

**TWINHORN VK-1060II 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)
- ▶ 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 20 HP Spindle Motor
- ▶ Spindle CAT-40 with **10000 RPM**
- ▶ Arm Type 24 Tool ATC
- ▶ **Coolant Through Spindle**
- ▶ Pitch Error Compensation
- ▶ Auto Lubrication System
- ▶ Fully Enclosed Splash Guard
- ▶ Spindle Air Blast & Cutting Air Blast
- ▶ Spindle Air Curtain
- ▶ Spindle Oil Refrigeration Unit
- ▶ Operating & Electrical Manuals
- ▶ Hand Held Coolant & Air Nozzle
- ▶ Two Year Control Warranty

**MACHINE SPECIFICATIONS**

Travel X Axis -----	40.16" (1020mm)
Travel Y Axis -----	23.62" (600mm)
Travel Z Axis -----	21.65" (550mm)
Rapid Feed Rate X & Y Axis -----	590ipm
Rapid Feed Rate Z Axis -----	590ipm
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 -----	43.31" x 21.65" (1100mm x 550mm)
Maximum Loading -----	1,760 lb (800Kg)
Spindle Motor -----	FANUC AC Spindle Motor β 22 / 7000i
Spindle Horse Power -----	20 HP
Spindle Speed -----	10000 RPM
Spindle Taper -----	CAT-40
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 -----	5.9" – 27.56" (150 – 700mm)
Distance from Spindle to Column -----	25.20" (640mm)

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 -----	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 -----	172"x87"x105" (4380mmx2200mmx2650mm)
Power Requirement -----	220V, 3 Phase, 60Hz, 30kVA, 75Amp
Machine Weight -----	13,200 lb (6,000 kg)

**MACHINE PRICES**

VK-1060II Fanuc Oi-MC / 10000RPM / Coolant Through Spindle / Arm Type ATC -----	<b>\$84,900</b>
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**OPTIONAL ACCESSORIES**

Mitsubishi 64SM Control -----	N/C
Mitsubishi 65SM Control -----	\$5,800
Fanuc 21i-MC Control -----	\$13,000
Fanuc 18i-MC Control -----	\$19,500
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 -----	\$3,250
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
ZF Gearbox -----	\$8,450
4 <sup>th</sup> Axis Interface with Servo Drive & Power/Signal Cable -----	\$4,300
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

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## Twinhorn VK-1060II Machine Specifications

### 1. HEADSTOCK

A. Belt Drive	-----	Variable Speed
B. Belt Type	-----	920-8YU-20W for 10Hp 8000Rpm
C. Belt Type	-----	920-8YU-30W for 15Hp 8000Rpm
D. Belt Type	-----	810-5GT-30W for 12000Rpm (OP)
E. Spindle Bearing Angular Contact (Front) (8000 RPM)	-----	7013C DBD P4
F. Spindle Bearing Angular Contact (Front) (12000RPM)	-----	65BNC10 DB
Contact Angle	-----	15 °
O.D	-----	3.937" (100mm)
I.D	-----	2.559" (65mm)
Width	-----	0.709" (18mm)
Angular Contact (Rear) (8000RPM)	-----	6011
Angular Contact (Rear) (12000RPM)	-----	55BNC10 DB
O.D	-----	3.543" (90mm)
I.D	-----	2.165" (55mm)
Width	-----	0.709" (18mm)
G. Spindle Shaft Hardness	-----	HRC 60 - 62
H. Retention System	-----	Bevel Springs 88 pc
I. Holding Force	-----	1,892 lb (860kg)
J. Counter Balance	-----	Mechanical
K. Spindle Orientation	-----	Sensor
L. Spindle Taper	-----	Cat40 or BT40
M. Spindle Motor	-----	Fanuc B22/7000i 20 Hp

### 2. TABLE

A. Dimensions	
Length x Width	----- 43.31" x 21.65" (110 x 550mm)
B. Max. Table Load	----- 1760 lb (800kg)
C. Slideways	----- Hardened & Ground Box Ways

### 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 Arm Type (Tool to Tool)	-----	2.5 Seconds
E. Magazine Capacity	-----	24 Tools
F. Max. Tool Diameter (Adjacent Pot Tool)	-----	3.14" (80mm)
G. Max. Tool Diameter (Adjacent Pot Empty)	-----	4.92" (125mm)

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**4. X AXIS**

A. Ballscrew Diameter	-----	1.57" (40mm)
Lead	-----	0.393" (10mm)
Accuracy	-----	C3
B. Drive Motor	-----	Fanuc B22/2000i Motor
C. Thrust	-----	1525 - 1828 lb (693 – 831kg)
D. Rapid Rate	-----	590ipm (15000mm/min)
E. Travel Stroke	-----	40.16" (1020mm)
F. Positioning	-----	0.0001"/12"
G. Repeatability	-----	± 0.0001"

**5. Y AXIS**

A. Ballscrew Diameter	-----	1.57" (40mm)
Lead	-----	0.393" (10mm)
Accuracy	-----	C3
B. Drive Motor	-----	Fanuc B22/2000i Motor
C. Thrust	-----	1525 - 1828 lb (693 – 831kg)
D. Rapid Rate	-----	590ipm (15000mm/min)
E. Travel Stroke	-----	23.60" (600mm)
F. Positioning	-----	0.0001"/12"
G. Repeatability	-----	± 0.0001"

**6. Z AXIS**

A. Ballscrew Diameter	-----	1.57" (40mm)
Lead	-----	0.393" (10mm)
Accuracy	-----	C3
B. Drive Motor	-----	Fanuc B22/2000i Motor
C. Thrust	-----	1525 - 1828 lb (693 – 831kg)
D. Rapid Rate	-----	590ipm (15000mm/min)
E. Travel Stroke	-----	21.65" (550mm)
F. Positioning	-----	0.0001"/12"
G. Repeatability	-----	± 0.0001"

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**7. COOLANT SYSTEM**

- A. Coolant Motor Type & HP ----- MTH2-30 / 1/2HP
- B. Pump Capacity ----- CRK2-180/18/4Kw-20L/min, 20bar-60HZ
- C. Coolant Tank Volume ----- 200L
- D. Coolant Flush System (Option) ----- CH2-30\*2

**8. FLOOR SPACE REQUIREMENTS / OPEN DOOR**

- A. Length ----- 172.44" (4380mm)
- B. Width ----- 86.61" (2200mm)
- C. Height ----- 104.33" (2650mm)

**9. PACKING SIZE**

- A. Standard Machine ----- 120" x 90.55" x 97.64" (3050 x 2300 x 2480mm)

**10. WEIGHT**

- A. Net ----- 13,200 lb (6000kg)
- B. Gross ----- 13,530 lb (6150kg)

**11. POWER REQUIREMENTS**

- 220 Volt ----- 208/220 VAC, 3 Phase / 75 Amps
- 440 Volt ----- 220-440 3 Phase Transformer / 20 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>
- \* 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)