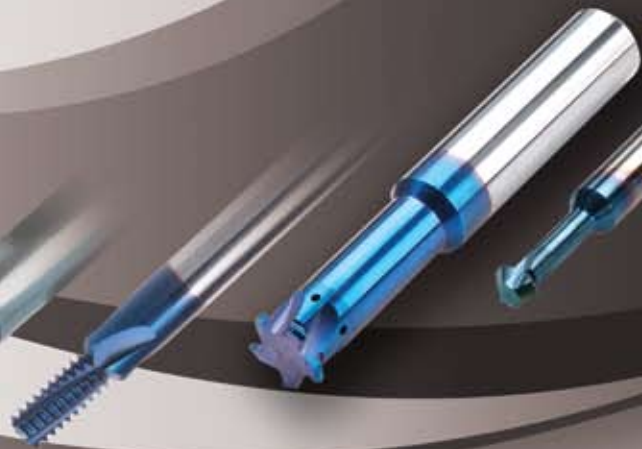
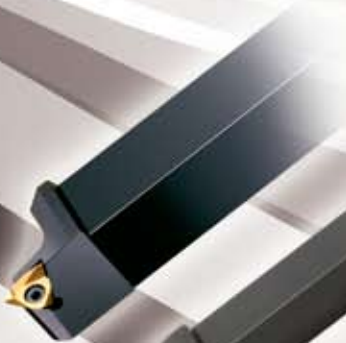








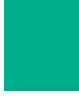




















Swiss Tools

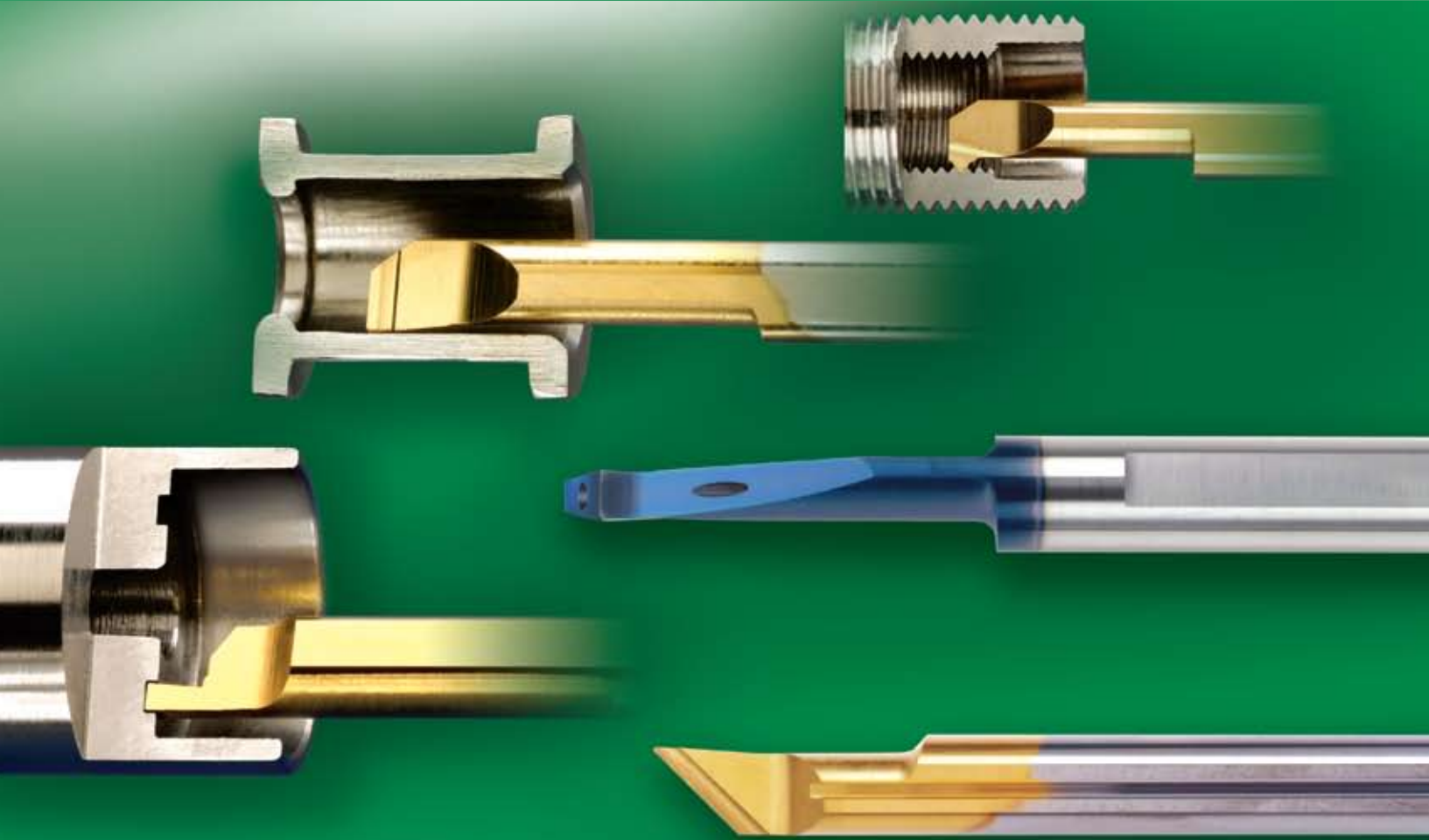
For Automatic and Swiss type Machines



 **Carmex**
Precision Tools Ltd.

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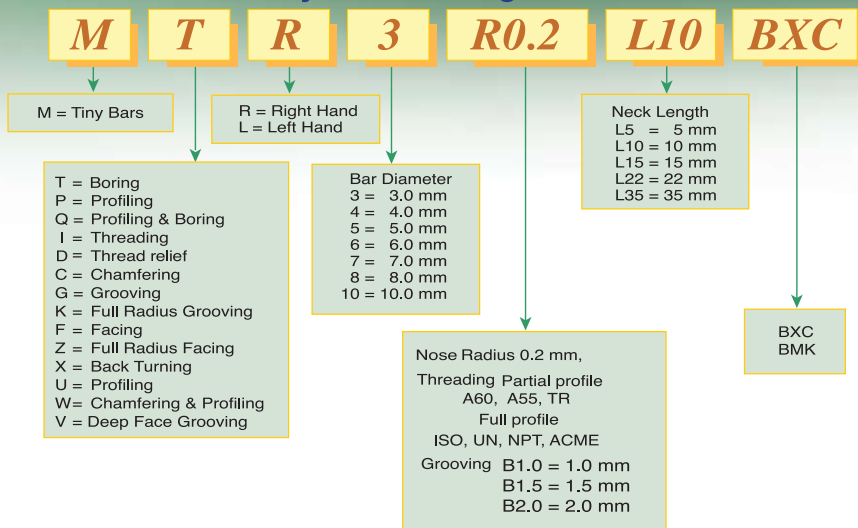
Tiny Tools



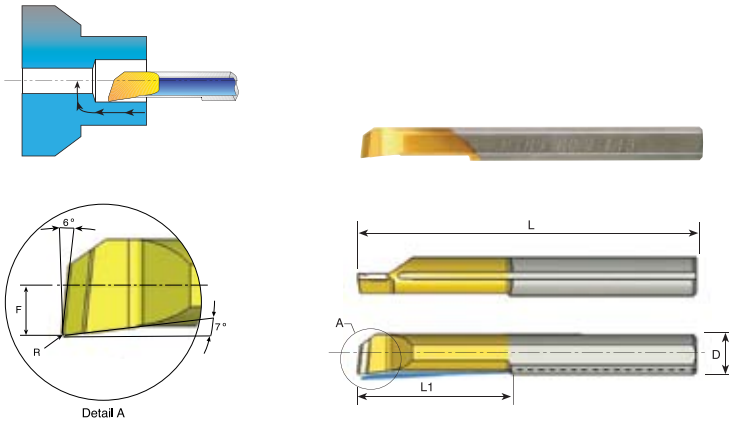
Solid Carbide tools for working in small bores

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

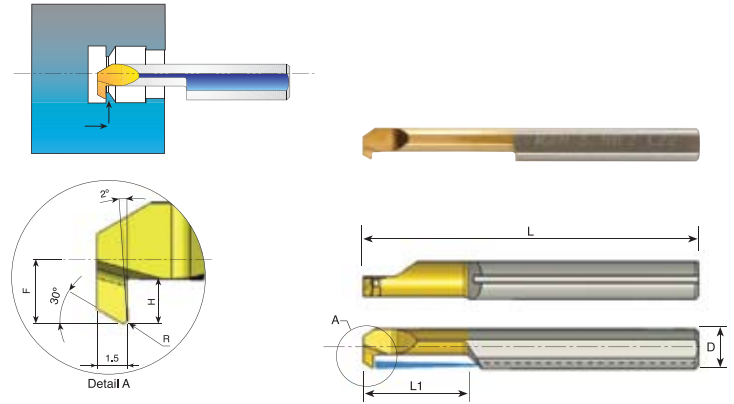
Product Identification Tiny Bars Ordering Codes



MTR Bars Boring - with Coolant Channel



MXR Bars Back Turning - with Coolant Channel



D mm	Ordering Code	L mm	L1 mm	R mm	F mm	Min. Bore Dia. mm	Holder*
3.0	*MTR 1 R0.05 L4	39	4	0.05	0.5	1.0	SIM 0020 H3
3.0	*MTR 1.5R0.1 L6	39	6	0.10	0.7	1.5	SIM 0020 H3
3.0	*MTR 2 R0.05 L10	39	10	0.05	0.8	2.1	SIM 0020 H3
3.0	*MTR 2 R0.15 L5	39	5	0.15	0.8	2.1	SIM 0020 H3
3.0	*MTR 2 R0.15 L10	39	10	0.15	0.8	2.1	SIM 0020 H3
3.0	MTR 3 R0.05 L10	39	10	0.05	1.3	3.1	SIM 0020 H3
3.0	MTR 3 R0.05 L15	39	15	0.05	1.3	3.1	SIM 0020 H3
3.0	MTR 3 R0.1 L15	39	15	0.10	1.3	3.1	SIM 0020 H3
3.0	MTR 3 R0.2 L10	39	10	0.20	1.3	3.1	SIM 0020 H3
3.0	MTR 3 R0.2 L15	39	15	0.20	1.3	3.1	SIM 0020 H3
4.0	MTR 4 R0.1 L10	51	10	0.10	1.7	4.1	SIM 0020 H4
4.0	MTR 4 R0.1 L15	51	15	0.10	1.7	4.1	SIM 0020 H4
4.0	MTR 4 R0.1 L22	51	22	0.20	1.7	4.1	SIM 0020 H4
4.0	MTR 4 R0.2 L10	51	10	0.20	1.7	4.1	SIM 0020 H4
4.0	MTR 4 R0.2 L15	51	15	0.20	1.7	4.1	SIM 0020 H4
4.0	MTR 4 R0.2 L22	51	22	0.20	1.7	4.1	SIM 0020 H4
5.0	MTR 5 R0.1 L15	51	15	0.10	2.1	5.1	SIM 0020 H5
5.0	MTR 5 R0.1 L22	51	22	0.10	2.1	5.1	SIM 0020 H5
5.0	MTR 5 R0.1 L30	76	30	0.10	2.1	5.1	SIM 0020 H5
5.0	MTR 5 R0.2 L15	51	15	0.20	2.1	5.1	SIM 0020 H5
5.0	MTR 5 R0.2 L22	51	22	0.20	2.1	5.1	SIM 0020 H5
5.0	MTR 5 R0.2 L30	76	30	0.20	2.1	5.1	SIM 0020 H5
6.0	MTR 6 R0.1 L15	51	15	0.10	2.8	6.1	SIM 0020 H6
6.0	MTR 6 R0.2 L15	51	15	0.20	2.8	6.1	SIM 0020 H6
6.0	MTR 6 R0.2 L22	51	22	0.20	2.8	6.1	SIM 0020 H6
6.0	MTR 6 R0.2 L30	58	30	0.20	2.8	6.1	SIM 0020 H6
7.0	MTR 7 R0.2 L22	62	22	0.20	3.3	7.1	SIM 0020 H7
7.0	MTR 7 R0.2 L30	62	30	0.20	3.3	7.1	SIM 0020 H7
8.0	MTR 8 R0.2 L15	64	15	0.20	3.8	8.1	SIM 0020 H8
8.0	MTR 8 R0.2 L22	64	22	0.20	3.8	8.1	SIM 0020 H8
8.0	MTR 8 R0.2 L35	76	35	0.20	3.8	8.1	SIM 0020 H8
10.0	MTR10R0.2 L35	73	35	0.20	4.8	10.1	SIM 0020 H10

* without coolant

Order example: MTR 4 R0.2 L15 BXC

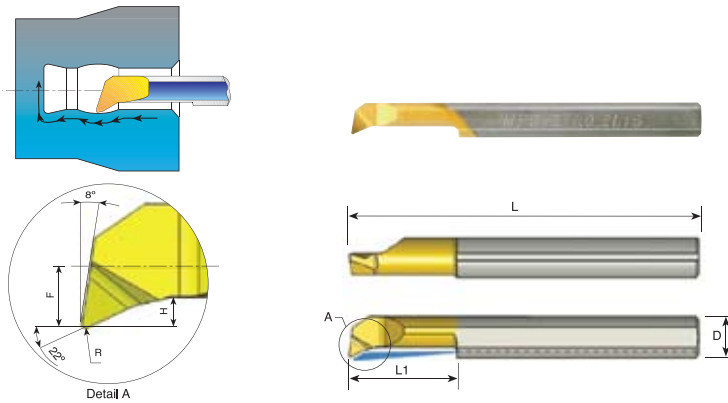
For L.H. bars specify MTL instead of MTR

D mm	Ordering Code	L mm	L1 mm	R mm	H mm	F mm	Min. Bore Dia. mm	Holder*
4.0	MXR 4 R0.1 L10	51	10	0.10	0.5	1.3	3.1	SIM 0020 H4
4.0	MXR 4 R0.15 L10	51	10	0.15	0.8	1.6	4.1	SIM 0020 H4
4.0	MXR 4 R0.15 L15	51	15	0.15	0.8	1.6	4.1	SIM 0020 H4
5.0	MXR 5 R0.2 L15	51	15	0.20	1.0	2.2	5.1	SIM 0020 H5
5.0	MXR 5 R0.2 L22	51	22	0.20	1.0	2.2	5.1	SIM 0020 H5
6.0	MXR 6 R0.2 L15	51	15	0.20	1.8	2.8	6.1	SIM 0020 H6
6.0	MXR 6 R0.2 L22	51	22	0.20	1.8	2.8	6.1	SIM 0020 H6

Order example: MXR 4 R0.15 L15 BXC

* For additional holders see page 7

MPR Bars Profiling and Boring - with Coolant Channel



D mm	Ordering Code	L mm	L1 mm	R mm	H mm	F mm	Min. Bore Dia. mm	Holder*
3.0	* MPR 1 R0.05 L4	39	4	0.05	0.2	0.5	1.0	SIM 0020 H3
3.0	* MPR 1.5R0.1L6	39	6	0.10	0.3	0.7	1.5	SIM 0020 H3
3.0	* MPR 2 R0.05 L10	39	10	0.05	0.5	0.8	2.1	SIM 0020 H3
3.0	* MPR 2 R0.1 L10	39	10	0.10	0.5	0.8	2.1	SIM 0020 H3
3.0	* MPR 2 R0.15 L5	39	5	0.15	0.5	0.8	2.1	SIM 0020 H3
3.0	* MPR 2 R0.15 L10	39	10	0.15	0.5	0.8	2.1	SIM 0020 H3
3.0	MPR 3 R0.05 L10	39	10	0.05	0.7	1.3	3.1	SIM 0020 H3
3.0	MPR 3 R0.05 L15	39	15	0.05	0.7	1.3	3.1	SIM 0020 H3
3.0	MPR 3 R0.1 L15	39	15	0.10	0.7	1.3	3.1	SIM 0020 H3
3.0	MPR 3 R0.1 L22	47	22	0.10	0.7	1.3	3.1	SIM 0020 H3
3.0	MPR 3 R0.2 L10	39	10	0.20	0.7	1.3	3.1	SIM 0020 H3
3.0	MPR 3 R0.2 L15	39	15	0.20	0.7	1.3	3.1	SIM 0020 H3
3.0	MPR 3 R0.2 L22	47	22	0.20	0.7	1.3	3.1	SIM 0020 H3
4.0	MPR 4 R0.1 L15	51	15	0.10	0.8	1.7	4.1	SIM 0020 H4
4.0	MPR 4 R0.1 L22	51	22	0.10	0.8	1.7	4.1	SIM 0020 H4
4.0	MPR 4 R0.2 L10	51	10	0.20	0.8	1.7	4.1	SIM 0020 H4
4.0	MPR 4 R0.2 L15	51	15	0.20	0.8	1.7	4.1	SIM 0020 H4
4.0	MPR 4 R0.2 L22	51	22	0.20	0.8	1.7	4.1	SIM 0020 H4
5.0	MPR 5 R0.1 L22	51	22	0.10	1.2	2.1	5.1	SIM 0020 H5
5.0	MPR 5 R0.1 L30	76	30	0.10	1.2	2.1	5.1	SIM 0020 H5
5.0	MPR 5R0.2 L15	51	15	0.20	1.2	2.1	5.1	SIM 0020 H5
5.0	MPR 5 R0.2 L22	51	22	0.20	1.2	2.1	5.1	SIM 0020 H5
5.0	MPR 5 R0.2 L30	76	30	0.20	1.2	2.1	5.1	SIM 0020 H5
6.0	MPR 6 R0.2 L15	51	15	0.20	1.4	2.8	6.1	SIM 0020 H6
6.0	MPR 6 R0.2 L22	51	22	0.20	1.4	2.8	6.1	SIM 0020 H6
6.0	MPR 6 R0.2 L30	76	30	0.20	1.4	2.8	6.1	SIM 0020 H6
7.0	MPR 7 R0.2 L22	62	22	0.20	1.5	3.3	7.1	SIM 0020 H7
7.0	MPR 7 R0.2 L30	62	30	0.20	1.5	3.3	7.1	SIM 0020 H7
8.0	MPR 8 R0.2 L15	64	15	0.20	1.6	3.8	8.1	SIM 0020 H8
8.0	MPR 8 R0.2 L22	64	22	0.20	1.6	3.8	8.1	SIM 0020 H8
8.0	MPR 8 R0.2 L35	76	35	0.20	1.6	3.8	8.1	SIM 0020 H8
10.0	MPR 10R0.2 L35	73	35	0.20	2.0	4.8	10.1	SIM 0020 H10

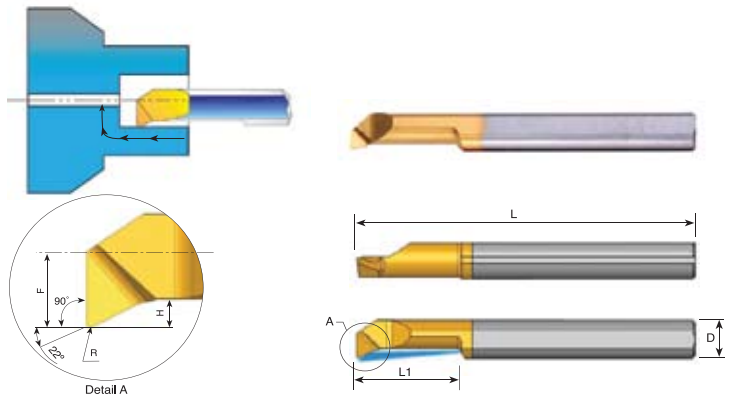
* without coolant

Order example: MPR 4 R0.2 L15 BXC

For L.H. bars specify MPL instead of MPR

* For additional holders see page 7

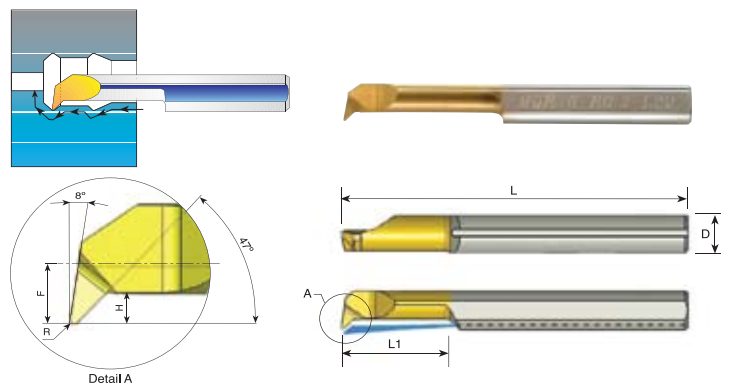
MUR Bars Profiling, 90° Face Cutting - with Coolant Channel



D mm	Ordering Code	L mm	L1 mm	R mm	H mm	F mm	Min. Bore Dia. mm	Holder*
3.0	MUR 3 R0.05 L10	39	10	0.05	0.4	1.3	3.1	SIM 0020 H3
3.0	MUR 3 R0.05 L15	39	15	0.05	0.4	1.3	3.1	SIM 0020 H3
4.0	MUR 4 R0.1 L10	51	10	0.10	0.5	1.7	4.1	SIM 0020 H4
4.0	MUR 4 R0.1 L15	51	15	0.10	0.5	1.7	4.1	SIM 0020 H4
5.0	MUR 5 R0.15 L15	51	15	0.15	0.7	2.1	5.1	SIM 0020 H5
5.0	MUR 5 R0.15 L22	51	22	0.15	0.7	2.1	5.1	SIM 0020 H5
6.0	MUR 6 R0.15 L15	51	15	0.15	0.9	2.8	6.1	SIM 0020 H6
6.0	MUR 6 R0.15 L22	51	22	0.15	0.9	2.8	6.1	SIM 0020 H6
8.0	MUR 8 R0.2 L22	64	22	0.20	1.1	3.8	8.1	SIM 0020 H8

Order example: MUR 5 R0.15 L15 BXC

MQR Bars Profiling and Boring - with Coolant Channel

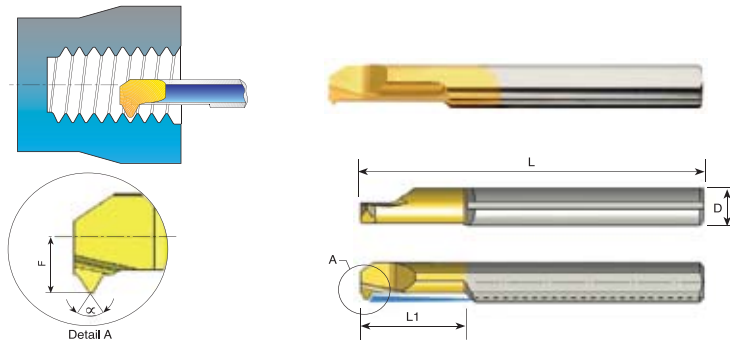


D mm	Ordering Code	L mm	L1 mm	R mm	H mm	F mm	Min. Bore Dia. mm	Holder*
4.0	MQR 4 R0.2 L10	51	10	0.20	0.8	1.8	4.1	SIM 0020 H4
4.0	MQR 4 R0.2 L15	51	15	0.20	0.8	1.8	4.1	SIM 0020 H4
4.0	MQR 4 R0.2 L22	51	22	0.20	0.8	1.8	4.1	SIM 0020 H4
5.0	MQR 5 R0.2 L15	51	15	0.20	1.0	2.3	5.1	SIM 0020 H5
5.0	MQR 5 R0.2 L22	51	22	0.20	1.0	2.3	5.1	SIM 0020 H5
6.0	MQR 6 R0.2 L15	51	15	0.20	1.4	2.8	6.1	SIM 0020 H6
6.0	MQR 6 R0.2 L22	51	22	0.20	1.4	2.8	6.1	SIM 0020 H6
6.0	MQR 6 R0.2 L30	58	30	0.20	1.4	2.8	6.1	SIM 0020 H6
8.0	MQR 8 R0.2 L22	64	22	0.20	1.6	3.8	8.1	SIM 0020 H8
8.0	MQR 8 R0.2 L27	64	27	0.20	2.0	3.8	8.1	SIM 0020 H8

Order example: MQR 5 R0.2 L15 BXC

For L.H. bars specify MQL instead of MQR

MIR Bars Threading - with Coolant Channel



Partial Profile 55°

D mm	Ordering Code	L mm	L1 mm	α	Pitch Range		F mm	Min. Bore Dia. mm	Holder*
					mm	TPI			
3.0	MIR 3 L15 A55	39	15	55	0.5 -1.0	48-24	1.4	3.2	SIM 0020 H3
4.0	MIR 4 L15 A55	51	15	55	0.5 -1.0	48-24	1.8	4.1	SIM 0020 H4
5.0	MIR 5 L15 A55	51	15	55	0.5 -1.25	48-20	2.3	5.1	SIM 0020 H5
5.0	MIR 5 L22 A55	51	22	55	0.5 -1.25	48-20	2.3	5.1	SIM 0020 H5
6.0	MIR 6 L15 A55	51	15	55	0.5 -1.5	48-16	2.6	6.0	SIM 0020 H6
6.0	MIR 6 L22 A55	51	22	55	0.5 -1.5	48-16	2.6	6.0	SIM 0020 H6

Order example: MIR 5 L15 A55 BXC

Partial Profile 60°

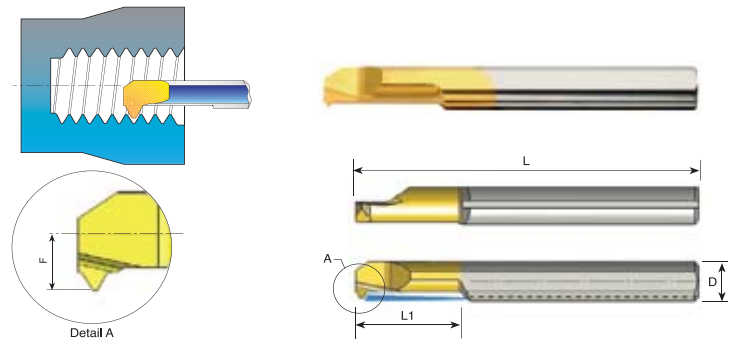
D mm	Ordering Code	L mm	L1 mm	α	Pitch Range		F mm	Min. Bore Dia. mm	Holder*
					mm	TPI			
3.0	* MIR 2 L8 A60	39	8	60	0.45-0.7	56-32	1.0	2.1	SIM 0020 H3
3.0	MIR 3 L15 A60	39	15	60	0.7 -1.0	32-24	1.4	3.2	SIM 0020 H3
4.0	MIR 4 L15 A60	51	15	60	0.7 -1.0	32-24	1.8	4.1	SIM 0020 H4
5.0	MIR 5 L15 A60	51	15	60	1.0 -1.25	24-20	2.3	5.1	SIM 0020 H5
5.0	MIR 5 L22 A60	51	22	60	1.0 -1.25	24-20	2.3	5.1	SIM 0020 H5
6.0	MIR 6 L15 A60	51	15	60	1.0 -1.5	24-16	2.6	6.0	SIM 0020 H6
6.0	MIR 6 L22 A60	51	22	60	1.0 -1.5	24-16	2.6	6.0	SIM 0020 H6
8.0	MIR 8 L22 A60	64	22	60	1.0 -2.0	24-13	3.6	8.0	SIM 0020 H8

* without coolant

Order example: MIR 5 L15 A60 BXC

For L.H. bars specify MIL instead of MIR

MIR Bars Threading - with Coolant Channel



Full Profile - ISO 60°

D mm	Ordering Code	Pitch mm	L mm	L1 mm	F mm	Min. Bore Dia. mm	Holder*
3.0	MIR 3 L15 0.5 ISO	0.5	39	15	1.4	3.2	SIM 0020 H3
3.0	MIR 3 L15 0.75 ISO	0.75	39	15	1.4	3.2	SIM 0020 H3
4.0	MIR 4 L15 0.5 ISO	0.5	51	15	1.8	4.1	SIM 0020 H4
4.0	MIR 4 L15 0.75 ISO	0.75	51	15	1.8	4.1	SIM 0020 H4
5.0	MIR 5 L15 1.0 ISO	1.0	51	15	2.2	4.9	SIM 0020 H5
6.0	MIR 6 L22 1.25 ISO	1.25	51	22	2.8	6.1	SIM 0020 H6

Order example: MIR 5 L15 1.0 ISO BXC

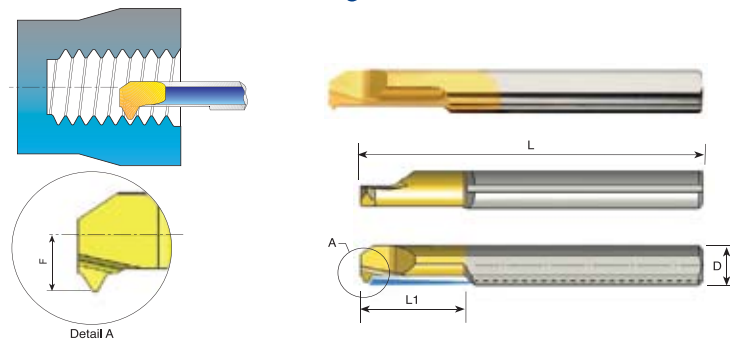
Full Profile - UN 60°

D mm	Ordering Code	Pitch TPI	L mm	L1 mm	F mm	Min. Bore Dia. mm	Holder*
3.0	MIR 3 L15 36 UN	36	39	15	1.4	3.2	SIM 0020 H3
3.0	MIR 3 L15 32 UN	32	39	15	1.4	3.2	SIM 0020 H3
4.0	MIR 4 L15 36 UN	36	51	15	1.8	4.1	SIM 0020 H4
4.0	MIR 4 L15 32 UN	32	51	15	1.8	4.1	SIM 0020 H4
5.0	MIR 5 L15 28 UN	28	51	15	2.2	4.9	SIM 0020 H5
5.0	MIR 5 L18 20 UN	20	51	18	2.3	5.0	SIM 0020 H5
6.0	MIR 6 L18 24 UN	24	51	18	2.8	6.5	SIM 0020 H6
6.0	MIR 6 L18 18 UN	18	51	18	2.8	6.2	SIM 0020 H6

Order example: MIR 4 L15 36 UN BXC

For L.H. bars specify MIL instead of MIR

MIR Bars Threading - with Coolant Channel

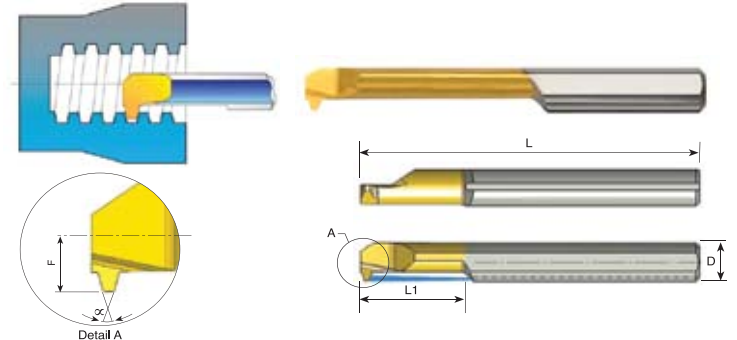


Full Profile - NPT 60°

D mm	Ordering Code	Pitch mm	L mm	L1 mm	F mm	Min. Bore Dia. mm	Thread	Holder*
6.0	MIR 6 L15 27 NPT	27	51	15	2.6	5.9	1/16 x 27NPT 1/8 x 27NPT	SIM 0020 H6

Order example: MIR 6 L15 27 NPT BXC

* For additional holders see page 7

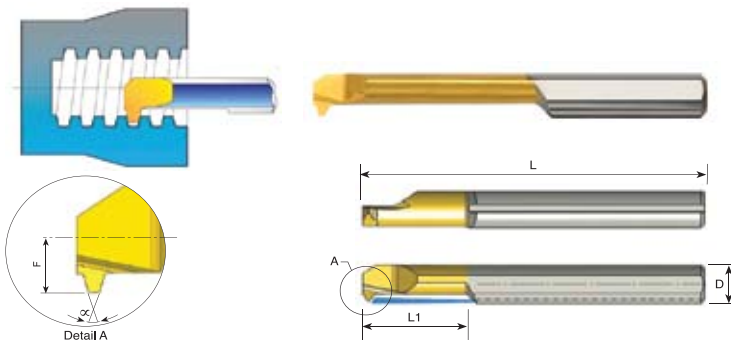


Acme

D mm	Ordering Code	Pitch TPI	L mm	L1 mm	F mm	α	Min. Bore Dia. mm	Thread	Holder*
4.0	MIR 4 L15 16 ACME	16	51	15	1.8	29	4.6	1/4 x 16	SIM 0020 H4
6.0	MIR 6 L20 14 ACME	14	51	20	2.8	29	6.0	5/16 X 14	SIM 0020 H6
7.0	MIR 7 L22 12 ACME	12	62	22	3.3	29	7.2	3/8 X 12	SIM 0020 H7

Order example: MIR 6 L 20 14 ACME BXC

MIR Bars Threading - with Coolant Channel

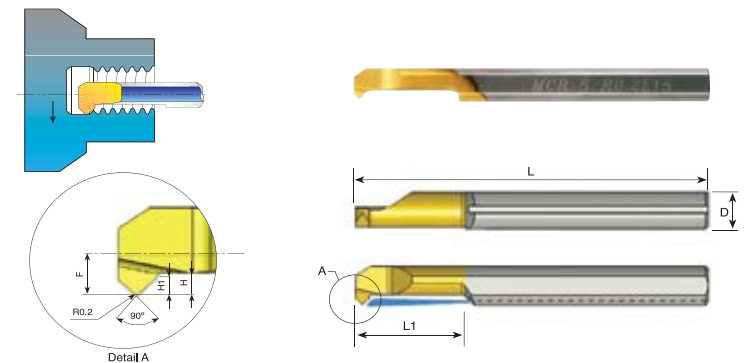


Full Profile Trapez - DIN 103

D mm	Ordering Code	Pitch mm	L mm	L1 mm	F mm	α	Min. Bore Dia. mm	Thread	Holder*
7.0	MIR 7 L25 2 TR	2	62	25	3.2	30	6.9	Tr 9 x 2 Tr 10 x 2 Tr 11 x 2 Tr 12 x 2	SIM 0020 H7
10.0	MIR 10 L35 2 TR	2	73	35	4.8	30	11.0	Tr 14 x 2 Tr 16 x 2 Tr 18 x 2 Tr 20 x 2	SIM 0020 H10
7.0	MIR 7 L35 3 TR	3	62	35	3.3	30	7.5	Tr 11 x 3 Tr 12 x 3	SIM 0020 H7
10.0	MIR 10 L35 3 TR	3	73	35	4.8	30	10.5	Tr 14 x 3 Tr 22 x 3 Tr 24 x 3 Tr 26 x 3 Tr 28 x 3	SIM 0020 H10
10.0	MIR 10 L45 4 TR	4	105	45	4.8	30	11.5	Tr 16 x 4 Tr 18 x 4 Tr 20 x 4	SIM 0020 H10
10.0	MIR 10 L55 5 TR	5	105	55	4.8	30	11.0	Tr 22 x 5 Tr 24 x 5 Tr 26 x 5	SIM 0020 H10

Order example: MIR 10 L35 3 TR BXC

MCR Bars Chamfering and Boring - with Coolant Channel

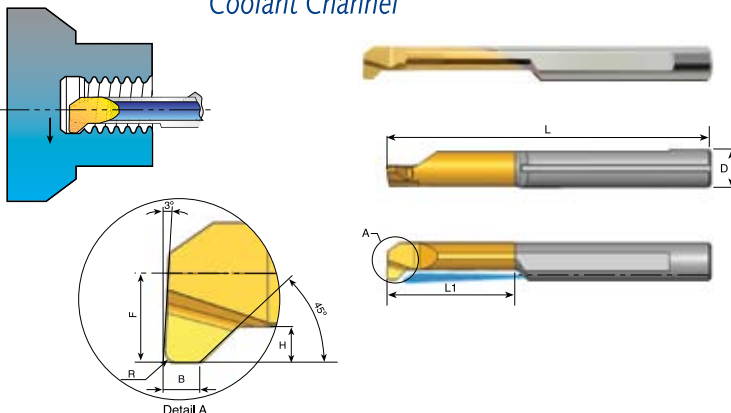


D mm	Ordering Code	L mm	L1 mm	R mm	H mm	H1 mm	F mm	Min. Bore Dia. mm	Holder*
3.0	MCR 3 R0.2 L10	39	10	0.20	0.7	0.3	1.3	3.1	SIM 0020 H3
4.0	MCR 4 R0.2 L15	51	15	0.20	0.8	0.4	1.7	4.1	SIM 0020 H4
5.0	MCR 5 R0.2 L15	51	15	0.20	1.2	0.7	2.1	5.1	SIM 0020 H5
6.0	MCR 6 R0.2 L15	51	15	0.20	1.4	0.7	2.8	6.1	SIM 0020 H6

Order example: MCR 4 R0.2 L15 BXC

For L.H. bars specify MCL instead of MCR

MDR Bars Thread Relief, Chamfering and Grooving - with Coolant Channel



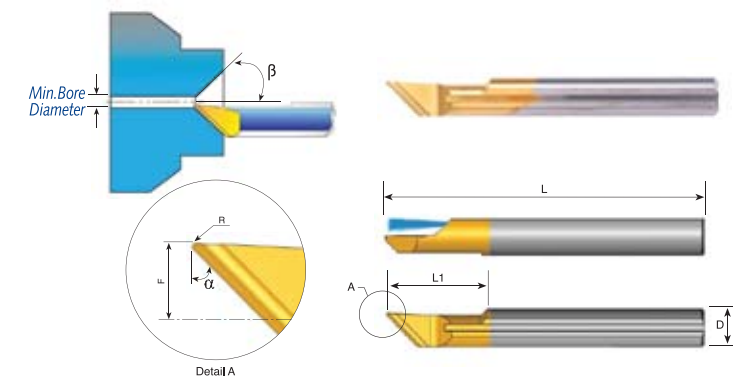
D mm	Ordering Code	L mm	L1 mm	B mm	R mm	H mm	F mm	Min. Bore Dia. mm	Holder*
4.0	MDR 4 R0.5 L18	51	18	1.5	0.5	0.8	1.8	4.1	SIM 0020 H4
5.0	MDR 5 R0.5 L24	51	24	1.5	0.5	1.2	2.3	5.1	SIM 0020 H5
6.0	MDR 6 R0.5 L27	58	27	1.5	0.5	1.4	2.8	6.1	SIM 0020 H6

*Order example: MDR 5 R0.5 L24 BXC

For L.H. bars specify MDL instead of MDR

* For additional holders see page 7

MWR Bars Chamfering and Profiling - with Coolant Channel

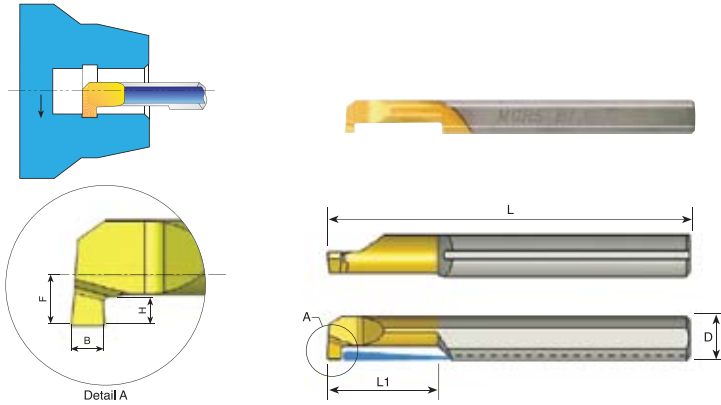


D mm	Ordering Code	L mm	L1 mm	R mm	α	β	F mm	Min. Bore Dia. mm	Holder*
6.0	MWR 6 R0.2 A90	51	15	0.20	45°	45°	2.3	1.0	SIM 0020 H6
6.0	MWR 6 R0.2 A60	51	15	0.20	60°	30°	2.3	1.0	SIM 0020 H6

Order example: MWR 6 R0.2 A90 BXC

For L.H. bars specify MWL instead of MWR

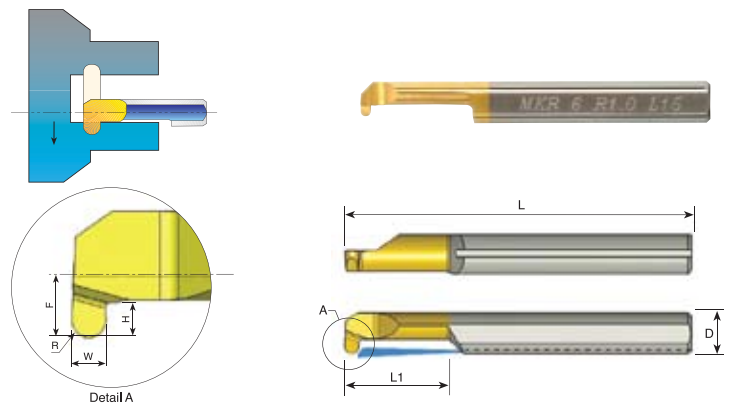
MGR Bars Grooving - with Coolant Channel



D mm	Ordering Code	L mm	L1 mm	B mm	H mm	F mm	Min. Bore Dia. mm	Holder*
4.0	MGR 4 B1.0 L10	51	10	1.0	1.0	1.7	4.1	SIM 0020 H4
4.0	MGR 4 B1.5 L10	51	10	1.5	1.0	1.7	4.1	SIM 0020 H4
5.0	MGR 5 B1.0 L15	51	15	1.0	1.2	2.3	5.1	SIM 0020 H5
5.0	MGR 5 B1.5 L15	51	15	1.5	1.2	2.3	5.1	SIM 0020 H5
5.0	MGR 5 B2.0 L15	51	15	2.0	1.2	2.3	5.1	SIM 0020 H5
6.0	MGR 6 B1.0 L15	51	15	1.0	1.4	2.8	6.1	SIM 0020 H6
6.0	MGR 6 B1.5 L15	51	15	1.5	1.4	2.8	6.1	SIM 0020 H6
6.0	MGR 6 B2.0 L15	51	15	2.0	1.4	2.8	6.1	SIM 0020 H6
8.0	MGR 8 B1.5 L22	64	22	1.5	1.7	3.8	8.1	SIM 0020 H8
8.0	MGR 8 B2.0 L22	64	22	2.0	2.6	3.8	8.1	SIM 0020 H8

Order example: MGR 5 B1.5 L15 BXC
For L.H. bars specify MGL instead of MGR

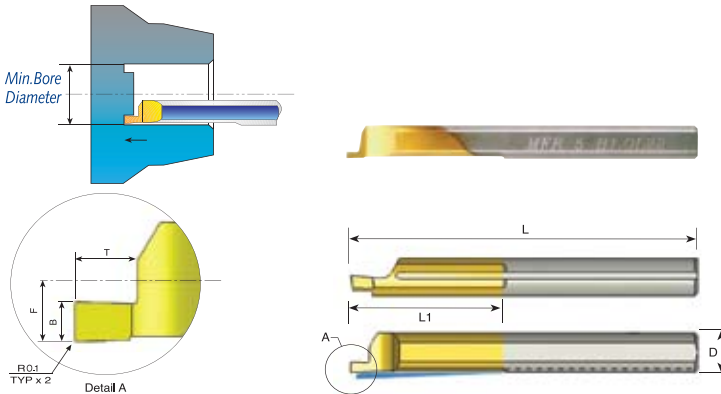
MKR Bars Full Radius Grooving - with Coolant Channel



D mm	Ordering Code	L mm	L1 mm	R mm	W mm	H mm	F mm	Min. Bore Dia. mm	Holder*
4.0	MKR 4 R0.5 L10	51	10	0.50	1.0	1.0	1.7	4.1	SIM 0020 H4
4.0	MKR 4 R0.75 L10	51	10	0.75	1.5	1.0	1.7	4.1	SIM 0020 H4
5.0	MKR 5 R0.5 L15	51	15	0.50	1.0	1.2	2.3	5.1	SIM 0020 H5
5.0	MKR 5 R0.75 L15	51	15	0.75	1.5	1.2	2.3	5.1	SIM 0020 H5
5.0	MKR 5 R1.0 L15	51	15	1.00	2.0	1.2	2.3	5.1	SIM 0020 H5
6.0	MKR 6 R0.5 L15	51	15	0.50	1.0	1.6	2.8	6.1	SIM 0020 H6
6.0	MKR 6 R0.75 L15	51	15	0.75	1.5	1.6	2.8	6.1	SIM 0020 H6
6.0	MKR 6 R1.0 L15	51	15	1.00	2.0	1.6	2.8	6.1	SIM 0020 H6

Order example: MKR 5 R1.0 L15 BXC
For L.H. bars specify MKL instead of MKR

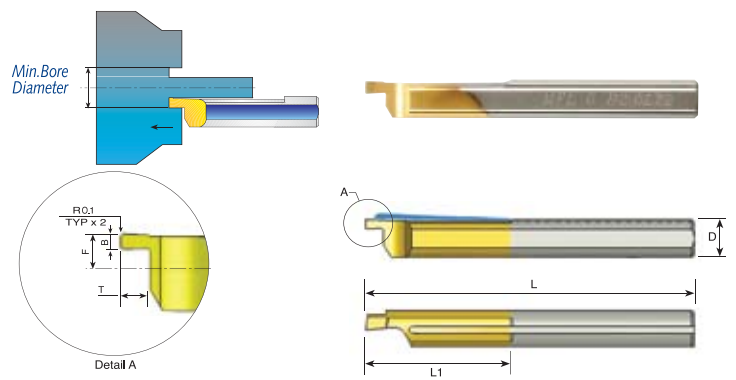
MFR Bars Face Grooving - with Coolant Channel



D mm	Ordering Code	L mm	L1 mm	B mm	T mm	F mm	Min. Bore Dia. mm	Holder*
4.0	MFR 4 B0.75 L15	51	15	0.75	1.2	1.95	5.0	SIM 0020 H4
4.0	MFR 4 B1.0 L15	51	15	1.0	1.5	1.95	5.0	SIM 0020 H4
5.0	MFR 5 B0.75 L22	51	22	0.75	1.2	2.45	6.0	SIM 0020 H5
5.0	MFR 5 B1.0 L22	51	22	1.0	1.5	2.45	6.0	SIM 0020 H5
5.0	MFR 5 B1.5 L22	51	22	1.5	2.5	2.45	6.0	SIM 0020 H5
6.0	MFR 6 B1.0 L22	51	22	1.0	1.5	2.95	8.0	SIM 0020 H6
6.0	MFR 6 B1.5 L22	51	22	1.5	2.5	2.95	8.0	SIM 0020 H6
6.0	MFR 6 B2.0 L22	51	22	2.0	3.0	2.95	8.0	SIM 0020 H6
8.0	MFR 8 B2.5 L22	64	22	2.5	3.5	3.95	10.0	SIM 0020 H8

Order example: MFR 5 B1.0 L22 BXC
* For additional holders see page 7

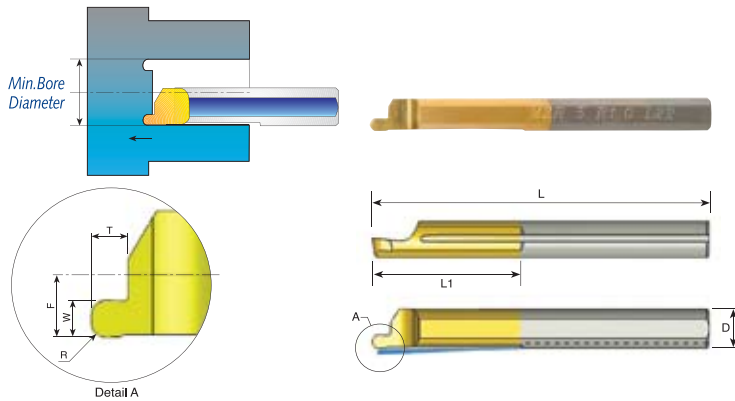
MFL Bars Face Grooving - with Coolant Channel



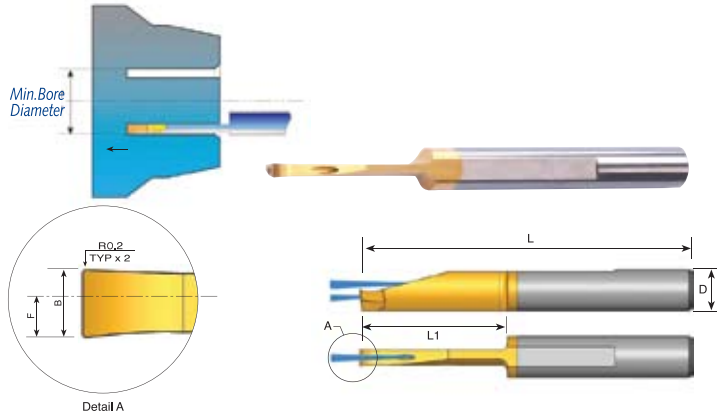
D mm	Ordering Code	L mm	L1 mm	B mm	T mm	F mm	Min. Bore Dia. mm	Holder*
4.0	MFL 4 B0.75 L15	51	15	0.75	1.2	1.75	5.0	SIM 0020 H4
4.0	MFL 4 B1.0 L15	51	15	1.0	1.5	1.75	5.0	SIM 0020 H4
5.0	MFL 5 B0.75 L22	51	22	0.75	1.2	2.25	6.0	SIM 0020 H5
5.0	MFL 5 B1.0 L22	51	22	1.0	1.5	2.25	6.0	SIM 0020 H5
5.0	MFL 5 B1.5 L22	51	22	1.5	2.5	2.25	6.0	SIM 0020 H5
6.0	MFL 6 B1.0 L22	51	22	1.0	1.5	2.75	8.0	SIM 0020 H6
6.0	MFL 6 B1.5 L22	51	22	1.5	2.5	2.75	8.0	SIM 0020 H6
6.0	MFL 6 B2.0 L22	51	22	2.0	3.0	2.75	8.0	SIM 0020 H6
8.0	MFL 8 B2.5 L22	64	22	2.5	3.5	3.75	10.0	SIM 0020 H8

Order example: MFL 6 B1.0 L22 BXC

MZR Bars Face Grooving - with Coolant Channel



MVR Bars Deep Face Grooving - with 2 Coolant Bores



D mm	Ordering Code	L mm	L1 mm	R mm	W mm	T mm	F mm	Min. Bore Dia. mm	Holder*
4.0	MZR 4 R0.5 L15	51	15	0.50	1.0	1.2	1.95	5.0	SIM 0020 H4
4.0	MZR 4 R0.75 L15	51	15	0.75	1.5	1.5	1.95	5.0	SIM 0020 H4
5.0	MZR 5 R0.5 L22	51	22	0.50	1.0	1.2	2.45	6.0	SIM 0020 H5
5.0	MZR 5 R0.75 L22	51	22	0.75	1.5	1.5	2.45	6.0	SIM 0020 H5
5.0	MZR 5 R1.0 L22	51	22	1.00	2.0	2.5	2.45	6.0	SIM 0020 H5
6.0	MZR 6 R0.5 L22	51	22	0.50	1.0	1.2	2.95	8.0	SIM 0020 H6
6.0	MZR 6 R0.75 L22	51	22	0.75	1.5	1.5	2.95	8.0	SIM 0020 H6
6.0	MZR 6 R1.0 L22	51	22	1.00	2.0	2.5	2.95	8.0	SIM 0020 H6

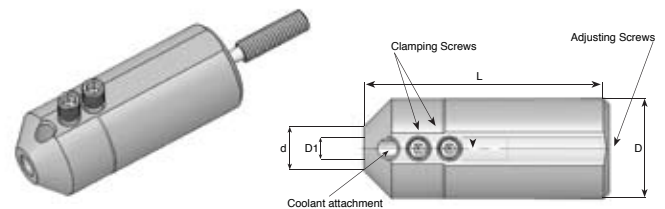
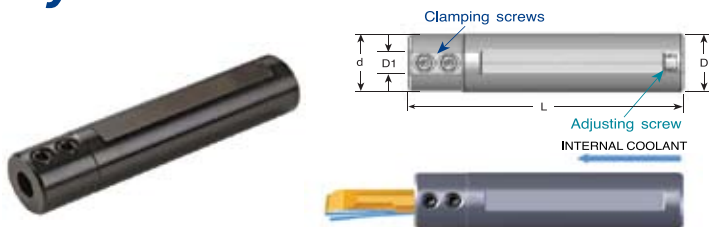
D mm	Ordering Code	L mm	L1 mm	B mm	F mm	Min. Bore Dia. mm	Holder*
6.0	MVR 6 B2.0 L15	64	15	2.0	1.7	12.0	SIM 0020 H6
6.0	MVR 6 B2.0 L22	64	22	2.0	1.7	12.0	SIM 0020 H6
6.0	MVR 6 B2.5 L22	64	22	2.5	2.2	12.0	SIM 0020 H6
8.0	MVR 8 B3.0 L27	64	27	3.0	2.5	15.0	SIM 0020 H8

Order example: MVR 6 B2.0 L22 BXC

Order example: MZR 6 R0.5 L22 BXC

* For additional holders see the next table

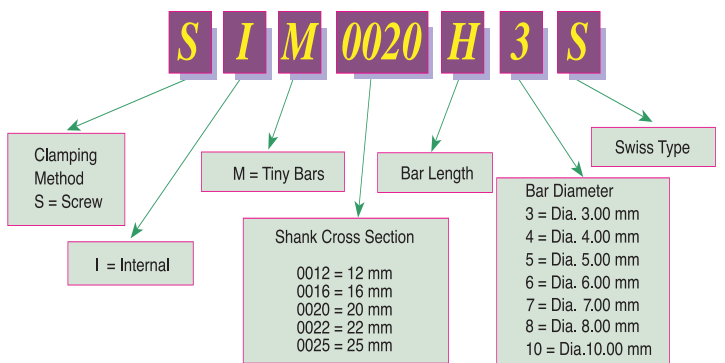
Tiny Tools Bar Holders



D1 mm	Ordering Code	L mm	D mm	d mm	Key	Clamping Screw	Adjusting Screw
3.0	SIM0012 H3	88	12	12	K25	S24	S35
3.0	*SIM0016 H3S	75	16	20	K25	S25	S35S
3.0	SIM0016 H3	88	16	20	K25	S25	S35
3.0	SIM0020 H3	88	20	20	K25	S25	S35
3.0	*SIM0022 H3	88	22	22	K25	S25	S35
4.0	SIM0012 H4	88	12	12	K25	S24	S35
4.0	*SIM0016 H4S	75	16	20	K25	S25	S35S
4.0	SIM0016 H4	88	16	20	K25	S25	S35
4.0	SIM0020 H4	88	20	20	K25	S25	S35
4.0	*SIM0022 H4	88	22	22	K25	S25	S35
5.0	SIM0012 H5	88	12	12	K25	S24	S35
5.0	*SIM0016 H5S	75	16	20	K25	S25	S35S
5.0	SIM0016 H5	88	16	20	K25	S25	S35
5.0	SIM0020 H5	88	20	20	K25	S25	S35
5.0	*SIM0022 H5	75	22	22	K25	S25	S35
6.0	*SIM0016 H6S	75	16	20	K25	S25	S35S
6.0	SIM0016 H6	88	16	20	K25	S25	S35
6.0	SIM0020 H6	88	20	20	K25	S25	S35
6.0	*SIM0022 H6	88	22	22	K25	S25	S35
7.0	SIM0016 H7	88	16	20	K25	S25	S35
7.0	SIM0020 H7	88	20	20	K25	S25	S35
8.0	SIM0016 H8	88	16	20	K25	S25	S35
8.0	SIM0020 H8	88	20	20	K25	S25	S35
10.0	SIM0020 H10	88	20	20	K25	S25S	S35

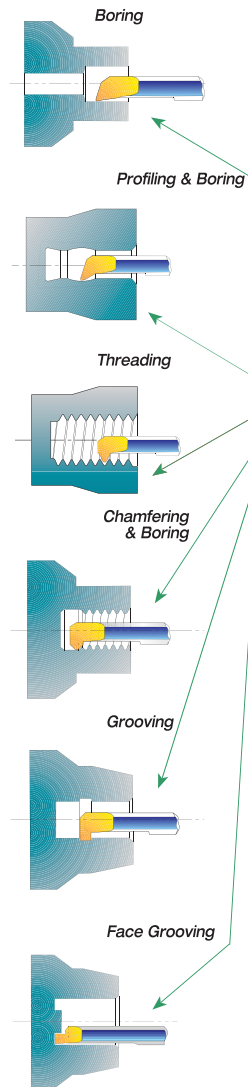
D1 mm	Ordering Code	L mm	D mm	d mm	Torx Key	Clamping Screw	Adjusting Screw
3.0	SIM0025 H3	62	25	10.8	K25	S25	S35M
4.0	SIM0025 H4	62	25	10.8	K25	S25	S35M
5.0	SIM0025 H5	62	25	10.8	K25	S25	S35M
6.0	SIM0025 H6	62	25	10.8	K25	S25	S35M

Tiny Bar Holders Ordering Codes



*Can also be used with Swiss type lathe machines

Tiny Tools Kits



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

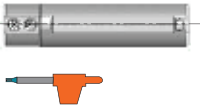
Order example: KT4-20

Also available are kits with a 16mm or 22mm shank diameter bar holder.

Order example: KT4-16

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

Tiny Tools Bar Holder



Technical Section

Carbide Grade: **BXC (P30 - P50, K25 - K40)**
 PVD TiN coated grade for low cutting speed,
 Works well with a wide range of stainless steels.



Carbide Grade: **BMK (ISO 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



Recommended Cutting speed for Tiny Tools

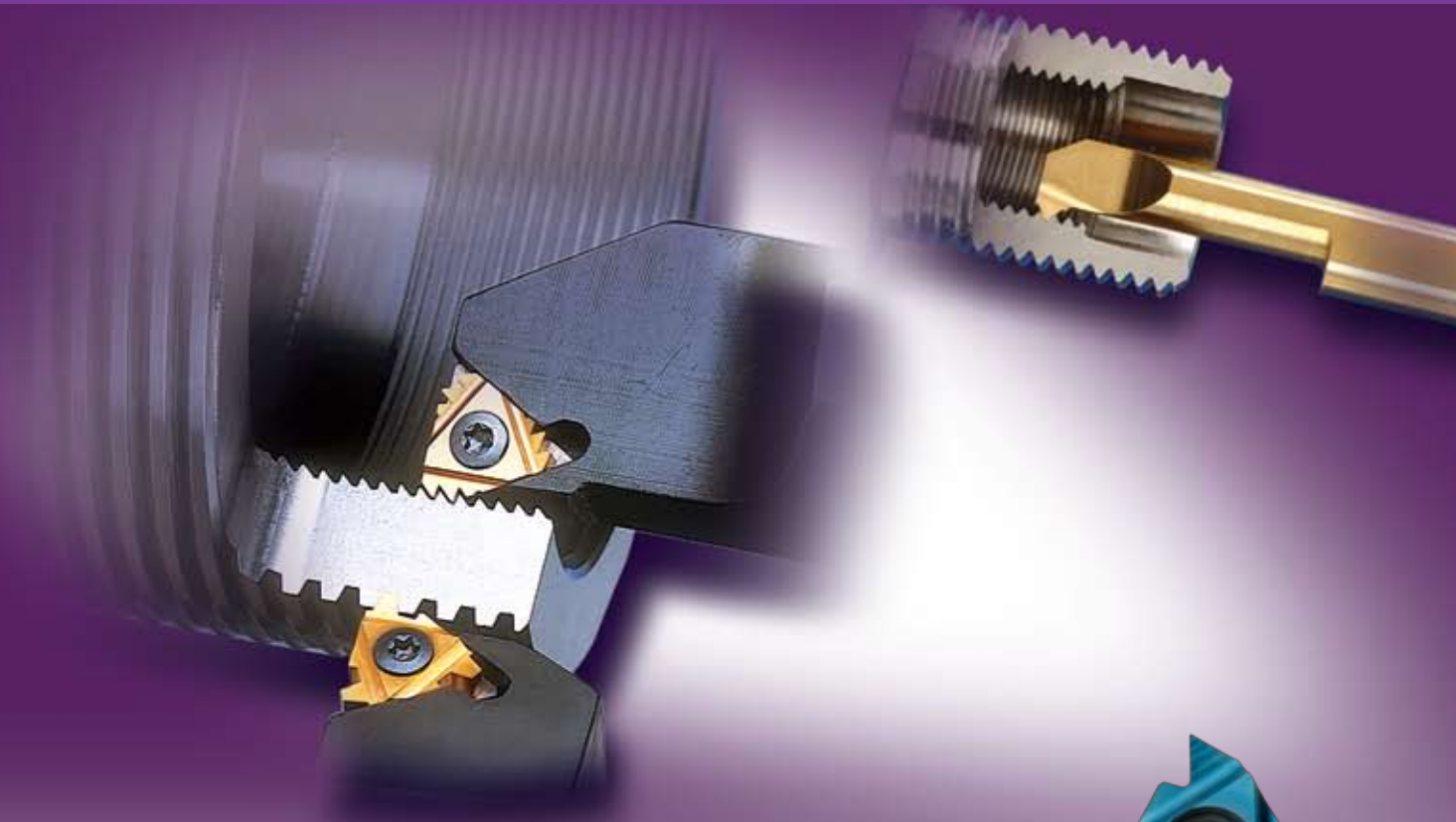
ISO Standard	Material	Condition	ft/min		
			BXC	BMK	
P	Non-Alloy steel and cast steel, free cutting steel	<0.25%C	Annealed	82-164	98-197
		≥0.25%C	Annealed		
		<0.55%C	Quenched and tempered		
		≥0.55%C	Annealed		
	Low alloy steel and cast steel (less than 5% alloying elements)	Annealed	66-82	79-98	
		Quenched and tempered			
High alloy steel, cast steel, and tool steel	Annealed	59-66	72-79		
	Quenched and tempered				
M	Stainless steel and cast steel	Ferritic/martensitic	82-98	98-138	
		Martensitic			
		Austenitic			
K	Cast iron nodular (GGG)	Ferritic/pearlitic	56-75	66-92	
		Pearlitic			
	Grey cast iron (GG)	Ferritic	56-75	66-92	
		Pearlitic			
	Malleable cast iron	Ferritic	56-75	66-92	
		Pearlitic			
N	Aluminum-wrought alloy	Not cureable	164-230	197-276	
		Cured			
	Aluminum-cast, alloyed	<=12% Si	Not cureable	98-131	118-157
		>12% Si	Cured		
		>1% Pb	High temperature		
	Copper alloys		Free cutting	72-82	79-98
		Brass			
Non metallic		Electrolytic copper	115-148		
		Duroplastics, fiber plastics Hard rubber			
S	High temp. alloys, Super alloys	Fe based	Annealed	49-66	59-79
			Cured		
		Ni or Co based	Annealed		
			Cured		
	Titanium alloys		Cast	39-59	49-66
			Alpha+beta alloys cured		
H	Hardened steel		Hardened 45-50 HRC	49-66	59-79
			Hardened 51-55 HRC		
			Hardened 56-62 HRC		
	Cast iron		Chilled cast iron	33-46	39-52
		Cast iron	Hardened	26-39	33-46

Recommended Feed Rate: 0.005-0.01 inch/rev

Threading Passes

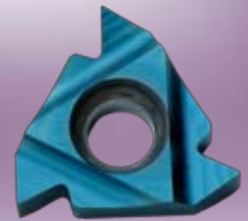
Pitch:	mm	0.5	0.7	0.8	1.0	1.25	1.5	2-5
	TPI	48	36	32	24	20	16	
Number of Passes		6-12	7-14	7-16	8-18	8-20	10-22	20-38

Thread Turning Inserts



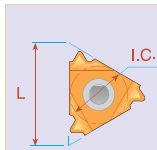
BLU Grade

Carmex presents a new sub-micrograin grade with PVD triple layer coating. The BLU grade provides a combination of very high strength with high wear resistance.

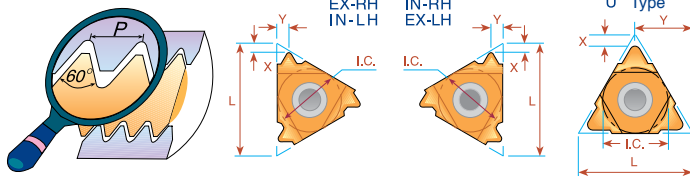


Product Identification

Thread Turning Inserts Ordering Codes

16	E	R	12	UN	BMA													
↓	↓	↓	↓	↓	↓													
 <table border="1" style="margin-top: 10px;"> <thead> <tr> <th>L</th> <th>I.C.</th> </tr> </thead> <tbody> <tr> <td>06</td> <td>5/32"</td> </tr> <tr> <td>08</td> <td>3/16"</td> </tr> <tr> <td>08U</td> <td>3/16"U</td> </tr> <tr> <td>11</td> <td>1/4"</td> </tr> <tr> <td>16</td> <td>3/8"</td> </tr> <tr> <td>16V</td> <td>3/8"V</td> </tr> </tbody> </table>	L	I.C.	06	5/32"	08	3/16"	08U	3/16"U	11	1/4"	16	3/8"	16V	3/8"V	<p>E = External I = Internal</p> <p style="text-align: center;">↓</p> <p>R = Right Hand L = Left Hand</p>	<p>Pitch in mm: 0.35-12</p> <p>or TPI (Threads per Inch) 72-2</p>	<p>Full Profiles: ISO N WHIT NPT NPTF BSPT ACME ST.ACME TRAPEZ UNJ MJ AM. BUTT.</p> <p>Partial Profiles: A 60° G 55° AG U</p>	<p>Carbide Grade: P30 K20 BMA BLU MXC P25C BXC</p>
L	I.C.																	
06	5/32"																	
08	3/16"																	
08U	3/16"U																	
11	1/4"																	
16	3/8"																	
16V	3/8"V																	

Partial Profile 60°

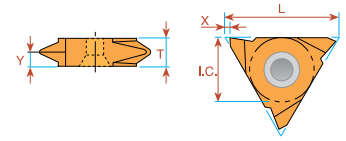


L mm	I.C. in	Pitch Range mm TPI	EXTERNAL Ordering Code		INTERNAL Ordering Code		X mm	Y mm
			Right Hand	Left Hand	Right Hand	Left Hand		
6	5/32	0.5 -1.25 48-20	ULTRA MINIATURE		*06 IR A60	*06 IL A60	0.6	0.6
8	3/16	0.5 -1.5 48-16	MINIATURE		*08 IR A60	*08 IL A60	0.6	0.7
8U	3/16U	1.75-2.0 14-11	"U" MINIATURE		*08U IR/L U60		0.8	4.0
11	1/4	0.5 -1.5 48-16	11 ER A60	11 EL A60	11 IR A60	11 IL A60	0.8	0.9

Order example: 11 ER A60 MXC

* Available only in BXC & BMA grades

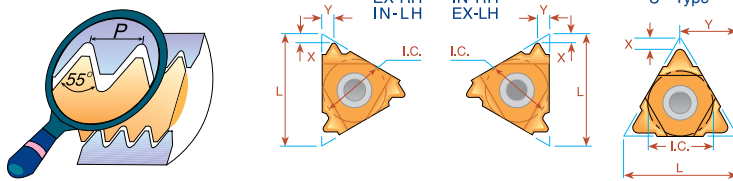
Partial Profile 60° Vertical



L mm	I.C. in	Pitch Range mm TPI	EXTERNAL Ordering Code		X mm	Y mm	T mm
			Right Hand	Left Hand			
16	3/8	0.5 -1.5 48-16	16V ER A60	16V EL A60	1.0	0.9	3.6
16	3/8	1.75-3.0 14-8	16V ER G60	16V EL G60	1.0	1.8	3.6
16	3/8	0.5 -3.0 48-8	16V ER AG60	16V EL AG	1.0	1.8	3.6

Order example: 16V ER G60 BMA

Partial Profile 55°



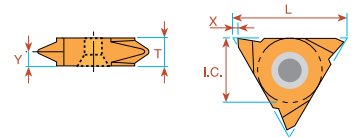
L mm	I.C. in	Pitch Range mm TPI	EXTERNAL Ordering Code		INTERNAL Ordering Code		X mm	Y mm
			Right Hand	Left Hand	Right Hand	Left Hand		
6	5/32	0.5 -1.25 48-20	ULTRA MINIATURE		*06 IR A55	*06 IL A55	0.5	0.6
8	3/16	0.5 -1.5 48-16	MINIATURE		*08 IR A55	*08 IL A55	0.6	0.7
8U	3/16U	1.75-2.0 14-11	"U" MINIATURE		*08U IR/L U55		0.9	4.0
11	1/4	0.5 -1.5 48-16	11 ER A55	11 EL A55	11 IR A55	11 IL A55	0.8	0.9

Order example: 11 ER A55 MXC

* Available only in BXC & BMA grades

For carbide grade and cutting speed see page 18

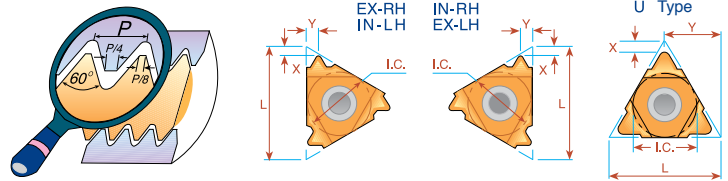
Partial Profile 55° Vertical



L mm	I.C. in	Pitch Range mm TPI	EXTERNAL Ordering Code		X mm	Y mm	T mm
			Right Hand	Left Hand			
16	3/8	0.5 -1.5 48-16	16V ER A55	16V EL A55	1.0	0.9	3.6
16	3/8	1.75-3.0 14-8	16V ER G55	16V EL G55	1.0	1.7	3.6
16	3/8	0.5 -3.0 48-8	16V ER AG55	16V EL AG55	1.0	1.8	3.6

Order example: 16V ER A55 BMA

ISO - metric



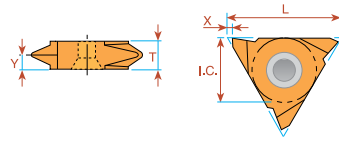
Pitch mm	L	I.C. in	EXTERNAL Ordering Code			INTERNAL Ordering Code		
			Right Hand	Left Hand	X Y	Right Hand	Left Hand	X Y
0.5	6	5/32	ULTRA MINIATURE			*06 IR 0.5 ISO	*06 IL 0.5 ISO	0.9 0.5
0.75	6	5/32				*06 IR 0.75 ISO	*06 IL 0.75 ISO	0.8 0.5
1.0	6	5/32				*06 IR 1.0 ISO	*06 IL 1.0 ISO	0.7 0.6
1.25	6	5/32				*06 IR 1.25 ISO	*06 IL 1.25 ISO	0.6 0.6
0.5	8	3/16	MINIATURE			*08 IR 0.5 ISO	*08 IL 0.5 ISO	0.6 0.5
0.75	8	3/16				*08 IR 0.75 ISO	*08 IL 0.75 ISO	0.6 0.5
1.0	8	3/16				*08 IR 1.0 ISO	*08 IL 1.0 ISO	0.6 0.6
1.25	8	3/16				*08 IR 1.25 ISO	*08 IL 1.25 ISO	0.6 0.7
1.5	8	3/16				*08 IR 1.5 ISO	*08 IL 1.5 ISO	0.6 0.7
1.75	8	3/16				*08 IR 1.75 ISO	*08 IL 1.75 ISO	0.6 0.8
2.0	8U	3/16U	"U" MINIATURE			*08U IR/L 2.0 ISO		0.9 4.0
0.35	11	1/4	11 ER 0.35 ISO	11 EL 0.35 ISO	0.8 0.4	11 IR 0.35 ISO	11 IL 0.35 ISO	0.8 0.3
0.4	11	1/4	11 ER 0.4 ISO	11 EL 0.4 ISO	0.7 0.4	11 IR 0.4 ISO	11 IL 0.4 ISO	0.8 0.4
0.45	11	1/4	11 ER 0.45 ISO	11 EL 0.45 ISO	0.7 0.4	11 IR 0.45 ISO	11 IL 0.45 ISO	0.8 0.4
0.5	11	1/4	11 ER 0.5 ISO	11 EL 0.5 ISO	0.6 0.6	11 IR 0.5 ISO	11 IL 0.5 ISO	0.6 0.6
0.6	11	1/4	11 ER 0.6 ISO	11 EL 0.6 ISO	0.6 0.6	11 IR 0.6 ISO	11 IL 0.6 ISO	0.6 0.6
0.7	11	1/4	11 ER 0.7 ISO	11 EL 0.7 ISO	0.6 0.6	11 IR 0.7 ISO	11 IL 0.7 ISO	0.6 0.6
0.75	11	1/4	11 ER 0.75 ISO	11 EL 0.75 ISO	0.6 0.6	11 IR 0.75 ISO	11 IL 0.75 ISO	0.6 0.6
0.8	11	1/4	11 ER 0.8 ISO	11 EL 0.8 ISO	0.6 0.6	11 IR 0.8 ISO	11 IL 0.8 ISO	0.6 0.6
1.0	11	1/4	11 ER 1.0 ISO	11 EL 1.0 ISO	0.7 0.7	11 IR 1.0 ISO	11 IL 1.0 ISO	0.6 0.7
1.25	11	1/4	11 ER 1.25 ISO	11 EL 1.25 ISO	0.8 0.9	11 IR 1.25 ISO	11 IL 1.25 ISO	0.8 0.8
1.5	11	1/4	11 ER 1.5 ISO	11 EL 1.5 ISO	0.8 1.0	11 IR 1.5 ISO	11 IL 1.5 ISO	0.8 1.0
1.75	11	1/4	11 ER 1.75 ISO	11 EL 1.75 ISO	0.8 1.1	11 IR 1.75 ISO	11 IL 1.75 ISO	0.8 1.1
2.0	11	1/4				11 IR 2.0 ISO	11 IL 2.0 ISO	0.8 0.9
2.5	11	1/4				11 IR 2.5 ISO	11 IL 2.5 ISO	0.8 1.2

Order example: 08 IR 1.75 ISO BXC

* Available only in BXC & BMA grades

Thread Turning Inserts

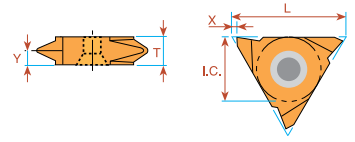
ISO - metric Vertical



Pitch mm	L mm	I.C. in	EXTERNAL Ordering Code		X mm	Y mm	T mm
			Right Hand	Left Hand			
0.5	16	3/8	16V ER 0.5 ISO	16V EL 0.5 ISO	1.0	0.6	3.6
0.75	16	3/8	16V ER 0.75 ISO	16V EL 0.75 ISO	1.0	0.6	3.6
0.8	16	3/8	16V ER 0.8 ISO	16V EL 0.8 ISO	1.0	0.6	3.6
1.0	16	3/8	16V ER 1.0 ISO	16V EL 1.0 ISO	1.0	0.7	3.6
1.25	16	3/8	16V ER 1.25 ISO	16V EL 1.25 ISO	1.0	0.9	3.6
1.5	16	3/8	16V ER 1.5 ISO	16V EL 1.5 ISO	1.0	0.9	3.6
1.75	16	3/8	16V ER 1.75 ISO	16V EL 1.75 ISO	1.0	1.2	3.6
2.0	16	3/8	16V ER 2.0 ISO	16V EL 2.0 ISO	1.0	1.3	3.6
2.5	16	3/8	16V ER 2.5 ISO	16V EL 2.5 ISO	1.0	1.5	3.6
3.0	16	3/8	16V ER 3.0 ISO	16V EL 3.0 ISO	1.0	1.7	3.6

Order example: 16V ER 1.5 ISO BMA

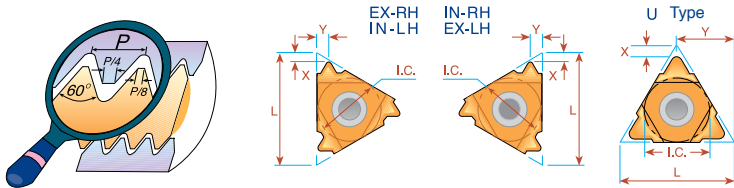
UN - Unified Vertical



Pitch TPI	L mm	I.C. in	EXTERNAL Ordering Code		X mm	Y mm	T mm
			Right Hand	Left Hand			
32	16	3/8	16V ER 32 UN	16V EL 32 UN	1.0	0.6	3.6
28	16	3/8	16V ER 28 UN	16V EL 28 UN	1.0	0.7	3.6
24	16	3/8	16V ER 24 UN	16V EL 24 UN	1.0	0.8	3.6
20	16	3/8	16V ER 20 UN	16V EL 20 UN	1.0	0.9	3.6
18	16	3/8	16V ER 18 UN	16V EL 18 UN	1.0	1.0	3.6
16	16	3/8	16V ER 16 UN	16V EL 16 UN	1.0	1.1	3.6
14	16	3/8	16V ER 14 UN	16V EL 14 UN	1.0	1.2	3.6
12	16	3/8	16V ER 12 UN	16V EL 12 UN	1.0	1.4	3.6
10	16	3/8	16V ER 10 UN	16V EL 10 UN	1.0	1.5	3.6
8	16	3/8	16V ER 8 UN	16V EL 8 UN	1.0	1.6	3.6

Order example: 16V ER 10 UN BMA

UN - Unified UNC, UNF, UNEF, UNS



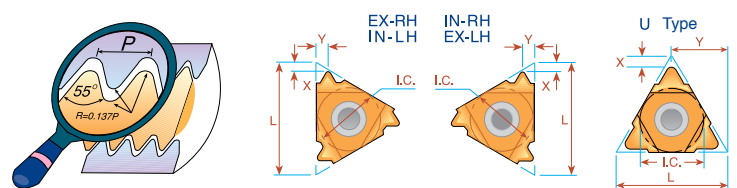
Pitch TPI	L mm	I.C. in	EXTERNAL Ordering Code		X mm	Y mm	INTERNAL Ordering Code		X mm	Y mm
			Right Hand	Left Hand			Right Hand	Left Hand		
32	6	5/32	ULTRA MINIATURE				*06 IR 32 UN	*06 IL 32 UN	0.8	0.5
28	6	5/32					*06 IR 28 UN	*06 IL 28 UN	0.8	0.6
24	6	5/32					*06 IR 24 UN	*06 IL 24 UN	0.7	0.6
20	6	5/32					*06 IR 20 UN	*06 IL 20 UN	0.6	0.6
18	6	5/32					*06 IR 18 UN	*06 IL 18 UN	0.6	0.7
32	8	3/16	MINIATURE				*08 IR 32 UN	*08 IL 32 UN	0.6	0.5
28	8	3/16					*08 IR 28 UN	*08 IL 28 UN	0.6	0.6
24	8	3/16					*08 IR 24 UN	*08 IL 24 UN	0.6	0.6
20	8	3/16					*08 IR 20 UN	*08 IL 20 UN	0.6	0.7
18	8	3/16					*08 IR 18 UN	*08 IL 18 UN	0.6	0.7
16	8	3/16					*08 IR 16 UN	*08 IL 16 UN	0.6	0.7
14	8	3/16					*08 IR 14 UN	*08 IL 14 UN	0.6	0.8
13	8U	3/16U	"U" MINIATURE				*08U IR/L 13 UN		1.0	4.0
12	8U	3/16U					*08U IR/L 12 UN		0.9	4.0
11	8U	3/16U					*08U IR/L 11 UN		0.9	4.0
72	11	1/4	11 ER 72 UN	11 EL 72 UN	0.8	0.4	11 IR 72 UN	11 IL 72 UN	0.8	0.3
64	11	1/4	11 ER 64 UN	11 EL 64 UN	0.8	0.4	11 IR 64 UN	11 IL 64 UN	0.8	0.4
56	11	1/4	11 ER 56 UN	11 EL 56 UN	0.7	0.4	11 IR 56 UN	11 IL 56 UN	0.7	0.4
48	11	1/4	11 ER 48 UN	11 EL 48 UN	0.6	0.6	11 IR 48 UN	11 IL 48 UN	0.6	0.6
44	11	1/4	11 ER 44 UN	11 EL 44 UN	0.6	0.6	11 IR 44 UN	11 IL 44 UN	0.6	0.6
40	11	1/4	11 ER 40 UN	11 EL 40 UN	0.6	0.6	11 IR 40 UN	11 IL 40 UN	0.6	0.6
36	11	1/4	11 ER 36 UN	11 EL 36 UN	0.6	0.6	11 IR 36 UN	11 IL 36 UN	0.6	0.6
32	11	1/4	11 ER 32 UN	11 EL 32 UN	0.6	0.6	11 IR 32 UN	11 IL 32 UN	0.6	0.6
28	11	1/4	11 ER 28 UN	11 EL 28 UN	0.6	0.7	11 IR 28 UN	11 IL 28 UN	0.6	0.7
27	11	1/4	11 ER 27 UN	11 EL 27 UN	0.7	0.8	11 IR 27 UN	11 IL 27 UN	0.7	0.8
24	11	1/4	11 ER 24 UN	11 EL 24 UN	0.7	0.8	11 IR 24 UN	11 IL 24 UN	0.7	0.8
20	11	1/4	11 ER 20 UN	11 EL 20 UN	0.8	0.9	11 IR 20 UN	11 IL 20 UN	0.8	0.9
18	11	1/4	11 ER 18 UN	11 EL 18 UN	0.8	1.0	11 IR 18 UN	11 IL 18 UN	0.8	1.0
16	11	1/4	11 ER 16 UN	11 EL 16 UN	0.9	1.1	11 IR 16 UN	11 IL 16 UN	0.9	1.1
14	11	1/4	11 ER 14 UN	11 EL 14 UN	0.9	1.1	11 IR 14 UN	11 IL 14 UN	0.9	1.1
13	11	1/4					11 IR 13 UN	11 IL 13 UN	0.8	1.0
12	11	1/4					11 IR 12 UN	11 IL 12 UN	0.9	1.1
11	11	1/4					11 IR 11 UN	11 IL 11 UN	0.8	1.1

Order example: 11 EL 18 UN BMA

* Available only in BXC & BMA grades

For carbide grade and cutting speed see page 18

Whitworth - 55° BSW, BSF, BSP, BSB



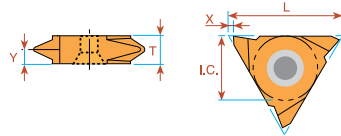
Pitch TPI	L mm	I.C. in	EXTERNAL Ordering Code		X mm	Y mm	INTERNAL Ordering Code		X mm	Y mm
			Right Hand	Left Hand			Right Hand	Left Hand		
26	6	5/32	ULTRA - MINI				*06 IR 26 W	*06 IL 26 W	0.7	0.6
22	6	5/32					*06 IR 22 W	*06 IL 22 W	0.6	0.6
20	6	5/32					*06 IR 20 W	*06 IL 20 W	0.6	0.7
18	6	5/32					*06 IR 18 W	*06 IL 18 W	0.6	0.7
28	8	3/16	MINI				*08 IR 28 W	*08 IL 28 W	0.6	0.6
24	8	3/16					*08 IR 24 W	*08 IL 24 W	0.6	0.6
20	8	3/16					*08 IR 20 W	*08 IL 20 W	0.6	0.7
19	8	3/16					*08 IR 19 W	*08 IL 19 W	0.6	0.7
18	8	3/16					*08 IR 18 W	*08 IL 18 W	0.6	0.7
16	8	3/16					*08 IR 16 W	*08 IL 16 W	0.6	0.7
14	8U	3/16U	"U" MINIATURE				*08U IR/L 14 W		1.0	4.0
12	8U	3/16U					*08U IR/L 12 W		0.9	4.0
11	8U	3/16U					*08U IR/L 11 W		0.9	4.0
72	11	1/4	11 ER 72 W	11 EL 72 W	11 IR 72 W	11 IL 72 W	0.7	0.4		
60	11	1/4	11 ER 60 W	11 EL 60 W	11 IR 60 W	11 IL 60 W	0.7	0.4		
56	11	1/4	11 ER 56 W	11 EL 56 W	11 IR 56 W	11 IL 56 W	0.7	0.4		
48	11	1/4	11 ER 48 W	11 EL 48 W	11 IR 48 W	11 IL 48 W	0.6	0.6		
40	11	1/4	11 ER 40 W	11 EL 40 W	11 IR 40 W	11 IL 40 W	0.6	0.6		
36	11	1/4	11 ER 36 W	11 EL 36 W	11 IR 36 W	11 IL 36 W	0.6	0.6		
32	11	1/4	11 ER 32 W	11 EL 32 W	11 IR 32 W	11 IL 32 W	0.6	0.6		
28	11	1/4	11 ER 28 W	11 EL 28 W	11 IR 28 W	11 IL 28 W	0.6	0.7		
26	11	1/4	11 ER 26 W	11 EL 26 W	11 IR 26 W	11 IL 26 W	0.7	0.7		
24	11	1/4	11 ER 24 W	11 EL 24 W	11 IR 24 W	11 IL 24 W	0.7	0.8		
22	11	1/4	11 ER 22 W	11 EL 22 W	11 IR 22 W	11 IL 22 W	0.8	0.9		
20	11	1/4	11 ER 20 W	11 EL 20 W	11 IR 20 W	11 IL 20 W	0.8	0.9		
19	11	1/4	11 ER 19 W	11 EL 19 W	11 IR 19 W	11 IL 19 W	0.8	1.0		
18	11	1/4	11 ER 18 W	11 EL 18 W	11 IR 18 W	11 IL 18 W	0.8	1.0		
16	11	1/4	11 ER 16 W	11 EL 16 W	11 IR 16 W	11 IL 16 W	0.9	1.1		
14	11	1/4	11 ER 14 W	11 EL 14 W	11 IR 14 W	11 IL 14 W	0.9	1.1		
12	11	1/4			11 IR 12 W	11 IL 12 W	1.0	1.1		
11	11	1/4			11 IR 11 W	11 IL 11 W	0.9	1.2		

Order example: 11 IL W BMA

* Available only in BXC & BMA grades

Whitworth - 55° Vertical

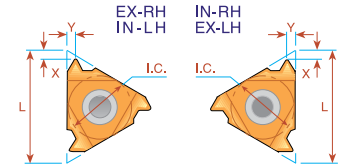
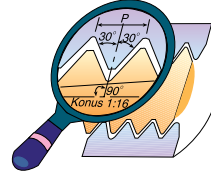
BSW, BSF, BSP, BSB



Pitch TPI	L mm	I.C. in	EXTERNAL Ordering Code		X mm	Y mm	T mm
			Right Hand	Left Hand			
20	16	3/8	16V ER 20 W	16V EL 20 W	1.0	0.9	3.6
19	16	3/8	16V ER 19 W	16V EL 19 W	1.0	0.9	3.6
18	16	3/8	16V ER 18 W	16V EL 18 W	1.0	1.0	3.6
16	16	3/8	16V ER 16 W	16V EL 16 W	1.0	1.0	3.6
14	16	3/8	16V ER 14 W	16V EL 14 W	1.0	1.2	3.6
12	16	3/8	16V ER 12 W	16V EL 12 W	1.0	1.4	3.6
11	16	3/8	16V ER 11 W	16V EL 11 W	1.0	1.5	3.6

Order example: 16V ER 14 W MXC

NPTF - Dryseal

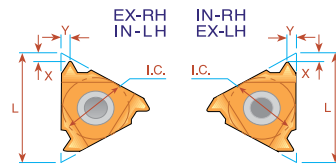
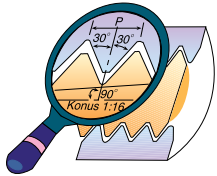


Pitch TPI	L mm	I.C. in	EXTERNAL Ordering Code		X mm	Y mm	T mm
			Right Hand	Left Hand			
27	6	5/32	ULTRA MINI		0.7	0.6	
27	8	3/16	MINI		0.6	0.6	
18	8	3/16			0.6	0.6	
27	11	1/4	11 ER 27 NPTF	11 EL 27 NPTF	0.7	0.7	
18	11	1/4	11 ER 18 NPTF	11 EL 18 NPTF	0.8	1.0	
14	11	1/4	11 ER 14 NPTF	11 EL 14 NPTF	0.8	1.0	

Order example: 11 ER 27 NPTF BMA

* Available only in BXC & BMA grades

NPT

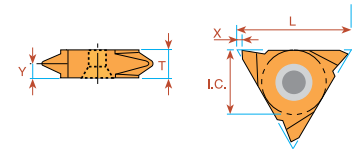


Pitch TPI	L mm	I.C. in	EXTERNAL Ordering Code		X mm	Y mm
			Right Hand	Left Hand		
27	6	5/32	ULTRA MINI		0.6	0.6
27	8	3/16	MINI		0.6	0.6
18	8	3/16			0.6	0.6
27	11	1/4	11 ER 27 NPT	11 EL 27 NPT	0.7	0.8
18	11	1/4	11 ER 18 NPT	11 EL 18 NPT	0.8	1.0
14	11	1/4	11 ER 14 NPT	11 EL 14 NPT	0.8	1.0

Order example: 11 IR 14 NPT MXC

* Available only in BXC & BMA grades

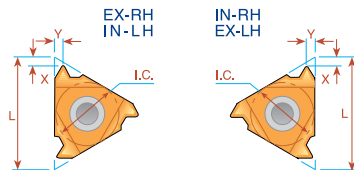
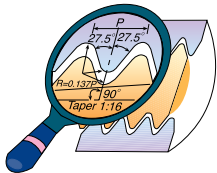
NPT Vertical



Pitch TPI	L mm	I.C. in	EXTERNAL Ordering Code		X mm	Y mm	T mm
			Right Hand	Left Hand			
27	16	3/8	16V ER 27 NPT	16V EL 27 NPT	1.0	0.8	3.6
18	16	3/8	16V ER 18 NPT	16V EL 18 NPT	1.0	1.0	3.6
14	16	3/8	16V ER 14 NPT	16V EL 14 NPT	1.0	1.2	3.6
11.5	16	3/8	16V ER 11.5 NPT	16V EL 11.5 NPT	1.0	1.5	3.6

Order example: 16V ER NPT BMA

BSPT

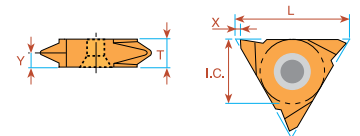


Pitch TPI	L mm	I.C. in	EXTERNAL Ordering Code		X mm	Y mm
			Right Hand	Left Hand		
28	6	5/32	ULTRA MINI		0.7	0.6
28	8	3/16	MINI		0.6	0.6
19	8	3/16			0.6	0.6
28	11	1/4	11 IR 28 BSPT	11 IL 28 BSPT	0.6	0.6
19	11	1/4	11 IR 19 BSPT	11 IL 19 BSPT	0.8	0.9
14	11	1/4	11 IR 14 BSPT	11 IL 14 BSPT	0.9	1.0
11	11	1/4	11 IR 11 BSPT	11 IL 11 BSPT	0.9	1.2

Order example: 11 IR 14 BSPT BMA

* Available only in BXC & BMA grades

BSPT Vertical



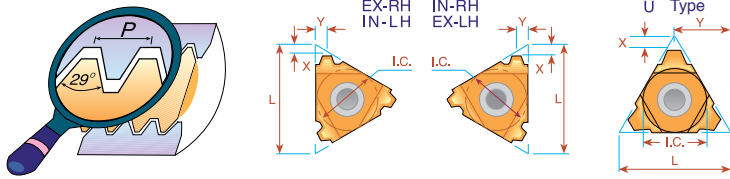
Pitch TPI	L mm	I.C. in	EXTERNAL Ordering Code		X mm	Y mm	T mm
			Right Hand	Standard			
28	16	3/8	16V ER 28 BSPT	16V EL 28 BSPT	1.0	0.6	3.6
19	16	3/8	16V ER 19 BSPT	16V EL 19 BSPT	1.0	0.9	3.6
14	16	3/8	16V ER 14 BSPT	16V EL 14 BSPT	1.0	1.2	3.6
11	16	3/8	16V ER 11 BSPT	16V EL 11 BSPT	1.0	1.5	3.6

Order example: 16V ER 19 BSPT BMA

For carbide grade and cutting speed see page 18

Thread Turning Inserts

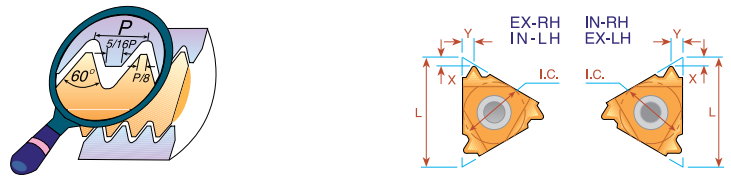
Acme



Pitch TPI	L mm	I.C. in	EXTERNAL Ordering Code		INTERNAL Ordering Code		X mm	Y mm
			Right Hand	Left Hand	Right Hand	Left Hand		
16	8	3/16	MINI →		**08 IR 16 ACME	**08 IL 16 ACME	0.6	0.6
14	8U	3/16U	→		*08U IR/L 14 ACME		0.8	4.0
12	8U	3/16U	"U" MINI →		*08U IR/L 12 ACME		0.8	4.0
10	8U	3/16U	→		*08U IR/L 10 ACME		0.8	4.0
16	11	1/4	11 ER 16 ACME	11 EL 16 ACME	11 IR 16 ACME	11 IL 16 ACME	0.9	1.0

Order example: 11 ER 16 ACME MXC
 * Available only in BXC & BMA grades
 ** One cutting edge

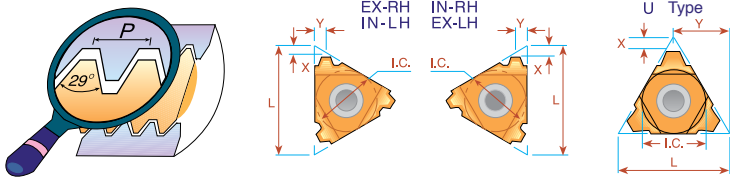
UNJ UNJC, UNJF, UNJEF, UNJS



Pitch TPI	L mm	I.C. in	EXTERNAL Ordering Code		INTERNAL Ordering Code		X mm	Y mm
			Right Hand	Left Hand	Right Hand	Left Hand		
48	11	1/4	11 ER 48 UNJ	11 EL 48 UNJ	11 IR 48 UNJ	11 IL 48 UNJ	0.6	0.6
44	11	1/4	11 ER 44 UNJ	11 EL 44 UNJ	11 IR 44 UNJ	11 IL 44 UNJ	0.6	0.6
40	11	1/4	11 ER 40 UNJ	11 EL 40 UNJ	11 IR 40 UNJ	11 IL 40 UNJ	0.6	0.6
36	11	1/4	11 ER 36 UNJ	11 EL 36 UNJ	11 IR 36 UNJ	11 IL 36 UNJ	0.6	0.6
32	11	1/4	11 ER 32 UNJ	11 EL 32 UNJ	11 IR 32 UNJ	11 IL 32 UNJ	0.6	0.6
28	11	1/4	11 ER 28 UNJ	11 EL 28 UNJ	11 IR 28 UNJ	11 IL 28 UNJ	0.6	0.6
24	11	1/4	11 ER 24 UNJ	11 EL 24 UNJ	11 IR 24 UNJ	11 IL 24 UNJ	0.7	0.8
20	11	1/4	11 ER 20 UNJ	11 EL 20 UNJ	11 IR 20 UNJ	11 IL 20 UNJ	0.8	0.9
18	11	1/4	11 ER 18 UNJ	11 EL 18 UNJ	11 IR 18 UNJ	11 IL 18 UNJ	0.8	1.0
16	11	1/4	11 ER 16 UNJ	11 EL 16 UNJ	11 IR 16 UNJ	11 IL 16 UNJ	0.8	1.0
14	11	1/4	11 ER 14 UNJ	11 EL 14 UNJ	11 IR 14 UNJ	11 IL 14 UNJ	0.9	1.0

Order example: 11 IR 16 UNJ MXC

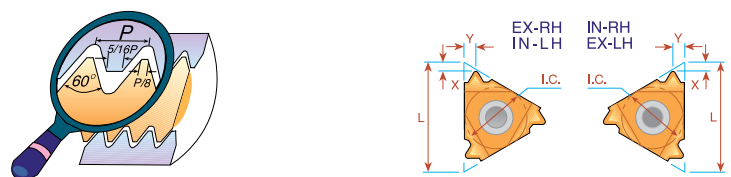
Stub Acme



Pitch TPI	L mm	I.C. in	EXTERNAL Ordering Code		INTERNAL Ordering Code		X mm	Y mm
			Right Hand	Left Hand	Right Hand	Left Hand		
16	8	3/16	MINI →		**08 IR16 STACME	**08 IL16 STACME	0.6	0.6
14	8U	3/16U	→		*08U IR/L 14 STACME		0.8	4.0
12	8U	3/16U	"U" MINI →		*08U IR/L 12 STACME		0.9	4.0
10	8U	3/16U	→		*08U IR/L 10 STACME		1.0	4.0
16	11	1/4	11 ER 16 STACME	11 EL 16 STACME			1.0	1.0

Order example: 08 IR 16 STACME BXC
 * Available only in BXC & BMA grades
 ** One cutting edge

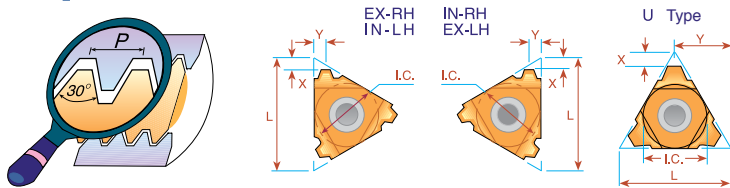
MJ - ISO 5855



Pitch mm	L mm	I.C. in	INTERNAL Ordering Code		X mm	Y mm
			Right Hand	Left Hand		
1.0	11	1/4	11 IR 1.0 MJ		0.7	0.8
1.25	11	1/4	11 IR 1.25MJ		0.8	0.9
1.5	11	1/4	11 IR 1.5 MJ		0.8	1.0
2.0	11	1/4	11 IR 2.0 MJ		0.9	1.0

Order example: 11 IR 1.0 MJ MXC

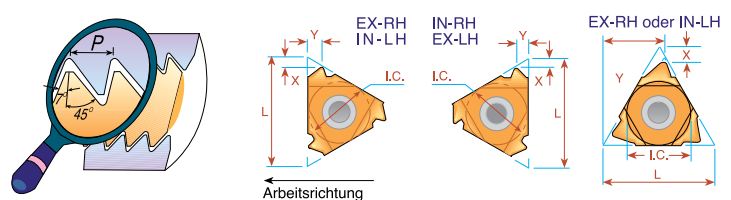
Trapez - DIN 103



Pitch mm	L mm	I.C. in	EXTERNAL Ordering Code		INTERNAL Ordering Code		X mm	Y mm
			Right Hand	Left Hand	Right Hand	Left Hand		
1.5	8	3/16	MINI →		**08 IR 1.5 TR	**08 IL 1.5 TR	0.6	0.6
2.0	8U	3/16U	"U" MINIATURE →		*08U IR/L 2 TR		0.9	4.0

Order example: 08 U IR/L 2 TR BXC
 * Available only in BXC & BMA grades
 ** One cutting edge
 For carbide grade and cutting speed see page 18

American Buttress



Pitch TPI	L mm	I.C. in	EXTERNAL Ordering Code		INTERNAL Ordering Code		X mm	Y mm
			Right Hand	Left Hand	Right Hand	Left Hand		
20	11	1/4	11 ER 20 ABUT	11 EL 20 ABUT	11 IR 20 ABUT	11 IL 20 ABUT	1.0	1.3
16	11	1/4	11 ER 16 ABUT	11 EL 16 ABUT	11 IR 16 ABUT	11 IL 16 ABUT	1.0	1.5

Order example: 11 IL 20 ABUT P25C

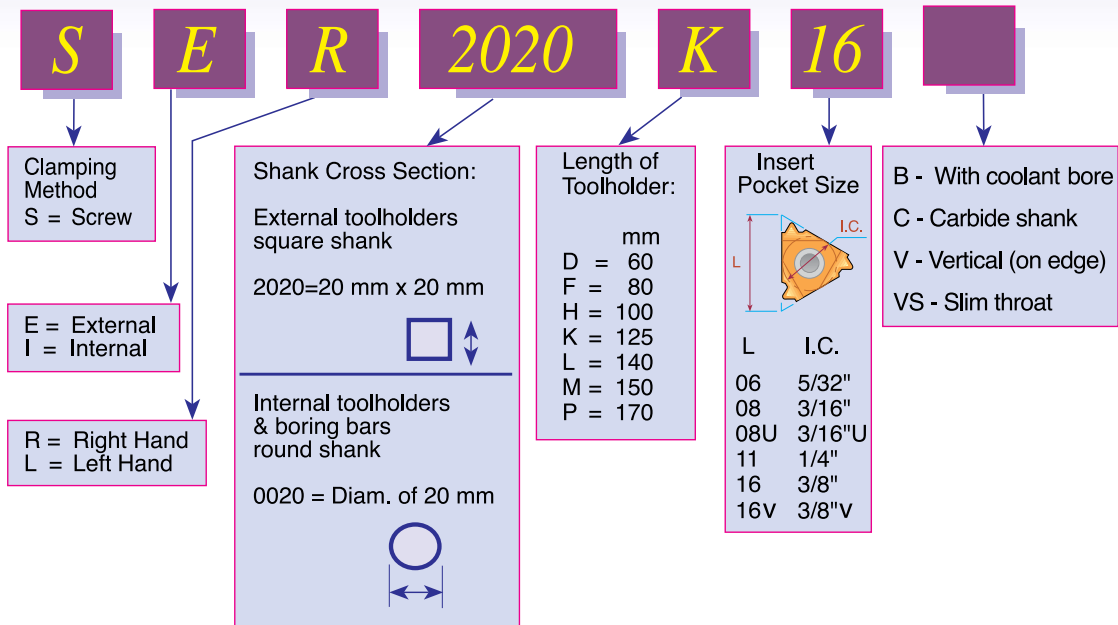
IMPORTANT NOTE:
 In CARMEX standard execution,
 the flank with the large angle is
 the leading edge. If otherwise required,
 please specify in your order.

Thread Turning Toolholders and Kits

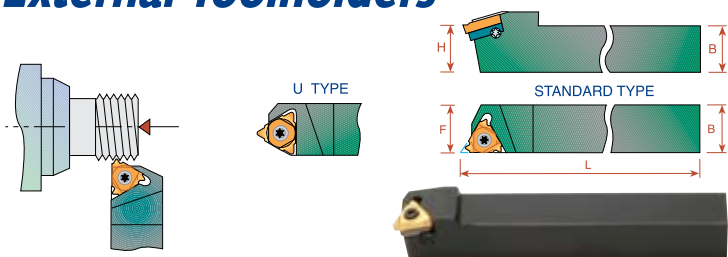


Product Identification

Threading Toolholders Ordering Codes



External Toolholders



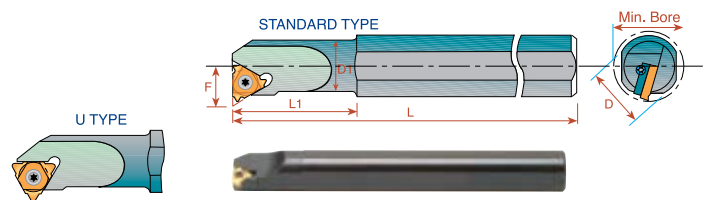
Ordering Code Right Hand		B=H mm	L mm	F mm	Insert Screw	Anvil Screw	Torx Key	RH Anvil	LH Anvil
• SER 8 8 H11	11	8	100	11	S11	-	K11	-	-
• SER 1010 H11	11	10	100	11	S11	-	K11	-	-
• SER 1212 K11	11	12	125	12	S11	-	K11	-	-
SER 1212 F16	16	12	80	16	S16	A16	K16	AE16	AI16
SER 1616 H16	16	16	100	16	S16	A16	K16	AE16	AI16
SER 2020 K16	16	20	125	20	S16	A16	K16	AE16	AI16

* Toolholders with no anvil

For **LEFT HAND** toolholders specify SEL instead of SER

Toolholders are made with a **1.5° Helix Angle**. For other Helix Angles please consult helix angle chart in the technical section of this catalogue.

Internal Toolholders



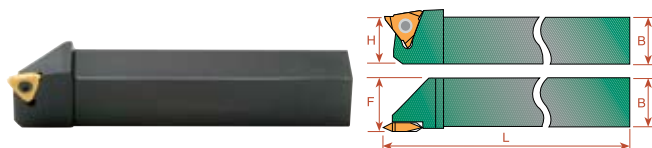
Ordering Code Right Hand		D mm	D1 mm	Min Bore Diam. mm	L mm	L1 mm	F mm	Insert Screw	Anvil Screw	Torx Key	RH Anvil	LH Anvil
• SIR 0005 H06	6	12	5.1	6.0	100	12	4.3	S06	-	K06	-	-
• SIR 0007 K08	8	16	6.6	7.8	125	18	5.3	S08	-	K08	-	-
• SIR 0008 K08U	8U	16	7.3	9.0	125	21	6.6	S08	-	K08	-	-
• SIR 0010 H11	11	10	10	12	100	-	7.4	S11	-	K11	-	-
• SIR 0010 K11	11	16	10	12	125	25	7.4	S11	-	K11	-	-
• SIR 0013 L11	11	16	13	15	140	32	8.9	S11	-	K11	-	-
• SIR 0013 M16	16	16	13	16	150	32	10.2	S16S	-	K16	-	-
• SIR 0016 P16	16	20	16	19	170	40	11.7	S16S	-	K16	-	-
SIR 0020 P16	16	20	20	24	170	-	13.7	S16	A16	K16	AI16	AE16

* Toolholders with no anvil.

For **LEFT HAND** toolholders specify SIL instead of SIR

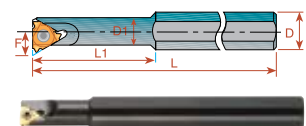
Toolholders are made with a **1.5° Helix Angle**. For other Helix Angles please consult Helix Angle chart in the technical section of this catalogue.

Vertical toolholders



Ordering Code Right Hand		B=H mm	L mm	F mm	Insert Screw	Torx Key
SER 1616 H16V	16	16	100	18	S16S	K16

Internal toolholders with coolant bore



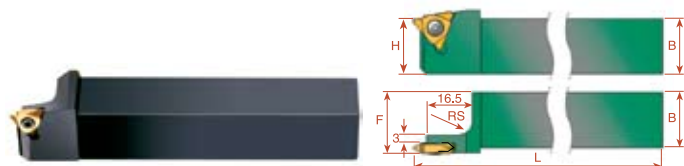
Ordering Code Right Hand		D mm	D1 mm	Min Bore Diam. mm	L mm	L1 mm	F mm	Insert Screw	Anvil Screw	Torx Key	RH Anvil	LH Anvil
• SIR 0010 K11B	11	16	10	12	125	25	7.4	S11	-	K11	-	-

* Toolholders with no anvil

For **LEFT HAND** toolholders specify SIL instead of SIR

Toolholders are made with a **1.5° Helix Angle**. For other Helix Angles please consult helix angle chart in the technical section of this catalogue.

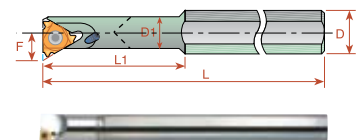
Slim Throat toolholders



Ordering Code Right Hand		B=H mm	L mm	F mm	Insert Screw	Torx Key
SER 1616 H16VS	16	16	100	18	S16S	K16

Carbide Shank Boring Bars With coolant bore

Carbide Shank Boring Bars are used when chatter and deflection are expected due to long overhang in deep small bores.



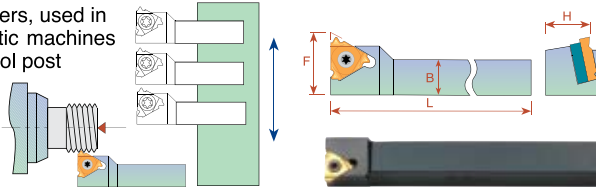
Ordering Code Right Hand		D mm	D1 mm	Min Bore Diam. mm	L mm	L1 mm	F mm	Insert Screw	Anvil Screw	Torx Key	RH Anvil	LH Anvil
SIR 0005 H06CB	6	6	5.1	6.0	100	26	4.3	S06	-	K06	-	-
SIR 0007 K08CB	8	8	6.6	7.8	125	31	5.3	S08	-	K08	-	-
SIR 0008 K08UCB	8U	8	7.3	9.0	125	35	6.6	S08	-	K08	-	-

* Carbide shank boring bars with anvils

For **LEFT HAND** toolholders specify SIL instead of SIR

Gang Toolholders

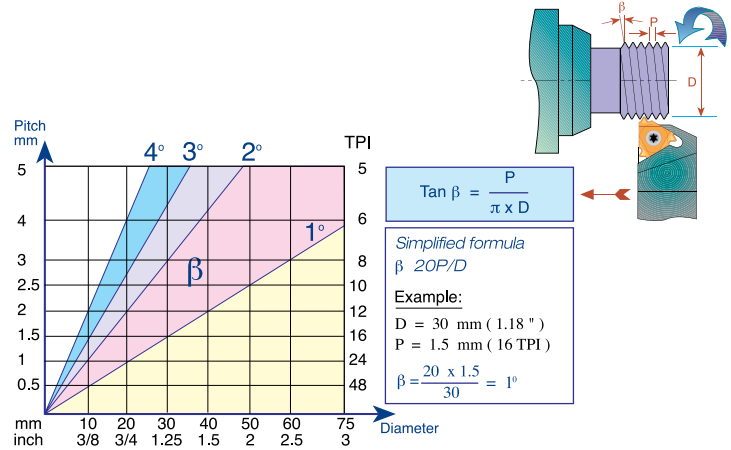
Gang Toolholders are External Holders, used in small automatic machines with a gangtool post



Ordering Code Right Hand	B = H mm	L mm	F mm	Insert Screw	Anvil Screw	Torx Key	RH Anvil	LH Anvil
* SER 8 8 H11G	11	8	100	12.0	S11	-	K11	-
* SER 1010 H11G	11	10	100	14.0	S11	-	K11	-
SER 1616 K16G	16	16	125	21.7	S16	A16	K16	AE16
SER 2020 K16G	16	20	125	26.2	S16	A16	K16	AE16

* Toolholders with no anvil
For LEFT HAND toolholders specify SEL instead of SER

Thread Helix Angle



Miniature & Ultra-miniature Kits



Ordering Code	Type	No. of Inserts	Contents		
			Insert	Boring Bar	Key
KU60M-BXC	ULTRA	10	06 IR A60 BXC	SIR 0005 H06	K6
KM60M-BXC	MINI	10	08 IR A60 BXC	SIR 0007 K08	K8

Threading & Boring Combination Kit

A practical and convenient combination kit for **Ultra Miniature** Threading and Boring. It enables Boring and Threading of mini bores as small as

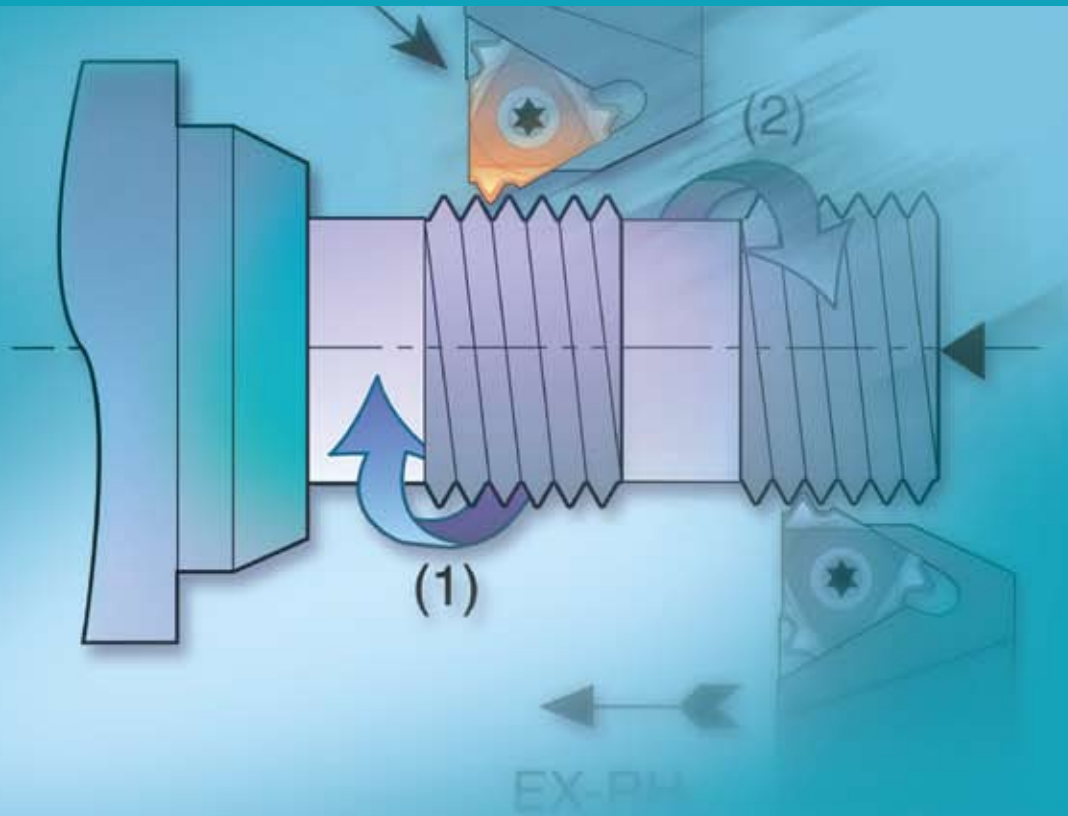
6 mm diameter (1/4") with just one deep reaching CARBIDE shank ultra mini Boring Bar.



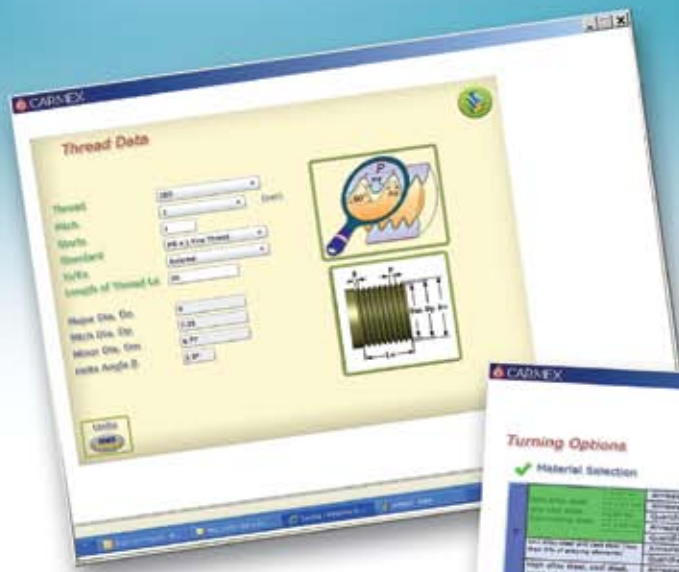
Ordering Code	Contents			Key
	Threading Insert	Turning Insert	Boring Bar	
KC6TM	06 IR A60 BXC 10 Pcs	06 IR TURN BMA 10 Pcs	SIR 0005 H06CB	K6

BMA - Coated carbide grade for medium to high cutting speeds
BXC - Coated carbide grade for low cutting speed - 40 to 90 m/min
CB - Carbide shank boring bar with coolant bore

Thread Turning Technical Section



Thread Turning catalog and CNC programming software



Carbide Grade Selection

Choose the CARMEX grade specifically formulated for your application from the following list:

Uncoated Grades

P30* (P20-P30) Carbide grade for carbon and cast steels, works well at medium to low cutting speeds.

K20* (K10-K30) Carbide grade for non ferrous metals, aluminum and cast iron.

Coated Grades

P25C (P15-P35) PVD TiN coated grade for treated and hard alloy steels (25 HRC & up) at medium to low cutting speeds.

BLU (M10-M20) (K05-K20) (N10-N20) (S10-S20) PVD triple layer coated Sub-micrograin grade for stainless steels, cast iron, titanium, non-ferrous metals and most of the high temperature alloys.

MXC (K10-K20) (P10-P25) PVD TiN coated micrograin for free cutting untreated alloy steels (below 30 HRC), for stainless steels and cast iron.

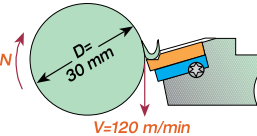
BMA (P20-P40) (K20-K30) PVD TiAlN coated sub-micrograin grade for stainless steels and exotic materials at medium to high cutting speeds.

BXC** (P30-P50) (K25-K40) PVD TiN coated grade for low cutting speed. Works well with wide range of stainless steels.

Note: Due to our unique and specialized production techniques, CARMEX coated inserts provide superior cutting performance and exceptionally long tool life.

Conversion of Cutting Speed to Rotational Speed

Conversion of a selected cutting speed to rotational speed is calculated by the following formula:

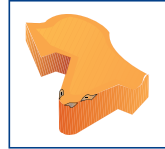


Example

$$N = \frac{V \times 1000}{\pi \times D} = \frac{120 \times 1000}{3.14 \times 30} = 1274 \text{ RPM}$$

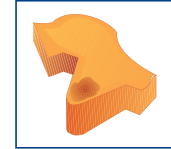
Troubleshooting

Chipping



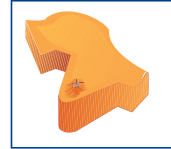
1. Use a harder carbide grade
2. Eliminate tool overhang
3. Check if insert is correctly clamped
4. Eliminate vibration

Crater Wear



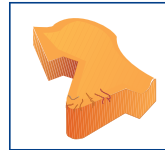
1. Reduce cutting speed
2. Apply coolant fluid
3. Use a harder carbide grade

Build-up Edge



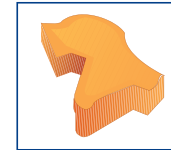
1. Apply coolant fluid
2. Increase cutting speed
3. Use a harder carbide grade

Thermal Cracking



1. Reduce cutting speed
2. Apply coolant fluid
3. Use a harder carbide grade

Deformation



1. Use a harder carbide grade
2. Reduce cutting speed
3. Reduce depth of cut
4. Apply coolant fluid

Fracture



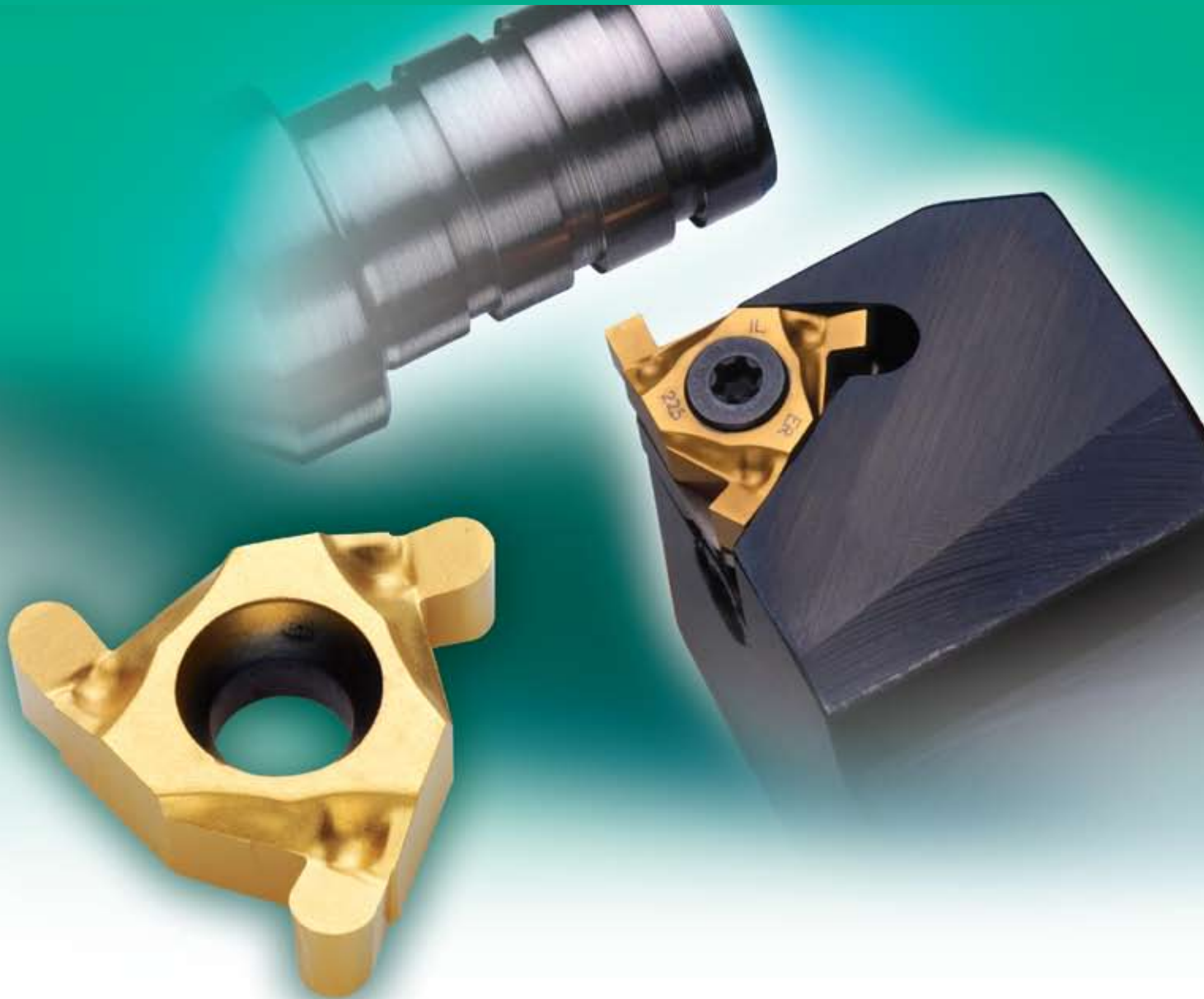
1. Use a harder carbide grade
2. Reduce depth of cut
3. Index insert sooner
4. Check machine and tool stability

Recommended cutting speed (ft/min) for thread turning inserts

ISO Standard	Material	Condition	BLU	BMA	P25C	MXC	BXC	K20	P30	
P	Non-Alloy steel and cast steel, free cutting steel	<0.25%C	Annealed	361-689	394-590	328-590	328-590	230-492	164-426	
		≥0.25%C	Annealed							
		< 0.55%C	Quenched and tempered							
		≥0.55%C	Annealed							
M	Low alloy steel and cast steel (less than 5% alloying elements)	Annealed	295-459	262-426	230-394	230-394	197-295	164-262		
		Quenched and tempered	230-295	197-262	164-197	180-230	164-197	131-164		
K	High alloy steel, cast steel, and tool steel	Annealed	230-295	197-262	164-197	180-230	164-197	131-164		
		Quenched and tempered	230-295	197-262	164-197	180-230	164-197	131-164		
M	Stainless steel and cast steel	Ferritic/pearlitic	328-525	295-426	197-295	197-295	164-262	164-262		
		Martensitic	328-525	295-426	197-295	197-295	164-262	164-262		
		Austenitic	328-525	295-426	197-295	197-295	164-262	164-262		
K	Cast iron nodular (GGG)	Ferritic/pearlitic	394-492	328-426		262-361	197-295			
		Ferritic	394-492	328-426		262-361	197-295			
		Ferritic	459-492	394-426		295-328	213-297			
K	Grey cast iron (GG)	Ferritic	459-492	394-426		295-328	213-297			
		Ferritic	361-459	328-426		262-328	197-279			
N	Malleable cast iron	Ferritic	361-459	328-426		262-328	197-279			
		Ferritic	361-459	328-426		262-328	197-279			
N	Aluminum-wrought alloy	Not cureable	2296-3280			1968-2624	1476-1968	1964-2624	1148-1640	
		Cured	2296-3280			1968-2624	1476-1968	1964-2624	1148-1640	
	Aluminum-cast, alloyed	<=12% Si	Not cureable	918-2460			656-1804	492-1148	656-1804	361-984
		>12% Si	Cured	918-2460			656-1804	492-1148	656-1804	361-984
		>12% Si	High temperature	918-2460			656-1804	492-1148	656-1804	361-984
	Copper alloys	Free cutting	623-1148			492-820	361-590	492-820	295-492	
Brass		623-1148			492-820	361-590	492-820	295-492		
N	Non metallic	Electrolytic copper	623-1148			492-820	361-590	492-820	295-492	
		Duroplastics, fiber plastics	623-1148			492-820	361-590	492-820	295-492	
H	Hard rubber	Hard rubber	623-1148			492-820	361-590	492-820	295-492	
		Hard rubber	623-1148			492-820	361-590	492-820	295-492	
S	High temp. alloys, Super alloys	Fe based	Annealed	98-213	82-197					
		Ni or Co based	Cured							
			Annealed							
			Cured							
S	Titanium alloys	cast	98-213	82-197						
		Alpha+beta alloys cured	131-164	115-148				115-148		
H	Hardened steel	Hardened 45-50 HRC	131-164	115-148						
		Hardened 51-55 HRC	131-164	115-148						
		Hardened 56-62 HRC	131-164	115-148						
H	Chilled cast iron	cast	98-131	82-115						
		cast	98-131	82-115						
H	Cast iron	Hardened	66-98	49-82						

• Available for size 16 mm inserts only
 * Upon request
 ** For miniature and ultra miniature insert

Grooving Tools

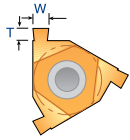


A combination of ground profile and sintered chip-breaker

Advantages:

- Same Toolholder for Grooving and Threading
- **Minimum Investment in Tooling**
 - Three cutting edges
 - Precision Ground

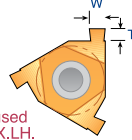
Grooving Inserts - Inch



External & Internal

ER / IL

Same insert can be used for EX.RH and for IN.LH.



IR / EL

Same insert can be used for IN.RH. and for EX.LH.

Grooving Kits



W ± .001	T	IC	Ordering Code		Ordering Code	
			ER/IL Inserts	Anvil	IR/EL Inserts	Anvil
.020	.055	1/4	11 ER/IL .020	-	11 IREL .020	-
.024	.055	1/4	11 ER/IL .024	-	11 IR/EL .024	-
.028	.055	1/4	11 ER/IL .028	-	11 IR/EL .028	-
.031	.055	1/4	11 ER/IL .031	-	11 IR/EL .031	-
.039	.051	1/4	11 ER/IL .039	-	11 IR/EL .039	-
.031	.055	3/8	16 ER/IL .031	AE 16-0	16 IR/EL .031	AI 16-0
.039	.055	3/8	16 ER/IL .039	AE 16-0	16 IR/EL .039	AI 16-0
.047	.063	3/8	16 ER/IL .047	AE 16-0	16 IR/EL .047	AI 16-0
.055	.071	3/8	16 ER/IL .055	AE 16-0	16 IR/EL .055	AI 16-0
.062	.075	3/8	16 ER/IL .062	AE 16-0	16 IR/EL .062	AI 16-0
.067	.079	3/8	16 ER/IL .067	AE 16-0	16 IR/EL .067	AI 16-0
.077	.079	3/8	16 ER/IL .077	AE 16-0	16 IR/EL .077	AI 16-0
.089	.089	3/8	16 ER/IL .089	AE 16-0	16 IR/EL .089	AI 16-0
.094	.089	3/8	16 ER/IL .094	AE 16-0	16 IR/EL .094	AI 16-0

**ER / IL INSERT
KGROI - EXTERNAL**

16 ER / IL .031 BXC	1 unit
16 ER / IL .039 BXC	1 unit
16 ER / IL .047 BXC	1 unit
16 ER / IL .062 BXC	1 unit
16 ER / IL .077 BXC	1 unit
16 ER / IL .094 BXC	1 unit
ANVIL AE 16 - 0	1 unit

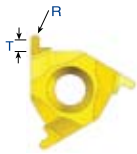
**IR / EL INSERT
KGROI - INTERNAL**

16 IR / EL .031 BXC	1 unit
16 IR / EL .039 BXC	1 unit
16 IR / EL .047 BXC	1 unit
16 IR / EL .062 BXC	1 unit
16 IR / EL .077 BXC	1 unit
16 IR / EL .094 BXC	1 unit
ANVIL AI 16 - 0	1 unit

Order example: 16 ER/IL .047 BXC

- * The inserts should be used with our standard threading toolholders
- * Attention: The anvil must be changed to AE 16-0 or AI 16-0
- * Other available blank sizes: I.C. 5/8", 1/2", 3/16" & 5/32"

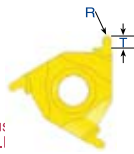
Grooving Inserts for Snap Ring



**External & Internal
Partial Profile Inserts**

ER / IL

Same insert can be used for EX.RH and for IN.LH.



IR / EL

Same insert can be used for IN.RH and for EX.LH.

R ± .001	T	IC	Ordering Code		Ordering Code	
			ER/IL Inserts	Anvil	IR/EL Inserts	Anvil
.020	.055	3/8	16 ER/IL R 0.50	AE 16 - 0	16 IR/EL R 0.50	AI 16 - 0
.024	.063	3/8	16 ER/IL R 0.60	AE 16 - 0	16 IR/EL R 0.60	AI 16 - 0
.035	.079	3/8	16 ER/IL R 0.90	AE 16 - 0	16 IR/EL R 0.90	AI 16 - 0
.039	.079	3/8	16 ER/IL R 1.00	AE 16 - 0	16 IR/EL R 1.00	AI 16 - 0
.043	.085	3/8	16 ER/IL R 1.10	AE 16 - 0	16 IR/EL R 1.10	AI 16 - 0
.047	.089	3/8	16 ER/IL R 1.20	AE 16 - 0	16 IR/EL R 1.20	AI 16 - 0

Order example: 16ER/IL R0.50 BXC

- * The inserts should be used with our standard threading toolholders
- * Attention: The anvil must be changed to AE 16-0 or AI 16-0
- * Other available blank sizes: I.C. 5/8", 1/2", 1/4", 3/16" & 5/32"

Technical Section

Cutting Speeds for Grooving Tools

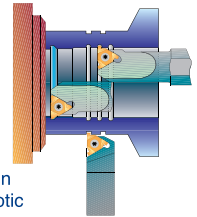
Carbide Grades:

BXC (P30 - P50, K25 - K40)

BMA (P20 - P40, K20 - K30)

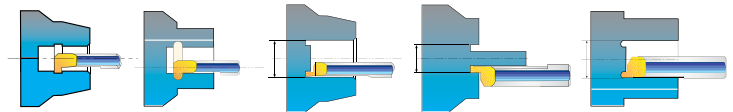
PVD TiN coated grade for low cutting speed. Works well with a wide range of stainless steels.

PVD TiAlN coated sub-micrograin grade for stainless steels and exotic materials at medium to high cutting speeds.

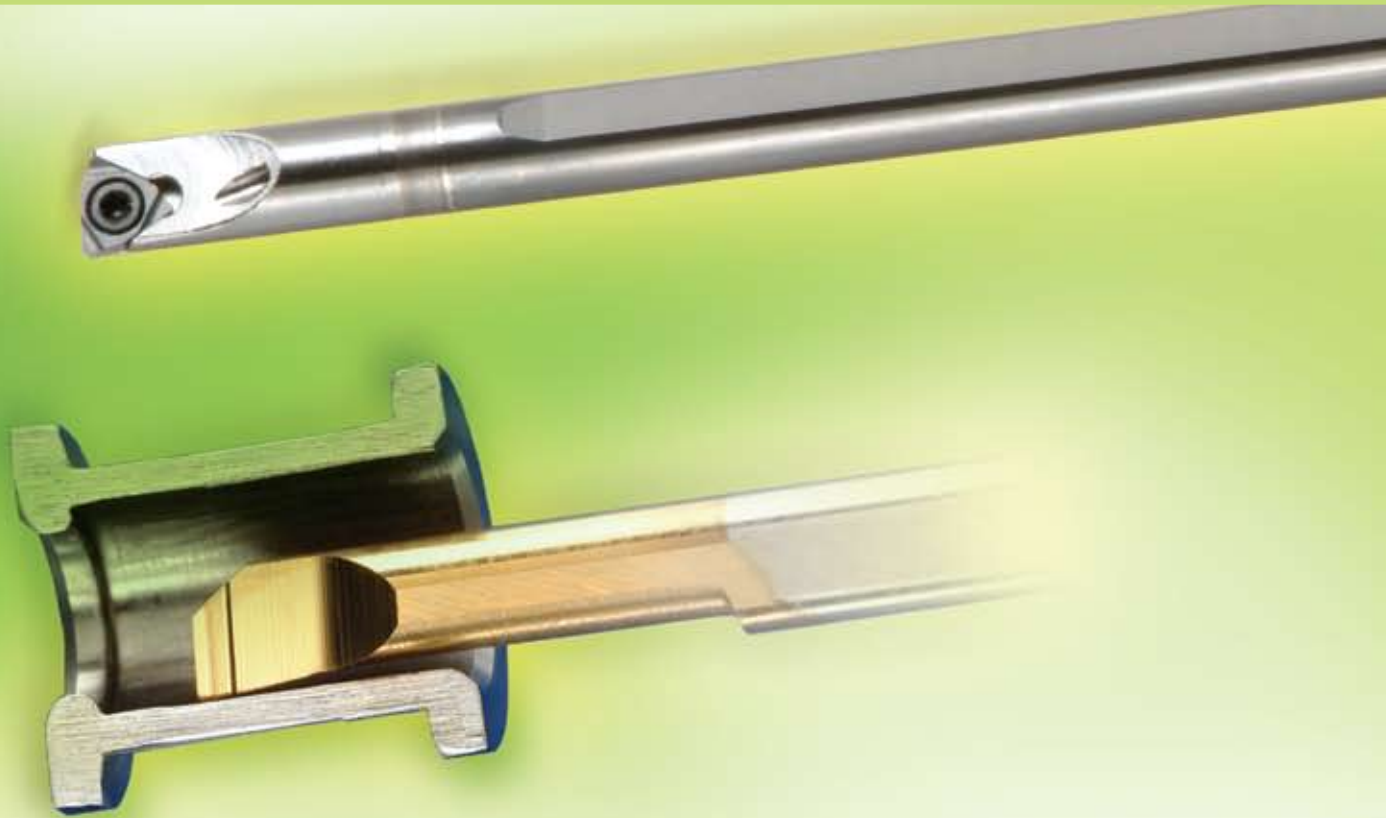


ISO Standard	Materials	Cutting Speed ft/min
P	Low & Medium Carbon Steel	65-330
	High Carbon Steel	100-260
	Alloy Steels and Treated Steels	130-300
M	Stainless Steels	100-260
	Cast Steels	100-300
K	Cast Iron	100-300
N	Non-Ferrous & Aluminium	65-680

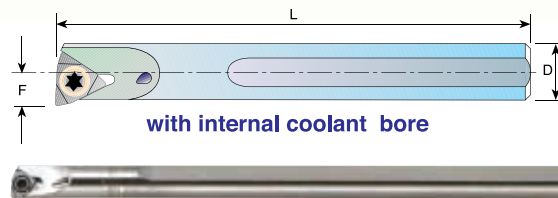
For grooving small bores see pages 6-7



Turning Tools



Carbide Shank Boring Bars and Inserts

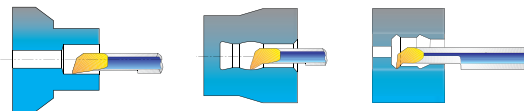


D	Ordering Code	L mm	F mm	Min. Bore Dia. mm	Screw	Key
6	SIR 0006 H06CT	100	3.3	6.5	S6	K6
8	SIR 0008 K06CT	125	4.3	8.6	S6	K6

Insert ordering code: 06 IR TURN BMA

Nose radius R= 0.2 mm

For turning small bores see pages 2-5



Thread Whirling Tools



For Perfect Long Threads on Swiss Type Machines

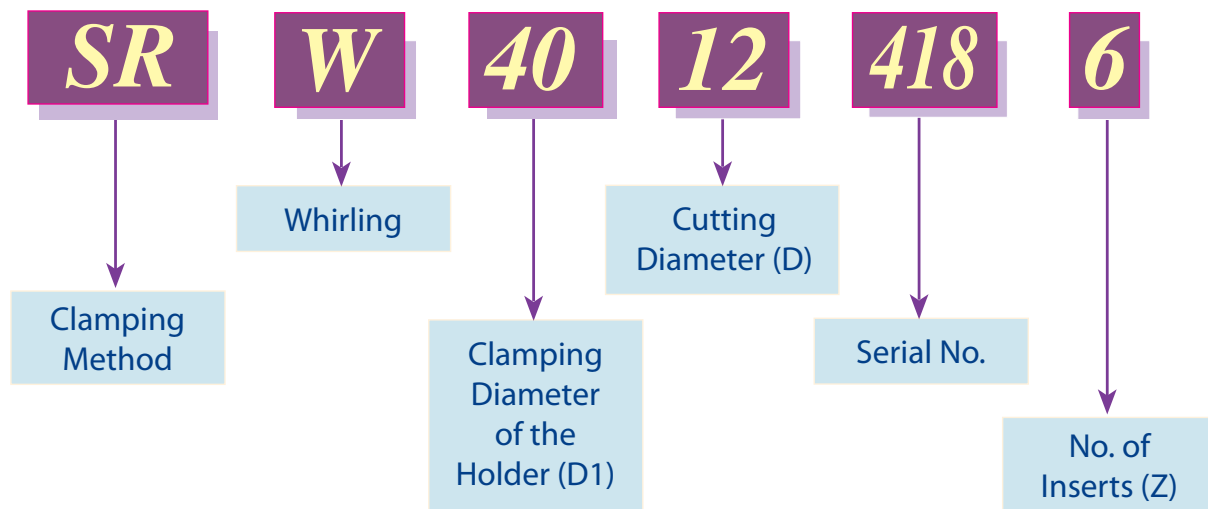
This method enables fast and accurate production of special threads.
Used for medical components such as implants, bone screws and small parts.

- Enables production of small diameter long threads on Swiss Type machines.
- Short machining time - one pass thread forming is needed.
- Very high surface quality and accurate geometry.
- Long tool life, short time tool set-up and insert changing.
- One toolholder can be used for various applications.
- All toolholders are standard stock items.
- Inserts are made for each application as a special item.
- Short delivery time for each application.
- The toolholders are designed according to different machine types and manufacturers.
- Whirling toolholders hold 3/5/6/8 Inserts.
- The unique clamping provides high indexability.
- Special adaptors for machine heads are available as stock items.

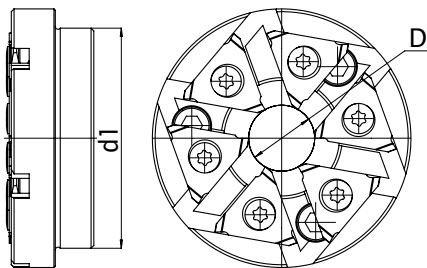
CARBIDE GRADE

BMA - PVD TiALN coated submicrograin for stainless steel, exotic materials and medical parts.

Product Identification

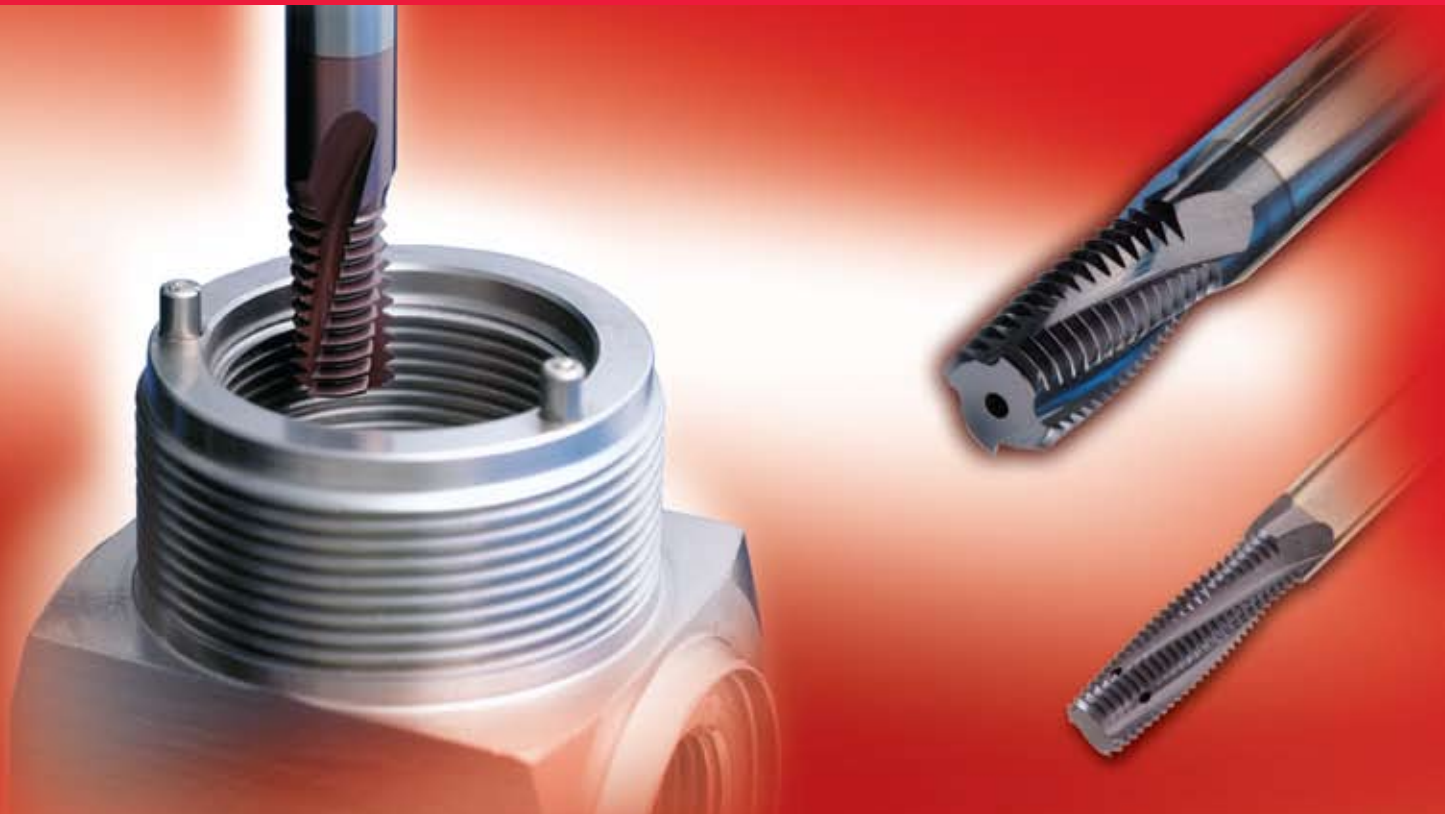


Toolholders & Adaptors



Machine		Whirling Holder Ordering Code	Adaptor Ordering Code	Z	D	d1	Insert Size	Insert Screw	Torx Key
Type	Model								
Star	SV12 / SV20	SRW4012 418 - 6	-	6	12	40	16	SW16	KW16
		SRW4012 424 - 8	WA4012 537	8			11	SW11	KW11
	SR20 / ECAS20	SRW4012 419 - 6	-	6			16	SW16	KW16
		SRW4012 425 - 8	WA4012 439	8			11	SW11	KW11
Citizen	M12 / M16	SRW4512 422 - 6	-	6	12	45	16	SW16	KW16
		SRW4512 426 - 8	WA4512 443	8			11	SW11	KW11
	M20 / M32	SRW4512 423 - 6	-	6			16	SW16	KW16
		SRW4512 427 - 8	WA4512 536	8			11	SW11	KW11
Tornos	Deco 13 / 20	SRW4012 420 - 6	-	6	12	40	16	SW16	KW16
Traub	TNL26 / TNK36	SRW4116 421 - 6	-	6	16	41	16	SW16	KW16
Hanwha	SL26HPD	SRW4012 416 - 3	-	3	12	40	16	SW16	KW16
Maier	ML20D	SRW4012 417 - 5	-	5	12	40	16	SW16	KW16

Mill-Thread Solid Carbide



Advantages of Mill-Thread Solid Carbide

- Thread is generated in one pass.
- Spiral flutes allow smooth cutting action.
- Shorter machining time due to multi, 3 to 6, flutes.
- 2.2 mm and up cutting diameter.
- Threads up to shoulder in blind holes.
- Longer tool life due to special multi-layer coating.
- Same tool can be used for a variety of materials.
- Excellent surface finish.
- Low cutting pressure allows thin wall machining.
- Same tool used for R.H. and L.H. threads.

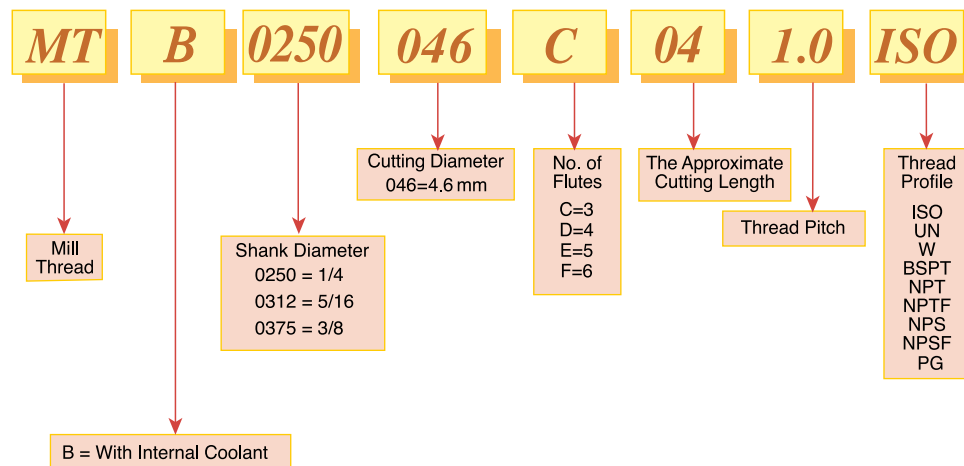
Thread Mills with Internal Coolant

- Coolant fluid washes the chips out of hole
- Increased tool life

MTB - Thread Mills with internal coolant bore for blind holes

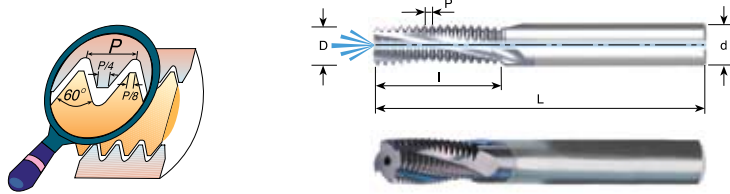
Product Identification

Mill-Thread Solid Carbide Ordering Codes



Mill - Thread Solid Carbide

ISO With internal coolant bore Tools for Internal Thread



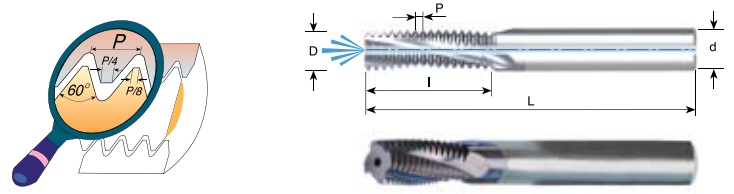
Pitch mm	M coarse	M fine mm	Ordering Code	d	D	No. of Flutes	I	L
0.5		∅ ≥ 5	MTB0250C04 0.5 ISO	1/4	.150	3	.41	2.5
0.7	M 4	∅ ≥ 5	MTB0250C02 0.7 ISO	1/4	.122	3	.29	2.5
0.75		∅ ≥ 6	MTB0250C04 0.75 ISO	1/4	.177	3	.40	2.5
0.8	M 5	∅ ≥ 6	MTB0250C03 0.8 ISO	1/4	.150	3	.36	2.5
1.0	M 6	∅ ≥ 7	MTB0250C04 1.0 ISO	1/4	.181	3	.41	2.5
1.0	M 6	∅ ≥ 7	MTB0250C06 1.0 ISO	1/4	.181	3	.60	2.5
1.0		∅ ≥ 9	MTB0250C05 1.0 ISO	1/4	.250	3	.50	2.5
1.0		∅ ≥ 10	MTB0312D06 1.0 ISO	5/16	.312	4	.65	2.5
1.0		∅ ≥ 12	MTB0375D09 1.0 ISO	3/8	.375	4	.96	3.0
1.25	M 8	∅ ≥ 10	MTB0250C05 1.25 ISO	1/4	.250	3	.57	2.5
1.25	M 8	∅ ≥ 10	MTB0250C07 1.25 ISO	1/4	.250	3	.76	2.5
1.5	M10	∅ ≥ 12	MTB0312C06 1.5 ISO	5/16	.307	3	.67	2.5
1.5	M10	∅ ≥ 12	MTB0312C09 1.5 ISO	5/16	.307	3	.98	2.5
1.5		∅ ≥ 14	MTB0375D08 1.5 ISO	3/8	.375	4	.86	3.0
1.5		∅ ≥ 16	MTB0500D10 1.5 ISO	1/2	.500	4	1.04	4.0
1.5		∅ ≥ 20	MTB0625F13 1.5 ISO	5/8	.625	6	1.33	4.0
1.75	M12	∅ ≥ 12	MTB0375C07 1.75 ISO	3/8	.354	3	.79	3.0
1.75	M12	∅ ≥ 12	MTB0375C11 1.75 ISO	3/8	.354	3	1.14	3.0
2.0	M14	∅ ≥ 15	MTB0375C10 2.0 ISO	3/8	.375	3	1.06	3.0
2.0	M16	∅ ≥ 17	MTB0500D10 2.0 ISO	1/2	.465	4	1.06	4.0
2.0	M16	∅ ≥ 17	MTB0500D15 2.0 ISO	1/2	.465	4	1.54	4.0
2.0		∅ ≥ 26	MTB0750F16 2.0 ISO	3/4	.750	6	1.61	4.0
2.5	M20	∅ ≥ 22	MTB0625E13 2.5 ISO	5/8	.591	5	1.33	4.0
2.5	M20	∅ ≥ 22	MTB0625E19 2.5 ISO	5/8	.591	5	1.92	4.0
3.0	M24	∅ ≥ 25	MTB0750D15 3.0 ISO	3/4	.709	4	1.59	4.0
3.0	M27	∅ ≥ 27	MTB0750D17 3.0 ISO	3/4	.750	4	1.71	4.0

Order example: MTB 0312C06 1.5 ISO MT7

For small thread mills see page 29



UN With internal coolant bore Tools for Internal Thread



Pitch TPI	UNC	UNF	UNEF	Ordering Code	d	D	No. of Flutes	I	L
32	8	10	12	MTB0250C02 32 UN	1/4	.126	3	.27	2.5
32			5/16	MTB0250C05 32 UN	1/4	.250	3	.58	2.5
32			3/8	MTB0312D07 32 UN	5/16	.312	4	.74	2.5
28		1/4		MTB0250C04 28 UN	1/4	.197	3	.44	2.5
28			7/16-1/2	MTB0250C05 28 UN	1/4	.250	3	.56	2.5
24		5/16		MTB0312C05 24 UN	5/16	.260	3	.56	2.5
24		3/8	9/16-5/8	MTB0312D08 24 UN	5/16	.312	4	.81	2.5
20	1/4			MTB0250C04 20 UN	1/4	.185	3	.48	2.5
20		7/16		MTB0312C08 20 UN	5/16	.312	3	.83	2.5
20		1/2		MTB0375D08 20 UN	3/8	.375	4	.88	3.0
20			3/4-1	MTB0500E10 20 UN	1/2	.500	5	1.07	4.0
18	5/16			MTB0250C05 18 UN	1/4	.220	3	.58	2.5
18		9/16-5/8	1 1/8-1 5/8	MTB0500D10 18 UN	1/2	.445	4	1.03	4.0
16	3/8			MTB0312C06 16 UN	5/16	.264	3	.66	2.5
16		3/4		MTB0500D12 16 UN	1/2	.500	4	1.22	4.0
14	7/16			MTB0312C08 14 UN	5/16	.303	3	.82	2.5
14		7/8		MTB0625E14 14 UN	5/8	.625	5	1.46	4.0
13	1/2			MTB0375C08 13 UN	3/8	.362	3	.89	3.0
12	9/16			MTB0500C10 12 UN	1/2	.413	3	1.04	4.0
12		1-1 1/2		MTB0625E16 12 UN	5/8	.625	5	1.63	4.0
11	5/8			MTB0500C11 11 UN	1/2	.449	3	1.14	4.0
10	3/4			MTB0625D13 10 UN	5/8	.567	4	1.35	4.0
9	7/8			MTB0625C15 9 UN	5/8	.625	3	1.50	4.0
8	1			MTB0750D16 8 UN	3/4	.750	4	1.69	4.0
7	1 1/8-1 1/4			MTB0750D17 7 UN	3/4	.750	4	1.78	4.0

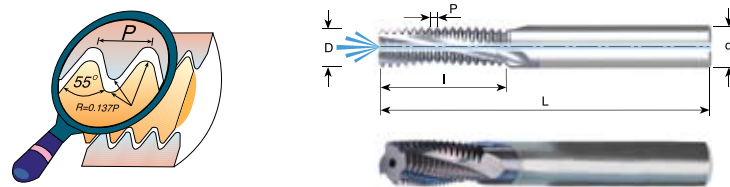
Order example: MTB 0625E14 14 UN MT7

For small thread mills see page 29



G 55° BSF, BSP

With internal coolant bore
Same Tool for Internal and External Thread

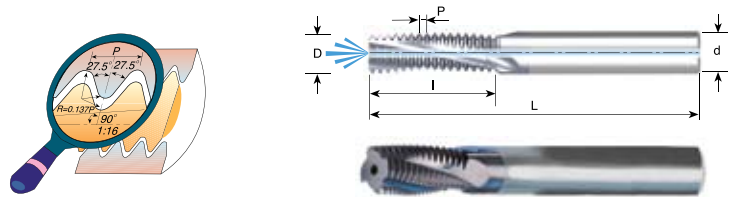


Pitch TPI	Standard	Ordering Code	d mm	D	No. of Flutes	I	L
28	G1/8	MTB08078C14 28W	8	.307	3	.56	2.5
19	G1/4-3/8	MTB1010D16 19W	10	.394	4	.66	2.9

Order example: MTB 1010D16 19 W MT7

For small thread mills see page 29

BSPT With internal coolant Same Tool for Internal and External Thread

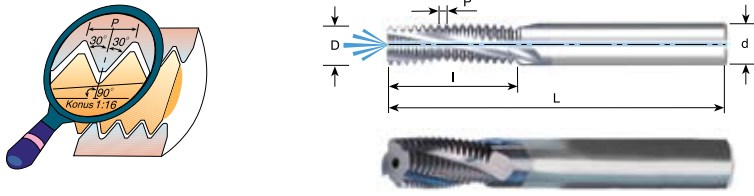


Pitch TPI	Standard	Ordering Code	d mm	D	No. of Flutes	I	L
28	RC1/8	MTB08078C14 28 BSPT	8	.307	3	.56	2.5
19	RC1/4-3/8	MTB1010D16 19 BSPT	10	.394	4	.66	2.9

Order example: MTB 08078C14 28 BSPT MT7

NPT

Same Tool for Internal and External Thread

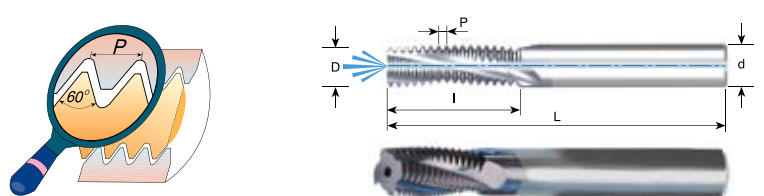


Pitch TPI	Standard	Ordering Code	d	D	No. of Flutes	I	L
27	1/8	MTB0312C04 27 NPT	5/16	.299	3	.43	2.5
18	1/4-3/8	MTB0375D06 18 NPT	3/8	.375	4	.64	3.0

Order example: MTB 0312C04 27 NPT MT7

NPS With internal coolant

Same Tool for Internal and External Thread

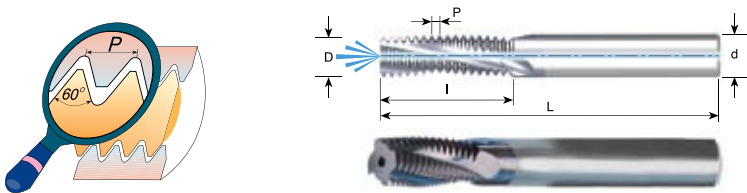


Pitch TPI	Standard	Ordering Code	d	D	No. of Flutes	I	L
27	1/8	MTB0312C04 27 NPS	5/16	.299	3	.43	2.5
18	1/4-3/8	MTB0375D06 18 NPS	3/8	.375	4	.64	3.0

Order example: MTB 0375D06 18 NPS MT7

NPSF With internal coolant

Same Tool for Internal and External Thread

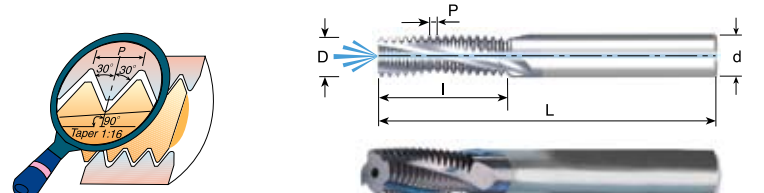


Pitch TPI	Standard	Ordering Code	d	D	No. of Flutes	I	L
27	1/8	MTB0312C04 27 NPSF	5/16	.299	3	.43	2.5
18	1/4-3/8	MTB0375D06 18 NPSF	3/8	.375	4	.64	3.0

Order example: MTB 0312C04 27 NPSF MT7

NPTF With internal coolant

Same Tool for Internal and External Thread

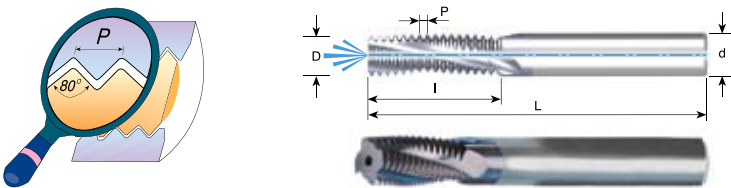


Pitch TPI	Standard	Ordering Code	d	D	No. of Flutes	I	L
27	1/8	MTB0312C04 27 NPTF	5/16	.299	3	.43	2.5
18	1/4-3/8	MTB0375D06 18 NPTF	3/8	.375	4	.64	3.0

Order example: MTB 0312C04 27 NPTF MT7

PG With internal coolant

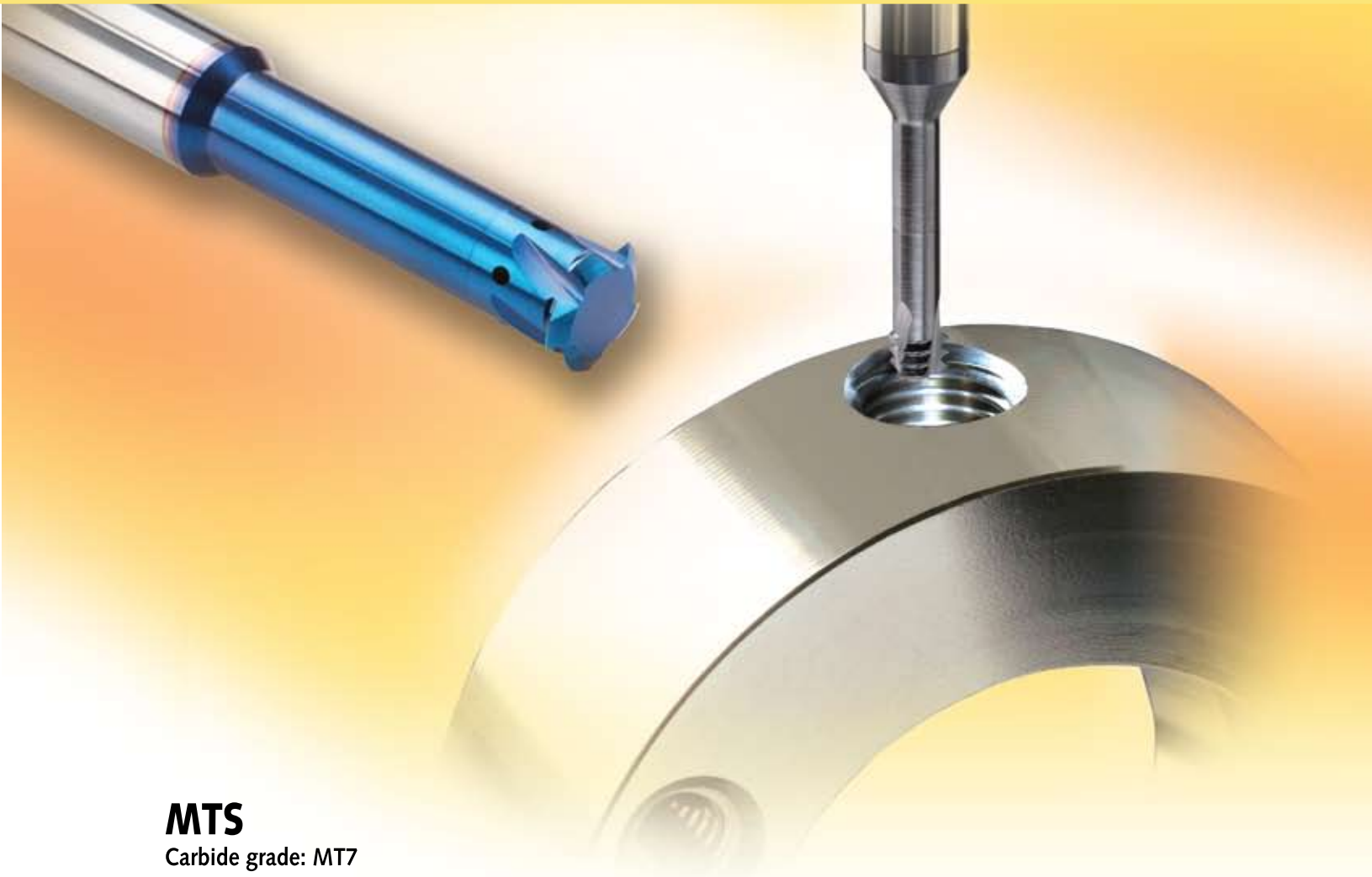
Same Tool for Internal and External Thread



Pitch TPI	Standard	Ordering Code	d mm	D	No. of Flutes	I	L
20	Pg 7	MTB1010D19 20 PG	10	.39	4	.78	2.9
18	Pg 9, 11, 13.5, 16	MTB1212D20 18 PG	12	.47	4	.81	3.3
16	Pg 21, 29, 36, 42, 48	MTB1212D23 16 PG	12	.47	4	.91	3.3

Order example: MTB 1212 D20 18 PG MT7

Mini Mill-Thread



MTS

Carbide grade: MT7

Sub-Micron grade with Titanium Aluminum Nitride multi-layer coating (ISO K10 - K20). To be run at medium to high cutting speeds. General purpose for all materials.

Advantages:

Specially designed solid-carbide thread mills for the production of internal threads in very small bores.

Due to the unique tool design, accurate geometries and high quality sub-micron carbide grade with Titanium Aluminum Nitride coating, the following are achieved:

- Threading from M1 x 0.25.
- Working in high cutting speed.
- Short machining time.
- Low cutting forces thanks to the short profile.
- No broken taps.

MTI

For threading deep parts

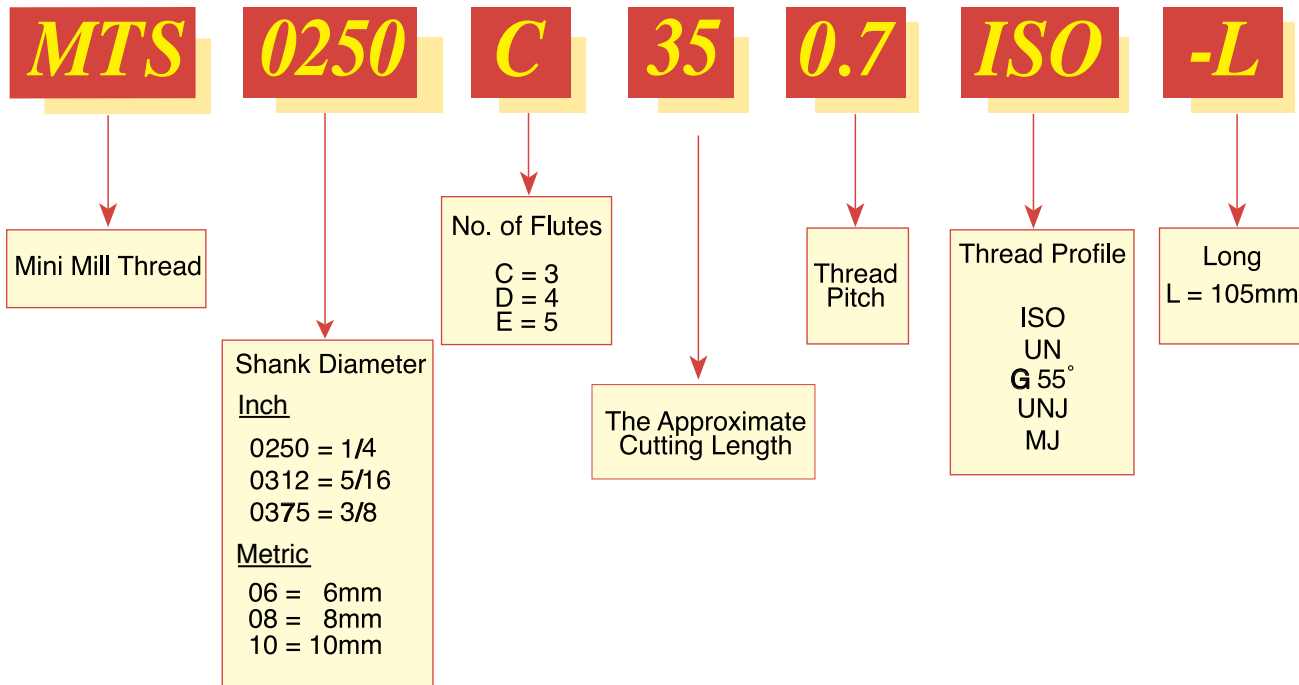
Carbide grade: MT8 Sub-micron grade with advanced PVD triple coating (ISO K10-K20). Extremely high heat resistant and smooth cutting operation, for high performance, and normal machining conditions. General purpose for all materials.

Advantages:

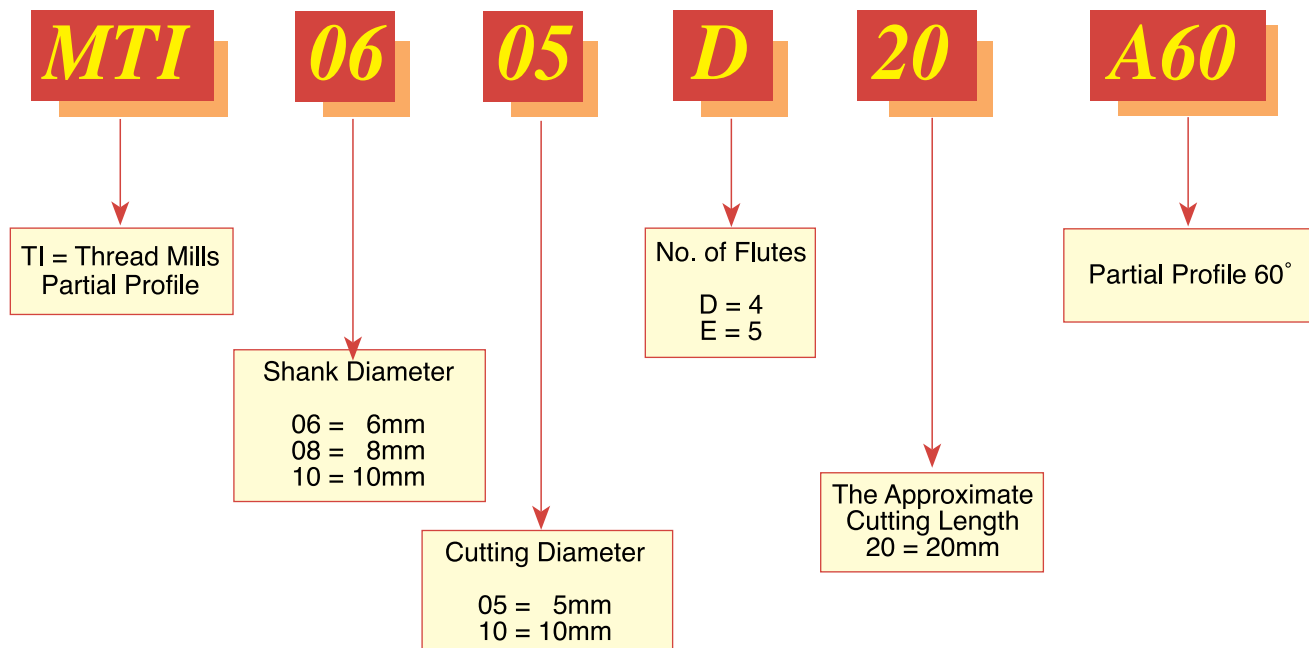
- Enables machining in deep holes.
- Same tool can produce a wide range of threads and pitches.
- Same tool can produce both External and Internal threads.
- Coolant through the flutes is very effective for deep holes.
- Spiral flutes allow smooth cutting action.
- Shorter machining time due to multi, 3 to 5, flutes.
- Longer tool life due to special triple coating.

Product Identification

Mini Mill-Thread MTS Ordering Codes



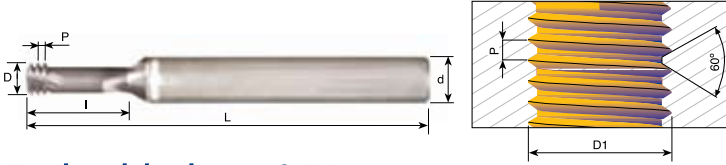
Mini Mill-Thread MTI Ordering Codes



Mini Mill - Thread

ISO

Tools for Internal Thread



For thread depth up to 2xD1

Pitch mm	D1	Ordering Code	d	D	No. of Flutes	I	L
0.25	M1	MTS03007C2 0.25 ISO	3mm	.028	3	.10	1.5
0.25	M1.2	MTS03009C3 0.25 ISO	3mm	.035	3	.12	1.5
0.4	M2	MTS0250C18 0.4 ISO	1/4	.061	3	.18	2.5
0.4	M2	MTS06016C4 0.4 ISO-L	6mm	.061	3	.18	4.1
0.45	M2.2	MTS0250C20 0.45 ISO	1/4	.065	3	.20	2.5
0.45	M2.5	MTS0250C22 0.45 ISO	1/4	.077	3	.22	2.5
0.45	M2.5	MTS0602C5 0.45 ISO-L	6mm	.077	3	.22	4.1
0.5	M3	MTS0250C26 0.5 ISO	1/4	.093	3	.26	2.5
0.5	M3	MTS06024C6 0.5 ISO-L	6mm	.093	3	.26	4.1
0.6	M3.5	MTS0250C30 0.6 ISO	1/4	.108	3	.30	2.5
0.7	M4	MTS0250C35 0.7 ISO	1/4	.122	3	.35	2.5
0.8	M5	MTS0250C49 0.8 ISO	1/4	.150	3	.49	2.5
1.0	M6	MTS0250C55 1.0 ISO	1/4	.183	3	.55	2.5
1.25	M8	MTS0250C71 1.25 ISO	1/4	.234	3	.71	2.5
1.5	M10	MTS0312C91 1.5 ISO	5/16	.307	3	.91	2.5
1.75	M12	MTS0375C10 1.75 ISO	3/8	.354	3	1.02	3.0
2.0	M16	MTS0500D13 2.0 ISO	1/2	.465	4	1.38	3.5
2.5	M20	MTS0625E16 2.5 ISO	5/8	.591	5	1.69	4.0

For thread depth up to 3xD1

Pitch mm	D1	Ordering Code	d	D	No. of Flutes	I	L
* 0.3	M1.4	MTS03011C4 0.3 ISO	3mm	.041	3	.16	1.5
* 0.35	M1.6	MTS03012C5 0.35 ISO	3mm	.047	3	.19	1.5
* 0.4	M2	MTS03016C6 0.4 ISO	3mm	.061	3	.24	1.5
0.45	M2.5	MTS0250C30 0.45 ISO	1/4	.077	3	.30	2.5
0.5	M3	MTS0250C37 0.5 ISO	1/4	.093	3	.37	2.5
0.5	M3	MTS06024C9 0.5 ISO-L	6mm	.093	3	.37	4.1
0.7	M4	MTS0250C49 0.7 ISO	1/4	.122	3	.49	2.5
0.7	M4	MTS06031C12 0.7 ISO-L	6mm	.122	3	.49	4.1
0.8	M5	MTS0250C63 0.8 ISO	1/4	.150	3	.63	2.5
0.8	M5	MTS06038C16 0.8 ISO-L	6mm	.150	3	.63	4.1
1.0	M6	MTS0250C79 1.0 ISO	1/4	.183	3	.79	2.5
1.0	M6	MTS06047C20 1.0 ISO-L	6mm	.183	3	.79	4.1
1.25	M8	MTS0250C94 1.25 ISO	1/4	.234	3	.94	2.5

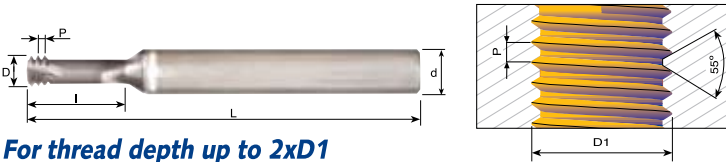
Order example: MTS 0250C26 0.5 ISO MT7

*Specially designed for the production of dental implants

- Machining Titanium, surgical stainless steels and hardened materials up to 45 HRC.
- Suitable for high speed air turbine machines (30,000-40,000 RPM) and for standard machining centers (6,000 RPM and higher).
- Can also be used for general purpose threading.

G 55° BSW, BSP

Same Tool for Internal and External Thread



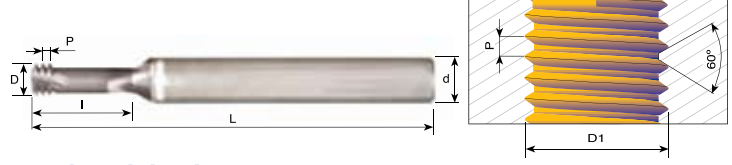
For thread depth up to 2xD1

Pitch TPI	Standard	Ordering code	d mm	D	No. of Flutes	I	L
28	G 1/8	MTS08078C19 28 W	8	.31	3	0.77	2.5
19	G 1/4 - 3/8	MTS1010D30 19 W	10	.39	4	1.18	2.9
14	G 1/2 - 7/8	MTS1212D37 14 W	12	.47	4	1.46	3.3
11	G ≥ 1	MTS1616D44 11 W	16	.63	4	1.73	4.1

Order example: MTS 1212D37 14 W MT7

UN

Tools for Internal Thread



For thread depth up to 2xD1

Pitch TPI	UNC	UNF	Ordering Code	d	D	No. of Flutes	I	L
72		1	MTS0250C15 72 UN	1/4	.057	3	.15	2.5
64	1	2	MTS0250C15 64 UN	1/4	.055	3	.15	2.5
56	2	3	MTS0250C17 56 UN	1/4	.065	3	.17	2.5
48	3	4	MTS0250C20 48 UN	1/4	.075	3	.20	2.5
40	4		MTS0250C25 40 UN	1/4	.083	3	.25	2.5
40	4	6	MTS06021C6 40 UN-L	6mm	.083	3	.25	4.1
40	5	6	MTS0250C28 40 UN	1/4	.096	3	.28	2.5
36		8	MTS0250C35 36 UN	1/4	.130	3	.35	2.5
32	6		MTS0250C28 32 UN	1/4	.100	3	.28	2.5
32	6		MTS06025C7 32 UN-L	6mm	.100	3	.28	4.1
32	8		MTS0250C37 32 UN	1/4	.126	3	.37	2.5
32	8		MTS06032C9 32 UN-L	6mm	.126	3	.37	4.1
32		10	MTS0250C41 32 UN	1/4	.146	3	.41	2.5
28		12	MTS0250C43 28 UN	1/4	.165	3	.43	2.5
28		1/4	MTS0250C57 28 UN	1/4	.197	3	.57	2.5
24	10,12		MTS0250C42 24 UN	1/4	.138	3	.42	2.5
24		5/16, 3/8	MTS0312C67 24 UN	5/16	.260	3	.67	2.5
20	1/4		MTS0250C55 20 UN	1/4	.187	3	.55	2.5
20		7/16	MTS0312C98 20 UN	5/16	.312	3	.98	2.5
18	5/16		MTS0250C67 18 UN	1/4	.236	3	.67	2.5
18	5/8		MTS0500D14 18 UN	1/2	.500	4	1.38	3.5
16	3/8		MTS0312C87 16 UN	5/16	.264	3	.87	2.5
14	7/16		MTS0312C98 14 UN	5/16	.303	3	.98	2.5
13	1/2		MTS0375C10 13 UN	3/8	.362	3	1.08	3.0
12	9/16		MTS0500C12 12 UN	1/2	.413	3	1.24	3.5
11	5/8		MTS0500C13 11 UN	1/2	.449	3	1.36	3.5
10	3/4		MTS0625D16 10 UN	5/8	.567	4	1.63	4.0

Order example: MTS 0250C28 40UN MT7

For thread depth up to 3xD1

Pitch TPI	UNC	UNF	Ordering Code	d	D	No. of Flutes	I	L
80		0	MTS0250C16 80 UN	1/4	.045	3	.16	2.5
* 72		1	MTS03015C6 72 UN	3mm	.057	3	.24	1.5
56	2	3	MTS0250C26 56 UN	1/4	.065	3	.26	2.5
56	2	3	MTS06016C6 56 UN-L	6mm	.065	3	.26	4.1
40	4		MTS0250C31 40 UN	1/4	.083	3	.31	2.5
40	4		MTS06021C8 40 UN-L	6mm	.083	3	.31	4.1
40	5	6	MTS0250C38 40 UN	1/4	.096	3	.38	2.5
32	6		MTS0250C40 32 UN	1/4	.100	3	.41	2.5
32	6		MTS06025C10 32 UN-L	6mm	.100	3	.41	4.1
32	8		MTS0250C49 32 UN	1/4	.126	3	.49	2.5
32	8		MTS06032C12 32 UN-L	6mm	.126	3	.49	4.1
32		10	MTS0250C59 32 UN	1/4	.146	3	.59	2.5
32		10	MTS06037C15 32 UN-L	6mm	.146	3	.59	4.1
28		1/4	MTS0250C75 28 UN	1/4	.197	3	.75	2.5
24		5/16, 3/8	MTS0312C94 24 UN	5/16	.260	3	.94	2.5
20	1/4		MTS0250C75 20 UN	1/4	.187	3	.75	2.5
20	1/4		MTS06047C19 20 UN-L	6mm	.187	3	.75	4.1
18	5/16		MTS0250C91 18 UN	1/4	.236	3	.91	2.5

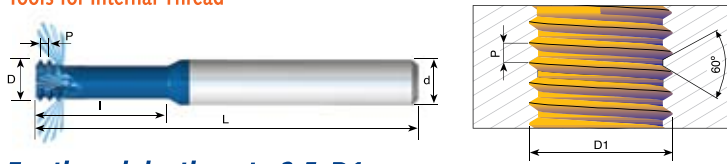
Order example: MTS 0250C26 56 UN MT7

*Specially designed for the production of dental implants

- Machining Titanium, surgical stainless steels and hardened materials up to 45 HRC.
- Suitable for high speed air turbine machines (30,000-40,000 RPM) and for standard machining centers (6,000 RPM and higher).
- Can also be used for general purpose threading.

UNJ With internal coolant through the flutes

Tools for Internal Thread



For thread depth up to 2.5xD1

Pitch TPI	UNJC	UNJF	Ordering Code	d mm	D	No. of Flutes	I	L
*32	8	10	* MTS06033C10 32 UNJ	6	.130	3	.41	2.3
28		1/4	MTS08051C16 28 UNJ	8	.201	3	.63	2.5
24		5/16, 3/8	MTS08067C20 24 UNJ	8	.264	3	.79	2.5
*20	1/4		* MTS06049C16 20 UNJ	6	.193	3	.63	2.3
20		7/16	MTS0808C28 20 UNJ	8	.315	3	1.10	2.5
18	5/16	9/16	MTS08061C20 18 UNJ	8	.242	3	.79	2.5
16	3/8		MTS08069C24 16 UNJ	8	.272	3	.94	2.5
14	7/16		MTS08079C25 14 UNJ	8	.311	3	.98	2.5
13	1/2		MTS10094C27 13 UNJ	10	.370	3	1.08	2.9

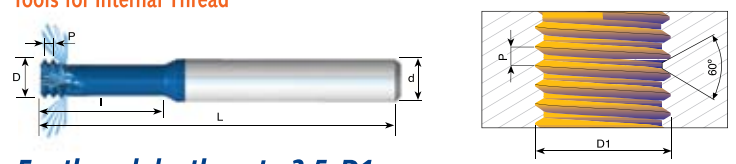
* Cutters without coolant

Order example: MTS 06049C16 20 UNJ MT8

Carbide grade MT8 Sub Micron grade with advanced PVD triple coating (ISO K 10-K20). Extremely high resistant and smooth cutting operation, for high performance, and normal machining conditions. General purpose for all materials

MJ With internal coolant through the flutes

Tools for Internal Thread



For thread depth up to 2.5xD1

Pitch mm	D1	Ordering Code	d mm	D	No. of Flutes	I	L
* 0.7	MJ4	* MTS06032C10 0.7 MJ	6	.126	3	.39	2.3
* 0.8	MJ5	* MTS06039C12 0.8 MJ	6	.154	3	.49	2.3
* 1.0	MJ6	* MTS06048C15 1.0 MJ	6	.189	3	.59	2.3
1.25	MJ8	MTS08061C20 1.25 MJ	8	.240	3	.79	2.5
1.5	MJ10	MTS0808C25 1.5 MJ	8	.315	3	.98	2.5
1.75	MJ12	MTS10092C30 1.75 MJ	10	.362	3	1.18	2.9
2.0	MJ14, MJ16	MTS1010C35 2.0 MJ	10	.394	3	1.38	2.9

* Cutters without coolant

Order example: MTS 06048C15 1.0 MJ MT8

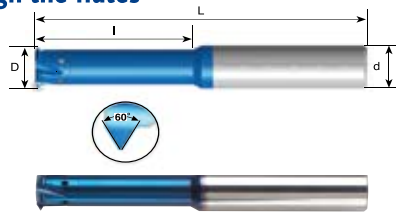
Carbide grade MT8 Sub Micron grade with advanced PVD triple coating (ISO K 10-K20). Extremely high resistant and smooth cutting operation, for high performance, and normal machining conditions. General purpose for all materials

MTI - For threading deep parts

Partial Profile 60°

With internal coolant through the flutes

Same Tool for Internal and External Thread



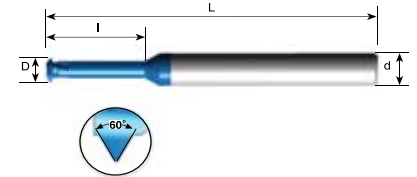
For threading deep parts

Pitch mm	Pitch TPI	Thread Dia. (min.)	Ordering Code	d mm	D	No. of Flutes	I	L
Int. 0.5 - 0.8	56-28	ø≥6	MTI0605D20 A60	6	.197	4	.79	2.3
Ex. 0.4 - 0.8	64-32	ø≥9	MTI0808D28 A60	8	.315	4	1.10	2.5
		ø≥13	MTI1212E38 A60	12	.472	5	1.50	3.3
Int. 1.0 - 1.75	28-14	ø≥10	MTI0808D30 A60	8	.315	4	1.18	2.5
Ex. 0.8 - 1.5	32-16	ø≥12	MTI1010D35 A60	10	.394	4	1.38	2.9
		ø≥14	MTI1212E39 A60	12	.472	5	1.54	3.3
Int. 2.0 - 3.0	13- 8	ø≥16	MTI1212E40 A60	12	.472	5	1.57	3.3
Ex. 1.75-2.5	15-10	ø≥18	MTI1614E45 A60	16	.551	5	1.77	4.0
		ø≥20	MTI1616E50 A60	16	.630	5	1.97	4.0

Order example: MTI 0808D28 A60 MT8

ISO

Tools for Internal Thread



For thread depth up to 3.5xD1

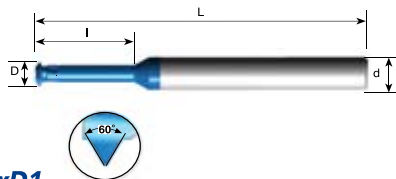
Pitch mm	M Coarse	M fine	Ordering Code	d mm	D	No. of Flutes	I	L
0.25	M1 x 0.25		MTI03007C3 0.25 ISO	3	.028	3	.14	1.5
0.25	M1.2 x 0.25	M1.4 x 0.25 M1.6 x 0.25	MTI03009C4 0.25 ISO	3	.035	3	.17	1.5
0.3	M1.4 x 0.3		MTI03011C5 0.3 ISO	3	.041	3	.20	1.5
0.35	M1.6 x 0.35	M2 x 0.35 M2.2 x 0.35	MTI03012C6 0.35 ISO	3	.047	3	.22	1.5
0.4	M2 x 0.4		MTI03012C7 0.4 ISO	3	.061	3	.28	1.5
0.5	M3 x 0.5	M3.5 x 0.5 M4 x 0.5	MTI03024C10 0.5 ISO	3	.083	3	.42	1.5

Order example: MTI 03012C6 0.35 ISO MT9

Carbide grade MT9 with advanced PVD triple coating (ISO K 10-K20).

UN

Tools for Internal Thread



For thread depth up to 3.5xD1

Pitch TPI	UNC	UNF	Ordering Code	d mm	D	No. of Flutes	I	L
80		0	MTI03012C5 80 UN	3	.045	3	.22	1.5
72		1	MTI03015C7 72 UN	3	.057	3	.26	1.5
56	2	3	MTI03016C9 56 UN	3	.065	3	.35	1.5
40	4		MTI03021C10 40 UN	3	.083	3	.40	1.5

Order example: MTI 03016C9 56 UN MT9

Carbide grade MT9 with advanced PVD triple coating (ISO K 10-K20).



Carmex is pioneer in offering solid carbide thread mills tools designed specifically for the machining of hardened materials up to 62HRc.

These tools provide high performance, improved cut and an excellent surface finish.

Mini Mill - Thread

Carbide grade: MT9

Sub-micron carbide grade with advanced Titanium Aluminium Nitride coating.

- Threading from M1.4 x 0.3
- Perfect solution for the Die and Mold industry
- Working at high cutting speeds
- Short machining time
- Low cutting forces thanks to the short profile

MTH

Carmex provide new innovative mill thread solid carbide tools for machining:

- Hardened steels and cast iron up to 62 HRc.
- High temperature alloys.
- Titanium alloys.
- Super Alloys (Hastelloy, Inconel, Nickel Base Alloys).

Carbide grade: MT9

Ultra fine sub-micron grade with Advanced PVD Triple Coating

Principle

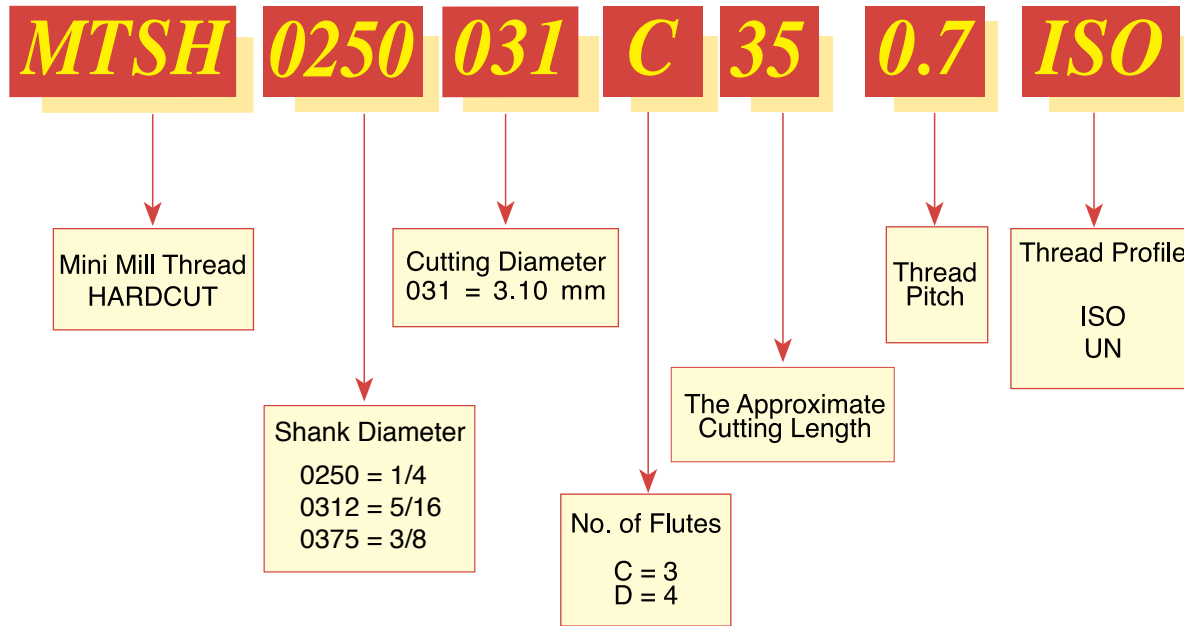
The tools provide the possibility to machine materials with a higher tensile strength and hardness using relatively high cutting data.

Advantages

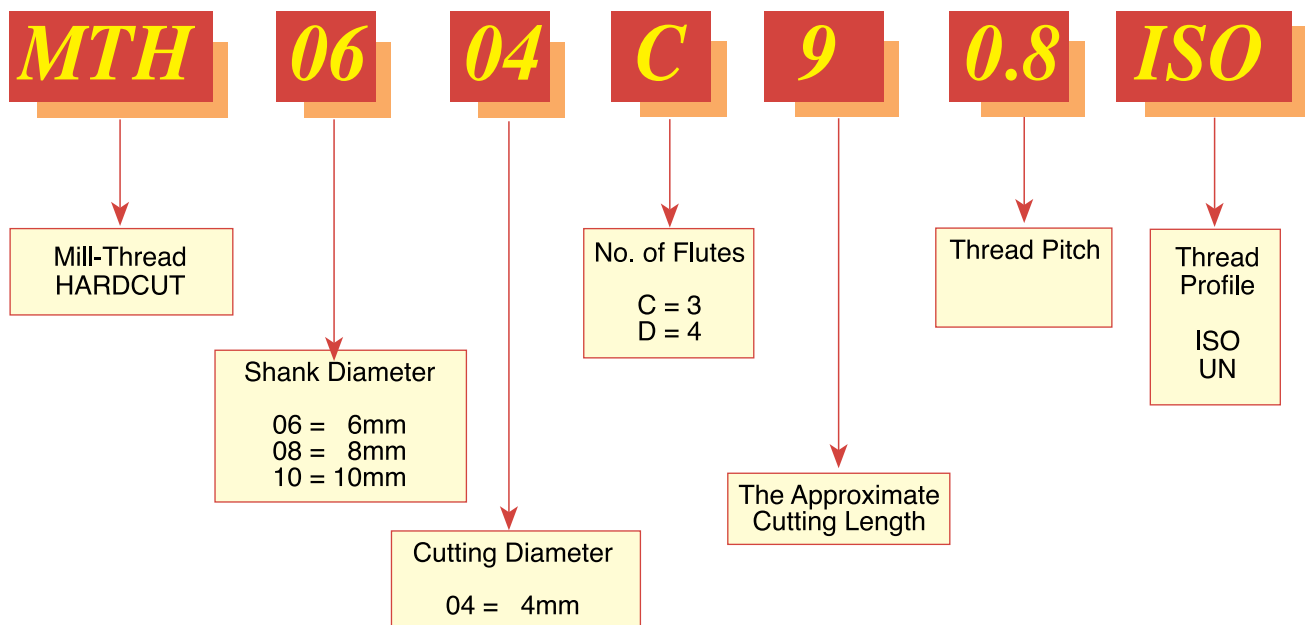
- Same tool performs thread milling and chamfering - saves machining time.
- Increased cutting diameter - better rigidity and stability.
- Coating provides high wear and heat resistance.
- Ultra fine grade - dedicated for hardened materials.
- Short chips are produced, insure high process security.
- Short cycle time - increases productivity.
- Thread length up to 2xD.

Product Identification

Mini Mill-Thread MTSH Type Ordering Codes

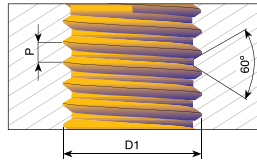
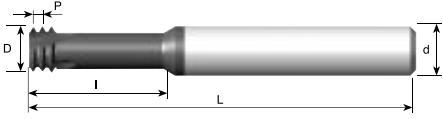


MTH Type Ordering Codes



ISO

Tools for Internal Thread



For thread depth up to 2xD1

Left hand cutting
For CNC code use M04

Pitch mm	D1	Ordering Code	d	D	No. of Flutes	I	L
0.4	M2	MTSH0250C18 0.4 ISO	1/4	.061	3	.18	2.5
0.45	M2.2	MTSH0250C20 0.45 ISO	1/4	.065	3	.20	2.5
0.45	M2.5	MTSH0250C22 0.45 ISO	1/4	.077	3	.22	2.5
0.5	M3	MTSH0250C26 0.5 ISO	1/4	.093	3	.26	2.5
0.6	M3.5	MTSH0250C30 0.6 ISO	1/4	.108	3	.30	2.5
0.7	M4	MTSH0250C35 0.7 ISO	1/4	.122	3	.35	2.5
0.8	M5	MTSH0250C49 0.8 ISO	1/4	.150	3	.49	2.5
1.0	M6	MTSH0250C55 1.0 ISO	1/4	.183	3	.55	2.5
1.25	M8	MTSH0250C71 1.25 ISO	1/4	.234	3	.71	2.5
1.5	M10	MTSH0312C91 1.5 ISO	5/16	.307	3	.91	2.5
1.75	M12	MTSH0375C10 1.75 ISO	3/8	.354	3	1.02	3.0
2.0	M16	MTSH12118D35 2.0 ISO	12mm	.465	4	1.38	3.3

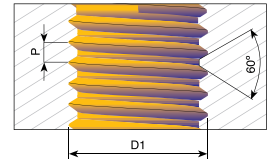
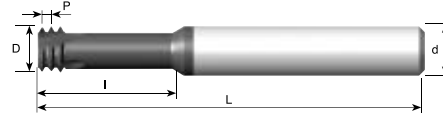
For thread depth up to 3xD1

Pitch mm	D1	Ordering Code	d	D	No. of Flutes	I	L
0.3	M1.4	MTSH03011C4 0.3 ISO	3mm	.041	3	.16	1.5
0.35	M1.6	MTSH03012C5 0.35 ISO	3mm	.047	3	.19	1.5
0.4	M2	MTSH03016C6 0.4 ISO	3mm	.061	3	.24	1.5
0.45	M2.5	MTSH0602C7 0.45 ISO	1/4	.077	3	.30	2.5
0.5	M3	MTSH06024C9 0.5 ISO	1/4	.093	3	.37	2.5
0.7	M4	MTSH06031C12 0.7 ISO	1/4	.122	3	.49	2.5
0.8	M5	MTSH06038C16 0.8 ISO	1/4	.150	3	.63	2.5
1.0	M6	MTSH06047C20 1.0 ISO	1/4	.183	3	.79	2.5
1.25	M8	MTSH0606C24 1.25 ISO	1/4	.234	3	.94	2.5

Order example: MTSH 0250C35C 0.7 ISO MT9

UN

Tools for Internal Thread



For thread depth up to 2xD1

Left hand cutting
For CNC code use M04

Pitch TPI	UNC	UNF	Ordering Code	d	D	No. of Flutes	I	L
72		1	MTSH0250C15 72 UN	1/4	.057	3	.15	2.5
64	1	2	MTSH0250C15 64 UN	1/4	.055	3	.15	2.5
56	2	3	MTSH0250C17 56 UN	1/4	.065	3	.17	2.5
48	3	4	MTSH0250C20 48 UN	1/4	.075	3	.20	2.5
40	4		MTSH0250C25 40 UN	1/4	.083	3	.25	2.5
40	5	6	MTSH0250C28 40 UN	1/4	.096	3	.28	2.5
36		8	MTSH0250C35 36 UN	1/4	.130	3	.35	2.5
32	6		MTSH0250C32 32 UN	1/4	.100	3	.28	2.5
32	8		MTSH0250C37 32 UN	1/4	.126	3	.37	2.5
32		10	MTSH0250C41 32 UN	1/4	.146	3	.41	2.5
28		12	MTSH0250C43 28 UN	1/4	.165	3	.43	2.5
28		1/4	MTSH0250C57 28 UN	1/4	.197	3	.57	2.5
24	10,12		MTSH0250C42 24 UN	1/4	.138	3	.42	2.5
24		5/16, 3/8	MTSH0312C67 24 UN	5/16	.260	3	.67	2.5
20	1/4		MTSH0250C55 20 UN	1/4	.187	3	.55	2.5
20		7/16	MTSH0312C98 20 UN	5/16	.312	3	.98	2.5
18	5/16		MTSH0250C67 18 UN	1/4	.236	3	.67	2.5
18	5/8		MTS0500D14 18 UN	1/2	.500	4	1.38	3.5
16	3/8		MTSH0312C87 16 UN	5/16	.264	3	.87	2.5
14	7/16		MTSH0312C98 14 UN	5/16	.303	3	.98	2.5
13	1/2		MTSH0375C10 13 UN	3/8	.362	3	1.08	3.0
12	9/16		MTSH12105C31 12 UN	12mm	.413	3	1.24	3.3
11	5/8		MTSH12114C34 11 UN	12mm	.449	3	1.36	3.3

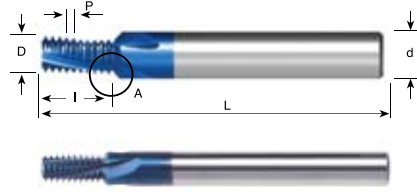
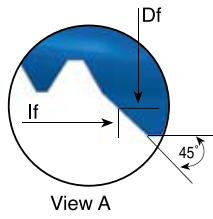
For thread depth up to 3xD1

Pitch TPI	UNC	UNF	Ordering Code	d	D	No. of Flutes	I	L
80		0	MTSH0250C16 80 UN	1/4	.045	3	.16	2.5
72		1	MTSH03015C6 72 UN	3mm	.057	3	.24	1.5
56	2	3	MTSH0250C26 56 UN	1/4	.065	3	.26	2.5
40	4		MTSH0250C31 40 UN	1/4	.083	3	.31	2.5
40	5	6	MTSH0250C38 40 UN	1/4	.096	3	.38	2.5
32	6		MTSH0250C40 32 UN	1/4	.100	3	.41	2.5
32	8		MTSH0250C49 32 UN	1/4	.126	3	.49	2.5
32		10	MTSH0250C59 32 UN	1/4	.146	3	.59	2.5
28		1/4	MTSH0250C75 28 UN	1/4	.197	3	.75	2.5
24		5/16, 3/8	MTSH0312C94 24 UN	5/16	.260	3	.94	2.5
20	1/4		MTSH0250C75 20 UN	1/4	.187	3	.75	2.5
18	5/16		MTSH0250C91 18 UN	1/4	.236	3	.91	2.5

Order example: MTSH 0250C28 40 UN MT9

ISO

Tools for Internal Thread

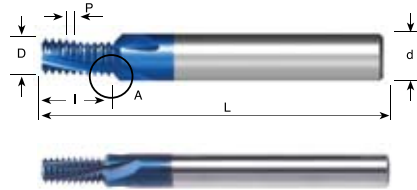
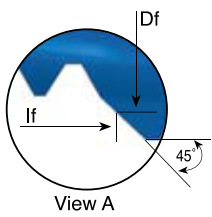


Pitch mm	M coarse	M fine	Ordering Code	d mm	D	Df	No. of Flutes	I	If	L
0.5	M3	$\varnothing \geq 4$	MTH06024C5 0.5 ISO	6	.094	.142	3	.209	.232	2.3
0.7	M4	$\varnothing \geq 5$	MTH06031C7 0.7 ISO	6	.122	.169	3	.291	.315	2.3
0.8	M5	$\varnothing \geq 6$	MTH0604C9 0.8 ISO	6	.157	.205	3	.362	.386	2.3
1.0	M6	$\varnothing \geq 7$	MTH08048D10 1.0 ISO	8	.189	.252	4	.413	.445	2.5
1.0		$\varnothing \geq 9$	MTH0806D13 1.0 ISO	8	.236	.299	4	.531	.563	2.5
1.0		$\varnothing \geq 10$	MTH1008D16 1.0 ISO	10	.315	.378	4	.650	.681	2.9
1.25	M8	$\varnothing \geq 10$	MTH0806D14 1.25 ISO	8	.236	.299	4	.567	.598	2.5
1.5	M10	$\varnothing \geq 12$	MTH1008D17 1.5 ISO	10	.315	.386	4	.681	.717	2.9
1.5		$\varnothing \geq 14$	MTH1210D21 1.5 ISO	12	.394	.465	4	.858	.894	3.3
1.75	M12	$\varnothing \geq 12$	MTH12095D20 1.75 ISO	12	.374	.453	4	.791	.831	3.3

Order example: MTH 08048D10 1.0 ISO MT9

UN

Tools for Internal Thread



Pitch TPI	UNC	UNF	UNEF	Ordering Code	d mm	D	Df	No. of Flutes	I	If	L
40	5	6		MTH06025C6 40 UN	6	.098	.146	3	.236	.260	2.3
32	6			MTH06026C5 32 UN	6	.102	.150	3	.232	.256	2.3
32	8			MTH06032C7 32 UN	6	.126	.173	3	.295	.319	2.3
32		10	12	MTH06038C9 32 UN	6	.150	.197	3	.358	.382	2.3
28		1/4		MTH08052D11 28 UN	8	.205	.268	4	.445	.476	2.5
28			7/16, 1/2	MTH12096D20 28 UN	12	.378	.441	4	.803	.835	3.3
24		5/16, 3/8	9/16, 5/8, 11/16	MTH08066D14 24 UN	8	.260	.315	4	.563	.591	2.5
20	1/4			MTH06048C12 20 UN	6	.189	.236	3	.476	.500	2.3
20		7/16, 1/2	3/4, 1	MTH12092D21 20 UN	12	.362	.425	4	.827	.858	3.3
18	5/16	9/16, 5/8	11/16	MTH08057C14 18 UN	8	.224	.295	3	.583	.618	2.5
16	3/8	3/4		MTH10074C16 16 UN	10	.291	.362	3	.657	.693	2.9
14	7/16	7/8		MTH10085D20 14 UN	10	.335	.390	4	.823	.850	2.9
13	1/2			MTH12094D22 13 UN	12	.370	.449	4	.886	.925	3.3

Order example: MTH 06048C12 20 UN MT9

Mill-Thread Technical Section

Carmex Mill-Thread catalogue and CNC programming Software

The software is available at our homepage
www.carmex.com
or on a CD-ROM



Mill-Thread Solid Carbide Grades, Speed and Feed Selection

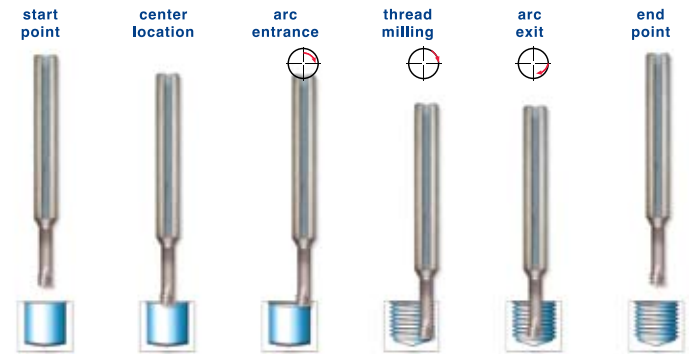
MTB type

MT7 Sub-Micron Grade with Titanium Aluminum Nitride multi-layer coating (ISO K10 - K20). This is a general purpose grade, which can be used with all materials; it should be run at medium to high cutting speeds.

ISO Standard	Material	Cutting Speed ft/min	Feed inch/tooth Cutting Diameter = D						
			0.08	0.12	0.16	0.24	0.31	0.39	0.47
P	Low and Medium Carbon Steels <0.55%C	330-820	.0012	.0016	.0016	.0024	.0028	.0032	.0037
	High Carbon Steels ≥0.55%C	360-590	.0009	.0011	.0013	.0018	.0022	.0026	.0031
	Alloy Steels, Treated Steels	300-520	.0008	.0009	.001	.0013	.0016	.0018	.0021
M	Stainless Steels - Free Cutting	200-520	.0008	.0012	.001	.0016	.0020	.0024	.0024
	Stainless Steels - Austenitic	200-390	.0008	.0008	.001	.0012	.0016	.0020	.0020
	Cast Steels	430-560	.0008	.0009	.001	.0013	.0016	.0018	.0021
K	Cast Iron	230-490	.0011	.0014	.002	.0022	.0027	.0032	.0037
N	Aluminium ≤12%Si, Copper	490-1150	.0011	.0014	.002	.0022	.0027	.0032	.0037
	Aluminium ≥12% Si	330-820	.0008	.0009	.001	.0013	.0016	.0018	.0021
	Synthetics, Duroplastics, Thermoplastics	330-1310	.0021	.0024	.003	.0032	.0038	.0043	.0049
S	Nickel Alloys, Titanium Alloys	70-260	.0009	.0009	.0010	.0010	.0011	.0012	.0013

For cutters with long cutting length reduce feed rate by 40%

Mini Mill - Thread Working Method



Mini Mill-Thread vs. Taps

Features	Mini Mill-Thread	Taps
Thread surface quality	High	Medium
Thread geometry	Very accurate	Medium
Thread tolerances	4H, 5H, 6H with std cutter	6H with standard tap, 4H with specific tap
Machining time	Same as tap or shorter	Short
Tool breakage	Almost not possible	Could happen often
Machining load	Very low	High
Range of thread diameters	Wide range of diameters	Specific tap for each diameter
Right/Left hand threading	Same cutter	Specific tap for each
Geometric shape	Full profile	Partial profile

Mini Mill - Thread MTS and MTI types

MT7 Sub-Micron Grade with Titanium Aluminum Nitride multi-layer coating (ISO K10 - K20). This is a general purpose grade, which can be used with all materials; it should be run at medium to high cutting speeds.

MT8 Sub-Micron Grade with Aluminium Titanium Nitride (AlTiN) multi-layer coating (ISO K10-K20). Extremely high heat resistant and smooth cutting operation, for high performance, and normal machining conditions. General purpose for all materials.

ISO Standard	Material	Cutting Speed ft/min	Feed inch/tooth Cutting Diameter = D													
			0.04	0.06	0.08	0.12	0.16	0.20	0.24	0.28	0.31	0.35	0.39	0.47	0.55	0.63
P	Low & Medium Carbon Steels <0.55%C	200-390	.0016	.0020	.0020	.0028	.0035	.0043	.0051	.0055	.0059	.0063	.0063	.0067	.0071	.0071
	High Carbon Steels ≥0.55%C	200-300	.0012	.0016	.0020	.0024	.0031	.0035	.0039	.0047	.0051	.0055	.0055	.0063	.0067	.0071
	Alloy Steels, Treated Steels	160-260	.0012	.0016	.0016	.0020	.0020	.0024	.0028	.0028	.0031	.0035	.0039	.0047	.0051	.0055
M	Stainless Steels - Free Cutting	230-330	.0008	.0012	.0012	.0016	.0020	.0024	.0024	.0028	.0031	.0035	.0039	.0043	.0047	.0051
	Stainless Steel-Austenitic	200-300	.0008	.0012	.0012	.0016	.0020	.0024	.0024	.0028	.0031	.0035	.0039	.0043	.0047	.0051
	Cast Steels	230-300	.0012	.0016	.0016	.0020	.0020	.0024	.0028	.0028	.0031	.0035	.0039	.0047	.0051	.0055
K	Cast Iron	130-260	.0016	.0020	.0020	.0028	.0035	.0043	.0051	.0055	.0059	.0063	.0063	.0067	.0071	.0071
N	Aluminium ≤12%Si, Copper	330-660	.0016	.0020	.0020	.0028	.0035	.0043	.0051	.0055	.0059	.0063	.0063	.0067	.0071	.0071
	Aluminium >12%Si	200-460	.0012	.0012	.0012	.0016	.0020	.0024	.0024	.0028	.0031	.0035	.0039	.0043	.0051	.0054
	Synthetics, Duroplastics, Thermoplastics	160-660	.0035	.0039	.0043	.0047	.0055	.0063	.0071	.0075	.0075	.0075	.0075	.0075	.0079	.0079
S	Nickel Alloys and Titanium Alloys	70-130	.0012	.0012	.0012	.0016	.0016	.0020	.0024	.0024	.0024	.0028	.0028	.0028	.0031	.0031

Mini Mill Thread MTSH type

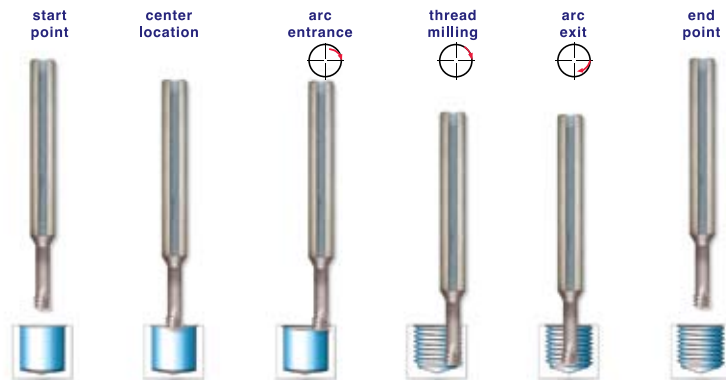
MT9 Sub - Micron carbide grade with advanced Titanium Aluminium Nitride coating.

ISO	Material	Hardness HRc	Cutting Speed ft/min	Feed inch/tooth Cutting Diameter = D											
				0.04	0.06	0.08	0.12	0.16	0.20	0.24	0.28	0.31	0.35	0.39	0.47
S	Nickel Alloys, Titanium Alloys and High Temp. Alloys		70-130	.0012	.0012	.0012	.0016	.0016	.0020	.0024	.0024	.0024	.0028	.0028	.0028
H	Hardened Steels Cast Iron	45-50	200-230	.0012	.0016	.0016	.0020	.0020	.0024	.0024	.0028	.0028	.0031	.0031	.0035
		51-55	160-200	.0008	.0012	.0012	.0016	.0016	.0020	.0020	.0024	.0024	.0028	.0028	.0031
		56-62	130-160	.0004	.0008	.0008	.0012	.0012	.0016	.0016	.0020	.0020	.0024	.0024	.0028

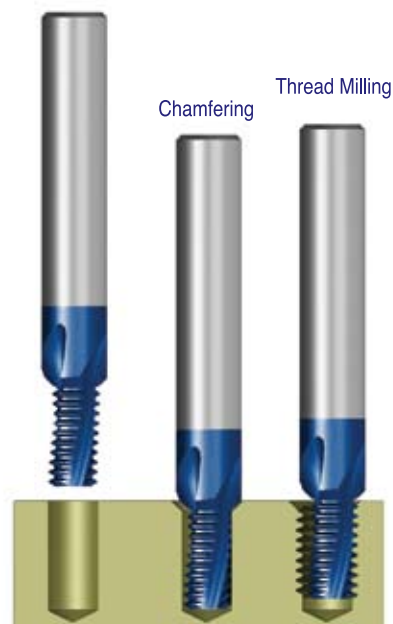
MTH type

MT9 ultra fine Sub-Micron Grade with advanced PVD triple coating.

ISO Standard	Material	Hardness HRc	Cutting Speed ft/min	Feed inch/tooth Cutting Diameter = D										
				0.10	0.12	0.16	0.20	0.24	0.28	0.31	0.35	0.39		
S	Nickel Alloys, Titanium Alloys, High Temperature Alloys		66 - 164	.0008	.0008	.0008	.0008	.0012	.0012	.0012	.0012	.0012	.0012	.0012
H	Hardened Steels, Cast Iron	45-50	230 - 262	.0008	.0012	.0012	.0016	.0016	.0020	.0020	.0024	.0024	.0028	
		51-55	197 - 230	.0004	.0008	.0008	.0012	.0012	.0016	.0016	.0020	.0020	.0024	
		56-62	131 - 164	.0002	.0004	.0004	.0008	.0008	.0012	.0012	.0016	.0016	.0020	



Positioning



CASE STUDY

Application	Internal Thread M4X0.7
Thread Depth	.31Inch
Workpiece Material	Tool Steel: D2
Hardness	60-62 (HRc)
Cutter Description	MTSH0250C35 0.7 ISO
Machining Conditions	Cutting Speed: 144 ft/min Feed: .0012 Inch/min
Machine	Mori Seiki NV5000
Control	Fanuc
Cooling Lubricant	Emulsion
Tool Life (No. of Threads)	84

Solid Carbide Milling Tools



For Grooving Deep Parts

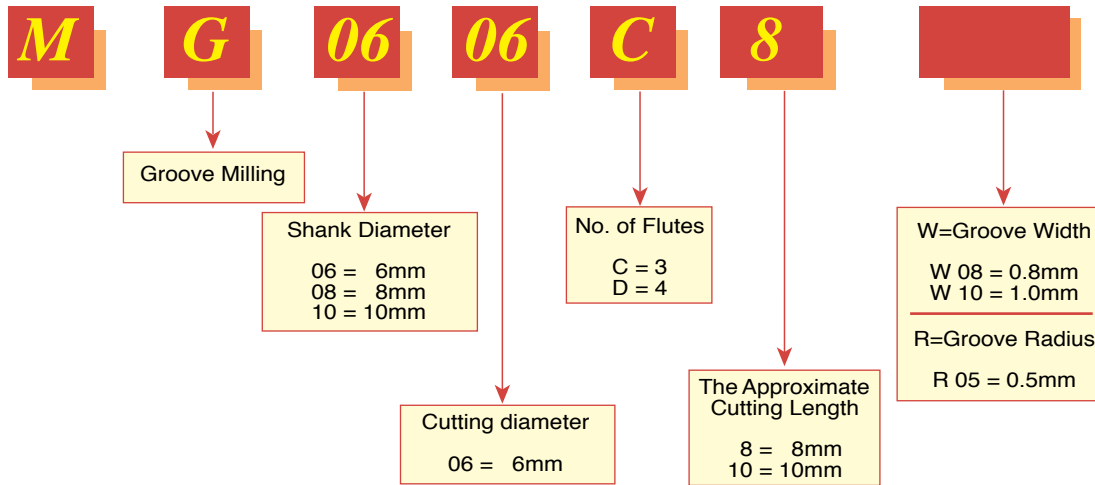
Advantages

Carbide grade: MT8

Sub-micron grade with advanced PVD triple coating (ISO K10-K20). Extremely high heat resistant and smooth cutting operation, for high performance, and normal machining conditions. General purpose for all materials.

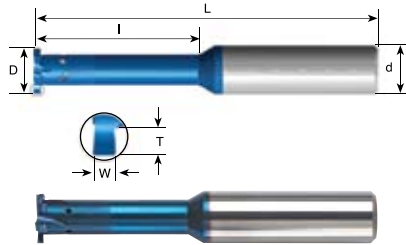
- Enables machining in deep holes.
- Coolant through the flutes is very effective for deep holes.
- Spiral flutes allow smooth cutting action.
- Longer tool life due to special multi-layer coating
- Shorter machining time due to multi, 3 to 5, flutes..

Product Identification Groove Milling Ordering Codes



Groove Milling

With internal coolant through the flutes



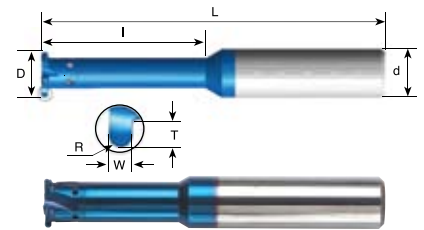
For grooving deep parts

W ± 0.02	T Max.	Groove Dia. (min)	Ordering Code	d mm	D	No. of Flutes	I	L
.031	.03	ø>6	MG0606C8 W08	6	.236	3	.31	2.3
.039	.05	ø≥8	MG08078D10 W10	8	.307	4	.39	2.5

Order example: MG 0606C8 W08 MT8

Full Radius Groove Milling

With internal coolant through the flutes



For grooving deep parts

R	W ± 0.02	T Max.	Groove Dia. (min)	Ordering Code	d mm	D	No. of Flutes	I	L
.020	.039	.03	ø>6	MG0606C8 R05	6	.236	3	.31	2.3
.020	.039	.04	ø>8.8	MG10088D16 R05	8	.346	4	.63	2.5

Order example: MG 10088D16 R05 MT8

Mini-Chamfer



Advantages

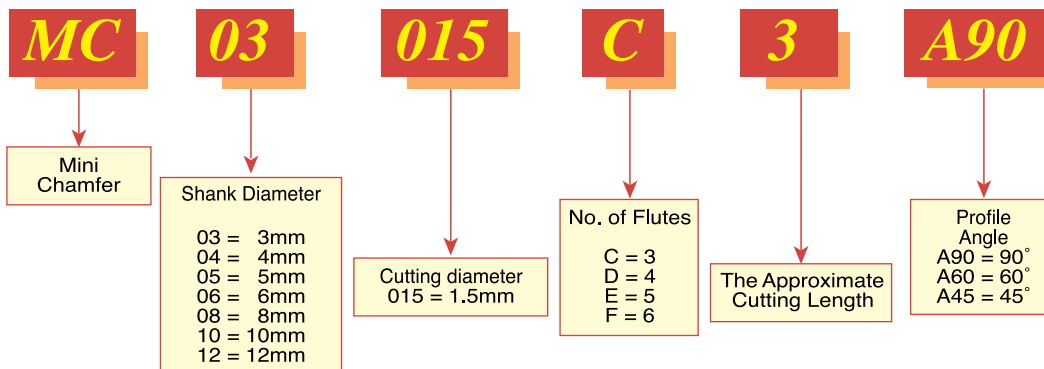
Carbide grade: MT8

Sub-micron grade with advanced PVD triple coating (ISO K10-K20). Extremely high heat resistant and smooth cutting operation, for high performance, and normal machining conditions. General purpose for all materials.

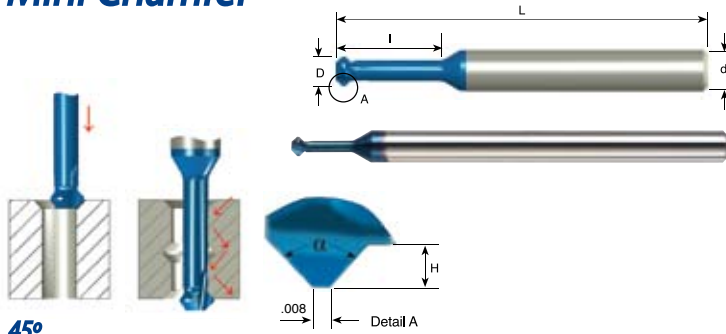
- Optimal for deburring, back chamfering and grooving
- Double side cutting
- Spiral flute allows smooth cutting action

Product Identification

Mini Chamfer Ordering Codes:



Mini Chamfer



45°

Ordering Code	d mm	D	I	H	α	No. of Flutes	L
MC03015C3 A90	3	.059	.15	.012	90°	3	1.5
MC0302C5 A90	3	.079	.20	.016	90°	3	1.5
MC03025C6 A90	3	.098	.25	.020	90°	3	1.5
MC0303C7 A90	3	.118	.30	.024	90°	3	1.5
MC04035C9 A90	4	.138	.35	.028	90°	3	2.0
MC0404C10 A90	4	.157	.39	.031	90°	3	2.0
MC05045C11 A90	5	.177	.44	.039	90°	3	2.0
MC0505C12 A90	5	.197	.49	.043	90°	3	2.0
MC06055C13 A90	6	.217	.54	.047	90°	3	2.0
MC0606C15 A90	6	.236	.59	.059	90°	3	2.0

Long Reach 45°

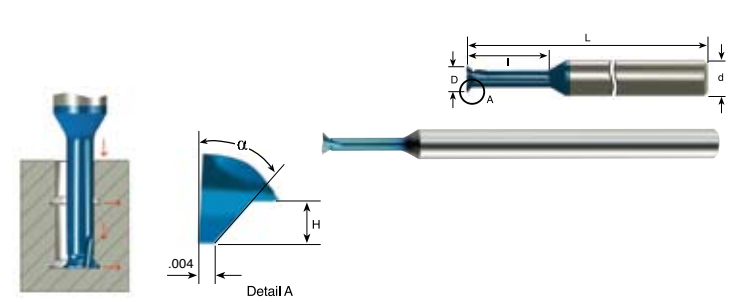
Ordering Code	d mm	D	I	H	α	No. of Flutes	L
MC0303C12 A90	3	.118	.47	.024	90°	3	1.5
MC04035C14 A90	4	.138	.55	.028	90°	3	2.0
MC0404C16 A90	4	.157	.63	.031	90°	3	2.0
MC05045C18 A90	5	.177	.71	.039	90°	3	2.0
MC0505C20 A90	5	.197	.79	.043	90°	3	2.0
MC06055C22 A90	6	.217	.87	.047	90°	3	2.3
MC0606C24 A90	6	.236	.94	.059	90°	3	2.3
MC0808D28 A90	8	.315	1.10	.063	90°	4	2.5
MC1010E35 A90	10	.394	1.38	.071	90°	5	2.9
MC1212F42 A90	12	.472	1.65	.083	90°	6	3.3

30°

Ordering Code	d mm	D	I	H	α	No. of Flutes	L
MC0302C5 A60	3	.079	.20	.016	60°	3	1.5
MC0303C7 A60	3	.118	.30	.024	60°	3	1.5
MC04035C9 A60	4	.138	.35	.028	60°	3	2.0
MC0404C10 A60	4	.157	.39	.031	60°	3	2.0
MC05045C11 A60	5	.177	.44	.039	60°	3	2.0
MC0505C12 A60	5	.197	.49	.043	60°	3	2.0

Mini Chamfer Kit

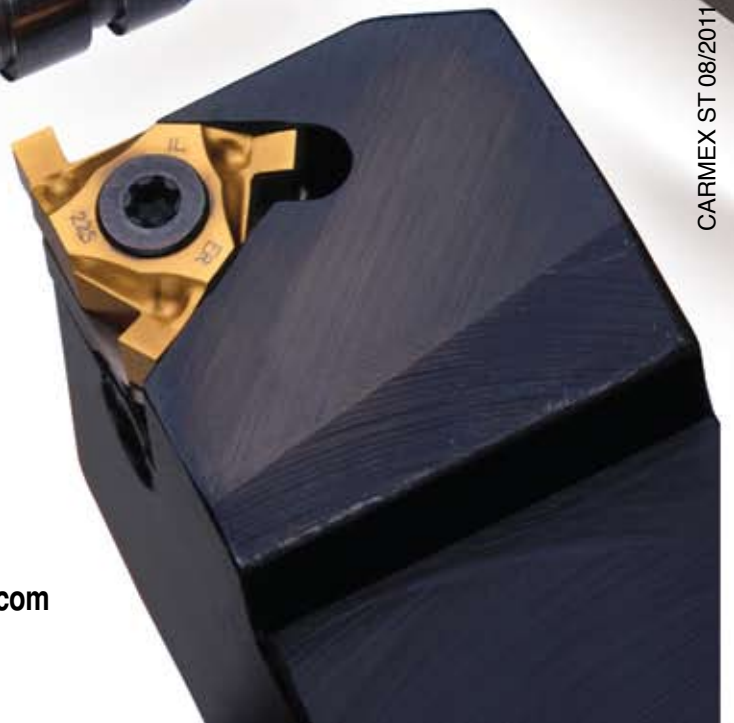
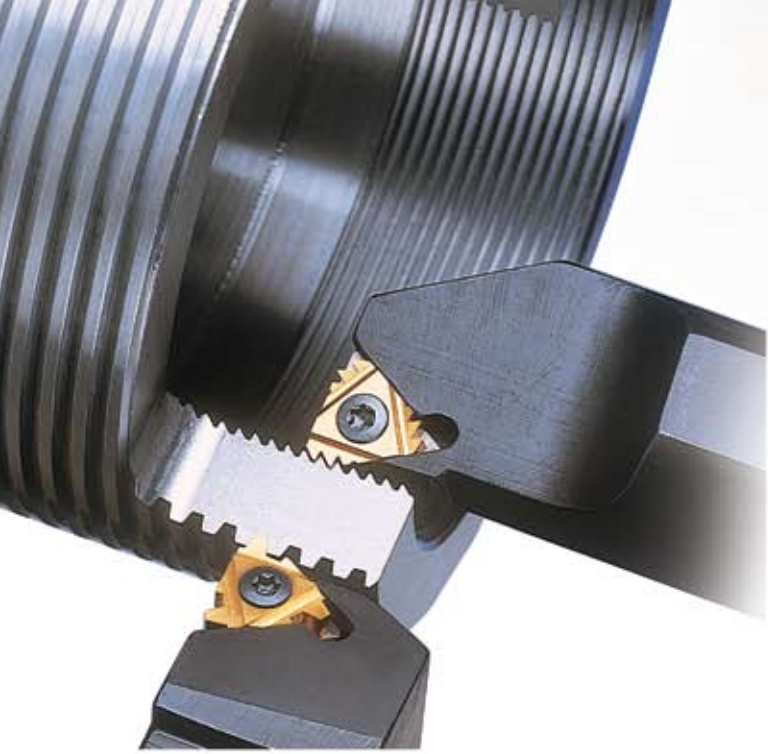
Kit KMC	Qty
MC 0303 C12 A90	1
MC 03025 C6 A90	1
MC 0404 C10 A90	1
MC 04035 C9 A90	1
MC 05045 C11 A90	1
MC 0606 C24 A90	1



Dovetail 45° *

Ordering Code	d mm	D	I	H	α	No. of Flutes	L
MC03015C4 A45	3	.059	.18	.012	45°	3	1.5
MC0302C6 A45	3	.079	.24	.016	45°	3	1.5
MC03025C7 A45	3	.098	.30	.020	45°	3	1.5
MC0303C12 A45	3	.118	.47	.024	45°	3	1.5
MC04035C14 A45	4	.138	.55	.028	45°	3	2.0
MC0404C16 A45	4	.157	.63	.031	45°	3	2.0
MC05045C18 A45	5	.177	.71	.039	45°	3	2.0
MC0505C20 A45	5	.197	.79	.043	45°	3	2.0
MC06055C22 A45	6	.217	.87	.047	45°	3	2.3
MC0606C24 A45	6	.236	.94	.059	45°	3	2.3

*one side cutting



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