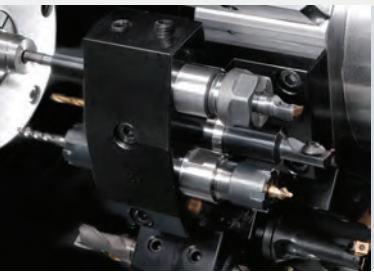
Miyano



BNA-S2/DHY2

Fixed Headstock Type Automatic CNC Lathe

BNA

The BNA series packs sophisticated functions and high accuracy into a space-saving compact body.

The BNA series aims to set the new standard for machines for cutting bar stock, based on the concept of “space savings and sophisticated functions”.

The BNA-42S2 enables back machining with its 2 spindles and 1 turret and combines a high level of basic performance with convenience of use.

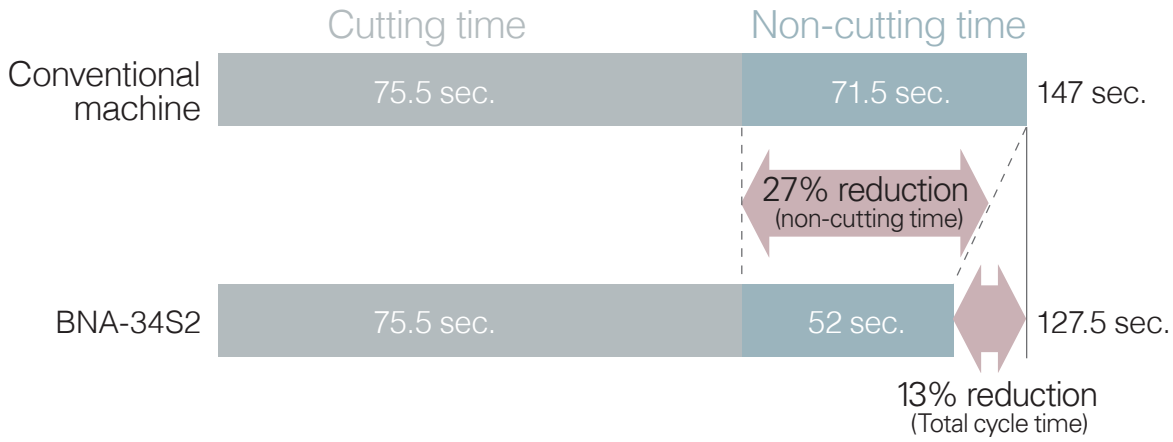
The BNA-42DHY2 achieves further shortening of cycle times by adding a compact sub-turret to provide superimposition machining and other forms of simultaneous machining.

The BNA series offers high performance in compact space, round-the-clock stability and accuracy; and ease of use for fast set-ups and quick changeovers.

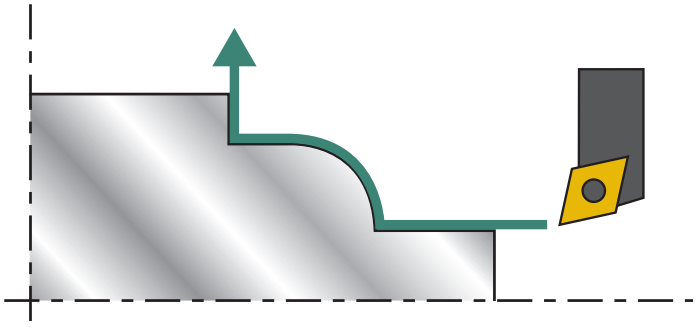
Substantial Reduction in Non-Cutting Time

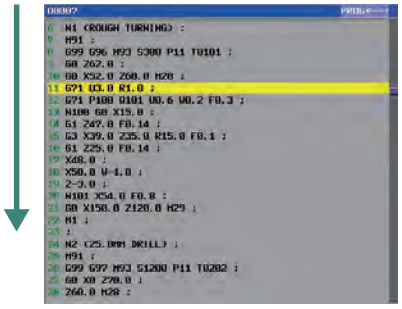
Miyano's unique control system cuts non-cutting time by 27% (compared to previous model), achieving a 13% reduction in terms of total cycle time.

Workpiece used for data measurement



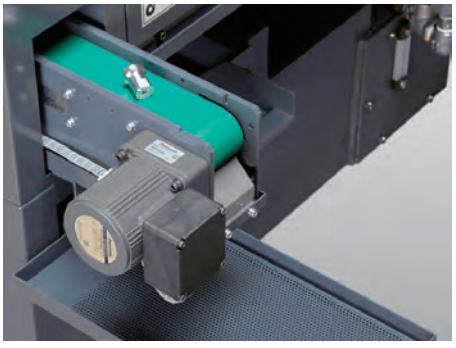
Standard Accessories





Handle Retrace Function (DHY2 Type)
New program movement can easily be checked by using manual pulse generator to avoid any interference of tools and workpiece.

Part catcher
Catches workpieces without damaging them and transfers them to the part conveyor.



Part conveyor
Transports workpieces received from the part catcher to outside the machine.

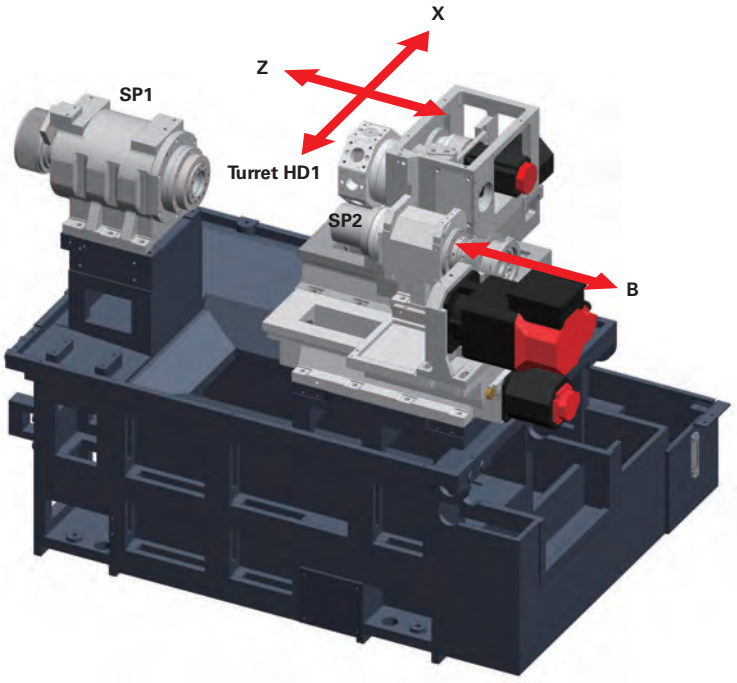
Chip conveyor
Ejects chips smoothly. Various types are available to suit the application.

BNA-42S2

Stable, Accurate and Strong

The machine bed has a platform structure with traditional square, hand-scraped slidways for assured accuracy and long tool life.

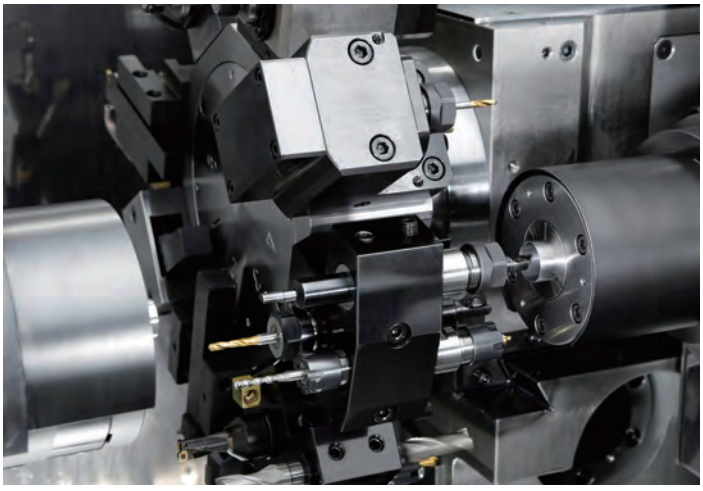
The unit mounting faces are not distorted by the effects of heat, and even if the units are subject to thermal expansion they are all displaced in the same direction (perpendicular to their mounting faces), minimizing relative deviations between the workpiece and cutting tools.



Sub-spindle Enables Complete Machining

The S model delivers increased versatility with the provision of a sub-spindle for pick-off and back machining. Multiple tool holders enable the use of many tools for unrivalled flexibility in a bar turning machine of this compact size.

All BNA models incorporate the latest control technology for reduced non-cutting time and improved productivity.

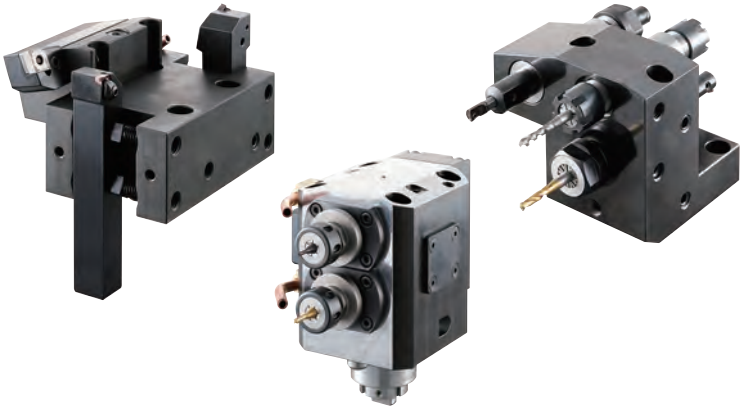


Back machining using tools installed in a triple sleeve holder.

Extensive Tool Range

The 8 station turret with half indexing in combination with multi tool holders helps to standardize set-ups and enable fast changeover to a different workpiece.

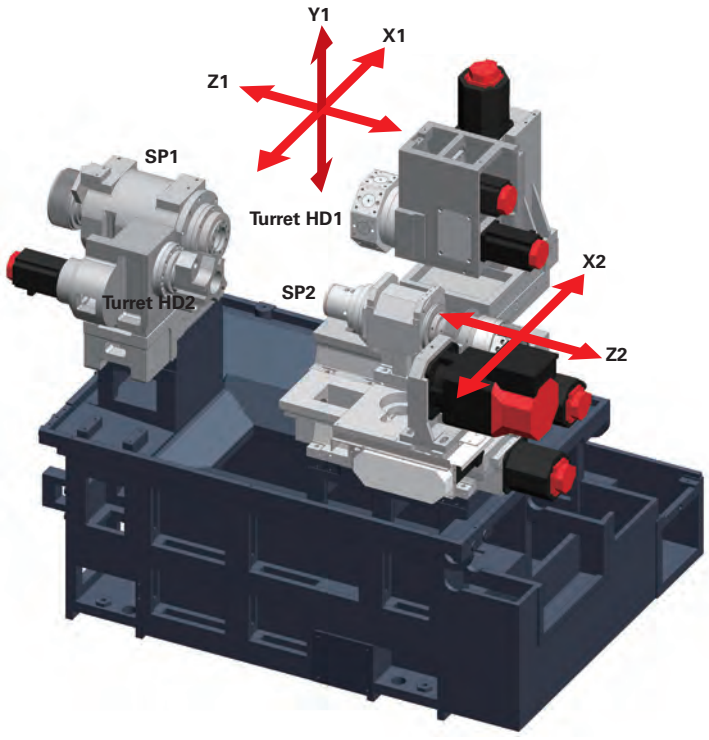
With double, triple and even quad tool holders you are assured of sufficient tool positions even for complex workpieces.



BNA-42DHY2

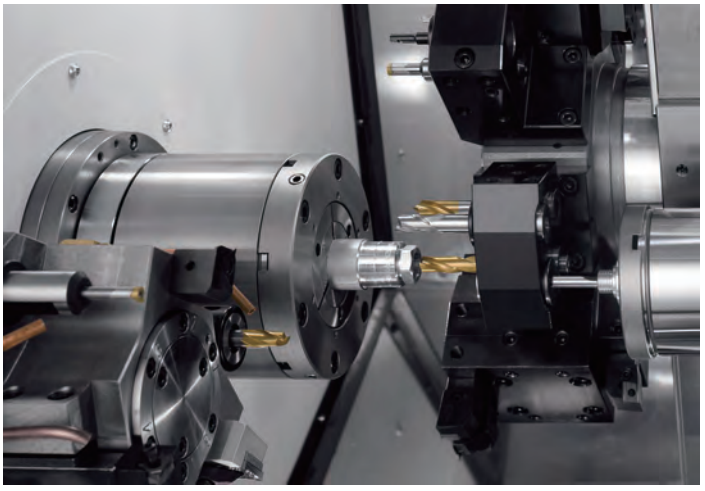
High-rigidity Scraped Slideways Support Powerful Cutting

High-rigidity scraped slideways are used on all axes except for X axis of SP2. These slideways with face contacts have exceptional rigidity and damping characteristics, achieve powerful cutting, and help to prolong the lives of cutting tools.



Y-axis Function and Sub-turret

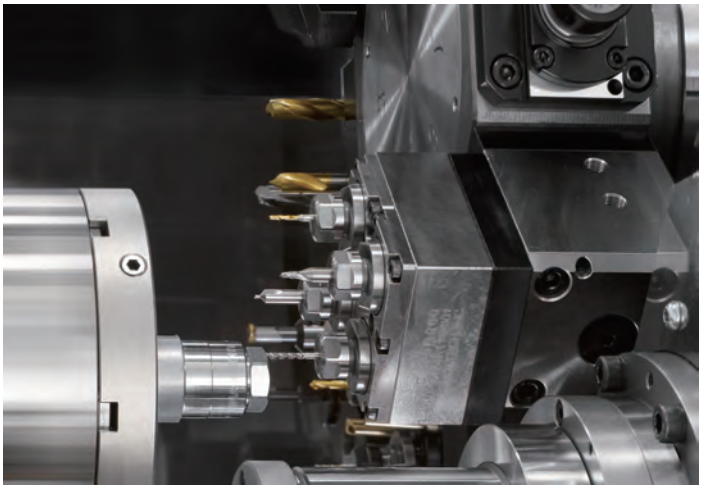
The combination of the Y-axis function incorporated in the main turret (HD1) and the compact 6-station sub-turret (HD2) can achieve further reductions in machining time through overlap processing and other forms of machining performed simultaneously on the main and sub spindles.



Simultaneous front/back machining

Inspiring Tooling Possibilities

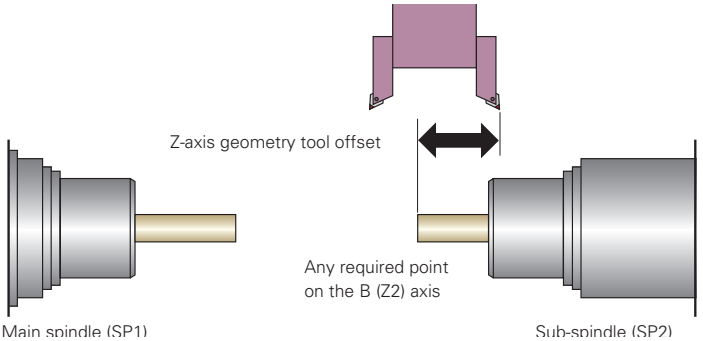
Revolving tools with rotational speeds of up to 5,000 min-1 can be mounted at all positions (8 positions) with independent drive. The range of machining possibilities is broadened by the ability to use multi-tool holders including triple and quad turning holders, quad sleeve holders and quad driven tool holders.



Arbitrary Point Control by B (Z2) axis

The approach for secondary operation can be made at any required point on the B (Z2) axis, so there is no need to consider the position of the B (Z2) axis when setting the offset for tools that operate on the sub-spindle (SP2).

Wasted motion is eliminated, and a smooth transition from primary to secondary operation can be made at turret index, helping to reduce cutting time.



B (Z2) axis independent commands (S Type)

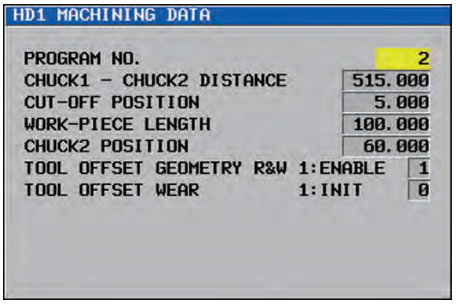
B (Z2) axis independent multiple block commands can make it possible for B (Z2) axis programs input in advance to run independently from the main program. B (Z2) axis commands can contain maximum 10 blocks.

```
O1000;
G591;                          G591: B-axis program registration start
G0 B-260.;                     B-axis forward
G01 B-290.43 F4000.;           B-axis positioning
M408;                          M408: M403 completion confirmation
M118;                          M118: SP2 chuck close
G590;                          G590: B-axis program registration end
•
•
N8 (CUT OFF) M91;              M91: SP1 position coder selection
G28U0;                         X-axis origin point return
M291;                          M291: B-axis program execution start
T0808M117;                     Turret selection, M117: SP2 chuck open
G0G97Z0.S2000M403P11;          Z-axis positioning,
                               M403SP1&2 Synchronous forward
                               Immediate completion
X23.0;                         X-axis positioning
M290;                          M290: B-axis program execution
                               completion confirmation
G506K0.05F500;                 G506: B-axis incremental move
G99G1X-1.0;                    Cut off
G0X50.0M205;                   M205: SP1&2 Synchronous stop
•
•
```

Synchronous Execution from M291

Machining Support Screens

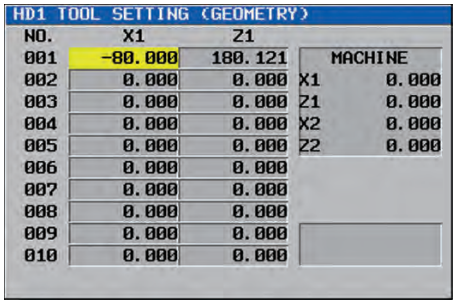
You can call up the various support screens with a single touch, greatly improving working efficiency.



HD1 MACHINING DATA

PROGRAM NO.	2
CHUCK1 – CHUCK2 DISTANCE	515.000
CUT-OFF POSITION	5.000
WORK-PIECE LENGTH	100.000
CHUCK2 POSITION	60.000
TOOL OFFSET GEOMETRY R&W 1:ENABLE	1
TOOL OFFSET WEAR 1:INIT	0

Machining data
Entering the machining length and position of the cut-off here makes it easier to measure geometry offsets and to set tools.

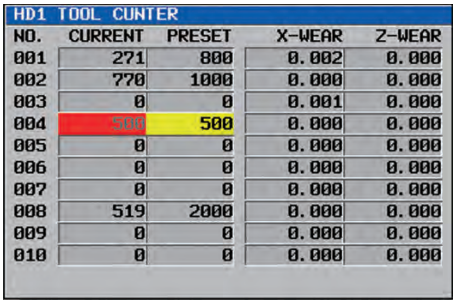


HD1 TOOL SETTING (GEOMETRY)

NO.	X1	Z1
001	-80.000	180.121
002	0.000	0.000
003	0.000	0.000
004	0.000	0.000
005	0.000	0.000
006	0.000	0.000
007	0.000	0.000
008	0.000	0.000
009	0.000	0.000
010	0.000	0.000

MACHINE	
X1	0.000
Z1	0.000
X2	0.000
Z2	0.000

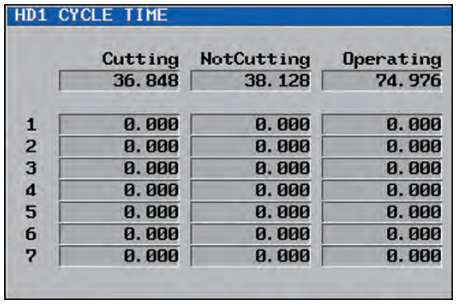
Tool setting
Used to measure geometry offsets. It can also be used for tool mounting support, to ensure that the overhang of all tools is fixed at a constant value.



HD1 TOOL CUNTER

NO.	CURRENT	PRESET	X-WEAR	Z-WEAR
001	271	800	0.002	0.000
002	770	1000	0.000	0.000
003	0	0	0.001	0.000
004	500	500	0.000	0.000
005	0	0	0.000	0.000
006	0	0	0.000	0.000
007	0	0	0.000	0.000
008	519	2000	0.000	0.000
009	0	0	0.000	0.000
010	0	0	0.000	0.000

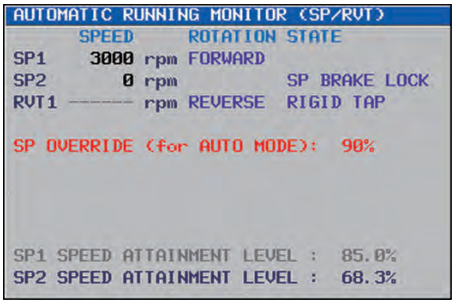
Tool counter
Informs you of the timing (count-up) for tool changes in accordance with the set tool counter stop value. You can also enter wear offsets.



HD1 CYCLE TIME

	Cutting	NotCutting	Operating
	36.848	38.128	74.976
1	0.000	0.000	0.000
2	0.000	0.000	0.000
3	0.000	0.000	0.000
4	0.000	0.000	0.000
5	0.000	0.000	0.000
6	0.000	0.000	0.000
7	0.000	0.000	0.000

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



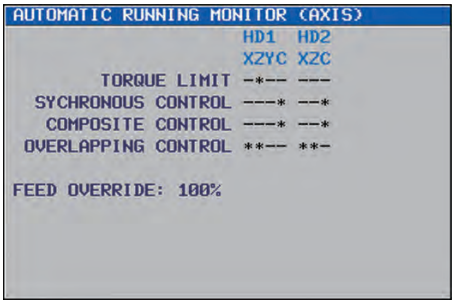
AUTOMATIC RUNNING MONITOR (SP/RVT)

	SPEED	ROTATION STATE	
SP1	3000 rpm	FORWARD	
SP2	0 rpm		SP BRAKE LOCK
RVT1	------ rpm	REVERSE	RIGID TAP

SP OVERRIDE (for AUTO MODE): 90%

SP1 SPEED ATTAINMENT LEVEL : 85.0%
SP2 SPEED ATTAINMENT LEVEL : 68.3%

Automatic running monitor
(Spindle / revolving tools)
Allows you to check the status of the spindle during automatic running.

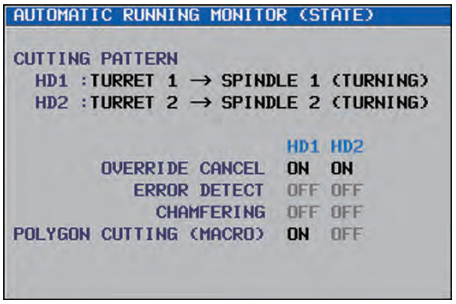


AUTOMATIC RUNNING MONITOR (AXIS)

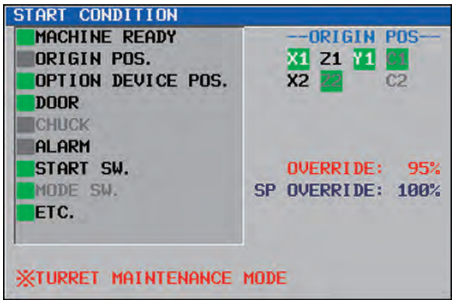
	HD1 XZYC	HD2 XZC
TORQUE LIMIT	-*--	---
SYCHRONOUS CONTROL	---*	--*
COMPOSITE CONTROL	---*	--*
OVERLAPPING CONTROL	**--	**-

FEED OVERRIDE: 100%

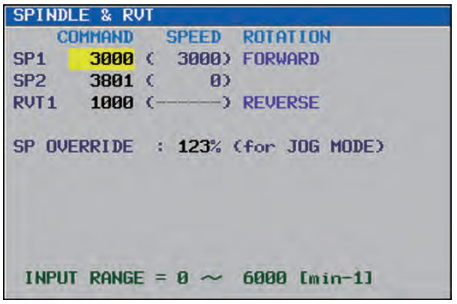
Automatic running monitor (axis)
Allows you to check the status of controlled feed axes during automatic running.



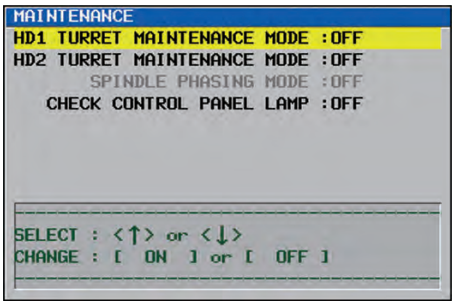
Automatic running monitor (status)
Allows you to check the machining conditions during automatic running.



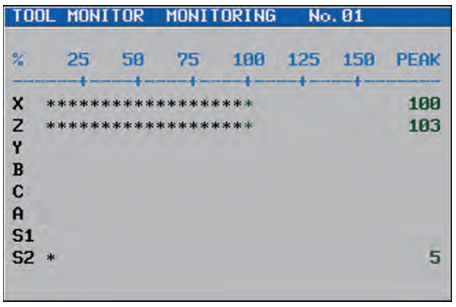
Start condition
Displays information on the start conditions for automatic running.



Spindle and revolving tool unit
Allows you to set the speed range (in manual operation) of the spindle and revolving tools, and to set the spindle override.



Maintenance
Used to access maintenance settings.



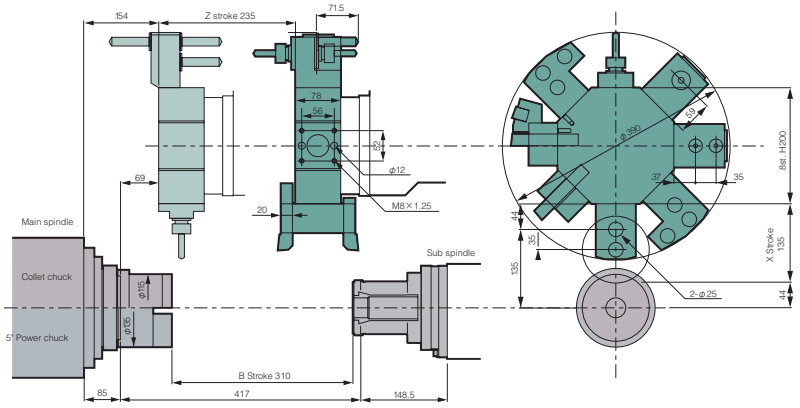
Tool monitor (option)
Allows you to monitor tool wear and breakage by checking the current state of the machining and status of the cutting tools in terms of numerical values based on test data.

Availability of machining support software for each machine model

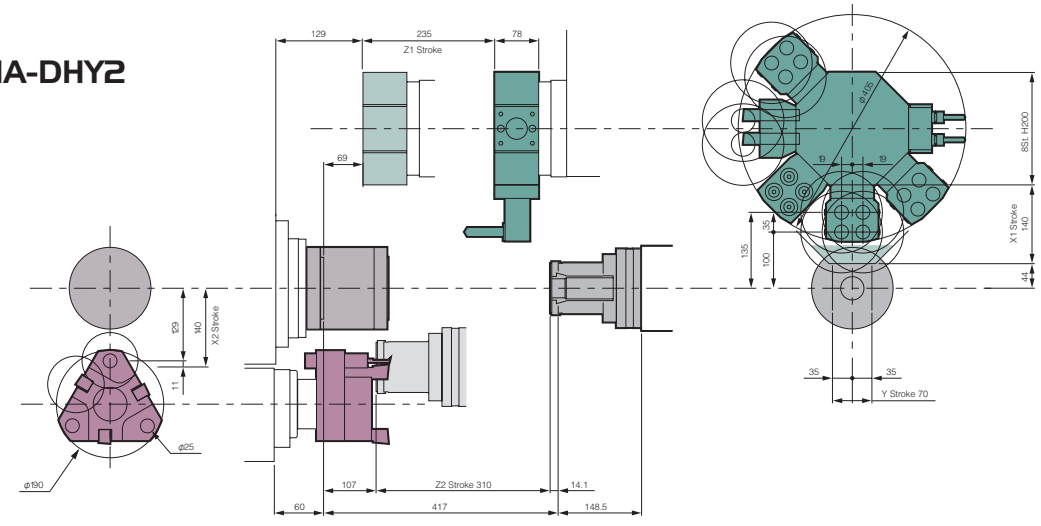
	DHY2	S2
Machining data	o	o
Tool setting	o	o
Tool counter	o	o
Cycle time	o	o
Automatic running monitor	o	o
Start condition	o	o
Spindle and revolving tools	o	o
Maintenance	o	o
Tool monitor	o	×

Tooling area

BNA-S2

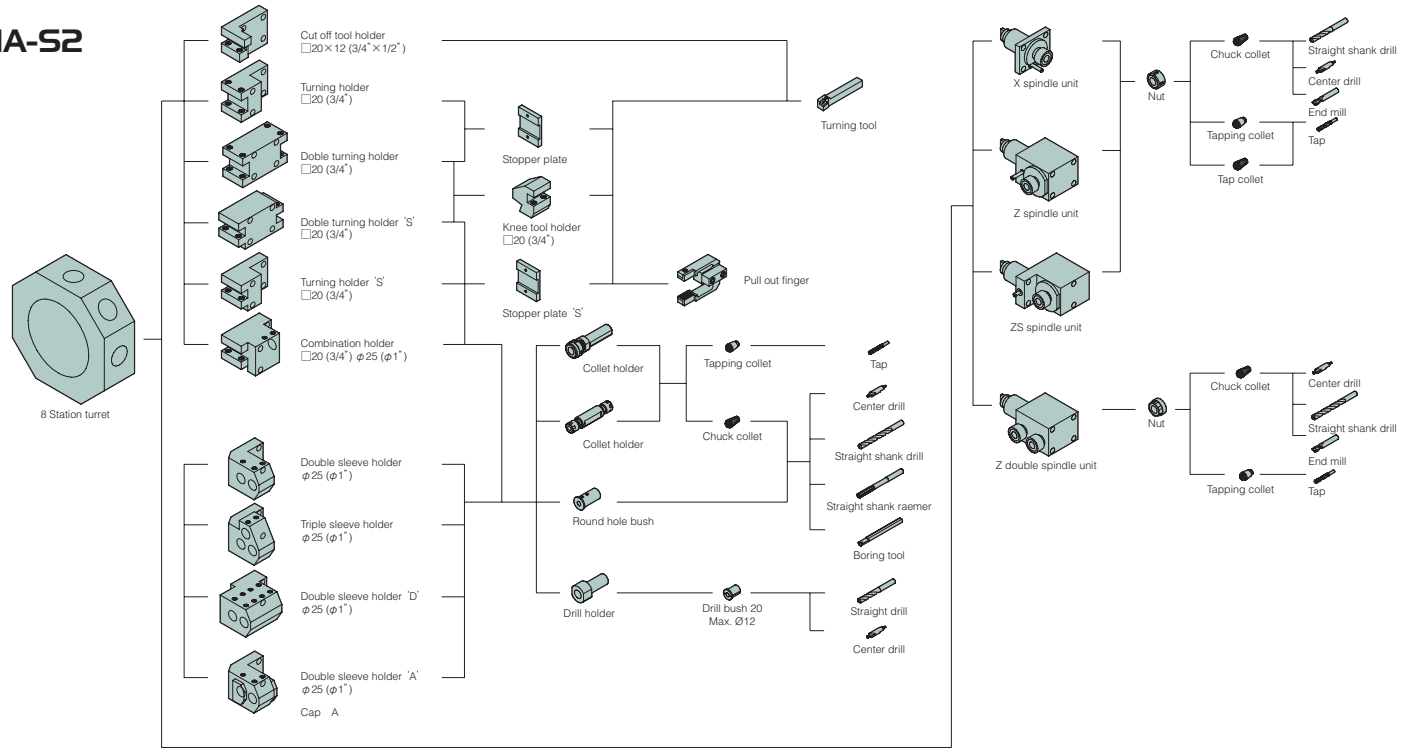


BNA-DHY2

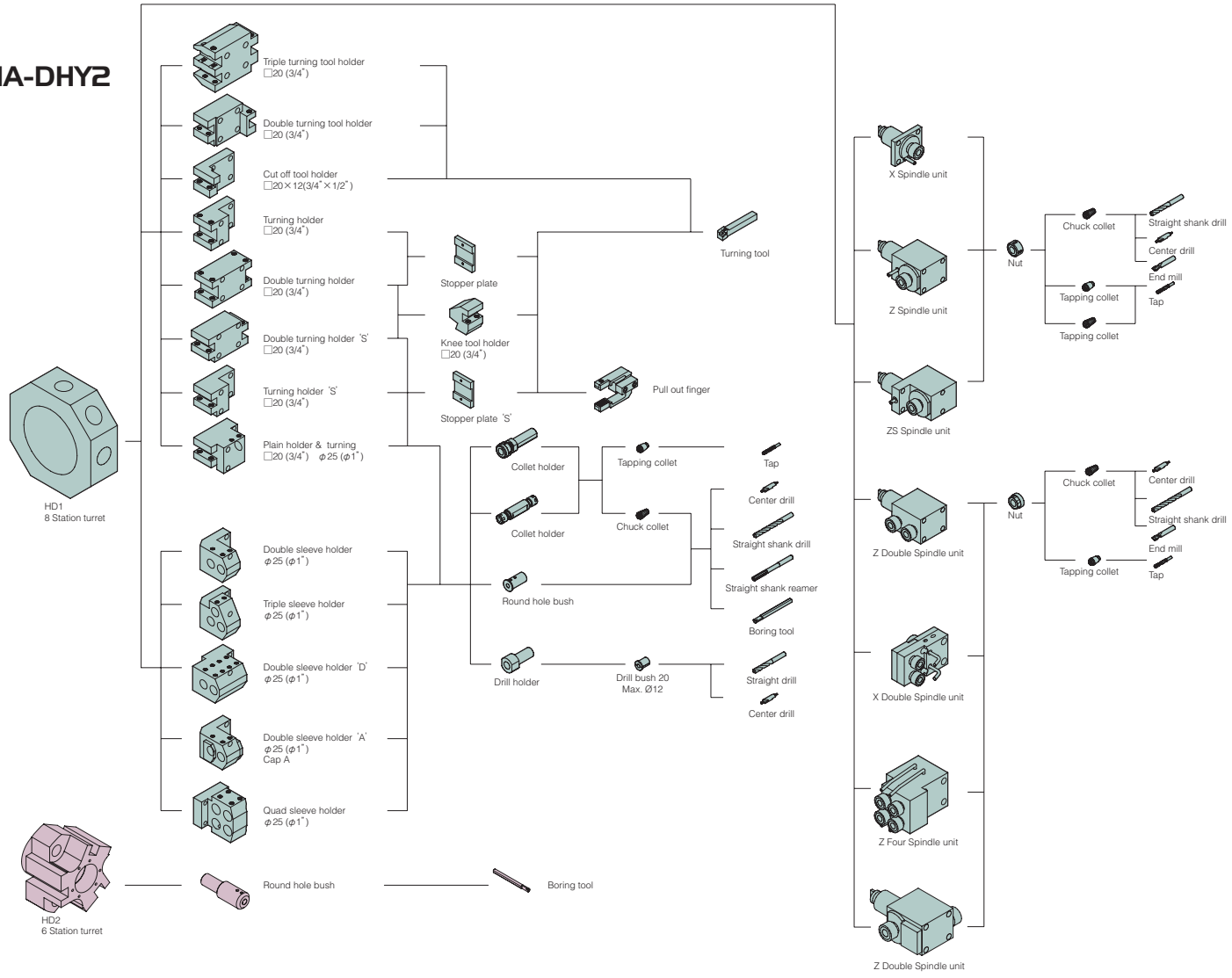


Tooling System

BNA-S2

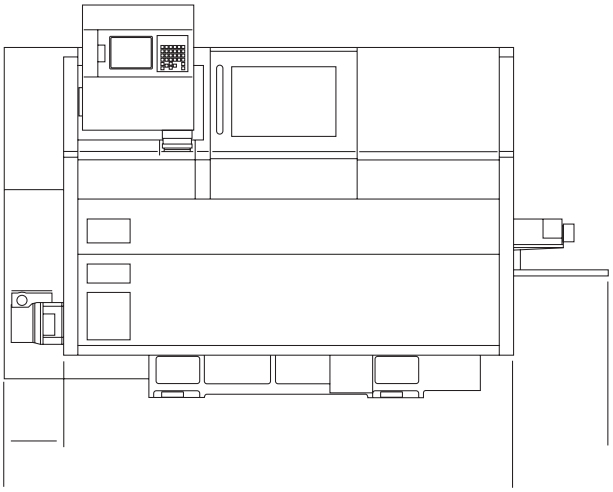


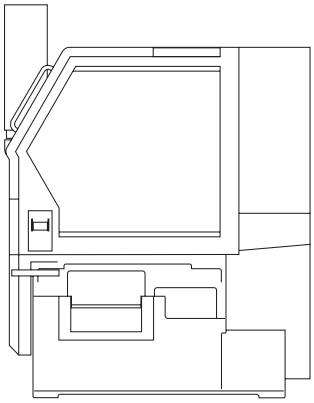
BNA-DHY2



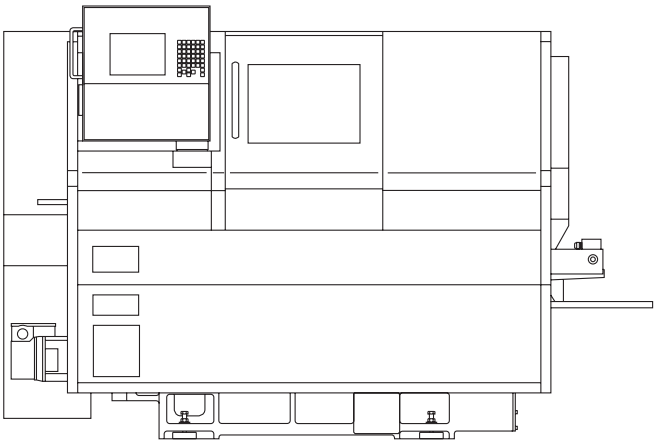
External View

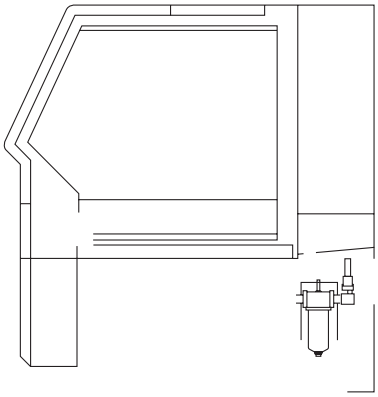
BNA-S2





BNA-DHY2





Bar feeder (Option)

The Miyano M-542 automatic magazine style bar feed is designed for feeding round, square and hexagonal bar stock into Miyano lathes.

Machine Specifications

Item		BNA-42S2	BNA-42DHY2
Maximum bar diameter	SP1	ø42 mm	ø42 mm
	SP2	ø34 mm (ø42 mm/OP)	ø34 mm (ø42 mm/OP)
Standard machining length		100 mm	100 mm
Number of spindles		2	2
Spindle speed	SP1	6,000 min-1	6,000 min-1
	SP2	5,000 min-1	5,000 min-1
Draw tube diameter	SP1	ø43 mm	ø43 mm
	SP2	ø30 mm	ø30 mm
Power chuck size	SP1	5"	5"
Number of turret		1	2
Number of turret stations	HD1	8	8
	HD2	—	6
Shank size of square turning tool		□20 mm	□20 mm
Diameter of drill shank		ø25 mm	ø25 mm
Number of live tools	HD1	8	8
Methods of live tools		Single clutch	Single clutch
Tool spindle speed		5,000 min-1	5,000 min-1
Rapid feed rate	X1 axis	20 m/min	20 m/min
	Z1 axis	20 m/min	20 m/min
	Y1 axis	—	12 m/min
	X2 axis	—	12 m/min
	Z2 axis	—	12 m/min
	B axis	20 m/min	—
Turret slide stroke	X1 axis	135mm	140mm
	Z1 axis	235mm	235mm
	Y1 axis	—	±35mm
Spindle slide stroke	X2 axis	—	140mm
	Z2 axis	—	310mm
	B axis	310mm	—
Spindle motor	SP1	7.5/5.5 kW (15min/cont)	7.5/5.5 kW (15min/cont)
	SP2	5.5/3.7 kW (15min/cont)	5.5/3.7 kW (15min/cont)
Live tool motor		2.8/1.0 kW (16 Nm)	2.8/1.0 kW (16 Nm)
Hydraulic pump motor		0.75 kW	0.75 kW
Lubricating motor		0.004 kW	0.004 kW
Coolant motor		0.18 kW	0.18 kW
145 PSI pressure coolant motor		1.0 kW	1.0 kW
Turret index motor	HD1	0.75 kW	0.75 kW
	HD2	—	0.75 kW
Input power capacity		28 KVA	30 KVA
Voltage		AC 200/220 V	AC 200/220 V
Fuse capacity		100 A	100 A
Compressed air supply		0.5 Mpa	0.5 Mpa
Hydraulic oil tank		7 L	7 L
Lubricating oil tank		2 L	2 L
Coolant tank		165 L	165 L
Machine height		1,660 mm	1,680 mm
Floor space		2150W × 1290D mm	2240W × 1450D mm
Machine weight		2,800 kg	3,000 kg

Standard accessories

Collet chuck system
Spindle brake (only DHY2)
Air blow
Work ejector
Automatic power shut-off
Cut-off confirmation
Parts catcher
Parts conveyor
Coolant level switch
SP2 Inner coolant & air blow
Chip conveyor
Signal tower
Filler tube
Total & preset counter
RS232C
Recommended tool package

Optional accessories

Collet chuck system for SP2 for 42 mm spec.
5" power chuck for SP1
Chip box

Standard NC functions

Fanuc Oi-TD
Back ground editing
Canned cycle for drilling
C-axis for main (Left) and back (Right) spindle
Chamfering/corner R
Constant surface speed control
Custom macro
Cylindrical interpolation
Direct drawing dimension input
Extended part program editing
Geometry & wear offset
Graphic display
Inch/Metric conversion
Multiple repetitive cycle
No. of tool offset: 64 Pairs
Part program storage capacity 1Mbyte (2560 m)
Polar coordinate interpolation
Programmable data input (G10)
Rigid tapping for SP & SP2 spindle and live tool
Run hour/Parts number counting
Tool life management
Tool nose R compensation
Variable lead thread cutting
Workpiece coordinate system selection

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