**Doosan Machine Tools**

GLOBAL STANDARD VERTICAL MACHINING CENTER

# DNM

## 4500/4500L · 5700/5700L · 6700/6700L/6700XL

# **DNM** series

**Building on the history of the well proven and successful DNM and DNM ll series, the new version DNM series boasts even greater reliability and performance. In addition, the new series includes grease lubrication to the roller guideways for more environmental-friendliness. The design concepts of the DNM 4500/5700/6700 series are high speed, high rigidity and suitability for universal applications. Standard features are the largest machining space in its class, direct coupled spindle, roller guideways and thermal error compensation to provide optimum precision.**

## Contents

### A highly versatile vertical machining center offering the largest machining space in its class

- DNM series provides a larger table with increased Y axis travel and maximum table load.
- Doosan machine tools offer X-axis extension version for DNM 4500L, 5700L, 6700L/XL to enhance customer's machine variation.

### Standard Direct-Coupled Spindle for Higher Productivity

- The direct coupled spindle reduces vibration and noise, thereby improving the machines performance and environmental-friendliness compared to belt drive type.
- High torque and High speed spindle are available to meet material of workpiece.
- Higher productivity is achieved by reducing tool change time and improving all axes feed system acc/dec times.

### An environmental-friendly machine designed for stable and easy operation

- Thermal error compensation function fitted as standard optimizes machine accuracy by reducing the effects of heat build-up during extended periods of operation.
- The EOP function can be checked in the pop-up window on the NC main screen for convenient machine operation.
- Grease lubrication for axis roller guideways is a standard feature and reduces contamination of the operator's environment.

## Basic structure

Designed as a highly stable, rigid structure, the new DNM series offers a wide line-up from 400 to 670 mm in the Y axis, enabling the user to handle a wider range of workpieces.

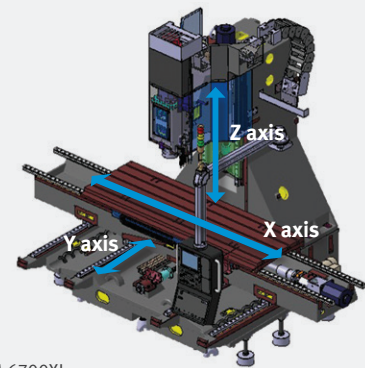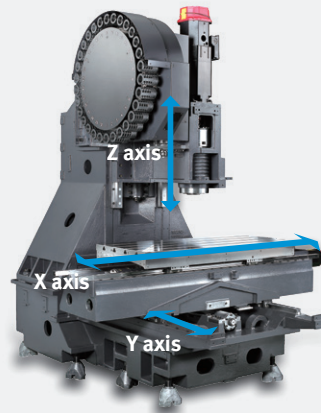### Travel distance (X x Y x Z axis)

**DNM 4500/L**

# 800{910} x 450 x 510 mm

**(31.5{35.8} x 17.7 x 20.1 inch)**

**DNM 5700/L**

# 1050{1300} x 570 x 510 mm

**(41.3{51.2} x 22.4 x 20.1 inch)**

**DNM 6700/L/XL**

# 1300{1500/2100} x 670 x 625 mm

**(51.2{59.1/82.7} x 26.4 x 24.6 inch)**



DNM 6700XL

## Axis system

Environmentally friendly grease lubrication is adopted as standard for all the axis feed system, and roller-type LM Guides are provided to enhance the rigidity.
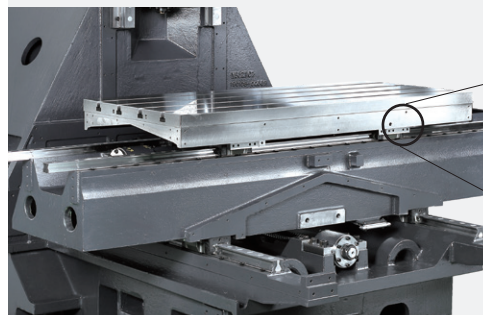
### Rapid traverse rate (X / Y / Z axis)

**DNM 4500 / 5700 / 6700 / 6700L**
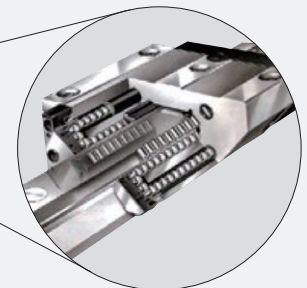
# 36 / 36 / 30 m/min (1417.3 / 1417.3 / 1181.1 ipm)

**DNM 6700XL**

# 30 / 30 / 30 m/min (1181.1 / 1181.1 / 1181.1 ipm)



**Grease lubrication for all axes is a standard feature.**

**Roller-type LM Guides are provided as a standard feature.**

## Table

Increased table size and maximum load capacity are included to offer maximum workpiece capacity even in the same floor space as previous model.

### Wide machining area

**Table size (A x B)**

**DNM 4500/L**

# 1000{1050} x 450 mm
**(39.4{41.3} x 17.7 inch)**

**DNM 5700/L**

# 1300{1500} x 570 mm
**(51.2{59.1} x 21.3 inch)**

**DNM 6700/L/XL**

# 1500{1600/2200} x 670 mm
**(59.1{63.0/86.6} x 26.4 inch)**

**Max weight on Table**

**DNM 4500/4500L**
# 600 kg
**(1322.8 lb)**

**DNM 5700/5700L**
# 1000 kg
**(2204.6 lb)**

**DNM 6700/6700L/6700XL**
# 1300 kg
**(2866.0 lb)**

**Increased maximum load capacity by up to 30% compare to previous model.**

A

B

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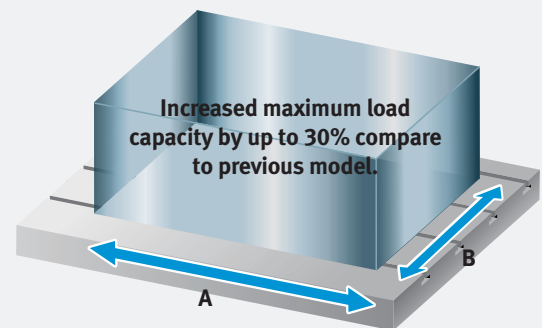
## Spindle

Direct-coupled type spindles have been adopted as a standard feature to further reduce vibration and noise while enhancing productivity, work environment and machining accuracy. High torque and High speed spindle are available to meet material of workpiece.

**Max. spindle speed**

# 8000 r/min
# 12000 r/min `option`
# 15000 r/min `option`

**Max. spindle motor power**

# 18.5 kW (24.8 Hp)

**Max. spindle motor torque**

# 117.8 N·m (86.9 lbf-ft)
**(8000 r/min, 12000 r/min, 15000 r/min)**

# 286 N·m (211.1 lbf-ft) `option`
**(8000 r/min high torque version)**

## Tool change system

Tool change time has been optimized to reduce non cutting time. The highly-reliable tool magazine can accommodate up to 30 tools as standard.

### Automatic tool change arm



| Tool to Tool time | **1.2**s |
| Chip to Chip* time | **3.2**s |

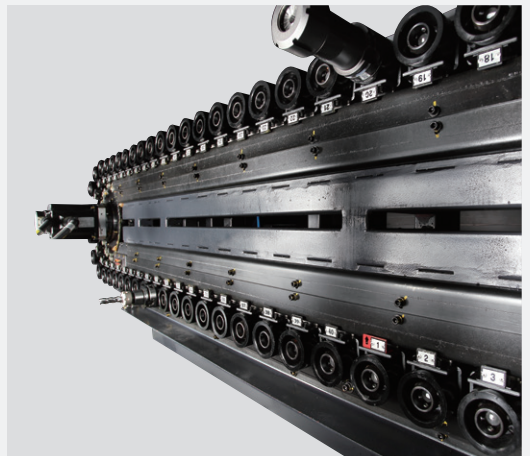\* The Chip-to-Chip time has been tested in accordance with Doosan's strict testing conditions, but may vary depending on the user's operating conditions.

### Magazine

**Tool storage capacity**

**30** ea, **40** ea `option`, **60** ea `option`



\* 30, 40ea

\* 60ea

## Machining performance

The DNM series delivers the best cutting performance in its class to optimize productivity.

### Cutting performance

**Face mill (ø80mm (3.15 inch))** Carbon steel (SM45C)

| Chip removal rate cm³/min (inch³/min) | Spindle speed r/min | Feedrate mm/min (ipm) |
|---|---|---|
| 527 (32.2) | 1500 | 2700 (106.3) |

3.1mm (0.1 inch) 64mm (2.5 inch)

**Face mill (ø80mm (3.15 inch))** Aluminium (AL6061)

| Chip removal rate cm³/min (inch³/min) | Spindle speed r/min | Feedrate mm/min (ipm) |
|---|---|---|
| 1901 (116.0) | 1500 | 5940 (233.9) |

5mm (0.2 inch) 64mm (2.5 inch)

**End mill (ø30mm (i.2 inch))** Carbon steel (SM45C)

| Chip removal rate cm³/min (inch³/min) | Spindle speed r/min | Feedrate mm/min (ipm) |
|---|---|---|
| 48 (2.9) | 222 | 107 (4.2) |

15mm (1.6 inch)

**U-Drill (ø50mm (2.0 inch))** Carbon steel (SM45C)

| Chip removal rate cm³/min (inch³/min) | Spindle speed r/min | Feedrate mm/min (ipm) |
|---|---|---|
| 501 (30.6) | 1500 | 255 (10.0) |

Ø50mm (Ø2.0 inch)

**Tap** Carbon steel (SM45C)

| Tap size mm | Spindle speed r/min | Feedrate mm/min (ipm) |
|---|---|---|
| M 36 x P 4.0 | 221 | 884 (34.8) |

*The results, indicated in this catalogue are provides as example. They may not be obtained due to differences in cutting conditions and environmental conditions during measurement.

### High Productivity

**Sample work**

| Material | Aluminium (AL6061) |
|---|---|
| Material size | 561 x 210 x 30 mm (22.1 x 8.3 x 1.2 inch) |
| Using tools | 18 ea |

| | Non-cutting time | Cutting time | Run hours |
|---|---|---|---|
| Previous model | 14min. 31sec. | 37min. 20sec. | 51min. 51sec. |
| | Reduced by 17% | | Reduced by 5% |
| New DNM series | 12min. 6sec. | 37min. 20sec. | 49min. 26sec. |

*The results, indicated in this catalogue are provides as example. They may not be obtained due to differences in cutting conditions and environmental conditions during measurement.

Product Overview

Basic Information

Basic Structure
Cutting
Performance

**Detailed Information**

Options
Applications
Diagrams
Specifications

Customer Support Service

## Standard / Optional Specifications

Various optional features are available to satisfy customers' specific machining applications.

● Standard  ○ Optional  X N/A

| NO. | Description | Features | | DNM 4500/L | DNM 5700/L | DNM 6700/6700L/XL |
|---|---|---|---|---|---|---|
| 1 | Spindle | 8000 r/min (Unit: kW(Hp), N·m(lbf-ft)) | 18.5/11(24.8/14.8), 117.8(86.9)_FANUC | ● | ● | X |
| 2 | | | 18.5/15 (24.8/20.1), 117.8(86.9)_FANUC | X | X | ● |
| 3 | | | 15/11 (20.1/14.8), 286(211.1)_FANUC | ○ | ○ | ○ |
| 4 | | 12000 r/min (Unit: kW(Hp), N·m(lbf-ft)) | 18.5/11(24.8/14.8), 117.8(86.9)_FANUC | ○ | ○ | ○ |
| 5 | | | 17/10 (22.8/13.4), 108.6(80.1)_HEIDENHAIN | ○ | ○ | X |
| 6 | | | 32/15 (42.9/20.1), 203.7(150.3)_HEIDENHAIN | X | X | ○ |
| 7 | | | 16.5/11 (22.1/14.8), 141(104.1)_SIEMENS | ○ | ○ | X |
| 8 | | | 21.8/16.3 (29.2/21.9),150.1(110.8)_SIEMENS | X | X | ○ |
| 9 | | 15000 r/min (Unit: kW(Hp), N·m(lbf-ft)) | 18.5/11(24.8/14.8), 117.8(86.9)_FANUC | ○ | ○ | ○ |
| 10 | | | 17/10 (22.8/13.4), 108.2 (79.9)_HEIDENHAIN | ○ | ○ | ○ |
| 11 | | | 16.5/11 (22.1/14.8), 141.3 (104.3)_SIEMENS | ○ | ○ | ○ |
| 12 | Magazine | Tool storage capacity | 30 ea | ● | ● | ● |
| 13 | | | 40 ea | ○ | ○ | ○ |
| 14 | | | 60 ea | ○ | ○ | ○ |
| 15 | Tool shank type | BIG PLUS BT40 | | ● | ● | ● |
| 16 | | BIG PLUS CAT40 | | ○ | ○ | ○ |
| 17 | | BIG PLUS DIN40 | | ○ | ○ | ○ |
| 18 | Raised column | 150 mm (5.9 inch) | | ○ | ○ | ○ |
| 19 | | 200 mm (7.9 inch) | | ○ | ○ | ○ |
| 20 | | 300 mm (11.8 inch) | | ○ | ○ | ○ |
| 21 | Coolant | FLOOD | 0.19 MPa(27.6 psi), 0.4 kW(0.5 Hp) | ● | ● | ● |
| 22 | | | 0.69 MPa(100.1 psi), 1.8 kW(2.4 Hp) | ○ | ○ | ○ |
| 23 | | TSC** | None | ● | ● | ● |
| 24 | | | 2 MPa(290.1 psi), 1.5kW(2.0 Hp) | ○ | ○ | ○ |
| 25 | | | 2 MPa(290.1 psi), 4 kW(5.4 Hp) | ○ | ○ | ○ |
| 26 | | | 7 MPa(1015.3 psi), 5.5 kW(7.4 Hp) | ○ | ○ | ○ |
| 27 | | FLUSHING | | ○ | ○ | ○ |
| 28 | | SHOWER (200 L/min (52.8 gal/min)) | | ○ | ○ | ○ |
| 29 | Chip disposal | Chip conveyor | Chip pan | ● | ● | ● |
| 30 | | | Hinged type (Left/Right/Rear) | ○ | ○ | ○ |
| 31 | | | Magnetic scraper type (Left/Right/Rear) | ○ | ○ | ○ |
| 32 | | | Screw(AUGER) type (Left/Right) | ○ | ○ | ○ |
| 33 | | Chip bucket | | ○ | ○ | ○ |
| 34 | Precision machining option | Linear scale | X / Y / Z axis | ○ | ○ | ○ |
| 35 | | AICC II (200 block) | | ● | ● | ● |
| 36 | | SSP (Smooth Surface Package) | | ○ | ○ | ○ |
| 37 | Measurement & Automation | Automatic tool measurement | TS27R_RENISHAW | ○ | ○ | ○ |
| 38 | | | OTS_RENISHAW | ○ | ○ | ○ |
| 39 | | Automatic tool breakage detection | | ○ | ○ | ○ |
| 40 | | Automatic workpiece measurement | OMP60_RENISHAW | ○ | ○ | ○ |
| 41 | | Automatic front door with safety device | | ○ | ○ | ○ |
| 42 | Accessories | WORK LIGHT | LED LAMP | ● | ● | ● |
| 43 | | OPERATOR CALL LAMP | 3-COLOR SIGNAL TOWER(LED) | ● | ● | ● |
| 44 | | LEVELING BLOCK & BOLT | - | ● | ● | ● |
| 45 | | SMART THERMAL CONTROL | SENSORLESS TYPE(ONLY SPINDLE) | ● | ● | ● |
| 46 | | ASSEMBLY & OPERATION TOOLS KIT | - | ● | ● | ● |
| 47 | | 4TH AXIS PREPARATION CABLING FOR SERVO/1-PNEUMATIC PIPING | FACTORY READY MADE | ○ | ○ | ○ |
| 48 | | AIR GUN | | ○ | ○ | ○ |
| 49 | | Air blower | | ○ | ○ | ○ |
| 50 | | Coolant gun | | ○ | ○ | ○ |
| 51 | | Mist collector | | ○ | ○ | ○ |
| 52 | Customized Special Option | ANCHORING | SLIDE CLAMP & CHEMINCAL ANCHOR BOLT | ○ | ○ | ○ |
| 53 | | TSA | 0.54 | ○ | ○ | ○ |
| 54 | | TOOL TYPE | HSK63A | ○ | ○ | ○ |
| 55 | | ATC AUTO SHUTTER | 30TOOL / 40TOOL | ○ | ○ | ○ |
| 56 | | ATC FULL COVER | 30TOOL / 40TOOL | ○ | ○ | ○ |
| 57 | | Drum chipconveyor | HINGE TYPE | ○ | ○ | ○ |
| 58 | | | SCRAPER TYPE | ○ | ○ | ○ |
| 59 | | Oil lubrication | X, Y, Z AXIS | ○ | ○ | ○ |
| 60 | | 20 Bar TSC with inverter | 50Hz → 60Hz | ○ | ○ | ○ |
| 61 | | FINE DUST PROTECTING PACKAGE — WET MACHINING | BELLOWS COVER(X/Y/Z) | ○ | ○ | ○ |
| 62 | | | PROTECT COVER(X-AXIS) | ○ | ○ | ○ |
| 63 | | | BALL SCREW BELLOWS COVER(X/Y) | ○ | ○ | ○ |
| 64 | | | GUIDE WAY DOUBLE WIPER | ○ | ○ | ○ |
| 65 | | FINE DUST PROTECTING PACKAGE — DRY MACHINING | PROTECT COVER(X-AXIS) | ○ | ○ | ○ |
| 66 | | | BALL SCREW BELLOWS COVER(X/Y) | ○ | ○ | ○ |
| 67 | | | GUIDE WAY DOUBLE WIPER | ○ | ○ | ○ |
| 68 | | | AIR OIL SUCTION(ONLY 15k SPINDLE) | ○ | ○ | ○ |
| 69 | | | ATC FULL CLOSED COVER | ○ | ○ | ○ |
| 70 | | AUTO TOOL LENGTH MEASUREMEMT | RENISHAW / LTS | ○ | ○ | ○ |
| 71 | | AUTO TOOL BREAKAGE DETECTION | MSC/BK9(NEEDLE TYPE ON MAGAZINE) | ○ | ○ | ○ |

＊ Please contact Doosan to select detail specifications.
＊＊ If this option is selescted, the TSA(Through Spindle Air) function available. TSA Max.pressure is 0.54MP
(1) Please refer to foundation drawing in relation to anchoring.
If more detail information want, consult with doosan service
(2) In case of TSC is not required and only TSA is needed, this option can be selected.

## Peripheral equipments

### Grease lubrication system

The standard grease lubrication system eliminates the need for an oil skimmer and reduces lubrication costs by about 60% compared to oil lubrication.
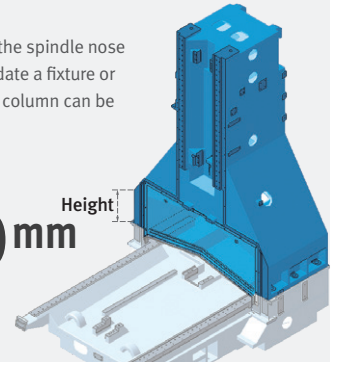
**Yearly maintenance cost**
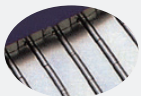
Max. **60%**

### Raised column  option 18~20

When the distance between the table top and the spindle nose needs to be extended, for example, accommodate a fixture or rotary axis on the table, solid one-piece raised column can be used to extend the distance.

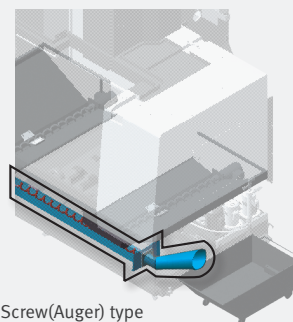**Height**

**150/200/300mm**

**(5.9/7.9/11.8 inch)**

Height

### Chip conveyor  option 29~32

Hinged belt

Magnetic scraper

Screw(Auger) type

| Chip conveyor type | Material | Description |
|---|---|---|
| Hinged belt | Steel | Hinged belt chip conveyor, which is most commonly used for steel work [for cleaning chips longer than 30mm(1.2inch)], is available as an option. |
| Magnetic scraper | Cast Iron | Magnetic scraper type chip conveyor, which is ideal for die-casting work [for cleaning small chips], is available as an option. |
| Screw(Auger) type | Steel | Screw(Auger) type chip conveyor is suitable for minimizing installation space. About 85% floor space is required to install Screw(Auger) type chip conveyor compare to Hinged belt type. |

### Chip bucket  option 33

**Capacity**

**300 L (79.3 gal)**

### Hydraulic / Pneumatic fixture line  option

The user should prepare pipelines for hydraulic/pneumatic fixtures whose detailed specifications should be determined by discussion with Doosan.

**Pneumatic**

**Hydraulic**

### Auto shutter  option 50

To prevent chips from getting inside the magazine port during aluminum workpiece cutting with a dual contact tool, an auto shutter is provided.
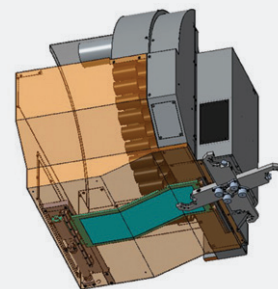
### AWC system  option

The optimized solution to realize compact automation system through automatic work-piece change system.

| Max. workpiece dimensions | Unit | Count | Max. loading | Max. construction height on the pallet |
|---|---|---|---|---|
| 250 x 250 (9.8x9.8) or ø 300 (11.8) | mm (inch) | 12 | 130kg (286.6lb) | |
| 320 x 320 (12.6x12.6) or ø 360 (14.2) | mm (inch) | 10 | | |
| 350 x 350 (13.8x13.8) or ø 400 (15.7) | mm (inch) | 8 | 250kg (551.1lb) | 350mm (13.8inch) |
| 400 x 400 (15.7x15.7) or ø 450 (17.7) | mm (inch) | 6 | | |
| 500 x 500 (19.7x19.7) or ø 550 (21.7) | mm (inch) | 4 | | |

**Pallet Storage-Table Configuration**

Unit : mm (inch)
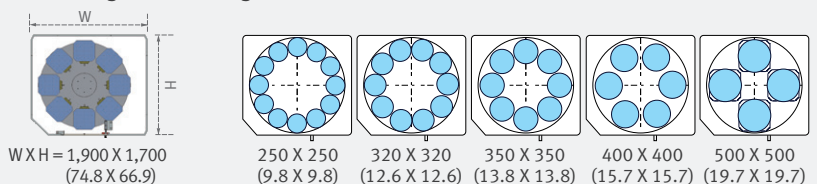
W

W X H = 1,900 X 1,700
(74.8 X 66.9)

250 X 250
(9.8 X 9.8)

320 X 320
(12.6 X 12.6)

350 X 350
(13.8 X 13.8)

400 X 400
(15.7 X 15.7)

500 X 500
(19.7 X 19.7)

## DOOSAN Fanuc i Plus

DOOSAN Fanuc i Plus is optimized for maximizing customer productivity and convenience.

### 15 inch screen + New OP

DOOSAN Fanuc i Plus' operation panel enhances operating convenience by incorporating common-design buttons and layout, and features the Qwerty keyboard for fast and easy operation.

**DOOSAN Fanuc i Plus**
- 15 inch color display
  Intuitive and user-friendly design

**USB & PCMCIA card QWERTY keyboard**
- EZ-guide i standard
- Ergonimic operator panel
- 2MB Memory
- Hot key

### iHMI Touch screen  *option*

iHMI provides an intuitive interface that utilizes a touch screen for quick and easy operation and provides a variety of applications that can help machine operation.
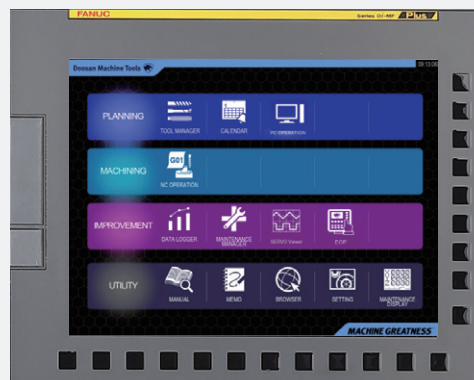
- **PLANNING**

  Tool information such as tool offset and tool life can be checked and set, and scheduler function is provided.

- **MACHINING**

  MDI, EDIT, MEM, JOG screen can be changed by using touch function, and it is quick and easy to move to sub menu by using soft key.

- **IMPROVEMENT**

  User can set up to record data for analysis and monitor the specific signals by setting up the maintenance and inspection function. Also user can add items.

- **UTILITY**

  View and search PDF and TEXT files, create notes from text / images / drawings, and link to web pages.
  For users who are familiar with the DDOOSAN Fanuc i Plus screen, the screen can be switched.

## Easy Operation Package

The software developed by Doosan's own technology provides numerous functions designed for convenient operation.
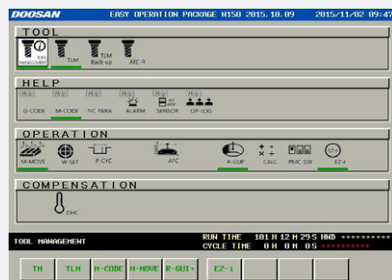
### EOP Main screen

On the operation panel, press the CUSTOM1 button to make the initial EOP screen show up.

### Tool management

This function controls information on the tools in the tool magazine pots.

### ATC recovery

In the event of an error during ATC (automatic tool changer) operation, follow the on-screen instructions for an easy and prompt solution.
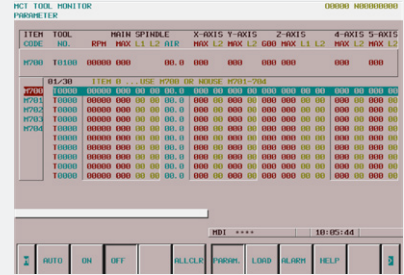
### Tool load monitoring

During cutting operation, abnormal load caused by wear and tear of the tool is detected and an alarm is triggered to prevent further damage.

### Adaptive Feed Control(AFC)

If tool overload is detected during operation, the feed rate is controlled to prevent the tool from being damaged.
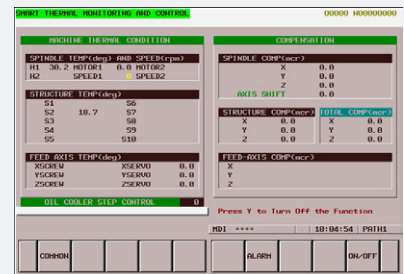
### Thermal compensation function

A thermal error compensation function is provided as a standard feature to secure stable cutting safe from potentially harmful environmental factors.

### Pop-up function

Various EOP functions can be monitored through the pop-up window on the NC main screen. (Press the CUSTOM2 button)

1 Display machining program
2 Tool Load Monitoring
3 Tool management data
4 M code list
5 G code list
6 Tool & Workpiece count

**Product Overview**

**Basic Information**

Basic Structure
Cutting
Performance

**Detailed
Information**

Options
Applications
Diagrams
Specifications

**Customer Support
Service**

**SIEMENS 828D**

SIEMENS CNC optimized for DOOSAN machine tools maximizes users' productivity.

## 15.6 inch screen + New OP

The newly-designed operation panel enhances operating convenience by incorporating common-design buttons and layout, and features the Qwerty keyboard for fast and easy operation.
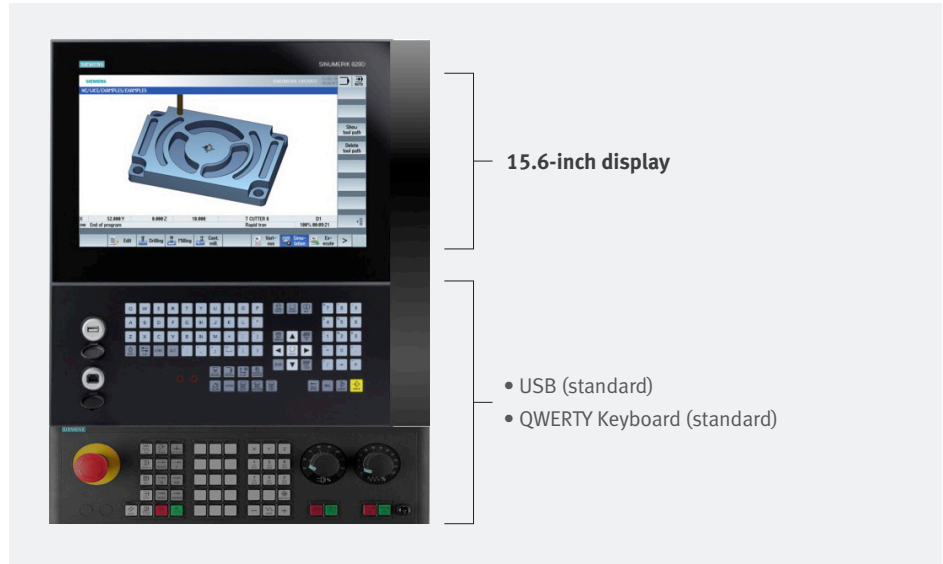
**15.6-inch display**

- USB (standard)
- QWERTY Keyboard (standard)

## Conversational Convenient function

The machining monitoring function developed on the basis of the Shop Mill – an interactive machining support function of SIEMENS – provides users with cutting, servicing and maintenance screens for easy and convenient machine operation.

**Smart function**
Color highlighting is provided for each processing code function, and the calculator can be used easily by using the pocket calculator on display.

**Shop Mill Part Programming**
It helps to write the part program and shorten the writing time.

**Advanced program language programGUIDE**
Increases program flexibility, minimizing cycle time.

**Simulation and machining contour monitoring**
Simulation results with different views can be checked.

**Side screen widget**
Through the side widget, operator can easily monitor the current machining status.

# Spindle Power – Torque Diagram (FANUC)

## DNM 4500/L, DNM5700/L

**8000 r/min**

Max. spindle power: 18.5 kW (24.8 Hp)
Max. spindle torque: 117.8 N·m (86.9 lbf-ft)



**8000 r/min High Torque** option

Max. spindle power: 15 kW (20.1 Hp)
Max. spindle torque: 286 N·m (211.1 lbf-ft)



## DNM 6700/L/XL

**8000 r/min**

Max. spindle power: 18.5 kW (24.8 Hp)
Max. spindle torque: 117.8 N·m (86.9 lbf-ft)



**8000 r/min High Torque** option

Max. spindle power: 15 kW (20.1 Hp)
Max. spindle torque: 286 N·m (211.1 lbf-ft)



## DNM 4500/L, 5700/L, 6700/L/XL

**12000 r/min** option

Max. spindle power: 18.5 kW (24.8 Hp)
Max. spindle torque: 117.8 N·m (86.9 lbf-ft)



**15000 r/min** option

Max. spindle power: 18.5 kW (24.8 Hp)
Max. spindle torque: 117.8 N·m (86.9 lbf-ft)

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## Spindle Power – Torque Diagram (SIEMENS)

### DNM 4500/L, 5700/L

**12000 r/min**

Max. spindle power: 16.5 kW (22.1 Hp)
Max. spindle torque: 141.3 N·m (104.3 lbf-ft)
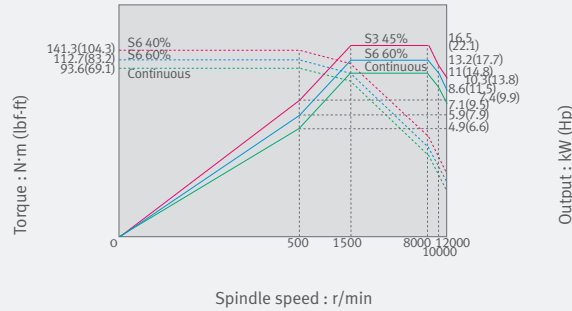


### DNM 6700L/XL

**12000 r/min**

Max. spindle power: 21.8 kW (29.2 Hp)
Max. spindle torque: 150.1 N·m(110.8 lbf-ft)
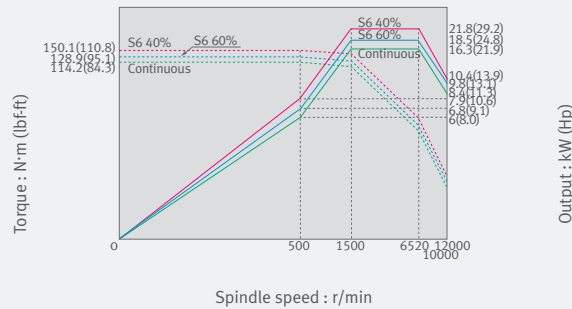


### DNM 4500/L, 5700/L, 6700/L/XL

**15000 r/min** *option*

Max. spindle power: 16.5 kW (22.1 Hp)
Max. spindle torque: 141.3 N·m (104.3 lbf-ft)
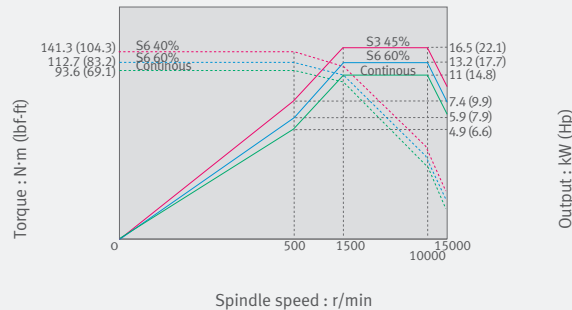


## (HEIDENHAIN)

### DNM 4500/L, 5700/L

**12000 r/min**

Max. spindle power: 17 kW (22.8 Hp)
Max. spindle torque: 108.2 N·m (79.9 lbf-ft)
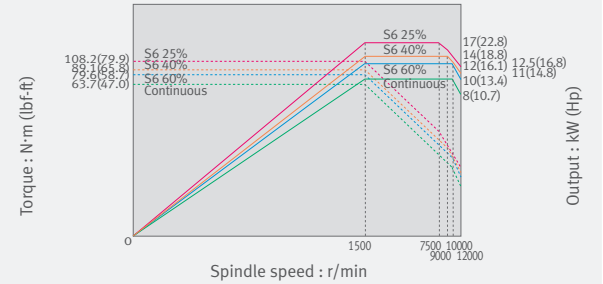


### DNM 6700L/XL

**12000 r/min**

Max. spindle power: 32 kW (42.9 Hp)
Max. spindle torque: 203.7 N·m (150.2 lbf-ft)
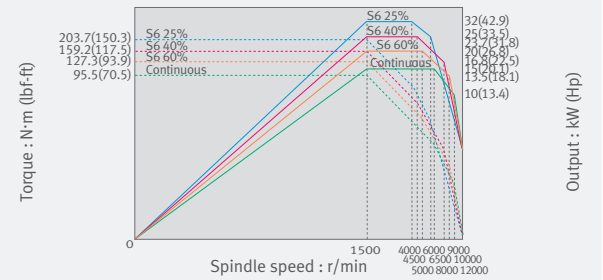


**15000 r/min** *option*

Max. spindle power: 17 kW (22.8 Hp)
Max. spindle torque: 108.2 N·m (79.9 lbf-ft)
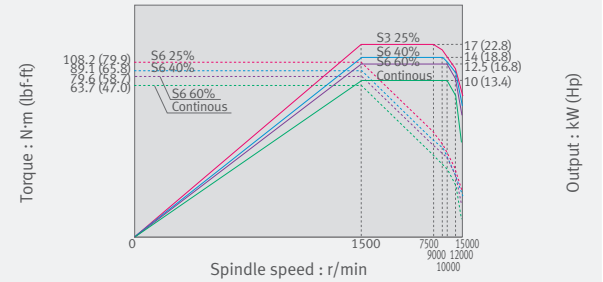


## (MITSUBISHI)

### DNM 4500/L, 5700/L, 6700/L/XL

**12000 r/min**

Max. spindle power: 18.5 kW (24.8 Hp)
Max. spindle torque: 117.8 N·m (86.9 lbf-ft)
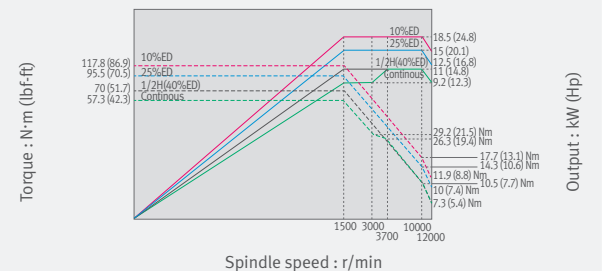
## External Dimensions

### DNM 4500/5700/6700 series

Top View

Front View
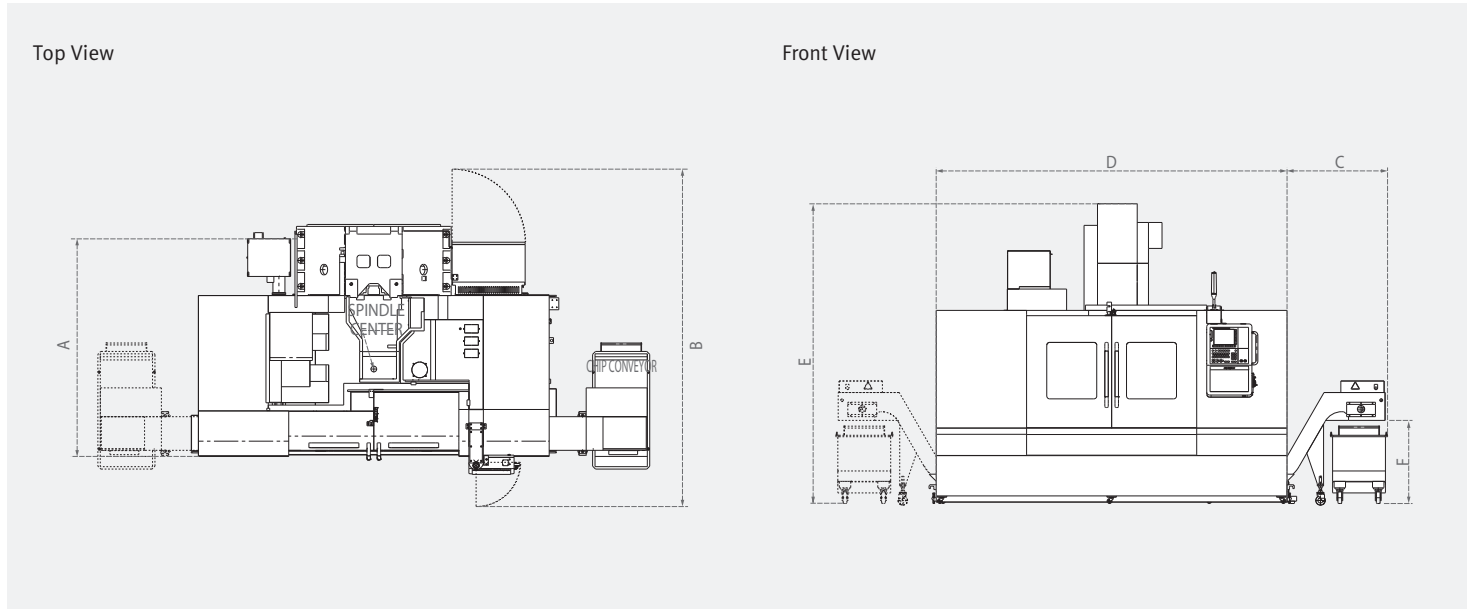
| Model | A (Length) | B[1] | C[2] | D (Width) | E (Height) | F | | |
|---|---|---|---|---|---|---|---|---|
| | | | | | | SCRAPER | HINGED | SCREW |
| DNM 4500 | 1970 (77.6) | 3200 (126.0) | 1040 (415) [40.9(16.3)] | 2465 (97.0) | 2985 (117.5) | 883 (34.8) | 865 (34.1) | 440 (17.3) |
| DNM 4500L | 1970 (77.6) | 3200 (126.0) | 1040 (415) [40.9(16.3)] | 2550(100.4) | 2985 (117.5) | 883 (34.8) | 865 (34.1) | 440 (17.3) |
| DNM 5700 | 2225 (87.6) | 3365 (132.5) | 1040 (415) [40.9(16.3)] | 2960 (116.5) | 2985 (117.5) | 883 (34.8) | 865 (34.1) | 440 (17.3) |
| DNM 5700L | 2225 (87.6) | 3365 (132.5) | 1040 (415) [40.9(16.3)] | 3200 (126.0) | 2985 (117.5) | 883 (34.8) | 865 (34.1) | 440 (17.3) |
| DNM 6700 | 2415 (95.1) | 3510 (138.2) | 1040 (415) [40.9(16.3)] | 3200 (126.0) | 3120 (122.8) | 883 (34.8) | 865 (34.1) | 440 (17.3) |
| DNM 6700L | 2415 (95.1) | 3510 (138.2) | 1040 (415) [40.9(16.3)] | 3650 (143.7) | 3120 (122.8) | 883 (34.8) | 865 (34.1) | 440 (17.3) |

### DNM 6700XL

Top View

Front View
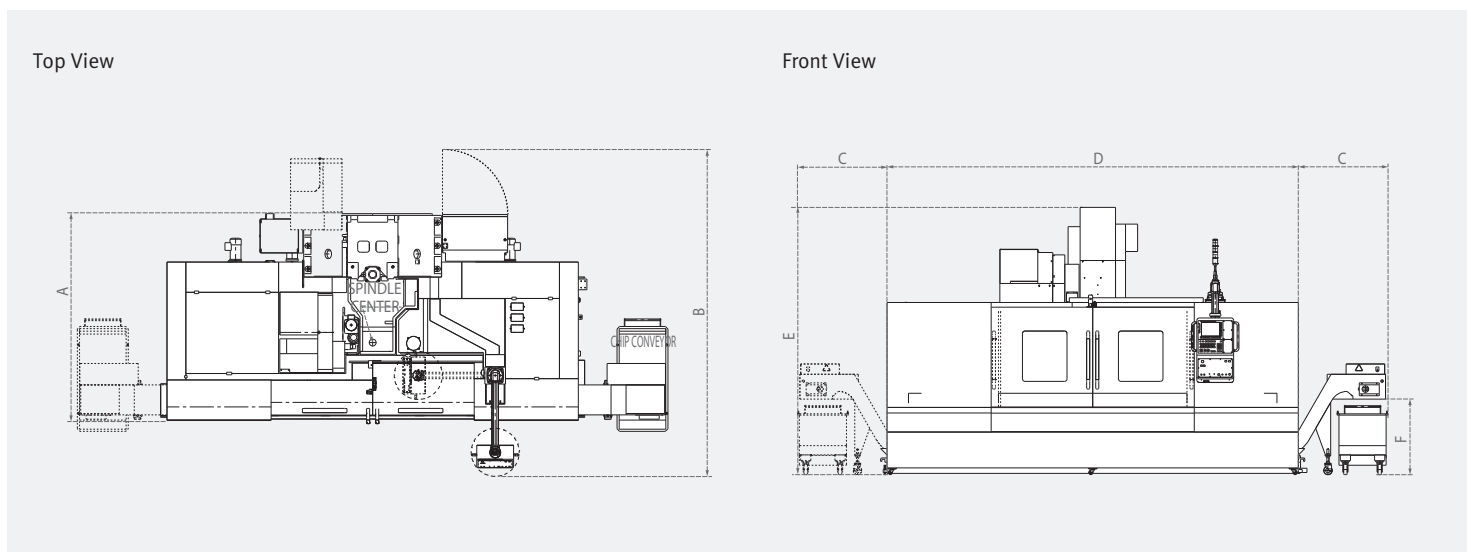
| Model | A (Length) | B[1] | C[2] | D (Width) | E (Height) | F | | |
|---|---|---|---|---|---|---|---|---|
| | | | | | | SCRAPER | HINGED | SCREW |
| DNM 6700XL | 2415 (95.1) | 3820 (150.4) | 1045 (41.1) | 4800 (189.0) | 3120 (122.8) | 883 (34.8) | 865 (34.1) | 440 (17.3) |

[1] Max. machine length (including electric cabinet door and operation panel swiveling)

[2] Additional width to accommodate the side chip conveyor. [ ] indicates the additional width required to accommodate a screw(auger)type chip conveyor.

* Some peripheral equipment can be placed in other places   *Rear chipconveyor need discuss with sales person

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### DNM 4500/L

Unit: mm (inch)
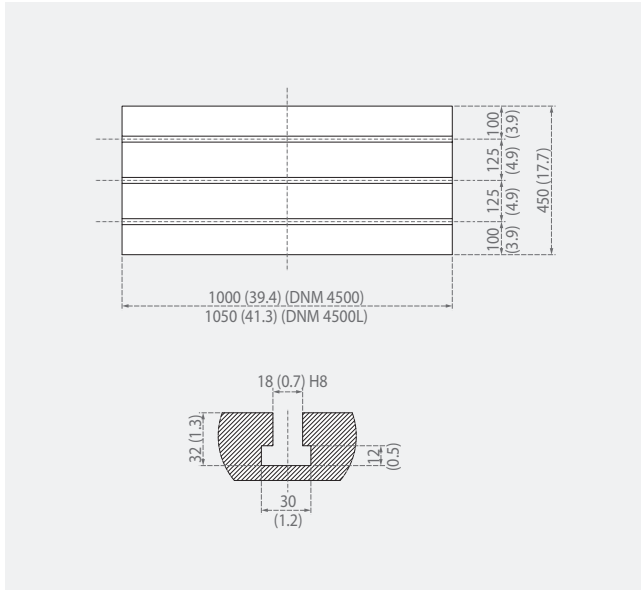


100 (3.9)
125 (4.9)
100 (3.9)
450 (17.7)
100 (3.9)
125 (4.9)
125 (4.9)

1000 (39.4) (DNM 4500)
1050 (41.3) (DNM 4500L)

18 (0.7) H8
32 (1.3)
12 (0.5)
30 (1.2)

### DNM 5700/L

Unit: mm (inch)



97.5 (3.8)
125 (4.9)
125 (4.9)
97.5 (3.8)
570 (22.4)
125 (4.9)
125 (4.9)

1300 (51.2) (DNM 5700)
1500 (59.1) (DNM 5700L)

18 (0.7) H8
32 (1.3)
12 (0.5)
30 (1.2)

### DNM 6700

Unit: mm (inch)



85 (3.3)
125 (4.9)
125 (4.9)
125 (4.9)
125 (4.9)
85 (3.3)
670 (26.4)

1500 (59.1)

18 (0.7) H8
32 (1.3)
12 (0.5)
30 (1.2)

### DNM 6700L

Unit: mm (inch)



85 (3.3)
125 (4.9)
125 (4.9)
670 (26.4)
125 (4.9)
125 (4.9)
85 (3.3)
65 (2.6)

1600 (63.0)

18 (0.7) $^{+0.027}_{0}$ (H8)
12 (0.5)
32 (1.3)

### DNM 6700XL

Unit: mm (inch)



85 (3.3)
125 (4.9)
125 (4.9)
670 (26.4)
125 (4.9)
125 (4.9)
85 (3.3)
65 (2.6)

2200 (86.6)

18 (0.7) H8
32 (1.3)
12 (0.5)
30 (1.2)
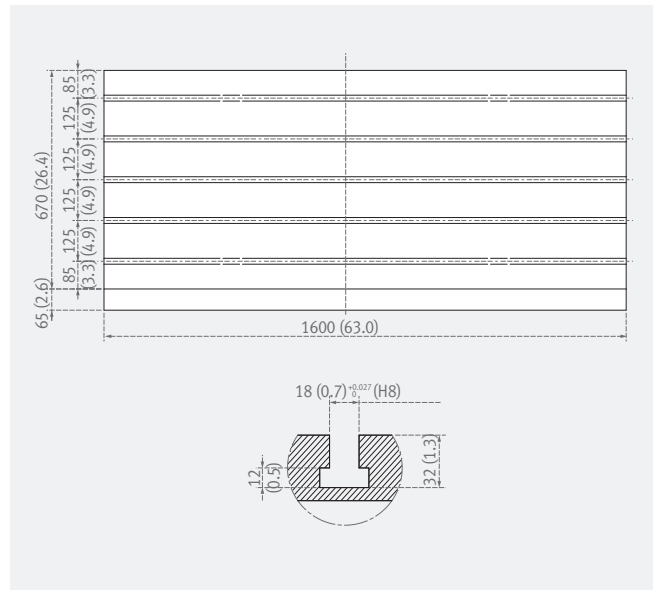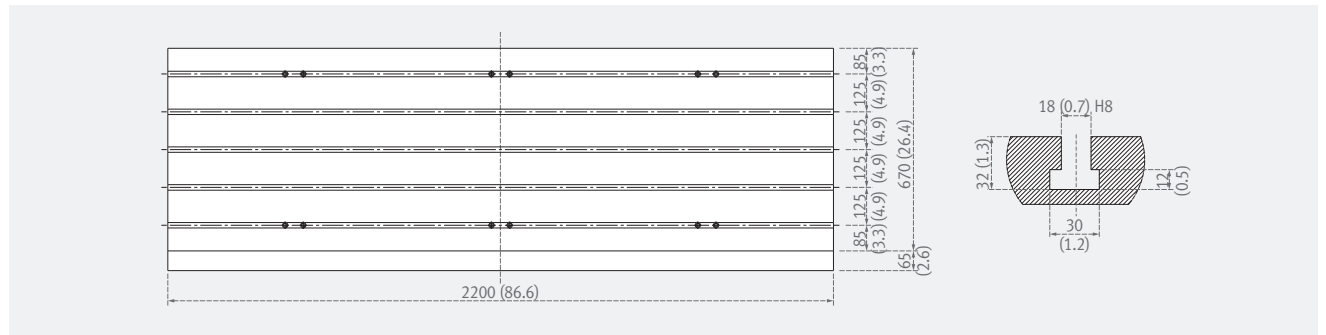
## Machine Specifications

**DNM** series



| Description | | | Unit | DNM 4500 | DNM 4500L | DNM 5700 | DNM 5700L | DNM 6700 | DNM 6700L | DNM 6700XL |
|---|---|---|---|---|---|---|---|---|---|---|
| **Travels** | Travel distance | X axis | mm (inch) | 800 (31.5) | 910 (35.8) | 1050 (41.3) | 1300 (51.2) | 1300 (51.2) | 1500 (59.1) | 2100 (82.7) |
| | | Y axis | mm (inch) | 450 (17.7) | | 570 (22.4) | | 670 (26.4) | | |
| | | Z axis | mm (inch) | 510 (20.1) | | | | 625 (24.6) | | |
| | Distance from spindle nose to table top | | mm (inch) | 150~660 (5.9~26.0) | | | | 150~775 (5.9~30.5) | | |
| **Table** | Table size | | mm (inch) | 1000 x 450 (39.4 x 17.7) | 1050 x 450 (41.3 x 17.7) | 1300 x 570 (51.2 x 22.4) | 1500 x 570 (59.1 x 22.4) | 1500 x 670 (59.1 x 26.4) | 1600 x 670 (63.0 x 26.4) | 2200 x 670 (86.6 x 26.4) |
| | Table loading capacity | | kg (lb) | 600 (1322.8) | | 1000 (2204.6) | | 1300 (2866.0) | | |
| | Table surface type | | mm (inch) | T-SLOT (3-125(4.9) x 18(0.7)H8) | | T-SLOT (4-125(4.9) x 18(0.7)H8) | | T-SLOT (5-125(4.9) x 18(0.7)H8) | | |
| **Spindle** | Taper | | - | ISO #40 | | | | | | |
| | Max. spindle speed | Fanuc | r/min | 8000 {8000*, 12000, 15000} | | | | | | |
| | | Siemens | r/min | 12000 {15000} | | | | | | |
| | | Heidenhain | r/min | 12000 {15000} | | | | | | |
| | | Mitsubishi | r/min | 12000 {15000} | | | | | | |
| | Max. Spindle power | Fanuc | kW (Hp) | 18.5/11 (24.8/14.8) {15/11 (20.1/14.8)*, 18.5/11 (24.8/14.8), 18.5/11 (24.8/14.8)} | | | | 18.5/15 (24.8/20.1) {15/11 (20.1/14.8)*, 18.5/11 (24.8/14.8), 18.5/11 (24.8/14.8)} | | |
| | | Siemens | kW (Hp) | 16.5/11 (22.1/14.8) {16.5/11 (22.1/14.8)} | | | | 21.8/16.3 (29.2/21.9) {16.5/11 (22.1/14.8)} | | |
| | | Heidenhain | kW (Hp) | 17/10 (22.8/13.4) {17/10 (22.8/13.4)} | | | | 32/15 (42.9/20.1) {17/10 (22.8/13.4)} | | |
| | | Mitsubishi | kW (Hp) | 18.5/11 (24.8/14.8) | | | | | | |
| | Max. spindle torque | Fanuc | N·m (lbf-ft) | 117.8 (86.9) {286 (211.1)*, 117.8 (86.9), 117.8 (86.9)} | | | | | | |
| | | Siemens | N·m (lbf-ft) | 141.3 (104.3) {141.3 (104.3)} | | | | 150.1 (110.7) {141.3 (104.3)} | | |
| | | Heidenhain | N·m (lbf-ft) | 108.2 (79.9) {108.2 (79.9)} | | | | 203.7 (150.2) {108.2 (79.9)} | | |
| | | Mitsubishi | N·m (lbf-ft) | 117.8 (86.9) | | | | | | |
| **Feedrates** | Rapid traverse rate | X axis | m/min (ipm) | 36 (1417.3) | | | | | | 30 (1181.1) |
| | | Y axis | m/min (ipm) | 36 (1417.3) | | | | | | 30 (1181.1) |
| | | Z axis | m/min (ipm) | 30 (1181.1) | | | | | | |
| **Automatic Tool Changer** | Type of tool shank | Tool shank | - | BT 40 {CAT 40 / DIN 40} | | | | | | |
| | | Pull stud | - | PS806 {Modified DIN / DIN 69872 #40} | | | | | | |
| | Tool storage capa. | | ea | 30 {40, 60} | | | | | | |
| | Max. tool diameter | Continous | mm (inch) | 80 (3.1) {76 (3.0)} | | | | | | |
| | | Without Adjacent Tools | mm (inch) | 125 (4.9) | | | | | | |
| | Max. tool length | | mm (inch) | 300 (11.8) | | | | | | |
| | Max. tool weight | | kg (lb) | 8 (17.6) | | | | | | |
| | Max. tool moment | | N·m (ft-lbs) | 5.88 (4.3) | | | | | | |
| | Tool selection | | | MEMORY RANDOM | | | | | | |
| | Tool change time (Tool-to-tool) | | sec | 1.2 | | | | | | |
| | Tool change time (Chip-to-chip) | | sec | 3.2 | | | | 3.5 | | |
| **Power source** | Electric power supply (rated capacity) | | kVA | 29.5 | | | | 38.1 {33.0**} | 40 {35}* | |
| | Compressed air supply | | MPa (psi) | 0.54 (78.3) | | | | | | |
| **Tank capacity** | Coolant tank capacity | | L (gal) | 260 (68.7) | 285 (75.3) | 310 (81.9) | 350 (92.5) | 325 (85.9) | 430 (113.6) | 440 (116.2) |
| **Machine Dimensions** | Height | | mm (inch) | 2985 (117.5) | | | | 3120 (122.8) | | |
| | Length | | mm (inch) | 2158 (85.0) | | 2413 (95.0) | | 2597 (102.2) | | 2970 (116.9) |
| | Width | | mm (inch) | 2615 (103.0) | 2701 (106.3) | 3110 (122.4) | 3350 (131.9) | 3350 (131.9) | 3650 (143.7) | 4800 (189.0) |
| | Weight | | kg (lb) | 5000 (11023.0) | 5500 (12125.2) | 6500 (14329.8) | 7000 (15432.1) | 8500 (18739.0) | 9000 (19841.3) | 10000 (22045.9) |
| **Control** | NC system | | - | DOOSAN Fanuc i Plus / SIEMENS S828D / HEIDENHAIN TNC620 / MITSUBISHI M80A | | | | | | |

* { } : Optional　* 8000 r/min High torque version(FANUC only)　** Power capacity of 8000 r/min high torque and 12000 r/min spindle

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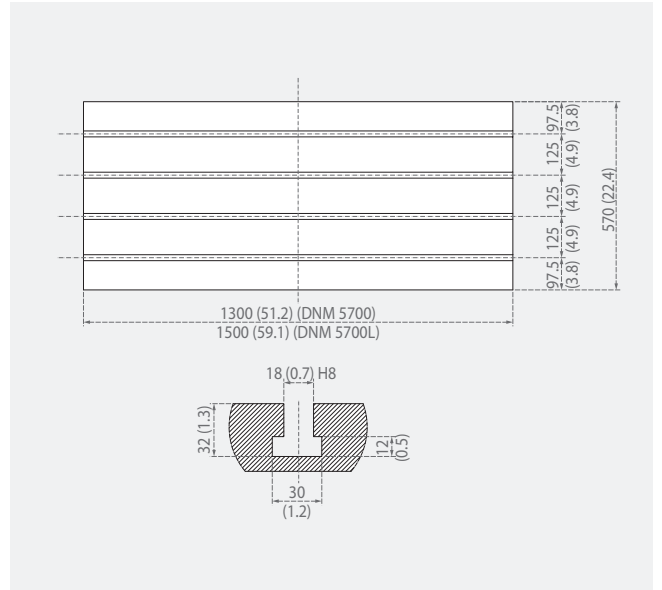## NC Unit Specifications

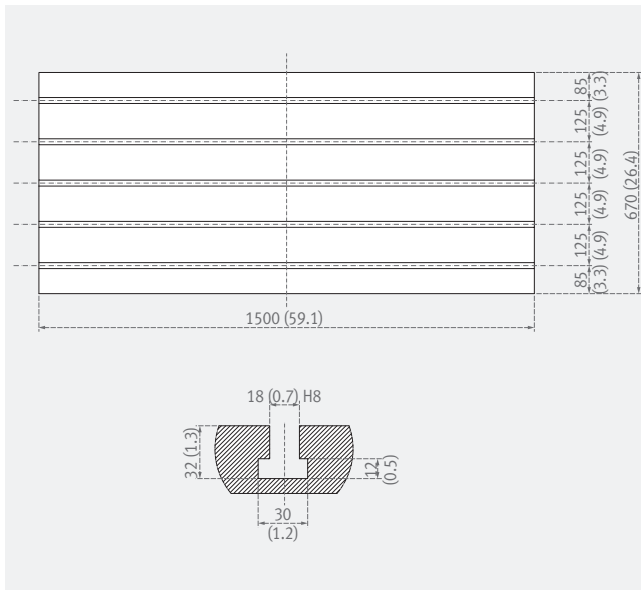● Standard  ○ Optional  X N/A

**FANUC**

| No. | Item | | Spec. | DOOSAN Fanuc i Plus |
|---|---|---|---|---|
| 1 | Controlled axis | Controlled axes | 3 ( X,Y,Z ) | X, Y, Z |
| 2 | | Additional controlled axes | 5 axes in total | ○ |
| 3 | | Least command increment | 0.001 mm / 0.0001" | ● |
| 4 | | Least input increment | 0.001 mm / 0.0001" | ● |
| 5 | | Interpolation type pitch error compensation | | ● |
| 6 | Interpolation & Feed Function | 2nd reference point return | G30 | ● |
| 7 | | 3rd / 4th reference return | | ● |
| 8 | | Inverse time feed | | ● |
| 9 | | Cylinderical interpolation | G07.1 | ● |
| 10 | | Bell-type acceleration/deceleration before look ahead interpolation | | ● |
| 11 | | Automatic corner override | G62 | ● |
| 12 | | Automatic corner deceleration | | ● |
| 13 | | Manual handle feed | Max. 3unit | 1 unit |
| 14 | | Handle interruption | | ○ |
| 15 | | Manual handle retrace | | ○ |
| 16 | | AICC II | 200 BLOCK | ● |
| 17 | | | 400 BLOCK | ○ *1) |
| 18 | | SSP Package | [Standard]<br>- Fine surface maching<br>- Bell type acc./dec. before look ahead interpolation<br>- Smooth backlash compensation<br>- Automatic corner deceleration<br>- Function for selecting machining status (10 level)<br>[Option]<br>- Accuracy, Productivity optimizing tuning for SSP of each machine | ○ *2) |
| 19 | Spindle & M code Function | M- code function | | ● |
| 20 | | Retraction for rigid tapping | | ● |
| 21 | | Rigid tapping | G84, G74 | ● |
| 22 | Tool Function | Number of tool offsets | 400 ea | 400 ea |
| 23 | | Tool nose radius compensation | G40, G41, G42 | ● |
| 24 | | Tool length compensation | G43, G44, G49 | ● |
| 25 | | Tool life management | | ● |
| 26 | | Tool offset | G45 - G48 | ● |
| 27 | Programming & Editing Function | Custom macro | | ● |
| 28 | | Macro executor | | ● |
| 29 | | Extended part program editing | | ● |
| 30 | | Part program storage | 2MB (5120m) | 5120m |
| 31 | | Inch/metric conversion | G20 / G21 | ● |
| 32 | | Number of Registered programs | 1000 ea | 1000 ea |
| 33 | | Optional block skip | 9 BLOCK | ● |
| 34 | | Optional stop | M01 | ● |
| 35 | | Program file name | 32 characters | ● |
| 36 | | Sequence number | N 8-digit | N8 digit |
| 37 | | Playback function | | ● |
| 38 | | Addition of workpiece coordinate system | G54.1 P1 - 48  (48 pairs) | 48 pairs |
| 39 | | Addition of workpiece coordinate system | G54.1 P1 - 300 (300 pairs) | ○ |
| 40 | OTHER FUNCTIONS (Operation, setting & Display, etc) | Embeded Ethernet | | ● |
| 41 | | Graphic display | Tool path drawing | ● |
| 42 | | Loadmeter display | | ● |
| 43 | | Memory card interface | | ● |
| 44 | | USB memory interface | Only Data Read & Write | ● |
| 45 | | Operation history display | | ● |
| 46 | | DNC operation with memory card | | ● |
| 47 | | Optional angle chamfering / corner R | | ● |
| 48 | | Run hour and part number display | | ● |
| 49 | | High speed skip function | | ○ |
| 50 | | Polar coordinate command | G15 / G16 | ● |
| 51 | | Programmable mirror image | G50.1 / G51.1 | ● |
| 52 | | Scaling | G50, G51 | ● |
| 53 | | Single direction positioning | G60 | ● |
| 54 | | Pattern data input | | ● |
| 55 | | Jerk control | AI contour control II is required. | ● |
| 56 | | Fast Data server with1GB PCMCIA card | | ○ |
| 57 | | Fast Ethernet | | ○ |
| 58 | | 3-dimensional coordinate conversion | | ○ |
| 59 | | Figure copying | G72.1, G72.2 | ○ |
| 60 | | Machining condition selection function | 10 LEVELS | ● *3) |
| 61 | | Machining quality level adjustment | 3 LEVELS | ○ *3) |
| 62 | | EZ Guide i (Conversational Programming Solution) | | ● *4) |

*1) AICC2 (400block) of 0iMF must be changed to High Speed Main board. Ask R&D center for information.
*2) Fine surface machining is included ①AICCII 200 block, ②Smooth tolerance control+, ③Jerk control
*3) If This funtion is selected, Step of Machining condition selection function is changed from 10 levels to 3 levels.
*4) nly with 15" LCD standard

# SIEMENS

| No. | Item | | Spec. | S828D |
|---|---|---|---|---|
| 1 | Controlled axis | Controlled axes | 3 axes | X, Y, Z |
| 2 | | Additional controlled axes | Max. 5 axes in total | ○ |
| 3 | | Least command increment | 0.001mm (0.0001 inch) | ● |
| 4 | | Least input increment | 0.001mm (0.0001 inch) | ● |
| 5 | | Travel to fixed stop with Force Control | | ○ |
| 6 | Interpolation & Feed Function | Reference point return | G75 FP=1 | ● |
| 7 | | 2nd reference point return | G75 FP=2 | ● |
| 8 | | 3rd / 4th reference return | G75 FP=3, 4 | ● |
| 9 | | Inverse time feedrate | G93 | ● |
| 10 | | Helical interpolation | | ● |
| 11 | | Polynomial interpolation | | N/A |
| 12 | | Spline interpolation (A, B and C splines) | | ○ |
| 13 | | Separate path feed for corners and chamfers | | ● |
| 14 | | Acceleration with Jerklimitation | | ● |
| 15 | | Compressor for 3-axis machining | | ● |
| 16 | | Temperature compensation | | ● |
| 17 | | Look ahead number of block | 150 BLOCK | ● |
| 18 | | Cartesian point-to-point (PTP) travel | | ● |
| 19 | | TRANSMIT/cylinder surface transformation | | ○ |
| 20 | Spindle Function | Tapping with compensating chuck/rigid tapping | | ● |
| 21 | | Retraction for rigid tapping | | ● |
| 22 | Tool Function | Tool radius compensations in plane | | ● |
| 23 | | Number of tools/cutting edges in tool list | 256/512 | ● |
| 24 | | | 600/1500 | N/A |
| 25 | | Tool length compensation | | ● |
| 26 | | Operation with tool management | | ● |
| 27 | | Tool list | | ● |
| 28 | | Replacement tools for tool management | | ○ |
| 29 | | Monitoring of tool life and workpiece count | | ● |
| 30 | | Manual measurement of tool offset | | ● |
| 31 | | Magazine list | | ● |
| 32 | Programming & Editing Function | Number of levels for skip blocks 1 | | ● |
| 33 | | Number of levels for skip blocks 8 | | ○ |
| 34 | | Program/workpiece management | On additional plug-in CF card | ● |
| 35 | | | On integral Hard disk PCU50.3 | N/A |
| 36 | | | On USB storage medium (e.g. disk drive, USB stick) | ● |
| 37 | | | On network drive | ○ |
| 38 | | Program editor | Programming support for cycles program(Program Guide) | ● |
| 39 | | | CNC editor with editing functions: Marking, copying, deleting | ● |
| 40 | | | Programming graphics/free contour input (contour calculator) | ● |
| 41 | | | ShopMill Machining step programming | ● |
| 42 | | Technology cycles for drilling/milling | | ● |
| 43 | | Pocket milling free contour and islands stock removal cycle | | ● |
| 44 | | Residual material detection | | ● |
| 45 | | Access protection for cycles | | ● |
| 46 | | Programming support can be extended, e.g. customer cycles | | ● |
| 47 | | 2D simulation | | ● |
| 48 | | 3D simulation, finished part | | ● |
| 49 | OTHERS FUNCTIONS (Operation, setting & Display, etc) | Switchover: inch/metric | | ● |
| 50 | | Manual measurement of zero/work offset | | ● |
| 51 | | Automatic tool/workpiece measurement | | ● |
| 52 | | Reference point approach, automatic/via CNC program | | ● |
| 53 | | Execution from USB or CF card interface on operator panel front | | ● |
| 54 | | Execution from network drive | | ○ |
| 55 | | 10.4" color display | | ● |
| 56 | | 15.0" color display | | N/A |
| 57 | | Alarms and messages | | ● |
| 58 | | Remote Control System (RCS) remote diagnostics | RCS Host remote diagnostics function | ○ |
| 59 | | | RCS Commander (viewer function) | ● |
| 60 | | Automatic measuring cycles | | ○ |

Product Overview

Basic Information

Basic Structure
Cutting
Performance

**Detailed
Information**

Options
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Specifications

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## NC Unit Specifications

**HEIDENHAIN**

● Standard  ○ Optional  X N/A

| NO. | Item | | Spec. | TNC 620 |
|---|---|---|---|---|
| 1 | Axes | Controlled axes | 3 axes | X, Y, Z |
| 2 | | Additional Controlled axes | Max. 18 axes in total | ○ (Max. 6axes) |
| 3 | | Least command increment | 0.0001 mm (0.0001 inch), 0.0001° | ● |
| 4 | | Least input increment | 0.0001 mm (0.0001 inch), 0.0001° | ● |
| 5 | | MDI / DISPLAY unit | 15.1 inch  TFT color flat panel | ● |
| 6 | | Program memory for NC programs | SSDR | 8GB |
| 7 | Commissioning and diagnostics | Data interfaces | Ethernet interface | ● |
| 8 | | | USB interface (USB 2.0) | ● |
| 9 | Machine functions | Look-ahead (Intelligent path control by calculating the path speed ahead of time) | Max. 1024 blocks. | N/A |
| 10 | | | Max. 5000 blocks. | ● |
| 11 | | HSC filters | | ● |
| 12 | | Switching the traverse ranges | | N/A |
| 13 | User functions | Tool compensation | In the working plane and tool length | ● |
| 14 | | | Radius-compensated contour lookahead for up to 99 blocks (M120) | ○ |
| 15 | | | Three-dimensional tool radius compensation | ○ |
| 16 | | Tool table | Central storage of tool data | ● |
| 17 | | | Multiple tool tables with any number of tools | ● |
| 18 | | MDI mode | | N/A |
| 19 | | Tilting the working plane with Cycle 19 | | ○ |
| 20 | | Tilting the working plane with the PLANE function | | ○ |
| 21 | | Manual traverse in tool-axis direction | after interruption of program run | ● |
| 22 | | Function TCPM | Retaining the position of tool tip when positioning tilting axes | ○ |
| 23 | | Rotary table machining | Programming of cylindrical contours as if in two axes | ○ |
| 24 | | | Feed rate in distance per minute | ○ |
| 25 | | New 3-D simulation graphics in full detail | | ● |
| 26 | | Program verification graphics | Plan view, view in three planes, 3-D view | ● |
| 27 | | | 3-D line graphics | ● |
| 28 | | Enhanced file management | | ● |
| 29 | | Context-sensitive help for error messages | | ● |
| 30 | | TNCguide | Browser-based, context-sensitive helpsystem | ● |
| 31 | | Calculator | | ● |
| 32 | | "Save As" function | | ● |
| 33 | Fixed cycles | Pecking | Cycle 1 | ● |
| 34 | | Tapping | Cycle 2 | ● |
| 35 | | Slot milling | Cycle 3 | ● |
| 36 | | Pocket milling | Cycle 4 | ● |
| 37 | | Circular pocket | Cycle 5 | ● |
| 38 | | Datum shift | Cycle 7 | ● |
| 39 | | Mirror imaging | Cycle 8 | ● |
| 40 | | Dwell time | Cycle 9 | ● |
| 41 | | Rotation | Cycle 10 | ● |
| 42 | | Scaling factor | Cycle 11 | ● |
| 43 | | Program call | Cycle 12 | ● |
| 44 | | Oriented spindle stop | Cycle 13 | ● |
| 45 | | Rigid tapping (controlled spindle) | Cycle 17 | ● |
| 46 | | Working plane | Cycle 19 | ○ |
| 47 | | Cylinder surface | Cycle 27 | ○ |
| 48 | | Cylinder surface slot milling | Cycle 28 | ○ |
| 49 | | Cylinder surface ridge milling | Cycle 29 | ○ |
| 50 | | Tolerance (HSC mode, TA) | Cycle 32 | ○ |
| 51 | | Rigid tapping, new | Cycle 207 | ● |
| 52 | | Tapping with chip breaking | Cycle 209 | ● |
| 53 | | Polar pattern | Cycle 220 | ● |
| 54 | | Cartesian pattern | Cycle 221 | ● |
| 55 | | Engraving | Cycle 225 | ● |
| 56 | | Multipass milling | Cycle 230 | ● |
| 57 | | Face milling | Cycle 233 Eenhanced with side walls, milling direction and strategy | ● |
| 58 | | Centering | Cycle 240 | ● |
| 59 | | Single-lip deep-hole drilling | Cycle 241 | ● |
| 60 | | Datum setting | Cycle 247 | ● |
| 61 | | Rectangular pocket, complete | Cycle 251 | ● |
| 62 | | Circular pocket, complete | Cycle 252 | ● |
| 63 | | Slot, complete | Cycle 253 | ● |
| 64 | | Circular slot, complete | Cycle 254 | ● |
| 65 | | Rectangular stud, complete | Cycle 256 | ● |
| 66 | | Circular stud, complete | Cycle 257 | ● |
| 67 | | Thread milling | Cycle 262 | ● |
| 68 | | Thread milling/countersinking | Cycle 263 | ● |
| 69 | | Thread drilling/milling | Cycle 264 | ● |
| 70 | | Helical thread drilling/milling | Cycle 265 | ● |
| 71 | | Outside thread milling | Cycle 267 | ● |
| 72 | | Trochoidal milling | Cycle 275 | ● |
| 73 | Touch probe cycles | Calibrating the effective radius on a circular stud | | ● |
| 74 | | Calibrating the effective radius on a sphere | | ● |
| 75 | Cycles for automatic workpiece inspection | Save kinematics | | ○ |
| 76 | | Measure kinematics | | ○ |
| 77 | | Preset compensation | | ○ |
| 78 | | TS calibration of length | | ○ |
| 79 | | TS calibration in a ring | | ○ |
| 80 | | TS calibration on stud | | ○ |
| 81 | Options | Software option 1 | Rotary table machining, Coordinate transformation, Interpolation | ○ |
| 82 | | Software option 2 | 3-D machining, Interpolation | ○ |

**MITSUBISHI**

● Standard  ○ Optional  X N/A

| No. | Item | | Spec. | M80A |
|---|---|---|---|---|
| 1 | Control Axes | Number of Basic Control Axes (NC Axes) | 3 (X,Y,Z) | ●3 |
| 2 | | Number of Simultaneous Contouring Control Axes | | ●4 |
| 3 | | Tape (RS-232C Input) Mode | | ● |
| 4 | | Front-side SD Card Mode | | ● |
| 5 | | Front-side USB Memory Mode | | ● |
| 6 | Input Command | Least control increment  0.01μm(10nm) | | ● |
| 7 | | Least control increment  0.001μm(1nm) | | ● |
| 8 | | Inch/Metric Changeover | G20/G21 | ● |
| 9 | | Absolute/Incremental Command | G90/G91 | ● |
| 10 | Positioning/Interpolation | Linear Interpolation | | ● |
| 11 | | Circular Interpolation(Center/Radius Designation) | | ● |
| 12 | | Helical Interpolation | | ● |
| 13 | | Spiral/Conical Interpolation | G02.1 /G03.1 | ● |
| 14 | | Cylindrical Interpolation | G7.1 | ● |
| 15 | Feed | Feed per Minute (Asynchronous Feed) | G94 | ● |
| 16 | | Feed per Revolution (Synchronous Feed) | G95 | ● |
| 17 | | Override Cancel | M48 / M49 | ● |
| 18 | | Automatic Acceleration/Deceleration after Interpolation | | ● |
| 19 | | Thread Cutting (Lead/Thread Number Designation) | | ● |
| 20 | | Synchronous Tapping Cycle | G84 | ● |
| 21 | | Pecking Tapping Cycle | | ● |
| 22 | | Deep-hole Tapping Cycle | | ● |
| 23 | Program Memory/Editing | Program Memory 500kB[1280m] (1000 programs) | | ● |
| 24 | Operation and Display | Color Touchscreen Display (10.4-type LCD TFT) | | ○ |
| 25 | | Absolute/Incremental Setting | G90/G91 | ● |
| 26 | | Parameter Guidance | | ● |
| 27 | | Alarm Guidance | | ● |
| 28 | | Screenshot Capture | | ● |
| 29 | | Remote Desktop Connection | | ● |
| 30 | | VNC Server | | ● |
| 31 | Input/Output Functions and Devices | Tool Offset Data Input/Output | | ● |
| 32 | | Common Variable Input/Output | | ● |
| 33 | | Parameter Input/Output | | ● |
| 34 | | History Data Output | | ● |
| 35 | | RS-232C I/F | | ● |
| 36 | | Front-side SD Card I/F [Up to 32GB] | | ● |
| 37 | | Ethernet I/F | | ● |
| 38 | | Front-side USB Memory I/F [Up to 32GB] | | ● |
| 39 | Tool Compensation | Number of Tool Offset 400 sets | | ● |
| 40 | | Tool Shape/Wear Offset Amount | | ● |
| 41 | Coordinate System | Workpiece Coordinate System Selection (6 Sets) | | ● |
| 42 | | Extended Workpiece Coordinate System Selection (48 Sets) G54.1P1 to P48 | | ● |
| 43 | Operation Support Functions | Optional Block Skip | | ● |
| 44 | | Auto-restart | | ● |
| 45 | | Manual Interruption | | ● |
| 46 | | Automatic Operation Handle Interruption | | ● |
| 47 | | Tapping Retract | | ● |
| 48 | Program Support Functions | Variable Command 8000 sets | | ● |
| 49 | | Fixed Cycle for Drilling | | ● |
| 50 | | Special Fixed Cycle | | ● |
| 51 | | Mirror Image by Parameter Setting | | ● |
| 52 | | Mirror Image by External Input | | ● |
| 53 | | Mirror Image by G Code | G51.1 | ● |
| 54 | | Coordinate Rotation by Program | G68/G69 | ● |
| 55 | | 3-dimensional Coordinate Conversion | | ● |
| 56 | | Corner Chamfering/Corner R | | ● |
| 57 | | Linear Angle Command | | ● |
| 58 | | Polar Coordinate Command | | ● |
| 59 | | Chopping | | ● |
| 60 | | Exact Stop Check Mode | G09 | ● |
| 61 | | Exact Stop Check | G61 | ● |
| 62 | | Error Detection | | ● |
| 63 | | Programmable In-position Check | | ● |
| 64 | | High-speed Machining Mode I (G05P1) Maximum [kBPM] | 337 BLOCK | ●33.7 |
| 65 | | High-speed Machining Mode II (G05P2) Maximum [kBPM] | 675 BLOCK | ●67.5 |
| 66 | | High-accuracy Control (G61.1/G08) | | ● |
| 67 | | SSS Control | | ● |
| 68 | | Tolerance Control | | ● |
| 69 | | High-speed High-accuracy Control I (G05.1Q1) Maximum [kBPM] | 337 BLOCK | ●33.7 |
| 70 | | High-speed High-accuracy Control II (G05P10000) Maximum [kBPM] | 675 BLOCK | ●67.5 |
| 71 | | High-speed High-accuracy Control III (G05P20000) Maximum [kBPM] | 1350 BLOCK | ●135 |
| 72 | | Smooth Fairing | | ● |
| 73 | | Machining Condition Selection I | | ● |
| 74 | | Playback | | ● |
| 75 | | Interactive Cycle Insertion | | ● |
| 76 | | Simple Programming (NAVI MILL/LATHE) | | ● |
| 77 | Machine Accuracy Compensation | Backlash Compensation | | ● |
| 78 | | Memory-type Pitch Error Compensation[sets] | 16SET | ●16 |
| 79 | | Memory-type Relative Position Error Compensation | | ● |
| 80 | | External Machine Coordinate System Compensation | | ● |
| 81 | | Circular Radius Error Compensation | | ● |
| 82 | | Ball Screw Thermal Expansion Compensation | | ● |
| 83 | | Position-dependent Gradually Increasing-type Backlash Compensation | | ● |
| 84 | | Bidirectional Pitch Error Compensation | | ● |
| 85 | | Smooth High-gain (SHG) Control | | ● |
| 86 | | Lost Motion Compensation | | ● |
| 87 | Automation Support Functions | Automatic Tool Length Measurement | | ● |
| 88 | | Workpiece Position Measurement | | ● |
| 89 | | Tool Life Management I / II / III | | ● |
| 90 | | Auto Power OFF | | ● |
| 91 | | Load Monitoring I | | ● |
| 92 | Machine Support Functions | Ethernet Connection | | ● |
| 93 | | CC-Link Connection | | ● |

# Responding to Customers
# Anytime, Anywhere

**Doosan Machine Tools' Global Network, Responding to Customer's Needs nearby, Anytime, Anywhere**

Doosan machine tools provides a system-based professional support service before
and after the machine tool sale by responding quickly and efficiently to customers' demands.
By supplying spare parts, product training, field service and technical support, we can provide top class support
to our customers around the world.

AMERICA        EUROPE

CHINA (Shanghai)

CHINA (Yantai)

Head Office
Changwon Factory

INDIA

## Global Sales and Service Support Network

| Corporations | Dealer Networks | Technical Centers<br>Technical Center: Sales Support, Service Support, Parts Support | Service Post | Factories |
|---|---|---|---|---|
| 4 | 167 | 51 | 200 | 3 |

# Doosan Machine Tools Customer Support Service

We help customers to achieve success by providing a variety of
professional services from pre-sales consultancy to post-sales support.

## Supplying Parts

- Supplying a wide range of original
  Doosan spare parts
- Parts repair service

## Field Services

- On site service
- Machine installation and testing
- Scheduled preventive maintenance
- Machine repair

## Technical Support

- Supports machining methods and technology
- Responds to technical queries
- Provides technical consultancy

## Training

- Programming / machine setup and operation
- Electrical and mechanical maintenance
- Applications engineering

# Doosan Machine Tools

⚠ **Fire Safety Precautions**

**doosanmachinetools.com**

⚠ **Fire Safety Precautions** | There is a high risk or fire when using non-water-soluble cutting fluids, processing flammable materials, neglecting use coolants and modifying the machine without the consent of the manufacturer. Please check the SAFETY GUIDANCE carefully before using the machine.