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**ISO 9001**  
**ISO 14001**



# FV5 SERIES

**CNC 5-FACE DOUBLE COLUMN  
MACHINING CENTER**



# CNC 5-FACE DOUBLE COLUMN MACHINING CENTER

**5-Face Machining Accomplished  
at One Time!  
Extra Heavy Cutting!  
High Efficiency!  
High Accuracy!**

■ With optimal double-column construction, the FEELER CNC 5-Face Double-Column Machining Center is excellent for heavy cutting for extra big workpieces. Its high precision and high rigidity 5-face milling head not only exhibits exceptionally heavy cutting capability, but also provides machining accuracy and efficiency compared to competitive models.





**Perfect Structure Design!**  
**Rigorous stress / strain analysis**  
**guarantees maximum stability**  
**in heavy cutting.**



Massive Base Construction

Box-type Guide Way on Z-axis

Hydraulic Counter-balance

90° Linear Ways Layout on Y-axis





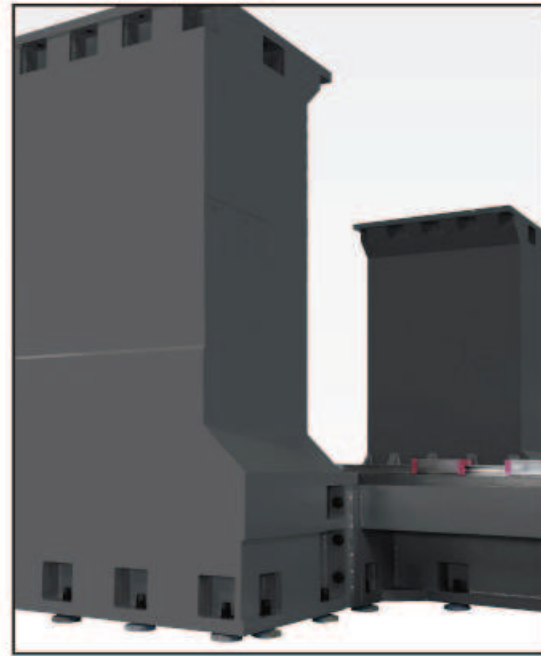
### Box-type Guide Way on Z-axis

- The Z-axis vertical travel is equipped with an extra large guide way, assuring the best dynamic rigidity of Z-axis.
- Z-axis travel reaches 1,100 mm.



### 90° Linear Ways Layout on Y-axis

- The two linear ways on Y-axis is mounted at 90° direction, ensuring extra high stability when the spindle head is performing cutting.
- Y-axis employs world-famous SCHNEEBERGER MRD 65 roller type linear ways combined with 6 blocks, significantly increasing Y-axis rigidity and cutting capacity.



### Extra Large Column Structure

- The massive box type column construction and extra wide span between columns exhibit unique stability during heavy cutting.



### Maintenance Ladder

- The maintenance ladder is convenient for maintenance personnel to climb up to top of the machine, providing safety protection for personnel.

## Hydraulic Counter-balance on Z-axis

- The Z-axis movement is counter-balanced by hydraulic cylinder. This ensures effortless, smooth and stable movement.
- The hydraulic system is equipped with an accumulator for increasing pressure stabilization. This also ensures motion stability of hydraulic cylinder.

# FY5



## Massive Base

- ▶ The X-axis is mounted with three THK-HSR 65 linear guide ways as standard equipment.
  - ▶ Upon request, SCHNEEBERGER MRD 65 roller type linear guide ways to upgrade loading capacity.
- ▶ Models with travels over 6 meters are designed with moving nut combined with ballscrew supported by hydraulic. This design may prevent ballscrew from deflection or vibration, while ensuring feed smoothness and machining accuracy.
  - ▶ Three linear ways on X-axis increases loading capacity.



# High Precision 5-Face Spindle Head maximizes Machining Efficiency and Accuracy

## Perpendicularity Accuracy Guaranteed

The 5-face milling head assures extremely high accuracy in vertical and horizontal machining. It eliminates the accuracy problem of angle alignment which usually occurs on conventional vertical/horizontal milling heads.

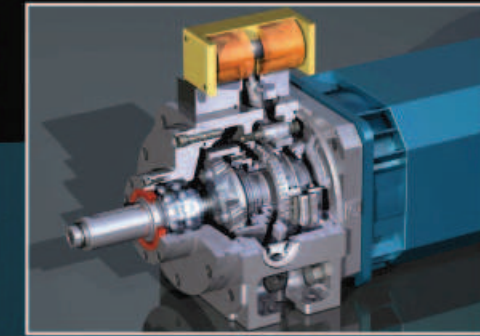
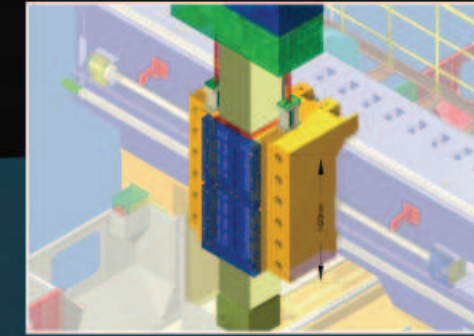
## Rigid Spindle Head

The 5-face milling head does not have complicated vertical/horizontal repositioning mechanism. As a result, it features superior rigidity, high efficiency and high accuracy.

## Two-function Magazine

The specially designed magazine is suitable for horizontal and vertical spindle. This results in shortened tool change time while upgrading efficiency.

## High Precision! Great Torque Output! 5-FACE MILLING HEAD



## Rigid Spindle Head

The contact length between the spindle head and the slide is of up to 1,420 mm for greatly upgrading rigidity of the spindle head. The spindle head provides superior stability in heavy cutting even when Z-axis extends to its maximum travel of 1,100 mm.

## German ZF Gearbox

The spindles running is transmitted by the German ZF 2K205 gearbox, providing high/low speed range.

Great torque output up to 1,000 Nm is excellent for heavy cutting.

## 5-face Machining Accomplished at One Time

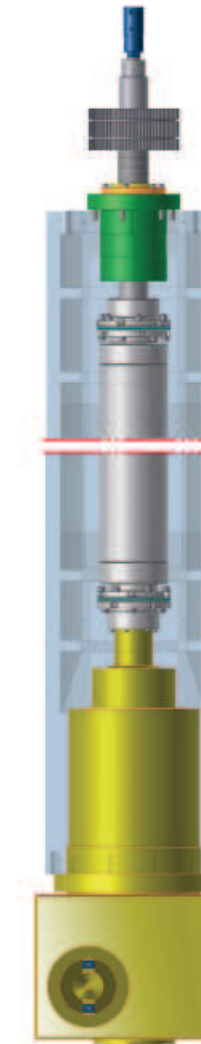
5-face machining only requires one setup of workpiece. With the 5-face milling head, you can save repetitive setup time and eliminate workpiece setup error.

## German ZF Gearbox

The spindles are transmitted by the German ZF gearbox, featuring high torque output up to 1000 Nm.

## German MAYR Coupling

The spindles employ German MAYR coupling, reducing vibration to a minimum even running at high speed.

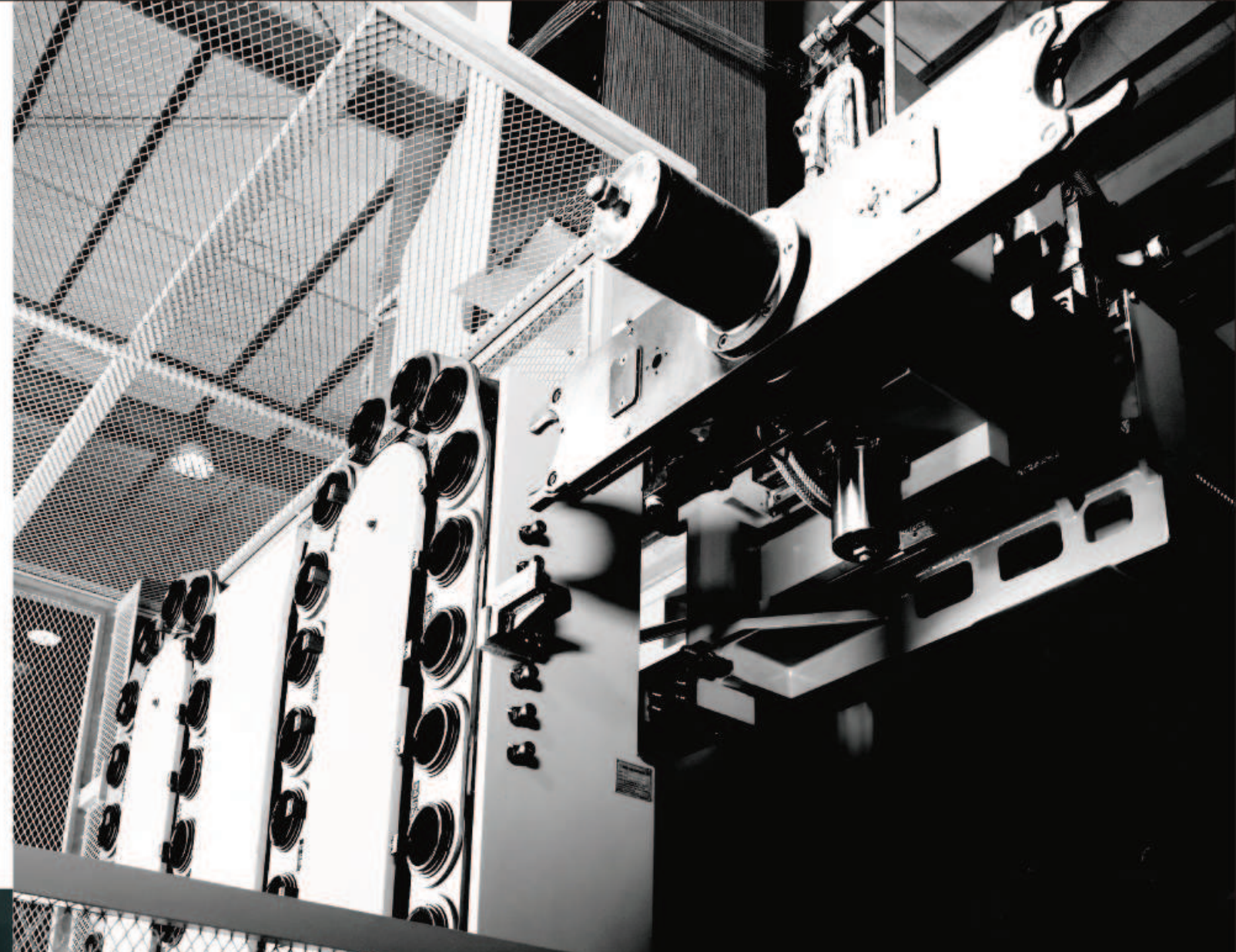


## German MAYR Coupling

The spindle employs German MAYR coupling, reducing vibration to a minimum even when running at high speed.

Available to equip with coolant through spindle device. (Optional)





- 60/90 tools chain type magazine.
- 60 tools magazine is standard equipment.
- 90 tools magazine is optional equipment.
- Chain type magazine is separately mounted from working area, preventing pollution by chips or coolant.

### Chip Augers

Both sides of base are mounted with one set each of chip auger. They deliver chips to a chain type chip conveyor.

### Chain Type Chip Conveyor

The chain type chip conveyor with cart is standard equipment.

### Pendant Control Box

The pendant control box is equipped with additional hydraulic counter-balance to facilitate control box movement.

The control box can be moved to any position that provides convenience for machine running test.

### Spindle Oil Cooler

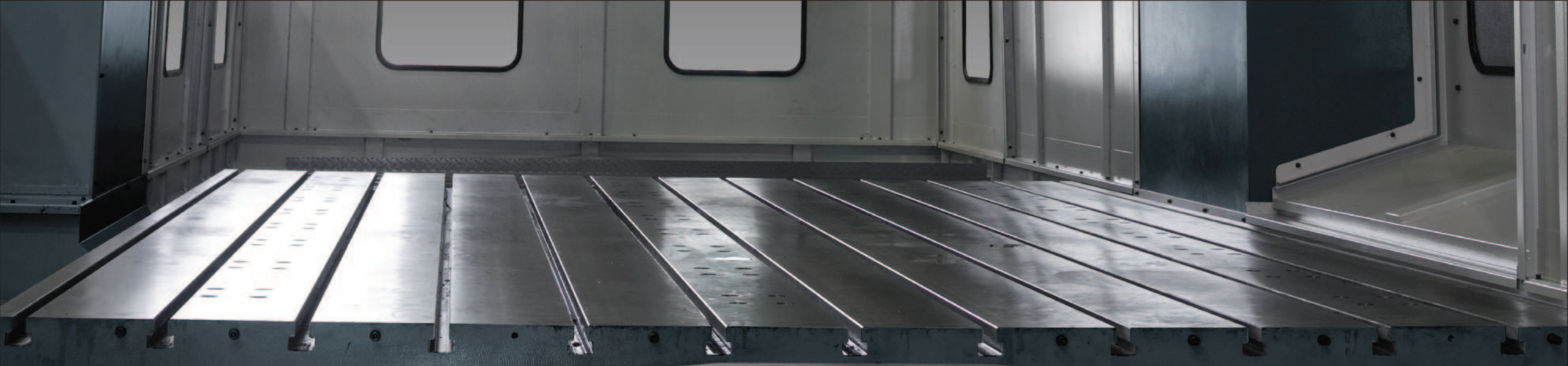
The immerse type spindle oil cooler has big capacity. It provides cooling to spindle and gearbox. The cooler helps spindle to maintain at a constant temperature for a long time. It eliminates thermal deformation on spindle while ensuring machining accuracy and spindle life.

### Tool Clamping / Unclamping Controlled by Foot Switch

The spindle tool clamping and unclamping are controlled by foot switch for added convenience and efficiency.

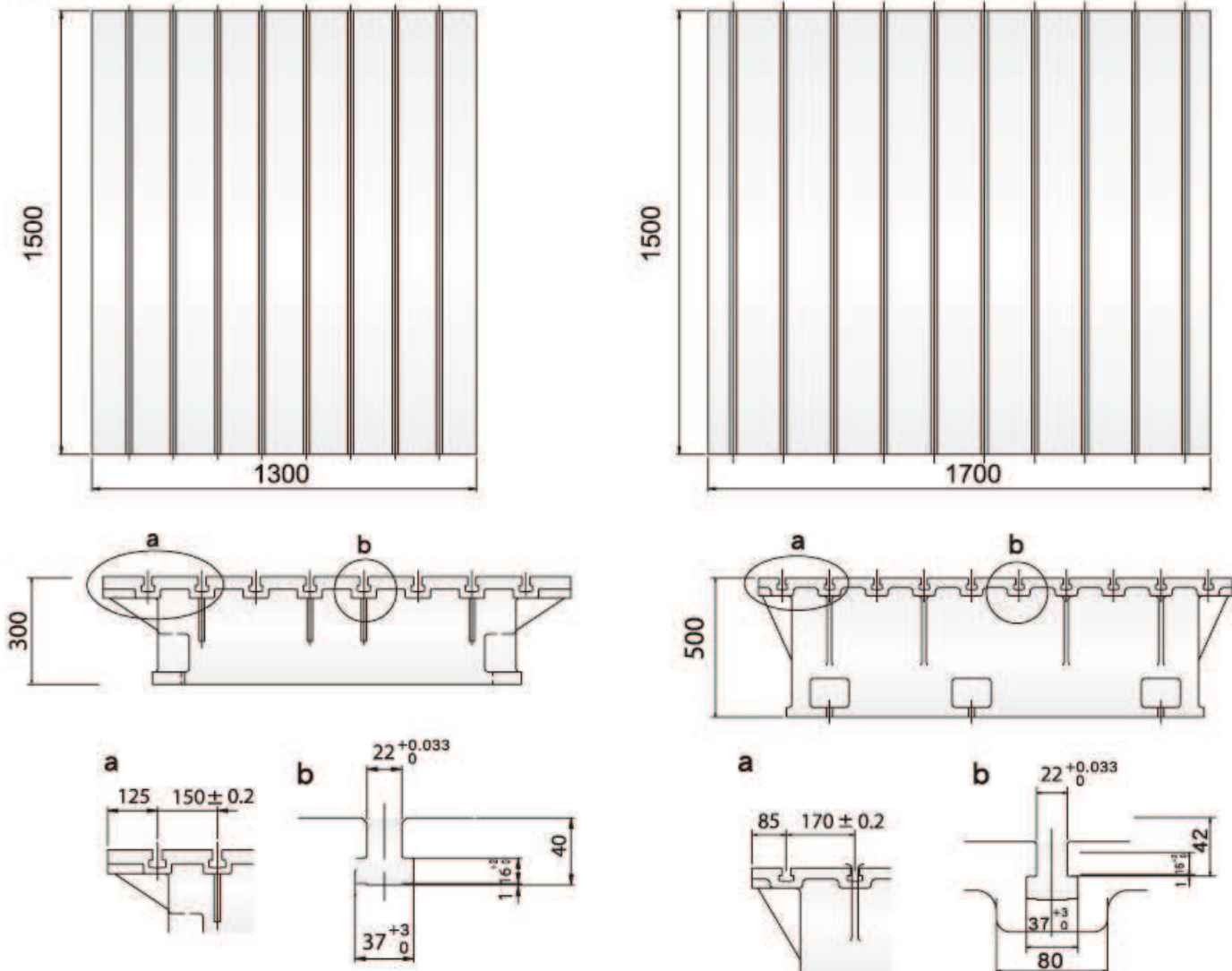






### Auxiliary Table Dimension

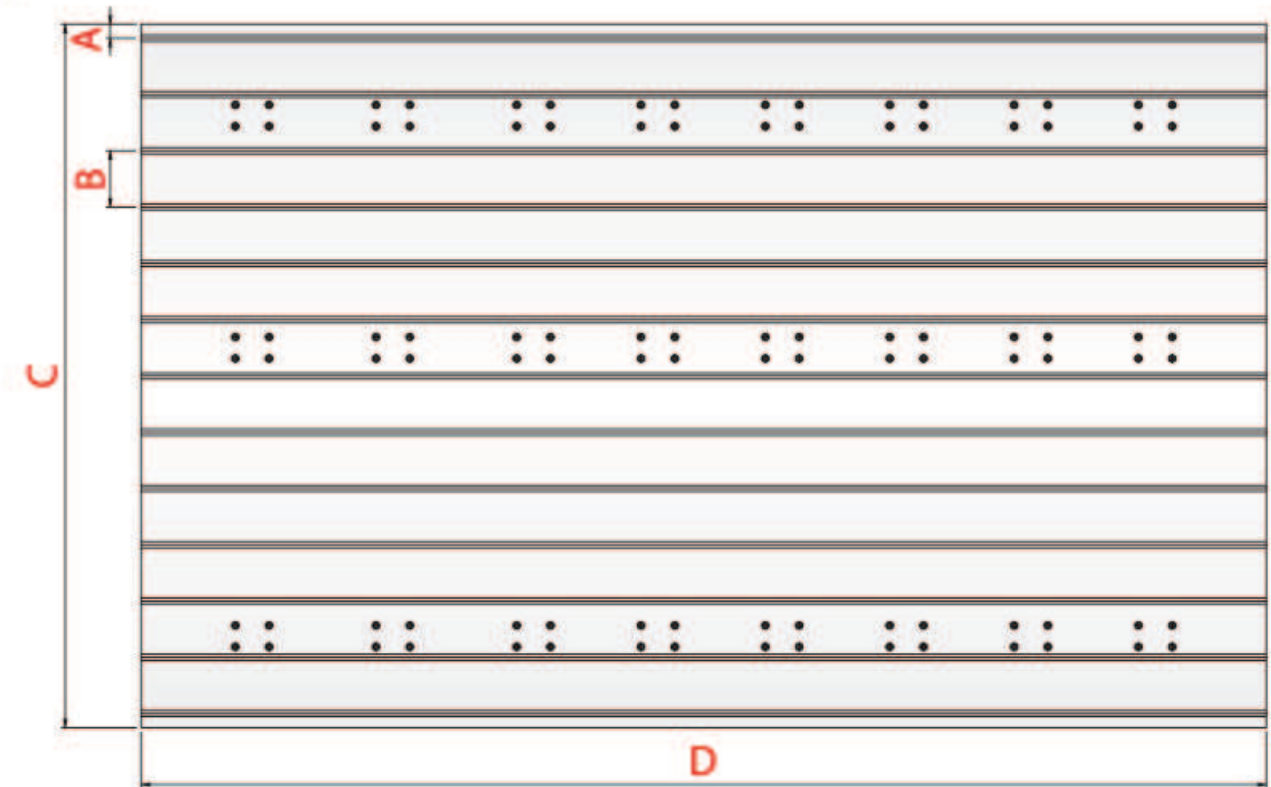
Unit: mm



### Auxiliary Table (Optional)

- (1) 1,500 x 1,300 x 300 mm (1) 1,500 x 1,700 x 200 mm
- (2) 1,500 x 1,700 x 500 mm (2) 2,200 x 2,000 x 300 mm
- ※ Other sizes are available upon request.

### Table Dimension

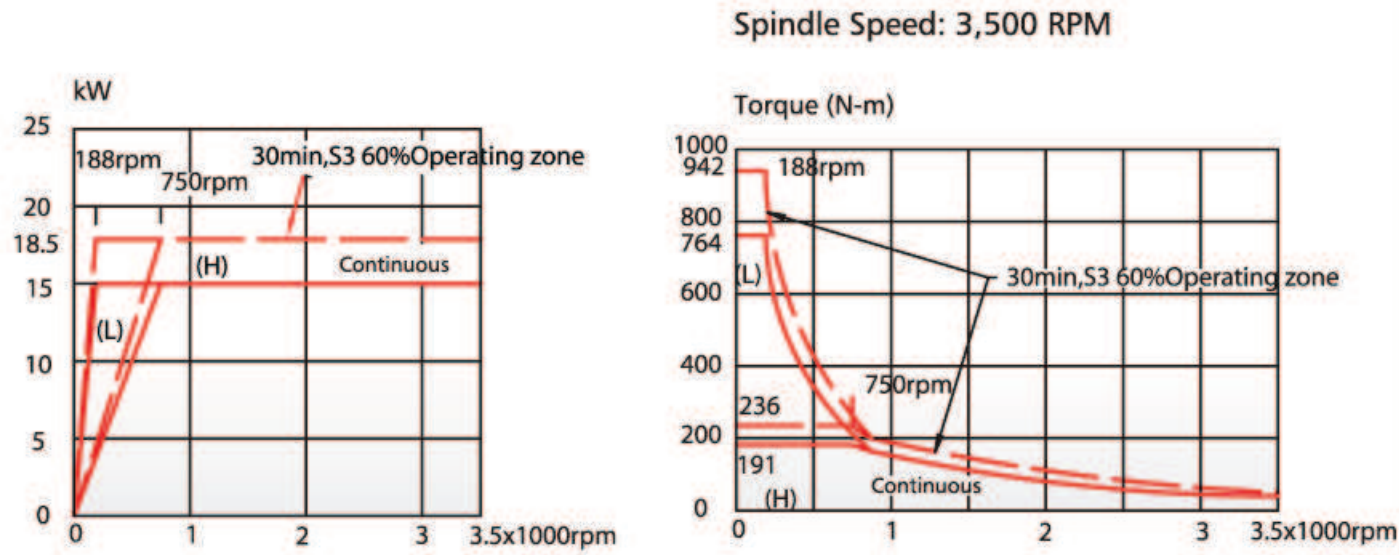


Unit: mm

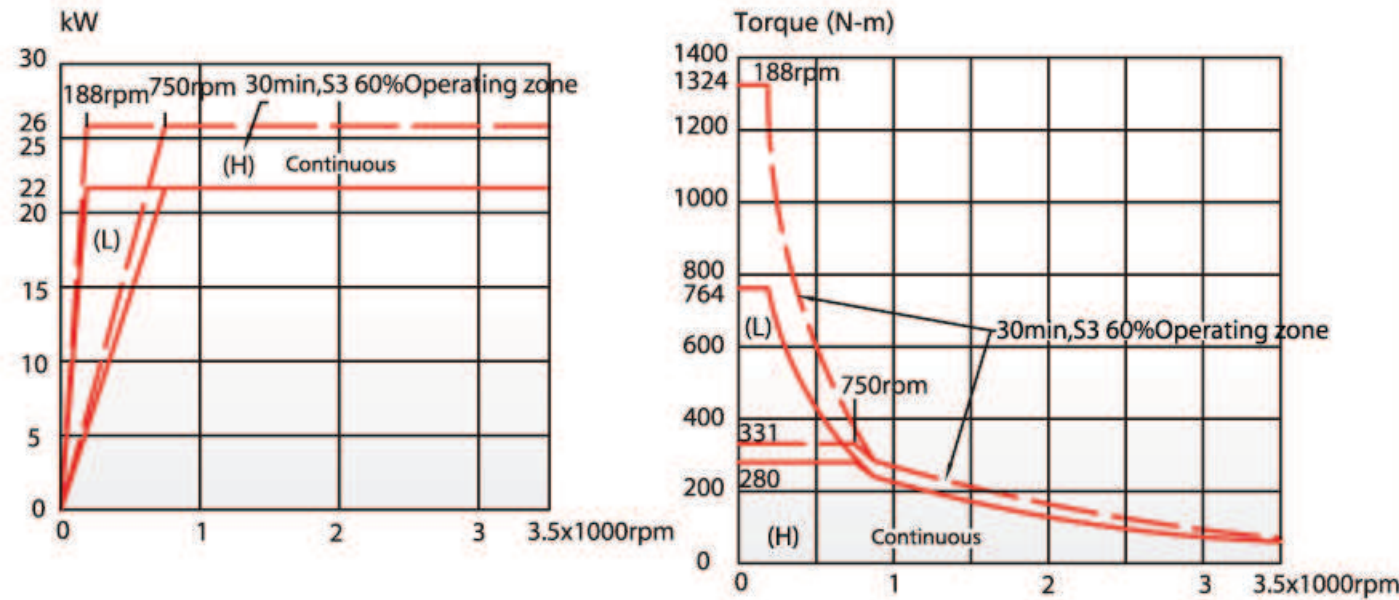
MODEL	A Side Width	B T-slot Distance	C Width	D Length
FV5-4535	50	200	2,500	4,000
FV5-5535	50	200	2,500	5,000
FV5-7235	50	200	2,500	6,000
FV5-4542	100	200	3,000	4,000
FV5-5542	100	200	3,000	5,000
FV5-7242	100	200	3,000	6,000



## Spindle Speed / Output Diagram

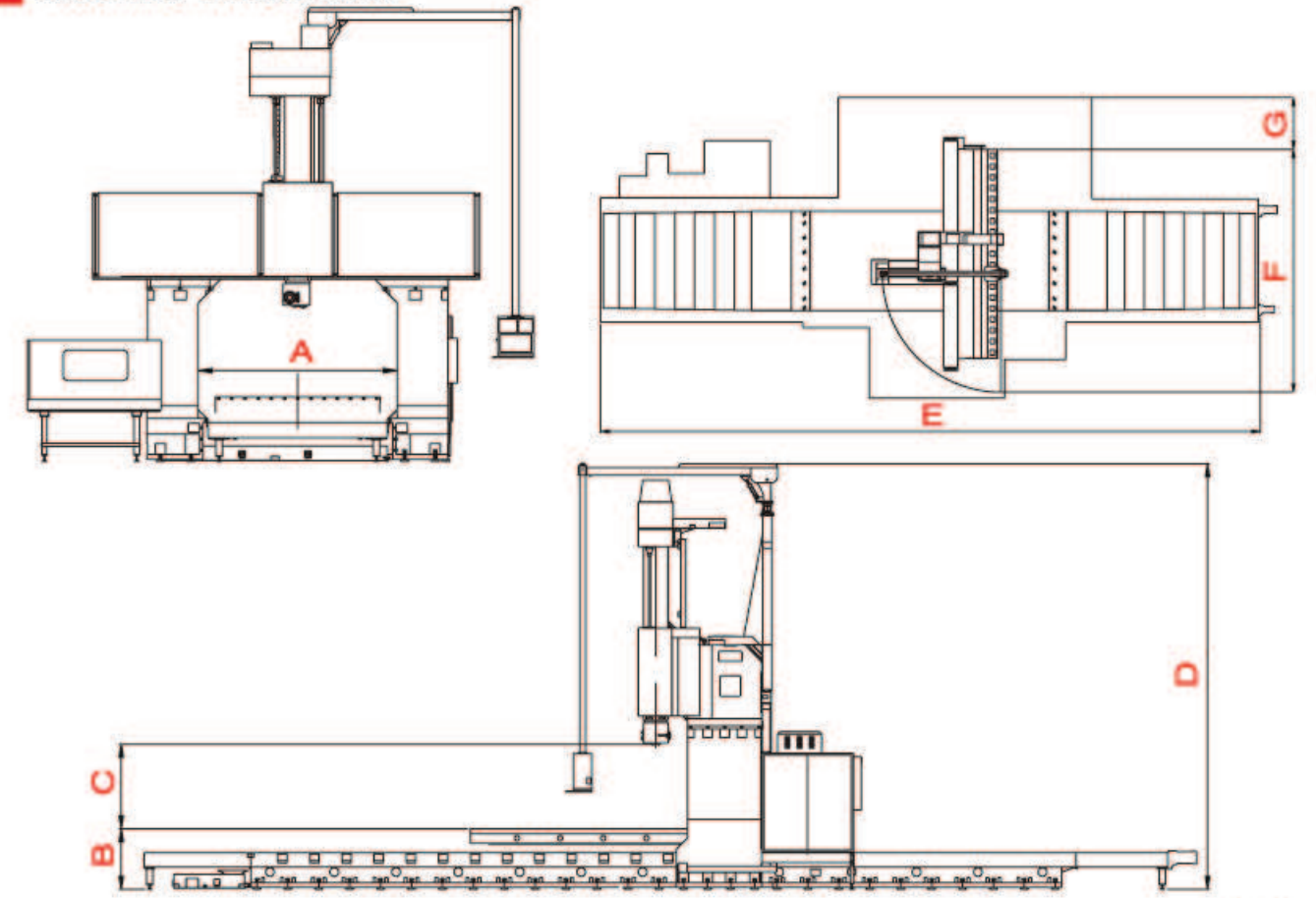


Z.F. 2K250 two-step gearbox (with FANUC  $\alpha$  15i 15/18.5kW spindle motor)



Z.F.2K250 two-step gearbox (with FANUC  $\alpha$  22i 22/26kW spindle motor)

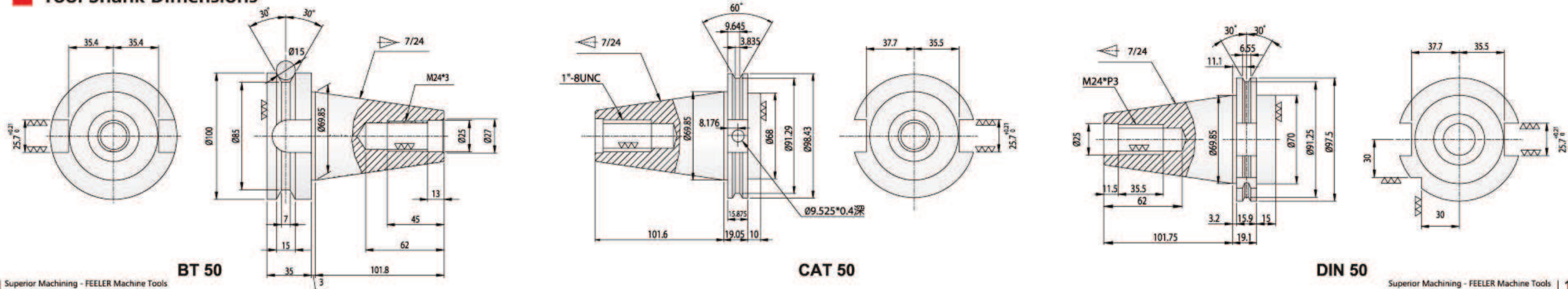
## Machine Dimensions



Unit: mm

MODEL	A Between Columns	B Table to Floor	C Spindle Nose to Table Surface	D Height	E Length	F Width	G Magazine
FV5-4535					10,620		
FV5-5535	3,000				12,515	6,110	
FV5-7235		975	270-1,370 (600-1,700)	6,878 (7,208)	16,555		1,320
FV5-4542					10,620		
FV5-5542	3,500				12,515	6,110	
FV5-7242					16,555		

## Tool Shank Dimensions



BT 50

CAT 50

DIN 50



# FV5 MACHINE SPECIFICATIONS

MODEL	Unit	FV5-4535	FV5-5535	FV5-7235	FV5-4542	FV5-5542	FV5-7242
<b>TABLE</b>							
Table sizes	mm	4,000 x 2,500	5,000 x 2,500	6,000 x 2,500	4,000 x 3,000	5,000 x 3,000	6,000 x 3,000
T-slot (W x No. x Pitch)	mm		22 x 13 x 200			22 x 15 x 200	
Max. Table load	kg	14,000	18,000	20,000	14,000	18,000	20,000
<b>TRAVEL</b>							
X-axis travel	mm	4,500	5,500	7,200	4,500	5,500	7,200
Y-axis travel	mm		3,500			4,150	
Z-axis travel	mm		1,100			1,100	
<b>DISTANCE</b>							
Distance between columns	mm		3,000			3,500	
Distance from spindle nose to table surface	mm		Vertical spindle: 270 ~ 1,370 (600 ~ 1,700)		Vertical spindle: 270 ~ 1,370 (600 ~ 1,700)		
Distance from spindle center to table surface	mm		Horizontal spindle: 408 ~ 1,508 (738 ~ 1,838)		Horizontal spindle: 408 ~ 1,508 (738 ~ 1,838)		
<b>SPINDLE</b>							
Spindle taper: tool shank			ISO. BT-50		ISO. BT-50		
Spindle speed (high/low)	rpm		3,000		3,000		
spindle motor (30 min./continuous)	HP		20/25		20/25		
<b>FEED RATE</b>							
Rapid traverse (X,Y-axis)	m/min		10 (12)		10 (12)		
Rapid traverse (Z-axis)	m/min		10		10		
Cutting feedrate	mm/min		5,000		5,000		
Minimum setting unit	mm		0.001		0.001		
<b>MAGAZINE</b>							
No. of tools	set		60 (90)		60 (90)		
Max. tool diameter (adjacent)	mm		Ø125 / Ø250		Ø125 / Ø250		
Max. tool length	mm		400		400		
Max. tool weight	kg		25		25		
Tool selection			Absolute		Absolute		
Tool change time (tool to tool)	sec		Vertical: 18 sec / Horizontal: 13 sec		Vertical: 18 sec / Horizontal: 13 sec		
<b>COOLING &amp; LUBRICATION SYSTEM</b>							
Coolant tank capacity	ℓ		1,400 (Incl. additional tank)		1,420 (Incl. additional tank)		
Hydraulic oil tank capacity	ℓ		250		250		
Lubrication oil tank capacity	ℓ		8 x 2		8 x 2		
<b>ACCURACY</b>							
Positioning	mm		JIS B 6201 0.01/300, VDI3441P=0.03		JIS B 6201 0.01/300, VDI3441P=0.03		
Repeatability	mm		±0.01 VDI3441Ps=0.02		±0.01 VDI3441Ps=0.03		
<b>MISCELLANEOUS</b>							
Pneumatic capacity	kg/cm <sup>2</sup>		6		6		
Hydraulic capacity	kg/cm <sup>2</sup>		70		70		
Power capacity	KVA	50	50	50	50	50	50
Floor space	mm	11,149 x 7,552	13,149 x 7,552	16,948 x 7,552	11,149 x 8,052	13,149 x 8,052	16,948 x 8,052
Machine height	mm		6,878 (7,208)		5,878 (7,208)		
Machine net weight	kg	65,000	75,000	85,000	68,000	78,000	88,000
CNC control			FANUC, MITSUBISHI, SIEMENS, HEIDENHAIN		FANUC, MITSUBISHI, SIEMENS, HEIDENHAIN		

\* Specifications and design characteristics are subject to change without prior notice.

## STANDARD ACCESSORIES

- \* Centralized automatic lubrication system
- \* Lower splash guard and manual door
- \* Coolant pump and tank
- \* Chain type chip conveyor and bucket
- \* M.P.G.
- \* Foundation bolts and leveling screws
- \* Working lamp
- \* Alarm lamp
- \* Tool kits
- \* Operation manual and electric wiring diagram
- \* RS-232 terminal interface
- \* Two sets chip augers
- \* Spindle air blast system
- \* Auto power off
- \* Accuracy inspection report
- \* Maintenance ladder
- \* 60 tools ATC system

## OPTIONAL ACCESSORIES

- \* 90 tools ATC system
- \* Tool length measurement
- \* Workpiece measuring device
- \* Coolant through spindle (vertical spindle)
- \* Upper splash guard
- \* Linear scale

# FV5