LARGE-SIZED BIG BORE HEAVY DUTY TURNING CENTER
WITH UP TO 560MM SPINDLE BORE

PUMA

1000/M

Doosan Machine Tools

PUMA 1000 SERIES

The PUMA 1000 series machines are large horizontal turning centers, optimized for the machining of pipe and flange type parts typically found in the oil & gas, power generation, aerospace and construction and shipbuilding industries.
The machines deliver powerful machining capability and feature a two-step gearbox and high torque motors together with a rigid box guideway structure. Highly rigid servo-driven turrets ensure fast and stable tool rotation and impressive stability required for heavy-duty cutting and high accuracy milling operations.

IDEAL SPECIFICATION FOR MACHINING LARGE WORKPIECES

- The Number One choice for machining large parts and undertaking powerful cutting operations with a maximum turning diameter of Ø1000 mm (39.4inch), a machining length of 2,000 mm (78.7inch) and maximum spindle torque 12,040 N-m (8,885.5 ft lbs).

PROVIDING A RANGE OF PIPE MACHINING SOLUTIONS

- Maximum Ø560 mm (Ø22.0 inch) big bore spindle enables the machining of parts longer than the distance between centers.
- PUMA 1000 machines are capable of performing threading work.

IMPROVED PRODUCTIVITY

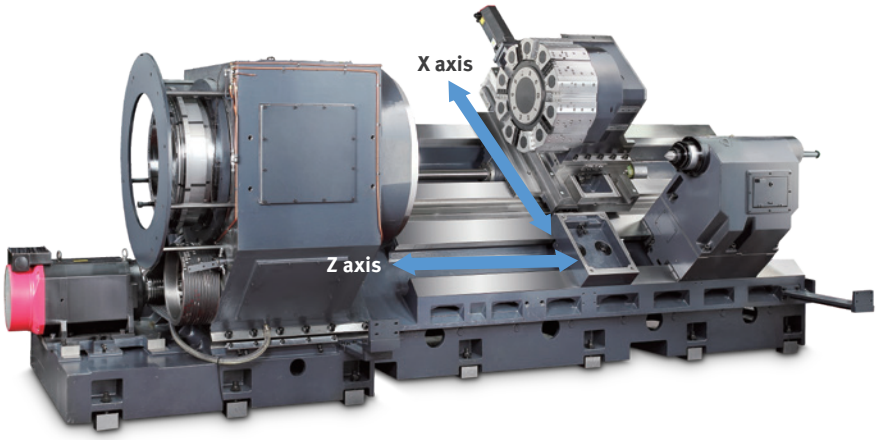
- Turret indexing is possible, even with a long boring bar (Ø100 x L1000 mm (Ø3.9 x 39.4inch)) mounted on the recently- designed high-rigidity turret that delivers improved machining stability and productivity.

BASIC STRUCTURE

A 45˚slant bed with hardened and ground box guideways is made from Meehanite cast iron.
The basic structure is designed to minimize deformation from occurring during heavy duty machining.

Structural stability of slant bed and box guideway

The PUMA 1000 series has been developed with years and years of accumulated engineering know-how and experience of designing and manufacturing large capacity Puma lathes behind it. PUMA 1000's rigid structure guarantees process reliability and efficient machining.

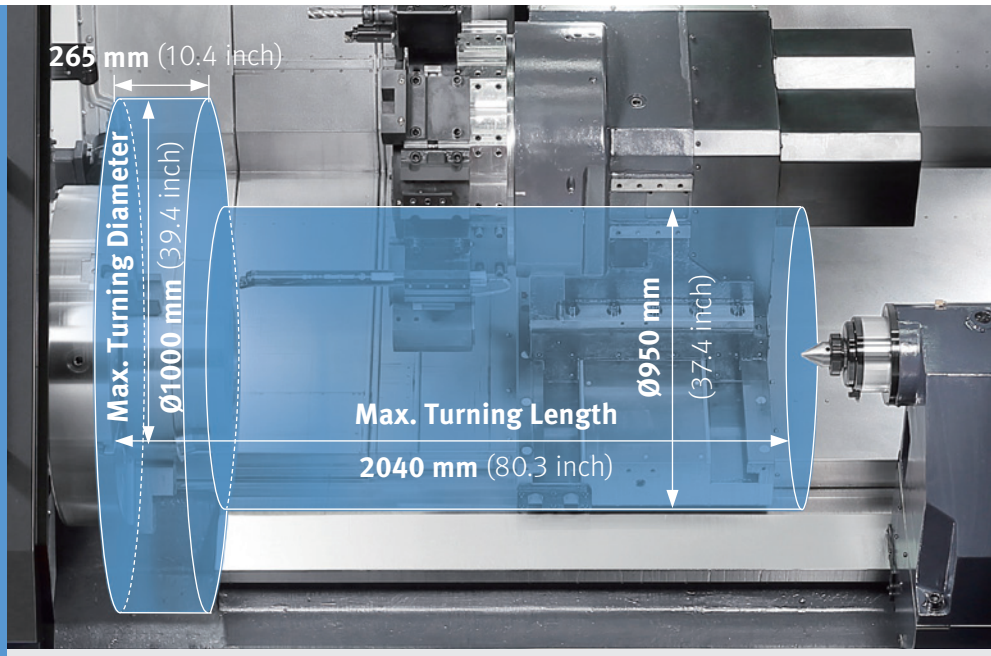


MACHINING AREA

PUMA 1000 machines are configured for machining pipes with big bores typically found in the oil and gas industry, and in sectors requiring large machined parts.

Spacious working envelope for machining large workpieces

PUMA 1000 machines' large working envelopes, big bore spindles and large swing over table enables the machining of big steel rollers, large diameter flanges, and long shafts found in ships etc.



Max. turning diameter

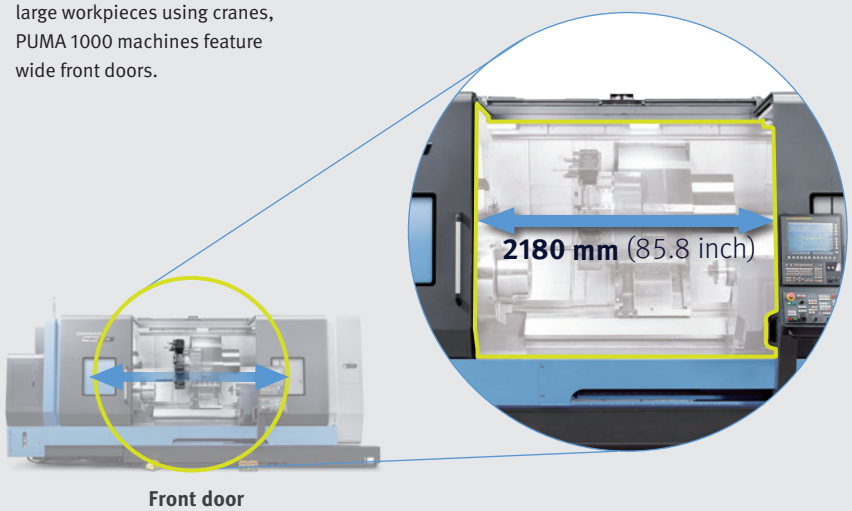
Ø1000 mm
ø39.4 inch

Max. turning length*

2040 mm
80.3 inch

** Max. turning length varies and depends on the chuck selected.*

To enable the mounting of large workpieces using cranes, PUMA 1000 machines feature wide front doors.



SPINDLE

Powerful motors and large spindle bores Ø560 mm (Ø22.0 inch) enable Puma 1000 turning centers to machine shafts and valves etc., that are longer than the distance between centers.

Extra large diameter spindle though hole (bore)

PUMA 1000 machines have big spindle-through-hole capacities - up to Ø560 (Ø22")mm - and powerful spindles - up to 75kW (100.1Hp) - with two-step gearboxes that deliver unrivalled performance.

Max. spindle through hole diameter

PUMA 1000A/MA {1000B/MB}

Ø375 {Ø560} mm
ø14.8 {ø22.0} inch

Max.spindle power (30min/cont.)

75/60 kW ø14.8 {ø22.0} inch

Max. spindle speed

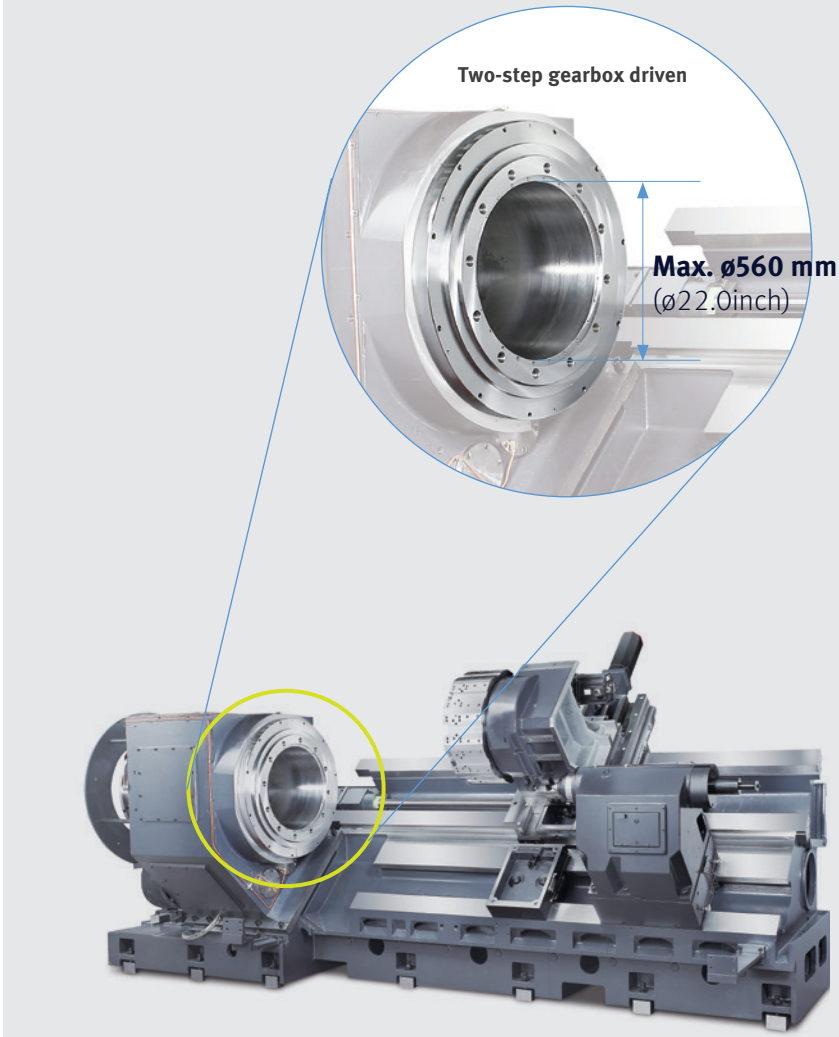
PUMA 1000A/MA {1000B/MB}

500 {300} r/min

Max. spindle torque

PUMA 1000A/MA {1000B/MB}

11011 {12040} N·m
8126.1 {8885.5} ft-lb



TAILSTOCK

Highly-rigid programmable tailstocks are available as standard to provide stable support for machining long workpieces.

Programmable tailstock with built-in dead center

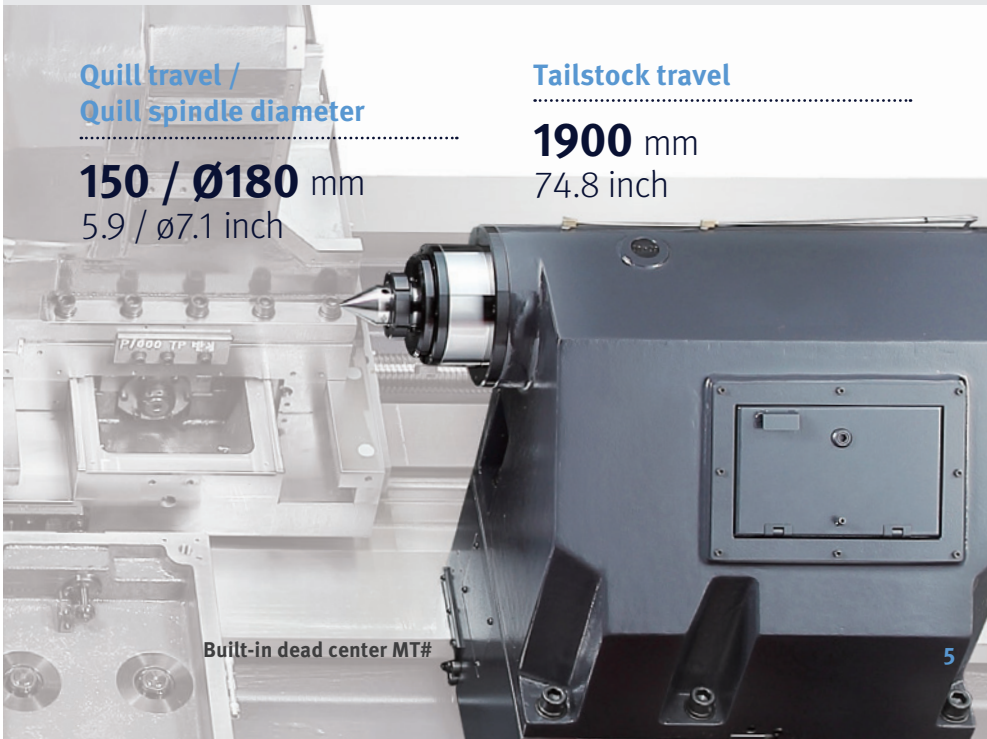
The tailstock, supported by hardened and ground boxed ways, comprises a one-piece structure with the machine base, ensuring high structural rigidity. Its built-in type dead center supports heavy workpieces while maintaining machining accuracy.

Quill travel / Quill spindle diameter

150 / Ø180 mm
5.9 / ø7.1 inch

Tailstock travel

1900 mm
74.8 inch



TURRET

Strong, large-sized and rigidly-built servo-driven turrets ensure fast and stable tool rotation, and best-in-class process reliability for heavy-duty machining and milling operations.

Servo-driven turret

The powerful servo-driven turret provides accurate location control and quick and stable tool exchange.

The width of the turret has been doubled, compared to PUMA 600/700/800 machines, ensuring high process stability - especially required when machining long parts and during heavy-duty operations.

No. of tool station

PUMA 1000

10 stations (for turning only)

Max. OD tool size

32 X 32 mm
1.25 X 1.25 inch

Max. Boring Bar Size

Ø80 mm
ø3.1 inch

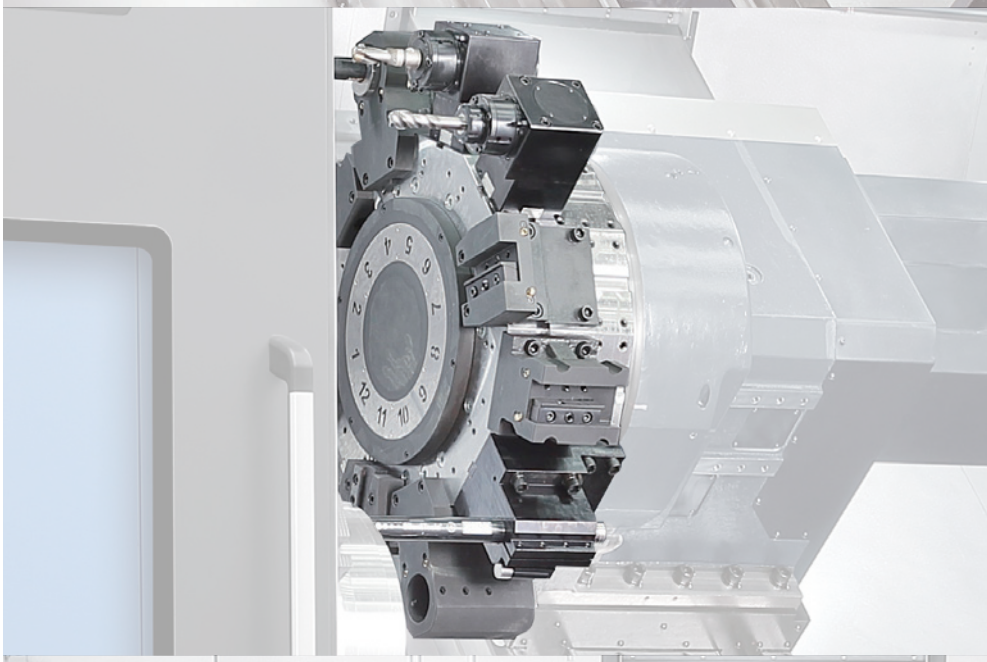
Tool holder type

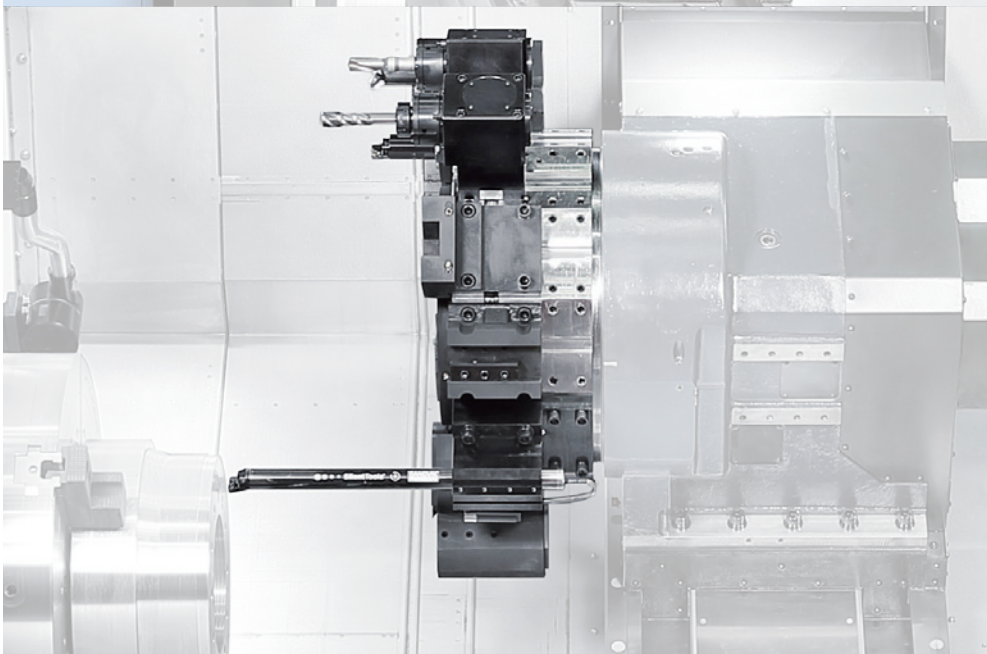
PUMA 1000M

BMT85P

No. of tool station

12 stations





STANDARD | OPTIONAL SPECIFICATIONS

A range of options is available to suit individual requirements.

Description	Features			PUMA1000A	PUMA1000B
				2 axis / M	2 axis / M
Chuck (Left / Right)	None			●	●
	32 Inch			○	X
	40 Inch			X	△
Jaws (Left / Right)	Soft Jaws			○*1)	△
	Hardened & Ground Hard Jaws			○	△
Chucking Option	Single Pressure Chucking			●	X
	Dual Pressure Chucking			○	X
	Cuck Clamp Confirmation			○	X
Steady Rest*	Dimension	Pressure	ø100~ø410 (K5.1Z)	○	○
			ø135~ø460(K6Z)	○	○
			ø215~ø510(K6.1Z)	○	○
	Type (Programmabl)	Single		○	○
		Twin		○	○
		Double		○	○
Tailstock	Programmable Dead Center			●	●
Coolant Pump	4.5 bar			●	●
	7/10/14.5/28/70 bar			○	○
Coolant Options	Oil Skimmer			○	○
	Coolant Chiller			○	○
	Coolant Pressure Switch			○	○
	Coolant Gun			○	○
Chip Disposal	Chip Conveyor_Side Type			○	○
	Chip Bucket			○	○
	Air Blow			○	○
	Mist Collector Interface (Duct only)			○	○
	Integrated Mist Collector			○	○
Measurement & Automation	Tool Setter	Auto		○	○
	Auto Door			○	○
Optional devices	Tool Load Monitoring			●	●
	Signal Tower			○	○
	Air Gun			○	○
	Auto Power Off			○	○
	Air Unit for Air Cuck	Single		○	○
		Twin		○	○
	Quick change tooling(CAPTO)			○	○
	Sketch-turn S/W			○	○
Customized Special Option	STEADY REST	PROGRAMMABLE	RX-6.1 (Ø250 ~ Ø685)	○	○
	CHUCK	40INCH (OUT DIAMETER Ø1000)		○	○
		TWIN CHUCKING **		○	○
	Coolant level switch : Sensing level - Low			○	○
Standard Accessories	FOUNDATION BOLT FOR ANCHORING			●	●

** Please contact DOOSAN to select detailed steady rest specifications*

*1) Each chuck comes with 1set of soft jaws as standard. ** Please contact DOOSAN to select detailed Twin Chucking specifcation.*

● *Standard* ● *Optional* X *Not applicable*

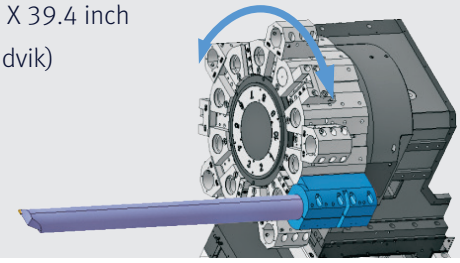
Fire Safety Precautions | There is a high risk of fire when using non-water-soluble cutting fluids, processing flammable materials, neglecting the controlled and careful use of coolants and modifying the machine without the consent of the manufacturer. Always check the SAFETY GUIDELINES carefully before using the machine.

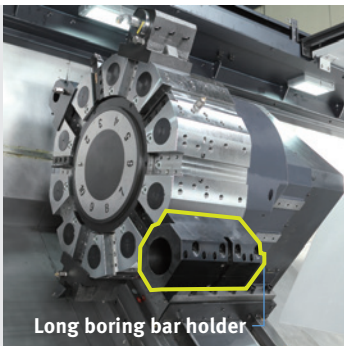
PERIPHERAL EQUIPMENT

Long boring bar OPTION

The long boring bar option allows customers to machine deep holes quickly and easily to minimize cycle times. Please consult Doosan for details.

Ø100 X 1000 mm
ø3.9 X 39.4 inch
(Sandvik)



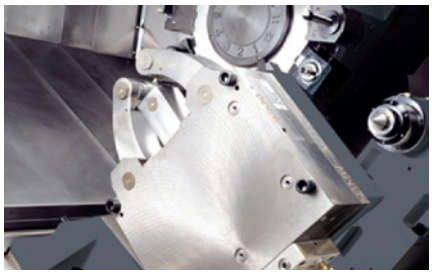


Twin chucking OPTION

For more stable pipe threading processes, the twin chucking option(manual or pneumatic) is available. Please consult with Doosan for details.

Steady rest OPTION

For turning extremely long parts various types of hydraulic steady rests (Single, Double or Twin) are available.

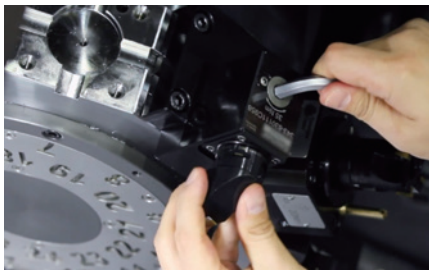


Auto tool setter OPTION

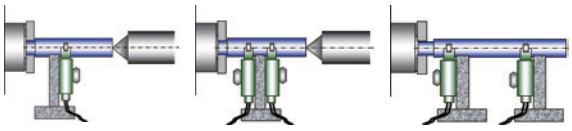
Best practice for shaft machining, the pocket of the chuck cover accommodates the overhang of the tool, minimizing interference and enhancing tool usability.

Quick change CAPTO OPTION

The quick change tool system simplifies tool change operations. Recommended for customers who need to change tools frequently or to reduce set-up times.



SINGLE **DOUBLE** **TWIN**

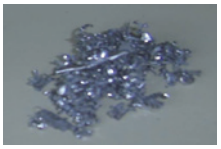


Chip conveyor OPTION


Long


Short


Needle


Sludge

Hinged belt type*

Most common type of chip conveyor. Appropriate for steel materials generating chips over 30mm.

Drum filter type**

Chip conveyor with a magnet: Appropriate for machining cast iron and the generation of fine chips.

Chip conveyor type \ Material		Carbon steel)			Cast iron		Aluminium		
		Long	Short	Needle	Short	Sludge	Long	Short	Needle
Hinged belt type*		O	△	X	△	X	O	△	X
Scrapper type	Normal	X	O	△	O	△	X	△	X
	Magnetic	X	O	O	O	O	-	-	-
Drum filter type**	Hinged type	O	△	X	△	X	O	△	X
	Scrapper	X	O	△	O	△	X	O	△

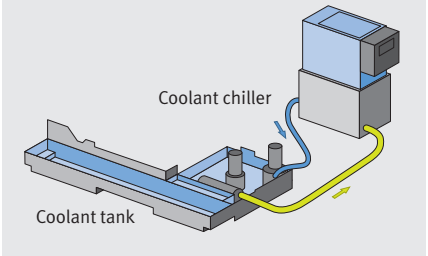
○ : Suitable, △ : Possible, X : Not suitable

Coolant tank

Doosan's ergonomic roller coolant tank design allows customers to easily replace and refill coolant. Rollers on the coolant tank allows them be taken out and put back into the machine like a drawer unit.

Coolant Chiller (recommended) OPTION

A coolant chiller is recommended to help prevent temperature rises and to reduce thermal deformation when using a water-insoluble coolant or a high-pressure coolant system (i.e., power over 1.5kW).



DOOSAN FANUC i PLUS

Doosan Fanuc i Plus maximizes customer productivity and convenience.

15” Screen + New OP

Doosan Fanuc i Plus’ operation panel enhances operating convenience by incorporating common-design buttons and layout. It features a Qwerty keyboard for fast and easy data input and operation.

Doosan Fanuc i Plus

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

USB and PCMCIA card QWERTY keyboard

- EZ-Guide i standard
- Ergonimic operator panel
- 2MB Memory
- Hot keys

iHMI touchscreen OPTION

iHMI provides an intuitive interface that uses a touchscreen for quick and easy operation.

Range of applications

Providing various applications related to planning, machining, improvement and utility, for customer convenience.

SKETCH-TURN OPTION

DOOSAN Conversational programming software for PC

- Easy to learn for beginners
- Time savings in programming
- Reduce processing cycle time

NUMERIC CONTROL SPECIFICATIONS

FANUC

Division	Item	Specifications	2-Axis Doosan Fanuc i (F0i-F Plus)	M Doosan Fanuc i (F0i-F Plus)	2-Axis Fanuc 32i (F32i-B)	M Fanuc 32i (F32i-B)
Controlled axis	Controlled axes		2(X,Z)	3(X,Z,C)	2(X,Z)	3(X,Z,C)
	Simultaneously controlled axes		2 axes	3 axes	2 axes	3 axes
Data input/output	Fast data server		O	O	O	O
	Memory card input/output		●	●	●	●
	USB memory input/output		●	●	●	●
	Larger capacity memory_2GB	Note *2) Available Option only with 15" Touch LCD (iHMI Only)	O *2)	O *2)	O *2)	X
Interface function	Embedded Ethernet		●	●	●	●
	Fast Ethernet		O	O	O	O
	Enhanced Embedded Ethernet function		●	●	●	●
Operation	DNC operation	Included in RS232C interface.	●	●	●	●
	DNC operation with memory card		●	●	●	●
Program input	Workpiece coordinate system	G52 - G59	●	●	●	●
Feed function	AI contour control I	G5.1 Q_, 40 Blocks	O	O	O	O
	AI contour control II	G5.1 Q_, 200 Blocks	O	O	O	O
Operation Guidance Function	EZ Guidei (Conversational Programming Solution)		●	●	●	●
	iHMI with Machining Cycle	Note *1) Only with 15" Touch LCD standard	O *1)	O *1)	X	X
	EZ Operation package		●	●	●	●
Setting and display	CNC screen dual display function		●	●	●	●
Network	FANUC MTConnect		✪	✪	✪	✪
	FANUC OPC UA		✪	✪	✪	✪
Others	Display unit	15" color LCD	●	●	●	●
		15" color LCD with Touch Panel	O	O	X	X
	Part program storage size & Number of registerable programs	640M(256KB)_500 programs	X	X	●	●
		5120M(2MB)_1000 programs	●	●	O	O

Network: FANUC MTConnect and FANUC OPC UA available.

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

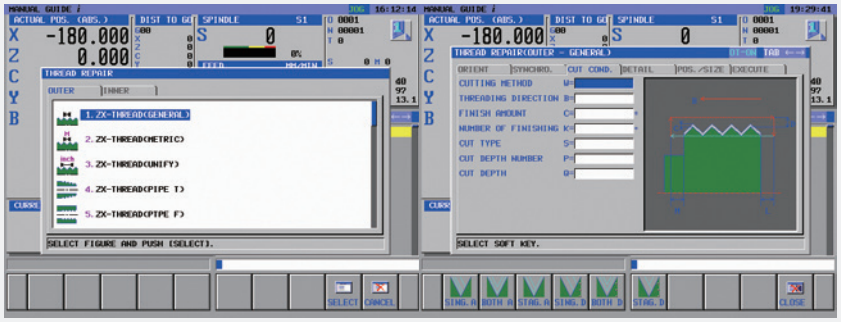
STABLE THREADING PERFORMANCE

2-axis* through to Y-axis models are capable of threading work.

** In order to re-machine threads or perform arbitrary speed threading on a 2-axis machine, additional options/accessories have to be selected.*

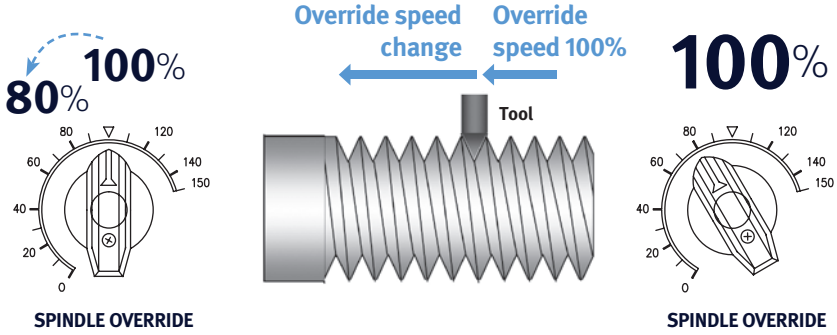
Threading repair function

This standard Fanuc NC function allows users to repair threads even when the original program is no longer available or cannot be accessed available.



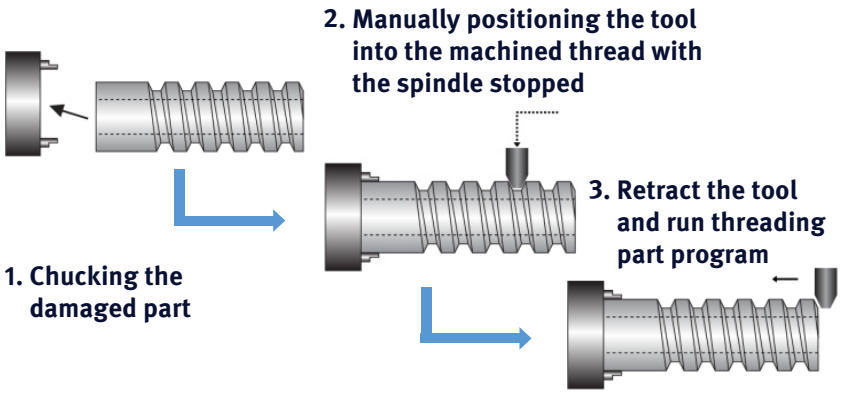
Arbitrary speed threading OPTION

This function allows users to control and override spindle speeds in order to produce/replicate the best thread quality.



Re-machining function

This function is included within the arbitrary speed threading software and enables customers to re-machine damaged threads using existing programs.



POWER | TORQUE

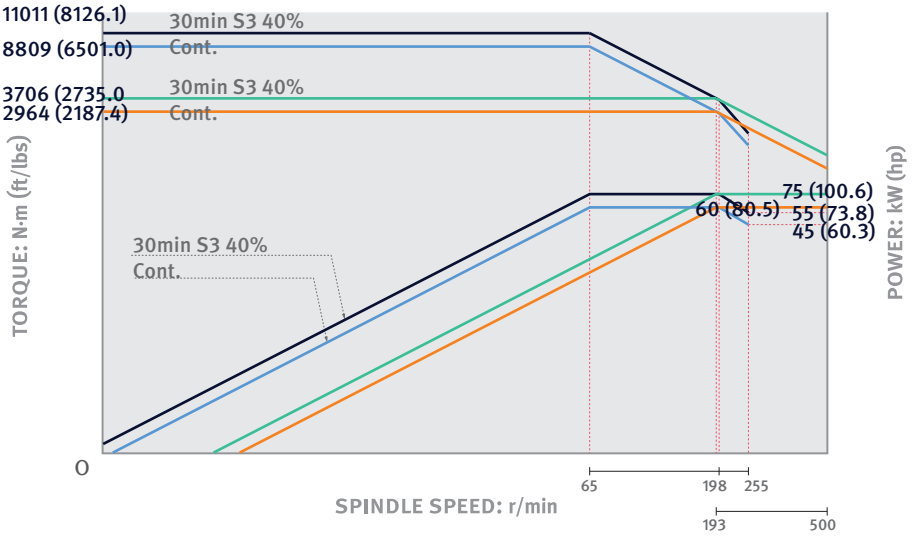
FANUC

PUMA 1000A/MA

Max. spindle speed : **500** r/min

Max. power : **75/60** kW
100.6 / 80.5 HP

Max Torque : **11011** N·m
8126.1 ft-lb

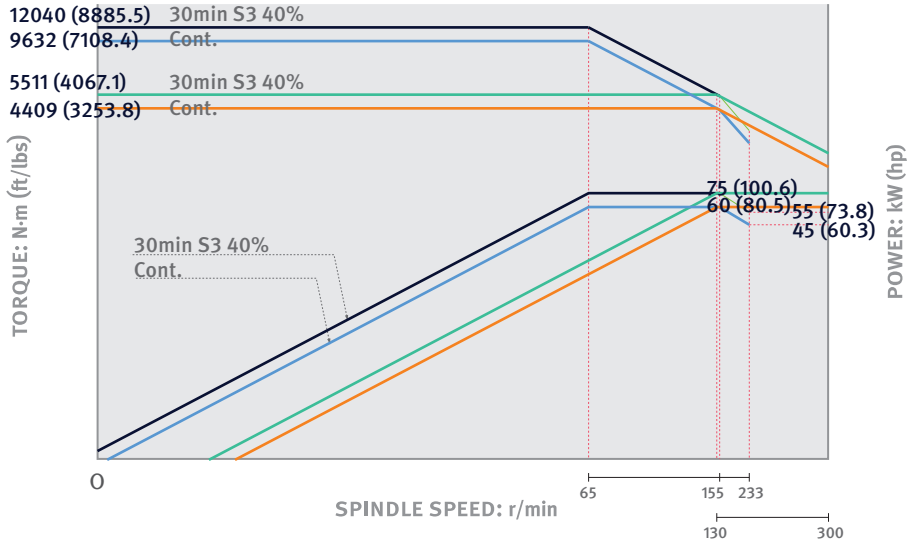


PUMA 1000B/MB

Max. spindle speed : **300** r/min

Max. power : **75/60** kW
100.6 / 80.5 HP

Max Torque : **12040** N·m
8885.5 ft-lb

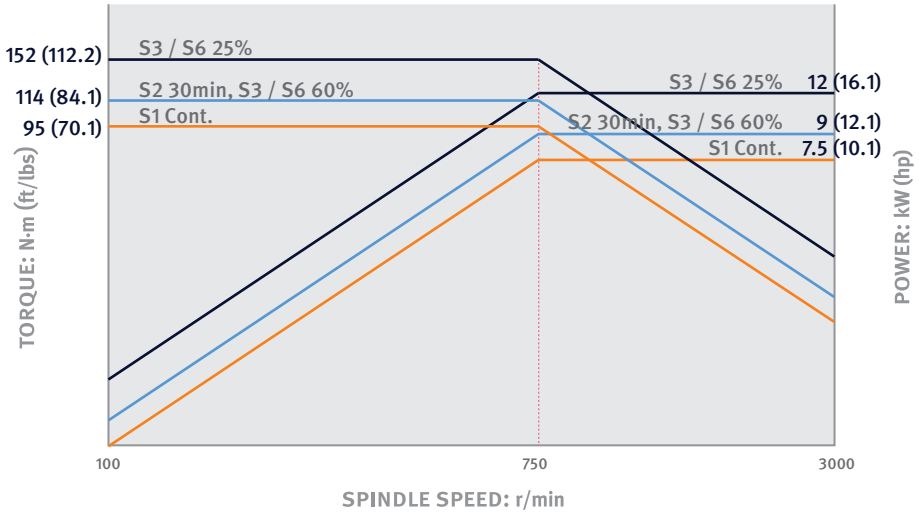


Rotary tool

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

Max. power : **12** kW
16.1 HP

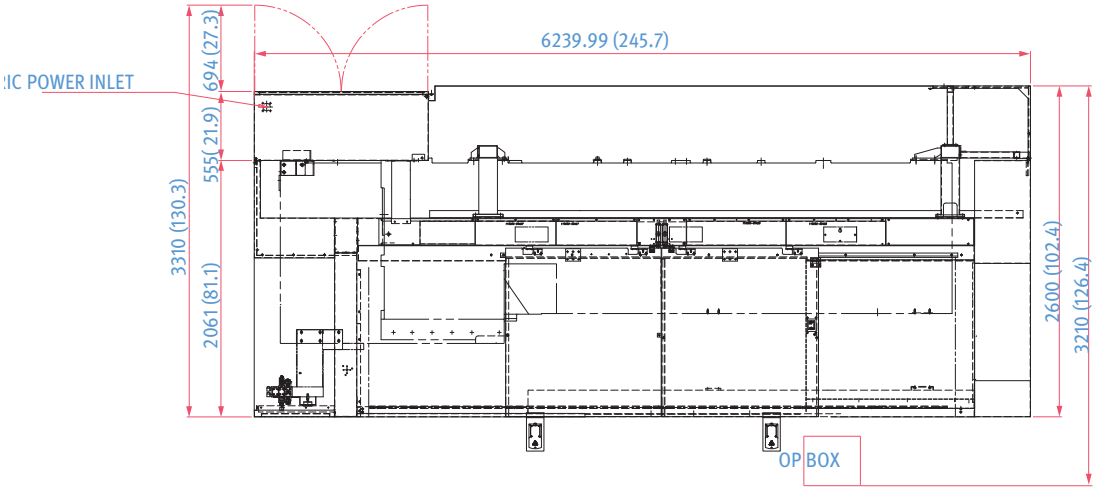
Max Torque : **152** N·m
112.2 ft-lb



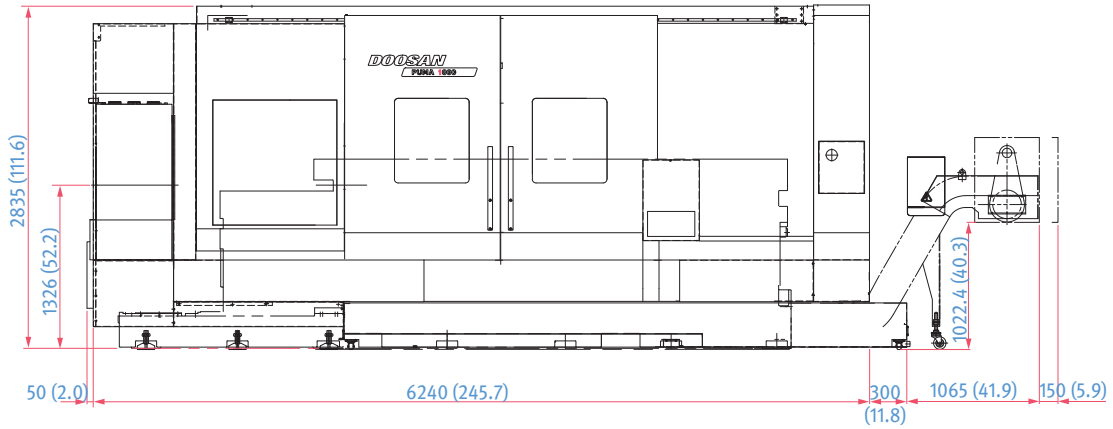
EXTERNAL DIMENSIONS | TOOL INTERFACE

Unit : mm (inch)

TOP



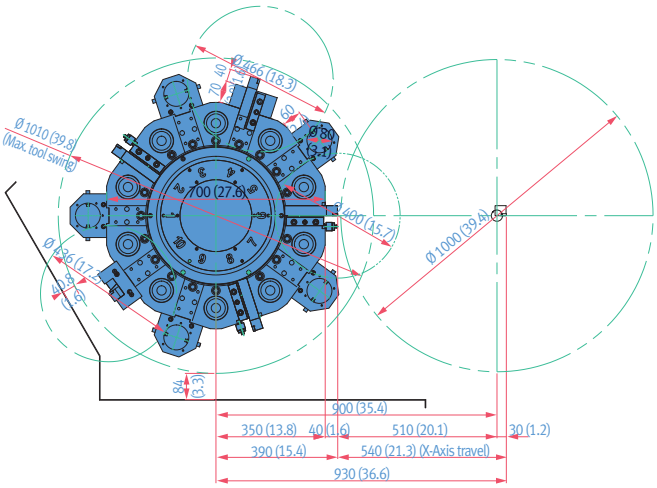
FRONT



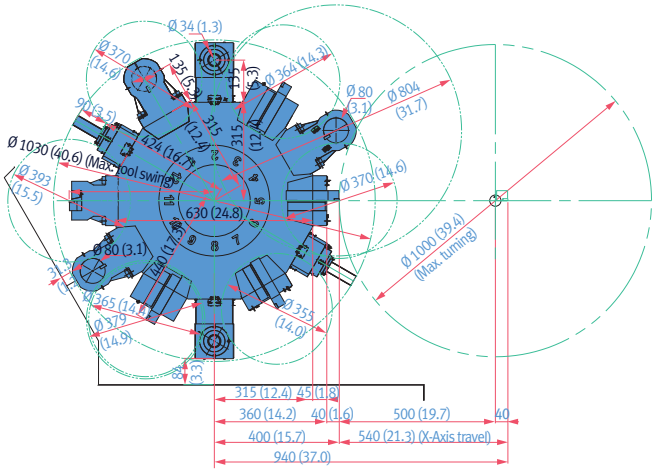
** Some peripheral equipment can be placed in other places.*

TOOL INTERFACE

PUMA 1000 (2-axis)



PUMA 1000M (3-axis)



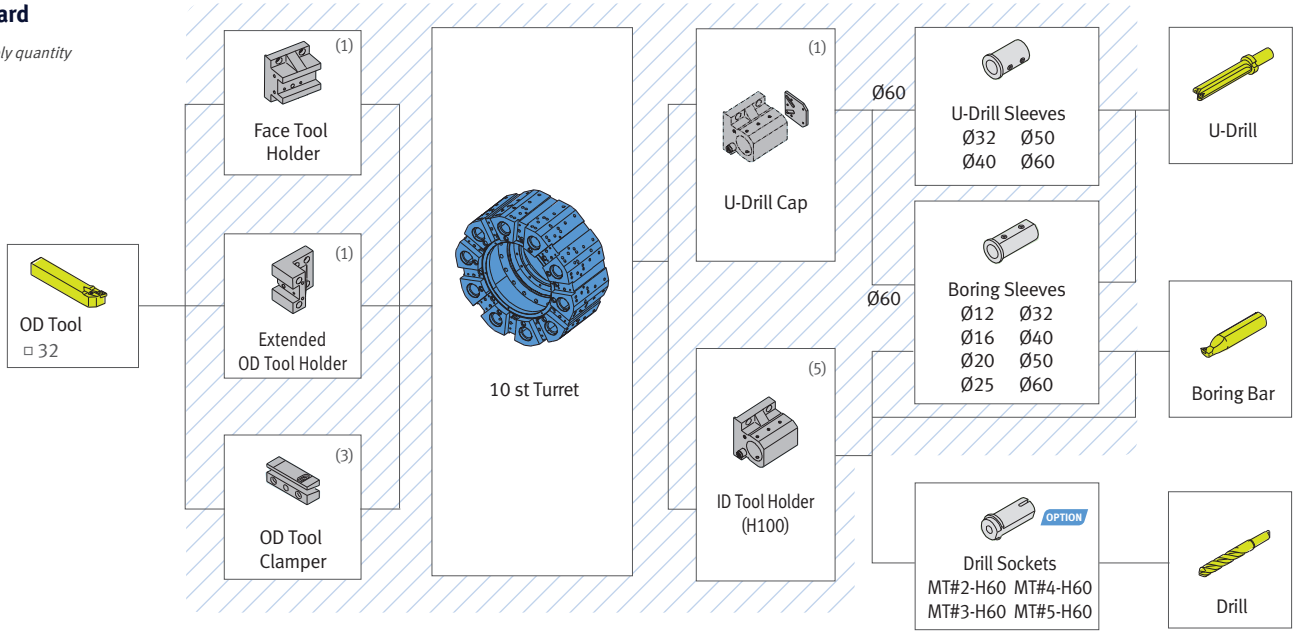
TOOLING SYSTEM

Unit : mm (inch)

PUMA 1000

Standard

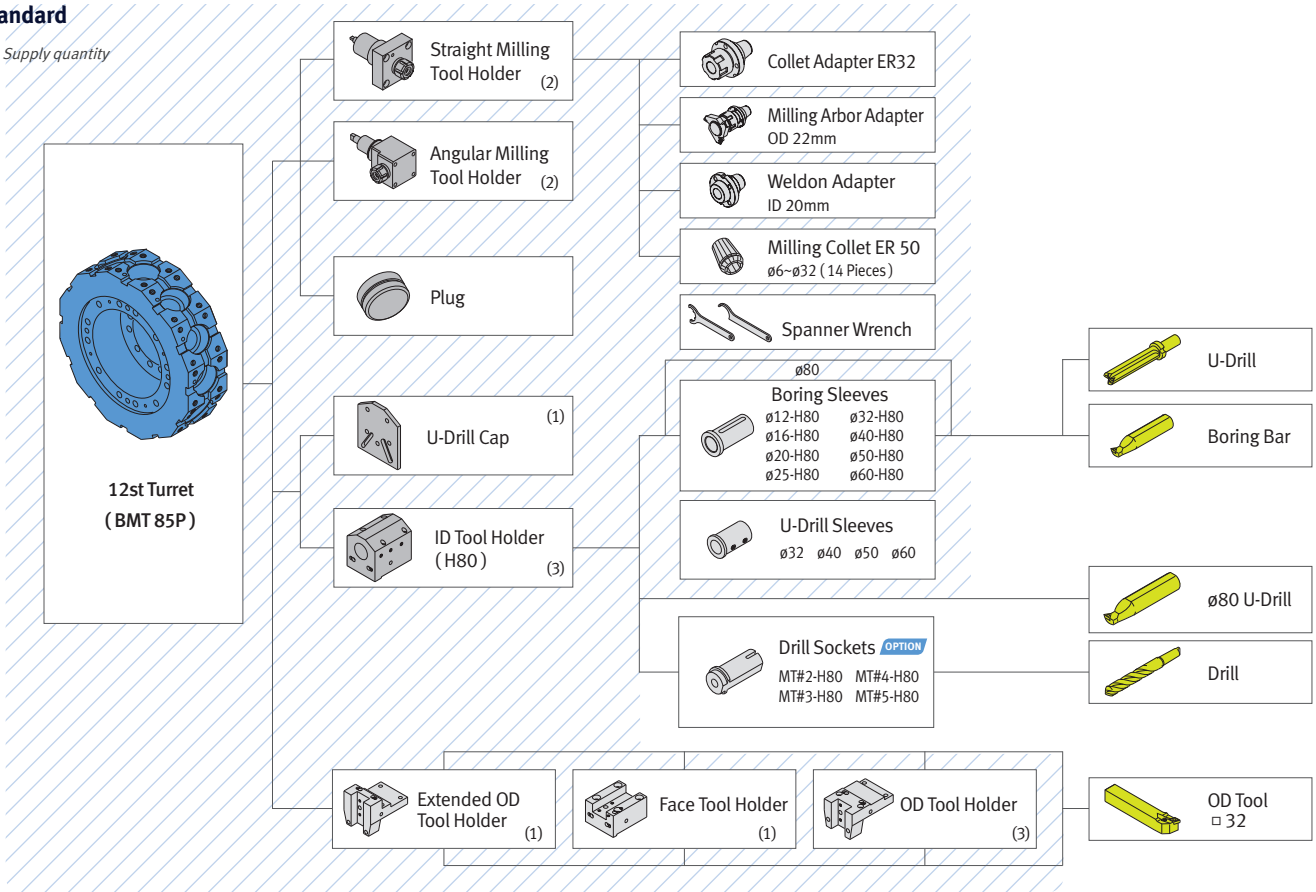
** ( ) Supply quantity*



PUMA 1000M

Standard

** ( ) Supply quantity*

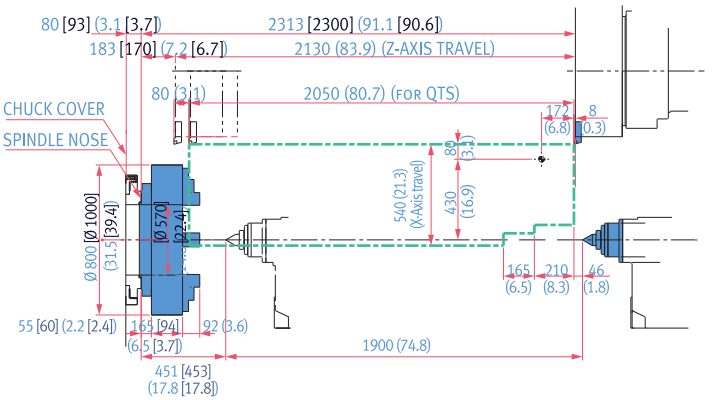


WORKING RANGE DIAGRAM

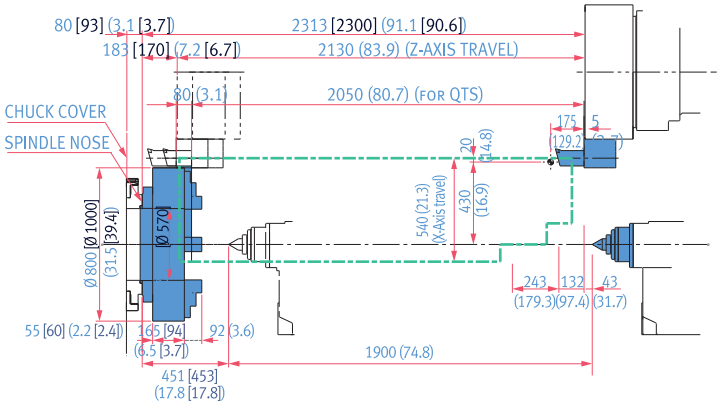
PUMA 1000A / B

Unit : mm (inch)

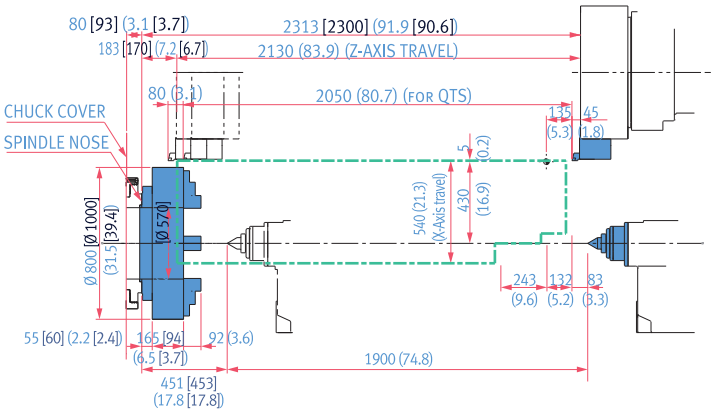
OD TOOL HOLDER



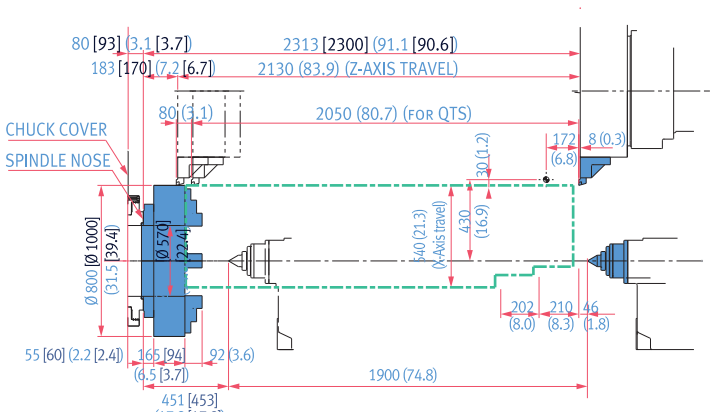
ID TOOL HOLDER



FACE TOOL HOLDER



EXTENDE OD TOOL HOLDER

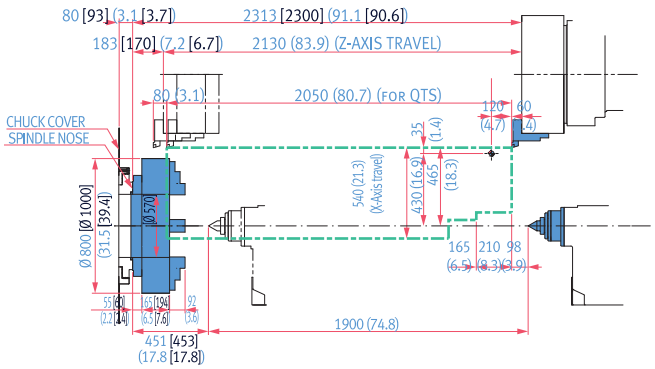


WORKING RANGE DIAGRAM

PUMA 1000MA / MB

Unit : mm (inch)

OD TOOL HOLDER



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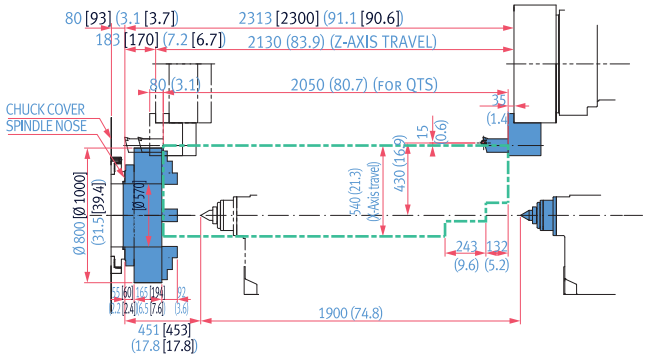

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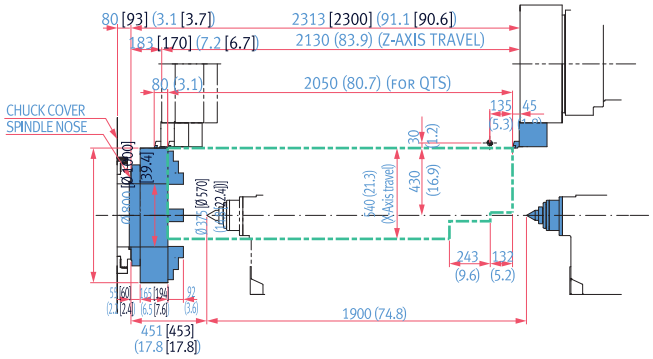

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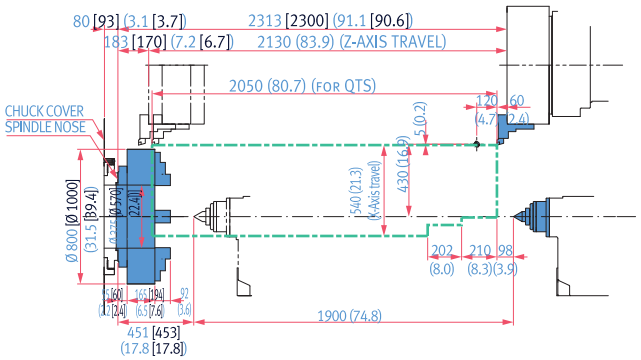
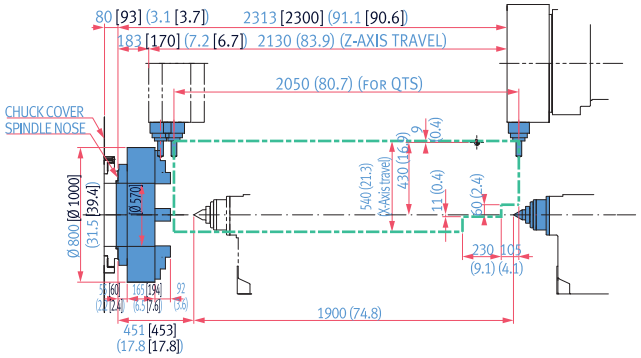


OD TOOL HOLDER



MACHINE SPECIFICATIONS

PUMA 1000 series

Description			Unit	PUMA 1000A [MA]	PUMA 1000B [MB]
Capacity	Swing over bed		mm (inch)	1250 (49.2)	
	Swing over saddle		mm (inch)	950 (37.4)	
	Recom. turning diameter		mm (inch)	800 (31.5)	
	Max. turning diameter		mm (inch)	Ø 1000 (39.4)	
	Max. turning length		mm (inch)	2040 (80.3)	2000 (78.7)
	Chuck size		inch	(ORDER MADE)	
Travels	Travel distance	X-axis	mm (inch)	540 (21.3)	
		Z-axis	mm (inch)	2130 (83.9)	
	Rapid traverse rate	X-axis	m/min (ipm)	12 (472.4)	
		Z-axis	m/min (ipm)	16 (629.9)	
Spindle	Max. spindle speed		r/min	500	300
	Main spindle motor power (30min./cont.)		kW (Hp)	75 (100.6) / 60 (80.5)	
	Max. spindle torque		N·m (ft-lb)	11011 (8126.1)	12040 (8885.5)
	Spindle nose		ISO	702-4 No.20	702-4 No.28
	Spindle bearing dia.(Front)		mm (inch)	440 (17.3)	700 (27.6)
	Max. Spindle through hole diameter		mm (inch)	Ø375 (14.8)	Ø560 (22.0)
Turret	No. of tool stations		ea	10 [12: BMT85P]	
	OD tool size		mm (inch)	32 x 32 (1.25 x 1.25)	
	Max. boring bar size		mm (inch)	80 (3.0)	
	Turret indexing time (1 station swivel)		s	0.31	
	Max. rotary tool speed		r/min	[3000]	
	Rotary tool motor power (30min./cont.)		kW (Hp)	[9 (12.1) /7.5 (10.1)]	
Tailstock	Tailstock travel		mm (inch)	1900 (74.8)	
	Quill diameter		mm (inch)	180(7.1)	
	Quill bore taper		MT	MT#6(Dead)	
	Quill travel		mm (inch)	150(5.9)	
Power Source	Power consumption		kVA	97.54	
Machine Dimensions	Length		mm (inch)	6595 (259.6)	
	Width		mm (inch)	3210 (126.4)	
	Height		mm (inch)	2835 (111.6)	
	Weight		kg (lb)	21000 (46296.4)	23000 (50705.6)
Control	CNC System			DOOSAN Fanuc i Plus {F32i}	

** Bar working diameter is a nominal size(PUMA 1000A : 375mm / PUMA 1000B: 555mm) we can expect when doing the double chucking operation at both sides of the headstock and using spindle through hole.*

** { } : Option*

WHY DOOSAN?

The Doosan promise, MACHINE GREATNESS, has two important meanings. The first is simple: Doosan makes great machines. The second is a challenge to our end-users. With a product line that is this comprehensive, accurate and reliable, we equip our customers to machine greatness.

The big question: ***Why should you choose Doosan over other options?*** Here's why...

WHAT YOU MAKE AND HOW YOU MAKE IT MATTERS—SO MAKE IT GREAT WITH DOOSAN.

UNBEATABLE MACHINES

You won't find a more comprehensive range or a better combination of value, performance and reliability anywhere else.

READILY AVAILABLE - ANYWHERE IN THE WORLD

Machining centers (including 5-axis machines), lathes, multi-tasking turning centers and mill-turn machines, and horizontal borers with best-in-class specifications are all available...ready to install.

ROBUST PRODUCT LINE

We offer an impressive range of machine models and hundreds of configurations. Whatever your machining needs and requirements, there's a Doosan for you.

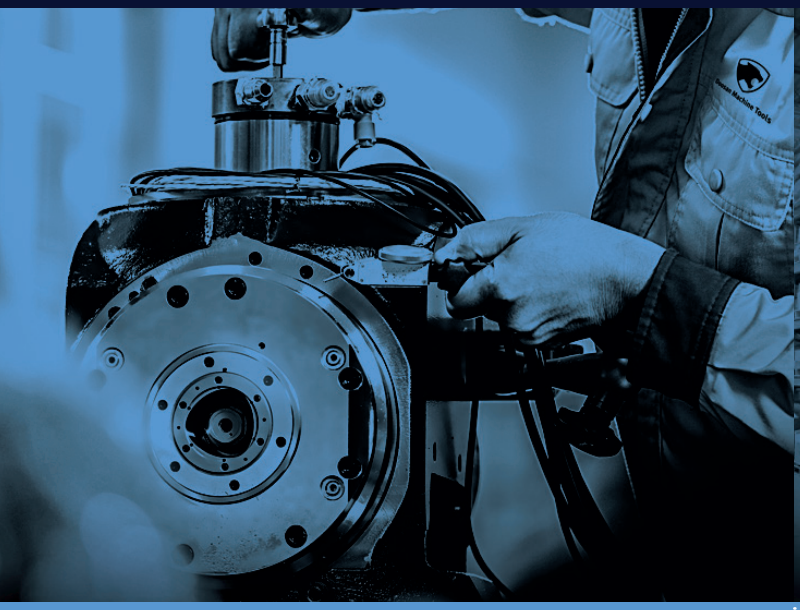
EXPERT SERVICE

Our dedicated, experienced and knowledgeable team is totally committed to improving your productivity, growth and success.

CUSTOMER SUPPORT AND SERVICES

We're there for you whenever you need us.

We help our customers operate at maximum efficiency by providing them with a range of tried, tested and trusted services - from pre-sales consultancy to post-sales support.



FIELD SERVICES

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

PARTS SUPPLY

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

TRAINING

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

TECHNICAL SUPPORT

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

RESPONDING TO CUSTOMERS
ANYTIME, ANYWHERE

Doosan Machine Tools' Global Network

Doosan Machine Tools provides systems-based professional support services, before and after the machine tool sale, by responding quickly and efficiently to customers. By supplying spare parts, product training, field service and technical support, we provide the expert care, attention and assistance our customers expect from a market leader.

Global sales and service support network

4	**Corporations**
167	**Dealer networks**
51	**Technical centers** Technical center, Sales support, Service support, Parts support
200	**Service posts**
3	**Factories**

Doosan Machine Tools

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