



Doosan Infracore  
Machine Tools

# PUMA AW 550/650

# PUMA VAW 600/700/800

Aluminum Wheel Turns



# 2-axis aluminum wheel turning

Superb customized horizontal aluminum wheel turning centers are designed for high precision and faster machining across a board range of aluminum wheels and to meet demanding specs for higher productivity.

## PUMA AW 550/650



# 4-axis aluminum wheel turning

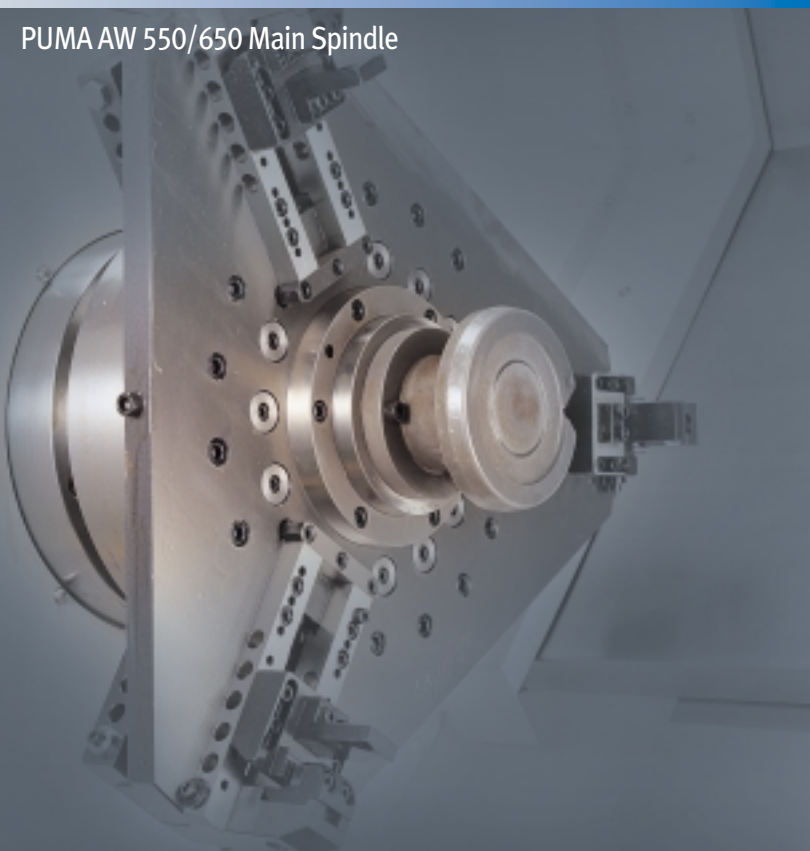
Specialized aluminum wheel turning centers, PUMA VAW series redouble the machining productivity with its twin turrets, robust and systemized design construction.

## PUMA VAW 600/700/800



# PUMA AW Series Main Spindle

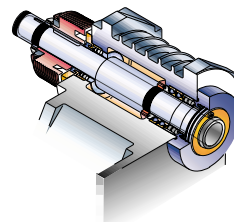
PUMA AW 550/650 Main Spindle



Max. spindle speed  
**3,000 (2,000) rpm** \*1

Motor(30 min)  
**37 kW**

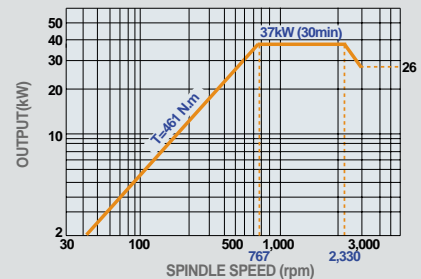
\*1: PUMA AW650 & PUMA AW550 opt.



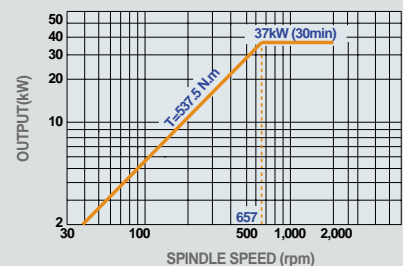
The powerful high-torque spindle motor provides power for heavy stock removal, greatly reducing the number of roughing passes required.

## Main Spindle Power-torque diagram

PUMA AW550 (Max. 3,000rpm)



PUMA AW650 (Max. 2,000rpm)



## AL. Wheel Turning Capacity



PUMA AW550 X-axis travel  
**20 (24) \*2 362 mm**

PUMA AW650 Z-axis travel  
**24 (26) \*2 720 mm**

\*2: The detail specifications should be reviewed before contract.

## Rapid Traverse

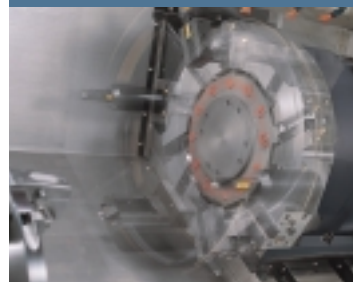


X-axis travel  
**16 m/min**

Z-axis travel  
**20 m/min**

• Perfect realization of servo driven feed system

## Turret



No. of tool station  
**12 station**

Index time  
 (1-station swiveled)  
**0.25 sec.**

Fast indexing turret (indexing time:0.25second) designed for high productivity and take on all kinds of Aluminum Wheels.

# Suitable For Al. Wheel Machining

## High speed & high accuracy cutting



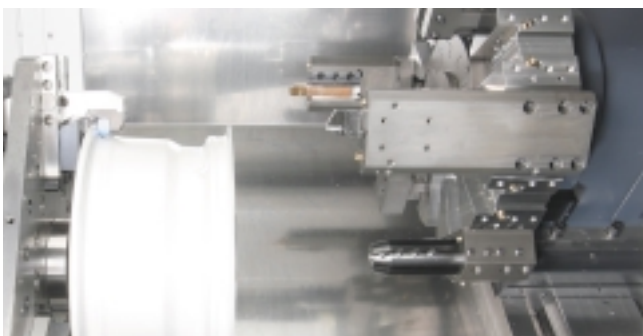
Doosan Al. wheel turn series finish aluminum wheels with improved efficiency, which is guaranteed by up 3,000rpm spindle speed and 0.002mm repeatability.

## Shower coolant system (Opt.)



The large volume of pressure coolant system is effectively to remove heat from the aluminum wheel and tool to assure consistent high precision.

## Easy chip removal



Mass of chips falls directly onto single-sheet saddle cover below for much more effective handling.

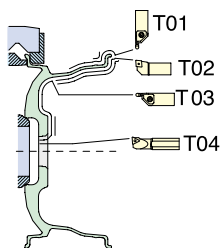
## Coolant system



Large-capacity chip flushing coolant system

# Machining Example

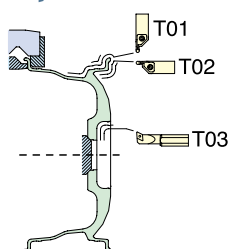
## 1st Operation



## Operating Specifications

Tool No.	Tools		Cutting conditions			
	Shape	Holders (Inserts)	N(rpm)	V(m/min)	T(mm)	F(min/rev)
T01		RF151. 42-2525-60 (N151. 4-800-60-AL)	2,200	2,620-2,618	3	0.3
T02		PCLNR 2525 M12 (CNMG 120412/KW10)	2,200	2,608-2,042	3	0.3
T03		RF151. 42-2525-60 (N151. 4-800-60-AL)	2,200	2,042-440	3	0.27
T04		S25T-STFCR/16 (TCGX 16T308-AL)	2,200	440-408	3	0.3

## 2nd Operation



## Operating Specifications

Tool No.	Tools		Cutting conditions			
	Shape	Holders (Inserts)	N (rpm)	V (m/min)	T (mm)	F (min/rev)
T01		RF151. 42-2525-60 (N151. 4-800-60-AL)	2,200	2,620-2,618	3	0.3
T02		RF151. 42-2525-60 (N151. 4-800-60-AL)	2,200	2,608-2,262	3	0.15
T03		S25T-SDUCR 11-M (DCGX-11T308-AL)	2,200	943-408	3	0.3

# PUMA VAW Series Main Spindle

PUMA VAW 600/700/800 Main Spindle



Max. spindle speed

**2,500 rpm**

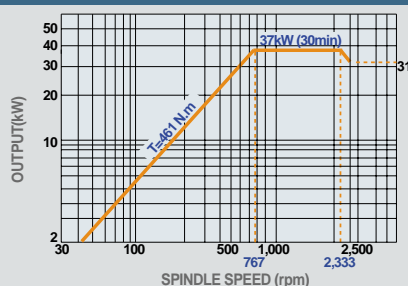
Motor(30 min)

**37 kW**

The high-torque spindle motor provides power for heavy stock removal, greatly reducing the number of roughing passes required. The powerful 37kW motor available on the Puma VAW600 provides 460 N.m of low end torque.

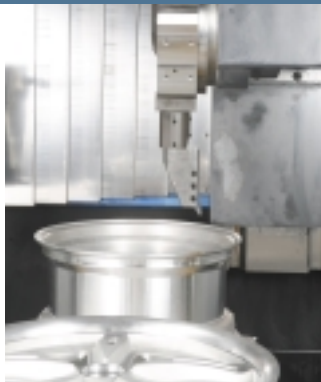
## Main Spindle Power-torque diagram

PUMA AW550 (Max. 3,000rpm)



- ACC(Automatic Chuck Changer) system on only VAW600

## AL. Wheel Turning Capacity



PUMA VAW 600  
**20 (WITH ACC)**

X-axis travel  
Left **570 mm**  
Right **570 mm**

PUMA VAW 700  
**26.5 (WITHOUT ACC)**

Z-axis travel  
Left **550 (650)\*1** mm  
Right **550 (650) mm**

PUMA VAW 800  
**28 (WITHOUT ACC)**

① 1: on VAW 800

## Rapid Traverse



X-axis travel  
**16 m/min**

Z-axis travel  
**16 m/min**

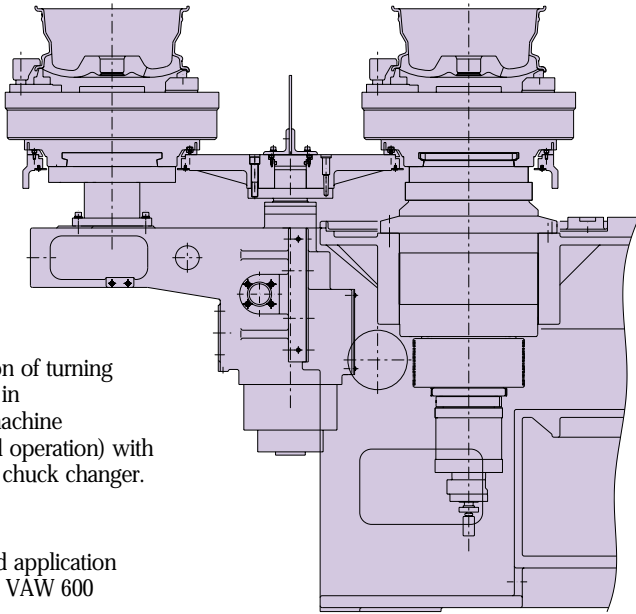
## Turret



No. of tool station  
**6 + 6 station**

Index time  
(1-station swiveled)  
**0.15 sec.**

## Automatic Chuck Changer\*(ACC)



Completion of turning processes in a single machine (1st & 2nd operation) with automatic chuck changer.

\* : Standard application on only VAW 600

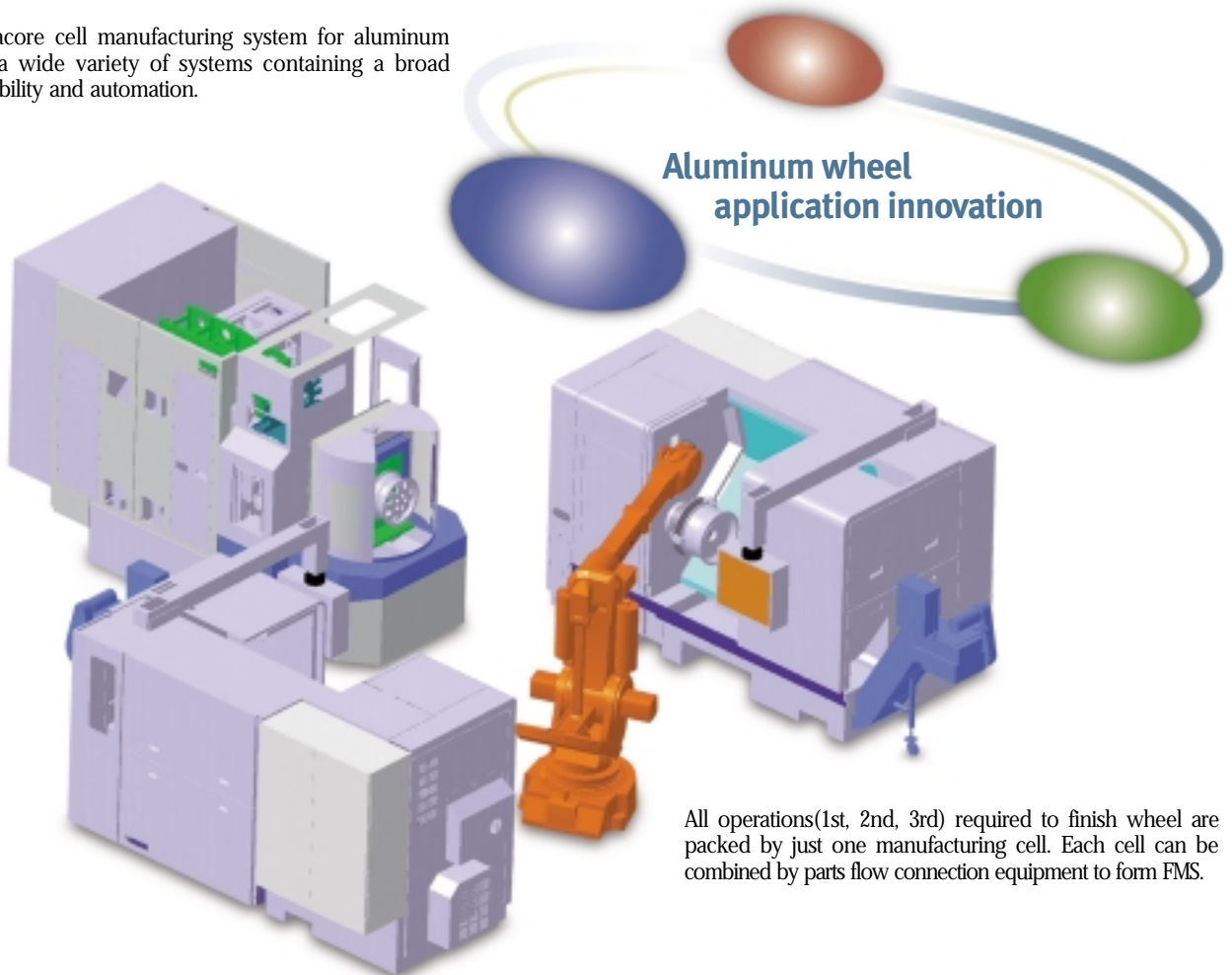
## Operator's Panel



The operator panel is mounted on an adjustable pendant for easy viewing and accessibility during set-up and operation. The layout and location of the panel is ergonomically designed to maximize the efficiency of use and operator's convenience. Comprehensive alarm diagnostics are provided for the machine, control and programming errors.

## AL. Wheel System Application

Doosan Infracore cell manufacturing system for aluminum wheel with a wide variety of systems containing a broad range of flexibility and automation.



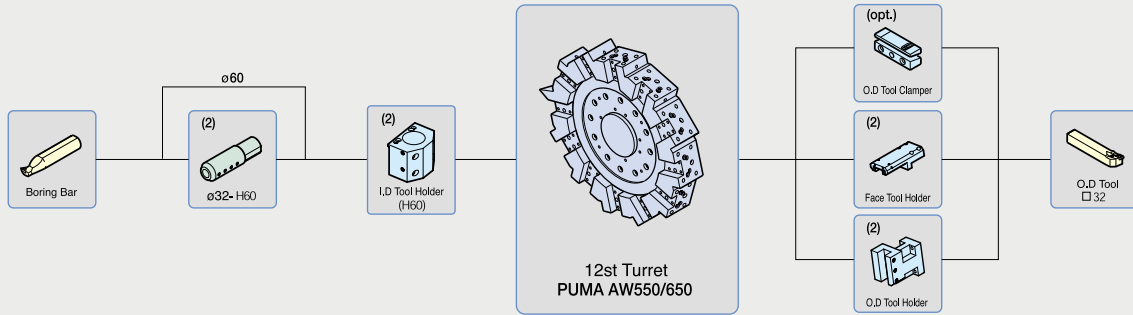
All operations(1st, 2nd, 3rd) required to finish wheel are packed by just one manufacturing cell. Each cell can be combined by parts flow connection equipment to form FMS.



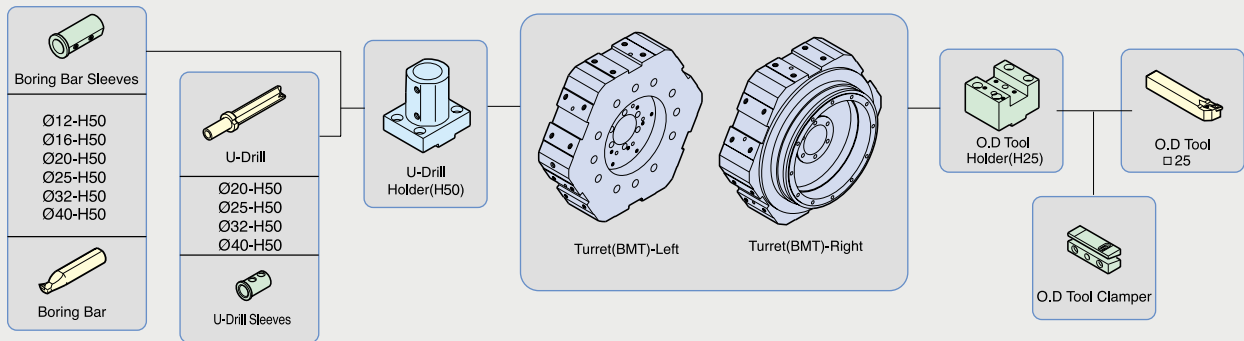
# Tooling System

unit : mm

## PUMA AW550/650



## PUMA VAW600/700/800

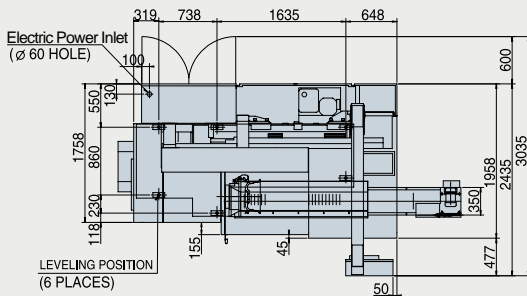


# External Dimension

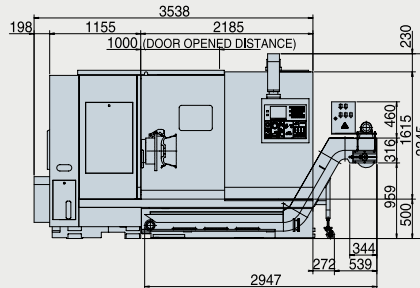
unit : mm

## PUMA AW550/650

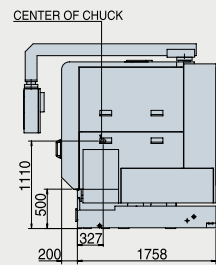
Top View



front View

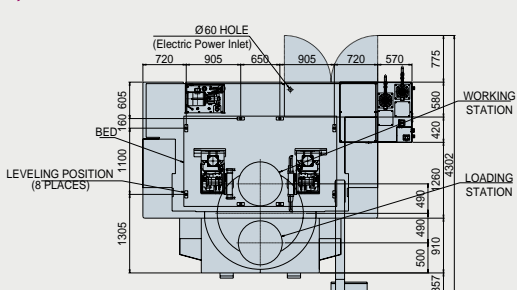


Side View

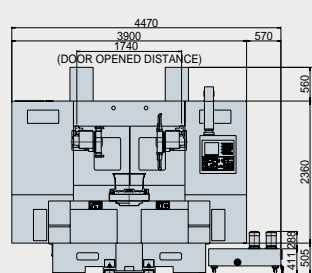


## PUMA VAW600

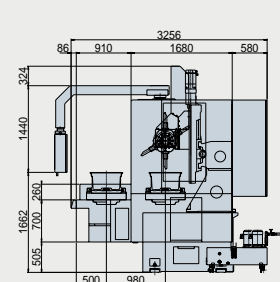
Top View



front View



Side View



# Machine Specifications

Item			PUMA AW550	PUMA AW650	PUMA VAW600	PUMA VAW700	PUMA VAW800
Capacity	Swing over bed	mm	830	830	730	900	1,140
	Swing over saddle	mm	600	600	730	730	970
	Max. turning diameter	mm	610	650	560	673	711
	Max. turning length	mm	710	710	290	330	440
	Recom. wheel size	inch	20 {24 }	24 {26 }	22	26.5	28
Carriage	Travel distance X-axis	mm	362	362	570	570	570
	Z-axis	mm	720	720	550	550	650
Main Spindle	Spindle speed	rpm	3,000	2,000	2,500	2,000	2,000
	Spindle nose	ASA	A2 #8	A2 #11	A2 #11	A2 #11	A2 #11
	Spindle bearing diameter (Front)	mm	160	180	150 {180}	150 {180}	150 {180}
Tool Post	No. of tool station		12st	12st	6st + 6st	6st + 6st	6st + 6st
	OD tool height	mm	32 × 32	32 × 32	25 × 25	25 × 25	25 × 25
	Boring bar diameter	mm	60	60	50	50	50
	Indexing time (1st swivel)	sec	0.25	0.25	0.15	0.15	0.15
Feedrate	Rapid traverse X-axis	m/min	16	16	16	16	16
	Z-axis	m/min	20	20	16	16	16
	Max. cutting feedrate X-axis	mm/rev	500	500	500	500	500
	Z-axis	mm/rev	500	500	500	500	500
ACC	Automatic chuck changer (A.C.C)		-	-	Std	N/A	N/A
Motors	Main spindle motor	kw	30/37	30/37	30/37	45/55	45/55
	Servo motor X-axis	kw	4.0	4.0	4.0	4.0	4.0
	Z-axis	kw	7.0	7.0	4.0	4.0	4.0
	Coolant pump	kw	1.5	1.5	1.5	1.5	1.5
Power Source	Electric power supply (Rated capacity)	kVA	53.1	53.1	70.5	88.2	88.2
Machine Size	Machine height	mm	2,345	2,345	3,425	3,425	3,675
	Machine Demension length	mm	3,580	3,580	4,470	4,470	4,470
	width	mm	3,035	3,035	4,302	3,602	3,842
	Machine weight	kg	7,600	7,800	14,000	13,000	13,500

Note : { } are optional.

## Standard Feature

Air blower* <sup>1</sup>	Full enclosure chip and coolant shield	clamp detection at loading station* <sup>2</sup>
Air gun* <sup>1</sup>	Hand tool kit, including small	Lubrication equipment
Automatic chuck changer* <sup>2</sup>	hand tool for operations	Safety precaution name plates
Automatic door* <sup>1</sup>	Hydraulic actuating cylinder	Standard tooling kit
Coolant supply equipment	Hydraulic power unit for operations	(tool holders & boring sleeve)
Electric power transformer	Instruction manuals & parts book	Work light
Foot switch-chuck	Levelling jack screw & plates	
Front door interlock	Linear position transducer for chuck	

\*<sup>1</sup> : VAW600/700/800  
\*<sup>2</sup> : VAW600 only

## Optional Feature

Additional tool holders & sleeves	Chip bucket	Oil mist collector
Air blast for chuck jaw or work cleaning	Chip conveyor	Oil skimmer
Air conditioner for electric power cabinet	Chuck air cleaner at loading station* <sup>2</sup>	Pressure switch for chucking
Air finger chucks	Controller Fanuc 0i-TC* <sup>3</sup>	pressure check
Air gun	Light beam sensor for checking	Safety edge sensor for auto-door
Array sensor for worker safety* <sup>2</sup>	workpiece at loading station* <sup>2</sup>	Semi-dry coolant
Automatic front door with safety device	Linear scale for left & right X-axis* <sup>1</sup>	Signal tower (yellow, red, green)
Automatic loading & unloading equipment	Mini-screen sensor for worker safety* <sup>2</sup>	Special chucks and cylinders

- in alphabetic order

- Design and specifications are subject to change without prior notice.
- Doosan is not responsible for difference between the information in the catalogue and the actual machine.

\*<sup>1</sup> : VAW600/700/800  
\*<sup>2</sup> : VAW600 only  
\*<sup>3</sup> : AW550/650

# NC Specifications

	Item	Spec.	Fanuc 21i-TB(Opt.)	Fanuc 18i-TB
Controls	Controlled axes		X,Z	X1,Z1, X2, Z2
	Simultaneously controlled axes	Std. 2 axes	2 axes	4axes
Axis Functions	Backlash compensation	0~ ± 9999 pulses		
	Follow-up / Chamfering on/off			
	HRV control			
	Increment system 1/10	0.0001mm / 0.00001		Opt.
	Least input increment	0.001mm / 0.0001		
	Stored stroke checkI	Overtravel control		
Operation	Automatic operation(memory) / Buffer register			
	Manual handle feed rate	X1, X10, X100		
	Search function	Sequence NO. / Program NO.		
Interpolation	1st, 2nd reference position check / return	G27/G28, -/ G30		
	Circular interpolation	G02, G03		
	Continuous thread cutting			
	Dwell	G04		
	Linear interpolation	G01		
	Multiple threading /Thread cutting retract			
	Thread cutting / Synchronous cutting			
Feed Functions	Feed per minute / Feed per revolution	G98 / G99		
	Feedrate override	0 - 200 %(10% unit)		
	Jog feed override	0 - 2000 mm/min		
	Rapid traverse override	F0/ 25 / 100 %		
	Tangential speed constant control			
Auxiliary & Spindle Functions	1st Spindle orientation			
	Constantant surface speed control	G96, G97		
	M-function	M3 digit		
	Spindle speed override	0~150%		
Programming Functions	Absolute / Incremental programming			
	Canned cycle for drilling	G80 series		
	Custom macro B			
	Decimal point programming/pocket calculator type decimal point programming			
	Direct drawing dimension programming			
	Maximum program dimension	± 99999.999mm/( ± 9999.9999 inch)		
	Multi repetitive canned cycle	G70~G76	-	
	Multi repetitive canned cycle 2			
	Optional block skip(without hardware)	Total 9(Only NC function)	-	
	Program number / Sequence number	O4 digits / N5 digits		
	Programmable data input	G10		Opt.
	Sub program call	Nested holds4	4	4
	Tape format for FANUC series 10/11			-
	Tape format for FANUC series 15		-	
Work coordinate system selection	G52, G53, G54~G59			
Tool Functions	Auto tool offset			
	Tool monitoring system		-	Opt.
	Direct input of tool offset value measured B			
	Tool geometry / wear compensation	Geometry & wear data		
	Tool life management		Opt.	
	Tool nose radius compensation	G40~G42		
	Tool number command(T-code function)	T2+2 digits		
	Tool offset pairs		64	32
	Tool offset value counter input		-	
Editing Op. Functions	Background editing			
	Expanded part program editing	Copy, Move, Change of NC program		
	No. of Registered programs		200EA	125EA
	Part program editing / Program protect			
	Part program storage length*1		640m	160m
Setting & Display	Display of spindle speed and T-code at all screen			
	Help function	Alarm&Operation display		
	Self diagnostic function			
	Servo setting screen / Spindle setting screen			
	Tool path graphic display		Opt.	
Data Input & Output	I/O interface	RS-232C		
	Memory card input and output			
	Reader puncher control	CH1 interface		
Other Functions	Ethernet function	Embedded ethernet function	Opt.	
	MDI / DISPLAY unit 1		8.4 Color LCD	9.5 Mono LCD
	PMC system			

\*1 : Standard Part program length is different on export condition. On the addition of optional functions, its length can be reduced. Fanuc 18i TB : PUMA VAW 600/700/800

# PUMA AW / VAW

<http://domss.doosaninfracore.com>

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Machine Tools

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