



COMPACT CNC VERTICAL MACHINING CENTER
TR-51/60/70 series

Intelligent High Speed Precision CNC Machining

Optimized Rigid Mechanical Foundation Reinforced Frame Construction Design High Speed Transmission System

- Meehanite cast iron with rib reinforcement design provides machine high rigidity and high structural stability.
- Extra wide span between linear guides ways. High speed feed rate and superior stability reduce vibration.
- Servo motor directly drives ball screw in 3 axes, featuring high positioning accuracy without backlash problem.

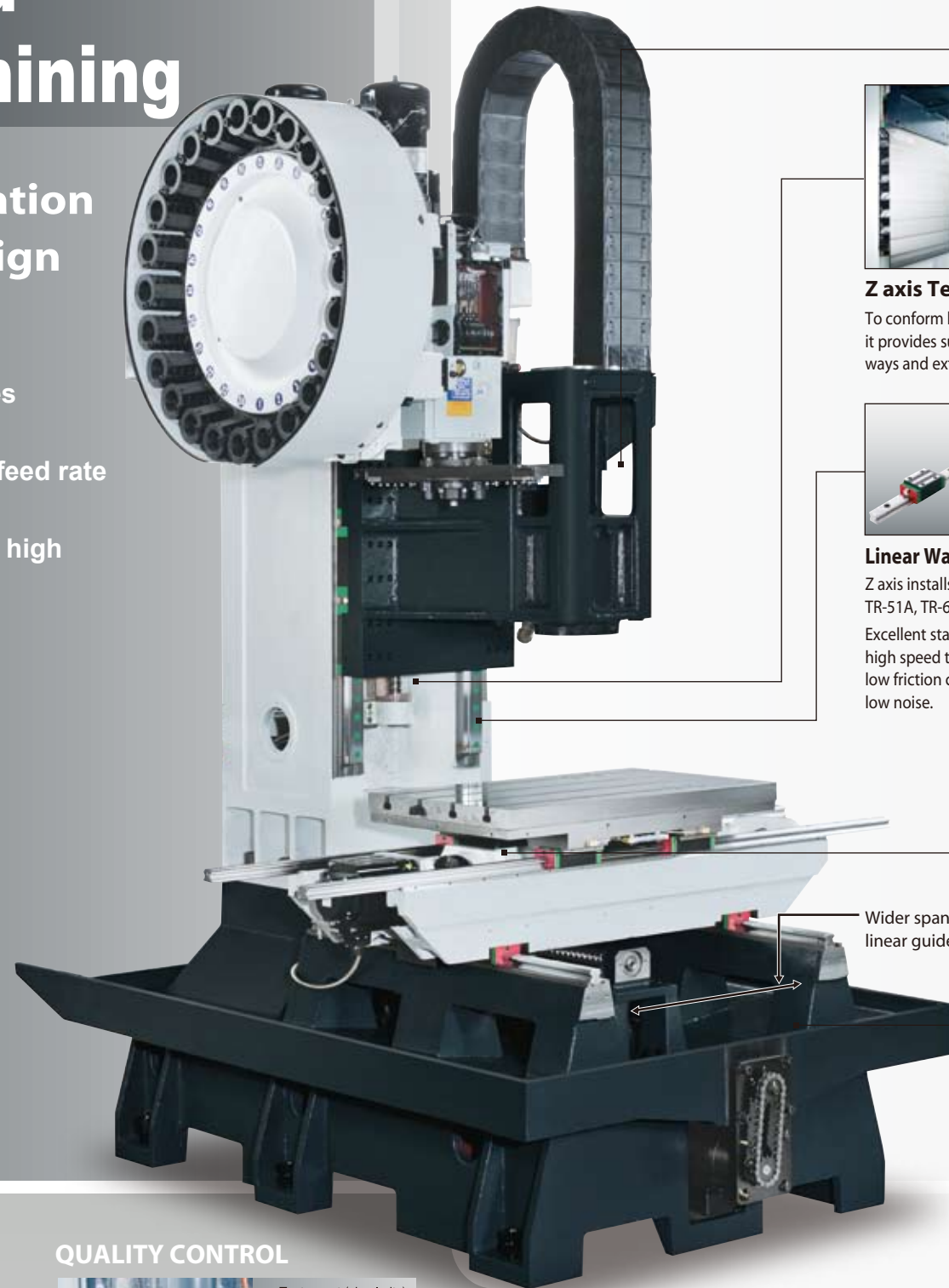
HIGH SPEED AND RELIABLE TOOL CHANGE



Armless-Type Magazine
Tool change time: 1.8 sec.
12 and 14 tools are available

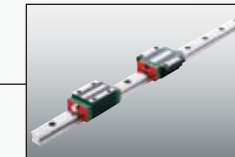


Arm-Type Magazine
Tool change time: 2.2 sec.
24 tools is available



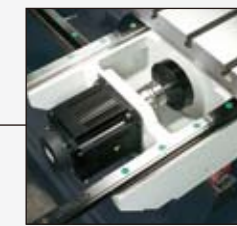
Z axis Telescopic Guard

To conform high speed traverse of Z axis, it provides superior protection for linear ways and extends their service life.



Linear Ways On 3 Axes

Z axis installs roller way for TR-51A, TR-60A and TR-70A
Excellent stability during high speed traverse ensures low friction coefficient and low noise.



Three axes are driven by high performance motors with quick acceleration and deceleration.



Large Capacity Coolant Tank With Casters

Sliding coolant tank can be pulled out easily while coolant pump with mesh filter take away cutting chips quickly.



Chip Auger

A chip auger is mounted at the center of the base, removing chips to the rear side of the machine easily. It makes chip disposal convenient.

X, Y Axis Telescopic Guard

The telescopic guards on X, Y-axis prevent chips or coolant from damaging linear ways.
"V" shaped telescopic guard on X, Y axis, allows fast chip removal and high efficiency linear way protection.

OPTIONAL EQUIPMENT



CNC Rotary Table (5th Axis)
For tilting shaft servo motor with absolute encoder is recommended.



Transformer



Chiller

CONTROL SPECIFICATIONS

	Mitsubishi				Fanuc	
	E-68	M70-VB	M70-VA	M720-VS	Oi-MATE-D	Oi-MD
CPU	64 bit				32 bit	
Max. Controlled Axes	4	5	8	8	4	7
Max. Simultaneous Axes	4	4	4	4	4	4
Program Storage Length	512K	1024K	1024K	1024K	256K	256K
Macro Variables Common	400	400	400	400	400	600
Tool Offset Sets	200	200	200	200	200	200
Conversational Programming	×	○	○	○	○	○
Display	8.4" TFT LCD		10.4" TFT LCD		8.4" TFT LCD	
Multi-Language Display	○		○		○	
Servo System with ABS. Encoder	○		○		○	
Memory Card	○		○		○	
Ethernet	×	○		○		
High Speed And Accuracy Machining Code	G08	G05.1 Q1	G05 P10000	SSS	G05.1 Q1	G05.1 Q1
RS-232 Interface	○		○		○	
Toolpath Simulation	×	○		3D	○	
Handwheel Feed Program Simulation	×	○		○	×	
Program Buffer Correction	○		○		×	



• The control panel is placed to achieve the optimum operation ergonomics.

○ : Standard
× : None

QUALITY CONTROL



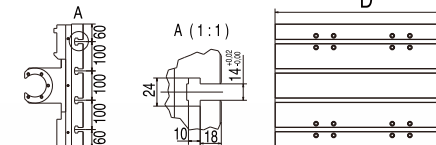
• Test report (circularity)



• The positioning accuracy is inspected by using Agilent laser unit.
• Positioning accuracy in full travel is less than 0.010mm
• HEIDENHAIN grid encoder is applied for circular servo adjustment.
• Diameter Ø100, F=3000, circularity <0.010mm.

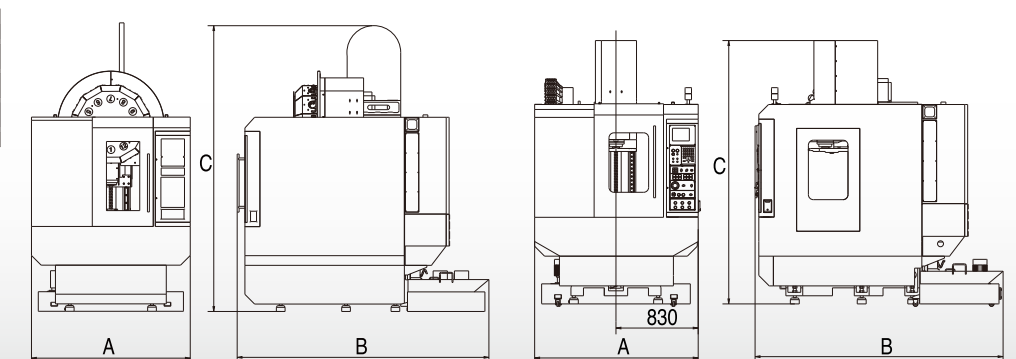
DIMENSIONS

T-slot Dimension



Machine Dimension

	A	B	C	D
TR-51E	1650	2520	2800	600
TR-51D	1650	2520	2800	600
TR-51A	1900	2520	2800	600
TR-60E	1650	2520	2800	700
TR-60D	1650	2520	2800	700
TR-60A	1900	2520	2800	700
TR-70E	1900	2520	2800	850
TR-70D	1900	2520	2800	850
TR-70A	2000	2520	2800	850



MACHINE SPECIFICATIONS

MODEL			TR-51E	TR-51D	TR-51A	TR-60E	TR-60D	TR-60A	TR-70E	TR-70D	TR-70A	
TRAVEL	X-Travel	mm	510			600			700			
	Y-Travel	mm	400			400			400			
	Z-Travel	mm	400		500	400		500	400		500	
	Table to Spindle Nose	mm	150~550		150~650	150~550		150~650	150~550		150~650	
TABLE	Table Size	mm	600 x 420			700 x 420			850 x 420			
	Max. Load	kg	250			250			250			
	T Slots (Width x Pitch x No.)	mm	14 x 100 x 4			14 x 100 x 4			14 x 100 x 4			
SPINDLE	Spindle Speed	rpm	8000			8000			8000			
	Max. Tapping Speed	rpm	3000			3000			3000			
	Spindle Taper		7/24 BT#40			7/24 BT#40			7/24 BT#40			
	Transmission		Belt	Direct drive		Belt	Direct drive		Belt	Direct drive		
FEED RATE	Rapid Traverse (G00)	m/min	48/48/48			48/48/48			48/48/48			
	Cutting Feed Rate (G01)	mm/min	10000			10000			10000			
AUTOMATIC TOOL CHANGER SYSTEM	Tool Shank		BT#40			BT#40			BT#40			
	PUII Studs		P40T-1 MAS403-45°			P40T-1 MAS403-45°			P40T-1 MAS403-45°			
	ATC Type		Armless	Armless	Arm	Armless	Armless	Arm	Armless	Armless	Arm	
	Magazine Capacity		12	14	24+1	12	14	24+1	12	14	24+1	
	Max. Tool Length	mm	250			250			250			
	Max. Tool Diameter	mm	100		80	100		80	100		80	
	Max. Tool Weight	kg	3		4	3		4	3		4	
	Tool Change Time	Tool To Tool	sec.	1.8		2.2	1.8		2.2	1.8		2.2
		Chip To Chip	sec.	2.7		3.1	2.7		3.1	2.7		3.1
MOTOR	X-axis (Mitsubishi)	kw	1.5			1.5			1.5			
	Y-axis (Mitsubishi)	kw	1.5			1.5			1.5			
	Z-axis (Mitsubishi)	kw	3.0			3.0			3.0			
	Spindle (Mitsubishi)	kw	5.5/3.7	7.5 / 5.5		5.5/3.7	7.5 / 5.5		5.5/3.7	7.5 / 5.5		
MACHINE DIMENSIONS	W x D x H	cm	165x252x280	165x252x280	190x252x280	165x252x280	165x252x280	190x252x280	190x252x280	190x252x280	200x252x280	
	N.W.	kg	3100	3100	3250	3250	3250	3500	3350	3350	3600	
OPTIONAL ACCESSORIES	High Speed Spindle Upgrade	rpm	10K/12K	10K/12K/15K		10K/12K	10K/12K/15K		10K/12K	10K/12K/15K		
	Spindle Power Upgrade	kw	7.5 / 5.5	11 / 7.5		7.5 / 5.5	11 / 7.5		7.5 / 5.5	11 / 7.5		
	SK-40 Magazine & Spindle		△			△			△			
	HSK-63 Magazine & Spindle		×		△	×		△	×		△	
	Enclosure Chip Flushing System		△		○	△		○	△		○	
	Magazine With Servo Indexing		△	○	×	△	○	×	△	○	×	
	Coolant Through Spindle		×	△		×	△		×	△		
	Extra Low Inertia Spindle Motor (Mitsubishi / Rigid Tapping 4000rpm)		△			△			△			
	ATLM with Breakage Detection		△			△			△			
	Automatic Door		△			△			△			
	Transformer / Voltage Regulator		△			△			△			
	Workpiece Air Blow System		△			△			△			
	Oil Mist System		△			△			△			
	4 TH or 5 TH axes		△			△			△			
	Coolant Gun		△			△			△			
Scraper or Chain-type Chip Conveyor		△			△			△				
Mist Collector / Top Full Cover		△			△			△				

● All specifications, dimensions and design characteristics are subject to change without notice.

○:Standard △:Optional X:Not available

STANDARD ACCESSORIES

- Spindle air blow device
- Work light (PL light)
- Coolant system and coolant tank
- Leveling bolts and pads
- Double-cabinet-type electrical cabinet (with heat exchanger)
- Chip auger
- Automatic lubrication system
- Tool kit and tools
- Dual-color LED alarm light
- TFT LCD monitor
- Enclosure chip flushing system (only for TR-51A, TR-60A, TR-70A)



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