CITIZEN

Miyano

Preface

Dear Readers,

Citizen Machinery UK has successfully been selling Swiss type lathes and fixed head automatic lathes of the brands Cincom and Miyano all over the UK and Ireland and across Europe for almost 50 years. With our 2 locations; our Solutions Centre in Bushey and our Centre of Excellence in Brierley Hill, we are always personally at your disposal to answer your questions regarding sales and other challenges. In all service matters, Citizen is there for you in the whole of Europe.

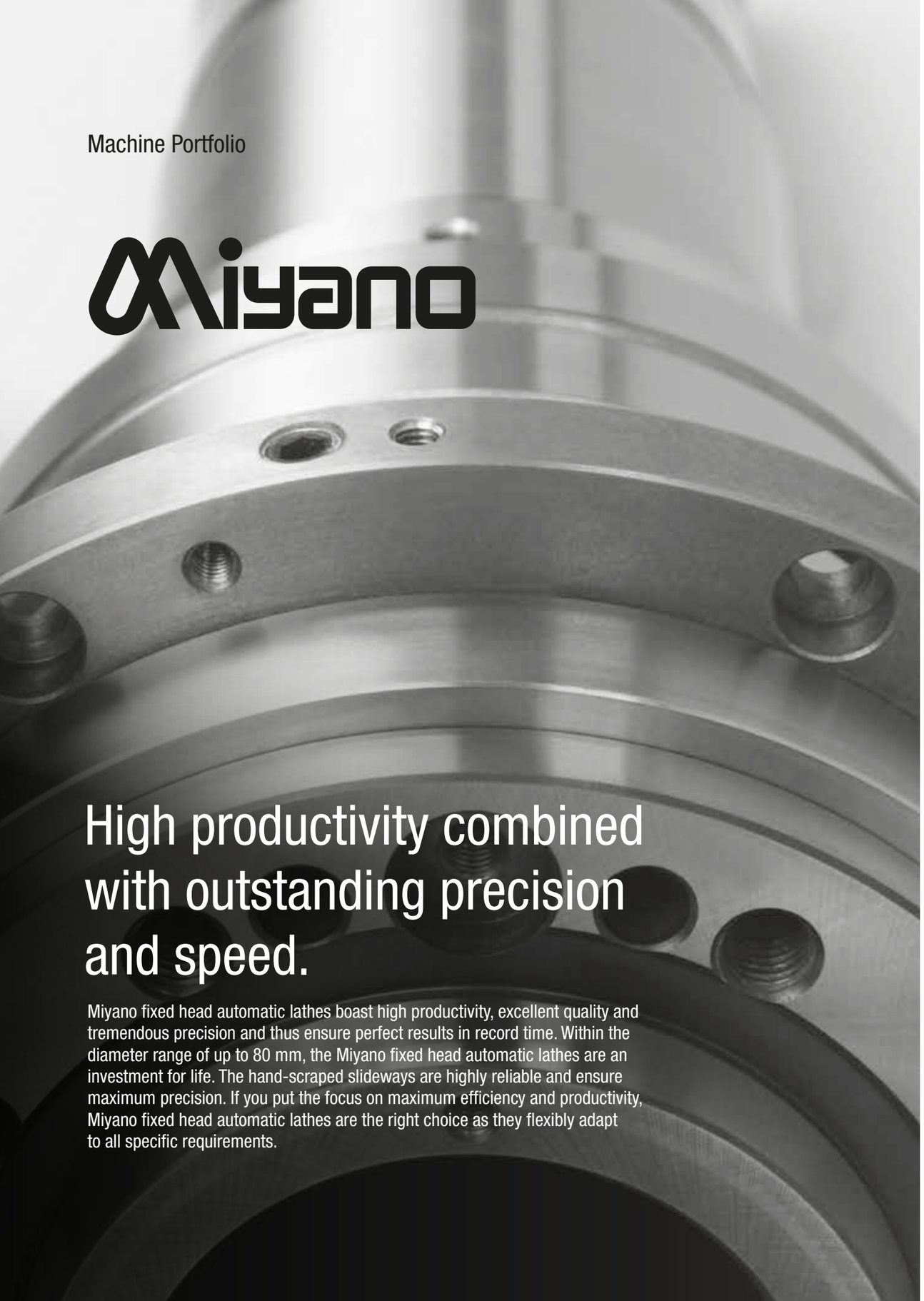
Under the Cincom brand, we sell Swiss type lathes which demonstrate their full power and performance when machining long workpieces and smaller diameters.

The Miyano brand meets all the challenges when turning short workpieces in fixed headstock applications. The machines distinguish themselves through high productivity, superior quality & reliability and precision and guarantees excellent results in diameter ranges from 1mm to 80 mm bar.

In addition we also cover the complex machining of billet work, forgings and near net shape parts.

Our technologies like programmable chip-breaking LFV as well as our laser integration has helped revolutionise the cutting process. We will continue to work hard for you on developing new innovations and to provide optimum solutions for your needs, both for new and existing customers. With future-oriented products, we look forward to growing together into the future.

Edward James
Managing Director, Citizen Machinery UK



Machine Portfolio

Miyano

High productivity combined with outstanding precision and speed.

Miyano fixed head automatic lathes boast high productivity, excellent quality and tremendous precision and thus ensure perfect results in record time. Within the diameter range of up to 80 mm, the Miyano fixed head automatic lathes are an investment for life. The hand-scraped slideways are highly reliable and ensure maximum precision. If you put the focus on maximum efficiency and productivity, Miyano fixed head automatic lathes are the right choice as they flexibly adapt to all specific requirements.

ABX 51/64 THY 51/64 SYY	51 64 80	**125** (51) **118** (64)	12 12 12 (THY example)	THY: 12 axes SYY: 9 axes	6
BNE 51/65 MYY 51 MSY 51 S/SY	51 65	**90**	12 12	MYY: 10 axes S: 7 axes SY: 8 axes MSY: 9 axes	22
ANX 42 SYY	42	**130**	12	SYY: 10 axes	46
BND 51 SY	51	**90**	12	SY: 6 axes	52
BNJ 42/51 SY	42 51 64	**100**	12 8	SY: 7 axes	58
BNA 42 GTY DHY S MSY SY/CY	42	**100** (MSY/S/SY/DHY) **110** (GTY) **200** (CY)	8 6 (DHY example)	GTY: 10 axes DHY: 7 axes S: 3 axes MSY: 7 axes SY: 6 axes CY: 4 axes	64
LX 08 C	210	**70**	10	2 axes	98
LZ 01 R / RY	70	**80**	12	R: 3 axes RY: 4 axes	104
VC 03	40	**40**	5	2 axes	112
GN 4200 3200W 3200	40 40	**40** **40**	5	2 axes	118
Techno-logies	LFV | ATC – Automatic Tool Changer | Laser | Industry 4.0				130

ABX 51/64 THY

The perfect turning centre with three Y axes.

Right and left upper turrets equipped with Y axis and a lower turret also with Y-axis provides free and direct access to both spindles. The Mill-Turn-Centre is particularly suited for machining highly complex parts. All this contributes to the machine's extremely high flexibility and its fast machining times.

Advantages

Three Y axes grant high efficiency and high productivity.

High rigidity and high torque with 40 Nm rotary tools.

Optional for 80 mm available.

4 axes per channel.

For complex machining.

Reduced cycle times.

7.25 m²

Workpiece examples

1 **Name** Shaft
Material Steel

2 **Name** Drive nut (for trapezoidal spindle)
Material Free-cutting steel

3 **Name** Hydraulic valve part
Material Free-cutting steel

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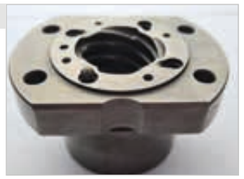
2 

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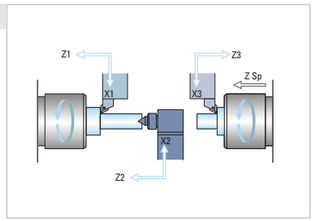
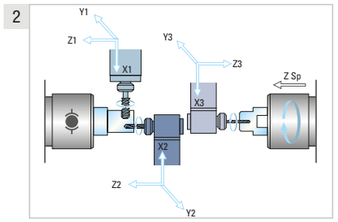
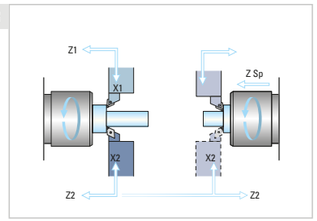
Machining examples

1 

1 Steady rest

2 

2 Drilling & tapping

3 

3 Simultaneous machining

Standard

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Support screens

1 Machining data
2 SP/RVT (spindle & rotary tool unit) Jog operation
3 Tool counter
4 Tool maintenance (Setting/Sampling/Monitoring)
5 Tool measurement
6 Parts catcher
7 Parts conveyor

Options

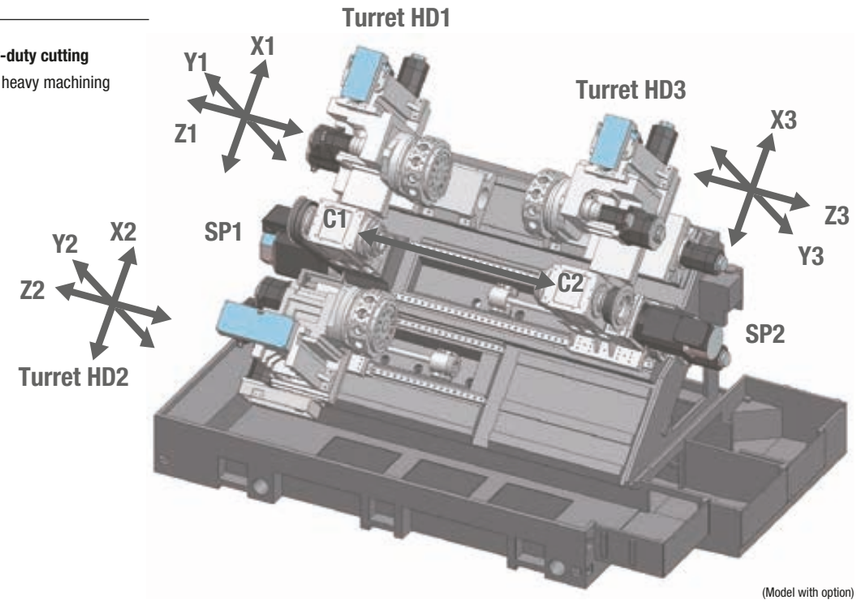
1 

2 

1 Chip conveyor
2 Bar feeder

Layout

Highly rigid slideways for heavy-duty cutting
Hand-scraped slideways allow for heavy machining and increase the tool life.



(Model with option)

Working area

1 **Three Y axes give high efficiency and high productivity.**
Right and left upper turrets equipped with Y axis and a lower turret also with Y-axis provides free and direct access to both spindles.

2 **High rigidity and high torque with 40 Nm revolving tools.**
The use of rigid 40 Nm revolving tool drives capable of heavy cutting ensures stable milling. Three turrets with a total of 36 tool positions handle complex machining just like a machining centre.

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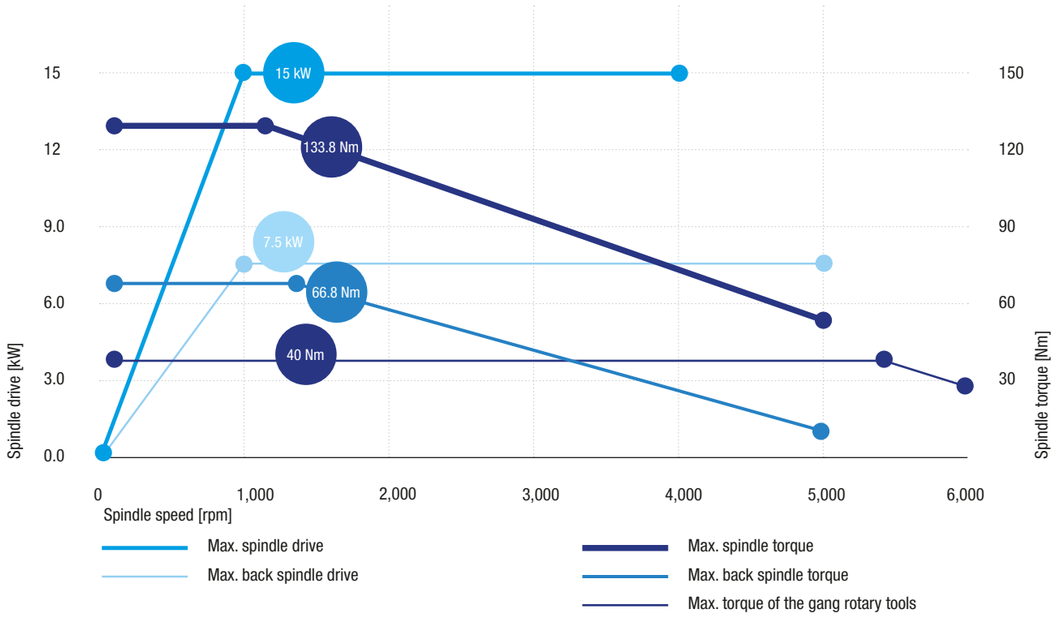
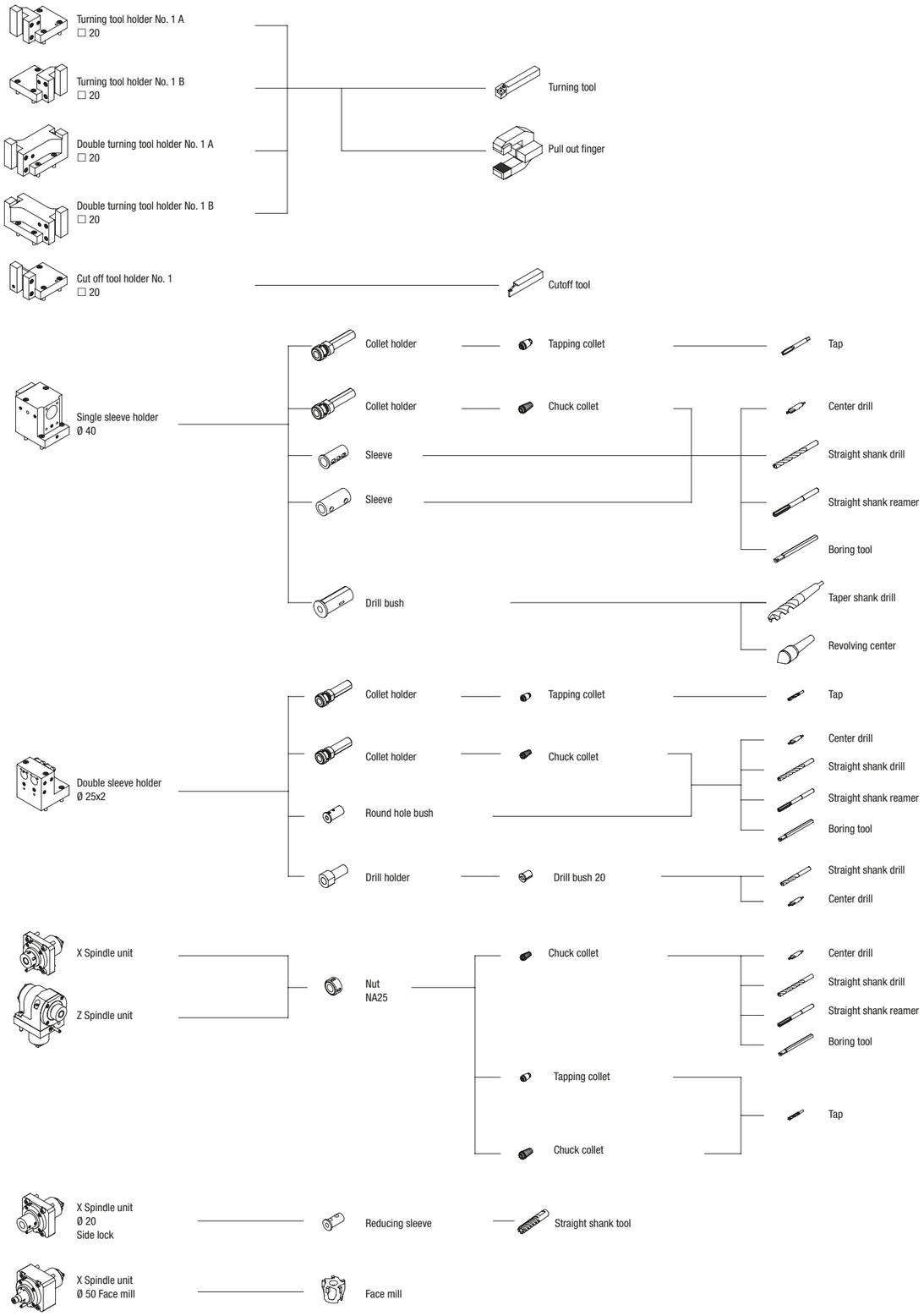
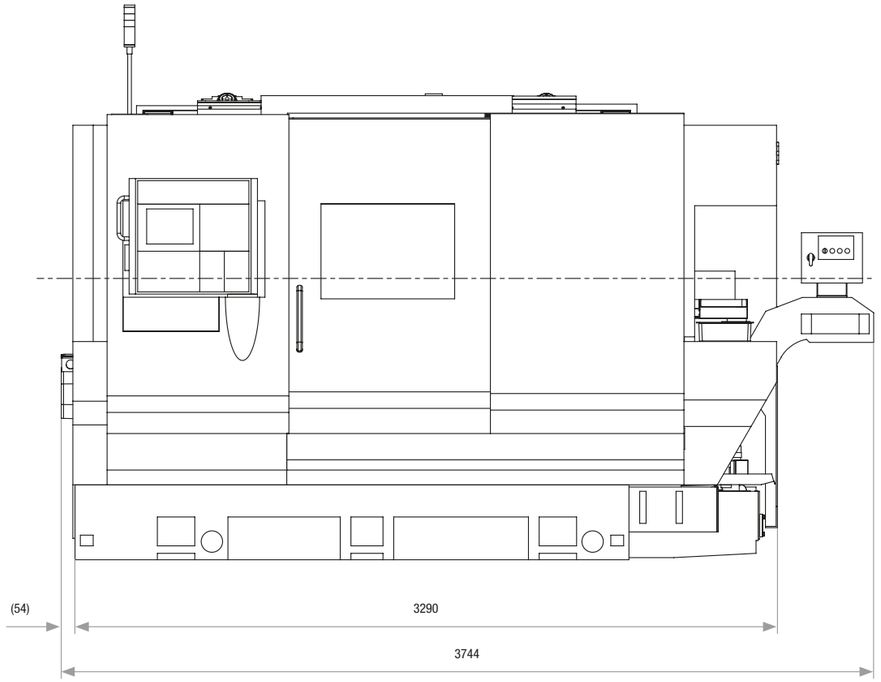
Performance diagram

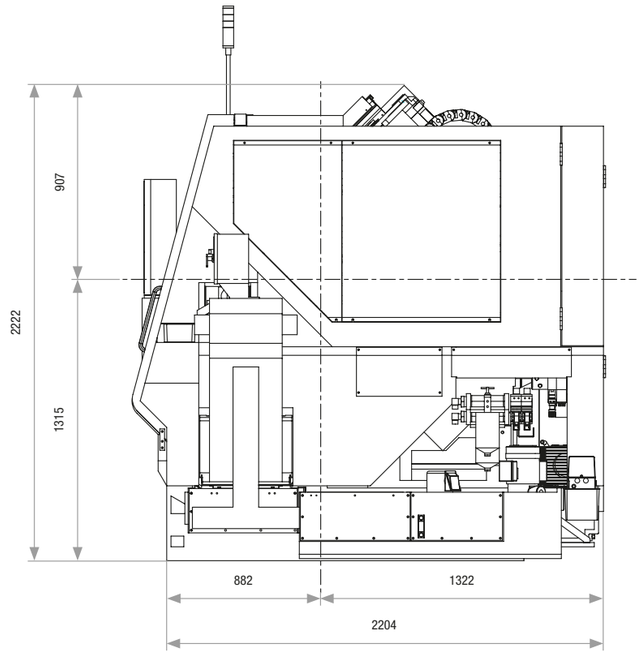


Tooling System



Floor plan





Machine specification

Item		ABX-51THY2	ABX-64THY2
Machining capacity			
Maximum work length	SP1	125 mm	118 mm
Maximum work length	SP2	125 mm	125 mm
Maximum work diameter for bar work	SP1	Ø 51 mm	Ø 64 mm
Maximum work diameter for bar work	SP2	Ø 51 mm	Ø 51 mm
Maximum work diameter for power chuck	SP1	Ø 165 mm	Ø 165 mm
Maximum work diameter for power chuck	SP2	Ø 165 mm	Ø 165 mm
Spindle			
Number of spindles		2	2
Spindle speed	SP1	50–5,000 rpm	40–4,000 rpm
	SP2	50–5,000 rpm	50–5,000 rpm
Inner diameter of draw tube	SP1	Ø 52 mm	Ø 65.5 mm
	SP2	Ø 52 mm	Ø 52 mm
Chucking system	SP1, SP2	Hydraulic cylinder	Hydraulic cylinder
Type of collet chuck	SP1	S Collet H-S22/DIN177E	S Collet H-S26/DIN185E
	SP2	S Collet H-S22/DIN177E	S Collet H-S22/DIN177E
Type of power chuck	SP1	6" Hydraulic chuck	6" Hydraulic chuck
	SP2	6" Hydraulic chuck	6" Hydraulic chuck
Turret			
Number of turrets		3	3
Turret stations	HD1, HD2, HD3	12 st.	12 st.
Tool shank size	HD1, HD2, HD3	□ 20 mm	□ 20 mm
I.D. tool hole size	HD1, HD2, HD3	Ø 25 mm/Ø 40 mm	Ø 25 mm/Ø 40 mm
Index time	HD1, HD2, HD3	0.77 s/1 Pos.	0.77 s/1 Pos.
Rapid traverse rate	HD1, X1	16 m/min	16 m/min
	HD1, Z1	20 m/min	20 m/min
	HD1, Y1	12 m/min	12 m/min
	HD2, X2	16 m/min	16 m/min
	HD2, Z2	30 m/min	30 m/min
	HD2, Y1	12 m/min	12 m/min
	HD3, X3	16 m/min	16 m/min
	HD3, Z3	20 m/min	20 m/min
	HD3, Y3	12 m/min	12 m/min
	SP2, Zs	30 m/min	30 m/min
Rotary tools (Option)			
Number of rotary tools	HD1, HD2, HD3	12 (max. 36)	12 (max. 36)
Maximum spindle speed		6,000 rpm	6,000 rpm
Machining capacity	Drilling	max. Ø 13 mm	max. Ø 13 mm
	Tapping	max. M8×1.25	max. M8×1.25
	End milling	max. Ø 12 mm	max. Ø 12 mm
Tank capacity			
Hydraulic tank capacity		18 l	18 l
Lubricating tank capacity		5 l	5 l
Coolant tank capacity		400 l	400 l
Machine dimensions			
Machine height		2,222 mm	2,222 mm
Floor space		3,290 × 2,204 mm	3,290 × 2,204 mm
Machine weight		11,200 kg	11,350 kg
Spindle motor	SP1	AC 11/15 kW	AC 11/15 kW
	SP2	AC 5.5/7.5 kW	AC 5.5/7.5 kW
Turning tool motor	HD1, 2, 3	AC 4.5 kW	AC 4.5 kW
Power supply			
Voltage		AC 200/220 V ± 10 % 50/60 Hz ± 1Hz	AC 200/220 V ± 10 % 50/60 Hz ± 1Hz
Power consumption		49 kVA	49 kVA
Air supply		5 bar (5 kgf/cm²)	5 bar (5 kgf/cm²)

Machine equipment (standard)

Y axis control for all 3 turrets; Tool measurement arm; Central lubrication; Cooling lubricant system; Hydraulic unit; Hydraulically actuated revolving hollow clamping cylinder; Limit switch clamping system open/closed at main & back spindle; Safety cover with special 2-layer window (special glass at inside for better visibility); Compressed air unit; Coolant supply through back spindle with rotary distributor and pneumatic ejector; Parts catcher (NC axis control) for main & back spindle; Conveyor belt; High-pressure coolant system; 10bar pump capacity for coolant supply to all 3 turrets and through the tools if equipped with appropriate tool holders; Pre-settable part counters; Manual + automatic reference point return with G28, G27; Tricolor warning light; Automatic machine shut-off triggered through alarm or parts counter; Coolant level switch; Disc brakes for main & back spindle; Tool wear monitoring; SP27, SP30 hexagon wrench for rotary tools; Constant cutting speed monitoring; Corner rounding and chamfering via R & C programming; Tool radius compensation; Tool offset; Linear and circular interpolation; Program memory 512 Kbyte (320 m); Rotary tool synchronous tapping via custom macro B; Main & back spindle synchronous tapping; Angle programming via A; Extended part program editing; Parameter input via program (G10); Overlap function between turret1, turret 2 and back spindle; Helical milling interpolation; Polygon turning function, parts counter; Program memory for 500 programs

Machine equipment (optional)

Cable 4G70 for transformer 65 KVA to machine; Compressed air gun and compressed air supply; KITAGAWA 6" 3-jaw chuck for Ø51 spindle; Spann top mini Axfix size 52 main spindle chuck; Spanntop mini Axfix size 52 back spindle chuck; SPANNTOP mini Axfix size 65 ABX-51 main spindle chuck; SPANNTOP mini Axfix size back spindle chuck

Special NC function

Werma MDE Signal Tower KombiSIGN71 Blue/Red/Green/Weight; Blum probe for one turret; incl. holder for tool turret; incl. Software Blum Quickstart for Fanuc; 5 controllable outputs floating for FANUC control unit without external query 5 pces. M commands / ON; 10 controllable outputs floating for FANUC control unit, Alkart CNC Wizard 2020 programming aid; Esprit CAD/CAM System extended; ESPRIT Interface Pro/E; ESPRIT Optional Interface NX; Esprit Basic Training; Esprit Advanced Training

ABX 51/64 SYY

High-performance turning centre with long strokes as well as independent upper and lower turrets and Y axes.

The ABX-51/64SYY features shortened cutting times by simultaneous machining on both spindles with two Y axes. The ability to machine simultaneously at the left and right spindles using the upper and lower turrets, both featuring a Y-axis function, means that complete front and back machining of products with complex shapes can be accomplished simply and in a short time.

Advantages

Thermal displacement compensation for 100 % precision around the clock.

High-rigidity 12-station turret.

Hand-scraped slideways for heavy cutting.

Optional 80 mm spindle capacity.

7.25 m²

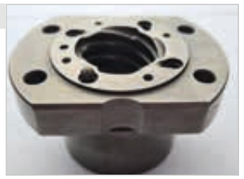
Workpiece examples

1 **Name** Shaft
Material Steel

2 **Name** Drive nut (for trapezoidal spindle)
Material Free-cutting steel

3 **Name** Hydraulic valve part
Material Free-cutting steel

1 

2 

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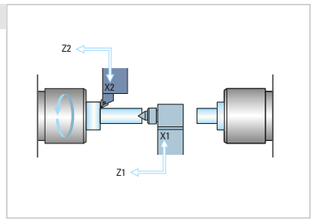
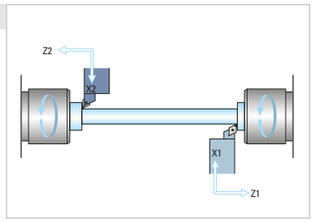
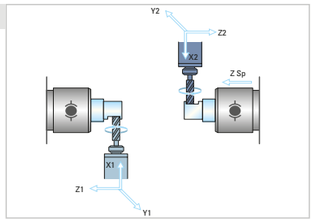
Machining examples

1 

1 Steady rest

2 

2 Long shaft machining

3 

3 Simultaneous machining

Standard

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Support screens

1 SP/RVT (spindle & rotary tool unit) Jog operation
2 Tool counter
3 Tool maintenance (Setting/Sampling/Monitoring)
4 **Tool measurement**
5 **Parts catcher**
6 **Parts conveyor**

Options

1 

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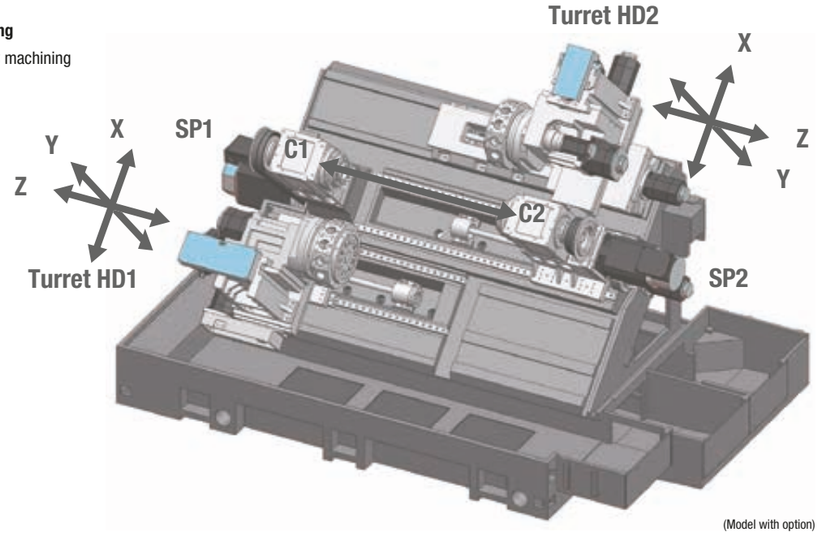
1 Chip conveyor
2 Bar feeder

Layout

Highly rigid slideways for heavy cutting
Hand-scraped slideways allow for heavy machining and increase the tool life.



(Model with option)

Working area

1 **High-rigidity 12-station turret**
High-performance turning centre with long strokes as well as independent upper and lower turrets and Y-Axes.

2 **Cutting time shortened by simultaneous cutting at left and right with two Y axes**
The ability to machine simultaneously at the left and right spindles using the upper and lower turrets, both featuring a Y-axis function, means that complete front and back machining of products with complex shapes can be accomplished simply and in a short time.

3 **High rigidity and high torque with 40 Nm revolving tools.**
The use of rigid 40 Nm revolving tool drives capable of heavy cutting ensures stable milling. Two turrets with a total of 24 tool positions handle complex machining just like a machining centre.

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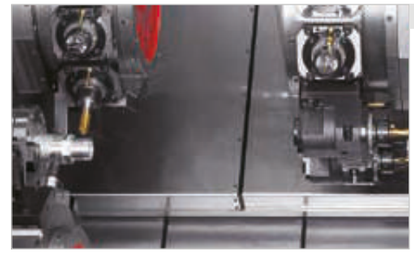
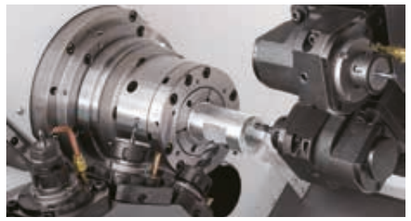
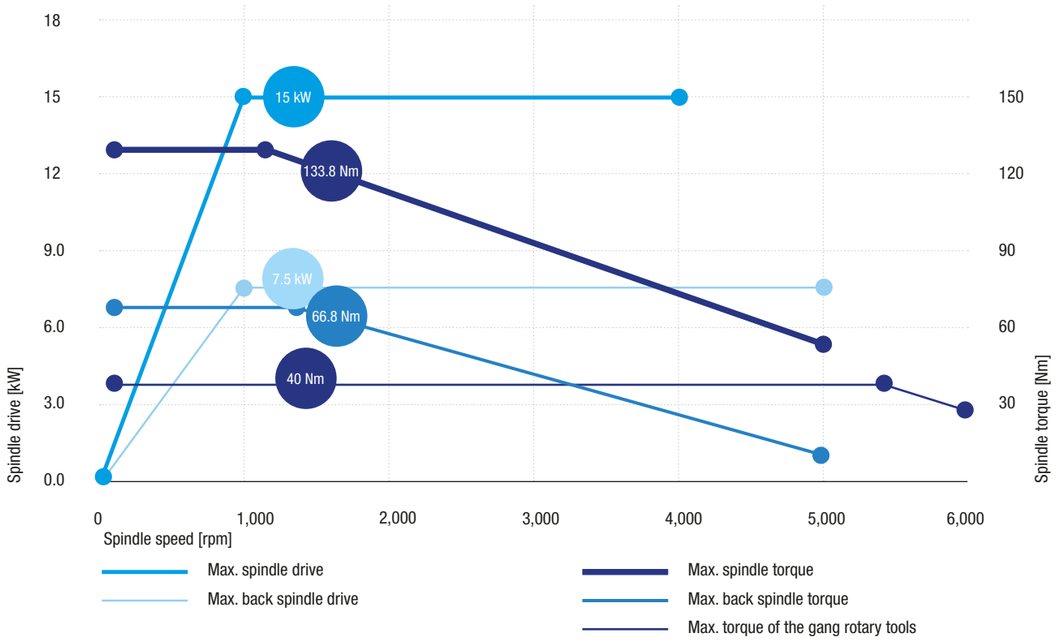
3 

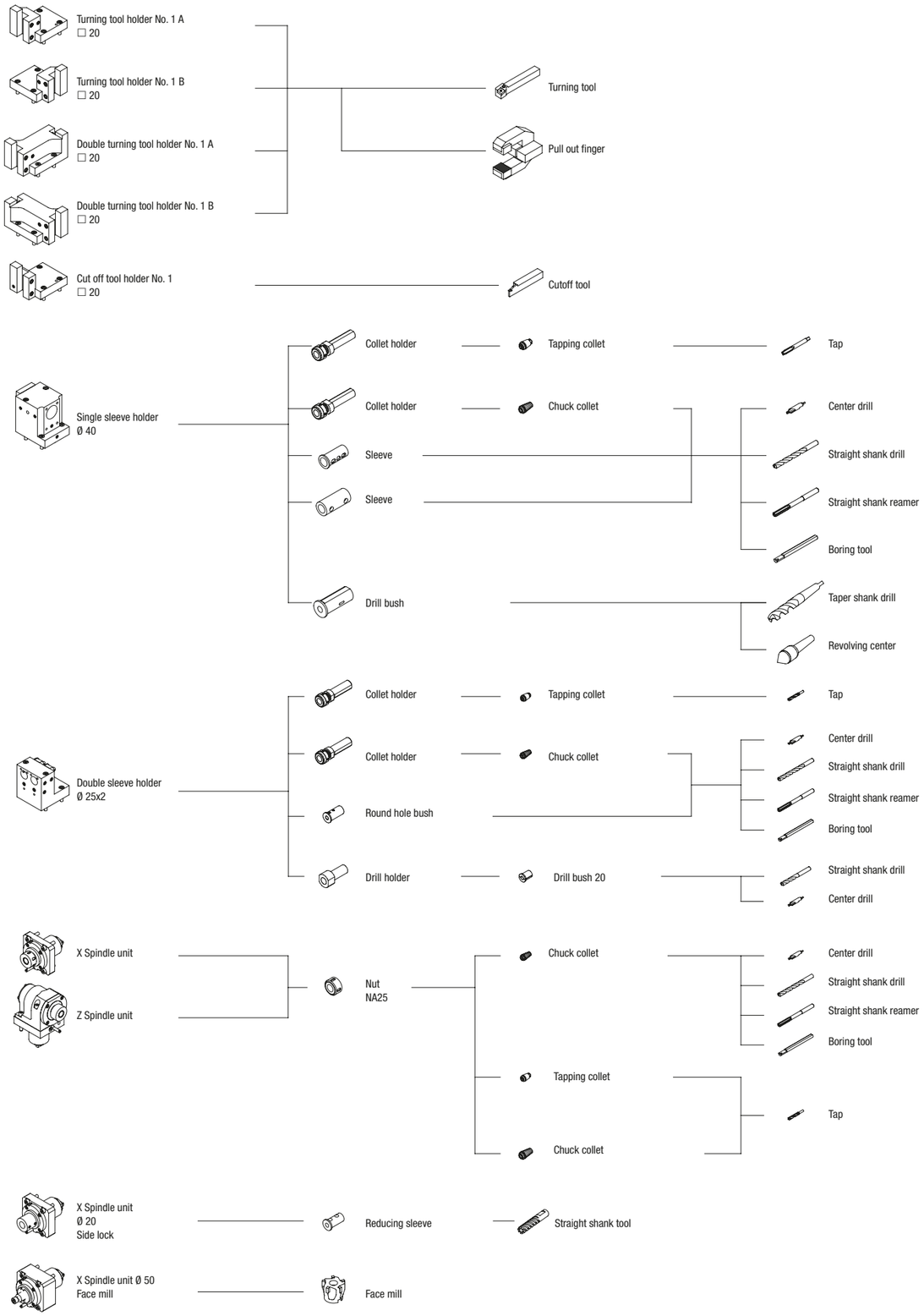


Simultaneous complex machining with two turrets.

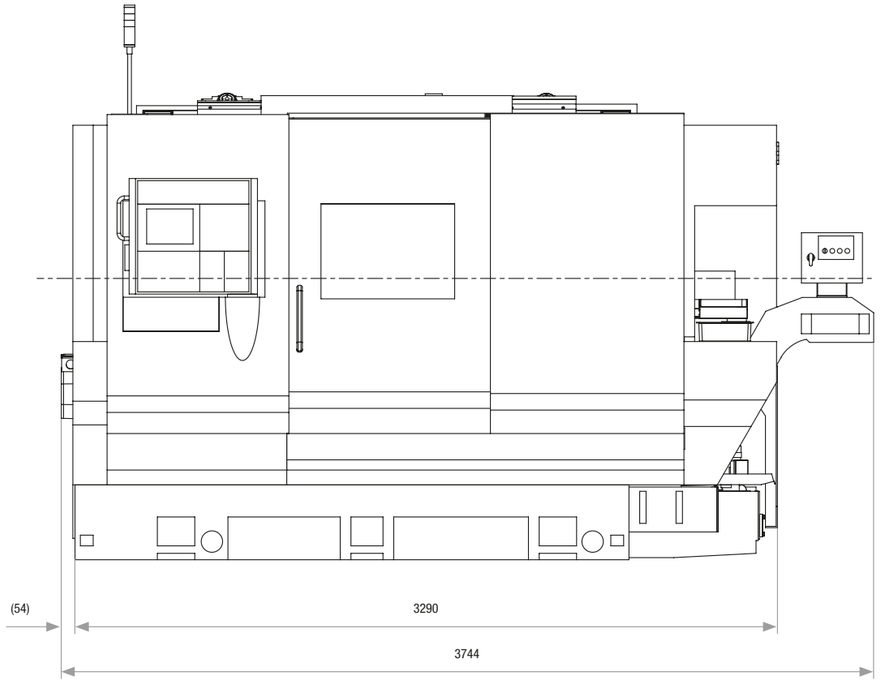
Performance diagram

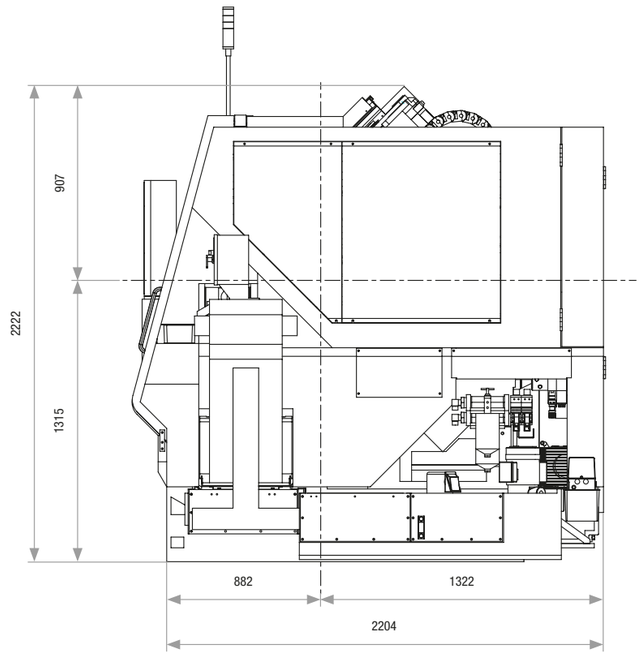


Tooling System



Floor plan





Machine specification

Item		ABX-51SYY2	ABX-64SYY2
Machining capacity			
Maximum work length	SP1	125 mm	118 mm
Maximum work length	SP2	125 mm	125 mm
Maximum work diameter for bar chuck	SP1	Ø 51 mm	Ø 64 mm
Maximum work diameter for bar chuck	SP2	Ø 51 mm	Ø 51 mm
Maximum work diameter for power chuck	SP1	Ø 165 mm	–
Maximum work diameter for power chuck	SP2	Ø 165 mm	Ø 165 mm
Spindle			
Number of spindles		2	2
Spindle speed	SP1	50–5,000 rpm	40–4,000 rpm
	SP2	50–5,000 rpm	50–5,000 rpm
Inner diameter of draw tube	SP1	Ø 52 mm	Ø 65.5 mm
	SP2	Ø 52 mm	Ø 52 mm
Chucking system	SP1, SP2	Hydraulic cylinder	Hydraulic cylinder
Type of collet chuck	SP1	S collet system H-S22/ DIN177E	S collet system H-S26/ DIN185E
	SP2	S collet system H-S22/ DIN177E	S collet system H-S22/ DIN177E
Type of power chuck	SP1	6" Hydraulic chuck	6" Hydraulic chuck
	SP2	6" Hydraulic chuck	6" Hydraulic chuck
Turret			
Number of turrets		2	2
Turret stations	HD1, HD2, HD3	12 st.	12 st.
Tool shank size	HD1, HD2, HD3	□ 20 mm	□ 20 mm
I.D. tool hole size	HD1, HD2, HD3	Ø 25 mm/Ø 40 mm	Ø 25 mm/Ø 40 mm
Index time	HD1, HD2, HD3	0.25 s/1 Pos.	0.25 s/1 Pos.
Rapid traverse rate	HD1, X1	16 m/min	16 m/min
	HD1, Z1	30 m/min	30 m/min
	HD1, Y1	12 m/min	12 m/min
	HD2, X2	20 m/min	20 m/min
	HD2, Z2	30 m/min	30 m/min
	HD2, Y1	12 m/min	12 m/min
	SP2, Zs	30 m/min	30 m/min
Rotary tools (Option)			
Number of rotary tools	HD1, HD2, HD3	12 (max. 24)	12 (max. 24)
Maximum spindle speed		6,000 rpm	6,000 rpm
Machining capacity	Drilling	max. Ø 20 mm	max. Ø 20 mm
	Tapping	max. M14×2	max. M14×2
	End milling	max. Ø 16 mm	max. Ø 16 mm
Tank capacity			
Hydraulic tank capacity		10 l	10 l
Lubricating tank capacity		4 l	4 l
Coolant tank capacity		400 l	400 l
Machine dimensions			
Machine height		2,222 mm	2,222 mm
Floor space		3,290 × 2,204 mm	3,290 × 2,204 mm
Machine weight		10,600 kg	10,600 kg
Spindle motor	SP1	AC 11/15 kW	AC 11/15 kW
	SP2	AC 5.5/7.5 kW	AC 5.5/7.5 kW
Turning tool motor	HD1, 2, 3	AC 4.5 kW	AC 4.5 kW
Power supply			
Voltage		AC 200/220 V ± 10 % 50/60 Hz ± 1Hz	AC 200/220 V ± 10 % 50/60 Hz ± 1Hz
Power consumption		48 kVA	48 kVA
Air supply		5 bar (5 kgf/cm²)	5 bar (5 kgf/cm²)

Machine equipment (standard)

Y axis control for both turrets; Tool measurement arm for turrets 1 and 2; Central lubrication; Cooling lubricant system; Hydraulic unit; Hydraulically actuated revolving hollow clamping cylinder; Limit switch clamping system open/closed at main & back spindle; Safety cover with special 2-layer window (special glass at inside for better visibility); Machining area illumination; Compressed air unit; Coolant supply through back spindle with rotary distributor and pneumatic ejector; Parts catcher (NC axis control) for main & back spindle; Conveyor belt; High-pressure coolant system; 10 bar pump capacity for coolant supply to both turrets and through the tools if equipped with appropriate tool holders; Pre-settable part counters; Manual + automatic reference point return with G28, H27; Spindle liner tube for main spindle; Warning light tricolor; Automatic machine shut-off triggered through alarm or parts counter; Disc brakes for main and back spindle; Tool wear monitoring, Constant surface speed monitoring; Multiple cycle repetition; Corner rounding and chamfering via R & C programming; Tool radius compensation; Tool offset; Linear and circular interpolation; Circular interpolation; Background editing; Rotary tool synchronous tapping via custom macro B; Main & back spindle synchronous tapping; Angle programming via A; Extended part program editing of part program; Self diagnosis with display of alarm history; Parameter input via program (G10); Overlap function between turret 1, turret 2 and back spindle; Helical milling interpolation; Polygon turning function; Parts counter; Synchronization / composite control; Program memory for 500 programs

Special NC function

Werma MDE Signal Tower KombiSIGN71 Blue/Red/Green/Weight; Blum probe for one turret; incl. holder for tool turret; incl. Software Blum Quickstart for Fanuc; 5 controllable outputs floating for FANUC control unit without external query 5 pcs. M commands / ON; 10 controllable outputs floating for FANUC control unit, Alkart CNC Wizard 2020 programming aid; Esprit CAD/CAM system extended; ESPRIT Interface Pro/E; ESPRIT Optional Interface Catia; Esprit Optional Interface NX; Esprit Advanced Training

BNE 51 / 65 MYY

Equipped with double Y axis. New BNE series models: Improved superimosed machining capability.

These two new BNE Series models, developed from the original before BNE51 and BNE65 (with machining diameters of 51 and 65 mm respectively) have inherited the excellent characteristics of power, high rigidity and maximum precision for which the BNE Series has been greatly praised. The new MYY models are equipped with one Y axis each at the upper and lower turret. The machine cover has completely been redesigned with a large window to provide excellent visibility of the machining area. It has also been equipped with a new HMI (Human Machine Interface). Use of a touchscreen panel improves operability, and its use with the new NC units also improves productivity.

Advantages

Equipped with double Y axis.

Reduced cycle times with high-performance machining

New design.

Latest Mitsubishi control unit.

Single drives at turrets.

6.26 m²

Workpiece examples

Name Valve
Material Free-cutting steel

Standard

1

2

1 Operating panel with new HMI (Human Machine Interface)
2 Part conveyor

Options

1 Chip conveyor
2 Magazine Barfeed

1

2

Working area

1 Both turrets of models BNE-51MYY und BNE-65MYY are equipped with one Y Axis each and identical. Therefore, both turrets with their 12 stations offer the same performance and clearly more flexibility in terms of tooling.
2 Thanks to the configuration of the turrets with Y axis and the Layout of main & back spindle (with independant X axis!), cycle times are reduced significantly.

1

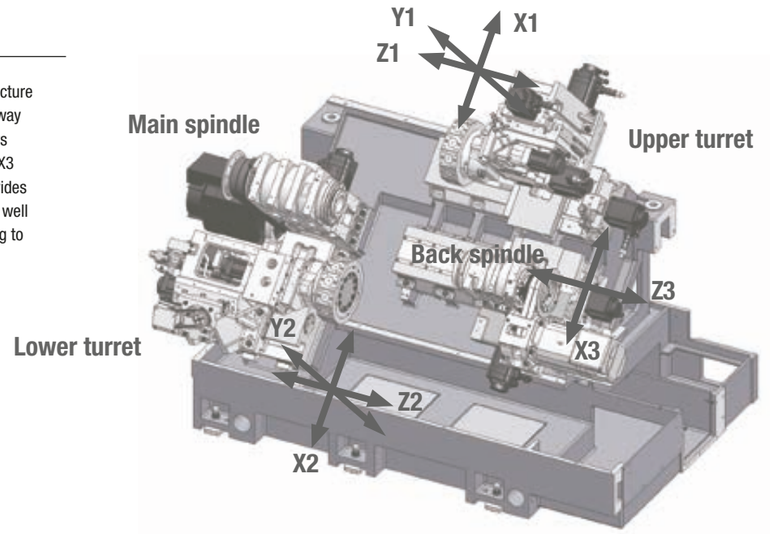
Upper/lower Y-axis machining

2

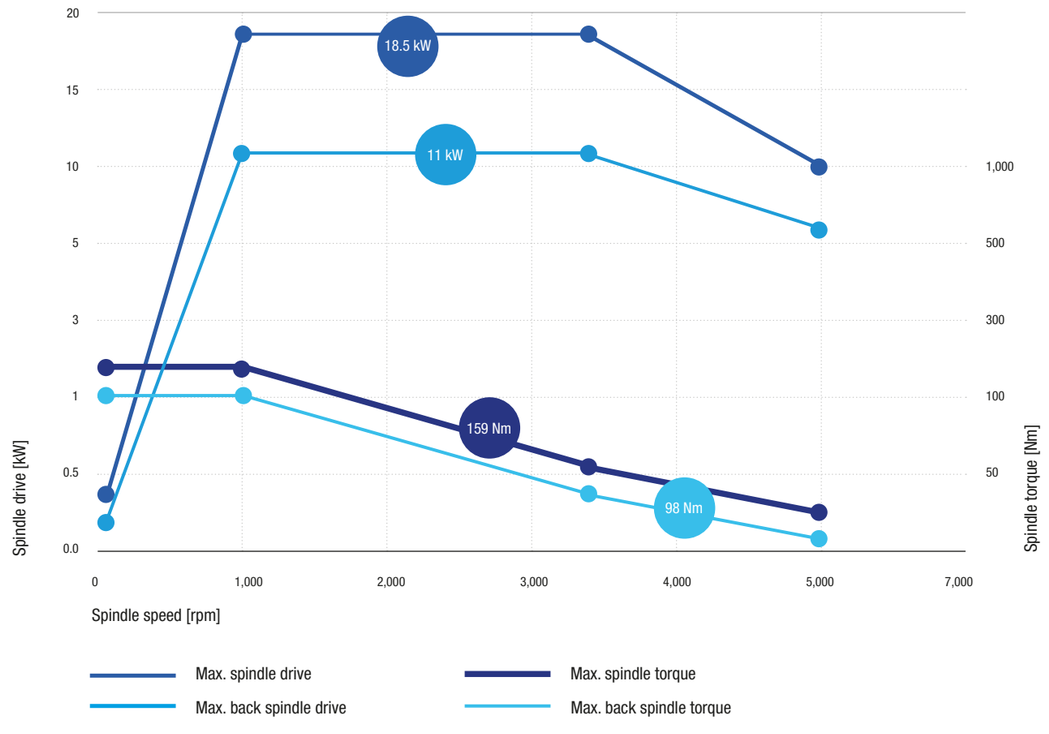
BNE MYY superimposed

Layout

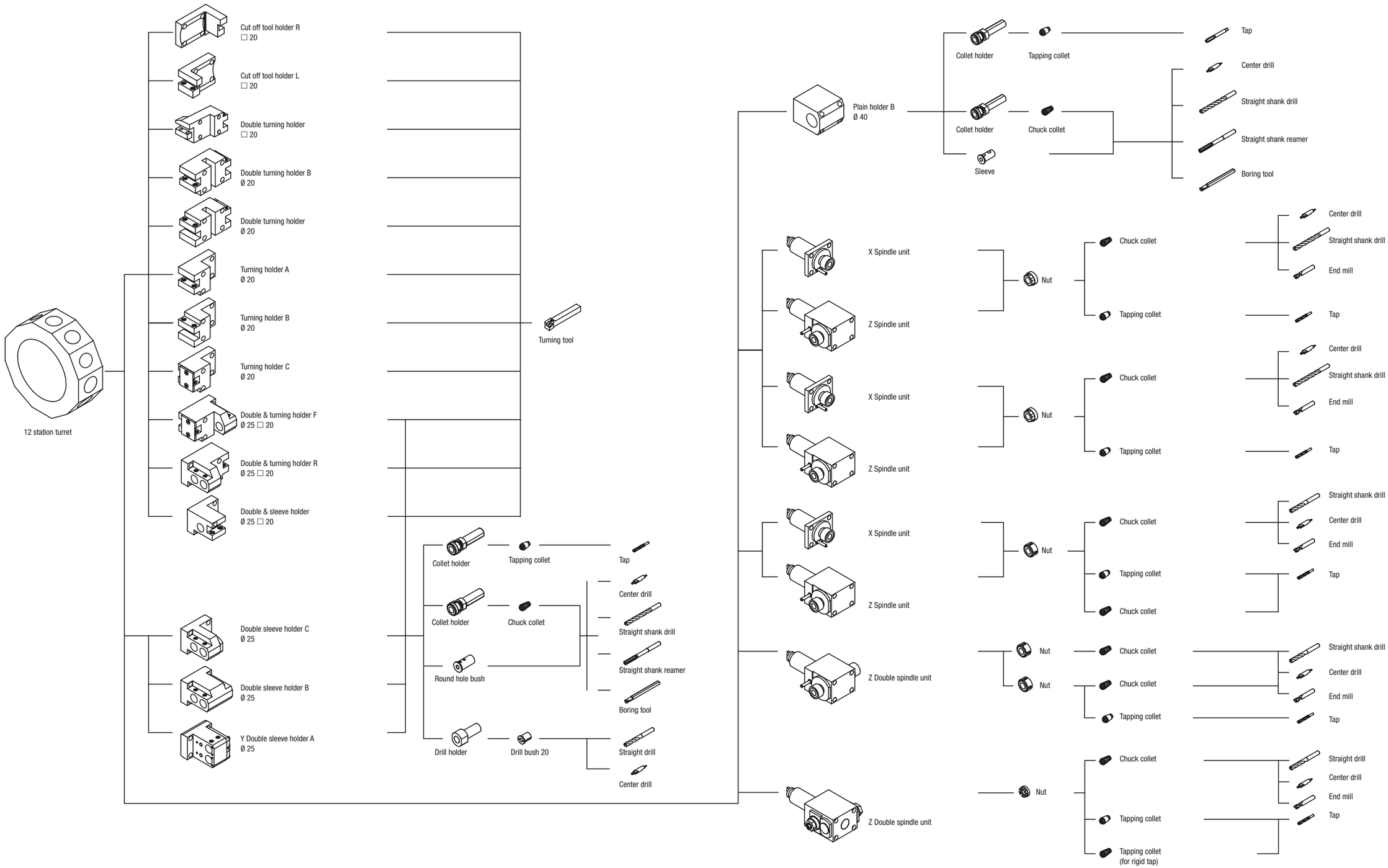
These new models have inherited the slide structure of the BNE series that makes it easy to clean away chips reliably. Rectangular lapped Box slideways have been adopted for all slides except for the X3 axis. The sliding contact between surfaces provides excellent rigidity and damping performance, as well as strong cutting performance, thus also helping to extend the service life of cutting tools.



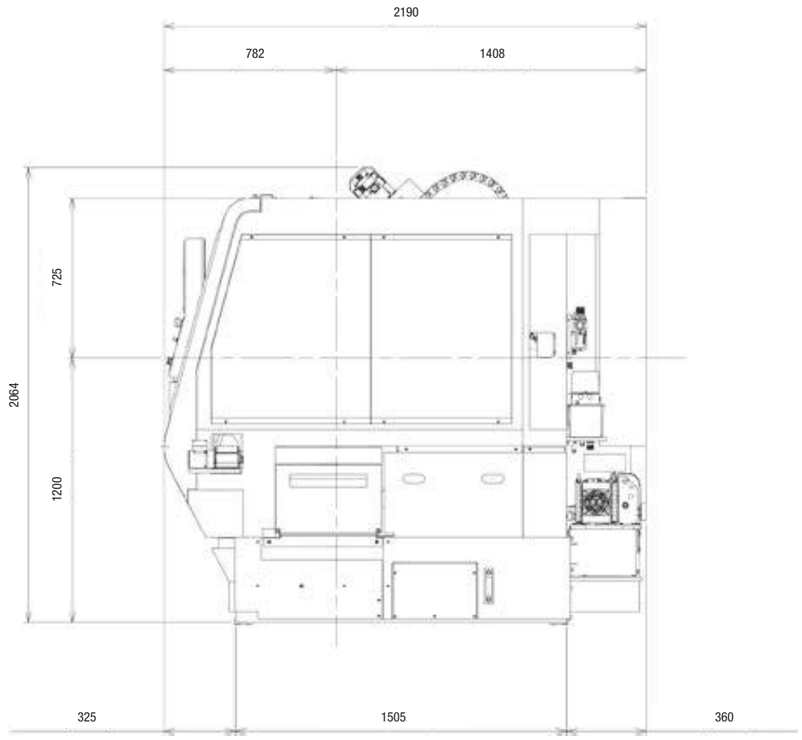
Performance diagram

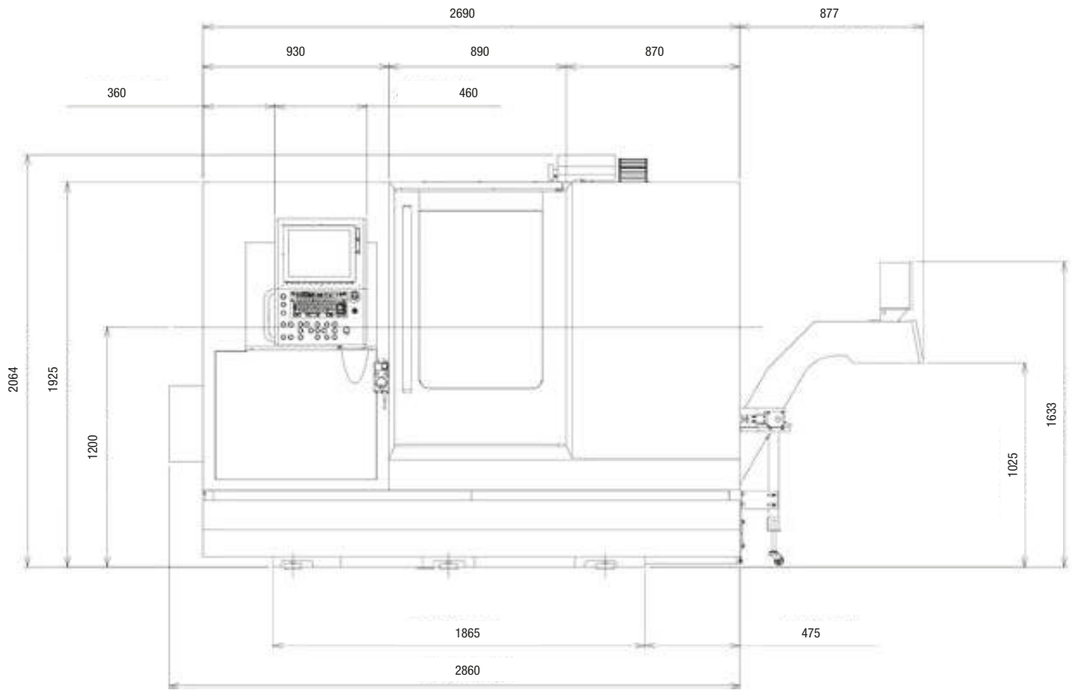


Tooling System



Floor plan





Machine specification

Item		BNE-51MYY	BNE-65MYY
Machining capacity			
Max. machining length		95 mm	
Max. machining diameter		Ø 51 mm	Ø 65 mm
Max. drilling diameter	SP1	Ø 25 mm	Ø 25 mm
	SP2	Ø 20 mm	Ø 20 mm
Max. tapping diameter	SP1	M22 × 2.5	
	SP2	M20 × 2.0	
Spindles			
Number of spindles		2	
Main spindle speed	SP1	max. 5,000 rpm	
	SP2	max. 5,000 rpm	
Main spindle collet chuck	SP1	Hardinge S22	Hardinge S26
		DIN 177E	DIN 185E
		HAINBUCH 51	HAINBUCH 65
	SP2	Hardinge S22	Hardinge S22
		DIN 177E	DIN 177E
		HAINBUCH 51	HAINBUCH 51
Power chuck type	SP1	6" 3-claw chuck, 6" 2-claw chuck	
	SP2	6" 3-claw chuck, 6" 2-claw chuck	
Travel distance			
Slide travel distance	X axis	X1: 205 mm, X2: 205 mm, X3: 155 mm	
	Z axis	Z1: 380 mm, Z2: 175 mm, Z3: 500 mm	
	Y axis	Y1: +60/ - 40mm, Y2: ±40 mm	
Tool posts			
Number of tool posts		2	
Type of tool post	HD1	12 stations	
	HD2	12 stations	
Dimensions of tools used		□20 mm	
Dimensions of tool post holes		Ø 25 mm	
Rotary tools			
Number of installed rotary tools	HD1	max. 12	
	HD2	max. 12	
Type of rotary tool drive		Independent clutch drive	
Rotating speed of rotary tools		6,000 rpm	
Machining capacities	Drill	Ø 16 mm	
	Tap	M12 x 1.75	
Feed rate			
Rapid feed rate			
X1, Z1, X3, Z3 axes		20 m/min	
X2, Z2 axes		18 m/min	
Y1, Y2 axes		12 m/min	
Slide thrust			
X1, Z1, X3 axes		8.5 KN	
X2 axis		11.3 KN	
Z2, Y1 axes		6.6 KN	
Z3 axis		5 KN	
Y2 axis		5.8 KN	
Motors			
Spindle motor	SP1	18.5/15 kW (30min./ cont.)	
	SP2	11/7.5 kW (15min./ cont.)	
Rotary tools motor	SP1+2	4.0 kW	
Required power source			
Power supply capacity		47 kVA	
Power supply		AC 200 ± 10%	
Air pressure source		0.5 MPa	
Air pressure flowrate		120 NL/min (When using air blower for 1 sec. in 3 locations)	
Tank capacity			
Hydraulic oil tank capacity		18 l	
Lubricating oil tank capacity		5 l	
Coolant tank capacity		350 l	
Machine dimension			
Machine height		2,070 mm	
Floor space		2,860 x 2,190 mm	
Machine weight		8,080 kg	8,130 kg

Option

Spindle brake; Air blow; Work ejector; Automatic fire extinguisher; Automatic power shut-off; Chip box; Parts conveyor; Coolant level switch; High pressure coolant; Inner high pressure coolant & air blow; Turret high pressure & air blow; Parts Catcher; Parts Box; Chuck system; Chip conveyor; Signal tower; Filler tube; Spindle inner bushing; Bar feeder inner bushing; Cut-off confirmation; Parts carrier; Left over catcher; Thermal displacement correction function

Standard function

Zero return function; On-machine program check function; Manual feed function; Manual data input (MDI) function; Back up function; Operation time display; Product counter display; Eco display; Cycle time check function; Automatic screen off function; 4-Group simultaneous spindle speed command; 3-group simultaneous M command; Superimposition of freely selected axis function; BNE-MYY-dedicated macros; Optional block skip; Optional stop; Cut-off check function; Corner chamfering/Radius function; Arc radius specification; Canned cycle for threading; Rotary tool synchronous tap function; Spindle synchronizing control function; Multiple canned cycles for turning; Canned cycle for drilling; Milling interpolation; Helical interpolation; Inch/ Millimeter switching function; Safety monitoring

Standard operating functions

Start position automatic return; Waiting point automatic return; Back spindle retract return; Turret retract return; Automatic cut-off machining function; Tool set function; Spindle speed set function; Tool select function; Check adjustment function; Auxiliary manual operation function (AUX); Jog function; Handle operation function; Zeroing operation function

Editing support functions

Calculator function; Code list display; Code insert; Coordinate calculation function; Format check; Alarm block display function; Background editing; Simultaneous 3-system program editing

Option

Program operation memory capacity of 1,920 Kbyte (4,800 m); Program memory capacity of 10 MB; Program memory range of 20 MB; Program memory range of 50 MB; Program memory range of 100 MB; Network I/O function, RS-232C; Automatic power shut-off function; Thermal displacement correction function; Tool setter; Tool monitor; 3D chamfering function; Variable lead threading; Arc threading; 2-System simultaneous threading I; 2-System simultaneous threading II; High-speed tapping function; Tool life management I; Spindle superimposition function; External memory program operation

BNE 51 MSY

With additional axis, for enhanced simultaneous machining.

The BNE series is renowned for its high rigidity, heavy cutting capability and outstanding precision. The 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 ease-of-use and the ability to machine complex work pieces is the result.

Advantages

Maximum rigidity for high-accuracy machining.

Convenient operation.

Simultaneous machining with up to three tools at a time.

5.88 m²

Workpiece examples

1 **Name** Sample part
Material Aluminium

2 **Name** Sample part for the trade fair
Material Free-cutting steel

3 **Name** Sample part for the trade fair
Material Free-cutting steel

4 **Name** Sample part for the trade fair
Material Free-cutting steel

1 

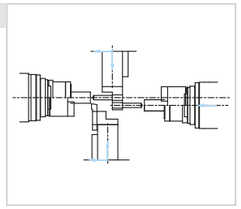
2 

3 

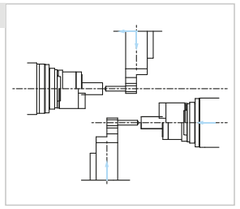
4 

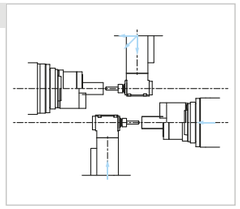
Machining examples

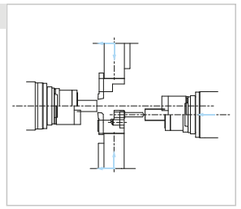
Simultaneous machining of 3 tools

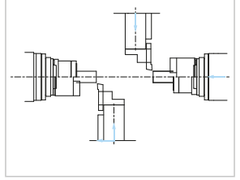
1 

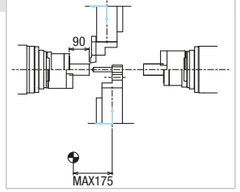
Simultaneous machining of 2 tools

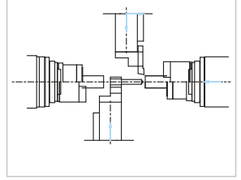
2 

3 

4 

5 

6 

7 

1 SP1, turning & drilling
SP2, drilling

2 HD1-L, drilling
HD2-R, drilling

3 HD1-L, milling
HD2-R, milling

4 SP1, simultaneous turning
SP2, drilling

5 HD1-L, turning
HD2-R, turning

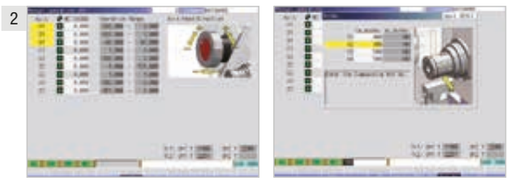
6 Left simultaneous machining
(HD1 turning, HD2 drilling)

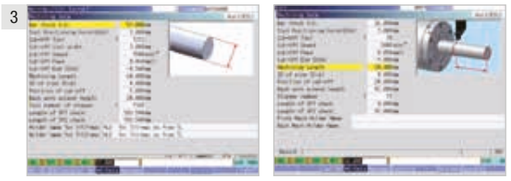
7 Right simultaneous machining
(HD1 turning, HD2 drilling)

Standard

1 

1 **Part catcher**
2 **HMI (Human Machine Interface) is adopted**
Graphics displayed for each item and screens that display all the necessary information in one place greatly improve operating convenience.
3 **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.

2 

3 

Options

1 

2 

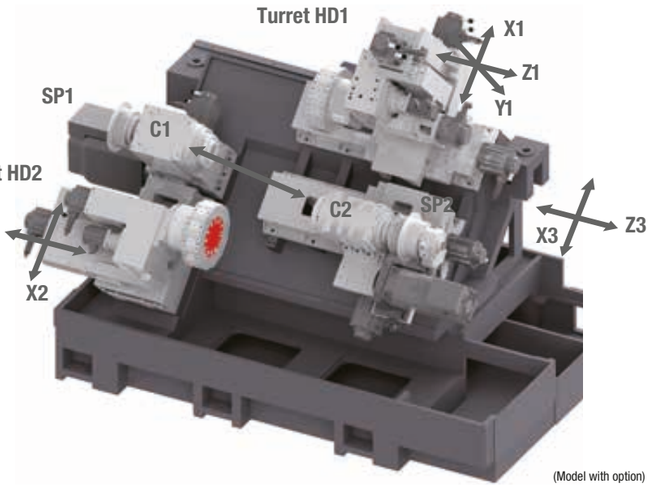
3 

4 

1 Barfeeder
2 Revolving tools
3 Cut-off confirmation
4 Drill breakage detector

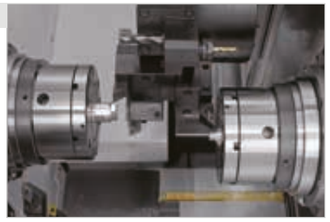
Layout

The basic construction of the machine, that is the combination of the highly rigid precision scraped Box slideways 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.



(Model with option)

Working area

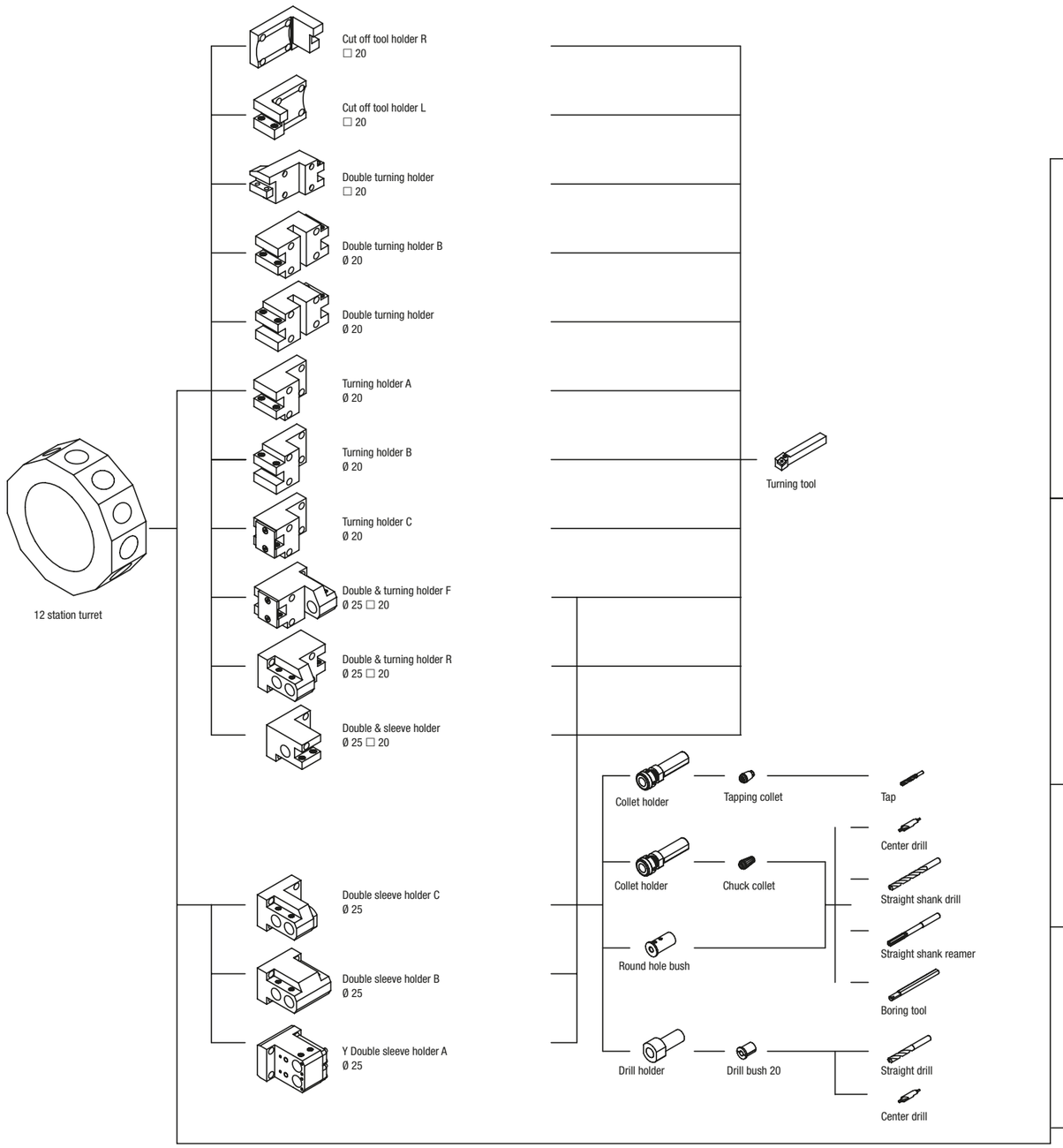
1 

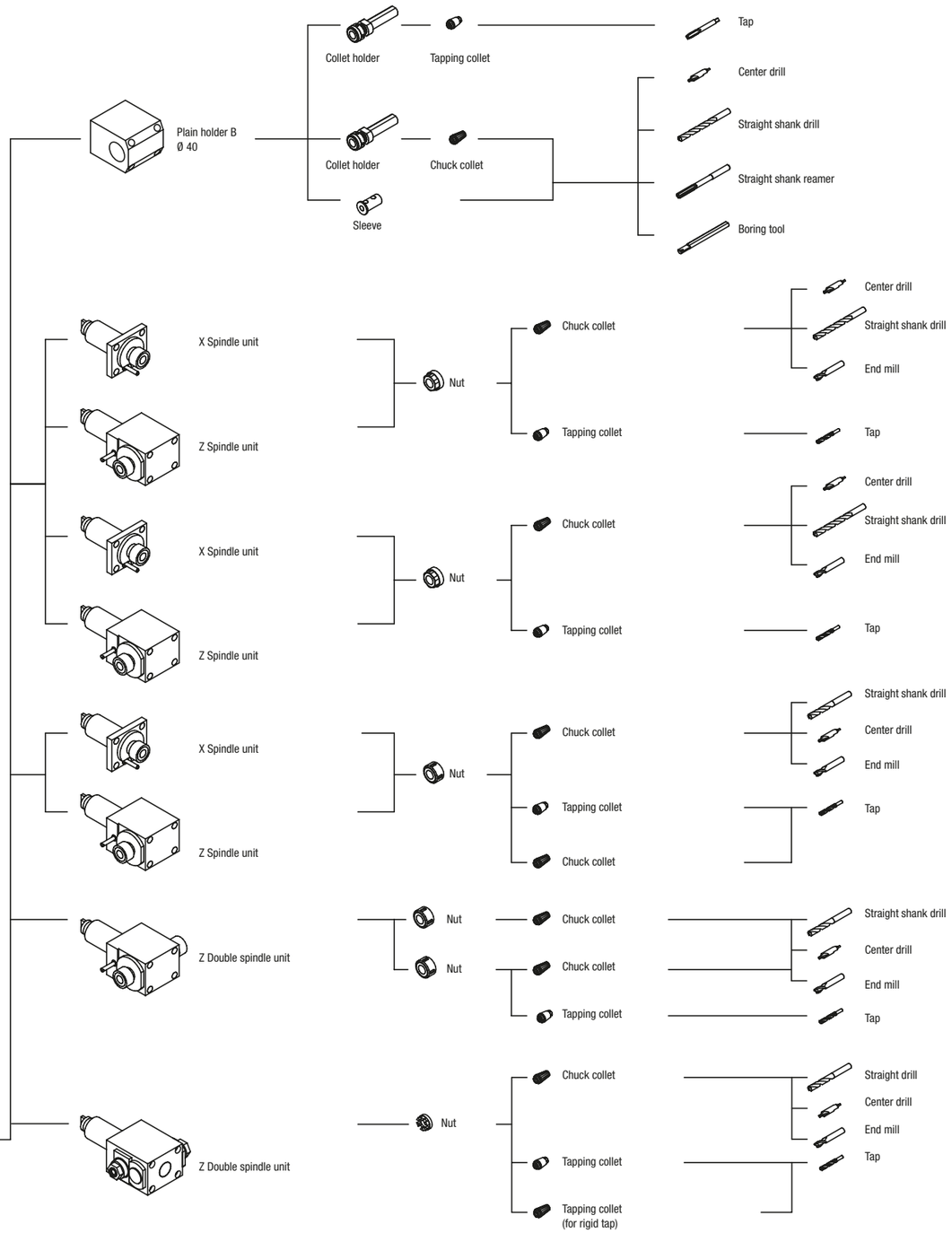
2 

3 

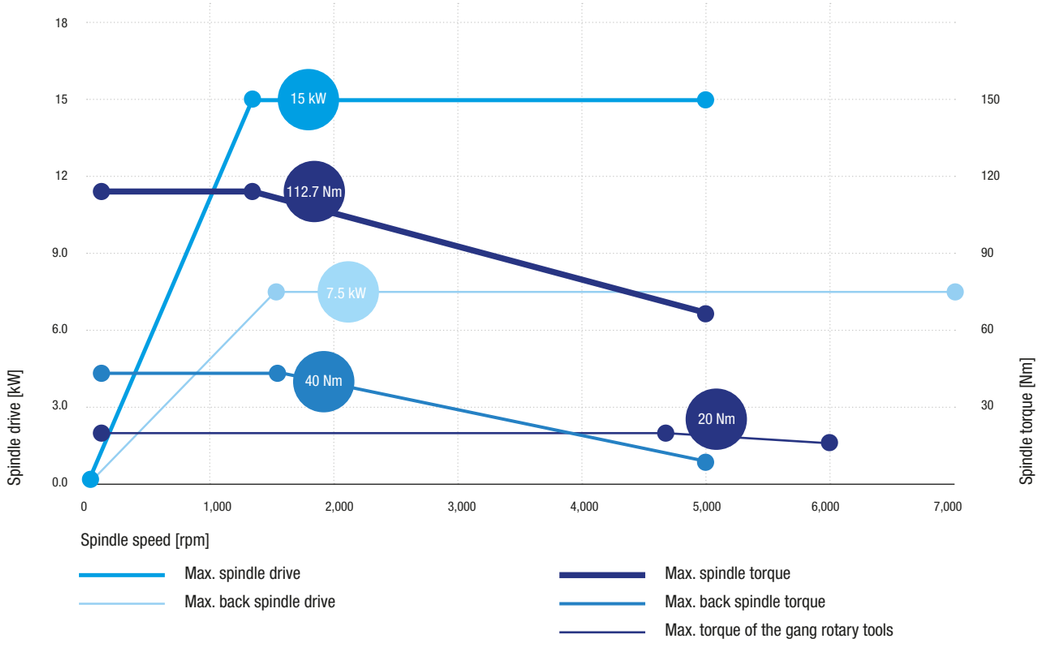
1 Examples of simultaneous machining with two tools
2 Examples of simultaneous machining with three tools
3 Turret

Tooling System

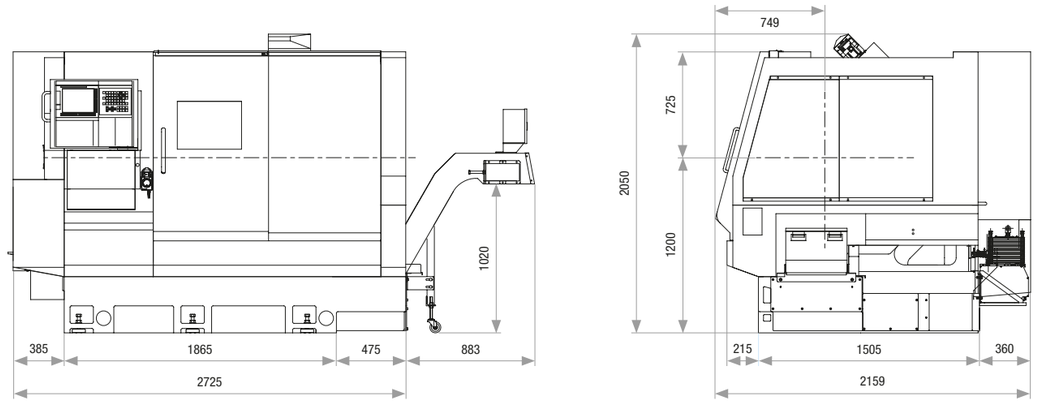




Performance diagram



Floor plan



Machine specification

Item		BNE-51MSY
Machining capacity		
Maximum work length		90 mm
Max. bar diameter	SP1	Ø 51 mm
	SP2	Ø 51 mm
Spindle		
Number of spindles		2
Spindle speed	SP1	5,000 rpm
	SP2	5,000 rpm
Spindle nose	SP1	A2-6
	SP2	A2-6
Draw tube dia.	SP1	Ø 52 mm
	SP2	Ø 52 mm
Collet chuck type	SP1	H-S22/ DIN177E
	SP2	H-S22/ DIN177E
Power chuck size and type	SP1	6" (Ø 169)
	SP2	6"(Ø 169)
Turret		
Number of turrets		2
Turret stations	HD1	12
	HD2	12
Shank size of square turning tool		□ 20 mm
Diameter of drill shank		Ø 25 mm
Rotary tool		
Number of rotary tools		Max.12+12
Type of rotary tools		Single clutch
Tool spindle speed range Feed rate		Max. 6,000 rpm
Rapid feed rate		
Rapid feed rate	X1 axis	18 m/min
	Z1 axis	20 m/min
	Y1 axis	12 m/min
	X2 axis	16.2 m/min
	Z2 axis	18 m/min
	X3 axis	18 m/min
	Z3 (B) axis	20 m/min
Slide stroke	X1 axis	195 mm
	Z1 axis	380 mm
	Y1 axis	80 (±40) mm
	X2 axis	195 mm
	Z axis	175 mm
	X3 axis	155 mm
	Z3 (B) axis	450 mm
Motors		
Spindle motor	SP1	11/15 kW
	SP2	5.5/7.5 kW
Motor for rotary tools		2.2 kW 20 Nm/4.0 kW 25 Nm (option)
Hydraulic motor		1.5 kW
Lubricating motor		0.023 kW
Coolant motor		0.25 kW
High pressure colant motor		0.8/1.36 kW (50/60 Hz)
Turret index motor		0.7 kW
Power supply		
Capacity		44 kVA
Voltage		AC 200/220 V
Air supply		5 bar
Tank capacity		
Hydraulic oil tank capacity		18 l
Lubrication oil tank capacity		5 l
Coolant tank capacity		350 l
Machine dimensions		
Machine height		2,050 mm
Floor space		W 2,725 x D 2,159 mm
Machine weight		8,000 kg

NC unit		
Model		MITSUBISHI M730VS
Program commands, axes		HD1: X1, Z1, Y1,
		HD2: X2, Z2,
		SP1: C1,
		SP2: C2,
		SP2 Slide : X3, Z3
Auxiliary axes		HD1 rotary tool : C3
		HD1 rotary tool : C4
	HD1 Index	T1
	HD2 Index	T2
Axis control groups		3 groups
Input code		ISO
Command input system		Incremental and absolute
Tool offset data		200 pairs
Feed command system		Per rotation feed and per minute
Cutting feed rate and		Max.100%
Rapid feed override		
Zero return function		Manual zero return
On-machine program check function		Manual pulse generator
Program storage capacity		512KB (1,312.34 yd)
Input/Output interface		Compact flash card slot
Spindle C-axis function		0.001°
Display device		10.4" color LCD / MDI
Machine equipment (standard)		
Start position automatic return, 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 canned cycle		
Spindle synchronizing control function		
Rotary tool synchronous tapping function		
Spindle synchronizing control function, Custom macro		
Multiple canned cycles for turning, Canned cycle for drilling		
High speed program check function, Milling interpolation		
Helical interpolation function		
Preparation functions		
Start position automatic return, Waiting point automatic return		
Sub spindle retract return, Turret 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 for 3 spindle		
3 Sets of M code simultaneous command		
Control axis swap function, Arbitrary superimposition function		
Background editing, Function to superimpose 2 pairs of axes		
Editing support functions		
Calculator function, Code list display, Code insert, Coordinate calculation function,		
Format check		
Options		
Automatic power shut-off, Thermo revision, tool setter, Eco function RS232C		

BNE 51 S SY

For the demanding manufacturing of complex high-precision workpieces from bar stock.

The BNE series was especially designed for ever more demanding production of complex high-precision workpieces from bar stock. Thanks to multi-tool simultaneous machining, also more complex shapes may be machined now in an ultrafast and economical way. On type ”S“, multiple tools may simultaneously be mounted in L & R spindle. Type ”SY“ with Y axis slide for the upper turret offers functions similar to a machining centre and efficiently machines complex workpieces.

Advantages

Highly rigid precision scraped flat Box slideways.

Powerful tools.

Optional for 65 mm available.

This model has been successful since it was first introduced in the 80's.

The BNE stands for rigidity and stability.

5.81 m²

Machining examples

Polygon machining (Optional)

Synchronizing the revolving tool speed with the spindle speed at two times permits polygon machining, such as two-, four- and six-sided machining, with a polygon cutter.

Large-diameter thread cutting using helical interpolation (Optional)

Large-diameter thread cutting can be done with a planetary tap using the helical interpolation function. (SY type)

Differential velocity cutting by revolving tools

In multiple cutting of inner and outer diameters, the optimum cutting speed can be obtained by controlling the revolving tool speed. A smalldiameter drill is rotated in the forward direction to increase the relative speed between the drill and the workpiece, while a large-diameter drill is rotated in the reverse direction to decrease the relative speed.

Long-shaft machining

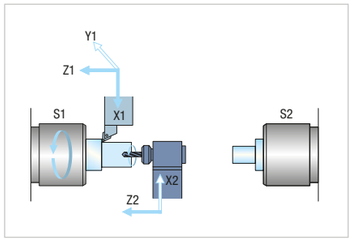
The bar stock machined on the L spindle is pulled out by the R spindle and chucked in synchronization by the L and R spindles at the same time. Simultaneous machining is performed and then the workpiece is cut off. After that the machining at the R spindle side is performed and the finished product is pushed out of the R spindle by the next workpiece.

Efficient face drilling

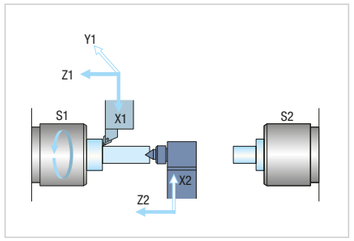
In complex machining in the X-Y or Z-Y plane, using C axis control to index the drilling position takes a long time. Using the Y axis allows efficient drilling on the end face. (SY type)

Machining patterns

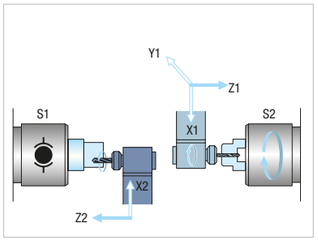
Differential cut



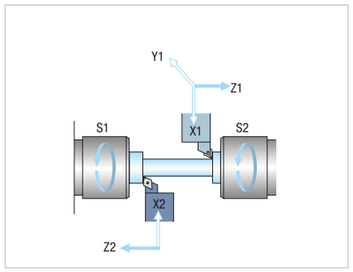
Centre support



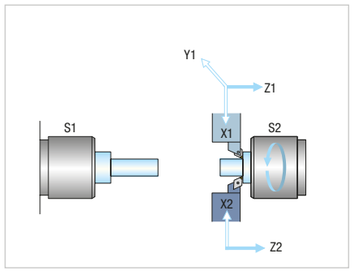
Drilling & tapping



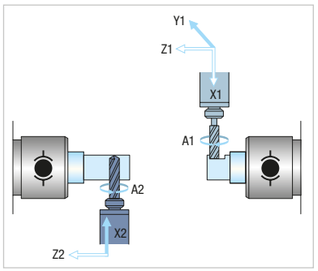
Long-shaft machining



Balanced turning



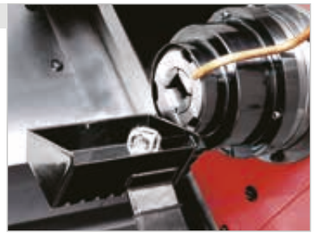
Simultaneous machining



Standard

1 Part catcher
2 Revolving tool
3 Tool setting
4 Maintenance

1



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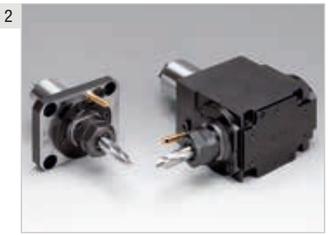

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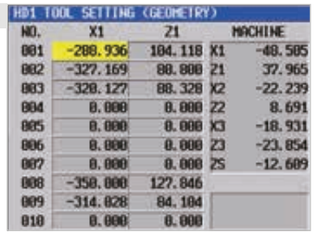

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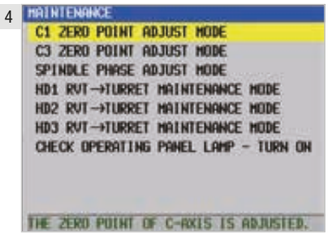


Options

1

2

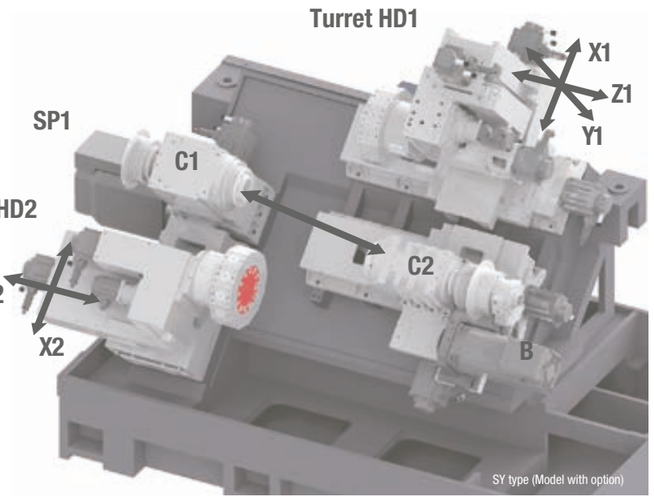
3

1 Barfeeder
2 Chip conveyor
3 Automatic measuring device
4 Tool monitor: 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 the sampling data.

4

Layout

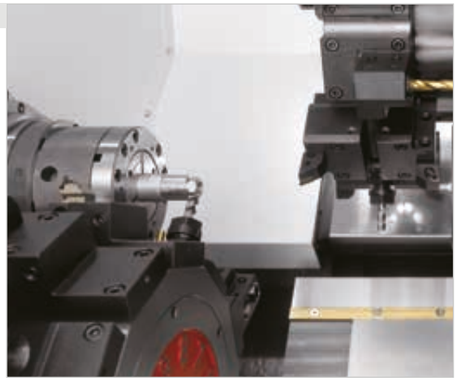
The basic construction of the machine, that is the combination of the highly rigid precision scraped square guideways and the heavy slanted bed cast in one piece, is the base to support high precision, heavy cutting and long tool life even in complex machining.



SY type (Model with option)

Working area

1



1 SY: Y Axis on turret HD1

In addition to front / back integrated machining and multiple cutting achievable by the 2-spindle and 2-turret specification machines, the Y axis installed on turret HD1 (SY type) enables a greater variety of complex machining.

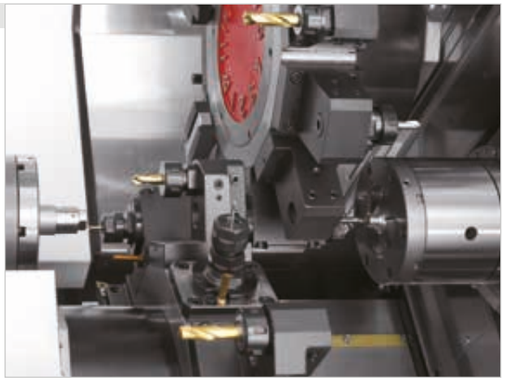
Ample tool stations

Installation of double tool holders on the 12-station turret allows two tools to be mounted at a single position, so you will never feel short of tools. (Common to S/SY types)

Powerful tool

Revolving tools featuring a power ful machining torque of 20 Nm and high rotational speeds of up to 6.000 rpm can be mounted at all positions (12 positions) with independent drive. (Common to S/SY types)

2



2 S: Two spindle capacities

BNE 42/51 available in two versions S without Y axis and SY with Y axis to turret HD 1.

Revamped NC unit

The new 31i-B NC unit simplifies the operation panel with less push buttons and support screens including “Machining Data”, “Start Conditions” and “Tool Monitor” (option) enable further improvements in productivity by faster set-ups.

Newly designed covers

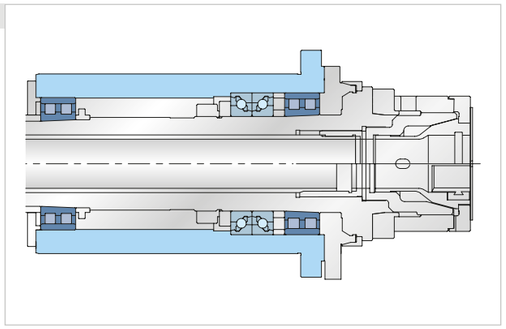
All the covers have been reviewed in detail and redesigned to improve ease of operation, including changing the splash guard to open inside the fixed cover.

3

3 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 20 Nm at all 12 positions. Our unique tool holder mounting method using two location pins makes it easy to mount and remove tool holders and ensures exceptionally high re-mounting accuracy.

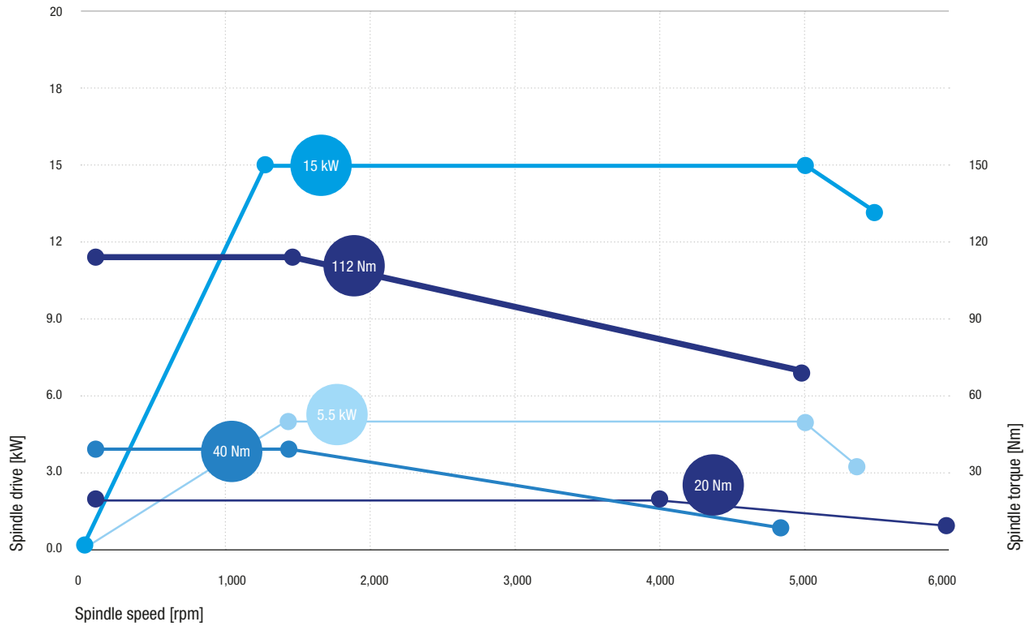
4



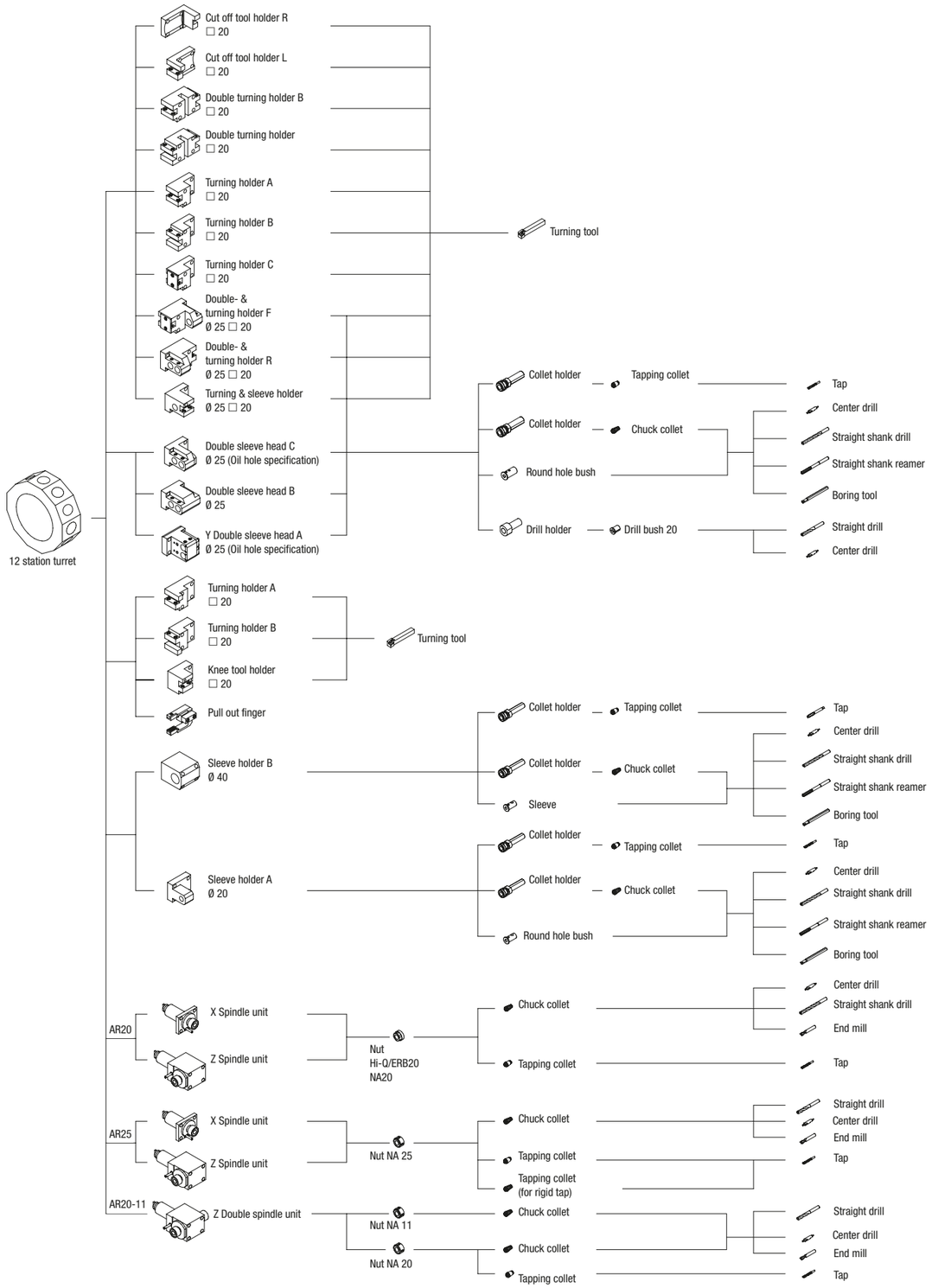
4 Spindle

The main spindle of the 51S / 51SY is supported by “ultra precision double-row cylindrical roller bearings” and “ultra precision angular contact ball bearings” at the front and by “ultra precision double-row cylindrical roller bearings” at the rear to suppress radial run-out and thermal displacement in the longitudinal direction as well as to provide high rigidity. This precision spindle is installed in a ground, high-precision quill type housing. This spindle structure maintains sufficient rigidity to allow powerful machining and ensures stable thermal displacement characteristics thanks to less heat generation. All spindles are manufactured in the dedicated in-house production line and undergo extended bench testing before being assembled into the machine to provide the stable machining accuracy for which Miyano is renowned.

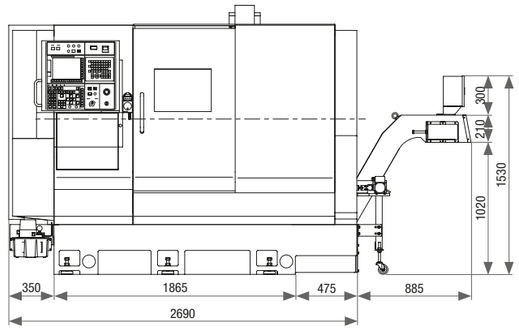
Performance diagram

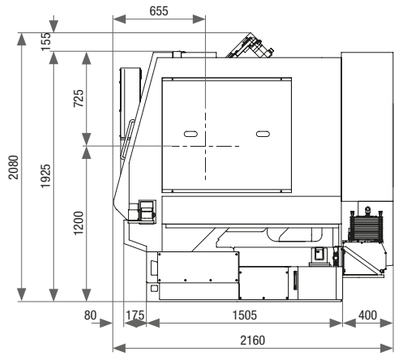


Tooling System



Floor plan





Machine specification

Item		BNE-51S6	BNE-51SY6
Machining capacity			
Maximum work length		90 mm	90 mm
Maximum bar diameter	SP1	Ø 51 mm	Ø 51 mm
	SP2	Ø 42 mm	Ø 42 mm
Spindle			
Number of spindles		2	2
Spindle speed	SP1	5,000 rpm	5,000 rpm
	SP2	5,000 rpm	5,000 rpm
Spindle nose	SP1	A2-6	A2-6
	SP2	Flat	Flat
Draw tube dia.	SP1	Ø 52 mm	Ø 52 mm
	SP2	Ø 43 mm	Ø 43 mm
Collet chuck type	SP1	H-S22/ DIN177E	H-S22/ DIN177E
	SP2	H-S20/ DIN173E	H-S20/ DIN173E
Power chuck size and type	SP1	6" Hydraulic	6" Hydraulic
	SP2	5" Hydraulic	5" Hydraulic
Turret			
Number of turrets		2	2
Turret stations	HD1	12	12
	HD2	12	12
Shank size of square turning tool		☐ 20 mm	☐ 20 mm
Diameter of drill shank		Ø 25 mm	Ø 25 mm
Rotary tool			
Number of rotary tools		Max.12+12	Max.12+12
Type of rotary tools		Single clutch	Single clutch
Tool spindle speed range		Max. 6,000 rpm	Max. 6,000 rpm
Feed rate			
Rapid feed rate	X1 axis	18 m/min	18 m/min
	X2 axis	16.2 m/min	16.2 m/min
	Z1 axis	20 m/min	20 m/min
	Z2 axis	18 m/min	18 m/min
	Y1 axis		12 m/min
	B axis	20 m/min	20 m/min
Slide stroke	X1 axis	175 mm	175 mm
	X2 axis	145 mm	145 mm
	Z1 axis	380 mm	380 mm
	Z2 axis	175 mm	175 mm
	Y1 axis		±40 mm
	B axis	450 mm	450 mm
Motors			
Spindle motors	SP1	11/15 kW	11/15 kW
	SP2	3.7/5.5 kW	3.7/5.5 kW
Motor for rotary tools		2.2 kW 20 Nm	2.2 kW 20 Nm
Hydraulic motor		2.2 kW	2.2 kW
Lubricating motor		0.023 kW	0.023 kW
Coolant motor		0.25 kW x 2	0.25 kW x 2
High-pressure coolant motor		0.8/1.36 kW (50/60Hz)	0.8/1.36 kW (50/60Hz)
Turret index motor		0.75 kW	0.75 kW
Power supply			
Capacity		44 kVA	44 kVA
Voltage		AC 200/220 V	AC 200/220 V
Air supply		5 bar	5 bar
Tank capacity			
Hydraulic oil tank capacity		18 l	18 l
Lubrication oil tank capacity		5 l	5 l
Coolant tank capacity		350 l	350 l
Machine dimensions			
Machine height		1,925 mm	2,080 mm
Floor space		W 2,690 x D 2,160	W 2,690 x D 2,160
Machine weight		7,800 kg	7,800 kg
NC unit			**FS31i-B 2 system**

Axis control: HD1: X1, Z1, (Y1), C1, A1 / HD2: X2, Z2, C2, A2, B2; **Minimum setting unit:** 0.001 mm, 0.001°; **Interpolation functions:** G01, G02, G03; **Threading:** G32, G33, G92; **Rapid feed override:** 0-100%; **Feed rate override:** 0-150%; **Feed rate per minute/Feed rate:** G98/G99; **Program storage capacity:** Sum total for 2 systems: 64 kB (160 m); **Spindle function:** 4-digit S command; **Support function:** 3-digit M word; **Constant surface speed control:** G96; **Tool function:**Taabb (aa=Tool number and geometry, bb=Wear offset number) 32 pieces, 64 pieces (2 system).

Automatic operation

Automatic operation, MDI operation, Program number search, Block number search, Test run, Single block, Optional stop (M01), Jog feed, manual reference point return, Setup/display function , Machine alarm message display, Self diagnosis function, Preventive maintenance screen, Maintenance data screen, Help function, Current feed rate display, Current spindle speed display and T code, Display of all group directories, Servo setting screen, Spindle setting screen, Display of hardware & software system configuration.

Data input-and-output function

Memory card interface, USB memory interface,

Others

10.4 inch color monitor (LCD), Machine lock, Overrun, Stored stroke check, Chamfering ON/OFF, Backlash compensation, Synchronization / mixture control, Cs outline control, Spindle synchronous control, Superimposition control, Polar coordinate interpolation, Optional block skip, Absolute command, Incremental command, Decimal point input, Coordinate system setup, Single form fixed cycle, Circle radius R command, Programmable data input

Options

Cylindrical interpolation, Spindle rigid tapping, Rotary tool rigid tapping, Helical interpolation, polygon turning, Workpiece coordinate system, Inch/metric change, Tool nose radius compensation, Customer macro, Multiple repetitive cycles, Program storage capacity addition, Background editing, Run hour/Parts count display, Leader puncher interface, RS-232C port

ANX 42 SYY

Innovative turret lathe ANX – the beginning of a new era.

With its manifold new functions, the ANX model ushers in a new era in the field of turret lathes. For the first time, a turret lathe of the Miyano brand comes equipped with LFV technology (Low Frequency Vibration Cutting). This makes tangled long chips - a source of serious problems for many years - a matter of the past. Another highlight is the operating panel with its new HMI (Human-Machine-Interface). Machine operation has become much more user-friendly; at the same time, identical operating processes are granted for those users who are not only dealing with machines of the Miyano brand but also with Cincom machines. We now use new operating procedures reducing conversion problems due to different NC control units thus virtually breaking down borders between the brands. The machine is equipped with two spindles, two turrets and two Y axes. Its rapid traverse rate has been increased in the linear guideways of all axes. Each spindle disposes of an integrated motor shortening acceleration and deceleration times and improving the response behavior on the whole.

Advantages

Linear guideways.

Improved operating comfort.

LFV technology.

Double Y axis.

LFV technology

4.32 m²

Workpiece example

Name Valve
Material Free-cutting steel

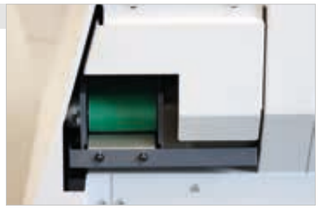
Standard

1 The operating panel has been designed as new HMI and is now working with multi-axis control group technology as do the machines of the Cincom brand. The productivity of simultaneous machining has thus been considerably improved. In excess of this, the latest NC control unit and the 15" touch panel have enhanced user friendliness enormously.

2 Work piece conveyer

1

2



Options

1 Chip conveyor
2 Loading magazine

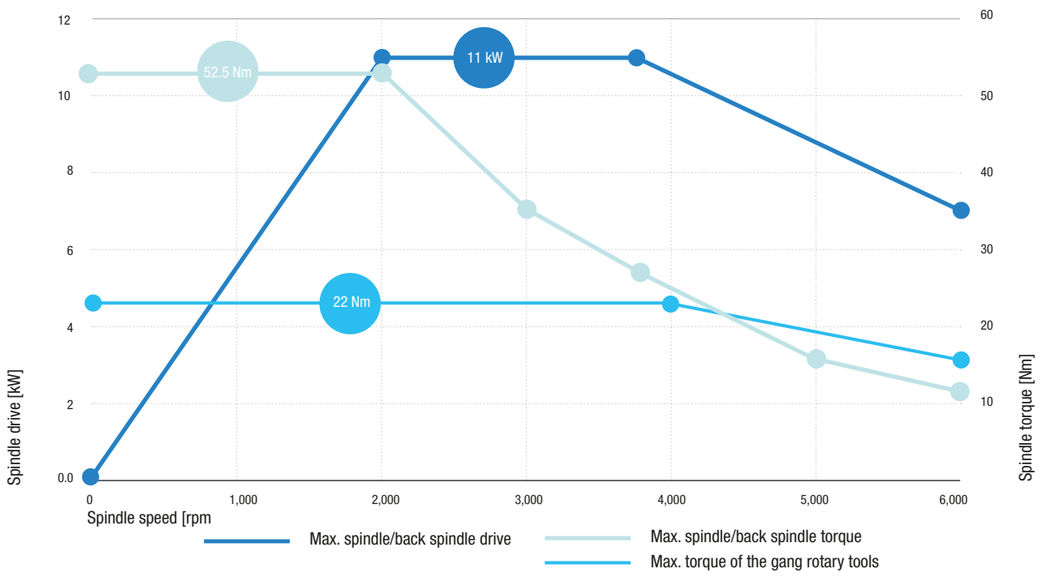
LFV technology

What is more...
LFV technology as an option

1

2

Performance diagram



Layout

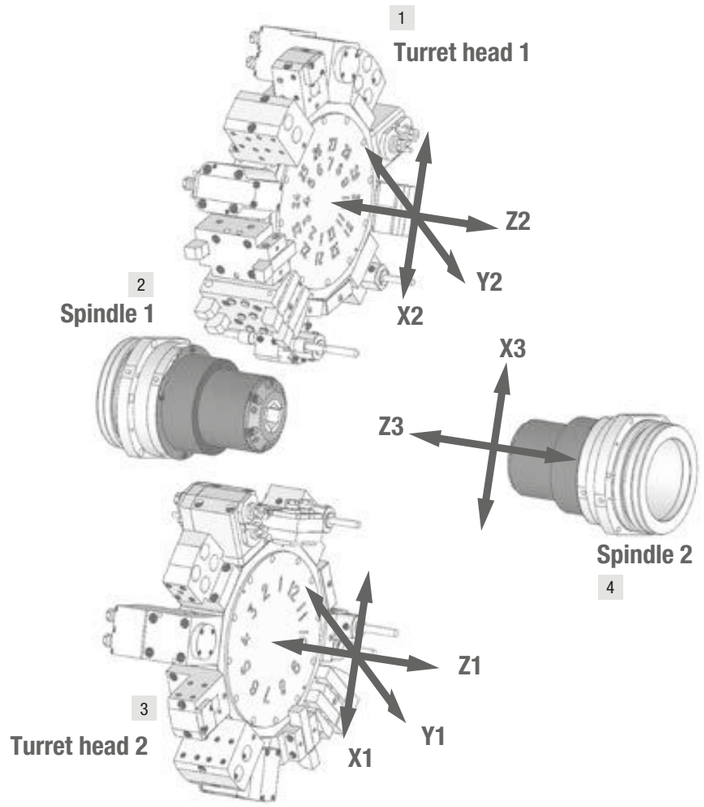
1 Turret head 1
Design of the tool slide : 12 stations
Number of mountable rotary tools: max. 12
Rotating speed of rotary tools: 6,000 rpm
Rotary tool torque: 20 Nm

2 Spindle 1
Spindle speed: 6.000 rpm
Diameter of the draw tube through hole: Ø 46
Type of collet chuck: DIN 173E
HAINBUCH
H-S20

3 Turret head 2
Design of the tool slide : 12 stations
Number of mountable rotary tools: max. 12
Rotating speed of rotary tools: 6.000 rpm
Rotary tool torque: 20 Nm

4 Spindle 2
Spindle speed: 6.000 rpm
Diameter of the draw tube through hole: Ø 46
Type of collet chuck: DIN 173E
HAINBUCH
H-S20
Type of the power Chuck: 5" hollow chuck

[X1 / Z1 / X2 / Z2 axis with LFV technology]



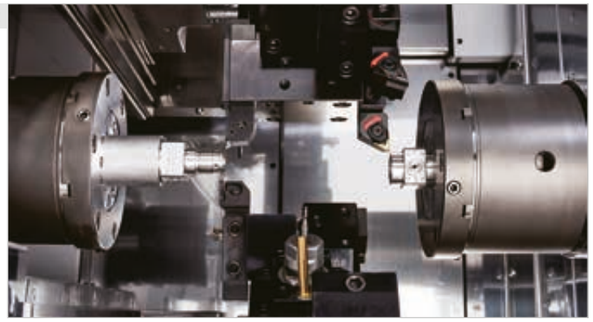
Working area

1 The operating panel in HMI design is now functioning in the same way as that of the Cincom machines, including multi-axis control technology.

2 Each main and back spindle utilises of an integrated motor shortening acceleration and deceleration times and thus also the cycle times.

3 Increased rapid traverse rates in all axes with linear guideways. LFV technology available via both turrets.

2



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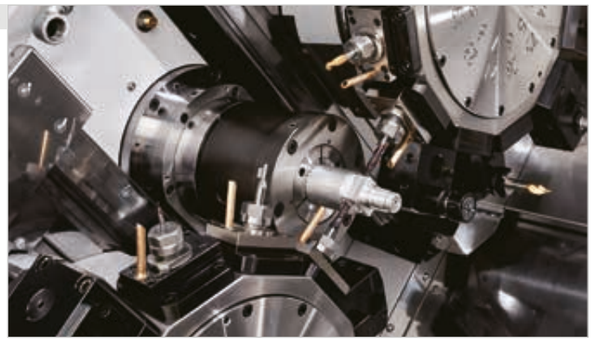
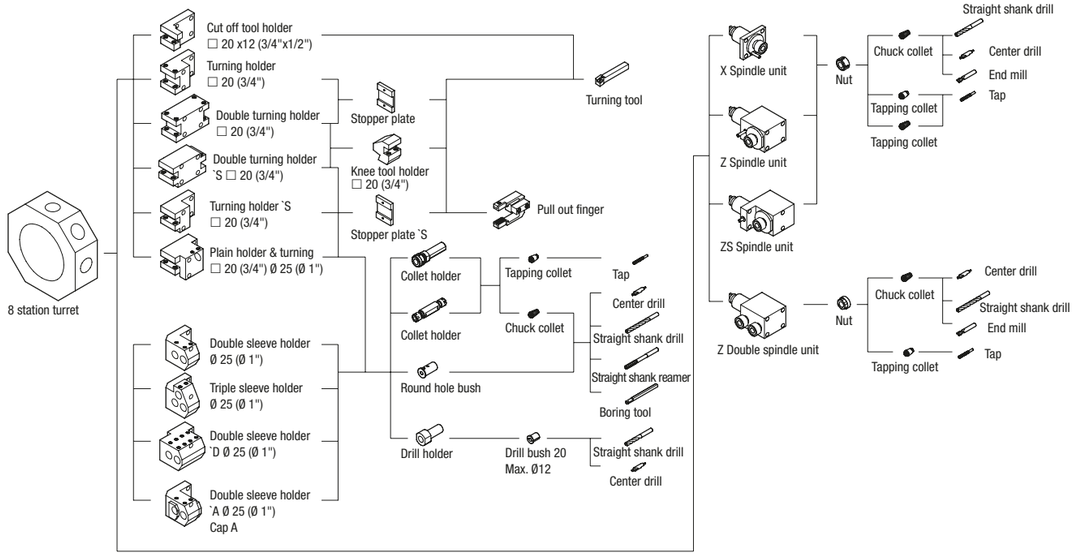
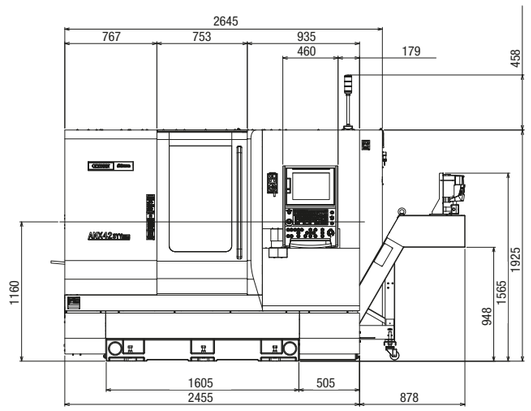
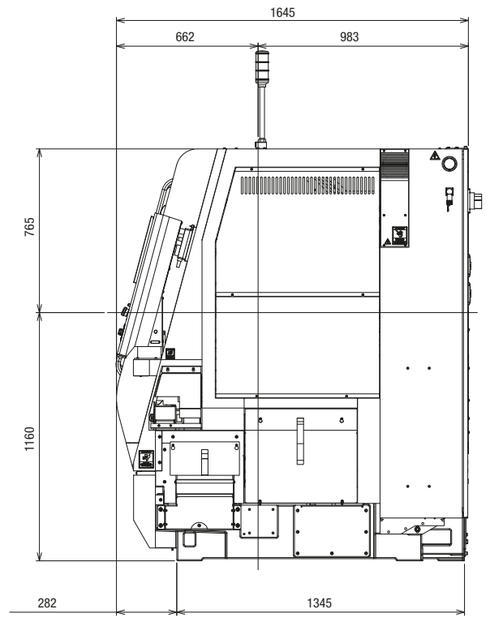


Tooling System



Floor plan





Machine specification

Item			ANX-42SYY
Machining capacity			
Maximum machining length		SP1	130 mm
Bar capacity, round		SP2	Ø 42 mm
			Ø 42 mm
Slide stroke			
Turret slide HD1		X1	140 mm
		Z1	315 mm
		Y1	70 (±35) mm
Turret slide HD2		X2	140 mm
		Z2	430 mm
		Y2	70 (±35) mm
Spindle No.2		X3	240 (±120) mm
		Z3	440 mm
Spindles			
Number of spindles			2
Spindle speed		SP1	6,000 rpm
		SP2	6,000 rpm
Inner diameter of draw tube		SP1	Ø 46 mm
		SP2	Ø 46 mm
Collet chuck model		SP1	DIN 173E(Ø 42 mm), HAINBUCH, H-S20
		SP2	DIN 173E(Ø 42 mm), HAINBUCH, H-S20
Power chuck model		SP1	–
		SP2	5" Kraftspannfutter
Cutting capability	SP1	Drill	Ø 20 mm
		Tap	M12 x 1.75
	SP2	Drill	Ø 20 mm
		Tap	M12 x 1.75
Spindle indexing			
Minimum spindle indexing command		SP1	0.001°
		SP2	0.001°
Turret			
Number of tool stands			2
Number of tool stations		HD1	12 Stationen
		HD2	12 Stationen
Distance across flat		HD1	300 mm
		HD2	300 mm
Maximum index clearance		HD1	Ø 505 mm
		HD2	Ø 505 mm
Tool shank size			☐20 mm Sq.
I.D tool hole size			Ø 25 mm
Revolving tool			
Number of rev.tool installed		HD1	max. 12
		HD2	max. 12
Rev.tool drive type			Single clutch drive
Rev.tool speed			6,000 rpm
Cutting capability		Drill	max. Ø 12 mm
		Tap	max. M8 x 1.25
Rapid traverse rate			
Rapid traverse rate		X1 / X2 / X3 axis	24 m/min
		Z1 / Z2 axis	24 m/min
		Y1 / Y2 axis	18 m/min
		Z3 axis	30 m/min
Motor for slide		X1 / X2 / X3 axis	1.8 kW
		Z1 / Z2 / Z3 axis	1.2 kW
		Y1 / Y2 axis	1.2 kW
Motor for spindle		SP1/SP2	11/7.5 kW (10 min./ cont.)
Motor for rev.tool		HD1/HD2	2.2 kW
Motor for coolant pump			0.18 x 2
Motor for medium-pressure coolant (1 MPa) (option)			0.75/1.1 kW (50/60 Hz)
Motor for medium-pressure coolant (2 MPa) (option)			1.5
Power supply			
Voltage			AC 200/ 220 + 5 % – 10 % 50/ 60 Hz±1 %
Capacity			34 kVA
Air supply			0.5 MPa
Tank capacity			
Hydraulic oil capacity			18 l
Lubricating oil capacity			2 l
Coolant tank capacity			280 l
Machine dimensions			
Machine height			1,900 mm
Floor space			2,650 x 1,630 mm
Machine weight			6,200 kg
Standard NC functions		MIYANO SYSTEM Fs31i-Model B Plus	

15-inch XGA touch panel; USB slot; On-machine program check function; User authentication function; Operating time display; Product counter Max. 8 digits; Machine operation information display; Eco display; Preparation function; Automatic power-off function; Collision detection function; B code I/ F; Tool offset pairs 200; Program storage capacity 10 MB; Program operation storage capacity 4 MB; User macro; Corner chamfering/ Corner rounding; Optional block skip (9 sets); Spindle constant surface speed control function; Spindle C-axis function; Spindle synchronized function; Canned cycle drilling; Helical interpolation function; Synchronized tapping function; Sub-micron specifications; Inch specifications; Sub-inch specifications; Interference check function; Thermal displacement correction function

Special NC functions

Tool offset pairs 400; Tool life management; Program storage capacity 100 MB; Program operation storage capacity 8 MB; Variable lead thread cutting; Circular thread cutting; Multiple repetitive cycle for turning; Milling interpolation function; Cylindrical interpolation; Polygon turning function; Tool monitor; alkarttransfer; LFV mode 1; Revolving tool feed per revolution; Part-way restart function

Options

Spindle brake; Air blower; Workpiece ejector; Chip box; Part conveyor; Coolant level switch; Medium-pressure coolant (1 MPa); Medium-pressure coolant (2 MPa); Through-spindle air blower; Turret air blower; Tool setter; Part catcher; Part box; Chuck System; Chip conveyor; Mist collector duct & fire prevention damper; Through-spindle bushing; 3-color signal tower; Tailstock; RS-232C; Part carrier; Product unloader

BND 51 SY

Perfectly suited for the precise machining of complex parts.

The BND bar machine is equipped with a back spindle an a Y-axis that can machine bar material up to Ø 51 mm. The structure of the machine offers precision scraped square slideways that provide the high rigidity and excellent vibration damping characteristics and a heavy 30° slanted bed as platform construction with intelligently arranged ribs ensuring good thermal stability and minimum dimensional changes over time. In other words: A comprehensive package designed for consistently high machining accuracy over long operating periods.

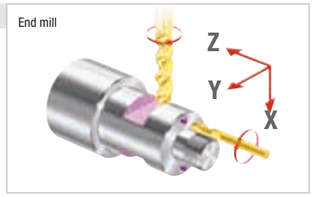
Advantages

Strong, highly rigid construction.

Wide range of complex machining with rotary tools.

4.05 m²

Machining examples

1


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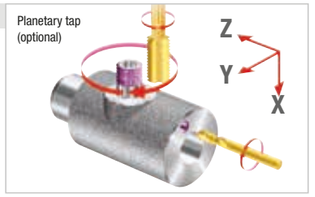

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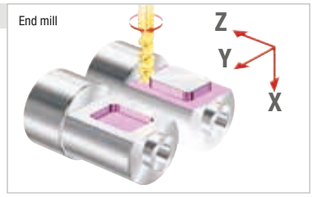

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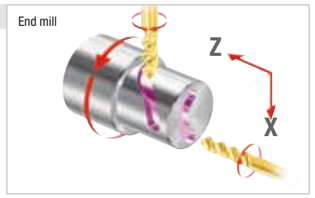

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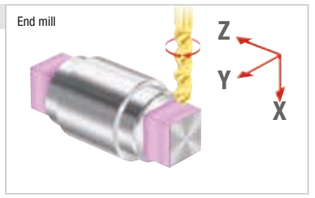

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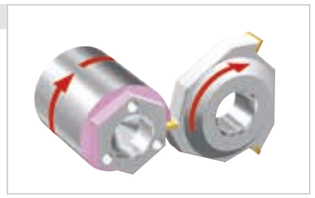


1 End mill
2 Planetary tap (optional)
3 End mill
4 End mill
5 End mill
6 Polygon machining (optional)

Standard

1


2

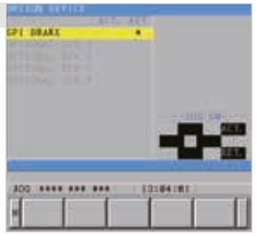

3


4


1 Turret maintenance: Used to adjust the turret zero point.
2 Block skip: Used to set block skip 1 to block skip 9.
3 Part catcher
4 Part conveyor

Options

1 Option device: Used to select an auxiliary device such as a part catcher to be operated manually.
2 Chip conveyor

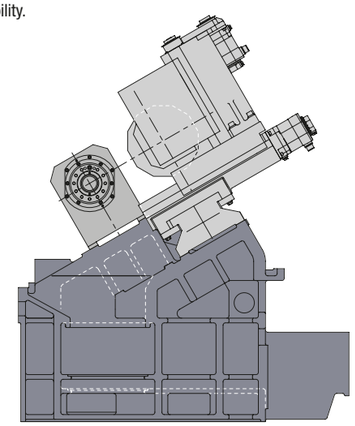
1


2


Working area

1 Complex machining with Y axis control
The combination of independently driven revolving tools that can be mounted at all positions on the turret with the Y axis and the subspindle realizes a high level of process integration in complex machining.

2 Easy to use tooling system
Double sleeve holders and double turning holders allow multiple tools to be mounted at a single position on the turret to maximize tooling flexibility.



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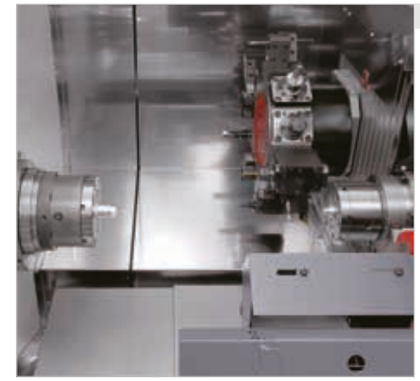
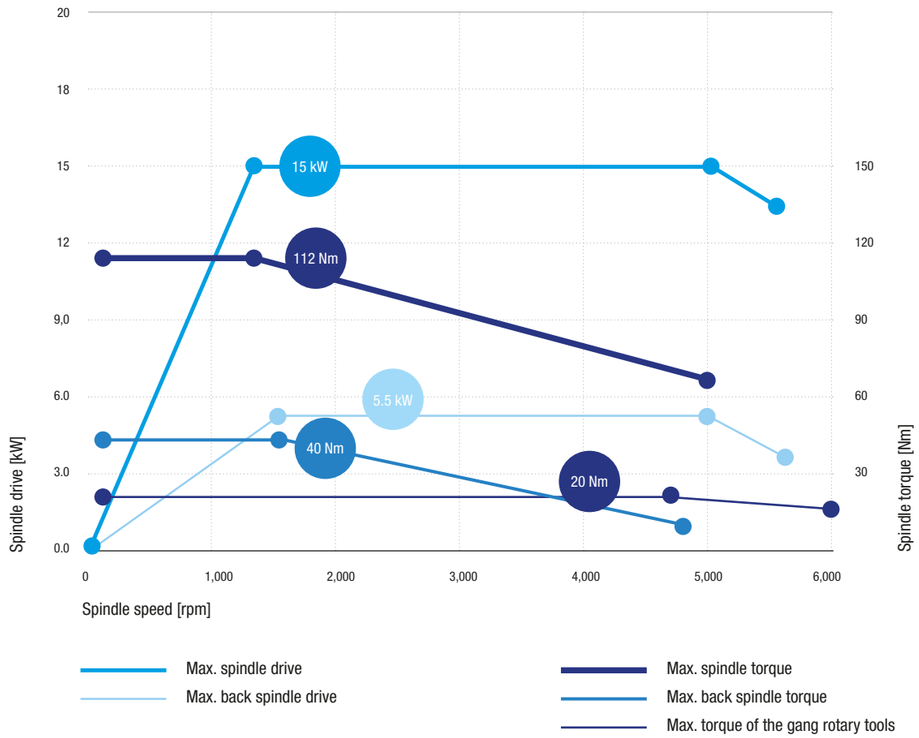
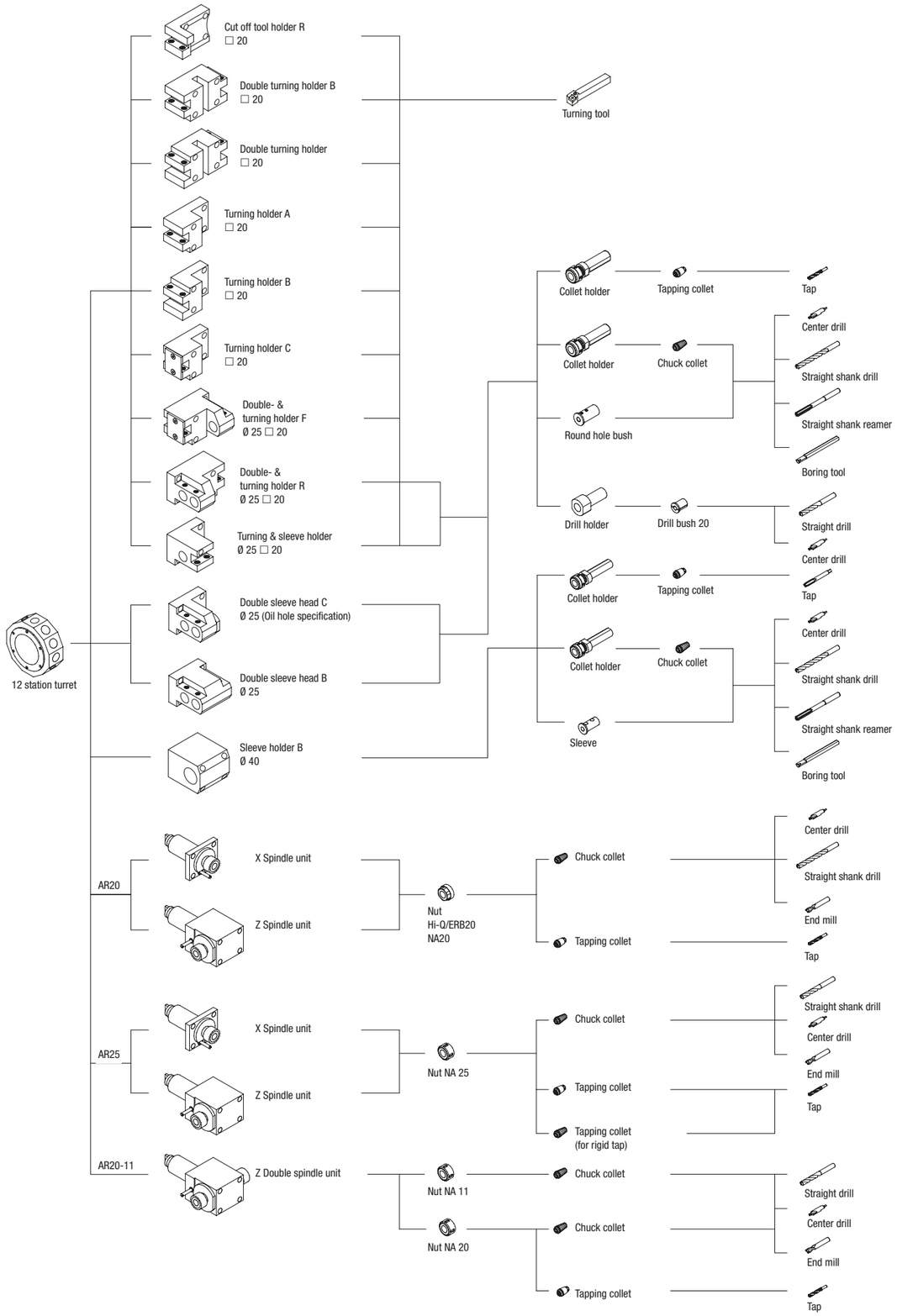


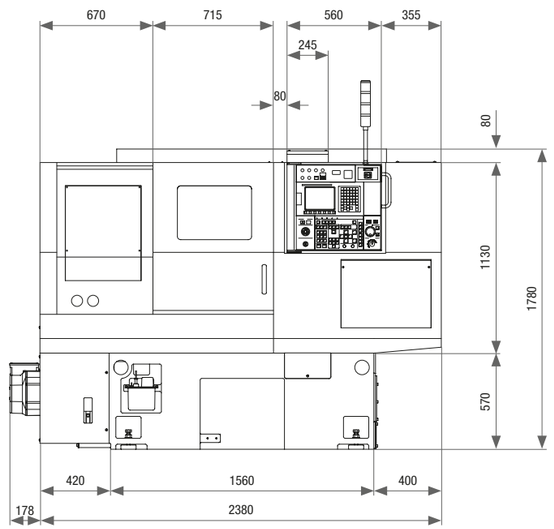
Performance diagram

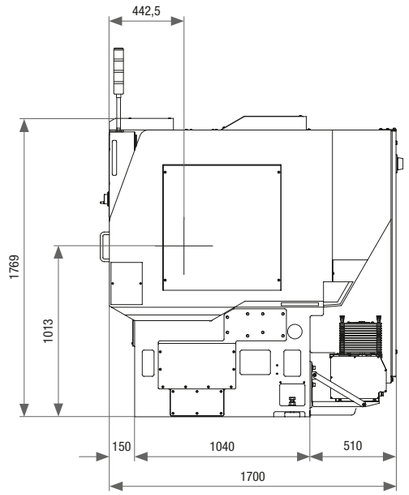


Tooling System



Floor plan





Machine specification

Item		BND-51SY2
Machining capacity		
Maximum work length		90 mm
Maximum bar diameter	SP1	Ø 51 mm
	SP2	Ø 51 mm
Maximum blank diameter	Chucker	Ø 210 mm
Spindle		
Number of spindles		2
Spindle speed		50–5,000 rpm
Draw tube dia.	SP1	Ø 52 mm
	SP2	Ø 26 mm
Power chuck type		Hydraulic
Collet chuck type	SP1	H-S22 Pads
	SP2	H-S16, S22 pads
Power chuck size and type	SP1	6" Through hole type
	SP2	5" Through hole type
Turret		
Number of turrets		1
Turret stations		12 st.
Shank size of square turning tool		☐ 20 mm
Diameter of drill shank		Ø 25 mm
Turret index time		0.26 sec. per station
Feed rate		
Slide stroke	X axis	175 mm
	Z axis	435 mm
	Y axis	+/- 40 mm
	B axis	530 mm
Rapid feed rate	X axis	18 m/min
	Z axis	20 m/min
	Y axis	12 m/min
	B axis	18 m/min
Rotary tool		
Number of rotary tools		max. 12
Tool spindle speed range		60–6,000 rpm
Capacity	Drill	max. Ø 13 mm
	Tap (steel)	max. M8
	Tap (Al, brass)	max. M8
Tank capacity		
Hydraulic oil tank capacity		18 l
Lubrication oil tank capacity		2 l
Coolant tank capacity		150 l
Machine dimensions		
Machine height		1,700 mm
Floor space		2,605mm × 1,740mm
Machine weight		4,500 kg
Motors		
Spindle motor	SP1	AC 11/15 kW
	SP2	AC 3.7/5.5 kW
Motor for rotary tools		AC 2.2 kW 20 Nm
Power supply		
Voltage		AC 200/220 V ± 10%
Capacity		37 kVA
Air supply		5 bar (5 kgf/cm²)

Others

Splash guard interlock, Revolving tool drive unit, Pneumatic, Spindle brake No.1, High pressure coolant, Part Catcher, Part conveyor, Work ejector & inner high pressure coolant.

NC Specifications	**FANUC 0i-TD**

Axis control: X, Z, Y, B, Cs; Simultaneous control axes: 4; Min. output unit: X=0.0005 mm, Z=0.001 mm / Y=0.001 mm, B=0.001 mm, Cs=0.001°; Interpolation functions: G00, G01, G02, G03, G04, G32, G33; Program storage capacity: 1 Mbyte (2560 m); Spindle function: 4-digit S command; Cutting feed rate: 3.4 digit F word (feed per revolution), 6-digit F word (feed per minute), direct programming; Feed rate override: 0–150% (in 10% increments); Rapid feed override: F0, 25, 50, 100%; Thread cutting: G32, G33, G92; Canned cycle: G90, G92, G94; Tool function T AABB (AA=Tool number & geometry, BB = Wear offset number); Direct input function of tool position: By measurement in MDI mode, data I/O, Memory card interface, USB memory interface, Automatic data backup; Automatic operation: 1cycle/Automatic operation; Single block, Block delete, Machine lock, Optional block skip, Dry run, Feed hold

Others

8.4" color LCD/MDI, Program storage capacity addition: 800 pieces; Decimal point input; Manual pulse generator; Memory protect; AC digital servo motor: circle radius command R; Nose radiuss compensation; Constant surface speed control (GH96); Background editing; Programmable data input (G10); Run hour/Parts count display; Multiple repetitive cycle (G70-G76); Rigid tap spindle; Polar coordinate interpolation; CUstom macro B; Canned cycles for drilling; Tool life management, etc.

NC Option

Helical interpolation, Leader puncher interface, etc.

BNJ
42/51 SY

Economical, efficient and powerful thanks to simultaneous machining.

Turret No. 2 now has 8 tool mounting stations instead of 6 on the previous machines, so the number of tools has been increased and also rotary tools may be mounted. The milling processes that were handled using turret No. 1 alone can now be shared with turret No. 2, making it possible so substantially shorten cycle times and deal with workpieces that require complex machining.

Advantages

Considerably improved operability.

Collision protection (rapid feed only).

Machining time shortened by simultaneous machining at left and right.

Combined Machining with the Y-axis.

Machining time shortened through superimposition machining.

Optional for 64 mm available.

4.05 m²

Workpiece example

1 **Name** Adjusting screw
Material Brass

2 **Name** Sample part for the trade fair
Material Steel

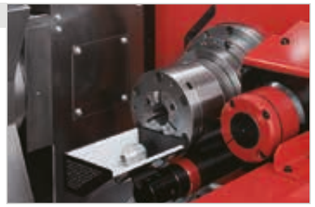
1

2

Standard

1

2

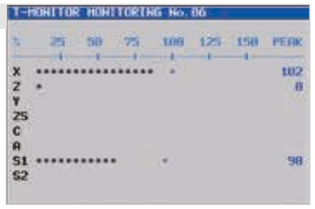


3

1 Control configuration of the new models BNJ42/ BNJ51
2 Part catcher
3 Part conveyor
4 Tool setting
5 Tool monitor

4

5



Options

1

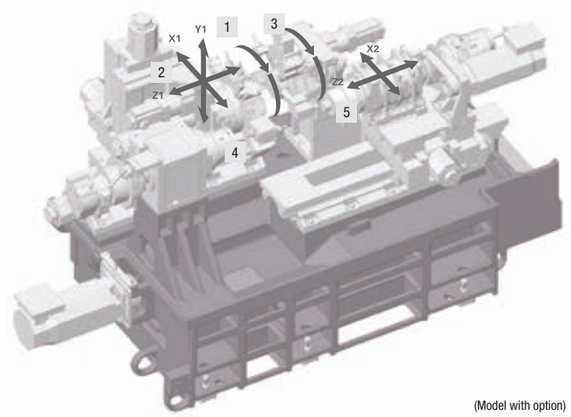
2

3

1 Chip conveyor
2 Bar feeder
3 Drill breakage detector

Layout

1 **Turret No. 1:** Turret type: 12 stations
Number of rotary tools: 12 (25 Nm)
2 **Y axis** (SY type only)
3 **Turret No. 2:** Turret type: 8 stations
Number of rotary tools: 4 (10 Nm)
4 **Spindle No. 1**
Spindle speed: 6000 rpm (BNJ42) / 5,000 rpm (BNJ51)
5 **Spindle No. 2**
Spindle speed: 5,000 rpm



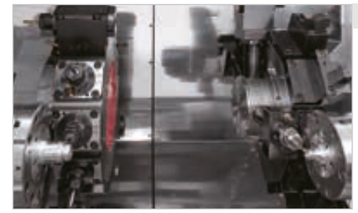
(Model with option)

Working area

1 **Turret No. 1 accommodating higher-torque revolving tools**
Since a single drive mechanism is used to drive the revolving tools, they can be mounted at all stations. With a maximum torque of 25 Nm, they can handle heavy-duty cutting too.

Turret No. 2 accommodating revolving tools and with a bigger tool capacity
The number of tool mounting positions has increased from the six on existing machines to eight. The turret also now accepts double plain holders, greatly increasing the number of tools that can be mounted.

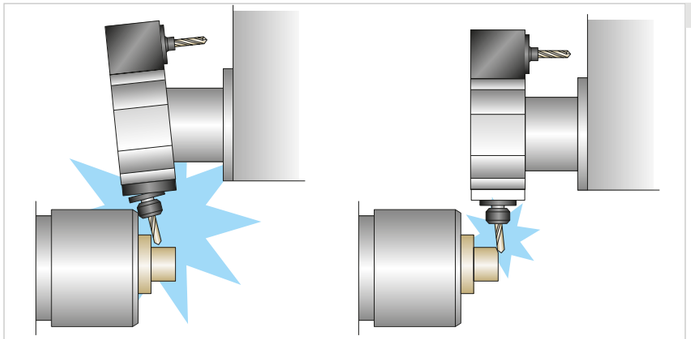
1



Machining time shortened
by simultaneous machining at left and right

2 **Collision buffering (just rapid traverse operation)**
When interference is encountered in rapid traverse operation, the function decelerates and stops axis feed and generates retraction torque to retract the feed axis in the opposite direction to the collision direction, limiting damage to the machine.

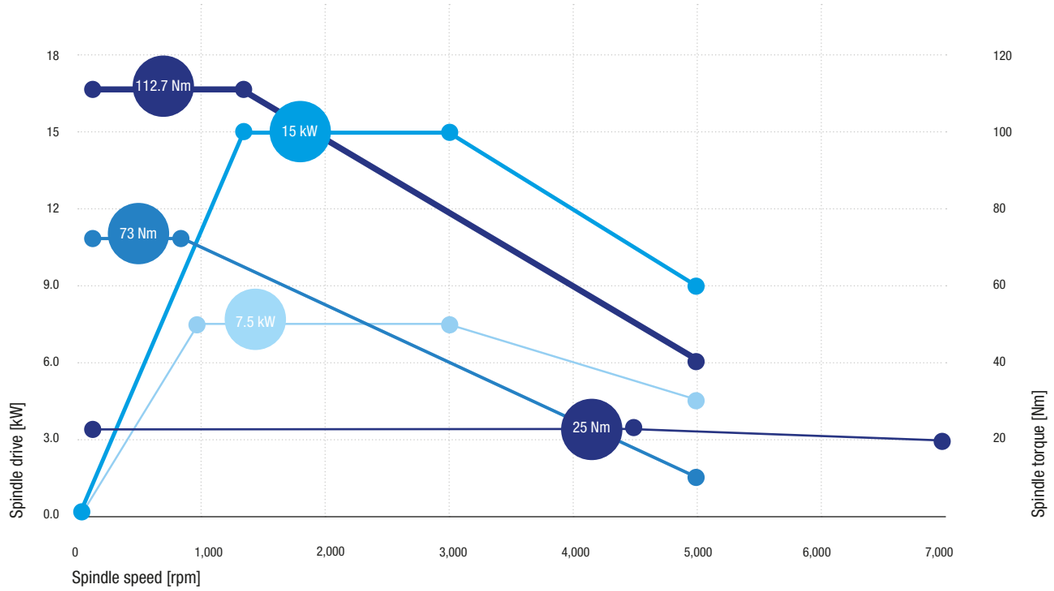
2



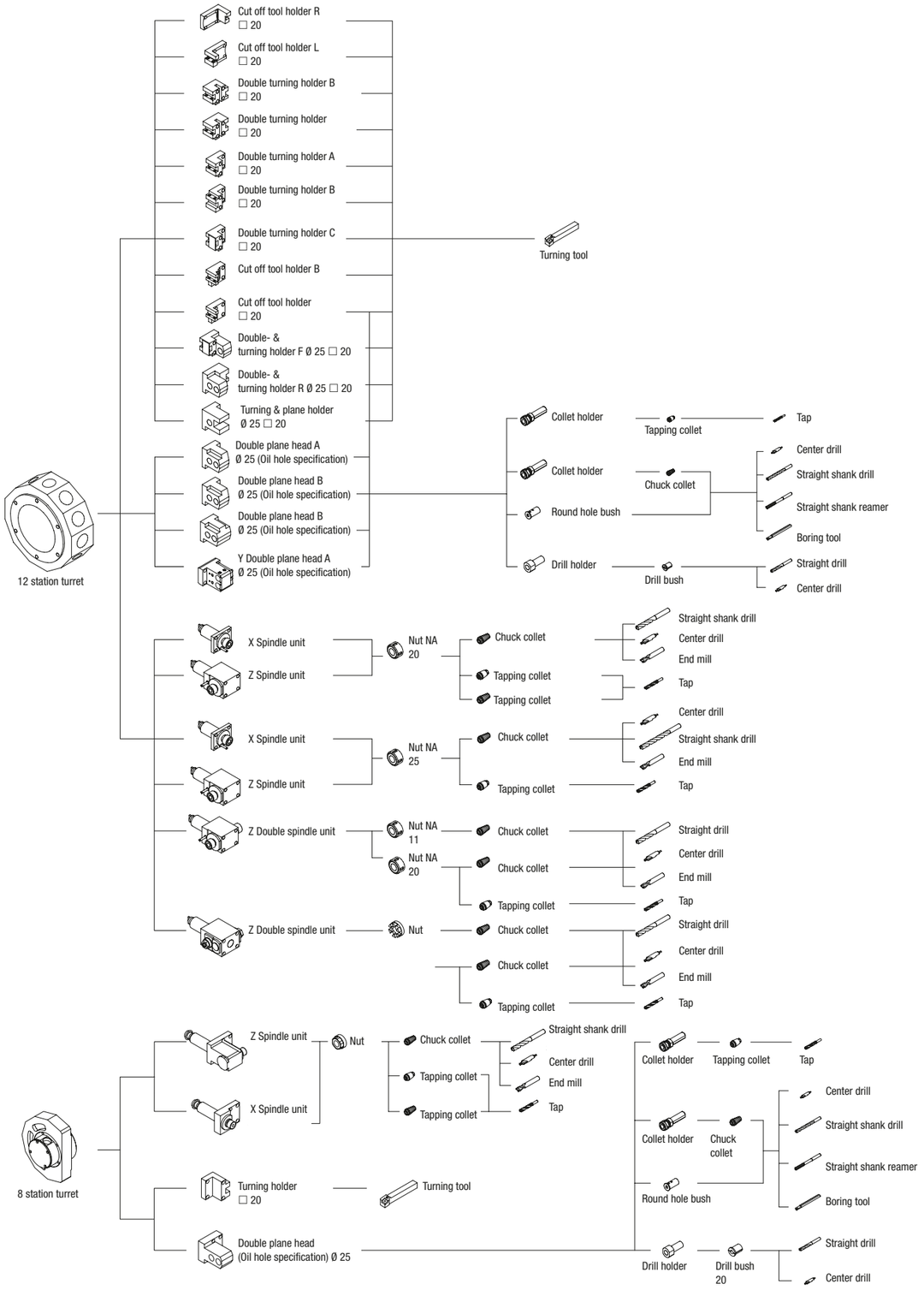
Without collision buffering function

With collision buffering function

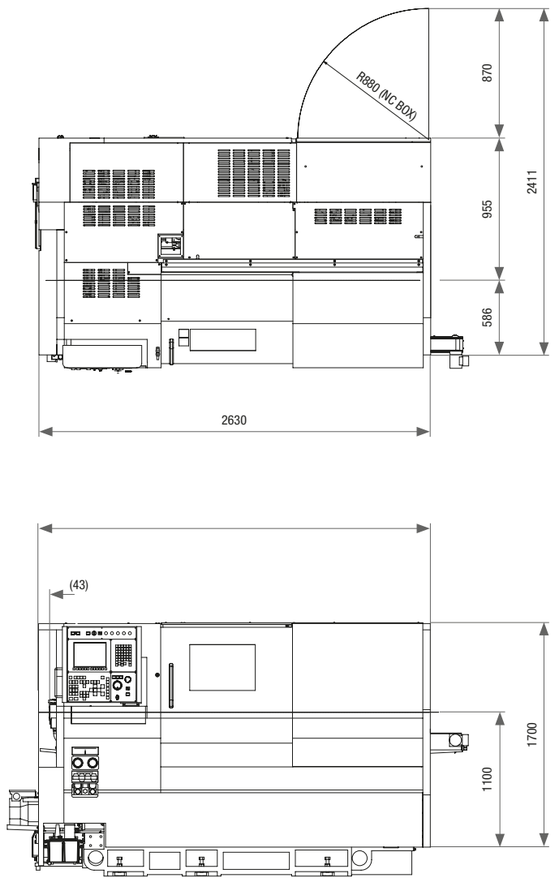
Performance diagram



Tooling System



Floor plan



Machine specification

Item		BNJ-42S6	BNJ-42SY6	BNJ-51SY6
Machining capacity				
Maximum machining length				100 mm
Ø Standard machining	Spindle No. 1	Ø 42 mm	Ø 42 mm	Ø 51 mm
	Spindle No. 2			Ø 42 mm
Chuck size	Spindle No. 1	5 "	5 "	6 "
	Spindle No. 2			5 "
Spindle				
Number of spindles				2
Spindle speed range	Spindle No. 1	6,000 rpm	6,000 rpm	5,000 rpm
	Spindle No. 2			5,000 rpm
Inner diameter of draw tube	Spindle No. 1	Ø 43 mm	Ø 43 mm	Ø 52 mm
	Spindle No. 2			Ø 43 mm
Chuck collet	Spindle No. 1			H-S22, DIN173E
	Spindle No. 2			JPN, H-S16, DIN171E
Power chuck (thru-hole chuck)	Spindle No. 1	5"	5"	6"
	Spindle No. 2			5"
Turret				
Number of turrets				2
Type of Turret	Turret No. 1			12-station turret
	Turret No. 2			8-station turret
Shank size of square turning tool				☐ 20 mm.
Diameter of drill shank				Ø 25 mm
Rotary tools				
Number of rotary tools	Turret No. 1			Max. 12
	Turret No. 2			Max. 4
Type of rotary tools	Turret No. 1			Single clutch
	Turret No. 2			Simultaneous drive in all positions
Tool spindle speed range	Turret No. 1			6,000 rpm
	Turret No. 2			3,000 rpm
Machining capacity Drill	Turret No. 1			Max. Ø 13 mm
	Turret No. 2			Max. Ø 10 mm
Tap	Turret No. 1			Max. M12x1.75 (S45C-D)
	Turret No. 2			Max. M6x1.0 (S45C-D)
Slide stroke				
Turret slide stroke	X1 axis			165 mm
	Z1 axis			246 mm
	Y1 axis	–	80 (±40) mm	80 (±40) mm
Spindle slide stroke	X2 axis			85 mm
	Z2 axis			590 mm
Feed rate				
Rapid feed rate	X1 axis			20 m/min
	Z1 axis			20 m/min
	Y1 axis	–	12 m/min	12 m/min
	X2 axis			20 m/min
	Z2 axis			20 m/min
Motors				
Spindle drive	Spindle No. 1 Cs			11/15 kW (15 min/cont.)
	Spindle No. 2 Cs			5.5/7.5 kW (15 min/cont.)
Rotary tool drive	Turret No. 1			2.2 kW
	Turret No. 2			0.75 kW
Slide				1.2 kW (X1, Z1, Y, X2, Z2)
Hydraulic oil motor				2.2 kW
Lubricating oil motor				0.004 kW
Coolant pump				0.25 kW × 1, 0.18 kW × 1
Turret index motor				0.75 kW
Power supply				
Voltage				AC 200/220 ± 10% 50/60 Hz ± 1%
Power consumption				33 KVA
Air supply				5 bar
Tank capacity				
Hydraulic oil tank capacity				18 l
Lubrication oil tank capacity				4 l
Coolant tank capacity				300 l
Machine dimensions				
Machine height				1,700 mm
Floor space				2,780×1,510 mm (without Chip conveyor)
Machine weight				5,300 kg

Others

Splash guard interlock, Coolant & pneumatic unit, Machine light, Non-fuse breaker, SP2 Work ejector & inner high pressure coolant, Chuck close confirmation, Total & preset counter (Custom menu)

NC specifications

Control unit: FS 0i-TF; Simultaneously controlled axis Max.4: X1, Z1, Y1, Cs1, A1, A2 (Opt.) X2, Z2, Cs2; Min. input increment; 0.001 mm, 0,0001 inch, 0.001 deg; Min. output increment: X-axis: 0,0000 in, X axis: Z0.001 mm, Y axis: 0.001 mm; total program storage capacity 1MB (2,560m tape length); Spindle function: speed programming via 4-digit S word / Constant cutting speed control (G96); Rapid traverse rate: X1, X2, Z1 axis: 20 m/min, Z2 axis: 20 m/min, Y1 axis: 12 m/min; Cutting feed rate: 3.4 digit F word (feed per revolution); Cutting feed rate override; 0 – 150% (in 10% increments); interpolation: G01, G02, G03; Thread cutting: G32, G92; Canned cycle: G90, G92, G94; Work coordinate setting: Automatic setting, 64 work coordinate systems can be set via tool position; Tool selection: by TAABB at the specified position for each turret tool wear compensation, selection by BB; Direct input of tool position by measurement in MDI mode; Input/Output interface: USB, PC card slot; Automatic operation: 1 cycle operation/continuous operation, Single block, Block delete, Machine lock, Dry run, Feed hold, Optional block skip

NC standard functions

10.4"color LCD, No of registered programs: 800, Decimal point input Manual pulse generator, Memory protect, Polar coordinate interpolation Programmable data input (G10), C-axis control (SP1/SP2), Superimposed control A Chamferring/Corner R, Tool nose R compensation, Background editing, Synchronous mixed control, Operating time/ Parts No. display Multiple repetitive canned cycle (G70-G76), Continuous threading Canned cycle for drilling, Tool life management system, Variable-lead cutting Rigid tapping function (spindle & rotary tool), Circular interpolation, Custom macro, Handle retrace function, Polygon cutting, Synchronized function, Dual check safety Reference position setting. NC option Helical interpolation, RS-232C.

BNA 42 GTY

Even faster with concistently high precision.

Hand scraped slideways offering maximum stability and rigidity are used to achieve the renowned “Miyano accuracy“. These slideways excel at extraordinarily high rigidity as well as excellent damping characteristics thus contributing to powerful machining and extended tool life. The main components of the machine, like spindles and tool slides, are installed on the stable cast bed. The machine is designed in a way that mounting faces are not distorted by the effects of heat. Even if the units are subject to thermal expansion, they are all displaced in the same direction (perpendicular to their mounting faces). This minimizes relative deviations between the workpice and cutting tools.

Advantages

Simultaneous machining with 3 tools.

Maximum productivity goes hand in hand with very short cycle times.

Highly flexible tool configuration.

Excellent machining output and efficiency.

Cycle time shortened by superimposition control.

LFV Technology.

LFV technology

4.66 m²

Workpiece example

Name Part of a valve
Material Brass

Standard

1 

2 

Support screens improve operating convenience

1 Program editing
2 HMI (Human Machine Interface) is adapted

Options

1 

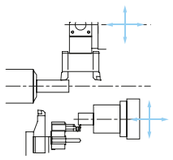
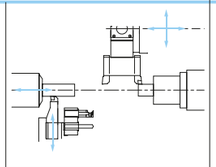
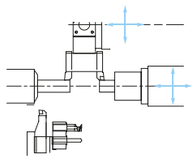
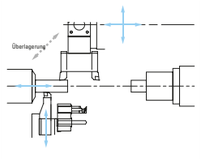
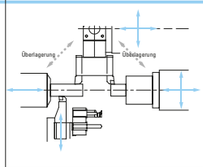
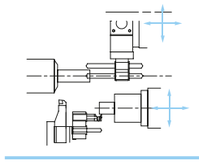
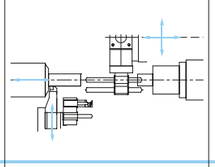
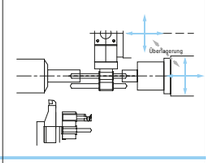
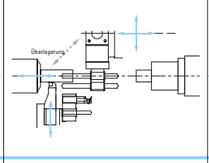
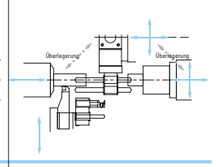
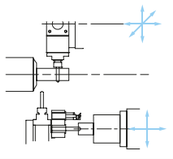
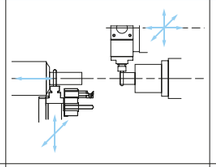
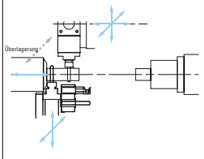
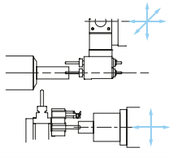
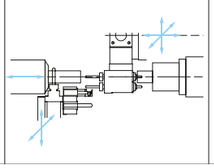
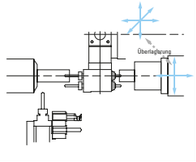
2 

1 Chip conveyor
2 Barfeeder

What is more...
LFV technology as an option

LFV technology

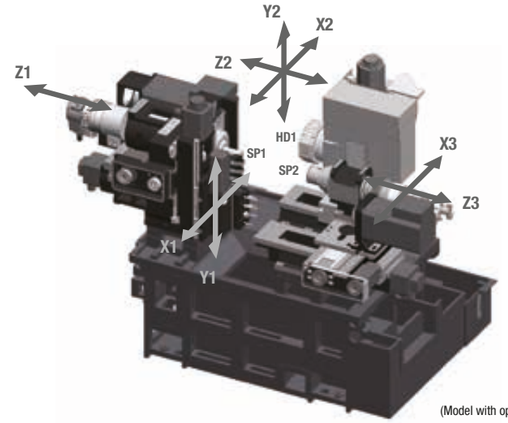
Machining examples

Simultaneous machining with 2 tools			Simultaneous machining with 3 tools	
Independent simultaneous machining of front/ back faces		Superimposition simultaneous machining of front/ back faces	Simultaneous machining of front/ back faces	Superimposition simultaneous machining of front/ front/ back faces	
					Turning
					
					Milling
					

Layout

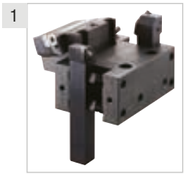
1 The machines is capable of balance cutting and pinch milling in addition to 3-axis-control-group overlapping, giving exceptional machining efficiency.
2 By using 4 position toolholder and tool holders for back machining, up to 45 tools can be mounted.

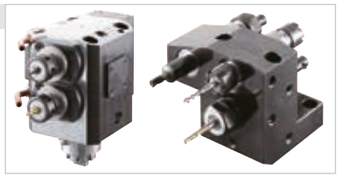
[X1/Z1 axis with LFV-technology available]

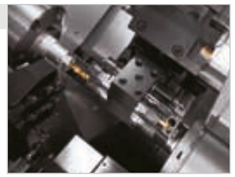


(Model with option)

Working area

1 

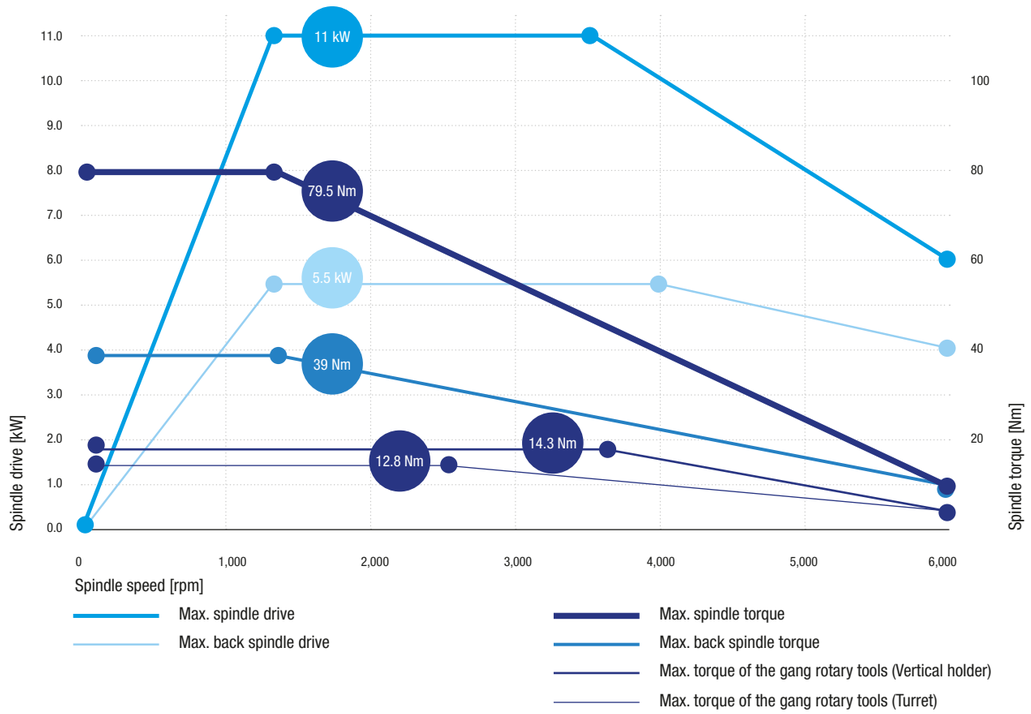
2 

3 

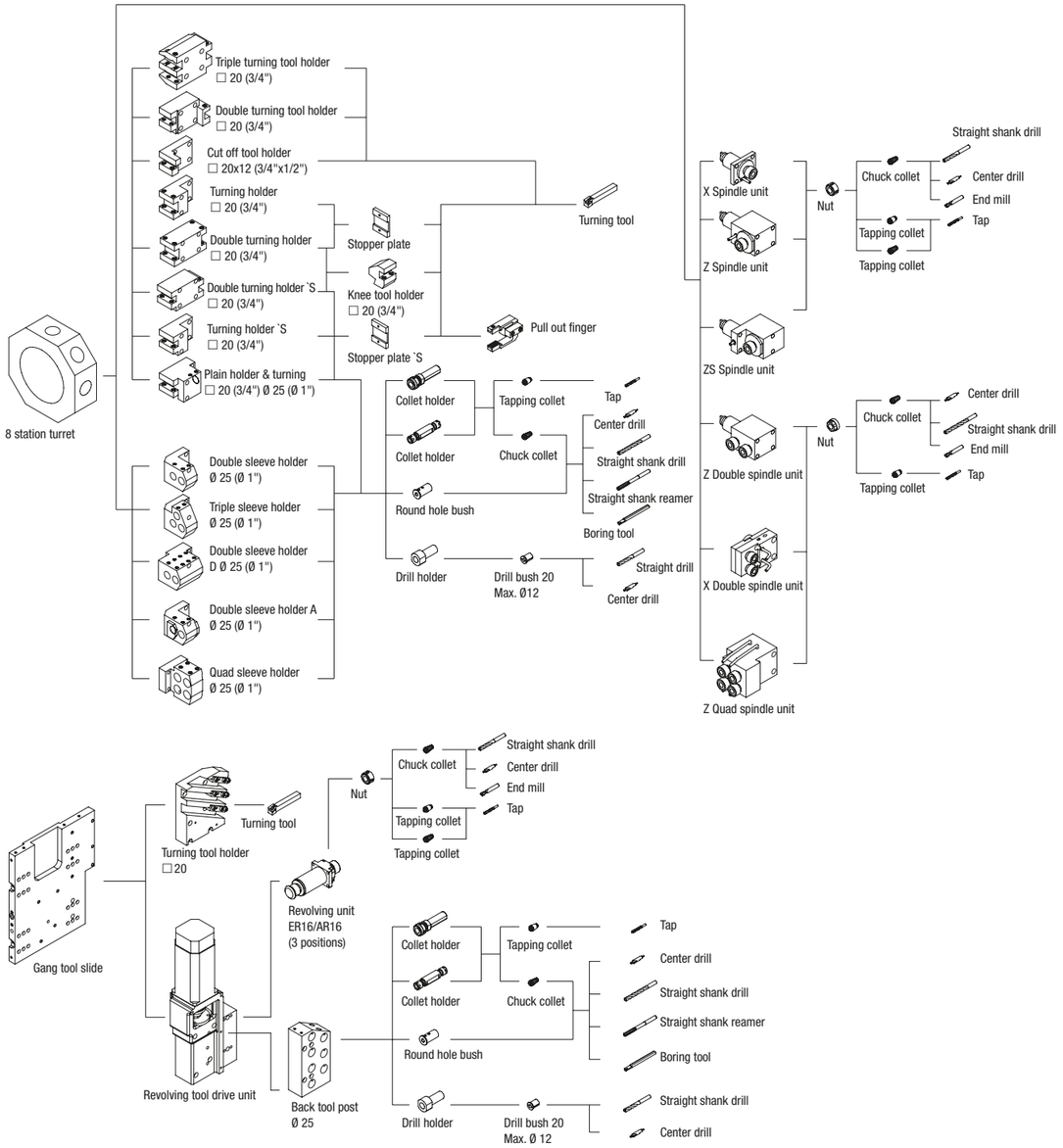
4 

1 The turret has 8 stations, but the half-indexing mechanism makes it possible to mount tools at up to 16 positions. The use of optional multiple tool holders can further increase the number of tool positions..
2 Tool layout
3 Superimposed function control allows simultaneous cutting with two tools at the main spindle (SP1), or with three tools when the sub spindle (SP2) is included, shortening cycle times.
4 Complex machining

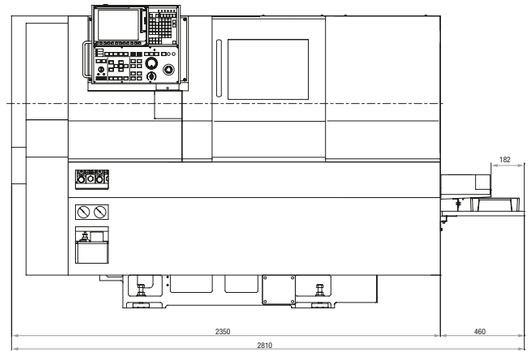
Performance diagram

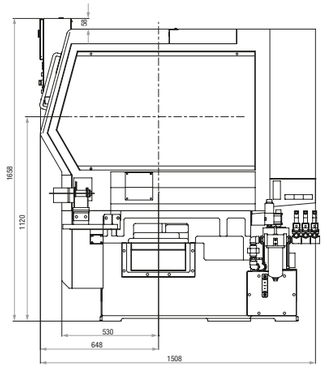


Tooling System



Floor plan





Machine specification

Item		BNA-42GTY
Machining capacity		
Maximum machining diameter for bar chuck	SP1	Ø 42 mm
	SP2	Ø 42 mm
Maximum machining length		100 mm
Spindle		
Number of tooling systems		2
Spindle speed range	SP1	6,000 rpm
	SP2	5,000 rpm
Minimum spindle positioning	SP1	0.001°
	SP2	0.001°
Turret		
Number of turrets		2
Tool for SP1	Turning	3
Drilling		
Rotary tool		3
Tool for SP2	Turning	
Drilling		7
Rotary tool		
Type of Turret		8 st.
Rotary tool		8 (Op.)
Max. number of tools		21 – 43
Shank size of turning tool		Ø 20 mm
Diameter of sleeve holder		Ø 25 mm
Rotary tool chuck		AR16 (Ø 10 mm)
Tool spindle speed range		6,000 rpm
Slide stroke		
Traverse rate/Feed rate	Z1 axis	110 mm 30 m/min
	X1 axis	95 mm 24 m/min
	Y1 axis	260 mm 30 m/min
	Z2 axis	235 mm 20 m/min
	X2 axis	140 mm 20 m/min
	Y2 axis	70 mm 12 m/min
	Z3 axis	360 mm 20 m/min
	X3 axis	190 mm 12 m/min
Motors		
Spindle drive	SP1	7.5/11 kW
	SP2	3.7/5.5 kW
Rotary tool drive unit	Turret	1.0 kW
Gang tool post		1.5 kW
Tank capacity		
Hydraulic tank		7 l
Lubricating tank		2 l
Coolant tank		165 l
Power supply		
Voltage		AC 200/220 V ± 10%
Power consumption		28 KVA
Air supply		7 bar
Machine dimensions		
Machine height		1,680 mm
Floor space (L x W)		2,350 × 1,490 mm
Machine weight		3,740 kg
NC specification		
Control model		MITSUBISHI M730VS
Display device		10.4-inch color LCD
Controllable axes		
Programmable axes		X1, Z1, Y1, C1 axis
		X2, Z2, Y2, C2 axis
		X3, Z3 axis
Auxiliary axes		C3, C4, Tl axis
Axis control groups		3 groups
Input code		ISO
Command input system		Incremental and absolute
Feed command system		Feed per revolution and feed per minute
Cutting feed rate and rapid feed override		Max.100%
Tool offset data		80 pairs
Program storage capacity		320 m

Standard accessories

On machine program check function; Manuel feed function; Manual Data input (MDI); Operation time display; Product counter display; Cycle time check function; Preparation functions; Start position automatic return; Automatic cut-off machining function; Tool set function; Spindle speed simultaneous command for 3 spindles; 3 Sets M code simultaneous command; Control axis swap function; Control axes superimposition function; Arbitrary superimposition function; Function to superimpose 2 pairs of axes; Background editing; Simultaneous program editing for 3 axis control groups; Editing support functions; Calculator function; Code list display; Coordinate calculation function; Spindle C axis function; Constant surface speed control;Cut off confirmation; Tool nose R compensation function; corner chamfering / rounding function; thread cutting canned cycle; Spindle synchronizing control function; Milling interpolation

Option

Helical interpolation; Spindle synchronous tapping function; Synchronous tapping function for rotary tools; Custom macro; Multiple canned cycle for turning; canned cycles for drilling; Inch / metric conversion

BNA 42 DHY

The BNA series is a synonym for evolution and innovation.

The BNA-DHY distinguishes itself by a compact structure and numerous high-performance and accuracy features as well as 2 turrets and one Y-axis. All features for which Miyano has rightly been renowned by our demanding customers. This makes the BNA-DHY an extremely flexible machine.

Advantages

Compact design.

Numerous high-performance and precision features.

Two turrets with Y axis on main turret.

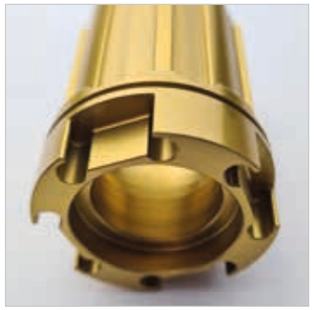
More versatile tooling options.

Cycle time shortened by superimposition control.

3.25 m²

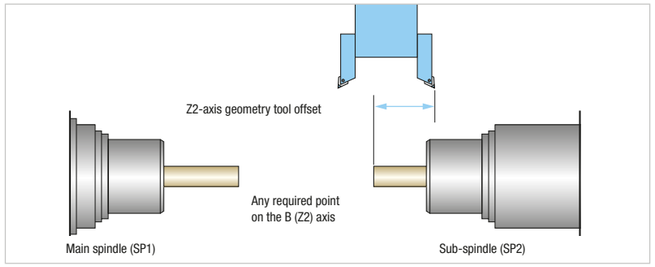
Workpiece example

Name Sample part for the trade fair
Material EcoBrass



Machining examples

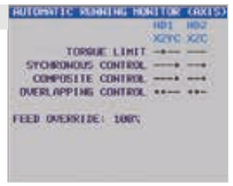
Arbitrary point control by B (Z2) axis

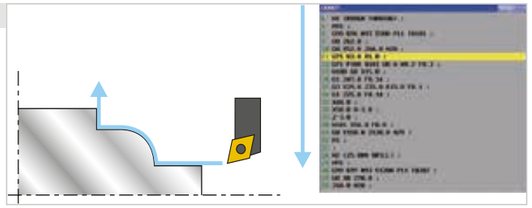


The approach for secondary operation can be made at any required point on the B (Z2) axis, so there is no need to consider the position of the B (Z2) axis when setting the offset for tools that operate on the sub-spindle (SP2). Wasted motion is eliminated, and a smooth transition from primary to secondary operation can be made at turret index, helping to reduce cutting time.

Standard

1 

2 

3 

Machining support screens

1 Automatic operation monitor (spindle / rotary tools)
2 Automatic operation monitor (axis)
3 Program handwheel (DHY only): In automatic operation, the program may be checked using the program handwheel.

Options

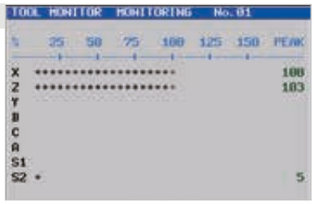
1 

2 

3 

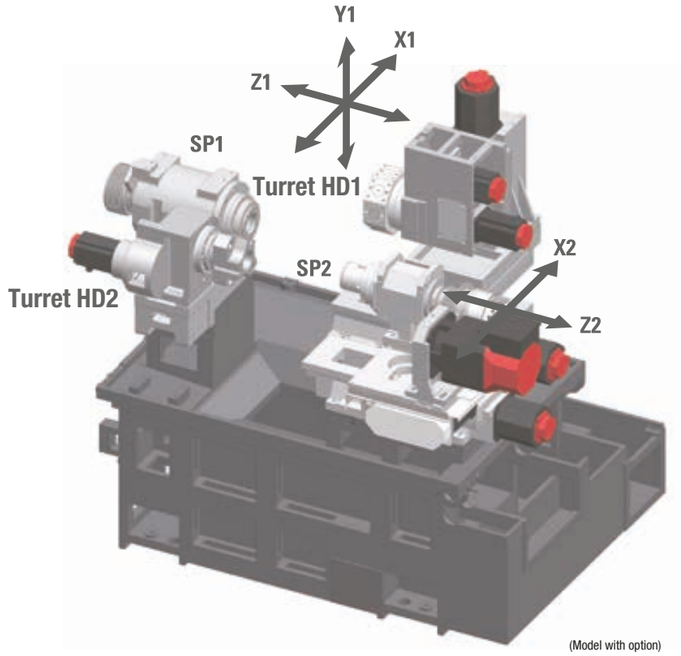
1 Part catcher
2 Part conveyor
3 Chip conveyor
4 Barfeeder
5 Tool monitor

4 

5 

Layout

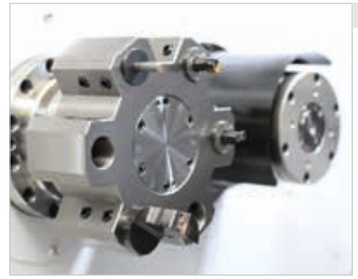
Highly rigid hand scraped slideways permit heavy-duty cutting.
These slideways excel at extraordinarily high rigidity as well as excellent damping characteristics thus contributing to powerful machining and extended tool life.



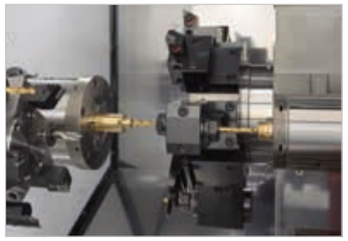
(Model with option)

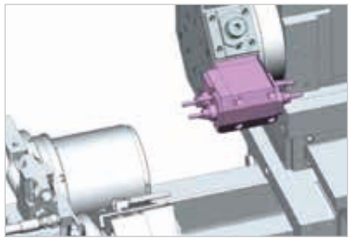
Working area

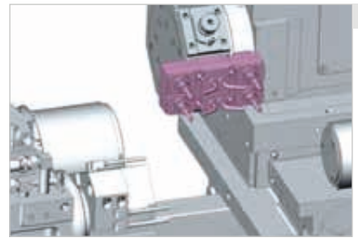
1 Combination from main turret with integrated Y axis (HD1) and compact additional turret with 6 stations (HD2)
2 Power chuck on back spindle
3 Optimized simultaneous machining at turret

1 

2 

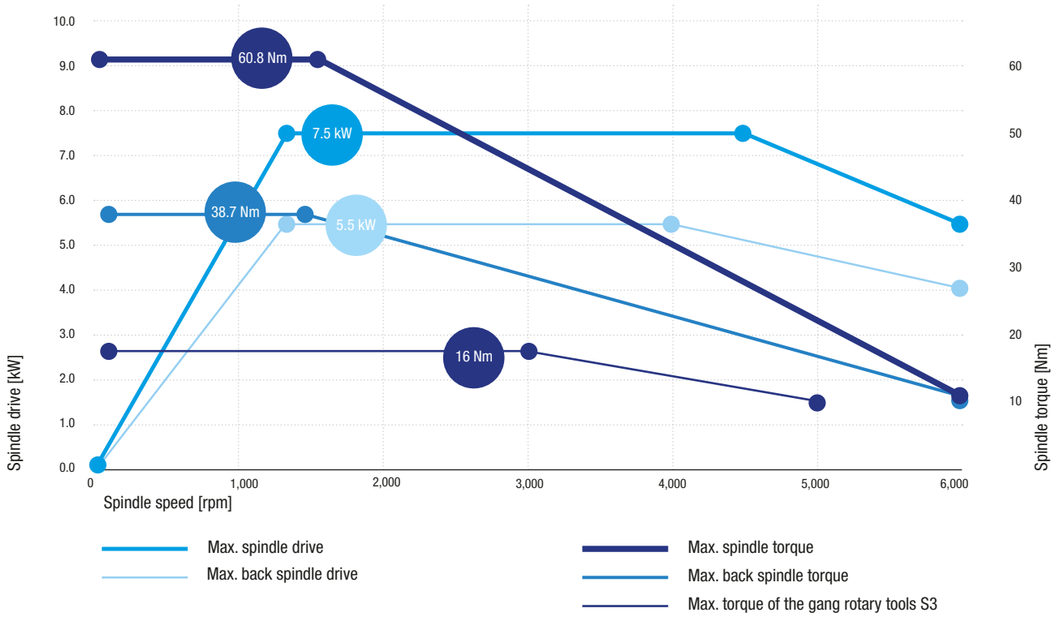




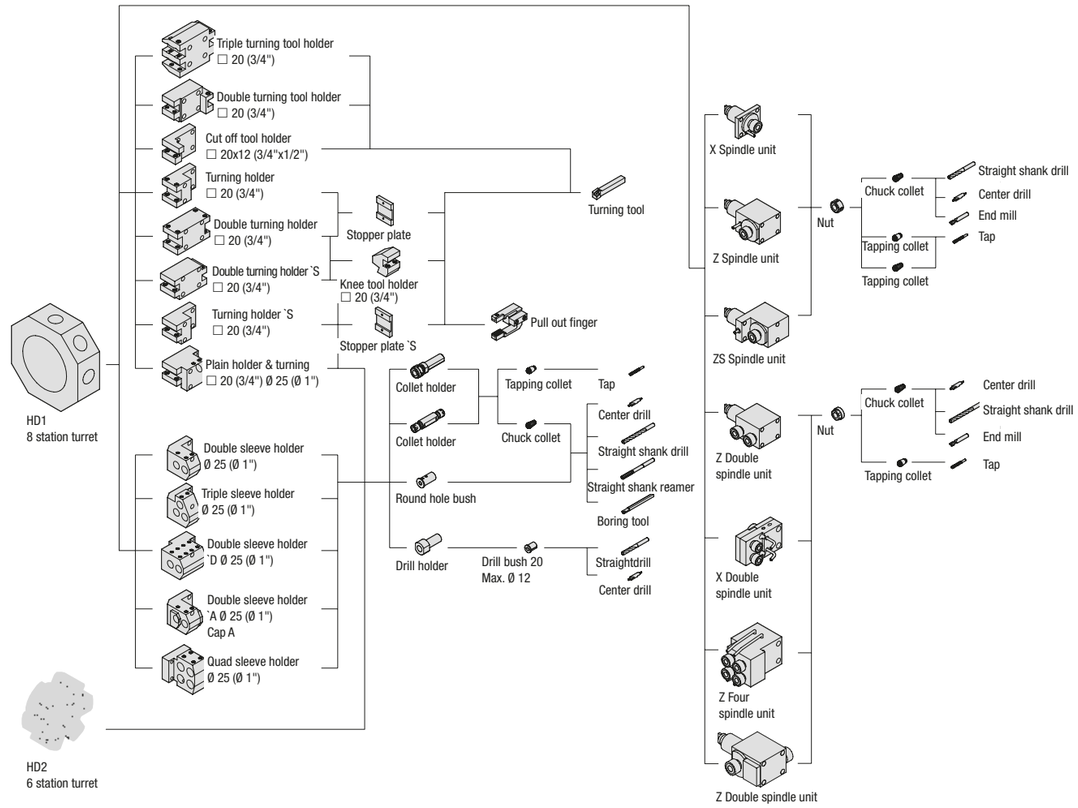
3 

Multiple tool stations for rotary tools

Performance diagram

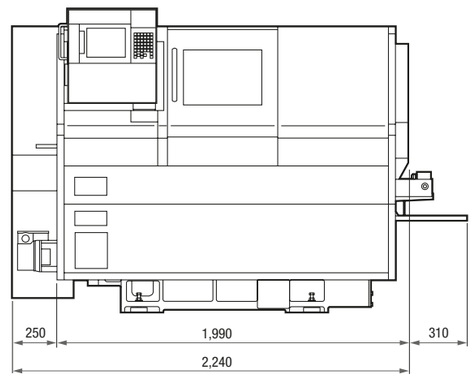


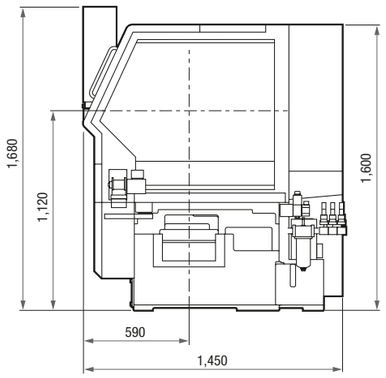
Tooling System



Floor plan

DHY





Machine specification

Machine dimensions	
Machine height	1,680 mm
Floor plan	L 2,240 x W 1,450 mm
Weight	3,740 kg

Machine equipment (standard)

Function for program check inside the machine, Manual feed; Manual data input (MDI); Operating time display, Product counter display; Cycle time check function; Preparatory functions; Automatic Starting point return; Automatic cut-off machining; Tool setting function; Spindle speed command for the simultaneous rotation of 3 spindles; 3 sets of M codes for Simultaneous function execution; Control axis exchange function; Control axis superimposition function; Arbitrary superimposition function; Function to superimpose 2 pairs of axes; Background editing; Simultaneous program editing for two axis control groups; Editing support functions; Calculator function; Code list display; Coordinate calculation function; Spindle C axis function; Constant surface speed control;Cut off confirmation; Tool nose R compensation function; Corner chamfering / rounding function; Thread cutting canned cycle; Spindle synchronizing control function; Milling interpolation

Machine equipment (optional)

Helical interpolation; Spindle synchronous tapping function; Synchronous tapping function for rotary tools; Custom macro; Multiple canned cycle for turning; Multiple canned cycles for drilling; Inch / metric conversion

Machine specification

Item	BNA-42DHY3
Max. machining diameter (main spindle)	Ø 42 mm
Max. machining diameter (back spindle)	Ø 42 mm
Maximum machining length	100 mm
Axis strokes	
X1 axis	140 mm
Z1 axis	235 mm
Y1 axis	70 (+/-35 mm)
X2 axis	140 mm
Z2 axis	360 mm
Spindle	
Number of spindles	2
Speed – spindle 1	60–6,000 rpm
Speed – spindle 2	50–5,000 rpm
Collet type – spindle 1 DIN collet	DIN collet Hainbuch
Collet type – spindle 2	DIN collet Hainbuch
C axis – spindle 1	0.001 °
Power chuck type	
Spindle 1	5" through-hole chuck
Spindle 2	4" through-hole chuck
C axis – spindle 2	0.001 °
Turret	
Number	2
Number of stations – turret 1	8
Number of stations – turret 2	6
Turning tool cross section	☐ 20 mm
Sleeve diameter	Ø 25 mm
Rotary tools	
Number of rotary tools	max. 8
Rotary tool speed	50–5,000 rpm
Max. drilling diameter	Ø 10 mm
Max. front tapping diameter	M8 x 1.25
Rapid feed rate	
X1 axis	20 m/min
X2 axis	20 m/min
Y1 axis	12 m/min
X2 axis	12 m/min
Z2 axis	20 m/min
Motor Output	
Main spindle	5.5/7.5 kW
Back spindle	3.7/5.5 kW
Rotary tools	1.0/2.8 kW
Power supply	
Capacity	30 kVA
Air supply	5 bar
Volume of tank	
Coolant tank	175 l
Hydraulik tank	7 l
Lubricating tank	2 l
NC Specification	
Control type	Fanuc 0i-TF
Screen	8.4 inch color liquid crystal display (LCD)
Controllable axes	X1, Z1 (BNA-C), -X1, Z1, Z2 (BNA-S), X1, Z1, Y, X2, Z2 (BNA-DHY)
Auxiliary axes	C3, TI
Input	ISO
Tool compensation	80 pairs
Memory capacity	1 Mbyte (2560 m)
Interpolation	G01, G02, G03
Thread cutting cycle	G32, G92
Fixed cycles	G90, G92, G94
Input/output interface	PC card
NC standard functions	
Corner chamfering / rounding function, tool nose R compensation, Constant cutting speed control (G70-G76), Synchronous tapping, Drilling cycle (G80-G86), Tool life monitoring,	

BNA 42 S

Space-saving design with improved functions and maximum precision. Sets the new standard in bar machining.

The BNA series combines high-tech functions and maximum precision in an extremely compact space-saving machine. The series includes the model BNA-S equipped with one back spindle (SP2) for back machining.

Advantages

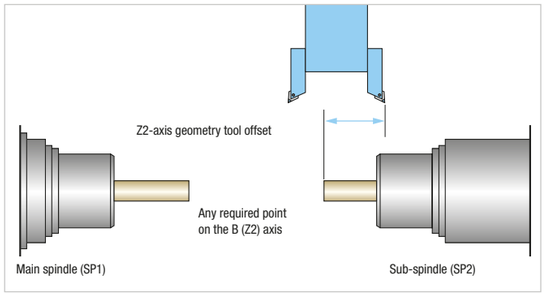
Equipped with a back spindle for tapping the workpiece and for backside machining.

Due to several tool holders, numerous tools can be used.

2.77 m²

Machining examples

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 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
•
```

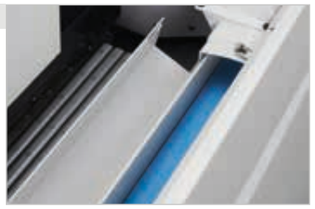
Synchronous Execution from M291

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.

Standard

1 

2 

1 Part catcher
2 Part conveyor belt

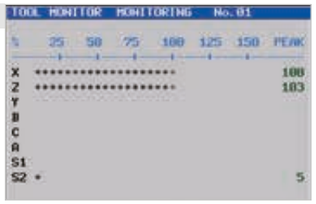
Options

1 Part conveyor
2 Chip conveyor
3 Barfeeder
4 Tool monitor

1 

2 

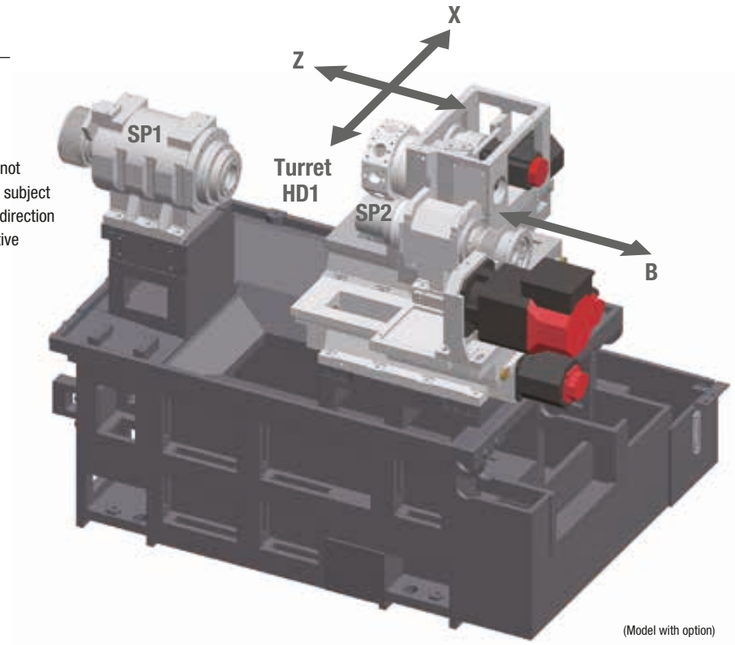
3 

4 

Layout

Stable, accurate and strong

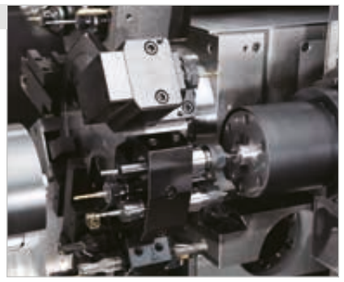
The machine bed has a platform structure with traditional square, hand-scraped slidways for assured accuracy and long tool life. The unit mounting faces are not distorted by the effects of heat, and even if the units are subject to thermal expansion they are all displaced in the same direction (perpendicular to their mounting faces), minimizing relative deviations between the workpiece and cutting tools.

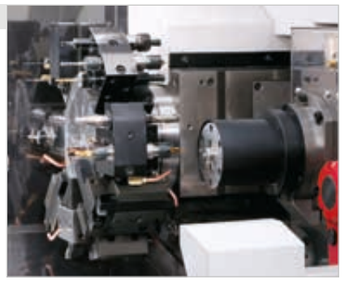


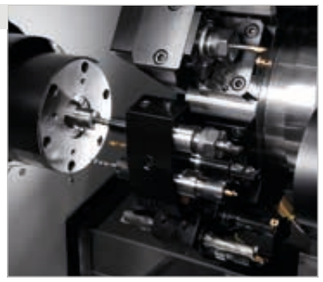
(Model with option)

Working area

1 Back spindle for complete machining
2 The turret may be expanded to accommodate 16 stations.
3 The BNA-S disposes of two spindles and one turret
4 Easy to use tooling system

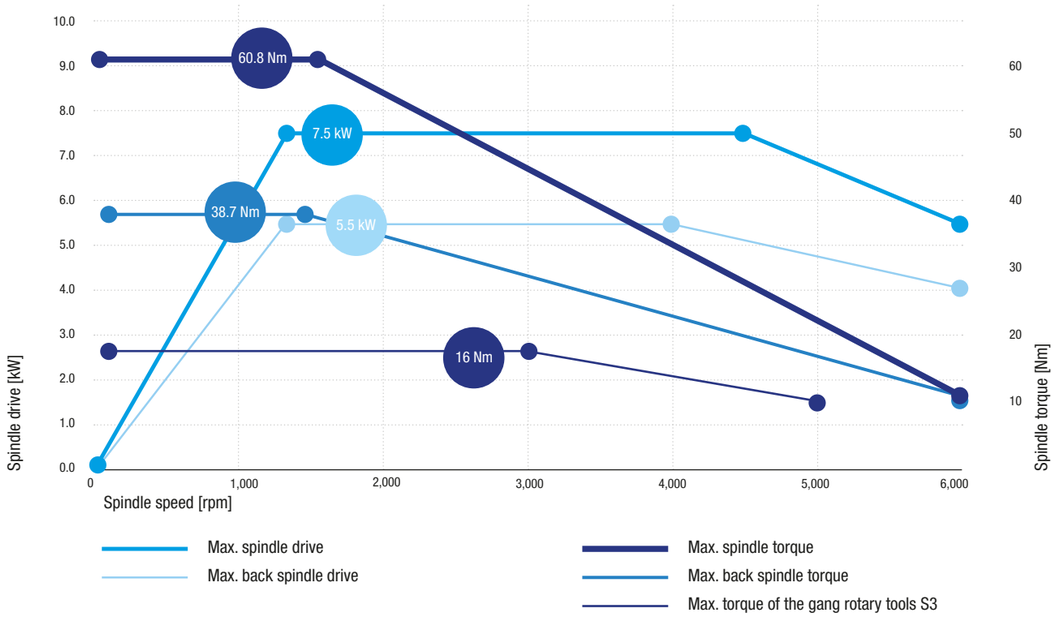
1 

2 

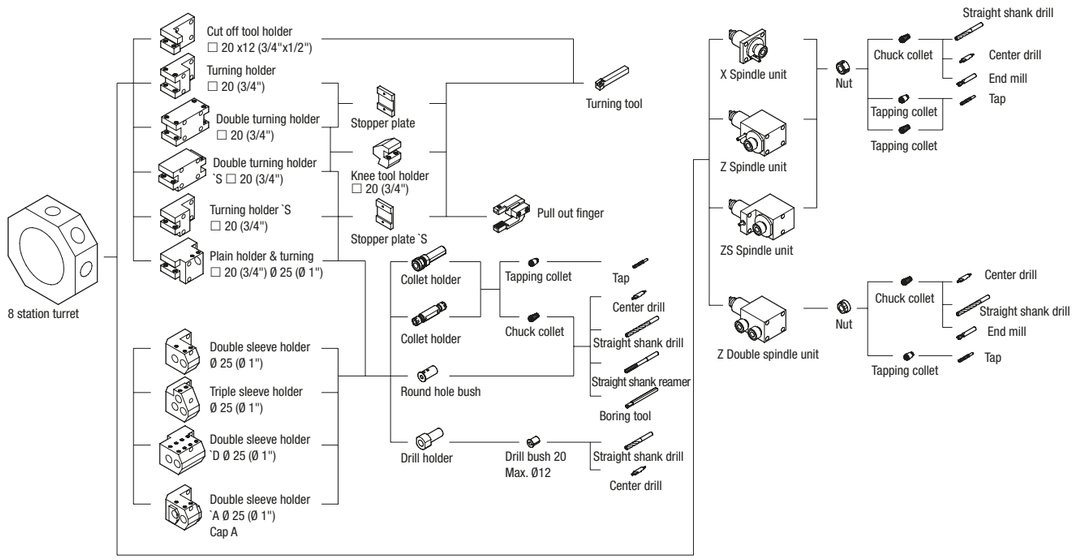
3 

4 

Performance diagram

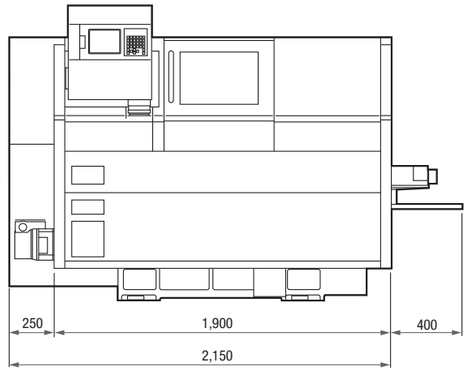


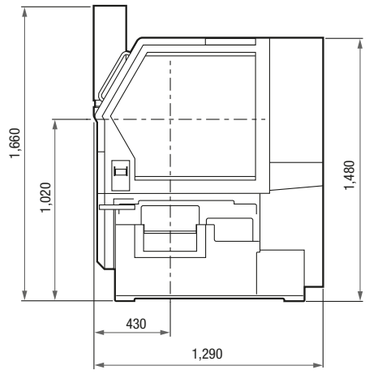
Tooling System



Floor plan

S





Machine specification

Item	BNA-42S
Max. machining diameter (main spindle)	Ø 42 mm
Max. machining diameter (back spindle)	Ø 42 mm
Maximum machining length	100 mm
Axis strokes	
X1 axis	135 mm
Z1 axis	235 mm
B axis	310 mm
Spindle	
Number of spindles	2
Inner diameter of draw tube – spindle 1	Ø 43 mm
Inner diameter of draw tube – spindle 2	Ø 30 mm
Speed – spindle 1	6,000 rpm
Speed – spindle 2	5,000 rpm
Collet type – spindle 1	DIN collet
Collet type – spindle 2	DIN collet
C axis – spindle 1	0.001 °
C axis – spindle 2	0.001 °
Turret	
Number	1
Number of stations – turret 1	8
Turning tool cross section	☐ 20 mm
Sleeve diameter	Ø 25 mm
Rotary tools	
Number of rotary tools	max. 8
Rotary tool speed	5,000 rpm
Max. drilling diameter	Ø 10 mm
Max. front tapping diameter	M6 x 1
Rapid feed rate	
X1 axis	20 m/min
X2 axis	20 m/min
B axis	20 m/min
Motor Output	
Main spindle	5.5/7.5 kW
Back spindle	3.7/5.5 kW
Rotary tools	1.0/2.8 kW
Volume of tank	
Coolant tank	165 l
NC Specification	
Control type	Fanuc 0i-TD
Screen	8.4 inch color liquid crystal display (LCD)
Controllable axes	X1, Z1 (BNA-C), -X1, Z1, Z2 (BNA-S), X1, Z1, Y, X2, Z2 (BNA-DHY)
Auxiliary axes	C3, TI
Input	ISO
Tool compensation	80 pairs
Memory capacity	1 Mbyte (2560 m)
Interpolation	G01, G02, G03
Thread cutting cycle	G32, G92
Fixed cycles	G90, G92, G94
Input/output interface	PC card
NC standard functions	
Corner chamfering / rounding function, tool nose R compensation, Constant cutting speed control (G70-G76), Synchronous tapping, Drilling cycle (G80-G86), Tool life monitoring,	
Machine dimensions	
Machine height	1,660 mm
Floor plan	L 2,150 x W 1,290 mm
Weight	2,800 kg
Machine equipment (standard)	
4 pces. Standard spindle liner tube; Automatic central lubrication; Cooling lubricant system; Compressed air unit; Hydraulic equipment; Hydraulic clamping cylinder; Main spindle collet system DIN173E; Back spindle collet system DIN171E, Limit switch clamping system open/closed at main spindle & back spindle; Machining area door with safety lock; Total parts counter & preset parts counter; Parts catcher and part conveyor belt; Signal lamp (tricolor); Cut-off control (electrical); Automatic shut-off in case of alarm; Pneumatic parts ejector (at back spindle), Interface for bar loading magazine	
Special machine equipment (options)	
Cable 4G25 for transformer 35 KVA to machine; Compressed air gun and compressed air supply; 5" 3-jaw chuck for Ø 51 main spindle; Cartridge for back spindle SKF; DIN173E holder back spindle, Oil pan; Chip chute; Long part option for Miyano BNA-42S2	

BNA 42 MSY

Sets the new standard in bar machining.

We proudly introduce: Model BNA-42MSY – CNC turning centre with 2 spindles and 1 turret. The turret features a Y axis and half-indexing, expanding the machining possibilities. The machine is equipped with the largest spindle motor in the series, enabling powerful cutting. The X2 axis at the back spindle allows for the simultaneous machining at the front and back of the workpiece. This model combines the advantages of a double turret machine and the lower purchase price of a machine with just one turret. The unique control improves productivity and cycle times.

Advantages

Maximum rigidity and stability for powerful cutting.

Cycle time shortened by superimposition control.

Substantial reduction in non-cutting time.

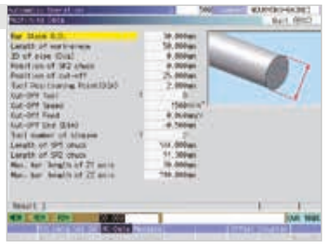
Convenient operation.

3.46 m²

Workpiece example

Name Thread attachment
Material Steel

Standard

1 

2 

3 

1 Machining data: All you have to do is enter machining length, chucking length etc. – the escape and approach positions are then automatically calculated in an instant. This effectively helps to avoid interference and shorten setup times.

2 HMI (Human Machine Interface) is adapted: Graphics displayed for each item and screens that display all necessary information in one place greatly improve operating convenience.

3 The BNA series is praised for its compactness and user-friendliness. The machine also offers a generous opening into the machining area from the top where the door extends beyond the spindle. In this way, coolant may not drop on the hands of the operator when the operation is temporarily interrupted to remove the finished parts close to the spindle.

Options

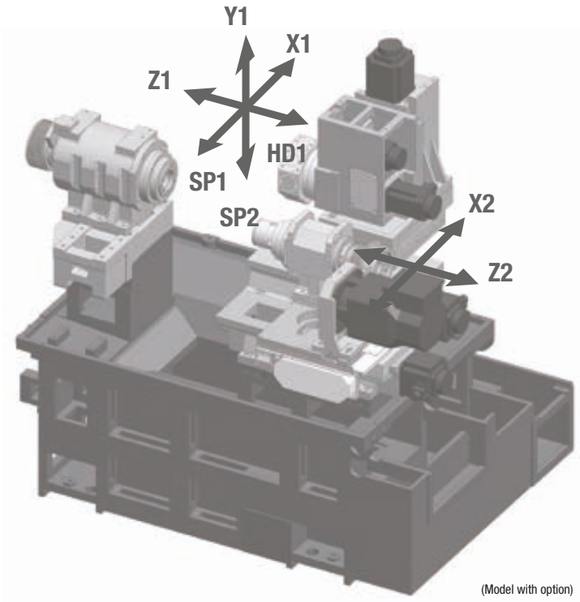
1 

2 

1 Chip conveyor
2 Barfeeder

Layout

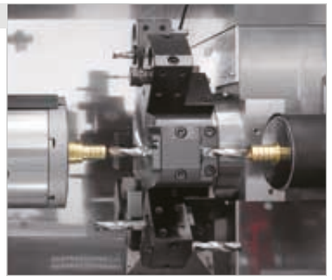
High-rigidity scraped slideways are used on all axes. These slideways with face contacts have exceptional rigidity and damping characteristics, achieve powerful cutting, and help to prolong cutting tool life.

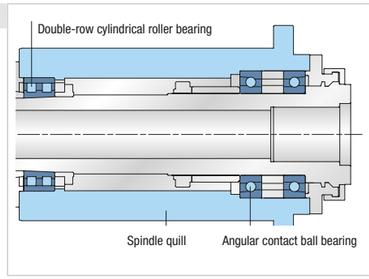


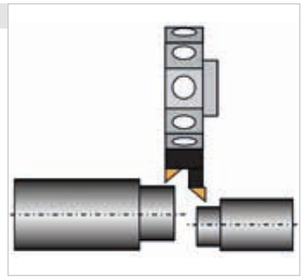
(Model with option)

Working area

1 Superimposition control: A turret with X, Y and Z axis (HD1) and a back spindle with X and Z acis (SP2) open up the possibility of machining by superimposition control, where the back spindle synchronizes with the turret to machine a workpiece in the main spindle (SP1), a very effective way to shorten cycle time.
2 Cross section of spindle
3 Simultaneous machining with superimposition control: With its double spindle/one turret design, the BNA 42MSY2 is able to machine simultaneously by superimposition control which had not been possible with models BNS34 / 42S so far. This innovative feature significantly reduces cycle times. This innovation drastically shortens cycle times. The turret incorporates X, Y and Z axis and an X and Z axis at the back spindle (SP2) – a constellation for the efficient machining of complex shapes.
4 Easy to use tooling system

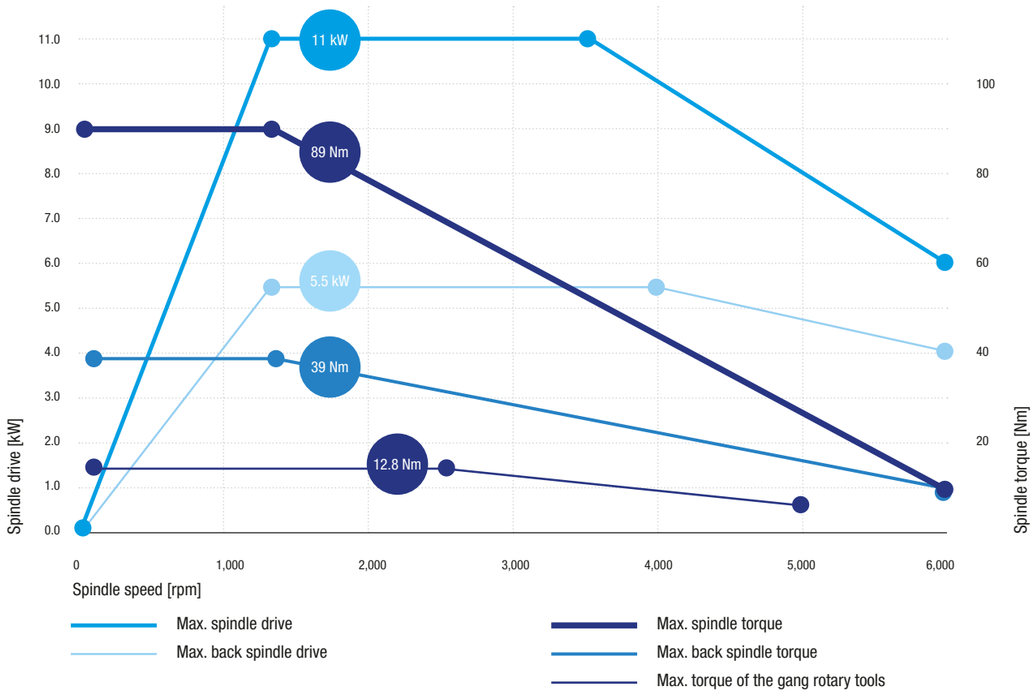
1 

2 

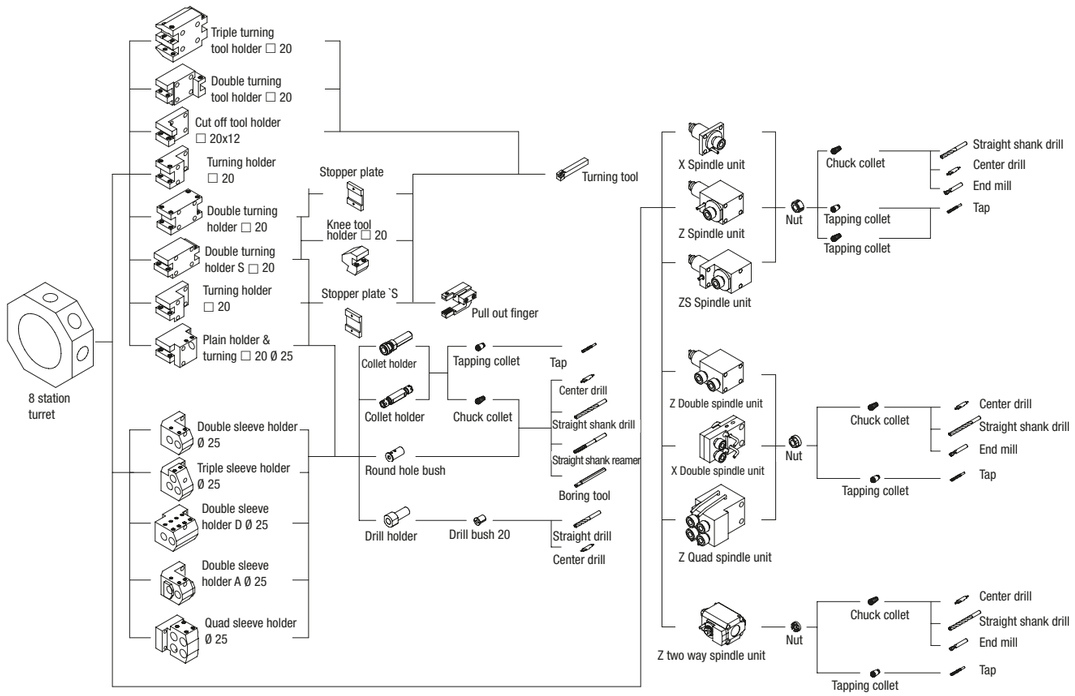
3 

4 

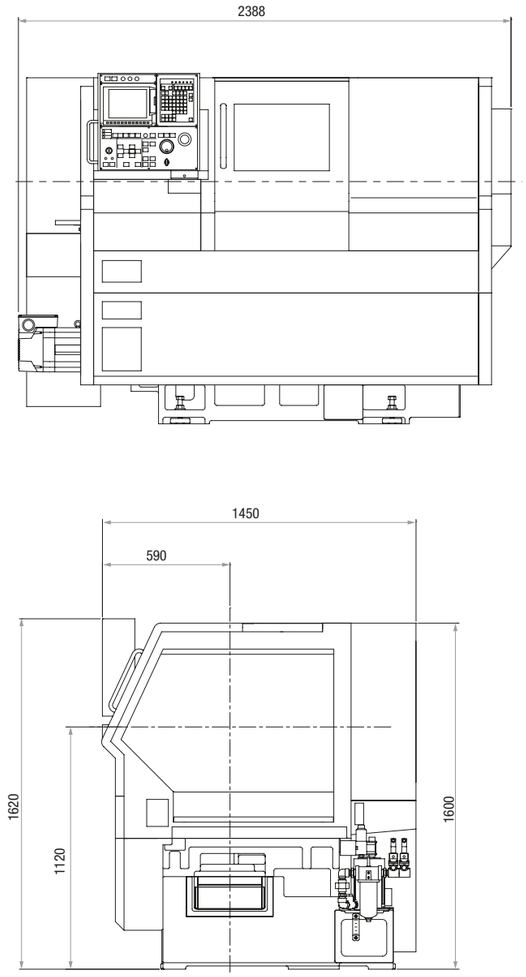
Performance diagram



Tooling System



Floor plan



Machine specification

Item		BNA-42MSY2
Machining capacity		
Maximum machining length		100 mm
Max. machining diameter	SP1	Ø 42 mm
	SP2	Ø 42 mm
Axis strokes		
X1 axis		140 mm
Z1 axis		235 mm
Y1 axis		70 (+/-35 mm)
X2 axis		129 mm
Z2 axis		360 mm
Spindle		
Number of spindles		2
Spindle through-hole diameter		Ø 43 mm
Speed	SP1	6,000 rpm
	SP2	5,000 rpm
Type of collet chuck	SP1	DIN collet
	SP2	DIN collet
C axis	SP1	0.001 °
	SP2	0.001 °
Turret		
Number		1
Number of stations		8
Turning tool cross section		☐ 20 mm
Sleeve diameter		Ø 25 mm
Rotary tools		
Number of rotary tools		max. 8
Rotary tool speed		6,000 rpm
Max. drilling diameter		Ø 10 mm
Max. front tapping diameter		M8 x 1.25
Rapid feed rate		
X1 axis		20 m/min
Z1 axis		20 m/min
Y1 axis		12 m/min
X2 axis		12 m/min
Z2 axis		20 m/min
Motor Output		
Main spindle		7.5/11 kW
Back spindle		3.7/5.5 kW
Rotary tools		1.0 kW
Volume of tank		
Coolant tank		165 l
NC Specification		
Control type		MITSUBISHI M730VS
Screen		8.4 inch color liquid crystal display (LCD)
Controllable axes		X1, Z1, Y1, C1, X2, Z2, C2 axis
Auxiliary axes		C3, TI axis
Input		ISO
Tool compensation		80 pairs
Memory capacity		160 m
Standard function		
Program check function using program wheel; MDI function; Cycle time display; Part counter; Automatic start position return; Automatic cut-off machining function; Tool set function; Superimposed function; special macros; Background program input; 2-line programming; Programming support functions; calculator function; M and G code display; Constant surface speed control; cut-off confirmation; Corner chamfering / rounding function; Tool nose R compensation; Thread chasing cycle; Synchronous thread cutting; Spindle synchronizing control function; custom macro; multiple cycle repetition; drilling cycle; milling interpolation		
Machine dimensions		
Machine height		1,620 mm
Floor plan		L 2,388 x W 1,450 mm
Weight		3,000 kg
Special machine equipment (options)		
Cable 4G25 for transformer 35 KVA to machine; Compressed air gun and compressed air supply; 5" 3-jaw chuck for main spindle; DIN173E holder back spindle; Cartridge for back spindle BNA MSY SKF; Oil pan; Chip chute		

BNA
42
SY/CY

Two BNA Series models with improved basic functions.

Type SY with improved performance as a bar-material processing machine.

Type CY may also be used as a chucker machine.

Advantages

Program storage capacity addition.

High-rigidity spindle.

SY: Front and back machining.

SY: Equipped with a 12 station turret and one Y axis.

SY: Short-term increase in rated power of the main spindle.

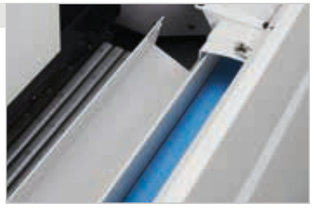
3.37 m²

3.27 m²

Standard

1

2



1 Part catcher
2 Part conveyor belt

Options

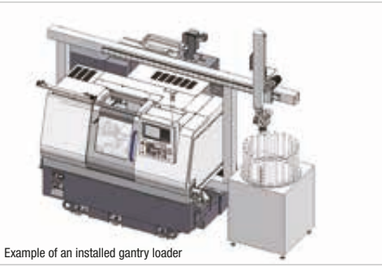
1

2

3

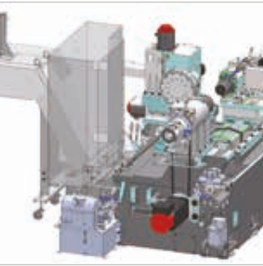
4

5



Example of an installed gantry loader

6



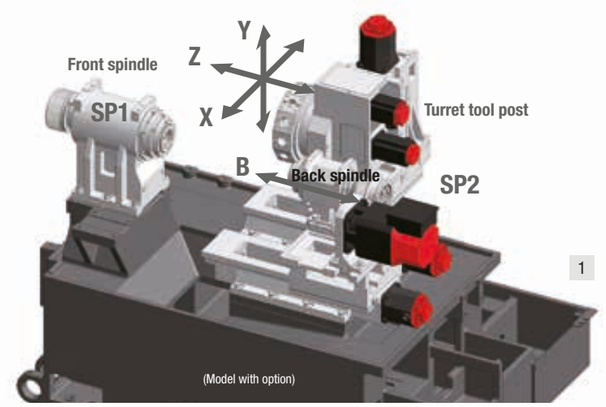
1 The chip conveyor allows for rear discharge in addition to the current side discharge. This increases the options for the installation method used.
2 Automatic shutter (SY)
3 Gantry loader
4 Barfeeder
5 **CY – Gantry loader**: Foot mounts for the gantry loader are provided as standard. An automatic shutter that secures space for the loader hand to enter the machine (above the spindle) has been adopted. Installation of gantry loaders manufactured by third parties is now supported
6 **SY – Foot mounts for the gantry loader**

Further (SY only):
· Spindle synchronizing control function
· Rigid tapping function
· Superimposition control

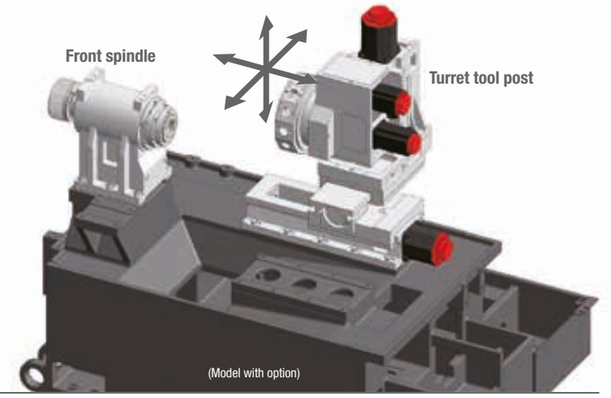
Layout

1 **SY:** The newly designed base increases the weight of the unit while also improving rigidity. Rectangular lapped slides have been adapted for all slides. The sliding contact between surfaces provides excellent rigidity and damping performance, as well as strong cutting performance, while also helping to extend the service life of cutting tools. Additionally, the Z-stroke travel distance has been increased to 50 mm to expand the range of machining available.

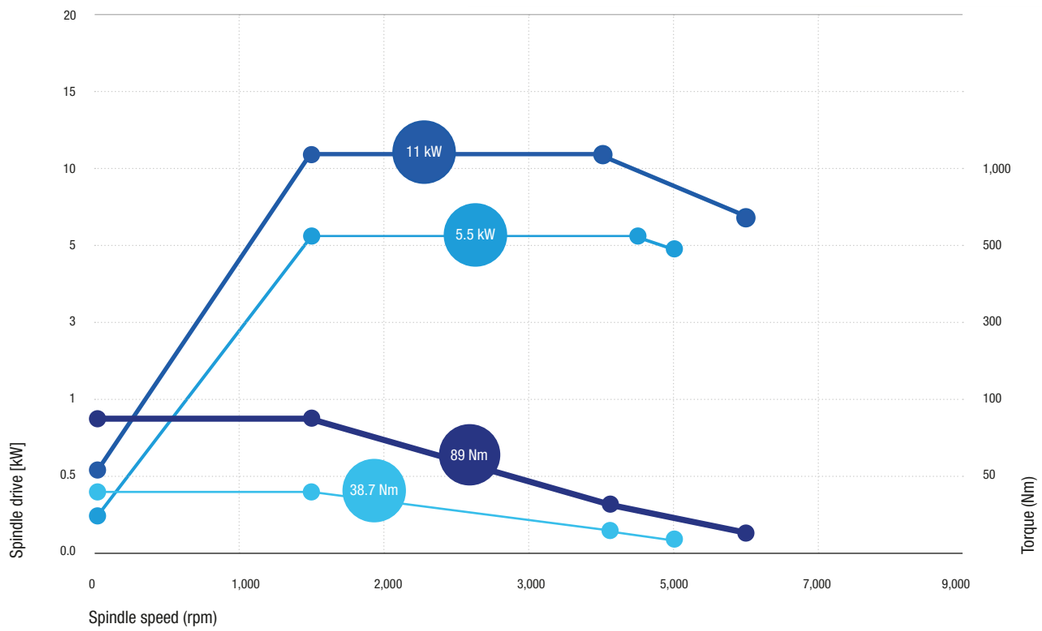
2 **CY:** The newly designed base increases the weight of the unit while also improving rigidity. Combining with a tailstock (option). enables use of long workpieces. Mounting eyes for the legs of the gantry loader are provided on the left and right side faces of the bed. You can select whether the chip conveyor discharges to the right or the rear.



1



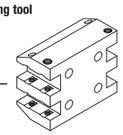
Performance diagram



Tooling System

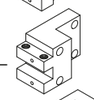
HD1
12 station turret

Turning tool

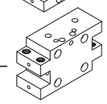


Fourth turning tool holder
☐ 20

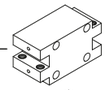
Cut off tool holder
☐ 20x12



Turning holder R
☐ 20

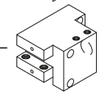


SUBSTANDARD
Double turning holder R
☐ 20



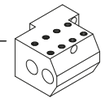
Double turning holder S
☐ 20

Turning holder S
☐ 20



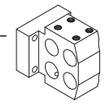
Plain holder & turning
☐ 20 Ø 25

Turning & plain holder
☐ 20 Ø 25



Double plain head D
Ø 25

Double plain head A
Ø 25
CAP A



SUBSTANDARD
Fourth plain head
Ø 25

Stopper plate `S

Pull out finger

Turning tool

Collet holder

Collet holder

Round hole bush

Drill holder

Drill bush 20
Max. Ø 12

Tapping collet

Chuck collet

Tap

Center drill

Straight shank drill

Straight shank reamer

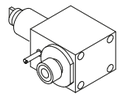
Boring tool

Straight drill

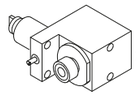
Center drill

Revolving tool

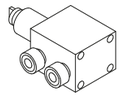
X Spindle unit



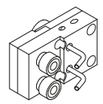
Z Spindle unit



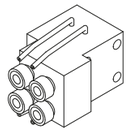
ZS Spindle unit



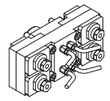
Z Double spindle unit



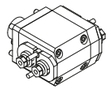
X Double spindle unit



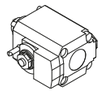
SUBSTANDARD
Z Fourth spinde unit



SUBSTANDARD
X Fourth spinde unit

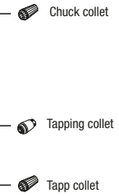


SUBSTANDARD
Z Fourth spinde unit



Z Double spindle unit

Nut
NA16
HI-Q/ERB16



Chuck collet
Tapping collet
Tapp collet
Straight shank drill
Center drill
End mill
Tap

Nut
NA11
HI-Q/ERB11

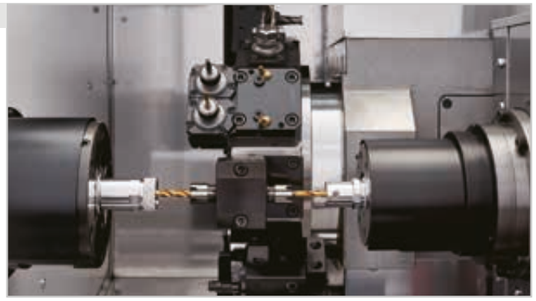
Chuck collet
Tapping collet
Center drill
Straight shank drill
End mill
Tap

Nut
HI-Q/ERAX11

Chuck collet
Tapping collet
Center drill
Straight shank drill
End mill
Tap

Working area

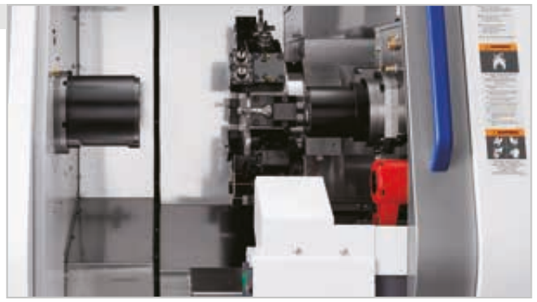
1



1 Simultaneous machining using both left and right-side spindles enables the turret tool post and front spindle to perform machining while the back spindle follows after to perform superimposed and similar types of machining, thereby further reducing the processing time.

(Image: SY type)

2



2 A surface plate structure, a tradition of the Miyano brand, has been carried over for the bed, an essential element for machining, while both size and weight have been increased in order to improve damping performance. Additionally, the coolant tank capacity has been increased to improve thermal stability. Rigidity of the entire turret tool post has been increased, and equipping with a Y axis enables the use of 12 stations. The number of installed tools has also been increased.

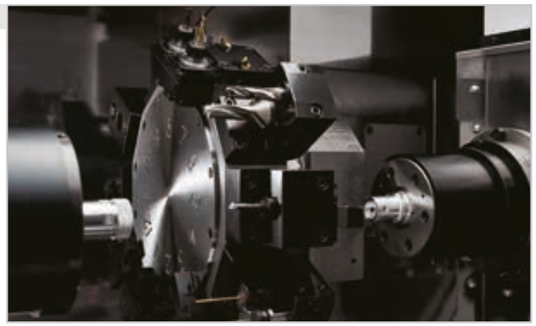
(Image: SY type)

3

3 The cover has been completely redesigned to improve workability. The opening has been enlarged for easier access and provided with a large window to improve visibility. The port through which chips fall has been enlarged and the removal port has been moved closer to the outer edge of the cover to make it easier to clean away chips. These new NC units are standard-equipped with a dual-check safety function to improve safety and productivity.

(Image: CY type)

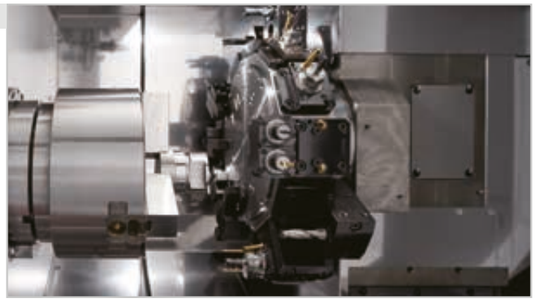
4



4 The SY type has a dual-spindle/single turret tool post mechanical configuration, and the base and turret rigidity has been increased to improve basic functions. The turret tool post has been equipped with a Y axis to expand the number of installed tools to 12 stations in order to provide the use of a rich assortment of tools, as well as simultaneous left/right machining for superimposed machining and similar processes. The tool holder and rotary tools are the same used for the current BNA Series and the program compatibility is also ensured.

(Image: SY type)

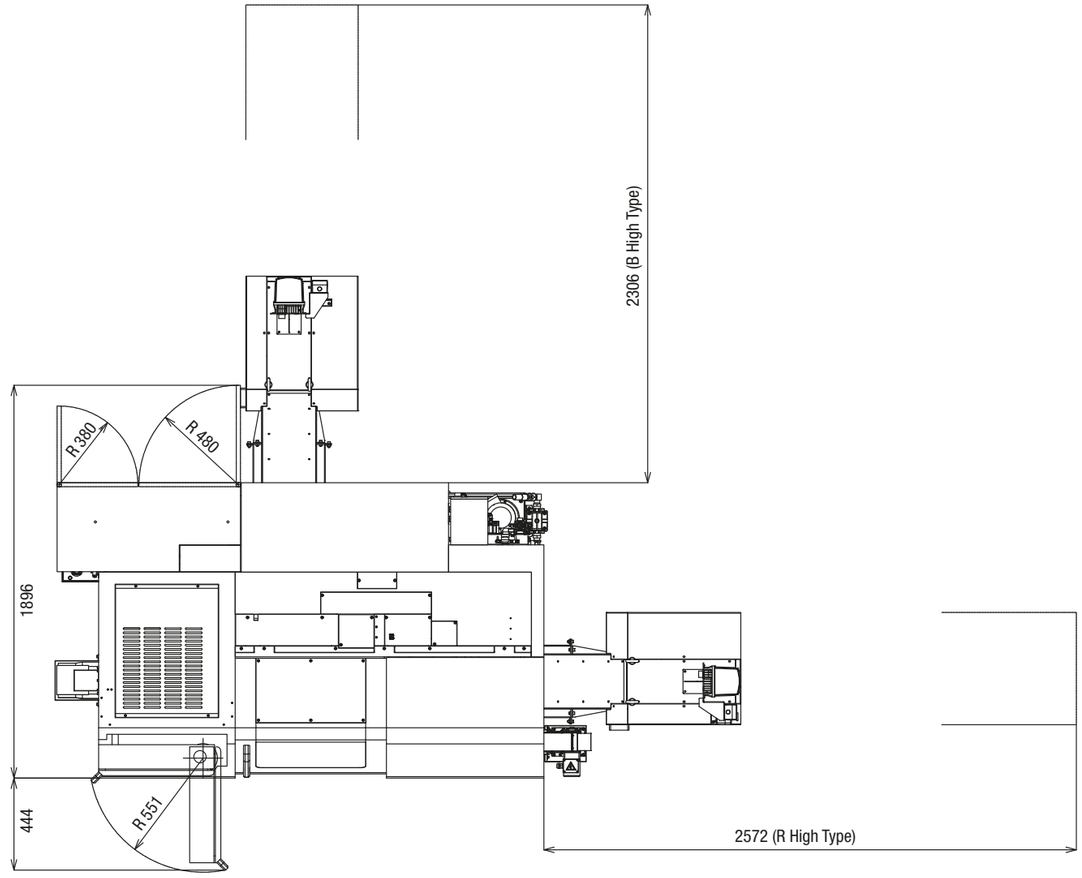
5



5 The CY type was developed under the concept of ”Bar and Chucker“. The simple structure of one spindle for one turret tool post can not only perform bar material machining, but you can also combine options such as power chucks or a chip conveyor with rear discharge together with supply/discharge units, such as a gantry loader manufactured by another company, in order to incorporate the CY type into a production line as a chucker machine.

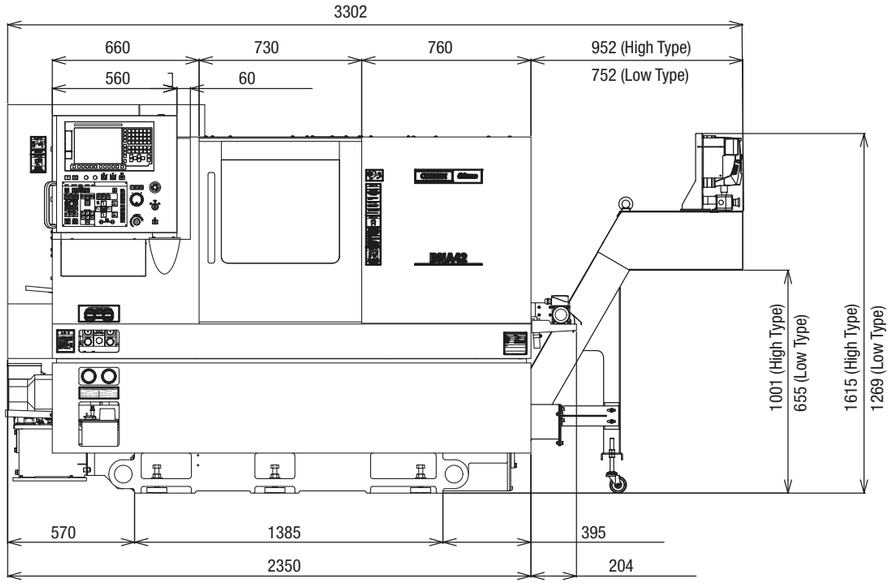
(Image: CY type)

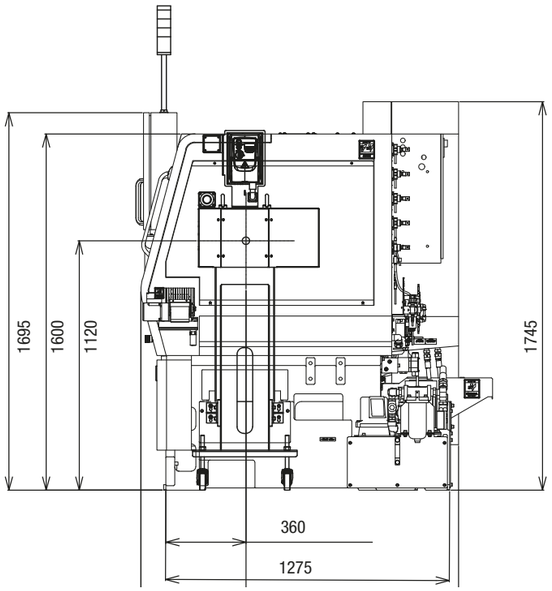
Floor plan



Type CY

Floor plan





Type SY

Machine specification

Item		BNA-42CY5	BNA-42SY5
Machining capacity			
Maximum machining length		200 mm	100 mm
Standard machining diameter (Chuck diameter)	SP1	Ø 42 mm	Ø 42 mm
	SP2	–	Ø 42 mm
Travel distance			
Turret slide stroke	X axis	140 mm	140 mm
	Z axis	285 mm	285 mm
	Y axis	70 (+/-35) mm	70 (+/-35) mm
Slide stroke, back spindle	B axis	–	360 mm
Spindles			
Number of spindles		1	2
Spindle speed	SP1	60 – 6,000 rpm	60 – 6,000 rpm
	SP2		50 – 5,000 rpm
Collet Chuck	SP1	DIN 173E HAINBUCH	DIN 173E HAINBUCH
	SP2	–	DIN 173E HAINBUCH
Power chuck type	SP1	5" and 6" hollow chucks	5" hollow chuck
	SP2	–	4" hollow chuck
Tool post			
Number of tool posts		1	
Type of tool post		12 st.	
Opposite side distance of tool post		300 mm	
Max. turning radius of tool post		Ø 505 mm	
Tool size		□ 20 mm	
Dimensions of tool post holes		Ø 25 mm	
Rotary tools			
Number of rotary tools		Max.12	
Type of rotary tool drive		Independent clutch drive	
Rotating speed of rotary tools		50 – 5,000 rpm	
Machining capacity	Drill	Max. Ø 10 mm	
	Tap	Max. M6 x 1	
Feed rate			
Rapid feed rate	X axis	20 m/min	
	Z axis	20 m/min	
	Y axis	12 m/min	
	B axis	–	20 m/min
Slide thrust	X axis	5 kN	
	Z axis	5 kN	
	Y axis	6.7 kN	
	B axis	5 kN	
Tailstock	Max. travel distance	200 mm	
	Morse taper size	MT2	
	Max. slide thrust	4.3 kN (at 34 bar)	
	Min. slide thrust	0.57 kN (at 4.5 bar)	
	Drive method	Hydraulic	
Motors			
Spindle motor	SP1	5.5/7.5/11 kW	
	SP2	3.7/ 5.5 kW	
Motor for rotary tools		1.0/2.8 kW	
Coolant pump motor		0.25 kW	
High-pressure coolant motor		0.75/1.1 kW (60/50 Hz)	
Power supply			
Voltage		AC 200/220 +5%/-10%, 50/60 Hz ±1%	
Capacity		16 KVA	26 KVA
Air supply		5 bar	5 bar
Tank capacity			
Hydraulic tank capacity		18 l	18 l
Lubrication oil tank capacity		2 l	2 l
Coolant tank capacity		225 l	225 l
Machine dimensions			
Machine height		1,745 mm	
Required floor space		W 2,260 x D 1,433 mm	W 2,350 x D 1,433 mm
Machine weight		3,430 kg	3,880 kg

NC unit		BNA-42CY5	BNA-42SY5
Control unit		FS.0i-TF PLUS	
Control axis	HD1	X1, Z1, Y1, C1, E1 (turret)	X1, Z1, Y1, C1, E1 (turret), A1 (rotary tools); In superimposition mode: X1, Z1, Y1, C1, E1 (turret), A1 (rotary tools)
	HD2	–	In superimposition mode: Z2, C2
Absolute position encoder of the feed axis		X, Z1, Y1	X1, Z1, Y1, B
Min. set unit		0.001 mm / 0.001°	
Interpolation functions			
Positioner		G00	
Linear interpolation		G01	
Cylindrical interpolation		G02, G03 (multiple quadrants available)	
Dwell		G04	
Multiple threading		G32	
Feed function			
Rapid feed override		0 – 100 % (10 % increments)	
Cutting feed rate override		0 – 150 % (10 % increments)	
Feed per revolution and feed per minute		G98/G99	
Manual handle feeding		x1, x10, x100	
Reference point return		G28	
Reference point return check		G27	
2nd reference point return		G30 or G30P2	
Program input function			
Tape code		EIA/ISO auto-detection	
Absolute commands		X, Z, Y, C	X, Z, Y, C, B
Incremental commands		U, W, V, H	
Programmable data input		G10	
Coordinate system settings		G50	
Workpiece coordinate system		G54 to G59	
Program storage and editing			
Program storage capacity		512 KB	1 Mbyte (two systems in total)
Number of registered programs		400	800 (two systems in total)
Spindle and supplementary functions			
Spindle function		S4 digit	
Supplementary functions		M3digit	
Constant surface speed control		G96	
Tool and tool compensation functions			
Tool functions		T○○△△	
		(○○ = Tool selection and shape compensation, △△ = Wear compensation)	
Nose radius compensation		G40, G41, G42	
Operating functions			
Optional stop		M01	
Jog feeding		0 – 1,260 mm/min	
Input/Output interface			
PC card slot and USB memory slot			
Automatic operation			
One-cycle/Continuous operation, single block, block delete, machine lock			
Optional block skip, dry run, feed-hold, optional stop			
Others			
10.4" color LCD, supporting multiple languages, decimal-point input,			
Manual pulse generator, Memory protection, AC digital servos, etc.			
NC standard functions			
Chamfering/corner R, background editing, operating time/number of parts display			
Canned composite cycles (G70 to G76), spindle synchronization function (SY only)			
Spindle rigid tapping (Main and sub (SY only))			
Cylindrical interpolation, custom macro B, canned drilling cycles (G80 to G86)			
Tool service life management, superimposition control function (SY only)			

LX
08
C

Powerful and highly rigid.

Citizen presents: An 8-inch chucking machine especially designed to comply with the basic performance required of machine tools following careful analysis.
The rigid turret uses precision scraped square guideways providing excellent vibration damping characteristics, the rigid spindle is supported by double-row cylindrical roller bearings and angular contact ball bearings, and the heavy 30° slanted bed is in a platform-like surface table where the turret and the spindle are mounted. The high levels of basic performance accomplished give consistently high machining accuracy.

Advantages

Outstanding thermal stability
thanks to smooth chip flow.

Minimum dimensional changes.

High rigidity, slanted bed and turret
with 10 stations for powerful machining.

Convenient and simple operation.

Machining accuracy in hard turning.

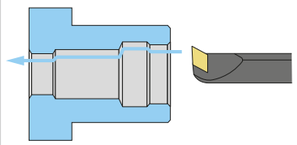
Hard turning.

3.66 m²

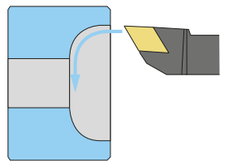
Machining examples

Examples of circular and free-form surface machining

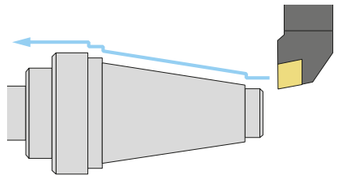
Internal turning
(thread cutting, stepped internal turning)



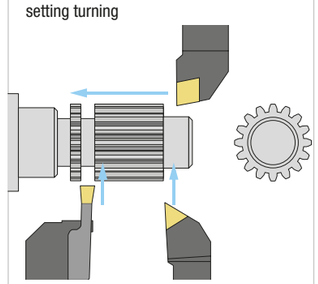
Spherical and free-form surface turning



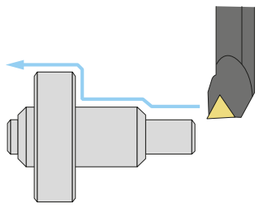
Taper turning



Grooving and width
setting turning

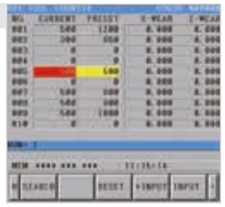


External + Face turning



Standard

1



1 Tool counter
Used to set and reset the tool counter stop value and enter the tool wear offsets.

Options

1

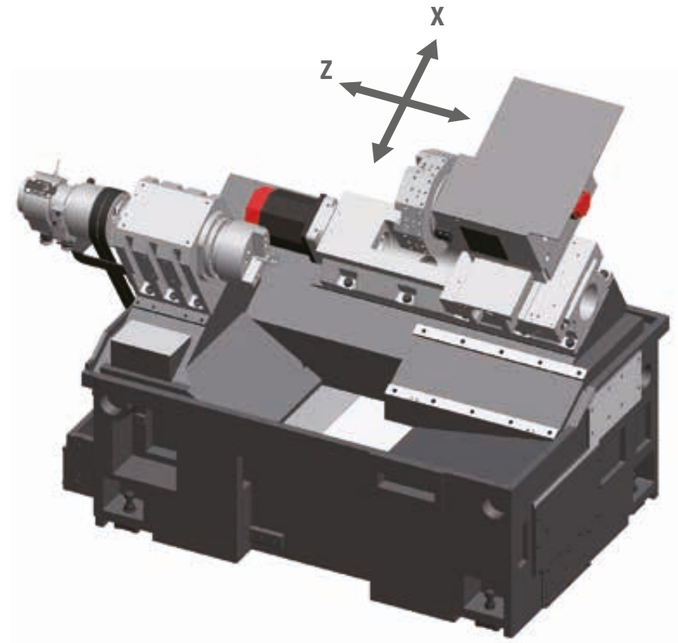
2

1 Option device
Used to select an auxiliary device such as a part catcher to be operated manually.

2 Chip conveyor

Layout

100% flat faces to mount major machine units
The flat faces of the 30° slanted bed where major machine units such as spindles and tool slides are mounted assure rigidity by adopting the platform-like surface table.
This structure maintains stable flatness in the face of external and internal factors that work to impair machining accuracy, minimizing changes in relative dislocation between the workpiece and tool nose.



Working area

1 Highly rigid turret
For the turret, subject to cutting forces and vibration under severe conditions, precision scraped square guideways are used on all axes to increase rigidity and vibration damping characteristics.

A two-piece curvic coupling is used to clamp the turret, prioritizing rigidity. This also realizes a compact mechanical structure.

2 Rigid 8-inch spindle
The spindles manufactured in the dedicated in-house production lines feature rigid double-row cylindrical roller bearings and angular contact ball bearings to support the spindle at the front and rear. By spacing them sufficiently far apart, the bearable moment load and straightness of the centre of rotary axis are improved.

3 Hard turning
Hard turning is a kind of turning process for machining quenched materials on an NC lathe using CBN or ceramic tools.

Advantages of hard turning over grinding

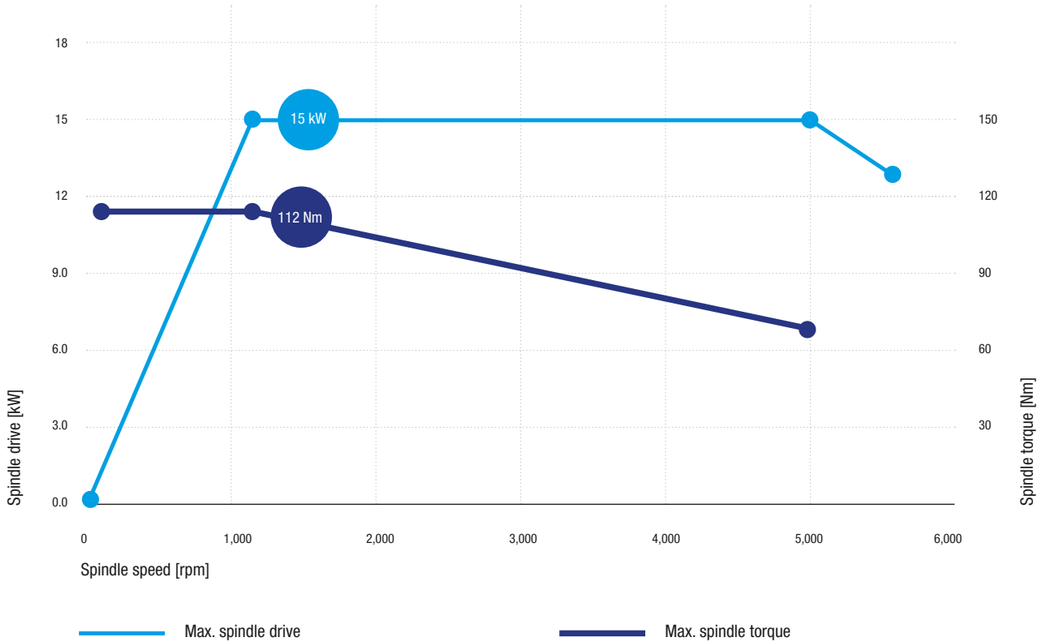
- Initial investment cost (machine price) is low.
- Several grinding processes can be integrated into turning processes performed on a single NC lathe.
- Since all machining processes including outer and inner turning, circular machining and free-form surface machining can be performed in one chucking, geometrical accuracy, such as straightness, squareness and concentricity, is considerably improved.
- Cycle time can be reduced thanks to short loading and unloading time.
- Dry cutting is environmentally friendly – reduced use of coolant, and recovery of resources by recycling chips instead of disposing of the sludge generated in grinding.

1

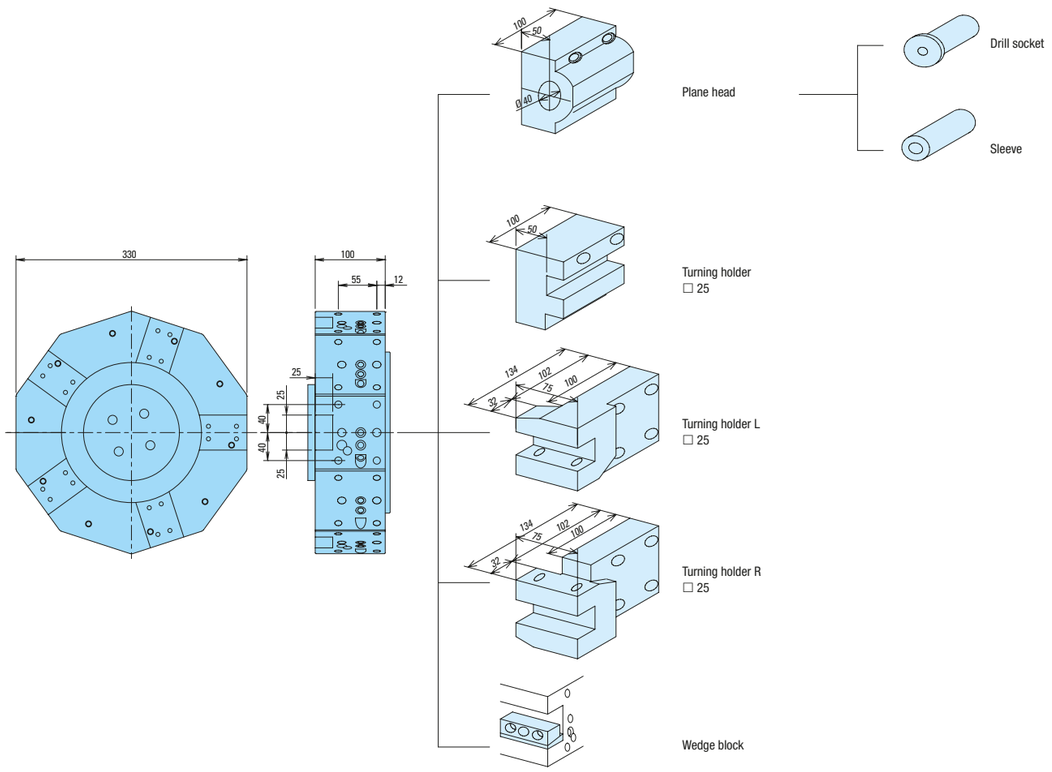
2

3

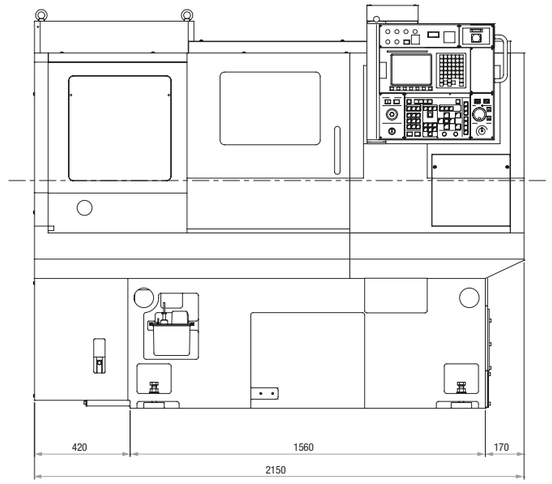
Performance diagram

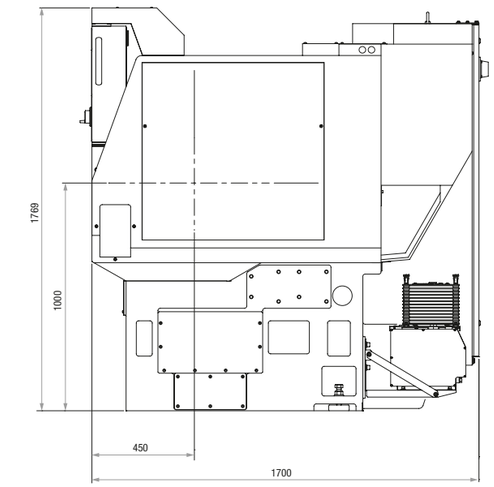


Tooling System



Floor plan





Machine specification

Item		LX-08C
Machining capacity		
Maximum work length		320 mm
Max. machining diameter		Ø 210 mm
Spindle		
Number of spindles		1
Spindle speed range		40 – 4,000 rpm
Spindle draw tube dia.		Ø 52 mm
Chucking system		Hydraulic thru-hole chuck cylinder
Collet Chuck		Hardinge S22 with pad
Power chuck type		8" thru-hole power chuck
Tool slide		
Number of tool slide		1
Type of tool slide		10-station turret
Size of turning tools		□ 250 mm
Size of drill & boring tools		Ø 40 mm
Turret index time		0.26 sec./station-to-station.
Slide		
Slide stroke	X axis	175 mm
	Z axis	435 mm
Rapid feed rate	X axis	12 m/min
	Z axis	16 m/min
Tailstock (Option)		
Type of slide		Hydraulic
Max. slide travel		300 mm
Rotary center		MT4
Max. slide thrust		4.3 KN/34 bar
Min. slide thrust		0.36 KN/3 bar
Quill type		Hydraulic
Max. slide travel		Quill 90 mm + Manual 220 mm
Rotary center		MT4
Max. slide thrust		4.3 KN/34 bar
Min. slide thrust		0.36 KN/3 bar
Tank capacity		
Hydraulic oil tank capacity		10 l
Lubrication oil tank capacity		2 l
Coolant tank capacity		150 l
Machine dimensions		
Machine height		1,734 mm
Floor space		2,150 mm × 1,728 mm
Machine weight		4,500 kg
Motors		
Spindle drive		AC 7.5/11 kW
Coolant pump		AC 0.18 kW
Power supply		
Voltage		AC 200 V ± 10 %, 50/60 Hz ± 1 %
Power consumption		30 kVA
Air supply		5 bar (5 kgf/cm^2)
NC Specifications		FANUC 0i-TD
Axial control		X, Z
Simultaneous control axis		2 axis (Positioning, Linear interpolation)
Minimun setting unit		0.001 mm
Minimum output unit		X : 0.0005 mm, Z: 0.001 mm
Interpolation functions		G00, G01, G02, G03
Interpolation functions		512 Kbyte (1280 m)
Spindle function		S4 digit direct spindle speed input (G97)
Feed		F3.4 digit feed per revolution, F6 digit feed per min.
Feed rate override		0 – 150 % (in 10 % increments)
Rapid traverse rate		X: 12 m/min, Z: 16 m/min
Interpolation functions		G01, G02, G03
Thread cutting		G32, G92
Canned cycle		G90, G92, G94
Tool function		T AABB (AA=Tool number and geometry, BB = Wear offset number)
Tool position direct input function		by measurement in MDI mode
Automatic operation		1 cycle/Automatic operation; Single block, Block delete, Machine lock, Optional block skip, Dry run, Feed hold
NC standard functions		
Circle radius command, Nose radius compensation, Constant surface speed control (G96), Background editing, Programmable data input (G10), Run hour/Parts count display, Multiple repetitive cycles (G70 – G76), Spindle rigid tapping, Polar coordinate interpolation, Custom macro B, Canned cycles for drilling (G80 – G86), Tool life management.		
Others		
8.4" color LCD/ MDI, Expanded program storage capacity: 400; Decimal point input, Manual pulse generator; Memory protection, Digital servo motor, etc.		

LZ
01
R/RY

Fast loading due to moving spindle and automation.

These are high-precision chucking machines equipped with a general-purpose in-machine loader head. The loading time is shortened substantially through coordinated operation of the loader head and spindle.

By constructing the turret with a single slide in the Y axis direction only (01RY), and by assigning the X axis and the Z axis that runs on a linear guide to the spindle, both rigidity and high-speed travel are achieved.

The enriched system configuration designed based on the loader head accommodates a wide range of automation needs.

Advantages

Roundness.

Dimensional accuracy.

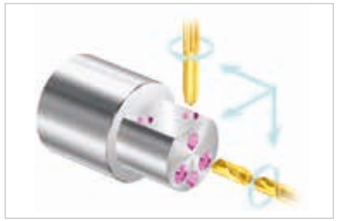
Highly rigid turret & high-rigidity spindle.

Machining of complex parts.

3.26 m²

Machining examples

Basic complex machining



By using the Y-axis, the machining time for off-centre drilling and off-centre tapping can be shortened. The tapping accuracy with a rigid tap is also improved. (01RY)

High precision milling

Accurate positioning by the C-axis and high precision combined machining by the Y-axis allow for a wider range of machining. (01RY)

Flat milling

Separating the machining into rough cutting and finishing improves both the accuracy and the quality of the machined surface. (01RY)

Contouring

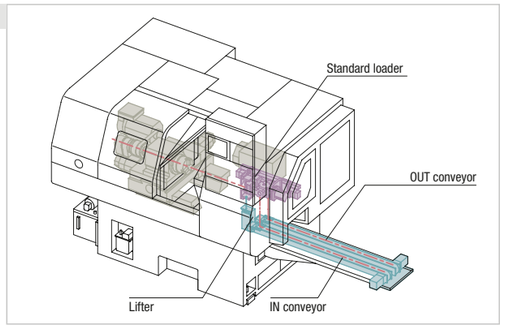
Simultaneous 2-axis control including the C axis in combination with the X, Z or Y axis can be used for contouring. (01RY)

Polygon machining

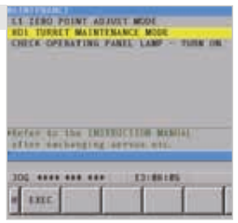
Synchronizing the revolving tool speed with the spindle speed at two times permits polygon machining, such as two-, four- and six-sided machining, with a polygon cutter.

Standard

1



2

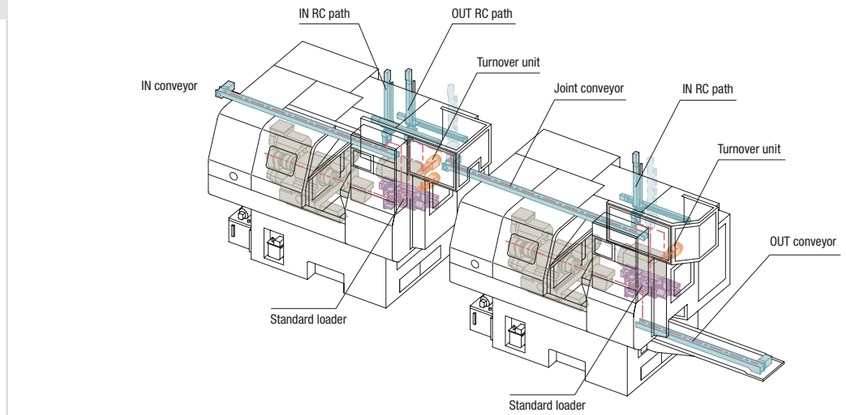


3

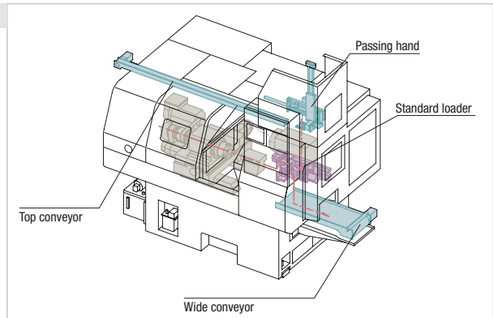
1 Conveyor system, bottom
2 **Maintenance:** Used to set ON / OFF for the maintenance items. Used to set ON / OFF for turret zero point adjustment.
3 **Turret maintenance:** Used to adjust the turret zero point.

Options

1



2



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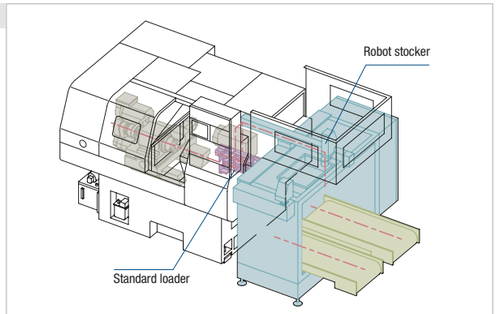
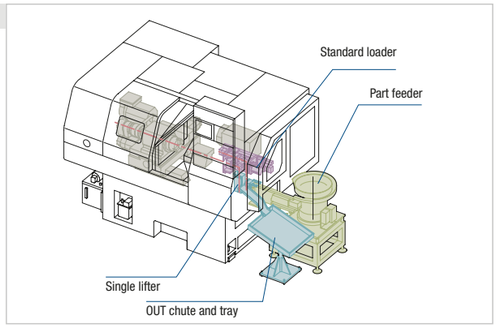


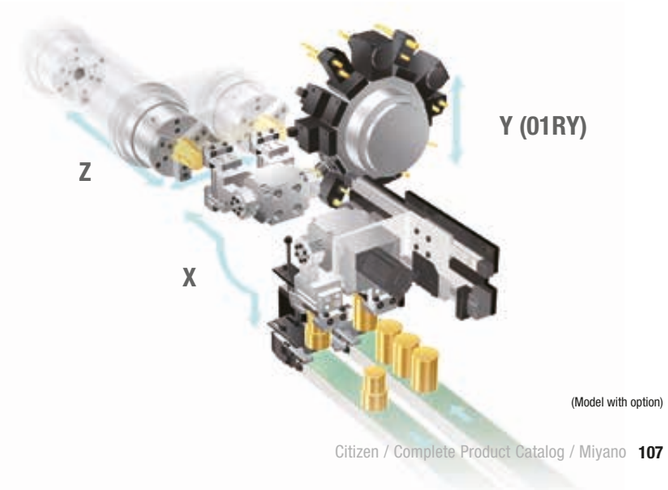
1 Tandem configuration with two units connected in series
2 Conveyor system, top (semi-standard)
3 Robot stocker system
4 System with part feeder underneath (semi-standard)

4



Layout

The loader head and spindle operate in coordination for loading/unloading, which means that the travel distance is reduced, and this helps to shorten machining time through high-speed loading with a loading time of 5.5 seconds.



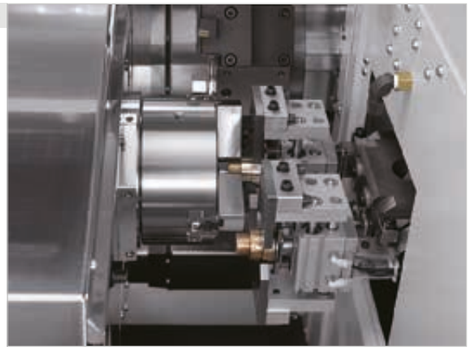
(Model with option)

Working area

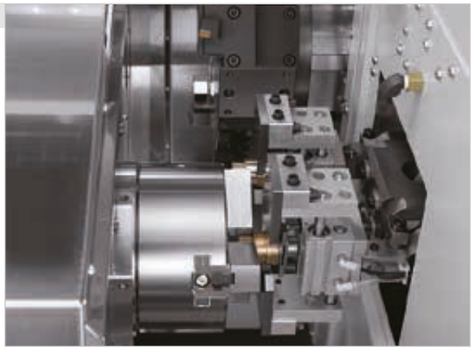
1

2

3

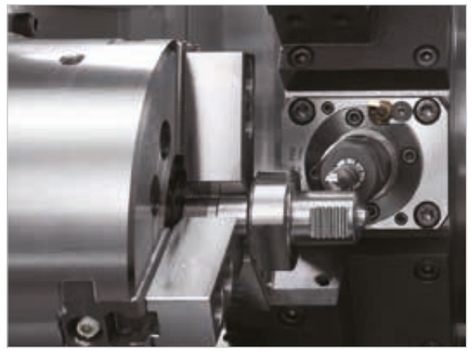


4



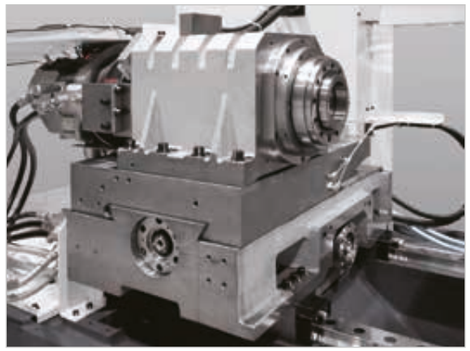
Loader cycle

1 In the tooling zone: machining of the workpiece is completed.
2 At the loader side: the IN hand grips a blank and carries it into the tooling zone.
3 The OUT hand receives the machined workpiece.
4 The spindle moves to the position of the IN hand and receives the blank from the IN hand.



Highly rigid turret

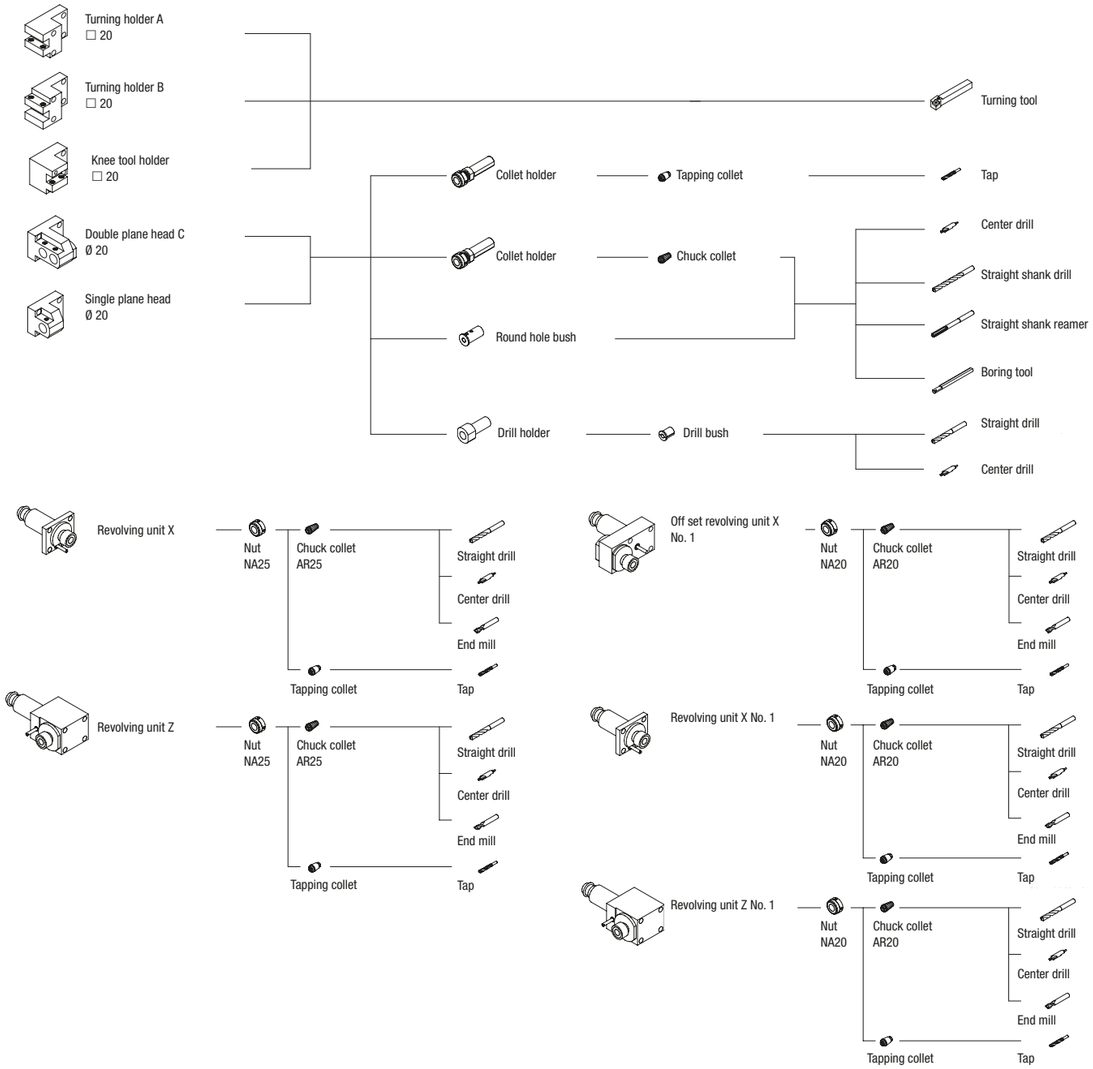
Combining an original double-column type Y-axis mechanism (01RY) with a turret slide on the Y-axis only instead of having X-axis and Z-axis slides enables high-precision machining in turning work.



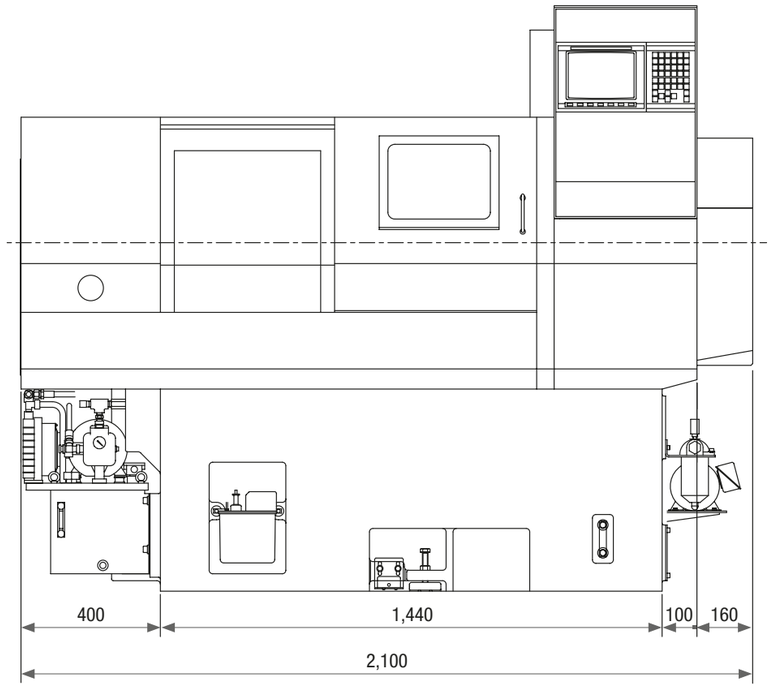
High-rigidity spindle and roller type linear guide

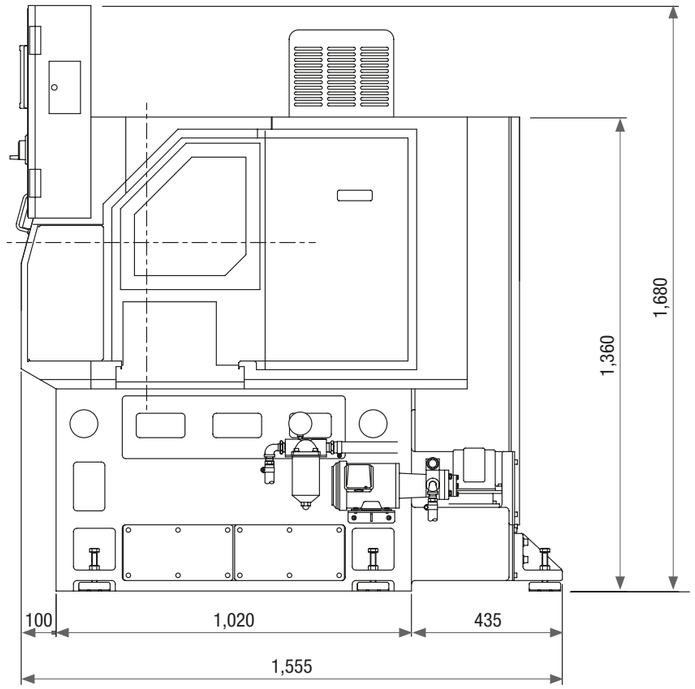
Adopting a linear guide for the Z-axis allows increased speed, with a rapid traverse rate of 24 m/ min. And because a roller type linear guide is used, the rigidity is equivalent to that of a square slide.

Tooling System



Floor plan





Machine specification

Item		LZ-01R2	LZ-01RY2
Machining capacity			
Maximum work length		80 mm	
Maximum blank diameter			
Power chuck type		Ø 70 mm	
Chuck collet		Ø 50 mm	
Spindle			
Number of spindles		1	
Spindle speed range		60 – 6,000 rpm	
Inner diameter of draw tube		Ø 32 mm	
Chuck system		Hydraulic cylinder	
Type of collet chuck		Spindle collet chuck	
Power chuck size and type		6" Hydraulic chuck	
Turret			
Number of turrets		1	
Turret stations		12	
Tool shank size		□ 20 mm	
I.D tool hole size		Ø 25 mm	
Index time		0.2 sec./1 pos.	
Slide			
Slide stroke	X axis	245 mm	
	Z axis	240 mm	
	Y axis	–	±35 mm
Rapid feed rate	X axis	20 m/min	
	Z axis	20 m/min	
	Y axis	–	12.5 m/min
Turning tool			
Number of rotary tools		max. 6	
Spindle speed range		100 – 4,000 rpm	
Machining capacity	Drilling	max. Ø 13 mm	
	Tapping	max. M8 x 1.25	
Tank capacity			
Hydraulic tank capacity		17 l	
Lubricating tank capacity		2 l	
Coolant tank capacity		140 l	
Machine dimensions			
Machine height		1,680 mm	
Floor space		2,100 mm x 1,555 mm	
Machine weight		3,600 kg	4,000 kg
Motors			
Spindle motor (50 % ED/Cont.)		5.5/7.5 kW	
Rotary tool motor		2.5 kW	
Power supply			
Voltage		AC 200 V ± 10 %, 50/1 Hz ± 1 HZ	
Power consumption		22 KVA	25 KVA
Air supply		5 bar (5 kgf/cm^2)	
Loader specification			
Hands type		Double gripper	
Max. work size		Ø 70 x 80 mm	
Min. work size		Ø 10 x 10 mm	
Max. work weight		0.7 kg x 2	
Servicing time		6.0 sec	
Control & driving method		PMC & air operating	

NC specifications	FANUC 0i-TD
Controlled axis	LZ-01R2: X, Z, C, A (Option) LZ-01RY2: X, Z, Y, C, A
Number of simultaneous control axes	4 axes
Min. input increment	0.001 mm / 0.001 °
Min. output resolution	X-axis: 0.0005 mm, Z axis: 0.001 mm
Program storage capacity	512 kB (1280 m)
Spindle function	4-digit S word (G97), Constant surface speed control (G96)
Feed rate	F3.4 mm/rev, F6 mm/min
Feed rate override	0 – 150 % (in 10 % increments)
Interpolation functions	G00, G01, G02, G03
Thread cutting	G32, G92
Canned cycles	G90, G92, G94
Tool function	Taabb (aa=Tool number and geometry, bb=Wear offset number)
Tool position direct input function	by measurement in MDI mode
Input/Output interface	Memory card, USB
Automatic operation	1 cycle/Automatic operation; Single block, Block delete, Machine lock, Optional block skip, Dry run. Feed hold
Others	8.4" color LCD/ MDI, Expanded program storage capacity: 400; Decimal point input, Manual pulse generator; Memory protection
NC standard functions	Circle radius command, Nose radius compensation, Constant surface speed control (G96), Background editing, Programmable data input (G10), Run hour/Parts count display, Polar coordinate interpolation, Multiple repetitive cycles (G70-G76), Spindle rigid tapping, Cylindrical interpolation, Custom macro B, Canned cycles for drilling (G80 – G86), Tool life management
NC option	Helical interpolation function

Machine equipment (standard)

C axis control unit; 12-station tool turret; Unit for rotary tools; Standard loading system (incl. clamping unit); Twofold lifting unit for loader; feeder & discharge belt; Complete set of gripper jaws for loading unit; Hydraulic equipment; Hydraulic clamping cylinder; Compressed air unit; Machine door lock; Machining area illumination; Automatic central lubrication; Cooling lubricant unit; 6" three-jaw chuck; Spindle lock; Automatic shutoff in case of alarm or reaching preset number of pieces; High-pressure cooling lubricant; Blow-off function at spindle; Total part & preset counter; Signal lamp (tricolor); Standard tool box with manual tools; Wrench for rotary tools (K-5, K-6 & SP-27); Chip conveyor hinge-type 1 m

Special machine equipment (options)

Werrma MDE Signal Tower KombiSIGN71 Blue/Red/Green/Weight; Blum probe; Compressed air gun and compressed air supply; Cable 4G25 for transformer 35 KVA to machine

VC 03

This space-saving high-precision lathe is perfect for micro-processing.

This machine was specially designed for high precision machining and is often used by watch manufacturers. Clock screws and other microparts in 0.1 mm range are the core competence of the VC 03. In combination with the ”machine construction for high accuracy“ inherited from the GN series, this opens up new possibilities in machining technology.

Advantages

High-precision turning machine.

Variety of machinable geometries.

Machine construction for high precision.

Compact footprint.

LFV-Technology.

LFV technology

2.11 m²

Workpiece example

Name Example workpiece
Material Steel

Micromachining compared to a pencil mine
(Diameter = 0.2 mm)

Standard

1

2

Features

3

4

5

6

7

1 Separately installed coolant tank
2 Gantry loader
3 Collet chuck (pull type)
4 Power chuck
5 Collet chuck (fixed type)
6 Diaphragm chuck
7 Fine precision chuck

Optionen

1

2

1 Pallet conveyor
2 Rotary stocker

What is more...
LFV technology as an option

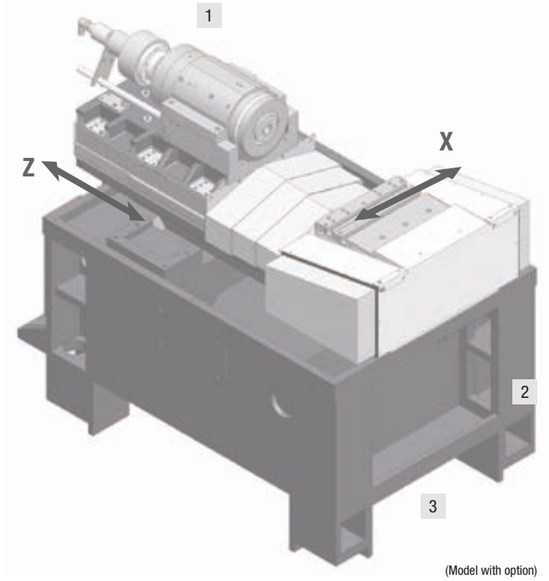
Layout

1 Wing type headstock
The spindle section is constructed such that only the “wing” parts make contact with the slides and the central part of the sleeve is suspended, so spindle heat generation is uniform and heat is not easily transmitted to the headstock.

2 Base with thermally symmetric design
A base that is a monobloc casting with a left/right symmetrical construction has the advantage that heat transfer is also symmetrical at left and right, which cancels out the effects that the machine’s heat generation has on machining.

3 Separately installed coolant tank
The coolant tank has been made a separable type to restrict the thermal effects of chips and coolant that have absorbed cutting heat and installed between the machine legs separately from the machine

[X/Z axis with LFV-technology available]



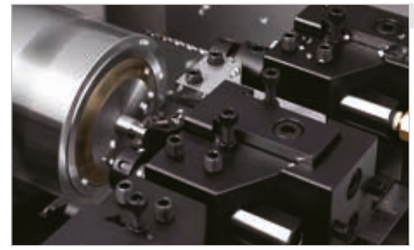
(Model with option)

Working area

1 The basic concept in designing the machine is preventing thermal displacement over time and the heat of machining being transferred to the body of the machine. This is achieved by a frame and bed with a thermally symmetric design, backed up by a wing-type headstock and a separately-installed coolant tank. Built-in motor with a forced cooling function gives smooth rotation with low vibration thanks to beltless drive, and this construction ensures outstanding shape accuracy. The incorporation of a high-speed gantry loader with a service time of 3.5 seconds and peripheral devices such as an IN/OUT stocker allows a whole range of automation needs to be accommodated.

2 Wing type headstock
The spindle section is constructed such that only the “wing” parts make contact with the slides and the central part of the sleeve is suspended, so spindle heat generation is uniform and heat is not easily transmitted to the headstock.

1



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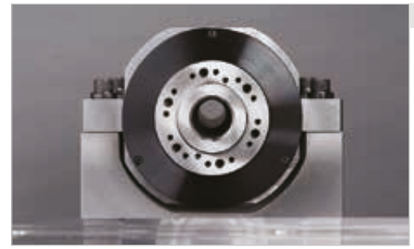
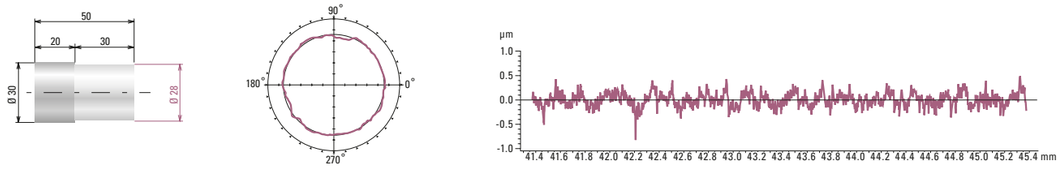


Machining accuracy

Test piece (LFV)
Material: SUS304
Spindle speed: 1,250 rpm
Feed: 0.01 mm/rev
Nose R: 0.4 mm
Frequency: 1.5 times per spindle rotation

Roundness (LFV)
Roundness: 0.80 µm
Scale: 0.5 µm

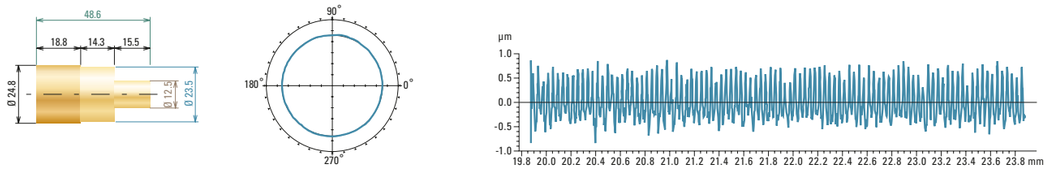
Surface roughness (LFV)



Test piece (regular cutting)
Material: BsBM
Spindle speed : 3.000 rpm
Feed: 0.04 mm/rev
Nose R: 0.2 mm

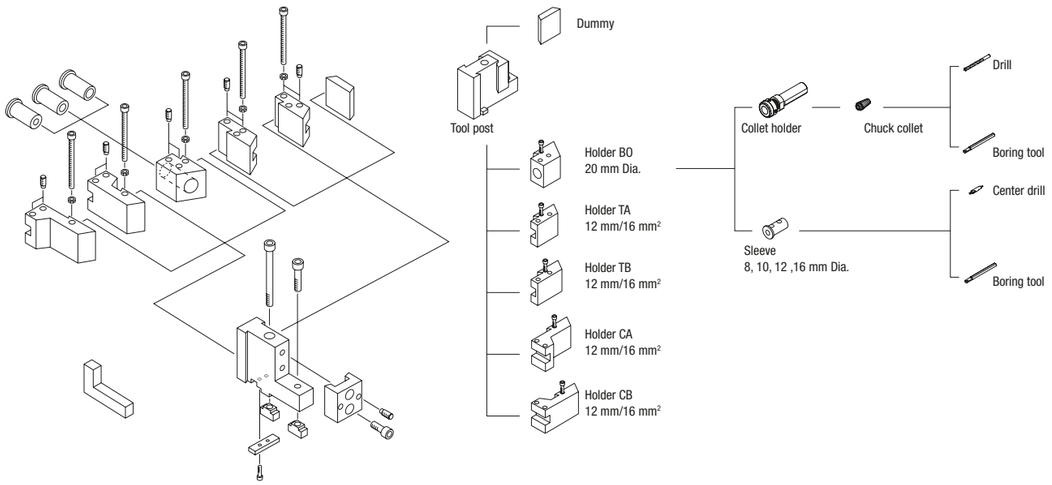
Roundness (regular cutting)
Roundness: 0.18 µm
Scale: 0.5 µm

Surface roughness (regular cutting)

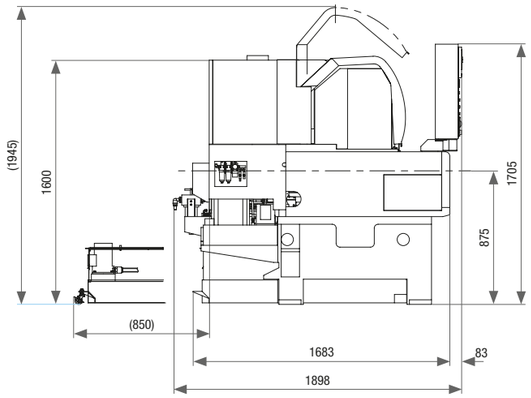


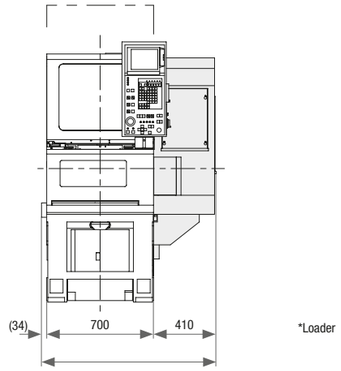
* Although the values stated here are the results of actual measurement, please note that they are not guaranteed.

Tooling System



Floor plan





*Loader

Machine specification

Item		VC03
Machining capacity		
Max. Work diameter		
Pull type collet chuck		Ø 40 mm
Fixed type collet chuck		Ø 35 mm
Fine precision air chuck		Ø 45 mm
Power chuck type		Ø 45 mm
Diaphragm Chuck		Ø 45 mm
Maximum machining length		50 mm
Max. work length with loader		40 mm
Spindle		
Number of spindles		1
Spindle nose		Flat
Through hole diameter		Ø 17 mm
Inner diameter of draw tube		Ø 10 mm
Spindle speed range		8,000 rpm
Slide		
Number of tool platens		1
Type		Horizontal linear tool platen
Control axis		2-Axis (Simultaneously X, Z)
Slide stroke	X axis	180 mm
	Z axis	200 mm
Rapid feed rate	X axis	20 m/min
	Z axis	30 m/min
Tools		
Shank size of square turning tool		□ 10, 12, (16) mm
Number of tools	Standard	5
Diameter of drill shank		Ø 20 mm
Motor		
Spindle drive 15 min./cont.		3.7/2.2 kW
Coolant pump		0.18 kW
Air supply		
Air pressure supply		5 bar (5 kgf/cm²)
Tank capacity		
Spindle cooling device		7 l
Lubricating system		0.8 l
Coolant tank		90 l
Equipment power supply		
Power consumption		11 kVA
Machine dimensions		
Spindle center height		875 mm
Machine height		1,705 mm
Floor space / depth		700 mm / 1,683 mm
Machine weight		1,500 kg
Others		
Splash guard interlock		
Loader specifications (Optional)		
Type		2-Axis NC
		1 saddle 2 hands
Max. Work Size		Ø 40 x 40 mm
Max. Work Weight		250 g
Feed rate	Right and left operation	108 m/min
	Upper and lower sides	90 m/min
Control unit		
Control system		PMC axis control
Control soft		Flexible loader control
Drive system	Right and left operation	Rack & pinion
	Upper and lower sides	Rack & pinion
NC Specifications		MITSUBISHI M70V
Controlled axis		X, Z
Min. input increment		0.0001 mm, 0.00001 inch, 0.0001 deg
Min. input increment		X-axis: 0.00005 mm (Radius value) Z axis: 0.0001 mm
Interpolation		G01, G02, G03
Thread cutting		G32, G76, G92
Rapid feed override		0–100 %
Cutting feed override		0–200 %
Program storage capacity		16 kB (40 m)
No of registered programs		64
Spindle function		Spindle speed S4-digits, directly specified (G97),
Tool function		T AABB (AA = Tool number & geometry, BB = Wear compensation number)
Tool compensation		40
Data input-and-output		RS-232C, Memory card interface
Others		
8.4" color LCD, Chamfering/Corner R, Drilling canned cycle, Custom macro, Multiple repetitive cycle, Spindle orientation, Tool nose compensation R (G40, G41, G42), Run hour/parts count display,		
Options		
Cs outline control; LFV-Technology		
Optional accessories		
Gantry loader, Chuck Systems, Air Blow, High pressure & inner coolant, Spindle inner coolant, Automatic fire-extinguisher, Automatic power off, Chip conveyor, Chip box, Coolant mist collector, Coolant mist collector duct, Damper & duct, Warning light, Specification color, etc.		

GN
4200

Maximum precision due to hand scraped guides and high-precision spindle.

Designed for high-precision machining of small-diameter workpieces, this machine has a wing type fixed spindle for low thermal influence installed on a thermally symmetrical machine base. It inherits the “design concept for high precision” that is a tradition at Ocean Cincom. The slideways grant excellent damping characteristics and are finally precision scraped by experienced experts. Based on these constructive properties, the user receives a complete package designed for excellent machining accuracy in terms of dimensional stability and concentricity. The workpieces can of course be handled manually, but the machine also flexibly accommodates automation including high-speed gantry loaders and robots. This makes high-precision machining even more efficient.

Advantages

Maximum precision due to hand scraped guides and high-precision spindle.

Increased speed for high-efficiency machining.

Outstanding machining accuracy.

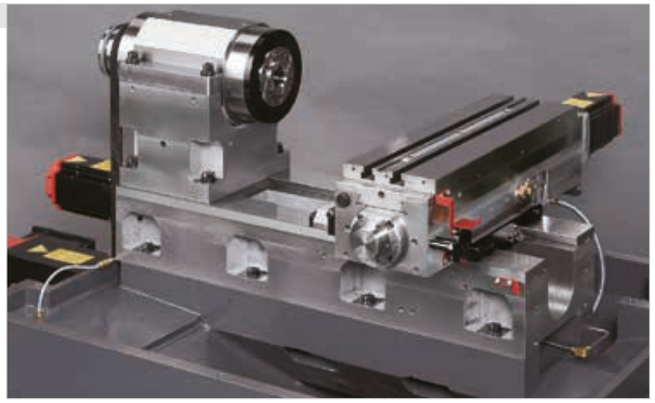
Program-controlled slideway lubrication.

Loading & unloading system.

2.52 m²

Standard

1



1 Slideway configuration offering high positioning accuracy

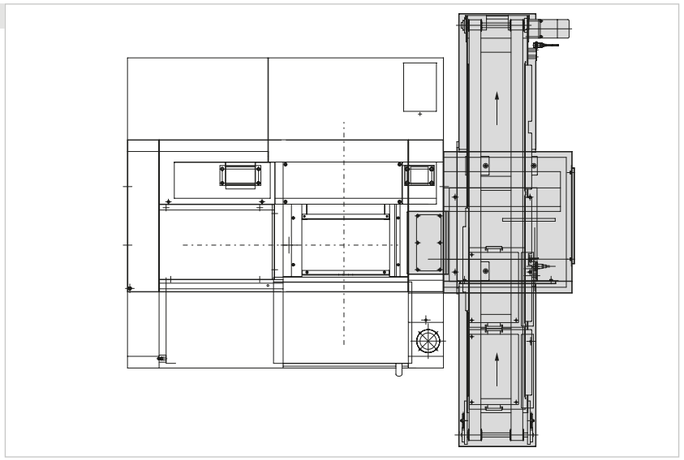
What is more...
Program-controlled slideway lubrication
Gantry loader

Options

1 Pallet conveyor
2 Part feeder – Loading & unloading

What is more...
Pallet stocker
Conveyor belt – Loading & unloading

1



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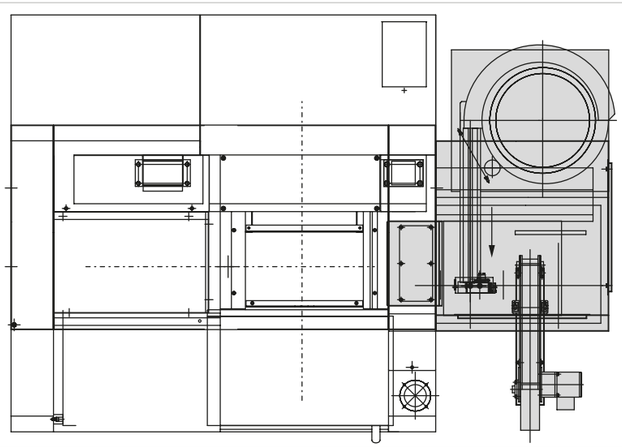
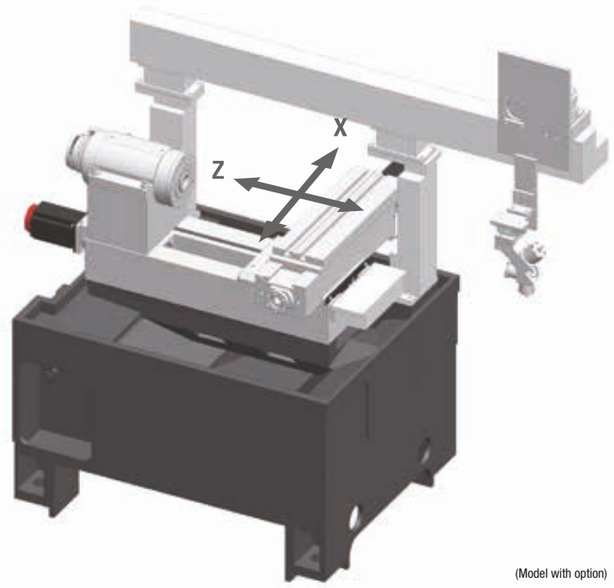


Layout

The flat bed on which major machine units such as spindles and tool slides are mounted has a thermally symmetric structure. This configuration with left/right thermal symmetry minimizes the effects of heat on the structure of the machine and provides the ideal form to counter deterioration in machining accuracy due to temperature changes. High-rigidity scraped slideways are used on all axes. These slideways with face contacts have exceptional rigidity and damping characteristics, achieve powerful cutting, and help to prolong cutting tool life.



(Model with option)

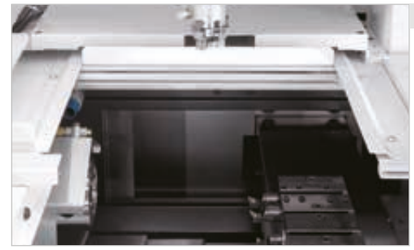
Working area

1 Designed for high-precision machining, a tool table with an X-axis slide stroke 50 mm longer than on existing machines allows for comprehensive and flexible tooling.

2 Faster cycle times are achieved due to quick acceleration/ deceleration of the axis over short travel distances.

3 Original winged spindle headstock

1



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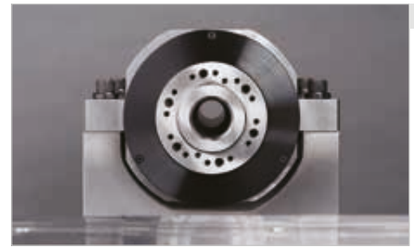
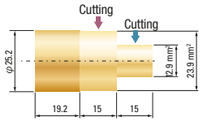


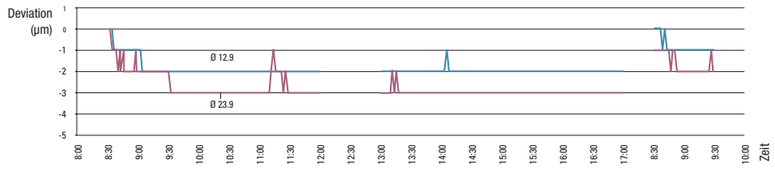
Machining accuracy

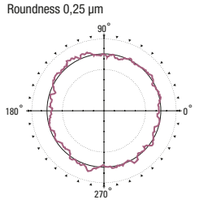
Test piece



Material: BSBM
Spindle speed: 2500 rpm
Feed: 0.05 mm/rev
Depth of cut: 0.1 mm
Machining time: 1'40"

Accuracy

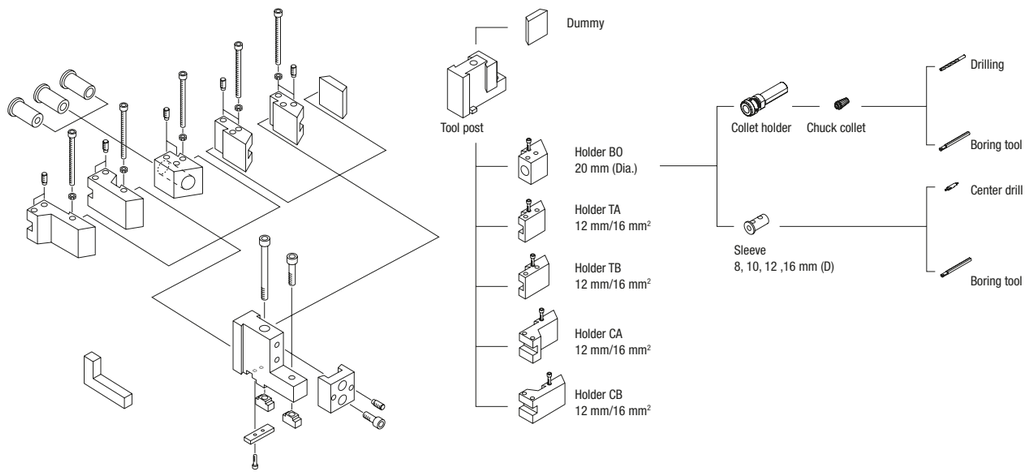




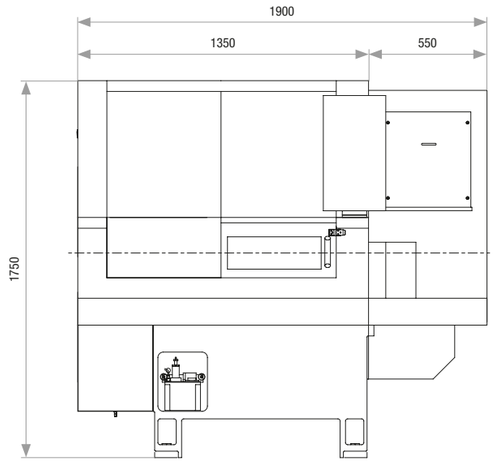
Dry cutting test results

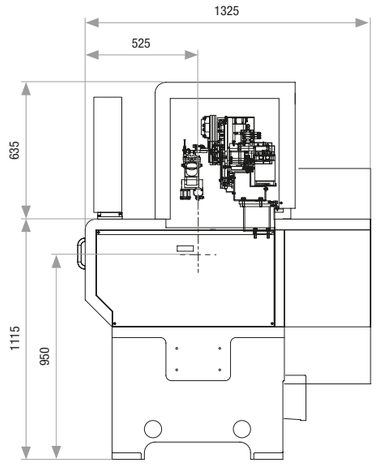
	O.D. changes				No. of test piece (pcs.)	Roundness (µm)	Cylindricity (µm)	Roughness
	1 day	1-hour stop	Next day	Start change				
23,9 mm²	3 µm	0 µm	1 µm	0 µm	1	0.25	0.5	0.252
					100	0.2	0.5	0.246
					200	0.25	0.6	0.245
12.9 mm²	2 µm	0 µm	0 µm	0 µm	1	0.35	0.75	0.27
					100	0.35	0.6	0.271
					200	0.25	0.6	0.263

Tooling System



Floor plan





Machine specification

Item	GN4200
Machining capacity	
Max. Diameter of collet chuck	
Fine precision air chuck	Ø 45 mm
Pull type collet chuck	Ø 40 mm (stationary Ø 35 mm)
Maximum machining length	80 mm
Spindle	
Number of spindles	1
Spindle nose	Flat
Through hole diameter	Ø 26 mm
Inner diameter of draw tube	Ø 15.4 mm
Max. spindle speed	8,000 rpm
Slide	
Number of Tool Platens	1
Type of slide	Horizontal gang tool post
X axis	Dovetail slide
Z axis	Dovetail slide
Control axis	2-axis (simultaneously X, Z)
Slide stroke	
X axis	300 mm
Z axis	250 mm
Rapid feed rate	
X axis	12 m/min
Z axis	12 m/min
Tools	
Shank size of square turning tool	Ø 20 mm
Diameter of drill shank	□ 10, 12, 16 mm
Motor	
Spindle drive	3.7 kW
Coolant	
Tank type	Separate type
Tank capacity	125 l
Machine dimensions	
Machine height	1,695 mm
Floor space	W 1,350 x D 1,325 mm
Machine weight	1,500 kg
Power supply	AC 200V ± 10%
Electrical capacity	11 KVA
Loader specifications (Optional)	
Tpe of loader	2-axis gantry loader (2 hand)
Max. work size	40 x 40 mm Dia.
Max. work weight	250 g
Control system	PMC axis control
Control soft	Flexible loader control
Drive system	
Right & left operation	Rack & pinion
Upper and lower sides	Rack & pinion
NC specifications	
NC unit	FS 0i-TF
Controlled axis	X, Z, with loader 2-axes (E,Y)
Min. output resolution	0.00005 mm (Radius value)
X axis	0.00005 mm (Radius value)
Z axis	0.0001 mm
Program storage capacity	512 kB
No of registered programs	400
Spindle function	Directly specified spindle speed (G97)
	Constant surface speed control (G96)
Cutting feed rate	Feed/min (G98), Feed/rev. (G97)
Rapid feed override	F0,10, 20, 30, 40, 50, 60, 70, 80, 90,100%
Cutting feed rate override	0 – 150 % (in 16 increments)
Interpolation	G01, G02, G03
Thread cutting	G32, G33, G34, G92
Canned cycle	G90, G92, G94
Coordinate system setting	Automatic system setting or G50
Tool compensation	64
Single block, Block delete, Machine lock, Optional block skip, Dry run, Feed hold	
Others	
8.4" color LCD, Circular interpolation by R programming, Programmable data input (G10), Display in several languages: Manual pulse generator, Memory protection, Alarm display	
NC option package	
Chamfering/Corner R; Direct drawing dimension programming; Drilling canned cyle; Custom macro; Multiple repetitive canned cycle; Expanded workpiece program editing; Background editing; Run hour/parts count display; Clock function; Rigid tapping (spindle); Tool radius N compensation; NC option; Cs axis control	
Options	
Spindle air blow, High pressure coolant, Coolant level switch, Counter, Signal tower, Coolant mist collector, Automatic power shut off, Chip conveyor, Chip Box.	

GN
3200W 3200

Efficient and space-saving, hand in hand with traditional precision.

Designed for high-throughput machining of small diameter workpieces, this machine has a wing type fixed spindle for low thermal influence and maximum thermal stability installed on a thermally symmetrical machine base. It inherits the “design concept for high precision” that is a tradition at Ocean series.
The slideways grant excellent damping characteristics and are finally precision scraped by experienced experts. Based on these constructive properties, the user receives a complete package designed for excellent machining accuracy in terms of dimensional stability and concentricity. The workpieces can of course be handled manually, but the machine also flexibly accommodates automation including high-speed gantry loaders and robots. This makes high-precision machining even more efficient.

Advantages

High-precision turning machine.

Loading/unloading just takes 3.5 seconds.

High/improved efficiency through space saving design.

High-precision positioning and exceptional accuracy.

Intelligent rigid construction with zero thermal deformation.

Stable construction for maximum precision.

2.08 m²
(3200W)

1.04 m²
(3200)

Standard

1

Collet chuck (pull type)

1 Chuck system

Options

1 Total and preset counter
These are separately mounted counters providing information about the internal counter function of the NC control unit.

2 High-pressure coolant supply through the spindle
Coolant is discharged from the chuck under pressure. This is also useful when cleaning the through-holes or for cleaning the chuck.

3 Automatic fire extinguishing unit

4 By air pressure measurement, the correct contact with the stopper may be measured when clamping a new workpiece.

1

2

3

4

Collet chuck (fixed type)

High-precision chuck

... and more (power chuck type and diaphragm chuck)

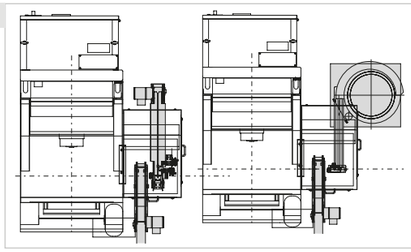
Configurations

1 High-speed gantry loader
2 Conveyor belt
3 Part feeder

High-efficiency production is achieved in combination with devices like newly designed high-speed gantry loaders featuring excellent cost performance, and part feeders, conveyors and pallet stockers.

1

2



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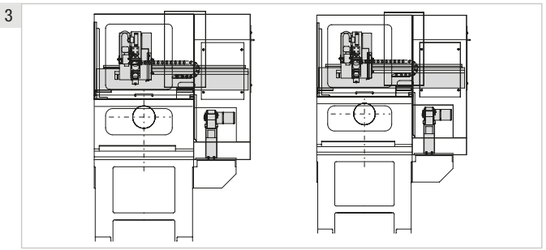


Working area

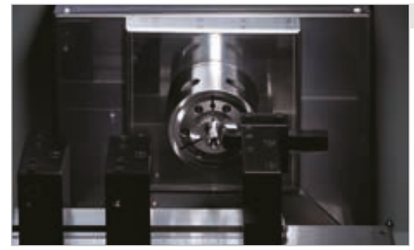
1 GN3200
A compact design with a total machine width of 700 mm and a floor space requirement of 1.04 m² has made it possible to shorten production lines and improve factory space utilization. The incorporation of a high-speed gantry loader with a loading time of 3.5 seconds and a wide choice of infeed and outfeed devices allows stand-alone automation or integration with other processes.

A combination of a single slide construction, achieved using slides with excellent damping characteristics and a lubricating oil discharge control has increased follow-up performance for very small axis movement and has brought lost motion as close to zero as possible. Built-in spindles with forced cooling and built-in sensors give smooth rotation with low vibration thanks to beltless drive. This construction ensures outstanding accuracy and repeatability.

2 GN3200W
The GN3200W is the twin spindle version of the GN3200 which, equipped with a high speed loader, makes even higher productivity available. The machine width is 33 % shorter than on previous Miyano models and the required floor space has been reduced by 27 %, realizing significant space saving and optimum space utilization. A wide choice of infeed/outfeed devices, single or double high speed gantry loaders, transfer and turnover units makes the machine the best choice to meet specific automation needs.

The basic concept in designing the machine is preventing thermal displacement over time and the heat of machining being transferred to the body of the machine. This is achieved by a frame and bed with a thermally symmetric design, backed up by a wing-type headstock and a separately-installed coolant tank.

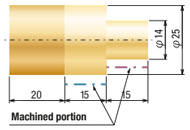
1



2

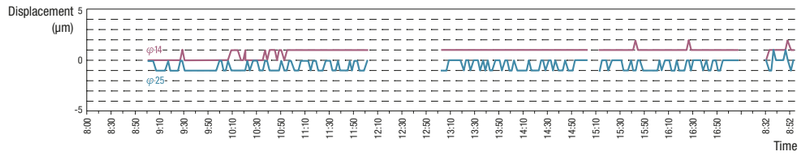
Machining accuracy

Test piece

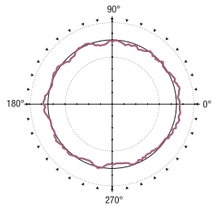


Material: BSBM
Spindle speed: 2,500 rpm
Feed: 0.05 mm/ rev
Depth of cut: 0.1 mm

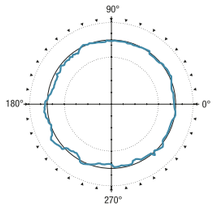
Dimensional accuracy



Roundness

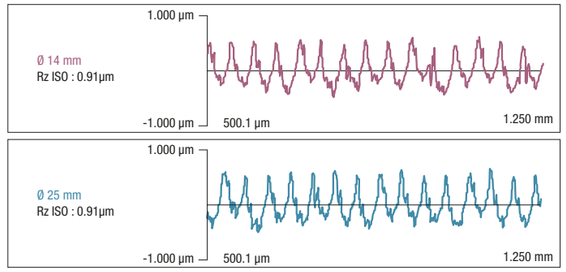


14 mm D
Roundness : 0.30 μm

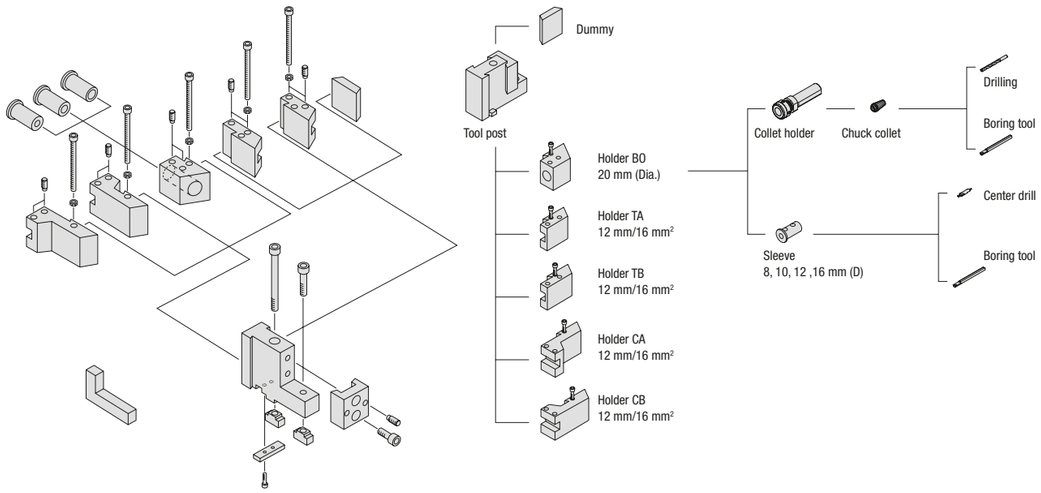


25 mm D
Roundness : 0.30 μm

Surface roughness

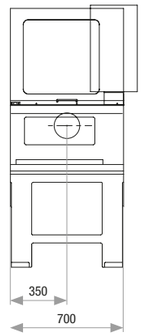


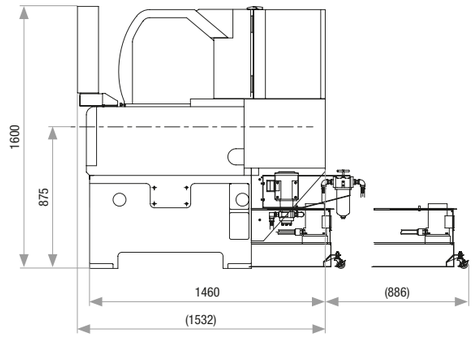
Tooling System



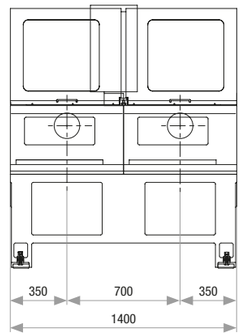
Floor plan

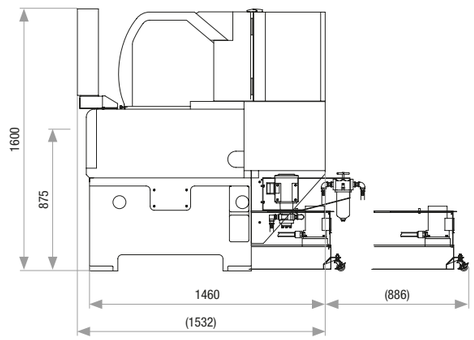
External view GN3200





External view GN3200W





Machine specification

Item		GN2-3200	GN2-3200W
Machining capacity			
Max. Diameter of chuck			
Pull type collet chuck		Ø 40 mm	Ø 40 mm
Fixed type collet chuck		Ø 35 mm	Ø 35 mm
Fine precision air chuck		Ø 45 mm	Ø 45 mm
Power chuck type		Ø 45 mm	Ø 45 mm
Diaphragm Chuck		Ø 45 mm	Ø 45 mm
Maximum machining length		Ø 50 mm	Ø 50 mm
Max. workpiece length with loader		Ø 40 mm	Ø 40 mm
Spindle			
Number of spindles		1	2
Spindle nose		Flat	Flat
Through hole diameter		Ø 17 mm	Ø 17 mm
Inner diameter of draw tube		Ø 11 mm	Ø 11 mm
Spindle speed range		8,000 rpm	8,000 rpm
Slide			
Number of tool platens		1	2
Type of slide		Horizontal linear tool platen	
	X axis	Dovetail	Dovetail
	Z axis	Dovetail	Dovetail
Control axis		2-Axis (Simultaneously X, Z)	2x2 axes (X, Z simultaneous)
Slide stroke	X axis	180 mm	180 mm
	Z axis	200 mm	200 mm
Rapid feed rate	X axis	15 m/min	15 m/min
	Z axis	15 m/min	15 m/min
Tools			
Shank size of square turning tool		□ 10, 12, (16) mm	□ 10, 12, (16) mm
Number of tools		5	5x2
Diameter of drill shank		Ø 20 mm	Ø 20 mm
Motor			
Spindle drive 15 min./cont.		2.2/1.5 kW	2.2/1.5 kW
Tank capacity			
Spindle cooling device		7 l	9 l
Lubricating system		1.5 l	1.5 l x 2
Coolant tank		90 l	200 l
Air supply			
Air pressure supply		4 bar (4 kgf/cm²)	4 bar (4 kgf/cm²)
Equipment power supply			
Power consumption		7.2 KVA	14 KVA
Machine dimensions			
Spindle center height		875 mm	875 mm
Machine height		1,600 mm	1,600 mm
Floor space			
Width		700 mm	1,400 mm
Depth		1,460 mm	
Machine weight		1,500 kg	2,700 kg
Others			
Splash guard interlock			
Optional accessories: Gantry loader, Chuck Systems, Air Blow, High pressure & inner coolant supply, Spindle inner coolant, Automatic fire-extinguisher, Automatic power off, Chip conveyor, Chip box, Total and preset counter, Total and multi counter, Coolant mist collector duct, Damper & duct, Warning light, Specification color, etc.			
Loader specifications (Optional)			
Type 2-axes NC		1 saddle 2 hands	1 saddle 2 hands
		–	2 saddle 4 hands
Max. Work Size		Ø 40 x 40 mm	Ø 40 x 40 mm
Max. Work Weight		250 g	250 g
Feed rate	Right and left operation	130 m/min	130 m/min
	Upper and lower sides	154 m/min	154 m/min
Control unit			
Control system		PMC axis control	PMC axis control
Control soft		Flexible loader control	Flexible loader control
Drive system	Right and left operation	Rack & pinion	Rack & pinion
	Upper and lower sides	Rack & pinion	Rack & pinion

NC specifications	**GN2-3200:** FS 0i-TF 1 system	**GN2-3200W:** FS 0i-TF 2 system
Controlled axis	X, Z	X, Z 2 axes × 2 systems
		Loader with one slide: 2 axes × 2 systems
		Loader with one slide: 2 axes × 1 system
Min. input increment	0.0001 mm, 0.00001 inch, 0.0001 deg	
Min. output resolution	X-axis: 0.00005 mm (Radius value) Z axis: 0.0001 mm	
Interpolation	G01, G02, G03	
Thread cutting	G32, G33, G34	
Rapid feed override	0–100%	
Cutting feed override	0–150%	
Program storage capacity	512 kB (1280 m)	Total of 2 systems 1 Mb (2560 m)
No of registered programs	400	800 (Total of 2 systems)
Spindle function	Direct speed programming via 4-digit S word (G97) / Constant surface speed control (G96)	
Tool function	T ##** (## = Tool number & geometry, ** = Wear compensation number)	
Tool compensation	64 pieces (total of 3 systems: 96)	
Data input-and-output	RS-232C, Memory card interface	
Others	8.4" color LCD, Work piece coordinate system (G52–G59), Inch/metric change, Chamfering/corner R, Programmable data input (G10), Direct drawing dimension programming, Drilling canned cycle, Custom macro, Multiple repetitive cyle, Background editing, Spindle orientation, Rigid tapping, Tool life management, Tool nose R compensation (G40, 641, G42), Actual cutting feed rate display, Operating time/Parts No. display	
Options	Polar coordinate interpolation, Cylindrical interpolation, Cs outline control.	

LFV-Technology

New Perspectives: thanks to Low Frequency Vibration (LFV) Cutting.

LFV, standing for “Low Frequency Vibration” cutting, is a new universally applicable and highly efficient cutting technology which allows machining virtually any part geometries from a highly diverse range of materials. While doing so, defined chip breaking significantly reduces the frequency of unnecessary machine stops caused by long chips.

Our machines equipped with LFV technology efficiently handle defined chip breaking when cutting difficult-to-machine materials thanks to their special control technology.

This technology opens up completely new possibilities in machining technology. Discover now this new “cutting-edge“ technology.

Advantages

Cutting resistance is lowered.

No built-up edge is formed.

No unnecessary machine stop.

Tool life is extended.

Thanks to the LFV technology, long chips are finally a thing of the past - this protects your lathe and optimizes the cutting process.

Defined chip breaking

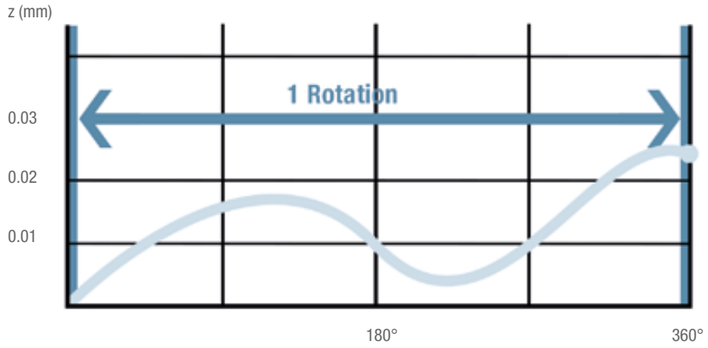
The controlled chip breaking may be done in three different modes:

Machines with LFV-Technology

Machine	Type	Axes with LFV	Mode 1	Mode 2	Mode 3
CINCOM					
M32	V	X1 / Z1 / X3 / Z3	x	x	x
	VIII	X1 / Z1 / X3 / Z3	x	x	x
L32	VIII	X1 / Z1 / X2 / Z2	x	x	x
	X	X1 / Z1 / X2 / Z2	x	x	x
	XII	X1 / Z1 / X2 / Z2	x	x	x
L20	VIII	X1 / Z1 / X2 / Z2	x	x	x
	X	X1 / Z1	x	x	x
	XII	X1 / Z1	x	x	x
L12	VII	X1 / Z1 / X2 / Z2	x	x	x
	X	X1 / Z1 / X2 / Z2	x	x	x
A20	VII	X1 / Z1 / X2 / Z2	x	–	–
D25	VII	X1 / Z1 / X3 / Z3	x	x	x
	VIII	X1 / Z1 / X3 / Z3	x	x	x
MC20	III	X / Z	x	x	x
	IV	X / Z	x	x	x
MIYANO					
BNA-42 GTY		X1 / Z1	x	x	x
VC03		X / Z	x	x	x
ANX-42SYY		X1 / Z1 / X2 / Z2	x	–	–

Mode 1

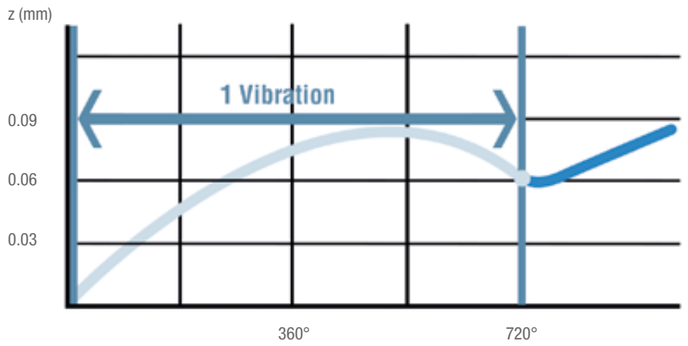
Specifies the number of vibrations for one spindle rotation.



If short swarfs are desired.

Mode 2

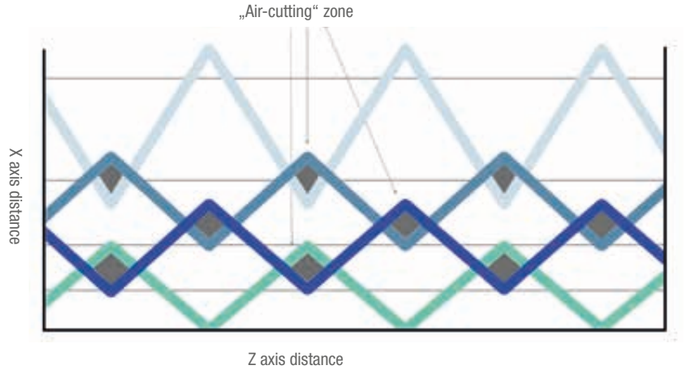
Specifies the number of spindle rotations per vibration.



If high circumferential speed for finish or depth machining with small diameter is desired.

Mode 3

Allows for turning threads.



If chip breaking when turning threads is desired.

ATC-Technology

We have developed a B-axis ATC (Automatic Tool Changer) while keeping the operability of the best-selling L20 machine unchanged.

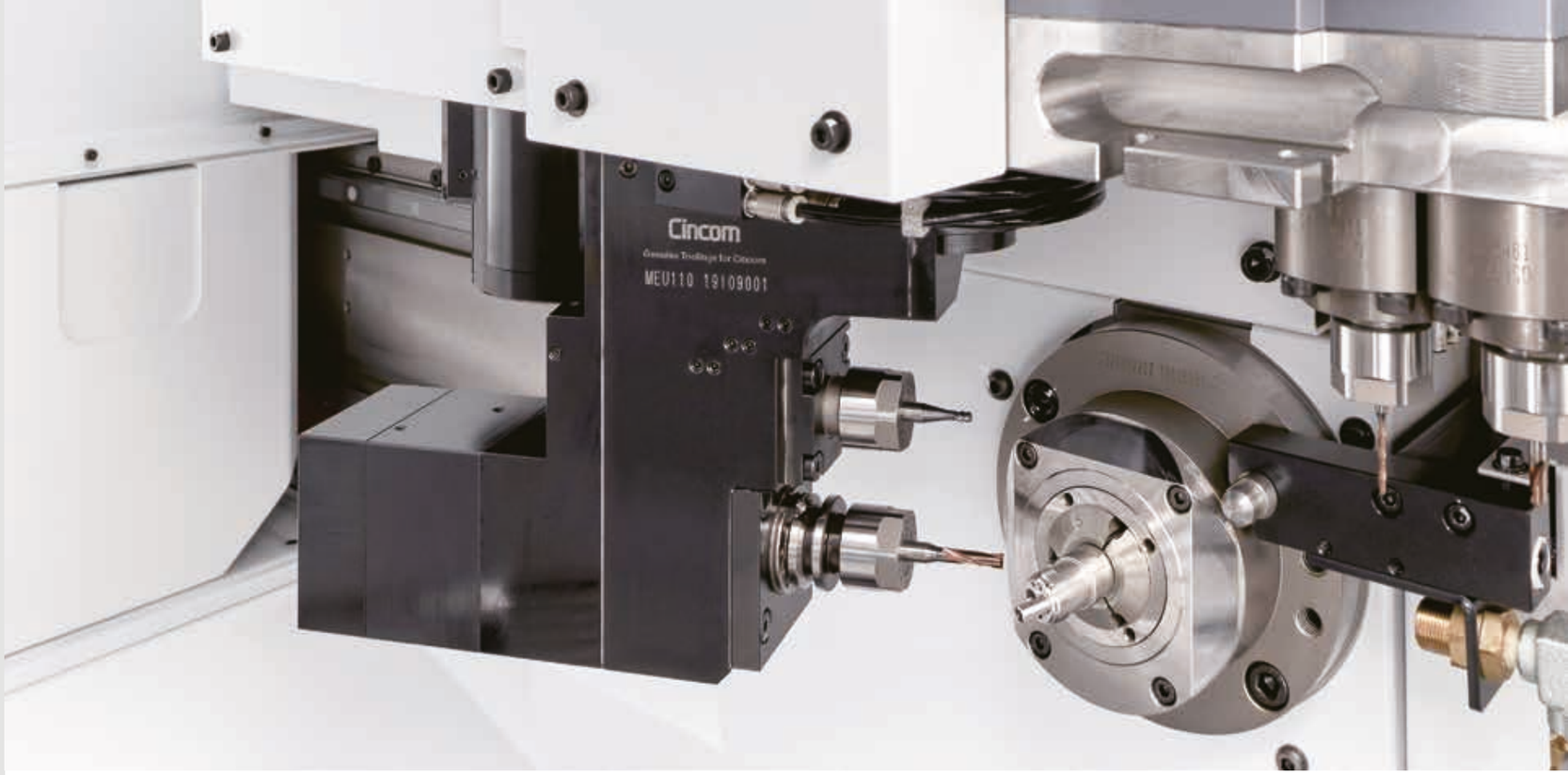
Citizen's unique, compactly designed ATC tooling with B-axis can be mounted on the gang tool post to enable use of a total of 13 front machining B-axis tools, comprising 12 ATC tools and one tool built into the tooling. (L20XII dedicated option)

Advantages

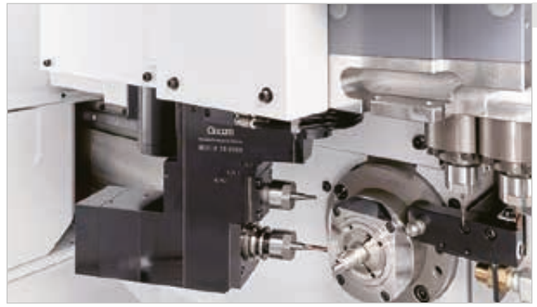
With the L20's operability unchanged, using the ATC tooling in conjunction with existing turning tools and cross machining rotary tools combines the machining speed of a Swiss-type automatic lathe thanks to the gang tool post. With the versatility of a B-axis turning center equipped with an ATC.

The capability for machining complex parts like medical parts including implants, the ATC provides an environment where the tool setting for machining several types of workpieces can be completed in a single setup.

B-axis machining, the ATC tooling can also be used in a wide range of applications such as those with a lot of cross/ end face machining, utilizing a wealth of tool variations including slitting/hobbing.



Automatic Tool Change


1


2

1 During B-axis machining
2 During an Automatic Tool Change

Tool holder/ sample workpiece

Technical data

Key feature	
Max. rotary tool speed on ATC tooling	12,000 min^{-1}
Motor output	2.2 kW
Tool holder type	JBS-15T
Number of B-axis tools	12 (magazine) + 1 (built-in)
Total number of tools mountable on machine	34 max.(including B-axis tools)
Tool change time (chip-to-chip)	4.0 sec
Maximum tool outer diameter	30 mm
Maximum tool gripping diameter	10 mm (ER16)

Laser-Technology

The hybrid system from Citizen – precision turning and laser cutting/welding.

Thanks to a state-of-the-art conversion kit, it has become possible to expand the functionality of a lathe by laser technology and enhance the metal processing range significantly.

The laser primarily adopts the part of a cutting tool, can also weld, supplements the usual cutter and replaces the latter in microscale applications. The strength of the hybrid system, comprising a lathe plus a laser system, lies in the repeatability as all sub-processes are handled on just one machine. This saves acquisition costs for a new stand-alone laser machine and also production costs when distributing the manufacturing process between two machines.

Advantages

Filigree cutting.

Corner radius close to 0.

Excellent beam quality.

High machining speed.

Long service life (approx. 20,000 hours).

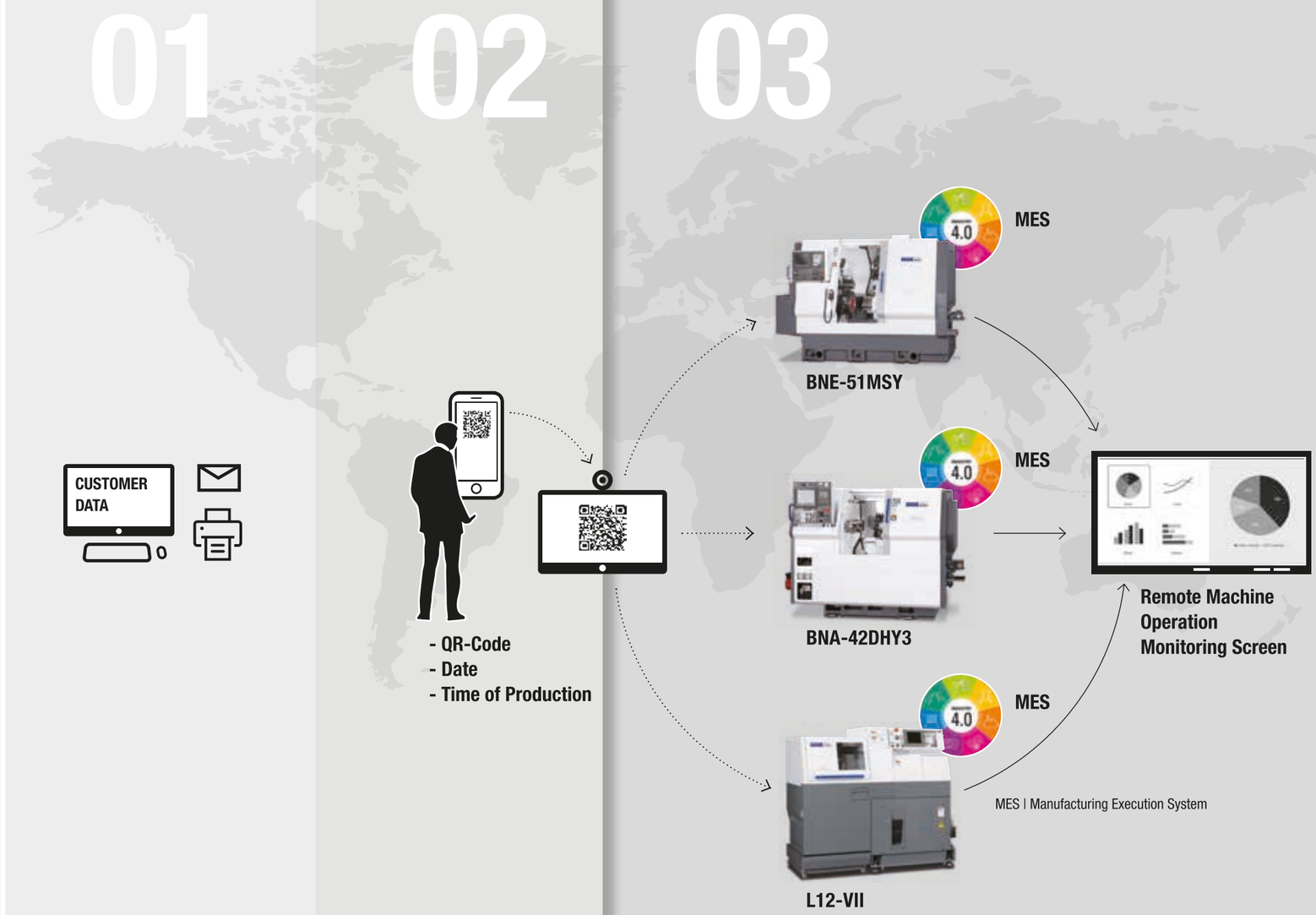
Turning and laser machining on one machine.

Laser cutting enables the cutting out of complex filigree structures in thin materials. Cutting process dynamics may directly be influenced by the parameters laser power, beam quality and wavelength of the laser light as well as the focus diameter.

Industry 4.0

Industry 4.0 – trailblazing, digital transformation.

Thanks to progressive digitization, production steps within one machine – or also within several machines combined – may be monitored and documented in a more efficient way. The networking of machines is the key to process optimization and puts the economical factor first. Using integrated sensors, the permanent supervision of the machine functions is granted which benefits the maintenance system during operation. Via remote maintenance, access to the machines from anywhere is possible and digital intervention may solve serious problems in case of an emergency.
This not only saves time but also unnecessary field service calls. Industry 4.0 pursues the target of achieving optimum machine availability due to digital networking.



Industry 4.0

Monitoring and controlling by sensor technology.

The sensors installed in the lathe detect parameters of the following measuring units: Temperature, acceleration and vibrations. Errors in the process sequence is detected by the sensors and directly transmitted to the PC of the operator in charge. In case of machines integrated in a production chain, a signal is sent to cooperating machines to make them stop the production. If e. g. an error occurs at the unloading unit, the production at lathe and loading system will be interrupted until the error is removed.

To grant a smooth exchange of data between the operating systems and make all units involved „speak the same language“, Citizen cooperates with a provider specialized in interface connections who bundles up a wide variety of computer languages to one common one.

The added value of Citizen Lathes.

01

Maintenance

Installed sensors check the temperature during the turning process and trigger an alarm in case overheating occurs at axes or spindles. The operating conditions may be queried at any time and even the smallest irregularities are indicated right away.

Barfeeder

02

Remote maintenance

If necessary, the machines connected to the network can be checked by a service technician via remote diagnosis. The remote diagnostics helps to avoid unnecessary machine stops, because the cause of defect can be identified beforehand and measures can be coordinated.

Machine

03

Process automation

CNC lathes can communicate technology-based and coordinate processes. The automation can also take place between barfeeder, lathe and unloading magazine to optimize the successive processes.

Unloading system

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