GLOBAL STANDARD
VERTICAL MACHINING CENTER

# DNM

## **4500**/L • **5700**/L • **6700**/L/XL

DN SOLUTIONS

# **DNM** SERIES
# **4500**/L • **5700**/L • **6700**/L/XL

Building on the legacy of the proven and successful DNM and DNM ll series, the new version DNM series boasts even greater reliability and improved performance. In addition, the new series includes grease lubrication to the roller guideways which is more environmentally-friendly. The design concepts underpinning the DNM 4500/5700/6700 series are high speed, high rigidity and suitability for all applications.


Standard features include the largest machining envelope in its class, direct coupled spindles, roller guideways and thermal compensation to deliver high precision.


## A HIGHLY VERSATILE VERTICAL MACHINING CENTER WITH THE LARGEST MACHINING ENVELOPE IN ITS CLASS

- DNM series machines have larger tables with increased Y-axis travels and increased maximum table loads.
- DNM machines with longer X-axes (i.e.,DNM 4500L, 5700L, 6700L/XL), are available.

## STANDARD DIRECT-COUPLED SPINDLE FOR HIGHER PRODUCTIVITY

- Directly coupled spindles reduce vibration and noise, thereby improving the machines' performance and making them more environmentally-friendly compared to belt driven machines.
- High-torque and high speed spindles are available for the machining of different materials.
- Higher productivity is achieved by reducing tool change times and by improving acceleration and deceleration rates.

## AN ENVIRONMENTALLY-FRIENDLY MACHINE DESIGNED FOR STABLE AND EASY OPERATION

- Thermal error compensation system supplied as standard optimizes machine accuracy by reducing the effects of heat build-up during extended periods of operation.
- The EZ work function can be checked in the pop-up window on the NC main screen for convenience.
- Grease lubrication for the axis roller guideways is a standard feature and helps reduce contamination.

# BASIC STRUCTURE

Designed with a highly stable and rigid structure, the new DNM series provides customers with machines with different Y-axis capabilities (from 450mm to 670mm), enabling the machining of a wider range of workpieces.

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

DNM 4500/L

**800{910} / 450 / 510** mm

31.5{35.8} / 17.7 / 20.1 inch

DNM 5700/L

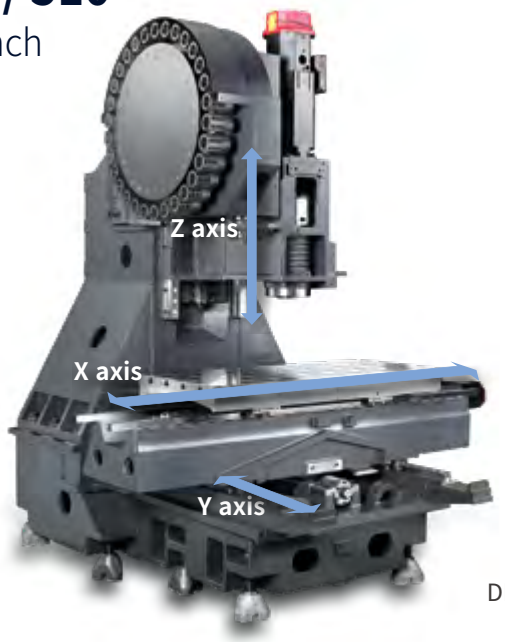
**1050{1300} / 570 / 510** mm

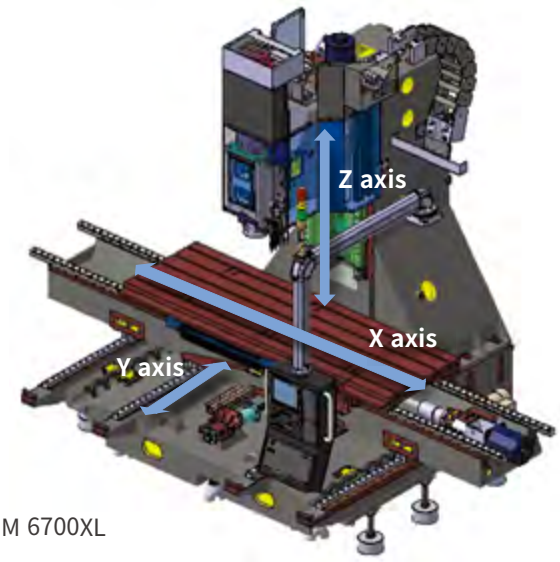
41.3{51.2} / 22.4 / 20.1 inch

DNM 6700/L/XL

**1300{1500/2100} / 670 / 625** mm

51.2{59.1/82.7} / 26.4 / 24.6 inch




DNM 6700XL

## Axis system

Environmentally-friendly grease lubrication is adopted as standard for all the axis feed systems, and roller-type LM guides are used to enhance rigidity.

## Rapid traverse rate (X / Y / Z axis)

DNM 4500 / 5700 / 6700 / 6700L

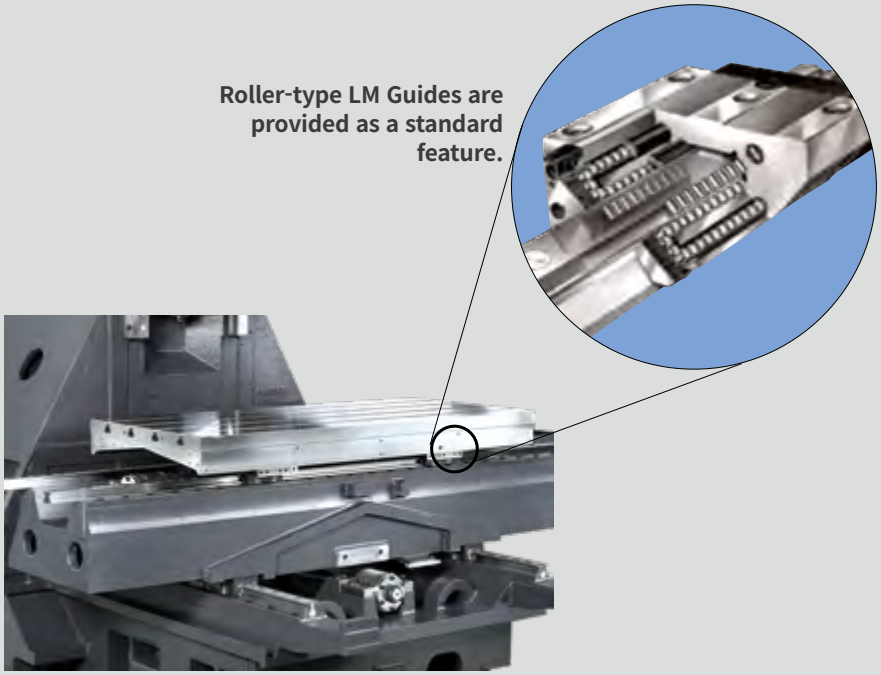
**36 / 36 / 30** m/min

(1417.3 / 1417.3 / 1181.1 ipm)

DNM 6700XL

**30 / 30 / 30** m/min

(1181.1 / 1181.1 / 1181.1 ipm)



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

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

# SPINDLE | TABLE

Directly-coupled spindles have been adopted as a standard feature to further reduce vibration and noise and enhance productivity, increase accuracy and improve the working environment.  High- torque and high speed spindle options for machining different materials are available.

### Max. spindle speed

**8000** r/min

**12000** r/min option

**15000** r/min option

### Max. spindle motor power

**18.5** kW  24.8 Hp

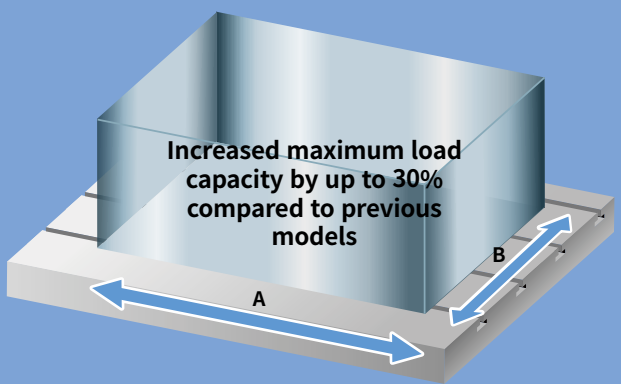
### Max. spindle motor torque

**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)

# TABLE

Increased table sizes and table load capacities are provided within the same floor space of the previous models.




### 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

# MACHINING PERFORMANCE

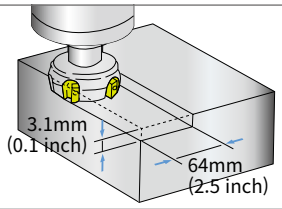
The DNM series delivers the best cutting performance in its class and ensures highest levels of productivity.

## Cutting performance

High-rigidity machining can be undertaken with speed and precision.

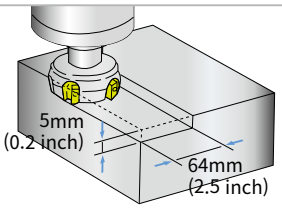
**Face mill (ø80mm (3.15 inch)) Carbon steel (SM45C)**

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



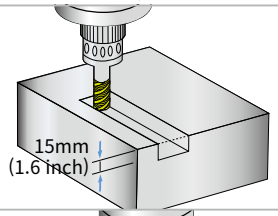

**Face mill (ø80mm (3.15 inch)) Aluminium(AL6061)**

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



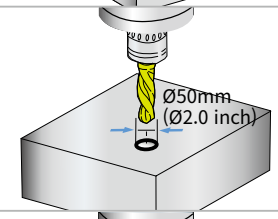

**End mill (ø30mm (i.2 inch)) Carbon steel (SM45C)**

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



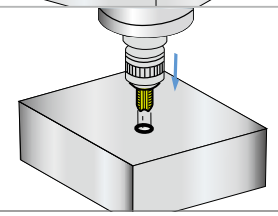

**U-Drill (ø50mm (2.0 inch)) Carbon steel (SM45C)**

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



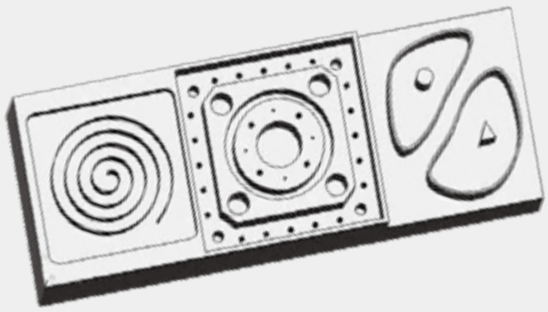

**Tap Carbon steel (SM45C)**

| 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 provided as examples only. They may not always be achieved owing to different cutting and environmental conditions.

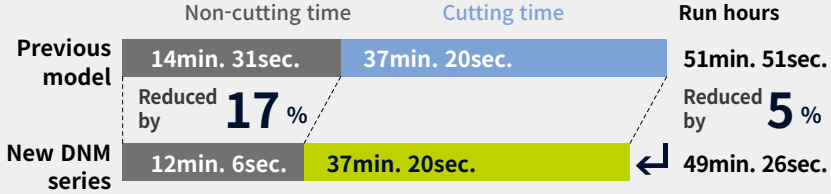
## High Productivity



*The results, indicated in this catalogue, are provided as examples only. They may not always be achieved owing to different cutting and environmental conditions.

**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 |



# TOOL CHANGE SYSTEM

Tool changers have been optimized to reduce non cutting times. The highly-reliable tool magazine can accommodate up to 30 tools as standard.

30, 40 ea

60 ea

## 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 DN Solutions's strict testing procedures, but may vary depending on the user's operating conditions.

## Tool storage capacity

**30** ea

**40** ea option

**60** ea option

# STANDARD | OPTIONAL SPECIFICATIONS

Various optional features are available to meet customers' specific machining requirements and applications.

| Description | Features | | DNM 4500/L | DNM 5700/L | DNM 6700/ 6700L/XL |
|---|---|---|---|---|---|
| Spindle | 8000 r/min (Unit: kW(Hp), N·m(lbf-ft) | 18.5/11(24.8/14.8), 117.8(86.9)_FANUC | ● | ● | X |
| | | 18.5/15 (24.8/20.1), 117.8(86.9)_FANUC | X | X | ● |
| | | 15/11 (20.1/14.8), 286(211.1)_FANUC | ○ | ○ | ○ |
| | 12000 r/min (Unit: kW(Hp), N·m(lbf-ft) | 18.5/11(24.8/14.8), 117.8(86.9)_FANUC | ○ | ○ | ○ |
| | | 17/10 (22.8/13.4), 108.6(80.1)_HEIDENHAIN | ○ | ○ | X |
| | | 32/15 (42.9/20.1), 203.7(150.3)_HEIDENHAIN | X | X | ○ |
| | | 16.5/11 (22.1/14.8), 141(104.1)_SIEMENS | ○ | ○ | X |
| | | 21.8/16.3 (29.2/21.9),150.1(110.8)_SIEMENS | X | X | ○ |
| | 15000 r/min (Unit: kW(Hp), N·m(lbf-ft) | 18.5/11(24.8/14.8), 117.8(86.9)_FANUC | ○ | ○ | ○ |
| | | 17/10 (22.8/13.4), 108.2 (79.9)_HEIDENHAIN | ○ | ○ | ○ |
| | | 16.5/11 (22.1/14.8), 141.3 (104.3)_SIEMENS | ○ | ○ | ○ |
| Magazine | Tool storage capacity | 30 ea | ● | ● | ● |
| | | 40 ea | ○ | ○ | ○ |
| | | 60 ea | ○ | ○ | ○ |
| Tool shank type | BIG PLUS BT40 | | ● | ● | ● |
| | BIG PLUS CAT40 | | ○ | ○ | ○ |
| | BIG PLUS DIN40 | | ○ | ○ | ○ |
| Raised column | 150 mm (5.9 inch) | | ○ | ○ | ○ |
| | 200 mm (7.9 inch) | | ○ | ○ | ○ |
| | 300 mm (11.8 inch) | | ○ | ○ | ○ |
| Coolant | FLOOD | 0.19 MPa(27.6 psi), 0.4 kW(0.5 Hp) | ● | ● | ● |
| | | 0.69 MPa(100.1 psi), 1.8 kW(2.4 Hp) | ○ | ○ | ○ |
| | TSC** | None | ● | ● | ● |
| | | 2 MPa(290.1 psi), 1.5kW(2.0 Hp) | ○ | ○ | ○ |
| | | 2 MPa(290.1 psi), 4 kW(5.4 Hp) | ○ | ○ | ○ |
| | | 7 MPa(1015.3 psi), 5.5 kW(7.4 Hp) | ○ | ○ | ○ |
| | FLUSHING | | ○ | ○ | ○ |
| | SHOWER (200 L/min (52.8 gal/min)) | | ○ | ○ | ○ |
| Chip disposal | Chip conveyor | Chip pan | ● | ● | ● |
| | | Hinged type (Left/Right/Rear) | ○ | ○ | ○ |
| | | Magnetic scraper type (Left/Right/Rear) | ○ | ○ | ○ |
| | | Screw(AUGER) type (Left/Right) | ○ | ○ | ○ |
| | Chip bucket | | ○ | ○ | ○ |
| Precision machining option | Linear scale | X / Y / Z axis | ○ | ○ | ○ |
| | AICC II (200 block) | | ● | ● | ● |
| | SSP (Smooth Surface Package) | | ○ | ○ | ○ |
| Measurement & Automation | Automatic tool measurement | TS27R_RENISHAW | ○ | ○ | ○ |
| | | OTS_RENISHAW | ○ | ○ | ○ |
| | Automatic tool breakage detection | | ○ | ○ | ○ |
| | Automatic workpiece measurement | OMP60_RENISHAW | ○ | ○ | ○ |
| | Automatic front door with safety device | | ○ | ○ | ○ |
| Accessories | WORK LIGHT | LED LAMP | ● | ● | ● |
| | OPERATOR CALL LAMP | 3-COLOR SIGNAL TOWER(LED) | ● | ● | ● |
| | LEVELING BLOCK & BOLT | - | ● | ● | ● |
| | SMART THERMAL CONTROL | SENSORLESS TYPE(ONLY SPINDLE) | ● | ● | ● |
| | ASSEMBLY & OPERATION TOOLS KIT | - | ● | ● | ● |
| | 4TH AXIS PREPARATION CABLING FOR SERVO/1-PNEUMATIC PIPING | FACTORY READY MADE | ○ | ○ | ○ |
| | AIR GUN | | ○ | ○ | ○ |
| | Air blower | | ○ | ○ | ○ |
| | Coolant gun | | ○ | ○ | ○ |
| | Mist collector | | ○ | ○ | ○ |
| Customized Special Option | ANCHORING (1) | SLIDE CLAMP & CHEMINCAL ANCHOR BOLT | ○ | ○ | ○ |
| | TSA (2) | 0.54 | ○ | ○ | ○ |
| | TOOL TYPE | HSK63A | ○ | ○ | ○ |
| | ATC AUTO SHUTTER | 30TOOL / 40TOOL | ○ | ○ | ○ |
| | ATC FULL COVER | 30TOOL / 40TOOL | ○ | ○ | ○ |
| | Drum chipconveyor | HINGE TYPE | ○ | ○ | ○ |
| | | SCRAPER TYPE | ○ | ○ | ○ |
| | Oil lubrication | X, Y, Z AXIS | ○ | ○ | ○ |
| | 20 Bar TSC with inverter | 50Hz → 60Hz | ○ | ○ | ○ |
| | FINE DUST PROTECTING PACKAGE (WET MACHINING) | BELLOWS COVER(X/Y/Z) | ○ | ○ | ○ |
| | | PROTECT COVER(X-AXIS) | ○ | ○ | ○ |
| | | BALL SCREW BELLOWS COVER(X/Y) | ○ | ○ | ○ |
| | | GUIDE WAY DOUBLE WIPER | ○ | ○ | ○ |
| | FINE DUST PROTECTING PACKAGE (DRY MACHINING) | PROTECT COVER(X-AXIS) | ○ | ○ | ○ |
| | | BALL SCREW BELLOWS COVER(X/Y) | ○ | ○ | ○ |
| | | GUIDE WAY DOUBLE WIPER | ○ | ○ | ○ |
| | | AIR OIL SUCTION(ONLY 15k SPINDLE) | ○ | ○ | ○ |
| | | ATC FULL CLOSED COVER | ○ | ○ | ○ |
| | AUTO TOOL LENGTH MEASUREMEMT | RENISHAW / LTS | ○ | ○ | ○ |
| | AUTO TOOL BREAKAGE DETECTION | MSC/BK9(NEEDLE TYPE ON MAGAZINE) | ○ | ○ | ○ |

※ *Please contact DN Solutions for detailed specification information.*

● *Standard* ○ *Optional* X *Not applicable*

**If this option is selected, the TSA(Through Spindle Air) Max.pressure is 0.54MP*

*(1) Please refer to foundation drawing in relation to anchoring. If more detailed information is required consult with DN Solutions service*

*(2) If TSC is not required - TSA can be selected as an option.*

***When using a semi-synthetic type or synthetic type, contact our sales representative or service center in advance.*



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

# PERIPHERAL EQUIPMENT

## 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**

**Reduced by**

**Max. 60%**

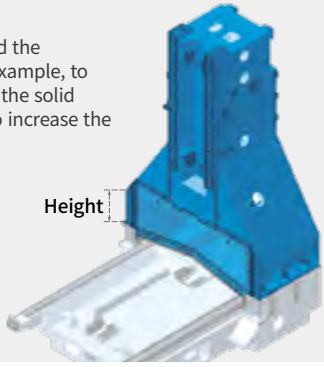
## Raised column option

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

**Height**

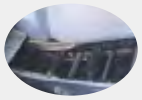
**150/200/300 mm**

**5.9/7.9/11.8 inch**

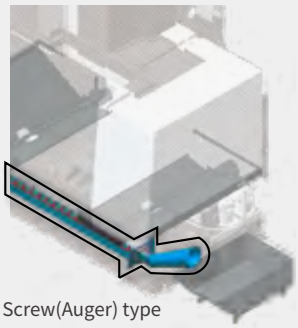



## Chip conveyor option

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 compared to Hinged belt type. |

## Chip bucket option

**Capacity 300 L (79.3 gal)**

## Hydraulic / Pneumatic fixture line option

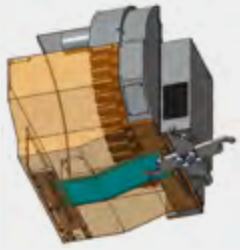
The user should prepare pipelines for hydraulic/pneumatic fixtures whose detailed specifications should be determined through discussions with DN Solutions.


## 4 axis rotary table option

The high-precision split system with its compact and highly rigid design, and double piston structure enables vertical and horizontal use and delivers a strong clamping force.


## ATC shutter door option

An ATC shutter door can be applied instead of the brush mechanism to provide a higher level of protection from potential chip ingress.



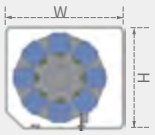
## AWC system option

A compact automatic workpiece change system

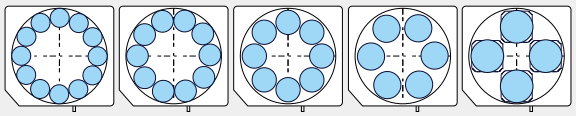
| Max. workpiece dimensions | Unit | Count | Max. loading | Max. construction height on the pallet |
|---|---|---|---|---|
| 250 x 250 (9.8x9.8) or ø 300 (11.8) | mm (inch) | 12 | 130kg (286.6lb) | 350mm (13.8inch) |
| 320 x 320 (12.6x12.6) or ø 360 (14.2) | mm (inch) | 10 | 250kg (551.1lb) | |
| 350 x 350 (13.8x13.8) or ø 400 (15.7) | mm (inch) | 8 | | |
| 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 X H = 1,900 X 1,700



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)

# DN SOLUTIONS FANUC i PLUS

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

### 15 inch screen + new operation panel

DN Solutions 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.

**DN Solutions 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 touchscreen option

iHMI provides an intuitive interface that uses a touchscreen for quick and easy operation.

### Range of applications

Providing various applications related to planning, machining, improvement and utility, for customer convenience.

# NUMERIC CONTROL SPECIFICATIONS

FANUC

| Item | | Specifications | DN Solutions Fanuc i (0i Plus) DNM 4digit |
|---|---|---|---|
| Controlled axis | Controlled axes | | 3 (X,Y,Z) |
| | Simultaneously controlled axes | | 4 axes |
| | Additional controlled Axis | Add 1 Axis (5th Axis) | ● |
| Data input/output | Fast data server | | ○ |
| | Memory card input/output | | ● |
| | USB memory input/output | | ● |
| | Large capacity memory(2GB)*2 | Available Option only with 15” Touch LCD (iHMI Only) *2) | ○ |
| Interface function | Embedded Ethernet | | ● |
| | Fast Ethernet | | ○ |
| | Enhanced Embedded Ethernet function | | ● |
| Operation | DNC operation | Included in RS232C interface. | ● |
| | DNC operation with memory card | | ● |
| Program input | Workpiece coordinate system | G52 - G59 | ● |
| | Addition of workpiece coordinate system | G54.1 P1 X 48 (48 pairs) | ● |
| | Tool number command | | T4 digits |
| | Tilted working plane indexing command | G68.2 TWP | ○ |
| Feed function | AI contour control I | G5.1 Q_, 40 Blocks | X |
| | AI contour control II | G5.1 Q_, 200 Blocks | ● |
| | AI contour control II | G5.1 Q_, 600 Blocks | X |
| | AI contour control II | G5.1 Q_, 1000 Blocks *1) | X |
| | High smooth TCP | | X |
| Operation guidance function | EZ Guidei (Conversational Programming Solution) | | ● |
| | iHMI with Machining Cycle | Only with 15” Touch LCD standard *2) | X |
| | EZ Operation package | | ● |
| Setting and display | CNC screen dual display function | | ● |
| Network | FANUC MTConnect | | ✪ |
| | FANUC OPC UA | | ✪ |
| Others | Display unit | 10.4" color LCD | X |
| | | 15" color LCD | X |
| | | 15" color LCD with Touch Panel | ● |
| | Part program storage size & Number of registerable programs | 640M(256KB)_500 programs | X |
| | | 1280M(512KB)_1000 programs | X |
| | | 2560M(1MB)_1000 programs | X |
| | | 5120M(2MB)_1000 programs | ● |
| | | 10240M(4MB)_1000 programs | X |
| | | 20480M(8MB)_1000 programs | X |
| | | 2560M(1MB)_2000 programs | X |
| | | 5120M(2MB)_4000 programs | X |
| | | 10240M(4MB)_4000 programs | X |
| | | 20480M(8MB)_4000 programs | X |

*1) The number of look-ahead blocks may be changed or limited depending on the peripheral device or the configuration of the internal NC system.
*2) Available Option only with Fanuc i plus iHMI

● Standard ○ Optional X N/A ✪ Available

Network: FANUC MT Connect and FANUC OPC UA available.

# EZ WORK

The software developed by DN Solutions provides a range of different functions designed for fast, efficient and convenient operation.

## EZ work

The EZ work package delivers speed and efficiency. This menu-driven innovation not only helps customers reduce setup times, but also simplifies common tasks and procedures, reducing the potential for errors. EZ work reduces operating time, protects machinery, enhances quality and speeds up maintenance interventions.

### Thermal Compensation

A function to maintain high-precision machining quality by analyzing and correcting the amount of thermal displacement of a structure through a temperature sensor

### M/G-Code List

Functional description of M code and G code


### Tool Management

Function to manage tool information [Tool information / Tool No. / Tool condition (normal, large diameter, worn / damaged, used for the rst time, manual) / Tool name]

### Operation Rate

Machine operation history management function by date based on load

### Adaptive Feed Control

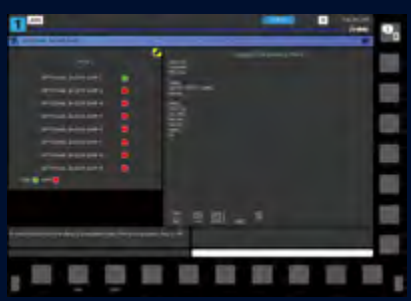
Function to control feedrate so that the cutting can be carried out at a constant load (To adapt to the spindle load set up with constant load feedrate control function)


### Spindle Warm Up

A function that assists spindle warm-up for spindle life when the spindle has not been used for a certain period of time

### ATC Recovery

Function to view detailed info with recommended actions and to perform step-by-step operation manually (when an alarm is triggered during an ATC operation)



### Addition of Optional Block Skip

In addition to the OPTIONAL BLOCK SKIP of the operation panel, the function to skip a specific block selected in the machining program

# CONVENIENT OPERATION

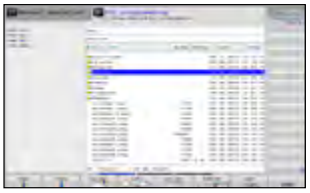
## HEIDENHAIN TNC620

### Superior hardware specifications

The TNC 620 features optimized motion control, short block processing times and special control strategies. Together with its uniform digital design and its integrated digital drive control (including inverters), it enables you to achieve high machining speeds and the best possible contour accuracy.

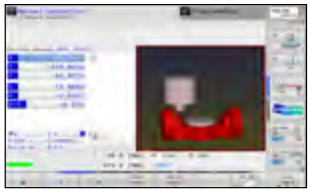
- 15.6" display
- 21GB Storage memory
- 1024 look ahead blocks
- High user convenience with folder structure data management

### Conversational convenient function



Data are controlled in the folder structure; convenient communication via USB devices

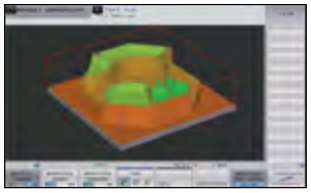
KinematicOpt & KinematicComp option (Touch probe cycle for automatic measurement)



Collision protection system option

Adaptive feed control option

Various built-in pattern cycles for a wider scope of application (Software standard)



Graphic simulation

# NUMERIC CONTROL SPECIFICATIONS

HEIDENHAIN

| Item | | Specifications | TNC620 DNM |
|---|---|---|---|
| Controlled axis | Controlled axis | | 3 (X,Y,Z) |
| | Simultaneously controlled axis | | 4 axis |
| Data input/output | USB memory input/output | | ● |
| Interface function | Embedded ethernet | | ● |
| Feed function | Look-ahead | 5000 blocks | ● |
| Axis compensation | KinematicsOpt | Automatic measurement and optimization of machine kinematics | ○ |
| Collision monitoring | Dynamic collision monitoring (DCM) | | X |
| Network | MTConnect | | ✪ |
| Others | Display unit | 15" color LCD | ● |
| | | 15" color LCD with touch panel | ○ |
| | Part program storage size & number of registerable programs | 1.8GB | ● |

● *Standard* ○ *Optional* X *Not Available* ✪ *Available*

# CONVENIENT OPERATION

## SIEMENS 828D

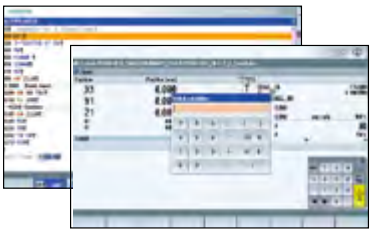
### 15.6” screen + new operation panel

The newly-designed operation panel improves the customer convenience by incorporating and using common-design buttons and layouts, and includes the familiar QWERTY keyboard for fast and easy operation.

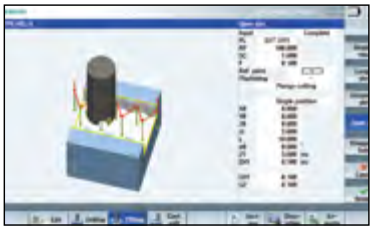
- 15.6" display
- 10MB high capacity user memory
- USB & ethernet (standard)
- QWERTY keyboard (standard)
- High-speed calculation and simulation can be fulfilled by improved processor functionality

### Conversational convenient function

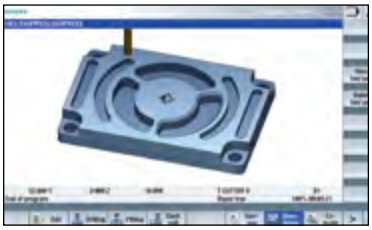
Shop Mill Part Programming



Smart function



Advanced program language programGUIDE



Simulation and machining contour monitoring

Side screen widget

# NUMERIC CONTROL SPECIFICATIONS

SIEMENS

| | Item | Specifications | S828D DNM |
|---|---|---|---|
| **Controlled axis** | Controlled axes ( 제어축수 ) | - | 3축 |
| | Simultaneously controlled axes ( 동시 제어축수 ) | - | 3축 |
| **Data input/output** | Memory card input/output | (Local drive) | X |
| | USB memory input/output | | ● |
| **Interface function** | Ethernet | (X130) | ● |
| **Operation** | On network drive | (without EES option, Extcall) | ○ |
| | On USB storage medium, e.g. memory stick | (without EES option, Extcall) | ● |
| **Program input** | Workpiece coordinate system | G54 - G57 | ● |
| | Addition of workpiece coordinate system | G505 - G599 | ● |
| **Interpolation & Feed function** | Advanced surface | | ● |
| | Top surface | | ○ |
| | Look ahead number of block | S/W version 4.8 | 450 |
| **Programming & Editing function** | 3D simulation, finished part | | ● |
| | Simultaneous recording | | ● |
| | Measure kinematics | | X |
| | DXF Reader for PC integrated in SINUMERIK Operate | | ○ |
| **Operation Guidance Function** | ShopMill | | ● |
| | EZ Work | | ● |
| **Setting and display** | Operation via a VNC viewer | | ● |
| **Network** | MTConnect | | ✪ |
| | OPCUA | | ○ |
| **Etc. function** | 15.6" color display with touch screen | | ● |
| | 19" color display without touch screen | | X |
| | 21.5" color display with touch screen | | X |
| | CNC user memory | 10 MB | ● |
| | Expansion by increments | 2 ~ 12 MB | ○ |
| | Collision avoidance | | X |
| | Collision avoidance ECO (machine, working area) | | X |

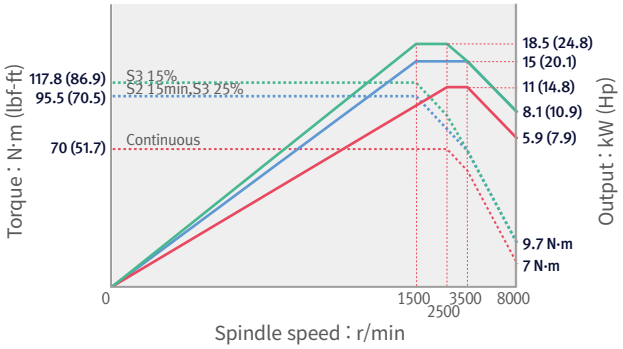
● *Standard* ○ *Optional* X *Not Available* ✪ *Available*

# POWER | TORQUE

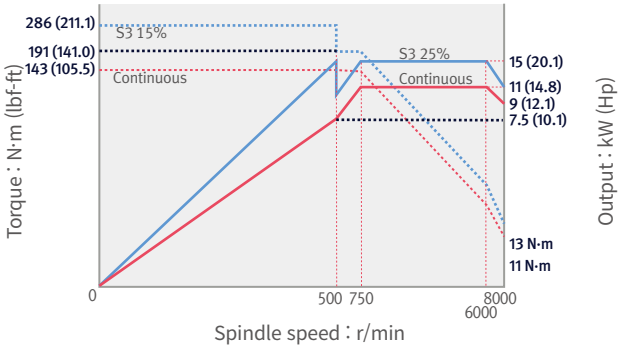
## FANUC

## DNM 4500/L, DNM 5700/L

**8000 r/min**
Max. spindle power: 18.5 kW (24.8 Hp)
Max. spindle torque: 117.8 N·m (86.9 lbf-ft)

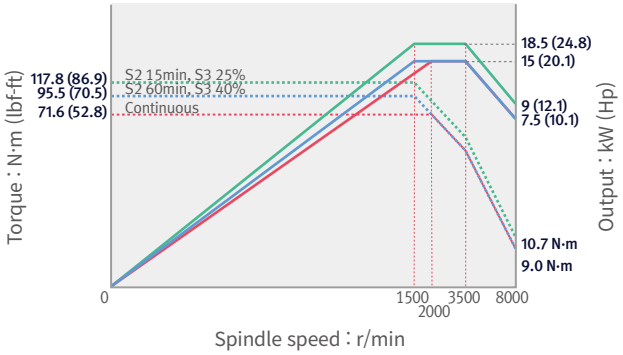



**8000 r/min** option
Max. spindle power: 15 kW (20.1 Hp)
Max. spindle torque: 286 N·m (211.1 lbf-ft)

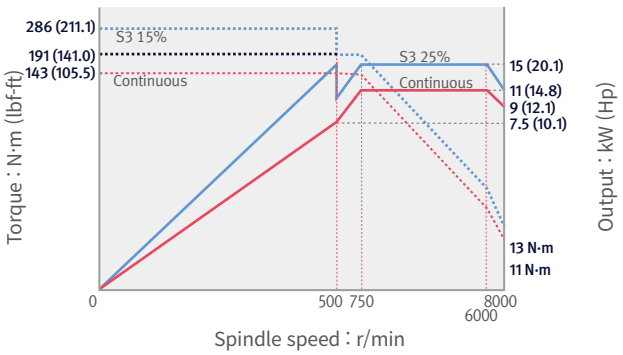



## DNM 6700/L/XL

**8000 r/min**
Max. spindle power: 18.5 kW (24.8 Hp)
Max. spindle torque: 117.8 N·m (86.9 lbf-ft)

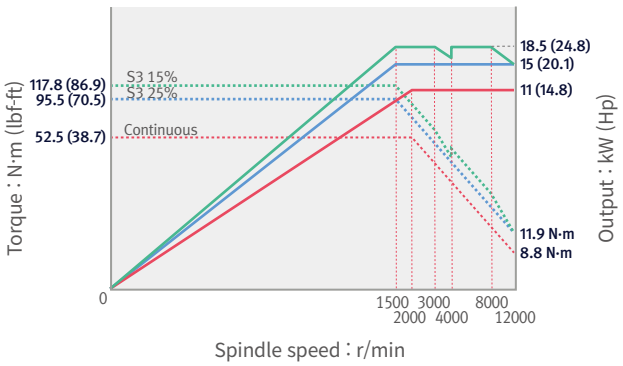



**8000 r/min** option
Max. spindle power: 15 kW (20.1 Hp)
Max. spindle torque: 286 N·m (211.1 lbf-ft)

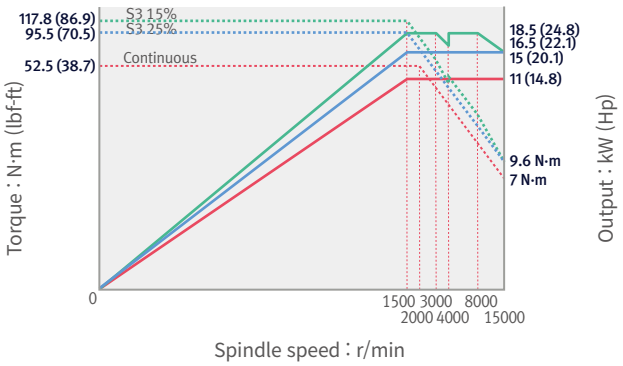



## DNM 4500/L, 5700/L, 6700/L/XL

**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)



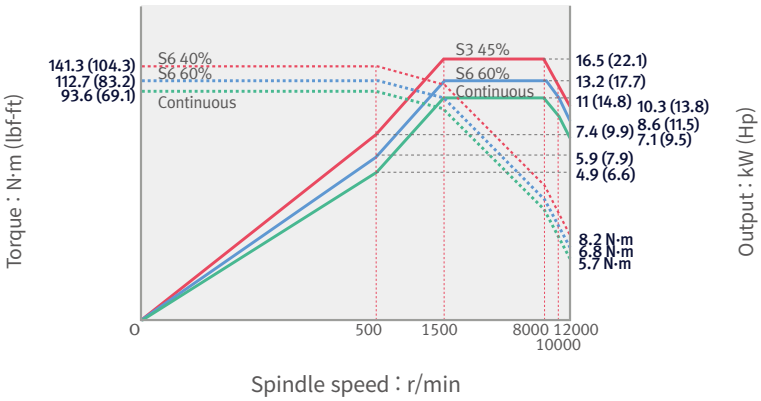
# POWER | TORQUE

**SIEMENS**

## DNM 4500/L, DNM 5700/L

**12000 r/min**

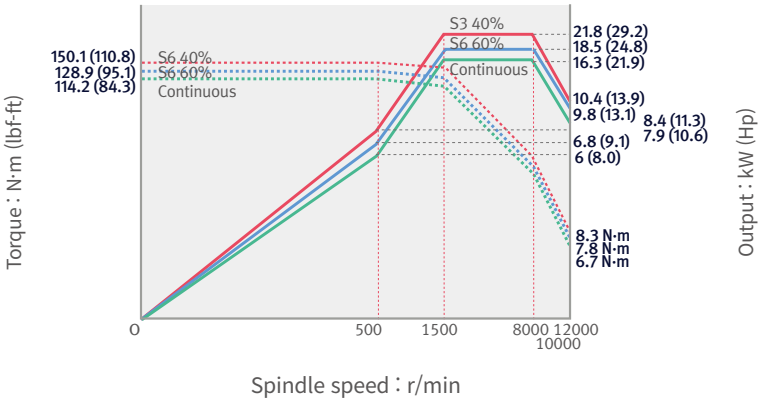
Max. spindle power: 16.5 kW (22.1 Hp)
Max. spindle torque: 141.3 N·m (104.3 lbf-ft)




## DNM 6700/L/XL

**12000 r/min**

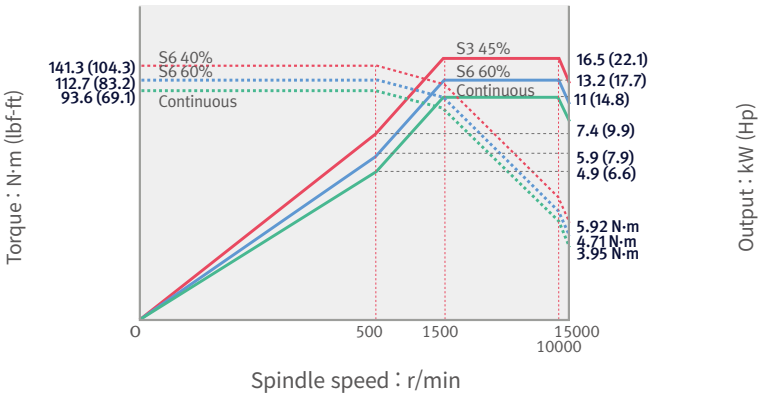
Max. spindle power: 21.8 kW (29.2 Hp)
Max. spindle torque: 150.1 N·m(110.8 lbf-ft)




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

**15000 r/min**

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

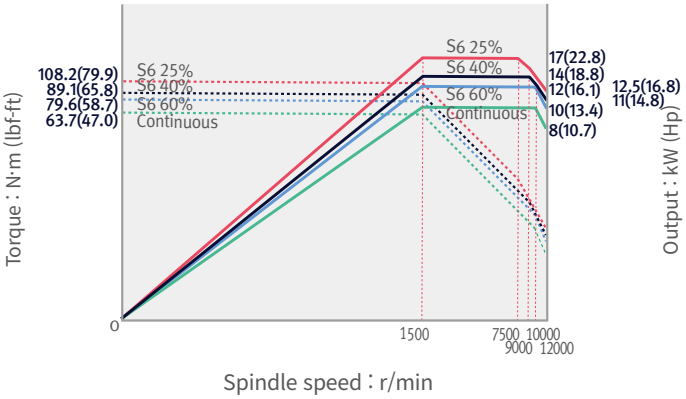


# POWER | TORQUE

## HEIDENHAIN | MITSUBISHI

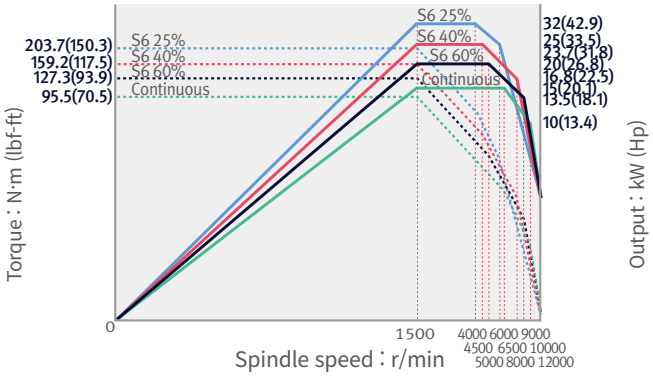
## HEIDENHAIN
## DNM 4500/L, DNM 5700/L

**12000 r/min**
Max. spindle power: 17 kW (22.8 Hp)
Max. spindle torque: 108.2 N·m (79.9 lbf-ft)

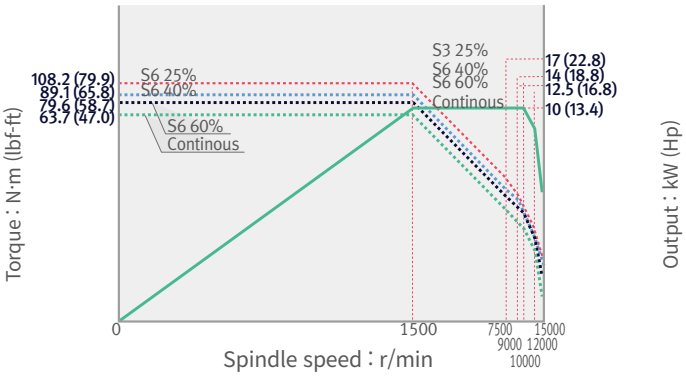



## HEIDENHAIN
## DNM 6700/L/XL

**12000 r/min**
Max. spindle power: 32 kW (42.9 Hp)
Max. spindle torque: 203.7 N·m (150.2 lbf-ft)

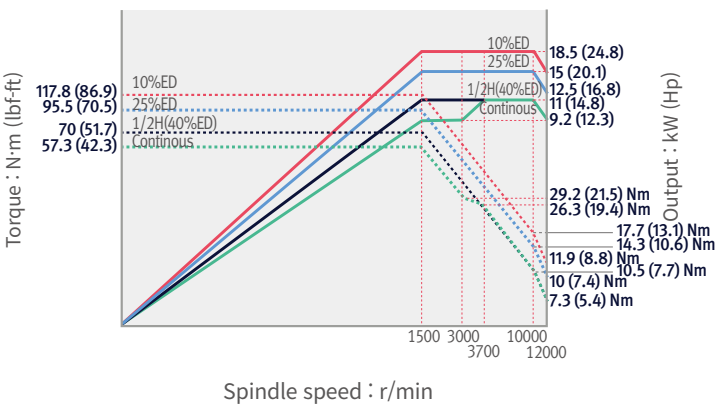



**15000 r/min** option
Max. spindle power: 17 kW (22.8 Hp)
Max. spindle torque: 108.2 N·m (79.9 lbf-ft)




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

**12000 r/min** option
Max. spindle power: 18.5 kW (24.8 Hp)
Max. spindle torque: 117.8 N·m (86.9 lbf-ft)

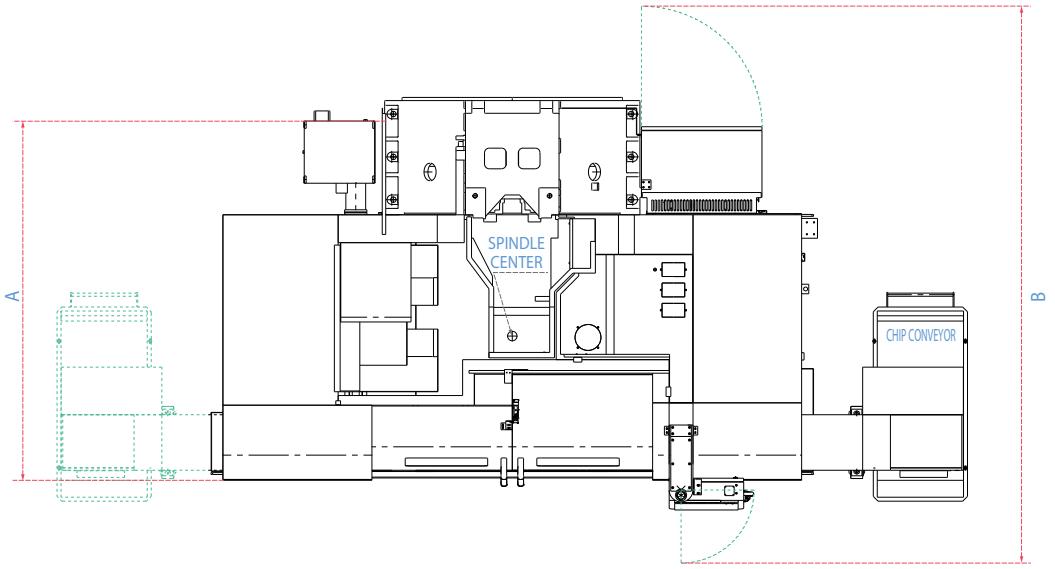


# DIMENSIONS

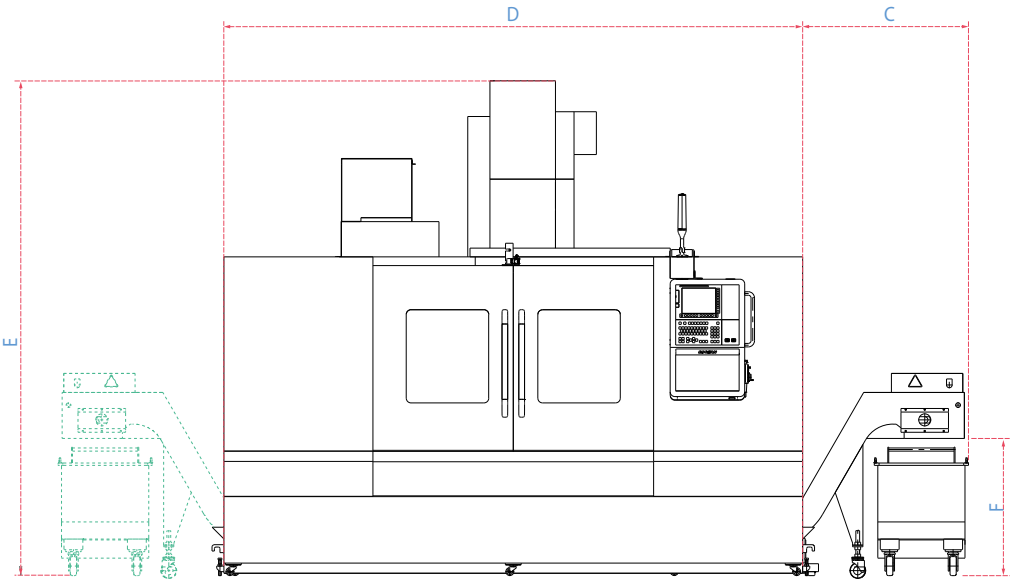
## DNM 4500/5700/6700 series

Units : mm (inch)

TOP




FRONT




| 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) |

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.

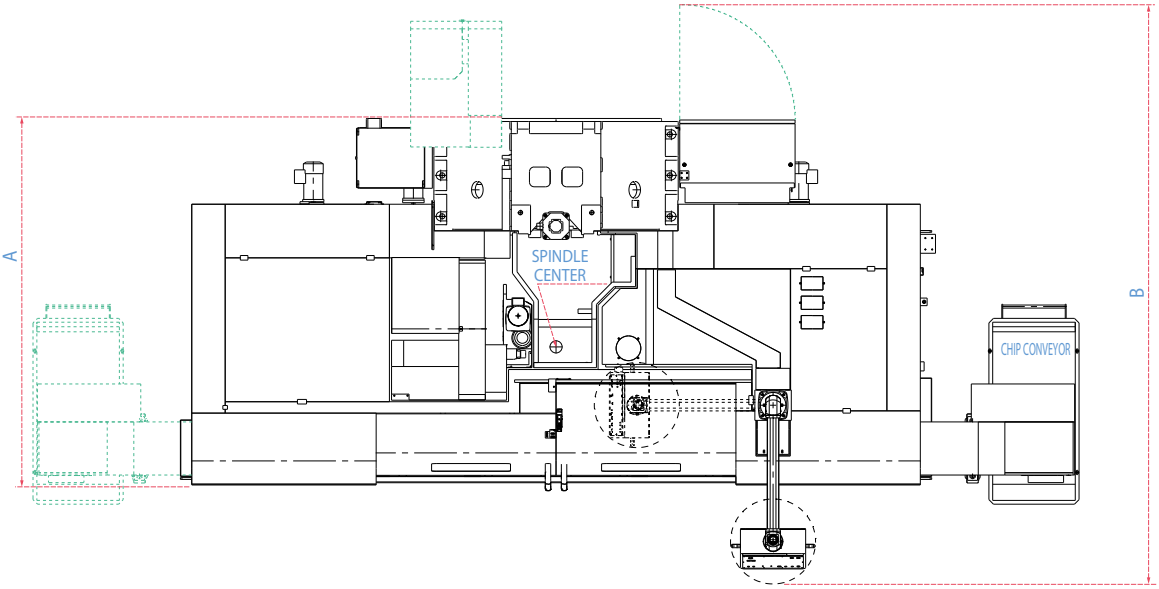
** Some peripheral equipment can be placed in other places  *Rear chipconveyor need discuss with sales person*

# DIMENSIONS

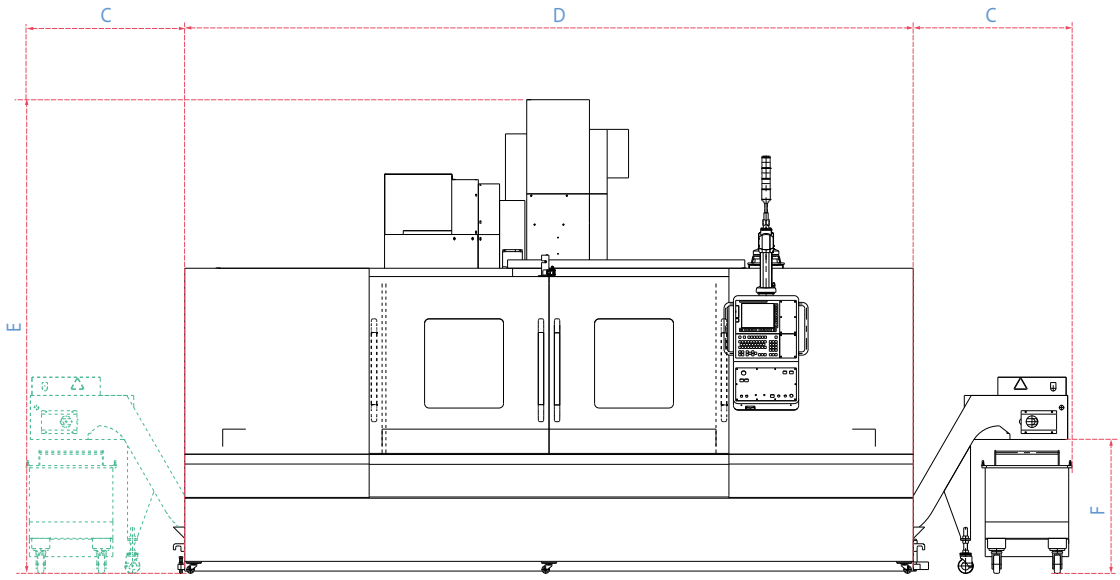
## DNM 6700XL

Units : mm (inch)

TOP




FRONT




| 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) |

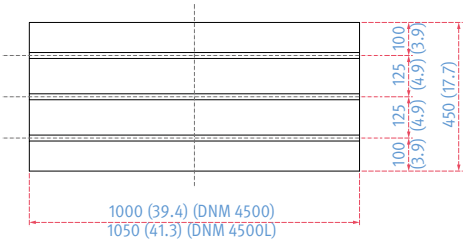
1 Max. machine length (including electric cabinet door and operation panel swiveling)
2 Additional width to accommodate the side chip conveyor. [ ] indicates the additional width required to accommodate a screw(auger)type chip conveyor.

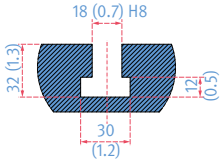
** Some peripheral equipment can be placed in other places  *Rear chipconveyor need discuss with sales person*

# TABLE

## DNM 4500/L

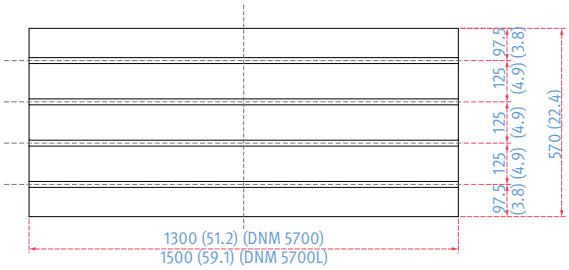
Units : mm (inch)

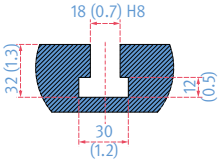



## DNM 5700/L

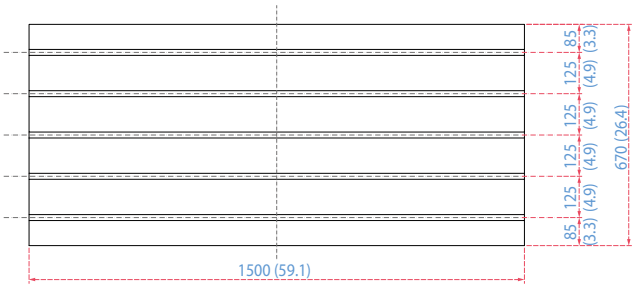
Units : mm (inch)

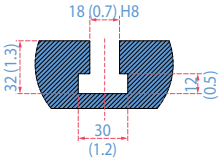



## DNM 6700

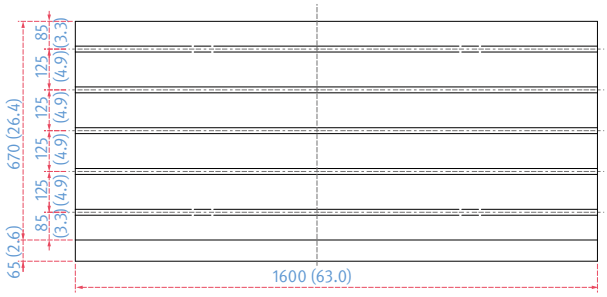
Units : mm (inch)

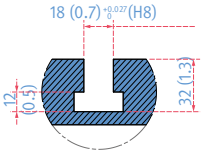



## DNM 6700L

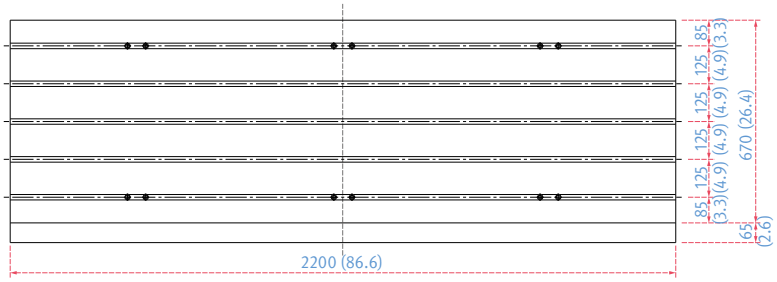
Units : mm (inch)

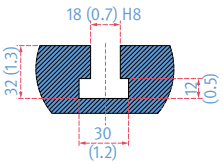



## DNM 6700XL

Units : mm (inch)



# MACHINE SPECIFICATIONS

| 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) |
| Contrel | NC system | | - | DN Solutions 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

# WHY DN SOLUTIONS

The DN Solutions promise, MACHINE GREATNESS, has two important meanings. The first is simple: DN Solutions makes great machines. The second is a challenge to our end-users. With a product line that is this comprehensive, accurate and reliable, we equip our customers to machine greatness. The big question: **Why should you choose DN Solutions over other options?**

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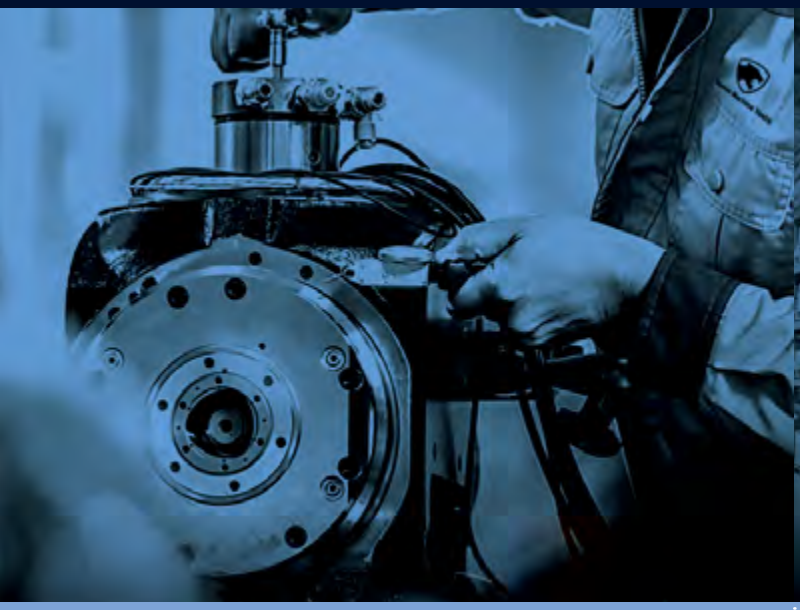

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- Supplying a wide range of original DN Solutions spare parts
- Parts repair service

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| | |
|---|---|
| 4 | Corporations |
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| 51 | Technical centers<br>Technical Center, Sales Support, Service Support, Parts Support |
| 200 | Service posts |
| 3 | Factories |

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