THE ULTIMATE MACHINING POWER

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ISO 9001 ISO 14001 CE

AGENT

A-FV960-EN-201502

THE ULTIMATE MACHINING POWER

FV-960 SERIES

5-axis Vertical Machining Center

FV-960 Series

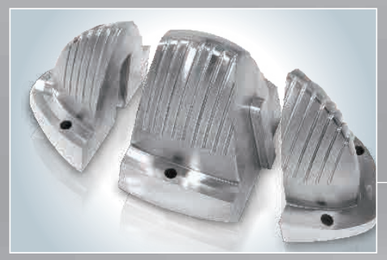
5-axis Vertical Machining Center

Derived from AWEA's mature R&D technology and manufacturing capability, FV-960 is especially designed for medium and small intricate parts machining. FV-960 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-960 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.

// *FV-960 full range of applications* //

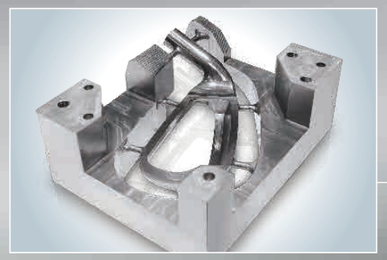
Aerospace

High precision, high complexity parts machining requirement



Automobile

High precision, high stability parts machining requirement

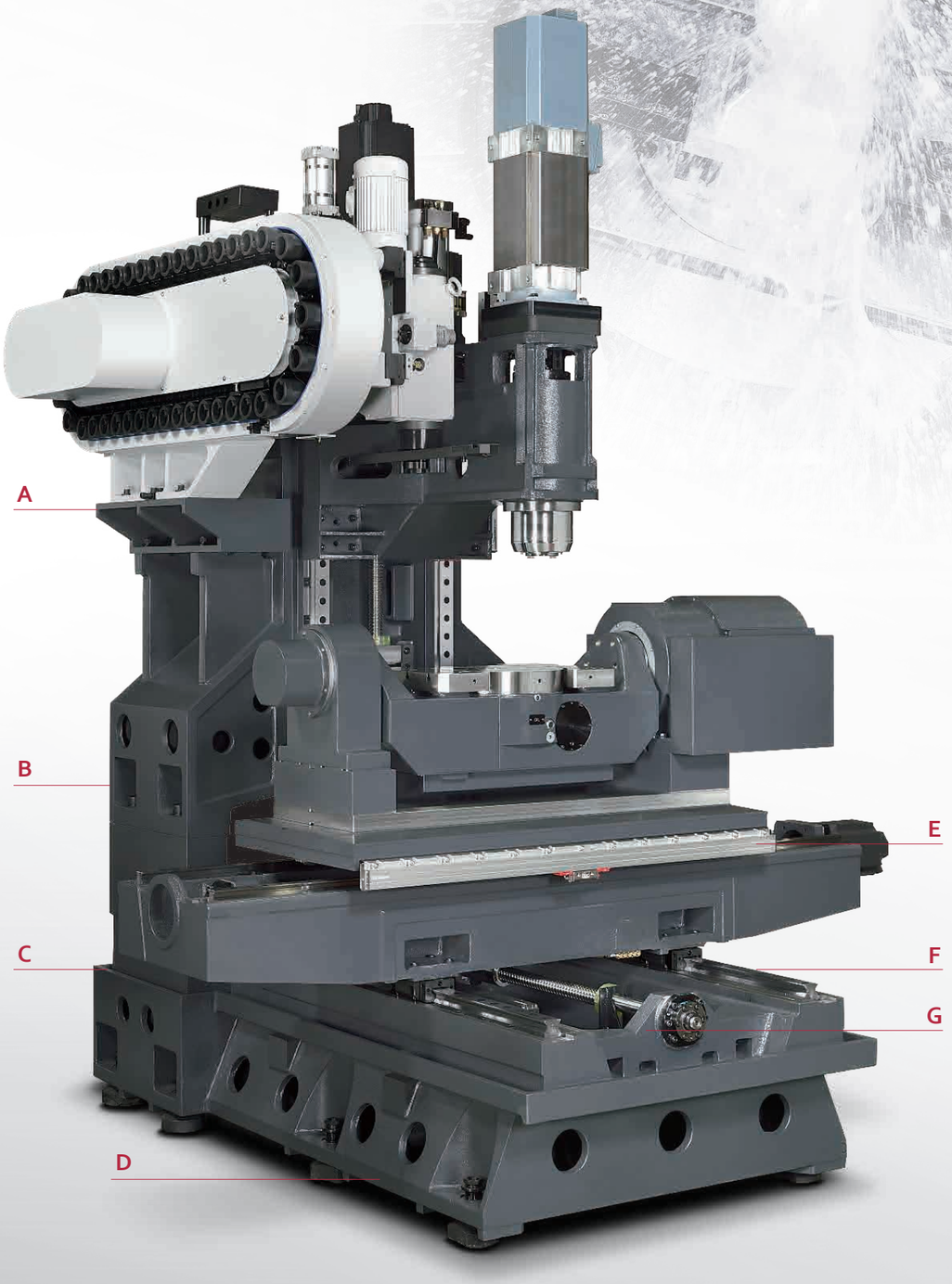


Biomedical and Health Equipment

High efficiency, difficult cutting materials machining requirement

FV-960 Series

5-axis Vertical Machining Center



High Rigidity Structure

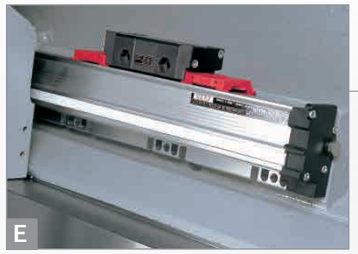
The Finite Element Method (FEM) provides optimal machine design and light-weight structure advantage while ensuring high rigidity of machine.

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.

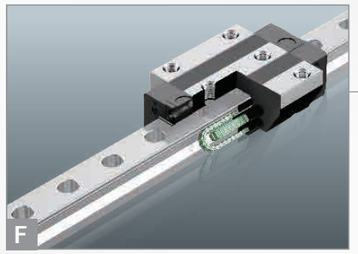
C. The contact surface of the column and bed are all hand scraped to ensure precision assembly, strong structure and loading balance.

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.



High Rigidity Linear Guide Way

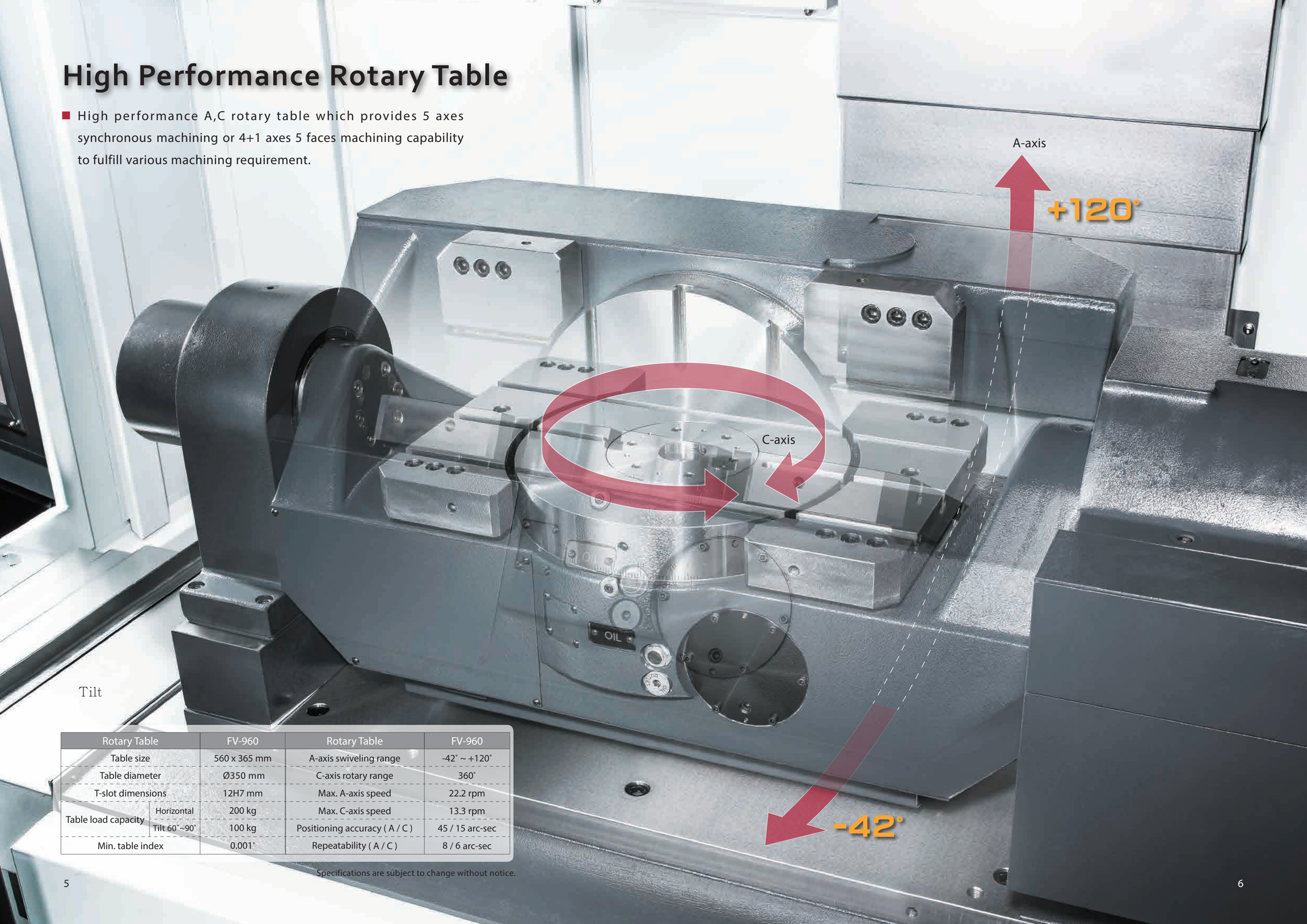
Roller type linear guide way provides rigidity for heavy cutting and speed for fast turning advantages.

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.

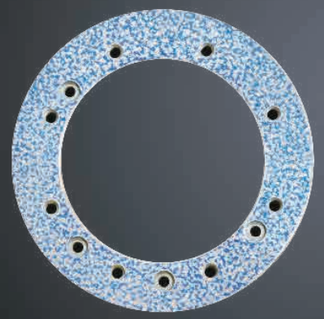


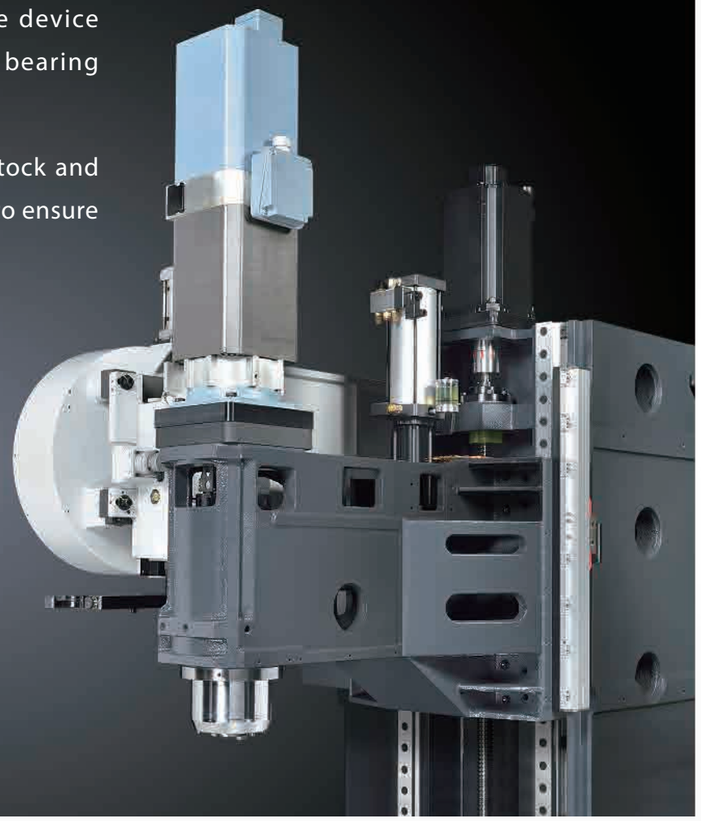
Rotary Table		FV-960	Rotary Table	FV-960
Table size		560 x 365 mm	A-axis swiveling range	-42° ~ +120°
Table diameter		Ø350 mm	C-axis rotary range	360°
T-slot dimensions		12H7 mm	Max. A-axis speed	22.2 rpm
Table load capacity	Horizontal	200 kg	Max. C-axis speed	13.3 rpm
	Tilt 60°~90°	100 kg	Positioning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

Specifications are subject to change without notice.

High Performance Direct-drive Spindle

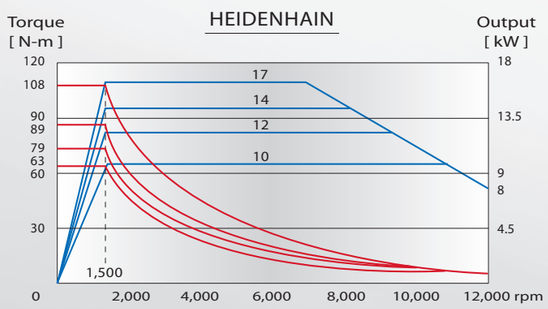
- Direct-drive spindle efficiently separates the heat generated from the motor, which reduces deformation, therefore increasing machining accuracy.
- Floating type hydraulic tool release device eliminates pressure on the spindle bearing when releasing a tool.
- The contact surfaces between headstock 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



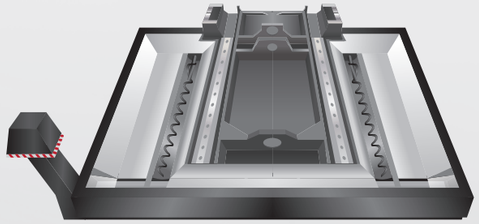
The Best Configuration

HIGH EFFICIENCY ATC SYS.

FV-960 is standard with 30T 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.



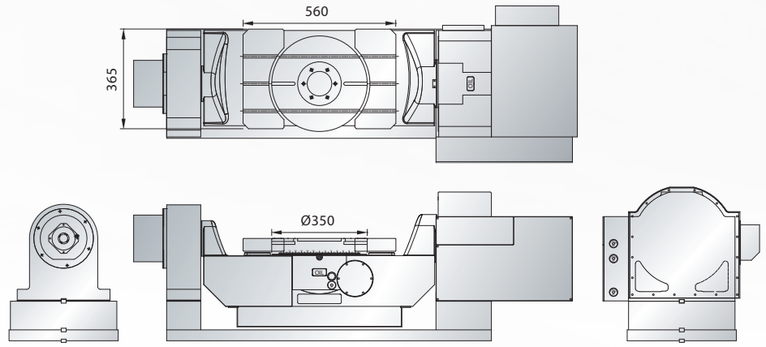
MULTI-FUNCTION CONTROLLER SYS.

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

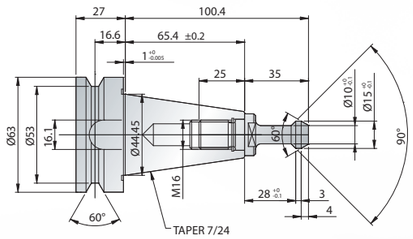
Table Dimensions

(Unit : mm)

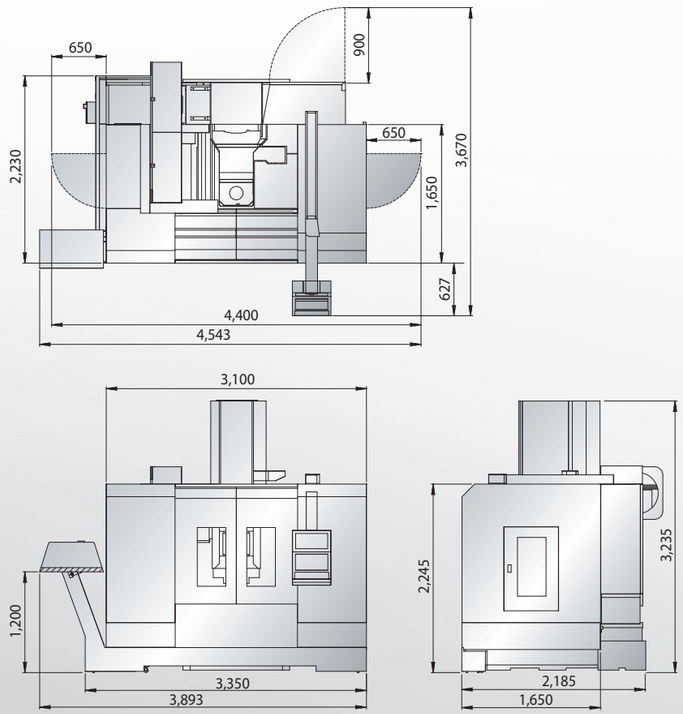


Tool Shank and Pull Stud Dimensions

BBT40



Machine Dimensions



		FV-960	
SPECIFICATIONS			
X-axis travel	mm	960	
Y-axis travel	mm	600	
Z-axis travel	mm	480	
A-axis swiveling range		-42˚ ~ +120˚	
C-axis rotary range		360˚	
Distance from spindle center to column	mm	800	
Distance from spindle nose to table center	mm	100 ~ 580	
ROTARY TABLE			
Table size (X x Y)	mm	560 x 365 (Ø350)	
Table load capacity	kg	Horizontal	200
		Tilt 60˚ ~ 90˚	100
SPINDLE			
Spindle taper		BBT40	
Spindle motor (con. / 30 min.)	kW	10 / 14 (11 / 15 Opt.)	
Spindle speed	rpm	12,000 (15,000 Opt.)	
FEED RATE			
X / Y axes rapid feed rate	m/min.	36	
Z-axis rapids feed rate	m/min.	24	
Cutting feed rate	m/min.	1-10	
TOOL MAGAZINE			
Tool magazine capacity	T	30 (32 / 60 Opt.)	
Max. tool diameter / adj. pocket empty	mm	Ø76 / Ø150	
Max. tool length	mm	250	
Max. tool weight	kg	7	
ACCURACY			
Positioning accuracy (JIS B 6338)	mm	± 0.01	
Positioning accuracy (VDI 3441)	mm	P = 0.01	
Repeatability (JIS B 6338)	mm	± 0.003	
Repeatability (VDI 3441)	mm	Ps = 0.008	
GENERAL			
Control system		HEIDENHAIN iTNC530 / FANUC Oi-MD	
Power requirement	kVA	45	
Pneumatic pressure requirement	kg/cm^2	6	
Machine weight	kg	7,400	
Machine dimensions (L x W x H)	mm	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
- Heat exchanger for electrical cabinet

Optional Accessories

- Direct-driven spindle 15,000 rpm
- Oil skimmer
- Electronic cabin cooler
- Coolant through spindle (Form A)