

CITIZEN

Miyano

GN4200

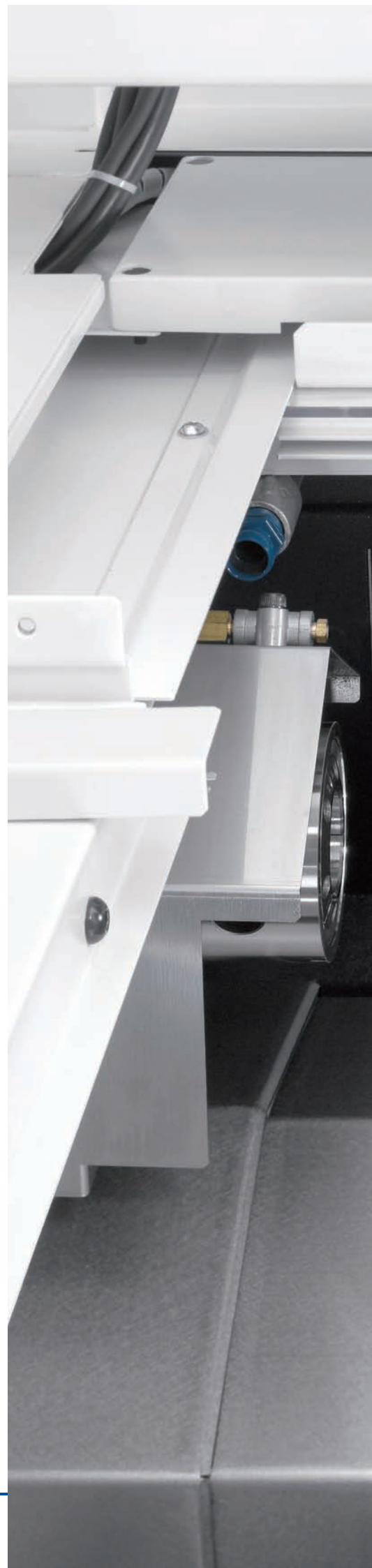
Fixed Headstock Type CNC Automatic Lathe

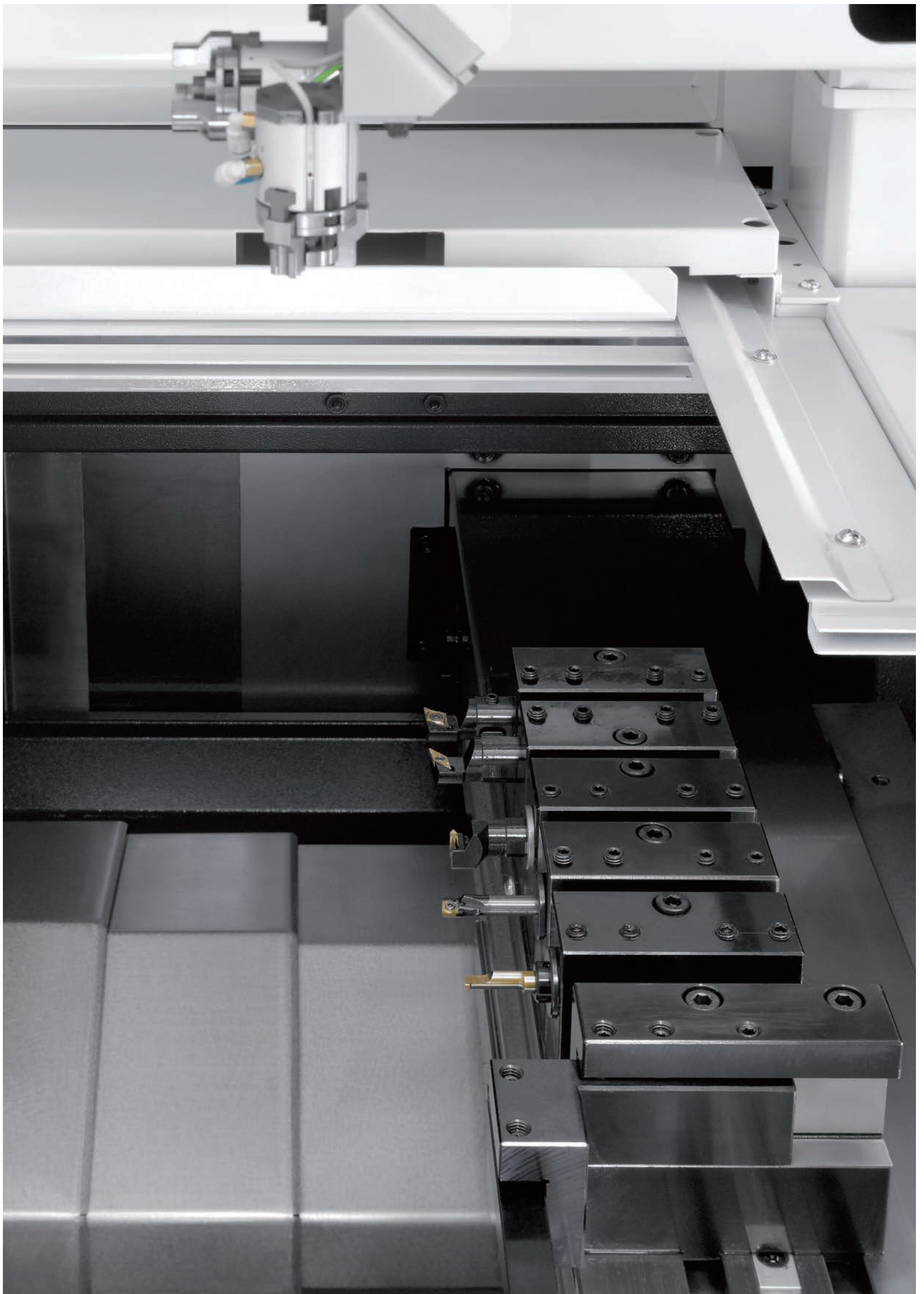


Designed for high-precision machining of small-diameter workpieces, this machine has a wing type fixed spindle for low thermal influence installed on a thermally symmetrical machine base. It inherits the “design concept for high precision” that is a tradition at Ocean Cincom.

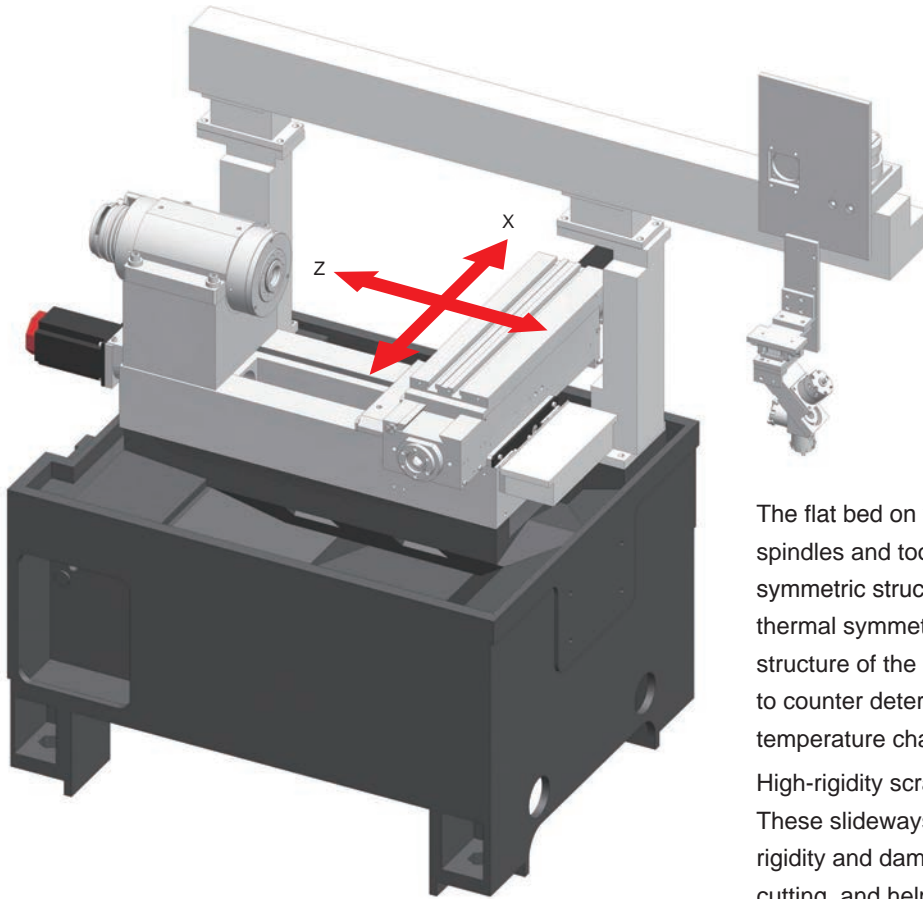
Combined with slideways with excellent damping characteristics finished by highly skilled masters of the art of scraping, this construction ensures outstanding machining accuracy in dimension and in roundness.

The workpieces can of course be handled manually, but the machine also flexibly accommodates automation including high-speed gantry loaders and robots. This makes high-precision machining even more efficient.





Basic construction

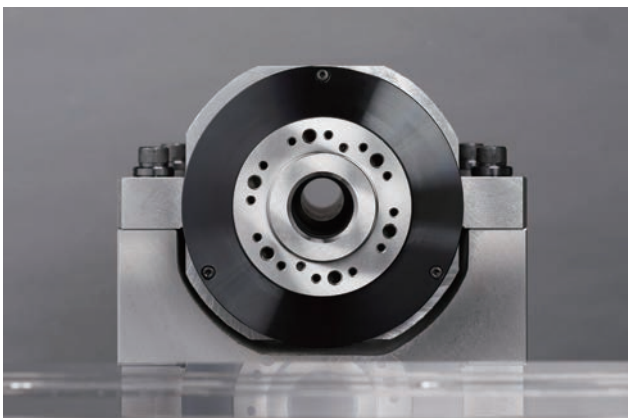


The flat bed on which major machine units such as spindles and tool slides are mounted has a thermally symmetric structure. This configuration with left/right thermal symmetry minimizes the effects of heat on the structure of the machine and provides the ideal form to counter deterioration in machining accuracy due to temperature changes.

High-rigidity scraped slideways are used on all axes. These slideways with face contacts have exceptional rigidity and damping characteristics, achieve powerful cutting, and help to prolong cutting tool life.

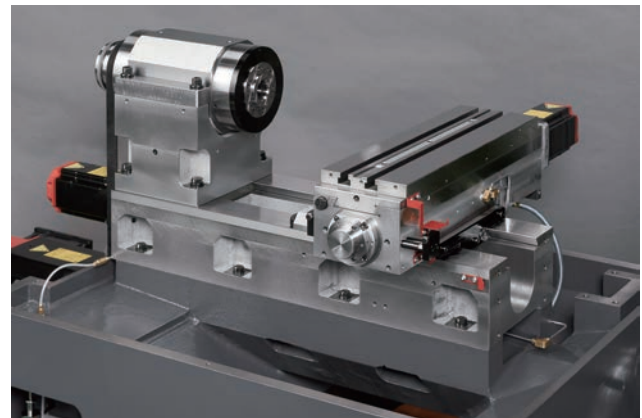
Original winged spindle headstock

Main spindle is mounted using a wing sleeve system. The construction is such that only the “wing” parts make contact with the slide faces and the central part of the sleeve is suspended, so spindle heat generation is uniform and heat is not easily transmitted to the headstock.



Slideway configuration offering high positioning accuracy

Because the spindle and tool slide are arranged on the same slideway the thermal deformation is also in the same direction and uniform, so the spindle centre is always at a constant position.



Program-controlled slideway lubrication

The supply of lubricating oil to a slideway results in a very slight lift and yawing, affecting machining accuracy to a very small degree. The use of “program-controlled lubrication”, which enables control matched to cycle times, makes it possible to generate an oil film of the ideal thickness and achieve stable high accuracy.

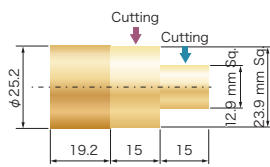


Increased speed for high-efficiency machining

A tool table with an X-axis slide stroke 50mm bigger than on existing machines allows a wide range of fixed and rotary tools to be mounted. Faster cycle times are achieved with quick acceleration/deceleration of axis moves over short travel distances.

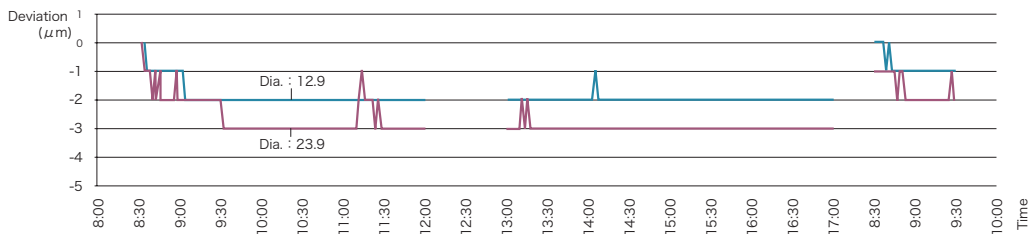
Machining accuracy

Test piece

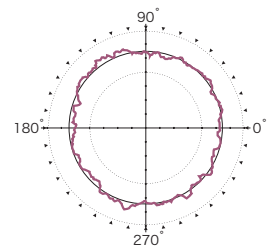


Material : BSBM
 Spindle speed : 2500 m⁻¹
 Feed : 0.05 mm/ rev
 Depth of cut : 0.1 mm
 Machining time : 1'40"
 Cycle time : 2'

Accuracy



Roundness: 0.25 μm

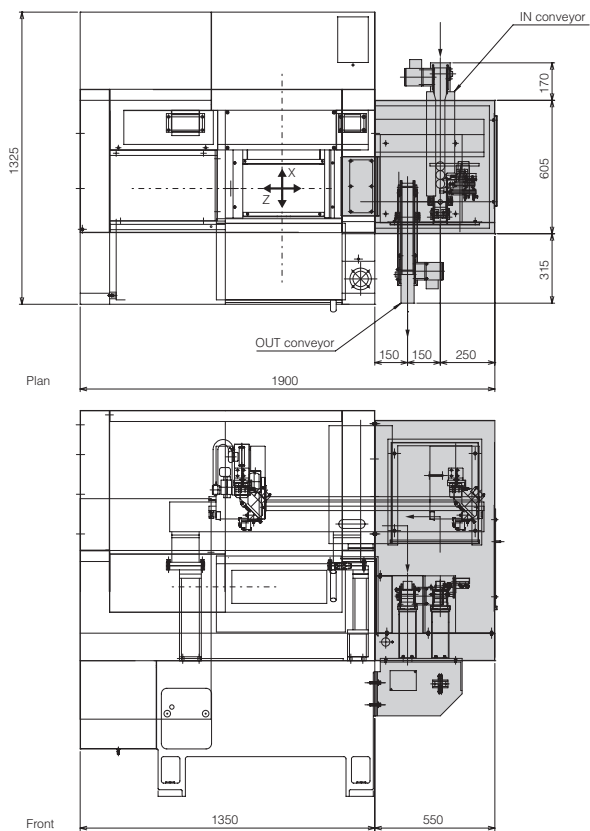


Dry cutting test

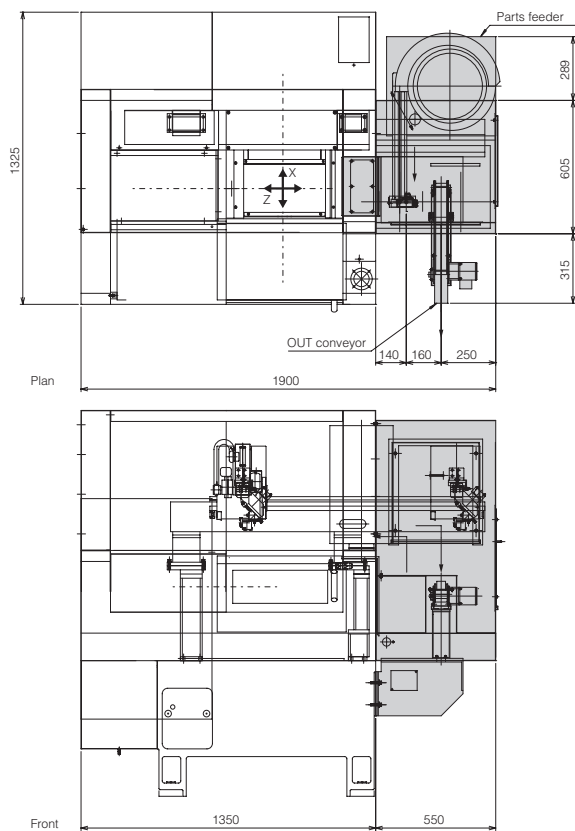
	O.D. changes				No. of test piece (pcs.)	Roundness (μm)	Cylindricity (μm)	Roughness
	1 day	1-hour stop	Next day	Start change				
23.9 mm Sq.	3μm	0μm	1μm	0μm	1	0.25	0.5	0.252
					100	0.2	0.5	0.246
					200	0.25	0.6	0.245
12.9 mm Sq.	2μm	0μm	0μm	0μm	1	0.35	0.75	0.27
					100	0.35	0.6	0.271
					200	0.25	0.6	0.263

Example configurations

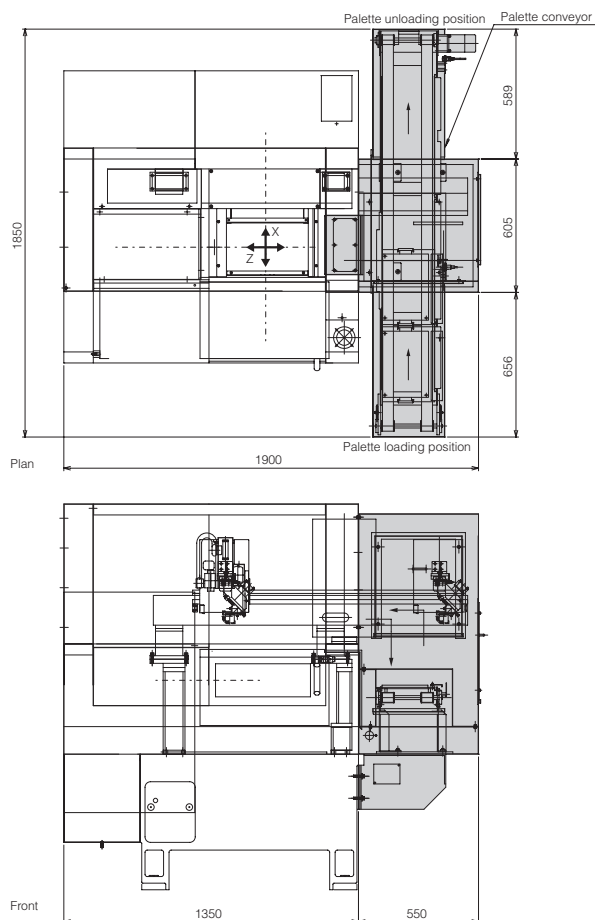
IN conveyor/ OUT conveyor



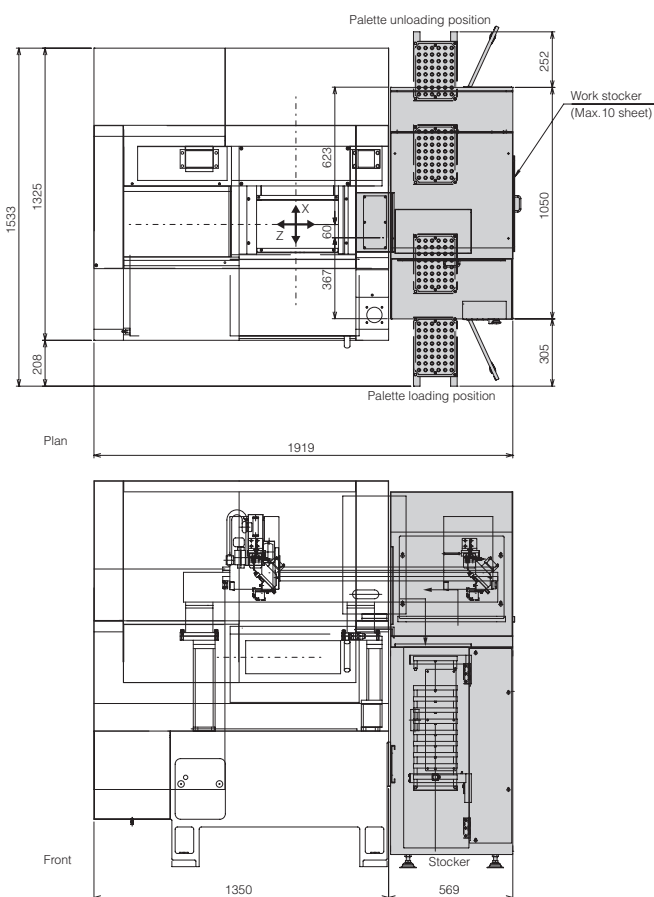
Part feeder/ OUT conveyor



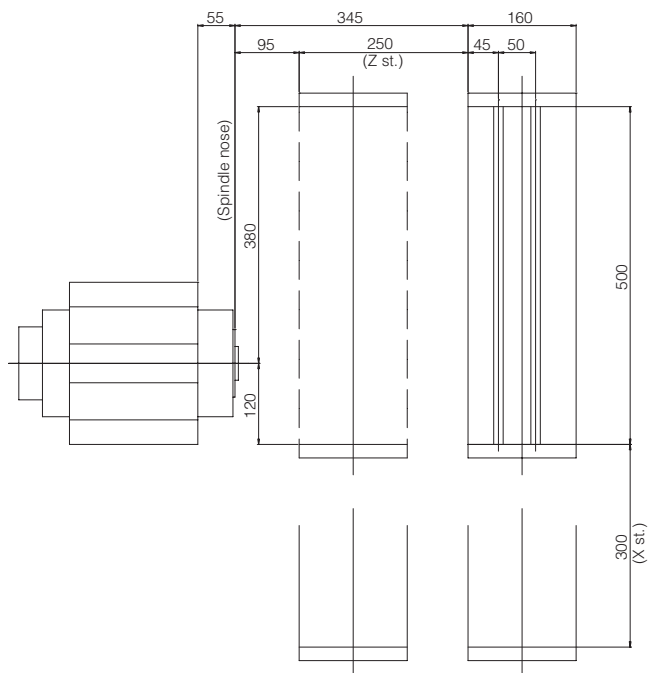
Pallet conveyor



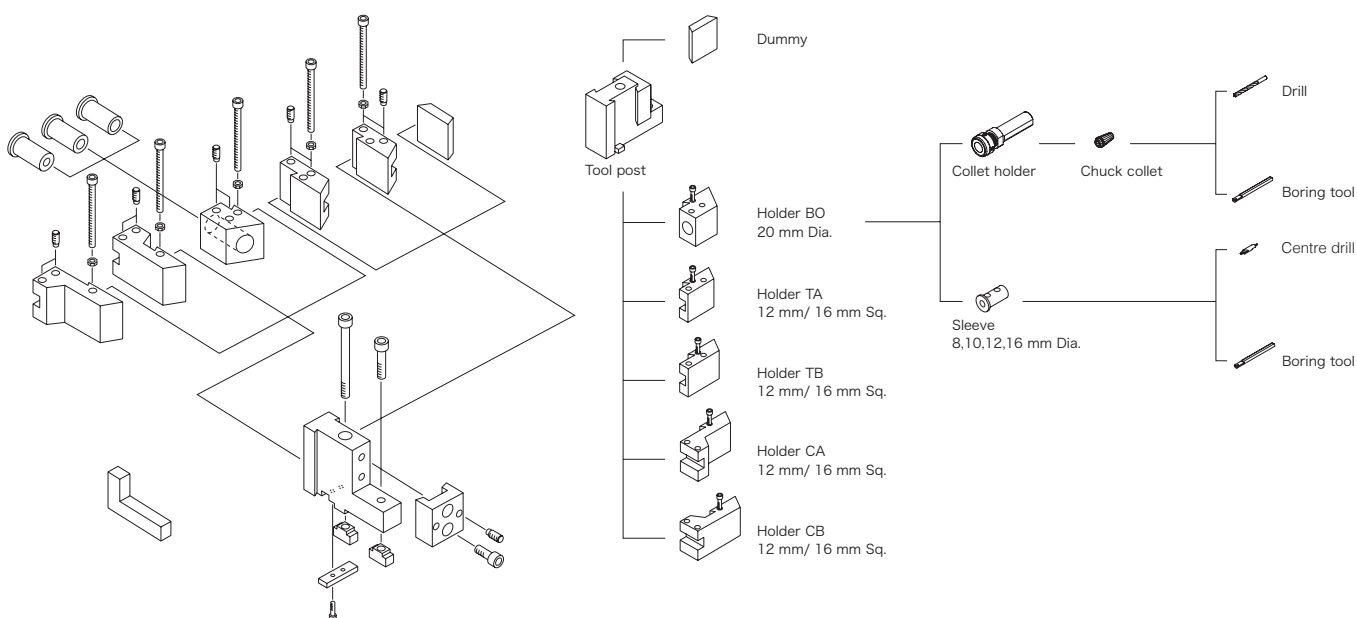
Pallet stocker



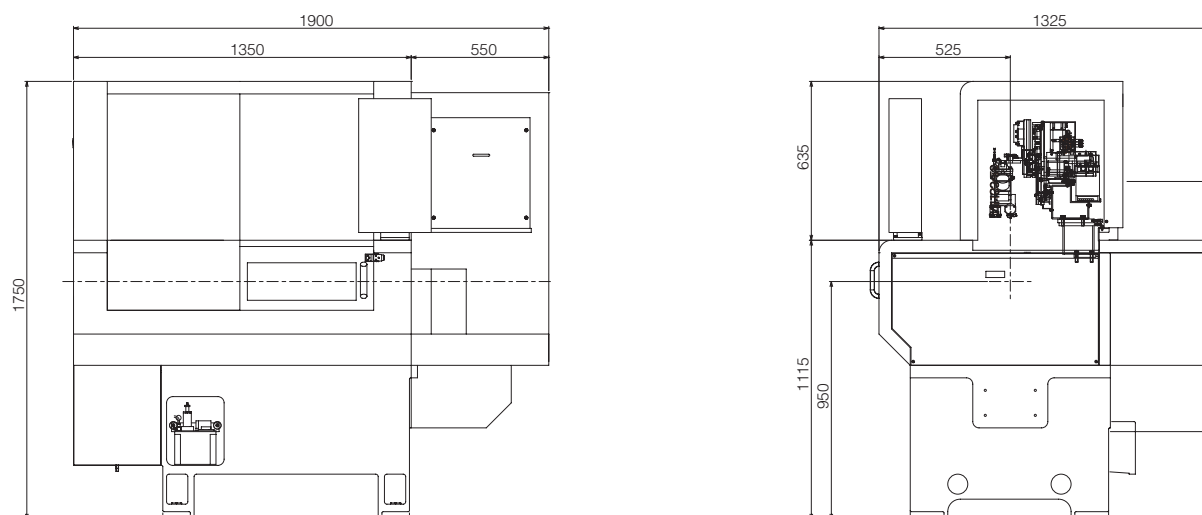
Tooling area



Tooling system



External view



Machine specification

Items	GN-4200	NC specification
Machining capacity		NC unit FS 0i-TD
Max. Diameter of collet chuck		Controlled axis X, Z, with loader 2-axis (E, Y)
Fine precision air chuck	45 mm Dia.	Min output increment X-axis: 0.00005 mm (Radius value)
Pull type collet chuck	40 mm Dia. (Stationary 35mm Dia.)	Z-axis: 0.0001 mm
Max. Machining length	80 mm	Parts program storage capacity 512Kbyte
Spindle		No of registered programs 400
Number of spindle	1	Spindle function Directly specified spindle speed (G97)
Spindle nose	Special flat	Constant cutting speed control (G96)
Through hole diameter	26 mm Dia.	Cutting feed Feed / min (G98), Feed / rev. (G97)
Inner diameter of draw tube	15.4 mm Dia.	Rapid feed rate override F0,10, 20, 30, 40, 50, 60, 70, 80, 90,100%
Max. spindle speed	8,000 min ⁻¹	Cutting feed rate override 0-150% (16step)
Slide		Interpolation G01, G02, G03
Number of tool platens	1	Threading G32, G33, G34, G92
Type of slide	Horizontal gang tool post	Canned cycle G90, G92, G94
X-axis	Dovetail slide	Coordinate system setting Automatic system setting or G50
Z-axis	Dovetail slide	Tool compensation 64 pieces
Control axis	2 - axis (simultaneously X, Z)	Direct input of tool position by measured MDI
Slide travel		Data input and
X-axis	300 mm	output function RS-232C, USB memory interface,
Z-axis	250 mm	PC card slot
Rapid feed rate		Automatic operation Single cycle automatic operation,
X-axis	12 m/ min	Single block, Block delete,
Z-axis	12 m/ min	Machine lock, Optional block skip,
Tools		Dry run, Feed hold
Shank size of square turning tool		Others
10, 12, 16 mm Sq.		8.4" color LCD, Circular interpolation by R programming
Diameter of drill shank	20 mm Dia.	Programmable data input (G10)
Motor		Multi-language display, Manual pulse generator
Spindle drive	3.7 kw	Memory protect
Coolant		Spindle orientation
Tank type	Separate type	Alarm display
Tank capacity	125 L	NC option package
Machine dimensions		Chamferring/Corner R
Machine height	1,695 mm	Direct drawing dimension programming
Floor space	W 1,350 × D1,325 mm	Canned cycles for drilling
Machine weight	1,500 kg	Custom macro B
Power supply	AC 200V ±10%	Multiple repetitive canned cycle (G70-G76)
Electrical capacity	11 KVA	Extended part program editing
Loader specifications (Optional)		Background editing
Tpe of loader	2 - axis gantry loader (2 hand)	Operating time/Parts No. display
Max. work piece size	40 × 40 mm Dia.	Clock function,
Max. weight capacity	250 g	Spindle rigid tapping
Control system	PMC axis control	Tool nose R compensation,
Control soft	Flexible loader control	Tool life management system
Drive system		NCOption
Right and left operation	Rack & pinion	Cs-axis control
Upper and lower sides	Rack & pinion	
Options		
Spindle air blow, High pressure coolant, Coolant level switch,		
Counter, Signal tower, Coolant mist collector, Automatic power shut off,		
Chip conveyor, Chip Box.		

CITIZEN

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