THE ULTIMATE MACHINING POWER

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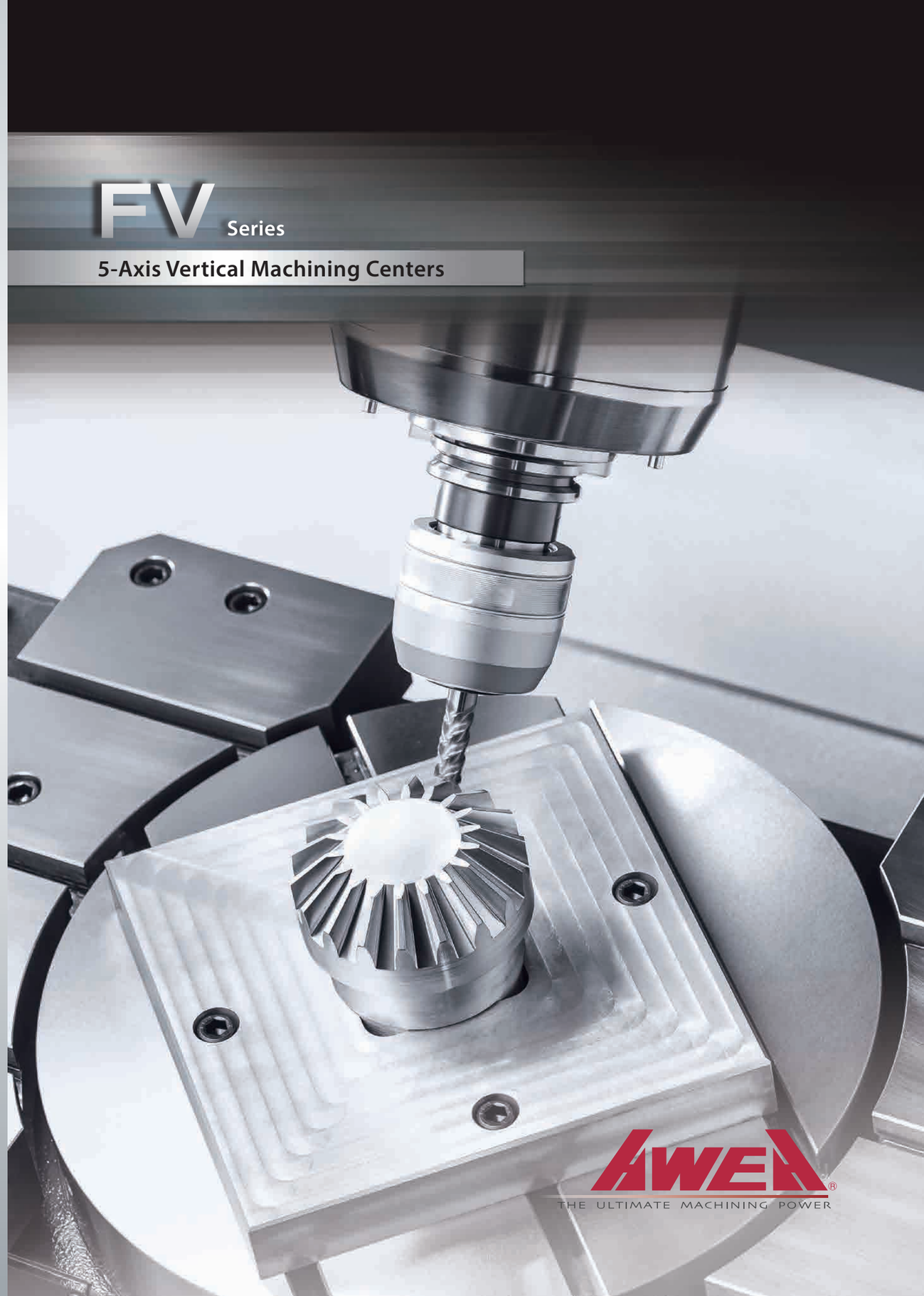
ISO 9001 ISO 14001 CE

AGENT

A-FV-EN-201707

FV Series

5-Axis Vertical Machining Centers



THE ULTIMATE MACHINING POWER

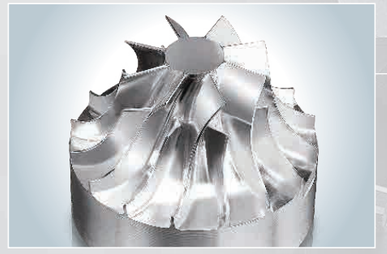
FV Series

5-axis Vertical Machining Center

Derived from AWEA's mature R&D technology and manufacturing capability, FV series is especially designed for medium and small intricate parts machining. FV series is equipped with high efficiency direct drive spindle and strong roller linear guide ways, combines with high performance A / C axes rotary table to provide you high productivity and comprehensive 5 axes cutting solution. FV series has the best performance/cost ratio among the 5 axes machines in the same range, which can meets your various needs for today and tomorrow.

1

// FV series full range of applications //

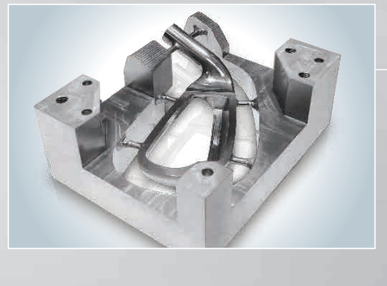


Aerospace

High precision, high complexity parts machining requirement

Automobile

High precision, high stability parts machining requirement



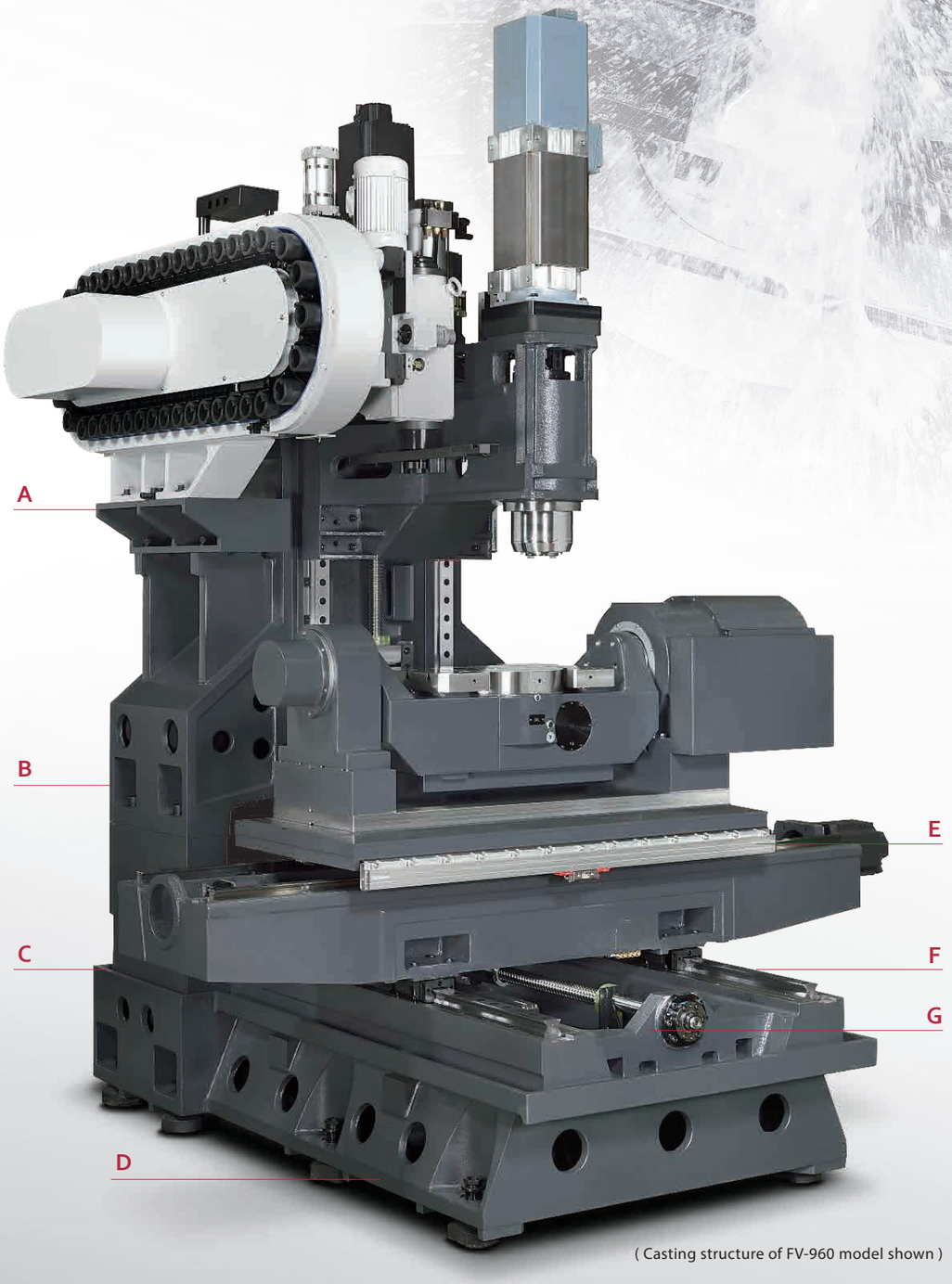
Biomedical and Health Equipment

High efficiency, difficult cutting materials machining requirement

2

FV Series

5-axis Vertical Machining Center



(Casting structure of FV-960 model shown)

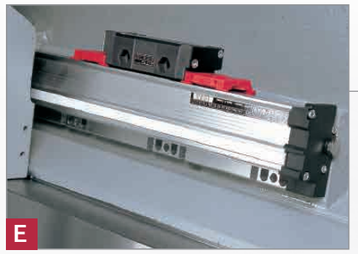
The Finite Element Analysis (FEA) provides optimal machine design and light-weight structure advantage while ensuring super rigidity of machine.

A. The tool magazine and the tools is supported by column structure, providing reliable and accurate tool exchange.

B. △ (Delta) Wide span column structure provides optimal machining rigidity. The headstock retains stability and accuracy even under high speed traveling.

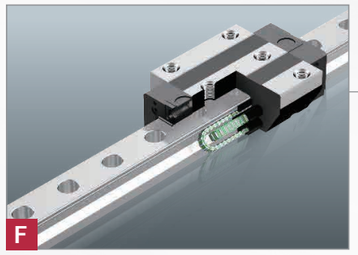
C. The contact surface of the column and bed are all hand scraped to ensure precision assembly, strong structure and loading balance.

D. The MEEHANITE casting bed design provide solid support to ensure ultimate dynamic accuracy.



High Resolution Linear Scale

The optional high resolution close-loop linear scale ensure optimal positioning and repeatability accuracy.



Super Rigidity Linear Guide Way

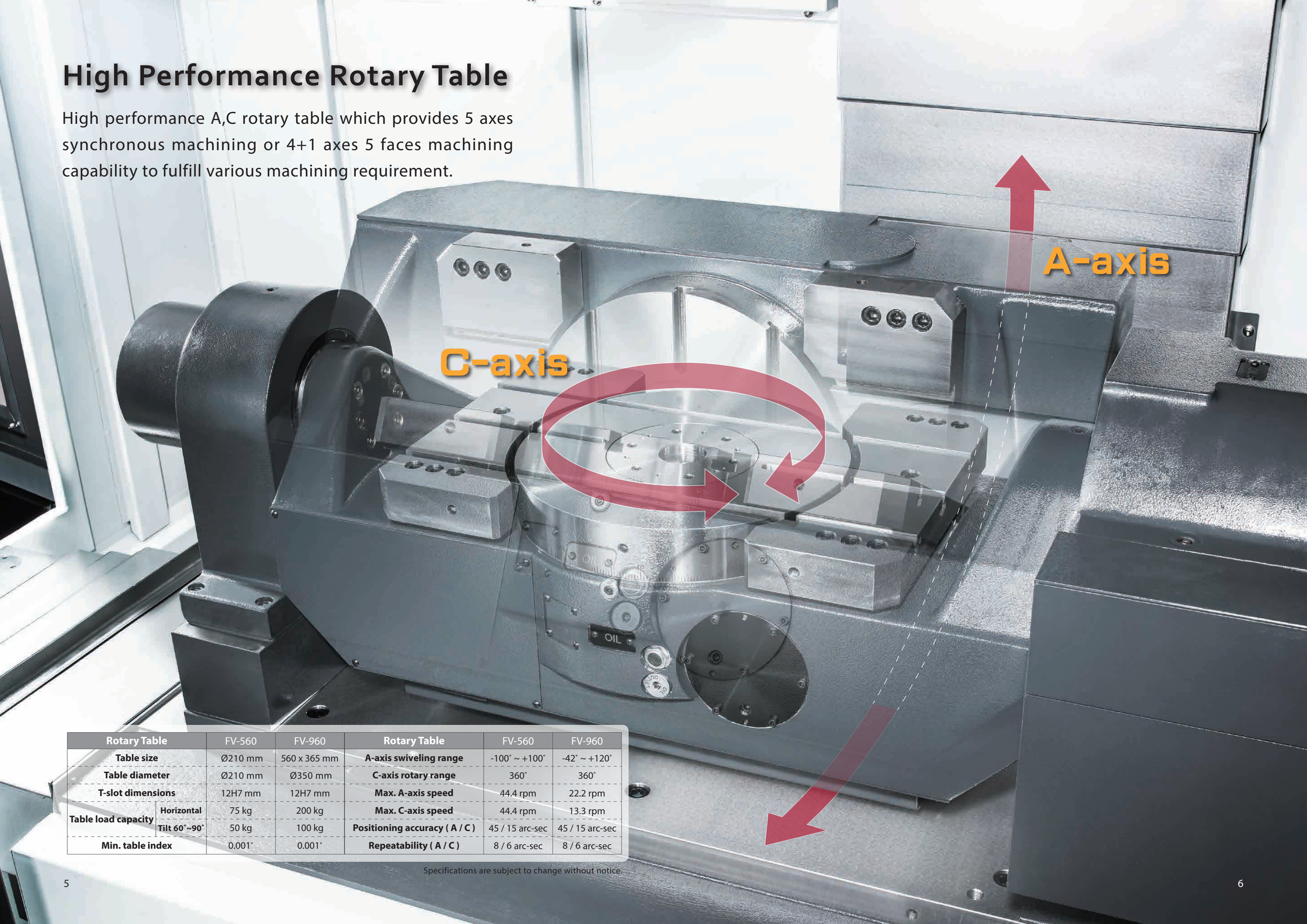
Roller type linear guide way provides rigidity for heavy cutting and speed for fast turning advantages.

One-piece Ball Screw Support Design

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.

High Performance Rotary Table

High performance A,C rotary table which provides 5 axes synchronous machining or 4+1 axes 5 faces machining capability to fulfill various machining requirement.

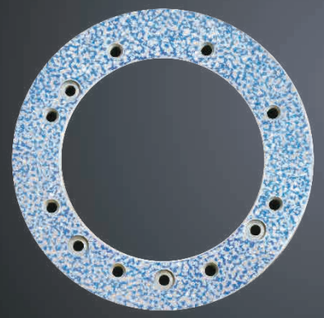


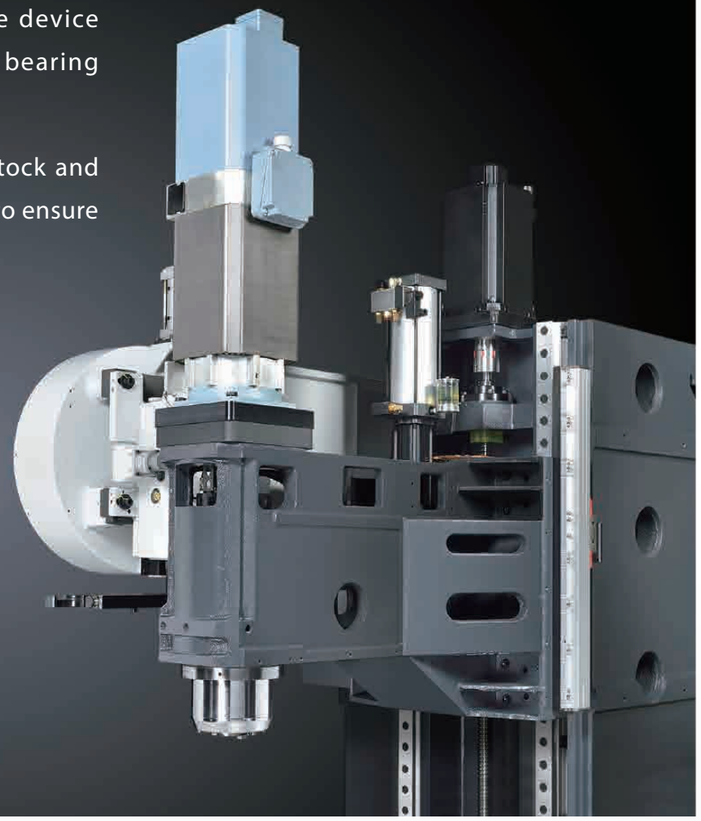
Rotary Table		FV-560	FV-960	Rotary Table	FV-560	FV-960
Table size		Ø210 mm	560 x 365 mm	**A-axis swiveling range**	-100˚ ~ +100˚	-42˚ ~ +120˚
Table diameter		Ø210 mm	Ø350 mm	**C-axis rotary range**	360˚	360˚
T-slot dimensions		12H7 mm	12H7 mm	**Max. A-axis speed**	44.4 rpm	22.2 rpm
Table load capacity	**Horizontal**	75 kg	200 kg	**Max. C-axis speed**	44.4 rpm	13.3 rpm
	Tilt 60˚~90˚	50 kg	100 kg	**Positioning accuracy (A / C)**	45 / 15 arc-sec	45 / 15 arc-sec
Min. table index		0.001˚	0.001˚	**Repeatability (A / C)**	8 / 6 arc-sec	8 / 6 arc-sec

Specifications are subject to change without notice.

High Performance Direct-drive Spindle

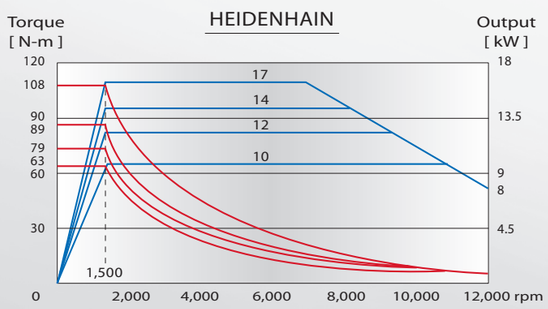
- Direct-drive spindle efficiently separates the heat generated from the motor, which reduces deformation, therefore increasing machining accuracy.
- Floating type hydraulic tool release device eliminates pressure on the spindle bearing when releasing a tool.
- The contact surfaces between headstock and spindle are all precisely hand scraped to ensure optimal performance and precision.



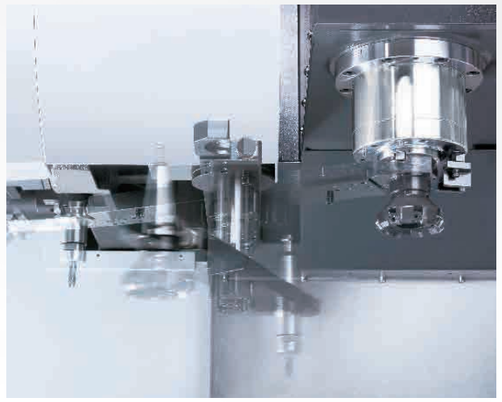


- Adopted with high power HEIDENHAIN spindle motor, 12,000 rpm and 15,000 rpm spindle for options to meet your variety of processing characteristics.

12,000 rpm Direct-driven Spindle



The Best Configuration

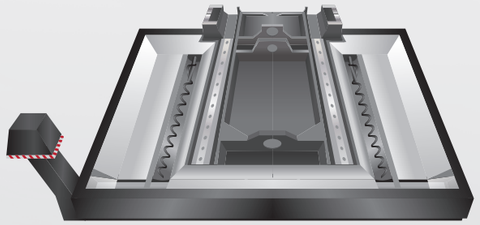


HIGH EFFICIENCY ATC SYS.

FV series is standard with arm type tool exchange system and random type tool selection to shorten tool exchange time, and enhance processing efficiency.

HIGH RELIABILITY CHIP REMOVAL SYS.

Chip removal system is adapted with chip wash down, chip auger, and chip conveyor to provide high efficiency and high reliability achievement.



(For FV-960 only)

MULTI-FUNCTION CONTROLLER SYS.

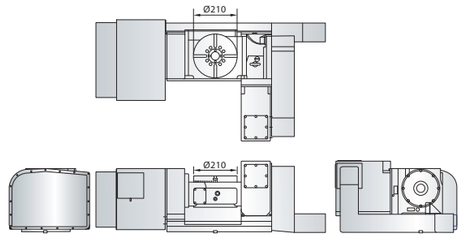
The HEIDENHAIN iTNC530 features optimized motion control, short block processing times and special control strategies. It enables you to reach very high machining speeds and the best possible contour accuracy—particularly when machining 2-D contours or 3-D shapes.

Dimensions

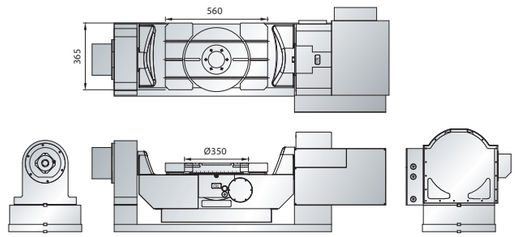
Table Dimensions

(Unit : mm)

FV-560

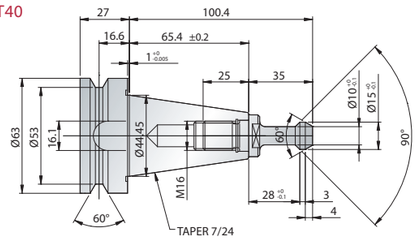


FV-960



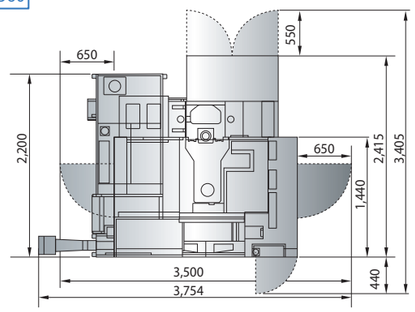
Tool Shank and Pull Stud Dimensions

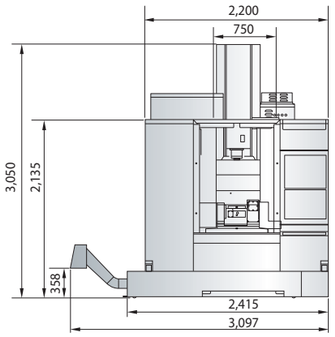
BBT40



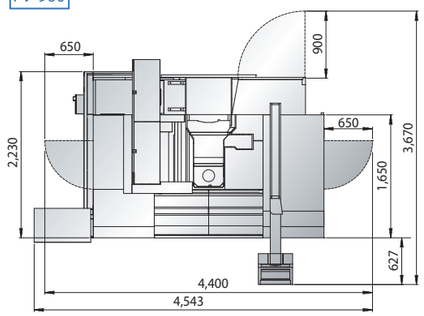
Machine Dimensions

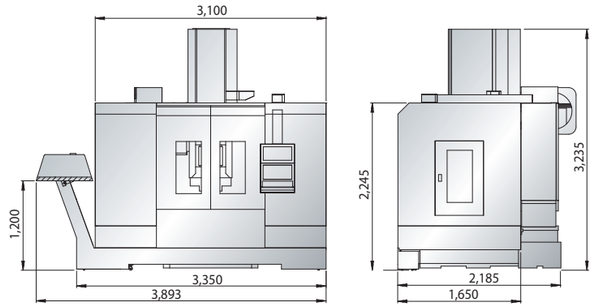
FV-560





FV-960





		FV-560		FV-960	
SPECIFICATIONS					
X-axis travel	mm	560		960	
Y-axis travel	mm	510		600	
Z-axis travel	mm	460		480	
A-axis swiveling range		200˚ (100˚ ~ -100˚)		162˚ (-42˚ ~ +120˚)	
C-axis rotary range		360˚		360˚	
Distance from spindle center to column	mm	600		800	
Distance from spindle nose to table center	mm	100 ~ 560		100 ~ 580	
ROTARY TABLE					
Table size (X x Y)	mm	(Ø210)		560 x 365 (Ø350)	
Table load capacity	kg	0˚ ~ 45˚	75	0˚ ~ 45˚	200
		45˚ ~ 100˚	50	45˚ ~ 120˚	100
A / C axes speed	rpm	44.4 / 44.4		13.3 / 22.2	
SPINDLE					
Spindle taper		BBT40		BBT40	
Spindle motor (cont. / 30 min.)	kW	5.5 / 7.5 (7.5 / 11)		10 / 14 (11 / 15 Opt.)	
Spindle speed	rpm	12,000 (15,000 Opt.)		12,000 (15,000 Opt.)	
FEED RATE					
X / Y axes rapid feed rate	m/min.	32		36	
Z-axis rapids feed rate	m/min.	24		24	
Cutting feed rate	m/min.	1~10		1-10	
TOOL MAGAZINE					
Tool magazine capacity	T	24		30 (32 / 60 Opt.)	
Max. tool diameter / adj. pocket empty	mm	Ø76 / Ø125		Ø76 / Ø150	
Max. tool length	mm	300		250	
Max. tool weight	kg	7		7	
ACCURACY					
Positioning accuracy (JIS B 6338)	mm	± 0.01		± 0.01	
Positioning accuracy (VDI 3441)	mm	P = 0.01		P = 0.01	
Repeatability (JIS B 6338)	mm	± 0.003		± 0.003	
Repeatability (VDI 3441)	mm	Ps = 0.008		Ps = 0.008	
GENERAL					
Control system		FANUC *Oi*-MF / HEIDENHAIN iTNC530 / SIEMENS 840D			
Power requirement	kVA	45		45	
Pneumatic pressure requirement	kg/cm^2	6		6	
Machine weight	kg	4,500		7,400	
Machine dimensions (L x W x H)	mm	2,595 x 2,200 x 2,040		3,100 x 2,200 x 3,070	

Specifications are subject to change without notice.

Standard Accessories

- Spindle air curtain
- Spindle oil cooler
- Centralized automatic lubricating system
- Roof enclosure splash guard
- Coolant equipment system (Pump & tank)
- Foundation bolt kit
- Electric cabin cooler
- Alarm light
- Air gun
- Automatic power off system
- Tool box
- Chips flush coolant system

Optional Accessories

- Direct-driven spindle 15,000 rpm
- Oil skimmer
- Coolant through spindle(Form A)
- Caterpillar type chip conveyor and bucket
- Automatic tool length measurement