



**BNA-34/42**

CNC Turning center

**Miyano Innovation Line**

# BNA





The BNA series packs sophisticated functions and high accuracy into a space-saving compact body. It represents Evolution and Innovation. The lineup includes models in three versions.

The Evolution line is made up of two models. The BNA-C, which has one spindle and one turret and offers excellent cost performance. The BNA-S, which features a sub-spindle (SP2) that enables back machining.

The BNA-DHY heads the Innovation line by offering the renowned Miyano attributes of performance and high accuracy in a small space with 2 turrets and Y axis for outstanding flexibility. Your needs will be met by these three models.

Miyano Evolution

CNC Turning center  
with 1 spindle and 1 turret

### BNA-C

Model Name			BNA-34C	BNA-42C
Max Machining Diameter of Bar Work	SP1	mm	φ 34	φ 42
Max. Machining Length for Bar Work		mm	175	175
Spindle Motor (15Min. Cont/Rating)	SP1	kW	7.5 / 5.5	7.5 / 5.5
Max. Spindle Speed	SP1	min <sup>-1</sup>	6,000	6,000
Type of Turret			8-station	8-station
Max. Number of Revolving Tools			8	8



Miyano Evolution

CNC Turning center  
with 2 spindles and 1 turret

### BNA-S

Model Name			BNA-34S	BNA-42S
Max Machining Diameter of Bar Work	SP1/SP2	mm	φ 34 / φ 34	φ 42 / φ 34
Max. Machining Length for Bar Work		mm	100	100
Spindle Motor (15Min. Cont/Rating)	SP1	kW	7.5 / 5.5	7.5 / 5.5
	SP2	kW	5.5 / 3.7	5.5 / 3.7
Max. Spindle Speed	SP1/SP2	min <sup>-1</sup>	6,000 / 5,000	6,000 / 5,000
Type of Turret			8-station	8-station
Max. Number of Revolving Tools			8	8



Miyano Innovation

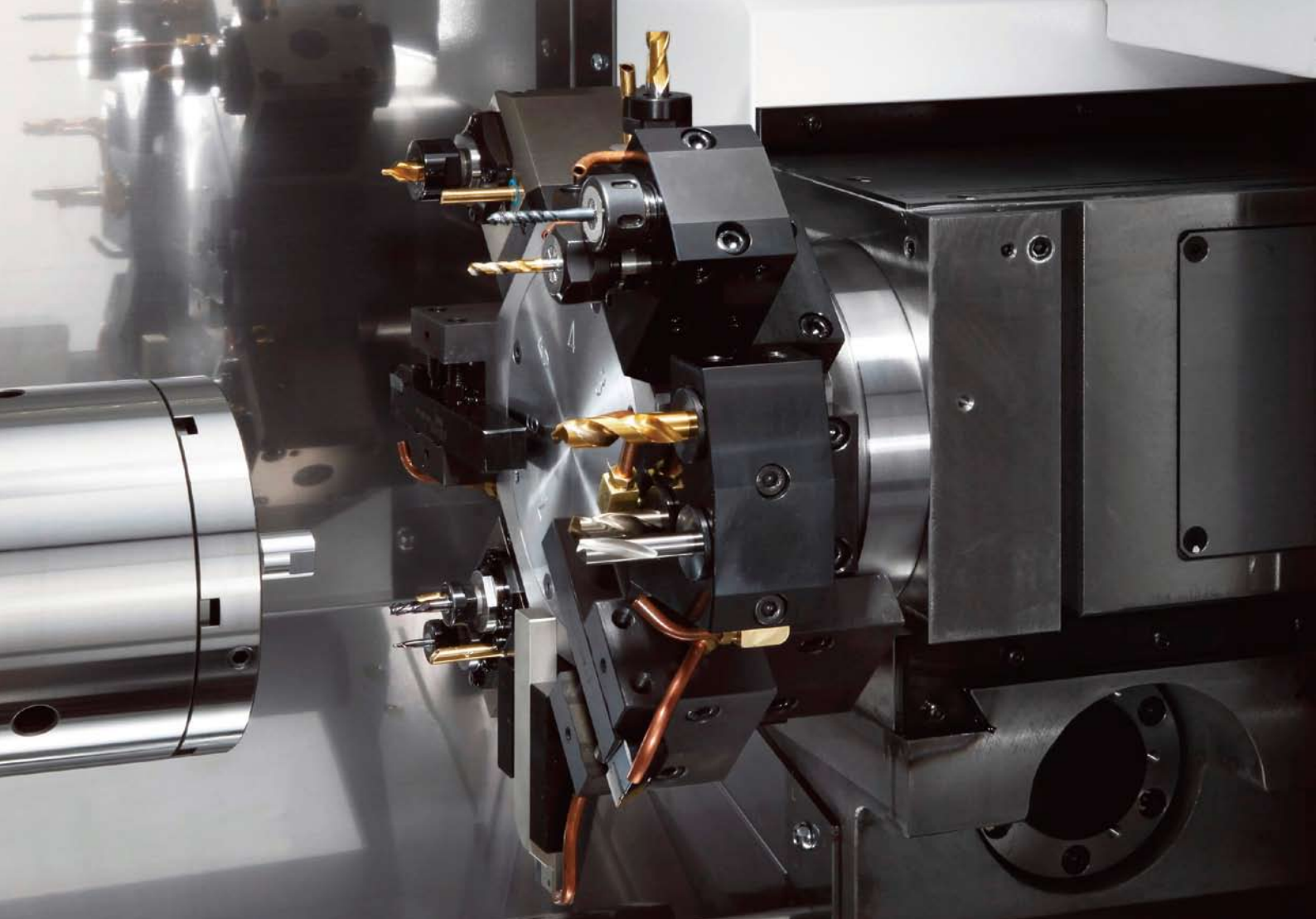
CNC Turning center  
with 2 spindles, 2 turrets and Y axis

### BNA-DHY

Model Name			BNA-34DHY	BNA-42DHY
Max Machining Diameter of Bar Work	SP1/SP2	mm	φ 34 / φ 34	φ 42 / φ 34
Max. Machining Length for Bar Work		mm	100	100
Spindle Motor (15Min. Cont/Rating)	SP1	kW	7.5 / 5.5	7.5 / 5.5
	SP2	min <sup>-1</sup>	5.5 / 3.7	5.5 / 3.7
Max. Spindle Speed	SP1/SP2		6,000 / 5,000	6,000 / 5,000
Type of Turret	SP1		8-station	8-station
	SP2		6-station	6-station
Max. Number of Revolving Tools			8	8







## BNA-34C / BNA-42C

### Space-saving Compact Design

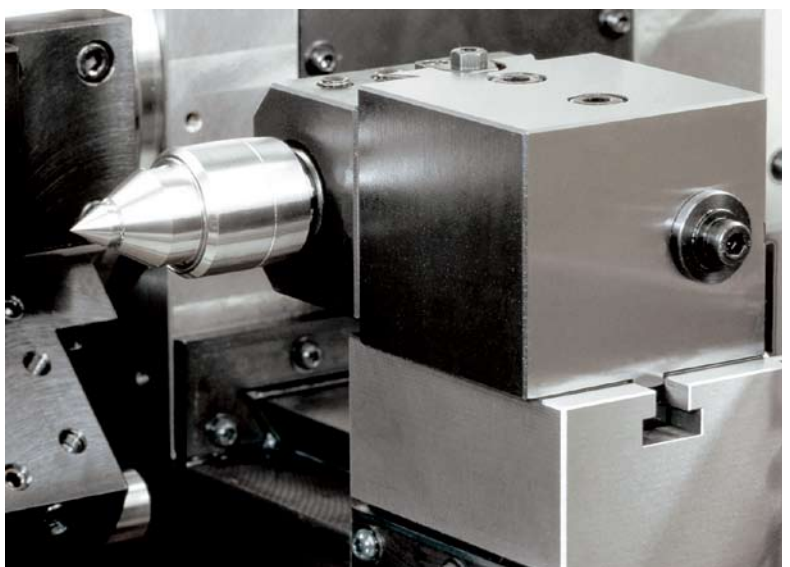
The compact design achieves space savings of around 30% compared to machines with equivalent functions. This improves the production efficiency per unit of floor area, delivering excellent cost performance.

### Ample Tool Stations

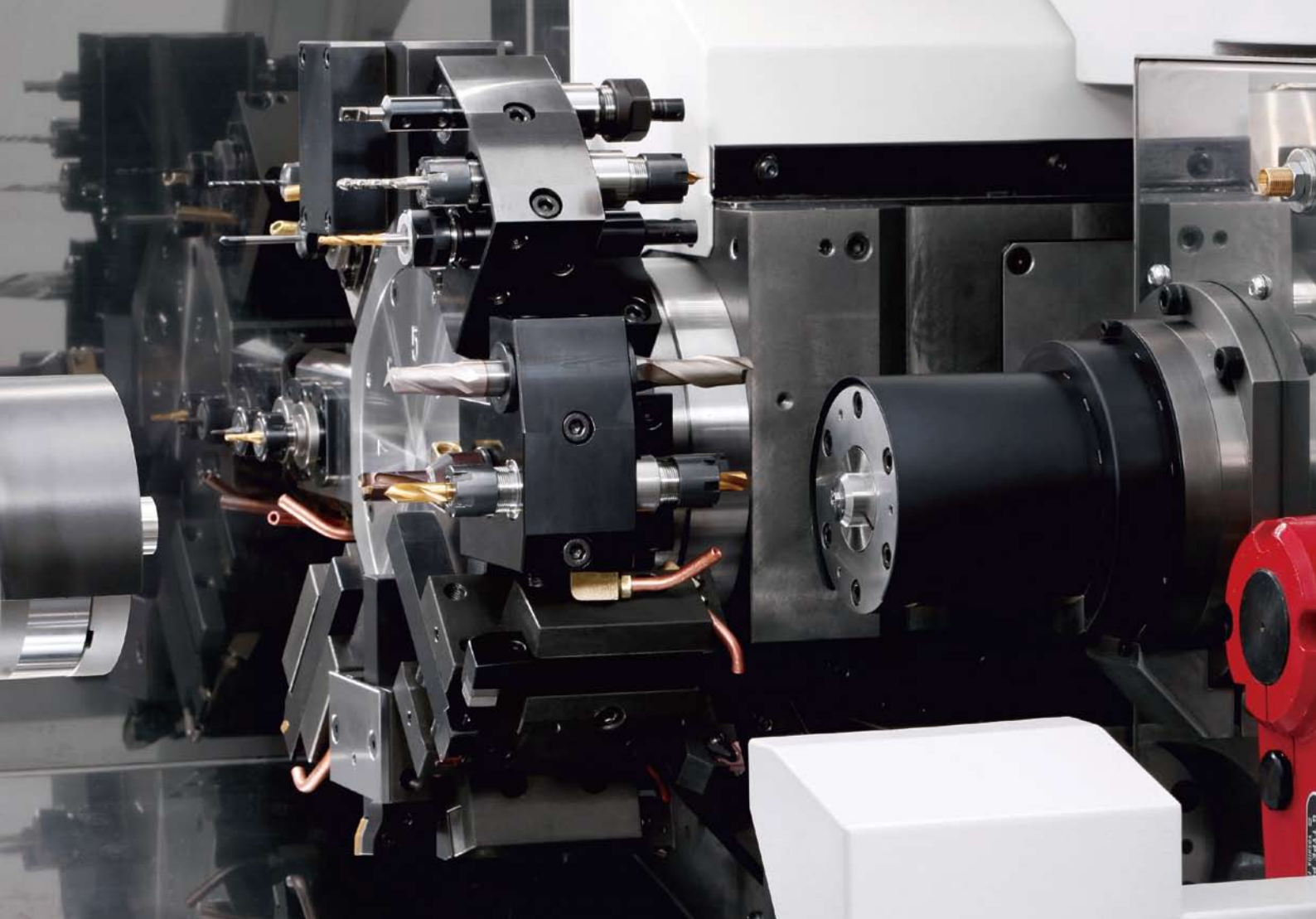
The machine is equipped with an 8-station turret and the half-indexing mechanism makes it possible to mount up to 16 tools.

### Tailstock for Machining Long Workpieces

A hydraulically driven tailstock capable of alignment in the X and Y directions permits the machining of workpieces up to 175 mm long.



Tailstock (live center, MT2)



## BNA-34S / BNA-42S

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.

### **Reduced Idle Time**

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

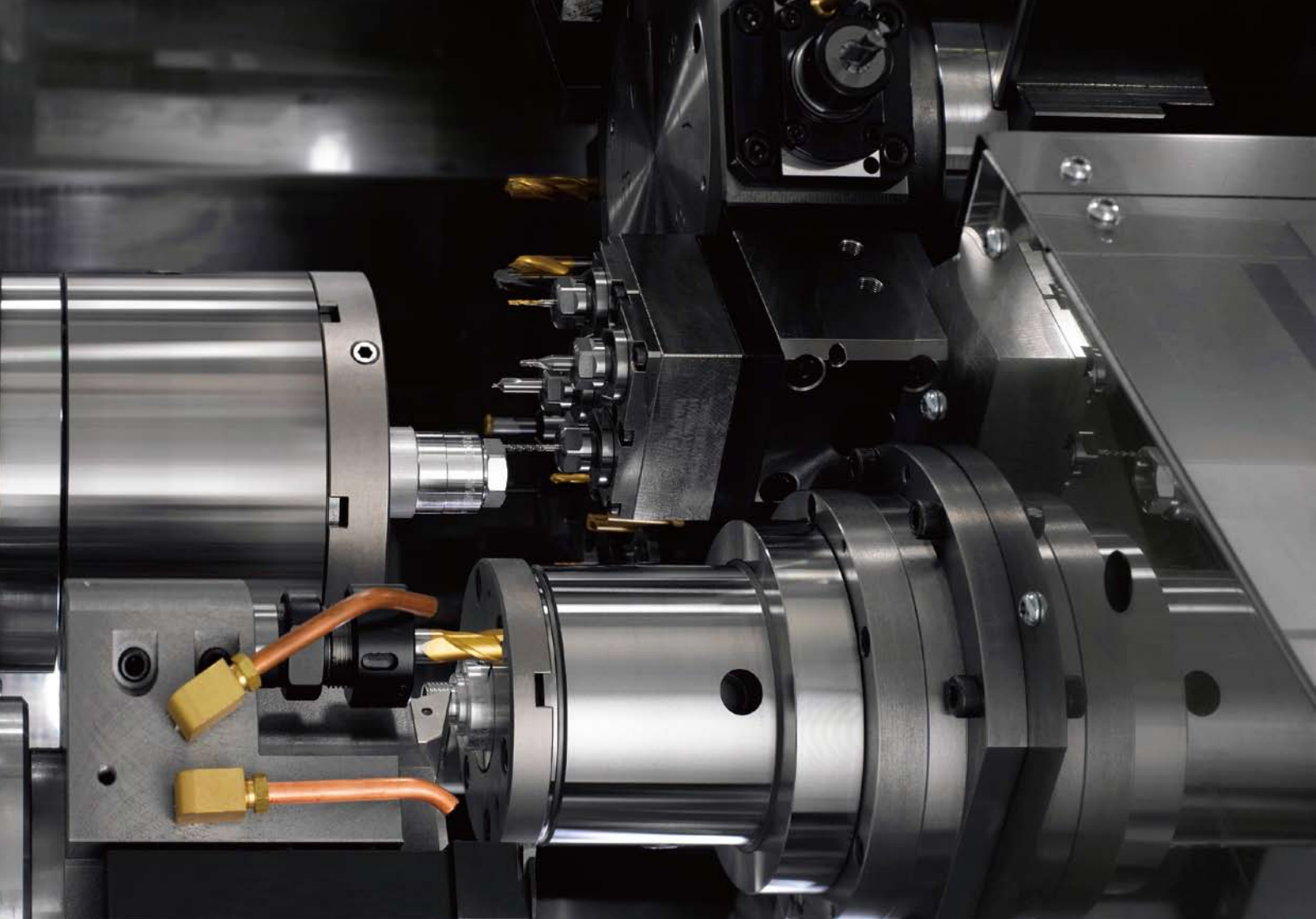
### **Inspiring Tooling Possibilities**

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.



Back machining using tools installed in a triple plain head





Main: Machining with a Z 4 spindle rotary tool  
Sub: Simultaneous screw-cutting

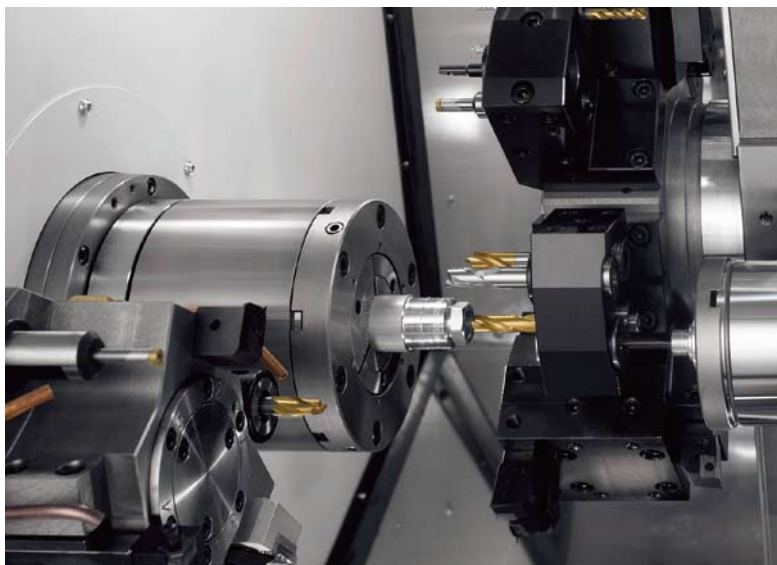
## BNA-34DHY / BNA-42DHY

### Y-axis Function and Sub-turret Featured

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.

### More Extensive Tooling

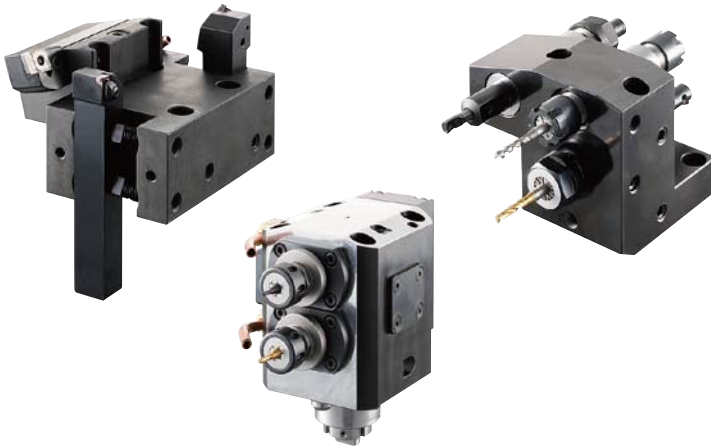
The range of machining possibilities has been broadened by the ability to use triple turning tool holder, quadruple drill holders and four spindle rotary tool units.



Overlap processing

## Highly versatile turret, and a wealth of tooling

Revolving tools and tool holders that allow multiple tools to be mounted at a single position mean you will never be short of tools even when machining complex workpieces.

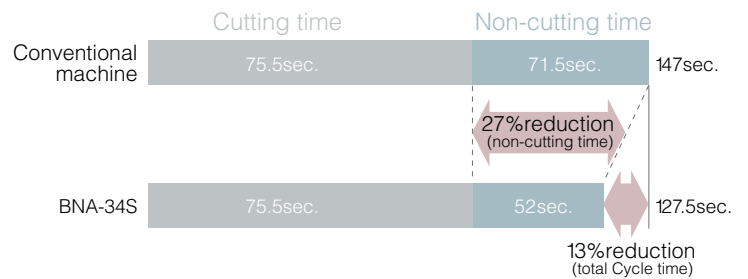


## Substantial Reduction in Non-cutting Time

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.

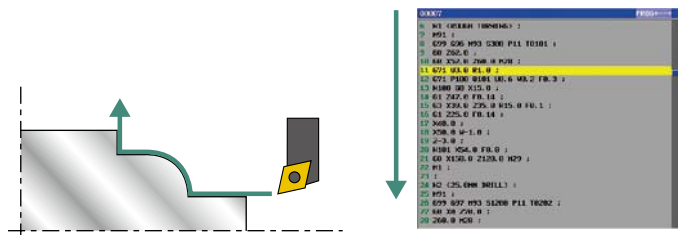


Workpiece used for data measurement



## Handle Retrace (DHY Type Only)

The program can be checked during automatic running by using the manual pulse handle.



## Options



### Part catcher

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



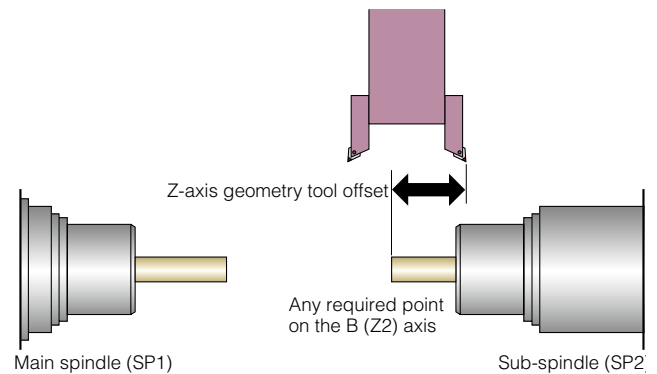
### Part conveyor

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

## ■ Arbitrary Point Control by B-axis (S and DHY Types Only)

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 from the new operating panel with a single touch, greatly improving working efficiency.

HDI 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 RAW 1:ENABLE	1
TOOL OFFSET MEAR 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.

HDI TOOL SETTING (GEOMETRY)	
NO.	X1 Z1
001	-00.000 100.121 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.

HDI TOOL COUNTER	
NO.	CURRENT PRESET X-WEAR Z-WEAR
001	271 000 0.002 0.000
002	770 1000 0.000 0.000
003	0 0 0.001 0.000
004	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.

HDI 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/ROT)	
SPEED	ROTATION STATE
SP1 3000 r/min FORWARD	SP BRAKE LOCK
SP2 0 r/min	RIGID TAP
RV1 r/min REVERSE	
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 HD2	X2YC X2C
TORQUE LIMIT	---
SYNCHRONOUS 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 (STATE)	
CUTTING PATTERN	
HD1 : TURRET 1 → SPINDLE 1 (TURNING)	
HD2 : TURRET 2 → SPINDLE 2 (TURNING)	
HD1 HD2	
OVERRIDE CANCEL	ON ON
ERROR DETECT	OFF OFF
CHAMFERING	OFF OFF
POLYGON CUTTING (HARD)	ON OFF

Automatic running monitor (status)

Allows you to check the machining conditions during automatic running.

START CONDITION	
MACHINE READY	---
ORIGIN POS.	X1 Z1 Y1 C2
OPTION DEVICE POS.	X2
DOOR	
RETRACT	
ALARM	
START SU.	
MODE SW.	
ETC.	
TURRET MAINTENANCE MODE	
OVERRIDE: 95%	
SP OVERRIDE: 100%	

Start condition

Displays information on the start conditions for automatic running.

SPINDLE & ROT	
COMMAND	SPEED ROTATION
SP1 3000 (3000) FORWARD	
SP2 3001 (0)	
RV1 1000 (---) REVERSE	
SP OVERRIDE: 123% (for JOG MODE)	
INPUT RANGE = 0 ~ 6000 (min-1)	

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	
HD1 TURRET MAINTENANCE MODE	OFF
HD2 TURRET MAINTENANCE MODE	OFF
SPINDLE PHASING MODE	OFF
CHECK CONTROL PANEL LAMP	OFF
SELECT: <↑> or <↓>	
CHANGE: [ ON ] or [ OFF ]	

Maintenance

Used to turn the settings for maintenance ON and OFF.

TOOL MONITOR MONITORING No. 01	
%	25 50 75 100 125 150 PEAK
X	100
Z	103
Y	
B	
C	
A	
S1	
S2	5

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

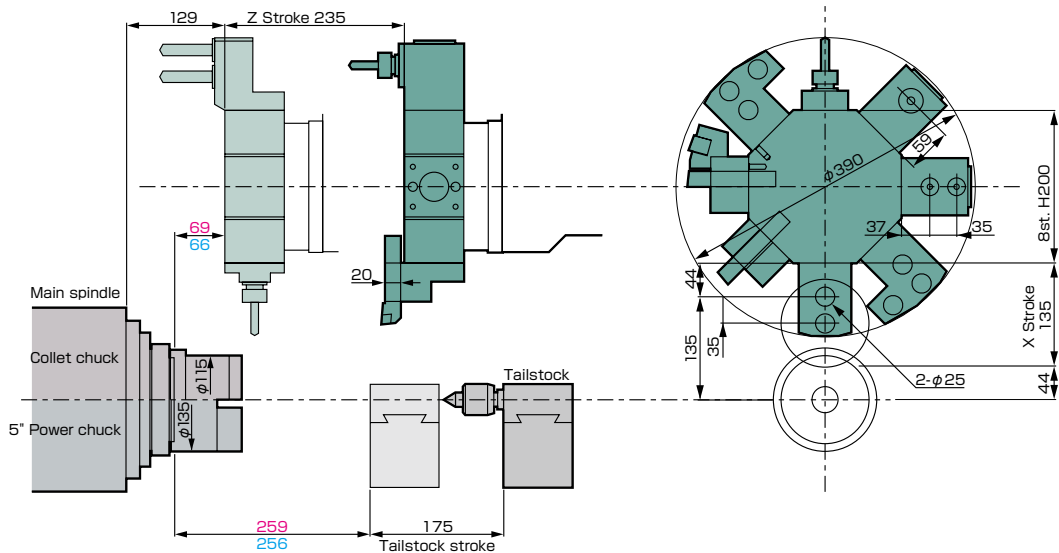
	DHY	S	C
Machining data	○	○	×
Tool setting	○	○	×
Tool counter	○	○	○
Cycle time	○	○	○
Automatic running monitor	○	○	○
Start condition	○	○	○
Spindle and revolving tools	○	○	○
Maintenance	○	○	○
Tool monitor	○	×	×



# Tooling area

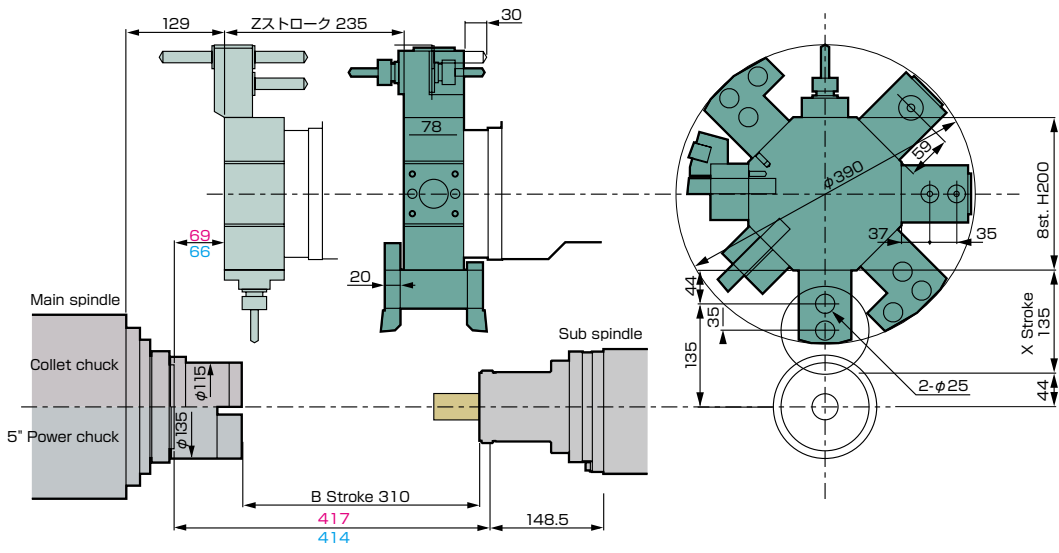
## BNA-C

- Common
- 42C
- 34C



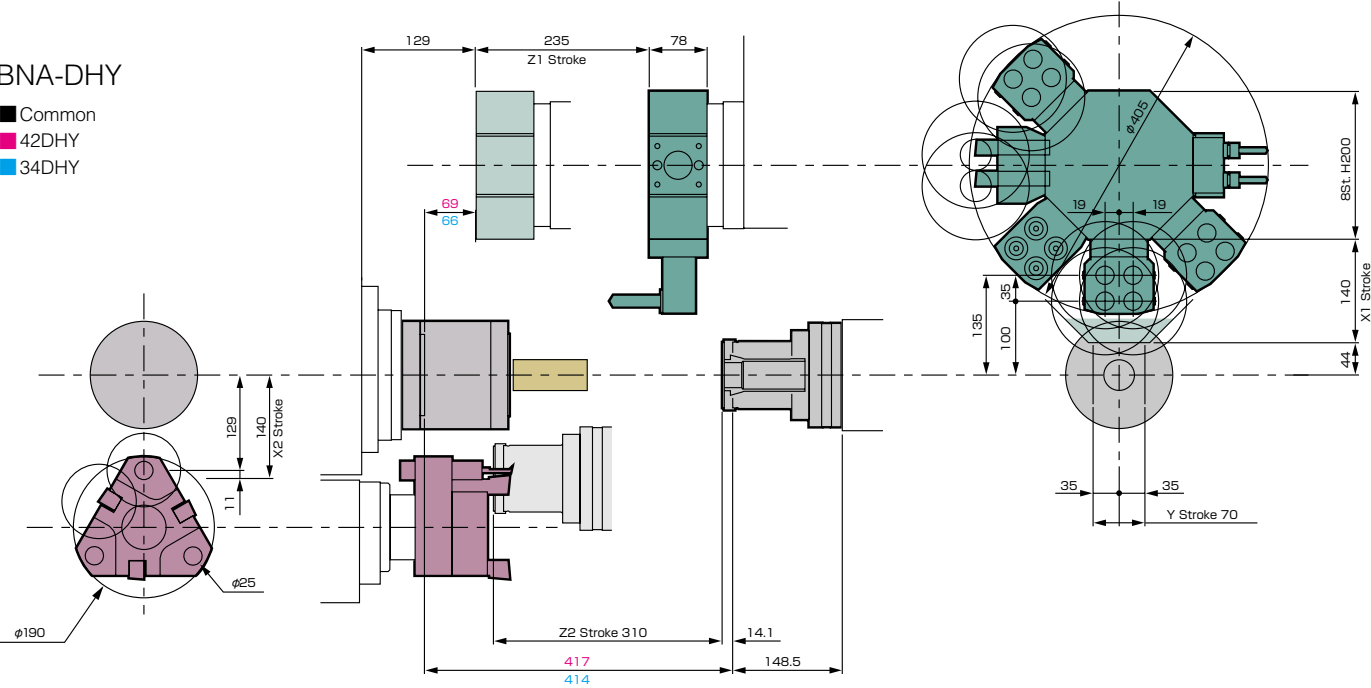
## BNA-S

- Common
- 42S
- 34S



## BNA-DHY

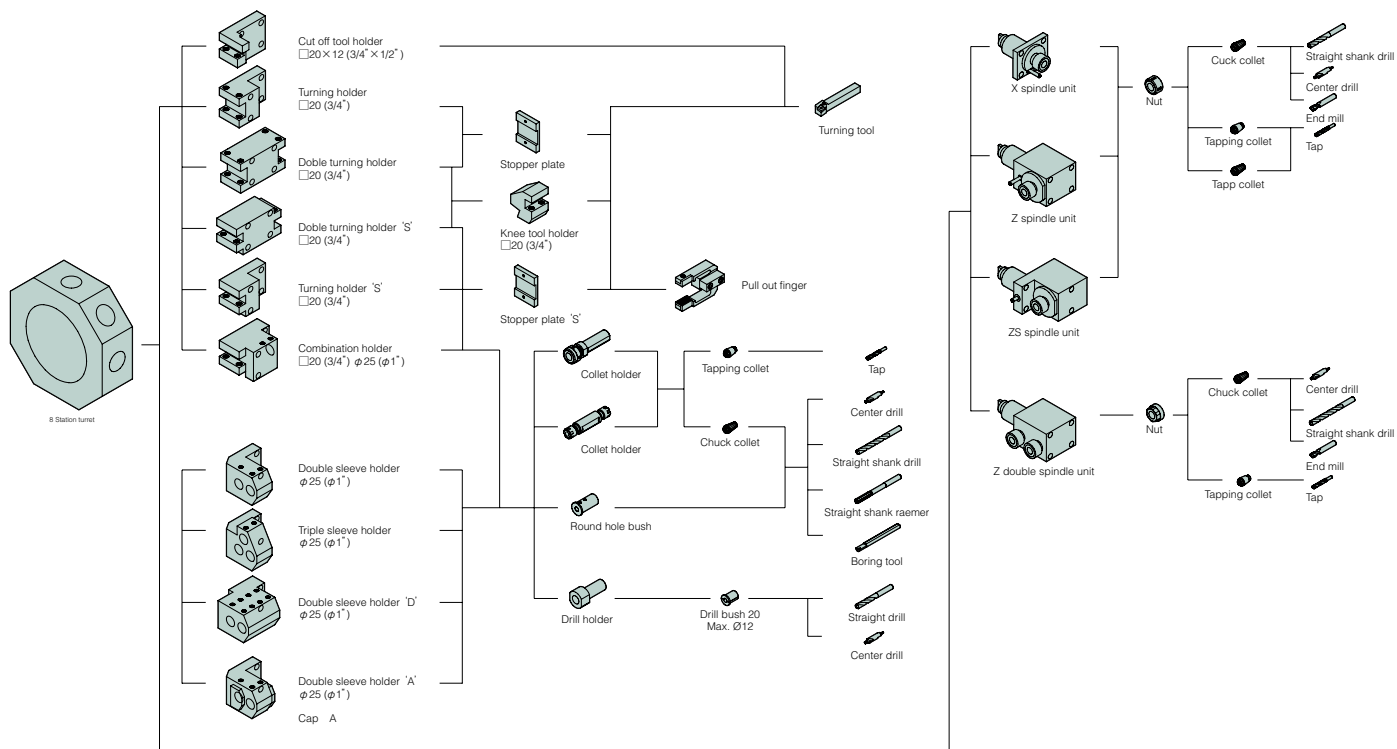
- Common
- 42DHY
- 34DHY



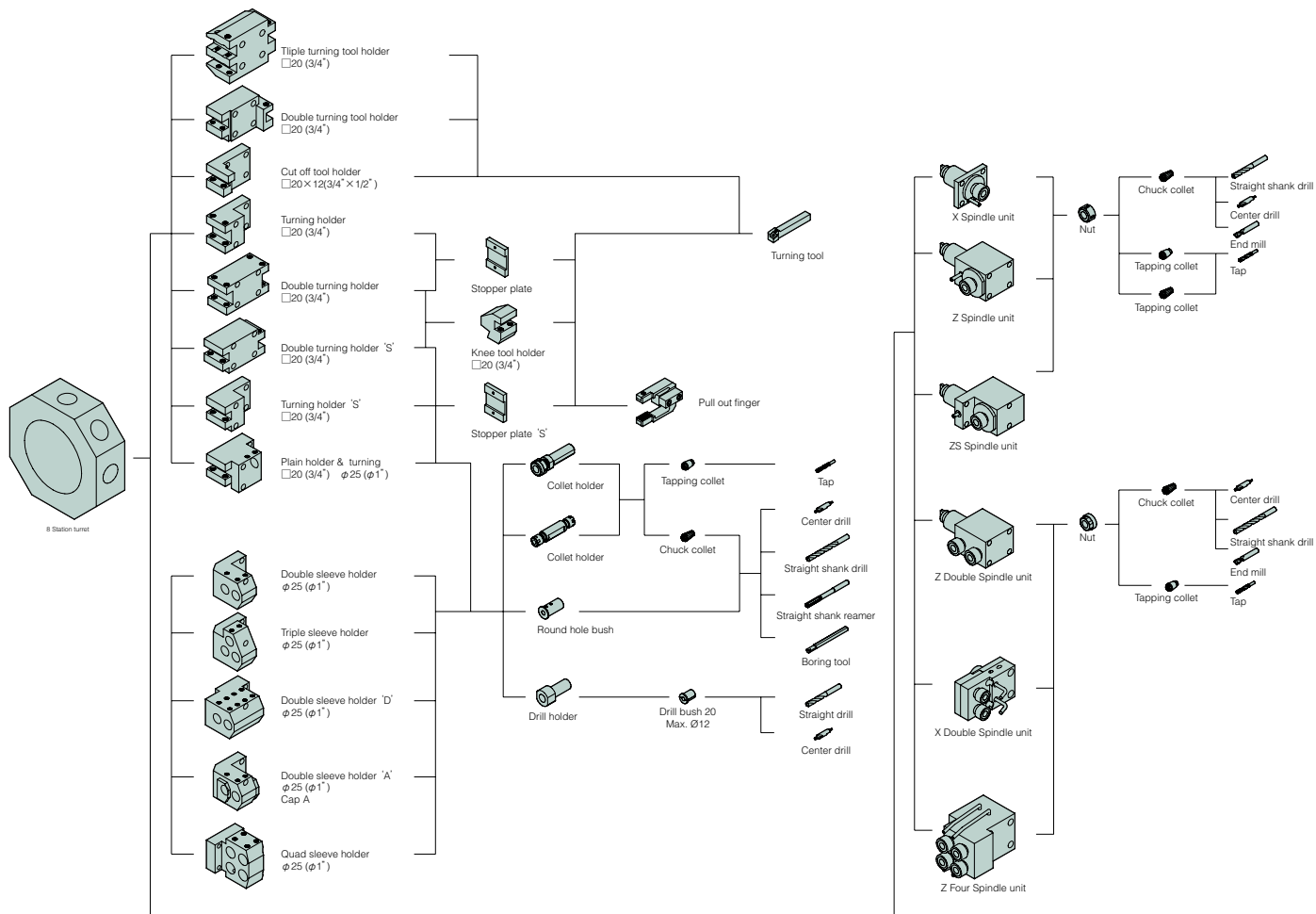
# Tooling system

■ BNA-C

■ BNA-S



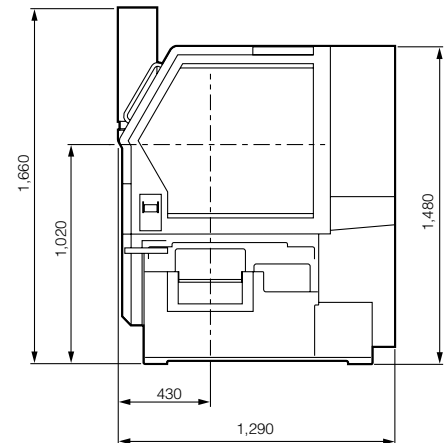
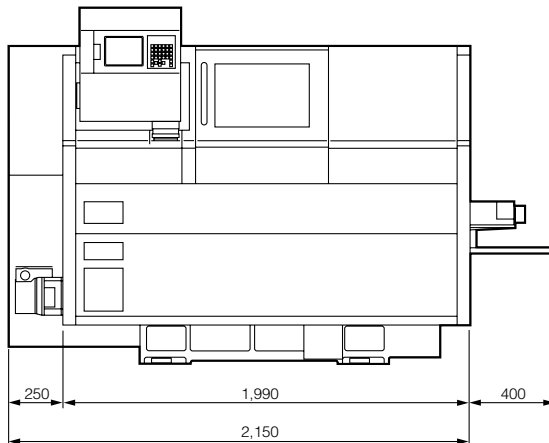
■ BNA-DHY



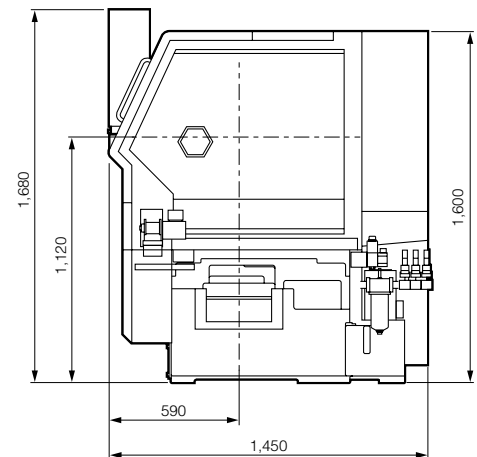
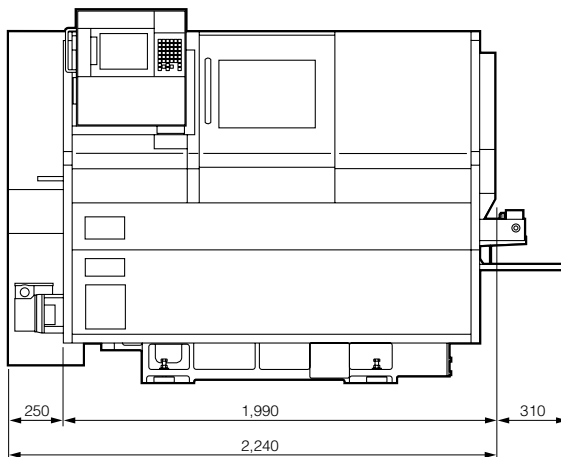
## External view

### ■ BNA-C

### ■ BNA-S



### ■ BNA-DHY



NC Specification	MIYANO-FANUC 0i-TD	Tool selection and work coordinate settings, and tool wear compensation	Tool selection and work coordinate settings are selected from 1-64 by $T \square \square \Delta \Delta \square \square$ at the specified position for each turret tool wear compensation is selected by $\Delta \Delta$ .
Controlled axis	X, Z, axis (BNA-C) X, Z, Baxis (BNA-S) X1, Z1, Y, X2, Z2 axis (BNA-DHY)	Direct input of tool position	by measured MDI
Min. input increment	0.001mm(Diameter for X axis), 0.001deg.	Input/Output interface	PC card slot
Min. output increment	X axis: 0.0005mm, Z axis: 0.001mm	Automatic operation	1 cycle operation/Continuous operation, Single block, Block delete, Machine lock, Optional block skip, Dry run feed hold
Parts program storage capacity	1Mbyte(2560m Tape length)	Others	8.4" color LCD, No of registered programs : 800,
Spindle function	Spindle speed S4-digits, directly specified(G97), Constant Cutting speed control(G96)	Decimal point input, Manual pulse generator,	Memory protect, AC digital servo motor, etc.
Cutting feed rate	F3.4 digit per revolution, F6 digit per minute, directly specified	NC standard functions	Chamfering/Corner R, Tool nose R compensation,
Cutting feed rate override	0 ~ 150%(in 10% increments)	Constant peripheral speed (G96), Background editing,	Programmable data input
Rapid traverse rate	X, Z, B axis : 20m/min (C,S) X1, Z1, Z2 axis:20m/min Y, X2 axis:12m/min (DHY)	(G10), Operating time/Parts	No. display, Multiple repetitive canned cycle(G70 ~ G76)
Interpolation	G01, G02, G03		Rigid tap function (Main & sub), Cylindrical interpolation,
Threading	G32, G92		Custom macro B, Drilling canned cycle (G80 ~ G86)
Canned cycle	G90, G92, G94		Tool life management system.
Work coordinate setting	Automatic Setting, 64 work coordinate setting by the tool position memory and the geometry offset.		



# Machine Specifications

Items		BNA-C		BNA-S		BNA-DHY	
		34C	42C	34S	42S	34DHY	42DHY
Machining capacity							
Max. work length		175mm		100mm			
Max. machining diameter of bar work	SP1	φ 34mm	φ 42mm	φ 34mm	φ 42mm	φ 34mm	φ 42mm
	SP2	φ 34mm					
Slide stroke							
Turret slide stroke	X1axis	135				140	
	Z1axis	235					
	Y1axis	---				70(±35)	
Spindle slide stroke	X2 axis	---				140	
	Z2 axis	---				310	
	B axis	---				310	
Spindle							
Number of spindle		1		2			
Spindle speed range	SP1	60 ~ 6,000min <sup>-1</sup>					
	SP2	50 ~ 5,000min <sup>-1</sup>					
Inner diameter of draw tube	SP1	φ 36mm	φ 43mm	φ 36mm	φ 43mm	φ 36mm	φ 43mm
		φ 30mm					
Collet chuck type	SP1	Spring collet	Hardinge S20	Spring collet	Hardinge S20	Spring collet	Hardinge S20
	SP2	Spring collet					
Power chuck type	SP1	5" thru-hole chuck					
Spindle minimum index angle	SP1	0.001°					
	SP2	0.001°					
Turret							
Number of turret		1				2	
Type of turret	HD1	8ST.					
	HD2	---				6ST.	
Shank height of square turning tool		□ 20mm					
Diameter of drill shank		φ 25mm					
Revolving tools							
Number of revolving tools		Max.8					
Type of revolving tools		Single Clutch					
Tool spindle speed range		50 ~ 5,000min <sup>-1</sup>					
Machining capacity	Drill	Max. φ 10					
	Tap	Max. M6x S45C (M8x.25 Spiral tap and Point tap only)					
		Max. M8x.25 BSBM					
Feed rate							
Rapid Feed rate	X1axis	20m/min					
	Z1axis	20m/min					
	Y1axis	---				12m/min	
	X2 axis	---				12m/min	
	Z2 axis	---				20m/min	
	B axis	---				20m/min	
Tailstock							
Max. slide stroke		175mm		---			
Live center size		MT2		---			
Max. slide force		4.3KN(at 3.4Mpa)		---			
Motors							
Spindle drive	SP1(Cs)	7.5/5.5kw(15min./cont)					
	SP2(Cs)	5.5/3.7kw(15min./cont)					
Revolving tool drive		2.8/1.0kw					
Coolant ponp		0.18kw					
High pressure coolant drive		1.0/0.6kw (60/50Hz)					
Tank capacity							
Hydraulic oil tank capacity		7L					
Lubricating oil tank capacity		2L					
Coolant tank capacity		165L					
Machine dimensions							
Machine hight		1,660mm				1,680mm	
Floor space		W2,150×D1,290mm			W2,240×D1,450mm		
Machine weight		2,800kg				3,000kg	
Optional accessories							
		Spindle air blow, Spindle Brake, High pressure coolant, Coolant level switch, Signal tower, Coolant mistcollector, Automatic fire-extinguishing equipment, Automatic power shut-off, Chip conveyor, Chip box, Parts catcher, Parts conveyor, RS-232C, 100V					