

CITIZEN

Miyano

BNA42 S/DHY

Fixed Headstock Type Automatic CNC Lathe



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

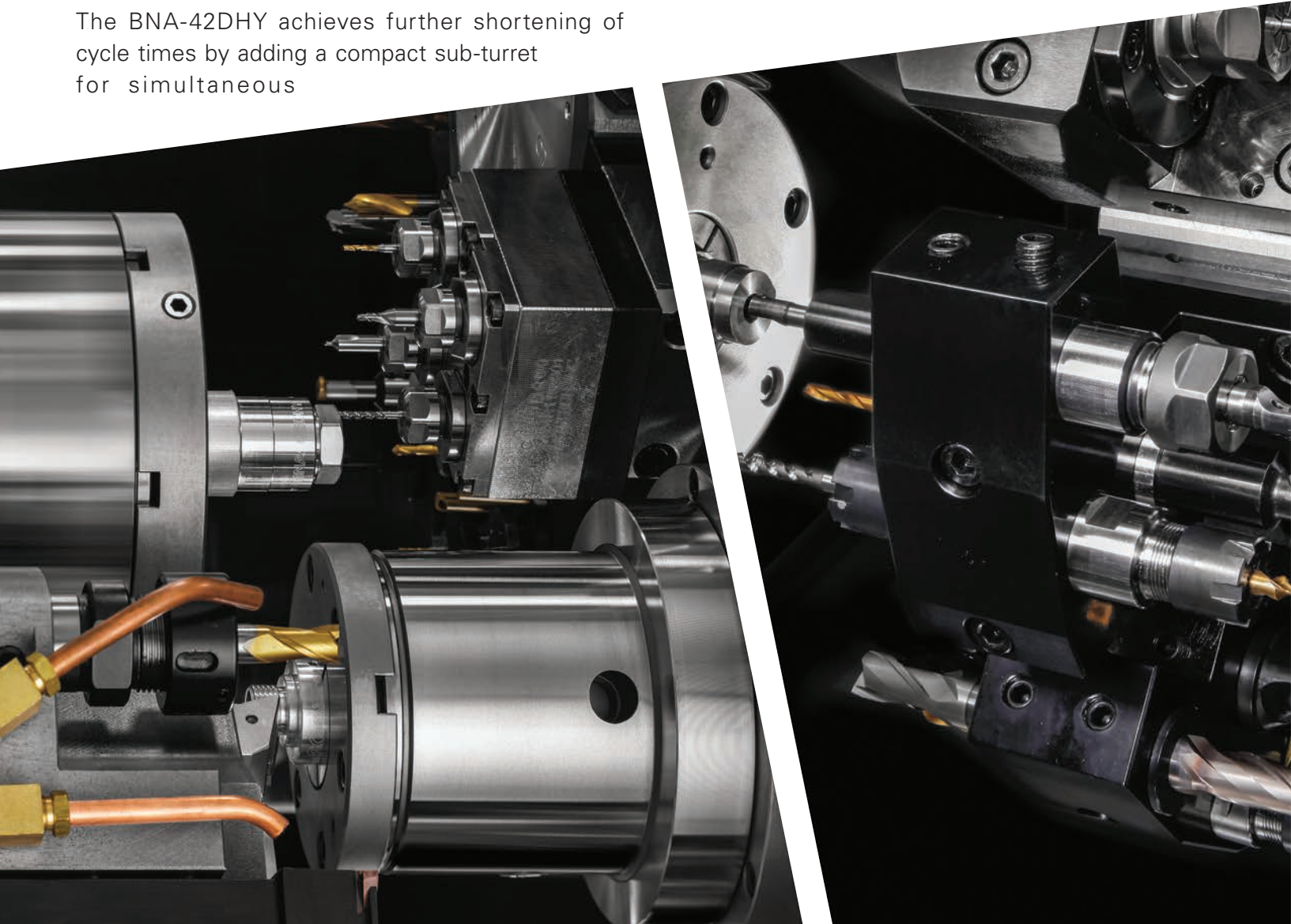
The BNA series aims to set the new standard for machines while cutting bar stock, based on the concept of “space savings and sophisticated functions.”

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

The BNA-42DHY achieves further shortening of cycle times by adding a compact sub-turret for simultaneous

machining. Also standard is superimposition machining which offers even more sub-spindle simultaneous operations to the rear side of the main turret.

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

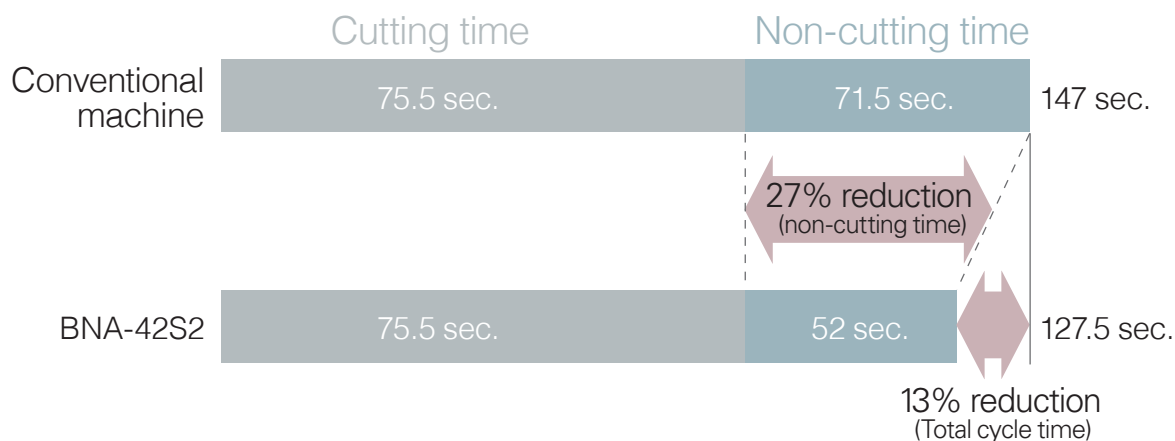


Substantial Reduction in Non-Cutting Time

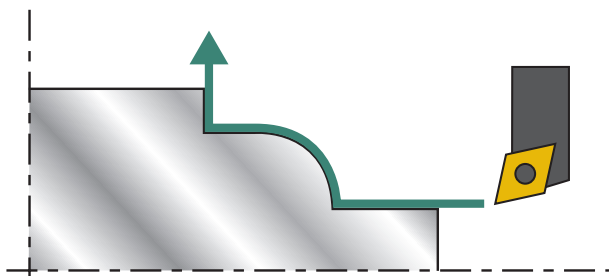
Miyano's unique control system cuts non-cutting time by 27% (compared to previous model), achieving a 13% reduction in terms of total cycle time.



Workpiece used for data measurement



Standard Accessories



Program Handwheel (DHY Type)

New program movement can easily be checked by using manual pulse generator to avoid any interference of tools and workpiece. Easy prove-out is assured using the handwheel for program prove-out.

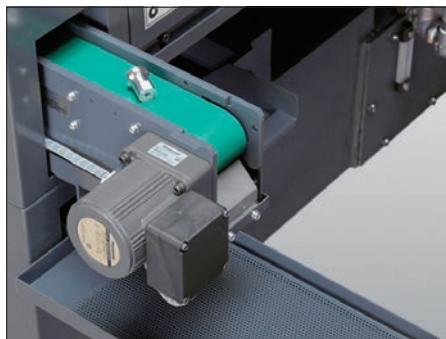
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0000?
6 N1 (ROUGH TURNING) ;
7 M91 ;
8 G99 G96 M93 S300 P11 T0101 ;
9 G0 Z62.0 ;
10 G0 X52.0 Z60.0 M28 ;
11 G71 U3.0 R1.0 ;
12 G71 P100 Q101 U0.6 W0.2 F0.3 ;
13 M100 G0 X15.0 ;
14 G1 Z47.0 F0.14 ;
15 G3 X39.0 Z35.0 R15.0 F0.1 ;
16 G1 Z25.0 F0.14 ;
17 X48.0 ;
18 X50.0 W-1.0 ;
19 Z-3.0 ;
20 N101 X54.0 F0.8 ;
21 G0 X150.0 Z120.0 M29 ;
22 M1 ;
23 ;
24 N2 (25.0MM DRILL) ;
25 M91 ;
26 G99 G97 M93 S1200 P11 T0202 ;
27 G0 X0 Z70.0 ;
28 Z60.0 M28 ;
    
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Part catcher

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



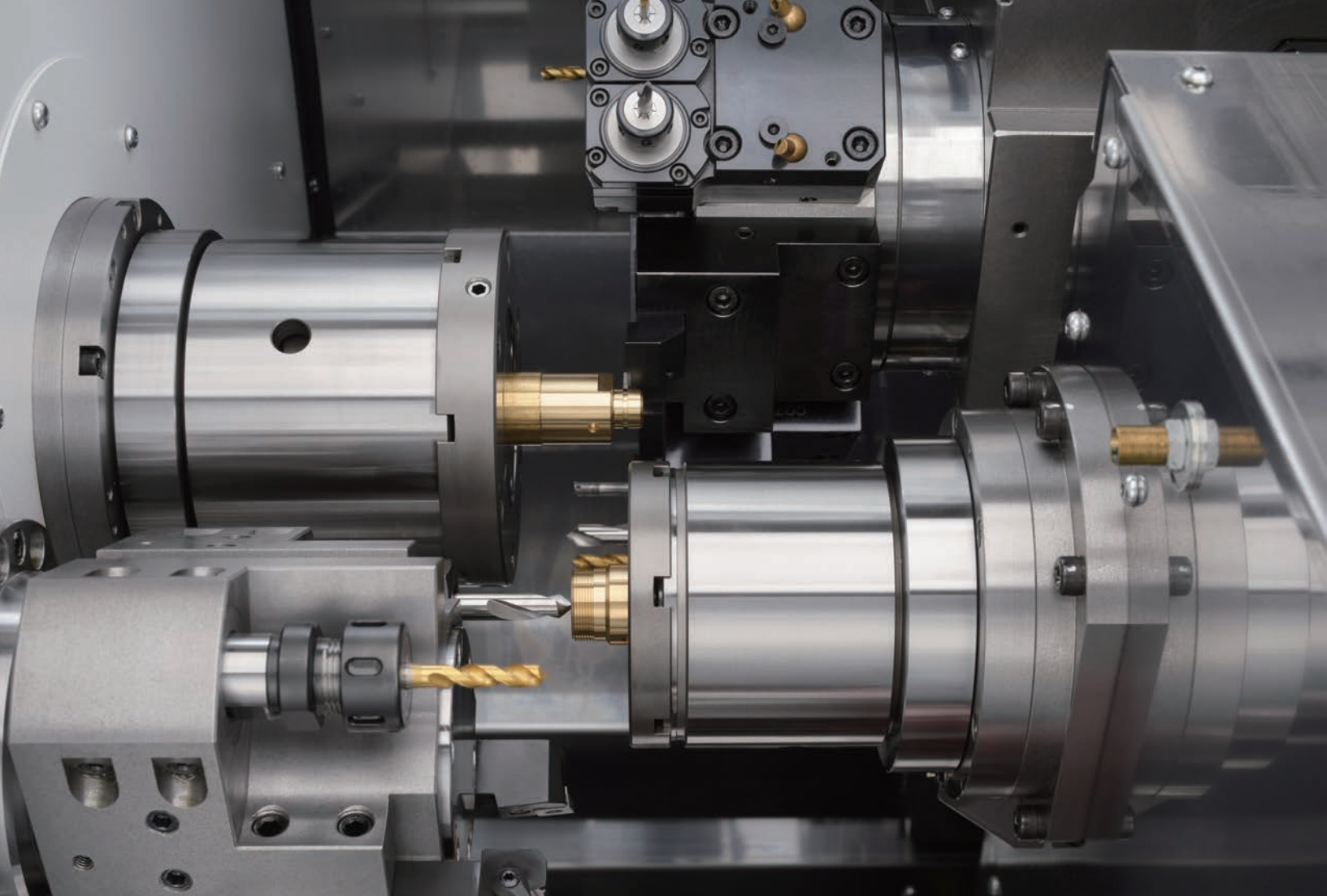
Part conveyor

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



Chip conveyor

Hinge Type or 250 Micron Filter Type is available.



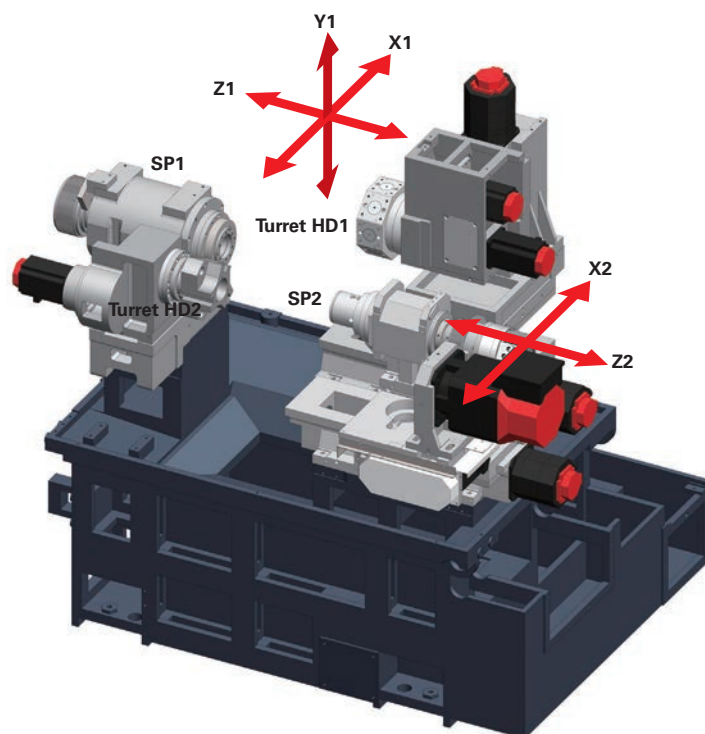
BNA-42DHY



Basic Construction and Axis Configuration

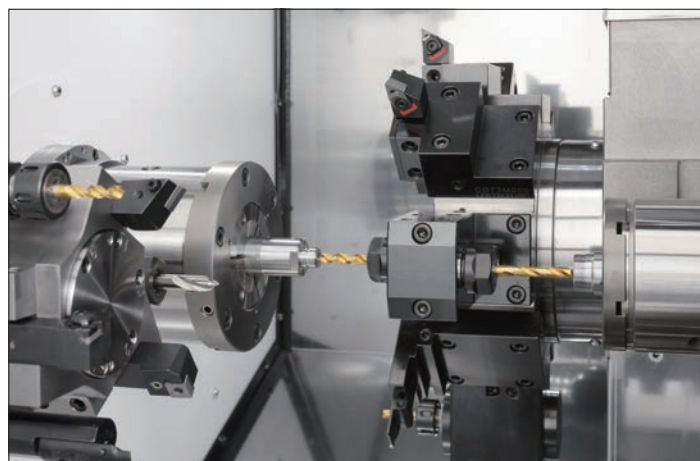
High-rigidity Scraped Slideways Support Powerful Cutting

High-rigidity scraped slideways are used on all axes (X axis of SP2 is a dovetail slideway). 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

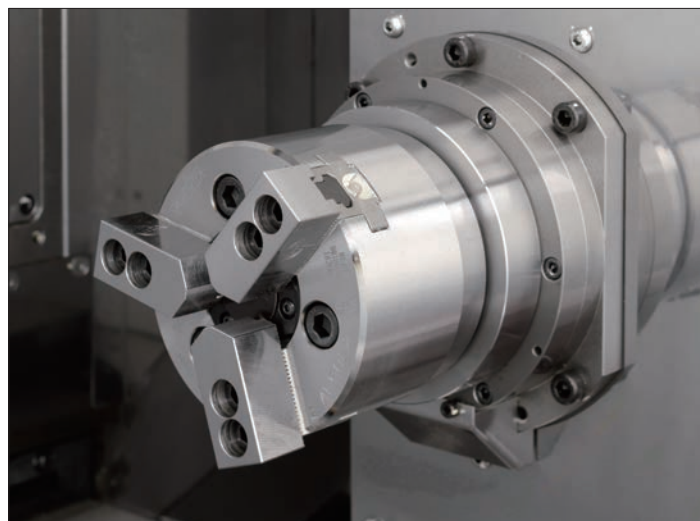
The combination of the Y-axis function incorporated in the main turret (HD1) and the compact 6-station sub-turret (HD2) can achieve further reductions in machining time through overlap processing and other forms of machining performed simultaneously on the main and sub spindles.

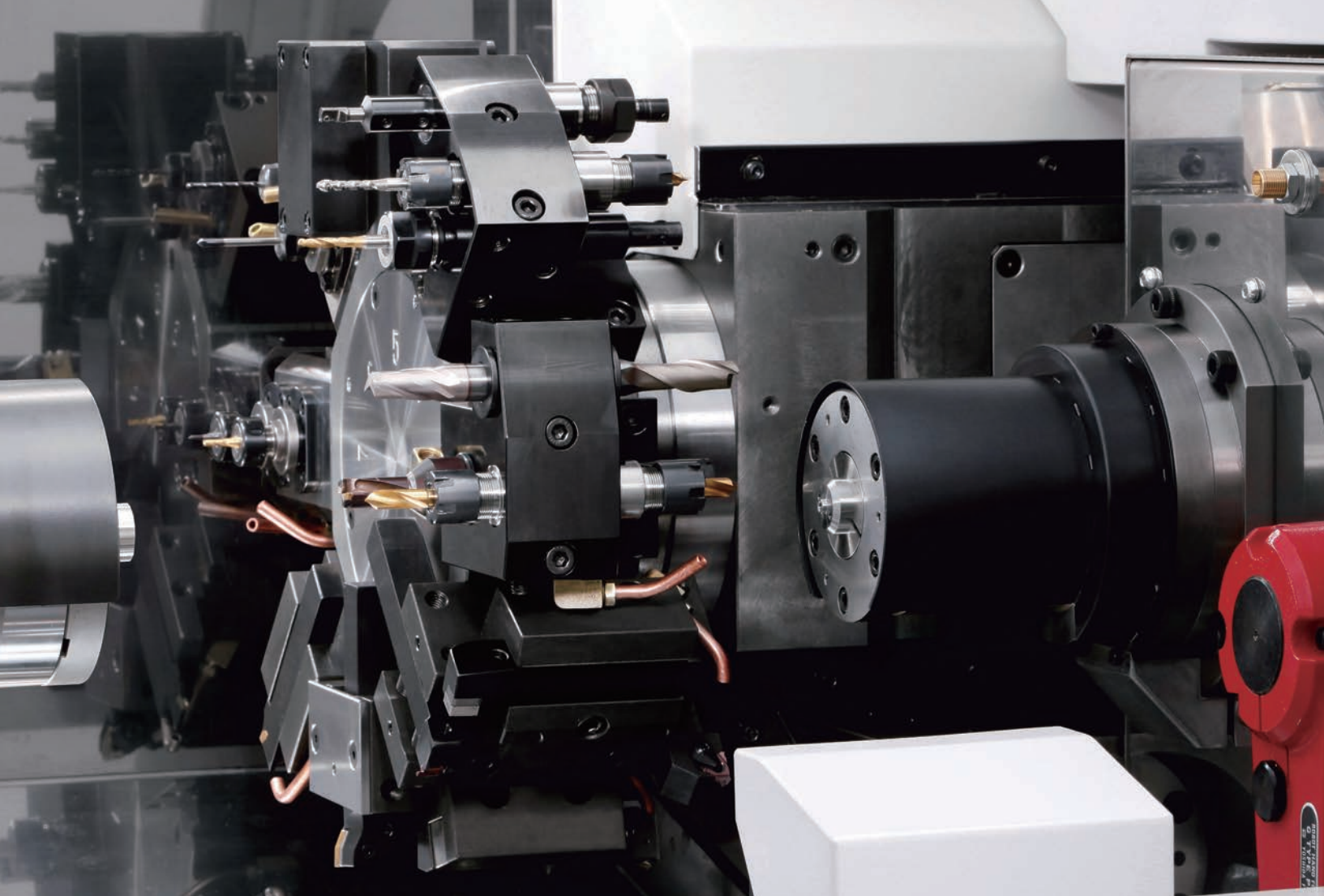


Simultaneous front/back machining

Power Chuck on Back Spindle

In addition to its 5-inch power chuck on the front spindle, the back spindle can also mount a 4-inch power chuck for flexible accommodation of forged parts.





BNA-42S

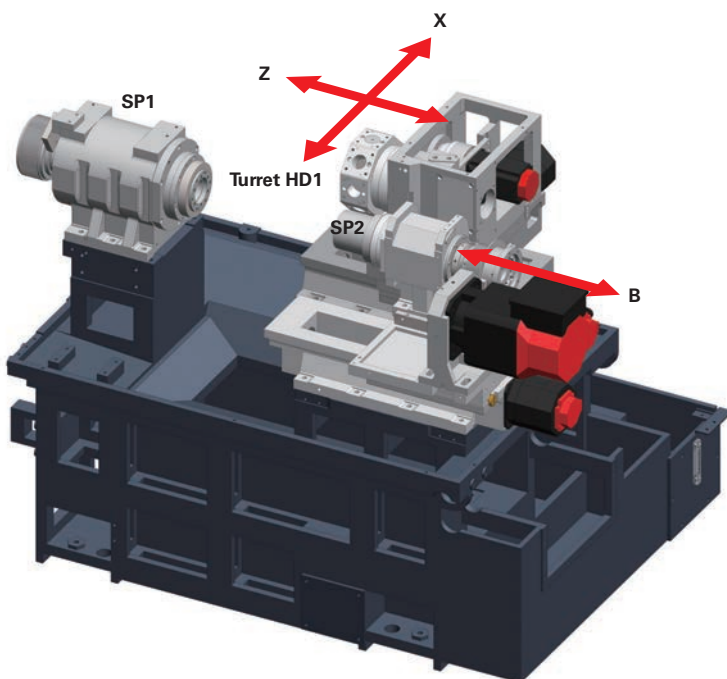


Basic Construction and Axis Configuration

Stable, Accurate and Strong

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

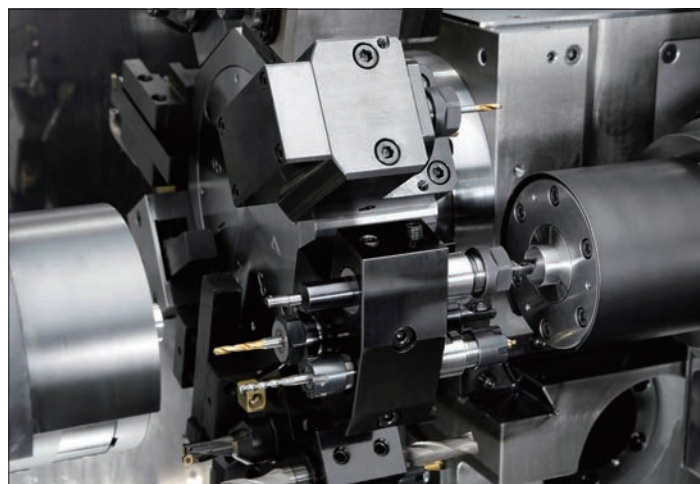
The unit mounting faces are not distorted by the effects of heat, and even if the units are subject to thermal expansion they are all displaced in the same direction (perpendicular to their mounting faces), minimizing relative deviations between the workpiece and cutting tools.



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.

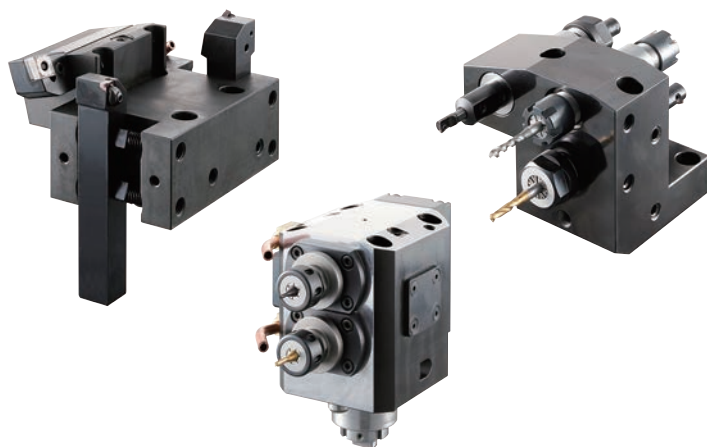


Back machining using tools installed in a triple sleeve holder.

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.

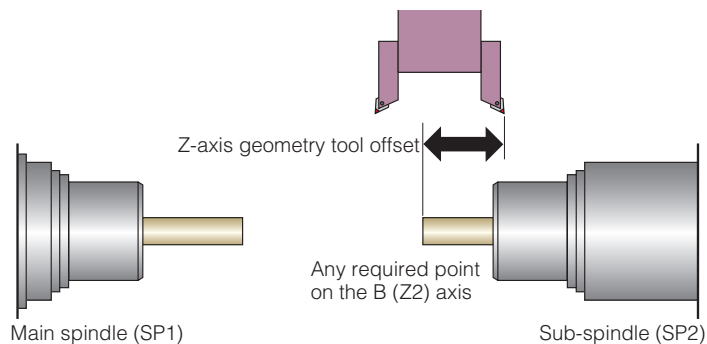
With double, triple and even quad tool holders you are assured of sufficient tool positions even for complex workpieces.



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.



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		MACHINE	
002	0.000	0.000	X1	0.000	
003	0.000	0.000	Z1	0.000	
004	0.000	0.000	X2	0.000	
005	0.000	0.000	Z2	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			

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 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.

COUNTER/PRESET&TOTAL		
	CURRENT	PRESET
PRESET	0	10
TOTAL	0	

Total & preset counter

Used to set the stop value for the product counter and to reset the count value.

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.

Machining program example

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

HD1 TOOL COUNTER				
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 POWER MONITOR(CYCLE TIME) [kwh]			
	Power	/hour	Operat. Time
	0.000	0.000	0.000
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

Power consumption monitor

Allows monitoring of the power consumption per cycle time, day, or month.

Electromagnetic switch maintenance
Used to set the ON/OFF usage count range for electromagnetic switches for notifying the replacement interval for these switches.

Maintenance
Used to access maintenance settings.

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

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.

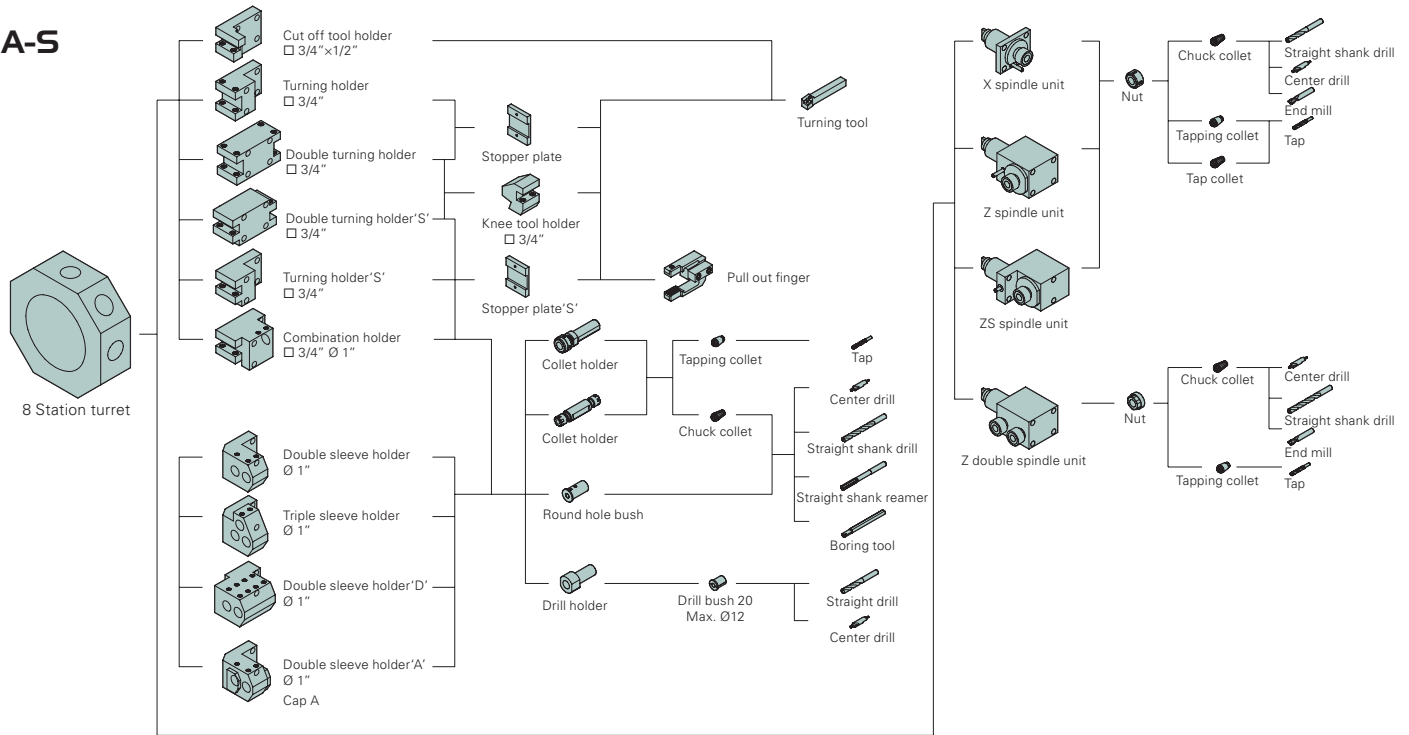
Spindle and revolving tool unit

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

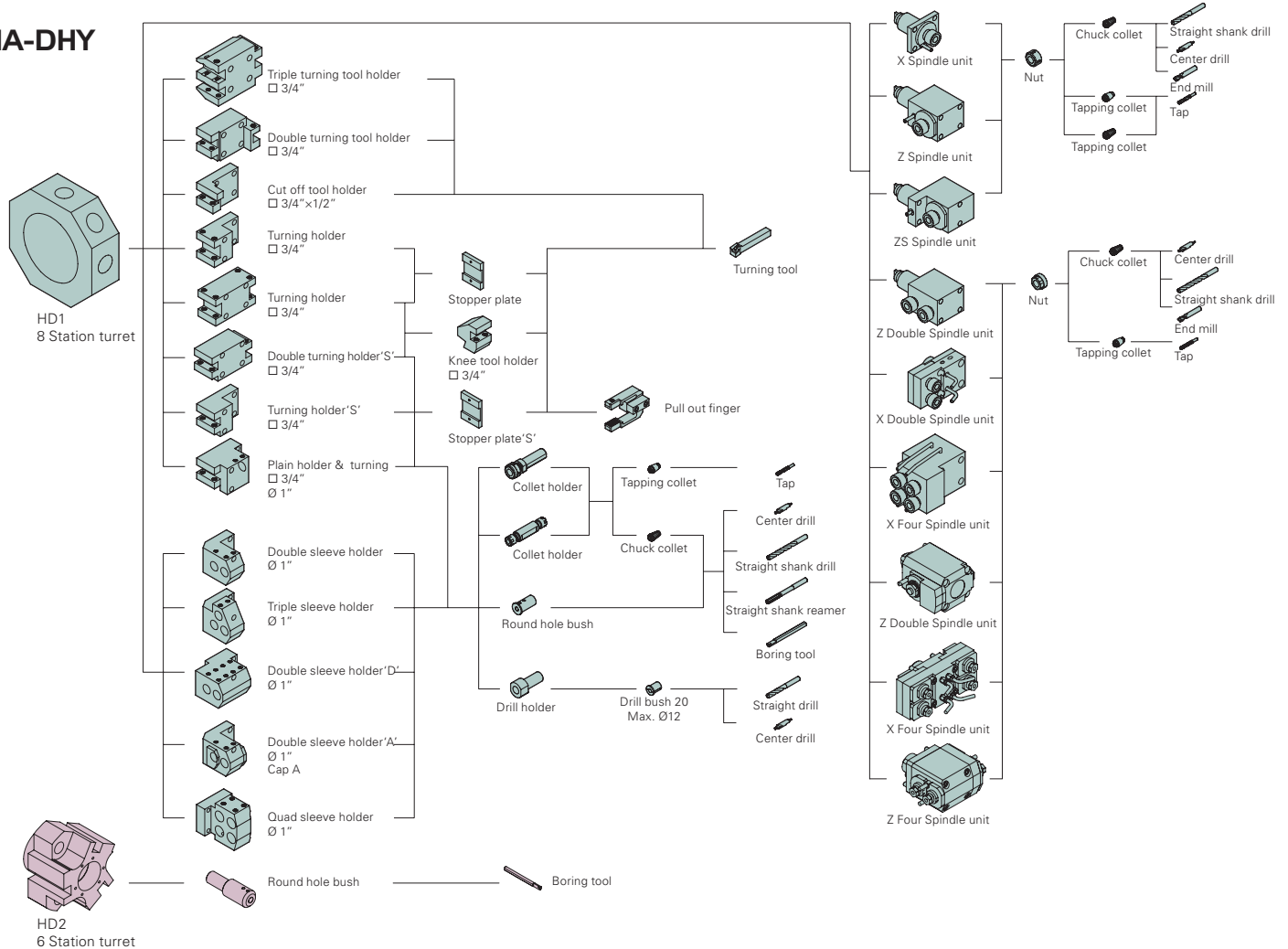
	DHY3	S2
Machining data	✓	✓
Tool setting	✓	✓
Tool counter	✓	✓
Cycle time	✓	✓
Automatic running monitor	✓	✓
Start condition	✓	✓
Total & preset counter	✓	—
Power consumption monitor	✓	—
Electromagnetic switch maint.	✓	—

Tooling System

BNA-S

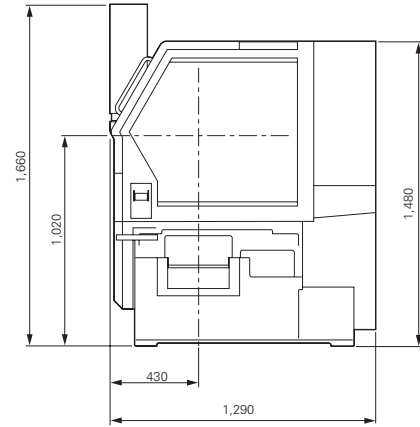
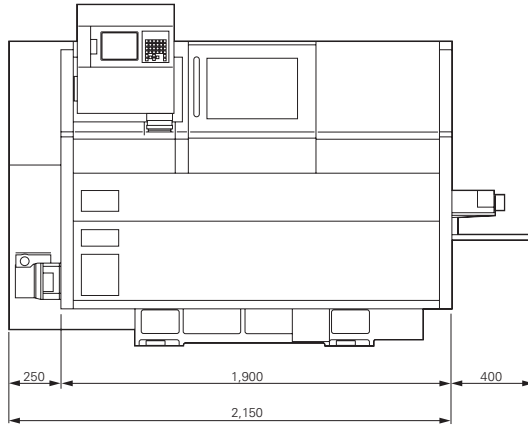


BNA-DHY

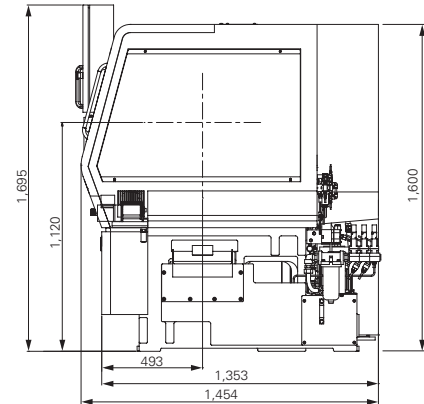
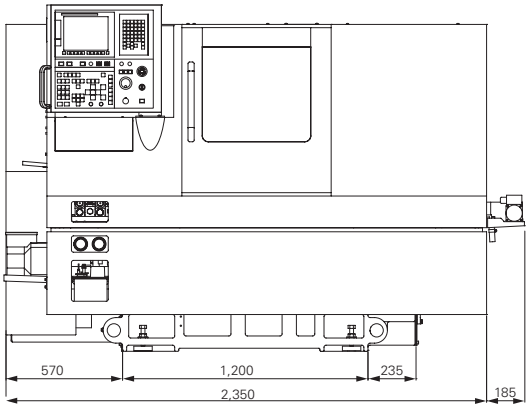


External View

BNA-S



BNA-DHY



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-42DHY3
Maximum bar diameter	SP1	Ø42 mm	Ø42 mm
	SP2	Ø42 mm	Ø42 mm
Standard machining length		100 mm	100 mm
Number of spindles		2	2
Spindle speed	SP1	6,000 rpm	6,000 rpm
	SP2	5,000 rpm	5,000 rpm
Draw tube diameter	SP1	Ø43 mm	Ø43 mm
	SP2	Ø30 mm	Ø30 mm
Power chuck size	SP1	5"	5"
	SP2	—	4"
Number of turret stations	HD1	8	8
	HD2	—	6
Shank size of square turning tool		□ ¾"	□ ¾"
Diameter of drill shank		1"	1"
Number of live tools	HD1	8	8
Methods of live tools		Single clutch	Single clutch
Tool spindle speed		5,000 rpm	5,000 rpm
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	—	20 m/min
	B axis	20 m/min	—
Turret slide stroke	X1 axis	135 mm	140 mm
	Z1 axis	235 mm	235 mm
	Y1 axis	—	±35 mm
Spindle slide stroke	X2 axis	—	140 mm
	Z2 axis	—	360 mm
	B axis	310mm	—
Spindle motor	SP1	7.5/5.5 kW (5 min/cont)	7.5/5.5 kW (15 min/cont)
	SP2	5.5/3.7 kW (5 min/cont)	5.5/3.7 kW (15 min/cont)
Live tool motor		2.8/1.0 kW (16 Nm)	2.8/1.0 kW (16 Nm)
Coolant motor		0.18 kW	0.18 kW
145 PSI pressure coolant motor		1.0 kW	1.0 kW
Input power capacity		28 KVA	28 KVA
Voltage		AC 200/220 V	AC 200/220 V
Main breaker capacity		100 A	100 A
Compressed air supply		0.5 Mpa	0.5 Mpa
Hydraulic oil tank		1.8 gal.	4.75 gal.
Lubricating oil tank		0.5 gal.	1.5 gal.
Coolant tank		43.5 gal.	46.2 gal.
Machine height		1,660 mm	1,695 mm
Floor space		2,150 mm W × 1,290 mm D	2,350 mm W × 1,454 mm D
Machine weight		6,173 lb.	6,834 lb.

Standard NC functions

BNA-42S2: FANUC Oi-TD

BNA-42DHY3: FANUC Oi-TF

- Background editing
- Custom macro
- Direct drawing dimension input
- Extended part program editing
- Geometry & wear offset
- Graphic display
- Inch/Metric conversion
- No. of tool offset:
S2: 64 Pairs
DHY3: 117 Pairs (HD1 - 97 pairs; HD2 - 20 pairs)
- Programmable data input (G10)
- Part program storage capacity 1 Mbyte (2560 m)
- Run hour/parts number counting
- Tool & preset counter
- Tool life management
- Tool monitor (DHY3 only)
- C-axis for main (left) and back (right) spindle
- Cylindrical interpolation
- Canned cycle for drilling
- Chamfering/Corner R
- Constant surface speed control
- Multiple repetitive cycle
- Polar coordinate interpolation
- Helical interpolation (DHY3 only)
- Rigid tapping for (left & right) spindle and turret live tool
- Skip function
- Tool nose R compensation
- Variable lead thread cutting
- Y-axis offset (DHY3 only)

Marubeni Citizen-Cincom Inc.

40 Boroline Road
Allendale, NJ 07401
201-818-0100

2316 Touhy Avenue
Elk Grove Village, IL 60007
847-364-9060

17815 Newhope Street, Suite P
Fountain Valley, CA 92708
714-434-6224

68 Moylan Lane
Agawam, MA 01001
413-786-6655