Boxway type Horizontal machining center

GBH SERIES

500H

SUZHOU GUDWAY CNC EQUIPMENT CO.,LTD

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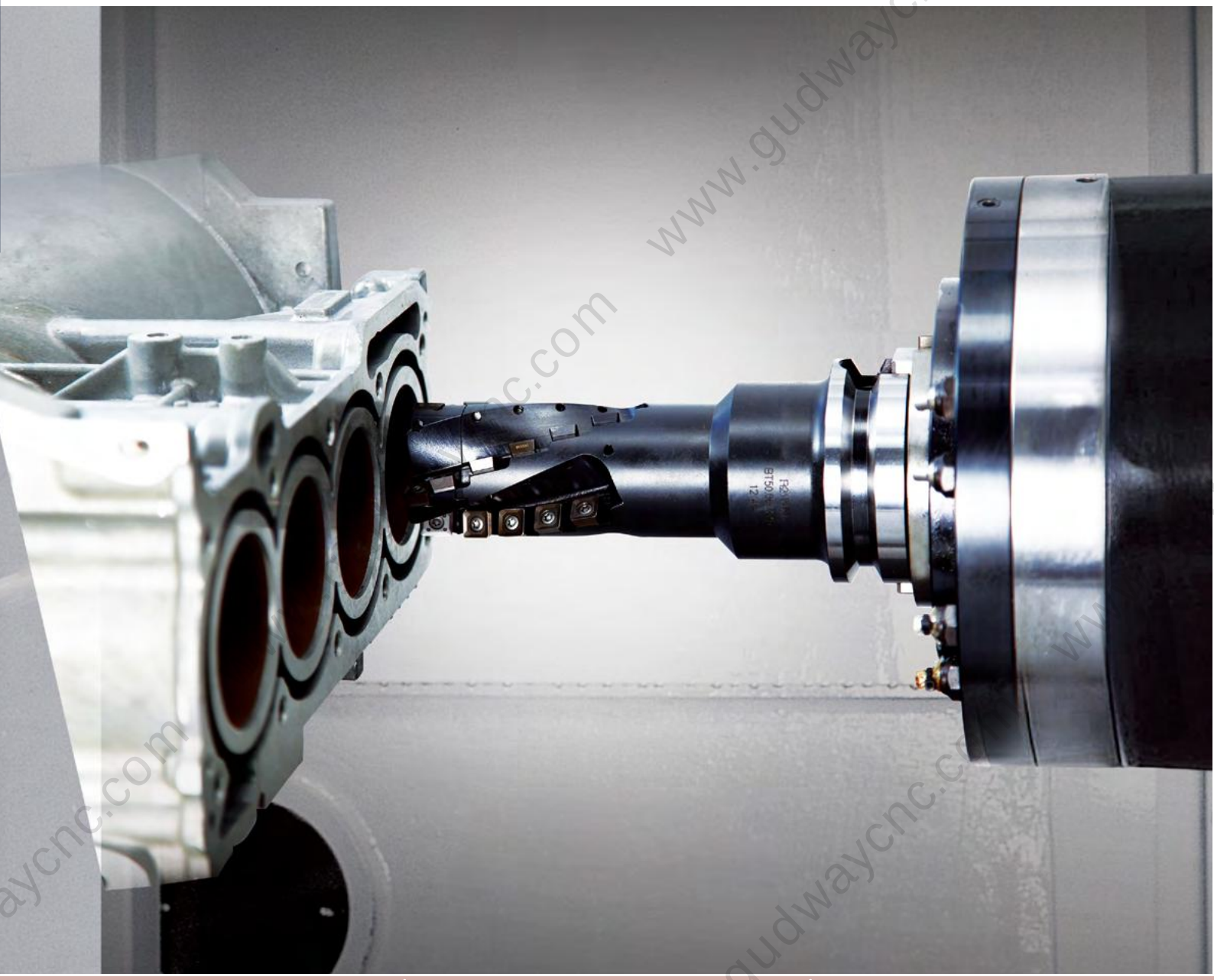
GBH500H

GBH Series provides the largest machining specifications and production capabilities in its class including powerful cutting capabilities for satisfying diversified needs for production of customers. The integrated structure of the box-type guideway is the optimal structure of excellent production capabilities for machining various materials from common parts to metal hard of cutting with its high rigidity capacity required for powerful cutting process. In addition, replacement speed of tools and palettes at servo motor driving for keeping non-cutting time minimal improves reliability and productivity.



HIGH RIGIDITY ONE-PIECE BED

- The high rigidity one-piece bed supports heavy duty cutting with the adoption of Finite Element Method (FEM) analysis.

HIGH PRODUCTIVITY AND RELIABILITY

- The servo-driven automatic tool changer (ATC) and automatic pallet changer improve parts durability and maintainability, leading to improved product quality. Compatibility with the pallet extension system and minimized idle time ensure even higher productivity.

USER-FRIENDLY FUNCTIONS

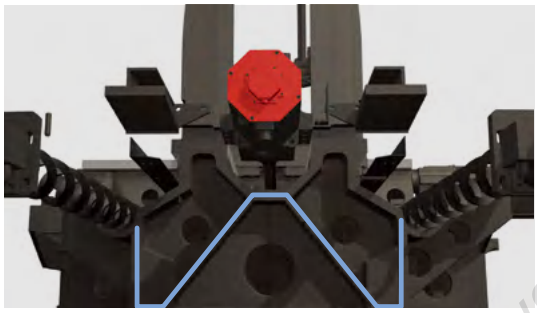
- Various new user-friendly functions have been introduced to reduce the operator's work load

BASIC STRUCTURE | TRAVEL AXIS

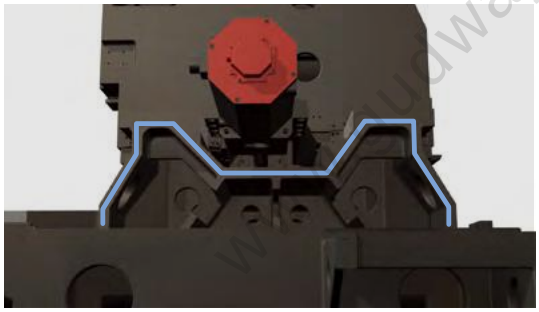
The machine of one-piece structure of the bed and the column yields high productivity.

High rigidity bed structure

GBH Series is designed for keeping high stability and durability intact through FEM technologies; the series ensures continuous powerful cutting power with the structure applied with M- and W-type ribs.



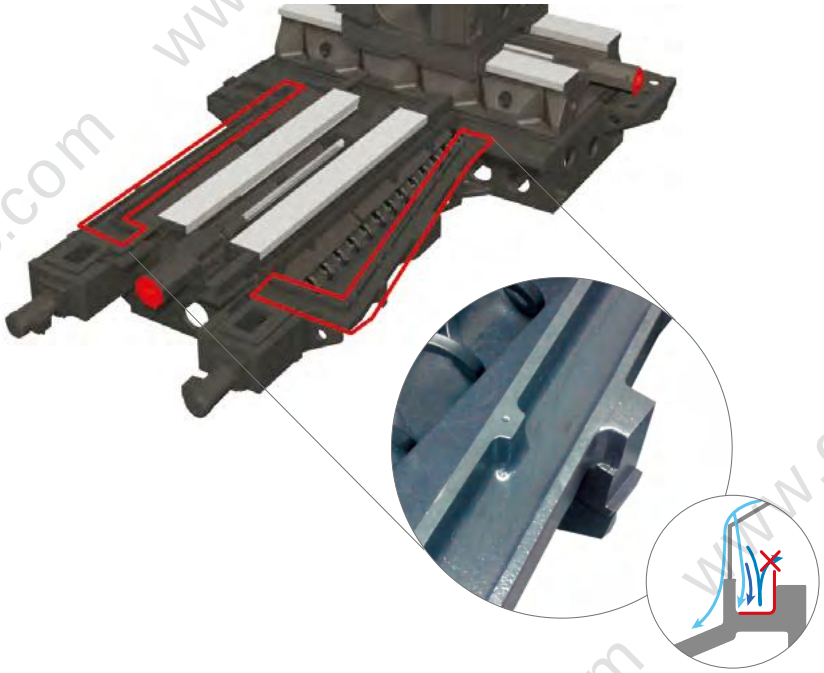
W-type rib



M-type rib

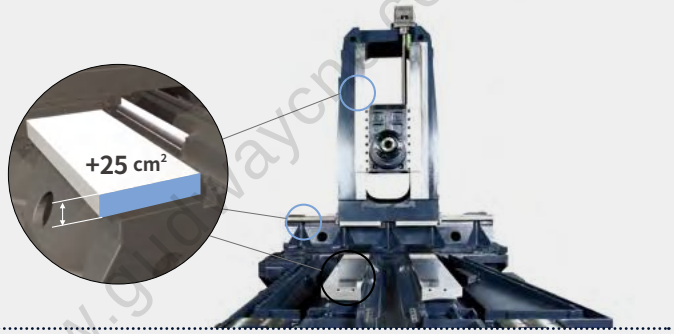
Double-wall configuration

The main body of the system is designed in double wall structure for preventing leak of cutting oil: This design allows easy maintenance and improves productivity as well.



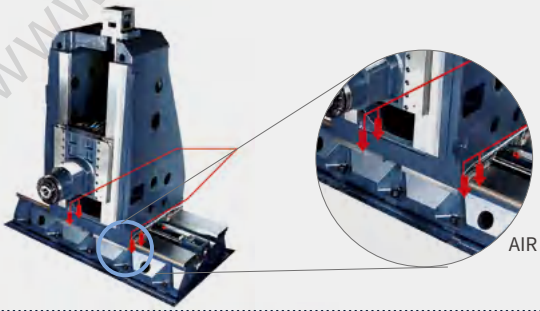
Strong feed axis structure

The extended box-type guideways are applied to all of the axes for providing higher rigidity, and the optimal dynamic rigidity of the main sliding parts further improve capabilities of strong cutting.



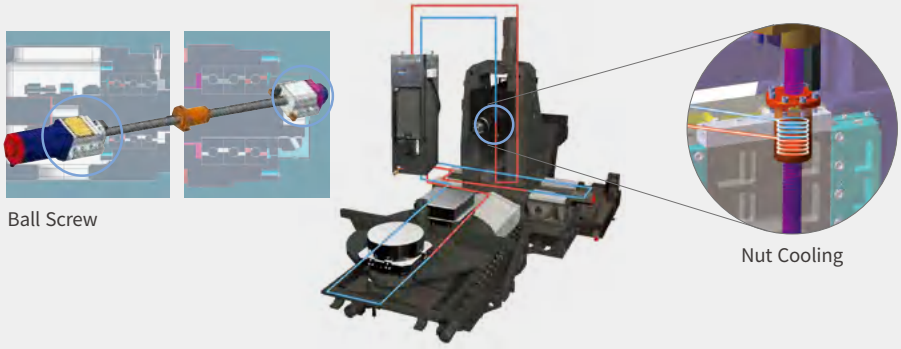
Half-floating air structure of feed system

The half-floating air structure mitigates friction resistance during feed along the X axis resulted form the mass of the spindle and the column for improving accuracy of positioning and repeatability.



Powerful ball screw and thermal displacement control

The 3-row bearing applied with the rigid coupling keeps precision and rigidity for individual axes high, and high accuracy is implemented by controlling thermal displacement by the ball screw locking devices and the nut cooling system on the all of the axes.



SPINDLE

The high power gear-driven spindle of GBH Series yields excellent rigidity for diverse materials.

Powerful spindle

Designed to minimize vibration and thermal error while offering rapid acceleration and deceleration, the spindle guarantees excellent cutting performance from steel to nonferrous metal parts

Max. spindle speed

GBH500H

6000r/min

Max. spindle motor power

GBH 500H

15 / **25** kW 20.1 / 33.5 Hp

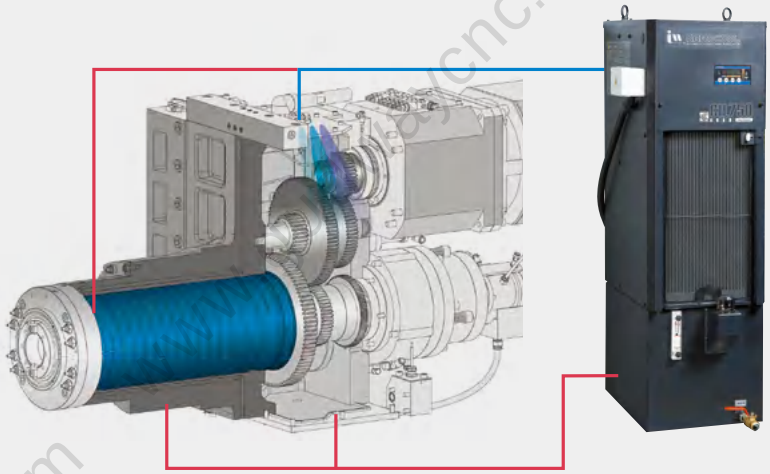
Max. spindle motor torque

GBH 500H

1034 N·m 25.8 ft-lb

Spindle cooling system

The spindle temperature is kept uniform by the cooling system. The temperature sensor controls temperature of the jacket surrounding the spindle as well as the temperature of oil circulating about the spindle bearing, the gear and the motor flange for ensuring stable and precise machining.



Dual contact tool system

Tool rigidity is enhanced by the firm clamping of the spindle. Tool lifecycle and cut-surface roughness have been improved as a result of the reduced vibration realized by the dual contact spindle.

Tool type

ISO #50

AUTO PALLET CHANGER (APC)

The servo-driven APC boasts high reliability with its stable, accurate performance and reduced rejection ratio.

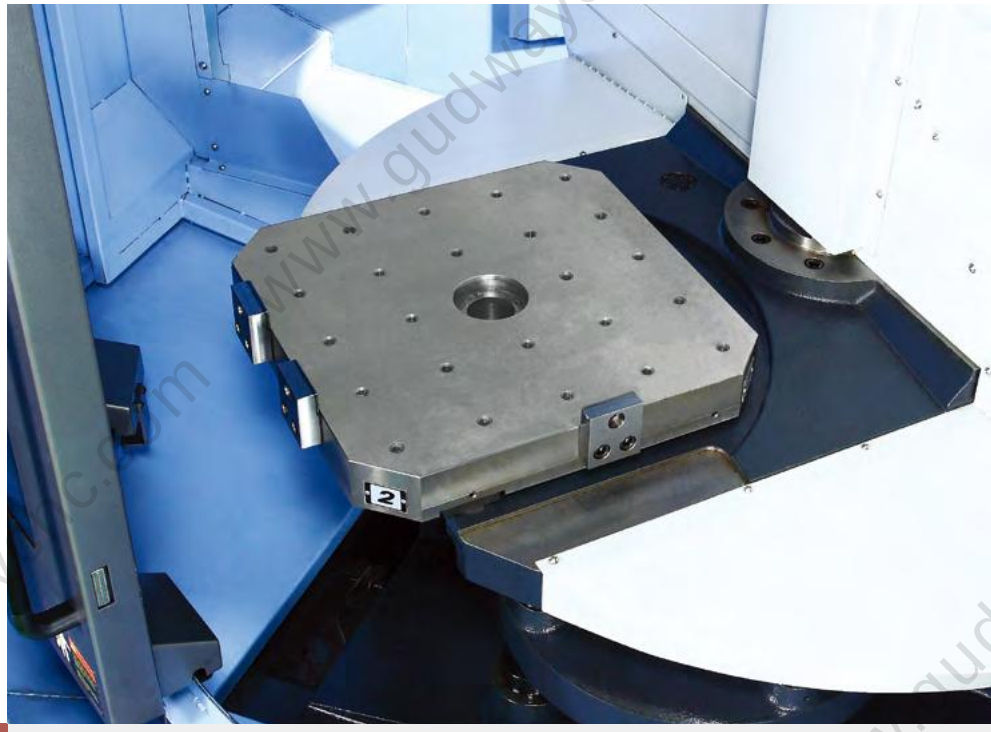
Improved pallet and APC system

The servo-driven APC system realizes increased productivity with fast and accurate pallet change. In addition to its excellent reliability, the improved APC has more space for the operator's convenience.

Pallet change time

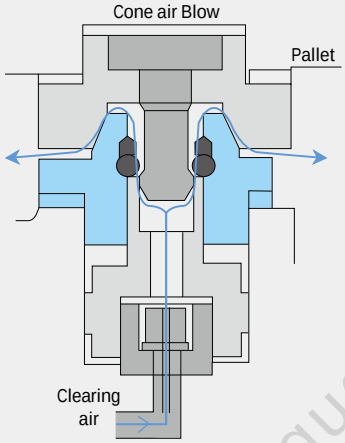
GBH 500H

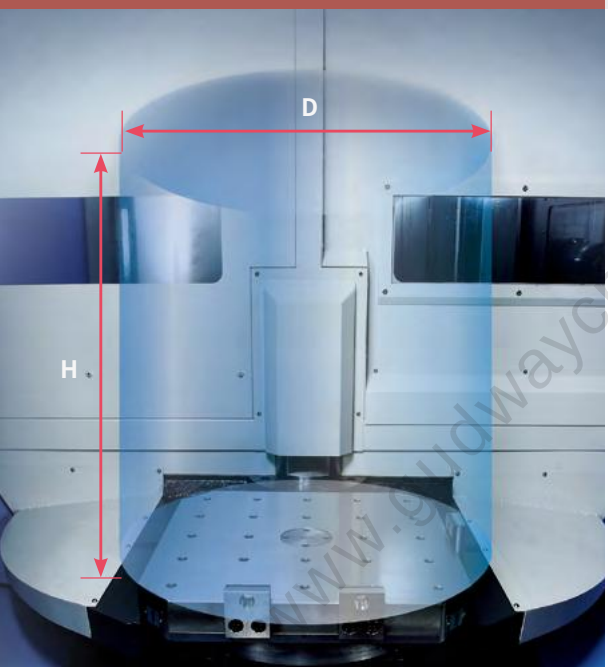
8.5S



Cone air blower

As a mechanism designed for precise pallet position repeatability, the cone air blower injects high-pressure air into the table fixing pin connecting the table and the pallet in order to remove chips from the pin and guaranteeing them seating at the correct positioning of the workpiece.





Max. Workpiece Size

The GBH Series provides more space for heavier and larger workpieces.

Max. workpiece size (D X H)		
GBH 500H	mm (inch)	Ø 850 x 1100 (33.5 x 43.3)

Max. workpiece weight (W)		
GBH 500H	kg (lb)	800 (1763.7)

CUTTING PERFORMANCE

The GBH Series realizes excellent machining performance thanks to its improved structure and comprehensive tooling system.

High cutting power

High-rigidity machining can be carried out with precision accuracy and diverse functions.

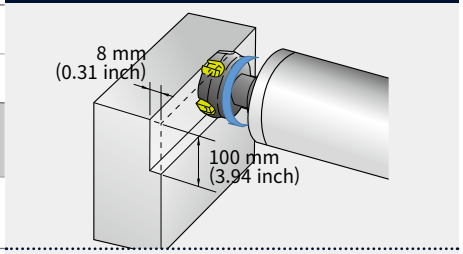
GBH 500H

(Motor power : 25 / 15 kW (33.5 / 20.1 Hp))

Face mill Carbon steel (SM45C)

ø125mm (3.94 inch) Face mill (8Z)

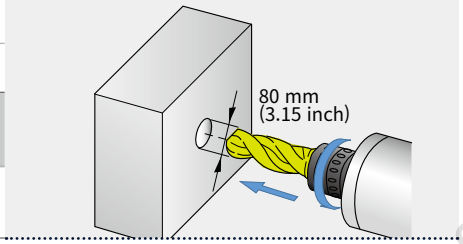
Machining rate cm³/min (in³/min)	Spindle speed r/min	Feedrate mm/min (ipm)
740 (452)	500	925 (36.4)



End mill Carbon steel (SM45C)

ø80mm (3.15 inch) U-Drill (2Z)

Machining rate cm³/min (in³/min)	Spindle speed r/min	Feedrate mm/min (ipm)
465 (28.4)	600	92.5 (3.6)



Productivity

High Productivity

10 % Down

- Component of automobile : Carrier middle
- Material : Cast iron
- No. of tools : 21

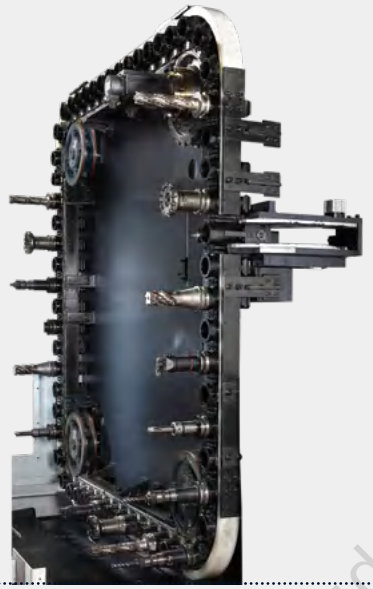
Cycle time

Previous Model	2333 s
GBH series	**2110 s**

↵ **223 s**

MAGAZINE

The servo-driven ATC provides high reliability and reduces tool change time.

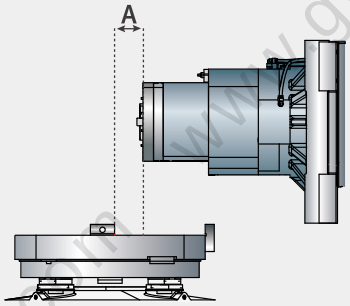


Servo-driven ATC

The ATC is capable of handling weight from 25kg to 30kg at high speed using a servo motor, and fast tool indexing and spindle positioning.

Max. tool diameter x max. tool length			
Model	**Unit**	BT/CT/DIN	HSK
GBH 500H	mm (inch)	320 x 530 (12.6 x 20.8)	320 x 600 (12.6 x 23.6)

Tool change time (tool weight of less than 12 kg (26.5 lb))			
Model	**Unit**	Tool to tool	Chip to chip
GBH 500H	s	2 s	6.4 s



Convenient short tool cutting

The distance between the spindle and the center of the pallet has been reduced for heavier-duty cutting with shorter tools.

Features

- Increased tool rigidity with a larger diameter
- Innovative improvement of ATC repeatability
- Minimal Z axis displacement at high speed
- Increased tool service life

Tool magazine for diverse types of tools, including chain and matrix tool types

The GBH Series provides 60 tools as a standard feature, and up to 376 tools as an option.

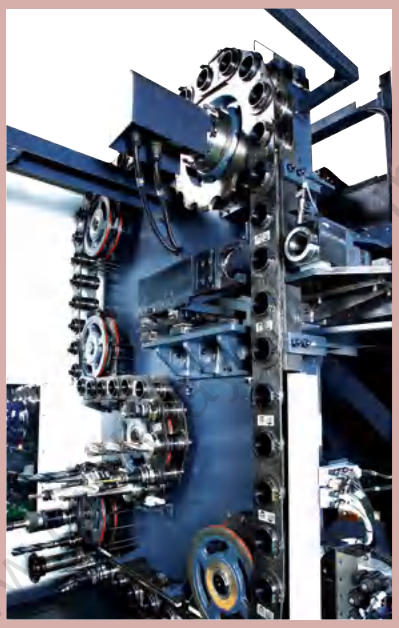
Chain type magazine

60 ea

90 ea option

120 ea option

150 ea option



Matrix type magazine option

196 ea

256 ea

316 ea

376 ea

SPECIFICATIONS

A range of options is available to suit individual requirements.

Description	Features		GBH500H
Tool magazine (No. of tool stations)	60 ea		●
	90 ea		○
	120 ea		○
	150 ea		○
Type of tool shank	BT50		●
	CAT50		○
	DIN50		○
	HSK A-100		○
Mist collector	Mist collector		○
Spindle	6000 r/min	15 / 25 kW (20.1 / 33.5 Hp)	●
		22 / 35 kW (29.5 / 46.9 Hp)	●
	8000 r/min	30 / 37 kW (40.2 / 49.6 Hp)	○
			○
Hydraulic fixtures	Hydraulic fixture line	2X2	○
		4X4	○
		6X6	○
		8X8	○
	Hydraulic fixture unit		○
Automatic workpiece measurement device	OMP60_RENISHAW		○
	RMP60_RENISHAW		○
Auto tool measuring device	BK MIKRO		○
	NEEDLE SWING TYPE		○
	OMRON (Limit Switch Type)		○
	TS27R		○
	NC 4		○
Accuracy	Linear scale (X-axis)		○
	Linear scale (Y-axis)		○
	Linear scale (Z-axis)		○
Chip Handling System	Chip conveyor	HINGED Type	○
		SCRAPER Type	○
		DRUM Type	○
	Chip bucket		○
Coolant	FLOOD		●
	FLUSHING		●
	SHOWER		○
	TSC	1.5 kW 2.0 MPA (2 Hp 290 psi)	○
		3.0 kW 3.0 MPA (4 Hp 435.1 psi)	○
		7.5 kW 7.0 MPA (10 Hp 1015.3 psi)	○
	Coolant gun		○
	Oil skimmer		●
	MQL System		○
	Coolant level switch： Sensing level - Low / High*		○
Table	Index table (1° control)		●
	Rotary table (0.001° control)		○
Pallet	Tap pallet		●
	T-Slot pallet		○
AIR	Pallet air seat		○
	AIR GUN		○
MPG	Portable MPG		●

● *Standard* ○ *Optional* X *Not applicable*

When using a semi-synthetic type or synthetic type, contact our sales representative or service center in advance.

Fire Safety Precautions | *There is a high risk of fire when using non-water-soluble cutting fluids, processing flammable materials, neglecting the controlled and careful use of coolants and modifying the machine without the consent of the manufacturer. Always check the SAFETY GUIDELINES carefully before using the machine.*

PERIPHERAL EQUIPMENT

Chip conveyor option

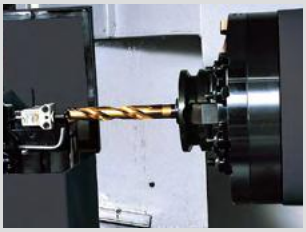
Scraper type

Hinge type

Drum filter type

Measurement systems

Auto tool damage detection device I (BK 9) option



Auto tool damage detection device II (OMRON) option

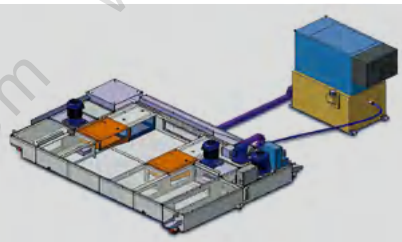
Automatic tool measuring device(TS 27R) option

Environmentally-friendly equipment

Oil skimmer

Mist collector option

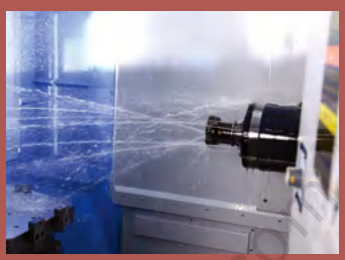
Cutting oil cooling system option



Linear scale feedback system option

Chip disposal system

Flushing coolant



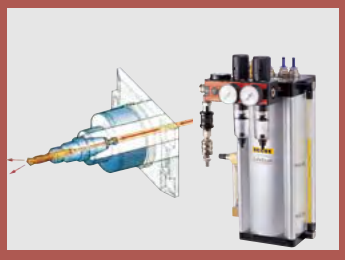
Flood coolant

Shower coolant option

Coolant gun option

Coolant spray gun on the spindle head

Screw conveyor



MQL system option Misting device

Spindle-through coolant spray device option

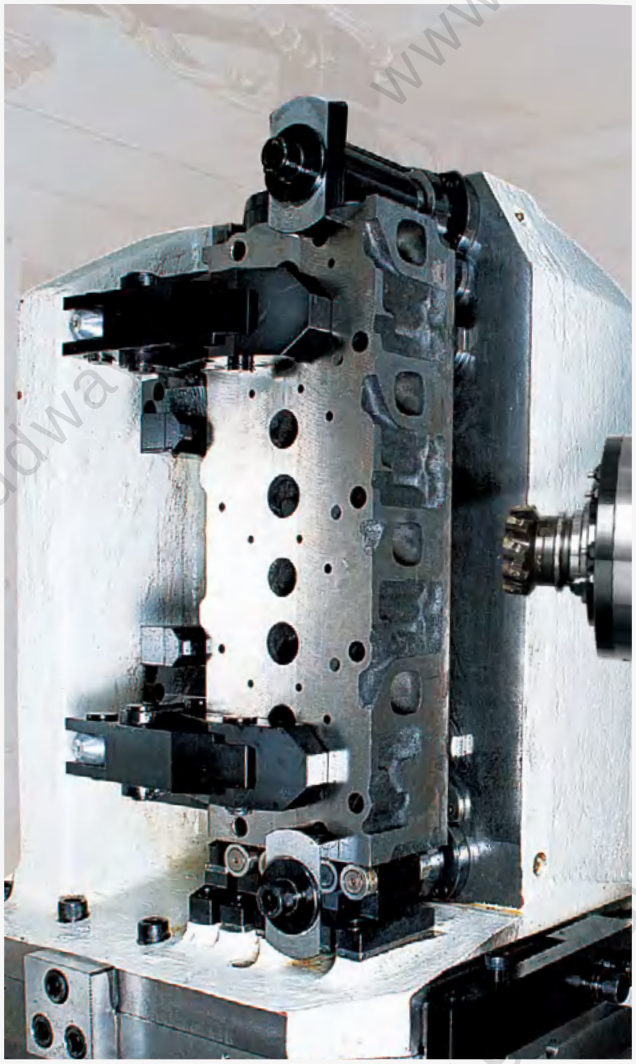
APPLICATION

We offer a wide range of solutions that can be optimized to suit our customer's needs.

Clamping fixtures

The following hydraulic and pneumatic fixture options are available for workpiece set up.

A variety of preparations for workpiece clamping fixtures (hydraulic/pneumatic) option



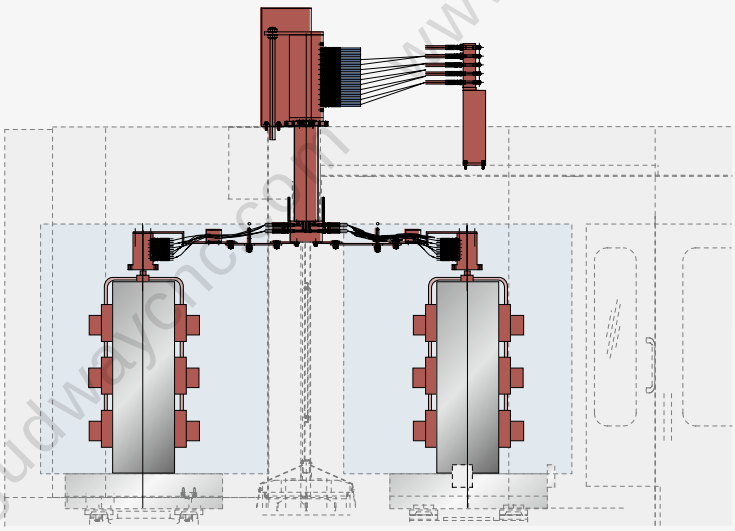
Hydraulic/pneumatic fixture pot

•A/B Line : 2, 4, 6, 8 Pairs
(Including solenoid valve)
•P/T Line : 2, 4, 6, 8 Pairs
(Excluding solenoid valve)

Clamping fixture hydraulic motor

•2.2 kW(3.0 HP) / 7MPa
•3.7 kW(5.0 HP) / 15MPa
•5.5 kW(7.4 HP) / 21MPa
•3.7 kW / 15MPa
•5.5 kW / 21MPa

※ Please provide us with detailed specifications on the order sheet.



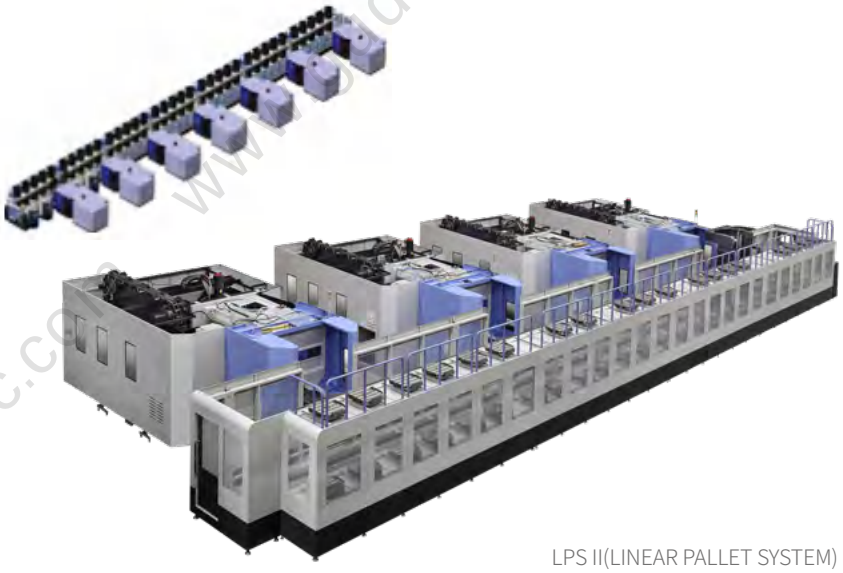
MULTI-PALLET SYSTEMS

GUDWAY's linear pallet system (LPS) and multipallet system (RPS) provides users with maximized productivity, rapid installation and commissioning, and easy maintainability.

Linear pallet system [LPS II]

option

Designed to provide users with an optimised system, the LPSII linear pallet systems designed and constructed by GUDWAY, offering outstanding flexibility, including system extension and layout change.



LPS II(LINEAR PALLET SYSTEM)

LPS II Model	LPS 500 II
Available Model	GBH500H
Forking type	
No. of machines	
No. of setup stations	
No. of pallets	12 ~ 70
Dimensions (L x W)	7824 x 2400 mm (308.0 X 94.5 inch)

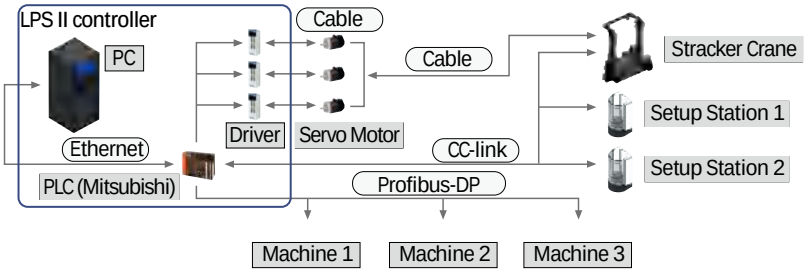
LPS standard control software

- Easily-storable basic information for flexible production.
- Platform management software for rapid production and changes in quantity.
- LPS management solution for fast and flexible production and sudden changes in quantity.

Production management system [DPMS]

The DPMS is an operating system designed to ensure effective control and management of the LPS. The main window provides a solution that enables a flexible and rapid response to changes in output.

System outline



Features

- Easy for system extension
- Sufficient workpiece space for high level of work efficiency
- Stable and efficient system operation
- Faster installation and commissioning
- Applicable to all HMC Series machines
- Excellent maintainability

MULTI-PALLET SYSTEMS

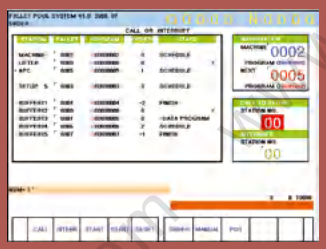
Round pallet system [RPS]

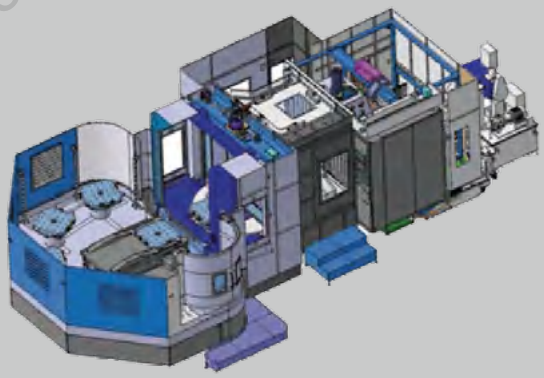
option

Compared with standard machines that use 2-pallet type APCs, the RPS can automatically handle 7 to 9 pallets for an extended period. This function enables small quantity batch production using machining scheduling.

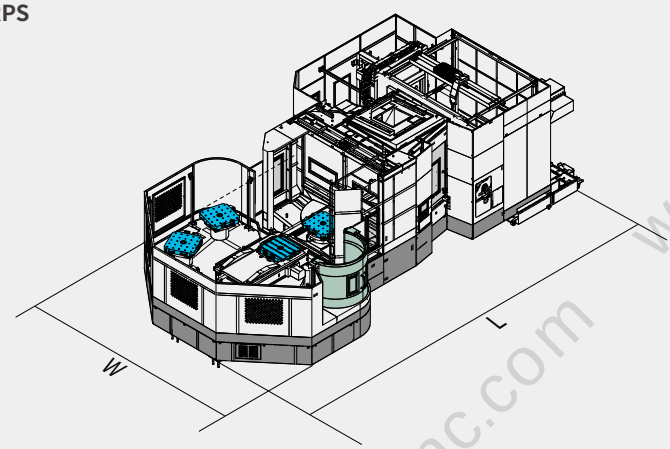
ROUND PALLET SYSTEM

The DPMS is an operating system for effective control and management of the RPS. The functions of the DPMS include scheduled operation, data input, and setting change.

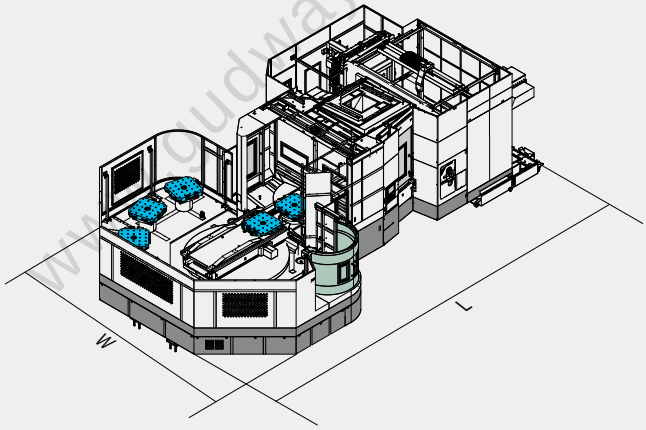




7 RPS



9 RPS



System Options

	Unit	GBH500H	
		7- RPS	9 - RPS
No. of pallets	pcs.	7	9
Foot print (Length)	mm (inch)	9490 (373.6)	10140 (399.2)
Foot print (Width)	mm (inch)	4220 (166.1)	4430 (174.4)

** Chip conveyor and RPS foot board are excluded.*

FANUC 31i PLUS

Fanuc 31i Plus maximizes customer productivity and convenience.

15" Touch screen + New OP

GUDWAY Fanuc 31iB/B5 Plus' operation panel enhances operating convenience by incorporating common-design buttons and layout. It features a Qwerty keyboard for fast and easy data input and operation.

Fanuc 31i Plus

- 15-inch color display
- Intuitive and user-friendly design

USB and PCMCIA card QWERTY keyboard

- EZ-Guide i standard
- Ergonimic operator panel
- 4MB Memory
- Hot keys
- Enhance AICC BLOCK
- Touch pen provided as standard

iHMI touchscreen

iHMI provides an intuitive interface that uses a touchscreen for quick and easy operation.

Range of applications

Providing various applications related to planning, machining, improvement and utility, for customer convenience.

NUMERIC CONTROL SPECIFICATIONS

	Item	Specifications	F31iB PLUS NHM
Controlled axis	Controlled axes		4 (X,Y,Z,B)
	Simultaneously controlled axes		4 axes
	Additional controlled Axis	Add 1 Axis (5th Axis)	●
Data input/output	Fast data server		○
	Memory card input/output		●
	USB memory input/output		●
	Large capacity memory(2GB)*2	Note *2) Available Option only with 15" Touch LCD (iHMI Only)	○
Interface function	Embedded Ethernet		●
	Fast Ethernet		○
	Enhanced Embedded Ethernet function		●
Operation	DNC operation	Included in RS232C interface.	●
	DNC operation with memory card		●
Program input	Workpiece coordinate system	G52 - G59	●
	Addition of workpiece coordinate system	G54.1 P1 X 48 (48 pairs)	●
	Tool number command		T4 digits
	Tilted working plane indexing command	G68.2 TWP	○
Feed function	AI contour control I	G5.1 Q_, 40 Blocks	X
	AI contour control II	G5.1 Q_, 200 Blocks	X
	AI contour control II	G5.1 Q_, 600 Blocks	●*
	AI contour control II	G5.1 Q_, 1000 Blocks	○*
	High smooth TCP		X
Operation Guidance Function	EZ Guidei (Conversational Programming Solution)		●
	iHMI with Machining Cycle	Note *1) Only with 15" Touch LCD standard	●
	EZ Operation package		●
Setting and display	CNC screen dual display function		●
Network	FANUC MT Connect		✪
	FANUC OPC UA		✪
Others	Display unit	15" color LCD	X
		15" color LCD with Touch Panel	●
	Part program storage size & Number of registerable programs	640M(256KB)_500 programs	X
		1280M(512KB)_1000 programs	X
		2560M(1MB)_1000 programs	X
		5120M(2MB)_1000 programs	X
		10240M(4MB)_1000 programs	●
		20480M(8MB)_1000 programs	○
		2560M(1MB)_2000 programs	○
		5120M(2MB)_4000 programs	○
		10240M(4MB)_4000 programs	○
		20480M(8MB)_4000 programs	○

Network: FANUC MTConnect and FANUC OPC UA available.

** The number of look-ahead blocks may be changed or limited depending on the peripheral device or the configuration of the internal NC system.*

● *Standard* ○ *Optional* X *Not Available* ✪ *Available*

EZ WORK

The software developed by GUDWAY features numerous functions designed for convenience and ease of operation.

EZ work

The EZ work package delivers speed and efficiency. This menu-driven innovation not only helps customers reduce setup times, but also simplifies common tasks and procedures, reducing the potential for errors. EZ work reduces operating time, protects machinery, enhances quality and speeds up maintenance interventions.

Tool support functions

Tool management I

- Tool magazine control
- Tool state display
- Fastems Tool Add/Remove Function option

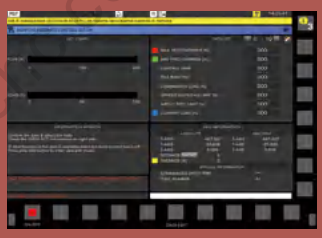
Tool management II option

- Tool magazine control
- Tool life management
- Tool life prediction • Tool state control
- Balluff Tool ID function

Tool load monitor option

- Detection of tool damage
- Detection of abnormalities during operation
- Detection of no-load air cutting

Productivity improvement functions



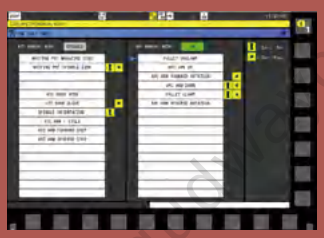
Adaptive Feed Control

Function to control feedrate so that the cutting can be carried out at a constant load

APC Setting Screen

A simple automation function that supports automatic processing of the next pallet by setting the processing program for each pallet of the equipment including APC in advance

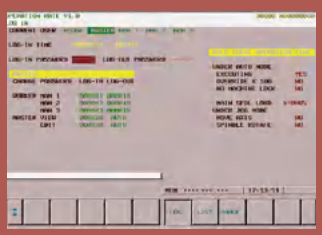
Pallet magazine support functions



PMC Soft Panel Switch

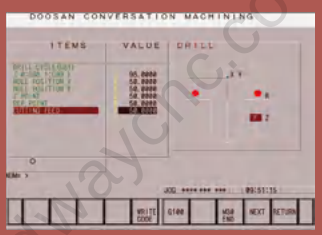
Manual operations that occur continuously in each stages for APC,ATC change command

Operation support, Help desk functions



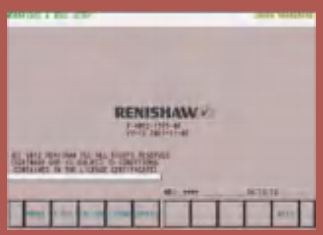
Operation rate

- Measure various machine operating rate
- Support 3 shift operation
- calculate and save 30 days operating rate
- Show data for a specific period



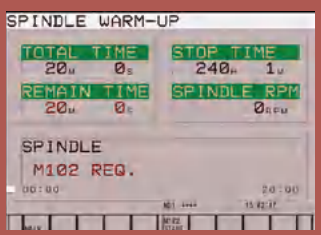
Pattern Cycle

A function to automatically create frequently used part programs.



Renishaw GUI

Renishaw tool length measuring and compensate function



Spindle Warm Up

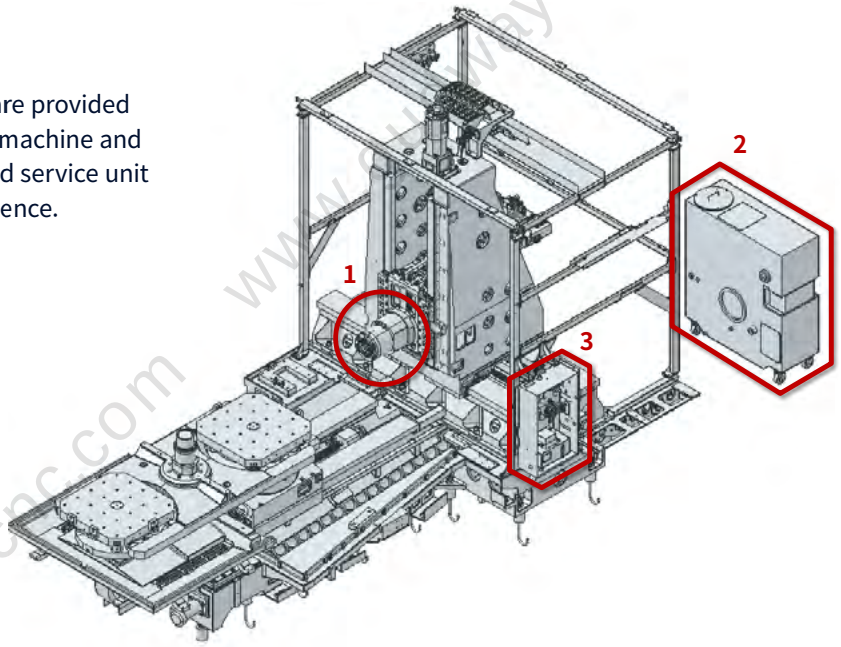
A function that assists spindle warm-up for spindle life when the spindle has not been used for a certain period of time

CONVENIENT OPERATION

Ergonomic design guarantees users' convenience and safety.

User-oriented design

Internal footings and an anti-door-lock function are provided to prevent the operator from being locked in the machine and to guarantee the operator's safety. The centralized service unit and screen panel enhance the operator's convenience.



1.
Flushing system to remove chips from the spindle top and slide cover.

2.
Coolant through spindle function for enhanced productivity option

3.
Centralized utility service unit

The utilities service unit is centralized for convenient maintainability.

ATC screen panel provides easy tool data entry at the tool magazine area

Safety has been improved with machine internal footings

Anti-door lock device

User Convenience

Swiveling Operating Panel

The operating panel can swivel by 90°, and displays various alarm messages concerning machine and controller error, enhancing the operator's convenience.

Portable MPG

The portable MPG allows the user to set up workpieces more easily.

PCMCIA Card

The PCMCIA card enables uploading and downloading of the NC program, NC parameters, tool information, and ladder programs, and also supports DNC operation.

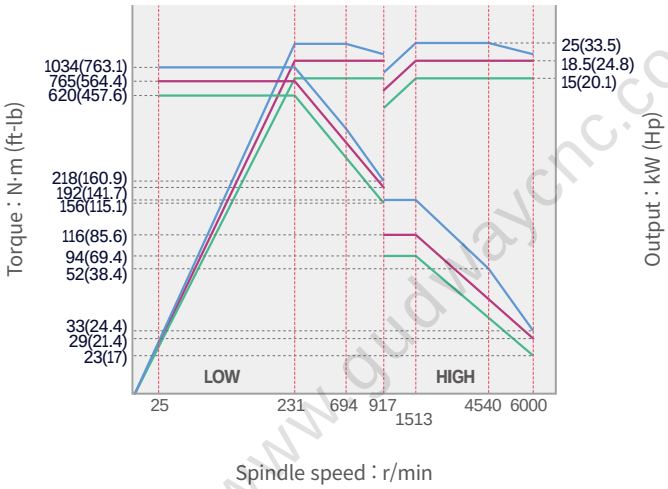
USB Port

Upload/download of NC software programs, NC parameters, tool information and ladder program using a USB drive is allowed, but DNC operation is not supported.

GBH 500H

Spindle Speed : 6000 r/min

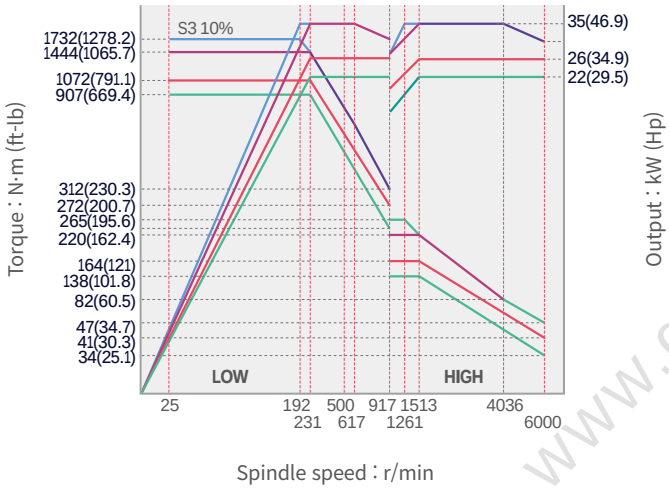
Spindle Motor : 25 / 15 kW (33.5 / 20.1 Hp)



GBH 500H option

Spindle Speed : 6000 r/min

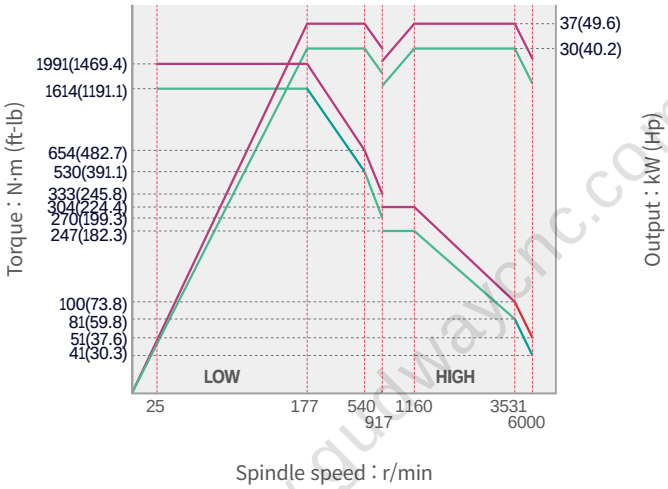
Spindle Motor : 35 / 22 kW (46.9 / 29.5 Hp)



GBH 500H option

Spindle Speed : 6000 r/min

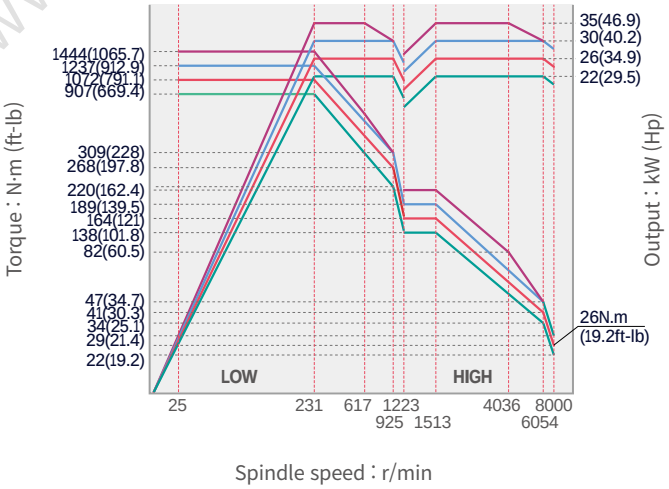
Spindle Motor : 37 / 30 kW (49.6 / 40.2 Hp)



GBH 500H option

Spindle Speed : 8000 r/min

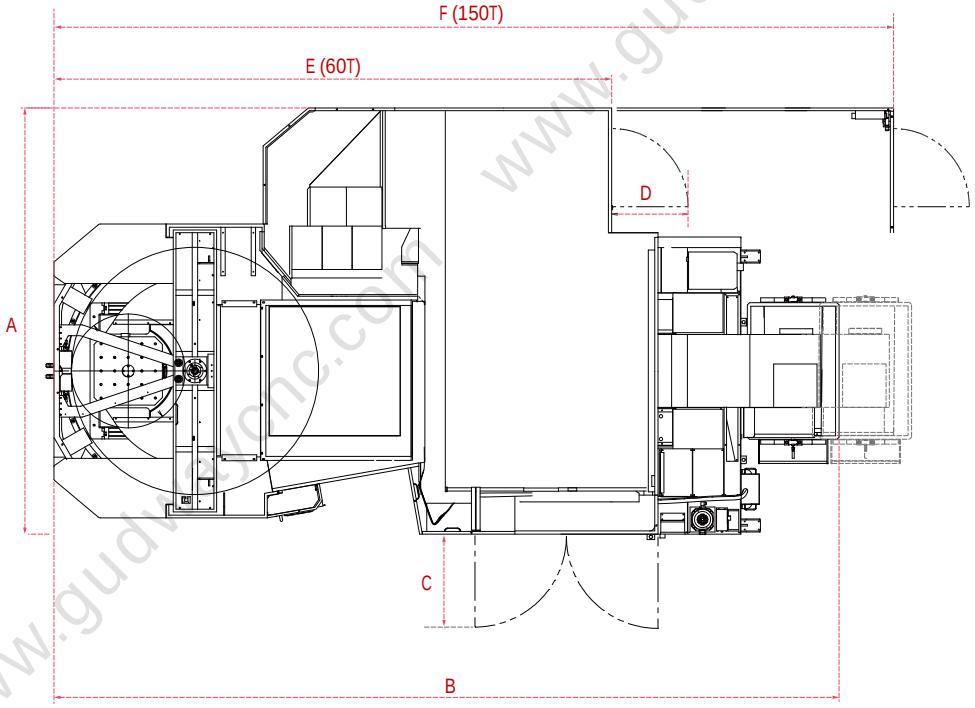
Spindle Motor : 35 / 22 kW (46.9 / 29.5)



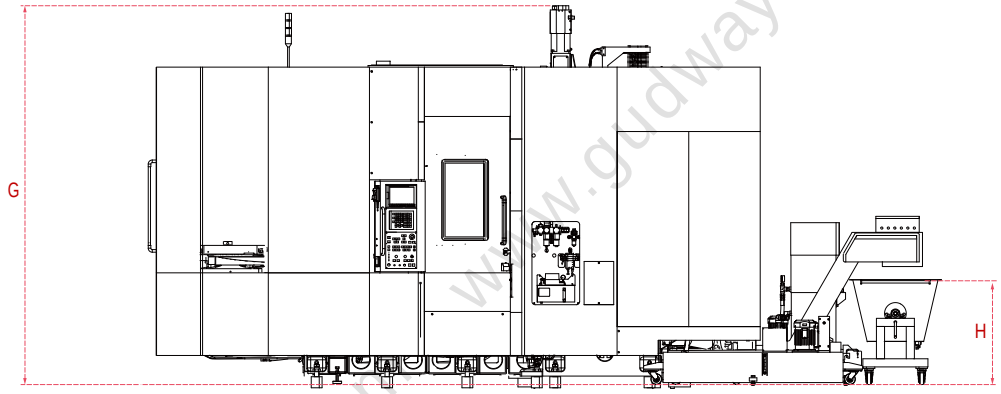
DIMENSIONS

Units : mm (inch)

TOP



FRONT



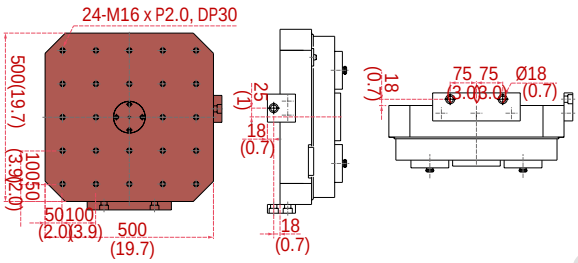
Model	A	B	C	D	E	F	G	H
NHM5000	3670 (144.5)	6830 (268.9)	660 (25.9)	745 (29.3)	4675 (184.1)	7305 (287.6)	3330 (131.1)	1085 (42.7)

PALLET

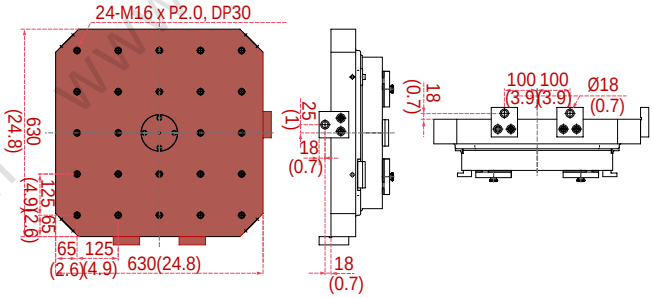
GBH 500H

Units : mm (inch)

STANDARD SPECIFICATIONS (500 × 500(19.7X19.7))



OPTIONAL SPECIFICATIONS (630 × 630(24.8X24.8))

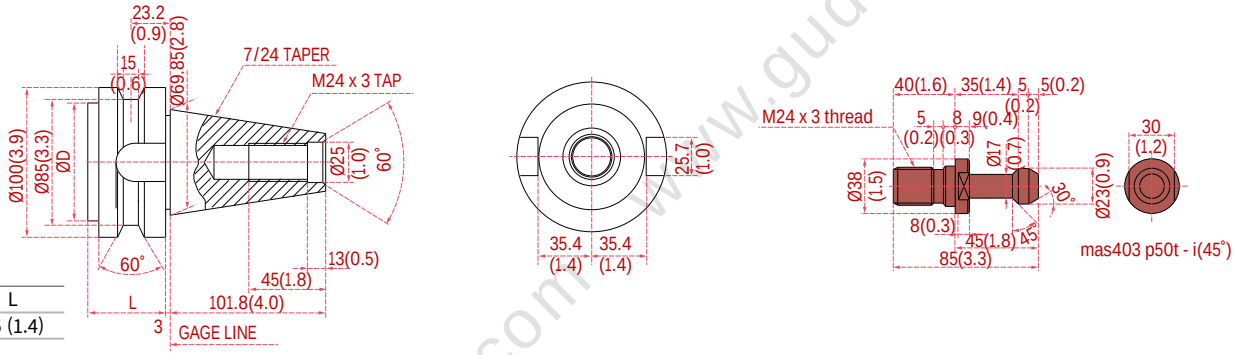


** Some peripheral equipment can be placed in other areas.*

TOOL SHANK

BT50

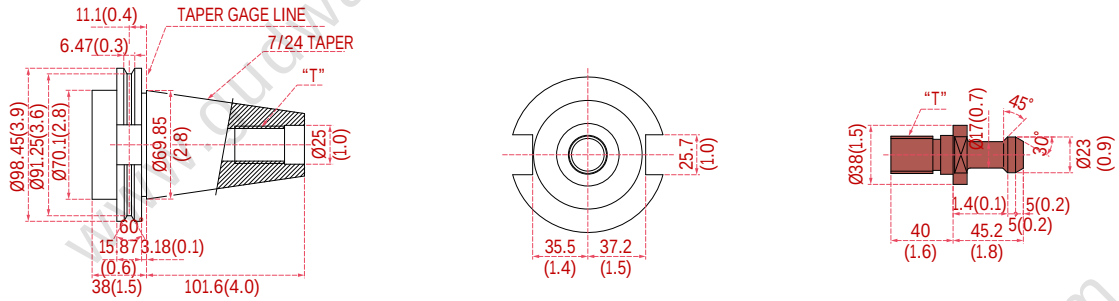
Units : mm (inch)



D	L
≤100 (3.9)	35 (1.4)
···› 100 (3.9)	49 (1.9)

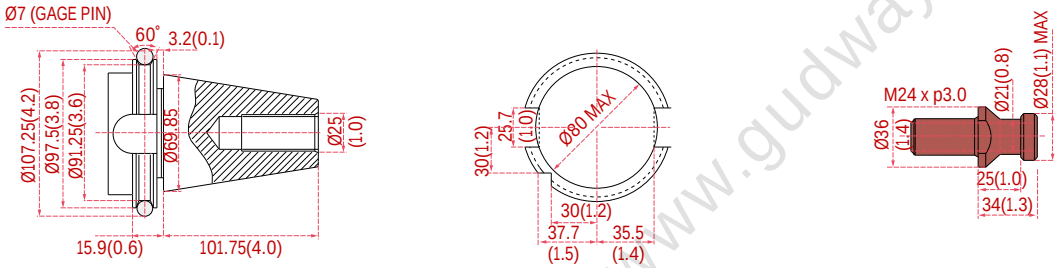
Units : mm (inch)

DIN50



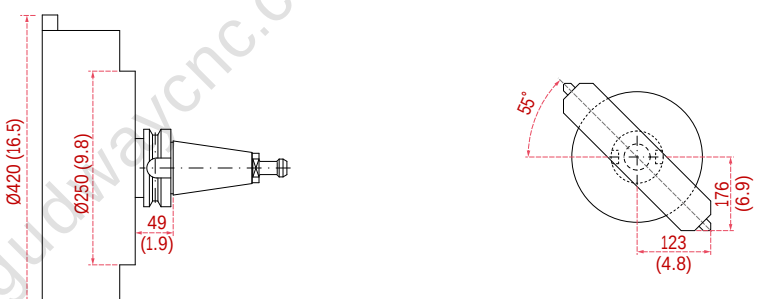
Units : mm (inch)

CAT50



Units : mm (inch)

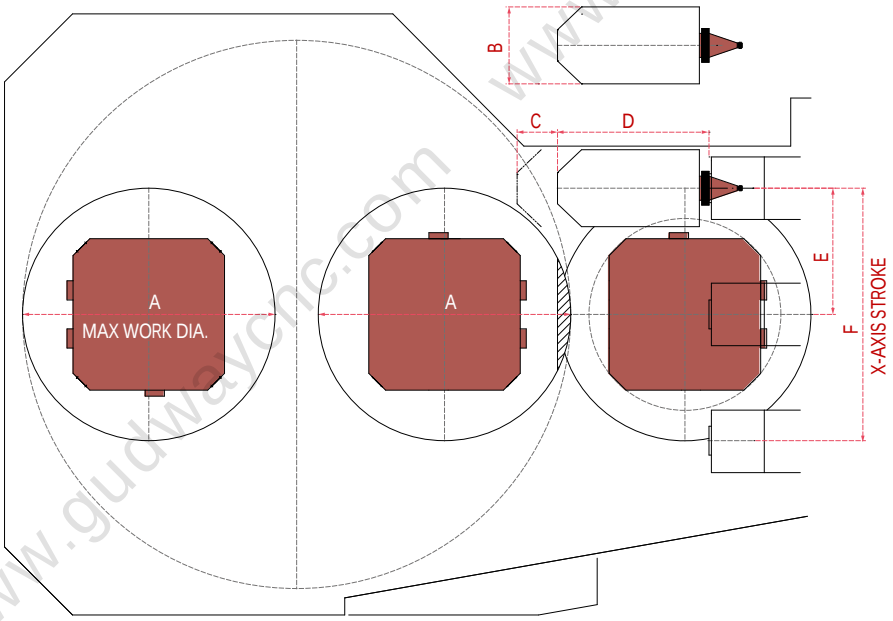
Boring bar Size

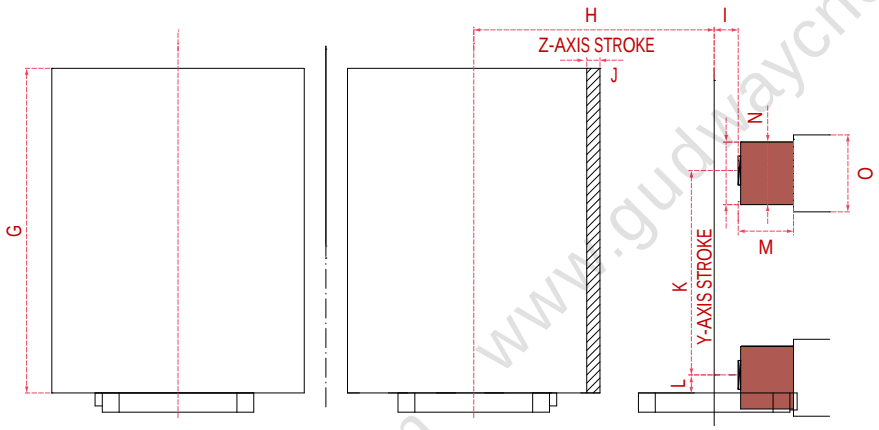


WORKING AREA

Workpiece working area

Units : mm (inch)





Model	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
GBH 500H	Ø850 (33.5)	Ø320 (12.6)	168 (6.6)	530 (20.9)	400 (15.7)	800 (31.5)	1100 (43.3)	850 (33.5)	100 (3.9)	5 (0.2)	750 (29.5)	75 (3.0)	230 (9.1)	Ø260 (10.2)	Ø320 (12.6)

** Some peripheral equipment can be placed in other areas.*

MACHINE SPECIFICATIONS

Description			Unit	GBH500H
Cutting Capacity	Travel distance	X-axis	mm (inch)	800 (31.5)
		Y-axis	mm (inch)	700 (27.6)
		Z-axis	mm (inch)	850 (33.5)
	Distance from spindle nose to table center		mm (inch)	100 ~ 950 (3.9 ~ 37.4)
	Distance from spindle center to table top		mm (inch)	75 ~ 775 (2.9 ~ 30.5)
Feed Rate	Rapid feed rate	X-axis	m/min (ipm)	30 (1181.1)
		Y-axis	m/min (ipm)	30 (1181.1)
		Z-axis	m/min (ipm)	30 (1181.1)
	Cutting feed rate		mm/min (ipm)	15000 (590.6)
Pallet	Pallet type			24-M16 × P2.0
	Pallet indexing angle		deg	1 {0.001}
	Max. loading capacity		kg (lb)	800 (1763.7)
	Max. workpiece size		mm (inch)	Ø 850 x 1100 (Ø 33.5 / 43.3)
	Pallet size		mm (inch)	500 x 500 (19.7 x 19.7)
Spindle	Max spindle speed		r/min	6000 {8000}
	Taper specifications			ISO #50, 7/24 TAPER
	Max. torque		N·m (ft-lb)	1034 {1444} (368.8 {1065})
Auto Pallet Changer (APC)	No. of pallets		ea	2
	Pallet change time		s	8.5
	APC indexing angle (rotation)		deg	90
Automatic Tool Changer (ATC)	Tool shank type			BT50 {CAT50 / DIN50 / HSK-A100}
	Tool storage capacity	Chain type	ea	60 {90 / 120 / 150}
		Matrix type	ea	{196 / 256 / 316 / 376}
	Max. tool diameter	W/O adjacent tool	mm (inch)	320 (12.6)
		With adjacent tool	mm (inch)	130 (5.1)
	Max. tool length		mm (inch)	530 (20.8) (BT / CAT / DIN), 600 (HSK)
	Max. tool weight		kg (lb)	30 (66)
	Max. tool moment		N·m (ft-lbs)	34.3 (25.3)
	Tool change time (tool to tool, tools weighing less than 12kg(26.5lb))		s	2
	Tool change time (chip-to-chip, tools weighing less than 12kg(26.5lb))		s	6.4
Motor	Spindle motor power		kW (Hp)	25 / 15 {35 / 22} (33.5 / 20.1 {46.9 / 29.5})
Power Source	Power consumption		kVA	60
	Compressed air pressure		Mpa (psi)	0.54 (78.3)
Tank Capacity	Coolant tank capacity		L (galon)	825 (217.9)
	Lubricant tank capacity		L (galon)	7.2 (1.9)
Machine Dimensions	Height		mm (inch)	3330 (131.1)
	Length		mm (inch)	6075 (239.2)
	Width		mm (inch)	3670 (144.5)
	Weight		kg (lb)	18500 (40785.5)

*{ } : Option