

## TWINHORN VE-1500L3 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
- ▶ High Precision Linear Guideways
- ▶ Meehanite Cast Iron Bed, Base & Headstock
- ▶ Heat Exchanger for Electrical Cabinet
- ▶ Automatic Power off (M30)
- ▶ Roll Out Coolant Tank & Chip Tray
- ▶ Fanuc Operating & Maintenance Manual
- ▶ 4<sup>th</sup> Axis Interface Cable only Ready
- ▶ One Year Machine Parts Warranty
- ▶ Fanuc 15 HP Spindle Motor
- ▶ Spindle CAT-40 with 8000 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
- ▶ Tool Kit / Work Light
- ▶ Operating & Electrical Manuals
- ▶ Hand Held Coolant & Air Nozzle
- ▶ Two Year Control Warranty

### MACHINE SPECIFICATIONS

Travel X Axis -----	59" (1500mm)
Travel Y Axis -----	20" (510mm)
Travel Z Axis -----	20" (510mm)
Rapid Feed Rate X & Y Axis -----	944ipm
Rapid Feed Rate Z Axis -----	944ipm
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 -----	61.81" x 19.68" (1570mm x 500mm)
Maximum Loading -----	1,320 lb (600Kg)
Spindle Motor -----	FANUC AC Spindle Motor βiI 8 / 8000
Spindle Horse Power -----	15 HP
Spindle Speed -----	8000 RPM
Spindle Taper -----	CAT-40
Servo Drive Motor X & Y Axis -----	Fanuc β 12 / 3000is
Servo Drive Motor Z Axis -----	Fanuc β 22 / 3000is
Distance from Spindle Nose to Table -----	4.72" – 24.8" (120 – 630mm)
Distance from Spindle to Column -----	24.68" (627mm)

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

September 1, 2006

ATC -----	Swing Arm Type Random, Shortest Path, Bi-Directional
Magazine Capacity -----	24 Tools
Tool Change Time -----	2.5 Second
Maximum Tool Weight -----	15.4 lb (7.0kg)
Maximum Tool Length -----	11.81" (300mm)
Maximum Tool Diameter -----	3.14" (80mm)
Floor Space L x W x H -----	165"x102"x102" (4200mmx2600mmx2600mm)
Power Requirement -----	220V, 3 Phase, 60Hz, 30kVA, 75Amp
Machine Weight -----	13,200 lb (6000 kg)

**MACHINE PRICES**

VE-1500L3 Fanuc Oi-MC Control / 8000RPM / 24 Tool Arm Type ATC -----	<b>\$79,900</b>
--	-----------------

**OPTIONAL ACCESSORIES**

Mitsubishi 64SM Control -----	N/C
Mitsubishi 65SM Control -----	\$5,000
Fanuc 21i-MC Control -----	\$10,800
Fanuc 18i-MC Control -----	\$15,800
Spindle Speed 10,000RPM -----	\$3,500
Spindle Speed 12000RPM -----	\$5,500
Data Server 256MB (DNC) -----	\$2,300
Spiral Type Chip Conveyor & Cart -----	\$1,950
Chain Type Chip Conveyor & Cart -----	\$3,850
Spindle Oil Refrigeration Unit -----	\$1,700
Coolant Through Spindle (Included Filter System) -----	\$10,800
Coolant Through Tool -----	\$1,250
Chip Flushing System -----	\$780
Coolant Ring -----	\$470
Water Curtain Device -----	\$590
Oil Skimmer -----	\$590
4 <sup>th</sup> Axis Interface with Servo Drive & Power/Signal Cable -----	\$4,900
4 <sup>th</sup> Axis Complete with Manual Tailstock + Install (Tanshing VRNC-210) -----	\$14,800
4 <sup>th</sup> Axis Complete with Manual Tailstock + Install (Golden Sun CNC-251R) -----	\$15,000
Transformer 25KVA -----	\$1,200

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

## Twinhorn VE-1500L3 Machine Specifications

### 1. HEADSTOCK

A. Belt Drive -----	Variable Speed
B. Spindle Bearing (6000 RPM)	
Angular Contact (Front) -----	7013C DBD
OD / ID / Width -----	3.94" x 2.56" x 0.71" (100 x 65 x 18mm)
Angular Contact (Rear) -----	6011
OD / ID / Width -----	3.54" x 2.17" x 0.71" (90 x 55 x 18mm)
C. Spindle Bearing (8000 RPM)	
Angular Contact (Front) -----	7013C DBD
OD / ID / Width -----	3.94" x 2.56" x 0.71" (100 x 65 x 18mm)
Angular Contact (Rear) -----	6011
OD / ID / Width -----	3.54" x 2.17" x 0.71" (90 x 55 x 18mm)
D. Spindle Bearing (12000 RPM)	
Angular Contact (Front) -----	65BNC10 DB
OD / ID / Width -----	3.94" x 2.56" x 0.71" (100 x 65 x 18mm)
Angular Contact (Rear) -----	55BNC10 DB
OD / ID / Width -----	3.54" x 2.17" x 0.71" (90 x 55 x 18mm)
E. Spindle Shaft Hardness -----	HRC 60-62
F. Retention System -----	88 pc Bevel Springs
G. Clamping Force -----	1,895 lb (860kg)
H. Spindle Orientation -----	Sensor
I. Spindle Taper -----	Cat 40
J. Spindle Motor -----	Fanuc B12/7000i (7.5/11 Kw) 10/15 Hp

### 2. TABLE

A. Dimensions	
Length -----	61.81" (1570mm)
Width -----	19.68" (500mm)
B. Max. Table Load -----	1320 lb (600kg)
C. Slideways -----	High Precision Linear Guideways

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

### 3. AUTOMATIC TOOL CHANGER (ATC)

A. Type	Arm Type Random, Shortest Path, Bi-Directional
B. Max. Tool Weight	15.4 lb (7kg)
C. Max. Tool Length	11.81" (300mm)
D. Tool Change Time	2.5 Seconds
E. Magazine	24 Tools
Max. Tool Dia. (Adjacent Pot Tooled)	3.14" (80mm)
Max. Tool Dia. (Adjacent Pot Empty)	5.9" (150mm)

### 4. X AXIS

A. Ballscrew Diameter	1.259" (32mm)
Lead	0.472" (12mm)
Accuracy	C3
B. Drive Motor	Fanuc B12/3000i Motor
C. Thrust ( <b>Continuous</b> )	1265 lb (575kg)
D. Rapid Rate	944ipm (24000mm/min)
E. Linear Way	THK/STAR-1720
F. Travel	59.06" (1500mm)
G. Positioning	0.0001"/12"
H. Repeatability	± 0.0001"

### 5. Y AXIS

A. Ballscrew Diameter	1.259" (32mm)
Lead	0.472" (12mm)
Accuracy	C3
B. Drive Motor	Fanuc B12/3000i Motor
C. Thrust ( <b>Continuous</b> )	1265 lb (575kg)
D. Rapid Rate (Linear Way)	944ipm (24000mm/min)
E. Linear Way	THK/STAR-1080 (Sub-Way-760L)
F. Travel	20.08" (510mm)
G. Positioning	0.0001"/12"
H. Repeatability	± 0.0001"

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

**6. Z AXIS**

A. Ballscrew Diameter -----	1.259" (32mm)
Lead -----	0.472" (12mm)
Accuracy -----	C3
B. Drive Motor -----	Fanuc B12/3000i Motor
C. Thrust ( <b>Continuous</b> ) -----	1265 lb (575kg)
D. Rapid Rate -----	944ipm (24000mm/min)
E. Linear Way -----	THK/STAR-1080
F. Travel -----	20.08" (510mm)
G. Positioning -----	0.0001"/12"
H. Repeatability -----	± 0.0001"

**7. FLOOR SPACE REQUIREMENTS**

A. Length -----	165.35" (4200mm)
B. Width -----	102.36" (2600mm)
C. Height -----	102.36" (2600mm)

**8. WEIGHT**

A. Net -----	13,218 lb (6000kg)
B. Gross -----	13,548 lb (6150kg)

**9. POWER REQUIREMENTS**

220 Volt -----	208/220 VAC, 3 Phase / 75 Amps
440 Volt -----	220-440 3 Phase Transformer / 20 kVA

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

### 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>
- \* 2<sup>nd</sup> auxiliary function (B8-digit)
- \* High speed M/S/T interface
- \* Spindle serial output
- \* Spindle override
- \* 1<sup>st</sup> spindle orientation
- \* 2<sup>nd</sup> 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
- \* 1<sup>st</sup> spindle output switching function
- \* 2<sup>nd</sup> 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)