



Doosan Machine Tools

High Performance Vertical Turning Center

PUMA VT

900 • 1100



Basic Information

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Line-up /
Processing

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PUMA VT 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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Further Enhanced Turning Capacity

The turning capacity achieved 32" of max. chuck size and 1100 mm of max. turning diameter.



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. Fixed type pendants are also available to suit customers' requirements.



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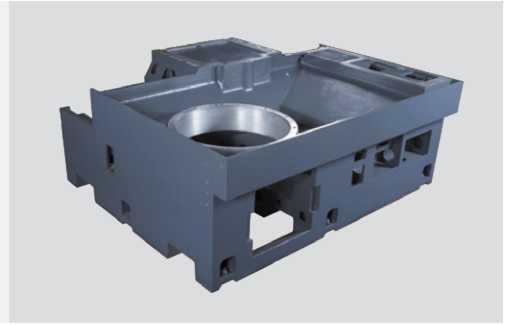
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Basic Mechanism

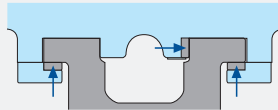
Robust Bed Construction

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 our products.



3Gibs Support on each for longterm and easy to maintain accuracy



Machining Area

Wider machining area for larger / more diverse workpieces.

Wide Machining Area

Max. turning diameter

Ø 1100 mm
(Ø 43.3 inch)

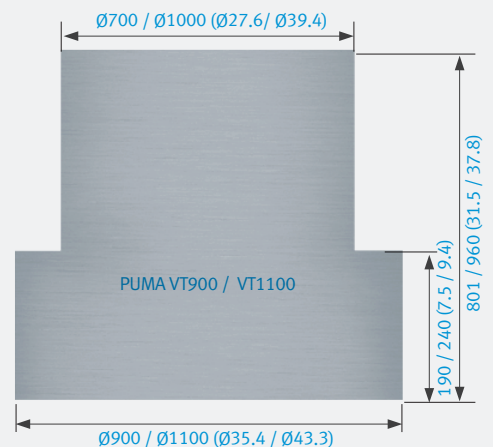
Max. turning height

1000 mm
(39.4 inch)

Chuck size

24 / 32 inch

unit : mm (inch)



Spindle

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

High performance spindle

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

PUMA VT900

Max. spindle speed

1800 r/min

Max. power (S3 60%/cont.)

45/37 kW
(60.3 / 49.6 Hp)

Max. torque

4443 N·m
(3278.9 ft-lbs)



Diversified spindle specifications

Description		Unit	PUMA VT900	PUMA VT1100
Spindle	Speed	r/min	1800	850
	Power	kW (Hp)	45 / 37 (60.3 / 49.6) (S3 60% / S1 Cont.)	60 / 55 / 45 (80.5 / 73.8 / 60.3) (S3 25% / S3 40% / S1 Cont.)
	Max. torque	N·m (ft-lbs)	4443 (3278.9)	7552 (5573.4)
C-axis minimum rotation command angle (M type)		deg	0.001	

Turret

The new servo turret facilitates faster indexing and accurate positioning.

Fast and Accurate Turret

The new servo motor turret increases indexing speed and accuracy. The M model uses BMT85P turret to provide excellent milling performance and reduced thermal error due to low heat generation design.

No. of Tool Positions

12st

Rotary tool Max. speed

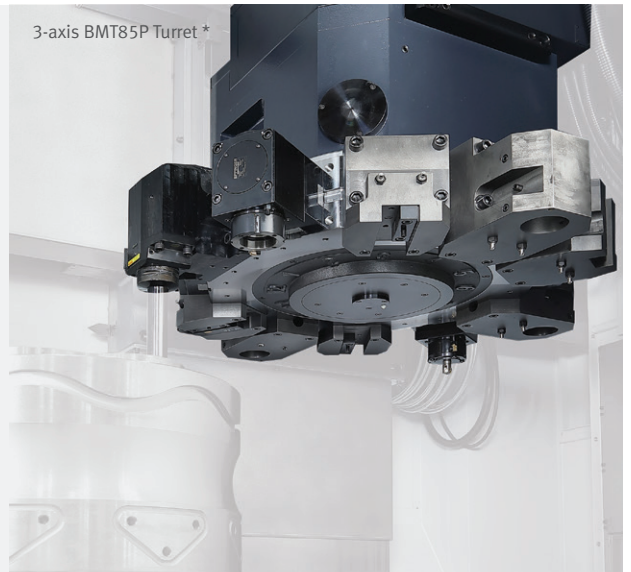
3000 r/min

Rotary tool max. power (S3 60% / Cont.)

PUMA VT1100M

11 / 7.5 kW
(14.8 / 10.1 Hp)

3-axis BMT85P Turret *



* The above image has Quick change tooling option for ATC.



Standard/Option Specifications

Various optional features are available to suit customers' diverse applications.

● Standard ○ Optional X N/A

NO.	Description	Features	PUMA VT900	PUMA VT1100
1	Chuck (LEFT / RIGHT)	610 mm (24 inch)	●	X
2		800 mm (32 inch)	○	●
3		1000 mm (40 inch)	X	○
4		None	○	○
5	Jaw (LEFT / RIGHT)	Soft jaw	●	●
6		Hard jaw (Hardened & Ground Hard Jaws)	○	○
7	Chucking option	Dual pressure chucking	○	○
8		Chuck clamp confirmation	○	○
9		Hydraulic chuck & actuating cylinder ^{*1}	○	○
10	Coolant pump	4.5 bar	●	●
11		7 / 10 / 14.5 bar	○	○
12	Coolant option	High coolant interface	○	○
13		Oil Skimmer(Belt type)	○	○
14		Coolant chiller(circulation type)	○	○
15		Coolant pressure switch	○	○
16	Chip conveyor	Side chip conveyor(Left)_Hinged type	○	○
17		Side chip conveyor(Left)_Magnetic scraper	○	○
18		Rear chip conveyor_Hinged type	○	○
19		Rear chip conveyor_Magnetic scraper	○	○
20	Chip processing options	Chip bucket	○	○
21		Coolant flushing	○	○
22		Air gun	○	○
23		Coolant gun	○	○
24	Automatic configuration	Auto door with safety edge	○	○
25		Automatic side door	○	○
26		Work & Tool counter	○	○
27		ATC(Automatic tool changer)	X	○
28	Robot Interface	PMC I/O MODULE TYPE	○	○
29		PROFIBUS-DP TYPE	X	○
30	Customized Special Option	Coolant level switch_sensing level_Low	○	○
31		Quick change tooling (CAPTO)	○	○
32		Mist Collector_2.2 KW	○	○
33		Accumulator For Hydraulic Power Unit	○	○
34		Air Blower Through Turret_With Coolant	○	○
35		Raised Column_250Mm	○	○

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

* For more details, please contact Doosan.

Automatic tool changer

option

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

VT1100 / VT1100M

Max. spindle speed

850 r/min

Motor (30 min)

60 kW (80.5 Hp)



Automatic tool changer option

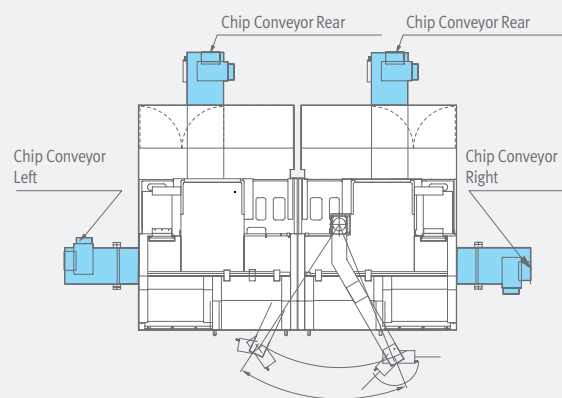
Description		Unit	Specifications
MAGAZINE & ATC	Tool shank	-	CAPTO C8
	Tool storage capacity	ea	12
	Max. tool diameter	mm (inch)	110 (4.3)
	Max. tool length	mm (inch)	450 (17.7)
	Max. tool mass	kg (lb)	15 (33.1)
	Tool Search Time (1 PORT)	sec	0.8
No. of CAPTO Tool Holder on turret		ea	1-12

*Please contact DOOSAN to select detailed ATC specifications

Chip Disposal

Chip disposal system offers improved maintainability for either manual operation or automated system.

Bed Structure for Easier Chip Disposal



Flexible Chip Conveyor option

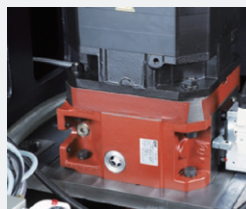
Right / Left (Rear / Side)

Chip air blow
Over head Coolant for chuck

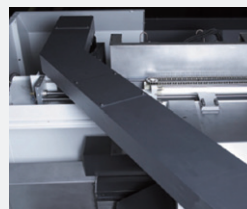
Bed wash coolant



Accessories



Gear box
PUMA VT900 / VT1100 (Standard)



Auto door
Pneumatic cylinder



Manual tool setter
Removable type, Renishaw



Quick change tooling (CAPTO)

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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

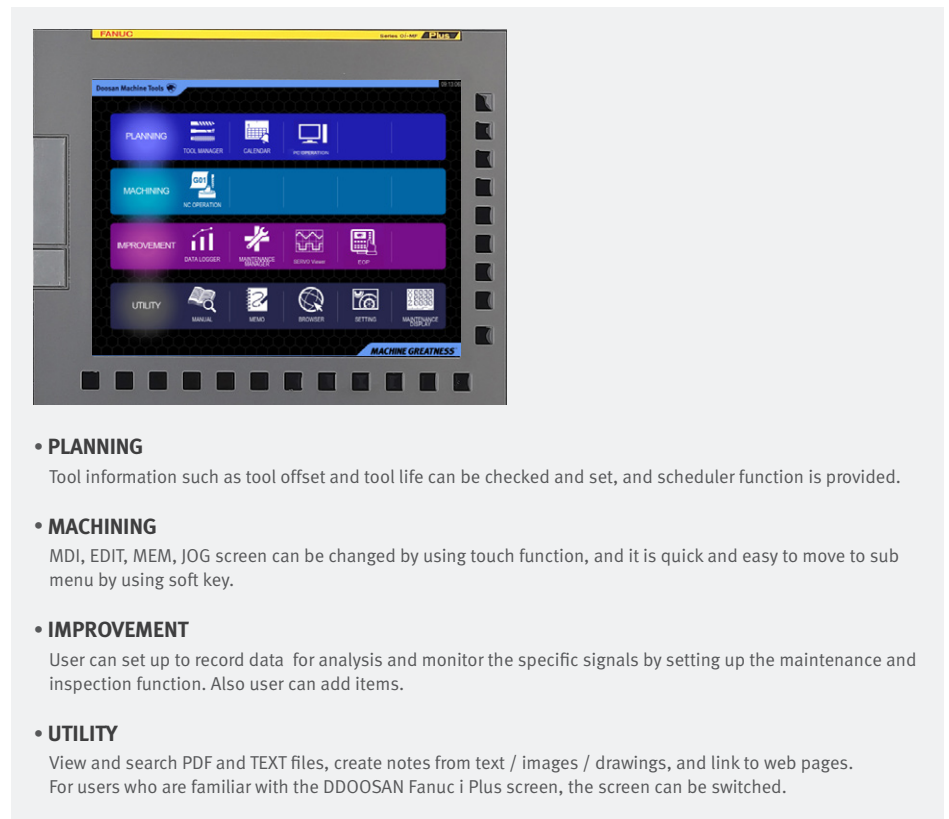
- 15 inch color display
- Intuitive and user-friendly design

USB & PCMCIA card QWERTY keyboard

- EZ-guide i standard
- Ergonomic 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 DOOSAN Fanuc i Plus screen, the screen can be switched.

SIEMENS S828D

SIEMENS CNC optimized for DOOSAN machine tools maximizes users' productivity.

15.6 inch screen + New OP

The newly-designed operation panel enhances operating convenience by incorporating common-design buttons and layout, and features the Qwerty keyboard for fast and easy operation.

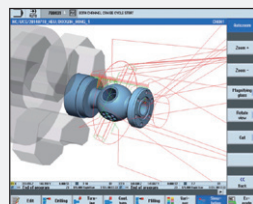


15.6-inch display

- USB (standard)
- QWERTY Keyboard (standard)

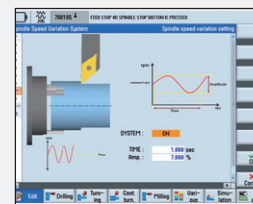
Conversational Convenient function

The machining monitoring function developed on the basis of the Shop Turn – an interactive machining support function of SIEMENS – provides users with cutting, servicing and maintenance screens for easy and convenient machine operation.



Cutting and operation support function

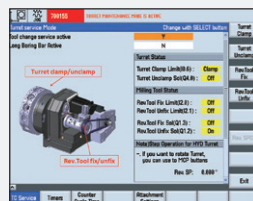
This function shows a cutting and tool path simulation of a cutting program on a real-time basis.



[various]
↓
[attachment]
↓
[DSSV]

Machining accuracy improvement

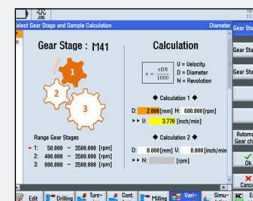
The NC controls spindle speed at an optimal level for precision threading and turning, making it possible to improve surface roughness automatically.



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

Maintenance and service convenience function

Maintenance and service of major units and peripheral devices, timer setting and parts counter setting can be easily carried out on a convenient screen.



Gear shifting convenience function

Dialogue interactive screen for gear switching.

Spindle Power – Torque Diagram (FANUC)

Basic Information

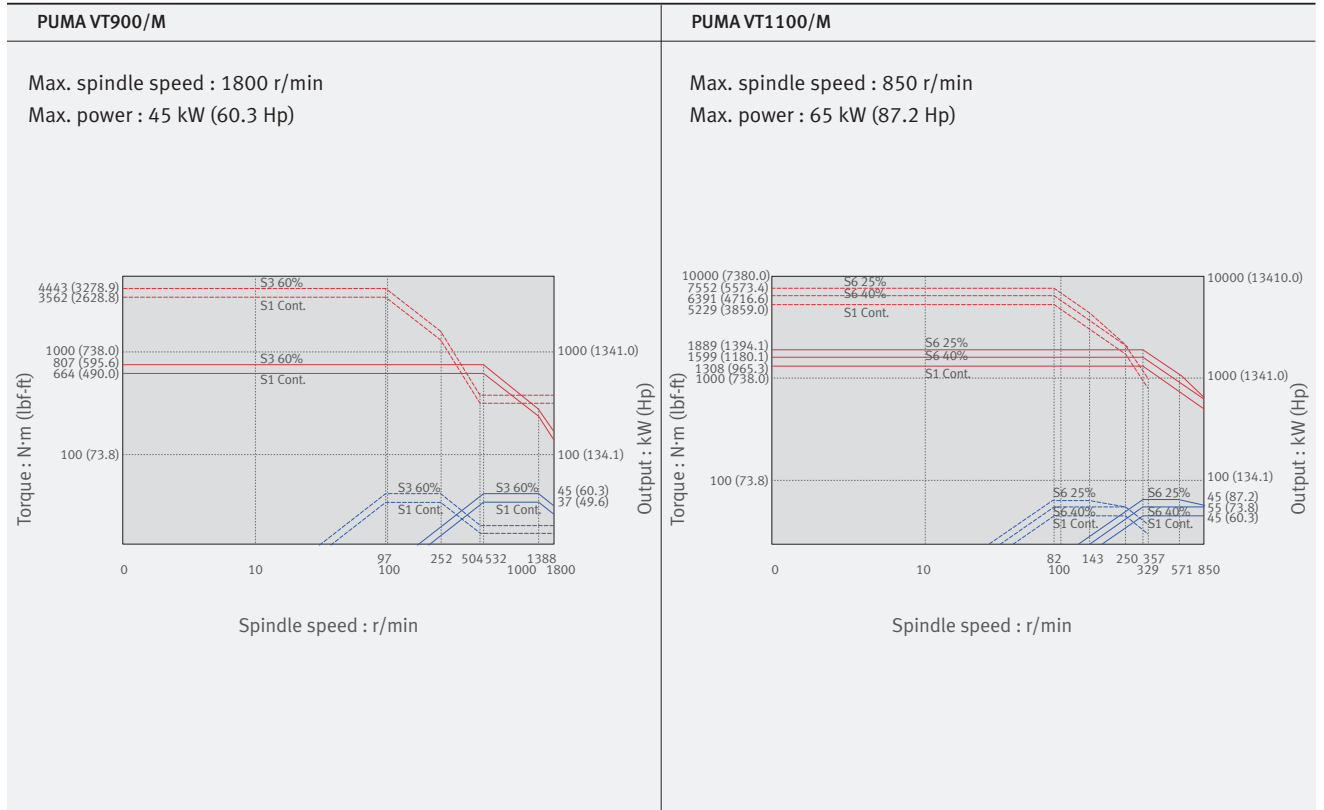
Basic Structure
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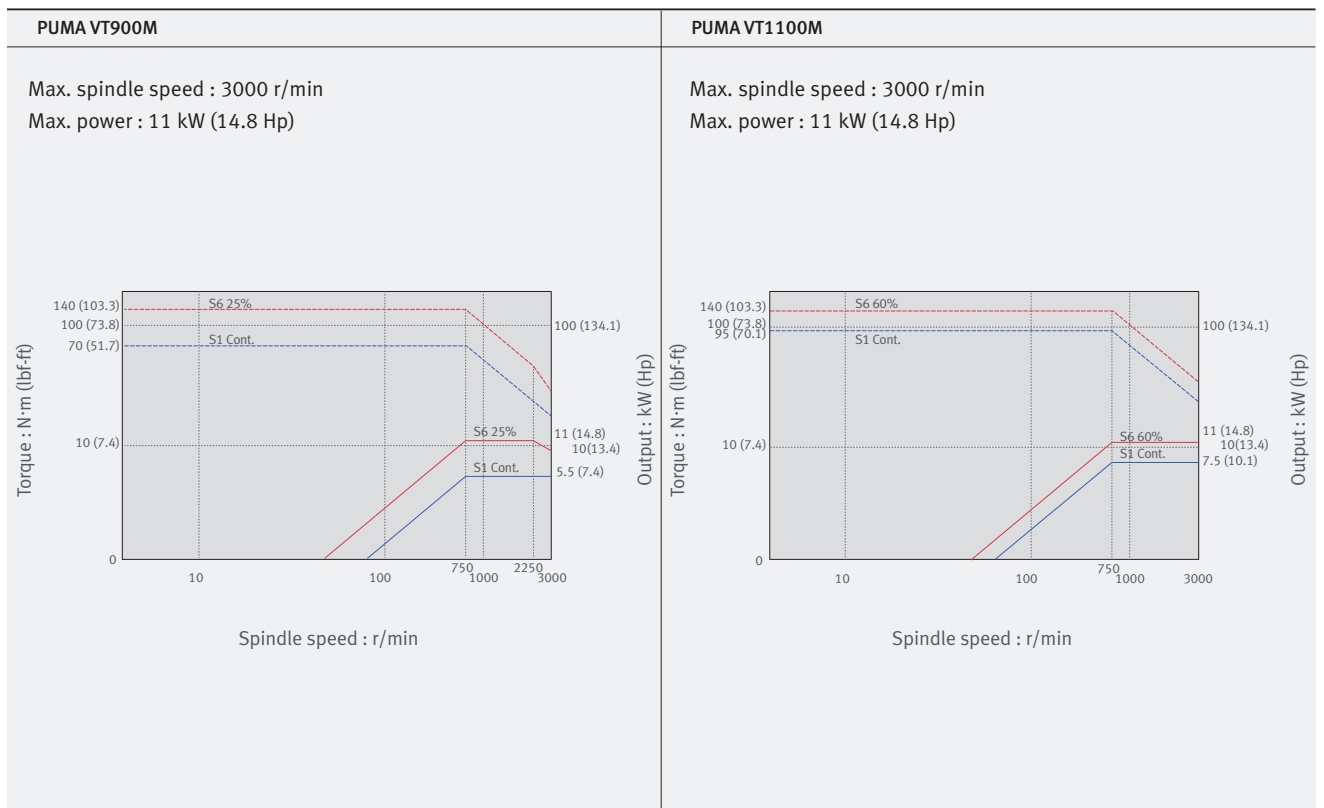
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Spindle

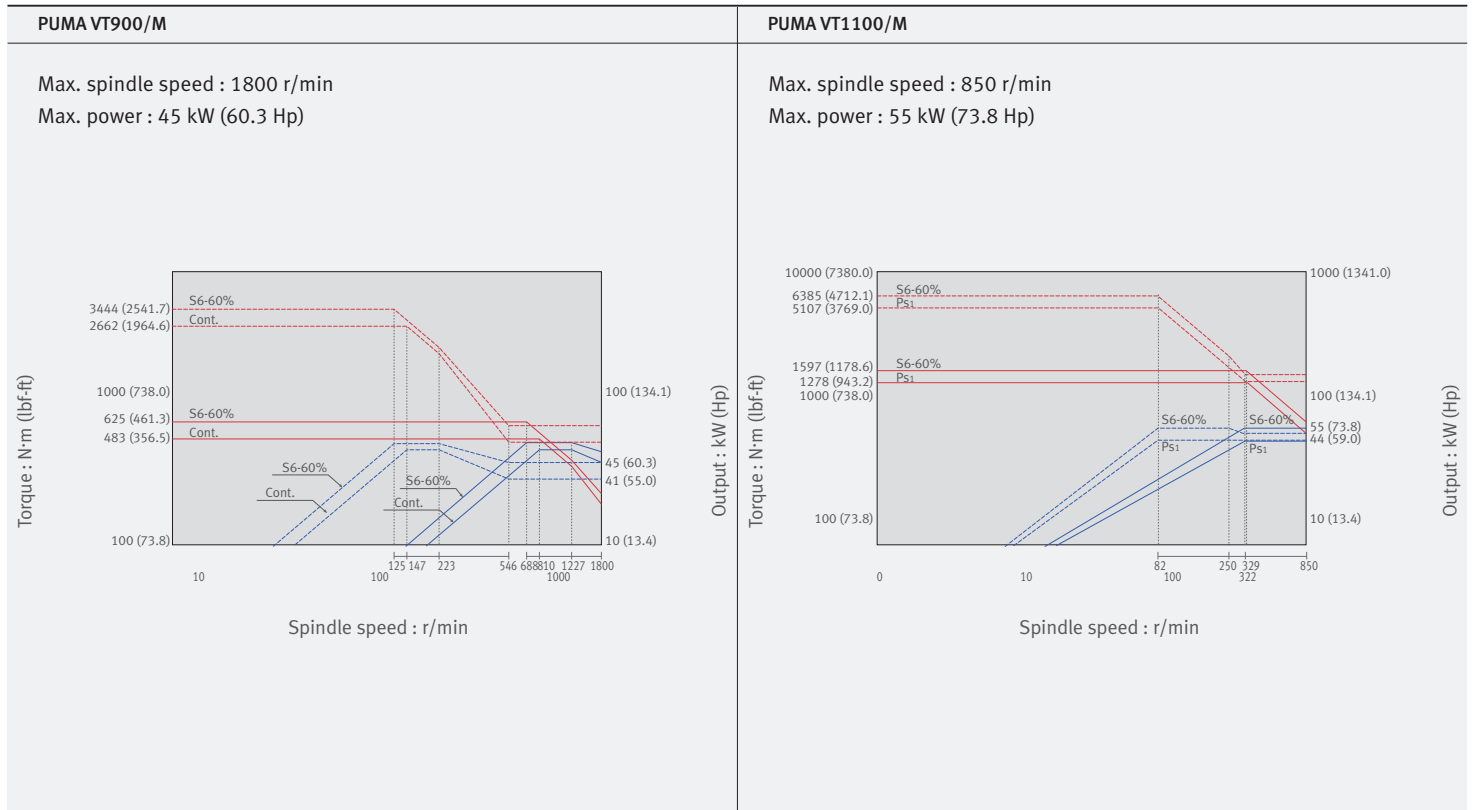


Rotary Tool

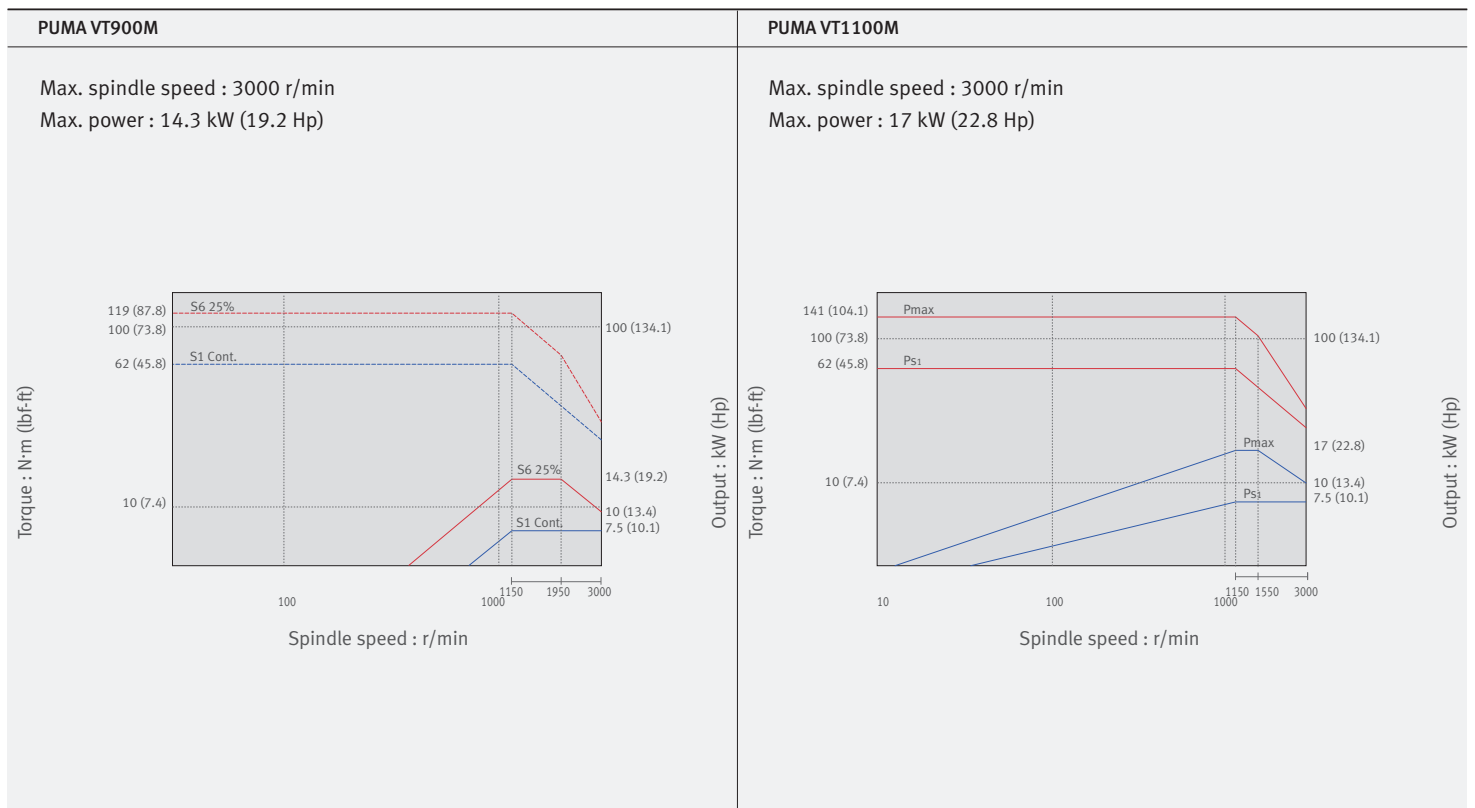


Spindle Power – Torque Diagram (SIEMENS)

Spindle



Rotary Tool



External Dimensions

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

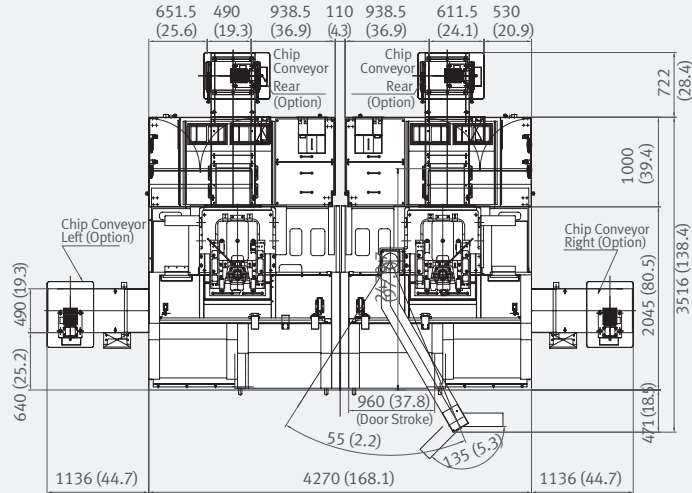
Unit: mm (inch)

Detailed Information

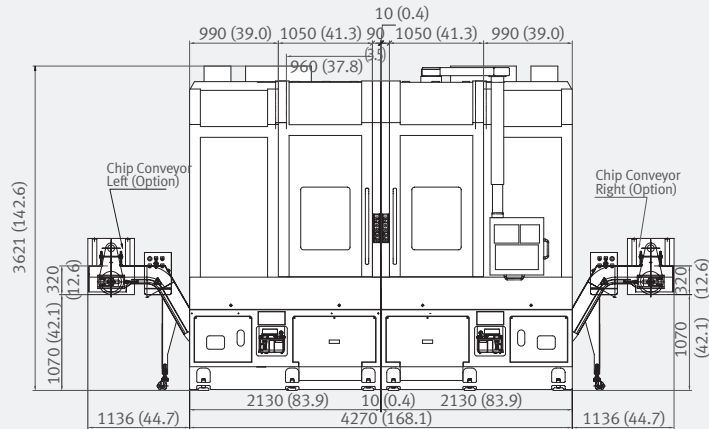
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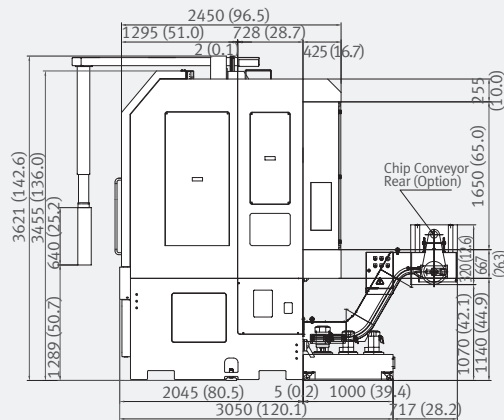
Top View



Top View



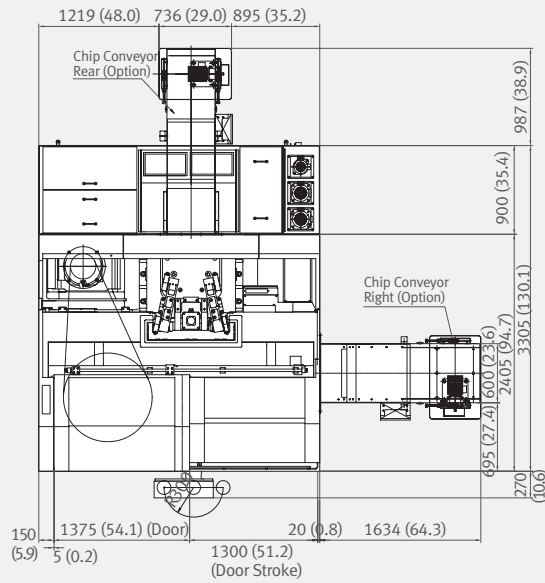
Side View



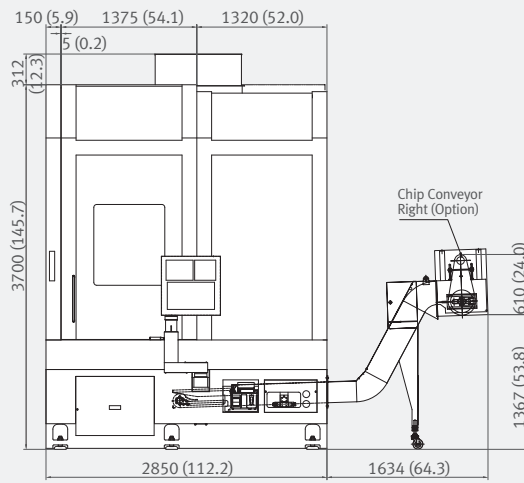
PUMA VT1100 / VT1100M

Unit: mm (inch)

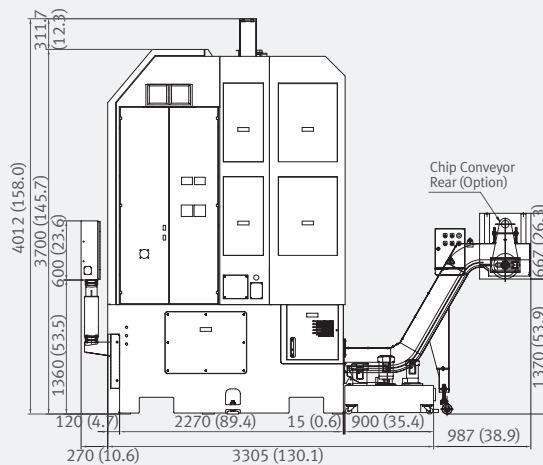
Top View



Top View



Side View



Tool Interference Diagram

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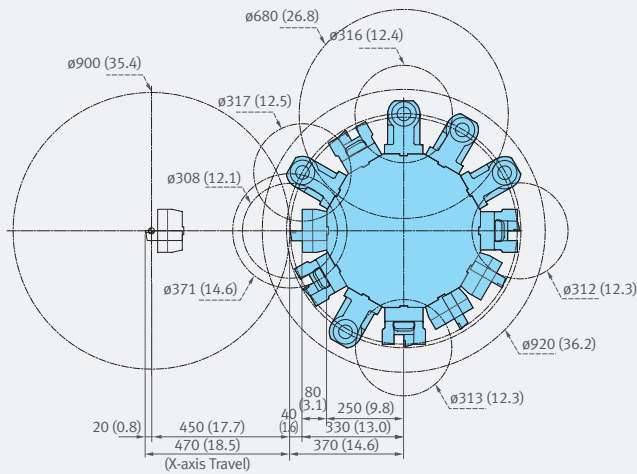
Unit: mm (inch)

Detailed Information

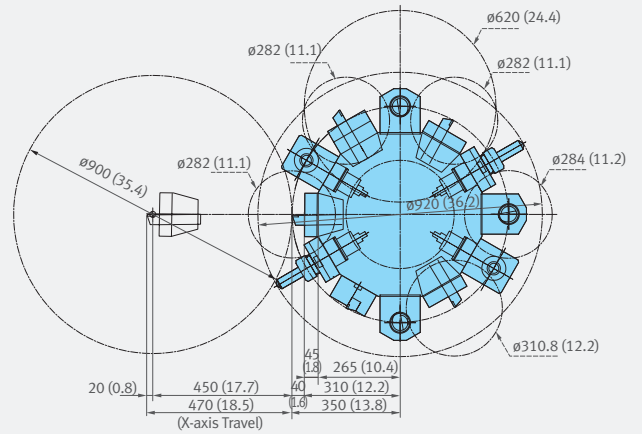
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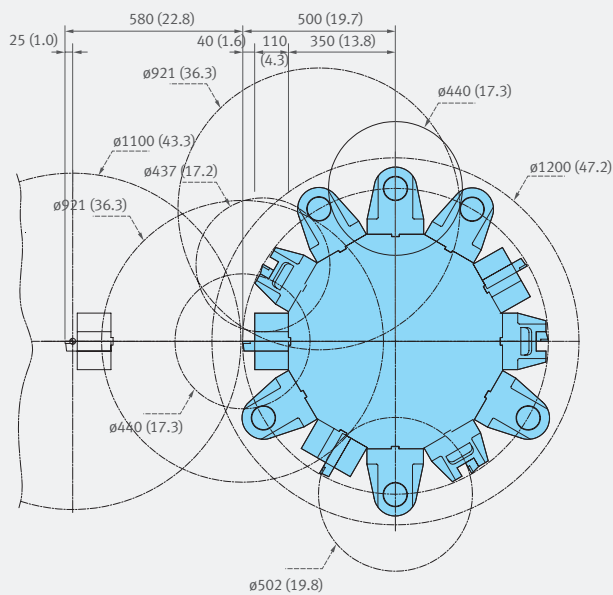
PUMA VT900 / VT900-2SP



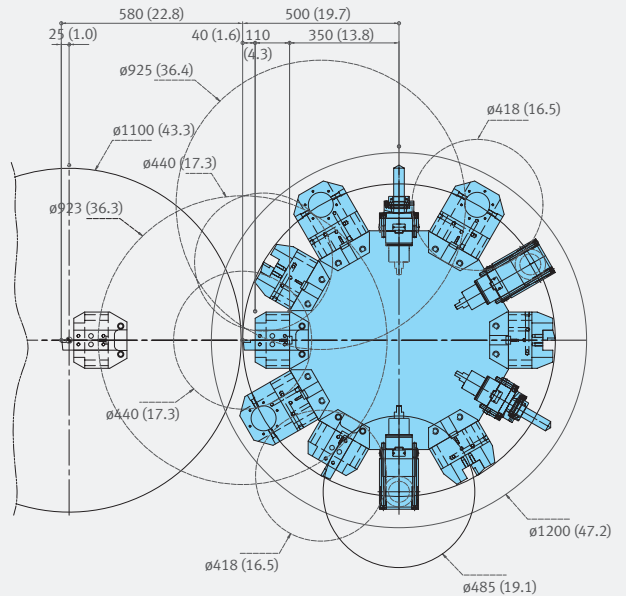
PUMA VT900M / VT900M-2SP



PUMA VT1100



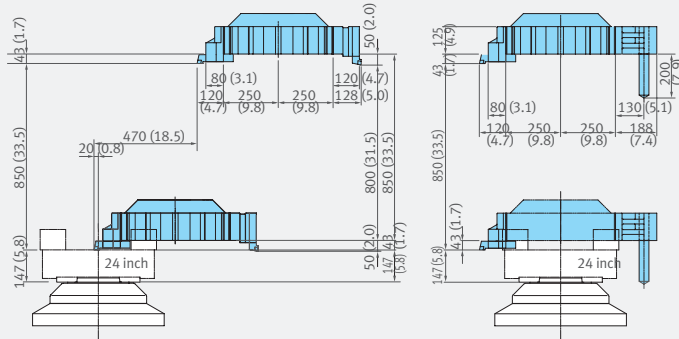
PUMA VT1100M



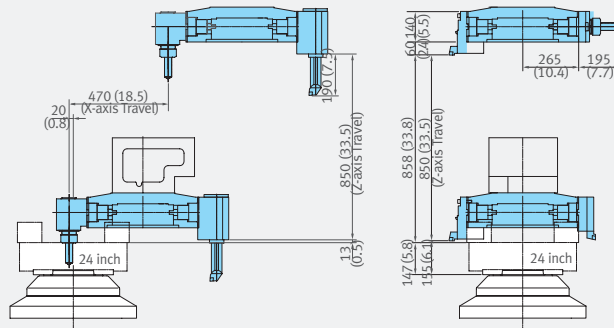
Working Range

Unit: mm (inch)

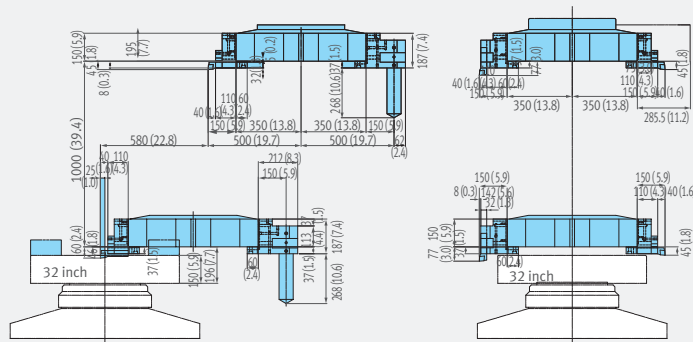
PUMA VT900 / VT900-2SP



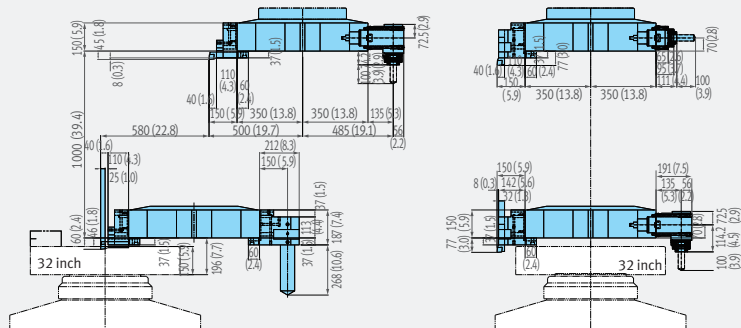
PUMA VT900M / VT900M-2SP



PUMA VT1100



PUMA VT1100M



Tooling System

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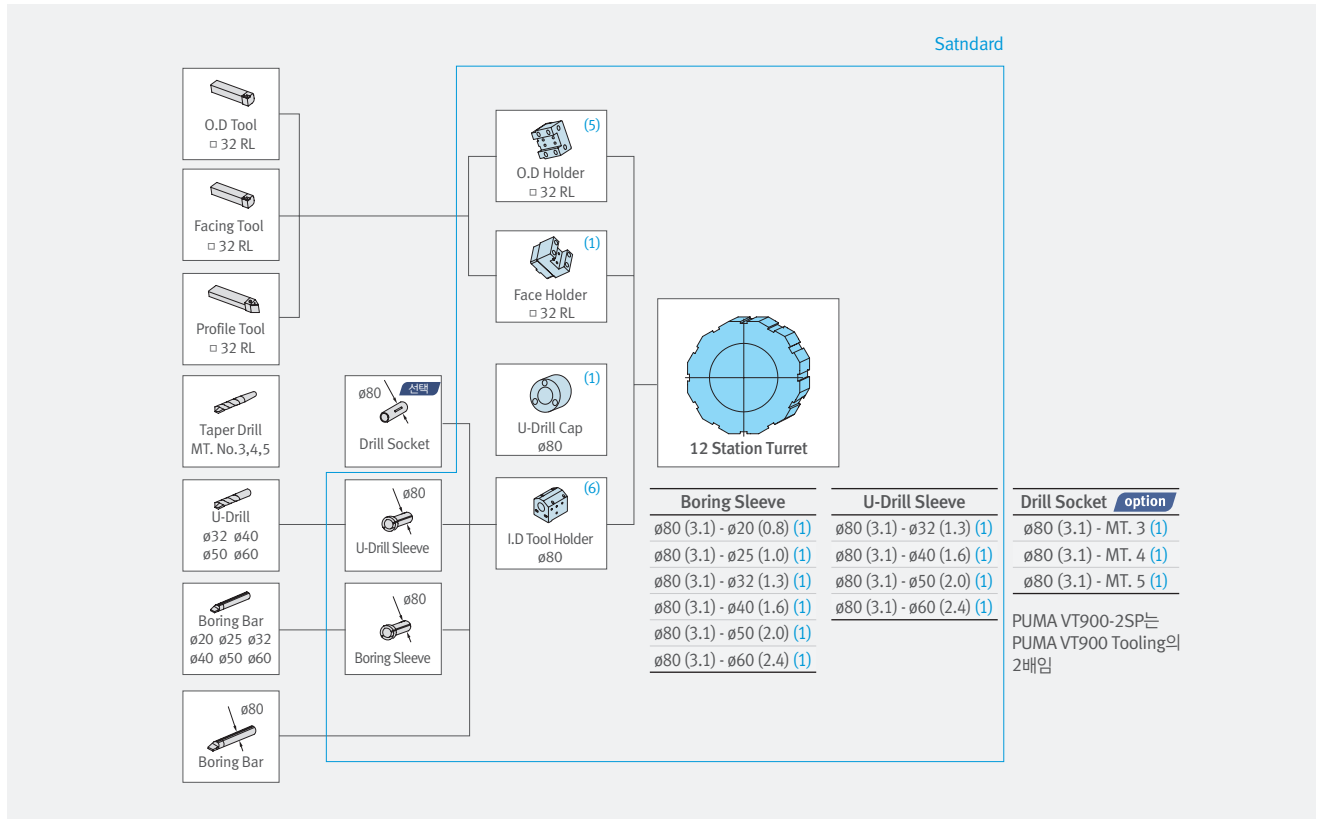
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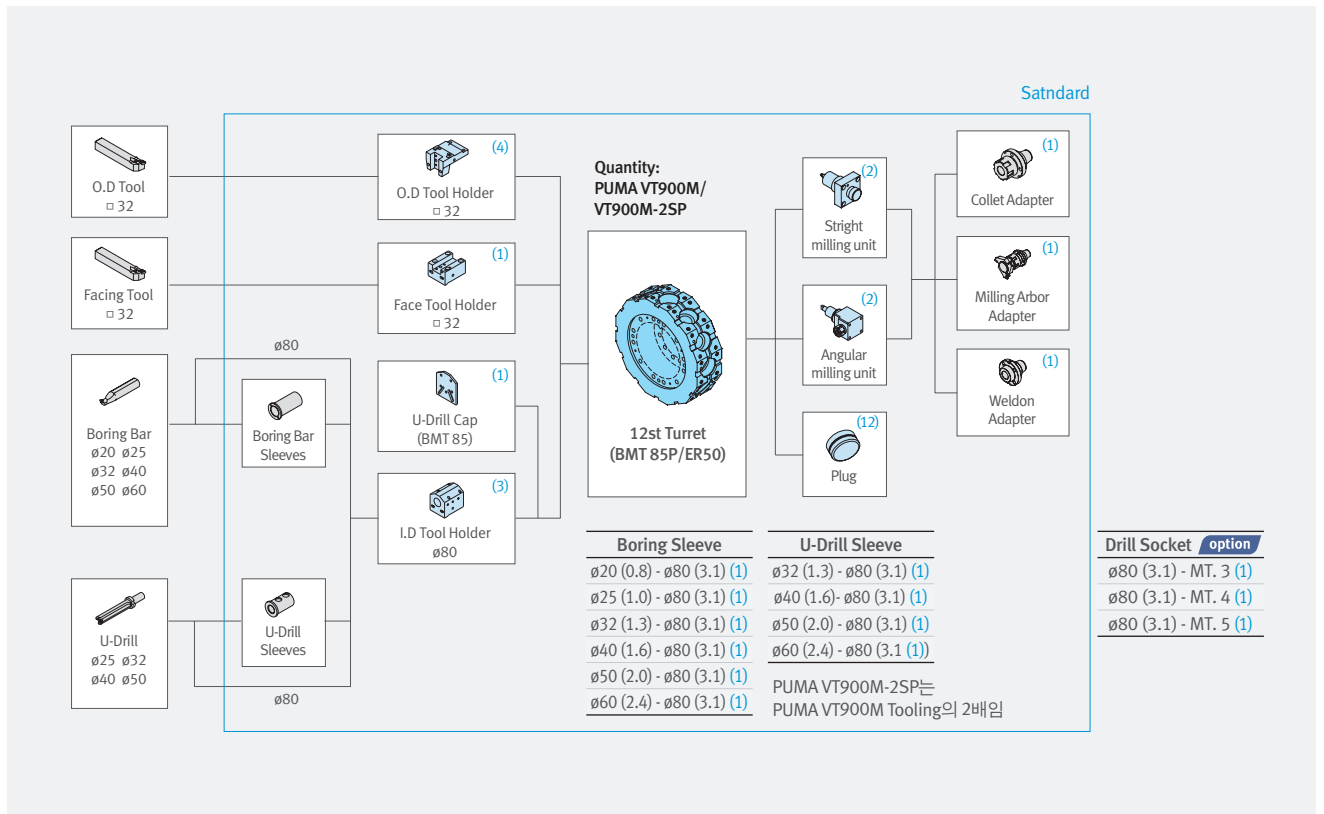
PUMA VT900 / VT900-2SP

Unit: mm (inch)



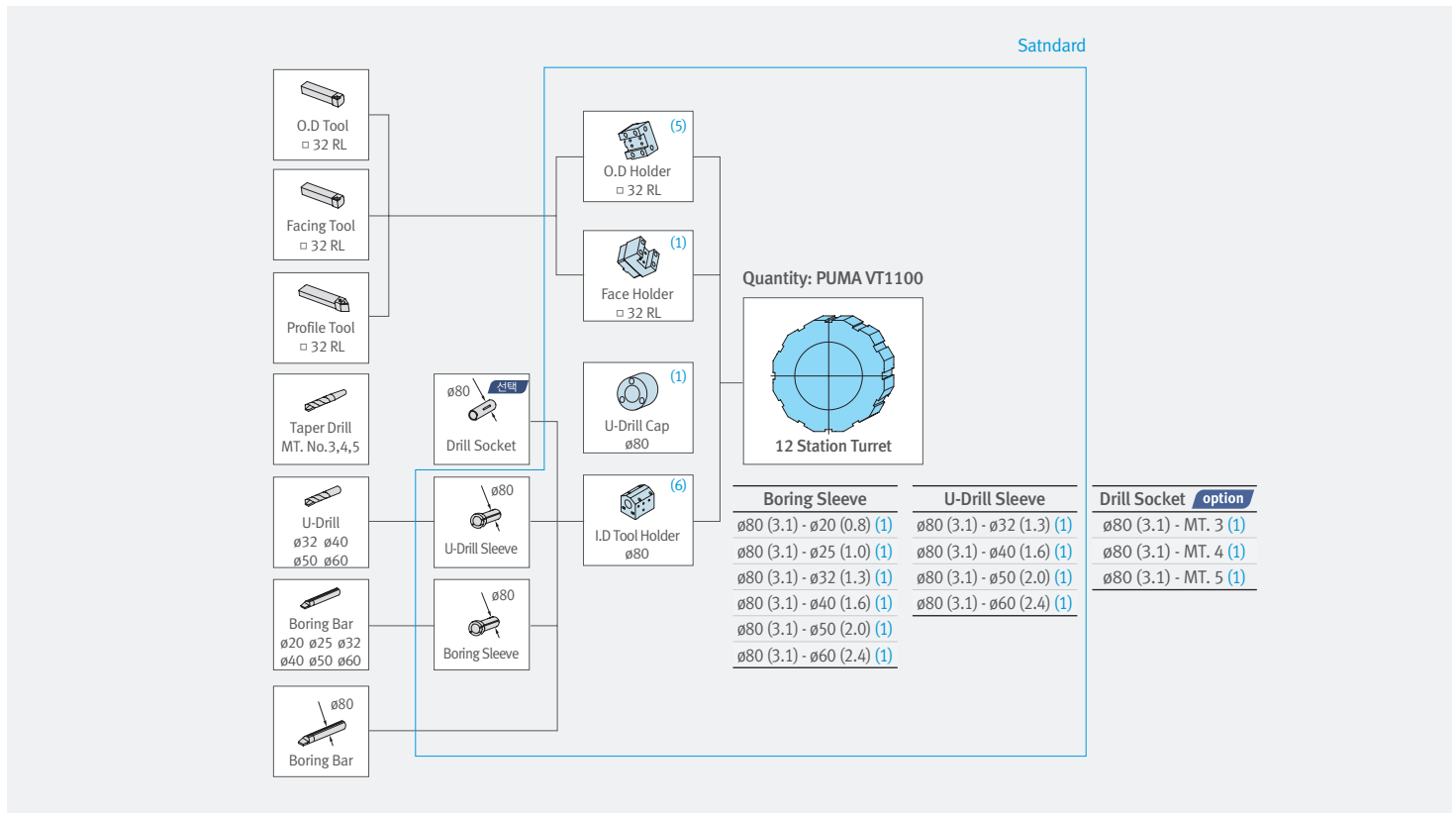
PUMA VT900M / VT900M-2SP

Unit: mm (inch)



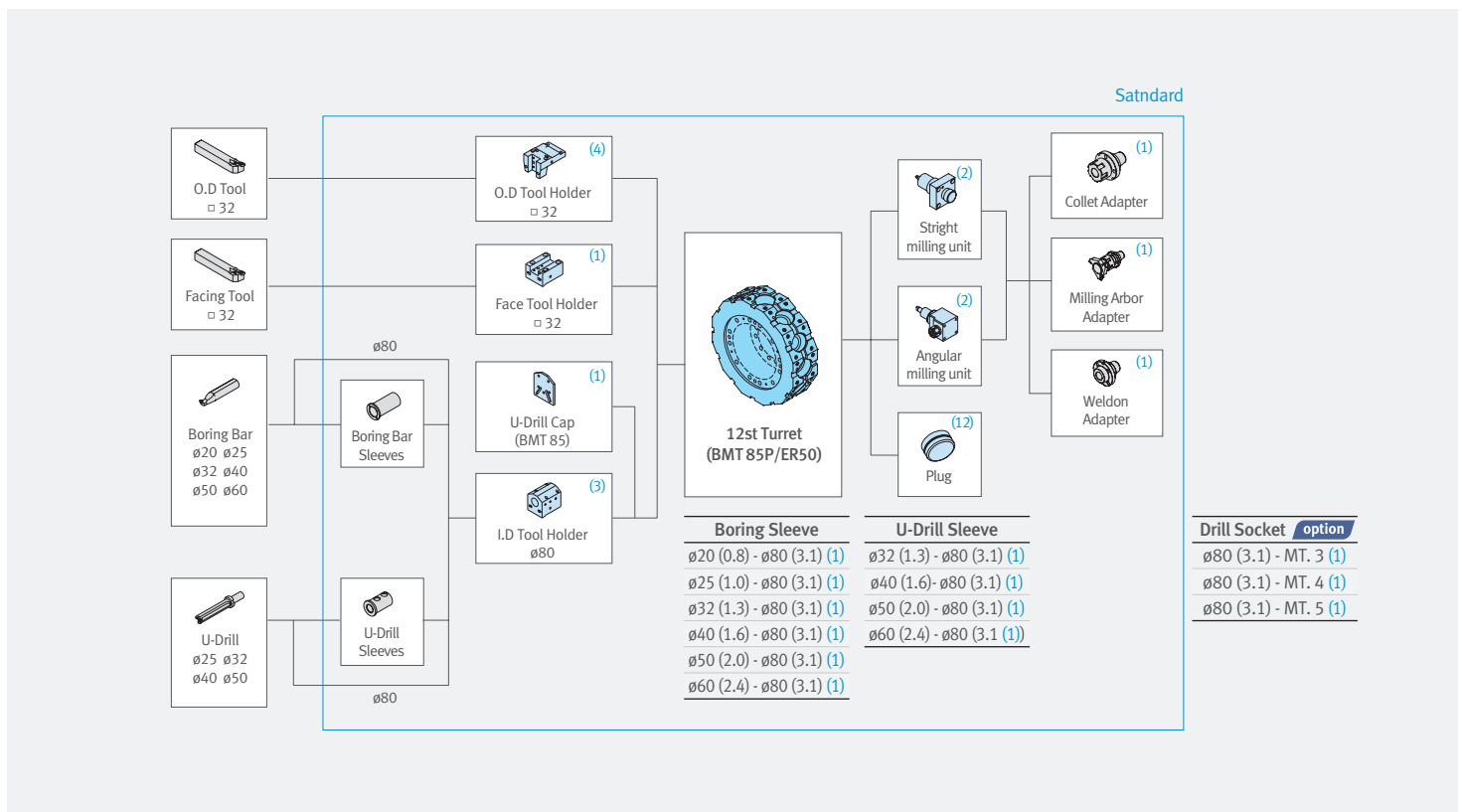
PUMAVT1100

Unit: mm (inch)



PUMAVT1100M

Unit: mm (inch)



Machine Specifications

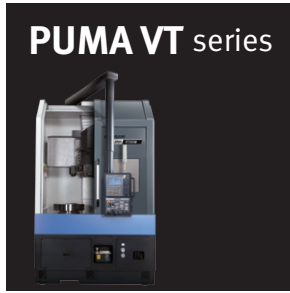
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Description		Unit	PUMA VT900	PUMA VT900-2SP	PUMA VT900M	PUMA VT900M-2SP	PUMA VT1100	PUMA VT1100M	
Capacity	Swing over bed	mm (inch)	1000 (39.4)				1270 (50.0)		
	Swing over saddle	mm (inch)	700 (27.6)				1000 (39.4)		
	Recom. turning diameter	mm (inch)	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)	610 (24.0)				800 (31.5)		
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				
		Z-axis	m/min		20				
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 (FANUC)	kW (Hp)	45 / 37 (60.3 / 49.6) (S3 60% / S1 Cont.)				65 / 55 / 45 (87.2 / 73.8 / 60.3) (S6 25% / S6 40% / S1 Cont.)		
	Main spindle motor (SIEMENS) (S6-60% / S1 Cont.)	kW (Hp)	45 / 41				55 / 44		
	Servo motor (FANUC)	X/Z axis	kW (Hp)		4.0 / 4.0 (5.4 / 5.4)		4.0 / 7.0 (5.4 / 9.4)		
	Servo motor (SIEMENS)	X/Z axis	kW (Hp)		3.3 / 4.29 (4.4 / 5.8)		4.0 / 9.0 (5.4 / 12.1)		
	Rotary tool spindle motor (FANUC)	kW (Hp)	-	7.0 (9.4)		-	11 (14.8)		
	Rotary tool spindle motor (SIEMENS) (S6 25% / S1 Cont.)	kW (Hp)	14.3 / 7.5 (19.2 / 10.1)				7.0 / 7.5 (9.4 / 10.1)		
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 (22557.4)	25000 (55114.8)	12500 (22557.4)	25000 (55114.8)	22000 (48501.0)		
Controller	Standard	DOOSAN Fanuc i Plus				Fanuc 32i			
	Option	Fanuc 32i		Fanuc 32i		DOOSAN Fanuc i Plus			
		SIEMENS 828D	Fanuc 31i		SIEMENS 828D	Fanuc 31i		SIEMENS 828D	

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

CNC Specifications

● Standard ○ Optional X Not applicable (!) : only M type

FANUC

NO.	Item	Spec.	DOOSAN Fanuc i Plus	Fanuc 31i	Fanuc 32i	
1	Controls	Controlled axes	X, Z, C (!)	X1, Z1, X2, Z2	X, Z, C (!)	
2		Simultaneously controlled axes	Std. 2 axes	4 axes (!)	4 axes (!)	
3	Axis Functions	Backlash compensation	0~±9999 pulses	●	●	
4		Cs contouring control		●(!)	X	●(!)
5		Follow-up / Chamfering on/off		●	●	●
6		HRV2 control		●	●	●
7		Least input increment	0.001mm / 0.0001"	●	●	●
8		Stored stroke check1	Overtravel control	●	●	●
9		Automatic operation(memory) / Buffer register		●	●	●
10		Operation	Handle incremental feed	X1, X10, X100	●	●
11	Search function		Sequence NO. / Program NO.	●	●	●
12	Interpolation	1st, reference position return	Manual, G28	●	●	●
13		2nd reference position return	G30	●	●	●
14		Reference position return check	G27	●	●	●
15		Circular interpolation	G02	●	●	●
16		Continuous thread cutting		●	●	●
17		Dwell	G04	●	●	●
18		Linear interpolation	G01	●	●	●
19		Multiple threading / Thread cutting retract		●	●	●
20	Feed Functions	Polar coordinate interpolation		●(!)	X	●(!)
21		Thread cutting / Synchronous cutting		●	●	●
22		Feed per minute / Feed per revolution		●	●	●
23		Feedrate override	0 - 200% (10% unit)	●	●	●
24		Jog feed override	0 - 2000 mm/min	●	●	●
25		Rapid traverse override	F0 / 25 / 100%	●	●	●
26		Tangential speed constant control		●	●	●
27		1st Spindle orientation		●	●	●
28	Auxiliary & Spindle Functions	Constant surface speed control		●	●	●
29		M-function	M3 digit	●	●	●
30		Multi-spindle control		●(!)	●	●(!)
31		Rigid tapping		●	●	●
32	Programming Functions	Spindle speed override	0~150%	●	●	●
33		Absolute / Incremental programming		●	●	●
34		Canned cycle for drilling / turning		●	●	●
35		Custom macro		●	●	●
36		Decimal point programming / pocket calculator type decimal point programming		●	●	●
37		Direct drawing dimension programming		●	●	●
		EZ Guide i	Conversational programming	● ¹⁾	●	●
36		iHMI with EZ Guide i	Conversational programming solution	○ ²⁾	○ ²⁾	X
37		Maximum program dimension	±9 digits	●	●	●
38		Multi repetitive canned cycle	G70~G76	●(!)	●	●(!)
39	Optional block skip(without hardware)	Total 9 (Only NC function)	●	●	●	
40	Sequence number		N8	N8	N8	
41	Programmable data input	G10	●	●	●	
42	Sub program call	Nested holds	10	10	10	
43	Tape format for FANUC series 10/11		●	X	X	
44	Tape format for FANUC series 15		X	●	●	
45	Work coordinate system selection	G52~G59	●	●	●	
46	Tool Functions	Auto tool offset		●	●	●
47		Tool monitoring system		X	○	X
48		Direct input of tool offset value measured B		●	●	●
49		Tool geometry / wear compensation	Geometry & wear data	●	●	●
50		Tool life management		●	●	●
51		Tool nose radius compensation	G40~G42	●	●	●
52		T-code function	T2+2 digits	●	●	●
53		Tool offset pairs		124	32	64
54		Tool offset value counter input		●	●	●
55		Editing Op. Functions	Display unit	15" Color LCD	●	●
56			15" Color LCD with Touch Panel	○	○	○
57	Background editing			●	●	●
58	Expanded part program editing		Copy, Move, Change of NC program	●	●	●
59	No. of Registered programs			5120M (2MB)_ 1000 programs	640M (256KB)_ 500 programs	640M(256KB)_ 500 programs
60	Part program editing / Program protect			●	●	●
61	Machine alarm diagnosis			●	X	X
62	Display of spindle speed and T-code at all screen			●	●	●
63	Setting & Display	Help function	Alarm&Operation display	●	●	●
64		Self diagnostic function		●	●	●
65		Servo setting screen / Spindle setting screen		●	●	●
66		Tool path graphic display		●	●	●
67	Data Input & Output	I/O interface	RS-232C	●	●	●
68		Memory card input and output		●	●	●
69	Other Functions	Reader puncher control	CH1 interface	●	●	●
70		Ethernet function	Embedded ethernet function	●	●	●
71		PMC system		●	●	●

1) only with 15" LCD standard 2) only with 15" Touch LCD standard



Basic Information

Basic Structure
Line-up /
Processing

Detailed Information

Options
Applications
Capacity Diagram
Specifications

Customer Support Service

No.	ITEM	Spec.	S828D PUMA VT900/M, PUMA VT1100/M
1	Controlled axes	2 axis	X, Z, SP
2	R: Milling spindle	M-type	X, Z, C, R
3	Simultaneously controlled axes	Positioning(G00)/Linear interpolation(G01) : 3 axes Circular interpolation(G02, G03) : 2 axes	●
4	Backlash compensation		●
5	Leadscrew error compensation		●
6	Measuring system error compensation		●
7	Feedforward control	velocity-dependent	●
8	Follow up mode		●
9	Programmable acceleration		●
10	Emergency stop / overtravel		●
11	Least command increment	0.001mm (0.0001 inch)	●
12	Least input increment	0.001mm (0.0001 inch)	●
13	Maximum commandable value	±99999.999mm (±3937 inch)	●
14	Machine lock (PRT)		●
15	Absolute encoder		●
16	Dry run		●
17	Feedrate/Rapid override	0 - 120 %	●
18	Reference point return	G75 FP=1	●
19	2nd reference point return	G75 FP=2	●
20	3rd / 4th reference return	G75 FP=3, 4	●
21	Linear interpolation	Max. 4	●
22	Circular interpolation	G02, G03	●
23	Inverse time feedrate	G93	●
24	Helical interpolation		●
25	Universal interpolator NURBS		●
26	Spline interpolation (A, B and C splines)		○
27	Dwell	G04	●
28	Separate path feed for corners and chamfers		●
29	Reposition		●
30	Acceleration with Jerklimitation		●
31	Positioning	G00	●
32	Cartesian point-to-point (PTP) travel		●
33	TRANSMIT/cylinder surface transformation	Not available for 2-axis type	●
34	Inclined axis	If machine attached inclind Y axis	●
35	Inclined axis TRAANG after TRANSMIT/ TRACYL	If machine attached inclind Y axis	●
36	Couplings	CP-Basic(If machine attached milling spindle) CP-Comfort	● ○
38	Spindle speed, digital setpoint		●
39	Spindle speed, max. programmable value range	106 ... 0.0001 (display: ± 999999999.9999)	●
40	Spindle override	50 - 120 %	●
41	Automatic gear state selection		●
42	Oriented spindle stop		●
43	Spindle speed limitation min./max.		●
44	Constant cutting rate		●
45	Spindle control via PLC (Positioning, oscillation)		●
46	Changeover to axis mode		●
47	Tapping with compensating chuck/rigid tapping		●
48	Retraction for rigid tapping		●
49	Tool radius compensations in plane		●
50	• With approach and retract strategies		●
51	• With transition circle/ellipse on outer edges		●
52	Number of tools/cutting edges in tool list	PPU.4 for S828D SW261 (2 axis/M-type) PPU.4 for S828D SW281 (S/MS/Y/SY-type)	256/512 768/1536
53	Tool length compensation		●
54	Operation with tool management		●
55	Tool list		●
56	Tool offset selection via T and D numbers		●
57	Replacement tools for tool management	Include tool load monitoring option	○
58	Monitoring of tool life and workpiece count		●
59	Manual measurement of tool offset		●
60	Magazine list		●
61	Loading and unloading of tools		●
62	Number of subroutine passes ≤ 9999		●
63	Number of levels for skip blocks 1		●
64	Number of levels for skip blocks 8		○
65	Polar coordinates		●
66	1/2/3-point contours		●
67	Dimensions metric/inch, changeover manually or via program		●
68			●

No.	ITEM	Spec.	S828D
			PUMA VT900/M, PUMA VT1100/M
69	Program functions		
70	• Dynamic preprocessing memory FIFO		●
71	• Look ahead number of blocks	In 840D, If machine attached milling spindle	1
72	• Frame concept		●
73	• Inclined-surface machining with swivel cycle		●
74	• Axis/spindle replacement		●
75	• Geometry axes, switchable online in the CNC program		●
76	• Program preprocessing		●
77	Online ISO dialect interpreter		●
78	Program/workpiece management		
73	• Parts programs on NCU, max. number		750
74	• Workpieces on NCU, max. number		250
75	• On USB storage medium (e.g. disk drive, USB stick)		●
76	• On network drive		○
77	Settable offsets, max. number	G54, G55, G56 ...	100
78	Program editor		
79	• Programming support for cycles program(Program Guide)		●
80	• CNC editor with editing functions: Marking, copying, deleting		●
81	• Programming graphics/free contour input (contour calculator)		●
82	• Support for parameter input Animated Elements		●
83	• ShopTurn/ShopMill Machining step programming		●
84	Technology cycles for drilling/milling		●
85	Pocket milling free contour and islands stock removal cycle		●
86	Residual material detection		●
87	Access protection for cycles		●
88	Programming support can be extended,e.g. customer cycles		●
89	2D simulation		●
90	3D simulation, finished part		●
91	Simultaneous recording		●
92	JOG		
93	• Handwheel selection		●
94	• Switchover: inch/metric		●
95	• Manual measurement of zero/work offset		●
96	• Manual measurement of tool offset		●
97	• Automatic tool/workpiece measurement		●
98	• Reference point approach, automatic/via CNC program		●
99	Automatic		
100	• Execution from USB or CF card interface on operator panel front		●
101	• Execution from HMI memory on NCU CF card	In 840D, If machine attached milling spindle	X
102	• Execution from network drive		○
103	Operating software languages		
104	• Ch _S,Ch _T, En, Fr, Gr, It, Kr, Pt, Sp		●
105	• Additional languages, use of language extensions		●
106	Working area limitation		●
107	Limit switch monitoring		●
108	Software and hardware limit switches		●
109	Position monitoring		●
110	Standstill (zero-speed) monitoring		●
111	Clamping monitoring		●
112	2D/3D protection zones		●
113	Contour monitoring		●
114	Axis limitation from the PLC		●
115	Alarms and messages		●
116	Action log can be activated for diagnostic purposes		●
117	PLC status		●
118	Remote Control System (RCS) remote diagnostics		
119	• RCS Host remote diagnostics function		○
120	• RCS Commander (viewer function)	RCS Commander for PC/PG on CD-ROM	●
121	Integrated service planner for the monitoring of service intervals		●
122	Measuring, Measuring stage 1 Two probes (switching) with/without deletion of distance-to-go	Measurement prove & receiver is needed	●
123	Measuring cycles for drilling/milling and turning • Calibrating workpiece probes • Workpiece measurement • Tool measuring	Measurement prove & receiver is needed (included in MDynamics 3-axis & 5-axis) In 840D, If machine attached milling spindle	○
124	Easy Extend		●
125	Contour handwheel		●
126	Integrate screens in SINUMERIK Operate with SINUMERIK Integrate Run MyScreens		●
127	Cross-mode actions (ASUPs and synchronized actions in all operating modes)		○

Responding to Customers Anytime, Anywhere

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.



Global Sales and Service Support Network

Corporations	Dealer Networks	Technical Centers Technical Center: Sales Support, Service Support, Parts Support	Service Post	Factories
4	167	51	200	3

Doosan Machine Tools 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





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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.