# PRODUCT NEWS

PN-E-017

NEW PRODUCT

NEW

High speed・High productivity

DIJET®

# SKS EXTREME

for high feed machining.

## EXSKS type

G-Body

■Facemill type: φ50～φ160

Face milling | Pocket milling | Copy milling | Helical interpolation | Plunging

## Next-generation high feed machining cutter

Improved insert strength by 1.5 times compared with conventional tool.

7.5mm
Insert thickness

Double-side insert(6corners)
Adopted PVD coated grade "JC7560" & "JC8118" and new PVD coated grade "JC8050".

**Possible to high feed machining on fz=2mm/t in case of Max. depth of cut (ap)= 3mm.**

DIJET GmbH・www.dijet.de

Fearure of product

# "SKS EXTREME" EXSKS type, next-generation high feed machining cutter

Features 1

Possible to high feed machining on fz=2mm/t in case of Max. depth of cut (ap)= 3mm.

Features 2

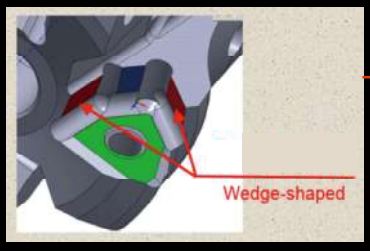
Economical double-side insert (6 corners).


Features 3

Insert thickness: 7.5mm improved strength by 1.5 times compared with conventional tool.


Features 4

Due to wedge-shaped binding face of insert, only single screw clamp prevents movement of inserts with changing corner of inserts easily.




G-Body

High Rigid G-Body

Features 5

## 3 insert grades PVD coated grade "JC7560", "JC8118" & new PVD coated grade "JC8050" can be widely applied from general & mold steel to high hardened die steel & stainless steel.


## Application

| ISO | P | | | | | M | | | | | K | | | | H | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | P01 | P10 | P20 | P30 | P40 | M01 | M10 | M20 | M30 | M40 | K01 | K10 | K20 | K30 | H01 | H10 | H20 |
| Applicable range | | | NEW JC8050 | | | | | NEW JC8050 | | | | | | | | | |
| | | | JC8118 | | | | | | | | | JC8118 | | | | JC8118 | |
| | | | | JC7560 | | | | | | JC7560 | | | | | | | |

Adopted 3 insert grades: PVD coated grade "JC7560" improved fracture toughness & heat impact resistance. PVD coated grade "JC8118" achieved longer tool life for mold steel, high hardened die steel less than 50HRC & cast iron. And new PVD coated grade "JC8050", that adopted carbide substrate with improved fracture toughness & coating layer with improved wear resistance, can be widely applied for carbon steel, mold steel, & stainless steel.

Features 6

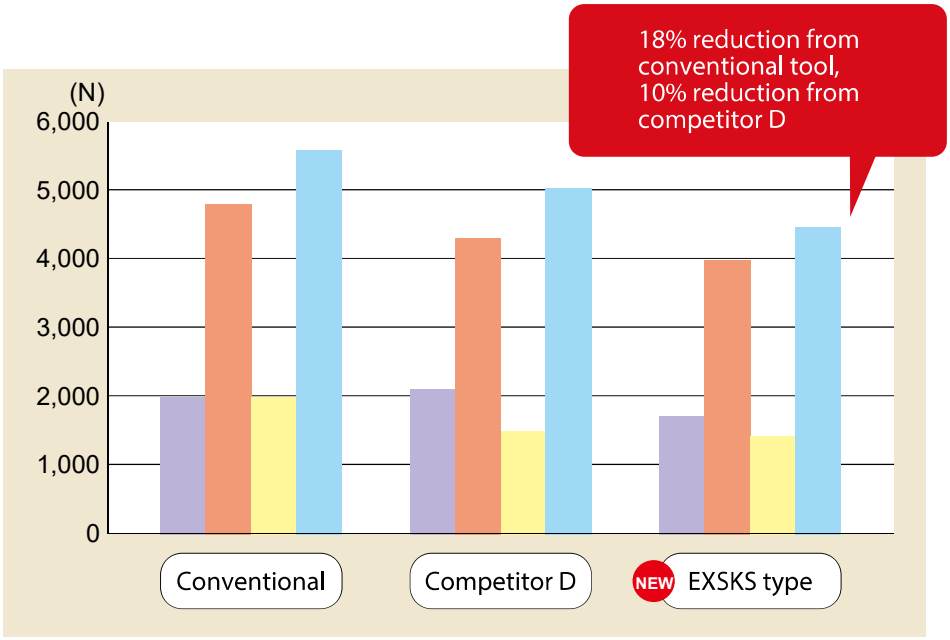
## Possible to stable high feed machining in case of long overhung length over L/D=6.

Features 7

## Excellent in ramping and helical interpolation, and possible to high efficient pocket milling.
※Possible to Max. ramping angle 3° in case of using φ63mm facemill.

## Cutting performance

### Cutting force comparison



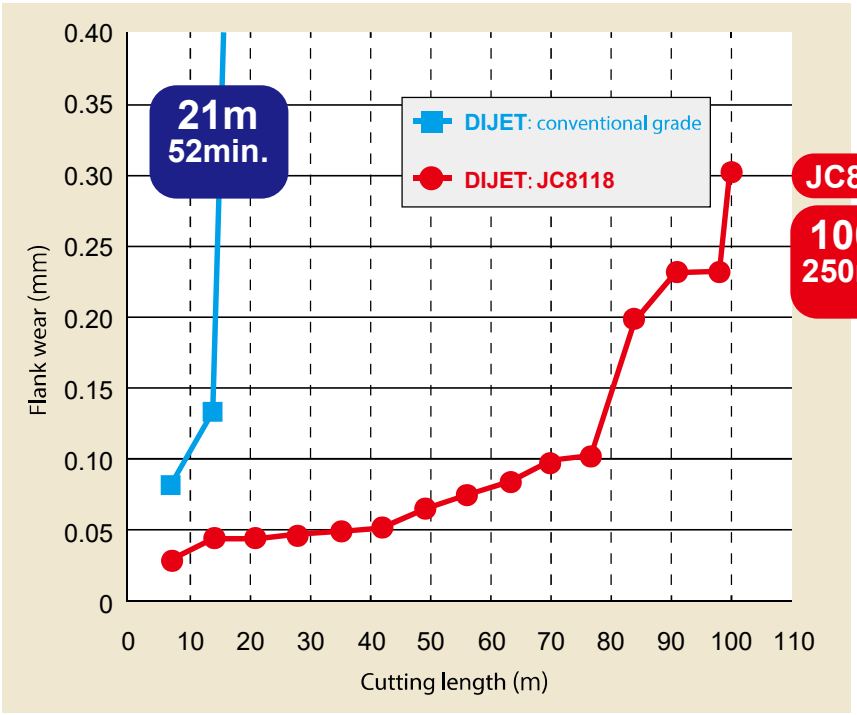

Material C50

●Tool dia.：φ63mm

（Insert No.：WNMU090720ZER-PM(JC7560)）

●Cutting conditions：Vc=150m/min, fz=1.5mm/t, $a_p$=1.5mm, $a_e$=40mm

### Tool life comparison




Material 1.2344 (45HRC)

●Tool dia.：φ63mm

（Insert No.：WNMU090720ZER-PM(JC8118)）

●Cutting conditions：Vc=80m/min, fz=1.0mm/t, $a_p$=1.0mm, $a_e$=45mm

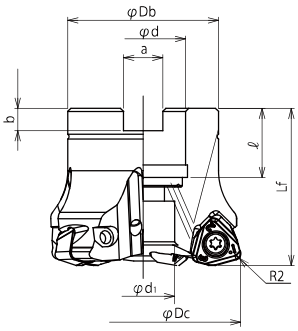
Test by one insert、
Cross cutting、
Dry

# Line up

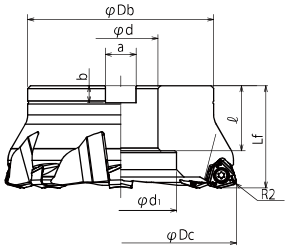
## Facemill type

G-Body

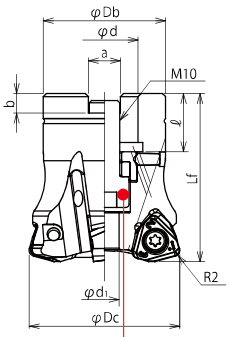
●Fig.1 Through coolant hole




●Fig.2 Without coolant hole




●Fig.3 Through coolant hole




Set bolt built into the cutter body

NEW Coarse pitch type achieved low cutting force & smooth chip ejection.

## Body (Metric Bore)

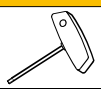
| Type | Item code | Stock | No. of inserts | Dimensions (mm) φDc | Lf | φDb | φd | φd1 | a | b | ℓ | Set bolt | | Weight (kg) | Fig. | Inserts |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Metric Bore | NEW EXSKS-3050R-22 | □ | 3 | 50 | 55 | 40 | 22 | 9.6 | 10.4 | 6.3 | 19 | M10×1.5×25★ | Head cap screw (JIS standard) | 0.4 | 3 | WNMU090720 ZER-PM |
| | EXSKS-4050R-22 | ● | 4 | 50 | 55 | 40 | 22 | 9.6 | 10.4 | 6.3 | 19 | M10×1.5×25★ | | 0.3 | 3 | |
| | EXSKS-4052R-22 | ● | 4 | 52 | 50 | 40 | 22 | 17 | 10.4 | 6.3 | 20 | M10 | | 0.4 | 1 | |
| | NEW EXSKS-4063R-22 | □ | 4 | 63 | 50 | 48 | 22 | 17 | 10.4 | 6.3 | 20 | M10 | | 0.5 | 1 | |
| | EXSKS-5063R-22 | ● | 5 | 63 | 50 | 48 | 22 | 17 | 10.4 | 6.3 | 20 | M10 | | 0.5 | 1 | |
| | EXSKS-5063R-27 | ● | 5 | 63 | 50 | 48 | 27 | 20 | 12.4 | 7 | 22 | M12×1.75×30★ | | 0.5 | 1 | |
| | EXSKS-5066R-27 | ● | 5 | 66 | 50 | 48 | 27 | 20 | 12.4 | 7 | 22 | M12×1.75×30★ | | 0.5 | 1 | |
| | EXSKS-6080R-27 | ● | 6 | 80 | 55 | 65 | 27 | 37 | 12.4 | 7 | 22 | M12×1.75×40★ | | 0.9 | 1 | |
| | EXSKS-7100R-32 | ● | 7 | 100 | 70 | 85 | 32 | 26 | 14.4 | 8 | 32 | M16×2×45★ | | 1.9 | 1 | |
| | EXSKS-8125R-40 | ● | 8 | 125 | 70 | 100 | 40 | 32 | 16.4 | 9 | 35 | M20×2.5×45★ | | 3.9 | 1 | |
| | EXSKS-9160R-40 | ● | 9 | 160 | 55 | 100 | 40 | 85 | 16.4 | 9 | 35 | M20 | Clamp bolt | 3.9 | 2 | |

●:Standard stock items □:Stock in Japan

Note)1. All cutters are supplied without inserts.
Note) 2.★ mark shows: these cutter bodies are equipped with the set bolt because of the specified bolt size.
Except for these cutter bodies, please use the set bolt equipped with arbor.
Note) 3. All cutters are supplied without wrench & MOLY since February 2019 for our stock production.

| Clamp screw | Recommended torque (N・m) |
|---|---|
| CSW-513H | 5.5 |

## Parts

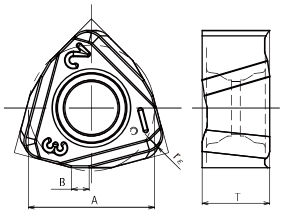
| Clamp screw | Wrench |
|---|---|
|  |  |
| CSW-513H | A-20 |

# Line up

## Insert

NEW JC8050 , JC8118

JC7560




| Item code | Tolerance | NEW PVD Coated | | | Dimensions (mm) | | | |
|---|---|---|---|---|---|---|---|---|
| | | JC8050 | JC8118 | JC7560 | A | T | B | r ε |
| WNMU090720ZER-PM | M | ● | ● | ● | 14 | 7.66 | 1.94 | 2 |

●: Standard stock items

10 inserts per case.

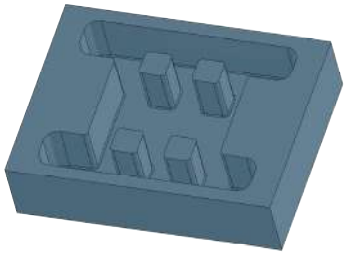
Each grade shows different mark around the hole for tool proof.

JC8050 JC8118 JC7560

# Cutting data

## 1. High feed machining on mold steel

Surface roughing



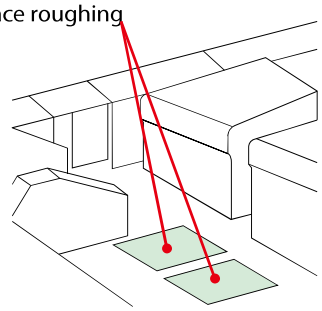
**Result**

Achieved high metal removal rate (Q=756cm³/min) by 2.4 times compared with conventional tool. And showed normal wear after 80min.(machining at Max. main spindle load)

| | | | |
|---|---|---|---|
| Work | Part name | | Cavity mold |
| | Material | | Mold steel (heat-treated) |
| | Hardness | | 30-34HRC |
| Tool | Tool No. | | EXSKS-7100R |
| | Insert No. | | WNMU090720ZER-PM (JC7560) |
| Cutting conditions | Cutting speed | *n* | 325 (min⁻¹) |
| | | *Vc* | 102 (m/min) |
| | Feed speed | *Vf* | 3,980 (mm/min) |
| | | *fz* | 1.75 (mm/t) |
| | *ap* | | 2.5 (mm) |
| | *ae* | | 76 (mm) |
| | Coolant | | Dry |
| | Machine | | Vertical MC(24Kw) |

## 2. High feed machining on die structure part

face roughing



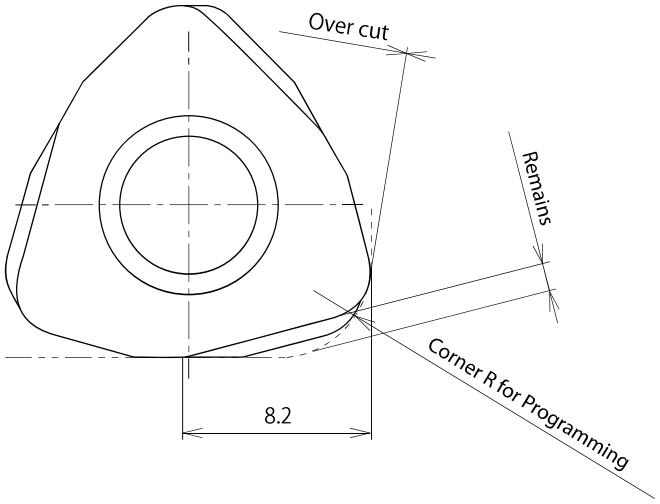
Overhung length : 220mm

**Result**

No chatter very smooth cutting. Achieved high metal removal rate by 1.9 times and longer tool life by 1.5 times compared with competitor D. Able to machining for 5 hours.

| | | | |
|---|---|---|---|
| Work | Part name | | Die structure part |
| | Material | | FC350 GG35 |
| | Hardness | | — |
| Tool | Tool No. | | EXSKS-6080R |
| | Insert No | | WNMU090720ZER-PM (JC7560) |
| Cutting conditions | Cutting speed | *n* | 500 (min⁻¹) |
| | | *Vc* | 125 (m/min) |
| | Feed speed | *Vf* | 5,000 (mm/min) |
| | | *fz* | 1.66 (mm/t) |
| | *ap* | | 3 (mm) |
| | *ae* | | 47 (mm) |
| | Coolant | | Dry |
| | Machine | | Double column type MC |

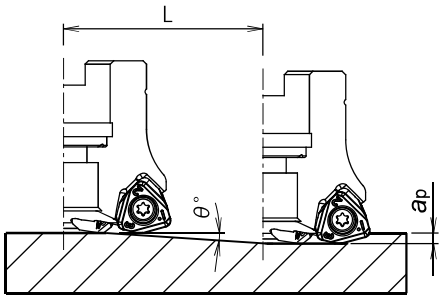
## Definition of corner shape for programming



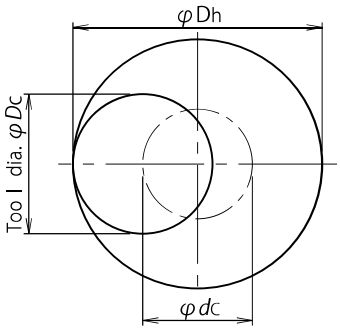

| Corner R for programming | Over cut | Remains |
|---|---|---|
| R3.0 | 0 | 1.41 |
| R3.5 | 0 | 1.30 |
| R4.0 | 0.025 | 1.19 |

## Attention 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, so tool pass rotation should be counterclockwise.

◎In case of ramping and helical interpolation, apply 70% or less feed speed from standard cutting condition table.
◎In case of drilling, apply 50% or less Z axis feed speed from standard cutting condition table.
◎Long consecutive chips may come out in case of drilling, confirm the safe condition sufficiently.

| Item code | Tool dia. (mm) | Eff. Cutting dia. (mm) | Max. depth of cut (mm) | Ramping | | Helical interpolation | | Max. drilling depth (mm) |
|---|---|---|---|---|---|---|---|---|
| | | | | Max. ramping angle θ° | Total cutting length at Max. ap | Min. bore dia. Dh min (mm) | Max. bore dia. Dh max (mm) | |
| EXSKS-*050 | 50 | 33.7 | 3 | 2°24' | 71.6 | 68 | 96 | 2 |
| EXSKS-*052 | 52 | 35.7 | 3 | 2°24' | 71.6 | 72 | 100 | 2 |
| EXSKS-*063 | 63 | 46.7 | 3 | 3° | 57.3 | 94 | 122 | 2 |
| EXSKS-*066 | 66 | 49.7 | 3 | 2°42' | 63.7 | 100 | 128 | 2 |
| EXSKS-*080 | 80 | 63.6 | 3 | 2°18' | 74.7 | 128 | 156 | 2 |
| EXSKS-*100 | 100 | 83.6 | 3 | 1°42' | 101.1 | 168 | 196 | 2 |
| EXSKS-*125 | 125 | 108.5 | 3 | 1°18' | 132.2 | 218 | 246 | 2 |
| EXSKS-*160 | 160 | 143.5 | 3 | 1° | 171.9 | 288 | 316 | 2 |

## Recommended cutting conditions

### Facemill type



| Work materials | Grades | Tool dia. (mm) | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 50 | | | | | 50/52 | | | | | 63 | | | | |
| | | No. of teeth 3N | | | | | No. of teeth 4N | | | | | No. of teeth 4N | | | | |
| | | ℓ (mm) | $a_p$ (mm) | $n$ ($min^{-1}$) | $V_f$ (mm/min) | $P_c$ (kW) | ℓ (mm) | $a_p$ (mm) | $n$ ($min^{-1}$) | $V_f$ (mm/min) | $P_c$ (kW) | ℓ (mm) | $a_p$ (mm) | $n$ ($min^{-1}$) | $V_f$ (mm/min) | $P_c$ (kW) |
| Carbon steel (C50,C55) Below 250HB | JC7560 JC8050 (JC8118) | ~150 | 2 | 950 | 5,700 | 9.3 | ~150 | 2 | 950 | 7,600 | 12.4 | ~150 | 2 | 750 | 6,000 | 12.3 |
| | | 200 | 1.5 | 800 | 4,800 | 5.9 | 200 | 1.5 | 800 | 6,400 | 7.8 | 200 | 1.8 | 680 | 5,440 | 10.0 |
| | | 250 | 1 | 650 | 2,925 | 2.4 | 250 | 1 | 650 | 3,900 | 3.2 | 250 | 1.5 | 600 | 4,800 | 7.4 |
| | | 300 | 0.6 | 650 | 1,950 | 1.0 | 300 | 0.6 | 650 | 2,600 | 1.3 | 300 | 1 | 550 | 4,400 | 4.5 |
| | | 350 | — | — | — | — | 350 | — | — | — | — | 350 | 0.6 | 550 | 3,300 | 2.0 |
| | | 400 | — | — | — | — | 400 | — | — | — | — | 400 | 0.4 | 550 | 2,200 | 0.9 |
| Die steel (1.2344,1.2379) Below 255HB | JC7560 JC8050 (JC8118) | ~150 | 2 | 950 | 5,700 | 9.3 | ~150 | 2 | 950 | 7,600 | 12.4 | ~150 | 2 | 750 | 6,000 | 12.3 |
| | | 200 | 1.5 | 800 | 4,800 | 5.9 | 200 | 1.5 | 800 | 6,400 | 7.8 | 200 | 1.8 | 680 | 5,440 | 10.0 |
| | | 250 | 1 | 650 | 2,925 | 2.4 | 250 | 1 | 650 | 3,900 | 3.2 | 250 | 1.5 | 600 | 4,800 | 7.4 |
| | | 300 | 0.6 | 650 | 1,950 | 1.0 | 300 | 0.6 | 650 | 2,600 | 1.3 | 300 | 1 | 550 | 4,400 | 4.5 |
| | | 350 | — | — | — | — | 350 | — | — | — | — | 350 | 0.6 | 550 | 3,300 | 2.0 |
| | | 400 | — | — | — | — | 400 | — | — | — | — | 400 | 0.4 | 550 | 2,200 | 0.9 |
| Mold steel (1.2311,P20) 30-36HRC | JC7560 JC8050 (JC8118) | ~150 | 2 | 830 | 4,980 | 9.2 | ~150 | 2 | 830 | 6,640 | 12.3 | ~150 | 2 | 650 | 5,200 | 12.2 |
| | | 200 | 1.5 | 700 | 4,200 | 5.9 | 200 | 1.5 | 700 | 5,600 | 7.8 | 200 | 1.8 | 580 | 4,640 | 9.8 |
| | | 250 | 1 | 570 | 2,565 | 2.4 | 250 | 1 | 570 | 3,420 | 3.2 | 250 | 1.5 | 520 | 4,160 | 7.3 |
| | | 300 | 0.6 | 570 | 1,710 | 1.0 | 300 | 0.6 | 570 | 2,280 | 1.3 | 300 | 1 | 460 | 3,680 | 4.3 |
| | | 350 | — | — | — | — | 350 | — | — | — | — | 350 | 0.6 | 460 | 2,760 | 1.9 |
| | | 400 | — | — | — | — | 400 | — | — | — | — | 400 | 0.4 | 460 | 1,840 | 0.9 |
| Mold steel (1.2311,P21) 38-43HRC | JC8118 (JC8050) | ~150 | 1.5 | 700 | 2,100 | 5.1 | ~150 | 1.5 | 700 | 2,800 | 6.8 | ~150 | 1.5 | 550 | 2,200 | 6.8 |
| | | 200 | 1 | 600 | 1,800 | 2.9 | 200 | 1 | 600 | 2,400 | 3.9 | 200 | 1.2 | 500 | 2,000 | 4.9 |
| | | 250 | 0.7 | 490 | 1,470 | 1.7 | 250 | 0.7 | 490 | 1,960 | 2.2 | 250 | 1 | 440 | 1,760 | 3.6 |
| | | 300 | 0.4 | 490 | 735 | 0.5 | 300 | 0.4 | 490 | 980 | 0.6 | 300 | 0.7 | 380 | 1,520 | 2.2 |
| | | 350 | — | — | — | — | 350 | — | — | — | — | 350 | 0.5 | 380 | 1,520 | 1.6 |
| | | 400 | — | — | — | — | 400 | — | — | — | — | 400 | — | — | — | — |
| Hardened die steel (1.2344, 1.2379) 42-52HRC | JC8118 | ~150 | 1.5 | 510 | 1,530 | 5.0 | ~150 | 1.5 | 510 | 2,040 | 6.6 | ~150 | 1.5 | 400 | 1,600 | 6.6 |
| | | 200 | 1 | 460 | 1,380 | 3.0 | 200 | 1 | 460 | 1,840 | 4.0 | 200 | 1.2 | 360 | 1,440 | 4.7 |
| | | 250 | 0.7 | 420 | 1,260 | 1.9 | 250 | 0.7 | 420 | 1,680 | 2.5 | 250 | 1 | 320 | 1,280 | 3.5 |
| | | 300 | 0.4 | 420 | 630 | 0.5 | 300 | 0.4 | 420 | 840 | 0.7 | 300 | 0.7 | 280 | 1,120 | 2.1 |
| | | 350 | — | — | — | — | 350 | — | — | — | — | 350 | 0.5 | 280 | 1,120 | 1.5 |
| | | 400 | — | — | — | — | 400 | — | — | — | — | 400 | — | — | — | — |
| Grey cast iron (GG25, GG30) Below 300HB | JC8118 | ~150 | 2.5 | 950 | 5,700 | 9.3 | ~150 | 2.5 | 950 | 7,600 | 12.4 | ~150 | 2.5 | 750 | 6,000 | 12.3 |
| | | 200 | 2 | 800 | 4,800 | 6.2 | 200 | 2 | 800 | 6,400 | 8.3 | 200 | 2 | 680 | 5,440 | 8.9 |
| | | 250 | 1.5 | 650 | 2,925 | 2.9 | 250 | 1.5 | 650 | 3,900 | 3.8 | 250 | 1.5 | 600 | 4,800 | 5.9 |
| | | 300 | 1 | 650 | 1,950 | 1.3 | 300 | 1 | 650 | 2,600 | 1.7 | 300 | 1 | 550 | 4,400 | 3.6 |
| | | 350 | — | — | — | — | 350 | — | — | — | — | 350 | 0.6 | 550 | 3,300 | 1.6 |
| | | 400 | — | — | — | — | 400 | — | — | — | — | 400 | 0.4 | 550 | 2,200 | 0.7 |
| Nodular cast iron (GGG50, GGG70) Below 300HB | JC8118 | ~150 | 2.5 | 950 | 5,700 | 9.3 | ~150 | 2.5 | 950 | 7,600 | 12.4 | ~150 | 2.5 | 750 | 6,000 | 12.3 |
| | | 200 | 2 | 800 | 4,800 | 6.2 | 200 | 2 | 800 | 6,400 | 8.3 | 200 | 2 | 680 | 5,440 | 8.9 |
| | | 250 | 1.5 | 650 | 2,925 | 2.9 | 250 | 1.5 | 650 | 3,900 | 3.8 | 250 | 1.5 | 600 | 4,800 | 5.9 |
| | | 300 | 1 | 650 | 1,950 | 1.3 | 300 | 1 | 650 | 2,600 | 1.7 | 300 | 1 | 550 | 4,400 | 3.6 |
| | | 350 | — | — | — | — | 350 | — | — | — | — | 350 | 0.6 | 550 | 3,300 | 1.6 |
| | | 400 | — | — | — | — | 400 | — | — | — | — | 400 | 0.4 | 550 | 2,200 | 0.7 |
| Stainless steel Below 250HB | JC8050 (JC7560) | ~150 | 2 | 950 | 4,275 | 11.1 | ~150 | 2 | 950 | 5,700 | 14.8 | ~150 | 2 | 750 | 4,500 | 14.7 |
| | | 200 | 1.5 | 800 | 3,600 | 7.0 | 200 | 1.5 | 800 | 4,800 | 9.4 | 200 | 1.8 | 680 | 4,080 | 12.0 |
| | | 250 | 1 | 650 | 1,950 | 2.5 | 250 | 1 | 650 | 2,600 | 3.4 | 250 | 1.5 | 600 | 3,600 | 8.8 |
| | | 300 | 0.6 | 650 | 1,950 | 1.5 | 300 | 0.6 | 650 | 2,600 | 2.0 | 300 | 1 | 550 | 2,640 | 4.3 |
| | | 350 | — | — | — | — | 350 | — | — | — | — | 350 | 0.6 | 550 | 2,200 | 2.2 |
| | | 400 | — | — | — | — | 400 | — | — | — | — | 400 | 0.4 | 550 | 2,200 | 1.4 |

ℓ : Overhung length $a_p$ : Depth of cut $n$ : Spindle speed $V_f$ : Feed speed $P_c$ : Net power consumption

Note:
*1. The figure to be adjusted according to the machine rigidity or work rigidity.
*2. In case of chatter occurring, recommend to reduce the depth of cut ap or Spindle speed and keep feed per tooth.
*3. If machine does not have enough power, recommend to reduce the depth of cut ap or Spindle speed and Feed speed.
*4. Use air blow.

## Facemill type



| Work materials | Grades | Tool dia. (mm) | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 63/66 | | | | | 80 | | | | | 100 | | | | |
| | | No. of teeth 5N | | | | | No. of teeth 6N | | | | | No. of teeth 7N | | | | |
| | | $\ell$ (mm) | $a_p$ (mm) | $n$ (min$^{-1}$) | $V_f$ (mm/min) | $P_c$ (kW) | $\ell$ (mm) | $a_p$ (mm) | $n$ (min$^{-1}$) | $V_f$ (mm/min) | $P_c$ (kW) | $\ell$ (mm) | $a_p$ (mm) | $n$ (min$^{-1}$) | $V_f$ (mm/min) | $P_c$ (kW) |
| (Carbon steel (C50,C55) Below 250HB | JC7560 JC8050 (JC8118) | ~150 | 2 | 750 | 7,500 | 15.4 | ~150 | 2 | 600 | 7,200 | 18.7 | ~150 | 2 | 480 | 6,720 | 21.8 |
| | | 200 | 1.8 | 680 | 6,800 | 12.5 | 200 | 1.8 | 540 | 6,480 | 15.2 | 200 | 2 | 430 | 6,020 | 19.6 |
| | | 250 | 1.5 | 600 | 6,000 | 9.2 | 250 | 1.8 | 480 | 5,760 | 13.5 | 250 | 2 | 380 | 5,320 | 17.3 |
| | | 300 | 1 | 550 | 5,500 | 5.6 | 300 | 1.5 | 440 | 5,280 | 10.3 | 300 | 1.5 | 350 | 4,900 | 11.9 |
| | | 350 | 0.6 | 550 | 4,125 | 2.5 | 350 | 1 | 440 | 5,280 | 6.9 | 350 | 1.5 | 350 | 4,900 | 11.9 |
| | | 400 | 0.4 | 550 | 2,750 | 1.1 | 400 | 0.6 | 440 | 3,960 | 3.1 | 400 | 1 | 350 | 4,900 | 8.0 |
| Die steel (1.2344,1.2379) Below 255HB | JC7560 JC8050 (JC8118) | ~150 | 2 | 750 | 7,500 | 15.4 | ~150 | 2 | 600 | 7,200 | 18.7 | ~150 | 2 | 480 | 6,720 | 21.8 |
| | | 200 | 1.8 | 680 | 6,800 | 12.5 | 200 | 1.8 | 540 | 6,480 | 15.2 | 200 | 2 | 430 | 6,020 | 19.6 |
| | | 250 | 1.5 | 600 | 6,000 | 9.2 | 250 | 1.8 | 480 | 5,760 | 13.5 | 250 | 2 | 380 | 5,320 | 17.3 |
| | | 300 | 1 | 550 | 5,500 | 5.6 | 300 | 1.5 | 440 | 5,280 | 10.3 | 300 | 1.5 | 350 | 4,900 | 11.9 |
| | | 350 | 0.6 | 550 | 4,125 | 2.5 | 350 | 1 | 440 | 5,280 | 6.9 | 350 | 1.5 | 350 | 4,900 | 11.9 |
| | | 400 | 0.4 | 550 | 2,750 | 1.1 | 400 | 0.6 | 440 | 3,960 | 3.1 | 400 | 1 | 350 | 4,900 | 8.0 |
| Mold steel (1.2311,P20) 30-36HRC | JC7560 JC8050 (JC8118) | ~150 | 2 | 650 | 6,500 | 15.2 | ~150 | 2 | 520 | 6,240 | 18.5 | ~150 | 2 | 410 | 5,740 | 21.3 |
| | | 200 | 1.8 | 580 | 5,800 | 12.2 | 200 | 1.8 | 470 | 5,640 | 15.1 | 200 | 2 | 370 | 5,180 | 19.2 |
| | | 250 | 1.5 | 520 | 5,200 | 9.1 | 250 | 1.8 | 420 | 5,040 | 13.5 | 250 | 2 | 330 | 4,620 | 17.2 |
| | | 300 | 1 | 460 | 4,600 | 5.4 | 300 | 1.5 | 360 | 4,320 | 9.6 | 300 | 1.5 | 280 | 3,920 | 10.9 |
| | | 350 | 0.6 | 460 | 3,450 | 2.4 | 350 | 1 | 360 | 4,320 | 6.4 | 350 | 1.5 | 280 | 3,920 | 10.9 |
| | | 400 | 0.4 | 460 | 2,300 | 1.1 | 400 | 0.6 | 360 | 3,240 | 2.9 | 400 | 1 | 280 | 3,920 | 7.3 |
| Mold steel (1.2311,P21) 38-43HRC | JC8118 (JC8050) | ~150 | 1.5 | 550 | 2,750 | 8.4 | ~150 | 1.5 | 430 | 2,580 | 10.1 | ~150 | 1.5 | 350 | 2,450 | 11.9 |
| | | 200 | 1.2 | 500 | 2,500 | 6.1 | 200 | 1.2 | 390 | 2,340 | 7.3 | 200 | 1.5 | 310 | 2,170 | 10.6 |
| | | 250 | 1 | 440 | 2,200 | 4.5 | 250 | 1.2 | 340 | 2,040 | 6.4 | 250 | 1.2 | 280 | 1,960 | 7.6 |
| | | 300 | 0.7 | 380 | 1,900 | 2.7 | 300 | 1 | 300 | 1,800 | 4.7 | 300 | 1 | 250 | 1,750 | 5.7 |
| | | 350 | 0.5 | 380 | 1,900 | 1.9 | 350 | 0.7 | 300 | 1,800 | 3.3 | 350 | 1 | 250 | 1,750 | 5.7 |
| | | 400 | — | — | — | — | 400 | 0.4 | 300 | 1,800 | 1.9 | 400 | 0.7 | 250 | 1,750 | 4.0 |
| Hardened die steel (1.2344, 1.2379) 42-52HRC | JC8118 | ~150 | 1.5 | 400 | 2,000 | 8.2 | ~150 | 1.5 | 320 | 1,920 | 10.0 | ~150 | 1.5 | 250 | 1,750 | 11.4 |
| | | 200 | 1.2 | 360 | 1,800 | 5.9 | 200 | 1.2 | 290 | 1,740 | 7.2 | 200 | 1.5 | 230 | 1,610 | 10.5 |
| | | 250 | 1 | 320 | 1,600 | 4.4 | 250 | 1.2 | 260 | 1,560 | 6.5 | 250 | 1.2 | 200 | 1,400 | 7.3 |
| | | 300 | 0.7 | 280 | 1,400 | 2.7 | 300 | 1 | 220 | 1,320 | 4.6 | 300 | 1 | 180 | 1,260 | 5.5 |
| | | 350 | 0.5 | 280 | 1,400 | 1.9 | 350 | 0.7 | 220 | 1,320 | 3.2 | 350 | 1 | 180 | 1,260 | 5.5 |
| | | 400 | — | — | — | — | 400 | 0.4 | 220 | 1,320 | 1.8 | 400 | 0.7 | 180 | 1,260 | 3.8 |
| Grey cast iron (GG25, GG30) Below 300HB | JC8118 | ~150 | 2.5 | 750 | 7,500 | 15.4 | ~150 | 2.5 | 600 | 7,200 | 18.7 | ~150 | 2.5 | 480 | 6,720 | 21.8 |
| | | 200 | 2 | 680 | 6,800 | 11.1 | 200 | 2 | 540 | 6,480 | 13.5 | 200 | 2.5 | 430 | 6,020 | 19.6 |
| | | 250 | 1.5 | 600 | 6,000 | 7.4 | 250 | 2 | 480 | 5,760 | 12.0 | 250 | 2 | 380 | 5,320 | 13.8 |
| | | 300 | 1 | 550 | 5,500 | 4.5 | 300 | 1.5 | 440 | 5,280 | 8.2 | 300 | 2 | 350 | 4,900 | 12.7 |
| | | 350 | 0.6 | 550 | 4,125 | 2.0 | 350 | 1 | 440 | 5,280 | 5.5 | 350 | 1.5 | 350 | 4,900 | 9.6 |
| | | 400 | 0.4 | 550 | 2,750 | 0.9 | 400 | 0.6 | 440 | 3,960 | 2.5 | 400 | 1 | 350 | 4,900 | 6.4 |
| Nodular cast iron (GGG50, GGG70) Below 300HB | JC8118 | ~150 | 2.5 | 750 | 7,500 | 15.4 | ~150 | 2.5 | 600 | 7,200 | 18.7 | ~150 | 2.5 | 480 | 6,720 | 21.8 |
| | | 200 | 2 | 680 | 6,800 | 11.1 | 200 | 2 | 540 | 6,480 | 13.5 | 200 | 2.5 | 430 | 6,020 | 19.6 |
| | | 250 | 1.5 | 600 | 6,000 | 7.4 | 250 | 2 | 480 | 5,760 | 12.0 | 250 | 2 | 380 | 5,320 | 13.8 |
| | | 300 | 1 | 550 | 5,500 | 4.5 | 300 | 1.5 | 440 | 5,280 | 8.2 | 300 | 2 | 350 | 4,900 | 12.7 |
| | | 350 | 0.6 | 550 | 4,125 | 2.0 | 350 | 1 | 440 | 5,280 | 5.5 | 350 | 1.5 | 350 | 4,900 | 9.6 |
| | | 400 | 0.4 | 550 | 2,750 | 0.9 | 400 | 0.6 | 440 | 3,960 | 2.5 | 400 | 1 | 350 | 4,900 | 6.4 |
| Stainless steel Below 250HB | JC8050 (JC7560) | ~150 | 2 | 750 | 5,625 | 18.4 | ~150 | 2 | 600 | 5,400 | 22.5 | ~150 | 2 | 480 | 5,040 | 26.2 |
| | | 200 | 1.8 | 680 | 5,100 | 15.0 | 200 | 1.8 | 540 | 4,860 | 18.2 | 200 | 2 | 430 | 4,515 | 23.5 |
| | | 250 | 1.5 | 600 | 4,500 | 11.1 | 250 | 1.8 | 480 | 4,320 | 16.2 | 250 | 2 | 380 | 3,990 | 20.7 |
| | | 300 | 1 | 550 | 3,300 | 5.4 | 300 | 1.5 | 440 | 3,960 | 12.4 | 300 | 1.5 | 350 | 3,675 | 14.3 |
| | | 350 | 0.6 | 550 | 2,750 | 2.7 | 350 | 1 | 440 | 3,168 | 6.6 | 350 | 1.5 | 350 | 3,675 | 14.3 |
| | | 400 | 0.4 | 550 | 2,750 | 1.8 | 400 | 0.6 | 440 | 2,640 | 3.3 | 400 | 1 | 350 | 3,675 | 9.6 |

$\ell$ : Overhung length $a_p$ : Depth of cut $n$ : Spindle speed $V_f$ : Feed speed $P_c$ : Net power consumption

Note:
*1. The figure to be adjusted according to the machine rigidity or work rigidity.
*2. In case of chatter occurring, recommend to reduce the depth of cut ap or Spindle speed and keep feed per tooth.
*3. If machine does not have enough power, recommend to reduce the depth of cut ap or Spindle speed and Feed speed.
*4. Use air blow.

| Work materials | Grades | Tool dia. (mm) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 125 | | | | | 160 | | | | |
| | | No. of teeth 8N | | | | | No. of teeth 9N | | | | |
| | | $\ell$ (mm) | $a_p$ (mm) | $n$ (min$^{-1}$) | $V_f$ (mm/min) | $P_c$ (kW) | $\ell$ (mm) | $a_p$ (mm) | $n$ (min$^{-1}$) | $V_f$ (mm/min) | $P_c$ (kW) |
| Carbon steel (C50,C55) Below 250HB | JC7560 JC8050 (JC8118) | ~150 | 2 | 380 | 6,080 | 24.7 | ~150 | 2 | 300 | 5,400 | 28.1 |
| | | 200 | 2 | 340 | 5,440 | 22.1 | 200 | 2 | 270 | 4,860 | 25.3 |
| | | 250 | 2 | 300 | 4,800 | 19.5 | 250 | 2 | 240 | 4,320 | 22.5 |
| | | 300 | 2 | 280 | 4,480 | 18.2 | 300 | 2 | 220 | 3,960 | 20.6 |
| | | 350 | 1.5 | 280 | 4,480 | 13.7 | 350 | 2 | 220 | 3,960 | 20.6 |
| | | 400 | 1.5 | 280 | 4,480 | 13.7 | 400 | 1.5 | 220 | 3,960 | 15.4 |
| Die steel (1.2344,1.2379) Below 255HB | JC7560 JC8050 (JC8118) | ~150 | 2 | 380 | 6,080 | 24.7 | ~150 | 2 | 300 | 5,400 | 28.1 |
| | | 200 | 2 | 340 | 5,440 | 22.1 | 200 | 2 | 270 | 4,860 | 25.3 |
| | | 250 | 2 | 300 | 4,800 | 19.5 | 250 | 2 | 240 | 4,320 | 22.5 |
| | | 300 | 2 | 280 | 4,480 | 18.2 | 300 | 2 | 220 | 3,960 | 20.6 |
| | | 350 | 1.5 | 280 | 4,480 | 13.7 | 350 | 2 | 220 | 3,960 | 20.6 |
| | | 400 | 1.5 | 280 | 4,480 | 13.7 | 400 | 1.5 | 220 | 3,960 | 15.4 |
| Mold steel (1.2311,P20) 30-36HRC | JC7560 JC8050 (JC8118) | ~150 | 2 | 330 | 5,280 | 24.5 | ~150 | 2 | 260 | 4,680 | 27.8 |
| | | 200 | 2 | 300 | 4,800 | 22.3 | 200 | 2 | 230 | 4,140 | 24.6 |
| | | 250 | 2 | 260 | 4,160 | 19.3 | 250 | 2 | 210 | 3,780 | 22.5 |
| | | 300 | 2 | 230 | 3,680 | 17.1 | 300 | 2 | 180 | 3,240 | 19.3 |
| | | 350 | 1.5 | 230 | 3,680 | 12.8 | 350 | 2 | 180 | 3,240 | 19.3 |
| | | 400 | 1.5 | 230 | 3,680 | 12.8 | 400 | 1.5 | 180 | 3,240 | 14.4 |
| Mold steel (1.2311,P21) 38-43HRC | JC8118 (JC8050) | ~150 | 1.5 | 280 | 2,240 | 13.7 | ~150 | 1.5 | 220 | 1,980 | 15.4 |
| | | 200 | 1.5 | 250 | 2,000 | 12.2 | 200 | 1.5 | 200 | 1,800 | 14.0 |
| | | 250 | 1.5 | 220 | 1,760 | 10.7 | 250 | 1.5 | 180 | 1,620 | 12.6 |
| | | 300 | 1.5 | 200 | 1,600 | 9.8 | 300 | 1.5 | 150 | 1,350 | 10.5 |
| | | 350 | 1 | 200 | 1,600 | 6.5 | 350 | 1.5 | 150 | 1,350 | 10.5 |
| | | 400 | 1 | 200 | 1,600 | 6.5 | 400 | 1 | 150 | 1,350 | 7.0 |
| Hardened die steel (1.2344, 1.2379) 42-52HRC | JC8118 | ~150 | 1.5 | 200 | 1,600 | 13.0 | ~150 | 1.5 | 160 | 1,440 | 15.0 |
| | | 200 | 1.5 | 180 | 1,440 | 11.7 | 200 | 1.5 | 150 | 1,350 | 14.0 |
| | | 250 | 1.5 | 160 | 1,280 | 10.4 | 250 | 1.5 | 130 | 1,170 | 12.2 |
| | | 300 | 1.5 | 140 | 1,120 | 9.1 | 300 | 1.5 | 110 | 990 | 10.3 |
| | | 350 | 1 | 140 | 1,120 | 6.1 | 350 | 1.5 | 110 | 990 | 10.3 |
| | | 400 | 1 | 140 | 1,120 | 6.1 | 400 | 1 | 110 | 990 | 6.9 |
| Grey cast iron (GG25, GG30) Below 300HB | JC8118 | ~150 | 2.5 | 380 | 6,080 | 24.7 | ~150 | 2.5 | 300 | 5,400 | 28.1 |
| | | 200 | 2.5 | 340 | 5,440 | 22.1 | 200 | 2.5 | 270 | 4,860 | 25.3 |
| | | 250 | 2.5 | 300 | 4,800 | 19.5 | 250 | 2.5 | 240 | 4,320 | 22.5 |
| | | 300 | 2 | 280 | 4,480 | 14.6 | 300 | 2.5 | 220 | 3,960 | 20.6 |
| | | 350 | 1.5 | 280 | 4,480 | 10.9 | 350 | 2 | 220 | 3,960 | 16.5 |
| | | 400 | 1.5 | 280 | 4,480 | 10.9 | 400 | 1.5 | 220 | 3,960 | 12.4 |
| Nodular cast iron (GGG50, GGG70) Below 300HB | JC8118 | ~150 | 2.5 | 380 | 6,080 | 24.7 | ~150 | 2.5 | 300 | 5,400 | 28.1 |
| | | 200 | 2.5 | 340 | 5,440 | 22.1 | 200 | 2.5 | 270 | 4,860 | 25.3 |
| | | 250 | 2.5 | 300 | 4,800 | 19.5 | 250 | 2.5 | 240 | 4,320 | 22.5 |
| | | 300 | 2 | 280 | 4,480 | 14.6 | 300 | 2.5 | 220 | 3,960 | 20.6 |
| | | 350 | 1.5 | 280 | 4,480 | 10.9 | 350 | 2 | 220 | 3,960 | 16.5 |
| | | 400 | 1.5 | 280 | 4,480 | 10.9 | 400 | 1.5 | 220 | 3,960 | 12.4 |
| Stainless steel Below 250HB | JC8050 (JC7560) | ~150 | 2 | 380 | 4,560 | 29.6 | ~150 | 2 | 300 | 4,050 | 33.7 |
| | | 200 | 2 | 340 | 4,080 | 26.5 | 200 | 2 | 270 | 3,645 | 30.3 |
| | | 250 | 2 | 300 | 3,600 | 23.4 | 250 | 2 | 240 | 3,240 | 27.0 |
| | | 300 | 2 | 280 | 3,360 | 21.8 | 300 | 2 | 220 | 2,970 | 24.7 |
| | | 350 | 1.5 | 280 | 3,360 | 16.4 | 350 | 2 | 220 | 2,970 | 24.7 |
| | | 400 | 1.5 | 280 | 3,360 | 16.4 | 400 | 1.5 | 220 | 2,970 | 18.5 |

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Note:
*1. The figure to be adjusted according to the machine rigidity or work rigidity.
*2. In case of chatter occurring, recommend to reduce the depth of cut ap or Spindle speed and keep feed per tooth.
*3. If machine does not have enough power, recommend to reduce the depth of cut ap or Spindle speed and Feed speed.
*4. Use air blow.

ISO9001 JQA-2089 ISO14001 JQA-EM1580


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