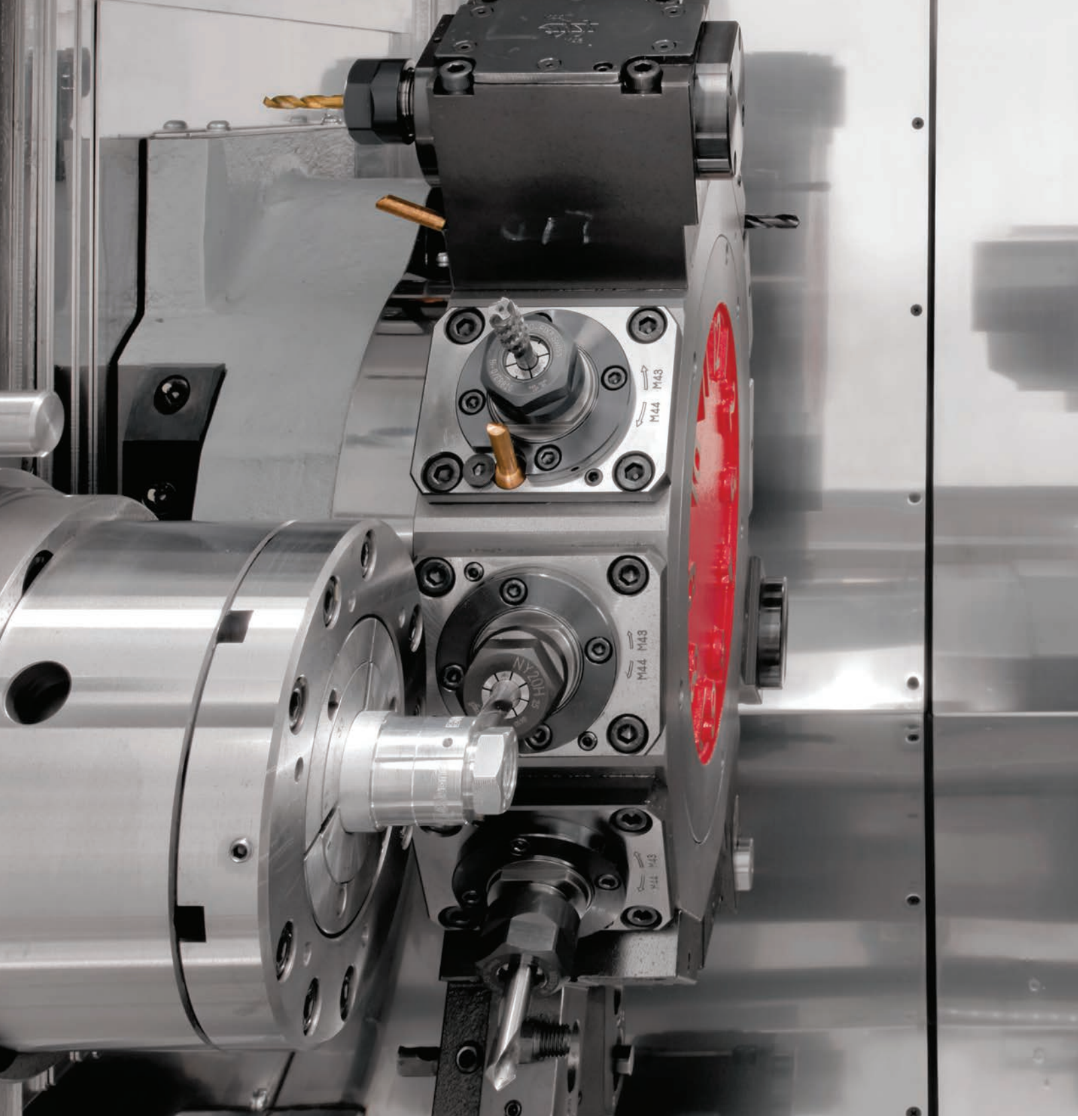
Miyano

BNJ51

Fixed Headstock Type CNC Automatic Lathe





Turret No. 2 now has 8 tool mounting stations in place of the 6 on the previous machines, so the number of tools has increased and optional revolving tools can also be mounted.

The milling processes that were handled using turret No. 1 can now be shared with turret No. 2, making it possible to substantially shorten cycle times and deal with workpieces that require complex machining.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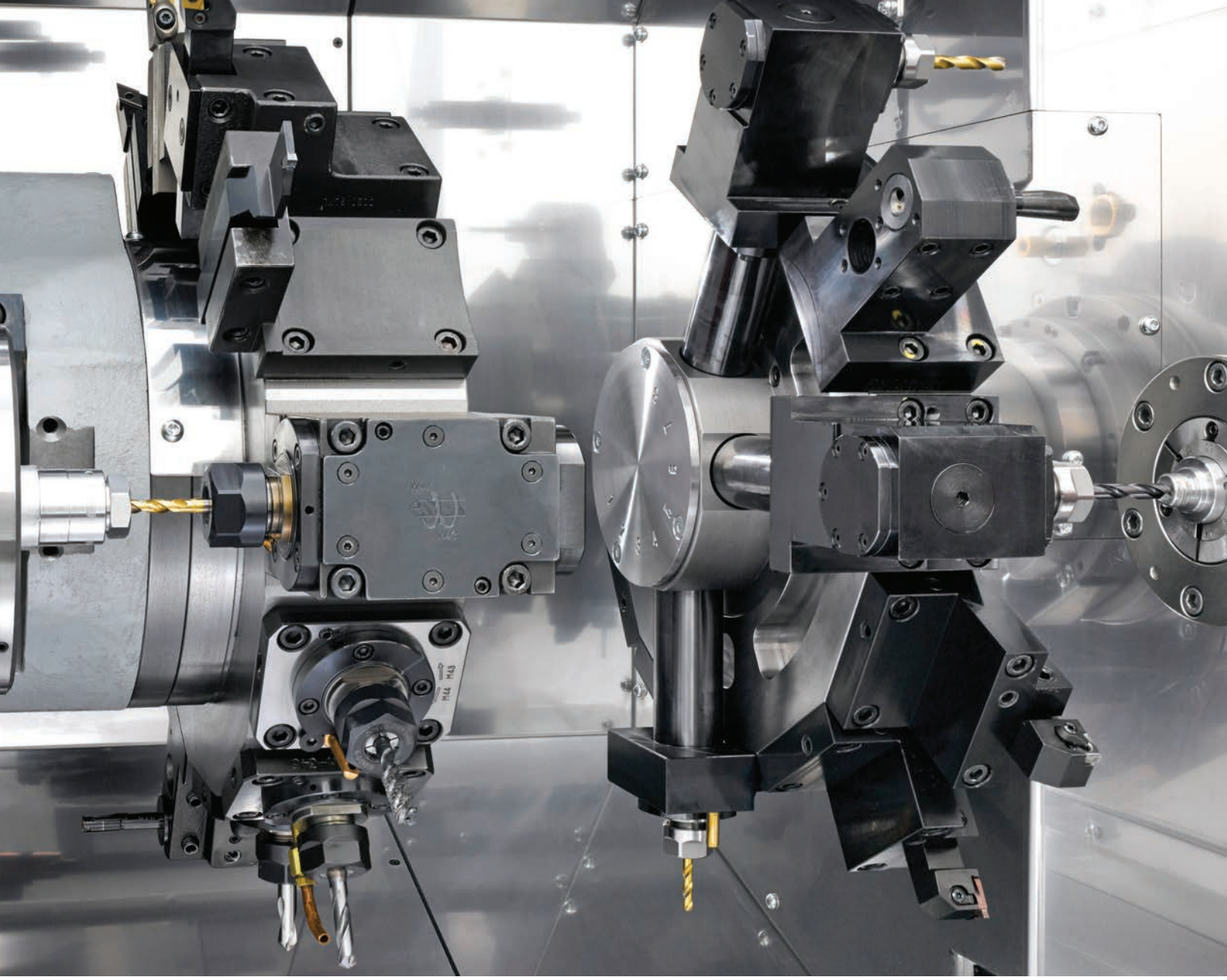
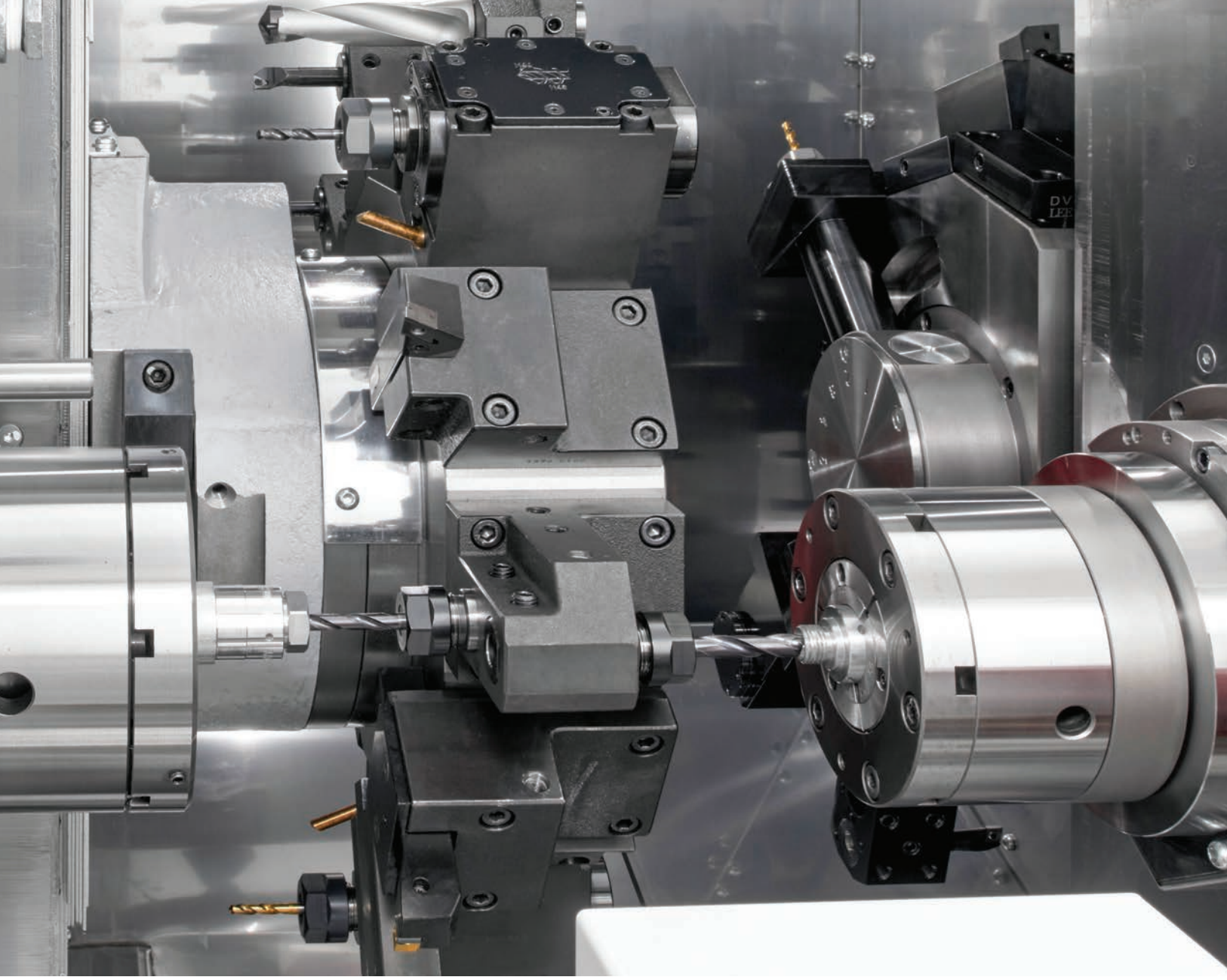


Turret No. 1 Accommodating Higher-torque Revolving Tools
Since a single drive mechanism is used to drive the revolving tools, they can be mounted at all stations. With a maximum torque of 25 Nm, they can handle heavy-duty cutting as well.

Turret No. 2 Now With a Bigger Tool Capacity and Ability to Accommodate Optional Revolving Tools
The number of tool mounting positions has increased from the six on existing machines to eight. The turret also now accepts double plain holders, greatly increasing the number of tools that can be mounted.

Machining Time Shortened by Simultaneous Machining at Left and Right
High efficiency is assured by having turret No. 1 and 2 machine simultaneously at left and right at spindles 1 and 2.



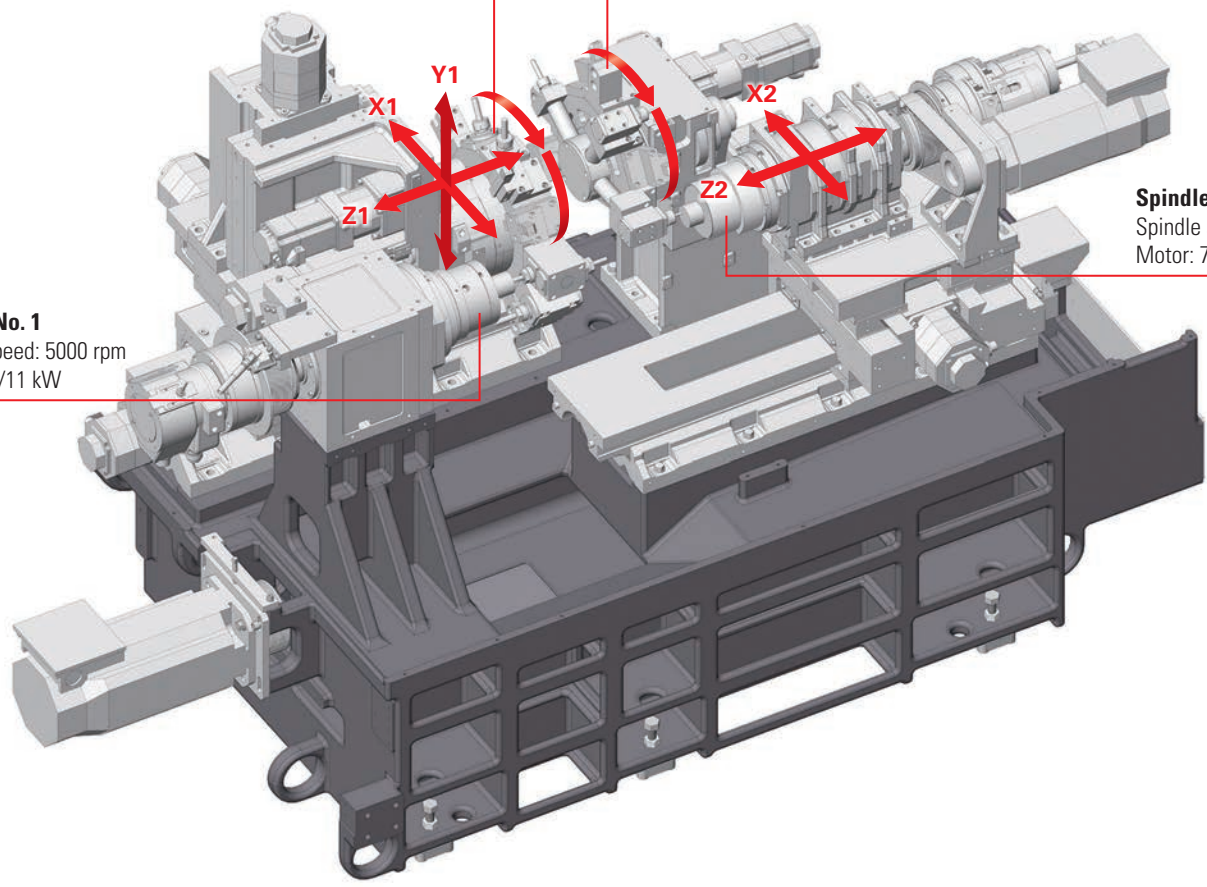
Combined Machining with the Y-axis
The SY type can handle the machining of complex shapes using the main turret's Y axis function.

Machining Time Shortened through Superimposition Machining
Superimposition control, where the move commands of turret No. 2 that can move in the X and Z directions are overlapped on the movement of turret No. 1, thus achieving substantial reductions in machining time.

Basic Construction

Turret No. 1
Type of turret: 12 Station
Number of revolving tools mountable: 12 (25 Nm)

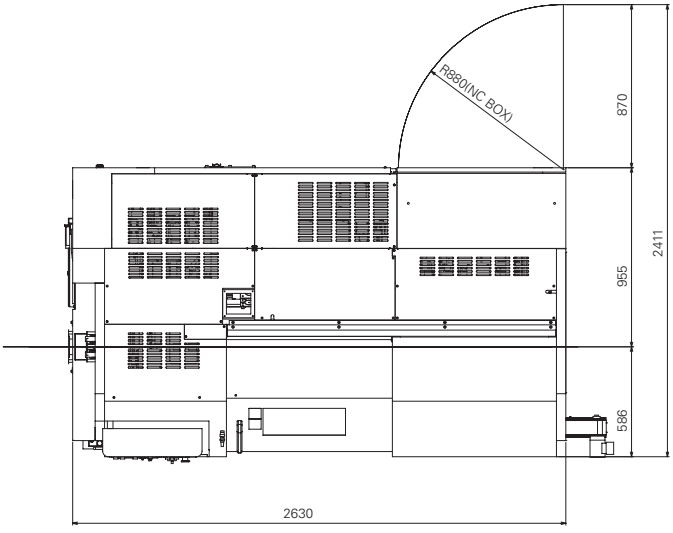
Turret No. 2
Type of turret: 8 Station
Number of revolving tools mountable: 4 (10 Nm)

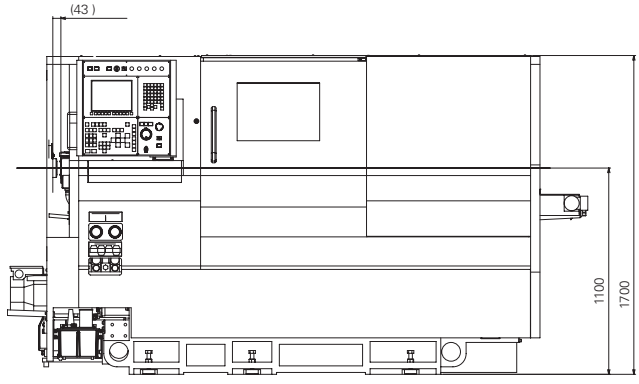


Spindle No. 2
Spindle speed: 5000 rpm
Motor: 7.5/5.5 kW

Spindle No. 1
Spindle speed: 5000 rpm
Motor: 15/11 kW

External View





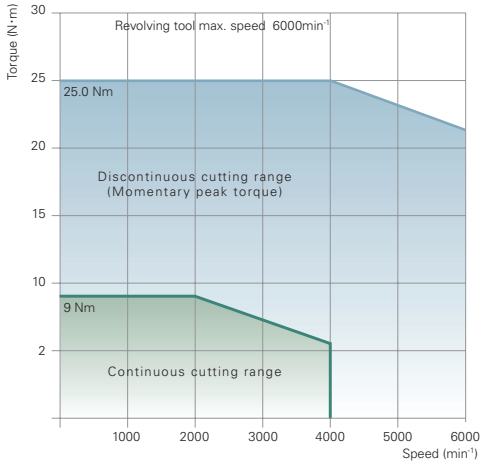
High Rigidity Spindle and Higher Torque Revolving Tools

The BNJ-51 has further increased the rigidity of spindle 1 by adopting the combination of angular contact ball bearings and double-row cylindrical roller bearings at the front, and double-row cylindrical roller bearings at the rear.

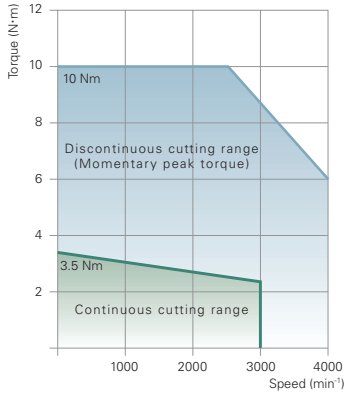
Assembling and inspecting these spindles based on a strict management system gives them ample rigidity and suppression of abnormal heat output, and manageable thermal displacement characteristics, thus facilitating high-precision machining.

In addition, the use of rigid 25 Nm revolving tools on turret No. 1 achieves stable milling.

Revolving Tool Torque Diagram
Turret No.1



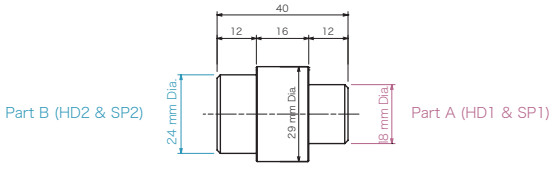
Revolving Tool Torque Diagram
Turret No.2



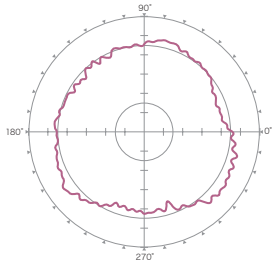
Machining Accuracy

Test piece

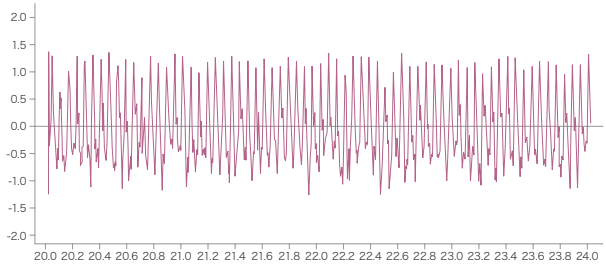
Material:	BSBM (Brass)
Spindle speed:	3,000 rpm
Feed:	0.06 mm/rev
Depth of cut:	0.5 mm (in diameter), 0.25 mm (in radius)



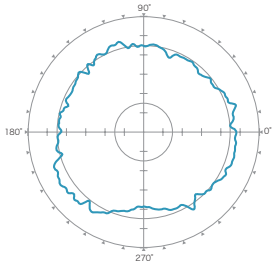
Roundness (part A)
0.66µm



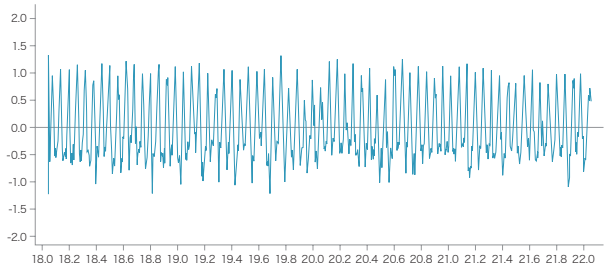
Surface roughness (part A)
Rz 2.5468µm



Roundness (part B)
0.62µm



Surface roughness (part A)
Rz 2.3419µm



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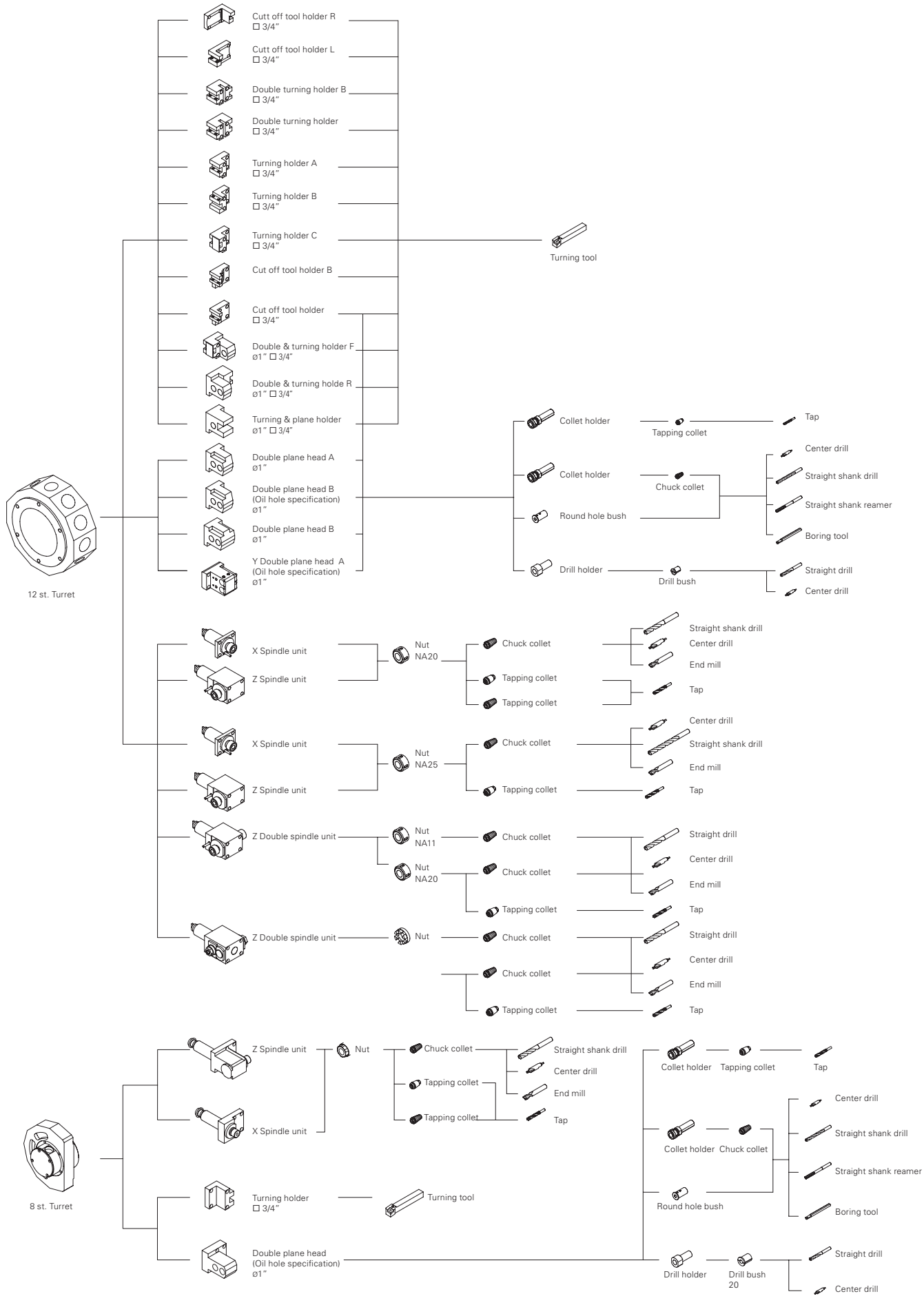
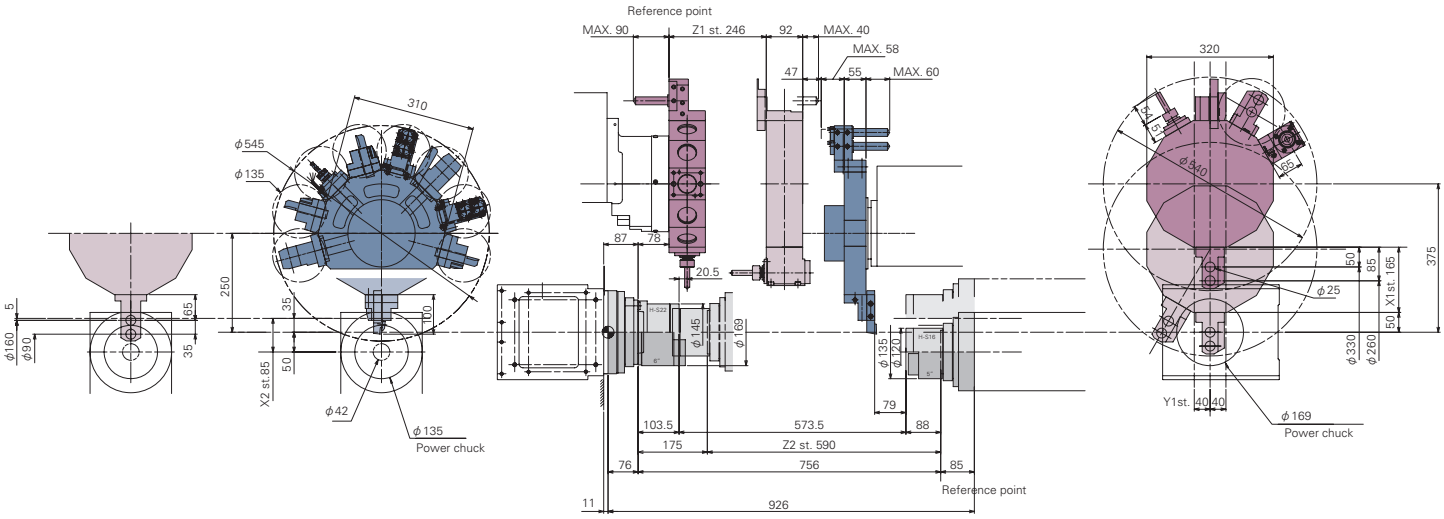
Tooling System



Tooling Area



Accessories



Part catcher (standard)
The part catcher and part conveyor are indispensable for bar work.

Part conveyor (standard)



Drill breakage detector (option)
Drill breakage is detected by the swing cylinder. The machine stops when breakage is detected, and a second accident can be prevented.

Chip conveyor (standard)
This unit ejects chips smoothly and is indispensable for protracted, unmanned operation.

User Friendly Design for Ease of Operation

The operation panel that was at the top of the previous machines has been moved to the left side of the new SY6. Operating convenience has been improved by lowering the position of the operation switches. The generous door opening also improves access to the machining area, lightening the load on the operator.

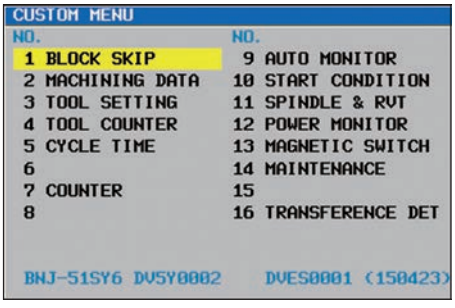
Previous tooling area



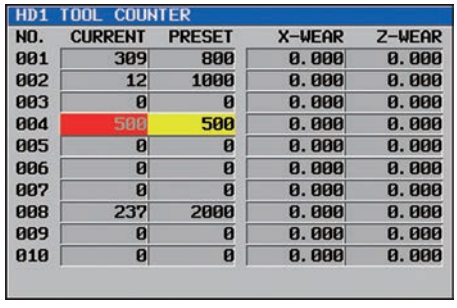
New BNJ-51SY6 tooling area



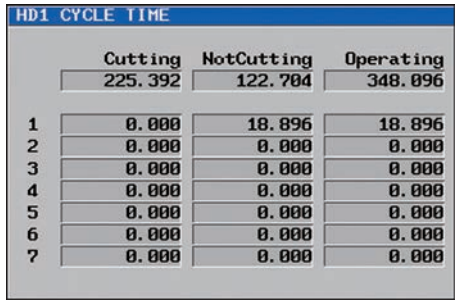
Machining Support Screens Provide Improved Working Efficiency



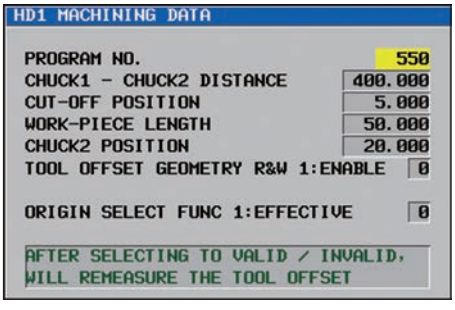
Menu screen
Displays the list of custom screens



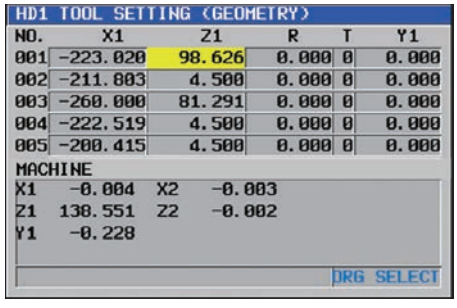
Tool counters
Used to set and reset the tool counter stop value and enter the tool wear offsets.



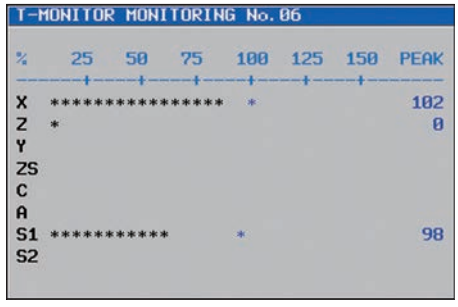
Cycle time display
Measures the cutting time, non-cutting time and running time in each cycle.



Machining data
Entering the machining length and position of the cut-off here makes it easier to measure geometry offsets and to mount tools.



Tool setting
Used to measure geometry offsets. It can also be used for tool mounting support, to ensure that the overhang of all tools is fixed at a constant value.



Tool monitor
Allows you to monitor tool wear and breakage by checking the current state of the machining and status of the cutting tools in terms of numerical values based on the sampling data.

Machine Specifications

Model		BNJ-51SY6
Maximum machining length		100 mm
Diameter of standard cutting	Spindle No. 1	51 mm Dia.
	Spindle No. 2	42 mm Dia.
Chuck size	Spindle No. 1	6 inch
	Spindle No. 2	5 inch
Number of spindles		2
Spindle speed range	Spindle No. 1 & 2	5,000 rpm
Inner diameter of draw tube	Spindle No. 1	52 mm Dia.
	Spindle No. 2	43 mm Dia.
Collet chuck	Spindle No. 1	H-S22
	Spindle No. 2	H-S16, DIN171E
Power chuck	Spindle No. 1	6" thru-hole chuck
	Spindle No. 2	5" thru-hole chuck
Number of turrets		2
Type of turret	Turret No. 1	12 station turret
	Turret No. 2	8 station turret
Shank height of square turning tool		3/4" Sq.
Diameter of drill shank		1" Dia.
Revolving tools		
Number of revolving tool	Turret No. 1	Max. 12
	Turret No. 2	Max. 4
Type of revolving tool	Turret No. 1	Single clutch
	Turret No. 2	Simultaneous drive in all positions
Tool spindle speed range	Turret No. 1	6,000 rpm
	Turret No. 2	3,000 rpm
Machining capacity Drill	Turret No. 1	Max. 13 mm Dia.
	Turret No. 2	Max. 10 mm Dia.
Tap	Turret No. 1	Max. M12 × 1.75 (S45C-D)
	Turret No. 2	Max. M6 × 1.0 (S45C-D)
Turret slide stroke	X1 axis	165 mm
	Z1 axis	246 mm
	Y1 axis	80 (± 40) mm
Spindle slide stroke	X2 axis	85 mm
	Z2 axis	590 mm
Rapid feed rate	X1, Z1, X2, Z2 axes	20 m/min
	Y1 axis	12 m/min
Motors		
Spindle drive	Spindle No. 1 Cs	15/ 11 kw (15 min/cont.)
	Spindle No. 2 Cs	7.5/ 5.5 kw (15 min/cont.)
Revolving tool drive	Turret No. 1	2.2 kw
	Turret No. 2	0.75 kw
Slide		1.2 kw (X1, Z1, Y, X2, Z2)
Hydraulic oil motor		2.2 kw
Lubricating oil motor		0.004 kw
Coolant pump		0.25 kw × 1, 0.18 kw × 1
Turret index motor		0.75 kw
Power supply		
Voltage		AC 200/ 220 ±10% 50/ 60 Hz ±1%
Capacity		33 KVA
Air supply		0.5 MPa
Fuse		100 A
Hydraulic oil tank capacity		10 L
Lubricating oil tank capacity		4 L
Coolant tank capacity		300 L
Machine height		1,700 mm
Floor space		2,630 × 1,540 mm (without chip conveyor)
Machine weight		11,687 lbs

NC Device	Fanuc FS 0i-TF
Controlled axis	Simultaneously controlled axis Max.4
	X1, Z1, Y1, Cs1, A1, A2, X2, Z2, Cs2
Min. input increment	0.001 mm, 0.0001 inch, 0.001 deg
Min. output increment	X axis: 0.0005 mm, Z axis: 0.001 mm
	Y axis: 0.001 mm
Parts program strage capacity	Total 1MB (2,560m Tape length)
Spindle function	Spindle speed S4-digits
	Constant Cutting speed control (G96)
Rapid traverse rate	X1, X2, Z1 axis: 20 m/min
	Z2 axis: 20 m/min
	Y1 axis: 12 m/min
Cutting feed rate	F 3.4 digit per revolution
Cutting feed rate override	0-150% (in 10% increments)
Interpolation	G01, G02, G03
Threading	G32, G92
Canned cycle	G90, G92, G94
Work coordinate setting	Automatic Setting, 64 work coordinate setting by the tool position
Tool selection	by TAABB at the specified position for each
	turret tool wear compensation is selected by BB.
Direct input of tool position	by measured MDI
Input/ Output interface	USB, PC Card slot
Automatic operation	1 cycle operation/ Continuous operation, Single block
	Block delete, Machine lock, Dry run, feed hold
	Optional block skip

NC standard functions

10.4" color LCD
No of resistered programs: 800
Decimal point input
Manual pulse generator
Memory protect
Polar coordinate interpolation
Programable data input (G10)
C-axis control (SP1/SP2)
Superimposed control A
Chamferring/ Corner R
Tool nose R compensation
Background editing
Synchronous mixed control
Operating time/ Parts No. display
Multiple repetitive canned cycle (G70-G76)
Continuous threading
Canned cycle for drilling
Tool life management system
Variable-lead cutting
Rigid tap function (Spindle & Revolving tool)
Circular interpolation
Custom macro
Handle retrace function
Polygon cutting
Synchronized function
Dual check safety
Network I/O function
Reference position setting
Helical interpolation, RS-232C

Others

Splash guard interlock
Coolant
Pneumatic unit
Machine light
Non-fuse breaker
SP2 Work ejector & inner high pressure coolant
Chuck close confirmation
Total & preset counter (Custom menu)
Cut-off confirmation
High pressure coolant
Revolving tool (HD2)
Spindle brake
Air blow
Parts catcher & Parts conveyor
Chip conveyor
Coolant level switch
Bar feeder interface
Signal tower
Automatic power shut-off
Thermo revision

Optional accessories

Drill breakage detector
Part carrier
Chip box
Tool holder, tools, etc.

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