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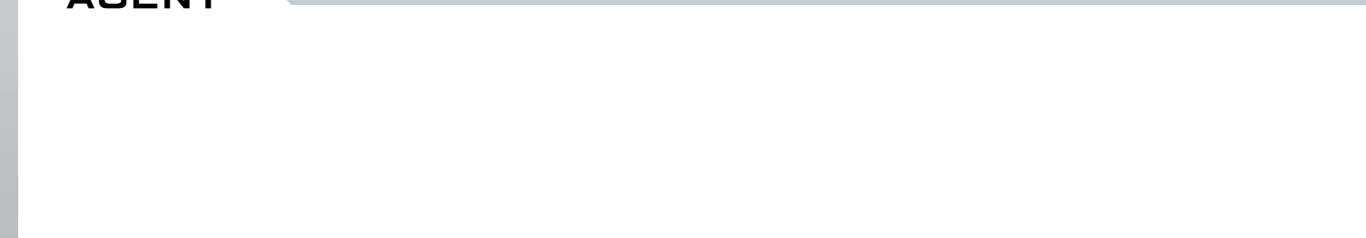
ISO 9001



ISO 14001



AGENT



BM SERIES

High Rigidity Vertical Machining Centers

HIGH RIGIDITY

Structure Design Providing Ultimate Heavy-duty Cutting Performance

AWEA in house made gear box spindle provides the best torque combination. Box way on 3 axes to fulfill reliable and stable heavy-duty cutting requirement. Precise hand scraping on key contact surfaces to ensure the best support and consistent machine accuracy.



BM-2500
(X : 2,500 / Y : 1,000 / Z : 1,000)

BM-1400
(X : 1,400 / Y : 800 / Z : 700)

BM-850
(X : 850 / Y : 600 / Z : 600)

(Unit : mm)

BM Series 850 / 1020 / 1200 / 1460
1400 / 1600 / 1800 / 2100 / 2500

High Rigidity Vertical Machining Centers

With the advanced R&D technology and strict quality control, BM series is especially made for heavy cutting machining needs, which have rigid and stable machine structure with extensive application.

BM series offers excellent cost-performance with reasonable and affordable price.

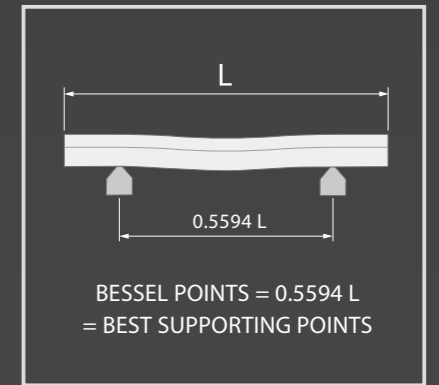
- Depends on the different machining requirement, we provides various modular spindle combination to achieve optimal cutting performance.
- 3 axes are equipped with box ways which is precisely grinded and throughly heat treated, especially suitable for heavy cutting.
- Highly efficient 24T arm type magazine design provides fast and reliable tool change system.
- The wide range BM series, X travel start from 850 mm to 2,500 mm ; Y / Z travel start from 600 mm to 1,000 mm to meet your various work-piece dimension.



High Rigidity Vertical Machining Centers



- The Finite Element Method (FEM) provides optimal machine design and light-weight structure advantage while ensuring high rigidity of machine.
- Δ (Delta) Wide span column construction provides superior cutting stability. The headstock retains stable even under high speed movement.
- Based on BESSEL POINTS concept, provides the stable support on Y-axis saddle to keep in minimum deformation, thus to enhance the table dynamic accuracy.



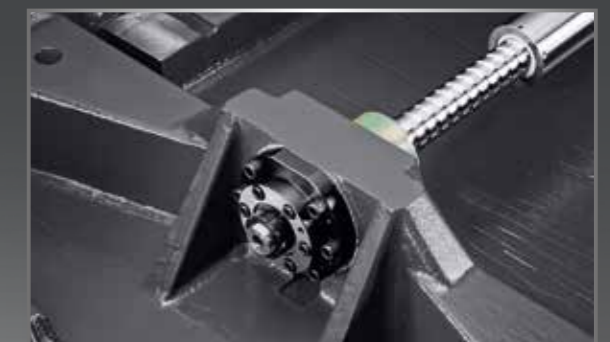
Dual-nuts secured ball screw



Direct-drive servo motor



Integrated ball screw servo motor base

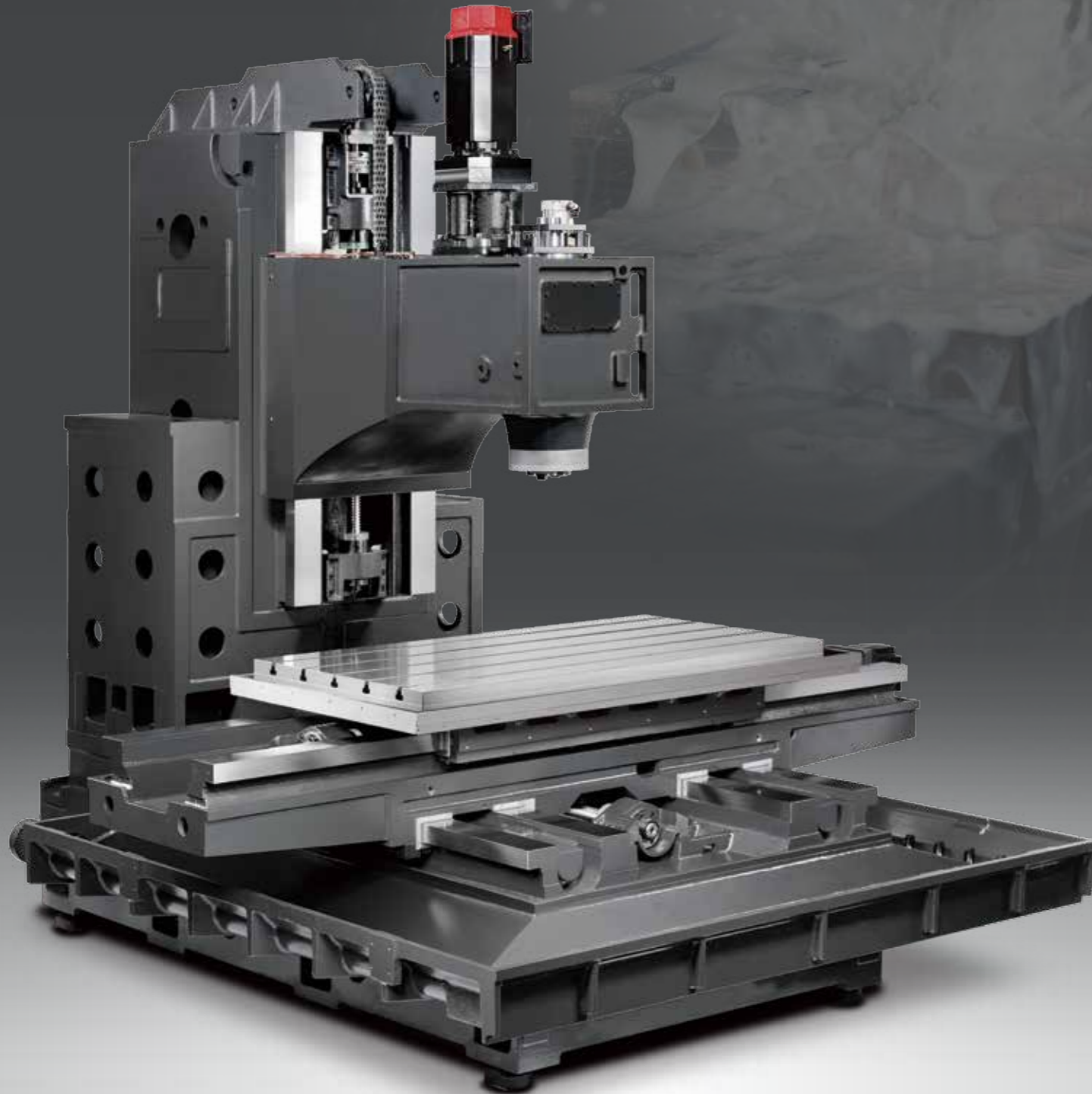


Integrated ball screw bearing base

- High precision dual-nuts ball screw provides excellent heavy cutting rigidity while ensuring machining accuracy and extend durability of ball screw.
- Three axial system are adopted with FANUC αi absolute AC servo motor direct drive to provide great thrust and fast acceleration / deceleration movement. Plus, it efficiently decreases motor load and reduces generation of heat while maintaining the ultimate performance and accuracy.

BM Series 850 / 1020 / 1200 / 1460
1400 / 1600 / 1800 / 2100 / 2500

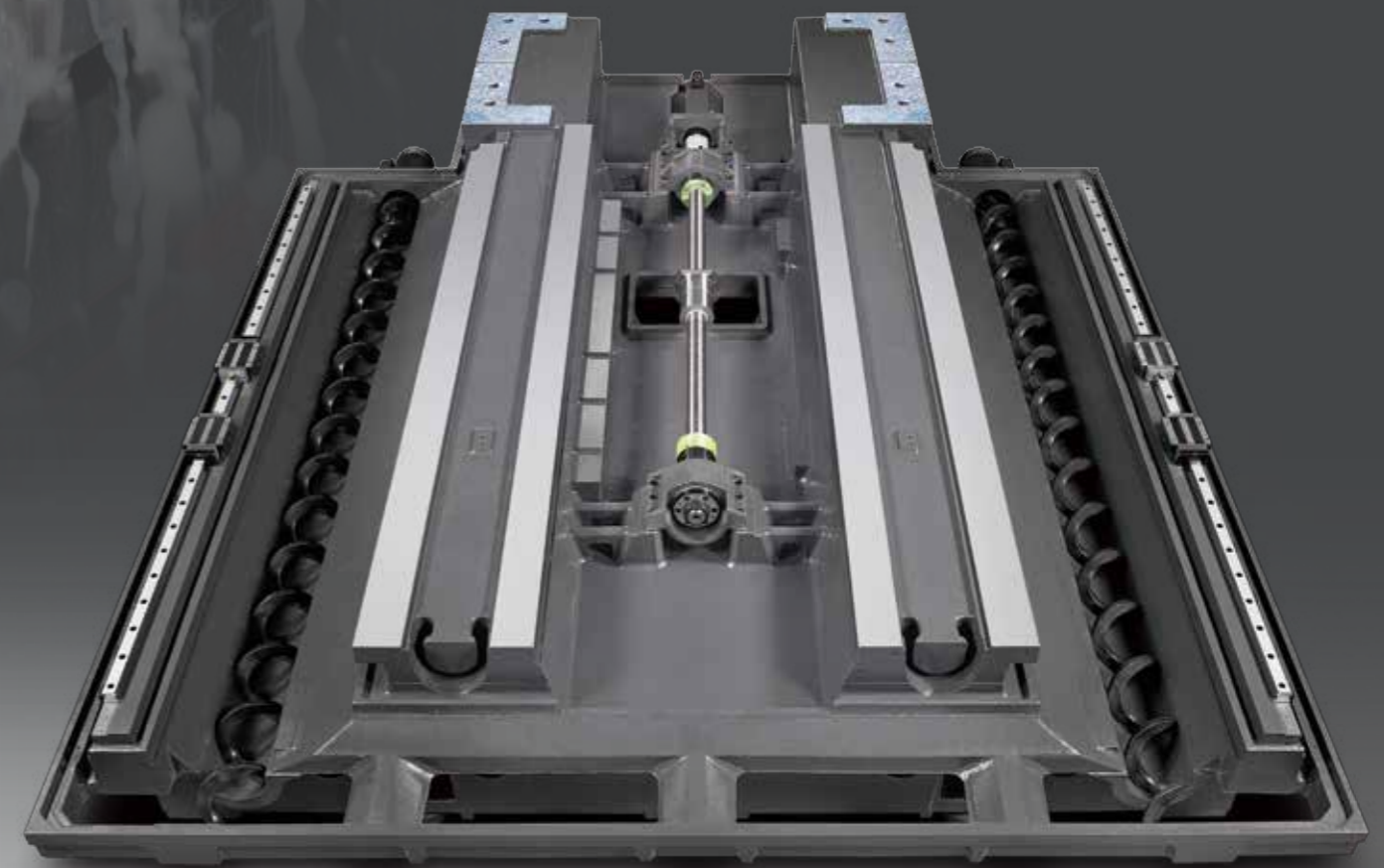
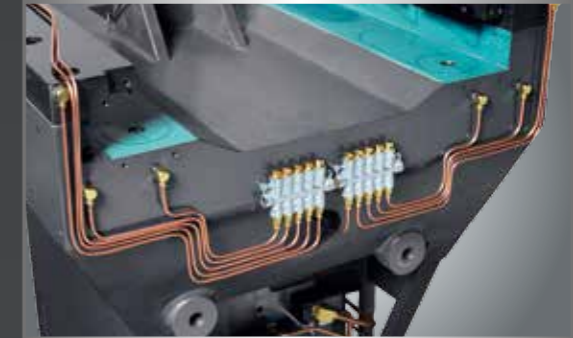
High Rigidity Vertical Machining Centers



BM-1400 high rigidity structure



- Working table with double ribbed design to enhance the structure strength, while securing the table will not deform even load heavily for a long time.
- Copper piping auto lubrication system delivers metered amounts of lubrication to the slide ways, ball screws, and vital components with ensured reliability.



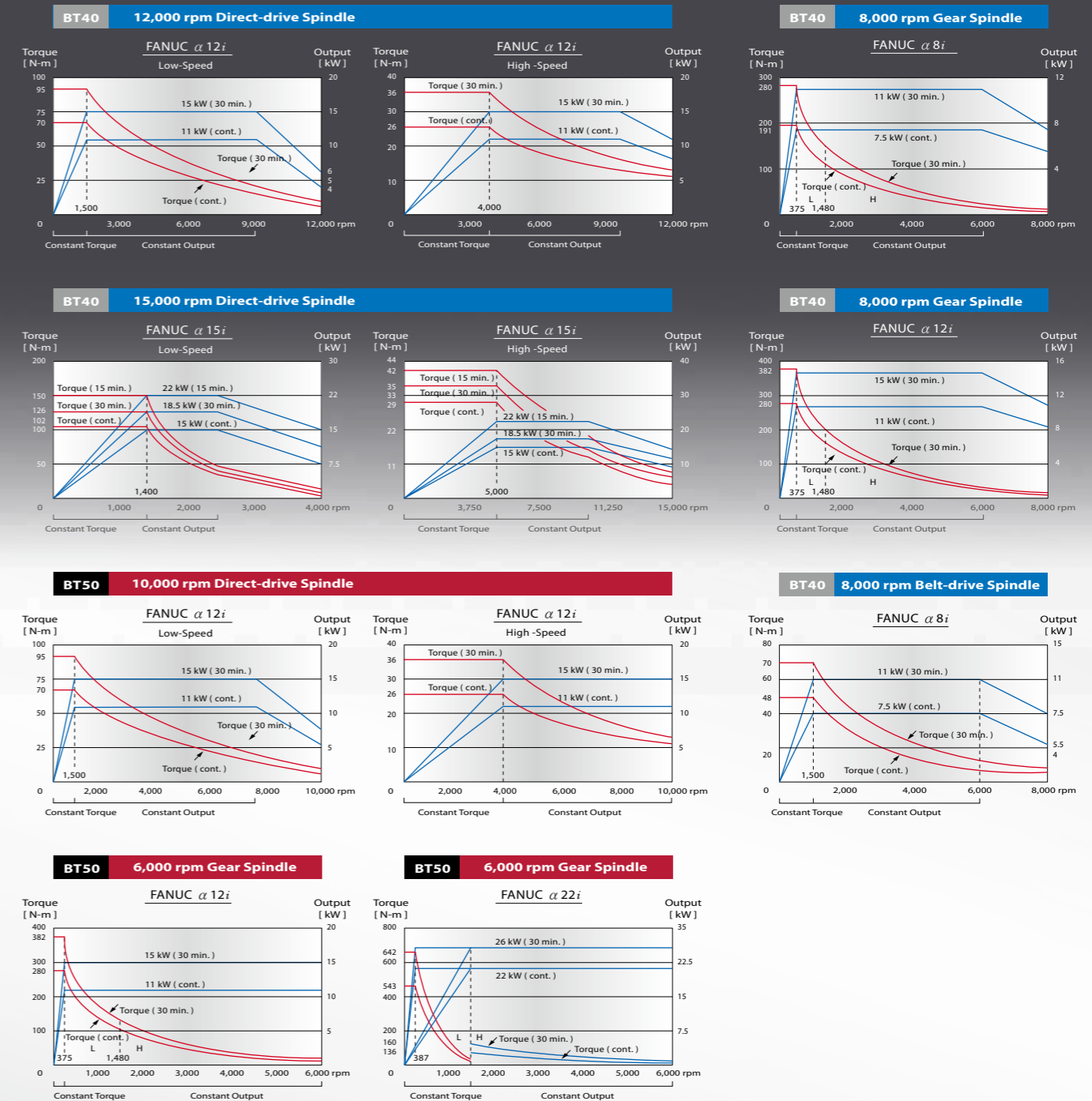
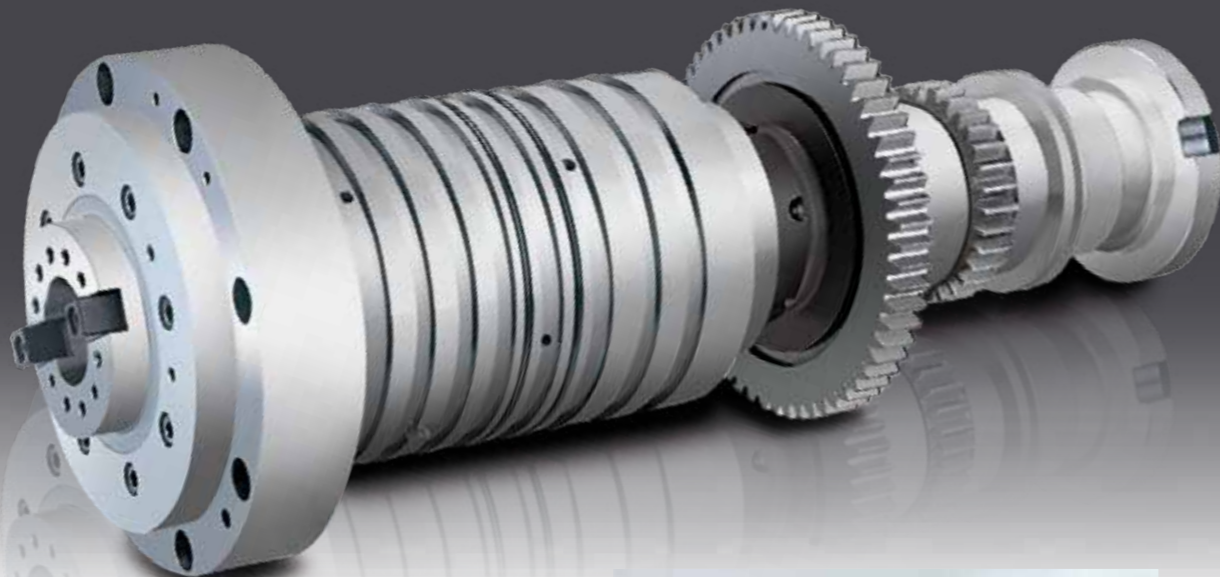
- BM-2100 / BM-2500, the table base is equipped with 6 guideways to solve over-hang problem and provide the fully support to ensure the rigidity.

High Performance Spindle System

- Gear spindle combines with High-Low 2 steps gear box design to provide large torque output
- High hardness Nickel-molybdenum-chromium alloy gear mechanism with auto lubrication and cooling system ensures the performance and lifetime of gear transmission box.
- High speed spindle and affordable belt type spindle options, which can be adapted with different kinds of spindle motor to fulfill variety of requirement.

Spindle taper

Models	BM-850	BM-1020	BM-1200	BM-1460	BM-1400	BM-1600	BM-1800	BM-2100	BM-2500
Standard		BT40				BT50		BT50	
Optional		BT50				BT40		—	



- Spindle, spindle motor, and gear box all pass through the completely running test ensures the performance and lifetime.



High Precision Hand Scraped Technology



- All the sliding or fix surface of machine bed, column, saddle, headstock, and ball screw holder are hand scraped to provide excellent assembly precision and load distribution.





High Speed ATC System

- BM series 24T arm type ATC system provide high speed tool exchange solution, and we also offer 30T / 40T arm type tool magazine to fulfill the variety of machining requirement.
- Standard shortcut tool change function can shorten tool change time and increase working efficiency.



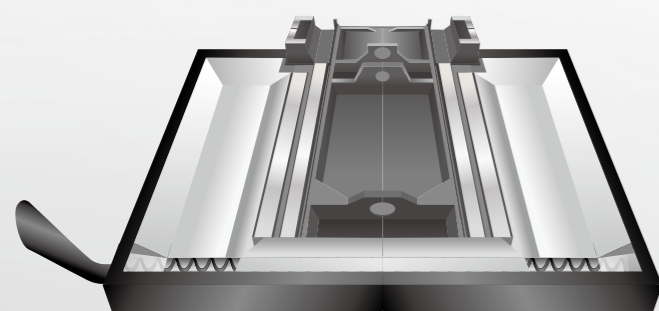
24T Disc type tool magazine



High Efficiency Chip Disposal System

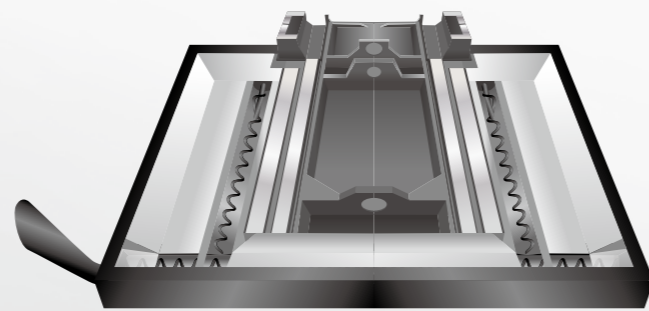
■ All series are equipped with 1-5 screw type chip auger according to the machine size, thus to provide high chip clearing efficiency.

■ The optional high pressure chips flush coolant system is also available.



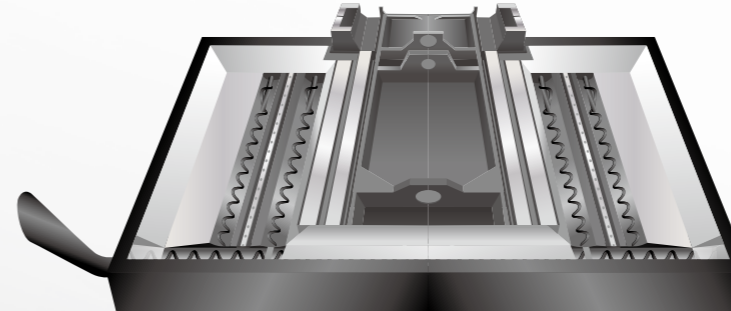
■ Screw chip conveyor x1

BM-850 | BM-1020 | BM-1200 | BM-1460



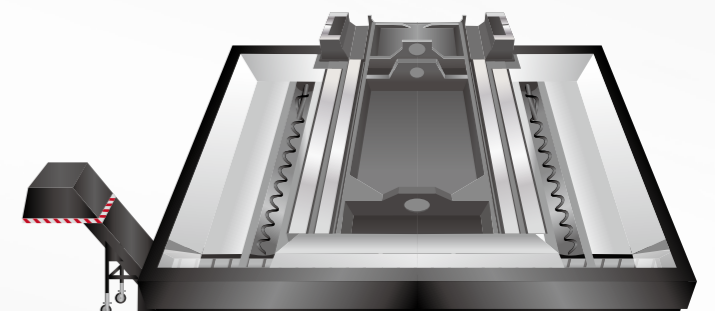
■ Screw chip conveyor x3

BM-1400 | BM-1600 | BM-1800



■ Screws chip conveyor x5

BM-2100 | BM-2500



■ Chain type chip conveyor (Opt.)

High Efficiency Automatic Pallets Changer System

In order to lower the labor cost and meet the requirement of high speed mass production, BM850-APC adapted with four box way, combines with APC system, which provides the best produce solution for automobile industry, especially suitable for gearbox, inlet manifold, or others parts.



7 second
Auto pallet changing time

0.02 mm
Repeatability between two tables

	BM850-APC		BM850-APC
X / Y / Z axes travel	850 / 600 / 600 mm	Spindle taper	BT40 / BT50 (Opt.)
Table size	460 x 800 mm	Spindle motor (cont. / 30 min.)	7.5 / 11 kW
Table rotating range	180°	Spindle speed	8,000 rpm
Repeatability for each table	0.01 mm	X / Y / Z axes rapid feed rate	24 / 24 / 20 m/min.
Repeatability between two tables	0.02 mm	Cutting feed rate	10 m/min.
Table load capacity	200 kg	Tool magazine capacity	24 T

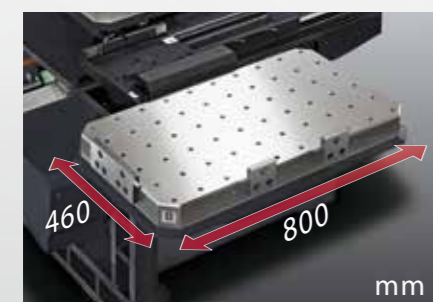


Table size

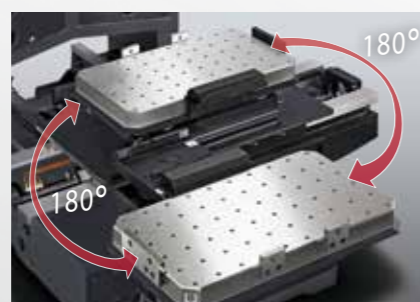


Table rotating range

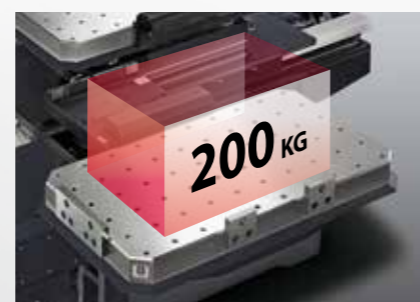


Table load capacity

i Console

- AWEA's self-developed *i Console* intelligent software enhancement system provides you with a user-friendly interface, real-time machine status information and dialogic functions. It not only effectively reduces complex working process but also increases intelligent machining abilities.

(For 10.4" LCD only)



Multiple Functions Status Display

- Real time operation information
- Tool list
- Work piece measurement
- M code illustration
- PLC function
- Calculator
- CNC optimize parameter (Opt.)
- Spindle thermal compensation (Opt.)



Trouble Shooting

When the alarm appears, the program will display the breakdown cause and a troubleshooting procedure. Users can easily troubleshoot minor problems to save machine shutdown time.



Circular Work Piece Measurement

The circular work piece program can calculate the center coordinate of a work piece by measuring point A, B and C coordinates.



CNC Optimized Parameter

From rough cutting to fine machining, users can select different working modes, determine the allowable tolerance and the weight of the work piece, based on your desired working condition.



Rectangular Work Piece Measurement

The rectangular work piece program can calculate the center coordinate and the slant angle of a work piece by measuring point A, B, C, D and E coordinates; the calculated center coordinate can be inputted into the work piece coordinate program (G54 ~ G59).

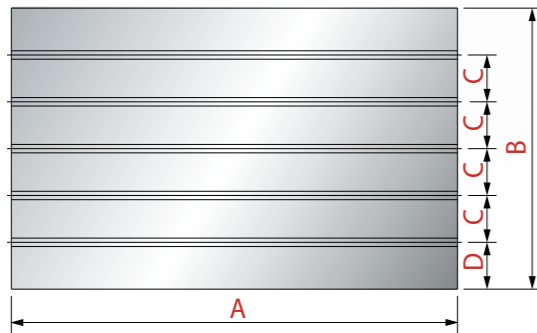


Manual Tool Length Measurement

After manually measuring the tool length, the controller will automatically calculate the tool tip position and input the data into the tool length offset table.

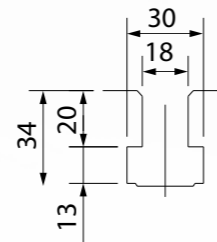
Dimensions

Table Dimensions



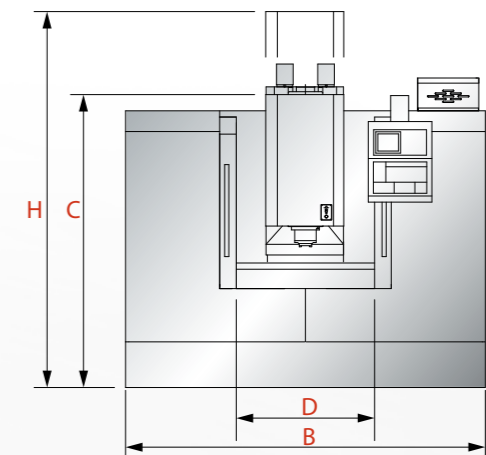
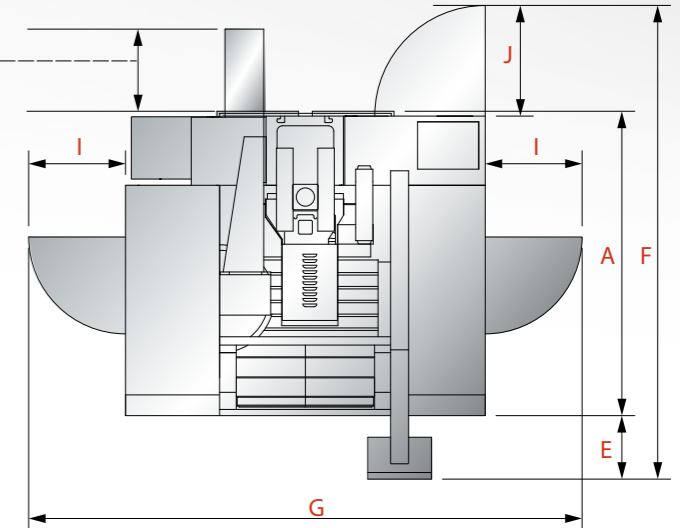
Models	A	B	C	D
BM-850	1,050			
BM-1020	1,120	600	100	100
BM-1200	1,300			
BM-1460		650		125
BM-1400	1,500			
BM-1600	1,700	800		100
BM-1800	2,000		150	
BM-2100	2,300	1,000		50
BM-2500	2,700			
BM850-APC	800	460		

T-slot Dimensions



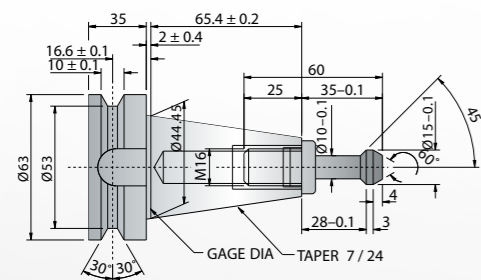
Machine Dimensions

BM-850 ~ 1460	40 Taper 40 Tool ATC : 170 mm 50 Taper 30 Tool ATC : 510 mm 50 Taper 40 Tool ATC : 1,140 mm
BM-1400	50 Taper 30 Tool ATC : 265 mm 50 Taper 40 Tool ATC : 900 mm
BM-1600	50 Taper 30 Tool ATC : 245 mm 50 Taper 40 Tool ATC : 880 mm
BM-1800	50 Taper 30 Tool ATC : 245 mm 50 Taper 40 Tool ATC : 880 mm
BM-2100	50 Taper 40 Tool ATC : 520 mm
BM-2500	50 Taper 40 Tool ATC : 520 mm
BM850-APC	40 Taper 40 Tool ATC : 170 mm 50 Taper 30 Tool ATC : 510 mm 50 Taper 40 Tool ATC : 1,140 mm

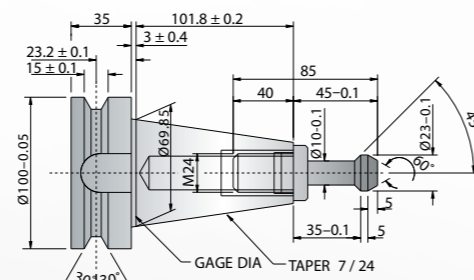


Tool Shank and Pull Stud Dimensions

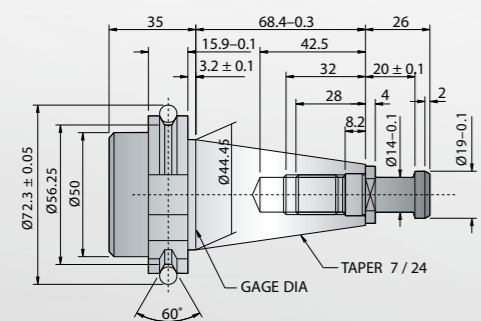
BT40



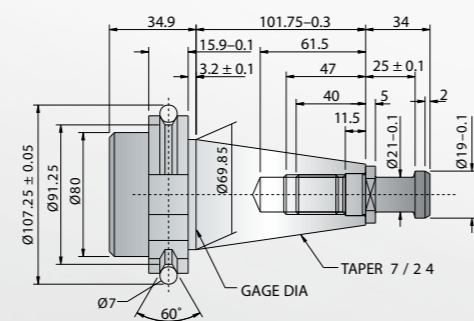
BT50



DIN40



DIN50



(Unit : mm)

(Unit : mm)

Models	A	B	C	D	E	F	G	H	I	J
BM-850	2,200	2,600		1,000		3,705	3,900			925
BM-1020		3,000				3,905	4,300			
BM-1200		3,400	2,117	1,300	580	3,890	4,700	2,717	650	1,125
BM-1460	2,185	3,850		1,470			5,150			
BM-1400	2,935	3,950	2,320	1,500	655	4,125	5,750	3,305		
BM-1600	2,995	4,400		1,800	605	4,070	6,200			
BM-1800	2,995	4,880	2,585	2,070	720	4,220	6,680	3,385	900	600
BM-2100	3,545	5,200		2,340			5,460			
BM-2500	3,545	6,500	2,765	2,950	700	4,080	6,500	3,765		
BM850-APC	3,000	2,600	2,417	850	790	3,900	3,900	3,017	650	925

Specifications are subject to change without notice.

		BM-850	BM-1020	BM-1200	BM-1460
SPECIFICATIONS					
X-axis travel	mm	850	1,020	1,200	1,400
Y-axis travel	mm	600			
Z-axis travel	mm	600			
Distance from spindle center to column	mm	680			
Distance from spindle nose to table center	mm	125 ~ 725			
WORKING TABLE					
Table size (X direction)	mm	1,050	1,120	1,300	1,500
Table size (Y direction)	mm	600	600	600	650
Table load capacity	kg	850	1,000	1,200	1,400
SPINDLE					
Spindle taper		BT40 / BT50 (Opt.)			
Spindle motor (cont. / 30 min.)	kW	7.5 / 11			
Spindle speed	rpm	Belt-drive 8,000			
FEED RATE					
X / Y axes rapid feed rate	m/min.	24			
Z-axis rapids feed rate	m/min.	20			
Cutting feed rate	m/min.	1-15			
TOOL MAGAZINE					
Tool magazine capacity	T	20 (Drum Type)			
Max. tool length	mm	250			
Max. tool weight	kg	15			
Max. tool diameter / adj. pocket empty	mm	Ø130 / Ø200			
ACCURACY					
Positioning accuracy (JIS B 6338)	mm	± 0.01 / Full Travel			
Positioning accuracy (VDI 3441)	mm	P = 0.012			
Repeatability (JIS B 6338)	mm	± 0.003			
Repeatability (VDI 3441)	mm	Ps = 0.008			
GENERAL					
Control system		FANUC Oi - MD / 31i - MB		MITSUBISHI M70 / M720	
Pneumatic pressure requirement	kg/cm ²	6			
Power requirement	kVA	25			
Coolant tank capacity	liter	250	310	315	320
Machine weight	kg	6,500	6,800	7,300	8,000

Standard Accessories

- 3 axes auto lubrication system
- 3 axes ball screw pretension
- Spindle air curtain
- Coolant nozzle around spindle
- Air blow system
- Front side chip auger
- Two sides chip auger
BM-1400 ~ 2500
- Fully enclosed splash guard
- Rigid tapping
- Lubricating oil recovering system
- Heat exchanger for electrical cabinet
- RS-232 interface
- Tool box
- Air gun
- Water gun
- Alarm light
- Foundation bolt kit
- Automatic power-off system

		BM-1400	BM-1600	BM-1800	BM-2100	BM-2500
SPECIFICATIONS						
X-axis travel	mm	1,400	1,600	1,800	2,100	2,500
Y-axis travel	mm	800			1,000	
Z-axis travel	mm	700	800		1,000	
Distance from spindle center to column	mm	900			1,100	
Distance from spindle nose to table center	mm	200 ~ 900	200 ~ 1,000		200 ~ 1,000	
WORKING TABLE						
Table size (X direction)	mm	1,500	1,700	2,000	2,300	2,700
Table size (Y direction)	mm	800	800	800	1,000	1,000
Table load capacity	kg	1,800	2,000	2,200	3,000	4,000
SPINDLE						
Spindle taper		BT50 / BT40 (Opt.)		BT50		
Spindle motor (cont. / 30 min.)	kW	11 / 15		15 / 18.5		
Spindle speed	rpm	Belt-drive 6,000		Gear Spindle 6,000		
FEED RATE						
X / Y axes rapid feed rate	m/min.	20			15	
Z-axis rapids feed rate	m/min.	18			12	
Cutting feed rate	m/min.	1-12				
TOOL MAGAZINE						
Tool magazine capacity	T	16 (Drum Type)				
Max. tool length	mm	300				
Max. tool weight	kg	15				
Max. tool diameter / adj. pocket empty	mm	Ø160 / Ø300				
ACCURACY						
Positioning accuracy (JIS B 6338)	mm	± 0.01 / Full Travel				
Positioning accuracy (VDI 3441)	mm	P = 0.02				
Repeatability (JIS B 6338)	mm	± 0.003				
Repeatability (VDI 3441)	mm	Ps = 0.008				
GENERAL						
Control system		FANUC Oi - MD / 31i - MB		MITSUBISHI M70		
Pneumatic pressure requirement	kg/cm ²	6				
Power requirement	kVA	40				
Coolant tank capacity	liter	590	480	480	820	900
Machine weight	kg	13,000	15,000	17,000	20,000	22,000

Specifications are subject to change without notice.

Optional Accessories

- Arm type tool magazine 30 / 40T
- Belt-drive spindle BT40 10,000 rpm
- Gear spindle BT40 8,000 rpm
- BT50 6,000 rpm
- Direct-driven spindle BT40 10,000 rpm
- 12,000 rpm
- 15,000 rpm
- BT50 8,000 rpm
- 10,000 rpm
- Roof enclosed splash guard
- Coolant through spindle (Form A)
- Spindle thermal compensation
- X / Y / Z axes optical linear scale
- CNC rotary table
- Transformer
- Coolant through the tool adapter
- Chips flush coolant system
- Caterpillar type chip conveyor & bucket
- Scraper type chip conveyor
- Automatic tool length measurement
- Oil skimmer
- Data server