AF-II series

AF-II SERIES

High Performance Vertical Machining Center

THE ULTIMATE MACHINING POWER

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ISO 9001 ISO 14001 CE

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THE ULTIMATE MACHINING POWER

AWEA MECHANTRONIC CO.,LTD.

HIGH PERFORMANCE
VERTICAL MACHINING CENTER

Introducing AWEA with mature manufacturing abilities and advanced technology skills, the AF-II series. They are based on high rigidity structure and three axes high precision linear guide way design with fast arm type ATC and chip conveying system. It is to provide you with fast, strong, stable machining performance. AF-II series are broadly used in high precision machine parts manufacturers, which can easily meet your demands of today and tomorrow.

AF-1060II

X-axis travel : 1,060 mm
Y-axis travel : 650 mm
Z-axis travel : 610 mm

AF-860II

X-axis travel : 860 mm
Y-axis travel : 650 mm
Z-axis travel : 610 mm

AF-1600MAX

X-axis travel : 1,600 mm
Y-axis travel : 800 mm
Z-axis travel : 800 mm

AF-Ⅱ Series

650Ⅱ / 800Ⅱ / 860Ⅱ / 1000 / 1060Ⅱ / 1250Ⅱ / 1400Ⅱ
1400MAX / 1600MAX / 1800MAX

High Performance Vertical Machining Center

Based on AWEA's innovative technology, the AF-Ⅱ series is specialized on high precision parts and mold machining industry. It can fully present high precision and high efficiency machining ability with very reasonable cost.

- The modular spindle design provides cutting flexibility for various machining needs.

SOLUTION FOR PRECISION PARTS

Spindle	Taper	Speed Range
Belt-drive Spindle	BT40	10,000 rpm

SOLUTION FOR PRECISION MOLD

Spindle	Taper	Speed Range
Direct-drive Spindle	BT40 / BT50	10 ,000 ~ 15,000 rpm

SOLUTION FOR HEAVY CUTTING*1

Spindle	Taper	Speed Range
Gear Spindle	BT40 / BT50	8,000 / 6,000 rpm

*1 Please contact with your sales representative for applicable models.

AF-Ⅱ Series

650Ⅱ / 800Ⅱ / 860Ⅱ / 1000 / 1060Ⅱ / 1250Ⅱ / 1400Ⅱ
1400MAX / 1600MAX / 1800MAX

High Performance Vertical Machining Center

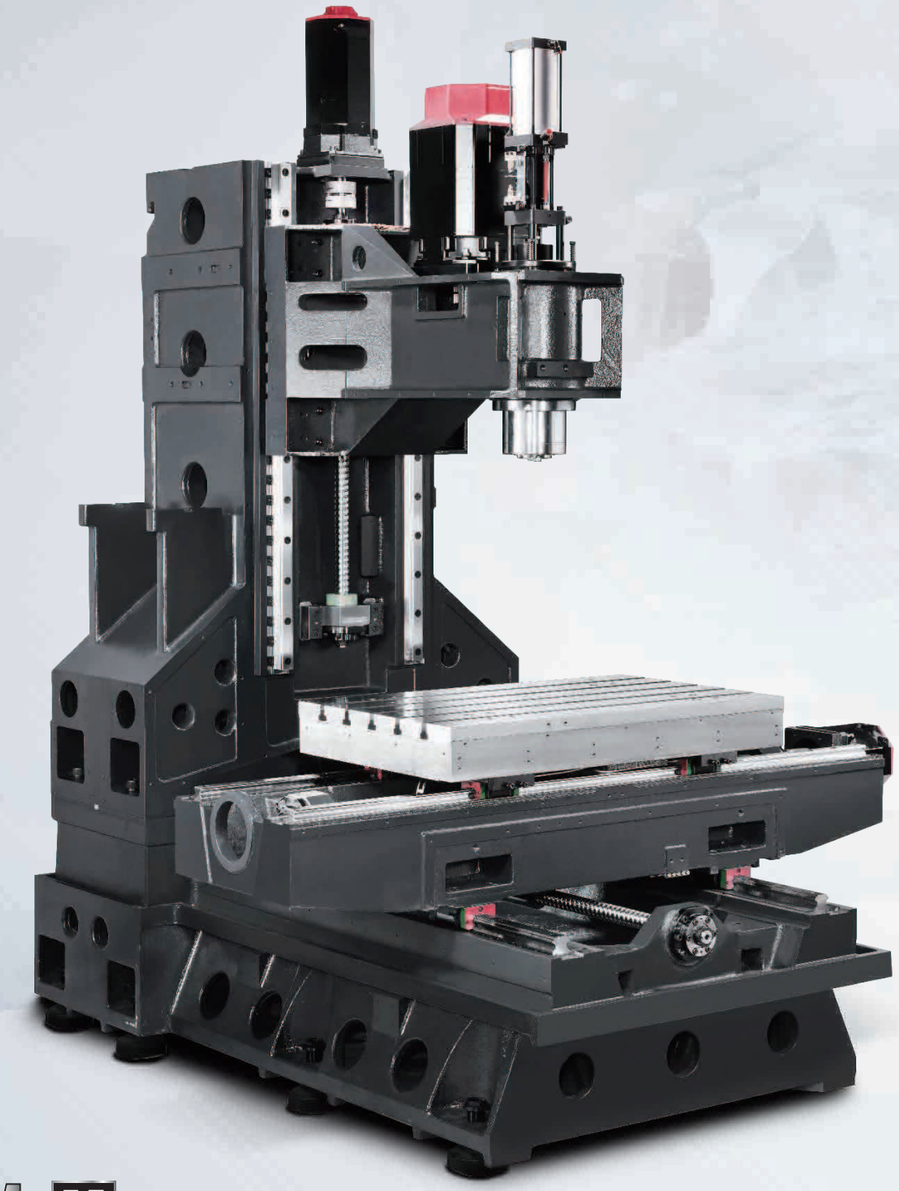
Combining strong machining capability and superior quality, the AF-Ⅱ series fulfills various machining requirements along with stable accuracy and long-lasting durability.

- X-axis travel 650 mm ~ 1,800 mm, Y / Z axes travel 510 mm ~ 800 mm. The complete product series can fulfill major working needs.
- High precision linear guide way design is used on three axes to provide the optimum control and efficient movement. Also, base on the actual machining application, customers can either select roller type or ball type linear guide way.
- Highly efficiency 24T arm type magazine design provides fast and reliable tool change system.
- Rotary operation panel and large width of protection door provide convenient operation display and spacious space for loading and unloading parts.
- Independent coolant tank system provide ease of maintenance.
- High pressure coolant pump efficiently increase cooling capability.

AF-II Series

650II / 800II / 860II / 1000 / 1060II / 1250II / 1400II
1400MAX / 1600MAX / 1800MAX

High Performance Vertical Machining Center

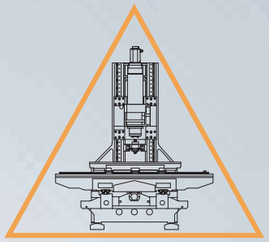


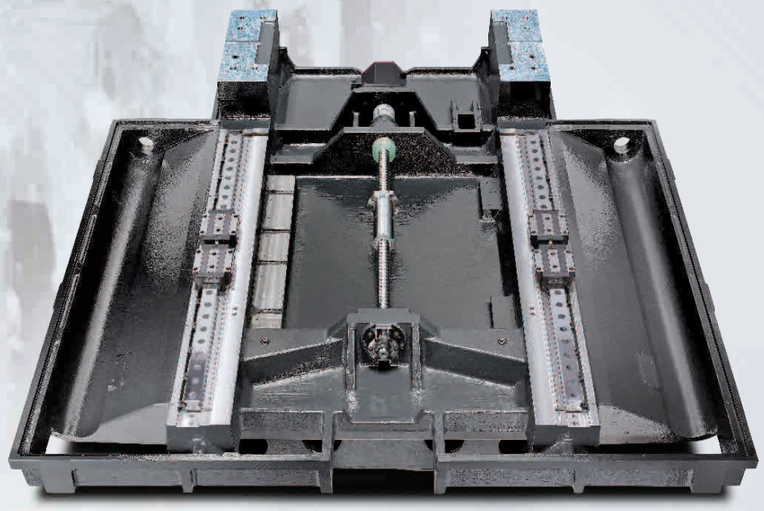
FEM Finite element method

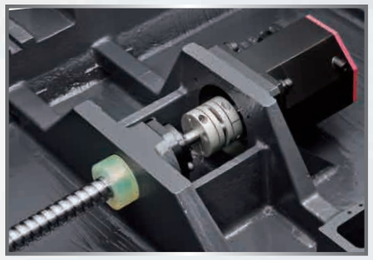
(Casting structure of AF-860II w/ belt-drive spindle model shown)

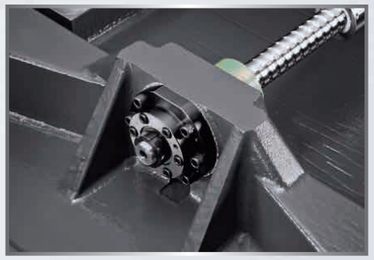
High Rigidity Structure

- The Finite Element Analysis (FEM) provides optimal machine design and light-weight structure advantage while ensuring high rigidity of machine.
- The MEEHANITE casting bed and Y-shaped column design provide solid support to ensure ultimate dynamic accuracy.
- △ (Delta) Wide span column structure provides optimal machining rigidity. The headstock retains stability and accuracy even under high speed traveling.
- The contact surface of the column and bed are all hand scraped to ensure precision assembly, strong structure and loading balance.







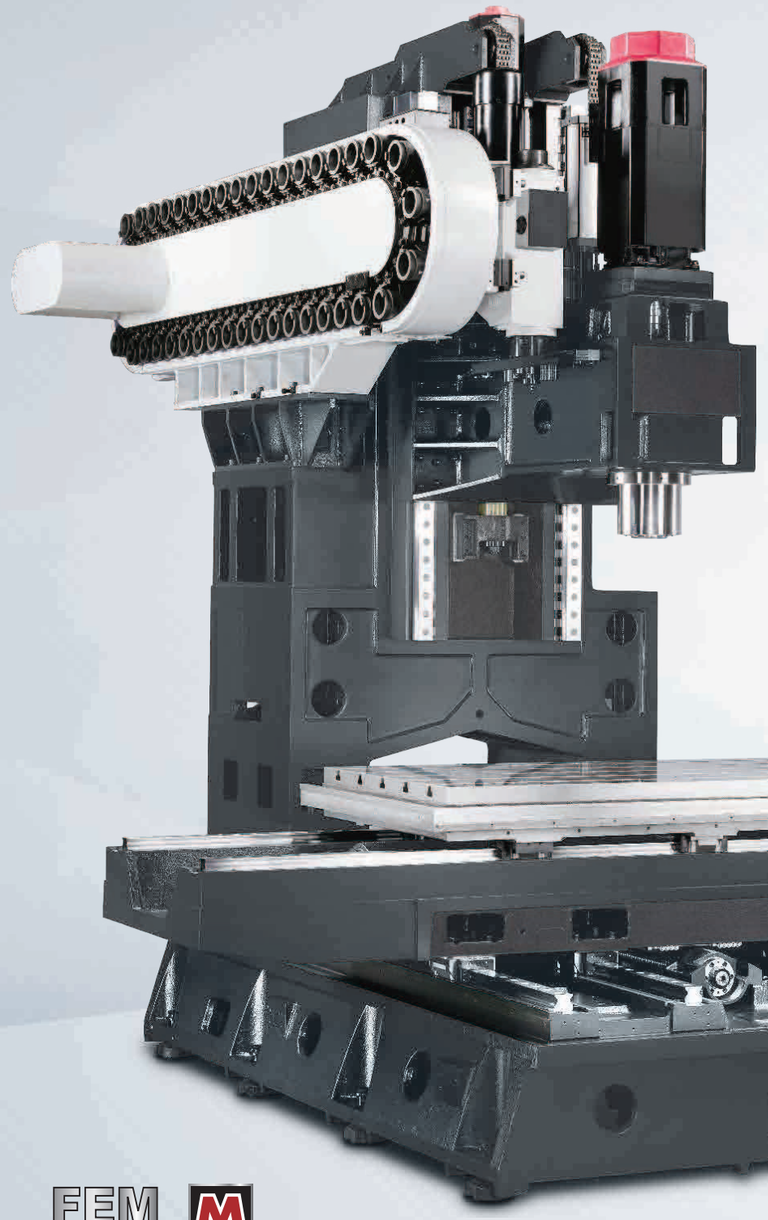


- One-piece ball screw driving motor support and bearing support enable cutting force to spread evenly into casting body, so it efficiently ehances axial system of entire rigidity and prevents deformation of ball screw.
- Contact surfaces between nut and support are hand scraped to ensure perfect contact.

AF-II Series

650II / 800II / 860II / 1000 / 1060II / 1250II / 1400II
1400MAX / 1600MAX / 1800MAX

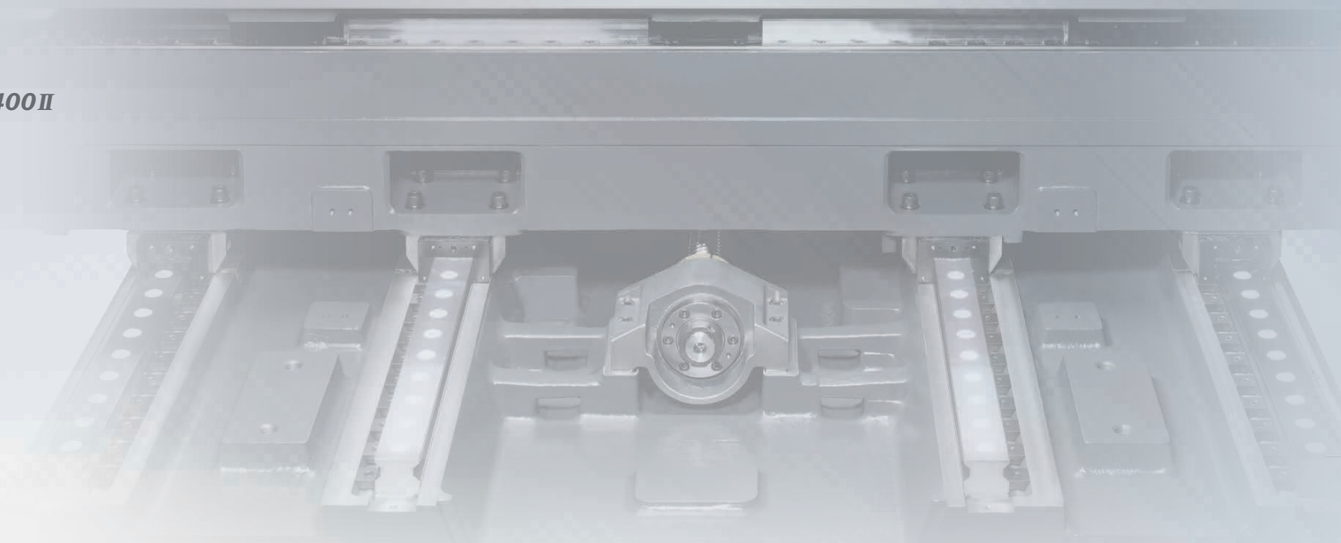
High Performance Vertical Machining Center



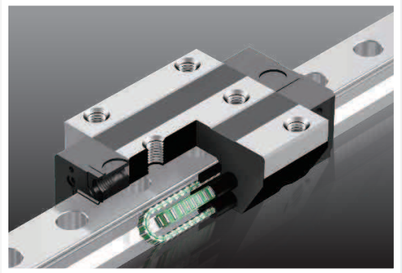
FEM Finite element method

MEEHANITE

(Casting structure of AF-1600MAX w/ direct-drive spindle model shown)

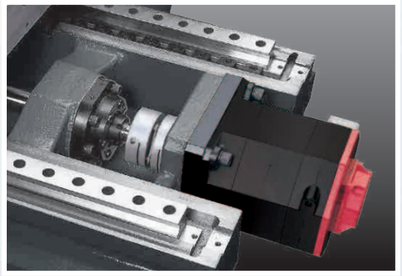


- X-axis travel 1,400 mm ~ 1,800 mm model, the bed uses four linear guide ways design, and size of the bed will extend proportionally according to travel length in order to solve the overhang problem of working table and ensure the optimum support rigidity.



- High rigidity roller type linear guide way which combines heavy cutting ability from ground box way and fast movement with low abrasion ability from linear guide way completely improves rigidity and control of machine.

- High precision dual-nuts ball screw provides excellent heavy cutting rigidity while ensuring machining accuracy and extend durability of ball screw.

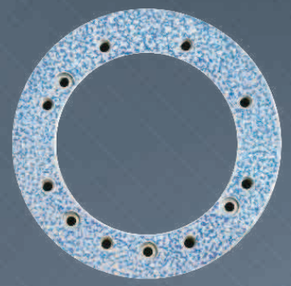


- Three axial system are adopted with FANUC αi absolute AC servo motor direct drive to provide great thrust and fast acceleration / deceleration movement. Plus, it efficiently decreases motor load and reduces generation of heat while maintaining the ultimate performance and accuracy.

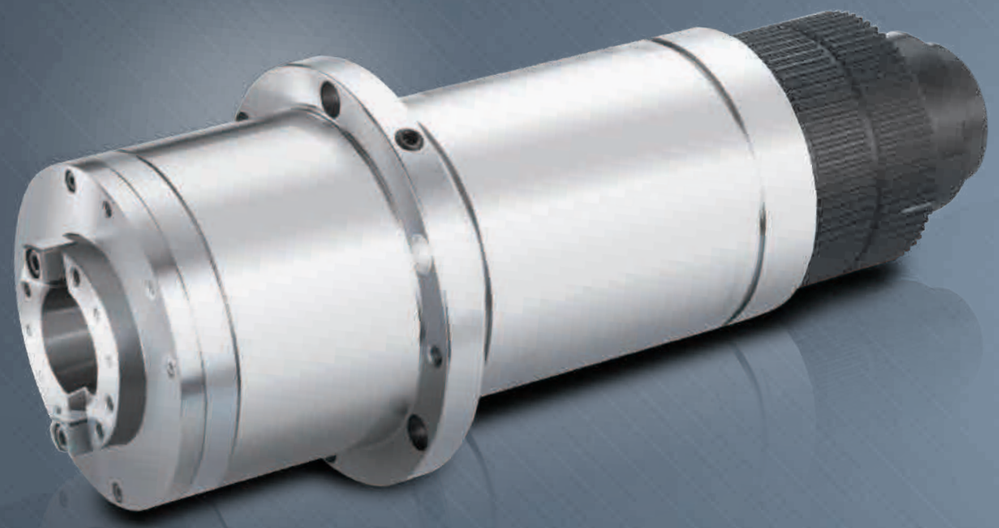
High Performance Spindle System

High Efficiency Belt-drive Spindle

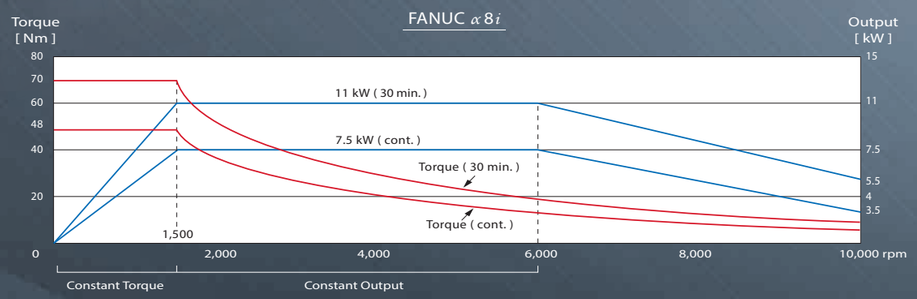
- The high efficiency belt-drive spindle provides 10,000 rpm spindle speed which depends on machining requirements.
- The spindle is equipped with FANUC $\alpha 8i$ motor which provides maximum output of 11 kW.
- All series are standard with spindle oil cooler system to prevent thermal expansion effects and thermal deformation.



- The contact surfaces between headstock and spindle are all precisely hand scraped to ensure optimal performance and precision.

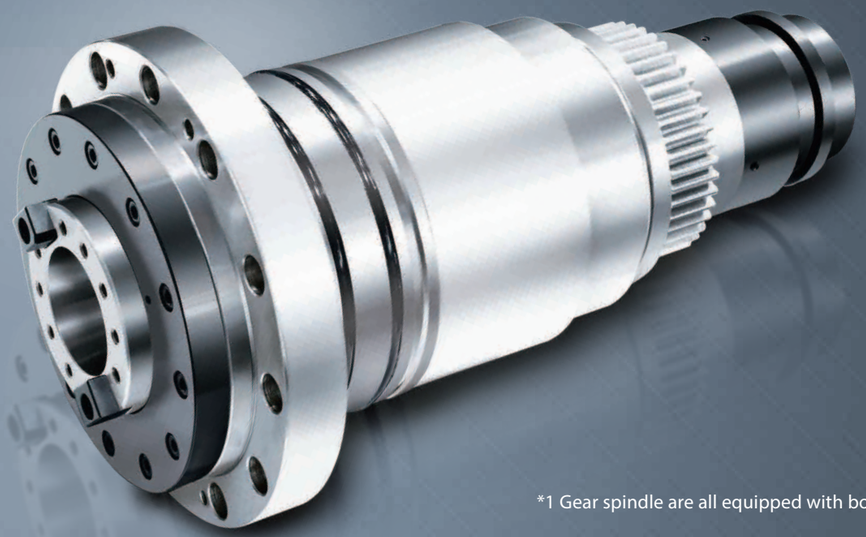


BT40 10,000 rpm Belt-drive Spindle



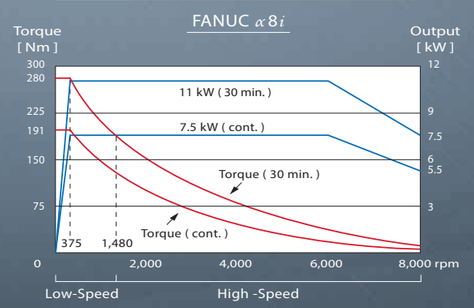
High Torque Gear Spindle

- 2-speed super heavy-duty gear box.*1
- Floating type hydraulic tool release device eliminates pressure on the spindle bearing when releasing a tool.
- 8,000 rpm high torque spindle (BT40) is equipped with powerful 11 kW motor delivers maximum torque output of 280 Nm at 375 rpm to meet various working conditions.
- 6,000 rpm high torque spindle (BT50) is equipped with powerful 15 kW motor delivers maximum torque output of 382 Nm at 375 rpm.



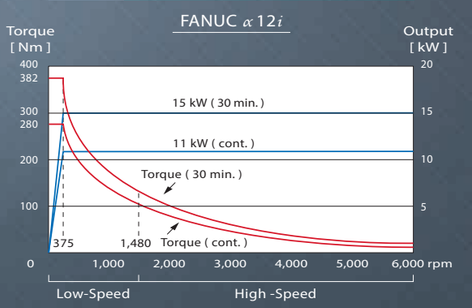
*1 Gear spindle are all equipped with box way Z-axis.

BT40 8,000 rpm Gear Spindle



▶ FANUC $\alpha 12i$ / $\alpha 15i$ motor are available.

BT50 6,000 rpm Gear Spindle



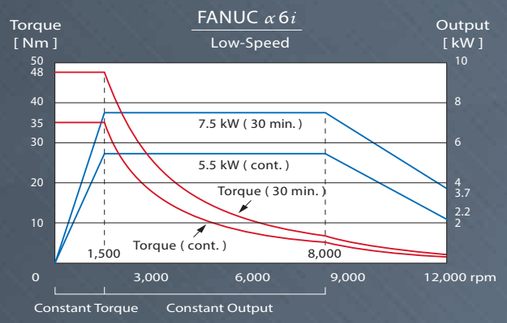
▶ FANUC $\alpha 15i$ / $\alpha 18i$ motor are available.

High Performance Spindle System

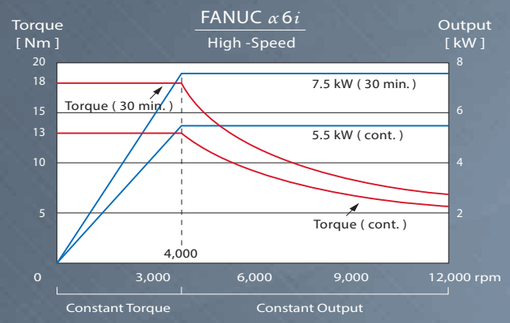
High Speed, High Power Direct-drive Spindle

- Direct-drive spindle efficiently separates the heat generated from the motor, which reduces deformation, therefore increasing machining accuracy.
- Floating type hydraulic tool release device eliminates pressure on the spindle bearing when releasing a tool.
- Several options of spindle heads and speed are available to fulfill various high speed machining requirments.

BT40 12,000 rpm Direct-drive Spindle

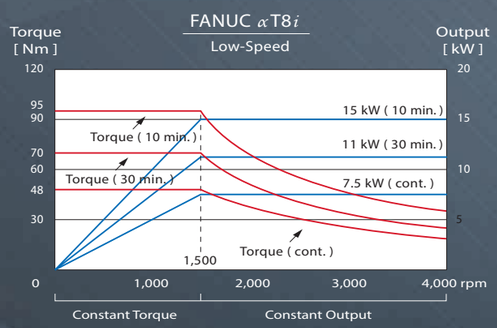


BT40 12,000 rpm Direct-drive Spindle

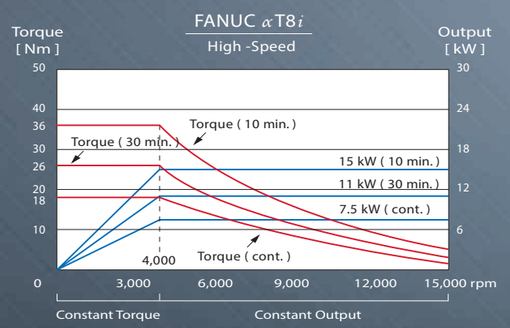


▶ FANUC α12i / α15i motor are available.

BT40 15,000 rpm Direct-drive Spindle



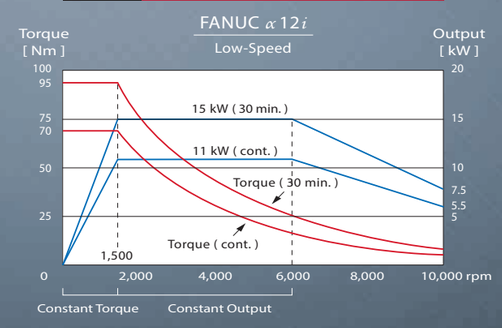
BT40 15,000 rpm Direct-drive Spindle



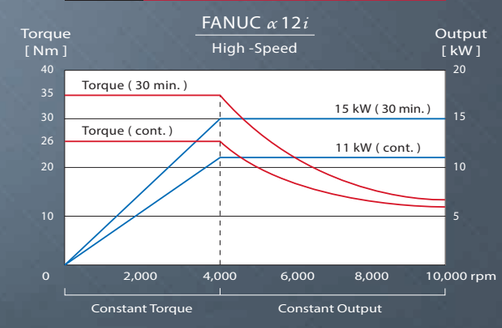
▶ FANUC α15i motor is also available.

■ Direct-drive spindle provides ability of precise contour machining to fulfill requirements of mold industry and high accuracy requirement components.

BT50 10,000 rpm Direct-drive Spindle



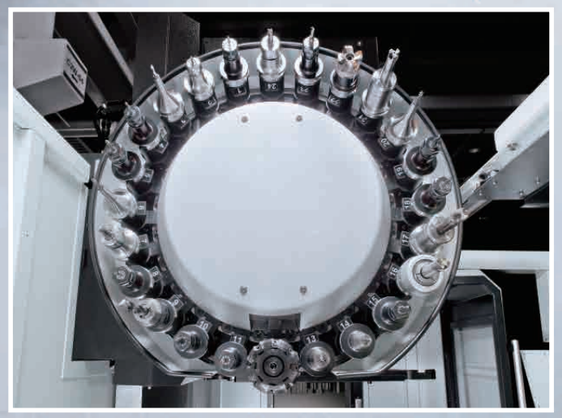
BT50 10,000 rpm Direct-drive Spindle



▶ FANUC α15i motor is also available.

High Speed ATC System

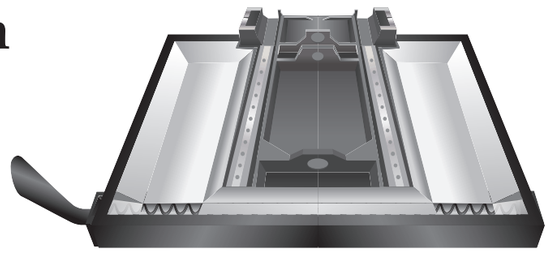
- All series are standard with 24T arm type ATC system which can easily fulfill various types of processing needs.
- Standard shortcut tool change function can shorten tool change time and increase working efficiency.
- The tool magazine is supported by the column base, which increases stability and lowers the tool change vibration, while ensuring its precision (AF-1250Ⅱ ~ AF-1800MAX).



24T Disc type tool magazine

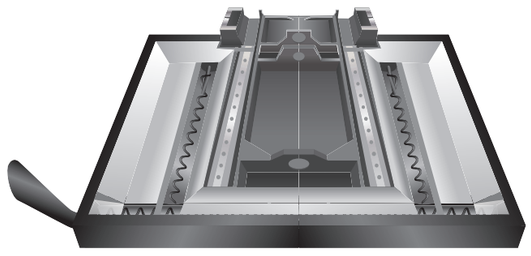
Chip Disposal System

- All series are equipped with chip auger. Single or triple chip augers are adopted according to different models.
- The optional high pressure chips flush coolant system is also available.



■ Chip auger x 1

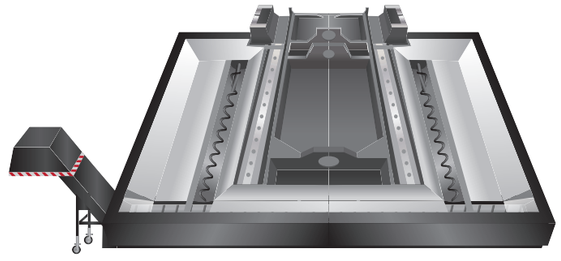
AF-650II AF-800II AF-860II



■ Chip augers x 3

AF-1000 AF-1060II AF-1250II AF-1400II

AF-1400MAX AF-1600MAX AF-1800MAX

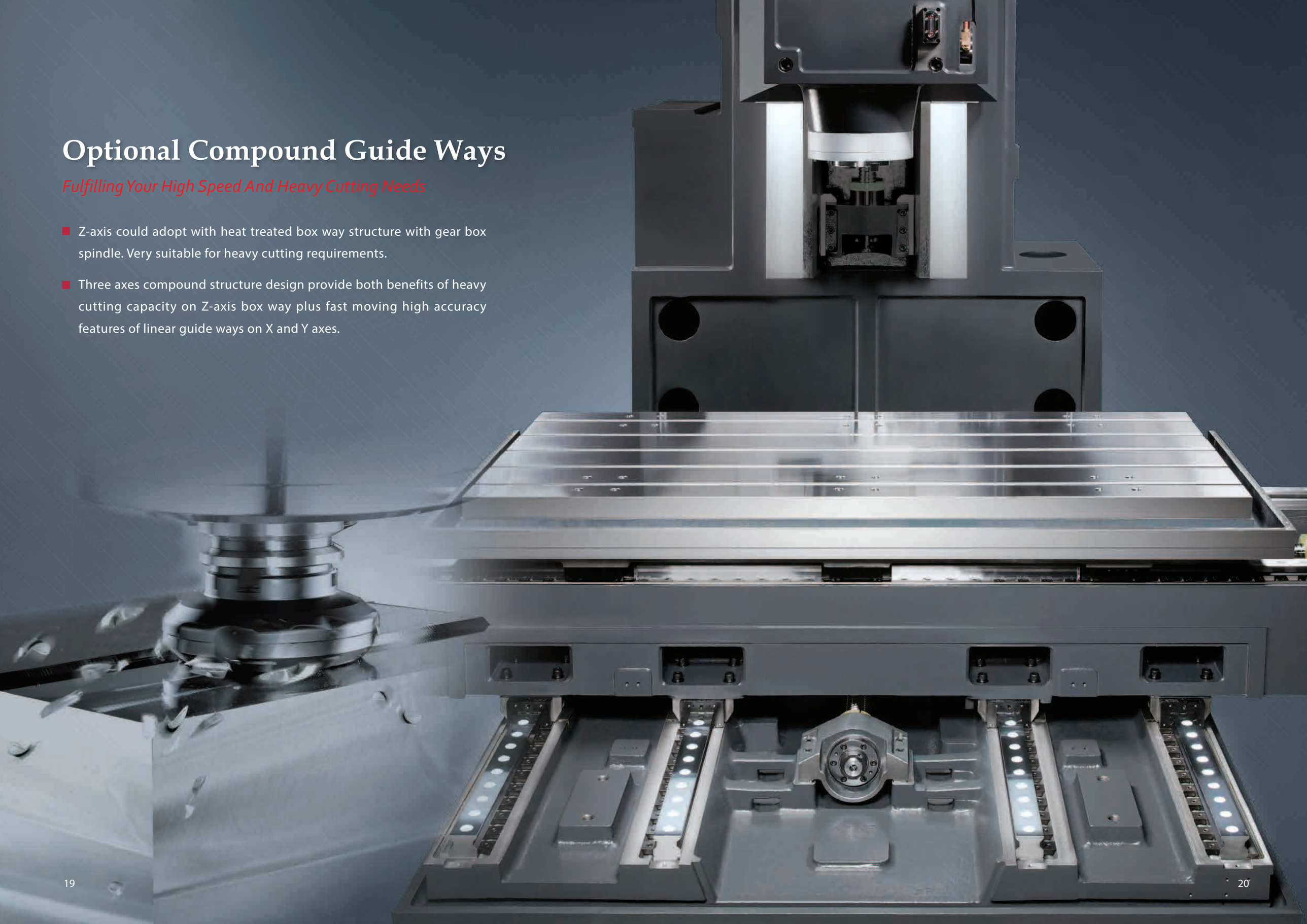


■ Chain Type Chip Conveyor (Opt.)

Optional Compound Guide Ways

Fulfilling Your High Speed And Heavy Cutting Needs

- Z-axis could adopt with heat treated box way structure with gear box spindle. Very suitable for heavy cutting requirements.
- Three axes compound structure design provide both benefits of heavy cutting capacity on Z-axis box way plus fast moving high accuracy features of linear guide ways on X and Y axes.



Optional APC System

Fulfilling Your Mass Production Needs

The high-quality, world famous Japanese auto parts machining plants, is recently installed with AWEA AF-860APC for processing of automotive intake manifold, gear box shell and other key components. Because of the AWEA machine high quality and high reliability performance, the installation quantity is continued to grow up.

0.02 mm
Repeatability between two tables

7 second
Auto pallet changing time

Table size

Table rotating range

Table load capacity

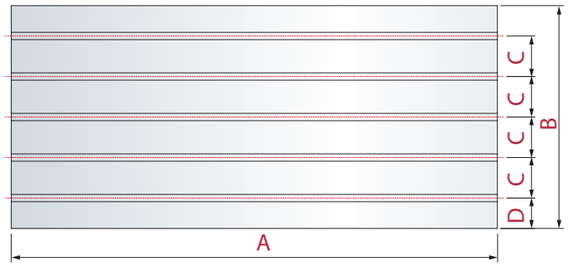
Model	AF860-APC
X / Y / Z axes travel	860 / 600 / 600 mm
Table size	460 x 800 mm
Table rotating range	180°
Repeatability for each table	0.01 mm
Repeatability between two tables	0.02 mm
Table load capacity	200 kg x 2

Model	AF860-APC
Spindle taper	BT40
Spindle motor (cont. / 30 min.)	7.5 / 11 kW
Spindle speed	8,000 rpm
X / Y / Z axes rapid feed rate	48 / 48 / 32 m/min.
Cutting feed rate	10 m/min.
Tool magazine capacity	24 T

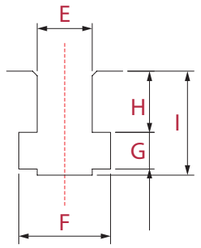
Dimensions

(Unit : mm)

Table Dimensions



T-slot Dimensions

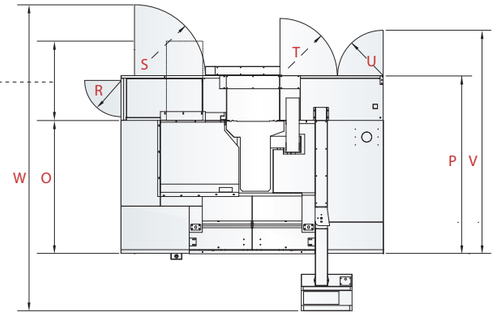


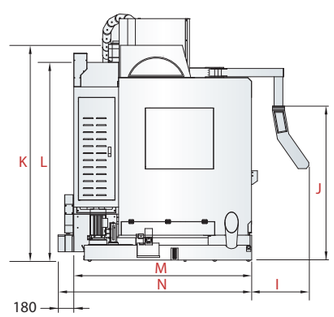
Models	A	B	C	D	E	F	G	H	I	NO.*1
AF-650II	750	510	100	105	14	24	10	15	26.5	4
AF-800II	860	510				24	10	15	26.5	4
AF-860II	1,000	650		125	18	30	12	20.5	34	5
AF-1000	1,200	550		75	18	30	12	20.5	34	5
AF-1060II	1,200	650		125	18	30	12	20.5	34	5
AF-1250II	1,350	650			18	30	12	20.5	34	5
AF-1400II	1,500	650			18	30	12	20.5	34	5
AF-1400MAX	1,500	800	150	100	18	30	12	20.5	34	5
AF-1600MAX	1,700	800			18	30	12	20.5	34	5
AF-1800MAX	1,900	800			18	30	12	20.5	34	5

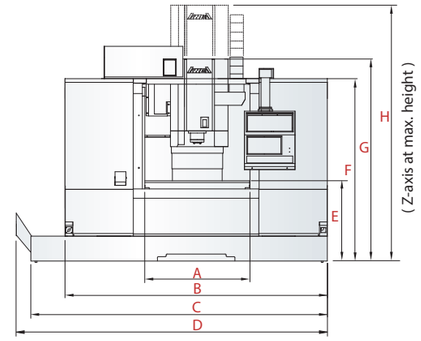
*1 : No. = Number of T-slots

Machine Dimensions

AF-1000	BT40 - 32 / 40T : 865 mm
AF-860II / 1060II AF-1250II / 1400II	BT40 - 40T : 679 mm BT40 - 60T : 1,362 mm
AF-1400MAX ~ 1800MAX	BT50 - 30T : 985 mm BT50 - 40T : 1,620 mm







(Unit : mm)

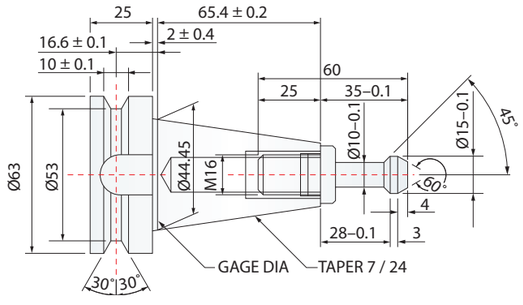
Models	A	B	C	D	E	F	G	H	I	J	K
AF-650II	875	2,200	2,415	2,703	855	1,934	2,333	2,843	620	1,770	2,285
AF-800II	875	2,200	2,415	2,703	855	1,934	2,333	2,843	620	1,770	2,285
AF-860II	1,040	2,600	2,859	3,376	900	2,000	2,532	3,142	656	1,730	2,640
AF-1000	1,200	3,000	3,000	3,643	928	2,100	2,467	3,102	655	1,845	2,612
AF-1060II	1,220	3,000	3,000	3,547	900	2,000	2,532	3,142	656	1,730	2,640
AF-1250II	1,410	3,380	3,380	3,897	900	2,000	2,532	3,142	656	1,730	2,640
AF-1400II	1,560	3,850	3,850	4,367	900	2,000	2,532	3,142	656	1,730	2,640
AF-1400MAX	1,486	3,950	3,950	4,278	1,050	2,315	2,653	3,453	655	1,840	3,297
AF-1600MAX	1,686	4,400	4,400	4,728	1,050	2,315	2,653	3,453	655	1,840	3,297
AF-1800MAX	1,978	4,880	4,880	5,208	1,050	2,315	2,653	3,453	655	1,840	3,297

Models	L	M	N	O	P	R	S	T	U	V	W
AF-650II	1,934	1,910	2,090	1,440	2,595	—	—	545	545	3,125	—
AF-800II	1,934	1,910	2,090	1,440	2,595			545	545	3,125	
AF-860II	2,224	2,234	2,414	1,726	2,231	411	775	436	474	2,705	3,662
AF-1000	2,270	2,040	2,220	1,520	2,030	415	973	647	512	2,534	3,659
AF-1060II	2,224	2,234	2,414	1,726	2,231	411	775	436	474	2,705	3,662
AF-1250II	2,224	2,234	2,414	1,726	2,231	411	775	436	474	2,705	3,662
AF-1400II	2,224	2,234	2,414	1,726	2,231	411	775	436	474	2,705	3,662
AF-1400MAX	2,980	2,905	3,085	2,175	2,875	—	—	600	600	4,130	—
AF-1600MAX	2,980	2,905	3,085	2,175	2,875			600	600	4,130	
AF-1800MAX	2,980	2,905	3,085	2,175	2,875			600	600	4,130	

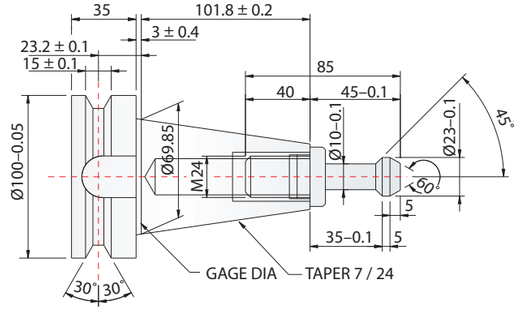
Specications are subject to change without notice.

Tool Shank Dimensions

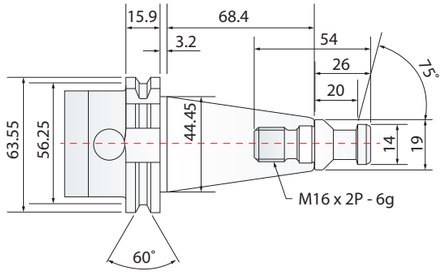
BT40



BT50



DIN40



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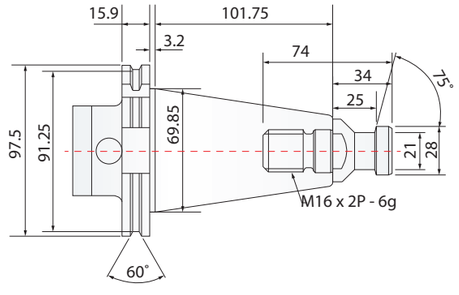

		AF-650II	AF-800II	AF-860II	AF-1000	AF-1060II
SPECIFICATIONS						
X-axis travel	mm	650	800	860	1,020	1,060
Y-axis travel	mm	510	510	650	550	650
Z-axis travel	mm	510	510	610	635	610
Distance from spindle center to column	mm	552	552	710	588	710
Distance from spindle nose to table top	mm	100 ~ 610	100 ~ 610	125 ~ 735	100 ~ 735	125 ~ 735
TABLE						
Table size (X direction)	mm	750	860	1,000	1,200	1,200
Table size (Y direction)	mm	510	510	650	550	650
Table load capacity	kg	500	500	700	700	700
T slot (Width x Pitch x No.)		14 mm x 100 mm x 4		18 mm x 100 mm x 5		
SPINDLE						
Spindle taper		BT40		BT40 (BT50 Opt.)		
Spindle motor (cont. / 30 min.)	kW	7.5 / 11				
Max. spindle speed	rpm	Belt-drive 10,000				
FEED RATE						
X / Y axes rapid feed rate	m/min.	48	48	48	36	48
Z-axis rapids feed rate	m/min.	32	32	36	24	36
Cutting feed rate	m/min.	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	0.006		0.008	0.006	0.008
Repeatability (ISO230-2)	mm	0.005		0.006	0.005	0.006
GENERAL						
Control system		FANUC Oi - MF PLUS				
Pneumatic pressure requirement	kg/cm²	6				
Power requirement	kVA	25	25	30	30	30
Coolant tank capacity	liter	270	270	360	360	370
Machine weight	kg	4,200	5,000	6,700	7,000	6,900

Standard Accessories

- Spindle air curtain
- Coolant nozzle around spindle
- Spindle cooling system
- Centralized automatic lubricating (X / Y / Z)
- Roof enclosed splash guard
- Coolant equipment
- Chip augers
- Automatic power-off system
- Heat exchanger for electrical cabinet
- Foundation bolt kit
- Oil skimmer
- Tool box
- Air gun
- Alarm light
- CE version

		AF-1250II	AF-1400II	AF-1400MAX	AF-1600MAX	AF-1800MAX
SPECIFICATIONS						
X-axis travel	mm	1,250	1,400	1,400	1,600	1,800
Y-axis travel	mm	650	650	800	800	800
Z-axis travel	mm	610	610	800	800	800
Distance from spindle center to column	mm	710		903		903
Distance from spindle nose to table top	mm	125 ~ 735		160 ~ 960*1		
TABLE						
Table size (X direction)	mm	1,350	1,500	1,500	1,700	1,900
Table size (Y direction)	mm	650	650	800	800	800
Table load capacity	kg	1,000	1,000	1,200	1,500	1,800
T slot (Width x Pitch x No.)		18 mm x 100 mm x 5		18 mm x 150 mm x 5		
SPINDLE						
Spindle taper		BT40 (BT50 Opt.)		BT40 (BT50 Opt.)		
Spindle motor (cont. / 30 min.)	kW	7.5 / 11		11 / 15		
Max. spindle speed	rpm	Belt-drive 10,000		Direct-drive 12,000		
FEED RATE						
X / Y axes rapid feed rate	m/min.	48	48	30	30	30
Z-axis rapids feed rate	m/min.	36	36	24	24	24
Cutting feed rate	m/min.	15		12		
TOOL MAGAZINE						
Tool magazine capacity	T	24		24		
Max. tool length	mm	250		300		
Max. tool weight	kg	7		15		
Max. tool diameter / adj. pocket empty	mm	Ø 75 / Ø 150		Ø 105 / Ø 210		
ACCURACY						
Positioning accuracy (ISO230-2)	mm	0.008		0.008		
Repeatability (ISO230-2)	mm	0.006		0.006		
GENERAL						
Control system		FANUC Oi - MF PLUS		FANUC Oi - MF PLUS		
Pneumatic pressure requirement	kg/cm²	6		6		
Power requirement	kVA	35		40		
Coolant tank capacity	liter	380	390	610	630	660
Machine weight	kg	7,500	8,100	14,000	16,000	18,000

*1 BT50 : 200 ~1,000 mm

Specifications are subject to change without notice.

Optional Accessories

- Arm type tool magazine 30 / 32 / 40 / 60 T
- Direct-drive spindle
  - BT40 12,000 / 15,000 rpm
  - BT50 10,000 rpm
- Coolant through spindle (CTS)
- Spindle thermal compensation
- CNC rotary table
- Coolant through the tool adapter
- Chip wash down
- Chip conveyor
- Gravity axis anti-drop function
- X / Y / Z axes linear scale
- Air conditioner for electric cabinet
- Automatic tool length measurement
- Automatic work piece measurement
- MITSUBISHI / HEIDENHAIN control system
- Transformer