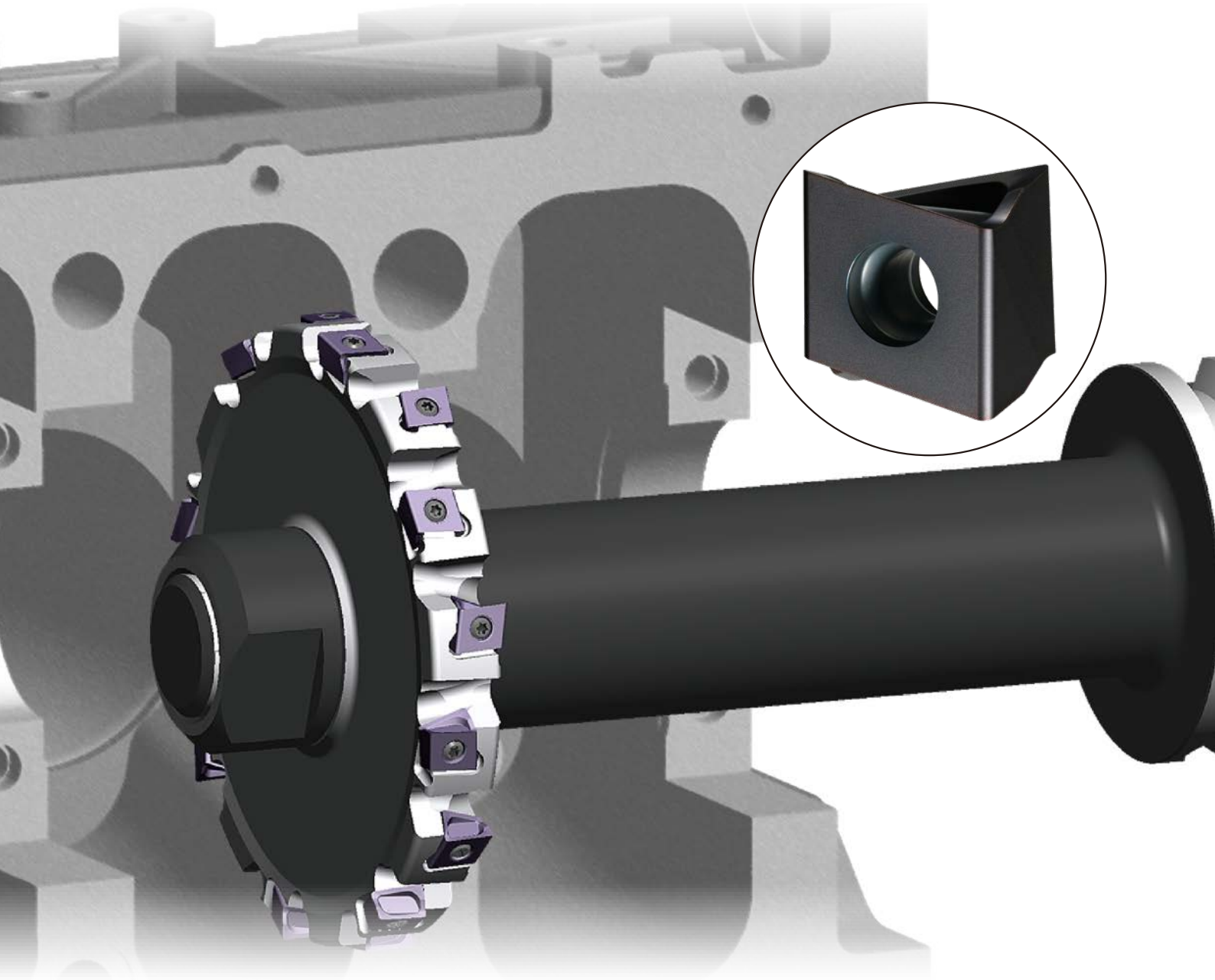
2026.04

# SIDE AND FACE MILLING CUTTER SERIES

## SIDE AND FACE MACHINING WITH LOW CUTTING RESISTANCE VERTICAL MOUNT DOUBLE-SIDED INSERTS FOR DCV SERIES



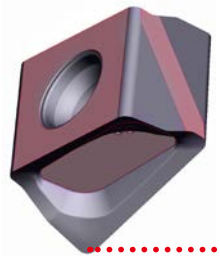
Mplus...

# DCV3 / DCV4 / DCV5

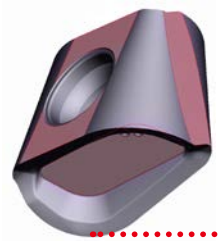
## EXCHANGEABLE INSERTS

**ECONOMICAL INSERT DESIGN**
Tangential type insert with 4 cutting edges.

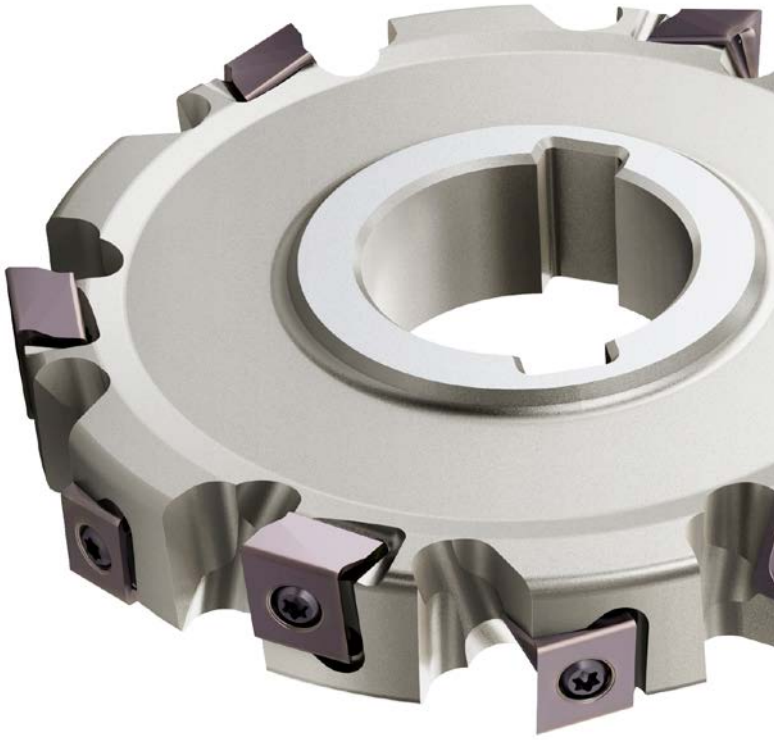
**SECURE CLAMPING**
Special seating surfaces enusre all different insert radius sizes are securely clamped.



Corner radius R 0.4 mm

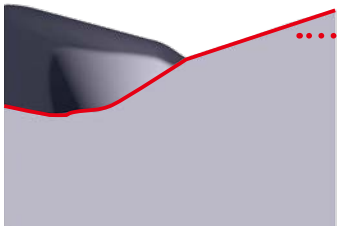


Corner radius R 4.0 mm for DCV3
Corner radius R 5.0 mm for DCV4
Corner radius R 7.0 mm for DCV5

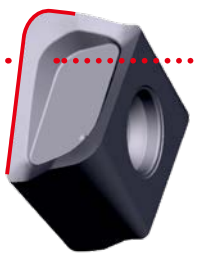


Cutter body with inserts: GAMF: + 8° GAMP: + 3°

**LOW CUTTING RESISTANCE INSERT → PREFERRED SHARPNESS**



Tough cutting edge
(Convex curve)

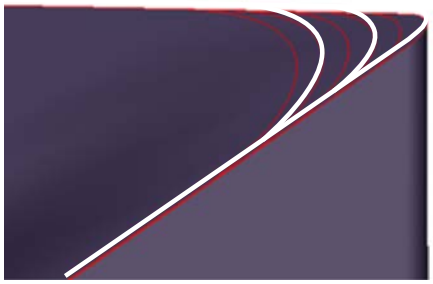


Double-phased helical rake angles

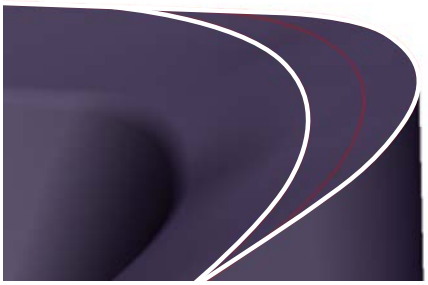
# HIGH PRECISION CORNER RADIUS

**PRECISION INSERTS FOR FORMING ACCURATE CORNER RADII IN THE WORKPIECE.**

**R 0.4 – R 3.0 mm**

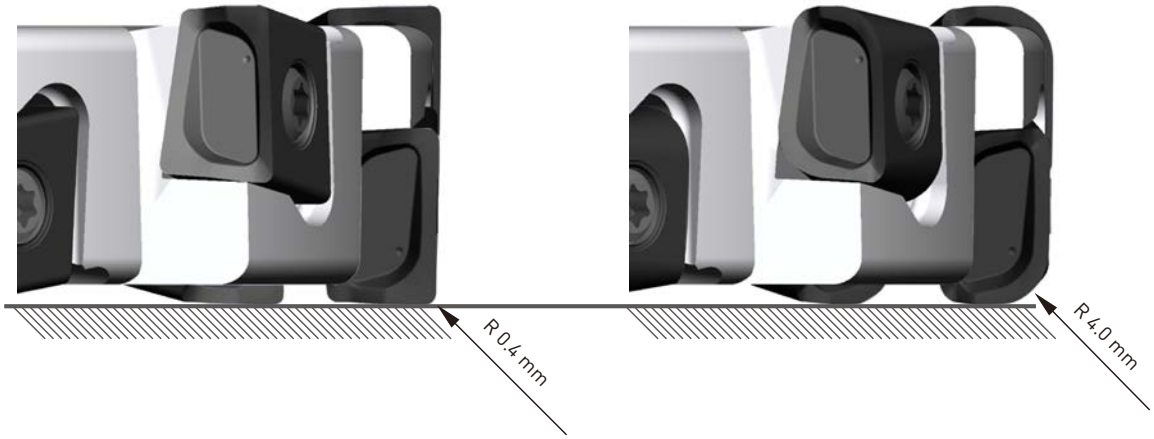


**R 3.0 – R 7.0 mm**



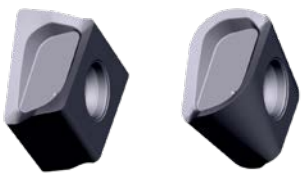
**CONSISTENT GEOMETRY**

Cutting width and diameter do not change even when different corner radius inserts are used.

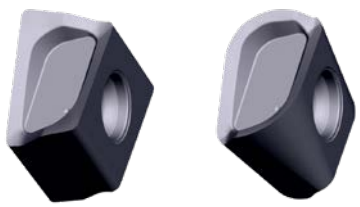



**LARGE VARIETY OF CORNER RADII AVAILABLE**

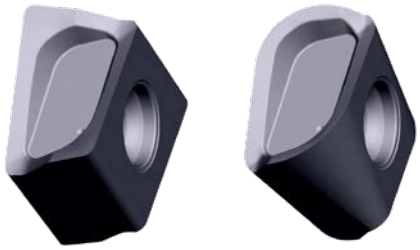
**DCV3** = R 0.4 – R 4.0 mm



**DCV4** = R 0.4 – R 5.0 mm



**DCV5** = R 0.4 – R 7.0 mm



NEW

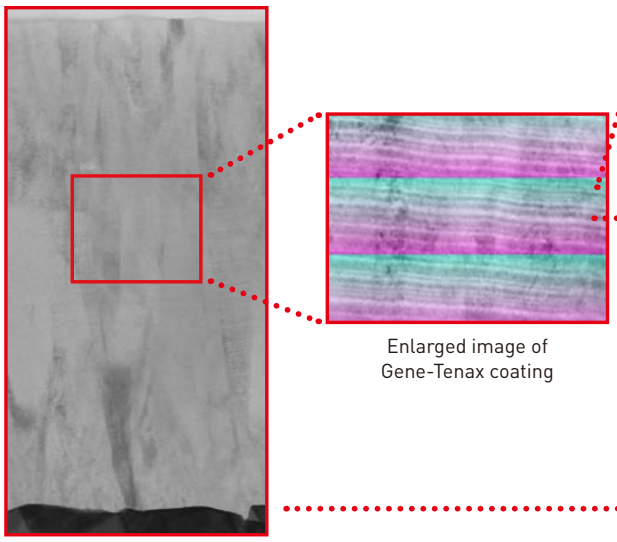
# MP1220/MP1230*/MP1240*

## MULTI-LAYER PVD COATING FOR MILLING

**ONE INSERT SERIES TO SOLVE ALL PROBLEMS WHEN MACHINING STEELS, STAINLESS STEELS, HEAT RESISTANT AND TITANIUM ALLOYS.**

### GENE-TENAX COATING

By controlling the coating structure at the nano level, damage to the coating has been vastly reduced compared to conventional lamination. By successfully laminating multiple films, simultaneous strengthening of heat, wear and welding resistance is achieved. Additionally the coating is now much less prone to cracking and with the increased adhesive strength, the most stable grade for milling has been created.



Enlarged image of Gene-Tenax coating

Dedicated carbide base material

**Al-RICH TECHNOLOGY AlTiN-BASED**

Improved wear and heat resistance.

**ORIGINAL AlTiN COMPOSITE FUNCTIONAL LAYER**

Increasingly resistant to oxidation and welding.

Technology to improve adhesion strength.

### ACHIEVES TOUGHNESS FOR A WIDE RANGE OF WORK MATERIALS

**DUCTILE CAST IRON MACHINING DAMAGE**

Cutting edge that is resistant to wear when machining ductile cast iron

Thermal cracking



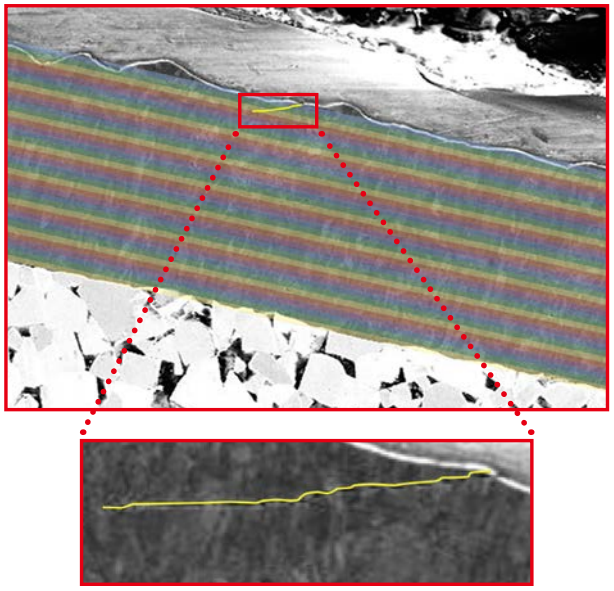
☐ : MP1200 Series ☐ : Conventional PVD

***Not available for side and face milling cutter series**

# NEW MULTILAYER TECHNOLOGY

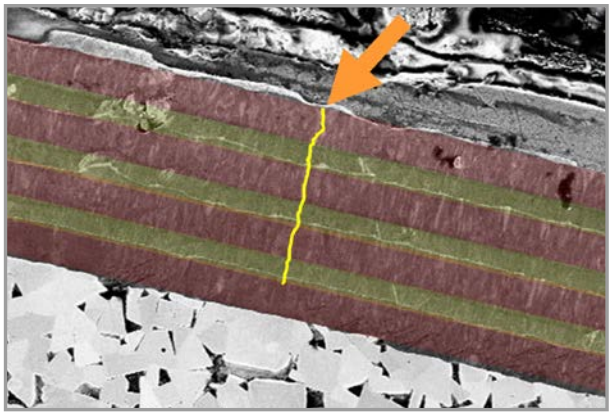
The adoption of a new multi-layer technology has succeeded in suppressing crack propagation and dramatically improved fracture resistance when compared to conventional technology.

**MP1200 SERIES MULTI-LAYER TECHNOLOGY**



Prevents cracks

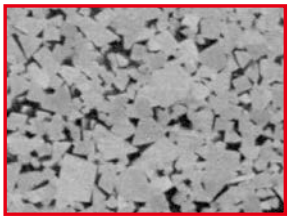
**CONVENTIONAL LAYER TECHNOLOGY**



## MULTI-GRADE SYSTEM

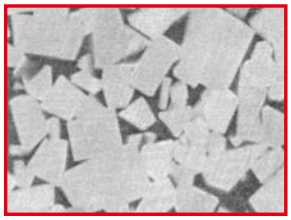
Using simulation technology, precise analysis of the cutting edge load and temperature when machining different workpiece materials was carried out. This led to the creation of different substrates for three different grades and ensures optimal performance for each type of workpiece material. Ensuring the best performance over a wide range of applications.

**MP1220**



**MP1230***

**MP1240***



2µm

## SELECTION GUIDELINES

**Steel, Carbon steel** — **Stainless steel** — **Titanium alloys, Heat resistant alloys**

- Hard grade
- Stable cutting
- Emphasis on wear resistance and mechanical properties

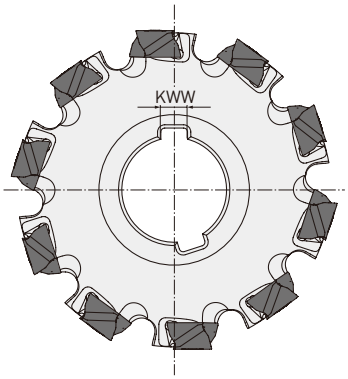
- Tough grade
- Unstable cutting
- Emphasis on fracture resistance and thermal properties

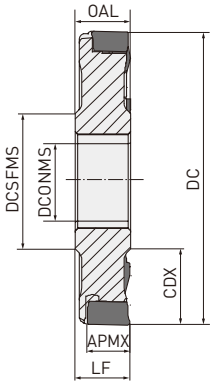
***Not available for side and face milling cutter series**

# DCV3

90° KAPR | R | PF

P K



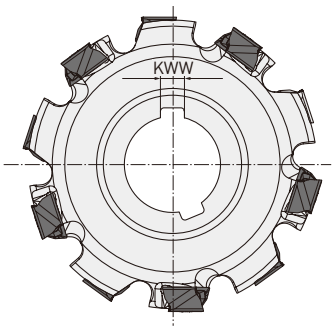

Max. APMX: 8.6 mm

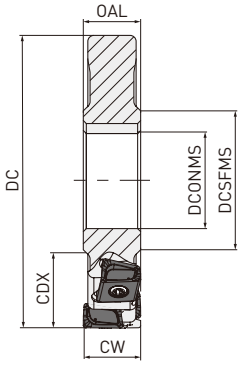
## HALF SIDE

| DC | ZNF | LF = OAL | CDX | DCONMS | DCSFMS | KWW | | |
|---|---|---|---|---|---|---|---|---|
| 80 – 99.9 | 8 | ≥12 | 20.0 | 27 | 40 | 7 | — | LNGU09 |
| 100 – 124.9 | 10 | | 27.0 | 32 | 46 | 8 | — | |
| 125 – 160.0 | 12 | | 35.0 | 40 | 55 | 10 | — | |

1/1

17 Vc




Largest width CW: 17.2 mm

## FULL SIDE

| DC | ZNF | ZNP | LF = OAL | CW | CDX | DCONMS | DCSFMS | KWW | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 80 – 99.9 | 4 | 8 | ≥12 | 12-17.2 | 20.0 | 27 | 40 | 7 | — | LNGU09 |
| 100 – 124.9 | 5 | 10 | | 12-17.2 | 27.0 | 32 | 46 | 8 | — | |
| 125 – 160.0 | 6 | 12 | | 12-17.2 | 35.0 | 40 | 55 | 10 | — | |

1/1

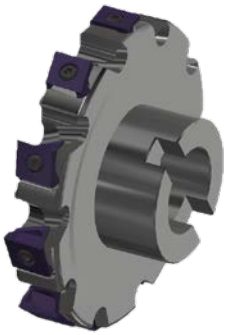
1. Multi level designs available for each size. Please contact our technical department (MMC Hartmetall GmbH - special@mmchg.de) for details of any geometry not shown.

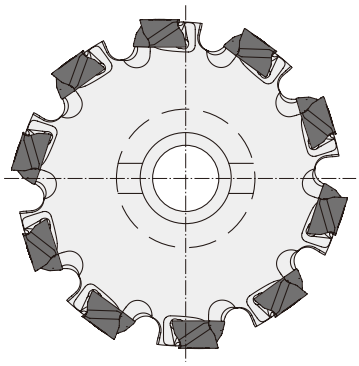
17 Vc

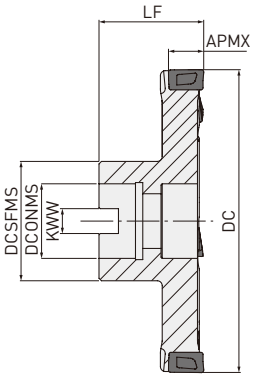
# DCV3

90° KAPR | R | PF

P K







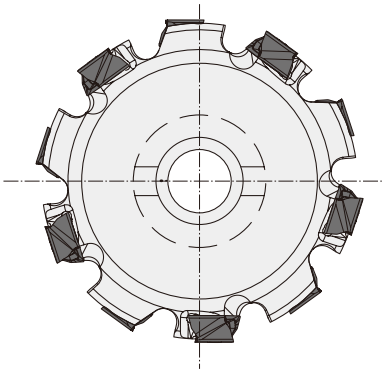

Max. APMX: 8.6 mm

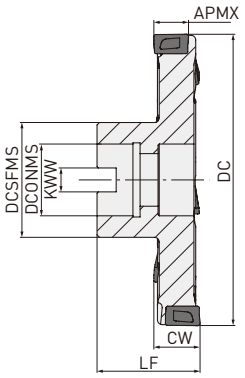
## HALF SIDE ARBOR

| DC | ZEFP | LF | CDX | DCONMS | DCSFMS | KWW | | |
|---|---|---|---|---|---|---|---|---|
| 80 – 99.9 | 8 | 50 | 20.0 | 27 | 40 | 12.4 | — | |
| 100 – 124.9 | 10 | 60 | 27.0 | 32 | 46 | 14.4 | — | LNGU09 |
| 125 – 160.0 | 12 | 60 | 35.0 | 40 | 55 | 16.4 | — | |

1/1

17 Vc






## FULL SIDE ARBOR

Largest width CW: 17.2 mm

| DC | ZEFP | LF | CW | CDX | DCONMS | DCSFMS | KWW | | |
|---|---|---|---|---|---|---|---|---|---|
| 80 – 99.9 | 8 | 50 | 12-17.2 | 20.0 | 27 | 40 | 12.4 | — | |
| 100 – 124.9 | 10 | 60 | 12-17.2 | 27.0 | 32 | 46 | 14.4 | — | LNGU09 |
| 125 – 160.0 | 12 | 60 | 12-17.2 | 35.0 | 40 | 55 | 16.4 | — | |

1/1

1. Multi level designs available for each size. Please contact our technical department (MMC Hartmetall GmbH - special@mmchg.de) for details of any geometry not shown.

17 Vc

# DCV3

## SPARE PARTS

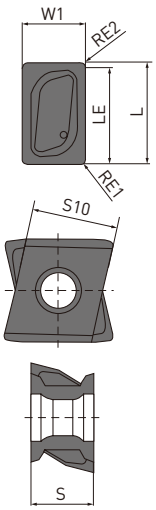
| Tool holder type | | TQ (Nm) | | |
|---|---|---|---|---|
| | Clamp screw | Clamp torque | Wrench | Anti-seize lubricant |
| DCV3 LNGU0906○○PNE○M | TS304 | 1.5 | TKY08W | MK1KS |

## INSERT

| Order number | VP15TF | Hand | Class | Honing | L | LE | S | S10 | RE1 | W1 |
|---|---|---|---|---|---|---|---|---|---|---|
| LNGU090604PNER-M | ● | R | G | E | 9 | 8.6 | 6 | 8.5 | 0.4 | 6 |
| LNGU090608PNER-M | ● | R | G | E | 9 | 8.6 | 6 | 8.5 | 0.8 | 6 |
| LNGU090612PNER-M | ● | R | G | E | 9 | 8.6 | 6 | 8.5 | 1.2 | 6 |
| LNGU090616PNER-M | ● | R | G | E | 9 | 8.6 | 6 | 8.5 | 1.6 | 6 |
| LNGU090620PNER-M | ● | R | G | E | 9 | 8.6 | 6 | 8.5 | 2 | 6 |
| LNGU090624PNER-M | ● | R | G | E | 9 | 8.6 | 6 | 8.5 | 2.4 | 6 |
| LNGU090630PNER-M | ● | R | G | E | 9 | 8.6 | 6 | 8.5 | 3 | 6 |
| LNGU090640PNER-M | ● | R | G | E | 9 | 8.6 | 6 | 8.5 | 4 | 6 |
| LNGU090604PNEL-M | ● | L | G | E | 9 | 8.6 | 6 | 8.5 | 0.4 | 6 |
| LNGU090608PNEL-M | ● | L | G | E | 9 | 8.6 | 6 | 8.5 | 0.8 | 6 |
| LNGU090612PNEL-M | ● | L | G | E | 9 | 8.6 | 6 | 8.5 | 1.2 | 6 |
| LNGU090616PNEL-M | ● | L | G | E | 9 | 8.6 | 6 | 8.5 | 1.6 | 6 |
| LNGU090620PNEL-M | ● | L | G | E | 9 | 8.6 | 6 | 8.5 | 2 | 6 |
| LNGU090624PNEL-M | ● | L | G | E | 9 | 8.6 | 6 | 8.5 | 2.4 | 6 |
| LNGU090630PNEL-M | ● | L | G | E | 9 | 8.6 | 6 | 8.5 | 3 | 6 |
| LNGU090640PNEL-M | ● | L | G | E | 9 | 8.6 | 6 | 8.5 | 4 | 6 |

**Shape**

**Geometry**
*Right hand insert shown*




1/1

(10 inserts in one case)

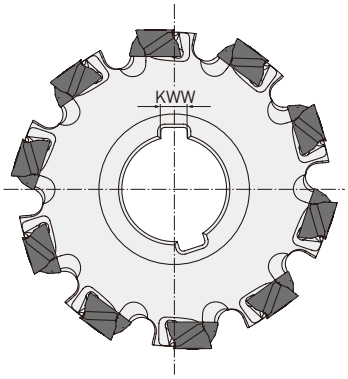


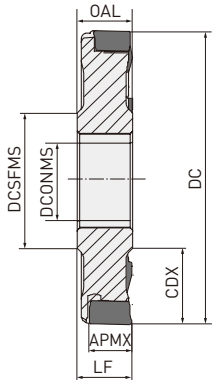
● : Inventory maintained. □ : Produced to order only.

# DCV4

90° KAPR | R | PF

P K



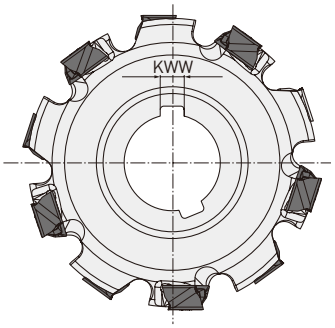

Max. APMX: RE1 < 3.0 mm 12.2 mm
RE1 > 3.0 mm 11.4 mm

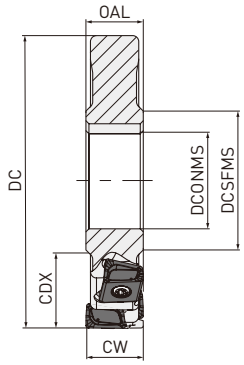
## HALF SIDE

| DC | ZEFP | LF = OAL | CDX | DCONMS | DCSFMS | KWW | | |
|---|---|---|---|---|---|---|---|---|
| 80 – 99.9 | 8 | 18 | 20.0 | 27 | 40 | 7 | — | LNGU13 |
| 100 – 124.9 | 10 | | 27.0 | 32 | 46 | 8 | — | |
| 125 – 159.9 | 12 | | 35.0 | 40 | 55 | 10 | — | |
| 160 – 200 | 14 | | 52.5 | 40 | 55 | 10 | — | |

1/1

17 Vc




Largest width CW: 24 mm

## FULL SIDE

| DC | ZEFP | CW | CDX | DCONMS | DCSFMS | KWW | | |
|---|---|---|---|---|---|---|---|---|
| 80 – 99.9 | 4 | 18–24 | 20.0 | 27 | 40 | 7 | — | LNGU13 |
| 100 – 124.9 | 5 | 18–24 | 27.0 | 32 | 46 | 8 | — | |
| 125 – 159.9 | 6 | 18–24 | 35.0 | 40 | 55 | 10 | — | |
| 160 – 200 | 7 | 18–24 | 52.5 | 40 | 55 | 10 | — | |

1/1

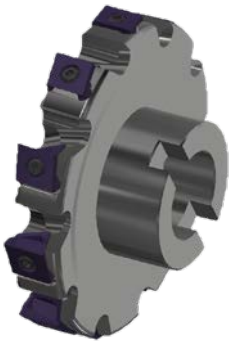
1. Multi level designs available for each size. Please contact our technical department (MMC Hartmetall GmbH - special@mmchg.de) for details of any geometry not shown.

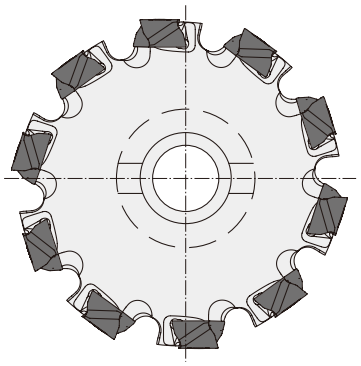
17 Vc

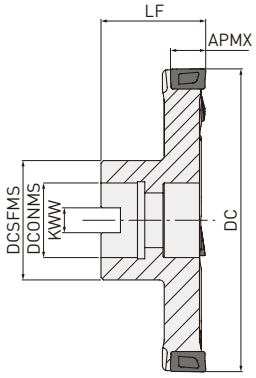
# DCV4

90° KAPR | R | PF

P K







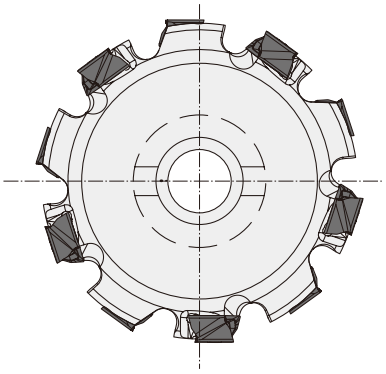

## HALF SIDE ARBOR

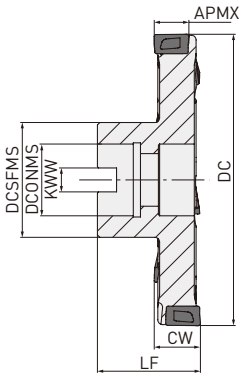
Max. APMX: RE1 < 3.0 mm 12.2 mm
RE1 > 3.0 mm 11.4 mm

| DC | ZEFP | LF | CDX | DCONMS | DCSFMS | KWW | | |
|---|---|---|---|---|---|---|---|---|
| 80 – 99.9 | 8 – 10 | 50 | 20 | 27 | 40 | 12.4 | — | LNGU13 |
| 100 – 124.9 | 10 – 12 | 60 | 27 | 32 | 46 | 14.4 | — | |
| 125 – 159.9 | 12 – 14 | 60 | 35 | 40 | 55 | 16.4 | — | |
| 160 – 200 | 14 – 20 | 70 | 52.5 | 40 | 55 | 16.4 | — | |

1/1

17 Vc






Largest width CW: 24 mm

## FULL SIDE ARBOR

| DC | ZEFP | LF | CW | CDX | DCONMS | DCSFMS | KWW | | |
|---|---|---|---|---|---|---|---|---|---|
| 80 – 99.9 | 8 – 10 | 50 | 18–24 | 20 | 27 | 40 | 12.4 | — | LNGU13 |
| 100 – 124.9 | 10 – 12 | 60 | 18–24 | 27 | 32 | 46 | 14.4 | — | |
| 125 – 159.9 | 12 – 14 | 60 | 18–24 | 35 | 40 | 55 | 16.4 | — | |
| 160 – 200 | 14 – 20 | 70 | 18–24 | 52.5 | 40 | 55 | 16.4 | — | |

1/1

1. Multi level designs available for each size. Please contact our technical department (MMC Hartmetall GmbH - special@mmchg.de) for details of any geometry not shown.

17 Vc

# DCV4

## SPARE PARTS

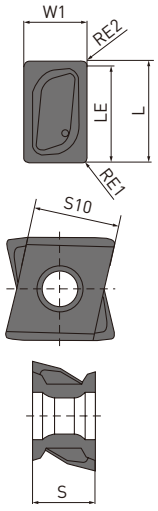
| Tool holder type | | TQ (Nm) | | |
|---|---|---|---|---|
| | Clamp screw | Clamp torque | Wrench | Anti-seize lubricant |
| DCV4 LNGU1308○○PNE○-○ | TS406 | 3.5 | TKY15T | MK1KS |

## INSERT

| Order number | NEW MP1220 | MP6120 | VP15TF | Hand | Class | Honing | L | LE | S | S10 | RE1 | RE2 | W1 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| LNGU130804PNER-M | ★ | | ● | R | G | E | 13.0 | 12.2 | 8.0 | 11.0 | 0.4 | 0.8 | 8.0 |
| LNGU130804PNEL-M | ★ | | ● | L | G | E | 13.0 | 12.2 | 8.0 | 11.0 | 0.4 | 0.8 | 8.0 |
| LNGU130808PNER-M | ★ | | ● | R | G | E | 13.0 | 12.2 | 8.0 | 11.0 | 0.8 | 0.8 | 8.0 |
| LNGU130808PNEL-M | ★ | | ● | L | G | E | 13.0 | 12.2 | 8.0 | 11.0 | 0.8 | 0.8 | 8.0 |
| LNGU130812PNER-M | ★ | | ● | R | G | E | 13.0 | 12.2 | 8.0 | 11.0 | 1.2 | 0.8 | 8.0 |
| LNGU130812PNEL-M | ★ | | ● | L | G | E | 13.0 | 12.2 | 8.0 | 11.0 | 1.2 | 0.8 | 8.0 |
| LNGU130816PNER-M | ★ | | ● | R | G | E | 13.0 | 12.2 | 8.0 | 11.0 | 1.6 | 0.8 | 8.0 |
| LNGU130816PNEL-M | ★ | | ● | L | G | E | 13.0 | 12.2 | 8.0 | 11.0 | 1.6 | 0.8 | 8.0 |
| LNGU130820PNER-M | ★ | | ● | R | G | E | 13.0 | 12.2 | 8.0 | 11.0 | 2.0 | 0.8 | 8.0 |
| LNGU130820PNEL-M | ★ | | ● | L | G | E | 13.0 | 12.2 | 8.0 | 11.0 | 2.0 | 0.8 | 8.0 |
| LNGU130824PNER-M | ★ | | ● | R | G | E | 13.0 | 12.2 | 8.0 | 11.0 | 2.4 | 0.8 | 8.0 |
| LNGU130824PNEL-M | ★ | | ● | L | G | E | 13.0 | 12.2 | 8.0 | 11.0 | 2.4 | 0.8 | 8.0 |
| LNGU130830PNER-M | ● | | ● | R | G | E | 13.0 | 11.4 | 8.0 | 11.0 | 3.0 | 1.6 | 8.0 |
| LNGU130830PNEL-M | ● | | ● | L | G | E | 13.0 | 11.4 | 8.0 | 11.0 | 3.0 | 1.6 | 8.0 |
| LNGU130840PNER-M | ★ | | ● | R | G | E | 13.0 | 11.4 | 8.0 | 11.0 | 4.0 | 1.6 | 8.0 |
| LNGU130840PNEL-M | ★ | | ● | L | G | E | 13.0 | 11.4 | 8.0 | 11.0 | 4.0 | 1.6 | 8.0 |
| LNGU130850PNER-M | ★ | | ● | R | G | E | 13.0 | 11.4 | 8.0 | 11.0 | 5.0 | 1.6 | 8.0 |
| LNGU130850PNEL-M | ★ | | ● | L | G | E | 13.0 | 11.4 | 8.0 | 11.0 | 5.0 | 1.6 | 8.0 |
| LNGU130804PNER-R | ★ | ● | ● | R | G | E | 13.0 | 12.2 | 8.0 | 11.0 | 0.4 | 0.8 | 8.0 |
| LNGU130804PNEL-R | ★ | ● | ● | L | G | E | 13.0 | 12.2 | 8.0 | 11.0 | 0.4 | 0.8 | 8.0 |
| LNGU130808PNER-R | ★ | ● | ● | R | G | E | 13.0 | 12.2 | 8.0 | 11.0 | 0.8 | 0.8 | 8.0 |
| LNGU130808PNEL-R | ★ | ● | ● | L | G | E | 13.0 | 12.2 | 8.0 | 11.0 | 0.8 | 0.8 | 8.0 |
| LNGU130812PNER-R | ★ | ● | ● | R | G | E | 13.0 | 12.2 | 8.0 | 11.0 | 1.2 | 0.8 | 8.0 |
| LNGU130812PNEL-R | ● | ● | ● | L | G | E | 13.0 | 12.2 | 8.0 | 11.0 | 1.2 | 0.8 | 8.0 |
| LNGU130816PNER-R | ★ | ● | ● | R | G | E | 13.0 | 12.2 | 8.0 | 11.0 | 1.6 | 0.8 | 8.0 |
| LNGU130816PNEL-R | ★ | ● | ● | L | G | E | 13.0 | 12.2 | 8.0 | 11.0 | 1.6 | 0.8 | 8.0 |
| LNGU130820PNER-R | ★ | ● | ● | R | G | E | 13.0 | 12.2 | 8.0 | 11.0 | 2.0 | 0.8 | 8.0 |
| LNGU130820PNEL-R | ★ | ● | ● | L | G | E | 13.0 | 12.2 | 8.0 | 11.0 | 2.0 | 0.8 | 8.0 |
| LNGU130824PNER-R | ★ | ● | ● | R | G | E | 13.0 | 12.2 | 8.0 | 11.0 | 2.4 | 0.8 | 8.0 |
| LNGU130824PNEL-R | ★ | ● | ● | L | G | E | 13.0 | 12.2 | 8.0 | 11.0 | 2.4 | 0.8 | 8.0 |
| LNGU130830PNER-R | ★ | ● | ● | R | G | E | 13.0 | 11.4 | 8.0 | 11.0 | 3.0 | 1.6 | 8.0 |
| LNGU130830PNEL-R | ● | ● | ● | L | G | E | 13.0 | 11.4 | 8.0 | 11.0 | 3.0 | 1.6 | 8.0 |
| LNGU130840PNER-R | ★ | ● | ● | R | G | E | 13.0 | 11.4 | 8.0 | 11.0 | 4.0 | 1.6 | 8.0 |
| LNGU130840PNEL-R | ★ | ● | ● | L | G | E | 13.0 | 11.4 | 8.0 | 11.0 | 4.0 | 1.6 | 8.0 |
| LNGU130850PNER-R | ★ | ● | ● | R | G | E | 13.0 | 11.4 | 8.0 | 11.0 | 5.0 | 1.6 | 8.0 |
| LNGU130850PNEL-R | ★ | ● | ● | L | G | E | 13.0 | 11.4 | 8.0 | 11.0 | 5.0 | 1.6 | 8.0 |

**Shape**

**Geometry**
*Right hand insert shown*




1/1

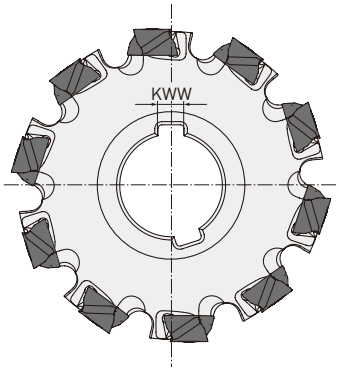
(10 inserts in one case)

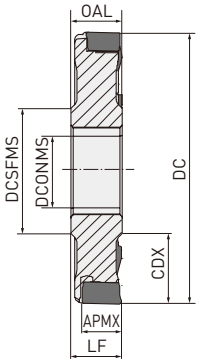
● : Inventory maintained. □ : Produced to order only.

# DCV5

90° KAPR | R | PF

P K



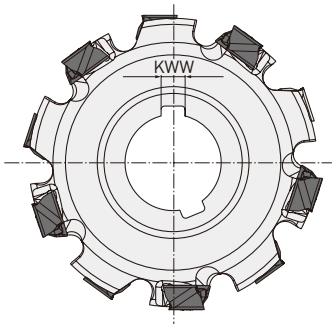

Max. APMX: RE1 < 3.0 mm 16.2 mm
RE1 > 3.0 mm 15.4 mm

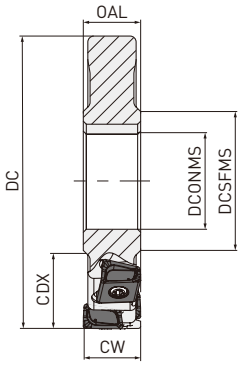
## HALF SIDE

| DC | ZEFP | LF = OAL | CDX | DCONMS | DCSFMS | KWW | | |
|---|---|---|---|---|---|---|---|---|
| 100 – 124.9 | 8 | 23 | 27.0 | 32 | 46 | 8 | — | LNGU17 |
| 125 – 159.9 | 10 | | 35.0 | 40 | 55 | 10 | — | |
| 160 – 199.9 | 12 | | 52.5 | 40 | 55 | 10 | — | |
| 200 – 250 | 16 | | 65.0 | 50 | 70 | 12 | — | |

1/1

17 Vc




Largest width CW: 32 mm

## FULL SIDE

| DC | ZEFP | CW | CDX | DCONMS | DCSFMS | KWW | | |
|---|---|---|---|---|---|---|---|---|
| 100 – 124.9 | 8 | 23 – 32 | 27.0 | 32 | 46 | 8 | — | LNGU17 |
| 125 – 159.9 | 10 | | 35.0 | 40 | 55 | 10 | — | |
| 160 – 199.9 | 12 | | 52.5 | 40 | 55 | 10 | — | |
| 200 – 250 | 16 | | 65.0 | 50 | 70 | 12 | — | |

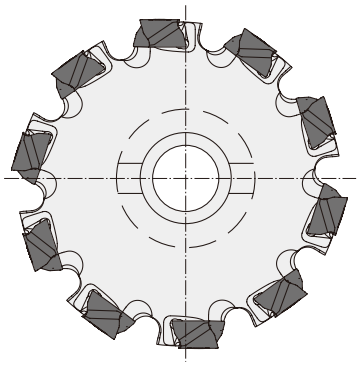
1/1

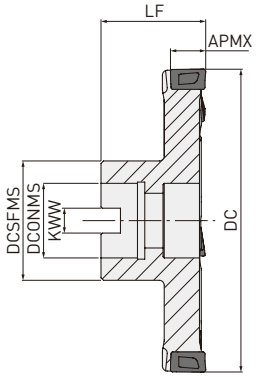
1. Multi level designs available for each size. Please contact our technical department (MMC Hartmetall GmbH - special@mmchg.de) for details of any geometry not shown.

17 Vc

# DCV5

P K



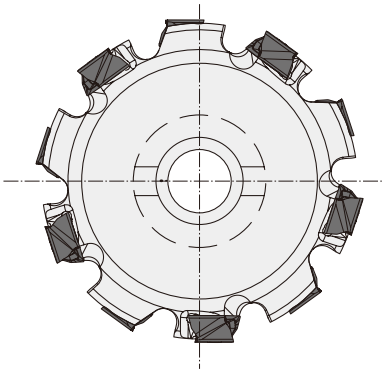


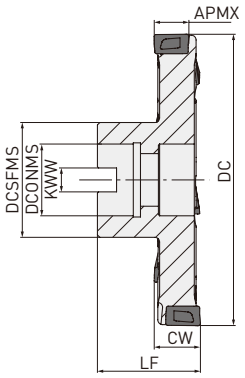

Max. APMX: RE1 < 3.0 mm 16.2 mm
RE1 > 3.0 mm 15.4 mm

## HALF SIDE ARBOR

| DC | ZEFP | LF | CDX | DCONMS | DCSFMS | KWW | | |
|---|---|---|---|---|---|---|---|---|
| 100 – 124.9 | 8 – 10 | 50 | 27 | 32 | 46 | 14.4 | — | LNGU17 |
| 125 – 159.9 | 10 – 12 | 60 | 35 | 40 | 55 | 16.4 | — | |
| 160 – 199.9 | 12 – 14 | 60 | 52.5 | 40 | 55 | 16.4 | — | |
| 200 – 250.0 | 14 – 20 | 70 | 65 | 40 | 70 | 16.4 | — | |

1/1






Largest width CW: 32 mm

## FULL SIDE ARBOR

| DC | ZEFP | LF | CW | CDX | DCONMS | DCSFMS | KWW | | |
|---|---|---|---|---|---|---|---|---|---|
| 100 – 124.9 | 8 – 10 | 60 | 23 – 32 | 27 | 32 | 46 | 14.4 | — | LNGU17 |
| 125 – 159.9 | 10 – 12 | 60 | | 35 | 40 | 55 | 16.4 | — | |
| 160 – 199.9 | 12 – 14 | 70 | | 52.5 | 40 | 55 | 16.4 | — | |
| 200 – 250.0 | 14 – 20 | 70 | | 65 | 40 | 70 | 16.4 | — | |

1/1

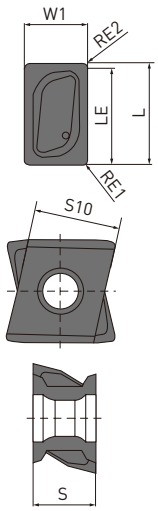
1. Multi level designs available for each size. Please contact our technical department (MMC Hartmetall GmbH - special@mmchg.de) for details of any geometry not shown.

# DCV5

## SPARE PARTS

| Tool holder type |  | TQ (Nm) |  |  |
|---|---|---|---|---|
| | Clamp screw | Clamp torque | Wrench | Anti-seize lubricant |
| DCV5 LNGU1710○○PNE○R | TS53 | 7.5 | TKY25T | MK1KS |

## INSERT

| Order number | MP6120 | VP15TF | Hand | Class | Honing | L | LE | S | S10 | RE1 | RE2 | W1 | D1 | Shape | Geometry *Right hand insert shown* |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| LNGU171004PNER-R | ● | ● | R | G | E | 17.0 | 16.2 | 10.0 | 13.0 | 0.4 | 0.8 | 10.0 | 5.5 |  |  |
| LNGU171004PNEL-R | ● | ● | L | G | E | 17.0 | 16.2 | 10.0 | 13.0 | 0.4 | 0.8 | 10.0 | 5.5 | | |
| LNGU171008PNER-R | ● | ● | R | G | E | 17.0 | 16.2 | 10.0 | 13.0 | 0.8 | 0.8 | 10.0 | 5.5 | | |
| LNGU171008PNEL-R | ● | ● | L | G | E | 17.0 | 16.2 | 10.0 | 13.0 | 0.8 | 0.8 | 10.0 | 5.5 | | |
| LNGU171012PNER-R | ● | ● | R | G | E | 17.0 | 16.2 | 10.0 | 13.0 | 1.2 | 0.8 | 10.0 | 5.5 | | |
| LNGU171012PNEL-R | ● | ● | L | G | E | 17.0 | 16.2 | 10.0 | 13.0 | 1.2 | 0.8 | 10.0 | 5.5 | | |
| LNGU171016PNER-R | ● | ● | R | G | E | 17.0 | 16.2 | 10.0 | 13.0 | 1.6 | 0.8 | 10.0 | 5.5 | | |
| LNGU171016PNEL-R | ● | ● | L | G | E | 17.0 | 16.2 | 10.0 | 13.0 | 1.6 | 0.8 | 10.0 | 5.5 | | |
| LNGU171020PNER-R | ● | ● | R | G | E | 17.0 | 16.2 | 10.0 | 13.0 | 2.0 | 0.8 | 10.0 | 5.5 | | |
| LNGU171020PNEL-R | ● | ● | L | G | E | 17.0 | 16.2 | 10.0 | 13.0 | 2.0 | 0.8 | 10.0 | 5.5 | | |
| LNGU171024PNER-R | ● | ● | R | G | E | 17.0 | 16.2 | 10.0 | 13.0 | 2.4 | 0.8 | 10.0 | 5.5 | | |
| LNGU171024PNEL-R | ● | ● | L | G | E | 17.0 | 16.2 | 10.0 | 13.0 | 2.4 | 0.8 | 10.0 | 5.5 | | |
| LNGU171030PNER-R | ● | ● | R | G | E | 17.0 | 15.4 | 10.0 | 13.0 | 3.0 | 1.6 | 10.0 | 5.5 | | |
| LNGU171030PNEL-R | ● | ● | L | G | E | 17.0 | 15.4 | 10.0 | 13.0 | 3.0 | 1.6 | 10.0 | 5.5 | | |
| LNGU171040PNER-R | ● | ● | R | G | E | 17.0 | 15.4 | 10.0 | 13.0 | 4.0 | 1.6 | 10.0 | 5.5 | | |
| LNGU171040PNEL-R | ● | ● | L | G | E | 17.0 | 15.4 | 10.0 | 13.0 | 4.0 | 1.6 | 10.0 | 5.5 | | |
| LNGU171050PNER-R | ● | ● | R | G | E | 17.0 | 15.4 | 10.0 | 13.0 | 5.0 | 1.6 | 10.0 | 5.5 | | |
| LNGU171050PNEL-R | ● | ● | L | G | E | 17.0 | 15.4 | 10.0 | 13.0 | 5.0 | 1.6 | 10.0 | 5.5 | | |
| LNGU171060PNER-R | ● | ● | R | G | E | 17.0 | 15.4 | 10.0 | 13.0 | 6.0 | 1.6 | 10.0 | 5.5 | | |
| LNGU171060PNEL-R | ● | ● | L | G | E | 17.0 | 15.4 | 10.0 | 13.0 | 6.0 | 1.6 | 10.0 | 5.5 | | |
| LNGU171070PNER-R | ● | ● | R | G | E | 17.0 | 15.4 | 10.0 | 13.0 | 7.0 | 1.6 | 10.0 | 5.5 | | |
| LNGU171070PNEL-R | ● | ● | L | G | E | 17.0 | 15.4 | 10.0 | 13.0 | 7.0 | 1.6 | 10.0 | 5.5 | | |



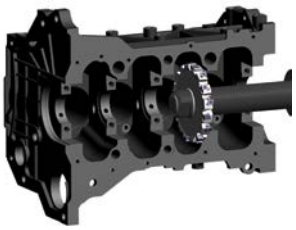
1/1

(10 inserts in one case)



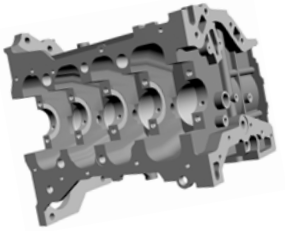
● : Inventory maintained. □ : Produced to order only.

# APPLICATION EXAMPLES

| Tool | DCV4 Ø 300 mm | DCV4 Ø 160 mm |
|---|---|---|
| Insert (Grade) | LNGU130804PNER-M (VP15TF) | LNGU130804PNER-M (VP15TF) |
| Workpiece | Brake caliper (DIN GGG40.3)  | Cylinder block (DIN GG25)  |
| n ($min^{-1}$) | 120 | 500 |
| Vc (m/min) | 113 | 201 |
| fz (mm/t.) | 0.09 – 0.24 | 0.14 |
| Vf (mm/min) | 150 – 400 | 500 |
| ap (mm) | 1.0 – 2.0 | 1.0 |
| Cutting mode | Dry cutting | Dry cutting |
| Machine | Machining centre | Horizontal |
| Results | Approximately 2 x longer tool life than conventional products. Excellent dimensional accuracy and surface finish. Improved machining efficiency gave a 30 % reduction in tooling costs. | 1.5 x better machining efficiency than conventional products. Approximately double tool life. Stable cutting with minimal sound and provided a good surface finish. Improved machining efficiency and longer tool life. |

1. The above application examples are customer's application examples, and can differ from the recommended conditions.

# UNIQUE SIDE CUTTER SERIES

Taking advantage of the latest technology, materials and cutter geometry.

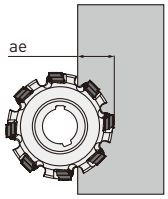
## CLASSIFIED

| | DCV3 | DCV4 | DCV5 |
|---|---|---|---|
| **Material** | P K | P K | P K |
| Low cutting resistance | ◎ | ◎ | ◎ |
| Toughness | ◎ | ◎ | ◎ |
| Insert shape | | Vertical | Vertical |
| ZNF | | Double sided insert | Double sided insert |
| ZNP | 4 | 4 | 4 |
| Half side Max. depth of cut APMX | RE < 4.0 mm 8.6 mm | RE < 3.0 mm 12.2 mm | RE < 3.0 mm 16.2 mm |
| | RE ⩾ 3.0mm 11.4 mm | RE ⩾ 3.0mm 11.4 mm | RE ⩾ 3.0 mm 15.4 mm |
| Full side Max. cutting dia DC | Ø 300 mm | Ø 400 mm | Ø 660 mm |

# DCV3 / DCV4 / DCV5

## RECOMMENDED CUTTING CONDITIONS

### SHOULDER MILLING

| | Material | Hardness | Grade | Vc | ap | ae | fz | Cutting mode |
|---|---|---|---|---|---|---|---|---|
| P | Steel | ≤180HB | MP1220<br>MP6120<br>VP15TF | 150 (130 – 180) | ≤APMX | <10%<br><30%<br>≤50% | 0.10 (0.08 – 0.15) |  |
| P | Carbon steel/<br>Alloy steel | 180 – 280HB | MP1220<br>MP6120<br>VP15TF | 150 (130 – 180) | ≤2.0 | ≤50% | 0.12 (0.08 – 0.20) | |
| | | | | | ≤4.0 | <10% | 0.12 (0.08 – 0.20) | |
| | | | | | ≤4.0 | ≤50% | 0.10 (0.08 – 0.15) | |
| | | | | | ≤APMX | <10% | 0.10 (0.08 – 0.15) | |
| | | | | | ≤APMX | ≤50% | 0.10 (0.08 – 0.12) | |
| K | Cast iron | Tensile<br>strength<br>≤ 350MPa | VP15TF | 150 (130 – 180) | ≤2.0 | ≤50% | 0.12 (0.08 – 0.20) | |
| | | | | | ≤4.0 | <10% | 0.12 (0.08 – 0.20) | |
| | | | | | ≤4.0 | ≤50% | 0.10 (0.08 – 0.15) | |
| | | | | | ≤APMX | <10% | 0.10 (0.08 – 0.15) | |
| | | | | | ≤APMX | ≤50% | 0.10 (0.08 – 0.12) | |
| K | Gray cast iron | Tensile<br>strength<br>≤ 450MPa | VP15TF | 130 (110 – 160) | ≤2.0 | ≤50% | 0.12 (0.08 – 0.20) | |
| | | | | | ≤4.0 | <10% | 0.12 (0.08 – 0.20) | |
| | | | | | ≤4.0 | ≤50% | 0.10 (0.08 – 0.15) | |
| | | | | | ≤APMX | <10% | 0.10 (0.08 – 0.15) | |
| | | | | | ≤APMX | ≤50% | 0.10 (0.08 – 0.12) | |
| | Ductile cast iron | Tensile<br>strength<br>≤ 800MPa | VP15TF | 130 (110 – 160) | ≤2.0 | ≤50% | 0.12 (0.08 – 0.20) | |
| | | | | | ≤4.0 | <10% | 0.12 (0.08 – 0.20) | |
| | | | | | ≤4.0 | ≤50% | 0.10 (0.08 – 0.15) | |
| | | | | | ≤APMX | <10% | 0.10 (0.08 – 0.15) | |
| | | | | | ≤APMX | ≤50% | 0.10 (0.08 – 0.12) | |

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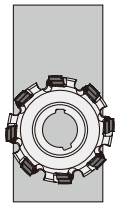
### FACE MILLING

| | Material | Hardness | Grade | Vc | ap | fz | Cutting mode |
|---|---|---|---|---|---|---|---|
| P | Steel | ≤180HB | MP6120<br>VP15TF | 150 (130 – 180) | ≤APMX | 0.10 (0.08 – 0.15) |  |
| P | Carbon steel/<br>Alloy steel | 180 – 280HB | MP6120<br>VP15TF | 150 (130 – 180) | ≤2.0 | 0.12 (0.08 – 0.20) | |
| | | | | | ≤4.0 | 0.10 (0.08 – 0.15) | |
| | | | | | ≤APMX | 0.10 (0.08 – 0.12) | |
| K | Cast iron | Tensile<br>strength<br>≤ 350MPa | VP15TF | 150 (130 – 180) | ≤2.0 | 0.12 (0.08 – 0.20) | |
| | | | | | ≤4.0 | 0.10 (0.08 – 0.15) | |
| | | | | | ≤APMX | 0.10 (0.08 – 0.12) | |
| K | Gray cast iron | Tensile<br>strength<br>≤ 450MPa | VP15TF | 150 (130 – 180) | ≤2.0 | 0.12 (0.08 – 0.20) | |
| | | | | | ≤4.0 | 0.10 (0.08 – 0.15) | |
| | | | | | ≤APMX | 0.10 (0.08 – 0.12) | |
| | Ductile cast iron | Tensile<br>strength<br>≤ 800MPa | VP15TF | 130 (110 – 160) | ≤2.0 | 0.12 (0.08 – 0.20) | |
| | | | | | ≤4.0 | 0.10 (0.08 – 0.15) | |
| | | | | | ≤APMX | 0.10 (0.08 – 0.12) | |

1/1

# SYMBOLS

**Recommended cutting conditions**

**NEW** **Completely new products or expansions released in the current Spring or Autumn product launch and are not included in the latest version of the General Catalogue.**

**NEW** **Products or expansions that have already been introduced in one of the previous Spring or Autumn product launches but are not included in the latest General Catalogue.**

## APPLICATION


**Face milling**


**Chamfer milling**


**Shoulder milling with R**


**Face milling close to a wall**


**Shoulder milling**


**Side milling**


**Slot milling**


**Ramping**


**Pocket milling**


**Slot milling with R**


**Copy milling**


**T-Slot milling**

## MACHINING TYPE


**Roughing**


**Medium cutting**


**Light cutting**


**Pre-finishing**


**Finishing**


**Fine-finishing**

## TOOL MATERIAL


**Ultra micro grain carbide**
Ultra micro grain carbide substrate material.


**Cubic boron nitride**
Mitsubishi Materials' original CBN material.


**Ceramic**
For high speed efficient machining of super alloys due to the excellent high temperature strength property.


**High hardness powder metallurgy HSS**
High hardness powder metallurgy HSS substrate material.


**High grade high alloy HSS**
High grade high alloy HSS substrate material.


**Cobalt high speed steel**
Cobalt high speed steel substrate material.


**High speed steel**
High speed steel substrate material.

# SYMBOLS

## COATING


**SMART MIRACLE coating**
New smooth and dense coating technology for high efficiency milling of difficult to cut materials.


**CRN coating**
Newly developed CrN coating for Copper Electrodes machining.


**Violet coating**
Increased tool life of 2-3 times more than TiN coated products.


**DP coating**
New generation coating suitable for a wide range of materials.


**MIRACLE coating**
The original Miracle (Al,Ti)N coating.
Also suitable for dry cutting.


**(Al, Ti)N coating**
(Al,Ti)N highly versatile application range.


**(Al,Ti,Cr)N multi-layer coating**
For carbon, alloy and hardened steels.


**IMPACT MIRACLE coating**
Single phase nano crystal coating technology has higher film hardness and heat resistance.


**MIRACLE coating**
The original MIRACLE (Al,Ti)N coating.
Also suitable for dry cutting.


**VFR coating**
The (AlCrSi)N/(AlTiSti)N PVD multilayer coating is ideal for machining of extremely hard materials up to 70 HRC.


**DLC coating**
Hardness similar to CVD diamond coating achieved with high adhesion strength.


**Diamond coating**
Suitable for CFRP and CFRP-aluminium materials.


**Diamond coating**
Suitable for graphite machining.


**Diamond coating**
The original CVD diamond coating.


**CVD Diamond coating**
Unique multi-layer micro-grain diamond crystal control technology drastically improves wear resistance and smoothness.

## CUTTING EDGE PROPERTIES

**Sharp corner edge**
Indicates the end mill has a sharp corner edge.

**Gash land**
Indicates the end mill cutting edge has a protective chamfer.


**Rake angle**

**Helix angle**
Indicates the helix angle of the end mill.


**Point angle**
Indicates the drill point angle.

**Roughing flute geometry**

**Variable helix**

**Rounded gash**


**Corner angle**

## WEB THINNING


**X type point geometry**
X web thinning used at the drill point.


**XR type point geometry**
XR web thinning used at the drill point.

**S type point geometry**
Easy cutting geometry.

**N type point geometry**
Effective when the point web is thick.

**Chipbreaker**

# SYMBOLS

## TOLERANCES

**Tolerance of taper angle**
Indicates the tolerance of the taper angle.

**R tolerance**
Indicates the radial tolerance of a ball nose end mill.

**R tolerance**
Indicates the radial tolerance of the corner radius.

**R tolerance**
Indicates the radial tolerance of a cutter with a corner radius.

**Outside diameter tolerance**
Indicates the diameter tolerance of the end mill.

**Peak tolerance**
Indicates the tolerance for the end diameter.


**Shank diameter tolerance**


**Shank diameter tolerance**

**Drill tolerance / diameter**

## COOLANT HOLES

**External coolant**

**Internal coolant**

**Internal coolant**

**Centered, internal coolant hole**

**Radial, internal coolant holes**

**Internal coolant holes**

**Internal coolant holes**

# MEMO

# MEMO

# MEMO

## EUROPEAN SALES COMPANIES OF MITSUBISHI MATERIALS


GERMANY
MITSUBISHI MATERIALS TOOLS EUROPE GMBH
Comeniusstr. 2 . 40670 Meerbusch
Phone +49 2159 91890 . Fax +49 2159 918966
Email admin@mmchg.de

UK Office
MMC HARDMETAL UK LTD
1 Centurion Court, Centurion Way
Tamworth, B77 5PN
Phone +44 1827 312312
Email sales@mitsubishicarbide.co.uk

UK Deliveries / Returns
Unit 4 B5K Business Park, Quartz Close
Tamworth, B77 4GR

SPAIN
MITSUBISHI MATERIALS ESPAÑA, S.A.
Calle Emperador 2 . 46136 Museros / Valencia
Phone +34 96 1441711
Email comercial@mmevalencia.es

FRANCE
MMC METAL FRANCE S.A.R.L.
6, Rue Jacques Monod . 91400 Orsay
Phone +33 1 69 35 53 53 . Fax +33 1 69 35 53 50
Email mmfsales@mmc-metal-france.fr

POLAND
MMC HARDMETAL POLAND SP. Z O.O.
Al. Armii Krajowej 61 . 50 - 541 Wroclaw
Phone +48 71335 1620 . Fax +48 71335 1621
Email sales@mitsubishicarbide.com.pl

ITALY
MMC ITALIA S.R.L.
Viale Certosa 144 . 20156 Milano
Phone +39 0293 77031 . Fax +39 0293 589093
Email info@mmc-italia.it

TURKEY
MITSUBISHI MATERIALS TOOLS EUROPE GMBH ALMANYA İZMİR MERKEZ ŞUBESİ
Adalet Mahallesi Anadolu Caddesi No: 41-1 . 15001 35530 Bayraklı / İzmir
Phone +90 232 5015000 . Fax +90 232 5015007
Email info@mmchg.com.tr


**europe.mmc-carbide.com**

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