



# VMC-137/168

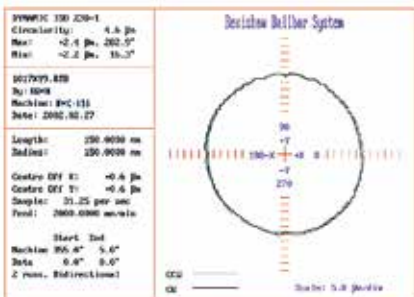
VERTICAL MACHINING CENTER



# VMC-137

## VERTICAL MACHINING CENTER

- AGMA hardened-way machines are designed for rigidity and heavy-duty cutting. The machine structures are exclusively made to absorb and dampen cutting-induced vibrations; yet the machine's agility is better than most linear-way type machines on the market. In order to support our customers' needs, AGMA has built a support network specifically in special material cutting applications. This allows us to offer our clientele the best solution to their applications. Customer satisfaction is always AGMA's first priority.
- **High-Rigidity Structure**  
All three axes have a hardened box-way design. In addition, the spindle headstock, column, saddle, base, and table are all made of high-quality Meehanite cast iron.



**X/Y/Z : 1,300/700/650mm**

**(51.18"/27.56"/25.59")**

**24 Tools Magazine (BT-50/CAT-50)**

**8,000RPM/6,000RPM (Belt/Gear Driven)**

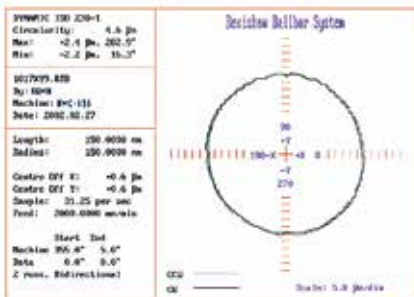


With Optional Accessories

# VMC-168

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**X/Y/Z : 1,600/800/700mm**

**(63"/31.50"/27.56")**

**24 Tools Magazine (BT-50/CAT-50)**

**8,000RPM/6,000RPM (Belt/Gear Driven)**







**With Optional Accessories**

# VMC-137/168

## HIGH-RIGIDITY STRUCTURE

### High-Stiffness Spindle Design

The cartridge-type spindle enables it to reach 8,000, or 10,000 RPM using a belt drive assembly. Bearings at spindle nose end are well supported by a shaft sleeve and casting structure. The optimized bearing arrangement along with rigid spindle headstock reduces cutting-induced vibrations, virtually guaranteeing a better work piece surface finish.

### Design of High Horse Power Spindle for Heavy-Duty Cutting

The gear-driven cartridge spindle is capable of reaching speeds of 6,000 RPM. There is a dramatic increase in spindle rigidity due to increased spindle bearing support. This along with a high horsepower spindle motor dramatically enhances the machine's cutting performance. In addition, each gear-driven spindle has a spindle oil cooler used to lower bearing temperature and prolong spindle life.



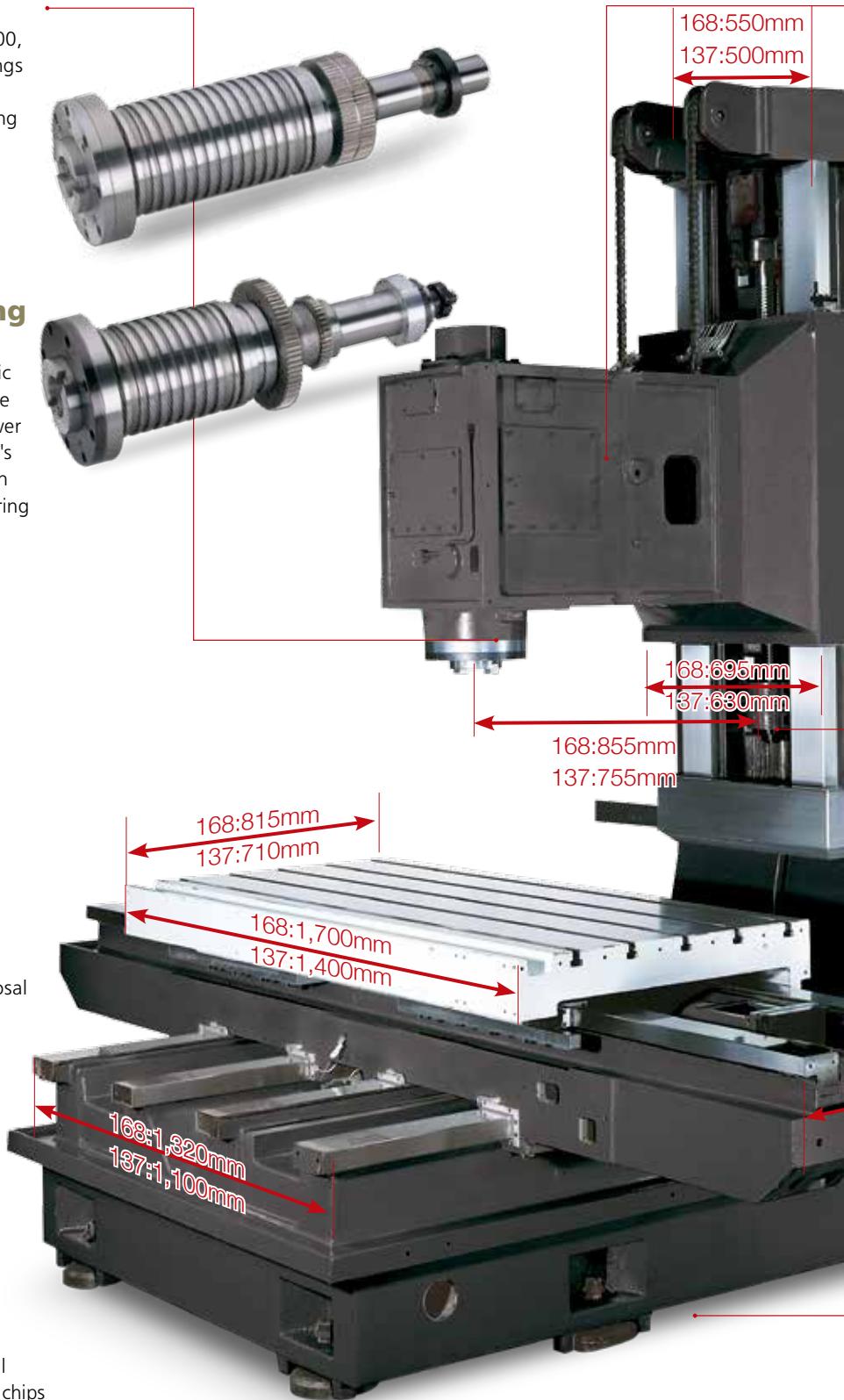
### X-Axis Chip Auger

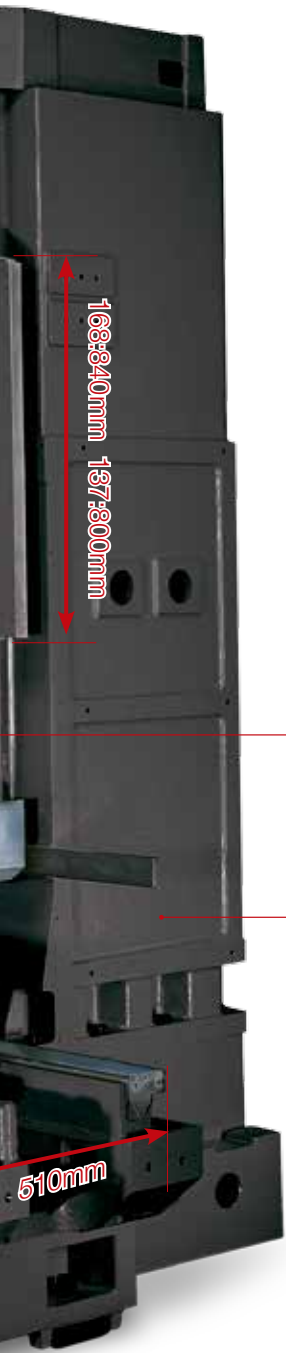
The chip auger design provides optimal chip disposal and maximizes table cleanliness.



### Three Chip Auger Design

Instead of using a costly chip conveyor, the special three chip auger system efficiently removes metal chips which produced during machining.





### Belt-Driven Spindle

The spindle headstock has increased rigidity due to the wide stance design of the z-axis ways and the long surface contact between the headstock and way bars.

### Gear-Driven Spindle Transmission

The two-speed gear transmission allows full power utilization. All gears are made of Chrome Molybdenum alloy steel, heat treated, and precisely ground to ensure the spindle runs quietly and smoothly. Furthermore, the design of the floating tool release mechanism minimizes any pressure exerted on the spindle bearings.

### Stiff Ballscrew Design for Greater Axial Support

All three axes use ISO Class C3 precision ground preloaded ballscrews with pre-tensioned supports on both ends to minimize backlash and compensate the thermal induced error.

### Massive Column Design

Four over-sized ways of the machine base combined with the large column helps make the structure a very rigid unit. The column is also heavily ribbed with honeycomb shape ribs to minimize any twisting caused during machining. When in operation, maximum contact surface between the spindle headstock and z-axis ways helps counteract heavy loads applied to the spindle structure.

### Excellent Machine Base Design

The machine base of the VMC-168 uses a unique enclosed circular structure. This unique design allows the base to remain free of deformation that may occur due to the heat generated during machining. This unique design also allows the machine to remain stable after extensive usage.

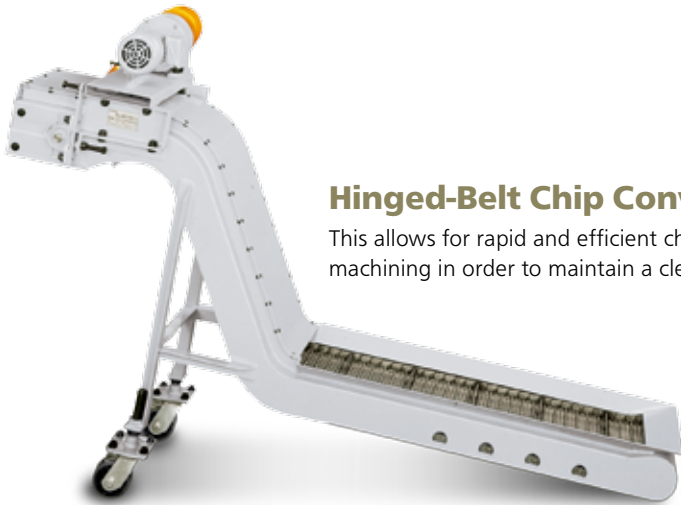
### Pressurized Oil Distributor

Lubricating oil is evenly distributed to the sliding surfaces of the machine by using Showa oil distributors along with hard-plumbed, low maintenance oil lines.





# VERTICAL MACHINING CENTER



## Hinged-Belt Chip Conveyor (Option)

This allows for rapid and efficient chip removal during machining in order to maintain a clean machine.



## Oil Circulating Cooling System for Spindle

A high efficiency spindle cooling system dissipates running induced heat generation in order to maintain spindle accuracy and prolong spindle life.



## Coolant Thru Spindle (C.T.S.)(Option)

Coolant through the spindle with pressure of 20-bar (280-psi) effectively reduces tool wear because of heat and the slow evacuation of metal chips. CTS with higher pressure is also available.



## Calibration with Laser Interferometer was Performed and Certified by PMC

All of our machines are calibrated according to the "VDI 3441 3D" standard. Calibration is performed for full travel length for each axis. Each measurement is taken six times to ensure the most consistent and accurate readings.





## 32 Tools Magazine (Option)

This unit offers larger tool capacity help to increase machining efficiency. The tool magazine is stored away from the working area to reduce any interference when the machine is in operation.

## 24 Tools Magazine

A rapid arm-type tool changer is driven with a precision cam, maintaining tool-changing accuracy of 0.01mm, which in turn will help maintain long-term spindle clamping accuracy.

## Automatic Lubrication System

All AGMA machines use a pressurized central lubricating system. The PLC controlled system allows all three axes to be lubricated evenly to maintain accuracy and prolong machine life.



## Ball-Bar Testing

Each machine goes through telescoping ball-bar tests to check contouring accuracy and uncover any geometric errors. This testing ensures the machine structure is both square and parallel.

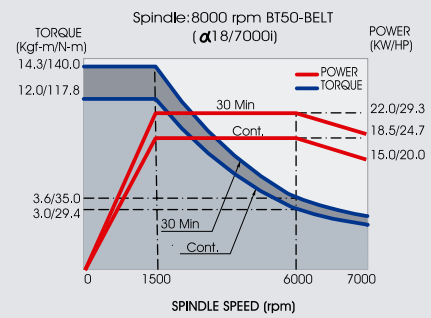
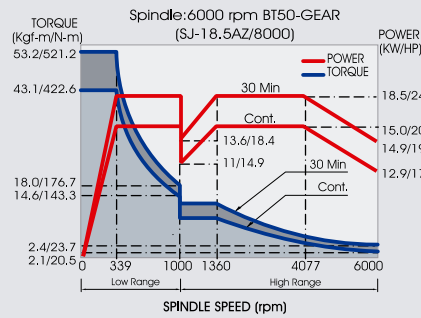
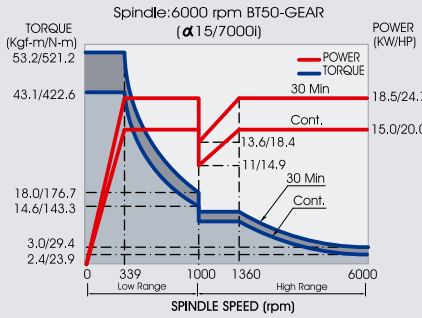
## Control panel

The control panel swivels for easy use and also has a remote MPG for fast manual operations.

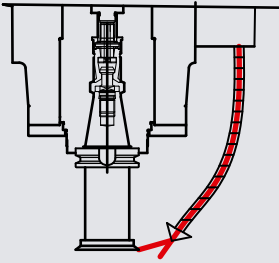
## Hand Scraping

To ensure consistent high quality, each slide way is hand-scraped. Each axis saddle has Turcite material on it and a special "\*" design is used along with a "Z" pattern for efficient oil through. There is an excellent distribution of oil to all axes, so setting time after rapid movements is eliminated, and stick-slip during cutting is minimized.

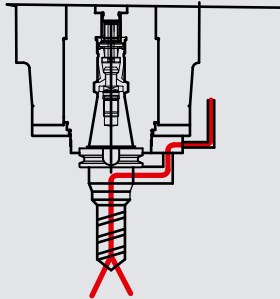
# VERTICAL MACHINING CENTER



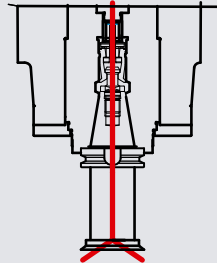
**Std.-Directional Pipe**  
Purpose-General



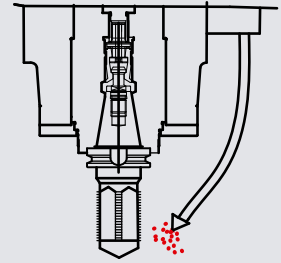
**Opt.-Oil Hole Holder**  
Purpose-Drilling, Boring, etc.



**Opt.-Coolant Through Spindle (C.T.S.)**  
Purpose-Drilling, Boring, etc.

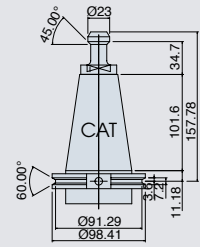
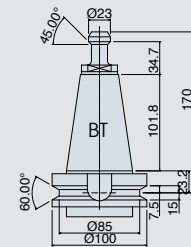
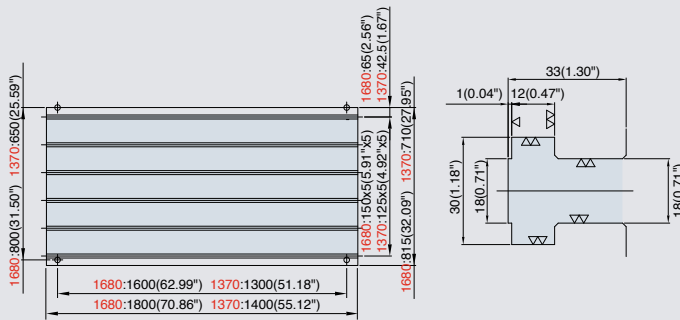


**Opt.- Oil Mist**  
Purpose-Tapping, Reaming, etc.



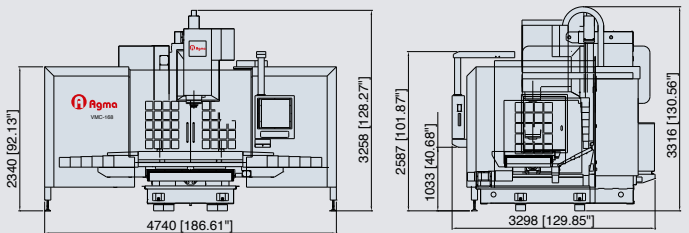
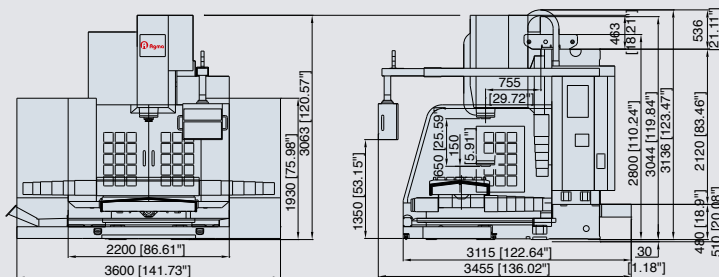
**BT-50**

**CAT-50**



**VMC-137**

**VMC-168**



Model	VMC-137	VMC-168
<b>Spindle</b>		
Spindle Taper	NO.50	
Transmission	Belt/Gear	
Spindle Speed	8,000/6,000 r.p.m.	
<b>Table</b>		
Table Size	1,400mm x 710mm (55.12" x 27.95")	1,700mm x 815mm (66.93" x 32.09")
T-Slot Size	18mm x 6 x 125mm (0.71" x 6 x 4.92")	18mm x 5 x 150mm (0.71" x 5 x 5.91")
Work Area	1,300mm x 700mm (51.18" x 27.56")	1,500mm x 800mm (59.06" x 31.50")
Max. Table Load	1,600kgs (3,520lbs)	2,000kgs (4,400lbs)
<b>Travel &amp; Feedrate</b>		
X Axis	1,300mm (51.18")	1600mm (63.00")
Y Axis	700mm (27.56")	800mm (31.50")
Z Axis	650mm (25.59")	700mm (27.56")
Distance from Spindle Nose to Table	200~850mm (7.87"~33.46")	200~900mm (7.87"~35.43")
Distance from Spindle Center to Column Ways	755mm (29.72")	855mm (33.66")
Rapid Traverse	X, Y =15 M/Min (590IPM) Z=12 M/ Min (472IPM)	
Cutting Feedrate	X, Y, Z: 1~10,000mm/min (393 IPM)	
<b>ATC</b>		
Tool Shank	BT/CAT-50	
Pull Stud	MAS P50T-1 (45°)	
Magazine Capacity	24 Tools	
Max. Tool Diameter (with Adjacent Pocket Empty)	ø250mm (9.84")	
Max. Tool Diameter (Full Storage)	ø125mm (4.92")	
Max. Tool Length	300mm (11.81")	
Max. Tool Weight	15kgs (33lbs)	
ATC Type	Cam Driven Arm Type	
<b>Motor</b>		
Spindle (Cont./30min.)	18.5/22Kw (25/30 HP) Belt 15/18.5Kw (20/25 HP) Gear	
X/Y/Z Axes (Fanuc)	4.0Kw (5.45 HP)	
Lubrication Pump	0.025Kw (0.033 HP)	
Coolant Pump	0.49Kw (0.66 HP)	
Machine Height	3,130mm (124")	3,320mm (131")
Floor Space	3,600mm x 3,455mm (141.73" x 136")	4,740mm x 3,298mm (186.61" x 129.85")
Machine Weight	12,000kgs (26,400 lbs)	15,000kgs (33,000 lbs)
Control	Fanuc 0iMD/0iMF	

• Specification is subject to change without further notice.

## Standard Accessories :

1. Fanuc 0iMD/0iMF Controller
2. Arm Type 24 Tools ATC.
3. Fully Splash Guard
4. Spindle Air Blast
5. Oil Circulating Coolant System for Spindle
6. Cutting Coolant Equipment
7. Quartz Work Lamp
8. Three-color Indicator Light
9. Automatic Lubrication Equipment
10. Three Axes Slideways Protector
11. Heat Exchanger for Electric Cabinet
12. Tool Box w/Leveling Bolt
13. One Year Warranty for Machine Parts
14. Auto Power Off
15. RS-232 Interface
16. Rigid Tapping
17. Operation Manual
18. Remote Manual Pulse Generator (M.P.G.)
19. X+Y Axis Screw Type Chip Auger 3 pcs
20. Transformer (Exclude India, USA and Canada)
21. Hydraulic Unit (Gear Type Only)
22. Lubrication System for Gear Box (Gear Type Only)
23. CE/CSA Electrical System (For European/Canada Country Only)
24. AI Contour Control

## Optional Accessories :

1. Fanuc 31iMB
2. Arm 32 Tools ATC
3. BT-50 Belt Driven Spindle 10,000RPM (Belt Type only)
4. Chip Conveyor
5. Coolant Through Spindle A Type 20 Bars or 70 Bars
6. Coolant Through Tool
7. Data Server
8. AI Contour Control II
9. High Speed Processing (31iMB only)
10. 4<sup>th</sup> Axis Preparation
11. Rotary Table
12. Renishaw TS-27R Tool Setup Probe (Tool Setter)
13. Renishaw Tool Machining Probe OMP-60



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