AQ1050

Vertical Machining Center
Specifications

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

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

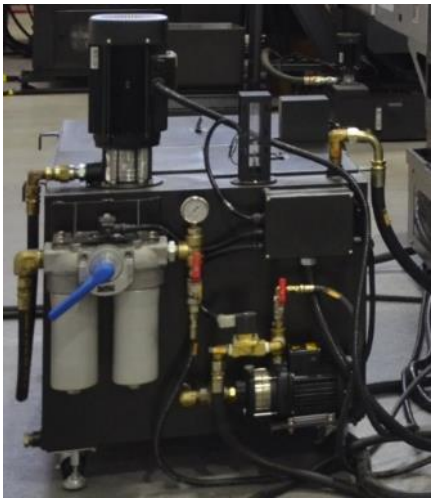
X Axis Travel	1,020 mm (40.2")
Y & Z Axes Travel	510 mm (20.1")
Distance from Spindle Nose to Table Top	125 - 635 mm (4.9" - 25.0")
Distance from Spindle Center to Column	510 mm (20.1")
Table Size (X Direction)	1,200 mm (47.2")
Table Size (Y Direction)	510 mm (20.1")
Table Load Capacity	1,320 lbs (600 kg)
Table T-Slot Size - Width x Distance x Number	18 x 100 mm x 5 (0.71" x 3.94" x 5)
Table Height From Plant Floor	940 mm (37.0")
Spindle Taper	CAT40
Spindle Motor (Cont. / 30 Min. Rating)	15 / 18.5 kW (20 / 25 hp)
Spindle Speed	15 ~ 15,000 min -1
Spindle Output Torques Continuous	110 / 125 Nm (81 / 92 ft/lb)
Spindle Bearing Diameter	70 mm (2.75")
Spindle Type	Direct Drive
Rapid Feedrate (X & Y Axes)	48 m/min (1,889 ipm)
Rapid Feedrate (Z Axis)	36 m/min (1,417 ipm)
Maximum Cutting Feedrate	36 m/min (1,417 ipm)
Motor Size (X and Y Axes)	α12 / 3 Kw / 4 hp
Motor Size (Z Axis)	α30 ß / 7 Kw / 9.31 hp
Ballscrew Diameter (X, Y and Z Axes)	45 mm (1.77")
Thrust (X and Y Axes)	1,058 lbf
Thrust (Z Axis)	3,532 lbf
Tool Magazine Capacity	40

Machine Specifications

Maximum Tool Diameter with Tool in Adjacent Pocket	76 mm (2.99")
Maximum Tool Diameter with Adjacent Pocket Empty	127 mm (5.0")
Maximum Tool Length from Gage Line	250 mm (9.8")
Maximum Tool Weight	7 kg (15.4 lb)
Tool Taper	CAT40
Pull Stud	ANSI CAT40
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 (35 kVA)
Air Pressure	100 psi
Power Supply Frequency	50 / 60 Hz
Control Voltage	24 Volt
Control Type	Fanuc 0iMF Plus
Axis Guideways	Linear Roller Guideway
Machine Weight	6,000 kg (13,227 lbs)
Machine Length *	4,300 mm (169.3")
Machine Width *	3,930 mm (154.7")
Machine Height *	2,975 mm (117.2")
Coolant Tank Capacity (Including CTS Tank)	270 gal
Flood Coolant (Gallons per Minute)	20 gal
CTS Coolant (7 Gallons per Minute)	300 gal

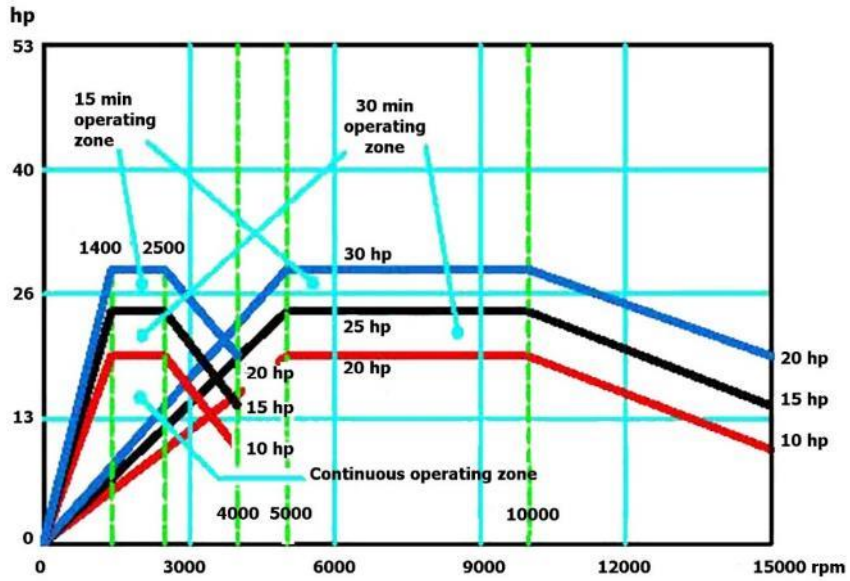
Note: Machine is 220V / 3 Phase / 60 Hz. Any other voltage requires a transformer (not supplied as std.)
* Dimensions are approximate, please verify upon ordering

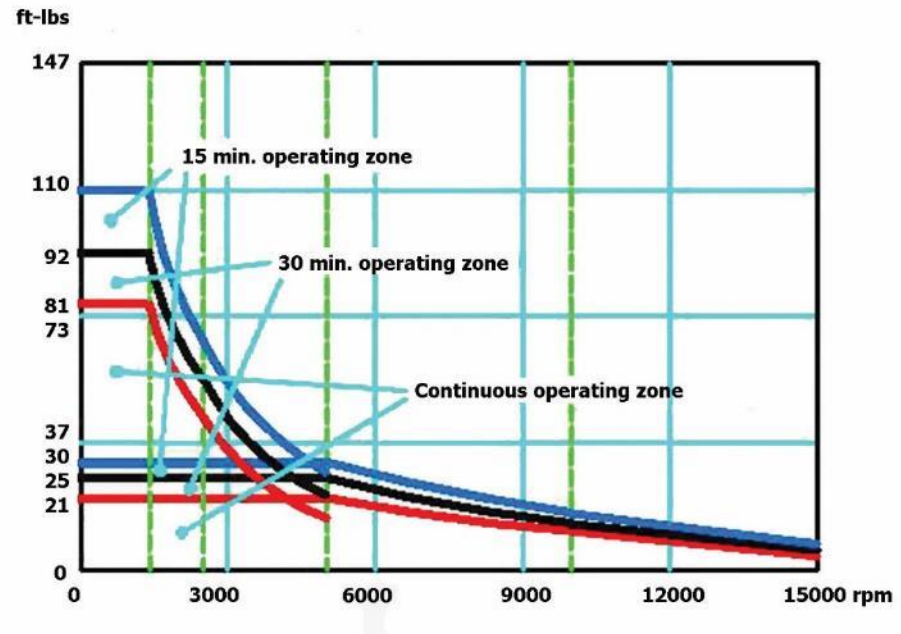
Included with this Model:



1. 15” Color LCD Display
2. 4th Axis Prep (Excluding Drivers)
3. Chip Wash Down Coolant
4. Chip Wash Gun
5. FANUC Manual Guide I (Training Not Included)
6. Coolant System and Tank
7. Coolant through the Spindle (300 psi)
8. Custom Macro B
9. Dual Chip Auger Each Side of Table
10. Installation / Leveling Kit
11. Full Enclosure Splash Guard
12. Direct Drive Spindle
13. Hand Tool Box
14. Helical Interpolation
15. Lift Up Type Hinged Belt Chip Conveyor (47")
16. Manual Pulse Generator (Hand Wheel)
17. Operation and Maintenance Manual
18. External Programmable Air Blast
19. Rigid Tapping
20. Ethernet RJ45 Interface
21. Spindle Oil Cooler
22. Forty (40) Tool Arm Type ATC
23. Three (3) Tier Status / Alarm Lamp
24. Work Light

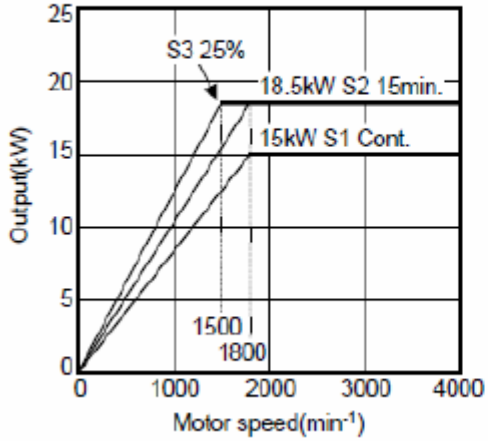
Power & Torque CAT40 15,000 Direct Driven (Option)

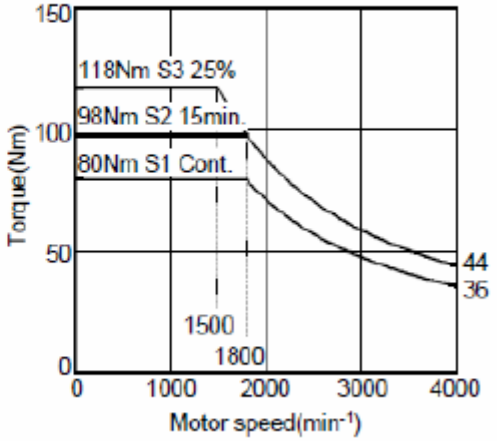




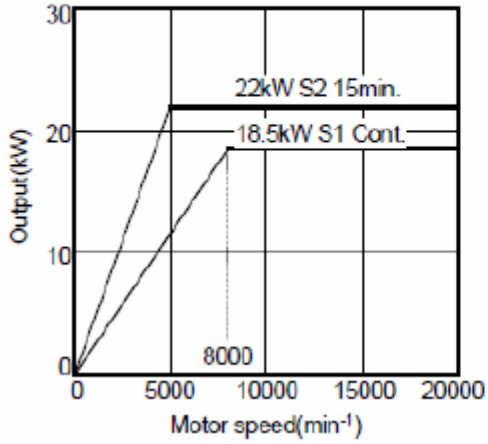
Power & Torque HSK 63A 20,000 RPM Direct Driven (Option)

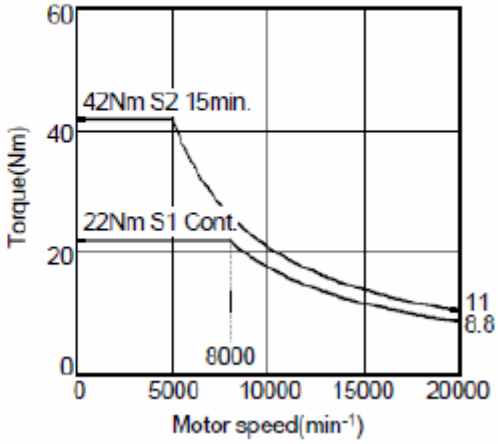
Low winding



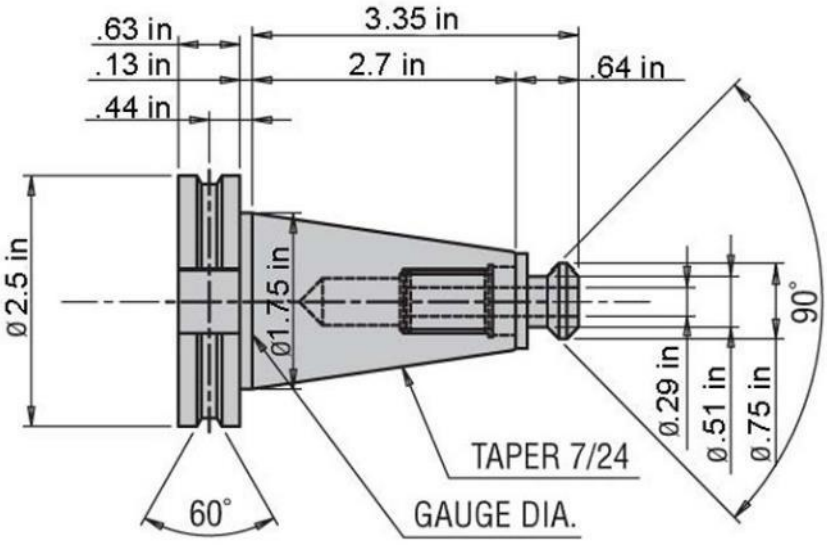


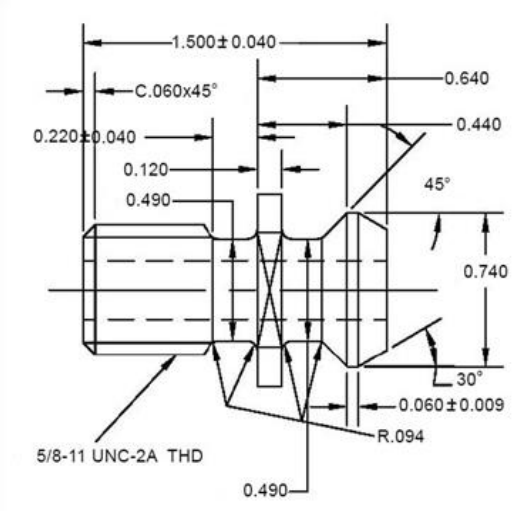
High winding

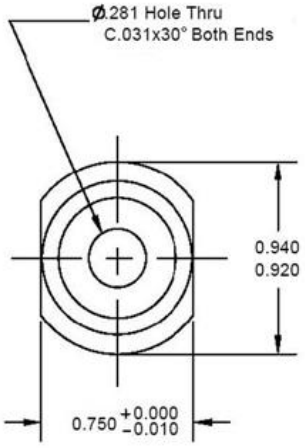




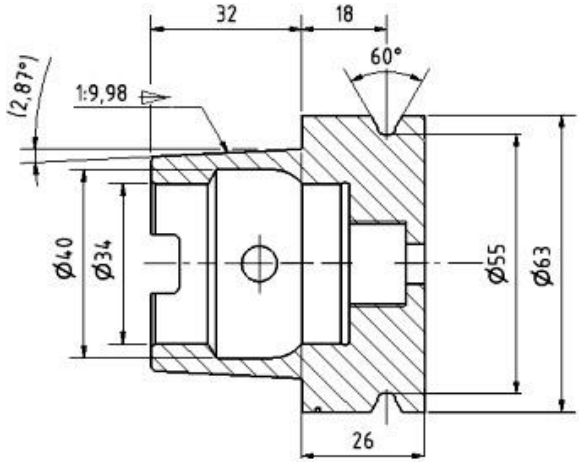
Retention Knob & Tool Assembly CAT40







Tool Assembly HSK 63A



Fanuc 0iMF Plus control specification		
No	Function	Specifications
1. System Functions		
1.1	15" 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	

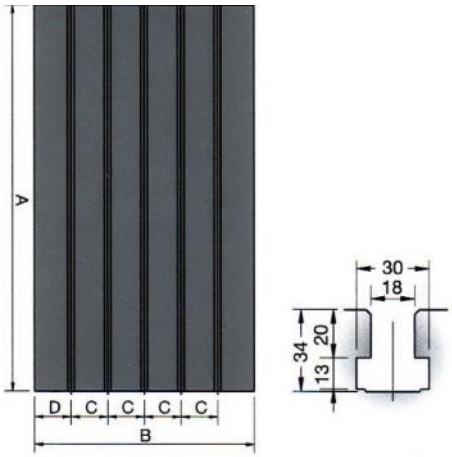
4.4	Single block	
4.5	MDI Operation	
4.6	Manual handle feed	1 unit
4.7	Manual handle feed rate	X1, X10, X100
4.8	Handle interruption	
4.9	Dry run	
4.10	Program restart	
4.11	Playback	
4.12	JOG feed	
4.13	Manual reference position return	
4.14	Rapid traverse override	F0, 25%, 50%, 100%
4.15	Cutting feedrate 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

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

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	

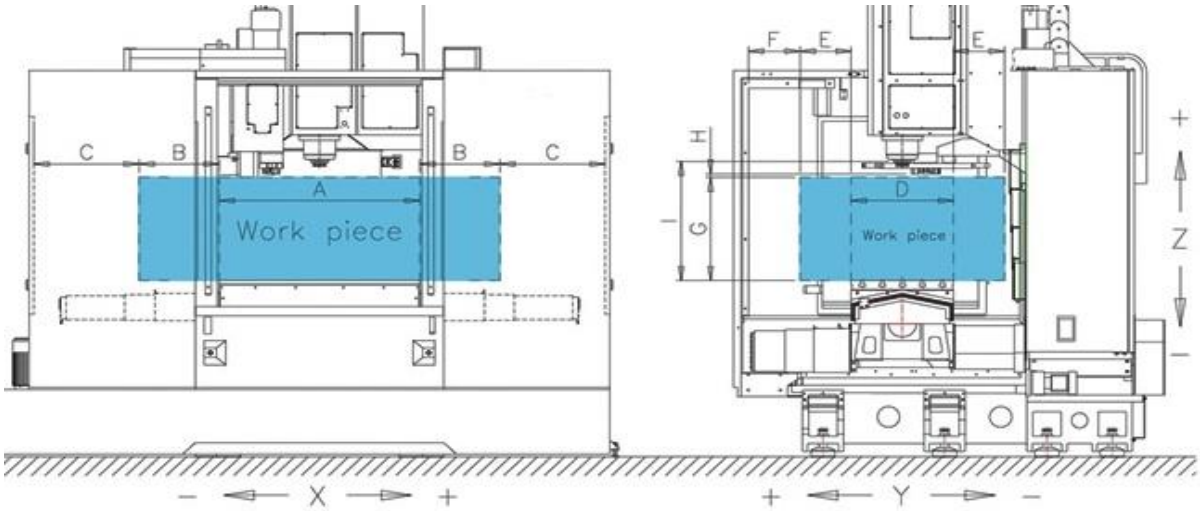
5.75	Run hour and parts count display	
5.76	Actual cutting feedrate display	
5.77	Status display	
5.78	Clock function	
5.79	Spindle speed function	
5.80	Servo setting screen	
5.81	Spindle setting screen	
5.82	Current position display	
5.83	Program comment display	Program name 31 characters
5.84	Parameter 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	

Table Dimensions



MODEL	A	B	C	D
AQ850	100(39.4)	510(20.1)	55(2.2)	100 (3.9)
AQ1050	1200(47.2)	510(20.1)	55(2.2)	100 (3.9)
AQ1265	1400(55.1)	650(25.6)	75(3)	100 (3.9)
AQ1465	1600(63)	650(25.6)	75 (3)	100 (3.9)
AQ1665	1750(68.9)	650(25.6)	75 (3)	100 (3.9)

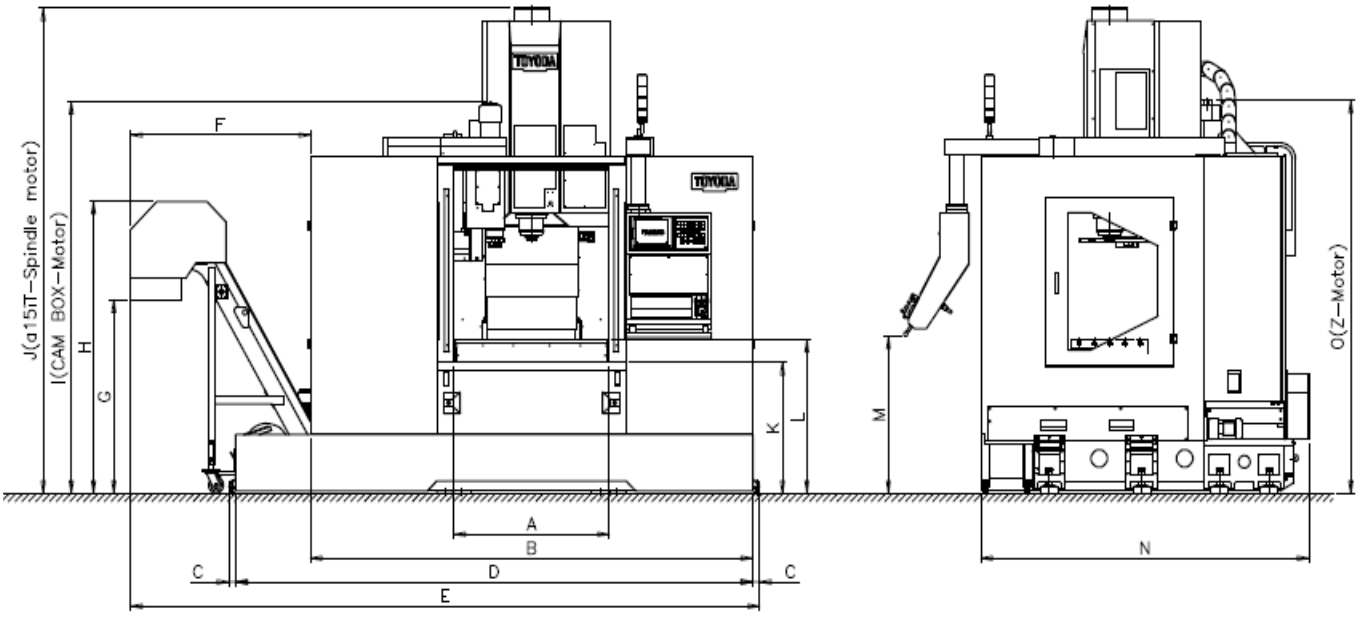
Work Envelope



Model	Table Area	T-Slot Size W x Ctrs x No.	Travel X / Y / Z	A	B	C	D	E	F	G	H	J: Min~Max
AQ850	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	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
AQ1050	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	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
AQ1265	55.1 x 25.6	.7 x 4.9 x 5	47.2 / 25.6 / 24.0	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
AQ1465	63 x 25.6	.7 x 4.9 x 5	55.1 / 25.6 / 24.0	63	27.6	17.1	25.6	12.8	8.3	26	0.79	150~760
AQ1665	68.9 x 25.6	.7 x 4.9 x 5	63.0 / 25.6 / 24.0	68.9	31.5	18.5	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
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	12	35.2	8	7.9~43.3

Unit: inches

Floor Space Requirement



MODEL	A	B	C	D	E	F	G	H	I	J
AQ850	40	114.2	1.8	133.5	162.6	46.5	46.7	70.5	94.5	117.1
AQ1050	47	122	1.8	133.5	169.3	45.3	46.7	70.5	94.5	117.1
AQ1265	55	135.4	1.8	140.6	182.7	45.3	46.5	70.5	99.6	122
AQ1465	63	154.3	1.8	154.3	201.6	45.3	46.5	70.5	99.6	122
AQ1665	69	170.9	1.8	170.9	218.1	45.3	46.5	70.5	99.6	122
MODEL	K	L	M	N	O	P	Q	R	S	T
AQ850	32	37	37.8	84.6	94.9	20.9	133.9	R32.9	R30.8	32T: 81.3
AQ1050	32	37	37.8	84.6	94.9	20.9	133.9	R32.9	R30.8	40T: 93.3
AQ1265	32	37	37.8	95.3	99.6	22.8	147.6	R32.9	R35.2	40T: 97.6
AQ1465	32	37	37.8	95.3	99.6	22.8	147.6	R32.9	R35.2	40T: 97.6
AQ1665	32	37	37.8	95.3	99.6	22.8	147.6	R32.9	R35.2	40T: 85

Unit: inches