

BM SERIES



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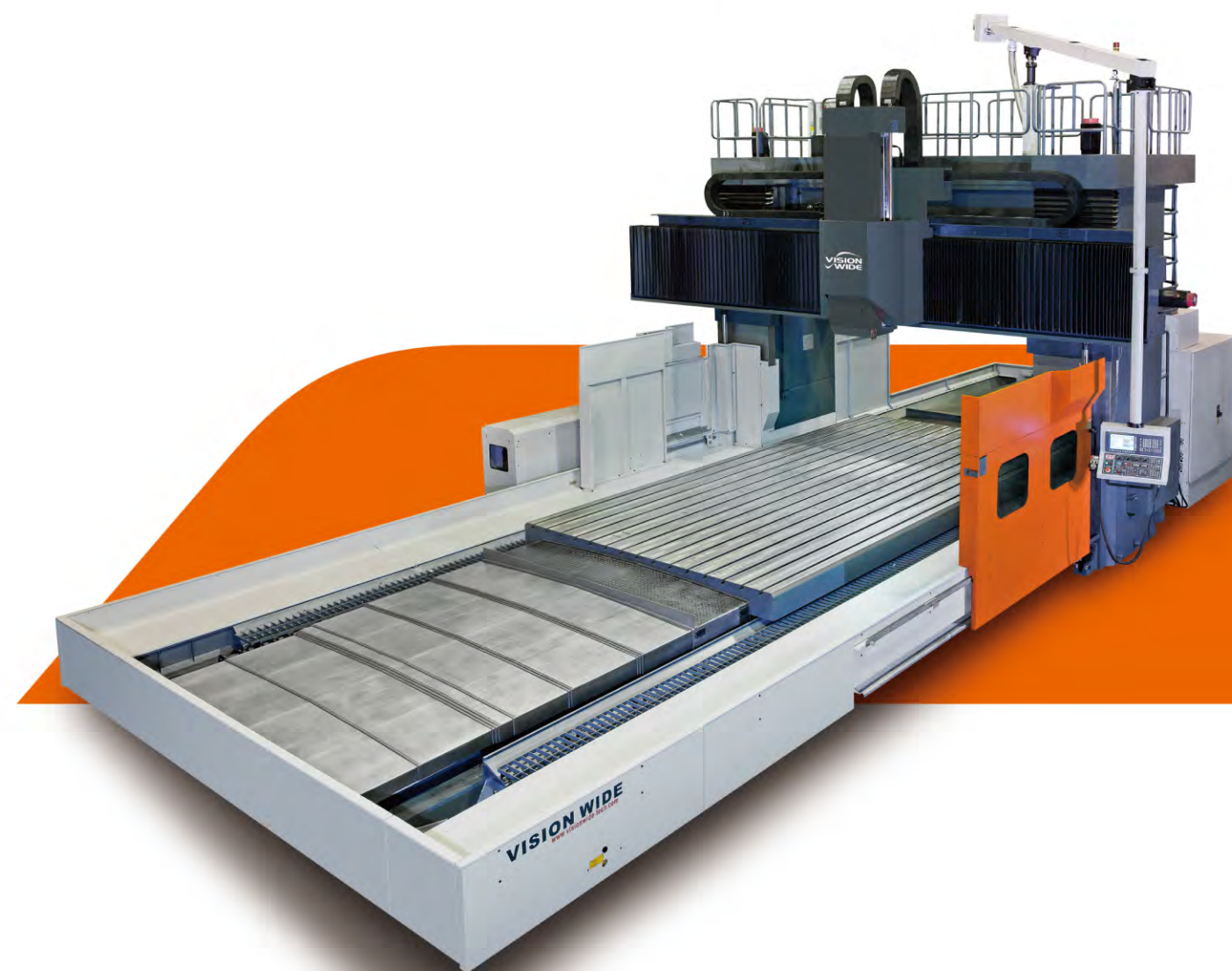
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BM-E-20170701

BM SERIES

Moving Beam Double Column Machining Center





Ultra-precision moving beam double column machining center

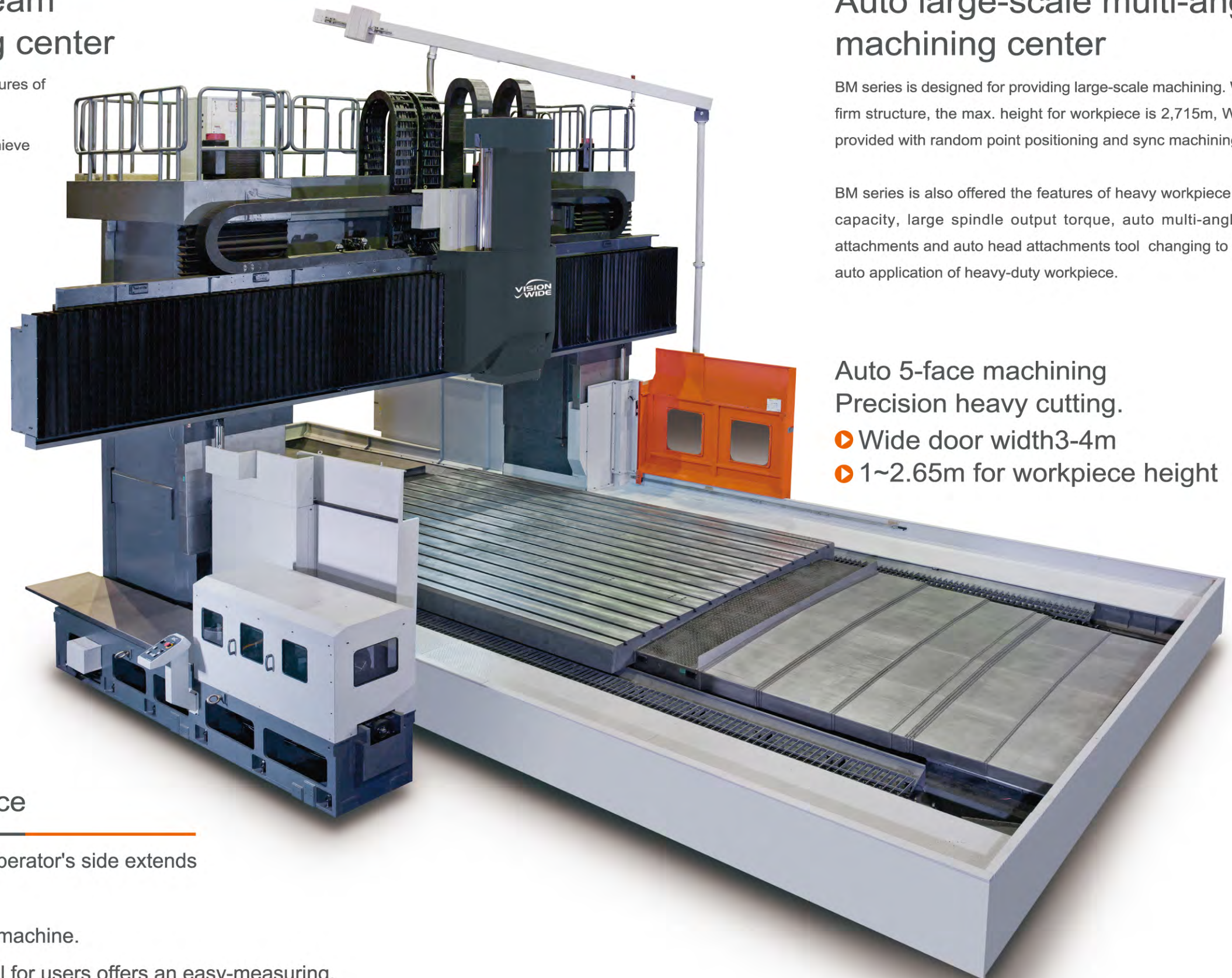
With Vision Wide tradition, BM series is unique by the features of moveable cross rail and synchronous cutting in W-axis.

BM series can be opted with various types of heads to achieve a wide range of multi-faced machining function.

- ▶ Cutting feed rate:
XYZ-axis 7m/min, W-axis 1m/min
- ▶ High torque gear type spindle:
3,000/4,000/5,500/6,000rpm
- ▶ Direct-driven type spindle:
8,000/10,000rpm
- ▶ X-axis travel: 4.2~10.2m
- ▶ Y-axis travel: 3.0(3.7)/3.5(4.2)m
- ▶ Z-axis travel: 1,000/1,200/1,400mm
- ▶ W-axis travel: 1,000/1,200/1,500mm
- ▶ Port width: 3,000/3,500mm
- ▶ Linear way for XZ-axis
- ▶ Box and linear way for Y-axis
- ▶ Box way for W-axis

Wide working and loading space

- ▶ Sectional type design of sliding door at operator's side extends the space for workpiece loading.
- ▶ Open-outward doors at both ends of the machine.
- ▶ Overhead pendulum type operation panel for users offers an easy-measuring, easy-programming and safe working environment.



Auto large-scale multi-angle machining center

BM series is designed for providing large-scale machining. With the firm structure, the max. height for workpiece is 2,715m, W-axis is provided with random point positioning and sync machining.

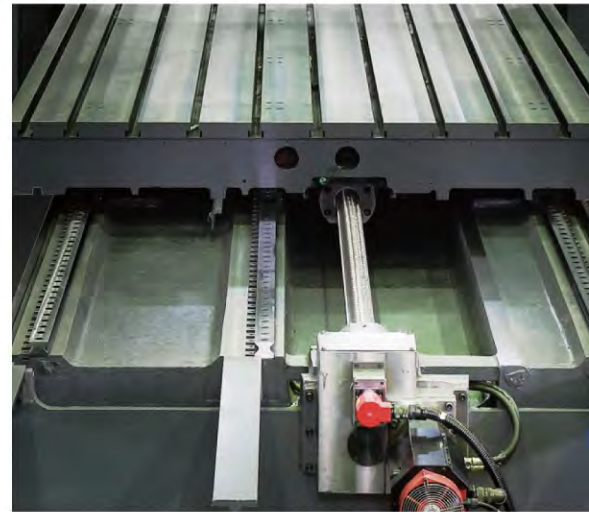
BM series is also offered the features of heavy workpiece loading capacity, large spindle output torque, auto multi-angle head attachments and auto head attachments tool changing to achieve auto application of heavy-duty workpiece.

Auto 5-face machining Precision heavy cutting.

- ▶ Wide door width 3-4m
- ▶ 1~2.65m for workpiece height

High rigid structure design

- Roller type linear guide way design enhances dynamic acceleration performance and low friction (high feed speed), and achieves the best rigidity and precision.
 - 3-way bed (X-axis) design is composed of 3 roller type linear ways. This design enlarges the table dimension to improve the loading capability, to keep high dynamic level accuracy and to provide the best feeding rigidity.
 - Gear reducer X-axis improves high table loading ability in acceleration/deceleration movement. Precision gears effectively transmit servo motor motion accuracy, provides low backlash and high positioning accuracy.
-
- Y-axis thick beam with box and linear guide way design ensures high rigidity.
 - Roller linear guide way design to enhance dynamic acceleration performance and low friction.
 - To achieve the best rigidity and precision.
 - Large size column (705X1500mm) provides the beam the strongest support and achieves the best rigidity and precision.
 - MEEHANITE grade casting iron, stress relief heat treatment. Component machining stress eliminated by its natural frequency and resonance



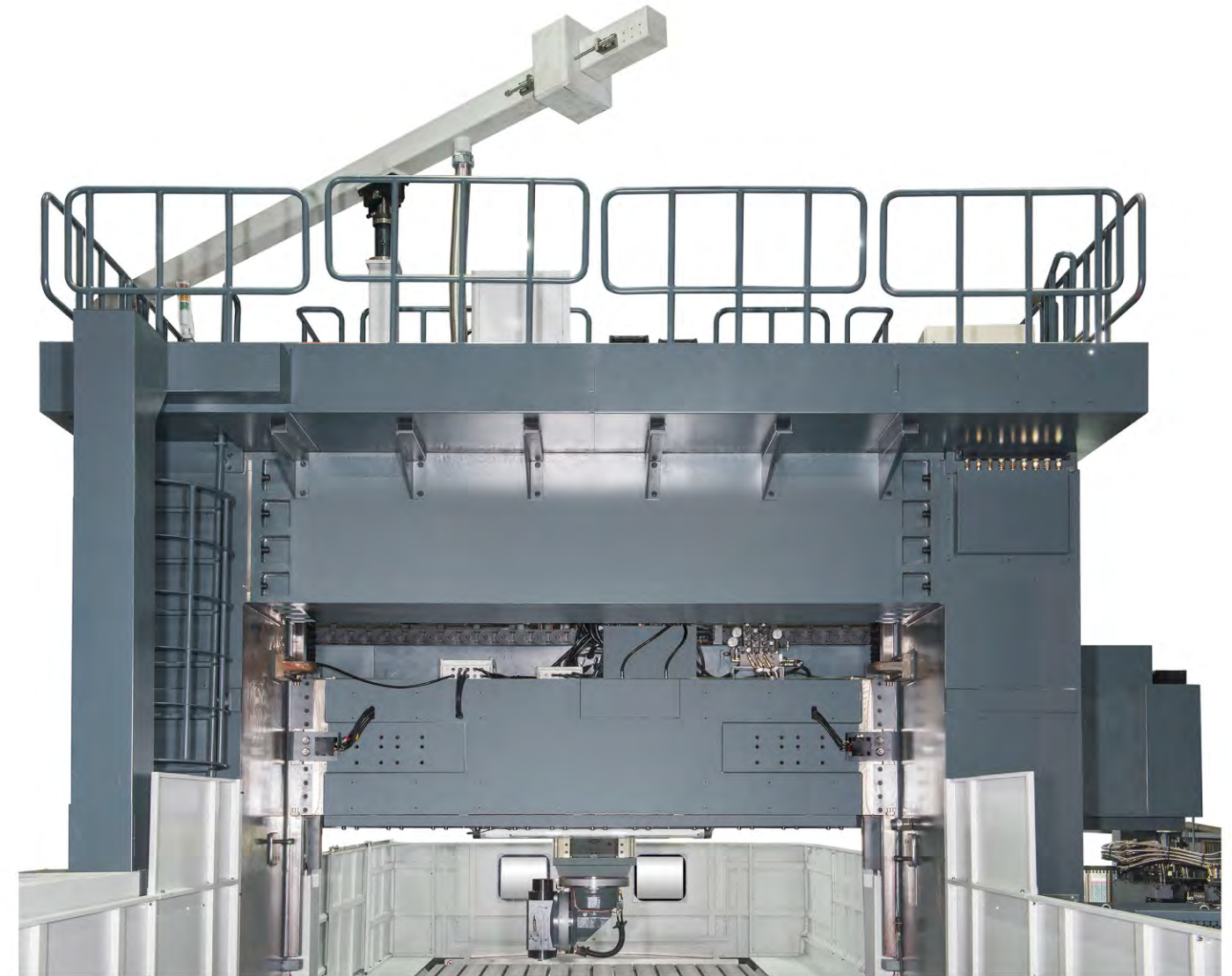
Beam adjusting mechanism improves the degree of machining precision:

To reduce or avoid beam central decurved, and correct beam twist
(patent no.M400896)

High Speed.
High Precision.
High Efficiency.

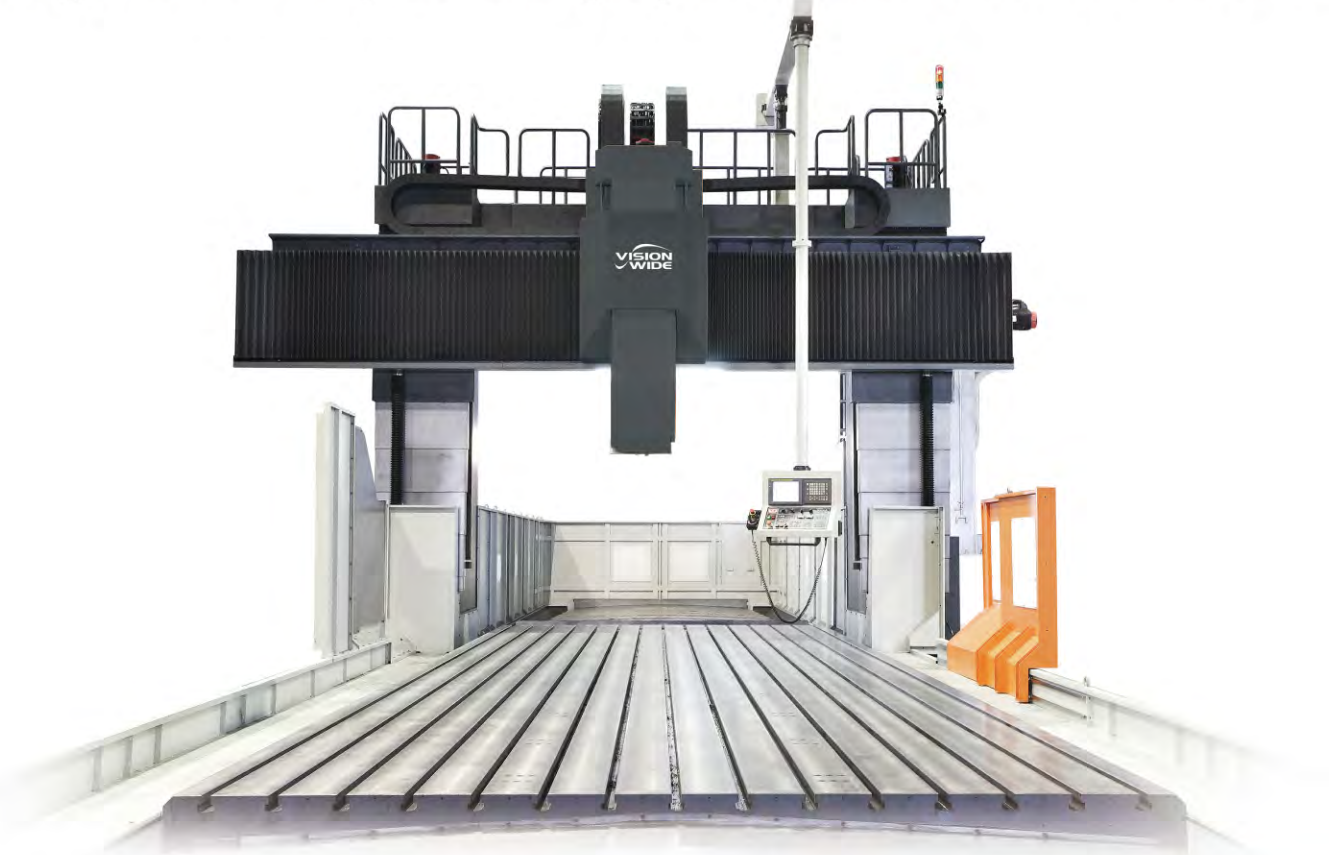


W-axis servo positioning and high accuracy mechanism



- W-axis w/ two hydraulic cylinders, ensures the accuracy of equalizing load of W-axis screw, and improves the straightness of Y-axis movement.
- Fixed point cutting at any point in W-axis stroke. Auto auxiliary braking mechanism enhances the capacity of heavy cutting when W-axis doing fixed point cutting.
- W-axis ball screw with dual independent linear scale position feedback provides the best movement positioning accuracy of W-axis.

High accuracy and high performance mechanism

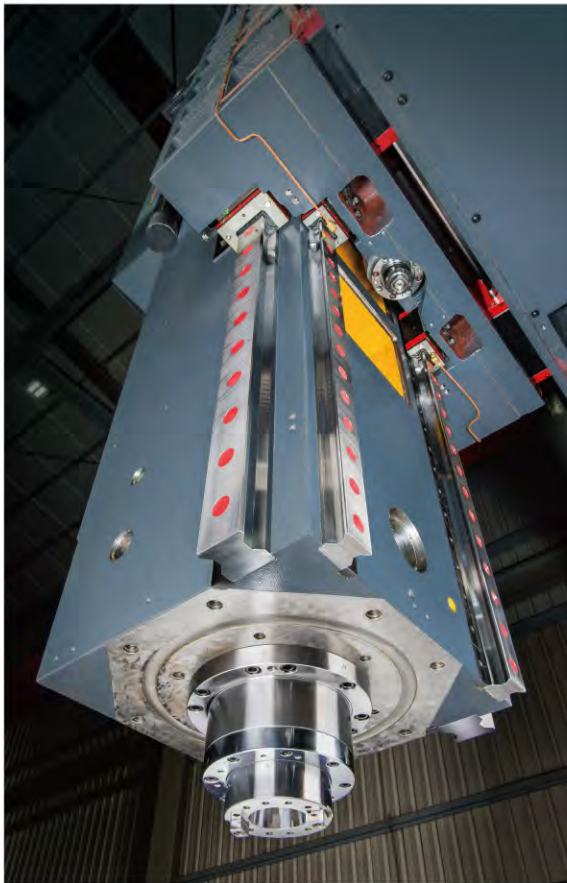
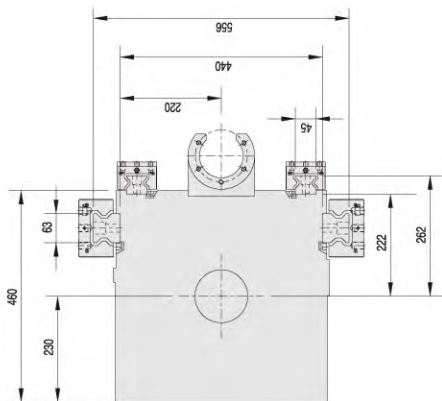


One-body box casting

Spindle locates closed to z guide ways; with symmetrical dual balancing device. Significantly reducing the deformation caused by internal thermal force and by cutting resistance.

Optimal symmetrical structure

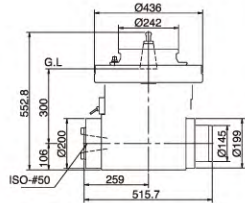
Spindle, Z-axis ball screw and motor located at instant center line all headstock. Efficiently eliminating unbalanced torque, and ensuring microscope feeding and long term accurate positioning.



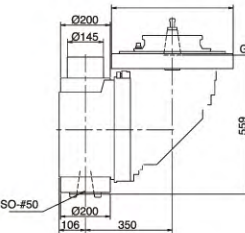
High Speed.
High Precision.
High Efficiency.



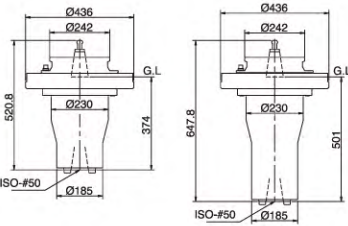
Auto multi-angle head attachment



Tool clamping	Auto hydraulic clamping
Head clamping	Auto hydraulic clamping
C-axis indexing	Auto 1° / 5°
Machining coolant	External nozzle/ CTS 20/ 70 bar
Max. power	26 kW
Max. speed	3,000 rpm

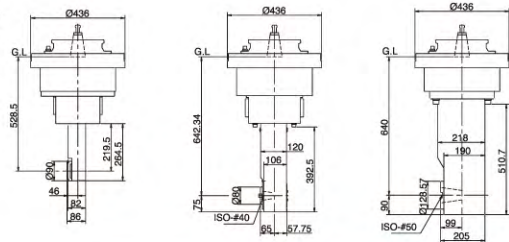


Tool clamping	Auto hydraulic clamping
Head clamping	Auto hydraulic clamping
C-axis indexing	Auto 1° / 5°
B-axis indexing	Auto / 5°(manual1°)
Machining coolant	External nozzle/ CTS 20/ 70 bar
Max. power	26 kW
Max. speed	3,000 rpm



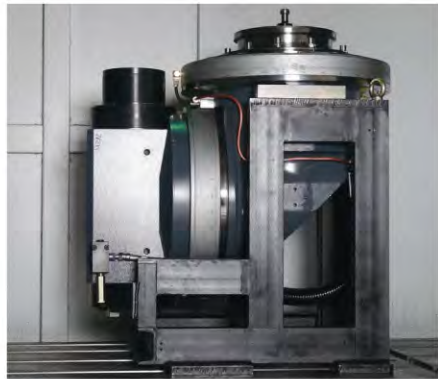
Tool clamping	Auto hydraulic clamping
Head clamping	Auto hydraulic clamping
Max. power	26kW
Max. speed	4,000rpm

Various types of milling head



Tool clamping	Manual
Head clamping	Auto hydraulic clamping
C-axis indexing	Auto 1° / 5°
Max.power	26 kW
Max. speed	800 rpm

Optional function



- One head magazine(on ATC side)
- Multi-heads magazine(on ATC side)
- Table type head bracket

Intelligent multi-face machining

5-axis specification tool point center management TPCM

Each type of head attachment with tool center point management, takes vertical workpiece as origin benchmark, and converts the workpiece coordinates to any new specified plane of workpiece coordinates automatically.



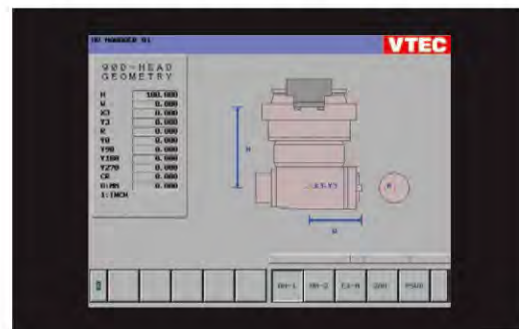
Auto coordinates tool axis 3D conversion

3-axis mechanical coordinates system can be automatically converted to machining coordinates system, easily achieving face milling, end milling, drilling and rigid tapping machining operations.

Head attachment dimensions correction

Intelligent compensation on each type of head attachments, rotation center, tool size, workpiece coordinates system correction management, and greatly simplifies the complexity of programming and operation to achieve perfect auto multi-angle machining.

Auto compensating heads



Auto compensating attachment heads:

Auto compensating horizontal head center and spindle center.
Auto compensating mechanism mass center and revolution center.

3D coordinates management:

- 1.V/H tool length and diameter compensation.
- 2.V/H working coordinate affine transformation.
- 3.V/H manual interrupting.
- 4.V/H 3D rigid tapping.

Heavy cutting ability

Through cutting depth test to show excellent heavy cutting rigidity

test specification: 22/26kW 4,500rpm spindle

Head attachment	Extended head	90 degree angular head	2-axis head
Tool type	BT-50 face milling tool-diameter $\phi 125/5$ edge		
Cutting material	S45C		
Spindle speed(rpm)	600		
Machining width(mm)	100		
Feed rate(mm/min)	1000		
Machining depth	5		
Removal rate(cc/min)	500		



High Speed.
High Precision.
High Efficiency.



Optimal central symmetric spindle system design. Strong, stable, durable and scalability

- Minimum distance between spindle center and Z-axis roller way not only shortens cutting lever arm but also significantly improves rigidity.
- Symmetric spindle gravity configuration, Z-axis ball screw, spindle center and spindle motor configure at gravity point of Z-axis box structure centerline provide the best feed precision and thermal balance.
- Gear spindles made of Japan-made JIS-0 grade.
- 2-step gear type spindle provides high torque and high speed characteristics to ensure heavy cutting ability on surface finish.



Heavy Cutting Ability

Face milling:

Tool dia.: 125mm

Cutting feed:1,000mm

Cutting width:100mm

Cutting depth: 6.5mm

Removal rate:650cc/min

End milling:

Total dia.: 63mmx9 inserts

Cutting speed:800rpm

Cutting feed:400mm/min

Cutting depth: 40mm

Cutting width: 20mm

Removal rate: 320cc/min

Gun drilling(u):

Total dia.:32mm

Cutting speed:1,500rpm

Cutting feed:500mm/min

Cutting depth: 30mm

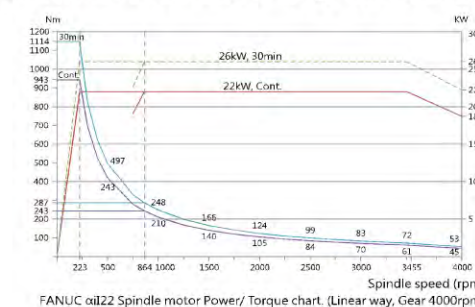
Removal rate: 480cc/min

Coolant through spindle

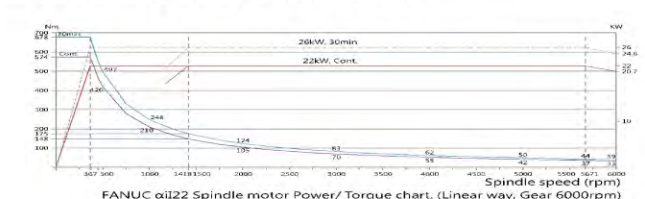
Test specification: 22/26kw/6,000rpm

Spindle power and torque chart

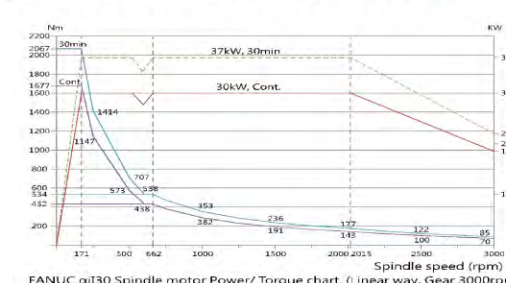
1. FANUC $\alpha 22$ Linear way 4,000RPM



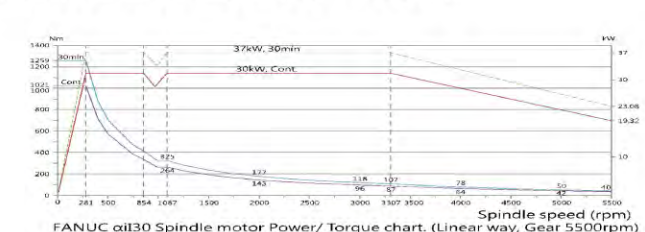
2. FANUC $\alpha 22$ Linear way 6,000RPM



3. FANUC $\alpha 30$ Linear way 3,000RPM

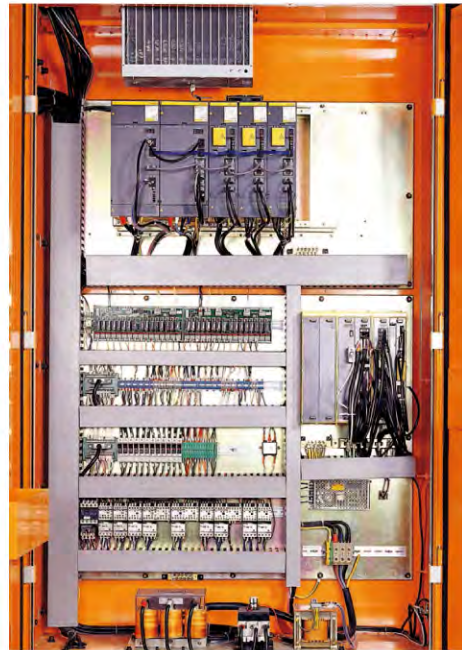


4. FANUC $\alpha 30$ Linear way 5,500RPM





Safe, friendly and reliable operation device



- Safe and reliable electrical circuit design
- CE compliant safety circuit design
- CE compliant EU regulation electrical parts for whole machine
- Anti-interference design on motor power cables
- Heat exchanger for electrical cabinet
- Main power protecting device
- Ethernet and RJ45 interface
- USB port

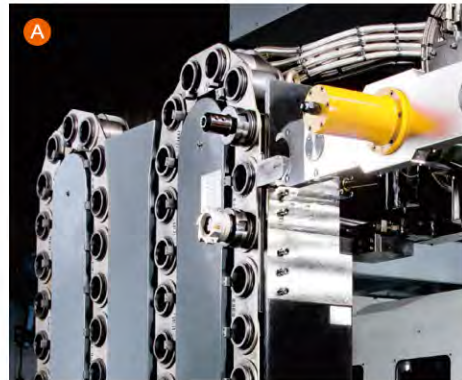


● Centralized auto lubrication system



● Modularized machine design for oil cooling device and hydraulic unit.

Tool magazine



A Auto vertical-horizontal type magazine, 32/40/60 tools magazine (all optional).



C Auto vertical-horizontal type tool magazine for vertical spindle.



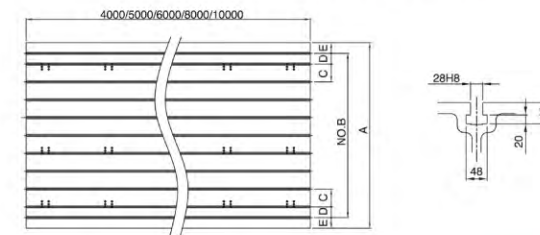
B Vertical tool magazine 60T (standard), 90T (optional).



D Auto vertical-horizontal type tool magazine for AC 90° angular head

※ AC 2-axis head/extended head only for vertical type tool magazine

Table Dimension

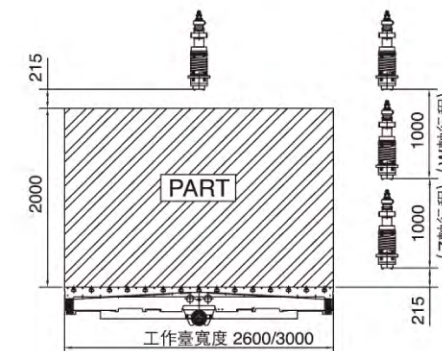


Unit:mm

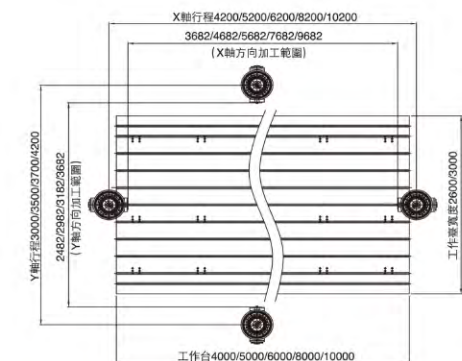
MODEL	A	B	C	D	E
BM-xx30/37	2,600	11 (pcs)	250	150	150
BM-xx35/42	3,000	13 (pcs)			100

Working Range

Vertical machining zone (lateral view.)

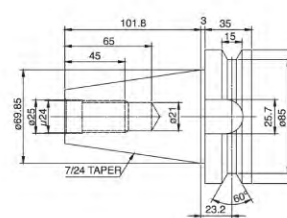


Horizontal machining zone (top view)

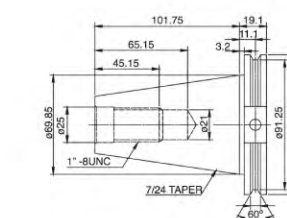


Tool Shank & Pull Stud Dimension

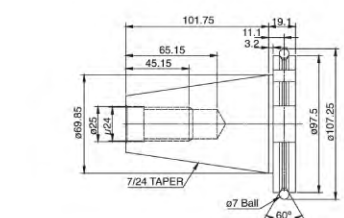
Tool shank BT-50, MAS403



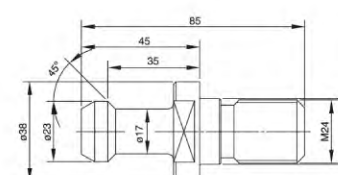
Tool shank BT-50, ANSI B5.50



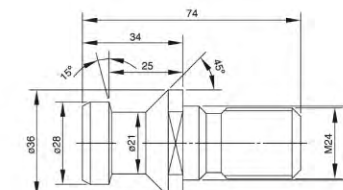
Tool shank DIN-50, DIN 69871/ISO 7388/1



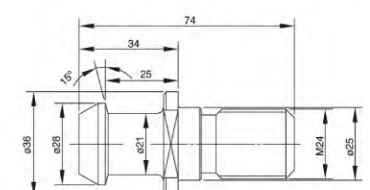
Pull stud bolt MAS403 P50T-1



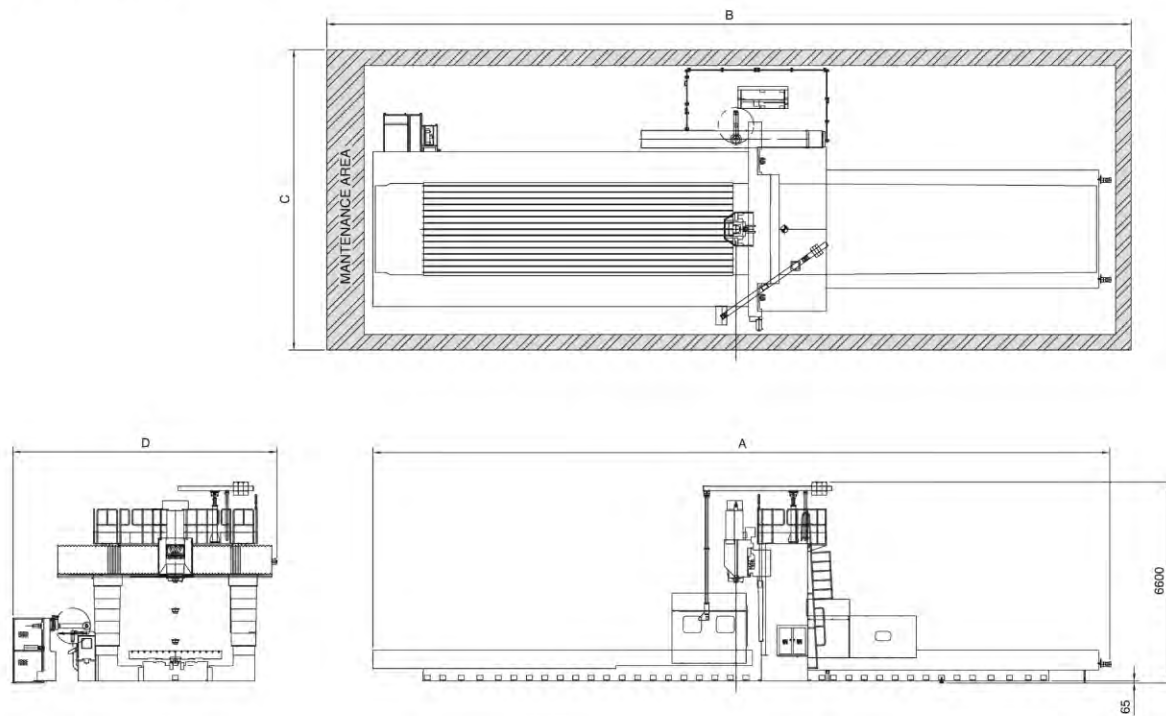
Pull stud bolt DIN-50, DIN 69872



Pull stud bolt DIN-50, ISO 7388/2/A



Machine Dimension



Technical Specification

Unit:mm

MODEL	A	B	C	D
BM-4230	12,000	14,000	8,700	7,500
BM-5230	14,000	16,000		
BM-6230	16,000	18,000		
BM-8230	20,000	22,000		
BM-10230	24,000	26,000		
BM-4237	12,000	14,000	9,200	8,000
BM-5237	14,000	16,000		
BM-6237	16,000	18,000		
BM-8237	20,000	22,000		
BM-10237	24,000	26,000		
BM-4235	12,000	14,000	9,200	8,000
BM-5235	14,000	16,000		
BM-6235	16,000	18,000		
BM-8235	20,000	22,000		
BM-10235	24,000	26,000		
BM-4242	12,000	14,000	9,700	8,500
BM-5242	14,000	16,000		
BM-6242	16,000	18,000		
BM-8242	20,000	22,000		
BM-10242	24,000	26,000		

High Speed.
High Precision.
High Efficiency.



BM Specification | BM-xx30/37 Series

MODEL			Unit	BM-4230/37	BM-5230/37	BM-6230/37	BM-8230/37	BM-10230/37
TRAVEL								
X axis				4,200	5,200	6,200	8,200	10,200
Y axis			mm	3,000/ 3,700				
Z axis	Linear way		mm	1,000/ 1,200(opt.)/1,400(opt.)				
W axis			mm	1,000/ 1,200(opt.)/1,500(opt.)				
Distance from spindle nose to table	2-step gear	Z axis =1,000	mm	215~2,215				
		Z axis =1,200	mm	15~2,415(column +200mm)				
	Direct-driven	Z axis =1,400	mm	15~2,615(column +400mm)				
		Z axis =1,000	mm	250~2,250				
		Z axis =1,200	mm	50~2,450(column +200mm)				
Distance from spindle center to column			mm	760				
Distance between columns (port width)			mm	3,000				
TABLE								
Dimension			mm	4,000x2,600	5,000x2,600	6,000x2,600	8,000x2,600	10,000x2,600
T-slot(Width x Number x Pitch)			mm	28x13x250(150)				
Max. table load			kg/m	20,000	24,000	28,000	32,000	36,000
SPINDLE								
Spindle motor(cont./30 min. rated)			kW	22/ 26(30/ 37opt.)				
Spindle speed	2-step gear	Direct-driven	rpm	22/26kW: 4,000/6,000(opt.) ; 30/37kW: 3000(opt.)/5500(opt.)				
	8,000/ 10,000(opt.)							
Spindle taper					ISO NO.50			
FEED								
Cutting feed rate			mm/min	XYZ:1-7,000 W:1,000				
Rapid traverse			m/min	XY:10, Z:12, W:2		X:8, Y:10, Z:12, W:2		
3 axis motor power (FANUC)			kW	X:9, Y:9, Z:4, W:9x2				
ACCURY(X,Y,Z)(Measured by laser instrument)								
Positioning accuracy	Refer to JIS B6333	mm	±0.01/300, ±0.015 Full travel					
	Refer to ISO 10791-2	mm	Ps0.045					P0.050
Repeatability	Refer to JIS-B6333	mm	±0.003					
	Refer to ISO 10791-2	mm	Ps0.035					Ps0.040
ATC								
ATC type/ capacity	Vertical type tool change	pcs	60/ 90(opt.)					
	Floor-standing type vertical-horizontal tool change(fixed)	pcs	32(opt.)/ 40(opt.)/ 60(opt.)					
	Floor-standing type vertical-horizontal tool change(random)	pcs	60(opt.)/ 90(opt.)					
Max. tool weight			kg	18				
Tool shank			-	BT 50/ CAT50				
Pull stud			-	P50T-1				
OTHERS								
Power requirement			kVA	85				
Pneumatic requirement			kg/cm²	6				
Machine net weight			kg	64,000/66,000	68,000/70,000	74,000/76,000	86,000/88,000	94,000/96,000
Machine gross weight			kg	68,000/70,000	73,000/75,000	80,000/82,000	94,000/96,000	102,000/104,000
Max. space (LxWxH)	Vertical type tool change	m	14x8.7x6.6	16x8.7x6.6	18x8.7x6.6	22x8.7x6.6	26x8.7x6.6	
	Floor-standing type vertical-horizontal tool change		14x9.2x6.6	16x9.2x6.6	18x9.2x6.6	22x9.2x6.6	26x9.2x6.6	

BM Specification | BM-xx35/42 Series

MODEL			Unit	BM-4235/42	BM-5235/42	BM-6235/42	BM-8235/42	BM-10235/42
TRAVEL								
X axis				4,200	5,200	6,200	8,200	10,200
Y axis			mm	3,500/ 4,200				
Z axis	Linear way		mm	1,000/ 1,200(opt.)/1,400(opt.)				
W axis			mm	1,000/ 1,200(opt.)/1,500(opt.)				
Distance from spindle nose to table	2-step gear	Z axis =1,000	mm	215~2,215				
		Z axis =1,200	mm	15~2,415(column +200mm)				
	Direct-driven	Z axis =1,400	mm	15~2,615(column +400mm)				
		Z axis =1,000	mm	250~2,250				
		Z axis =1,200	mm	50~2,450(column +200mm)				
Distance from spindle center to column			mm	760				
Distance between columns (port width)			mm	3,500				
TABLE								
Dimension			mm	4,000x3,000	5,000x3,000	6,000x3,000	8,000x3,000	10,000x3,000
T-slot(Width x Number x Pitch)			mm	28x15x250(150)				
Max. table load			kg/m	20,000	24,000	28,000	32,000	36,000
SPINDLE								
Spindle motor(cont./30 min. rated)			kW	22/ 26(30/ 37opt.)				
Spindle speed	2-step gear	rpm	22/26kW: 4,000/6,000(opt.) ; 30/37kW: 3000(opt.)/5500(opt.)					
	Direct-driven		8,000/ 10,000(opt.)					
Spindle taper				ISO NO.50				
FEED								
Cutting feed rate			mm/min	XYZ:1~7,000 W:1,000				
Rapid traverse			m/min	XY:10, Z:12, W:2		X:8, Y:10, Z:12, W:2		
3 axis motor power (FANUC)			kW	X:9, Y:9, Z:4, W:9x2				
ACCURY(X,Y,Z)(Measured by laser instrument)								
Positioning accuracy	Refer to JIS B6333	mm	±0.01/300, ±0.015 Full travel					
	Refer to ISO 10791-2	mm	Ps0.045					P0.050
Repeatability	Refer to JIS-B6333	mm	±0.003					
	Refer to ISO 10791-2	mm	Ps0.035					Ps0.040
ATC								
ATC type/ capacity	Vertical type tool change	pcs	60/ 90(opt.)					
	Floor-standing type vertical-horizontal tool change(fixed)	pcs	32(opt.)/ 40(opt.)/ 60(opt.)					
	Floor-standing type vertical-horizontal tool change(random)	pcs	60(opt.)/ 90(opt.)					
Max. tool weight			kg	18				
Tool shank			-	BT 50/ CAT50				
Pull stud			-	P50T-1				
OTHERS								
Power requirement			kVA	85				
Pneumatic requirement			kg/cm²	6				
Machine net weight			kg	66,000/68,000	70,000/72,000	76,000/78,000	90,000/92,000	98,000/100,000
Machine gross weight			kg	70,000/72,000	75,000/77,000	82,000/84,000	98,000/100,000	106,000/108,000
Max. space (LxWxH)	Vertical type tool change		m	14x9.2x6.6	16x9.2x6.6	18x9.2x6.6	22x9.2x6.6	26x9.2x6.6
	Floor-standing type vertical-horizontal tool change			14x9.7x6.6	16x9.7x6.6	18x9.7x6.6	22x9.7x6.6	26x9.7x6.6

High Speed.
High Precision.
High Efficiency.



Standard & Optional Accessories

Standard

- 1 FANUC 0iMD controller
- 2 4,000rpm 2-step gear type spindle
- 3 Z-axis travel 1,000mm
- 4 Spindle oil cooling device
- 5 Twin hydraulic cylinders with pressured air assistance balancing system for Z-axis
- 6 Two hydraulic cylinders with automatic pressure tuning for W-axis
- 7 Hydraulic braking system for W-axis
- 8 Abusolute pulse coder, dual linear scales for W-axis
- 9 Ball screws supporting devices for XY-axis
- 10 Overhead pendulum type operation panel
- 11 60T tool magazine (vertical) (BM-xx30/35)
- 12 Centralized auto lubrication system
- 13 Independent lubrication system for four axis
- 14 Four piece splash guard
- 15 Working lamp & 3-color signal lamp
- 16 Air blast through spindle
- 17 Movable manual pulse generator (MPG)
- 18 Wash gun and pneumatic interface
- 19 RJ45 interface
- 20 Vision Wide FX graphical user interface
- 21 Flood coolant system
- 22 Heat exchanger for electrucal cabinet
- 23 Twin chip screws on table sides
- 24 Caterpillar chup conveyor
- 25 Adjustment tool and tool kits
- 26 Technical manuals
(operation, maintenance manual and circuit diagram)
- 27 Remote monitoring software-Standard.
(Not available for Siemens controller)

Optional

- 1 3,000/5,500/6,000rpm 2-step gear type spindle
- 2 8,000/ 10,000rpm direct driven spindle
- 3 90T tool magazine (vertical) (BM-xx30/35)
- 4 Coolant through tool holder interface (vertical spindle)
- 5 Coolant through spindle system (vertical spindle)
- 6 Interface preparation for coolant through spindle system (vertical spindle)
- 7 Enclosed splash guard (without roof)
- 8 Heidenhain linear scale feedback (X, Y, Z)
- 9 Z-axis travel 1,200/1,400mm
- 10 200/300/400/500mm higher column(W-axis travel 1,200 mm)
- 11 Overhead pendulum type auto lifting operation panel
- 12 Air conditioner for electrical cabinet
- 13 Sub table
- 14 Oil skimmer
- 15 Oil mist cooling device
- 16 Rotary table
- 17 Interface preparation for rotary table
- 18 Automatic tool length measurement (VT2030/TS27R/NC4)
- 19 Automatic workpiece measurement (RMP60)
- 20 Transformer
- 21 3-axis independent manual pulse generator
- 22 Interface preparation for fourth axis
- 23 Z-axis retract function at power failure
- 24 Anti-collision and machining simulation software
- 25 Remote monitoring software-Professional(Not available for Siemens controller)

Optional accessory for auto head attachment

- 1 Auto AC90 degree angular head/ AC 2-axis head/AC extended head
- 2 Auto AC milling head/ small head/ customized head attachment
- 3 32/40/60T vertical-horizontal type fixed point tool changing(for BM-XX37/42)
- 4 60/90T vertical-horizontal type ramdon point tool changing(for BM-XX37/42)
- 5 Auto multi-heads magazine on magazine side(Only for BM-xx37/xx42 serie)
- 6 AC90 degree angular head coolant through spindle system 20bar