

FAIR FRIEND • ENGINEERING • EXCELLENCE • LEADERSHIP • EXPERTISE • RELIABILITY



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# MT-1000 *SERIES*

5-Axis Mill-Turn Machining Center

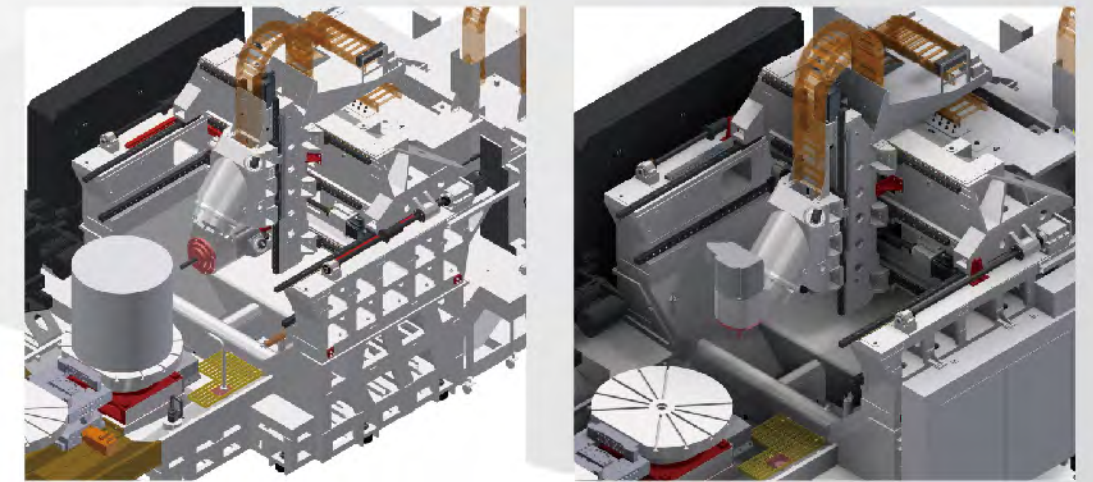


# MT-1000



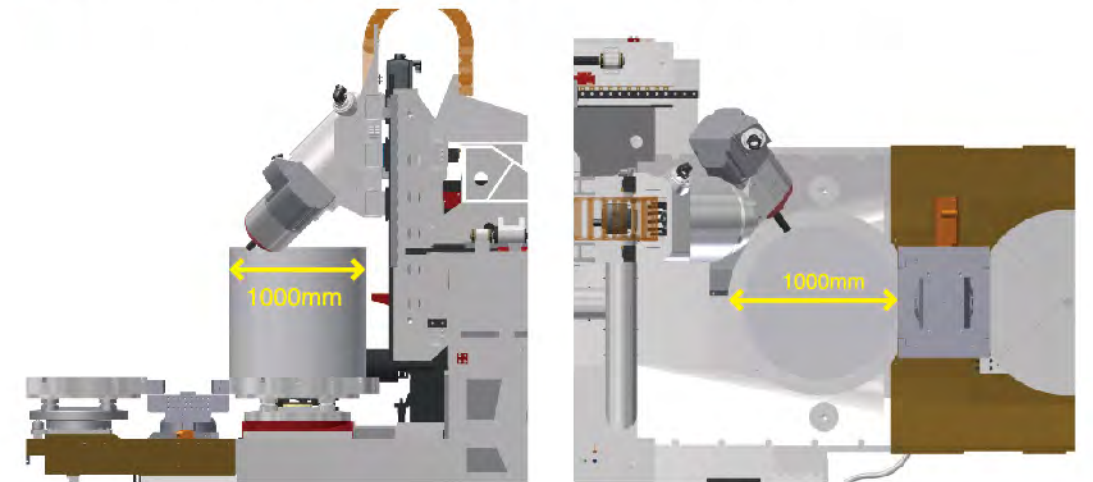
## Vertical / Horizontal Machining

- Increased X-axis travel, tool length up to 400mm, allowing concentric boring.
- Vertical / Horizontal turning function are capable.



## 5-axis Machine Application

- The spindle head tilts 45° (X axis) and 0°-90° (Y axis), providing B-axis machining function.
- The table rotates 360° (C axis), providing B/C-axis machining function.
- Maximum machining capacity is up to 1000mm in diameter.



## Turning & Milling Multi-function



## APPLICABLE INDUSTRIES

### Aerospace

- Engine case
- Structural parts

### Mold Industry

- Mold sample
- Mold base

### Precise Parts

- Machine tool components
- Semiconductor equipment
- Electro-optical
- Construction machinery
- Hydraulic machinery
- Automotive



# Gantry Type Machine Structure

## Maximum Stability and Smoothness in High Speed Machining

The Fair Friend MT1000 5-Axis Mill-Turn Machining Center is designed with a gantry type structure. With this advanced structure design, the workpiece does not move with 3 axes movement, Smooth and fast movement as well as high positioning accuracy can be obtained.

- A** X slide using T structure, 3 rails at back wall shape cross beam
- B** Y-axis is twin ball screws drive and has 3 points support on both sides which ensure minimum vibration during acceleration
- C** T-shape cross beam with high value which ensures no deflection of gravity
- D** Max work piece height: 1000mm  
Max table speed: 500rpm
- E** Roller type linear way for X/Y/Z

### Gantry Type Structure

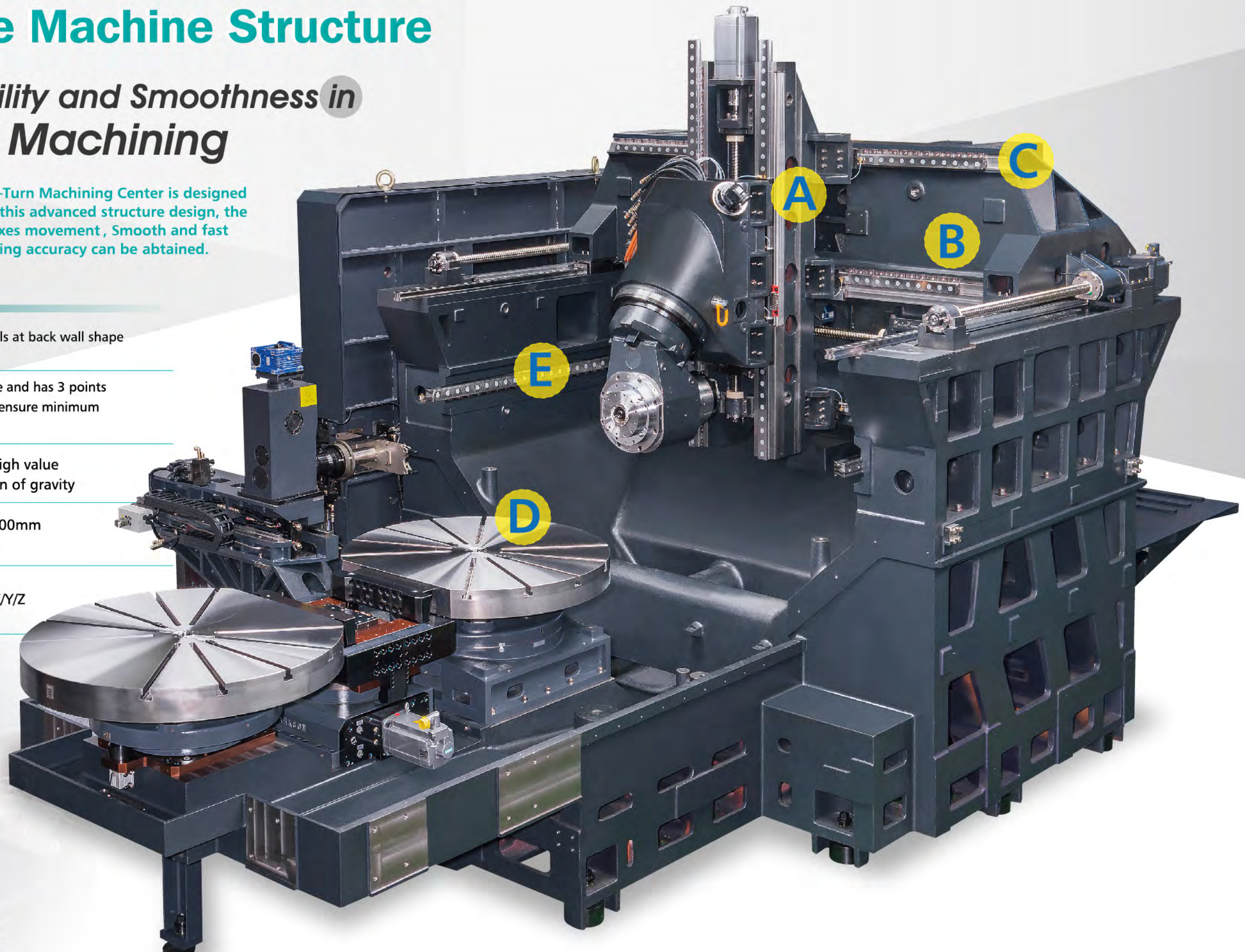
It provides a spacious working space and allows convenient workpiece loading / unloading.

### Base

The massive base structure enables the entire machine to be supported firmly.

### Table

- Driven by a high torque motor, the table speed reaches 500 rpm suitable for turning operations.
- Supported by hydrostatic bearing.





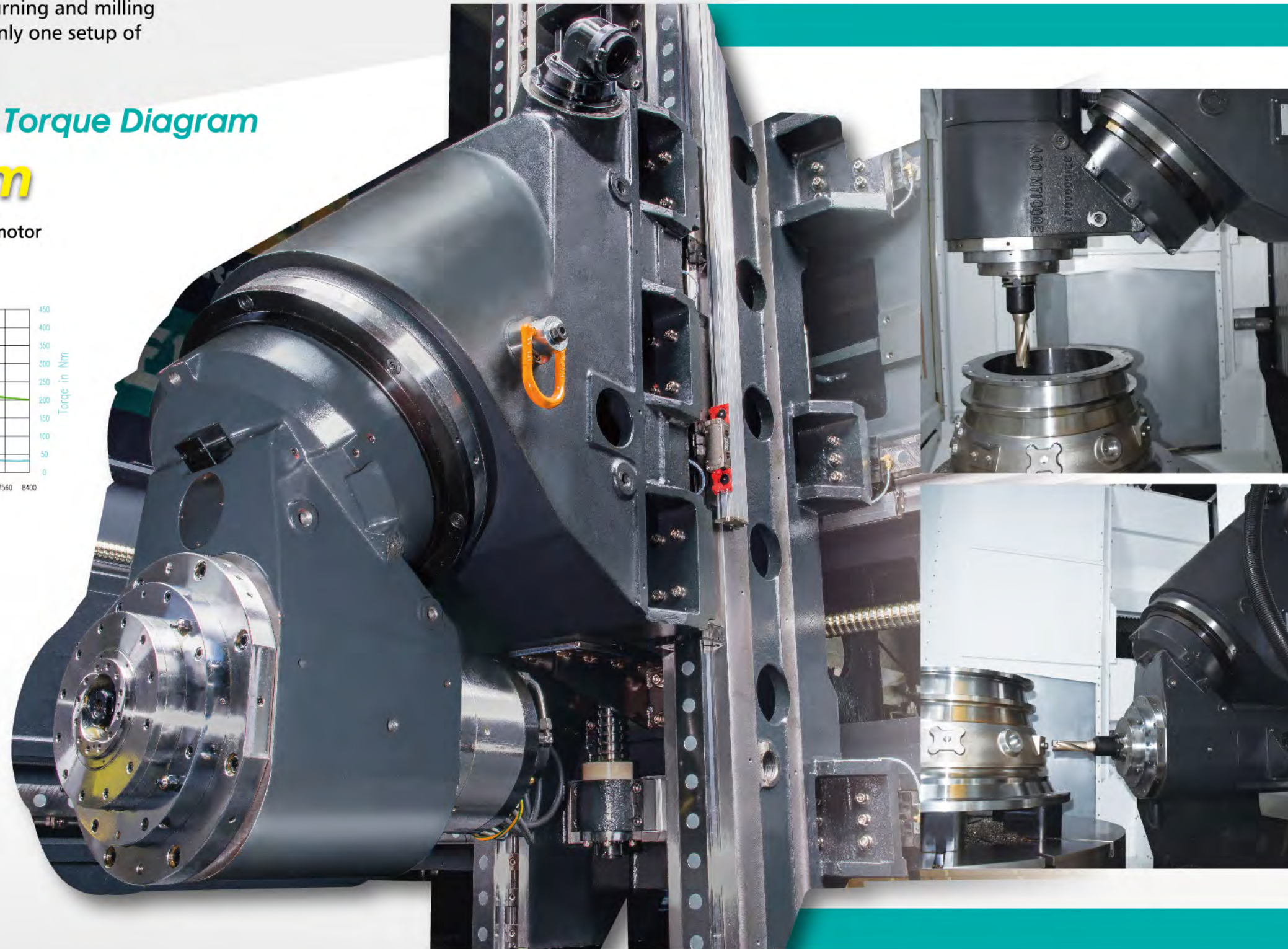
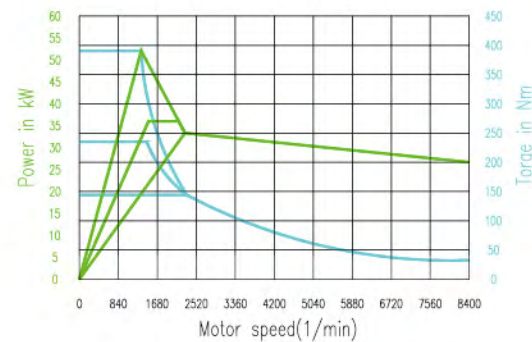
# 45-degree Vertical / Horizontal Spindle Head

- The direct-drive 45° vertical / horizontal head features short lever arm and high rigidity, allowing for maximum stability in heavy cutting.
- Vertical and horizontal turning and milling can be completed with only one setup of workpiece.

## Spindle Speed / Torque Diagram

### 8,000 rpm

Spindle speed with Indramat motor  
MMS 202B-0210



## 5-axis Machine Application

- When spindle head position is at 0 degrees, the machine can perform vertical machining.
- When spindle head can positioned at 180 degrees, the machine can perform horizontal machining.

The spindle head is positioned at 0 degrees for machining top face of workpiece.

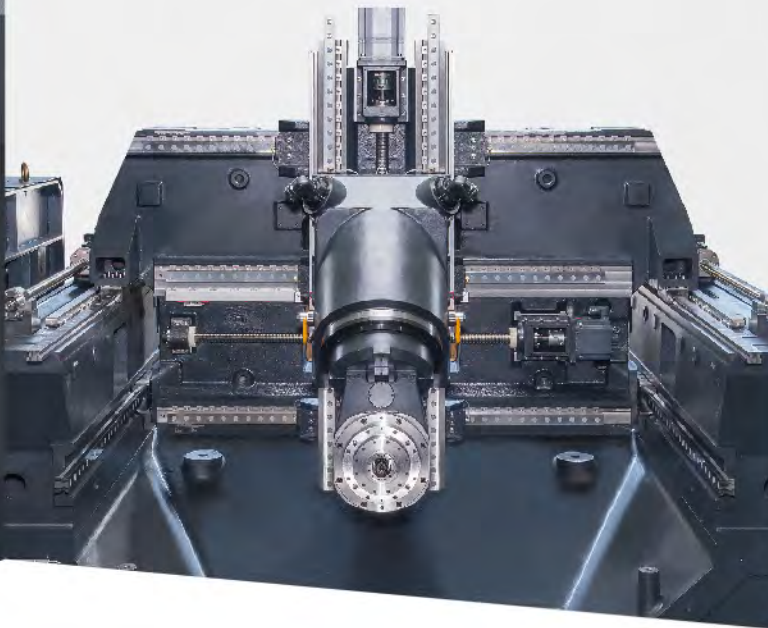
The spindle head is positioned at 180 degrees for machining four faces of workpiece.





## 3 Linear Ways on X-axis

- X-axis is mounted with 3 linear ways combined with large span design and high / low step deployment, so as to provide a solid support for the spindle head.

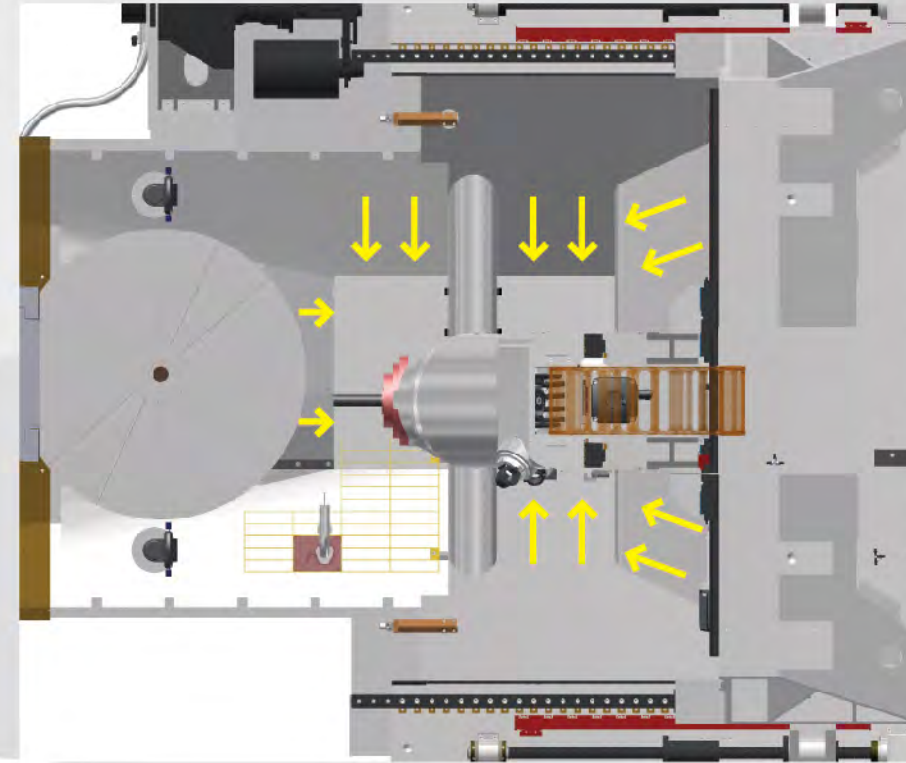


## Three-Point Support on Y-axis

- The T shape back-wall designed cross beam features high rigidity and no deformation in the middle .
- Dual screw transmission with center drive.
- Two linear ways on Y-axis together with 3-point support ensure no displacement of the cross beam at high speed movement.

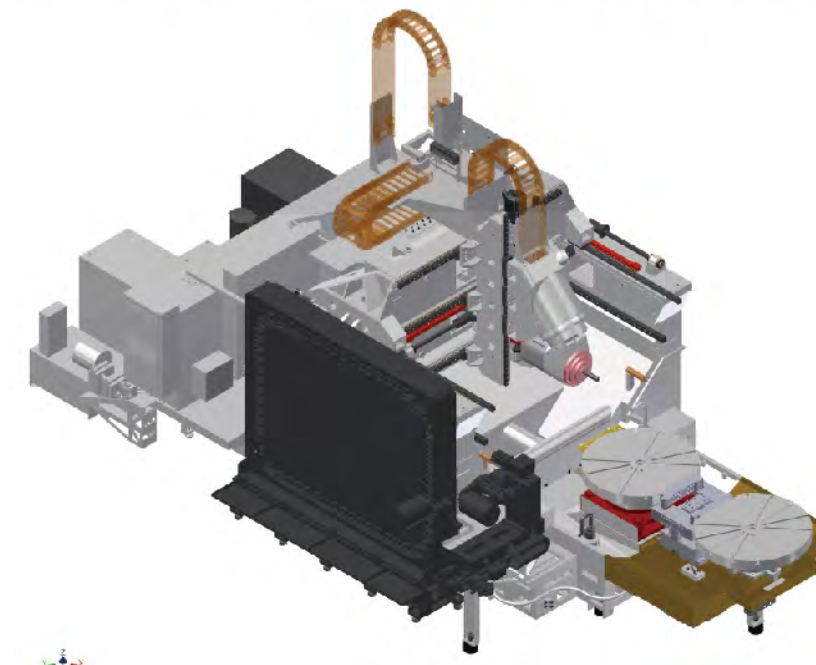
## Center Chip Discharge

- The center chip discharge design in combination with oversized chip outlet port and steep incline make chip removing more smoothly and efficiently.



## 60 Tools ATC

- Vertical tool change.
- Tool change can be quickly accomplished in only 4 seconds (tool-to-tool).



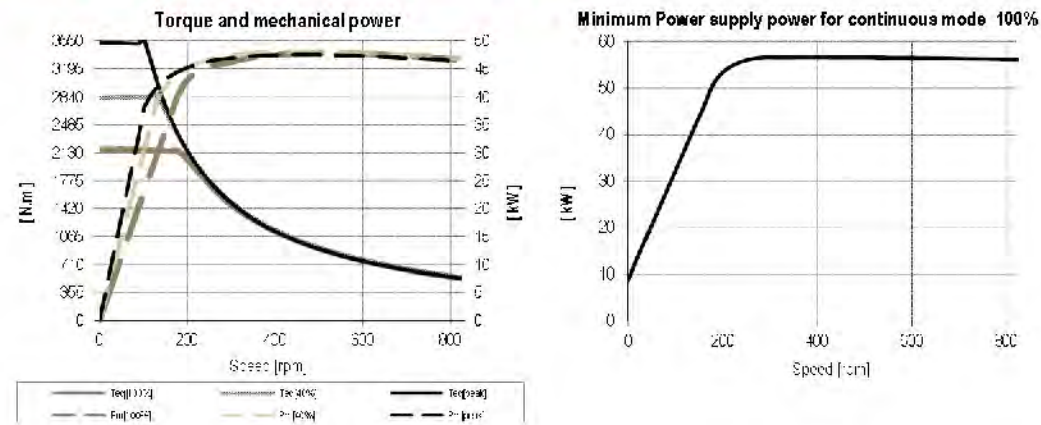


## Automatic Pallet Changer (APC)

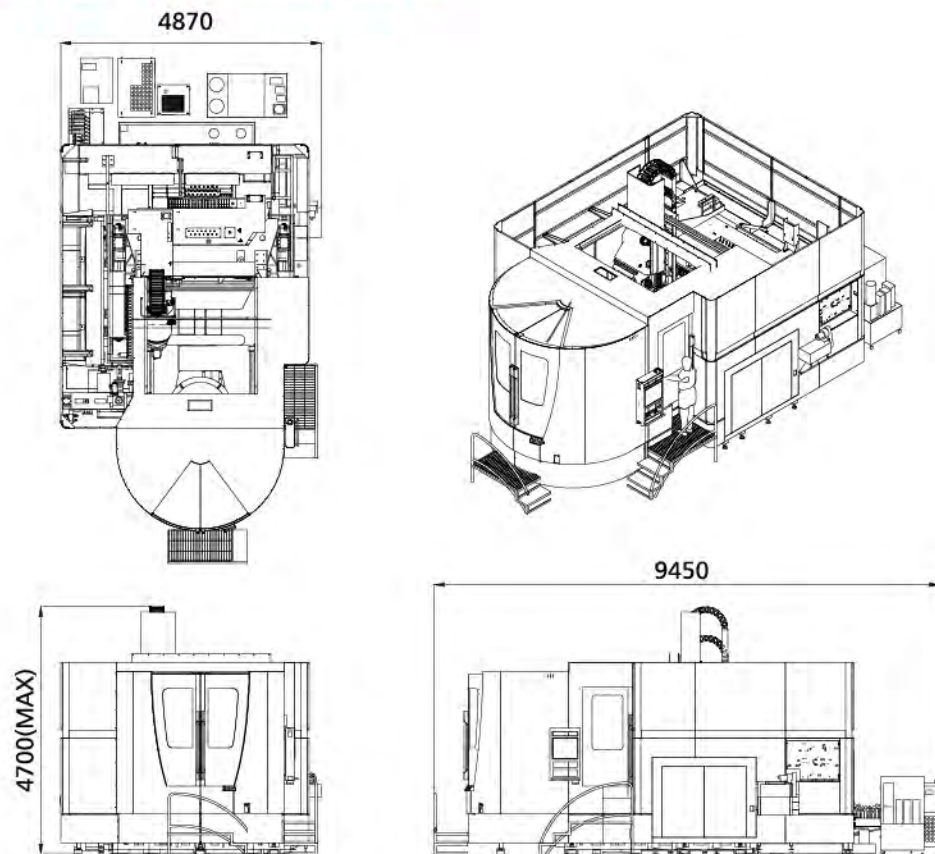
- Number of pallets: 2
- Pallet change type: 180° swing type
- APC drive: servo motor
- Pallet Change time: 18 seconds



## Rotary Table Torque Chart



## Mechanical Dimensions



# SPECIFICATIONS

MODEL	Unit	MT1000	
<b>B/C-axes Tiling Rotary table</b>		DDM Drive	
<b>TRAVEL</b>			
X-axis travel	mm	1200	
Y-axis travel	mm	1230	
Z-axis travel	mm	1000	
B-axis rotation angle	degree	+180° ~ -30°	
C-axis rotation angle	degree	360°	
Spindle nose to table surface	mm	95 - 1095	
Table surface to floor	mm	1250 ± 5	
<b>TABLE</b>			
Table dimensions	mm	1000 x 1000 (Ø1000)	
Spindle hold diameter	mm	Ø75H7	
T-slots	mm	22 H7	
Max. table load	kg	2000	
Max. torque	B-axis (Tilting axis) C-axis (Rotary axis)	N-m	3530
Max. rotation speed	B-axis (Tilting axis) C-axis (Rotary axis)	min <sup>-1</sup>	25 500
Min. indexing unit	degree	0.001	
Max. diameter of workpiece	mm	Ø1200 x 1000 (H)	
<b>SPINDLE</b>			
Spindle speed	min <sup>-1</sup>	8000	
Spindle taper	-	HASK-A100	
Spindle power	Kw	19 / 28	
<b>FEED RATE</b>			
X-axis rapid traverse	m/min	50	
Y-axis rapid traverse	m/min	50	
Z-axis rapid traverse	m/min	50	
<b>ATC</b>			
Tool changing time (tool to tool)	sec	4 / (60Hz)	
Tool changer	-	Arm type	
No. of tools	-	60	
Max. tool weight	Kg	20	
Max. tool length	mm	400	
Max. tool diameter	mm	Ø125	
Max. tool diameter (no adjacent tool)	mm	Ø245	
<b>AIR SOURCE</b>	bar	6-8	

• Specifications are subject to change without prior notice.

### Standard Accessories

- Air condition
- Automatic lubrication system
- Spindle air sealing
- Dust-proof electrical cabinet
- Linear scale for X/Y/Z
- Coolant system
- Oil skimmer
- Coolant gun
- Heat exchanger
- 3 Color signal light,
- Working light
- Leveling blocks and plates
- Operation and maintenance manual

### Optional Accessories

- Workpiece measurement system
- Automatic tool length measurement and breaking detection
- Auto power off
- High pressure pump