



JOHNFORD

Vertical Machining Centers



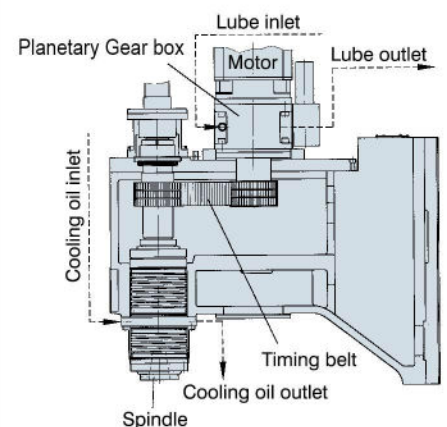
VMC-1300/1300HD/1300-2H
VMC-1600/1600HD/1600S/1600SHD
VMC-2000S/2000SHD/3000S/3000SHD

Vertical Machining Center



VMC-I300 / I300HD / I300-2H

Item	Model	VMC-I300	VMC-I300HD	VMC-I300-2H
Table working surface		1500 x 750 mm (59.1" x 29.5")		
X-axis travel		1300 mm (51")		
Y-axis travel		850 mm (33.5")		
Z-axis travel		800 mm (31.5")	710 mm (28")	
Spindle motor		11 / 7.5 kW	18.5 / 15 kW	15 / 11 kW
Table load capacity		3270 kg (7100 lb)		
Machine dimensions (LxWxH)		3600 x 3940 x 3535 mm (141.7"x155"x139.2")		3600 x 3940 x 3220 mm (141.7"x155"x126.8")
Machine weight		13500 kg (29700 lb)		14000 kg (30800 lb)

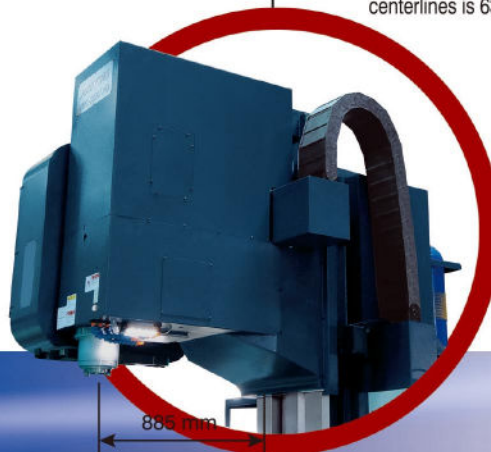


HD Type With Planetary Gear Box



↑ Twin Spindle Head-2H

- The distance between two spindle centerlines is 635 mm.

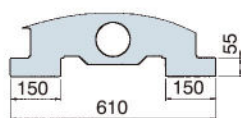


↑ Heavy-Duty Head-HD

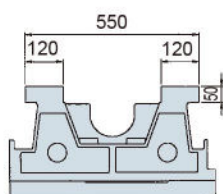
- The distance between spindle center and column is 885 mm.

Symmetrical and High-rigid Structure

- High rigidity and mass Meehanite cast iron construction.
- One piece base with four guide ways.
- Turcite-B on 3 axes, best damping and strength

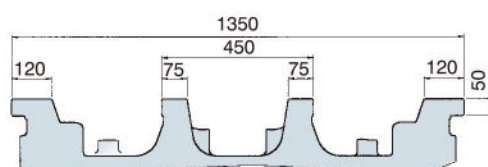


Column

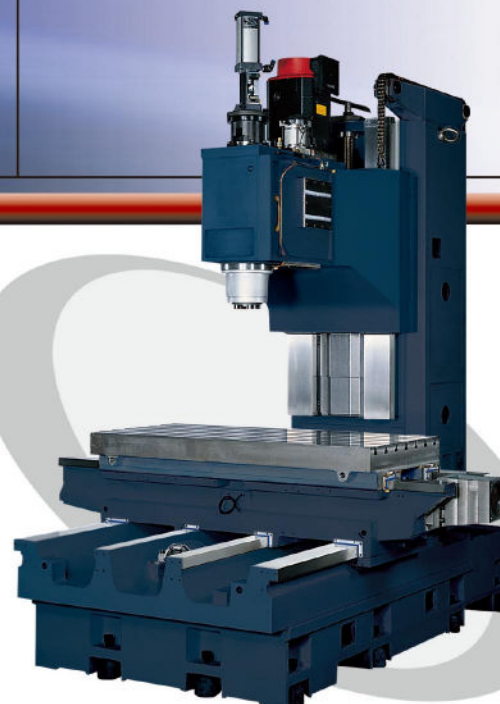


Saddle

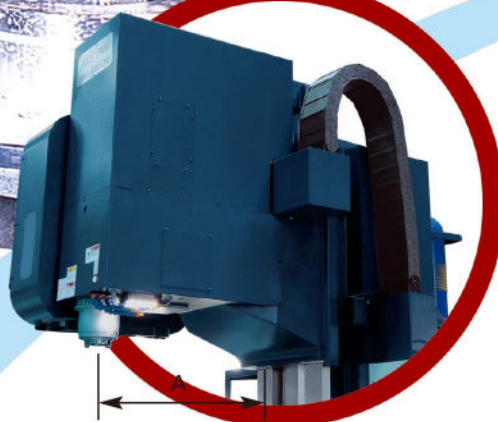
- ➔ High-Quality
- ➔ High-Reliability
- ➔ High-Stability



Four guide ways on base



Vertical Machining Center



Heavy-Duty Head-HD

- Distance Between Spindle Center and Column

Model	A
VMC-1600 (No.40)	885 mm (34.8")
VMC-1600HD (No.50)	885 mm (34.8")
VMC-1600S (No.40)	1150 mm (45.3")
VMC-1600SHD (No.50)	1150 mm (45.3")

Highly Cost-Effective Machines

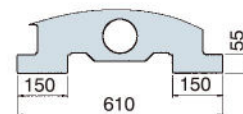
- Large capacity, high accuracy and rigid structure .
- Wide-machining area provides a wide range of operation.
- Maximum 4600kg (10000lb) table loading capacity ensures reliable machining of heavy workpieces.

Zero Table Overhang

- Overhang has been eliminated on all axes to ensure excellent rigidity and high machining accuracy.
- The thick-walled, well-ribbed and box-shaped casting structure.
- Hand scraped turcite-B on 3 axes ensures long term, static and dynamic accuracy.

VMC-1600 / 1600HD / 1600S / 1600SHD

Item	Model	VMC-1600	VMC-1600HD	VMC-1600S	VMC-1600SHD
Table working surface		1800 x 750 mm (70.9" x 29.5")		1800 x 1000 mm (70.9" x 39.4")	
X-axis Travel		1600 mm (63")			
Y-axis Travel		850 mm (33.5")		1100 mm (43.3")	
Z-axis Travel		800 mm (31.5")	710 mm (28")	800 mm (31.5")	
Spindle motor		11 / 7.5 kW Auto Hi-Lo	18.5 / 15 kW Auto Hi-Lo	11 / 7.5 kW Auto Hi-Lo	18.5 / 15 kW Auto Hi-Lo
Table load capacity		4600 kg (10000 lb)			
Machine dimensions (LxWxH)		4500 x 3940 x 3535 mm (177.2"x155"x139.2")		4500 x 4580 x 3695 mm (177.2"x180.3"x145")	
Machine weight		17500 kg (38500 lb)		18600 kg (40920 lb)	

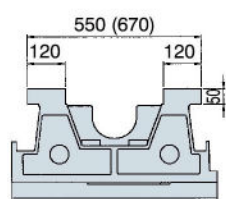


Column

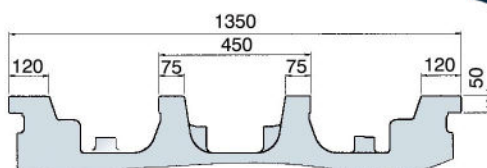


SHD

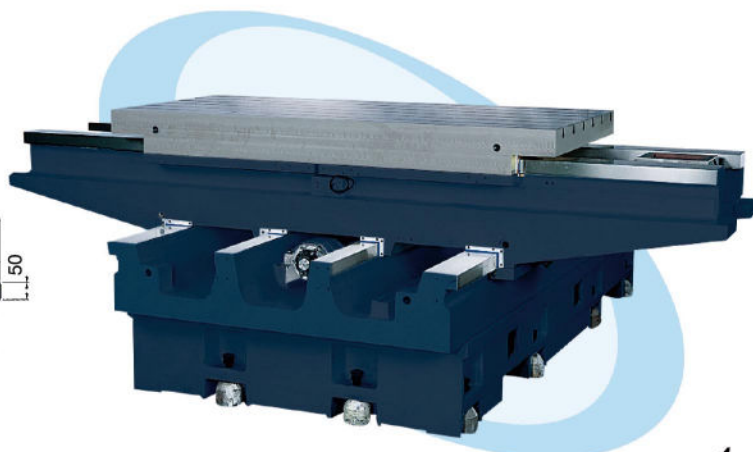
() For I600S / I600SHD



Saddle



Four guide ways on base

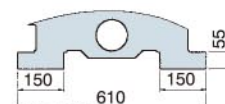


Vertical Machining Center

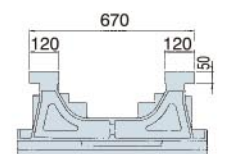


VMC-2000S / 2000SHD / 3000S / 3000SHD

Item	Model	VMC-2000S	VMC-2000SHD	VMC-3000S	VMC-3000SHD
Table working surface		2200 x 1000 mm (86.6" x 39.4")		3200 x 1000 mm (126" x 39.4")	
X-axis Travel		2050 mm (80.7")		3050 mm (120")	
Y-axis Travel		1100 mm (43.3")			
Z-axis Travel		800 mm (31.5")			
Spindle motor		11 / 7.5 kW Auto Hi-Lo	18.5 / 15 kW Auto Hi-Lo	11 / 7.5 kW Auto Hi-Lo	18.5 / 15 kW Auto Hi-Lo
Table load capacity		4800 kg (10500 lb)			
Machine dimensions (LxWxH)		5500 x 4580 x 3695 mm (216.5"x180.3"x145.5")		7700 x 4580 x 3695 mm (303"x180.3"x145.5")	
Machine weight		20000 kg (44000 lb)		23000 kg (50600 lb)	



Column



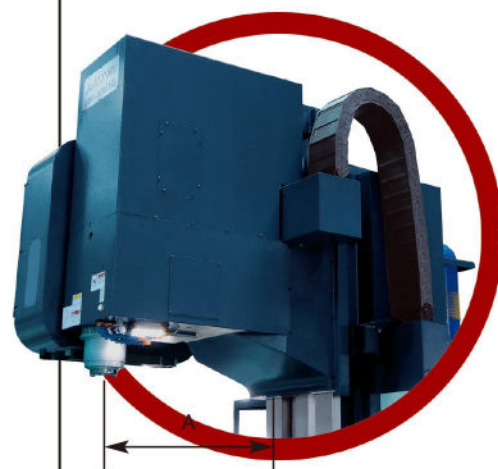
Saddle

High Total Accuracy

- The big box ways are on all 3 axes.
- The base is built with a wide distance between the guides.
- Extra wide saddle allows for full movement of the table without an overhang condition occurring.

Big Capacity for Jobs

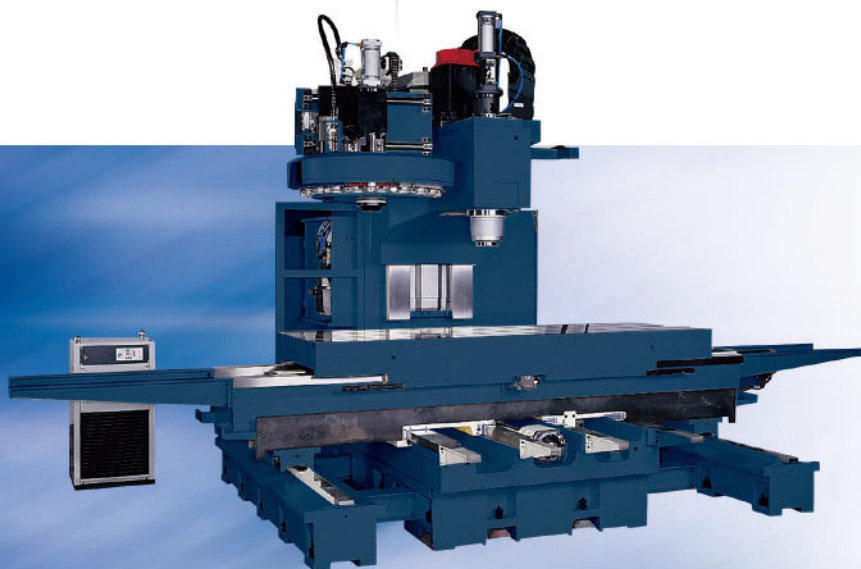
- These machines can take a workpiece up the weight of 4800kg.
- With planetary 2-step gearbox, the high torque spindle performs a heavy cutting.



Heavy-Duty Head-HD

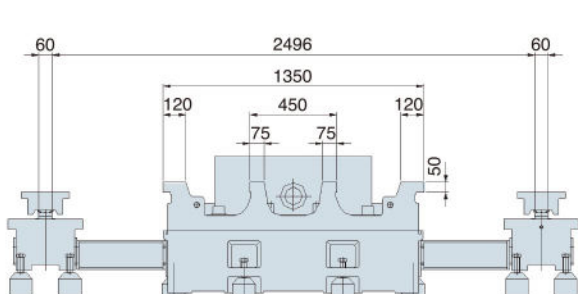
- Distance Between Spindle Center and Column

Model	A
VMC-2000S 3000S (No.40)	1150 mm (45.3")
VMC-2000SHD 3000SHD (No.50)	1150 mm (45.3")

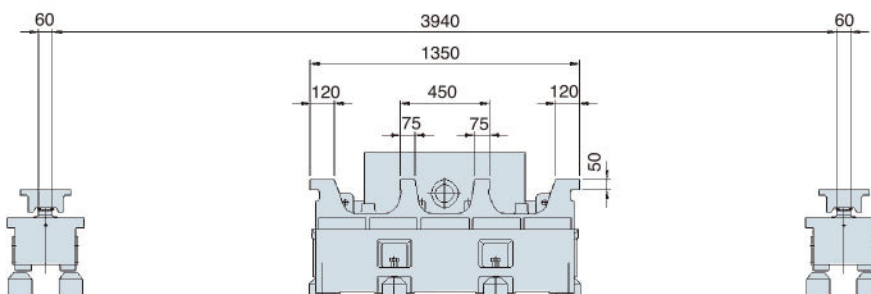


000SHD

VMC-2000S / 2000SHD



VMC-3000S / 3000SHD



High rigid guide ways on base

Automatic Pallet Changer

Chain Type (Patented)

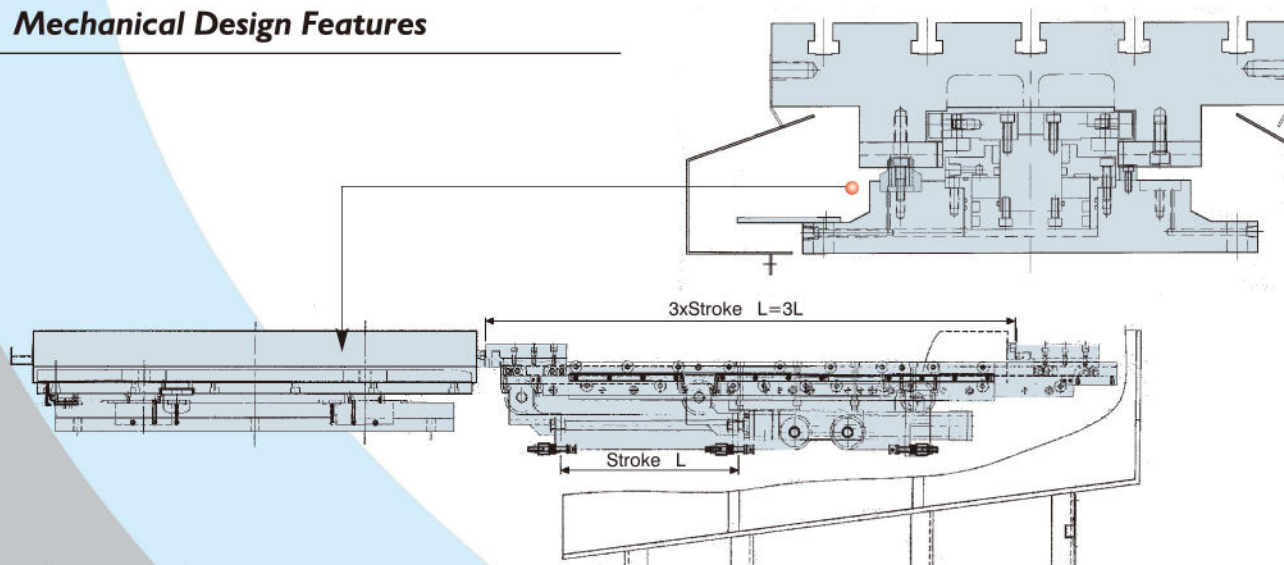
JOHNFORD designed, built and integrated APC is the best you will find. Our side load twin Pallet system is fast, yet heavy duty. A complete pallet exchange takes only 30 seconds, yet our heavy mechanism provides plenty of beef for fixtures and a load of parts. Our pallets are made of cast iron and are available T-slotted or drilled and tapped. Our hydraulic clamping mechanism provides twin large diameter cylinders for clamping. The pallets locate on precision ground hardened steel pins and bushings. Repeatability is excellent at .0001" !

APC Specifications	Model	VMC-1300+APC	VMC-1600+APC	VMC-1600S+APC
Pallet size (L x W)		1400 x 710 mm (55.1" x 28")	1700 x 750 mm (67" x 30")	1700 x 1000 mm (67" x 39.4")
Max. pallet load		2000 kg (4400 lb)	3000 kg (6600 lb)	3200 kg (7040 lb)
T-slot		18 mm (0.7")	18 mm (0.7")	18 mm (0.7")
Hydraulic clamping force		6000 kg (13216 lb)	9000 kg (19824 lb)	9000 kg (19824 lb)
Pallet change time		30 sec	30 sec	30 sec

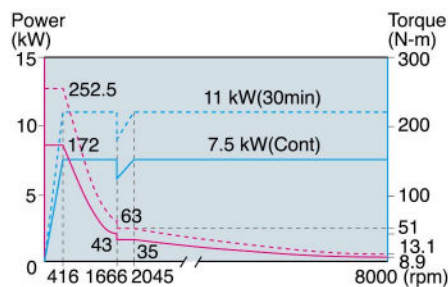
➔ VMC-1600HD+APC



Mechanical Design Features

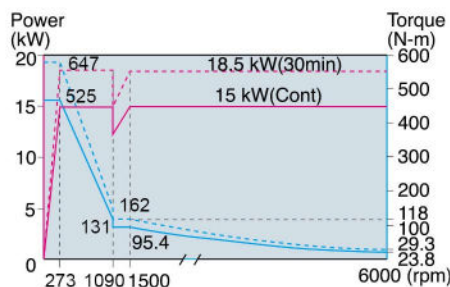


Spindle Power & Torque Chart



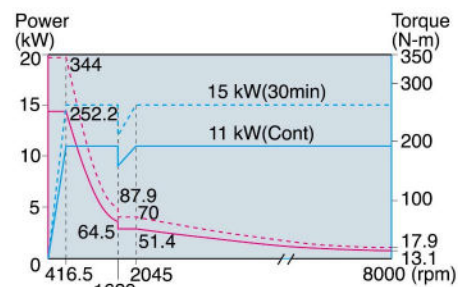
VMC-1300

■ (No.40) 8000 rpm 2-step planetary gear box



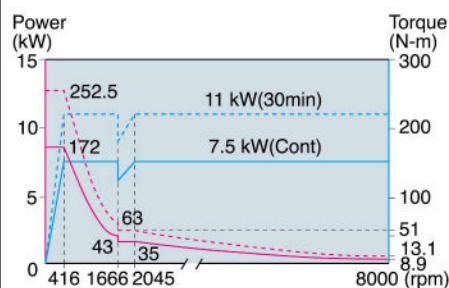
VMC-1300HD

■ (No.50) 6000 rpm 2-step planetary gear box (Opt.)
■ (No.50) 4500 rpm (Std.)



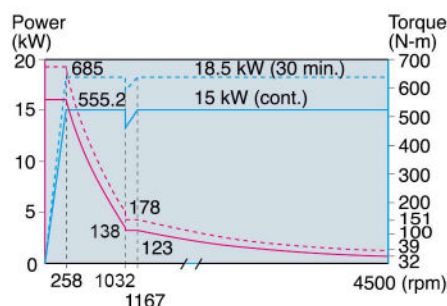
VMC-1300-2H

■ (No.40) 8000 rpm 2-step planetary gear box



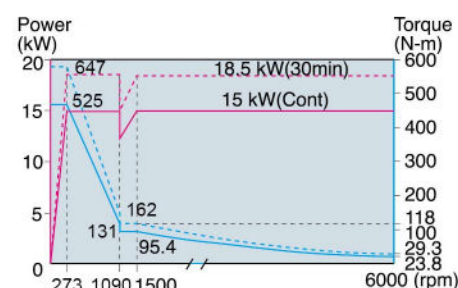
VMC-1600/1600S: (No. 40)

■ 8000 rpm 2-step planetary gear box



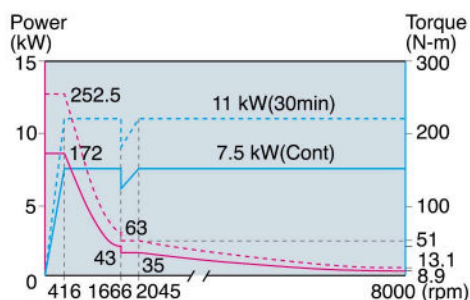
VMC-1600HD/1600SHD: (No. 50)

■ 4500 rpm 2-step gear box (Std.)



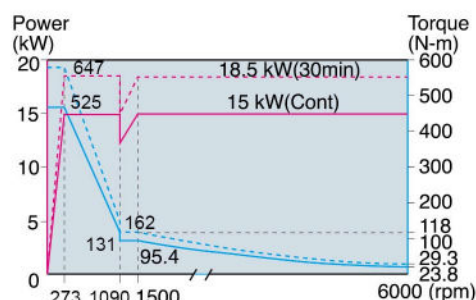
VMC-1600HD/1600SHD: (No.50)

■ 6000 rpm 2-step planetary gear box (Opt.)



VMC-2000S/3000S: (No. 40)

■ 8000 rpm 2-step planetary gear box

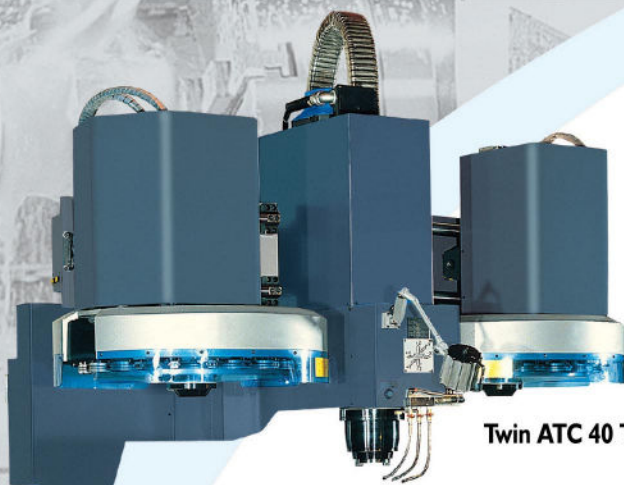


VMC-2000SHD/3000SHD: (No. 50)

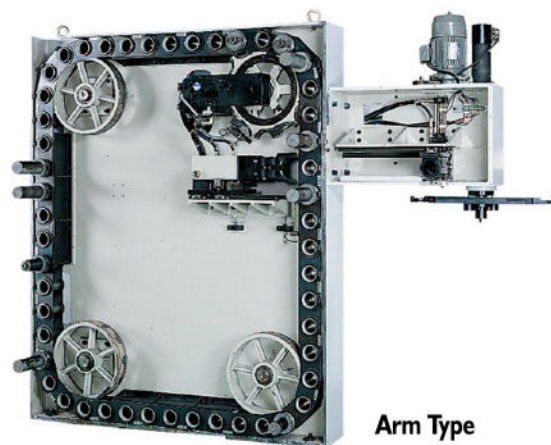
■ 6000 rpm 2-step planetary gear box (Opt.)

Different Accessories for Your C

ATC Units



Twin ATC 40 Tools



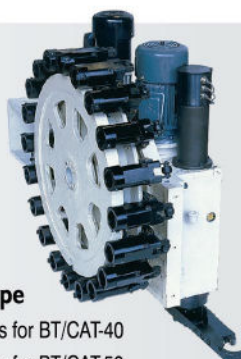
Arm Type

- 50 tools or more for BT/CAT 40, BT/CAT 50



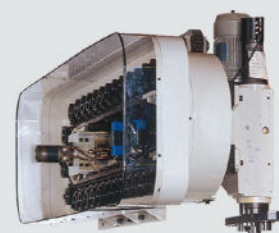
Armless Type

- 24 tools for BT/CAT-40
- 20 tools for BT/CAT-50



Arm Type

- 24 tools for BT/CAT-40
- 24 tools for BT/CAT-50

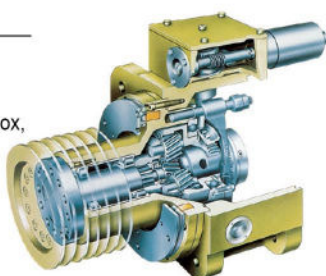


Arm Type

- 32 tools for BT/CAT-40, BT/CAT-50

Gear Box

- Delivers high torque.
- Planetary 2 speed automatic gear box,
- No noise generated,
- No heat transmitted,
- No gear vibration,
- High efficiency (over 95%)



Cooler

- High efficiency.
- Powerful cooling performance.



Standard Features-Great Equipment



Rigid tapping



High pressure coolant
(P:3.5 kg/cm², Q:100 l/min)



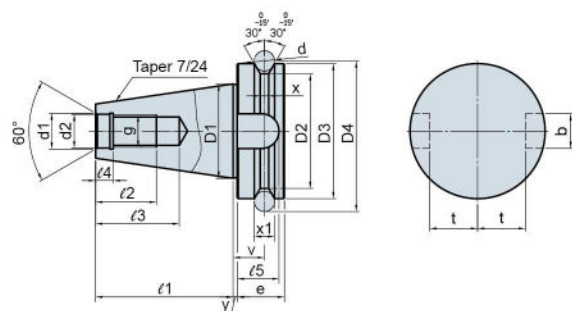
Automatic chip removal
(Screw type chip conveyor)



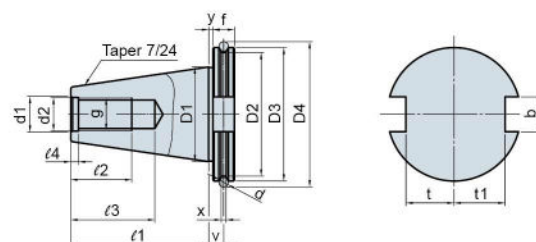
Remote handwheel

BT/CAT Tool System

Mas



Ansi



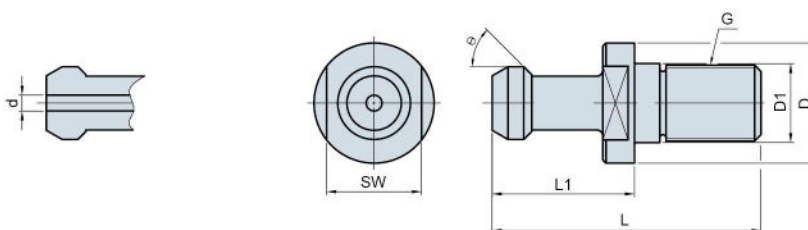
Unit: mm

Shank size	Item	D1	l1	d1	d2	g	l2	l3	l4	b	l5	t
No.40	MAS(BT)	44.45	65.4 ^{+0.15} ₀	19	17 ^{+0.027} ₀	M16	30min	43min	9.0 ^{+0.5} ₀	16.1 ^{+0.18} ₀	21	22.6 ⁰ _{-0.2}
	ANSI(CAT)	44.45	68.4 ⁰ _{-0.3}	18.5	16.4 ^{+0.4} ₀	M16	30min	—	4.75 ^{+0.5} ₀	16.1 ^{+0.2} ₀	—	22.8 ⁰ _{-0.4}
No.50	MAS(BT)	69.85	101.8 ^{+0.2} ₀	27	25 ^{+0.033} ₀	M24	45min	62min	13.1 ^{+0.5} ₀	25.7 ^{+0.21} ₀	31	35.4 ⁰ _{-0.2}
	ANSI(CAT)	69.85	101.75 ⁰ _{-0.3}	26.5	24.8 ^{+0.4} ₀	M24	45min	—	5.75 ^{+0.5} ₀	25.7 ^{+0.2} ₀	—	35.5 ⁰ _{-0.4}

Unit: mm

Shank size	Item	t1	D2	D3	e	f	v	x	x1	y	d	D4
No.40	MAS(BT)	—	53	63 ⁰ _{-0.046}	25	—	16.6 ^{±0.1}	5	10 ^{+0.1} ₀	2 ^{±0.4}	10	75.68
	ANSI(CAT)	26 ⁰ _{-0.4}	56.25 ⁰ _{-0.5}	63.55 ⁰ _{-0.1}	—	15.82	11.1	3.75 ^{+0.15} ₀	—	3.18	7	72.3 ^{±0.05}
No.50	MAS(BT)	—	85	100 ^{+0.054} ₀	35	—	23.2 ^{±0.1}	7	15 ^{+0.1} ₀	3 ^{±0.4}	15	119.02
	ANSI(CAT)	40.4 ⁰ _{-0.4}	91.25 ⁰ _{-0.5}	98.45 ⁰ _{-0.1}	—	15.82	11.1	3.75 ^{+0.15} ₀	—	3.18	7	107.25 ^{±0.05}

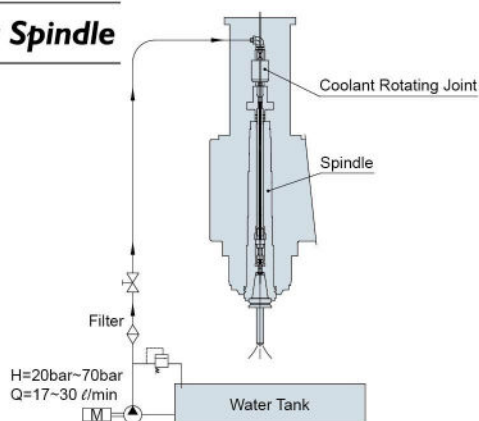
拉刀螺栓



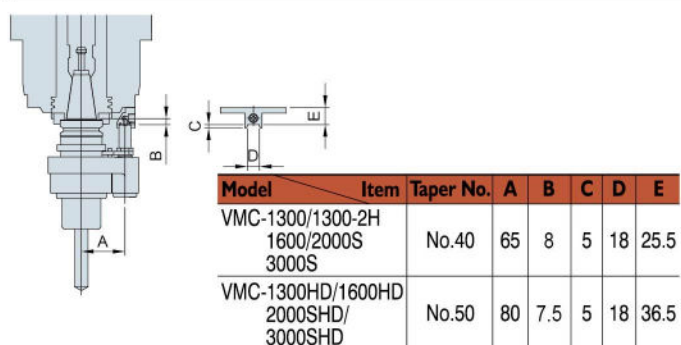
Unit: mm

Tool size	Pull Stud	L	L1	D	D1	θ	G	SW	d
BT-40	P40T-1	60	35	23	17	45°	M16	19	3
CAT-40	ANSI B5.50 CAT	53.8	32	23	17	45°	M16	19	3
BT / CAT-50	P50T-1	85	45	38	25	45°	M24	30	5

Coolant Thru Spindle



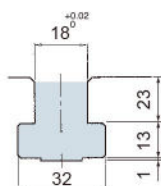
Coolant Thru Tool Tip



Dimensions

VMC-1300/1300HD/1600/1600HD

() for VMC-1600/1600HD



T-Slot

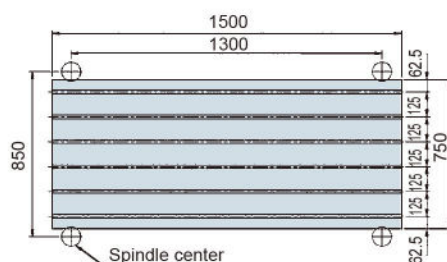


Table (VMC-1300/1300HD)

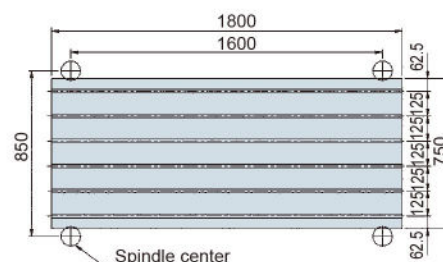
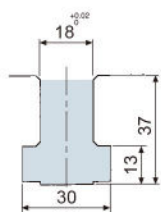


Table (VMC-1600/1600HD)

VMC-1600S/1600SHD/2000S/2000SHD/3000S/3000SHD

() for VMC-2000S/2000SHD [] for VMC-3000S/3000SHD



T-Slot

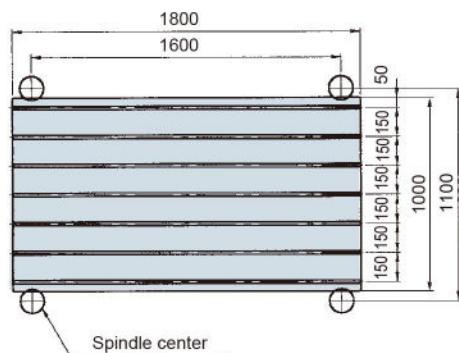


Table (VMC-1600S/1600SHD)

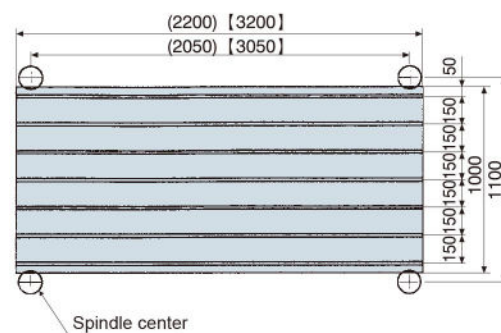
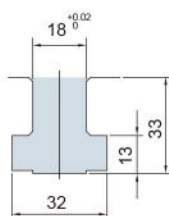


Table (VMC-2000S/3000SHD)

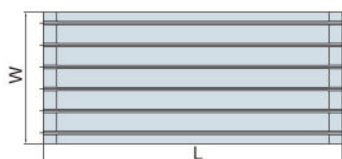
VMC-1300/1600+APC

Unit: mm

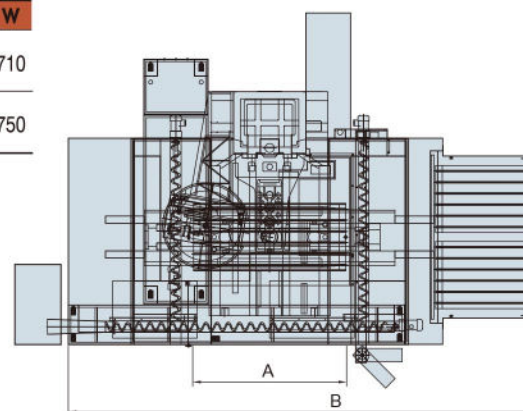
Model	Item	A	B	C	D	E	F	G	H	I	J	K	L	W
VMC-1300+APC		1320	5132	850	3445	1690	1255	2300	1275	3115	880	3180-3890	1400	710
VMC-1600+APC		1620	6100	850	4175	1925	1255	2300	1250	3115	880	2990-3700	1700	750



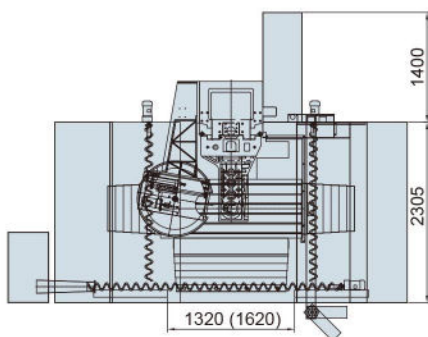
T-Slot



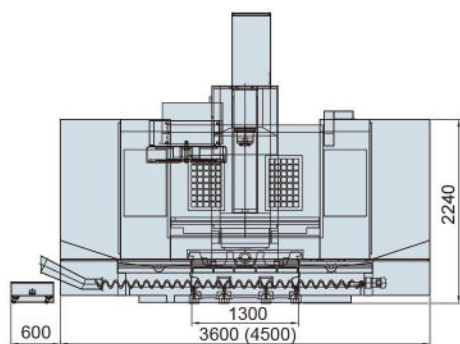
Table



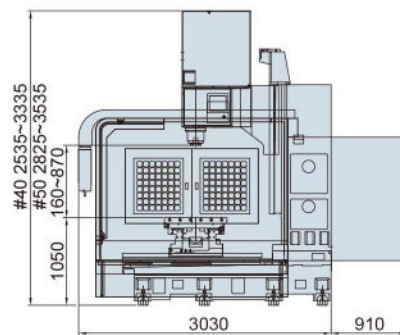
Top View (floor space required)



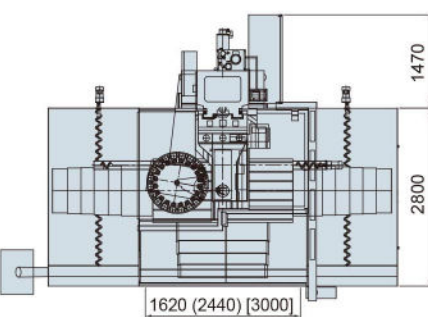
Top View (floor space required)



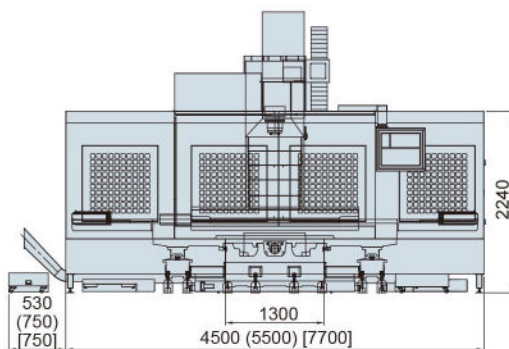
Front View



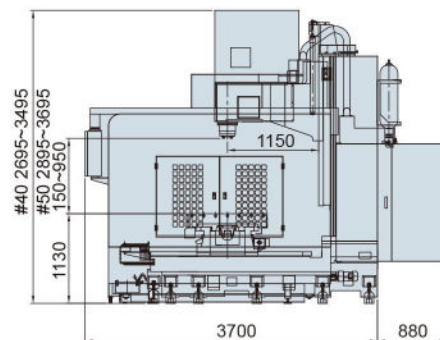
Side View



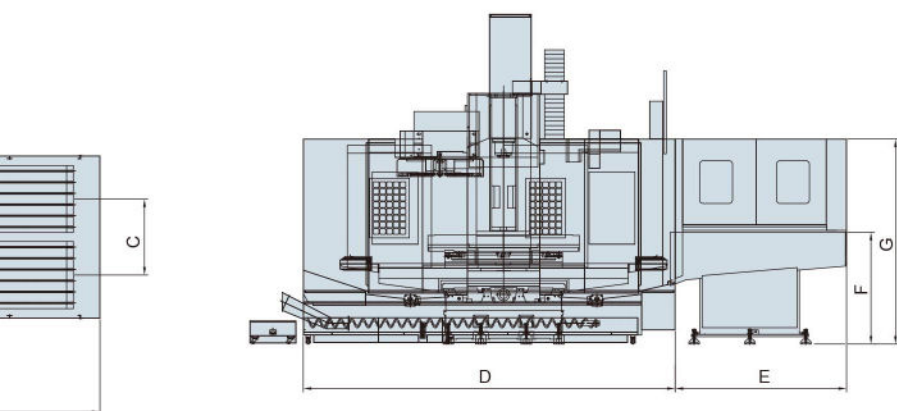
Top View (floor space required)



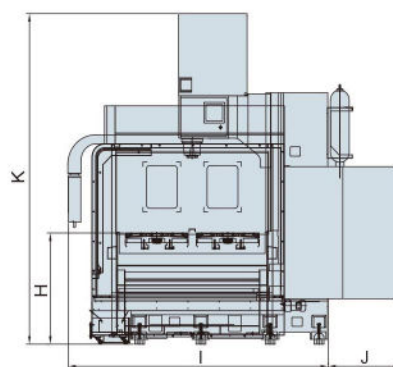
Front View



Side View



Front View



Side View

Specifications

Model		No.40	VMC-1300-2H	VMC-1300	VMC-1600	VMC-1600S	VMC-1600S	VMC-2000S	VMC-3000S
Item		No.50		I300HD	I600HD	I600SHD		2000SHD	3000SHD
Table working surface (mm)			1500x750 (59.1" x 29.5")		1800 x 750 (70.9" x 29.5")	1800 x 1000 (70.9" x 39.4")		2200 x 1000 (86.6" x 39.4")	3200 x 1000 (126" x 39.4")
Longitudinal travel (X) (mm)			1300 (51.2")		1600 (63")			2050 (80.7")	3050 (120")
Cross travel (Y) (mm)			850 (33.5")				1100 (43.3")		
Vertical travel (Z) (mm)	No.40		710 (28")	800 (31.5")					
	No.50		-	710 (28")		800 (31.5")			
Spindle nose to table (mm)	No.40		160-870 (6.3" -34.3")	150~950 (5.9" -37.4")		150~950 (5.9"~37.4")			
	No.50		-	160~870 (6.3" -34.3")					
Spindle center to column (mm)			885 (34.8")				1150 (45.3")		
Distance between two spindles (mm)			635 (25")	-					
Spindle taper			BT-40 / CAT-40		1300 1600 For VMC- 1600S 2000S 3000S	BT-50 / CAT-50		1300HD 1600HD For VMC- 1600SHD 2000SHD 3000SHD	
Spindle diameter (mm)			70 (2.8")			100 (3.9")			
Spindle speed (rpm)			Auto Hi-Lo Gear 80-8000			Auto Hi-Lo Gear 10-4500			
Spindle motor (kW)			11 / 15	7.5 / 11		15 / 18.5			
X-Y-Z Rapid traverse (m/min)			18-18-12					15-15-12	12-12-12
Cutting feed (mm/min)			1-12000					1-8000	
No.of tools			Armless 24x2	BT-40 / CAT-40: Armless 24, Arm type 24 / 32 (Opt.) BT-50 / CAT-50: Armless 20, Arm type 24 / 32 (Opt.)					
Adjacent pockets Max. tool dia. (mm)			75 (3")	BT-40 / CAT-40 For VMC- 1300 1300-2H 1600 1600S 2000S 3000S		125 (5")	BT-50 / CAT-50 For VMC- 1300HD 1600HD 1600SHD 2000SHD 3000SHD		
Max. tool diameter (mm)			100 (3.9")			250 (9.8")			
Max. tool length (mm)			320 (12.6")			400 (15.7")			
Max. tool weight (kg)			10 (22 lb)			15 (33 lb)			
Table load capacity (kg)			3270 (7194 lb)		4600 (10120 lb)		4800 (10560 lb)		
Machine weight (kg)			14000 (30800 lb)	13500 (29700 lb)	17500 (38500 lb)	18600 (40920 lb)	20000 (44000 lb)	23000 (50600 lb)	
Machine dimensions (LxWxH) (mm)			3600x3940x3220 (141.7"x155"x126.8")	3600x3940x3535 (141.7"x155"x139.2")	4500x3940x3535 (177.2"x155"x139.2")	4500x4580x3695 (177.2"x180.3"x145.5")	5500x4580x3695 (216.5"x180.3"x145.5")	7700x4580x3695 (303"x180.3"x145.5")	
X-Y-Z Ball screw dia.			φ 50, φ 50, φ 50			φ 50, φ 63, φ 50		φ 63, φ 63, φ 50	
Cutting capacity (S45C)	milling (cc/min)		160	180	1300 1600 For VMC- 1600S 2000S 3000S	320	1300HD 1600HD For VMC- 1600SHD 2000SHD 3000SHD		
	drilling (mm)		φ 30	φ 40		φ 52			
	tapping		M24 x P3.0	M30 x P3.5		M50 x P4.5			

■ All data subject to change without notice.

■ All the specifications are listed with the FANUC CNC system.

Standard Accessories:

1. Coolant system
2. Spindle air blast
3. Auto lubrication with alarm
4. LED working lamp
5. Tools, tool box and various manuals
6. Twin spindle/ Twin ATC (VMC-1300-2H)
7. Screw type chip conveyor
8. Full enclosure splash guard
9. Spindle cooler unit (for VMC-HD,SHD series)
10. FANUC Oi-MF Controller

Optional Accessories:

1. Contact / non-contact tool setting system
2. CNC Rotary table
3. Automatic pallet changer (for VMC-1300/HD, 1600/HD)
4. Twin ATC (for VMC-1300)
5. High pressure coolant thru tool tip
6. High pressure coolant thru spindle (20 bar/30 bar)
7. Chain type chip conveyor
8. Manual guide i / Oi (OiMF) ; Manual guide i (31iMB)

CNC Control Specs

■ CNC system type

O: Std. △: Opt. -: Nil

Type	Model	VMC Series
FANUC 0i/MF		○
FANUC 31i/MB		△
Heidenhain i/TNC640 HSCI		△
Siemens 840D		△
Siemens 828D		△

■ Fanuc specifications

O: Std. △: Opt. -: Nil

	Item	Specifications	0iMF	31iMB
Display unit	8.4" color LCD		○	-
	10.4" color LCD		△	○
	Data Server with 2GB CF card		△	△
	AICC II		△	○
Function	High speed processing		-	△
	Conversational programming with graphic function	Manual guide 0i	○	-
		Manual guide i	△	○
	NC program memory	1280 meter (about 512 KB)	○	○

■ Siemens specifications

O: Std. △: Opt. -: Nil

	Item	Specifications	828D	840D
Operation Panel	10.4" color LCD		○	○
	15.1" color LCD		-	△
	Machine panel MCP483C		○	○
	TCU without hard disk	CF card	○	○
	PCU 50 with hard disk		-	△
	Ethernet		○	○
Function	ShopMill programming		○	△
	Automatic residual material detection		△	△
	Universal interpolator NURBS		○	○
	Spline interpolation for 3 - axes		△	△

■ Heidenhain specifications

O: Std. △: Opt. -: Nil

	Item	Specifications	TNC 640
Display unit	Visual display unit 15" TFT display		○
Function	Main computer	0.5 ms block processing time	○
	NC programming memory	21GB on SSDR	○
Option No. 8	•Machining with a rotary table •Coordinate transformation •Interpolation - circular in 3 axes with tilted working plane		△
Option No. 9	•Spline interpolation •5-axis simultaneous machining •Interpolation - linear in 5 axes		△



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ROUNDTOP MACHINERY INDUSTRIES CO., LTD.

No. 1056, Zhongshan Rd., Shengang Dist.,
Taichung City 42952, Taiwan (R.O.C.)

Tel : 886-4-2562-4721

Fax: 886-4-2561-3886

<http://www.johnford.com.tw>

E-mail: johnford@johnford.com.tw