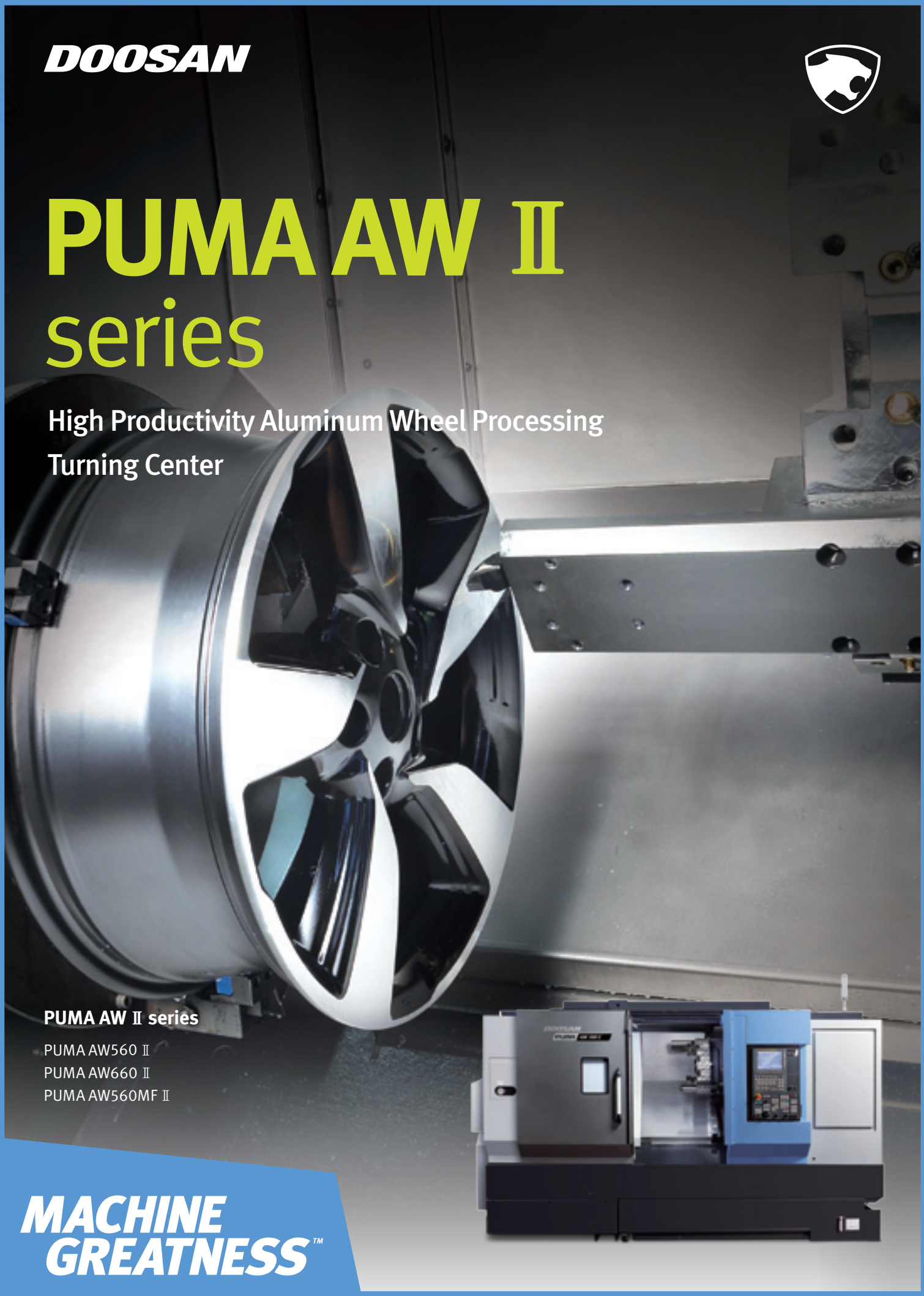
DOOSAN

PUMA AW Ⅱ series

High Productivity Aluminum Wheel Processing Turning Center



PUMA AW Ⅱ series

PUMA AW560 Ⅱ
PUMA AW660 Ⅱ
PUMA AW560MF Ⅱ

MACHINE GREATNESS™

PUMA AW Ⅱ series

The PUMA AW560 Ⅱ / 660 Ⅱ / 560MF Ⅱ models are Doosan Machine Tools' next generation wheel processing turning centers, with powerful and stable cutting performance and enhanced chip disposal efficiency and cutting stability.

Contents

02 Product Overview

Basic Information

04 Basic Structure

Detailed Information

06 Standard / Optional Specifications
08 Applications
09 Diagrams
15 Machine / CNC Specifications

18 Customer Support Service

Powerful Cutting, Wide Machining Area

Offers a wide cutting area for processing a wide variety of aluminum wheels with high cutting capacity and reliability.

Enhanced Chip Disposal and Maintenance Efficiency

Easy for chip disposal, efficient lubrication system, and good maintainability of the air units.

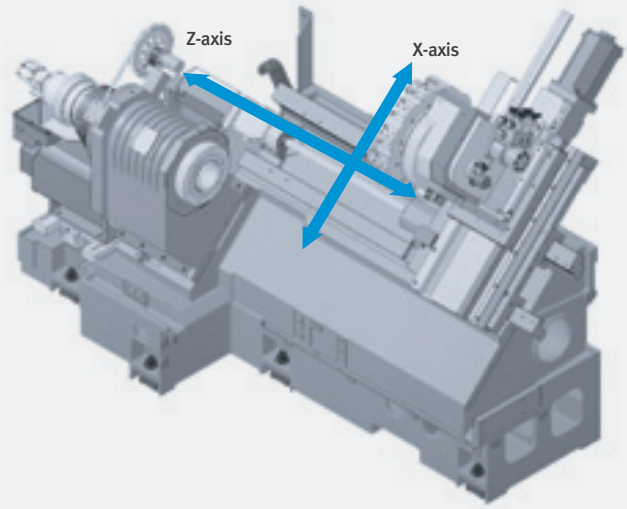
User Convenience

The distance between machine front and spindle is minimized for operator's convenience. The center can be integrated with various automation systems.

Basic structure

The PUMA AW II Series offer greatly enhanced user convenience and chip disposal capacity in addition to the powerful cutting capacity of the preceding model.

Optimized for the machining of aluminum alloy wheels, the PUMA AW II Series delivers a very high level of accuracy thanks to its anti-vibration structure. In particular, MF model is capable of mirror surface finishing with extremely low surface roughness.



Description		Unit	PUMA AW560 II	PUMA AW660 II	PUMA AW560MF II
Travel distance	X-axis	mm (inch)	362 (14.3)		
	Z-axis	mm (inch)	720 (28.3)		
Rapid traverse rate	X-axis	m/min (ipm)	16 (629.9)		
	Z-axis	m/min (ipm)	20 (787.4)		

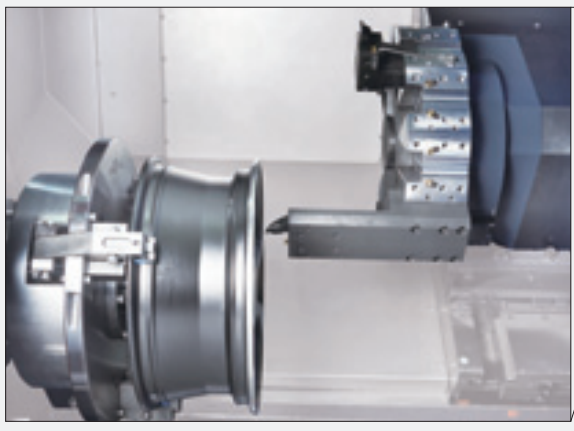
Machining Area

The Series offer wide machining area for processing a wide variety of aluminum wheel sizes.

Max. Turning Diameter

PUMA AW560 II / 560MF II
Ø550 mm
(21.7 inch)

PUMA AW660 II
Ø650 mm
(25.6 inch)



finger chuck

Description	Unit	PUMA AW560 II	PUMA AW660 II	PUMA AW560MF II
Max. turning dia.	mm (inch)	Ø550 (21.7)	Ø650 (25.6)	Ø550 (21.7)
Recommended turning dia.	mm (inch)	508 (20")	610 (24")	508 (20")
Max. turning length	mm (inch)	710 (28.0)		

Spindle

The spindle with high power and torque provides high accuracy cutting at high speed and heavyduty cutting at low speed. especially MF type model has built-in spindle so that, offer better surface with high accuracy.

Max. turning speed

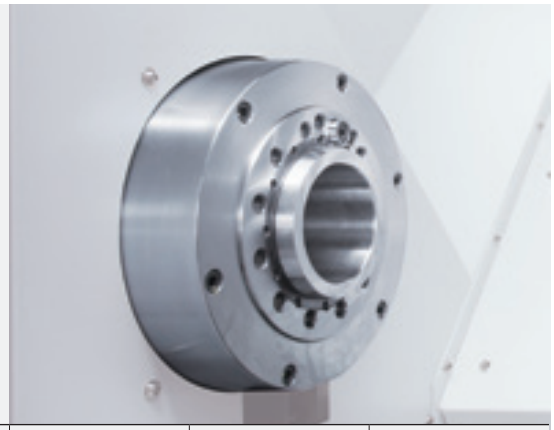
2500 r/min

Max. power (30min/cont.)

37/30 kW (49.6/40.2 Hp)

Max. Torque

538 N·m (397.0 ft-lbs)



Description	Unit	PUMA AW560 Ⅱ	PUMA AW660 Ⅱ	PUMA AW560MF Ⅱ
Spindle speed	r/min	2500	2000	2500
Spindle power (30min/cont.)	kW (Hp)	37/30 (49.6/40.2)	37/30 (49.6/40.2)	30/25 (40.2/33.5)
Spindle torque	N·m (ft-lbs)	461 (340.2)	538 (397.0)	325 (239.7)
Spindle type	-	Belt drive		Built-in spindle

Turret

The biggest-in-class curvic coupling and hydraulic clamp of the highest power inhibit vibration, extend tool life, and guarantee higher cutting power as well as reliability.

Index station

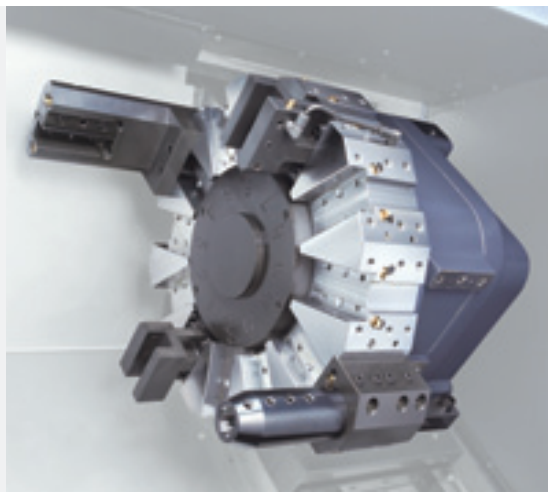
12 ea

1station swivel

0.25 sec

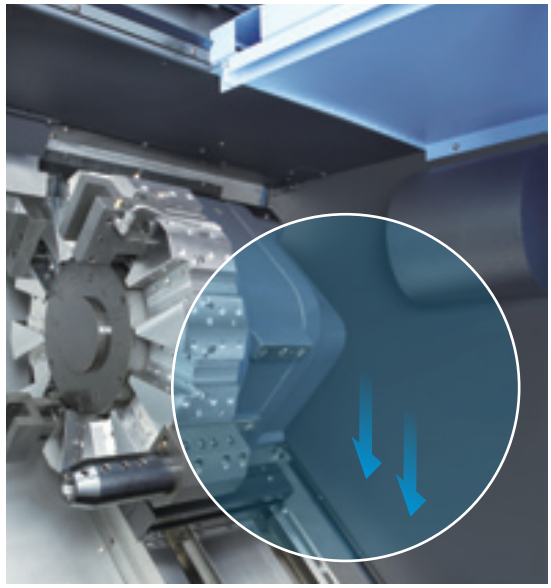
1station index

0.9 sec



Chip Disposal

The streamlined cover with steeper angle removes chips at much higher efficiency. The new Series specially boast of enhanced convenience features for chip disposal and maintenance.



Standard / Optional Specifications

Various options are available to satisfy various user requirements.

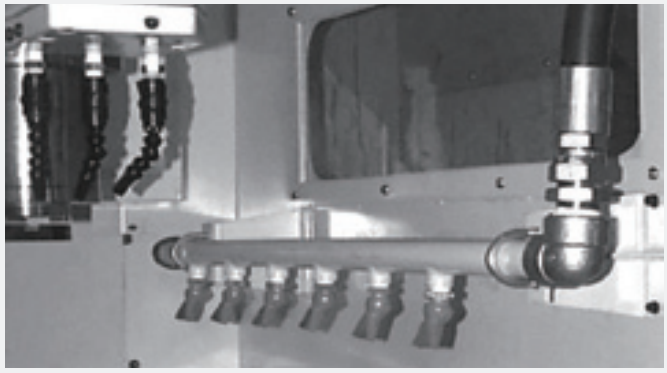
● Standard ○ Optional X N/A

No.	Description	Features	PUMA AW Ⅱ series
1	Rotary Cylinder	LONG STROKE_Y1240RE	●
2		LONG STROKE_Y1550RE	○
3	Coolant pump	1.8 kW (2.4 Hp)_0.7 MPA_30 L/MIN	●
4		2.5 kW (3.4 Hp)_1.0 MPA_30 L/MIN	○
5		4.0 kW (5.4 Hp)_1.45 MPA_30 L/MIN	○
6	Coolant options	High pressure coolant interface	○
7		Shower coolant	○
8		Oil Skimmer (Belt type)	○
9	Chip processing	Chip conveyor_Hinged type at right side	○
10		Chip conveyor_Magnetic type at right side	○
11		Chip bucket_Forklift 220 L (58.1 galon)	○
12		Chip bucket_Forklift 300 L (79.3 galon)	○
13		Chip bucket_Forklift 380 L (100.4 galon)	○
14		Chip bucket_Rotation 220 L (58.1 galon)	○
15		Chip bucket_Rotation 300 L (79.3 galon)	○
16		Chip bucket_Rotation 380 L (100.4 galon)	○
17		Air blower for chuck	○
18		Air gun	○
19	Automatic & Mesurement	Automatic front door and safety devices	○
20		Robot interface with PMC I/O module	○
21		Robot interface with Profibus DP	○
22	Optional devices	Tool load mononitoring system	○
23		Easy programming guide for PC	○
24		Mist collector	○
25		Work location confirmation	○
26		Chuck clamp confirmation	○
27		Auto power off	○
28		Work & Tool counter	○
29		Signal tower	○
30		Electric cabinet light	○
31		Air conditioner	○
32		Quick change tooling(CAPTO)	○
33	Customized Special Option	Coolant level switch : Sensing level - Low	○
34		Drum Filter Chip Conveyor	○
35		Coolant Chiller	○
36		Double Cylinder	○
37		Holder Interface Work Proof RLP40	○

※Please contact Doosan to select detail specifications.

Diverse Options

Shower Coolant option 7



The shower coolant washes workpiece with coolant sprayed from above.

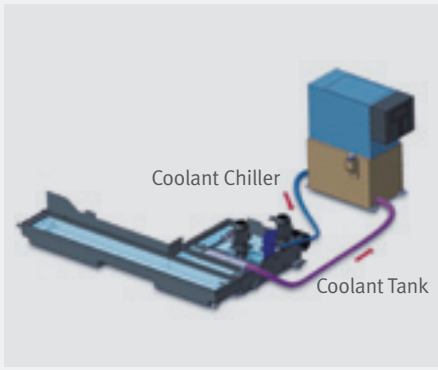
Oil Skimmer option 8

The oil skimmer keeps coolant and lubricant isolated from each other to extend the lifecycle of coolant.

Chuck Coolant option

The chuck coolant removes chips on the chuck and jaws to facilitate contact between the workpiece and the chuck.

Coolant Chiller option



The detachable coolant chiller is recommended to maintain thermal error at a minimal level and achieve superior machining precision.

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.

Dust Collector option 25

The dust collector absorbs airborne oil vapor and fine dust in the system to improve working environment.

Work & Tool Counter option 29

The counter counts daily and cumulative works, tool usage, etc.

Power Panel Air Conditioner option 32

When a machine operates in a hot environment, this device regulates the temperature inside of power panel to prevent the panel from malfunctioning owing to the of temperature fluctuation.

Signal Tower option

Device to show present statuses of the machine.

FANUC

The FANUC CNC has been optimized for Doosan's machine tools to maximize customers' productivity.

User-Friendly Operation Panel

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.

10.4-inch display

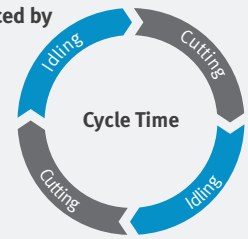
- **USB & PCMCIA card (standard)**
- **QWERTY keyboard employed**
- **Buttons can be easily added for additional options**
- **Operation panel newly designed for greater user convenience**

Easy Operation Package

Improved productivity compared to the preceding model

Idling time reduced by

10%



Idling time during the machining process has been dramatically reduced to achieve higher productivity.

G-code / M-code Functions

G-code and M-code can be viewed and referred to on the NC.

Tool Load Management Function

During cutting operation, abnormal load caused by wear and tear of the tool is detected and an alarm is triggered to prevent further damage.

Work Management Function

The function is capable of checking operation hours of the system, and quantity of finished workpieces.

Spindle Power - Torque Diagram

PUMA AW560

PUMA AW560 Ⅱ

Max. spindle speed

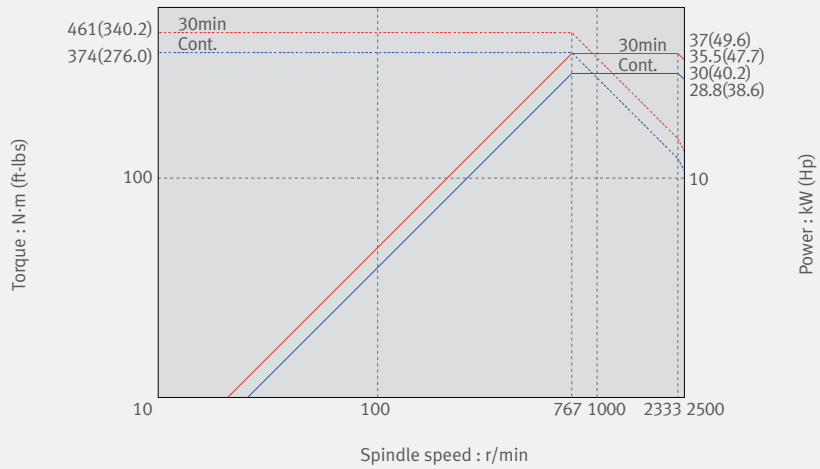
2500 r/min

Max. spindle power

37/30 kW (49.6/40.2 Hp)

Max. spindle torque

461 N·m (340.2 ft-lbs)



PUMA AW660 Ⅱ

Max. spindle speed

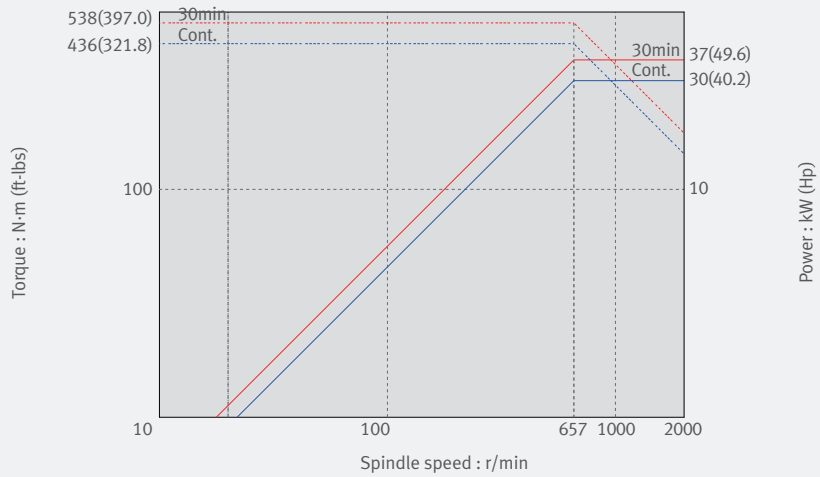
2000 r/min

Max. spindle power

37/30 kW (49.6/40.2 Hp)

Max. spindle torque

538 N·m (397.0 ft-lbs)



PUMA AW560MF Ⅱ (built-in)

Max. spindle speed

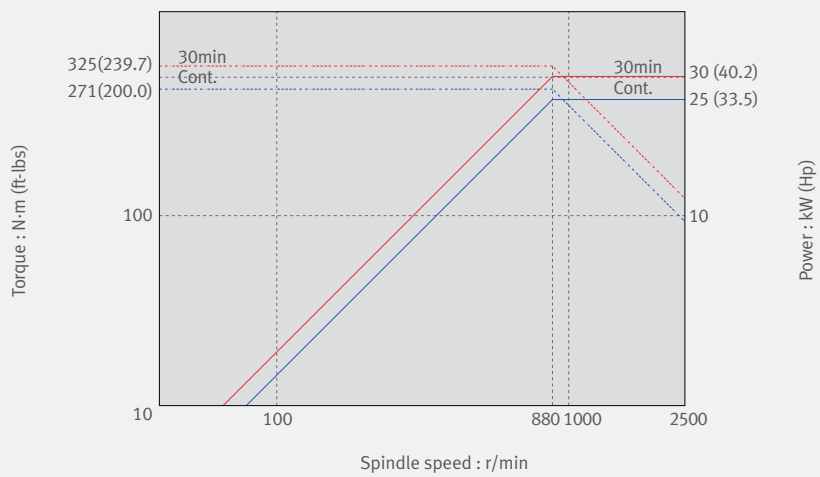
2500 r/min

Max. spindle power

30/25 kW (40.2/33.5 Hp)

Max. spindle torque

325 N·m (239.7 ft-lbs)

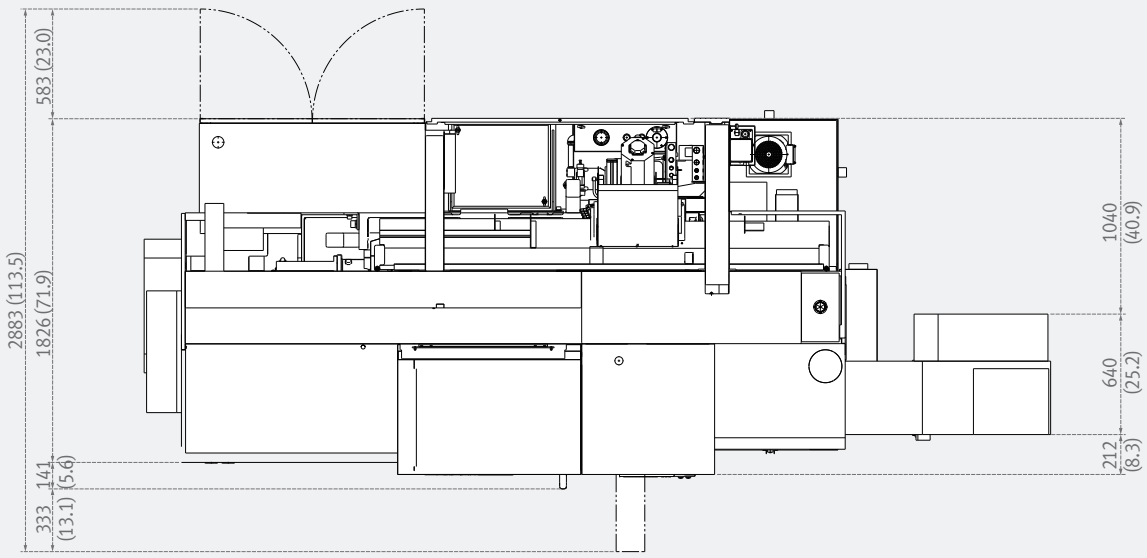


External Dimensions

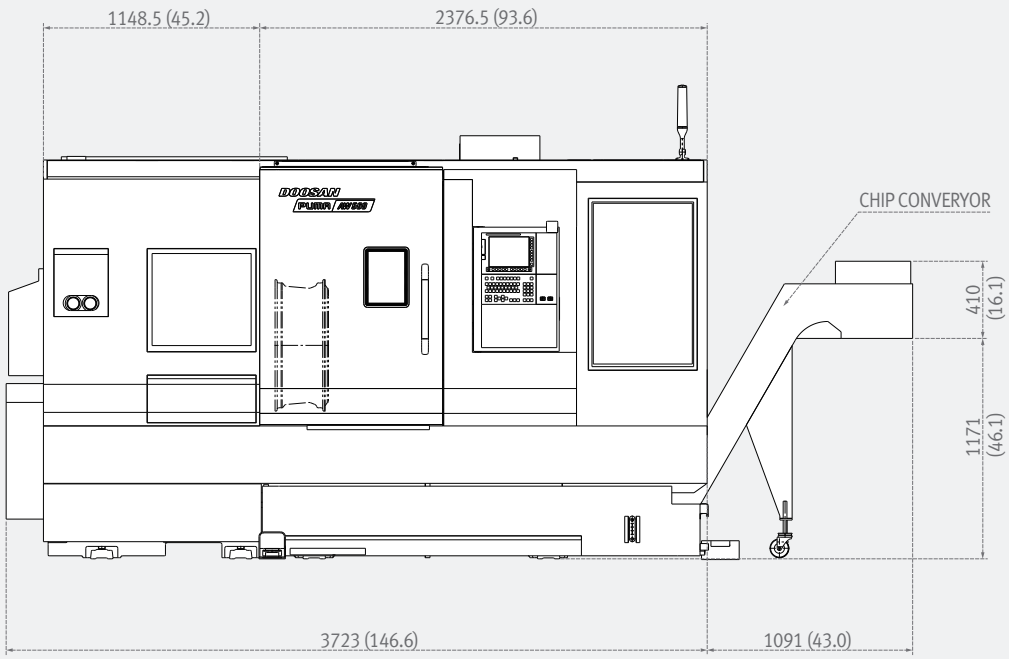
PUMA AW560 Ⅱ / 660 Ⅱ / 560MF Ⅱ

Unit: mm (inch)

Top View



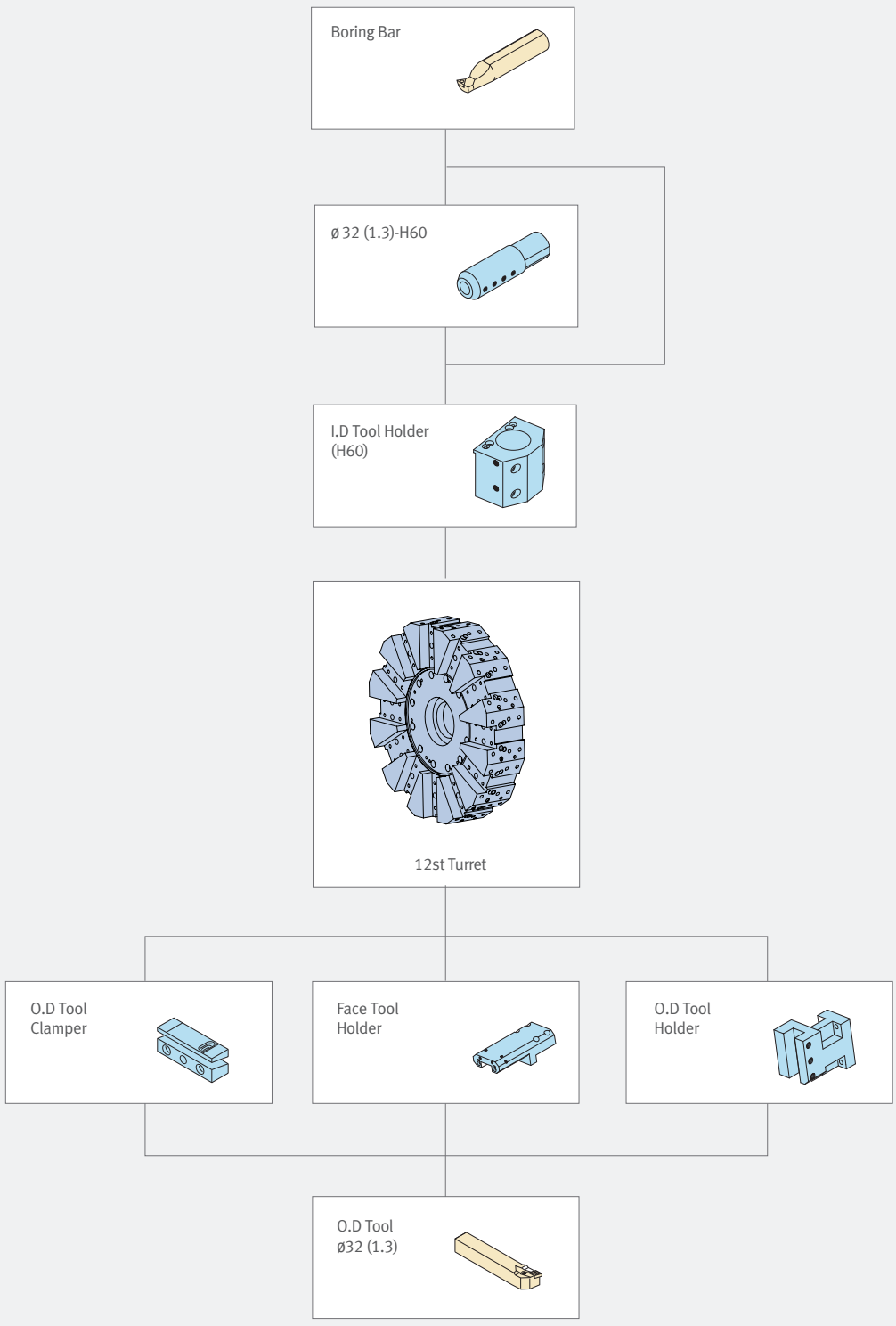
Pront View



* Some peripheral equipment can be placed in other places

PUMA AW560 Ⅱ / 660 Ⅱ / 560MF Ⅱ

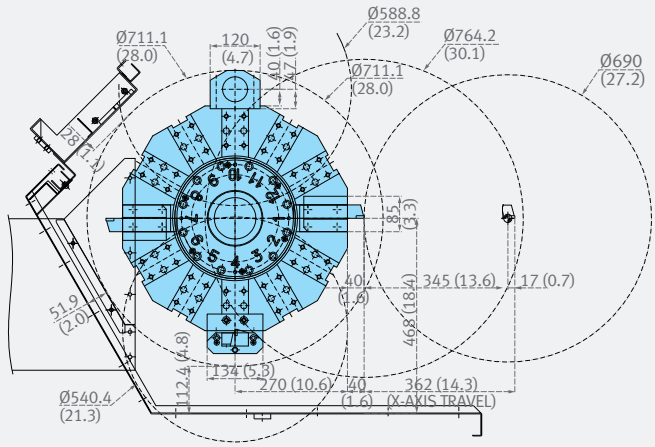
Unit: mm (inch)



Tool Interference Diagram

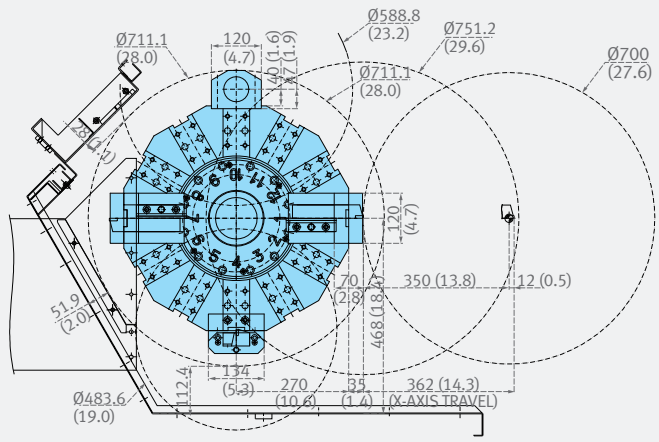
PUMA AW560 II

Unit: mm (inch)



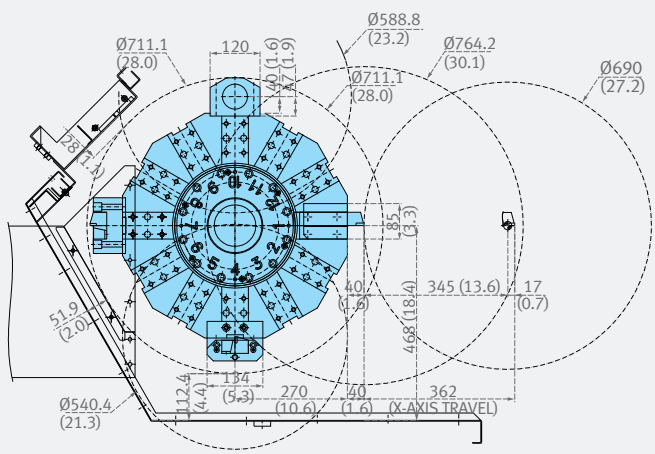
PUMA AW660 II

Unit: mm (inch)



PUMA AW560MF II

Unit: mm (inch)

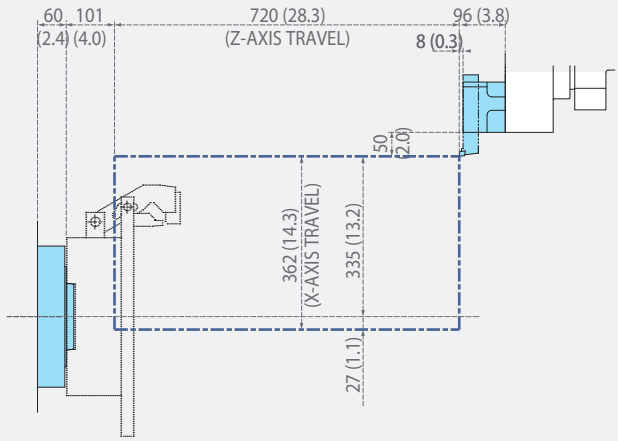


Working Range

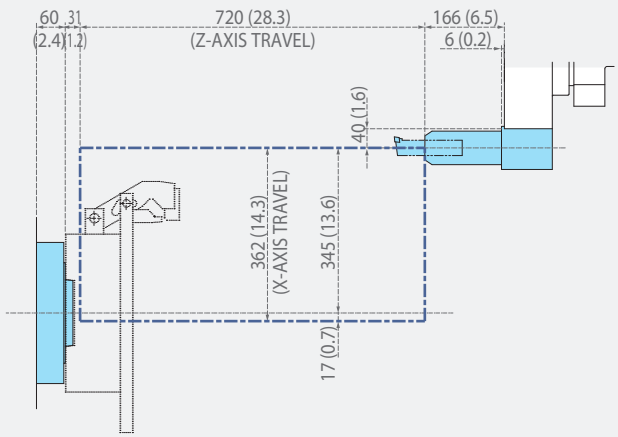
PUMA AW560 Ⅱ / 560MF Ⅱ

Unit: mm (inch)

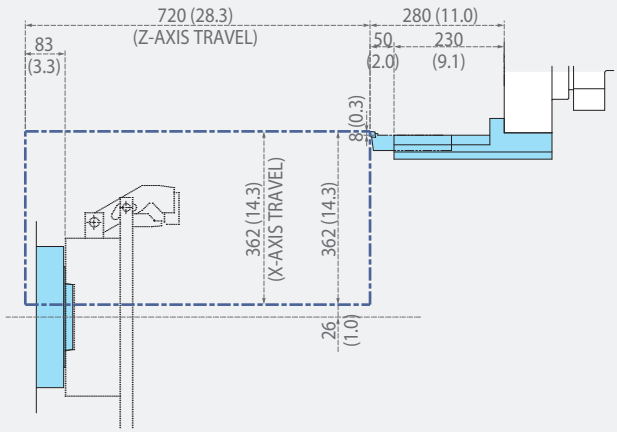
OD TOOL HOLDER



ID TOOL HOLDER



FACE TOOL HOLDER

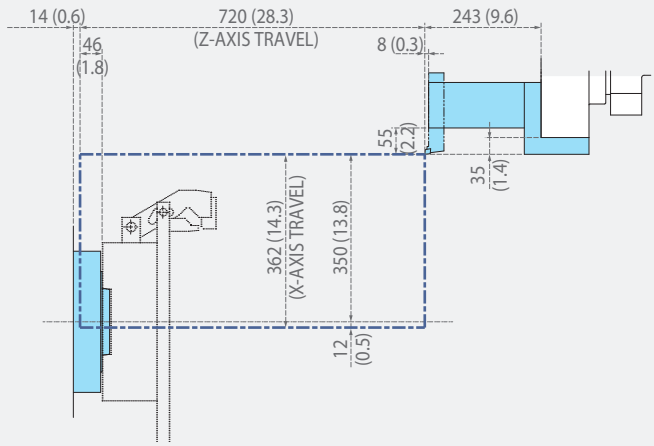


Working Range

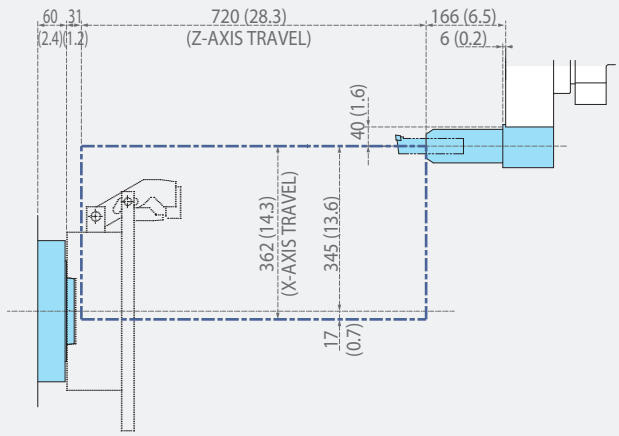
PUMA AW660 Ⅱ

Unit: mm (inch)

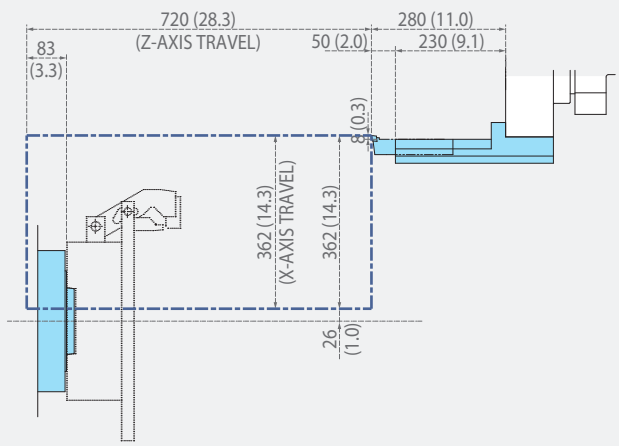
OD TOOL HOLDER



ID TOOL HOLDER



FACE TOOL HOLDER



Machine Specifications

PUMA AW Ⅱ
series

Description			Unit	PUMA AW560 Ⅱ	PUMA AW660 Ⅱ	PUMA AW560MF Ⅱ
Capacity	Swing over bed		mm (inch)	830 (32.7)		
	Recommended turning diameter		mm (inch)	508 (20")	610 (24")	508 (20")
	Max. turning diameter		mm (inch)	550 (21.7)	650 (25.6)	550 (21.7)
Travels	Travel distance	X-axis	mm (inch)	362 (14.3)		
		Z-axis	mm (inch)	720 (28.3)		
Feedrates	Rapid traverse rate	X-axis	m/min (ipm)	16 (629.9)		
		Z-axis	m/min (ipm)	20 (787.4)		
Spindle	Drive Machine		-	Belt-Drive		Belt-In-Spindle-Motor
	Spindle nose		ASA	A2-8	A2-11	A2-8
	Spindle bearing diameter		mm (inch)	160 (6.3)	180 (7.1)	130 (5.1)
	Spindle through hole diameter		mm (inch)	76 (3.0)	86 (3.4)	
	Bore of Draw Tube		mm (inch)	-		45 (1.8)
	Spindle Max. power (30min / cont.)		kW (Hp)	37/30 (49.6/40.2)	37/30 (49.6/40.2)	30/25 (40.2/33.5)
	Spindle Max. speed		r/min	2500	2000	2500
	Full Power Range		r/min	767~2333	657~2000	880~2500
	Gear Ratio		-	1:1.5	1:1.75	1:1
	Spindle Max. torque		N·m (ft-lbs)	461 (340.2)	538 (397.0)	325 (239.7)
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)	Ø60 (2.4)		
	Turret Indexing time (1 station swivel)		sec	0.25		
Power source	Power consumption		kVA	53.1		47
Machine Dimensions	Length x Width		mm (inch)	3730 X 2000 (146.9 X 78.7)		
	Height		mm (inch)	2250 (88.6)		
	Weight		kg (lb)	7750 (17085.6)	8000 (17636.7)	7750 (17085.6)
Control	CNC system		-	DOOSAN Fanuc i		Fanuc 31i

CNC Specifications

FANUC

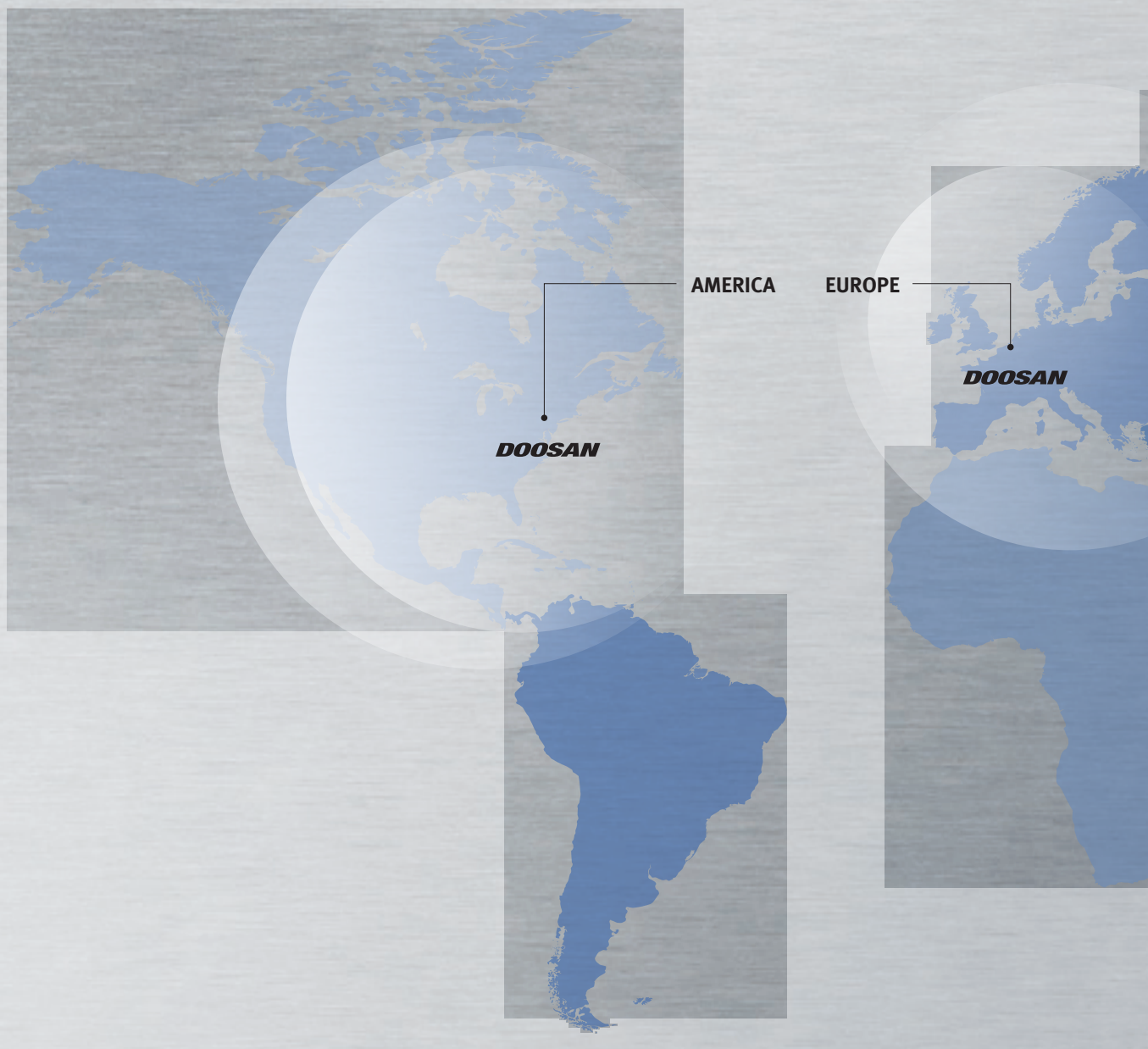
● Standard ○ Optional X Not applicable

No.	Division	Item	Spec.	PUMA AW560/660 Doosan Fanuc i Series	PUMA AW560MF Fanuc 31i
1	Controlled axis	Controlled axes		2 (X, Z)	2 (X, Z)
2		Simultaneously controlled axes		2 axes	2 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		X	○
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		X	○
24	Operation	Nano interpolation		●	●
25		Linear interpolation		●	●
26		Circular interpolation		●	●
27		Thread cutting, synchronous cutting		●	●
28		Multi threading		●	●
29		Thread cutting retract		●	●
30		Continuous threading		●	●
31		Variable lead thread cutting		●	●
32		Circular thread cutting		X	○
33		High-speed skip	Input signal is 8 points.	○	○
34		2nd reference position return	G30	●	●
35		3rd/4th reference position return		●	○
36	Feed function	Override cancel		●	●
37		AI contour control I		○	○
38		AI contour control II		○	○
39		Rapid traverse block overlap		●	●
40	Program input	Optional block skip	9 pieces	●	●
41		Absolute/incremental programming	Combined use in the same block	●	●
42		Diameter/Radius programming		●	●
43		Automatic coordinate system setting		●	●
44		Workpiece coordinate system	G52 - G59	●	●
45		Workpiece coordinate system preset		●	○
46		Addition of workpiece coordinate system	48 pairs	X	○
47		Direct drawing dimension programming		●	●
48		G code system	A	●	●
49		G code system	B/C	●	●
50		Chamfering/Corner R		●	○
51		Custom macro		●	●

● Standard ○ Optional X Not applicable

No.	Division	Item	Spec.	PUMA AW560/660	PUMA AW560MF
				Doosan Fanuc i Series	Fanuc 31i
52	Program input	Addition of custom macro common variables	#100 - #199, #500 - #999	●	○
53		Interruption type custom macro		●	○
54		Canned cycle		●	●
55		Multiple repetitive cycles	G70~G76	●	●
56		Multiple repetitive cycles II	Pocket profile	●	●
57		Canned cycle for drilling		●	●
58		Automatic corner override		X	○
59		Coordinate system shift		●	●
60		Direct input of coordinate system shift		●	●
61		Pattern data input		●	○
62	Operation Guidance Function	EZ Guidei(Conversational Programming Solution)		●	●
63		Easy Operation package		●	●
64	Auxiliary / Spindle speed function	Constant surface speed control		●	●
65		Spindle override	0 - 150%	●	●
66		Spindle orientation		●	●
67		Rigid tap		●	●
68		Arbitrary speed threading		○	○
69	Tool function / Tool compensation	Tool offset pairs	32-pairs	X	●
70			64-pairs	●	○
71			99-pairs	○	○
72			200-pairs	X	○
73			400-pairs	X	○
74			499-pairs	X	○
75			999-pairs	X	○
76		Tool offset		●	●
77		Tool radius/Tool nose radius compensation		●	●
78		Tool geometry/wear compensation		●	●
79		Automatic tool offset		●	●
80		Direct input of offset value measured B		●	●
81		Tool life management		●	●
82	Accuracy compensation function	Backlash compensation for each rapid traverse and cutting feed		●	●
83		Stored pitch error compensation		○	○
84	Editing operation	Part program storage size & Number of registerable programs	640M(256KB)_500 programs	X	●
85			1280M(512KB)_1000 programs	X	○
86			2560M(1MB)_1000 programs	X	○
87			5120M(2MB)_1000 programs	X	○
88			10240M(4MB)_1000 programs	X	○
89			20480M(8MB)_1000 programs	X	○
90			2560M(1MB)_2000 programs	X	○
91			5120M(2MB)_4000 programs	X	○
92			10240M(4MB)_4000 programs	X	○
93			20480M(8MB)_4000 programs	X	○
94			1280M(512KB)_400 programs	●	X
95			5120M(2MB)_400 programs	○	X
96		Program protect		●	●
97		Password function		●	●
98		Playback		●	○
99	Data input / output	Fast data server		○	○
100		External data input		●	○
101		Memory card input/output		●	●
102		USB memory input/output		●	●
103		Automatic data backup		○	●
104	Interface function	Embedded Ethernet		●	●
105		Fast Ethernet		○	○
106	Others	Display unit	10.4" color LCD	●	●
107	Robot interface	Robot interface with PMC I/O module		○	○
108		Robot interface with PROFIBUS-DP		○	○

Responding to Customers Anytime, Anywhere



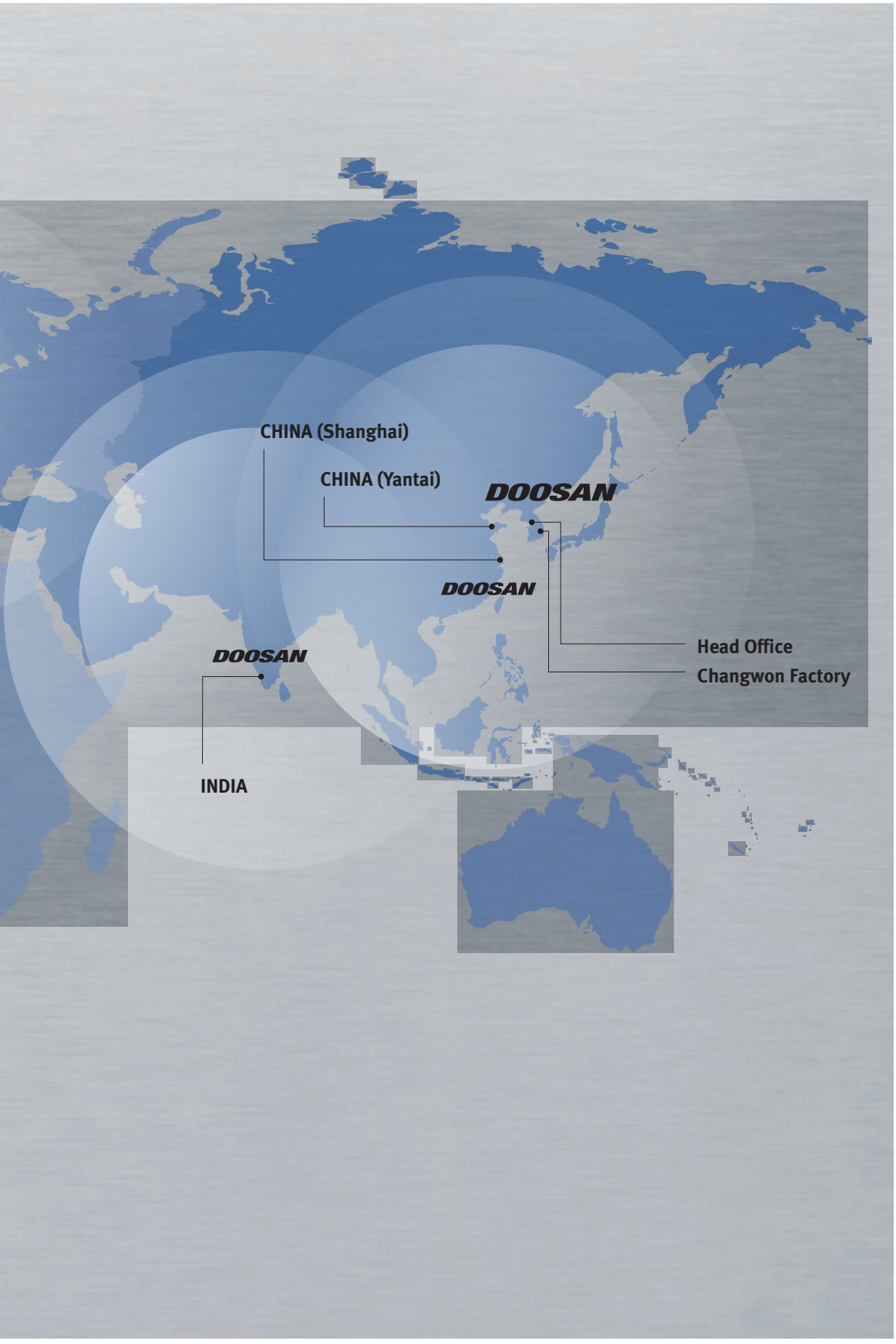
Global Sales and Service Support Network

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 AW Ⅱ series

Description	Unit	PUMA AW560 Ⅱ	PUMA AW660 Ⅱ	PUMA AW560MF Ⅱ
Max turning dia.	mm (inch)	Ø550 (21.7)	Ø650 (25.6)	Ø550 (21.7)
Recommended turning dia.	mm(inch)	508 (20'')	610 (24'')	508 (20'')
Travel distance (X / Z axis)	mm (inch)	362 / 720 (14.3 / 28.3)		
Rapid traverse (X / Z axis)	m/min (ipm)	16 / 20 (629.9 / 787.4)		
Max. spindle speed	r/min	2500	2000	2500
Spindle motor power (30min/cont.)	kW (Hp)	37/30 (49.6/40.2)	37/30 (49.6/40.2)	30/25 (40.2/33.5)
Spindle nose	ASA	A2-8	A2-11	A2-8
No. of tool stations	ea	12		
Machine Dimensions (Length x Width)	mm (inch)	3730 x 2000 (146.9 x 78.7)		

Doosan Machine Tools

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* For more details, please contact Doosan Machine Tools.
* The specifications and information above-mentioned may be changed without prior notice.
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Fire Safety Precautions | There is a high risk 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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