

DOOSAN



PUMA 600/700/800 II series

Doosan's Large Horizontal Turning Center with
2-axis to Y-axis Machining Capability

PUMA 600 II series
PUMA 700 II series
PUMA 800 II series



**MACHINE
GREATNESS™**

Basic Information

Basic Structure
Cutting
Performance

Detailed
Information

Options
Applications
Capacity Diagram
Specifications

Customer Support
Service



PUMA 600/700/800 II series

PUMA 600/700/800 II series is a large horizontal turning center ideally designed for machining pipes and flanges used in oil and gas industry, hydraulic parts used in construction equipment, and also complex parts used in aircraft and ship building industry. Its maximum turning diameter and length are Ø900mm and 5050mm, respectively, which is the highest in its class. The slant bed design allows easy chip disposal.



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Single setup for machining large complex parts.

- Maximum productivity can be achieved with the 200mm (± 100 mm) orthogonal Y axis structure, which allows users to machine variety of large and complex part.

Boasting the largest machining area and top performance in its class, PUMA 600/700/800 II series is perfect for machining large work pieces.

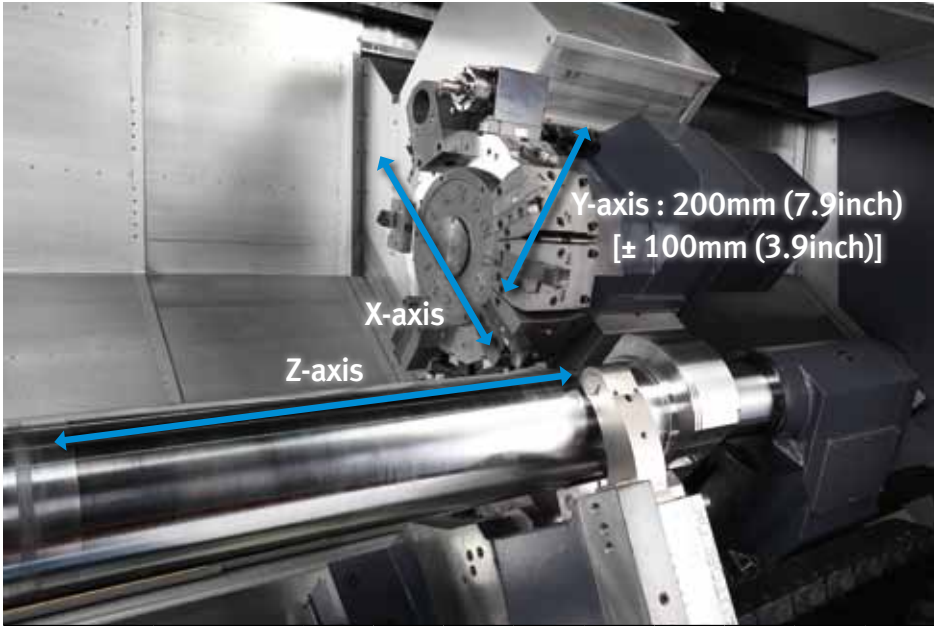
- With 5m maximum turning length, $\varnothing 900$ mm maximum turning diameter, and 11,004N·m of Torque, machine is ideal for heavy-duty cutting of large parts used in different industries.
- CAPTO type ATC(Auto Tool Changer) enable to increase the number of tooling and reduce setting time, and it is advantageous for machining hard-to-cut materials(Titanium, Inconel) or automation system. **option**

Machining Solution for wide range of pipes.

- $\varnothing 375$ mm maximum spindle through hole diameter makes it ideal for turning large diameter pipes.
- Wide range of solution to improve threading performance and reduce failure ratio.

Basic Structure

Machine capability ranges from 2-axis to Y axis, which allows single setup to maximize productivity of machining large diameter parts.

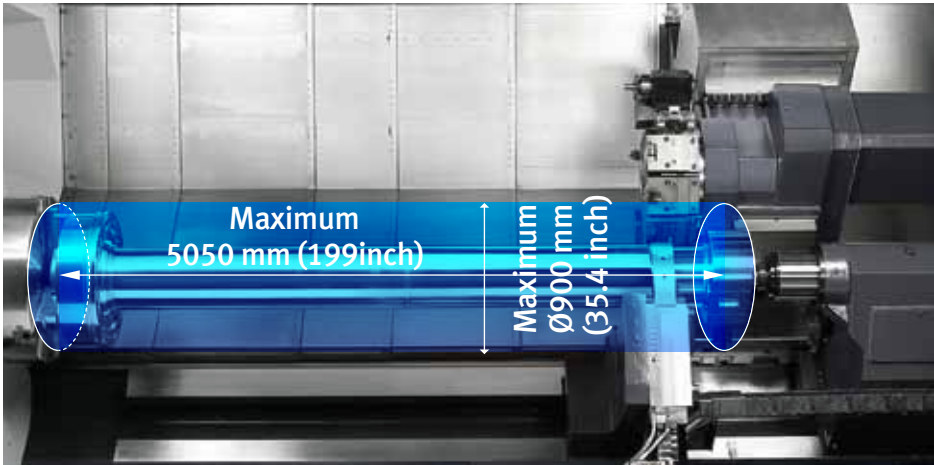


Series	Chuck* Size (inch)	1600 mm (63 inch)			3200 mm (126 inch)			5050 mm (199 inch)		
		2-axis	M	Y	2-axis	M	Y	2-axis	M	Y
PUMA 600 II	18	0	0	-	0	0	0	0	0	0
PUMA 700 II	24	0	0	-	0	0	0	0	0	0
PUMA 800 II	32	0	0	-	0	0	0	0	0	0
PUMA 800B II	Order made	0	-	-	0	-	-	-	-	-

*Chuck and chuck cylinder are optional features.

Machining area

The largest work envelop in its class with maximum turning diameter of Ø900 mm and maximum turning length of 5 m.



Max. turning diameter

Max. turning length

Ø900^{mm} (35.4inch) 5050^{mm} (199inch)

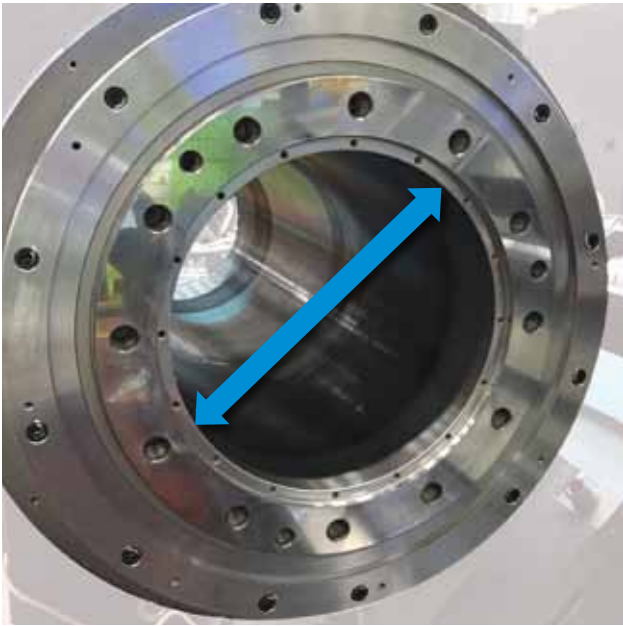
Unit: mm (inch)

	Model	Max. turning diameter	Max. turning length
2-axis	PUMA 600 /700/800/800B II	900 (35.4)	1600 (63)
	PUMA 600L/700L/800L/800LB II		3200 (126)
	PUMA 600XL/700XL/800XL II		5050 (199)
M	PUMA 600M/700M/800M II	900 (35.4)	1600 (63)
	PUMA 600LM/700LM/800LM II		3200 (126)
	PUMA 600XLM/700XLM/800XLM II		5050 (199)
Y	PUMA 600LY/700LY/800LY II	750 (29.5)	3250 (128)
	PUMA 600XLY/700XLY/800XLY II		5050 (199)



Machining area

Machine available in various spindle through hole sizes to provide adequate machining solutions for different size pipes.



Max. spindle through hole diameter

Ø375mm
(14.8 inch)

Unit: mm (inch)

Series	Max. spindle through hole diameter
PUMA 600 II	152 (6.0)
PUMA 700 II	181 (7.1)
PUMA 800 II	320 (12.6)
PUMA 800B II	375 (14.8)



Spindle

The gearbox design allows PUMA 600/700/800 II series spindle to have unparalleled power and torque, which boosts productivity with extreme heavy-duty cutting capability.



Max. spindle speed

750r/min

Max. spindle power

55kW
(73.8 hp)

75kW option
(100.1 hp)

Max. spindle torque

8076N·m
(5960.1 lbf·ft)

11013N·m option
(8127.6 lbf·ft)

PUMA 800 series

Series	Max. spindle speed	Max. spindle power	Max. spindle torque
PUMA 600 II	1800 r/min	55 kW (73.8hp) 75 kW (100.6 hp) option	6622 N·m (4887.0 lbf·ft) 9030 N·m (6664.1 lbf·ft) option
PUMA 700 II	1500 r/min		8076 N·m (5960.1 lbf·ft) 11013 N·m (8127.6 lbf·ft) option
PUMA 800 II	750 r/min		
PUMA 800B II	500 r/min		

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Tailstock

Standard programmable tailstock gives you the ability to easily adjust position of the tailstock for different work pieces to minimize setup time.



Tailstock travel

1550mm
(61 inch)

3135mm* (L)
(123 inch)

4885mm (XL)
(192 inch)

Unit: mm (inch)

Model	Quill diameter	Quill travel
PUMA 600/M/L/LM II	160 (6.3)	150 (5.9)
PUMA 700/M/L/LM II		
PUMA 800/M/L/LM II		
PUMA 600LY/XL/XLM/XLY II	180 (7.1)	150 (5.9)
PUMA 700LY/XL/XLM/XLY II		
PUMA 800LY/XL/XLM/XLY II		
PUMA 800B/LB II		

* Tailstock travel of PUMA 600 II / 700 II / 800LY II is 3085mm(121.5inch).

Turret

Doosan's unique BMT85P design turret is used on M and Y-Axis models to boost heavy-duty cutting performance.



2-axis model

No. of tool stations

12 stations



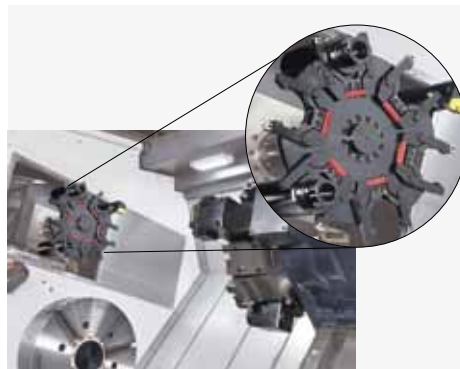
M,Y Model

No. of tool stations

BMT85P 12 stations

Automatic tool Changer

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

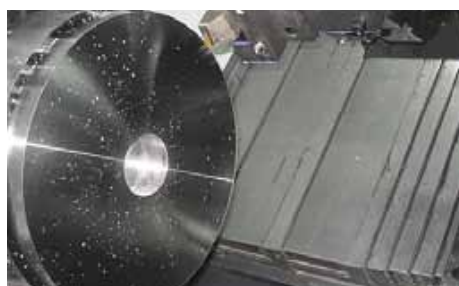


Description	Spec.
Tool shank	CAPTO C8
Tool storage capa.	6 ea
Max. tool diameter	Ø80 mm (3.1 inch)
Max. tool length	320mm (400mm*) (12.6 (15.7inch*))
Max. tool weight	10 kg(22.0lb)
Magazine motor	Servo

* Tech. discussion is required in advance

Cutting performance

PUMA 600/ 700/800 II series can perform excellent heavy-duty machining in many different ways such as ID/OD turning, end milling, tapping, and U-drilling, to maximize productivity.



O.D turning (Material diameter Ø 380 mm)

Speed	230 m/min (9055.1 ipm)
Feed	0.6 mm/rev (0.0 ipr)
Depth of cut	10 mm (0.4 inch)
Chip Removal rate	1418 cm ³ /min (86.5 inch ³ /min)



Tapping

Cutting Tool	M33 x P3.5
Cutting speed	15 m/min (590.6 ipm)
Feed	3.5 mm/rev (0.1 ipr)



U-Drill (3-axis)

Cutting Tool	Ø 30 mm (1.2 inch)
Spindle Load	2000 m/min
Feed	0.12 mm/rev (0.0 ipr)
Chip Removal rate	171 cm ³ /min (10.4 inch ³ /min)



End mill (Low Speed)

Cutting Tool	Ø 32 mm (1.3 inch)
Spindle Load	30 m/min
Feed	90 mm/min
Chip Removal rate	105 cm ³ /min



End mill (High Speed)

Cutting Tool	Ø 25 mm (1.0 inch)
Spindle Load	220 m/min (787.4 ipm)
Feed	1000 mm/min (39.4 ipm)
Chip Removal rate	175 cm ³ /min (10.7 inch ³ /min)



Helical End Milling

Cutting Tool	Ø 25 mm (1.0 inch)
Spindle Load	240 m/min (9448.8 ipm)
Feed	800 mm/min (31.5 ipm)
Chip Removal rate	100 cm ³ /min (6.1 inch ³ /min)

* The results, indicated in this catalogue are provides as example. They may not be obtained due to differences in cutting conditions and environmental conditions during measurement.



Standard/Optional features

● Standard ○ Option △ Contact DOOSAN X N/A

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Division		Items		PUMA 600 II series		PUMA 700 II series		PUMA 800 II series		
				2-axis / M	Y	2-axis / M	Y	2-axis / M	Y	Big bore(B/LB)
1	Chuck	None		●	●	●	●	●	●	●
2		18 inch		○	○	X	X	X	X	X
3		21 inch		○	○	X	X	X	X	X
4		24 inch		X	X	○	○	X	X	X
5		32 inch		X	X	X	X	○	○	X
6		32INCH (OUT DIAMETER Ø800)		○	○	○	○	X	X	X
7		40INCH (OUT DIAMETER Ø1000)		X	X	○ (XL/XLM)	○	○ (XL/XLM)	○	X
8	Jaw	Soft jaws		○	○	○	○	○	○	○
9		Hardened & ground hard jaws		○	○	○	○	○	○	○
10	Chucking option	Single pressure chucking		●	●	●	●	●	●	●
11		Dual pressure chucking		○	○	○	○	○	○	○
12		Chuck clamp confirmation		○	○	○	○	○	○	○
13	Steady rest	MANUAL STEADY REST	Ø35 ~ Ø330 mm (Ø1.4 ~ Ø13.0 inch)	○	○	○	○	○	○	○
14			Ø300 ~ Ø450 mm (Ø11.8 ~ Ø17.7 inch)	○	○	○	○	○	○	○
15			Ø300 ~ Ø590 mm (Ø11.8 ~ Ø23.2 inch)	(std./M/L/LM)	(LY)	(std./M/L/LM)	(LY)	(std./M/L/LM)	(LY)	(B)
16			Ø380 ~ Ø720 mm (Ø15.0 ~ Ø28.3 inch)	(std./M/L/LM)	(LY)	(std./M/L/LM)	(LY)	(std./M/L/LM)	(LY)	(B)
17			Ø420 ~ Ø570 mm (Ø16.5 ~ Ø22.4 inch)	(XL/XLM)	(XLY)	(XL/XLM)	(XLY)	(XL/XLM)	(XLY)	(LB)
18			Ø570 ~ Ø720 mm (Ø22.4 ~ Ø28.3 inch)	(XL/XLM)	(XLY)	(XL/XLM)	(XLY)	(XL/XLM)	(XLY)	(LB)
19		Hydraulic	SLU-4 (Ø30 ~ Ø245 mm) (Ø1.4 ~ Ø9.6 inch)	○	○	○	○	○	○	○
20			SLU-5 (Ø45 ~ Ø310 mm) (Ø1.8 ~ Ø12.2 inch)	○	○	○	○	○	○	○
21			SLU-5.1 (Ø85 ~ Ø350 mm) (Ø3.3 ~ Ø13.8 inch)	○	○	○	○	○	○	○
22			K-5 (Ø80 ~ Ø390 mm) (Ø3.1 ~ Ø15.4 inch)	○	○	○	○	○	○	○
23			SLU-4 (Ø30 ~ Ø245 mm) (Ø1.4 ~ Ø9.6 inch)	○	○	○	○	○	○	○
24		PROGRAMMABLE STEADY REST	SLU-5 (Ø45 ~ Ø310 mm) (Ø1.8 ~ Ø12.2 inch)	○	○	○	○	○	○	○
25			SLU-5.1 (Ø85 ~ Ø350 mm) (Ø3.3 ~ Ø13.8 inch)	○	○	○	○	○	○	○
26			K-5 (Ø80 ~ Ø390 mm) (Ø3.1 ~ Ø15.4 inch)	○	○	○	○	○	○	○
27			K-5.1 (Ø100 ~ Ø410 mm) (Ø3.9 ~ Ø16.1 inch)	○	○	○	○	○	○	○
28			RX-6 (Ø100 ~ Ø520 mm) (Ø3.9 ~ Ø20.5 inch)	○	○	○	○	○	○	○
29			AX-7E (Ø45 ~ Ø320 mm) (Ø1.8 ~ Ø0.6 inch)	○	○	○	○	○	○	○
30			AX-8E (Ø85 ~ Ø360 mm) (Ø3.3 ~ Ø14.2 inch)	○	○	○	○	○	○	○
31			AX-8.5I (Ø100 ~ Ø430 mm) (Ø3.9 ~ Ø16.9 inch)	○	○	○	○	○	○	○
32			AX-9I (Ø100 ~ Ø510 mm) (Ø3.9 ~ Ø20.1 inch)	○	○	○	○	○	○	○
33		Type	Single	○	○	○	○	○	○	○
34			Twin	○	○	○	○	○	○	○
35			Double	○	○	○	○	○	○	○
36	Tailstock	Programmable type		●	●	●	●	●	●	●
37		Live center		●	●	●	●	●	●	●
38		Built-in dead center		○	○	○	○	○	○	○
39	Coolant pump (60/50Hz)	4.5/3.0 bar		●	●	●	●	●	●	●
40		7/5, 10/7, 14.5/10, 28/19.5, 70/70 bar		○	○	○	○	○	○	○
41		Coolant level switch : Sensing level - Low		○	○	○	○	○	○	○
42	Coolant options	Oil skimmer		○	○	○	○	○	○	○
43		Coolant chiller		○	○	○	○	○	○	○
44		Coolant pressure switch		○	○	○	○	○	○	○
45		Coolant gun		○	○	○	○	○	○	○
46	Chip disposal	Chip conveyor (Right side)		○	○	○	○	○	○	○
47		Chip bucket		○	○	○	○	○	○	○
48		Air blower for chuck		○	○	○	○	○	○	○
49		Mist collector interface (Duct only)		○	○	○	○	○	○	○
50	Measurement & Automation	Integrated mist collector		○	○	○	○	○	○	○
51		Tool setter	Manual	○	○	○	○	○	○	○
52			Automatic	○	○	○	○	X	X	X
53		Auto door		○	○	○	○	○	○	○
54	Others	Automatic tool changer		○	○	○	○	X	X	X
55		Doosan Tool load monitoring system		○	○	○	○	○	○	○
56		Signal tower		○	○	○	○	○	○	○
57		Air gun		○	○	○	○	○	○	○
58		Automatic power off		○	○	○	○	○	○	○
59		Air unit for air chuck	Single	X	X	X	X	○	X	○
60			Twin	X	X	X	X	○	X	○
61	Standard Accessories	Quick change tooling(CAPTO)		○	○	○	○	○	○	○
62		Sketch-turn S/W		○	○	○	○	○	○	○
63		FOUNDATION BOLT FOR ANCHORING		(L/LM/XL/XLM)	(LY/XLY)	(L/LM/XL/XLM)	(LY/XLY)	(L/LM/XL/XLM)	(LY/XLY)	(LB)

PUMA 600/700/800 series

★ Please contact DOOSAN to select detailed steady rest specifications.
★★ TWIN CHUCKING for PUMA 700/L/XL/M/LM/XLM/LY/XLY II, PUMA 800/L/XL/M/LM/XLM/LY/XLY/B/LB II: Please contact Doosan.

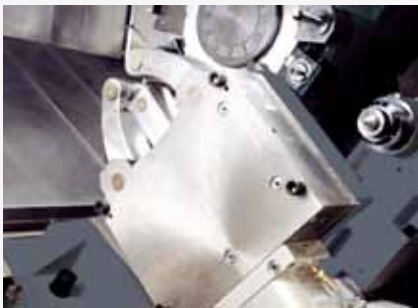
Peripheral equipments

Long boring bar option

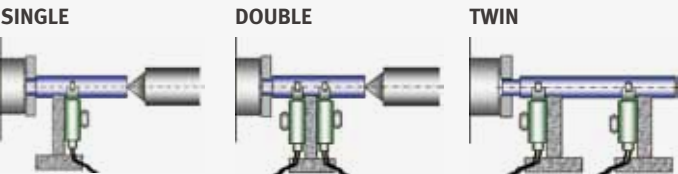


The long boring bar option allows you to easily machine deep holes to minimize cycle time. Please consult with Doosan specialist for details.

Steady rest option



For turning a part with extensive length, various types of hydraulic steady rests(Single, Double or Twin type) are available.



Chip conveyor (Right side) option



Chip conveyor type	Material	Description
Hinged belt	Steel	Hinged belt chip conveyor, which is most commonly used for steel work(for cleaning chips longer than 30mm), is available as an option.
Magnetic scraper	Cast Iron	Magnetic scraper type chip conveyor, which is ideal for die-casting work(for cleaning small chips), is available as an option.

Twin chucking option



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

Quick change CAPTO option



The Quick Change Tool system simplifies tool change operation. Recommended for users who need to change tools frequently or reduce the set-up time.

Coolant tank



Standard bed: 470L
L: 570L (LY: 600L)
XL: 770L

Doosan's ergonomic roller coolant tank design, allows users to easily replace and refill coolant. Roller on the coolant tank allows users to simply take out and put it back in the machine like a drawer unit.

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

Variety of applications

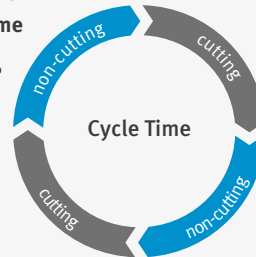
- Providing various applications related to PLANNING, MACHINING, IMPROVEMENT, and UTILITY for customer convenience.

SKETCH-TURN option**DOOSAN Conversational programming software for PC**

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

Easy Operation Package**Increase Productivity**

Reduced non-cutting time by **10%**



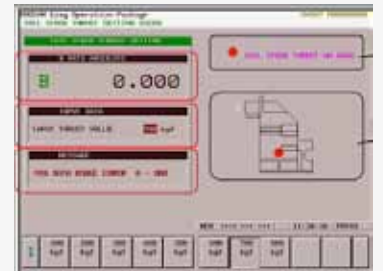
Minimizes non-cutting time to further improve productivity.

Operation rate

Function allows users to easily keep track of machine operating hours and the number of completed parts.

Tool load monitoring option

This function detects overload on tools, caused by wear and damage, and triggers an alarm to minimize damage.

Tail stock thrust force setting option

This function allows users to easily setup tailstock thrust force on the screen.



SIEMENS S828D

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

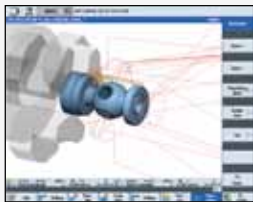
15.6 inch screen + New OP

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.



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.



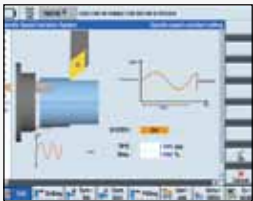
Operation safety function

Spindle and Turret's interference could be checked before crash. So that it Protect operator's mistake.
[offset] [operating parameter]
[attachment setting] [Collision avoidance]



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.



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.



Before applying the function

After applying the function

Stable threading performance

All PUMA 600/700/800 II series (2-Axis* to Y-Axis) are capable of threading work.

*In order to re-machine threads or perform arbitrary speed threading on a 2-Axis machine, additional optional devices have to be selected.

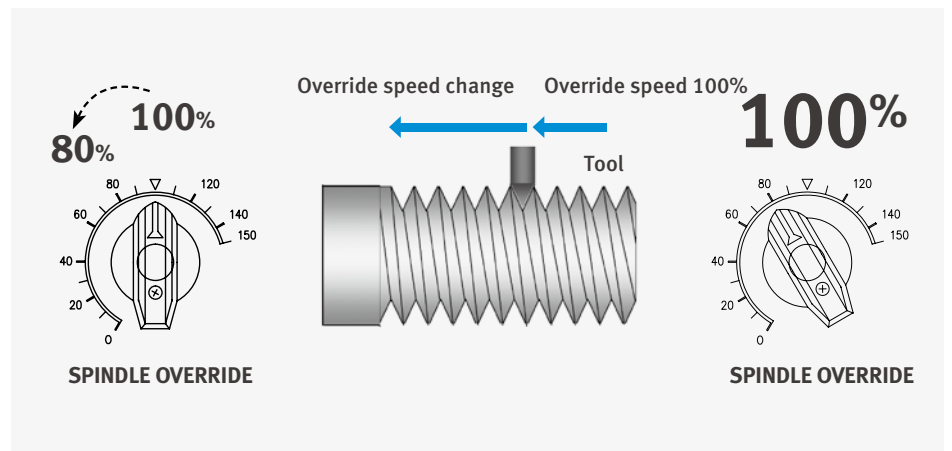
Threading repair function

This function allows users to repair thread even when original program is not available and this is a standard Fanuc NC function.



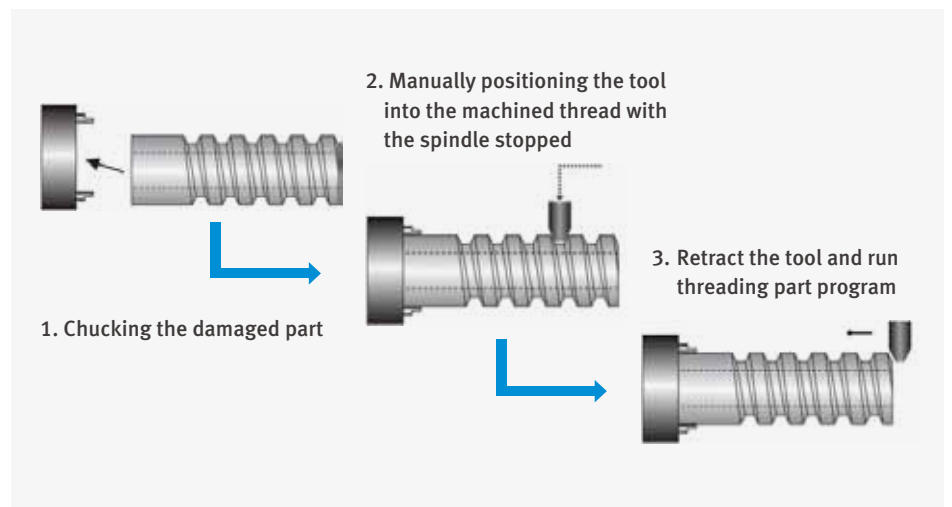
Arbitrary speed threading option

This function allows users to control spindle speed in order to set it at an ideal machining condition to keep the best thread quality.



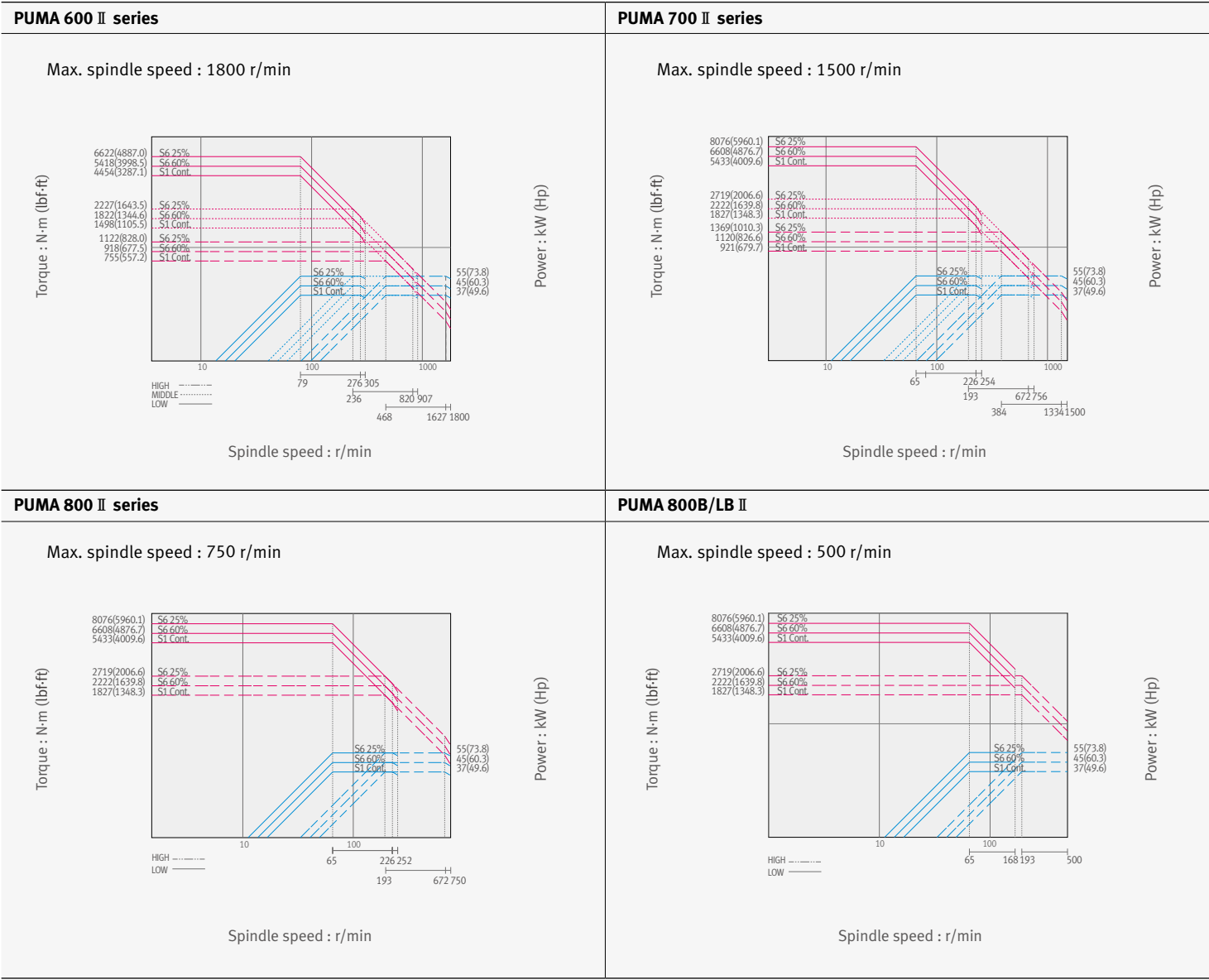
Re-machining function * Available when selecting "Arbitrary speed threading" option

This function allows users to re-machine damaged threads by using the existing program.

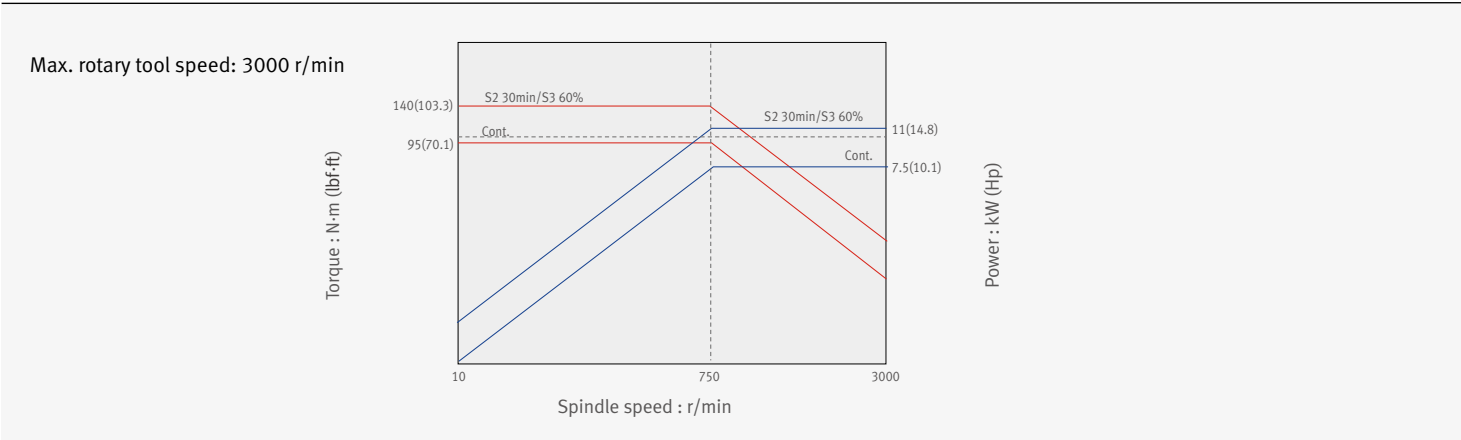


Power-Torque diagram

Spindle(FAUNC)

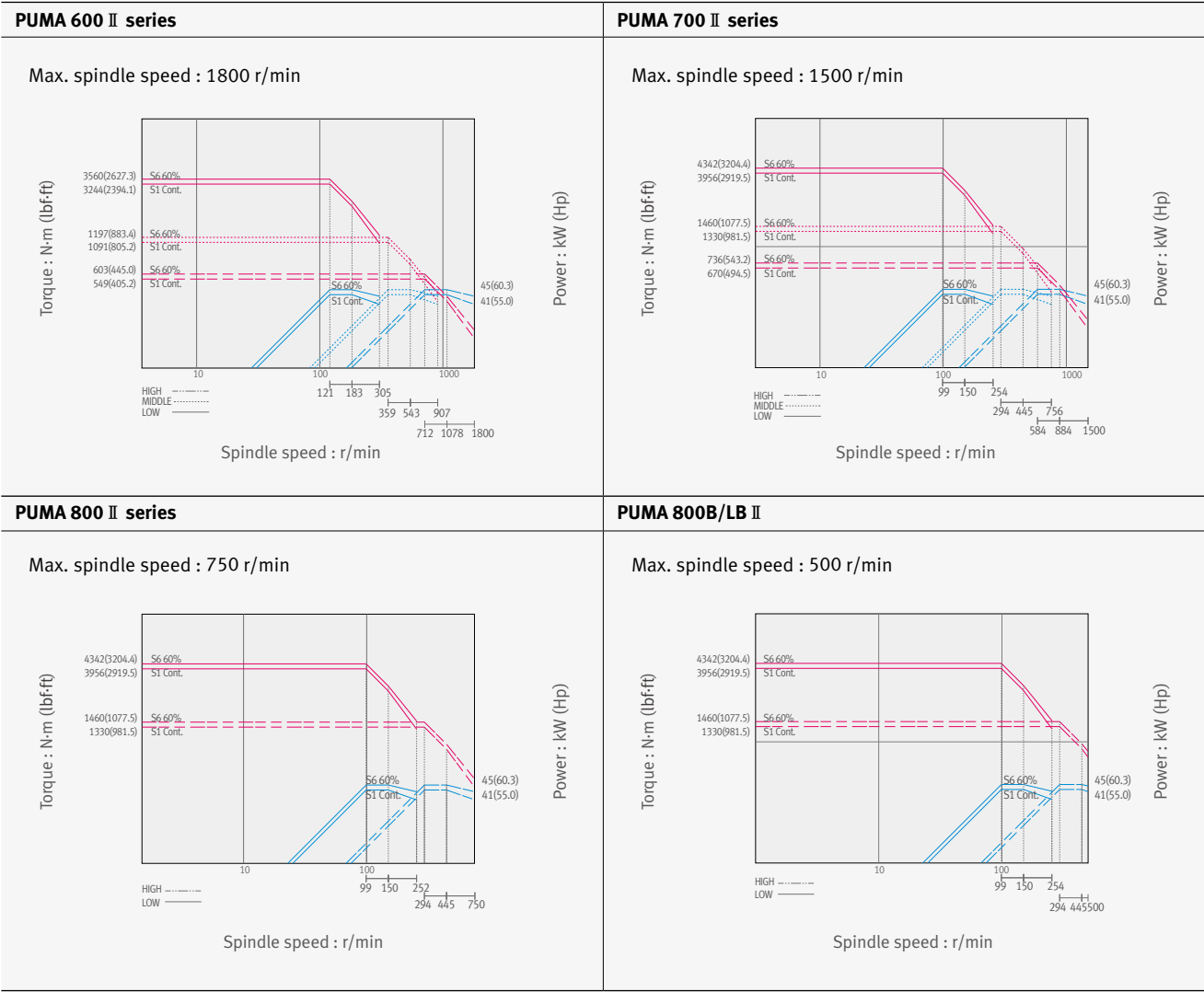


Rotary tool

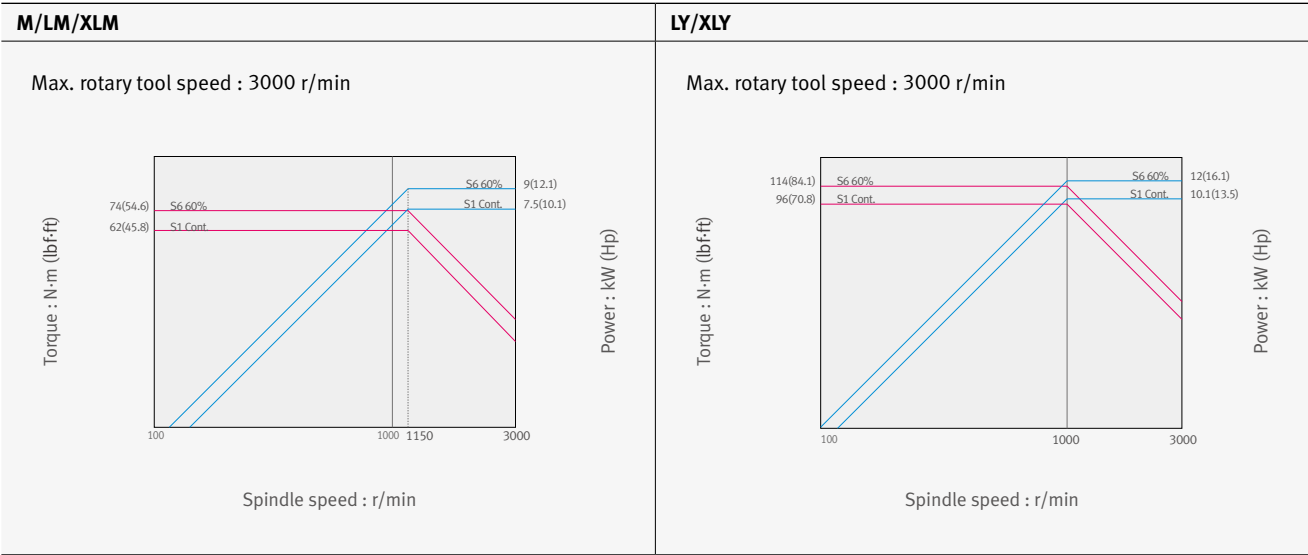


Power-Torque diagram

Spindle(SIEMENS)



Rotary tool



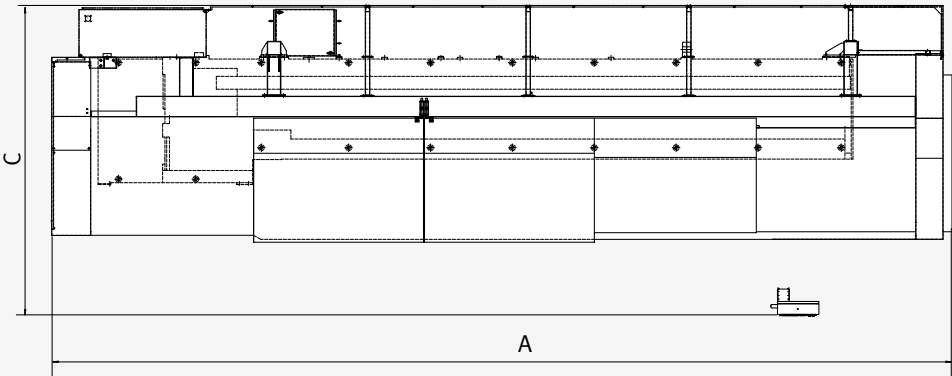
PUMA 600 II series (FAUNC) Max. spindle speed : 1800 r/min Torque : N·m (lbf·ft) Power : kW (Hp) Spindle speed : r/min	PUMA 700 II series (FAUNC) Max. spindle speed : 1500 r/min Torque : N·m (lbf·ft) Power : kW (Hp) Spindle speed : r/min
PUMA 800 II series (FAUNC) Max. spindle speed : 750 r/min Torque : N·m (lbf·ft) Power : kW (Hp) Spindle speed : r/min	PUMA 800B/LB II (FAUNC) Max. spindle speed : 500 r/min Torque : N·m (lbf·ft) Power : kW (Hp) Spindle speed : r/min
PUMA 600 II series (SIEMENS) Max. spindle speed : 1800 r/min Torque : N·m (lbf·ft) Power : kW (Hp) Spindle speed : r/min	PUMA 700 II series (SIEMENS) Max. spindle speed : 1500 r/min Torque : N·m (lbf·ft) Power : kW (Hp) Spindle speed : r/min
PUMA 800 II series (SIEMENS) Max. spindle speed : 750 r/min Torque : N·m (lbf·ft) Power : kW (Hp) Spindle speed : r/min	PUMA 800B/LB II (SIEMENS) Max. spindle speed : 500 r/min Torque : N·m (lbf·ft) Power : kW (Hp) Spindle speed : r/min

External dimensions

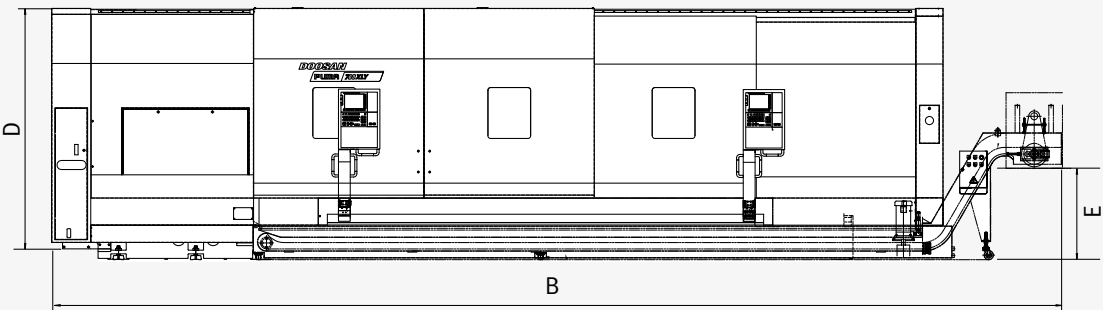
PUMA 600/700/800 II series

Unit : mm (inch)

Top view



Front view



Unit : mm (inch)

Model	A (Length)	B* (Length with chip conveyor)	C (Width)	D (Height)	E
PUMA 600/700/800 II [M]	5760 (226.8)	6911 (272.1)	3145 (123.8)	2780 (109.4)	1020 (40.2)
PUMA 600L/700L/800L II [M]	7360 (289.8)	8510 (335.0)	2770 (109.1)	2590 (102.0)	1020 (40.2)
PUMA 600LY/700LY/800LY II	7430 (292.5)	8592 (338.3)	3090 (121.7)	2770 (109.1)	1005 (39.6)
PUMA 600XL/700XL/800XL II [M]	9860 (388.2)	11010 (433.5)	3090 (121.7)	2770 (109.1)	1020 (40.2)
PUMA 600XLY/700XLY/800XLY II	9898 (389.7)	11112 (437.5)	3090 (121.7)	2770 (109.1)	1005 (39.6)
PUMA 800B II	5760 (526.8)	6911 (272.1)	3145 (123.8)	2780 (109.4)	1020 (40.2)
PUMA 800LB II	7360 (289.8)	8510 (355.0)	2770 (109.1)	2590 (102.0)	1020 (40.2)

★ 500mm of a space is required to the right of the machine in order to install and remove chip conveyor.

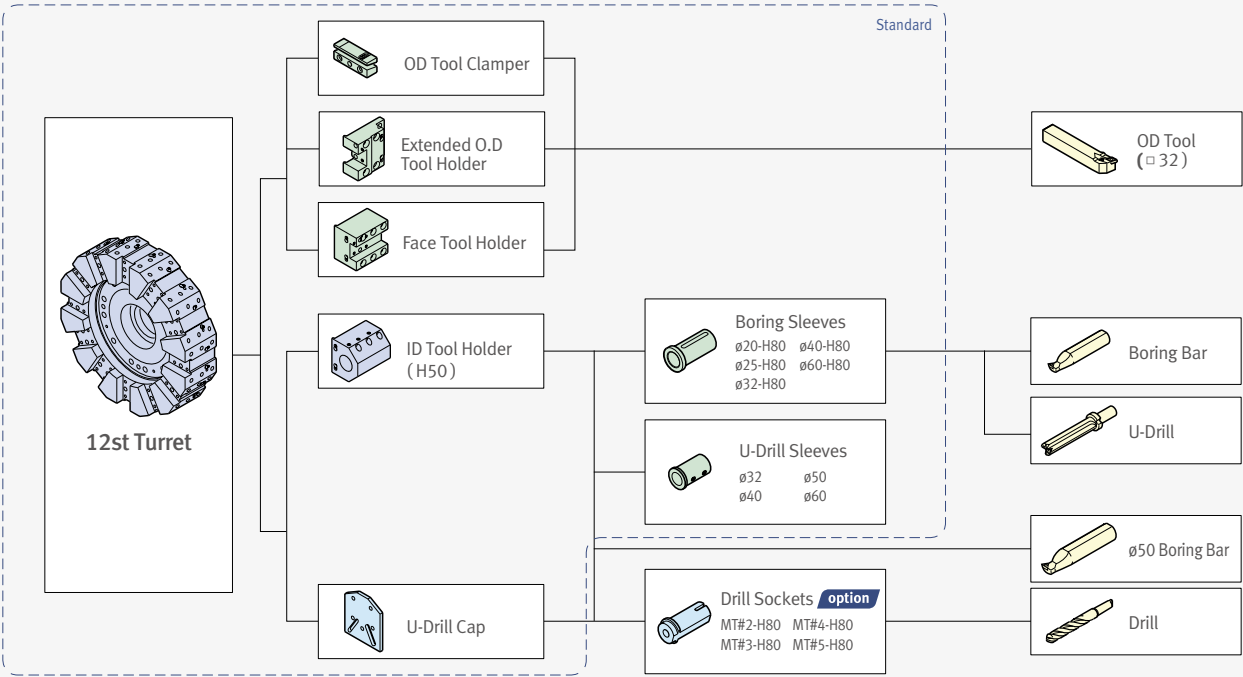
* Machine foundation : Anchoring is recommended to maintain accuracy over a long period of time, The anchor bolts and other related parts of foundation work are supplied as standard items. Please consult with Doosan and sales technicians regarding ground and operating conditions.

* Some peripheral equipment can be placed in other places

Tooling system

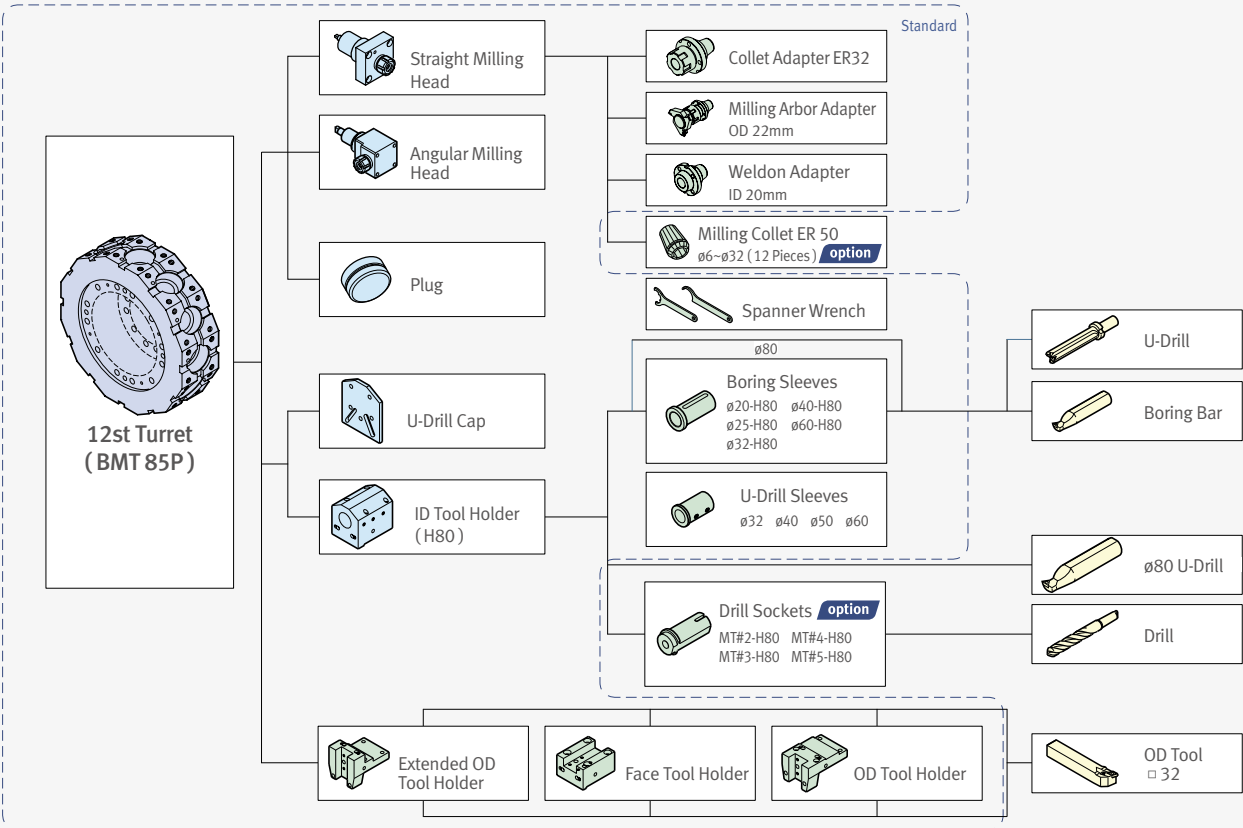
PUMA 600/700/800 II [L/XL], PUMA 800B/LB II

Unit : mm (inch)



PUMA 600M/700M/800M II [LM/LY/XLM/XLY]

Unit : mm (inch)

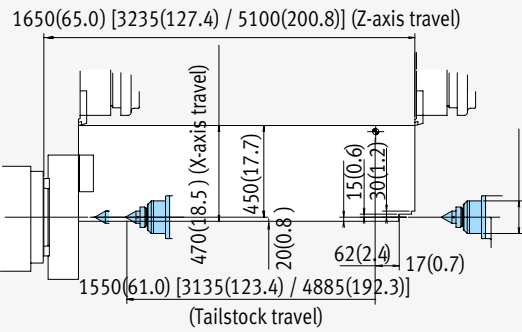


Working Range

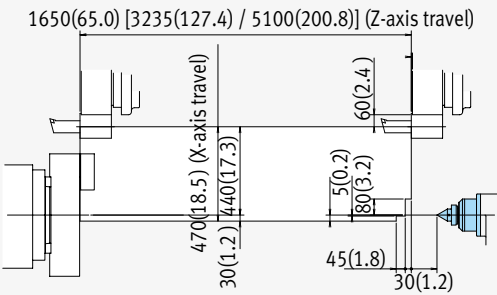
PUMA 600/700/800 II [L/XL], PUMA 800B II [LB]

Unit : mm (inch)

OD Tool Holder



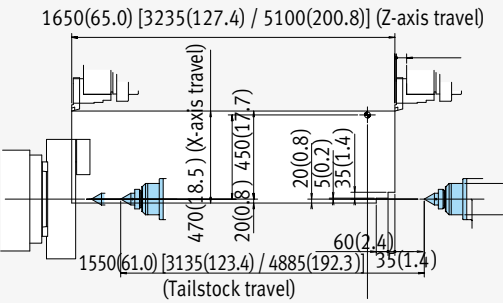
ID Tool holder



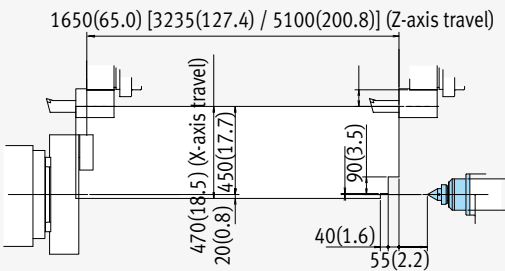
PUMA 600M/700M/800M II [LM/XLM]

Unit : mm (inch)

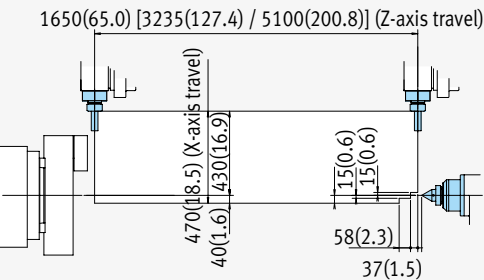
OD Tool Holder



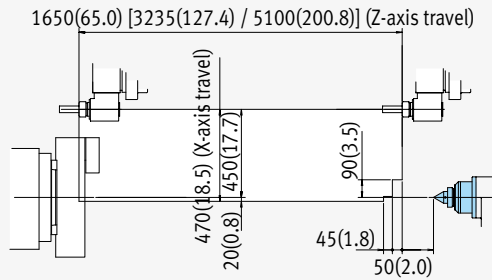
ID Tool Holder



Straight Milling Unit



Angular Milling Unit

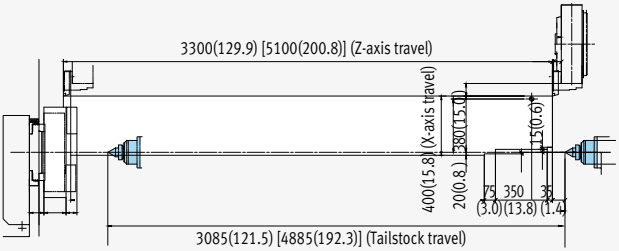


Working Range

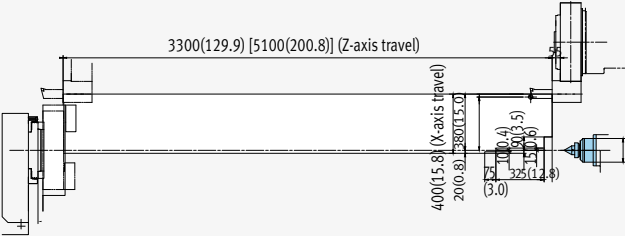
PUMA 600LY/700LY/800LY II [XLY]

Unit : mm (inch)

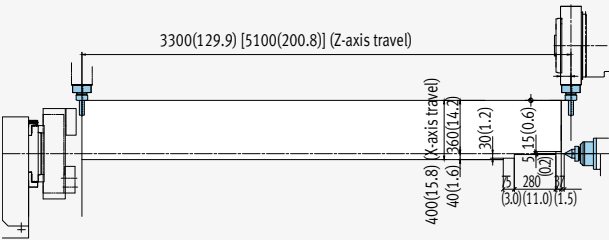
OD Tool Holder



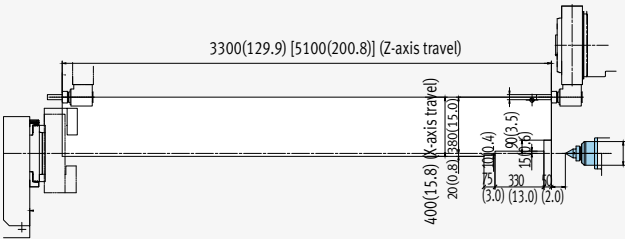
ID Tool Holder



Straight Milling Unit



Angular Milling Unit



Machine specifications



Description			Unit	PUMA 600 II [L/XL]	PUMA 600M II [LM/XLM]	PUMA 600LY II [XLY]
Capacity	Swing over bed		mm(inch)	1030(40.6) [1000(39.4)/1140(44.9)]		1140(44.9)
	Swing over saddle		mm(inch)	800(31.5) [800(31.5)/1000(39.4)]		1000(39.4)
	Recom. turning diameter		mm(inch)	600(23.6)		700(27.6)
	Max. turning diameter		mm(inch)	900(35.4)		750(29.5)
	Max. turning length		mm(inch)	1600(63) [3200(126)/5050(199)]		3250(128) [5050(199)]
	Chuck size		inch	18		
	Bar working diameter		mm(inch)	117(4.6)		
Travels	Travel distance	X-axis	mm(inch)	470(18.5)		400(15.7)
		Y-axis	mm(inch)	-		200 (7.9)
		Z-axis	mm(inch)	1650(65) [3235(127)/5100(201)]		3300(130) [5100(201)]
Feedrates	Rapid traverse rate	X-axis	m/min(ipm)	12(472.4)		
		Y-axis	m/min(ipm)	-		6(236.2)
		Z-axis	m/min(ipm)	16(630.0) [10(393.7)/10(393.7)]		10(393.7)
Main Spindle	Max. spindle speed		r/min	1800		
	Main spindle motor power	FANUC (S6 25% / S6 60% / S1 Cont.)	kW(Hp)	55/45/37(73.8/60.3/49.6) {75/60(100.1/80.5) (S3 60% / S1 Cont.)}* 45/41 {93/74}* (60.3/55.0 {124.7/99.2}) (S6 60% / S1 Cont.)		
		SIEMENS (S6 60% / S1 Cont.)				
	Max. spindle torque	FANUC	N·m(lbf·ft)	6622 {9030}* (4887.0{6664.1})		
		SIEMENS		3560 {8584}* (2627.3 {6335.0})		
	Spindle nose		ASA	A2-15		
	Spindle bearing diameter (Front)		mm(inch)	200(7.9)		
	Spindle through hole diameter		mm(inch)	152(6.0)		
	Min. spindle indexing angle (C-axis)		deg	-	0.001	
Turret	No. of tool stations		ea	12		
	OD tool size		mm(inch)	32 x 32 (1.3 x 1.3)		
	Max. boring bar size		mm(inch)	80 (3.1)		
	Turret indexing time (1 station swivel)		s	0.25		
	Max. rotary tool speed		r/min	-	3000	
	Rotary tool motor power	FANUC (30min)	kW(hp)	-	11(14.8)	
		SIEMENS (S6 60%)	-	-	9(12.1)	12(16.1)
Tailstock	Tailstock travel		mm(inch)	1550(61) [3135(123)/4885(192)]		3085(121) [4885(192)]
	Quill diameter		mm(inch)	160(6.3) [160(6.3)/180(7.1)]		180(7.1)
	Quill travel		mm(inch)	150(5.9)		150(5.9)
	Quill bore taper		MT	#6 {#6(Dead)}*		
Power Source	Electric power supply (rated capacity)		kVA	64.44	68.60	78
Machine Dimensions	Length		mm(inch)	5760(226.8) [7360(289.8)/9860(388.2)]		7430(292.5) [9898(389.7)]
	Width		mm(inch)	3145(123.8) [2770(109.1)/3090(121.7)]		3090(121.7)
	Height		mm(inch)	2780(109.4) [2590(102.0)/2770(109.1)]		2770(109.1)
	Weight		kg(lb)	16300(35953) [21800(48060)/25600(56438)]	16500(36376) [22000(48502)/25800(56879)]	23000(50706) [26000(57320)]
Control	NC system		-	DOOSAN Fanuc i Plus / SIEMENS S828D		

*{ } : Option

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Description			Unit	PUMA 700 II [L/XL]	PUMA 700M II [LM/XLM]	PUMA 700LY II [XLY]	PUMA 800 II [L/XL]	PUMA 800M II [LM/XLM]	PUMA 800LY II [XLY]	PUMA 800B II [LB]
Capacity	Swing over bed		mm (inch)	1030(40.6) [1000(39.4)/1140(44.9)]		1140(44.9)	1030(40.6) [1000(39.4)/1140(44.9)]		1140(44.9)	1030(40.6) [1000(39.4)]
	Swing over saddle		mm (inch)	800(31.5) [800(31.5)/1000(39.4)]		1000(39.4)	800(31.5) [800(31.5)/1000(39.4)]		1000(39.4)	800(31.5)
	Recom. turning diameter		mm (inch)	700(27.6)			800(31.5)		700(27.6)	800(31.5)
	Max. turning diameter		mm (inch)	900(35.4)		750(29.5)	900(35.4)		750(29.5)	900(35.4)
	Max. turning length		mm (inch)	1600(63) [3200(126)/5050(199)]		3250(128) [5050(199)]	1600(63) [3200(126)/5050(199)]		3250(128) [5050(199)]	1600(63) [3200(126)]
	Chuck size		inch	24			32			Order made
	Bar working diameter		mm (inch)	164(6.5)			Depending on chuck spec.			
Travels	Travel distance	X-axis	mm (inch)	470(18.5)		400(15.7)	470(18.5)		400(15.7)	470(18.5)
		Y-axis	mm (inch)	-		200 (7.9)	-		200 (7.9)	-
		Z-axis	mm (inch)	1650(65) [3235(127)/5100(201)]		3300(130) [5100(201)]	1650(65) [3235(127)/5100(201)]		3300(130) [5100(201)]	1650(65) [3235(127)]
Feedrates	Rapid traverse rate	X-axis	m/min (ipm)	12(472.4)			12(472.4)			
		Y-axis	m/min (ipm)	-		6(236.2)	-		6(236.2)	-
		Z-axis	m/min (ipm)	16(630.0) [10(393.7)/10(393.7)]		10(393.7)	16(630.0) [10(393.7)/10(393.7)]		10(393.7)	16(630.0) [10(393.7)]
Main Spindle	Max. spindle speed		r/min	1500			750			500
	Main spindle motor power	FANUC (S6 25%/ S6 60% / S1 Cont.)	kW (Hp)	55/45/37(73.8/60.3/49.6) {75/60(100.1/80.5) (S3 60% / S1 Cont.)}* 45/41 {93/74}* (60.3/55.0 {124.7/99.2})			55/45/37(73.8/60.3/49.6) 75/60(100.1/80.5) (S3 60% / S1 Cont.)}* 45/41 {93/74}* (60.3/55.0 {124.7/99.2}) (S6 60% / S1 Cont.)			
		SIEMENS (S6 60% / S1 Cont.)								
	Max. spindle torque	FANUC	N-m (lbf-ft)	8076(5960.1) {11013(8127.6)}*			8076(5960.1) {11013(8127.6)}*			
		SIEMENS		4342 {10470}* (3204.4 {7726.9})			4342 {10470}* (3204.4 {7726.9})			
	Spindle nose		ASA	A1-15			A1-20			ISO 702-4 NO.20
	Spindle bearing diameter (Front)		mm (inch)	240(9.4)			400(15.7)			440(17.3)
	Spindle through hole diameter		mm (inch)	181(7.1)			320(12.6)			375(14.8)
	Min. spindle indexing angle (C-axis)		deg	-	0.001		-	0.001 {1}	0.001	-
Turret	No. of tool stations		ea	12			12			
	OD tool size		mm (inch)	32 x 32 (1.3 x 1.3)			32 x 32 (1.3 x 1.3)			
	Max. boring bar size		mm (inch)	80 (3.1)			80 (3.1)			
	Turret indexing time (1 station swivel)		s	0.25			0.25			
	Max. rotary tool speed		r/min	-	3000		-	3000		-
	Rotary tool motor power	FANUC (30min)	kW (hp)	-	11(14.8)		-	11(14.8)		-
		SIEMENS (S6 60%)	-	-	9(12.1)	12(16.1)	-	9(12.1)	12(16.1)	-
Tailstock	Tailstock travel		mm (inch)	1550(61) [3135(123)/4885(192)]		3085(121) [4885(192)]	1550(61) [3135(123)/4885(192)]		3085(121) [4885(192)]	1550(61) [3135(123)]
	Quill diameter		mm (inch)	160(6.3) [160(6.3)/180(7.1)]		180(7.1)	160(6.3) [160(6.3)/180(7.1)]		180(7.1)	160(6.3)
	Quill travel		mm (inch)	150(5.9)		150(5.9)	150(5.9)			150(5.9)
	Quill bore taper		MT	#6 {#6(Dead)}*			#6 {#6(Dead)}*			
Power Source	Electric power supply (rated capacity)		kVA	64.44	68.6	78	64.44	68.6	78	64.44
Machine Dimensions	Length		mm (inch)	5760(226.8) [7360(289.8)/9860(388.2)]		7430(292.5) [9898(389.7)]	5760(226.8) [7360(289.8)/9860(388.2)]		7430(292.5) [9898(389.7)]	5760(226.8) [7360(289.8)]
	Width		mm (inch)	3145(123.8) [2770(109.1)/3090(121.7)]		3090(121.7)	3145(123.8) [2770(109.1)/3090(121.7)]		3090(121.7)	3145(123.8) [2770(109.1)]
	Height		mm (inch)	2780(109.4) [2590(102.0)/2770(109.1)]		2770(109.1)	2780(109.4) [2590(102.0)/2770(109.1)]		2770(109.1)	2780(109.4) [2590(102.0)]
	Weight		kg(lb)	16300(35953) [21800(48060)/25800(56879)]	16500(36376) [21800(48060)/26000(57320)]	23000(50706) [26000(57320)]	16300(35953) [21800(48060)/25800(56879)]	16500(36376) [22000(48502)/26000(57320)]	23000(50706) [26000(57320)]	16300(35953) [21800(48060)]
Control	NC system		-							

NC unit specifications

● Standard ○ Option X N/A

FANUC

No.	Division	Item	Spec.	DOOSAN Fanuc i Plus		
				2-axis	M	Y
1	Controlled axis	Controlled axes		2 (X,Z)	3 (X,Z,C)	4 (X,Z,C,Y)
2		Simultaneously controlled axes		2 axes	3 axes	4 axes
3		Cs contouring control		X	●	●
4		Torque control		●	●	●
5		HRV2 control		●	●	●
6		Inch/metric conversion		●	●	●
7		Stored stroke check 1		●	●	●
8		Stored stroke check 2,3		●	●	●
9		Stored limit check before move		●	●	●
10		Chamfering on/off		●	●	●
11		Unexpected disturbance torque detection function		●	●	●
12		Position switch		●	●	●
13	Operation	DNC operation	Included in RS232C interface	●	●	●
14		DNC operation with memory card		●	●	●
15		Tool retract and recover		○	○	○
16		Wrong operation prevention		●	●	●
17		Dry run		●	●	●
18		Single block		●	●	●
19		Reference position shift		●	●	●
20		Handle interruption		○	○	○
21		Incremental feed	x1,x10,x100	●	●	●
22		Manual handle retrace		○	○	○
23		Active block cancel		○	○	○
24	Interpolation functions	Nano interpolation		●	●	●
25		Linear interpolation		●	●	●
26		Circular interpolation		●	●	●
27		Polar coordinate interpolation		X	●	●
28		Cylindrical interpolation		X	●	●
29		Helical interpolation		X	○	●
30		Thread cutting, synchronous cutting		●	●	●
31		Multi threading		●	●	●
32		Thread cutting retract		●	●	●
33		Continuous threading		●	●	●
34		Variable lead thread cutting		●	●	●
35		Circular thread cutting		○	○	○
36		Polygon machining with two spindles		X	●	●
37		High-speed skip	Input signal is 8 points.	○	○	○
38		2nd reference position return	G30	●	●	●
39		3rd/4th reference position return		●	●	●
40	Feed function	Override cancel		●	●	●
41		AI contour control I		○	○	●
42		AI contour control II		○	○	○
43	Program input	Rapid traverse block overlap		●	●	●
44		Optional block skip	9 pieces	●	●	●
45		Absolute/incremental programming	Combined use in the same block	●	●	●
47		Diameter/Radius programming		●	●	●
48		Automatic coordinate system setting		●	●	●
49		Workpiece coordinate system	G52 - G59	●	●	●
50		Workpiece coordinate system preset		●	●	●
51		Addition of workpiece coordinate system	48 pairs	X	X	X
52		Direct drawing dimension programming		●	●	●
53		G code system	A	●	●	●
54		G code system	B/C	●	●	●
55		Chamfering/Corner R		●	●	●

No.	ITEM	Spec.	S828D
1	Axes control	Controlled axes	2 axis
2		R: Milling spindle	M-type
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	Interpolation & Feed function	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)
37			CP-Comfort
38	Spindle & M code function	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 function	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)
53			PPU.4 for S828D SW281 (S/MS/Y/SY-type)
54		Tool length compensation	●
55		Operation with tool management	●
56		Tool list	●
57		Tool offset selection via T and D numbers	●
58		Replacement tools for tool management	Include tool load monitoring option
59		Monitoring of tool life and workpiece count	●
60		Manual measurement of tool offset	●
61		Magazine list	●
62		Loading and unloading of tools	●
63	Programming & Editing function	Number of subroutine passes ≤ 9999	●
64		Number of levels for skip blocks 1	●
65		Number of levels for skip blocks 8	○
66		Polar coordinates	●
67		1/2/3-point contours	●
68		Dimensions metric/inch, changeover manually or via program	●

CNC Specifications

● Standard ○ Optional X Not applicable

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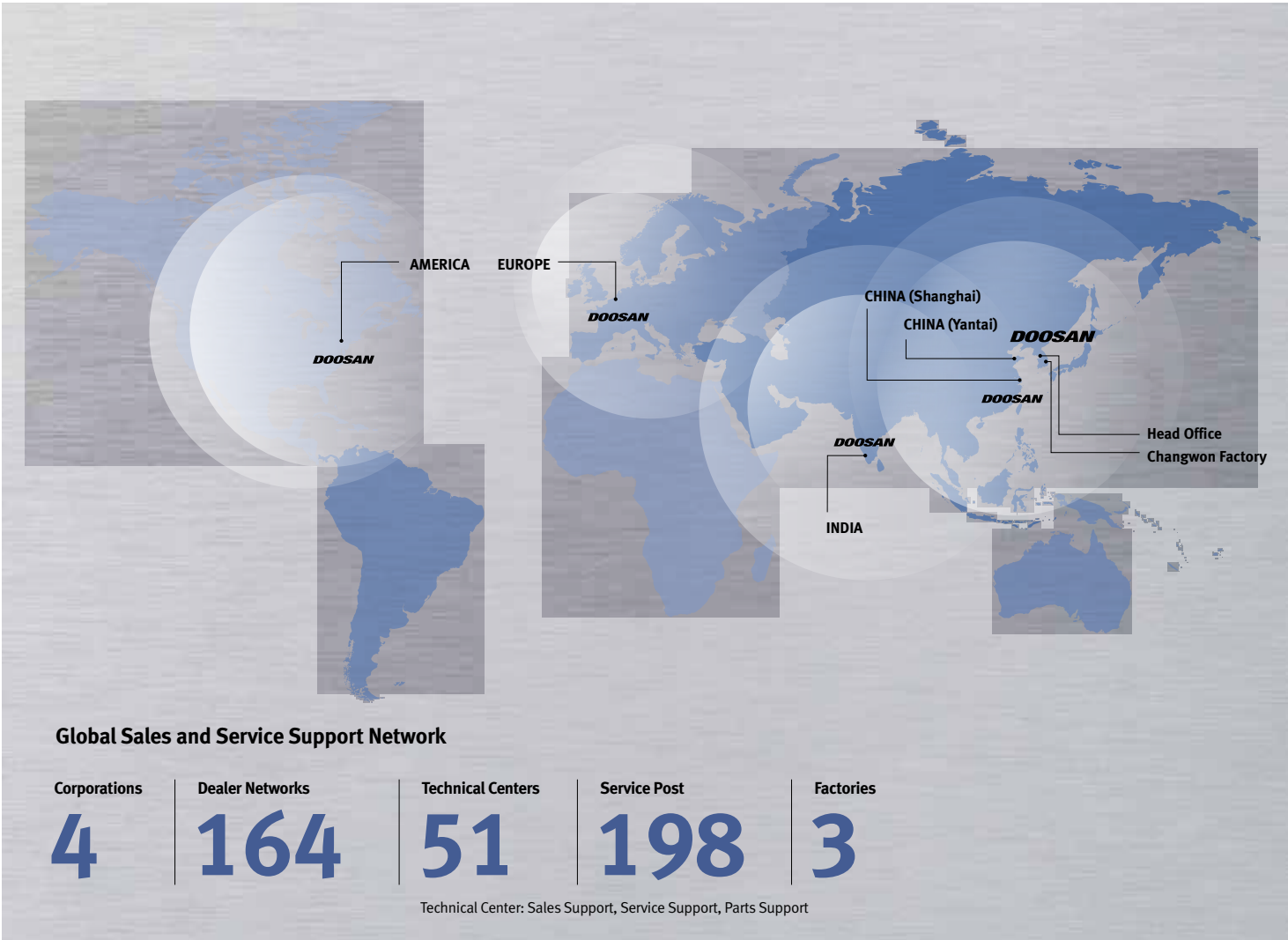
Customer Support Service

No.	ITEM	Spec.	S828D
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.



Customer Support Service

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



Supplying Parts

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



Field Services

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



Technical Support

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



Training

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

Major Specifications

PUMA 600/700/800 II series



Description	Unit	PUMA 600 II series [LY/LXY]	PUMA 700 II series [LY/LXY]	PUMA 800 II series [LY/LXY]	PUMA 800B II [LB]
Max. turning diameter	mm (inch)	900 (35.4) [750 (29.5)]			900 (35.4)
Max. turning length (Std. / L / XL)	mm (inch)	1600 / 3200 / 5050 (63 / 126 / 199) [3250 / 5050 (128 / 199)]			1600 (63) [3200 (126)]
Chuck size	inch	18	24	32	Order made
Spindle through hole diameter	mm (inch)	152 (6.0)	181 (7.1)	320 (12.6)	375 (14.8)
Max. spindle speed	r/min	1800	1500	750	500
Max. spindle power (S6 25% / S6 60% / S1 Cont.)	kW (Hp)	55/45/37(73.8/60.3/49.6) {75/60(100.1/80.5) (S3 60% / S1 Cont.)}*}			

*{}: Option

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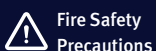
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* For more details, please contact Doosan Machine Tools.

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

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**Fire Safety
Precautions**

There is a high risk 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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