BUFFALO MACHINERY CO., LTD.
56, Lane 318, Desheng Road, Daya District,
Taichung City 428-46, Taiwan
P.O. Box 320, Daya, Taichung City, Taiwan
Tel: +886-4-25 60 37 59 Fax: +886-4-25 60 37 69
E-mail: info@mail.buffalo.com.tw
www.buffalo-machinery.com

MICROCUT EUROPE
Ulica hrvatskih branitelja 3
10430 Samobor CROATIA
Tel. +385 1 3141 515
Fax. +385 1 3141 516
info@microcut-europe.eu
www.microcut-europe.eu

MICROCUT

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

MICROCUT HBM T type Horizontal Boring & Milling Center provides large spindle quill diameter of 110, 130 and 150 mm to provide high machining capability for heavy-duty cutting. Equipped with two-speed gear box to shifts spindle speed automatically makes the heavy cutting more efficiency.

HBM series machines also have additional option of D'Andrea precision facing head with servo actuation and support users with wide variety machining purpose.

For the machining need of big parts, Microcut HBM T type meets the specific requirements of industries in aerospace, energy, and defense industries.

HBM-3T

HBM-4T

HBM-5T / HBM-5TL

HBM-5TLU

5TLU is equipped with UT5 servo facing head as standard

Structure

- All major structural components are made of Meehanite licensed casting iron with stress released, ensuring maximum stability and rigidity.
- Offering super high rigidity and very high load capacities.
- Roller-type linear guideway offers greater rigidity in all directions.
- The guideway base ensures maximum rigidity and performance of positioning accuracy for high loading capacity

Spindle

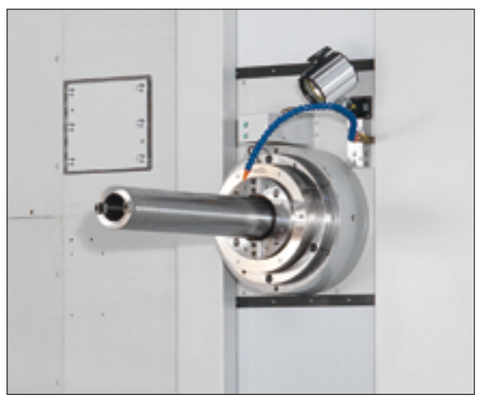
Highlight

- MICROCUT T-type Horizontal Boring & Milling Center provides large quills with diameter from 110 to150 mm to support heavy-duty cutting and machinable travel
- ISO50 spindle taper, the Max spindle speed: Ø110/Ø130 mm quill:3000 rpm ; Ø150 mm quill:2000 rpm
- Hardened spindle and quill sleeve (surface hardness HRC52-55) provide high rigidity and accuracy
- Two-step gear box to enhance cutting torque at low rpm

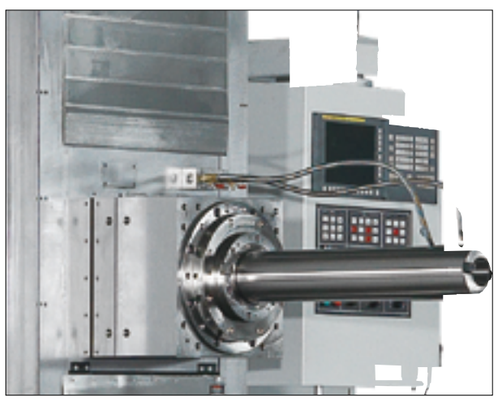
Structure

- 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.

Model	Quill Diameter - Ø (mm)	Quill Travel - W (mm)	Spindle speed (rpm)	Two - step gear box
HBM-3T	Ø 110	550	35 ~ 3000	Ratio 1:6 - heavy-duty cutting Ratio 1:2 - general application
HBM-4T	Ø 130	700	35 ~ 3000	
HBM-5T	Ø 130 / Ø 150	700 / 900	35 ~ 3000 / 35 ~ 2000	
HBM-5TL	Ø 130 / Ø 150	700 / 900	35 ~ 3000 / 35 ~ 2000	Ratio 1:5.5 - heavy-duty cutting Ratio 1:1 - general application
HBM-5TU	Ø 150	900	35 ~ 2000	
HBM-5TLU	Ø 150	900	35 ~ 2000	



HBM-3T
– Quill Ø110, travel of 550mm



HBM-4T/HBM-5T/HBM-5TL
– Quill Ø130, travel of 700mm

HBM-5TU/HBM-5TLU
– Quill Ø150, travel of 900mm

Axes

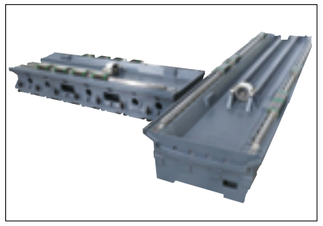
Highlight

- High Rigidity roller-type linear guideway offers super high rigidity and very high load capacities
- X/Y/Z axes with linear scales ensure precise positioning
- All linear guideways with sliding blocks are designed for heavy loading and provide high accuracy

Structure

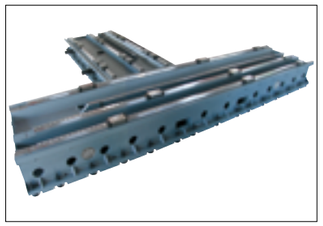
- Roller-type linear guideway takes loads and enables movement in all directions
- 3 axes are driven by high precision ballscrews with double nuts, offering high axis accuracy and less deforming under axial force
- Ballscrew supporter is equipped to support axis travel longer than 3 meters

Model	Table X travel (mm)	Column Y travel (mm)	Boring Spindle Z travel (mm)
HBM-3T	2000 / 3000	2000	1400 / 1700 (opt)
HBM-4T	2000 / 3000	2000	1400
HBM-5T	3500 / 4500 / 5500	2600	1400 / 2000
HBM-5TL	3500 / 4500 / 5500	3200	1400 / 2000
HBM-5TU	3500 / 4500 / 5500	2000 / 2600 / 3200	1400 / 2000
HBM-5TLU	3500 / 4500 / 5500	2000 / 2600 / 3200	1400 / 2000



HBM-3T / HBM-4T

X axis : 2 linear guideways with 6 sliding blocks
Z axis : 2 linear guideways with 8 sliding blocks



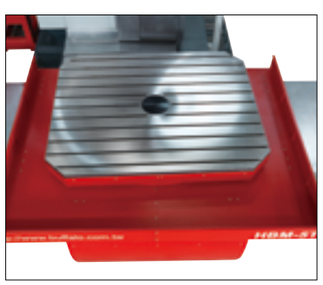
HBM-5T

X axis 3 linear guideways with 9 sliding blocks
Z axis 3 linear guideways with 12 sliding blocks

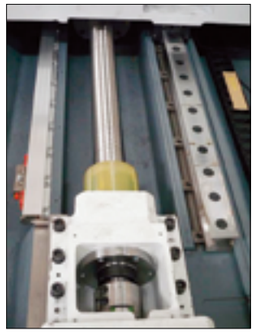
Table

- CNC Index Table with 0.001 degree positioning
- Equipped with rotary encoder provides accuracy of 0.001°
- Three-ring bearing surface coated and hand-scraping treatment for stability and longevity
- Large clamping force and four ports lock pins to provides heavy loading capacity

Model	Table size (mm)	T - slot (w / pitch / no)	Max. table load (Ton)
HBM-3T	1400 x 1600 (std.) 1600 x 1800 (opt.)	24H8 x 160 x 9	8 (std.) / 10 (opt.)
HBM-4T	1400 x 1600 (std.) 1600 x 1800 (opt.)	24H8 x 160 x 9	8 (std.) / 10 (opt.)
HBM-5T	1800 x 2200 (std.)	24H8 x 160 x 11	15 (std.) / 20 (opt.)
HBM-5TL	2500 x2500 (std.)	24H8 x 160 x 15	20 (std.)
HBM-5TU **HBM-5TLU**	1800x2200 (std.) 2500x2500 (opt.)	24H8 x 160 x 11 28H8 x 160 x 15	15(std.) / 20 (opt.) 20 (std.)



Machine Features

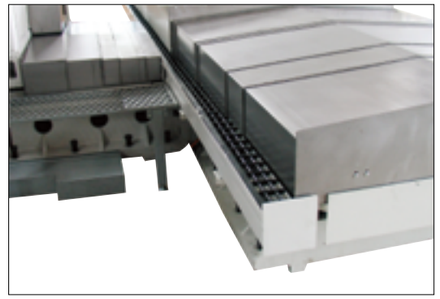


High Precision Ballscrews

- 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 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

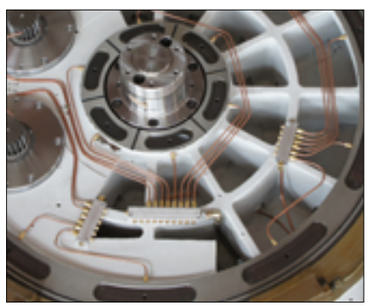
Chip Arrangement

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



Lubrication System

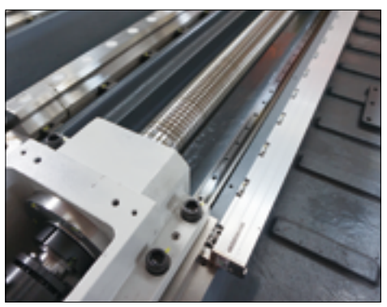
- Automatic lubrication system uses pressure-released type lubricator; oil volume is controlled according to distribution values metered
- Oil is supplied according to the lubrication oil demand of the sliding surface and the ballscrew
- Oil level detector unit is provided.
- Alarm will be shown on the 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, ±5 μm Accuracy

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

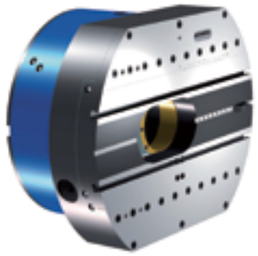


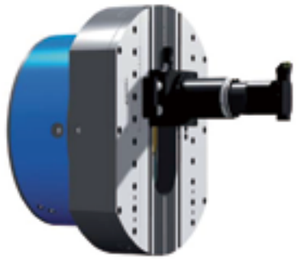
Optional Head

■ U-axis Servo Facing Head

One time clamping to finish milling, tapping, drilling and facing together.

MICROCUT HBM-5T are designed to use UT5 servo facing heads with size of ø 500 and ø 630 mm. The medium and large sized NC facing heads provides motor revolution of 200 mm radial slide traverse with repeatability accuracy of 0.005 mm, allows the U axis of the HBM-5T to effectively perform machining such as outer/inner facing, cylindrical and conical boring and threading, concave and convex radius machining.





UT5-630 / UT5-500

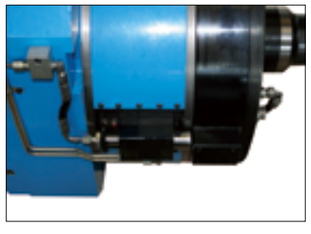
- Motor revolution 0,1 mm
- Radial traverse 200 mm
- Feedrate 1-400 mm/min
- Radial force 500 daN
- Torque 800 daNm
- Max working diameter 1250 mm
- Repeatability accuracy 0.005 mm
- Boring accuracy H7
- Facing accuracy 0.02 mm
- Backlash less than 0.05 mm
- Max chip removal 9 mm²
- Roughness 1.6 Ra (μm)
- Head weight 400 kg
- Flange weight 100 kg

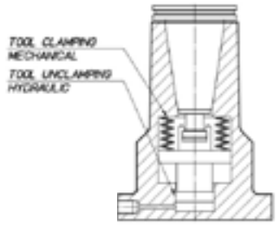
Driving Key (option)

The servo facing head of HBM-5T are installed with driving key, which fixes the head without rotation while the boring spindle is rotating. After the servo head returns to the original position, being locked and disengaging the drive key, the spindle can run independently at high speed up to 2000 rpm even without removing the facing head

Automatic Tool Change of Facing head (option)

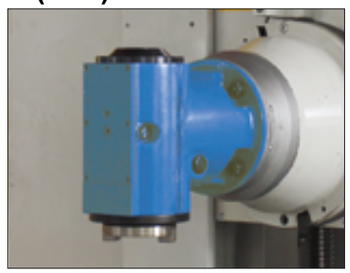
Equipped with hydraulic system to easily clamp/ unclamp tool.
Maximize productivity without interruption.



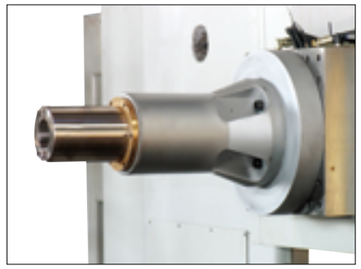


When the 50-bar pressure goes into the B50 hydraulic system, the chucks piston opens the grippers for loading/unloading the PSC80 toolholder, when releasing the oil pressure the springs contained inside the B50 hydraulic system, the toolholder clamps the tool.

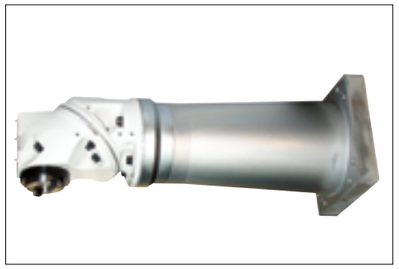
■ Angle milling head (N75)



■ Spindle extension sleeve

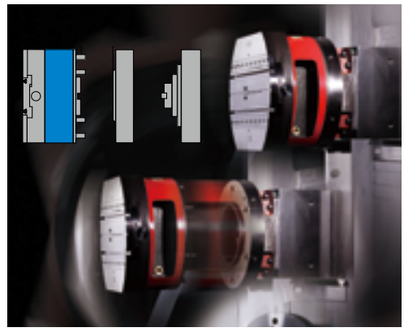


■ Universal milling head



■ Camlock System

For easy loading /unloading of accessory head.



■ Support Stand & Rotary Arm

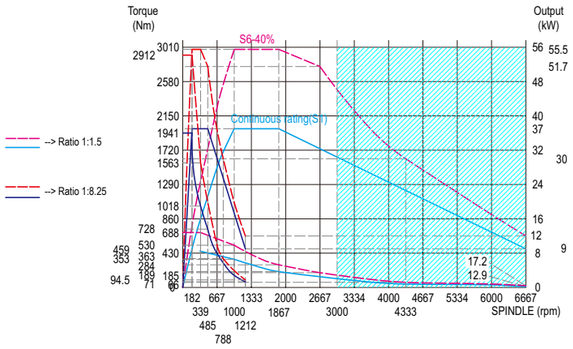
Support stand and rotary arm provide a convenient and efficient solution to place and carry the milling head. The support stand provides a convenient platform to place the milling head while the rotary arm supports manual transport of the milling head.

■ Automatic Tool Changer

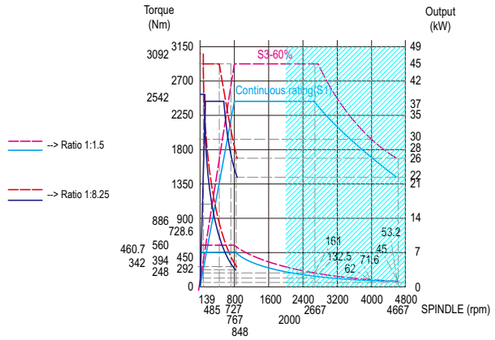
A fast and reliable automatic tool changing system
ATC type: Arm
Tool shank: BT/CAT/DIN 50
Tool capacity:
HBM-3T 40/60 tools
HBM-4T 60/120 tools
HBM-5T/5TL 60/120 tools

Power & Torque Chart

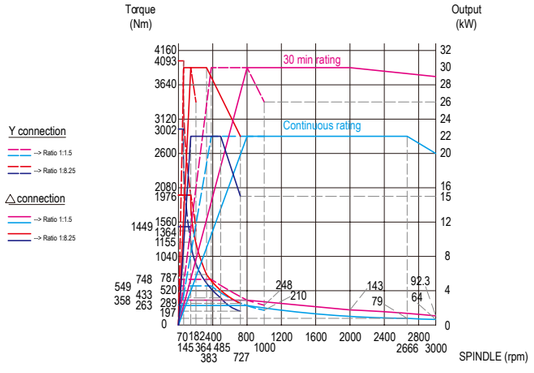
HBM-4T/5T/5TL
Siemens & Heidenhain 37/56 kW



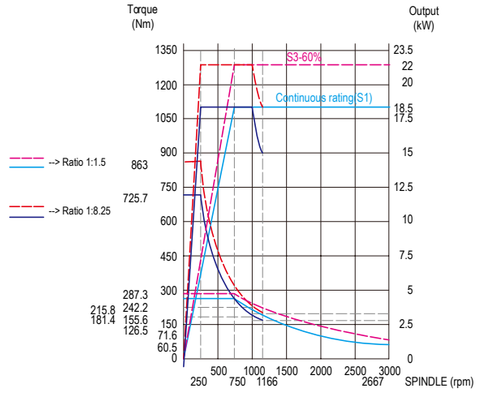
HBM-5T/5TL
Fanuc 37/45 kW



HBM-4T
Fanuc 22/30 kW



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



Control

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

Heidenhain TNC640

Siemens 840D sl

Fanuc 31i/32i

Portable MPG

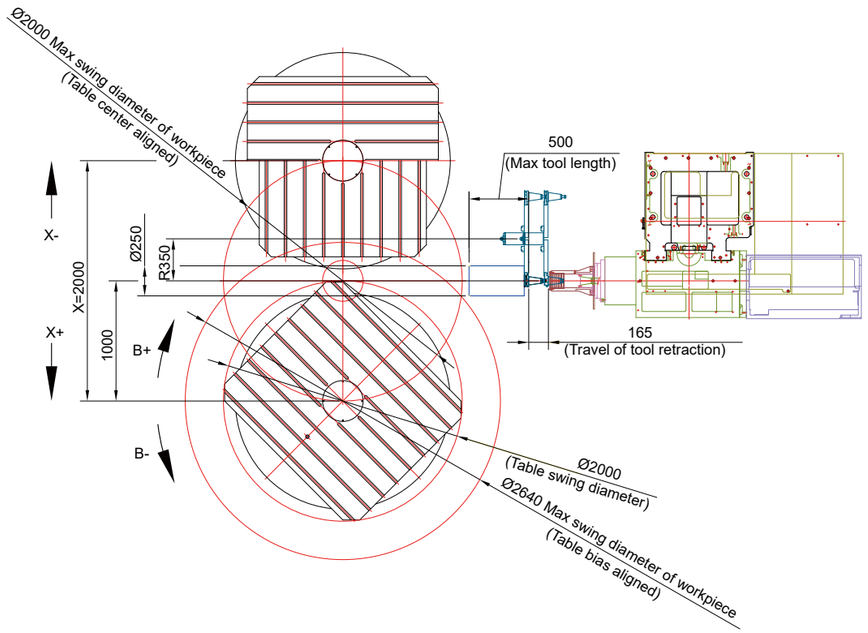
Portable control panel Heidenhain

Portable control panel Fanuc/Siemens

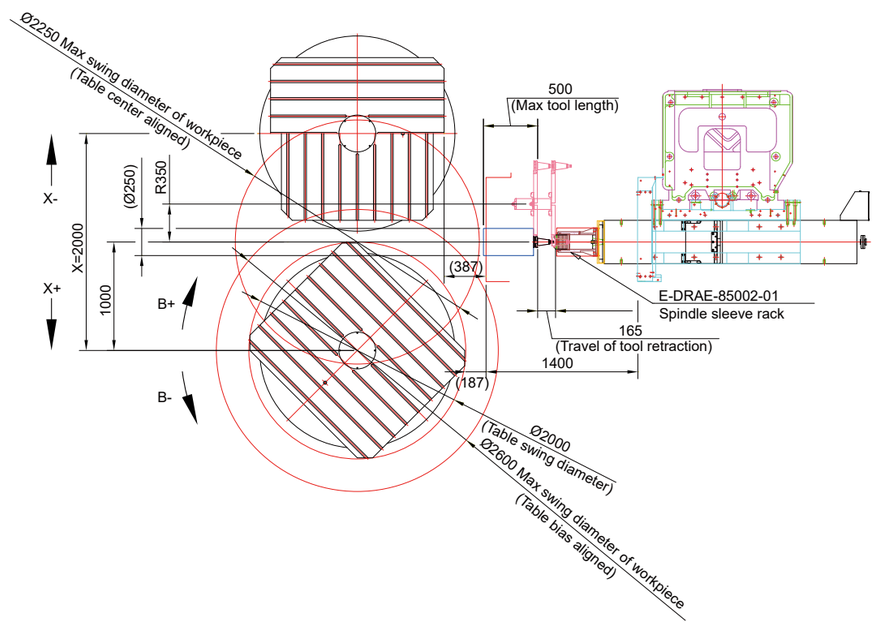
Portable control panel Siemens (opt.)

Workspace

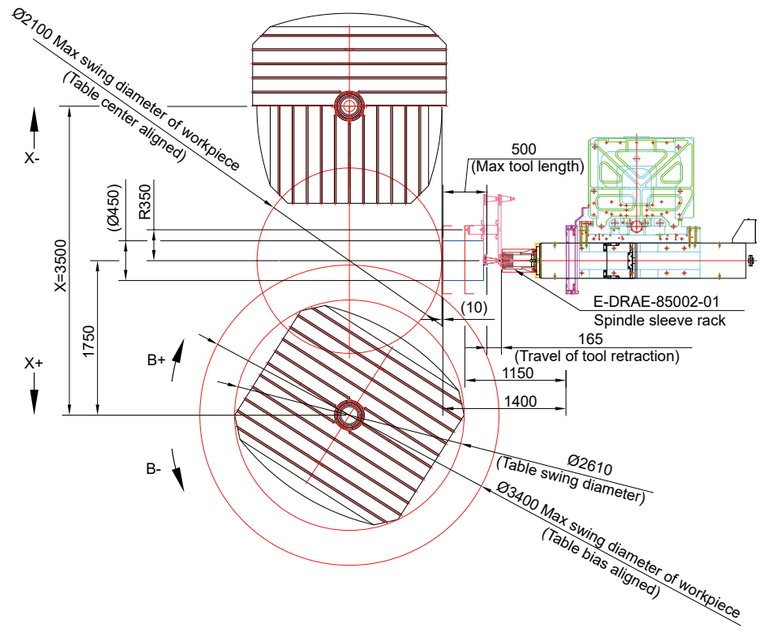
HBM-3T (x travel 2000mm, table 1400 x 1600 mm)



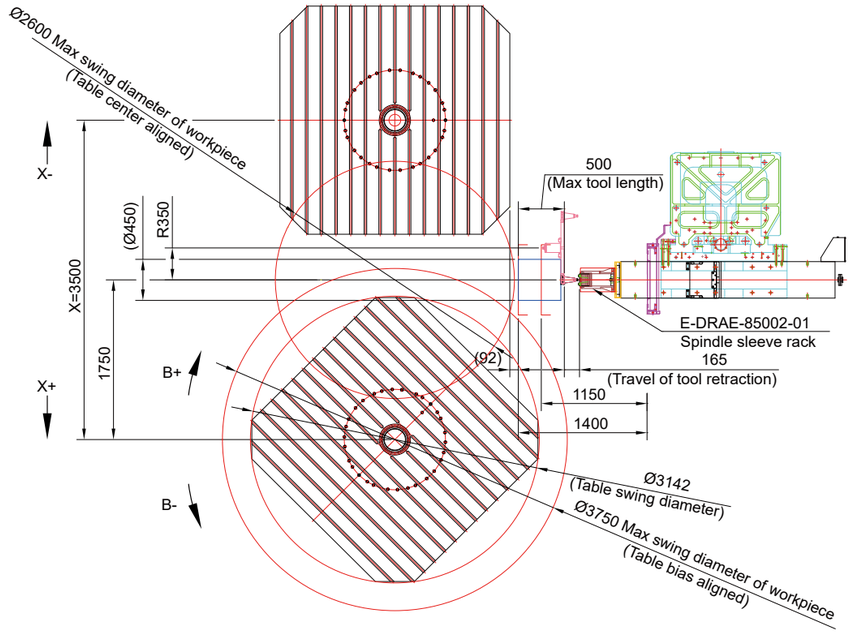
HBM-4T (x travel 2000mm, table 1400 x 1600 mm)



HBM-5T (x travel 3500mm, table 1800 x 2200 mm)

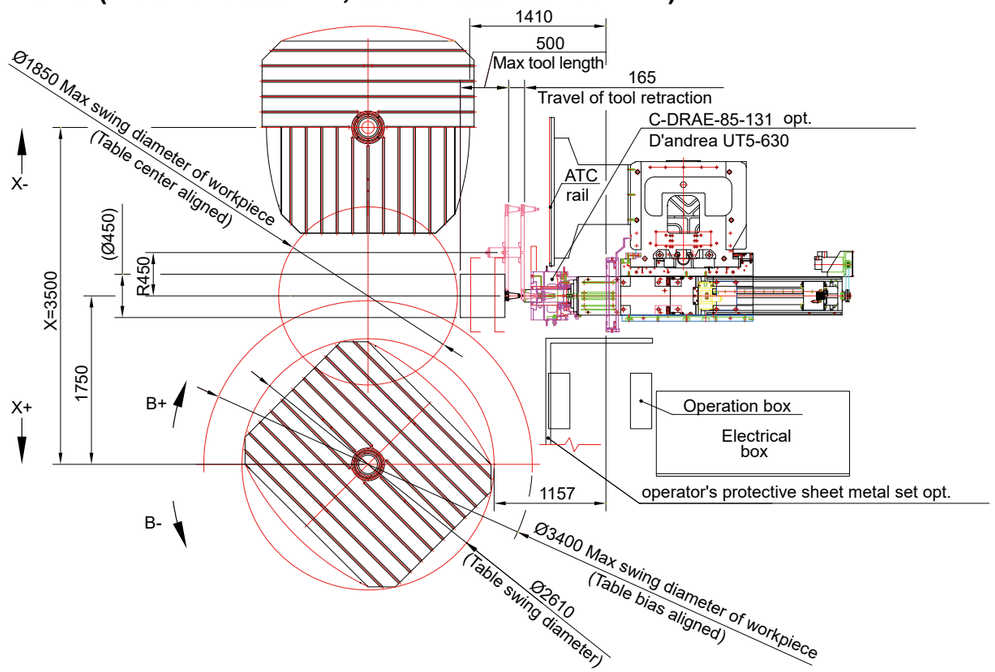


HBM-5TL (x travel 3500mm, table 2500 x 2500 mm)

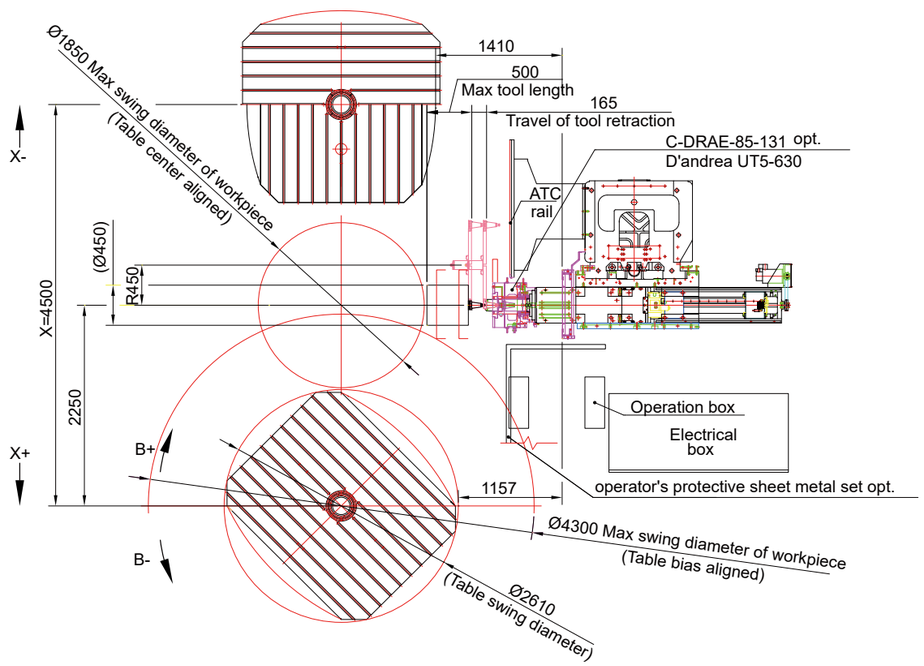


Workspace

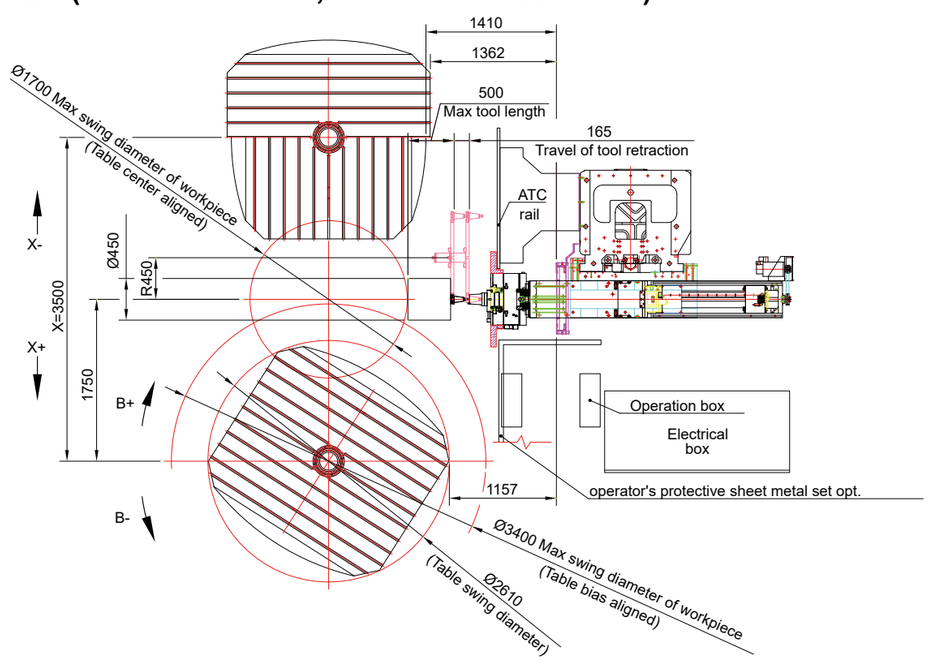
HBM-5TU (x travel 3500mm, table 1800 x 2200 mm)



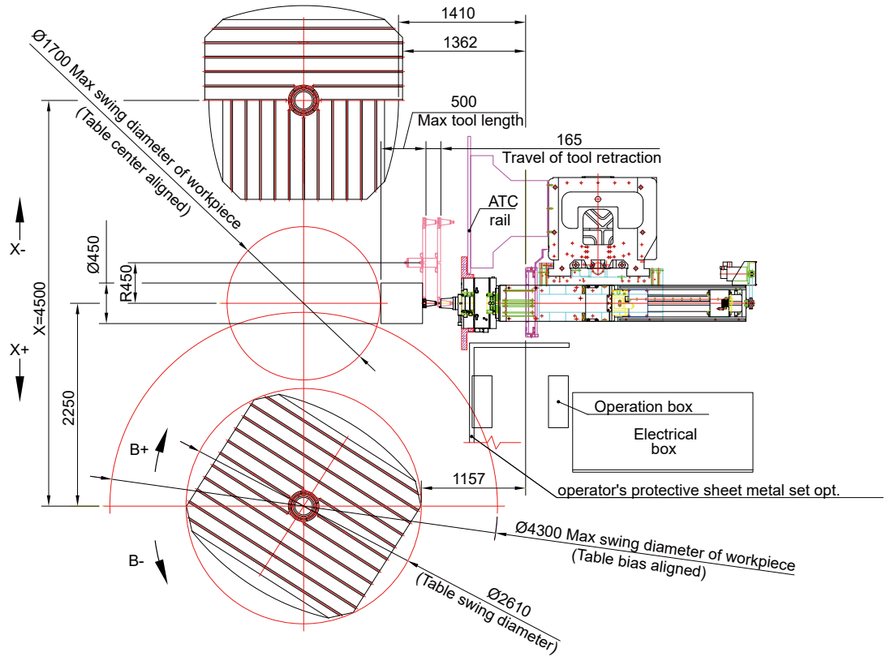
HBM-5TU (x travel 4500mm, table 1800 x 2200 mm)



HBM-5TLU (x travel 3500mm, table 1800 x 2200 mm)



HBM-5TLU (x travel 4500mm, table 1800 x 2200 mm)



Technical data

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

Item \ Model		Unit	HBM-3T	HBM-4T	HBM-5T	HBM-5TL
Table						
Table size		mm	1400x1600 (std) / 1600x1800(opt)	1400x1600 (std) / 1600x1800(opt)	1800 x 2200	2500 x 2500
Table height		mm	1280	1280	1390	1415
T-slot (w/pitch/no)		mm	24H8/160/9	24H8/160/9	24H8/160/11	24H8/160/15
Max table load		kg	8000 (std) / 10000 (opt)	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	-30~2070(Z:1400)/ -30~2670(Z:2000)	250~2100(Z:1400) 250~2700(Z:2000)
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	Fanuc	Nm	600/740	1449/1976 (Δ connection); 3002/4093(Y connection);	1942/2362	1942/2362
	Siemens/Heidenhain	Nm	785/1828	1941/2912	1941/2912	1941/2912
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) (Fanuc)		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/120T	60T/120T	60T/120T
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	500 (std) / 700 (opt)	500 (std) / 700 (opt)	500 (std) / 700 (opt)
Max. tool weight		kg	25	25	25	25
Max. loading weight		kg	600	900/1800	900/1800	900/1800
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	37000	40000/42000	(X travel 3500) 49000 ; (X travel 4500) 51500/55000 (X travel 5500) 54500/58000	

*Specifications are subject to change without notice.

HBM-5TU/5TLU

Item \ Model		Unit	HBM-5TU / 5TLU		
Table					
Table size		mm	1800 x 2200	2500 x 2500	
Table height		mm	1390	1415	
T-slot (w/pitch/no)		mm	24H8 x 160 x 11	28H8 x 160 x 15	
Max table load		kg	15000 (std.) / 20000 (opt.)	20000	
Table index		degree	0.001°		
Rotary table positioning accuracy		sec	15		
Rotary table repeatability accuracy		sec	4		
Rotary table encoder accuracy		sec	±5		
Travel					
X axis		mm	3500 (std.)	4500 (opt.)	5500 (opt.)
Y axis		mm	2600 (std.)	3200 (opt.)	
Z axis		mm	1400 (std.)	2000 (opt.)	
W axis (Quill)		mm	900		
U axis		mm	200		
Spindle nose to table center (standard Z travel & table size)		mm	-230~2070 (std.) -230~2670 (opt.)	50~2350 (std.) 50~2950 (opt.)	
Spindle					
Spindle taper			ISO 50		
Transmission			Belt		
Spindle speed		rpm	35~2000		
Spindle output		kW	Fanuc: 37/45 (std.) / 22/30 (opt.) SIEMENS / HEIDENHAIN: 37/55.5		
Spindle torque	Fanuc	Nm	2542/3092		
	Siemens/Heidenhain	Nm	1941/2912		
Spindle step			2 steps		
Quill diameter(W axis)		mm	Ø150		
Spindle bearing I/D		mm	Ø190		
Axes Transmission					
X axis ballscrew		mm	Ø80 x P10 x C3		
Y axis ballscrew		mm	Ø63 x P10 x C3 / Ø80 x P10 x C3		
Z axis ballscrew		mm	Ø80 x P10 x C3		
W axis ballscrew		mm	Ø40 x P5 x C3		
Motor Output					
Axes motor(X/Y/Z/B/W)		Nm	Fanuc: 75/65/38/38/22/4 Siemens: 118(std.)140(opt.)/70/26/48/20/4.5 Heidenhain: 92/55/82/ 30.6/16/4.5		
Hydraulic motor		kW	7.5		
Coolant motor		kW	0.85 (50Hz) / 1.29 (60Hz)		
Lubrication pump motor		W	25		
Guideway					
X axis guideway type			Linear / 65mm (Roller)		
X axis guideway distance		mm	1250		
Y axis guideway type			Box way		
Y axis guideway distance		mm	1120		
Z axis guideway type			Linear / 65mm (Roller)		
Z axis guideway distance		mm	1374		
Axes Feed Rate					
X/Y/Z/W rapid feed		m/min	10 / 10 / 10 / 8		
ATC System					
ATC type			Arm		
No of tools			60T / 120T		
Tool shank type			BT / BBT / CAT / DIN 50		
Tool Changing Time (T-T)		sec	16		
Max. tool diameter		mm	Ø125		
Max. tool dia. w/ next tool empty		mm	Ø245		
Max. tool length		mm	500 (std.) / 700 (opt.)		
Max. tool weight		kg	25		
Max. loading weight		kg	900 / 1800		
Dimension					
Width		mm	8100 (std.)	9000 (opt.)	10100 (opt.)
Height		mm	5560 (std.) / 5580 (opt.)	6230 (std.) / 6250 (opt.)	
Length		mm	8100 (std.) / 9000 (opt.)	8700 (std.) / 9600 (opt.)	
Weight		kg	49000 (std.) 54000 (opt.)	51500 (std.) 56500 (opt.)	54500 (std.) 59500 (opt.)

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Standard Accessories

- Spindle vibration supervision function (SVS)
- CTS preparation
- Spindle oil cooling system
- Chip auger
- Linear scale for three axes
- Heat exchanger
- Hoist ring set

Optional Accessories

- Chip conveyor
- Chip bucket
- Coolant gun
- ATC 60/120 pockets
- Right angle block: 800 x 525 x 800mm/1000 x 550 x 1000mm/1300 x 700 x 1300mm
- Power transformer 100KVA for Fanuc / Siemens/Heidenhain controller
- CTS system with20/70 bar high pressure pump
- Electric and wiring preparation for CTS
- Table guard for CTS system
- Air conditioner
- EMC (except Heidenhain CNC)
- Safety module (except of Heidenhain CNC)
- Tool setting probe
- Workpiece probe
- Lifting device for 1st machine
- Safeguarding located at rear of column
- Vice type leveling pads (for 4T/5T)
- Remote service excluded TeamViewer remote software (For machine equipped with CNC : Fanuc/Siemens/Heidenhain)
- Time lock function for machine equipped with CNC : Fanuc / Heidenhain / Siemens

  Optional Head:
- Angle milling head(N75)
- Universal milling head
- Fanuc Tilted working plane command (necessary function for universal head)
- Facing head (driven by W-axis)
- Spindle extension sleeve (essential)
- NC Facing head