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# HFMD

## High Feed Mill Double

- Available for economical and highly efficient machining with implementation of double sided 4 corner inserts and increase in the number of teeth per cutter diameter
- Available for high speed/high feed machining with high helix edge design and excellent clamping stability

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High feed milling tool with 4 corners for small diameter

# HFMD

With the development of the end-user market, the current cutting tool industry has challenges including:

First, discovering highly effective machining technologies that can improve productivity and reduce production costs within limited time and budget. Second, to find a tool/solution that can easily machine hard-to-cut materials which are becoming more widely used in numerous industries (mold, aerospace, and etc) in pursuit of durability and lighter weight.

KORLOY recommends a new high feed tool, HFMD, which can easily resolve above two challenges.

**HFMD** insert is a double sided 4 corner insert which is economical and enhances machining productivity by implementing more flutes per diameter. In addition, HFMD has achieved high speed/high feed machining by applying high rake angle and helix design on its edge. These two features have significantly reduced cutting resistance compared to competitors' tools or even against positive-type inserts.

Furthermore, HFMD provides excellent clamping stability by applying concave clamping system on the side, wider bottom face at the clamping area, and bigger sized screws. These will help minimize noise and vibration, prevent damage of insert with stable machining in high feed machining, and improve the surface finish of the workpiece.

As we can see in these advantages, KORLOY's HFMD is the next-generation high speed/high feed machining solution, one step ahead in the high-efficiency machining trend.

### » Highly efficient and economical insert
- Double-sided 4 corners

### » Superior clamping stability
- Prevents insert chipping and damage by minimizing vibrations
- Improved surface finish of workpieces

### » Realization of high speed/high feed
- High speed machining by applying high rake angle, and helix cutting edge
- Available for high feed machining with the increase in the number of teeth per cutter diameter

### » Optimized holder design
- Excellent chip evacuation in slotting or deep shouldering with minimized interference with side walls

## Code system

### Shank type

**HFMD S 025 R - 4 C 25 - 180 - LN06**

- **HFMD**
- **Type**: S: Shank
- **Machining diameter**: 025: Ø25 mm
- **Oil hole & Hand**: R: With oil hole, Right-handed; NR: Without oil hole, Right-handed
- **No. of tooth**: 4: 4 teeth
- **Shank type**: W: Weldon; C: Cylinder
- **Shank diameter**: 25: Ø25 mm
- **Overall length**: 180: 180 mm
- **Available inserts**: LN04: LNMX04; LN06: LNMX06; LN10: LNMX10

### Cutter type

**HFMD C M 063 R - 22 - 8 - LN10**

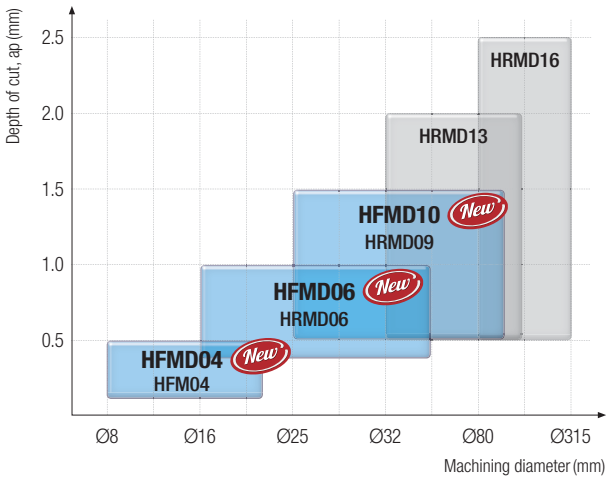
- **HFMD**
- **Type**: C: Cutter
- **Arbor type**: M: Metric; A: Inch; None: Asia
- **Machining diameter**: 063: Ø63 mm
- **Oil hole & Hand**: R: With oil hole, Right-handed; NR: Without oil hole, Right-handed
- **Internal diameter**: 22: Ø22 mm
- **No. of tooth**: 8: 8 teeth
- **Available inserts**: LN06: LNMX06; LN10: LNMX10

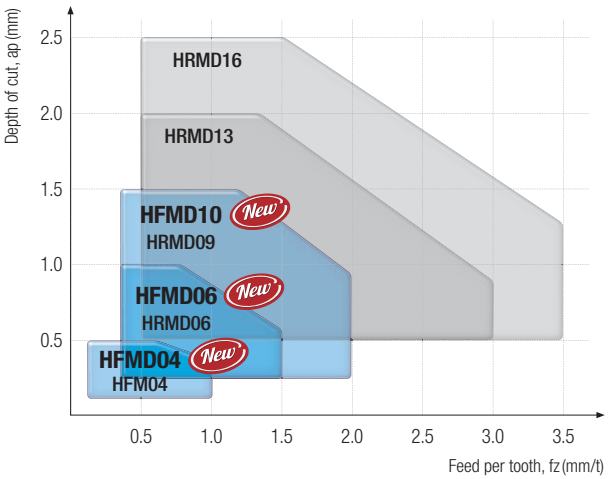
### Modular type

**HFMD M 016 R - 4 - M08 - LN04**

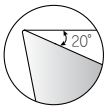
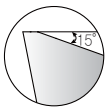
- **HFMD**
- **Type**: M: Modular
- **Machining diameter**: 016: Ø16 mm
- **Oil hole & Hand**: R: With oil hole, Right-handed; NR: Without oil hole, Right-handed
- **No. of tooth**: 4: 4 teeth
- **M Dimensions**
- **Available inserts**: LN04: LNMX04; LN06: LNMX06; LN10: LNMX10

## Application range

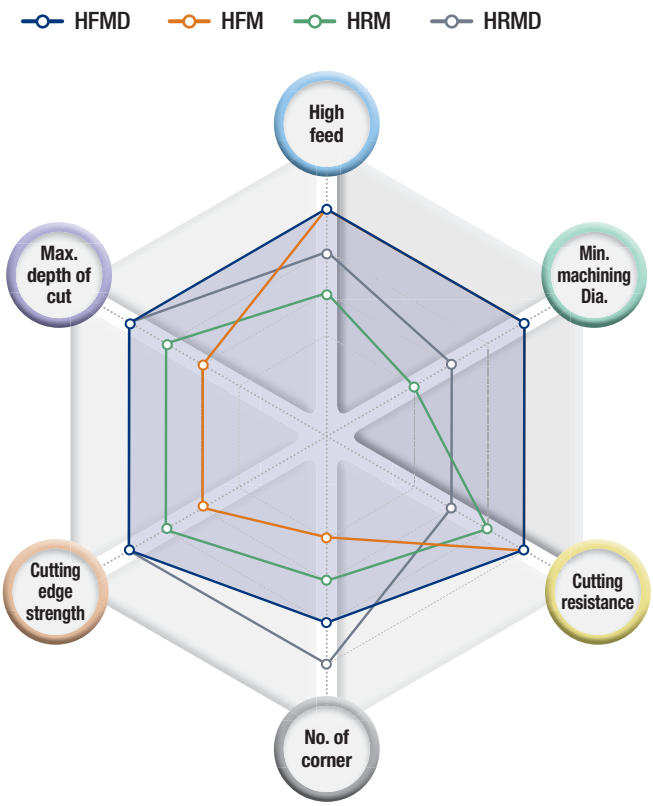


## Application and features of chip breakers

| Chip breakers | | Cutting-edge | Application | Features |
|---|---|---|---|---|
| ML |  |  | For heat resistant alloy and titanium | Ensures superior machining quality by applying a low cutting resistance chip breaker and high-strength cutting edge design suitable for machining heat resistant alloy |
| MF |  |  | For light cutting | Suitable for light cutting with a low cutting resistance chip breaker design |
| MM |  |  | For multi-purpose | Available for most cutting area with its exclusive design suitable for general high feed machining |

## High feed tool selection guide




**HFMD** New

- To increase productivity
- To machine workpiece with more edges
- Min. Ø8 mm machining

**HFM**

- To machine smaller diameter
- Min. Ø8 mm machining

**HRM**

- For general machining
- Single-sided 3 corners machining

**HRMD**

- To focus on economical feasibility
- Double-sided 6 corners machining

| Tools | High feed | Min. machining Dia. | Cutting resistance | No. of corner | Cutting edge strength | Max. depth of cut |
|---|---|---|---|---|---|---|
| HFMD New | ★★★★ | ★★★★ | ★★★★ | ★★★ | ★★★★ | ★★★★ |
| HFM | ★★★★ | ★★★★ | ★★★★ | ★ | ★★ | ★★ |
| HRM | ★★ | ★ | ★★★ | ★★ | ★★★ | ★★★ |
| HRMD | ★★★ | ★★ | ★★ | ★★★★ | ★★★★ | ★★★★ |

# Recommended cutting conditions _ HFMD04

N/mm²: Specific cutting force Kc1

| Workpiece | | | | | | PC5300 | | | PC3700 | | | PC2510 | | PC2505 | | ML, MM |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ISO | Workpiece materials | ISO | AISI | N/mm² | HB (HRC) | vc (m/min) | ML fz (mm/t) | MM fz (mm/t) | vc (m/min) | ML fz (mm/t) | MM fz (mm/t) | vc (m/min) | MM fz (mm/t) | vc (m/min) | MM fz (mm/t) | ap (mm) |
| P | Mild steel | C22 | 1020 | 1500 | 125 | 160 | 1.2 | 1.2 | 160 | 1.0 | 1.0 | - | - | - | - | 0.2~0.5 |
| | | | | | | **180** | **1.0** | **1.0** | **200** | **0.8** | **0.8** | **-** | **-** | **-** | **-** | |
| | | | | | | 200 | 0.8 | 0.8 | 240 | 0.6 | 0.6 | - | - | - | - | |
| | Carbon steel | C45 | 1045 | 1700 | 190 | 160 | 1.2 | 1.2 | 160 | 1.0 | 1.0 | - | - | - | - | 0.2~0.5 |
| | | | | | | **180** | **1.0** | **1.0** | **200** | **0.8** | **0.8** | **-** | **-** | **-** | **-** | |
| | | | | | | 200 | 0.8 | 0.8 | 240 | 0.6 | 0.6 | - | - | - | - | |
| | Alloy steel | 41CrMo4 | 4140 | 1700 | 175 | 160 | - | 1.2 | 180 | - | 1.0 | - | - | - | - | 0.2~0.5 |
| | | | | | | **180** | **-** | **1.0** | **200** | **-** | **0.8** | **-** | **-** | **-** | **-** | |
| | | | | | | 200 | - | 0.8 | 220 | - | 0.6 | - | - | - | - | |
| | Pre-hardened steel | 36CrNiMo6 (Improved) | 4340 (Improved) | 2020 | 330 | 140 | - | 1.0 | 160 | - | 0.8 | - | - | - | - | 0.2~0.4 |
| | | | | | | **160** | **-** | **0.9** | **180** | **-** | **0.7** | **-** | **-** | **-** | **-** | |
| | | | | | | 180 | - | 0.8 | 200 | - | 0.6 | - | - | - | - | |
| | | 36CrNiMo6 (Improved) | 4340 (Improved) | 2020 | 360 | 140 | - | 1.0 | 160 | - | 0.8 | - | - | - | - | 0.2~0.4 |
| | | | | | | **160** | **-** | **0.9** | **180** | **-** | **0.7** | **-** | **-** | **-** | **-** | |
| | | | | | | 180 | - | 0.8 | 200 | - | 0.6 | - | - | - | - | |
| | | 36CrNiMo6 (Improved) | 4340 (Improved) | 2020 | 400 | 120 | - | 1.0 | - | - | - | - | - | - | - | 0.2~0.4 |
| | | | | | | **140** | **-** | **0.9** | **-** | **-** | **-** | **-** | **-** | **-** | **-** | |
| | | | | | | 160 | - | 0.8 | - | - | - | - | - | - | - | |
| | | X20Cr13 | 420 | 2300 | 330 | 100 | - | 0.7 | 140 | - | 0.7 | - | - | - | - | 0.2~0.4 |
| | | | | | | **120** | **-** | **0.6** | **150** | **-** | **0.6** | **-** | **-** | **-** | **-** | |
| | | | | | | 140 | - | 0.5 | 160 | - | 0.5 | - | - | - | - | |
| | Alloy tool steel | X40CrMoV5-1 | H13 | 2300 | (38) | - | - | - | - | - | - | 110 | 0.7 | 110 | 0.7 | 0.2~0.3 |
| | | | | | | **-** | **-** | **-** | **-** | **-** | **-** | **120** | **0.6** | **120** | **0.6** | |
| | | | | | | - | - | - | - | - | - | 130 | 0.5 | 130 | 0.5 | |

| Workpiece | | | | | | PC5300 | | PC9540 | | UPC845 | | UNC840 | | ML |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ISO | Workpiece materials | ISO | AISI | N/mm² | HB (HRC) | vc (m/min) | ML fz (mm/t) | vc (m/min) | ML fz (mm/t) | vc (m/min) | ML fz (mm/t) | vc (m/min) | ML fz (mm/t) | ap (mm) |
| M | Ferritic/ martensitic | X10CrAl13 X10CrAl18 | 405 430 | 1800 | 200 | 120 | 1.0 | 120 | 1.0 | 120 | 1.0 | 120 | 1.0 | 0.2~0.5 |
| | | | | | | **160** | **0.8** | **160** | **0.8** | **160** | **0.8** | **160** | **0.8** | |
| | | | | | | 200 | 0.6 | 200 | 0.6 | 200 | 0.6 | 200 | 0.6 | |
| | | X12CrS13 X6CrMo17-1 | 416 434 | 2800 | 330 | 100 | 1.0 | 100 | 1.0 | 100 | 1.0 | 100 | 1.0 | 0.2~0.5 |
| | | | | | | **140** | **0.8** | **140** | **0.8** | **140** | **0.8** | **140** | **0.8** | |
| | | | | | | 180 | 0.6 | 180 | 0.6 | 180 | 0.6 | 180 | 0.6 | |
| | | X6Cr13 X10Cr13 | 403 410 | 2300 | 330 | 100 | 1.0 | 100 | 1.0 | 100 | 1.0 | 100 | 1.0 | 0.2~0.5 |
| | | | | | | **140** | **0.8** | **140** | **0.8** | **140** | **0.8** | **140** | **0.8** | |
| | | | | | | 180 | 0.6 | 180 | 0.6 | 180 | 0.6 | 180 | 0.6 | |
| | Austenitic | 5CrNi18-10 X5CrNiMo17-12-2 | 304 316 | 2000 | 200 | 100 | 0.8 | 100 | 0.8 | 100 | 0.8 | 100 | 0.8 | 0.2~0.4 |
| | | | | | | **130** | **0.7** | **120** | **0.7** | **120** | **0.7** | **130** | **0.7** | |
| | | | | | | 160 | 0.6 | 140 | 0.6 | 140 | 0.6 | 160 | 0.6 | |
| | Austenitic/ ferritic (Duplex) | X2CrNiMoN22-53 | S31803 S32750 | 2400 | 260 | 60 | 0.7 | 60 | 0.7 | 60 | 0.7 | 60 | 0.7 | 0.2~0.3 |
| | | | | | | **90** | **0.6** | **90** | **0.6** | **90** | **0.6** | **90** | **0.6** | |
| | | | | | | 120 | 0.5 | 120 | 0.5 | 120 | 0.5 | 120 | 0.5 | |

| Workpiece | | | | | | PC5300 | | MM |
|---|---|---|---|---|---|---|---|---|
| ISO | Workpiece materials | ISO | AISI | N/mm² | HB (HRC) | vc (m/min) | MM fz (mm/t) | ap (mm) |
| K | Gray cast iron | 200 EN-GJL-200 | No 30 B | 900 | 180 | 120 | 1.0 | 0.2~0.5 |
| | | | | | | **160** | **0.8** | |
| | | | | | | 200 | 0.6 | |
| | Nodular graphite cast iron | 500-7 EN-GJS-800-7 | 80-55-06 | 870 | 155 | 110 | 1.0 | 0.2~0.5 |
| | | | | | | **145** | **0.8** | |
| | | | | | | 180 | 0.6 | |

| Workpiece | | | | | | UPC845 | | | UNC840 | | | ML, MM |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ISO | Workpiece materials | ISO | AISI | N/mm² | HB (HRC) | vc (m/min) | ML fz (mm/t) | MM fz (mm/t) | vc (m/min) | ML fz (mm/t) | MM fz (mm/t) | ap (mm) |
| S | Nickel based | 15156-3 | 15156-3 | 2650 | 250 | 25 | - | 0.7 | 30 | - | 0.7 | 0.2~0.3 |
| | | | | | | **40** | **-** | **0.5** | **45** | **-** | **0.5** | |
| | | | | | | 55 | - | 0.3 | 60 | - | 0.3 | |
| | | 9723 | 9723 | 2900 | 350 | 20 | - | 0.7 | 25 | - | 0.7 | 0.2~0.3 |
| | | | | | | **35** | **-** | **0.5** | **40** | **-** | **0.5** | |
| | | | | | | 50 | - | 0.3 | 55 | - | 0.3 | |
| | Cobalt based alloy | Stellite | Stellite | 3000 | 300 | 20 | 0.7 | - | 30 | 0.7 | - | 0.2~0.3 |
| | | | | | | **35** | **0.5** | **-** | **45** | **0.5** | **-** | |
| | | | | | | 50 | 0.3 | - | 60 | 0.3 | - | |
| | Titanium alloy steel | TiAl6V4 | - | 1400 | 320 | 20 | 0.8 | - | 30 | 0.8 | - | 0.2~0.3 |
| | | | | | | **40** | **0.6** | **-** | **50** | **0.6** | **-** | |
| | | | | | | 60 | 0.4 | - | 70 | 0.4 | - | |

# Recommended cutting conditions _ HFMD06

N/mm²: Specific cutting force Kc1

| Workpiece | | | | | | PC5400 | | PC5300 | | | PC3700 | | | PC2510 | | PC2505 | | ML, MF, MM |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ISO | Workpiece materials | ISO | AISI | N/mm² | HB (HRC) | vc (m/min) | ML fz (mm/t) | vc (m/min) | MF fz (mm/t) | MM | vc (m/min) | MF fz (mm/t) | MM | vc (m/min) | MM fz (mm/t) | vc (m/min) | MM fz (mm/t) | ap (mm) |
| P | Mild steel | C22 | 1020 | 1500 | 125 | 160 | 1.0 | 160 | 1.2 | 1.2 | - | - | - | - | - | - | - | 0.2~1.0 |
| | | | | | | **200** | **0.8** | **180** | **1.0** | **1.0** | **-** | **-** | **-** | **-** | **-** | **-** | **-** | |
| | | | | | | 240 | 0.6 | 200 | 0.8 | 0.8 | - | - | - | - | - | - | - | |
| | Carbon steel | C45 | 1045 | 1700 | 190 | 160 | 1.0 | 160 | 1.2 | 1.2 | 180 | 1.2 | - | - | - | - | - | 0.2~1.0 |
| | | | | | | **200** | **0.8** | **180** | **1.0** | **1.0** | **200** | **1.0** | **-** | **-** | **-** | **-** | **-** | |
| | | | | | | 240 | 0.6 | 200 | 0.8 | 0.8 | 220 | 0.8 | - | - | - | - | - | |
| | Alloy steel | 41CrMo4 | 4140 | 1700 | 175 | - | - | 160 | 1.0 | 1.2 | 180 | 1.0 | 1.2 | - | - | - | - | 0.2~1.0 |
| | | | | | | **-** | **-** | **180** | **0.8** | **1.0** | **200** | **0.8** | **1.0** | **-** | **-** | **-** | **-** | |
| | | | | | | - | - | 200 | 0.6 | 0.8 | 220 | 0.6 | 0.8 | - | - | - | - | |
| | Pre-hardened steel | 36CrNiMo6 (Improved) | 4340 (Improved) | 2020 | 330 | - | - | 140 | 0.8 | 1.0 | 160 | 0.8 | 1.0 | - | - | - | - | 0.2~0.8 |
| | | | | | | **-** | **-** | **160** | **0.7** | **0.9** | **180** | **0.7** | **0.9** | **-** | **-** | **-** | **-** | |
| | | | | | | - | - | 180 | 0.6 | 0.8 | 200 | 0.6 | 0.8 | - | - | - | - | |
| | | 36CrNiMo6 (Improved) | 4340 (Improved) | 2020 | 360 | - | - | 140 | 0.8 | 1.0 | 160 | 0.8 | 1.0 | - | - | - | - | 0.2~0.8 |
| | | | | | | **-** | **-** | **160** | **0.7** | **0.9** | **180** | **0.7** | **0.9** | **-** | **-** | **-** | **-** | |
| | | | | | | - | - | 180 | 0.6 | 0.8 | 200 | 0.6 | 0.8 | - | - | - | - | |
| | | 36CrNiMo6 (Improved) | 4340 (Improved) | 2020 | 400 | - | - | 120 | 0.8 | 1.0 | - | - | - | - | - | - | - | 0.2~0.8 |
| | | | | | | **-** | **-** | **140** | **0.7** | **0.9** | **-** | **-** | **-** | **-** | **-** | **-** | **-** | |
| | | | | | | - | - | 160 | 0.6 | 0.8 | - | - | - | - | - | - | - | |
| | | X20Cr13 | 420 | 2300 | 330 | - | - | 100 | - | 0.8 | 140 | 0.8 | 0.8 | - | - | - | - | 0.2~0.8 |
| | | | | | | **-** | **-** | **120** | **-** | **0.7** | **150** | **0.7** | **0.7** | **-** | **-** | **-** | **-** | |
| | | | | | | - | - | 140 | - | 0.6 | 160 | 0.6 | 0.6 | - | - | - | - | |
| | Alloy tool steel | X40CrMoV5-1 | H13 | 2300 | (38) | - | - | - | - | - | - | - | - | 110 | 0.8 | 110 | 0.8 | 0.2~0.6 |
| | | | | | | **-** | **-** | **-** | **-** | **-** | **-** | **-** | **-** | **120** | **0.7** | **120** | **0.7** | |
| | | | | | | - | - | - | - | - | - | - | - | 130 | 0.6 | 130 | 0.6 | |

| Workpiece | | | | | | PC5400 | | PC9540 | | UPC845 | | UNC840 | | ML |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ISO | Workpiece materials | ISO | AISI | N/mm² | HB (HRC) | vc (m/min) | ML fz (mm/t) | vc (m/min) | ML fz (mm/t) | vc (m/min) | ML fz (mm/t) | vc (m/min) | ML fz (mm/t) | ap (mm) |
| M | Ferritic/ martensitic | X10CrAl13 X10CrAl18 | 405 430 | 1800 | 200 | 120 | 1.0 | 120 | 1.0 | 120 | 1.0 | 120 | 1.0 | 0.2~1.0 |
| | | | | | | **160** | **0.8** | **160** | **0.8** | **160** | **0.8** | **160** | **0.8** | |
| | | | | | | 200 | 0.6 | 200 | 0.6 | 200 | 0.6 | 200 | 0.6 | |
| | | X12CrS13 X6CrMo17-1 | 416 434 | 2800 | 330 | 100 | 1.0 | 100 | 1.0 | 100 | 1.0 | 100 | 1.0 | 0.2~1.0 |
| | | | | | | **140** | **0.8** | **140** | **0.8** | **140** | **0.8** | **140** | **0.8** | |
| | | | | | | 180 | 0.6 | 180 | 0.6 | 180 | 0.6 | 180 | 0.6 | |
| | | X6Cr13 X10Cr13 | 403 410 | 2300 | 330 | 100 | 1.0 | 100 | 1.0 | 100 | 1.0 | 100 | 1.0 | 0.2~1.0 |
| | | | | | | **140** | **0.8** | **140** | **0.8** | **140** | **0.8** | **140** | **0.8** | |
| | | | | | | 180 | 0.6 | 180 | 0.6 | 180 | 0.6 | 180 | 0.6 | |
| | Austenitic | X5CrNi18-10 X5CrNiMo17-12-2 | 304 316 | 2000 | 200 | 100 | 0.8 | 100 | 0.8 | 100 | 0.8 | 100 | 0.8 | 0.2~0.8 |
| | | | | | | **130** | **0.7** | **120** | **0.7** | **120** | **0.7** | **130** | **0.7** | |
| | | | | | | 160 | 0.6 | 140 | 0.6 | 140 | 0.6 | 160 | 0.6 | |
| | Austenitic/ ferritic (Duplex) | X2CrNiMoN22-53 | S31803 S32750 | 2400 | 260 | 60 | 0.7 | 60 | 0.7 | 60 | 0.7 | 60 | 0.7 | 0.2~0.6 |
| | | | | | | **90** | **0.6** | **90** | **0.6** | **90** | **0.6** | **90** | **0.6** | |
| | | | | | | 120 | 0.5 | 120 | 0.5 | 120 | 0.5 | 120 | 0.5 | |

| Workpiece | | | | | | PC5300 | | | MF, MM |
|---|---|---|---|---|---|---|---|---|---|
| ISO | Workpiece materials | ISO | AISI | N/mm² | HB (HRC) | vc (m/min) | MF fz (mm/t) | MM fz (mm/t) | ap (mm) |
| K | Gray cast iron | 200 EN-GJL-200 | No 30 B | 900 | 180 | 120 | 1.0 | 1.0 | 0.2~1.0 |
| | | | | | | **160** | **0.8** | **0.8** | |
| | | | | | | 200 | 0.6 | 0.6 | |
| | Nodular graphite cast iron | 500-7 EN-GJS-800-7 | 80-55-06 | 870 | 155 | 110 | 1.0 | 1.0 | 0.2~1.0 |
| | | | | | | **145** | **0.8** | **0.8** | |
| | | | | | | 180 | 0.6 | 0.6 | |

| Workpiece | | | | | | UPC845 | | | UNC840 | | | ML, MF |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ISO | Workpiece materials | ISO | AISI | N/mm² | HB (HRC) | vc (m/min) | ML fz (mm/t) | MF fz (mm/t) | vc (m/min) | ML fz (mm/t) | MF fz (mm/t) | ap (mm) |
| S | Nickel based | 15156-3 | 15156-3 | 2650 | 250 | 25 | - | 0.7 | 30 | - | 0.7 | 0.2~0.6 |
| | | | | | | **40** | **-** | **0.5** | **45** | **-** | **0.5** | |
| | | | | | | 55 | - | 0.3 | 60 | - | 0.3 | |
| | | 9723 | 9723 | 2900 | 350 | 20 | - | 0.7 | 25 | - | 0.7 | 0.2~0.6 |
| | | | | | | **35** | **-** | **0.5** | **40** | **-** | **0.5** | |
| | | | | | | 50 | - | 0.3 | 55 | - | 0.3 | |
| | Cobalt based alloy | Stellite | Stellite | 3000 | 300 | 20 | 0.7 | - | 30 | 0.7 | - | 0.2~0.6 |
| | | | | | | **35** | **0.5** | **-** | **45** | **0.5** | **-** | |
| | | | | | | 50 | 0.3 | - | 60 | 0.3 | - | |
| | Titanium alloy steel | TiAl6V4 | - | 1400 | 320 | 20 | 1.0 | - | 30 | 1.0 | - | 0.2~0.6 |
| | | | | | | **40** | **0.8** | **-** | **50** | **0.8** | **-** | |
| | | | | | | 60 | 0.6 | - | 70 | 0.6 | - | |

# Recommended cutting conditions _ HFMD10

N/mm²: Specific cutting force Kc1

| Workpiece | | | | | | PC5400 | | PC5300 | | | PC3700 | | | PC2510 | | PC2505 | | ML, MF, MM |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ISO | Workpiece materials | ISO | AISI | N/mm² | HB (HRC) | vc (m/min) | ML fz (mm/t) | vc (m/min) | MF fz (mm/t) | MM | vc (m/min) | MF fz (mm/t) | MM | vc (m/min) | MM fz (mm/t) | vc (m/min) | MM fz (mm/t) | ap (mm) |
| P | Mild steel | C22 | 1020 | 1500 | 125 | 160 | 1.2 | 160 | 1.2 | 1.4 | - | - | - | - | - | - | - | 0.3~1.5 |
| | | | | | | **200** | **1.0** | **200** | **1.0** | **1.2** | **-** | **-** | **-** | **-** | **-** | **-** | **-** | |
| | | | | | | 240 | 0.8 | 240 | 0.8 | 1.0 | - | - | - | - | - | - | - | |
| | Carbon steel | C45 | 1045 | 1700 | 190 | 160 | 1.2 | 160 | 1.2 | 1.4 | 160 | 1.4 | - | - | - | - | - | 0.3~1.5 |
| | | | | | | **200** | **1.0** | **200** | **1.0** | **1.2** | **200** | **1.2** | **-** | **-** | **-** | **-** | **-** | |
| | | | | | | 240 | 0.8 | 240 | 0.8 | 1.0 | 240 | 1.0 | - | - | - | - | - | |
| | Alloy steel | 41CrMo4 | 4140 | 1700 | 175 | - | - | 160 | 1.2 | 1.4 | 180 | 1.2 | 1.4 | - | - | - | - | 0.3~1.5 |
| | | | | | | **-** | **-** | **180** | **1.0** | **1.2** | **200** | **1.0** | **1.2** | **-** | **-** | **-** | **-** | |
| | | | | | | - | - | 200 | 0.8 | 1.0 | 220 | 0.8 | 1.0 | - | - | - | - | |
| | Pre-hardened steel | 36CrNiMo6 (Improved) | 4340 (Improved) | 2020 | 330 | - | - | 140 | 1.0 | 1.2 | 160 | 1.0 | 1.2 | - | - | - | - | 0.3~1.2 |
| | | | | | | **-** | **-** | **160** | **0.9** | **1.0** | **180** | **0.9** | **1.0** | **-** | **-** | **-** | **-** | |
| | | | | | | - | - | 180 | 0.8 | 0.8 | 200 | 0.8 | 0.8 | - | - | - | - | |
| | | 36CrNiMo6 (Improved) | 4340 (Improved) | 2020 | 360 | - | - | 140 | 1.0 | 1.2 | 160 | 1.0 | 1.2 | - | - | - | - | 0.3~1.2 |
| | | | | | | **-** | **-** | **160** | **0.9** | **1.0** | **180** | **0.9** | **1.0** | **-** | **-** | **-** | **-** | |
| | | | | | | - | - | 180 | 0.8 | 0.8 | 200 | 0.8 | 0.8 | - | - | - | - | |
| | | 36CrNiMo6 (Improved) | 4340 (Improved) | 2020 | 400 | - | - | 140 | 1.0 | 1.2 | - | - | - | - | - | - | - | 0.3~1.2 |
| | | | | | | **-** | **-** | **160** | **0.9** | **1.0** | **-** | **-** | **-** | **-** | **-** | **-** | **-** | |
| | | | | | | - | - | 180 | 0.8 | 0.8 | - | - | - | - | - | - | - | |
| | | X20Cr13 | 420 | 2300 | 330 | - | - | 100 | - | 0.8 | 140 | 0.9 | 0.9 | - | - | - | - | 0.3~1.2 |
| | | | | | | **-** | **-** | **120** | **-** | **0.7** | **150** | **0.8** | **0.8** | **-** | **-** | **-** | **-** | |
| | | | | | | - | - | 140 | - | 0.6 | 160 | 0.7 | 0.7 | - | - | - | - | |
| | Alloy tool steel | X40CrMoV5-1 | H13 | 2300 | (38) | - | - | - | - | - | - | - | - | 130 | 0.9 | 130 | 0.9 | 0.3~0.9 |
| | | | | | | **-** | **-** | **-** | **-** | **-** | **-** | **-** | **-** | **140** | **0.8** | **140** | **0.8** | |
| | | | | | | - | - | - | - | - | - | - | - | 150 | 0.7 | 150 | 0.7 | |

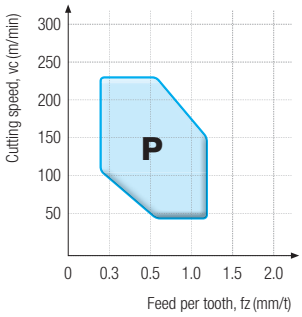
| Workpiece | | | | | | PC5400 | | PC9540 | | UPC845 | | UNC840 | | ML |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ISO | Workpiece materials | ISO | AISI | N/mm² | HB (HRC) | vc (m/min) | ML fz (mm/t) | vc (m/min) | ML fz (mm/t) | vc (m/min) | ML fz (mm/t) | vc (m/min) | ML fz (mm/t) | ap (mm) |
| M | Ferritic/ martensitic | X10CrAl13 X10CrAl18 | 405 430 | 1800 | 200 | 120 | 1.2 | 120 | 1.2 | 120 | 1.2 | 120 | 1.2 | 0.3~1.5 |
| | | | | | | **160** | **1.0** | **160** | **1.0** | **160** | **1.0** | **160** | **1.0** | |
| | | | | | | 200 | 0.8 | 200 | 0.8 | 200 | 0.8 | 200 | 0.8 | |
| | | X12CrS13 X6CrMo17-1 | 416 434 | 2800 | 330 | 100 | 1.2 | 100 | 1.2 | 100 | 1.2 | 100 | 1.2 | 0.3~1.5 |
| | | | | | | **140** | **1.0** | **140** | **1.0** | **140** | **1.0** | **140** | **1.0** | |
| | | | | | | 180 | 0.8 | 180 | 0.8 | 180 | 0.8 | 180 | 0.8 | |
| | | X6Cr13 X10Cr13 | 403 410 | 2300 | 330 | 100 | 1.2 | 100 | 1.2 | 100 | 1.2 | 100 | 1.2 | 0.3~1.5 |
| | | | | | | **140** | **1.0** | **140** | **1.0** | **140** | **1.0** | **140** | **1.0** | |
| | | | | | | 180 | 0.8 | 180 | 0.8 | 180 | 0.8 | 180 | 0.8 | |
| | Austenitic | X5CrNi18-10 X5CrNiMo17-12-2 | 304 316 | 2000 | 200 | 100 | 1.0 | 100 | 1.0 | 100 | 1.0 | 100 | 1.0 | 0.3~1.2 |
| | | | | | | **130** | **0.9** | **120** | **0.9** | **120** | **0.9** | **130** | **0.9** | |
| | | | | | | 160 | 0.8 | 140 | 0.8 | 140 | 0.8 | 160 | 0.8 | |
| | Austenitic/ ferritic (Duplex) | X2CrNiMoN22-53 | S31803 S32750 | 2400 | 260 | 60 | 0.9 | 60 | 0.9 | 60 | 0.9 | 60 | 0.9 | 0.3~1.0 |
| | | | | | | **90** | **0.8** | **90** | **0.8** | **90** | **0.8** | **90** | **0.8** | |
| | | | | | | 120 | 0.7 | 120 | 0.7 | 120 | 0.7 | 120 | 0.7 | |

| Workpiece | | | | | | PC5300 | | | MF, MM |
|---|---|---|---|---|---|---|---|---|---|
| ISO | Workpiece materials | ISO | AISI | N/mm² | HB (HRC) | vc (m/min) | MF fz (mm/t) | MM fz (mm/t) | ap (mm) |
| K | Gray cast iron | 200 EN-GJL-200 | No 30 B | 900 | 180 | 120 | 1.2 | 1.2 | 0.3~1.5 |
| | | | | | | **160** | **1.0** | **1.0** | |
| | | | | | | 200 | 0.8 | 0.8 | |
| | Nodular graphite cast iron | 500-7 EN-GJS-800-7 | 80-55-06 | 870 | 155 | 110 | 1.2 | 1.2 | 0.3~1.5 |
| | | | | | | **145** | **1.0** | **1.0** | |
| | | | | | | 180 | 0.8 | 0.8 | |

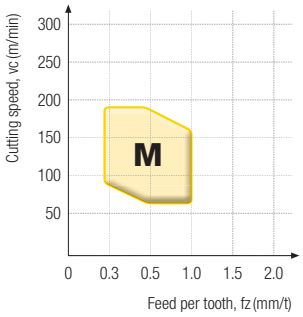
| Workpiece | | | | | | UPC845 | | | UNC840 | | | ML, MF |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ISO | Workpiece materials | ISO | AISI | N/mm² | HB (HRC) | vc (m/min) | ML fz (mm/t) | MF fz (mm/t) | vc (m/min) | ML fz (mm/t) | MF fz (mm/t) | ap (mm) |
| S | Nickel based | 15156-3 | 15156-3 | 2650 | 250 | 30 | - | 0.8 | 25 | - | 0.8 | 0.3~0.9 |
| | | | | | | **45** | **-** | **0.6** | **40** | **-** | **0.6** | |
| | | | | | | 60 | - | 0.4 | 55 | - | 0.4 | |
| | | 9723 | 9723 | 2900 | 350 | 25 | - | 0.8 | 20 | - | 0.8 | 0.3~0.9 |
| | | | | | | **40** | **-** | **0.6** | **35** | **-** | **0.6** | |
| | | | | | | 55 | - | 0.4 | 50 | - | 0.4 | |
| | Cobalt based alloy | Stellite | Stellite | 3000 | 300 | 30 | 0.8 | - | 20 | 0.8 | - | 0.3~0.9 |
| | | | | | | **45** | **0.6** | **-** | **35** | **0.6** | **-** | |
| | | | | | | 60 | 0.4 | - | 50 | 0.4 | - | |
| | Titanium alloy steel | TiAl6V4 | - | 1400 | 320 | 30 | 1.0 | - | 20 | 1.0 | - | 0.3~0.9 |
| | | | | | | **50** | **0.8** | **-** | **40** | **0.8** | **-** | |
| | | | | | | 70 | 0.6 | - | 60 | 0.6 | - | |

## [HFMD04]

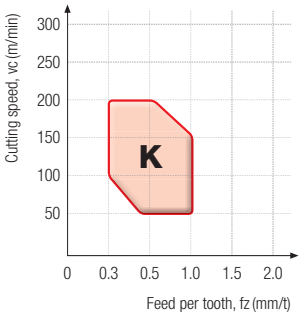
**P** Steel



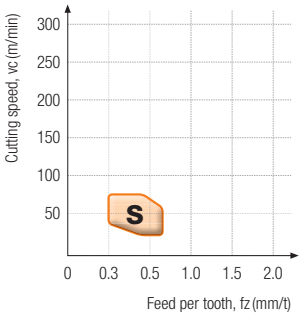

**M** Stainless steel




**K** Cast iron

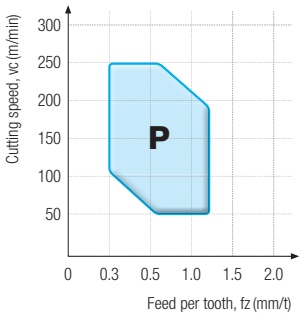



**S** HRSA

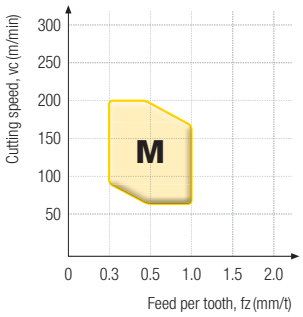



## [HFMD06]

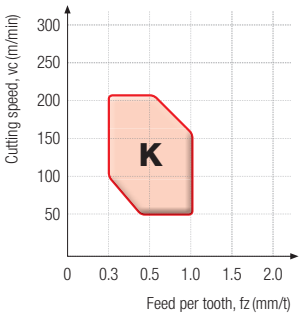
**P** Steel



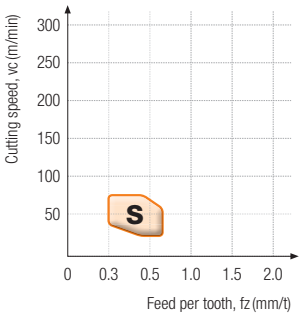

**M** Stainless steel




**K** Cast iron

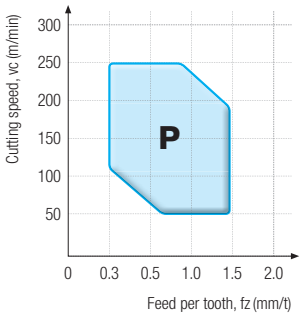



**S** HRSA

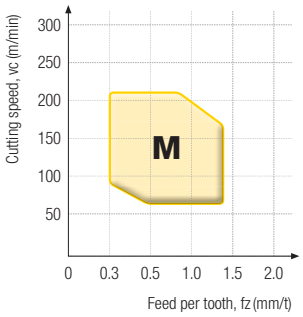



## [HFMD10]

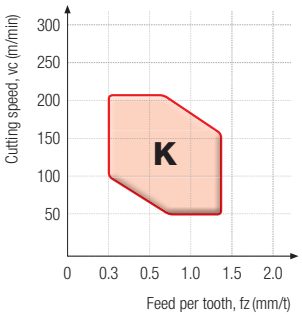
**P** Steel



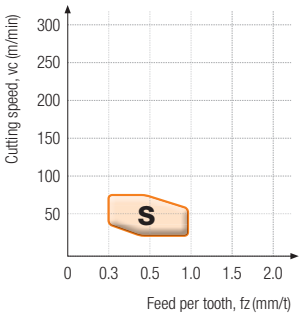

**M** Stainless steel




**K** Cast iron




**S** HRSA



# Cutting performance

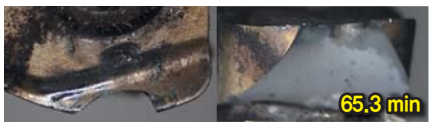
## Carbon steel (C45, HB200)

**Workpiece** Steel rectangular tube (300 × 200 × 100)

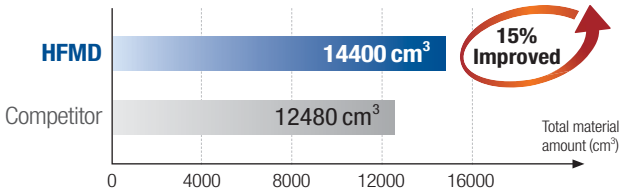
**Cutting conditions** vc (m/min) = 200, fz (mm/t) = 1.2, ap (mm) = 0.8, ae (mm) = 20, dry

**Tools** Insert LNMX060310R-MF (PC5300) Holder HFMDS032R-5C32-200-LN06


[HFMD]




[Competitor]




- Material removal rate Q (cm³/min): 191.0
- Cutting time (min): 75.4

## Alloy tool steel (X40CrMoV5-1, HRC40 ~ 45)

(*: DIN)

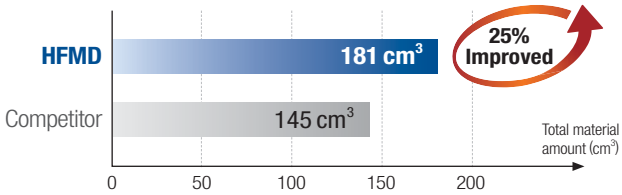
**Workpiece** Steel rectangular tube (300 × 200 × 100)

**Cutting conditions** vc (m/min) = 160, fz (mm/t) = 1.2, ap (mm) = 0.9, ae (mm) = 20, dry

**Tools** Insert LNMX100412R-MF (PC2510) Holder HFMDS032R-4C32-200-LN10


[HFMD]


[Competitor]




- Material removal rate Q (cm³/min): 91.7
- Cutting time (min): 2.0

## Stainless steel (X5CrNi18-10, HB200)

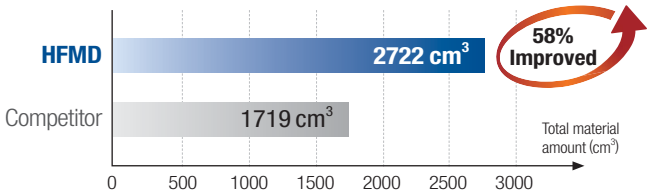
**Workpiece** Steel rectangular tube (300 × 200 × 100)

**Cutting conditions** vc (m/min) = 150, fz (mm/t) = 0.6, ap (mm) = 0.4, ae (mm) = 10, dry

**Tools** Insert LNMX040205R-ML (PC5300) Holder HFMDS016R-4C16-150-LN04


[HFMD]


[Competitor]

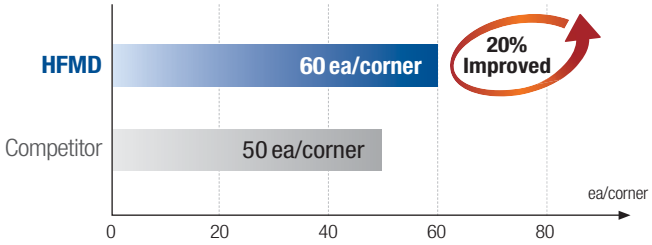



- Material removal rate Q (cm³/min): 28.6
- Cutting time (min): 93

## Application examples

### Carbon steel (C45, HB200)

| | |
|---|---|
| **Workpiece** | Machine parts |
| **Cutting conditions** | vc (m/min) = 157, fz (mm/t) = 0.43, ap (mm) = 0.5, ae (mm) = 20 ~ 50, dry |
| **Tools** | **Insert** LNMX100412R-MF (PC2510) **Holder** HFMDCM050R-22-7-LN10 |

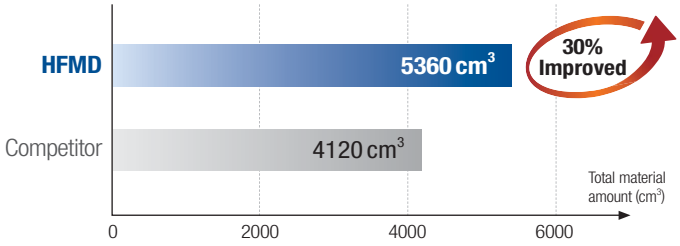



» 20% longer tool life than existing items

### Alloy tool steel (1.2714*, HRC37~38)

(*: DIN)

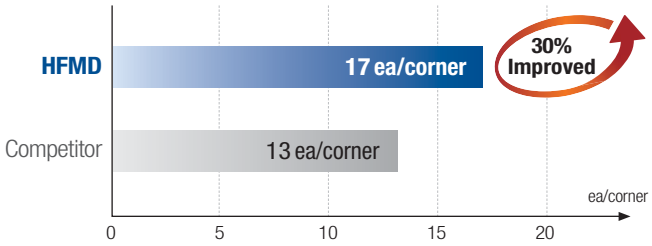
| | |
|---|---|
| **Workpiece** | Pipe |
| **Cutting conditions** | vc (m/min) = 130, fz (mm/t) = 1.2, ap (mm) = 0.3, ae (mm) = 30, dry |
| **Tools** | **Insert** LNMX060310R-MF (PC3700) **Holder** HFMDCM040R-16-6-LN06 |




» 30% longer tool life and 10% higher productivity than existing items

### HRSA (15156-3 , HRC40)

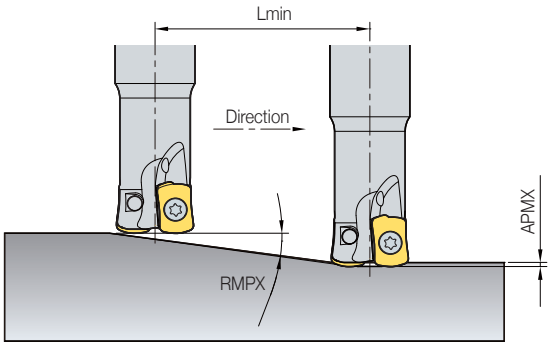
| | |
|---|---|
| **Workpiece** | Aircrafts parts |
| **Cutting conditions** | vc (m/min) = 80, fz (mm/t) = 0.2, ap (mm) = 0.5, ae (mm) = 11, wet |
| **Tools** | **Insert** LNMX060310R-ML (UPC845) **Holder** HFMDS017R-2C16-200-LN06 |



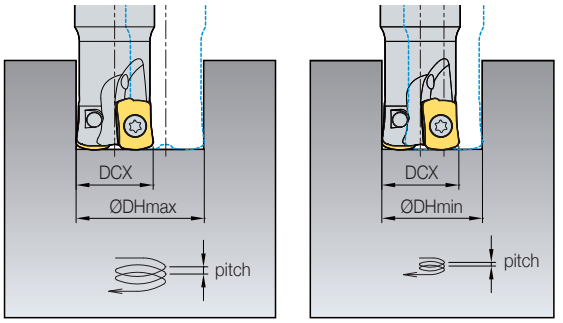

» 30% longer tool life than existing items

# Ramping and helical cutting

## Ramping




## Helical cutting



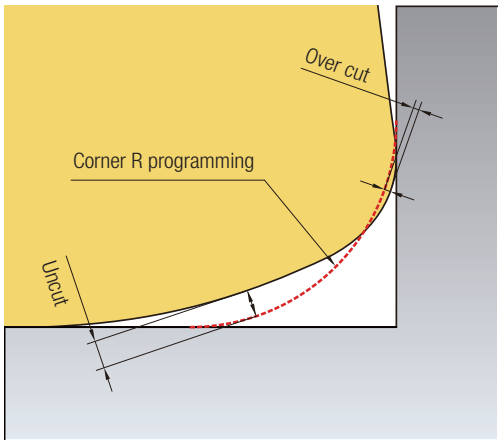

(mm)

| Designation | Tool dia. DCX | Depth of cut APMX | Ramping | | Blind hole helical cutting | | | | Through hole helical cutting | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Max. rake angle RMPX | Lmin | Max. machining dia. ØDHmax | Max. pitch | Min. machining dia. ØDHmin | Max. pitch | Min. machining dia. ØDHmin | Max. pitch |
| LNMX04 | 8 | 0.4 | 0.5 | 45 | 12 | 0.2 | 10 | 0.2 | 9 | 0.2 |
| | 10 | 0.4 | 0.6 | 37 | 16 | 0.3 | 14 | 0.3 | 13 | 0.3 |
| | 11 | 0.5 | 0.8 | 37 | 18 | 0.3 | 15 | 0.3 | 15 | 0.3 |
| | 12 | 0.5 | 1.0 | 28 | 20 | 0.4 | 17 | 0.4 | 17 | 0.4 |
| | 13 | 0.5 | 1.0 | 27 | 22 | 0.4 | 19 | 0.4 | 19 | 0.4 |
| | 16 | 0.5 | 1.0 | 28 | 28 | 0.5 | 25 | 0.5 | 25 | 0.5 |
| | 17 | 0.5 | 1.0 | 29 | 30 | 0.5 | 27 | 0.5 | 27 | 0.5 |
| | 20 | 0.5 | 0.9 | 33 | 36 | 0.5 | 33 | 0.5 | 33 | 0.5 |
| | 21 | 0.5 | 0.7 | 44 | 38 | 0.5 | 35 | 0.5 | 35 | 0.5 |
| | 25 | 0.5 | 0.7 | 43 | 46 | 0.5 | 43 | 0.5 | 43 | 0.5 |
| | 32 | 0.5 | 0.5 | 57 | 60 | 0.5 | 57 | 0.5 | 57 | 0.5 |
| | 33 | 0.5 | 0.4 | 74 | 62 | 0.5 | 59 | 0.5 | 59 | 0.5 |
| | 35 | 0.5 | 0.4 | 79 | 66 | 0.5 | 63 | 0.5 | 63 | 0.5 |
| LNMX06 | 16 | 0.7 | 3.0 | 13 | 30 | 0.7 | 22 | 0.7 | 21 | 0.7 |
| | 17 | 1.0 | 2.3 | 25 | 32 | 1.0 | 24 | 1.0 | 22 | 1.0 |
| | 18 | 1.0 | 2.1 | 27 | 34 | 1.0 | 26 | 1.0 | 24 | 1.0 |
| | 19 | 1.0 | 1.9 | 30 | 36 | 1.0 | 28 | 1.0 | 26 | 1.0 |
| | 20 | 1.0 | 1.5 | 37 | 38 | 1.0 | 30 | 1.0 | 28 | 1.0 |
| | 21 | 1.0 | 1.5 | 39 | 40 | 1.0 | 32 | 1.0 | 30 | 1.0 |
| | 25 | 1.0 | 1.4 | 40 | 48 | 1.0 | 40 | 1.0 | 38 | 1.0 |
| | 26 | 1.0 | 1.4 | 42 | 50 | 1.0 | 42 | 1.0 | 40 | 1.0 |
| | 30 | 1.0 | 1.1 | 51 | 58 | 1.0 | 50 | 1.0 | 48 | 1.0 |
| | 32 | 1.0 | 1.0 | 55 | 62 | 1.0 | 54 | 1.0 | 52 | 1.0 |
| | 33 | 1.0 | 1.0 | 57 | 64 | 1.0 | 56 | 1.0 | 54 | 1.0 |
| | 35 | 1.0 | 0.9 | 61 | 68 | 1.0 | 60 | 1.0 | 58 | 1.0 |
| | 40 | 1.0 | 0.8 | 71 | 78 | 1.0 | 70 | 1.0 | 68 | 1.0 |
| | 42 | 1.0 | 0.8 | 76 | 82 | 1.0 | 74 | 1.0 | 72 | 1.0 |
| | 50 | 1.0 | 0.6 | 92 | 98 | 1.0 | 90 | 1.0 | 88 | 1.0 |
| | 52 | 1.0 | 0.6 | 96 | 102 | 1.0 | 94 | 1.0 | 92 | 1.0 |
| | 63 | 1.0 | 0.5 | 119 | 124 | 1.0 | 116 | 1.0 | 114 | 1.0 |
| | 66 | 1.0 | 0.5 | 126 | 130 | 1.0 | 122 | 1.0 | 120 | 1.0 |
| LNMX10 | 25 | 1.5 | 2.9 | 30 | 42 | 1.5 | 35 | 1.5 | 32 | 1.5 |
| | 26 | 1.5 | 2.7 | 32 | 44 | 1.5 | 37 | 1.5 | 34 | 1.5 |
| | 30 | 1.5 | 2.2 | 39 | 52 | 1.5 | 45 | 1.5 | 42 | 1.5 |
| | 32 | 1.5 | 2.0 | 43 | 56 | 1.5 | 49 | 1.5 | 46 | 1.5 |
| | 33 | 1.5 | 1.9 | 45 | 58 | 1.5 | 51 | 1.5 | 48 | 1.5 |
| | 35 | 1.5 | 1.8 | 49 | 62 | 1.5 | 55 | 1.5 | 52 | 1.5 |
| | 40 | 1.5 | 1.5 | 58 | 72 | 1.5 | 65 | 1.5 | 62 | 1.5 |
| | 42 | 1.5 | 1.4 | 62 | 76 | 1.5 | 69 | 1.5 | 66 | 1.5 |
| | 50 | 1.5 | 1.1 | 77 | 92 | 1.5 | 85 | 1.5 | 82 | 1.5 |
| | 52 | 1.5 | 1.1 | 81 | 96 | 1.5 | 89 | 1.5 | 86 | 1.5 |
| | 63 | 1.5 | 0.8 | 101 | 118 | 1.5 | 111 | 1.5 | 108 | 1.5 |
| | 66 | 1.5 | 0.8 | 107 | 124 | 1.5 | 117 | 1.5 | 114 | 1.5 |
| | 80 | 1.5 | 0.6 | 133 | 152 | 1.5 | 145 | 1.5 | 142 | 1.5 |
| | 100 | 1.5 | 0.5 | 171 | 192 | 1.5 | 185 | 1.5 | 182 | 1.5 |

- When ramping and helical milling, table feed, vf (mm/min) should be lower than 70% of the recommended cutting conditions.
- When helical milling, Max. pitch, DHmax should be lower than max. depth of cut, APMX.
- When ramping, the depth of cut should be lower than max. depth of cut, APMX.

- Lmin = APMX/tan (RMPX) (mm)
- Lmin : Min. length of ramping
- APMX : Depth of cut
- RMPX : Max. rake angle in ramping

## Caution for corner R programming



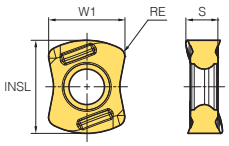
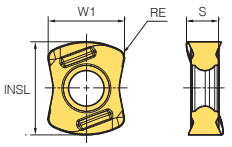
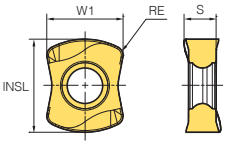

------ Corner R programming

(mm)

| Insert | Corner R programming | Cutting conditions | | Over cut | Uncut |
|---|---|---|---|---|---|
| | | Nose R RE | Max. APMX | | |
| LNMX040205R-ML<br>LNMX040205R-MM | R0.8 | 0.5 | 0.5 | 0.00 | 0.27 |
| | R0.9 (Standard) | | | 0.00 | 0.24 |
| | R1.0 | | | 0.01 | 0.22 |
| LNMX060310R-ML<br>LNMX060310R-MF<br>LNMX060310R-MM | R1.5 | 1.0 | 1.0 | 0.00 | 0.41 |
| | R1.6 (Standard) | | | 0.00 | 0.41 |
| | R2.0 | | | 0.06 | 0.38 |
| LNMX100412R-ML<br>LNMX100412R-MF<br>LNMX100412R-MM | R2.0 | 1.2 | 1.5 | 0.00 | 0.84 |
| | R2.5 (Standard) | | | 0.00 | 0.60 |
| | R3.0 | | | 0.06 | 0.51 |

- During usage of CNC program, over cut & uncut would be occurred on the corner processing site if entering the correct program corner R value for each insert.
- To prevent overcut, you will need to complete a CNC program considering the above overcut.

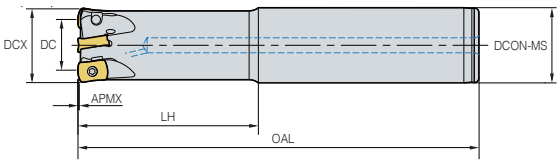
## Insert

| Picture | Designation | | Coated | | | | | | | | Dimensions (mm) | | | | Geometries |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | PC2505 | PC2510 | PC3700 | PC9540 | PC5300 | PC5400 | UNC840 | UPC845 | INSL | W1 | S | RE | |
|  | LNMX | 040205R-ML | | | | | ● | ● | ● | ● | 6.2 | 4.2 | 2.35 | 0.5 |  |
| | | 060310R-ML | | | | | ● | ● | ● | ● | 10.0 | 6.8 | 3.60 | 1.0 | |
| | | 100412R-ML | | | | ● | ● | ● | ● | ● | 12.2 | 10.0 | 4.20 | 1.2 | |
|  | LNMX | 060310R-MF | | ● | ● | | ● | ● | ● | ● | 10.0 | 6.8 | 3.60 | 1.0 |  |
| | | 100412R-MF | | ● | ● | ● | ● | ● | ● | ● | 12.2 | 10.0 | 4.20 | 1.2 | |
|  | LNMX | 040205R-MM | | ● | ● | | ● | ● | | ● | 6.2 | 4.2 | 2.35 | 0.5 |  |
| | | 060310R-MM | | ● | ● | | ● | ● | | | 10.0 | 6.8 | 3.60 | 1.0 | |
| | | 100412R-MM | | ● | ● | | ● | ● | | | 12.2 | 10.0 | 4.20 | 1.2 | |

●: Stock item

# HFMDS-LN04

• AR : -8°~ -7°
• RR : -19°~ -15°




(mm)

| | Designation | Stock | | DCX | DC | DCON-MS | LH | OAL | APMX | kg |
|---|---|---|---|---|---|---|---|---|---|---|
| **HFMDS** | 008NR-1C08-080-LN04 | | 1 | 8 | 3.68 | 8 | 20 | 80 | 0.4 | 0.03 |
| | 008NR-1C10-100-LN04 | | 1 | 8 | 3.68 | 10 | 20 | 100 | 0.4 | 0.05 |
| | 010NR-2C08-080-LN04 | | 2 | 10 | 5.68 | 8 | 20 | 80 | 0.4 | 0.03 |
| | 010NR-2C10-100-LN04 | | 2 | 10 | 5.68 | 10 | 20 | 100 | 0.4 | 0.06 |
| | 010NR-2C10-150-LN04 | | 2 | 10 | 5.68 | 10 | 40 | 150 | 0.4 | 0.08 |
| | 011NR-2C10-100-LN04 | | 2 | 11 | 6.68 | 10 | 20 | 100 | 0.5 | 0.06 |
| | 011NR-2C10-150-LN04 | | 2 | 11 | 6.68 | 10 | 20 | 150 | 0.5 | 0.09 |
| | 008R-1C08-080-LN04 | | 1 | 8 | 3.68 | 8 | 35 | 80 | 0.5 | 0.02 |
| | 008R-1C10-100-LN04 | ● | 1 | 8 | 3.68 | 10 | 20 | 100 | 0.5 | 0.05 |
| | 010R-2C08-080-LN04 | ● | 2 | 10 | 5.68 | 8 | 20 | 80 | 0.4 | 0.03 |
| | 010R-2C10-080-LN04 | ● | 2 | 10 | 5.68 | 10 | 35 | 80 | 0.4 | 0.05 |
| | 010R-2C10-100-LN04 | ● | 2 | 10 | 5.68 | 10 | 20 | 100 | 0.4 | 0.05 |
| | 010R-2C10-150-LN04 | ● | 2 | 10 | 5.68 | 10 | 40 | 150 | 0.4 | 0.07 |
| | 011R-2C10-100-LN04 | | 2 | 11 | 6.68 | 10 | 20 | 100 | 0.5 | 0.05 |
| | 011R-2C10-150-LN04 | ● | 2 | 11 | 6.68 | 10 | 20 | 150 | 0.5 | 0.08 |
| | 012R-3C12-100-LN04 | ● | 3 | 12 | 7.68 | 12 | 50 | 100 | 0.5 | 0.07 |
| | 012R-3C12-105-LN04 | ● | 3 | 12 | 7.68 | 12 | 20 | 105 | 0.5 | 0.07 |
| | 012R-3C12-150-LN04 | ● | 3 | 12 | 7.68 | 12 | 40 | 150 | 0.5 | 0.11 |

●: Stock item

## Available inserts

LNMX-ML

LNMX-MM

| | Designation | Coated | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | PC2505 | PC2510 | PC3700 | PC9540 | PC5300 | PC5400 | UNC840 | UPC845 |
| **LNMX** | 040205R-ML | | | | | ● | ● | ● | ● |
| | 040205R-MM | | ● | ● | | ● | ● | | ● |

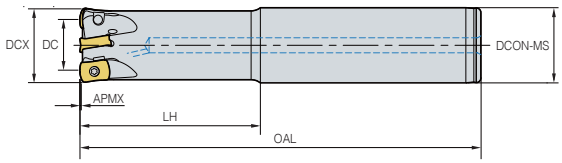
●: Stock item

## Parts

| Specification \ Parts | Screw | Wrench |
|---|---|---|
| Ø8 ~ Ø12 | FTKA01844-A | TW06S-A |

# HFMDS-LN04

• AR : -8°
• RR : -14°~ -13°




(mm)

| | Designation | Stock | | DCX | DC | DCON-MS | LH | OAL | APMX | kg |
|---|---|---|---|---|---|---|---|---|---|---|
| **HFMDS** | 013R-3C12-100-LN04 | | 3 | 13 | 8.68 | 12 | 20 | 100 | 0.5 | 0.08 |
| | 013R-3C12-120-LN04 | ● | 3 | 13 | 8.68 | 12 | 20 | 120 | 0.5 | 0.09 |
| | 013R-3C12-150-LN04 | ● | 3 | 13 | 8.68 | 12 | 20 | 150 | 0.5 | 0.12 |
| | 016R-4C16-100-LN04 | ● | 4 | 16 | 11.68 | 16 | 50 | 100 | 0.5 | 0.13 |
| | 016R-4C16-120-LN04 | ● | 4 | 16 | 11.68 | 16 | 70 | 120 | 0.5 | 0.20 |
| | 016R-4C16-150-LN04 | ● | 4 | 16 | 11.68 | 16 | 80 | 150 | 0.5 | 0.20 |
| | 016R-4C16-200-LN04 | ● | 4 | 16 | 11.68 | 16 | 120 | 200 | 0.5 | 0.26 |
| | 017R-4C16-100-LN04 | | 4 | 17 | 12.68 | 16 | 20 | 100 | 0.5 | 0.14 |
| | 017R-4C16-150-LN04 | ● | 4 | 17 | 12.68 | 16 | 20 | 150 | 0.5 | 0.20 |
| | 017R-4C16-200-LN04 | ● | 4 | 17 | 12.68 | 16 | 20 | 200 | 0.5 | 0.29 |
| | 020R-5C20-100-LN04 | ● | 5 | 20 | 15.68 | 20 | 20 | 100 | 0.5 | 0.22 |
| | 020R-5C20-150-LN04 | ● | 5 | 20 | 15.68 | 20 | 40 | 150 | 0.5 | 0.30 |
| | 020R-5C20-200-LN04 | ● | 5 | 20 | 15.68 | 20 | 80 | 200 | 0.5 | 0.40 |
| | 021R-5C20-100-LN04 | | 5 | 21 | 16.68 | 20 | 20 | 100 | 0.5 | 0.22 |
| | 021R-5C20-150-LN04 | ● | 5 | 21 | 16.68 | 20 | 20 | 150 | 0.5 | 0.30 |
| | 021R-5C20-200-LN04 | ● | 5 | 21 | 16.68 | 20 | 20 | 200 | 0.5 | 0.46 |

●: Stock item

## Available inserts


LNMX-ML


LNMX-MM

| | Designation | Coated | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | PC2505 | PC2510 | PC3700 | PC9540 | PC5300 | PC5400 | UNC840 | UPC845 |
| **LNMX** | 040205R-ML | | | | | ● | ● | ● | ● |
| | 040205R-MM | | ● | ● | | ● | ● | | ● |

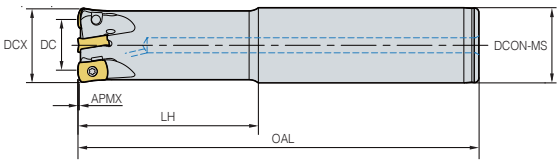
●: Stock item

## Parts

| Specification \ Parts | Screw | Wrench |
|---|---|---|
| Ø13 ~ Ø21 | FTKA01844-A | TW06S-A |

# HFMDS-LN06

• AR : -9°
• RR : -14°~ -13°




(mm)

| | Designation | Stock | | DCX | DC | DCON-MS | LH | OAL | APMX | kg |
|---|---|---|---|---|---|---|---|---|---|---|
| **HFMDS** | 016R-2C16-100-LN06 | ● | 2 | 16 | 9.0 | 16 | 30 | 100 | 0.7 | 0.13 |
| | 016R-2C16-150-LN06 | ● | 2 | 16 | 8.6 | 16 | 50 | 150 | 0.7 | 0.19 |
| | 017R-2C16-100-LN06 | ● | 2 | 17 | 9.6 | 16 | 30 | 100 | 1.0 | 0.13 |
| | 017R-2C16-150-LN06 | ● | 2 | 17 | 9.6 | 16 | 40 | 150 | 1.0 | 0.20 |
| | 017R-2C16-200-LN06 | | 2 | 17 | 9.6 | 16 | 40 | 200 | 1.0 | 0.27 |
| | 018R-2C16-100-LN06 | | 2 | 18 | 10.6 | 16 | 40 | 100 | 1.0 | 0.14 |
| | 018R-2C16-160-LN06 | | 2 | 18 | 10.6 | 16 | 40 | 160 | 1.0 | 0.18 |
| | 018R-2C16-200-LN06 | | 2 | 18 | 10.6 | 16 | 40 | 200 | 1.0 | 0.28 |
| | 019R-2C16-100-LN06 | | 2 | 19 | 11.6 | 16 | 40 | 100 | 1.0 | 0.15 |
| | 019R-2C16-160-LN06 | | 2 | 19 | 11.6 | 16 | 40 | 160 | 1.0 | 0.19 |
| | 019R-2C16-200-LN06 | | 2 | 19 | 11.6 | 16 | 40 | 200 | 1.0 | 0.29 |
| | 020R-3C20-100-LN06 | | 3 | 20 | 12.6 | 20 | 40 | 100 | 1.0 | 0.20 |
| | 020R-3C20-130-LN06 | ● | 3 | 20 | 12.6 | 20 | 50 | 130 | 1.0 | 0.26 |
| | 020R-3C20-160-LN06 | ● | 3 | 20 | 12.6 | 20 | 80 | 160 | 1.0 | 0.31 |
| | 020R-3C20-200-LN06 | ● | 3 | 20 | 12.6 | 20 | 120 | 200 | 1.0 | 0.10 |
| | 021R-3C20-100-LN06 | | 3 | 21 | 13.6 | 20 | 30 | 100 | 1.0 | 0.21 |
| | 021R-3C20-130-LN06 | | 3 | 21 | 13.6 | 20 | 40 | 130 | 1.0 | 0.27 |
| | 021R-3C20-160-LN06 | ● | 3 | 21 | 13.6 | 20 | 40 | 160 | 1.0 | 0.34 |
| | 021R-3C20-200-LN06 | ● | 3 | 21 | 13.6 | 20 | 40 | 200 | 1.0 | 0.42 |

●: Stock item

## Available inserts


LNMX-ML


LNMX-MF


LNMX-MM

| | Designation | Coated | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | PC2505 | PC2510 | PC3700 | PC9540 | PC5300 | PC5400 | UNC840 | UPC845 |
| **LNMX** | 060310R-ML | | | | | ● | ● | ● | ● |
| | 060310R-MF | | ● | ● | | ● | ● | ● | ● |
| | 060310R-MM | | ● | ● | | ● | ● | | |

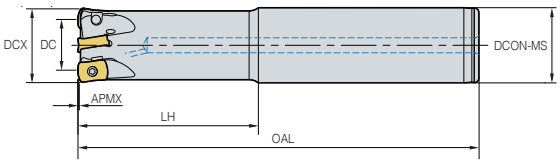
●: Stock item

## Parts

| Specification \ Parts | Screw | Wrench |
|---|---|---|
| Ø16 ~ Ø21 | FTNA0306 | TW09S |

# HFMDS-LN06

• AR : -9°
• RR : -12°~ -10°




(mm)

| | Designation | Stock | | DCX | DC | DCON-MS | LH | OAL | APMX | kg |
|---|---|---|---|---|---|---|---|---|---|---|
| **HFMDS** | 025R-4C25-100-LN06 | ● | 4 | 25 | 17.6 | 25 | 40 | 100 | 1.0 | 0.33 |
| | 025R-4C25-140-LN06 | ● | 4 | 25 | 17.6 | 25 | 60 | 140 | 1.0 | 0.46 |
| | 025R-4C25-180-LN06 | ● | 4 | 25 | 17.6 | 25 | 100 | 180 | 1.0 | 0.58 |
| | 025R-4C25-250-LN06 | | 4 | 25 | 17.6 | 25 | 150 | 250 | 1.0 | 0.67 |
| | 026R-4C25-100-LN06 | | 4 | 26 | 18.6 | 25 | 30 | 100 | 1.0 | 0.34 |
| | 026R-4C25-140-LN06 | ● | 4 | 26 | 18.6 | 25 | 40 | 140 | 1.0 | 0.48 |
| | 026R-4C25-180-LN06 | ● | 4 | 26 | 18.6 | 25 | 40 | 180 | 1.0 | 0.63 |
| | 026R-4C25-250-LN06 | ● | 4 | 26 | 18.6 | 25 | 40 | 250 | 1.0 | 0.72 |
| | 032R-5C32-150-LN06 | ● | 5 | 32 | 24.6 | 32 | 70 | 150 | 1.0 | 0.82 |
| | 032R-5C32-200-LN06 | ● | 5 | 32 | 24.6 | 32 | 120 | 200 | 1.0 | 1.08 |
| | 032R-5C32-250-LN06 | | 5 | 32 | 24.6 | 32 | 150 | 250 | 1.0 | 1.20 |
| | 033R-5C32-150-LN06 | | 5 | 33 | 25.6 | 32 | 40 | 150 | 1.0 | 0.82 |
| | 033R-5C32-200-LN06 | ● | 5 | 33 | 25.6 | 32 | 40 | 200 | 1.0 | 1.08 |
| | 033R-5C32-250-LN06 | ● | 5 | 33 | 25.6 | 32 | 40 | 250 | 1.0 | 1.20 |
| | 035R-5C32-150-LN06 | | 5 | 35 | 27.6 | 32 | 40 | 150 | 1.0 | 0.87 |
| | 035R-5C32-200-LN06 | | 5 | 35 | 27.6 | 32 | 40 | 200 | 1.0 | 1.13 |
| | 035R-5C32-250-LN06 | | 5 | 35 | 27.6 | 32 | 40 | 250 | 1.0 | 1.25 |
| | 040R-6C32-150-LN06 | | 6 | 40 | 32.6 | 32 | 40 | 150 | 1.0 | 0.97 |
| | 040R-6C32-200-LN06 | | 6 | 40 | 32.6 | 32 | 40 | 200 | 1.0 | 1.28 |
| | 040R-6C32-250-LN06 | | 6 | 40 | 32.6 | 32 | 40 | 250 | 1.0 | 1.38 |

●: Stock item

## Available inserts


LNMX-ML


LNMX-MF


LNMX-MM

| | Designation | Coated | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | PC2505 | PC2510 | PC3700 | PC9540 | PC5300 | PC5400 | UNC840 | UPC845 |
| **LNMX** | 060310R-ML | | | | | ● | ● | ● | ● |
| | 060310R-MF | | ● | ● | | ● | ● | ● | ● |
| | 060310R-MM | | ● | ● | | ● | ● | | |

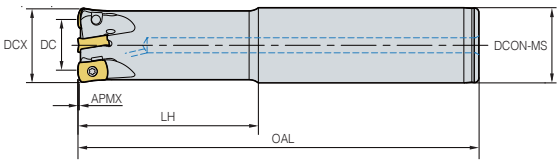
●: Stock item

## Parts

| Specification \ Parts | Screw | Wrench |
|---|---|---|
| Ø25 ~ Ø40 | FTNA0306 | TW09S |

# HFMDS-LN10

• AR : -9°
• RR : -16°~ -13°




(mm)

| | Designation | Stock | ⚙ | DCX | DC | DCON-MS | LH | OAL | APMX | kg |
|---|---|---|---|---|---|---|---|---|---|---|
| HFMDS | 025R-2C25-150-LN10 | ● | 2 | 25 | 14 | 25 | 70 | 150 | 1.5 | 0.46 |
| | 025R-2C25-200-LN10 | ● | 2 | 25 | 14 | 25 | 100 | 200 | 1.5 | 0.60 |
| | 025R-3C25-150-LN10 | ● | 3 | 25 | 14 | 25 | 70 | 150 | 1.5 | 0.45 |
| | 025R-3C25-200-LN10 | ● | 3 | 25 | 14 | 25 | 100 | 200 | 1.5 | 0.60 |
| | 026R-3C25-150-LN10 | ● | 3 | 26 | 15 | 25 | 40 | 150 | 1.5 | 0.49 |
| | 026R-3C25-200-LN10 | ● | 3 | 26 | 15 | 25 | 40 | 200 | 1.5 | 0.68 |
| | 030R-3C32-150-LN10 | ● | 3 | 30 | 19 | 32 | 70 | 150 | 1.5 | 0.71 |
| | 030R-3C32-200-LN10 | ● | 3 | 30 | 19 | 32 | 100 | 200 | 1.5 | 0.94 |
| | 032R-4C32-150-LN10 | ● | 4 | 32 | 21 | 32 | 70 | 150 | 1.5 | 0.75 |
| | 032R-4C32-200-LN10 | ● | 4 | 32 | 21 | 32 | 100 | 200 | 1.5 | 1.00 |
| | 032R-4C32-250-LN10 | ● | 4 | 32 | 21 | 32 | 150 | 250 | 1.5 | 1.20 |
| | 033R-4C32-150-LN10 | ● | 4 | 33 | 22 | 32 | 40 | 150 | 1.5 | 0.80 |
| | 033R-4C32-200-LN10 | ● | 4 | 33 | 22 | 32 | 40 | 200 | 1.5 | 1.00 |
| | 033R-4C32-250-LN10 | ● | 4 | 33 | 22 | 32 | 40 | 250 | 1.5 | 1.40 |
| | 035R-4C32-150-LN10 | | 4 | 35 | 24 | 32 | 40 | 150 | 1.5 | 0.85 |
| | 035R-4C32-200-LN10 | | 4 | 35 | 24 | 32 | 40 | 200 | 1.5 | 1.10 |
| | 035R-4C32-250-LN10 | | 4 | 35 | 24 | 32 | 40 | 250 | 1.5 | 1.44 |
| | 040R-4C32-150-LN10 | | 4 | 40 | 29 | 32 | 40 | 150 | 1.5 | 0.89 |
| | 040R-4C32-200-LN10 | | 4 | 40 | 29 | 32 | 40 | 200 | 1.5 | 1.20 |
| | 040R-4C32-250-LN10 | ● | 4 | 40 | 29 | 32 | 40 | 250 | 1.5 | 1.48 |
| | 040R-5C32-150-LN10 | | 5 | 40 | 29 | 32 | 40 | 150 | 1.5 | 0.89 |
| | 040R-5C32-200-LN10 | | 5 | 40 | 29 | 32 | 40 | 200 | 1.5 | 1.19 |
| | 040R-5C32-250-LN10 | ● | 5 | 40 | 29 | 32 | 40 | 250 | 1.5 | 1.48 |
| | 042R-5C32-150-LN10 | | 5 | 42 | 31 | 32 | 40 | 150 | 1.5 | 0.92 |
| | 042R-5C32-200-LN10 | | 5 | 42 | 31 | 32 | 40 | 200 | 1.5 | 1.23 |
| | 042R-5C32-250-LN10 | ● | 5 | 42 | 31 | 32 | 40 | 250 | 1.5 | 1.51 |

●: Stock item

## Available inserts


LNMX-ML


LNMX-MF


LNMX-MM

| | Designation | Coated | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | PC2505 | PC2510 | PC3700 | PC9540 | PC5300 | PC5400 | UNC840 | UPC845 |
| LNMX | 100412R-ML | | | | ● | ● | ● | ● | ● |
| | 100412R-MF | | ● | ● | ● | ● | ● | ● | ● |
| | 100412R-MM | | ● | ● | | ● | ● | | |

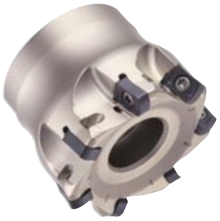
●: Stock item

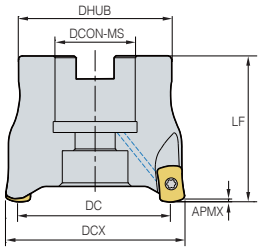
## Parts

| Specification \ Parts | Screw | Wrench |
|---|---|---|
| Ø25 ~ Ø42 | FTNA0408 | TW15S |

# HFMDCM-LN06

• AR : -9°
• RR : -12°~ -10°






(mm)

| Designation | | Stock | | DCX | DC | DHUB | DCON-MS | LF | APMX | kg |
|---|---|---|---|---|---|---|---|---|---|---|
| **HFMDCM** | 032R-16-5-LN06 | | 5 | 32 | 24.6 | 30 | 16 | 40 | 1.0 | 0.12 |
| | 040R-16-6-LN06 | ● | 6 | 40 | 32.6 | 34 | 16 | 40 | 1.0 | 0.21 |
| | 050R-22-6-LN06 | | 6 | 50 | 42.6 | 42 | 22 | 40 | 1.0 | 0.32 |
| | 050R-22-7-LN06 | | 7 | 50 | 42.6 | 42 | 22 | 40 | 1.0 | 0.32 |
| | 050R-22-8-LN06 | ● | 8 | 50 | 42.6 | 42 | 22 | 40 | 1.0 | 0.32 |
| | 052R-22-7-LN06 | | 7 | 52 | 44.6 | 42 | 22 | 40 | 1.0 | 0.34 |
| | 052R-22-8-LN06 | | 8 | 52 | 44.6 | 42 | 22 | 40 | 1.0 | 0.34 |
| | 063R-22-8-LN06 | | 8 | 63 | 55.6 | 49 | 22 | 40 | 1.0 | 0.53 |
| | 063R-22-9-LN06 | ● | 9 | 63 | 55.6 | 49 | 22 | 40 | 1.0 | 0.53 |
| | 066R-22-8-LN06 | | 8 | 66 | 58.6 | 49 | 22 | 40 | 1.0 | 0.57 |
| | 066R-22-9-LN06 | | 9 | 66 | 58.6 | 49 | 22 | 40 | 1.0 | 0.57 |

●: Stock item

## Available inserts


LNMX-ML


LNMX-MF


LNMX-MM

| Designation | | Coated | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | PC2505 | PC2510 | PC3700 | PC9540 | PC5300 | PC5400 | UNC840 | UPC845 |
| **LNMX** | 060310R-ML | | | | | ● | ● | ● | ● |
| | 060310R-MF | | ● | ● | | ● | ● | ● | ● |
| | 060310R-MM | | ● | ● | | ● | ● | | |

●: Stock item

## Available arbors

| Designation | | DCON | Available arbors |
|---|---|---|---|
| **HFMDCM** | 032R-16-□-LN06 | Ø16 | BT□□-FMC16-□□ |
| | 040R-16-□-LN06 | | |
| | 050R-22-□-LN06 | Ø22 | BT□□-FMC22-□□ |

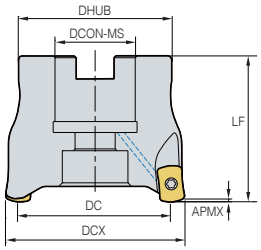
| Designation | | DCON | Available arbors |
|---|---|---|---|
| **HFMDCM** | 052R-22-□-LN06 | Ø22 | BT□□-FMC22-□□ |
| | 063R-22-□-LN06 | | |
| | 066R-22-□-LN06 | | |

## Parts

| Specification \ Parts | Screw | Wrench |
|---|---|---|
| Ø32 ~ Ø66 | FTNA0306 | TW09S |

# HFMDC(M)-LN10

• AR : -9°
• RR : -16°~ -13°




(mm)

| | Designation | Stock | | DCX | DC | DHUB | DCON-MS | LF | APMX | kg |
|---|---|---|---|---|---|---|---|---|---|---|
| **HFMDCM** | 040R-16-4-LN10 | | 4 | 40 | 29 | 38 | 16.00 | 40 | 1.5 | 0.19 |
| | 040R-16-5-LN10 | ● | 5 | 40 | 29 | 38 | 16.00 | 40 | 1.5 | 0.19 |
| | 042R-16-4-LN10 | | 4 | 42 | 31 | 38 | 16.00 | 40 | 1.5 | 0.20 |
| | 042R-16-5-LN10 | ● | 5 | 42 | 31 | 38 | 16.00 | 40 | 1.5 | 0.20 |
| | 050R-22-6-LN10 | ● | 6 | 50 | 39 | 42 | 22.00 | 40 | 1.5 | 0.26 |
| | 050R-22-7-LN10 | ● | 7 | 50 | 39 | 42 | 22.00 | 40 | 1.5 | 0.26 |
| | 052R-22-6-LN10 | | 6 | 52 | 41 | 42 | 22.00 | 40 | 1.5 | 0.27 |
| | 052R-22-7-LN10 | ● | 7 | 52 | 41 | 42 | 22.00 | 40 | 1.5 | 0.27 |
| | 063R-22-7-LN10 | ● | 7 | 63 | 52 | 49 | 22.00 | 40 | 1.5 | 0.47 |
| | 063R-22-8-LN10 | ● | 8 | 63 | 52 | 49 | 22.00 | 40 | 1.5 | 0.47 |
| | 066R-22-7-LN10 | | 7 | 66 | 55 | 49 | 22.00 | 40 | 1.5 | 0.49 |
| | 066R-22-8-LN10 | ● | 8 | 66 | 55 | 49 | 22.00 | 40 | 1.5 | 0.50 |
| | 080R-27-9-LN10 | | 9 | 80 | 69 | 60 | 27.00 | 50 | 1.5 | 0.84 |
| | 080R-27-10-LN10 | ● | 10 | 80 | 69 | 60 | 27.00 | 50 | 1.5 | 0.84 |
| | 100R-32-10-LN10 | | 10 | 100 | 89 | 67 | 32.00 | 56 | 1.5 | 1.48 |
| | 100R-32-11-LN10 | ● | 11 | 100 | 89 | 67 | 32.00 | 56 | 1.5 | 1.48 |
| | 100R-32-12-LN10 | | 12 | 100 | 89 | 67 | 32.00 | 56 | 1.5 | 1.48 |
| **HFMDC** | 080R-25.4-9-LN10 | | 9 | 80 | 69 | 60 | 25.40 | 50 | 1.5 | 0.84 |
| | 080R-25.4-10-LN10 | | 10 | 80 | 69 | 60 | 25.40 | 50 | 1.5 | 0.84 |
| | 100R-31.75-10-LN10 | | 10 | 100 | 89 | 67 | 31.75 | 56 | 1.5 | 1.48 |
| | 100R-31.75-11-LN10 | | 11 | 100 | 89 | 67 | 31.75 | 56 | 1.5 | 1.48 |
| | 100R-31.75-12-LN10 | | 12 | 100 | 89 | 67 | 31.75 | 56 | 1.5 | 1.48 |

●: Stock item

## Available inserts


LNMX-ML


LNMX-MF


LNMX-MM

| | Designation | Coated | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | PC2505 | PC2510 | PC3700 | PC9540 | PC5300 | PC5400 | UNC840 | UPC845 |
| **LNMX** | 100412R-ML | | | | ● | ● | ● | ● | ● |
| | 100412R-MF | | ● | ● | ● | ● | ● | ● | ● |
| | 100412R-MM | | ● | ● | | ● | ● | | |

●: Stock item

## Available arbors

| | Designation | DCON | Available arbors |
|---|---|---|---|
| **HFMDCM** | 040R-16-□-LN10 | Ø16 | BT□□-FMC16-□□ |
| | 042R-16-□-LN10 | | |
| | 050R-22-□-LN10 | Ø22 | BT□□-FMC22-□□ |
| | 052R-22-□-LN10 | | |
| | 063R-22-□-LN10 | | |

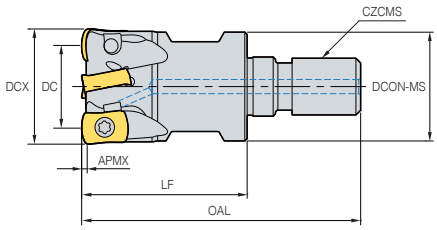
| | Designation | DCON | Available arbors |
|---|---|---|---|
| **HFMDCM** | 066R-22-□-LN10 | Ø22 | BT□□-FMC22-□□ |
| | 080R-27-□-LN10 | Ø27 | BT□□-FMC27-□□ |
| | 100R-32-□-LN10 | Ø32 | BT□□-FMC32-□□ |
| **HFMDC** | 080R-25.4-□-LN10 | Ø25.4 | BT□□-FMA25.4-□□ |
| | 100R-31.75-□-LN10 | Ø31.75 | BT□□-FMA31.75-□□ |

## Parts

| Specification \ Parts | Screw | Wrench |
|---|---|---|
| Ø40 ~ Ø100 | FTNA0408 | TW15S |

# HFMDM-LN04

• AR : -8°
• RR : -16°~ -10°




(mm)

| | Designation | Stock | | DCX | DC | DCON-MS | LF | OAL | CZCMS | APMX | kg |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **HFMDM** | 010R-2-M06-LN04 | ● | | 2 | 10 | 5.68 | 9.5 | 22 | 37 | M6 | 0.4 | 0.01 |
| | 011R-2-M06-LN04 | ● | | 2 | 11 | 6.68 | 11.0 | 22 | 37 | M6 | 0.5 | 0.01 |
| | 012R-3-M06-LN04 | ● | | 3 | 12 | 7.68 | 11.0 | 22 | 37 | M6 | 0.5 | 0.01 |
| | 013R-3-M06-LN04 | ● | | 3 | 13 | 8.68 | 11.0 | 22 | 37 | M6 | 0.5 | 0.02 |
| | 016R-4-M08-LN04 | ● | | 4 | 16 | 11.68 | 14.5 | 22 | 39 | M8 | 0.5 | 0.03 |
| | 017R-4-M08-LN04 | ● | | 4 | 17 | 12.68 | 14.5 | 22 | 39 | M8 | 0.5 | 0.03 |
| | 020R-5-M10-LN04 | ● | | 5 | 20 | 15.68 | 18.0 | 30 | 51 | M10 | 0.5 | 0.06 |
| | 025R-7-M12-LN04 | ● | | 7 | 25 | 20.68 | 23.0 | 30 | 54 | M12 | 0.5 | 0.10 |
| | 032R-8-M16-LN04 | ● | | 8 | 32 | 27.68 | 29.0 | 35 | 62 | M16 | 0.5 | 0.20 |
| | 033R-8-M16-LN04 | ● | | 8 | 33 | 28.68 | 29.0 | 35 | 62 | M16 | 0.5 | 0.20 |
| | 035R-9-M16-LN04 | ● | | 9 | 35 | 30.68 | 29.0 | 35 | 62 | M16 | 0.5 | 0.21 |

●: Stock item

## Available inserts

LNMX-ML

LNMX-MM

| | Designation | Coated | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | PC2505 | PC2510 | PC3700 | PC9540 | PC5300 | PC5400 | UNC840 | UPC845 |
| **LNMX** | 040205R-ML | | | | | ● | ● | ● | ● |
| | 040205R-MM | | ● | ● | | ● | ● | | ● |

●: Stock item

## Available adapter

| | Designation | Available adapter |
|---|---|---|
| **HFMDM** | 010R-□-M06-LN04 | MAT-M06 |
| | 011R-□-M06-LN04 | |
| | 012R-□-M06-LN04 | |
| | 013R-□-M06-LN04 | |
| | 016R-□-M08-LN04 | MAT-M08 |
| | 017R-□-M08-LN04 | |

| | Designation | Available adapter |
|---|---|---|
| **HFMDM** | 020R-□-M10-LN04 | MAT-M10 |
| | 025R-□-M12-LN04 | MAT-M12 |
| | 032R-□-M16-LN04 | MAT-M16 |
| | 033R-□-M16-LN04 | |
| | 035R-□-M16-LN04 | |

Designation:
HFMDM016R-□-M08-LN04
Modular head threading measure size (M08)

=

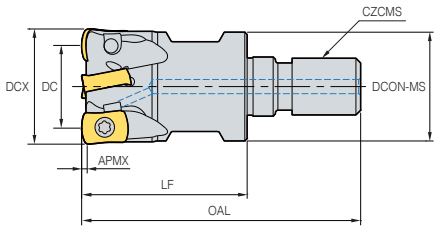
Adapter spec: MAT-M08-040-S16T
Adapter threading measure (M08)

## Parts

| Parts / Specification | Screw | Wrench |
|---|---|---|
| Ø10 ~ Ø35 | FTKA01844-A | TW06S-A |

# HFMDM-LN06

• AR : -9°
• RR : -15°~ -10°




(mm)

| | Designation | Stock | | DCX | DC | DCON-MS | LF | OAL | CZCMS | APMX | kg |
|---|---|---|---|---|---|---|---|---|---|---|---|
| HFMDM | 016R-2-M08-LN06 | ● | | 2 | 16 | 8.6 | 14.5 | 25 | 42 | M08 | 0.7 | 0.03 |
| | 017R-2-M08-LN06 | ● | | 2 | 17 | 9.6 | 14.5 | 25 | 42 | M08 | 1.0 | 0.03 |
| | 018R-2-M08-LN06 | | | 2 | 18 | 10.6 | 14.5 | 25 | 42 | M08 | 1.0 | 0.04 |
| | 019R-2-M08-LN06 | | | 2 | 19 | 11.6 | 14.5 | 25 | 42 | M08 | 1.0 | 0.05 |
| | 020R-3-M10-LN06 | ● | | 3 | 20 | 12.6 | 18.0 | 30 | 51 | M10 | 1.0 | 0.06 |
| | 021R-3-M10-LN06 | ● | | 3 | 21 | 13.6 | 18.0 | 30 | 51 | M10 | 1.0 | 0.07 |
| | 025R-4-M12-LN06 | ● | | 4 | 25 | 17.6 | 23.0 | 35 | 59 | M12 | 1.0 | 0.10 |
| | 026R-4-M12-LN06 | | | 4 | 26 | 18.6 | 23.0 | 35 | 59 | M12 | 1.0 | 0.10 |
| | 032R-5-M16-LN06 | ● | | 5 | 32 | 24.6 | 29.0 | 40 | 67 | M16 | 1.0 | 0.20 |
| | 033R-5-M16-LN06 | | | 5 | 33 | 25.6 | 29.0 | 40 | 67 | M16 | 1.0 | 0.20 |
| | 035R-5-M16-LN06 | ● | | 5 | 35 | 27.6 | 29.0 | 40 | 67 | M16 | 1.0 | 0.21 |
| | 040R-6-M16-LN06 | | | 6 | 40 | 32.6 | 29.0 | 40 | 67 | M16 | 1.0 | 0.24 |
| | 042R-6-M16-LN06 | | | 6 | 42 | 34.6 | 29.0 | 40 | 67 | M16 | 1.0 | 0.25 |

●: Stock item

## Available inserts


LNMX-ML


LNMX-MF


LNMX-MM

| | Designation | Coated | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | PC2505 | PC2510 | PC3700 | PC9540 | PC5300 | PC5400 | UNC840 | UPC845 |
| LNMX | 060310R-ML | | | | | ● | ● | ● | ● |
| | 060310R-MF | | ● | ● | | ● | ● | ● | ● |
| | 060310R-MM | | ● | ● | | ● | ● | | |

●: Stock item

## Available adapter

| Designation | | Available adapter |
|---|---|---|
| HFMDM | 016R-□-M08-LN06 | MAT-M08 |
| | 017R-□-M08-LN06 | |
| | 018R-□-M08-LN06 | |
| | 019R-□-M08-LN06 | |
| | 020R-□-M10-LN06 | MAT-M10 |
| | 021R-□-M10-LN06 | |
| | 025R-□-M12-LN06 | MAT-M12 |

| Designation | | Available adapter |
|---|---|---|
| HFMDM | 026R-□-M12-LN06 | MAT-M12 |
| | 030R-□-M16-LN06 | MAT-M16 |
| | 032R-□-M16-LN06 | |
| | 033R-□-M16-LN06 | |
| | 035R-□-M16-LN06 | |
| | 040R-□-M16-LN06 | |
| | 042R-□-M16-LN06 | |

Designation:
HFMDM025R-□-M12-LN06
Modular head threading measure size (M12)

II

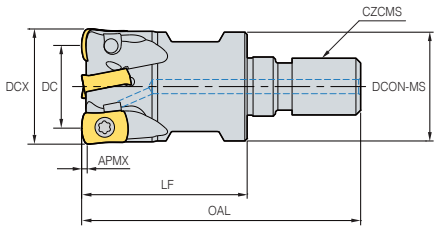
Adapter spec: MAT-M12-050-S25T
Adapter threading measure (M12)

## Parts

| Specification \ Parts | Screw | Wrench |
|---|---|---|
| Ø16 ~ Ø42 | FTNA0306 | TW09S |

# HFMDM-LN10

• AR : -9°
• RR : -16°~ -13°




(mm)

| Designation | | Stock | | DCX | DC | DCON-MS | LF | OAL | CZCMS | APMX | kg |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **HFMDM** | 025R-2-M12-LN10 | ● | 2 | 25 | 14 | 23 | 35 | 59 | M12 | 1.5 | 0.10 |
| | 025R-3-M12-LN10 | ● | 3 | 25 | 14 | 23 | 35 | 59 | M12 | 1.5 | 0.10 |
| | 026R-3-M12-LN10 | ● | 3 | 26 | 15 | 23 | 35 | 59 | M12 | 1.5 | 0.10 |
| | 030R-4-M16-LN10 | ● | 4 | 30 | 19 | 29 | 40 | 67 | M16 | 1.5 | 0.17 |
| | 032R-3-M16-LN10 | | 3 | 32 | 21 | 29 | 40 | 67 | M16 | 1.5 | 0.19 |
| | 032R-4-M16-LN10 | ● | 4 | 32 | 21 | 29 | 40 | 67 | M16 | 1.5 | 0.19 |
| | 033R-4-M16-LN10 | ● | 4 | 33 | 22 | 29 | 40 | 67 | M16 | 1.5 | 0.19 |
| | 035R-3-M16-LN10 | | 3 | 35 | 24 | 29 | 40 | 67 | M16 | 1.5 | 0.20 |
| | 035R-4-M16-LN10 | ● | 4 | 35 | 24 | 29 | 40 | 67 | M16 | 1.5 | 0.20 |
| | 040R-4-M16-LN10 | | 4 | 40 | 29 | 29 | 40 | 67 | M16 | 1.5 | 0.22 |
| | 040R-5-M16-LN10 | ● | 5 | 40 | 29 | 29 | 40 | 67 | M16 | 1.5 | 0.22 |
| | 042R-4-M16-LN10 | | 4 | 42 | 31 | 29 | 40 | 67 | M16 | 1.5 | 0.25 |
| | 042R-5-M16-LN10 | ● | 5 | 42 | 31 | 29 | 40 | 67 | M16 | 1.5 | 0.25 |

●: Stock item

## Available inserts


LNMX-ML


LNMX-MF


LNMX-MM

| Designation | | Coated | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | PC2505 | PC2510 | PC3700 | PC9540 | PC5300 | PC5400 | UNC840 | UPC845 |
| **LNMX** | 100412R-ML | | | | ● | ● | ● | ● | ● |
| | 100412R-MF | | ● | ● | ● | ● | ● | ● | ● |
| | 100412R-MM | | ● | ● | | ● | ● | | |

●: Stock item

## Available adapter

| Designation | | Available adapter |
|---|---|---|
| **HFMDM** | 025R-□-M12-LN10 | MAT-M12 |
| | 026R-□-M12-LN10 | |
| | 030R-□-M16-LN10 | MAT-M16 |
| | 032R-□-M16-LN10 | |

| Designation | | Available adapter |
|---|---|---|
| **HFMDM** | 033R-□-M16-LN10 | MAT-M16 |
| | 035R-□-M16-LN10 | |
| | 040R-□-M16-LN10 | |
| | 042R-□-M16-LN10 | |

Designation:
HFMDM035R-□-M16-LN10
Modular head threading measure size (M16)

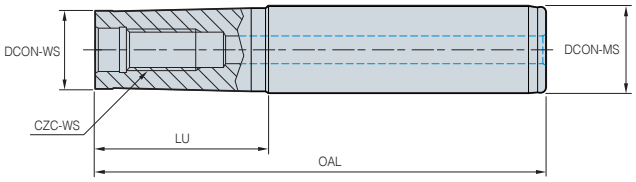
II

Adapter spec: MAT-M16-035-S32S
Adapter threading measure (M16)

## Parts

| Specification \ Parts | Screw | Wrench |
|---|---|---|
| Ø25 ~ Ø42 | FTNA0408 | TW15S |

# **MAT** (Steel Shank type)



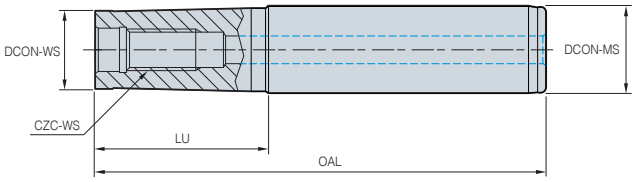

(mm)

| | Designation | Stock | DCON-WS | DCON-MS | LU | OAL | CZC-WS |
|---|---|---|---|---|---|---|---|
| **MAT-** | M06-020-S10S | ● | 9.5 | 10 | 20 | 70 | M06 |
| | M06-040-S12T | ● | 9.5 | 12 | 40 | 96 | M06 |
| | M06-065-S16T | ● | 9.5 | 16 | 65 | 125 | M06 |
| | M6B-020-S12S | ● | 11.0 | 12 | 20 | 76 | M06 |
| | M6B-040-S12S | ● | 11.0 | 12 | 40 | 96 | M06 |
| | M6B-065-S16T | ● | 11.0 | 16 | 65 | 125 | M06 |
| | M6B-080-S16T | ● | 11.0 | 16 | 80 | 140 | M06 |
| | M08-020-S16S | ● | 14.5 | 16 | 20 | 80 | M08 |
| | M08-040-S16T | ● | 14.5 | 16 | 40 | 100 | M08 |
| | M08-065-S16T | ● | 14.5 | 16 | 65 | 125 | M08 |
| | M08-080-S20T | ● | 14.5 | 20 | 80 | 150 | M08 |
| | M08-110-S25T | ● | 14.5 | 25 | 110 | 190 | M08 |
| | M10-030-S20S | ● | 18.0 | 20 | 30 | 100 | M10 |
| | M10-050-S20T | ● | 18.0 | 20 | 50 | 120 | M10 |
| | M10-070-S20T | ● | 18.0 | 20 | 70 | 140 | M10 |
| | M10-090-S25T | ● | 18.0 | 25 | 90 | 170 | M10 |
| | M10-110-S25T | ● | 18.0 | 25 | 110 | 190 | M10 |
| | M10-130-S32T | ● | 18.0 | 32 | 130 | 220 | M10 |
| | M12-030-S25S | ● | 22.5 | 25 | 29 | 110 | M12 |
| | M12-050-S25T | ● | 22.5 | 25 | 50 | 130 | M12 |
| | M12-070-S25T | ● | 22.5 | 25 | 70 | 150 | M12 |
| | M12-090-S25T | ● | 22.5 | 25 | 90 | 170 | M12 |
| | M12-110-S32T | ● | 22.5 | 32 | 110 | 200 | M12 |
| | M12-175-S40T | ● | 22.5 | 40 | 175 | 300 | M12 |
| | M16-035-S32S | ● | 28.5 | 32 | 35 | 125 | M16 |
| | M16-055-S32T | ● | 28.5 | 32 | 55 | 145 | M16 |
| | M16-080-S32T | ● | 28.5 | 32 | 80 | 170 | M16 |
| | M16-120-S32T | ● | 28.5 | 32 | 120 | 210 | M16 |
| | M16-175-S40T | ● | 28.5 | 40 | 175 | 300 | M16 |

* S: Straight neck adapter * T: Taper neck adapter

●: Stock item

# MAT-C (Carbide Shank type)



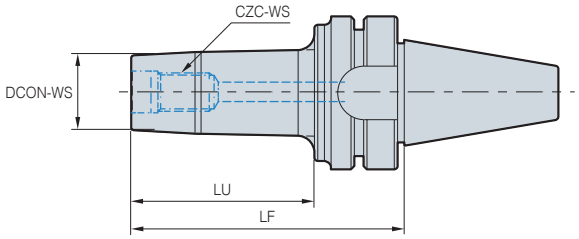

(mm)

| | Designation | Stock | DCON-WS | DCON-MS | LU | OAL | CZC-WS |
|---|---|---|---|---|---|---|---|
| MAT- | M06-030-S10S-C-80 | | 9.5 | 10 | 30 | 80 | M06 |
| | M06-050-S10S-C-100 | | 9.5 | 10 | 50 | 100 | M06 |
| | M06-080-S10S-C-130 | | 9.5 | 10 | 80 | 130 | M06 |
| | M6B-030-S12S-C-80 | | 11.0 | 12 | 30 | 80 | M06 |
| | M6B-050-S12S-C-100 | | 11.0 | 12 | 50 | 100 | M06 |
| | M6B-080-S12S-C-130 | | 11.0 | 12 | 80 | 130 | M06 |
| | M08-080-S16S-C | ● | 14.5 | 16 | 80 | 150 | M08 |
| | M08-110-S16S-C | ● | 14.5 | 16 | 110 | 180 | M08 |
| | M08-150-S16S-C | | 14.5 | 16 | 150 | 250 | M08 |
| | M08-010-S16S-C-150 | | 14.5 | 16 | 10 | 150 | M08 |
| | M08-010-S16S-C-180 | | 14.5 | 16 | 10 | 180 | M08 |
| | M08-010-S16S-C-250 | | 14.5 | 16 | 10 | 250 | M08 |
| | M10-090-S20S-C | ● | 18.0 | 20 | 90 | 170 | M10 |
| | M10-110-S20S-C | ● | 18.0 | 20 | 110 | 200 | M10 |
| | M10-175-S20S-C | | 18.0 | 20 | 175 | 300 | M10 |
| | M10-010-S20S-C-170 | ● | 18.0 | 20 | 10 | 170 | M10 |
| | M10-010-S20S-C-200 | ● | 18.0 | 20 | 10 | 200 | M10 |
| | M10-010-S20S-C-300 | | 18.0 | 20 | 10 | 300 | M10 |
| | M12-090-S25S-C | ● | 22.5 | 25 | 90 | 170 | M12 |
| | M12-110-S25S-C | | 22.5 | 25 | 110 | 200 | M12 |
| | M12-175-S25S-C | | 22.5 | 25 | 175 | 300 | M12 |
| | M12-015-S25S-C-170 | | 22.5 | 25 | 15 | 170 | M12 |
| | M12-015-S25S-C-200 | | 22.5 | 25 | 15 | 200 | M12 |
| | M12-015-S25S-C-300 | | 22.5 | 25 | 15 | 300 | M12 |
| | M16-090-S32S-C | ● | 28.5 | 32 | 90 | 180 | M16 |
| | M16-120-S32S-C | | 28.5 | 32 | 120 | 210 | M16 |
| | M16-175-S32S-C | | 28.5 | 32 | 175 | 300 | M16 |
| | M16-020-S32S-C-180 | | 28.5 | 32 | 20 | 180 | M16 |
| | M16-020-S32S-C-210 | | 28.5 | 32 | 20 | 210 | M16 |
| | M16-020-S32S-C-300 | ● | 28.5 | 32 | 20 | 300 | M16 |

* S: Straight neck adapter * T: Taper neck adapter

●: Stock item

# BT30/BT40/BT50

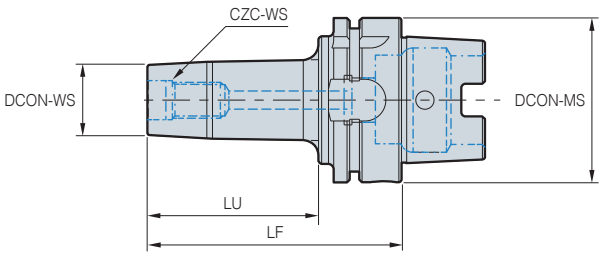



(mm)

| | Designation | Stock | DCON-WS | LU | LF | CZC-WS |
|---|---|---|---|---|---|---|
| **BT30-** | MAT-M06-053 | | 11.0 | 21 | 53 | M06*1.0 |
| | MAT-M08-057 | | 14.5 | 25 | 57 | M08*1.25 |
| | MAT-M10-062 | | 18.0 | 30 | 62 | M10*1.5 |
| | MAT-M12-067 | | 23.0 | 35 | 67 | M12*1.75 |
| | MAT-M16-067 | | 29.0 | 35 | 67 | M16*2.0 |
| **BT40-** | MAT-M06-062 | | 11.0 | 25 | 62 | M06*1.0 |
| | MAT-M06-077 | | 11.0 | 40 | 77 | M06*1.0 |
| | MAT-M06-092 | | 11.0 | 55 | 92 | M06*1.0 |
| | MAT-M08-067 | | 14.5 | 30 | 67 | M08*1.25 |
| | MAT-M08-082 | | 14.5 | 45 | 82 | M08*1.25 |
| | MAT-M08-097 | | 14.5 | 60 | 97 | M08*1.25 |
| | MAT-M10-072 | | 18.0 | 35 | 72 | M10*1.5 |
| | MAT-M10-087 | | 18.0 | 50 | 87 | M10*1.5 |
| | MAT-M10-102 | | 18.0 | 65 | 102 | M10*1.5 |
| | MAT-M12-077 | | 23.0 | 40 | 77 | M12*1.75 |
| | MAT-M12-092 | | 23.0 | 55 | 92 | M12*1.75 |
| | MAT-M12-107 | | 23.0 | 70 | 107 | M12*1.75 |
| | MAT-M16-077 | | 29.0 | 40 | 77 | M16*2.0 |
| | MAT-M16-092 | | 29.0 | 55 | 92 | M16*2.0 |
| | MAT-M16-107 | | 29.0 | 70 | 107 | M16*2.0 |
| **BT50-** | MAT-M06-083 | | 11.0 | 35 | 83 | M06*1.0 |
| | MAT-M06-098 | | 11.0 | 50 | 98 | M06*1.0 |
| | MAT-M06-113 | | 11.0 | 65 | 113 | M06*1.0 |
| | MAT-M08-088 | | 14.5 | 40 | 88 | M08*1.25 |
| | MAT-M08-103 | | 14.5 | 55 | 103 | M08*1.25 |
| | MAT-M08-118 | | 14.5 | 70 | 118 | M08*1.25 |
| | MAT-M10-093 | | 18.0 | 45 | 93 | M10*1.5 |
| | MAT-M10-113 | | 18.0 | 65 | 113 | M10*1.5 |
| | MAT-M10-128 | | 18.0 | 80 | 128 | M10*1.5 |
| | MAT-M12-103 | | 23.0 | 55 | 103 | M12*1.75 |
| | MAT-M12-118 | | 23.0 | 70 | 118 | M12*1.75 |
| | MAT-M12-133 | | 23.0 | 85 | 133 | M12*1.75 |
| | MAT-M16-103 | | 29.0 | 55 | 103 | M16*2.0 |
| | MAT-M16-118 | | 29.0 | 70 | 118 | M16*2.0 |
| | MAT-M16-133 | | 29.0 | 85 | 133 | M16*2.0 |

●: Stock item

# HSK63A/HSK100A



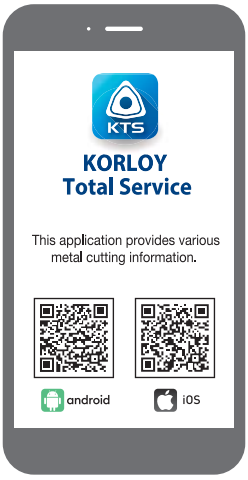

(mm)

| | Designation | Stock | DCON-WS | DCON-MS | LU | LF | CZC-WS |
|---|---|---|---|---|---|---|---|
| **HSK63A-** | MAT-M06-061 | | 11.0 | 63 | 25 | 61 | M06*1.0 |
| | MAT-M06-076 | | 11.0 | 63 | 40 | 76 | M06*1.0 |
| | MAT-M06-091 | | 11.0 | 63 | 55 | 91 | M06*1.0 |
| | MAT-M08-066 | | 14.5 | 63 | 30 | 66 | M08*1.25 |
| | MAT-M08-081 | | 14.5 | 63 | 45 | 81 | M08*1.25 |
| | MAT-M08-096 | | 14.5 | 63 | 60 | 96 | M08*1.25 |
| | MAT-M10-071 | | 18.0 | 63 | 35 | 71 | M10*1.5 |
| | MAT-M10-086 | | 18.0 | 63 | 50 | 86 | M10*1.5 |
| | MAT-M10-101 | | 18.0 | 63 | 65 | 101 | M10*1.5 |
| | MAT-M12-076 | | 23.0 | 63 | 40 | 76 | M12*1.75 |
| | MAT-M12-091 | | 23.0 | 63 | 55 | 91 | M12*1.75 |
| | MAT-M12-106 | | 23.0 | 63 | 70 | 106 | M12*1.75 |
| | MAT-M16-076 | | 29.0 | 63 | 40 | 76 | M16*2.0 |
| | MAT-M16-091 | | 29.0 | 63 | 55 | 91 | M16*2.0 |
| | MAT-M16-106 | | 29.0 | 63 | 70 | 106 | M16*2.0 |
| **HSK100A-** | MAT-M06-074 | | 11.0 | 100 | 35 | 74 | M06*1.0 |
| | MAT-M06-089 | | 11.0 | 100 | 50 | 89 | M06*1.0 |
| | MAT-M06-104 | | 11.0 | 100 | 65 | 104 | M06*1.0 |
| | MAT-M08-079 | | 14.5 | 100 | 40 | 79 | M08*1.25 |
| | MAT-M08-094 | | 14.5 | 100 | 55 | 94 | M08*1.25 |
| | MAT-M08-109 | | 14.5 | 100 | 70 | 109 | M08*1.25 |
| | MAT-M10-084 | | 18.0 | 100 | 45 | 84 | M10*1.5 |
| | MAT-M10-104 | | 18.0 | 100 | 65 | 104 | M10*1.5 |
| | MAT-M10-119 | | 18.0 | 100 | 80 | 119 | M10*1.5 |
| | MAT-M12-094 | | 23.0 | 100 | 55 | 94 | M12*1.75 |
| | MAT-M12-109 | | 23.0 | 100 | 70 | 109 | M12*1.75 |
| | MAT-M12-124 | | 23.0 | 100 | 85 | 124 | M12*1.75 |
| | MAT-M16-094 | | 29.0 | 100 | 55 | 94 | M16*2.0 |
| | MAT-M16-109 | | 29.0 | 100 | 70 | 109 | M16*2.0 |
| | MAT-M16-124 | | 29.0 | 100 | 85 | 124 | M16*2.0 |

●: Stock item

## ⚠ For the safe metalcutting

- Use safety supplies such as protective gloves to prevent possible injury while touching the edge of tools.
- Use safety glasess 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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