VERTICAL MACHINING CENTER
BOX WAY SERIES

VMC-95 / VMC-115 / VMC-116
VMC-137 / VMC-147
VMC-168 / VMC-168C
VMC-1910 / VMC-2210

Heavy-duty cutting and high rigidity box way models best suited for aerospace industry and mold industry

Agma

VMC-95/115/116

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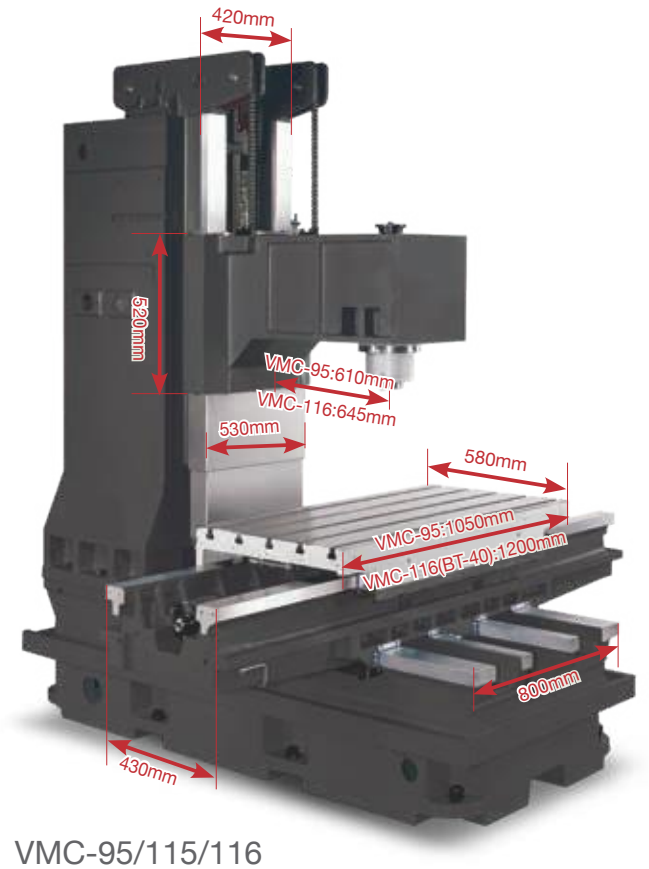
- All three axes have a hardened box-way design. In addition, the spindle headstock, column, saddle, base, and table are all made of high rigidity Meehanite cast iron (FC30) with stress relieved to ensure maximum accuracy and absolute rigidity.
- All slide-ways are heat-treated and precision ground to maintain high precision.
- Double guide ways and a counter-balanced design prevent unexpected vibration from the Z-axis drive, which helps achieve a quality surface finish.
- Strategically placed ribs help enhance the spindle headstock structure. The spindle headstock also has the proper proportion of contact with the column, which creates strong spindle support.
- The base of VMC-95/115/116 has 4 hardened box ways that allow greater stability and accuracy even with heavy loading. In essence, the design fully supports the saddle and table along the entire travels lengths of the X and Y axes.
- Ø40/40/40mm high class double nut ballscrew provides strong rigidity, high torque, better accuracy, long-life, and effectively heat extension control.

VMC-95/115/116

VMC- 95: X/Y/Z 900/550/580mm
VMC-115: X/Y/Z 1,100/550/580mm
VMC-116: X/Y/Z 1,100/600/600mm
BT-40 Arm type 24 tools ATC (standard)
BT-50 Arm type 24 tools ATC (option)
BT-40 Belt Driven 8,000 rpm (standard)
BT-40 Belt Driven 10,000 rpm (option)
BT-40 Direct Driven 10,000/12,000/15,000 rpm (option)
BT-50 Pulley Driven 8,000 rpm (option) for VMC-116
BT-50 Gear Driven 6,000 rpm (option) for VMC-115/VMC-116

VMC-95/115/116

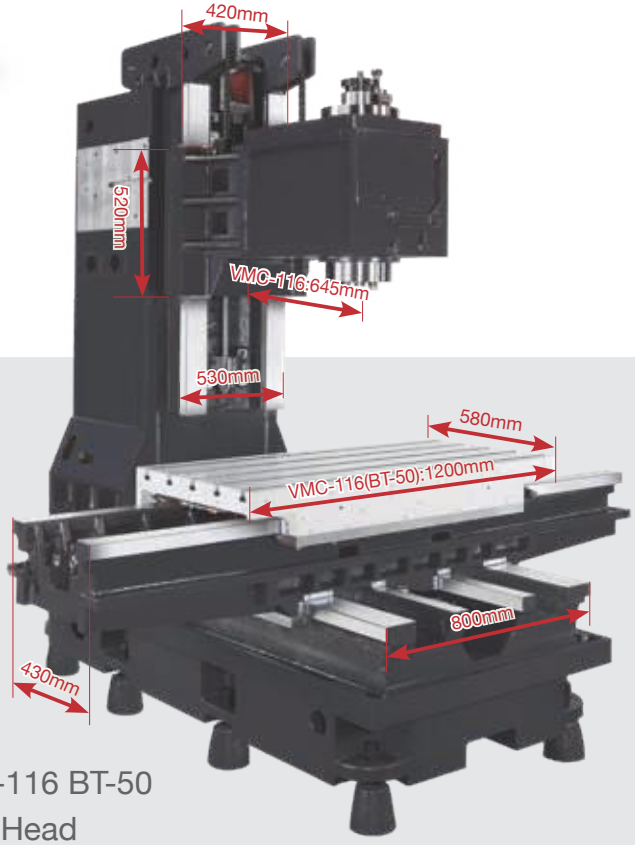
High-Rigidity Structure Design



VMC-95/115/116
BT-40 Belt Head

Enhanced Base Design

The base of the VMC-95/115/116 has 4-hardened ways that allow for greater stability and accuracy even with heavy loading. In essence, the design fully supports the saddle and table along the entire travel lengths of the X and Y-axes.



VMC-116 BT-50
Gear Head

VMC-137

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- Strategically placed ribs help enhance the spindle headstock structure. The spindle headstock also has the proper proportion of contact with the column, which creates strong spindle support.
- The base of VMC-137 has 4 hardened box ways that allow greater stability and accuracy even with heavy loading. In essence, the design fully supports the saddle and table along the entire travels lengths of the X and Y axes.
- Ø45/45/45mm high class double nut ballscrew provides strong rigidity, high torque, better accuracy, long-life, and effectively heat extension control.

VMC-137

X/Y/Z 1,300/700/650mm
BT-50 Arm type 24 tools ATC (standard)
BT-50 Gear Driven 6,000 rpm (standard)
BT-50 Belt Driven 8,000/10,000 rpm (option)
BT-50 Direct Driven 10,000 rpm (option)
BT-40 Belt/Direct Driven 10,000 rpm (option)

VMC-147 (Container Loading Type)

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- All slide-ways are heat-treated and precision ground to maintain high precision.
- Container loading type VMC-147 use Nitrogen Weight System to replace counter-balanced design for the non-container loading type
- Strategically placed ribs help enhance the spindle headstock structure. The spindle headstock also has the proper proportion of contact with the column, which creates strong spindle support.
- The base of VMC-147 has 4 hardened box ways that allow greater stability and accuracy even with heavy loading. In essence, the design fully supports the saddle and table along the entire travels lengths of the X and Y axes.
- Ø45/45/45mm high class double nut ballscrew provides strong rigidity, high torque, better accuracy, long-life, and effectively heat extension control.

VMC-147

X/Y/Z 1,400/700/700mm
BT-50 Arm type 24 tools ATC (standard)
BT-50 Gear Driven 6,000 rpm (standard)
BT-50 Belt Driven 8,000/10,000 rpm (option)
BT-50 Direct Driven 10,000 rpm (option)

VMC-168

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- All slide-ways are heat-treated and precision ground to maintain high precision.
- Double guide ways and a counter-balanced design prevent unexpected vibration from the Z-axis drive, which helps achieve a quality surface finish.
- Strategically placed ribs help enhance the spindle headstock structure. The spindle headstock also has the proper proportion of contact with the column, which creates strong spindle support.
- The base of VMC-168 has 4 hardened box ways that allow greater stability and accuracy even with heavy loading. In essence, the design fully supports the saddle and table along the entire travels lengths of the X and Y axes.
- Ø50/50/50mm high class double nut ballscrew provides strong rigidity, high torque, better accuracy, long-life, and effectively heat extension control.

VMC-168

X/Y/Z 1,600/800/700mm
BT-50 Arm type 24 tools ATC (standard)
BT-50 Gear Driven 6,000 rpm (standard)
BT-50 Belt Driven 8,000/10,000 rpm (option)
BT-50 Direct Driven 10,000 rpm (option)
BT-40 Belt/Direct Driven 10,000 rpm (option)

VMC-168C (Container Loading Type)

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- All slide-ways are heat-treated and precision ground to maintain high precision.
- Container loading type VMC-168 use Nitrogen Weight System to replace counter-balanced design for the non-container loading type
- Strategically placed ribs help enhance the spindle headstock structure. The spindle headstock also has the proper proportion of contact with the column, which creates strong spindle support.
- The base of VMC-168C has 4 hardened box ways that allow greater stability and accuracy even with heavy loading. In essence, the design fully supports the saddle and table along the entire travels lengths of the X and Y axes.
- Ø50/50/50mm high class double nut ballscrew provides strong rigidity, high torque, better accuracy, long-life, and effectively heat extension control.

VMC-168C

X/Y/Z 1,600/800/700mm
BT-50 Arm type 24 tools ATC (standard)
BT-50 Gear Driven 6,000 rpm (standard)
BT-50 Belt Driven 8,000/10,000 rpm (option)
BT-50 Direct Driven 10,000 rpm (option)

VMC-137/147/168/168C

High-Rigidity Structure Design

High-Stiffness Spindle Design

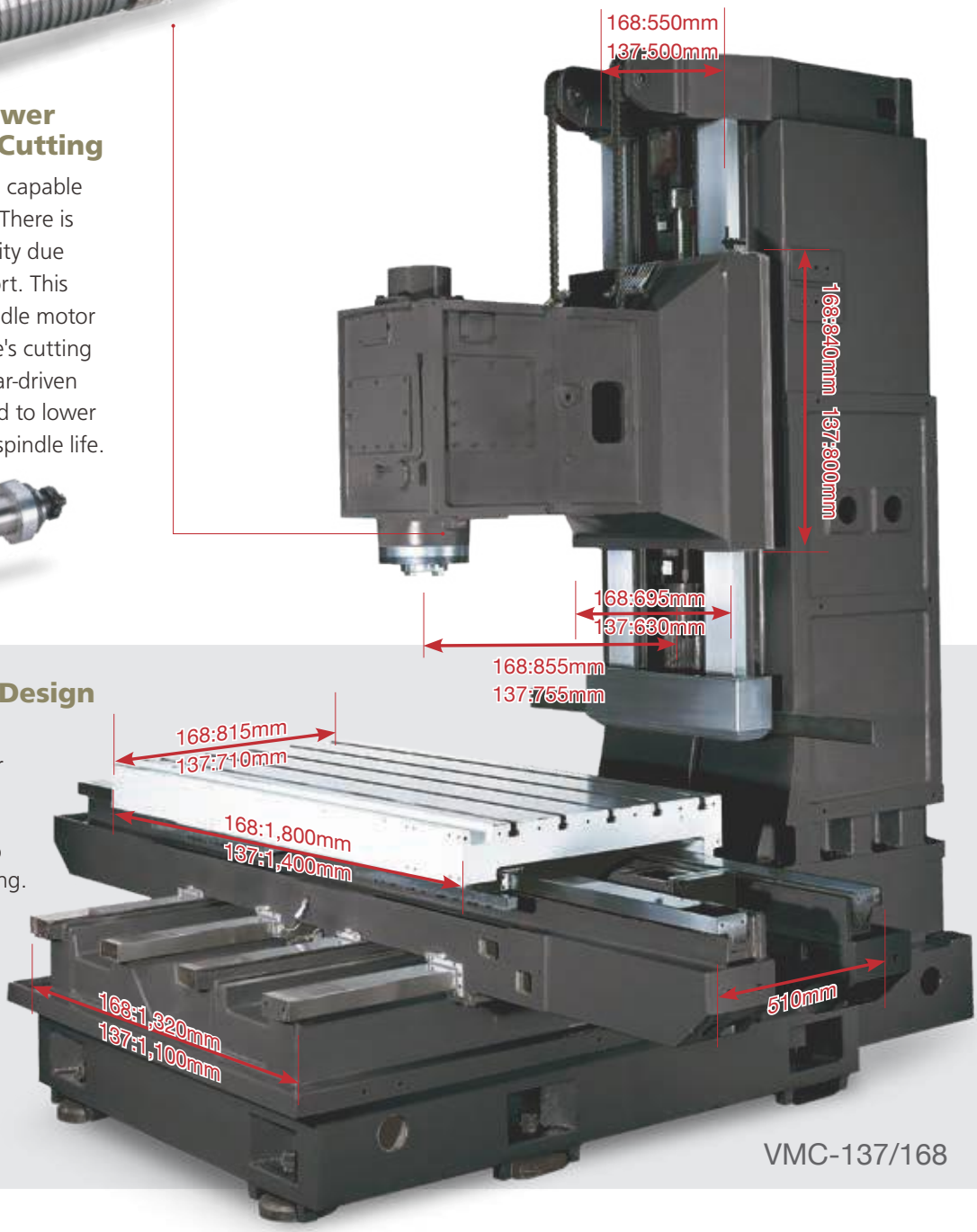
The cartridge-type spindle enables it to reach 8,000 or 10,000 RPM using a belt drive assembly. Bearings at spindle nose end are well supported by a shaft sleeve and casting structure. The optimized bearing arrangement along with rigid spindle headstock reduces cutting-induced vibrations, virtually guaranteeing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

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.

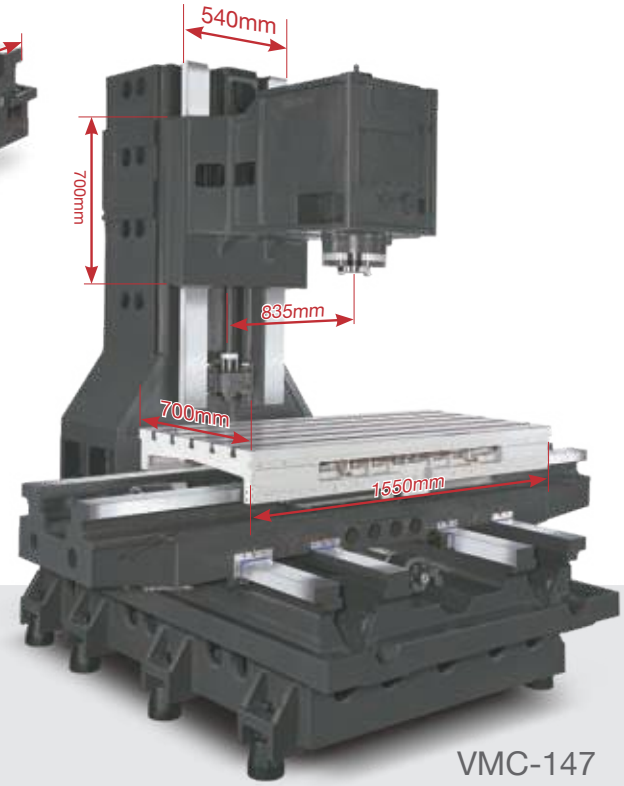


VMC-137/168

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.

VMC-168C



VMC-147

VMC-168C
one piece stretch sheet

Nitrogen Weight System

Container loading type VMC-147/168C all use Nitrogen Weight System to replace counter-balanced design for the non-container loading type.

VMC-1910

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- All slide-ways are heat-treated and precision ground to maintain high precision.
- Double guide ways and a counter-balanced design prevent unexpected vibration from the Z-axis drive, which helps achieve a quality surface finish.
- Strategically placed ribs help enhance the spindle headstock structure. The spindle headstock also has the proper proportion of contact with the column, which creates strong spindle support.
- The base of VMC-1910 has 4 hardened box ways that allow greater stability and accuracy even with heavy loading. In essence, the design fully supports the saddle and table along the entire travels lengths of the X and Y axes.
- Ø63/63/63mm high class double nut ballscrew provides strong rigidity, high torque, better accuracy, long-life, and effectively heat extension control.

VMC-1910

X/Y/Z 1,900/1,000/800mm
BT-50 Arm type 24 tools ATC (standard)
BT-50 Gear Driven 6,000 rpm (standard)
BT-50 Belt Driven 8,000/10,000 rpm (option)
BT-50 Direct Driven 10,000 rpm (option)

VMC-2210

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- All slide-ways are heat-treated and precision ground to maintain high precision.
- Double guide ways and a counter-balanced design prevent unexpected vibration from the Z-axis drive, which helps achieve a quality surface finish.
- Strategically placed ribs help enhance the spindle headstock structure. The spindle headstock also has the proper proportion of contact with the column, which creates strong spindle support.
- The base of VMC-2210 has one piece six hardened box ways that allow greater stability and accuracy even with heavy loading. In essence, the design fully supports the saddle and table along the entire travels lengths of the X and Y axes.
- Ø63/63/63mm high class double nut ballscrew provides strong rigidity, high torque, better accuracy, long-life, and effectively heat extension control.

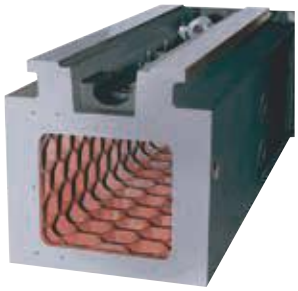
VMC-2210

X/Y/Z 2,200/1,000/800mm
BT-50 Arm type 24 tools ATC (standard)
BT-50 Gear Driven 6,000 rpm (standard)
BT-50 Belt Driven 8,000/10,000 rpm (option)
BT-50 Direct Driven 10,000 rpm (option)

VMC-1910/2210

High-Rigidity Structure Design

VMC-1910



Column with Honeycomb Shape Structure

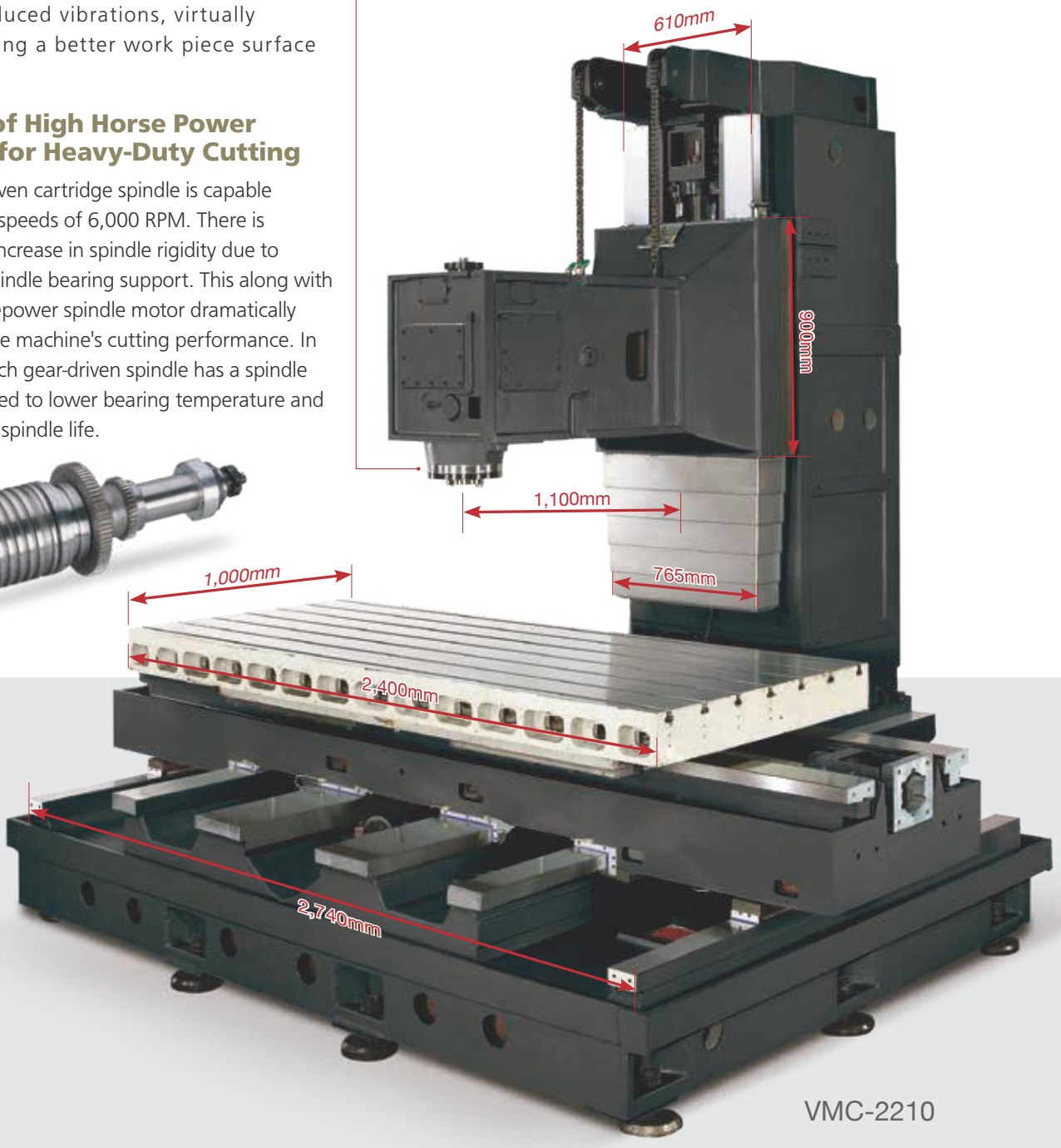
The exclusive honeycomb shape structure design is utilized on the Column of VMC-1910/2210. This design reinforces the headstock support and also enhances the stiffness of the structure. A high stiffness to weight ratio allows excellent dynamic performance during cutting.

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 the spindle life.



VMC-2210

Standard and option accessories

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.

Hinged-Belt Chip Conveyor (Option)

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

32 Tools Magazine (Option for VMC-137/168/168C/1910/2210)

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.

Oil Circulating Cooling System for Spindle

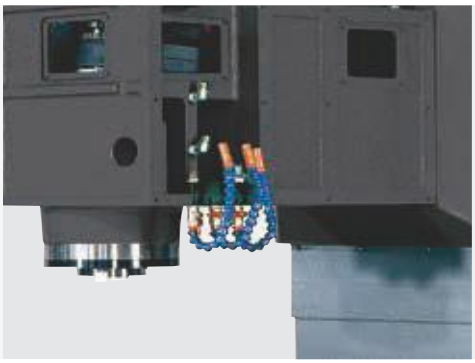
A high efficiency spindle cooling system dissipates running induced heat generation in order to maintain spindle accuracy and prolong spindle life.

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

THE C.T.S. (COOLANT THROUGH SPINDLE) (A TYPE) system provides 20 bar (280 PSI) of hi-pressure coolant delivery that effectively reduces tool wear because of heat and the slow evacuation.

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.

X-Axis Chip Auger

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

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.

Standard and option accessories

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.

Enhanced Base Design

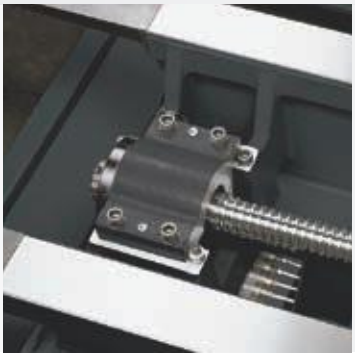
The base of the VMC-95/115/116 has 4-hardened ways that allow for greater stability and accuracy even with heavy loading. In essence, the design fully supports the saddle and table along the entire travel lengths of the X and Y-axes.

Volumetric Oil Distributor

Lubricating oil is evenly distributed to all the sliding surfaces of the machine via volumetric oil distributors.
All stationary lines are made of rigid alloy pipe and hard-plumbed for low maintenance operation over the life of the machine.

Double Stoppers Design

To prevent any deviation between the servomotor housing and ball screw bearing housing, each axis is equipped with two stoppers to guarantee absolute axial alignment.



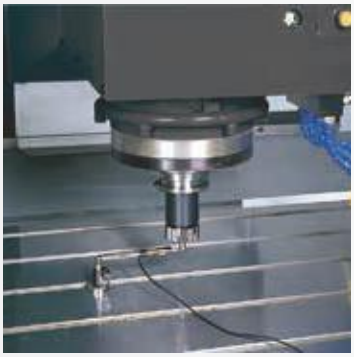
Forceful Cleaning Spray-Gun

Equipped on the right front side of base this unit along with the assistance of a high-pressure coolant and air mixture that could helps to increase table cleaning speed.

Strict Quality Control

Calibration with Laser Interferometer was performed

All of our machines are calibrated according to the "VDI 3441 3∂"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.



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.

Metal Steps (Option)

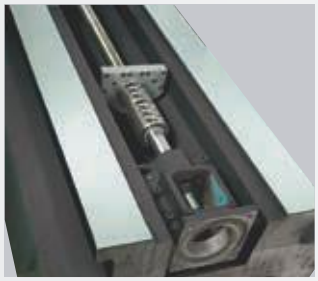
Metal steps allow the operator to load and unload work pieces easily. This feature is designed for easy operator access into the machine.

Double Anti-collision Stoppers Design

When over-travel occurs, to avoid direct collision between the flange, the motor seat and the bearing seat, the three shafts adopt a double stopper design, and can prevent the motor seat and the bearing seat from moving to ensure the accuracy of the machine.

Stiff Ballscrew Design for Greater Axial Support

The three-axis adopts C3 grade double nut preloaded precision ball screw, and the pre-pull design of the supporting seats at both ends can eliminate the backlash of the transmission and pre-compensate the error caused by the temperature rise to ensure positioning accuracy and repeated positioning accuracy.



Rigid Box Shape Double Deck Table

Unique AGMA designed double deck table. This unique design increases the load capacity of worktable for more variety applications, and also minimizes the deformation induced during heat treatment process.

LED Fluorescent Light

The LED fluorescent light is installed with the fully enclosed splash guard and it is located on the left & right hand corner to provide a well-lit table area.

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.

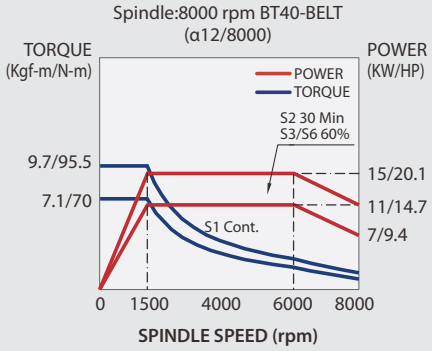
Control panel

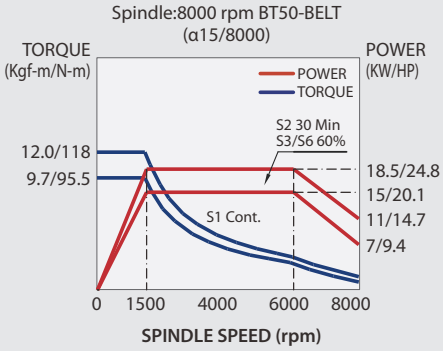
The control panel swivels for easy use and also has a remote MPG for fast manual operations.

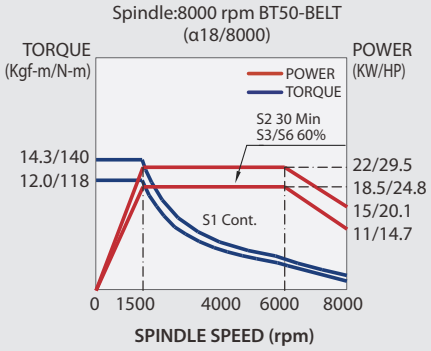
Electric Cabinet with Heat Exchanger

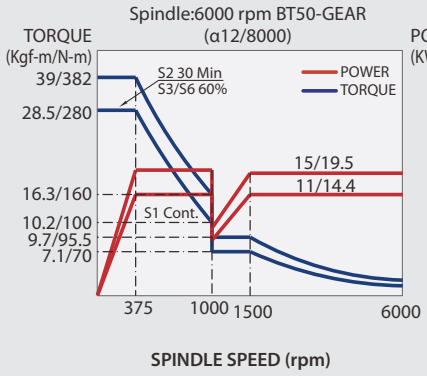
All electrical components are in compliance with safety rules and regulations. All components inside the cabinets are clearly labeled and identified for easy of trouble-shooting.

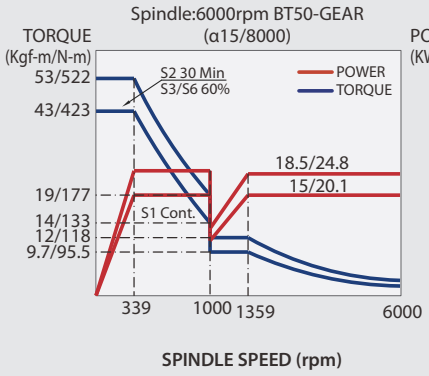
FANUC Spindle Torque Drawing

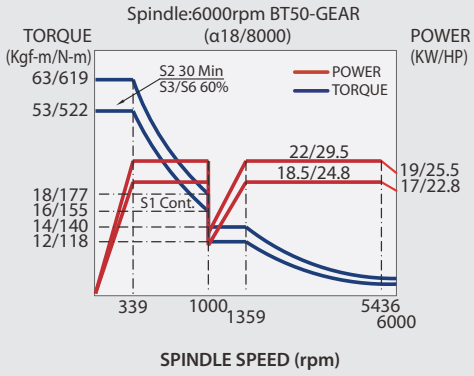




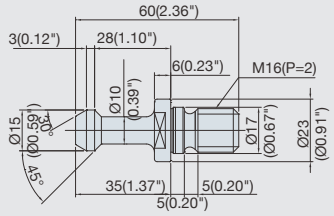


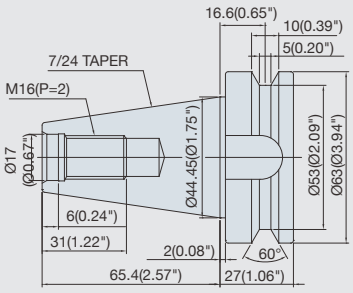




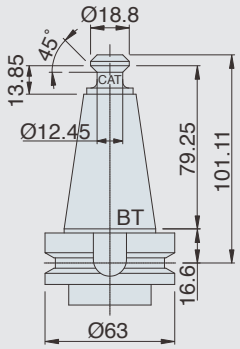


BT-40 Toolholder Figure

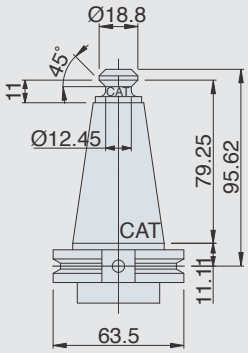




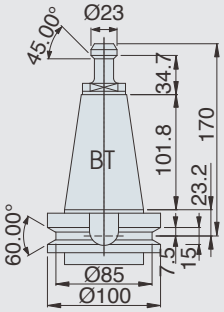
MAZAK BT-40 Toolholder Figure (coolant through spindle)



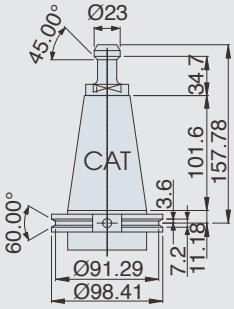
CAT-40 Toolholder Figure (coolant through spindle)



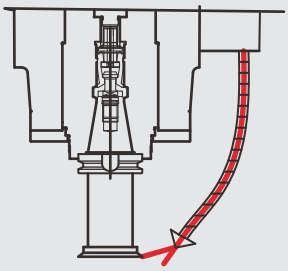
BT-50



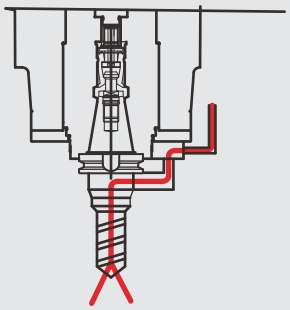
CAT-50



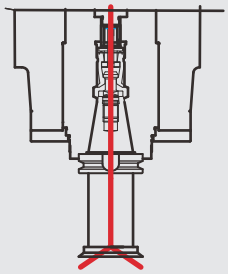
Std.-Directional Pipe
Purpose- General



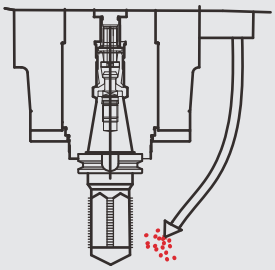
Opt.-Oil Hole Holder
Purpose-Drilling, Boring,etc.



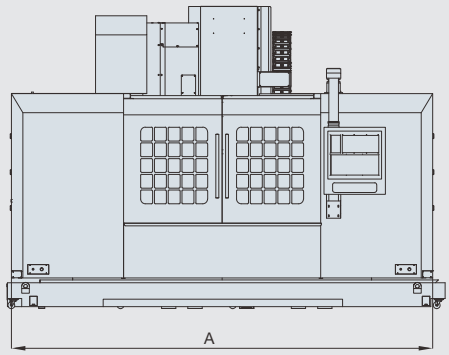
Opt.-Coolant Through Spindle(C.T.S.)
Purpose - Drilling , Boring , etc .

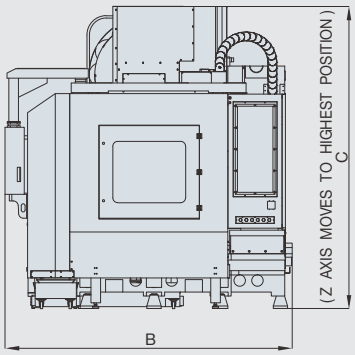


Opt.- Oil Mist
Purpose-Tapping, Reaming,etc.



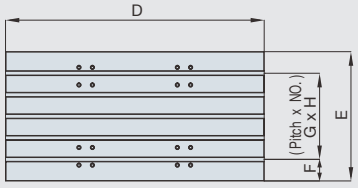
Machine Layout

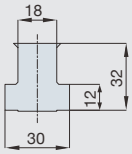




MODEL	A	B	C	D	E	F	G	H	T-SLOT
VMC-95	3000	2720	2450	1050	580	50	120	5	18
VMC-115	3000	2720	2450	1200	580	50	120	5	18
VMC-116	3000	2720	2900	1200	580	50	120	5	18
VMC-137	3600	3455	3136	1400	710	42.5	125	6	18
VMC-147	3800	3350	3600	1550	700	37.5	125	5	18
VMC-168	4740	3300	3320	1800	815	65	150	5	18
VMC-168C	4400	3000	3160	1800	800	100	150	5	18
VMC-1910	5100	3900	3600	2100	1000	50	150	7	18
VMC-2210	5700	3900	3600	2400	1000	50	150	7	18

Table Dimension





VERTICAL MACHINING CENTER BOX WAY SERIES

MODEL	ITEM	UNIT	VMC-95	VMC-115	VMC-116	VMC-116	VMC-137	
SPINDLE	SPINDLE TAPER		NO.40	NO.40	No. 40	No. 50	NO.50	
	TRANSMISSION		BELT DRIVEN	BELT DRIVEN	BELT DRIVEN	GEAR DRIVEN	BELT DRIVEN	GEAR DRIVEN
	SPINDLE SPEED	r.p.m.	8,000	8,000	8,000	6,000	8,000	6,000
	SPINDLE DIAMETER	mm(inch)	150 (5.9)	150 (5.9)	150 (5.9)	150 (5.9)	190 (7.48)	
TABLE	TABLE SIZE	mm(inch)	1,050 x 580 (41.34 x 22.83)	1,200 x 580 (47.24 x 22.83)	1,200 x 580 (47.24 x 22.83)	1,200 x 580 (47.24 x 22.83)	1,400 x 710 (55.12 x 27.95)	
	T-SLOT	mm(inch)	18 x 5 x 120 (0.71 x 5 x 4.72)	18 x 5 x 120 (0.71 x 5 x 4.72)	18 x 5 x 120 (0.71 x 5 x 4.72)	18 x 5 x 120 (0.71 x 5 x 4.72)	18 x 6 x 125 (0.71 x 6 x 4.92)	
	WORK AREA	mm(inch)	900 x 550 (35.43 x 21.65)	1,100 x 550 (43.31 x 21.65)	1,100 x 550 (43.31 x 21.65)	1,100 x 550 (43.31 x 21.65)	1,300 x 700 (51.18 x 27.56)	
	MAX. TALBE LOAD	kgs(lbs)	800 (1,760)	1,000 (2,205)	1,000 (2,205)	1,000 (2,205)	1,600 (3,520)	
TRAVEL & FEEDRATE	X AXIS	mm(inch)	900 (35.43)	1,100 (43.31)	1,100 (43.31)	1,100 (43.31)	1,300 (51.18)	
	Y AXIS	mm(inch)	550 (21.65)	550 (21.65)	600 (23.62)	580 (22.83)	700 (27.56)	
	Z AXIS	mm(inch)	580 (22.83)	580 (22.83)	600 (23.62)	600 (23.62)	650 (25.59)	
	DISTANCE FROM SPINDLE NOSE TO TABLE	mm(inch)	170~750 (6.69~29.53)	170~750 (6.69~29.53)	170~770 (6.69~30.31)	170~770 (6.69~30.31)	200~850 (7.87~33.46)	
	DISTANCE FROM SPINDLE CENTER TO SURFACE OF COLUMN WAY	mm(inch)	610 (24.02)	610 (24.02)	645 (25.39)	645 (25.39)	755 (29.72)	
	RAPID TRAVERSE (X/Y/Z)	m/min (ipm)	X,Y,Z:20/20/15 (787/787/590)	X,Y,Z:20/20/15 (787/787/590)	X,Y,Z:20/20/15 (787/787/590)	X,Y,Z:20/20/15 (787/787/590)	X,Y,Z:15/15/12 (590/590/472)	
	CUTTING FEEDRATE	mm/min (ipm)	X,Y,Z: 1~10,000 (393)	X,Y,Z: 1~10,000 (393)	X,Y,Z: 1~10,000 (393)	X,Y,Z: 1~10,000 (393)	X,Y,Z: 1~10,000 (393)	
ATC	TOOL SHANK		BT-40	BT-40	BT-40	BT-50	BT-50	
	PULL STUD		MAS P40T-1(45°)	MAS P40T-1(45°)	MAS P40T-1(45°)	MAS P50T-1(45°)	MAS P50T-1(45°)	
	MAGAZINE CAPACITY	pcs	24	24	24	24	24	
	MAX. TOOL DIAMETER (FULL STORAGE)	mm(inch)	Ø80 (3.15)	Ø80 (3.15)	Ø80 (3.15)	Ø125 (4.93)	Ø125 (4.93)	
	MAX. TOOL DIAMETER (WITH ADJACENT POCKET EMPTY)	mm(inch)	Ø125 (4.93)	Ø125 (4.93)	Ø125 (4.93)	Ø150 (5.92)	Ø250 (9.84)	
	MAX. TOOL LENGTH	mm(inch)	300 (11.81)	300 (11.81)	300 (11.81)	350 (13.78)	350 (13.78)	
	MAX. TOOL WEIGHT	kgs(lbs)	7 (15.4)	7 (15.4)	7 (15.4)	15 (33)	15 (33)	
	ATC TYPE		ARM TYPE	ARM TYPE	ARM TYPE	ARM TYPE	ARM TYPE	
MOTOR	FOR SPINDLE (CONT./30 min.)	kw (hp)	11/15 (15/20)	11/15 (15/20)	11/15 (15/20)	11/15 (15/20)	15/18.5 (20/25)	
	X/Y/Z AXIS (Fanuc)	kw (hp)	3/3/3 (4/4/4)	3/3/3 (4/4/4)	3/3/3 (4/4/4)	3/3/3 (4/4/4)	4/4/4 (5.4/5.4/5.4)	
	LUBRICATION PUMP	kw (hp)	0.025 (0.033)	0.025 (0.033)	0.025 (0.033)	0.025 (0.033)	0.025 (0.033)	
	COOLANT PUMP	kw (hp)	0.49 (0.66)	0.49 (0.66)	0.49 (0.66)	0.49 (0.66)	0.49 (0.66)	
BALL SCREW	DIAMETER (X/Y/Z)	mm(inch)	40/40/40 (1.58/1.58/1.58)	40/40/40 (1.58/1.58/1.58)	40/40/40 (1.58/1.58/1.58)	40/40/40 (1.58/1.58/1.58)	45/45/45 (17.72/17.72/17.72)	
	CLASS		C3	C3	C3	C3	C3	
	PITCH	mm(inch)	10 (3.94)	10 (3.94)	10 (3.94)	10 (3.94)	10 (3.94)	
BOX WAY	BASE BOX WAY Q'TY	PC	4	4	4	4	4	
	SADDLE BOX WAY Q'TY	PC	2	2	2	2	2	
	COLUMN BOX WAY Q'TY	PC	2	2	2	2	2	
MISC.	MACHINE HEIGHT	mm(inch)	2,450 (94.45)	2,450 (94.45)	2,900 (114.17)	2,900 (114.17)	3,136 (123.5)	
	MACHINE SPACE	mm(inch)	3,000 x 2,720 (118.11 x 107.09)	3,000 x 2,720 (118.11 x 107.09)	3,000 x 2,720 (118.11 x 107.09)	3,000 x 2,720 (118.11 x 107.09)	3,600 x 3,455 (141.73 x 136)	
	MACHINE WEIGHT	kgs(lbs)	6,700 (14,740)	7,000 (15,400)	7,300 (16,000)	8,000 (17,600)	12,000 (26,400)	
	CNC CONTROLLER		0iMF 8.4"	0iMF 8.4"	0iMF 8.4"	0iMF 8.4"	0iMF 8.4"	

●Specification is subject to change without further notice.

MODEL	ITEM	單位	VMC-147		VMC-168		VMC-168C		VMC-1910		VMC-2210	
SPINDLE	SPINDLE TAPER		NO.50		NO.50		NO.50		NO.50		NO.50	
	TRANSMISSION		BELT DRIVEN	GEAR DRIVEN	BELT DRIVEN	GEAR DRIVEN	BELT DRIVEN	GEAR DRIVEN	BELT DRIVEN	GEAR DRIVEN	BELT DRIVEN	GEAR DRIVEN
	SPINDLE SPEED	r.p.m.	8,000	6,000	8,000	6,000	8,000	6,000	8,000	6,000	8,000	6,000
	SPINDLE DIAMETER	mm(inch)	190 (7.48)		190 (7.48)		190 (7.48)		190 (7.48)		190 (7.48)	
TABLE	TABLE SIZE	mm(inch)	1,550 x 700 (61.03 x 27.56)		1,800 x 815 (70.87 x 32.09)		1,800 x 800 (70.87 x 31.5)		2,100 x 1,000 (82.68 x 39.37)		2,400 x 1,000 (94.49 x 39.37)	
	T-SLOT	mm(inch)	18 x 5 x 125 (0.71 x 5 x 4.92)		18 x 5 x 150 (0.71 x 5 x 5.91)		18 x 5 x 150 (0.71 x 5 x 5.91)		18 x 7 x 150 (0.71 x 7 x 5.91)		18 x 7 x 150 (0.71 x 7 x 5.91)	
	WORK AREA	mm(inch)	1,400 x 700 (55.12 x 27.56)		1,600 x 800 (63 x 31.50)		1,600 x 800 (63 x 31.50)		1,900 x 1,000 (74.8 x 39.37)		2,200 x 1,000 (86.61 x 39.37)	
	MAX. TALBE LOAD	kgs(lbs)	1,400 (3,080)		2,000 (4,400)		2,000 (4,400)		3,000 (6,600)		4,000 (8,800)	
TRAVEL & FEEDRATE	X AXIS	mm(inch)	1,400 (55.12)		1,600 (63)		1,600 (63)		1,900 (74.8)		2,200 (86.61)	
	Y AXIS	mm(inch)	700 (27.56)		800 (31.56)		800 (31.56)		1,000 (39.37)		1,000 (39.37)	
	Z AXIS	mm(inch)	700 (27.56)		700 (27.56)		700 (27.56)		800 (31.5)		800 (31.5)	
	DISTANCE FROM SPINDLE NOSE TO TABLE	mm(inch)	120~820 (4.72~32.28)		200~900 (7.87~35.43)		200~900 (7.87~35.43)		150~950 (5.91~37.4)		150~950 (5.91~37.4)	
	DISTANCE FROM SPINDLE CENTER TO SURFACE OF COLUMN WAY	mm(inch)	820 (32.28)		855 (33.66)		855 (33.66)		1,100 (43.31)		1,100 (43.31)	
	RAPID TRAVERSE (X/Y/Z)	m/min (ipm)	X,Y,Z:24/24/12 (944/944/472)		X,Y,Z:15/15/12 (590/590/472)		X,Y,Z:15/15/12 (590/590/472)		X,Y,Z:12/12/10 (472/472/394)		X,Y,Z:12/12/10 (472/472/394)	
	CUTTING FEEDRATE	mm/min (ipm)	X,Y,Z: 1~10,000 (393)		X,Y,Z: 1~10,000 (393)		X,Y,Z: 1~10,000 (393)		X,Y,Z: 1~10,000 (393)		X,Y,Z: 1~10,000 (393)	
ATC	TOOL SHANK		BT-50		BT-50		BT-50		BT-50		BT-50	
	PULL STUD		MAS P50T-1(45°)		MAS P50T-1(45°)		MAS P50T-1(45°)		MAS P50T-1(45°)		MAS P50T-1(45°)	
	MAGAZINE CAPACITY	pcs	24		24		24		24		24	
	MAX. TOOL DIAMETER (FULL STORAGE)	mm(inch)	Ø125 (4.93)		Ø125 (4.93)		Ø125 (4.93)		Ø125 (4.93)		Ø125 (4.93)	
	MAX. TOOL DIAMETER (WITH ADJACENT POCKET EMPTY)	mm(inch)	Ø250 (9.84)		Ø250 (9.84)		Ø250 (9.84)		Ø250 (9.84)		Ø250 (9.84)	
	MAX. TOOL LENGTH	mm(inch)	350 (13.78)		350 (13.78)		350 (13.78)		350 (13.78)		350 (13.78)	
	MAX. TOOL WEIGHT	kgs(lbs)	15 (33)		15 (33)		15 (33)		15 (33)		15 (33)	
	ATC TYPE		ARM TYPE		ARM TYPE		ARM TYPE		ARM TYPE		ARM TYPE	
MOTOR	FOR SPINDLE (CONT./30 min.)	kw (hp)	15/18.5 (20/25)		15/18.5 (20/25)		15/18.5 (20/25)		18.5/22 (25/30)		18.5/22 (25/30)	
	X/Y/Z AXIS (Fanuc)	kw (hp)	4/4/4 (5.4/5.4/5.4)		4/4/4 (5.4/5.4/5.4)		4/4/4 (5.4/5.4/5.4)		7/7/7 (9.33/9.33/9.33)		7/7/7 (9.33/9.33/9.33)	
	LUBRICATION PUMP	kw (hp)	0.025 (0.033)		0.025 (0.033)		0.025 (0.033)		0.025 (0.033)		0.025 (0.033)	
	COOLANT PUMP	kw (hp)	0.49 (0.66)		0.49 (0.66)		0.49 (0.66)		0.49 (0.66)		0.49 (0.66)	
BALL SCREW	DIAMETER (X/Y/Z)	mm(inch)	45/45/45 (17.72/17.72/17.72)		50/50/50 (17.72/17.72/17.72)		50/50/50 (17.72/17.72/17.72)		63/63/63 (24.8/24.8/24.8)		63/63/63 (24.8/24.8/24.8)	
	CLASS		C3		C3		C3		C3		C3	
	PITCH	mm(inch)	12 (4.72)		10 (3.94)		10 (3.94)		10 (3.94)		10 (3.94)	
BOX WAY	BASE BOX WAY Q'TY	PC	4		4		4		4		6	
	SADDLE BOX WAY Q'TY	PC	2		2		2		2		2	
	COLUMN BOX WAY Q'TY	PC	2		2		2		2		2	
MISC.	MACHINE HEIGHT	mm(inch)	3,600 (141.73)		3,320 (130.71)		3,160 (124.4)		3,600 (141.73)		3,600 (141.73)	
	MACHINE SPACE	mm(inch)	3,800 x 3,350 (149.61 x 131.89)		4,740 x 3,300 (186.61 x 129.92)		4,400 x 3,000 (173.23 x 118.11)		5,100 x 3,900 (200.79 x 153.54)		5,700 x 3,900 (225 x 154)	
	MACHINE WEIGHT	kgs(lbs)	目前無法得知		15,000 (33,000)		15,000 (33,000)		18,000 (39,600)		20,000 (44,000)	
	CNC CONTROLLER		0iMF 8.4"		0iMF 8.4"		0iMF 8.4"		0iMF 8.4"		0iMF 8.4"	

●Specification is subject to change without further notice.

Vertical Machining Center Box Way Series Accessories

STANDARD: ● ; OPTION: ○ ; NOT AVAILABLE: X

ITEM / MODEL	VMC-95	VMC-115	VMC-116	VMC-116 (G)	VMC-137P	VMC-137G	VMC-147P	VMC-147G
1. Fully Splash Guard	●	●	●	●	●	●	●	●
2. Spindle Air Blast	●	●	●	●	●	●	●	●
3. Oil Circulatig Cooling System Spindle	●	●	●	●	●	●	●	●
4. Cutting Coolant Equipment	●	●	●	●	●	●	●	●
5. Three-color Indicator Light	●	●	●	●	●	●	●	●
6. LED Fluorescent Light	●	●	●	●	●	●	●	●
7. Automatic Lubrcation Equipment	●	●	●	●	●	●	●	●
8. Three Axes Slideways Protector	●	●	●	●	●	●	●	●
9. Heat Exchanger for Electric Cabinet	●	●	●	●	●	●	●	●
10. Tool Box w/ Levelling Bolts & Pads	●	●	●	●	●	●	●	●
11. One Year Warranty for Machine	●	●	●	●	●	●	●	●
12. Auto Power Off	●	●	●	●	●	●	●	●
13. RS-232 Interface	●	●	●	●	●	●	●	●
14. Cutting Air Blast	●	●	●	●	●	●	●	●
15. Rigid Tapping	●	●	●	●	●	●	●	●
16. Machine and Electric Operation Manual	●	●	●	●	●	●	●	●
17. Remote Manual Pulse Generator (M.P.G.)	●	●	●	●	●	●	●	●
18. X Axis Screw Type Chip Auger	●Front	●Front	●Front	●Front	●Front	●Front	●Front	●Front
19. Y Axis Screw Type Chip Auger	X	X	●2 pcs	●2 pcs	●2 pcs	●2 pcs	●2 pcs	●2 pcs
20. Chip Conveyor	○In Front	○In Front	○In Front	○In Front	○In Front	○In Front	○In Front	○In Front
21. Forceful Cleaning Spray-Gun	●	●	●	●	●	●	●	●
22. Hydraulic Unit	X	X	X	●	X	●	X	●
23. Lubrication System for Gear Box	X	X	X	●	X	●	X	●
24. AICC For Fanuc only	●	●	●	●	●	●	●	●
25. Manual Guide 0i For Fanuc OiMF 8.4"	●	●	●	●	●	●	●	●
26. Spindle Ring Sprinkler	○	○	○	○	○	○	○	○
27. Chassis Chip Flushing	○	○	○	○	○	○	○	○
28. Transformer (Exclude India, USA and Canada)	20KVA	20KVA	20KVA	20KVA	30KVA	30KVA	30KVA	30KVA
29. 24 TOOLS BT-40 ATC	●	●	●	X	○	X	X	X
30. 24 TOOLS BT-50 ATC	X	X	○	●	●	●	●	●
31. 32 TOOLS BT-50 ATC	X	X	X	X	○	○	○	○
32. 40 TOOLS BT-50 ATC	X	X	X	X	X	X	X	X
33. CE/CSA Electrical Specification for European/ Canada only	●	●	●	●	●	●	●	●
34. Manual Guide i For Fanuc OiMF Plus 10.4" only	○	○	○	○	○	○	○	○
35. Mitsubishi M80 10.4" controller	○	○	○	○	○	○	○	○
36. Siemens 828/848D Controller	○	○	○	○	○	○	○	○
37. Heidenhain TNC-620/TNC-640 Controller	○	○	○	○	○	○	○	○
38. 16 TOOLS ARMLESS TYPE BT-40 ATC	○	○	○	○	X	X	X	X
39. WITHOUT ATC	○	○	○	○	○	○	○	○
40. BT-40 PULLEY DRIVEN 8000RPM 11/15 KW	●	●	●	X	X	X	X	X
41. BT-40 PULLEY DRIVEN 8000RPM 7.5/11 KW	○	○	○	X	X	X	X	X
42. BT-40 PULLEY DRIVEN 10000RPM 11/15 KW	○	○	○	X	X	X	X	X
43. BT-40 DIRECT DRIVEN 10000/12000RPM 5.5/7.5 KW	○	○	○	X	X	X	X	X
44. BT-40 DIRECT DRIVEN 10000/12000/15000RPM 7.5/11KW	○	○	○	X	X	X	X	X
45. BT-50 GEAR DRIVEN 6000RPM 11/15 KW	X	X	X	●	X	X	X	X
46. BT-50 GEAR DRIVEN 6000RPM 15/18.5KW	X	X	X	X	X	●	X	●
47. BT-50 PULLEY DRIVEN 8000RPM 15/18.5KW	X	X	X	X	●	X	●	X
48. BT-50 GEAR DRIVEN 6000RPM 18.5/22KW	X	X	X	X	X	○	X	○
49. BT-50 PULLEY DRIVEN 8000RPM 18.5/22KW	X	X	X	○	○	X	○	X
50. BT-50 PULLEY DRIVEN 10000RPM 15/18.5KW	X	X	X	X	○	X	○	X
51. BT-50 PULLEY DRIVEN 10000RPM 18.5/22KW	X	X	X	○	○	X	○	X
52. BT-50 DIRECT DRIVEN 10000/12000RPM 15/18.5KW	X	X	X	X	○	X	○	X
53. BT-50 DIRECT DRIVEN 10000/12000RPM 18.5/22KW	X	X	X	○	○	X	○	X
54. Coolant-thru tool holder	○	○	○	○	○	○	○	○
55. Three Axes Optical Linear Scale	○	○	○	○	○	○	○	○
56. Oil Mist	○	○	○	○	○	○	○	○
57. Oil Mist Collector	○	○	○	○	○	○	○	○
58. Coolant Through Spindle A Type (20/70 Bars-closed hole)	○	○	○	○	○	○	○	○
59. Renishaw TS-27R Tool Setup Probe (Tool Setter)	○	○	○	○	○	○	○	○
60. Renishaw Tool Machining Probe OMP-60	○	○	○	○	○	○	○	○
61. Disc Type Oil Skimmer	○	○	○	○	○	○	○	○
62. Automatic Door	○	○	○	○	○	○	○	○
63. Air Conditioning For Electrical Cabinet	○	○	○	○	○	○	○	○
64. Data Server (Include 2G Card) For Fanuc 0iMF	○	○	○	○	○	○	○	○
65. AICCII-200 For Fanuc 0iMF	○	○	○	○	○	○	○	○
66. Nano Smoothing For Fanuc 0iMF	○	○	○	○	○	○	○	○
67. 4TH AXIS INTERFACE	○	○	○	○	○	○	○	○
68. CNC ROTARY TABLE	○	○	○	○	○	○	○	○

ITEM / MODEL	VMC-168P	VMC-168G	VMC-168CP	VMC-168CG	VMC-1910P	VMC-1910G	VMC-2210P	VMC-2210G
1. Fully Splash Guard	●	●	●	●	●	●	●	●
2. Spindle Air Blast	●	●	●	●	●	●	●	●
3. Oil Circulatig Cooling System Spindle	●	●	●	●	●	●	●	●
4. Cutting Coolant Equipment	●	●	●	●	●	●	●	●
5. Three-color Indicator Light	●	●	●	●	●	●	●	●
6. LED Fluorescent Light	●	●	●	●	●	●	●	●
7. Automatic Lubrcation Equipment	●	●	●	●	●	●	●	●
8. Three Axes Slideways Protector	●	●	●	●	●	●	●	●
9. Heat Exchanger for Electric Cabinet	●	●	●	●	●	●	●	●
10. Tool Box w/ Levelling Bolts & Pads	●	●	●	●	●	●	●	●
11. One Year Warranty for Machine	●	●	●	●	●	●	●	●
12. Auto Power Off	●	●	●	●	●	●	●	●
13. RS-232 Interface	●	●	●	●	●	●	●	●
14. Cutting Air Blast	●	●	●	●	●	●	●	●
15. Rigid Tapping	●	●	●	●	●	●	●	●
16. Machine and Electric Operation Manual	●	●	●	●	●	●	●	●
17. Remote Manual Pulse Generator (M.P.G.)	●	●	●	●	●	●	●	●
18. X Axis Screw Type Chip Auger	●Back	●Back	●Front	●Front	○Y axis Front to Back	○Y axis Front to Back	○Y axis Front to Back	○Y axis Front to Back
19. Y Axis Screw Type Chip Auger	●2 pcs	●2 pcs	●2 pcs	●2 pcs	●2 pcs	●2 pcs	●2 pcs	●2 pcs
20. Chip Conveyor	○Back	○Back	○In Front	○In Front	○Y axis Front to Back	○Y axis Front to Back	○Y axis Front to Back	○Y axis Front to Back
21. Forceful Cleaning Spray-Gun	●	●	●	●	●	●	●	●
22. Hydraulic Unit	X	●	X	●	X	●	X	●
23. Lubrication System for Gear Box	X	●	X	●	X	●	X	●
24. AICC For Fanuc only	●	●	●	●	●	●	●	●
25. Manual Guide 0i For Fanuc OiMF 8.4"	●	●	●	●	●	●	●	●
26. Spindle Ring Sprinkler	○	○	○	○	○	○	○	○
27. Chassis Chip Flushing	○	○	○	○	○	○	○	○
28. Transformer (Exclude India, USA and Canada)	35KVA	35KVA	35KVA	35KVA	40KVA	40KVA	40KVA	40KVA
29. 24 TOOLS BT-40 ATC	○	X	X	X	X	X	X	X
30. 24 TOOLS BT-50 ATC	●	●	●	●	●	●	●	●
31. 32 TOOLS BT-50 ATC	○	○	○	○	○	○	○	○
32. 40 TOOLS BT-50 ATC	○	○	○	○	○	○	○	○
33. CE/CSA Electrical Specification for European/ Canada only	●	●	●	●	●	●	●	●
34. Manual Guide i For Fanuc OiMF Plus 10.4" only	○	○	○	○	○	○	○	○
35. Mitsubishi M80 10.4" controller	○	○	○	○	○	○	○	○
36. Siemens 828/848D Controller	○	○	○	○	○	○	○	○
37. Heidenhain TNC-620/TNC-640 Controller	○	○	○	○	○	○	○	○
38. 16 TOOLS ARMLESS TYPE BT-40 ATC	X	X	X	X	X	X	X	X
39. WITHOUT ATC	○	○	○	○	○	○	○	○
40. BT-40 PULLEY DRIVEN 8000RPM 11/15 KW	X	X	X	X	X	X	X	X
41. BT-40 PULLEY DRIVEN 8000RPM 7.5/11 KW	X	X	X	X	X	X	X	X
42. BT-40 PULLEY DRIVEN 10000RPM 11/15 KW	X	X	X	X	X	X	X	X
43. BT-40 DIRECT DRIVEN 10000/12000RPM 5.5/7.5 KW	X	X	X	X	X	X	X	X
44. BT-40 DIRECT DRIVEN 10000/12000/15000RPM 7.5/11KW	X	X	X	X	X	X	X	X
45. BT-50 GEAR DRIVEN 6000RPM 11/15 KW	X	X	X	X	X	X	X	X
46. BT-50 GEAR DRIVEN 6000RPM 15/18.5KW	X	●	X	●	X	○	X	○
47. BT-50 PULLEY DRIVEN 8000RPM 15/18.5KW	●	X	●	○	○	○	○	X
48. BT-50 GEAR DRIVEN 6000RPM 18.5/22KW	X	○	X	○	X	●	X	●
49. BT-50 PULLEY DRIVEN 8000RPM 18.5/22KW	○	X	○	○	●	○	●	X
50. BT-50 PULLEY DRIVEN 10000RPM 15/18.5KW	○	X	○	X	○	X	○	X
51. BT-50 PULLEY DRIVEN 10000RPM 18.5/22KW	○	X	○	X	○	X	○	X
52. BT-50 DIRECT DRIVEN 10000/12000RPM 15/18.5KW	○	X	○	X	○	X	○	X
53. BT-50 DIRECT DRIVEN 10000/12000RPM 18.5/22KW	○	X	○	X	○	X	○	X
54. Coolant-thru tool holder	○	○	○	○	○	○	○	○
55. Three Axes Optical Linear Scale	○	○	○	○	○	○	○	○
56. Oil Mist	○	○	○	○	○	○	○	○
57. Oil Mist Collector	○	○	○	○	○	○	○	○
58. Coolant Through Spindle A Type (20/70 Bars-closed hole)	○	○	○	○	○	○	○	○
59. Renishaw TS-27R Tool Setup Probe (Tool Setter)	○	○	○	○	○	○	○	○
60. Renishaw Tool Machining Probe OMP-60	○	○	○	○	○	○	○	○
61. Disc Type Oil Skimmer	○	○	○	○	○	○	○	○
62. Automatic Door	○	○	○	○	○	○	○	○
63. Air Conditioning For Electrical Cabinet	○	○	○	○	○	○	○	○
64. Data Server (Include 2G Card) For Fanuc 0iMF	○	○	○	○	○	○	○	○
65. AICCII-200 For Fanuc 0iMF	○	○	○	○	○	○	○	○
66. Nano Smoothing For Fanuc 0iMF	○	○	○	○	○	○	○	○
67. 4TH AXIS INTERFACE	○	○	○	○	○	○	○	○
68. CNC ROTARY TABLE	○	○	○	○	○	○	○	○