CITIZEN







BNA42SY

Two BNA Series models with improved basic functions

A surface plate structure, a tradition of the Miyano brand, has been carried over for the bed, an essential element for machining, while both size and weight have been increased in order to improve damping performance. Additionally, the coolant tank capacity has been increased to improve thermal stability. Rigidity of the entire turret tool post has been increased, and equipping with a Y axis enables the use of 12 stations. The number of installed tools has also been increased.



BNA42CY

The cover has been completely redesigned to improve workability.

The opening has been enlarged for easier access and provided with a large window to improve visibility. The port through which chips fall has been enlarged and the removal port has been moved closer to the outer edge of the cover to make it easier to clean away chips.

These new NC units are standard-equipped with a dual-check safety function to improve safety and productivity.



SY type with improved performance as a bar-material processing machine

The SY type has a dual-spindle/single turret tool post mechanical configuration, and the base and turret rigidity has been increased to improve basic functions.

The turret tool post has been equipped with a Y axis to expand the number of installed tools to 12 stations in order to provide the use of a rich assortment of tools, as well as simultaneous left/right machining for superimposed machining and similar processes.

The tool holder and rotary tools are the same used for the current BNA Series and the program compatibility is also ensured.



Basic structure and axis configuration

The newly designed base increases the weight of the unit and also improves rigidity.

Rectangular lapped slides have been adopted for all slides.

The sliding contact between surfaces provides excellent rigidity and damping performance, as well as strong cutting performance, while also helping to extend the service life of cutting tools.

Additionally, the Z-stroke travel distance has been increased to 50 mm to expand the range of machining available.



Left/Right simultaneous machining reduces processing time

Simultaneous machining using both left and rightside spindles enables the turret tool post and front spindle to perform machining while the back spindle follows after to perform superimposed and similar types of machining, thereby further reducing the processing time.



Superimposed machining

$\mathsf{LFV}^{\mathsf{Option}}$

LFV* is a technology for performing machining while vibrating the X and Z servo axes in the cutting direction in synchrony with the rotation of the spindle.

It reduces various problems caused by chips entangling with the product or tool, and is effective for small-diameter deep hole machining and the machining of difficult-to-cut materials.

* "LFV" is a registered trademark of Citizen Watch Co., Ltd.

Туре	X, Z	Y	B(Z2)
BNA42SY	0	×	×

Note 1, LFV function is available only for BNA42SY

Note 2. LFV machining can be performed simultaneously on a maximum of two axes



of the same weight SUS304

LFV mode 1 Ideal for outer/inner diameter machining and groove machining Multiple vibrations per spindle revolution







Conventional cutting

LFV



CY type enables use as a chucker machine

The CY type was developed under the concept of "Bar and Chucker".

The simple structure of one spindle for one turret tool post can not only perform bar material machining, but you can also combine options such as power chucks or a chip conveyor with rear discharge together with supply/discharge units, such as a gantry loader manufactured by another company, in order to incorporate the CY type into a production line as a chucker machine.



Basic structure and axis configuration

The newly designed base increases the weight of the unit while also improving rigidity.

Combining with a tailstock^{OPT.} enables use of long workpieces.

Mounting eyes for the legs of the gantry loader are provided on the left and right side faces of the bed.

You can select whether the chip conveyor discharges to the right or the rear.



Gantry loader provided as standard equipment

Standard equipment includes mounting eyes for the legs of the gantry loader, a loader hand insertion space above the spindles, and a loader interface. Compatibility is provided for installation of a gantry loader by another manufacturer.

An automatic shutter OPT that secures space for the loader hand to enter the machine can also be mounted.



Rear-discharge chip conveyor OPT.

This chip conveyor allows for rear discharge in addition to the current side discharge. This increases the options for the installation method used.



Short-term increase in rated power of the front spindle

Power is increased up to 11 kW during spindle acceleration and deceleration to help reduce the cycle time.



Machining Support Screens



Machining data

Entering the machining length and position of the cutoff here makes it easier to measure geometry offsets and to mount tools.



Total & preset counter

Used to set the stop value for the product counter and to reset the count value.

Options

HO.	XX	-21	R T	71
1991	-50, 800	-181.000	0.008.01	8.006
002	-58,080	-100.000	0.008 0.	0.800
000	-58.000	-100.000	0.000 0	0.000
884	-58,000	-189,990	0.000 0	0.000
865	-50,000	-180,000	0.000.0	0.000
MIKH	I HE			
XI	-2,958	72 -8.0	11	
21	-25.460			
11	-0.763			

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.

	Poser	- Zhour 8	perst. Lise
	0.053	0.159	1190.560
1 1	1.245	0.100	0.006
2	1.245	0.008	0.000
3	1.245	0.900	0.000
4	1.245	0.000	0.000
5	1.245	0.000	0.000
6	1.245	0.000	0.000
9	1.245	0.809	B. 606

Power consumption monitor

Allows monitoring of the power consumption per cycle time, day, or month.

NO.	CURRENT	PRESET	X LIDER	2-4696
DOL	0	0.1	B. ERH	87.000
002	0		-0.010	0.200
003		0	0.025	0.030
884	U.		8.500	0.000
865		8	0,000	0.000
000	U	8	0.000	0.000
007	0		6,060	0.000
066	0		0.000	0.000
600	0	0	0.000	0.000
1118	18		0.000	11. 0130

Tool counters

Informs you of the timing (count-up) for tool changes in accordance with the set tool counter stop value.

You can also enter wear offsets.



revolving tool unit

Allows you to set the rotational speed (in manual operation) of the spindle and revolving tools, and to set the spindle override.

	Outting	NotCutting	Operating
	0.000	1155.000	1155.000
1	8.000	11.600	11.600
2	8,010	11.504	11.504
3	0.000	11.632	11.632
4	0,000	11.600	11.606
5	8,000	11.600	11.600
6	0.000	11.632	11.632
9	8,608	11.615	11.616

Cycle time

Allows you to measure the cutting time, non-cutting time and running time in each cycle.



Start condition screen Displays information on the

start conditions for automatic running.



Part catcher Receives finished workpieces. This option is indispensable for bar work.



Cut-off confirmation

This is a function that moves the sub spindle to the retract position at a low thrust after the workpiece has been cut off to check for failure in the cut-off operation.



Drill breakage detector

Drill breakage is detected by the swing cylinder. The machine stops when breakage is detected, and a second accident can be protected.

Tooling area

BNA42SY



BNA42CY



Tooling system





External view

BNA42SY







BNA42CY







Machine Specification

Item			BNA-42CY5	BNA-42SY5
Capabilities/Capacities				
Max. machining length			200 mm	100 mm
Standard machining diameter (Chuc	k diameter)	SP1	42 mm dia.	
		SP2		34 mm dia.
Travel distance				
Turret slide travel distance	X axis		140 mm	
	Z axis		285 mm	
	Y axis		70 (+/-35) mm	
Back spindle slide travel distance	B axis			360 mm
Spindles				
Number of spindles			1	2
Spindle speed	SP1		60 to 6,000 min ⁻¹	
	SP2		10 1	50 to 5,000 min '
Closing tube through-hole diameter	SP1		43 mm dia.	
Callet abush tree	SP2		DIN170E DR	30 mm dia.
Collet chuck type	SPI		Hardinge S20, DIN173E, B&S	#22D, JPN34, Hainbuch
	582			JPN, DINT/TE
Dower obyek type	CD1		F" and G" hallow abuaka	DIN173E, BQS #22
Power chuck type	500		5 and 6 hollow chucks	5 Hollow chuck
Tool post	JF Z			- HOHOW CHUCK
Number of tool posts			1	
Type of tool post			12 ST	
Opposite side distance of tool pos	t		300 mm	
Max turning radius of tool post			505 mm dia	
Dimensions of tools used			20 mm sg	
Dimensions of tool post holes			25 mm dia	
Rotary tools				
Number of installed rotary tools			Max.12	
Type of rotary tool drive			Independent clutch drive	
Rotating speed of rotary tools			50 to 5.000 min ⁻¹	
Machining capacities	Drill		Max. 10 dia.	
5 .	Тар		Max. M6 × 1	
			(Limited to spiral and point ta	ps for M8 x 1.25)
			Max. M8 x 1.25 for BSBM	
Feed rate				
Rapid feed rate	X axis		20 m/min	
	Z axis		20 m/min	
	Y axis		12 m/min	
	B axis			20 m/min
Slide thrust				
	X axis		5 kN	
	Z axis		5 kN	
	Y axis		6.7 kN	
	B axis			5 kN
Tailstock				
	Max. travel di	stance	200 mm	
	Morse taper	size	МГ2	
	Max. slide th	rust	4.3 kN (at 3.4 MPa)	
	Min. slide th	rust	0.57kN (at0.45 MPa)	
Mastan	Drive metho	a	Hydraulic	
Spindle meter	CD1		11/7 5/5 5 104/1450/145	(cont)
Spinale motor	501		E E (2 7 k) ((15%/ 15 m)	i/ cont.)
Botany tools motor	372			
Coolant numn motor			0.25 K/M	
High prossure coolent motor			1 1/0 75 k/M/ (60/ 50Hz)	
Required power source			1.170.75 KW (00/ 50112)	
Power supply			AC 200/ 220 +5%/-10% 50/	60 Hz +1%
Power supply capacity			16 kVA	26 kVA
Air pressure source			0.5 MPa	
Fuse capacity on facilities side			75 A	100 A
Tank capacities				
Hydraulic tank capacity			18 L	
Lubricating oil tank capacity			2 L	
Coolant tank capacity			235 L	
Machine size				
Machine height			1,745 mm	
Required floor surface area			W 2,260 x D 1,433 mm	W 2,350 x D 1,433 mm
Machine weight			3,220 kg	3,650 kg
			CITIZEN M	ACHINERY CO., LTD.

Control unit		BNA-42CY5	BNA-42SY5
Control ovio		FS.0i-TF PLUS	
HD1		X1 71 Y1 C1 E1 (Turret)	X1 71 Y1 B1 C1 C2
no i		A1 (Botany tools)	(Turret) A1 (Botany to
			During superimposed
			operation: X1, 71, Y1,
			C1, E1 (Turret)
			A1 (Rotary tools)
HD2			During superimpos
			operation: Z2, C2,
Feed axis abso	olute position detector	[•] X, Z1, Y1	X1,Z1,Y1,B
Min. set un	it	0.001 mm/0.001 deg.	
Interpolation	n function		
Positioner		G00	
Linear inte	rpolation	G01	
Circular int	erpolation	G02, G03 (multiple quadra	ants available)
Dwell		G04	
I nreading	rooding	G32	
Iviuitiple tr	reading	G33	
Peed function	on Jing override	0 to 100% (10% increme	nto)
Cutting foor	ling override	0 to 100% (10% increme	nts)
Por minuto fo	a speed overhide	C09/C00	nts)
Manual ba	ndle feeding	x1 x10 x100	
Reference	noint return	G28	
Reference	point return chuck	G27	
2nd refere	nce point return	G30 or G30P2	
Program inr	out function	223 0. 000. 2	
Tape code		EIA/ISO auto-detection	
Absolute o	commands	X,Z,Y,C	X,Z,Y,C,B
Increment	al commands	U, W, V, H	
Programm	able data input	G10	
Coordinate	system settings	G50	
Workpiece	coordinate system	G54 to G59	
Program sto	brage and editing]	
Program s	torage capacity	512 Kbyte	1 Mbyte (Two system to
Number of re	gistered programs	400	800 (Two system to
Spindle and	supplementary	functions	
Spindle fui	nctions	S4 digits	
Suppleme	ntary functions	M3 digits	
Constant per	ipneral speed contro	1G96	
Tool functi	ione	T4 digits command	
Toor functi	0113	Linner 2 digits' Tool selec	tion & Geometry off
		Lower 2 digits: Wear offs	et
Nose radiu	is compensation	G40,G41,G42	
Operating f	unctions		
Optional s	top	M01	
log foodi-	g	0 to 1,260 mm/min	
Jug reeain	it interface		
Input/Outpu	10 1110011000		
Input/Outpu PC card slo	ot and USB men	hory slot	
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