

MSB Plus

The premium solid boring tool

- Applicable for various cutting types: Boring, grooving, threading, and face grooving etc.
- Suitable for high precision cutting due to internal coolant and precise strong clamping system



The premium solid boring tool

MSB Plus

KORLOY newly launched the optimal tool for small diameter boring, MSB.

The **MSB Plus** is a premium solid boring tool with better stability and machinability in small diameter boring. It is available for various cutting range such as boring, grooving, threading and etc. due to great performance with enhanced cutting performance from internal coolant system and effective clamping system.

The MSB Plus removes chips on the cutting edge in cutting through high pressure coolant passing the tool. The coolant cools heat focusing on the cutting edge and increases cutting performance and tool life.

In addition, the MSB Plus makes clamping an insert easy and quick and keeps precise dimensions even in repeated clamping. The exclusive holder and rake side of the insert provide convenient cutting and the improved clamping system enhances cutting performance by reducing time for replacing and setting up tools.

The MSB Plus applied the improved coating layer technology is suitable for medium to high speed cutting. Its new multi layered PVD coating prevents fracture and chipping increases tool life dramatically.

Therefore, the MSB Plus ensures stable cutting and high machining quality in small diameter boring.

» **Applicable for various types of cutting**

- Boring, grooving and threading
- Profiling, parting and etc.

» **Internal coolant system**

- It cools the cutting edge removing chips through the high pressure coolant hole on the tool or holder.

» **Improved clamping system**

- It is easy to clamp quickly, repeatedly and precisely.

» **Enhanced coating layer technology**

- The multi layered PVD coating is suitable for medium to high speed boring and prevents flaking and chipping.



Code system

Insert							
M	BC	R	4	30	L20	(C)	- R015
MSB Plus	Use	Handed R: Right handed L: Left handed	Shank Dia. 4: 4.0 mm 5: 5.0 mm 6: 6.0 mm 7: 7.0 mm	Min. Machining Dia. 10: 1.0 mm 22: 2.2 mm 30: 3.0 mm 42: 4.2 mm 59: 5.9 mm	Max. Machining Depth 10: 10 mm 22: 22 mm 30: 30 mm 42: 42 mm 59: 59 mm	Coolant C: High Pressure Coolant	Radius (radius)/ Width (width) R015: 0.15 mm R100: 1.00 mm R150: 1.50 mm W015: 0.15 mm W100: 1.00 mm W150: 1.50 mm
BC: Boring BCB: Boring (chip breaker) BCF: Boring (chip former) CBLF: Boring & Profiling (chip breaker) CL: Boring & Profiling FG: Cross section quadrilateral grooving (internal) FP: Cross section quadrilateral grooving (external) FGR: Cross section round grooving GS: Quadrilateral grooving PP: Preparatory cutting							

Holder							
MH	R	N	C	4	-22	(-4)	(-2F)
MSB Plus Holder	Use R: MSB Plus Round shank holder	Shank type N: Negaland type R: Round type S: Shrink holder	Coolant C: Coolant	Bore size (1) 4: Ø4.0 mm 5: Ø5.0 mm 6: Ø6.0 mm 7: Ø7.0 mm	Shank size 22: Ø22.0 mm	Bore size (2) 4: Ø4.0 mm 5: Ø5.0 mm 6: Ø6.0 mm 7: Ø7.0 mm	No. of flat side 2F: 2 flat sides 4F: 4 flat sides

Features

Improved clamping system

- With its easy to clamp structure, strong clamping is fulfilled with a single screw

Rake design

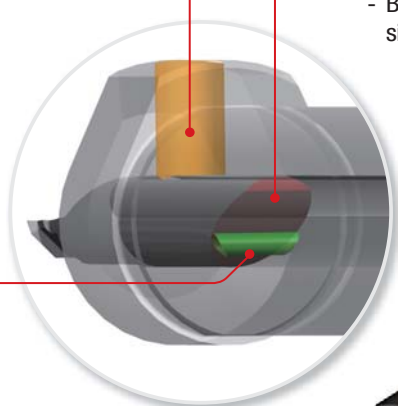
- Better precision by rake side of the insert

Stop pin

- Precise position control while clamping an insert

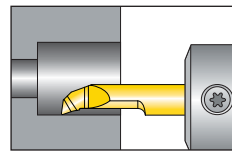
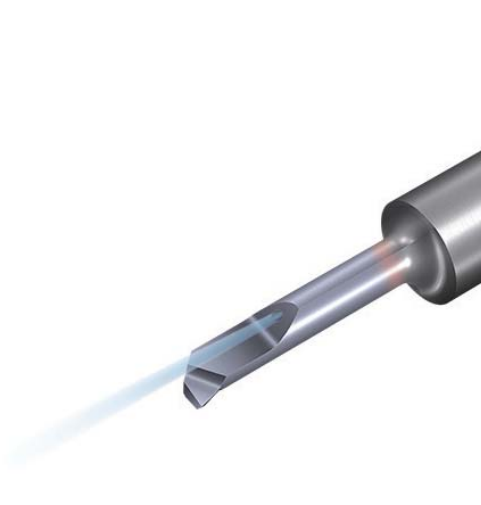
Enhanced coolant system

- Cooling the cutting edge and removing chips through the coolant hole

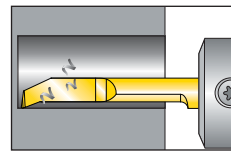


✓ Application range

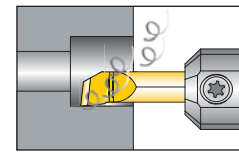
Boring



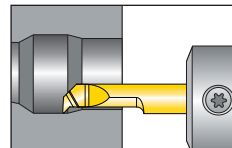
Boring



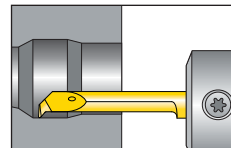
Boring (chip breaker)



Boring (chip former)

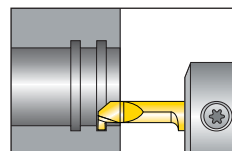
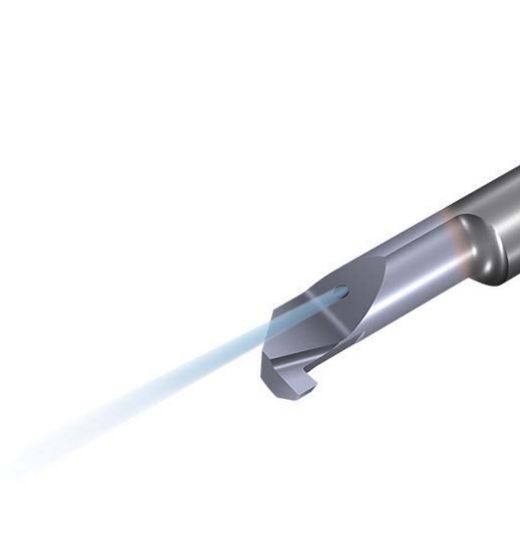


Boring & Profiling (CL)

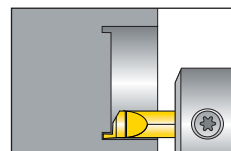


Boring & Profiling
(CBLF chip breaker)

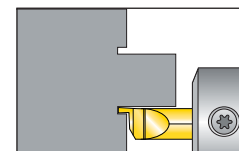
Grooving



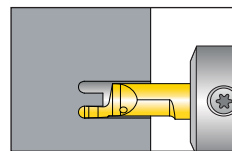
Quadrilateral grooving



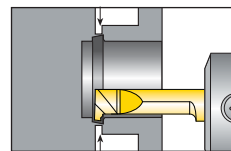
Cross section
quadrilateral grooving
(internal cutting)



Cross section
quadrilateral grooving
(external cutting)

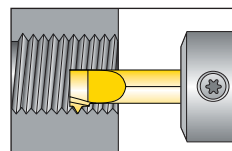
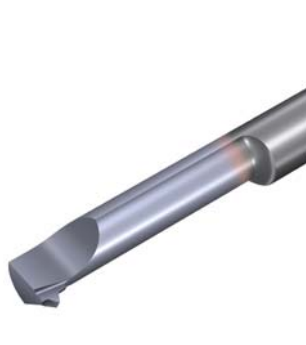


Cross section round
grooving



Preparatory cutting

Threading



Threading

 Recommended cutting conditions _ Boring

Workpiece		Brinell hardness (HB)	vc (m/min)	
ISO	Workpiece materials			
P	Non-alloy	Low carbon alloy (C = 0.1 ~ 0.25%)	125	80 ~ 150
		Medium carbon alloy (C = 0.25 ~ 0.55%)	150	80 ~ 130
		High carbon alloy (C = 0.55 ~ 0.85%)	170	70 ~ 110
	Low-alloy (alloy composition ≤ 5%)	Non-hardening treatment	180	70 ~ 110
		Hardening treatment	275	70 ~ 100
		Hardening treatment	350	70 ~ 100
	High-alloy (alloy composition > 5%)	Annealing treatment	200	80 ~ 120
		Hardening treatment	325	70 ~ 110
	Cast steel	Low carbon alloy (alloy composition < 5%)	200	80 ~ 110
		High carbon alloy (alloy composition > 5%)	225	80 ~ 110
M	Ferritic	Non-hardening treatment	200	80 ~ 100
		Hardening treatment	330	70 ~ 110
	Austenitic	Austenitic	180	80 ~ 110
		Super Austenitic	200	80 ~ 110
	Cast ferritic	Non-hardening treatment	200	40 ~ 60
		Hardening treatment	330	30 ~ 50
	Cast austenitic	Austenitic	200	40 ~ 60
		Hardening treatment	330	30 ~ 50
K	Malleable cast iron	Ferritic (short chip)	130	80 ~ 110
		Pearlitic (long chip)	230	80 ~ 110
	Gray cast iron	Low tensile strength	180	80 ~ 110
		High tensile strength	260	80 ~ 110
	Nodular graphite cast iron	Ferritic	160	80 ~ 110
		Pearlitic	260	80 ~ 110
N	Aluminum alloy wrought	Non aging treatment	60	100 ~ 300
		Aging treatment	100	100 ~ 150
	Aluminum alloy	Cast	75	100 ~ 150
		Cast & aging	90	60 ~ 100
		Cast Si 13 ~ 22%	130	100 ~ 150
	Copper & copper alloy	Brass	90	60 ~ 100
		Bronze and lead-free copper	100	60 ~ 100
S	High heat alloy	Annealing (Fe based)	200	25 ~ 45
		Aging (Fe based)	280	20 ~ 30
		Annealing (Ni or cobalt based)	250	15 ~ 20
		Aging (Ni or cobalt based)	350	10 ~ 15
	Titanium alloy	Purity 99.5 Ti	400Rm	60 ~ 100
		α+β Hardening treatment	1050Rm	40 ~ 50
H	High hardened alloy	Hardening & chamfering	45 ~ 50HRC	20 ~ 45
			51 ~ 55HRC	20 ~ 40

✓ Recommended cutting conditions _ Grooving

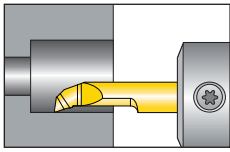
Workpiece		Brinell hardness (HB)	vc (m/min)	fn (mm/rev)	
ISO	Workpiece materials				
P	Non-alloy	Low carbon alloy (C = 0.1 ~ 0.25%)	125	50 ~ 120	0.05
		Medium carbon alloy (C = 0.25 ~ 0.55%)	150	40 ~ 100	0.05
		High carbon alloy (C = 0.55 ~ 0.85%)	170	30 ~ 80	0.05
	Low-alloy (alloy composition ≤ 5%)	Non-hardening treatment	180	50 ~ 70	0.05
		Hardening treatment	275	40 ~ 60	0.05
		Hardening treatment	350	30 ~ 50	0.05
	High-alloy (alloy composition > 5%)	Annealing treatment	200	30 ~ 50	0.05
		Hardening treatment	325	25 ~ 40	0.05
	Cast steel	Low carbon alloy (alloy composition < 5%)	200	30 ~ 50	0.05
		High carbon alloy (alloy composition > 5%)	225	25 ~ 40	0.05
M	Ferritic	Non-hardening treatment	200	60 ~ 100	0.05
		Hardening treatment	330	40 ~ 60	0.05
	Austenitic	Austenitic	180	50 ~ 90	0.05
		Super Austenitic	200	40 ~ 60	0.05
	Cast ferritic	Non-hardening treatment	200	40 ~ 60	0.05
		Hardening treatment	330	30 ~ 50	0.05
	Cast austenitic	Austenitic	200	40 ~ 60	0.05
		Hardening treatment	330	30 ~ 50	0.05
K	Malleable cast iron	Ferritic (short chip)	130	50 ~ 70	0.04
		Pearlitic (long chip)	230	50 ~ 70	0.04
	Gray cast iron	Low tensile strength	180	50 ~ 70	0.04
		High tensile strength	260	40 ~ 60	0.04
	Nodular graphite cast iron	Ferritic	160	50 ~ 70	0.04
		Pearlitic	260	60 ~ 80	0.04
N	Aluminum alloy wrought	Non aging treatment	60	100 ~ 300	0.04
		Aging treatment	100	100 ~ 150	0.04
	Aluminum alloy	Cast	75	100 ~ 150	0.04
		Cast & aging	90	60 ~ 100	0.04
		Cast Si 13 ~ 22%	130	100 ~ 150	0.04
	Copper & copper alloy	Brass	90	60 ~ 100	0.03
		Bronze and lead-free copper	100	60 ~ 100	0.04
S	High heat alloy	Annealing (Fe based)	200	25 ~ 45	0.02
		Aging (Fe based)	280	20 ~ 30	0.02
		Annealing (Ni or cobalt based)	250	15 ~ 20	0.02
		Aging (Ni or cobalt based)	350	10 ~ 15	0.02
	Titanium alloy	Purity 99.5 Ti	400Rm	60 ~ 100	0.02
α+β Hardening treatment		1050Rm	40 ~ 50	0.02	
H	High hardened alloy	Hardening & chamfering	45 ~ 50HRC	20 ~ 40	0.02
			51 ~ 55HRC	20 ~ 35	0.02

 Recommended cutting conditions _ Threading

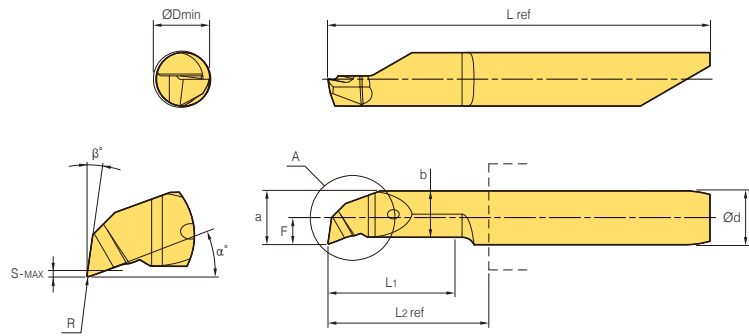
Workpiece		Brinell hardness (HB)	vc (m/min)	
ISO	Workpiece materials			
P	Non-alloy	Low carbon alloy (C = 0.1 ~ 0.25%)	125	140 ~ 200
		Medium carbon alloy (C = 0.25 ~ 0.55%)	150	120 ~ 180
		High carbon alloy (C = 0.55 ~ 0.85%)	170	110 ~ 180
	Low-alloy (alloy composition ≤ 5%)	Non-hardening treatment	180	100 ~ 155
		Hardening treatment	275	90 ~ 145
		Hardening treatment	350	80 ~ 135
	High-alloy (alloy composition > 5%)	Annealing treatment	200	65 ~ 115
		Hardening treatment	325	50 ~ 100
	Cast steel	Low carbon alloy (alloy composition < 5%)	200	30 ~ 50
		High carbon alloy (alloy composition > 5%)	225	25 ~ 40
M	Ferritic	Non-hardening treatment	200	80 ~ 120
		Hardening treatment	330	55 ~ 95
	Austenitic	Austenitic	180	60 ~ 100
		Super Austenitic	200	50 ~ 90
	Cast ferritic	Non-hardening treatment	200	60 ~ 80
		Hardening treatment	330	45 ~ 65
	Cast austenitic	Austenitic	200	50 ~ 70
		Hardening treatment	330	40 ~ 60
K	Malleable cast iron	Ferritic (short chip)	130	60 ~ 80
		Pearlitic (long chip)	230	60 ~ 80
	Gray cast iron	Low tensile strength	180	60 ~ 80
		High tensile strength	260	40 ~ 70
	Nodular graphite cast iron	Ferritic	160	60 ~ 80
		Pearlitic	260	70 ~ 90
N	Aluminum alloy wrought	Non aging treatment	60	80 ~ 240
		Aging treatment	100	100 ~ 170
	Aluminum alloy	Cast	75	100 ~ 150
		Cast & aging	90	60 ~ 100
		Cast Si 13 ~ 22%	130	100 ~ 150
	Copper & copper alloy	Brass	90	80 ~ 200
		Bronze and lead-free copper	100	80 ~ 200
S	High heat alloy	Annealing (Fe based)	200	25 ~ 45
		Aging (Fe based)	280	20 ~ 30
		Annealing (Ni or cobalt based)	250	15 ~ 20
		Aging (Ni or cobalt based)	350	10 ~ 15
	Titanium alloy	Purity 99.5 Ti	400Rm	60 ~ 100
		α+β Hardening treatment	1050Rm	40 ~ 50
H	High hardened alloy	Hardening & chamfering	45 ~ 50HRC	20 ~ 40
			51 ~ 55HRC	20 ~ 40

Boring HPC

※ HPC: High pressure coolant

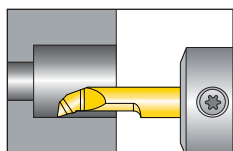


For internal cutting

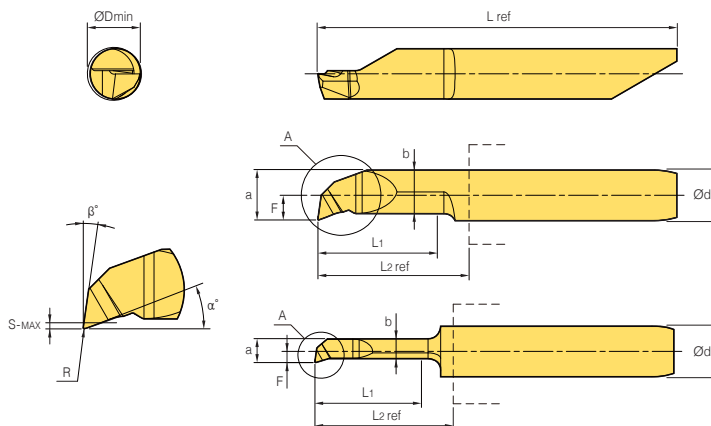
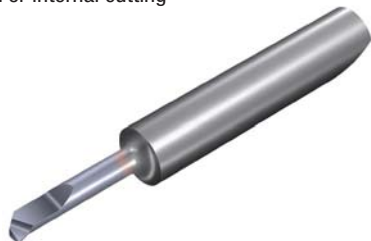


Shank Dia. Ød	Min. machining Dia. ØDmin	Designation	Dimensions (mm)									
			L1	R	F	S-MAX	a	b	α°	β°	L2 ref	L ref
4.0	3.0	MBCR430L20C-R015	20	0.15	1.36	0.20	2.70	2.36	17.5	8	22.80	39.80
	3.2	MBCR432L10C-R015	10	0.15	1.44	0.20	2.90	2.50	17.5	8	11.50	28.50
		MBCR432L20C-R015	20	0.15	1.40	0.20	2.87	2.45	17.5	8	22.80	39.80
	4.0	MBCR440L10C-R020	10	0.20	1.90	0.25	3.74	3.35	17.5	8	11.50	28.50
	4.2	MBCR442L10C-R015	10	0.15	1.93	0.30	3.93	3.13	19.0	8	11.50	28.50
		MBCR442L10C-R020	10	0.20	1.98	0.30	3.98	3.13	19.0	8	11.50	28.50
MBCR442L21C-R015		21	0.15	1.93	0.30	3.93	3.13	19.0	8	22.80	39.80	
5.0	5.2	MBCR552L10C-R020	10	0.20	2.44	0.50	4.94	4.04	21.0	8	12.15	35.00
		MBCR552L15C-R020	15	0.20	2.44	0.50	4.94	4.24	21.0	8	18.15	41.00
		MBCR552L21C-R020	21	0.20	2.44	0.50	4.94	4.04	21.0	8	23.15	46.00
		MBCR552L30C-R020	30	0.20	2.44	0.50	4.94	4.04	21.0	8	32.15	55.00
		MBCR552L35C-R020	35	0.20	2.44	0.50	4.94	4.04	21.0	8	37.15	60.00

Boring

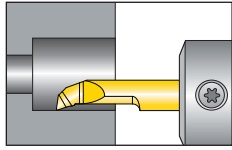


For internal cutting

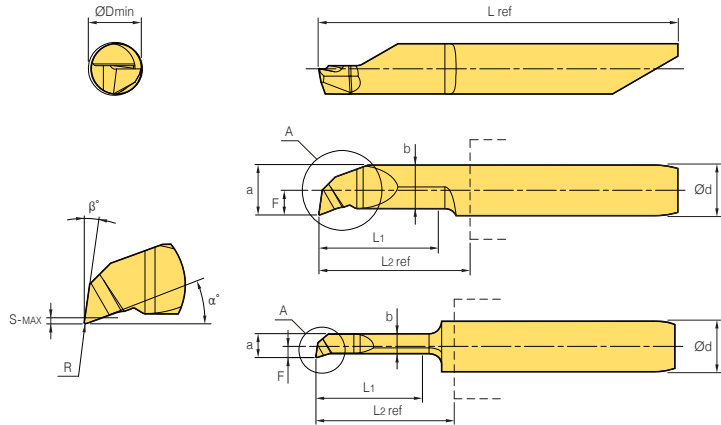


Shank Dia. Ød	Min. machining Dia. ØDmin	Designation	Dimensions (mm)									
			L1	R	F	S-MAX	a	b	α°	β°	L2 ref	L ref
4.0	1.0	MBCR/L410L04-R005	4	0.05	0.48	0.10	0.96	0.71	16.4	8	8.80	25.75
		MBCR/L410L04-R010	4	0.10	0.48	0.10	0.96	0.71	17.0	8	8.80	25.75
		MBCR/L410L06-R005	6	0.05	0.48	0.15	0.96	0.71	16.4	8	8.80	25.75
		MBCR/L410L06-R010	6	0.10	0.48	0.15	0.96	0.81	17.0	8	8.80	25.75
	1.5	MBCR415L04-R005	4	0.05	0.74	0.15	2.74	1.15	16.0	8	11.50	28.50
		MBCR/L415L09-R010	9	0.10	0.74	0.15	1.45	1.22	16.0	8	11.50	28.50
	1.7	MBCR/L417L06-R005	6	0.05	0.62	0.20	1.43	1.02	16.0	8	11.50	28.50
		MBCR/L417L06-R010	6	0.10	0.77	0.20	1.58	1.18	16.0	8	11.50	28.50
		MBCR/L417L09-R005	9	0.05	0.62	0.20	1.43	1.04	16.0	8	11.50	28.50
		MBCR/L417L09-R010	9	0.10	0.82	0.20	1.63	1.30	16.0	8	11.50	28.50
	1.9	MBCR/L419L06-R005	6	0.05	0.72	0.20	1.62	1.20	16.0	8	11.50	28.50
		MBCR/L419L09-R005	9	0.05	0.72	0.20	1.62	1.20	16.0	8	11.50	28.50
	2.2	MBCR/L422L06-R005	6	0.05	0.88	0.20	1.88	1.55	17.7	8	11.50	28.50
		MBCR/L422L06-R010	6	0.10	0.93	0.20	1.93	1.55	17.7	8	11.50	28.50
		MBCR/L422L09-R005	9	0.05	0.88	0.20	1.88	1.55	17.7	8	11.50	28.50
		MBCR/L422L09-R010	9	0.05	0.1	0.20	2.06	1.76	17.7	8	11.50	28.50
		MBCR/L422L14-R010	14	0.10	1.04	0.20	2.04	1.76	17.7	8	18.20	35.20
		MBCR422L14-R010	14	0.10	1.04	0.20	2.04	1.76	17.7	8	18.20	35.20
	2.7	MBCR/L427L10-R005	10	0.10	0.05	0.20	2.47	2.06	17.5	8	11.50	28.50
		MBCR/L427L10-R015	10	0.15	1.19	0.20	2.41	2.06	17.5	8	11.50	28.50
		MBCR/L427L15-R015	15	0.15	1.23	0.20	2.48	2.06	17.5	8	18.20	35.20
		MBCR427L15-R015	15	0.15	1.23	0.20	2.48	2.06	17.5	8	18.20	35.20
		MBCR/L427L16-R005	16	0.05	1.22	0.20	2.47	2.06	17.5	8	18.20	35.20
		MBCR427L16-R005	16	0.05	1.22	0.20	2.47	2.06	17.5	8	18.20	35.20
3.0	MBCR430L10-R005	10	0.05	1.33	0.20	2.70	2.25	17.5	8	11.50	28.70	
	MBCR/L430L16-R005	16	0.05	1.33	0.20	2.70	2.25	17.5	8	18.20	35.20	
	MBCR/L430L20-R015	20	0.15	1.36	0.20	2.70	2.36	17.5	8	22.80	39.80	
	MBCR/L430L26-R005	26	0.05	1.33	0.20	2.70	2.25	17.5	8	28.70	45.70	

Boring

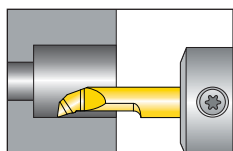


For internal cutting

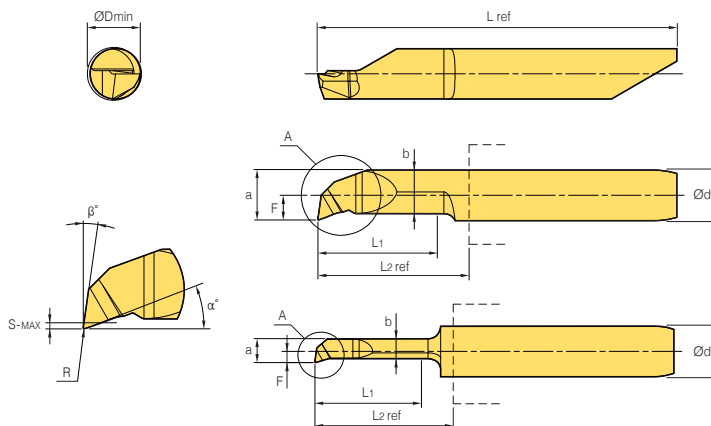


Shank Dia. Ød	Min. machining Dia. ØDmin	Designation	Dimensions (mm)									
			L1	R	F	S-MAX	a	b	α°	β°	L2 ref	L ref
3.2	3.2	MBCR/L432L10-R005	10	0.05	1.43	0.20	2.90	2.45	17.5	8	11.50	28.50
		MBCR/L432L10-R015	10	0.15	1.44	0.20	2.90	2.50	17.5	8	11.50	28.50
		MBCR/L432L16-R005	16	0.05	1.43	0.20	2.90	2.45	17.5	8	18.20	35.20
		MBER432L16-R005	16	0.05	1.43	0.20	2.90	2.45	17.5	8	18.20	35.20
		MBCR/L432L16-R015	16	0.15	1.44	0.20	2.87	2.50	17.5	8	18.20	35.20
		MBER432L16-R015	16	0.15	1.44	0.20	2.87	2.50	17.5	8	18.20	35.20
		MBCR/L432L20-R005	20	0.05	1.43	0.20	2.90	2.45	17.5	8	22.80	39.80
		MBER432L20-R005	20	0.05	1.43	0.20	2.90	2.45	17.5	8	22.80	39.80
		MBCR/L432L20-R015	20	0.15	1.40	0.20	2.87	2.45	17.5	8	22.80	39.80
		MBER432L20-R015	20	0.15	1.40	0.20	2.87	2.45	17.5	8	22.80	39.80
		MBER432L23-R010	23	0.10	1.43	0.20	2.90	2.45	17.5	8	22.80	45.70
4.0	3.7	MBCR437L10-R005	10	0.05	1.78	0.20	3.48	3.05	17.5	8	11.50	28.50
		MBCR/L437L10-R015	10	0.15	1.74	0.20	3.44	3.05	17.5	8	11.50	28.50
		MBCR/L437L15-R015	15	0.15	1.74	0.20	3.44	3.05	17.5	8	18.20	35.20
		MBER437L15-R015	15	0.15	1.74	0.20	3.44	3.05	17.5	8	18.20	35.20
		MBCR/L437L20-R015	20	0.15	1.74	0.20	3.44	3.05	17.5	8	22.80	39.80
		MBER437L20-R015	20	0.15	1.74	0.20	3.44	3.05	17.5	8	22.80	39.80
		MBCR437L26-R005	26	0.05	1.78	0.20	3.48	3.05	17.5	8	28.70	45.70
4.2	4.2	MBCR442L10-R003	10	0.03	1.98	0.30	3.98	3.13	19.0	8	11.50	28.50
		MBCR442L10-R005	10	0.05	1.95	0.30	3.95	3.45	21.0	8	11.50	28.50
		MBCR/L442L10-R015	10	0.15	1.93	0.30	3.93	3.13	19.0	8	11.50	28.50
		MBCR/L442L16-R005	16	0.05	1.95	0.30	3.95	3.45	21.0	8	18.20	35.20
		MBER442L16-R005	16	0.05	1.95	0.30	3.95	3.45	21.0	8	18.20	35.20
		MBCR442L15-R003	15	0.03	1.98	0.30	3.98	3.13	19.0	8	18.20	35.20
		MBCR/L442L16-R015	16	0.15	1.93	0.30	3.93	3.13	19.0	8	18.20	35.20
		MBER442L16-R015	16	0.15	1.93	0.30	3.93	3.13	19.0	8	18.20	35.20
		MBCR/L442L21-R005	21	0.05	1.95	0.30	3.95	3.45	21.0	8	22.80	39.80
		MBER442L21-R005	21	0.05	1.95	0.30	3.95	3.45	21.0	8	22.80	39.80
		MBCR/L442L21-R015	21	0.15	1.93	0.30	3.93	3.13	19.0	8	22.80	39.80
		MBER442L21-R015	21	0.15	1.98	0.30	3.98	3.13	19.0	8	24.70	41.70
		MBCR442L25-R003	25	0.03	1.98	0.30	3.98	3.13	19.0	8	28.70	45.70
		MBCR/L442L26-R005	26	0.05	1.95	0.30	3.95	3.45	21.0	8	28.70	45.70
MBCR/L442L26-R015	26	0.15	1.93	0.30	3.93	3.13	19.0	8	28.70	45.70		
MBCR442L30-R005	30	0.05	1.95	0.30	3.95	3.45	21.0	8	33.70	50.70		

Boring



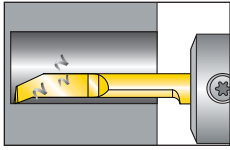
For internal cutting



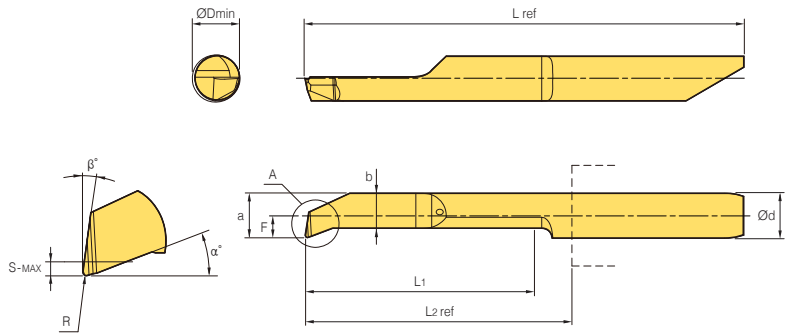
Shank Dia. Ød	Min. machining Dia. ØDmin	Designation	Dimensions (mm)									
			L1	R	F	S-MAX	a	b	α°	β°	L2 ref	L ref
5.0	5.2	MBCR552L10-R005	10	0.05	2.43	0.50	4.93	4.24	19.0	8	12.15	35.00
		MBCR/L552L10-R020	10	0.20	2.44	0.50	4.94	4.04	21.0	8	12.15	35.00
		MBCR552L15-R003	15	0.03	2.44	0.50	4.94	4.24	21.0	8	18.15	41.00
		MBCR/L552L16-R020	16	0.20	2.44	0.50	4.94	4.04	21.0	8	18.15	41.00
		MBCR552L20-R005	20	0.05	2.43	0.50	4.93	4.24	21.0	8	23.15	46.00
		MBCR552L20-R020	20	0.20	2.44	0.50	4.94	4.04	21.0	8	23.15	46.00
		MBCR/L552L21-R020	21	0.20	2.44	0.50	4.94	4.04	21.0	8	23.15	46.00
		MBCR552L21-R020	21	0.20	2.44	0.50	4.94	4.04	21.0	8	23.15	46.00
		MBCR/L552L26-R020	26	0.20	2.44	0.50	4.94	4.04	21.0	8	28.15	51.00
		MBCR552L26-R020	26	0.20	2.44	0.50	4.94	4.04	21.0	8	28.15	51.00
		MBCR552L30-R005	30	0.05	2.42	0.50	4.92	4.24	21.0	8	32.15	55.00
		MBCR/L552L30-R020	30	0.20	2.44	0.50	4.94	4.04	21.0	8	32.15	55.00
MBCR/L552L35-R020	35	0.20	2.44	0.50	4.94	4.04	21.0	8	37.15	60.00		
6.0	6.2	MBCR/L662L16-R020	16	0.20	2.93	0.50	5.93	4.73	22.0	8	18.30	42.00
		MBCR662L20-R005	20	0.05	2.93	0.50	5.93	4.73	22.0	8	23.30	47.00
		MBCR/L662L21-R020	21	0.20	2.93	0.50	5.93	4.73	22.0	8	23.30	47.00
		MBCR/L662L26-R020	26	0.20	2.93	0.50	5.93	4.73	22.0	8	28.30	52.00
		MBCR662L30-R005	30	0.05	2.93	0.50	5.93	4.73	22.0	8	32.30	56.00
		MBCR/L662L30-R020	30	0.20	2.93	0.50	5.93	4.73	22.0	8	32.30	56.00
		MBCR662L30-R020	30	0.20	2.93	0.50	5.93	4.73	22.0	8	32.30	56.00
		MBCR/L662L35-R020	35	0.20	2.93	0.50	5.93	4.73	22.0	8	37.30	61.00
		MBCR662L35-R020	35	0.20	2.93	0.50	5.93	4.73	22.0	8	37.30	61.00
		MBCR/L662L40-R020	40	0.20	2.93	0.50	5.93	4.73	22.0	8	42.30	66.00
7.0	7.2	MBCR772L15-R010	15	0.10	3.44	0.50	6.94	5.74	22.0	8	16.40	41.00
		MBCR/L772L15-R020	15	0.20	3.44	0.50	6.94	5.74	22.0	8	16.40	41.00
		MBCR/L772L25-R020	25	0.20	3.44	0.50	6.94	5.74	22.0	8	26.40	51.00
		MBCR772L30-R020	30	0.20	3.44	0.50	6.94	5.74	22.0	8	31.40	56.00
		MBCR/L772L35-R020	35	0.20	3.44	0.50	6.94	5.74	22.0	8	36.40	61.00
		MBCR/L772L40-R020	40	0.20	3.44	0.50	6.94	5.74	22.0	8	41.40	66.00
		MBCR772L40-R020	40	0.20	3.44	0.50	6.94	5.74	22.0	8	41.40	66.00
		MBCR/L772L45-R020	45	0.20	3.44	0.50	6.94	5.74	22.0	8	46.40	71.00
		MBCR772L45-R020	45	0.20	3.44	0.50	6.94	5.74	22.0	8	46.40	71.00
		MBCR/L772L50-R020	50	0.20	3.44	0.50	6.94	5.74	22.0	8	51.40	76.00

Boring chip breaker HPC

※ HPC: High pressure coolant



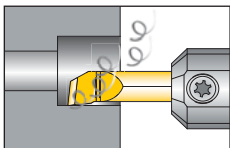
For internal cutting



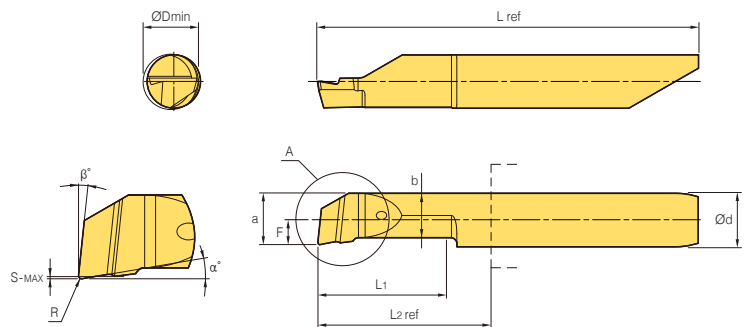
Shank Dia. Ød	Min. machining Dia. ØDmin	Designation	Dimensions (mm)									
			L1	R	F	S-MAX	a	b	α°	β°	L2 ref	L ref
4.0	4.2	MBCBR442L20C-R015	20	0.15	1.95	0.30	3.95	3.13	21	8	22.80	39.80
5.0	5.2	MBCBR552L15C-R020	15	0.20	2.44	0.50	4.94	4.04	21	8	18.15	41.00
		MBCBR552L25C-R020	25	0.20	2.44	0.50	4.94	4.04	21	8	28.15	51.00
6.0	6.2	MBCBR662L30C-R020	30	0.20	2.93	0.50	5.93	4.73	22	8	32.30	56.00

Boring chip former HPC

※ HPC: High pressure coolant



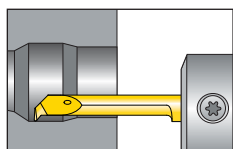
For internal cutting



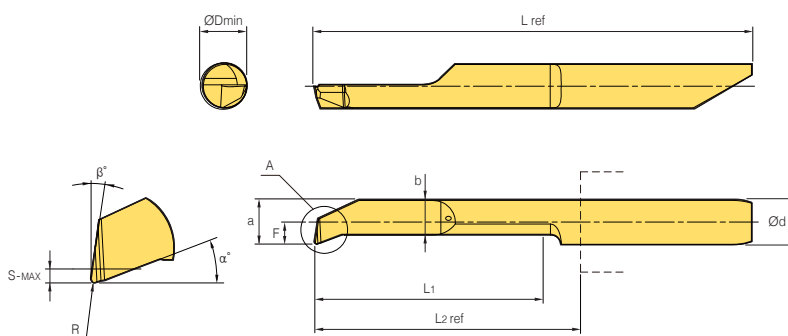
Shank Dia. Ød	Min. machining Dia. ØDmin	Designation	Dimensions (mm)									
			L1	R	F	S-MAX	a	b	α°	β°	L2 ref	L ref
4.0	4.2	MBCFR442L10C-R015	10	0.15	1.85	0.05	3.85	3.35	7.5	6	11.50	28.50

Boring & Profiling (CBLF) HPC

※ HPC: High pressure coolant



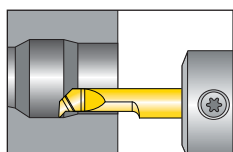
For internal cutting



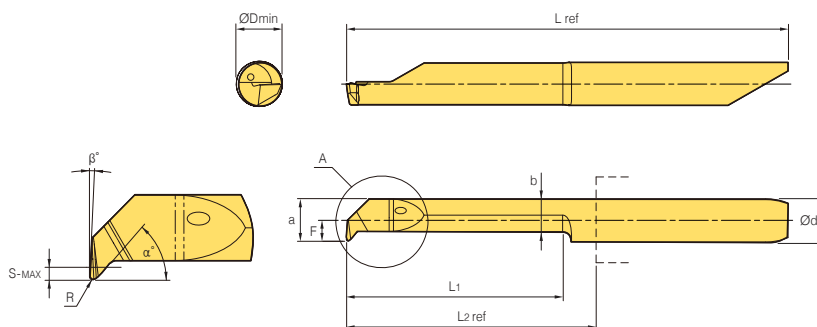
Shank Dia. Ød	Min. machining Dia. ØDmin	Designation	Dimensions (mm)									
			L1	R	F	S-MAX	a	b	α°	β°	L2 ref	L ref
4.0	4.2	MCBLFR/L442L10C-R015	10	0.15	1.90	0.70	3.90	3.10	47	3	11.50	28.50
		MCBLFR/L442L16C-R015	16	0.15	1.90	0.70	3.90	3.10	47	3	18.20	35.20
		MCBLFR/L442L21C-R015	21	0.15	1.90	0.70	3.90	3.10	47	3	22.80	39.80
5.0	5.2	MCBLFR/L552L16C-R020	16	0.20	2.40	0.95	4.90	3.80	49	3	18.15	41.00
		MCBLFR/L552L25C-R020	25	0.20	2.40	0.95	4.90	3.80	49	3	28.15	51.00
6.0	6.2	MCBLFR/L662L16C-R020	16	0.20	2.78	1.75	5.80	3.90	49	3	18.30	42.00
		MCBLFR/L662L21C-R020	21	0.20	2.78	1.75	5.80	3.90	49	3	23.30	47.00
		MCBLFR/L662L30C-R020	30	0.20	2.78	1.75	5.80	3.90	49	3	32.30	56.00

Boring & Profiling (CL) HPC

※ HPC: High pressure coolant

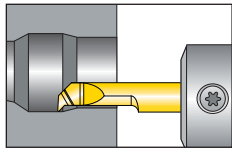


For internal cutting

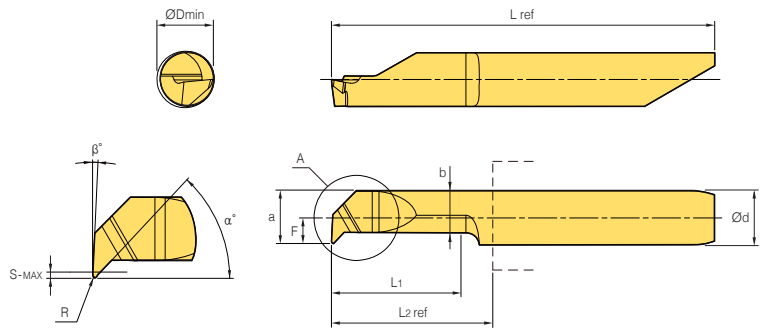
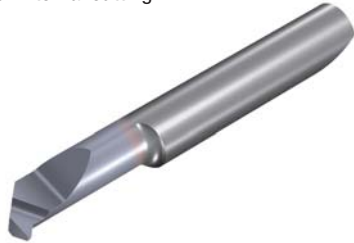


Shank Dia. Ød	Min. machining Dia. ØDmin	Designation	Dimensions (mm)									
			L1	R	F	S-MAX	a	b	α°	β°	L2 ref	L ref
4.0	4.2	MCLR442L10C-R015	10	0.15	1.90	0.70	3.90	3.10	47	3	11.50	28.50
		MCLR442L21C-R015	21	0.15	1.90	0.70	3.90	3.10	47	3	18.20	35.20
5.0	5.2	MCLR552L25C-R020	25	0.20	2.40	0.95	4.90	3.80	49	3	28.15	51.00

Boring & Profiling (CL)



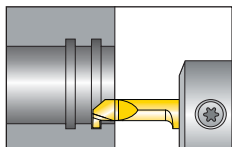
For internal cutting



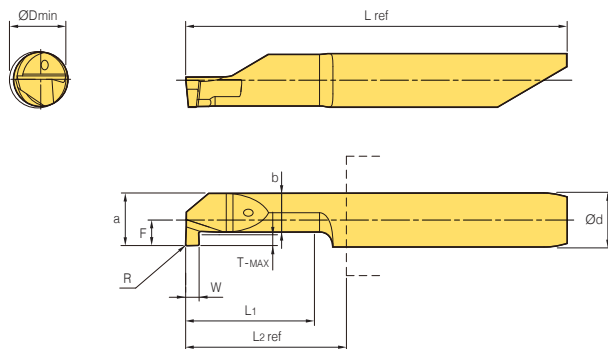
Shank Dia. Ød	Min. machining Dia. ØDmin	Designation	Dimensions (mm)									
			L1	R	F	S-MAX	a	b	α°	β°	L2 ref	L ref
4.0	4.2	MCLR442L10-R010	10	0.10	1.90	0.70	3.90	3.10	47	3	11.50	28.50
		MCLR/L442L10-R015	10	0.15	1.90	0.70	3.90	3.10	47	3	11.50	28.50
		MCLR/L442L16-R015	16	0.15	1.90	0.70	3.90	3.10	47	3	18.20	35.20
		MCLR/L442L21-R015	21	0.15	1.90	0.70	3.90	3.10	47	3	22.80	39.80
5.0	5.2	MCLR552L07-R007	7	0.07	2.40	0.95	4.90	3.75	49	3	18.20	35.20
		MCLR/L552L16-R020	16	0.20	2.40	0.95	4.90	3.80	49	3	18.15	41.00
		MCLR/L552L25-R020	25	0.20	2.40	0.95	4.90	3.80	49	3	28.15	51.00
6.0	6.2	MCLR662L16-R010	16	0.10	2.78	1.75	5.78	3.90	49	3	18.30	42.00
		MCLR/L662L16-R020	16	0.20	2.78	1.75	5.78	3.90	49	3	18.30	42.00
		MCLR/L662L21-R020	21	0.20	2.78	1.75	5.78	3.90	49	3	23.30	47.00
		MCLR/L662L30-R020	30	0.20	2.78	1.75	5.78	3.90	49	3	32.30	56.00

Quadrilateral grooving HPC

※ HPC: High pressure coolant

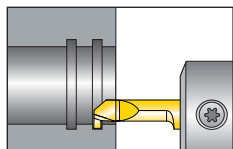


For internal cutting

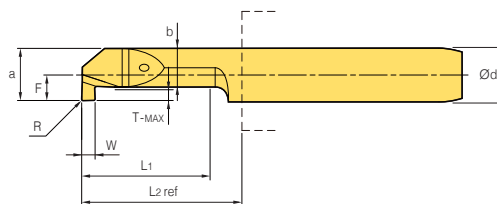
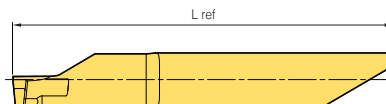
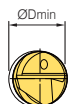


Shank Dia. Ød	Min. machining Dia. ØDmin	Designation	Dimensions (mm)								
			W±0.025	T-MAX	L1	F	R	a	b	L2 ref	L ref
4.0	4.2	MGSR442L10C-W100	1.00	0.80	10	1.90	0.10	3.90	2.90	11.50	28.50
		MGSR442L15C-W100	1.00	0.80	15	1.90	0.10	3.90	2.90	18.20	35.20
		MGSR442L20C-W100	1.00	0.80	20	1.90	0.10	3.90	2.90	22.80	39.80
5.0	5.2	MGSR552L10C-W100	1.00	1.00	10	2.40	0.10	4.90	3.70	12.15	35.00
		MGSR552L15C-W100	1.00	1.00	15	2.40	0.10	4.90	3.70	18.15	41.00
		MGSR552L15C-W150	1.50	1.00	15	2.40	0.10	4.90	3.70	18.15	41.00
		MGSR552L20C-W150	1.50	1.00	20	2.40	0.10	4.90	3.70	23.15	46.00

Quadrilateral grooving

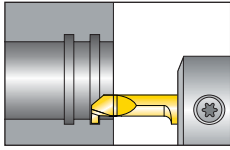


For internal cutting

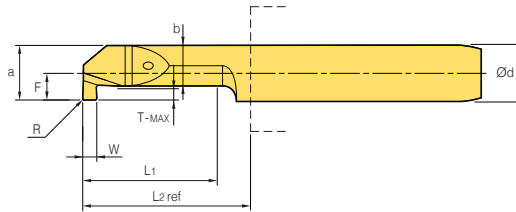
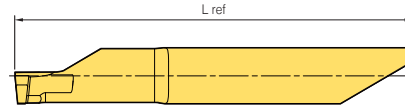
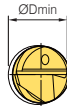


Shank Dia. Ød	Min. machining Dia. ØDmin	Designation	Dimensions (mm)								
			W±0.025	T-MAX	L1	F	R	a	b	L2 ref	L ref
4.0	3.0	MGSR430L16-W070	0.70	0.62	16	1.40	0.10	2.70	1.75	11.50	39.80
	4.0	MGSR440L10-W100	1.00	1.00	10	1.90	0.00	3.90	2.50	18.20	35.20
	4.2	MGSR/L442L10-W079	0.79	0.80	10	1.96	0.10	3.96	2.90	11.50	28.50
		MGSR/L442L10-W100	1.00	0.80	10	1.90	0.10	3.90	2.90	11.50	28.50
		MGSR442L10-W150	1.50	0.80	10	1.90	0.10	2.90	2.90	18.20	35.20
		MGSR/L442L15-W079	0.79	0.80	15	1.96	0.10	3.96	2.90	18.20	35.20
		MGSR/L442L15-W100	1.00	0.80	15	1.90	0.10	3.90	2.90	18.20	35.20
		MGSR/L442L20-W100	1.00	0.80	15	20.00	0.10	3.90	2.90	22.80	39.80
MGSR/L442L25-W079	0.79	0.80	25	1.96	0.10	3.96	2.90	28.70	45.70		
5.0	5.2	MGSL552L06-W070	0.70	1.00	6	2.40	0.10	4.90	3.70	12.15	32.00
		MGSR/L552L10-W100	1.00	1.00	10	2.40	0.10	4.90	3.70	12.15	35.00
		MGSR552L10-W179	1.79	1.35	10	2.40	0.10	4.90	3.70	12.15	35.00
		MGSR552L10-W150	1.50	1.00	10	2.40	0.10	4.90	3.70	12.15	35.00
		MGSR552L10-W200	2.00	1.00	10	2.40	0.10	4.90	3.70	12.15	35.00
		MGSR/L552L15-W100	1.00	1.00	15	2.40	0.10	4.90	3.70	18.15	41.00
		MGSR/L552L15-W150	1.50	1.00	15	2.40	0.10	4.90	3.70	18.15	41.00
		MGSR552L15-W200	2.00	1.00	15	2.40	0.10	4.90	3.70	18.15	41.00
		MGSR/L552L20-W100	1.00	1.00	20	2.40	0.10	4.90	3.70	23.15	46.00
		MGSR/L552L20-W150	1.50	1.00	20	2.40	0.10	4.90	3.70	23.15	46.00
		MGSR552L20-W200	2.00	1.00	20	2.40	0.10	4.90	3.70	23.15	46.00
		MGSR552L21-W050	0.50	1.00	21	2.40	0.10	4.90	3.70	23.15	46.00
6.0	5.2	MGSR652L10-W160	1.60	1.80	10	2.20	0.10	5.20	2.90	12.30	36.00
	6.2	MGSR662L06-W150	1.50	1.80	6	0.40	0.10	3.40	1.70	12.30	40.00
		MGSR662L09-W080	0.80	1.80	9	2.96	0.10	5.96	4.00	11.30	35.00
		MGSR662L10-W079	0.79	1.80	10	2.90	0.10	5.90	4.00	12.30	36.00
		MGSR/L662L10-W100	1.00	1.80	10	2.90	0.10	5.90	4.00	12.30	36.00
		MGSR662L10-W117	1.17	1.80	10	2.90	0.10	5.90	4.00	12.30	36.00
		MGSR/L662L10-W150	1.50	1.80	10	2.90	0.10	5.90	4.00	12.30	36.00
		MGSR662L10-W157	1.57	1.80	10	2.90	0.10	5.94	4.00	12.30	36.00
		MGSR662L10-W198	1.98	1.80	10	2.90	0.10	5.94	4.00	12.30	36.00
		MGSR/L662L10-W200	2.00	1.80	10	2.90	0.10	5.90	4.00	12.30	36.00
		MGSR662L15-W079	0.79	1.80	15	2.90	0.10	5.94	4.00	18.30	42.00
	MGSR/L662L15-W100	1.00	1.80	15	2.90	0.10	5.90	4.00	18.30	42.00	

Quadrilateral grooving

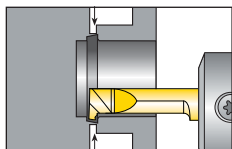


For internal cutting

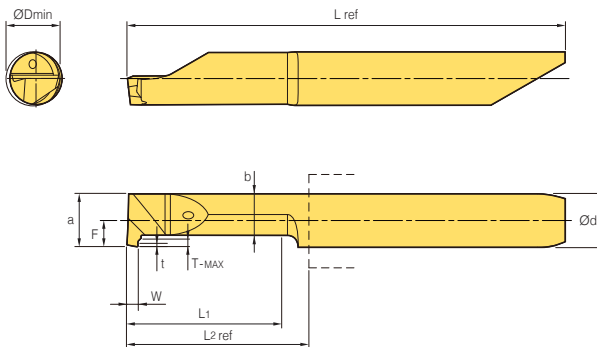


Shank Dia. Ød	Min. machining Dia. ØDmin	Designation	Dimensions (mm)									
			W±0.025	T-MAX	L1	F	R	a	b	L2 ref	L ref	
6.0	6.2	MGSR662L15-W117	1.17	1.80	15	2.96	0.10	5.96	4.00	18.30	42.00	
		MGSR/L662L15-W150	1.50	1.80	15	2.90	0.10	5.90	4.00	18.30	42.00	
		MGSR662L15-W157	1.57	1.80	15	2.96	0.10	5.96	4.00	18.30	42.00	
		MGSR662L15-W198	1.98	1.80	15	2.96	0.10	5.96	4.00	18.30	42.00	
		MGSR/L662L15-W200	2.00	1.80	15	2.90	0.10	5.90	4.00	18.30	42.00	
		MGSR/L662L20-W100	1.00	1.80	20	2.90	0.10	5.90	4.00	23.30	47.00	
		MGSR/L662L20-W150	1.50	1.80	20	2.90	0.10	5.90	4.00	23.30	47.00	
		MGSR/L662L20-W200	2.00	1.80	20	2.90	0.10	5.90	4.00	23.30	47.00	
		MGSR662L25-W079	0.79	1.80	25	2.96	0.10	5.96	4.00	28.30	52.00	
		MGSR662L25-W100	1.00	1.80	25	2.90	0.10	5.90	3.10	28.30	56.00	
		MGSR662L25-W117	1.17	1.80	25	2.96	0.10	5.96	4.00	28.30	52.00	
		MGSR662L25-W157	1.57	1.80	25	2.96	0.10	5.96	4.00	28.30	52.00	
		MGSR662L25-W198	1.98	1.80	25	2.96	0.10	5.96	4.00	28.30	52.00	
		MGSR662L25-W200	2.00	1.80	25	2.90	0.10	5.90	3.20	28.30	56.00	
		MGSR662L25-W350	3.50	1.80	25	2.96	0.10	5.96	4.00	28.30	52.00	
		MGSR/L662L30-W100	1.00	1.80	30	2.90	0.10	5.90	4.00	32.30	56.00	
		MGSR/L662L30-W150	1.50	1.80	30	2.90	0.10	5.90	4.00	32.30	56.00	
		MGSR/L662L30-W200	2.00	1.80	30	2.90	0.10	5.90	4.00	32.30	56.00	
		MGSR662L35-W079	0.79	1.80	35	2.96	0.10	5.96	4.00	37.30	61.00	
		MGSR662L35-W117	1.17	1.80	35	2.96	0.10	5.96	4.00	37.30	61.00	
MGSR662L35-W150	1.50	1.80	35	2.96	0.10	5.90	3.95	37.30	59.85			
MGSR662L35-W157	1.57	1.80	35	2.96	0.10	5.96	4.00	37.30	61.00			
7.0	7.2	MGSR762L15-W250	2.50	2.50	15	3.40	0.10	6.90	4.10	18.30	42.00	
		MGSR772L10-W079	0.79	2.50	10	3.46	0.10	6.96	4.10	11.40	36.00	
		MGSR/L772L10-W100	1.00	2.50	10	3.40	0.10	6.90	4.10	11.40	36.00	
		MGSR/L772L10-W150	1.50	2.50	10	3.40	0.10	6.90	4.10	11.40	36.00	
		MGSR/L772L10-W200	2.00	2.50	10	3.40	0.10	6.90	4.10	11.40	36.00	
		MGSR772L10-W600	6.00	2.50	10	3.20	0.10	6.90	4.10	11.40	36.00	
		MGSR772L15-W079	0.79	2.50	15	3.46	0.10	6.96	4.10	16.40	41.00	
		MGSR772L15-W100	1.00	2.50	15	3.40	0.10	6.90	4.10	16.40	41.00	
		MGSR772L15-W117	1.17	2.50	15	3.46	0.10	6.96	4.10	16.40	41.00	
		MGSR/L772L15-W150	1.50	2.50	15	3.40	0.10	6.90	4.10	16.40	41.00	
		MGSR772L15-W157	1.57	2.50	15	3.46	0.10	6.96	4.10	16.40	41.00	
		MGSR772L15-W198	1.98	2.50	15	3.46	0.10	6.90	4.10	16.40	41.00	
		MGSR/L772L15-W200	2.00	2.50	15	3.40	0.10	6.90	4.10	16.40	41.00	
		MGSR772L16-W150	1.50	2.50	16	3.40	0.10	6.90	4.10	17.40	42.00	
		MGSR772L20-W079	0.79	2.50	20	3.46	0.10	6.96	4.10	26.40	51.00	
		MGSR772L20-W117	1.17	2.50	20	3.46	0.10	6.96	4.10	26.40	51.00	
		MGSR772L20-W157	1.57	2.50	20	3.46	0.10	6.96	4.10	26.40	51.00	
		MGSR772L20-W198	1.98	2.50	20	3.46	0.10	6.96	4.10	26.40	51.00	
		MGSR772L20-W150	1.50	2.50	20	3.40	0.10	6.90	4.10	26.40	46.00	
		MGSR772L25-W100	1.00	2.50	25	3.40	0.10	6.90	4.10	26.40	51.00	
		MGSR/L772L25-W150	1.50	2.50	25	3.40	0.10	6.90	4.10	26.40	51.00	
		MGSR/L772L25-W200	2.00	2.50	25	3.40	0.10	6.90	4.10	26.40	51.00	
		MGSR772L35-W100	1.00	2.50	35	3.40	0.10	6.90	4.10	36.40	61.00	
		MGSR/L772L35-W150	1.50	2.50	35	3.40	0.10	6.90	4.10	36.40	61.00	
MGSR/L772L35-W200	2.00	2.50	35	3.40	0.10	6.90	4.10	36.40	61.00			

Preparatory cutting



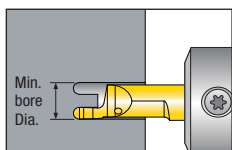
For internal cutting



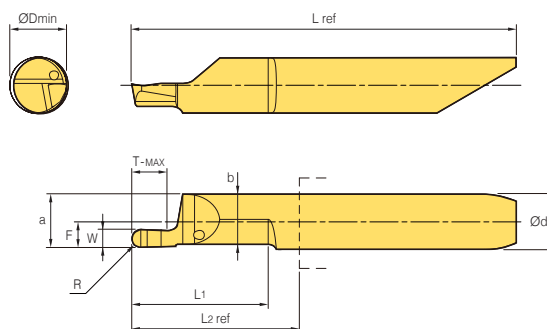
Shank Dia. $\varnothing d$	Min. machining Dia. $\varnothing D_{min}$	Designation	Dimensions (mm)								
			$W \pm 0.025$	T-MAX	L_1	F	t	a	b	$L_2\ ref$	L ref
5.0	5.2	MPPR/L552L15-W100	1.00	0.70	15	2.44	0.30	4.94	3.88	18.15	41.00
		MPPR/L552L20-W100	1.00	0.70	20	2.44	0.30	4.94	3.88	23.15	46.00
		MPPR552L20C-W100	1.00	0.70	20	2.44	0.30	4.94	3.88	23.15	46.00
		MPPR/L552L25-W100	1.00	0.70	25	2.44	0.30	4.94	3.88	28.15	51.00
		MPPR552L30-W100	1.00	0.70	30	2.44	0.30	4.94	3.88	32.15	55.00

Cross section round grooving HPC

※ HPC: High pressure coolant



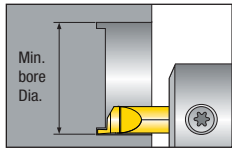
For internal cutting



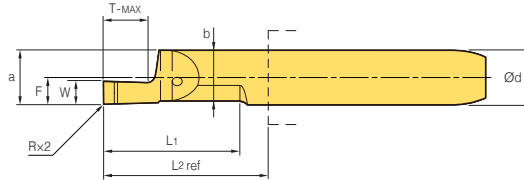
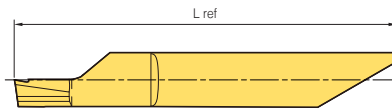
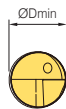
Shank Dia. $\varnothing d$	Min. machining Dia. $\varnothing D_{min}$	Designation	Dimensions (mm)								
			$W \pm 0.025$	T-MAX	L_1	F	R	a	b	$L_2\ ref$	L ref
6.0	6.2	MFGR/L662L15C-R050	1.00	2.00	15	2.80	0.50	5.80	5.55	18.30	42.00
		MFGR/L662L15C-R080	1.60	3.00	15	2.80	0.80	5.80	5.45	18.30	42.00
		MFGR/L662L15C-R100	2.00	4.00	15	2.80	1.00	5.80	5.45	18.30	42.00
		MFGR/L662L15C-R125	2.50	5.00	15	2.80	1.25	5.80	5.45	18.30	42.00
		MFGR/L662L15C-R150	3.00	6.00	15	2.80	1.50	5.80	5.45	18.30	42.00

Cross section quadrilateral grooving HPC

※ HPC: High pressure coolant



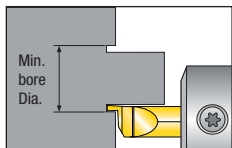
For internal cutting



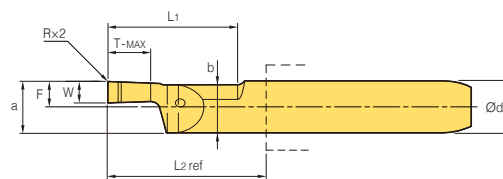
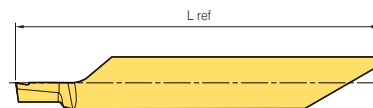
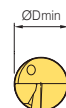
Shank Dia. $\varnothing d$	Min. machining Dia. $\varnothing D_{min}$	Designation	Dimensions (mm)								
			$W \pm 0.025$	T-MAX	L_1	F	R	a	b	$L_2 ref$	$L ref$
6.0	8.0	MFGR/L680L15C-W100	1.00	2.00	15	2.80	0.10	5.80	5.55	18.30	42.00
		MFGR/L680L15C-W117	1.17	2.00	15	2.80	0.15	5.80	5.55	18.30	42.00
		MFGR/L680L15C-W150	1.50	3.00	15	2.80	0.10	5.80	5.55	18.30	42.00
		MFGR/L680L15C-W157	1.57	3.00	15	2.80	0.15	5.80	5.55	18.30	42.00
		MFGR/L680L15C-W198	1.98	4.00	15	2.80	0.15	5.80	5.55	18.30	42.00
		MFGR/L680L15C-W200	2.00	4.00	15	2.80	0.10	5.80	5.55	18.30	42.00
		MFGR/L680L15C-W239	2.39	5.00	15	2.80	0.15	5.80	5.55	18.30	42.00
		MFGR/L680L15C-W250	2.50	5.00	15	2.80	0.10	5.80	5.55	18.30	42.00
		MFGR/L680L15C-W300	3.00	6.00	15	2.80	0.10	5.80	5.55	18.30	42.00
		MFGR/L680L15C-W318	3.18	6.00	15	2.80	0.15	5.80	5.55	18.30	42.00

Cross section quadrilateral grooving HPC

※ HPC: High pressure coolant

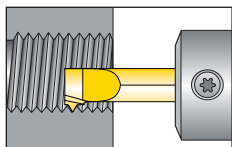


For external cutting

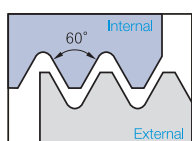
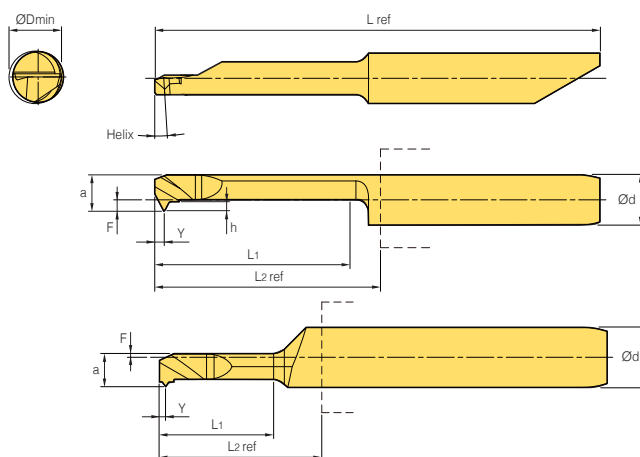


Shank Dia. $\varnothing d$	Min. machining Dia. $\varnothing D_{min}$	Designation	Dimensions (mm)								
			$W \pm 0.025$	T-MAX	L_1	F	R	a	b	$L_2 ref$	$L ref$
6.0	8.0	MFPR/L680L15C-W100	1.00	2.00	15	2.80	0.10	5.80	5.55	18.30	42.00
		MFPR/L680L15C-W117	1.17	2.00	15	2.80	0.15	5.80	5.55	18.30	42.00
		MFPR/L680L15C-W150	1.50	3.00	15	2.80	0.10	5.80	5.55	18.30	42.00
		MFPR/L680L15C-W157	1.57	3.00	15	2.80	0.15	5.80	5.55	18.30	42.00
		MFPR/L680L15C-W198	1.98	4.00	15	2.80	0.15	5.80	5.55	18.30	42.00
		MFPR/L680L15C-W200	2.00	4.00	15	2.80	0.10	5.80	5.55	18.30	42.00
		MFPR/L680L15C-W239	2.39	5.00	15	2.80	0.15	5.80	5.55	18.30	42.00
		MFPR/L680L15C-W250	2.50	5.00	15	2.80	0.10	5.80	5.55	18.30	42.00
		MFPR/L680L15C-W300	3.00	6.00	15	2.80	0.10	5.80	5.55	18.30	42.00
		MFPR/L680L15C-W318	3.18	6.00	15	2.80	0.15	5.80	5.55	18.30	42.00

Threading

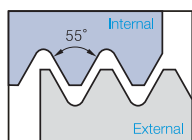


For internal cutting



Partial profile 60°

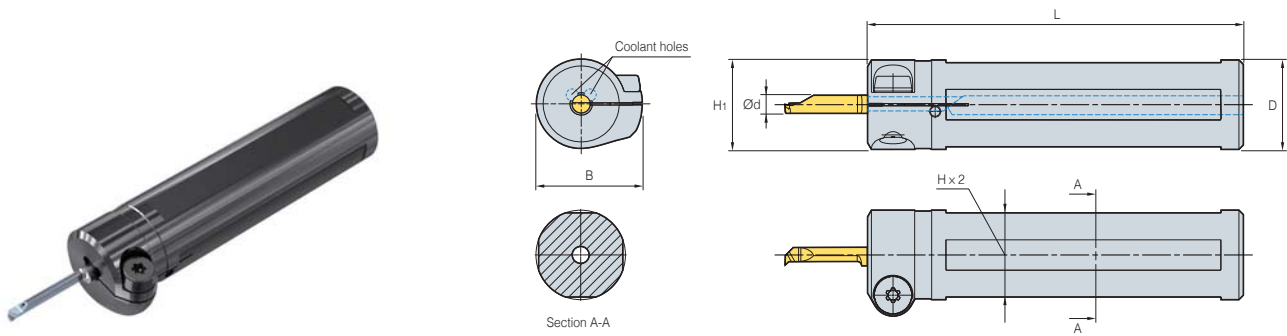
Thread	Shank Dia. Ød	Min. machining Dia. ØDmin	Designation	Pitch		Dimensions (mm)							
				(mm)	(tpi)	L1	a	F	Y	h	L2 ref	L ref	Helix
M1-M2x0.25	4.0	0.73	MTHR407L02P60-0.25	0.25	-	2.5	0.65	1.95	0.14	0.29	13.00	29.80	4.9
M1.6-M3x0.35		1.22	MTHR412L04P60-0.35	0.35	-	4.0	1.10	1.95	0.18	0.29	13.00	29.80	3.8
M2x0.4		1.57	MTHR416L05P60-0.4	0.40	-	5.0	1.45	1.95	0.20	0.41	13.00	29.80	4.2
M2.2-M2.5x0.45		1.71	MTHR417L06P60-0.45	0.45	-	6.0	1.54	1.95	0.22	0.46	13.00	29.80	4.0
-	4.0	3.20	MTHR/L429L16F60	0.5~1.0	48~24	16.0	2.90	0.90	0.90	-	18.40	35.40	3.5
		4.20	MTHR/L439L16F60	0.5~1.0	48~24	16.0	3.89	1.90	0.90	-	18.40	35.40	3.5
	6.0	6.20	MTHR659L06A60	0.5~1.5	48~16	6.0	5.89	2.90	0.90	-	8.50	36.20	3.5
		6.20	MTHR/L659L16A60	0.5~1.5	48~16	16.0	5.89	2.90	0.90	-	18.50	42.20	3.5



Partial profile 55°

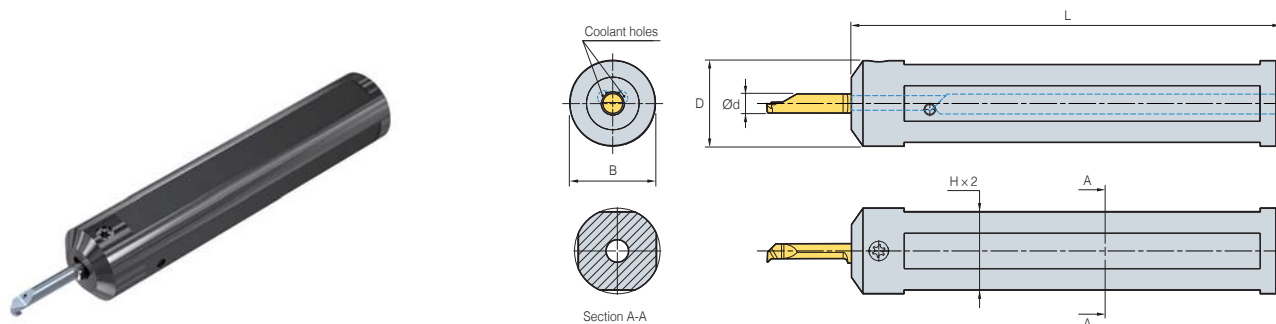
Shank Dia. Ød	Min. machining Dia. ØDmin	Designation	Pitch		Dimensions (mm)						
			(mm)	(tpi)	L1	a	F	Y	L2 ref	L ref	Helix
4.0	3.2	MTHR/L429L16F55	0.5~1.0	48~24	16	2.90	0.90	0.75	18.40	35.40	3.5
	4.2	MTHR/L439L16F55	0.5~1.0	48~24	16	2.90	1.90	0.75	18.40	35.40	3.5
6.0	6.2	MTHR/L659L16A55	0.5~1.5	48~16	16	5.89	2.90	0.90	18.50	42.20	3.5

MHRSC (shrink tool holder)



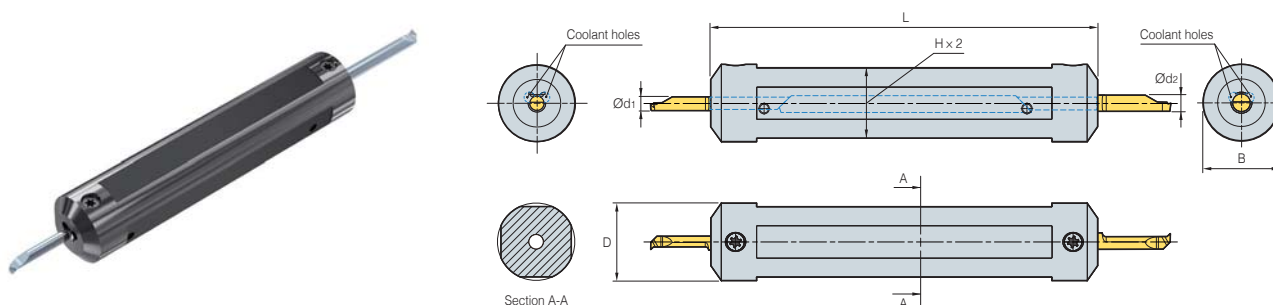
Insert Dia. Ød	Designation	Dimensions (mm)					Screw	Wrench
		D	B	H ₁	H	L		
4.0	MHRSC4-10-4F	10	19.7	13.3	8.8	65	MTS10-15X2	MTL15/MTLX15
	MHRSC4-12-4F	12	19.7	13.8	10.8	70		
	MHRSC4-16-4F	16	21.7	16.0	14.8	75		
	MHRSC4-20-4F	20	23.7	20.0	18.8	84		
	MHRSC4-22-4F	22	24.7	22.0	20.0	110		
5.0	MHRSC5-16-4F	16	21.7	16.0	14.8	75		
	MHRSC5-20-4F	20	23.7	20.0	18.8	84		
6.0	MHRSC6-12-4F	12	19.7	13.8	10.8	70		
	MHRSC6-16-4F	16	21.7	16.0	14.8	75		
	MHRSC6-20-4F	20	23.7	20.0	18.8	84		
	MHRSC6-22-4F	22	24.7	22.0	20.0	110		
7.0	MHRSC7-16-4F	16	21.7	16.0	14.8	75		
	MHRSC7-20-4F	20	23.7	20.0	18.8	84		

MHRRC (round holder)



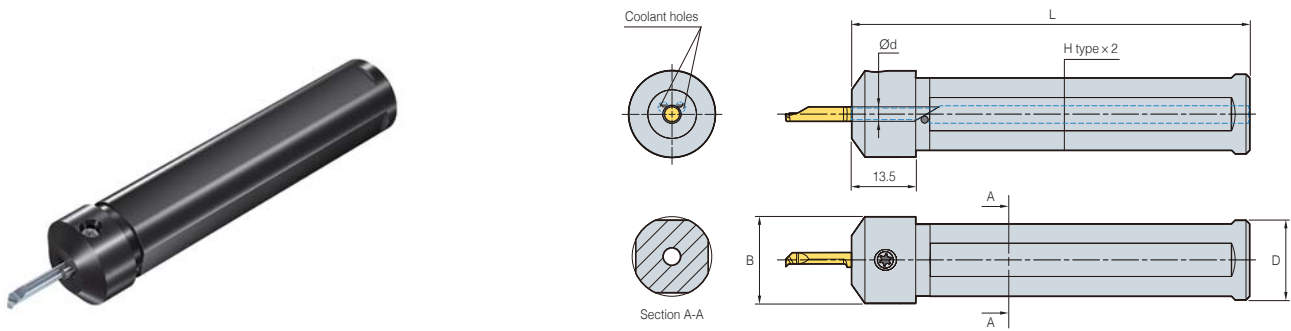
Insert Dia. Ød	Designation	Dimensions (mm)			Screw	Wrench
		B = D	H	L		
4.0	MHRRC4-20-4F	20.00	18.8	83.5	MTDBT15	MTF15
	MHRRC4-22-4F	22.00	20.0	110.0		
5.0	MHRRC5-20-4F	20.00	18.8	83.5		
	MHRRC5-22-4F	22.00	20.0	110.0		
6.0	MHRRC6-20-4F	20.00	18.8	83.5		
	MHRRC6-22-4F	22.00	20.0	110.0		
7.0	MHRRC7-25-4F	25.00	20.0	110.0		

MHRRC (double-sided round holder)



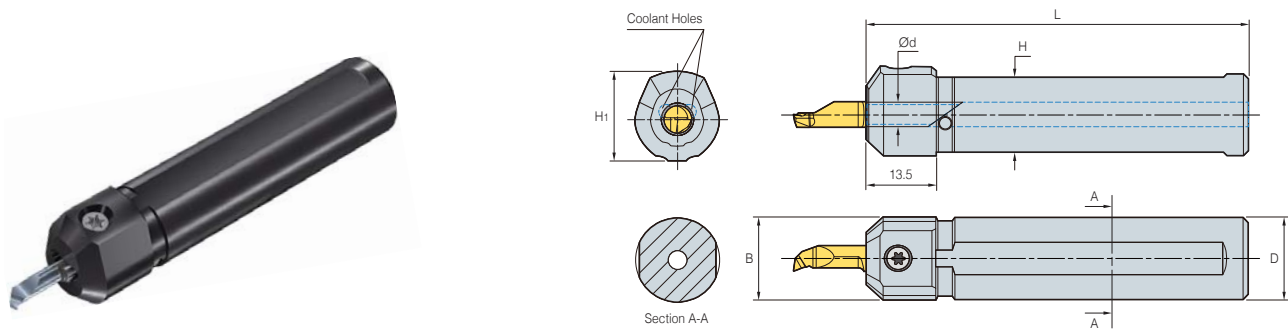
Insert Dia. Ød1~Ød2(mm)	Designation	Dimensions (mm)			Screw	Wrench
		B = D	H	L		
4.0 ~ 5.0	MHRRC4-075-5-4F	19.05	17.8	83.5	MTDBT15	MTF15
	MHRRC4-20-5-4F	20.00	18.8	83.5		
	MHRRC4-22-5-4F	22.00	20.0	110.0		
	MHRRC4-25-5-4F	25.00	23.0	110.0		
6.0 ~ 7.0	MHRRC6-20-7-4F	20.00	18.8	83.5		
	MHRRC6-25-7-4F	25.00	23.0	110.0		

MHRNC-4F (round shank holder)



Insert Dia. Ød	Designation	Dimensions (mm)				Screw	Wrench
		D	B	H	L		
4.0	MHRNC4-20-4F	20	22	18.8	83.5	MTDT15 or MTDBT15	MTKT15 or MTF15
	MHRNC4-22-4F	22	24	20.0	110.0		
	MHRNC4-23-4F	23	25	21.0	110.0		
	MHRNC4-25-4F	25	27	23.0	110.0		
	MHRNC4-28-4F	28	30	26.0	110.0		
5.0	MHRNC5-20-4F	20	22	18.8	83.5		
	MHRNC5-22-4F	22	24	20.0	110.0		
	MHRNC5-23-4F	23	25	21.0	110.0		
	MHRNC5-25-4F	25	27	23.0	110.0		
	MHRNC5-28-4F	28	30	26.0	110.0		
6.0	MHRNC6-20-4F	20	22	18.8	83.5		
	MHRNC6-22-4F	22	24	20.0	110.0		
	MHRNC6-23-4F	23	25	21.0	110.0		
	MHRNC6-25-4F	25	27	23.0	110.0		
	MHRNC6-28-4F	28	30	26.0	110.0		
7.0	MHRNC7-22-4F	22	24	20.0	110.0		
	MHRNC7-23-4F	23	25	21.0	110.0		
	MHRNC7-25-4F	25	27	23.0	110.0		
	MHRNC7-28-4F	28	30	26.0	110.0		

MHRNC-2F (round shank holder)



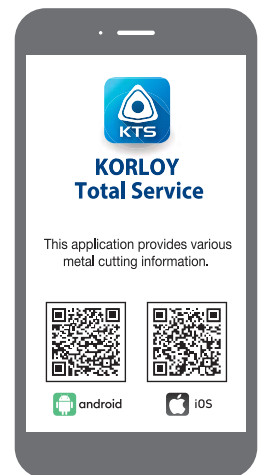
Insert Dia. Ød	Designation	Dimensions (mm)				Screw	Wrench
		B = D	H ₁	H	L		
4.0	MHRNC4-10-2F	10.00	14.0	8.8	65.0	MTDT15 or MTDBT15	MTKT15 or MTF15
	MHRNC4-12-2F	12.00	16.0	10.8	70.0		
	MHRNC4-16-2F	16.00	17.6	14.8	75.0		
	MHRNC4-20-2F	20.00	22.0	18.8	84.0		
5.0	MHRNC5-10-2F	10.00	14.0	8.8	65.0		
	MHRNC5-12-2F	12.00	16.0	10.8	70.0		
	MHRNC5-16-2F	16.00	18.6	14.8	75.0		
	MHRNC5-20-2F	20.00	22.0	18.8	84.0		
6.0	MHRNC6-12-2F	12.00	16.0	10.8	70.0		
	MHRNC6-16-2F	16.00	18.6	14.8	75.0		
	MHRNC6-20-2F	20.00	22.0	18.8	84.0		
7.0	MHRNC7-16-2F	16.00	18.6	14.8	75.0		
	MHRNC7-20-2F	20.00	22.0	18.8	84.0		

⚠ For the safe metalcutting

- Use safety supplies such as protective gloves to prevent possible injury while touching the edge of tools.
- Use safety glasses or safety cover to hedge possible dangers. Inappropriate usage or excessive cutting condition may lead tool's breakage or even the fragment's scattering.
- Clamp the workpiece tightly enough to prevent its movement while its machining.
- Properly manage the tool change phase because the inordinately used tool can be easily broken under the excessive cutting load or severe wear, and it may threat the operator's safety.
- Use safety cover because chips evacuated during cutting are hot and sharp and may cause burns and cuts. To remove chips safely, stop machining, put on protective gloves, and use a hook or other tools.
- Prepare for fire prevention measures as the use of the non-water soluble cutting oil may cause fire.
- Use safety cover and other safety supplies because the spare parts or the inserts can be pulled out due to centrifugal force while high speed machining.



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