MICROCUT
THE CHALLENGER

HBM T TYPE Series

CNC Horizontal Boring & Milling Center

National Award of Outstanding

ISO 9001:2015 FM 538421

ISO 14001:2015 EMS 546518

ISO 50001:2011 ENMS 642457

T Type Horizontal Boring & Milling Center

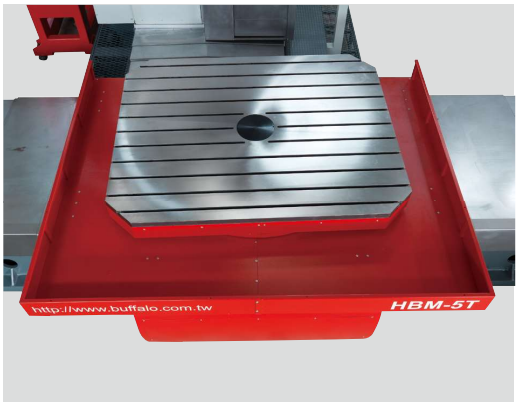
HBM-3T/4T/5T/5TL

HBM-4T

HBM-3T

HBM-5T

Rotary Table

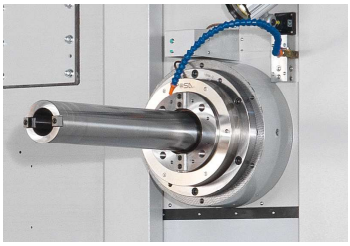


HBM-5T

- Centrally integrated rotary encoder guarantees precision positioning and easy maintenance
- 0.001 degree variable positioning in any angular position is available for rotary milling
- Three-ring bearing surface coated and hand-scraping treatment for stability and longevity
- With integrated hydraulic clamping force and four ports lock pins, the rotary table provides heavy loading capacity and large clamping force
- Both table slide clamping plates are made of robust cross-ribbed casting treated by thermal stabilization

Spindle

- MICROCUT T-type Horizontal Boring & Milling Center provides quills with diameter of 110mm and 130mm, ISO50 spindle taper and 3000rpm spindle speed
- Spindle construction with 2pcs NN bearings at the front and the rear, and 3pcs angular contact bearings in the middle
- The interface for main headstock supporting part is made of grade GGG iron casting. The slide coating on the bearing surface is hand-scraped to ensure high precision assembly.
- The spindle and quill are driven by the servo motor. The spindle ring made of sintered bronze ensures easy maintenance, and provides reliability and longevity.
- Spindle and sleeve provide high precision accuracy. The spindle surface hardness is around HRC52-55.



HBM-3T – Quill Ø110, travel of 550mm

- A two-step gear box, featuring two big ratios (1:6 for rough operation; 1:2 for normal work). Speed step shifts automatically according to the spindle speed setting.

HBM-4T – Quill Ø130, travel of 700mm

HBM-5T/HBM-5TL – Quill Ø130, travel of 700mm

- A two-speed planet gear box features two large ratios (1:5.5 for rough operation; 1:1 for normal work). Speed step shifts automatically according to the spindle speed setting.
- The spindle is equipped with automatic OTT-Jakob hydraulic tool clamping system to hold the tool securely with chucking power booster. The hydraulic cylinder is provided for releasing.

Axes

X & Z Axes

- All major structural components are made of Meehanite licensed casting iron with stress released, ensuring maximum stability and rigidity.
- Linear scales ensure precise positioning for three axes.
- Support for heavy loading and provide high accuracy.

HBM-3T / HBM-4T

X axis 2 roller-type linear guideways with 6 sliding blocks
Z axis 2 roller-type linear guideways with 8 sliding blocks

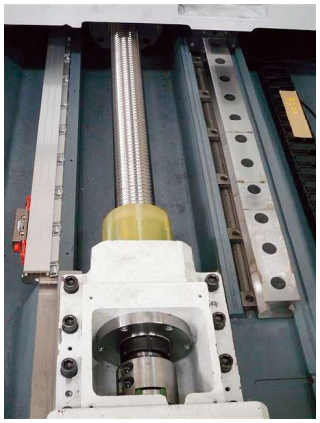
HBM-5T / HBM-5TL

X axis 3 roller-type linear guideways with 9 sliding blocks
Z axis 3 roller-type linear guideways with 12 sliding blocks

Roller-type Linear Guideway

- Offering super high rigidity and very high load capacities.
- Roller-type linear guideway takes loads and enables movement in all directions.
- High performance in compact design and only a few bearings are required.
- Roller guideway doesn't show stick-slip effect but achieve a max. Velocity of 4m/s (sufficient for the machining centers) ; in addition, the variation resp. pulsation of the friction is reduced to a minimum by optimized raceway geometry.
- Due to the rolling contact (steel-steel), vibrations are transferred without damping.
- Friction of the preloaded rolling contact leads to heat development of the guideway. Heat development depends on load and duration of the movement. In applications, the heat development of a linear roller guideway can be disregarded.

Machine Features

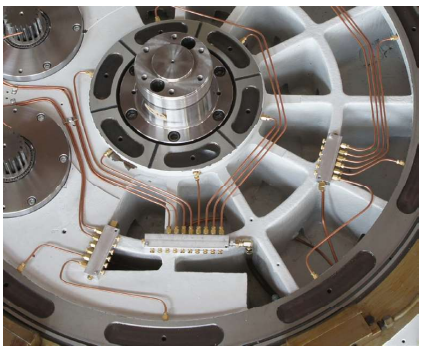


High Precision Ballscrews

- C3 class ballscrews with double nuts are applied on X/Y/Z/W axes which offer high axis accuracy and less deforming under axial force.
- All the ballscrew nuts are preloaded to ensure less tension deforming, and the ballscrews are with thermal compensation.
- When the axis travel is three meters and above, the ballscrew supporter comes along as standard component to prevent the ballscrew deformation and ensure smooth axis travel.

Chip Arrangement

- Machine is equipped with chip auger for easy chip collection.
- Floor chip conveyor is available for request.



Lubrication System

- Automatic lubrication system uses pressure-released type lubricator; oil volume is controlled according to distribution values metered.
- Oil is supplied according to the lubrication oil demand of the sliding surface and the ballscrew.
- Oil level detector unit is provided.
- Alarm will be shown on the screen when an oil shortage occurs. Sealed type spindle bearings are lubricated by grease.

Measuring System

X/Y/Z axes -
All three axes are equipped with absolute linear scale.

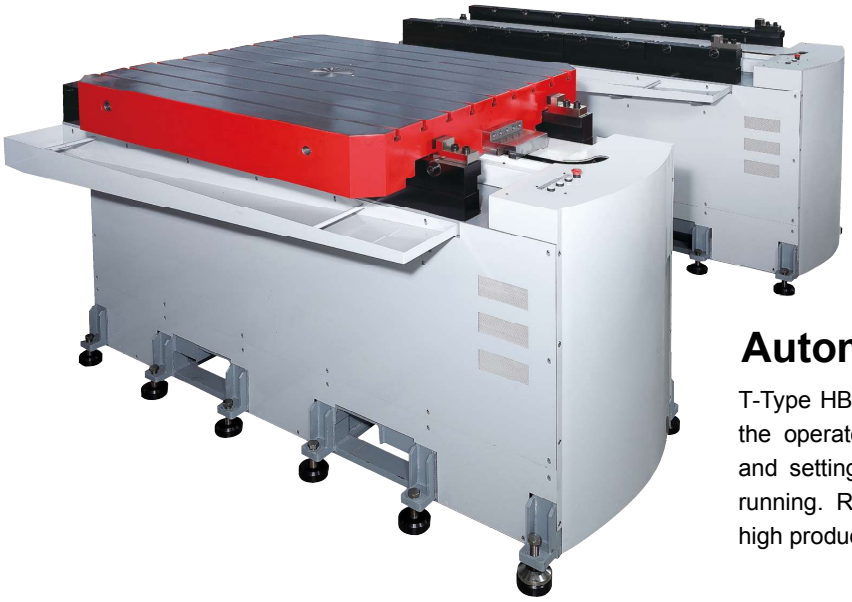
W axis -
The W axis is measured by the axis servo motor.

Rotary table -
The rotary table is integrated with rotary encoder, providing accuracy of 0.001mm.

T Type Horizontal Boring & Milling Center with APC (Opt.)

Automatic Pallet Changing System Increases the Manufacturing Productivity

The optional automatic pallet changing system is designed to increase the productivity of T-Type HBM series. Automatic pallet changing system allows operator to set up a workpiece while another workpiece is being machined which significantly reduces downtime for both the machine and the operator. By saving set-up time, the spindle idle time is greatly reduced and productivity is remarkably increased.

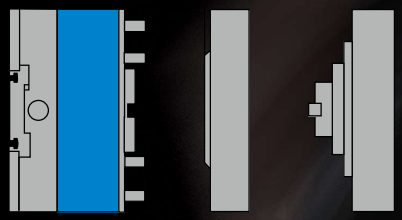


Automatic Pallet Changer

T-Type HBM series equipped with APC enables the operator to keep uploading the workpiece and setting up new jobs while the machine is running. Reliable pallet changing units ensure high productivity performance.

Camlock System

Camlock system for easy accessory head loading/unloading



Support Stand & Rotary Arm

Support stand and rotary arm provide a convenient and efficient solution to place and carry the milling head. The support stand provides a convenient platform to place the milling head while the rotary arm supports manual transport of the milling head.

Selection of CNC Controller

Heidenhain iTNC530 HSCI

Siemens 840D sl

Fanuc 31i/32i

Portable MPG

Portable control panel Heidenhain

Portable control panel Fanuc/Siemens

All systems provide full control of 5 axes, especially Heidenhain controller comes with spindle rotation function.

Control system in basic configuration consists of:

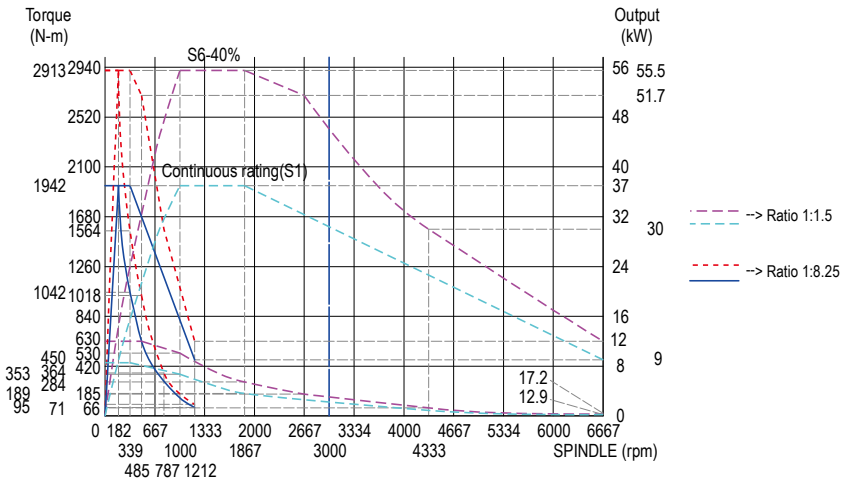
- Standard software functions
- 15” color display (Heidenhain) / 10.4” color display (Fanuc/Siemens)
- Operational panel with keyboard
- Auxiliary portable control with electronic hand wheel
- Tool management

Power & Torque Chart

Siemens control

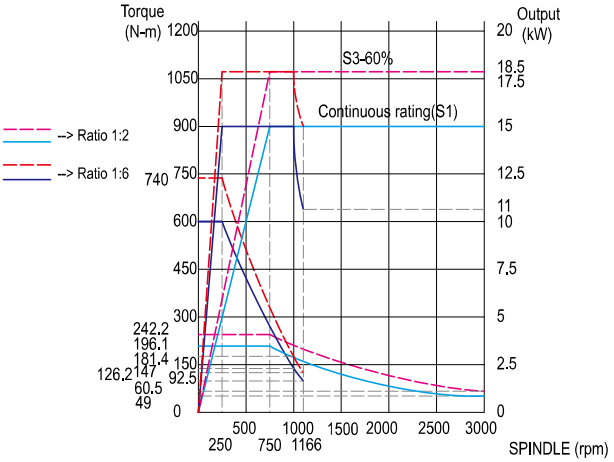
HBM-4T/5T/5TL -- Siemens & Heidenhain 37/56 kW

Torque / Horsepower Chart Data		
Spindle Taper	ISO	BT50
		CAT50
		DIN 69871
Spindle Speed		3000 RPM
Spindle Motor		Siemens 1PH8165-1MF03-1BC1
Motor Output		37 / 55.5 kW
Gear Ratio		1:1 / 1:5.5
Pulley Ratio		1:1.5



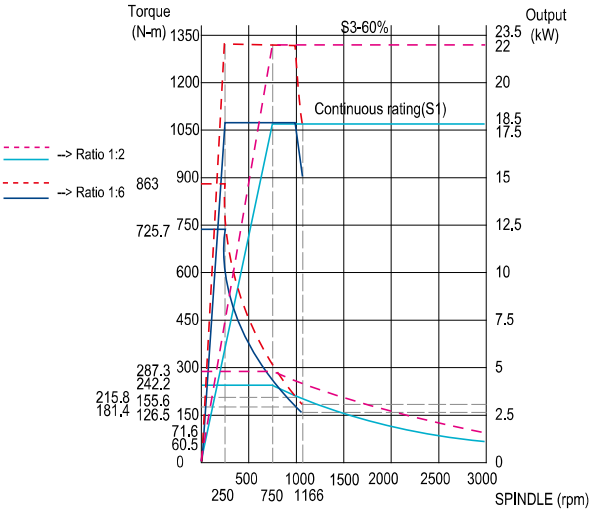
FANUC control

HBM-3T(std.)15/18.5 kW



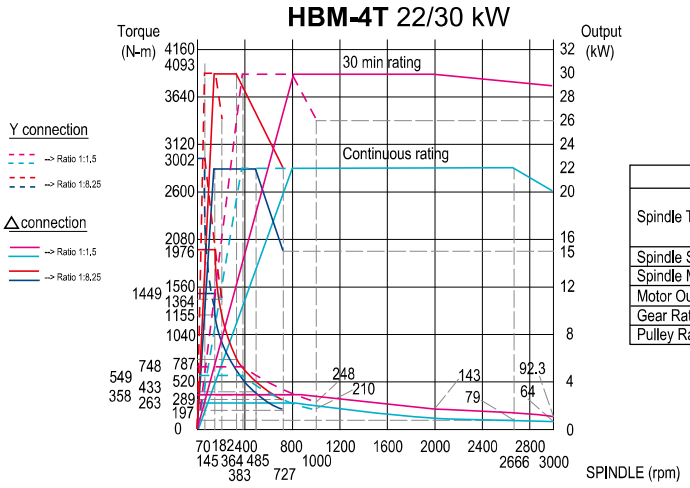
Torque / Horsepower Chart Data				
Spindle Taper	ISO	BT50	Spindle Motor	FANUC α15/7000i
		CAT50	Motor Output	15 / 18.5 kW
		DIN 69871	Gear Ratio	1:2 / 1:6
Spindle Speed		3000 RPM	Pulley Ratio	-

HBM-3T(opt.)18.5/22 kW



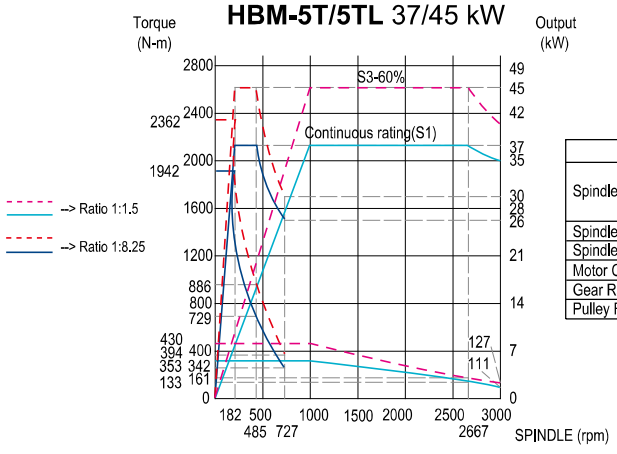
Torque / Horsepower Chart Data				
Spindle Taper	ISO	BT50	Spindle Motor	FANUC £\18/7000i
		CAT50	Motor Output	18.5 / 22 kW
		DIN 69871	Gear Ratio	1:2 / 1:6
Spindle Speed		3000 RPM	Pulley Ratio	-

HBM-4T 22/30 kW



Torque / Horsepower Chart Data		
Spindle Taper	ISO	BT50
		CAT50
		DIN 69871
Spindle Speed		3000 RPM
Spindle Motor		FANUC aP50/6000i
Motor Output		20 / 30 kW
Gear Ratio		1:1 / 1:5.5
Pulley Ratio		1:1.5

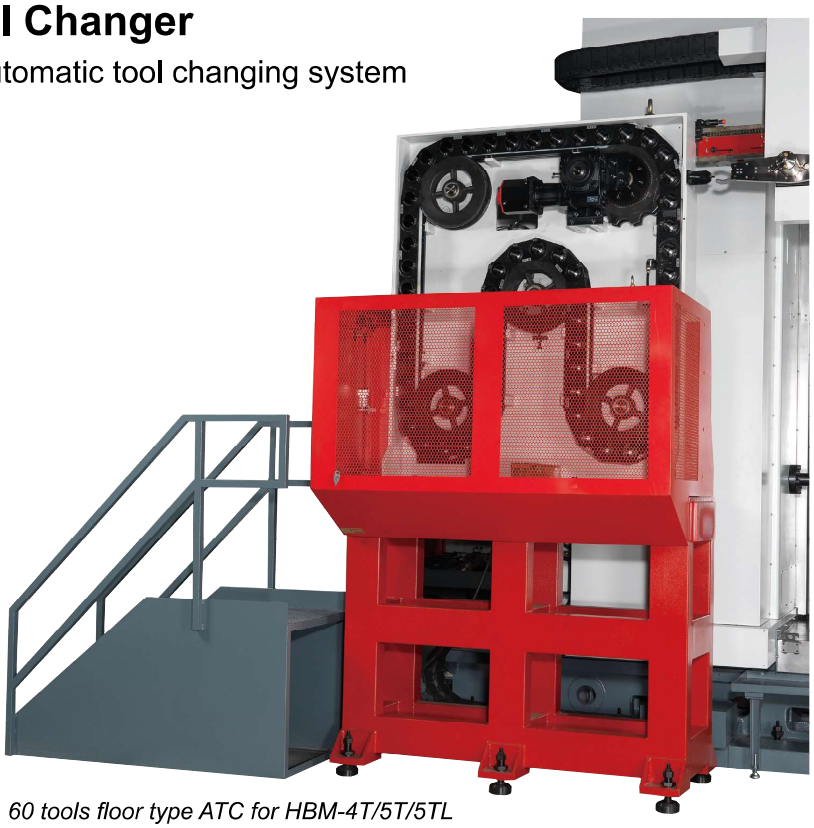
HBM-5T/5TL 37/45 kW



Torque / Horsepower Chart Data		
Spindle Taper	ISO	BT50
		CAT50
		DIN 69871
Spindle Speed		3000 RPM
Spindle Motor		FANUC a40/6000i
Motor Output		37 / 45 kW
Gear Ratio		1:1 / 1:5.5
Pulley Ratio		1:1.5

Automatic Tool Changer

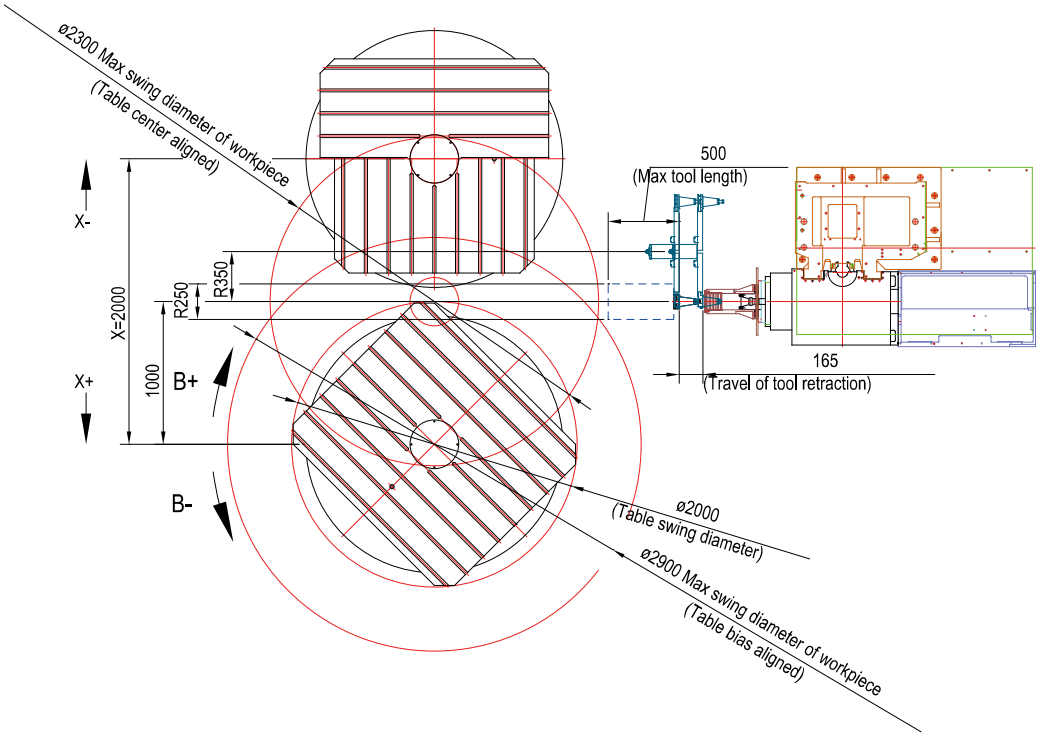
A fast and reliable automatic tool changing system



60 tools floor type ATC for HBM-4T/5T/5TL

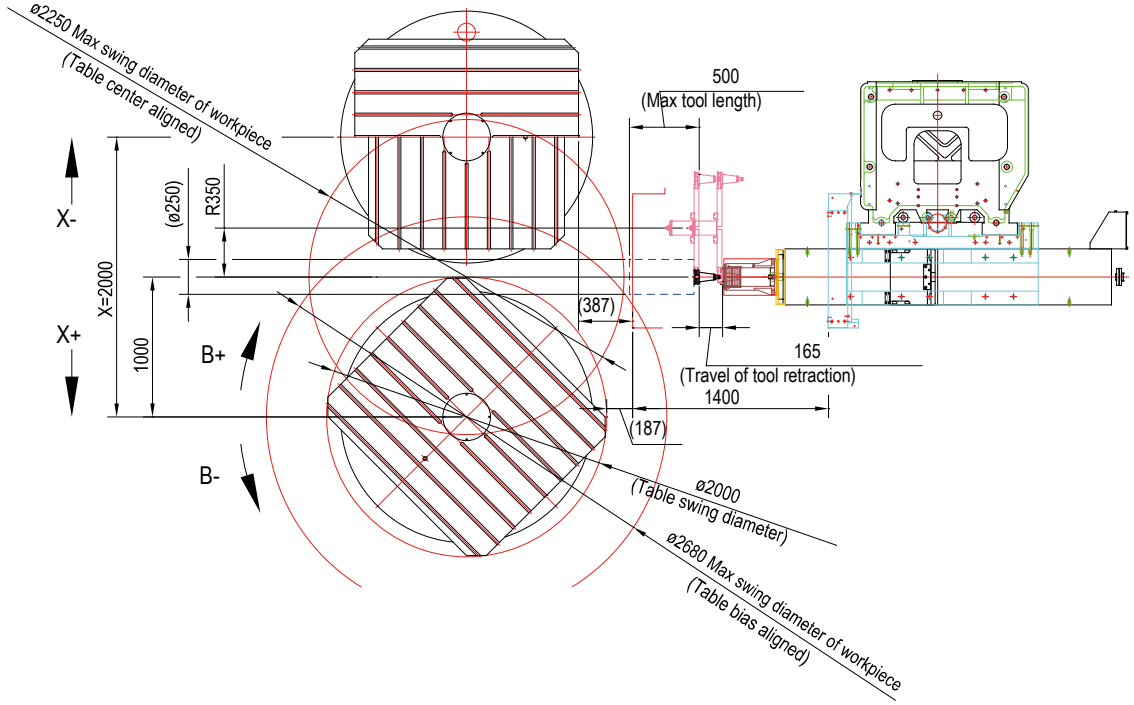
Interference drawing

HBM-3T

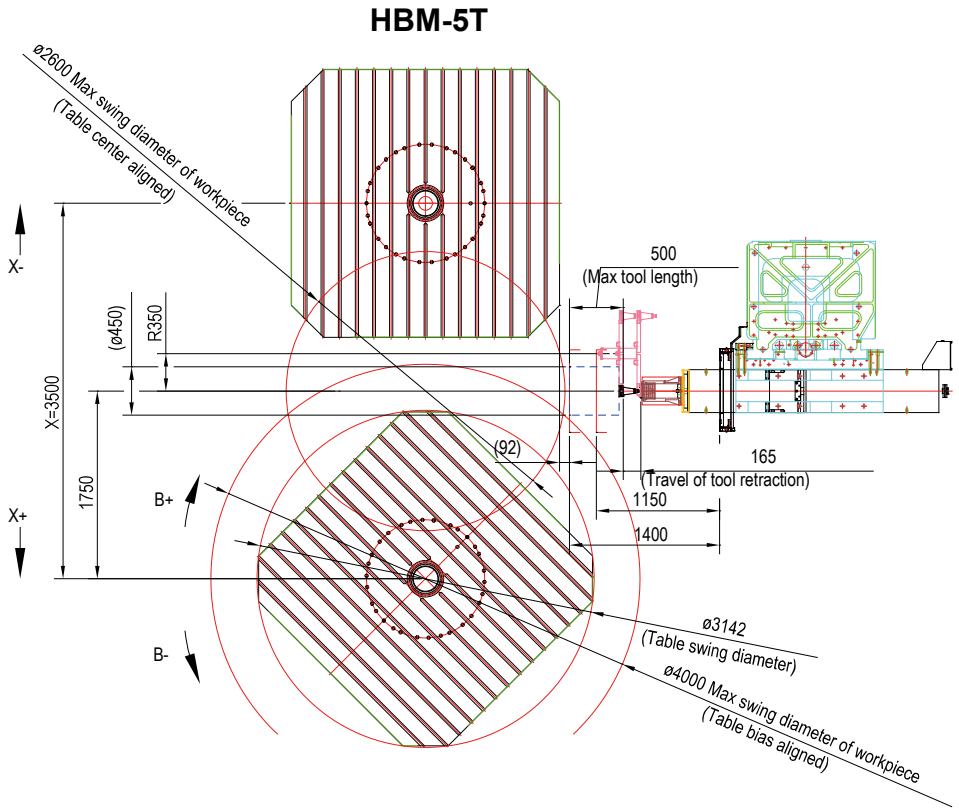


Interference drawing

HBM-4T



HBM-5T



Technical Data

Item \ Model	Unit	HBM-3T	HBM-4T	HBM-5T	HBM-5TL
Table					
Table size	mm	1400 x 1600	1400x1600(std.)/1600x1800(opt.)	1800 x 2200	2500 x 2500
Table height	mm	1280	1280	1365	1415
T-slot(w/pitch/no)	mm	24H8/160/9	24H8/160/9	24H8/160/11	24H8/160/15
Max. table load	kg	8000	8000(std)/10000 (opt)	15000(std)/20000 (opt)	20000(std)
Table index	degree	0.001°	0.001°	0.001°	0.001°
Rotary table positioning accuracy	sec	15	15	15	15
Rotary table repeatability accuracy	sec	4	4	4	4
Rotary table encoder accuracy	sec	±5	±5	±5	±5
Travel					
X axis	mm	std-2000 opt-3000	std-2000 opt-3000	std-3500 opt-4500/5500	std-3500 opt-4500/5500
Y axis	mm	2000	2000	std-2600 opt-3200	std-3200 opt-2600
Z axis	mm	std-1400 opt-1700	1400	std-1400 opt-2000	std-2000 opt-1400
W axis (Quill)	mm	550	700	700	700
Spindle nose to table center (standard Z travel & table size)	mm	40-1990(Z:1400)/ 40-2290(Z:1700)	70~2170	-100~2000(Z:1400)/ -100~2600(Z:2000)	250~2950
Spindle					
Spindle taper		ISO 50	ISO 50	ISO 50	ISO 50
Transmission		Gear	Belt	Belt	Belt
Spindle speed	rpm	35~3000	35~3000	35~3000	35~3000
Spindle output	kW	15/18.5	22/30 ; 37/56	37/45 ; 37/56	37/45 ; 37/56
Spindle torque	Nm	740	1449/1976 (Δ connection); 3002/4093(Y connection); 1942/2913	2454/2985; 1942/2913	2454/2985; 1942/2913
Spindle step		2 steps	2 steps	2 steps	2 steps
Quill diameter(W axis)	mm	Ø110	Ø130	Ø130	Ø130
Spindle bearing I/D	mm	Ø150	Ø170	Ø170	Ø170
Axes Transmission					
X axis ballscrew	mm	Ø80 x P10 x C3	Ø80 x P10 x C3	Ø80 x P10 x C3	Ø80 x P10 x C3
Y axis ballscrew	mm	Ø63 x P10 x C3	Ø63 x P10 x C3	Ø63 x P10 x C3 / Ø80 x P10 x C3	Ø63 x P10 x C3 / Ø80 x P10 x C3
Z axis ballscrew	mm	Ø80 x P10 x C3	Ø80 x P10 x C3	Ø80 x P10 x C3	Ø80 x P10 x C3
W axis ballscrew	mm	Ø40 x P5 x C3	Ø40 x P5 x C3	Ø40 x P5 x C3	Ø40 x P5 x C3
Motor Output					
Axes motor(X/Y/Z/B/W)	Nm	75/65/38/12	75/38/38/38/22	75/38/38/38/22	75/38/38/38/22
Hydraulic motor	kW	3.75	7.5	7.5	7.5
Coolant motor	kW	0.85(50Hz) / 1.29 (60Hz)	0.85(50Hz) / 1.29(60Hz)	0.85(50Hz) / 1.29(60Hz)	0.85(50Hz) / 1.29(60Hz)
Lubrication pump motor	W	25	25	25	25
Guideway					
X axis guideway type		Linear/ 65mm(Roller)	Linear/ 65mm(Roller)	Linear/ 65mm(Roller)	Linear/ 65mm(Roller)
X axis guideway distance	mm	1010	1010	1250	1250
Y axis guideway type		Box way	Box way	Box way	Box way
Y axis guideway distance	mm	720	1120	1120	1120
Z axis guideway type		Linear/ 65mm(Roller)	Linear/ 65mm(Roller)	Linear/ 65mm(Roller)	Linear/ 65mm(Roller)
Z axis guideway distance	mm	954	954	1374	1374
Axes Feed Rate					
X/Y/Z/W rapid feed	m/min	10/10/10/6	10/10/10/8	10/10/10/8	10/10/10/8
ATC System					
ATC type		Arm	Arm	Arm	Arm
No. of tools		40T	60T	60T	60T
Tool shank type		BT/CAT/DIN 50	BT/CAT/DIN 50	BT/CAT/DIN 50	BT/CAT/DIN 50
Tool Changing Time(T-T)	sec	15	16	16	16
Max. tool diameter	mm	Ø125	Ø125	Ø125	Ø125
Max. tool dia. w/ next tool empty	mm	Ø250	Ø245	Ø245	Ø245
Max. tool length	mm	500	300/500	300/500	300/500
Max. tool weight	kg	25	25	25	25
Max. loading weight	kg	600	900	900	900
Dimension					
Length	mm	7300	7800	8450	9055
Width	mm	7100	7050/7800	(X travel 3500) 6980 ; (X travel 4500) 8500 ; (X travel 5500) 9720	
Height	mm	4500	4600	5400	6100
Weight	kg	43000	40000/42000	(X travel 3500) 49000 ; (X travel 4500) 51500/55000 (X travel 5500) 54500/58000	

*Specifications are subject to change without notice.

Standard Accessories

* Spindle vibration supervision device
* CTS preparation
* Spindle oil cooling system
* Chip auger
* Linear scale for three axes
* Heat exchanger
* Hoist ring set

Optional Accessories

* Table guard with folding door
* Angular block
* Safety module
* Air conditioner
* Support stand and rotary arm
* CTS unit
* Oil skimmer

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