

CITIZEN

Miyano

BNA42

Fixed Headstock Type CNC Automatic Lathe



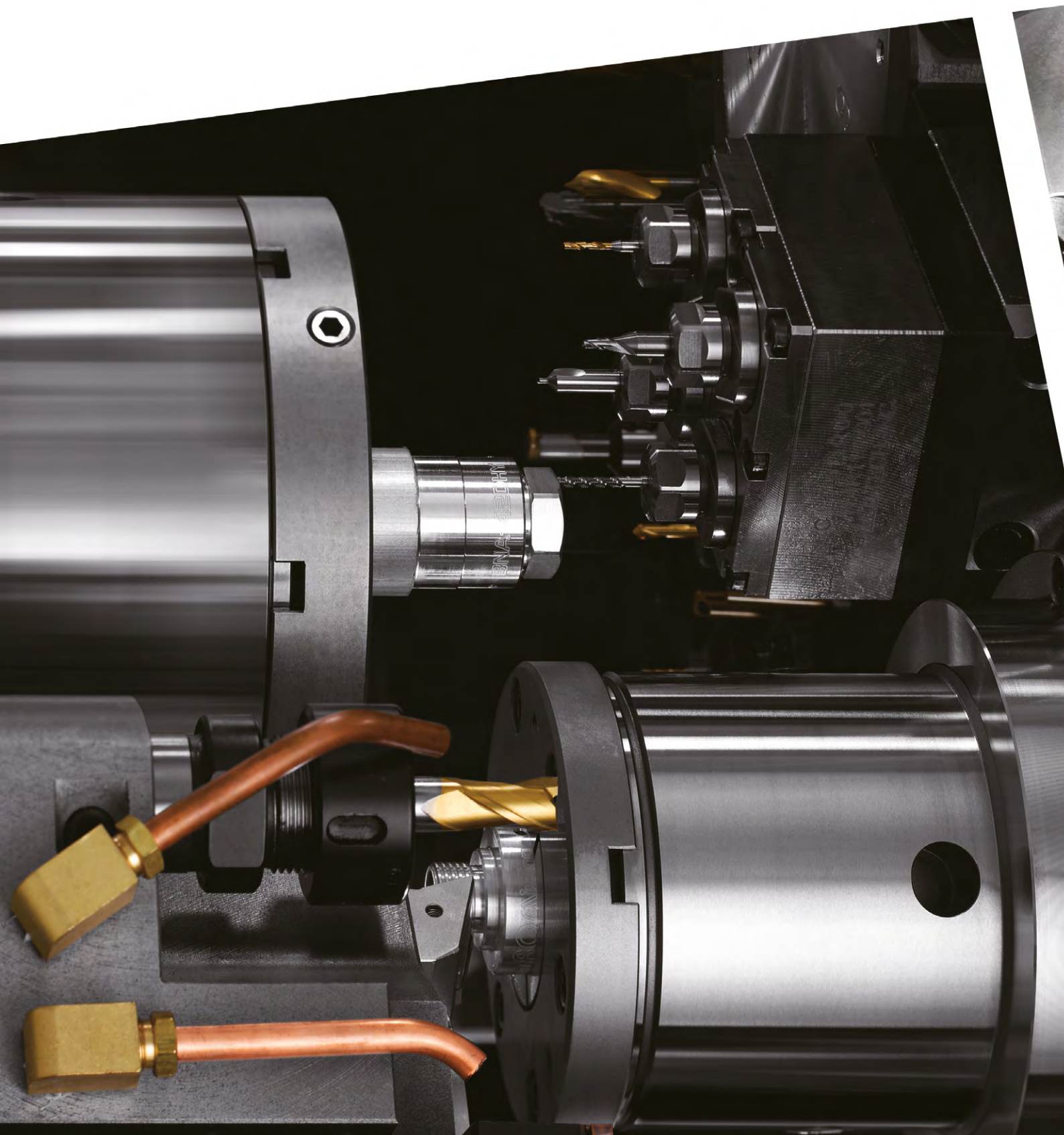
The BNA series packs sophisticated functions and high accuracy into a space-saving compact body.

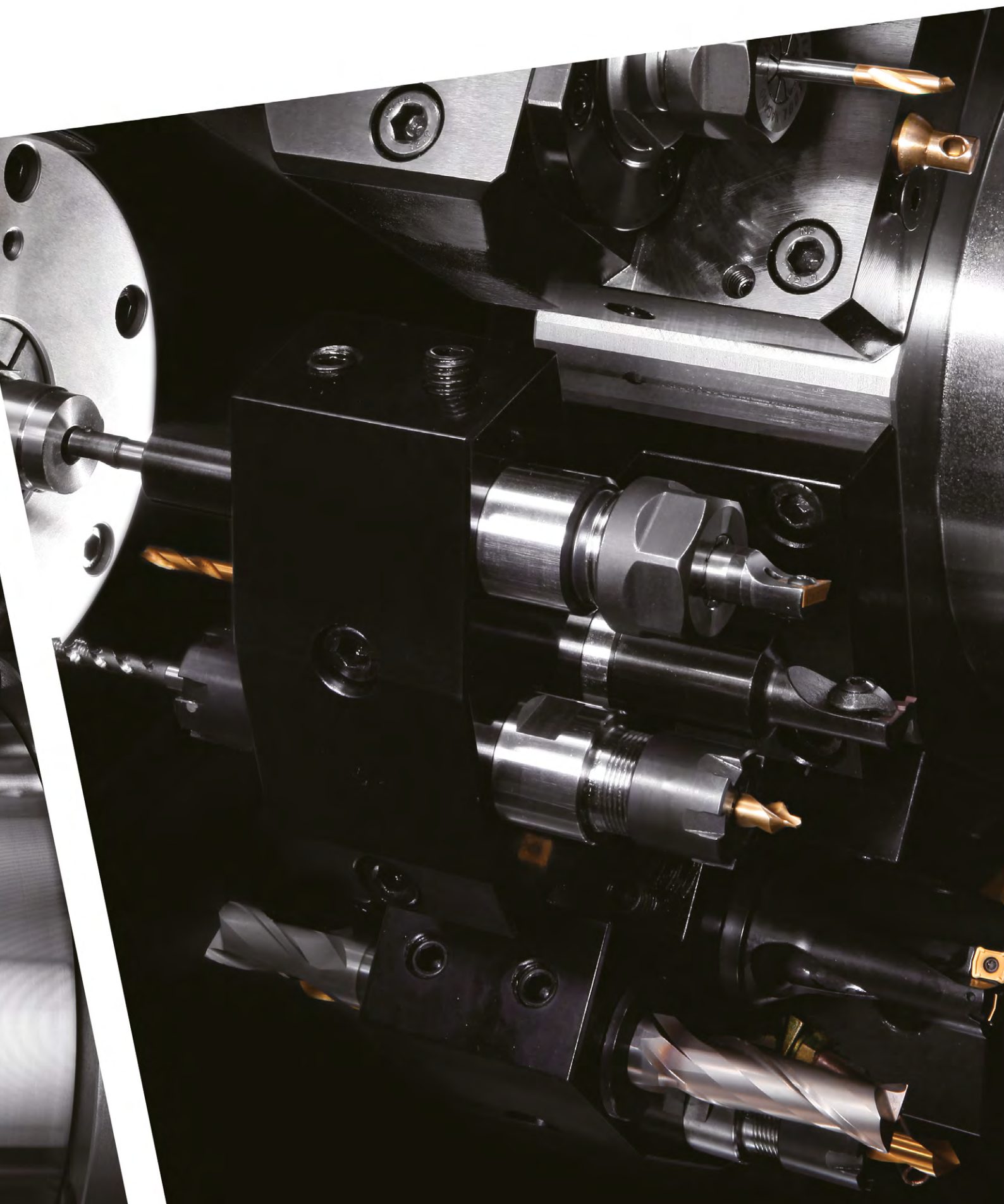
The BNA series aims to set the new standard for machines for cutting bar stock, based on the concept of “space savings and sophisticated functions”.

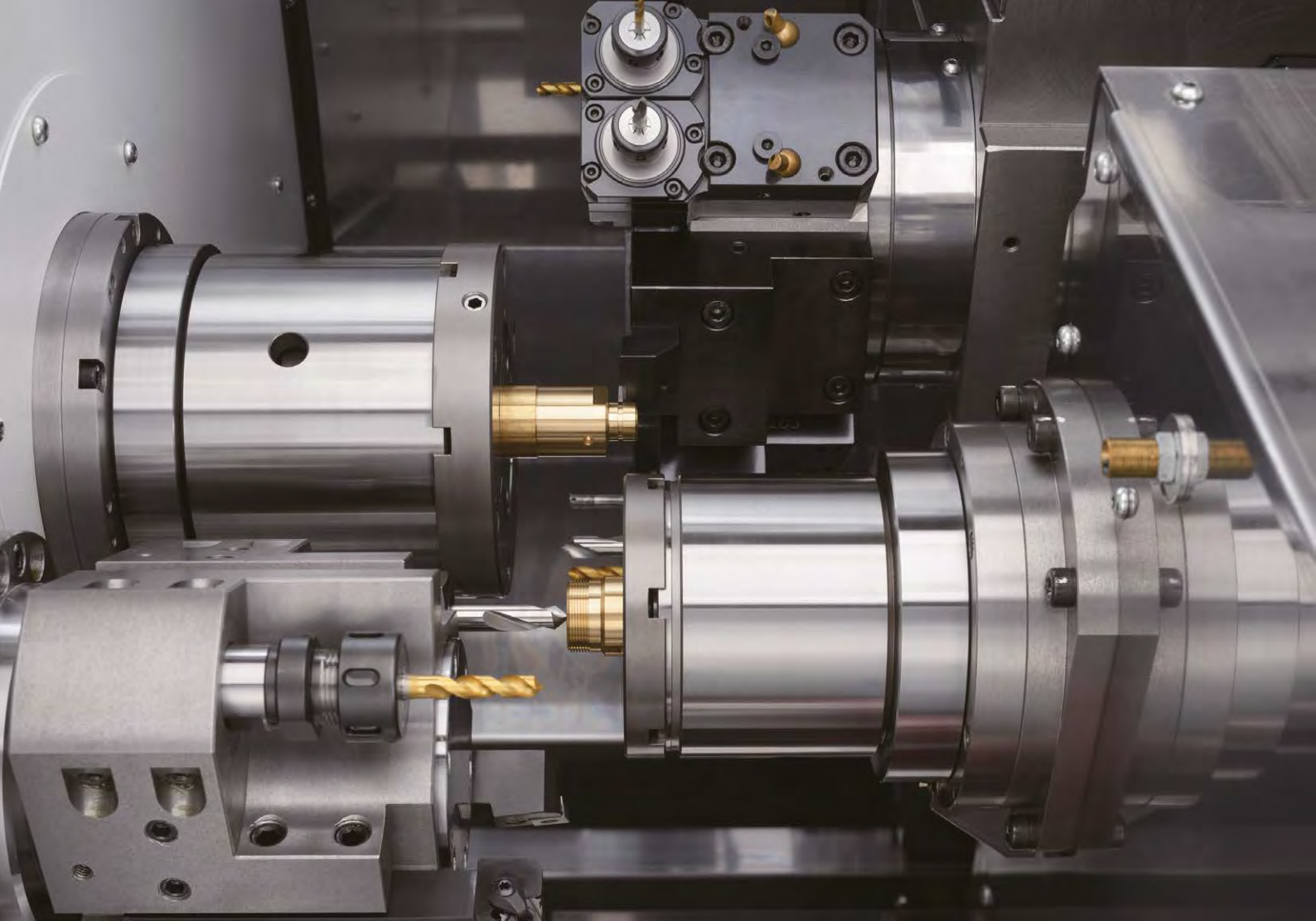
The BNA-42S enables back machining with its 2 spindles and 1 turret and combines a high level of basic performance with convenience of use.

The BNA-42DHY achieves further shortening of cycle times by adding a compact sub-turret 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; ease of use for fast set-ups and quick changeovers.







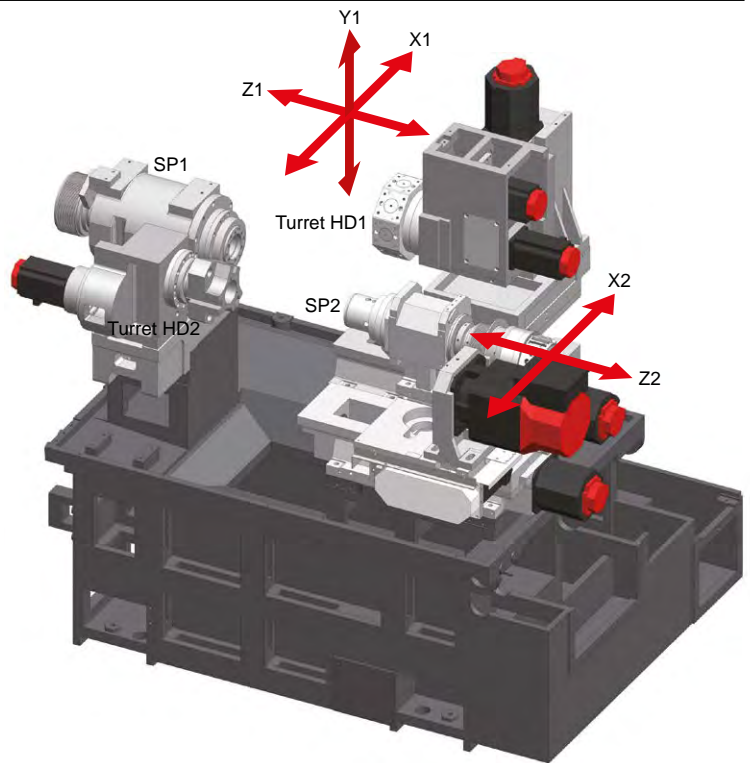
DHY



Basic construction and axis configuration

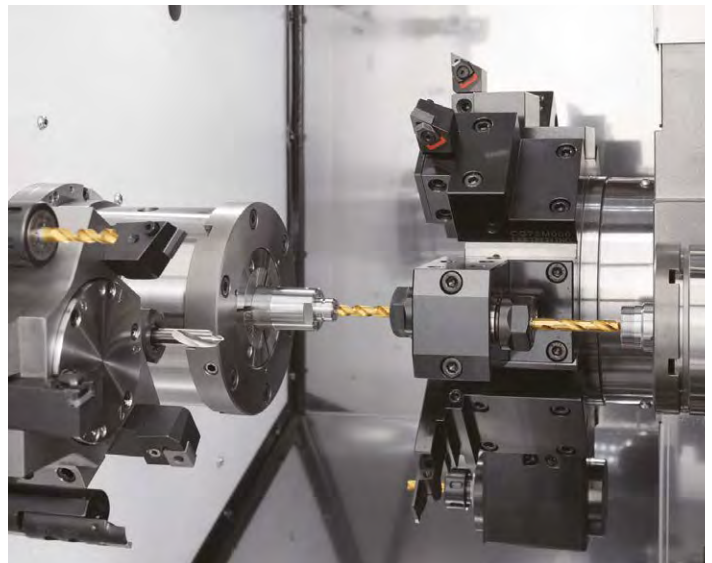
High-rigidity scraped slideways support powerful cutting

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

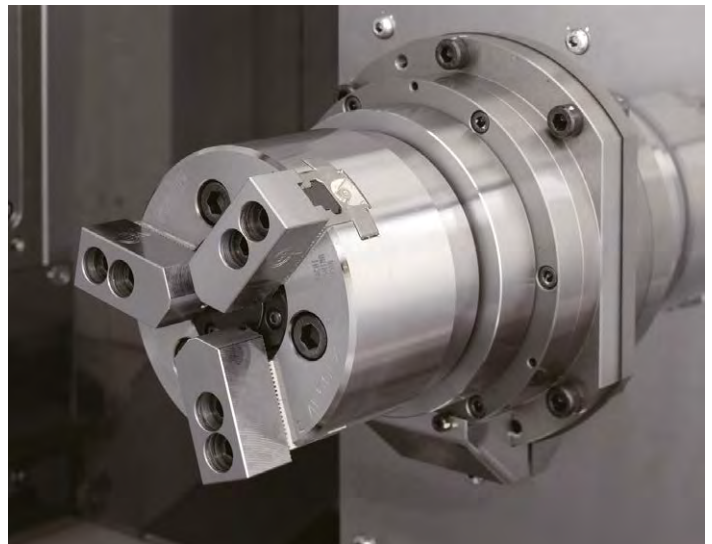
The combination of the Y-axis function incorporated in the main turret (HD1) and the compact 6-station sub-turret (HD2) can achieve further reductions in machining time through overlap processing and other forms of machining performed simultaneously on the main and sub spindles.

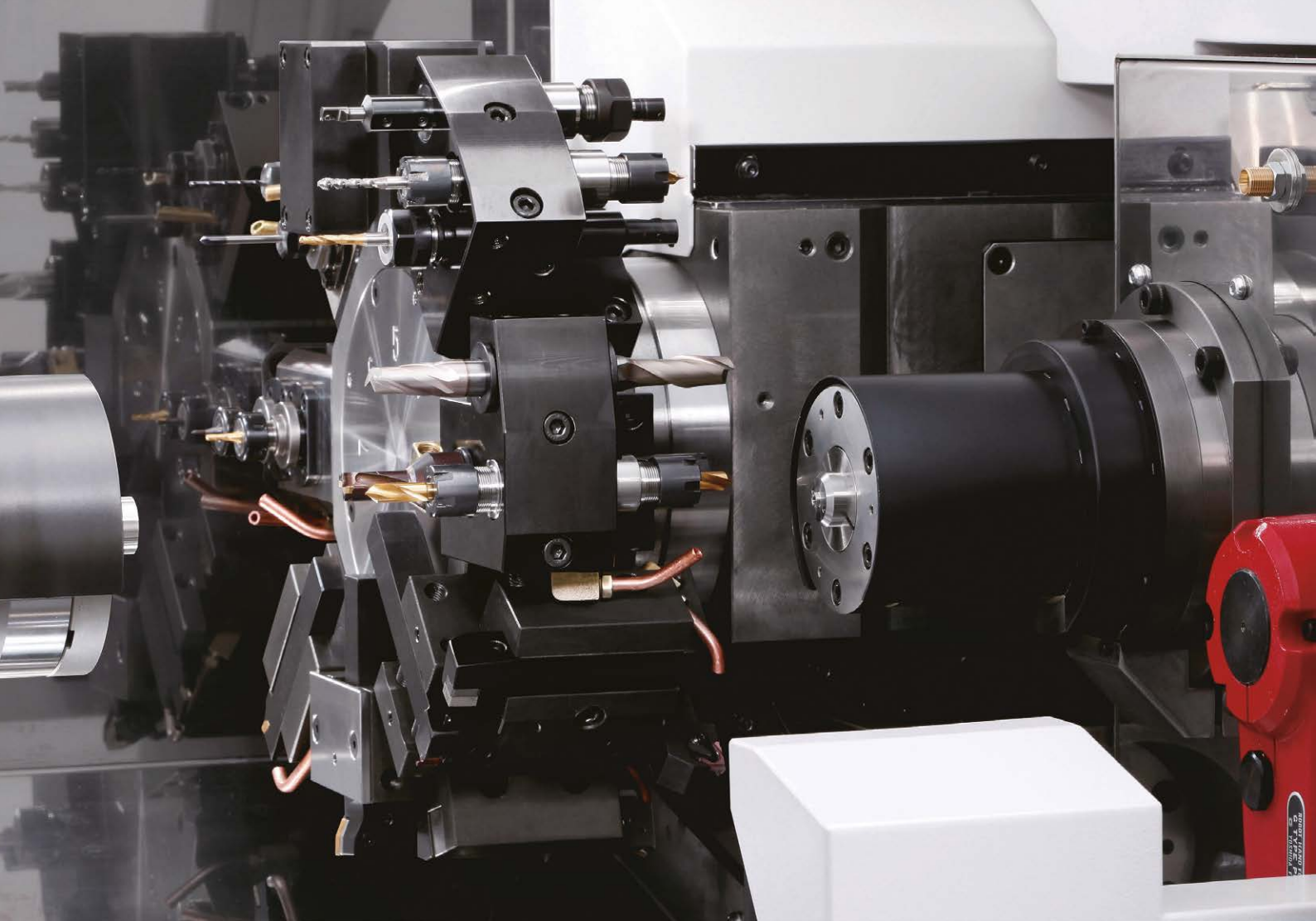


Simultaneous front/back machining

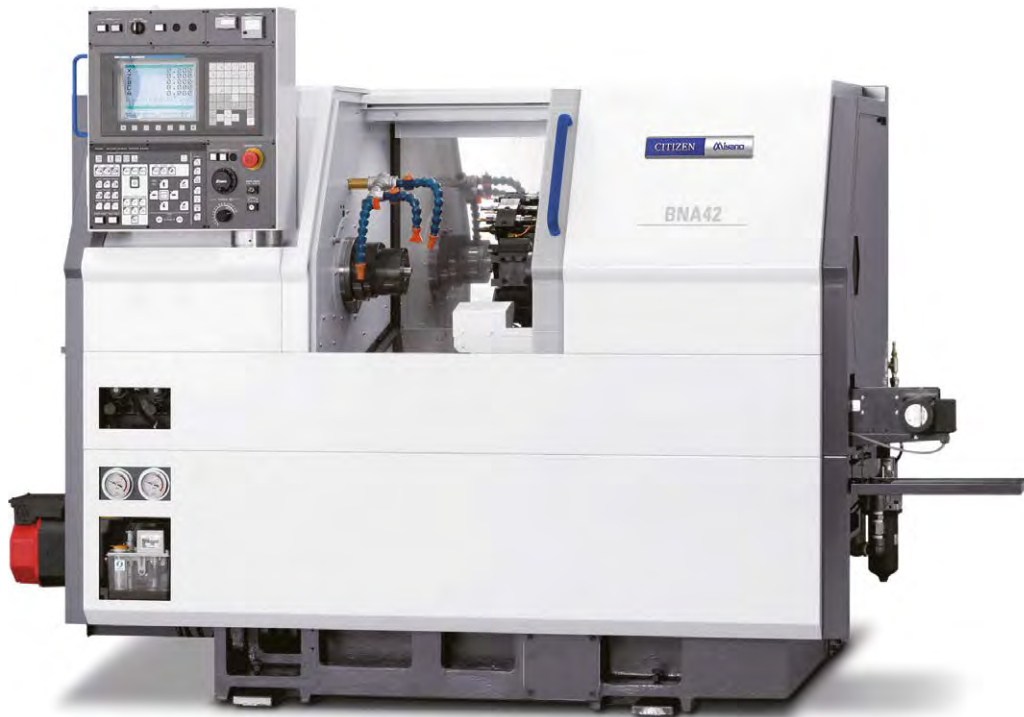
Power chuck on back spindle

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.





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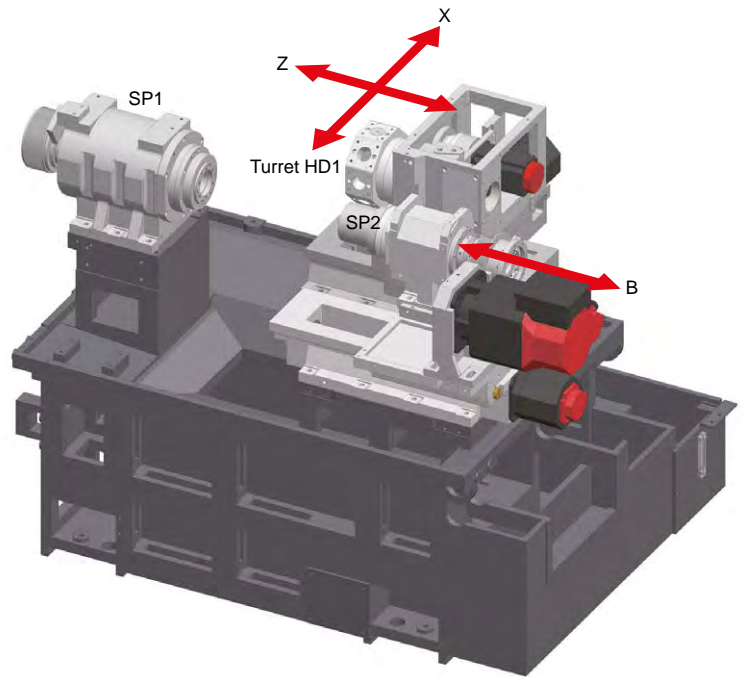


Basic construction and axis configuration

Stable, accurate and strong

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

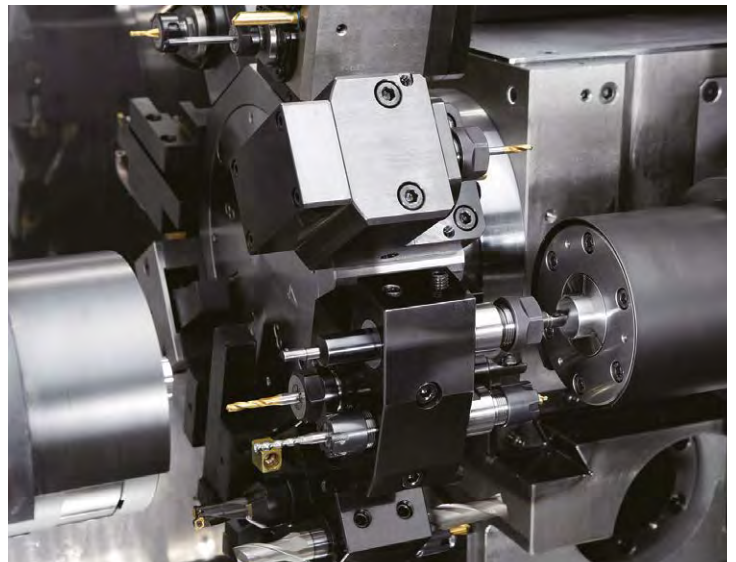
The unit mounting faces are not distorted by the effects of heat and even if the units are subject to thermal expansion they are all displaced in the same direction (perpendicular to their mounting faces), minimising relative deviations between the workpiece and cutting tools.



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.

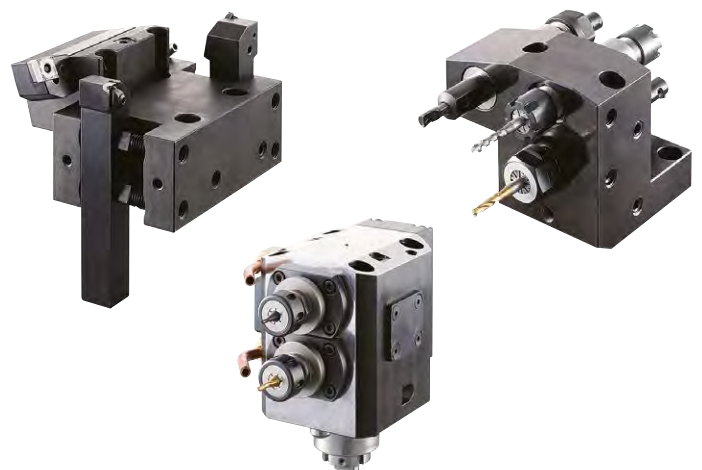


Back machining using tools installed in a triple sleeve holder

Extensive tool range

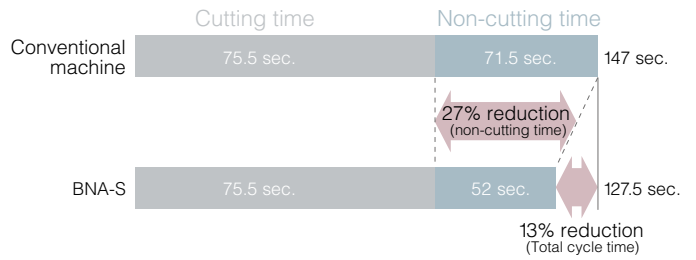
The 8 station turret with half indexing in combination with multi tool holders helps to standardise set-ups and enable fast changeover to a different workpiece.

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



Substantial reduction in non-cutting time

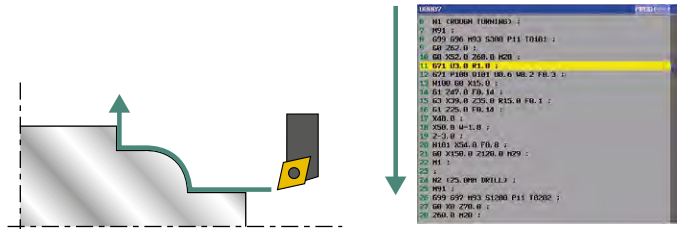
Miyano's unique control system cuts non-cutting time by 27% (compared to previous model), achieving a 13% reduction in terms of total cycle time.



Workpiece used for data measurement

Program handwheel (DHY)

Easy prove-out is assured by using the hand-wheel function.



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.

Chip conveyor

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



Bar feeder

A range of barfeeders are available for short or long bars.

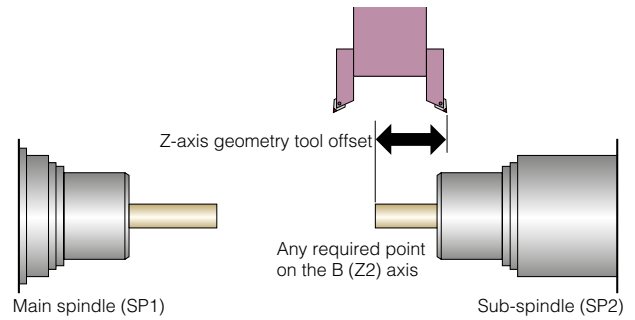


Support software

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.

Machining program example

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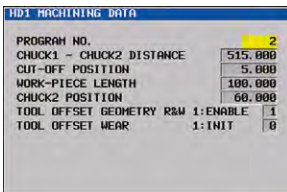
O1000 ;
G591 ;
G0 B-260. ;
G01 B-290.43 F4000. ;
M408 ;
M118 ;
G590 ;
G591 : B-axis program registration start
B-axis forward
B-axis positioning
M408 : M403 completion confirmation
M118 : SP2 chuck close
G590 : B-axis program registration end

N8 (CUT OFF) M91 ;
G28U0 ;
M291 ;
T0808M117 ;
G0G97Z0.S2000M403P11 ;
X23.0 ;
M290 ;
G506K0.05F500 ;
G99G1X-1.0 ;
G0X50.0M205 ;
M91 : SP1 position coder selection
X-axis origin point return
M291 : B-axis program execution start
Turret selection, M117 : SP2 chuck open
Z-axis positioning,
M403SP1&2 Synchronous forward
Immediate completion
X-axis positioning
M290 : B-axis program execution
completion confirmation
G506 : B-axis incremental move
Cut off
M205 : SP1&2 Synchronous stop
    
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Synchronous Execution from M291

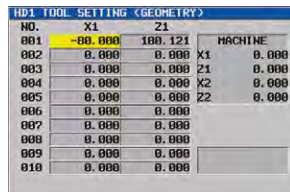
Machining support screens

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



Machining data

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



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.



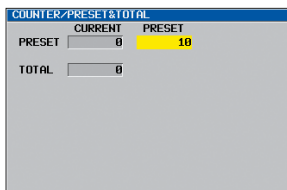
Tool counter

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.



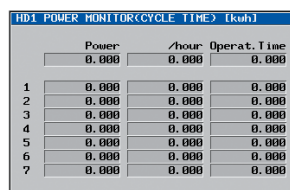
Cycle time

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



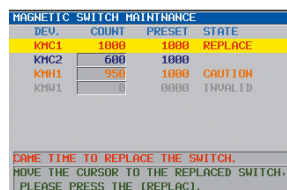
Total & preset counter

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



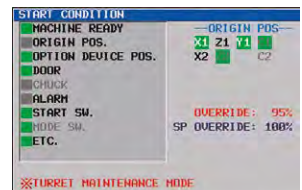
Power consumption monitor

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



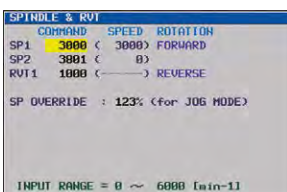
Electromagnetic switch maintenance

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



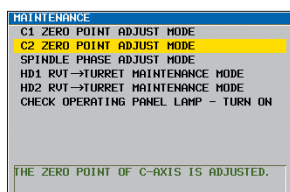
Start condition

Displays information on the start conditions for automatic running.



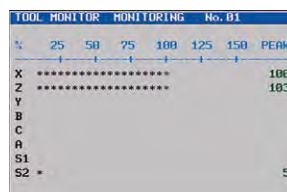
Spindle and revolving tool unit

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)

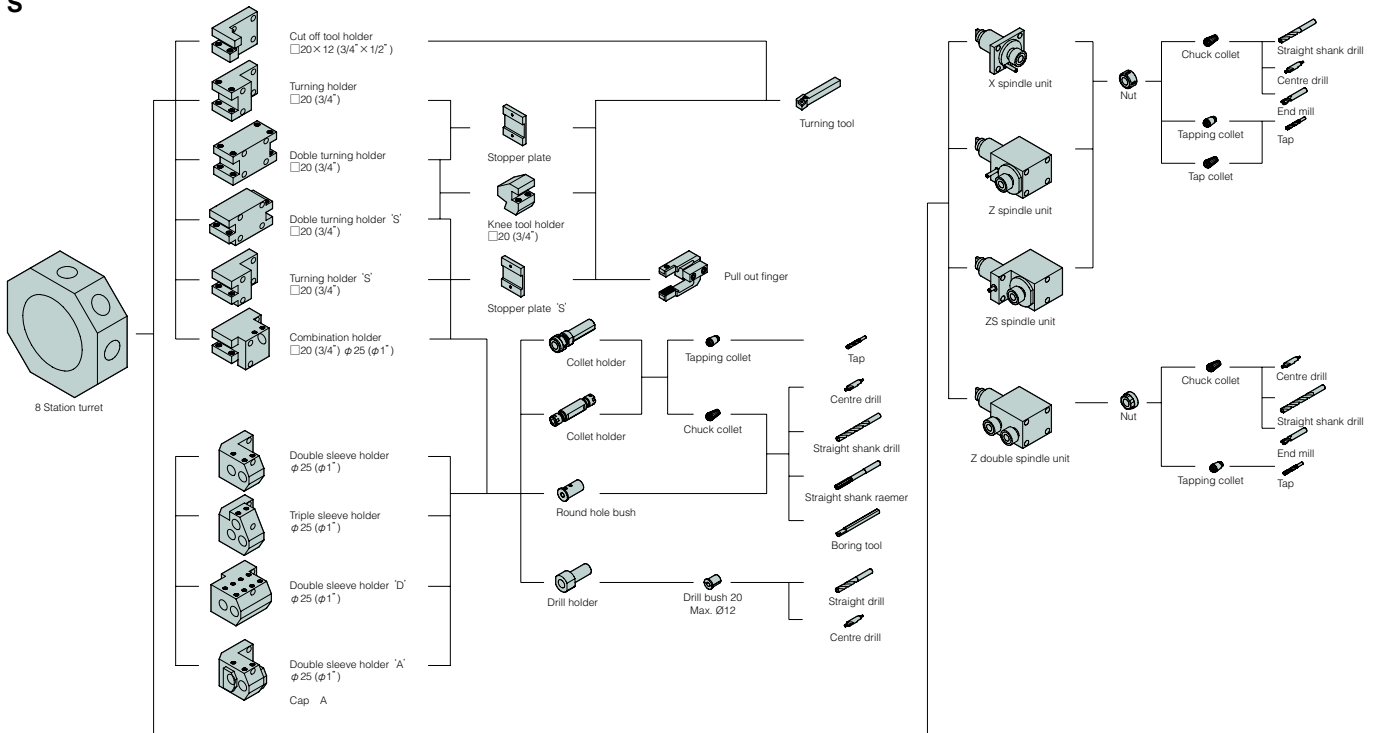
Allows the user to set limit values for load on individual tools. This can help to prevent damage to tools by automatically stopping the machine if the tool load increases.

Availability of machining support software for each machine model

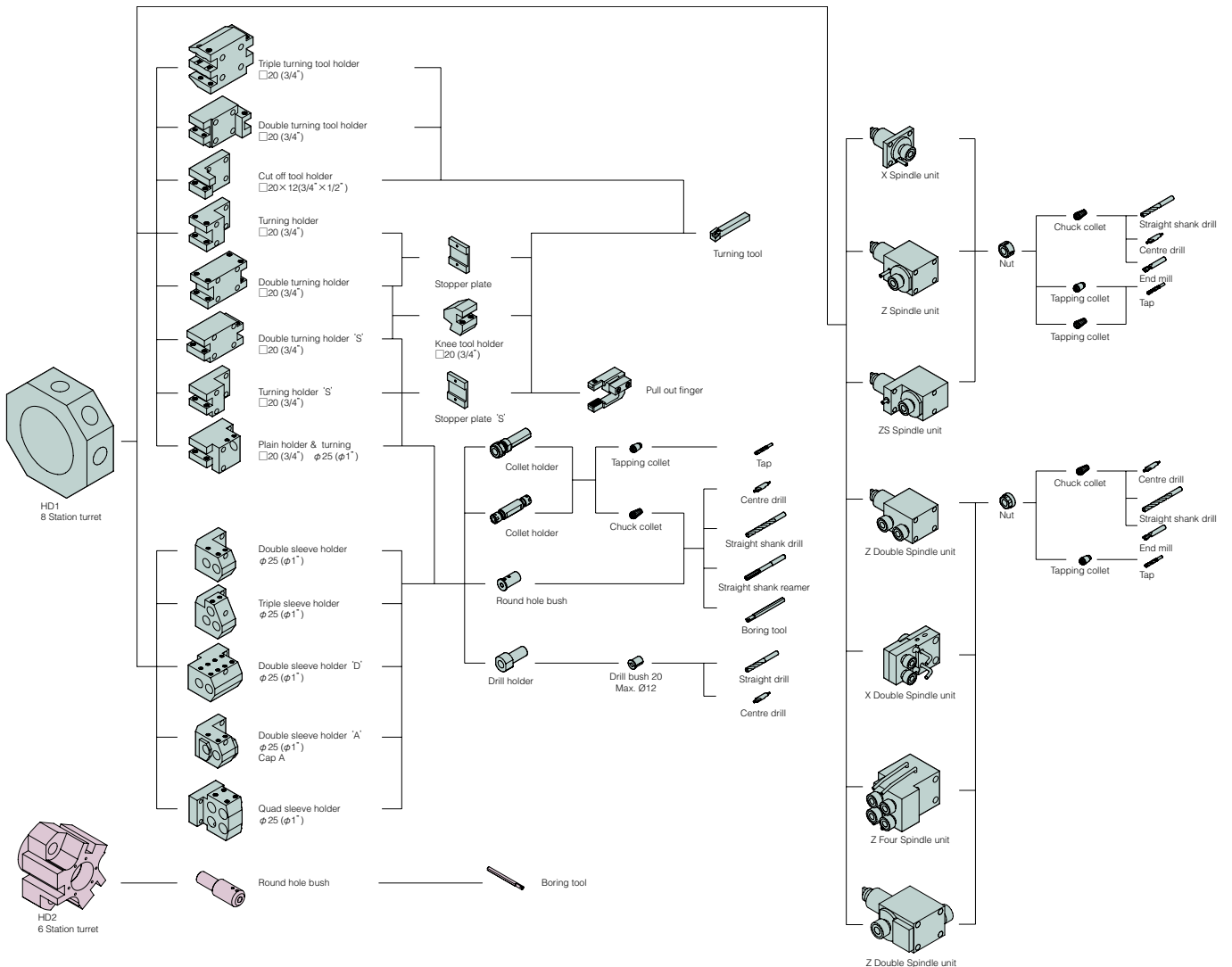
	DHY	S
Machining data	✓	✓
Tool setting	✓	✓
Tool counter	✓	✓
Cycle time	✓	✓
Automatic running monitor	✓	✓
Start condition	✓	✓
Total & preset counter	✓	-
Power consumption monitor	✓	-
Electromagnetic switch maintenance	✓	-

Tooling system

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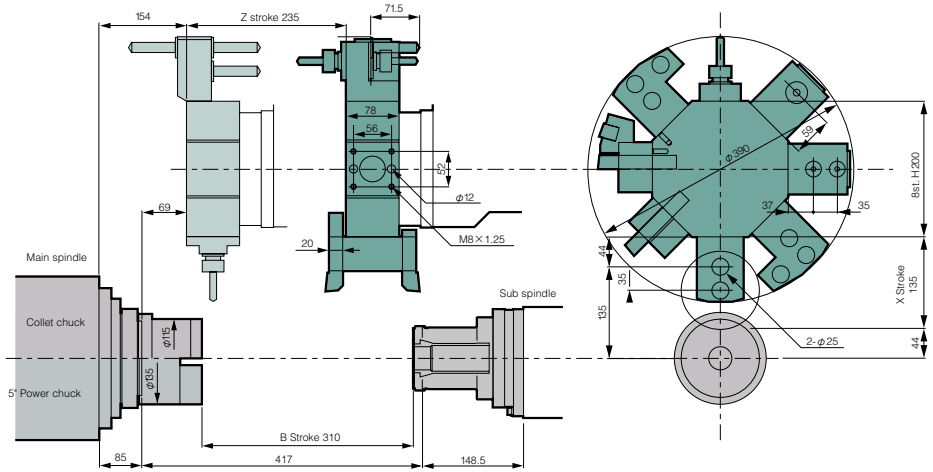


DHY

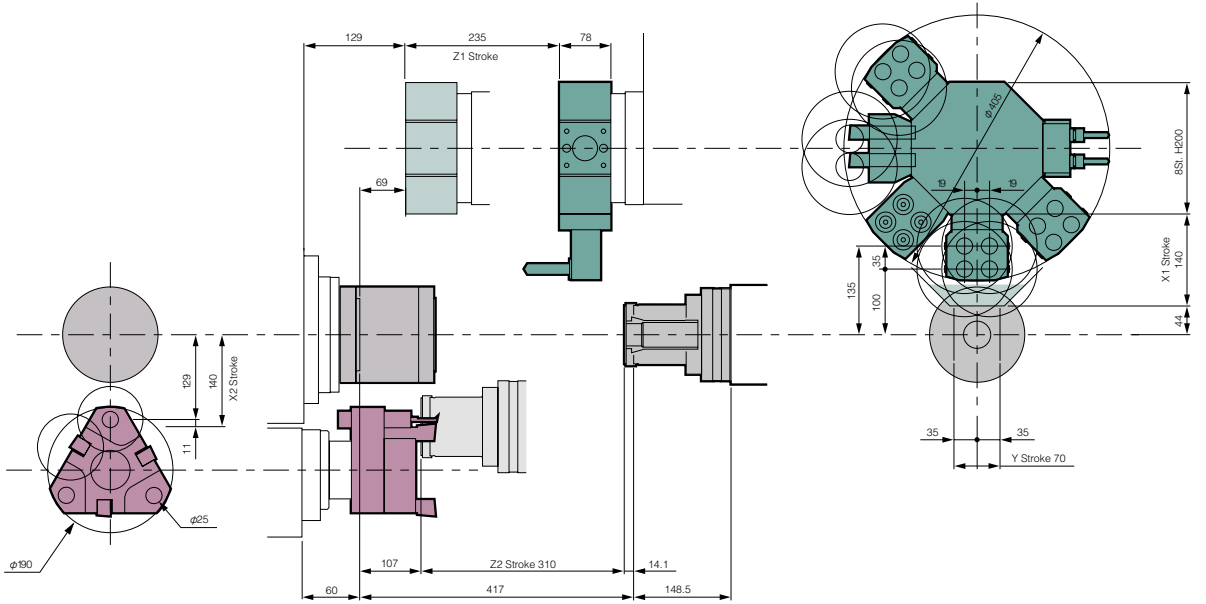


Tooling area

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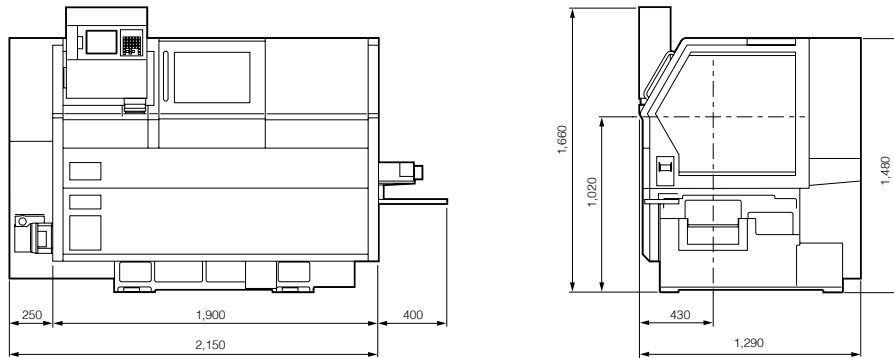


DHY

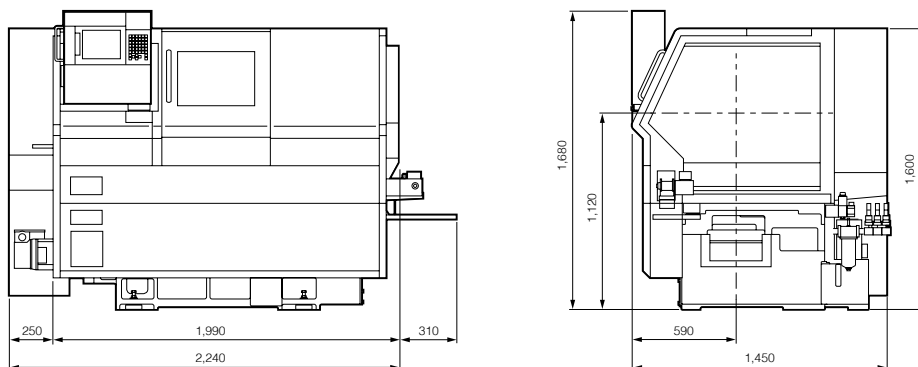


External view

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DHY



Machine specification

Items	BNA-42S2	BNA-42DHY3
Machining capacity		
Max. work length	100 mm	
Max. machining diameter of bar work	SP1 42 mm Dia. SP2 34 mm Dia.	42mm
Slide stroke		
Turret slide stroke	X1 axis 135 mm Z1 axis 235 mm Y1 axis ---	140 mm 70 (±35) mm
Spindle slide stroke	X2 axis --- Z2 axis --- B axis 310 mm	140 mm 360 mm ---
Spindle		
Number of spindle	2	
Spindle speed range	SP1 60- 6,000 min ⁻¹ SP2 50- 5,000 min ⁻¹	
Inner diameter of draw tube	SP1 43 mm Dia. SP2 30 mm Dia.	
Collet chuck type	SP1 Hardinge S20, DIN173E, B&S#22D, JPN34, Hainbuch SP2 DIN173E, B&S#22D, JPN	
Power chuck type	SP1 5" thru-hole chuck SP2 ---	4" thru-hole chuck
Turret		
Number of turret	1	2
Type of turret	HD1 8 ST. HD2 ---	6 ST.
Shank height of square turning tool	20 mm Sq.	
Diameter of drill shank	25 mm Dia.	
Revolving tools		
Number of revolving tools	Max.8	
Type of revolving tools	Single Clutch	
Tool spindle speed range	50- 5,000 min ⁻¹	
Feed rate		
Rapid Feed rate	X1 axis 20 m/ min Z1 axis 20 m/ min Y1 axis --- X2 axis --- Z2 axis --- Baxis 20 m/ min	12 m/ min 12 m/ min 20 m/ min ---
Motors		
Spindle drive	SP1(Cs) 7.5/ 5.5 kw (15min./ cont) SP2(Cs) 5.5/ 3.7 kw (15min./ cont)	
Revolving tool drive	2.8/ 1.0 kw	
Coolant pump	0.18 kw	
High pressure coolant drive	1.0/ 0.6 kw (60/ 50Hz)	1.0/0.75kw (60/50Hz)
Tank capacity		
Hydraulic oil tank capacity	7L	18L
Lubricating oil tank capacity	2L	
Coolant tank capacity	165L	175L
Power supply		
Capacity	28 KVA	30KVA
Fuse	100 A	
Air supply	0.5 MPa	
Machine dimensions		
Machine height	1,660 mm	1,700 mm
Floor space	W2,150 × D1,290 mm	W2,350 × D1,454 mm
Machine weight	2,800 kg	3,100 kg
Optional accessories		
Spindle air blow, Spindle Brake, High pressure coolant, Coolant level swich, Signal tower, Coolant mistcollector, Automatic power shut-off, Chip conveyor, Chip box, Parts catcher, Parts conveyor, RS-232C, 100V		

BNA-42S2	
NC Specification	MIYANO-FANUC 0i-TD
Controlled axis	X, Z, B axis (BNA-S2)
Min. input increment	0.001mm (Diameter for X axis), 0.001deg.
Min. output increment	X axis: 0.0005 mm, Z axis: 0.001 mm
Parts program storage capacity	1Mbyte (2560 m Tape length)
Spindle function	Spindle speed S4-digits, Directly specified (G97), Constant Cutting speed control (G96)
Cutting feed rate	F3.4 digit per revolution, F6 digit per minute, directly specified
Cutting feed rate override	0- 150% (in 10% increments)
Rapid traverse rate	X, Z, B axis : 20m/ min (S2) X1, Z1, Z2 axis: 20m/ min Y, X2 axis: 12m/ min (DHY2)
Interpolation	G01, G02, G03
Threading	G32, G92
Canned cycle	G90, G92, G94
Work coordinate setting	Automatic Setting, 64 work coordinate setting by the tool position memory and the geometry offset.
Tool selection and work coordinate settings, and tool wear compensation	Tool selection and work coordinate settings are selected from 1-64 by T AABBC at the specified position for each turret tool wear compensation is selected by BB.
Direct input of tool position	by measured MDI
Input/Output interface	PC card slot
Automatic operation	1 cycle operation/Continuous operation, Single block, Block delete, Machine lock, Optional block skip, Dry run feed hold
Others	8.4" colour LCD, No of registered programs: 800, Decimal point input, Manual pulse generator, Memory protect, AC digital servo motor, etc.
NC standard functions	Chamferring/ Corner R, Tool nose R compensation, Constant peripheral speed (G96), Background editing, Programmable data input (G10), Operating time/ Parts No. display, Multiple repetitive canned cycle (G70 -G76) Rigid tap function (Main & sub), Cylindrical interpolation, Custom macro B, Drilling canned cycle (G80 -G86) Tool life management system.

BNA-42DHY3	
NC Specification	MIYANO-FANUC 0i-TD
Controlled axis	X1, Z1, Y1, X2, Z2 axis
Min. input increment	0.001mm (Diameter for X axis), 0.001deg.
Min. output increment	X axis: 0.0005 mm, Z axis: 0.001 mm
Parts program storage capacity	1Mbyte (2560 m Tape length)
Spindle function	Spindle speed S4-digits, Directly specified (G97), Constant Cutting speed control (G96)
Cutting feed rate	F3.4 digit per revolution, F6 digit per minute, directly specified
Cutting feed rate override	0 - 150% (in 10% increments)
Rapid traverse rate	X1, Z1, Z2 axis : 20m/ min Y1, X2 axis : 12m/ min
Interpolation	G01, G02, G03
Threading	G32, G92
Canned cycle	G90, G92, G94
Work coordinate setting	Automatic Setting, 64 work coordinate setting by the tool position memory and the geometry offset.
Tool selection and work coordinate settings, and tool wear compensation	Tool selection and work coordinate settings are selected from 1-99(HD1) or 1-20 (HD2) by Taabb at the specified position for each turret tool wear compensation is selected by bb.
Direct input of tool position	by measured MDI
Input/Output interface	PC card slot, USB port
Automatic operation	1 cycle operation/Continuous operation, Single block, Block delete, Machine lock, Optional block skip, Dry run, feed hold
Others	10.4" colour LCD, No of registered programs: 800, Decimal point input, Manual pulse generator, Memory protect, AC digital servo motor, etc.
NC standard functions	Chamferring/ Corner R, Tool nose R compensation, Constant cutting speed control (G96), Background editing, Programmable data input (G10), Operating time/ Parts No. display, Multiple repetitive canned cycle (G70 -G76) Rigid tap function (Main & sub), Cylindrical interpolation, Custom macro B, Drilling canned cycle (G80 -G86) Tool life managementsystem, Helical interpolation.

CITIZEN

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