

# PRODUCT NEWS

PN-E-008

SERIES EXPANSION

 **DIJET**<sup>®</sup>

High-Feed Milling Cutter with Double-Sided Inserts

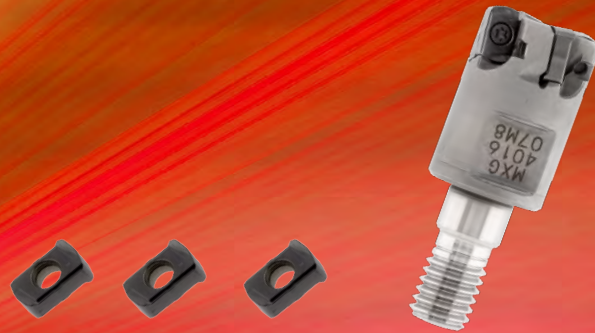
# QFM MAX GII



## GMX07/MXG07

Modular type :  $\varnothing 10$ – $\varnothing 16$

Shank type :  $\varnothing 10$ – $\varnothing 14$



## GMX10/MXG10

Bore type :  $\varnothing 40$ – $\varnothing 66$

Modular type :  $\varnothing 16$ – $\varnothing 42$

Shank type :  $\varnothing 16$ – $\varnothing 32$

**DIJET GmbH**

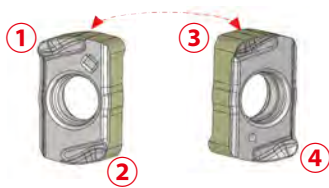
[www.dijet.de](http://www.dijet.de)

## High-Feed Milling Cutter Multi-Blade Design with **Double-Sided Compact Inserts** for High Productivity

### Feature 1

Lineup from  $\varnothing 10$ , featuring economical double-sided inserts with four cutting edges.

#### 1. Economical Double-Sided Inserts



#### 2. Lineup from $\varnothing 10$ – Insert size 07



- ✓ Tool diameter  $\varnothing 10$ – $\varnothing 16$  mm
- ✓ Max. depth of cut: **0.5 mm**
- ✓ **Modular type:**  $\varnothing 10$ – $\varnothing 16$  mm
- Shank type:**  $\varnothing 10$ – $\varnothing 14$  mm

### Feature 2

High-Rigidity Design for Stable, Reliable Machining.

#### 1. Increased insert rigidity



**NEW**

**MXG07**  
ENMU07...

MPM  
EOMT06...



#### 2. M2 Fine-Pitch Screw

**Fine-pitch**  
M2 screw



**NEW**

**MXG07**

Coarse-pitch  
M1.8 screw



MPM  
(Conventional model)

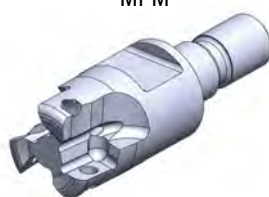
#### 3. High-Rigidity Body Design

**NEW**

**MXG07**



MPM



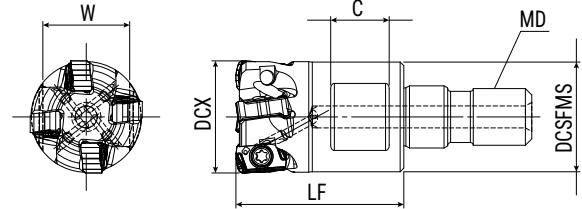
**Body rigidity improved by 44%**

Through coolant hole



**MXG07**  
TYPE

**Modular Type**



| Cat.No.        | Stock | No. of inserts | Dimensions (mm) |    |        |    |     |    | Insert           |
|----------------|-------|----------------|-----------------|----|--------|----|-----|----|------------------|
|                |       |                | DCX             | LF | DCSFMS | MD | C   | W  |                  |
| MXG-2010-07-M6 | ●     | 2              | 10              | 18 | 9.5    | M6 | 6.5 | 8  | ENMU07T207ZER-PM |
| MXG-3012-07-M6 | ●     | 3              | 12              | 20 | 11.2   | M6 | 6.5 | 8  |                  |
| MXG-3013-07-M6 | ●     | 3              | 13              | 20 | 11.2   | M6 | 6.5 | 8  |                  |
| MXG-4016-07-M8 | ●     | 4              | 16              | 23 | 15     | M8 | 8   | 12 |                  |

Note) All cutter bodies are supplied without Inserts, Wrench and MOLY.

● : Stocked Items

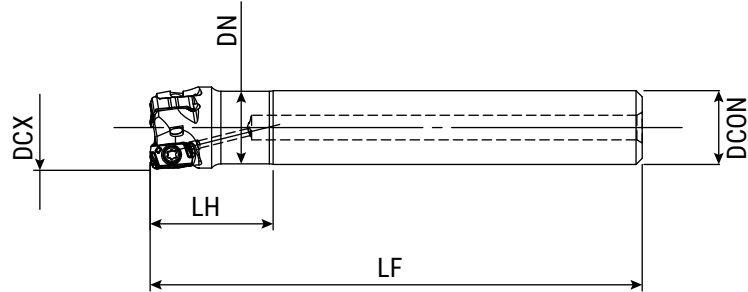
| Screw     | Torque(N.m) | Wrench |
|-----------|-------------|--------|
| TSW-2044H | 0.5         | A-06   |

# GMX07/MXG07 type

**GMX07**  
TYPE

Shank Type

Through coolant hole



| Type       | Cat.No.                | Stock | No. of inserts | Dimensions (mm) |    |     |      |      | Insert           |
|------------|------------------------|-------|----------------|-----------------|----|-----|------|------|------------------|
|            |                        |       |                | DCX             | LH | LF  | DN   | DCON |                  |
| Standard   | GMX2010-07-20-S10+A    | ●     | 2              | 10              | 20 | 80  | 9.2  | 10   | ENMU07T207ZER-PM |
|            | GMX3012-07-20-S12+A    | ●     | 3              | 12              | 20 | 80  | 11.2 | 12   |                  |
|            | GMX3014-07-20-S12+A    | ●     | 3              | 14              | 20 | 80  | 11.8 | 12   |                  |
| Long shank | GMX2011-07-20-S10-LS+A | ●     | 2              | 11              | 20 | 120 | 9.6  | 10   |                  |
|            | GMX3013-07-20-S12-LS+A | ●     | 3              | 13              | 20 | 120 | 11.6 | 12   |                  |
|            | GMX3014-07-20-S12-LS+A | ●     | 3              | 14              | 20 | 120 | 11.8 | 12   |                  |

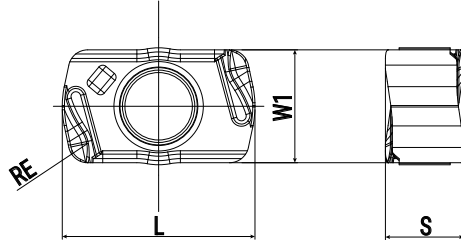
Note) All cutter bodies are supplied without Inserts, Wrench and MOLY.

● : Stocked Items

| Screw     | Torque(N.m) | Wrench |
|-----------|-------------|--------|
| TSW-2044H | 0.5         | A-06   |

**GMX07/MXG07**  
TYPE

Insert



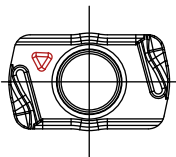
| Cat.No.          | Tolerance | PVD Coating |        | Dimensions (mm) |   |      |      |
|------------------|-----------|-------------|--------|-----------------|---|------|------|
|                  |           | JC8050      | JC8118 | RE              | L | W1   | S    |
| ENMU07T207ZER-PM | M         | ●           | ●      | 0.7             | 7 | 4.25 | 2.85 |

Note) 10 inserts per case.

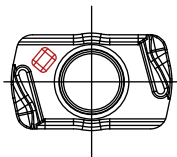
● : Stocked Items

**GRADE MARKING**

ENMU07T207ZER-PM



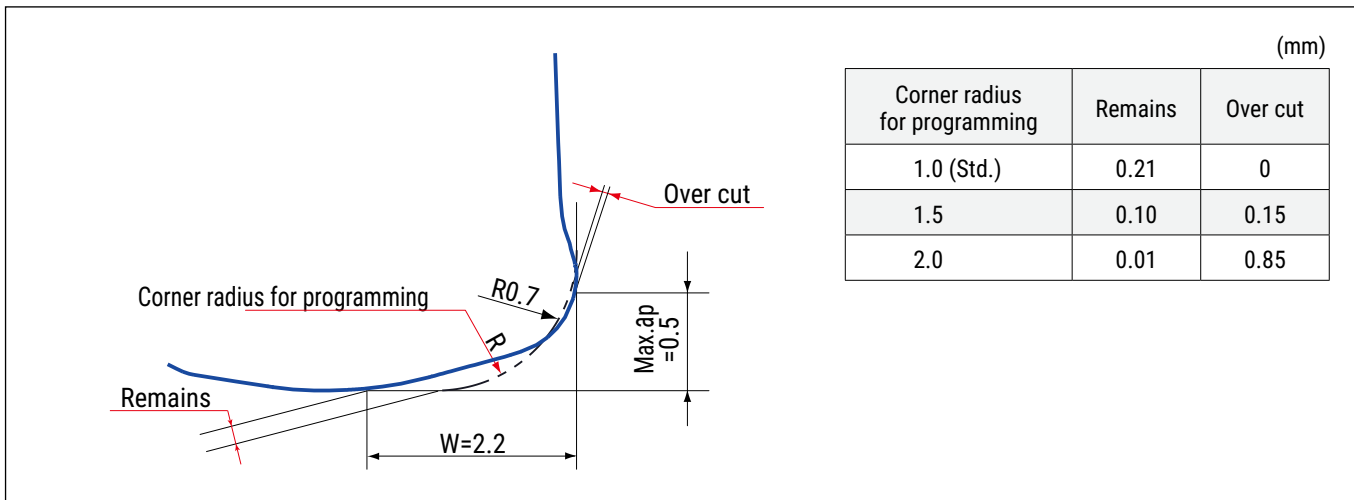
JC8118



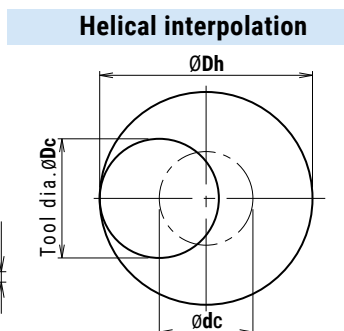
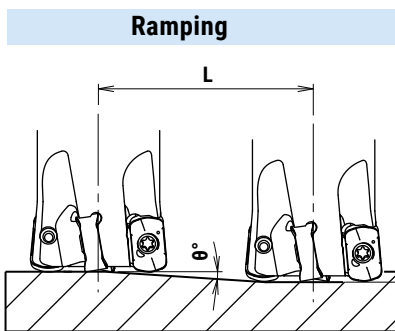
JC8050

# GMX07/MXG07 type

## Definition of corner shape for programming



## Recommended Data for Profile Milling



● Calculation of tool pass dia.

$$\phi_{dc} = \phi_{Dh} - \phi_{Dc}$$

Tool pass dia.    Bore dia.    Tool dia.

● Depth of cut per one circuit should not exceed max. depth of cut ap

● Down cutting is recommended, tool pass rotation should be counterclockwise

- In case of ramping and helical interpolation, apply 70% or less feed (Vf) from standard cutting condition table
- Drilling is not recommended.

ENMU07T207ZER-PM

| Tool dia. (mm) | Effective Cutting dia. (mm) | Max. depth of cut APMX (mm) | Ramping                   |                                      | Helical interpolation              |  |                                    |
|----------------|-----------------------------|-----------------------------|---------------------------|--------------------------------------|------------------------------------|--|------------------------------------|
|                |                             |                             | Max.ramping angle RMPX θ° | Total cutting length at APMX : L(mm) | Through hole Min.bore dia. Dh (mm) | Blind hole,flat bottom Min.bore dia. Dh (mm) | Through hole Max.bore dia. Dh (mm) |
| 10             | 5.5                         | 0.5                         | 1.1                       | 26.0                                 | 15                                 | 16   | 19                                 |
| 12             | 7.5                         | 0.5                         | 1.2                       | 23.9                                 | 19                                 | 20   | 23                                 |
| 13             | 8.4                         | 0.5                         | 1.1                       | 26.0                                 | 21                                 | 22   | 25                                 |
| 16             | 11.4                        | 0.5                         | 0.9                       | 31.8                                 | 27                                 | 28   | 31                                 |

## ■ Recommended Cutting Conditions | GMX07/MXG07 type

| Material                          | Insert       | Grade  | Vc (m/min) | fz (mm/t) | ap (mm) | ae (mm) |
|-----------------------------------|--------------|--------|------------|-----------|---------|---------|
| Carbon Steel<br>below 250HB       | ENMU07...-PM | JC8050 | 165        | 1.0       | 0.3     | 0.7 Dc  |
| Tool & Die Steel<br>below 255HB   | ENMU07...-PM | JC8050 | 150        | 1.0       | 0.3     | 0.7 Dc  |
| Mold Steel<br>30-36HRC            | ENMU07...-PM | JC8050 | 150        | 1.0       | 0.3     | 0.7 Dc  |
| Mold Steel<br>38-43HRC            | ENMU07...-PM | JC8118 | 120        | 0.9       | 0.3     | 0.7 Dc  |
| Hardened<br>Die Steel<br>42-52HRC | ENMU07...-PM | JC8118 | 90         | 0.6       | 0.25    | 0.7 Dc  |
| Grey<br>Cast Iron                 | ENMU07...-PM | JC8118 | 200        | 1.0       | 0.3     | 0.7 Dc  |
| Nodular<br>Cast Iron              | ENMU07...-PM | JC8118 | 200        | 1.0       | 0.3     | 0.7 Dc  |
| Stainless Steel                   | ENMU07...-PM | JC8050 | 165        | 1.0       | 0.3     | 0.7 Dc  |

### Note:

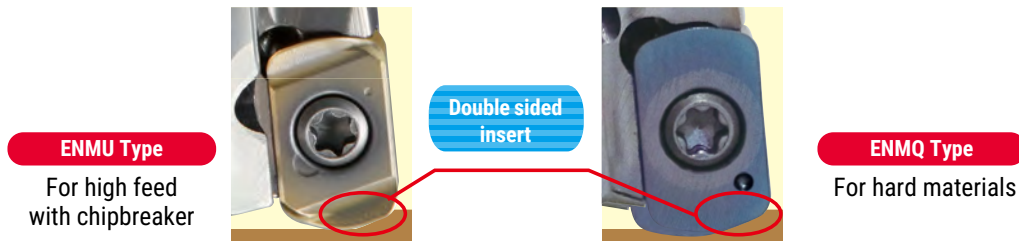
1. These parameters represent stable machining at lengths 3×D.  
Please adjust cutting conditions according to machine rigidity or work rigidity.
2. In case of chatter occurring, recommended to reduce ap or rpm and keep feed per tooth.
3. ap should be reduced when using on low rigidity machine.
4. Use air blow.

## Achieving high metal removal rates! High efficiency machining for versatile applications



### Feature 1

Optimized cutting edge for a wide range of applications



### Feature 2

Economical double sided insert with 4 cutting edges for various types of materials;  
**Carbon steel, Hardened material <upto 62HRC>, Stainless steel, Titanium alloy**

#### ● Line up



| ENMU100412ZER-SL   | ENMU100412ZER-PH   | ENMU100312ZER-HL  | ENMQ100312ZER   |
|--|--|---|---|
| <ul style="list-style-type: none"> <li>• Low cutting force</li> <li>• Sharp cutting edge</li> <li>• Grade C7550, JC7518</li> <li>DS118, DS150</li> </ul> | <ul style="list-style-type: none"> <li>• For general applications</li> <li>• Grade JC8118, JC8050, JC7560</li> </ul> | <ul style="list-style-type: none"> <li>• For hardened materials up to 60HRC</li> <li>• enhanced cutting edge strength but retains sharpness</li> <li>• Grade DH102</li> </ul> | <ul style="list-style-type: none"> <li>• Flat top insert</li> <li>• Grade DH102</li> <li>• For hardened materials over 60HRC</li> </ul> |

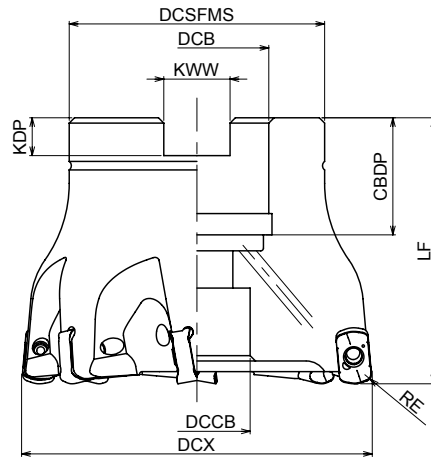
#### ● Insert grades

| ISO   | P   |     |        |        |     | M   |        |     |     |     | K     |        |        |        | S   |        |        |        | H   |     |        |
|-------|-----|-----|--------|--------|-----|-----|--------|-----|-----|-----|-------|--------|--------|--------|-----|--------|--------|--------|-----|-----|--------|
|       | P01 | P10 | P20    | P30    | P40 | M01 | M10    | M20 | M30 | M40 | K01   | K10    | K20    | K30    | S01 | S10    | S20    | S30    | H01 | H10 | H20    |
| Range |     |     |        |        |     |     |        |     |     |     |       |        |        |        |     |        |        |        |     |     |        |
|       |     |     | JC8118 |        |     |     | JC8118 |     |     |     | DH102 |        | JC8118 |        |     | DS118  |        |        |     |     |        |
|       |     |     |        | JC8050 |     |     | JC8050 |     |     |     |       | JC8050 |        |        |     | DS150  |        |        |     |     |        |
|       |     |     | JC7518 |        |     |     | JC7518 |     |     |     |       | JC8118 | JC8050 |        |     | DH102  | JC8118 |        |     |     | DH102  |
|       |     |     | JC7550 |        |     |     | JC7550 |     |     |     |       | JC8050 | JC7518 | JC8118 |     | JC8118 | JC8050 |        |     |     | JC8118 |
|       |     |     | JC7560 |        |     |     | JC7560 |     |     |     |       | JC7560 | JC7550 | JC7518 |     | JC7550 | JC7518 | JC8118 |     |     | JC7518 |



**GMX  
TYPE**

**Bore Type**



| Cat.No         | Stock | No. of inserts | Dimensions (mm) |    |        |     |      |      |     |      | Weight (kg) | Inserts                              |
|----------------|-------|----------------|-----------------|----|--------|-----|------|------|-----|------|-------------|--------------------------------------|
|                |       |                | DCX             | LF | DCSFMS | DCB | DCCB | KWW  | KDP | CBDP |             |                                      |
| GMX-6040R-16+A | ●     | 6              | 40              | 45 | 35     | 16  | 13.5 | 8.4  | 5.6 | 19   | 0.24        | ENMU100412ZER-**<br>ENM*100312ZER-** |
| GMX-7050R-22   | ●     | 7              | 50              | 50 | 40     | 22  | 17   | 10.4 | 6.3 | 20   | 0.35        |                                      |
| GMX-7052R-22   | ●     | 7              | 52              | 50 | 40     | 22  | 17   | 10.4 | 6.3 | 20   | 0.40        |                                      |
| GMX-7063R-22   | ●     | 7              | 63              | 50 | 48     | 22  | 17   | 10.4 | 6.3 | 20   | 0.64        |                                      |
| GMX-7066R-27   | ●     | 7              | 66              | 50 | 48     | 27  | 20   | 12.4 | 7   | 22   | 0.66        |                                      |

Note) All cutter bodies are supplied without Inserts, Wrench and MOLY.

● : Stocked Items

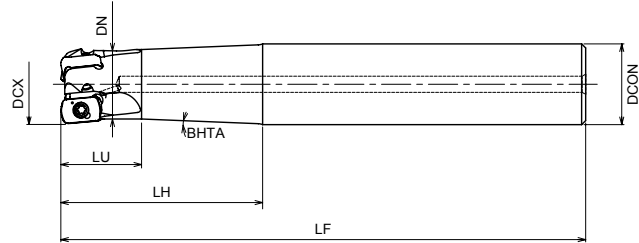
| Screw     | Torque(N.m) | Wrench |
|-----------|-------------|--------|
| TSW-2567H | 1.1         | A-08   |

# GMX10/MXG10 type

**GMX**  
TYPE

Shank Type

Through  
coolant  
hole



| Cat.No.          | Stock | No. of inserts | Dimensions (mm) |    |     |     |      |      |      | Insert                               |
|------------------|-------|----------------|-----------------|----|-----|-----|------|------|------|--------------------------------------|
|                  |       |                | DCX             | LU | LH  | LF  | DN   | BHTA | DCON |                                      |
| GMX-2016-30-S16  | ●     | 2              | 16              | 16 | 30  | 100 | 14   | 3.5° | 16   | ENMU100412ZER-**<br>ENM*100312ZER-** |
| GMX-2016-50-S16  | ●     | 2              | 16              | 16 | 50  | 150 | 14   | 1.2° | 16   |                                      |
| GMX-3020-50-S20  | ●     | 3              | 20              | 20 | 50  | 130 | 17.2 | 2.3° | 20   |                                      |
| GMX-3020-80-S20  | ●     | 3              | 20              | 20 | 80  | 160 | 17.2 | 1°   | 20   |                                      |
| GMX-4025-60-S25  | ●     | 4              | 25              | 25 | 60  | 140 | 22   | 2°   | 25   |                                      |
| GMX-4025-100-S25 | ●     | 4              | 25              | 25 | 100 | 180 | 22   | 0.9° | 25   |                                      |
| GMX-5032-70-S32  | ●     | 5              | 32              | 30 | 70  | 150 | 29   | 1.5° | 32   |                                      |
| GMX-5032-120-S32 | ●     | 5              | 32              | 30 | 120 | 200 | 29   | 0.6° | 32   |                                      |

Note) All cutter bodies are supplied without Inserts, Wrench and MOLY.

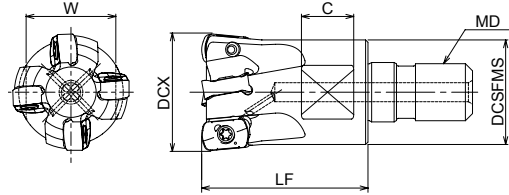
● : Stocked Items

| Screw     | Torque(N.m) | Wrench |
|-----------|-------------|--------|
| TSW-2567H | 1.1         | A-08   |



**MXG  
TYPE**

**Modular Type**



| Cat.No.      | Stock | No. of inserts | Dimensions (mm) |    |        |     |    |    | Insert                               |
|--------------|-------|----------------|-----------------|----|--------|-----|----|----|--------------------------------------|
|              |       |                | DCX             | LF | DCSFMS | MD  | C  | W  |                                      |
| MXG-2016-M8  | ●     | 2              | 16              | 23 | 14     | M8  | 8  | 12 | ENMU100412ZER-**<br>ENM*100312ZER-** |
| MXG-2017-M8  | ●     | 2              | 17              | 23 | 14     | M8  | 8  | 12 |                                      |
| MXG-3020-M10 | ●     | 3              | 20              | 30 | 18     | M10 | 9  | 14 |                                      |
| MXG-3021-M10 | ●     | 3              | 21              | 30 | 18     | M10 | 9  | 14 |                                      |
| MXG-3022-M10 | ○     | 3              | 22              | 30 | 18     | M10 | 9  | 14 |                                      |
| MXG-3025-M12 | ●     | 3              | 25              | 35 | 22     | M12 | 11 | 19 |                                      |
| MXG-4025-M12 | ●     | 4              | 25              | 35 | 22     | M12 | 11 | 19 |                                      |
| MXG-4026-M12 | ●     | 4              | 26              | 35 | 22.5   | M12 | 11 | 19 |                                      |
| MXG-4028-M12 | ○     | 4              | 28              | 35 | 23.6   | M12 | 11 | 19 |                                      |
| MXG-5030-M16 | ●     | 5              | 30              | 43 | 27     | M16 | 12 | 22 |                                      |
| MXG-5032-M16 | ●     | 5              | 32              | 43 | 29     | M16 | 12 | 22 |                                      |
| MXG-5035-M16 | ●     | 5              | 35              | 43 | 29     | M16 | 12 | 22 |                                      |
| MXG-6040-M16 | ●     | 6              | 40              | 43 | 32     | M16 | 14 | 26 |                                      |
| MXG-6042-M16 | ●     | 6              | 42              | 43 | 32     | M16 | 14 | 26 |                                      |

Note) All cutter bodies are supplied without Inserts, Wrench and MOLY.

● : Stocked Items ○ : Stock in Japan

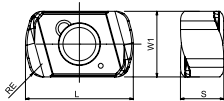
| Screw     | Torque(N.m) | Wrench |
|-----------|-------------|--------|
| TSW-2567H | 1.1         | A-08   |

# GMX10/MXG10 type

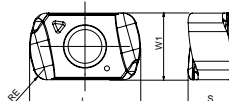
**GMX/MXG**  
TYPE

Insert

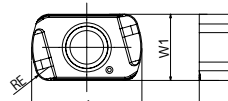
ENMU100412ZER-PH



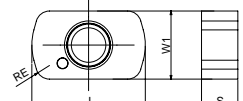
ENMU100412ZER-SL



ENMU100312ZER-HL



ENMQ100312ZER



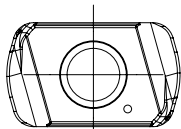
| Cat.No.          | Tolerance | PVD Coating |        |        |        |        |        |       |       | Dimensions (mm) |    |    |     |
|------------------|-----------|-------------|--------|--------|--------|--------|--------|-------|-------|-----------------|----|----|-----|
|                  |           | DH102       | JC7518 | JC7550 | JC7560 | JC8050 | JC8118 | DS118 | DS150 | RE              | L  | W1 | S   |
| ENMU100412ZER-PH | M         |             |        |        | ●      | ●      | ●      |       |       | 1.2             | 10 | 6  | 4   |
| ENMU100412ZER-SL | M         |             | ●      | ●      |        |        |        | ●     | ●     | 1.2             | 10 | 6  | 4   |
| ENMU100312ZER-HL | M         | ●           |        |        |        |        |        |       |       | 1.2             | 10 | 6  | 3.2 |
| ENMQ100312ZER    | M         | ●           |        |        |        |        |        |       |       | 1.2             | 10 | 6  | 3.2 |

Note) 10 inserts per case.

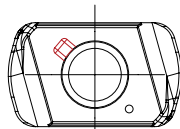
● : Stocked Items

## GRADE MARKING

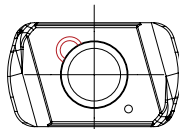
ENMU100412ZER-PH



JC8118

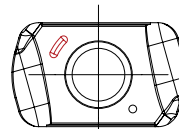


JC8050

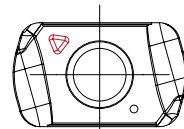


JC7560

ENMU100412ZER-SL



JC7518/DS118



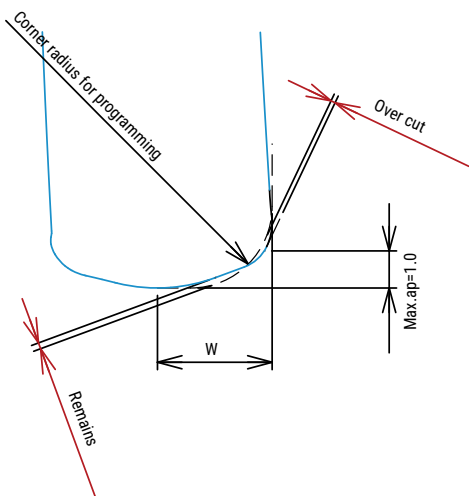
JC7550/DS150

## ■ Insert selection guide

| Materials   | Grade  | Cat.No.                                 |                                       |  |                                  |
|---|--------|---|---------------------------------------|--|----------------------------------|
|   |        | ENMU100412ZER-PH<br>For general milling | ENMU100412ZER-SL<br>Low cutting force | ENMU100312ZER-HL<br>For Hardened materials | ENMQ100312ZER<br>Flat top insert |
| Chip breaker  |        |   |                                       |  |                                  |
| Carbon steel<br>(S50C, S55C)<br>below 250HB               | JC8118 | ○                                       |                                       |  |                                  |
|   | JC8050 | ○                                       |                                       |  |                                  |
|   | JC7560 | ●                                       |                                       |  |                                  |
|   | JC7550 |   |                                       |  |                                  |
|   | JC7518 |   | ☆                                     |  |                                  |
|   | DH102  |   |                                       |  |                                  |
|   | DS118  |   |                                       |  |                                  |
|   | DS150  |   |                                       |  |                                  |
| Tool & die<br>steel (SKD61, SKD11)<br>below 255HB         | JC8118 | ○                                       |                                       |  |                                  |
|   | JC8050 | ○                                       |                                       |  |                                  |
|   | JC7560 | ●                                       |                                       |  |                                  |
|   | JC7550 |   |                                       |  |                                  |
|   | JC7518 |   | ☆                                     |  |                                  |
|   | DH102  |   |                                       |  |                                  |
|   | DS118  |   |                                       |  |                                  |
|   | DS150  |   |                                       |  |                                  |
| Mold steel<br>(HPM7, PX5, P20)<br>30 - 36HRC              | JC8118 | ○                                       |                                       |  |                                  |
|   | JC8050 | ○                                       |                                       |  |                                  |
|   | JC7560 | ●                                       |                                       |  |                                  |
|   | JC7550 |   |                                       |  |                                  |
|   | JC7518 |   | ☆                                     |  |                                  |
|   | DH102  |   |                                       |  |                                  |
|   | DS118  |   |                                       |  |                                  |
|   | DS150  |   |                                       |  |                                  |
| Mold steel<br>(NAK80, HPM1, P21)<br>38 - 43HRC            | JC8118 | ○                                       |                                       |  |                                  |
|   | JC8050 | ●                                       |                                       |  |                                  |
|   | JC7560 |   |                                       |  |                                  |
|   | JC7550 |   |                                       |  |                                  |
|   | JC7518 |   | ☆                                     |  |                                  |
|   | DH102  |   |                                       |  |                                  |
|   | DS118  |   |                                       |  |                                  |
|   | DS150  |   |                                       |  |                                  |
| Hardened die<br>steel<br>(SKD61, DAC, DHA)<br>42 - 52HRC  | JC8118 | ○                                       |                                       |  |                                  |
|   | JC8050 |   |                                       |  |                                  |
|   | JC7560 |   |                                       |  |                                  |
|   | JC7550 |   |                                       |  |                                  |
|   | JC7518 |   | ☆                                     |  |                                  |
|   | DH102  |   |                                       | ●  |                                  |
|   | DS118  |   |                                       |  |                                  |
|   | DS150  |   |                                       |  |                                  |
| Hardened die<br>steel<br>(SKD11, SLD, DC11)<br>55 - 62HRC | JC8118 | ×                                       |                                       |  |                                  |
|   | JC8050 | ×                                       |                                       |  |                                  |
|   | JC7560 | ×                                       |                                       |  |                                  |
|   | JC7550 |   | ×                                     |  |                                  |
|   | JC7518 |   | ×                                     |  |                                  |
|   | DH102  |   |                                       | ○  | ○                                |
|   | DS118  |   |                                       |  |                                  |
|   | DS150  |   |                                       |  |                                  |
| Grey cast iron<br>(FC, FCD)<br>below 300HB                | JC8118 | ○                                       |                                       |  |                                  |
|   | JC8050 | ○                                       |                                       |  |                                  |
|   | JC7560 | ●                                       |                                       |  |                                  |
|   | JC7550 |   |                                       |  |                                  |
|   | JC7518 |   |                                       |  |                                  |
|   | DH102  |   |                                       |  |                                  |
|   | DS118  |   |                                       |  |                                  |
|   | DS150  |   |                                       |  |                                  |
| Stainless steel<br>(SUS304)<br>below 250HB                | JC8118 | ●                                       |                                       |  |                                  |
|   | JC8050 |   |                                       |  |                                  |
|   | JC7560 |   |                                       |  |                                  |
|   | JC7550 |   | ○                                     |  |                                  |
|   | JC7518 |   |                                       |  |                                  |
|   | DH102  |   |                                       |  |                                  |
|   | DS118  |   |                                       |  |                                  |
|   | DS150  |   | ○                                     |  |                                  |
| Titanium alloy<br>(Ti-6Al-4V)                             | JC8118 | ●                                       |                                       |  |                                  |
|   | JC8050 |   |                                       |  |                                  |
|   | JC7560 |   |                                       |  |                                  |
|   | JC7550 |   | ○                                     |  |                                  |
|   | JC7518 |   |                                       |  |                                  |
|   | DH102  |   |                                       |  |                                  |
|   | DS118  |   |                                       |  |                                  |
|   | DS150  |   | ○                                     |  |                                  |
| Heat resistant<br>alloy<br>(INCO718)                      | JC8118 | ●                                       |                                       |  |                                  |
|   | JC8050 |   |                                       |  |                                  |
|   | JC7560 |   |                                       |  |                                  |
|   | JC7550 |   |                                       |  |                                  |
|   | JC7518 |   | ○                                     |  |                                  |
|   | DH102  |   |                                       |  |                                  |
|   | DS118  |   | ○                                     |  |                                  |
|   | DS150  |   |                                       |  |                                  |

○ : First choice   ○ : For general milling   ● : For unstable milling   ☆ : For light cutting resistance   × : Not recommended

## Definition of Corner Shape for Programming



| Cat.No.          | W   | Corner radius for programming | Remains | Over cut |
|------------------|-----|-------------------------------|---------|----------|
| ENMU100412ZER-PH | 3.1 | 1.0                           | 0.51    | 0        |
| ENMU100412ZER-SL |     | 1.5 (Standard)                | 0.36    | 0        |
|                  |     | 2.0                           | 0.22    | 0.05     |

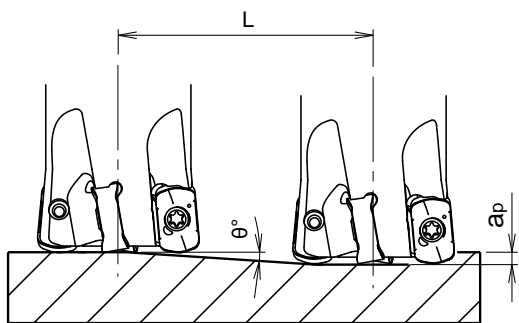
(mm)

| Cat.No.          | W   | Corner radius for programming | Remains | Over cut |
|------------------|-----|-------------------------------|---------|----------|
| ENMU100312ZER-HL | 3.3 | 1.0                           | 0.55    | 0        |
| ENMQ100312ZER    |     | 1.5 (Standard)                | 0.41    | 0        |
|                  |     | 2.0                           | 0.26    | 0.04     |

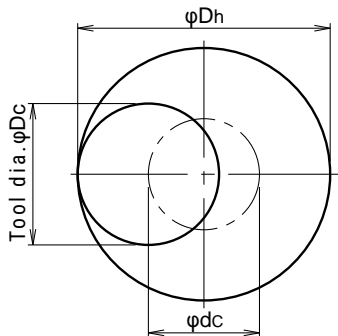
(mm)

## Recommended Data for Profile Milling

### Ramping



### Helical interpolation



- Calculation of tool pass dia.

$$\varphi_{dc} = \varphi_{Dh} - \varphi_{Dc}$$

Tool pass dia.    Bore dia.    Tool dia.

- Depth of cut per one circuit should not exceed max. depth of cut Ap
- Down cutting is recommended, tool pass rotation should be counterclockwise

- In case of ramping and helical interpolation, apply 70% or less feed (Vf) from standard cutting condition table
- In case of drilling, apply 50% or less Z axis feed (F) from standard cutting condition table
- Long consecutive chips may result in case of drilling, confirm safe operating conditions

| Cat.No.         | Tool dia. | Effective Cutting dia. |                     | Max. depth of cut: ap | Ramping                             |  |
|-----------------|-----------|------------------------|---------------------|-----------------------|-------------------------------------|--|
|                 |           | Insert                 |                     |                       | Ramping Max. ramping Angle $\theta$ | Max. depth of cut (ap)<br>Total cutting length: L (mm) |
|                 |           | ENMU100412ZER-***      | ENM***100312ZER-*** |                       |                                     |  |
| MXG-2016-M8     | 16        | 10.1                   | 9.6                 | 0.7                   | 1°36'                               | 25.1   |
| MXG-2017-M8     | 17        | 11                     | 10.5                | 0.7                   | 1°36'                               | 25.1   |
| MXG-3020-M10    | 20        | 13.9                   | 13.5                | 1                     | 1°30'                               | 38.2   |
| MXG-3021-M10    | 21        | 14.9                   | 14.5                | 1                     | 1°30'                               | 38.2   |
| MXG-*025-M12    | 25        | 18.9                   | 18.4                | 1                     | 1°12'                               | 47.7   |
| MXG-4026-M12    | 26        | 19.9                   | 19.4                | 1                     | 1°12'                               | 47.7   |
| MXG-5030-M16    | 30        | 23.9                   | 23.4                | 1                     | 0°54'                               | 63.6   |
| MXG-5032-M16    | 32        | 25.8                   | 25.4                | 1                     | 0°54'                               | 63.6   |
| MXG-5035-M16    | 35        | 28.8                   | 28.4                | 1                     | 0°42'                               | 81.8   |
| MXG-6040-M16    | 40        | 33.8                   | 33.4                | 1                     | 0°30'                               | 114.5  |
| MXG-6042-M16    | 42        | 35.8                   | 35.4                | 1                     | 0°30'                               | 114.5  |
| GMX-2016-**-S16 | 16        | 10.1                   | 9.6                 | 0.7                   | 1°36'                               | 25.1   |
| GMX-3020-**-S20 | 20        | 13.9                   | 13.5                | 1                     | 1°30'                               | 38.2   |
| GMX-4025-**-S25 | 25        | 18.9                   | 18.4                | 1                     | 1°12'                               | 47.7   |
| GMX-5032-**-S32 | 32        | 25.8                   | 25.4                | 1                     | 0°54'                               | 63.6   |
| GMX-7050R-***   | 50        | 43.8                   | 43.4                | 1                     | 0°24'                               | 143.2  |
| GMX-7052R-22    | 52        | 45.8                   | 45.4                | 1                     | 0°24'                               | 143.2  |
| GMX-7063R-***   | 63        | 56.8                   | 56.4                | 1                     | 0°18'                               | 190.9  |
| GMX-7066R-***   | 66        | 59.8                   | 59.4                | 1                     | 0°18'                               | 190.9  |

| Cat.No.         | Tool dia. | Helical interpolation |                     |                | Max.drilling depth :Z |                     |
|-----------------|-----------|-----------------------|---------------------|----------------|-----------------------|---------------------|
|                 |           | Min.Bore dia.         |                     | Max. Bore dia. | Insert                |                     |
|                 |           | Insert                |                     |                | ENMU100412ZER-***     | ENM***100312ZER-*** |
|                 |           | ENMU100412ZER-***     | ENM***100312ZER-*** |                | ENMU100412ZER-***     | ENM***100312ZER-*** |
| MXG-2016-M8     | 16        | 22                    | 21                  | 30             | 0.3                   | 0.2                 |
| MXG-2017-M8     | 17        | 24                    | 23                  | 32             | 0.3                   | 0.2                 |
| MXG-3020-M10    | 20        | 30                    | 29                  | 38             | 0.4                   | 0.2                 |
| MXG-3021-M10    | 21        | 32                    | 31                  | 40             | 0.4                   | 0.2                 |
| MXG-*025-M12    | 25        | 40                    | 39                  | 48             | 0.5                   | 0.3                 |
| MXG-4026-M12    | 26        | 42                    | 41                  | 50             | 0.5                   | 0.3                 |
| MXG-5030-M16    | 30        | 50                    | 49                  | 58             | 0.6                   | 0.4                 |
| MXG-5032-M16    | 32        | 54                    | 53                  | 62             | 0.6                   | 0.4                 |
| MXG-5035-M16    | 35        | 60                    | 59                  | 68             | 0.6                   | 0.4                 |
| MXG-6040-M16    | 40        | 70                    | 69                  | 78             | 0.7                   | 0.5                 |
| MXG-6042-M16    | 42        | 74                    | 73                  | 82             | 0.7                   | 0.5                 |
| GMX-2016-**-S16 | 16        | 22                    | 21                  | 30             | 0.3                   | 0.2                 |
| GMX-3020-**-S20 | 20        | 30                    | 29                  | 38             | 0.4                   | 0.2                 |
| GMX-4025-**-S25 | 25        | 40                    | 39                  | 48             | 0.5                   | 0.3                 |
| GMX-5032-**-S32 | 32        | 54                    | 53                  | 62             | 0.6                   | 0.4                 |
| GMX-7050R-***   | 50        | 90                    | 89                  | 98             | 0.8                   | 0.6                 |
| GMX-7052R-22    | 52        | 94                    | 93                  | 102            | 0.8                   | 0.6                 |
| GMX-7063R-***   | 63        | 116                   | 115                 | 124            | 0.8                   | 0.6                 |
| GMX-7066R-***   | 66        | 122                   | 121                 | 130            | 0.8                   | 0.6                 |

## ■ Recommended Cutting Conditions | GMX / MXG type

| Material                                  | Insert                | Grade              | Vc (m/min)       | fz (mm/t)         | ap (mm) | ae (mm) |
|---|-----------------------|--------------------|------------------|-------------------|---------|---------|
| Carbon Steel<br>below 250HB               | -PH                   | JC8050<br>(JC7560) | 180<br>(130-180) | 1.2               | 0.4-1.0 | 0.7 Dc  |
| Tool & Die Steel<br>below 255HB           | -PH                   | JC8050<br>(JC7560) | 180<br>(130-180) | 1.2               | 0.4-1.0 | 0.7 Dc  |
| Mold Steel<br>30-36HRC                    | -PH                   | JC8050<br>(JC7560) | 160<br>(130-160) | 1.2               | 0.4-1.0 | 0.7 Dc  |
| Mold Steel<br>38-43HRC                    | -PH                   | JC8118<br>(JC8050) | 100<br>(70-100)  | 1.1<br>(0.8-1.1)  | 0.3-0.8 | 0.7 Dc  |
| Hardened Die Steel<br>42-52HRC            | -PH<br>(-SL)          | JC8118<br>(JC7518) | 90<br>(70-90)    | 1.1<br>(0.8-1.1)  | 0.1-0.6 | 0.6 Dc  |
| Hardened Die Steel<br>55-62HRC            | ENMQ..<br>(ENMU..-HL) | DH102              | 80<br>(60-80)    | 0.3<br>(0.25-0.3) | 0.1-0.2 | 0.4 Dc  |
| Grey Cast Iron                            | -PH                   | JC8118<br>(JC8050) | 200<br>(150-200) | 1.5<br>(1.2-1.5)  | 0.4-1.0 | 0.7 Dc  |
| Nodular Cast Iron                         | -PH                   | JC8118<br>(JC8050) | 200<br>(150-200) | 1.5<br>(1.2-1.5)  | 0.4-1.0 | 0.7 Dc  |
| Austenitic<br>Stainless Steel             | -SL                   | JC7550<br>(JC7518) | 120<br>(100-120) | 1.0<br>(0.8-1.0)  | 0.3-0.8 | 0.6 Dc  |
| Precipitationhardening<br>Stainless Steel | -SL<br>(-PH)          | JC7550<br>(JC8050) | 100<br>(90-100)  | 0.7<br>(0.6-0.7)  | 0.2-0.6 | 0.6 Dc  |
| Duplex<br>Stainless Steel                 | -SL<br>(-PH)          | JC7550<br>(JC8050) | 100<br>(90-100)  | 0.3<br>(0.2-0.3)  | 0.3-0.8 | 0.6 Dc  |
| Titanium Alloy                            | -SL                   | DS150<br>(DS118)   | 60<br>(50-60)    | 0.7<br>(0.6-0.7)  | 0.3-0.7 | 0.6 Dc  |
| Heat Resistant Alloy                      | -SL                   | JC7518<br>(JC7550) | 30<br>(20-30)    | 0.3               | 0.2~0.7 | 0.6 Dc  |

### Note

1. Please adjust cutting conditions according to machine rigidity or work rigidity. (the above table is guide for cutting on a BT50 machine.)
2. In case of chatter occurring, recommended to reduce ap or rpm and keep feed per tooth.
3. ap should be reduced when using on low rigidity machine.
4. Use air blow.

**HEADQUARTER**  
**DIJET Industrial Co.Ltd.**  
 2-1-18, Kami-Higashi,  
 Hirano-ku, Osaka 547-0002, Japan  
 PHONE +81-6-6791-6781  
 FAX +81-6-6793-1221  
 www.dijet.co.jp



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**MAIN OFFICE EUROPE**  
**DIJET GmbH**  
 Immermannstraße 9  
 40210 Düsseldorf, Germany  
 PHONE +49-211-5008820  
 FAX +49-211-5008823  
 www.dijet.de



**DIJET EUROPE**

**Web : www.dijet.de**

