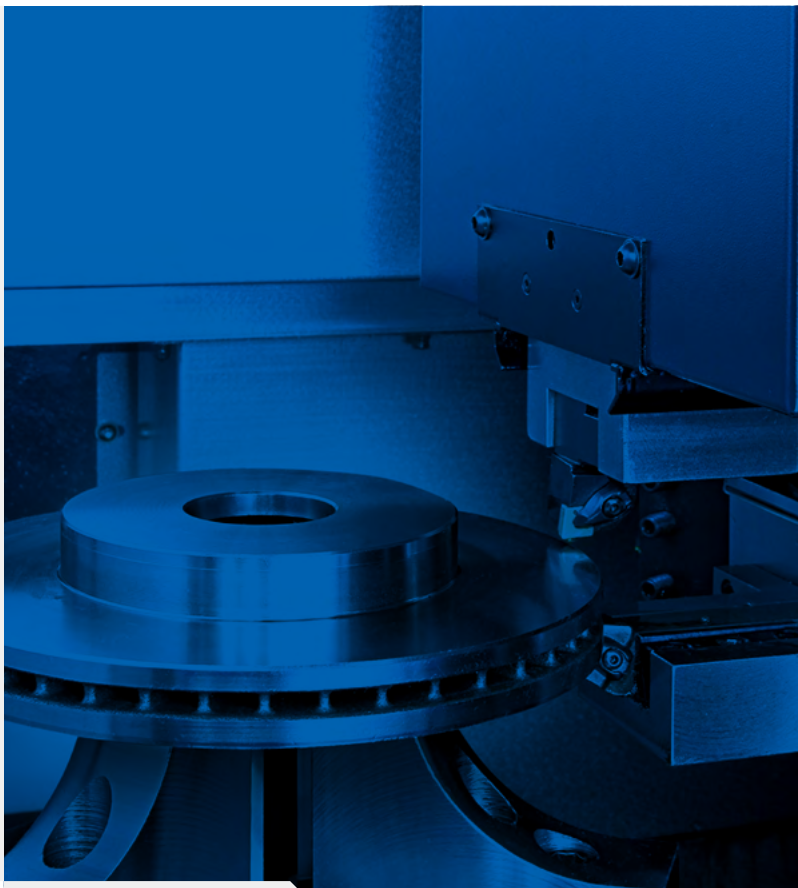
DN SOLUTIONS

HIGH PERFORMANCE VERTICAL TURNING CENTER

PUMA

PUMA V400/L/R/ML/MR/PL/PR



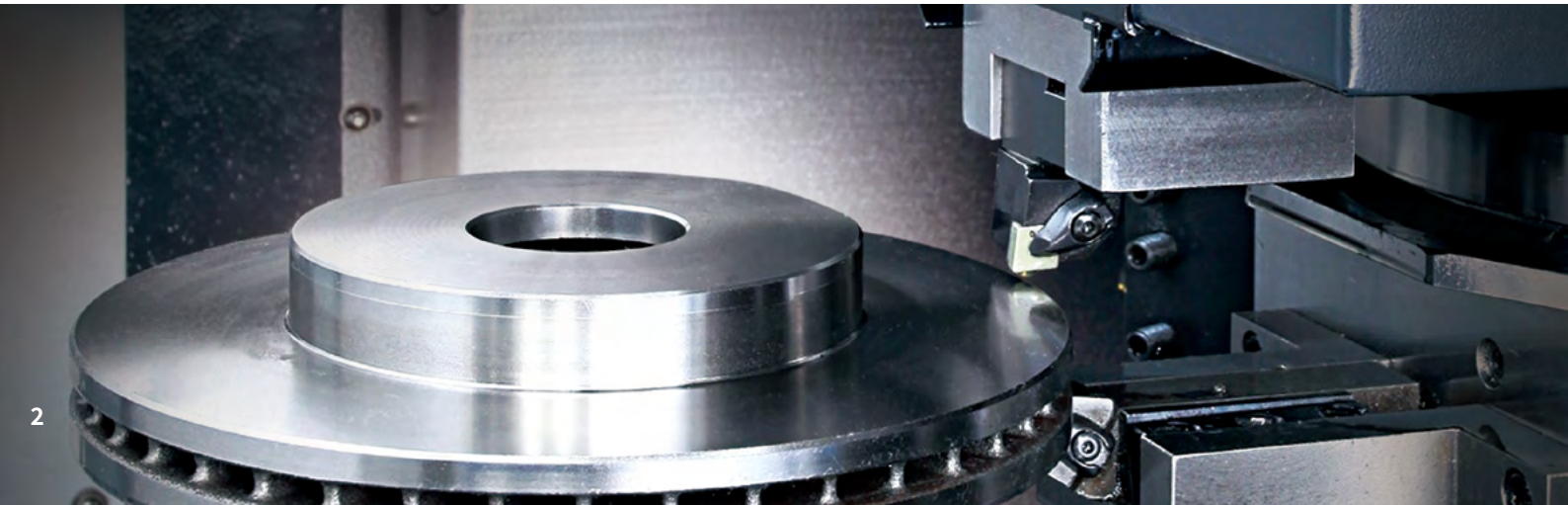


PUMA V400 SERIES

The compact vertical turning center has a small footprint and is ideal for heavy-duty machining operations and for achieving long term accuracies. Its powerful spindle drives, meehanite casting and integral box guideway construction provide unsurpassed stability and rigidity.









ENHANCED TURNING CAPACITY

These machines have exceptional machining capabilities and are able to deliver the optimum in productivity for customers.

HIGH RELIABILITY

To facilitate heavy duty machining and optimize chip flow, the machine's base has been streamlined.

USER FRIENDLY DESIGN

The bed structure has been redesigned to enable high chip volumes to be disposed of - quickly and efficiently. For operator comfort and convenience the height of the operation panel can be adjusted.

BASIC STRUCTURE | MACHINING AREA

The machine's integral box guideway bed design ensures vibration-free performance and facilitates heavy duty and high precision cutting.

Robust bed construction

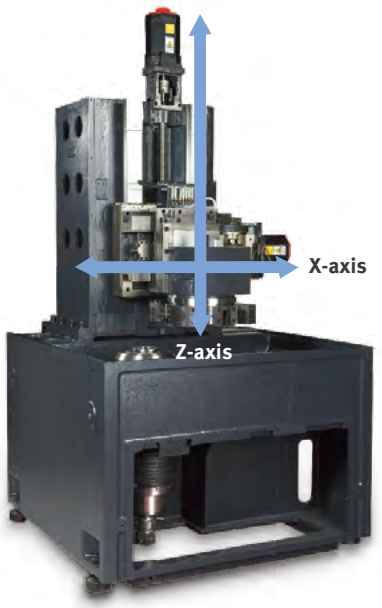
A Meehanite cast iron bed and integral box guideways provide the rigid foundation needed for superior precision, heavy duty cutting and reliability. The heavily-ribbed and innovative bed design provides unsurpassed rigidity and , as a result, delivers exceptional accuracies and repeatability's and superior surface finishes.

Travel distance (X/Z axis)

268/488 mm
10.55 / 19.21 inch

Rapid traverse (X/Z axis)

20/24 m/min
787.4 / 944.9 ipm



PUMA V400P

The PUMA V400P vertical turning center is a productivity powerhouse with Roller-type LM guides, impressive rapid rates and fast acceleration/deceleration.

Power of axis motor (X / Z axis)

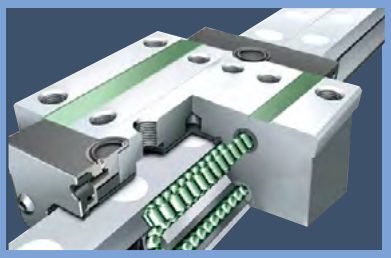
3/7 kW 4.0/9.4 Hp

Rapid traverse (X / Z axis)

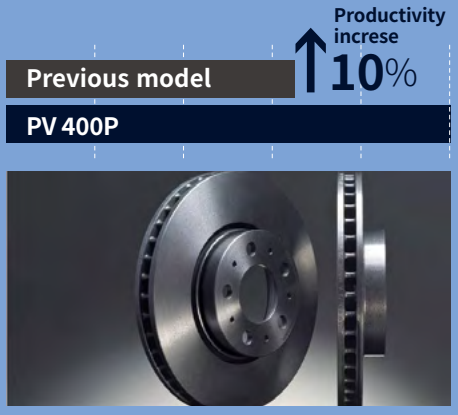
24/24 m/min

Roller type LM guideways

Roller type LM guideways and upgraded servo motors along with a Meehanite cast iron bed with rigid heavy-rib structure, deliver outstanding productivity.



Machinining time for brake disc



** Internal test result*

MACHINING AREA

Wide machining area for larger/more diverse workpieces.

(A) Max. turning diameter

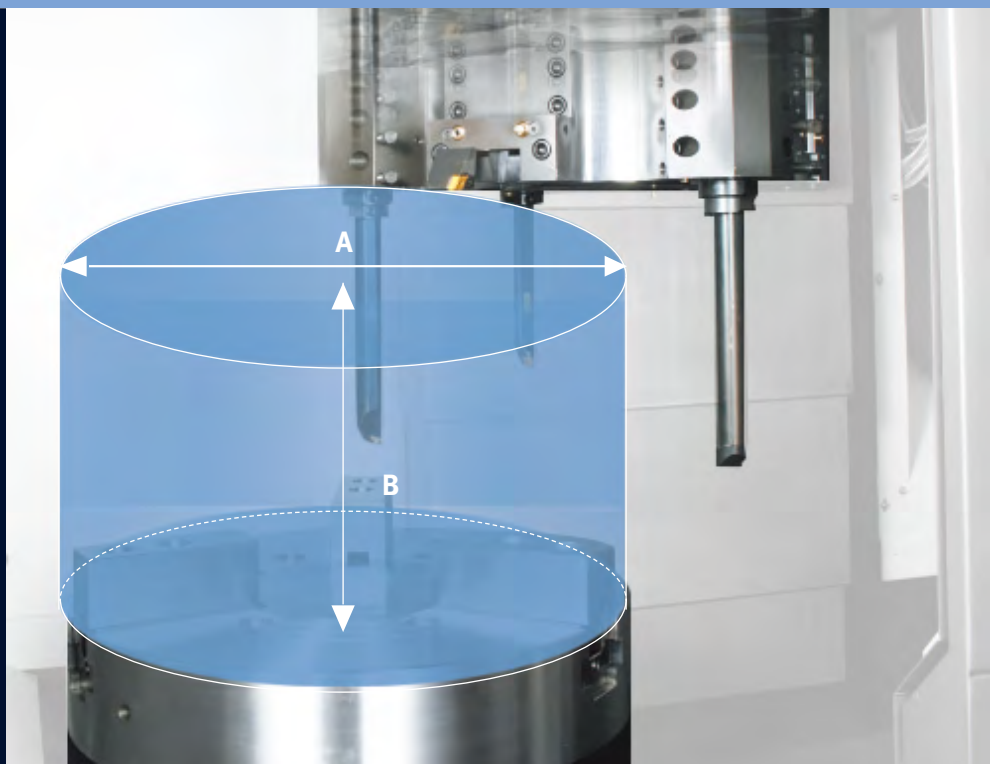
PUMA V400(P) / M

Ø496/420 mm
19.53/16.54 inch

(B) Max. turning length

PUMA V400(P) / M

461/400 mm
18.15/15.75 inch



SPINDLE | TURRET

High reliability and rigidity with an improved base and spindle motor assembly.
The cartridge type spindle with A2#8 spindle nose is highly capable and is easy to maintain. The extremely rigid coupled bearing assembly supports heavy workpieces and helps reduces thermal growth over long machining runs and extended operation.

Max. spindle speed

3000 r/min

Max. spindle power (S6 25%)

26 kW 34.9 Hp



TURRET

The servo turret facilitates faster indexing and accurate positioning.

The large 12 station heavy duty turret features a large diameter Curvic coupling and has a heavy duty design with unsurpassed rigidity. Turret rotation, acceleration and deceleration etc., are all controlled by a reliable high-torque servo motor. Unclamping and rotation are virtually simultaneous. The machine's fast indexing response reduces the total part cycle times.

Index time (11-station swivel)

0.15 s

No. of tool station

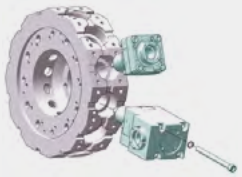
PUMA V400(P)

12 ea

PUMA V400

8 ea OPTION

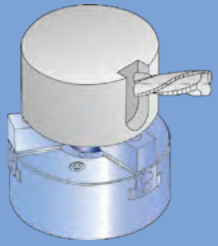
PUMA V400M : BMT65P





Rotary tool head

The rotary tool head ensures high rigidity and accuracy by simultaneously facilitating dual contact between the rotary tool head face and the tool holding insert (called Preci-flex adapter) flange face as well as its the tool head pocket taper.



Collet application



Preci-flex adapter application



STANDARD | OPTIONAL SPECIFICATIONS

A range of options is available to suit individual requirements.

Description	Features	PUMA V400 series
Chuck (LEFT / RIGHT)	305 mm (12 inch)	●
	380 mm (15 inch)	○
	Hydraulic chuck & actauating cylinder	●*1)
	None	○
Jaw (LEFT / RIGHT)	Soft Jaws	●
	Hardened & Ground Hard Jaws	○
Chucking option	Dual Pressure Chucking	○
	Chuck Clamp Confirmation	○
Coolant pump	1.5 bar	●
	4.5 / 7 / 10 / 14.5 bar	○
Coolant options	High Coolant Interface	○
	Oil Skimmer(Belt type)	○
	Water soluble Coolant Chiller**	○
	Coolant Pressure Switch	○
Chip Conveyor	Side chip conveyor(Left)_Hinged type	○
	Side chip conveyor(Left)_Magnetic scraper	○
	Rear chip conveyor_Hinged type	○
	Rear chip conveyor_Magnetic scraper	○
Chip processing options	Chip Bucket (220L / 300L)	○
	Flushing coolant	○
	Air blower	○
	Air Gun	○
	Coolant Gun	○
Automatic configuration	Auto door with safety edge	○
	Automatic side door	○
	Tool Setter	○
	Work & Tool Counter	○
Robot Interface	PMC I/O MODULE TYPE	○
	PROFIBUS-DP TYPE	○
Customized Special Option	Coolant Level Switch : Sensing Level - Low	○
	Quick Change Tooling(CAPTO)	○
	High Torque Spindle With Gear Box	○
	Straddle Tool_Servo Type	○
	Cooant Pump_4.0 kW_2.0 Mpa	○
	Automatic Top Door	○
	Automatic Side Door	○
	Flushing Coolant_Special Specification	○
	Raised Column_50 mm	○
	Chuck Type_4 Jaw_T-Slot	○
	Additional Hydraulic A/B Line	○
	Rotary Cylinder_For Air Limit Sensing	○
	Raised Level Plate_110 / 160 / 200 mm	○
	Rotary Type Window Wiper_Eletrical	○

※ 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*
1) In case of chuck specification change, it may be necessary to replace the chuck cylinder.

● *Standard* ○ *Optional* X *N/A*

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.

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 keys





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	PUMA V400 / P	PUMA V400M
			DN Solutions Fanuc i Plus	DN Solutions Fanuc i Plus
Controlled axis	Controlled paths		1 Path	1 Path
	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	●	●

● *Standard* ○ *Optional* X *N/A* ✪ *Available*

CONVENIENT OPERATION

SIEMENS S828D

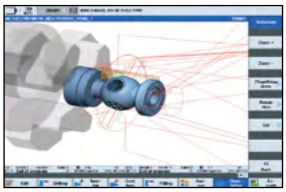
15.inch display + New OP

Siemens 828D' 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.

- **15.6 inch display**
- USB (standard)
- QWERTY keyboard

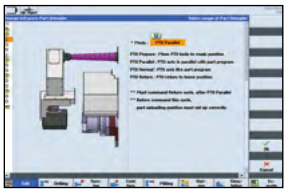


Convenient conversational functionality



Cutting and operation support function

This function shows a cutting and tool path simulation in real-time.



Shop-turn mode
[various]
↓
[attachments]

The automation elements (parts catcher, parts unloader etc.), can be easily controlled via interactive screens.



[Custom]
↓
[Protection zones]

Operation safety function

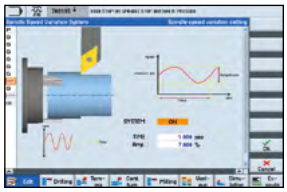
Protection Zone Synchronized Actions checks the interference between the turret and the spindle to prevent collisions caused by operator error.



[offset]
↓
[operating parameter]
↓
[TC service]

Maintenance and service convenience function

Maintenance and service of major equipment and peripheral devices, including the timer and parts counter settings can be easily undertaken.



[various]
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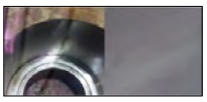
Machining accuracy improvement

The NC controls spindle speed at an optimal level for precision threading and turning, making it possible to automatically improve surface roughness.



Before applying the function



After applying the function

NUMERIC CONTROL SPECIFICATIONS

SIEMENS

Division	Item	Specifications	2-Axis S828D	M S828D
Controlled axis	Controlled axes		X,Z,SP	X,Z,C,R
	Simultaneously controlled axes		4 axes	4 axes
Data input/output	Memory card input/output		X	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 - G59, G507 - G599	●	●
Feed function	Advanced surface		X	X
	Top surface		X	X
	Look ahead number of block		1	1
Programming & Editing function	3D simulation, finished part		●	●
	Simultaneous recording		●	●
	DXF Reader for PC integrated in SINUMERIK Operate		○	○
Operation Guidance Function	Shopturn		●	●
	EZ Operation package		●	●
Setting and display	Operation via a VNC viewer		●	●
Network	MTConnect		✪	✪
	OPCUA		○	○
Others	Display unit	15.6" color display with touch screen	●	●
	Part program storage size	CNC user memory 5MB	●	●
		CNC user memory 100 MB	○	○
		CNC user memory 6GB	X	X
		CNC user memory 40GB (with PCU or IPC)	X	X
		CNC user memory without limit (Execution from extenal storage devices) (EES / Using by USB or Network)	○	○
		HMI user memory for CNC part program 6GB	X	X

● *Standard* ○ *Optional* X *N/A* ✪ *Available*

POWER | TORQUE

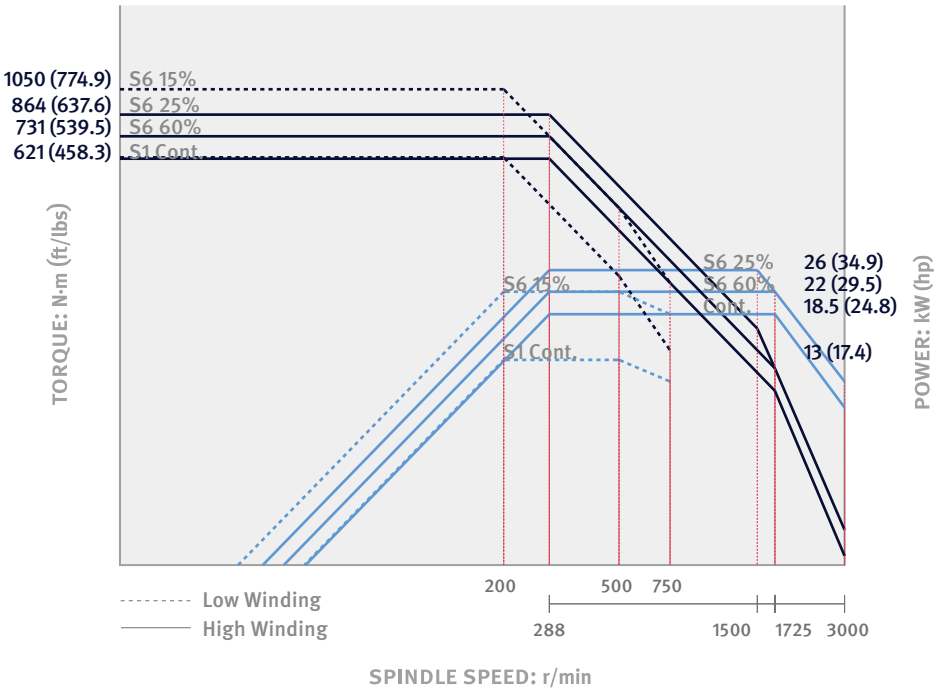
FANUC

PUMA V400 / M / P

Max. spindle speed : **3000** r/min

Max. power : **26** kW
34.9 Hp

Max. torque : **1050** N · m
774.9 ft-lbs

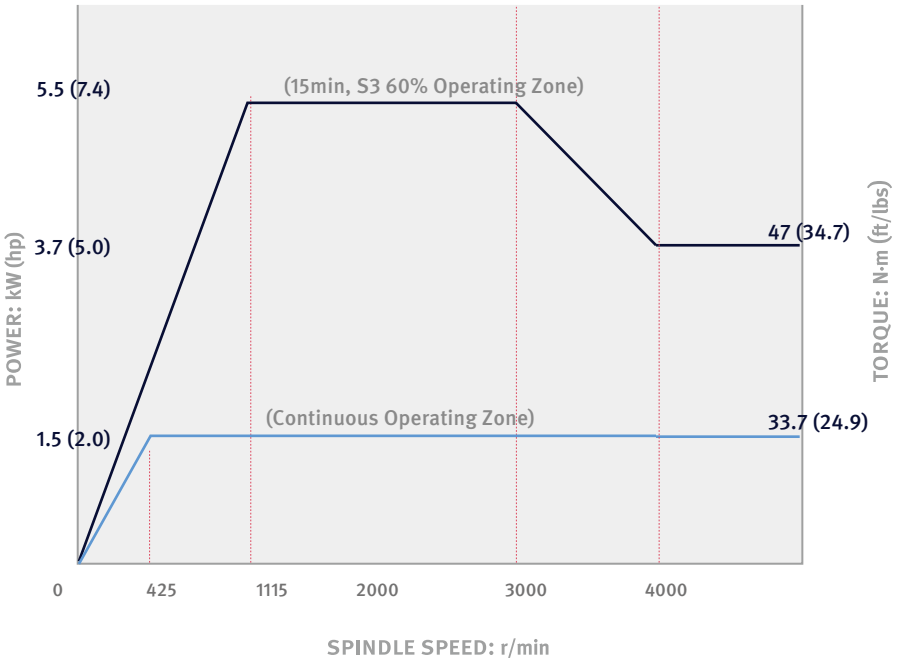


Rotary tool_**PUMA** V400M BMT65P rotary spindle

Max. spindle speed : **4000** r/min

Max. power : **5.5** kW
7.4 Hp

Max. torque : **47** N · m
34.7 ft-lbs

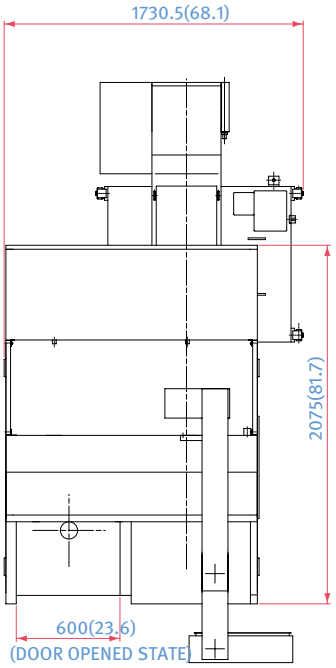


EXTERNAL DIMENSIONS

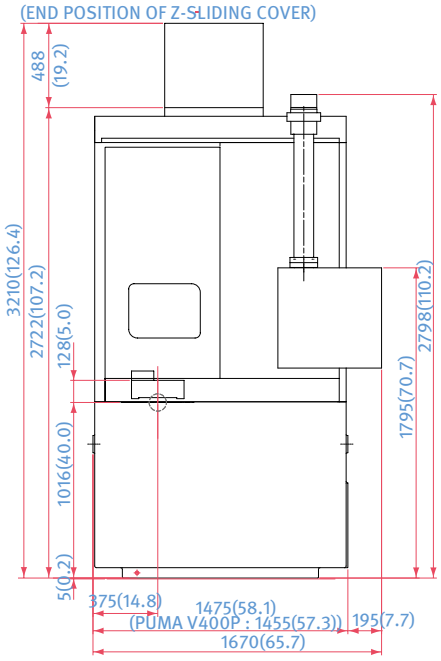
Unit : mm (inch)

PUMA V400/M/P

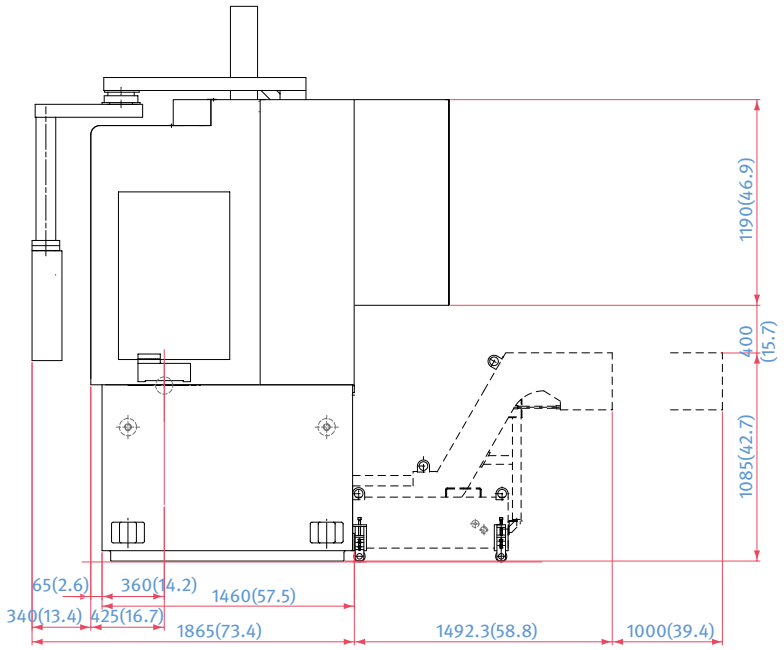
TOP



FRONT



SIDE



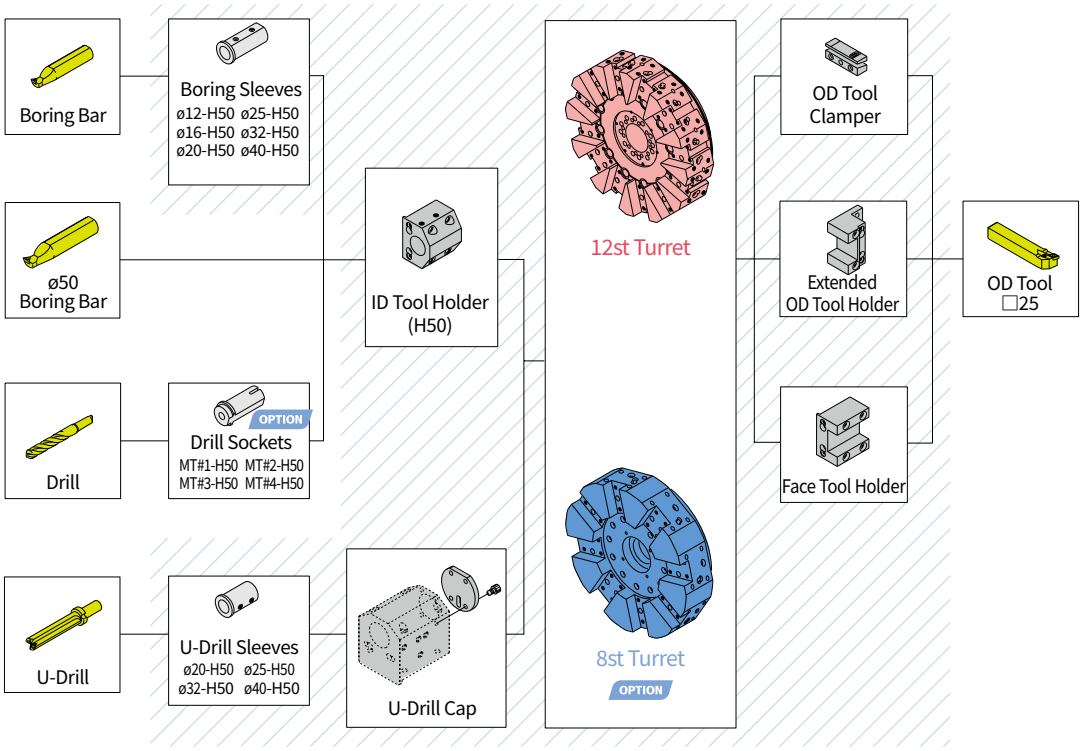
** Some peripheral equipment can be placed in other areas.*

TOOLING SYSTEM

Unit : mm (inch)

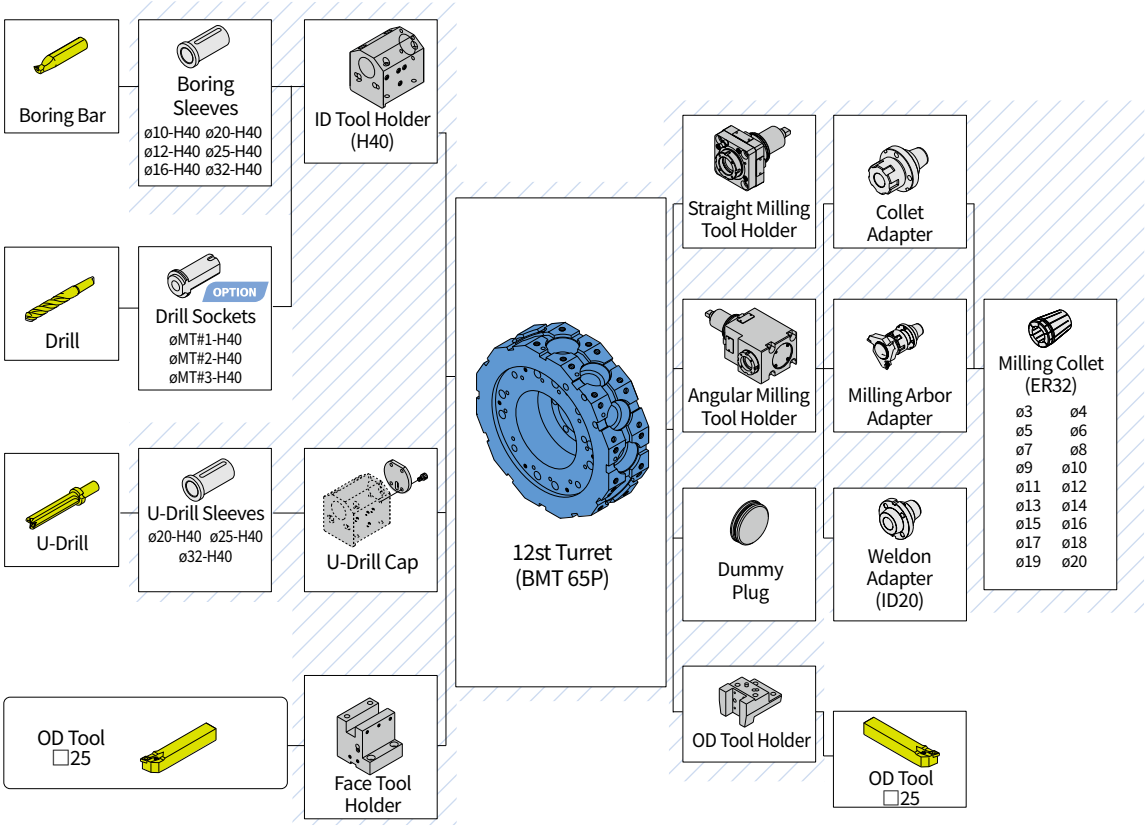
PUMA V400 / P

Standard



PUMA V400M

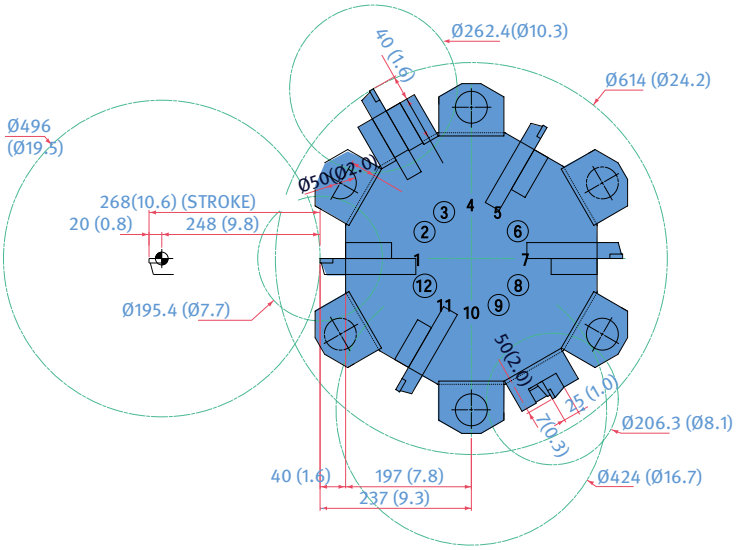
Standard

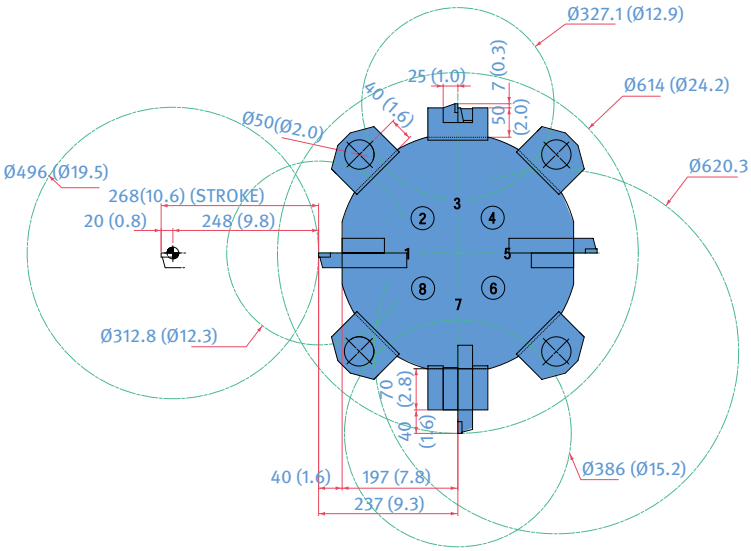


TOOL INTERFACE

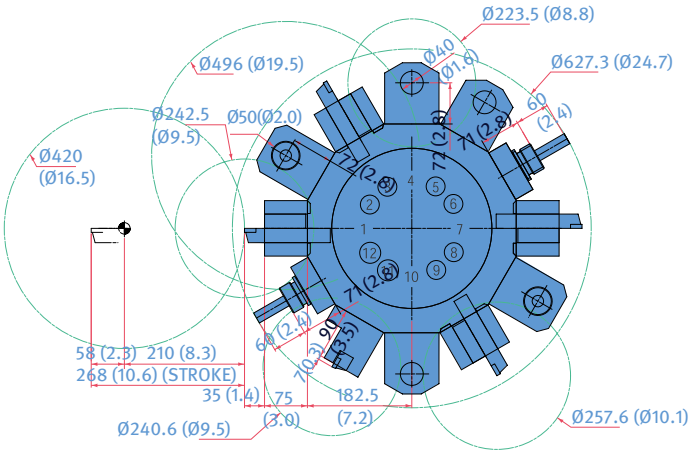
Unit : mm (inch)

PUMA V400 / P





PUMA V400M

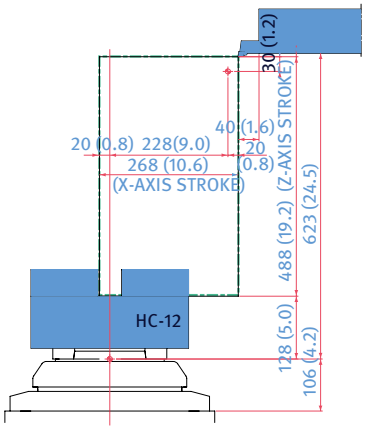


WORKING RANGE

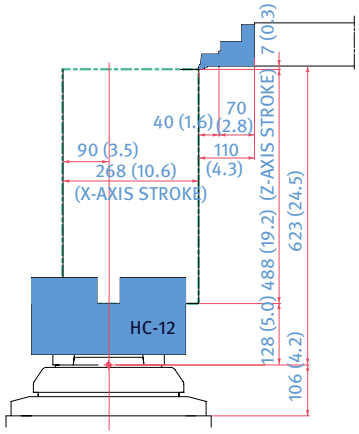
Unit : mm (inch)

PUMA V400 / P

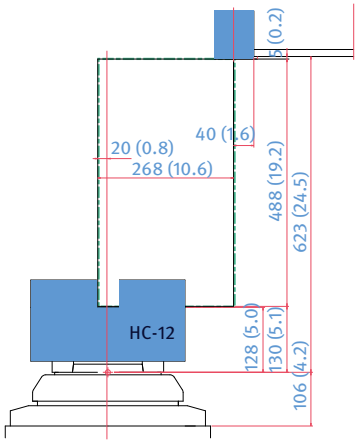
OD TOOL HOLDER



EXTENDED OD TOOL HOLDER

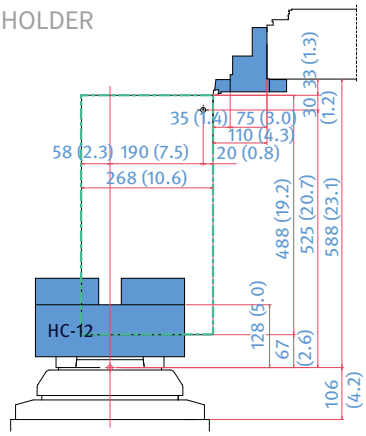


ID TOOL HOLDER

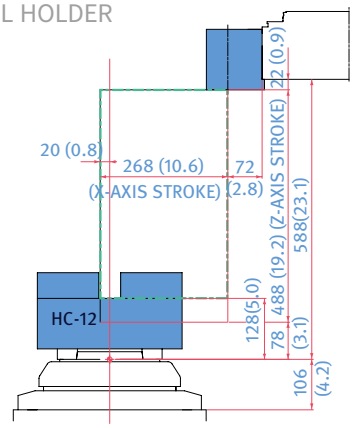


PUMA V400M

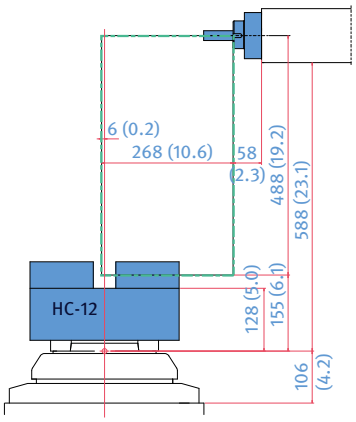
OD TOOL HOLDER



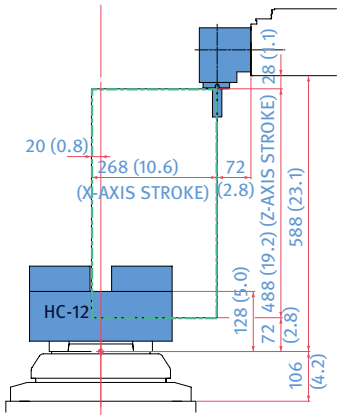
ID TOOL HOLDER



STRAIGHT MILLING TOOL HOLDER



ANGULAR MILLING TOOL HOLDER



MACHINE SPECIFICATIONS

PUMA V400 series

Description			Unit	PUMA V400/L/R	PUMA V400M/L/MR	PUMA V400P/L/PR
Capacity	Swing over bed		mm (inch)	610 (24.0)		
	Swing over saddle		mm (inch)	500 (19.7)		
	Recom. turning diameter		mm (inch)	305 (12.0)		
	Max. turning diameter		mm (inch)	496 (19.5)	420 (16.5)	496 (19.5)
	Max. turning length		mm (inch)	461 (18.1)	400 (15.7)	461 (18.1)
	Chuck size		inch	12		
Travels	Travel distance	X-axis	mm (inch)	268(10.6)		
		Z-axis	mm (inch)	488 (19.2)		
		C-axis	deg		360	
Feedrates	Rapid traverse	X-axis	m/min (ipm)	20 (787.4)	20 (787.4)	24 (944.9)
		Z-axis	m/min (ipm)	24 (944.9)	24 (944.9)	24 (944.9)
		C-axis	r/min	-	50	-
Spindle	Max. Spindle speed		r/min	3000		
	Max. spindle power (S6 25% / S6 60% / S1 cont.)		kW (Hp)	26/22/18.5 (34.9/29.5/24.8)		
	Max. spindle torque		N·m (ft-lbs)	863 (636.9)		
	Spindle nose		ASA	A2-8		
	Spindle bearing diameter (Front)		mm (inch)	130 (5.1)		
	Main spindle indexing angle (C-axis)		deg	-	0.001	-
Turret	No. of tool stations		ea	12{8}	12	12
	OD tool size		mm (inch)	25 x 25 (1.0 X 1.0)		
	Turret Indexing time(1st swivel)		sec	0.15		
	Rotary tool spindle speed		r/min	-	4000	-
	Rotary tool spindle motor		kW (Hp)	-	3.7/2.2 (5.0/3.0)	-
Power Source	Electric power supply (rated capacity)		kVA	43.16	43.16	43.16
Machine dimensions	Length x Width		mm (inch)	1475 x 2075 (58.1 X 81.7)		
	Height		mm (inch)	3210 (126.4)		
	Weight		kg (lb)	6000 (13227.5)		
Control	NC system			DN Solutions Fanuc i Plus		

{} : option

RESPONDING TO CUSTOMERS
ANYTIME, ANYWHERE

DN Solutions Global Network

66 Countries | **140** + Sales networks | **3** Factories | **6** Regional HQs



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

DN SOLUTIONS

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

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