BNE51MSY
Fixed Headstock Type CNC Automatic Lathe
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.
External View

Accessories

Part catcher (Standard)
Discharges workpiece on to conveyor.

Cut-off confirmation (Standard)
This is a function to confirm that cut-off of the workpiece is completed.

Revolving tools (Standard)
Ensures high-power, stable milling at a torque of 25 Nm.

Drill breakage detector (Option)
Drill breakage is detected by the swing cylinder. The machine stops when breakage is detected.
**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 25 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.

**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.
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.
Convenient operation

HMI (Human Machine Interface) is utilized.

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 and shortening setup times.

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

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 conversational style.
Tooling area

Tooling system
## Specifications

<table>
<thead>
<tr>
<th>Machine Model</th>
<th>BNE-51MSY</th>
<th>NC Model device</th>
<th>MITSUBISHI M730VS</th>
</tr>
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<tbody>
<tr>
<td>Machining capacity</td>
<td></td>
<td>Command specified axes</td>
<td>HD1: X1, Z1, Y1,</td>
</tr>
<tr>
<td>Maximum work length</td>
<td>90 mm</td>
<td>HD2: X2, Z2,</td>
<td>HD2: Index T1</td>
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<tr>
<td>Maximum bar diameter</td>
<td>SP1: Ø 51 mm</td>
<td>SP1: C1,</td>
<td>SP2: C2,</td>
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<tr>
<td>SP2: Ø 51 mm</td>
<td>SP2: Slide: X3, Z3</td>
<td>SP2: Slide: X3, Z3</td>
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<tr>
<td>Spindle</td>
<td></td>
<td>Auxiliary axes</td>
<td>HD1 Revolving tool: C3</td>
</tr>
<tr>
<td>Number of spindles</td>
<td>2</td>
<td>HD1 Revolving tool: C4</td>
<td>HD1 Revolving tool: C4</td>
</tr>
<tr>
<td>Spindle speed</td>
<td>SP1: 5,000 rpm</td>
<td>Control axis groups</td>
<td>3 groups</td>
</tr>
<tr>
<td>SP2: 5,000 rpm</td>
<td>Spindle speed simultaneous command</td>
<td>Input code</td>
<td>ISO</td>
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<tr>
<td>Spindle nose</td>
<td>SP1: A2-E</td>
<td>Cycle time check function</td>
<td>Manual zero return</td>
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<tr>
<td>SP2: A2-E</td>
<td>Automatic cut-off machining function</td>
<td>Tool offset data</td>
<td>99 pairs</td>
</tr>
<tr>
<td>Draw tube Dia.</td>
<td>SP1: Ø 52</td>
<td>Feed command system</td>
<td>Incremental and absolute</td>
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<tr>
<td>SP2: Ø 52</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Type of collet chuck</td>
<td>SP1: H-S22/DIN177E</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SP2: H-S22/DIN177E</td>
<td></td>
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<tr>
<td>Power chuck size and type</td>
<td>SP1: 6&quot; (Ø 69)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SP2: 6&quot; (Ø 69)</td>
<td></td>
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<tr>
<td>Turret</td>
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<tr>
<td>Number of turret</td>
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<tr>
<td>Turret stations</td>
<td>HD1: 12 ST.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>HD2: 12 ST.</td>
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</tr>
<tr>
<td>Shank size of square turning tool</td>
<td>¼&quot; Sq.</td>
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<tr>
<td>Diameter of drill shank</td>
<td>1&quot;</td>
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<tr>
<td>Revolving tool</td>
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</tr>
<tr>
<td>Number of revolving tools</td>
<td>Max.12+12</td>
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</tr>
<tr>
<td>Type of revolving tools</td>
<td>Single clutch</td>
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<tr>
<td>Tool spindle speed range</td>
<td>Max. 6,000 rpm</td>
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<tr>
<td>Feed rate</td>
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<tr>
<td>Rapid feed rate</td>
<td>X1 axis: 18 m/min</td>
<td>Spindle C-axis function</td>
<td>0.001&quot;</td>
</tr>
<tr>
<td>Z1 axis: 20 m/min</td>
<td>Z1 axis: 12 m/min</td>
<td>Display device</td>
<td>10.4&quot; color LCD</td>
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<tr>
<td>Y1 axis: 16.2 m/min</td>
<td>X2 axis: 18 m/min</td>
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<tr>
<td>Z2 axis: 18 m/min</td>
<td>X3 axis: 18 m/min</td>
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<tr>
<td>Z3 (B) axis: 20 m/min</td>
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<tr>
<td>Slide stroke</td>
<td>X1 axis: 195 mm</td>
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<tr>
<td>Z1 axis: 380 mm</td>
<td>Y1 axis: 80 (±40) mm</td>
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<tr>
<td>X2 axis: 195 mm</td>
<td>Z2 axis: 175 mm</td>
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<tr>
<td>Z3 axis: 155 mm</td>
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<tr>
<td>Z3 (B) axis: 450 mm</td>
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<tr>
<td>Motors</td>
<td></td>
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<tr>
<td>Spindle motor</td>
<td>SP1: 15/11 kw (15 min./cont)</td>
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<tr>
<td>SP2: 7.5/5.5 kw (15 min./cont)</td>
<td></td>
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</tr>
<tr>
<td>Revolving tool motor</td>
<td>4.0 kw 25 Nm</td>
<td></td>
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</tr>
<tr>
<td>Hydraulic operating motor</td>
<td>1.5 kw</td>
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<tr>
<td>Lubricating motor</td>
<td>0.023 kw</td>
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<tr>
<td>Coolant motor</td>
<td>0.25 kw</td>
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<td></td>
</tr>
<tr>
<td>High-pressure coolant motor</td>
<td>0.8/1.36 kw (50/60 Hz)</td>
<td></td>
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</tr>
<tr>
<td>Turret index motor</td>
<td>0.7 kw</td>
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<td>Power supply</td>
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<td>Capacity</td>
<td>44 KVA</td>
<td>Command specified axes</td>
<td>HD1: X1, Z1, Y1,</td>
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<td>Voltage</td>
<td>AC 200/220 V</td>
<td>HD2: X2, Z2,</td>
<td>HD2: Index T1</td>
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<tr>
<td>Air supply</td>
<td>0.5 Mpa</td>
<td>SP1: C1,</td>
<td>SP2: C2,</td>
</tr>
<tr>
<td>Fuse</td>
<td>125 A</td>
<td>SP2: Slide: X3, Z3</td>
<td>SP2: Slide: X3, Z3</td>
</tr>
<tr>
<td>Hydraulic oil tank capacity</td>
<td>10 L</td>
<td>Auxiliary axes</td>
<td>HD1 Revolving tool: C3</td>
</tr>
<tr>
<td>Lubricating oil tank capacity</td>
<td>4 L</td>
<td>HD1 Revolving tool: C4</td>
<td>HD1 Revolving tool: C4</td>
</tr>
<tr>
<td>Coolant tank capacity</td>
<td>350 L</td>
<td>Control axis groups</td>
<td>3 groups</td>
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<td>Machine height</td>
<td>2,050 mm</td>
<td>Input code</td>
<td>ISO</td>
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<td>Floor space</td>
<td>W 2,725 × D 2,159 mm</td>
<td>Command input system</td>
<td>Incremental and absolute</td>
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<td>Machine weight</td>
<td>17,640 lbs.</td>
<td>Tool offset data</td>
<td>99 pairs</td>
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<td></td>
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<td>Feed command system</td>
<td>Per rotation feed and per minute</td>
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<tr>
<td></td>
<td></td>
<td>Cutting feed rate and</td>
<td>Max.100%</td>
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<td></td>
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<td>Rapid feed override</td>
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<tr>
<td></td>
<td></td>
<td>Zero return function</td>
<td>Manual zero return</td>
</tr>
<tr>
<td></td>
<td></td>
<td>On machine program check function</td>
<td>Manual pulse generator</td>
</tr>
<tr>
<td></td>
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<td>Program storage capacity</td>
<td>512 KB (1200 m)</td>
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<tr>
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<td>Input/Output interface</td>
<td>Compact flash card slot</td>
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<tr>
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<td>Spindle C-axis function</td>
<td>0.001&quot;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Display device</td>
<td>10.4&quot; color LCD</td>
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</tbody>
</table>

### Standard functions
- 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 chamfering/Radius function
- Tool nose R compensation function
- Arc radius specification
- Thread cutting camed cycle
- Spindle synchronizing control function
- Revolving tool synchronous tap function
- Custom macro
- Multiple camed cycles for turning
- Canned cycle for drilling
- High speed program check function
- Milling interpolation
- Helical Interpolation
- Tool Life Management
- Automatic power shut-off RS232C
- Spindle brake
- Air blow
- Work ejector
- Parts conveyor
- Coolant level switch
- High pressure coolant
- Inner high pressure coolant & air blow
- Parts catcher
- Parts box
- Collet chuck system
- Chip conveyor
- Total & preset counter
- Signal tower
- Filler tube
- Cut-off confirmation
- Thermo revision

### Preparation functions
- Manual zero return
- Manual zero return
- Sub spindle retract return
- Sub spindle 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
- 4 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
- 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 chamfering/Radius function
- Tool nose R compensation function
- Arc radius specification
- Thread cutting camed cycle
- Spindle synchronizing control function
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- Helical Interpolation
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- Air blow
- Work ejector
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- Coolant level switch
- High pressure coolant
- Inner high pressure coolant & air blow
- Parts catcher
- Parts box
- Collet chuck system
- Chip conveyor
- Total & preset counter
- Signal tower
- Filler tube
- Cut-off confirmation
- Thermo revision

### Optional accessories
- Chip box
- Turret high pressure coolant & air blow
- Tool setter
- Spindle inner bushing
- Bar feeder inner bushing
- Parts carrier
- Left over catcher
- Drill checker
- Drill checker touch (HD1)
- 100 V

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