DOOSAN

PUMA ST series

A Highly Rigid Swiss type Turning Center, Excellent for Continuous Precision Machining

PUMA ST series

PUMA ST10GS
PUMA ST20GS / 26GS
PUMA ST32GS / 35GS

MACHINE GREATNESS™

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.

Contents

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 Ø20 mm (Ø0.8 inch) ~ Ø38 mm (Ø1.5 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.

PUMA ST series Line -up

GS series

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	25 (30) ea	22 (27) ea	24 (29) ea	21 (26) ea
Cross tool	4 ea	5 ea	5 ea	4 ea	4 ea
CNC	DOOSAN FANUC i	DOOSAN FANUC i	DOOSAN FANUC i	DOOSAN FANUC i	DOOSAN FANUC i

PUMA ST10GS

PUMA ST10GS excellent for continuous precising is suitable for processing small parts having diameters between Ø3 (Ø0.1)~Ø8 mm (Ø0.3 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 (L x W x H)	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

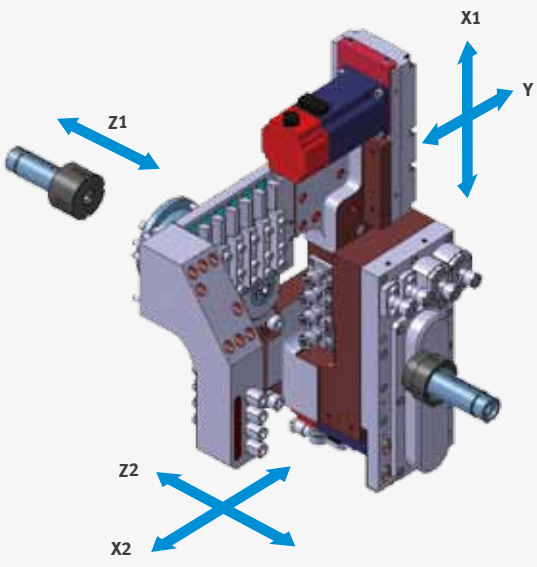
Max. Machining Diameter

Ø10mm
(Ø0.4 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	22
Front machining	Turning tool	ea	6 (10 x 10 x 110)
	Sleeve holder		4 (ER11)
	Cross tool		4
Back machining	Number of mountable tool	ea	fixed 2 + rotation 2

PUMA ST20GS / 26GS

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

Major specifications

Description	Unit	PUMA ST20GS	PUMA ST26GS
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 : 3.7/2.2 (5.0/3.0)	Main : 5.5/2.2 (7.4/3.0) Sub : 3.7/2.2 (5.0/3.0)
Machine dimensions (L x W x H)	mm (inch)	2320 x 1245 x 1735 (91.3 x 49.0 x 68.3)	
Display unit	inch	10.4	
CNC		DOOSAN FANUC i	

PUMA ST20GS

Max. Machining Diameter

ø20mm
(Ø0.8 inch)

Max. spindle speed

Main Spindle: 10000 r/min

Sub-Spindle: 8000 r/min

PUMA ST26GS

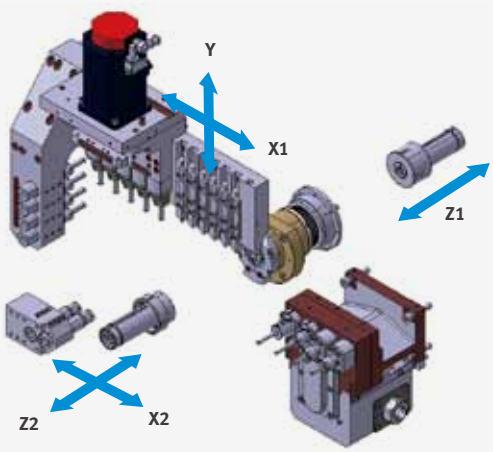
Max. Machining Diameter

ø26mm
(Ø1.0 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	25 (30)	22 (27)
Front machining	Turning tool	ea	6 (12 x 12 x 120)	5 (16 x 16 x 120)
	Sleeve holder		4 (ER16M) (+4,bifacial)	4 (ER16) (+4,bifacial)
	Cross tool		5 (ER16)	
Back machining	Number of mountable tool	ea	fixed 2+rotation 2	
	Additional fixed type tool		2	
Deep hole	Number of mountable tool	ea	2	X

PUMA ST GS series Features Highlight

* Except for PUMA ST10GS

Built-in Sub Spindle

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 (L x W x H)	mm (inch)	2835 x 1470 x 1850 (111.6 x 57.9 x 72.8)	
Display unit	inch	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

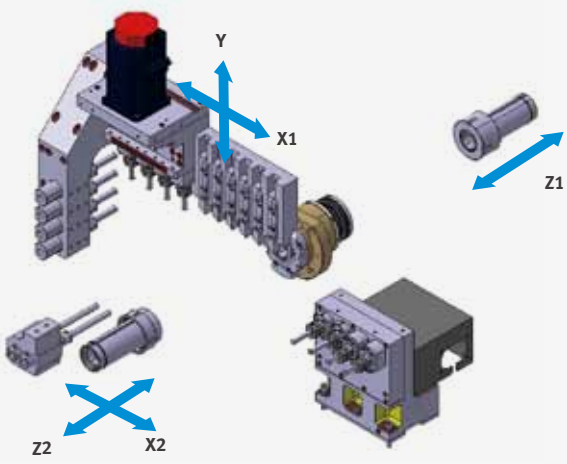
ø35 (ø38)mm (Ø1.4 inch)

Max. spindle speed

Main Spindle **8000 r/min**

Sub-Spindle **8000 r/min**

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



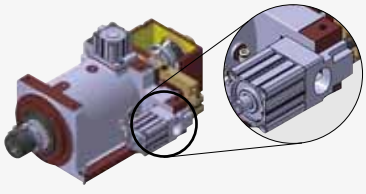
Travel

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	ea	6 (16 x 16 x 120)	5 (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		2	
Deep hole	Number of mountable tool	ea	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.

Servo-controlled Guide Bushes

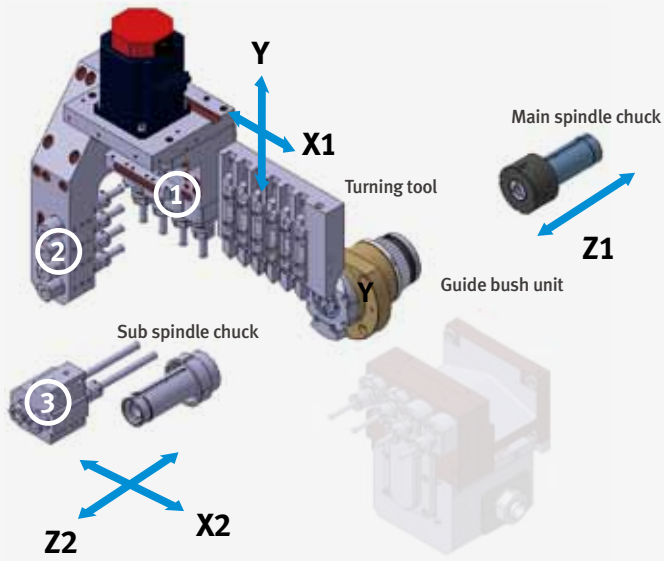
The guide bush and main spindle are synchronized by servo motor for high precision control and easy maintenance. Minimized vibration further increases machining accuracy.

Machining

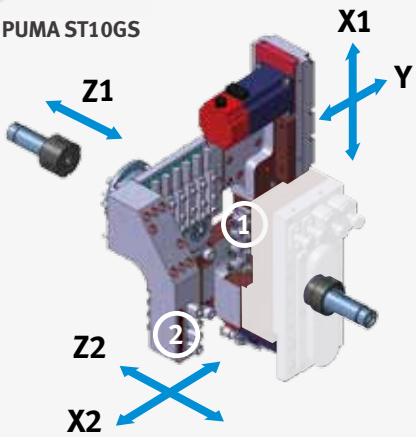
The PUMA ST series are designed to adopt various tooling options. Customers can choose optimal tooling to achieve highest level of productivity.

Front Machining

PUMA ST20GS / 26GS / 32GS / 35GS



PUMA ST10GS



1. Cross Rotary Tool Holder

Cross Rotary Tool Holder

2. Sleeve Holder

Double Sleeve Sleeve

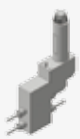
3. Deep Hole Cutting Sleeve Holder

Deep Hole Sleeve

* Except for PUMA ST10GS / ST26GS / 35GS

Cross Tools for Special Cutting (Except for PUMA ST10GS)

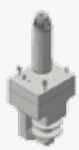
2 Spindle Unit



2 Spindle Counter Face Unit

3 Spindle Unit

Polygon Unit



Slotting Unit

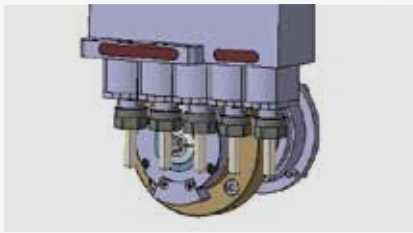
Thread Whirling Unit

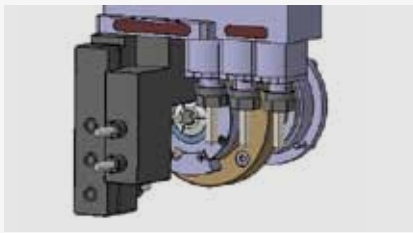
2-Spindle Adjustable Angle Unit

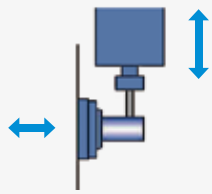
3-Spindle Adjustable Angle Unit

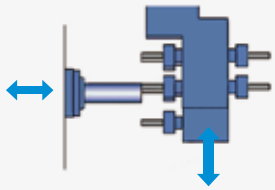
Cross Tool Drilling / Milling Hole Cutting

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









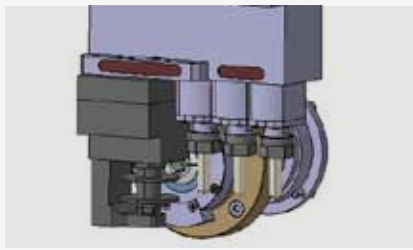
* Except for PUMA ST10GS

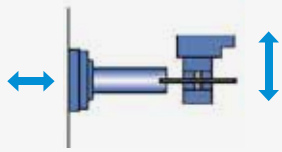
Special Cutting Function (Helical Interpolation) option

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

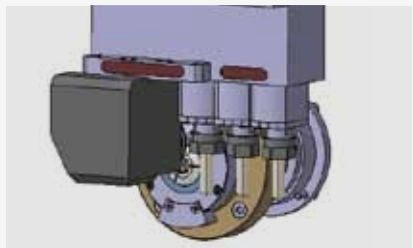


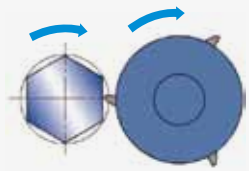


* Except for PUMA ST10GS

Polygonal Turning

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

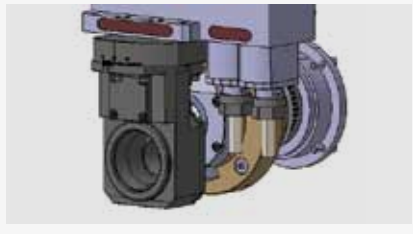


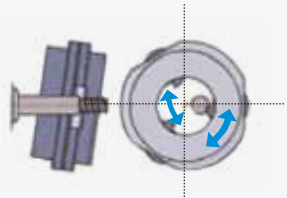


* Except for PUMA ST10GS

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.

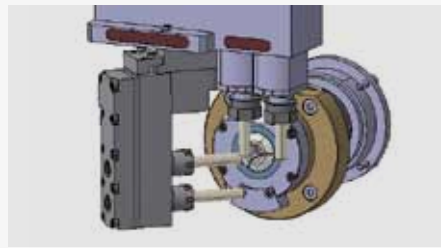


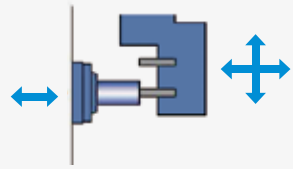


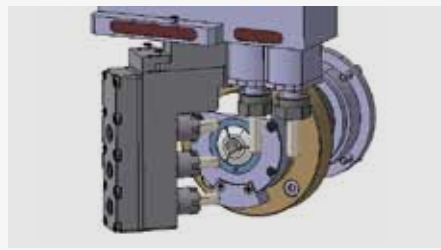
* Except for PUMA ST10GS

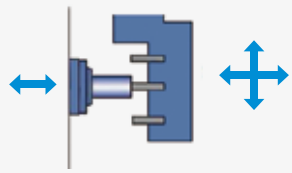
Drilling / Milling Hole Cutting with Angle Adjustment

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

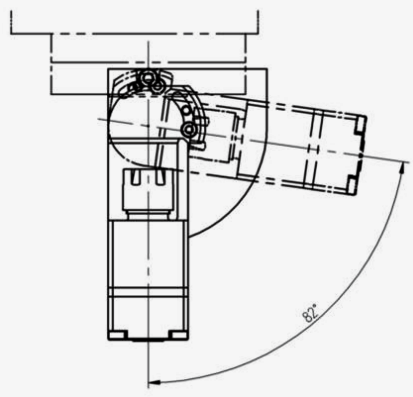






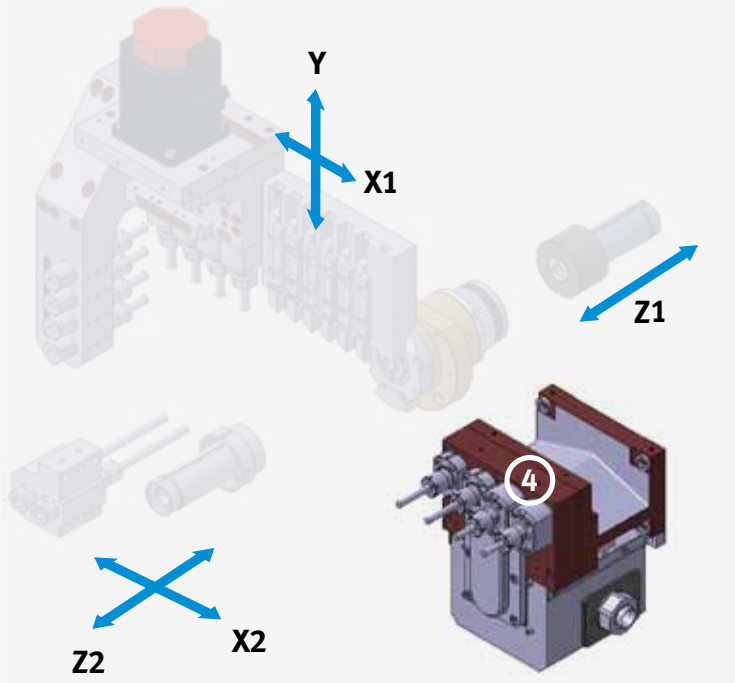


Adjustable up to 82 degrees in the left and right to enable complicated hole cutting.

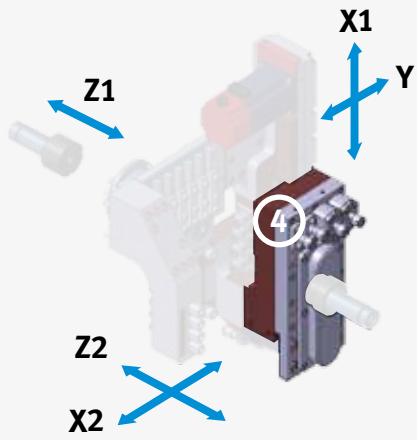


Back Machining

PUMA ST20GS / 26GS / 32GS / 35GS



PUMA ST10GS



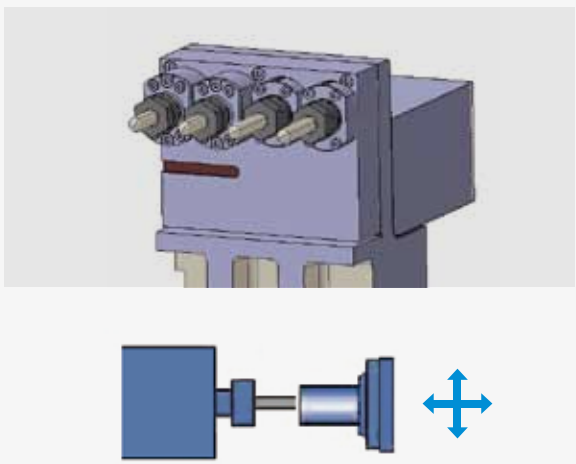
4. Back Tools

Back Sleeve Holder * | Back Bite Holder * | Back Slotting Unit | Back Sleeve | Back Tool Holder

* Except for PUMA ST10GS

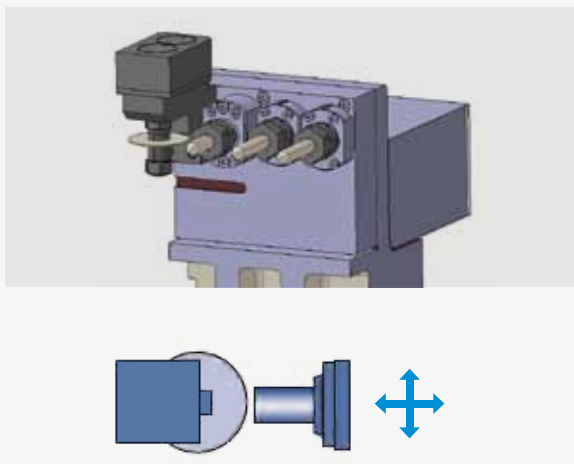
Back Drilling / Milling Hole Cutting

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

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

● Standard ○ Optional X N/A

NO.	Description	Features	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	○	○	○
5		Ø27~Ø32	X	X	X	○	○
6		Ø33~Ø38	X	X	X	X	○
7	Gudie Bush Chuck Size	None	●	●	●	●	●
8		Ø1~Ø10	○	○	○	○	○
9		Ø11~Ø20	X	○	○	○	○
10		Ø21~Ø26	X	X	○	○	○
11		Ø27~Ø32	X	X	X	○	○
12		Ø33~Ø38	X	X	X	X	○
13	Coolant Pump (60 / 50Hz)	None	●	●	●	●	●
14		15 / 30 / 70bar	X	○	○	○	○
15	Coolant Options	Coolant Flow Rate Detector	●	●	●	●	●
16		TSC(Through Spindle Coolnat) 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	●	●
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
40		Dr Sleeve (Er16 Counter Face)	–	○	○	○	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	○	○	○	○	○

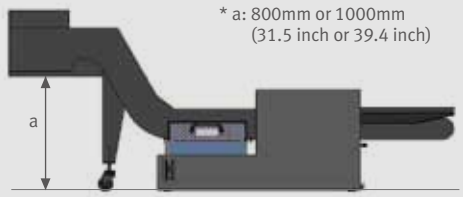
* For further details of the range of options, please contact Doosan.

Peripheral Equipment

Chip Removal Options

Chip Conveyor option

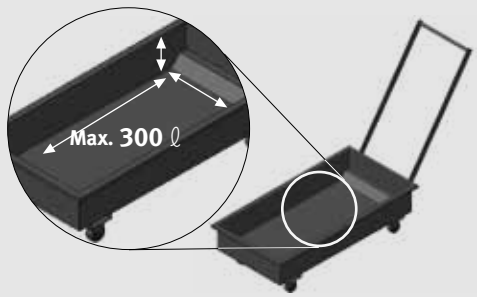
A hinged-type chip conveyor is employed, with chip discharger height selectable by the customer requirements.



* Except for PUMA ST10GS

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.



With chip conveyor:
110 ℓ , 220 ℓ and 300 ℓ
* Except for PUMA ST10GS

Without conveyor:
90 ℓ

Coolant System

Coolant Pump option

The customer can select coolant pressure from: 30 / 35 / 70 bar.

*35 Bar simple type

*30 / 70 Bar
* Except for PUMA ST10GS

TSC option

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

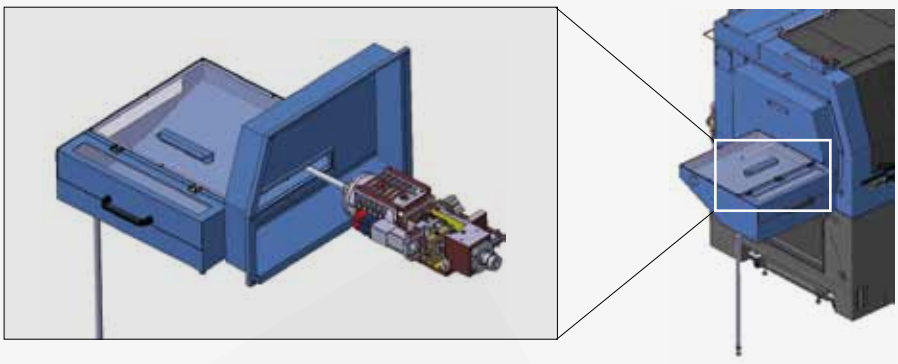
High Pressure Coolant Interface option

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.



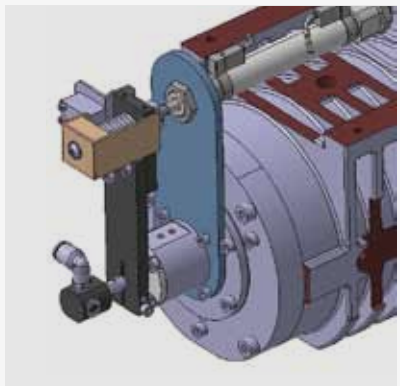
The pipe penetrating through the sub spindle is made of brass to minimize damage to the work. Various materials for discharge pipe are available to meet customer's requirements.

	PUMA ST20GS	PUMA ST26GS	PUMA ST32GS	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

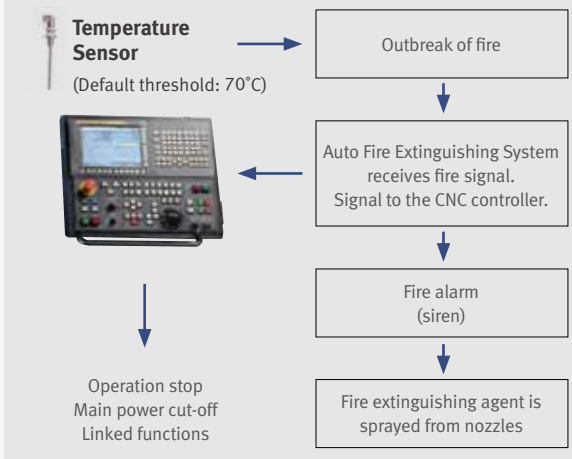
Accessories

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.

Auto Fire Extinguishing System



Mist Collector option

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

FANUC

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

User-Friendly Operation Panel

PUMA ST GS series 10.4"

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

Easy Operation Package

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

User convenience software functionality

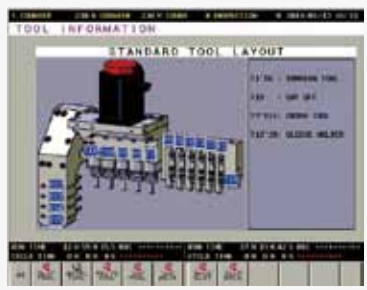
Short-cut buttons on the operation panel for user convenience →

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

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

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

Auto Cut-off Function

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

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

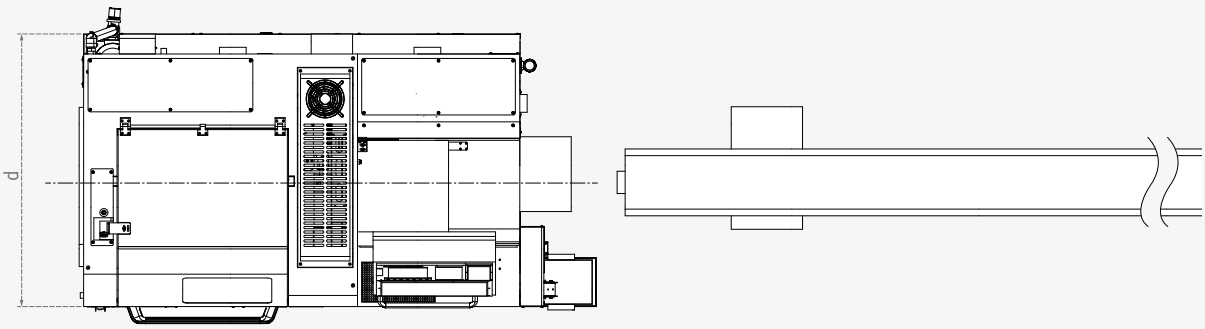
The description on the method and conditions for using G and M codes are provided to help the operator to run the machine with minimal effort and time.

Machine Dimensions

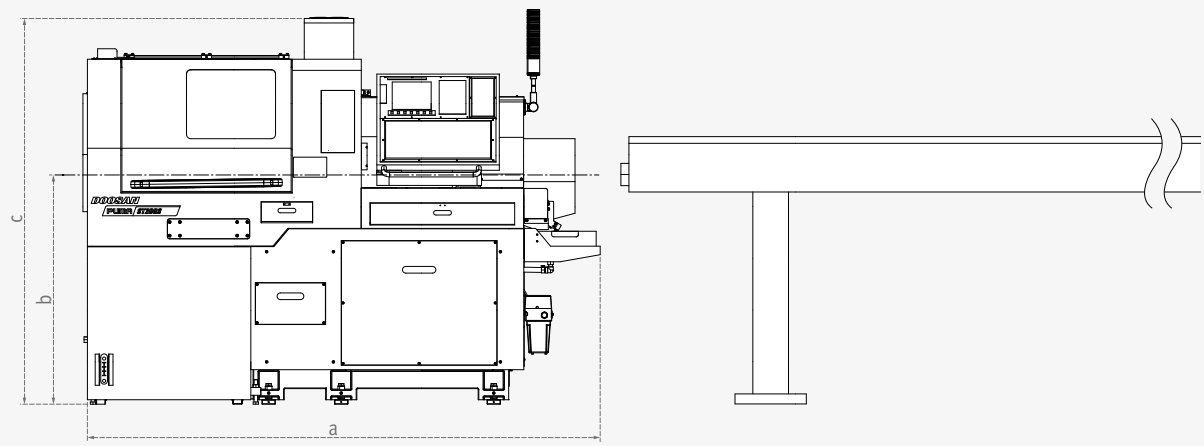
PUMA ST series

Unit: mm (inch)

Top View



Front View



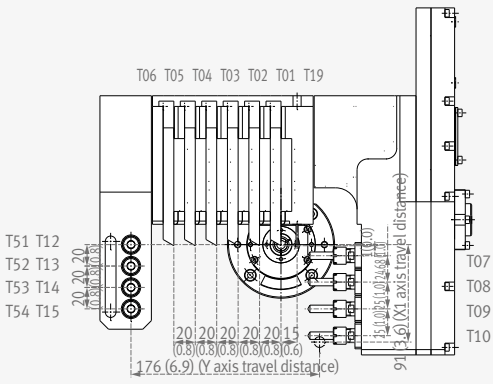
Division	Unit	PUMA ST10GS	PUMA ST20GS	PUMA ST26GS	PUMA ST32GS	PUMA ST35GS
Length (a)	mm (inch)	1929 (75.9)	2320 (91.3)	2320 (91.3)	2835 (111.6)	2835 (111.6)
Center height (b)	mm (inch)	1050 (41.3)	1050 (41.3)	1050 (41.3)	1060 (41.7)	1060 (41.7)
Height (c)	mm (inch)	1710 (67.3)	1735 (68.3)	1735 (68.3)	1850 (72.8)	1850 (72.8)
Width (d)	mm (inch)	910 (35.8)	1245 (49.0)	1245 (49.0)	1470 (57.9)	1470 (57.9)

Tooling System

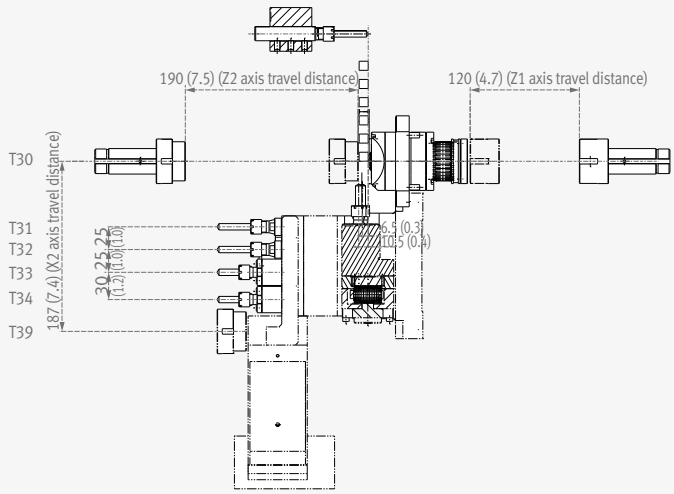
PUMA ST10GS

Unit: mm (inch)

Front Tools



Back Tools

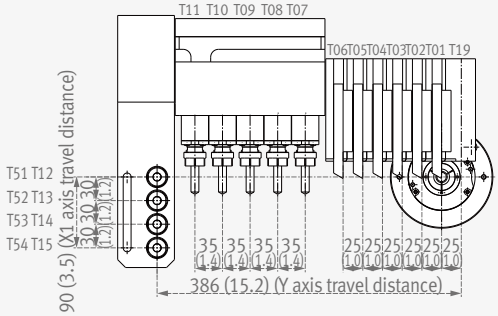


PUMA ST20GS / 26GS

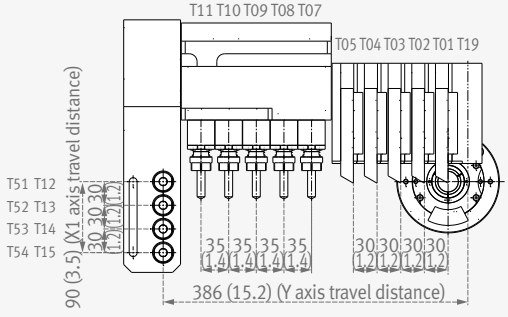
Unit: mm (inch)

Front Tools

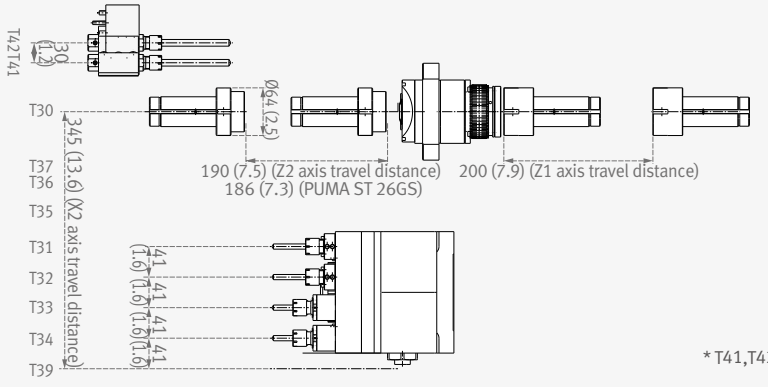
PUMA ST20GS



PUMA ST26GS



Back Tools



* T41,T42 Except PUMA ST26GS

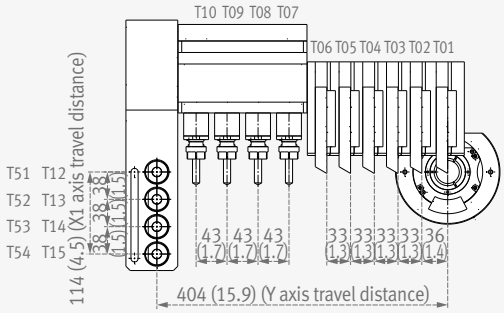
Tooling System

PUMA ST32GS / ST35GS

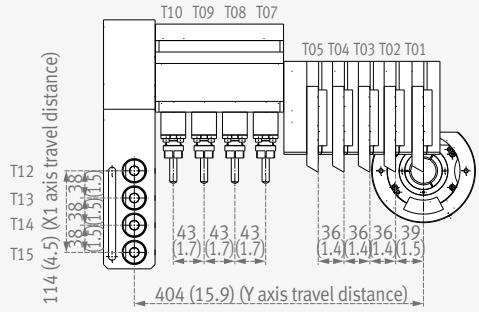
Unit: mm (inch)

Front Tools

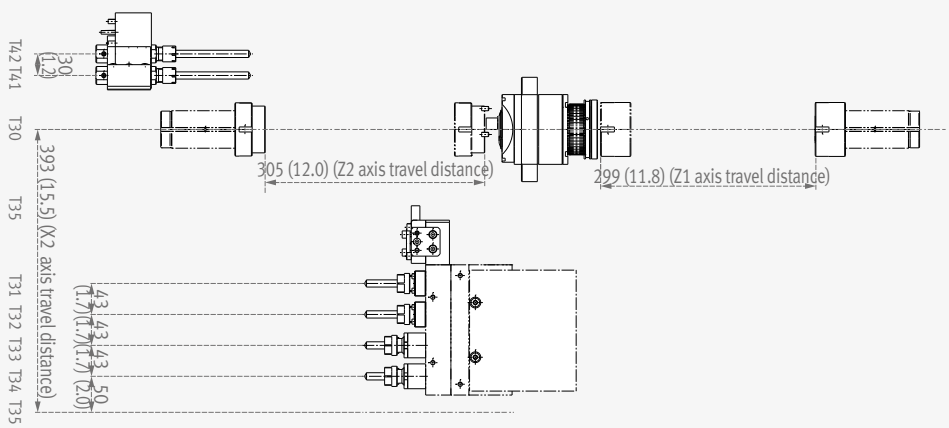
PUMA ST32GS



PUMA ST35GS



Back Tools



*T41,T42 Except PUMA ST35GS

Machine Specifications

Description			Unit	PUMA ST10GS	PUMA ST20GS	PUMA ST26GS	PUMA ST32GS	PUMA ST35GS
Machining Capacity	Max. machining diameter		mm (inch)	Ø10 (Ø0.4)	Ø20 (Ø0.8)	Ø26 (Ø1.0)	Ø32 (Ø1.3)	Ø35 (Ø38) (Ø1.4 (Ø1.5))
	Max. machining length		mm (inch)	120 (4.7)	200 (7.9)	200 (7.9)	300 (11.8)	300 (11.8)
	Max. front drilling / tap		mm (inch)	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)	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)
Tool post	No. Mountable tools (Max)		ea	22	25 (30)	22 (27)	24 (29)	21 (26)
	Front machining	Turning tool	ea	6 (10 x10 x110)	6 (12x12 x120)	5 (16x16 x120)	6 (16x16 x120)	5 (16x16 x120)
		Sleeve holder	ea	4(ERM11)	4 (ER16M)	4 (ER16)	4 (ER20M)	4 (ER20M)
		Cross tool	ea	4	5 (ER16)	5 (ER16)	4 (ER16)	4 (ER16)
		Max. rotaty tool speed	r/min	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
		Max. rotaty tool speed	r/min	8000	6000	6000	8000	8000
Spindle	Main spindle	Max. spindle speed	r/min	12000	10000	8000	8000	8000
		Max. spindle power (30min/cont.)	kW (Hp)	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	10000	8000	8000	8000	8000
		Max. spindle power (30min/cont.)	kW (Hp)	1.1/0.55 (1.5/0.7)	3.7/2.2 (5.0/3.0)	3.7/2.2 (5.0/3.0)	3.7/2.2 (5.0/3.0)	3.7/2.2 (5.0/3.0)
	C-axis minimum indixing increment			0.001				
Travel	Rapid traverse rate		m/min (ipm)	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)	0.5 (0.7)	0.75 (1.0)	1.0 (1.3)	1.0 (1.3)
Chuck / Guide bush	Main/sub spindle			TF15	TF25	TF32	TF37	TF40
	Guide bush			TD10	TD25NS	CD25	TD32S	TD35
Power source	Power consumption		Kva	11	12	22	22	22
Control	CNC system			DOOSAN FANUC i				

CNC Unit Specifications

● Standard ○ Optional X Not applicable

FANUC

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, x100, x1000	●	●
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		●	● (Except for PUMA ST10GS)
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		●	●

* Specifications are subject to change without prior notice.

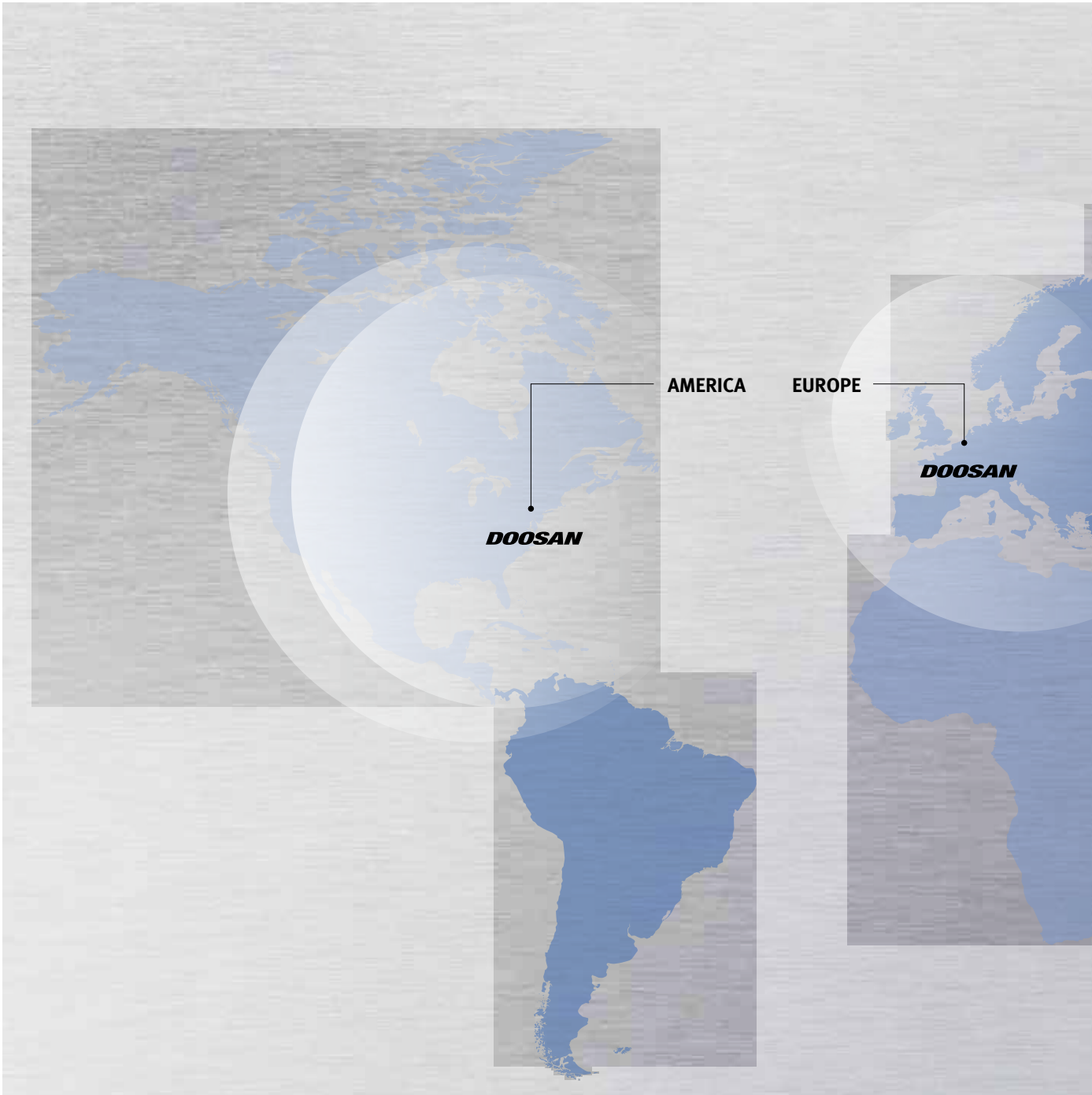
FANUC

● Standard ○ Optional X Not applicable

No	Division	Item	Spec.	FANUC 31i	DOOSAN FANUC i
63	Interpolation functions	Reference position return	G28	●	●
64		Reference position return check	G27	●	●
65		2nd reference position return	G30	●	●
66		3rd/4th reference position return		○	●
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		Rapid traverse block overlap		●	●
75	Program input	Optional block skip	9 pieces	-	-
76		Absolute/incremental programming	Combined use in the same block	●	●
77		Diameter/Radius programming		●	●
78		Automatic coordinate system setting		●	●
79		Direct drawing dimension programming		●	●
80		G code system	A	●	●
81		G code system	B/C	●	●
82		Chamfering/Corner R		●	●
83		Programmable data input	G10	●	●
84		Programmable parameter input		●	●
85		Custom macro		●	●
86		Interruption type custom macro		○	●
87		Canned cycle		●	●
88		Multiple repetitive cycles	G70~G76	●	●
89		Multiple repetitive cycles II	Pocket profile	●	●
90		Canned cycle for drilling		●	●
91		Circular interpolation by R programming	9 digit/12 digit	●	●
92		Tape format	FS10.11 / FS15	-	●
93		Coordinate system shift		●	●
94		Direct input of coordinate system shift		●	●
95	Auxiliary / Spindle speed function	Constant surface speed control		●	●
96		Spindle override	0 - 150%	-	●
97		Spindle orientation		-	●
98		Rigid tap		●	●
99		Spindle control with servo motor	Spindle serial output is required.	●	●
100		Arbitrary speed threading		-	-
101	Tool function/ Tool compensation	Tool function		●	●
102		Tool offset pairs	64-pairs	●	●
103		Tool offset		●	●
104		Y-axis offset		●	●
105		Tool radius/Tool nose radius compensation		●	●
106		Tool geometry/wear compensation		-	●
107		Tool offset value counter input		●	●
108		Automatic tool offset	G36/G37	-	●
109		Direct input of tool offset value measured		●	●
110		Direct input of offset value measured B		-	●
111		Tool life management		-	●
112	Accuracy compensation function	Backlash compensation		●	●
113		Backlash compensation for each rapid traverse and cutting feed		●	●
114	Editing operation	Program protect		●	●
115		Password function		●	●
116	Setting and display	Parameter setting and display		●	●
117		Multi-language display	Selection of Five Optional Language	●	-
118		Dynamic display language switching		-	●
119		Graphic function		-	●
120		Dynamic graphic display function		-	-
121	Data input / output	Fast data server		○	-
122		External data input		●	●
123		Memory card input/output		●	●
124		USB memory input/output		●	●
125		Automatic data backup		●	●
126	Interface function	Embedded Ethernet		●	●
127		Fast Ethernet		○	-
128	Others	Display unit	10.4" color LCD	●	●

*Specifications are subject to change without prior notice.

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 ST series

Description			Unit	PUMA ST10GS	PUMA ST20GS	PUMA ST26GS	PUMA ST32GS	PUMA ST35GS
Machining Capacity	Max. machining diameter		mm (inch)	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	kW (Hp)	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		1.1/0.55 (1.5/0.7)	3.7/2.2 (5.0/3.0)	3.7/2.2 (5.0/3.0)	3.7 / 2.2 (5.0 / 3.0)	3.7 / 2.2 (5.0 / 3.0)
Tool post	No. Mountable tools (Max)		ea	22	25 (30)	22 (27)	24 (29)	21 (26)
	Front machining	Turning tool	ea	6	6	5	6	5
		Sleeve holder		4	4+4	4+4	4+4	4+4
		Cross tool		4	5	5	4	4
	Back machining	Number of mountable tool	ea	4	4	4	4	4
		Additional fixed type tool		-	2	2	2	2
Travel	Rapid traverse rate		m/min (ipm)	32 (1259.8)				
Control	Control axes		-	7 (X1, Z1, C1, Y, X2, Z2, C2)				

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.
* Doosan Machine Tools Co., Ltd. is a subsidiary of MBK Partners. The trademark DOOSAN is used under a licensing agreement with Doosan Corporation, the registered trademark holder.

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.

ver. EN 181128 SU