DN SOLUTIONS

HIGH PRODUCTIVITY VERTICAL TURNING CENTER

# PV 6300

**PV** 6300/L/R/ML/MR





# PV 6300

The new PV 6300Series comprises a range of 15"~18" chuck size vertical turning centers developed by DN Solutions using the latest technologies. The column-integrated box guideway and reinforced bed frame machines have a stronger and more rigid structure that is suitable for heavy-duty turning. The Series represents the largest turning capacity of its class further enhancing productivity and profitability.

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PV 6300M (ATC OPTION )

## ENHANCED MACHINING CAPACITY

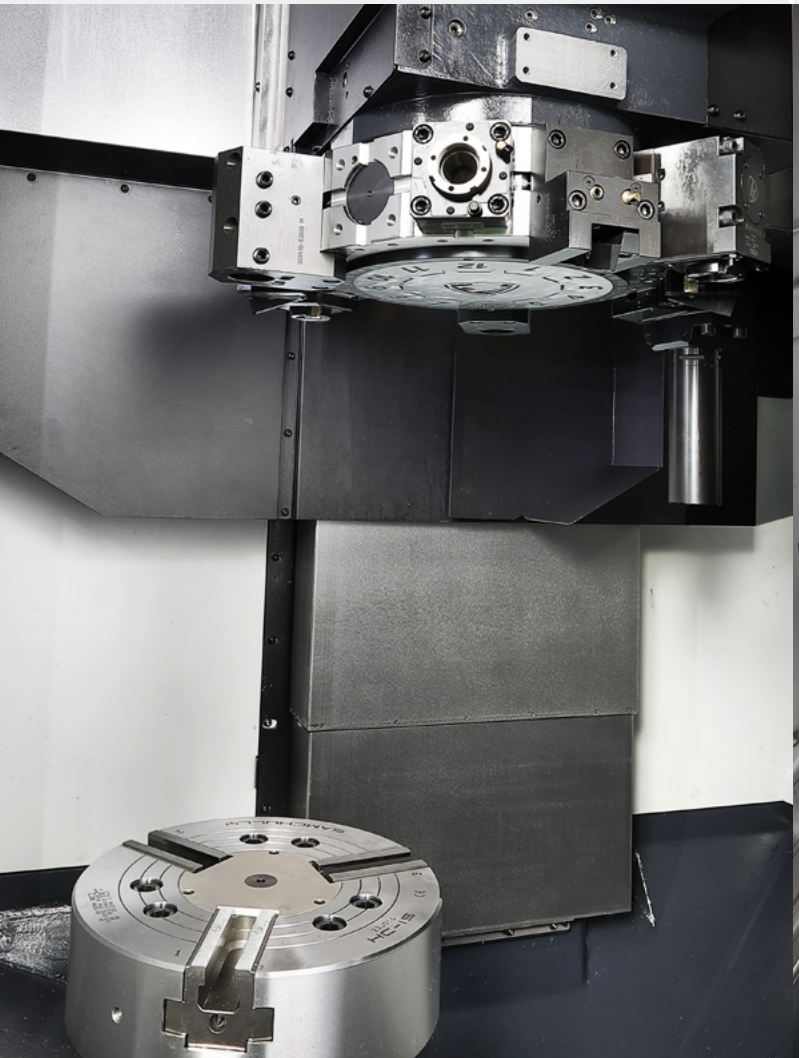
The largest turning capacity in its class is achieved with max. 18" m chuck size and 630 mm (24.8 inch) of max. turning diameter.

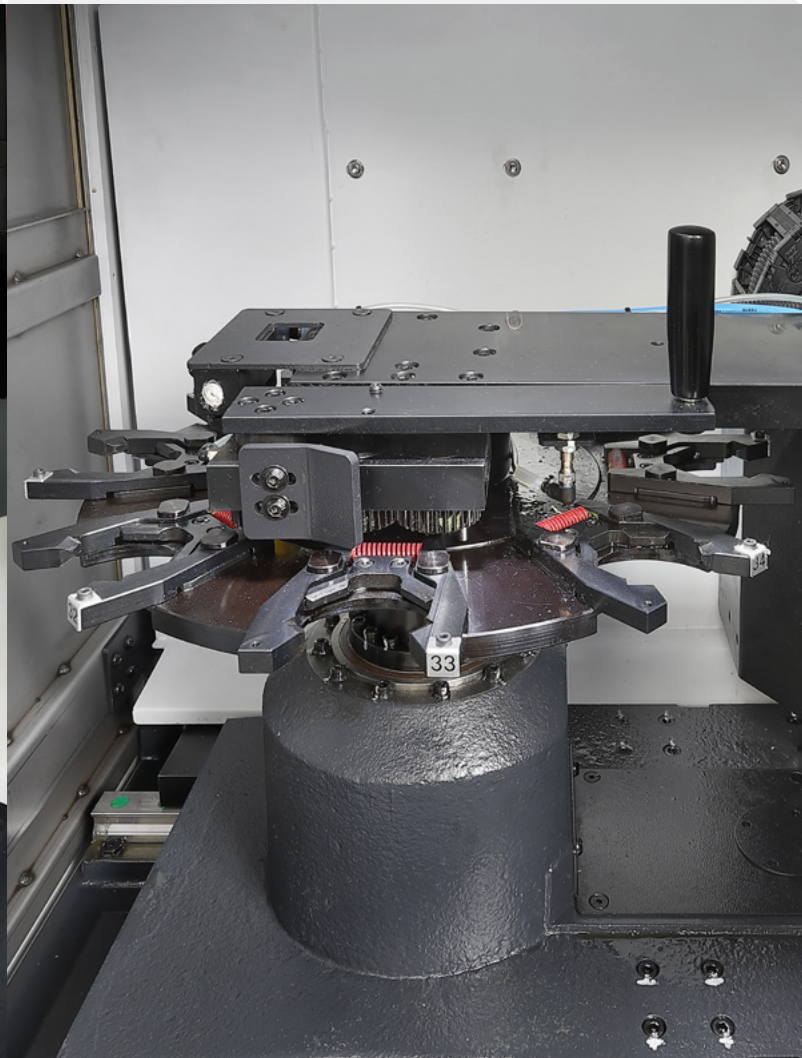
## HIGHEST POWER AND MACHINING PERFORMANCE IN ITS CLASS

- High power spindle for powerful cutting performance
  - Max. power 37kW, Torque 1638N·m
- Increase the number of tools with ATC option can improve the flexibility and efficiencyofmachining performance
- Fast and stable servo driven turret
- Robust BMT milling holder on turret and best-in-class high power rotary tool motor carry out high productivity in milling 〈M type model〉

## IMPROVED OPERATIONAL EFFICIENCY, INCLUDES IMPROVED CHIP DISPOSAL AND OPERATION PANEL

- Highly steep bed structure for easy chip disposal
- Intuitive and user-friendly
  DN Solutions FANUC i PLUS CNC
- Pendant type operation panel with easy movement of locating and height adjustment according to operator's workflow





# BASIC STRUCTURE

The integral box guideway bed design delivers vibration-free performance and ensures heavy duty and high precision cutting over long periods of operation.

The machine frame and structure have been redesigned to accommodate the enhanced specifications. The rapid traverse is increased to 20 m/min (787.4 ipm) for higher productivity.

**Travel distance**

**X-axis**

**400**(-85~315) mm
(15.7(-3.3~12.4) inch)

**Z-axis**

**660** mm (26.0 inch)

**Rapid traverse rate**

**X/Z-axis**

**20** m/min (787.4 ipm)




# MACHINING AREA*

Wider machining area for larger/more diverse workpieces.

## Wider machining area

The turning center now offers larger turning diameter and swing of workpiece.

**Max. turning diameter**

**Ø630** mm (24.8 inch)

**Max. turning height**

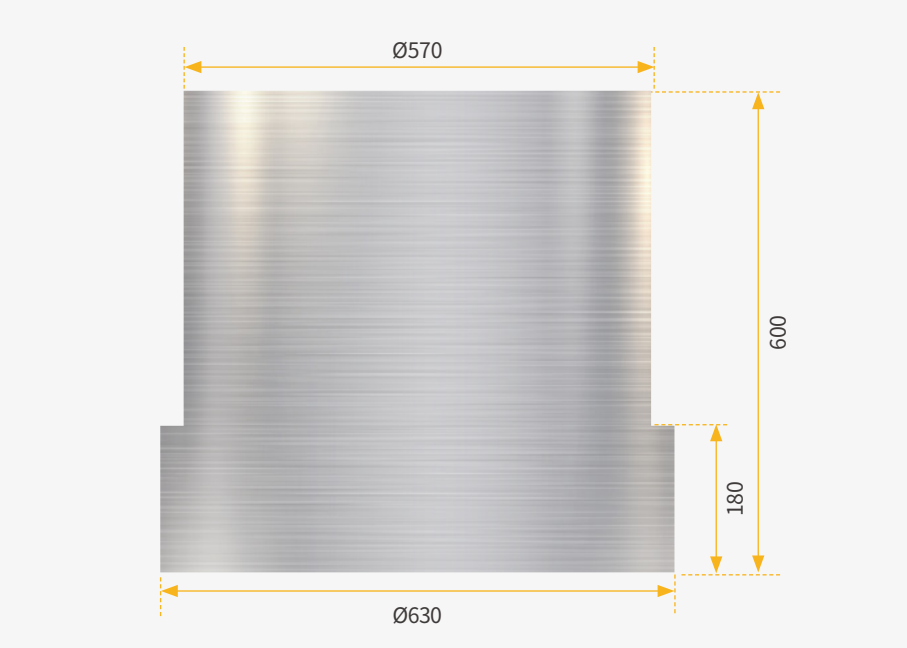
**600** mm (23.6 inch)

** When selecting options such as tool setter, it is necessary to check the machining area with DN engineers.*

**Chuck size**

**PV** 6300

**15** {18 OPTION} inch



# SPINDLE

Higher reliability and rigidity with improved base and spindle motor assembly.

## Stronger spindle

The highly rigid gearbox structure provides the highest power / torque in its class for heavy duty cutting and optimum performance. A variety of spindle specifications are available to suit customers' diverse requirements.

**Max. rotating speed**

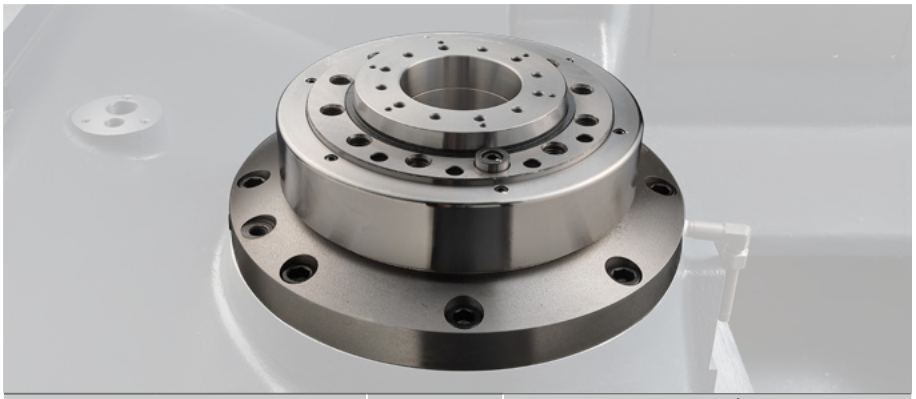
**2000** r/min

**Max. power (S6 25% / Cont.)**

**37/22** kW (49.6/29.5 Hp)

**Max. torque**

**1638** N·m (1208.8 ft-lbs)



| Description | | Unit | PV 6300/M |
|---|---|---|---|
| **Standard spindle** | Power | kW (Hp) | 26/22/18.5 (34.9/29.5/24.8) (S6 25% / S6 60% / S1 Cont.) |
| | Max. torque | N·m (ft-lbs) | 1116 (823.6) |
| **Option 1** | Power | kW (Hp) | 37/30/22 (49.6/40.2/29.5) (S6 25% / S6 60% / S1 Cont.) |
| | Max. torque | N·m (ft-lbs) | 1306 (963.8) |
| **Option 2 (Gear box)** | Power | kW (Hp) | 35/26/22 (46.9/34.9/29.5) (S6 25% / S6 60% / S1 Cont.) |
| | Max. torque | N·m (ft-lbs) | 1638 (1208.8) |
| **Spindle nose** | | ASA | A2-11 |
| **C-axis minimum rotation command angle (M type)** | | deg | 0.001 |

** C-axis contouring control is available with Belt direct type main spindle.*

# TURRET

The new servo turret facilitates faster indexing and accurate positioning.

## Strong and convenient Turret

Enable more powerful cutting by increasing width of turret disk. 2/3-axis turning holders are commonized to share same tools for 2/3-axis machines

**No. of tool positions**

**12** st

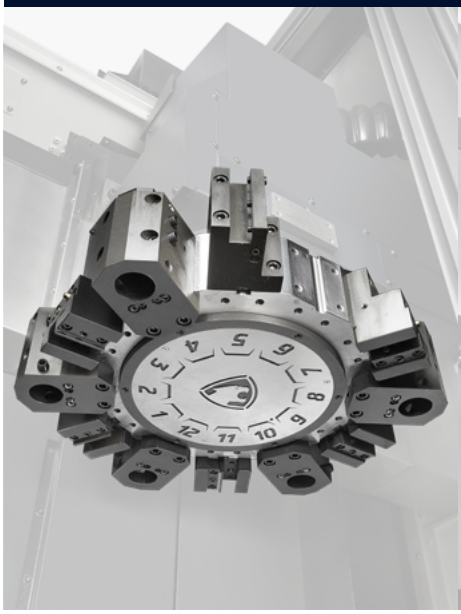
**Turret indexing time**

**0.2** sec

**Holder type**

**BMT65P**

**2-axis turret**



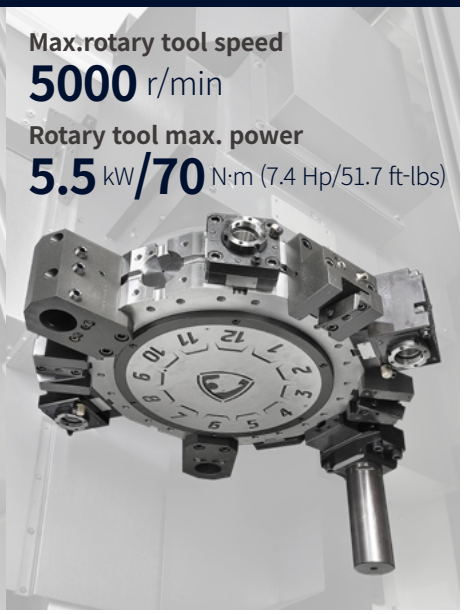
**Milling 3-axis turret**

**Max.rotary tool speed**

**5000** r/min

**Rotary tool max. power**

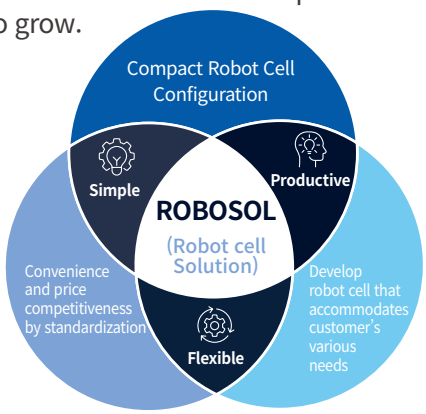
**5.5** kW/**70** N·m (7.4 Hp/51.7 ft-lbs)



# AUTOMATION SOLUTION

## ROBOSOL

By Standardizing Robot interface with our Vertical Turning Centers, DN SOLUTIONS provides high quality automation solution with potential to grow.




**Robot Cell Interface Standardization**

Guaranteed quality by standardized robot interface with vertical turning center

**Provision of Customized Cells**

Simple cell configuration and various modular option units for automation

**Provide User Convenience**

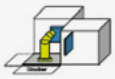
Convenient setup and accessibility

**Minimized loading/unloading time**

37.9% cycle time reduction by machine-robot optimization and interface improvement



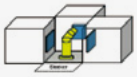
* Three types of ROBOSOL layout configuration



Type 1 :
A layout where two machines are consecutively arranged adjacent to two sides of the robot



Type 2 :
A layout where two machines are facing each other with the robot in between



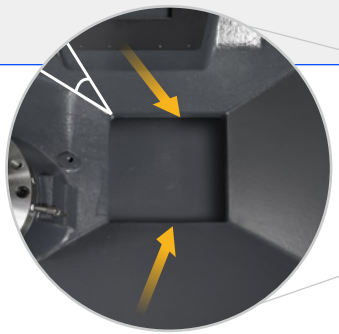
Type 3 :
A layout where three machines are arranged around three sides of the robot

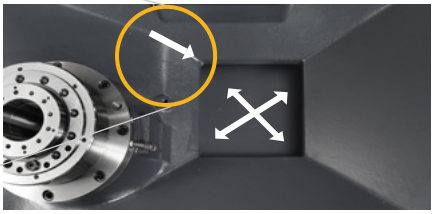
# CHIP DISPOSAL

Improved chip disposal system increase the convenience of operation and maintenance for chip disposal even when applying various automation application.

## Improved bed structure for easier chip disposal

A greater inclined slope results in improved chip removal from the working area, and a wider chip exit is able to handle higher chip volumes.





# AUTOMATIC TOOL CHANGER(ATC) OPTION

Increasing the number of tools with ATC option can improve the flexibility and efficiency of machine operation or automation, especially it is advantageous to avoid interference with adjacent tools during long boring machining and minimize downtime for tool change when changing workpieces

| Description | | Unit | PV 6300 |
|---|---|---|---|
| ATC Magazine | Tool shank | - | CAPTO C6 |
| | Tool storage capacity | ea | 8 |
| | Max. tool diameter | mm (inch) | 90 (3.5) |
| | Max. tool length | mm (inch) | 290 (11.4) |
| | Max. tool weight | kg (lb) | 10(22.0) |
| | Tool search time(1 port) | sec | 0.5 |
| | No. of CAPTO tool holder on turret | ea | 1~12 |

** Please contact DN Solutions for detailed ATC specifications.*





# STANDARD | OPTIONAL SPECIFICATIONS

Diverse optional features are available for customer-specific work applications.

| Description | Features | PV 6300 series |
|---|---|---|
| **Chuck** | 380 mm (15 inch) | ● |
| | 450 mm (18 inch) | ○ |
| | NONE | ○ |
| **Turret** | 12 st | ● |
| | 9 st + 1 Straddle tool | ○ |
| **Coolant pump direction** | Side | ○ |
| | Rear | ● |
| **Coolant pump** | 1.5 Bar | ● |
| | 4.5 Bar | ○ |
| | 7 Bar | ○ |
| | 10 Bar | ○ |
| | 14.5 Bar | ○ |
| | 20 Bar | ○ |
| | 70 Bar | ○ |
| **Coolant options** | High coolant interface | ○ |
| | Oil Skimmer(Belt type) | ○ |
| | Water soluble Coolant Chiller** | ○ |
| | Coolant pressure switch | ○ |
| | Coolant level switch : Sensing level - Low | ○ |
| **Chucking option** | Dual pressure chucking | ○ |
| | Chuck clamp conrmation | ● |
| **Work location confirmation** | Air limit sensor preperation_Festo | ○ |
| | Air limit sensor preperation_TACO | ○ |
| **Workpiece measurement** | Removable tool setter | ○ |
| | Auto tool setter(Electric) | ○ |
| | In-machine workpiece measuring system(Renishaw) | ○ |
| **Jaw** | Soft jaw | ● |
| | Hardend & Ground hard jaws | ○ |
| **Side chip conveyor** | Hinged belt | ○ |
| | Magnetic scrapper | ○ |
| **Rear chip conveyor** | Hinged belt | ○ |
| | Magnetic scrapper | ○ |
| **Chip processing options** | Chip bucket | ○ |
| | Air blower | ○ |
| | Chuck Coolant | ○ |
| | Bed flushing Coolant | ○ |
| | Air Gun | ○ |
| | Coolant gun | ○ |
| | Mist collector_1.5kW | ○ |
| | Mist collector_2.2kW | ○ |
| **Automatic configuration** | Auto door with safety edge | ○ |
| | Automatic side door | ○ |
| | Work & Tool counter | ○ |
| | OP panel position check (Pandent arm position check) | ○ |
| | Automoatic Tool Changer | ○ |
| **Robot Interface** | PMC I/O MODULE TYPE | ○ |
| | PROFIBUS-DP TYPE | ○ |
| **Optional devices** | Tool load mononitoring system | ● |
| | Signal tower | ○ |
| | Additional MPG | ○ |
| | Straddle tool preparation | ○ |
| | Linear scale (X-axis) | ○ |
| | Linear scale (Z-axis) | ○ |
| | Auto power off | ○ |
| | Quick change tooling(CAPTO) | ○ |
| **OP Panel type** | Pendant arm | ● |
| **Customized Special Option** | Rotary Type Window Wiper_Electrical | ○ |
| | Chip Conveyor_Drum Filter Type | ○ |
| | Chuck Type_4 Jaw_T-Slot | ○ |
| | Rotary Cylinder_For Air Limit Sensing | ○ |
| | Additional Hydraulic A/B Line | ○ |
| | Accumulator for Hydraulic Power Unit | ○ |
| | Air Blower Through Turret_with Coolant | ○ |

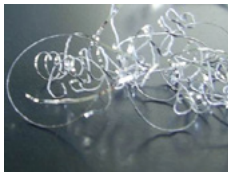
※ *Please contact your DN Solutions representative for detailed machine information.*
* *When using a semi-synthetic type or synthetic type, contact our sales representative or service center in advance.*
** *Technical consultation is mandatory for the chilling of non-water soluble coolant*

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

**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.

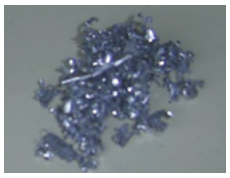
# PERIPHERAL EQUIPMENT

## Chip conveyor OPTION


Long


Short


Needle


Sludge

### Hinged belt type*

Most common type of chip conveyor. Appropriate for steel materials generating chips over 30mm (1.2inch).

### Magnetic scrapper type

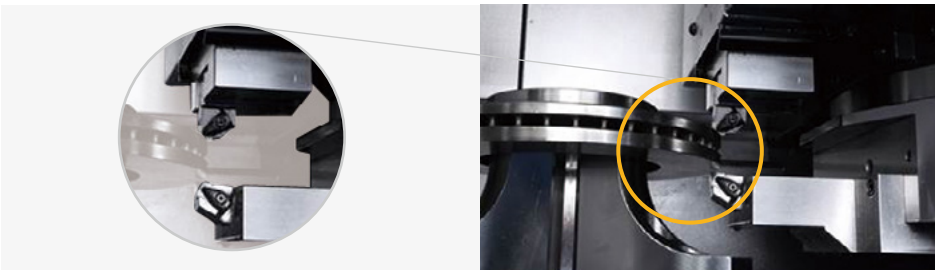
Chip conveyor with a magnet. Appropriate for machining cast iron and the generation of fine chips.

| Material / Chip conveyor type | | Carbon steel | | | Cast iron | | Aluminium | | |
|---|---|---|---|---|---|---|---|---|---|
| | | Long | Short | Needle | Short | Sludge | Long | Short | Needle |
| Hinged belt type* | | ○ | △ | X | △ | X | ○ | △ | X |
| Scrapper type | Magnetic | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| Drum filter type** | Hinged type | ○ | △ | X | △ | X | ○ | △ | X |
| | Scrapper | X | ○ | △ | ○ | △ | X | ○ | △ |

*○ : Suitable, △ : Possible, X : Not suitable*

## Servo straddle tool OPTION

Simultaneous dual side cutting for higher productivity.



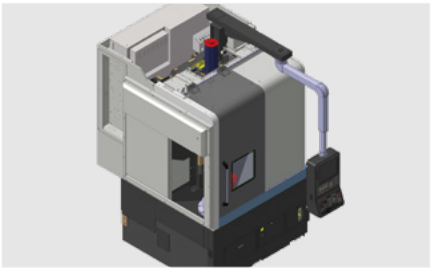
## Quick change CAPTO OPTION

The quick change tool system simplies tool change operations. It is recommended for users who need to a) change tools frequently or b) reduce set-up times.



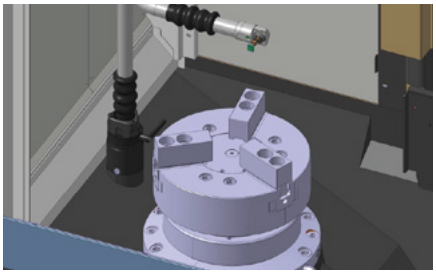
## Auto side door OPTION

Automatic side door enables the machine to become automated.



## Detachable tool setter OPTION

The tool setter facilitates the setting of cutting tools, and can be used to detect worn tools.



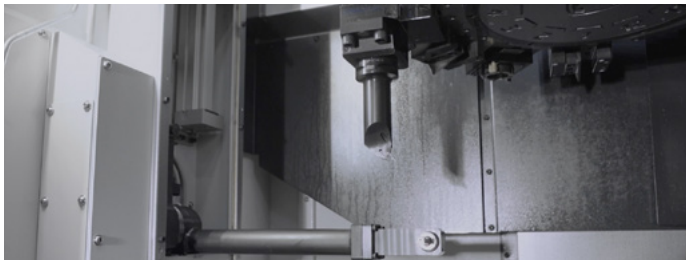
## Axis-tool number display OPTION

Axis-tool 'Number Display' is located inside the machine and it displays real time information to the operator.



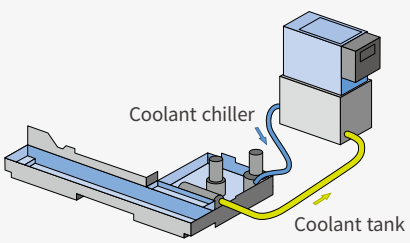

## Auto Tool Setter OPTION

Tool measurement for initial setting and worn tool length compensation can proceed without manual work or machine stop



## Coolant chiller (recommended) OPTION

A coolant chiller is recommended to help prevent temperature rises and to reduce thermal deformation when using a water-insoluble coolant or high-pressure coolant system (i.e., power over 1.5kW).



# DN SOLUTIONS FANUC i PLUS

DN Solutions Fanuc i Plus maximizes customer productivity and convenience.



### 15" Screen + New OP

DN Solutions Fanuc i Plus' operation panel enhances operating convenience by incorporating common-design buttons and layout. It features a Qwerty keyboard for fast and easy data input and operation.

### DN Solutions Fanuc i Plus

- 15-inch color display
- Intuitive and user-friendly design

### USB and 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

| Division | Item | Specifications | 2-axis | M |
|---|---|---|---|---|
| | | | DN Solutions Fanuc i Plus | DN Solutions Fanuc i Plus |
| Controlled axis | Controlled axes | | 2 (X,Z) | 3 (X,Z,C) |
| | Simultaneously controlled axes | | 2 axes | 3 axes |
| Data input/output | Fast data server | | ○ | ○ |
| | Memory card input/output | | ● | ● |
| | USB memory input/output | | ● | ● |
| | Larger capacity memory_2GB | Note *2) Available Option only with 15" Touch LCD (iHMI Only) | ○ *2) | ○ *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 | ● | ● |
| Feed function | AI contour control I | G5.1 Q_, 40 Blocks | ● | ● |
| | AI contour control II | G5.1 Q_, 200 Blocks | ○ | ○ |
| Operation Guidance Function | EZ Guidei (Conversational Programming Solution) | | ● | ● |
| | iHMI with Machining Cycle | Note *1) Only with 15" Touch LCD standard | ○ *1) | ○ *1) |
| | Multi path function | Supporting 2 or 3 path machine | ● | ● |
| | EZ WORK | | ● | ● |
| Setting and display | CNC screen dual display function | | ● | ● |
| Network | FANUC MTConnect | | ✪ | ✪ |
| | FANUC OPC UA | | ✪ | ✪ |
| Others | Display unit | 15" color LCD | ● | ● |
| | | 15" color LCD with Touch Panel | ○ | ○ |
| | Part program storage size & Number of registerable programs | 5120M(2MB)_1000 programs | ● | ● |

*Network: FANUC MTConnect and FANUC OPC UA available.*

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

# POWER | TORQUE

FANUC

## PV 6300/M

**Max. spindle speed**

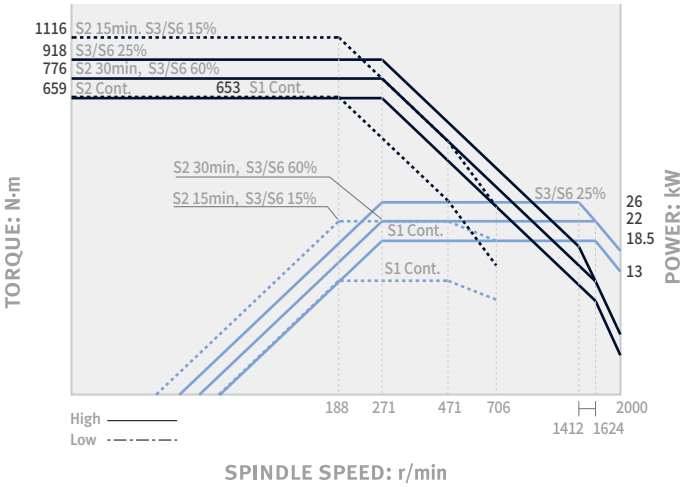
**2000** r/min

**Max. spindle power**

**26** kW (34.9 Hp)

**Max. Spindle torque**

**1116** N·m (823.6 ft-lbs)




## PV 6300/M OPTION

**Max. spindle speed**

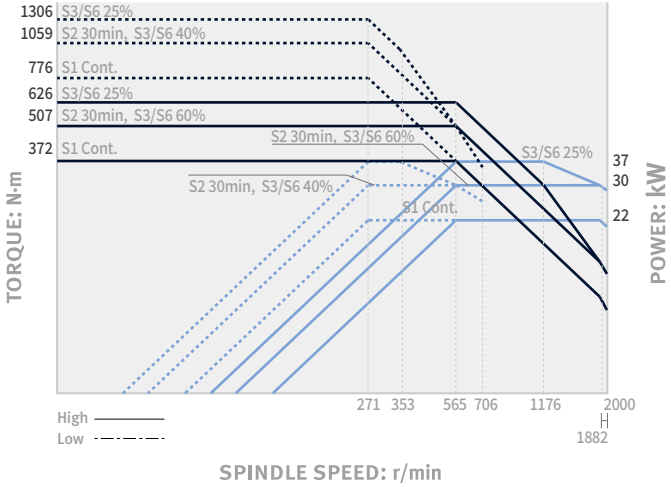
**2000** r/min

**Max. spindle power**

**37** kW (49.6 Hp)

**Max. Spindle torque**

**1306** N·m (963.8 ft-lbs)




## PV 6300/M, Gear box OPTION

**Max. spindle speed**

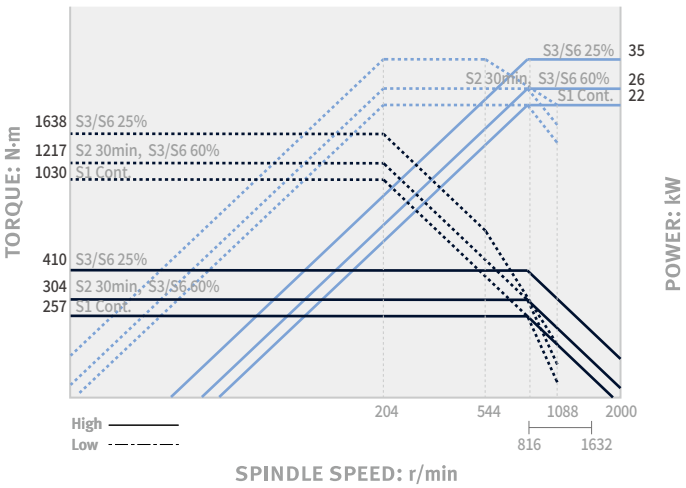
**2000** r/min

**Max. spindle power**

**35** kW (46.9 Hp)

**Max. Spindle torque**

**1638** N·m (1208.8 ft-lbs)




## Rotary Tool_PV 6300M

**Max. spindle speed**

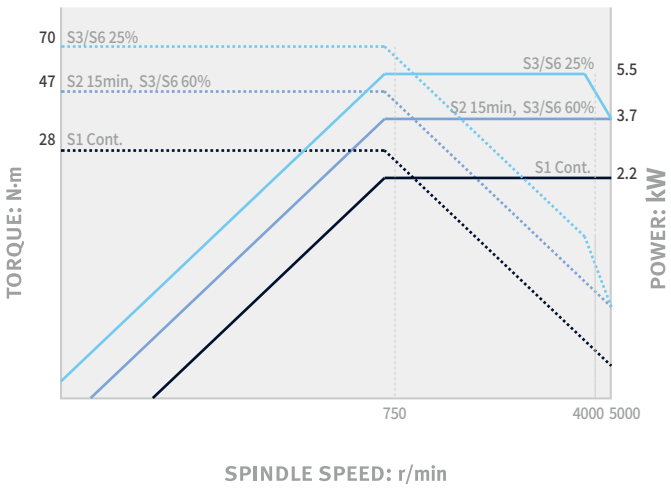
**5000** r/min

**Max. spindle power**

**5.5** kW (7.4 Hp)

**Max. Spindle torque**

**70** N·m (51.7 ft-lbs)

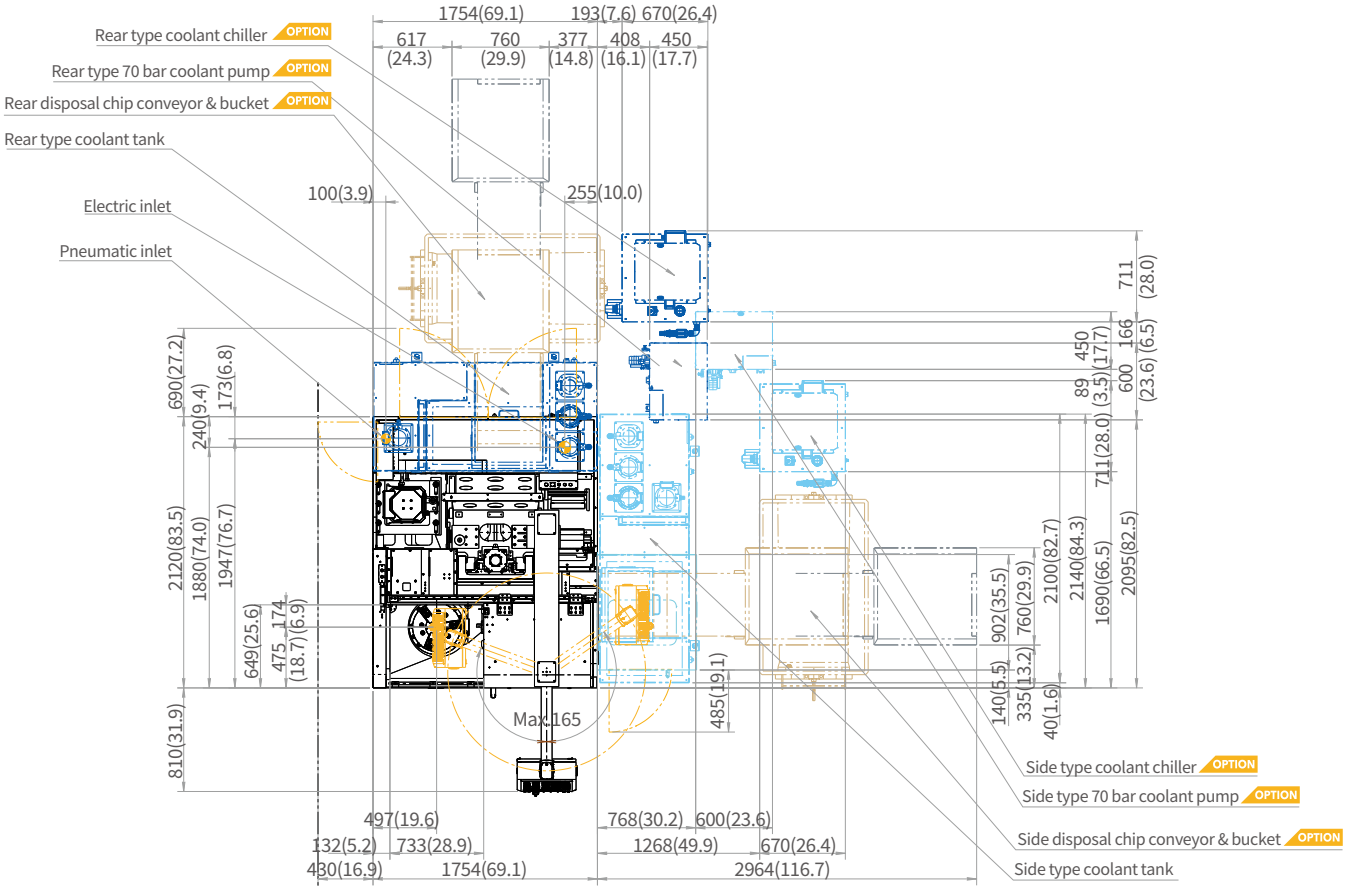


# EXTERNAL DIMENSIONS

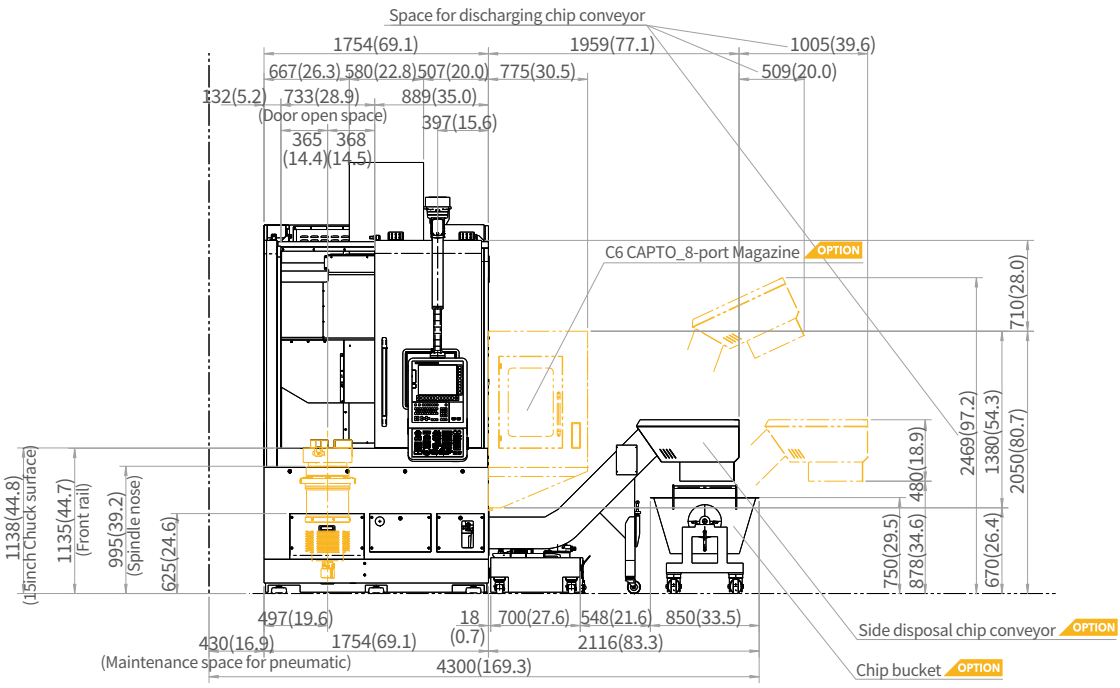
## PUMA V6300/M (R type)

*Unit : mm (inch)*

TOP




FRONT



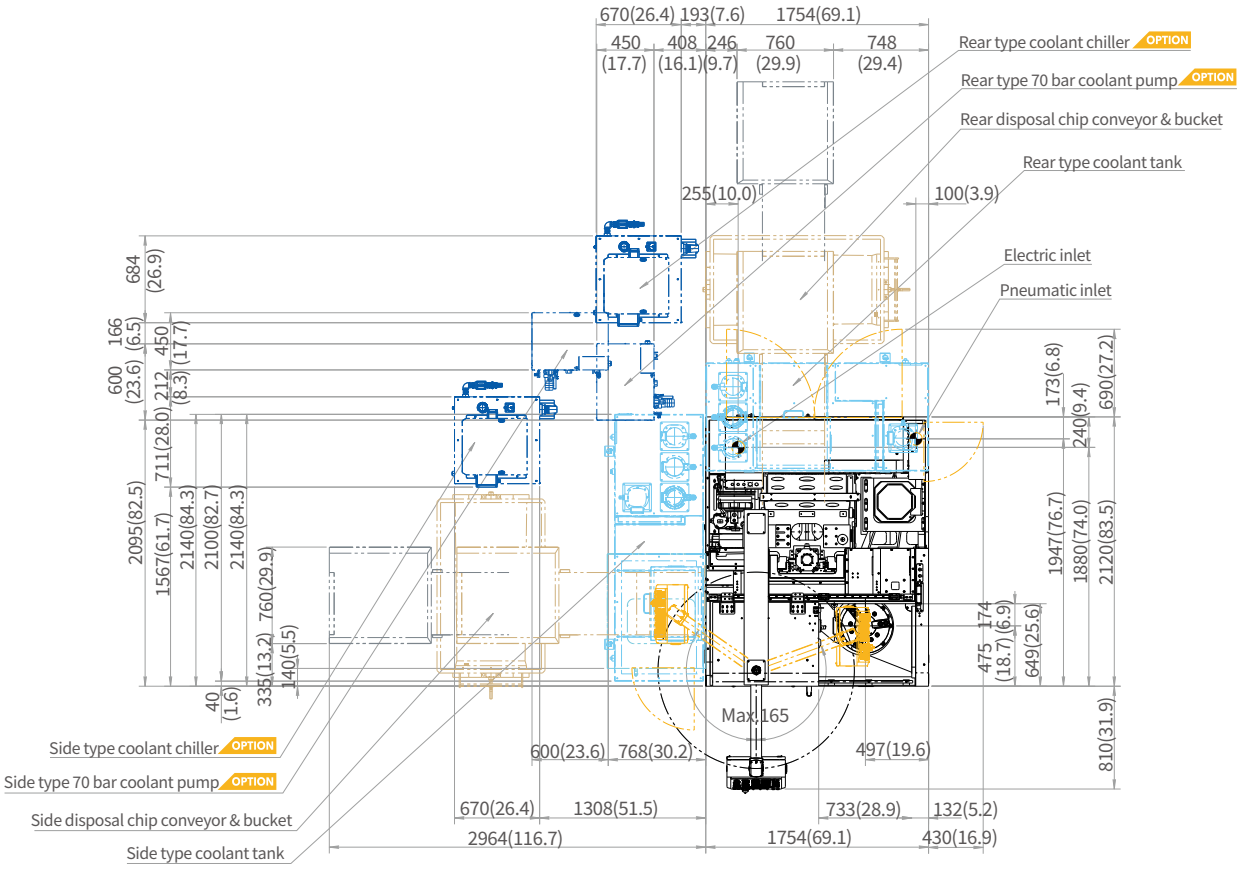

** Some peripheral equipment can be placed in other areas.*

# EXTERNAL DIMENSIONS

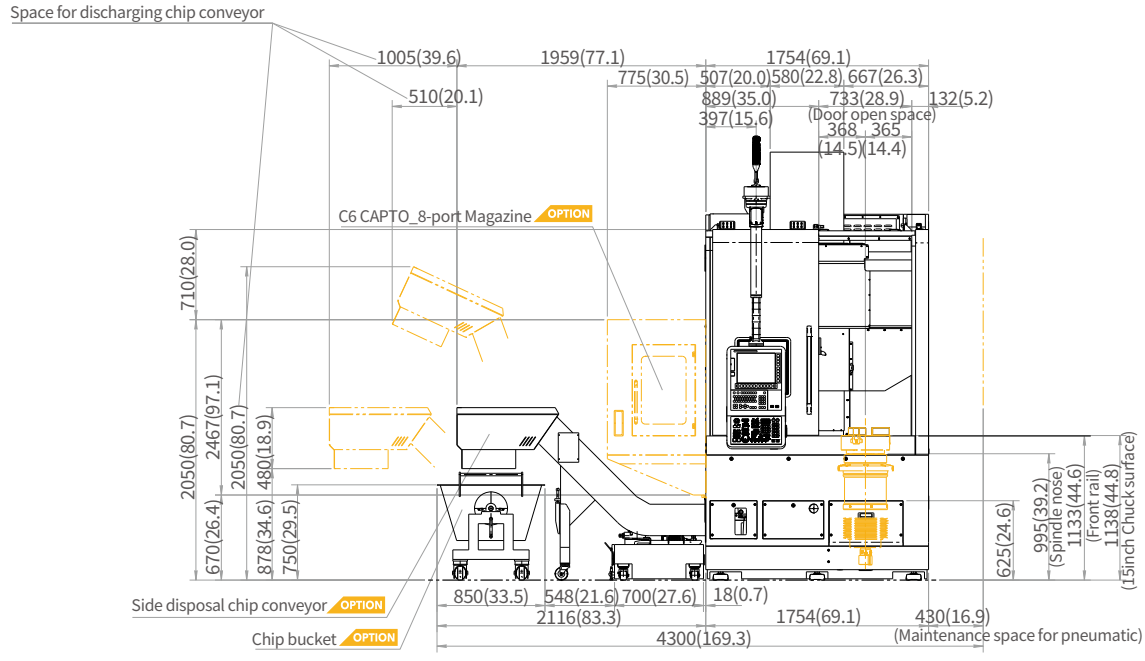
## PUMA V6300/M (L type)

*Unit : mm (inch)*

TOP




FRONT



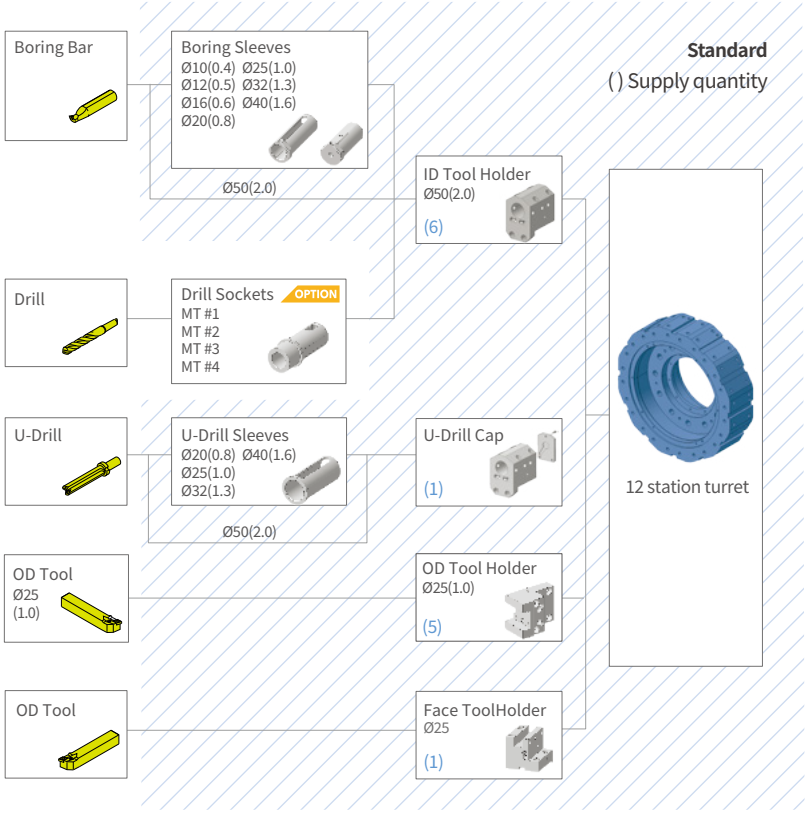



** Some peripheral equipment can be placed in other areas.*

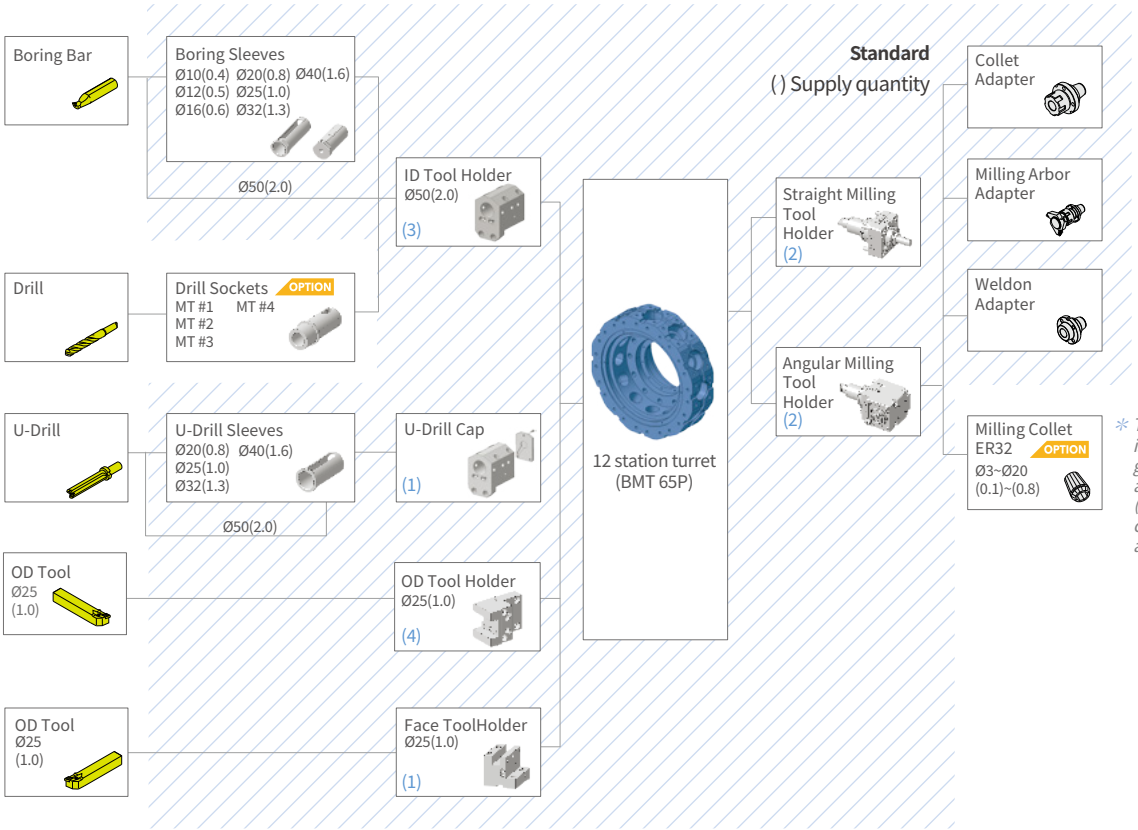
# TOOLING SYSTEM

*Unit : mm (inch)*

## **PV 6300** (12st)




## **PV 6300M** (12st, BMT65P)

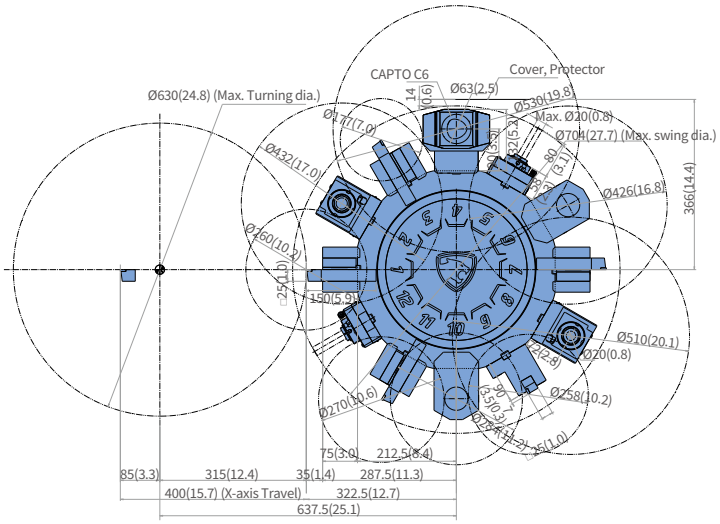



* *The milling collet is available as a general option, and special collets (TTC, TSC, tapping collets, etc.) are not available.*

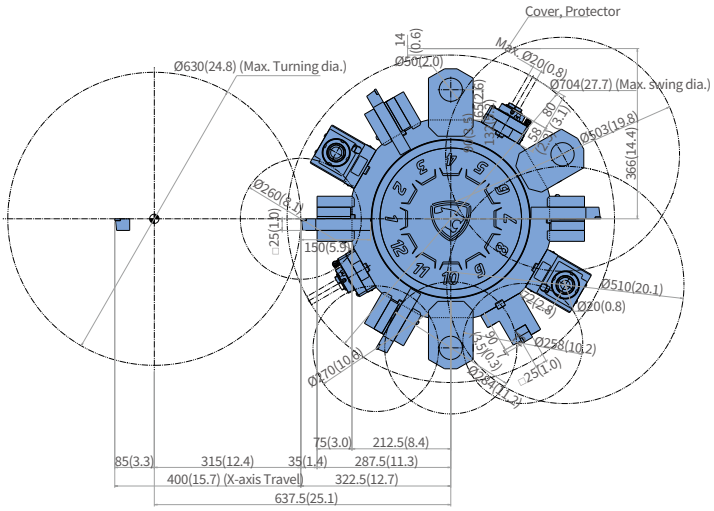
# TOOL INTERFACE

*Unit : mm (inch)*

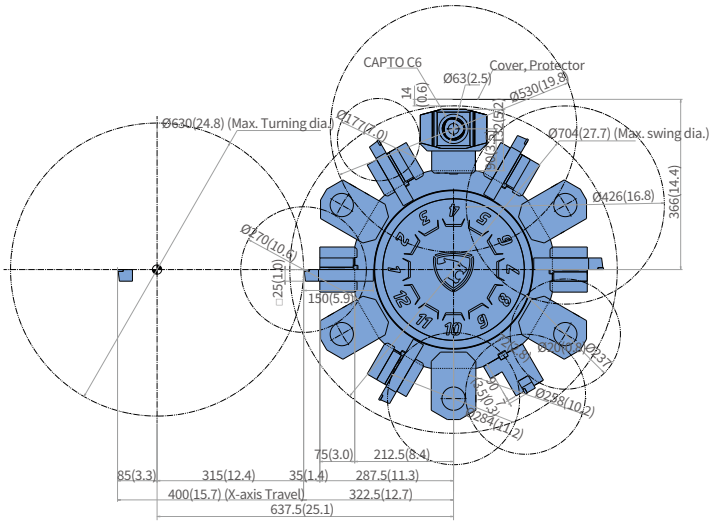
## **PV 6300MR** (3-axis, 12st_ATC)



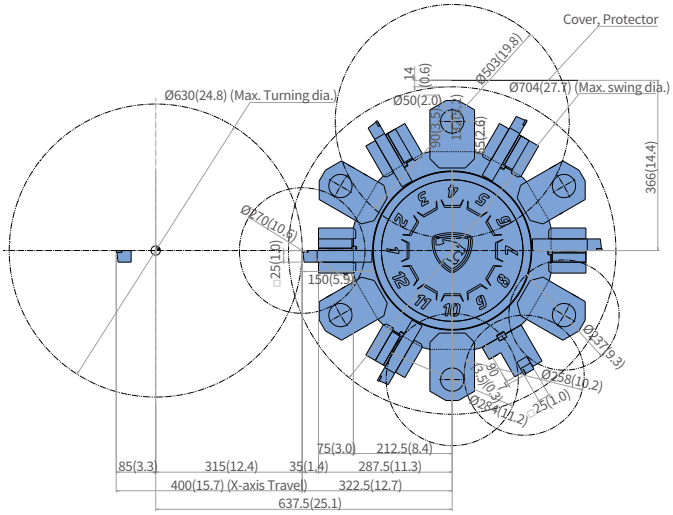

## **PV 6300MR** (3-axis, 12st)




## **PV 6300R** (2-axis, 12st_ATC)




## **PV 6300R** (2-axis, 12st)

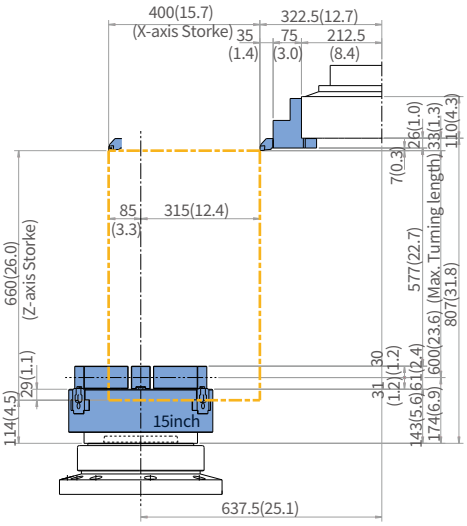


# WORKING RANGE

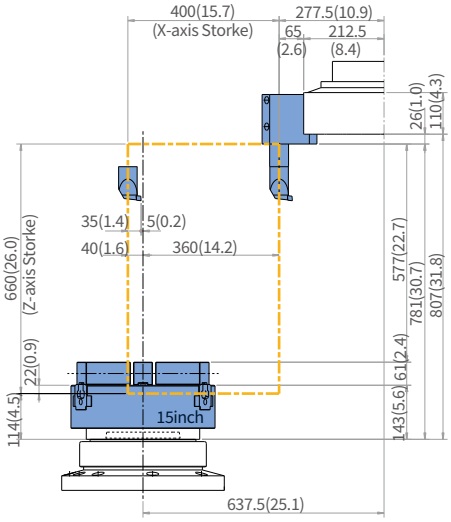
PV 6300

*Unit : mm (inch)*

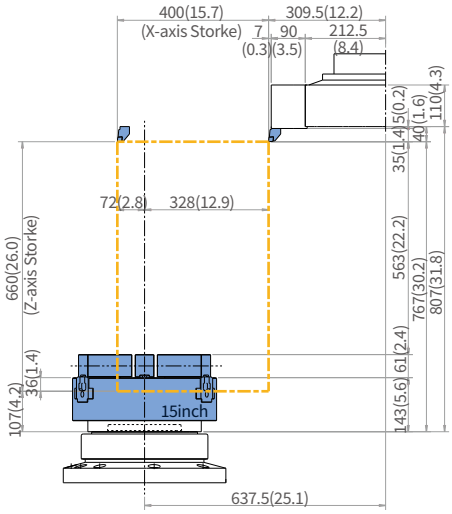
## OD HOLDER



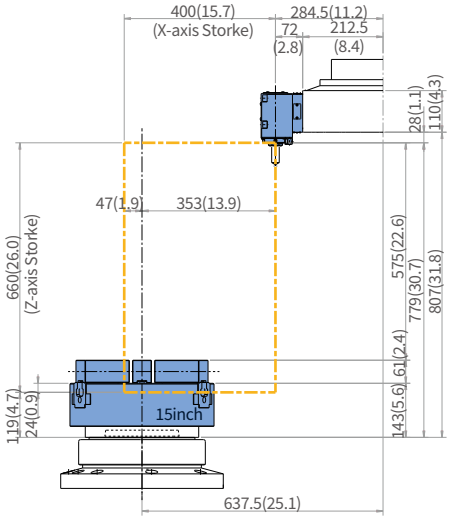

## ID HOLDER



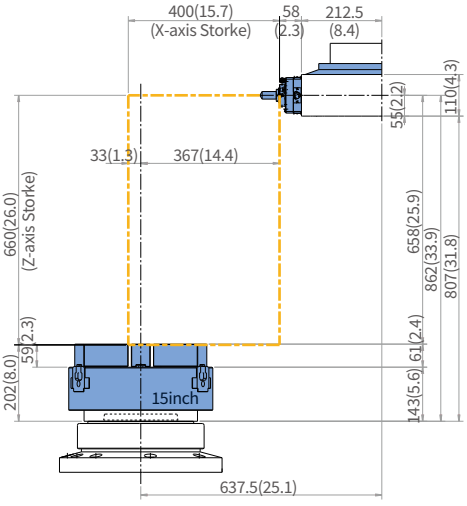

## FACE HOLDER




## ANGULAR MILLING HOLDER




## STRAIGHT MILLING HOLDER



# MACHINE SPECIFICATIONS

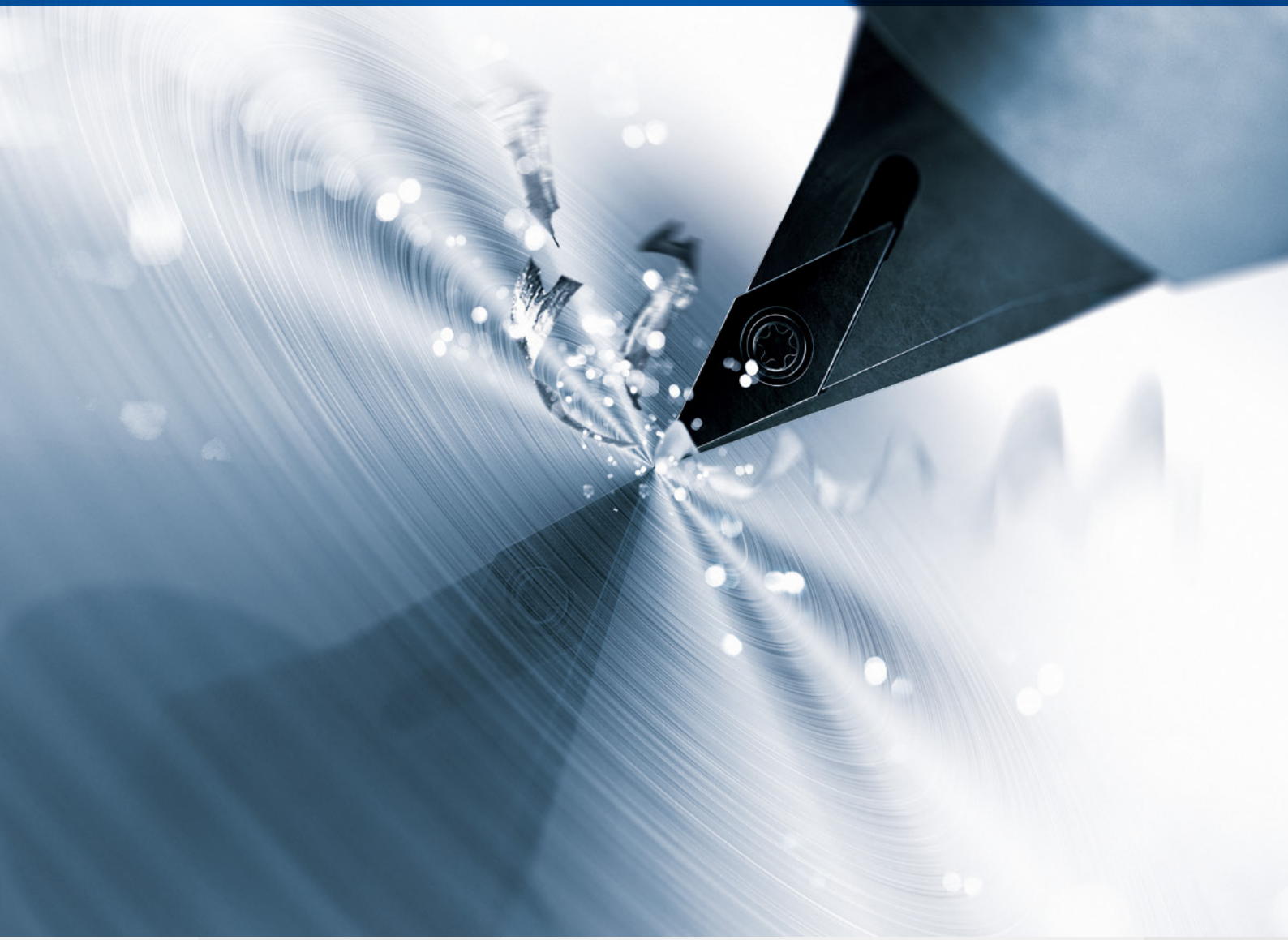
PV 6300 series

| Description | | | Unit | PV 6300 | PV 6300M |
|---|---|---|---|---|---|
| Capacity | Swing over bed | | mm (inch) | 700 (27.6) | |
| | Swing over saddle | | mm (inch) | 570 (22.4) | |
| | Recommended turning diameter | | mm (inch) | 380 (15.0) | |
| | Max. turning diameter | | mm (inch) | 630 (24.8) | |
| | Max. turning length | | mm (inch) | 600 (23.6) | |
| | Chuck size | | inch | 15 {18 }* | |
| Travel | Travel distance | X-axis | mm (inch) | 400 (15.7) | |
| | | Z-axis | mm (inch) | 660 (26.0) | |
| Feedrate | Rapid traverse | X-axis | m/min (ipm) | 20 (787.4) | |
| | | Z-axis | m/min (ipm) | 20 (787.4) | |
| Spindle | Spindle speed | | r/min | 2000 | |
| | Spindle moter power (FANUC)<br>(S6 25%/S6 60%/Cont.) | | kW | 26/22/18.5 (34.9/34.9/24.8)<br>{37/30/22, 35/26/22 (49.6/40.2/29.5,(46.9/34.9/29.5)} | |
| | Spindle moter torque(FANUC) | | N · m (ft-lbs) | 1116 {1306, 1638} (823.6 {963.8, 1208.8}) | |
| | Spdinel nose | | ASA | A2-11 | |
| | Spindle bearing diameter | | mm (inch) | 160 (6.3) | |
| | C-axis min.indexing angle | | deg | - | 0.001 |
| Turret | No.of tool stations | | ea | 12 | |
| | OD tool size | | mm (inch) | 25 x 25 (1.0 x 1.0) | |
| | Turret indexing time(1st swivel) | | sec | 0.2 | |
| | Max.rotary tool speed | | r/min | - | 5000 |
| | Ratary tool motor power (FANUC)<br>(S6 25%/S6 60%/Cont.) | | kW (Hp) | - | 5.5/3.7/2.2 (7.4/5.0/3.0) |
| Power source | Power consumption | | kVA | 41.10 {45.22, 45.22} | |
| Machine dimensions | Length x Width | | mm (inch) | 1754 x 2590 (69.1 x 102.0) | |
| | Height | | mm (inch) | 3369 (132.6) | |
| | Weight | | kg (lb) | 7800 (17195.8) | |
| Control | CNC system | | | DN Solutions Fanuc i Plus | |

*{ } : Option

# 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?*** Here's why…



## UNBEATABLE MACHINES

You won't find a more comprehensive range or a better combination of value, performance and reliability anywhere else.

## READILY AVAILABLE - ANYWHERE IN THE WORLD

Machining centres (including 5-axis machines), lathes, multi-tasking turning centres and mill-turn machines, and horizontal borers with best-in-class specifications are all available…ready to install.

## ROBUST PRODUCT LINE

We offer an impressive range of machine models and hundreds of configurations. Whatever your machining needs and requirements, there's a DN Solutions for you.

## EXPERT SERVICE

Our dedicated, experienced and knowledgeable team is totally committed to improving your productivity, growth and success.

# CUSTOMER SUPPORT AND SERVICES

## WE'RE THERE FOR YOU WHENEVER YOU NEED US.

We help our customers operate at maximum efficiency by providing them with a range of tried, tested and trusted services - from pre-sales consultancy to post-sales support.



### FIELD SERVICES

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



### PARTS SUPPLY

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



### TRAINING

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




### TECHNICAL SUPPORT

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

# RESPONDING TO CUSTOMERS **ANYTIME, ANYWHERE**

## DN SOLUTIONS GLOBAL NETWORK

DN Solutions provides systems-based professional support services, before and after the machine tool sale, by responding quickly and efficiently to customers. By supplying spare parts, product training, field service and technical support, we provide the expert care, attention and assistance our customers expect from a market leader.




| | |
|---|---|
| **66** | COUNTRIES |
| **140+** | SALES NETWORKS |
| **3** | FACTORIES |
| **6** | REGIONAL HQS |



DN SOLUTIONS

dn-solutions.com


### *Head Office*

19F, 10, Tongil-ro, Jung-gu, Seoul,
Republic of Korea, 04527

Tel: +82-2-6972-0370
Fax: +82-2-6972-0400

### *DN Solutions America*

360 E State PKWY,
Schaumburg, IL. 60173,
United states

Tel: +1-315-265-7500

### *DN Solutions Europe*

Emdener Strasse 24, D-41540
Dormagen, Germany

Tel: +49-2133-5067-100
Fax: +49-2133-5067-111

### *DN Solutions (India) Private Limited.*

Plot No. 137, Devanahalli General
Industrial Area ( KIADB ), ACIL,
Kundana and Kasaba Area,
Devanahalli, Bengaluru Rural – 562110.
Karnataka, INDIA.

Email: info.india@dncompany.com

### *DN Solutions China*

Room 101,201,301,
Building 39 Xinzhuan Highway
No.258 Songjiang District
China Shanghai (201612)

Tel: +86 21-5445-1155
Fax: +86 21-6405-1472

### *DN Solutions Vietnam*

M.O.R.E building 2F, 40A-40B Ut
Tich Street, 04 Ward 04,
District Tan Binh District,
Ho Chi Minh City, Vietnam

Tel: +84 28-7304-0163

### *DN Solutions Mexico*

Avenida Parque Bicentenario
#100 Nave M65L3-6,
Fraccionamiento San Isidro
Business Park,
Santa Rosa Jauregui,
Querétaro, México

E-mail: efrain.figueroa@
dncompany.com

### *Sales inquiry*

sales@dncompany.com


** For more details, please contact DN Solutions.*
** Specifications and information contained within this catalogue may be changed without prior notice.*

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