Doosan Infracore
Machine Tools

PUMA V400/V400M/V400-2SP
PUMA V550/V550M/V550-2SP

High Performance Vertical Turning Center

New standard for unsurpassed high productivity, high speed and high precision

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.

PUMA V400/V550


DOOSAN
PUMA V550

PUMA V400 series Main Spindle

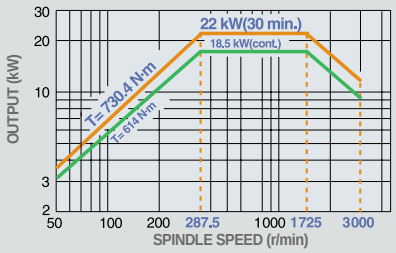
The cartridge type spindle with A2#8 spindle nose assures high capability and easy of maintenance. Especially rigid coupled bearing assembly is to support heavy weight workpiece and reduces thermal growth in long run operation.

Max. spindle speed
3000 r/min

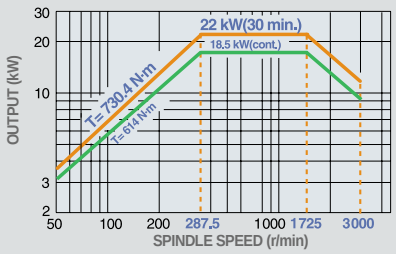
Motor(30 min)
22 kW

Main Spindle Power-torque diagram

- PUMA V400/V400M(Standard)
- High Speed winding, Max. 3000 r/min



- PUMA V400/V400M(Option)
- High & Low Speed winding, Max. 3000 r/min)



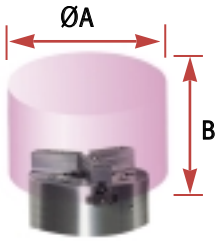
Rigidity Bed and Wide Working Range

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 surface finishes.

X-axis travel
268 mm

Z-axis travel
488 mm

Machining range



A : Max. turning diameter
496 (420) mm

B : Max. turning length
461 (400) mm

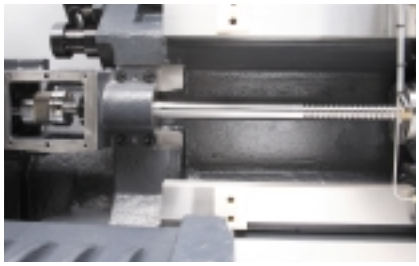
( ) : on PUMA V400M

Rapid Traverse

X-axis
20 m/min

Z-axis
20 m/min

• Scraping of Slideway



• Outstanding rigidity for high feedrates

BMT Turret

Index time (1-station swivel)

0.15 s

No. of tool station

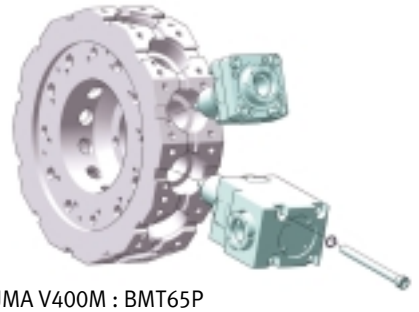
12 (12+12)*1 stations

8 (8+8)*1 stations (opt)

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 required to machine parts.

*1 : PUMA V400-2SP

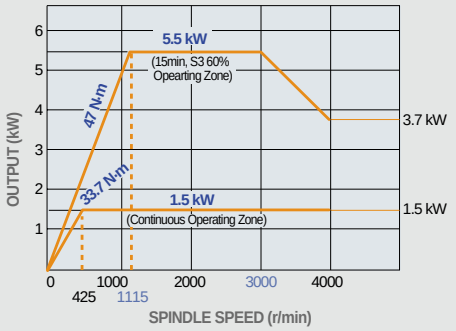
PUMA V400M Radial BMT Turret



PUMA V400M : BMT65P

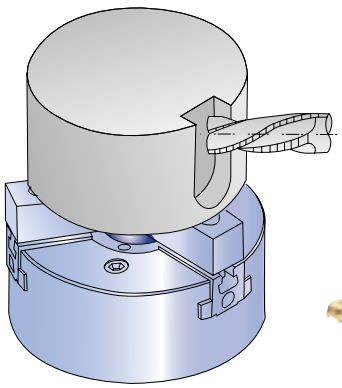
Rotary tool spindle power-torque diagram

● PUMA V400M BMT65P rotary spindle

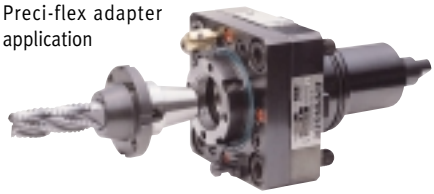


Rotary Tool Head

The new 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 and the insert' taper shank.

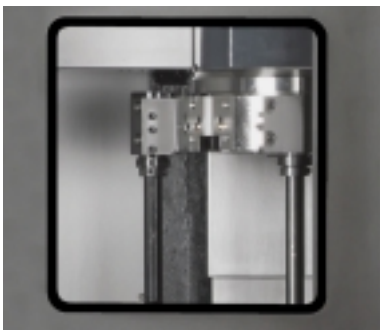


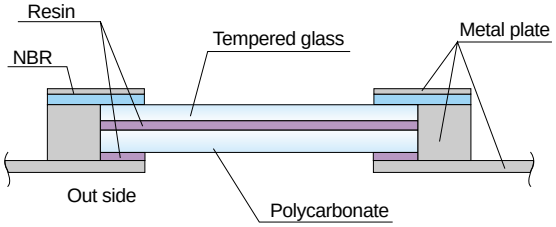
Preci-flex adapter application



Collet application

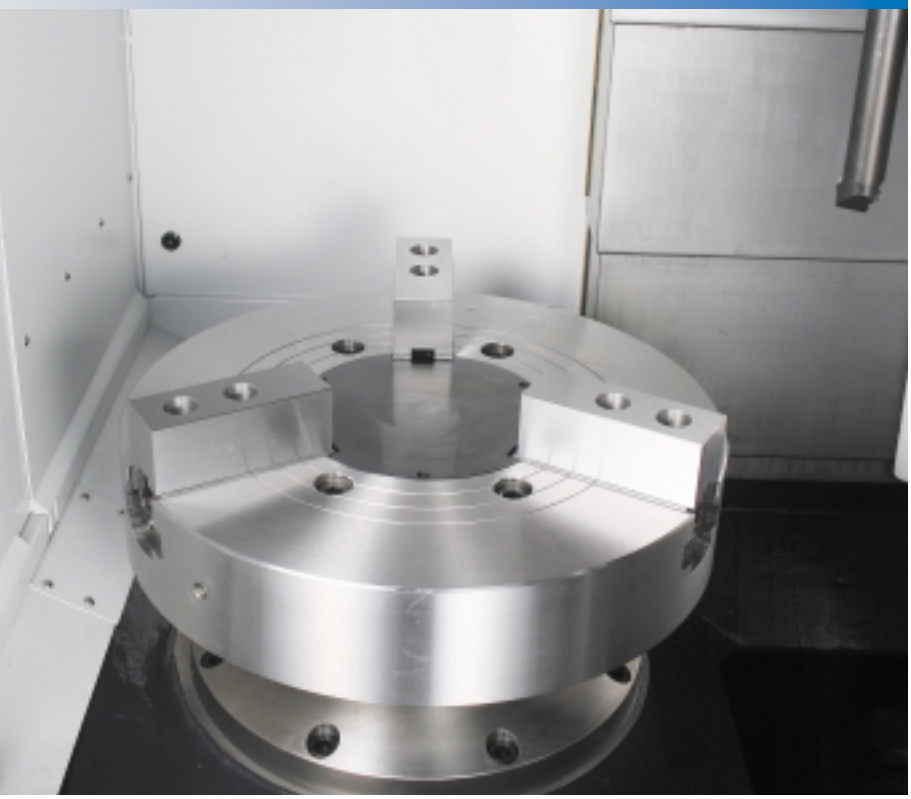
Double-Paneled Safety Window





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.

PUMA V550 series Main Spindle

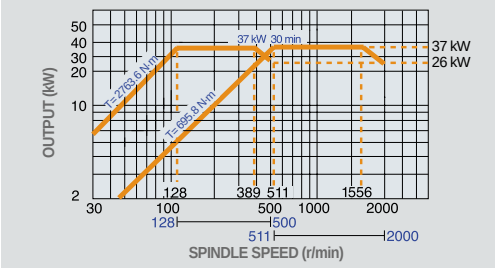


The cartridge-type precision spindle is assembled in a temperature controlled clean room. Four rows of high precision roller bearings and two rows of angular contact thrust bearings support the A2#11 American standard type spindle nose. The entire assembly is per-manently grease lubricated, which eliminates routine maintenance and reduces thermal growth. Twin spindle model(PUMA V550-2SP) have an independent direct drive system for each spindle. This permits either synchronous or asynchronous operation to double your productivity, or to machine complete components from each unit.

Max. spindle speed
2000 r/min

Motor(30 min)
37 kW

Main Spindle Power-torque diagram



Rigidity Bed and Wide Working Range

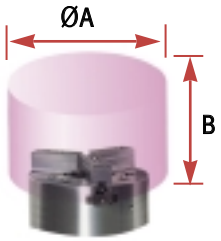
The one piece bed and box type column castings are rigid and heavily ribbed. Meehanite cast iron. These castings remain stable even under the heaviest cutting conditions. Fine grained Meehanite cast iron is used for its excellent vibration absorbing characteristics. The cross slide body is fully supported by the saddle in all positions and there is no table overhang.

X-axis travel
390 (490)*1 mm

Z-axis travel
780 mm

*1 : PUMAV550M

Machining range



A : Max. turning diameter
730 mm

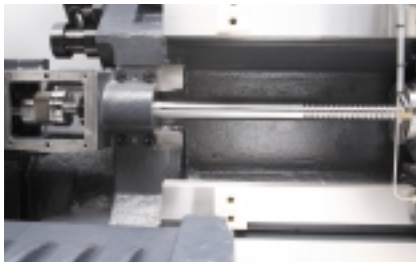
B : Max. turning length
750 mm

Rapid Traverse

X-axis
12 m/min

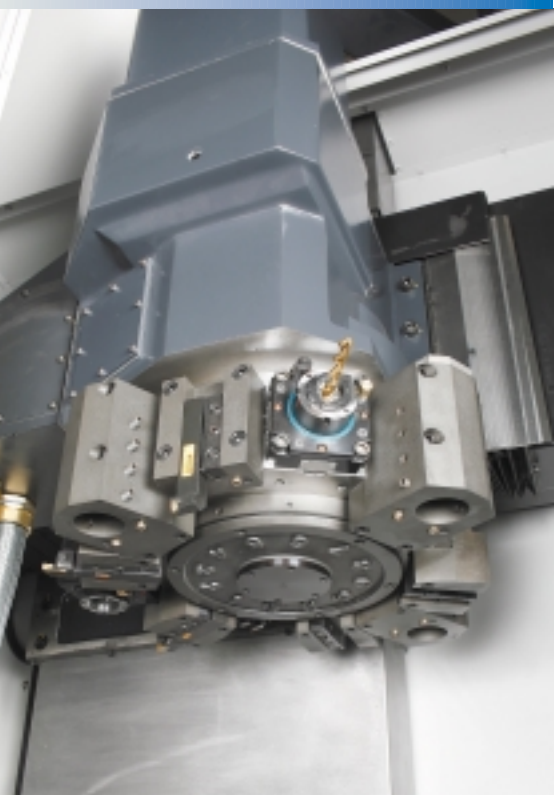
Z-axis
16 m/min

• Scraping of Slideway



• Outstanding rigidity for high feedrates

BMT Turret



Index time (1-station swivel)

0.15 s

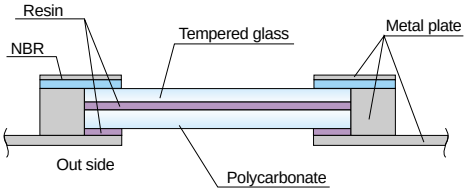
No. of tool station

8 (8+8)*1 stations

The large 8 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 required to machine parts.

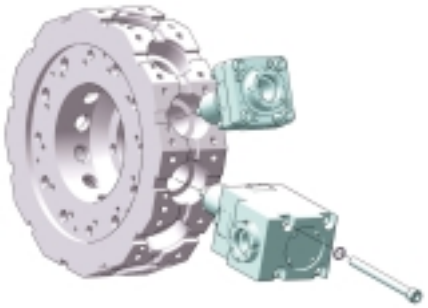
*1 : PUMA V550-2SP : 8+8

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.

PUMA V550M Radial BMT Turret



The turret features BMT75P style tooling in which the toolholders are mounted directiy to the turret's periphery using 4 large bolts. This type of mounting system allows a extremely high degree of rigidity.

Index time (1-station swivel)

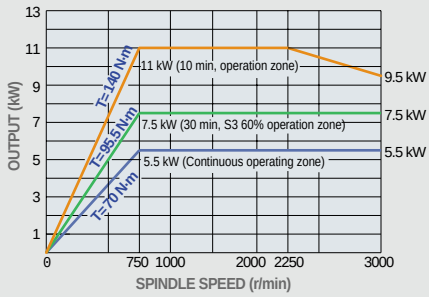
0.25 s

No. of tool station

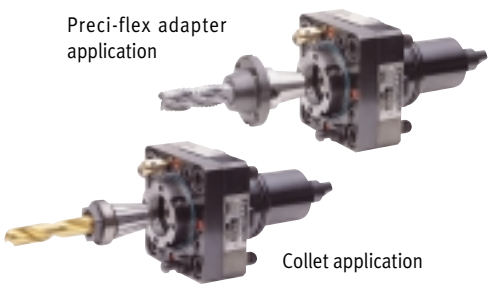
12 stations

Rotary tool spindle power-torque diagram

● PUMA V550M BMT75P rotary spindle



Preci-Flex Ready Rotary Tools

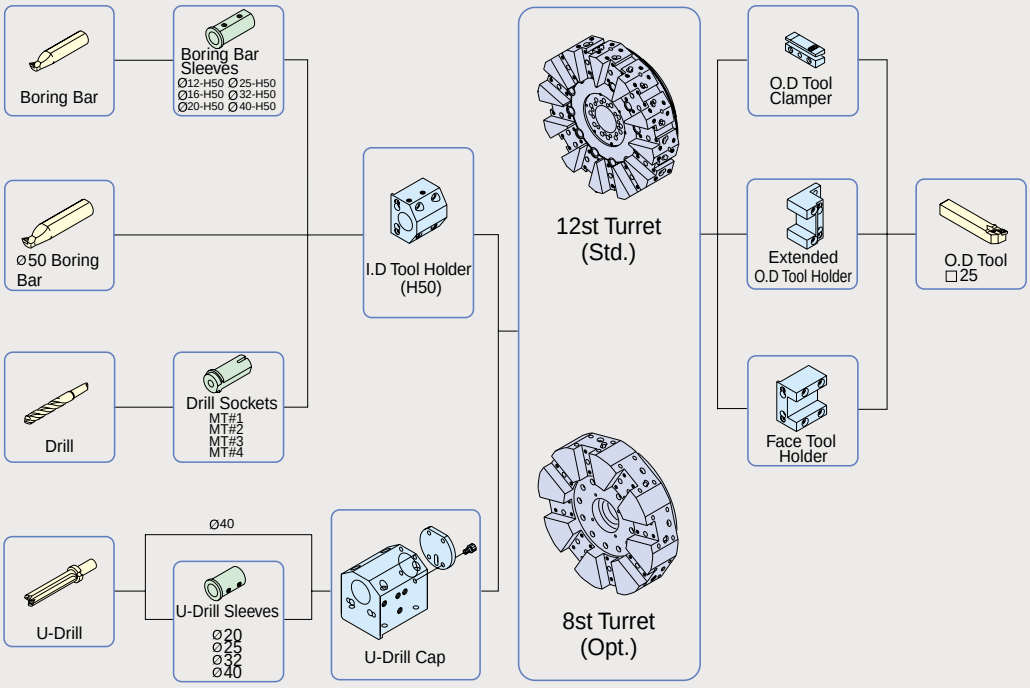


Preci-Flex ready rotary tool holders are available on the milling versions. Preci-Flex is a tooling system utilizes the existing ER collet taper in the rotary holders. The spindle face is precision ground relative to the taper and there are four drilled and tapped holders in this face. The Preci-Flex adapters locate on both the taper and the spindle face for maximum rigidity.

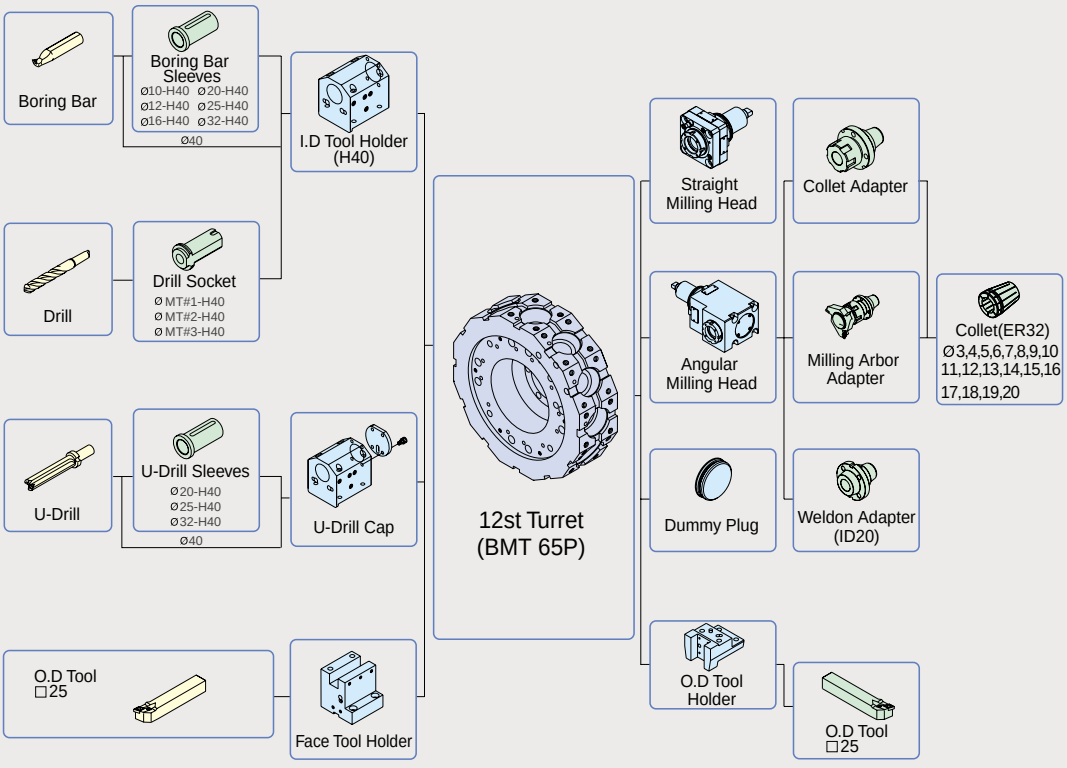
Tooling System

unit : mm

PUMA V400/V400-2SP



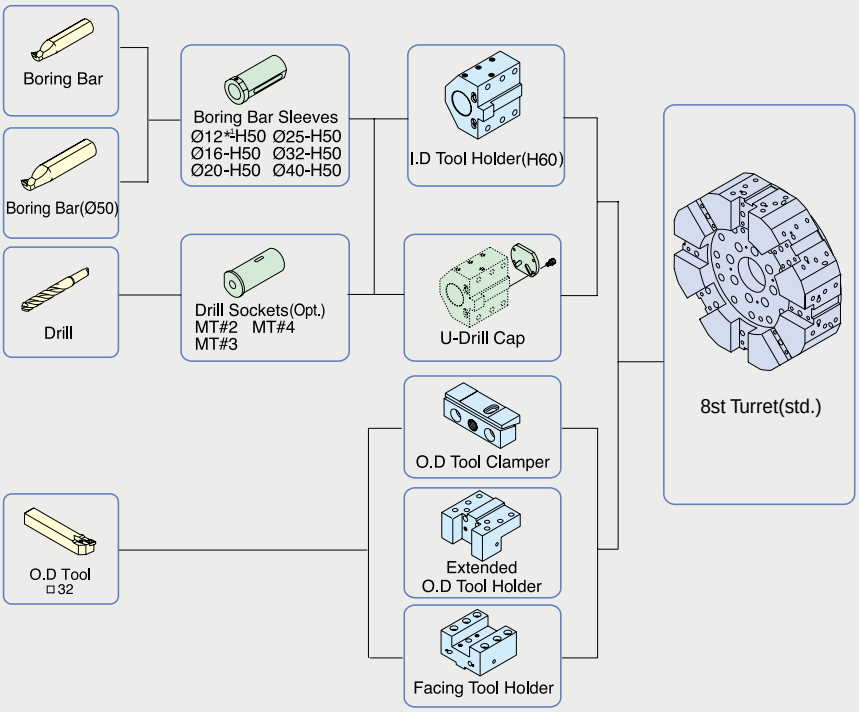
PUMA V400M



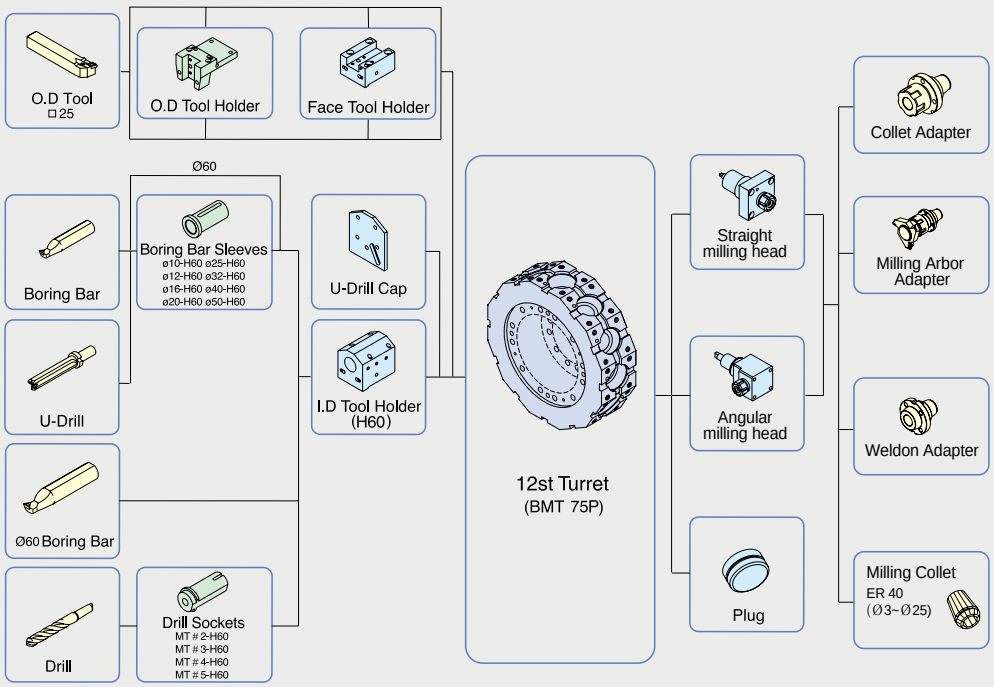
Tooling System

unit : mm

PUMA V550/V550-2SP



PUMA V550M



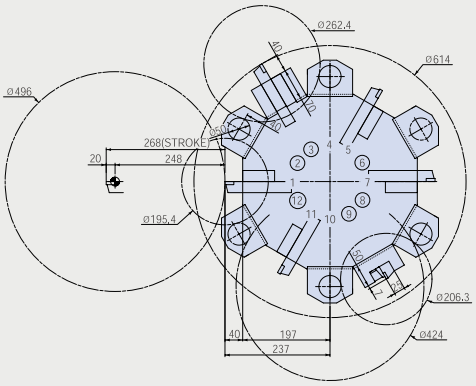
Note) Above tooling system is our recommendation. Depending on export condition, the standard tooling packed with the machine can be different.

Tool Interference Diagram

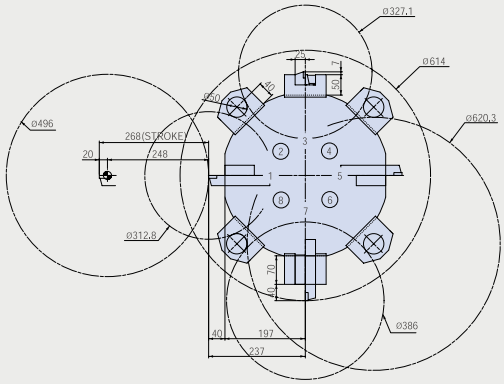
unit : mm

PUMA V400/V400-2SP

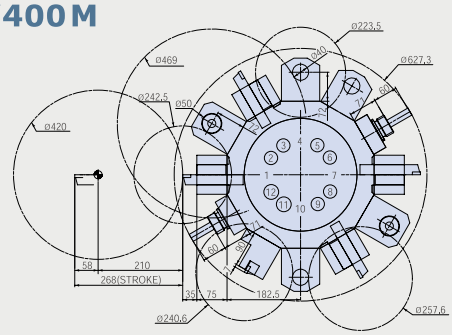
(1) PUMA V400 : 12 Stations (Std.)



(2) PUMA V400 : 8 Stations (Opt.)

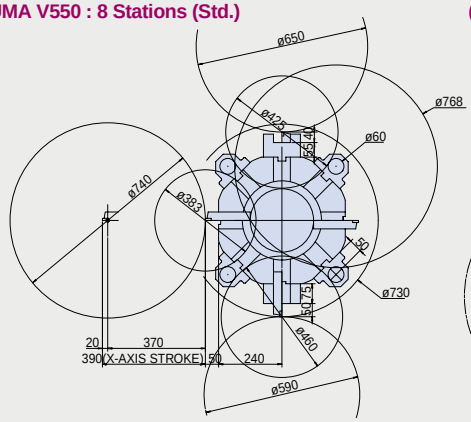


PUMA V400M

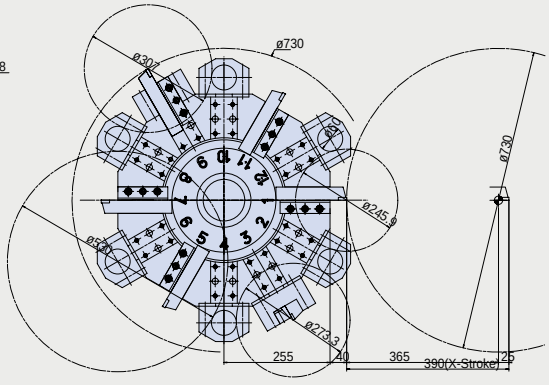


PUMA V550/V550-2SP

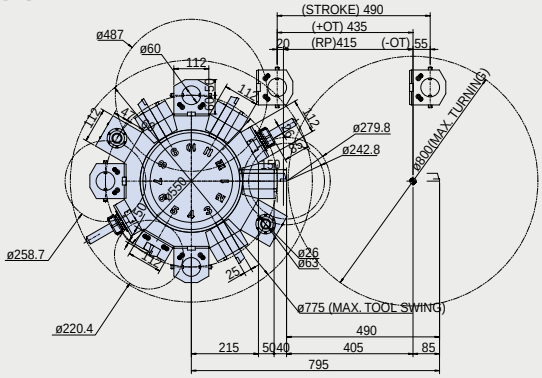
(1) PUMA V550 : 8 Stations (Std.)



(2) PUMA V550 : 12 Stations (Opt.)



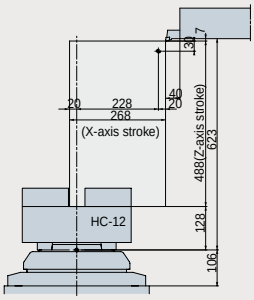
PUMA V550M



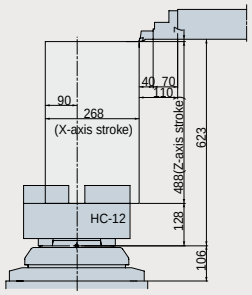
unit : mm

PUMA V400/V400-2SP

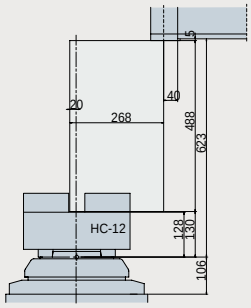
OD tool holder range



Extended OD tool holder range

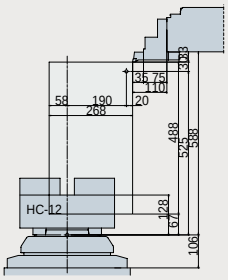


ID tool holder range

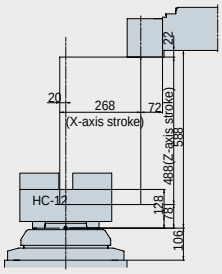


PUMA V400M

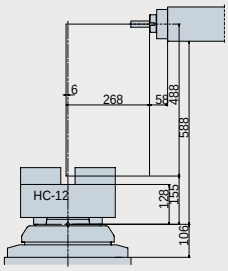
OD tool holder range



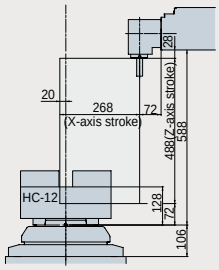
ID tool holder range



Straight milling unit

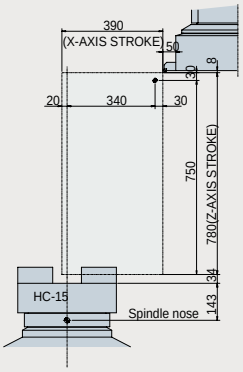


Angular milling head

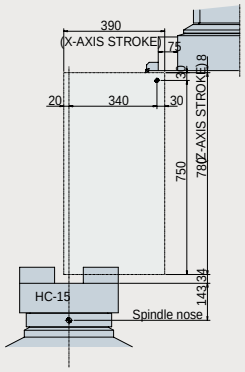


PUMA V550/V550-2SP

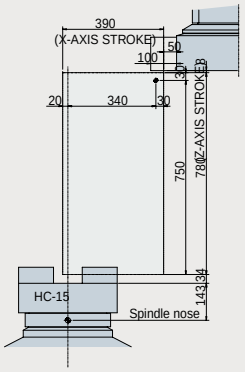
OD tool holder range



Extended OD tool holder range

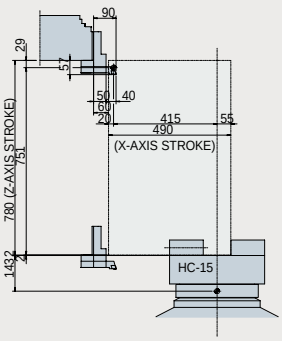


ID tool holder range

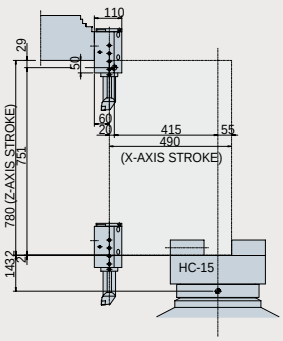


PUMA V550M

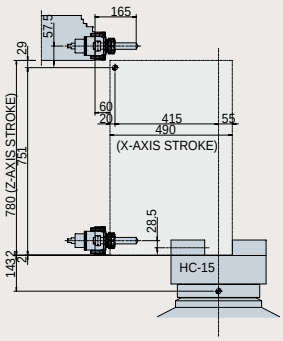
OD tool holder range



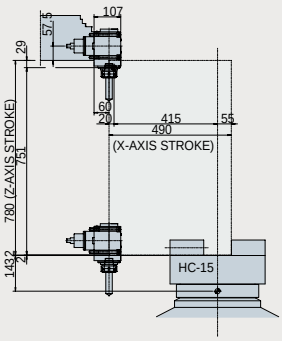
ID tool holder range



Straight milling unit



Angular milling head

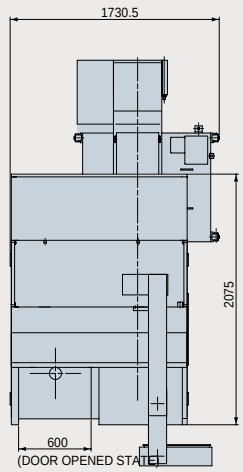


External Dimension

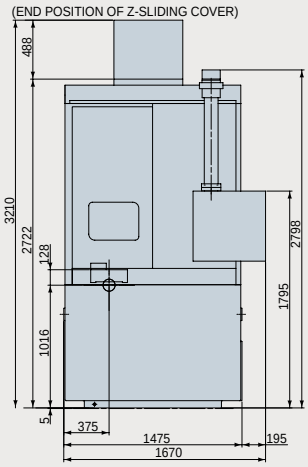
unit : mm

PUMA V400[M]

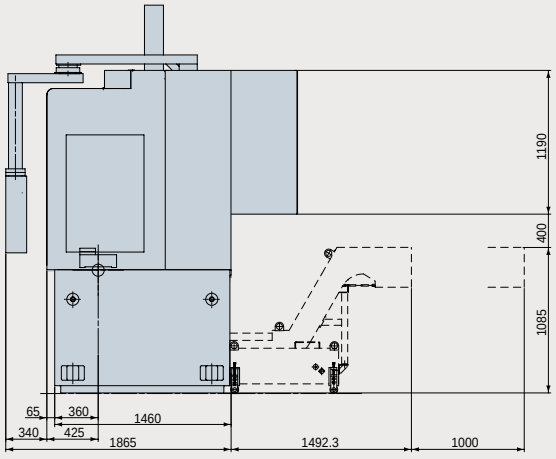
TOP VIEW



FRONT VIEW



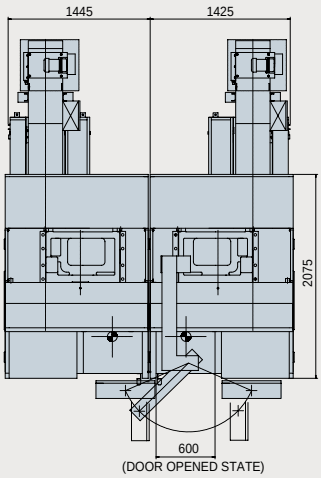
SIDE VIEW



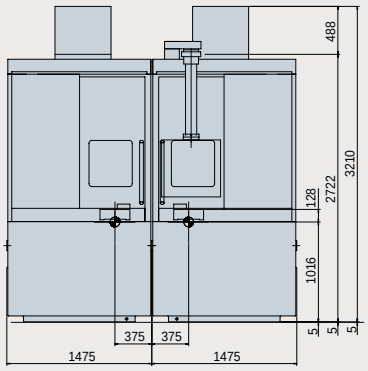
Note) Right Handed Model of PUMA V400 series

PUMA V400-2SP

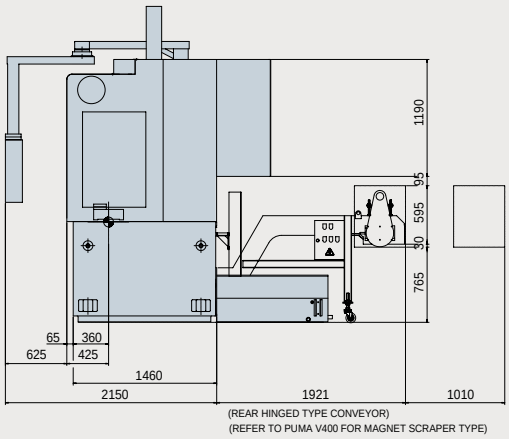
TOP VIEW



FRONT VIEW



SIDE VIEW

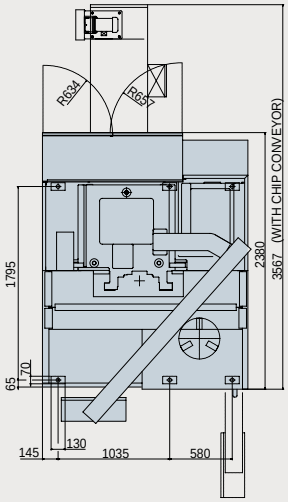


External Dimension

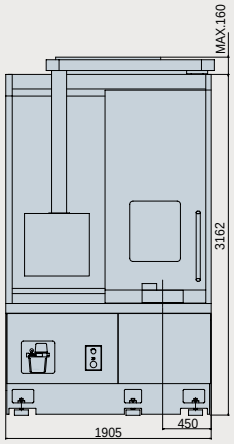
unit : mm

PUMA V550M

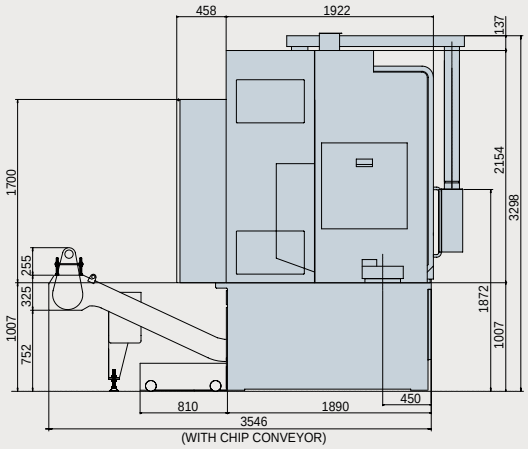
TOP VIEW



FRONT VIEW



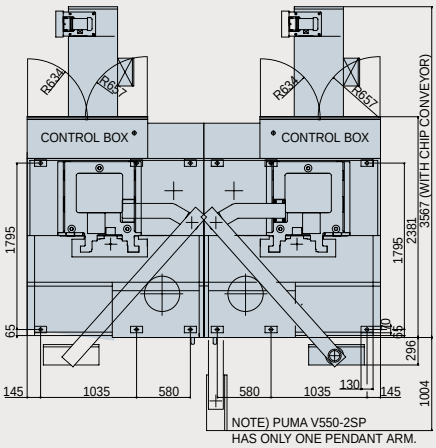
SIDE VIEW



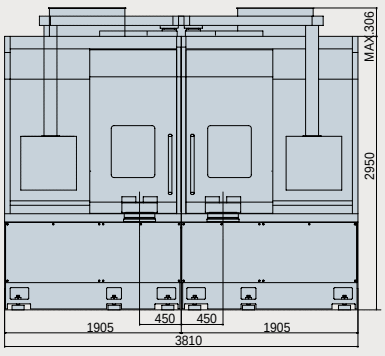
Note) Left Handed Model of PUMA V550 series

PUMA V550/V550-2SP

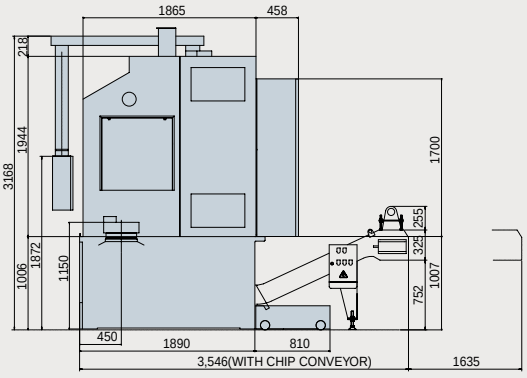
TOP VIEW



FRONT VIEW



SIDE VIEW



Machine Specifications

Item				PUMA V400	PUMA V400M	PUMA V400-2SP	PUMA V550	PUMA V550M	PUMA V550-2SP
Capacity	Swing over bed		mm	610			800		
	Swing over saddle		mm	500			490		
	Recom. Turning diameter		mm	305			550		
	Max. turning diameter		mm	496	420	496	730	800	730
	Max. turning length		mm	461	400	461	750		
Carriage	X-axis travel		mm	268			390	490	390
	Z-axis travel		mm	488			780		
Main spindle	Spindle speed		r/min	3000			2000		
	Spindle nose		ASA	A2#8			A2#11		
	Spindle bearing diameter		mm	130			160		
	Spindle bore diameter		mm	90			-	-	-
	Main spindle indexing angle	(C-axis)	deg	-	360 (0.001)	-	-	360 (0.001)	-
Turret	No. of tool stations		st	12 {8}	12	12+12{8+8}	8 {12}	12	8+8 {12+12}
	OD tool size		mm	25			32	25	32
	Boring bar diameter		mm	50	40	50	60		
	Indexing time		s	0.15			0.15	0.25	0.15
	Rotary tool spindle speed		r/min	-	4000	-	-	3000	-
Feedrates	Rapid traverse	(X-axis)	m/min	20			12		
		(Z-axis)	m/min	20			16		
Motor	Main spindle motor (30min)		kW	22			37		
	Servo motor	(X/Z-axis)	kW	X:3.0, Z:4.0			X:3.0, Z:4.0		
	Rotary tool spindle motor		kW	-	5.5	-	-	11	-
Power source	Electric power supply		kVA	40.3	44.7	81	54.4	56.6	103.9
Machine size	Machine height		mm	3210			3260	3390	3260
	Machine dimension	(length)	mm	1455		2910	1905		3810
		(width)	mm	2075			2720		
	Machine weight		kg	6000		12000	9000	9100	18000

Note { } : Option

Standard Feature

- ■Coolant supply equipment
- ■Controller : Doosan Fanuc i series*1
- ■Controller : Fanuc 31i-A*2
- ■Full enclosure chip and coolant shield
- ■Hand tool kit, including small hand tool for operations
- ■Hydraulic chuck & actuating cylinder
- ■Hydraulic power unit
- ■Leveling jack screw & plates
- ■Lubrication equipment
- ■Soft jaws (total)
- ■Standard tooling kit (tool holders & boring sleeve)
- ■Work light

Optional Feature

- ■Air blast for chuck jaw cleaning
- ■Automatic door
- ■Automatic door with safety device
- ■Chip conveyor & Chip bucket
- ■Controller : Fanuc 32i-A*1
- ■Coolant flushing
- ■Dual chucking pressure
- ■Hardened & ground jaws
- ■Manual tool presetter
- ■Oil skimmer
- ■Signal tower (yellow, red, green)
- ■Proximity switch for chuck clamp detection
- ■Special chucks

*1 : PUMA V400/400M/V550/V550M *2 : PUMA V400-2SP, V550-2SP

· Design and specifications are subject to change without prior notice.
· Doosan is not responsible for difference between the information in the catalogue and the actual machine.

NC Specifications

	Item	Spec.	Doosan Fanuc i series	Fanuc 32i-A	Fanuc 31i-A
Controls	Controlled axes		X,Z,C (!)	X,Z,C (!)	X1,Z1, X2, Z2
	Simultaneously controlled axes	Std. 2 axes	4 axes (!)	3 axes (!)	4 axes
Axis Functions	Backlash compensation	0~±9999 pulses	○	○	○
	Cs contouring control		○(!)	○(!)	-
	Follow-up / Chamfering on/off		○	○	○
	HRV2 control		○	○	○
	Least input increment	0.001mm / 0.0001"	○	○	○
	Stored stroke check1	Overtravel control	○	○	○
Operation	Automatic operation(memory) / Buffer register		○	○	○
	Handle incremental feed	X1, X10, X100	○	○	○
	Search function	Sequence NO. / Program NO.	○	○	○
Interpolation	1st, reference position return	Manual, G28	○	○	○
	2nd reference position return	G30	○	○	○
	Reference position return check	G27	○	○	○
	Circular interpolation	G02, G03	○	○	○
	Continuous thread cutting		○	○	○
	Dwell	G04	○	○	○
	Linear interpolation	G01	○	○	○
	Multiple threading /Thread cutting retract		○	○	○
	Polar coordinate interpolation		○(!)	○(!)	-
	Thread cutting / Synchronous cutting		○	○	○
Feed Functions	Feed per minute / Feed per revolution		○	○	○
	Feedrate override	0 - 200 % (10 % unit)	○	○	○
	Jog feed override	0 - 2000 mm/min	○	○	○
	Rapid traverse override	F0/ 25 / 100 %	○	○	○
	Tangential speed constant control		○	○	○
Axuiliary & Spindle Functions	1st Spindle orientation		○	○	○
	Constantant surface speed control		○	○	○
	M-function	M3 digit	○	○	○
	Multi-spindle control		○(!)	○(!)	○
	Rigid tapping		○	○	○
	Spindle speed override	0~150%	○	○	○
Programming Functions	Absolute / Incremental programming		○	○	○
	Canned cycle for drilling		○	○	○
	Custom macro		○	○	○
	Decimal point programming/pocket calculator type decimal point programming		○	○	○
	Direct drawing dimension programming		○	○	○
	Manual guide i	Conversational programming	○	○	○
	Maximum program dimension	±9 digits	○	○	○
	Multi repetitive canned cycle	G70~G76	○(!)	○	○
	Optional block skip(without hardware)	Total 9 (Only NC function)	-	○	○
	Sequence number		N5	N8	N8
	Programmable data input	G10	○	○	○
	Sub program call	Nested holds	4	10	10
	Tape format for FANUC series 10/11		○	○	-
	Tape format for FANUC series 15		-	-	○
	Work coordinate system selection	G52~G59	○	○	○
Tool Functions	Auto tool offset		○	○	○
	Tool monitoring system		-	Opt.	Opt.
	Direct input of tool offset value measured B		○	○	○
	Tool geometry / wear compensation	Geometry & wear data	○	○	○
	Tool life management		○	○	○
	Tool nose radius compensation	G40~G42	○	○	○
	T-code function	T2+2 digits	○	○	○
	Tool offset pairs		64	64	32
	Tool offset value counter input		-	○	○
Editing Op. Functions	Background editting		○	○	○
	Expanded part program editting	Copy, Move, Change of NC program	○	○	○
	No. of Registered programs		400ea	500ea	500ea
	Part program editing / Program protect		○	○	○
	Part program storage length*1		640m	640m	640m
Setting & Display	Display of spindle speed and T-code at all screen		○	○	○
	Help function	Alarm&Operation display	○	○	○
	Self diagnostic function		○	○	○
	Servo setting screen / Spindle setting screen		○	○	○
	Tool path graphic display		○	Opt.(!)	○
Data Input & Output	I/O interface	RS-232C	○	○	○
	Memory card input and output		○	○	○
	Reader puncher control	CH1 interface	○	○	○
Other Functions	Ethernet function	Embedded ethernet function	○	○	○
	MDI / DISPLAY unit		10.4" color TFT LCD	10.4" color TFT LCD	10.4" color TFT LCD
	PMC system		○	○	○

Fanuc 31i-A : PUMA V550-2SP
PUMA V400-2SP

*1 : Standard Part program length is different on export condition. On the addition of optional functions, its length can be reduced.

PUMA V400/V550

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