

BM-II
series

BM-II SERIES

Super Rigidity Vertical Machining Centers



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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 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-2100MAX

X-axis travel : 2,100 mm
Y-axis travel : 1,000 mm
Z-axis travel : 1,000 mm



BM-850II

X-axis travel : 850 mm
Y-axis travel : 650 mm
Z-axis travel : 610 mm



BM-1200II

X-axis travel : 1,200 mm
Y-axis travel : 650 mm
Z-axis travel : 610 mm

BM-II Series

850II / 1020II / 1200II / 1400II / 1500II
1400MAX / 1600MAX / 1800MAX / 2100MAX / 2500MAX

Super Rigidity Vertical Machining Centers

With the advanced R&D technology and strict quality control, BM-II series is specially made for heavy cutting which have rigid and stable machine structure for extensive application. BM-II series offers excellent performance with reasonable and affordable price.

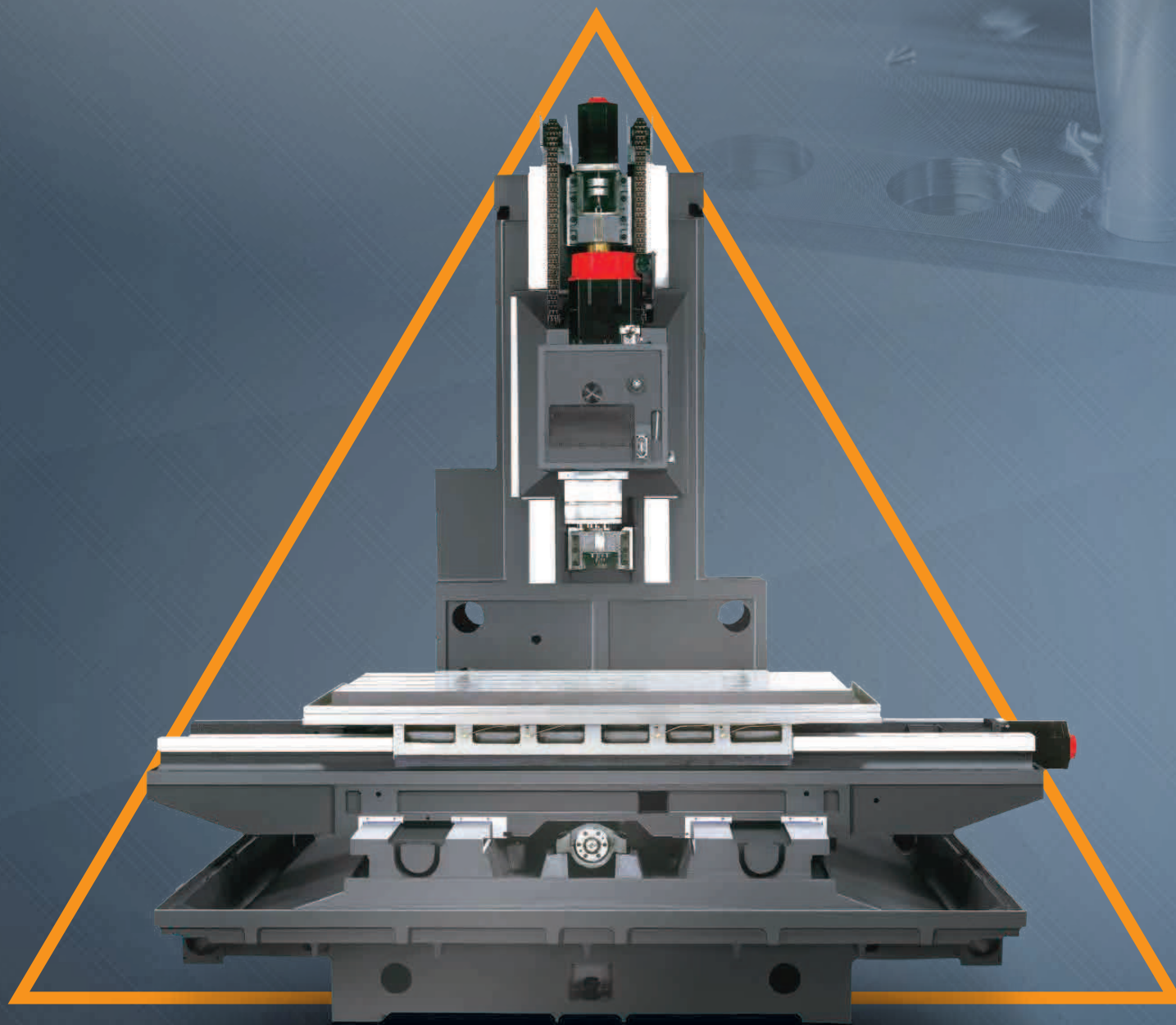
- Depends on the different machining requirement, we provide various modular spindle combinations to achieve optimal cutting performance.
- 3 axes are equipped with box ways which are precisely grinded and thoroughly heat treated, especially suitable for heavy cutting.
- Highly efficient 24T arm type magazine design provides fast and reliable tool change system.
- The wide range BM-II series, X-axis travel start from 850 mm to 2,500 mm ; Y-axis travel start from 650 mm to 1,000 mm ; Z-axis travel start from 610 mm to 1,000 mm to meet your various machining requirements.



BM-II Series

850II / 1020II / 1200II / 1400II / 1500II
1400MAX / 1600MAX / 1800MAX / 2100MAX / 2500MAX

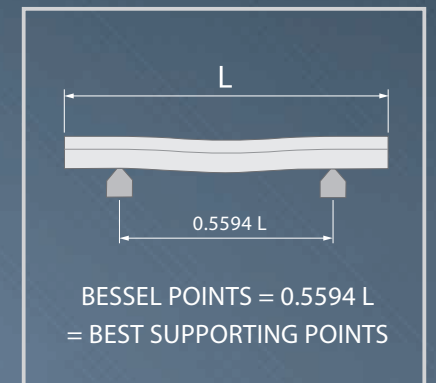
Super Rigidity Vertical Machining Centers



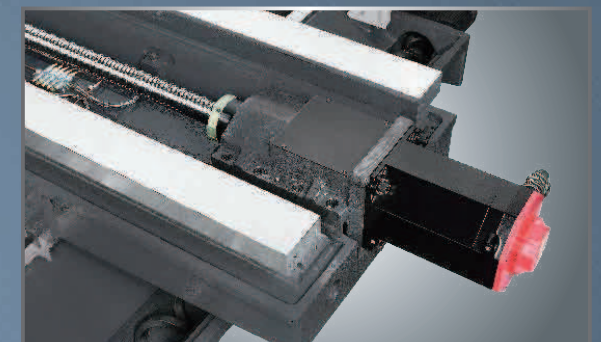
△ (Delta) Wide span column structure



- The Finite Element Analysis (FEM) 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.



Dual-nuts secured ball screw



Direct-drive servo motor



Integrated ball screw servo motor base



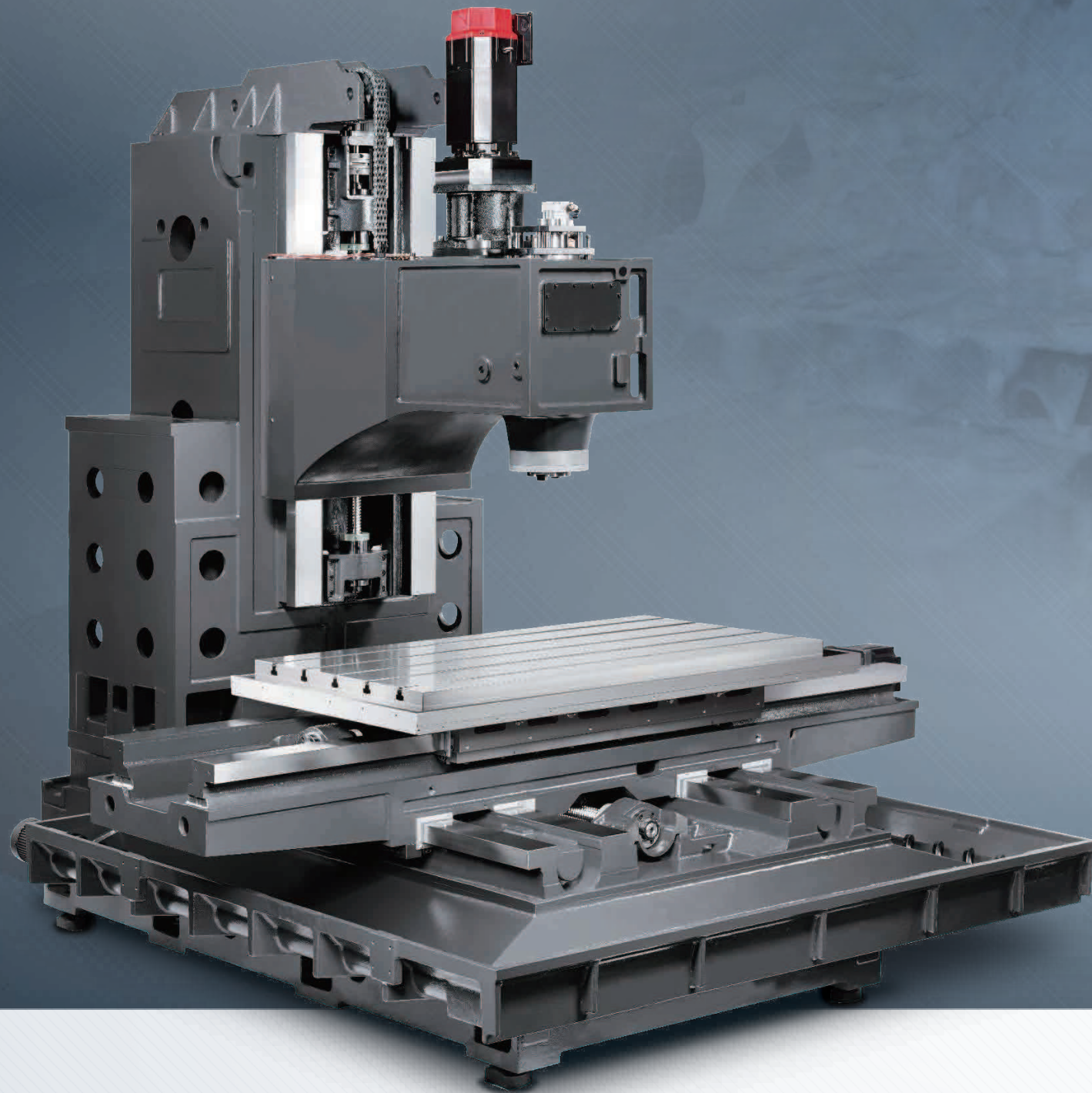
Integrated ball screw bearing base

- 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-II Series

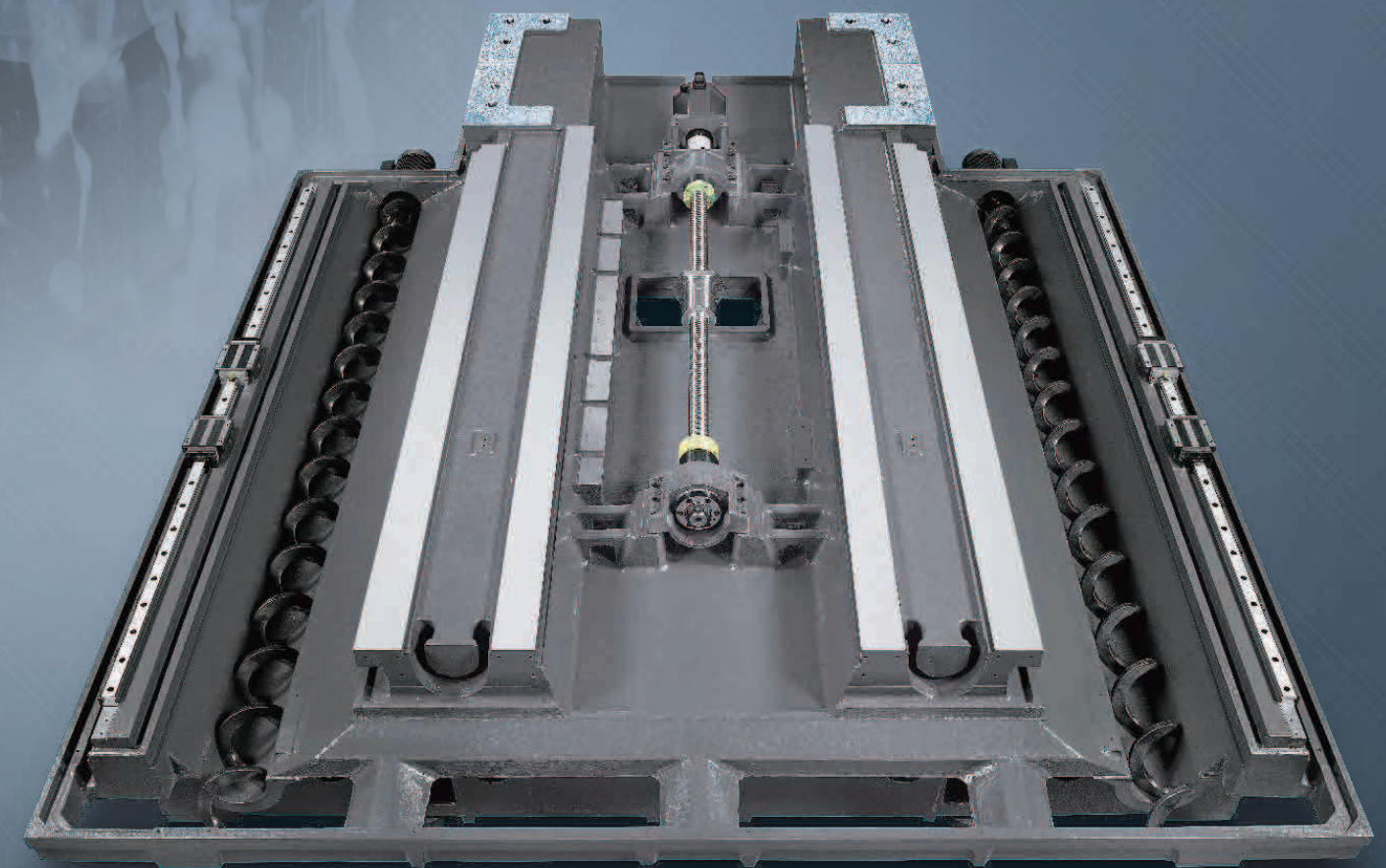
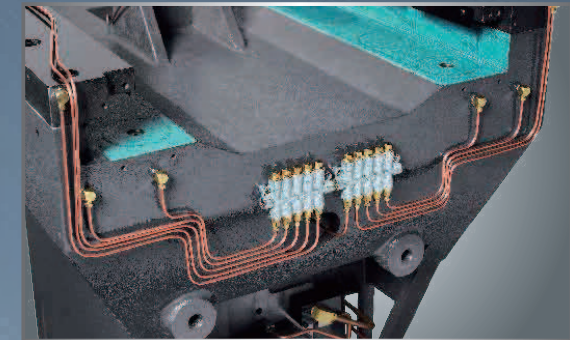
850II / 1020II / 1200II / 1400II / 1500II
1400MAX / 1600MAX / 1800MAX / 2100MAX / 2500MAX

Super Rigidity Vertical Machining Centers



BM-1400II super rigidity structure

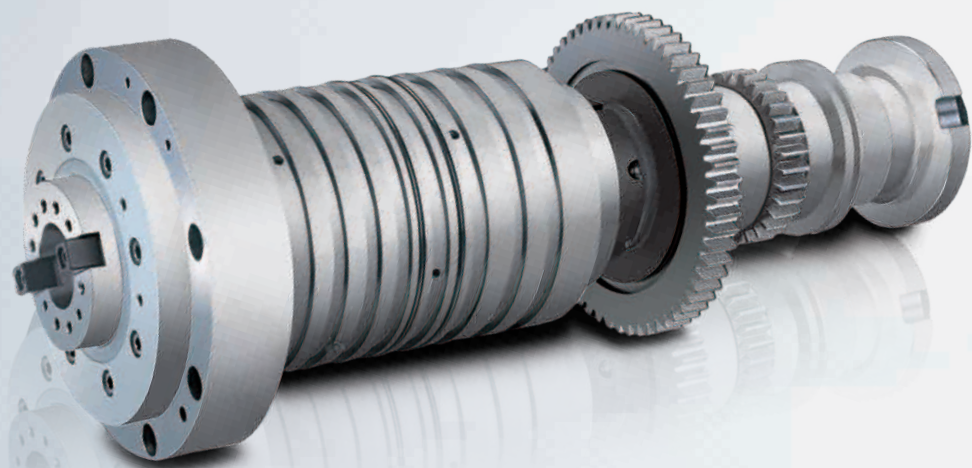
- Working table with double ribbed design to enhance the structure strength, while securing the table will not deform even load heavily for a long time.
- Copper piping auto lubrication system delivers metered amounts of lubrication to the slide ways, ball screws, and vital components with ensured reliability.



- BM-2100MAX / BM-2500MAX, 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 features 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 or affordable belt type spindles can all be equipped with different types of spindle motor to fulfill a variety of requirement.

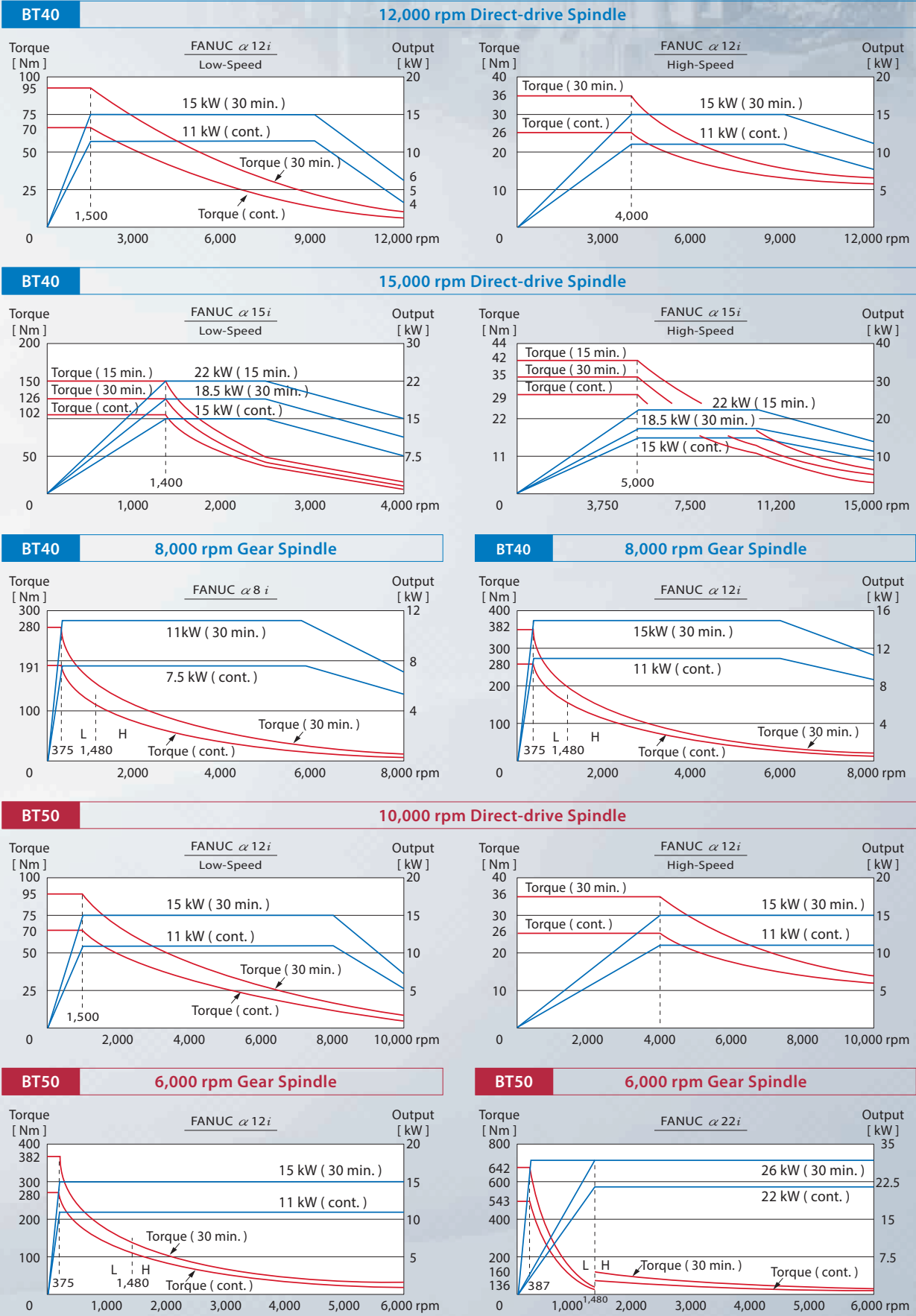
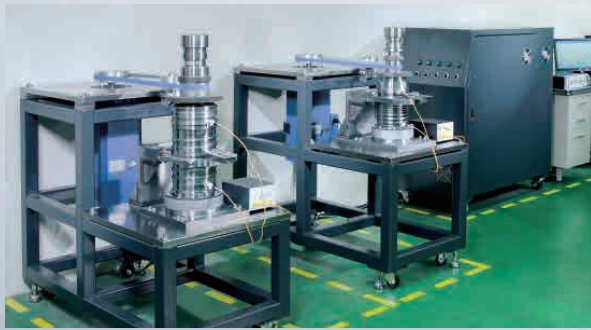


- Spindle taper

Models	BM-850II	BM-1020II	BM-1200II	BM-1400II	BM-1500II
Standard			BT40		
Optional			BT50		

Models	BM-1400MAX	BM-1600MAX	BM-1800MAX	BM-2100MAX	BM-2500MAX
Standard		BT50		BT50	
Optional		BT40			

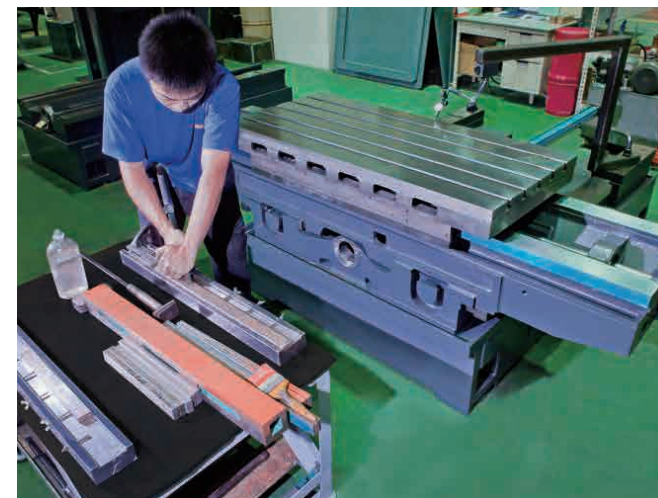
- Spindle, spindle motor and gear box ought to pass complete running test to ensure performance and lifetime.





Hand Scraped Craftmanship

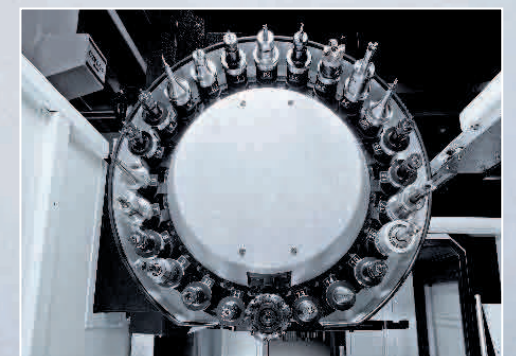
- All the sliding or fix surface of machine bed, column, saddle, headstock, and ball screw holder are hand scraped to provide excellent assembly precision and load distribution, ensuring long term accuracy.





High Speed ATC System

- BM-II 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.)



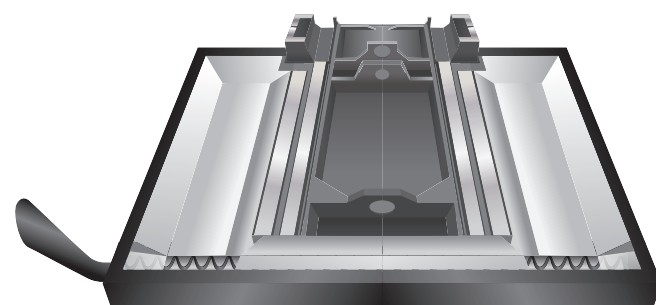
24T Disc type tool magazine



Chip Disposal System

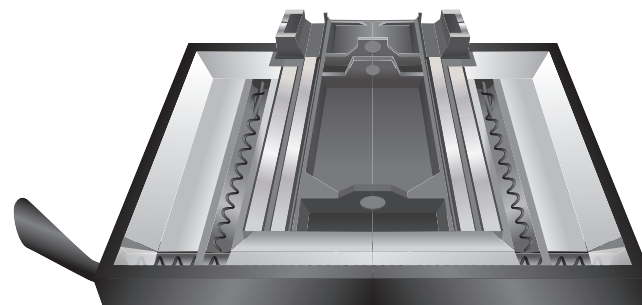
- All series are equipped with 1 / 3 / 5 screw type chip auger according to the machine size, thus to provide high chip remove efficiency.
- BM-850II ~ BM-1400II with Y-axis chip augers. (std.)

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



■ Screw chip auger x 1

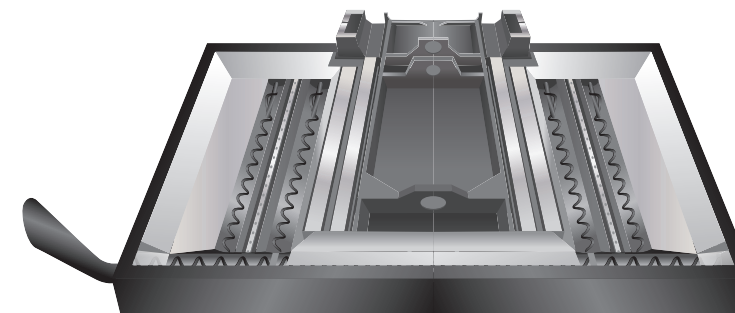
BM-850II



■ Screw chip augers x 3

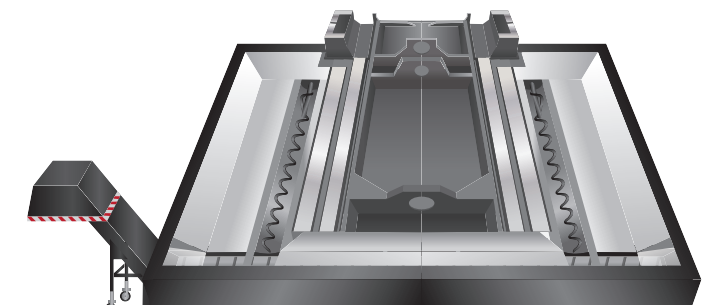
BM-1020II BM-1200II BM-1400II BM-1500II

BM-1400MAX BM-1600MAX BM-1800MAX



■ Screws chip augers x 5

BM-2100MAX BM-2500MAX



■ 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

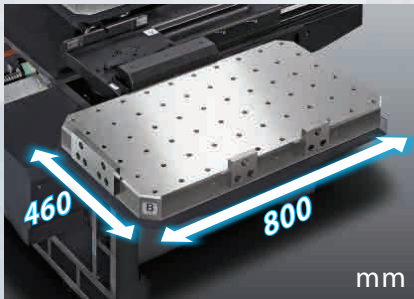


Table size

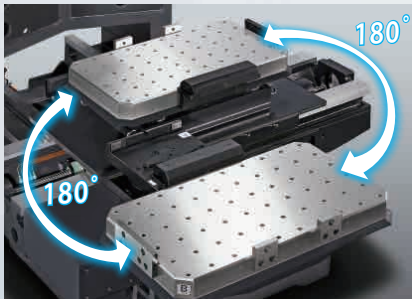


Table rotating range

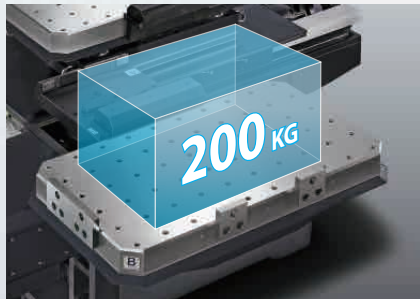
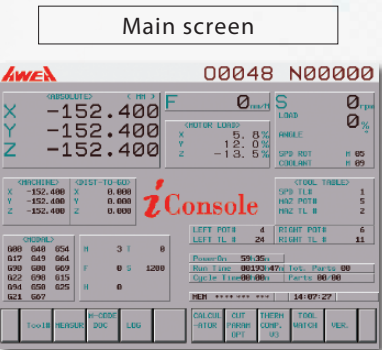


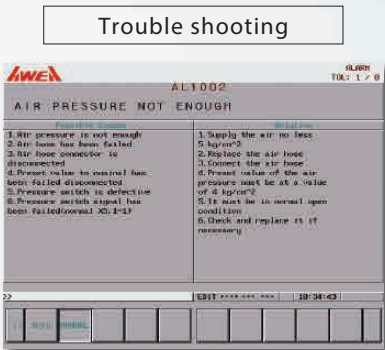
Table load capacity

i Console Optional

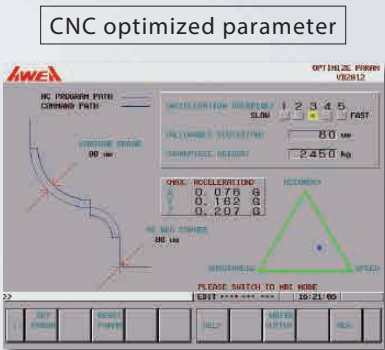
AWEA's self-developed *i Console* intelligent software enhancement system provides you with a user-friendly interface, real-time machine status information and diagnosis functions. It not only effectively reduces complex working processes but also enables intelligent machining abilities.



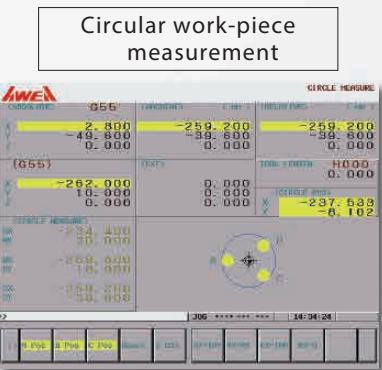
- Instant messaging system
 - Tool list
 - Work-piece measurement
 - M code
 - Calculator
- OPT.**
- CNC parameter optimization
 - Spindle thermal compensation
 - Adaptive feed control (AFC)



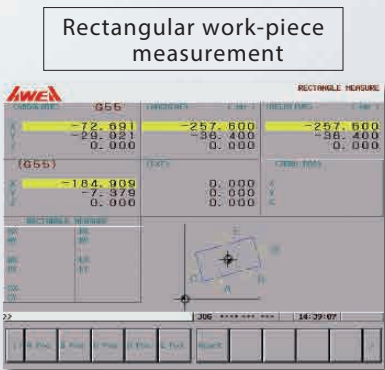
When an alarm appears, the program will display the cause for the alarm and a suitable troubleshooting procedure. Users can easily troubleshoot minor problems to avoid down time.



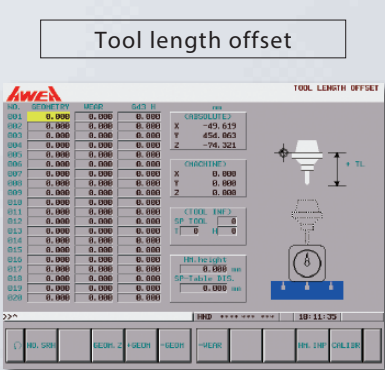
From rough cutting to fine machining, users can select different work modes, define the allowable tolerances and enter the weight of the work piece. Based on this input the *i Console* program will modify machining parameters to reduce machining time.



By measuring the A, B, C three points coordinates the circular work-piece's center point can be correctly calculated.



By measuring the A, B, C, D, and E five points coordinates, the rectangular work-piece's center point and slant angle can be calculated. Then the center point coordinate can be entered in the work-piece coordinate system.(G54 - G59)

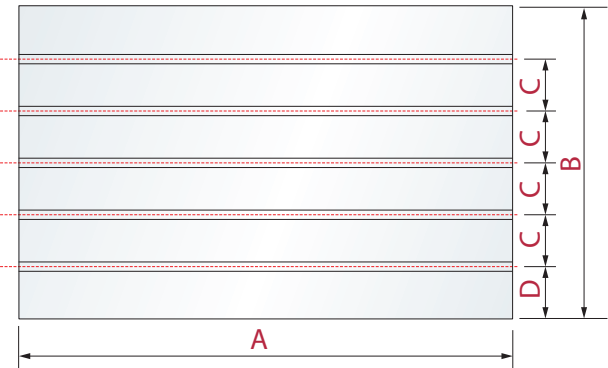


After manually measuring the tool length, the controller will automatically calculate the tool tip position and enter the data into the tool length offset table.

Dimensions

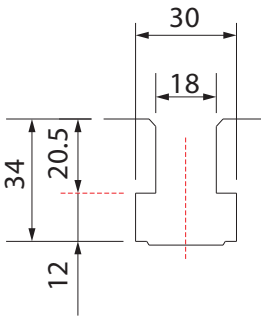
(Unit : mm)

Table Dimensions



Models	A	B	C	D	NO.*1
BM-850II	1,050	650	100	125	5
BM-1020II	1,120				
BM-1200II	1,300				
BM-1400II	1,500				
BM-1500II	1,600	700	100	50	7
BM-850APC	800	460	—	—	5

T-slot Dimensions

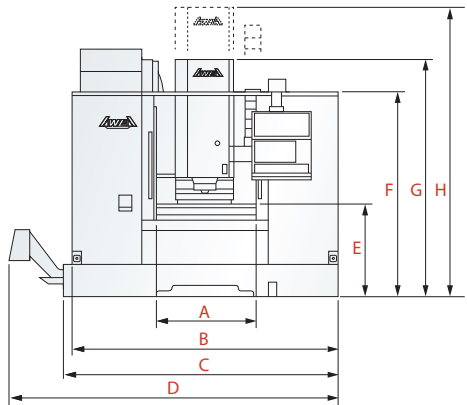
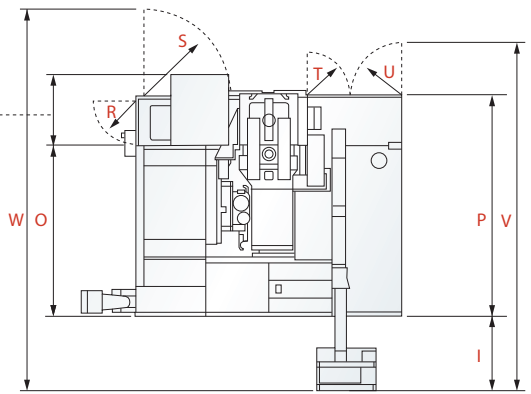
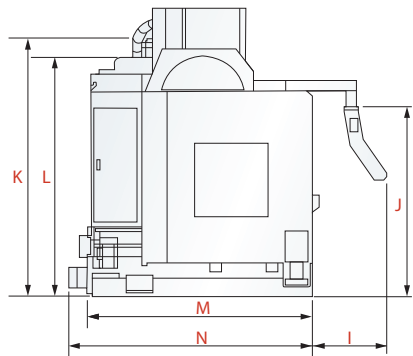


Models	A	B	C	D	NO.*1
BM-1400MAX	1,500	800	150	100	5
BM-1600MAX	1,700				
BM-1800MAX	2,000				
BM-2100MAX	2,300	1,000	50	7	7
BM-2500MAX	2,700				

*1 : No. = Number of T-slots

Machine Dimensions

BM 850II ~ 1400II	BT40 40T : 679 mm BT40 60T : 1,362 mm
BM 1400MAX	BT50 30T : 980 mm BT50 40T : 1,620 mm
BM 1600MAX / 1800MAX	BT50 30T : 980 mm BT50 40T : 1,620 mm
BM 2100MAX / 2500MAX	BT50 40T : 1,400 mm BT50 50T : 1,870 mm



(Unit : mm)

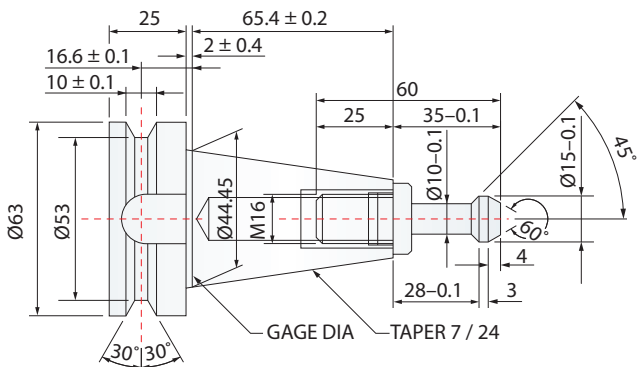
Models	A	B	C	D	E	F	G	H	I	J	K
BM-850II	1,040	2,600	2,059	3,376	900	2,000	2,532	3,142	656	1,730	2,492
BM-1020II	1,220	3,000	3,000	3,547							
BM-1200II	1,410	3,380	3,380	3,897							
BM-1400II	1,560	3,850	3,850	4,367							
BM-1500II	1,640	3,850	3,850	4,368	900	2,000	2,532	3,142	780	1,730	2,492
BM-1400MAX	1,570	3,950	3,950	4,308	960	2,180	2,621	3,321	735	1,830	2,836
BM-1600MAX	1,785	4,400	4,400	5,089	1,050	2,330	2,645	3,445	875	1,860	3,296
BM-1800MAX	2,085	4,880	4,880	5,200							
BM-2100MAX	2,385	5,200	5,200	5,751	1,100	2,600	2,865	3,865	870	1,930	3,501
BM-2500MAX	2,720	6,500	6,500	7,041							
BM-850APC	900	2,600	2,800	—	1,050	2,150	2,465	3,065	865	1,700	2,734

Models	L	M	N	O	P	R	S	T	U	V	W
BM-850II	2,389	2,234	2,414	1,726	2,231	411	775	436	474	3,361	3,662
BM-1020II											
BM-1200II											
BM-1400II											
BM-1500II	2,389	2,475	2,655	1,970	2,471	392	741	436	474	3,725	3,983
BM-1400MAX	2,749	2,955	3,135	2,245	2,900	—	—	600	600	4,235	—
BM-1600MAX	3,205	2,685	2,865	2,175	2,875					4,127	
BM-1800MAX				2,230	2,930					4,250	
BM-2100MAX	3,405	3,380	3,560	2,660	3,505					4,785	
BM-2500MAX	2,438	3,065	—	2,450	2,710	—	—	560	560	4,135	3,063
BM-850APC											

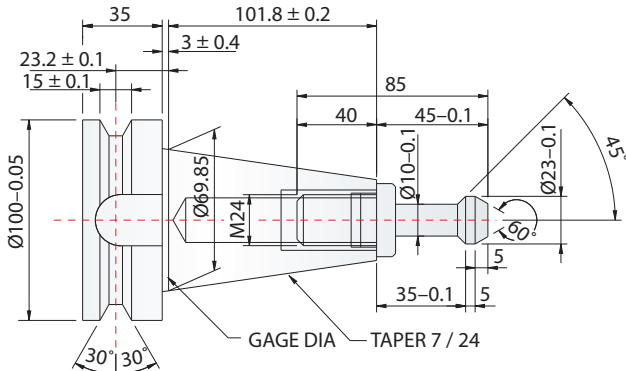
Specifications are subject to change without notice.

Tool Shank Dimensions

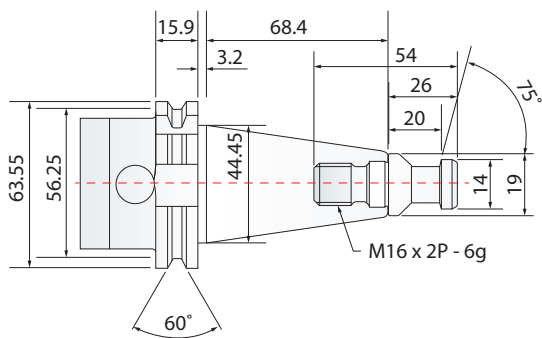
BT40



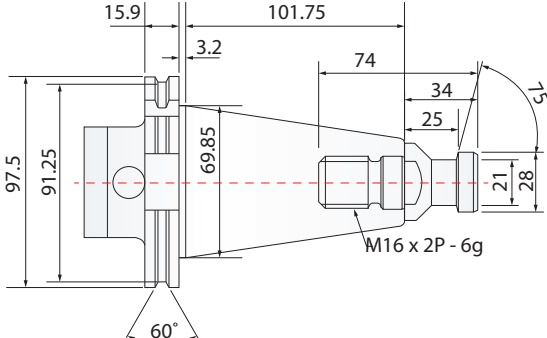
BT50



DIN40



DIN50



BM-Ⅱ Series		BM-850Ⅱ	BM-1020Ⅱ	BM-1200Ⅱ	BM-1400Ⅱ	BM-1500Ⅱ
SPECIFICATIONS						
X-axis travel	mm	850	1,020	1,200	1,400	1,500
Y-axis travel	mm	650				740
Z-axis travel	mm	610				
Distance from spindle center to column	mm	710				780
Distance from spindle nose to table top	mm	125 ~ 735				
WORK TABLE						
Table size (X direction)	mm	1,050	1,120	1,300	1,500	1,600
Table size (Y direction)	mm	650	650	650	650	700
Table load capacity	kg	850	1,000	1,200	1,400	1,450
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.	30				30
Z-axis rapids feed rate	m/min.	24				24
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 PLUS				
Pneumatic pressure requirement	kg/cm²	6				
Power requirement	kVA	25				
Coolant tank capacity	liter	360	370	380	390	500
Machine weight	kg	6,700	6,900	7,500	8,100	8,700

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
- Y-axis chip augers

BM-850II ~ 1460II

■ Two sides chip augers

BM-1400MAX ~ 2500MAX

■ Roof enclosed splash guard

■ Rigid tapping
- Lubricating oil recovering system

■ Heat exchanger for electrical cabinet

■ RS-232 interface

■ Tool box

■ Oil skimmer

■ Air gun
- Coolant gun

■ Alarm light

■ Foundation bolt kit

■ Automatic power-off system

■ CE version

BM-MAX Series		BM-1400MAX	BM-1600MAX	BM-1800MAX	BM-2100MAX	BM-2500MAX
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	Gear Spindle 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 PLUS				
Pneumatic pressure requirement	kg/cm ²	6				
Power requirement	kVA	35		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.

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 12,000 rpm / 15,000 rpm

BT50 10,000 rpm
- Fully enclosed splash guard

■ Coolant through spindle (CTS)

■ Spindle thermal compensation

■ CNC rotary table

■ Chip wash down

■ Chip conveyor
- X / Y / Z axes linear scale

■ Air conditioner for electric cabinet

■ Automatic tool length measurement

■ Automatic work piece measurement

■ MITSUBISHI / HEIDENHAIN control system

■ Transformer