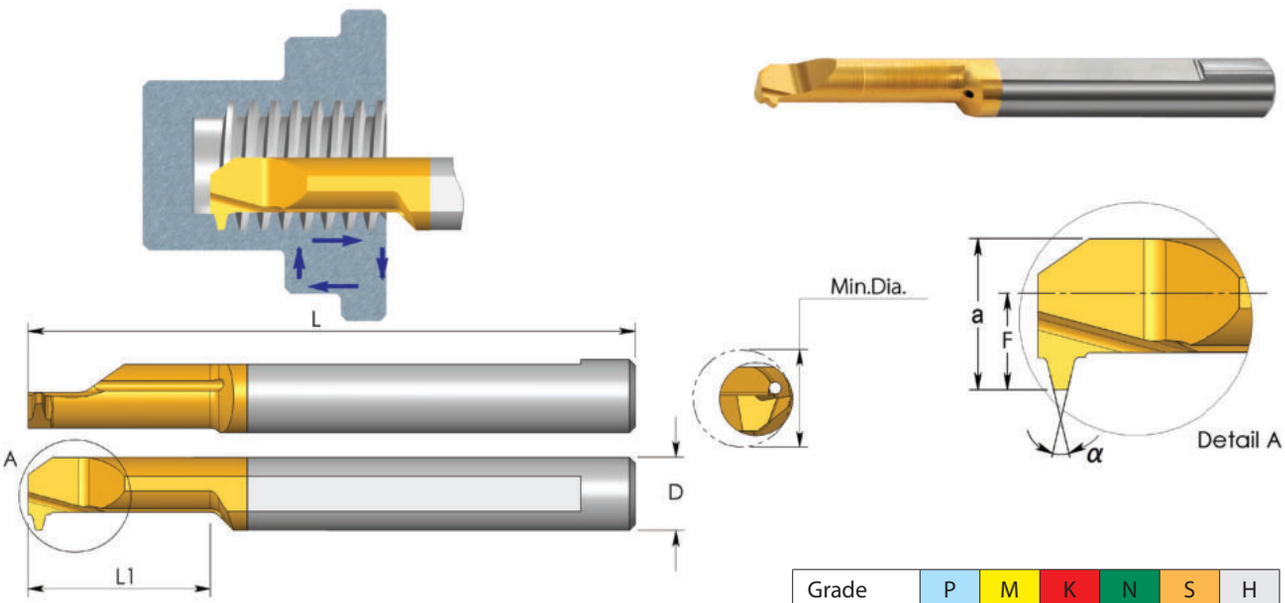
D	Ordering Code	Pitch TPI	Thread Size	L	L1	α	F	a	Min. Dia.	K20	BXC	BMK	TNX	Holder
4.0	**MIR 4 L15 16 STACME**	16	1/4 x 16	51	15	29	1.8	3.8	5.2	●	●	●		SIM ... H4
6.0	**MIR 6 L20 14 STACME**	14	5/16 x 14	51	20	29	2.8	5.8	6.6	●	●	●		SIM ... H6
7.0	**MIR 7 L22 12 STACME**	12	3/8 x 12 7/16 x 12	62	22	29	3.3	6.8	8.1	●	●	●		SIM ... H7
8.0	**MIR 8 L30 10 STACME**	10	1/2 x 10	76	30	29	3.8	7.8	11.0	●	●	●		SIM ... H8
10.0	**MIR 10 L35 8 STACME**	8	5/8 x 8	73	35	29	4.8	9.8	13.8	●	●	●		SIM ... H10
10.0	**MIR 10 L45 6 STACME**	6	3/4 x 6 7/8 x 6	105	45	29	4.8	9.8	16.3	●	●	●		SIM ... H10

Order example: MIR 7 L22 12 STACME K20

See pages 40-54 for holders

● Available.
Other items available upon request

MIR Bars *Threading*



Grade	P	M	K	N	S	H
K20		○	○	●	○	
BXC	●	●	●	○	●	○
BMK	●	●	●	○	●	○
TNX	●	●	●	○	●	●

● First choice ○ Alternative

Trapez – DIN 103

For L.H. bars specify MIL instead of MIR

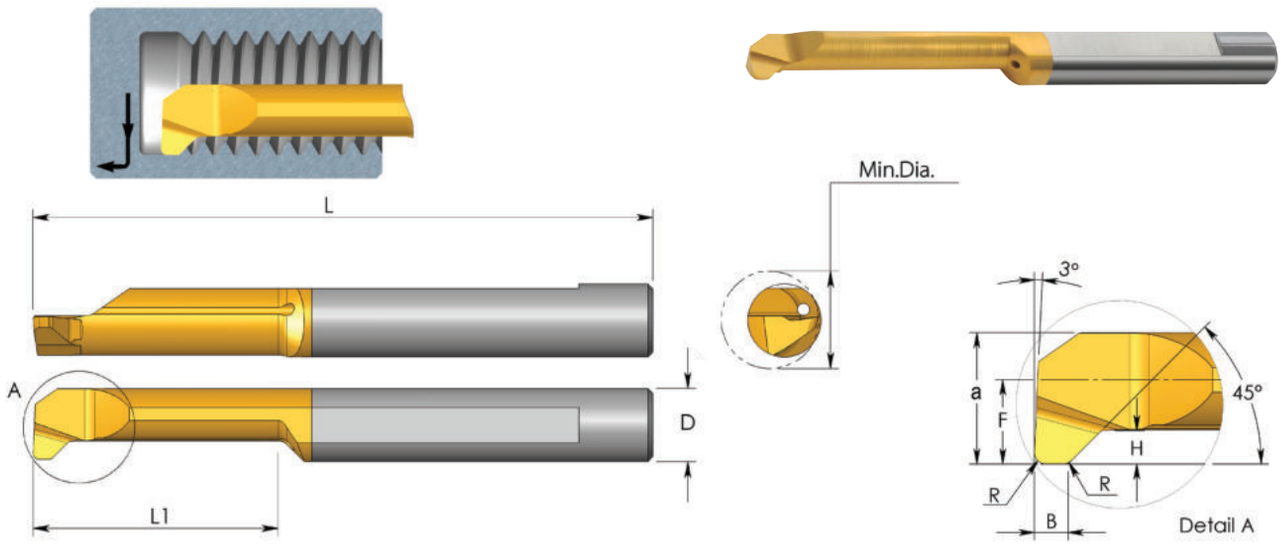
D	Ordering Code	Pitch mm	Thread Size	L	L1	α	F	a	Min. Dia.	K20	BXC	BMK	TNX	Holder
6.0	**MIR 6 L22 1.5 TR**	1.5	TR 8 x 1.5 TR 9 x 1.5 TR10 x 1.5	51	22	30	2.8	5.8	6.4	●	●	●		SIM ... H6
7.0	**MIR 7 L25 2 TR**	2	TR 9 x 2 TR10 x 2 TR11 x 2 TR12 x 2	62	25	30	3.2	6.7	6.9	●	●	●	●	SIM ... H7
10.0	**MIR 10 L35 2 TR**	2	TR14 x 2 TR16 x 2 TR18 x 2 TR20 x 2	73	35	30	4.8	9.8	11.0	●	●	●		SIM ... H10
7.0	**MIR 7 L35 3 TR**	3	TR11 x 3 TR12 x 3	62	35	30	3.3	6.8	7.5	●	●	●	●	SIM ... H7
10.0	**MIR 10 L35 3 TR**	3	TR14 x 3 TR22 x 3 TR24 x 3 TR26 x 3 TR28 x 3	73	35	30	4.8	9.8	10.5	●	●	●		SIM ... H10
10.0	**MIR 10 L45 4 TR**	4	TR16 x 4 TR18 x 4 TR20 x 4	105	45	30	4.8	9.8	11.5	●	●	●		SIM ... H10
10.0	**MIR 10 L55 5 TR**	5	TR22 x 5 TR24 x 5 TR28 x 5	105	55	30	4.8	9.8	11.0	●	●	●		SIM ... H10

Order example: MIR 10 L35 3 TR BXC

See pages 40-54 for holders

• Available.
Other items available upon request

MDR Bars *Thread Relief, Chamfering and Grooving*



Grade	P	M	K	N	S	H
K20		○	○	●	○	
BXC	●	●	●	○	●	○
BMK	●	●	●	○	●	○
TNX	●	●	●	○	●	●

● First choice ○ Alternative

For L.H. bars specify MDL instead of MDR

D	Ordering Code	L	L1	B	R	H	F	a	Min. Dia.	K20	BXC	BMK	TNX	Holder
4.0	**MDR 4 R0.5 L18**	51	18	1.5	0.5	0.8	1.8	3.8	4.1	●	●	●	●	SIM ... H4
5.0	**MDR 5 R0.5 L24**	51	24	1.5	0.5	1.2	2.3	4.8	5.1	●	●	●		SIM ... H5
6.0	**MDR 6 R0.5 L27**	58	27	1.5	0.5	1.4	2.8	5.8	6.1	●	●	●	●	SIM ... H6

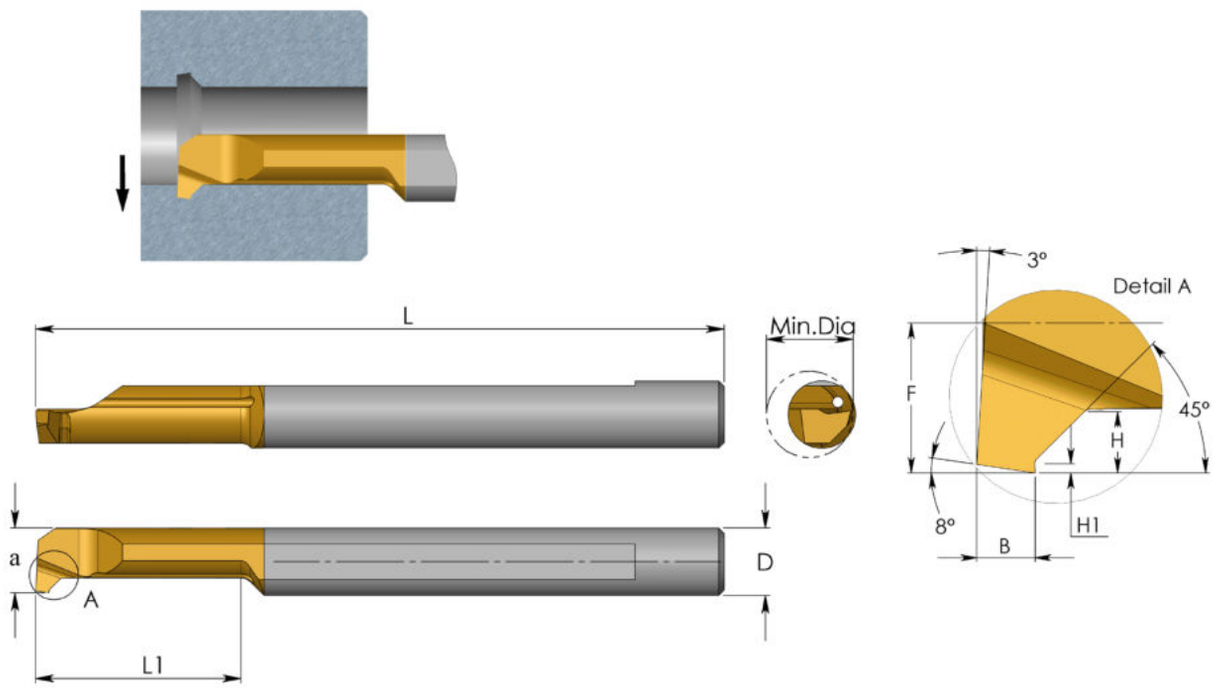
Order example: MDR 5 R0.5 L24 BXC

See pages 40-54 for holders

• Available.
Other items available upon request

New

CPR Bars *Pre-parting and Chamfering*



Grade	P	M	K	N	S	H
K20		○	○	●	○	
BXC	●	●	●	○	●	○
BMK	●	●	●	○	●	○
TNX	●	●	●	○	●	●

● First choice ○ Alternative

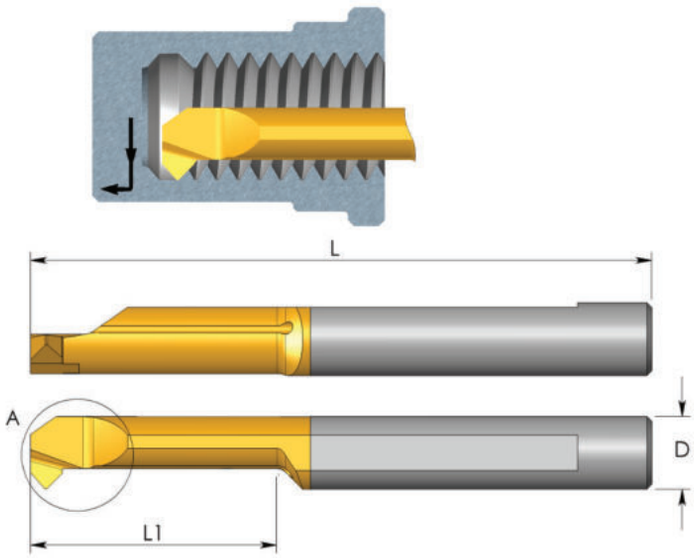
For L.H. bars specify CPL... instead of CPR...

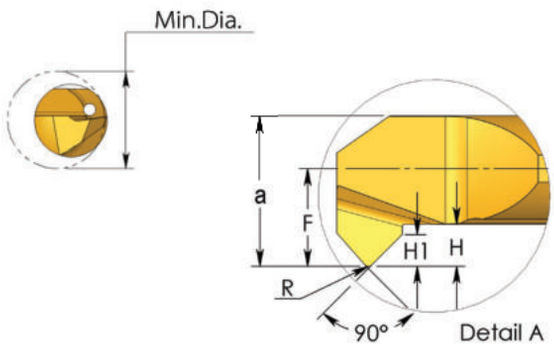
D	Ordering Code	L	L1	B	H	H1	F	a	Min. Dia.	K20	BXC	BMK	TNX	Holder
4.0	**CPR 4 B1.0 L10**	51	10	1.0	0.8	0.2	1.8	3.8	4.1	●	●	●		SIM ... H4
	CPR 4 B1.0 L15	51	15	1.0	0.8	0.2	1.8	3.8	4.1	●	●	●		
5.0	**CPR 5 B1.0 L15**	51	15	1.0	1.0	0.2	2.3	4.8	5.1	●	●	●		SIM ... H5
	CPR 5 B1.0 L22	51	22	1.0	1.0	0.2	2.3	4.8	5.1	●	●	●		
6.0	**CPR 6 B1.0 L15**	51	15	1.0	1.2	0.2	2.8	5.8	6.1	●	●	●		SIM ... H6
	CPR 6 B1.0 L22	51	22	1.0	1.2	0.2	2.8	5.8	6.1	●	●	●		
	CPR 6 B1.0 L30	76	30	1.0	1.2	0.2	2.8	5.8	6.1	●	●	●		

Order example: CPR 6 B1.0 L15 BXC

• Available.
Other items available upon request

MCR Bars *Chamfering and Boring*





Grade	P	M	K	N	S	H
K20		○	○	●	○	
BXC	●	●	●	○	●	○
BMK	●	●	●	○	●	○
TNX	●	●	●	○	●	●

● First choice ○ Alternative

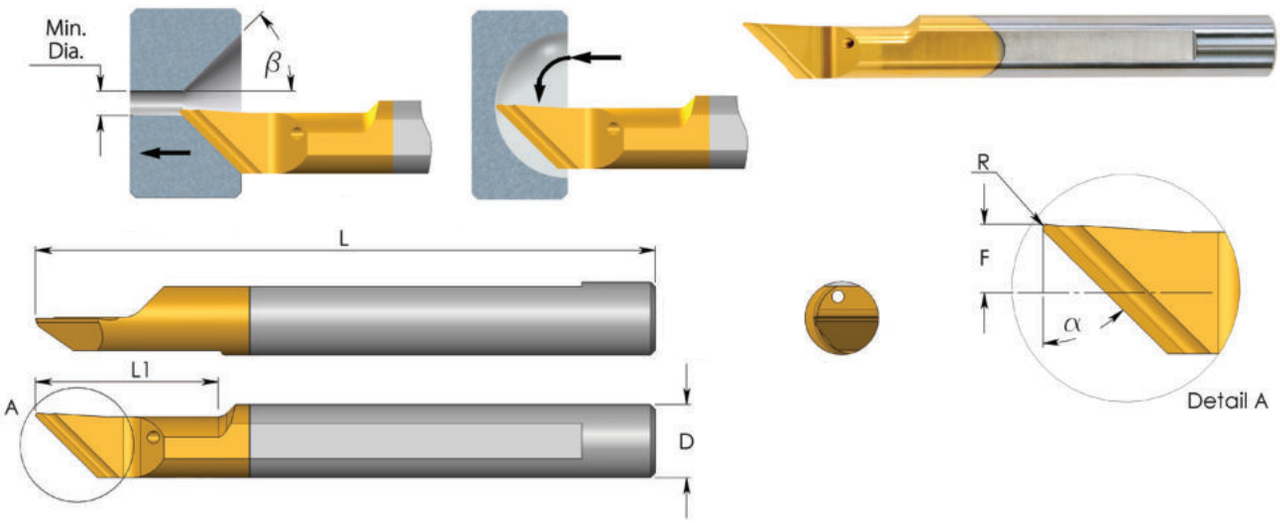
For L.H. bars specify MCL instead of MCR

D	Ordering Code	L	L1	R	H	H1	F	a	Min. Dia.	K20	BXC	BMK	TNX	Holder
3.0	**MCR 3 R0.2 L10**	39	10	0.2	0.7	0.3	1.3	2.8	3.1	●	●	●		SIM ... H3
4.0	**MCR 4 R0.2 L15**	51	15	0.2	0.8	0.4	1.7	3.7	4.1	●	●	●		SIM ... H4
5.0	**MCR 5 R0.2 L15**	51	15	0.2	1.2	0.7	2.1	4.6	5.1	●	●	●		SIM ... H5
6.0	**MCR 6 R0.2 L15**	51	15	0.2	1.4	0.7	2.8	5.8	6.1	●	●	●	●	SIM ... H6
7.0	**MCR 7 R0.2 L20**	62	20	0.2	1.5	0.8	3.3	6.8	7.1	●	●	●	●	SIM ... H7

Order example: MCR 4 R0.2 L15 BXC
See pages 40-54 for holders

• Available.
Other items available upon request

MWR Bars *Chamfering and Profiling*



Grade	P	M	K	N	S	H
K20		○	○	●	○	
BXC	●	●	●	○	●	○
BMK	●	●	●	○	●	○
TNX	●	●	●	○	●	●

● First choice ○ Alternative

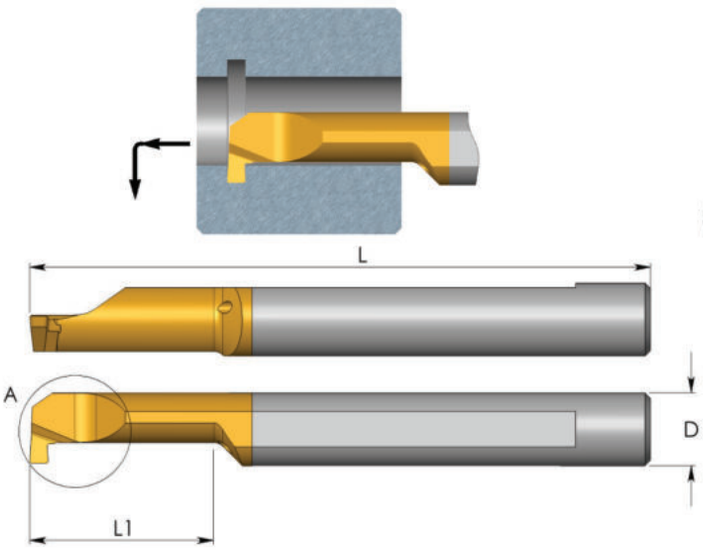
For L.H. bars specify MWL instead of MWR

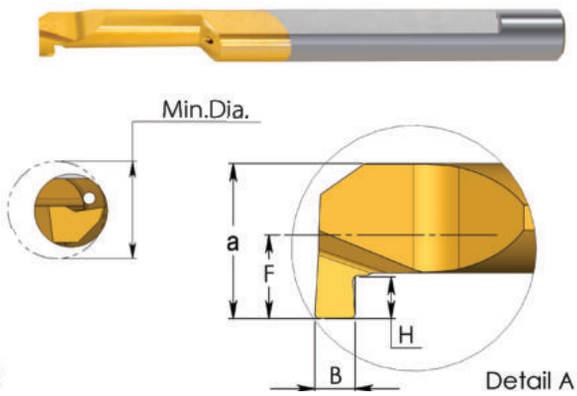
D	Ordering Code	L	L1	R	α	β	F	Min. Dia.	K20	BXC	BMK	TNX	Holder
6.0	**MWR 6 R0.2 A90**	51	15	0.2	45°	45°	2.3	1.0	●	●	●	●	SIM ... H6
	MWR 6 R0.2 A60	51	15	0.2	60°	30°	2.3	1.0	●	●	●	●	
6.0	*** MWR 6 R0.4 A90**	51	22	0.4	45°	45°	2.3	6.0	●	●	●		
	*** MWR 6 R0.4 A60**	51	22	0.4	60°	30°	2.3	6.0	●	●	●		

Order example: MWR 6 R0.2 A90 BXC
*Can be used also for boring
See pages 40-54 for holders

• Available.
Other items available upon request

MGR Bars *Grooving*





Grade	P	M	K	N	S	H
K20		○	○	●	○	
BXC	●	●	●	○	●	○
BMK	●	●	●	○	●	○
TNX	●	●	●	○	●	●

● First choice ○ Alternative

For L.H. bars specify MGL instead of MGR

D	Ordering Code	L	L1	B mm	B in	H	F	a	Min. Dia.	K20	BXC	BMK	TNX	Holder
4.0	**MGR 2 B0.5 L10**	51	10	0.5	.020	0.5	0.9	1.9	2.1	●	●	●		SIM ... H4
3.0	**MGR 3 B0.5 L10**	39	10	0.5	.020	0.5	1.3	2.8	3.1	●	●	●		SIM ... H3
	MGR 3 B0.7 L10	39	10	0.7	.028	0.6	1.3	2.8	3.1	●	●	●	●	
4.0	**MGR 4 B0.5 L10**	51	10	0.5	.020	0.5	1.7	3.7	4.1	●	●	●		SIM ... H4
	MGR 4 B0.5 L15	51	15	0.5	.028	0.5	1.7	3.7	4.1	●	●	●		
	MGR 4 B0.7 L10	51	10	0.7	.028	0.6	1.7	3.7	4.1	●	●	●		
	MGR 4 B0.79 L15	51	15	0.79	.031	0.9	1.7	3.7	4.1	●	●	●		
	MGR 4 B0.79 L22	51	22	0.79	.031	0.9	1.7	3.7	4.1	●	●	●		
	MGR 4 B1.0 L10	51	10	1.0	.039	1.0	1.7	3.7	4.1	●	●	●	●	
	MGR 4 B1.0 L15	51	15	1.0	.039	1.0	1.7	3.7	4.1	●	●	●	●	
	MGR 4 B1.0 L22	51	22	1.0	.039	1.0	1.7	3.7	4.1	●	●	●		
	MGR 4 B1.5 L10	51	10	1.5	.059	1.0	1.7	3.7	4.1	●	●	●	●	
	MGR 4 B1.5 L15	51	15	1.5	.059	1.0	1.7	3.7	4.1	●	●	●		
	MGR 4 B1.5 L22	51	22	1.5	.059	1.0	1.7	3.7	4.1	●	●	●		
5.0	**MGR 5 B0.79 L15**	51	15	0.79	.031	1.0	2.3	4.8	5.1	●	●	●		SIM ... H5
	MGR 5 B0.79 L22	51	22	0.79	.031	1.0	2.3	4.8	5.1	●	●	●		
	MGR 5 B1.0 L15	51	15	1.0	.039	1.2	2.3	4.8	5.1	●	●	●	●	
	MGR 5 B1.0 L22	51	22	1.0	.039	1.2	2.3	4.8	5.1	●	●	●		
	MGR 5 B1.19 L15	51	15	1.19	.047	1.2	2.3	4.8	5.1	●	●	●		
	MGR 5 B1.19 L22	51	22	1.19	.047	1.2	2.3	4.8	5.1	●	●	●		
	MGR 5 B1.5 L15	51	15	1.5	.059	1.2	2.3	4.8	5.1	●	●	●	●	
	MGR 5 B1.5 L22	51	22	1.5	.059	1.2	2.3	4.8	5.1	●	●	●		
	MGR 5 B1.59 L15	51	15	1.59	.063	1.2	2.3	4.8	5.1	●	●	●		
	MGR 5 B1.59 L22	51	22	1.59	.063	1.2	2.3	4.8	5.1	●	●	●		
New	**MGR 5 B2.0 L10**	51	10	2.0	.079	1.2	2.3	4.8	5.1	●	●	●		
	MGR 5 B2.0 L15	51	15	2.0	.079	1.2	2.3	4.8	5.1	●	●	●	●	
	MGR 5 B2.0 L22	51	22	2.0	.079	1.2	2.3	4.8	5.1	●	●	●		

Tolerance: B±0.025 mm/.001"

See pages 40-54 for holders

• Available.
Other items available upon request

MGR Bars *Grooving*

D	Ordering Code	L	L1	B mm	B in	H	F	a	Min. Dia.	K20	BXC	BMK	TNX	Holder
6.0	**MGR 6 B1.0 L15**	51	15	1.0	.039	1.4	2.8	5.8	6.1	●	●	●	●	SIM ... H6
	MGR 6 B1.0 L22	51	22	1.0	.039	1.4	2.8	5.8	6.1	●	●	●	●	
	MGR 6 B1.5 L15	51	15	1.5	.059	1.4	2.8	5.8	6.1	●	●	●	●	
	MGR 6 B1.5 L22	51	22	1.5	.059	1.4	2.8	5.8	6.1	●	●	●		
	MGR 6 B2.0 L15	51	15	2.0	.079	1.4	2.8	5.8	6.1	●	●	●	●	
	MGR 6 B2.0 L22	51	22	2.0	.079	1.4	2.8	5.8	6.1	●	●	●	●	
6.0	**MGR 6 B0.79 L17**	51	17	0.79	.031	1.8	2.8	5.8	6.1	●	●	●		SIM ... H6
	MGR 6 B0.79 L23	51	23	0.79	.031	1.8	2.8	5.8	6.1	●	●	●		
	MGR 6 B1.0 L17	51	17	1.0	.039	1.8	2.8	5.8	6.1	●	●	●		
	MGR 6 B1.19 L17	51	17	1.19	.047	1.8	2.8	5.8	6.1	●	●	●		
	MGR 6 B1.19 L23	51	23	1.19	.047	1.8	2.8	5.8	6.1	●	●	●		
	MGR 6 B1.5 L17	51	17	1.5	.059	1.8	2.8	5.8	6.1	●	●	●		
	MGR 6 B1.5 L23	51	23	1.5	.059	1.8	2.8	5.8	6.1	●	●	●		
	MGR 6 B1.59 L17	51	17	1.59	.063	1.8	2.8	5.8	6.1	●	●	●		
	MGR 6 B1.59 L23	51	23	1.59	.063	1.8	2.8	5.8	6.1	●	●	●		
	MGR 6 B2.0 L17	51	17	2.0	.079	1.8	2.8	5.8	6.1	●	●	●		
	MGR 6 B2.0 L23	51	23	2.0	.079	1.8	2.8	5.8	6.1	●	●	●		
7.0	**MGR 7 B1.0 L15**	62	15	1.0	.039	2.5	3.3	6.8	7.1	●	●	●		SIM ... H7
	MGR 7 B1.0 L22	62	22	1.0	.039	2.5	3.3	6.8	7.1	●	●	●		
	MGR 7 B1.0 L30	62	30	1.0	.039	2.5	3.3	6.8	7.1	●	●	●		
	MGR 7 B1.19 L22	62	22	1.19	.047	2.5	3.3	6.8	7.1	●	●	●		
	MGR 7 B1.19 L30	62	30	1.19	.047	2.5	3.3	6.8	7.1	●	●	●		
	MGR 7 B1.5 L15	62	15	1.5	.059	2.5	3.3	6.8	7.1	●	●	●		
	MGR 7 B1.5 L22	62	22	1.5	.059	2.5	3.3	6.8	7.1	●	●	●		
	MGR 7 B1.5 L30	62	30	1.5	.059	2.5	3.3	6.8	7.1	●	●	●		
	MGR 7 B1.59 L22	62	22	1.59	.063	2.5	3.3	6.8	7.1	●	●	●		
	MGR 7 B1.59 L30	62	30	1.59	.063	2.5	3.3	6.8	7.1	●	●	●		
	MGR 7 B2.0 L15	62	15	2.0	.079	2.5	3.3	6.8	7.1	●	●	●		
	MGR 7 B2.0 L22	62	22	2.0	.079	2.5	3.3	6.8	7.1	●	●	●		
	MGR 7 B2.0 L30	62	30	2.0	.079	2.5	3.3	6.8	7.1	●	●	●		
8.0	**MGR 8 B1.0 L22**	64	22	1.0	.039	1.7	3.8	7.8	8.1	●	●	●		SIM ... H8
	MGR 8 B1.5 L22	64	22	1.5	.059	1.7	3.8	7.8	8.1	●	●	●	●	
	MGR 8 B2.0 L15	64	15	2.0	.079	2.6	3.8	7.8	8.1	●	●	●		
	MGR 8 B2.0 L22	64	22	2.0	.079	2.6	3.8	7.8	8.1	●	●	●	●	
	MGR 8 B2.38 L15	64	15	2.38	.094	2.6	3.8	7.8	8.1	●	●	●		
	MGR 8 B2.38 L22	64	22	2.38	.094	2.6	3.8	7.8	8.1	●	●	●		
New	**MGR 8 B3.0 L30**	64	30	3.0	.118	2.6	3.8	7.8	8.1	●	●	●		

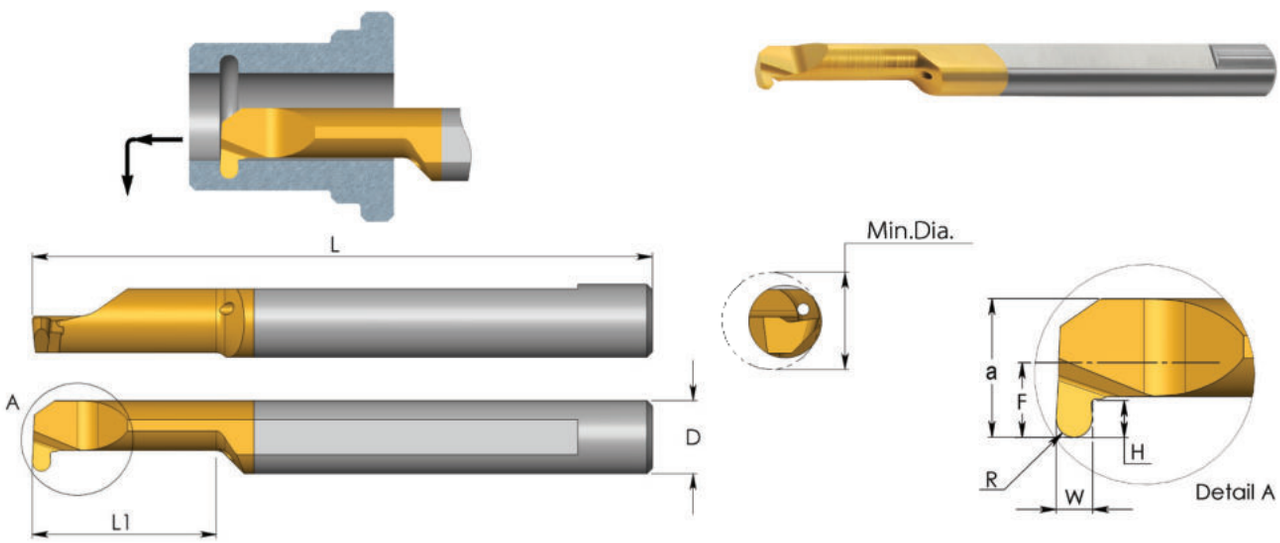
Tolerance: B±0.025 mm/.001”

Order example: MGR 5 B1.5 L15 BXC

See pages 40-54 for holders

● Available.
Other items available upon request

MKR Bars *Full Radius Grooving*



Grade	P	M	K	N	S	H
K20		○	○	●	○	
BXC	●	●	●	○	●	○
BMK	●	●	●	○	●	○
TNX	●	●	●	○	●	●

● First choice ○ Alternative

For L.H. bars specify MKL instead of MKR

D	Ordering Code	L	L1	R	W	H	F	a	Min. Dia.	K20	BXC	BMK	TNX	Holder
4.0	**MKR 4 R0.5 L10**	51	10	0.50	1.0	1.0	1.7	3.8	4.1	●	●	●		SIM ... H4
	MKR 4 R0.5 L15	51	15	0.50	1.0	1.0	1.7	3.8	4.1	●	●	●		
	MKR 4 R0.75 L10	51	10	0.75	1.5	1.0	1.7	3.8	4.1	●	●	●		
5.0	**MKR 5 R0.5 L15**	51	15	0.50	1.0	1.2	2.3	4.8	5.1	●	●	●		SIM ... H5
	MKR 5 R0.75 L15	51	15	0.75	1.5	1.2	2.3	4.8	5.1	●	●	●		
	MKR 5 R1.0 L15	51	15	1.00	2.0	1.2	2.3	4.8	5.1	●	●	●	●	
	MKR 5 R1.0 L22	51	22	1.00	2.0	1.2	2.3	4.8	5.1	●	●	●		
6.0	New **MKR 6 R0.3 L10**	51	10	0.30	0.6	1.2	2.8	5.8	6.1	●	●	●		SIM ... H6
	MKR 6 R0.5 L15	51	15	0.50	1.0	1.6	2.8	5.8	6.1	●	●	●	●	
	MKR 6 R0.75 L15	51	15	0.75	1.5	1.6	2.8	5.8	6.1	●	●	●		
	MKR 6 R1.0 L15	51	15	1.00	2.0	1.6	2.8	5.8	6.1	●	●	●	●	
	MKR 6 R1.0 L23	51	23	1.00	2.0	1.8	2.8	5.8	6.1	●	●	●		
7.0	**MKR 7 R0.5 L22**	62	22	0.50	1.0	2.5	3.3	6.8	7.1	●	●	●		SIM ... H7
	New **MKR 7 R0.5 L30**	62	30	0.50	1.0	2.5	3.3	6.8	7.1	●	●	●		
	MKR 7 R0.75 L22	62	22	0.75	1.5	2.5	3.3	6.8	7.1	●	●	●		
	MKR 7 R1.0 L22	62	22	1.00	2.0	2.5	3.3	6.8	7.1	●	●	●		

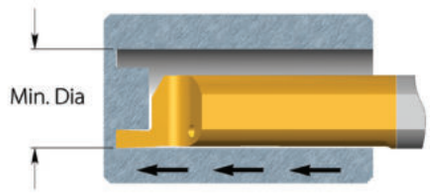
Tolerance: R±0.025 mm

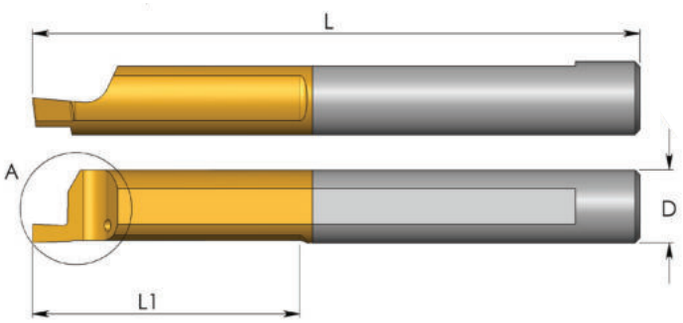
Order example: MKR 5 R1.0 L15 BXC

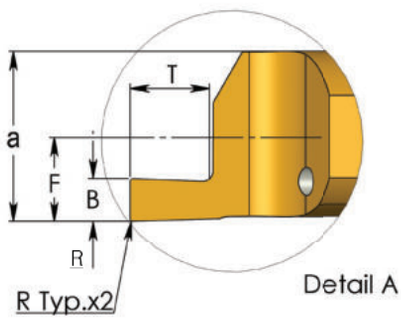
See pages 40-54 for holders

• Available.
Other items available upon request

MFR Bars *Face Grooving*







Grade	P	M	K	N	S	H
K20		○	○	●	○	
BXC	●	●	●	○	●	○
BMK	●	●	●	○	●	○
TNX	●	●	●	○	●	●

● First choice ○ Alternative

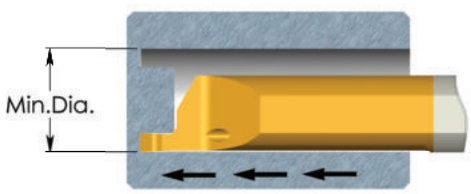
D	Ordering Code	L	L1	R	B	T	F	a	Min. Dia.	K20	BXC	BMK	TNX	Holder
4.0	**MFR 4 B0.5 L15**	51	15	0.05	0.5	1.2	1.95	3.95	5.0	●	●	●		SIM ... H4
	MFR 4 B0.75 L15	51	15	0.10	0.75	1.2	1.95	3.95	5.0	●	●	●	●	
	MFR 4 B1.0 L15	51	15	0.10	1.0	1.5	1.95	3.95	5.0	●	●	●		
	MFR 4 B1.5 L15	51	15	0.10	1.5	2.8	1.95	3.95	5.0	●	●	●		
	MFR 4 B1.5 L17	51	17	0.10	1.5	3.5	1.95	3.95	5.0	●	●	●		
	MFR 4 B2.0 L17	51	17	0.10	2.0	5.0	1.95	3.95	5.0	●	●	●		
5.0	**MFR 5 B0.5 L22**	51	22	0.05	0.5	1.2	2.45	4.95	6.0	●	●	●		SIM ... H5
	MFR 5 B0.75 L22	51	22	0.10	0.75	1.2	2.45	4.95	6.0	●	●	●		
	MFR 5 B1.0 L22	51	22	0.10	1.0	1.5	2.45	4.95	6.0	●	●	●		
	MFR 5 B1.0 L23	51	23	0.10	1.0	2.5	2.45	4.95	6.0	●	●	●		
	MFR 5 B1.5 L22	51	22	0.10	1.5	2.5	2.45	4.95	6.0	●	●	●		
	MFR 5 B1.5 L23	51	23	0.10	1.5	3.5	2.45	4.95	6.0	●	●	●		
	MFR 5 B2.0 L22	51	22	0.10	2.0	3.8	2.45	4.95	6.0	●	●	●		
	MFR 5 B2.0 L23	51	23	0.10	2.0	5.0	2.45	4.95	6.0	●	●	●		
6.0	**MFR 6 B1.0 L22**	51	22	0.10	1.0	1.5	2.95	5.95	8.0	●	●	●	●	SIM ... H6
	MFR 6 B1.5 L22	51	22	0.10	1.5	2.5	2.95	5.95	8.0	●	●	●	●	
	MFR 6 B2.0 L22	51	22	0.10	2.0	3.0	2.95	5.95	8.0	●	●	●	●	
	MFR 6 B2.5 L22	51	22	0.10	2.5	4.8	2.95	5.95	8.0	●	●	●		
	MFR 6 B3.0 L30	58	30	0.10	3.0	6.0	2.95	5.95	8.0	●	●	●	●	
New 8.0	**MFR 8 B2.5 L22**	64	22	0.10	2.5	3.5	3.95	7.95	10.0	●	●	●		SIM ... H8
	MFR 8 B3.0 L30	64	30	0.10	3.0	6.0	3.95	7.95	10.0	●	●	●		

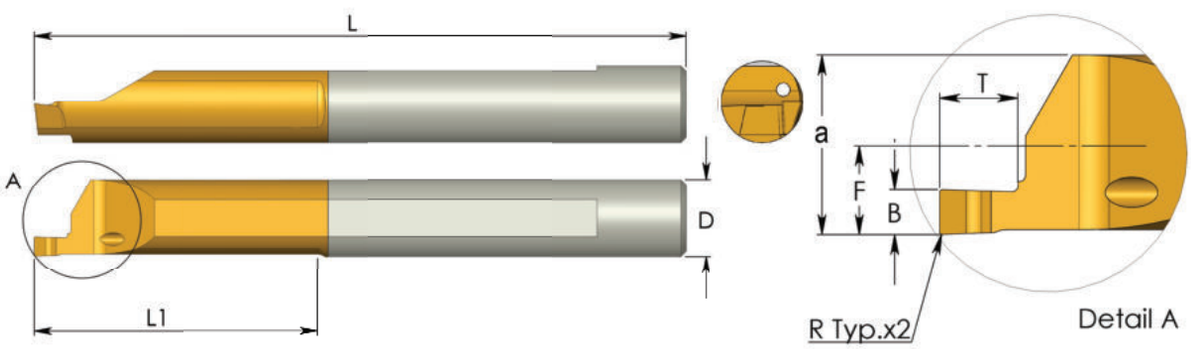
Order example: MFR 5 B1.0 L22 BXC

See pages 40-54 for holders

● Available.
Other items available upon request

MFR Bars *Face Grooving with Chip Former*





Grade	P	M	K	N	S	H
K20		○	○	●	○	
BXC	●	●	●	○	●	○
BMK	●	●	●	○	●	○
TNX	●	●	●	○	●	●

● First choice ○ Alternative

For L.H. bars specify MFL instead of MFR

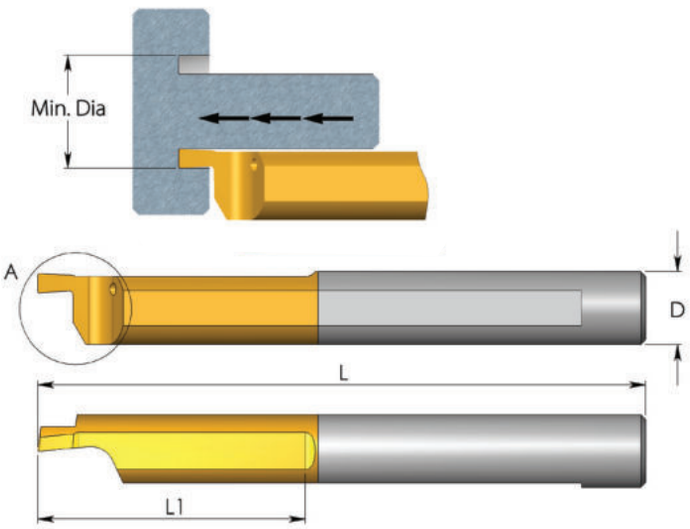
D	Ordering Code	L	L1	R	B	T	F	a	Min. Dia.	K20	BXC	BMK	TNX	Holder
4.0	**MFR 4 B1.5 L15-C**	51	15	0.10	1.5	2.8	1.95	3.95	5.0	●	●	●		SIM ... H4
5.0	**MFR 5 B1.5 L22-C**	51	22	0.10	1.5	2.5	2.45	4.95	6.0	●	●	●		SIM ... H5
	MFR 5 B2.0 L22-C	51	22	0.10	2.0	3.8	2.45	4.95	6.0	●	●	●		
6.0	**MFR 6 B1.5 L22-C**	51	22	0.10	1.5	2.5	2.95	5.95	8.0	●	●	●		SIM ... H6
	MFR 6 B2.0 L22-C	51	22	0.10	2.0	3.0	2.95	5.95	8.0	●	●	●		
	MFR 6 B3.0 L22-C	51	22	0.10	3.0	6.0	2.95	5.95	8.0	●	●	●	●	

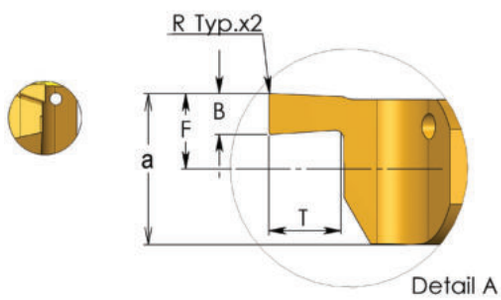
Order example: MFR 5 B2.0 L22-C BXC

See pages 40-54 for holders

• Available.
Other items available upon request

MFL Bars *Face Grooving*





Grade	P	M	K	N	S	H
K20		○	○	●	○	
BXC	●	●	●	○	●	○
BMK	●	●	●	○	●	○
TNX	●	●	●	○	●	●

● First choice ○ Alternative

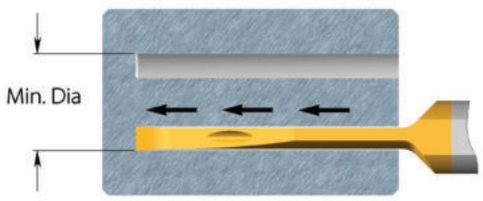
D	Ordering Code	L	L1	R	B	T	F	a	Min. Dia.	K20	BXC	BMK	TNX	Holder
4.0	**MFL 4 B0.5 L15**	51	15	0.05	0.5	1.2	1.75	3.75	5.0	●	●	●		SIM ... H4
	MFL 4 B0.75 L15	51	15	0.10	0.75	1.2	1.75	3.75	5.0	●	●	●		
	MFL 4 B1.0 L15	51	15	0.10	1.0	1.5	1.75	3.75	5.0	●	●	●		
	MFL 4 B1.5 L15	51	15	0.10	1.5	2.8	1.75	3.75	5.0	●	●	●		
	MFL 4 B1.5 L17	51	17	0.10	1.5	3.5	1.75	3.75	5.0	●	●	●		
	MFL 4 B2.0 L17	51	17	0.10	2.0	5.0	1.75	3.75	5.0	●	●	●		
5.0	**MFL 5 B0.5 L22**	51	22	0.05	0.5	1.2	2.25	4.75	6.0	●	●	●		SIM ... H5
	MFL 5 B0.75 L22	51	22	0.10	0.75	1.2	2.25	4.75	6.0	●	●	●		
	MFL 5 B1.0 L22	51	22	0.10	1.0	1.5	2.25	4.75	6.0	●	●	●		
	MFL 5 B1.0 L23	51	23	0.10	1.0	2.5	2.25	4.75	6.0	●	●	●		
	MFL 5 B1.5 L22	51	22	0.10	1.5	2.5	2.25	4.75	6.0	●	●	●		
	MFL 5 B1.5 L23	51	23	0.10	1.5	3.5	2.25	4.75	6.0	●	●	●		
	MFL 5 B2.0 L22	51	22	0.10	2.0	3.8	2.25	4.75	6.0	●	●	●		
	MFL 5 B2.0 L23	51	23	0.10	2.0	5.0	2.25	4.75	6.0	●	●	●		
6.0	**MFL 6 B1.0 L22**	51	22	0.10	1.0	1.5	2.75	5.75	8.0	●	●	●	●	SIM ... H6
	MFL 6 B1.5 L22	51	22	0.10	1.5	2.5	2.75	5.75	8.0	●	●	●	●	
	MFL 6 B2.0 L22	51	22	0.10	2.0	3.0	2.75	5.75	8.0	●	●	●	●	
	MFL 6 B2.5 L22	51	22	0.10	2.5	4.8	2.75	5.75	8.0	●	●	●		
	MFL 6 B3.0 L30	58	30	0.10	3.0	6.0	2.75	5.75	8.0	●	●	●	●	
New 8.0	**MFL 8 B2.5 L22**	64	22	0.10	2.5	3.5	3.75	7.75	10.0	●	●	●		SIM ... H8
	MFL 8 B3.0 L30	64	30	0.10	3.0	6.0	3.75	7.75	10.0	●	●	●		

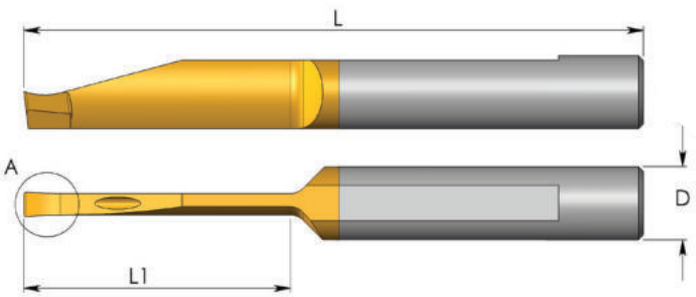
Order example: MFL 4 B2.0 L17 BMK

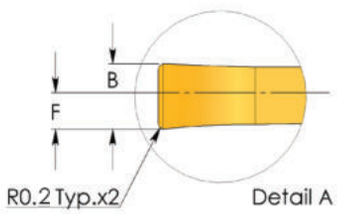
See pages 40-54 for holders

• Available.
Other items available upon request

MVR Bars *Deep Face Grooving – with 2 coolant bores*







Grade	P	M	K	N	S	H
K20		○	○	●	○	
BXC	●	●	●	○	●	○
BMK	●	●	●	○	●	○
TNX	●	●	●	○	●	●

● First choice ○ Alternative

For L.H. bars specify MVL instead of MVR

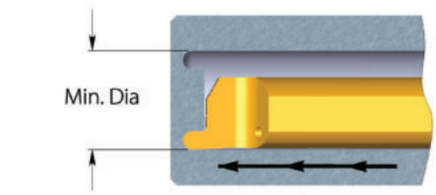
D	Ordering Code	L	L1	B	F	Min. Dia.	K20	BXC	BMK	TNX	Holder
6.0	**MVR 6 B2.0 L10**	64	10	2.0	1.1	10.0	●	●	●		SIM ... H6
	MVR 6 B2.0 L15	64	15	2.0	1.1	12.0	●	●	●		
	MVR 6 B2.0 L22	64	22	2.0	1.1	12.0	●	●	●		
	MVR 6 B2.5 L15	64	15	2.5	1.4	10.0	●	●	●		
	MVR 6 B2.5 L22	64	22	2.5	1.4	12.0	●	●	●		
New	**MVR 6 B3.0 L15**	64	15	3.0	1.6	10.0	●	●	●		
	MVR 6 B3.0 L22	64	22	3.0	1.6	10.0	●	●	●		
8.0	**MVR 8 B3.0 L27**	64	27	3.0	1.6	15.0	●	●	●		SIM ... H8
	MVR 8 B3.0 L43	80	43	3.0	1.6	15.0	●	●	●		
New 8.0	**MVR 8 B4.0 L27**	64	27	4.0	2.1	20.0	●	●	●		SIM ... H8
	MVR 8 B4.0 L43	80	43	4.0	2.1	20.0	●	●	●		

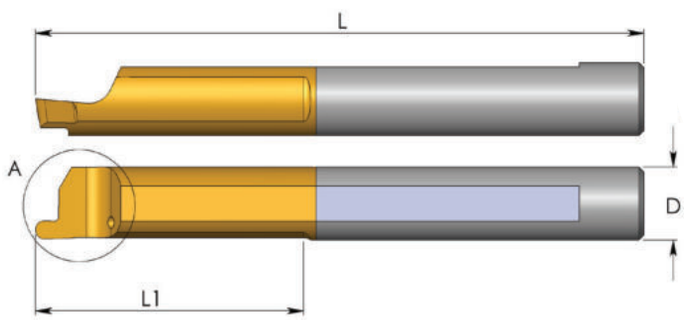
Order example: MVR 6 B2.0 L22 BXC

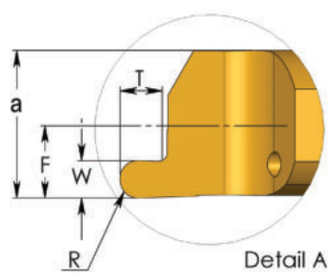
See pages 40-54 for holders

• Available.
Other items available upon request

MZR Bars *Face Grooving*







Grade	P	M	K	N	S	H
K20		○	○	●	○	
BXC	●	●	●	○	●	○
BMK	●	●	●	○	●	○
TNX	●	●	●	○	●	●

● First choice ○ Alternative

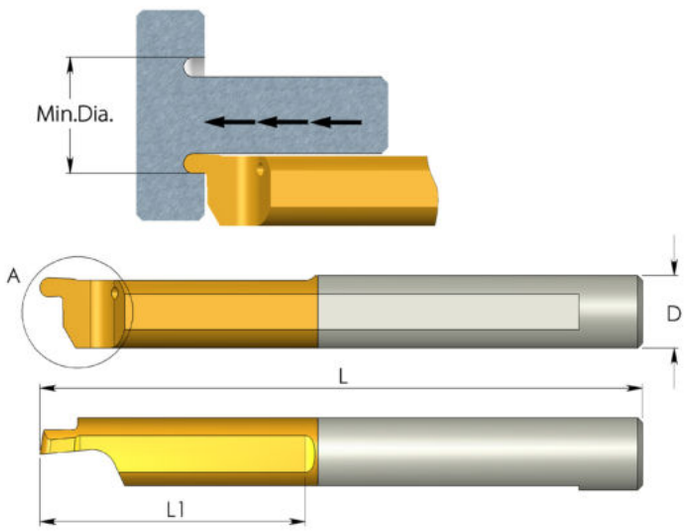
D	Ordering Code	L	L1	R	W	T	F	a	Min. Dia.	K20	BXC	BMK	TNX	Holder
4.0	**MZR 4 R0.5 L15**	51	15	0.50	1.0	1.2	1.95	3.95	5.0	●	●	●	●	SIM ... H4
	MZR 4 R0.75 L15	51	15	0.75	1.5	1.5	1.95	3.95	5.0	●	●	●		
5.0	**MZR 5 R0.5 L22**	51	22	0.50	1.0	1.2	2.45	4.95	6.0	●	●	●		SIM ... H5
	MZR 5 R0.75 L22	51	22	0.75	1.5	1.5	2.45	4.95	6.0	●	●	●		
	MZR 5 R1.0 L22	51	22	1.00	2.0	2.5	2.45	4.95	6.0	●	●	●		
6.0	**MZR 6 R0.5 L22**	51	22	0.50	1.0	1.2	2.95	5.95	8.0	●	●	●	●	SIM ... H6
	MZR 6 R0.75 L22	51	22	0.75	1.5	1.5	2.95	5.95	8.0	●	●	●	●	
	MZR 6 R1.0 L22	51	22	1.00	2.0	2.5	2.95	5.95	8.0	●	●	●	●	

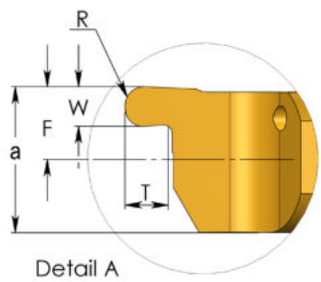
Order example: MZR 5 R0.5 L22 BXC

See pages 40-54 for holders

• Available.
Other items available upon request

MZL Bars *Face Grooving*





Grade	P	M	K	N	S	H
K20		○	○	●	○	
BXC	●	●	●	○	●	○
BMK	●	●	●	○	●	○
TNX	●	●	●	○	●	●

● First choice ○ Alternative

D	Ordering Code	L	L1	R	W	T	a	F	Min. Dia.	K20	BXC	BMK	TNX	Holder
4.0	**MZL 4 R0.5 L15**	51	15	0.50	1.0	1.2	3.75	1.75	5.0	●	●	●		SIM ... H4
	MZL 4 R0.75 L15	51	15	0.75	1.5	1.5	3.75	1.75	5.0	●	●	●		
5.0	**MZL 5 R0.5 L22**	51	22	0.50	1.0	1.2	4.75	2.25	6.0	●	●	●		SIM ... H5
	MZL 5 R0.75 L22	51	22	0.75	1.5	1.5	4.75	2.25	6.0	●	●	●		
	MZL 5 R1.0 L22	51	22	1.00	2.0	2.5	4.75	2.25	6.0	●	●	●		
6.0	**MZL 6 R0.5 L22**	51	22	0.50	1.0	1.2	5.75	2.75	8.0	●	●	●	●	SIM ... H6
	MZL 6 R0.75 L22	51	22	0.75	1.5	1.5	5.75	2.75	8.0	●	●	●		
	MZL 6 R1.0 L22	51	22	1.00	2.0	2.5	5.75	2.75	8.0	●	●	●	●	

Order example: MZL 5 R0.5 L22 BXC

See pages 40-54 for holders

• Available.
Other items available upon request

HK *Broaching Tools for Hexagon Keys*

Product Identification – Ordering Codes

HK — Hexagon Keys

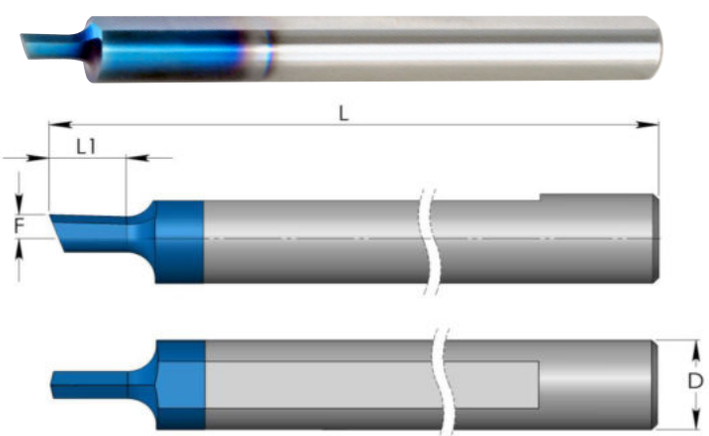
3 — Min. Bore Dia.
1 = 1.2 - 1.6 mm
2 = 2.2 mm
3 = 2.9 mm
4 = 3.9 mm
5 = 4.9 mm

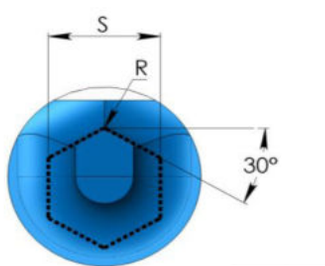
S30 — Socket Size
S12 = 1.2 - 1.6 mm
S16 = 1.6 - 2.3 mm
S23 = 2.3 - 2.9 mm
S30 = 3.0 - 4.0 mm
S40 = 4.0 - 5.0 mm
S50 = 5.0 - 8.0 mm

L5 — Maximum Cutting depth
L2= 2.3 - 2.5 mm
L4 = 4.0 mm
L5 = 5.5 mm
L6 = 6.5 mm
L9 = 9.5 mm

BMK — Grade

Demonstration





Grade	P	M	K	N	S	H
BMK	●	●	●	●	●	

● First choice ○ Alternative

D	S	Ordering Code	L	L1	R	F	Min. Dia.	BMK	Holder
4.0	1.2-1.6	**HK 1 S12 L2**	51	2.3	0.05	0.10	1.2	●	SIM…H4
	1.6-2.3	**HK 1 S16 L2**	51	2.5	0.05	0.10	1.6	●	
5.0	2.3-2.9	**HK 2 S23 L4**	51	4.0	0.05	1.35	2.2	●	SIM…H5
	3.0-4.0	**HK 3 S30 L5**	51	5.5	0.05	1.35	2.9	●	
	4.0-5.0	**HK 4 S40 L6**	51	6.5	0.10	1.35	3.9	●	
7.0	5.0-8.0	**HK 5 S50 L9**	62	9.5	0.10	1.35	4.9	●	SIM…H7

S = Socket Size
Order example: HK 1 S12 L2 BMK
See pages 40-54 for holders

● Available.
Other items available upon request

New

Solid Carbide *SuperCut MSD Drills*

CPT expands the Tiny Tool line, adding high-performance solid carbide SuperCut drills for a wide range of applications on CNC machines.

CPT **MSD** drills feature a reinforced cutting edge geometry for smooth cutting and high edge stability.

Advantages

- High performance and high productivity **(HPC)**
- High precision
- Excellent edge quality and high surface finish provides excellent chip evacuation
- Minimized tool run out and deflection
- Usable with all the CPT standard Tiny Tools holders: SIM, CIM, SEMV, SEMR, SEMK (economical clamping solution)
- The toolholder's adjusting screw (stopper) provides support while allowing the user to control overhang.

Applications

- Drill hole depth up to 5xDC
- Usable for Countersinking and chamfering existing holes
- General purpose machining including small parts
- Excellent solution for the pre-hole required using the CPT Tiny Tools and Mill-Thread lines

Carbide grades:

CR3

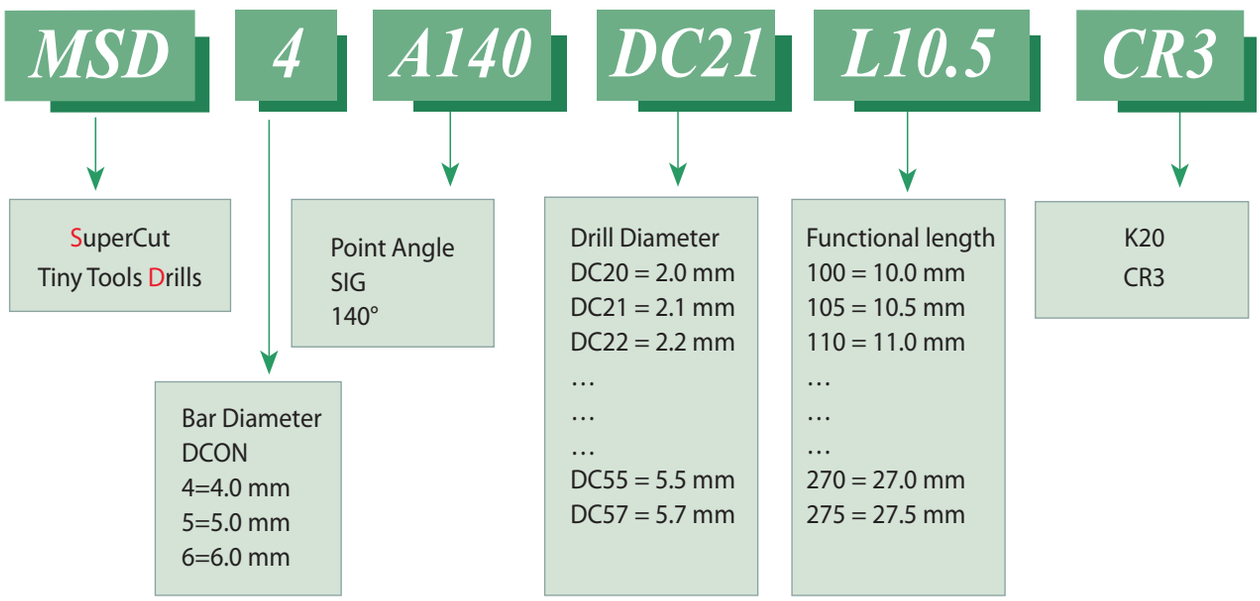
Ultra-Fine carbide grade with high hardness and toughness provides high cutting edge stability and wear resistance.

A **New Generation** of PVD Coating for High-Performance Cutting Applications.

K20

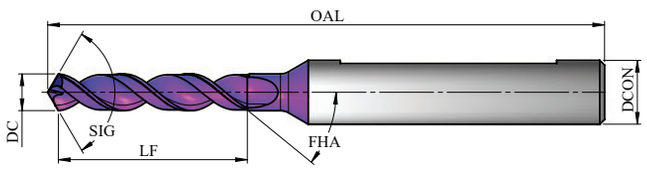
Uncoated ultra-Fine carbide grade with high hardness and toughness provides high cutting edge stability and wear resistance.

Product Identification – Ordering Codes



New

SuperCut MSD Drills



Grade	P	M	K	N	S	H
K20		○	○	●	○	
CR3	●	●	●	○	●	●

● First choice ○ Alternative

DCON	Ordering Code	DC	LF	SIG	FHA	OAL	Holder
4.0	**MSD 4 A140 DC18 L9**	1.8	9.0	140	30	55	SIM ... H4
	MSD 4 A140 DC20 L10	2.0	10.0	140	30	55	
	MSD 4 A140 DC21 L10.5	2.1	10.5	140	30	55	
	MSD 4 A140 DC22 L11	2.2	11.0	140	30	55	
	MSD 4 A140 DC23 L11.5	2.3	11.5	140	30	55	
	MSD 4 A140 DC25 L12.5	2.5	12.5	140	30	55	
	MSD 4 A140 DC26 L13	2.6	13.0	140	30	55	
	MSD 4 A140 DC27 L13.5	2.7	13.5	140	30	55	
	MSD 4 A140 DC29 L14.5	2.9	14.5	140	30	55	
	MSD 4 A140 DC30 L15	3.0	15.0	140	30	55	
	MSD 4 A140 DC32 L16	3.2	16.0	140	30	55	
	MSD 4 A140 DC33 L16.5	3.3	16.5	140	30	55	
	MSD 4 A140 DC34 L17	3.4	17.0	140	30	55	
	MSD 4 A140 DC35 L17.5	3.5	17.5	140	30	55	
	MSD 4 A140 DC38 L19	3.8	19.0	140	30	55	
5.0	**MSD 5 A140 DC40 L20**	4.0	20.0	140	30	66	SIM ... H5
	MSD 5 A140 DC41 L20.5	4.1	20.5	140	30	66	
	MSD 5 A140 DC42 L21	4.2	21.0	140	30	66	
	MSD 5 A140 DC43 L21.5	4.3	21.5	140	30	66	
	MSD 5 A140 DC44 L22	4.4	22.0	140	30	66	
	MSD 5 A140 DC45 L22.5	4.5	22.5	140	30	66	
	MSD 5 A140 DC47 L23.5	4.7	23.5	140	30	66	
	MSD 5 A140 DC48 L24	4.8	24.0	140	30	66	
6.0	**MSD 6 A140 DC50 L25**	5.0	25.0	140	30	70	SIM ... H6
	MSD 6 A140 DC51 L25.5	5.1	25.5	140	30	70	
	MSD 6 A140 DC52 L26	5.2	26.0	140	30	70	
	MSD 6 A140 DC53 L26.5	5.3	26.5	140	30	70	
	MSD 6 A140 DC54 L27	5.4	27.0	140	30	70	
	MSD 6 A140 DC55 L27.5	5.5	27.5	140	30	70	
	MSD 6 A140 DC57 L28.5	5.7	28.5	140	30	70	

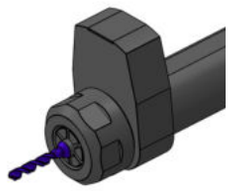
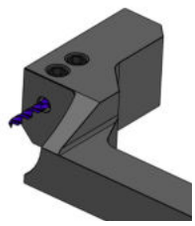
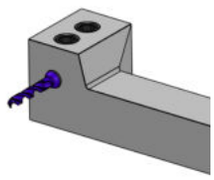
Order example: MSD 5 A140 DC44 L22 CR3

* Cylindrical shank h6 with flat

Thread Standards Vs. Appropriate drill for the pre-hole

MSD Drills Ordering Code	DC	ISO		UN		
		M coarse	M fine	UNC	UNF/UNEF	UNS
MSD 4 A140 DC18 L9	1.8	M2.2x0.45	M2.2x0.35		2-64UNF	
MSD 4 A140 DC20 L10	2.0	M2.5x0.45	M2.2x0.2 M2.2x0.25	3-48UNC		
MSD 4 A140 DC21 L10.5	2.1		M2.5x0.35		3-56UNF	
MSD 4 A140 DC22 L11	2.2		M2.5x0.25 M2.5x0.35	4-40UNC		
MSD 4 A140 DC23 L11.5	2.3				4-48UNF	
MSD 4 A140 DC25 L12.5	2.5	M3x0.5		5-40UNC		
MSD 4 A140 DC26 L13	2.6		M3x0.35		5-44UNF	
MSD 4 A140 DC27 L13.5	2.7		M3x0.25	6-32UNC		
MSD 4 A140 DC29 L14.5	2.9	M3.5x0.6			6-40UNF	
MSD 4 A140 DC30 L15	3.0		M3.5x0.5			
MSD 4 A140 DC32 L16	3.2		M3.5x0.25 M3.5x0.35			
MSD 4 A140 DC33 L16.5	3.3	M4x0.7	M3.5x0.2			
MSD 4 A140 DC34 L17	3.4			8-32UNC		
MSD 4 A140 DC35 L17.5	3.5		M4x0.5		8-36UNF	
MSD 4 A140 DC38 L19	3.8	M4.5x0.75	M4x0.2 M4.5x0.25 M4x0.35	10-24UNC		
MSD 5 A140 DC40 L20	4.0		M4.5x0.5		10-32UNF	
MSD 5 A140 DC41 L20.5	4.1		M4.5x0.35			10-36UNS
MSD 5 A140 DC42 L21	4.2	M5x0.8	M4.5x0.2 M4.5x0.25 M4.5x0.35			10-40UNS
MSD 5 A140 DC43 L21.5	4.3		M5x0.75			10-48UNS
MSD 5 A140 DC44 L22	4.4			12-24UNC		10-56UNS
MSD 5 A140 DC45 L22.5	4.5		M5x0.5			
MSD 5 A140 DC47 L23.5	4.7		M5x0.35		12-32UNEF	
MSD 5 A140 DC48 L24	4.8		M5x0.2 M5x0.25 M5.5x0.75			12-36UNS
MSD 6 A140 DC50 L25	5.0	M6x1.0	M5.5x0.5			12-48UNS 12-56UNS
MSD 6 A140 DC51 L25.5	5.1		M5.5x0.35	1/4-20UNC		
MSD 6 A140 DC52 L26	5.2		M5.5x0.25 M5.5x0.35 M6x0.75			
MSD 6 A140 DC53 L26.5	5.3		M5.5x0.2			1/4-24UNS
MSD 6 A140 DC54 L27	5.4				1/4-28UNF	1/4-27UNS
MSD 6 A140 DC55 L27.5	5.5		M6x0.5			
MSD 6 A140 DC57 L28.5	5.7		M6x0.35			1/4-40UNS

Standard Tiny Tools holders to clamp the MSD drills

SIM 22S...	CIM...	SIM...	SEMK...	SEM R...
				

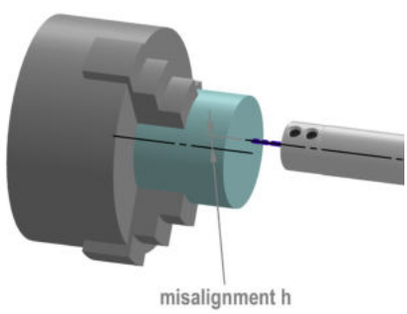
Technical Section
General instructions for use

Using the SIM holders

Insert the MSD supercut drill into any of the Tiny Tools holders and tighten the two clamping screws on the tool flat (in case of CIM use the internal tool indexing).
Use the smallest possible tool overhang for maximum tool stability.
Adjust the rear stopper till the front of the screw touches the tool shank.

Non-rotating drill aligning

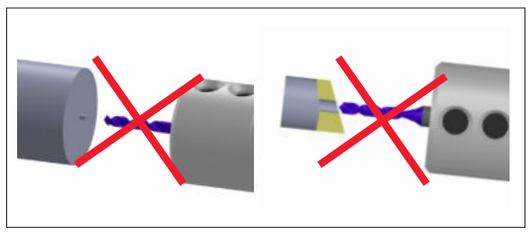
Drilling operation on lathe is called non-rotating drilling, when the workpiece rotates instead of the drill. It is extremely important to ensure the smallest axis **misalignment h**, as possible, between a tool and lathe spindle prior machining. Large misalignment could cause poor quality of holes or even drill breakage, the solid carbide drills are very sensitive to bending.
To achieve high quality holes and avoid hole shape deviation, a drill axis must be parallel with the spindle axis.



Drill penetration

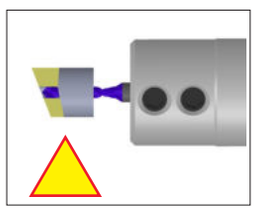
The surface should be cleanly faced (especially from a nib after parting off operation) and normal to drill axis.

Boring operation (enlarging of existing hole) can cause chip forming and evacuation problems, such operation is not recommended. Pre-hole is not required for short drills up to 5XD, center drilling preparation is not allowed.



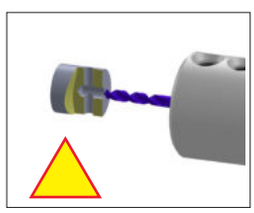
Drill exit

Avoid drill exit on significant slope surfaces because of breakage danger due to unequal side forces.
In case it can't be avoided, please reduce feed at the exit.



Cross holes

Crossing existing holes is a challenge for the drilling operation. In case you can't avoid that please reduce feed at the crossing stage.



Pecking cycle

Generally, in case of optimal conditions, pecking cycle is not required, but if a chip evacuation problem occurs, the pecking cycle can be applied. Using of pecking cycle can reduce drill tool life.

General recommendation

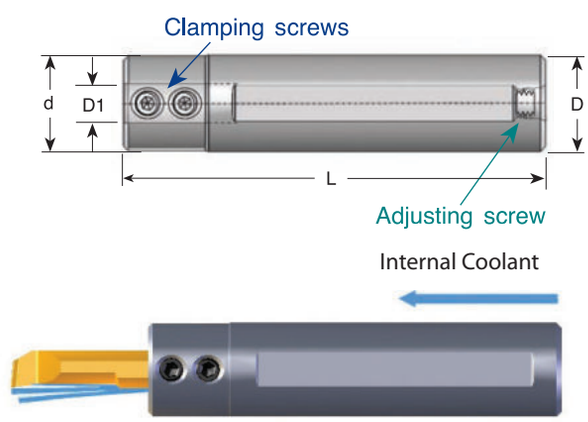
Choose machine with the best stability and high RPM ability for small diameter drills.
Horizontal spindle is preferrable due to better chip evacuation.
Provide suitable coolant supply.

Cutting Data

ISO Standard	Material	Cutting Speed m/min	Drill Diameter=DC Feed mm/rev	
			2 < DC < 2.9	3 < DC< 6
P	Low and Medium Carbon Steels <0.55%C	80 - 120	0.04 - 0.08	0.10 - 0.25
	High Carbon Steels ≥0.55%C	70 - 110	0.03 - 0.07	0.08 - 0.14
	Alloy Steels, Treated Steels	70 - 100	0.03 - 0.07	0.08 - 0.14
M	Stainless Steels - Free Cutting	40 - 80	0.03 - 0.07	0.08 - 0.14
	Stainless Steels - Austenitic	40 - 70	0.03 - 0.07	0.08 - 0.14
	Cast Steels	40 - 70	0.03 - 0.07	0.08 - 0.14
K	Cast Iron	70 - 160	0.06 - 0.10	0.10 - 0.25
N	Aluminum ≤12% Si, Copper	80 - 200	0.06 - 0.10	0.10 - 0.25
	Aluminum >12% Si	70 - 150	0.05 - 0.08	0.08 - 0.20
	Synthetics, Duroplastics, Thermoplastics	90 - 150	0.06 - 0.10	0.10 - 0.25
S	Nickel Alloys, Titanium Alloys	10 - 50	0.02 - 0.04	0.06 - 0.12
H	Hardened Steels	30 - 50	0.01 - 0.04	0.05 - 0.08

Tiny Tools Toolholders
Product Identification – Ordering Codes

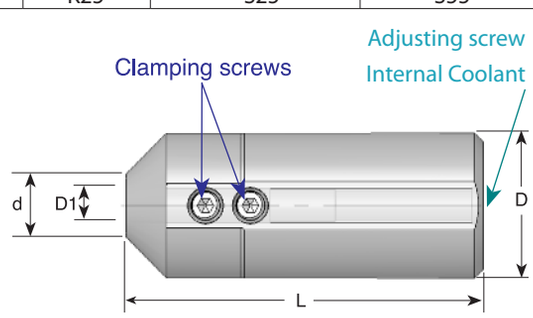
S	I	M	0020	H3	S
Clamping Method S = Screw	I = Internal	M = Tiny Bars	Shank Cross Section Metric 0012 = 12 mm 0016 = 16 mm 0020 = 20 mm 0022 = 22 mm 0025 = 25 mm	Bar Diameter 3 = 3.0 mm 4 = 4.0 mm 5 = 5.0 mm 6 = 6.0 mm 7 = 7.0 mm 8 = 8.0 mm 10 = 10.0 mm	Total length S = L 75 mm K = L 120 mm M = L 150 mm



D1	Ordering Code	D	d	L	Key	Clamping Screw	Adjusting Screw
	SIM 0010 H3	12	10	65	K16	S24	S28M
	SIM 0012 H3	12	12	88	K16, K25	S24	S35
	SIM 0016 H3S	16	20	75	K25	S25	S35S
	SIM 0016 H3	16	20	88	K25	S25	S35
3.0	**SIM 0020 H3**	20	20	88	K25	S25	S35
	SIM 0022 H3	22	22	88	K25	S25	S35
	SIM 0022 H3K	22	22	120	K25	S25	S55
	SIM 0025 H3M	25	25	150	K25	S25	-

New

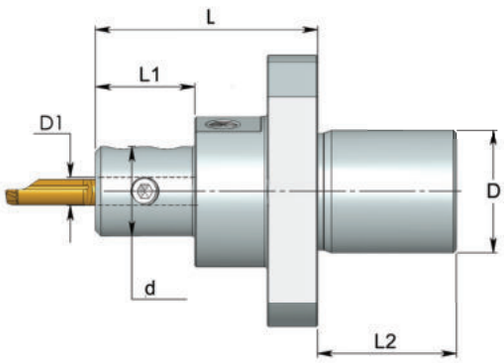
D1	Ordering Code	D	d	L	Key	Clamping Screw	Adjusting Screw
4.0	**SIM 0010 H4**	12	10	65	K16	S24	S28M
	SIM 0012 H4	12	12	88	K16, K25	S24	S35
	SIM 0016 H4S	16	20	75	K25	S25	S35S
	SIM 0016 H4	16	20	88	K25	S25	S35
	SIM 0020 H4	20	20	88	K25	S25	S35
	SIM 0022 H4	22	22	88	K25	S25	S35
	SIM 0022 H4K	22	22	120	K25	S25	S55
	SIM 0025 H4M	25	25	150	K25	S25	-
5.0	**SIM 0010 H5**	12	10	65	K16	S24	S28M
	SIM 0012 H5	12	12	88	K16, K25	S24	S35
	SIM 0016 H5S	16	20	75	K25	S25	S35S
	SIM 0016 H5	16	20	88	K25	S25	S35
	SIM 0020 H5	20	20	88	K25	S25	S35
	SIM 0022 H5	22	22	88	K25	S25	S35
	SIM 0022 H5K	22	22	120	K25	S25	S55
	SIM 0025 H5M	25	25	150	K25	S25	-
6.0	**SIM 0012 H6**	12	14	88	K16, K25	S24	S35
	SIM 0016 H6S	16	20	75	K25	S25	S35S
	SIM 0016 H6	16	20	88	K25	S25	S35
	SIM 0020 H6	20	20	88	K25	S25	S35
	SIM 0022 H6	22	22	88	K25	S25	S35
	SIM 0022 H6K	22	22	120	K25	S25	S55
	SIM 0025 H6M	25	25	150	K25	S25	-
7.0	**SIM 0016 H7**	16	20	88	K25	S25	S35
	SIM 0020 H7	20	20	88	K25	S25	S35
	SIM 0022 H7	22	22	88	K25	S25	S35
	SIM 0022 H7K	22	22	120	K25	S25	S55
8.0	**SIM 0016 H8**	16	20	88	K25	S25	S35
	SIM 0020 H8	20	20	88	K25	S25	S35
	SIM 0022 H8	22	22	88	K25	S25	S35
	SIM 0022 H8K	22	22	120	K25	S25	S55
10.0	**SIM 0016 H10**	16	20	88	K25	S25S	S35
	SIM 0020 H10	20	20	88	K25	S25S	S35
	SIM 0022 H10	22	22	88	K25	S25	S35
	SIM 0022 H10K	22	22	120	K25	S25	S55

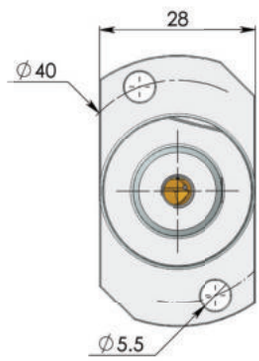


D1	Ordering Code	D	d	L	Key	Clamping Screw	Adjusting Screw
3.0	**SIM 0025 H3**	25	10.8	62	K25	S25	S35M
4.0	**SIM 0025 H4**	25	10.8	62	K25	S25	S35M
5.0	**SIM 0025 H5**	25	10.8	62	K25	S25	S35M
6.0	**SIM 0025 H6**	25	10.8	62	K25	S25	S35M
7.0	**SIM 0025 H7**	25	10.8	62	K25	S25	S35M
8.0	**SIM 0025 H8**	25	10.8	62	K25	S25	S35M

Tiny Tools Toolholders for Star Swiss Machines

CPT has developed a unique external turning holder for the sub-spindle on CNC Swiss type lathes.

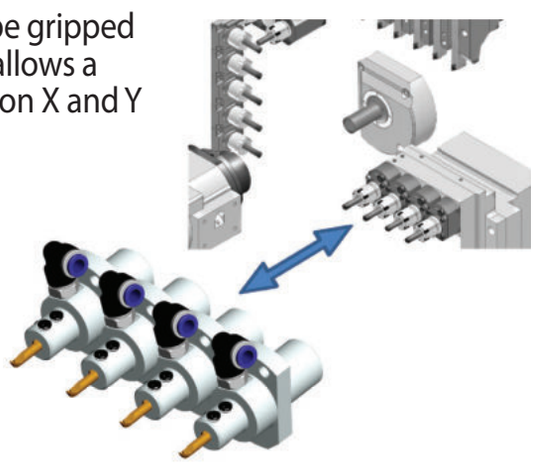


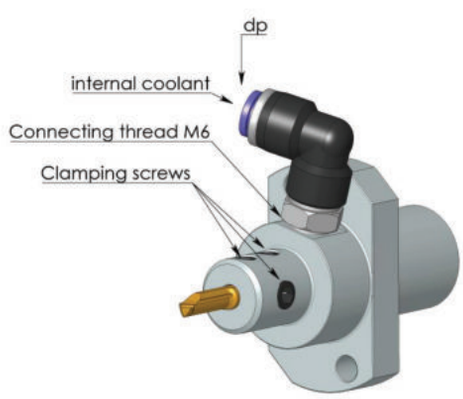


D1	Ordering Code	D	d	L	L1	L2	dp*	key	Clamping Screw
3.0	**SIM 22S H3**	22	16	40	18	25	4/6	K16, K25	S24P
3.0	**SIM 22S H3-L**	22	16	50	28	25	4/6	K16, K25	S24P
4.0	**SIM 22S H4**	22	16	40	18	25	4/6	K16, K25	S24P
4.0	**SIM 22S H4-L**	22	16	50	28	25	4/6	K16, K25	S24P
5.0	**SIM 22S H5**	22	16	40	18	25	4/6	K16, K25	S24M
5.0	**SIM 22S H5-L**	22	16	50	28	25	4/6	K16, K25	S24M
6.0	**SIM 22S H6**	22	16	40	18	25	4/6	K16, K25	S24M
6.0	**SIM 22S H6-L**	22	16	50	28	25	4/6	K16, K25	S24M
7.0	**SIM 22S H7**	22	20	40	18	25	4/6	K25	S25
8.0	**SIM 22S H8**	22	20	40	18	25	4/6	K25	S25
8.0	**SIM 22S H8-L**	22	20	50	28	25	4/6	K25	S25
10.0	**SIM 22S H10**	22	20	40	18	25	4/6	K25	S25S
10.0	**SIM 22S H10-L**	22	20	50	28	25	4/6	K25	S25S

*Coolant pipe diameter. Standard packing with Ø4mm

The Tiny tool can be gripped in two directions, allows a turning operation on X and Y axis.





CIM-Fast Clamping System

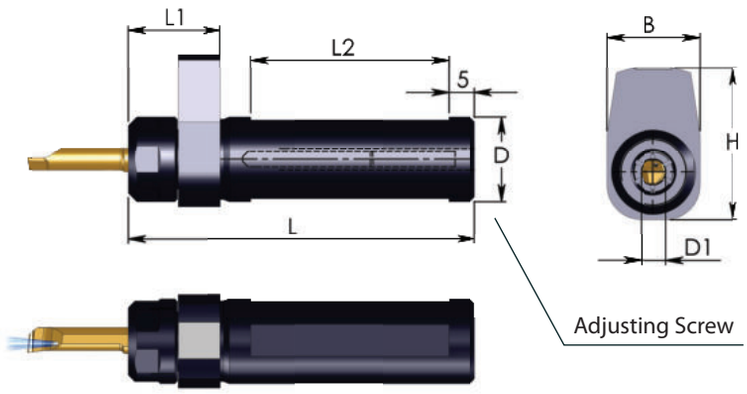
The innovative *CIM* clamping system ensures high precision and repeatability while allowing quick tool exchanges in the machine. *CIM* features an internal tool indexing mechanism that positions the tool in the correct orientation. A rigid collet clamp offers enhanced stability.

- No screws required.
- Enable fast Tiny Tool exchange without removing the Toolholder from the machine or additional tool set up.
- Holders with three clamping flats on the shank for maximum flexibility.
- Fits standard and special CPT Tiny Tools.
- Bores in the CIM holder and Tiny Tool deliver coolant directly to the cutting edge.

Product Identification – Ordering Codes

CIM – Toolholder

CIM	0016	H4
Clamping System C = Collet	Shank Cross Section **Metric Version** 16 = Ø16 mm 20 = Ø20 mm **Inch Version** 0625 = Ø.625" 0750 = Ø.75"	Tiny Tools, Bar Diameter 4 = 4.0 mm 5 = 5.0 mm 6 = 6.0 mm



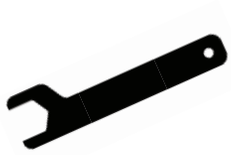
Metric Version

D1	Ordering Code	D	L	L1	L2	B	H
4.0	**CIM 0016 H4**	16	88	22	58	22	36
	CIM 0020 H4	20	88	22	58	22	36
5.0	**CIM 0016 H5**	16	88	22	58	22	36
	CIM 0020 H5	20	88	22	58	22	36
6.0	**CIM 0016 H6**	16	88	22	58	22	36
	CIM 0020 H6	20	88	22	58	22	36

Inch Version

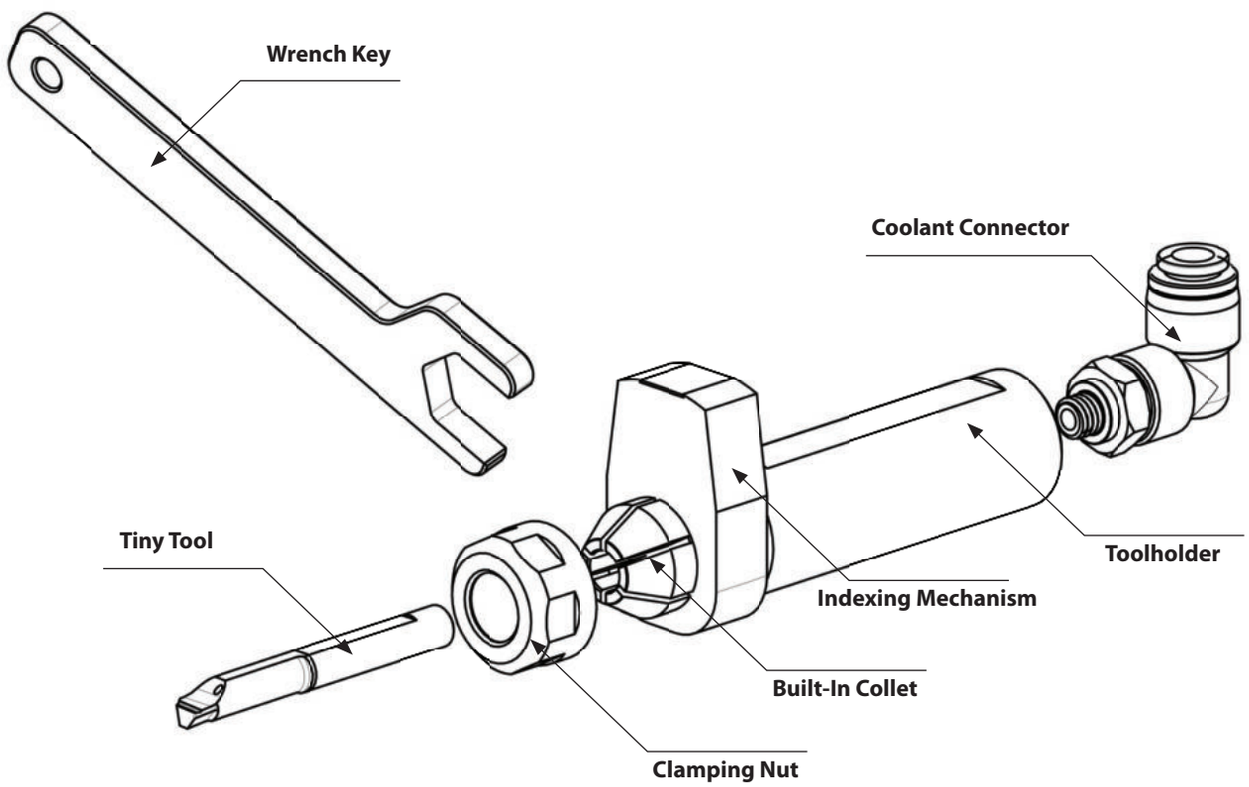
D1 mm	Ordering Code	D"	L"	L1"	L2"	B"	H"
4.0	**CIM 0625 H4**	5/8	3.5	.87	2.3	.87	1.4
	CIM 0750 H4	3/4	3.5	.87	2.3	.87	1.4
5.0	**CIM 0625 H5**	5/8	3.5	.87	2.3	.87	1.4
	CIM 0750 H5	3/4	3.5	.87	2.3	.87	1.4
6.0	**CIM 0625 H6**	5/8	3.5	.87	2.3	.87	1.4
	CIM 0750 H6	3/4	3.5	.87	2.3	.87	1.4

Spare Parts

Clamping Nut	Wrench Key	Adjusting Screw	Adjusting Screw Key	Coolant Supply Connector
				
CN19	WK19	S35	K25	P-M6-4

* P-M6-6 also available

CIM – *Clamping System Details*



General Instructions for Use

The CIM toolholder system is designed to provide fast and simple indexing for Tiny Tools.

Following is a recommended procedure for the first use:

1. That procedure should be done only once and outside the machine.
   Adjust the rear stopper screw according the tool required overhang.
   Insert the Tiny Tool into the collet and push gently until it passes the internal indexing mechanism.
   Adjust the rear stopper screw according the required overhang (do not set the final tool orientation).

2. Remove the Tiny Tool from the toolholder. Mount the toolholder onto the machine. Hand-tighten the clamping nut on the toolholder collet, ensuring it remains open.

3. Insert the Tiny Tool into the CIM collet and push it inside gently until you will hear a click.
   Rotate the tool by hand clockwise and counterclockwise until you hear a click — the indexing mechanism has centered the tool.

4. Close the nut by the wrench key.

The tool is ready to use.

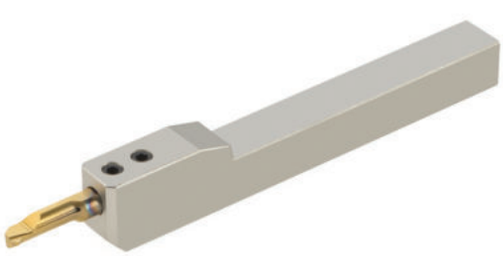
For tool replacement, open the collet with the wrench key, replace the tool, close the collet, and continue working.

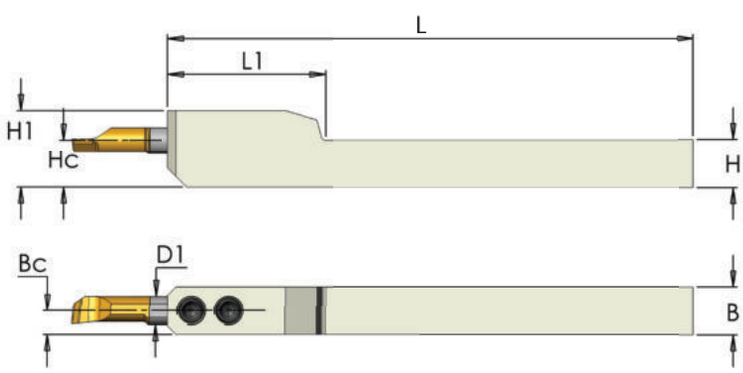
Tiny Tools Toolholders – Square Shank

for internal machining

Product Identification – Ordering Codes

S	E	M	V	1212	H5
Clamping Method S = Screw	E = External Square Shank	M = Tiny	Vertical	Shank Cross Section 1010 = 10x10 mm 1212 = 12x12 mm	Bar Diameter H3 = 3.0 mm H4 = 4.0 mm H5 = 5.0 mm H6 = 6.0 mm



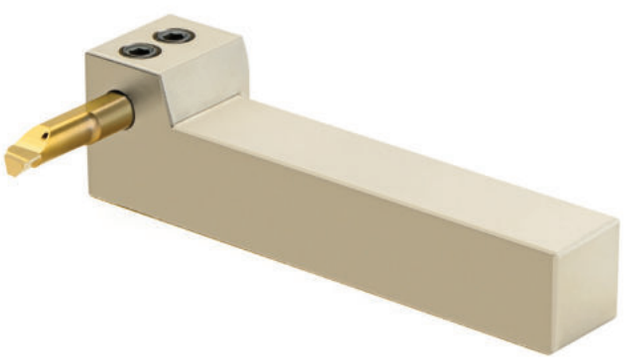


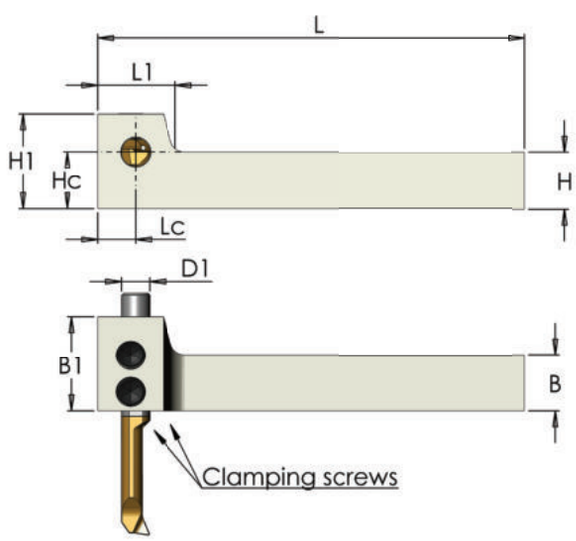
D1	Ordering Code	H	B	L1	L	Hc	Bc	H1	Key	Clamping Screw
3.0	**SEMV 1010 H3**	10	10	24	110	10	5	14.7	K16	S24
	SEMV 1212 H3	12	12	24	110	12	6	16.7	K16	S24
4.0	**SEMV 1010 H4**	10	10	36	110	10	5	15.2	K16	S24
	SEMV 1212 H4	12	12	36	110	12	6	17.2	K16	S24
5.0	**SEMV 1010 H5**	10	10	36	110	10	5	15.7	K16	S24
	SEMV 1212 H5	12	12	36	110	12	6	17.7	K16	S24
6.0	**SEMV 1010 H6**	10	10	33	110	10	5	16.2	K16	S24
	SEMV 1212 H6	12	12	33	110	12	6	18.2	K16	S24

Product Identification – Ordering Codes

S	E	M	R	1616	H5
Clamping Method S = Screw	E = External Square Shank	M = Tiny Bars / Tools	Right Hand	Shank Cross Section 1212 = 12x12 mm 1616 = 16x16 mm	Bar Diameter 3 = 3.0 mm 4 = 4.0 mm 5 = 5.0 mm 6 = 6.0 mm

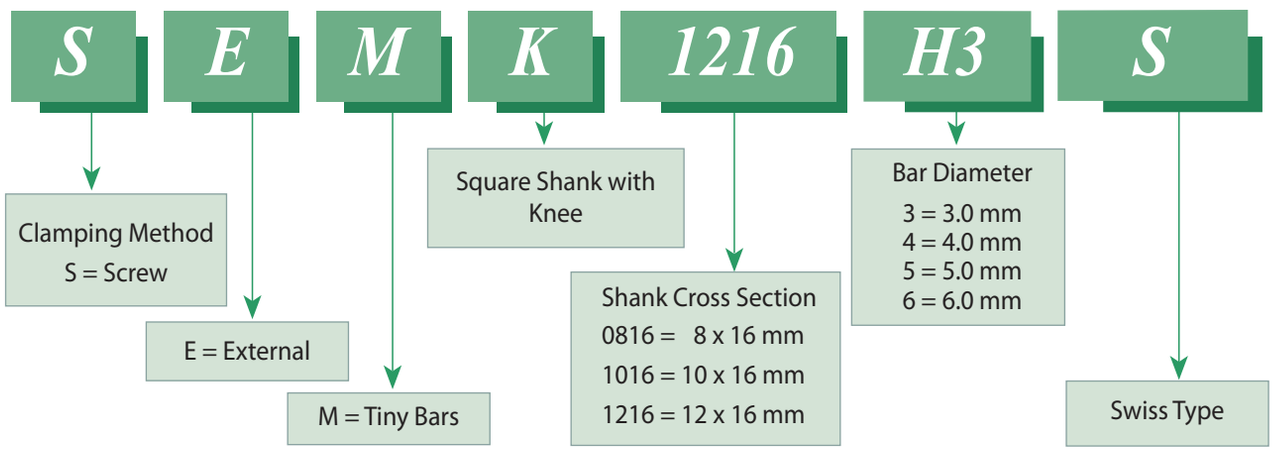
Right hand version

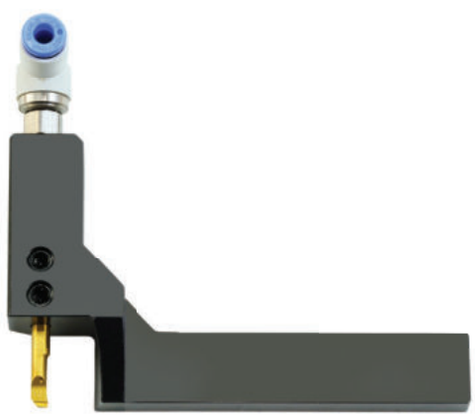


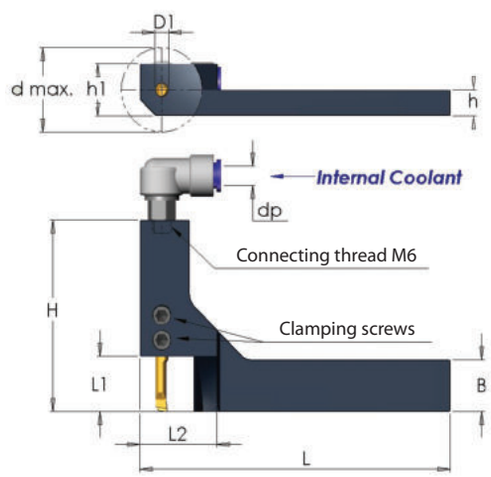


D1	Ordering Code	H	B	B1	L	L1	Hc	Lc	H1	Key	Clamping Screw
3.0	**SEMR 1212 H3**	12	12	20	88	16	12	7	20	K25	S25
	SEMR 1616 H3	16	16	24	120	16	16	7	24	K25	S25
4.0	**SEMR 1212 H4**	12	12	20	88	16	12	7	20	K25	S25
	SEMR 1616 H4	16	16	24	120	16	16	7	24	K25	S25
5.0	**SEMR 1212 H5**	12	12	20	88	16	12	7	20	K25	S25
	SEMR 1616 H5	16	16	24	120	16	16	7	24	K25	S25
6.0	**SEMR 1212 H6**	12	12	20	88	16	12	7	20	K25	S25S
	SEMR 1616 H6	16	16	24	120	16	16	7	24	K25	S25S

Product Identification – Ordering Codes





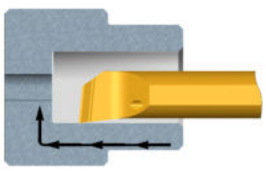


D1	Ordering Code	B	L	L1	L2	H	h	h1	d max.	*dp	Key	Clamping Screw
3.0	**SEMK 0816 H3S**	16	100	17	25	46	8	16	26	4/6	K25	S25
	SEMK 1016 H3S	16	100	17	25	46	10	18	26	4/6	K25	
	SEMK 1216 H3S	16	100	17	25	46	12	20	26	4/6	K25	
4.0	**SEMK 0816 H4S**	16	100	17	25	58	8	16	26	4/6	K25	S25
	SEMK 1016 H4S	16	100	17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

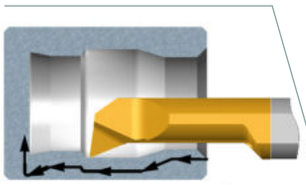
* Optional

Tiny Tools Kits

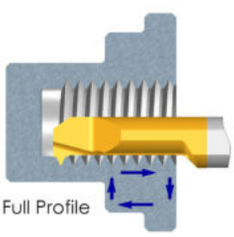
Boring



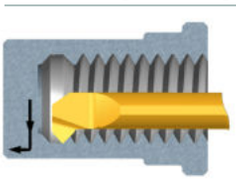
Profiling & Boring



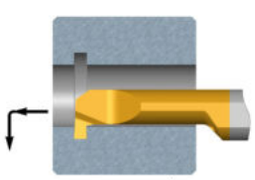
Threading



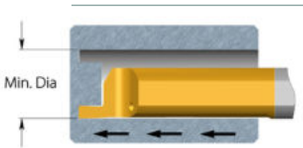
Chamfering & Boring



Grooving



Face Grooving



KT4-20	*KT5-20*	
MTR 4 R0.2 L10	MTR 5 R0.2 L15	Boring
MPR 4 R0.2 L10	MPR 5 R0.2 L15	Profiling
MIR 4 L15 A60	MIR 5 L15 A60	Threading
MCR 4 R0.2 L15	MCR 5 R0.2 L15	Chamfering
MGR4 B1.5 L10	MGR 5 B1.5 L15	Grooving
MFR 4 B1.0 L15	MFR 5 B1.0 L22	Face Grooving
SIM 0020 H4	SIM 0020 H5	Holder
K25	K25	Key

Order example: KT4-20

Kits are also available with 16mm (KT4-16 / KT5-16) or 22mm (KT4-22 / KT5-22) diameter holders.

Technical Section

Carbide Grades:

BXC (P30 - P50, K25 - K40)
PVD TiN coated grade for low cutting speed.
Works well with a wide range of materials.

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.

New

TNX
New advanced carbide grade TN***X*** for higher feeds and high performance, at medium to high cutting speed. Extra fine grain size with high hardness and toughness combined with triple layer reddish coating, provides high edge stability and better chip flow.

Cutting speed for Tiny Tools

ISO Standard	Material		Condition	Cutting Speed m/min			
				BXC	BMK	K20	TN***X***
P	Non-Alloy steel and cast steel, free cutting steel	<%0.25C	Annealed	25 - 70	30 - 80		36 - 80
		≥%0.25C	Annealed				
		< %0.55C	Quenched and tempered				
		≥%0.55C	Annealed				
		≥%0.55C	Quenched and tempered				
	Low alloy steel and cast steel (less than %5 alloying elements)		Annealed	20 - 40	25 - 50		30 - 50
			Quenched and tempered				
	High alloy steel, cast steel, and tool steel		Annealed	20 - 40	25 - 50		30 - 50
			Quenched and tempered				
M	Stainless steel and cast steel		Ferritic/martensitic	25 - 40	30 - 60		36 - 60
			Martensitic				
			Austenitic				
K	Cast iron nodular (GGG)		Ferritic/pearlitic	25 - 60	30 - 80		36 - 80
			Pearlitic				
	Grey cast iron (GG)		Ferritic	30 - 70	30 - 80		36 - 80
			Pearlitic				
	Malleable cast iron		Ferritic	20 - 40	20 - 50		24 - 50
			Pearlitic				
N	Aluminum-wrought alloy		Not cureable	50 - 100	60 - 120	30 - 50	72 - 120
			Cured				
	Aluminum- cast, alloyed	≤%12 Si	Not cureable	40 - 80	50 - 90	20 - 40	60 - 90
			Cured				
		>%12 Si	High temperature				
	Copper alloys	>%1 Pb	Free cutting	30 - 60	30 - 70	20 - 40	36 - 70
			Brass				
			Electrolytic copper				
	Non metalic		Duroplastics, fiber plastics	40 - 80		20 - 40	
			Hard rubber				
S	High temp.alloys, Super alloys	Fe based	Annealed	15 - 30	15 - 40		18 - 40
			Cured				
		Ni or Co based	Annealed				
			Cured				
			Cast				
	Titanium, Titanium alloys		Alpha+beta alloys cured	10 - 30	10 - 30		12 - 30
H	Hardened steel		Hardened 45-50 HRc	10 - 30	14 - 40		18 - 40
			Hardened 51-55 HRc				
			Hardened 56-62 HRc				
	Chilled cast iron		Cast	10 - 30	10 - 30		12 - 30
	Cast iron		Hardened	10 - 20	10 - 20		12 - 20

Recommended Feed Rate: 0.01 - 0.03 mm/rev

For CMR Tiny Tools see page 54

Threading Passes

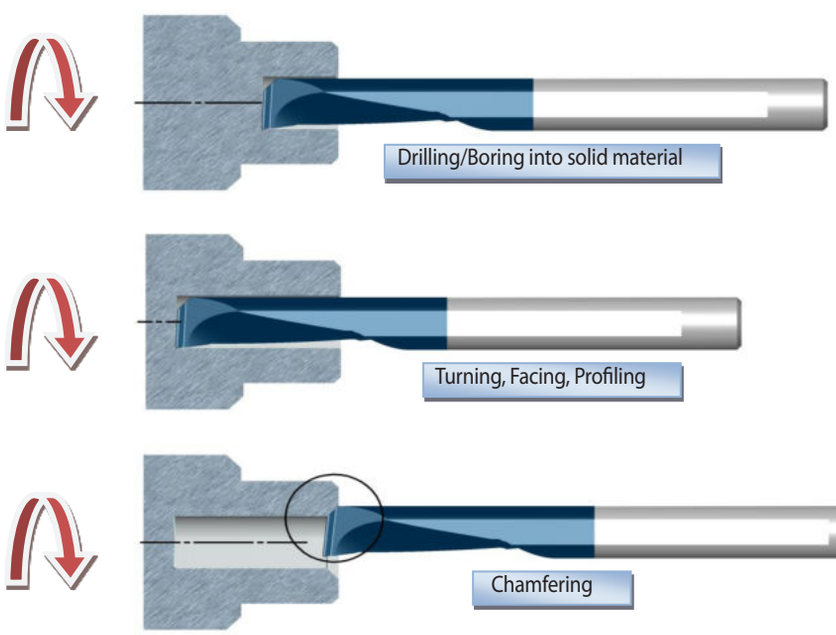
Pitch: mm / TPI	0.5 / 48	0.7 / 36	0.8 / 32	1.0 / 24	1.25 / 20	1.5 / 16	2-5 / 14-5
Number of Passes	6 - 12	7 - 14	7 - 16	8 - 18	8 - 20	10 - 22	20 - 38

CMR CPT Multi-Task Tiny Tools

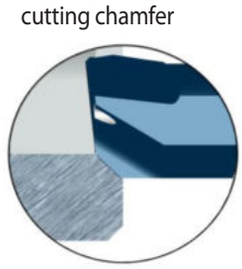
- A new Multi-Task Tiny Tool for Boring, Turning, Facing, and Chamfering.
- The innovative design allows for machining without the need for a pilot hole.
- High Productivity — reduced cycle times and fewer tools required.
- Effective through coolant hole with a spiral flute, evacuates the chips out of 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 drills the workpiece and produces a bore of minimum diameter per the tool's specifications.
- The tool can operate in one or several passes depending on the workpiece material, coolant pressure, machine power, etc.
- The hole can be enlarged using multi-radial passes.



Rear view of the cutting chamfer



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

CMR 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 external coolant can improve 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.

Cutting Data

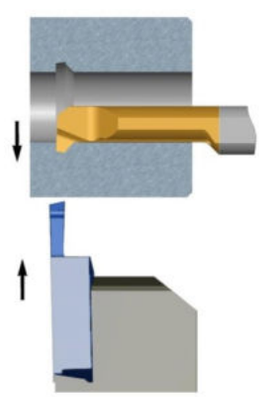
ISO Standard	Material	Cutting Speed m/min
P	Low and Medium Carbon Steels <0.55%C	20 - 75
	High Carbon Steels ≥0.55%C	20 - 75
	Alloy Steels, Treated Steels	20 - 60
M	Stainless Steels - Free Cutting	20 - 60
	Stainless Steels - Austenitic	20 - 50
	Cast Steels	20 - 70
K	Cast Iron	20 - 90
N	Aluminum ≤12%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

Recommended Feed Rate: 0.01 - 0.03 mm/rev

CPR – Technical Section

Internal pre-parting and chamfering are common operations on "small part machining" applications where a smooth and burr-free cut is needed.

CPR tools create a pre-parting groove and chamfer. The operation should be completed with one of our standard parting-off inserts. A right or left-hand parting-off insert can be used with a leading from angle to minimize burrs.

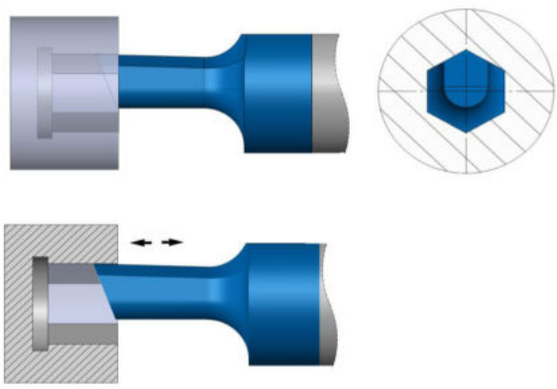


HK *Broaching Tools for Hexagon Keys*

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

- To use with CPT 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

Working Demo



Cutting Data

Material Tensile Strength (N/mm²)	Feed rate (mm/min)	In-feed per stroke (mm)
400-650	7000-9000	0.06-0.09
700-850	5000-6500	0.04-0.07
900-1000	4000-5500	0.03-0.05
1100-1200	3000-4500	0.02-0.04

The cutting data above is an initial recommendation and depends on the machine condition, workpiece profile and the application clamping

- A relief groove is highly recommended, if not possible a gradual volume decrease should be made at the end of the broaching groove
- The HK tool must be positioned outside of the hole/groove before each stroke
- After setup and first stroke, we recommend to observe the tool and the application to make sure no collision occurred

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CPT Tiny Tools 09/2025 Metric