Miyano

BNA42 MSY

Fixed Headstock Type CNC Automatic Lathe

MSY

Configured with two spindles and one turret and equipped with a Y axis and X2 axis, the BNA42MSY is able to handle complex machining, with short cycle times and fast set ups.

The X2 axis to sub-spindle enables simultaneous independent machining of the front and back of the workpiece. This, in effect, provides the benefits of a twin turret machine with the significant cost savings of a single turret model.

- 2 tool simultaneous cutting
- renowned Miyano accuracy
- quick to set up and changeover
- highly efficient for small and medium batch sizes (lots)
- compact design for improved floor space efficiency
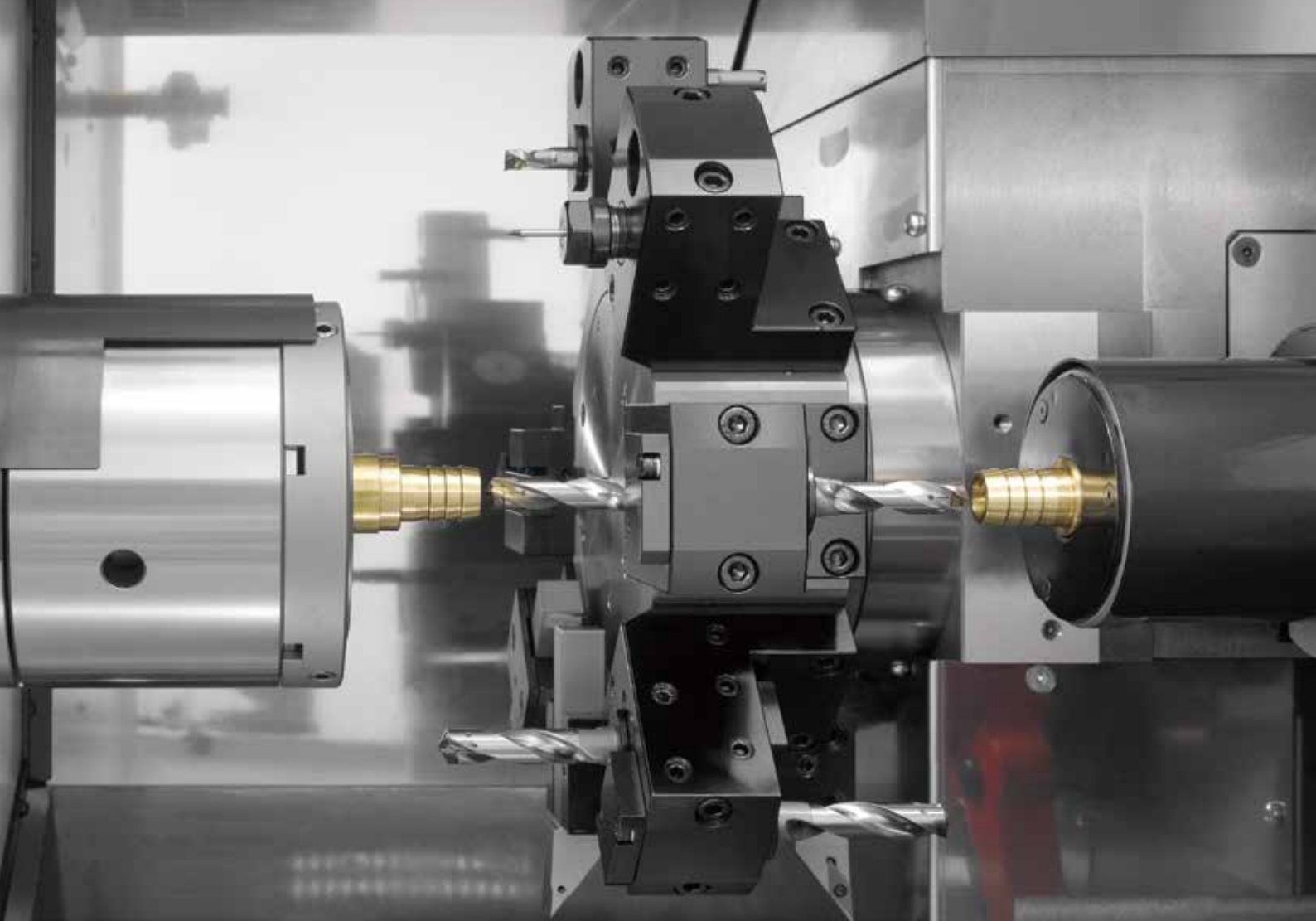
Cycle time shortened by superimposition control

A turret incorporating X, Y and Z axes (HD1) and a sub spindle incorporating X and Z axes (SP2) open up the possibility of machining by superimposition control, where the sub spindle synchronizes with the turret to machine a workpiece in the main spindle (SP1), a very effective way to shorten cycle time.

High-rigidity spindle

To achieve powerful cutting, the spindle, which is the key component in machining, is equipped with angular contact ball bearings at the front and double-row cylindrical roller bearings at the rear.

Double-row cylindrical roller bearing

Spindle quill

Angular contact ball bearing
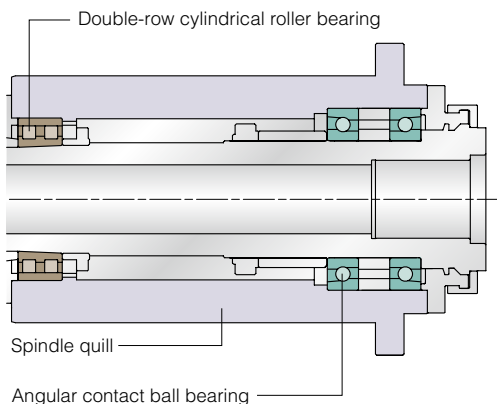
Spindle Motors with Increased Output

The spindle 1 motor has the highest output in the BNA series. This enables powerful cutting.

Motor pulley diameter: ϕ125mm Moto r(min^{-1}) 1500 2000 4500 7632
Speed-reduction rate: 0.786
Spindle pulley diameter: ϕ159mm Spindle (min^{-1})
1179 1572 3537 6000

Output (kW) Torque (Nm)

11 kW (15min)
7.5 kW (cont.)

10.0
5.0

200

1.0 89.1 Nm(15min) 100

45.6 Nm(cont.)

0.5 50

0.1 10

100 500 1000 5000
Spindle speed (min^{-1})
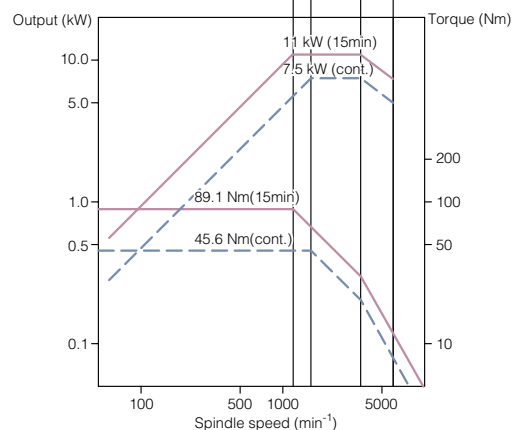
Basic Construction

High-rigidity scraped slideways are used on all axes. These slideways with face contacts have exceptional rigidity and damping characteristics, achieve powerful cutting, and help to prolong cutting tool life.
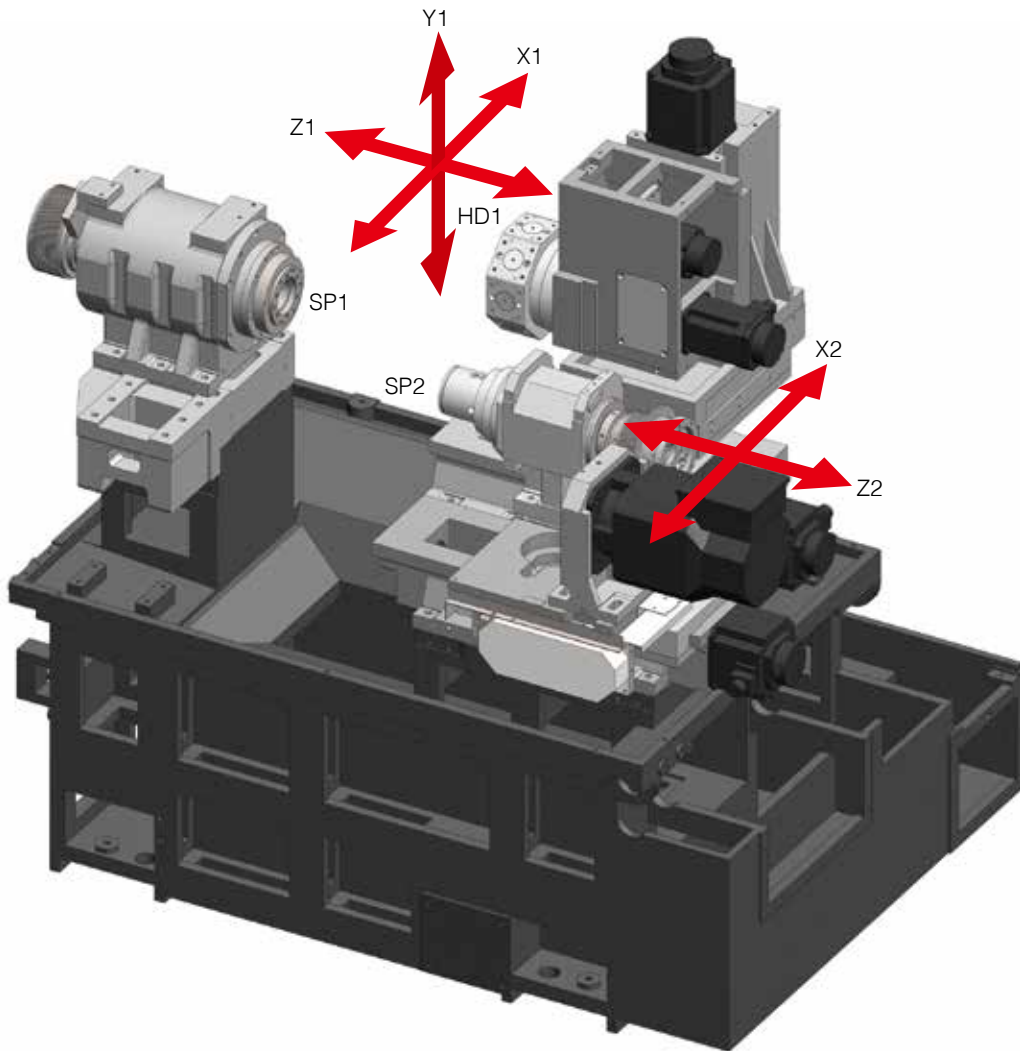
Substantial Reduction in Non-cutting Time

The unique control system cuts non-cutting time by 27% (compared to earlier equivalent Miyano products). The result is a 13% reduction in cycle time.

	Cutting time	Non-cutting time	
Conventional machine	75.5sec.	71.5sec.	147sec.
		27% reduction (non-cutting time)	
BNA	75.5sec.	52sec.	127.5sec.
		13% reduction (total cycle time)	

Workpiece
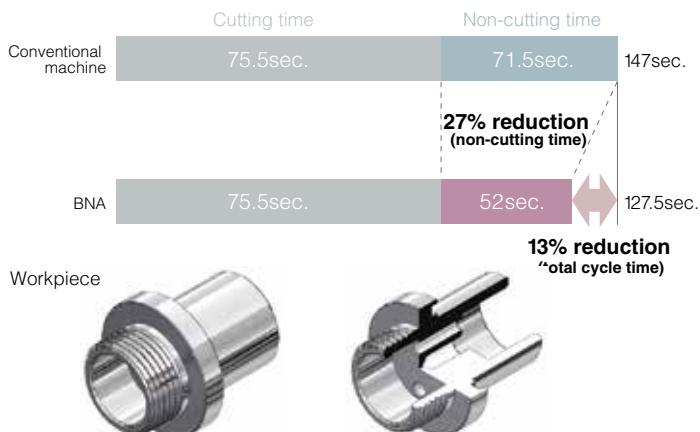
Easy to Use Tooling System

The turret has 8 stations, but the half-indexing mechanism makes it possible to mount tools at up to 16 positions. The use of optional multiple tool holders can further increase the number of tool positions.

Support Screens Improve Operating Convenience
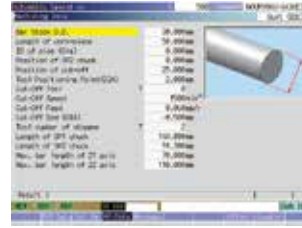
The program screen, organized for easy reading, can be displayed in synchronization with the editing screen. This simplifies the editing of complex programs with a lot of queuing.

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 and shortening setup times.
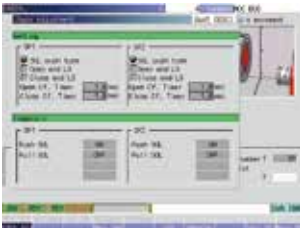
HMI (Human Machine Interface) Adopted
Graphics displayed for each item and screens that display all the necessary information in one place greatly improve operating convenience.
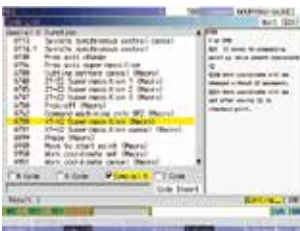
The function displays the list of G and M codes including explanations of the arguments to support programming.
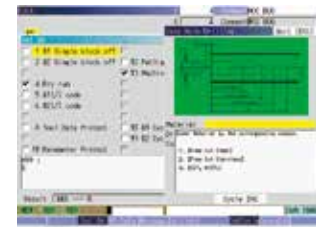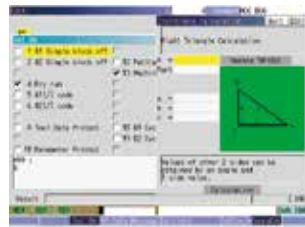
The coordinate calculation function and calculator function incorporated in the NC unit can be used for complex intersection point calculations.

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

External view
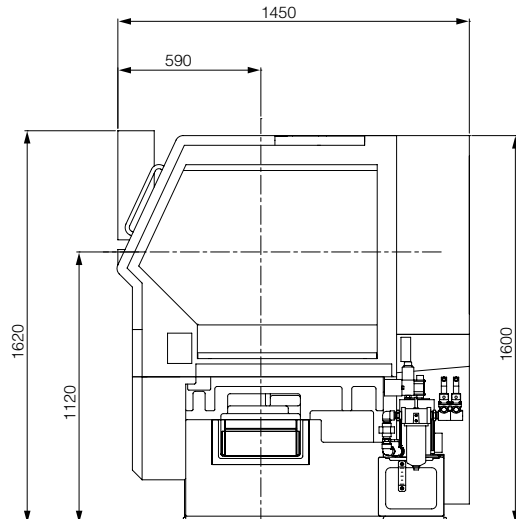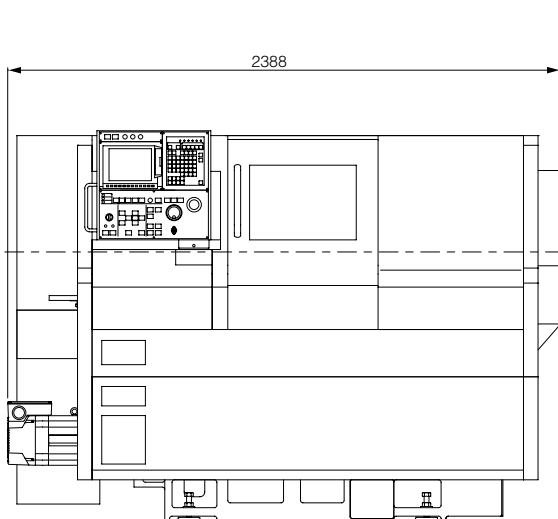
Tooling area

Tooling system

- Triple turning tool holder □20
- Double turning toll holder □20
- Cut off tool holder □20×12
- Turning holder □20
- Double turning holder □20
- Double turning holder S □20
- Turning holder S □20
- Plain holder & turning □20 φ25
- 8 Station turret
- Double sleeve holder φ25
- Triple sleeve holder φ25
- Double sleeve holder D φ25
- Double sleeve holder A φ25
- Quad sleeve holder φ25
- Stopper plate
- Knee tool holder □20
- Stopper plate S
- Turning tool
- Pull out finger
- Collet holder
- Tapping collet
- Collet holder
- Chuck collet
- Round hole bush
- Drill holder
- Drill bush 20
- Tap
- Center drill
- Straight shank drill
- Straight shank raemer
- Boring tool
- Straight drill
- Center drill
- X Spindle unit
- Z Spindle unit
- ZS Spindle unit
- Chuck collet
- Tapping collet
- Tapp collet
- Nut
- Straight shank drill
- Center drill
- End mill
- Tap
- Z Double spindle unit
- X Double spindle unit
- Z Quad spindle unit
- Chuck collet
- Tapping collet
- Nut
- Center drill
- Straight shank drill
- End mill
- Tap
- Z two way spindle unit
- Chuck collet
- Tapping collet
- Nut
- Center drill
- Straight shank drill
- End mill
- Tap

Machine specification

Items		BNA-42MSY2
Machining capacity		
Max. machining diameter of bar work	SP1	42 mm Dia.
	SP2	34 mm Dia.
Max. work length		100 mm
Slide stroke		
Turret slide stroke	X1 axis	140 mm
	Z1 axis	235 mm
	Y1 axis	70 (±35 mm)
Spindle slide stroke	X2 axis	140 mm
	Z2 axis	310 mm
Spindle		
Number of spindle		2
Inner diameter of draw tube	SP1	43 mm Dia.
	SP2	30 mm Dia.
Spindle speed range	SP1	6,000 min^{-1}
	SP2	5,000 min^{-1}
Collet chuck type	SP1	Hardinge S20, DIN 173E, B&S 22D, HAINBUCH SK42
	SP2	Spring collet, DIN171E, B&S 22
Power chuck type		5"thru-hole chuck
Spindle minimum index angle	SP1	0.001°
	SP2	0.001°
Turret		
Number of turret		1
Type of turret		8st.
Shank size of turning tool		20 mm squ.
Diameter of sleeve holder		25mm Dia.
Revolving tools		
Number of revolving tools		Max. 8
Tool spindle speed range		Max. 6,000min^{-1}
Machining capacity	Drill	Max.10 mm Dia.
	Tap	Max. M8×1.25
Feed rate		
Rapid Feed rate	X1 axis	20 m/ min
	Z1 axis	20 m/ min
	Y1 axis	12 m/ min
	X2 axis	12 m/ min
	Z2 axis	20 m /min
Motors		
Spindle drive	SP1	11/ 7.5kw (15min/ cont.)
	SP2	5.5/ 3.7kw (15min/ cont.)
Revolving tool drive		1.0 kW
Power supply		
Electrical capacity		29 KVA
Coolant tank capacity		165 L
Machine dimensions		
Machine height		1,620 mm
Floor space		W 2,278 × D 1,450 mm
Machine weight		3,000 kg
Optional accessories		
Spindle air blow, Spindle Brake, High pressure coolant,		
Inner High pressure coolant & Air blow, Coolant level swich, Signal tower,		
Coolant mist collector, Automatic fire- extinguishing equipment,		
Automatic power shut-off, Chip conveyor, Chip box, Parts catcher, Parts conveyor,		
Drill breakage detector, RS-232C, 100V		

NC Specification

Model device	MITSUBISHI M70V
Display devise	8.4"color LCD
Controllable axis	
command specified axes	X1, Z1, Y1, C1, X2, Z2, C2-axis
auxiliary axes	C3, TI-axis
Control axis groups	Two groups
Input code	ISO
Command input system	Incremental and absolute
Feed command system	Per rotation feed and per minute
Cutting Feed Rate Override	Max.100%
Tool offset data	80 pairs
Program storage capacity	160m
Standard function	
On machine program check function	
Manual feed function	
Manual data input (MDI) function	
Operation time display	
Product counter display	
Cycle time check function	
Preparation functions	
Start position automatic return	
Automatic cut-off machining function	
Tool set function	
Spindle speed simultaneous command for 3 spindle	
3 Sets of M code simultaneous command	
Control axis swap function	
Control axes superimpose command	
Arbitrary superposition function	
Function to superimpose 2 pairs of axes	
BNA-42MSY dedicated macros	
Background editing	
Simultaneous program editing two control axis group	
Editing support functions	
Calculator function	
Code list display	
Coordinate calculation function	
Main spindle C-axis function spindle	
Constant surface speed control	
Cut off confirmation	
Tool nose R compensation function	
Arc radius specification	
Thread cutting canned cycle	
Spindle synchronizing control function	
Milling interpolation	
Option	
Helical interpolation, Corner chamferring/ Radius function,	
Spindle synchronous tap function, Revolving tool synchronous tap function,	
Custom macro, Multiple canned cycles for turning, Canned cycles for drilling,	
Inchi/ metric change	