Optimal Solutions for the Future



2600

PUMA TW2600 series

High Productivity, 10-in. Class, 2-Spindle Horizontal Turning Center

PUMA TW2600 PUMA TW2600-GL

ver. EN 160502 SU

Basic Information

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Customer Support Service



PUMA TW2600 series

The 10-in. class PUMA TW2600 Series turning center is a next-generation standard, 2-spindle automation machine tool providing the users with even higher level of satisfaction with excellent productivity and accuracy.



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Superior Productivity

Implemented with the Feed System Optimization Technology, the PUMA TW2600 Series offer the highest productivity of the class, including high performance feed motor, rapid traverse and acceleration/ deceleration control by section.

Superior Machining Performance

With 15kW power and 404 N-m of high torque, the PUMA TW2600 Series provides the biggest turning diameter (Ø360mm) and the longest turning length (170mm) of the class.

Improved User Convenience

EOP, hot keys and various convenience functions are provided for operating functions and peripheral devices. Work counting, gantry operation and parts control functions further improve the user convenience, especially, in mass production.

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A 10-in. class, high

the PUMA TW2600

Series offers a built-in

gantry model in addition

to the standard version.

productivity, 2-spindle

horizontal turning center,

Standard model

PUMA TW2600

Built-in gantry model

PUMA TW2600-GL

Chuck size



Travel distance (X x Y axis) **190 x 180** mm (7.5 x 7.1 inch)



Rapid traverse (X / Y axis) **24 / 24** m/min (944.9 / 944.9 ipm)



The Series offers the largest machining area of the same class, up to Ø360 mm (Ø14.2 inch) and 170mm (6.7 inch) of max. turning diameter and max. turning length, respectively.

PUMA TW2600 Max. machining area

Max. turning diameter Ø360 mm (ø14.2 inch)

Max. turning length **170** mm (6.7 inch)



PUMA TW2600-GL Max. machining area

Max. work diameter (Max. / Min.) Ø200 / Ø50 mm (Ø7.9 / Ø2.0 inch)

Max. work length (Max. / Min.) 95 / 165mm (3.7 / 6.5 inch)

Max. work weight 6 kg (13.2 lb)





In addition to the standard spindle which offers the highest power of the class, an even higher torque spindle is available as an option for heavy duty cutting. Max. spindle speed

3500 r/min

Max. spindle motor power (S3 25%/Cont.) **18.5/15** kW (24.8 / 20.1 Hp) Max. spindle motor torque

202 N·m (149.1 lbf-ft) 404N·m (option) (298.2 lbf-ft)



Turret

The servo-driven turret minimizes idle time (tool change time) with higher reliability.

No. of tool posts

10ea + **10**ea

Tool 1 \rightarrow Tool 2 **0.73s** (12% faster than the

preceding models)

1.22s

(40% faster than the preceding models)



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The 3-axis, servo-driven, high-speed gantry loader of the PUMA TW2600-GL model offers minimized work loading/unloading time and maximized productivity. Gantry loader handling time (Enter → Change Work → Exit)



Rapid traverse (X x Y x Z axis)

150 x 130 x 50m/min (5905.5 x 5118.1 x 1968.5 ipm)

Travel distance (A1 / A2 / A3)

$x_{axis} \frac{2260}{89.0} \frac{2260}{162.2} \frac{4120}{mm}$

A-2 type

Yaxis **710**mm (28.0 inch) ^{Zaxis} **290**mm (11.4 inch)

Gantry types

A-1 type



Work in/out and stocker are at the left side of the gantry



Work in/out and stocker are at the right side of the gantry

 Londing position	

- Unloading position

A-3 type



Work in/out position is independent, and stockers are at both the left and right sides of the gantry

Additional functions for higher productivity and user convenience

- AUTO RAPID function (automatic acceleration/deceleration by position)
- **TRACK BACK function** (retraction by a predetermined distance by load sensing) The function to protect the loader from collision by detecting load and retracting the loader if collision is expected.
- Easy flow change function (work flow direction can be changed with M-code) Built-in standard program enables changing gantry loader operation using M-code, such as: L → R / R → L / L=R

Applications







Simultaneous machining of same parts at left/right sides



Work concept example 2



Simultaneous machining of two sequential processes of a same part

Work concept example 3



Simultaneous machining of different works

PUMA TW2600

210 (8267.7)

0.55 (0.0)

875

4.6 (0.2)

Cutting Performance

The PUMA TW2600 Series offers the greatest cutting performance of the class with max. torque of 404 N·m.





Inner diameter turning (Roughing/Finishing) (Material: SM45C)					
	Unit	PUMA TW2600 (202 N·m (149.1 ft-lbs))			
Cutting speed	m/min (ipm)	280 / 200 (11023.6 / 7874.0)			
Feed	mm/rev (ipr)	0.3 / 0.1 (0.0 / 0.0)			
Spindle speed	r/min	1393 / 1481			
Cutting depth	mm (inch)	3 / 0.4 (0.1 / 0.0)			
Tool length	-	4.0D / 3.0D			

* 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.

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Standard / Optional **Specifications**

features are available for

customer-specific work

Various optional

environments.

No.	Description	Features	PUMA TW2600	PUMA TW2600-0
1		8 inch	0	0
2	Chuck	10 inch	•	•
3		Chuck excluded	0	0
4	Turret	10 station	•	•
5		1.5 bar	•	•
6	Coolant Pump	4.5 bar	0	0
7		7 bar	0	0
8		Oil Skimmer (Belt-type)	0	0
9		Flushing Coolant	0	0
10	Coolant System Options	Through-spindle Coolant	0	0
11		Coolant Pressure Switch	0	0
12		High Pressure Coolant Interface	0	0
13	Chucking Option	Chuck Clamp Confirmation	0	0
14		Hinged Belt Type	0	0
15	Rear Chip Conveyor	Magnetic Scrapper Type (for castings)	0	0
16		Screw Type	0	0
17		Folklift 300L	0	0
18	- Chip Bucket	Rotation 300L	0	0
19		Air Blower	0	0
20	- - Chip Disposal Options -	Chuck Coolant	0	0
21		Air Gun	0	0
22		Coolant Gun	0	0
23		Mist Collector_Ready	0	0
24		Mist Collector Soluble	0	0
25		Tool Setter (Removable)	0	0
26		Work Position Confirmation Device_Ready	0	0
27	Measurement & Automation	Work Position Confirmation Device_TACO	0	0
28		Auto Door	0	0
29		Work & Tool Counter	0	0
30		A1 Type Loader & Stocker	-	0
31		A2 Type Loader & Stocker	-	0
32		A3 Type Loader & Stocker	-	0
33	- Gantry Loader	Turnover Unit	-	0
34		Gripper Type	-	0
35	-	Work Inspection Chute	-	0
36		Tool Load Monitoring System	0	0
37		Linear Scale (X/Z-axis)	0	0
38		Air Conditioner	0	0
39	Optional Accessories	Signal Tower	0	0
40		Electric Cabinet Lamp	0	0
41	-	Auto Power Cut-off	0	

● Standard ○ Optional X N/A

* Please contact DOOSAN to select detail specifications.

Peripheral equipments



Classification	Material	Description
Hinged Belt	Steel	Most typical type of chip conveyors. Suitable for steel material works producing 30 mm or longer chips.
Screw (Auger)	Casting	Chip conveyor with smallest footprint. Demands 80% of footprint compared to hinged belt type.
Magnetic Scrapper	Casting	Chip conveyor with magnets. Suitable for cast steel producing fine chips.

Coolant tank

The coolant tank can be isolated without removing the chip conveyor, significantly enhancing operator convenience.



Special response to the demands for special turning diameter works **option**





* Delivery terms will be advised on request

Chip bucket option

Capacity **300**L (79.3galon)



Tool setter option

The tool setter facilitates tool setting, and fast and precise length compensation of abraded tools.



Independent gantry operation panel



Standard, independent gantry loader operation panel is provided for user convenience.

*PUMA TW2600-GL

Work counter option

Available counting categories are Total, Daily, and Work. This function further enhances productivity with planned work management.





CNC systems optimized

for DOOSAN's machine

tools maximize productivity.

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User-friendly operation panel

The operation panel of new design enhances operating convenience with common buttons and layout, and uses Qwerty type keyboard for easy and fast operation.



10.4" display

- USB & OCMCIA card (standard)
- QWERTY keyboard
- Buttons can be easily added for additional options
- Operation panel newly designed for greater user convenience

Additional convenience functions

Warming-up (short-cut key)

Warming-up program can be loaded and executed with a short-cut key

Automatic Machine Sleep Function

Enters sleep mode automatically by detecting work on the IN/OUT stockers

Easy operation package

Loader teaching



Real-time-based monitoring of

loader sensor status



Alarm guidance



Helps the operator to identify the cause of and reset various alarms.

Tool load monitoring



Max. allowable tool load can be set up for control and actual loading can be plotted according to time into graphs.

Monitors loader sensors in real-timebasis and provides information on the error causes, enhancing operating efficiency

and maintainability.

Tool counter

1.1.5	- 1	-	CONTRACT	-	-
			1.00		
		1.1			
		1.1			
		1.1			
		111			
		10.0			
 		4.5			
		1.1			

Helps managing tool information.

[Tool information includes tool No., tool conditions (general, large diameter, worn/damaged, first-time-used tool, manual), and tool name etc.]

Spindle Power – Torque Diagram

PUMA TW2600 series



External Dimensions

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PUMA TW2600

Unit: mm (inch)

Top View



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Front View



PUMA TW2600-GL

Unit: mm (inch)

Top View



	A	В	С
PUMA TW2600-GL (A1 type)	4150 (163.4)	-	-
PUMA TW2600-GL (A2 type)	-	4150 (163.4)	-
PUMA TW2600-GL (A3 type)	-	-	4840 (190.6)

Tooling System / Tool Interference Diagram

Tooling System

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Unit: mm (inch)



Tool Interference

Unit: mm (inch)



Working Range

PUMA TW2600 series

Unit: mm (inch)

PUMA TW2600



PUMA TW2600-GL



Machine Specifications

PUMA

series

TW2600

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Item			Unit	PUMA TW2600	PUMA TW2600-GL	
Capacity	Recommended turning diameter		mm (inch)	Ø360 (Ø14.2)	Ø200 (Ø7.9)	
	Max. turning diameter (Max. / Min.)		mm (inch)	Ø360 (Ø14.2)	Ø200 / Ø50 (Ø7.9 / Ø2.	
	Max. turning length (Max. / Min.)		mm (inch)	170 (6.7)	95 / 165 (3.7 / 6.5)	
		Standard	mm (inch)	Ø254	(Ø10)	
	Chuck Size	Optional	mm (inch)	Ø210 (Ø8)		
Travel Travel distance		X axis	mm (inch)	190(10+180) (7.5)((0.4+7.1))		
		Z axis	mm (inch)	180 (7.1)		
Feedrate	Papid traverce	X axis		24 (944.9)		
	Kapiu traverse	Z axis	m/min (ipm)	24 (944.9)		
Spindle	Max. spindle speed		r/min	3500		
	Max. spindle power (30 min/cont.)	Standard	kW (hp)	18.5/15 (24.8/20.1)		
		Optional	kW (hp)	18.5/15 (24.8/20.1)		
	Max spindle torque	Standard	N∙m (ft-lbs)	202 (149.1)		
	max. spinule torque	Optional	N∙m (ft-lbs)	404 (298.2)		
	Distance between left-right spindle centers		mm (inch)	460 (18.1)		
	Spindle nose		ASA	A2	2-6	
	Spindle bearing size (front face I/D)		mm (inch)	Ø110 (Ø4.3)		
	Spindle hole through diameter		mm (inch)	Ø61 (Ø2.4)		
Turret	No. of tool stations		ea	10+10		
	OD tool size		mm (inch)	Ø25 (Ø1)		
	Max. boring bar size		mm (inch)	Ø40 (Ø1.6)		
	Turret Indexing time	(1 station swivel)	sec	0.16		
Power	Power consumption		kVA	92.4		
Dimensions	Length	Length		2520 (99.2)	4840 (190.6) (A3 type)	
	Width		mm (inch)	2410 (94.9)	2775 (109.3) (A3 type)	
	Height (Max. / Min.)		mm (inch)	2150 (84.6)	3513 / 2803 (138.3 / 110.4)	
	Weight		kg (lbf)	7200 (15873.0)		
Control	CNC system			DOOSAN	I-FANUC i	

NC Unit Specifications

DOOSAN FANUC i

			standard fe	eatures O optio	n X Not available
				Doosan Fa	anuc i Series
No.	ltem		Spec.	PUMA TW2600	PUMA TW2600-GL
				,	7
1		Controlled axes		4 (X1,Z1+X2,Z2)	(X1,Z1 + X2,Z2
					+ GX, GY, GZ)
2	Control Augo	Simultaneously controlled axes		2 axes (each nath)	(each path)
2	Control Axes	Inch/matric conversion		(cucii putii)	3 axes(Gantry)
4		Stored limit check before move		•	•
5		Chamfering on/off		•	•
6		Unexpected disturbance torque detection function		•	•
7		DNC operation	Included in RS232C interface.	•	•
8		Tool retract and recover		0	•
10		Wrong operation prevention		•	•
11	Operation	Single block		•	•
12		Reference position shift		•	•
13		Handle Interruption	x1 x10 x100	•	•
15		Manual handle retrace	X1,X10,X100	0	0
16		Nano interpolation		•	•
17		Linear interpolation		•	•
18		Circular interpolation		•	•
20	Interpolation	Multi threading		•	•
21	Function	Thread cutting retract		•	•
22		Continuous threading		•	•
23		Variable lead thread cutting		•	•
25		High-speed skip	Input signal is 8 points.	•	•
26		Override cancel		•	•
27	Feed Function	Al contour control I		0	0
28		Al contour control II Papid traverse block evertap		0	0
30		Optional block skip	9 pieces	•	•
31		Absolute/incremental programming	Combined use in the same	•	•
- 22			block	•	•
32		Diameter/Radius programming		•	•
34		Workpiece coordinate system preset		•	•
35		Direct drawing dimension programming		•	•
36		Chamfering/Comer R		•	0
3/	Program Input	Custom macro	#100, #199 #500, #999	•	•
39		Interruption type custom macro	#100-#199,#900-#999	•	•
40		Canned cycle		•	•
41		Multiple repetitive cycles	G70~G76	•	•
42		Multiple repetitive cycles II	Pocket profile	•	•
44		Coordinate system shift		•	•
45		Direct input of coordinate system shift		•	•
46		Pattern data input		•	•
4/	Interactive	EZ Guidei(Conversational Programming Solution)		•	•
40	Auxiliary/Spindle	Arbitrany speed threading		-	-
49	Function			0	0
50		Iool offset pairs	128-pairs	•	•
52		Tool offset	200-pairs	•	•
53	Tool Function /	Tool radius/Tool nose radius compensation		•	•
54	Compensation	Tool geometry/wear compensation		•	•
55		Automatic tool offset		•	•
57		Tool life management		•	•
58	Accuracy	Stored nitch error compensation		0	0
	Correction	Dart program storage size 9 Number of registerable registerable	E120M(2MD) 1000 mm		
59 60		Part program storage size & Number of registerable programs	2560M(1MB) 800 programs	•	•
61	Editing	Part program storage size & Number of registerable programs	5120M(2MB)_800 programs	0	0
62	Lating	Program protect		•	•
63		Password function		•	•
64		Flayback Fast data server		•	•
66	Data Input/	Memory card input/output		•	•
67	Output	USB memory input/output		•	•
68		Automatic data backup		•	•
- 69 - 70	Other Functions	Fast Ethernet		0	
71	Other Functions	Display unit	10.4" color LCD	•	•

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Customer Support Service

Responding to Customers Anytime, Anywhere



Doosan Machine Tools' Global Network, Responding to Customer's Needs nearby, Anytime, Anywhere

Doosan machine tools provides a system-based professional support service before and after the machine tool sale by responding quickly and efficiently to customers' demands. By supplying spare parts, product training, field service and technical support, we can provide top class support to our customers around the world.



Customer Support Service

We help customers to achieve success by providing a variety of professional services from presales 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

PUMA TW2600 series



Description		Unit	PUMA TW2600 PUMA TW2600-0		
Max. turning diameter (Ma	x. / Min.)	mm (inch)	Ø360 (Ø14.2)	Ø200 / Ø50 (Ø7.9 / Ø2.0)	
Max. turning length (Max. /	' Min.)	mm (inch)	170 (6.7)	95 / 165 (3.7 / 6.5)	
Chuck size		inch	10 {8/12}		
Travel distance	X / Z-axis	mm(inch)	190(180 + 10) (7.5)((7.1 + 0.4)) / 180 (7.1)		
Rapid traverse	X / Z-axis	m/min(ipm)	24 (944.9) / 24 (944.9)		
Spindle speed		r/min	3500		
Spindle motor power (S3 2	5%/cont.)	kW (hp)	18.5/15 (24.8/20.1)		
Spindle nose specificati	on	ASA	A2	-6	
Spindle bearing I·D		mm (inch)	Ø 110	(4.3)	
No. of tool stations		ea	10+10		
Machine dimensions (Lx W	0	mm (inch)) 2520 x 2350 (99.2 x 92.5) 4840** x 2715 (190.6** x 106.9)		
CNC specification	NC specification - DOOSAN FANUC i			FANUC i	

* Chip conveyor excluded. ** Based on type A3 (stockers on the left/right) { } : optional



Doosan Machine Tools

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Optimal Solutions for the Future

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 $\ast~$ For more details, please contact Doosan Machine Tools.

 $\ast\,$ The specifications and information above-mentioned may be changed without prior notice.

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