



*Optimal Solutions for the Future*

# PUMA ST series

A highly rigid Swiss  
type turning center,  
excellent for continuous  
precision machining

## **PUMA ST series**

PUMA ST20G / 32G

PUMA ST10GS **NEW**

PUMA ST20GS / 26GS

PUMA ST32GS / 35GS

ver. EN 160502 SU



## Product Overview

### Basic Information

Basic Structure  
Machining

### Detailed Information

Options  
Applications  
Capacity Diagram  
Specifications

### Customer Support Service



# PUMA ST series

The PUMA ST series models are Swiss type turning centers developed by Doosan's technology that originally created the world-famous brand PUMA. The PUMA ST series machines are designed to provide high reliability and precision, and work with various types of special tooling to achieve very high productivity.



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#### Excellent Rigidity and Precision

- Designed with FEM analysis to provide high stability and productivity.
- Precision machining capability is further improved due to minimal thermal error design.

#### Provide a Tool Solution Applicable for a Diversity of Machining Processes

- Suitable for processing small parts having diameters between  $\varnothing 20$  mm ( $\varnothing 0.8$  inch) ~  $\varnothing 38$  mm ( $\varnothing 1.5$  inch).
- Up to 5 cross tools can be used for highest efficiency in milling and other special machining processes.

#### User-Friendly Software for Easy Set-up and Operation

- Doosan's built-in software provides various user convenience functions for easy operation and control.
- Productivity is further improved by the reduced time of setup and operation.

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# PUMA ST series Line -up

## G series Premium class

Division	PUMA ST20G	PUMA ST32G
Max. machining diameter	ø20 mm (ø0.8 inch)	ø32 mm (ø1.3 inch)
No. Mountable tools (Max.)	25 (30) ea	24 (29) ea
Cross tool	5 ea	4 ea
CNC	FANUC 31i	FANUC 31i

## GS series Standard class

Division	PUMA ST10GS	PUMA ST20GS	PUMA ST26GS	PUMA ST32GS	PUMA ST35GS
Max. machining diameter	ø10 mm (ø0.4 inch)	ø20 mm (ø0.8 inch)	ø26 mm (ø1.0 inch)	ø32 mm (ø1.3 inch)	ø35 (ø38) mm (ø1.4 (ø1.5) inch)
No. Mountable tools (Max.)	22 ea	24 (29) ea	22 (27) ea	24 (29) ea	21 (26) ea
Cross tool	4 ea	4 ea	5 ea	4 ea	4 ea
CNC	DOOSAN FANUC i	DOOSAN FANUC i	DOOSAN FANUC i	DOOSAN FANUC i	DOOSAN FANUC i

## PUMA ST20G / 32G

The PUMA ST20G / 32G spindle guide bush and chucking system are precisely controlled by servo motor and the latest FANUC 31i CNC as standard to optimise machining accuracy.



### Major specifications

Description	Unit	PUMA ST20G
Controll axes	-	7 (X1,Z1,C1,Y,X2,Z2,C2)
Max. machining length	mm (inch)	200 (7.9)
Max. spindle power (30min/cont.)	kW (Hp)	Main : 3.7 / 2.2 (5.0 / 3.0) Sub : 2.2 / 1.5 (3.0 / 2.0)
Machine dimensions (LxWxH)	mm (inch)	2300 x 1245 x 1735 (90.6 x 49.0 x 68.3)
Display unit	inch	10.4
CNC	-	FANUC 31i

### PUMA ST20G

Max. Machining Diameter

**Ø20mm**  
(Ø0.8 inch)

Max. spindle speed

Main Spindle: **10000 r/min**

Sub-Spindle: **8000 r/min**



### Major specifications

Description	Unit	PUMA ST32G
Controll axes	-	7 (X1,Z1,C1,Y,X2,Z2,C2)
Max. machining length	mm (inch)	320 (12.6)
Max. spindle power (30min/cont.)	kW (Hp)	Main : 7.5 / 5.5 (10.1 / 7.4) Sub : 3.7 / 2.2 (5.0 / 3.0)
Machine dimensions (LxWxH)	mm (inch)	2630 x 1400 x 1850 (103.5 x 55.1 x 72.8)
Display unit	inch	10.4
CNC	-	FANUC 31i

### PUMA ST32G

Max. Machining Diameter

**Ø32mm**  
(Ø1.3 inch)

Max. spindle speed

Main Spindle: **8000 r/min**

Sub-Spindle: **8000 r/min**

Product Overview

Basic Information

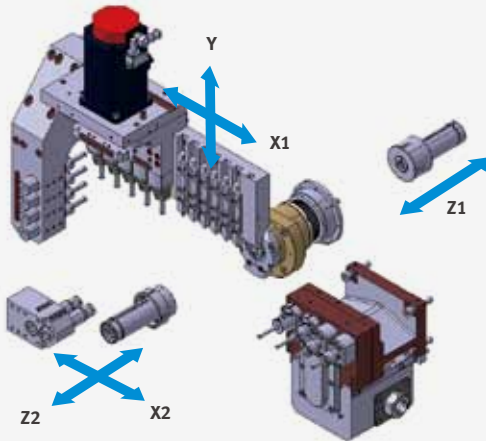
Basic Structure  
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### PUMA ST20G



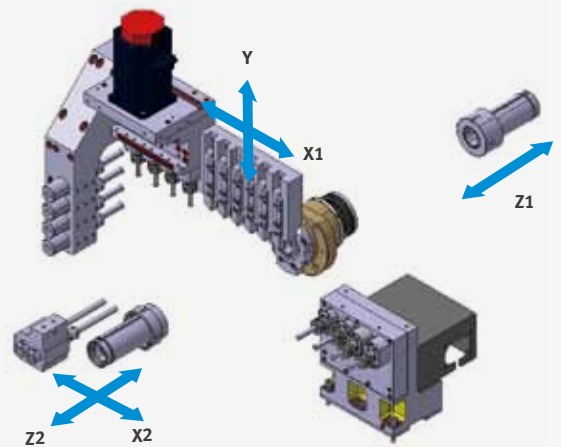
Travel

Description	Unit	Z1	X1	Y	Z2	X2
Travel distance	mm (inch)	200 (7.9)	90 (3.5)	386 (15.2)	190 (7.5)	345 (13.6)
Rapid traverse rate	m/min (ipm)	32 (1259.8)				

Tool

Description		Unit	PUMA ST20G
No. Mountable tools (Max)		ea	25 (30)
Front machining	Turning tool	ea	6 (12 x 12 x 120)
	Sleeve holder		4 (ER16M) (+4, bifacial)
	Cross tool		5 (ER16)
Back machining	Number of mountable tool	ea	fixed 2 + rotation 2
	Additional fixed type tool	ea	2
Deep hole	Number of mountable tool	ea	2

### PUMA ST32G



Travel

Description	Unit	Z1	X1	Y	Z2	X2
Travel distance	mm (inch)	320 (12.6)	114 (4.5)	404 (15.9)	305 (12.0)	393 (15.5)
Rapid traverse rate	m/min (ipm)	32 (1259.8)				

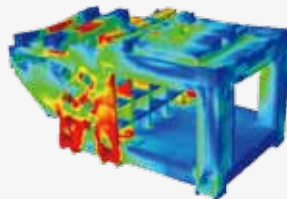
Tool

Description		Unit	PUMA ST32G
No. Mountable tools (Max)		ea	24 (29)
Front machining	Turning tool	ea	6 (16 x 16 x 120)
	Sleeve holder		4 (ER20M) (+4, bifacial)
	Cross tool		4 (ER16)
Back machining	Number of mountable tool	ea	fixed 2 + rotation 2
	Additional fixed type tool	ea	2
Deep hole	Number of mountable tool	ea	2

### PUMA ST-G series Features Highlight

#### Bed Structure

Designed via structural analysis, the bed improves rigidity and minimizes thermal error due to its integrated type structure.

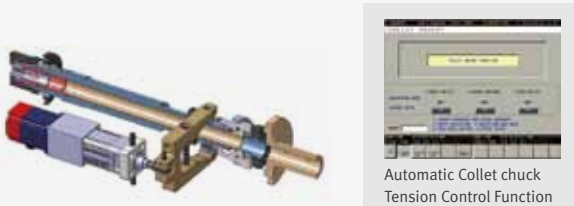


#### Servo-controlled Guide Bushes

The guide bush and main spindle are synchronized by servo motor for high precision control and easy maintenance. Minimized vibration further increases machining accuracy.

#### Servo-controlled Chucking System

The tension of the collet chuck is controlled by servo motor. This system maintains constant tension for precise and stable setting. The setting up can easily be done with short-cut keys and Doosan's EOP function on the screen.



Automatic Collet chuck Tension Control Function

#### Built-in Sub Spindle

The main and sub spindles use built in motors to minimize vibration and noise, resulting in high accuracy. The main and sub spindles can be controlled by fast and precise synchronization, improving machining accuracy, and allows easy maintenance without affecting belt life and accuracy.



\* PUMA 20G (Standard), 32G **option**

## PUMA ST10GS

PUMA ST10GS excellent for continuous precising is suitable for processing small parts having diameters between  $\varnothing 3$  ( $\varnothing 0.1$ )~ $\varnothing 8$  mm ( $\varnothing 0.3$  inch).



### Major specifications

Description	Unit	PUMA ST10GS
controll axes	-	7 (X1,Z1,C1,Y,X2,Z2,C2)
Max. machining length	mm (inch)	120 (4.7)
Max. spindle power (30min/cont.)	kW (Hp)	Main : 3.7/2.2 (5.0/3.0) Sub : 1.1/0.55 (1.5/0.7)
Machine dimensions (LxWxH)	mm (inch)	1929 x 910 x 1710 (75.9 x 35.8 x 67.3)
Display unit	inch	10.4
CNC		DOOSAN FANUC i Series

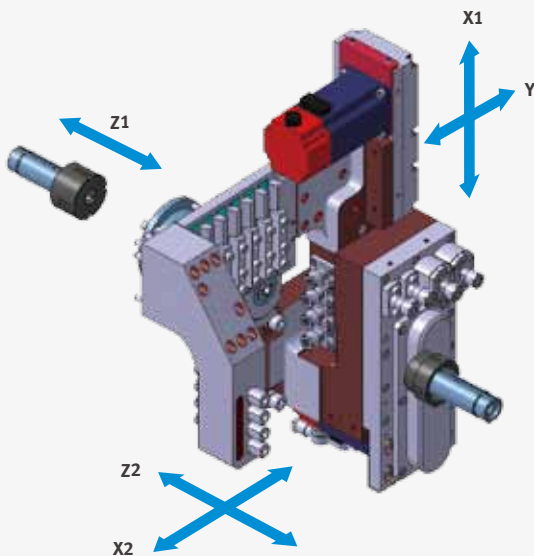
## PUMA S10GS

Max. Machining Diameter

**$\varnothing 10$  mm**  
( $\varnothing 0.4$  inch)

Max. spindle speed

Main Spindle: **12000 r/min**      Sub-Spindle: **10000 r/min**



### Travel

Description	Unit	Z1	X1	Y	Z2	X2
Travel distance	mm (inch)	120 (4.7)	91 (3.6)	176 (6.9)	190 (7.5)	187 (7.4)
Rapid traverse rate	m/min (ipm)	35 (1378.0)				

### Tool

Description	Unit	PUMA ST10GS
No. Mountable tools (Max)	ea	24 (29)
Front machining	Turning tool	6 (10 x 10 x 110)
	Sleeve holder	4 (ER11)
	Cross tool	4
Back machining	Number of mountable tool	fixed 2 + rotation 2

## PUMA ST20GS / 26GS

The PUMA ST20GS / 26GS provide stable, continuous cutting accuracy due to minimized thermal error design.

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### Major specifications

Description	Unit	PUMA ST20GS	PUMA ST26GS
Control axes	-	7 (X1,Z1,C1,Y,X2,Z2,C2)	
Max. machining length	mm (inch)	200 (7.9)	
Max. spindle power (30min/cont.)	kW (Hp)	Main : 3.7 / 2.2 (5.0 / 3.0) Sub : 2.2 / 1.5 (3.0 / 2.0)	Main : 5.5 / 2.2 (7.4 / 3.0) Sub : 2.2 / 1.5 (3.0 / 2.0)
Machine dimensions (LxWxH)	mm (inch)	2210 x 1225 x 1730 (87.0 x 48.2 x 68.1)	2320 x 1245 x 1780 (91.3 x 49.0 x 70.1)
Display unit	inch	8.4	
CNC		DOOSAN FANUC i	

### PUMA ST20GS

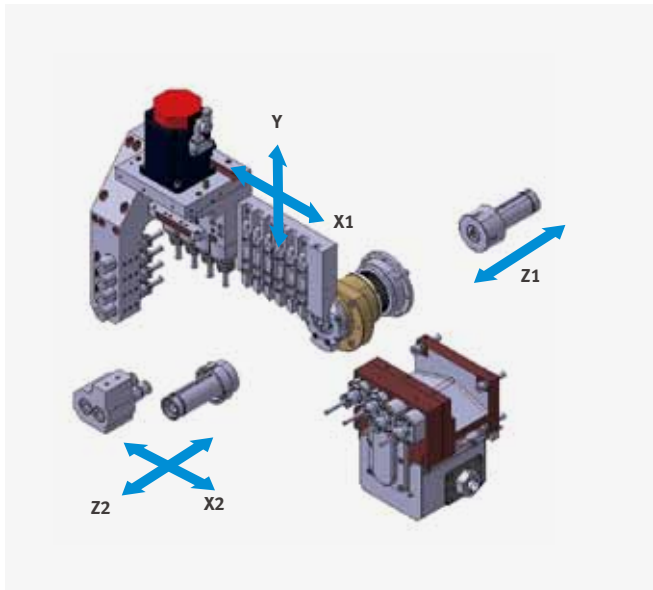
Max. Machining Diameter  
**∅20mm**  
(∅0.8 inch)

Max. spindle speed  
Main Spindle: **10000 r/min**  
Sub-Spindle: **8000 r/min**

### PUMA ST26GS

Max. Machining Diameter  
**∅26mm**  
(∅1.0 inch)

Max. spindle speed  
Main Spindle: **8000 r/min**  
Sub-Spindle: **8000 r/min**



### Travel

Description	Unit	Z1	X1	Y	Z2	X2
Travel distance (PUMA ST20GS)	mm (inch)	200 (7.9)	90 (3.5)	350 (13.8)	190 (7.5)	345 (13.6)
Travel distance (PUMA ST26GS)	mm (inch)	200 (7.9)	90 (3.5)	386 (15.2)	186 (7.3)	345 (13.6)
Rapid traverse rate	m/min (ipm)	32 (1259.8)				

### Tool

Description	Unit	PUMA ST20GS	PUMA ST26GS
No. Mountable tools (Max)	ea	24 (29)	22 (27)
Front machining	Turning tool	6 (12 x 12 x 120)	5 (16 x 16 x 120)
	Sleeve holder	4 (ER16M) (+4,bifacial)	4 (ER16) (+4,bifacial)
	Cross tool	4 (ER16M)	5 (ER16)
Back machining	Number of mountable tool	fixed 2+rotation 2	fixed 2+rotation 2
	Additional fixed type tool	2	2
Deep hole	Number of mountable tool	ea 2	X

### PUMASTGS series Features Highlight



\* PUMA 26GS (Standard)  
\* Except for PUMA ST10GS

#### Built-in Sub Spindle option

The PUMA ST GS series models provide a built-in sub spindle as an option. The main and sub spindles can be controlled by fast and precise synchronization, improving machining accuracy and allows easy maintenance without affecting belt life and accuracy.



#### Back Tool Post for 6 Tools option

The Back tool post can hold up to 6 tools to improve efficiency and productivity.

\* Except for PUMA ST10GS

**Standard Specification**  
Fixed 2ea, rotary 2ea



## PUMA ST32GS / PUMA ST35GS

The spindle chucking capacity of the PUMA ST32GS / 35GS is suitable for heavy-duty cutting of large-sized parts. These models are suitable for processing the parts for automotive, hydraulic, and pneumatic applications.



### Major specifications

Description	Unit	PUMA ST32GS	PUMA ST35GS
Controll axes	-	7 (X1,Z1,C1,Y,X2,Z2,C2)	
Max. machining length	mm (inch)	300 (11.8)	
Max. spindle power (30min/cont.)	kW	Main : 7.5 / 5.5 (10.1 / 7.4) Sub : 3.7 / 2.2 (5.0 / 3.0)	Main : 7.5 / 5.5 (10.1 / 7.4) Sub : 3.7 / 2.2 (5.0 / 3.0)
Machine dimensions (LxWxH)	mm (inch)	2630 x 1400 x 1850 (103.5 x 55.1 x 72.8)	2630 x 1400 x 1850 (103.5 x 55.1 x 72.8)
Display unit	inch	8.4	10.4
CNC		DOOSAN FANUC i	

### PUMA ST32GS

Max. Machining Diameter

**Ø32mm**  
(Ø1.3 inch)

Max. spindle speed

Main Spindle **8000 r/min**  
Sub-Spindle **8000 r/min**

### PUMA ST35GS

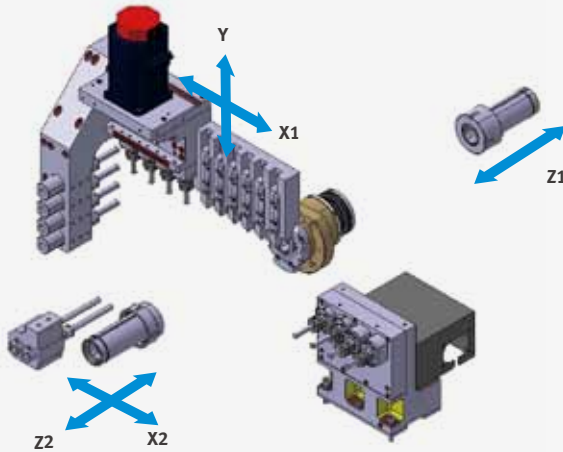
Max. Machining Diameter

**Ø35 (Ø38)mm**  
(Ø1.4 inch)

Max. spindle speed

Main Spindle **8000 r/min**  
Sub-Spindle **8000 r/min**

\*Max. turning diameter can be extended by exchanging the guide bush and chuck parts.



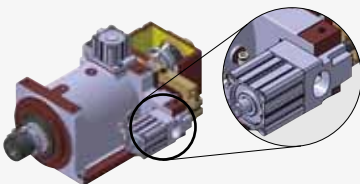
### Travel

Description	Unit	Z1	X1	Y	Z2	X2
Travel distance (PUMA ST32GS)	mm (inch)	300 (11.8)	114 (4.5)	404 (15.9)	305 (12.0)	393 (15.5)
Travel distance (PUMA ST35GS)	mm (inch)	300 (11.8)	114 (4.5)	404 (15.9)	305 (12.0)	393 (15.5)
Rapid traverse rate	m/min (ipm)	32 (1259.8)				

### Tool

Description	Unit	PUMA ST32GS	PUMA ST35GS
No. Mountable tools (Max)	ea	24 (29)	21 (26)
Front machining	Turning tool	6 (16 x 16 x 120)	5 (16 x 16 x 120)
	Sleeve holder	4 (ER20M) (+4,bifacial)	4 (ER20M) (+4,bifacial)
	Cross tool	4 (ER16)	4 (ER16)
Back machining	Number of mountable tool	fixed 2 + rotation 2	fixed 2 + rotation 2
	Additional fixed type tool	2	2
Deep hole	Number of mountable tool	2	X

## PUMA ST GS series Features Highlight



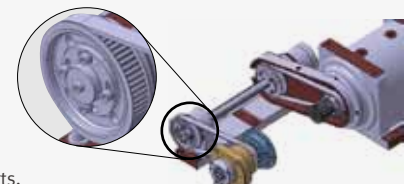
### Chucking System Driven with Air Cylinder

The chucking system of the PUMA ST GS series is driven by air cylinder for simple structure and easy maintenance.

### Guide Bush

The PUMA ST GS series models use mechanical, ball spline type guide bush.

\* Beneficial for cutting profile parts.





## Machining




The PUMA ST series are designed to adopt various tooling options.

Customers can choose optimal tooling to achieve highest level of productivity.









## Front Machining

**PUMA ST20G / 32G / 26GS / 32GS / 35GS**

**PUMA ST10GS**

<p><b>1. Cross Rotary Tool Holder</b></p>  <p>Cross Rotary Tool Holder</p>	<p><b>2. Sleeve Holder</b></p>  <p>Double Sleeve    Sleeve</p>	<p><b>3. Deep Hole Cutting Sleeve Holder</b></p>  <p>Deep Hole Sleeve</p> <p><small>* Except for PUMA ST10GS / ST26GS / 35GS</small></p>
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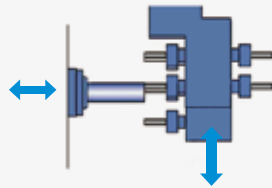
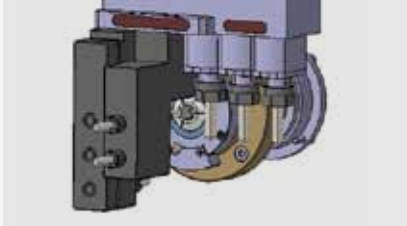
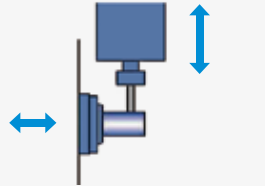
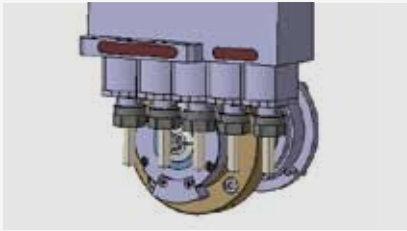
**Cross Tools for Special Cutting** (Except for PUMA ST10GS)

 <p>2 Spindle Unit</p>	 <p>2 Spindle Counter Face Unit</p>	 <p>3 Spindle Unit</p>	 <p>Polygon Unit</p>
 <p>Slotting Unit</p>	 <p>Thread Whirling Unit</p>	 <p>2-Spindle Adjustable Angle Unit</p>	 <p>3-Spindle Adjustable Angle Unit</p>

## Front Machining

### Cross Tool Drilling / Milling Hole Cutting

Drilling, rigid tapping and milling in radial direction using rotary tools.

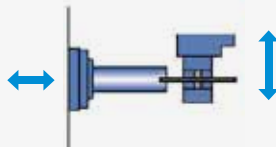
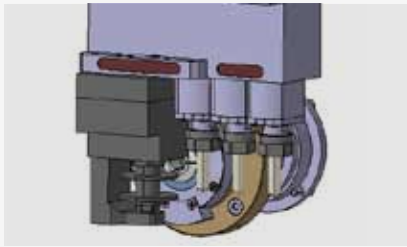


### Special Cutting Function (Helical Interpolation) option

This function provides helical paths for tools by issuing instructions to other axes in synchronization with circular interpolation. When it is necessary to process a hole bigger than the machine specification, this is especially useful for cutting the hole with cross tools.

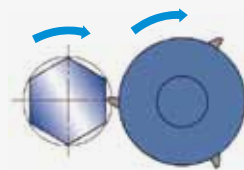
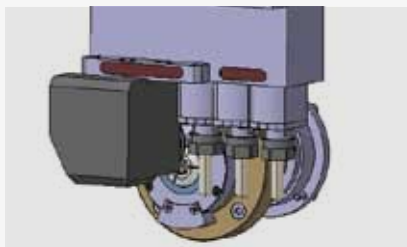
### Face Slotting

Slotting in the longitudinal direction on the main side



### Polygonal Turning

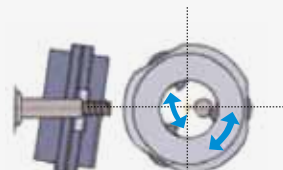
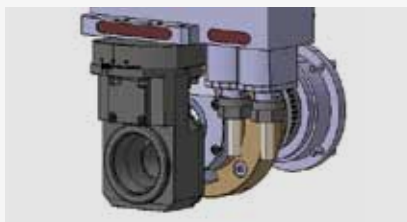
A polygon can be processed in a single cycle using a polygon cutter.



\* Except for PUMA ST10GS

### Thread Whirling

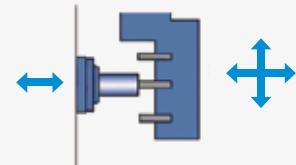
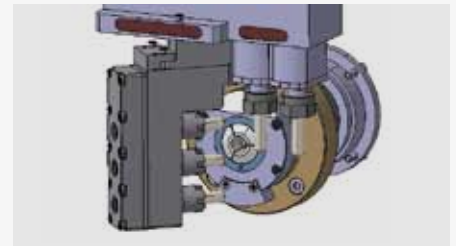
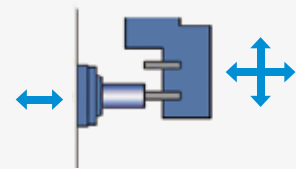
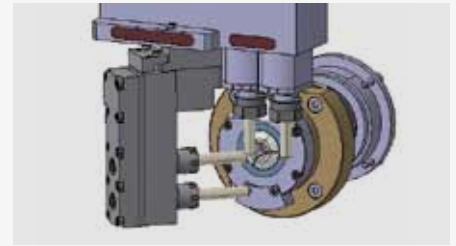
Thread cutting using a rotary tool and the C-axis by setting-up a whirling holder at the rotary tool unit on the main side.



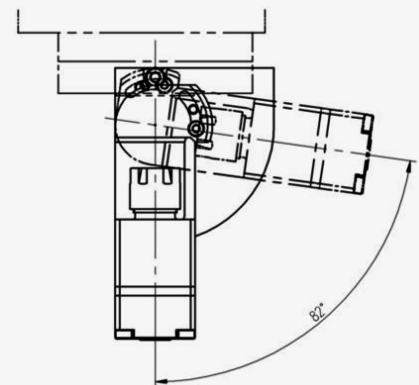
\* Except for PUMA ST10GS

### Drilling / Milling Hole Cutting with Angle Adjustment

Drilling, rigid tapping and milling by adjusting the angle of the tool in the longitudinal direction on the main side.



Adjustable up to 82 degrees in the left and right to enable complicated hole cutting.




## Back Machining

**PUMA ST20G / 32G / 26GS / 32GS / 35GS**


**PUMA ST10GS**

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**4. Back Tools**




Back Sleeve Holder




Back Bite Holder



Back Slotting Unit



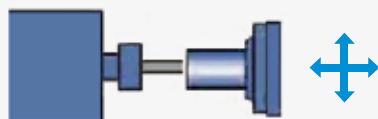
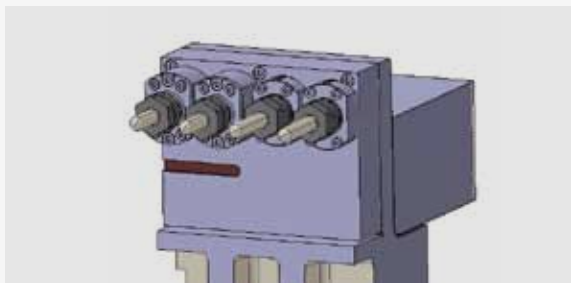
Back Sleeve



Back Tool Holder

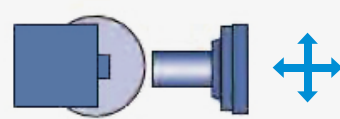
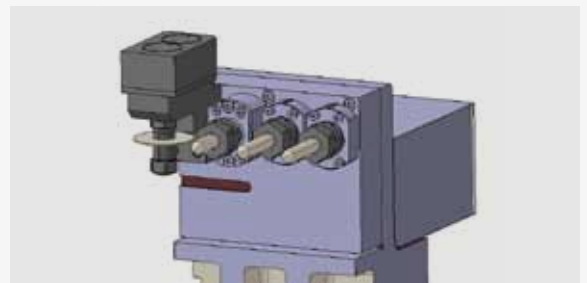
### Back Drilling / Milling Hole Cutting

Off-center drilling, rigid tapping and end milling using reverse rotating tools.



### Back Slotting

Slotting using a slotting tool mounted on a reverse rotating tool.





## Standard / Optional Specifications

● Standard ○ Optional X N/A

Diverse optional features are available for customer-specific work applications.

NO.	Description	Features	G series		GS series				
			PUMA ST20G	PUMA ST32G	PUMA ST10GS	PUMA ST20GS	PUMA ST26GS	PUMA ST32GS	PUMA ST35GS
1	Collet Chuck Size (Main / Sub)	None	●	●	●	●	●	●	●
2		Ø1~Ø10	○	○	○	○	○	○	○
3		Ø11~Ø20	○	○	X	○	○	○	○
4		Ø21~Ø26	X	○	X	X	○	○	○
5		Ø27~Ø32	X	○	X	X	X	○	○
6		Ø33~Ø38	X	X	X	X	X	X	○
7	Gudie Bush Chuck Size	None	●	●	●	●	●	●	●
8		Ø1~Ø10	○	○	○	○	○	○	○
9		Ø11~Ø20	○	○	X	○	○	○	○
10		Ø21~Ø26	X	○	X	X	○	○	○
11		Ø27~Ø32	X	○	X	X	X	○	○
12	Ø33~Ø38	X	X	X	X	X	X	○	
13	Coolant Pump (60 / 50Hz)	None	●	●	●	●	●	●	●
14		15 / 30 / 70bar	○	○	○	○	○	○	○
15	Coolant Options	Coolant Flow Rate Detector	●	●	●	●	●	●	●
16		TSC(Through Spindle Coolant) For Sub / Right Spindle	○	○	○	○	○	○	○
17		High Coolant Interface	○	○	○	○	○	○	○
18	Chip Processing Options	Hinged Belt_Left Side	○	○	—	○	○	○	○
19		Hinged Belt_Left Side (Height:1M)	○	○	—	○	○	○	○
20		Chip Bucket (90L / 110L / 220L / 300L)	○	○	○(90L)	○	○	○	○
21	Measurement & Automation	Cut Off Tool Breakage Detector (Mechanical)	●	●	○	●	●	X	X
22		Cut Off Tool Breakage Detector (Software)	X	X	X	X	X	●	●
23		Parts Ejector (Air Cylinder Type)	●	●	●	●	●	●	●
24		Workpiece Ejector W/Spring	○	○	○	○	○	○	○
25		Rear Workpiece Ejector	○	○	X	○	○	○	○
26		Parts Conveyor	●	●	○	●	●	●	●
27		Bar Feeder	○	○	○	○	○	○	○
28	Attachable Tools	Main T/P Gang (Turning)	●	●	●	●	●	●	●
29		Main T/P Cross Drill	●	●	●	●	●	●	●
30		Main T/P Sleeve Holder	●	●	●	●	●	●	●
31		Cross Drill Holder 2Spd	○	○	—	○	○	○	○
32		Cross Drill Holder 2Spd Conter Face	○	○	—	○	○	○	○
33		Cross Drill Holder 3Spd	○	○	—	○	○	○	○
34		Cross Drill Holder Polygon	○	○	—	○	○	○	○
35		Cross Drill Holder Slotting	○	○	—	○	○	○	○
36		Cross Drill Holder Tw	○	○	—	○	○	○	○
37		Cross Drill Holder 2Spd Adjustable Angel	○	○	—	○	○	○	○
38		Cross Drill Holder 3Spd Adjustable Angel	○	○	—	○	○	○	○
39		Dr Sleeve (Er16 STD)	X	X	—	X	○	○	X
40		Dr Sleeve (Er16 Counter Face)	X	X	—	○	○	○	X
41		Br Sleeve D6 / D8	○	○	○(D4/D6)	○	○	○	○
42		Br Sleeve D10	○	○	—	X	X	X	○
43		Slotting Back Tool Holder	○	○	○	○	○	○	○
44		Back Br Sleeve D6 / D8	○	○	○(D4/D6)	○	○	○	○
45		Back Tool Attach_Fixed_2EA	○	○	○	○	○	○	○
46		Back Tool Attachment_Bite	○	○	○	○	○	○	○
47		Deep Hole Sleeve	○	○	—	○	X	○	X
48	Optional Devices	Signal Tower	●	●	●	●	●	●	●
49		Led Work Light	●	●	●	●	●	●	●
50		Fire Extinguisher (Auto)	○	○	○	○	○	○	○
51		Mist Collector	○	○	○	○	○	○	○
52		Electric Line Filter	○	○	○	○	○	○	○
53		Extra M Code (4EA)	○	○	○	○	○	○	○
54		Automatic Power Off	○	○	○	○	○	○	○
55		Shunt Trip Coil	○	○	○	○	○	○	○

\* For further details of the range of options, please contact Doosan.

## Basic Information

Basic Structure  
Machining

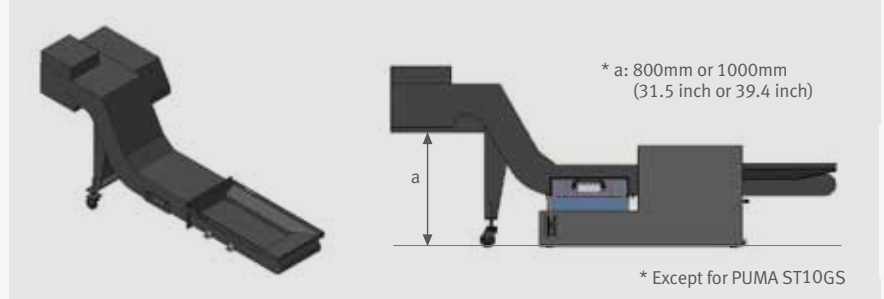
## Detailed Information

Options  
Applications  
Capacity Diagram  
Specifications

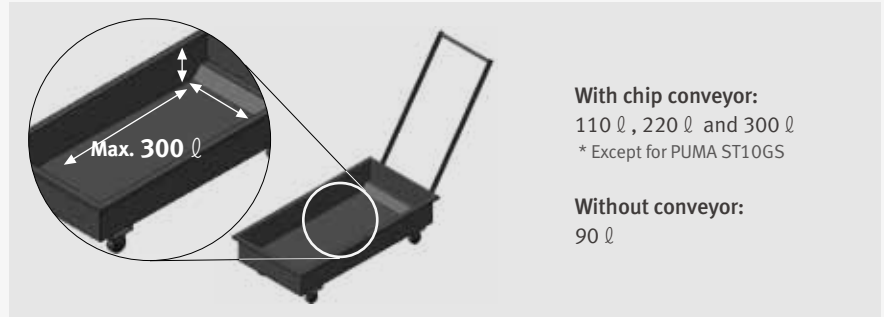
## Customer Support Service

**Chip Conveyor** option

A hinged-type chip conveyor is employed, with chip discharger height selectable by the customer requirements.

**Chip Bucket** option

Chips can be disposed of conveniently using a chip bucket, whose size can be determined according to the convenience of the customer.



## Coolant System

**Coolant Pump** option

The customer can select coolant pressure from: 15 / 30 / 70 bar.

**TSC** option

A TSC (Through Spindle Coolant) type coolant spray system is available for efficient chips disposal.

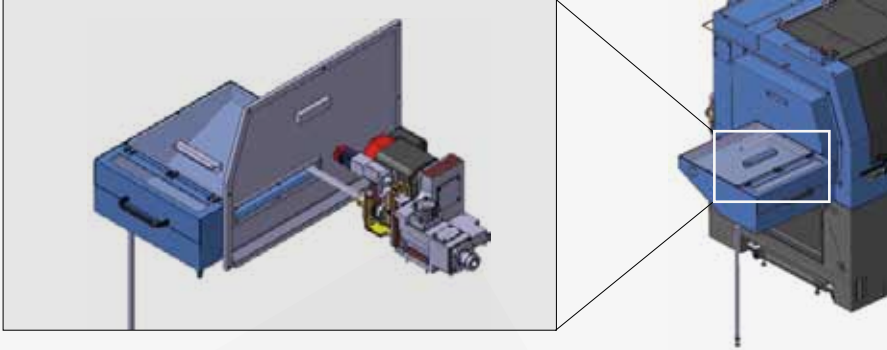
**High Pressure Coolant Interface** option

The customer can select additional electric wiring interface for using high pressure coolant.

## Measurement & Automation

### Back Work-piece Disposal System option

For the rear chip disposal system, the box size is increased and the cover is re-designed to protect the operator and environment by preventing coolant spray.



The pipe penetrating through the sub spindle is made of brass to minimize damage to the work. Various materials for discharge pipe are available to meet customer's requirements.

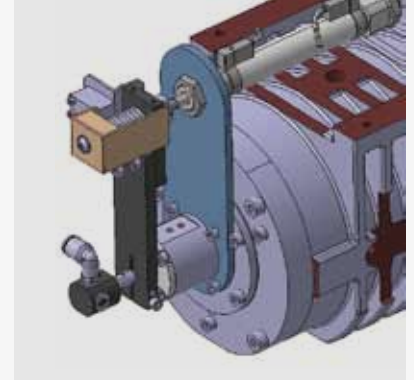


	PUMA ST20G / GS	PUMA ST26GS	PUMA ST32G / GS	PUMAST35GS
Ø11	○	○	○	○
Ø17	○	○	○	○
Ø20	○	○	○	○
Ø23	X	○	X	X
Ø25	X	X	○	○
Ø32	X	X	○	○

\* Except for PUMA ST10GS

### Work Ejector

Air cylinder type and spring type work ejectors are available for customer's choice.



Air cylinder type



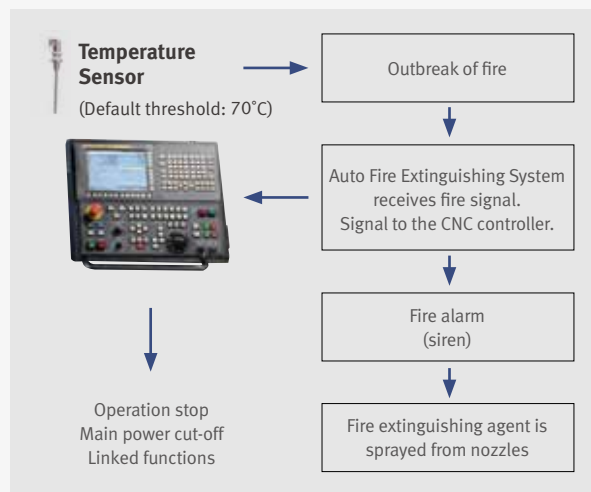
Spring type option

## Accessories

### Auto Fire Extinguishing System option

When the fire is detected by temperature sensors, an alarm is triggered and carbon dioxide fire extinguishing system is activated automatically.

\* Please ask to local distributor about fire extinguishing system, because of difference fire defense regulation by each country.



### Mist Collector option

A mist collector is provided to remove coolant and dust and provide pleasant work environment.



Product Overview

Basic Information

Basic Structure  
Machining

Detailed Information

Options  
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Customer Support Service



FANUC

User-Friendly Operation Panel

FANUC CNC optimized for DOOSAN's machine tools maximizes users' productivity.



PUMA ST G series  
10.4" Color LCD

PUMA ST GS series  
8.4" Color LCD  
10.4" Color LCD **option**

- USB & PCMCIA Card
- Slant design for user convenience
- Short-cut keys for easier setup and operation



Easy Operation Package

User convenience software functionality

Easier and simpler screens are continuously being developed for pre-process setup, machine check-ups, cutting, and other operations.

Short-cut buttons on the operation panel for user convenience



Preparation for Operation: Machine check-up and pre-setting

Machine Check-up



Displays the conditions of the machine and the interface to the peripheral equipment.

Tool Information



Tool layout information is displayed in 3D graphic, enabling easy setup of optional tools.

Manual Handle Retrace



Operator can use manual function to execute the program forward or backward.

Cutting and Count-up Setting Function



Information window for cutting operation (diameter & length of work, tool number, spindle's rotating direction, feed, etc.)





## Preparation for Operation: Machine check-up and pre-setting

### Tool Geometry Offset Setting

TOOL NO.	X1 AXIS	Y1 AXIS	Z1 AXIS	X2 AXIS	Y2 AXIS	Z2 AXIS
104	17.0000	0.0000	0.0000	107	0.0000	0.0000
105	17.0000	0.0000	0.0000	108	0.0000	0.0000
106	17.0000	0.0000	0.0000	109	0.0000	0.0000
110	0.0000	0.0000	0.0000	112	0.0000	0.0000
111	0.0000	0.0000	0.0000	113	0.0000	0.0000
112	0.0000	0.0000	0.0000	114	0.0000	0.0000
113	0.0000	0.0000	0.0000	115	0.0000	0.0000
114	0.0000	0.0000	0.0000	116	0.0000	0.0000
115	0.0000	0.0000	0.0000	117	0.0000	0.0000
116	0.0000	0.0000	0.0000	118	0.0000	0.0000
117	0.0000	0.0000	0.0000	119	0.0000	0.0000
118	0.0000	0.0000	0.0000	120	0.0000	0.0000
119	0.0000	0.0000	0.0000	121	0.0000	0.0000
120	0.0000	0.0000	0.0000	122	0.0000	0.0000
121	0.0000	0.0000	0.0000	123	0.0000	0.0000
122	0.0000	0.0000	0.0000	124	0.0000	0.0000
123	0.0000	0.0000	0.0000	125	0.0000	0.0000

Shows geometry values of individual tool.

### Auto Collet chuck Adjust



A patented technology which greatly reduces tension adjustment time by easily setting up the tension of the main/sub collet and guide bush at an appropriate torque.

\* Available for PUMA ST G series only.



### Cycle Setting Function

FUNCTION SETTING

- SW FILTER (ON/OFF)
- WHEEL PRESSURE COOLANT
- SPIN PRESSURE COOLANT
- WHEEL LOCK
- SW OFF

WHEEL	RELATIVE	ABSOLUTE	DISTANCE TO GO
11	17.0000	0.0000	17.0000
12	0.0000	0.0000	0.0000
13	0.0000	0.0000	0.0000
14	0.0000	0.0000	0.0000
15	0.0000	0.0000	0.0000
16	0.0000	0.0000	0.0000
17	0.0000	0.0000	0.0000
18	0.0000	0.0000	0.0000
19	0.0000	0.0000	0.0000
20	0.0000	0.0000	0.0000

A screen where the user conducts basic setups for machine operation within the cycle set.



### Auto Cut-off Function

AUTO CUT-OFF EXECUTION

PROCEDURE:

- SW FILTER ON
- CHECK THE VALUE OF WHEELING DEFLECTOR CHECK
- SELECT MAIN AND REPORT MODE
- PRESS THE EXECUTE KEY
- PRESS THE CYCLE START BUTTON

WHEEL	RELATIVE	ABSOLUTE	DISTANCE TO GO
11	17.0000	0.0000	17.0000
12	0.0000	0.0000	0.0000
13	0.0000	0.0000	0.0000
14	0.0000	0.0000	0.0000
15	0.0000	0.0000	0.0000
16	0.0000	0.0000	0.0000
17	0.0000	0.0000	0.0000
18	0.0000	0.0000	0.0000
19	0.0000	0.0000	0.0000
20	0.0000	0.0000	0.0000

Using a hot key, the operator can cut off work piece without using extra macro or programming. Reduced setup time leads to reduced preparation time.



### Tool Life Management Function

TOOL LIFE MANAGEMENT

TOOL	INSET	CURRENT	PREL.	PRESCT.	CURRENT	PREL.	PRESCT.	CURRENT
101	123456	0	113	3420	0	113	2973	0
102	123456	0	113	0	0	113	0	0
103	0	0	114	1014	0	113	0	0
104	1234	0	115	0	0	114	4404	0
105	0	0	115	0	0	115	473	0
106	0	0	115	0	0	116	0	0
107	0	0	116	0	0	116	0	0
108	0	0	116	0	0	117	0	0
109	0	0	116	0	0	118	0	0
110	1234	0	116	0	0	118	0	0
111	1234	0	117	0	0	119	0	0

The usage info of each tool is counted for easier management of tools. Tool life can be managed with this function without additional hardware.



### Programming Code Help Function

M CODE HELP

NO.	M CODE & DESCRIPTION	DETAIL
1	M01 - RAPID FEED POSITIONING	See (P.1)
2	M02 - LINEAR INTERPOLATION	
3	M03 - CIRCULAR INTERPOLATION(CCW)	Preprogram path
4	M04 - CIRCULAR INTERPOLATION(CCW)	
5	M04 - SWELL	
6	M05 - EXACT STOP	
7	M12 - MILLING INTERPOLATION (ON/OFF)	
8	M13 - MILLING INTERPOLATION OFF (OPT.1)	
9	M17 - XY PLANE	
10	M18 - ZC PLANE	
11	M19 - XZ PLANE	
12	M21 - STOPS STRIKE CHECK FUNCTION ON	
13	M23 - STOPS STRIKE CHECK FUNCTION OFF	
14	M25 - SPINDLE SPEED CHANGE DETECT OFF	
15	M26 - SPINDLE SPEED CHANGE DETECT ON	
16	M27 - SINGLE POINT THREAD CUTTING	
17	M34 - VARIABLE THREAD CUTTING	
18	M35 - CIRCULAR THRODING(CCW)	
19	M35 - CIRCULAR THRODING(CCW)	
20	M36 - MODE R COMP. CANCEL	

The description on the method and conditions for using G and M codes are provided to help the operator to run the machine with minimal effort and time.

## Machine Dimensions

Basic Information

Basic Structure  
Machining

### PUMA ST series

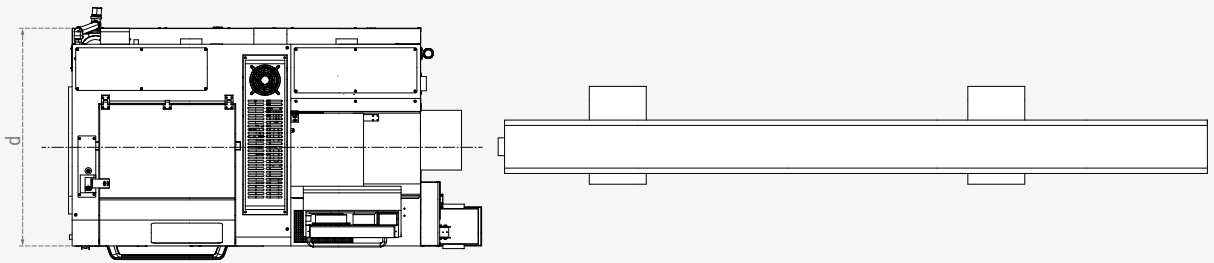
Unit: mm (inch)

Detailed Information

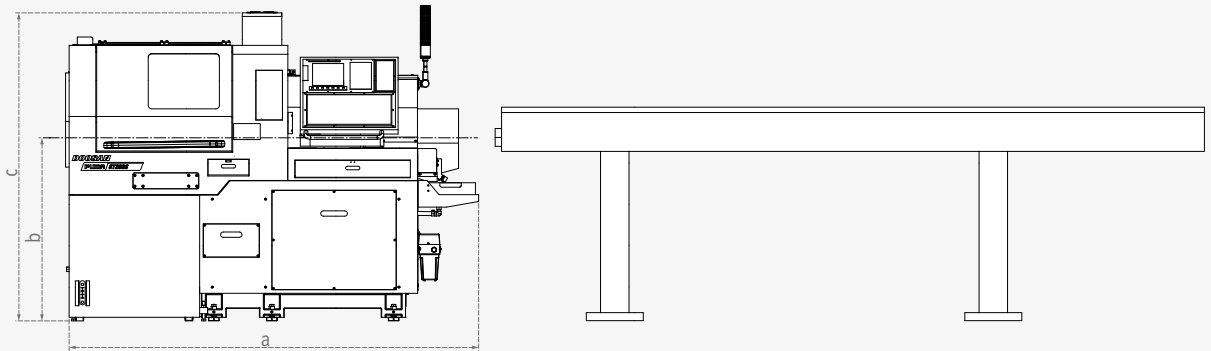
Options  
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Customer Support Service

Top View



Front View



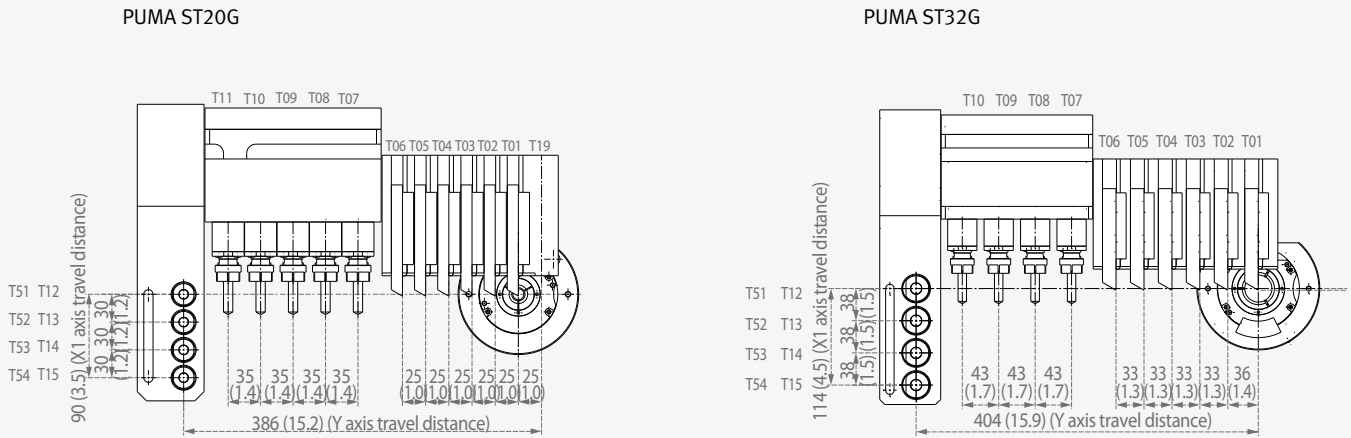
Division	Unit	PUMA ST20G	PUMA ST32G	PUMA ST10GS	PUMA ST20GS	PUMA ST26GS	PUMA ST32GS	PUMA ST35GS
Length (a)	mm (inch)	2300 (90.6)	2630 (103.5)	1929 (75.9)	2210 (87.0)	2320 (91.3)	2630 (103.5)	2630 (103.5)
Center height (b)	mm (inch)	1050 (41.3)	1060 (41.7)	1050 (41.3)	1050 (41.3)	1050 (41.3)	1060 (41.7)	1060 (41.7)
Height (c)	mm (inch)	1735 (68.3)	1850 (72.8)	1710 (67.3)	1730 (68.1)	1780 (70.1)	1850 (72.8)	1850 (72.8)
Width (d)	mm (inch)	1245 (49.0)	1400 (55.1)	910 (35.8)	1225 (48.2)	1245 (49.0)	1400 (55.1)	1400 (55.1)

# Tooling System

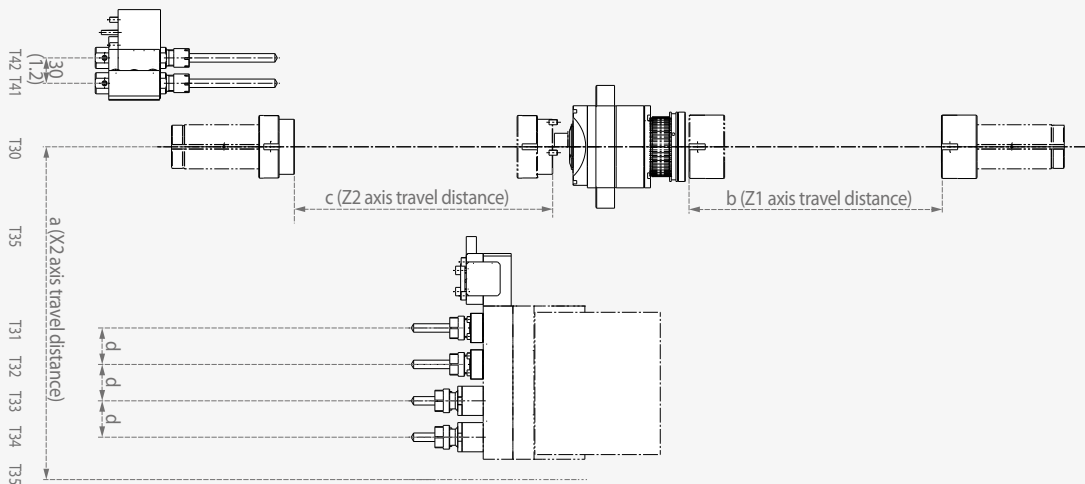
## PUMA ST20G / ST32G

Unit: mm (inch)

### Front Tools

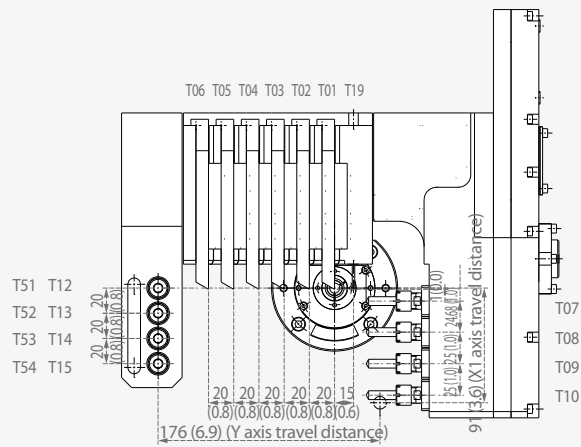


### Back Tools

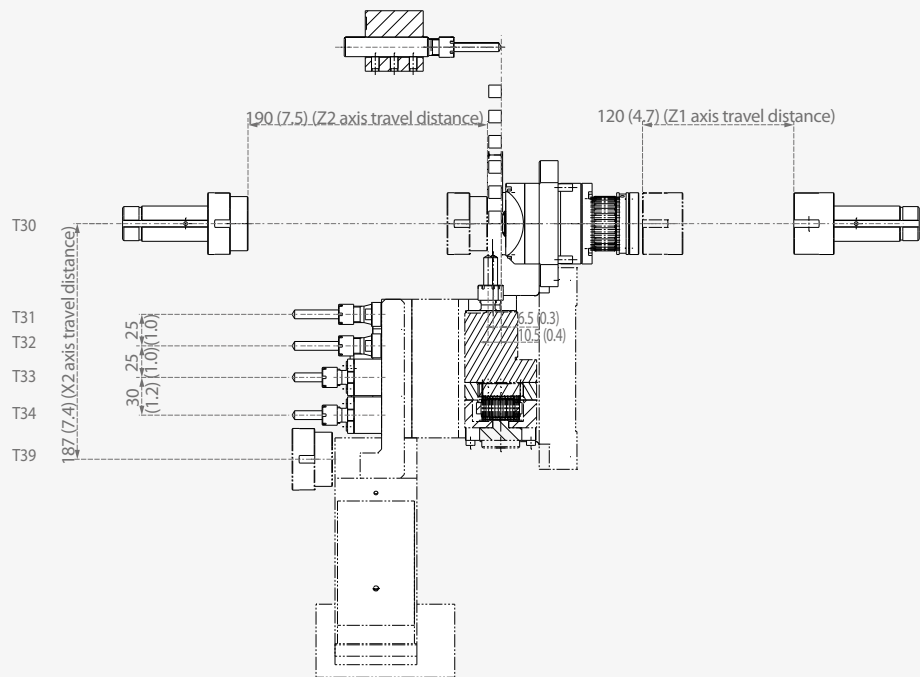


Division	Unit	PUMA ST20G	PUMA ST32G
X2 axis travel distance (a)	mm (inch)	345 (13.6)	393 (15.5)
Z1 axis travel distance (b)	mm (inch)	200 (7.9)	320 (12.6)
Z2 axis travel distance (c)	mm (inch)	190 (7.5)	305 (12.0)
Distance between back tools (d)	mm (inch)	41 (1.6)	43 (1.7)

### Front Tools



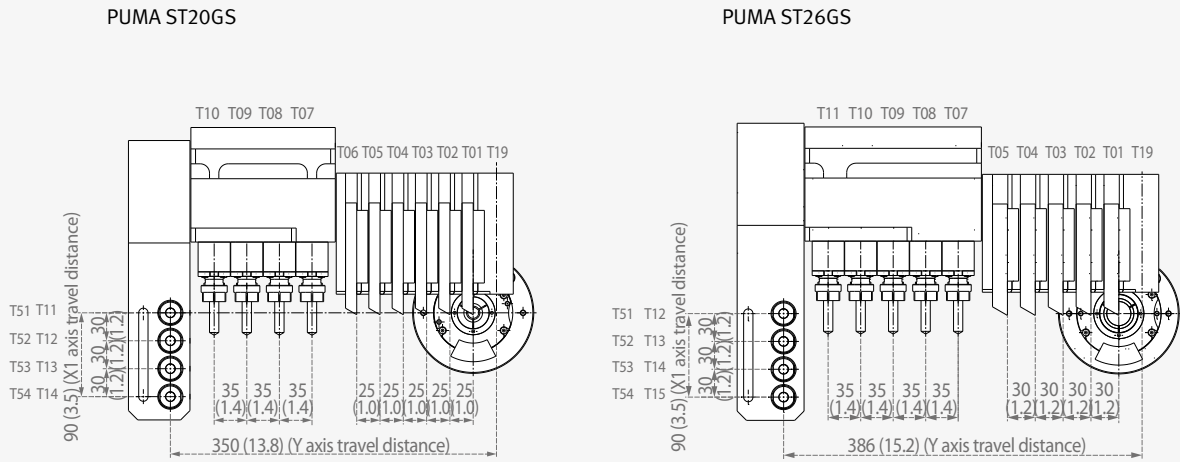
### Back Tools



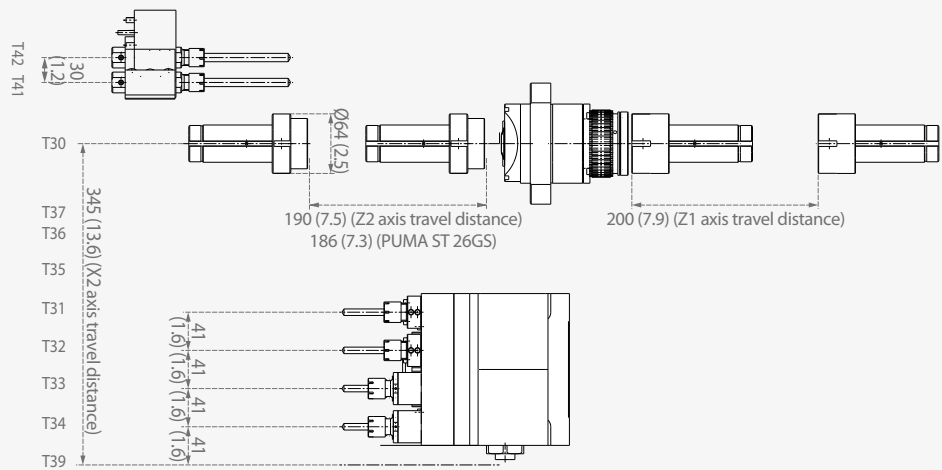
# PUMA ST20GS / 26GS

Unit: mm (inch)

## Front Tools

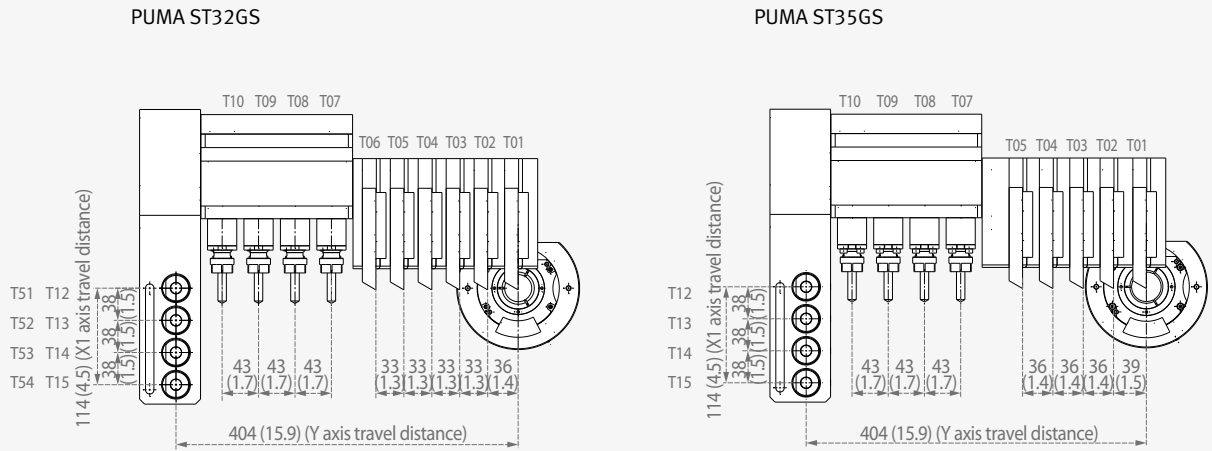


## Back Tools

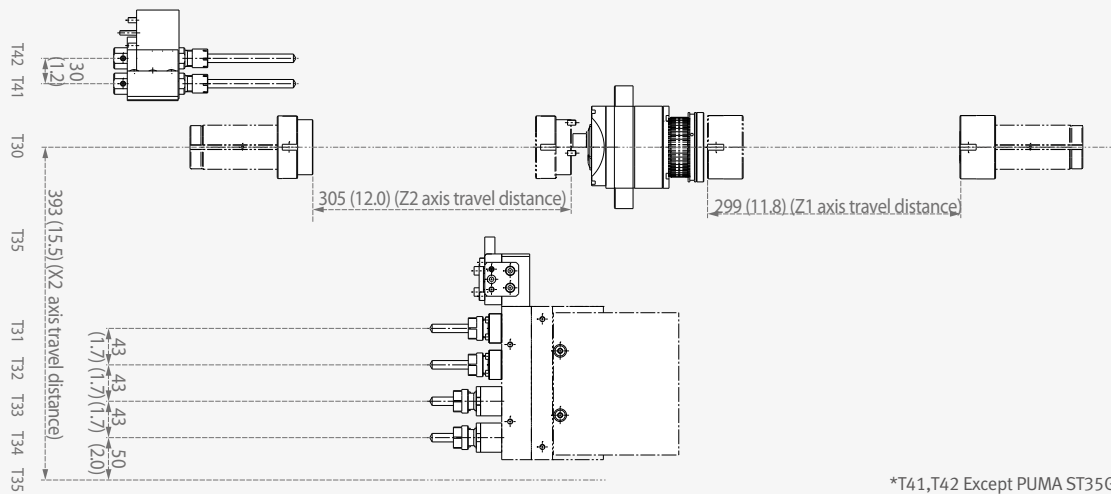


\* T41, T42 Except PUMA ST26GS

Front Tools



Back Tools



\*T41, T42 Except PUMA ST35GS

## Machine Specifications



Description		Unit	G series		GS series					
			PUMA ST20G	PUMA ST32G	PUMA ST10GS	PUMA ST20GS	PUMA ST26GS	PUMA ST32GS	PUMA ST35GS	
Machining Capacity	Max. machining diameter	mm (inch)	Ø20 (Ø0.8)	Ø32 (Ø1.3)	Ø10 (Ø0.4)	Ø20 (Ø0.8)	Ø26 (Ø1.0)	Ø32 (Ø1.3)	Ø35 (Ø1.4) (Ø38 (Ø1.5))	
	Max. machining length	mm (inch)	200 (7.9)	320 (12.6)	120 (4.7)	200 (7.9)	200 (7.9)	300 (11.8)	300 (11.8)	
	Max. front drilling / tap	mm (inch)	Ø10 / M8 (Ø0.4 / M0.3)	Ø13 / M12 (Ø0.5 / M0.5)	Ø7 / M6 (Ø0.3 / 0.2)	Ø10 / M8 (Ø0.4 / M0.3)	Ø10 / M8 (Ø0.4 / M0.3)	Ø13 / M12 (Ø0.5 / M0.5)	Ø13 / M12 (Ø0.5 / M0.5)	
	Max. cross drill / tap	mm (inch)	Ø8 / M6 (Ø0.3 / M0.2)	Ø8 / M6 (Ø0.3 / M0.2)	Ø5 / M4 (Ø0.2 / M0.2)	Ø8 / M6 (Ø0.3 / M0.2)	Ø8 / M6 (Ø0.3 / M0.2)	Ø8 / M6 (Ø0.3 / M0.2)	Ø8 / M6 (Ø0.3 / M0.2)	
No. Mountable tools (Max)		ea	25 (30)	24 (29)	22	24 (29)	22 (27)	24 (29)	21 (26)	
Tool post	Front machining	Turning tool	ea	6 (12x12 x120)	6 (16 x16 x120)	6 (10 x10 x110)	6 (12x12 x120)	5 (16x16 x120)	6 (16x16 x120)	5 (16x16 x120)
		Sleeve holder	ea	4 (ER16M)	4 (ER20M)	4 (ERM11)	4 (ER16M)	4 (ER16)	4 (ER20M)	4 (ER20M)
		Cross tool	ea	5 (ER16)	4 (ER16)	4	4 (ER16M)	5 (ER16)	4 (ER16)	4 (ER16)
		Max. rotaty tool speed	r/min	8000	8000	8000	8000	8000	8000	8000
Back machining	Number of mountable tool	ea	fixed 2 + rotation 2							
	Additional fixed type tool	ea	2	2	-	2	2	2	2	
	Max. rotaty tool speed	r/min	6000	8000	8000	6000	6000	8000	8000	
Spindle	Main spindle	Max. spindle speed	r/min	10000	8000	12000	10000	8000	8000	8000
		Max. spindle power (30min/cont.)	kW (Hp)	3.7 / 2.2 (5.0 / 3.0)	7.5 / 5.5 (10.1 / 7.4)	3.7 / 2.2 (5.0 / 3.0)	3.7 / 2.2 (5.0 / 3.0)	5.5 / 2.2 (7.4 / 3.0)	7.5 / 5.5 (10.1 / 7.4)	7.5 / 5.5 (10.1 / 7.4)
	Sub spindle	Max. spindle speed	r/min	8000	8000	10000	8000	8000	8000	8000
		Max. spindle power (30min/cont.)	kW (Hp)	2.2 / 1.5 (3.0 / 2.0)	3.7 / 2.2 (5.0 / 3.0)	1.1/0.55 (1.5/0.7)	2.2 / 1.5 (3.0 / 2.0)	2.2 / 1.5 (3.0 / 2.0)	3.7 / 2.2 (5.0 / 3.0)	3.7 / 2.2 (5.0 / 3.0)
C-axis minimum indexing increment			0.001							
Travel	Rapid traverse rate	m/min (ipm)	32 (1259.8)	32 (1259.8)	35 (1378.0)	32 (1259.8)	32 (1259.8)	32 (1259.8)	32 (1259.8)	
	X1, X2, Z1, Z2, Y motor power	kW (Hp)	0.75 (1.0)	1.0 (1.3)	0.75 (1.0)	0.5 (0.7)	0.75 (1.0)	1.0 (1.3)	1.0 (1.3)	
Chuck / Guide bush	Main/sub spindle		TF25	TF37	TF15	TF25	TF32	TF37	TF40	
	Guide bush		TD25NS	TD32S	TD10	TD25NS	CD25	TD32S	TD35	
Power source	Power consumption	Kva	15	22	11	12	22	22	22	
Control	NC system		FANUC 31i		DOOSAN FANUC i					

# NC Unit Specifications

● Standard ○ Optional X Not applicable



**Basic Information**

Basic Structure  
Machining

**Detailed Information**

Options  
Applications  
Capacity Diagram  
Specifications

**Customer Support Service**

No	Division	Item	Spec.	FANUC 31i	DOOSAN FANUC i
1	Controlled axis	Control paths		○	2 Path
2		Controlled axes		7(X1,Z1,Y,C1, X2,Z2,C2)	7(X1, Z1, C1, X2, Z2, C2, A)
3		Simultaneously controlled axes		4 axes	4 axes
4		Axis control by PMC		●	●
5		Cs contouring control		●	●
6		Synchronous/Composite control (C1 & C2 Synchro Control)		●	●
7		Torque control		●	●
8		HRV2 control		●	●
9		Inch/metric conversion		●	●
10		Interlock		●	●
11		Machine lock	all / each axis	●	●
12		Emergency stop		●	●
13		Over travel		●	●
14		Stored stroke check 1		●	●
15		Stored stroke check 2,3		●	●
16		Stored limit check before move		●	●
17		Stroke limit area changing function		●	●
18		Mirror image	each axis	●	●
19		Follow-up		●	●
20		Servo off/Mechanical handle		●	●
21		Chamfering on/off		●	●
22		Unexpected disturbance torque detection function		●	●
23		Position switch		●	●
24	Operation	Automatic operation		●	●
25		MDI operation		●	●
26		DNC operation	Included in RS232C interface.	●	●
27		DNC operation with memory card		●	●
28		Schedule function	Included in RS232C interface.	●	●
29		Program number search		●	●
30		Sequence number search		●	●
31		Program restart		●	●
32		Manual intervention and return		○	●
33		Wrong operation prevention		●	●
34		Buffer register		●	●
35		Dry run		●	●
36		Single block		●	●
37		Manual continuous feed (JOG)		●	●
38		Manual reference position return		●	●
39		Reference position setting without DOG		●	●
40		Reference position shift		●	●
41		Manual handle feed 1-unit	1 unit	●	●
42		Manual handle feed 2/3-units	2 units/3 units	○	-
43		Handle interruption		○	●
44		Incremental feed	x1,x10,x100	●	●
45		Manual handle retrace		●	●
46		Interpolation functions	Nano interpolation		●
47	Positioning		G00	●	●
48	Linear interpolation			●	●
49	Circular interpolation			●	●
50	Dwell (Second designation)		G04	●	●
51	Polar coordinate interpolation			●	●
52	Cylindrical interpolation			●	●
53	Helical interpolation			○	○
54	Thread cutting, synchronous cutting			●	●
55	Multi threading			●	●
56	Thread cutting retract			●	●
57	Continuous threading			●	●
58	Variable lead thread cutting			●	●
59	Skip		G31	●	●
60	Multi-step skip			○	○
61	High-speed skip		Input signal is 8 points.	○	○
62	Torque limit skip			●	●
63	Reference position return		G28	●	●
64	Reference position return check		G27	●	●
65	2nd reference position return		G30	●	●
66	3rd/4th reference position return		○	●	



# FANUC

● Standard ○ Optional X Not applicable

No	Division	Item	Spec.	FANUC 31i	DOOSAN FANUC i
67	Feed function	Rapid traverse override	F0, 25, 100%	●	●
68		Tangential speed constant control		●	●
69		Cutting feedrate clamp		●	●
70		Feedrate override	0 - 200% (10% unit)	●	●
71		Jog override	0 - 2000mm/min (10% unit)	●	●
72		Override cancel		●	●
73		Manual per revolution feed		●	●
74		AI contour control I		●	●
75		AI contour control II		○	-
76	Rapid traverse block overlap		●	●	
77	Program input	Optional block skip	9 pieces	-	-
78		Absolute/incremental programming	Combined use in the same block	●	●
79		Diameter/Radius programming		●	●
80		Automatic coordinate system setting		●	●
81		Workpiece coordinate system	G52 - G59	-	●
82		Workpiece coordinate system preset		-	●
83		Direct drawing dimension programming		●	●
84		G code system	A	●	●
85		G code system	B/C	●	●
86		Chamfering/Corner R		●	●
87		Programmable data input	G10	●	●
88		Programmable parameter input		●	●
89		Custom macro		●	●
90		Addition of custom macro common variables	#100 - #199, #500 - #999	-	●
91		Interruption type custom macro		○	●
92		Canned cycle		●	●
93		Multiple repetitive cycles	G70-G76	●	●
94		Multiple repetitive cycles II	Pocket profile	●	●
95		Canned cycle for drilling		●	●
96		Circular interpolation by R programming	9 digit/12 digit	●	●
97		Tape format	FS10.11 / FS15	-	●
98		Macro executor		●	●
99		Coordinate system shift		●	●
100	Direct input of coordinate system shift		●	●	
101	Auxiliary / Spindle speed function	Constant surface speed control		●	●
102		Spindle override	0 - 150%	-	●
103		Spindle orientation		-	●
104		Rigid tap		●	●
105		Spindle control with servo motor	Spindle serial output is required.	●	●
106	Arbitrary speed threading		-	-	
107	Tool function/ Tool compensation	Tool function		●	●
108		Tool offset pairs	64-pairs	●	●
109		Tool offset		●	●
110		Y-axis offset		●	●
111		Tool radius/Tool nose radius compensation		●	●
112		Tool geometry/wear compensation		-	●
113		Tool offset value counter input		●	●
114		Automatic tool offset	G36/G37	-	●
115		Direct input of tool offset value measured		●	●
116		Direct input of offset value measured B		-	●
117	Tool life management		-	●	
118	Accuracy compensation function	Backlash compensation		●	●
119		Backlash compensation for each rapid traverse and cutting feed		●	●
120	Editing operation	Program protect		●	●
121		Password function		●	●
122	Setting and display	Parameter setting and display		●	●
123		Multi-language display	Selection of Five Optional Language	●	-
124		Dynamic display language switching		-	●
125		Graphic function		-	●
126		Dynamic graphic display function		-	-
127	Data input / output	Fast data server		○	-
128		External data input		●	●
129		Memory card input/output		●	●
130		USB memory input/output		●	●
131		Automatic data backup		●	●
132	Interface function	Embedded Ethernet		●	●
133		Fast Ethernet		○	-
134	Others	Display unit	10.4" color LCD	●	-

Product Overview

Basic Information

Basic Structure  
Machining

Detailed  
Information

Options  
Applications  
Capacity Diagram  
Specifications

Customer Support  
Service

# Responding to Customers Anytime, Anywhere



## Global Service Support Network

Corporations

5

Dealer Networks

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Technical Centers

18

Factories

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 ST series



Specification		UNIT	G series		GS series					
			PUMA ST20G	PUMA ST32G	PUMA ST10GS	PUMA ST20GS	PUMA ST26GS	PUMA ST32GS	PUMA ST35GS	
Machining Capacity	Max. machining diameter	mm (inch)	Ø20 (Ø0.8)	Ø32 (Ø1.3)	Ø10 (Ø0.4)	Ø20 (Ø0.8)	Ø26 (Ø1.0)	Ø32 (Ø1.3)	Ø35 (Ø38) (Ø1.4(Ø1.5))	
Spindle	Max. spindle power (30min/cont.)	Main	3.7 / 2.2 (5.0 / 3.0)	7.5 / 5.5 (10.1 / 7.4)	3.7 / 2.2 (5.0 / 3.0)	3.7 / 2.2 (5.0 / 3.0)	5.5 / 2.2 (7.4 / 3.0)	7.5 / 5.5 (10.1 / 7.4)	7.5 / 5.5 (10.1 / 7.4)	
		Sub	2.2 / 1.5 (3.0 / 2.0)	3.7 / 2.2 (5.0 / 3.0)	1.1 / 0.55 (1.5 / 0.7)	2.2 / 1.5 (3.0 / 2.0)	2.2 / 1.5 (3.0 / 2.0)	3.7 / 2.2 (5.0 / 3.0)	3.7 / 2.2 (5.0 / 3.0)	
Tool post	No. Mountable tools (Max)	ea	25 (30)	24 (29)	22	24 (29)	22 (27)	24 (29)	21 (26)	
	Front machining	Turning tool	ea	6	6	6	6	5	6	5
		Sleeve holder	ea	4+4	4+4	4	4+4	4+4	4+4	4+4
		Cross tool	ea	5	4	4	4	5	4	4
	Back machining	Number of mountable tool	ea	4	4	4	4	4	4	4
Additional fixed type tool		ea	2	2	-	2	2	2	2	
Travel	Rapid traverse rate	m/min (ipm)	32 (1259.8)	32 (1259.8)	35 (1378.0)	32 (1259.8)	32 (1259.8)	32 (1259.8)	32 (1259.8)	
Control	Control axes	-	7 (X1,Z1,C1,Y,X2,Z2,C2)							
	NC system	-	FANUC 31i		DOOSAN FANUC i					



## Doosan Machine Tools

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