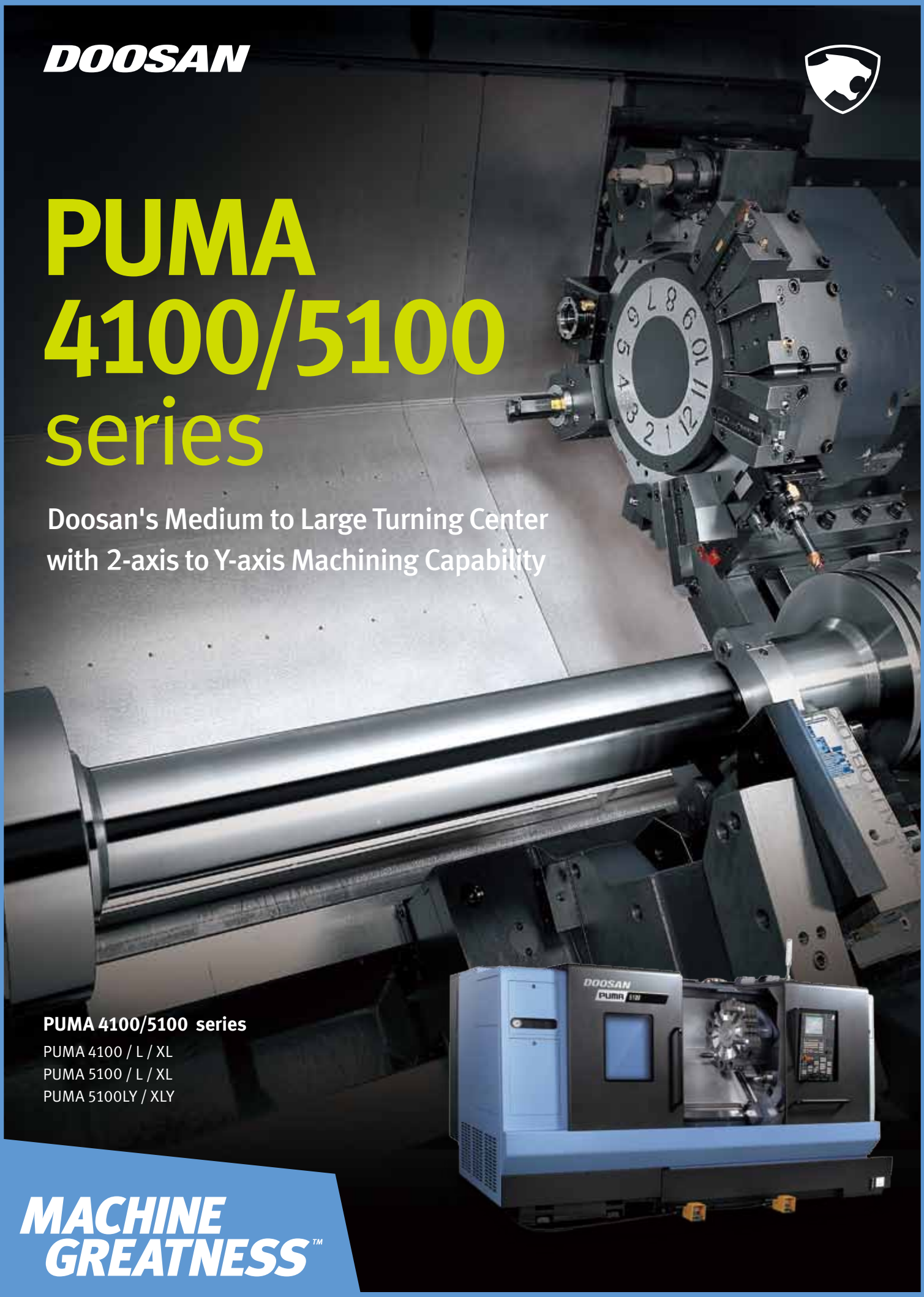
DOOSAN

PUMA 4100/5100 series

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



PUMA 4100/5100 series

PUMA 4100 / L / XL
PUMA 5100 / L / XL
PUMA 5100LY / XLY

MACHINE GREATNESS™

PUMA 4100/5100 series

PUMA 4100/5100 series are horizontal turning centers designed for machining medium to large size workpieces. It ensures powerful machining capability by using a 2 step gearbox and high torque motors together with a rigid box guideway structure. Also, it can process complex workpieces by using the optional Y axis function. In addition, the optional Doosan threading functions, especially for Oil/Gas industry parts, makes it the solution for a wide variety of applications.

Contents

Various Line-up

- For machining various medium to large size workpieces, the PUMA 4100/5100 series offers 38 models in the line-up. This consists of chuck sizes from 12” to 21” diameter with optional big bore spindle, 1m/2m/3m turning length and 2 axis to Y axis configurations.

Powerful machining capability

- PUMA 4100/5100 series have powerful machining capability with optimized cutting performance due to the 2 speed gearbox and high torque spindle motors, and stable box guideway structure.

Improve convenience

- PUMA 4100/5100 series can process complex parts in just one setup by applying the optional Y axis function. In addition, the newly designed operation panel and optional threading functions optimize the operators convenience.

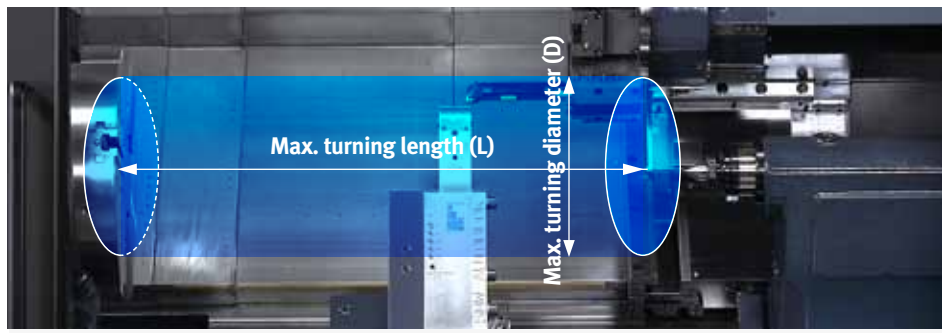
Basic Structure

Machine capability ranges from 2 axis to Y axis, which allows large, complex parts to be completed in a single setup.

Model		Chuck size (inch)	Standard model (Max. turning length 1m)			L(Long)-model (Max. turning length 2m)			XL(Extra long)-model (Max. turning length 3m)		
			2-axis	M	Y	2-axis	M	Y	2-axis	M	Y
PUMA 4100 series	A	12	○	○	-	○	○	-	○	○	-
	B	15	○	○	-	○	○	-	○	○	-
	C	21	○	○	-	○	○	-	○	○	-
PUMA 5100 series	A	15	○	○	-	○	○	○	○	○	○
	B	21	○	○	-	○	○	○	○	○	○
	C	Big bore	○	-	-	○	-	○	○	-	-

Machining area

The largest work envelop in its class with maximum turning diameter of Ø650 mm and maximum turning length of 3m.



Max. turning diameter

ø650 mm

(ø25.6 inch)

Max. turning length

3152 mm

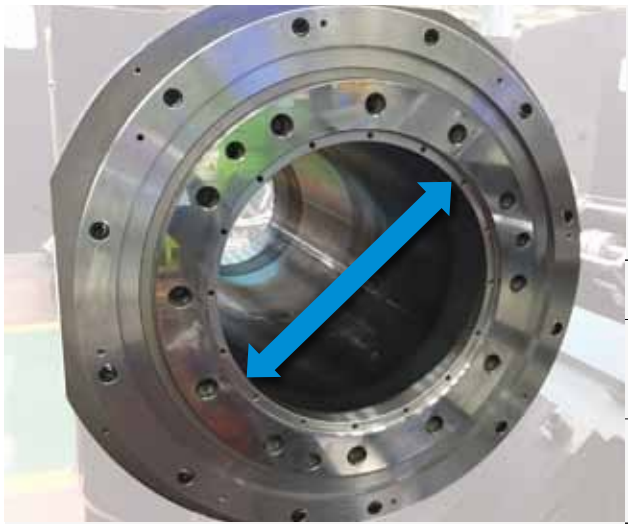
(ø124.1 inch)

Unit : mm (inch)

Function	Model	Max. "D"	Max. "L"
2-axis (for Turning)	PUMA 4100A / LA / XLA	550 (21.7)	1074 /2124 /3152 (42.3 / 83.6 / 124.1)
	PUMA 4100B / LB / XLB	550 (21.7)	1042 / 2092 /3120 (41.0 / 82.4 / 122.8)
	PUMA 4100C / LC / XLC	550 (21.7)	1002 / 2052 /3080 (39.4 / 80.8 / 121.3)
	PUMA 5100A / LA / XLA	650 (25.6)	1032 / 2082 / 3082 (40.6 / 82.0 / 121.3)
	PUMA 5100B / LB / XLB	650 (25.6)	992 / 2042 / 3042 (39.1 / 80.4 / 119.8)
	PUMA 5100C / LC / XLC	650 (25.6)	992 / 2042 / 3042 (39.1 / 80.4 / 119.8)
M-model (for Turn-Milling)	PUMA 4100MA / LMA / XLMA	560 (22.0)	1010 / 2060 / 3100 (39.8 / 81.1 / 122.0)
	PUMA 4100MB / LMB / XLMB	560 (22.0)	978 / 2028 / 3068 (38.5 / 79.8 / 120.8)
	PUMA 4100MC / LMC / XLMC	560 (22.0)	938 / 1988 / 3028 (36.9 / 78.3 / 119.2)
	PUMA 5100MA / LMA / XLMA	650 (25.6)	992 / 2042 / 3068 (39.1 / 80.4 / 120.8)
	PUMA 5100MB / LMB / XLMB	650 (25.6)	952 / 2002 / 3028 (37.5 / 78.8 / 119.2)
Y-axis model (for Turn-Milling)	PUMA 5100LYA / LYB / LYC	550 (21.7)	2050 / 2020 / 2020 (80.7 / 79.5 / 79.5)
	PUMA 5100XLYA / XLYB	550 (21.7)	3070 / 3040 (120.9 /119.7)

Machining area

The machines are available with a variety of spindle through bore sizes to provide the ideal solution for customers pipe diameters.



Max. spindle through hole diameter

ø275 mm

(ø10.8 inch)

Unit : mm (inch)

Model		Max. spindle through hole diameter
PUMA 4100	A	115 (4.5)
	B	132 (5.2)
	C	181 (7.1)
PUMA 5100	A	132 (5.2)
	B	181 (7.1)
	C	275 (10.8)

Spindle

The gearbox design allows PUMA 4100/5100 spindle to have unparalleled power and torque, which boosts productivity with extreme heavy-duty cutting capability.

Max. spindle speed

1500 r/min

Max. spindle power (30min/Cont.)

45/37 kW

(60.3/49.6 Hp)

Max. spindle torque

4038 N·m

(2980.0 ft-lb)

PUMA 5100B

Model	Max. spindle speed r/min	Max. spindle power (30min/Cont.) kW (Hp)	Max. spindle torque N·m (ft-lb)
PUMA 4100A / LA / XLA	3000	35 (S3 25%)/26/22 (46.9 (S3 25%)/34.9/29.5)	1584 (1169.0)
PUMA 4100B / LB / XLB	2000	35 (S3 25%)/26/22 (46.9 (S3 25%)/34.9/29.5)	2379 (1755.7)
PUMA 4100C/ LC / XLC	1500	37/30 (49.6/40.2)	3280 (2420.6)
PUMA 4100MA/LMA / XLMA	3000	30/22 (40.2/29.5)	832 (614.0)
PUMA 4100MB / LMB / XLMB	2000	30/22 (40.2/29.5)	1611 (1188.9)
PUMA 4100MC / LMC / XLMC	1500	37/30 (49.6/40.2)	2432 (1794.8)
PUMA 5100A / LA / XLA	2000	37/30 (49.6/40.2)	3280 (2420.6)
PUMA 5100B / LB / XLB	1500	45/37 (60.3/49.6)	4038 (2980.0)
PUMA 5100C / LC / XLC	1000	45/37 (60.3/49.6)	4463 (3293.7)
PUMA 5100MA / LMA / XLMA	2000	37/30 (49.6/40.2)	2432 (1794.8)
PUMA 5100MB / LMB / XLMB	1500	45/37 (60.3/49.6)	2957 (2182.3)
PUMA 5100LYA / XLYA	2000	37/30 (49.6/40.2)	2431 (1794.1)
PUMA 5100LYB / XLYB	1500	45/37 (60.3/49.6)	2957 (2182.3)
PUMA 5100LYC	1000	45/37 (60.3/49.6)	3268 (2411.8)

Tailstock

High rigidity hydraulic tailstock is rigidly clamped to the bed slide way to provide stable support for long workpieces.

Tailstock travel

1000 / 2050 / 3070 mm

(39.4 / 80.7 / 120.9 inch)

Unit : mm (inch)

Model	Tailstock travel	Quill diameter	Quill travel	Std.	Opt.
PUMA4100 / M, PUMA 5100 / M	1000 (39.4)	120 (4.7)	120 (4.7)	Manual	Programmable
PUMA4100L / LM, PUMA 5100L / LM	2050 (80.7)	120 (4.7)	120 (4.7)		
PUMA4100XL / XLM, PUMA 5100XL / XLM	3070 (120.9)	120 (4.7)	120 (4.7)		
PUMA 5100LY	2050 (80.7)	120 (4.7)	120 (4.7)	Programmable	-
PUMA 5100XLY	3050 (119.7)	120 (4.7)	120 (4.7)		

Turret

Turret rotation is controlled by servo motor for fast and reliable tool selection. Doosan's unique BMT85P turret design is used on M and Y specification models to boost heavy duty milling performance.

2-axis model

No. of tool stations

PUMA 4100A / LA / XLA

12ea (std.) / **10ea** option

PUMA 4100B / LB / XLB / C / LC / XLC
PUMA 5100 series

10ea (std.) / **12ea** option

M,Y Model

BMT75P

No. of tool stations

12 ea

Cutting performance

Multi-functionality including end milling, face milling, drilling, tapping, etc. offers better machining performance while minimizing work setting.

O.D turning	
Cutting speed	210 m/min (8267.7 ipm)
Feedrate	0.55 mm/rev
Cutting depth	11.9 mm (0.5 inch)

ID turning (Rough cutting)	
Cutting speed	280 m/min (11023.6 ipm)
Feedrate	0.1 mm/rev
Cutting depth	3 mm (0.1 inch)
Tool length	4.0D

U-Drill (2-axis)	
Cutting Tool	80 mm (3.1 inch)
Spindle speed	750 r/min
Feedrate	0.2 mm/rev

Face milling	
Face mill dia.	63 mm (2.5 inch)
Cutting speed	176 m/min (6.9 ipm)
Feedrate	900 mm/min (35.4 ipm)
Cutting depth	6 mm (0.2 inch)

U-Drill (3-axis)	
Cutting Tool	25 mm (1.0 inch)
Spindle speed	2500 r/min
Feedrate	0.3 mm/rev

* This test result come from under condition
1) Material : Steel (SM45C)
2) Test Machine :PUMA 5100LMA
   - Main spindle motor : 37 / 30 kW (49.6 / 40.2 Hp)
   - Rotary tool motor : 11 / 5.5 kW (14.8 / 7.4 Hp)

* 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 Specifications

● Standard ○ Optional △ Contact DOOSAN X N/A

No.	Description	Features			PUMA 4100 series						PUMA 5100 series							
					A	B	C	MA	MB	MC	A	B	C	MA	MB	LYA/ XLYA	LYB/ XLYB	LYC
1	CHUCK	None			○	○	○	○	○	○	○	○	●	○	○	○	○	●
2		12 Inch			●	X	X	●	X	X	X	X	X	X	X	X	X	X
3		15 Inch			X	●	X	X	●	X	●	X	X	●	X	●	X	X
4		18 Inch			X	○	X	X	○	X	○	X	X	○	X	X	X	X
5		21 Inch			X	X	●	X	X	●	X	●	X	X	●	X	●	X
6		24 Inch			X	X	X	X	X	X	X	○	X	X	○	X	○	X
7		Special Chuck			△	△	△	△	△	△	△	△	△	△	△	△	△	△
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*	Specifi-cation	Manual	Ø25 ~ Ø200	○	○	○	○	○	○	X	X	X	X	X	X	X	X
14				Ø35 ~ Ø330	X	X	X	X	X	X	○	○	○	○	○	○	○	○
15				Ø50 ~ Ø260	○	○	○	○	○	○	○	○	○	○	○	X	X	X
16			Hydraulic orPramm-able	Ø16 ~ Ø152 (SLU-3Z)	○	○	○	○	○	○	X	X	X	X	X	X	X	X
17				ø20 ~ ø165 (SLU-3.1Z)	○	○	○	○	○	○	X	X	X	X	X	X	X	X
18				ø30 ~ ø245 (SLU-4Z)	○	○	○	○	○	○	○	○	○	○	○	○	○	○
19				ø45 ~ ø310 (SLU-5Z)	X	X	X	X	X	X	○	○	○	○	○	○	○	○
20	TAILSTOCK	Manual type			●	●	●	●	●	●	●	●	●	●	●	X	X	X
21		Programmable type			○	○	○	○	○	○	○	○	○	○	○	●	●	●
22		Live center			●	●	●	●	●	●	●	●	●	●	●	●	●	●
23		Built-in dead center			○	○	○	○	○	○	○	○	○	○	○	○	○	○
24	COOLANT PUMP	1.5 BAR			●	●	●	●	●	●	●	●	●	●	●	X	X	X
25		4.5 BAR			○	○	○	○	○	○	○	○	○	○	○	●	●	●
26		7/10/14.5/20/70 BAR			○	○	○	○	○	○	○	○	○	○	○	○	○	○
27	COOLANT OPTIONS	Oil skimmer			○	○	○	○	○	○	○	○	○	○	○	○	○	○
28		Coolant chiller			○	○	○	○	○	○	○	○	○	○	○	○	○	○
29		Coolant pressure switch			○	○	○	○	○	○	○	○	○	○	○	○	○	○
30		Coolant level switch : Sensing level - Low			○	○	○	○	○	○	○	○	○	○	○	○	○	○
31		Coolant gun			○	○	○	○	○	○	○	○	○	○	○	○	○	○
32	CHIP DISPOSAL	Chip conveyor (Right side)			○	○	○	○	○	○	○	○	○	○	○	○	○	○
33		Chip bucket			○	○	○	○	○	○	○	○	○	○	○	○	○	○
34		Air blower for chuck			○	○	○	○	○	○	○	○	○	○	○	○	○	○
35		Mist collector interface (Duct only)			○	○	○	○	○	○	○	○	○	○	○	○	○	○
36		Integrated mist collector			○	○	○	○	○	○	○	○	○	○	○	○	○	○
37	MEASURE-MENT & AUTOMA-TION	Tool setter	Manual		○	○	X	○	○	X	○	X	○	○	X	X	X	X
38			Automatic		○	○	○	○	○	○	○	○	○	○	○	○	○	○
39		Auto door			○	○	○	○	○	○	○	○	○	○	○	○	○	○
40	OTHERS	Doosan Tool load monitoring system			○	○	○	○	○	○	○	○	○	○	○	○	○	○
41		Signal tower			○	○	○	○	○	○	○	○	○	○	○	○	○	○
42		Air gun			○	○	○	○	○	○	○	○	○	○	○	○	○	○
43		Automatic power off			○	○	○	○	○	○	○	○	○	○	○	○	○	○
44		Quick change tooling(CAPTO)			○	○	○	○	○	○	○	○	○	○	○	○	○	○
45		Sketch-turn S/W			○	○	○	○	○	○	○	○	○	○	○	○	○	○

No.	Description	Features	PUMA 4100 series					
			A/LA/ MA/LMA	B/LB/ MB/LMB	C/LC/ MC/LMC	XLA/XLMA	XLB/XLMB	XLC/XLMC
46	Customized Special Option	NON POWERED TAIL SPINDLE	○	○	○	○	○	○
47		CAPTO TOOL C6	○	○	○	○	○	○
48		COOLANT CHILLER	○	○	○	○	○	○
49		HIGH PRESSURE COOLANT 70bar_CYCLONE FILTER	○	○	○	○	○	○
50		THROUGH SPINDLE COOLANT	○	○	○	○	○	○
51		HYD S/REST BASE/BKT_ATLING AX6 (30-255)	○	○	○	○	○	○
52		HYD S/REST BASE/BKT_ATLING AX7 (45-320)	○	○	○	○	○	○
53		HYD S/REST BASE/BKT_ATLING AX8 (85-360)	X	X	X	X	X	X
54		PRO S/REST BASE/BKT_ATLING AX6 (30-255)	○	○	○	○	○	○
55		PRO S/REST BASE/BKT_ATLING AX7 (45-320)	○	○	○	○	○	○
56		PRO S/REST BASE/BKT_ATLING AX8 (85-360)	X	X	X	X	X	X
57		SERVO DRIVEN S/REST	X	X	X	○	○	○
58		SPIN WINDOW SYSTEM	○	○	○	○	○	○
59		HOLDER INTERFACE WORK PROOF OLP40	○	○	○	○	○	○
60		TWIN CHUCK	X	X	○	X	X	○

No.	Description	Features	PUMA 5100 series													
			A/LA	B/LB	C/LC	MA/ LMA	MB/ LMB	XLA	XLB	XLC	XLMA	XLMB	LYA	LYB	LYC	XLYA	XLYB
46	Customized Special Option	NON POWERED TAIL SPINDLE	○	○	○	○	○	○	○	○	○	○	X	X	X	X	X
47		CAPTO TOOL C6	○	○	○	○	○	○	○	○	○	○	X	X	X	X	X
48		COOLANT CHILLER	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
49		HIGH PRESSURE COOLANT 70bar_CYCLONE FILTER	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
50		THROUGH SPINDLE COOLANT	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
51		HYD S/REST BASE/BKT_ATLING AX6 (30-255)	X	X	X	○	○	X	X	X	○	○	X	X	X	X	X
52		HYD S/REST BASE/BKT_ATLING AX7 (45-320)	○	○	○	○	○	○	○	○	○	○	X	X	X	X	X
53		HYD S/REST BASE/BKT_ATLING AX8 (85-360)	○	○	○	X	X	○	○	○	X	X	X	X	X	X	X
54		PRO S/REST BASE/BKT_ATLING AX6 (30-255)	○	○	○	○	○	○	○	○	○	○	X	X	X	X	X
55		PRO S/REST BASE/BKT_ATLING AX7 (45-320)	X	X	X	○	○	X	X	X	○	○	X	X	X	X	X
56		PRO S/REST BASE/BKT_ATLING AX8 (85-360)	○	○	○	X	X	○	○	○	X	X	X	X	X	X	X
57		SERVO DRIVEN S/REST	X	X	X	X	X	○	○	○	○	○	X	X	X	○	○
58		SPIN WINDOW SYSTEM	○	○	○	○	○	○	○	○	○	○	X	X	X	X	X
59		HOLDER INTERFACE WORK PROOF OLP40	○	○	○	○	○	○	○	○	○	○	X	X	X	X	X
60		TWIN CHUCK	X	X	○	X	○	X	X	○	X	○	X	○	○	X	○

* Please contact DOOSAN to select detailed steady rest specifications

Peripheral equipments

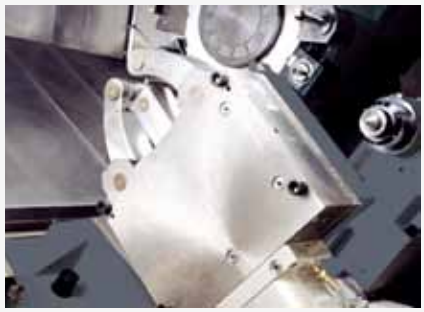
Long boring bar option

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

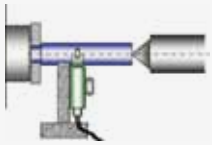
For more stable pipe threading process, twin chucking option(manual or pneumatic) is available. Please consult with Doosan specialist for details.

Steady rest option

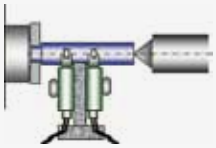


For turning a part with extensive length, various types of hydraulic steady rests(Single, Double or Twin type) are available.

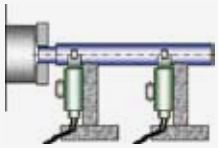
SINGLE



DOUBLE



TWIN



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

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.

Chip conveyor (Right side) option

Long

Short

Needle

Sludge

Material / Chip conveyor type		Carbon steel			Cast iron		Aluminium		
		Long	Short	Needle	Short	Sludge	Long	Short	Needle
Hinged belt type		○	△	X	△	X	○	△	X
Scrapper type	Normal	X	○	△	○	△	X	△	X
	Magnetic	X	○	○	○	○	–	–	–

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

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
- Ergonimic operator panel
- 2MB Memory
- Hot key

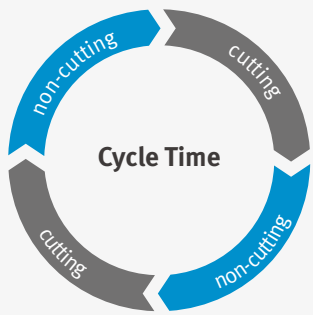
iHMI Touch screen option
- iHMI provides an intuitive interface that utilizes a touch screen for quick and easy operation

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

Reduced non-cutting time by 10%



Minimizes non-cutting time to further improve productivity.

Tool load monitoring

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

Operation rate

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

SIEMENS S828D

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

15.6 inch screen + New OP

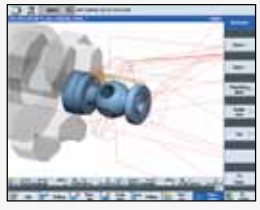
The newly-designed operation panel enhances operating convenience by incorporating common-design buttons and layout, and features the Qwerty keyboard for fast and easy operation.

15.6-inch display

- USB (standard)
- QWERTY Keyboard (standard)

Conversational Convenient function

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



Cutting and operation support function

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

[offset]
⬇
[operating parameter]
⬇
[attachment setting]
⬇
[Collision avoidance]

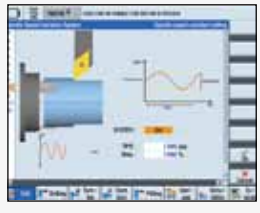
Operation safety function

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

[offset]
⬇
[operating parameter]
⬇
[TC service]

Maintenance and service convenience function

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



[various]
⬇
[attachment]
⬇
[DSSV]

Machining accuracy improvement

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

Before applying the function

After applying the function

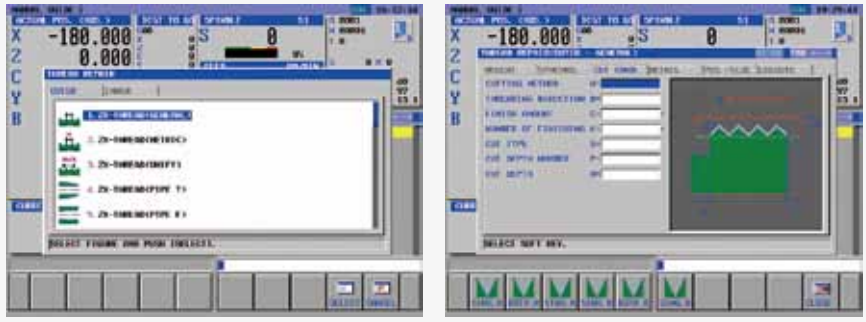
Stable threading performance

All PUMA 4100 / 5100 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.

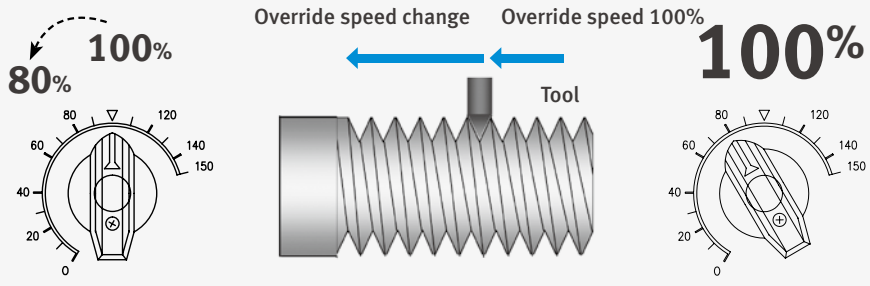
Threading repair function

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



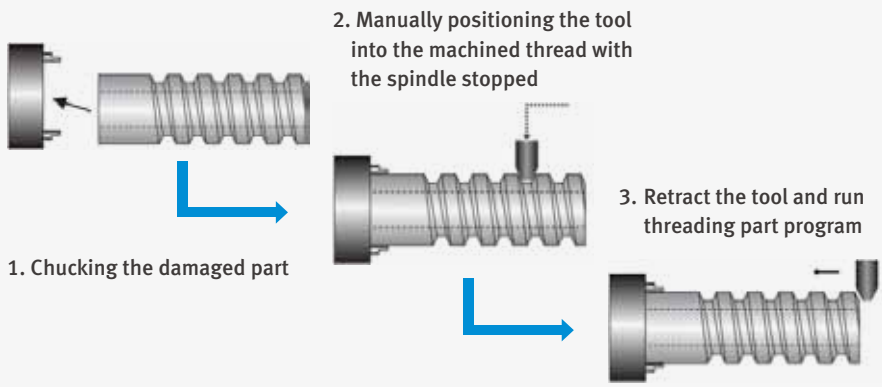
Arbitrary speed threading option

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

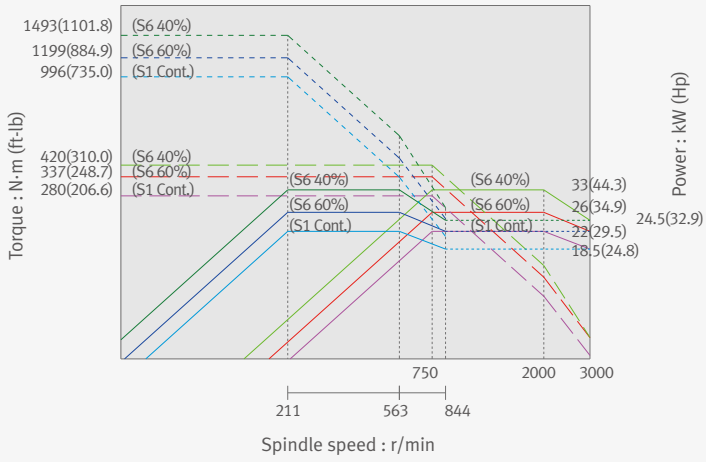
This function allows users to re-machine damaged threads by using the existing program.



Power-Torque Diagram (SIEMENS)

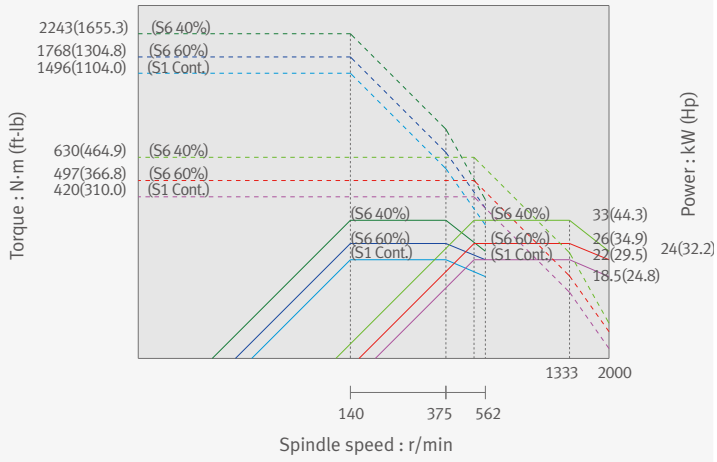
PUMA 4100A / LA / XLA

Max. spindle speed : 3000 r/min



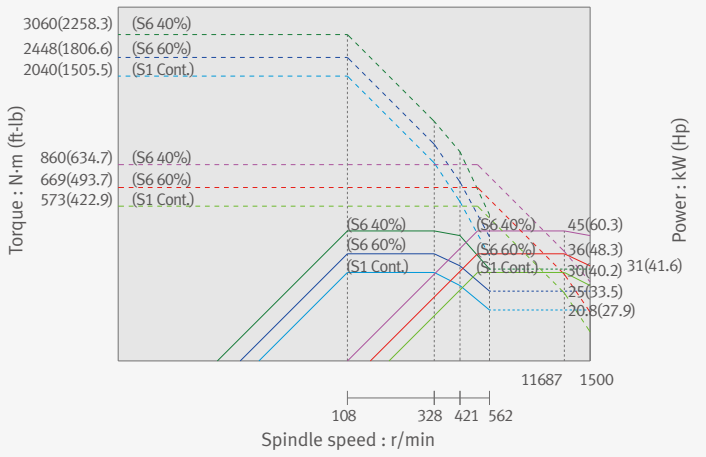
PUMA 4100B / LB / XLB

Max. spindle speed : 2000 r/min



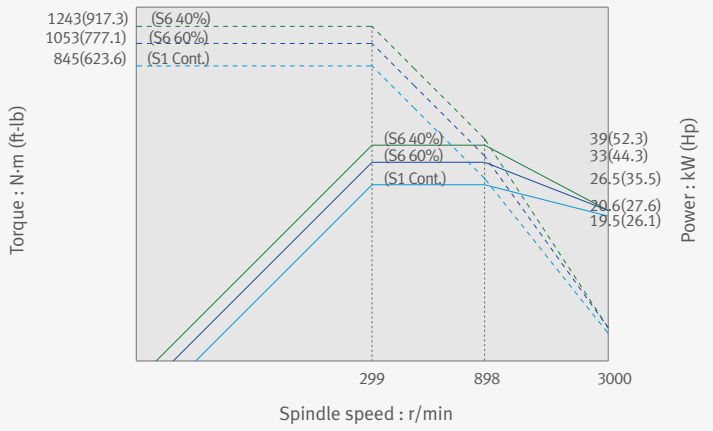
PUMA 4100C / LC / XLC

Max. spindle speed : 1500 r/min



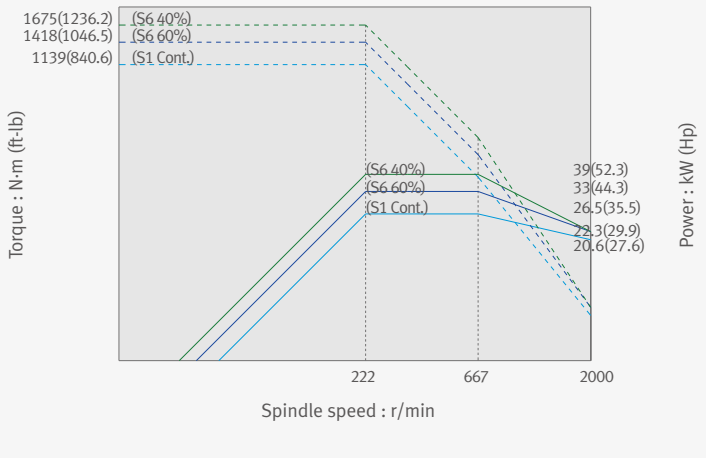
PUMA 4100MA / LMA / XLMA

Max. spindle speed : 3000 r/min



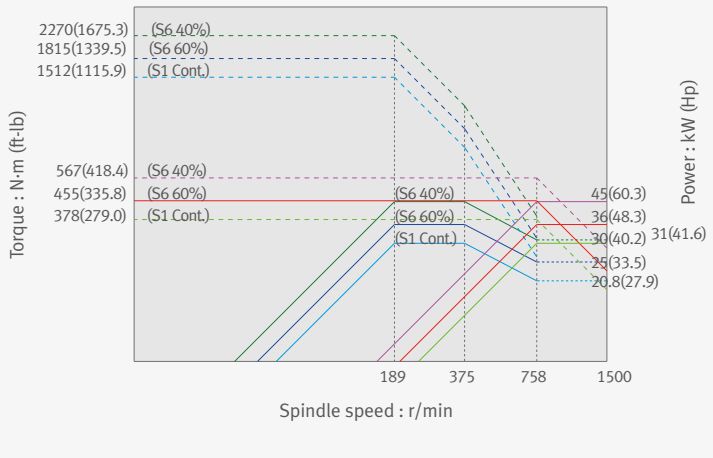
PUMA 4100MB / LMB / XLMB

Max. spindle speed : 2000 r/min



PUMA 4100MC / LMC / XLMC

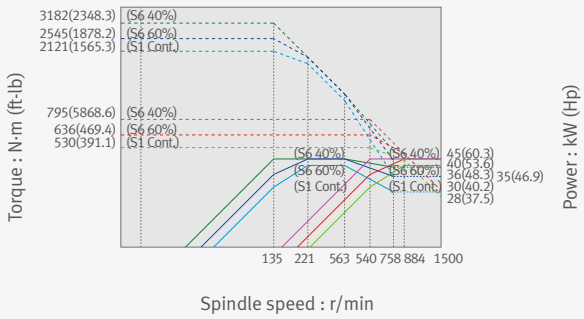
Max. spindle speed : 1500 r/min



Power-Torque Diagram (SIEMENS)

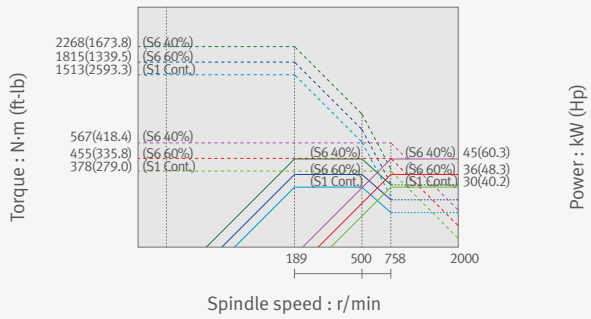
PUMA 5100C / LC / XLC

Max. spindle speed : 1500 r/min



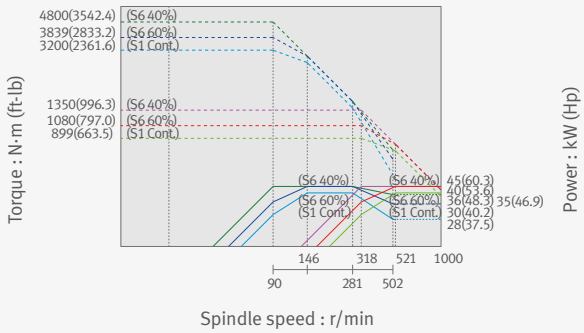
PUMA 5100MA / LMA / XLMA

Max. spindle speed : 2000 r/min



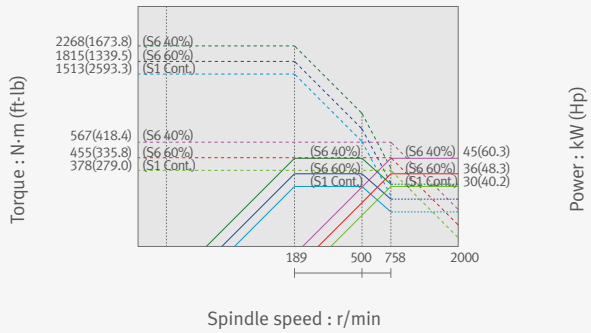
PUMA 5100MB / LMB / XLB

Max. spindle speed : 1000 r/min



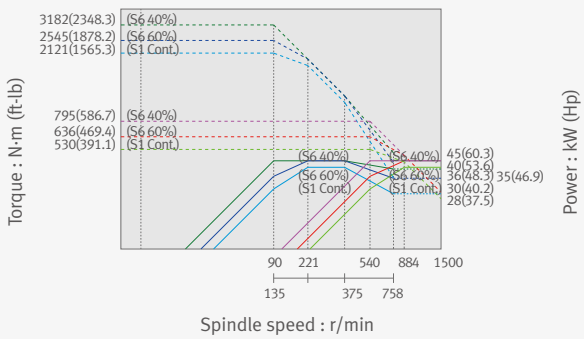
PUMA 5100LYA / XLYA

Max. spindle speed : 2000 r/min



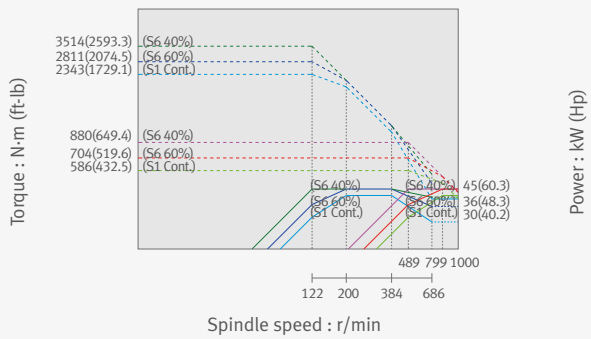
PUMA 5100LYB / XLYB

Max. spindle speed : 1500 r/min



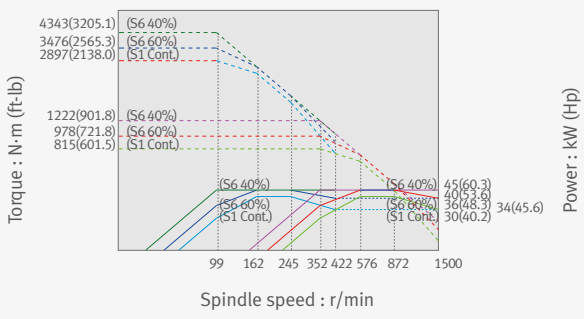
PUMA 5100LYC

Max. spindle speed : 1000 r/min



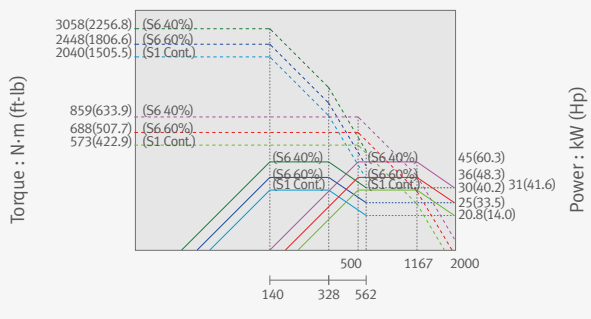
PUMA 5100B / LB / XLB

Max. spindle speed : 1500 r/min



PUMA 5100A / LA / XLA

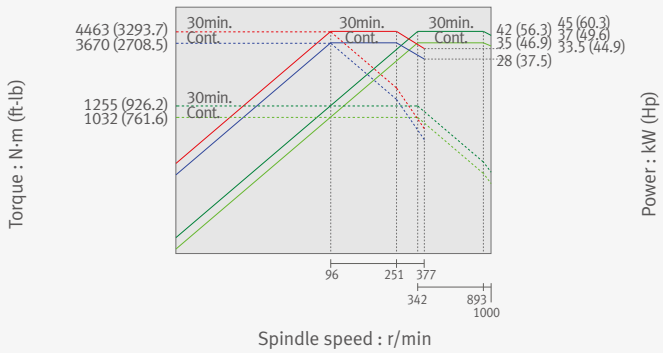
Max. spindle speed : 2000 r/min



Power-Torque Diagram (FANUC)

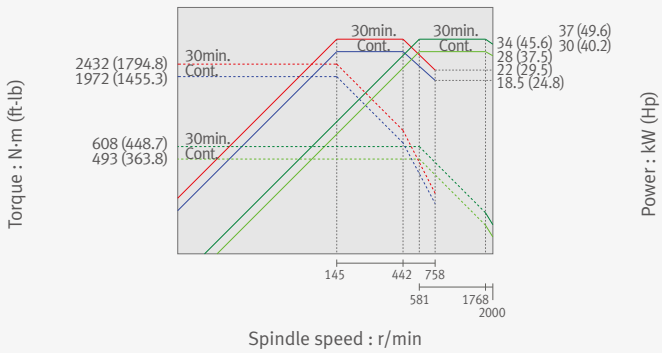
PUMA 5100C / LC / XLC

Max. spindle speed : 1000 r/min



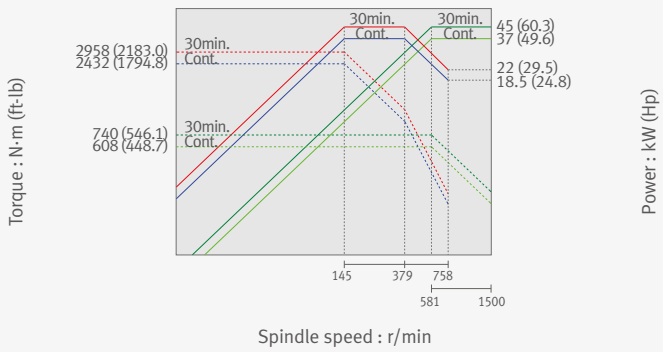
PUMA 5100MA / LMA / XLMA

Max. spindle speed : 2000 r/min



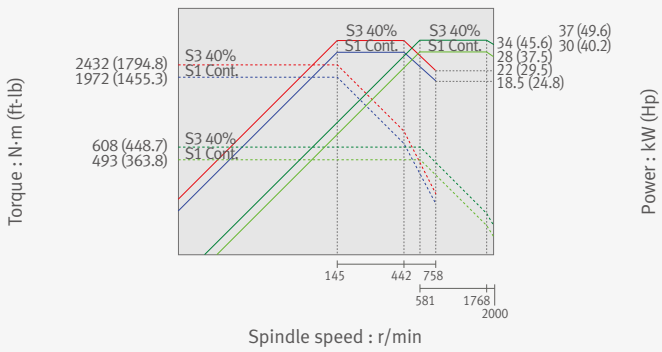
PUMA 5100MB / LMB / XLMB

Max. spindle speed : 1500 r/min



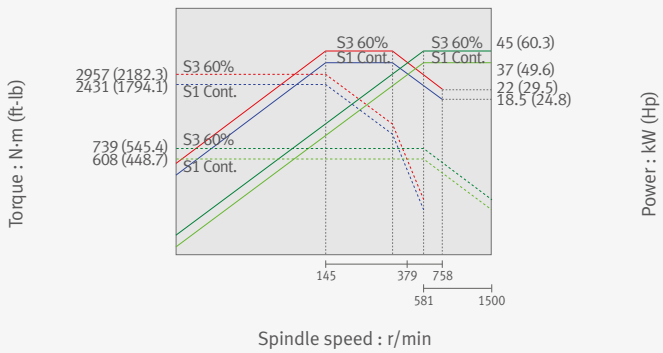
PUMA 5100LYA / XLYA

Max. spindle speed : 2000 r/min



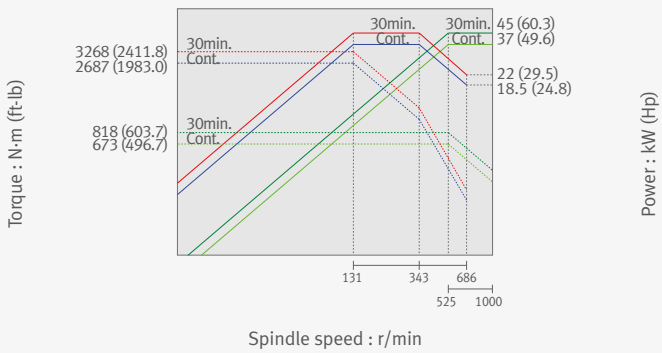
PUMA 5100LYB / XLYB

Max. spindle speed : 1500 r/min



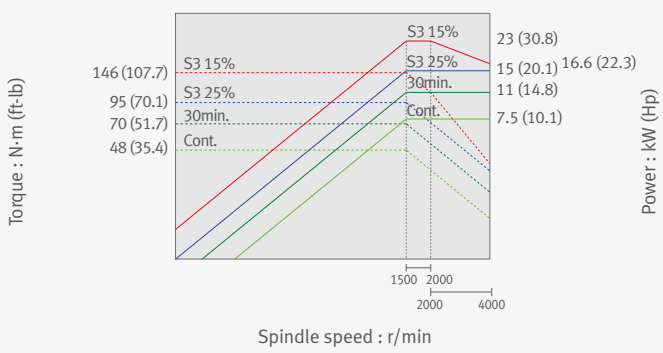
PUMA 5100LYC

Max. spindle speed : 1000 r/min



Rotary tool

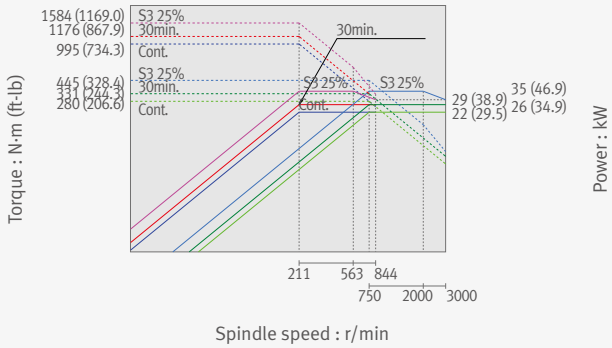
Max. spindle speed : 4000 r/min



Power-Torque Diagram (FANUC)

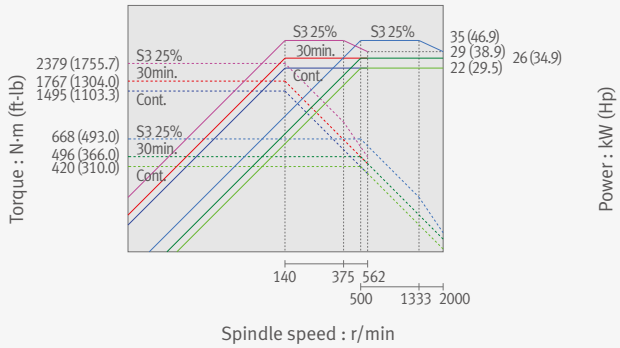
PUMA 4100A / LA / XLA

Max. spindle speed : 3000 r/min



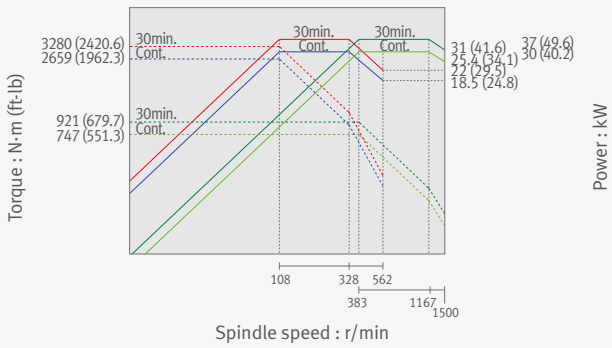
PUMA 4100B / LB / XLB

Max. spindle speed : 2000 r/min



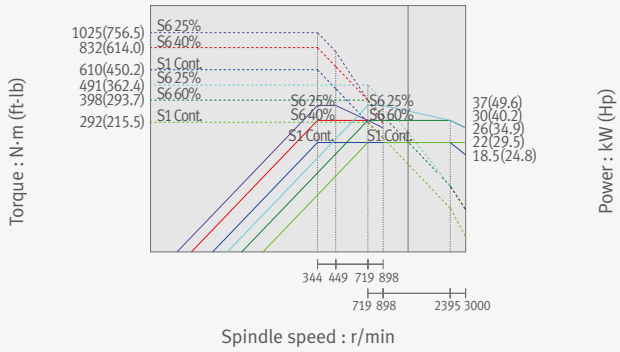
PUMA 4100C / LC / XLC

Max. spindle speed : 1500 r/min



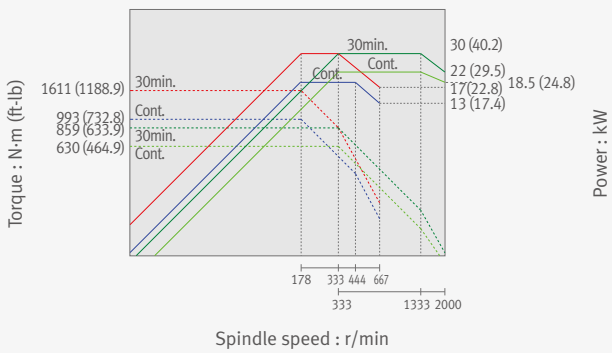
PUMA 4100MA / LMA / XLMA

Max. spindle speed : 3000 r/min



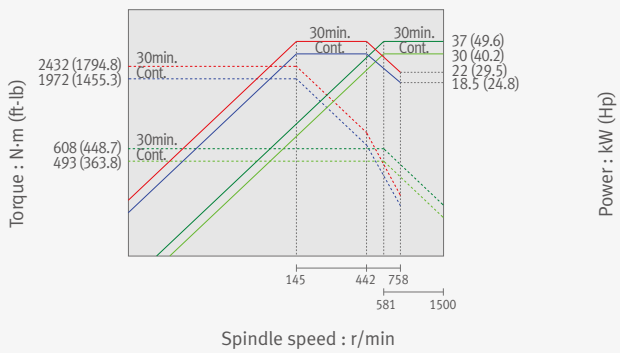
PUMA 4100MB / LMB / XLMB

Max. spindle speed : 2000 r/min



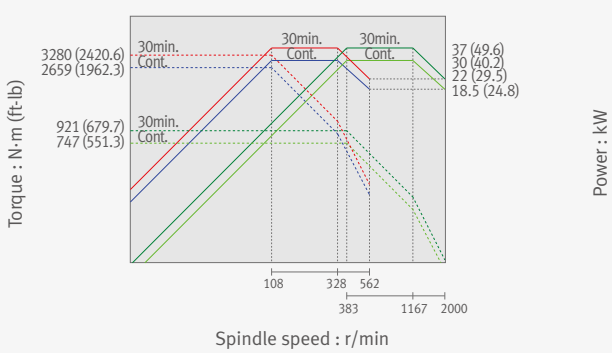
PUMA 4100MC / LMC / XLMC

Max. spindle speed : 1500 r/min



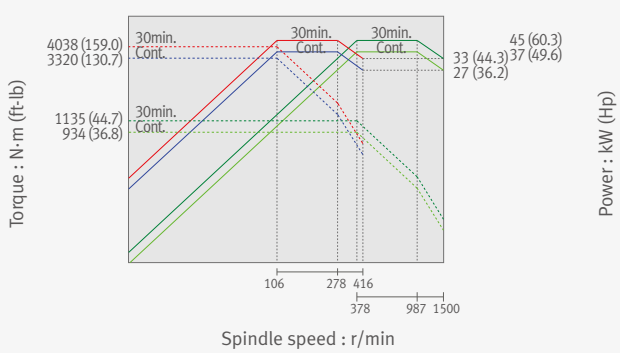
PUMA 5100A / LA / XLA

Max. spindle speed : 2000 r/min



PUMA 5100B / LB / XLB

Max. spindle speed : 1500 r/min

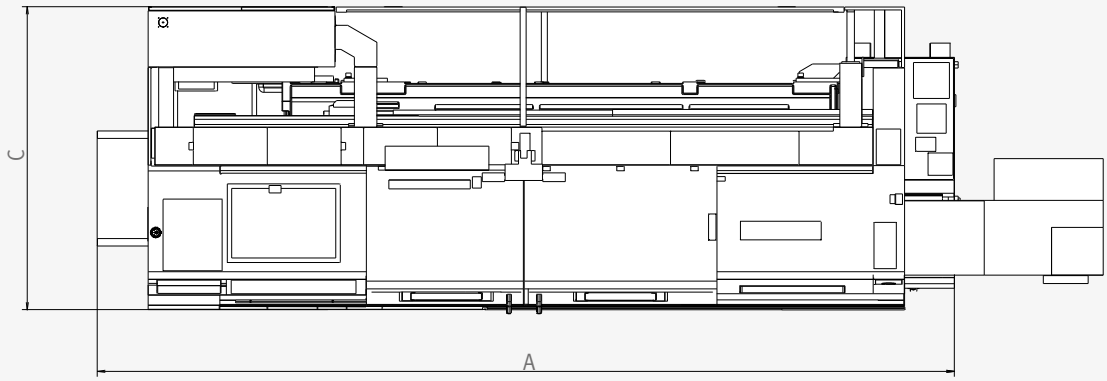


External Dimensions

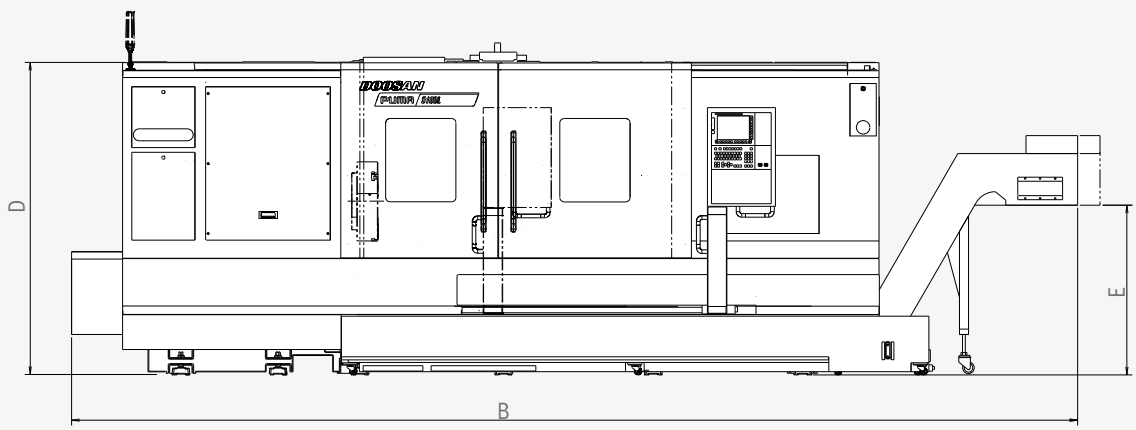
PUMA 4100 / 5100 series

Unit : mm (inch)

Top view



Front view



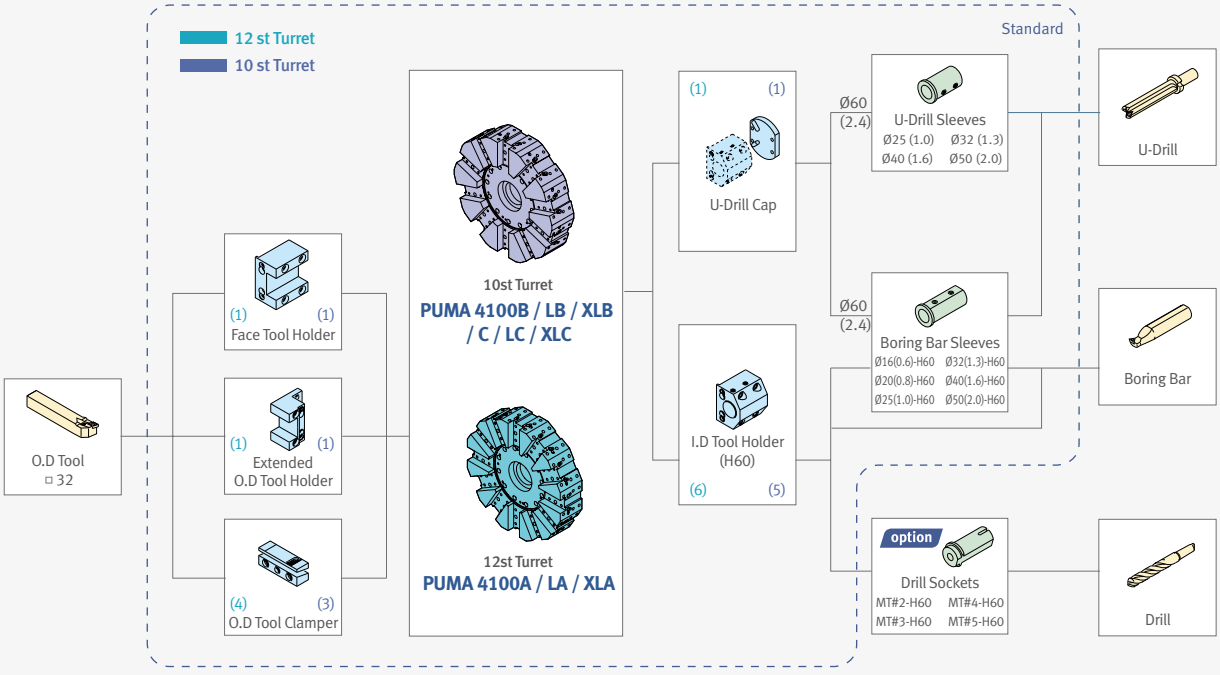
Model	A (Length)	B (Length with chip conveyor)	C (Width)	D (Height)	E (Height of ground to chip outlet)
PUMA 4100 / 5100	4654 / 4759 (183.2 / 187.4)	5549 (218.5)	2056 (80.9)	2194 (86.4)	1053 (41.5)
PUMA 4100L / 5100L	5774 / 5879 (227.3 / 231.5)	6669 (262.6)	2275 (89.6)	2272 (89.4)	1053 (41.5)
PUMA 4100XL / 5100XL	7024 / 7059 (276.5 / 277.9)	7958 / 7993 (313.3 / 314.7)	2276 (89.6)	2335 (91.9)	1021 (40.2)
PUMA 4100M / 5100M	4654 / 4759 (183.2 / 187.4)	5580 (219.7)	2056 (80.9)	2194 (86.4)	1053 (41.5)
PUMA 4100LM / 5100LM	5774 / 5879 (227.3 / 231.5)	6669 (262.6)	2275 (89.6)	2272 (89.4)	1053 (41.5)
PUMA 4100XLM / 5100XLM	7024 / 7059 (276.5 / 277.9)	7958 / 7993 (313.3 / 314.7)	2276 (89.6)	2335 (91.9)	1021 (40.2)
PUMA 5100LY	5980 (235.4)	6890 (271.3)	2522 (99.3)	2885 (113.6)	1050 (41.3)
PUMA 5100XLY	7302 (287.5)	8175 (321.9)	2632 (103.6)	2937 (115.6)	1050 (41.3)

* Some peripheral equipment can be placed in other places * 500 mm of a space is required to the right of the machine in order to install and remove chip conveyor.

Tooling System

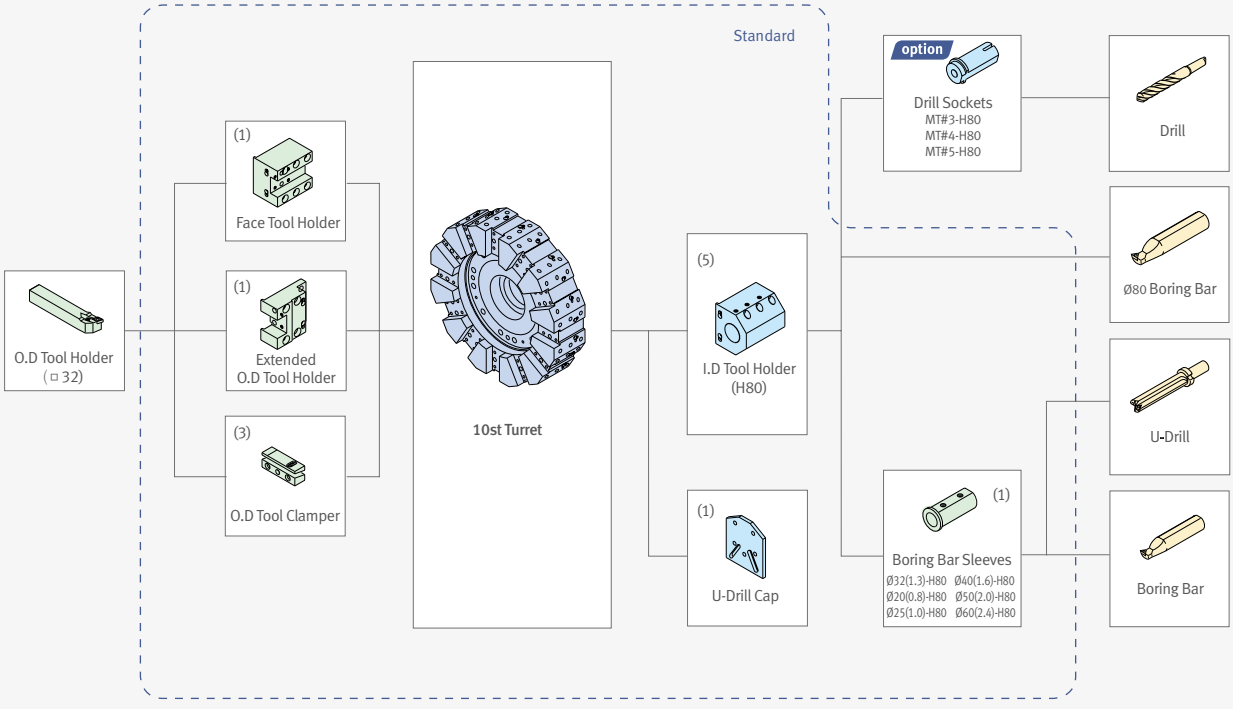
PUMA 4100

Unit : mm (inch)



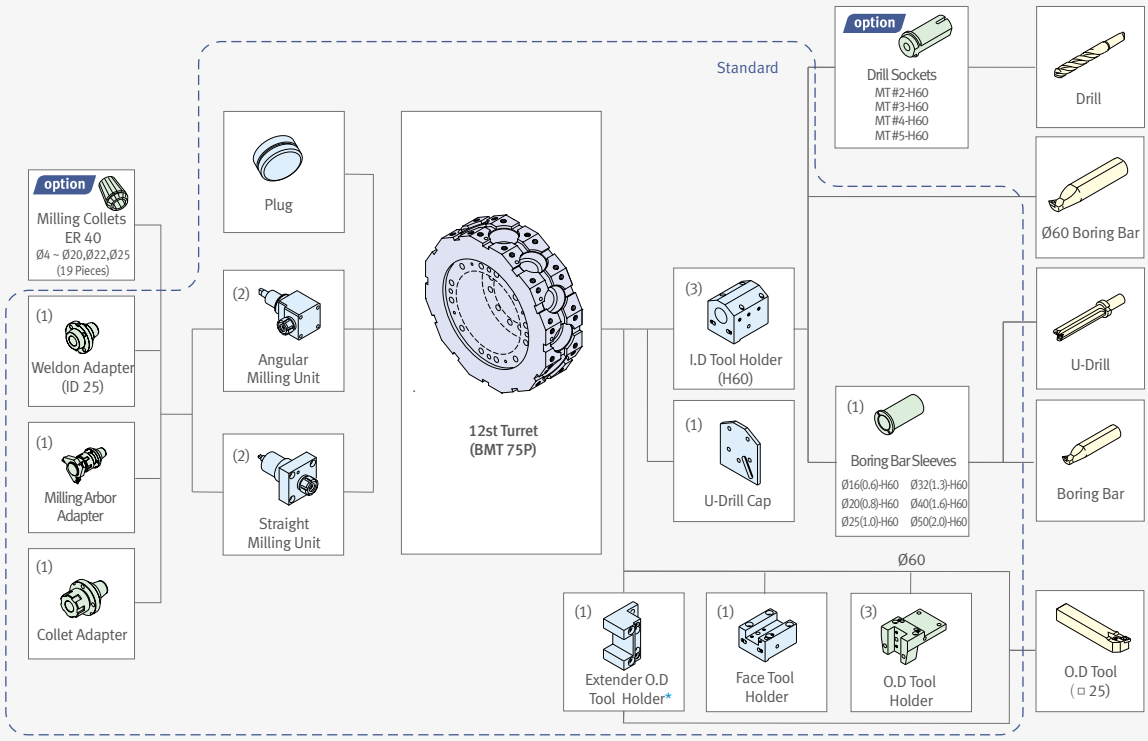
PUMA 5100

Unit : mm (inch)



PUMA 4100M / LM / XLM, PUMA 5100M / LM / XLM / LY

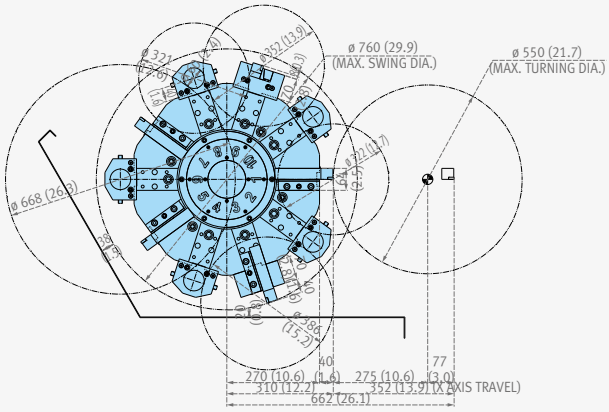
Unit : mm (inch)



* PUMA 4100M/LM/XLM : N/A

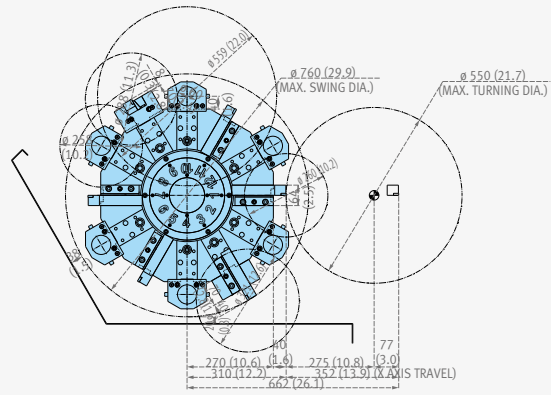
Tool Interference Diagram

PUMA 4100 (10 station)



PUMA 4100 (12 station)

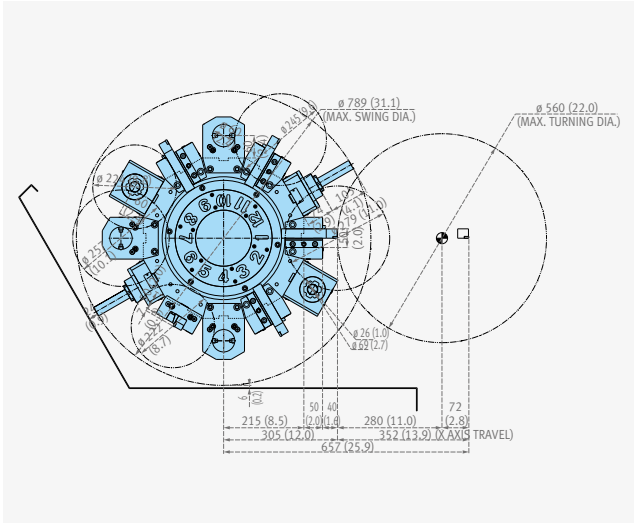
Unit : mm (inch)



Tool Interference Diagram

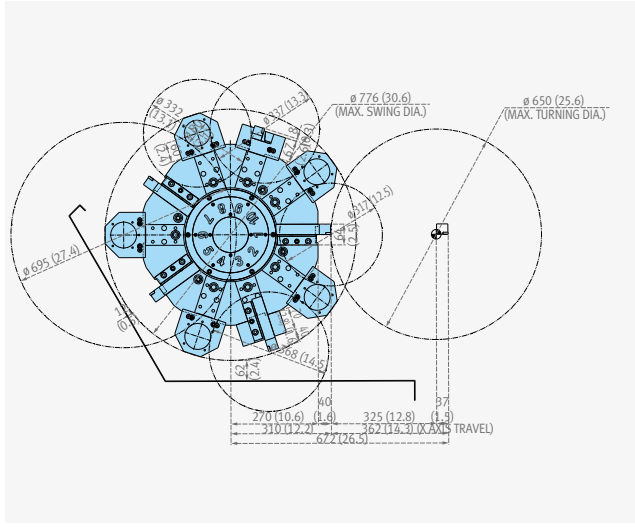
PUMA 4100M (12 station)

Unit : mm (inch)



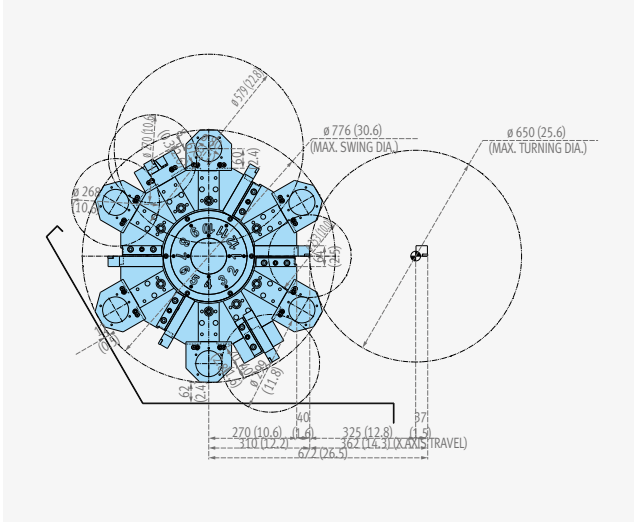
PUMA 5100 (10 station)

Unit : mm (inch)



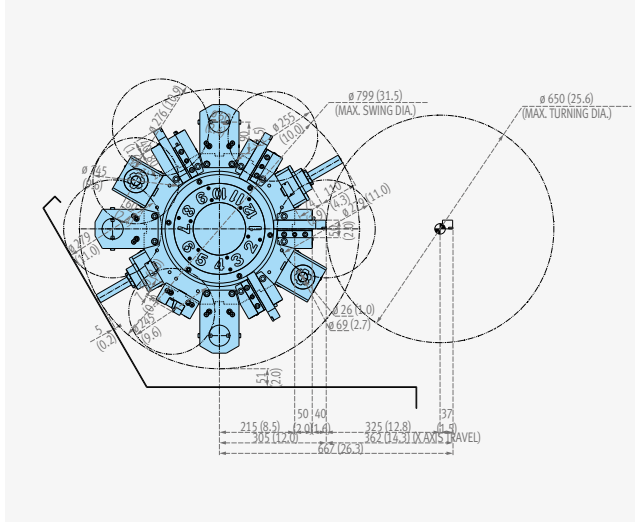
PUMA 5100 (12 station)

Unit : mm (inch)



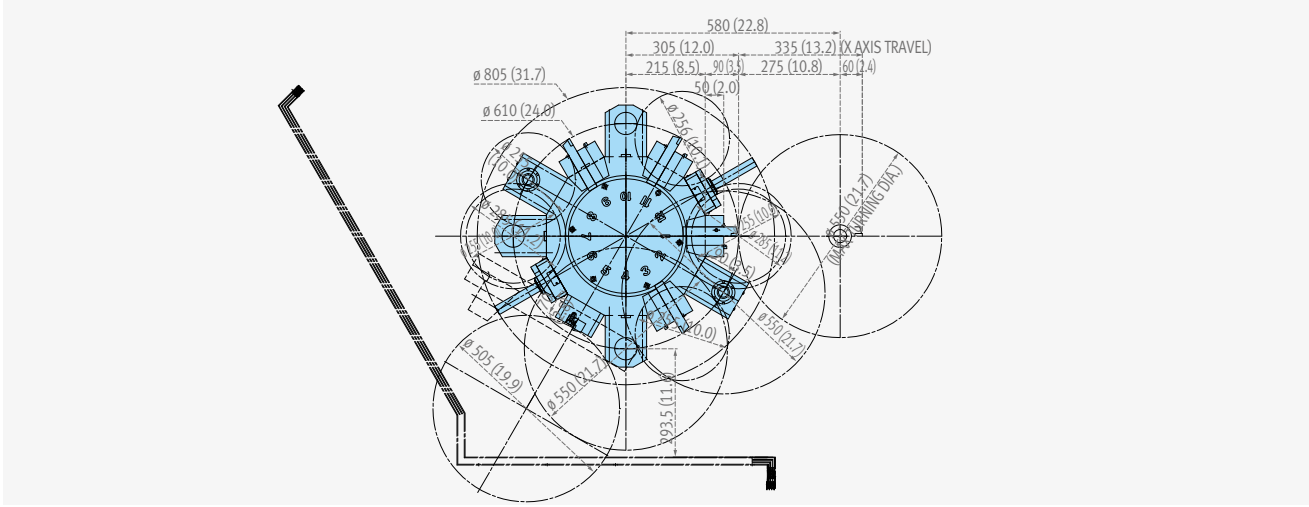
PUMA 5100M (12 station)

Unit : mm (inch)



PUMA 5100LY / XLY (12 station)

Unit : mm (inch)

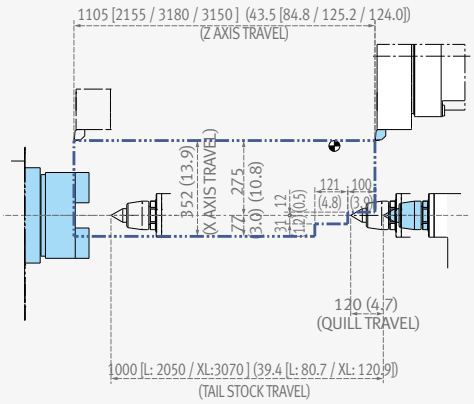


Working Range Diagram

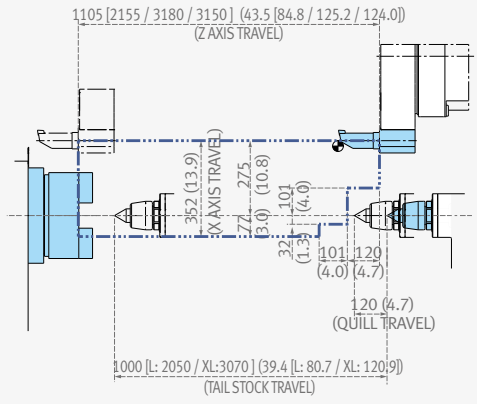
PUMA 4100 [L / XLA & XLB / XLC]

Unit : mm (inch)

OD Tool Holder



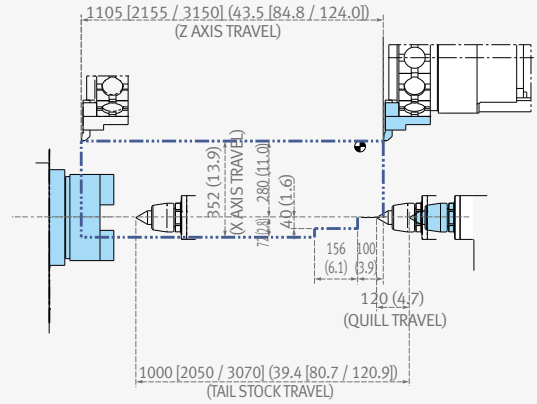
ID Tool holder



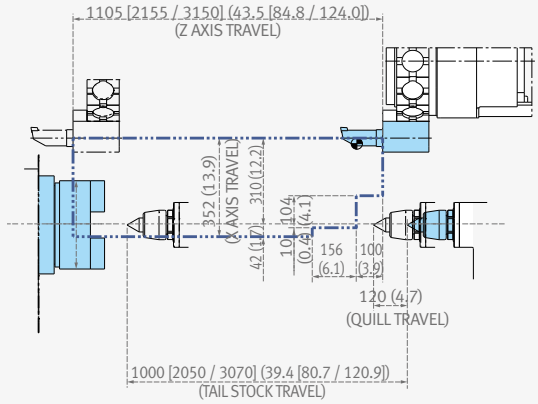
PUMA 4100M [LM / XLM]

Unit : mm (inch)

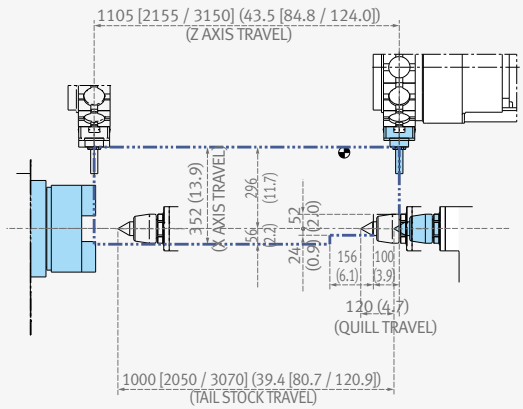
OD Tool Holder



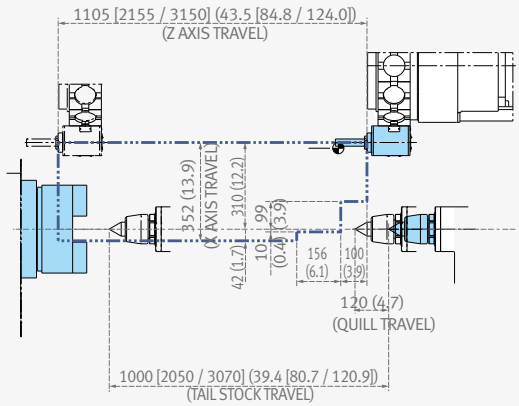
ID Tool Holder



Straight Milling Unit



Angular Milling Unit

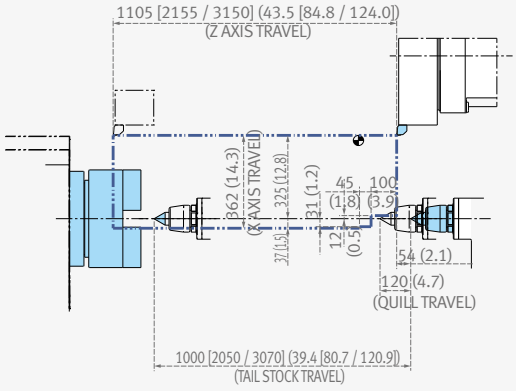


Working Range Diagram

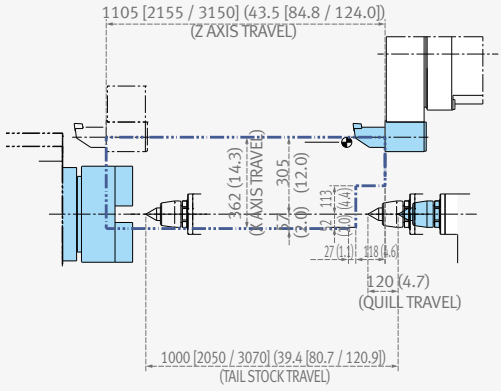
PUMA 5100 [L / XL]

Unit : mm (inch)

OD Tool Holder



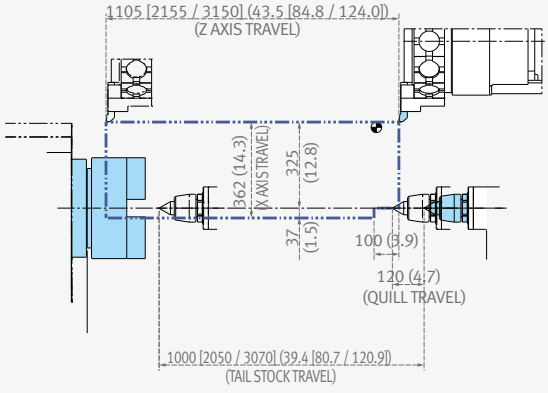
ID Tool holder



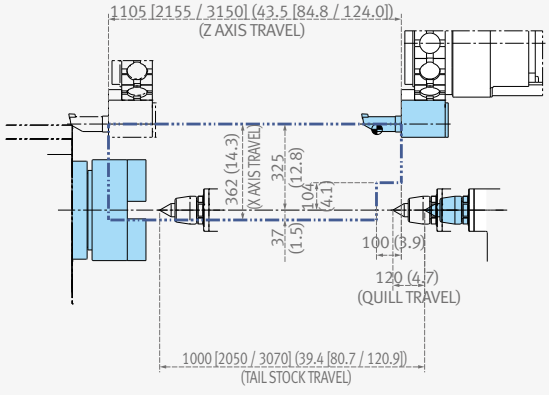
PUMA 5100M [LM / XLM]

Unit : mm (inch)

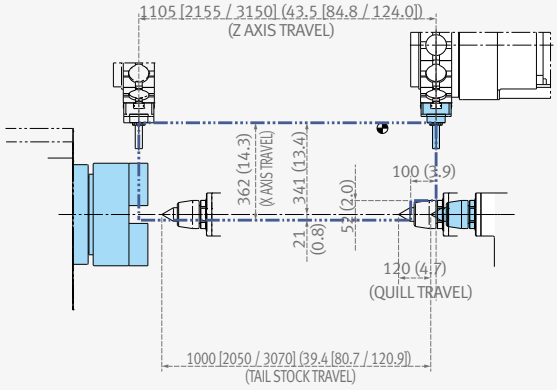
OD Tool Holder



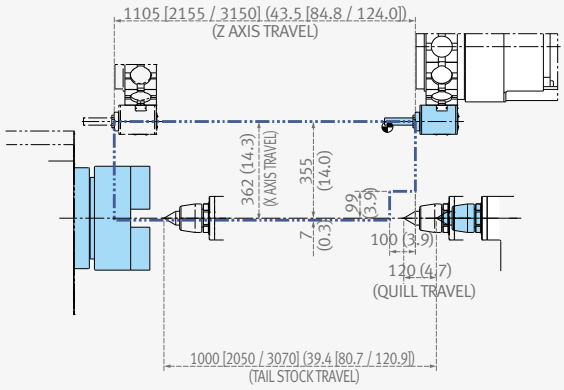
ID Tool Holder



Straight Milling Unit



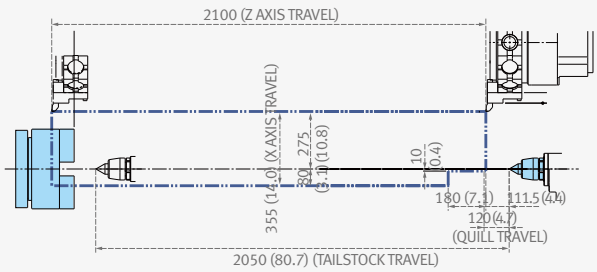
Angular Milling Unit



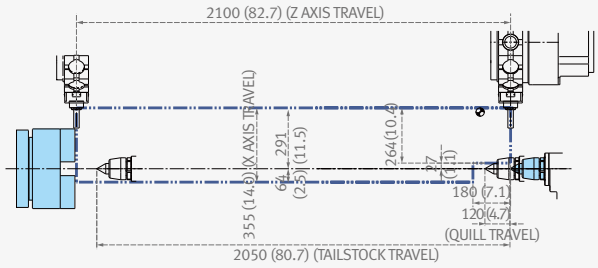
PUMA 5100LY

Unit : mm (inch)

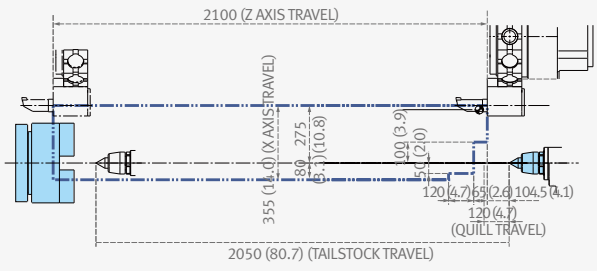
OD Tool Holder



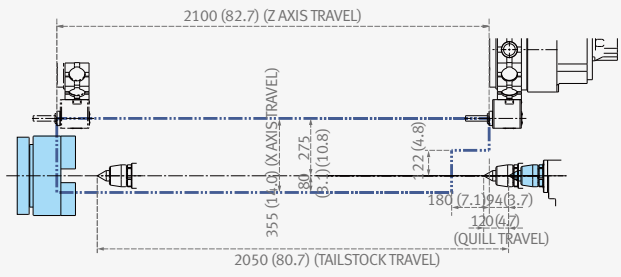
Straight Milling Unit



ID Tool Holder



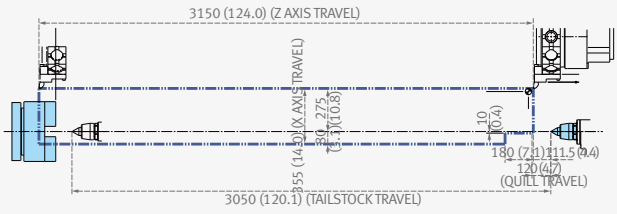
Angular Milling Unit



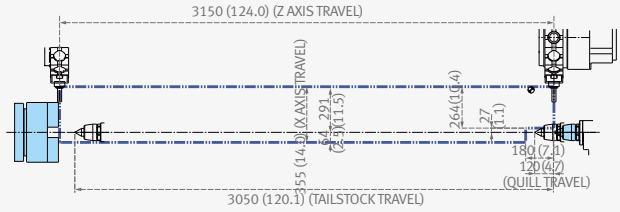
PUMA 5100XLY

Unit : mm (inch)

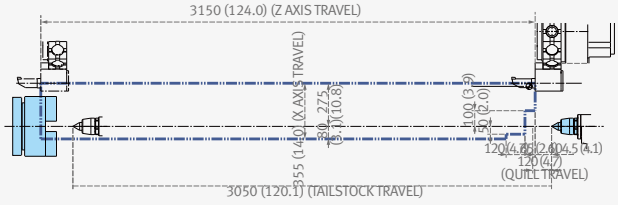
OD Tool Holder



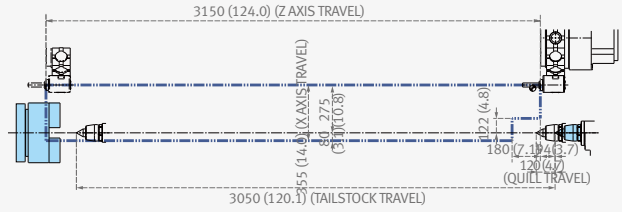
Straight Milling Unit



ID Tool Holder



Angular Milling Unit



Machine Specifications

Description			Unit	PUMA 4100A [LA / XLA]	PUMA 4100B [LB / XLB]	PUMA 4100C [LC / XLC]	PUMA 4100MA [LMA / XLMA]
Capacity	Swing over bed		mm (inch)	790 [790 / 770] (31.1 [31.1 / 30.3])			
	Swing over saddle		mm (inch)	590 (22.0)			
	Recom. turning diameter		mm (inch)	315 (12.4)	380 (15.0)		315 (12.4)
	Max. turning diameter		mm (inch)	550 (21.7)			
	Max. turning length		mm (inch)	1074 [2124 / 3152] (42.3 [83.6 / 124.1])	1042 [2092 / 3120] (41.0 [82.4 / 122.8])	1002 [2052 / 3080] 39.4 [80.8 / 121.3])	1010 [2060 / 3100] (39.9 [81.1 / 122.0])
	Chuck size		inch	12	15	21	12
	Chuck work weight (including chuck)		kg (lb)	500 (1102.3)	870 (1918.0)	1400 (3086.5)	500 (1102.3)
	Shaft work weight (including chuck)		kg (lb)	1000 (2204.6)	1700 (3747.9)	2600 (5732.0)	1000 (2204.6)
	Bar working diameter		mm (inch)	102 (4.0)	116.5 (4.6)	165.5 (6.5)	102 (4.0)
Travels	Travel distance	X-axis	mm (inch)	352 (13.9)			
		Z-axis	mm (inch)	1105 [2155 / 3180] (43.5 [84.8 / 125.2])		1105 [2155 / 3150]	
		Y-axis	mm (inch)	-			
		C-axis	deg	-			
	Rapid traverse rate	X-axis	m/min (ipm)	16 (629.9)			
		Z-axis	m/min (ipm)	20 (787.4)			
		Y-axis	m/min (ipm)	-			
		C-axis	r/min	-			
Main spindle	Max. spindle speed		r/min	3000	2000	1500	3000
	Main spindle motor power (30min/Cont.)		kW (Hp)	35/26/22 (46.9/34.9/29.5) (S3 25%/30min/Cont.)		37/30 (49.6/40.2)	37 / 30 / 22 (S6 25% / S6 60% / S1 Cont.)
	Max. spindle torque		N·m (ft-lb)	1584 (1169.0)	2379 (1755.7)	3280 (2420.6)	1025 (756.4)
	Spindle nose		ASA	A2-11		A1-15	A2-11
	Spindle bearing dia.(Front)		mm (inch)	160 (6.3)	180 (7.1)	240 (9.4)	160 (6.3)
	Max. Spindle through hole diameter		mm (inch)	115 (4.5)	132 (5.2)	181 (7.1)	115 (4.5)
	Min. spindle indexing angle (C-axis)		deg	-			
Turret	No. of tool stations		ea	12 {10}*	10 {12}*		
	OD tool size		mm (inch)	32 x 32 (1.3 x 1.3)			
	Max. boring bar size		mm (inch)	60 (2.4)			
	Turret indexing time (1 station swivel)		s	0.25			
	Max. rotary tool speed		r/min	-			
	Rotary tool motor power (S3 15%/S3 25%/30min/Cont.)		kW (Hp)	-			(S3 15% /
	Max. rotary tool torque		N·m (ft-lb)	-			
Tailstock	Tailstock travel		mm(inch)	1000 [2050 / 3070] (39.4 [80.7 / 120.9])			
	Quill diameter		mm(inch)	120(4.7)			
	Quill travel		mm(inch)	120(4.7)			
	Quill bore taper		MT	MT#6 Live {MT#5 Built-in Dead}*			
Power Source	Electric power supply (rated capacity)		kVA	42.25 [43.17/ 44.98]		51.05 [51.97 / 53.78]	43.18 [45.06 / 44.98]
Machine Dimensions	Length		mm(inch)	4654 [5774 / 7024] (183.2 [227.3 / 276.5])			
	Width		mm(inch)	2056 [2275 / 2276] (80.9 [89.6 / 89.6])			
	Height		mm(inch)	2194 [2272 / 2335] (86.4 [89.4 / 91.9])			
	Weight		kg(lb)	9450 [10900 / 11900] (20833 [24030 / 26235])	9950 [11400 / 12400] (21936 [25132 / 27337]	10450 [11900 / 12900] (23038 [26235 / 28439]	9600 [11050 / 12050] (21164 [24361 / 26565])
Control	NC system		-				

PUMA 4100MB [LMB / XLMB]	PUMA 4100MC [LMC / XLMC]	PUMA 5100A [LA / XLA]	PUMA 5100B [LB / XLB]	PUMA 5100C [LC / XLC]	PUMA 5100MA [LMA / XLMA]	PUMA 5100MB [LMB / XLMB]	PUMA 5100LYA [XLYA]	PUMA 5100LYB [XLYB]	PUMA 5100LYC
900 [900 / 870] (35.4 [35.4 / 34.3])							880 (34.6)		
690 (27.2)							817 (32.2)		
315 [315 / 380] (12.4 [12.4 / 15.0])		380 (15.0)					380 (15.0)		
650 (25.6)							550 (21.7)		
978 [2028 / 3068] (38.5 [79.8 / 120.8])	938 [1988 / 3028] (36.9 [78.3 / 119.2])	1032 [2082 / 3082] (40.6 [82.0 / 121.3])	992 [2042 / 3042] (39.1 [80.4 / 119.8])		992 [2042 / 3068] (39.1 [80.4 / 120.8])	952 [2002 / 3028] (37.4 [78.8 / 119.2])	2050 (80.7) [3070 (120.9)]	2020 (79.5) [3040 (119.7)]	
15	21	15	21	No chuck(order base)	15	21	15	21	No chuck(order base)
870 (1918.0)	1400 (3086.5)	870 (1918.0)	1400 (3086.5)	2000 (4409.2)	870 (1918.0)	1400 (3086.5)	870 (1918.0)	1400 (3086.5)	2000 (4409.2)
1700 (3747.9)	2600 (5732.0)	1700 (3747.9)	2600 (5732.0)	3600 (7936.6)	1700 (3747.9)	2600 (5732.0)	1700 (3747.9)	2600 (5732.0)	3600 (7936.6)
116.5 (4.6)	165.5 (6.5)	116.5 (4.6)	165.5 (6.5)	depends on applied chuck	116.5 (4.6)	165.5 (6.5)	116.5 (4.6)	165.5 (6.5)	depends on applied chuck
362 (14.3)							355 (14.0)		
(43.5 [84.8 / 124.0])		1105 [2155 / 3150] (43.5 [84.8 / 124.0])					2100 (82.7) [3150 (124.0)]		
-							150 (5.9)		
360		-			360		360		
16 (629.9)							20 (787.4)		
20 (787.4)							18 (708.7) [20 (787.4)]		
							10 (393.7)		
50		-					50 [100]		
2000	1500	2000	1500	1000	2000	1500	2000	1500	1000
30 / 22 (S6 60% / S1 Cont.)	-	37/30 (49.6/40.2)	45/37 (60.3/49.6)		37/30 (49.6/40.2)	45/37 (60.3/49.6)	37/30 (49.6/40.2)	45/37 (60.3/49.6)	
1611 (1188.9)	-	3280 (2420.6)	4038 (2980.0)	4463 (3293.7)	2432 (1794.8)	2957 (2182.3)	2431 (1794.1)	2957 (2182.3)	3268 (2411.8)
A2-11	A1-15	A2-11	A1-15	ISO 702-4 NO.20	A2-11	A1-15	A2-11	A1-15	ISO 702-4 NO.20
180 (7.1)	240 (9.4)	180 (7.1)	240 (9.4)	340 (13.4)	180 (7.1)	240 (9.4)	180 (7.1)	240 (9.4)	340 (13.4)
132 (5.2)	181 (7.1)	132 (5.2)	181 (7.1)	275 (10.8)	132 (5.2)	181 (7.1)	132 (5.2)	181 (7.1)	275 (10.8)
0.001		-			0.001		0.001		
12, BMT75P		10 {12}*			12, BMT75P		12, BMT75P		
Main 25*25(1.0*1.0) Sub 32*32 (1.3*1.3)		32 x 32 (1.3 x 1.3)			25 x 25 {32 x 32} (1.0 x 1.0 {1.3 x 1.3})*		25 x 25 {32 x 32} (1.0 x 1.0 {1.3 x 1.3})*		
80 (3.1)					60 (2.4)		60 (2.4)		
0.25							0.25		
4000		-			4000		4000		
23 / 15 / 11 / 7.5 S3 25% / S6 15% / S1 Cont.)		-			23/15/11/7.5 (30.8/20.1/14.8/10.1)		23/15/11/7.5 (30.8/20.1/14.8/10.1)		
146 (107.7)		-			146 (107.7)		146 (107.7)		
1000 [2050 / 3070] (39.4 [80.7 / 120.9])							2050 (80.7)		
120(4.7)							120(4.7)		
120(4.7)							120(4.7)		
MT#6 Live {MT#5 Built-in Dead}*							MT#6 Live {MT#5 Built-in Dead}*		
43.18 [45.06 / 44.98]	51.98 [53.86 / 53.78]	52.55 [52.55 / 53.78]	60.25 [60.25 / 59.36]		53.86 [53.86 / 53.78]	61.56 [61.56 / 59.36]	61.09	68.79	
4759 [5879 / 7059] (187.4 [231.5 / 277.9])							5980 (235.4) [7302 (287.5)]		
2056 [2275 / 2276] (80.9 [89.6 / 89.6])							2522 (99.3) [2632 (103.6)]		
2194 [2272 / 2335] (86.4 [89.4 / 91.9])							2885 (113.6) [2937 (115.6)]		
10100 [11550 / 12550] (22266 [25463 / 27668])	10600 [12050 / 13050] (23369 [26565 / 28770])	10100 [11550 / 12550] (22266 [25463 / 27668])	10600 [12050 / 13050] (23369 [26565 / 28770])	10650 [12100 / 13100] (23479 [26676 / 28880])	10250 [11700 / 12700] (22597 [25794 / 27998])	10750 [12200 / 13200] (23699 [26896 / 29101])	13000 (28660) [16000 (35273)]		
DOOSAN Fanuc i Plus, Fanuc 32i (SIEMENS 828D / 840D)**									

* { } : Option ** : Please contact Doosan in advance

Note1 : Standard chuck is not included in PUMA 5100C series. Depends on customers' request, its applicable chuck is different. Tha't's way, some specifications are not fixed.

NC Unit Specifications

FANUC

● Standard ○ Optional X N/A

No.	Division	Item	Spec.	DOOSAN æFanuc i Plus			FANUC 32i		
				2-axis	M	Y	2-axis	M	Y
1	Controlled axis	Controlled axes		2 (X,Z)	3 (X,Z,C)	4 (X,Z,C,Y)	2 (X,Z)	3 (X,Z,C)	4 (X,Z,C,Y)
2		Simultaneously controlled axes		2 axes	3 axes	4 axes	2 axes	3 axes	4 axes
3		Cs contouring control		X	●	●	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	●	●	X	●	●
28		Cylindrical interpolation		X	●	●	X	●	●
29		Helical interpolation		X	○	●	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	●	●	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		●	●	●	●	●	●
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	X	X	X	○	○	○
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	●	●	●	○	○	○

● Standard ○ Optional X N/A

No.	Division	Item	Spec.	DOOSAN Fanuc i Plus			FANUC 32i		
				2-axis	M	Y	2-axis	M	Y
57	Program input	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		X	X	X	○	○	○
63		Coordinate system shift		●	●	●	●	●	●
64		Direct input of coordinate system shift		●	●	●	●	●	●
65		Pattern data input		●	●	●	○	○	○
66	Operation Guidance Function	EZ Guide i (Conversational Programming Solution)		● *1)	● *1)	● *1)	●	●	●
67		iHMI with Machining Cycle		○ *2)	○ *2)	○ *2)	X	X	X
68		EZ Operation package		●	●	●	●	●	●
69	Auxiliary/ Spindle speed function	Constant surface speed control		●	●	●	●	●	●
70		Spindle override	0 - 150%	●	●	●	●	●	●
71		Spindle orientation		●	●	●	●	●	●
72		Rigid tap		●	●	●	●	●	●
73		Arbitrary speed threading		○	○	○	○	○	○
74	Tool function/ Tool compensation	Tool offset pairs	32-pairs	X	X	X	X	X	X
75			64-pairs	X	X	X	●	●	●
76			99-pairs	X	X	X	○	○	○
77			128-pairs	●	●	●	X	X	X
78			200-pairs	○	○	○	○	○	○
79			400-pairs	X	X	X	○	○	○
80			499-pairs	X	X	X	○	○	○
81			999-pairs	X	X	X	○	○	○
82		Tool offset		●	●	●	●	●	●
83		Tool radius/Tool nose radius compensation		●	●	●	●	●	●
84		Tool geometry/wear compensation		●	●	●	●	●	●
85		Automatic tool offset	G36/G37	●	●	●	●	●	●
86		Direct input of offset value measured B		●	●	●	●	●	●
87		Tool life management		●	●	●	●	●	●
88	Accuracy compensation function	Backlash compensation for each rapid traverse and cutting feed		●	●	●	●	●	●
89		Stored pitch error compensation		○	○	○	○	○	○
90	Editing operation	Part program storage size & Number of registerable programs	640M(256KB)_500 programs	X	X	X	●	●	●
91			1280M(512KB)_1000 programs	X	X	X	○	○	○
92			2560M(1MB)_1000 programs	X	X	X	○	○	○
93			5120M(2MB)_1000 programs	●	●	●	○	○	○
94			1280M(512KB)_400 programs	X	X	X	X	X	X
95			5120M(2MB)_400 programs	X	X	X	X	X	X
96		Program protect		●	●	●	●	●	●
97		Password function		●	●	●	●	●	●
98	Data input/ output	Fast data server		○	○	○	○	○	○
99		External data input		●	●	●	○	○	○
100		Memory card input/output		●	●	●	●	●	●
101		USB memory input/output		●	●	●	●	●	●
102		Automatic data backup		●	●	●	●	●	●
103	Interface function	Embedded Ethernet		●	●	●	●	●	●
104		Fast Ethernet		○	○	○	○	○	○
105	Others	Display unit	15" color LCD	●	●	●	●	●	●
106			15" color LCD with Touch Panel	○	○	○	X	X	X
107		Robot interface	with PMC I/O module	○	○	○	○	○	○
108			with PROFIBUS-DP	○	○	○	○	○	○

*1) Only with 15" LCD standard *2) Only with 15" Touch LCD standard

CNC Specifications

SIEMENS

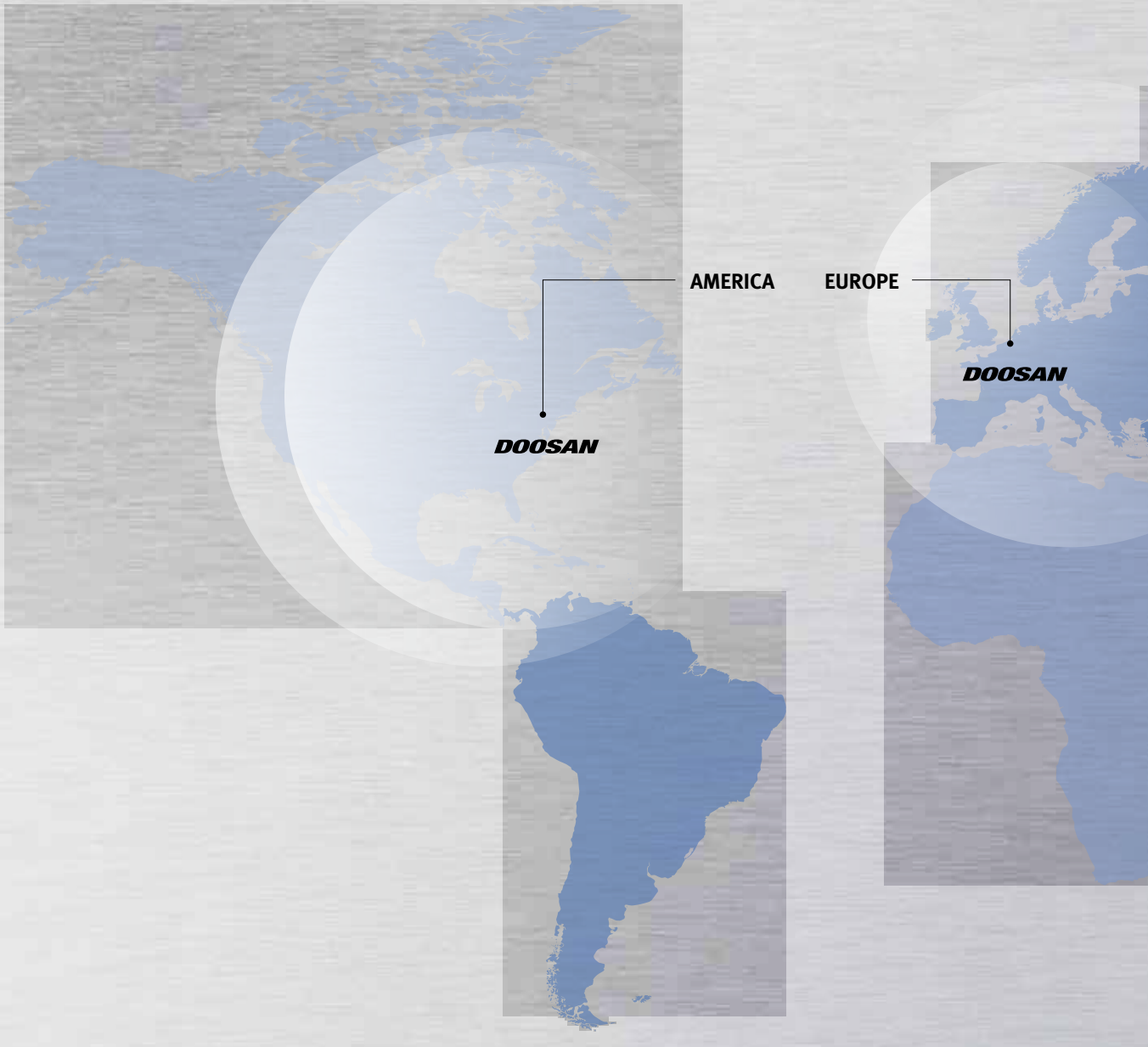
● Standard ○ Optional X Not applicable

No.	ITEM		Spec.	S828D
1	Axes control	Controlled axes	2 axis	X, Z, SP
2		R: Milling spindle	M-type	X, Z, C, R
3		Simultaneously controlled axes	Positioning(G00)/Linear interpolation(G01) : 3 axes Circular interpolation(G02, G03) : 2 axes	●
4		Backlash compensation		●
5		Leadscrew error compensation		●
6		Measuring system error compensation		●
7		Feedforward control	velocity-dependent	●
8		Follow up mode		●
9		Programmable acceleration		●
10		Emergency stop / overtravel		●
11		Least command increment	0.001mm (0.0001 inch)	●
12		Least input increment	0.001mm (0.0001 inch)	●
13		Maximum commandable value	±99999.999mm (±3937 inch)	●
14		Machine lock (PRT)		●
15		Absolute encoder		●
16	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)	256/512
53			PPU.4 for S828D SW281 (S/MS/Y/SY-type)	768/1536
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		●

● Standard ○ Optional X Not applicable

No.	ITEM		Spec.	S828D
69	Programming & Editing function	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	Others functions (Operation, setting & Display, etc)	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



Global Sales and Service Support Network

Corporations	Dealer Networks	Technical Centers	Service Post	Factories
4	164	51	198	3

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.

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 4100 / 5100 series

Description		Unit	PUMA 4100 series		PUMA 5100 series		PUMA 5100LY series
			A / B / C	MA / MB / MC	A / B / C	MA / MB	A / B / C
Max. turning diameter		mm (inch)	550 (21.7)	560 (22.0)	650 (25.6)		550 (21.7)
Max. turning length	Std. model	mm (inch)	1074 / 1042 / 1002 (42.3 / 41.0 / 39.4)	1010 / 978 / 938 (39.8 / 38.5 / 36.9)	1032 / 992 / 992 (40.6 / 39.1 / 39.1)	992 / 952 (39.1 / 37.5)	-
	L-model	mm (inch)	2124 / 2092 / 2052 (83.6 / 82.4 / 80.8)	2060 / 2028 / 1988 (81.1 / 79.8 / 78.3)	2082 / 2042 / 2042 (82.0 / 80.4 / 80.4)	2042 / 2002 (80.4 / 78.8)	2050 / 2020 / 2020 (80.7 / 79.5 / 79.5)
	XL-model	mm (inch)	3152 / 3120 / 3080 (124.1 / 122.8 / 121.3)	3100 / 3068 / 3028 (122.0 / 120.8 / 119.2)	3082 / 3042 / 3042 (121.3 / 119.8 / 119.8)	3068 / 3028 (120.8 / 119.2)	3070 / 3040 (120.9 / 119.7)
Chuck size		inch	12 / 15 / 21		15 / 21 / Order made		15 / 21 / Order made
Spindle through hole diameter		mm (inch)	115 / 132 / 181 (4.5 / 5.2 / 7.1)		132 / 181 / 275 (5.2 / 7.1 / 10.8)	132 / 181 (5.2 / 7.1)	132 / 181 / 275 (5.2 / 7.1 / 10.8)
Max. spindle speed		r/min	3000 / 2000 / 1500		2000 / 1500 / 1000	2000 / 1500	2000 / 1500 / 1000

* The other NC system application instead of FANUC should be checked with Doosan

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Fire Safety Precautions | There is a high risk or 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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