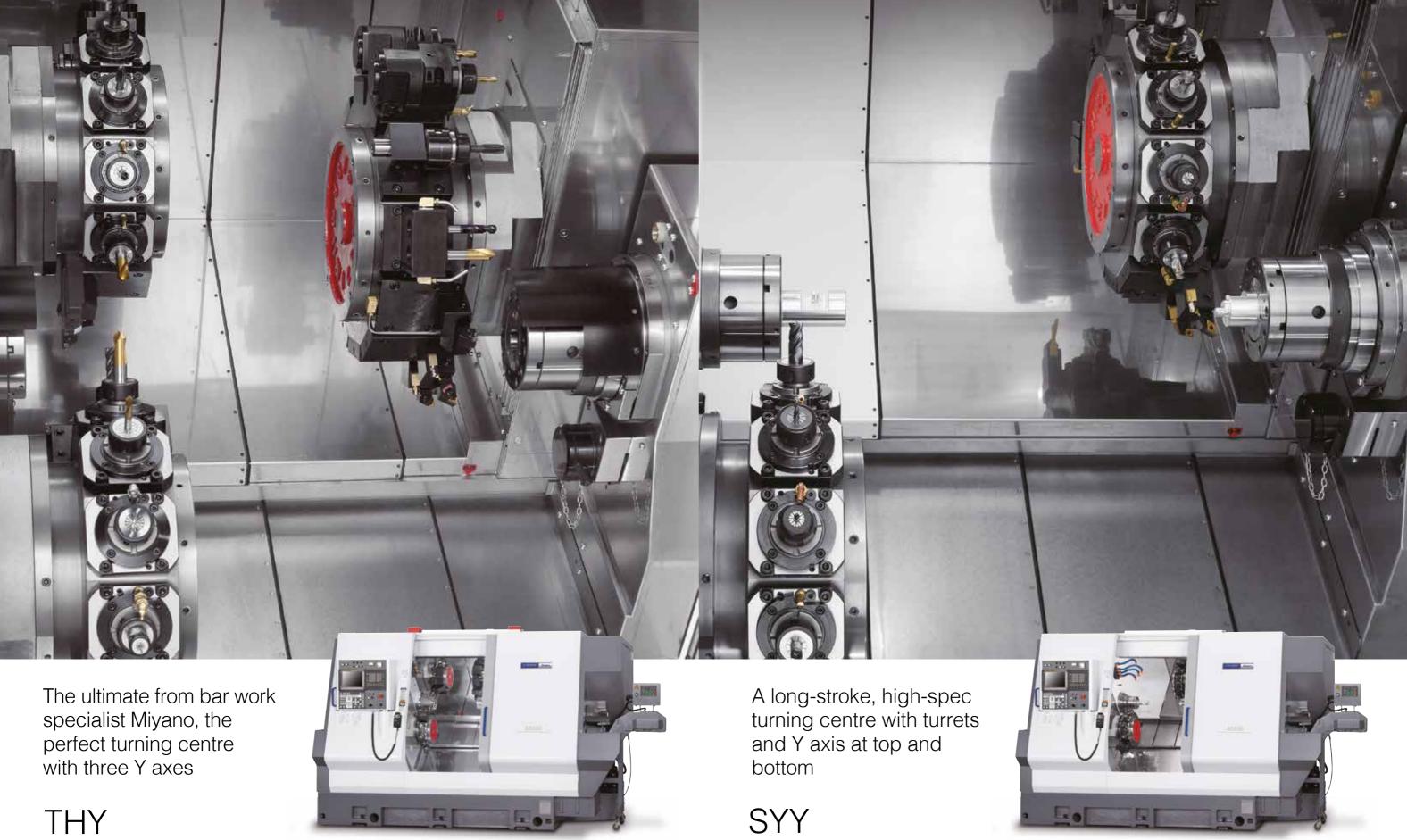
# CITIZEN



# Fixed Headstock Type CNC Automatic Lathe







### THY

Right and left upper turrets equipped with a Y axis, and a lower turret also with a Y axis that can unrestrictedly approach both spindles, enable the ideal process allocation and flexible tooling without any limitations imposed by machining balance.

Three Y axis for ultimate flexibility & high productivity.

Two upper 12 station turrets on box guideways dedicated to each spindle and a lower 12 station turret capable of working on both spindles – all with 80mm of Y axis stroke. Complete flexibility in tandem with Miyanos' world renowned accuracy and rigidity.

High power, high torque (40Nm) power tool capability in any of the 36 turret stations to enable milling capability like a machining centre.



Simultaneous complex machining with three turrets

### SYY

Cutting time shortened by simultaneous cutting at left and right with two Y axis.

The ability to machine simultaneously at the left and right spindles using the upper and lower turrets, both featuring a Y-axis function, means that complete front and back machining of products with complex shapes can be accomplished simply and in a short time.

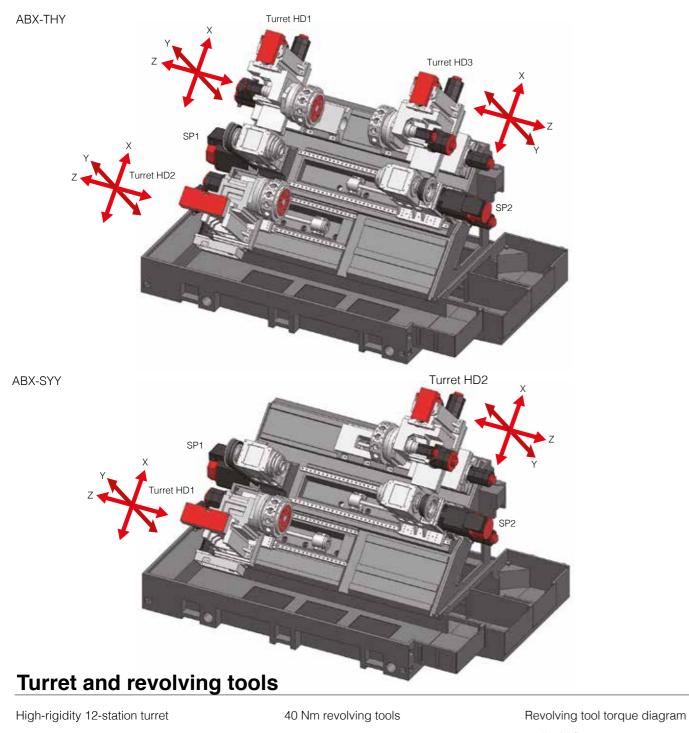
Twin spindle twin turret machining. Two 12 station turrets both capable of working on each spindle either separately or in tandem – both with 80mm of Y axis stroke. Complete flexibility in tandem with Miyanos' world renowned accuracy and rigidity.

High power, high torque (40Nm) power tool capability in any of the 24 turret stations to enable milling capability like a machining centre.

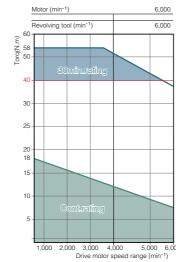


Simultaneous complex machining with two turrets

### **Basic construction**



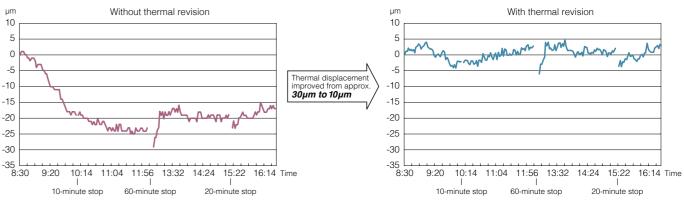




## Thermal revision for "round the clock" accuracy

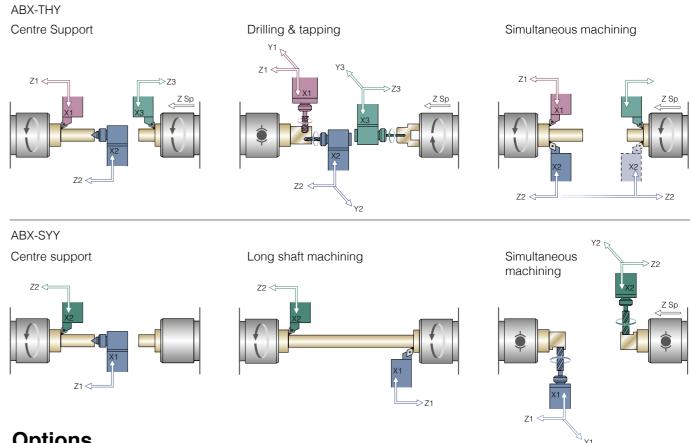
Temperature variations are constantly measured using sensors throughout the machine with the software, then automatically adjusting the relevant axes accordingly.

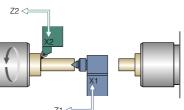
Thermal displacement between the X1 axis and SP1 (water soluble coolant used)

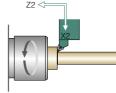


Although the values above are the results of measurement, they are not guaranteed. Values will vary according to the machining conditions, workpiece material and other conditions.

### Examples of simultaneous complex machining







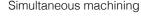
## **Options**



Tool setter Tool geometry can be accurately measured via the optional touch probe for both OD & ID tooling. The unit is removable via a magnetic coupling.



6 ABX-80 | Citizen



#### Chip conveyor

Chip conveyors are available for different types of chip, enabling enhanced unmanned running.

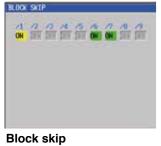


Parts catcher Parts conveyor

A fully programmable servo driven parts catcher can collect parts from both spindles and safely unload them via a parts conveyor.



### Support screens



Up to 9 individual block skips are available.

	Cutting 326812, 224	NotCutting 198461.848	Operating
	320012.229	130401.040	5 210474, 904
1	171.768	168.488	332. 166
2	171.712	168.528	332.246
3	171.688	168.568	332.240
4	171.728	161.136	332.864
5	344. 384	332. 128	676.432
6	171.664	164.176	335.848
2	171.664	164.176	335,848

#### Cycle time

Automatically measures the proportion of cutting and non cutting time per cycle.

5P1	10005	(	(8)
SP2	APR .	(	8)
RUTI	(100)	ζ.	6)
RVT2	.100	6	0)
RVT3	1007	¢ l	8)
SP OVE	RRIDE	(E)300	A (for AUTO MODE)

Spindle and 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.



**Revolving tool adjustment** Used to adjust the revolving tool zero point; the screen

displays the zero point

adjustment instructions.

PROGRAM NO.	111
CHUCK1 - CHUCK2 DISTANCE	748, 886
CUT-OFF POSITION	18.000
NORK-PIECE LENGTH	98.000
CHUCK2 POSITION	78.000
TOOL OFFSET GEOMETRY RIM	1:EHABLE

#### 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 monitoring (option device)

Allows the user to set limit values for load on individual tools. This can help to prevent damage to tools by automatically stopping the machine if the tool load increases.

ERINIENNACE C1 22R0 POINT AD205T HODE C3 22R0 POINT AD205T HODE SPINDLE PHASE AD205T HODE HO1 RVT→TURRET HAINTENANCE HODE HO2 RVT→TURRET HAINTENANCE HODE HO3 RVT→TURRET HAINTENANCE HODE CHECK OPERATING PANEL LAMP - TURN ON

THE ZERO POINT OF C-RAIS IS ADJUSTED.

#### Maintenance

Used to turn the settings for maintenance ON and OFF.

SPINULE PHRSE ADJUST HORE 1/2 1.0.4WP A VORK OREXARDN etc.) IF SPI -SP2 0.4WP HIS MORE LATER. IT IS USTIME THE VORK AFTER OUTTING. WHEN REQUIRED 2.0PEN SP2 ORDOX 3.0.0SE BOOR 4.RETURN TO ZERO POINT OF ALL AVES -MAEN EDECT IS PUSHED. (1) SP2 OPEN (2) SP1 AND SP2 ADTATE AT A LOW SPEED 25 -0.082 CORNCELT - THIS MORE IS CONCELED

### Spindle phase

Synchronization adjustment Allows simple adjustment of spindle to spindle angular adjustment through on screen guides.

NO.	XI	24	1000	JULIUS
1000	and the second se		-	-49.585
881	-288.936	194.118	1000	
882	-327.169	88.888	21	37.965
663	-328.127	88.328	12	-22.235
884	8.000	8,888	22	8.691
885	0.000	8, 888	X	-18.931
886	0.000	8,000	23	-23.854
887	0.008	8.888	25	-12.685
888	-358,888	127.846		
009	-314.020	84. 184	100	
818	0.008	8.880		

#### 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.

SP1	8 rps
SP2	8 rps
RUT1	8 rpa
RVT2	8 rpa
RVT3	8 rps
	RIDE (for AUTO HODE): 188%

#### Automatic running monitor (Spindle/ revolving tools) (axis)

Allows you to check the status of the spindle during automatic running and feed axes during automatic running.

C1 2600 POINT ROUGET HORE 1/2 1. CLARP & WORK CHEXIGON etc. 3 by SP1 2. CLARP & WORK CHEXIGON etc. 3 by SP1 2. CLARP & WORK CHEXIGON Etc. 3 by SP1 2. CLARP & WORK CHEXIGON ETC. 3 by SP1 3. RETURN TO 2600 POINT OF ALL AVES 4. RETURN TO 2600 POINT OF ALL AVES 4. RETURN TO 2600 POINT OF ALL 5. SELECT HOW TO ADJUST C1 2600 POINT (DEC1 - 1T TURKS BY HIND (SERVO-OFF) (DECT) - HOHOLE OR JOG HODE

#### T HEXT 1 - C1 WARKING OPERATION (CONCEL) - THIS HODE IS CONCELED

#### C1 Zero point adust mode

Used to adjust the C axis zero point; the screen displays the zero point adjustment instructions.

100	HINE POS	163	124	HTHE POS	121
X1	-8.815	-	X3	-8.819	-
21	0.002	-	23	-0.002	-
11	-8.886	1	73	-0.005	-
GL	H, 003			0.000	
			25	-8.882	-
X2	-0.883	-			
22	8.899	-	PCT	-8.004	-
12	-8.883	× .		JOG 50	-
				•X1	11

Manual operation

Displays the zero point lamp status and the machine coordinate of each axis.

NO.	CURRENT	PRESET	X-WEAR	Z-WEA
881	6	10	8.808	4,28
882	8	0	8.000	8.00
883	0		0.000	8.88
084	8	0	8,800	8.88
885	6	9	8.888	8.00
996	8	0	8.000	8.00
987	8	Ð	8.000	8.88
888	8	0	8.000	8.88
889	0	0	-0.210	8.00
818	8	15	8.888	8.88

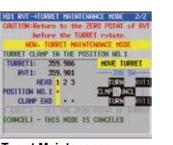
#### **Tool counter**

Used to simply set tool counters and corresponding offset values for each tool.tool counter stop value.You can also enter wear offsets.

MACHINE READY	
ORIGIN POS.	20.21.91 01
OPTION DEVICE POS.	XII 22 YZ
DOOR	0 273 01
ALARM	
START SM.	OVERRIDE: 10
HODE SN.	SP GENEIDI 100
ETČ.	

### Start condition

Displays information on the start conditions for automatic running.



### Turret Maintenance

Used to adjust the turret zero point; the screen displays the zero point adjustment instructions.

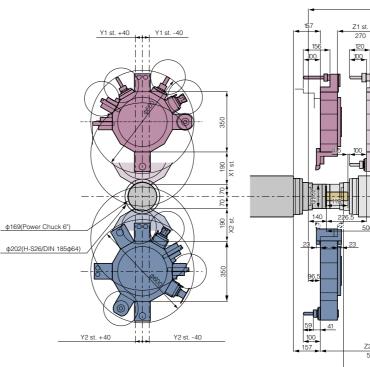


Option device

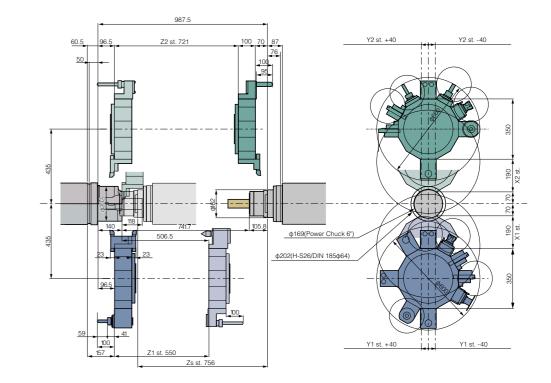
Used to select an auxiliary device (option) such as a part catcher to be operated manually.

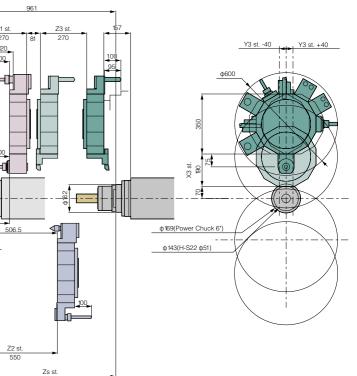
### **Tooling area**

ABX-THY

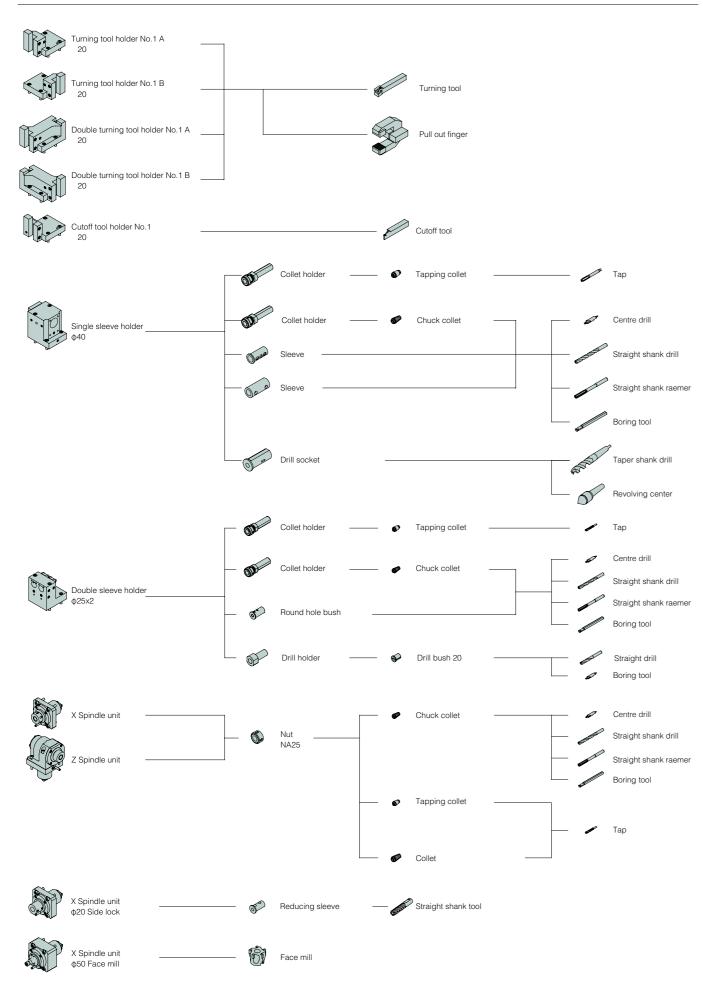


ABX-SYY

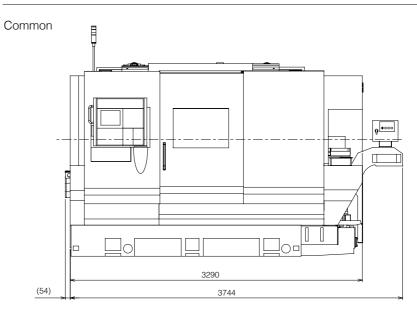




### Tooling system

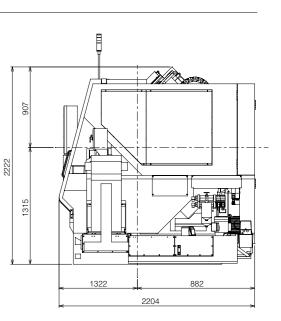


### External view



### **NC Specifications**

ABX-THY2	FS.31i-B 3 system
Axial control	HD1: X1,Z1,Y1,C1,A1,E1(T1)
	HD2: X2,Z2,Y2,(C2),A2,E2(T2)
	HD3: X3,Z3,Y3,C3,A3,E3(T3),PC,ZS
Minimum setting unit	0.001mm, 0.0001inch, 0.001deg
Interpolation functions	G01, G02, G03
Thread cutting	G32, G33, G92
Rapid feed override	0-100%
Feed rate override	0-150%
Feed rate per minute/Feed rate	G98/ G99
Single form fixed cycle	G90, G92, G94
Program storage capacity	The sum total of 3 systems : 128KB (320 m)
Registered program number (Extension)	The sum total of 3 systems : 250 programs
Spindle function	S4 digit
Constant surface speed control	G96
Tool function	T AABB (AA =Tool number and geometry,
	BB =Wear offset number)
Tool compensation number	32 pieces, 96 pieces (3 systems)
Automatic operation	Single-cycle automatic operation, Single block, Block delete,
	Machine lock, Optional block skip, Dry run, Feed hold
Data input-and-output function	RS -232C, Memory card interface
Others	10.4" color LCD, Feed axis absolute position detection unit,
	Synchronization / mixture control, Cs outline control,
	Many article thread cutting, Continuation thread cutting,
	Polar coordinate interpolation, A decimal point input
	Programmable date input G10, Automatic coordinate system setup,
	Custom macro, Program protection, Manual handle retrace,
	Self-diagnostic function, etc.
Options	Superimposed control, Variable lead thread cutting,
	Cylindirical interpolation, Helical interpolation, Inch / metric change,
	Chamfering /Corner R control, Drawing size direct input,
	Canned cycles for drilling, Multiple repetitive cycles,
	Program storage capacity addition,
	Program simultaneous edit number,
	Spidle rigid tap, Revolving tool rigid tap, Polygon cutting,
	Tool compensation number addition,
	Amount measured value of tool compensation direct input,
	Tool life management, Tool nose radius compensetion,
	Run hour and the number of parts display, Graphic display,



ABX-SYY2	FS.31i -B 2 system
Axial control	HD1: X1, Z1, Y1, C1, A1, E1 (T1), (ZS)
	HD2: X2, Z2, Y2, C2, A2, E2 (T2), PC, ZS
Minimum setting unit	0.001 mm, 0.0001 inch, 0.001 deg
Interpolation functions	G01, G02, G03
Thread cutting	G32, G33, G92
Rapid feed override	0-100%
Feed rate override	0-50%
Feed rate per minute/Feed rate	G98 /G99
Single form fixed cycle	G90, G92, G94
Program storage capacity	The sum total of 2 systems : 80KB (160 m)
Registered program number (Extension)	The sum total of 2 systems : 125 programs
Spindle function	S4 digit
Constant surface speed control	G96
Tool function	T AABB (AA =Tool number and geometry,
	BB =Wear offset number)
Tool compensation number	32 pieces, 80 pieces(2 systems)
Automatic operation	Single -cycle automatic operation, Single block, Block delete,
	Machine lock, Optional block skip, Dry run, Feed hold
Data input-and-output function	RS -232C, Memory card interface
Others	10.4" color LCD, Feed axis absolute position detection unit,
	Synchronization /mixture control, Cs outline control,
	Many article thread cutting, Continuation thread cutting,
	Polar coordinate interpolation, A decimal point input
	Programmable date input G10, Automatic coordinate system setup,
	Custom macro, Program protection, Manual handle retrace,
	Self-diagnostic function, etc.
Options	Superimposed control, Variable lead thread cutting,
	Cylindirical interpolation, Helical interpolation, Inch / metric change,
	Chamfering/Corner R control, Drawing size direct input,
	Canned cycles for drilling, Multiple repetitive cycles,
	Program storage capacity addition,
	Program simultaneous edit number,
	Spidle rigid tap, Revolving tool rigid tap, Polygon cutting,
	Tool compensation number addition,
	Amount measured value of tool compensation direct input,
	Tool life management, Tool nose radius compensetion,
	Run hour and the number of parts display, Graphic display,

### **Machine specification**

Item		ABX-THY2	ABX-SYY2
		80THY2	80SYY2
Machining capacity			
Maximum work length	SP1	125 mm	125 mm
	SP2	125 mm	
Maximum work diameter			
for bar work	SP1	80 mm Dia.	80 mm Dia.
	SP2	ø51mm	
for power chuck	SP1	165 mm Dia.	ф165mm
	SP2	ø165mm	
Spindle			
Number of spindles		2	
Spindle speed	SP1	50 - 2,750 min <sup>-1</sup>	50 - 2,750min <sup>-1</sup>
	SP2	50 - 5,000 min <sup>-1</sup>	
Inner diameter of draw tube	SP1	82 mm Dia.	82 mm Dia.
	SP2	ф52mm	
Chucking system	SP1, SP2	Hydraulic cylinder	
Type of collet chuck	SP1	S collet system	
		DIN190E	DIN190E
	SP2	DIN177E	
Type of Power chuck	SP1	6" Hydraulic chuck	
	SP2	6" Hydraulic chuck	
Turret		· .	
Number of turrets		3	2
Turret stations	HD1, HD2, HD3	12 st.	
Tool shank size	HD1, HD2, HD3	20 mm Sq.	
I.D tool hole size	HD1, HD2, HD3	25 mm Dia. /40mm Dia.	
Index time	HD1, HD2, HD3	0.25 SEC/ 1POS	
Rapid traverse rate HD1	X1	16 min <sup>-1</sup>	
hapid traverse rate TIDT	Z1	20 min <sup>-1</sup>	
	Y1	12 min <sup>-1</sup>	
HD2		12 min <sup>-1</sup>	
HD2	X2 Z2	30 min <sup>-1</sup>	
1150	Y2	12 min <sup>-1</sup>	
HD3	X3	16 min <sup>-1</sup>	
	Z3	20 min <sup>-1</sup>	
	Y3	12 min <sup>-1</sup>	
SP2	Zs	30 min <sup>-1</sup>	
Revolving tool (Option)			
Number of revolving tools	HD1, HD2, HD3	12 (MAX.36)	12 (MAX.24)
Maximum spindle speed		6,000 min <sup>-1</sup>	
Machining capacity	Drilling	MAX. 20 Dia.	
Tapping	MAX. M14×2		
End mill	MAX.ф16		
Fank capacity			
Hydraulic tank capacity		10 L	
Lubricating tank capacity		4 L	
Coolant tank capacity		400 L	
Machine dimensions			
Machine height		2,222 mm	
Floor space		3,290 × 2,204 mm	
Machine weight		11,350 Kg	10,600 Kg
Spindle motor	SP1	AC 15/ 11 Kw	10,000 Ng
opinale motor	SP2	AC 7.5/5.5Kw	
Revolving tool motor	HD1, 2, 3	AC 4.5 Kw	
	HU1, 2, 3	AU 4.0 NW	
Power supply			
Voltage		AC 200/ 220 V ± 10% 50/60Hz±1Hz	40 1/1/4
Capacity		49 KVA	48 KVA
Air supply		0.5 MPa (5 kgf/ cm <sup>2</sup> )	
Fuse		150 A	150 A
Others			

Optional accessories

100V, Collet chuck system, 6\* Power chuck, Air blow, No.2 spindle inner high pressure coolant & air blow, Coolant level switch, Automatic power shut-off and extinguisher,

Automatic power shut-off, Chip conveyor, Chip box, Parts carrier, Coolant mist collector, Blast-proof dumpers, Tool setter, Signal light (3 steps), Total & preset counter,

Bar feeder interface, Filler tube, Spindle inner bushing, Drill breakage detector, etc.

CITIZEN	CITIZEN MACHINE	ERY CO., LTD.		
CITIZEN	Japan	Citizen Machinery Co Ltd 4017-6 Miyota, Miyota-machi, Kitasaku-gun, Nagano-ken, 389-0206, Japan	Tel: 81-267-32-5901	Fax: 81-267-32-5908
	Europe - Germany	Citizen Machinery Europe GmbH Mettinger Strasse 11, D-73728 Esslingen, Germany	Tel: 49-711-3906-100	Fax: 49-711-3906-106
www.citizenmachinery.co.uk	Europe - UK	Citizen Machinery UK Ltd 1 Park Avenue, Bushey, WD23 2DA, UK	Tel: 44-1923-691500	Fax: 44-1923-691599

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