

TWINHORN VQ-1300 VERTICAL MACHINING CENTER

STANDARD FEATURES

- ▶ Fanuc Oi-MC & 640 Meters Memory
- ▶ AC Digital Servo & Spindle Drivers
- ▶ High Precision Contouring Function (AICC)
- ▶ PCMCIA Slot for Memory Expansion
- ▶ Helical Interpolation & Custom Macro B
- ▶ Hardened Ground Box Ways on X,Y & Z
- ▶ Meehanite Cast Iron Bed, Base & Headstock
- ▶ Heat Exchanger for Electrical Cabinet
- ▶ Automatic Power off (M30)
- ▶ Spindle Oil Refrigeration Unit
- ▶ Roll Out Coolant Tank & Chip Tray
- ▶ Fanuc Operating & Maintenance Manual
- ▶ 4th Axis Interface Cable only Ready
- ▶ One Year Machine Parts Warranty
- ▶ 20 HP Spindle Motor with ZF Gear Box
- ▶ Spindle Speed CAT-50 with 6000 RPM
- ▶ Arm Type 24 Tool ATC
- ▶ RS232 Interface
- ▶ Pitch Error Compensation
- ▶ Auto Lubrication System
- ▶ Fully Enclosed Splash Guard
- ▶ Spindle Air Blast & Cutting Air Blast
- ▶ Spindle Air Curtain
- ▶ Spiral Type Chip Auger
- ▶ Tool Kit / Work Light
- ▶ Operating & Electrical Manuals
- ▶ Hand Held Coolant & Air Nozzle
- ▶ Two Year Control Warranty

MACHINE SPECIFICATIONS

| | |
|---|----------------------------------|
| Travel X Axis ----- | 51" (1300mm) |
| Travel Y Axis ----- | 27.56" (700mm) |
| Travel Z Axis ----- | 25.59" (650mm) |
| Rapid Feed Rate X & Y Axis ----- | 630ipm |
| Rapid Feed Rate Z Axis ----- | 472ipm |
| Cutting Feed Rate ----- | 196.85ipm (5000mm/min) |
| Positioning X, Y & Z Axis ----- | 0.0001/12" (0.005mm / 300mm) |
| Repeatability X, Y & Z Axis ----- | ±0.0001" (±0.003mm) |
| Table Dimension ----- | 55.12" x 27.56" (1400mm x 700mm) |
| Maximum Loading ----- | 3,300 lb (1500Kg) |
| Spindle Motor ----- | FANUC AC Spindle Motor |
| Spindle Horse Power ----- | 20 HP |
| Spindle Speed ----- | 6000 RPM |
| Spindle Taper ----- | CAT-50 |
| Servo Drive Motor X & Y Axis ----- | Fanuc β 22 / 3000is |
| Servo Drive Motor Z Axis ----- | Fanuc β 22 / 3000is |
| Distance from Spindle Nose to Table ----- | 7.48" – 33.07" (190 – 840mm) |
| Distance from Spindle to Column ----- | 26.37" (670mm) |

Note: Prices and model specifications are subject to change without prior notice. All prices are in U.S. Dollars.

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| | |
|-----------------------------|--|
| ATC ----- | Swing Arm Type Random, Shortest Path, Bi-Directional |
| Magazine Capacity ----- | 24 Tools |
| Tool Change Time ----- | 3.5 Second |
| Maximum Tool Weight ----- | 33 lb (15kg) |
| Maximum Tool Length ----- | 13.78" (350mm) |
| Maximum Tool Diameter ----- | 5" (127mm) |
| Floor Space W x D x H ----- | 177"x134"x130" (4500mmx3400mmx3300mm) |
| Power Requirement ----- | 220V, 3 Phase, 60Hz, 30kVA, 100Amp |
| Machine Weight ----- | 23,568 lb (10700 kg) |

MACHINE PRICES

| | |
|--|------------------|
| VQ-1300 Fanuc Oi-MC Package A/ZF Gear Box/6000RPM/24 Tool Arm Type ATC ----- | \$119,900 |
|--|------------------|

OPTIONAL ACCESSORIES

| | |
|---|-----------|
| Mitsubishi M64SM Control ----- | <\$3,000> |
| Mitsubishi M65SM Control ----- | N/C |
| Fanuc 21i-MC Control ----- | \$6,500 |
| Fanuc 18i-MC Control ----- | \$12,200 |
| Spindle Speed 6000RPM ----- | \$3,500 |
| Spindle Motor 25 Hp ----- | \$3,500 |
| Data Server 256MB (DNC) ----- | \$2,200 |
| 32 Tool Arm Type ATC ----- | \$5,000 |
| Coolant Through Spindle (Included Filter System) ----- | \$11,900 |
| Coolant Through Tool ----- | \$1,250 |
| 4 th Axis Interface Included Servo Drive & Power/Signal Cable ----- | \$4,900 |
| 4 th Axis Complete with Manual Tailstock + Install (Tanshing MRNC-320) ----- | \$16,000 |
| Transformer 40KVA ----- | T/A |

SPINDLE TORQUE FOR VQ SERIES

1. 6000 Rpm spindle & 20Hp regular spindle motor (SJ-15A)
 Torque: 70/52.5 lb-ft. (30 min./Continue)
 Full power output speed: 1500-4500 Rpm
2. 4800 Rpm spindle & 20Hp wide range spindle motor (SJ-15XW8)
 Torque: 168/126 lb-ft. (30 min./Continue)
 Full power output speed: 625-5000 Rpm
3. 4800 Rpm spindle & 20Hp regular spindle motor & ZF Gear box
 Torque: 350/250 lb-ft. (30 min./Continue)
 Full power output speed: 300-900 Rpm in low gear

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Twinhorn VQ-1300 Machine Specifications

1. HEADSTOCK

| | |
|---|--------------------|
| A. High Torque Gear Drive Spindle ----- | Direct Gear Driven |
| B. Gear Box Type ----- | ZF Made |
| C. Gear Box Refrigeration Unit (Oil Type) ----- | CO-8 |
| D. Spindle Bearing (Front) (4800RPM) ----- | NSK7020A5 P4 |
| Contact Angle (4800RPM) ----- | 25 Degree |
| O.D ----- | 5.91" (150mm) |
| I.D ----- | 3.94" (100mm) |
| Width ----- | 0.94" (24mm) |
| Angular Contact (Rear) (4800RPM) ----- | NSK7020A5 P4 |
| O.D ----- | 4.53" (115mm) |
| I.D ----- | 2.95" (75mm) |
| Width ----- | 0.79" (20mm) |
| Rear Support Bearing ----- | 7015C*2 |
| E. Spindle Shaft Hardness ----- | HRC 60 - 62 |
| F. Retention System ----- | Bevel Springs |
| G. Holding Force ----- | 3,760 lb (1700kg) |
| H. Counter Balance ----- | Mechanical |
| I. Spindle Orientation ----- | Sensor |
| J. Spindle Taper ----- | Cat50 or BT50 |
| K. Spindle Motor ----- | Fanuc Motor 20 Hp |

2. TABLE

| | |
|--------------------------|--------------------------------|
| A. Dimensions | |
| Length x Width ----- | 55.12" x 27.56" (1400 x 700mm) |
| B. Max. Table Load ----- | 3,300 lb (1500kg) |
| C. Slideways ----- | Hardened & Ground Box Ways |

3. AUTOMATIC TOOL CHANGER (ATC)

| | |
|---|----------------|
| A. Type ----- | Arm Type |
| B. Max. Tool Weight ----- | 44 lb (20kg) |
| C. Max. Tool Length ----- | 11.81" (300mm) |
| D. Max. Tool Diameter ----- | 5" (127mm) |
| E. Tool Change Time Arm Type (Tool to Tool) ----- | 3.5 Seconds |
| F. Magazine Capacity ----- | 32 Tools |
| G. Max. Tool Diameter (Adjacent Pot Tool) ----- | 5" (127mm) |
| H. Max. Tool Diameter (Adjacent Pot Empty) ----- | 10" (254mm) |

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4. X AXIS

| | | |
|-----------------------|-------|----------------------|
| A. Ballscrew Diameter | ----- | 1.97" (50mm) |
| Lead | ----- | 0.47" (12mm) |
| Accuracy | ----- | C3 |
| B. Drive Motor | ----- | Fanuc α C22 / 1500 |
| C. Thrust | ----- | 2,332 lb (1060kg) |
| D. Rapid Rate | ----- | 630ipm (16000mm/min) |
| E. Travel Stroke | ----- | 50" (1270mm) |
| F. Positioning | ----- | 0.0001"/12" |
| G. Repeatability | ----- | ± 0.0001" |

5. Y AXIS

| | | |
|-----------------------|-------|----------------------|
| A. Ballscrew Diameter | ----- | 1.97" (50mm) |
| Lead | ----- | 0.47" (12mm) |
| Accuracy | ----- | C3 |
| B. Drive Motor | ----- | Fanuc α C22 / 1500 |
| C. Thrust | ----- | 2,332 lb (1060kg) |
| D. Rapid Rate | ----- | 630ipm (16000mm/min) |
| E. Travel Stroke | ----- | 27.56" (700mm) |
| F. Positioning | ----- | 0.0001"/12" |
| G. Repeatability | ----- | ± 0.0001" |

6. Z AXIS

| | | |
|-----------------------|-------|----------------------|
| A. Ballscrew Diameter | ----- | 1.97" (50mm) |
| Lead | ----- | 0.47" (12mm) |
| Accuracy | ----- | C3 |
| B. Drive Motor | ----- | Fanuc α C22 / 1500 |
| C. Thrust | ----- | 2,332 lb (1060kg) |
| D. Rapid Rate | ----- | 472ipm (12000mm/min) |
| E. Travel Stroke | ----- | 25.59" (650mm) |
| F. Positioning | ----- | 0.0001"/12" |
| G. Repeatability | ----- | ± 0.0001" |

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7. COOLANT SYSTEM

- A. Coolant Motor Type ----- CH2-20 / 520W
- B. Pump Capacity ----- 33.3L/min, 2bar
- C. Coolant Tank Volume ----- 450L
- D. Coolant Flush System (Option) ----- CH2-30*2
- E. Coolant Through Spindle System (Option) ----- CRK2-180/18
- F. Pump Capacity ----- 20L/min, 20bar
- G. Coolant Filter Type ----- PFA-60-50

8. FLOOR SPACE REQUIREMENTS / OPEN DOOR

- A. Length ----- 177" (4500mm)
- B. Width ----- 134" (3400mm)
- C. Height ----- 130" (3300mm)

9. PACKING SIZE

- A. Standard Machine (W x D x H) ----- 87" x 120" x 117" (2200 x 3050 x 2975mm)

10. WEIGHT

- A. Net ----- 23,540 lb (10700kg)
- B. Gross ----- 24,640 lb (11200kg)

11. POWER REQUIREMENTS

- 220 Volt ----- 208/220 VAC, 3 Phase, 50/60HZ, 100 Amps
- 440 Volt ----- 220-440 3 Phase Transformer / 40 KVA

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Fanuc 0i-MC (Package B) Standard Features

- * Work piece coordinate system (G52 – G59)
- * Manual absolute on and off
- * Programmable data input (G10)
- * Custom macro B
- * Interruption type custom macro
- * Circular interpolation by R programming
- * Feedrate clamp based on arc radius
- * Programmable mirror image
- * Conversational programming with graphic function (Graphic module is required)
- * <Auxiliary/Spindle speed function>
- * 2nd auxiliary function (B8-digit)
- * High speed M/S/T interface
- * Spindle serial output
- * Spindle override
- * 1st spindle orientation
- * 2nd spindle orientation
- * Spindle synchronous control
- * <Tool function/Tool compensation>
- * Tool offset pairs +-6-digit 400
- * Tool length compensation (G43/G44)
- * Cutter compensation C (G41/G42)
- * Extended tool life management
- * Automatic tool length measurement (G37)
- * Part program storage length 320 m
- * Part program editing
- * Background editing
- * Playback
- * Status display
- * Current position display
- * Parameter setting and display
- * Alarm display
- * Operator message history display
- * Help function
- * Actual cutting speed display
- * Directory display of floppy cassette
- * Spindle setting screen
- * Display of hardware and software configuration
- * Software operator's panel general purpose switch
- * Multi-language display English, Japanese, German/French, Italian, Chinese, Spanish, Korean
- * Direct input of work piece origin offset valve measured
- * Optional chamfering / corner R
- * Sub program call (4 folds)
- * Pattern data input
- * Canned cycle for drilling
- * Automatic corner deceleration
- * Coordinate system rotation
- * Tape format for FS10/11
- * Auxiliary function (M8-digit)
- * Auxiliary function lock
- * Multiple command of auxiliary function
- * Spindle analog output
- * Analog voltage control by PMC
- * 1st spindle output switching function
- * 2nd spindle output switching function
- * Rigid tapping
- * Tool function (T8-digit)
- * Tool offset memory C
- * Tool offset (G45~G48)
- * Tool life management
- * Tool length measurement
- * <Editing operation>
- * Number of registerable programs 400
- * Program protect
- * Extended part program editing
- * <Setting and display>
- * Clock function
- * Program display
- * Self-diagnosis function
- * Alarm history display
- * Operation history display
- * Run hour and parts count display
- * Display of spindle speed and T-code
- * Servo setting screen
- * Servo waveform display (Graphic module is required)
- * Software operator's panel
- * Data protection key

- * Erase display
- * Reader/puncher interface (2 ch)
- * External tool offset
- * External machine zero point shift
- * External key input
- * External work piece number search
- * Power Mate CNC manager
- * <Others>
- * CNC screen display
- * <Controlled axis>
- * Simultaneous controllable axes; 4
- * Axis name (X, Y, Z, U, V, W, A, B, C)
- * Least input increment (0.001 mm, 0.001 deg, 0.001 inch)
- * Incremental system 1/10
- * Fine Acc & Dec control
- * Inch/metric conversion
- * Machine lock
- * Overtravel
- * Stroke limit external setting
- * Mirror image
- * Servo-off/mechanical handle
- * Backlash compensation for each rapid traverse and cutting feed
- * Stored pitch error compensation
- * Unexpected disturbance torque detection function
- * <Operation>
- * DNC operation
- * Schedule function
- * Sequence number search
- * Program restart
- * Retraction for rigid tapping
- * Dry run
- * JOG feed
- * Reference position return without DOG
- * Reference position shift
- * Manual handle feed rate
- * Incremental feed
- * <Interpolation functions>
- * Linear interpolation type positioning
- * Exact stop mode (G61)
- * Linear interpolation (G01)
- * <Data input/output>
- * External I/O device control
- * External message
- * External data input
- * External program input
- * External program number search
- * Memory card interface for maintenance
- * Status output signal
- * Built-in Ethernet
- * Number of controlled axes; 4
- * Axis control by PMC
- * Simple synchronous control
- * Flexible feed gear
- * HRV control
- * Interlock
- * Emergency stop
- * Stored stroke check 1
- * Stored stroke check 2
- * Follow-up
- * Backlash compensation
- * Position switch
- * Control axis detach
- * Automatic operation (memory)
- * MDI operation
- * Program number search
- * Sequence number comparison and stop
- * Manual intervention and return
- * Buffer register
- * Single block
- * Manual reference position return
- * Reference position setting with mechanical stopper
- * Manual handle feed
- * Manual handle interruption
- * Jog and handle simultaneous mode
- * Positioning (G00)
- * Single direction positioning
- * Exact stop (G09)
- * Circular interpolation (G02/G03)

- * Dwell (G04)
- * Helical interpolation
- * Skip (G31)
- * Reference position return (G28)
- * 2nd reference position return
- * Normal direction control
- * <Feed function>
- * Rapid traverse override
- * Feed per revolution
- * Cutting federate clamp
- * Rapid traverse bell shaped acceleration/deceleration
- * Linear acceleration/deceleration after cutting feed interpolation
- * Bell-shaped acc/dec after cutting feed interpolation
- * Feedrate override
- * Jog override
- * External deceleration
- * <Program input>
- * Label skip
- * Control in/out
- * Max. programmable dimension +- 8-digit
- * Sequence number
- * Decimal point programming/pocket calculator type decimal point programming
- * Input unit 10 time multiply
- * Rotary axis designation
- * Polar coordinate command
- * Automatic coordinate system setting
- * Cylindrical interpolation
- * Threading/synchronous cutting
- * High-speed skip
- * Reference position return check (G27)
- * 3rd/4th reference position return
- * Index table indexing
- * Rapid traverse rate; 240m/min (1 m)
- * Feed per minute
- * Tangential speed control
- * Automatic acceleration/deceleration
- * One digit F-code feed
- * Override cancel
- * Advanced preview control
- * Tape cede EIA; RS244/ISO840
- * Parity check
- * Optional block skip
- * Program number
- * Absolute/incremental command
- * Plane selection (G17, G18, G19)
- * Rotary axis roll-over
- * Coordinate system setting (G92)