

DOOSAN



PUMA VT series

High Performance Vertical Turning Center



PUMA VT series

PUMA VT450

PUMA VT900

PUMA VT1100



**MACHINE
GREATNESS™**

PUMA VT series

PUMA VT450/900/1100

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.



Standard for Unsurpassed High Productivity, High Speed and High Precision



Basic Mechanism

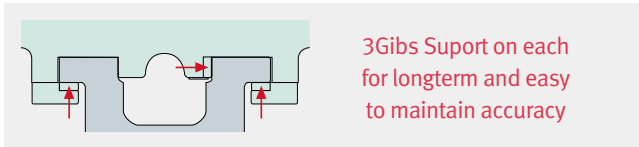


Robust Bed Construction

In order to assure heavy duty machining and optimized chip flow, the machine base body is designed and streamlined. Its small foot print help you systemizing your manufacturing plan plot in your factory.

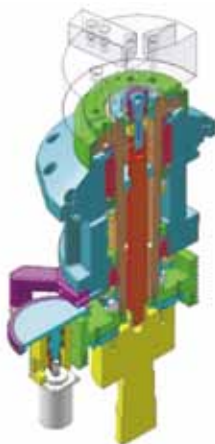
Robust Column Construction

The wide hardened and ground box ways reduce vibration promoting better tool life and surface finishes. The box ways are turcite coated which allows for 787 ipm rapid traverse rates. The Balanced Counter Weight located inside the column, neutralizes the gravity effect on the Vertical slide. It will also conserve electricity and prevent Turret Drop while in Emergency stop or Power failure. All axis Slides are Induction Hardened and Ground HRC 55 Hardness. Long-term Accuracies are very basic requirements on Doosan Infracore products. 3 adjustable Gibs on each Axis slide are provided to maintain original accuracy.



High Performance Spindle & Turret

The spindle is supported by a double row of tapered roller bearings in the Top and Bottom of the spindle while angular thrust bearings provide tremendous radial load capability. The Cartridge Spindle is axial symmetric construction, which provides very stable accuracy all day-long even when the spindle is heated up by continuous operation.

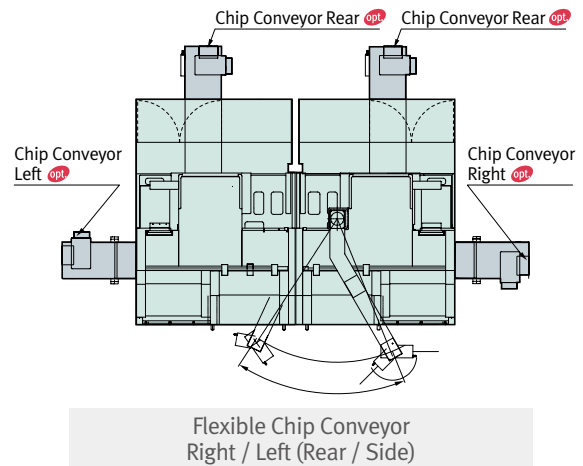


V12 Turret is ground finish for Zero accuracy. Turret has large Three piece curvic couplings. of clamping force so high accuracy and heavy-duty cutting can be achieved. The 12 station turret holds ID or OD tools.



Chip Disposal

Chip air blow
Over head Coolant for chuck
Bed wash coolant



Safety Cover



12 mm Poly carvonate
(0.4 inch)

double steel cover

Easy Operation



The swing arm on the Main Operation panel is a userfriendly feature to minimize the distance from Part to operator's Panel during setup. Narrow Vertical panel is space saving design. The handy Sub Operation Panel beside Door for each spindle has Cycle start, Feed hold, Emergency stop, Door Open/close switches.



Accessories



Gear box opt.
PUMA VT900 / VT1100 std.



Auto door opt.
Pneumatic cylinder



Manual tool setter opt.
Removable type, Renishaw



Quick change tooling std.
(CAPTO)

PUMA VT450

VT450 / VT450M / VT450-2SP / VT450M-2SP



Max. spindle speed

2500 r/min

Motor (30 min)

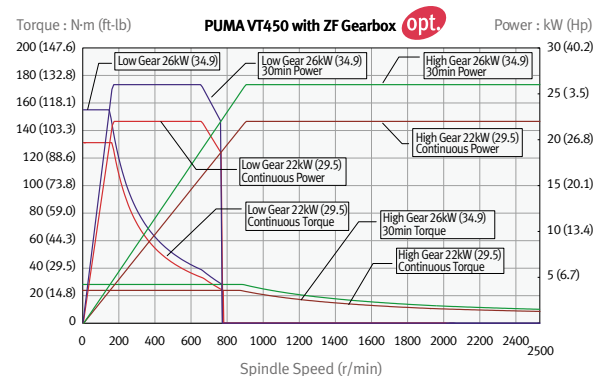
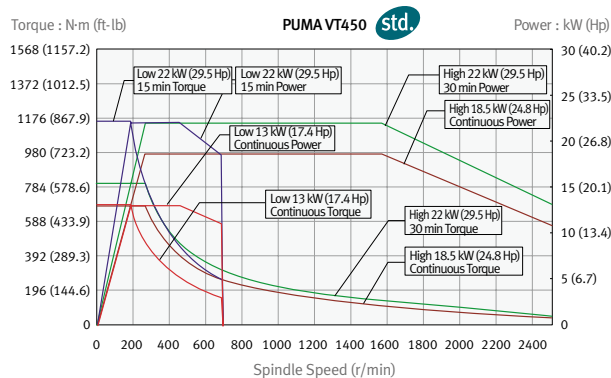
22 kW (29.5 Hp)

Main Specification std.

Travels (X / Z axis)	mm (inch)	240 / 450 (9.4 / 17.7)
Chuck size	mm (inch)	305 (12.0)
Max. Spindle speed	r/min	2500
Spindle motor (Cont. / 15min.)	kW (Hp)	18.5 / 22 (24.8 / 29.5)
Rapid Traverse (X / Z axis)	m/min (ipm)	20 / 20 (787.4 / 787.4)
Turret index time	s	1.6 (PUMA VT450)
No. of tool station	stations	12
Std. M/C dimension (L x W x H)	mm (inch)	1445 x 2491 x 3009 (56.9 x 98.1 x 118.5)*
Machine weight	kg (lb)	6200 kg (13668.5 lb)*

* : PUMA VT450 / VT450M

Main Spindle Power-torque Diagram



PUMA VT900

VT900 / VT900M / VT900-2SP / VT900M-2SP



Max. spindle speed

1800 r/min

Motor(30 min)

45 kW (60.3 Hp)

Main Specification std.

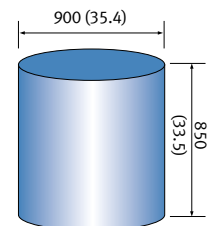
Travels (X / Z axis)	mm (inch)	470 / 850 (18.5 / 33.5)
Chuck size	mm (inch)	610 (24.0)
Max. Spindle speed	r/min	1800
Spindle motor (Cont. / 15min.)	kW (Hp)	37 / 45
Rapid Traverse (X / Z axis)	m/min (ipm)	20 / 20 (787.4 / 787.4)
Turret index time	s	2.0 (PUMA VT900)
No. of tool station	stations	12
Std. M/C dimension (L x W x H)	mm (inch)	2130 x 3050 x 3621* (83.9 x 120.1 x 142.6)
Machine weight	kg (lb)	12500 (2755.7)*

* : PUMA VT900 / VT900M

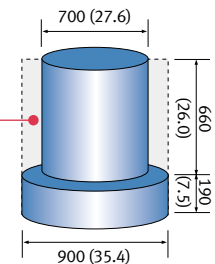
Working Range

unit : mm (inch)

Max. working range

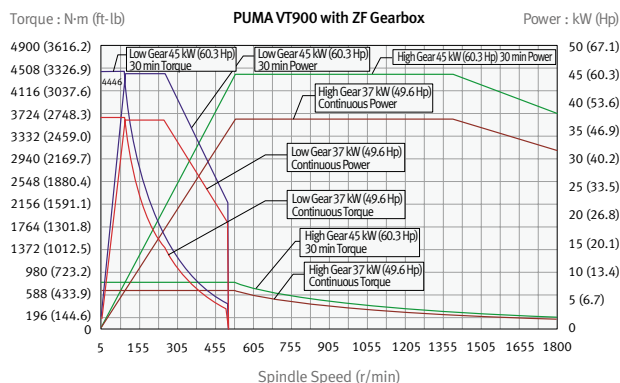


Interference area



If working length 190mm (7.5 inch) excess, interference area

Main Spindle Power-torque Diagram



PUMA VT1100

VT1100 / VT1100M



Automatic tool changer **opt.**

Capto tool of ATC provide the higher productivity at difficult to cut material

Description	Unit	Specifications
TOOL SHANK	-	CAPTO C8
TOOL STORAGE CAPACITY	ea	12
MAX. TOOL DIAMETER	mm (inch)	110 (4.3)
MAX. TOOL LENGTH	mm (inch)	450 (17.7)
MAX. TOOL MASS	kg (lb)	15 (33.1)
Tool Search Time (1 PORT)	sec	0.8
NO. OF CAPTO Tool Holder ON TURRET	ea	1~12

*Please contact DOOSAN to select detailed ATC specifications

Max. spindle speed

850 r/min

Motor(30 min)

60 kW(80.5 Hp)



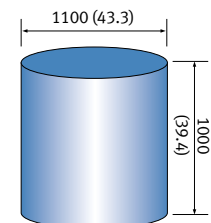
Main Specification **std.**

Travels (X / Z axis)	mm (inch)	580 / 1000 (22.8 / 39.4)
Chuck size	mm (inch)	800 (31.5)
Max. Spindle speed	r/min	850
Spindle motor (Cont./30min./10min.)	kW (Hp)	45 / 55 / 60 (60.3 / 73.8 / 80.5)
Rapid Traverse (X / Z axis)	m/min (ipm)	20 / 20 (787.4 / 787.4)
Turret index time	s	2.2
No. of tool station	stations	12
Std. M/C dimension (L x W x H)	mm (inch)	2850 x 3305 x 4012 (112.2 x 130.1 x 158.0)
Machine weight	kg (lb)	22000 (48501.0)

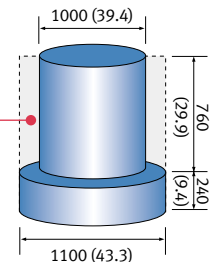
Working Range

unit : mm (inch)

Max. working range

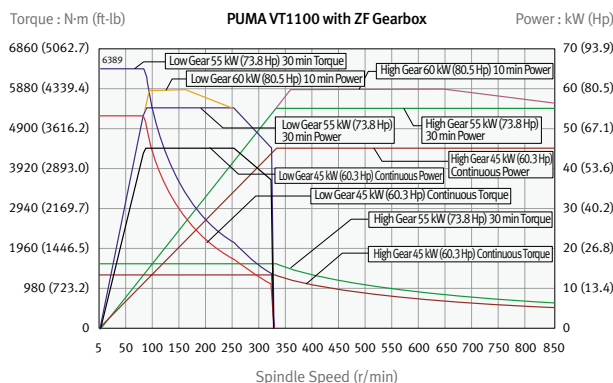


Interference area



If working length 240mm (9.4 inch) excess, interference area

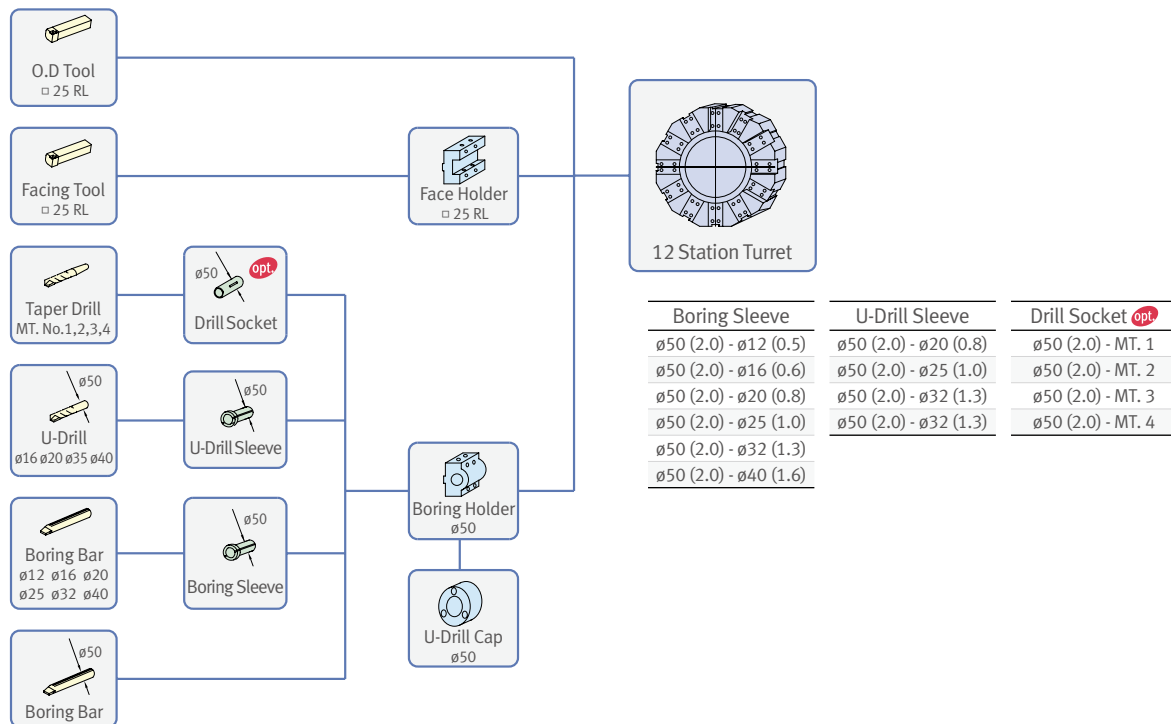
Main Spindle Power-torque Diagram



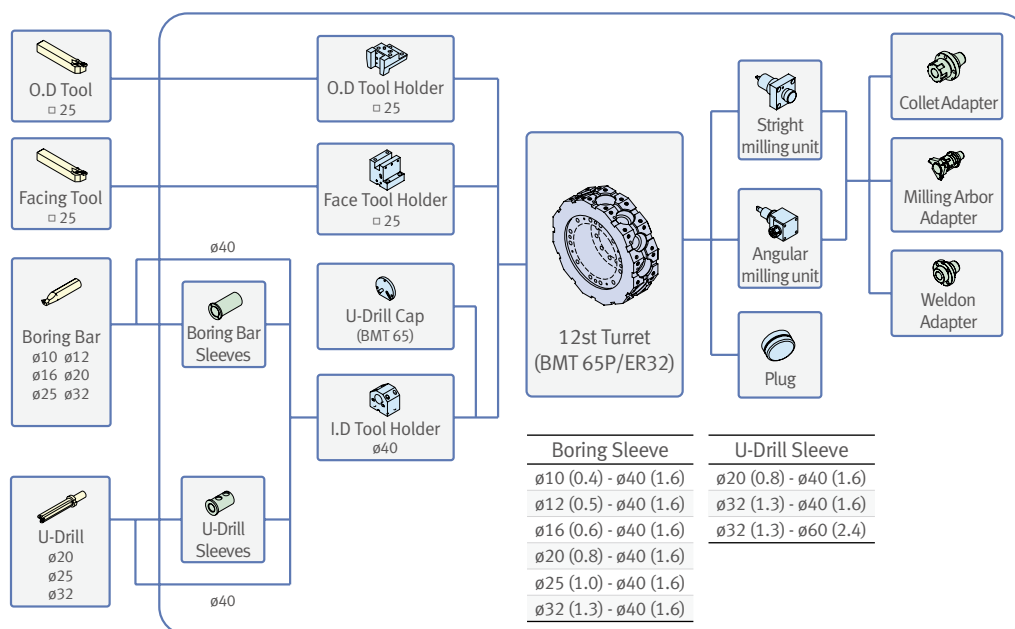
Tooling System

Unit: mm (inch)

PUMA VT450 / VT450-2SP



PUMA VT450M / VT450M-2SP

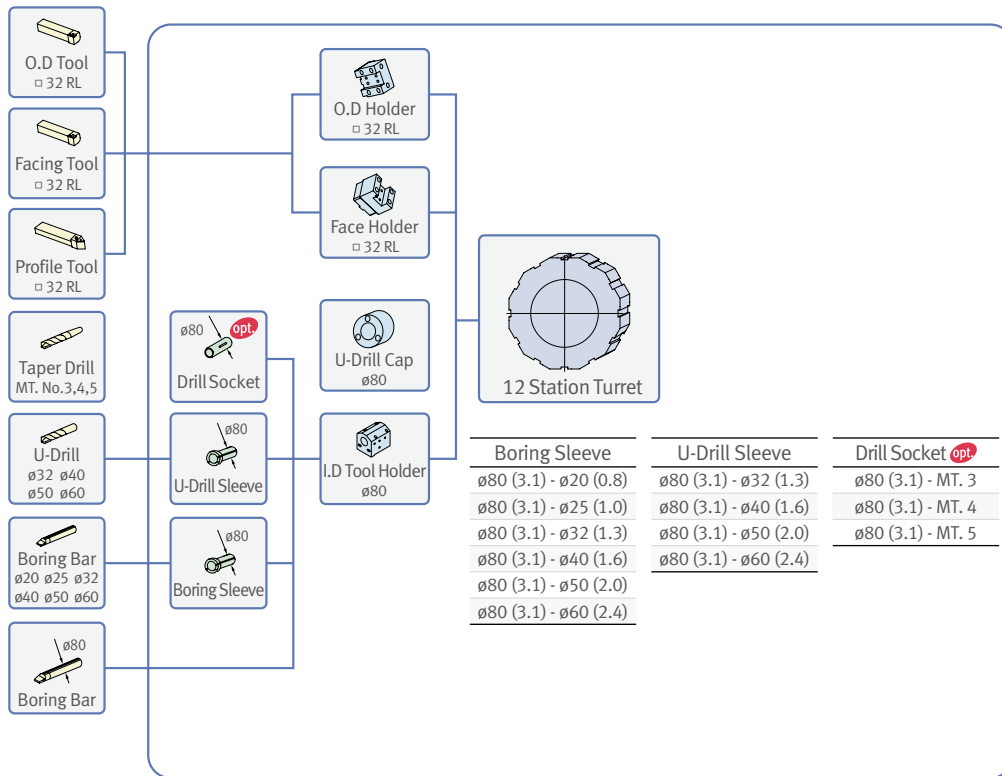


Note) Above tooling system is our recommendation.
Depending on export condition, the standard tooling packed with the machine can be different.

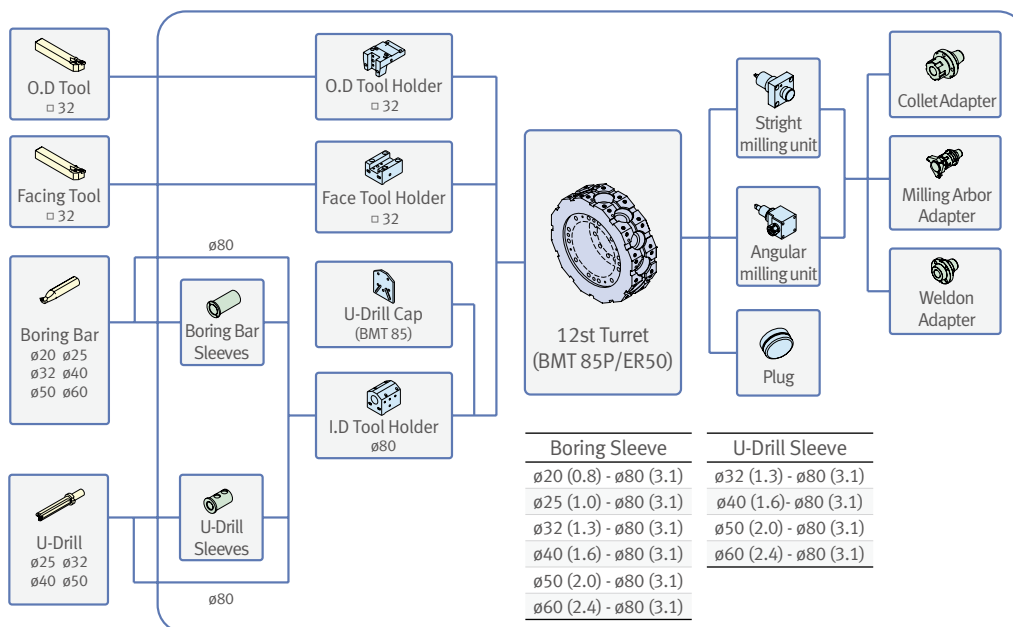
Tooling System

Unit: mm (inch)

PUMA VT900 / VT900-2SP



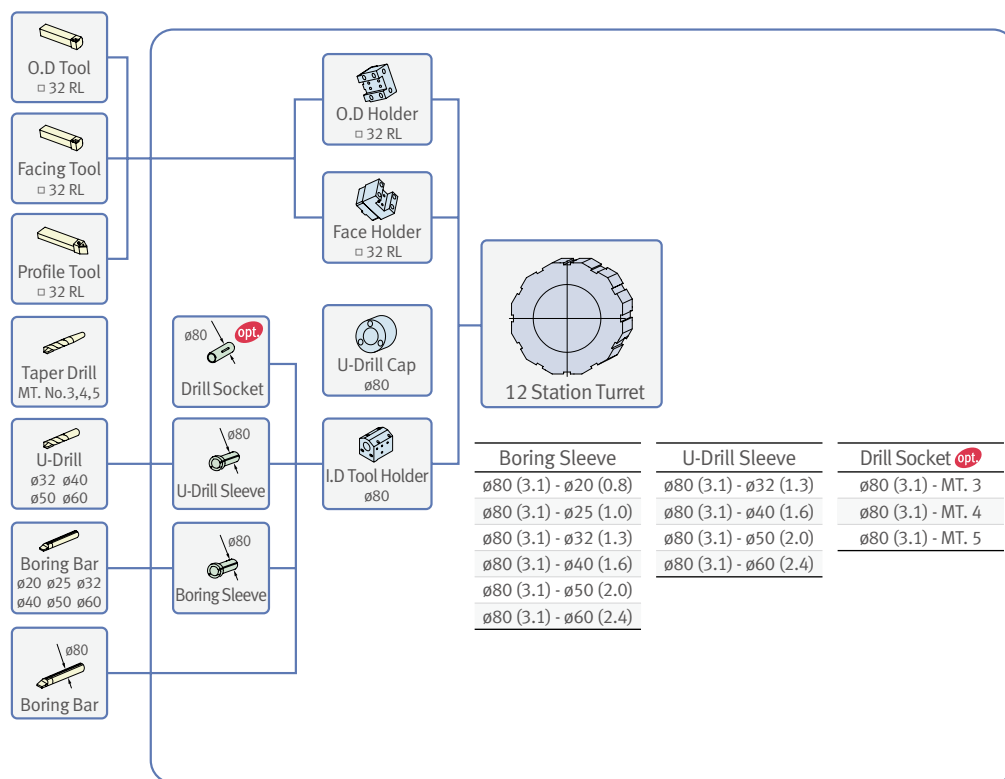
PUMA VT900M / VT900M-2SP



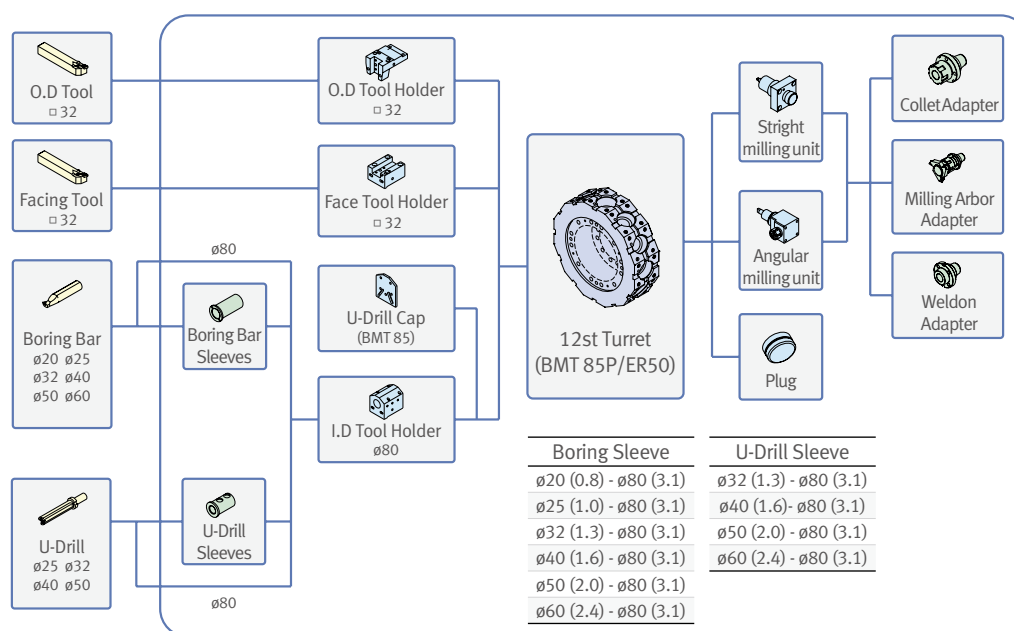
Note) Above tooling system is our recommendation.

Depending on export condition, the standard tooling packed with the machine can be different.

PUMA VT1100



PUMA VT1100M

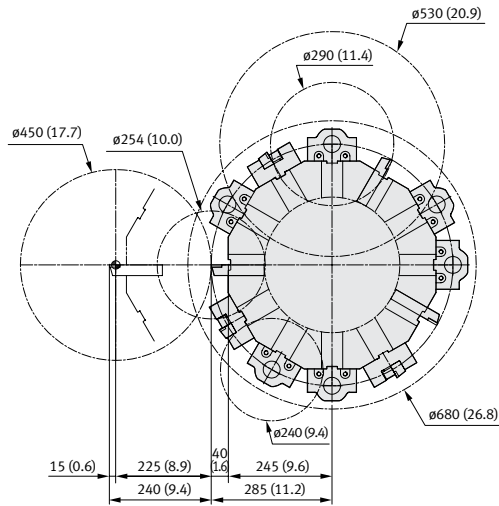


Note) Above tooling system is our recommendation.

Depending on export condition, the standard tooling packed with the machine can be different.

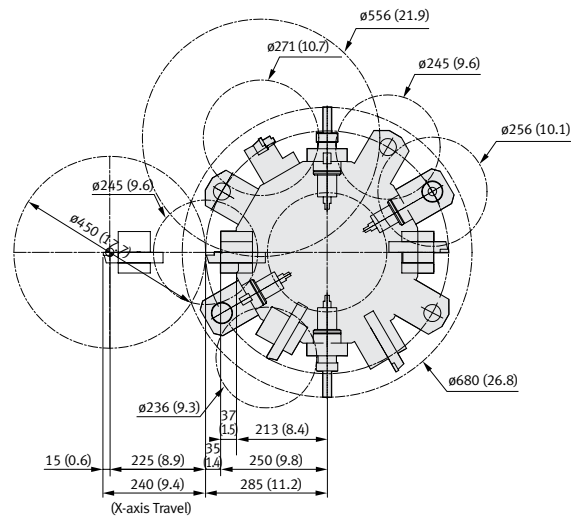
Tool Interference Diagram

PUMA VT450 / VT450-2SP

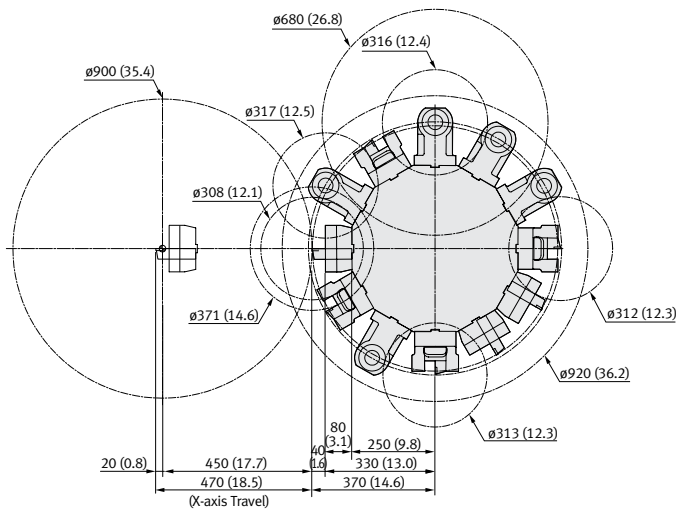


PUMA VT450M / VT450M-2SP

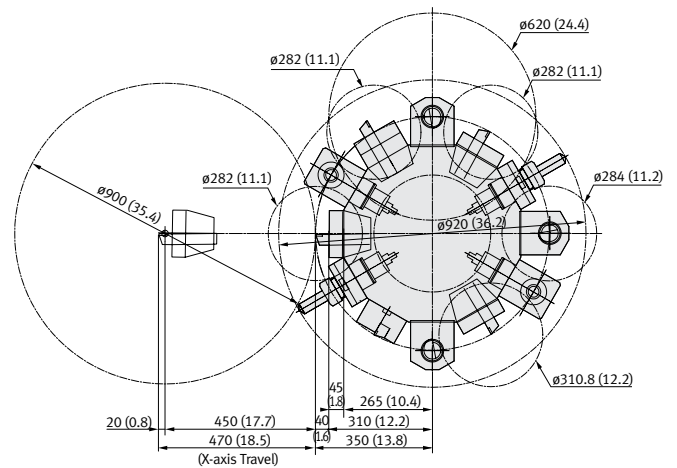
Unit: mm (inch)



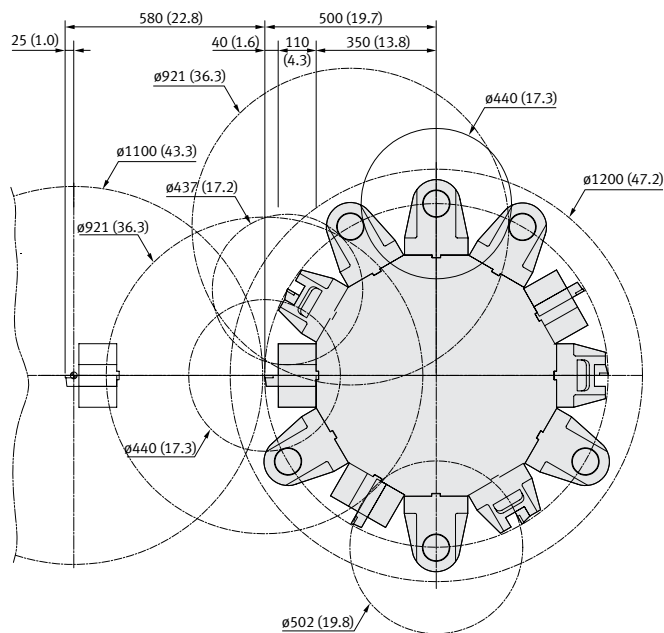
PUMA VT900 / VT900-2SP



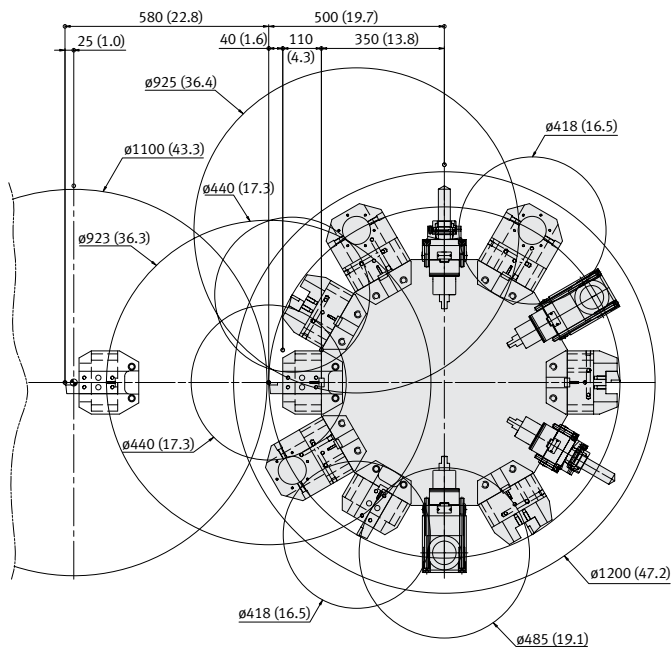
PUMA VT900M / VT900M-2SP



PUMA VT1100



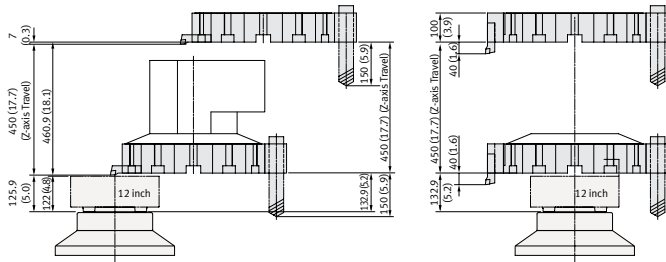
PUMA VT1100M



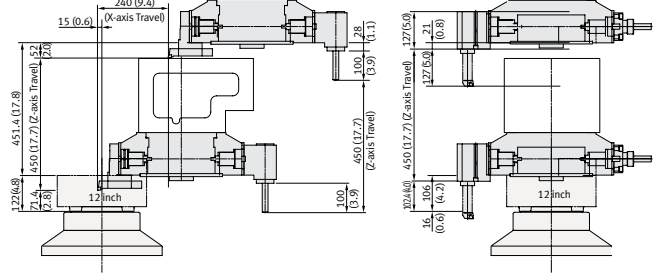
Working Range

Unit: mm (inch)

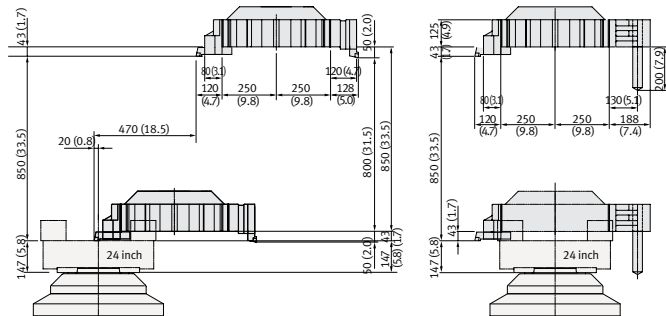
PUMA VT450 / VT450-2SP



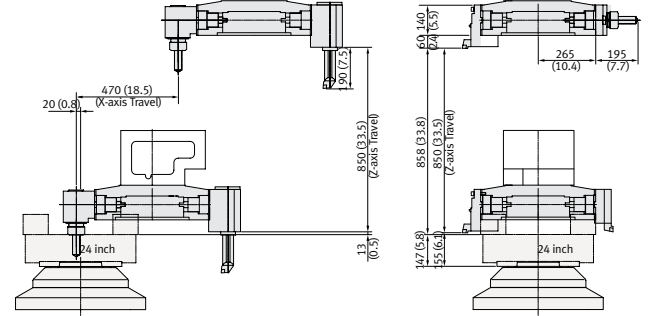
PUMA VT450M / VT450M-2SP



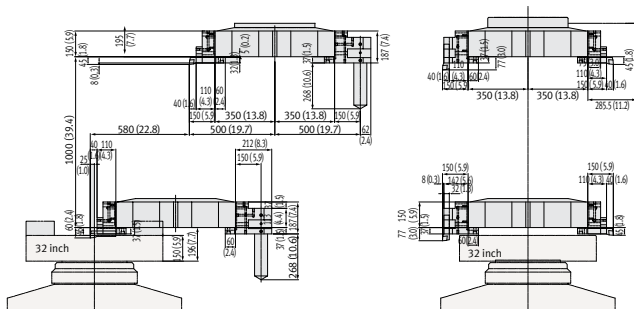
PUMA VT900 / VT900-2SP



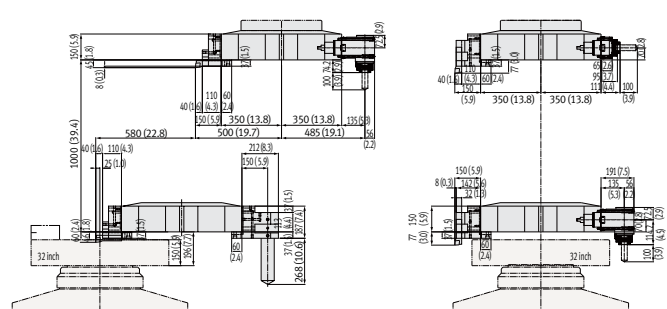
PUMA VT900M / VT900M-2SP



PUMA VT1100



PUMA VT1100M

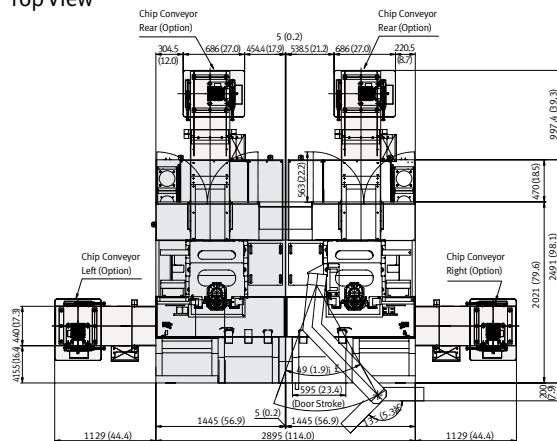


External Dimensions

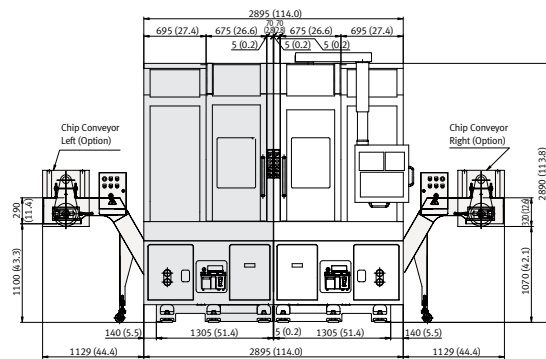
Unit: mm (inch)

**PUMA VT450 / VT450M /
PUMA VT450-2SP / VT450M-2SP**

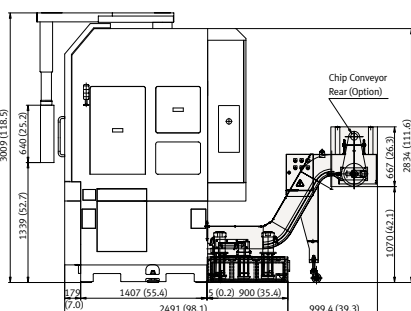
Top View



Front View



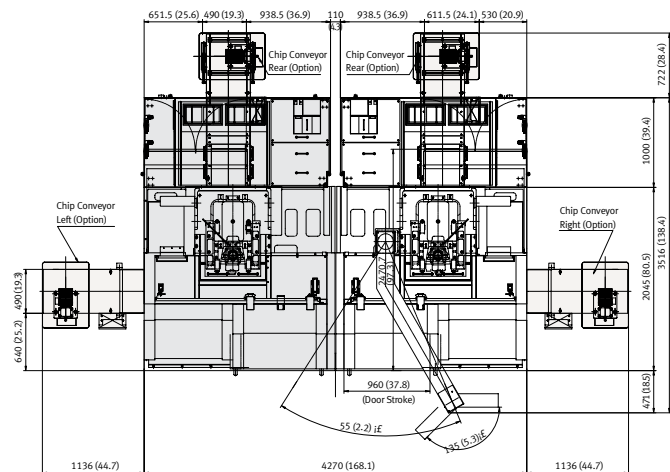
Side View



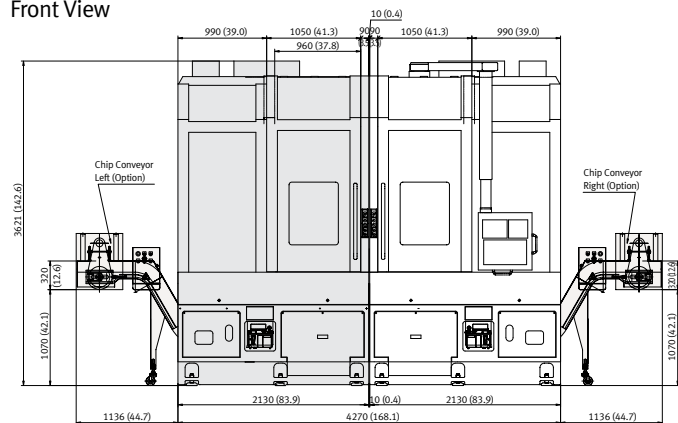
* Some peripheral equipment can be placed in other places

PUMA VT900 / VT900M
PUMA VT900-2SP / VT900M-2SP

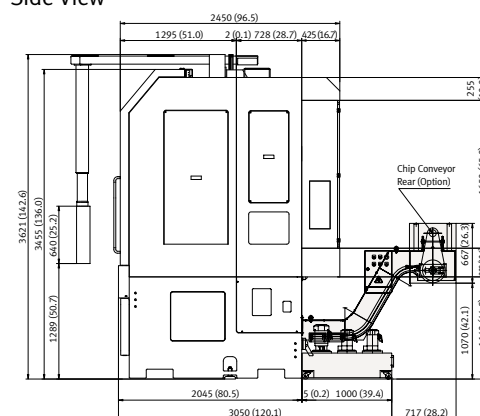
Top View



Front View



Side View

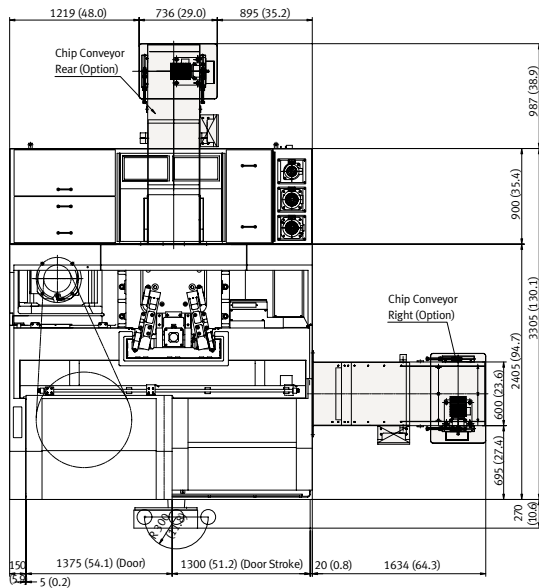


External Dimensions

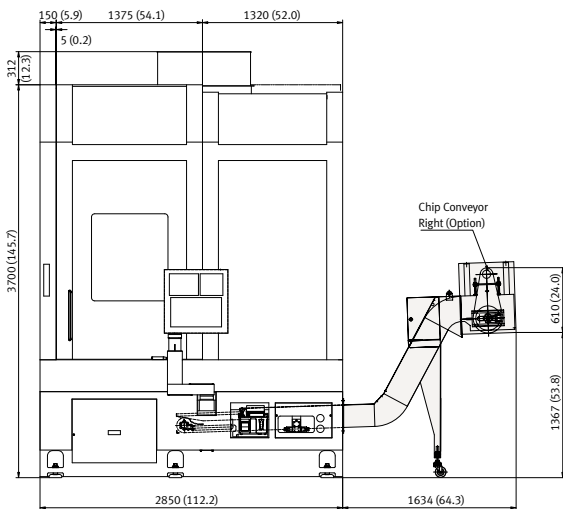
PUMA VT1100 / VT1100M

Unit: mm (inch)

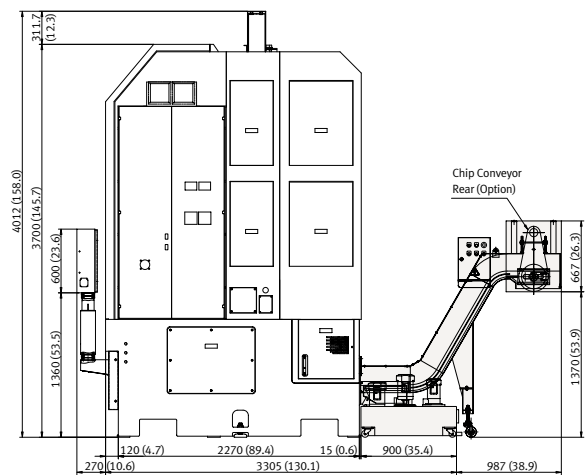
Top View



Front View



Side View



* Some peripheral equipment can be placed in other places

Machine Specifications

Description			Unit	PUMA VT450	PUMA VT450-2SP	PUMA VT450M	PUMA VT450M-2SP
Capacity	Swing over bed		mm (inch)	580 (22.8)			
	Swing over saddle		mm (inch)	450 (17.7)			
	Recom. turning diameter		mm (inch)	380 (15.0)			
	Max. turning diameter		mm (inch)	450 (17.7)			
	Max. turning height		mm (inch)	427 (16.8)	427 (16.8)	373 (14.7)	373 (14.7)
	Chuck size		mm (inch)	305 (12)			
Travels	X-axis		mm (inch)	240 (9.4)			
	Z-axis		mm (inch)	450 (17.7)			
Feedrates	Rapid traverse rate	X-axis	m/min	20 (787.4)			
		Z-axis	m/min	20 (787.4)			
Main Spindle	Spindle speed		r/min	2500			
	Spindle nose		ASA	A2#8			
	Spindle bearing diameter (Front)		mm (inch)	120 (4.7)			
	Spindle through hole		mm (inch)	62 (2.4)			
	Main spindle indexing angle (C-axis)		deg	-		360 (in 0.001)	
Turret	No. of tool stations		st	12			
	OD tool size		mm (inch)	25 (1.0)			
	Max. boring bar size		mm (inch)	ø50 (ø2.0)		ø40 (ø1.6)	
	Turret Indexing time (1 station swivel)		s	1.6		1.2	
Motor	Main spindle motor		kW (Hp)	22 (29.5) [15min.] {26 (34.9) [30min.]}			
	Servo motor X/Z-axis		kW (Hp)	3.0 / 4.0 (4.0 / 5.4)			
	Rotary tool spindle motor		kW (Hp)	-		4.5 (6.0)	
Power source	Electric power supply (rated capacity)		kVA	55	105	60	110
Machine Size	Height		mm (inch)	3009 (118.5)			
	Length		mm (inch)	1445 (56.9)	2895 (114.0)	1445 (56.9)	2895 (114.0)
	Width		mm (inch)	2491 (98.1)			
	Weight		kg (lb)	6200 (13668.5)	12400 (27336.9)	6200 (13668.5)	12400 (27336.9)
Controller				Doosan Fanuc i series	Fanuc 31i	Doosan Fanuc i series	Fanuc 31i

{ } : Option

Standard Feature

- Coolant flushing for bed
- Coolant flushing for chuck
- Coolant supply equipment
- Full enclosure chip and coolant shield
- Hydraulic chuck & actuating cylinder
- Hand tool kit, including small hand tool for operationst
- Hydraulic power unit
- Leveling jack screw & plates
- Lubrication equipment
- Soft jaws
- Standard tooling kit (tool holders & boring sleeve & U-Drill sleeve)
- Work light

Optional Feature

- Air blast for chuck jaw cleaning
- Automatic door with safety device
- Chip bucket
- Coolant gun
- Drill socket
- Dual chucking pressure
- Hardened & ground jaws
- High pressure coolant
- Manual tool presetter (Removable type)
- Oil skimmer (Belt type)
- Proximity switch for chuck clamp detection
- Signal tower (yellow, red, green)
- Special chucks
- Straddle tool preparation (Piping & Solenoid valve, Exclude straddle tool)
- Quick change tooling(CAPTO)**

* The specifications and information above-mentioned may be changed without prior notice.

* For more details, please contact Doosan.

** Special Quotation.

Machine Specifications

Description			Unit	PUMA VT900	PUMA VT900-2SP	PUMA VT900M	PUMA VT900M-2SP	PUMA VT1100	PUMA VT1100M
Capacity	Swing over bed		mm (inch)	1000 (39.4)				1270 (50.0)	
	Swing over saddle		mm (inch)	700 (27.6)				1000 (39.4)	
	Recom. turning diameter		mm (inch)	610 (24.0)				800 (31.5)	
	Max. turning diameter		mm (inch)	900 (35.4)				1100 (43.3)	
	Max. turning height		mm (inch)	801 (31.5)	801 (31.5)	809 (31.9)	809 (31.9)	960 (37.8)	
	Chuck size		mm (inch)	609 (24)				800 (32)	
Travels	X-axis		mm (inch)	470 (18.5)				580 (22.8)	
	Z-axis		mm (inch)	850 (33.5)				1000 (39.4)	
Feedrates	Rapid traverse rate	X-axis	m/min	20 (787.4)					
		Z-axis	m/min	20 (787.4)					
Main Spindle	Spindle speed		r/min	1800				850	
	Spindle nose		ASA	ISO 702-1 A2#15				ISO 702-4-No15	
	Spindle bearing diameter (Front)		mm (inch)	200 (7.9)					
	Spindle through hole		mm (inch)	107 (4.2)				100 (3.9)	
	Main spindle indexing angle (C-axis)		deg	-		360 (in 0.001)		-	360 (in 0.001)
Turret	No. of tool stations		st	12					
	OD tool size		mm (inch)	32 (1.3)					
	Max. boring bar size		mm (inch)	ø80 (ø3.1)					
	Turret Indexing time (1 station swivel)		s	2.0		1.6		2.2	
Motor	Main spindle motor		kW (Hp)	45 (60.3) [30min.]				60 (80.5) [10min.]	
	Servo motor X/Z-axis		kW (Hp)	4.0 / 4.0 (5.4 / 5.4)				4.0 / 7.0 (5.4 / 9.4)	
	Rotary tool spindle motor		kW (Hp)	-		7.0 (9.4)		-	11 (14.8)
Power source	Electric power supply (rated capacity)		kVA	75	145	80	155	90	100
Machine Size	Height		mm (inch)	3621 (142.6)				4012 (158.0)	
	Length		mm (inch)	2130 (83.9)	4270 (168.1)	2130 (83.9)	4270 (168.1)	2850 (112.2)	
	Width		mm (inch)	3050 (120.1)				3305 (130.1)	
	Weight		kg (lb)	12500 (27557.4)	25000 (55114.8)	12500 (27557.4)	25000 (55114.8)	22000 (48501.0)	
Controller			Standard	Doosan Fanuc i series					
			Option	Fanuc 32i	Fanuc 31i	Fanuc 32i	Fanuc 31i	Fanuc 32i	

Standard Feature

- Coolant flushing for bed
- Coolant flushing for chuck
- Coolant supply equipment
- Full enclosure chip and coolant shield
- Hydraulic chuck & actuating cylinder
- Hand tool kit, including small hand tool for operationst
- Hydraulic power unit
- Leveling jack screw & plates
- Lubrication equipment
- Soft jaws
- Standard tooling kit (tool holders & boring sleeve & U-Drill sleeve)
- Work light

Optional Feature

- Air blast for chuck jaw cleaning
- Automatic door with safety device
- Chip bucket
- Coolant gun
- Drill socket
- Dual chucking pressure
- Hardened & ground jaws
- High pressure coolant
- Manual tool presetter (Removable type)
- Oil skimmer (Belt type)
- Chuck clamp confirmation
- Signal tower (yellow, red, green)
- Special chucks
- Straddle tool preparation (Piping & Solenoid valve, Exclude straddle tool)
- Coolant level switch : Sensing level - Low
- Quick change tooling(CAPTO)**

* The specifications and information above-mentioned may be changed without prior notice.

* For more details, please contact Doosan.

** Special Quotation.

NC Unit Specifications

	Item	Spec.	Doosan Fanuc i series	Fanuc 32i	Fanuc 31i
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	○	○	○
	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		○	○	○
Auxiliary & Spindle Functions	1st Spindle orientation		○	○	○
	Constant 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 / turning		○	○	○
	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
Editing Op. Functions	Tool offset value counter input		-	○	○
	Background editing		○	○	○
	Expanded part program editing	Copy, Move, Change of NC program	○	○	○
	No. of Registered programs		400ea	500ea	500ea
	Part program editing / Program protect		○	○	○
Setting & Display	Part program storage length ^{*1}		1280m	640m	640m
	Display of spindle speed and T-code at all screen		○	○	○
	Help function	Alarm&Operation display	○	○	○
	Self diagnostic function		○	○	○
	Servo setting screen / Spindle setting screen		○	○	○
Data Input & Output	Tool path graphic display		○	Opt. (!)	○
	I/O interface	RS-232C	○	○	○
	Memory card input and output		○	○	○
Other Functions	Reader puncher control	CH1 interface	○	○	○
	Ethernet function	Embedded ethernet function	○	○	○
	PMC system		○	○	○

○: Standard OPT: Option (!): only M type

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

Major Specifications

PUMA VT series



Description		Unit	PUMA VT450	PUMA VT900	PUMA VT1100
Capacity	Max. turning diameter	mm (inch)	450 (17.7)	900 (35.4)	1100 (43.3)
	Max turning length	mm (inch)	427 (16.8)	801 (31.5)	960 (37.8)
	Chuck size	mm (inch)	305 (12)	609 (24)	800 (32)
Travels	Travel distance (X / Z)	mm (inch)	240 / 450 (9.4 / 17.7)	470 / 850 (18.5 / 33.5)	580 / 1000 (22.8 / 39.4)
	Rapid traverse (X / Z)	m/min (ipm)	20 / 20 (787.4 / 787.4)		
Spindle	Spindle speed	r/min	2500	1800	850
	Spindle motor power	kW (Hp)	22(29.5) [15min.]	45 (60.3) [30min.]	60 (80.5) [10min.]
	Spindle bearing diameter	mm (inch)	120 (4.7)	200 (7.9)	

Doosan Machine Tools

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* The specifications and information above-mentioned may be changed without prior notice.

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**Fire Safety
Precautions**

There is a high risk of 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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