

Miyano

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BNJ-34S3/42S3/34SY3/42SY3/51SY3

CNC Turning Center with 2 Spindles, 2 Turrets and 1 Y-axis Slide

Miyano Evolution Line

BNJ



Cincom **Miyano**

“Evolution and Innovation” is the Future

What could not be done can be done

X-axis movement is added to the traditional self loading mechanism which the main spindle is fixed and the opposed sub spindle can move to the Z-axis direction to receive the workpiece.

Wide space appears immediately after the back working turret is indexed at the concave position, then sub spindle passes.

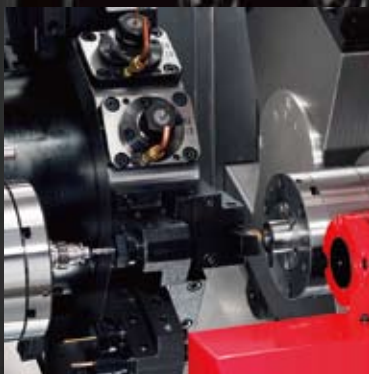
The state-of-art technology of starting full capacity machining immediately after turret index completion reduces idle time and make it possible to do complete machining including eccentric machining and multiple machining, which other machines cannot do.





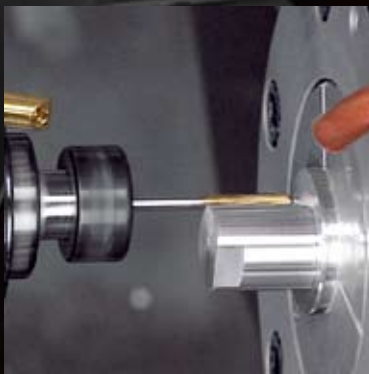
Simultaneous machining by main and back-working turrets

Simultaneous machining of work pieces on the L-spindle with the main turret and work on the R-spindle with the back working turret is the key to high efficiency.



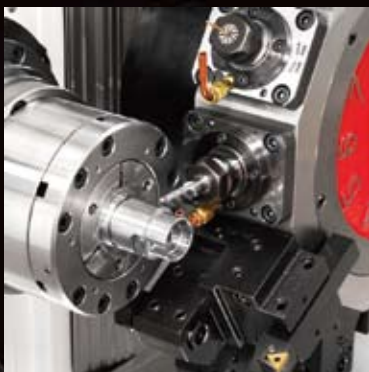
Simultaneous, overlapping machining for the front and back operations

Overlapping control, which enables the R-spindle to precisely follow the movement of the main turret, reduces machining time for operations such as turning operation and combined machining with the Double sided revolving tool.



Off-center machining on the R-spindle

The off-center collet on the R-spindle enables off-center machining including combined machining such as crank machining which other machines are not capable of.



Combined machining on the Y-axis

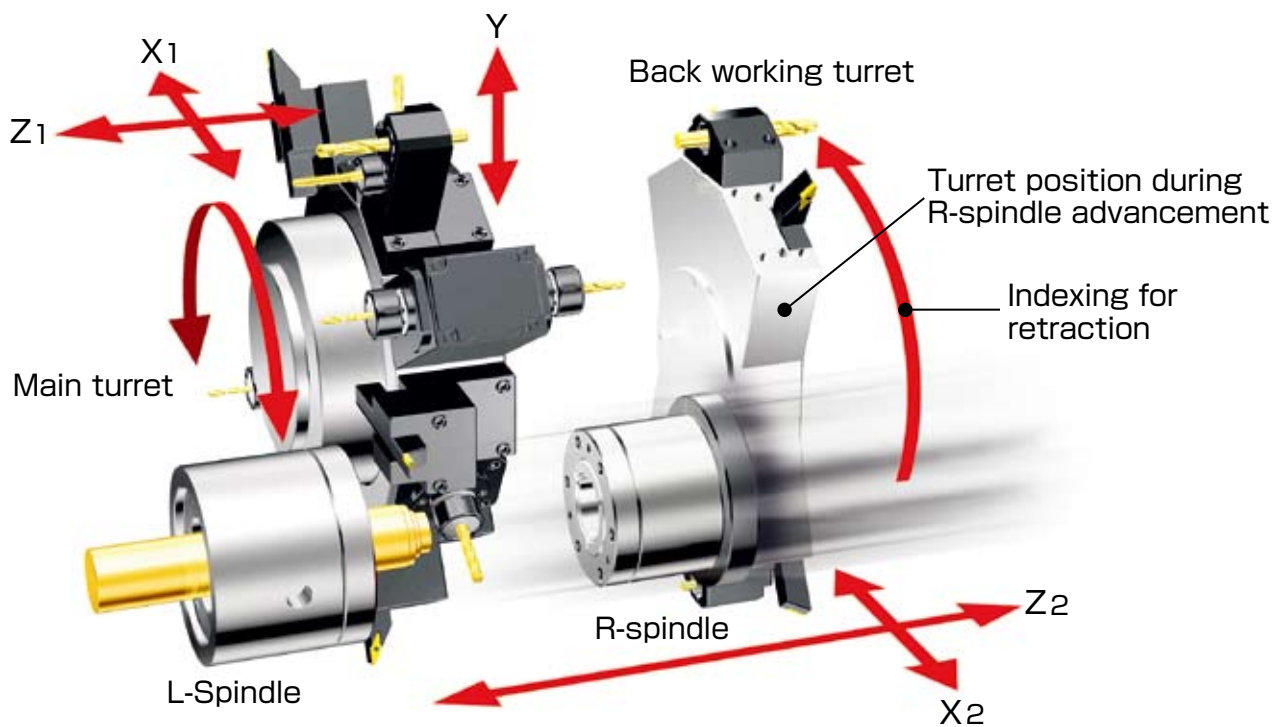
The Y-axis function of the main turret enables side milling which previously required both C-axis and end milling. This also enables large diameter threading and machining of work pieces with large pockets and bosses which were previously difficult to machine.

Machining at full capacity starts immediately after indexing the back working turret and the entire operation is completed in a single process as a result of combined machining. Cranks and off-center bushes can also be machined.

Machining at full capacity starts immediately after indexing the back working turret

The backworking turret has two concave sections. Immediately after this turret is indexed to a concave section, clearance is created to allow the R spindle to

gain access to rearward facing tools mounted on the main turret and/or to collect the workpiece from the L spindle. This new innovation results in reduced idle times.



Off-center machining by X-axis shift

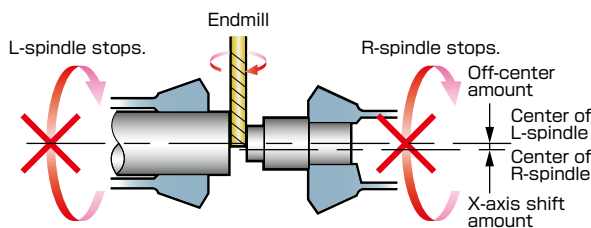
The off-center collet is installed in the R spindle and the R spindle is shifted horizontally in the X-axis direction by the off-center dimension. Then the chuck centers of the L and R spindle are aligned. The R spindle traverses to the left and chucks the workpiece that has been partially parted

off. The workpiece is fully parted off by using an end mill to allow the operation to begin. Off-center machining on parts such as cranks, bushes can begin on the R spindle. Double off-center machining can also be carried out manually.

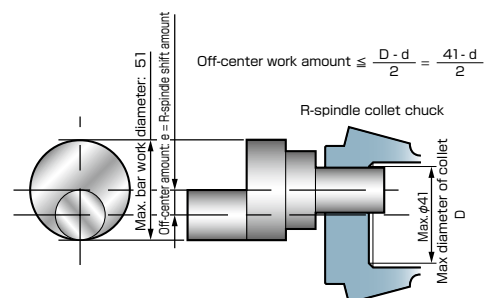
Examples of Machining



Cut-off with endmill



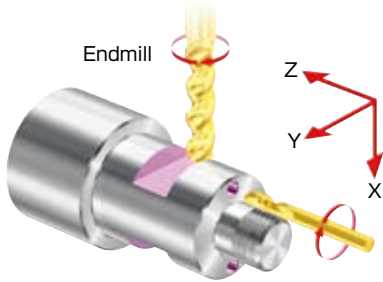
Reference of off-center amount



A wide variety of combined machining with revolving tools

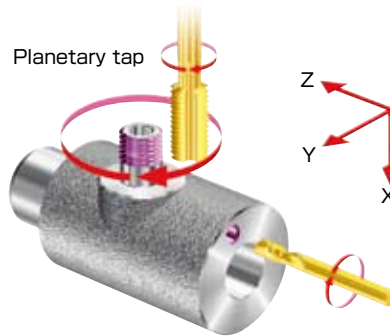
Basic combined machining

In addition to conventional cross drilling, tapping and face tapping on the main spindle's center axis, a Y-axis allows for off-center drilling, tapping, and milling.



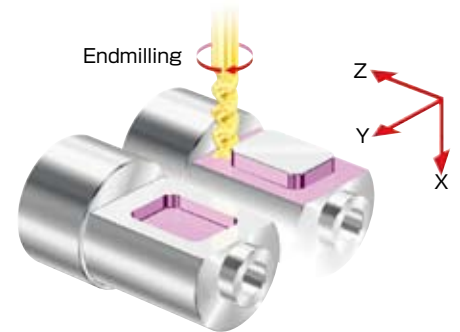
Large Diameter Helical Threading (Option)

(Option)



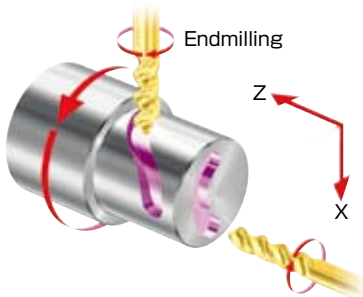
Milling of large pockets and bosses

Linear and circular interpolation makes it possible to machine large OD pockets and bosses on the Y-Z plane.



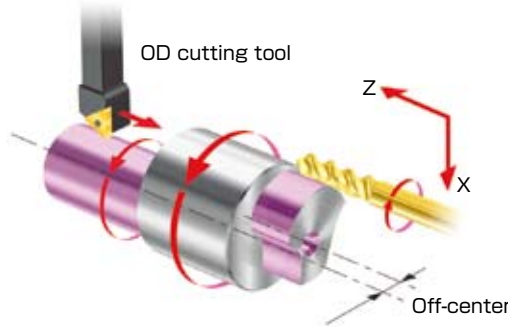
Contour Milling

Combining the C-, X-, and Z-axes makes it possible to do contour milling with simultaneous 3-axis control.



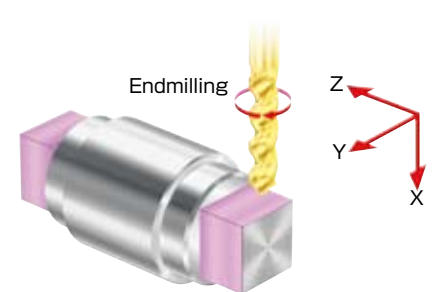
Contouring milling + Off-center machining

One side is machined off-center by contour milling and the other side is machined off-center on the off-center chuck. Double off-center machining can be performed on the machine.



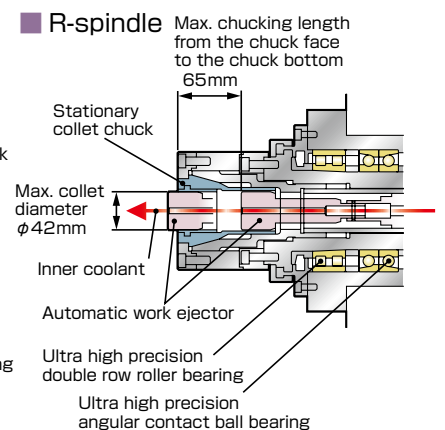
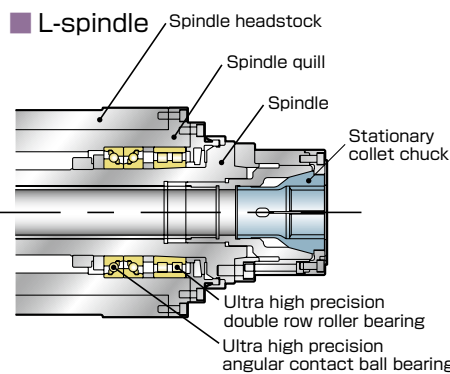
High precision milling

Accurate positioning by the C-axis and high precision combined machining by the Y-axis allow for a wider range of machining.

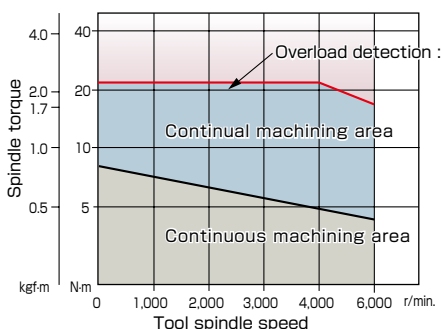


The L/R-spindles and tool spindles enable stable machining

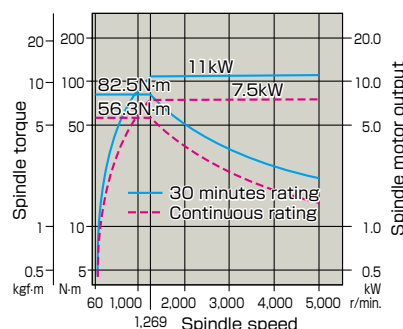
Double row roller bearing and angular contact ball bearing used for the front bearing and double row roller bearing used for the back bearing are mounted in the quill housing for both L and R axes. This makes it possible to achieve sufficient rigidity, heat control, and flexible thermal distortion qualities to facilitate the production of high precision parts. Tool spindles are driven by a tough AC servo motor to achieve stable machining and overload protection.



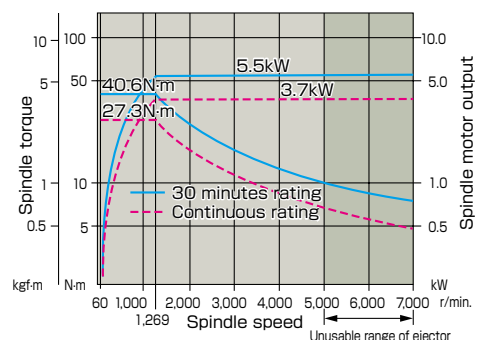
Torque Diagram of Tool Spindle



L-spindle Power Diagram



R-spindle Power Diagram

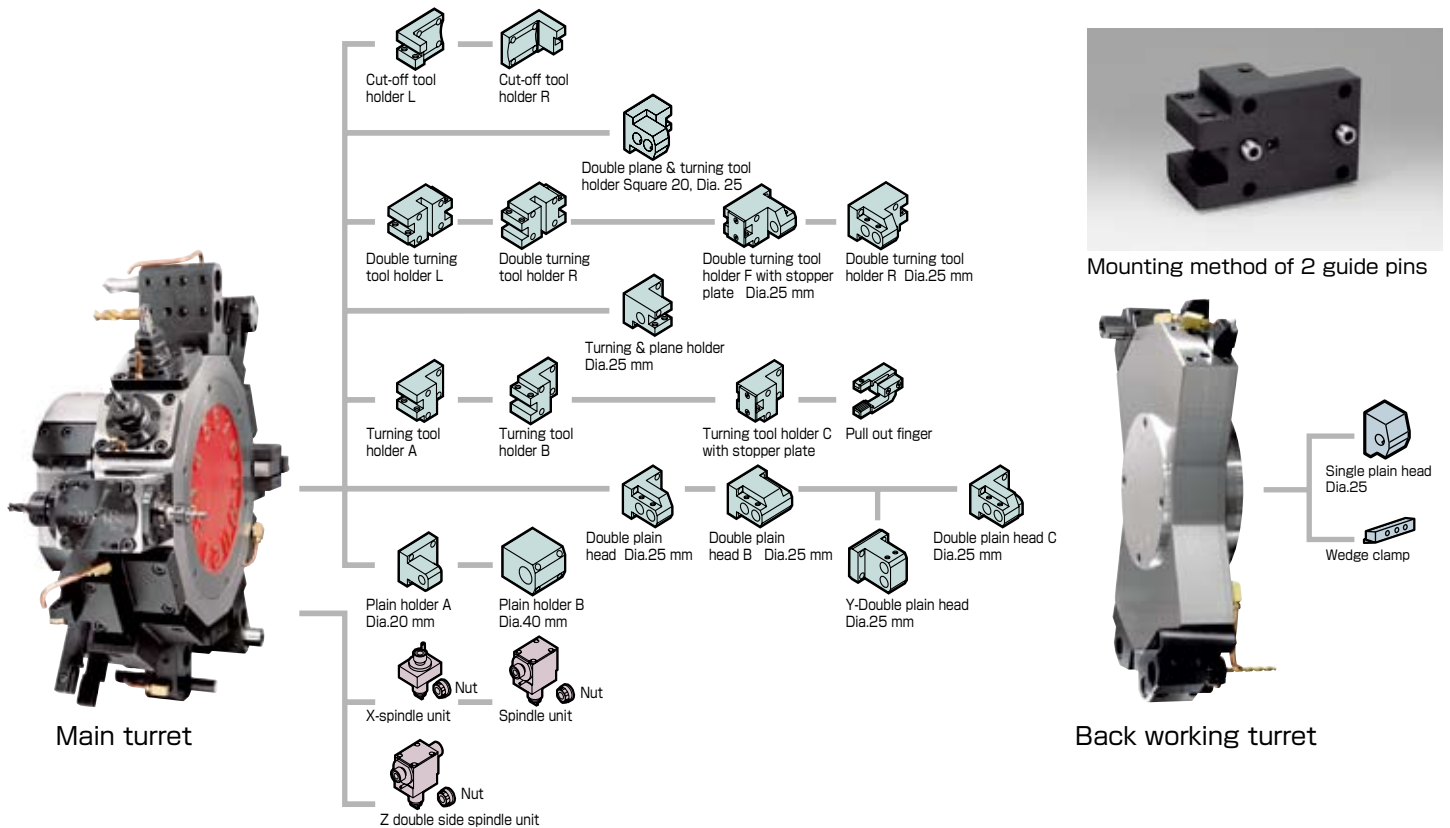


A tooling system that is ideal for bar work machining and abundant options for a wide tooling zone.

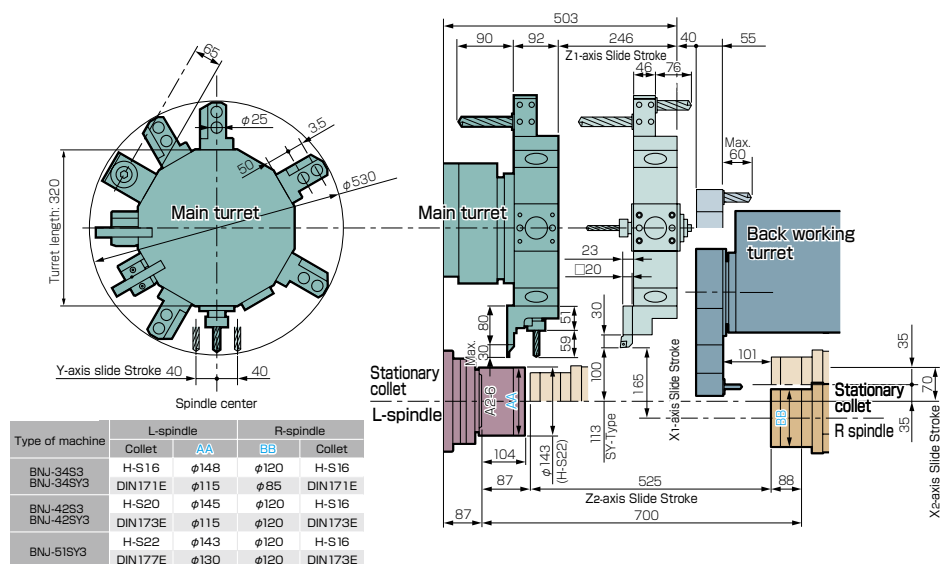
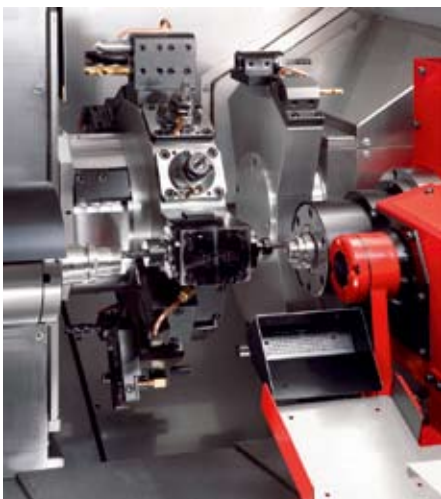
Tooling system

Since this model employs the same tooling system as the ABX series, the tool holders are completely compatible. Ideal tooling is achieved by selecting the most appropriate tool holders. When the bar feeder is not attached to the machine, a pull out finger chuck is available, which is

commonly used for round bar, hexangular bar and square bar. The back working turret is a turret for back side machining. The OD cutting tool is directly mounted on the turret as a wedge and the ID cutting tool is mounted on the holder.



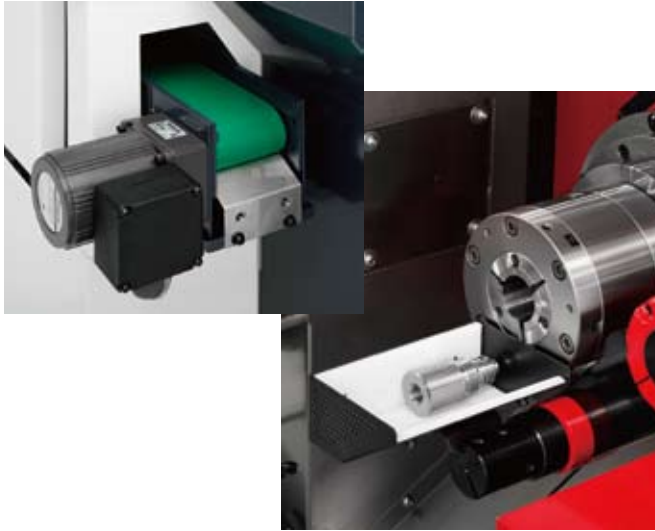
Tooling area



Various options

● Parts catchers and parts conveyors

Parts catcher & Parts conveyor is the requirement for bar work machining.



● Chip conveyor

This chip conveyor is a universal hinge type. It enables high precision machining by smoothly carrying out large volumes of chips and eliminating chip heat generated during prolonged machining. A chip conveyor is the indispensable for prolonged operation. Please consult with us when using special work piece materials for machining.



● Revolving tools

The standard tooling is a simple setup consisting of an X-spindle unit and a Z-spindle unit. The rigid tapping function (optional) is used for tapping. The tapping collet is mounted only in special situations.



● Tool-break detection for drill

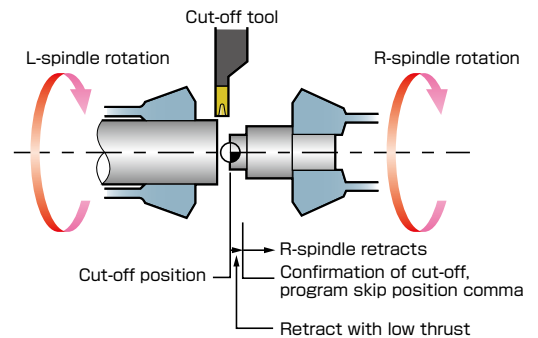
Drill breakage is detected by the swing cylinder.

The machine stops when breakage is detected, second accident can be protected.



● Cut-off confirmation

This is a function to confirm that cut-off of the work piece is completed and the R-spindle can traverse with low thrust to the retract position for cut-off confirmation and program skip. The safety and reliability of this function makes it easier to avoid mechanical troubles.



NC SPECIFICATIONS

MIYANO-FANUC



● Simultaneously controlled axes	4axes / 2 paths, X1,Z1,Y1,Cs1,A1(Rev. tools) / X2, Z2, Cs2
● Min. input increment	0.001mm, 0.0001 inch, 0.001 deg.
● Min. output increment	X-axis:0.0005mm, Z-axis: 0.001mm
● Parts program storage capacity	512 kb, 1,280m (4,200 feet)Tape length
● Spindle function	Spindle speed S4 digits direct specify, Constant cutting speed control(G96)
● Rapid traverse rate	X1,X2, axis:18m/min. (708ipm) , Z1,Z2,axis:20m/min.(787ipm) Y-axis 12m/min.(472ipm)
● Cutting feed rate	F3.4 digit direct specify
● Cutting feed rate override	0 ~ 150% (10% steps)
● Interpolation	G01, G02, G03
● Threading	G32, G92
● Canned Cycle	G90, G92, G94
● Work coordinate setting	Automatic setting, 64 sets by the geometry offset function
● Tool selection and work coordinate system selection	Tool selection 1 ~ 64 can be done by the first two digit of the T-4 digit code.
● Tool wear offset	Tool wear selection 1 ~ 64 sets can be done by the last two digit of the T-4 digit code.
● Direct input of tool positions	Measured value can be directly key in
● Input/Output interface	RS-232C, PC Card Slot.
● Automatic operation	Single/Continuous cycle operation. Single block operation, Block delete, Machine lock, Dry run, Optional block skip.
● Others	10.4" Color LCD, 800 storage parts programs, Decimal point input Manual pulse generator, Memory protect, AC digital servo Polar coordinate interpolation, Programmable data input(G10) Cs-axis control(L/R Spindle)
● Basic Options	Chamfering/Corner R control, Tool nose R compensation, Background editing Run hour/Parts count display, Synchronous mixing feed function Multiple repetitive canned cycle(G70 ~ G76), Drilling canned cycle Continuous threading, Tool life management system Continuous multi-lead thread cutting, Rigid tapping function(Spindle / Revolving Tools) Cylindrical interpolation, Custom macro B
● NC Additional Function	Manual retrace function, Macro executor, Additional parts program storage (1Mbyte)
● NC Options	Helical interpolation

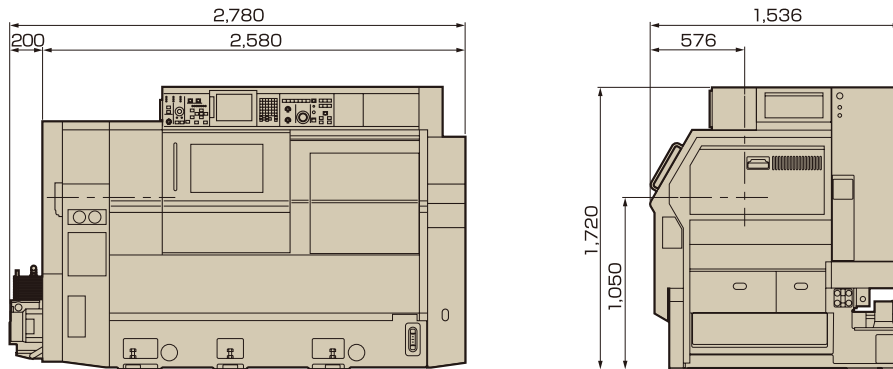
MACHINE SPECIFICATIONS

Items	Model Name	BNJ-34S3	BNJ-42S3	BNJ-34SY3	BNJ-42SY3	BNJ-51SY3
Machining Capacity & Chucking System						
Max. Bar Capacity	L-spindle	Φ 34mm (1.34" Dia.)	Φ 42mm (1.65" Dia.)	Φ 34mm (1.34" Dia.)	Φ 42mm (1.65" Dia.)	Φ 51mm (2" Dia.)
	R-spindle	Φ 34mm (1.34" Dia.)	Φ 42mm (1.65" Dia.)	Φ 34mm (1.34" Dia.)	Φ 42mm (1.65" Dia.)	Φ 42mm (1.65" Dia.)
Type of Collet Chuck	L&R-spindle	Stationary	Stationary	Stationary	Stationary	Stationary
Standard Turning Length		100mm	100mm	100mm	100mm	100mm
Size of Power Chuck	L/R-spindle	5" / 4"	5" / 4"	5" / 4"	5" / 4"	6" / 5"
Spindle						
Spindle Nose	L/R-spindle	Sp. Flat/Sp. Flat	Sp. Flat/Sp. Flat	Sp. Flat/Sp. Flat	Sp. Flat/Sp. Flat	A2-6/Sp. Flat
Spindle Speed Range	L-spindle	80 ~ 7,000min ⁻¹	60 ~ 6,000min ⁻¹	80 ~ 7,000min ⁻¹	60 ~ 6,000min ⁻¹	50 ~ 5,000min ⁻¹
	R-spindle	67 ~ 5,000min ⁻¹	67 ~ 5,000min ⁻¹	67 ~ 5,000min ⁻¹	67 ~ 5,000min ⁻¹	67 ~ 5,000min ⁻¹
Spindle Motor (30min./Cont.)	L-spindle	7.5/5.5 kW	11/7.5 kW	7.5/5.5 kW	11/7.5 kW	11/7.5 kW
	R-spindle	5.5/3.7 kW	5.5/3.7 kW	5.5/3.7 kW	5.5/3.7 kW	5.5/3.7 kW
R-SP Slide Stroke	X2	70 mm	70 mm	70 mm	70 mm	70 mm
	Z2	525 mm	525 mm	525 mm	525 mm	525 mm
Main Turret						
Type of Turret Station		12 Station	12 Station	12 Station	12 Station	12 Station
Turret Indexing Time		0.25sec./1st.	0.25sec./1st.	0.25sec./1st.	0.25sec./1st.	0.25sec./1st.
Turret Indexing Methods		AC Servo & Curvic C.	AC Servo & Curvic C.	AC Servo & Curvic C.	AC Servo & Curvic C.	AC Servo & Curvic C.
Slide Stroke	X1	165 mm	165 mm	165 mm	165 mm	165 mm
	Z1	246 mm	246 mm	246 mm	246 mm	246 mm
	Y1	---	---	± 40 mm	± 40 mm	± 40 mm
Back-working Turret						
Type of Turret Station		6 Station	6 Station	6 Station	6 Station	6 Station
Turret Indexing Time		0.2sec./1st.	0.2sec./1st.	0.2sec./1st.	0.2sec./1st.	0.2sec./1st.
Turret Indexing Methods		AC Servo & Curvic C.	AC Servo & Curvic C.	AC Servo & Curvic C.	AC Servo & Curvic C.	AC Servo & Curvic C.
Revolving Tools (Main Turret / Option)						
No. of Revolving Tools Station		12	12	12	12	12
Tool Speed Range		60 ~ 6,000min ⁻¹	60 ~ 6,000min ⁻¹	60 ~ 6,000min ⁻¹	60 ~ 6,000min ⁻¹	60 ~ 6,000min ⁻¹
Tool Motor		2.5 kW	2.5 kW	2.5 kW	2.5 kW	2.5 kW
Machining Capacity	Drill/Tap	Φ 13mm/M8xP1.25	Φ 13mm/M8xP1.25	Φ 13mm/M8xP1.25	Φ 13mm/M8xP1.25	Φ 13mm/M8xP1.25
Machine Dimensions						
Machine Height		1,720mm (67.7")	1,720mm (67.7")	1,720mm (67.7")	1,720mm (67.7")	1,720mm (67.7")
Floor Space		2,780mm x 1,536mm (109.5" x 60.5")	2,780mm x 1,536mm (109.5" x 60.5")	2,780mm x 1,536mm (109.5" x 60.5")	2,780mm x 1,536mm (109.5" x 60.5")	2,780mm x 1,536mm (109.5" x 60.5")
Machine Weight		5,500kg (12,125Lbs.)	5,500kg (12,125Lbs.)	5,500kg (12,125Lbs.)	5,500kg (12,125Lbs.)	5,500kg (12,125Lbs.)
Others						
Splash Guard Interlock, Coolant, Pneumatic Unit, Machine Light, Regular Hand Tools Kits & Box						
Options						
Collet Chuck System, Power Chuck System, Cut-off Confirmation, High Pressure Coolant, Revolving Tools and Drive Unit, Work Ejector, R-spindle Inner Coolant and air blow Spindle Brake System(L&R-spindle), Air Blow, Parts Catcher and Parts Conveyor, Coolant Level Switch, Drill Breakage Detector, Chip Conveyor, Chip Box, R-spindle Through Parts Carrier Magazine Bar Feeder, Signal Tower(3 steps)						

The specifications are subject to change without notice, Standard equipment package may vary by region.
Machines in photos may not look exactly the same as the actual products.

[Japanese patent No.4090748]

EXTERNAL VIEW



CITIZEN MACHINERY MIYANO CO., LTD. (Miyano Company)

CITIZEN
Micro HumanTech

JAPAN	CITIZEN MACHINERY MIYANO CO.,LTD. 500 Akazawa, Yabuki-machi, Nishishirakawa-gun, Fukushima-ken 969-0206, Japan	TEL.81-248-44-3050 FAX.81-248-44-3051
SOUTH ASIA	CITIZEN MACHINERY ASIA CO.,LTD. 69 Moo 1 Phaholyothin Road, Sanuhtube, Wang Noi, Ayutthaya 13170, THAILAND	TEL.66-35-721-833 FAX.66-35-721-835
CHINA	CITIZEN CHINA PRECISION MACHINERY CO.,LTD. 366,HENGTONG ROAD OF ZHOUCUN, ZIBO, SHANDONG, P.R.CHINA	TEL.86-533-6150560 FAX.86-533-6161379
EUROPE-Germany	CITIZEN MACHINERY EUROPE GmbH Mettinger Strasse 11, D-73728 Esslingen, GERMANY	TEL.49-711-3906-100 FAX.49-711-3906-106
EUROPE-UK	CITIZEN MACHINERY UK LTD. 1 Park Avenue, Bushey, WD23 2DA, UK	TEL.44-1923-691500 FAX.44-1923-691599
AMERICA	MARUBENI CITIZEN-CINCOM INC. 40 Boroline Road Allendale, NJ 07401, U.S.A.	TEL.1-201-818-0100 FAX.1-201-818-1877

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