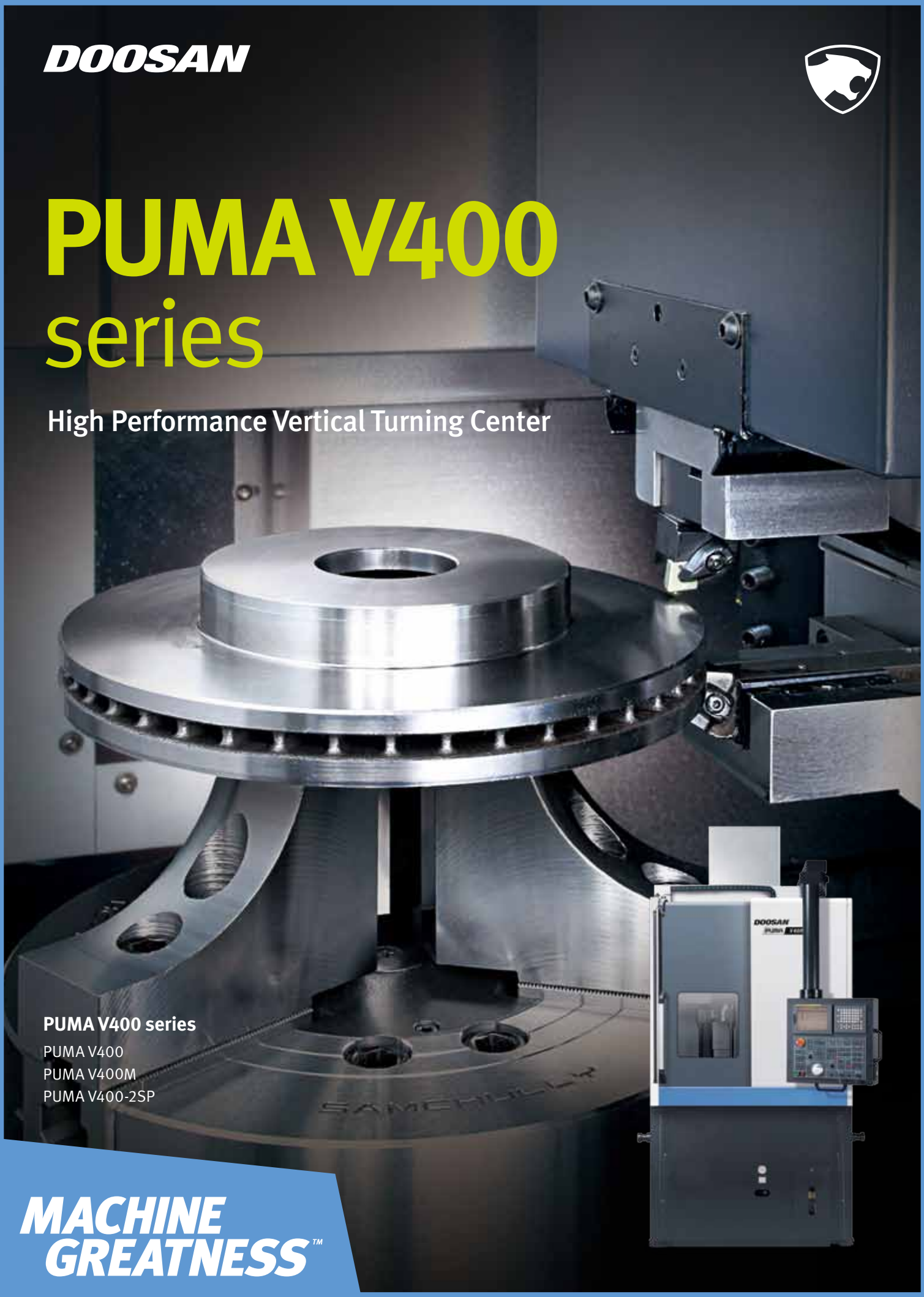
DOOSAN

PUMA V400 series

High Performance Vertical Turning Center



PUMA V400 series

PUMA V400
PUMA V400M
PUMA V400-2SP

MACHINE GREATNESS™

Basic Information

Basic Structure

Detailed Information

Options
Applications
Capacity Diagram
Specifications

Customer Support Service

PUMA V400 series

The vertical turning center is designed for long term accuracy, heavy duty cutting and to minimize floor space. Its powerful spindle drives, meehanite casting and integral box guide way provide unsurpassed rigidity.

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Sample

Further Enhanced Turning Capacity

These DOOSAN machines offer a high level of machining capability to provide optimum productivity for the customer.

High Reliability

In order to assure heavy duty machining and optimized chip flow, the machine base body is designed and streamlined.

User Friendly design

The bed structure has been redesigned to facilitate the efficient disposal of high volumes of chips. In addition, the height of the operation panel can be adjusted for optimum convenience.

Basic Structure

The integral box guideway bed design provides vibrationfree performance and ensures heavy duty and high precision cutting over long term operation.

Robust Bed Construction

Meehanite cast iron bed and integral box guideways provide the rigid foundation needed for superior precision, deep cutting and rugged dependability. The heavily-ribbed and exclusive bed design provides unsurpassed rigidity, enabling heavy cutting and assuring stability for exceptional accuracy and superior

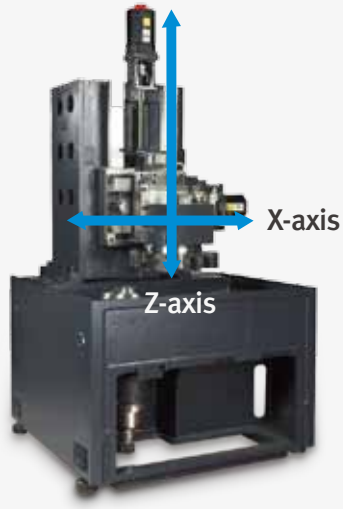
Travel distance

X axis 268 mm(10.55 inch)

Z axis 488 mm(19.21 inch)

Rapid traverse (X / Z)

20/24 m/min
(787.4/944.9 ipm)



Machining Area

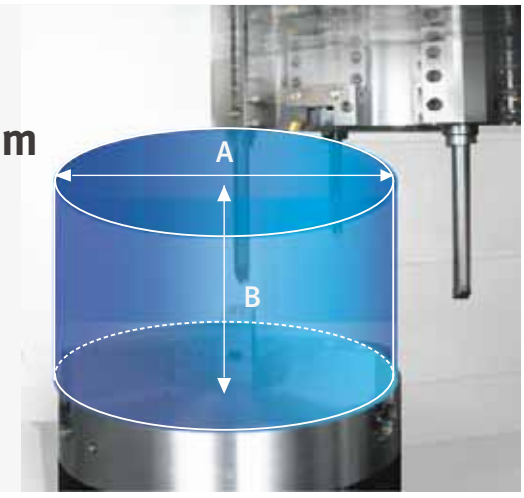
Wide machining area for larger/more diverse workpieces

Max. turning diameter (A)
PUMA V400/ V400M

Ø496/420 mm
(19.53/16.54 inch)

Max. turning length (B)
PUMA V400/ V400M

461/400 mm
(18.15/15.75 inch)



Spindle

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

The cartridge type spindle with A2#8 spindle nose assures high capability and easy of maintenance. Especially rigid coupled bearing assembly is to support heavy weight workpiece and reduces thermal growth in long run operation.

Max. spindle speed

3000 r/min

Max. spindle power

22 kW (30 min)

Turret

The servo turret facilitates faster indexing and accurate positioning.

PUMA V400M : BMT65P

Turret

The large 12 station heavy duty turret features a large diameter Curvic coupling and heavy duty design with unsurpassed rigidity. Turret rotation, acceleration and deceleration are all controlled by a reliable high torque servo motor. Unclamp and rotation are virtually simultaneous. Its fast index response reduces the total cycle time.

Index time(1-station swivel)

0.15 s

No. of tool station

PUMA V400/PUMA V400-2SP

12/12+12 ea

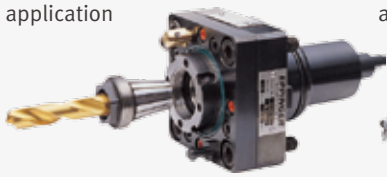
PUMA V400/PUMA V400-2SP

8/8+8 ea option

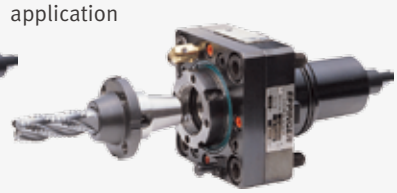
Rotary tool head

Rotary tool head confirms the high rigidity and accuracy by simultaneous dual contact between the rotary tool head face and tool holding insert (called Preci-flex adapter) flange face as well as tool head pocket taper

Collet application



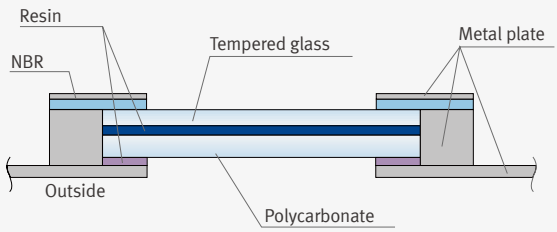
Preci-flex adapter application



User-friendly design

Double-paneled safety window

The operator safety can be enhanced through the front door with its shock absorbing laminated glass and double panel construction. The windows without grating also provide a clear view of the machine inside.



Standard / Optional Specifications

Various options are available to satisfy all the customers' requirements.

● Standard ○ Optional X N/A

NO.	Description	Features	PUMA V 400 series
1	Chuck (LEFT / RIGHT)	305 mm (12 inch)	●
2		380 mm (15 inch)	○
3		Hydraulic chuck & actauating cylinder	●*1)
4		None	○
5	Jaw (LEFT / RIGHT)	Soft Jaws	●
6		Hardened & Ground Hard Jaws	○
7	Chucking option	Dual Pressure Chucking	○
8		Chuck Clamp Confirmation	○
9	Coolant pump	1.5 bar	●
10		4.5 / 7 / 10 / 14.5 bar	○
11	Coolant options	High Coolant Interface	○
12		Oil Skimmer(Belt type)	○
13		Coolant chiller(circulation type)	○
14		Coolant Pressure Switch	○
15	Chip Conveyor	Side chip conveyor(Left)_Hinged type	○
16		Side chip conveyor(Left)_Magnetic scraper	○
17		Rear chip conveyor_Hinged type	○
18		Rear chip conveyor_Magnetic scraper	○
19	Chip processing options	Chip Bucket (220L / 300L)	○
20		Flushing coolant	○
21		Air blower	○
22		Air Gun	○
23		Coolant Gun	○
24	Automatic configuration	Auto door with safety edge	○
25		Automatic side door	○
26		Tool Setter	○
27		Work & Tool Counter	○
28	Robot Interface	PMC I/O MODULE TYPE	○
29		PROFIBUS-DP TYPE	○
30	Customized Special Option	Coolant Level Switch : Sensing Level - Low	○
31		Quick Change Tooling(CAPTO)	○
32		High Torque Spindle With Gear Box	○
33		Straddle Tool_Servo Type	○
34		Cooant Pump_4.0 kW_2.0 Mpa	○
35		Automatic Top Door	○
36		Automatic Side Door	○
37		Flushing Coolant_Special Specification	○
38		Raised Column_50 mm	○
39		Chuck Type_4 Jaw_T-Slot	○
40		Additional Hydraulic A/B Line	○
41		Rotary Cylinder_For Air Limit Sensing	○
42		Raised Level Plate_110 / 160 / 200 mm	○
43		Rotary Type Window Wiper_Eletrical	○

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

* Please contact DOOSAN to select detailed steady rest specifications.

DOOSAN Fanuc i Plus

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

15 inch screen + New OP

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

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

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

iHMI Touch screen option

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

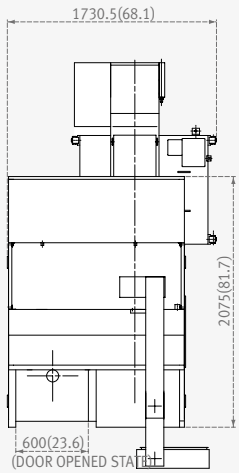
- **PLANNING**
  Tool information such as tool offset and tool life can be checked and set, and scheduler function is provided.
- **MACHINING**
  MDI, EDIT, MEM, JOG screen can be changed by using touch function, and it is quick and easy to move to sub menu by using soft key.
- **IMPROVEMENT**
  User can set up to record data for analysis and monitor the specific signals by setting up the maintenance and inspection function. Also user can add items.
- **UTILITY**
  View and search PDF and TEXT files, create notes from text / images / drawings, and link to web pages.
  For users who are familiar with the DDOOSAN Fanuc i Plus screen, the screen can be switched.

External Dimensions

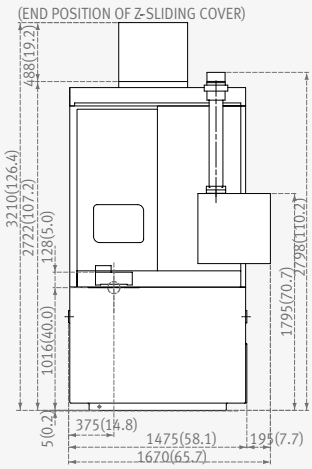
PUMA V400/M

Unit : mm (inch)

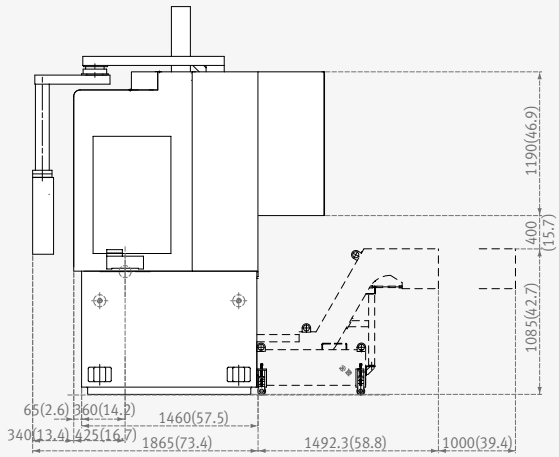
Top view



Front view



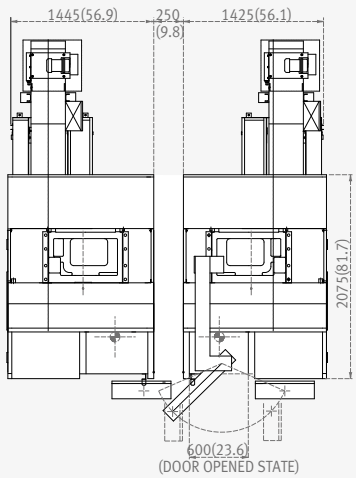
Side view



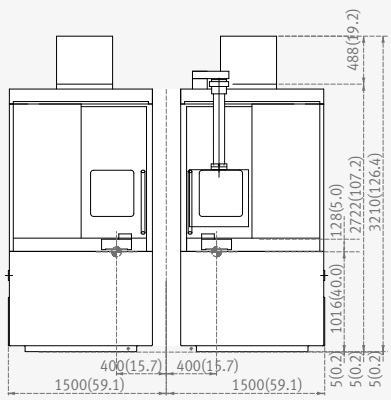
PUMA V400-2SP

Unit : mm (inch)

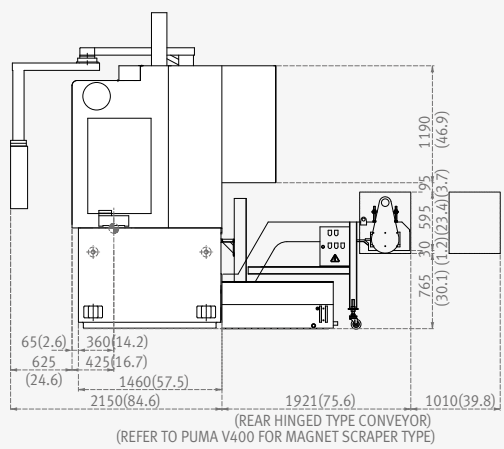
Top view



Front view



Side view

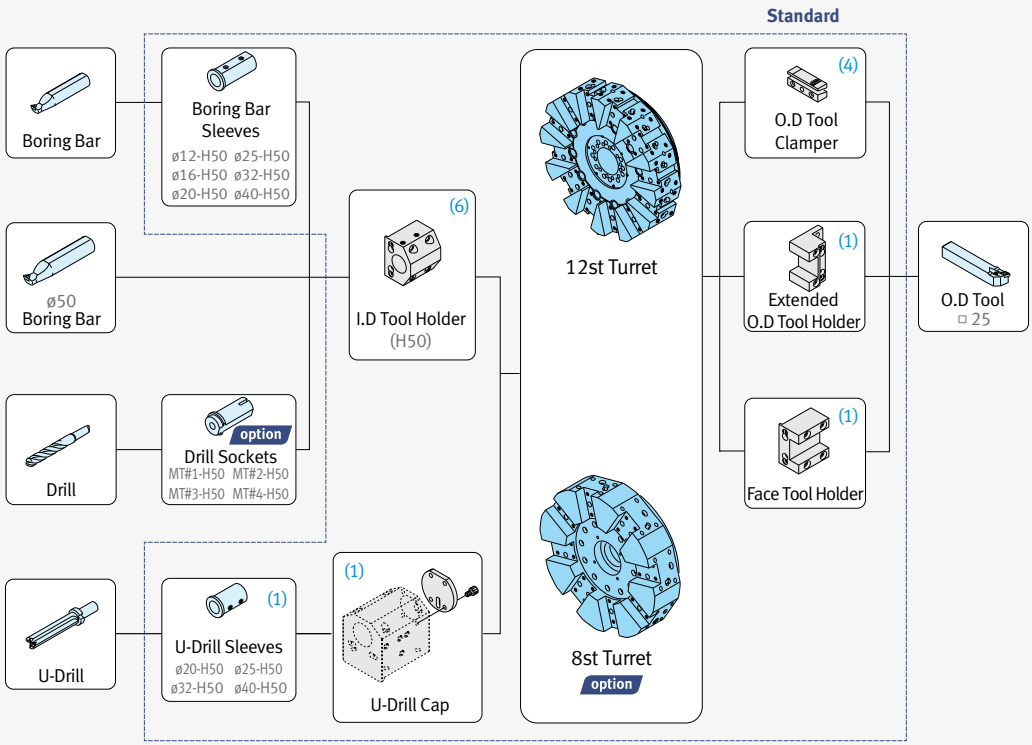


* Some peripheral equipment can be placed in other places

Tooling System

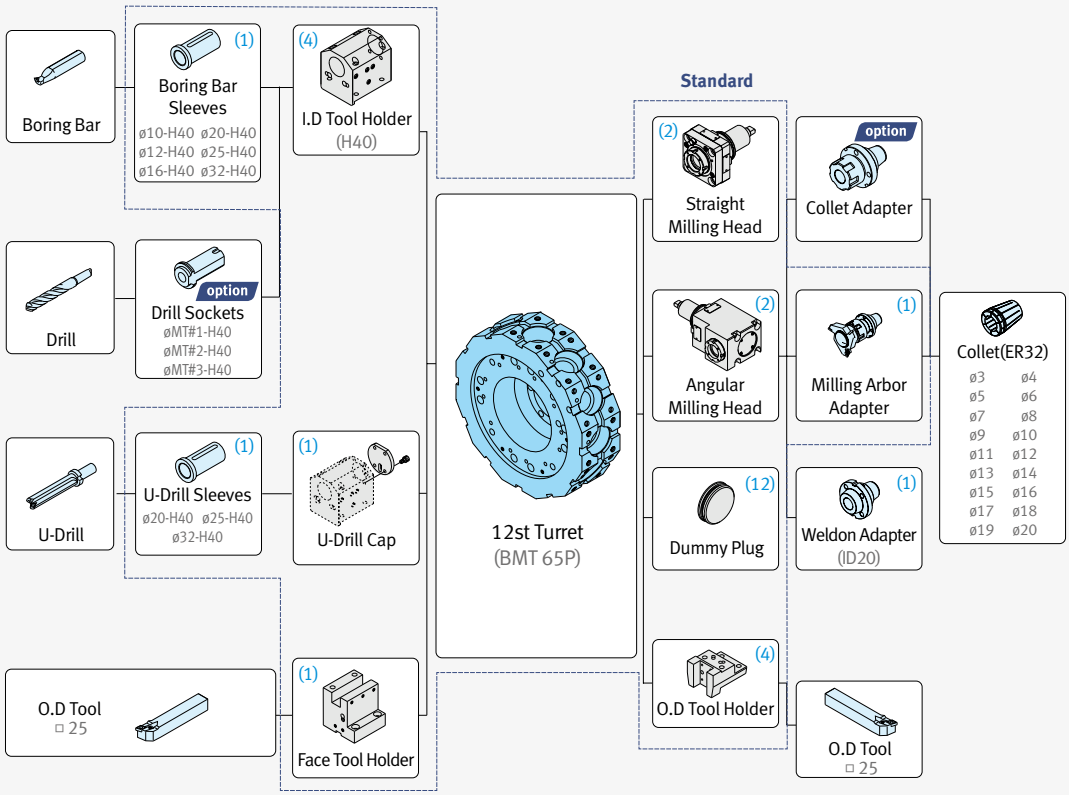
PUMA V400 / V400-2SP

Unit : mm (inch)



PUMA V400M

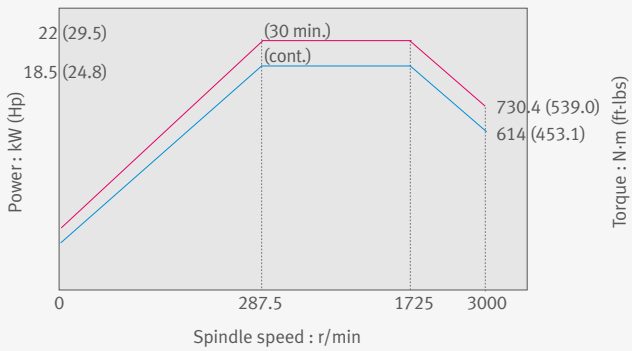
Unit : mm (inch)



Spindle Power – Torque Diagram

PUMA V400/V400M

Max. spindle speed : 3000 r/min
Max. spindle power : 22 kW

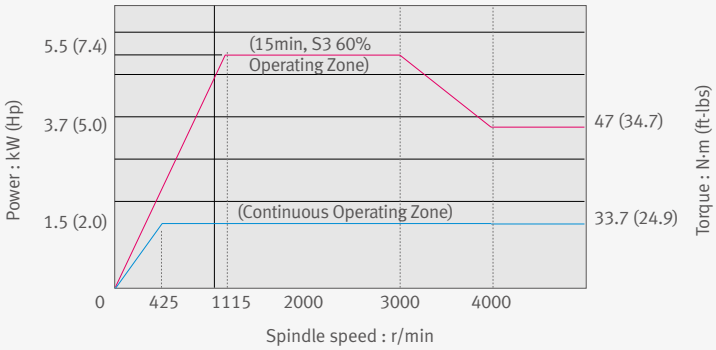


PUMA V400/V400M option

Max. spindle speed : 3000 r/min
Max. spindle power : 22 kW

Rotary tool_PUMA V400M BMT65P rotary spindle

Max. spindle speed : 4000 r/min
Max. spindle power : 5.5 kW

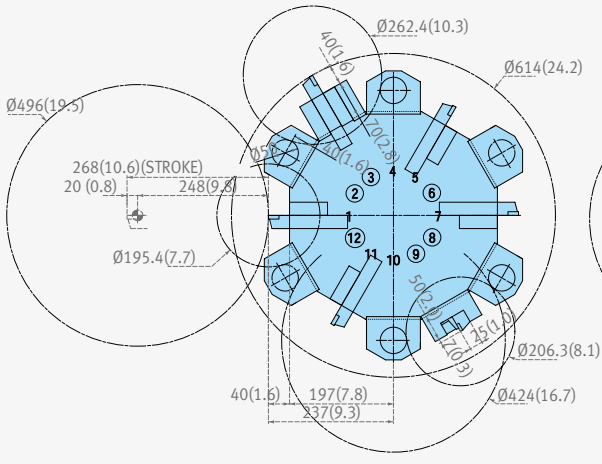


Tool Interference Diagram

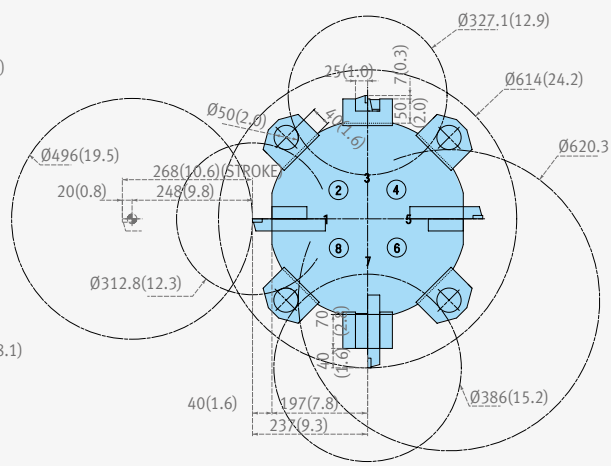
PUMA V400/V400-2SP

Unit : mm (inch)

PUMA V400 : 12 stations



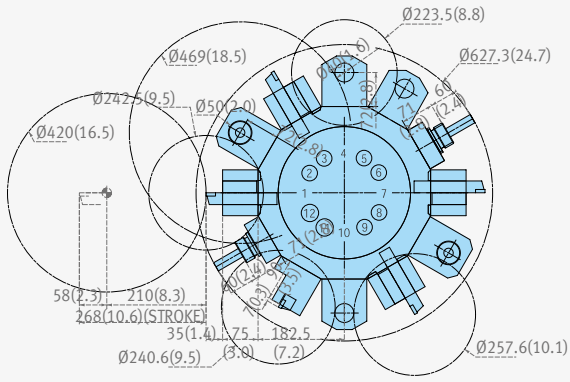
PUMA V400 : 8 stations option



Tool Interference Diagram

PUMA V400M

Unit : mm (inch)

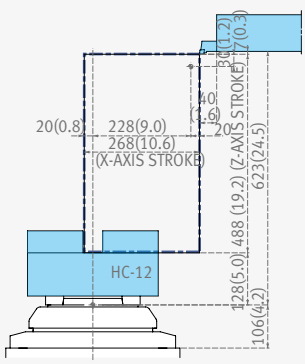


Working Ranges

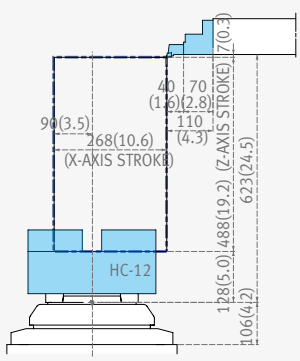
PUMA V400 / V400-2SP

Unit : mm (inch)

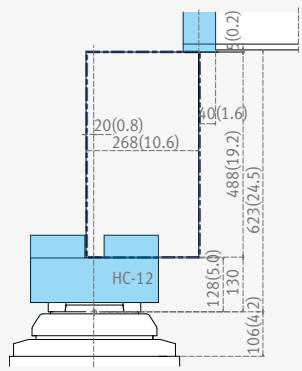
OD tool holder range



Extended OD tool holder range



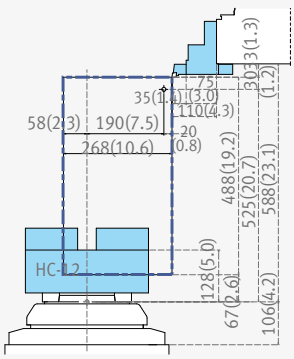
ID tool holder range



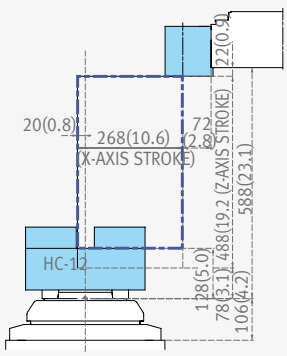
PUMA V 400M

Unit : mm (inch)

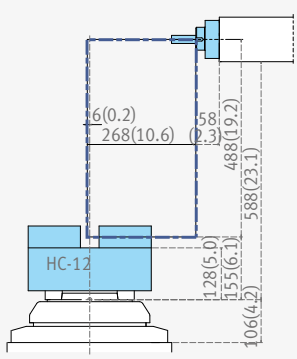
OD tool holder range



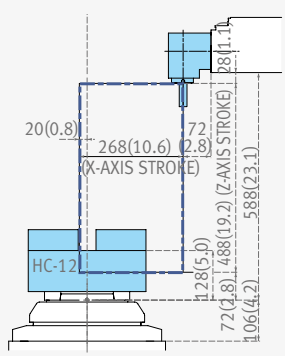
ID tool holder range



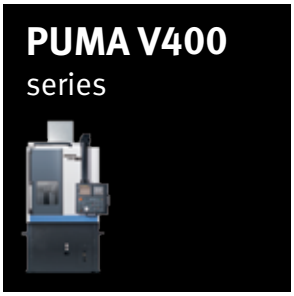
Straight milling unit



Angular milling head



Machine Specifications



Description			Unit	PUMA V400	PUMA V400M	PUMA V400-2SP
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	12	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)	20 (787.4)
		Z-axis	m/min (ipm)	24 (944.9)	24 (944.9)	24 (944.9)
		C-axis	r/min		200	-
Spindle	Max. Spindle speed		r/min	3000	3000	-
	Max. spindle power (30 min/ cont.)		kW (Hp)	22/18.5 (29.5/24.8)	22/18.5 (29.5/24.8)	-
	Max. spindle torque		N·m (ft-lbs)	731 (539.5)		
	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+12{8+8}
	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	40.3	44.7	81
Machine dimensions	Length x Width		mm (inch)	1475 x 2075 (58.1 X 81.7)		2910 x 2075 (114.6 X 81.7)
	Height		mm (inch)	3210 (126.4)		
	Weight		kg (lb)	6000 (13227.5)		12000 (26455.1)
Control	NC system			DOOSAN Fanuc i Plus {Fanuc 32i}		DOOSAN Fanuc i Plus {Fanuc 31i}

{ } : option

NC Unit Specifications

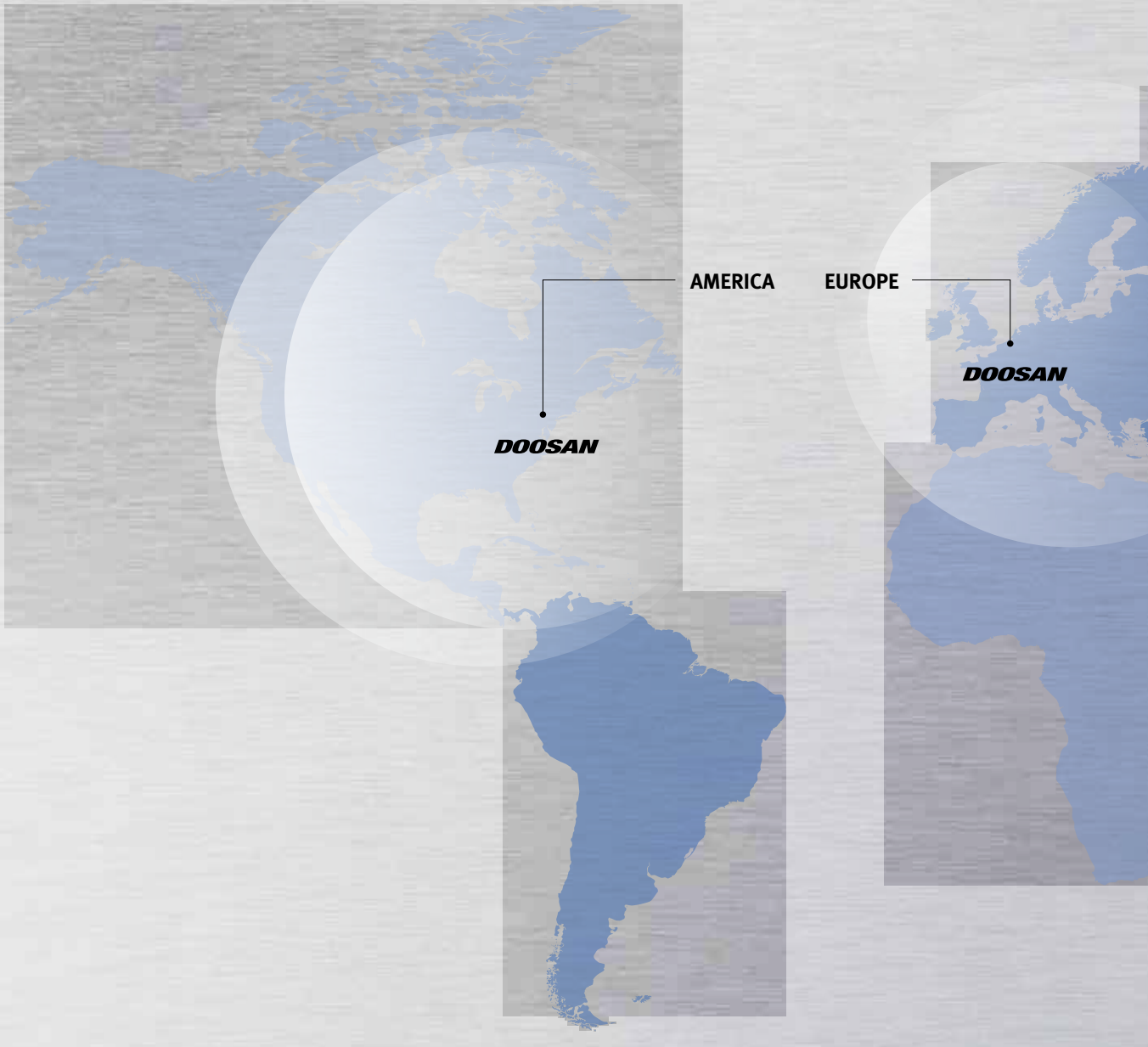
FANUC

● Standard ○ Optional X Not applicable

NO.	Division	Item	Specifications	DOOSAN Fanuc i Plus		
				PUMA V400	PUMA V400M	PUMA V400/ M-2SP
1	Controlled axis	Control paths		1 Path	1 Path	2 Path
2		Controlled axes		2(X,Z)	3(X,Z,C)	4 (X1,Z1 + X2,Z2)
3		Cs contouring control		X	●	X
4		HRV2 control		●	●	●
5		Over travel		●	●	●
6		Follow-up		●	●	●
7		Chamfering on/off		●	●	●
9	Operation	Automatic operation		●	●	●
10		Program number search		●	●	●
11		Sequence number search		●	●	●
12		Manual intervention and return		●	●	●
13		Buffer register		●	●	●
14		Incremental feed	x1,x10,x100	●	●	●
15	Interpolation functions	Nano interpolation		●	●	●
16		Positioning	G00	●	●	●
17		Exact stop mode	G61	●	●	●
18		Linear interpolation		●	●	●
19		Circular interpolation		●	●	●
20		Dwell (Second designation)	G04	●	●	●
21		Polar coordinate interpolation		X	●	X
22		Cylindrical interpolation		X	●	X
23		Helical interpolation		X	○	X
24		Thread cutting, synchronous cutting		●	●	●
25		Multi threading		●	●	●
27		Thread cutting retract		●	●	●
28		Continuous threading		●	●	●
29		Variable lead thread cutting		●	●	●
30	Interpolation functions (CONTINUED)	Circular thread cutting		○	○	○
31		Polygon machining with two spindles		X	●	X
32		Reference position return	G28	●	●	●
33		2nd reference position return	G30	●	●	●
34	Feed function	Rapid traverse rate (Increment system B)	Max. 999.999m/min(1um)	●	●	●
35		Rapid traverse override	F0, 25, 100%	●	●	●
36		Tangential speed constant control		●	●	●
37		Rapid traverse bell-shaped acceleration/deceleration		●	●	●
38		Jog override	0 - 2000mm/min (10% unit)	●	●	●
39	Program input	Max. programmable dimension	±9 digit (R,I,J and K is ±12digit)	●	●	●
40		Sequence number	N5 digit/N8 digit	N8 digit	N8 digit	N8 digit
41		Decimal point programming / pocket calculator type decimal point programming	□ 9 digits	●	●	●
42						
43		Workpiece coordinate system	G52 - G59	●	●	●
44		Programmable data input	G10	●	●	●
45		Sub program call	10 folds nested	●	●	●
46		Custom macro		●	●	●
47		Multiple repetitive cycles	G70~G76	●	●	●
48		Circular interpolation by R programming	9 digit/12 digit	●	●	●
49		Tape format	FS10.11 / FS15	FS10/11	FS10/11	FS10/11
50		Direct input of coordinate system shift		●	●	●
51	Operation Guidance Function	EZ Guidei (Conversational Programming Solution)		●*1)	● *1)	● *1)
52		iHMI with Machining Cycle		○ *2)	○ *2)	○ *2)
53		EZ Operation package		●	●	●
54	Auxiliary/ Spindle speed function	Spindle override	0 - 150%	●	●	●
55		Spindle orientation		●	●	●
56		Multi spindle control		X	●	●
57		Rigid tap		●	●	●
58		Arbitrary speed threading		○	○	○
59	Tool function/ Tool compensation	Tool offset pairs	128-pairs	●	●	●
60		Tool offset pairs	200-pairs	○	○	○
61		Tool radius/Tool nose radius compensation		●	●	●
62		Tool geometry/wear compensation		●	●	●
63		Automatic tool offset	G36/G37	●	●	●
64		Direct input of offset value measured B		●	●	●
65		Tool life management		●	●	●
66	Setting and display	Part program storage size & Number of registerable programs	5120M(2MB)_1000 programs	●	●	●
67		Part program storage size & Number of registerable programs	5120M(2MB)_400 programs	○	○	○
68		Display of spindle speed and T code at all screens		●	●	●
69		Servo setting screen		●	●	●
70		Spindle setting screen		●	●	●
71		Self-diagnosis function		●	●	●
72		Machine alarm diagnosis		●	●	●
73		CNC screen display		●	●	●
74		CNC screen dual display function		●	●	●
75	Data input/ output	Reader/puncher interface	Reader/puncher (Ch.1) interface	●	●	●
76		Memory card input/output		●	●	●
77	Interface function	Fast Ethernet		○	○	○
78	Others	Display unit	15" color LCD	●	●	●
79		Display unit	15" color LCD with Touch Panel	○	○	○
80	PMC System	PMC ladder function	24000 steps	●	●	●

*1) Only with 15" LCD standard *2) Only with 15" Touch LCD standard

Responding to Customers Anytime, Anywhere



Global Sales and Service Support Network

Corporations	Dealer Networks	Technical Centers	Service Post	Factories
4	164	51	198	3

Technical Center: Sales Support, Service Support, Parts Support

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

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

Customer Support Service

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

Supplying Parts

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

Field Services

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

Technical Support

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

Training

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

Major Specifications

PUMA V400 series

Description		Unit	PUMA V400 [2SP]	PUMA V400M
Capacity	Max. turning diameter	mm (inch)	496 (19.5)	420 (16.5)
	Max turning length	mm (inch)	461 (18.1)	400 (15.7)
	Chuck size	mm (inch)	305 (12")	
Travels	Travel distance (X / Z)	mm (inch)	268 / 488 (10.6 / 19.2)	
	Rapid traverse (X / Z)	m/min (ipm)	20 / 24 (787.4 / 944.9)	
Spindle	Spindle speed	r/min	3000	
	Spindle motor power (30min)	kW (Hp)	22 (29.5)	
	Spindle bearing diameter	mm (inch)	130 (5.1)	

Doosan Machine Tools

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* For more details, please contact Doosan Machine Tools.
* The specifications and information above-mentioned may be changed without prior notice.
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Fire Safety Precautions | There is a high risk or fire when using non-water-soluble cutting fluids, processing flammable materials, neglecting use coolants and modifying the machine without the consent of the manufacturer. Please check the SAFETY GUIDANCE carefully before using the machine.

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