

RB

Multi Centers



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Certified to ISO 9001
(Quality Management System)
Certified to ISO 14001
(Environmental Management System)

SNK URL <http://www.snkc.co.jp/>

The export of all or any part of this product shall be subject to the permission of your country's Government prior to such export.

 **SHIN NIPPON KOKI**

- High Rigidity
- Reasonable
- Economical

High Accuracy

Positioning accuracy

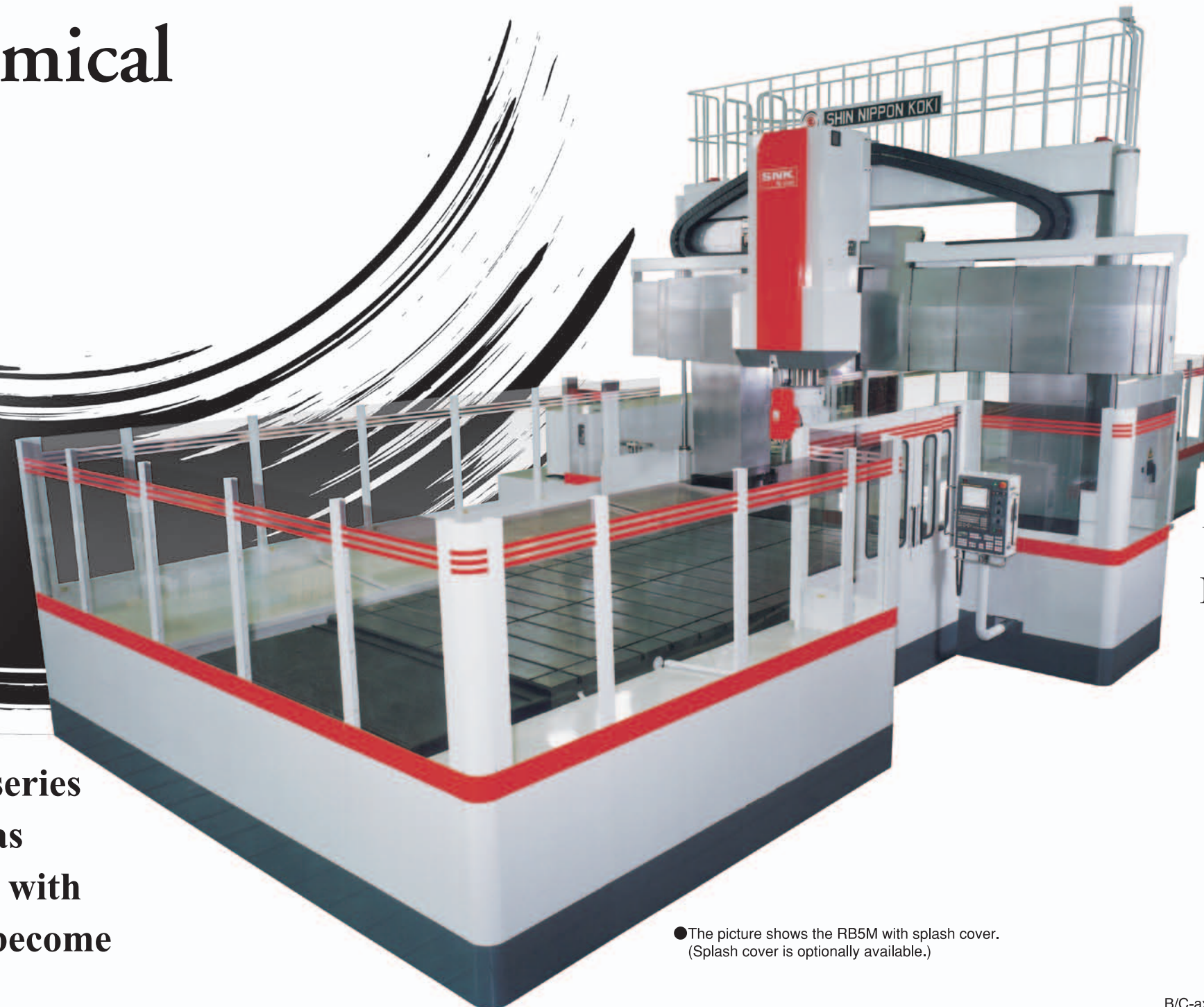
Machine with scale feedback (optional) X,Y axis $\pm 0.004\text{mm}$ / 1,000mm
Z axis $\pm 0.004\text{mm}$ / 600mm

Standard Machine X,Y axis $\pm 0.006\text{mm}$ / 1,000mm
Z axis $\pm 0.006\text{mm}$ / 600mm

Repeatability

Machine with scale feedback (optional) X,Y,Z axis $\pm 0.003\text{mm}$

Standard machine X,Y,Z axis $\pm 0.005\text{mm}$



RB five-face machining center series that fulfills high productivity has undergone a complete make-up with new economical advantages to become your best partner.

Step-up for further progress.
Ascend to the next level.

From five-face
to **multi-face**



●The picture shows the RB5M with splash cover.
(Splash cover is optionally available.)

90° universal attachment (option),
B/C-axis 1° index, and Automatic tool changer compatible.

Round column and quill for consistent machining.

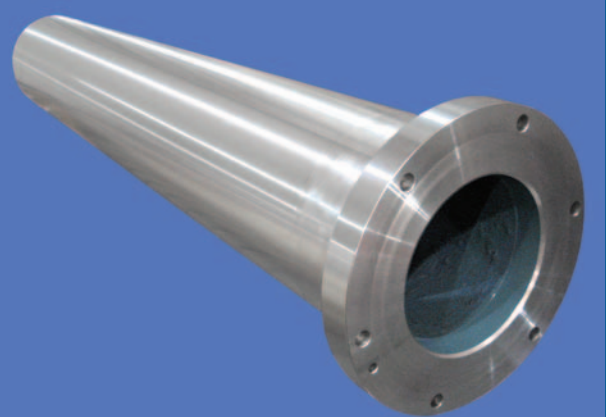
High Rigidity

Reasonable

Economical



Quill for superior operability



Round column construction for symmetrical heat distribution.

Round Column

Ambient temperature change imparts a large effect on large-size machining centers so symmetrical heat distributing construction for the column that supports the crossrail, spindle head, quill and tools is very important.

As horizontal cross-section of round column has a complete symmetrical heat distribution, there is no leaning of the central axis of the column due to changes in ambient temperature, this helps in maintaining machine accuracy and supports high-precision machining.

The column, which is centrifugal cast* using SNK's in-house technology is perfectly symmetrical, maintains even thickness without a core and has no inside defects, thus has a high rigidity.

Additionally, the crossrail holds the circumference of the round columns, giving it high rigidity which allows the distance between the centers of the spindle and column to be shorter. Not only does the round column have advantage over environmental issues, but this construction minimizes the effect of the uneven load of the spindle head and crossrail supporting high precision machining.

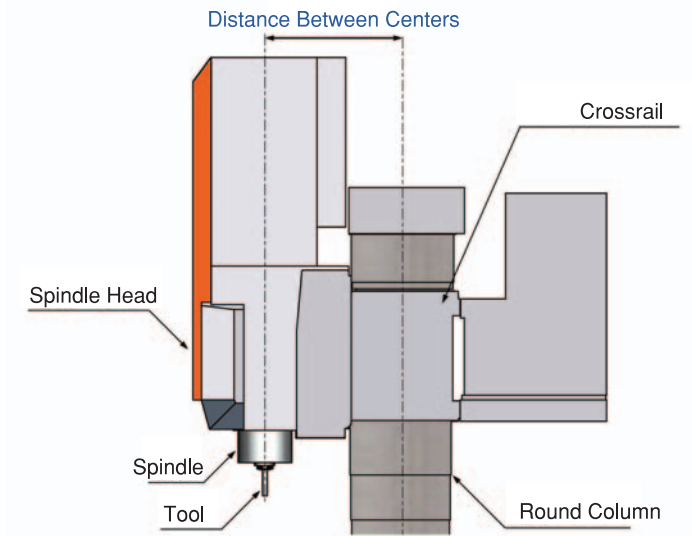
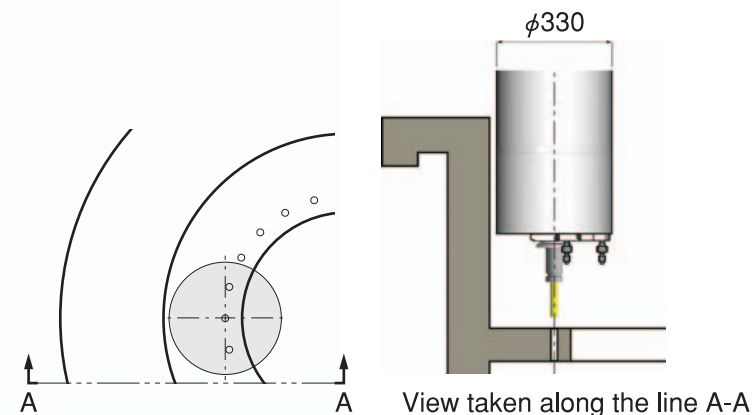
We offer the superior machining center having highly rigid column and reasonable gripping structure giving the excellent cost performance.

*Centrifugal cast is the method of solidifying melted steel by working strong centrifugal force

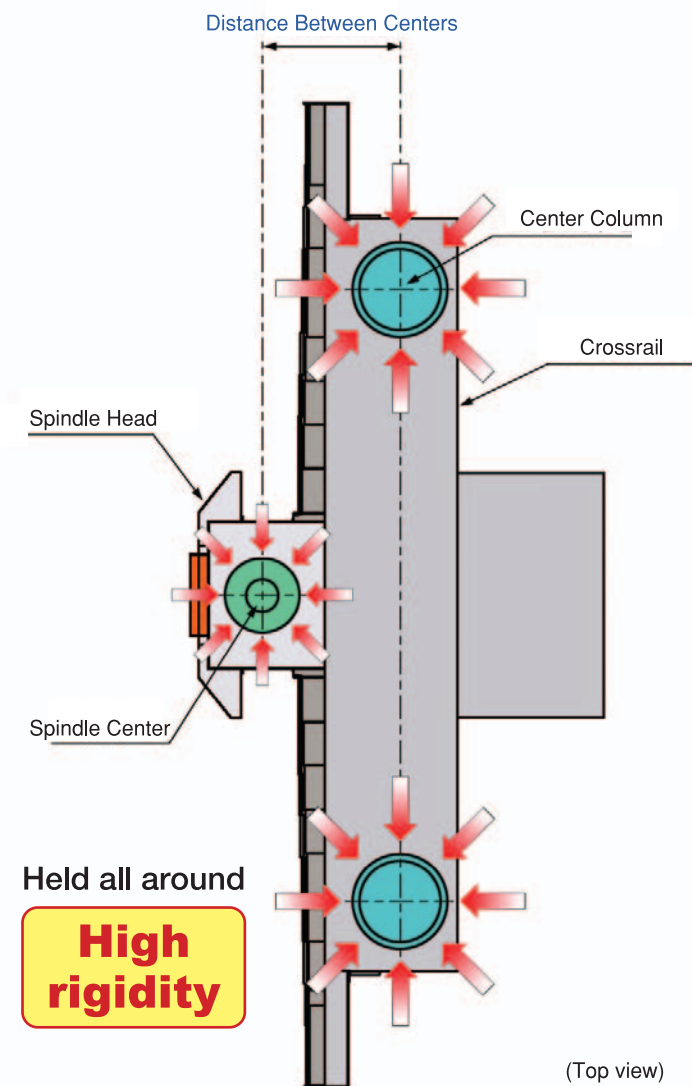
Quill (Round Spindle)

The quill has a round cross-sectional area therefore interference is easy to grasp making it easy to operate over uneven surfaces.

In addition, the spindle head holds the entirety of the round quill, absorbs cutting loads from any angle and therefore provides stability for heavy cutting.



(Side view)



(Top view)

Full-stroke
Z/W axis under
NC control

Four-axis
controlled

Four-axis control to support large workpieces

Full-stroke under NC control in W axis (crossrail) makes possible for machining in large area against workpiece with steps and unique shapes.

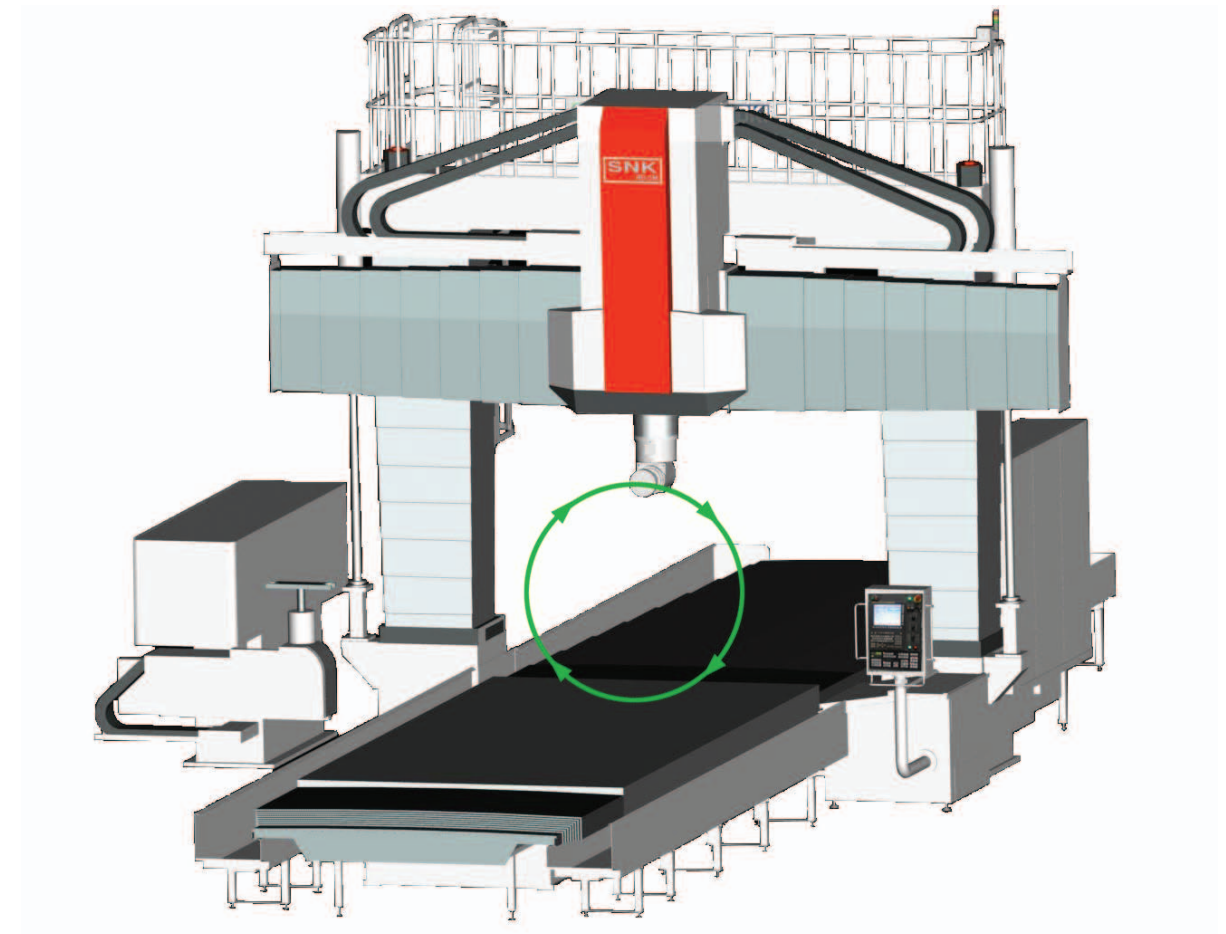
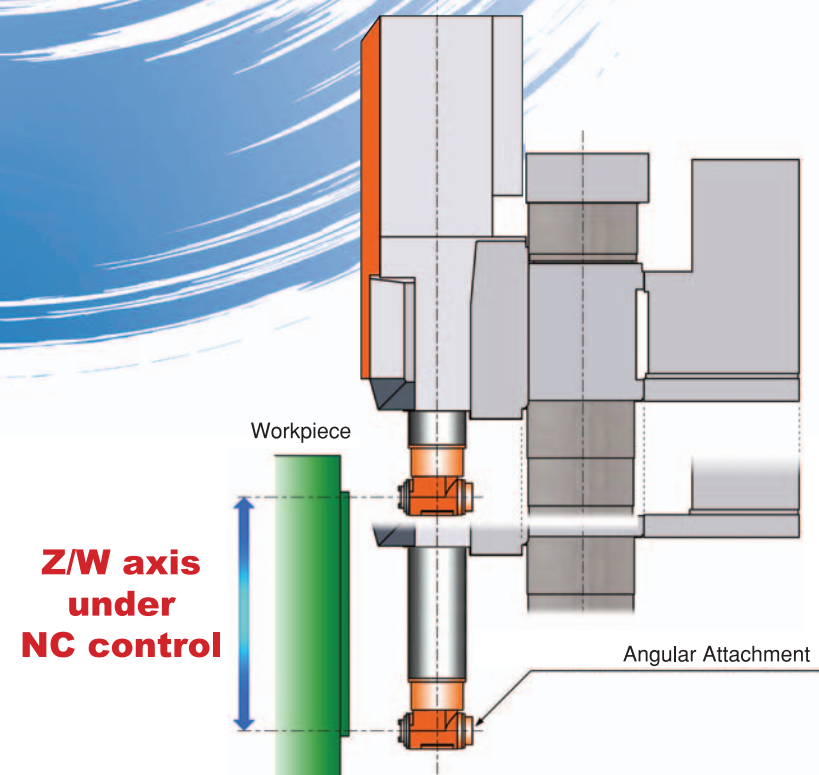
It is possible to utilize the machine size to its fullest by putting more space into distance between columns and Y axis stroke against table width.

In addition, it is equipped with an extended Z axis (quill), (option : Zst. 800mm).

Equipped the W axis machining mode that effectively uses W axis !

W axis machining mode is to machine by X, Y, W axis with X, Y, Z axis command.

It is possible to use different machining axes according to the machining situation without editing complicated NC programs. The W axis enable large stroke machining, where previously there were limitations on the Z axis stroke during circular interpolation and tool radius compensation.



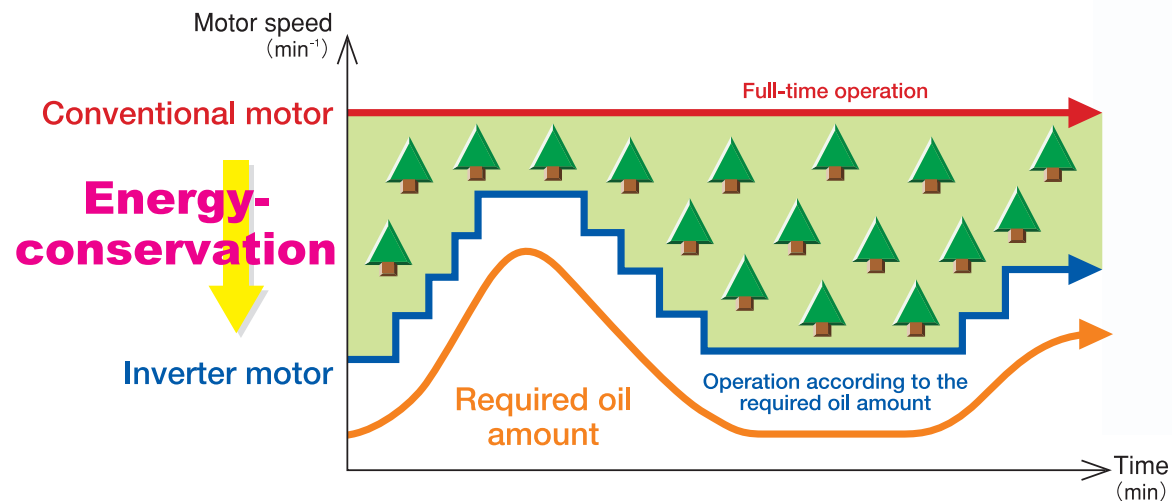
Energy-conserving functions that contribute to ecology

The effort for ecology is required in contemporary society. The RB high-speed machining center is equipped with many ecological functions.

Provision for energy-conserving and environment

	Energy-conservation	Low-heat-generation	Noise-reduction	Natural resources conservation
Equipment	Gas balancer in W axis			
	Energy-saving type hydraulic solenoid valve			
	Linear guide filled with grease for X, Y axis			
	LED indicator light (spot light, three-lamp flashing light)			
Function	Inverter controlled hydraulic unit for the machine			
	Inverter controlled oil temperature regulator for cooling spindle			
	Auto-off function for the ATC hydraulic unit when not in operation			
	Intermittent driving time control for Z, W axis lubrication pump			
	Added intermittent operation mode for the chip conveyor (option)			

Inverter control of hydraulic unit in the machine



By adopting an inverter motor on the hydraulic unit, controlled the amount of oil in stages in response to the amount of oil needed. Reduced the running of motor during idle time, and significantly reduced the power consumption.

W axis gas balancer

By adopting a gas balancer in the W axis, a more compact hydraulic unit can be utilized. Compared to conventional hydraulic balancers, power consumption is significantly reduced.



LED spot light



LED three-lamp flashing light



Energy conserving efficiency
(Compared to our past products)

Reduction of CO₂ emissions

0.000555ton-CO₂/kWh

8.4 ton/year

Reduction of consumed power

500 hours operation/month

15,173 kWh/year

Spindle lineup for various machining

Spindle type can be chosen according to customer's machining method.

- "Standard type" for general steel machining
- "High-speed type" based on standard type available for mold machining and aluminum machining
- "High-power type" available for latest high depth of cut and high feed machining
- "High-torque type" available for low speed and high torque heavy cutting machining

**Strong!
ISO No.50
spindle**
(dual face contact can
be equipped with)

Cutting ability

Vertical spindle (standard type) 22kW full-power cutting

Tool	φ160 face mill (10blades)
Work material	S45C
Spindle speed	350min ⁻¹
Cutting feed rate	1,300mm/min
Depth of cut	5×120mm
Chip removal rate	780cc/min

Vertical spindle (standard type) 22kW full-power cutting

Tool	φ160 face mill (8blades)
Work material	S45C
Spindle speed	350min ⁻¹
Cutting feed rate	7,000mm/min
Depth of cut	1×128mm
Chip removal rate	896cc/min

Vertical spindle (standard type) Large-diameter drill machining

Tool	φ68 indexable drill
Work material	S45C
Spindle speed	800min ⁻¹
Cutting feed rate	80mm/min
Fixed cycle	G81
Lubrication	through spindle

Vertical spindle (standard type) Large-diameter tap machining

Tool	M42×4.5
Work material	SS400
Spindle speed	100min ⁻¹
Cutting feed rate	450mm/min
Fixed cycle	G84 rigid tap
Lubrication	externally fed

90° Angular attachment (standard) 22kW full-power

Tool	φ160 face mill (7blades)
Work material	S45C
Spindle speed	350min ⁻¹
Cutting feed rate	1,100mm/min
Depth of cut	5×120mm
Chip removal rate	660cc/min
Quill overhang	300mm

90° Angular attachment (standard) Large-diameter drill machining

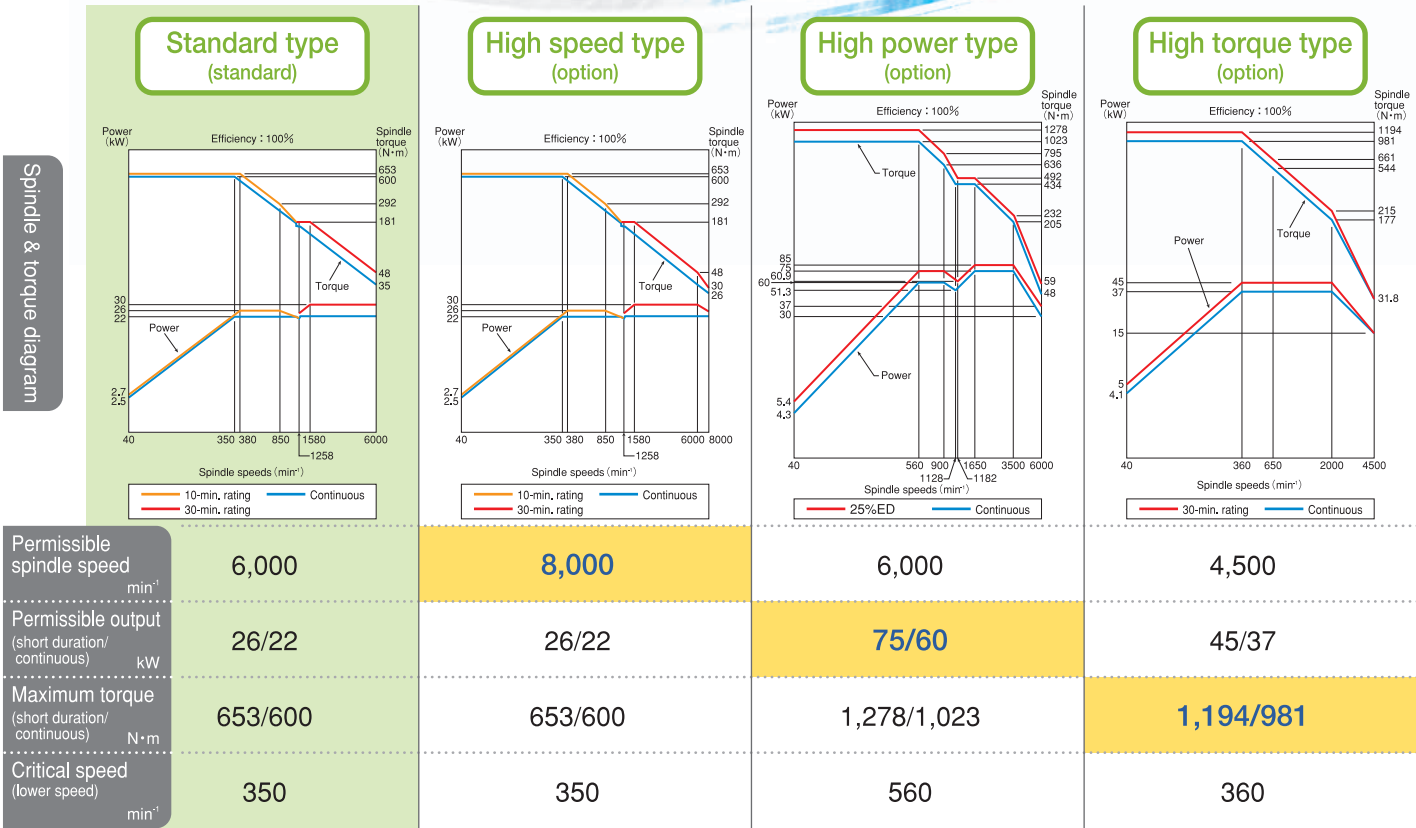
Tool	φ74 indexable drill
Work material	SC450
Spindle speed	516min ⁻¹
Cutting feed rate	46mm/min
Fixed cycle	G81
Lubrication	through spindle
Depth of hole	414mm through hole

90° universal attachment (option) 15kW full-power cutting

Tool	φ160 face mill (7blades)
Work material	S45C
Spindle speed	385min ⁻¹
Cutting feed rate	1,300mm/min
Depth of cut	3×120mm
Chip removal rate	468cc/min
Quill overhang	0mm

Vertical spindle (high power type) End mill heavy cutting

Tool	φ80 end mill (5blades)
Work material	Ti-6Al-4V
Spindle speed	245min ⁻¹
Cutting feed rate	123mm/min
Depth of cut	40×52mm
Chip removal rate	255cc/min



Vertical spindle (high power type) 60kW full-power

Tool	φ125 face mill (7blades)
Work material	S45C
Spindle speed	510min ⁻¹
Cutting feed rate	4,000mm/min
Depth of cut	5×100mm

Chip removal rate **2,000** cc/min

Attachment offers process intensive capability

Equipments to support operation efficiency up

Attachment can be chosen according to the customer's workpiece.

- "90° Angular attachment" establishes strong five-face machining
- "Extension attachment" to approach narrow area
- "90° universal attachment" expands machining area to multi-face machining
- "30° inclined attachment" improves quality level of finished surface in the mold's aesthetic shape

X, Y axis equipped with linear guides

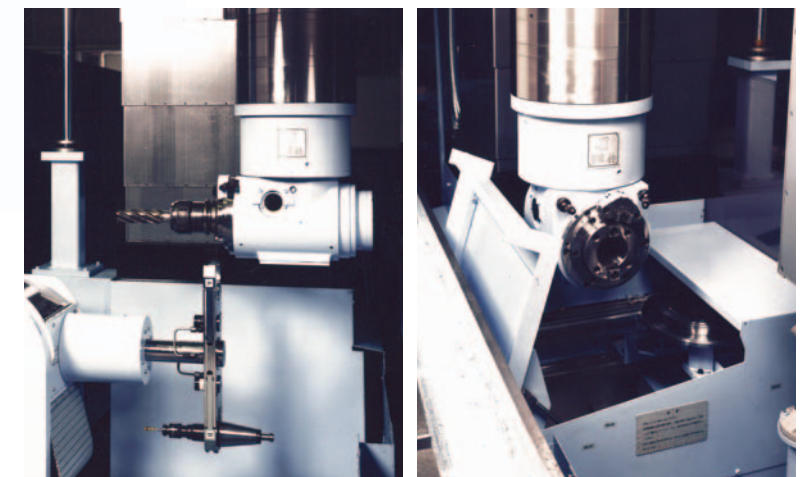
Rapid traverse is increased 25%
(compared to company's products)

Positioning speed up by 25% compared to our previous company products (X, Y axis rapid traverse is 25m/min). Shortening positioning time reduces cycle time.

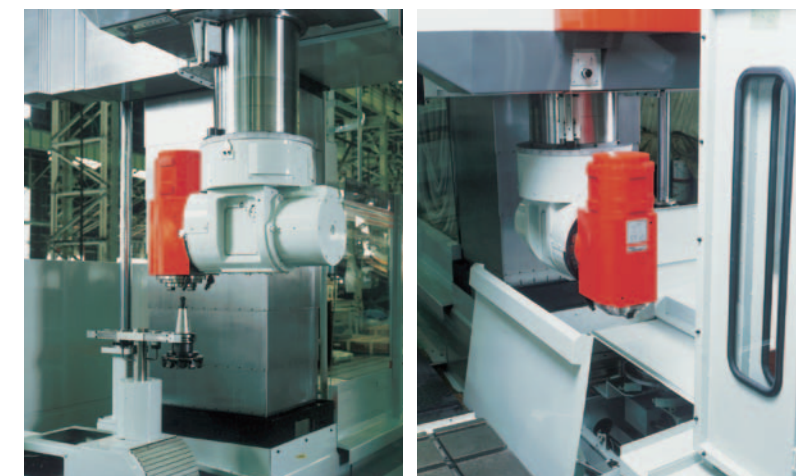
Automatic Tool Changer (ATC-40-tool storage capacity) and Automatic Attachment Changer (AAC) for one attachment is standard

Unmanned 5 face machining operation increases machine utilization time. Operation is simplified by assigning M codes for the ATC, AAC, and attachment's rotational movement.

90° Angular Attachment

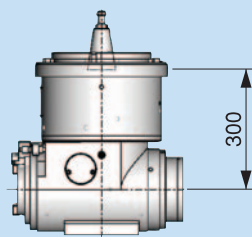


90° Universal Attachment (option)



Vertical spindle

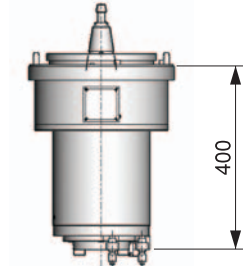
90° Angular Attachment (standard)



ATC•AAC feasible

Permissible output : 22kW
Permissible spindle speed : 5,000min⁻¹

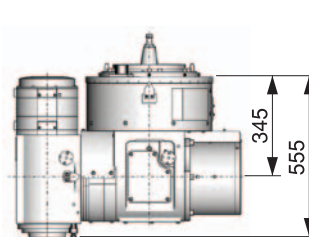
Extension Attachment (option)



ATC•AAC feasible

Permissible output : 22kW
Permissible spindle speed : 6,000min⁻¹

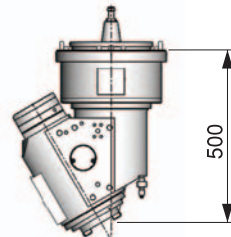
90° Universal Attachment (option)



ATC•AAC feasible

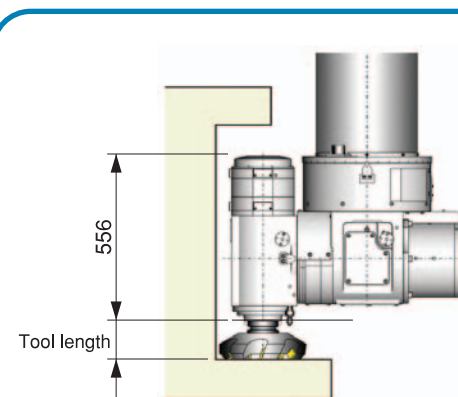
Permissible output : 15kW
Permissible spindle speed : 5,000min⁻¹

30° Inclined Attachment (option)



ATC•AAC feasible

Permissible output : 4kW
Permissible spindle speed : 6,000min⁻¹



- Automatic tool changer and automatic attachment changer are available.
- Vertical (±95°)/ horizontal (±180°) automatic rotating (1°index) is available.
- Through spindle is optionally available.

Possible to machine inclined surfaces in 1°increments, both vertically and horizontally.
Since the spindle on the attachment is offset from the center of the vertical spindle, it is possible to get much closer to the wall. Also, it is now possible to machine under hangover with the length of the attachment is shorter.

*Please contact us if you have any questions.

Automatic Pallet Changer (APC-option)

Reduces idling time caused by setup, and helps increase machine operation rate. In addition, it can be equipped with pallet systems and FMS flexibly systems according to the customers' factory facility.

Chip-conveyor (option)

By automating chip emission inside, reduce the idling time caused due to cleaning.

Splash cover (option)

Prevents chips and coolant scattering, keeps clean factory and improves operator's safety.

Facilitating five-face/ multi-face machining

Program support system ①

New five-face machining software

Easy Operation

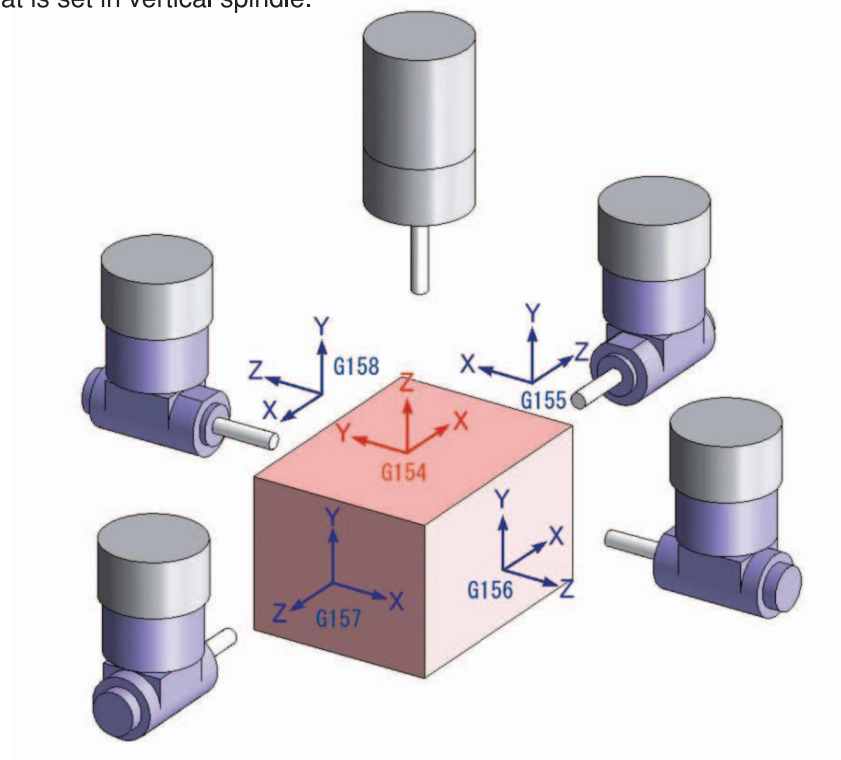
Controlling X, Y, Z, W axis by X, Y, Z axis command

Top surface, four-side surfaces and inclined surfaces can be easily programmed like a Machining Center, making it an easy to use 5-face Multi-Center.

- Automated coordinate conversion
- Fully automated sorting for Z-W axis
- Automatic interference check for downward movement of crossrail (W-axis)
- Multi-face machining done by 90° universal attachment is available.

Automated coordinate conversion (Coordinate system setting function)

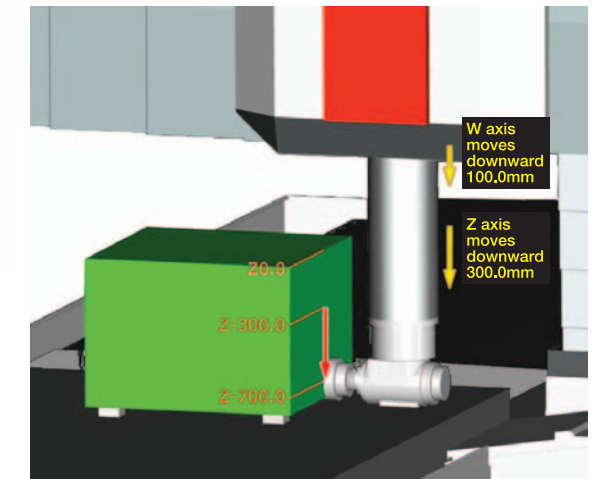
In side surface, it's possible to set attachment's program coordination system in the program based on a coordination that is set in vertical spindle.



Fully automated sorting for Z-W axis

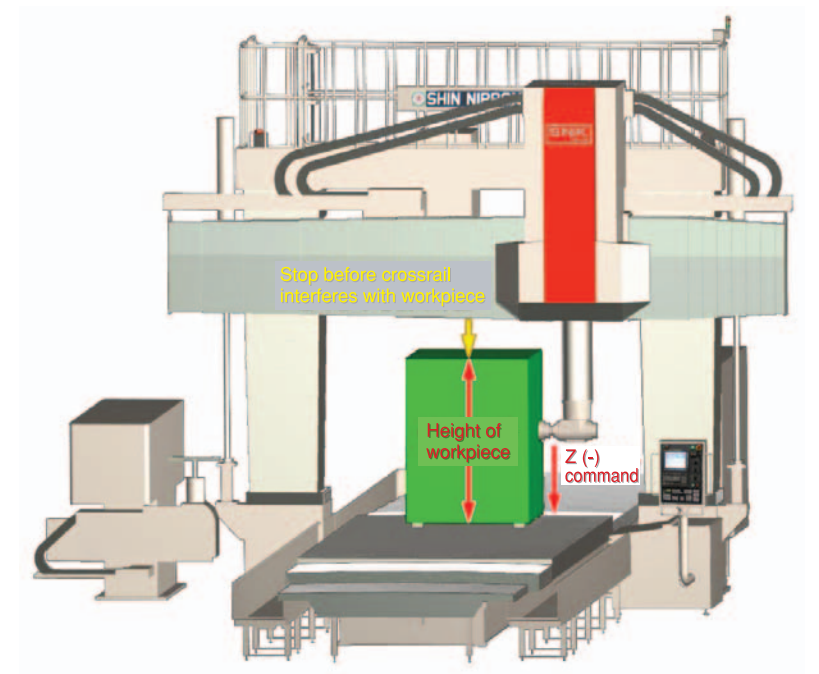
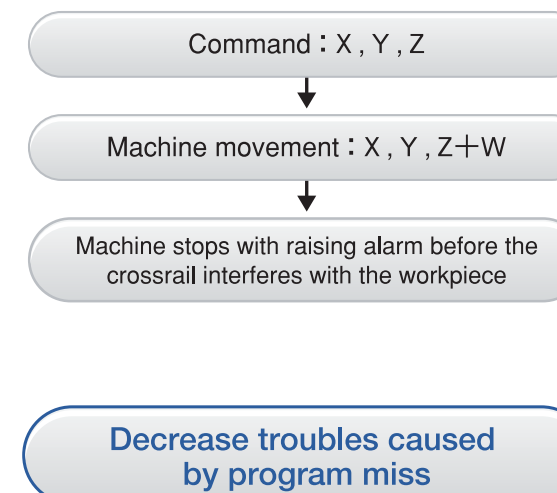
The W axis automatically compensates when the Z-axis stroke reaches its limit to 600mm during positioning and linear interpolation, operating Z+W axes. Thus it is not necessary to differentiate using Z/W axis. The Z axis command (Y axis command for side surfaces) will utilize the full stroke appropriating the Z+W axes.

(Example)
 G90G01 X0 Z-50.0 → G90G01 X0 Z-50.0 W0
 G90G01 X0 Z-550.0 → G90G01 X0 Z-200.0 W-350.0
 (In case of lower limit of machine Z axis stroke is -200.0)



Automatic interference check for downward movement of crossrail

When machining downward of workpiece such as machining side surface of tall workpiece, bottom of crossrail might interfere with top surface of workpiece. The new five-face machining software, it checks interference by specifying the height of workpiece.



Simplify five-face/ multi-face machining Program support system ②

Easy Operation

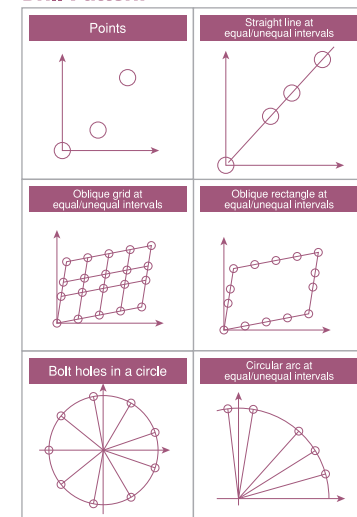
Interactive machining pattern software (Option)

Major machining patterns necessary for parts machining are available.

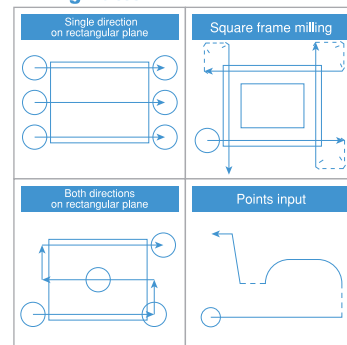
Selection of work and tool materials on the interactive screen automatically outputs the optimum cutting conditions.

The software will drastically reduce the program preparation time. Can be implemented as immediate use on the shop floor.

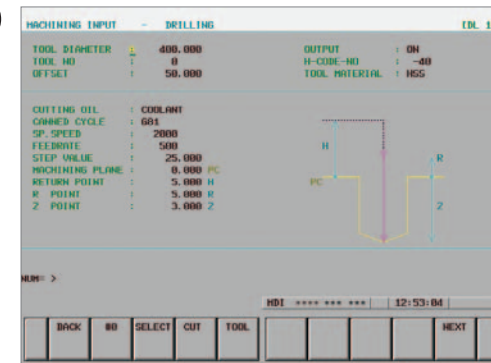
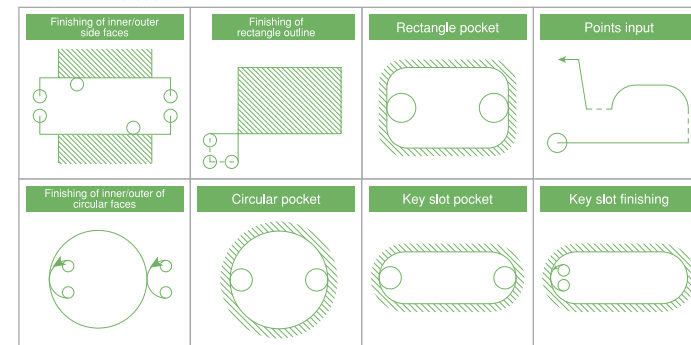
Drill Pattern



Milling Pattern



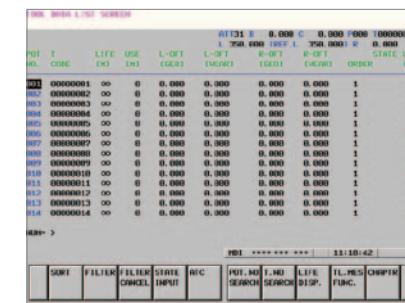
End-mill Pattern



Support machining/maintenance Supporting function

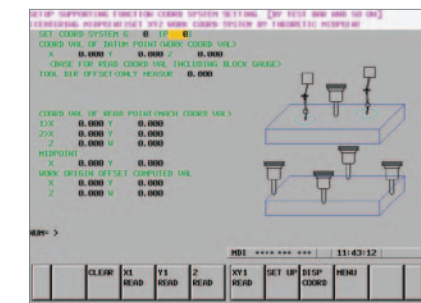
Tool management and tool life management

T code (maximum eight-digit) that is corresponded to tool mounting pod No. can be registered freely. Program modification is not necessary in changing pod No. In addition, tool life control can be set easily in the same function.



Setup supporting function (option)

The work coordinate system can be set simply by getting the tool or test bar in contact with the work and operating the screen. It also can be set by using the automatic measuring probe (option). ※Automatic alignment function is necessary



Operation result & chip production ratio management

The machine operation result and chip production ratio are provided on a real-time basis.

Note : Chip production ratio means "net cutting time" when the machine actually works. SNK calls the ratio of this net cutting time to the entire operation time "chip production ratio".

Status display of major devices

The status of major devices such as the spindle, ATC, and AAC are displayed so that cause of trouble can easily be identified for early solution when the trouble occurs.

Alarm detail display and history display

Alarms are displayed in detail to minimize machine stop due to trouble. The alarm history of up to 100 past alarms are stored and displayed.

Maintenance display

Periodic inspection information is displayed. Consumable goods such as grease and oil and back-up battery can be managed efficiently.

Realizing higher-precision machining — TCD (Thermal Controlled Design)(Option)

New RB series has round columns and quills with complete symmetrical heat distributing construction, therefore, it is less affected by the change in ambient temperature.

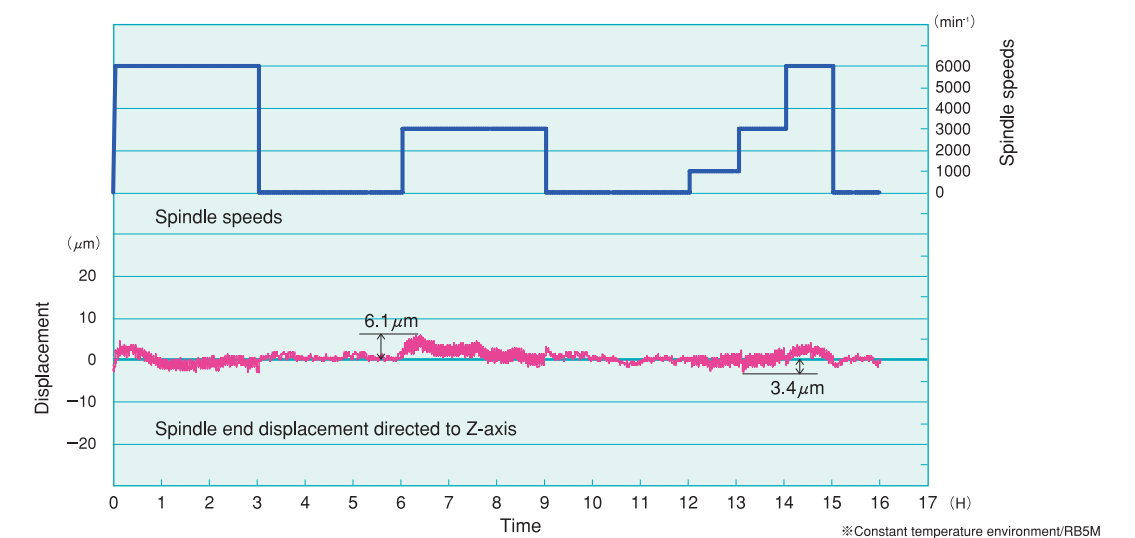
However, while machining, i.e. at the time of spindle rotation, the spindle bearings produce heat.

When the heat is transferred to the spindle, machining accuracy is affected. Circulating oil, controls the temperature around spindle and reduces temperature change, but cannot bring effect of the change to zero.

TCD (Thermal Controlled Design) is the function that figures out the effect and controls spindle end displacement directed to Z-axis precisely in order to eliminate it.



Measured value of Z-axis displacement when TCD is effective



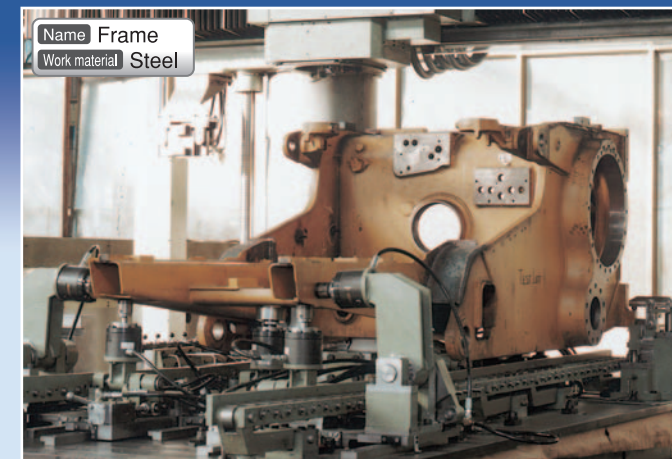
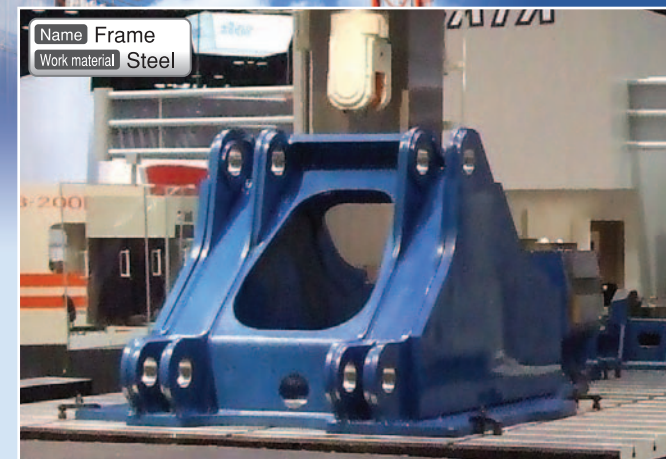
Machining Example

High-speed five-face RB machining center series that provide high productivity show the best cost performance for workpiece in many kinds of industries.

Industrial machinery



Construction machinery industry



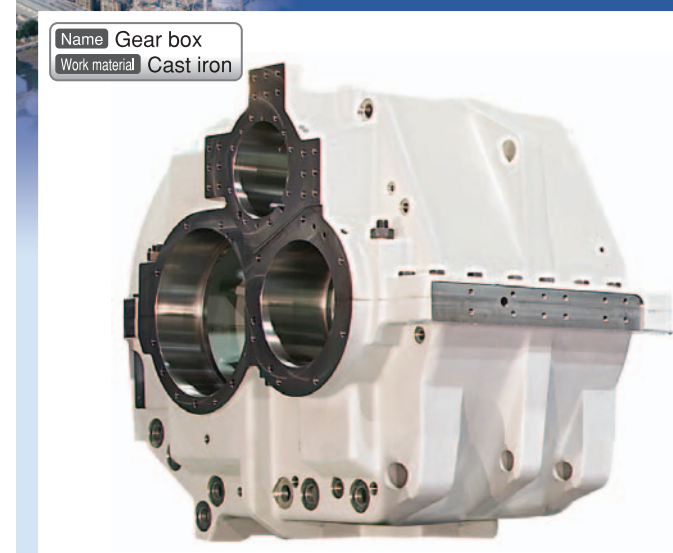
Shipbuilding Industry



IT industry



Energy industry



Automobile Industry



Main Specifications

Spec. items				RB2M			RB3M			RB4M			RB5M			RB6M						
Effective distance between columns			mm	1,700			2,100			2,600			3,100			3,600						
Distance from table top to spindle end			mm	1,350 〈1,100〉	1,600 〈1,350〉	1,850 〈1,600〉	1,500 〈1,250〉	1,750 〈1,500〉	2,000 〈1,750〉	1,500 〈1,250〉	1,750 〈1,500〉	2,000 〈1,750〉	1,800 〈1,550〉	2,050 〈1,800〉	2,300 〈2,050〉	2,000 〈1,750〉	2,250 〈2,000〉	2,500 〈2,250〉				
Size of working surface		X axis	mm	2,500		4,000	3,000		4,000		4,000		5,000		5,000		6,000		6,000		8,000	
		Y axis	mm	1,200			1,500			2,000			2,500			3,000						
Permissible mass of workpiece			kg	5,000 〈5,000〉			10,000 〈7,000〉			15,000 〈10,000〉			15,000 〈10,000〉			30,000 〈20,000〉						
Spindle motor			kW	26 / 22 (10-min / continuous) [45 / 37 (30-min / continuous), 75 / 60 (25%ED / continuous)]																		
Spindle speeds			min ⁻¹	40 ~ 6,000 [40 ~ 8,000, 40 ~ 4,500]																		
Spindle nose (nominal size, No.)				ISO No.50																		
Spindle bearing inner diameter/quill diameter			mm	φ 90 [φ 100] / φ 330																		
Travel	Table longitudinal	X axis	mm	2,750		4,250	3,250		4,250		4,250		5,250		5,250		6,250		6,250		8,250	
	Spindle head transverse	Y axis	mm	2,000			2,400			2,900			3,400			3,900						
	Quill vertical	Z axis	mm	600 [800]																		
	Crossrail vertical	W axis	mm	900		1,150	1,100		1,350		1,100		1,350		1,400		1,650		1,600		1,850	
Feedrate	Rapid traverse	X axis	m/min	25			25 (Both stroke end 20)												23 (Both stroke end 20)			
		Y axis	m/min	25												25 (Both stroke end 20)			23 (Both stroke end 20)			
		Z axis	m/min	8																		
		W axis	m/min	6																5		
	Feedrate	X, Y axis	mm/min	1 ~ 10,000																		
		Z axis	mm/min	1 ~ 8,000																		
		W axis	mm/min	1 ~ 6,000															1 ~ 4,000			
Accuracy	Positioning accuracy		mm	X,Y axis ± 0.004 / 1,000 Z axis ± 0.004 / 600 (Machine with scale feedback) X,Y axis ± 0.006 / 1,000 Z axis ± 0.006 / 600 (Standard machine) W axis ± 0.01 / 500																		
	Repeatability		mm	X,Y,Z axis ± 0.003 (Machine with scale feedback) X,Y,Z axis ± 0.005 (Standard machine) W axis ± 0.005																		
ATC	Tool storage capacity			40 [60, 80]																		
	Tool selection			Random (Fixed location)																		
	Tool shank			MAS BT50 + P50T - II																		
	Max. tool diameter	Without adjacent tools	mm	232																		
		With adjacent tools	mm	110																		
	Max. tool length		mm	400 [600]																		
	Max. tool mass		kg	20 [35]																		
Mass of machine (Standard machine)			kg	24,000			28,000			33,000			42,000			53,000						
Required electric power			KVA	60			65												70			
Compressed air blow rate			Nℓ/min	525																		

Blue letters indicate options. Figures in 〈 〉 indicate specification with APC. ★The values may change, depending on the selected special accessories.

Standard Accessories

- ATC (40-tool storage capacity)
 - 90° Angular attachment (L=300 mm, indexing at every 90°) 1 set
 - Automatic attachment changer (AAC) for one attachment
 - Coolant tank (Floor-mounted type: 180L)
 - Cutting air blow device
 - Three datum slots on table in X-axis direction
 - Slideway covers
 - Handrail on crossbeam
 - Spindle speed meter
 - Spindle load meter
 - Work light
 - Three-lamp flashing light
- Inverter control (hydraulic unit of the machine body)
 - Auto-off function (ATC hydraulic unit)
 - Cycle completion total shutoff function
 - New five-face machining software
 - Foundation leveling device
 - Ladder
 - Maintenance and inspection handtools
 - Manual pulse handle operation panel
 - Constant cutting load control
 - Earth leakage break function
 - Tool management and tool life management function
 - Operation rate and Chip production ratio display function
 - Maintenance support display function

Special Accessories

- ATC(60- or 80-tool storage capacity)
 - ATC max. tool weight 35kg and max. tool length 600mm
 - Additional attachment
 - 30° inclined attachment※1 ※2
 - 90° universal attachment※1 ※2 ★
 - Extension attachment
 - AAC device(for 2- or 3-attachment)
 - Automatic pallet changer (APC)(Side-delivery type)★
 - Chip-conveyor (2- or 3-conveyor type)
 - Larger-capacity coolant tank (300 L, 1000 L)
 - High-pressure coolant pump (3MPa, 5MPa, 7MPa)
 - Low-coolant-level alarm device for coolant tank
 - Mist coolant
 - Improved T-slot accuracy H7
 - Splash cover★
 - Machine top alarm light
 - Z axis stroke change (+200mm)
 - W axis stroke change (+250mm)
 - Leveling column (+250mm, +500mm)★
- X axis stroke change★
 - Table length change★
 - Automatic measuring function
 - Automatic alignment function
 - Automatic tool length measuring function (laser type※3, touch type)★
 - Broken tool detection (laser type※3, touch type)★
 - Scale feedback for X and Y axes
 - Scale feed back for X, Y and Z axes
 - Power transformer
 - Additional manual pulse handle (Total: 2)
 - Movable operation pendant (Hanging type)
 - Attachment indexing at every 5°
Available attachment
 - 90° Angular attachment
 - 30° inclined attachment
 - Attachment indexing at every 1°
Available attachment
 - Angular attachment
 - 30° inclined attachment
 - 90° universal attachment
 - Interactive machining pattern software
- Automatic attachment data measuring function
 - TCD (Thermal Controlled Design)
 - Spindle speeds
 - High speed type(40~8,000min⁻¹, 22kW, 600Nm)
 - High power type(40~6,000 min⁻¹, 60kW, 1,023Nm)
 - High torque type(30~4,500 min⁻¹, 37kW, 981Nm)
 - Through spindle (coolant, mist, air) for
 - Vertical spindle
 - 90° Angular attachment
 - 90° universal attachment
 - Extension attachment
 - Provision for special tool (through-tool/speed-up tool/angle head)
 - Set-up supporting function (Interactive alignment function)※4
 - Intelligent PC
- ※ 1: "Tool axis direction handle feed function" is included

※ 2: "Attachment tool position compensating software" and voluntary surface machining software are included

※ 3: The laser system can measure the tool diameter

※ 4: Automatic alignment function is necessary

CNC FANUC 31i

Basic Specifications

Controlled axes	5 axes (X, Y, Z & Wm,Ws)	
Simultaneously controlled axes	Positioning (rapid traverse)	4 axes
	Linear interpolation	4 axes
	Circulation interpolation	2 axes
Max. programmable dimension	Linear axes ±99999.999mm	
Least input increment	0.001mm	
● HRV control	● Rotary axis roll-over	
● Interlock	● Coordinate system setting (G92)	
● Machine lock	● Manual absolute on and off	
● Emergency stop	● Programmable data input (G10)	
● Stored stroke check 1	● Programmable parameter input	
● Mirror image	● Sub program call (10 folds nested)	
● Automatic operation (Memory/MDI/DNC)	● Circular interpolation by R programming	
● Program number search	● Auxiliary function (M code)	
● Sequence number search	● Auxiliary lock function	
● Wrong operation prevention	● Tool function (T code)	
● Buffer register	● Tool offset memory A	
● Dry run	● Tool length offset (G43,G44,G49)	
● Single block	● Tool length measurement	
● Manual continuous feed (JOG)	● Backlash compensation for each rapid traverse and cutting feed	
● Manual reference position return	● Smooth backlash compensation	
● Nano interpolation	● Program protect	
● Positioning (G00)	● Extended part program editing	
● Exact stop mode (G61)	● Clock function	
● Exact stop (G09)	● Current position display	
● Linear interpolation (G01)	● Program comment display (program name 32 characters)	
● Circular interpolation (Multi-quadrant is possible) (G02,G03)	● Parameter setting and display	
● Dwell (Per second) (G04)	● Alarm display	
● Skip (G31)	● Alarm history display	
● Reference position return/check (G27, G28, G29)	● Operator message history display	
● 2nd reference positioning return (G30)	● Operation history display	
● Rapid traverse override (F0.25%,50%,100%)	● Actual cutting feedrate display	
● Feed per minute (mm/min)	● Operating monitor screen	
● Tangential speed constant control	● Servo setting screen	
● Cutting feedrate clamp	● Spindle setting screen	
● Feedrate override (0 to 200% (per every 10%))	● Servo waveform display	
● Override cancel	● Data protection key (1 type)	
● Linear ACC/DEC after cutting feed interpolation	● Erase CRT screen display	
● Tape code (EIA/ISO automatic recognition)	● Parameter set supporting screen	
● Label skip	● Help function	
● Control in/out	● Self-diagnosis function	
● Program file name (32 characters)	● Memory card input/output	
● Sequence number (N8 digit)	● USB memory input/output	
● Absolute/incremental programming (G90,G91)	● Screen hard copy	
● Decimal point programming/pocket calculator type decimal point programming	● Machine interface (DI/DO)	
● Plane selection (G17 to G19)		

Additional optional functions

items	Kit I	items	Kit I
Program restart	○	Part program storage size (Total:1MB,2MB,4MB,8MB)	
One-digit F code feed	○	Tool offset pairs (Total:200,400,499,999)	
Sequence number comparison and stop	○	Tool offset memory C※1	
3rd/4th reference position return	○	AI contouring control II	
Part program storage size (Total:512Kbyte)	○	RS-232C buffer function	
Graphic function	○	DCS- VII	

※1 Separate setting of geometry and wear, and also cutter dia. and length compensation.

SNK standard optional functions

Inch/metric conversation	G20,G21
Stored stroke check 2,3	
Stroke limit check before move	
Stored/interpolation pitch error compensation	
Manual handle feed	1unit
Manual handle interruption	
Single direction positioning	G60
Helical interpolation	G02,G03
External deceleration	
Optional block skip	Total: 3
Workpiece coordinate system	G52,G53,G54~G59
Workpiece coordinate system preset	G92.1
Addition of workpiece coordinate system pair	Total: 48 pairs
Optional chamfering/corner R	
Custom macro	G65,G66,G67 (Common variable: Total 600)
Canned cycles for drilling	G73,G74,G76,G80~G89,G98,G99
Automatic corner override	G62
Scaling	G50,G51
Coordinate system rotation	G68,G69
Programmable mirror image	G50.1,G51.1
Tape format for FS15	
Macro executor	2MB
Spindle serial output	
Spindle override	50~150% (every 10%)
Spindle orientation	
Spindle output switching function	
Rigid tapping	
Tool offset pairs	Total: 99 pairs (For 40-tool ATC) Total: 200 pairs (For 60-tool or more ATC)
Tool compensation	G40,G41,G42
Part program storage size	256Kbyte
Number of registerable programs expansion	Total: 500
Background editing	
High-speed skip	
Run hour and parts count display	
Multi-language display	Japanese
RS-232C Channel 1	1unit
Fast Ethernet/Data server	CF card 1GB
External data input	
10.4" color LCD	

Intelligent PC (Intelligent Precision Control)



Pre Maintenancer

Detect deviation and abnormal trends by obtaining drive axis current value and spindle loading value. Can displaying on the screen and export to create report files.

Data Charger

Display operational status of the machine. Operational history and alarm history can be stored and exported to create reports. We hope this function is useful for your application.

Advance Analyzer

Exercise simple servo motor diagnosis by special program. Automatic adjustment of servo parameter inconsistency which caused by deviation is available.

Smooth Guide

Management procedure manual provided with movie and searchable electronic manual.

Specification list

Hardware

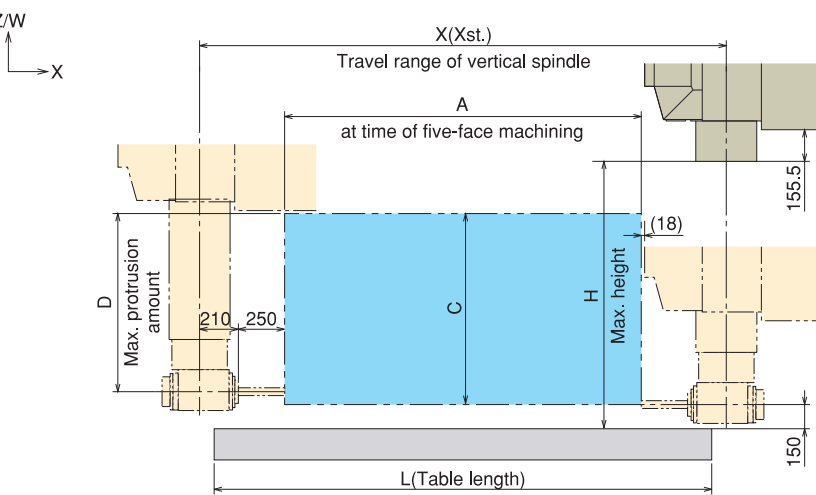
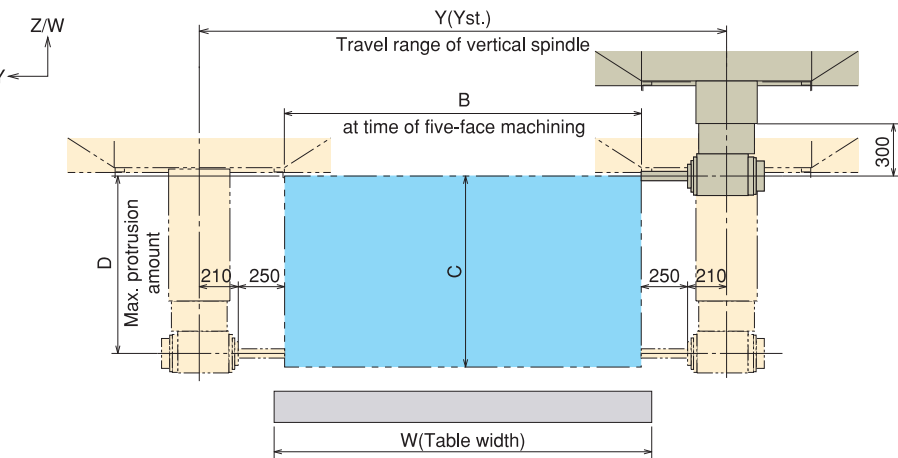
Classification	Item	Contents	Note
①	I-Tree	A set of PC and setting stand	
②	Only software is provided	Customer provides PC	

Software

Classification	Item	Contents	Note
Pre Maintenancer	Self-diagnosis function	Self-diagnosis program (general and high-speed die& mold machining)	※1
	Consumable goods management	Inspection period alarm, display oil and lubrication area	
	Automatic wave shape diagnosis	Obtaining continuously and storing servo axis wave shape	※2
Advance Analyzer	Accuracy management function	Simple servo adjustment program	※1
Data Charger	Collecting result function	Collect within designated period, display graph, and making report	
	History management function	Operation history and alarm history	
	Data monitoring and storing sample	O/N/T/G, actual F/S, spindle load value, electric current value in drive axis, value in each axis of machine coordinate system	※3
Option	Smooth Guide	Electronic manual (Automatic display of interlocking alarm)	
	Sending e-mail	Setting necessity of sending message against alarm number is available	※4
	iPad application	Machine monitor viewing is feasible	※5
	Storing movie function	Set option with camera	
	Adding vibration sensor	Adding sensor and storing sampling data	※3
	Adding temperature sensor	Adding sensor and storing sampling data	※3
	Display convergence oil level	Adding oil level detector to tank, and listing it in the screen	

Note ※1 Run the program and gather data for the contents in ※3, and verify. ※2 File saved in CSV format. ※3 File saved in CSV format. Sampling interval is 15msec(min)
※4 Externally-connected LAN is prerequisite. ※5 iPad is a trademark of Apple Inc., registered in the U.S. and other countries.

Machining range (90° Angular attachment using 250mm long cutter)



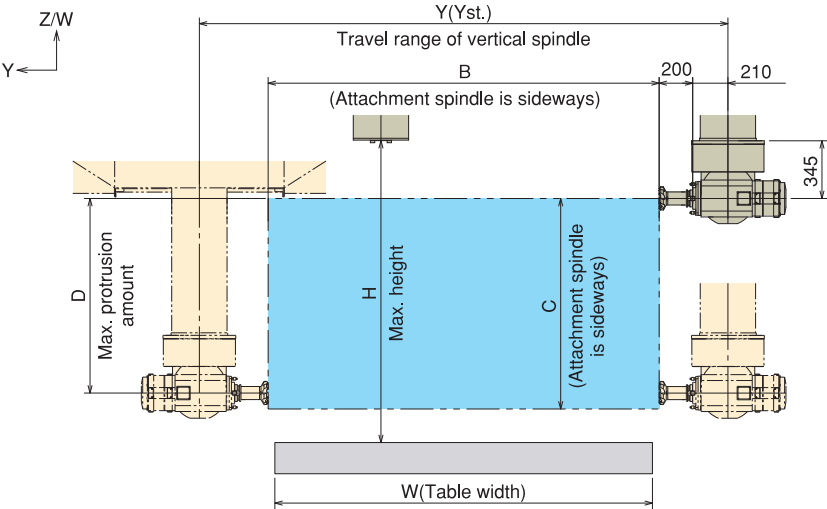
The values may change, depending on the selected special accessories.

	A	B	C	D
RB2M	1,830	1,080	900	900
RB3M	2,330	1,480	1,050	1,050
RB4M	3,330	1,980	1,050	1,050
RB5M	4,330	2,480	1,350*	1,050
RB6M	5,330	2,980	1,550*	1,050

	L	W	X	Y	H
RB2M	2,500	1,200	2,750	2,000	1,350
RB3M	3,000	1,500	3,250	2,400	1,500
RB4M	4,000	2,000	4,250	2,900	1,500
RB5M	5,000	2,500	5,250	3,400	1,800
RB6M	6,000	3,000	6,250	3,900	2,000

※Machining area might be limited when 90 degree angular attachment is sideways or backward.

Machining range (90° universal attachment using 200mm long cutter) option



The values may change, depending on the selected special accessories.

	A	A'	B	C	C'	D
RB2M	1,930	1,180	1,080	805	595	805
RB3M	2,430	1,580	1,480	955	745	955
RB4M	3,430	2,080	1,980	955	745	955
RB5M	4,430	2,580	2,480	1,255*	1,045	1,095
RB6M	5,430	3,080	2,980	1,455*	1,245	1,095

	L	W	X	Y	H
RB2M	2,500	1,200	2,750	2,000	1,350
RB3M	3,000	1,500	3,250	2,400	1,500
RB4M	4,000	2,000	4,250	2,900	1,500
RB5M	5,000	2,500	5,250	3,400	1,800
RB6M	6,000	3,000	6,250	3,900	2,000

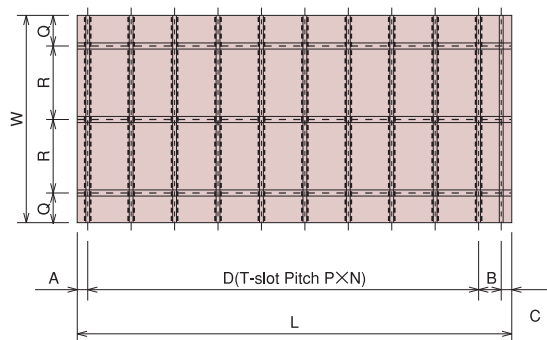
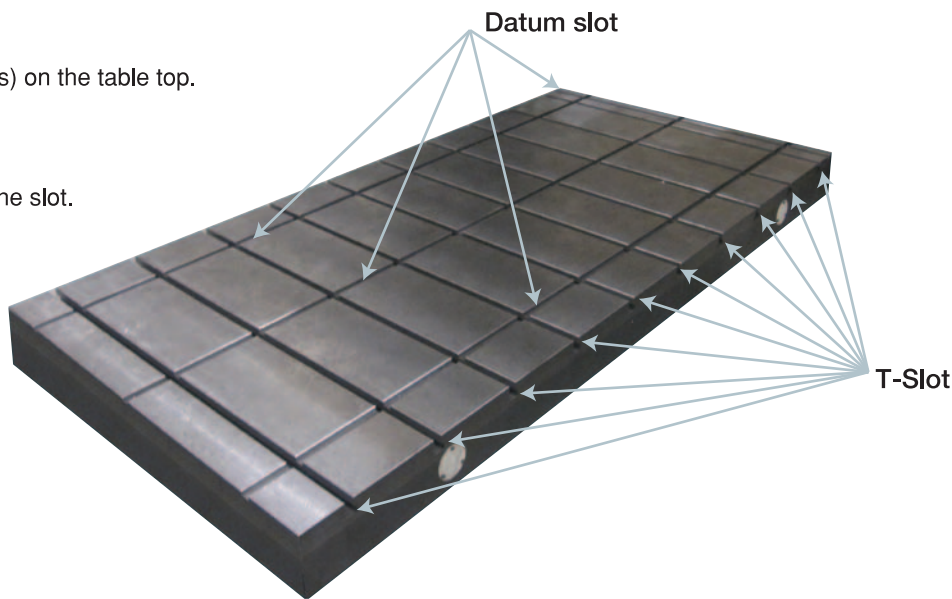
※Machining area might be limited when 90 degree universal attachment is sideways or backward (*its attachment spindle is sideways).

Table Top

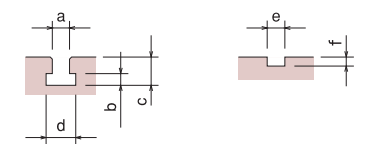
Logical T-slot arrangement

T-slot is cut in the horizontal direction (Y-axis) on the table top.

- Facilitates setting-up workpieces.
- Doesn't affect table rigidity.
- Shorter distance to remove chips inside the slot.



Detail of T-slot () Detail of datum slot ()



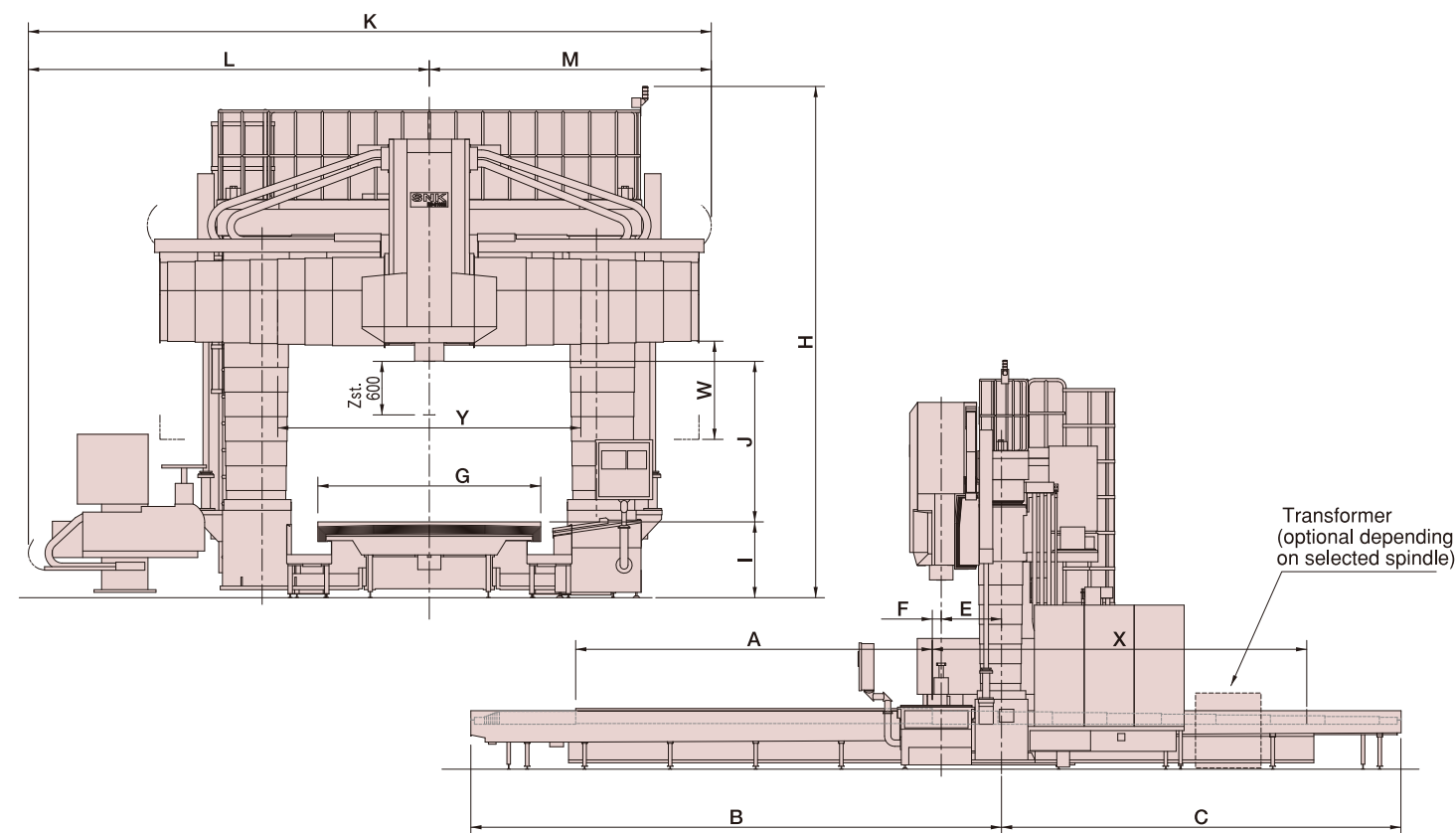
Unit : mm

RB2M	2,500	1,200	62.5	125	62.5	2,250	9	250	300	300
RB3M	3,000	1,500	150	100	50	2,700	9	300	200	550
RB4M	4,000	2,000	200	150	50	3,600	12	300	200	800
RB5M	5,000	2,500	250	200	50	4,500	15	300	200	1,050
RB6M	6,000	3,000	150	100	50	5,700	19	300	200	1,300

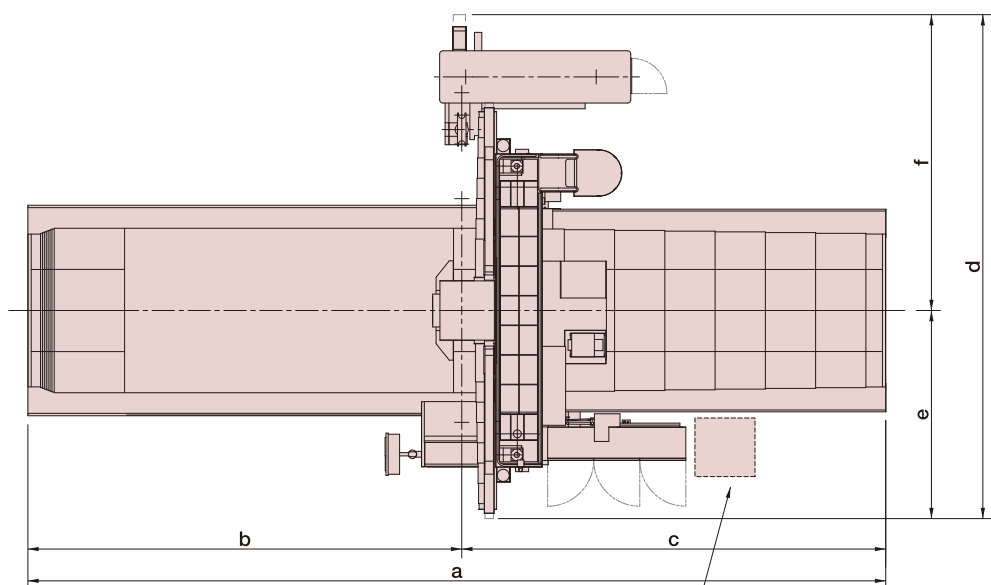
Note: On extended tables, the number of T-slots are increased, with the same pitch.

	a	b	c	d	e	f
RB2M	20 ^{+0.21} ₀	13.5 ⁺² ₀	33 ⁺² ₀	34 ⁺² ₀	20 ^{+0.02} ₀	10
RB3M						
RB4M						
RB5M	28 ^{+0.21} ₀	20 ⁺² ₀	48 ⁺² ₀	46 ⁺⁴ ₀	28 ^{+0.02} ₀	15
RB6M						

Floor plan

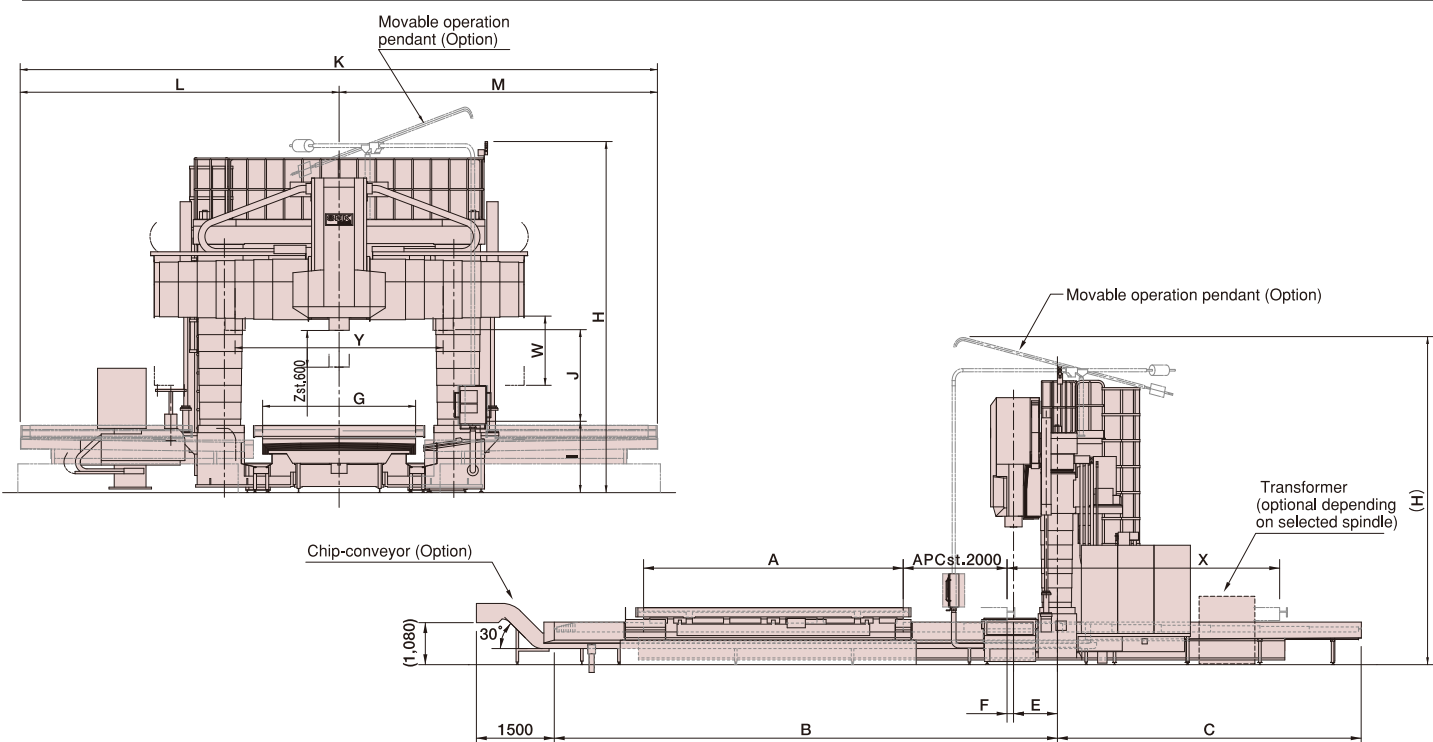


	A	B	C	E	F	G	H	I	J	K	L	M	X	Y	W
RB2M	2,500	4,790	2,965	815	125	1,200	5,260	820	1,350	6,065	3,800	2,265	2,750	2,000	900
RB3M	3,000	5,290	3,460	815		1,500	5,440	850	1,500	6,620	4,040	2,580	3,250	2,400	1,100
RB4M	4,000	6,385	4,560	815		2,000	5,440	850	1,500	7,135	4,250	2,885	4,250	2,900	1,100
RB5M	5,000	7,490	5,605	845		2,500	5,740	850	1,800	7,585	4,500	3,085	5,250	3,400	1,400
RB6M	6,000	8,615	6,725	845		3,000	6,005	860	2,000	8,300	4,800	3,500	6,250	3,900	1,600

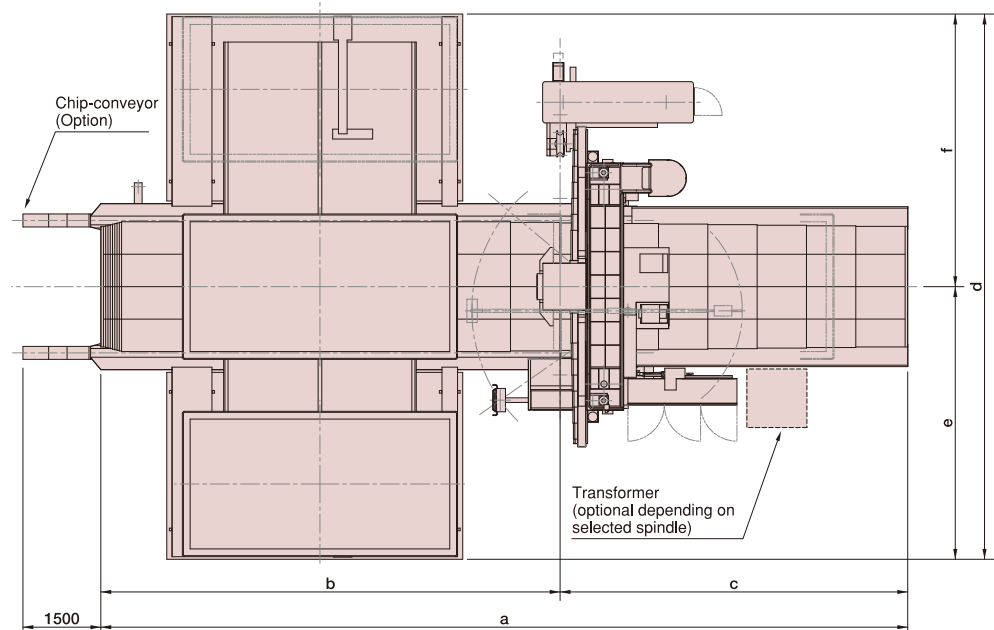


	a	b	c	d	e	f
RB2M	7,755	3,975	3,780	6,065	2,265	3,800
RB3M	8,750	4,475	4,275	6,620	2,580	4,040
RB4M	10,945	5,570	5,375	7,135	2,885	4,250
RB5M	13,095	6,645	6,450	7,585	3,085	4,500
RB6M	15,340	7,770	7,570	8,300	3,500	4,800

Floor plan with Automatic Pallet Changer



	A	B	C	E	F	G	H	(H)	I	J	K	L	M	X	Y	W
RB2M	2,500	6,850	3,075	815	125	1,200	5,260	5,740	1,070	1,100	7,150	3,575	3,575	2,750	2,000	900
RB3M	3,000	7,410	3,635	815		1,500	5,440	5,920	1,100	1,250	7,900	3,950	3,950	3,250	2,400	1,100
RB4M	4,000	8,535	4,755	815		2,000	5,440	5,920	1,100	1,250	9,150	4,575	4,575	4,250	2,900	1,100
RB5M	5,000	9,690	5,855	845		2,500	5,740	6,220	1,100	1,550	10,400	5,200	5,200	5,250	3,400	1,400
RB6M	6,000	10,640	7,150	845		3,000	6,005	6,480	1,110	1,750	11,900	5,950	5,950	6,250	3,900	1,600



	a	b	c	d	e	f
RB2M	9,925	6,035	3,890	7,150	3,575	3,575
RB3M	11,045	6,595	4,450	7,900	3,950	3,950
RB4M	13,290	7,720	5,570	9,150	4,575	4,575
RB5M	15,545	8,845	5,980	10,400	5,200	5,200
RB6M	17,790	9,795	7,995	11,900	5,950	5,950

Specifications are subject to change without notice.