AQ-Series

Vertical Machining Centers

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

Machine Features Overview

FANUC OiMF PLUS CNC Machine Control

High Speed – 30 HP - 15,000RPM Integral Motor Spindle – Big Plus CAT40 Spindle Taper

(32) Thirty-Two Pocket Standard Automatic Tool Changer. (40) Tools Optional Upgrade Available

Precision Hand Scraped Machine Metal to Metal Contact Points for Long Term Accuracy, Vibration Dampening and Extended Machine Life

Built in WELE iSmartTune Controller Package with Tool Life Monitoring and ATC Recovery Suite

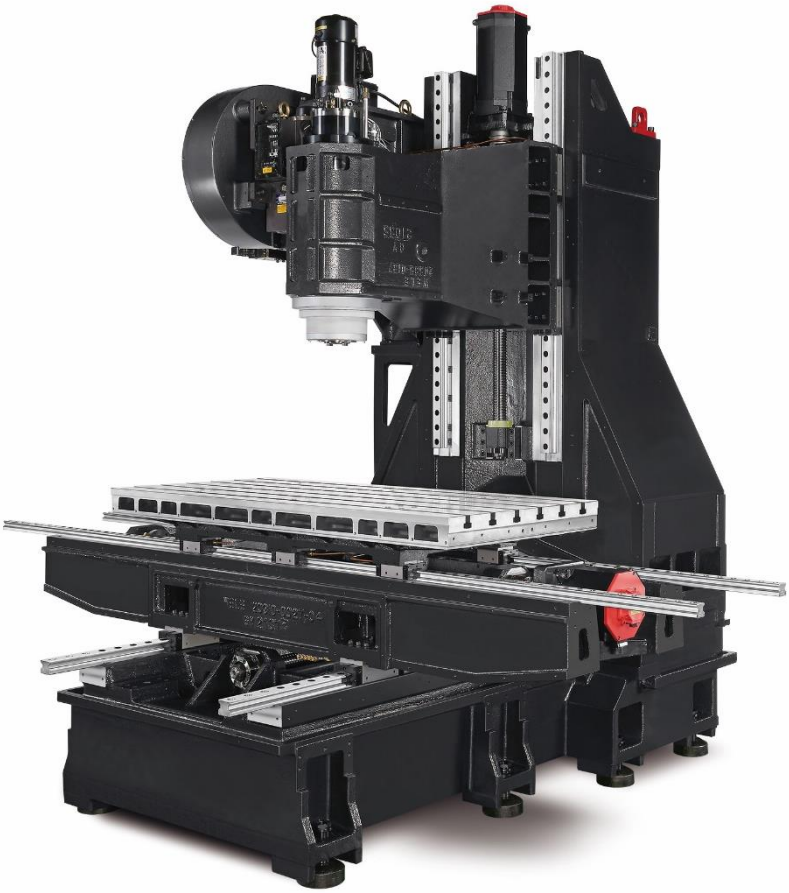
Standard FANUC Package Includes 200 Block Look Ahead Function and 2MB Memory Standard

Embedded Machine Operator and Maintenance Manuals Resident on Controller

Dual Chip Auger with Lift Up Type Conveyor as Standard Feature. Includes Coolant Wash Down

1000 PSI Through Spindle Coolant Preparation

FANUC



FANUC OiMF PLUS Controller

15 Inch Touch Screen Platform with Built in Operation Supporter Package from WELE

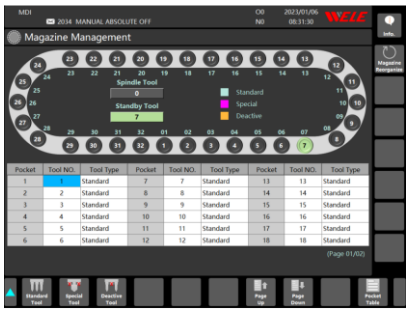
FANUC's Upgraded Platform Includes a Full Suite Of Machine Monitoring and Operation Support Functions

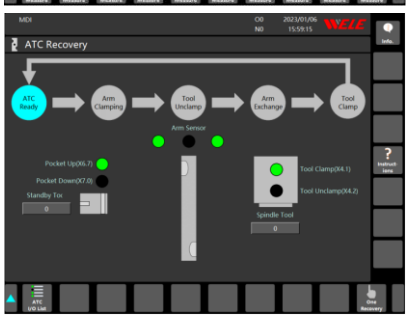
Uses a Full Keyboard CNC Pendant with Hard Push Buttons

FANUC

Standard FANUC OiMF PLUS Features

- Fine Surface Technology – Set Optimal Parameters for Roughing, Semi-Finishing, and Finishing
- AI Contour Control II, Smooth Tolerance Control, and Control Nano Interpolation
- Built in Reporting that that Monitors Productivity and Tool Life
- Fast Cycle Time Technology Set of Servo Functions to Reduce Cycle Time. Acc/Dec Based on Load Inertia, Reduction in Processing Time
- FANUC Picture Allows Generation of Custom Control Objects – WELE iSmartTune
- Smart Servo Control Real Time Optimization Suite
- A Simplified Repair Process with Step-Through Procedure for Common Issues such as ATC Recovery
- On Board Storage and Display of all Machine Maintenance and Operation and Tooling Manuals



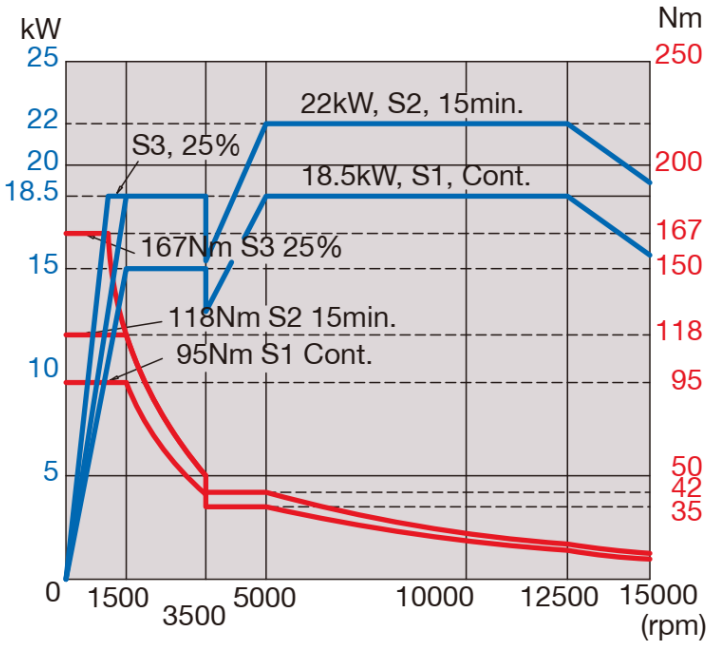


Machine Specifications

X Axis Travel - AQ1265	1,200 mm (47.2”)
X Axis Travel - AQ1465	1,400 mm (55.1”)
X Axis Travel - AQ1665	1,600 mm (63.0”)
Y Axis Travel	650 mm (25.6")
Z Axis Travel	610 mm (24.0")
Distance from Spindle Nose to Table Top	150 - 760 mm (5.9" - 29.9")
Table Height From Plant Floor	900 mm (35.4")
Spindle Taper	CAT40 (Big PLus)
Spindle Motor	30HP
Spindle Speed	15,000RPM
Spindle Type	Built in Motor
Rapid Feedrate (X & Y Axes)	36 m/min (1,417 ipm)
Rapid Feedrate (Z Axis)	30 m/min (1,181 ipm)
Chain Type ATC	32 Pockets (OPT. 40)
Maximum Tool Diameter with Tool in Adjacent Pocket	80 mm (3.1")
Maximum Tool Diameter with Adjacent Pocket Empty	150 mm (5.9")
Maximum Tool Length from Gage Line	250 mm (9.8")
Maximum Tool Weight	7 kg (15.4 lb)
Tool Taper	CAT40 Big Plus
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)
Power Supply Frequency	50 / 60 Hz
Axis Guideways	Linear Roller Guideway
Coolant Tank Capacity (Including CTS Tank)	147.2 gal
Flood Coolant (Gallons per Minute)	20 gal

Designed and built by Wele Mechatronic, this machining center is sold and serviced exclusively by JTEKT Machinery Americas Corp. and our exclusive representatives.

Power & Torque CAT40 15,000 Built in Motor



Benefits to Built-In Spindle Design:

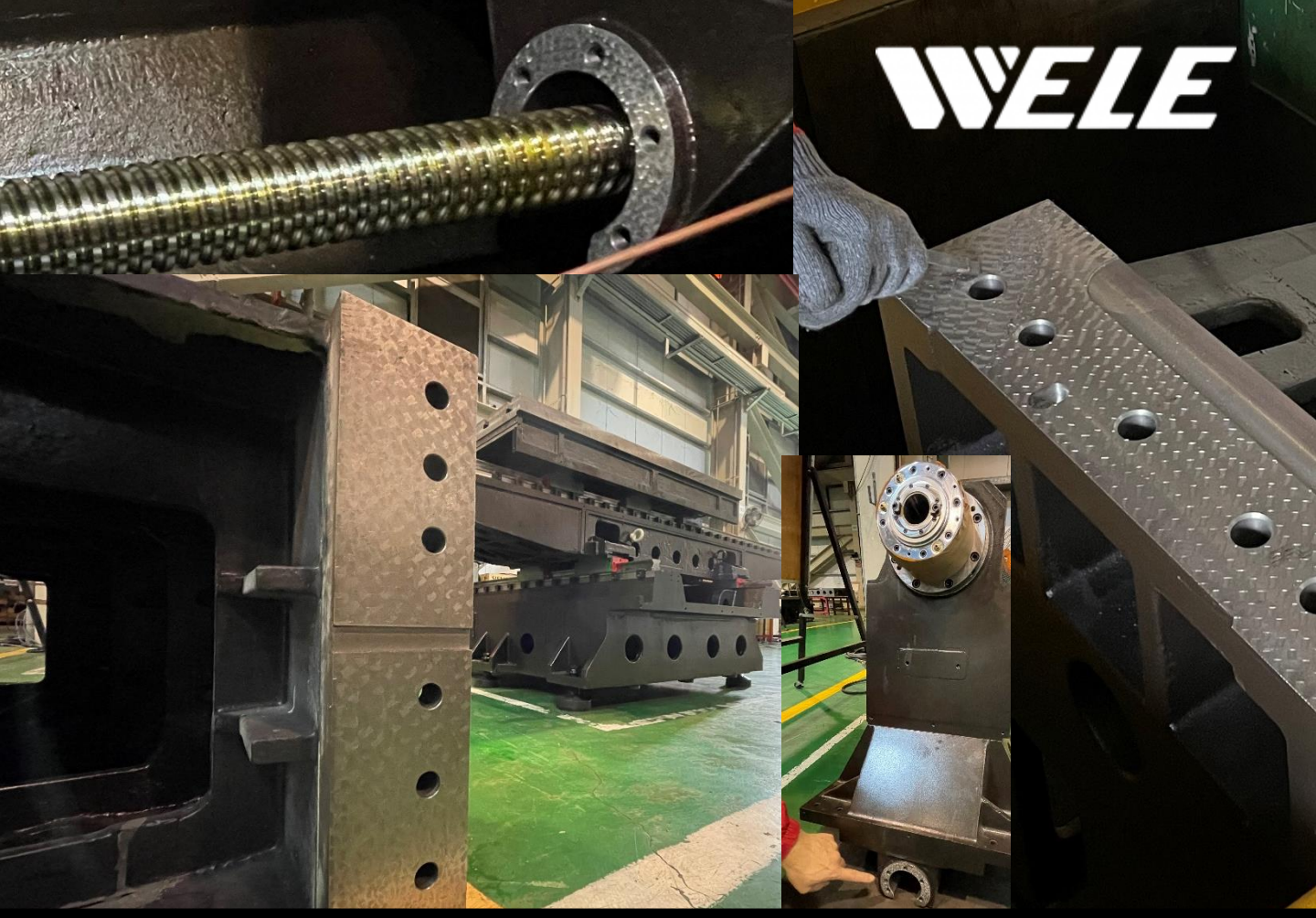
G.4 Spindle Balance Specification Achieved as WELE Standard vs G1 Industry Standard – Increased Tool Life and Superior Surface Finish

Reduction in External Connections, Cabling and Wiring

Increased Powerband to High Speed - Increased Torque at Low RPM Range

No Motor Coupling to Introduce Outside Vibration

Factory Balance Stand G.4 Specification

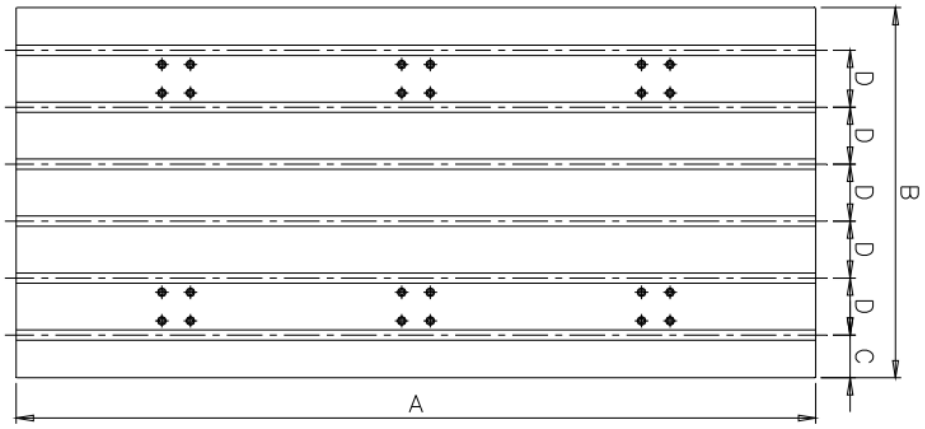


WELE Precision Hand Scraping – All Metal Contact Surfaces

Fanuc OIMF-PLUS Control Package

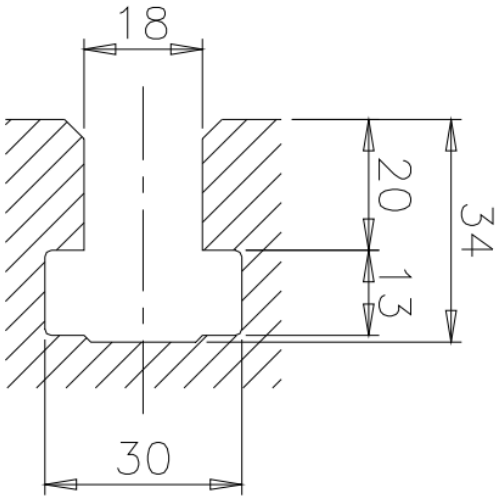
Absolute or incremental programming	G90, G91
Actual cutting feedrate display	
Addition of Custom macro common variables	#100~#199, #500~#999
Addition of Workpiece coordinate system	48 pairs
AI contour control II	Look-ahead blocks 200
Air blow on	M07
Alarm display	
Alarm history display	
Auto power off	
Automatic acceleration/deceleration	linear
Automatic corner deceleration	
Automatic corner override	G62
Automatic return to reference position	G28
Backlash compensation	
Backlash compensation for each rapid traverse and cutting feed	
Bell-type acceleration/deceleration after cutting feed interpolation	
Calling subprogram stored in external memory	M198
Circular interpolation cw(ccw)	G02, G03
Helical interpolation cw(ccw)	
Clock function	
Constant surface speed control	
Control axes	4 axes (Option to 5 axes)
Control axis detach	
Coordinate system rotation mode	G68, G69
Current position display	
Custom macro	
Cutter compensation	G40, G41, G42
Cutting feedrate override	0, 10%, 20%, 30%, … 200%
Decimal point programming/pocket calculator type decimal point programming	
Direct input of workpiece origin offset value measured	
Display of hardware and software configuration	
DNC operation	CF card or RS-232C or Data Server attachment required
Dry run	
Dwell, exact stop	G04
Dynamic display langauge switching	
Dynamic graphic display	
Emergency stop	
Ethernet interface	Program transfer
Exact stop	G09
Exact stop mode	G61
Extended part program editing	
External deceleration	
External machine zero point shift	
External message	
Feed per minute	G94
Feed per revolution	G95
Feedrate override reset	
Fine surface machining	
Fixed cycle	G74, G76, G80, G81, G84-G89
Follow up	
FSSB High speed rigid tapping	
Handle interruption	
Help function	
High-speed and high-precision machining	HRV3 Control
Ilelical interpolation	
Increment system C	0.001mm / 0.0001 inch / 0.001 deg
Input in mm or inch	G20, G21
JOG feed	
Linear interpolation	G01
M, S, T function	
Machine lock	All axes
Macro executor/C language executor	
Manual absolute on and off	
Manual guide 0i	
Manual handle feed	1 unit
Manual handle feed rate	X1, X10, X100
Manual reference position return	
Max. programmable dimension	+/- 9 digits
MDI Operation	
Memory card interface	CF card and PCMCIA card attachment is required.
Multi-language display	
Number of registerable programs	1000 programs
Operator message display	
Operator message history display	
Optional block skip	
Optional chamfering/corner R	
Overtravel	
Parameter setting and display	
Parameter setting support screen	
Parity check	
Part program editing	
Part program storage size	2M byte
Peck drilling cycle	G73, G83
Plane selection	G17, G18, G19
Playback	
Polar coordinate command	G15, G16
Positioning	G00
Program cide	EIA/ISO
Program comment display	Program name 31 characters
Program end	M02, M30
Program file name	32 characters
Program protect key	
Program restart	
Program stop / Optional stop	M00, M01
Programmable data input	G10, G11
Programmable mirror image	G50.1 / G51.1
Rapid traverse bell-shaped acceleration/deceleration	
Rapid traverse override	F0, 25%, 50%, 100%
Reference position return function	
Rigid tapping	M29
Rigid tapping bell-shaped acceleration/deceleration	
Rotary axis designation	
RS-232C interface	
Run hour and parts count display	
Scaling cancel	G50 / G51
Screen hard copy	
Self-diagnosis function	
Sequence number	N8 digit
Servo information screen	
Servo setting screen	
Simultaneously controlled axes	4 axes
Single block	
Single direction position	G60
Skip function	G31
Software stroke check 1	
Software stroke check 2, 3	
Special fixed cycle	G34, G35 (macro control is required)
Spindle axes	1 axes
Spindle information screen	
Spindle orientation	M19
Spindle output switching function	
Spindle override	50%, 60%, 70%, … 120%
Spindle serial output	
Spindle setting screen	
Spindle speed function	
Spindle synchronous control	
Status display	
Stored pitch error compensation	
Stroke check before movement	
Sub program call	10 folds nested
Thread cutting	G33 (macro control is required)
Tool function	T8 digit
Tool length measurement	
Tool length offset	
Tool life management	
Tool offset increase or decrease	G45~G59
Tool offset memory C	
Tool offset pairs	400 pairs
Tool radius offset	
USB interface	Only data input and output (not DNC)
Workpiece coordinate system	G54~G59
Workpiece coordinate system preset	
Z lock	

Table Dimensions

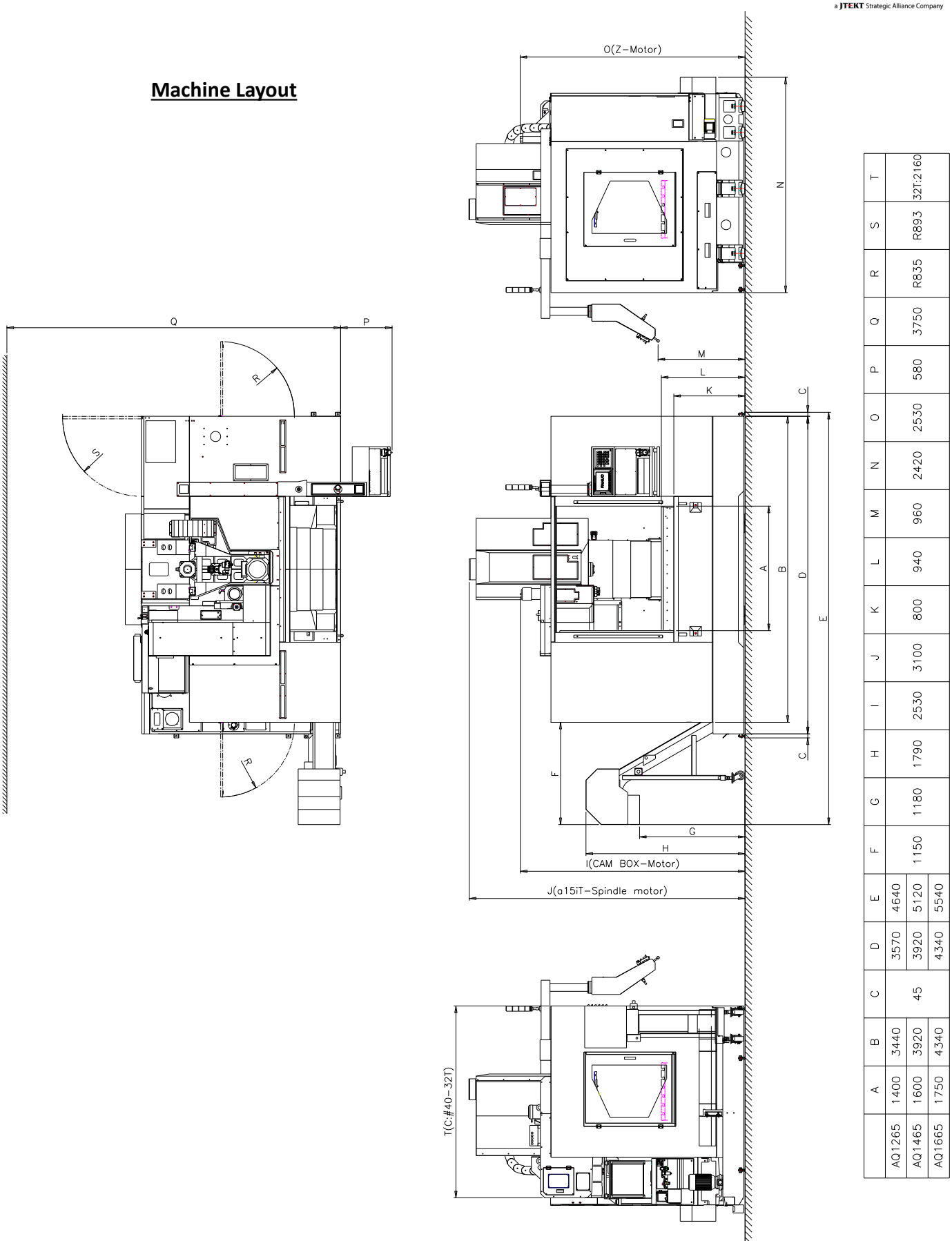


	A	B	C	D
AQ1265	1400	650	75	100
AQ1465	1600			
AQ1665	1750			

T-Slot Specification

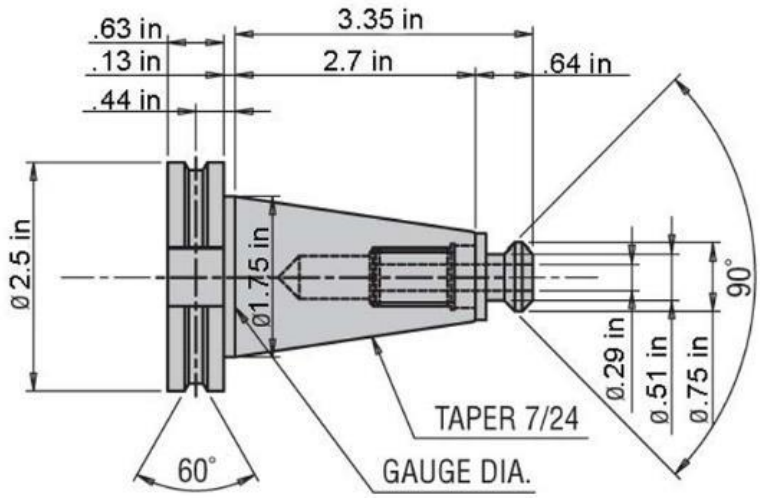


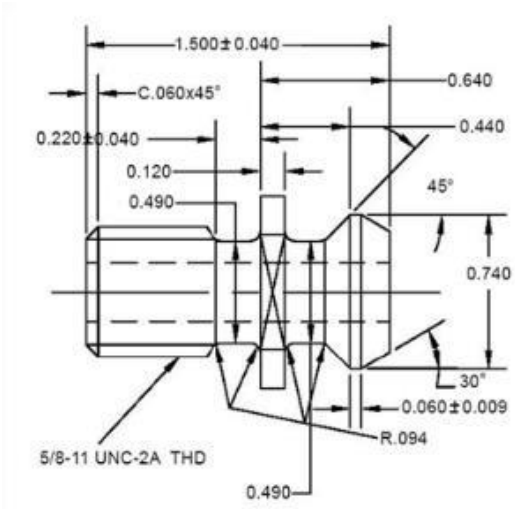
Machine Layout

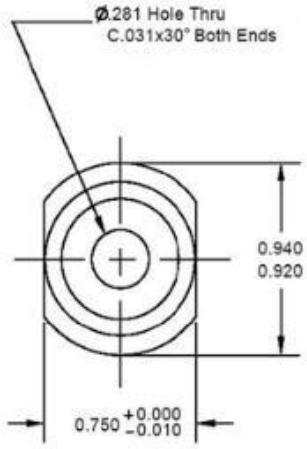


	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T
AQ1265	1400	3440	45	3570	4640	1150	1180	1790	2530	3100	800	940	960	2420	2530	580	3750	R835	R893	32T:2160
AQ1465	1600	3920		3920	5120															
AQ1665	1750	4340		4340	5540															

Retention Knob & Tool Assembly CAT40







Shipping Dimensions - Reference

AQ1265 Dimensions

Crate #1: 3550mm x 2320mm x 2550mm @ 7,000KGS
Crate #2: 4390mm x 1150mm x 2470mm @ 1,800KGS

AQ1465 Dimensions

Crate #1: 3950mm x 2320mm x 2550mm @ 7,700KGS
Crate #2: 4590mm x 1150mm x 2470mm @ 1,800KGS

Machine Weight

AQ1265 Weight: 6,500KG
AQ1465 Weight: 7,200KG
AQ1665 Weight: 7,700KG

Productivity Enhancements

3.2.1 Power and grounding

a. AC line Voltage: 3 phases AC 220V +/- 10% (AC 380V, 400V etc. must through transformer)

b. Frequency: 50 or 60 Hz +/- 1%

c. Power capacity: AQ1265/AQ1465/AQ1665: 35KVA

d. Main circuit breaker:

model	Voltage	Current capacity	Main breaker
AQ1265/AQ1465/AQ1665	220V(for USA/Asia/Japan)	100A	150A
	400V (for Europe)		

e. The cross-section area of Power line cable: 38mm^2

f. The colors of power line cables should be assigned by CE regulations.

g. The outside terminal of power line cables should be protected by fuse or breaker.

h. The power line cables should **NOT** be connected with other machines, but be connected independently.

i. The cross-section area of grounding wire: 22mm^2; the grounding resistor should be less than 50 Ω. The color of grounding wire must be yellow-green.

j. The grounding method of multiple machines is shown as Figure 3-1.

k. Ambient temperature: 0℃~45℃. Ambient humidity: Under 90%

3.2.2 Compressed air

a. Compressed air must be filtered to keep it clean and dry (dew point, below 7kgf/cm^2; 10℃).

b. The required pressure of compressed air is 4~7 kgf/cm^2. Make sure the supply of compressed air satisfy the capacity requirement. (One-hp air compressor could provide 90 L/min air flow rate, and it is approximately enough.) Furthermore, air compressor should not branch the use ends excessively, or the instantaneous pressure varieties will cause the insufficient machine pressure alarm.

c. The size of quick couplings at the air inlet is 3/8".