BM series

AWEA MECHANTRONIC CO.,LTD.

ISO 9001 ISO 14001 CE

Official distributor for Benelux

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A-BM-EN-202002

BM SERIES

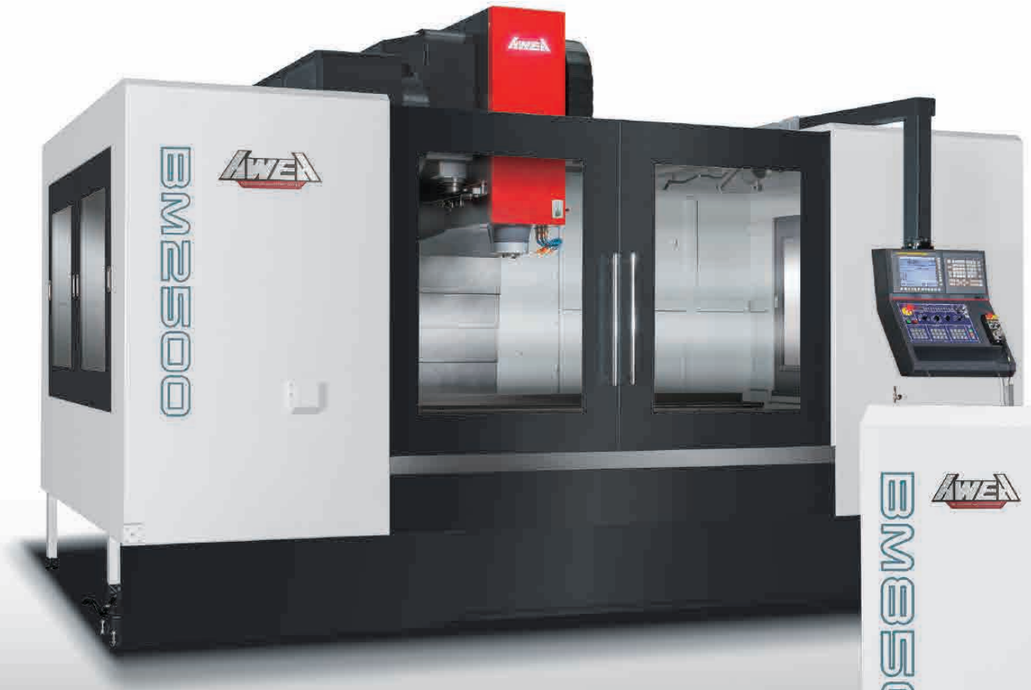
Super Rigidity Vertical Machining Centers

AWEA MECHANTRONIC CO.,LTD.

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

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

(Unit : mm)

BM Series

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

Super Rigidity Vertical Machining Centers

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

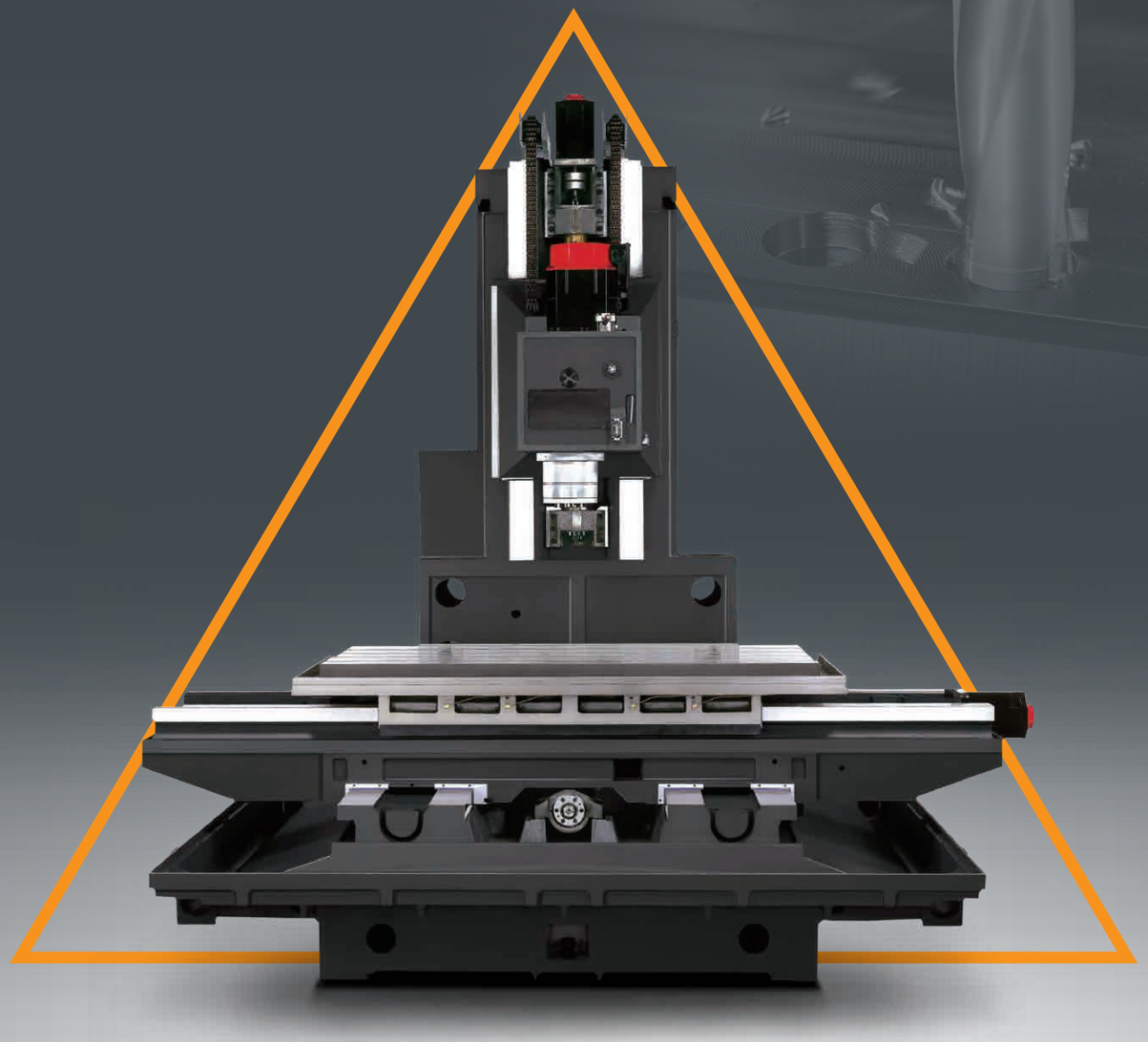
BM series offers excellent performance with reasonable and affordable price.

- Depends on the different machining requirement, we provides various modular spindle combinations 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 machining requirements.

BM Series

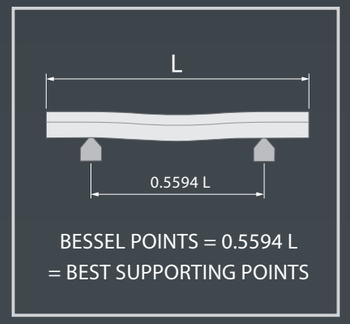
850 / 1020 / 1200 / 1460 / 1400
1600 / 1800 / 2100 / 2500

Super Rigidity Vertical Machining Centers



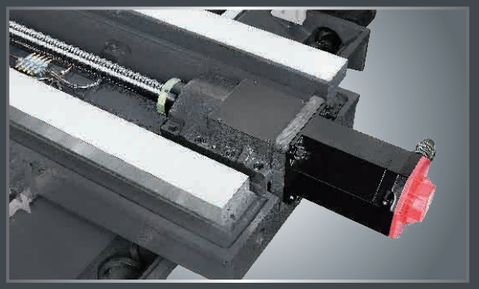
△ (Delta) Wide span column structure

- The Finite Element Analysis (FEA) provides optimal machine design and light-weight structure advantage while ensuring super rigidity of machine.
- △ (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.

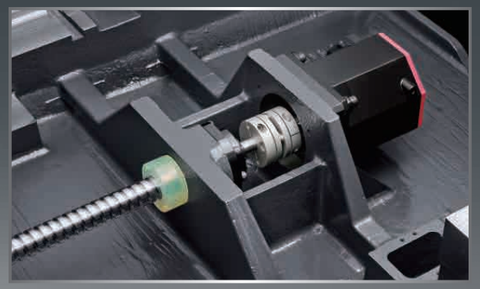


BESSEL POINTS = 0.5594 L
= BEST SUPPORTING POINTS

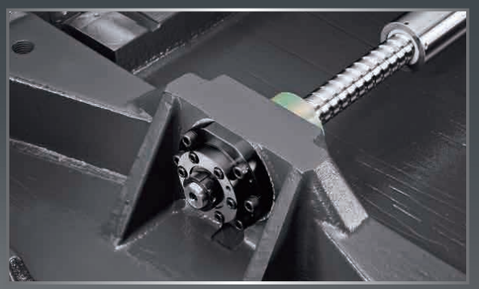
Dual-nuts secured ball screw



Direct-drive servo motor



Integrated ball screw servo motor base



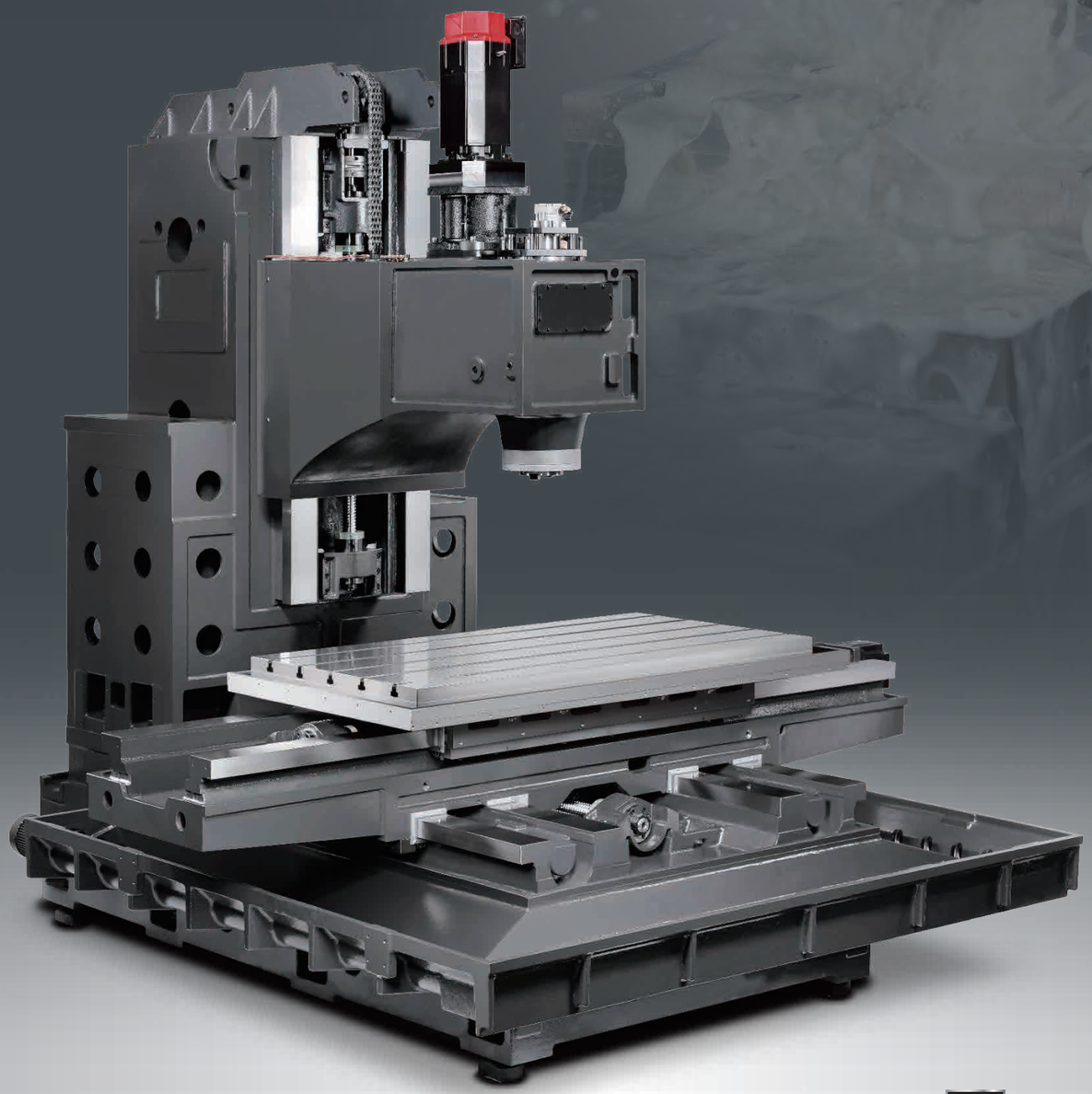
Integrated ball screw bearing base

- 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

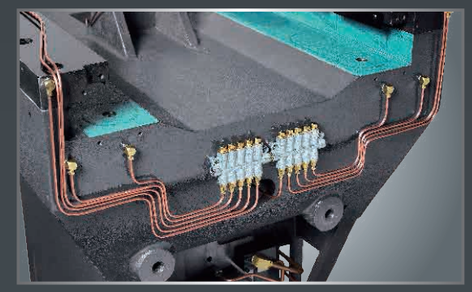
850 / 1020 / 1200 / 1460 / 1400
1600 / 1800 / 2100 / 2500

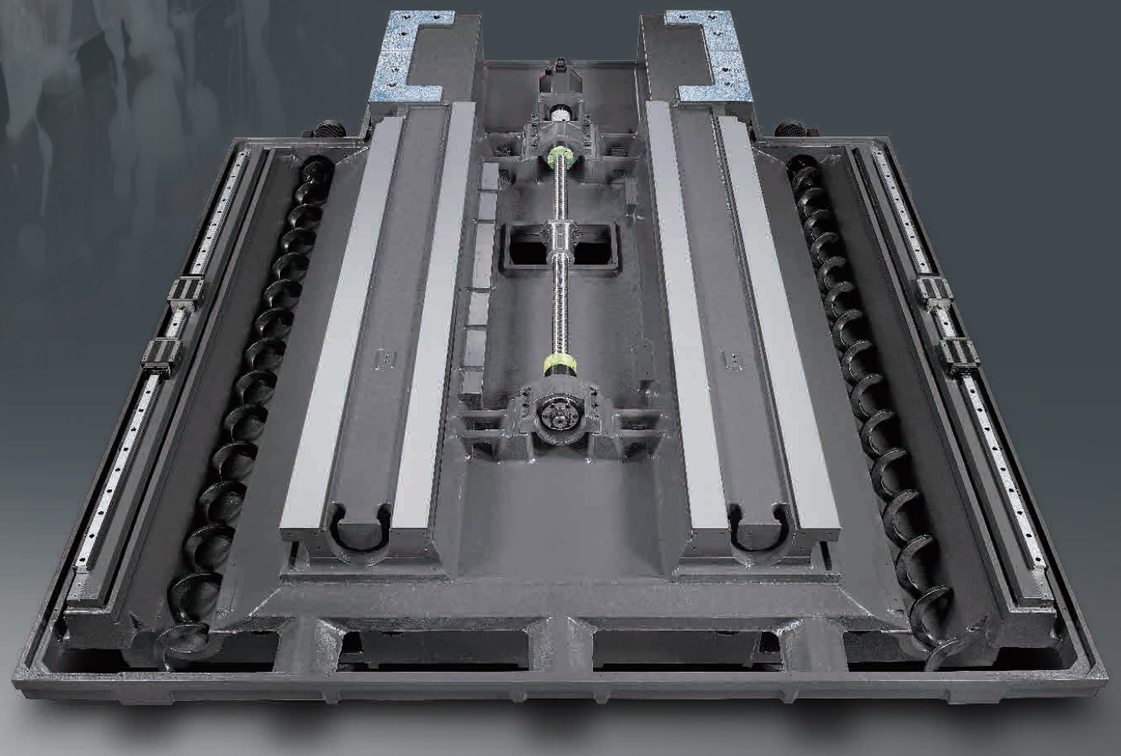
Super Rigidity Vertical Machining Centers



BM-1400 super 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.

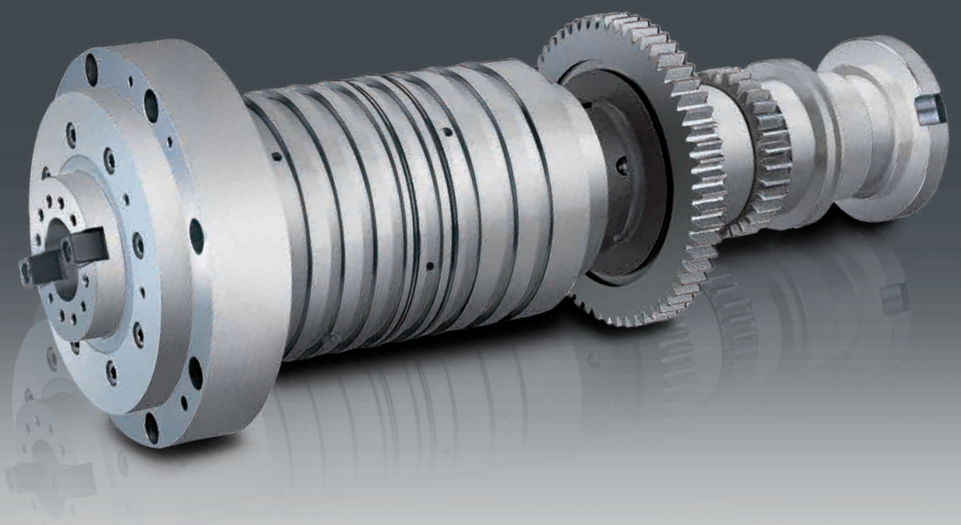




- BM-2100 / BM-2500, the table base is equipped with 6 guideways to solve over-hang problem and provide the fully support to ensure the rigidity.

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.

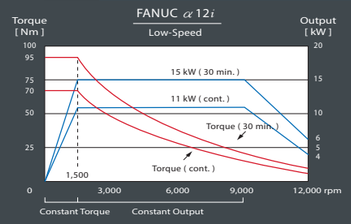


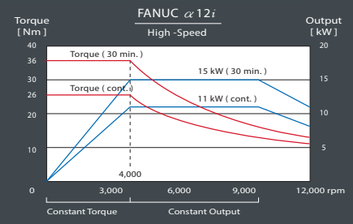
- Spindle, spindle motor, and gear box all pass through the completely running test ensures the performance and lifetime.

- Spindle taper

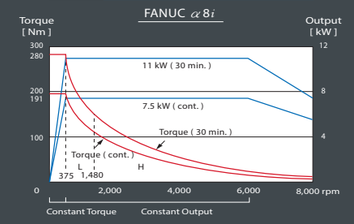
Models	BM-850	BM-1020	BM-1200	BM-1460	BM-1400	BM-1600	BM-1800	BM-2100	BM-2500
Standard	BT40				BT50			BT50	
Optional	BT50				BT40			- -	

BT40 — 12,000 rpm Direct-drive Spindle

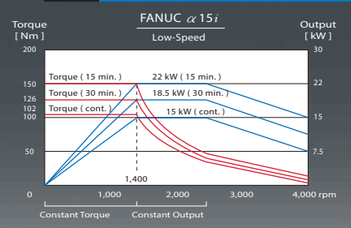


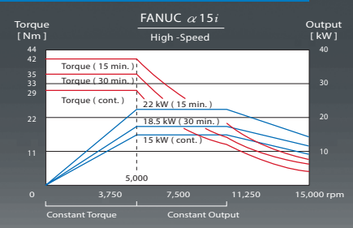


BT40 — 8,000 rpm Gear Spindle

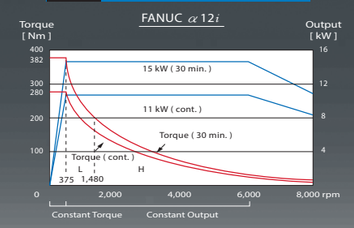


BT40 — 15,000 rpm Direct-drive Spindle

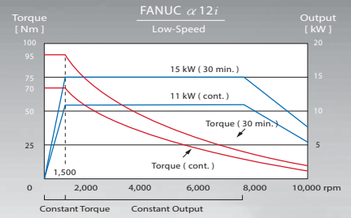


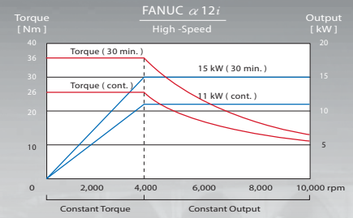


BT40 — 8,000 rpm Gear Spindle

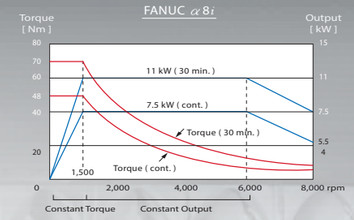


BT50 — 10,000 rpm Direct-drive Spindle

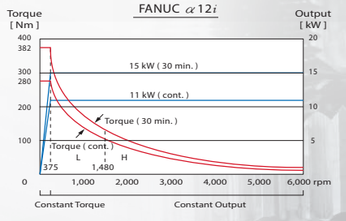




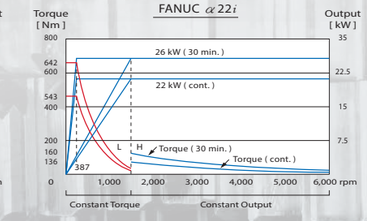
BT40 — 8,000 rpm Belt-drive Spindle



BT50 — 6,000 rpm Gear Spindle

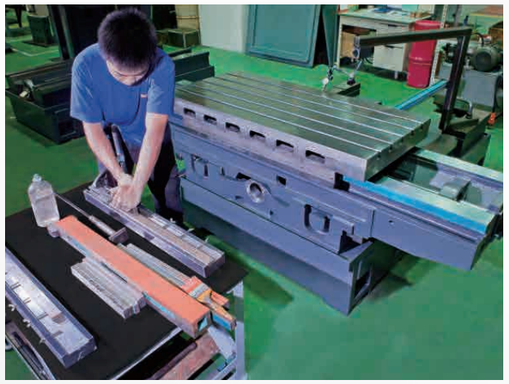


BT50 — 6,000 rpm Gear Spindle



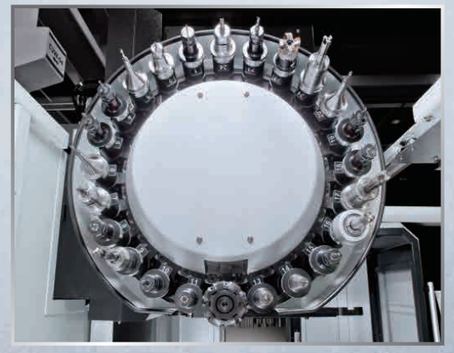
Hand Scraped Craftmanship

- 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, ensuring long term accuracy.



High Speed ATC System

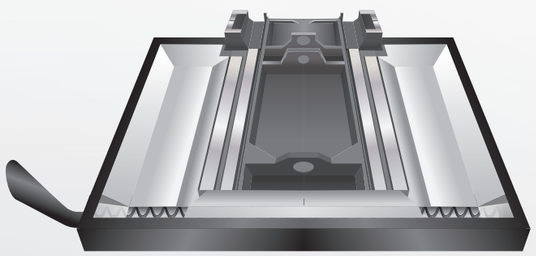
- BM series 24T arm type ATC system provide high speed tool exchange solution, and we also offer 30T / 40T arm type tool magazine to fulfill the variety of machining requirement.
- Standard shortcut tool change function can shorten tool change time and increase working efficiency.
- Ultra fast tool exchange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



24T Disc type tool magazine

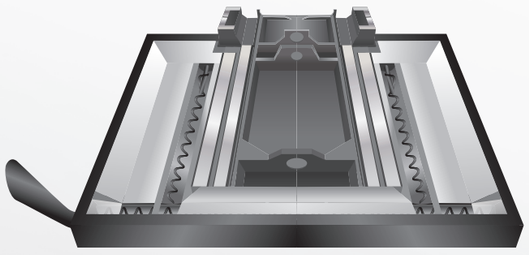
Chip Disposal System

- All series are equipped with 1 / 3 / 5 screw type chip auger according to the machine size, thus to provide high chip remove efficiency.



- Screw chip auger x 1

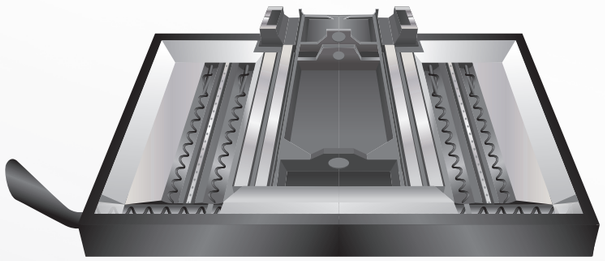
BM-850 | BM-1020 | BM-1200 | BM-1460



- Screw chip augers x 3

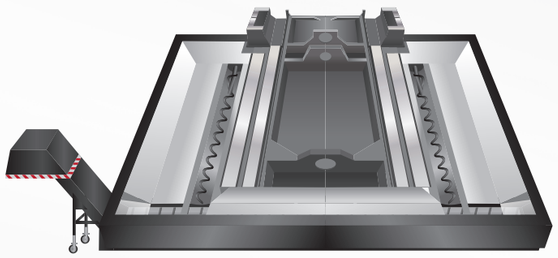
BM-1400 | BM-1600 | BM-1800

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



- Screws chip augers x 5

BM-2100 | BM-2500



- Chain type chip conveyor (Opt.)

High Efficiency APC 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

Model	BM850-APC
X / Y / Z axes travel	850 / 600 / 600 mm
Table size	460 x 800 mm
Table rotating range	180°
Repeatability for each table	0.01 mm
Repeatability between two tables	0.02 mm
Table load capacity	200 kg

Model	BM850-APC
Spindle taper	BT40 / BT50 (Opt.)
Spindle motor (cont. / 30 min.)	7.5 / 11 kW
Spindle speed	8,000 rpm
X / Y / Z axes rapid feed rate	24 / 24 / 20 m/min.
Cutting feed rate	15 m/min.
Tool magazine capacity	24 T

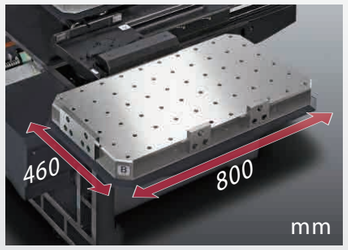


Table size

Table rotating range

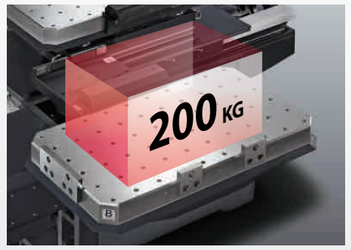


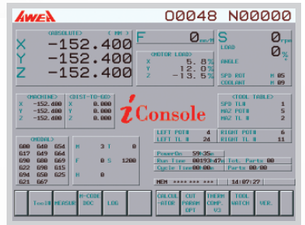
Table load capacity

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 diagnosis functions. It not only effectively reduces complex working process but also increases intelligent machining abilities. Optional

(For 10.4" LCD only)

Multiple Functions Status Display

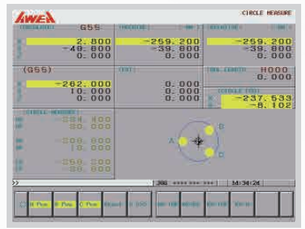


- Real time operation information
- Tool list
- Work piece measurement
- M code illustration
- PLC function
- Calculator
- CNC optimize parameter (Opt.)
- Spindle thermal compensation (Opt.)

Trouble Shooting

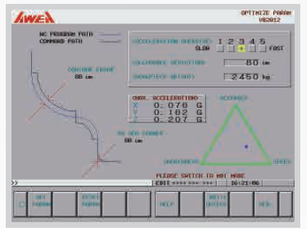
When the alarm appears, the program will display the breakdown cause and a troubleshooting procedure. Users can easily troubleshoot minor problems to save machine shutdown time.

Circular Work Piece Measurement



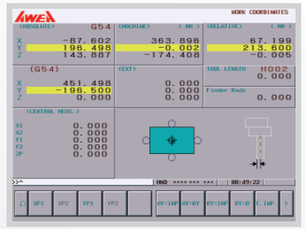
The circular work piece program can calculate the center coordinate of a work piece by measuring point A, B and C coordinates.

CNC Optimized Parameter



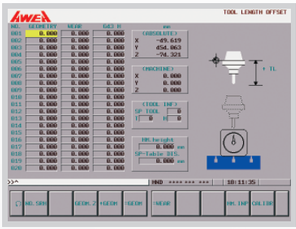
From rough cutting to fine machining, users can select different working modes, determine the allowable tolerance and the weight of the work piece, based on your desired working condition.

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).

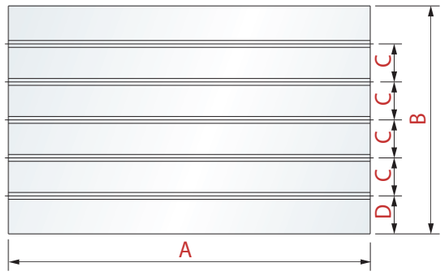
Manual Tool Length Measurement



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

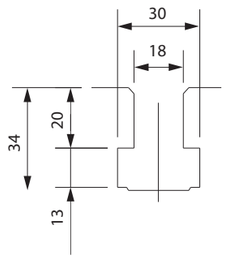


Models	A	B	C	D	No.*1
BM-850	1,050	600	100	100	5
BM-1020	1,120	600		100	5
BM-1200	1,300	600		100	5
BM-1460	1,500	650		125	5
BM-1400		800	150	100	5
BM-1600	1,700				5
BM-1800	2,000				5
BM-2100	2,300	1,000		50	7
BM-2500	2,700				7
BM-850-APC	800	460	—	—	5

*1 : No. = Number of T-slots

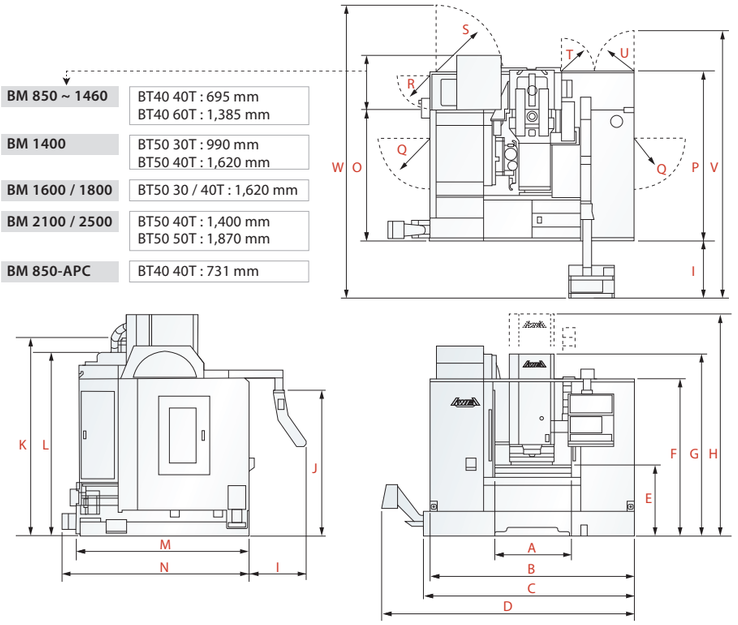
T-slot Dimensions

(Unit : mm)



Machine Dimensions

BM 850 ~ 1460	BT40 40T : 695 mm BT40 60T : 1,385 mm
BM 1400	BT50 30T : 990 mm BT50 40T : 1,620 mm
BM 1600 / 1800	BT50 30 / 40T : 1,620 mm
BM 2100 / 2500	BT50 40T : 1,400 mm BT50 50T : 1,870 mm
BM 850-APC	BT40 40T : 731 mm



(Unit : mm)

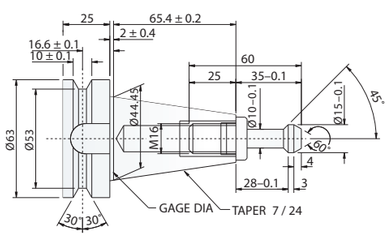
Models	A	B	C	D	E	F	G	H	I	J	K	L
BM-850	1,085	2,600	2,850	3,380	900	2,000	2,330	2,930	710	1,845	2,520	2,340
BM-1020	1,165	3,000	3,050	3,580								
BM-1200	1,325	3,400	3,400	3,935								
BM-1460	1,565	3,850	3,850	4,385								
BM-1400	1,570	3,950	4,005	4,360	960	2,180	2,710	3,280	735	1,840	2,875	2,675
BM-1600	1,785	4,400	4,400	5,110	1,050	2,330	2,665	3,445	875	1,860	3,330	3,205
BM-1800	2,085	4,880	4,880	5,195				3,465				
BM-2100	2,385	5,200	5,200	5,740	1,100	2,600	2,865	3,865	720	1,840	3,530	3,405
BM-2500	2,720	6,500	6,500	7,041								
BM-850-APC	850	2,600	2,800	- -	1,050	2,150	2,400	3,000	865	1,040	2,670	2,490

Models	M	N	O	P	Q	R	S	T	U	V	W
BM-850	2,205	2,385	1,665	2,165	712	387	736	571	571	3,405	3,603
BM-1020											
BM-1200											
BM-1460											
BM-1400	2,935	3,115	2,245	2,930	900	- -	- -	600	600	4,235	- -
BM-1600	2,965	3,145	2,230							4,345	
BM-1800										4,400	
BM-2100	3,550	3,730	2,660	3,500	- -					4,785	
BM-2500											
BM-850-APC	3,040	- -	2,500	2,995	650			410	510	3,505	3,905

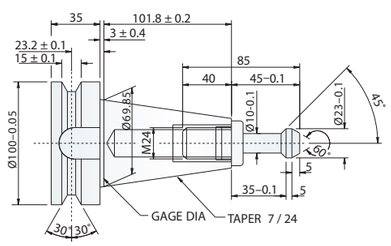
Specifications are subject to change without notice.

Tool Shank and Pull Stud Dimensions

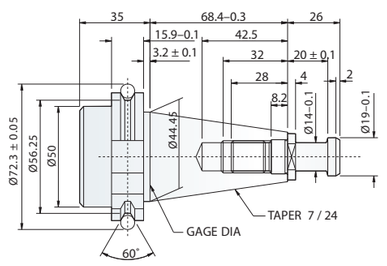
BT40



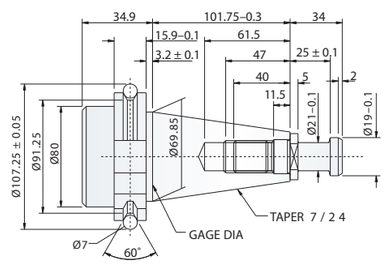
BT50



DIN40



DIN50



		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 top	mm	125 ~ 725			
WORK 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	24			
Max. tool length	mm	250			
Max. tool weight	kg	7			
Max. tool diameter / adj. pocket empty	mm	Ø 75 / Ø 150			
ACCURACY					
Positioning accuracy (ISO230-2)	mm	0.008			
Repeatability (ISO230-2)	mm	0.006			
GENERAL					
Control system		FANUC Oi-MF / 31i-MB MITSUBISHI M80 / M800			
Pneumatic pressure requirement	kg/cm²	6			
Power requirement	kVA	25			
Coolant tank capacity	liter	330	330	350	370
Machine weight	kg	6,500	6,800	7,300	8,000

		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 top	mm	200 ~ 900	200 ~ 1,000		200 ~ 1,200	
WORK 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	24				
Max. tool length	mm	250				
Max. tool weight	kg	15				
Max. tool diameter / adj. pocket empty	mm	Ø 105 / Ø 210				
ACCURACY						
Positioning accuracy (ISO230-2)	mm	0.008				
Repeatability (ISO230-2)	mm	0.006				
GENERAL						
Control system		FANUC Oi-MF / 31i-MB MITSUBISHI M80 / M800				
Pneumatic pressure requirement	kg/cm²	6				
Power requirement	kVA	40				
Coolant tank capacity	liter	770	570	620	950	1,040
Machine weight	kg	13,000	15,000	17,000	20,000	22,000

Specifications are subject to change without notice.

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 augers
  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
- Coolant gun
- Alarm light
- Foundation bolt kit
- Automatic power-off system

Optional Accessories

- Arm type tool magazine
  30 / 40 / 60 T
- 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
- HEIDENHAIN , SIEMENS controller
- Chips flush coolant system
- Caterpillar type chip conveyor & bucket
- Scraper type chip conveyor
- Automatic tool length measurement
- Oil skimmer
- Data server