

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

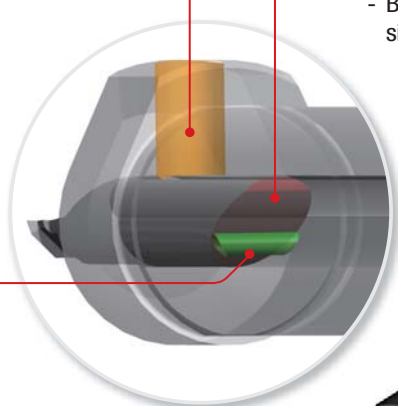
- Better precision by rake side of the insert

Stop pin

- Precise position control while clamping an insert

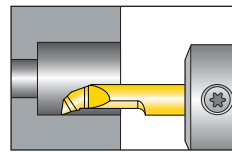
Enhanced coolant system

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

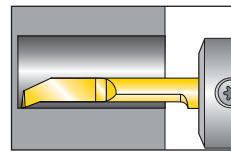


Application range

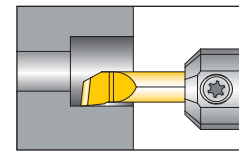
Boring



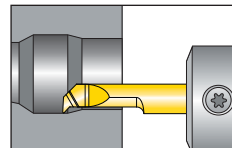
Boring



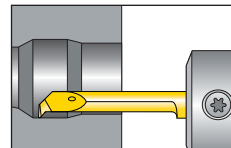
Boring (chip breaker)



Boring (chip former)

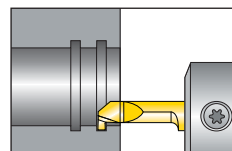
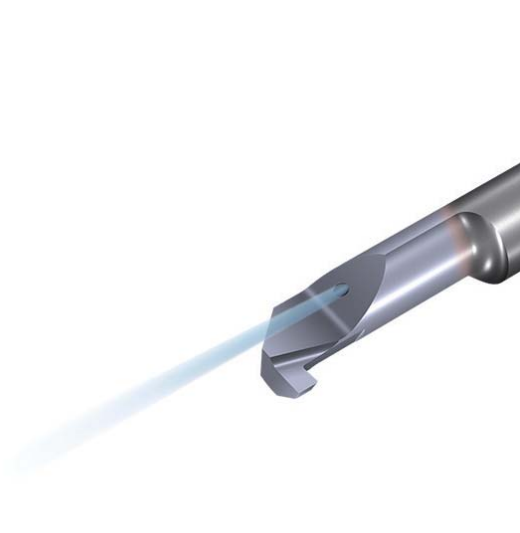


Boring & Profiling (CL)

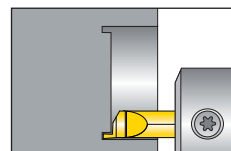


Boring & Profiling
(CBLF chip breaker)

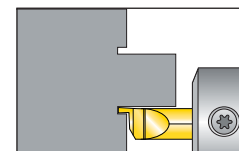
Grooving



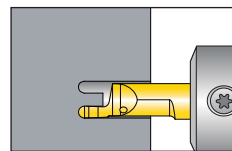
Quadrilateral grooving



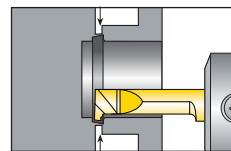
Cross section
quadrilateral grooving
(internal cutting)



Cross section
quadrilateral grooving
(external cutting)

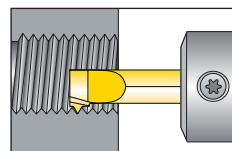
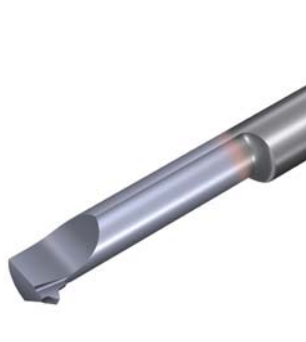


Cross section round
grooving



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

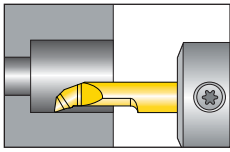
| Workpiece | | Brinell hardness (HB) | vc (m/min) | fn (mm/rev) | |
|-------------------------|---|--|---------------|----------------|------|
| ISO | Workpiece materials | | | | |
| P | Non-alloy | Low carbon alloy (C = 0.1 ~ 0.25%) | 125 | 50 ~ 120 | 0.05 |
| | | Medium carbon alloy (C = 0.25 ~ 0.55%) | 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

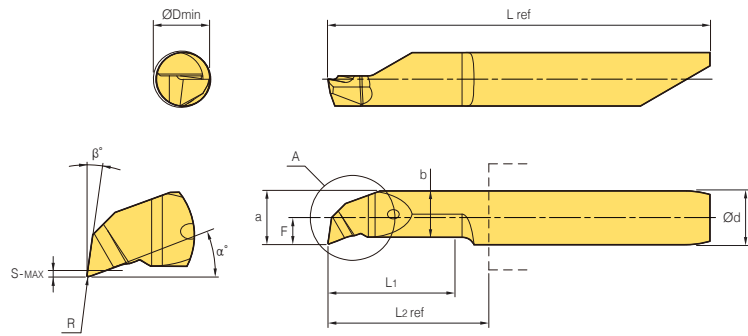
| Workpiece | | Brinell hardness (HB) | vc (m/min) | |
|-----------|--|--|---------------|-----------|
| ISO | Workpiece materials | | | |
| P | Non-alloy | Low carbon alloy (C = 0.1 ~ 0.25%) | 125 | 140 ~ 200 |
| | | Medium carbon alloy (C = 0.25 ~ 0.55%) | 150 | 120 ~ 180 |
| | | High carbon alloy (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

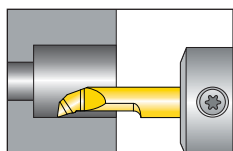


For internal cutting

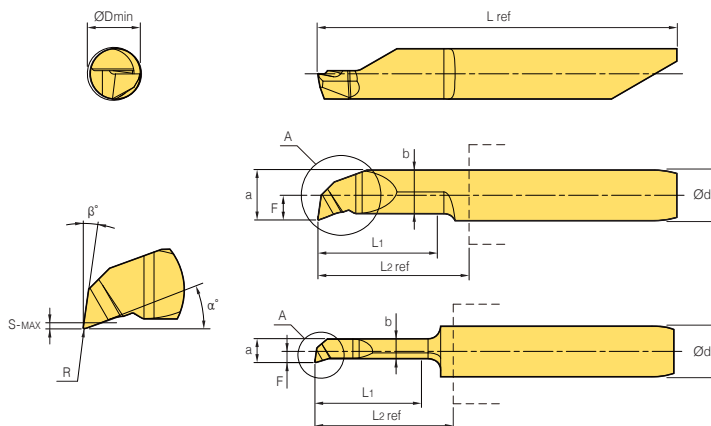


| Shank Dia. Ød | Min. machining Dia. ØDmin | Designation | Dimensions (mm) | | | | | | | | | |
|------------------|------------------------------|------------------|-----------------|------|------|-------|------|------|------|-------|--------|-------|
| | | | L1 | R | F | S-MAX | a | b | α° | β° | L2 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

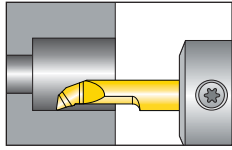


For internal cutting

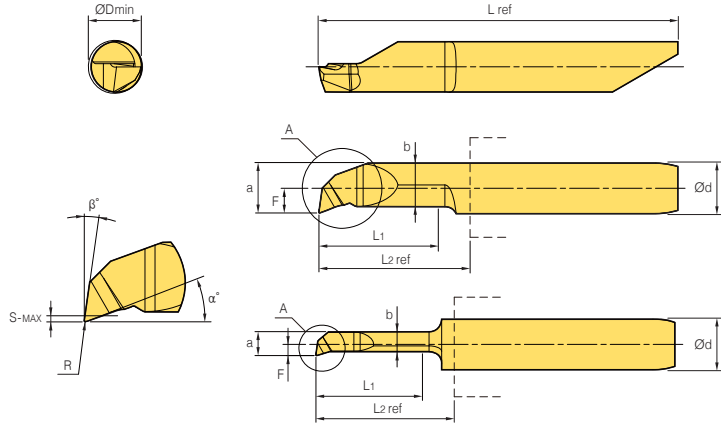


| Shank Dia. Ød | Min. machining Dia. ØDmin | Designation | Dimensions (mm) | | | | | | | | | |
|------------------|------------------------------|-------------------|-----------------|------|------|-------|------|------|------|-------|--------|-------|
| | | | L1 | R | F | S-MAX | a | b | α° | β° | 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 |
| | | MBER422L14-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 |
| | | MBER427L15-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 |
| | | MBER427L16-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

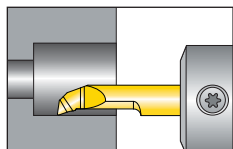


For internal cutting

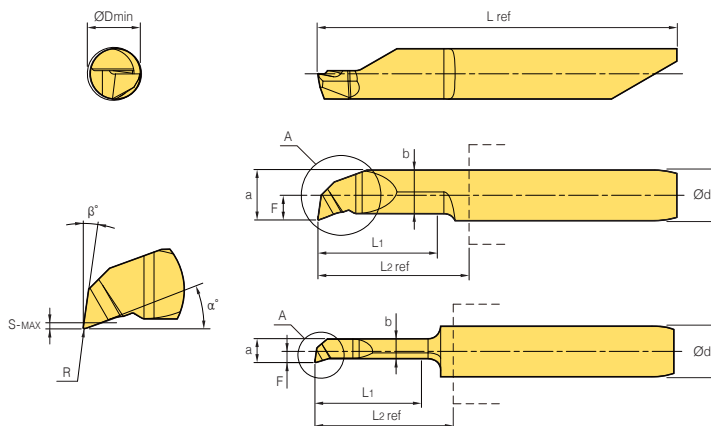
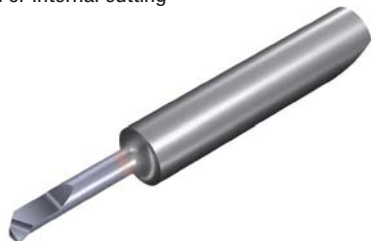


| Shank Dia. \varnothing_d | Min. machining Dia. \varnothing_{Dmin} | Designation | Dimensions (mm) | | | | | | | | | | | |
|-------------------------------|---|-------------------|-----------------|-------------------|------|-------|------|------|----------------|---------------|--------------------|------------------|-------|-------|
| | | | L ₁ | R | F | S-MAX | a | b | α° | β° | L _{2 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 | | |
| | | MBCR/L432L16-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 | | |
| | | MBCR/L432L20-R015 | 20 | 0.15 | 1.40 | 0.20 | 2.87 | 2.45 | 17.5 | 8 | 22.80 | 39.80 | | |
| | | MBCR/L432L23-R010 | 23 | 0.10 | 1.43 | 0.20 | 2.90 | 2.45 | 17.5 | 8 | 22.80 | 45.70 | | |
| | | 3.7 | 3.7 | MBCR/L437L10-R005 | 10 | 0.05 | 1.78 | 0.20 | 3.48 | 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 |
| | | | | MBCR/L437L20-R015 | 20 | 0.15 | 1.74 | 0.20 | 3.44 | 3.05 | 17.5 | 8 | 22.80 | 39.80 |
| | | | | MBCR/L437L26-R005 | 26 | 0.05 | 1.78 | 0.20 | 3.48 | 3.05 | 17.5 | 8 | 28.70 | 45.70 |
| 4.0 | 4.2 | | | MBCR/L442L10-R003 | 10 | 0.03 | 1.98 | 0.30 | 3.98 | 3.13 | 19.0 | 8 | 11.50 | 28.50 |
| | | | | MBCR/L442L10-R005 | 10 | 0.05 | 1.95 | 0.30 | 3.95 | 3.45 | 21.0 | 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 |
| | | MBCR/L442L15-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 | | |
| | | MBCR/L442L21-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 | | |
| | | MBCR/L442L25-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 | | |
| | | MBCR/L442L30-R005 | 30 | 0.05 | 1.95 | 0.30 | 3.95 | 3.45 | 21.0 | 8 | 33.70 | 50.70 | | |

Boring



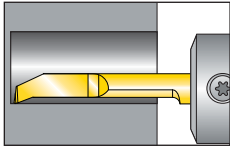
For internal cutting



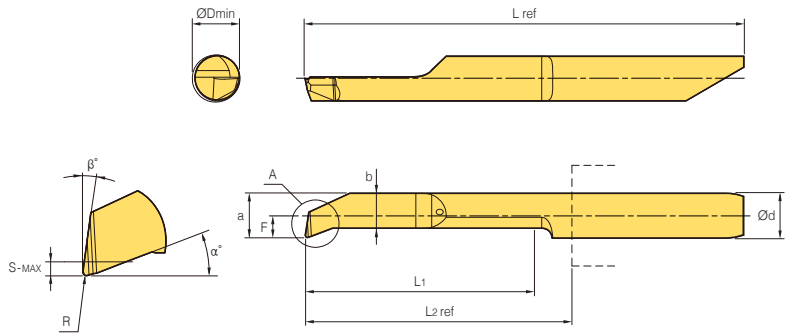
| Shank Dia. Ød | Min. machining Dia. ØDmin | Designation | Dimensions (mm) | | | | | | | | | |
|-------------------|------------------------------|-------------------|-----------------|------|------|-------|------|------|-------|-------|--------|-------|
| | | | L1 | R | F | S-MAX | a | b | α° | β° | 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



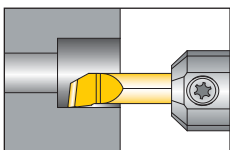
For internal cutting



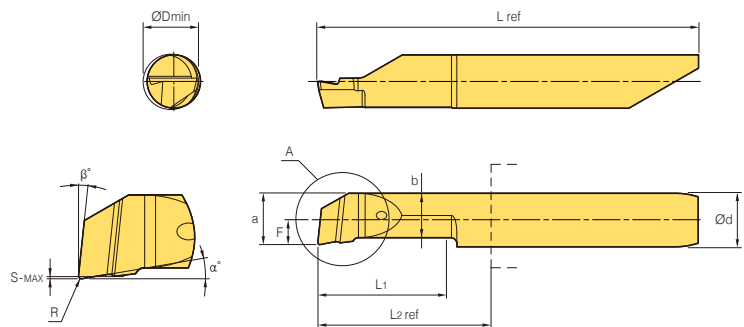
| Shank Dia. Ød | Min. machining Dia. ØDmin | Designation | Dimensions (mm) | | | | | | | | | |
|------------------|------------------------------|-------------------|-----------------|------|------|-------|------|------|----|----|--------|-------|
| | | | L1 | R | F | S-MAX | a | b | α° | β° | L2 ref | 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



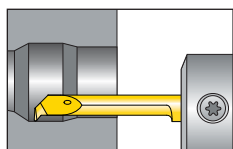
For internal cutting



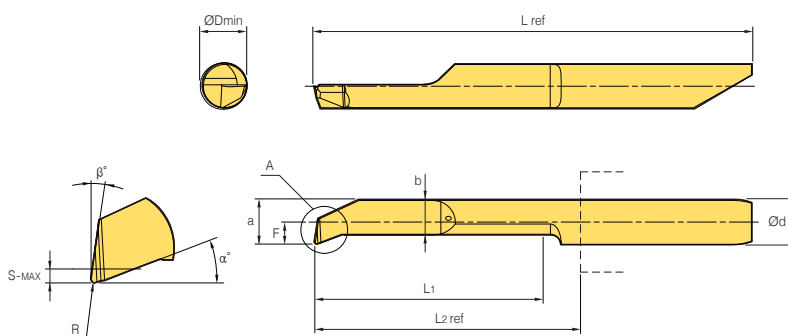
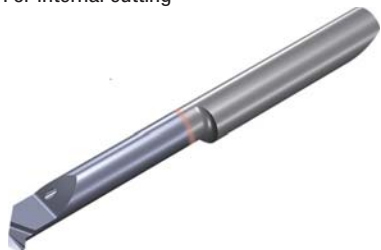
| Shank Dia. Ød | Min. machining Dia. ØDmin | Designation | Dimensions (mm) | | | | | | | | | |
|------------------|------------------------------|-------------------|-----------------|------|------|-------|------|------|-----|----|--------|-------|
| | | | L1 | R | F | S-MAX | a | b | α° | β° | L2 ref | 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



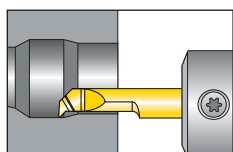
For internal cutting



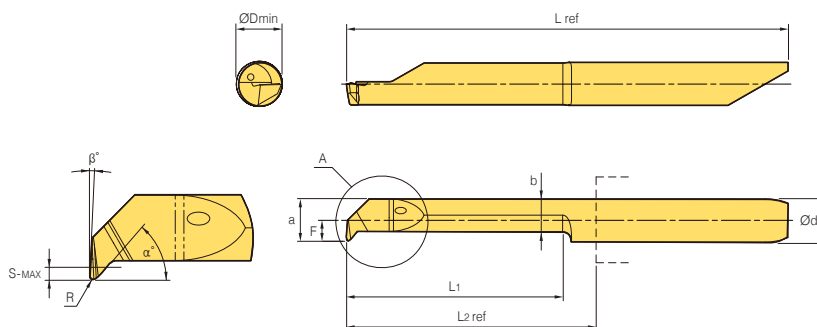
| Shank Dia. $\varnothing d$ | Min. machining Dia. $\varnothing D_{min}$ | Designation | Dimensions (mm) | | | | | | | | | |
|-------------------------------|--|----------------------|-----------------|------|------|---------|------|------|----------------|---------------|-------------|-----------|
| | | | L_1 | R | F | $S-MAX$ | a | b | α° | β° | L_2_{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

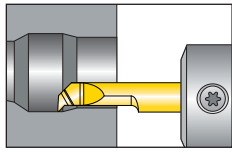


For internal cutting

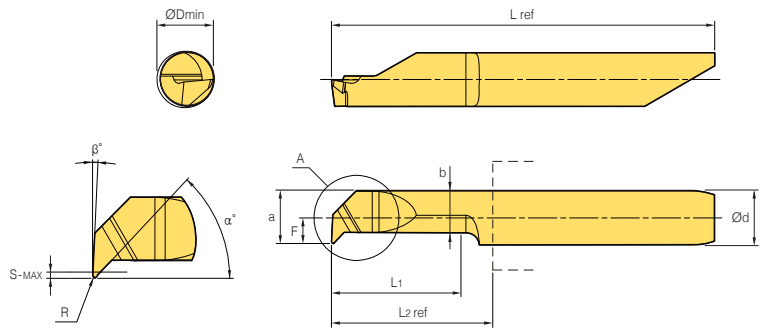


| Shank Dia. $\varnothing d$ | Min. machining Dia. $\varnothing D_{min}$ | Designation | Dimensions (mm) | | | | | | | | | |
|-------------------------------|--|------------------|-----------------|------|------|---------|------|------|----------------|---------------|-------------|-----------|
| | | | L_1 | R | F | $S-MAX$ | a | b | α° | β° | L_2_{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)



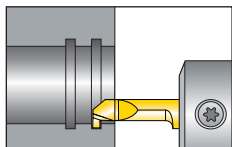
For internal cutting



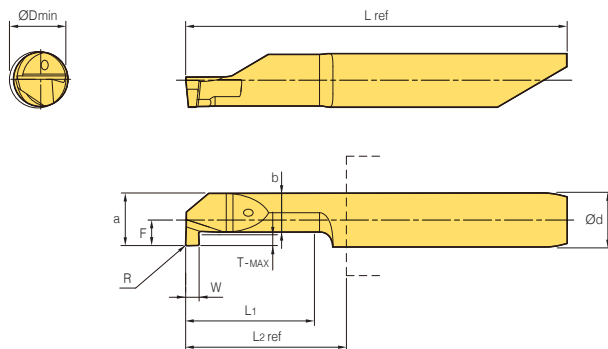
| Shank Dia. Ød | Min. machining Dia. ØDmin | Designation | Dimensions (mm) | | | | | | | | | |
|------------------|---------------------------------|-------------------|-----------------|------|------|-------|------|------|----|----|--------|-------|
| | | | L1 | R | F | S-MAX | a | b | α° | β° | L2 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 |
| | | MCLR4/L42L21-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

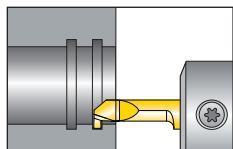


For internal cutting

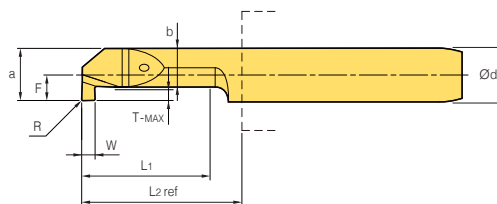
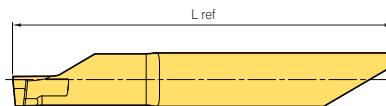
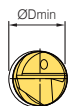


| Shank Dia. Ød | Min. machining Dia. ØDmin | Designation | Dimensions (mm) | | | | | | | | | |
|------------------|---------------------------------|------------------|-----------------|-------|----|------|------|------|------|--------|-------|--|
| | | | W±0.025 | T-MAX | L1 | F | R | a | b | L2 ref | 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

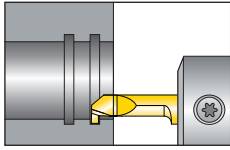


For internal cutting

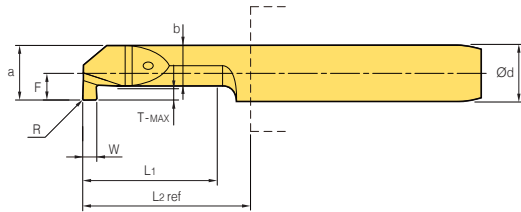
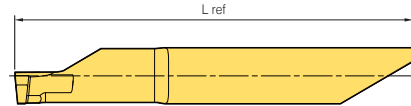
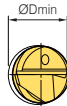


| Shank Dia. Ød | Min. machining Dia. ØDmin | Designation | Dimensions (mm) | | | | | | | | |
|-------------------|------------------------------|-------------------|-----------------|-------|------|-------|------|-------|-------|--------|-------|
| | | | W±0.025 | T-MAX | L1 | F | R | a | b | L2 ref | 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

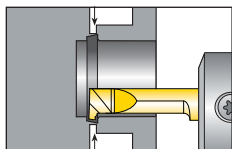


For internal cutting

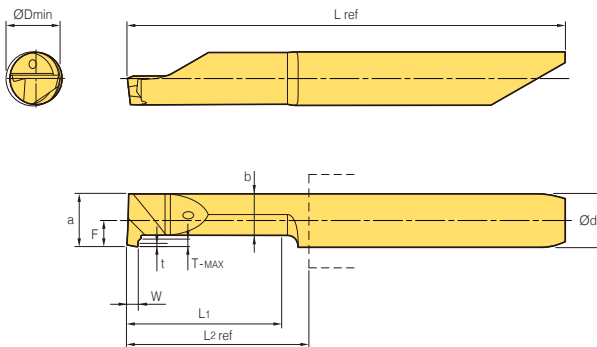


| Shank Dia. Ød | Min. machining Dia. ØDmin | Designation | Dimensions (mm) | | | | | | | | | |
|-------------------|---------------------------------|-------------------|-----------------|-------|------|------|------|-------|-------|--------|-------|--|
| | | | W±0.025 | T-MAX | L1 | F | R | a | b | 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



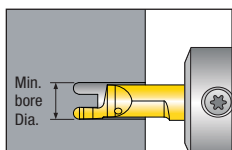
For internal cutting



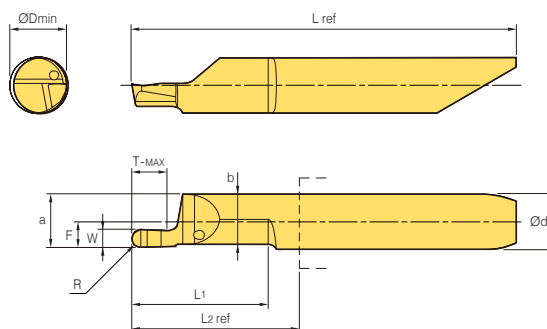
| Shank Dia. Ød | Min. machining Dia. ØDmin | Designation | Dimensions (mm) | | | | | | | | |
|------------------|------------------------------|-------------------|-----------------|-------|----|------|------|------|------|--------|-------|
| | | | W±0.025 | T-MAX | L1 | F | t | a | b | L2 ref | L ref |
| 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



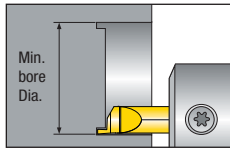
For internal cutting



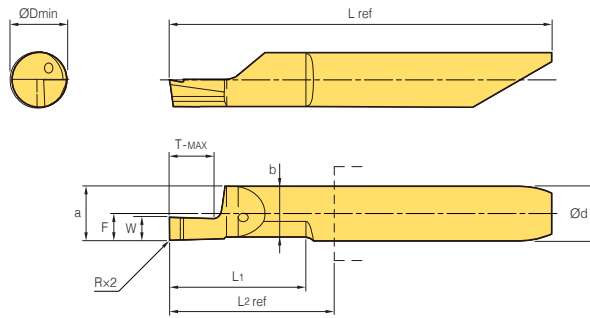
| Shank Dia. Ød | Min. machining Dia. ØDmin | Designation | Dimensions (mm) | | | | | | | | |
|------------------|------------------------------|---------------------|-----------------|-------|----|------|------|------|------|--------|-------|
| | | | W±0.025 | T-MAX | L1 | F | R | a | b | L2 ref | L ref |
| 6.0 | 6.2 | MFGRR/L662L15C-R050 | 1.00 | 2.00 | 15 | 2.80 | 0.50 | 5.80 | 5.55 | 18.30 | 42.00 |
| | | MFGRR/L662L15C-R080 | 1.60 | 3.00 | 15 | 2.80 | 0.80 | 5.80 | 5.45 | 18.30 | 42.00 |
| | | MFGRR/L662L15C-R100 | 2.00 | 4.00 | 15 | 2.80 | 1.00 | 5.80 | 5.45 | 18.30 | 42.00 |
| | | MFGRR/L662L15C-R125 | 2.50 | 5.00 | 15 | 2.80 | 1.25 | 5.80 | 5.45 | 18.30 | 42.00 |
| | | MFGRR/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



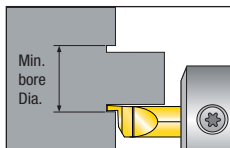
For internal cutting



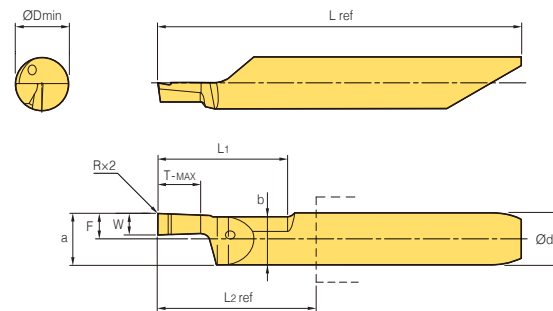
| Shank Dia. $\varnothing d$ | Min. machining Dia. $\varnothing D_{min}$ | Designation | Dimensions (mm) | | | | | | | | |
|-------------------------------|--|--------------------|-----------------|-------|-------|------|------|------|------|-------------------|-----------------|
| | | | $W \pm 0.025$ | T-MAX | L_1 | F | R | a | b | $L_2 \text{ ref}$ | $L \text{ ref}$ |
| 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

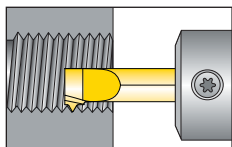


For external cutting

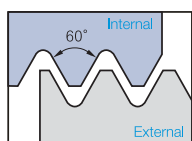
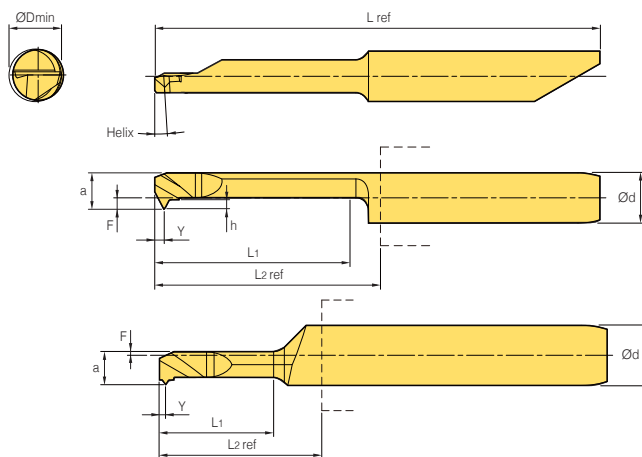


| Shank Dia. $\varnothing d$ | Min. machining Dia. $\varnothing D_{min}$ | Designation | Dimensions (mm) | | | | | | | | |
|-------------------------------|--|--------------------|-----------------|-------|-------|------|------|------|------|-------------------|-----------------|
| | | | $W \pm 0.025$ | T-MAX | L_1 | F | R | a | b | $L_2 \text{ ref}$ | $L \text{ ref}$ |
| 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

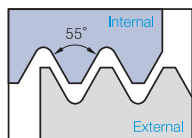


For internal cutting



Partial profile 60°

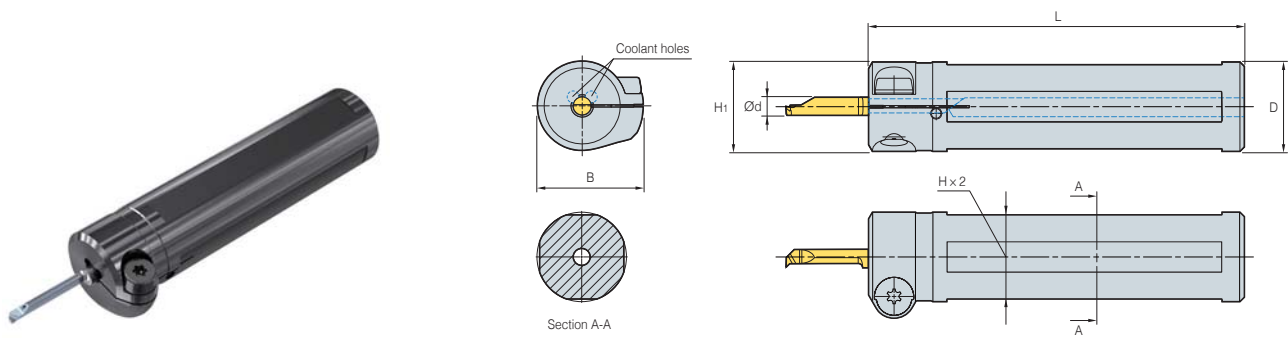
| Thread | Shank Dia. Ød | Min. machining Dia. ØDmin | Designation | Pitch | | Dimensions (mm) | | | | | | | |
|----------------|---------------|---------------------------|--------------------|---------|-------|-----------------|------|------|------|------|--------|-------|-------|
| | | | | (mm) | (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°

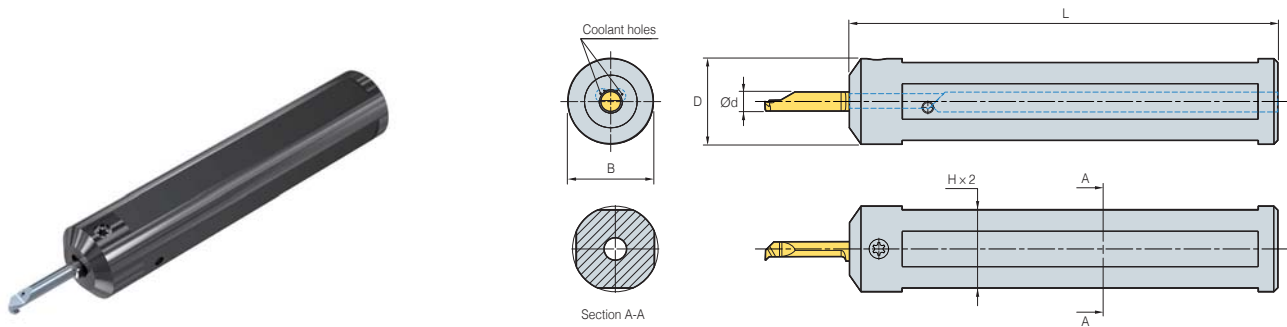
| Shank Dia. Ød | Min. machining Dia. ØDmin | Designation | Pitch | | Dimensions (mm) | | | | | | |
|---------------|---------------------------|-----------------|---------|-------|-----------------|------|------|------|--------|-------|-------|
| | | | (mm) | (tpi) | L1 | a | F | Y | L2 ref | L ref | 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)



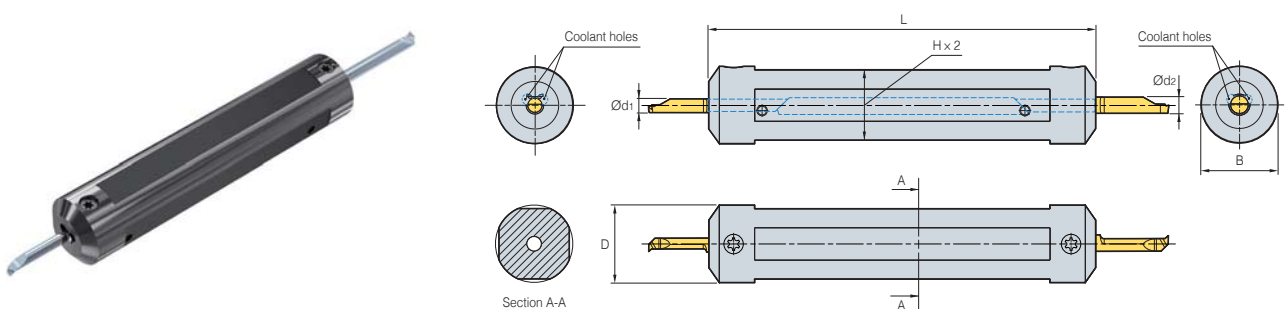
| Insert Dia. Ød | Designation | Dimensions (mm) | | | | | Screw | Wrench |
|-------------------|--------------|-----------------|------|----------------|------|-----|------------|--------------|
| | | D | B | H ₁ | H | L | | |
| 4.0 | MHRSC4-10-4F | 10 | 19.7 | 13.3 | 8.8 | 65 | MTS10-15X2 | MTL15/MTLX15 |
| | 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)



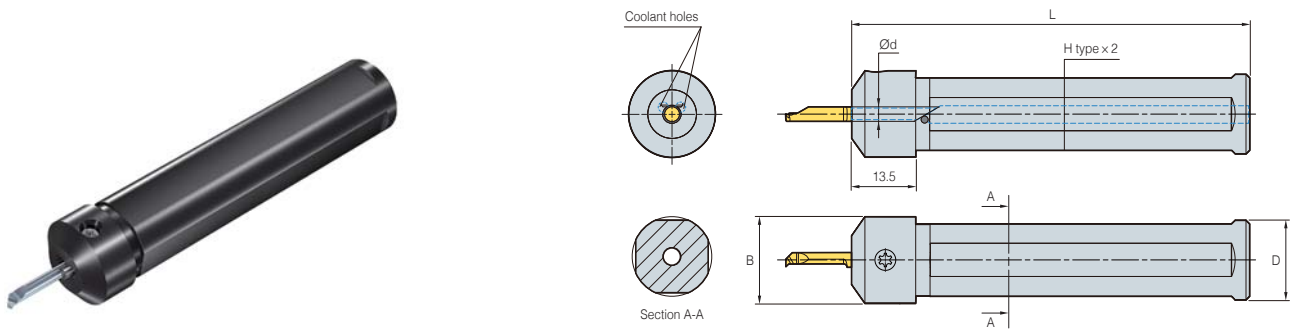
| Insert Dia. Ød | Designation | Dimensions (mm) | | | Screw | Wrench |
|-------------------|--------------|-----------------|------|-------|---------|--------|
| | | B = D | H | L | | |
| 4.0 | MHRRC4-20-4F | 20.00 | 18.8 | 83.5 | MTDBT15 | MTF15 |
| | MHRRC4-22-4F | 22.00 | 20.0 | 110.0 | | |
| 5.0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



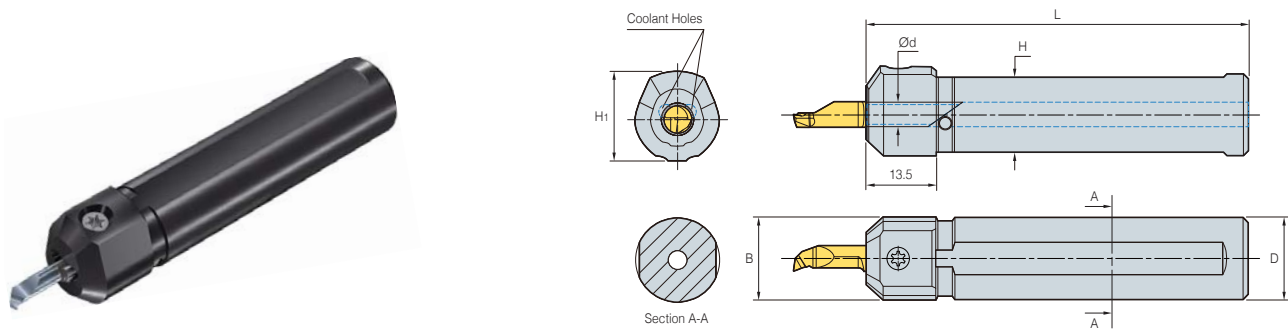
| Insert Dia. Ød1 ~ Ød2 (mm) | Designation | Dimensions (mm) | | | Screw | Wrench |
|-------------------------------|-----------------|-----------------|------|-------|---------|--------|
| | | B = D | H | L | | |
| 4.0 ~ 5.0 | MHRRC4-075-5-4F | 19.05 | 17.8 | 83.5 | MTDBT15 | MTF15 |
| | MHRRC4-20-5-4F | 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)



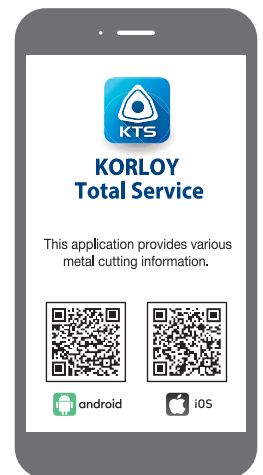
| Insert Dia. Ød | Designation | Dimensions (mm) | | | | Screw | Wrench |
|-------------------|--------------|-----------------|----------------|------|------|-------------------------|-----------------------|
| | | B = D | H ₁ | H | L | | |
| 4.0 | MHRNC4-10-2F | 10.00 | 14.0 | 8.8 | 65.0 | MTDT15 or 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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