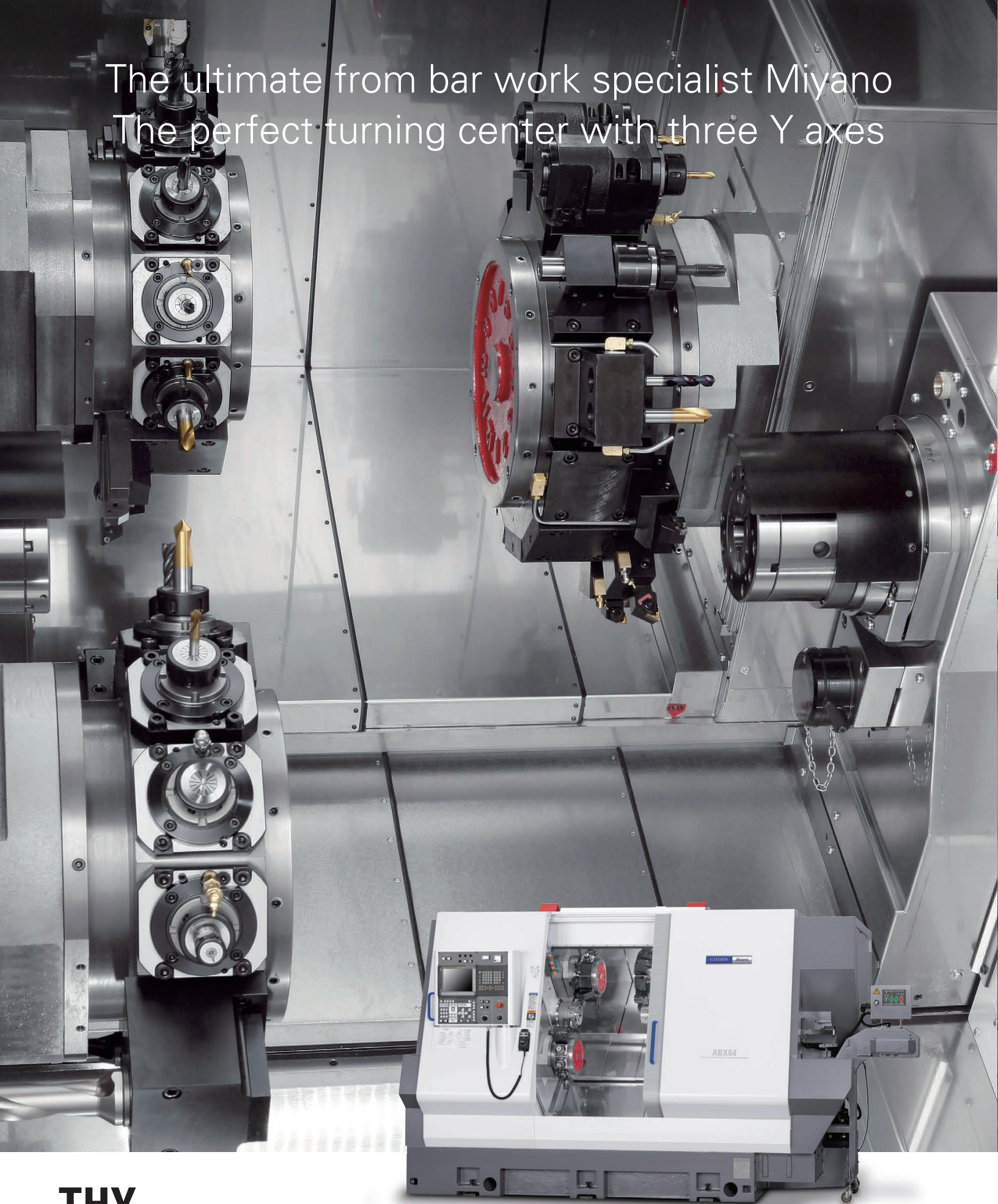# CITIZEN

Miyano

ABX51/64
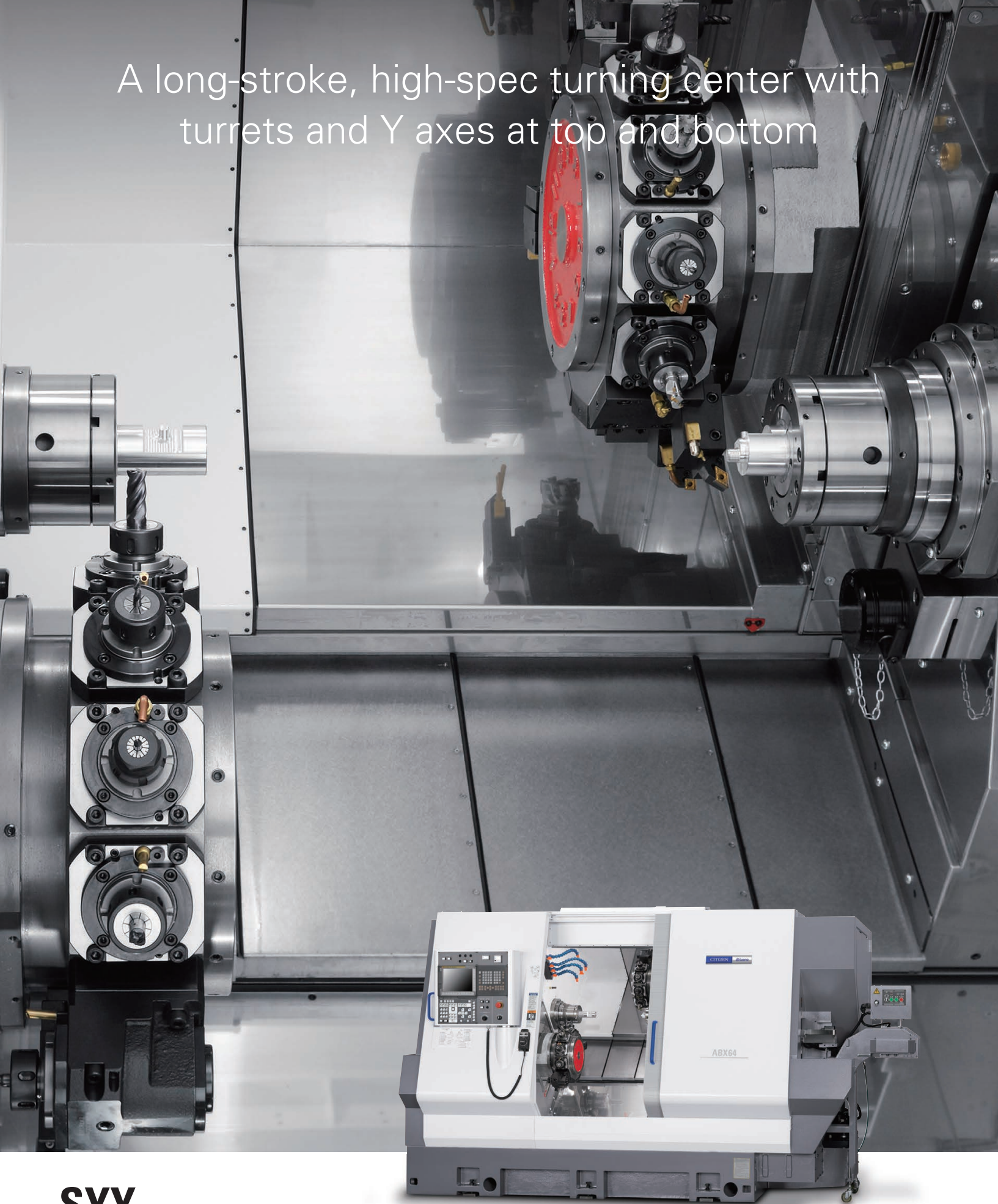
Fixed Headstock Type Automatic CNC Lathe

ABX64

The ultimate from bar work specialist Miyano
The perfect turning center with three Y axes
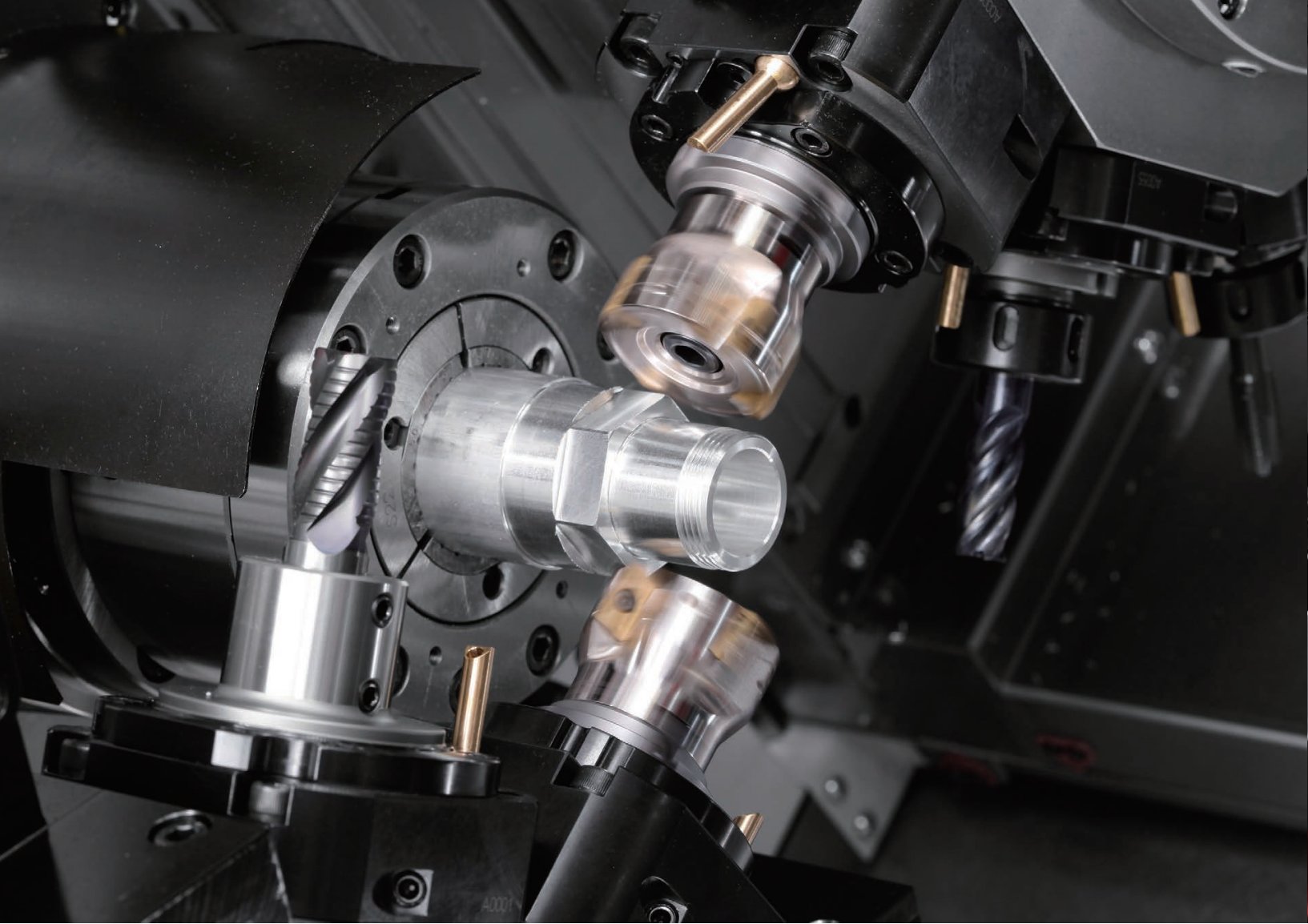
THY

A long-stroke, high-spec turning center with turrets and Y axes at top and bottom

SYY

THY

## Three Y axes give high efficiency and high productivity

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.

High rigidity and high torque with 40 Nm revolving tools

The use of rigid 40 Nm revolving tool drives capable of heavy cutting ensures stable milling. Three turrets with a total of 36 tool positions handle complex machining just like a machining center.
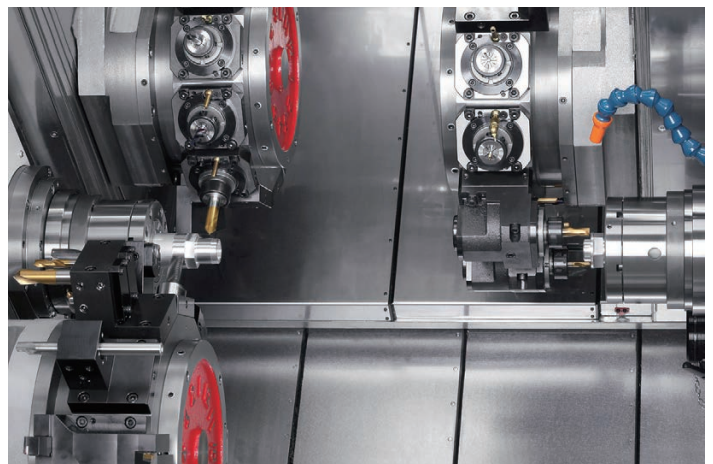
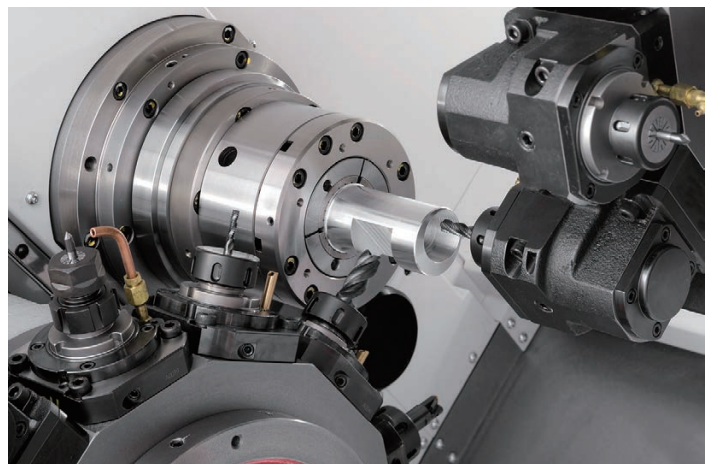Simultaneous complex machining with three turrets
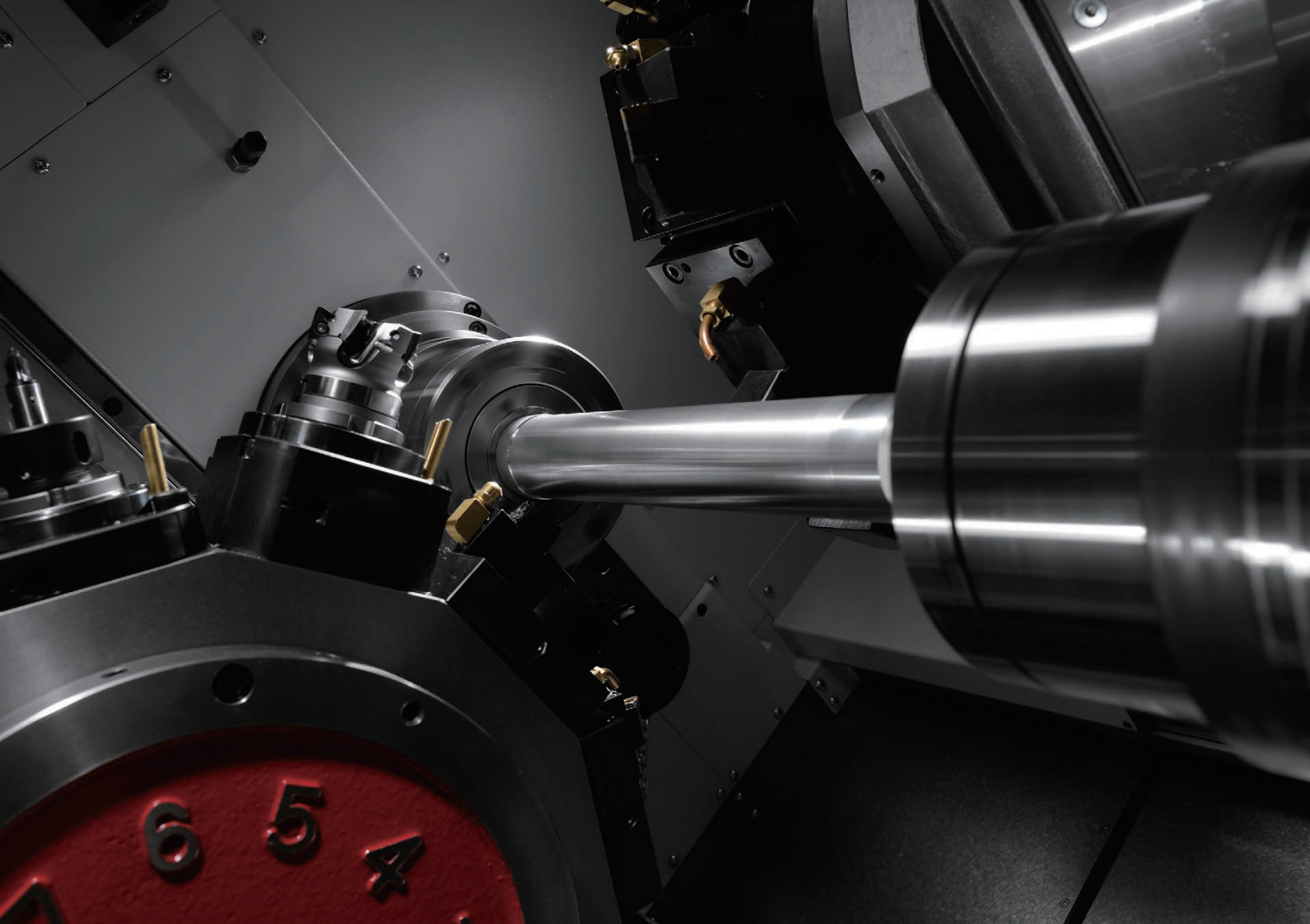
SYY

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

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.

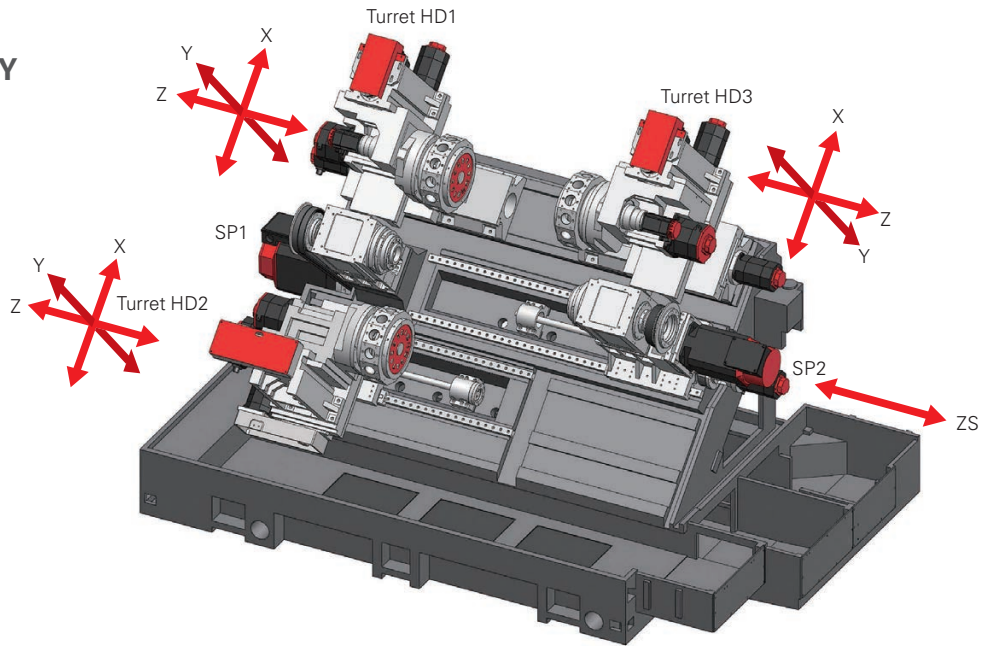### High rigidity and high torque with 40 Nm revolving tools

The use of rigid 40 Nm revolving tool drives capable of heavy cutting ensures stable milling. Two turrets with a total of 24 tool positions handle complex machining just like a machining center.

Simultaneous complex machining with two turrets

Basic construction

ABX-THY

Turret HD1

Y X
Z

Turret HD3

X
Z
Y

SP1

Y X
Z Turret HD2

SP2

ZS

ABX-SYY

Turret HD2

X
Z
Y

SP1

Y X
Z Turret HD1

SP2

ZS
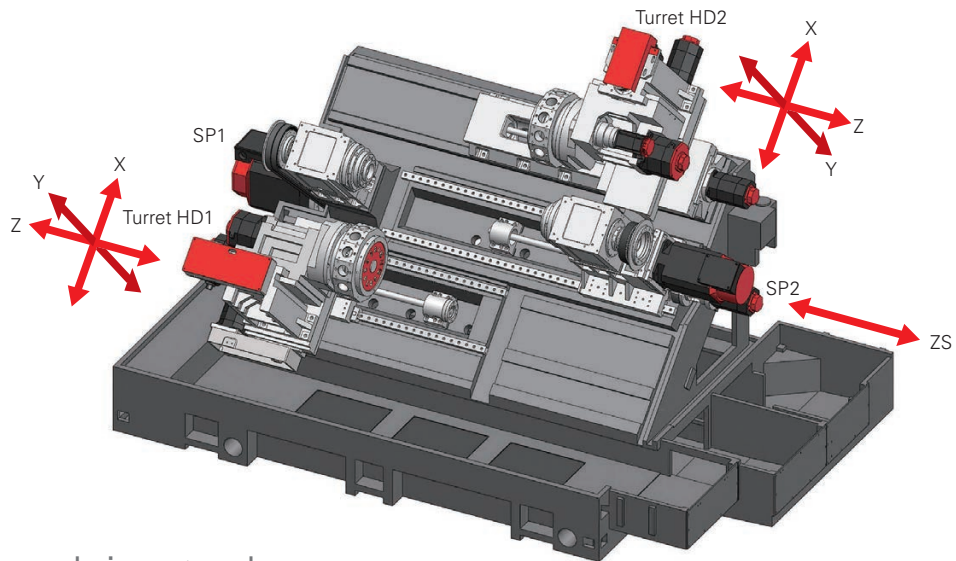
Turret and revolving tools

High-rigidity 12-station turret

40 Nm revolving tools
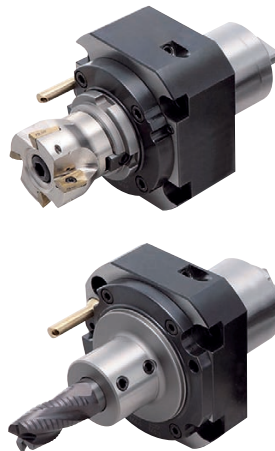
Revolving tool torque diagram

| Motor (min⁻¹) | 6,000 |
| Revolving tool (min⁻¹) | 6,000 |

Torq(N.m)

60
58
50
40
30
25
20
18
15
10
5

30min.rating

Cont.rating

1,000 2,000 3,000 4,000 5,000 6,000
Drive motor speed range (min⁻¹)
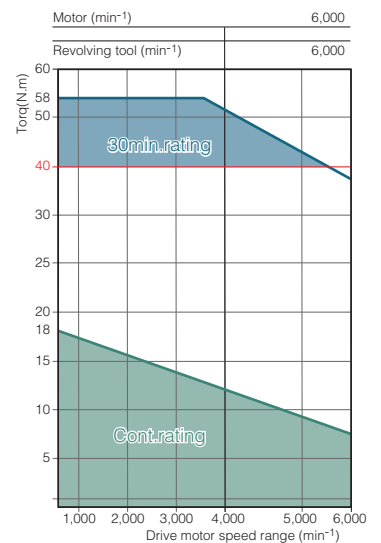
Thermo revision for 'round-the-clock' accuracy

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

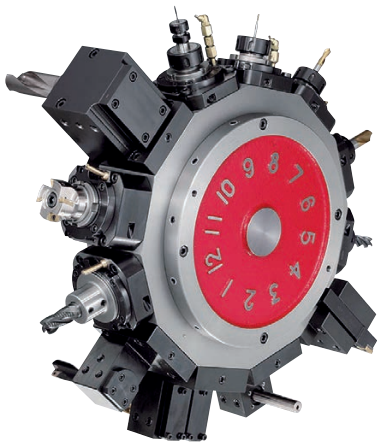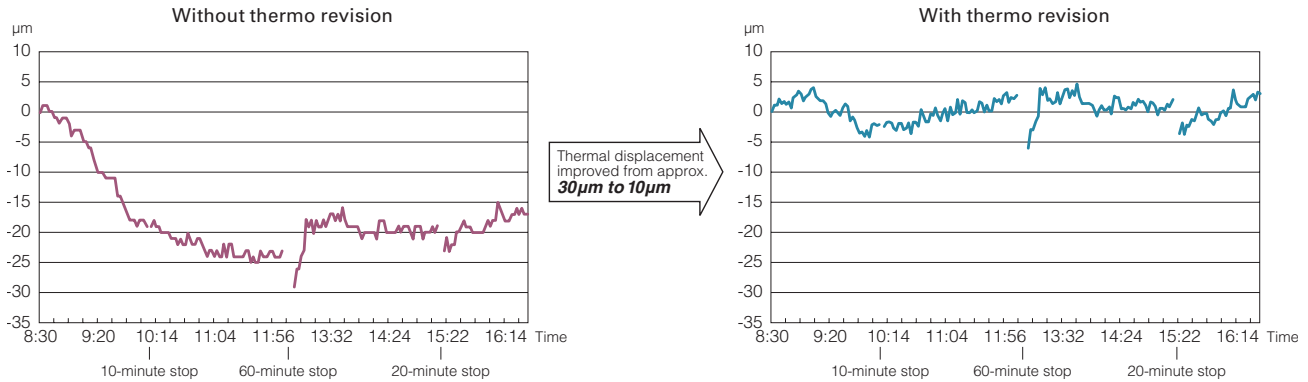Temperature discrepancies are automatically measured by temperature sensors, and the position data (*) is corrected using pre-set correction coefficients. (*) The axes that are corrected differ depending on the machine model.

Without thermo revision

With thermo revision

Thermal displacement improved from approx.
30µm to 10µm

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.
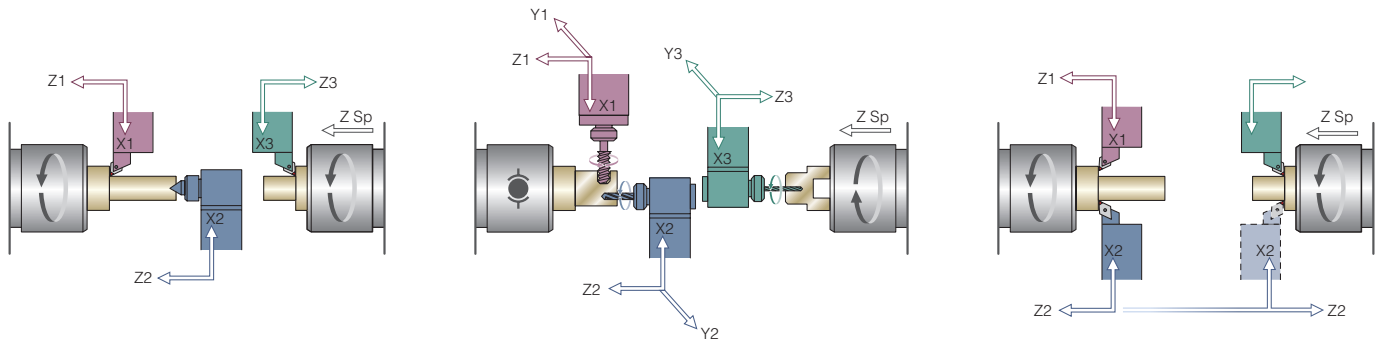
Examples of simultaneous complex machining

ABX-THY

Center Support

Drilling & tapping

Simultaneous machining

ABX-SYY

Center support

Long shaft machining

Simultaneous machining
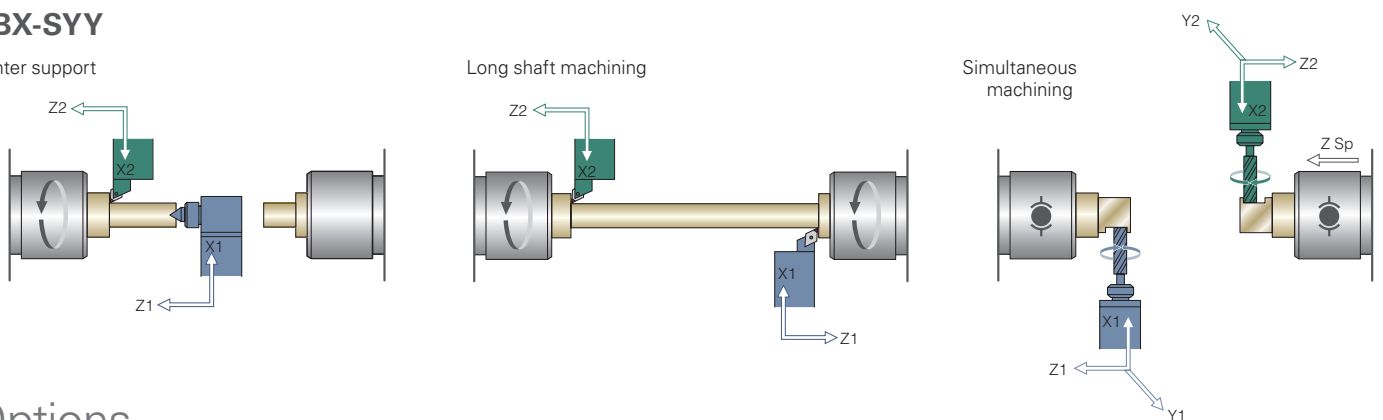
Options

Tool setter
Tool offsets can be set accurately and easily with a manually detachable double-arm tool setter. For both OD and ID cutting tools, tool offset values accurately measured with sensors in four directions mounted at the ends of the arms are automatically input to the NC unit.

Chip conveyor
The hinged belt type conveyor ejects chips smoothly and is an optional unit that is indispensable for unmanned operation. Alternative types of conveyor are available depending on the material being cut.

Parts catcher / Parts conveyor
The servo-driven part catcher can collect products from both spindles. It places the products on the part conveyor, which unloads them outside the machine without damage.

Block skip
Used to set block skip 1 to block skip 9.

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
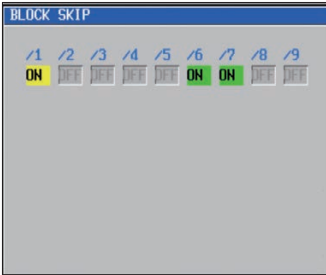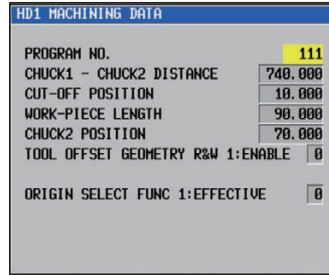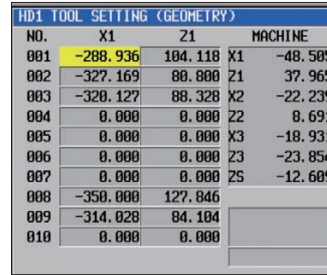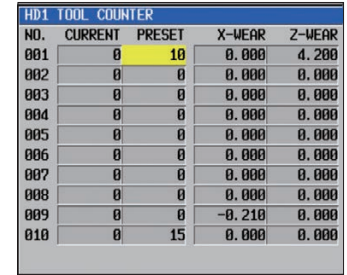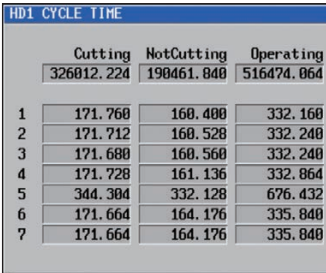Used to measure geometry offsets. It can also be used for tool mounting support, to ensure that the overhang of all tools is fixed at a constant value.
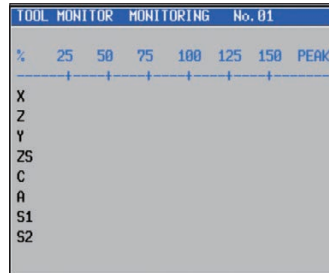
Tool counter
Informs you of the timing (count-up) for tool changes in accordance with the set tool counter stop value.You can also enter wear offsets.

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

Tool monitoring (option device)
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.
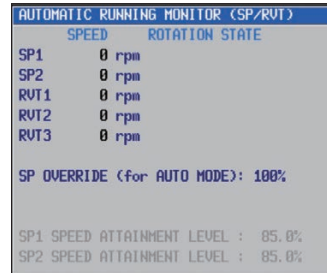
Automatic running monitor (Spindle/revolving tools) (axis)
Allows you to check the status of the spindle during automatic running and feed axes during automatic running.
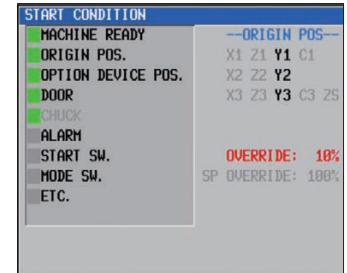
Start condition
Displays information on the start conditions for automatic running.
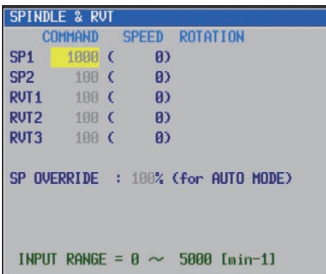
Spindle and revolving tool unit
Allows you to set the rotational speed (in manual operation) of the spindle and revolving tools, and to set the spindle override.
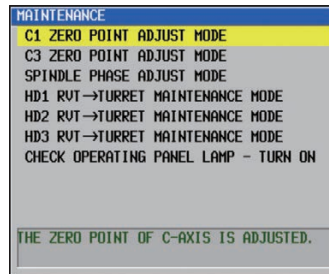
Maintenance
Used to turn the settings for maintenance ON and OFF.
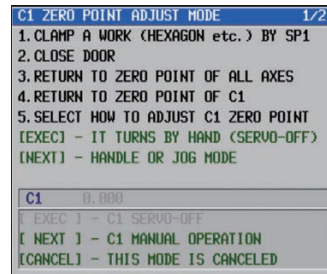
C1 Zero point adust mode
Used to adjust the C axis zero point; the screen displays the zero point adjustment instructions.
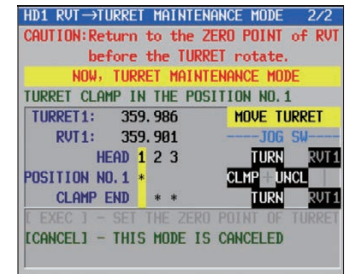
Turret Maintenance
Used to adjust the turret zero point; the screen displays the zero point adjustment instructions.
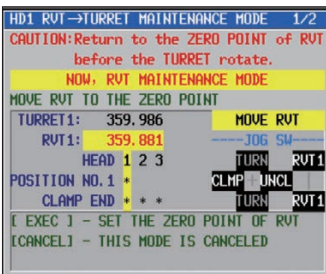
Revolving tool adjustment
Used to adjust the revolving tool zero point; the screen displays the zero point adjustment instructions.
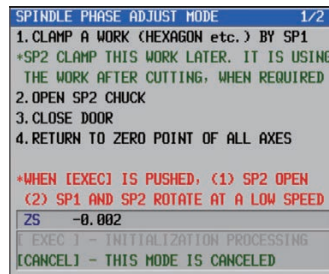
Spindle phase
Synchronization adjustment Used to adjust the spindle phase synchronization by following the instructions on the screen.
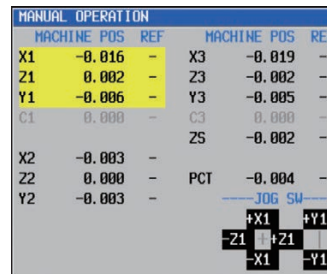
Manual operation
Displays the zero point lamp status and the machine coordinate of each axis.
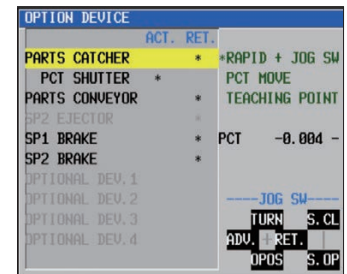
Option devise
Used to select an auxiliary device (option) such as a part catcher to be operated manually.

Tooling area

ABX-THY

Common
51
64

Y1 st. +40 | Y1 st. -40

350

190 | X1 st.

70 | 70

190 | X2 st.

350

φ143(H-S22 φ51)
φ169(Power Chuck 6")

φ169(Power Chuck 6")
φ202(H-S26/DIN 185φ64)

Y2 st. +40 | Y2 st. -40

961

157 | Z1 st. 270 | 81 | Z3 st. 270 | 157

156 | 120
100 | 100 | 100 | 95

9.2
8.5 | 100

105.8 | 234.2
514.2
506.5 | 26.5

23 | 23

70
96.5

59 | 41
100
157 | Z2 st. 550

Zs st. 756

φ162

φ600

Y3 st. -40 | Y3 st. +40

350

X3 st. | φ0
75
70

φ169(Power Chuck 6")
φ143(H-S22 φ51)

ABX-SYY

Common
51
64

961
987.5

87 | 70 | Z2 st. 721 | 100 | 70 | 87
60.5 | 96.5 | | | | 76
76 | | | 100
50 | | | 95

435

435

118
140
514.2 | 749.4
506.5 | 741.7

23 | 23

97
96.5

59 | 41
100
157 | Z1 st. 550

Zs st. 756

φ162

105.8

φ143(H-S22 φ51)
φ169(Power Chuck 6")

φ169(Power Chuck 6")
φ202(H-S26/DIN 185φ64)

Y2 st. +40 | Y2 st. -40

350

190 | X2 st.

70 | 70

190 | X1 st.

350

Y1 st. +40 | Y1 st. -40

Tooling system

Turning tool holder No.1 A
20

Turning tool holder No.1 B
20

Double turning tool holder No.1 A
20

Double turning tool holder No.1 B
20

Turning tool

Pull out finger

Cutoff tool holder No.1
20

Cutoff tool

Single sleeve holder
φ40

Collet holder — Tapping collet — Tap

Collet holder — Chuck collet

Sleeve

Sleeve

Drill socket

Center drill

Straight shank drill

Straight shank raemer

Boring tool

Taper shank drill

Revolving center

Double sleeve holder
φ25x2

Collet holder — Tapping collet — Tap

Collet holder — Chuck collet

Round hole bush

Drill holder — Drill bush 20

Center drill

Straight shank drill

Straight shank raemer

Boring tool

Straight drill

Boring tool

X Spindle unit

Z Spindle unit

Nut
NA25

Chuck collet

Tapping collet

Collet

Center drill

Straight shank drill

Straight shank raemer

Boring tool

Tap

X Spindle unit
φ20 Side lock

Reducing sleeve

Straight shank tool

X Spindle unit
φ50 Face mill

Face mill

External view

Common

Dimensions: 3290, 3744, (54), 2222, 907, 1315, 1322, 882, 2204

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 : 128 KB (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 : 64 KB (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, 64 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 specifications

Item			ABX-51THY2	ABX-64THY2	ABX-51SYY2	ABX-64SYY2
Machining capacity						
Maximum work length	SP1		125 mm	118 mm	125 mm	118 mm
	SP2		125 mm			
Maximum work diameter						
for bar work	SP1		51 mm Dia.	64 mm Dia.	51 mm Dia.	64 mm Dia.
	SP2		51 mm Dia.			
for power chuck	SP1		165 mm Dia.	---	165 mm Dia.	---
	SP2		165 mm Dia.			
Spindle						
Number of spindles			2			
Spindle speed	SP1		50-5,000 min^{-1}	40-4,000min^{-1}	50-5,000min^{-1}	40-4,000 min^{-1}
	SP2		50-5,000 min^{-1}			
Inner diameter of draw tube	SP1		52 mm Dia.	65.5 mm Dia.	52 mm Dia.	65.5 mm Dia.
	SP2		$\varnothing$52 mm			
Chucking system	SP1, SP2		Hydraulic cylinder			
Type of collet chuck	SP1		S collet system			
			H-S22/DIN177E	H-S26/DIN185E	H-S22/DIN177E	H-S26/DIN185E
	SP2		S collet system			
			H-S22/DIN177E			
Type of Power chuck	SP1, SP2		6" Hydraulic chuckTurret			
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./40 mm Dia.			
Index time	HD1, HD2, HD3		0.25 SEC/1POS			
Rapid traverse rate	HD1	X1	16 m/min			
		Z1	20 m/min		30 m/min	
		Y1	12 m/min			
	HD2	X2	16 m/min			
		Z2	30 m/min		20 m/min	
		Y1	12 m/min			
	HD3	X3	16 m/min		---	
		Z3	20 m/min		---	
		Y3	12 m/min		---	
	SP2	Zs	30 m/min			
Revolving tool (Option)						
Number of revolving tools	HD1, HD2, HD3		12 (MAX.36)		12 (MAX.24)	
Maximum spindle speed			6,000 min^{-1}			
Machining capacity	Drilling		MAX. 20 Dia.			
	Tapping		MAX. M14×2			
	End mill		MAX. $\varnothing$16			
Tank 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		10,900 Kg	
Spindle motor	SP1		AC 15/11 Kw			
	SP2		AC 7.5/5.5 Kw			
Revolving tool motor	HD1, 2, 3		AC 4.5 Kw			
Power supply						
Voltage			AC 200/220 V±10% 50/60Hz±1Hz			
Capacity			49 KVA		48 KVA	
Air supply			0.5 MPa (5 kgf/cm^2)			
Fuse			150 A			

Others

Pneumatic, Spindle brake, Revolving tools and driving unit, Thermo revision, Spalsh guard interlock, High pressure coolant,Parts catcher (Servo type).

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, Spindle inner bushing

Drill breakage detector, Work ejector No2, etc.

Marubeni Citizen-Cincom Inc.