



HIGH PRODUCTIVITY, 6/8/10/12 INCH CLASS,
2-SPINDLE HORIZONTAL TURNING CENTER

PUMA

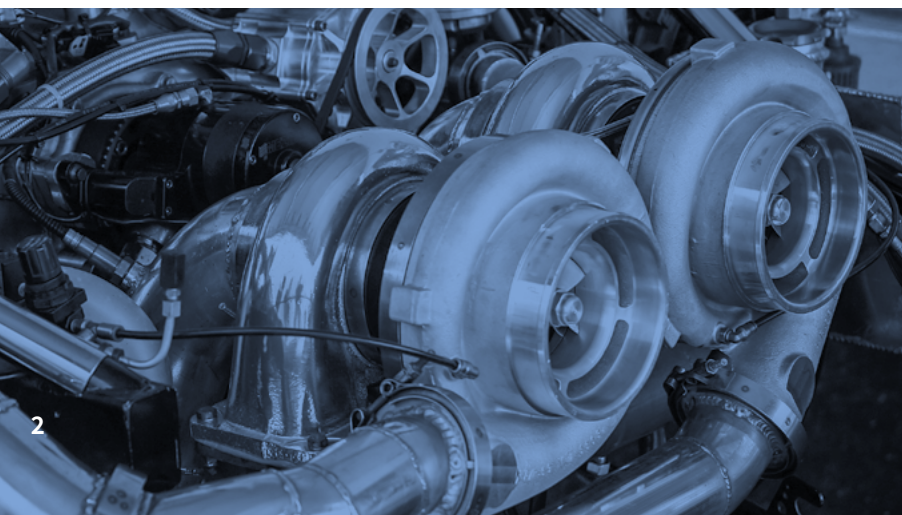
TW/TS 2100/2600/M • TW/TS 2100/2600/M-GL •
TW 2600B/M • TW 2600B/M-GL



PUMA TW/TS SERIES

TW/TS 2100/2600/M • **TW/TS 2100/2600/M-GL** •
TW 2600B/M • **TW 2600B/M-GL**

The 6 / 8 / 10 / 12 inch PUMA TW/TS series turning center is a next-generation, twin-spindle automated machine tool providing users with excellent productivity and accuracy, and even higher levels of satisfaction.



The PUMA TW has parallel twin spindles and a twin live tool turret construction, which makes it ideal for machining automotive-type jobs like ring gears or clutch boss applications.



SUPERIOR PRODUCTIVITY

Equipped with Feed System Optimization Technology, the PUMA TW/TS Series delivers high productivity and features high-performance feed motors, and impressive rapid rates and acceleration/deceleration.

SUPERIOR MACHINING PERFORMANCE

PUMA TW/TS series' machining performance is based on high power and high torque. The BMT turret (available on 'M' models) deliver superior milling performance.

IMPROVED USER CONVENIENCE

EZ work, hot keys and other features control machine and peripheral device operations. Work counting, gantry operation and parts control functions further improve user convenience, especially, in mass production.

BASIC STRUCTURE

The guideway type of PUMA TW/TS can be selected from Box and LM type. Box guide way is for customers who need heavy cutting. LM guide way is for customers who need light/fast/high accuracy machining

Chuck size

PUMA TW/TS 2600 SERIES

8, 10, 12 inch

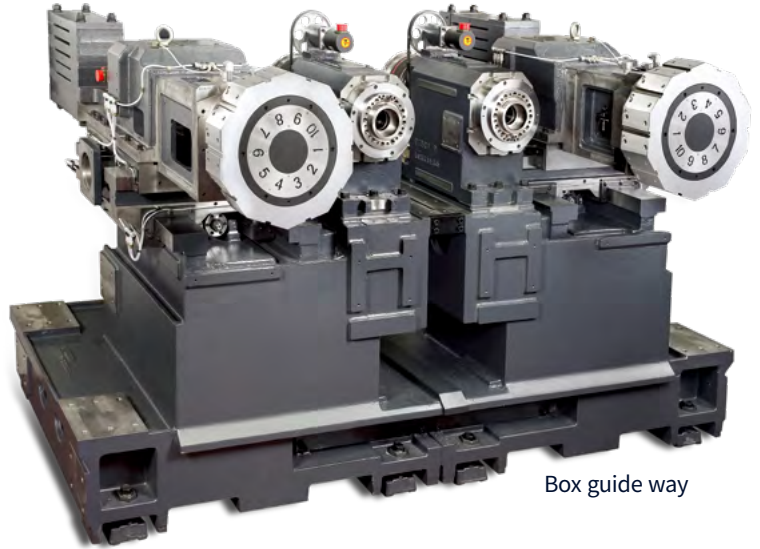
PUMA TW/TS 2100 SERIES

6, 8 inch

Guide way

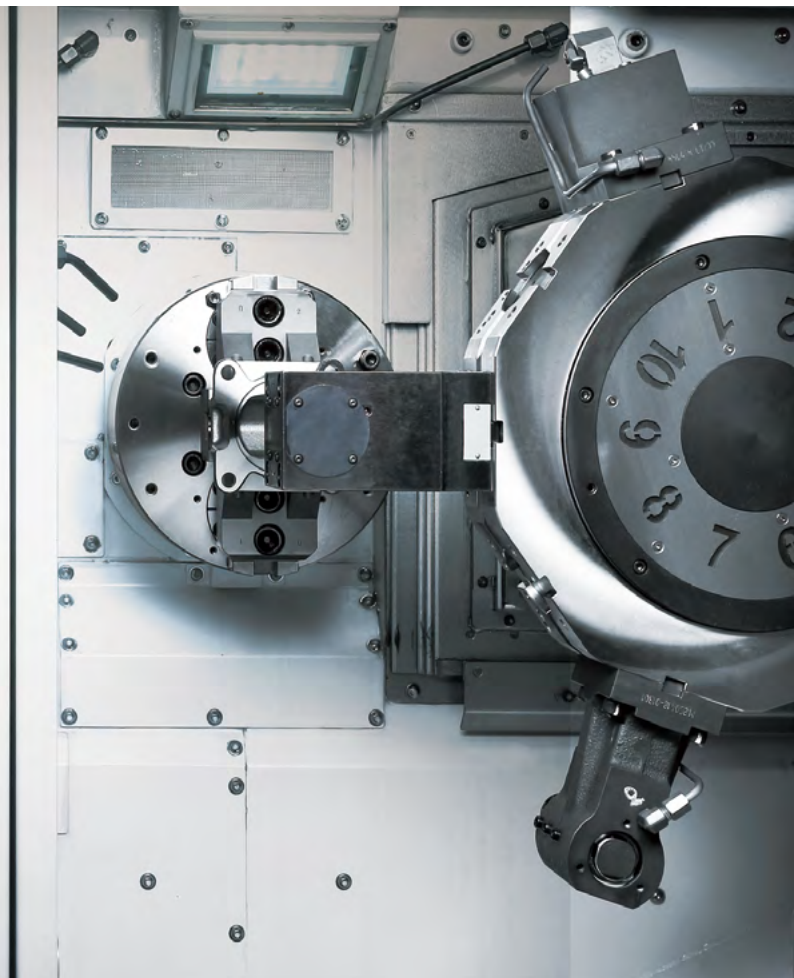
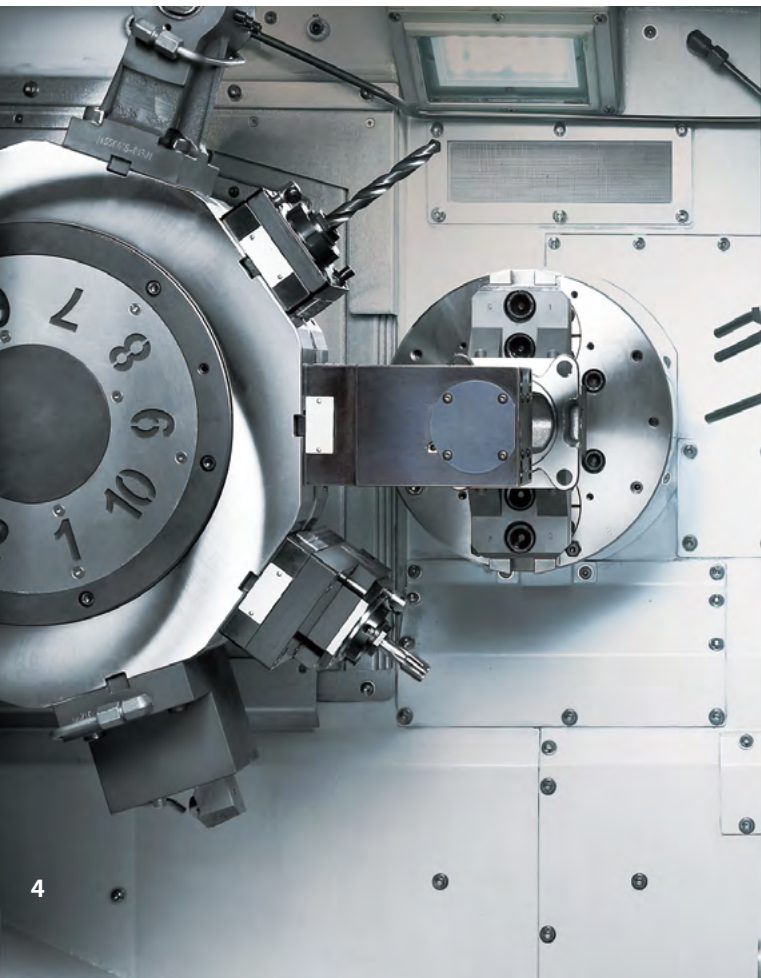
BOX Guide way

LM Guide way option



Box guide way

Chuck size	Machine	Travel distance (mm (inch))		Rapid traverse rate (m/min (ipm))		Functions		Guide way	
		X axis	Z axis	X axis	Z axis	2 axis	M	BOX	LM
6, 8 inch	PUMA TW/TS 2100/M	135 (5.3)	160 (6.3)	24 (944.9)	24 (944.9)	○	○	●	○
	PUMA TW/TS 2100GL/M-GL								
8, 10, 12 inch	PUMA TW/TS 2600/M	190 (7.5)	180 (7.1)	24 (944.9)	24 (944.9)	○	○	●	○
12 inch	PUMA TW 2600B/MB								



SPINDLE INFORMATION

The high-power/torque motor supports high-precision and heavy-duty machining - improving productivity.

Max. spindle speed

PUMA TW/TS 2100 SERIES

4500 {**6000** option} r/min

PUMA TW/TS 2600 SERIES

3500 r/min

Max. spindle motor torque

PUMA TW/TS 2600 SERIES

202{**404** option} N·m

149.1{298.2} ft-lbs

PUMA TW/TS 2100 SERIES

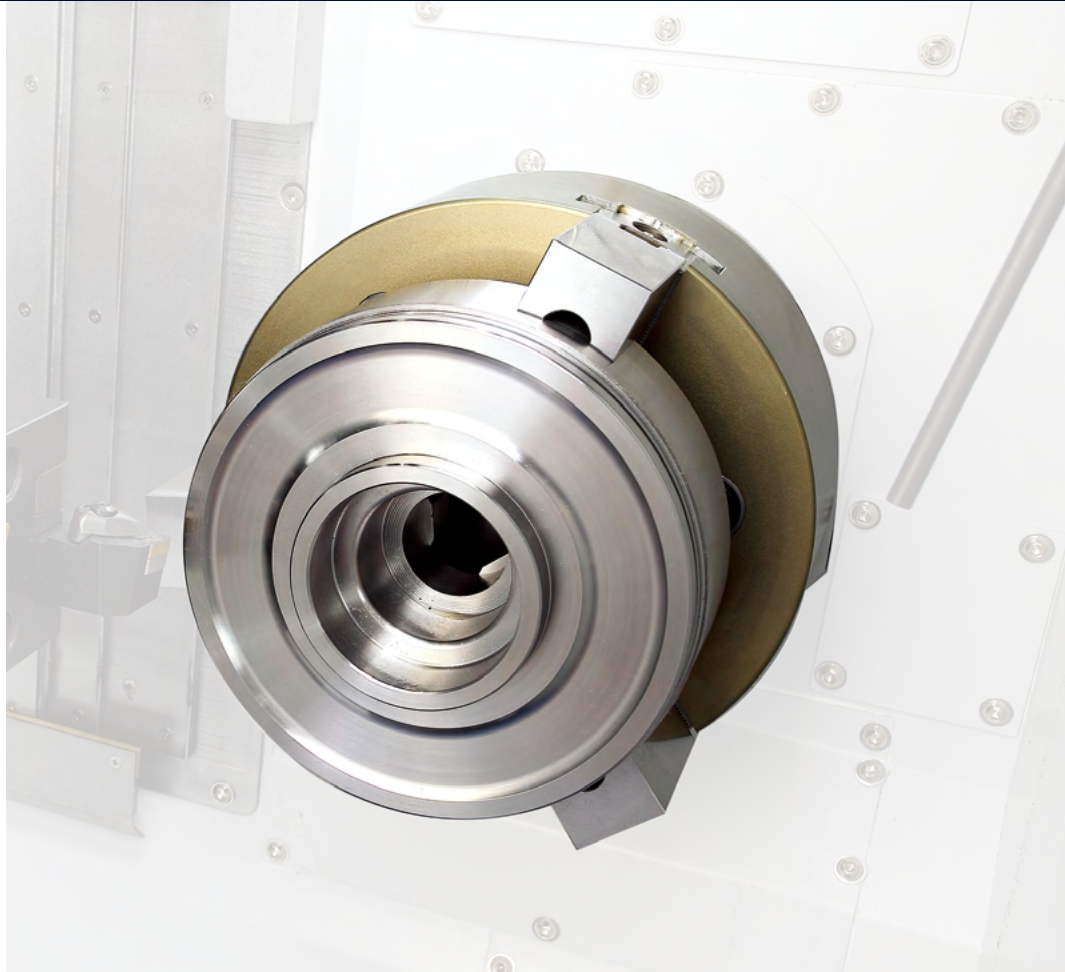
127 N·m

93.7 ft-lbs

PUMA TW 2600B SERIES

622 N·m

459.0 ft-lbs



Machining area

The Series offers the largest machining area of its class, up to Ø360mm (Ø14.2 inch) maximum turning diameter, and 170mm (6.7 inch) maximum turning length.

Max. machining area

Max. turning diameter

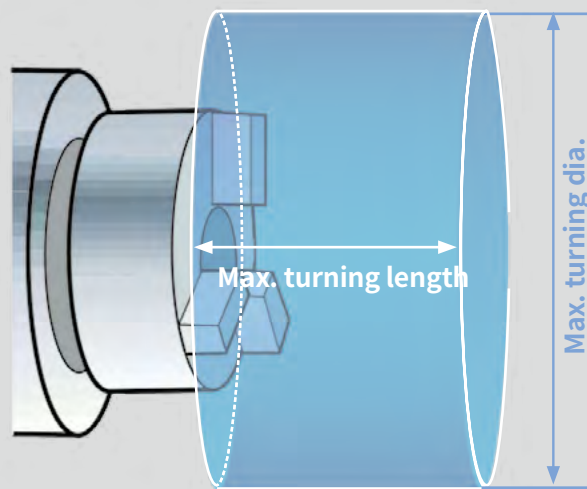
Ø360 mm

Ø14.2 inch

Max. turning length

170 mm

6.7 inch



Description	Unit	PUMA TW/TS 2100/M	PUMA TW/TS 2600/M	PUMA TW 2600B/MB
Max. turning diameter	mm (inch)	Ø240 (Ø9.4)	Ø360 (Ø14.2)	Ø360 (Ø14.2)
Max. turning length	mm (inch)	128 (5.0)	170 (6.7)	170 (6.7)
Chuck size	Standard	Ø210 (8")	Ø255 (10")	Ø304 (12")
	Optional	Ø 160(6")	Ø210 (8"), Ø305 (12")	X

TURRET

Turret rotation is controlled by a servo motor that ensures the rapid and accurate selection of tools. M model machines are equipped with DN Solutions's unique BMT turret that provides superior milling performance.

2-axis Turret_PUMA TW/TS series

No. of tool posts (PUMA TW 2100/TS 2100)

8+8 ea
{10+10_{option}}

No. of tool posts (PUMA TW 2600/TS 2600)

10+10 ea
{12+12_{option}}

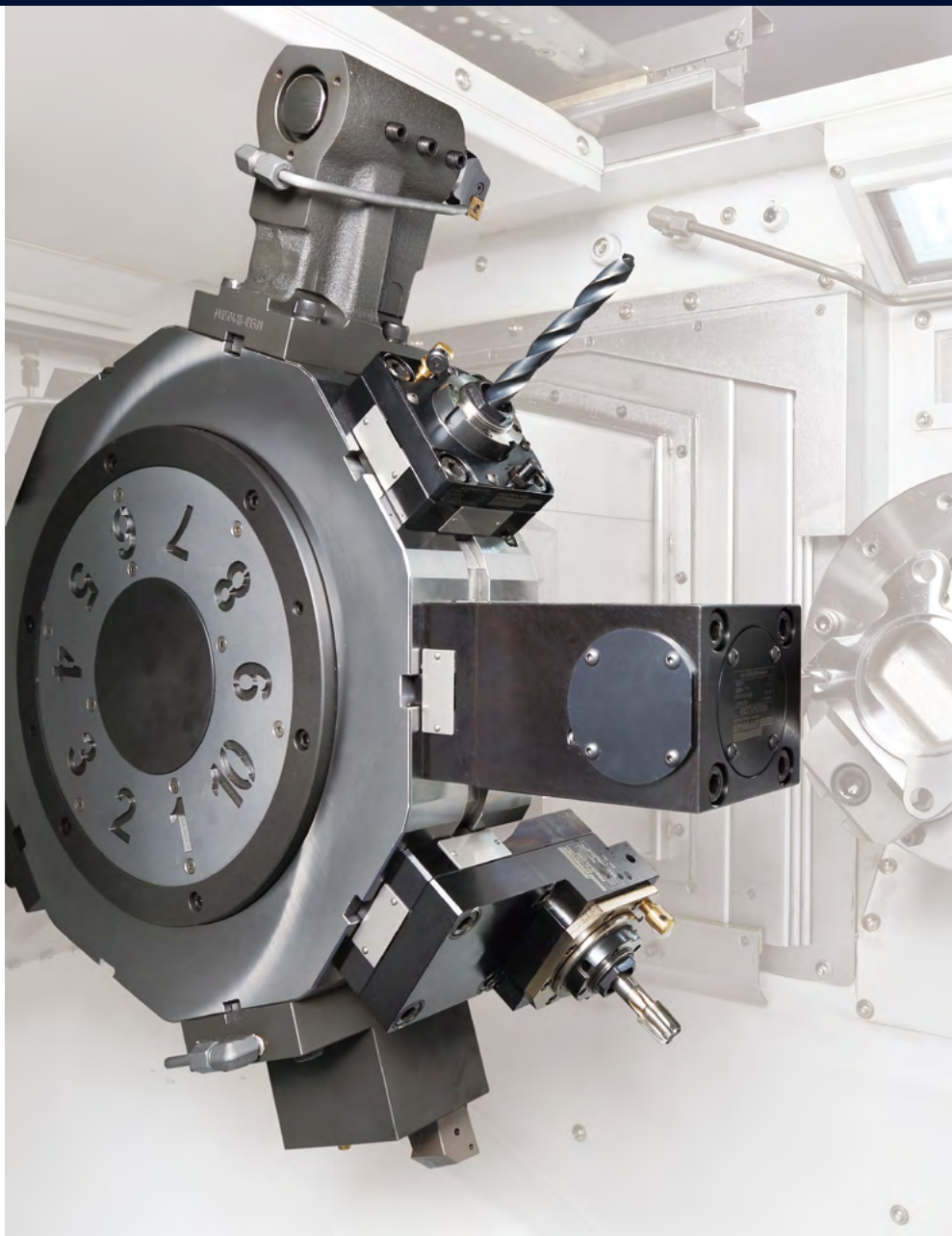
3-axis Turret_PUMA TW/TS series

No. of tool posts (PUMA TW 2100M/TS 2100M)

10+10 ea , **BMT45P**
{BMT55P_{option}}

No. of tool posts (PUMA TW 2600M/TS 2600M)

10+10 ea, **BMT55P**
{BMT65P_{option}}



- REDUCE NON-CUTTING TIME BY 10%
- HIGHER INDEXING SPEEDS
- IMPROVED ACCURACY

Rotary tool structure - highly resistant to thermal error

The milling turret, including the rotary tools, features the BMT design for higher rigidity. In addition, the reduction of thermal displacement due to oil and air lubrication of the rotary tools, ensures the best milling, drilling and tapping performance in its class.

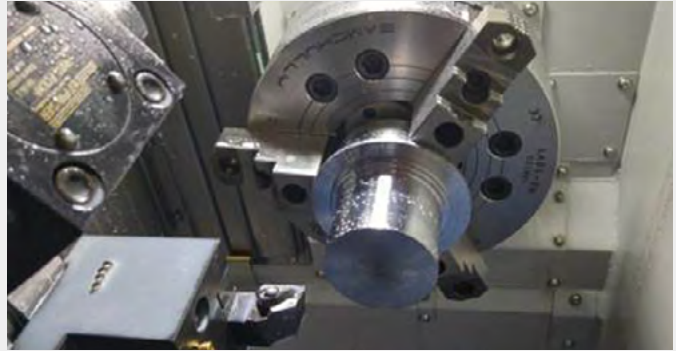
CUTTING PERFORMANCE

PUMA TW/TS series delivers class-leading cutting performance with maximum torque of 404 N·m (298.2 ft-lbs).

PUMA TW 2600 (202 N·m (149.1 ft-lbs)) (Material: SM45C)

Outer diameter turning

Outer diameter turning	Rough	Finish
Cutting speed (m/min (ipm))	210 (8267.7)	200 (7874.0)
Feed (mm/rev (ipr))	0.55 (0.0)	0.1 (0.0)
Spindle speed (r/min)	875	920
Cutting depth (mm (inch))	4.6 (0.2)	0.2 (0.0)



Inner diameter turning

Inner diameter turning	Rough	Finish
Cutting speed (m/min (ipm))	280 (11023.6)	200 (7874.0)
Feed (mm/rev (ipr))	0.3 (0.0)	0.1 (0.0)
Spindle speed (r/min)	1393	1481
Cutting depth (mm (inch))	3 (0.1)	0.4 (0.0)
Tool length	4.0D	3.0D



Tapping

Tapping	
Tap size (mm (inch))	M20 x P2.5 (M0.8 x P0.1)
Cutting speed (m/min (ipm))	10 / 20 (393.7 / 787.4)
Spindle speed (r/min)	159 / 318

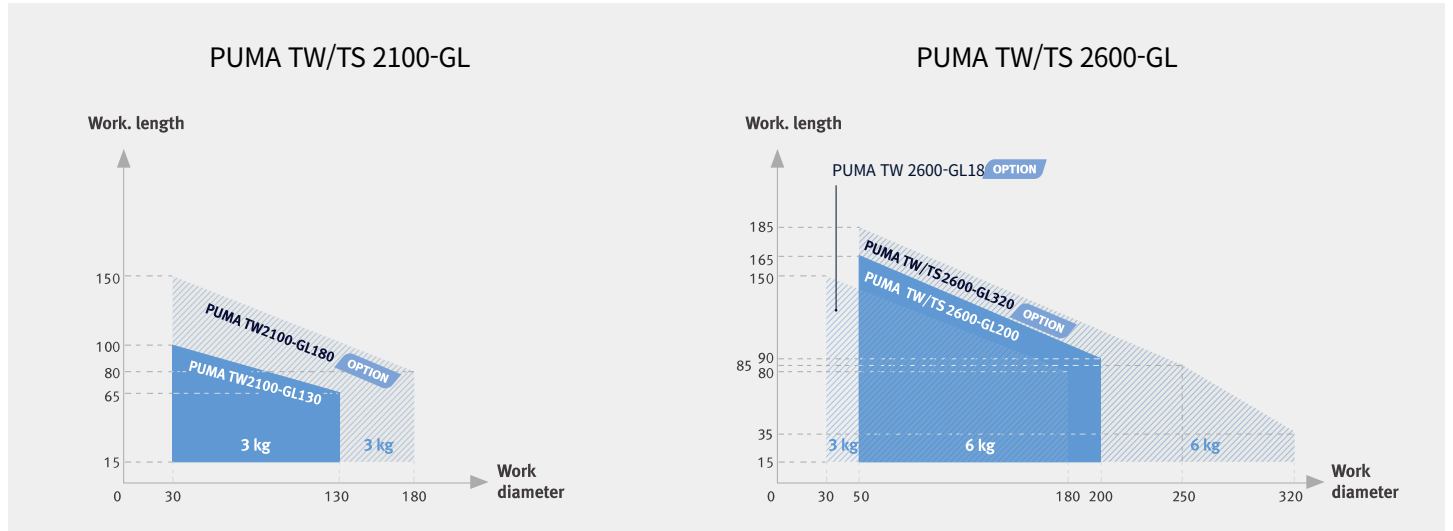


* The results indicated in this catalogue are provided as examples only. Different cutting conditions and environmental conditions will deliver different results.

HIGH-SPEED GANTRY LOADER

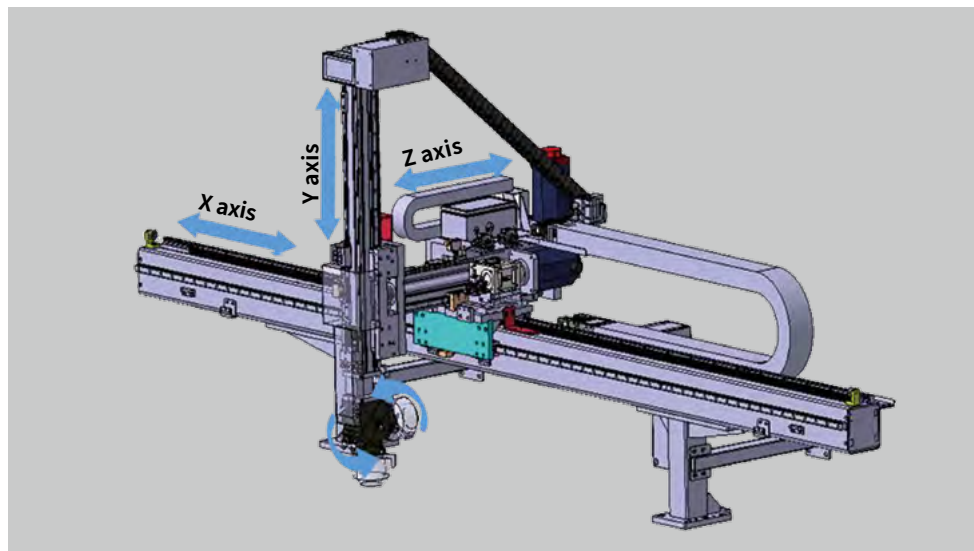
The 3-axis, servo-driven, high-speed gantry loader reduces work loading/unloading times and maximizes productivity.

DN Solutions has various types of gantry loader options to meet customer's individual requirements.



● Standard ○ Optional

Max. Handling diameter	PUMA TW/TS 2100-GL130	PUMA TW/TS 2100-GL180	PUMA TW/TS 2600-GL180	PUMA TW/TS 2600-GL200	PUMA TW/TS 2600-GL320
Ø130 x 65mm 3.0kg/ea	●				
Ø180 x 80mm 3.0kg/ea		○	○		
Ø200 x 90mm 6.0kg/ea				●	
Ø320 x 35mm 6.0kg/ea					○



Gantry loader handling time
(Enter → Change Work → Exit)

PUMA TW/TS 2100-GL

5.7 S

PUMA TW/TS 2600-GL

7.9 S

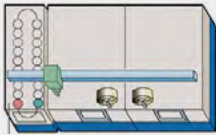
* Without Top door operating time

Description	Unit	PUMA TW 2100/M-GL	PUMA TW 2600/M-GL	PUMA TS 2600-GL
Rapid traverse	X axis	m/min (ipm)	210 (8267.7)	150 (5905.5)
	Y axis	m/min (ipm)	180 (7086.6)	130 (5118.1)
	Z axis	m/min (ipm)	55 (2165.4)	50 (1968.5)
Travel distance (GL TYPE A1 / A2 / A3)	X axis	mm (inch)	1910 / 1910 / 3220 (75.2 / 75.2 / 126.8)	1535 / 2040 / 2677 (60.4 / 80.3 / 105.4)
	Y axis	mm (inch)	560 (22.0)(GL130), 610 (24.0)(GL180)	710 (28.0)
	Z axis	mm (inch)	200 (7.9)	270 (10.6)

Gantry and stocker types

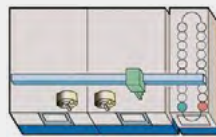
- Loading position
- Unloading position

A-1 type



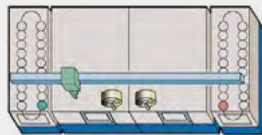
Work in/out and stocker are at the left side of the gantry

A-2 type



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

A-3 type



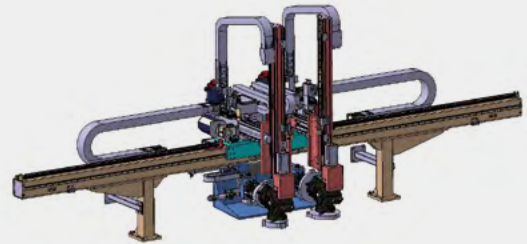
Work in/out position is independent, and stockers are at both the left and right sides of the gantry

* Contact your sales representative for more details regarding gantry and stocker configurations.

Various gantry loader option

Twin gantry loader

The twin gantry loader uses a double loader to reduce processing times.



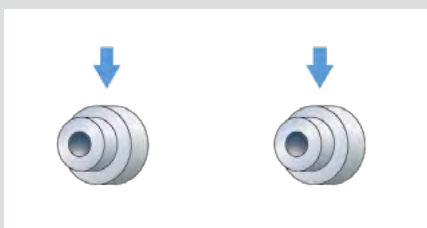
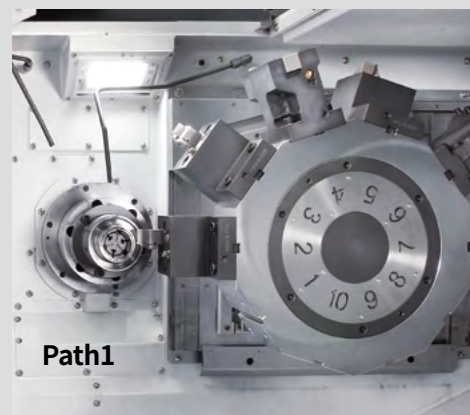
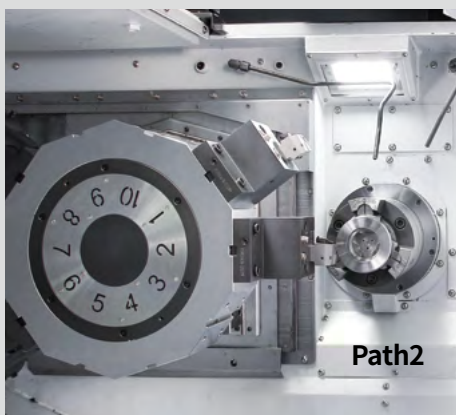
Extended gantry loader

Provides extended X,Y and Z axis strokes.
(Contact your sales representative for details).

Separate type option

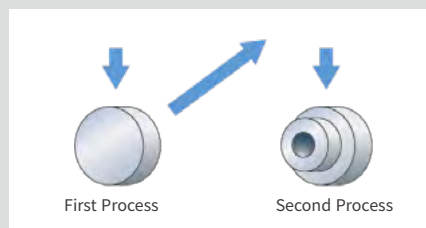
Completely separate and ultra-productive, the left and right bed and gantry loader can be used in conjunction with each other - rough machining being undertaken on one side and finish machining on the other.
(Contact your sales representative for details).

Applications



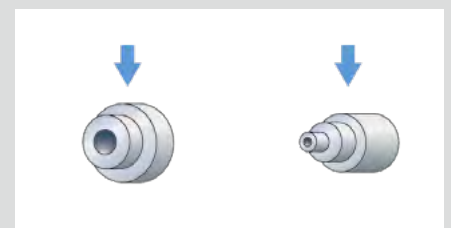
Work concept : example 1

Simultaneous machining of the same parts on the left and right sides



Work concept : example 2

Simultaneous machining of two sequential processes of the same part



Work concept : example 3

Simultaneous machining of different parts (in case of Non-GL, Twin -GL)

PUMA TW AUTOMATION SOLUTION

Improve customer's convenience by providing a variety of standard/modular peripheral equipment.

Peripheral equipment

Standardization of variety option

Modular system with 26 types of stocker / measurement

Price competitiveness

Reduce costs by up to 15% than previously

Short delivery lead time

Estimated 80% faster delivery time and quicker maintenance

Quality and stability

Quality assurance through standardization

Improving operator convenience

Provide PLC control and motion control

Stocker



Measurement



A	1	S	TR	14	-	200	M	O	B	200		
A	3	S	PU	30	-	100	-	2R	M	D	T	200

① Gantry type

② Stocker system define

③ Measuring system define

① Gantry type

- A1
- A2
- A3

②-1 Stocker type

- Rotary **T**rack
- Rotary **R**ound
- Conveyor **P**itch
- **P**ush type
- Conveyor **P**late

②-2 Station

- 6/7/8/10/12/14/30/50 station or pitch

②-3 Size

- Max 100
- Max 125
- Max 200

②-4 Row

- 2Row
- 3Row

③-1 Measuring type

- Inner diameter
- Outer diameter
- Difference gap

③-2 Type

- **B**utton
- **T**ouch

③-3 Size

- Max 200

Modular peripheral equipment

		Stoker (5 Type)				Measurement (3 Type)								
		Drum	Rotary	Pitch conveyor	Push	Conveyor	Inner dia.	Outer dia.	Difference gap					
Image														
Description		<ul style="list-style-type: none"> Convenient space to stack workpieces Can handle different load capacities 	<ul style="list-style-type: none"> Minimal installation space required Superior accuracy of loading / unloading operations 	<ul style="list-style-type: none"> Shaft types and asymmetric square shapes can be loaded 	<ul style="list-style-type: none"> No separate feeder required 	<ul style="list-style-type: none"> Can be used to transfer between each process 	<ul style="list-style-type: none"> Data back-up function enables part dimension status and history to be checked Automatic offset function ensures machining accuracy Stability and cost-effectiveness provided through modularization 							
Station	Station	8	10	12	14	6	8	10	14 Pitch		30 Stock		50 Stock	
	Work size (Outer dia.) mm (inch)	50~200 (2.0~7.9)				50~100 (2.0~3.9)				7 Stock		Button		Touch
TW Type	A1	○	○	○	○	○	○	○						
	A2	○	○	○	○	○	○	○						
	A3	○	○	○	○	○	○	○	○	○	○			
Out stocker		All				Only out stocker				All				

Matrix

Item		Stoker							
Type		Drum				Rotary			
Station		8	10	12	14	6	8	10	
Work size (outer dia.) mm (inch)		50~200 (2.0~7.9)							
- (No measurement)		A1-STR08-50(~200) A2-STR08-50(~200)	A1-STR10-50(~200) A2-STR10-50(~200)	A1-STR12-50(~200) A2-STR12-50(~200)	A1-STR14-50(~200) A2-STR14-50(~200)	A1-SRO06-50(~200) A2-SRO06-50(~200)	A1-SRO08-50(~200) A2-SRO08-50(~200)	A1-SRO10-50(~200) A2-SRO10-50(~200)	
Measurement	Inner diameter	Button	A3-STR08-50(~200)-MIB50(~200)	A3-STR10-50(~200)-MIB50(~200)	A3-STR12-50(~200)-MIB50(~200)	A3-STR14-50(~200)-MIB50(~200)	A3-SRO06-50(~200)-MIB50(~200)	A3-SRO08-50(~200)-MIB50(~200)	A3-SRO10-50(~200)-MIB50(~200)
		Touch	A3-STR08-50(~200)-MIT50(~200)	A3-STR10-50(~200)-MIT50(~200)	A3-STR12-50(~200)-MIT50(~200)	A3-STR14-50(~200)-MIT50(~200)	A3-SRO06-50(~200)-MIT50(~200)	A3-SRO08-50(~200)-MIT50(~200)	A3-SRO10-50(~200)-MIT50(~200)
	Outer diameter	Button	A3-STR08-50(~200)-MOB50(~200)	A3-STR10-50(~200)-MOB50(~200)	A3-STR12-50(~200)-MOB50(~200)	A3-STR14-50(~200)-MOB50(~200)	A3-SRO06-50(~200)-MOB50(~200)	A3-SRO08-50(~200)-MOB50(~200)	A3-SRO10-50(~200)-MOB50(~200)
		Touch	A3-STR08-50(~200)-MOT50(~200)	A3-STR10-50(~200)-MOT50(~200)	A3-STR12-50(~200)-MOT50(~200)	A3-STR14-50(~200)-MOT50(~200)	A3-SRO06-50(~200)-MOT50(~200)	A3-SRO08-50(~200)-MOT50(~200)	A3-SRO10-50(~200)-MOT50(~200)
	Difference gap	Button	A3-STR08-50(~200)-MDB50(~200)	A3-STR10-50(~200)-MDB50(~200)	A3-STR12-50(~200)-MDB50(~200)	A3-STR14-50(~200)-MDB50(~200)	A3-SRO06-50(~200)-MDB50(~200)	A3-SRO08-50(~200)-MDB50(~200)	A3-SRO10-50(~200)-MDB50(~200)
		Touch	A3-STR08-50(~200)-MDT50(~200)	A3-STR10-50(~200)-MDT50(~200)	A3-STR12-50(~200)-MDT50(~200)	A3-STR14-50(~200)-MDT50(~200)	A3-SRO06-50(~200)-MDT50(~200)	A3-SRO08-50(~200)-MDT50(~200)	A3-SRO10-50(~200)-MDT50(~200)

Item		Stoker						
Type		Pitch Conveyor		Push		Conveyor		
Station		14		30 stock	50 stock	7 stock		
Work size (outer dia.) mm (inch)		2 row	3 row	2 row	3 row	50~125 (2.0~4.9)	125~200 (4.9~7.9)	
		50~100 (2.0~3.9)						
Measurement	Inner diameter	Button	A3-SPI14-2R-50(~100)-MIB50(~200)	A3-SPI14-3R-50(~100)-MIB50(~200)	A3-SPU30-2R-50(~100)-MIB50(~200)	A3-SPU50-2R-50(~100)-MIB50(~200)	A3-SPL07-50(~125)-MIB50(~200)	A3-SPL07-125(~200)-MIB50(~200)
		Touch	A3-SPI14-2R-50(~100)-MIT50(~200)	A3-SPI14-3R-50(~100)-MIT50(~200)	A3-SPU30-2R-50(~100)-MIT50(~200)	A3-SPU50-2R-50(~100)-MIT50(~200)	A3-SPL07-50(~125)-MIT50(~200)	A3-SPL07-125(~200)-MIT50(~200)
	Outer diameter	Button	A3-SPI14-2R-50(~100)-MOB50(~200)	A3-SPI14-3R-50(~100)-MOB50(~200)	A3-SPU30-2R-50(~100)-MOB50(~200)	A3-SPU50-2R-50(~100)-MOB50(~200)	A3-SPL07-50(~125)-MOB50(~200)	A3-SPL07-125(~200)-MOB50(~200)
		Touch	A3-SPI14-2R-50(~100)-MOT50(~200)	A3-SPI14-3R-50(~100)-MOT50(~200)	A3-SPU30-2R-50(~100)-MOT50(~200)	A3-SPU50-2R-50(~100)-MOT50(~200)	A3-SPL07-50(~125)-MOT50(~200)	A3-SPL07-125(~200)-MOT50(~200)
	Difference gap	Button	A3-SPI14-2R-50(~100)-MDB50(~200)	A3-SPI14-3R-50(~100)-MDB50(~200)	A3-SPU30-2R-50(~100)-MDB50(~200)	A3-SPU50-2R-50(~100)-MDB50(~200)	A3-SPL07-50(~125)-MDB50(~200)	A3-SPL07-125(~200)-MDB50(~200)
		Touch	A3-SPI14-2R-50(~100)-MDT50(~200)	A3-SPI14-3R-50(~100)-MDT50(~200)	A3-SPU30-2R-50(~100)-MDT50(~200)	A3-SPU50-2R-50(~100)-MDT50(~200)	A3-SPL07-50(~125)-MDT50(~200)	A3-SPL07-125(~200)-MDT50(~200)

* Please contact DN Solutions Machine Tools sales to discuss more detail consultation regarding material shape.

STANDARD & OPTIONAL SPECIFICATIONS

A range of options is available to suit individual requirements.

Description	Features	PUMA TW2100/M TS2100/M	PUMA TW2100/M-GL TS2100/M-GL	PUMA TW2600/M TS2600/M TW 2600B/M	PUMA TW2600/M-GL TS2600/M-GL TW2600B/M-GL
Guide way	BOX	●	●	●	●
	LMG	○	○	○	○
Chuck	5 inch(BUILT-IN)	○	○	×	×
	8 inch(BELT)	○	○	○	○
	10 inch(BELT)	○	○	○	○
	12 inch(BELT)	×	×	○	○
	Chuck excluded	●	●	●	●
Turret	2 axis_8 station	●	●	X	X
	2 axis_10 station	○	○	●	●
	2 axis_12 station	X	X	○	○
	3 axis(M)_10 station, BMT45P	●	●	X	X
	3 axis(M)_10 station, BMT55P	○	○	●	●
Coolant pump	3 axis(M)_10 station, BMT65P	X	X	○	○
	1.5 bar	●	●	●	●
	4.5 bar	○	○	○	○
Coolant system options	7 bar	○	○	○	○
	Oil skimmer (Belt-type)	○	○	○	○
	Flushing coolant	○	○	○	○
	Through-spindle coolant	○	○	○	○
Chucking option	Coolant pressure switch	○	○	○	○
	Chuck clamp confirmation	○	○	○	○
Rear chip conveyor	Hinged belt type	○	○	○	○
	Magnetic scrapper type (for castings)	○	○	○	○
Chip bucket	Screw type	○	○	○	○
	Folklift 300L	○	○	○	○
Chip disposal options	Rotation 300L	○	○	○	○
	Air blower	○	●	○	●
	Chuck coolant	○	●	○	●
	Air gun	○	○	○	○
	Coolant gun	○	○	○	○
	Mist collector_ready	○	○	○	○
Measurement & automation	Mist collector_soluble	○	○	○	○
	Tool setter (Removable)	○	○	○	○
	Work position confirmation device_ready	○	○	○	○
	Work position confirmation device_TACO	○	○	○	○
Gantry loader	Auto door	○	Top Door Standard	○	Top Door Standard
	Work & tool counter	○	○	○	○
	A1 Type loader	-	●	-	●
	A2 Type loader	-	○	-	○
	A3 Type loader	-	○	-	○
	Stocker (A1/A2/A3)	-	○	-	○
	Turn over Unit	-	●	-	●
	Gripper	-	○	-	○
Optional accessories	Gripper head type (CAM type swivel)	-	○	-	○
	Work inspection chute	-	○	-	○
	Tool load monitoring system	○	○	○	○
Customized special option	Tail stock	○	○	○	○
	Linear scale (X/Z-axis)	○	○	○	○
	Air conditioner	○	○	○	○
	Signal tower	○	●	○	●
	Electric cabinet lamp	○	○	○	○
	Auto power cut-off	○	○	○	○
	Quick change tooling(CAPTO)	○	○	○	○
Customized special option	High torque motor	○	○	○	○
	Chip conveyor side-way type (Left & Right)	○	○	○	○
	Screw type chip conveyor	○	○	○	○
	Through spindle Air	○	○	○	○
	High pressure coolant(10Bar, 20Bar, 70Bar)	○	○	○	○
	Stand-alone gantry loader	X	○	X	○
	Gantry loader twin carriage	X	○	X	○
Gantry loader cam type swivel	X	○	X	○	
Coolant level switch : Sensing level - Low / High	○	○	○	○	

Please contact your DN Solutions representative for detailed machine information.

● Standard ○ Optional X N/A

PERIPHERAL EQUIPMENT

Chip conveyor option

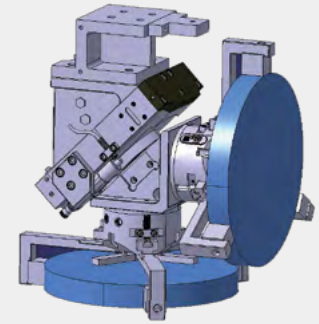


Long Short Needle Sludge

Chip conveyor type		Material		Carbon steel			Cast iron		Aluminium		
		Long	Short	Needle	Short	Sludge	Long	Short	Needle		
Hinged belt type		o	Δ	x	Δ	x	o	Δ	x		
Scrapper type	Normal	x	o	Δ	o	Δ	x	Δ	x		
	Magnetic	x	o	o	o	o	-	-	-		
Drum filter type	Hinged type	o	Δ	x	Δ	x	o	Δ	x		
	Scrapper	x	o	Δ	o	Δ	x	o	Δ		

o : Suitable, Δ : Possible, x : Not suitable

Unique solution for non-conventional turning applications option

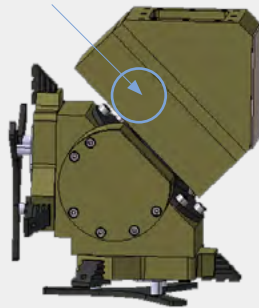


* Delivery terms will be advised on request.

CAM TYPE (SWIVEL) option

Stable rotation reduces time and improves productivity by making material loading / unloading more efficient.

SWIVEL SENSOR



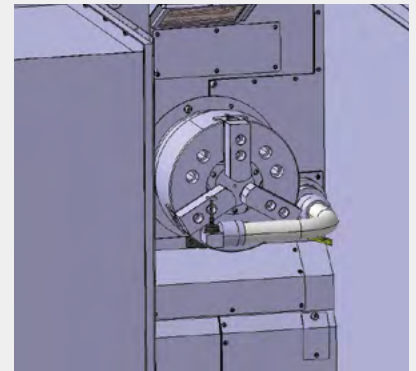
Quick change CAPTO option

The Quick Change Tool system simplifies the tool change operation. The system is recommended for users who need to change tools frequently, or who are looking to significantly reduce set-up times.



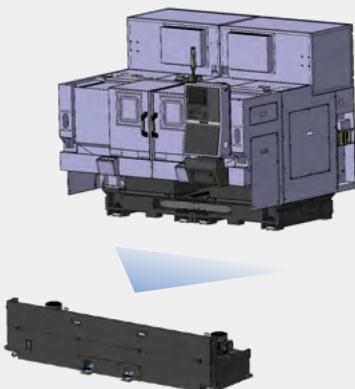
Tool setter option

The tool setter ensures fast and precise tool length and diameter measurement, and the detection of broken tools.



Coolant tank

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



Independent gantry operation panel

Independent gantry loader operation panel is provided as standard for improved user convenience.



Work counter option

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



Built-in spindle option

Recommend the customer who wants high accuracy/high speed/small parts. (available on PUMA TW2100 series)



DN SOLUTIONS FANUC i PLUS

DN Solutions Fanuc i Plus maximizes customer productivity and convenience.

15" Screen + New OP

DN Solutions Fanuc i Plus' operation panel enhances operating convenience by incorporating common-design buttons and layout. It features a Qwerty keyboard for fast and easy data input and operation.

DN Solutions Fanuc i Plus

- 15-inch color display
- Intuitive and user-friendly design

USB and PCMCIA card QWERTY Keyboard

- EZ-guide i standard
- Ergonomic operator panel
- 2MB Memory
- Hot keys



iHMI touchscreen

iHMI provides an intuitive interface that uses a touchscreen for quick and easy operation.

Range of applications

Providing various applications related to planning, machining, improvement and utility, for customer convenience.

NUMERIC CONTROL SPECIFICATIONS

FANUC

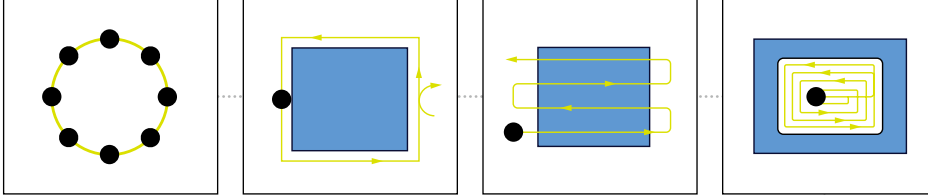
Division	Item	Specifications	TS2100	TW2100/	TW2100M/	TS2100-GL	TW2100-GL/	TW2100M-GL/	TW2100-TWIN GL	TW2100M-TWIN GL
			TS2600	TW2600	TW2600M	TS2600-GL	TW2600-GL	TW2600M-GL	TW2600-TWIN GL	TW2600M-TWIN GL
			DN Solutions Fanuc i Plus							
Controlled axis	Control paths		1 Path	2 Path	2 Path	2 Path	3 Path	3 Path	4 Path	4 Path
	Controlled axis		2 (X,Z)	4 (XR,ZR, XL,ZL)	6 (XR,ZR,CR, XL,ZL,CL)	5 (X,Z)+(GX,GY,GZ)	7 (XR,ZR,XL,ZL)+(GX,GY,GZ)	9 (XR,ZR,CR, XL,ZL,CL)+(GX,GY,GZ)	10 (XR,ZR,XL,ZL)+(XGR,YGR,ZGR, XGL,YGL,ZGL)	12 (XR,ZR,CR,XL,ZL,CL)+(XGR,YGR,ZGR, XGL,YGL,ZGL)
	Simultaneously controlled axis		2 axes	2 axes (each path)	3 axes (each path)	2 axes/ 3 axes (Gantry)	2 axes (each path)/ 3 axes(Gantry)	3 axes (each path)/ 3 axes(Gantry)	2 axes (each path)/3 axes (Gantry each path)	3 axes (each path)/3 axes (Gantry each path)
Data input/output	Data server		●	●	●	●	●	●	●	●
	Memory card input/output		●	●	●	●	●	●	●	●
	USB memory input/output		●	●	●	●	●	●	●	●
Interface function	Embedded ethernet		●	●	●	●	●	●	●	●
	Fast Ethernet		●	●	●	●	●	●	●	●
	Enhanced embedded ethernet function		●	●	●	●	●	●	●	●
Operation	DNC operation	Included in RS232C interface.	●	●	●	●	●	●	●	●
	DNC operation with memory card		●	●	●	●	●	●	●	●
Program input	Workpiece coordinate system	G52 - G59	●	●	●	●	●	●	●	
Feed function	AI contour control I	G5.1 Q, 40 blocks	●	●	●	●	●	●	●	
	AI contour control II	G5.1 Q, 200 blocks	●	●	●	●	●	●	●	
Operation guidance function	EZ Guide i (Conversational Programming Solution)		●	●	●	●	●	●	●	
	iHMI with machining cycle	Note *1) Only with 15" Touch LCD standard	● *1)	● *1)	● *1)	● *1)	● *1)	● *1)	● *1)	
	Multi path function	Supporting 2- or 3-path machine	●	●	●	●	●	●	●	
	EZ Operation package		●	●	●	●	●	●	●	
Setting & display	CNC screen dual display function		●	●	●	●	●	●	●	
Network	FANUC MTConnect		✳	✳	✳	✳	✳	✳	✳	
	FANUC OPC UA		✳	✳	✳	✳	✳	✳	✳	
Others	Display unit	15" color LCD	●	●	●	●	●	●	●	
		15" color LCD with touch panel	●	●	●	●	●	●	●	
	Part program storage size & number of registerable programs	5120M (2MB) 1000 programs	●	●	●	●	●	●	●	

DN SOLUTIONS FANUC i PLUS

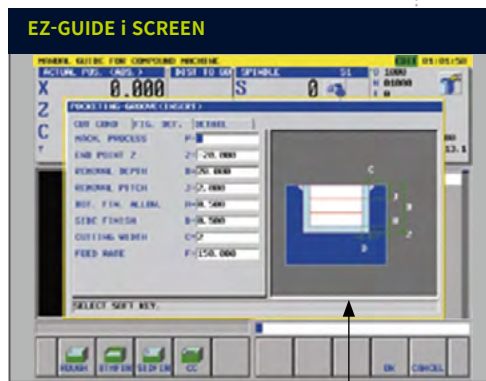
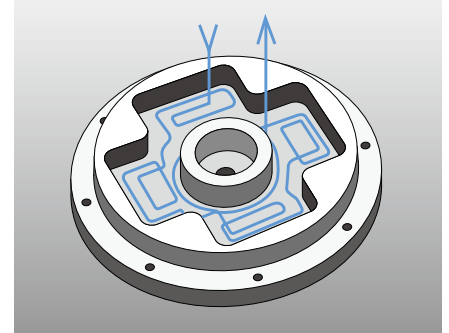
EZ-Guide i

Using the DN Solutions EZ-Guide i, users can create a cutting program for any desired shape, including patterns, by entering just the dimensions.

EXAMPLE PROGRAMMING : CUTTING SHAPE



EXAMPLE PART



Enter the dimensions of the shape

AUTOMATIC CREATION OF CUTTING PROGRAM

```
O7000 (SAMPLE PROGRAM) ;
...
M3 S1500 ;
G0 X50. Y125. ;
G0 Z30. ;
G1040 T0.5 J3. H0.2 K0.5 ... ;
G1020 H120. V50. U37. W68. ... ;
G0 Z80. ;
M5 ;
```

A cutting program is automatically created with the entered values.

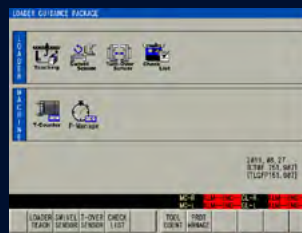
EZ work

DN Solutions's EZ worksupports the user with functions relating to tool data, error diagnostics, set up and machine monitoring.

Main screen



Loader Guidance



For Gantry loader setting and Automation function guide

Real time check sensor of loader



The status of the sensor (swivel unit, turn-over unit) in the loader can be checked in real time.

Check list



Operators can check, immediately, the status of the machine and loader.

Tool counter



The tool life management screen displays tool usage and the ratio of tools used.

Work counter

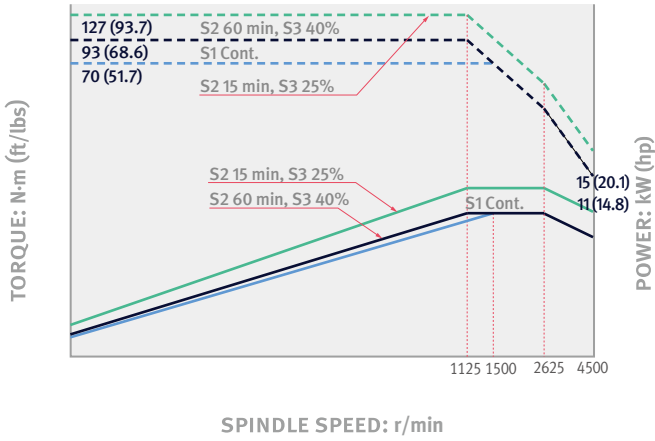


Different screens help manage customers' production scheduling and inspection routines.

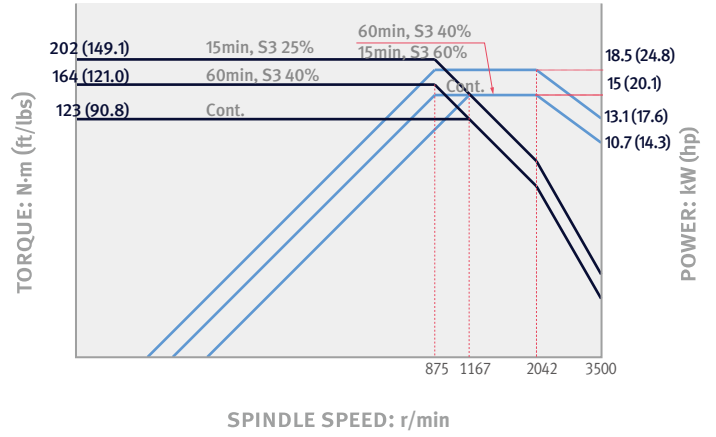
POWER | TORQUE

Spindle

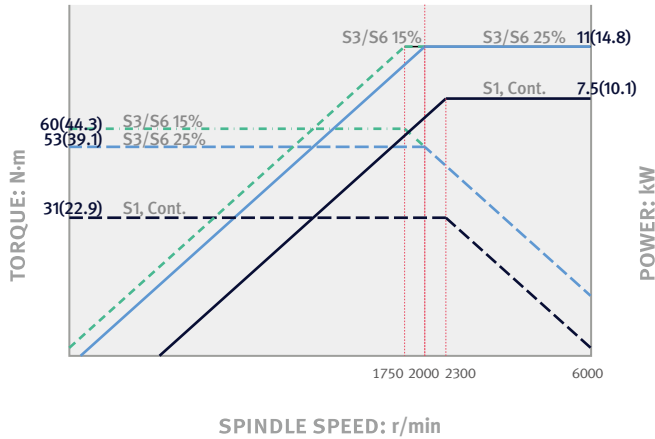
PUMA TW 2100/TW 2100-GL/TS 2100/TS 2100-GL series



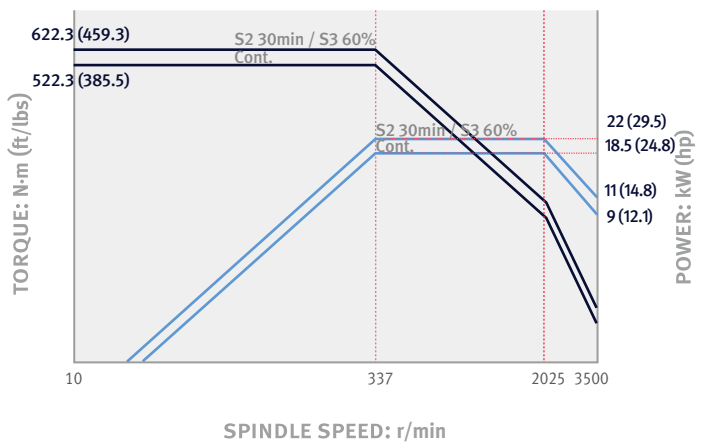
PUMA TW 2600/TW 2600-GL/TS 2600/TS 2600-GL series



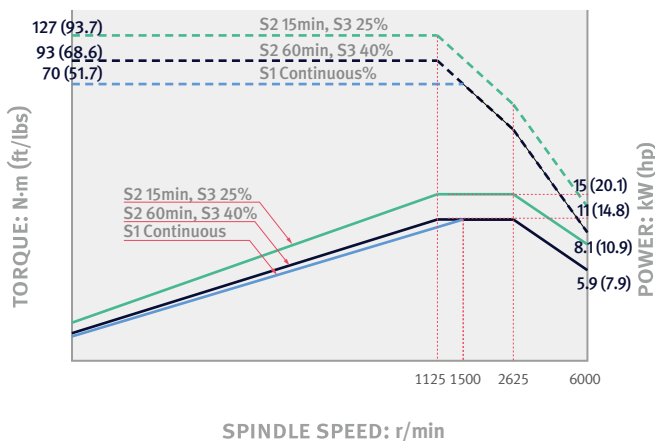
PUMA TW 2100/TW 2100-GL/TS 2100/TS 2100-GL series (Built-in)



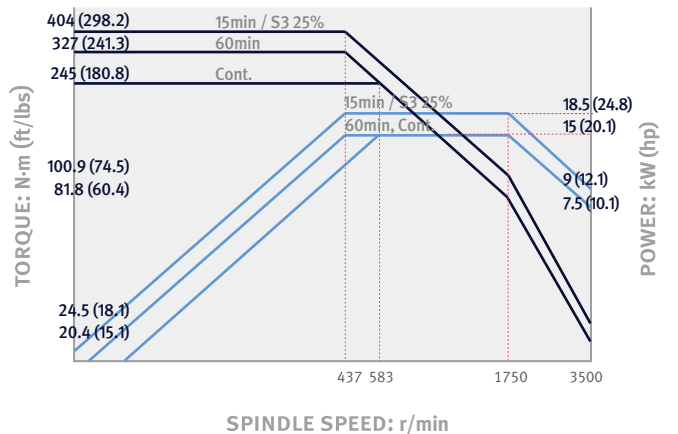
PUMA TW 2600B/TW 2600B-GL series



PUMA TW 2100/TW 2100-GL/TS 2100/TS 2100-GL series (High Speed) option



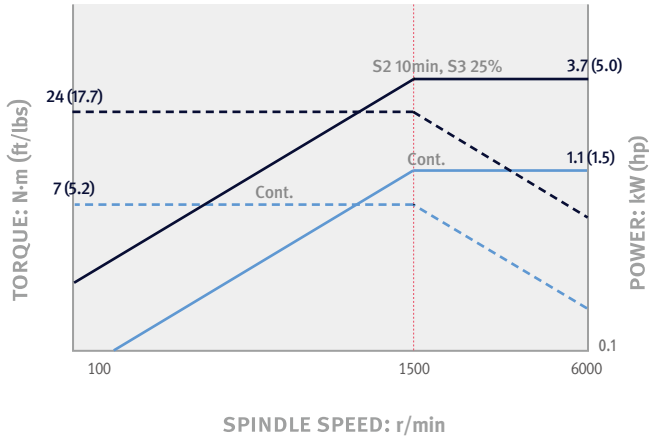
PUMA TW 2600/GL (High Torque) option



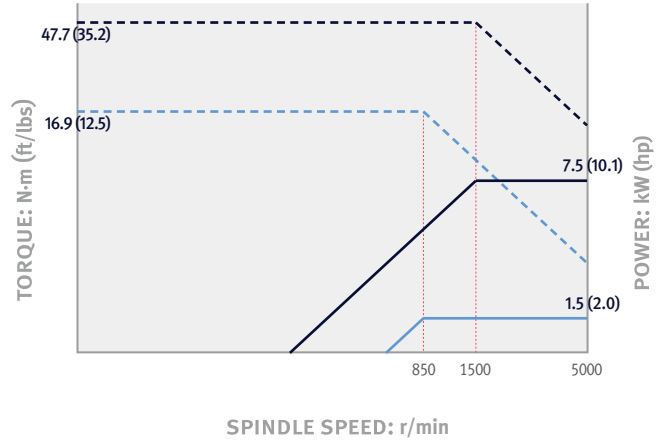
POWER | TORQUE

Rotary Tool

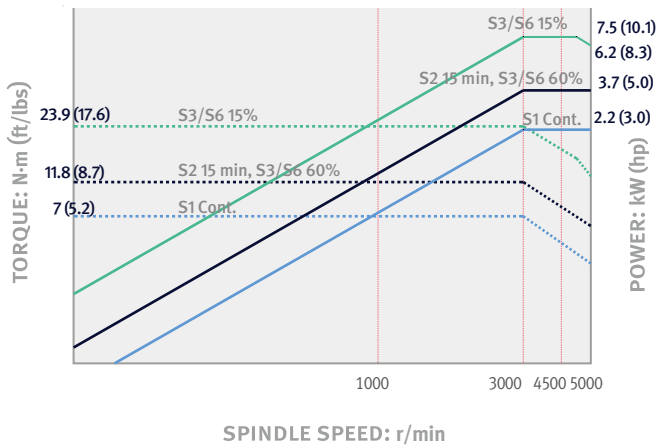
PUMA TW 2100/TW 2100-GL/TS 2100/TS 2100-GL series
(BMT 45P)



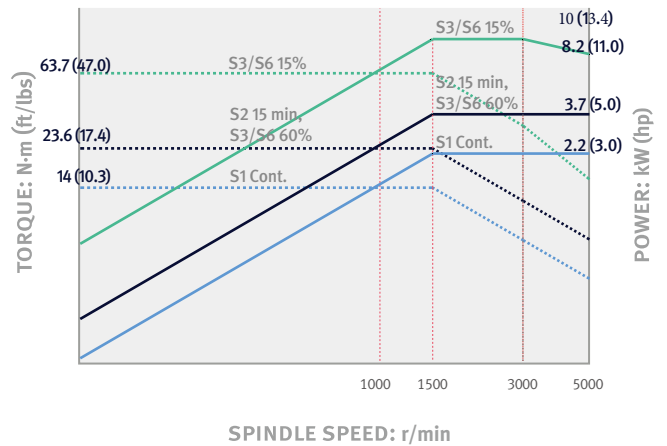
PUMA TW 2600/TW 2600-GL/TS 2600/TS 2600-GL series
(BMT 55P)



PUMA TW 2100/TW 2100-GL/TS 2100/TS 2100-GL series
(BMT 55P) **option**



PUMA TW 2600/TW 2600-GL/TS 2600/TS 2600-GL series
(BMT 65P) **option**

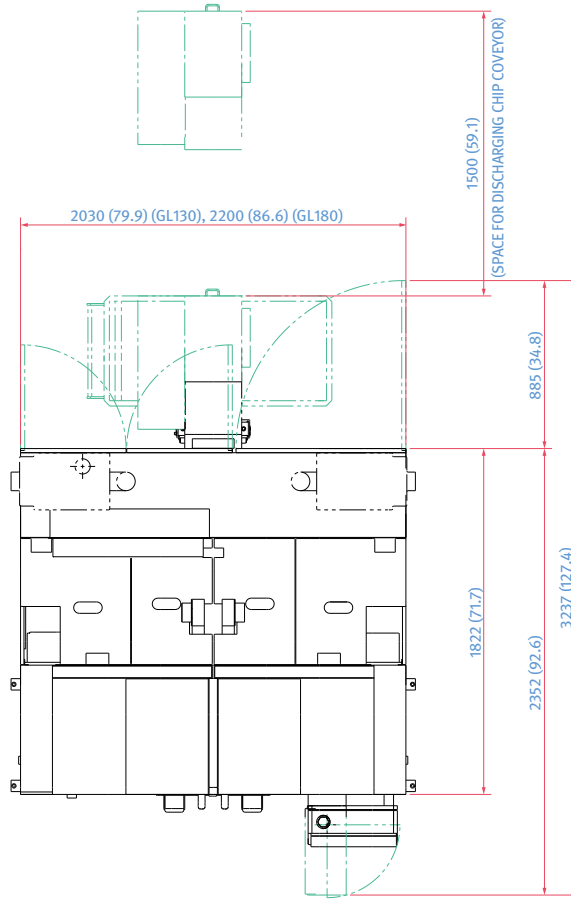


EXTERNAL DIMENSIONS

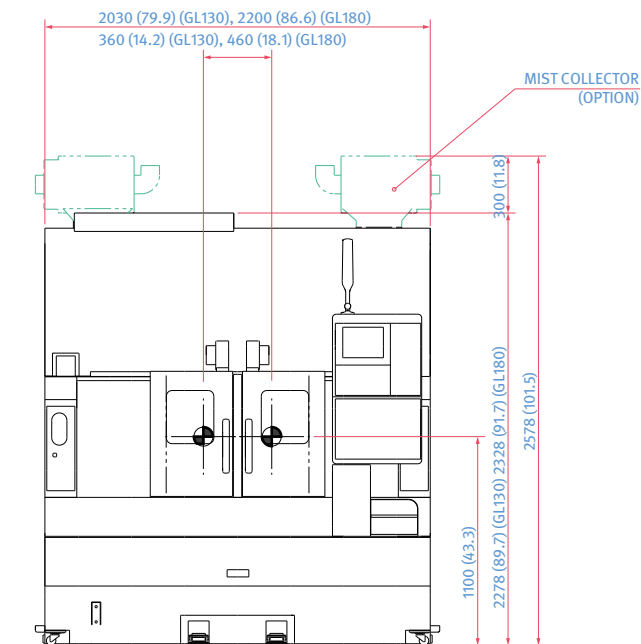
PUMA TW 2100/M

Unit : mm (inch)

TOP



FRONT

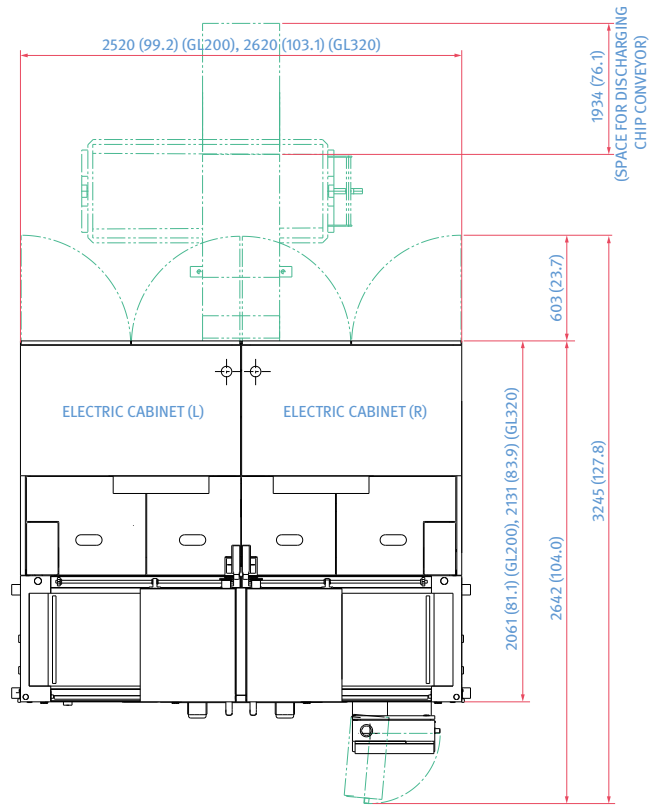


EXTERNAL DIMENSIONS

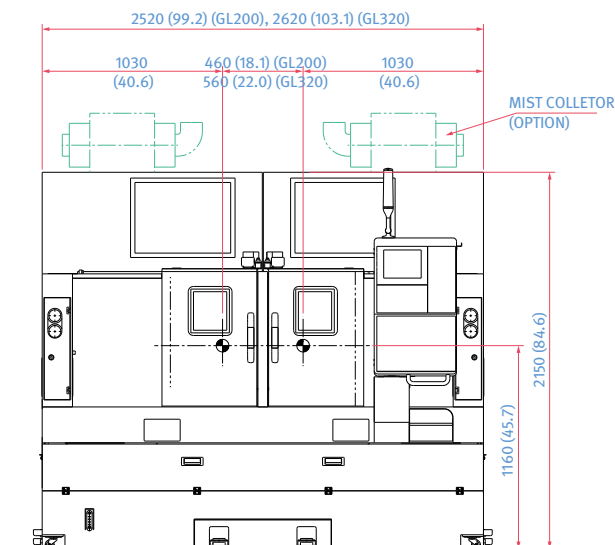
PUMA TW 2600/M (TW 2600B/MB)

Unit : mm (inch)

TOP



FRONT

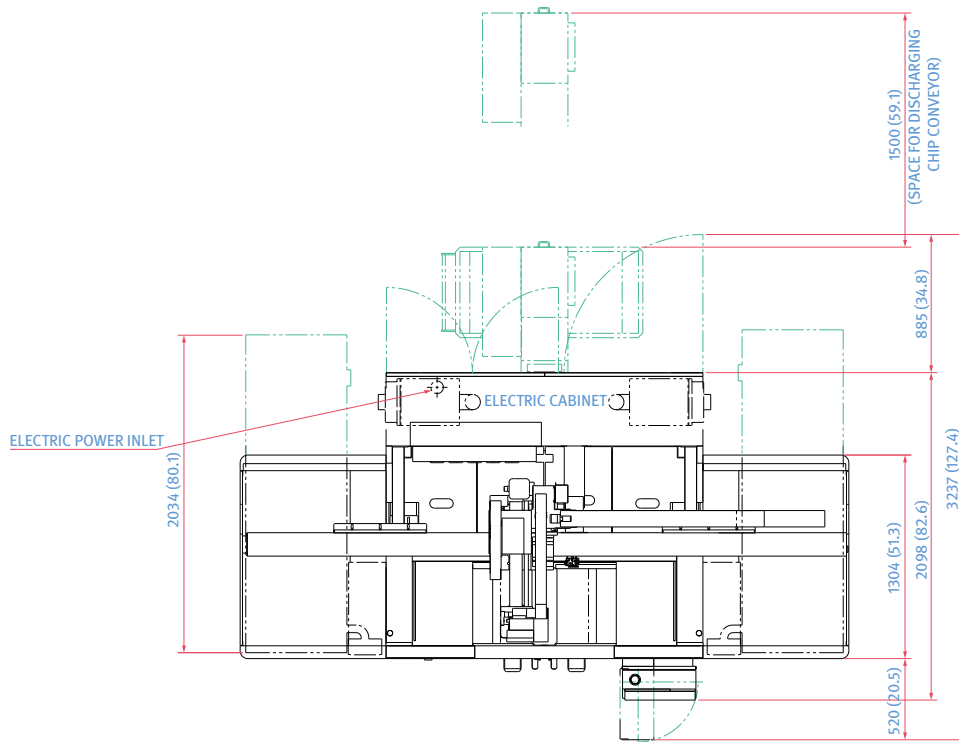


EXTERNAL DIMENSIONS

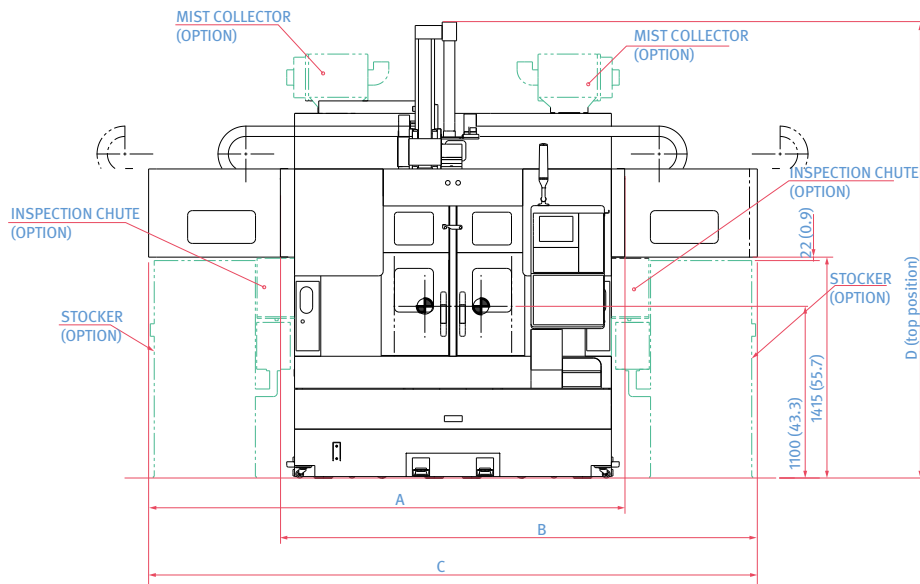
PUMA TW 2100-GL series

Unit : mm (inch)

TOP



FRONT



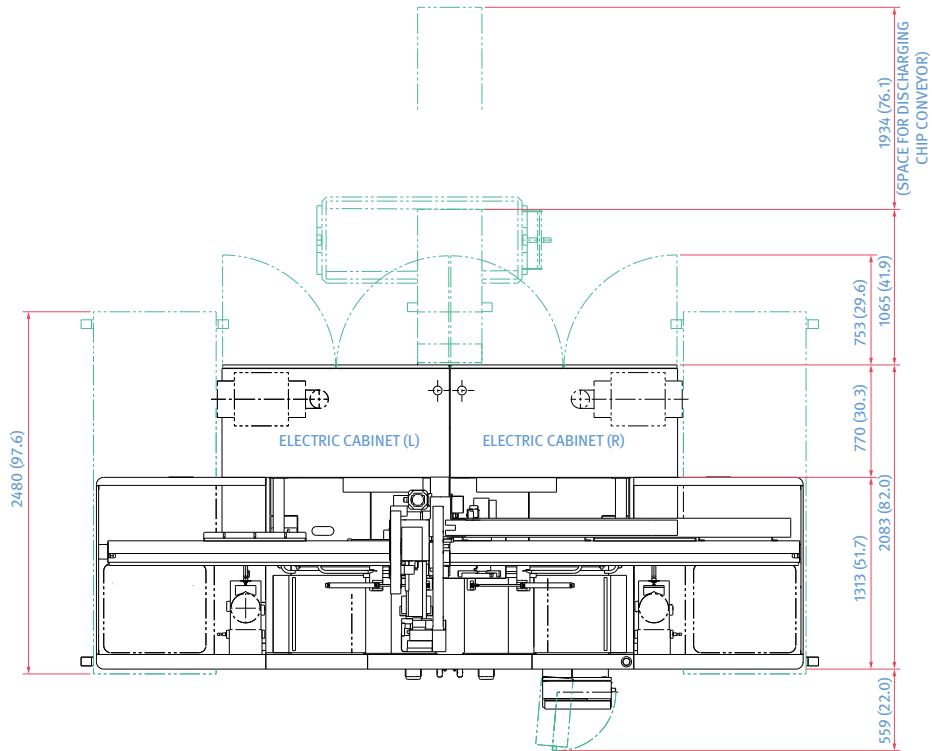
	A	B	C	D
PUMA TW 2100-GL130 (A1 type)	3295 (129.7)	-	-	2921 (115.0)
PUMA TW 2100-GL130 (A2 type)	-	3295 (129.7)	-	2921 (115.0)
PUMA TW 2100-GL130 (A3 type)	-	-	3900 (153.5)	2921 (115.0)
PUMA TW 2100-GL180 (A1 type)	3465 (136.4)	-	-	2971 (117.0)
PUMA TW 2100-GL180 (A2 type)	-	3465 (136.4)	-	2971 (117.0)
PUMA TW 2100-GL180 (A3 type)	-	-	4000 (157.5)	2971 (117.0)

EXTERNAL DIMENSIONS

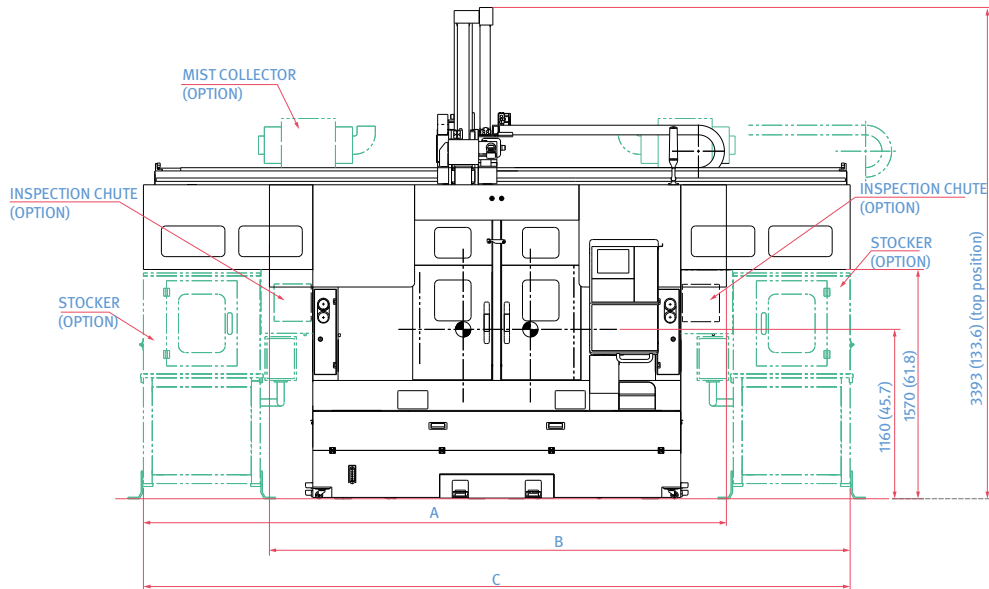
PUMA TW 2600-GL series (TW 2600B/MB)

Unit : mm (inch)

TOP



FRONT



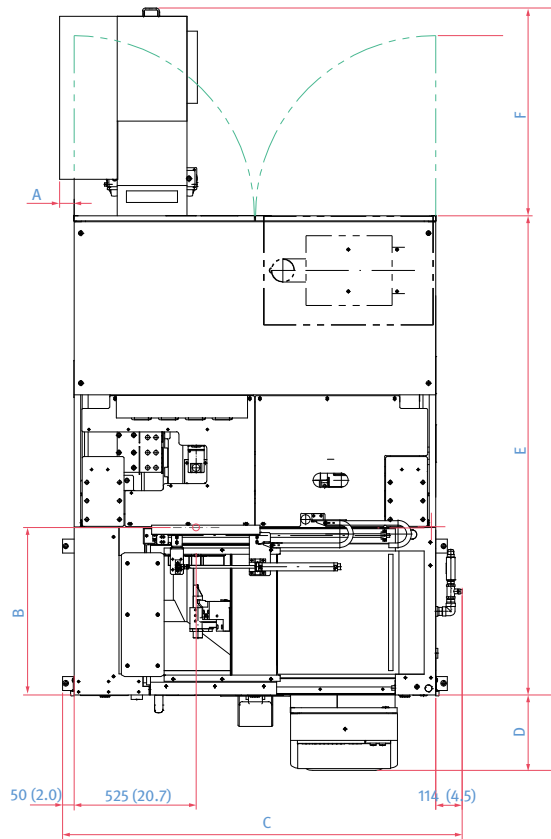
	A	B	C
PUMA TW 2600-GL200 (A1 type)	3980 (156.7)	-	-
PUMA TW 2600-GL200 (A2 type)	-	3980 (156.7)	-
PUMA TW 2600-GL200 (A3 type)	-	-	4840 (190.6)
PUMA TW 2600-GL320(A1 type)	4120 (162.2)	-	-
PUMA TW 2600-GL320(A2 type)	-	4120 (162.2)	-
PUMA TW 2600-GL320(A3 type)	-	-	4940 (194.5)

* Some peripheral equipment can be placed in other places

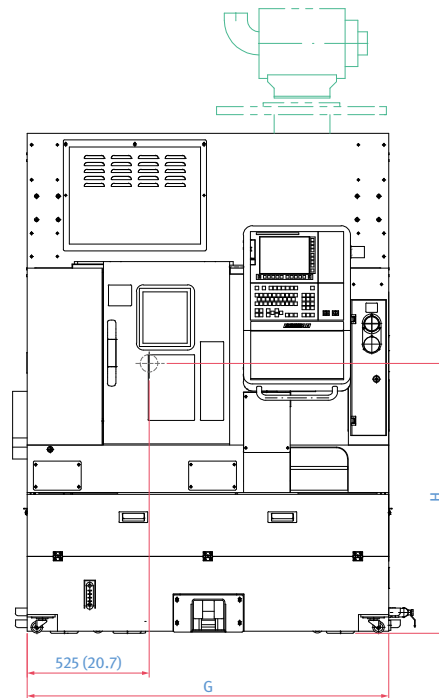
EXTERNAL DIMENSIONS

PUMA TS 2100/2600

TOP



FRONT

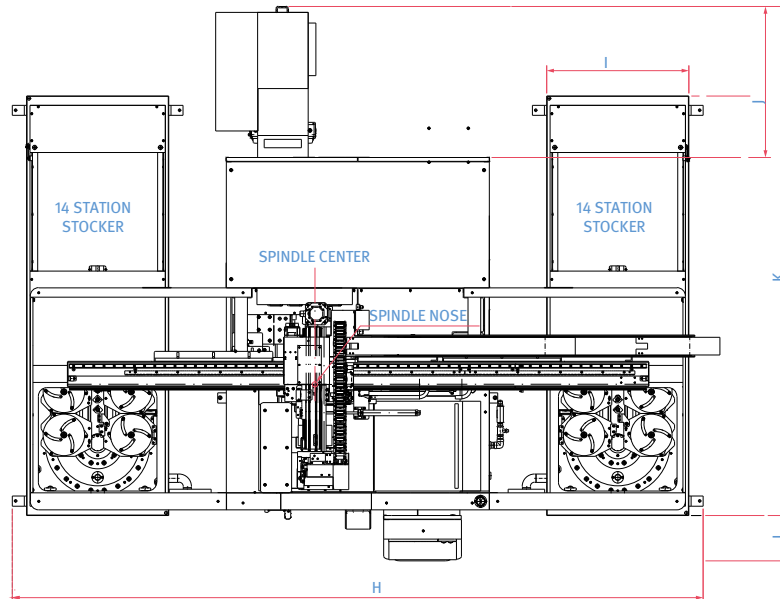


	A	B	C	D	E	F	G	H
PUMA TS 2100/M	52 (2.0)	681 (26.8)	1524 (60.0)	265.7 (10.5)	1833(72.2)	839 (33.0)	1360 (53.5)	1100 (43.3)
PUMA TS 2600/M	62 (2.4)	720 (28.3)	1719 (67.7)	324.1 (12.8)	2061(81.1)	893.5(35.2)	1555 (61.2)	1160 (45.7)

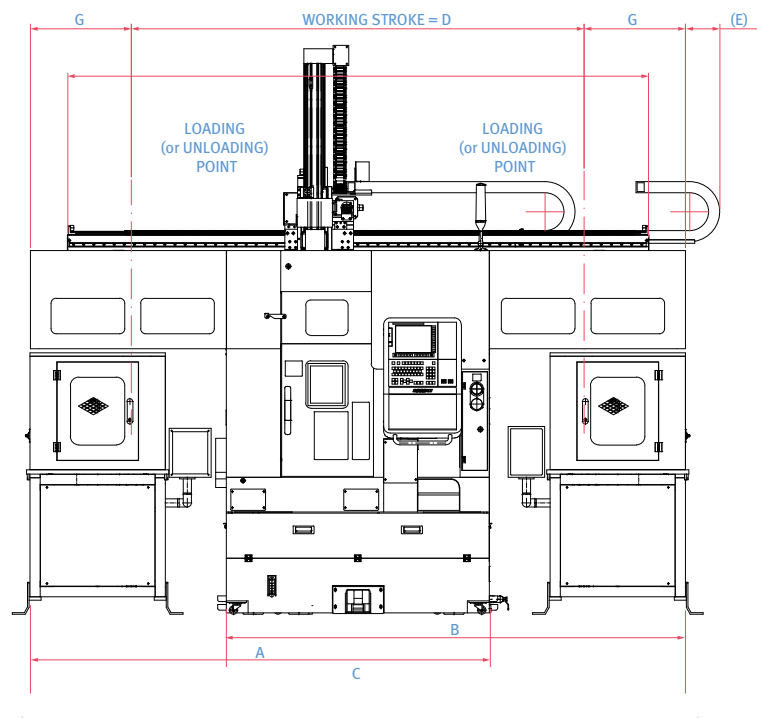
EXTERNAL DIMENSIONS

PUMA TS 2100/2600-GL

TOP



FRONT



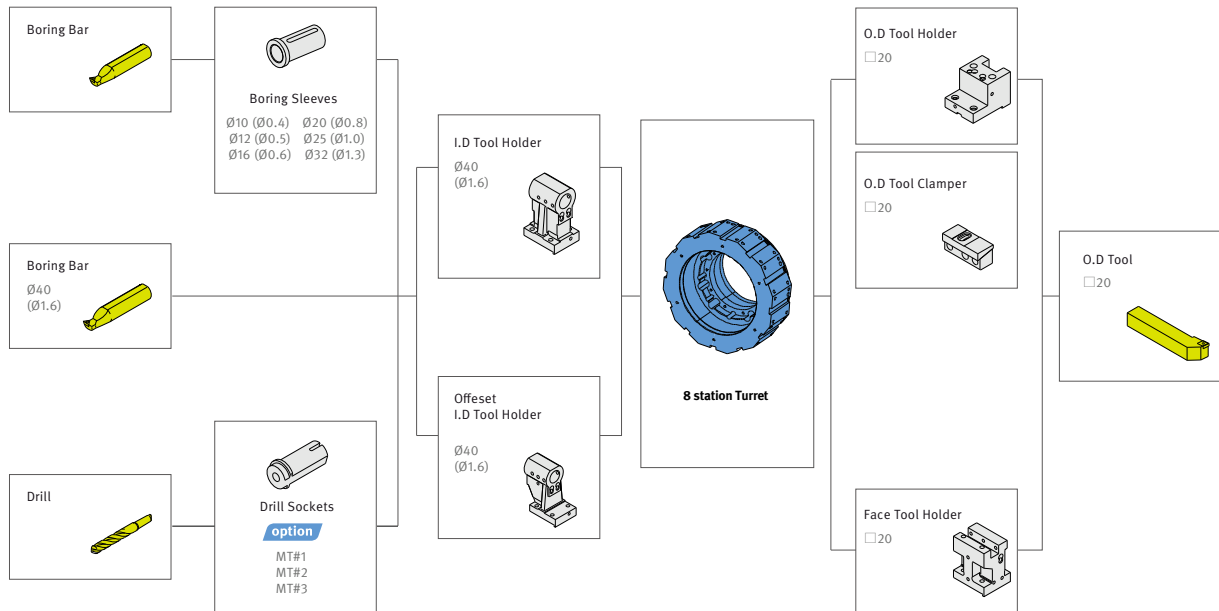
	Type	A	B	C	D	E	G	H	I	J	K	L
PUMA TS 2100/M	A1	2625 (103.3)	-	-	1235 (48.6)	-	-	-	-	-	-	-
	A2	-	2659 (104.7)	-	1579 (62.2)	407.5 (16.0)	-	-	-	-	-	-
	A3	-	-	3264 (128.5)	2274 (89.5)	267 (10.5)	495 (19.5)	3300 (129.9)	642 (25.3)	839 (33.0)	2672 (105.2)	265.7 (10.5)
PUMA TS 2600/M	A1	3007 (118.4)	-	-	1535 (60.4)	-	-	-	-	-	-	-
	A2	-	2955 (116.3)	-	2040 (80.3)	-	-	-	-	-	-	-
	A3	-	-	3875 (152.6)	2677 (105.4)	203.5 (8.0)	599 (23.6)	4085 (160.8)	840 (33.1)	893.5 (35.2)	3010 (118.5)	269.1 (10.6)

* Some peripheral equipment can be placed in other places

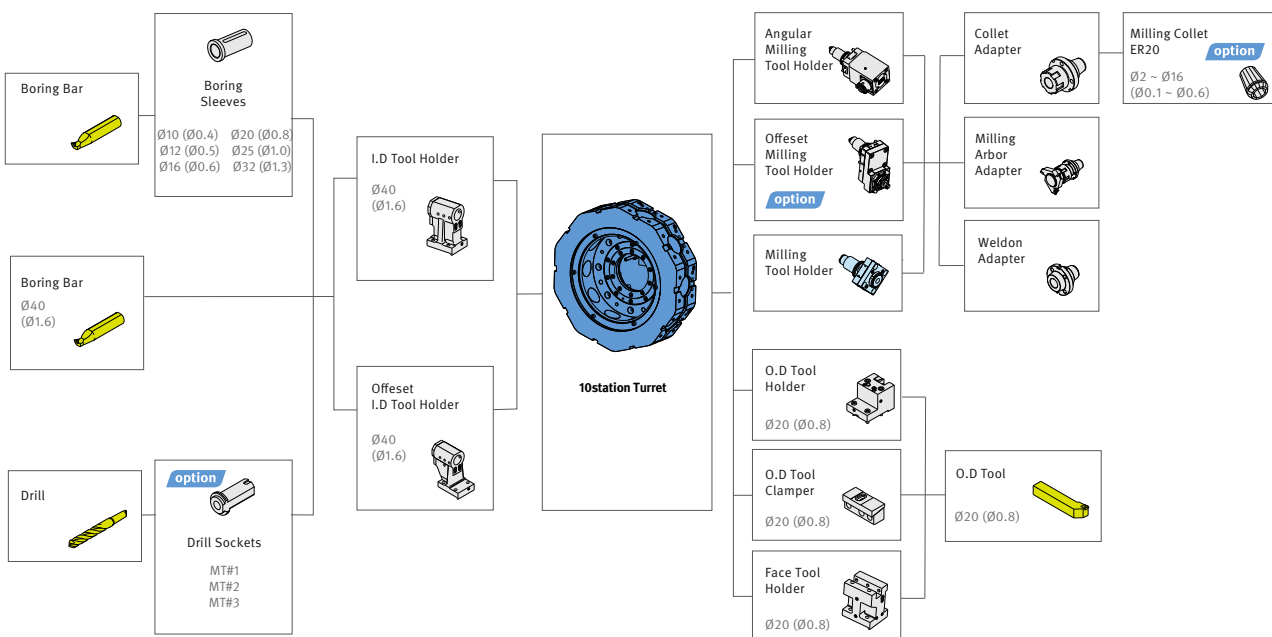
TOOLING SYSTEM

Unit : mm (inch)

PUMA TW 2100/2100-GL • TS 2100/2100-GL



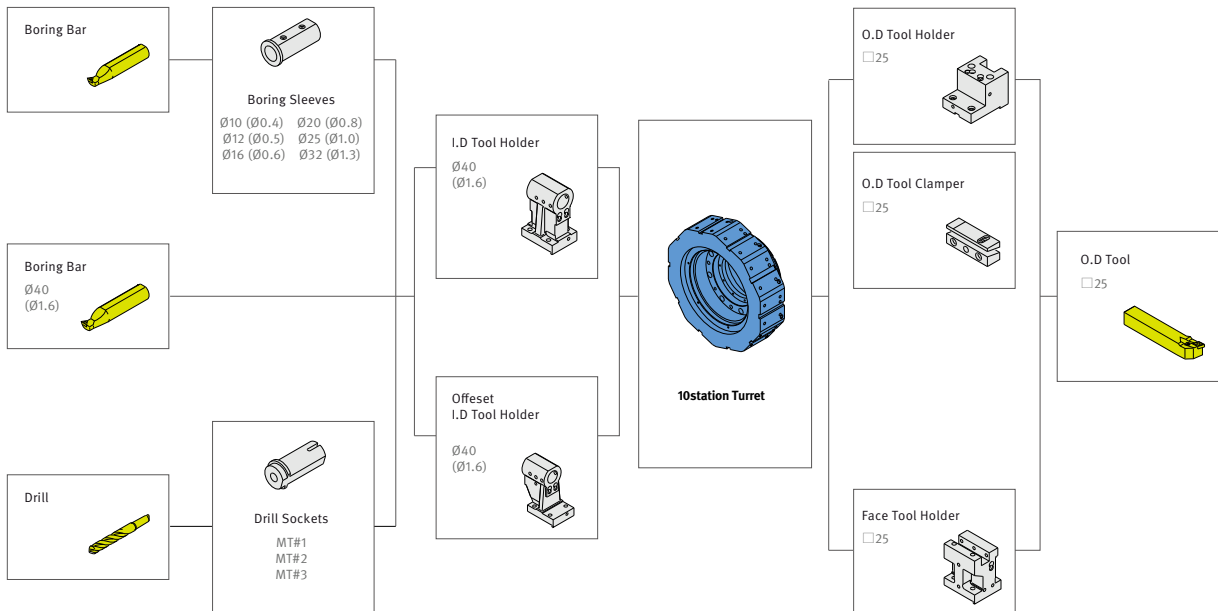
PUMA TW 2100M/2100M-GL • TS 2100M/2100M-GL



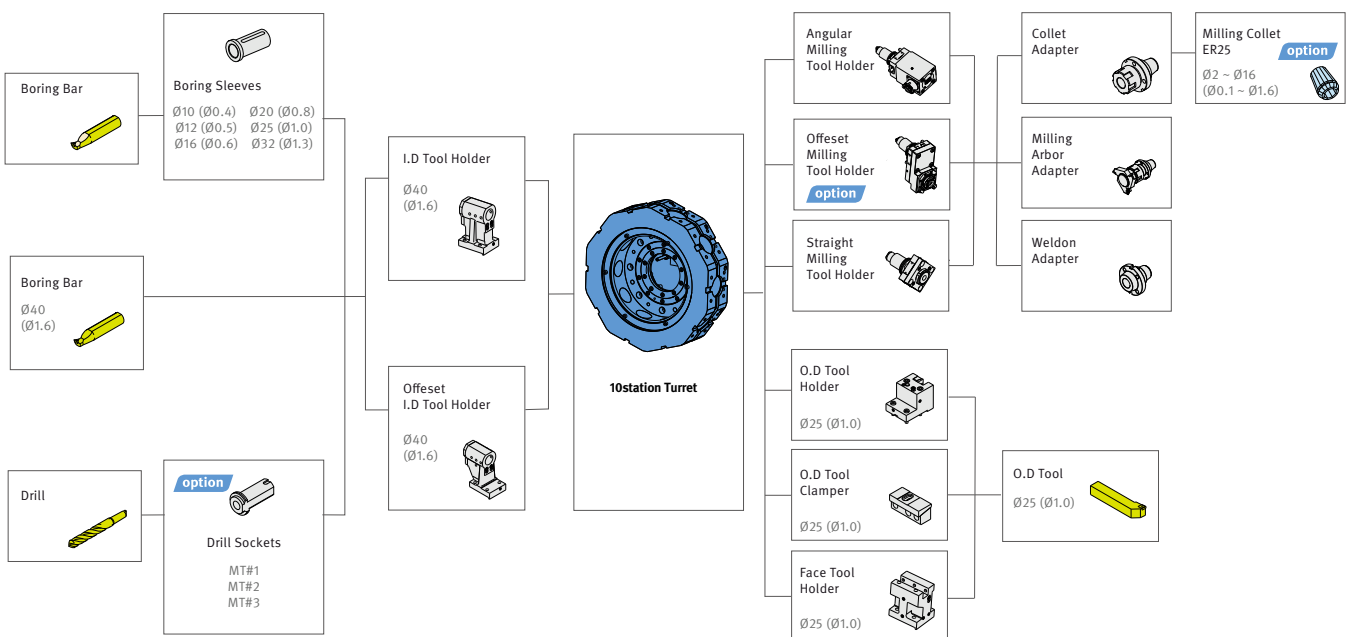
TOOLING SYSTEM

Unit : mm (inch)

PUMA TW 2600/2600-GL • TS 2600/2600-GL



PUMA TW 2600M/2600M-GL • TS 2600M/2600M-GL

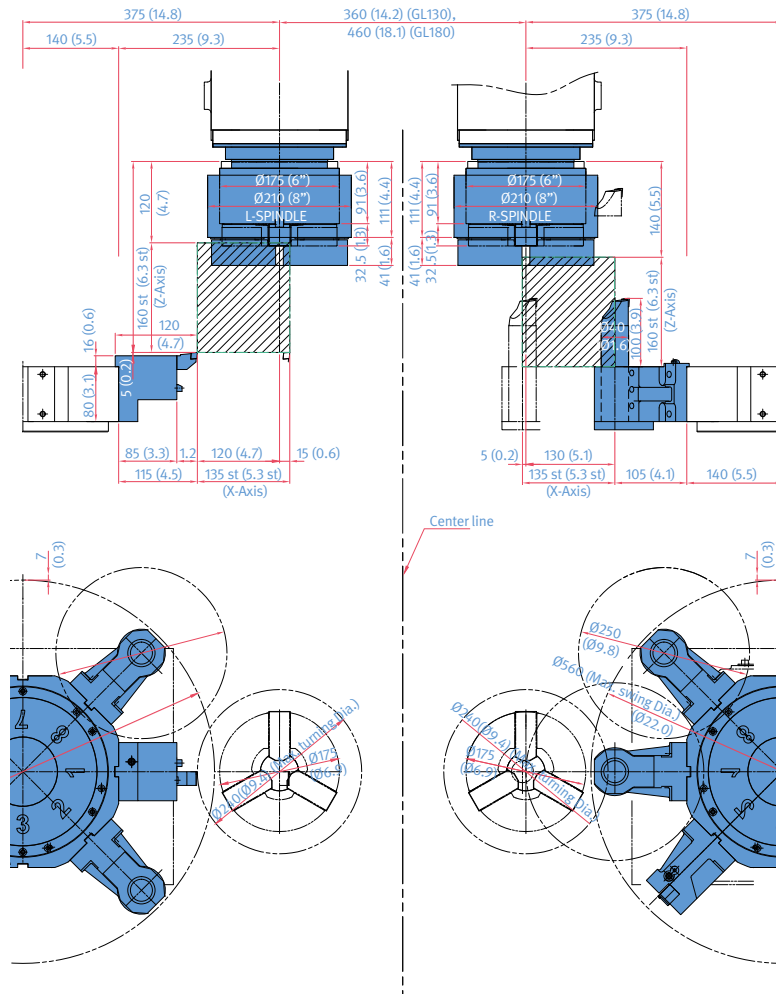


WORKING RANGE

PUMA TW 2100/2100-GL/TS 2100/2100-GL

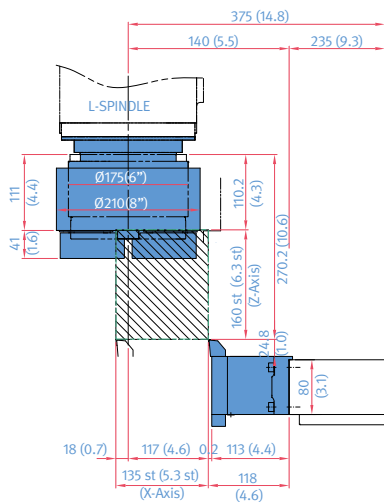
Unit : mm (inch)

O.D HOLDER

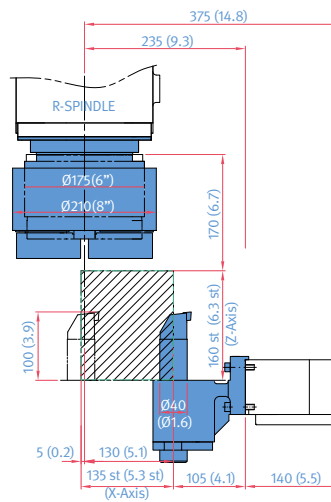


I.D HOLDER

FACE TOOL HOLDER



OFFSET I.D HOLDER

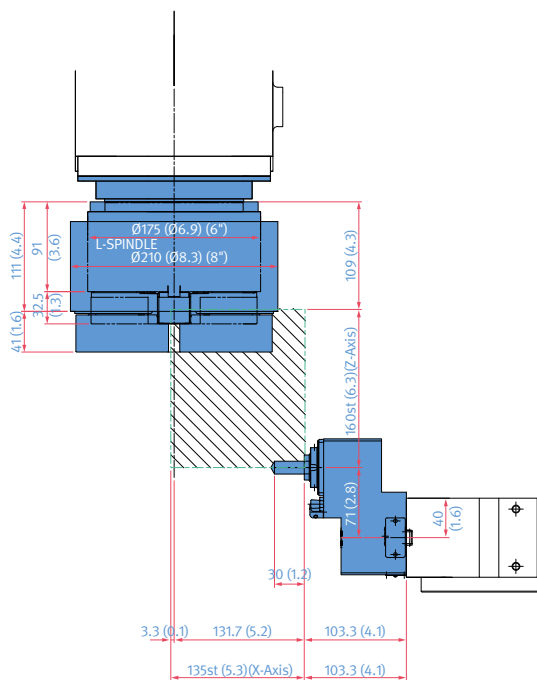


WORKING RANGE

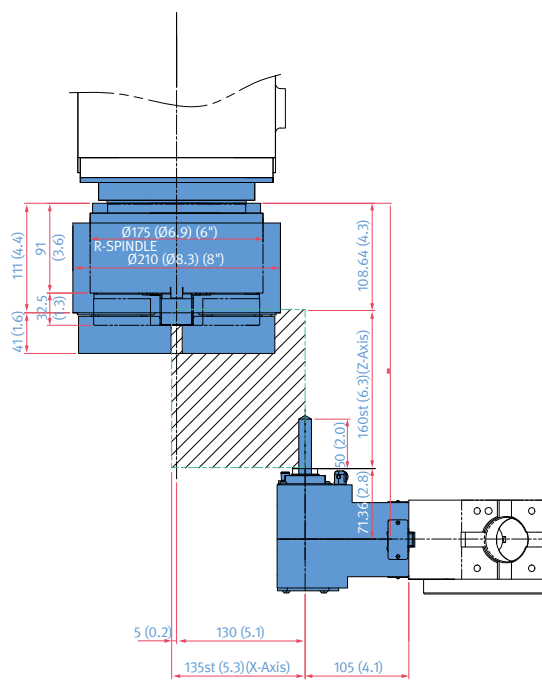
PUMA TW 2100M/2100M-GL · TS 2100M/2100M-GL

Unit : mm (inch)

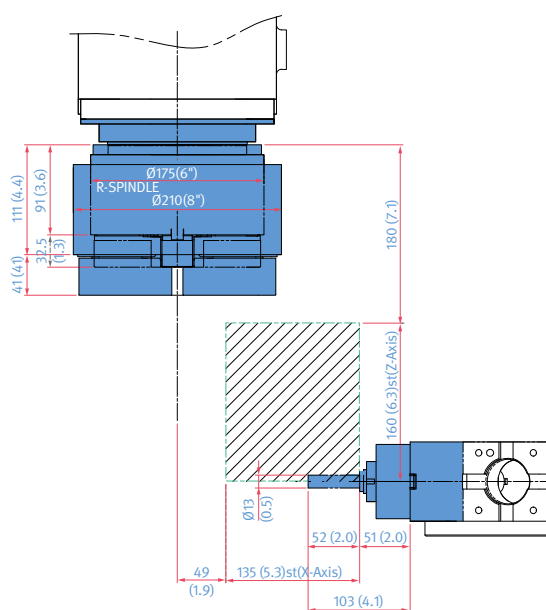
OFFSET MILLING HEAD **option**



ANGULAR MILLING HEAD



STRAIGHT MILLING HOLDER



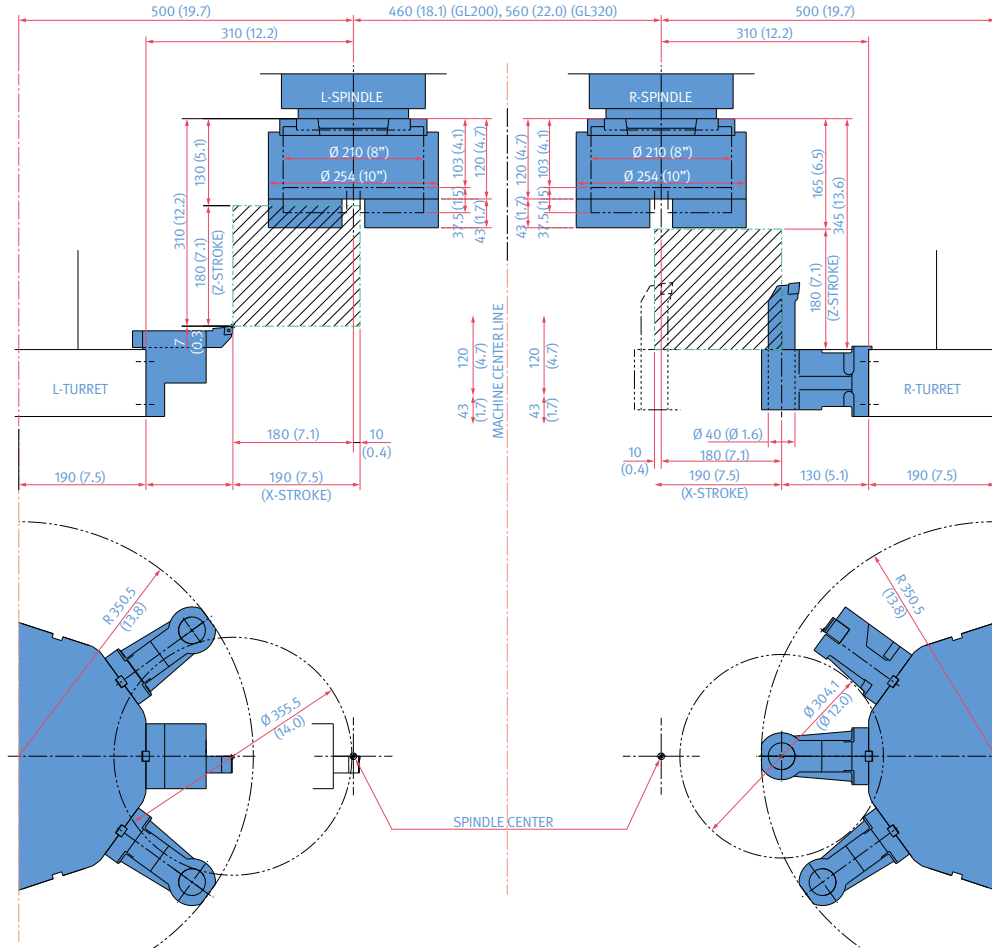
WORKING RANGE

PUMA TW 2600/2600-GL · TS 2600/2600-GL

Unit : mm (inch)

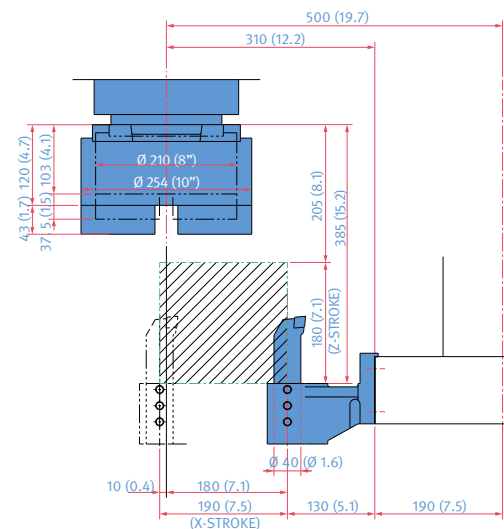
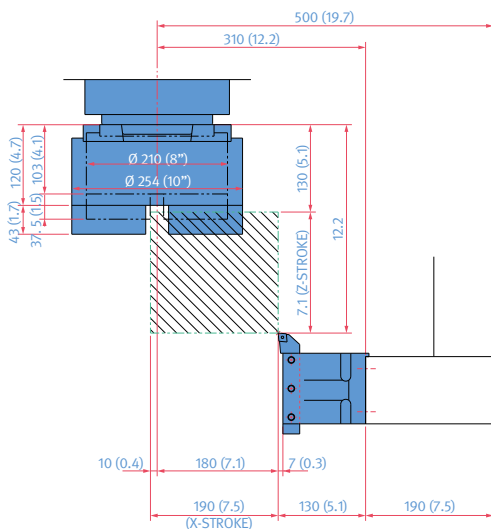
O.D HOLDER

I.D HOLDER



FACE TOOL HOLDER

OFFSET I.D HOLDER

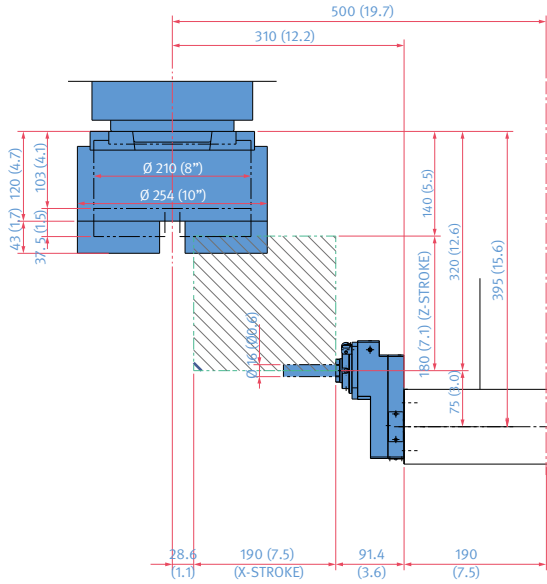


WORKING RANGE

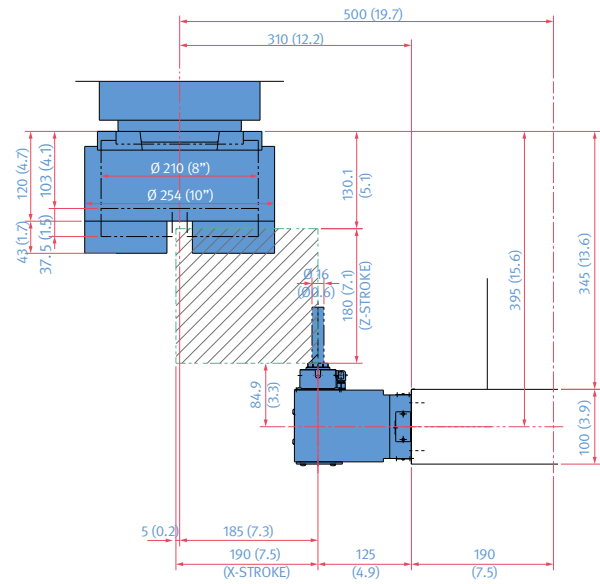
PUMA TW 2600M/2600M-GL · TS 2600M/2600M-GL

Unit : mm (inch)

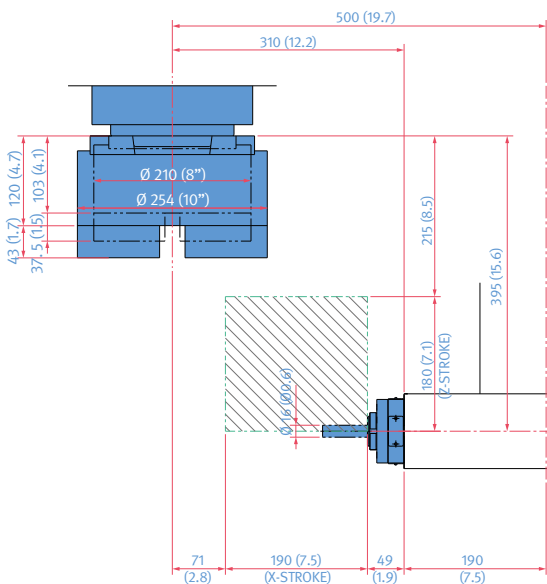
OFFSET MILLING HOLDER option



ANGULAR MILLING HOLDER



STRAIGHT MILLING HOLDER



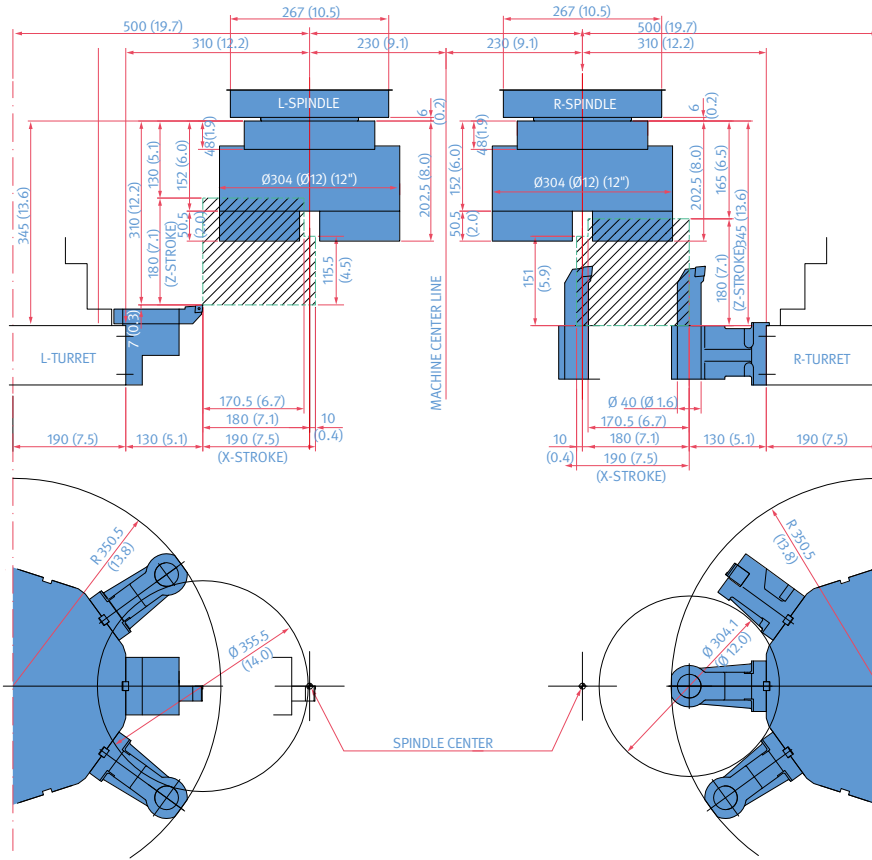
WORKING RANGE

PUMA TW 2600MB

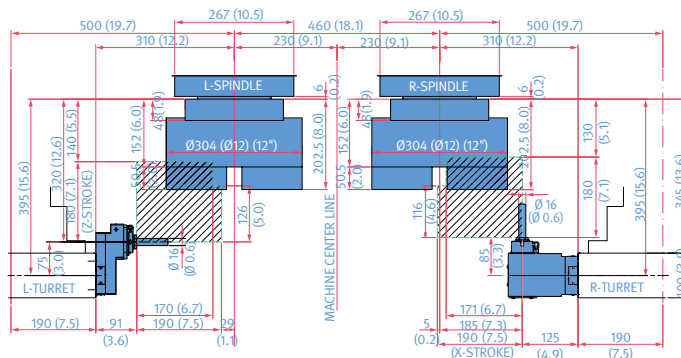
Unit : mm (inch)

O.D HOLDER

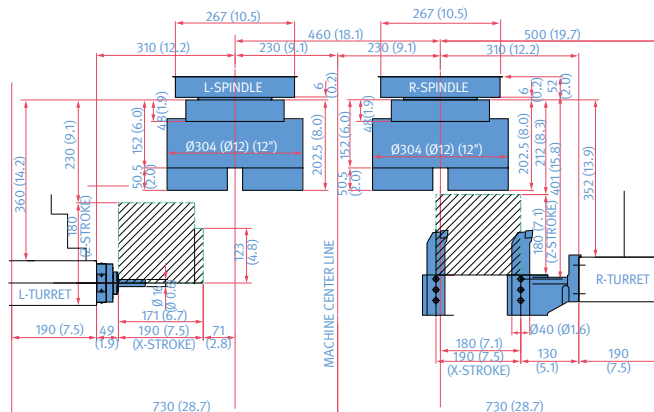
I.D HOLDER



FACE TOOL HOLDER



OFFSET I.D HOLDER



MACHINE SPECIFICATIONS

PUMA TW 2100/2600/M • TW 2600B/M • TS 2100/2600/M

Description		Unit	PUMA TW2100 [M]	PUMA TW2100-GL [M-GL]	PUMA TS2100 [M]	PUMA TS2100-GL [M-GL]	PUMA TW2600 [M]	PUMA TW2600-GL [M-GL]	PUMA TW2600B [MB] [GL]	PUMA TS2600 [M]	PUMA TS2600-GL [M-GL]
Capacity	Recommended turning diameter	mm (inch)	Ø160 (Ø6.3)	-	-	-	Ø255 (Ø10.0)	-	Ø255 (Ø10.0)		-
	Max. turning diameter (Max. / Min.)	mm (inch)	Ø240 (Ø9.4)	Ø130 / Ø30 (Ø5.1 / Ø1.2) (GL130) Ø180 / Ø30 (Ø7.1 / Ø1.2) (GL180)	Ø240 (Ø9.4)		Ø360 (Ø14.2)	Ø200 / Ø50 (Ø7.9 / Ø2.0) (GL200) Ø320 / Ø50 (Ø12.6 / Ø2.0) (GL320)	Ø360 (Ø14.2)		Ø200 / Ø50 (Ø7.9 / Ø2.0) (GL200) Ø320 / Ø50 (Ø12.6 / Ø2.0) (GL320)
	Max. turning length	mm (inch)	128 (5.0)	65 / 100 (2.6 / 3.9) (GL130) 80 / 150 (3.1 / 5.9) (GL180)	128 (5.0)		170 (6.7)	90 / 165 (3.5 / 6.5) (GL200) 35 / 185 (1.4 / 7.3) (GL320)	170 (6.7)		90 / 165 (3.5 / 6.5) (GL200) 35 / 185 (1.4 / 7.3) (GL320)
	Chuck size	Standard	mm (inch)	Ø210 (8")			Ø255 (10")		Ø304(12")		Ø255 (10")
	Optional	mm (inch)	Ø210 (6")			Ø210 (8"), Ø305 (12")		-		Ø210 (8"), Ø305 (12")	
Travel	Travel distance	X axis	mm (inch)	135 (5.3)			190 (10+180) (7.5 (0.4+7.1))		190 (10+180) (7.5 (0.4+7.1))		
		Z axis	mm (inch)	160 (6.3)			180 (7.1)		180 (7.1)		
Feedrate	Rapid traverse rate	X axis	m/min (ipm)	24 (944.9)			24 (944.9)		24 (944.9)		
		Z axis	m/min (ipm)	24 (944.9)			24 (944.9)		24 (944.9)		
Spindle	Max. spindle speed	r/min	4500 {6000}			3500		3500			
	Max. spindle power (15 min/cont.)	kW (Hp)	15/11 (20.1/14.8)			18.5/15 (24.8/20.1)		22/18.5 (29.5/24.8)		18.5/15 (24.8/20.1)	
	Max. spindle torque	N·m (ft-lbs)	127 (93.7)			202{404} (149.0{298.2})		622 (459.0)		202{404} (149.0{298.2})	
	Distance between left-right spindle centers	mm (inch)	360 (14.2) (GL130), 460 (18.1) (GL180)		-		460 (18.1) (GL200), 560 (22.0) (GL320)		560 (22.0)		-
	Spindle nose		A2-5			A2-6		A2-8		A2-6	
	Spindle bearing size (front face I/D)	mm (inch)	Ø90 (Ø3.5)			Ø110 (Ø4.3)		Ø130 (Ø5.1)		Ø110 (Ø4.3)	
	Spindle hole through diameter	mm (inch)	Ø61 (Ø2.4)			Ø61 (Ø2.4)		Ø91 (Ø3.6)		Ø61 (Ø2.4)	
Turret	No. of tool stations	ea	8+8 {10+10} / 8 {10}{10}			10+10 {12+12} [10+10]		10			
	OD tool size		□20 (□0.8)			□25 (□1.0)		□25 (□1.0)			
	Max. boring bar size	mm (inch)	Ø40 (Ø1.6)			Ø40 (Ø1.6)		Ø40 (Ø1.6)			
	Turret Indexing time (1 station swivel)	sec	0.16			0.16		0.16			
Rotary tool	Max. spindle speed	r/min	6000 {5000}*			5000					
	Max. spindle torque	N·m (ft-lbs)	23.5 {23.9}* (17.3 {17.6})			47.7 {63.7}* (35.2 {47.0})					
	Tool holder Type		BMT45P {55P}*			BMT55P {65P}*					
Power	Power consumption	kVA	53.91 [55.91]	GL130/GL180 58.47/64.32 [60.47/66/52]	-	-	GL200/GL320 69.97/76.97 [79.97/81.37]	GL200/GL20 72.97/80.27 [76.97/84.67]	83.16 [90.16][86.16]	53.91 [58.47]	55.91 [60.47]
Dimensions	Length	mm (inch)	2030 (79.9)	GL130/GL180 2030 (79.9) /2200 (86.6)	-	3263 (128.5)	GL200/GL320 2520 (99.2) / 2620 (103.1)		1555 (61.2)		
	Width*	mm (inch)	2098 (82.6)	2098 (82.6)	-	2101 (82.7)	2061 (81.1)				
	Height (Max. / Min.)	mm (inch)	2278 (89.7)	2921 (115.0)	-	2953 (116.3)	2150 (84.6)	3393 (133.6)	2150 (84.6)		
	Weight	kg (lb)	4650 (10251.3) [4700 (10361.6)]	GL130/GL180 5200/5250 (11463.9/11574.1) [5250/5300] 5200(11463.9) /5250 (11574.1)	-	-	GL200/GL320 7200/7250 (15873.0/15983.3) [7300/7350]	GL200/GL320 7730/7780 (17041.5/17151.7) [7830/7880]	GL200/GL320 7200/7250 (15873.0/15983.3) [7300/7350] [7730/7780]	5000 (11023.0) [5100 (11243.4)]	5530 (12191.4) [5630 (12411.8)]
Control	CNC system	DN Solutions Fanuc i Plus									

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* Specifications and information contained within this catalogue may be changed without prior notice.