

ACRA.

BED TYPE UNIVERSAL MILLING MACHINE

• FBE-1500

• FBE-2000

• FBE-2600

• FBE-3000

• FBE-4000



Features:

- Ideal for large molds, forging dies, and heavy work pieces up to 8000kg weight.
- Machine five sides of workpiece with a single set-up. (with optional milling head & rotary table)
- Steel cutting, with speeds up to 3500 rpm ; 25 kw #50 taper. Linear glass scales for all three axes.
- Fully independent brushless digital AC servomotors.
- Universal multi angle universal milling head with hydraulic tool clamping.
- Hydraulic counterbalance on vertical movement.
- Hardened & ground guideways with sliding surfaces coated with turcite anti-friction material.
- Precision large diameter ball screws on X-Y-Z, rigid mounted.
- Highest quality Meehanite castings throughout.

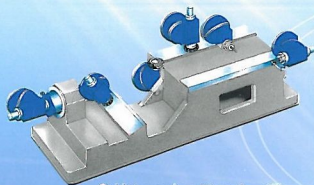


THE LEADER IN QUALITY AND RELIABILITY

~SINCE 1973~

The newest **FREJOTH** bed type universal in rigidity, accuracy, versatility and performance

- ◆ Ideal for large molds, forging dies, and heavy work pieces up to 8000kg weight.
- ◆ Machine multi-sides of workpiece with a single set-up. (with optional milling head & rotary table)
- ◆ Universal multi angle universal milling head with hydraulic tool clamping.
- ◆ Hydraulic counterbalance on vertical movement.
- ◆ Hardened & ground guideways with sliding surfaces coated with turcite anti-friction material.
- ◆ Precision large diameter ball screws on X-Y-Z, rigid mounted.



○ Universal multi angle milling



○ FBE-2000 with 2000mm x 1000mm x 950mm (1500mm) travel, 2100mm x 1050mm table



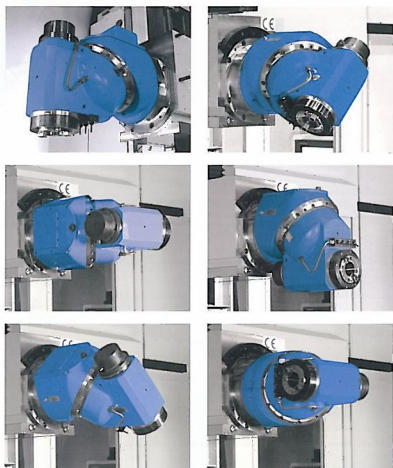
○ FBE-2600 with 2600mm x 1000mm x 950mm (1500mm) travel, 2700mm x 1050mm table



○ FBE-3000 with 3000mm x 1000mm x 950mm (1500mm) travel, 3100mm x 1050mm table

milling machine, with further innovations mance!

The newest FBE families has been designed to enhance 3D surface finishing together with highest rigidity and versatility; various multi-functioned milling heads all can accomplish with both vertical & horizontal machining at same time once the work piece is being fixed on table. This definitely & greatly increases productivity significantly through done in one operation!

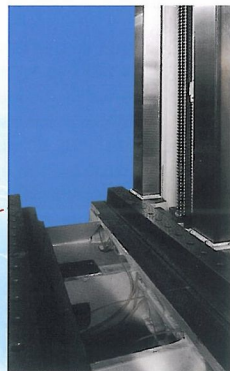
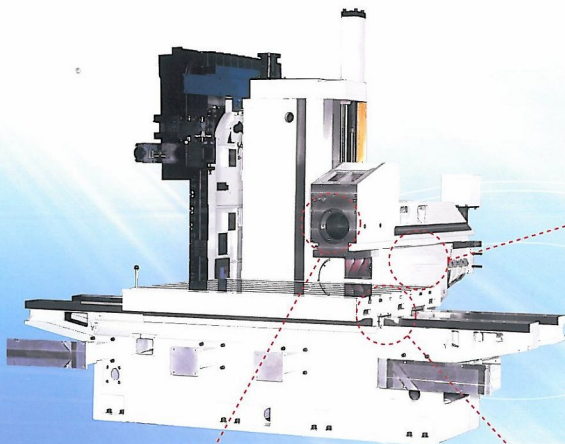


○ Super wide interior space



○ FBE-4000 with 4000mm x 1000mm x 950mm (1500mm) travel, 4100mm x 1050mm table

Rigid & robust casting frame:



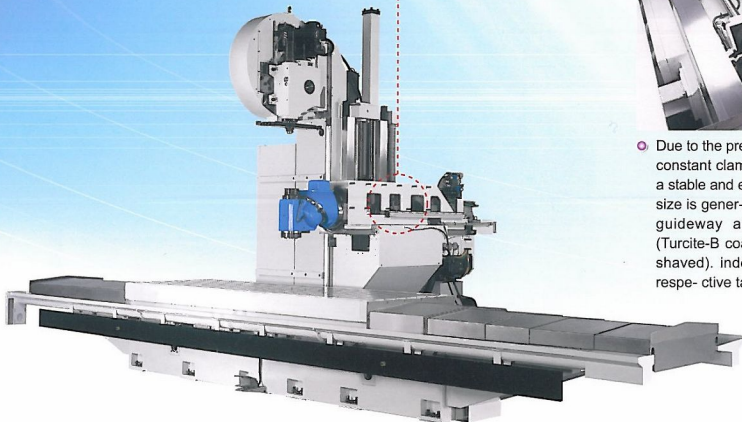
○ The generously dimensioned guideways ensure a high permanent precision supported by specially hardened vertical and horizontal guideways at column and milling carriage, while the counter-guide ways are coated with Turcite-B.

Two types ram:

1. Standard version with horizontal spindle inside, for standard manual head or optional VH-2, VH-90 heads.
2. Direct coupling for optional VH-5, VH-2.5, VH-1 automatic heads. No more horizontal spindle.



○ Due to the precisely defined and constant clamping of the guide, a stable and exactly defined gap size is generated between bed guideway and table saddle (Turcite-B coated and specially shaved), independently of the respective table load.

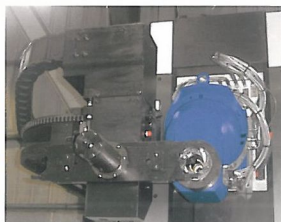


Optional automatic tool changers:

1. Automatic tools changing:



○ Vertical tool change with 24 stations swing arm type



○ Horizontal tool change with 32, 40 or 60 stations swing arm rail type

2. Full guarding:



3. Options



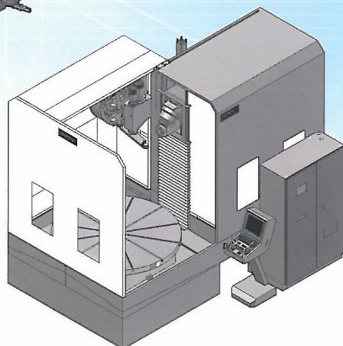
○ 4th axis rotary table



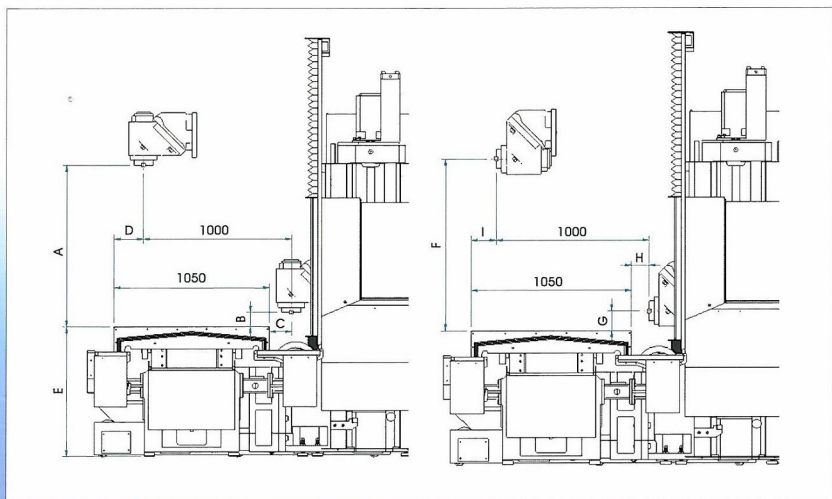
○ Chain type chip conveyor

4. YZC machine:

- Engineering adapted to satisfy customer requirement.
- Based on 20 years milling machine engineering experience, Frejoth has been successfully delivering many machines for Customers' specified jobs and always oriented towards high Productivity such as following example - a machining unit with controlled Y/Z/C (rotary table) for machining large bearing ring and steel disk etc. large round parts.



Universal head related dimensions:



Unit : MM

Milling heads	Model	A	B	C	D	E	F	G	H	I
Standard manual head	FBE1500	1046 (1606)	96 (106)	147	197	870	1078 (1638)	128 (138)	115	165
	FBE2000									
	FBE2600									
	FBE3000	1016 (1576)	66 (76)			900	1048 (1608)	98 (108)		
	FBE4000									

Milling heads	Model	A	B	C	D	E	F	G	H	I
Optional Automatic VH-2	FBE1500	1001 (1561)	51 (61)	27	77	870	1051 (1611)	101 (111)	-23	27
	FBE2000									
	FBE2600									
	FBE3000	971 (1531)	21 (31)			900	1021 (1581)	71 (81)		
	FBE4000									

Milling heads	Model	A	B	C	D	E	F	G	H	I
Optional Automatic VH-5	FBE1500	1001 (1561)	51 (61)	59	109	870	1051 (1611)	101 (111)	9	59
	FBE2000									
	FBE2600									
	FBE3000	971 (1531)	21 (31)			900	1021 (1581)	71 (81)		
	FBE4000									

Milling heads	Model	A	B	C	D	E	F	G	H	I
Optional Automatic VH-2.5	FBE1500	985 (1545)	25 (35)	125	175	870	1015 (1575)	65 (75)	95	145
	FBE2000									
	FBE2600									
	FBE3000	955 (1515)	5 (15)			900	985 (1545)	35 (45)		
	FBE4000									

Versatile various milling heads:

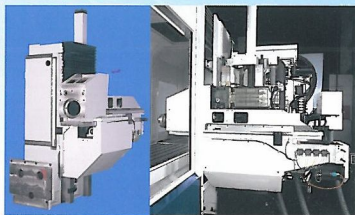
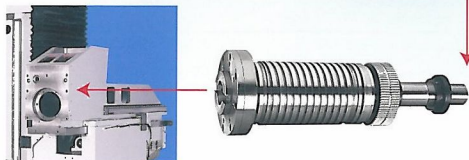
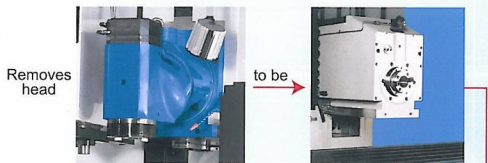
Above 3 heads are attachment type, the horizontal spindle is inside of sliding ram; ISO 50 spindle taper and maximum 25KW/650Nm/3500RPM.



Above 3 heads are built-in ram type, no more horizontal spindle inside of the ram; ISO 50 spindle taper and maximum 25KW/650Nm/3500RPM.



Versatile & flexible spindle solution:



Remove the standard manual milling head (or opt. VH-2 head), a standard horizontal milling spindle is inside of the sliding ram. It increases minimum 500mm working distance from such horizontal spindle to work piece by just removing universal milling head !

Heavy cutting operation is possible; its 17kw/22kw spindle motor plus a 1:4 gearbox then an additional pulley ratio, spindle torque can be up to more than 1000 Nm at 200RPM.

SPECIFICATIONS

MODEL	UNIT	FBE-1500	FBE-2000	FBE-2600	FBE-3000	FBE-4000
TABLE						
WORKING AREA	MM	1600 x 1050	2100 x 1050	2700 x 1050	3100 x 1050	4100 x 1050
T SLOTS(SIZE x NO)	MM	22 H8 x 7 SLOTS				
TOP TO FLOOR DISTANCE	MM	860				
LOAD [EVENLY DISTRIBUTED]	KG	3000	5000	6000	8000	9000
TRAVEL						
X AXES	MM	1500	2000	2600	3000	4000
Y AXES	MM	1000				
Z AXES	MM	950[1500]				
HORIZONTAL SPINDLE: (NO MORE IF WITH VH-5, VH-2.5, VH-1 HEAD)						
TAPER		DIN 69871 #50				
SPEED	RPM	3500 (6000)				
OUTPUT 40% DUTY CYCLE	KW	25				
CONSTANT OUTPUT	KW	17				
MAXIMUM TORQUE	Nm	650				
UNIVERSAL MILLING HEAD:						
TAPER		DIN 69871 #50				
SPEED	RPM	3500				
OUTPUT 40% DUTY CYCLE	KW	25				
CONSTANT OUTPUT	KW	17				
MAXIMUM TORQUE	Nm	650				
FEEDRATE:						
CUTTING	MM / MIN	1-5000				
RAPID	MM / MIN	10000				
BALLSCREWS:						
X AXIS DIA. x PITCH	MM x MM	ø50 x 10	ø50 x 10	ø63 x 10	ø63 x 10	ø80 x 10
Y AXIS DIA. x PITCH	MM x MM	ø50 x 10				
Z AXIS DIA. x PITCH	MM x MM	ø50 x 10				
PRECISION CLASS	MM / 300MM	0.008 / 300				
ACCURACY:						
POSITIONING	MM / 300MM	JIS 6338 : ±0.005MM / 300MM VDI 3441:PO.014 MM				
REPEATABILITY	MM	JIS 6338 : ±0.003MM VDI 3441:PS0.01 MM				
ROUNDNESS	MM / DIA.	JIS 6338 : ±0.01MM / 300 MM DIAMETER				
GENERAL:						
MACHINE NET WEIGHT	KG	11000	12000	13000	14000	15500
PHNEUMATIC REQUIRED	KG / CM ²	6				
HYDRAULIC REQUIRED	KW	3.5				
POWER REQUIRED	KVA	30 KVA	30 KVA	35 KVA	35 KVA	40 KVA

() OPTION

STANDARD FEATURES & ACCESSORIES

3500RPM UNIVERSAL MANUAL MILLING HEAD.
 PROGRAMMABLE COOLANT SYSTEM.
 AUTOMATIC LUBRICATION SYSTEM.
 WORKING LAMP.
 ALARM LAMP FOR ABNORMAL SITUATION.
 INDICATION LAMP FOR DWELL & END OF JOB.
 SCREW CHIP AUGERS.

LEVELLING BOLTS & PADS.
 RS-232 TERMINAL INTERFACE PORT.
 MACHINE & CONTROL MANUALS.
 TOOLBOX WITH SPANNERS & WRENCHES.
 3 AXIS LINEAR SCALES. WITH AIR BLAST.
 HEIDENHAIN OR SIEMENS CONTROL.

 **FREJOTH INTERNATIONAL LTD.**

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