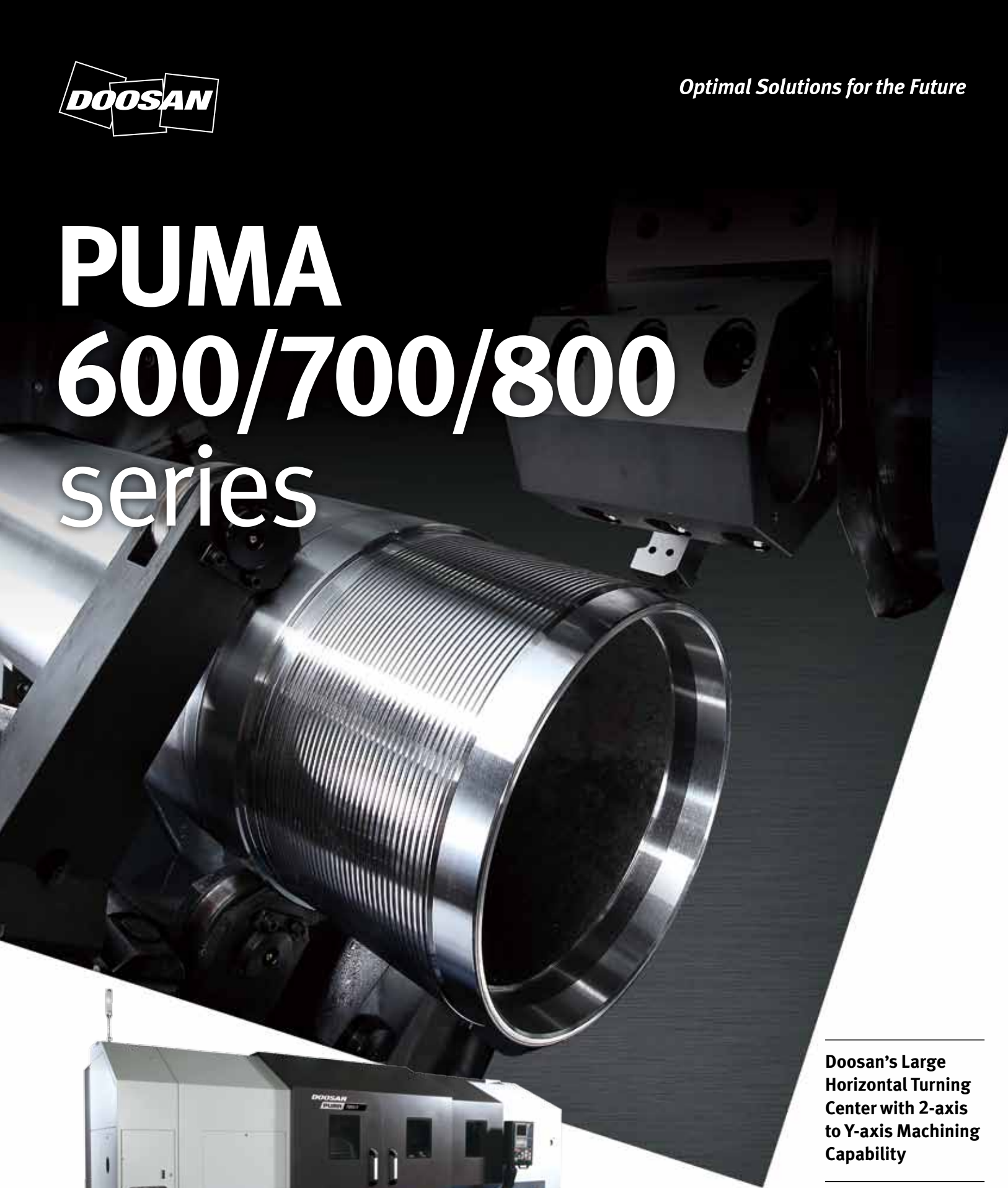
DOOSAN

Optimal Solutions for the Future

PUMA 600/700/800 series



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

PUMA 600 series
PUMA 700 series
PUMA 800 series

ver. EN 150923 SU

Basic Information

Basic Structure
Cutting
Performance

Detailed Information

Options
Applications
Capacity Diagram
Specifications

Customer Support Service

PUMA 600/700/800 series

PUMA 600/700/800 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 (±100mm) 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 series is perfect for machining large work pieces.

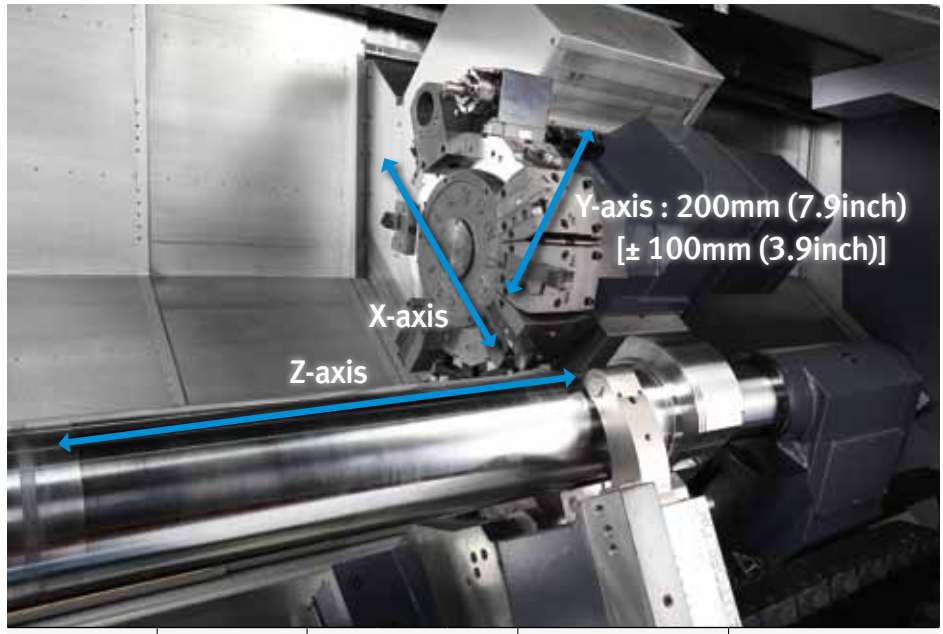
- With 5m maximum turning length, Ø900mm maximum turning diameter, and 11,004N·m of Torque, machine is ideal for heavy-duty cutting of large parts used in different industries.

Machining Solution for wide range of pipes.

- Ø375 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.

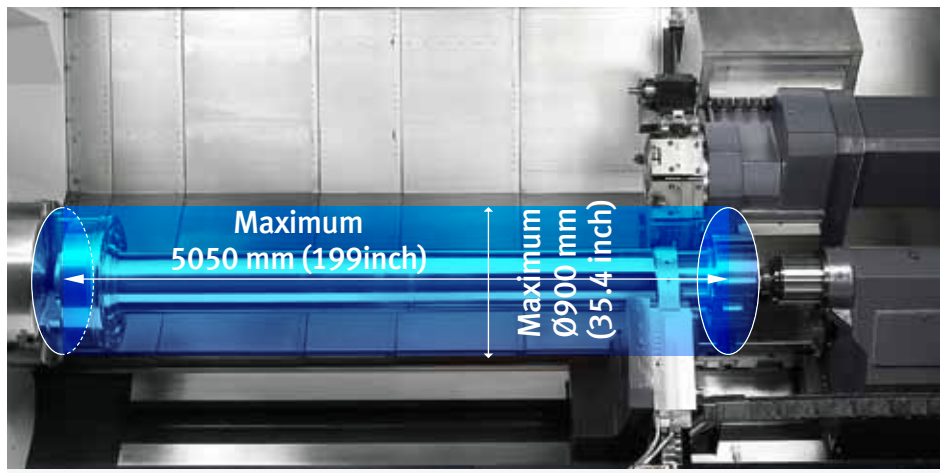


Series	Chuck* Size (inch)	1600 mm (63 inch)			3200 mm (126 inch)			5050 mm (199 inch)		
		2-axis	M	Y	2-axis	M	Y	2-axis	M	Y
PUMA 600	18	O	O	-	O	O	O	O	O	O
PUMA 700	24	O	O	-	O	O	O	O	O	O
PUMA 800	32	O	O	-	O	O	O	O	O	O
PUMA 800B	Order made	O	-	-	O	-	-	-	-	-

*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

ø900mm (35.4inch)

Max. turning length

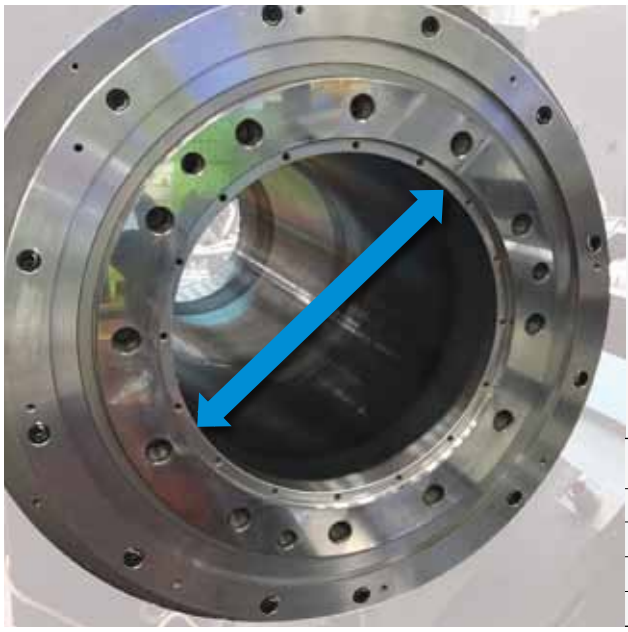
5050mm (199inch)

Unit: mm (inch)

	Model	Max. turning diameter	Max. turning length
2-axis	PUMA 600/700/800/800B	900 (35.4)	1600 (63)
	PUMA 600L/700L/800L/800LB		3200 (126)
	PUMA 600XL/700XL/800XL		5050 (199)
M	PUMA 600M/700M/800M		1600 (63)
	PUMA 600LM/700LM/800LM		3200 (126)
	PUMA 600XLM/700XLM/800XLM		5050 (199)
Y	PUMA 600LY/700LY/800LY	750 (29.5)	3250 (128)
	PUMA 600XLY/700XLY/800XLY		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	152 (6.0)
PUMA 700	181 (7.1)
PUMA 800	320 (12.6)
PUMA 800B	375 (14.8)

Spindle

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

Max. spindle speed

750r/min

Max. spindle power (30 min / Cont.)

45/37kW
(60.3/49.6 hp)

75/60kW option
(100.1/80.5 hp)

Max. spindle torque

6605N·m
(4871.6 lbf·ft)

11004N·m option
(8116.1 lbf·ft)

PUMA 800 series

Series	Max. spindle speed	Max. spindle power (30min/Cont.)	Max. spindle torque
PUMA 600	1800 r/min	45/37 kW (60.3/49.6 hp) 75/60 kW (100.1/80.5 hp) option	5419 N·m (3996.8 lbf·ft) 9025 N·m (6656.5 lbf·ft) option
PUMA 700	1500 r/min		6605 N·m (4871.6 lbf·ft) 11004 N·m (8116.1 lbf·ft) option
PUMA 800	750 r/min		
PUMA 800B	500 r/min		

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	160 (6.3)	150 (5.9)
PUMA 700/M/L/LM		
PUMA 800/M/L/LM		
PUMA 800B/LB	180 (7.1)	200 (7.9)
PUMA 600LY/XL/XLM/XLY		
PUMA 700LY/XL/XLM/XLY		
PUMA 800LY/XL/XLM/XLY		

* Tailstock travel of PUMA 600/700/800LY 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

12stations

M,Y Model

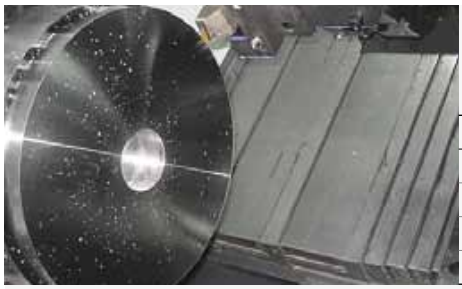
BMT85P

No. of tool stations

12stations

Cutting performance

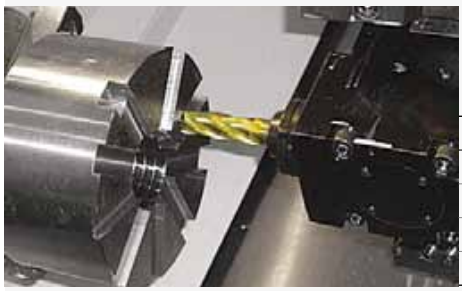
PUMA 600/700/800 series can perform excellent heavy-duty machining in many different ways such as ID/OD turning, end milling, tapping, and U-drilling, to maximize productivity.



O.D turning (Material diameter Ø 380 mm)	
Speed	230 m/min
Feed	0.6 mm/rev
Depth of cut	10 mm
Chip Removal rate	1418 cm^3/min

Tapping	
Cutting Tool	M33 x P3.5
Cutting speed	15 m/min
Feed	3.5 mm/rev

U-Drill (3-axis)	
Cutting Tool	Ø 30 mm
Spindle Load	2000 m/min
Feed	0.12 mm/rev
Chip Removal rate	171 cm^3/min



End mill (Low Speed)	
Cutting Tool	Ø 32 mm
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
Spindle Load	220 m/min
Feed	1000 mm/min
Chip Removal rate	175 cm^3/min

Helical End Milling	
Cutting Tool	Ø 25 mm
Spindle Load	240 m/min
Feed	800 mm/min
Chip Removal rate	100 cm^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

Division		Items			PUMA 600 series		PUMA 700 series		PUMA 800 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	Jaw	Soft Jaws			○	○	○	○	△	△	△
7		Hardened & ground hard jaws			○	○	○	○	△	△	△
8	Chucking option	Single pressure chucking			●	●	●	●	●	●	●
9		Dual pressure chucking			○	○	○	○	○	○	○
10		Chuck clamp confirmation			○	○	○	○	○	○	○
11	Steady rest*	Specification	Manual	Ø35 ~ Ø330 mm (Ø1.4 ~ Ø13.0 inch)	○	○	○	○	○	○	○
12				Ø300 ~ Ø450 mm (Ø11.8 ~ Ø17.7 inch)	○	○	○	○	○	○	○
13			Hydraulic or Prammable	Ø35 ~ Ø245 mm (SLU-4) (Ø1.4 ~ Ø9.6 inch)	○	○	○	○	○	○	○
14				Ø45 ~ Ø310 mm (SLU-5) (Ø1.8 ~ Ø12.2 inch)	○	○	○	○	○	○	○
15				Ø85 ~ Ø350 mm (SLU-5.1) (Ø3.3 ~ Ø13.8 inch)	○	○	○	○	○	○	○
16				Ø80 ~ Ø390 mm (K 5) (Ø3.1 ~ Ø15.4 inch)	△	△	△	△	△	△	△
17				Ø100 ~ Ø410 mm (K 5.1) (Ø3.9 ~ Ø16.1 inch)	△	△	△	△	△	△	△
18		Type	Single		○	○	○	○	○	○	○
19			Twin		○	○	○	○	○	○	○
20			Double		○	○	○	○	○	○	○
21	Tailstock	Programmable type			●	●	●	●	●	●	●
22		Live center			●	●	●	●	●	●	●
23		Built-in dead center			○	○	○	○	○	○	○
24	Coolant pump (60/50Hz)	4.5/3.0 bar			●	●	●	●	●	●	●
25		7/5, 10/7, 14.5/10, 28/19.5, 70/70 bar			○	○	○	○	○	○	○
26	Coolant options	Oil skimmer			○	○	○	○	○	○	○
27		Coolant chiller			○	○	○	○	○	○	○
28		Coolant pressure switch			○	○	○	○	○	○	○
29		Coolant level switch			○	○	○	○	○	○	○
30		Coolant gun			○	○	○	○	○	○	○
31	Chip disposal	Chip conveyor (Right side)			○	○	○	○	○	○	○
32		Chip bucket			○	○	○	○	○	○	○
33		Air blower for chuck			○	○	○	○	○	○	○
34		Mist collector interface (Duct only)			○	○	○	○	○	○	○
35		Integrated mist collector			○	○	○	○	○	○	○
36	Measurement & Automation	Tool setter	Manual		○	○	○	○	○	○	○
37			Automatic		○	○	○	○	X	X	X
38		Auto door			○	○	○	○	○	○	○
39	Others	Doosan Tool load monitoring system			○	○	○	○	○	○	○
40		Signal tower			○	○	○	○	○	○	○
41		Air gun			○	○	○	○	○	○	○
42		Automatic power off			○	○	○	○	○	○	○
43		Air unit for air chuck	Single		X	X	X	X	○	X	○
44			Twin		X	X	X	X	○	X	○

* Please contact DOOSAN to select detailed steady rest specifications

Peripheral equipments

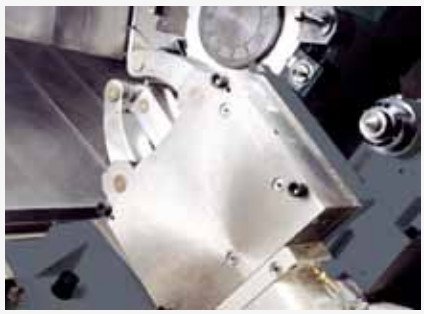
Long boring bar option

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

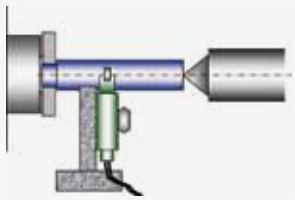
Twin chucking option

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

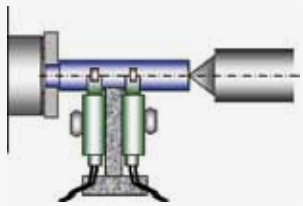
Steady rest option



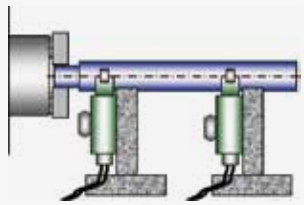
SINGLE



DOUBLE



TWIN



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

Hinged belt

Magnetic scraper

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.

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.

FANUC 32i

Fanuc CNC is tuned ideally to PUMA 600/700/800 series, in order to maximize productivity.

User-friendly operation panel

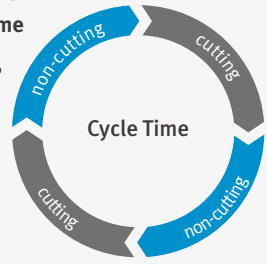
The newly designed operation panel groups all of the common buttons together to enhance operator's convenience. Also, 'QWERTY' keypad is applied as standard to improve convenience of users who are accustomed to PC keyboards.

- 10.4" Display
- USB & PCMCIA card (Std.)
- Qwerty type keyboard
- Easy to put button switch for attached option
- Ergonomic new design

Easy Operation Package

Increase Productivity

Reduced non-cutting time by 10%



Minimizes non-cutting time to further improve productivity.

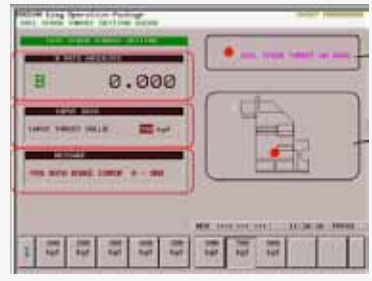
Operation rate

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.

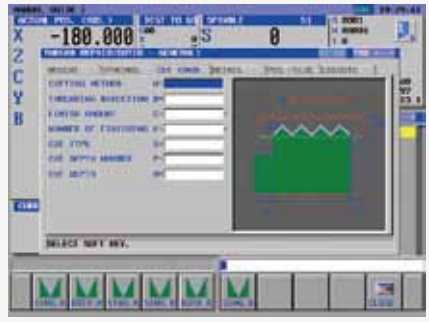
Stable threading performance

All PUMA 600/700/800 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.

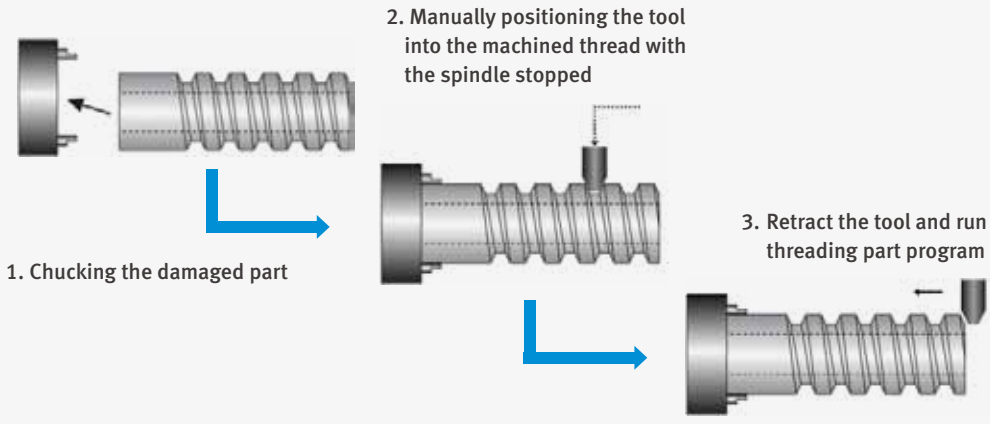
Threading repair function

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



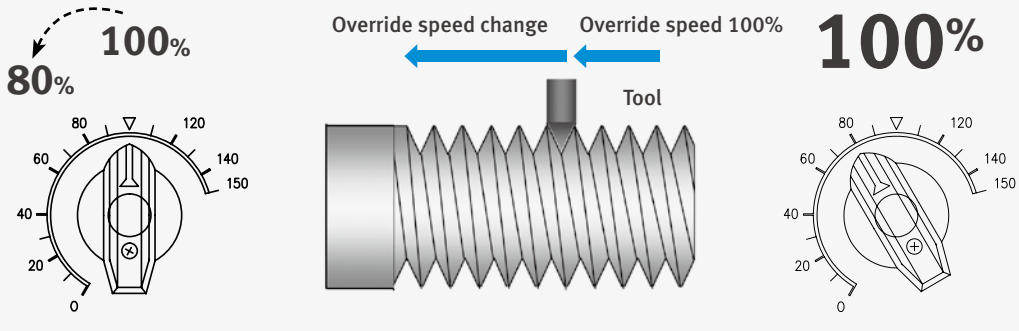
Re-machining function option

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



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.

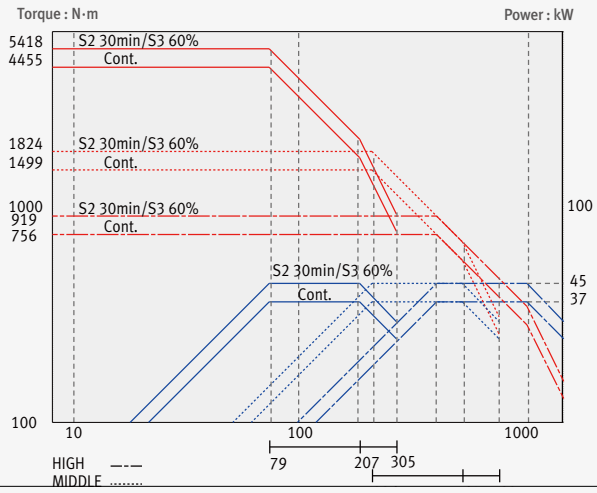


Power-Torque diagram

Spindle

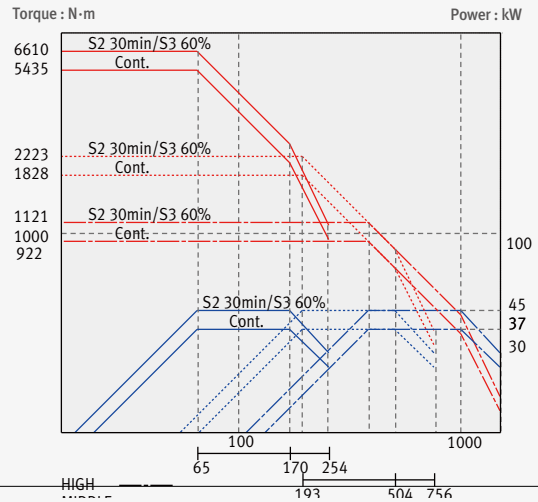
PUMA 600 series

Max. spindle speed: 1800 r/min



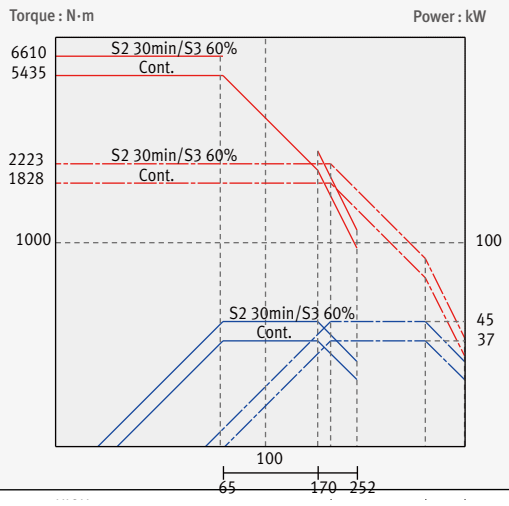
PUMA 700 series

Max. spindle speed: 1500 r/min



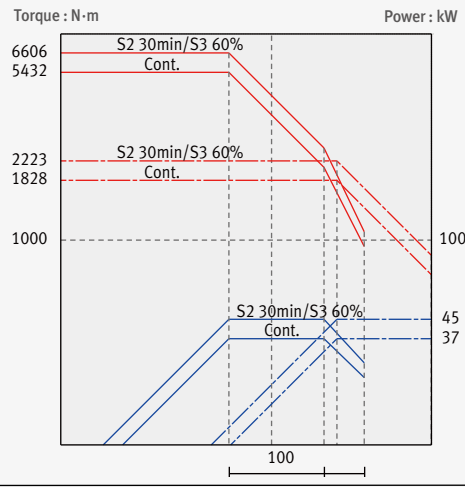
PUMA 800 series

Max. spindle speed: 750 r/min



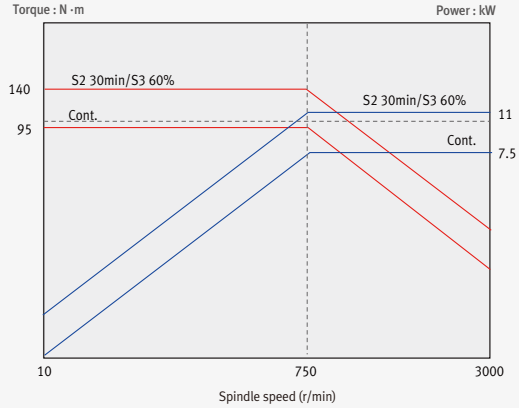
PUMA 800B/LB

Max. spindle speed: 500 r/min



Rotary tool

Max. rotary tool speed: 3000 r/min

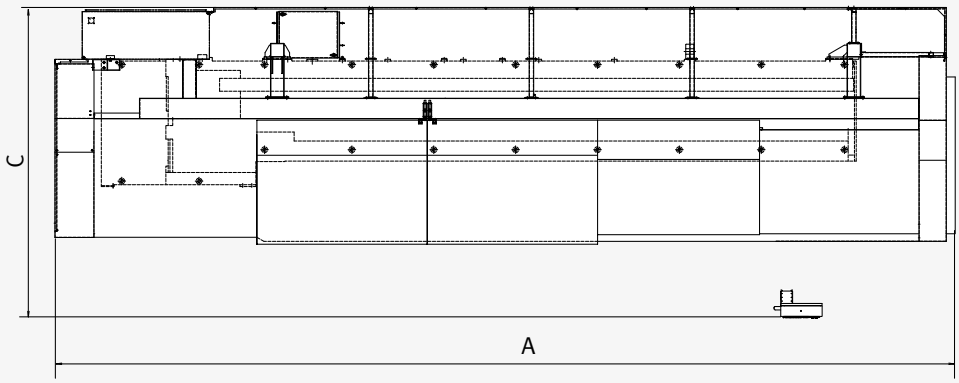


External dimensions

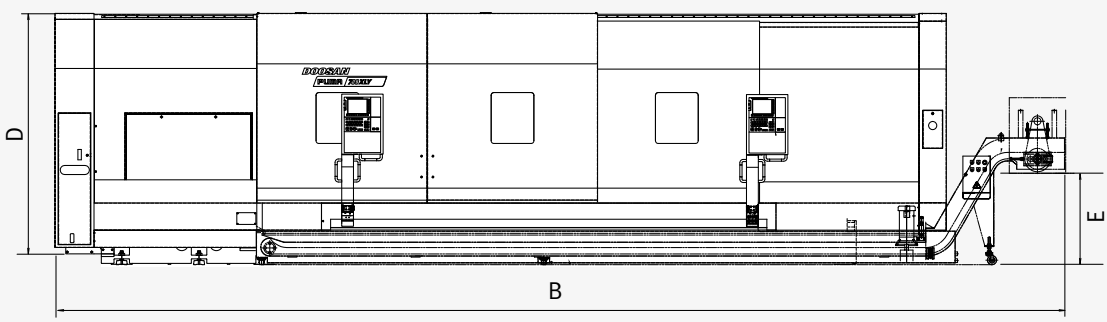
PUMA 600/700/800 series

Unit : mm (inch)

Top view



Front view



Unit : mm (inch)

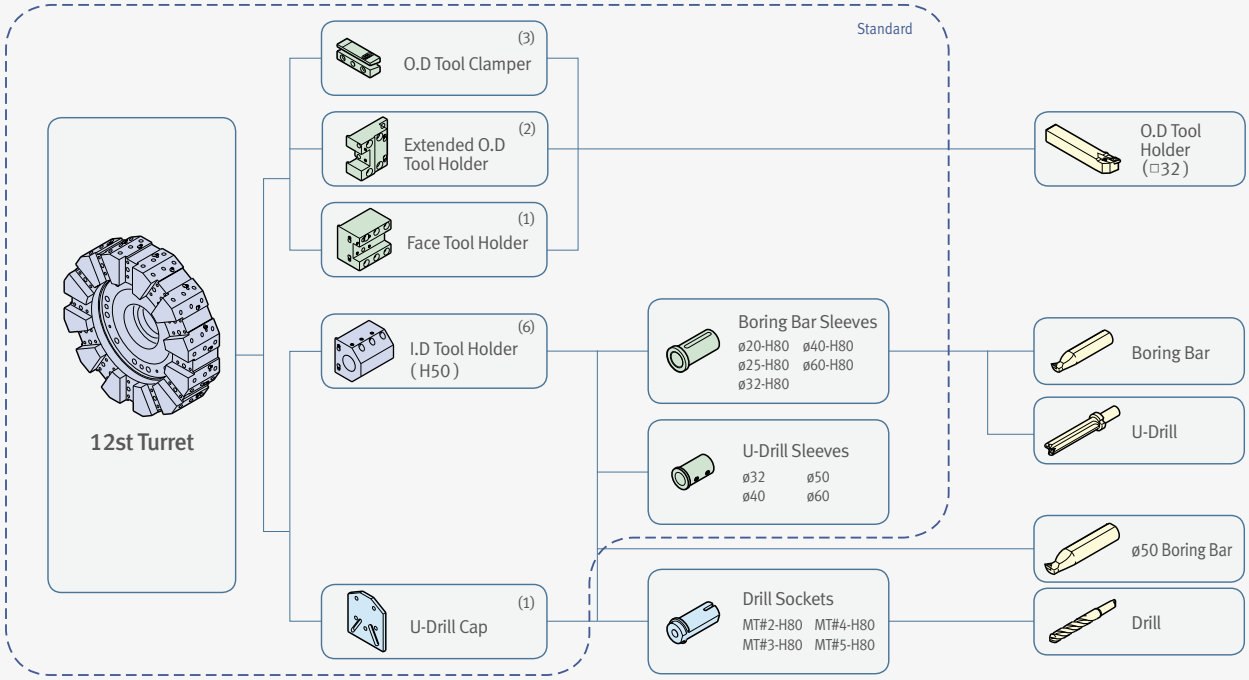
Model	A (Length)	B* (Length with chip conveyor)	C (Width)	D (Height)	E
PUMA 600/700/800 [M]	5760 (226.8)	6911 (272.1)	3145 (123.8)	2780 (109.4)	1020 (40.2)
PUMA 600L/700L/800L [M]	7360 (289.8)	8510 (355.0)	2770 (109.1)	2590 (102.0)	1020 (40.2)
PUMA 600LY/700LY/800LY	7430 (292.5)	8592 (338.3)	3090 (121.7)	2770 (109.1)	1005 (39.6)
PUMA 600XL/700XL/800XL [M]	9860 (388.2)	11010 (433.5)	3090 (121.7)	2770 (109.1)	1020 (40.2)
PUMA600XLY/700XLY/800XLY	9898 (389.7)	11112 (437.5)	3090 (121.7)	2770 (109.1)	1005 (39.6)
PUMA 800B	5760 (526.8)	6911 (272.1)	3145 (123.8)	2780 (109.4)	1020 (40.2)
PUMA 800LB	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.

Tooling system

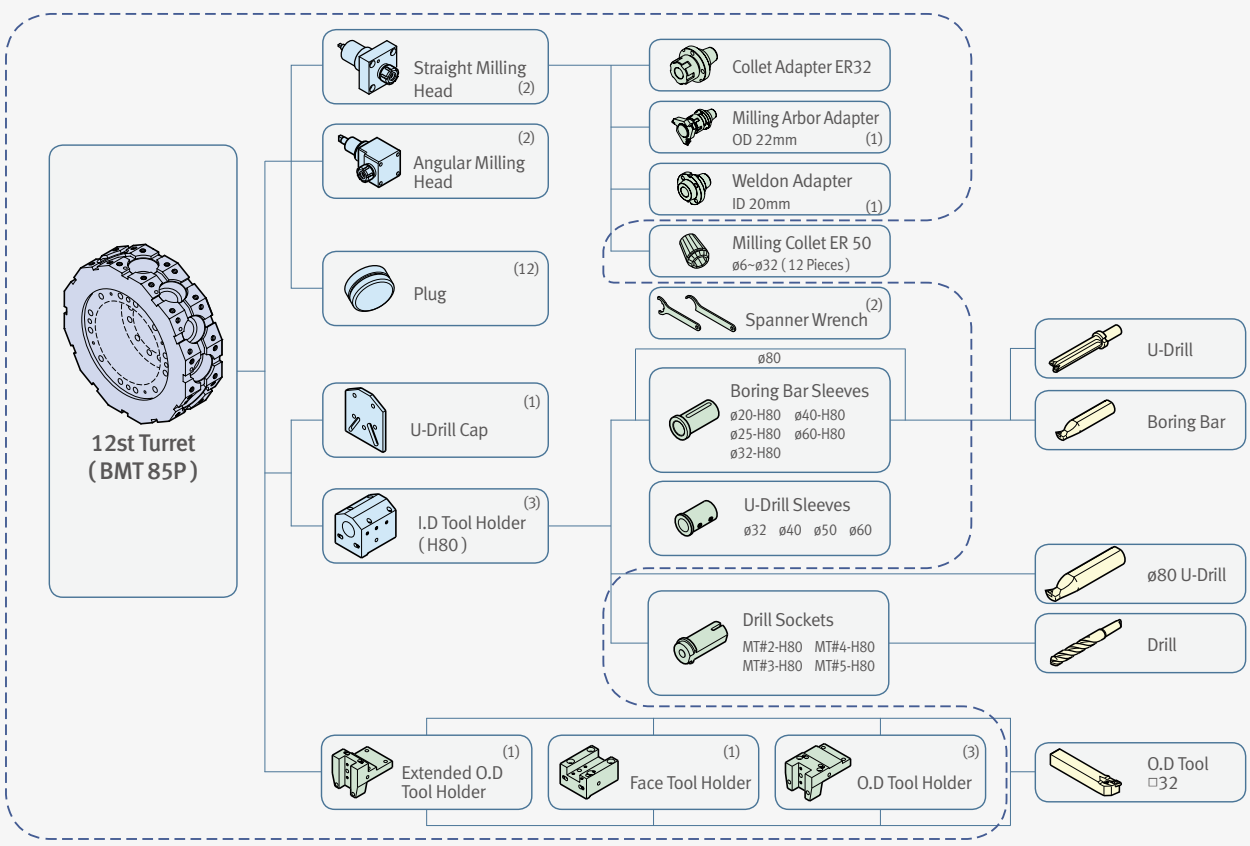
PUMA 600/700/800 [L/XL], PUMA 800B/LB

Unit : mm (inch)



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

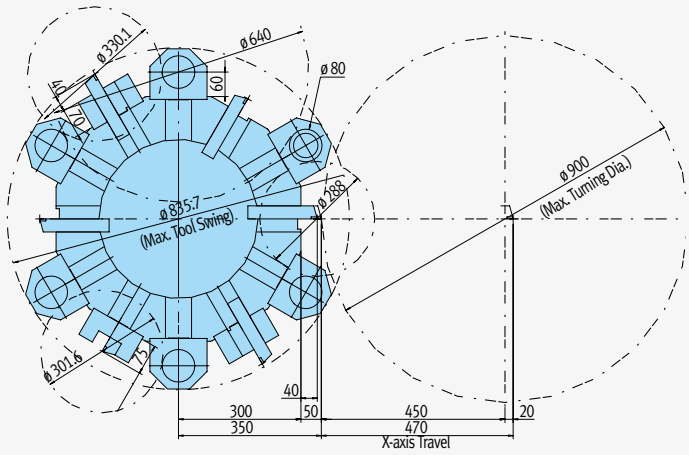
Unit : mm (inch)



Tool interference diagram

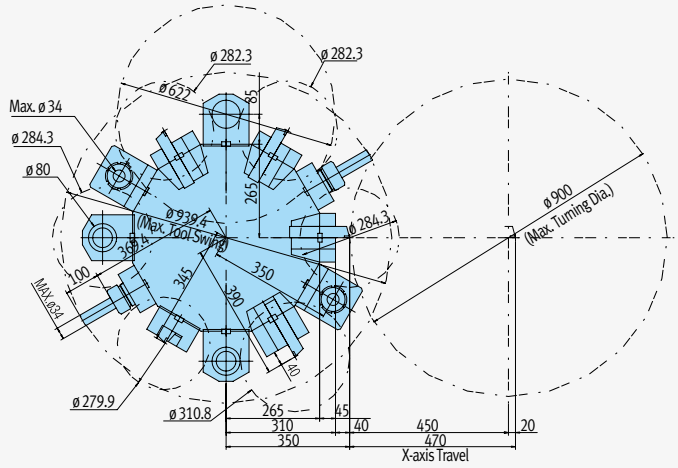
PUMA 600/700/800 [L/XL], PUMA 800B/LB

Unit : mm (inch)



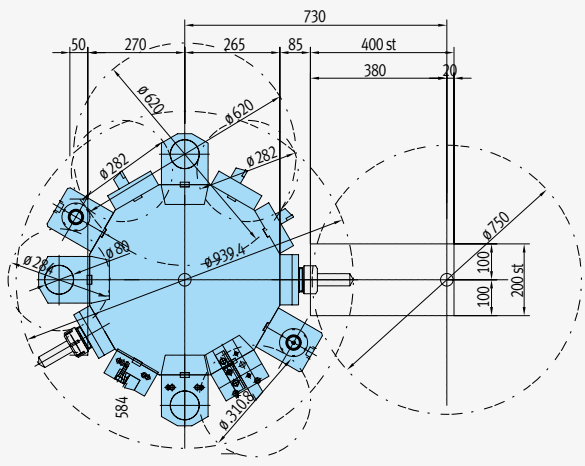
PUMA 600M/700M/800M [LM/XLM]

Unit : mm (inch)



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

Unit : mm (inch)

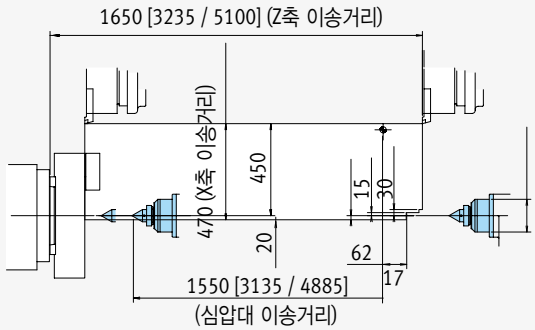


Description

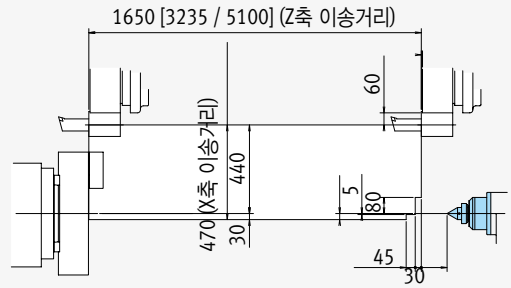
PUMA 600/700/800 [L/XL], PUMA 800B [LB]

Unit : mm (inch)

OD Tool Holder



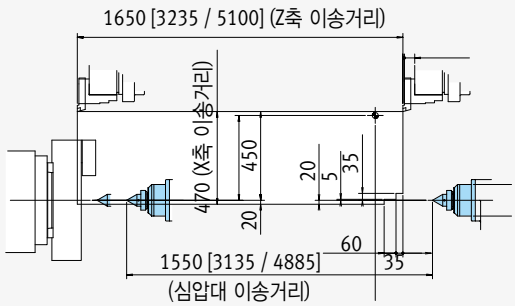
ID Tool holder



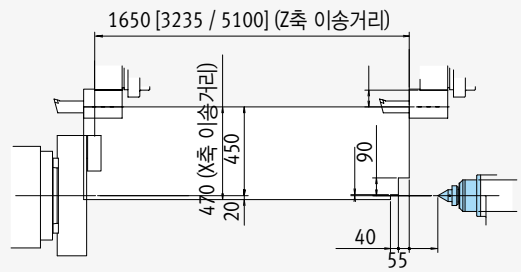
PUMA 600M/700M/800M [LM/XLM]

Unit : mm (inch)

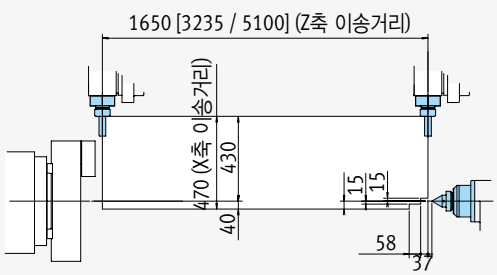
OD Tool Holder



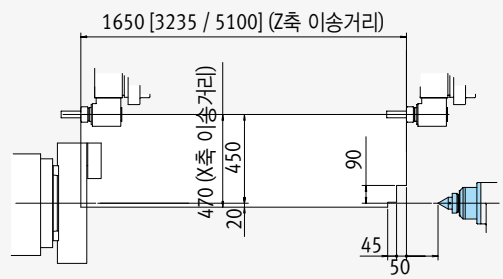
ID Tool Holder



Straight Milling Unit



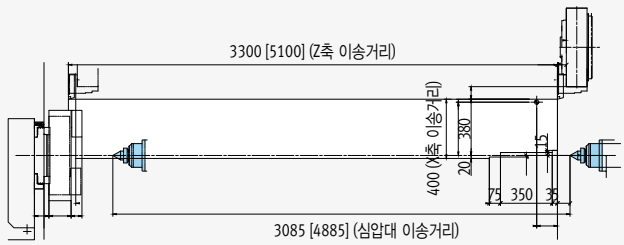
Angular Milling Unit



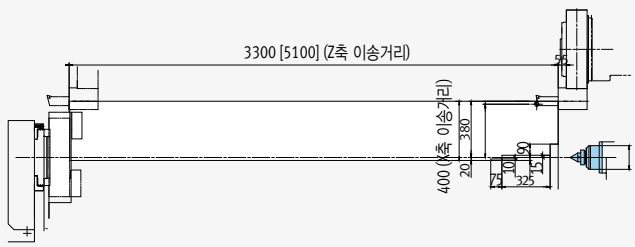
PUMA 600LY/700LY/800LY [XLY]

Unit : mm (inch)

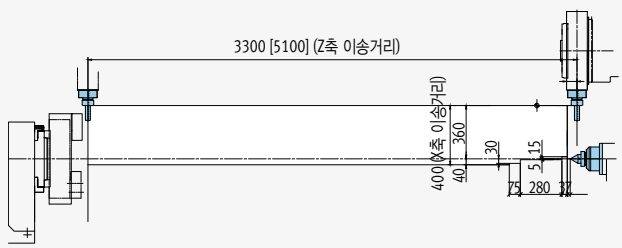
OD Tool Holder



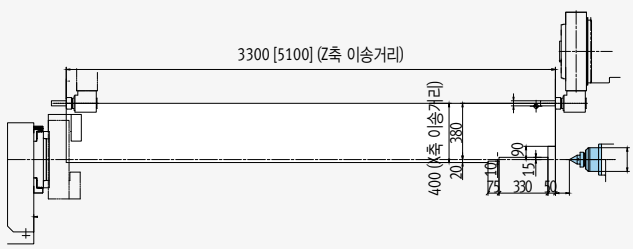
ID Tool Holder



Straight Milling Unit



Angular Milling Unit



Machine specifications

Description			Unit	PUMA 600[L/XL]	PUMA 600M[LM/XLM]	PUMA 600LY[XLY]
Capacity	Swing over bed		mm(inch)	1030(40.6) [1030(40.6)/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		
	Spindle through hole diameter		mm(inch)	152(6.0)		
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 (30min./Cont.)		kW(hp)	45/37(60.3/49.6) {75/60(100.1/80.5)}		
	Max. spindle torque		N·m(lbf·ft)	5419(3996.8) {9025(6656.5)}		
	Spindle nose		ASA	A2-15		
	Spindle bearing diameter (Front)		mm(inch)	200(7.9)		
	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 (30min)		kW(hp)	-	11(14.8)	
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)/200(7.9)]		200(7.9)
	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		-			

PUMA 700[L/XL]	PUMA 700M[LM/XLM]	PUMA 700LY[XLY]	PUMA 800[L/XL]	PUMA 800M[LM/XLM]	PUMA 800LY[XLY]	PUMA 800B[LB]
1030(40.6) [1030(40.6)/1140(44.9)]		1140(44.9)	1030(40.6) [1030(40.6)/1140(44.9)]		1140(44.9)	1030(40.6)
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)
700(27.6)			800(31.5)		700(27.6)	800(31.5)
900(35.4)		750(29.5)	900(35.4)		750(29.5)	900(35.4)
1600(63) [3200(126)/5050(199)]		3250(128) [5050(199)]	1600(63) [3200(126)/5050(199)]		3250(128) [5050(199)]	1600(63) [3200(126)]
24			32			Order made
181(7.1)			320(12.6)			375(14.8)
470(18.5)		400(15.7)	470(18.5)		400(15.7)	470(18.5)
-		200 (7.9)	-		200 (7.9)	-
1650(65) [3235(127)/5100(201)]		3300(130) [5100(201)]	1650(65) [3235(127)/5100(201)]		3300(130) [5100(201)]	1650(65) [3235(127)]
12(472.4)			12(472.4)			
-		6(236.2)	-		6(236.2)	-
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)]
1500			750			500
45/37(60.3/49.6) {75/60(100.1/80.5)}			45/37(60.3/49.6) {75/60(100.1/80.5)}			
6605(4871.6) {11004(8116.1)}			6605(4871.6) {11004(8116.1)}			
A1-15			A1-20			ISO 702-4 NO.20
240(9.4)			400(15.7)			440(17.3)
-	0.001		-	0.001 {1}	0.001	-
12			12			
32 x 32 (1.3 x 1.3)			32 x 32 (1.3 x 1.3)			
80 (3.1)			80 (3.1)			
0.25			0.25			
-	3000		-	3000		-
-	11(14.8)		-	11(14.8)		-
1550(61) [3135(123)/4885(192)]		3085(121) [4885(192)]	1550(61) [3135(123)/4885(192)]		3085(121) [4885(192)]	1550(61) [3135(123)]
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)
150(5.9) [150(5.9)/200(7.9)]		200(7.9)	200(7.9)			150(5.9)
#6 {#6(Dead)}			#6 {#6(Dead)}			
64.44	68.6	78	64.44	68.6	78	64.44
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)]
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)]
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)]
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)]
FANUC 32i						

* { } : Option

NC unit specifications

FANUC 32i

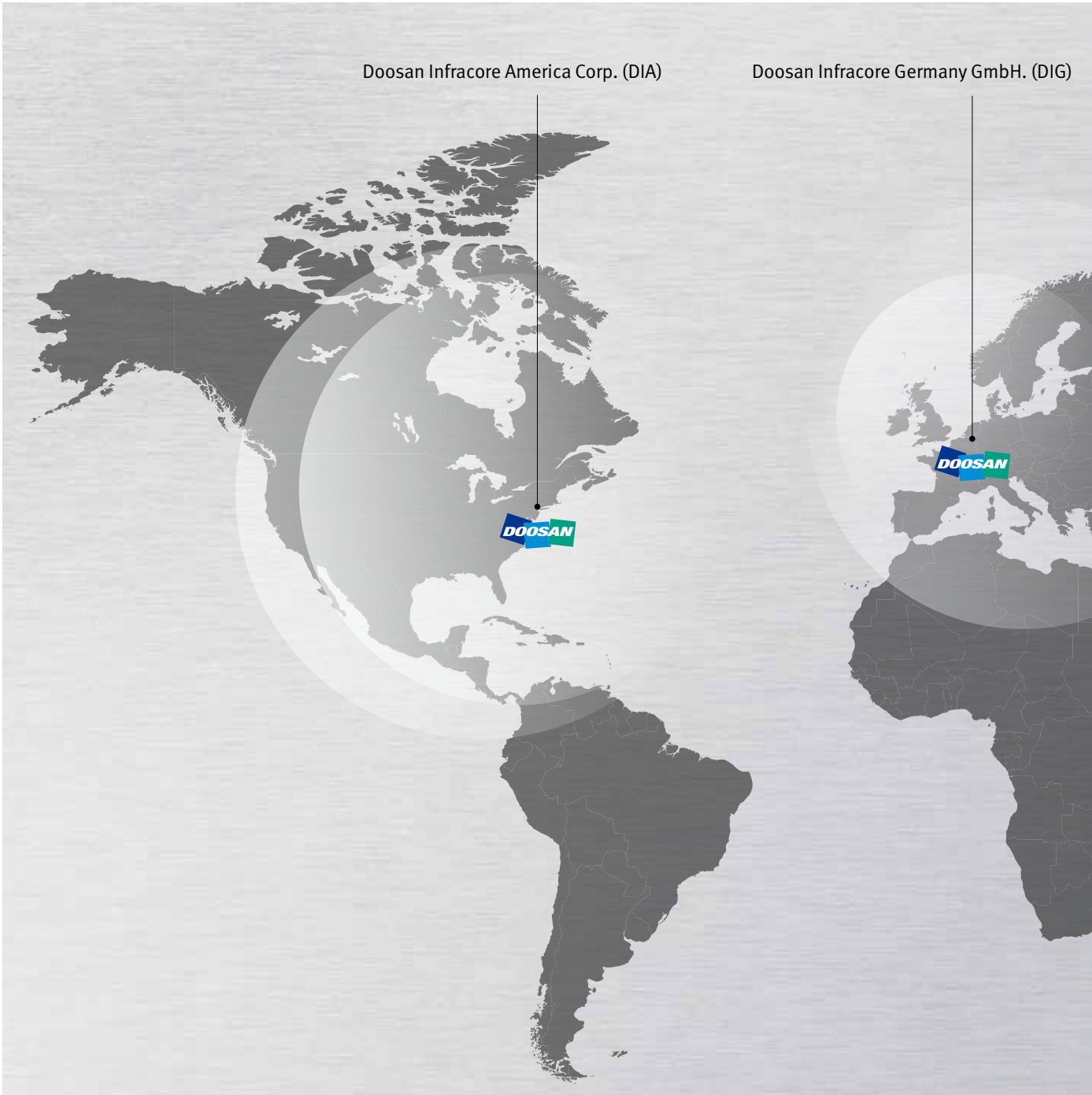
● Standard ○ Option X N/A

Description				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		Rapid traverse block overlap		●	●	●

● Standard ○ Option X N/A

Description				2-axis	M	Y
44	Program input	Optional block skip	9 pieces	●	●	●
45		Absolute/incremental programming	Combined use in the same block	●	●	●
46		Diameter/Radius programming		●	●	●
47		Automatic coordinate system setting		●	●	●
48		Workpiece coordinate system	G52 - G59	●	●	●
49		Workpiece coordinate system preset		○	○	○
50		Addition of workpiece coordinate system	48 pairs	○	○	○
51		Direct drawing dimension programming		●	●	●
52		G code system	A	●	●	●
53		G code system	B/C	●	●	●
54		Chamfering/Corner R		○	○	○
55		Custom macro		●	●	●
56		Addition of custom macro common variables	#100 - #199, #500 - #999	○	○	○
57		Interruption type custom macro		○	○	○
58		Canned cycle		●	●	●
59		Multiple repetitive cycles	G70~G76	●	●	●
60		Multiple repetitive cycles II	Pocket profile	●	●	●
61		Canned cycle for drilling		●	●	●
62		Automatic corner override		○	○	○
63		Coordinate system shift		●	●	●
64		Direct input of coordinate system shift		●	●	●
65		Pattern data input		○	○	○
66	Operation Guidance Function	EZ Guidei(Conversational Programming Solution)		●	●	●
67		Easy Operation package		●	●	●
68	Auxiliary/Spindle speed function	Constant surface speed control		●	●	●
69		Spindle override	0 - 150%	●	●	●
70		Spindle orientation		●	●	●
71		Rigid tap		●	●	●
72		Arbitrary speed threading		○	○	○
73	Tool function/Tool compensation	Tool offset pairs	64-pairs	●	●	●
74			99-pairs	○	○	○
75			200-pairs	○	○	○
76			400-pairs	○	○	○
77			499-pairs	○	○	○
78			999-pairs	○	○	○
79		Tool offset		●	●	●
80		Y-axis offset		X	X	●
81		Tool radius/Tool nose radius compensation		●	●	●
82		Tool geometry/wear compensation		●	●	●
83		Automatic tool offset		●	●	●
84		Direct input of offset value measured B		●	●	●
85		Tool life management		●	●	●
86	Accuracy compensation function	Backlash compensation for each rapid traverse and cutting feed		●	●	●
87	Editing operation	Part program storage size & Number of registerable programs	640M(256KB)_500 programs	●	●	●
88			1280M(512KB)_1000 programs	○	○	○
89			2560M(1MB)_1000 programs	○	○	○
90			5120M(2MB)_1000 programs	○	○	○
91		Program protect		●	●	●
92		Password function		●	●	●
93		Playback		○	○	○
94	Data input/output	Fast data server		○	○	○
95		External data input		○	○	○
96		Memory card input/output		●	●	●
97		USB memory input/output		●	●	●
98		Automatic data backup		●	●	●
99	Interface function	Embedded Ethernet		●	●	●
100		Fast Ethernet		○	○	○
101	Others	Display unit	10.4" color LCD	●	●	●
102		Robot interface	with PMC I/O module	○	○	○
103			with PROFIBUS-DP	○	○	○

Responding to Customers Anytime, Anywhere



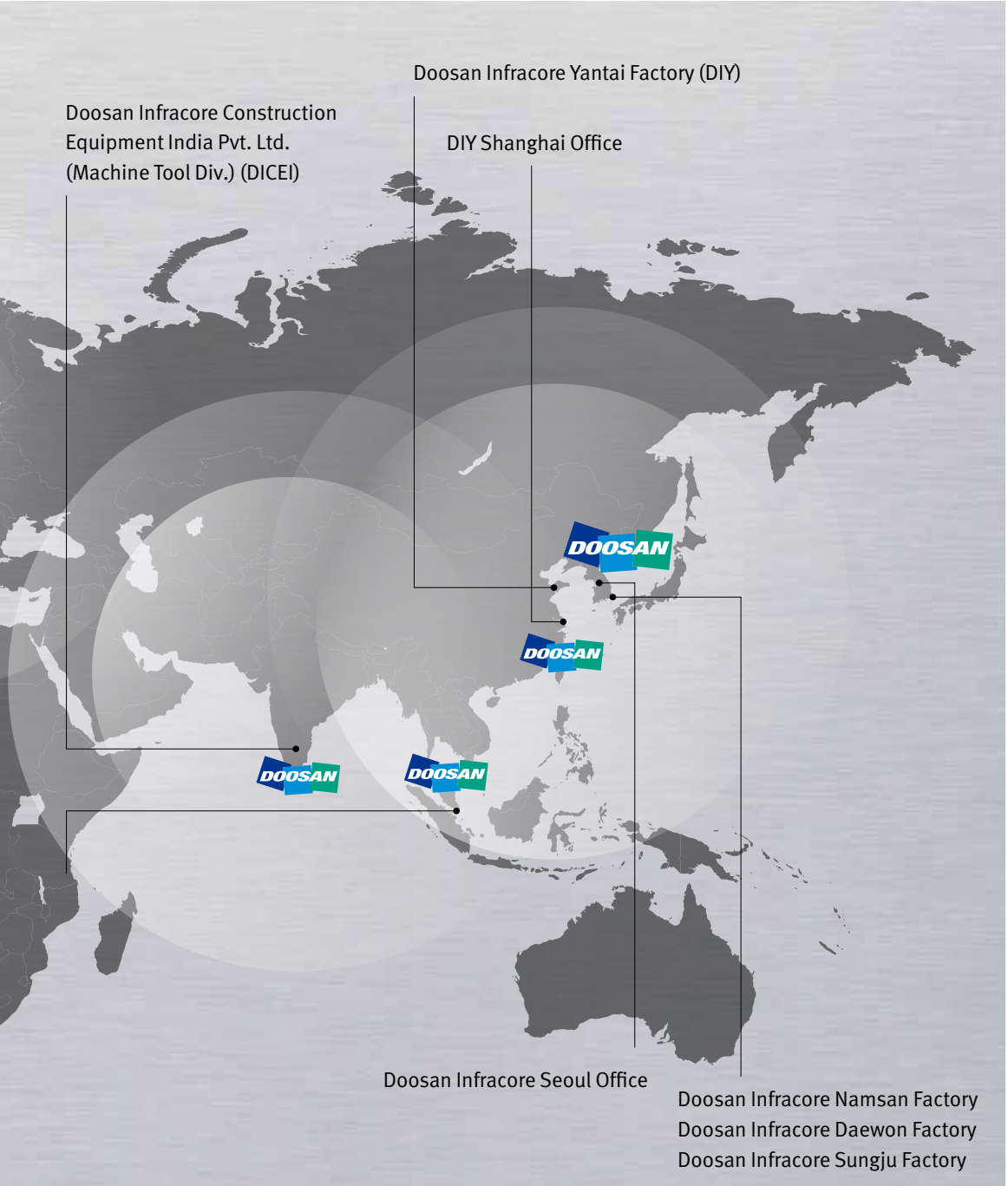
Global Service Support Network

Corporations	Dealer Networks	Technical Centers	Factories
5	128	21	4

Technical Center: Sales Support, Service Support, Parts Support

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.



Domestic Service Support Network

Integrated Support Centers	Sales Branch Offices	Post-Sales Service Centers	Designated Repair Service Centers
2	7	6	31

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

Main Specifications

PUMA 600/700/800 series

Description	UNIT	PUMA 600 series [LY/LXY]	PUMA 700 series [LY/LXY]	PUMA 800 series [LY/LXY]	PUMA 800B[LB]
Max. turning diameter	mm(inch)	900 (35.4) [750 (29.5)]			900 (35.4)
Max. turning legnth (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 (30min/Cont.)	kW(hp)	45/37 (60.3/49.6) {75/60 (100.1/80.5)}			
NC system	-	FANUC 32i			

Doosan Machine Tools

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