TOYODA

WELE

FV2090

Vertical Machining Center
Specifications

All specifications are subject to change without prior notice
Verification of technical changes may be confirmed after receipt of order

TOYODA JTEKT

Designed and built by Wele Mechatronic in Taiwan, this machining center is sold and serviced exclusively by JTEKT Toyoda Americas Corporation and our exclusive representatives.

Machine Specifications

X Axis Travel	2,000 mm (78.7")
Y Axis Travel	900 mm (35.4")
Z Axis Travel	900 mm (35.4")
Distance from Spindle Nose to Table Top	200 - 1,100 mm (7.8" - 43.3")
Distance from Spindle Center to Column	900 mm (35.4)
Table Size (X Direction)	2,150 mm (84.6")
Table Size (Y Direction)	900mm (35.4")
Table Load Capacity	4,840 lbs (2,200 kg)
Table T-Slot Size - Width x Distance x Number	22 x 175 mm x 5 (0.866" x 6.9" x 5)
Table Height From Plant Floor	1,090 mm (42.9")
Spindle Taper	CAT50
Spindle Motor (Cont. / 30 Min. Rating)	22 / 26 kW (30 / 35 hp)
Spindle Speed	15 ~ 6,000 min -1
Spindle Output Torques	658 Nm (485 ft/lb)
Spindle Bearing Diameter	110 mm (4.33")
Spindle Type	Gear Type
Rapid Feedrate (X & Y Axes)	20 m/min (787 ipm)
Rapid Feedrate (Z Axis)	18 m/min (708 ipm)
Maximum Cutting Feedrate	18 m/min (708 ipm)
Motor Size (X and Z Axes)	α30 / 7 Kw / 9.3 hp
Motor Size (Y Axis)	α22 x 2 / 4 Kw x 2/ 5.5 hp x 2
Ballscrew Diameter (X, and Z Axes)	50 mm (1.97")
Ballscrew Diameter (Y Axis)	50 mm x 2 (1.97" x 2)
Thrust (X Axis)	3,461 lbf
Thrust (Y Axis)	6,085 lbf
Thrust (Z Axis)	4,153 lbf
Tool Magazine Capacity	30 (40, 60 Optional)

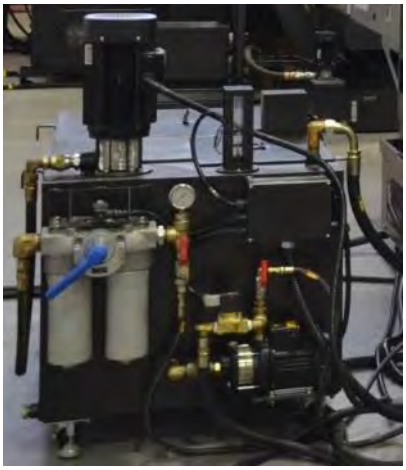
Machine Specifications

Maximum Tool Diameter with Tool in Adjacent Pocket	127 mm (5.0")
Maximum Tool Diameter with Adjacent Pocket Empty	229 mm (9.0")
Maximum Tool Length from Gage Line	300 mm (11.8")
Maximum Tool Weight	15 kg (33 lb)
Tool Taper	CAT50
Pull Stud	ANSI CAT50
Tool Selection	Random
Tool Access	Bi-Directional
Positioning Accuracy (JIS)	±.005 mm (±.0002")
Repeatability (JIS)	±.003 mm (±.0001")
Total Power Required	3 Phase ±10% 220 V (50 kVA)
Air Pressure	100 psi
Power Supply Frequency	50 / 60 Hz
Control Voltage	24 Volt
Control Type	Fanuc 0iMF
Axis Guideways	Box Way
Machine Weight	23,000 kg (50,705 lbs)
Machine Length *	6,480 mm (255.1")
Machine Width *	4,948 mm (194.8")
Machine Height *	3,620 mm (142.5")
Coolant Tank Capacity (Including CTS Tank)	270 gal
Flood Coolant (Gallons per Minute)	20 gal
CTS Coolant (7 Gallons per Minute)	300 psi

Note: Machine is 220V / 3 Phase / 60 Hz. Any other voltage requires a transformer (not supplied as std.)
* Dimensions are approximate, please verify upon ordering

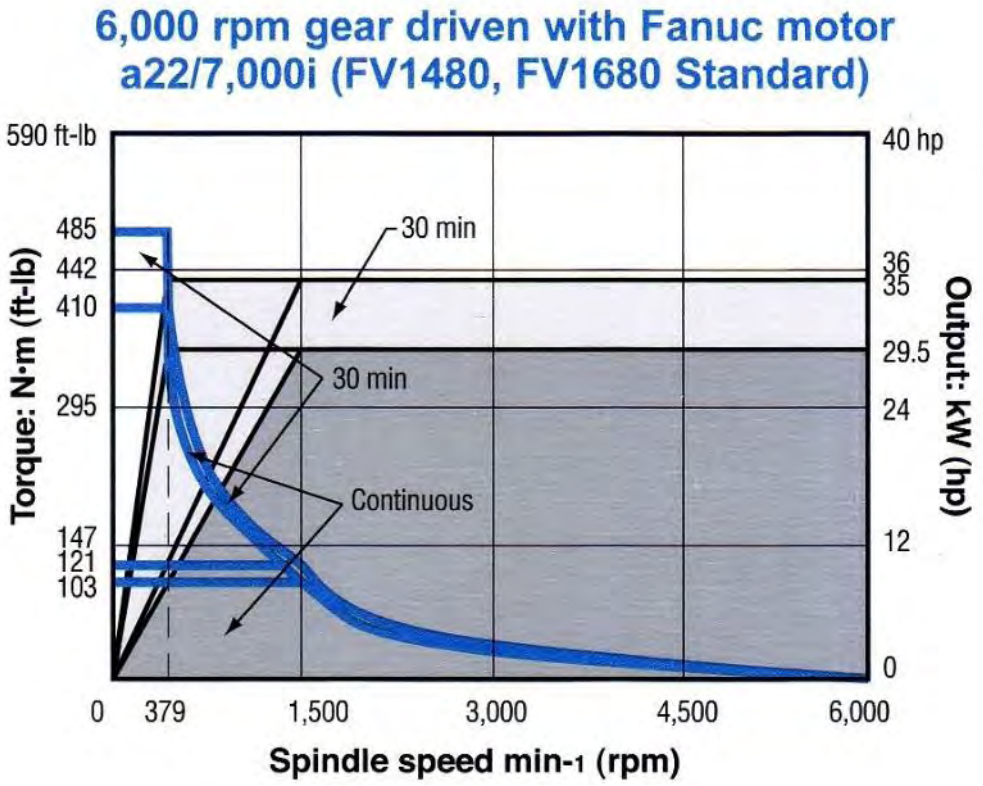
Included with this Model:

1. 15” Color LCD Display
2. 4th Axis Preparation (Excluding Drive Unit)
3. Rear Tool Change Access (Ladder or step
4. Chip Wash Gun
5. Conversational FANUC Manual Guide I (Training not included)
6. Coolant System including tank & pumps
7. Coolant thru the Spindle (300 psi) including additional tank
8. Dual Chip Augers along Y Axis, Rear Auger along X Axis
9. Foundation and Leveling Kit
10. Full Enclosure Splash Guard
11. Gear-Driven Spindle
12. Hand Tool Box
13. Helical Interpolation
14. Hinged Belt Chip Conveyor (47“ Drop Height)
15. Manual Pulse Generator (Hand Wheel)
16. Operation and Maintenance Manual, Fanuc Manuals
17. External Programmable Air Blast
18. Rigid Tapping
19. Ethernet RJ45 Interface
20. Spindle Oil Cooler
22. Three (3) Tier Status / Alarm Lamp
23. Work Light

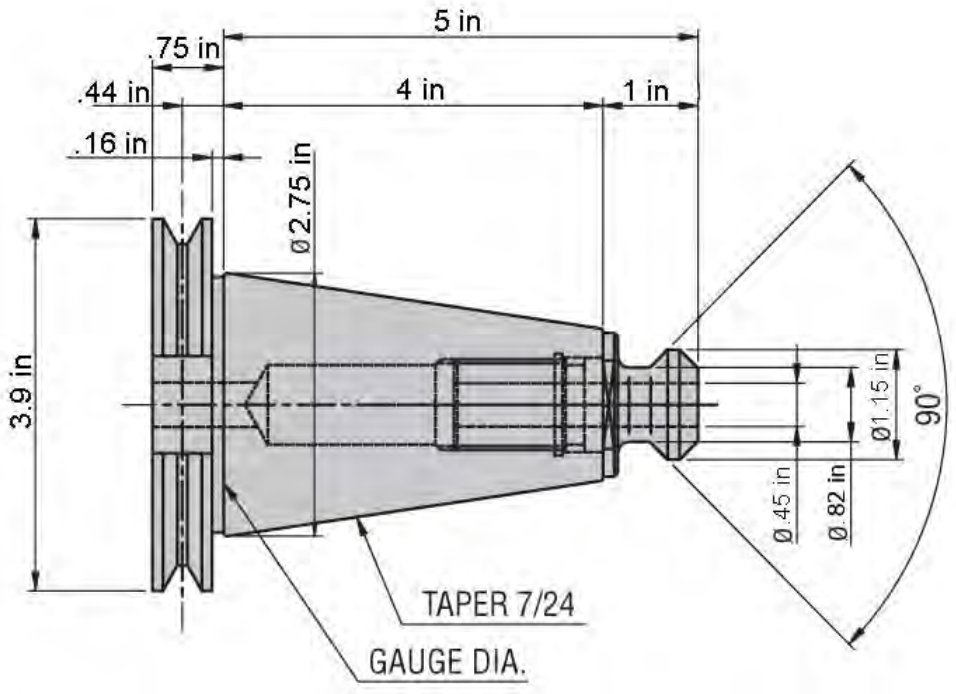


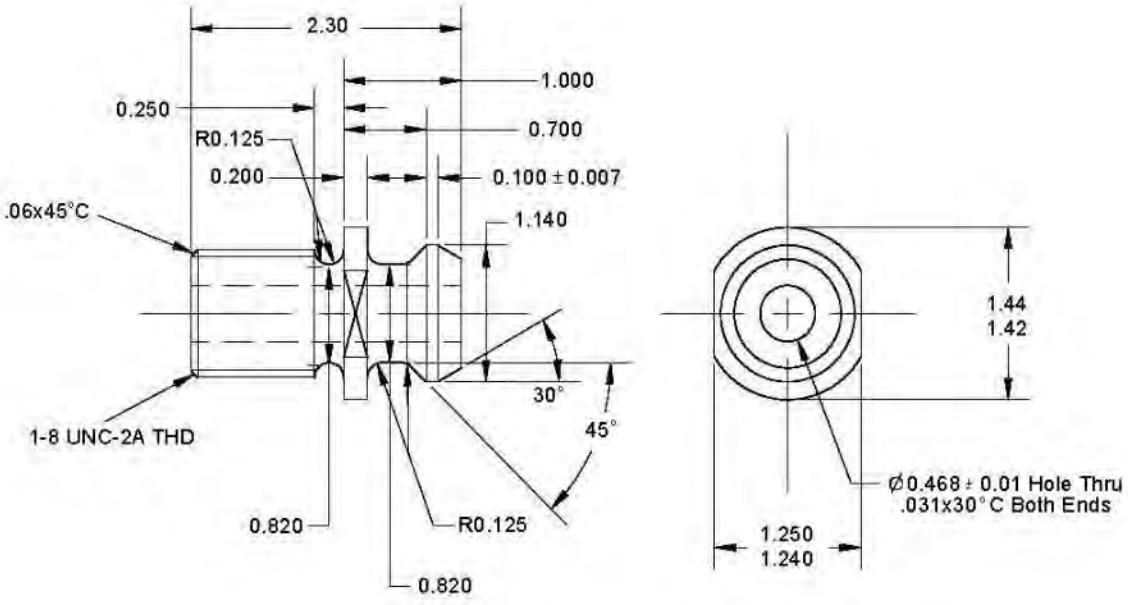
Spindles

Power & Torque CAT50 Geared Head



Retention Knob & Tool Assembly CAT50





Fanuc 0iMF Plus control specification		
No	Function	Specifications
1. System Functions		
1.1	Color LCD/MDI	
1.2	Control axes	4 axes (Option to 5 axes)
1.3	Simultaneously controlled axes	4 axes
1.4	Spindle axes	1 axes
1.5	Memory card interface	CF card and PCMCIA card attachment is required. Program operation on large capacity memory Function (for DNC)
1.6	Ethernet interface	Program transfer
1.7	RS-232C interface	
1.8	USB interface	Only data input and output (not DNC)
2. Axis functions		
2.1	High-speed and high-precision machining	HRV3 Control
2.2	Follow up	
2.3	Overtravel	
2.4	Software stroke check 1	
2.5	Software stroke check 2, 3	
2.6	Stroke check before movement	
2.7	Control axis detach	
3. Spindle functions		
3.1	Spindle orientation	M19
3.2	Rigid tapping	M29
3.3	FSSB High speed rigid tapping	
3.4	Constant surface speed control	
3.5	Spindle serial output	
3.6	Spindle output switching function	
3.7	Spindle synchronous control	
4. Operation functions		
4.1	Machine lock	All axes
4.2	Z lock	
4.3	Emergency stop	

Fanuc 0iMF Plus control specification

4.4	Single block	
4.5	MDI Operation	
4.6	Manual handle feed	1 unit
4.7	Manual handle feed rate	X1, X10, X100
4.8	Handle interruption	
4.9	Dry run	
4.10	Program restart	
4.11	Playback	
4.12	JOG feed	
4.13	Manual reference position return	
4.14	Rapid traverse override	F0, 25%, 50%, 100%
4.15	Cutting feedrate override	0, 10%, 20%, 30%, … 200%
4.16	Spindle override	50%, 60%, 70%, … 120%
4.17	Optional block skip	
4.18	Direct input of workpiece origin offset value measured	
4.19	Manual absolute on and off	
4.20	Program protect key	
4.21	Help function	
4.22	Self-diagnosis function	
5. Editing functions		
5.1	Increment system C	0.001mm / 0.0001 inch / 0.001 deg
5.2	Backlash compensation	
5.3	DNC operation	CF card or RS-232C or Data Server attachment is required
5.4	Positioning	G00
5.5	Linear interpolation	G01
5.6	Circular interpolation cw(ccw) Helical interpolation cw(ccw)	G02, G03
5.7	Dwell, exact stop	G04
5.8	Exact stop	G09
5.9	Programmable data input	G10, G11
5.10	Polar coordinate command	G15, G16

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5.11	Plane selection	G17, G18, G19
5.12	Input in mm or inch	G20, G21
5.13	Automatic return to reference position	G28
5.14	Skip function	G31
5.15	Thread cutting	G33 (macro control is required)
5.16	Special fixed cycle	G34, G35 (macro control is required)
5.17	Cutter compensation	G40, G41, G42
5.18	Tool offset increase or decrease	G45~G59
5.19	Workpiece coordinate system	G54~G59
5.20	Addition of Workpiece coordinate system	48 pairs
5.21	Programmable mirror image	G50.1 / G51.1
5.22	Scaling cancel	G50 / G51
5.23	Single direction position	G60
5.24	Exact stop mode	G61
5.25	Automatic corner override	G62
5.26	Coordinate system rotation mode	G68, G69
5.27	Peck drilling cycle	G73, G83
5.28	Fixed cycle	G74, G76, G80, G81, G84-G89
5.29	Absolute or incremental programming	G90, G91
5.30	Workpiece coordinate system preset	
5.31	Feed per minute	G94
5.32	Feed per revolution	G95
5.33	Custom macro	
5.34	Addition of Custom macro common variables	#100~#199, #500~#999
5.35	External deceleration	
5.36	Automatic corner deceleration	
5.37	Automatic acceleration/deceleration	linear
5.38	Rapid traverse bell-shaped acceleration/deceleration	
5.39	Bell-type acceleration/deceleration after cutting feed interpolation	
5.40	Ilelical interpolation	
5.41	AI contour control II	Look-ahead blocks 200
5.42	Program cide	EIA/ISO

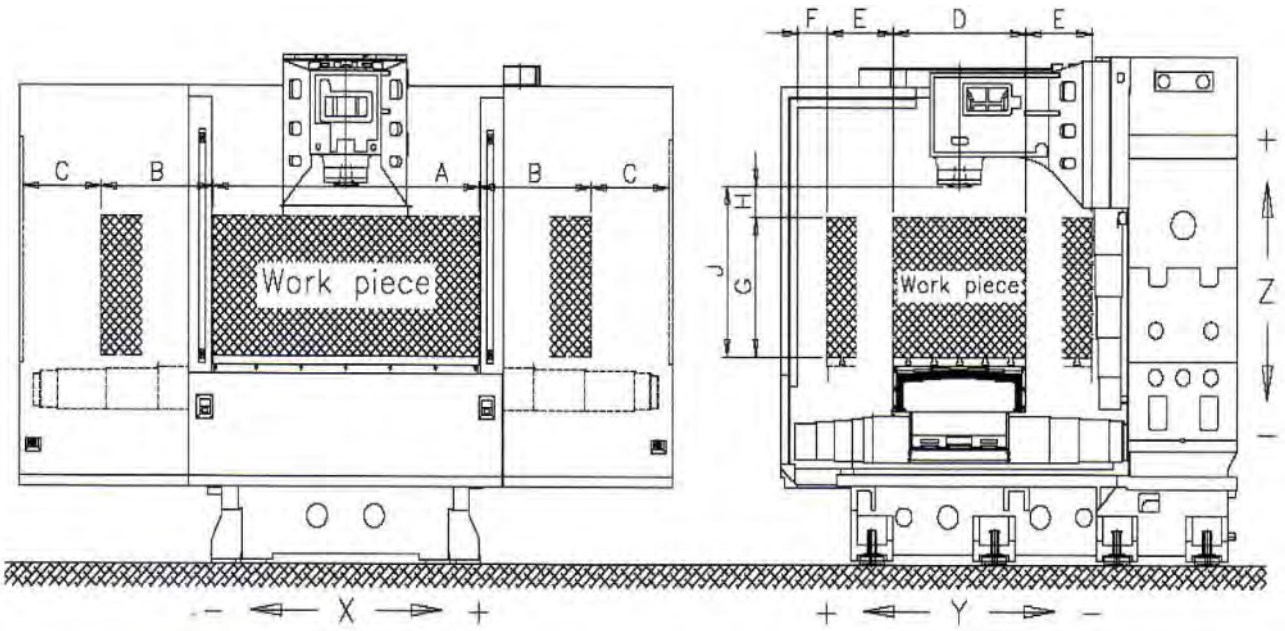
Fanuc 0iMF Plus control specification

5.43	Parity check	
5.44	Program file name	32 characters
5.45	Sequence number	N8 digit
5.46	Decimal point programming/pocket calculator type decimal point programming	
5.47	Rotary axis designation	
5.48	Optional chamfering/corner R	
5.49	Number of registerable programs	1000 programs
5.50	Part program storage size	2M byte
5.51	Part program editing	
5.52	Extended part program editing	
5.53	Feedrate override reset	
5.54	Max. programmable dimension	+/- 9 digits
5.55	Sub program call	10 folds nested
5.56	M, S, T function	
5.57	Program stop / Optional stop	M00, M01
5.58	Program end	M02, M30
5.59	Air blow on	M07
5.60	Auto power off	
5.61	Calling subprogram stored in external memory	M198
5.62	Tool function	T8 digit
5.63	Tool offset pairs	400 pairs
5.64	Tool offset memory C	
5.65	Tool length offset	
5.66	Tool radius offset	
5.67	Tool length measurement	
5.68	Tool life management	
5.69	Backlash compensation for each rapid traverse and cutting feed	
5.70	Stored pitch error compensation	
5.71	Alarm display	
5.72	Alarm history display	
5.73	Operator message display	
5.74	Operator message history display	

Fanuc 0iMF Plus control specification

5.75	Run hour and parts count display	
5.76	Actual cutting feedrate display	
5.77	Status display	
5.78	Clock function	
5.79	Spindle speed function	
5.80	Servo setting screen	
5.81	Spindle setting screen	
5.82	Current position display	
5.83	Program comment display	Program name 31 characters
5.84	Parameter setting and display	
5.85	Multi-language display	
5.86	Dynamic display langauge switching	
5.87	Parameter setting support screen	
5.88	Display of hardware and software configuration	
5.89	Servo information screen	
5.90	Spindle information screen	
5.91	External machine zero point shift	
5.92	External message	
5.93	Screen hard copy	
5.94	Manual guide 0i	
5.95	Reference position return function	
5.96	Rigid tapping bell-shaped acceleration/deceleration	
5.97	Fine surface machining	
5.98	Macro executor/C language executor	
5.99	Dynamic graphic display	
6. Optional functions		
6.1	AI contour control II	Look-ahead blocks 400
6.2	Manual guide i	
6.3	Fast data Server	Suggest use item 1-5 (Program operation on large capacity memory function)
6.4	3-dimensional Coordinate systems conversion	

Work Envelope



Model	Table Area	T-Slot Size W x Ctrs x	Travel X / Y / Z	A	B	C	D	E	F	G	H	J: Min~Max
								Travel				
FV850	39.4 x 20.1	.7 x 3.9 x 5	31.5 / 20.1 / 20.1	39.4	15.8	20.7	20	10	10.2	21.7	0.79	125~635
FV965	43.3 x 25.6	.7 x 4.9 x 5	35.4 / 25.6 / 23.6	43.3	17.7	17.7	25.6	12.8	5.2	23.4	5.1	4.9~28.5
FV1050	47.2 x 20.1	.7 x 3.9 x 5	40.2 / 20.1 / 20.1	47.2	20	16.4	20	10	10.2	21.7	0.79	125~635
FV1165	51.2 x 25.6	.7 x 4.9 x 5	43.3 / 25.6 / 23.6	51.2	21.3	14.9	25.6	12.8	5.2	23.4	5.1	4.9~28.5
FV1265	55.1 x 25.6	.7 x 4.9 x 5	47.2 / 25.6 / 24	55.2	23.6	15.6	25.6	12.8	8.3	26	0.79	150~760
FV1365	57.1 x 25.6	.7 x 4.9 x 5	51.2 / 25.6 / 23.6	57.1	25.6	16.5	25.6	12.8	5.2	23.4	5.1	4.9~28.5
FV1465	63 x 25.6	.7 x 4.9 x 5	55.1 / 25.6 / 24	63	27.6	17.1	25.6	12.8	8.3	26	0.79	150~760
FV1565	64.9 x 25.6	.7 x 4.9 x 5	59.1 / 25.6 / 23.6	64.9	29.5	18.1	25.6	12.8	5.2	23.4	5.1	4.9~28.5
FV1480	61 x 31.5	.7 x 4.9 x 5	55.1 / 31.5 / 27.6	61	27.6	20.2	31.5	15.7	8.5	27.4	8	7.9~35.4
FV1680	68.9 x 31.5	.7 x 5.9 x 5	63 / 31.5 / 31.5	68.9	31.5	20.2	31.5	15.7	9.5	31.3	8	7.9~39.4
FV1890	76.8 x 35.4	.86 x 6.9 x 5	70.9 / 35.4 / 35.4	76.8	35.4	25.4	35.4	17.7	11.8	35.2	8	7.9~43.3
FV2090	84.6 x 35.4	.86 x 6.9 x 5	78.7 / 35.4 / 35.4	84.7	39.4	21.4	35.4	17.7	11.8	35.2	8	7.9~43.3
FV2590	104.4 x 35.4	.86 x 6.9 x 5	98.5 / 35.4 / 35.4	49.2	49.2	14.7	35.4	17.7	11.8	35.2	8	7.9~43.3

Unit: inches

Floor Space Requirement