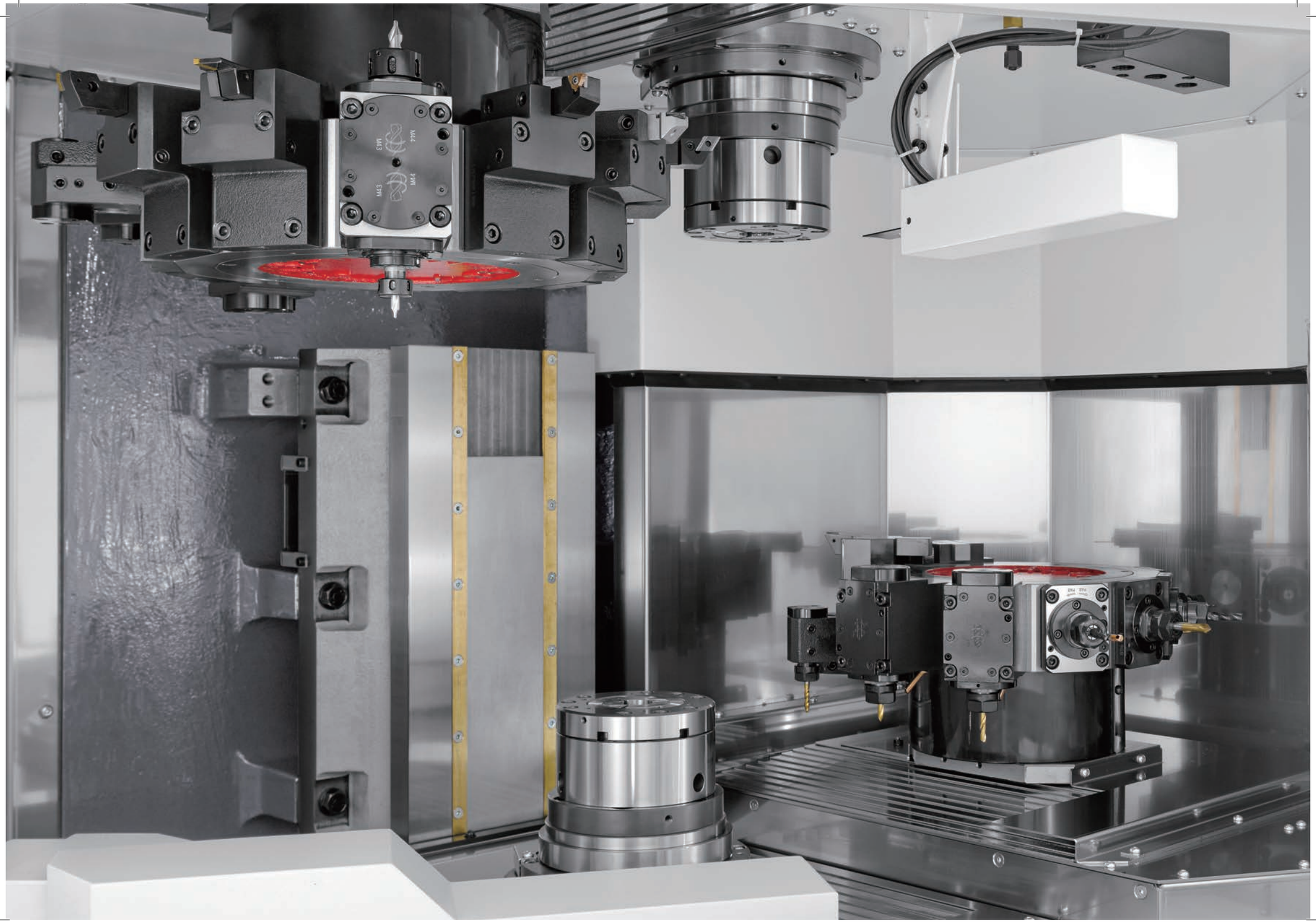
CITIZEN

Miyano

BNE51MSY

Fixed Headstock Type CNC Automatic Lathe

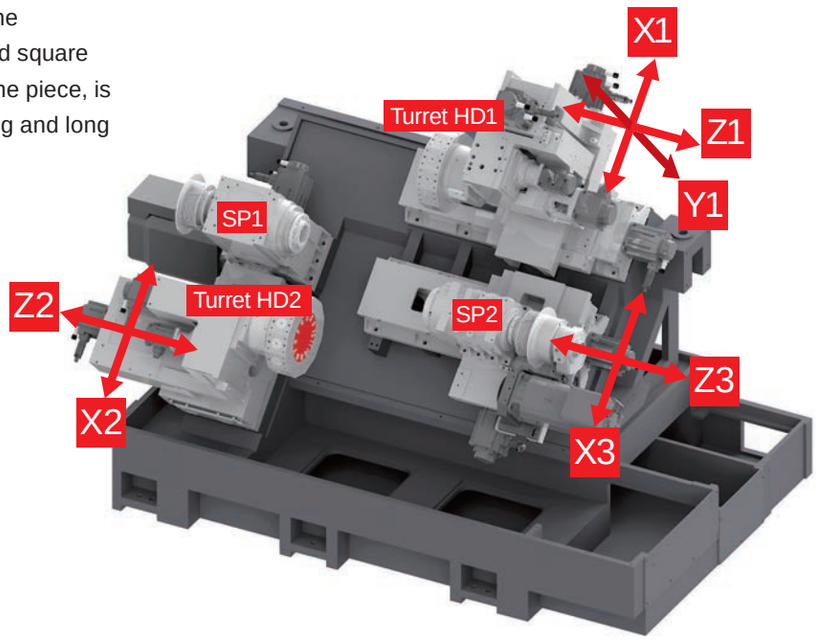


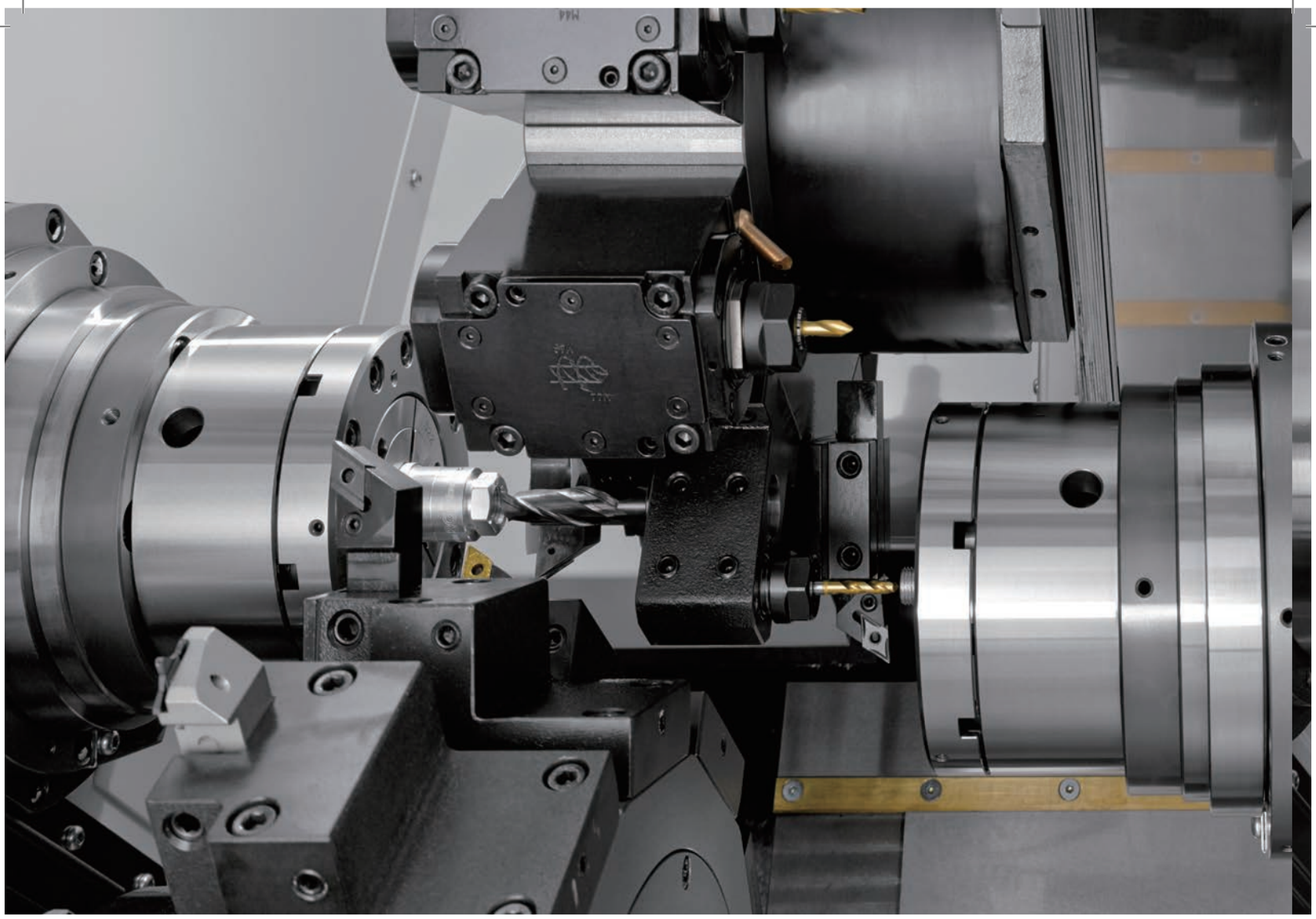
MSY

The BNE series is renowned for its high rigidity, heavy cutting capability and outstanding precision. The new MSY model extends the ability of the BNE series with the adoption of X3 axis on the back spindle (SP2) and synchronized / superimposed control for 3-tool simultaneous machining. Faster cycle times, outstanding easy-of-use and the ability to machine complex work pieces is the result.

Machine structure

The basic construction of the machine, that is the combination of the highly rigid precision scraped square guideways and the heavy slanted bed cast in one piece, is the base to support high precision, heavy cutting and long tool life even in complex machining.





Examples of simultaneous machining with three tools

Turret

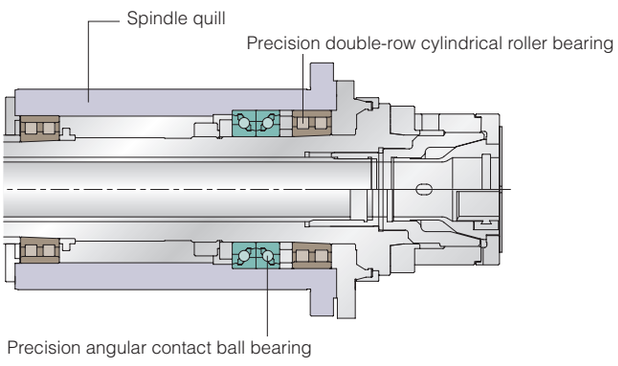
Indexing by a large-diameter curvic coupling, secure hydraulic turret clamping and rugged square guideways assure high precision and long life of the turret without compromise. This turret can accommodate revolving tools with a high machining torque of 20 Nm at all 12 positions. Our unique tool holder mounting method using two guide pins makes it easy to mount and remove tool holders and ensures exceptionally high re-mounting accuracy.

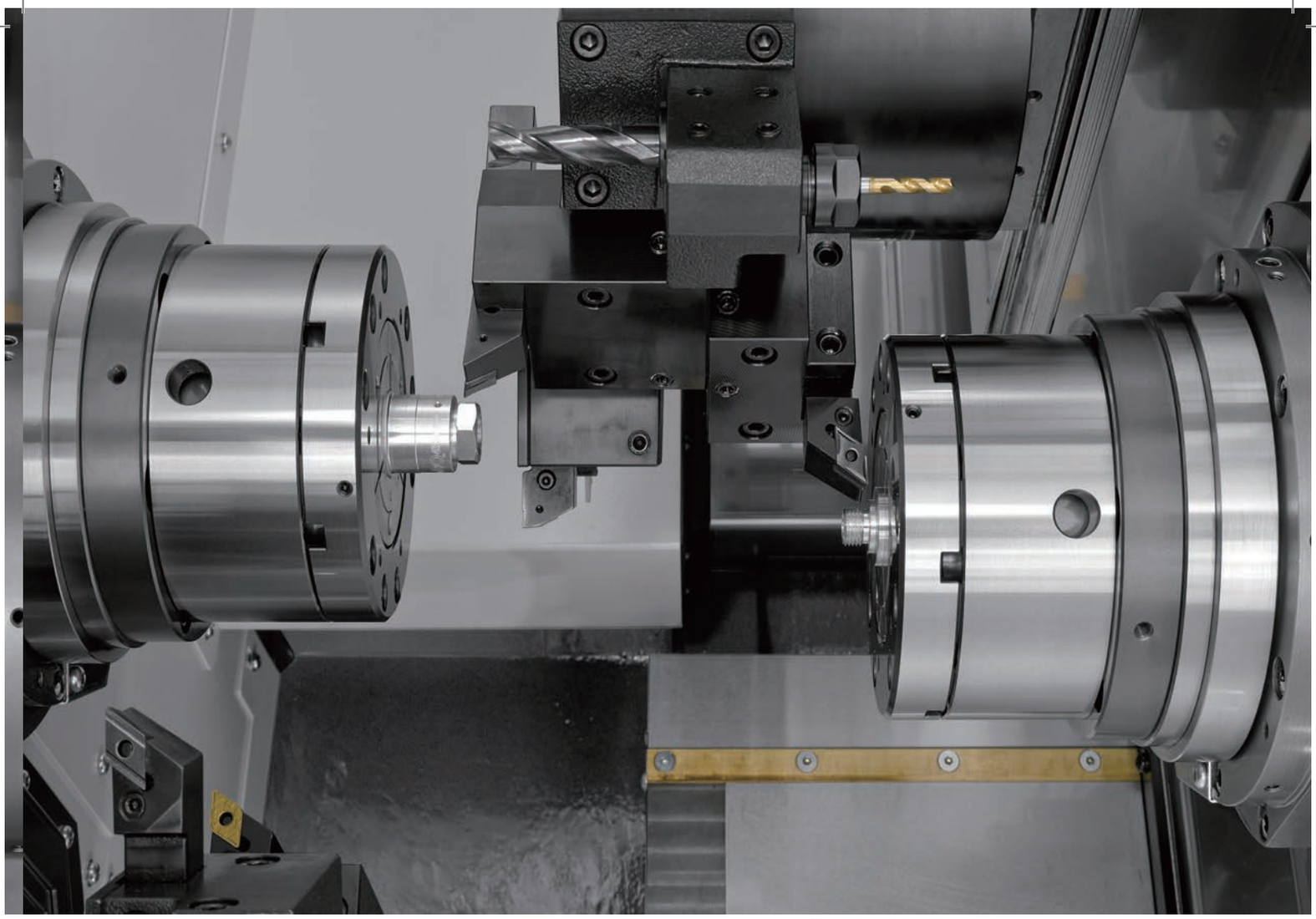
Tool holder using two guide pin mounting method

Spindle

A combination of 'precision double-row cylindrical roller bearings' and 'precision angular contact ball bearings' suppresses radial run-out and thermal displacement in the longitudinal direction as well as providing high rigidity.

Cross section of spindle





Examples of simultaneous machining with two tools

Comprehensive machining patterns

Equipping SP2 with an X3-axis has enabled simultaneous hole machining on both end faces, which was not possible on conventional BNE models. In addition, superimposition control allows simultaneous cutting with two tools by synchronizing the cutting at SP2 with the cutting at SP1, and also simultaneous cutting with three tools including SP2, helping to shorten cycle times. So a full range of machining variations is offered.

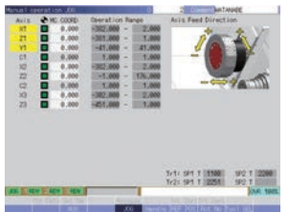
■ Simultaneous machining of 3 tools

SP1, Turning & Drilling SP2, Drilling	
SP1, Simultaneous Turning SP2, Drilling	

■ Simultaneous machining of 2 tools

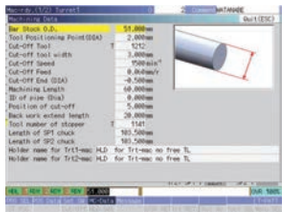
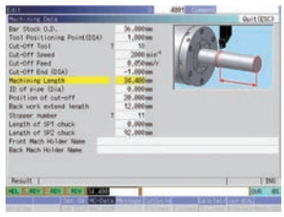
HD1-L, Drilling HD2-R, Drilling	HD1-L, Milling HD2-R, Milling	
HD1-R, Turning HD2-L, Turning	Left simultaneous machining (HD1 Turning, HD2 Drilling)	Right simultaneous machining (HD1 Turning, HD2 Drilling)

Convenient operation



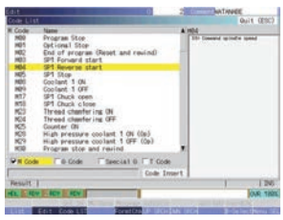
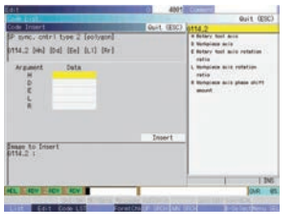
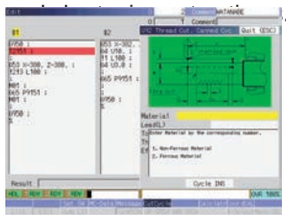

HMI (Human Machine Interface) is adopted

Graphics displayed for each item and screens that display all the necessary information in one place greatly improve operating convenience.

Machining data screen

All you have to do is input the machining length, chucking length and so on, and the escape and approach positions are automatically calculated. This is useful for collision prevention

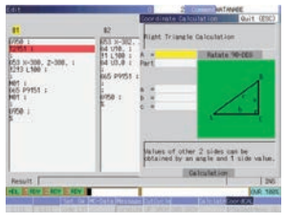





Support for programming

The function displays the list of G and M codes including explanations of the arguments. Canned drilling cycle is designed by dialogue form to support programming.


Easy-to-view edit screen

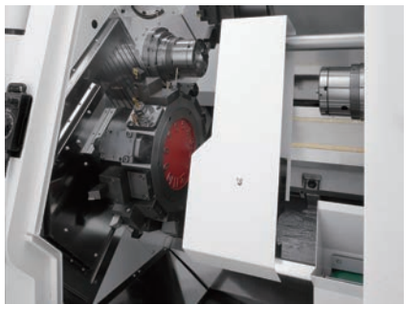
The coordinate calculation function and calculator function incorporated in the NC unit can be used for complex intersection point calculations.

Calculation function

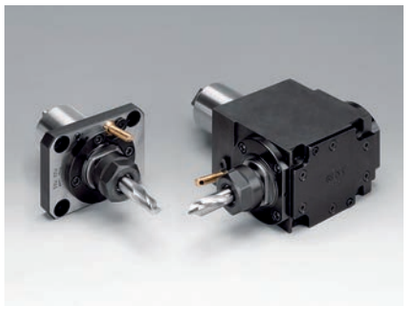
Programs for canned cycles etc. can be created in the conversational style.

Options



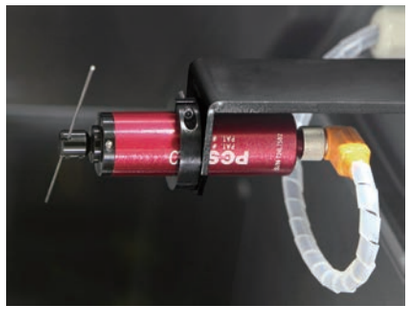
Part catcher

Discharges workpiece on to conveyor.



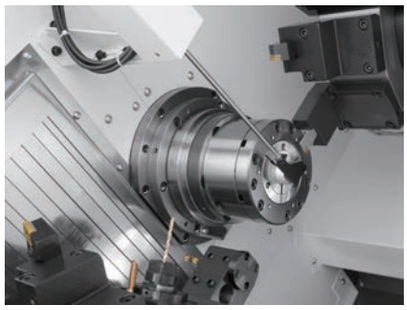
Revolving tools

Ensures high-power, stable milling at a torque of 20 Nm. Furthermore, a powerful 25Nm motor for revolving tools is available.



Drill breakage detector

Drill breakage is detected by the swing cylinder. The machine stops when breakage is detected.



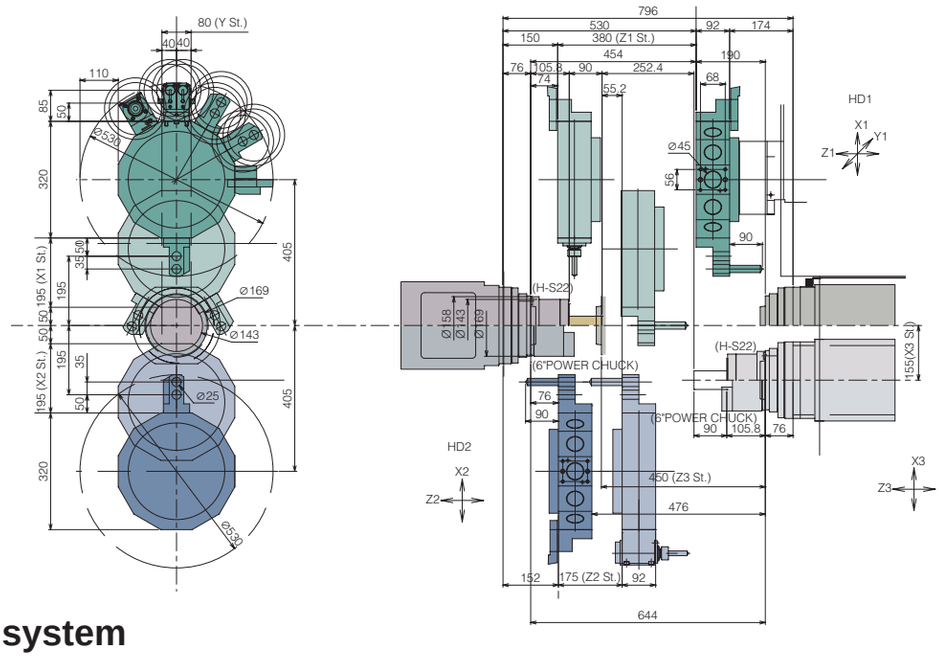
Cut-off confirmation

This is a function to confirm that cut-off of the workpiece is completed.

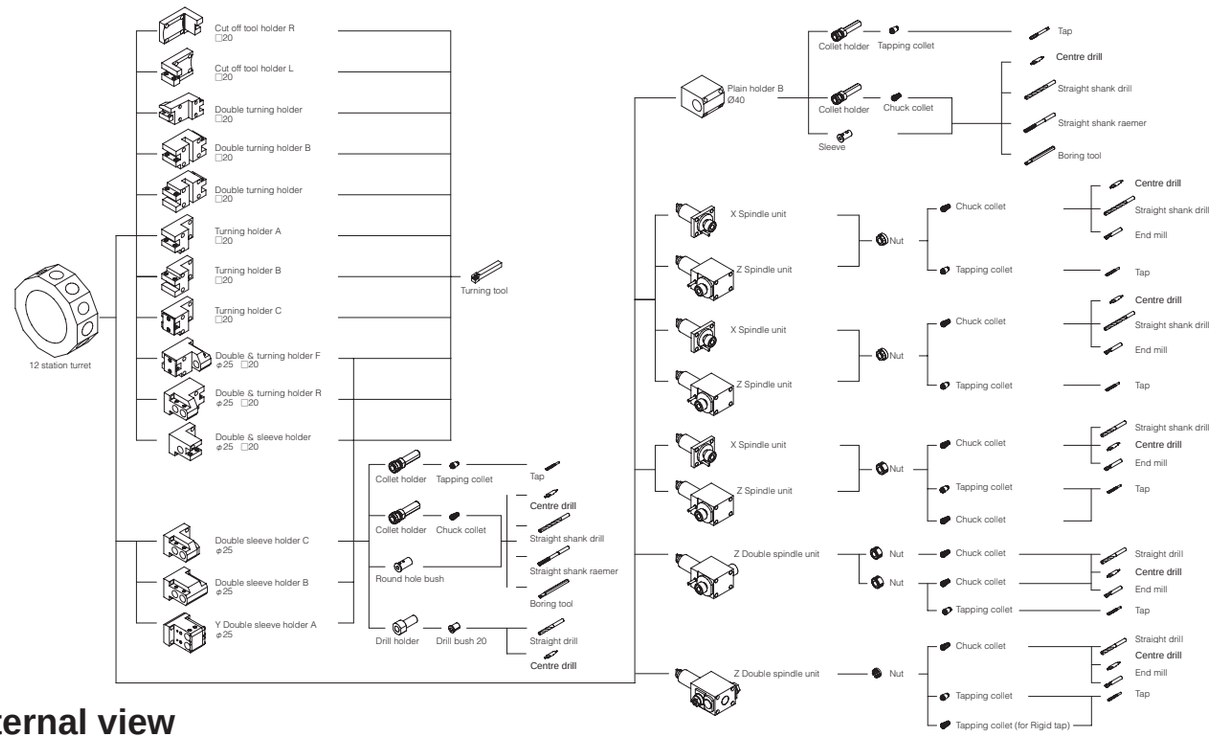
Bar loader/bar feeder

A choice of Barloaders (max bar length≃1m) or Barfeeders (max bar length≃ 3.6m are available.)

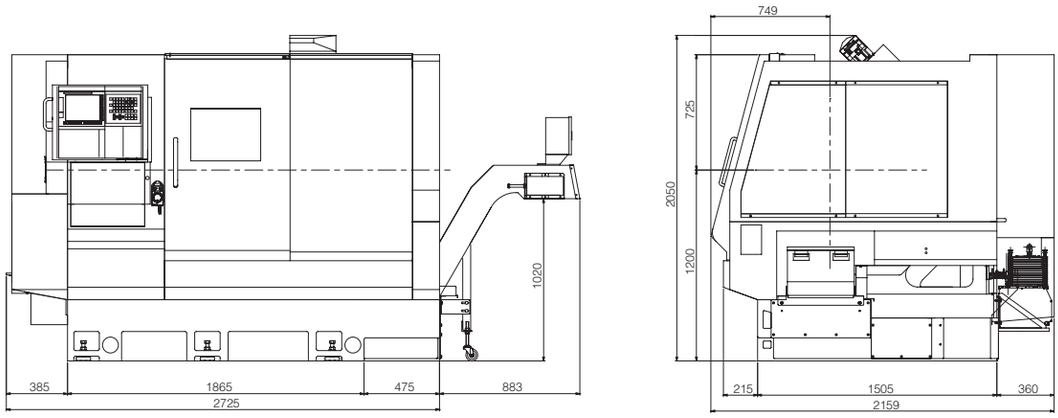
Tooling area



Tooling system



External view



Machine specification

Item		BNE-51MSY
Machining capacity		
Maximum work length		90 mm
Maximum bar diameter	SP1	ϕ51 mm
	SP2	ϕ51 mm
Spindle		
Number of spindles		2
Spindle speed	SP1	5,000 min^{-1}
	SP2	5,000 min^{-1}
Spindle nose	SP1	A2-6
	SP2	A2-6
Draw tube Dia.	SP1	ϕ52
	SP2	ϕ52
Type of collet chuck	SP1	H-S22/ DIN177E
	SP2	H-S22/ DIN177E
Power chuck size and type	SP1	6" (ϕ169)
	SP2	6"(ϕ169)
Turret		
Number of turret		2
Turret stations	HD1	12 ST.
	HD2	12 ST.
Shank size of square turning tool		20 mm Sq.
Diameter of drill shank		ϕ25 mm
Revolving tool		
Number of revolving tools		Max.12+12
Type of revolving tools		Single clutch
Tool spindle speed range		Max. 6,000 min^{-1}
Feed rate		
Rapid feed rate	X1 axis	18 m/ min
	Z1 axis	20 m/ min
	Y1 axis	12 m/ min
	X2 axis	16.2 m/ min
	Z2 axis	18 m/ min
	X3 axis	18 m/ min
	Z3(B) axis	20 m/ min
Slide stroke	X1 axis	195 mm
	Z1 axis	380 mm
	Y1 axis	80 (±40) mm
	X2 axis	195 mm
	Z2 axis	175 mm
	X3 axis	155 mm
	Z3(B) axis	450 mm
Motors		
Spindle motor	SP1	15/ 11 kw (15min./ cont)
	SP2	7.5/ 5.5 kw (15min./ cont)
Revolving tool motor		2.2 kw 20 Nm / 4.0kw 25Nm(op.)
Hydraulic operating motor		1.5 kw
Lubricating motor		0.023 kw
Coolant motor		0.25 kw
High-pressure coolant motor		0.8/ 1.36 kw (50/60Hz)
Turret index motor		0.7 kw
Power supply		
Capacity		44 KVA
Voltage		AC 200/ 220 V
Air supply		0.5 Mpa
Fuse		125 A
Tank capacity		
Hydraulic oil tank capacity		10 L
Lubricating oil tank capacity		4 L
Coolant tank capacity		350 L
Machine dimensions		
Machine height		2,050 mm
Floor space		W 2,725×D 2159mm
Machine weight		8,000 kg

Optional accessories

Spindle brake, Air blow, Work ejector, Automatic fire extinguisher, Automatic power shut-off
Chip box, Parts conveyor, Coolant level switch, High pressure coolant
Inner high pressure coolant & air blow, Turret high pressure coolant & Air blow, Tool setter
Parts Catcher, Parts Box, Collet chuck system, Chip conveyor, Total & preset counter
Oil mist collector, Signal tower, Filler tube, Spindle inner bushing, Bar feeder inner bushing
Cut-off confirmation, Parts carrier, Left over catcher, Drill checker, Drill checker touch (HD1)
Themo revision, 100V, Revolving tool power No.1 (25Nm).

NC specification	
Model device	MITSUBISHI M730VS
Command specified axes	HD1: X1, Z1, Y1,
	HD2: X2, Z2,
	SP1 : C1,
	SP2 : C2,
	SP2 Slide : X3, Z3
Auxiliary axes	HD1 Revolving tool : C3
	HD1 Revolving tool : C4
	HD1 Index T1
	HD2 Index T2
Control axis groups	3 groups
Input code	ISO
Command input system	Incremental and absolute
Tool offset data	200 pairs
Feed command system	Per rotation feed and per minute
Cutting feed rate and	Max.100%
Rapid feed override	
Zero return function	Manual zero return
On machine program check function	Manual pulse generator
Program storage capacity	512KB (1200 m)
Input/Output interface	Compact flash card slot
Spindle C-axis function	0.001°
Display devise	10.4" color LCD

Standard function

Start position automatic return, Manual feed function
Manual data input (MDI) function, Back up function
Operation time display, Product counter display
Cycle time check function, Automatic screen off function
Optional block skip, Optional stop
Constant surface speed control Cut off confirmation
Corner chamferring/ Radius function
Tool nose R compensation function
Arc radius specification, Thread cutting canned cycle
Spindle synchronising control function
Revolving tool synchronous tap function
Spindle synchronising control function, Custom macro
Multiple canned cycles for turning, Canned cycle for drilling
High speed program check function, Milling interpolation
Helical Interpolation

Preparation functions

Start position automatic return, Waiting point automatic return
Sub spindle retract return, Turret retract return
Automatic cut-off machining function, Tool set function
Spindle speed set function, Tool select function
Chuck adjustment function, AUX Manual select function
JOG operation function, Handle operation function
Spindle speed simultaneous command for 3 spindle
3 Sets of M code simultaneous command
Control axis swap function, Arbitrary superposition function
Background editing, Function to superimpose 2 pairs of axes

Editing support functions

Calculator function, Code list display, Code insert, Coordinate calculation function, Format check

Option

Automatic power shut-off, Thermo revision, tool setter, Eco function RS232C

CITIZEN

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