



Since 1990

# CNC MASTERS

Call Toll Free: (877) CNC-8895

## CNC SUPRA Vertical Knee-type Milling Machine

**Turn-Key Operation** for any beginner or experienced machinist who needs a **user-friendly, easy to use** cnc control to **begin cutting parts the same day it arrives!**

The CNC SUPRA Vertical Knee Mill provides the strength and durability of a manual driven bridgeport-type vertical knee mill. The ingenuity of the CNC Supra Knee Mill can machine your intricate and detailed parts through automation technology, while still giving you the option to manually machine your simple parts through the use of the axis' hand wheels. **Improve your productivity with ease!**

The CNC SUPRA serves both types of customers:

- Small companies: Why pay thousands for out-sourcing when you can machine your own parts at a fraction of the cost?
- Large companies: Why pay thousands for a CNC machine that come with all the extras bells and whistles that you'll never use to machine out a simple part day in and day out?

**SAVE YOUR BUDGET, TIME, AND BEGIN CUTTING PARTS THE SAME DAY!** The CNC SUPRA is made in the USA with parts made in the USA and abroad allowing us to bring the savings to you. *We also build our controllers in-house in the USA so we'll never direct you to a third-party vendor for any support or troubleshooting needs you may have.*

**THE CNC SUPRA IS TESTED FOR QUALITY AND PERFORMANCE IN-HOUSE IN AZUSA, CA USA.**



**\$10,098.00**  
**3 AXIS CNC with**  
**Variable Spindle Control**

## CNC SPECIFICATIONS:

- WINDOWS INTERFACE. Works on operating systems: WINDOWS VISTA and XP on USB.
- Powerful X and Y axis micro-stepping motors size 34 with 1500 in/oz. of torque and Z axis micro-stepping motor with size 34 with 1200 in/oz. of torque. Stronger torque coupled with micro-stepping motion keeps the CNC Supra from losing steps and performs as accurate as a servo system. The minimum possible motion is .0001" with a minimum speed of 0.5" per minute. The maximum speed is 50" per minute.
- X & Y Zero Backlash Ball Screws with pre-loaded ball nuts to eliminate play on the table travel, and give precision machining
- X & Y Direct Drives--no belts to adjust. This results in smoother operations and ensures accuracy unlike bipolar, pulley and belt, drive methods which can cause the belt to buckle causing inaccurate results. This unique design of direct drive keeps the user without having the need to change the belt or adjust as it wears down.
- Z Axis Zero Backlash Ball Screw with pre-loaded ball nut to eliminate play on the up and down travel of the Quill.
- Quill Driven which is better than a knee driven Z axis; this maintains rigidity of the part being machined on three axis interpolation.
- Home Reference Sensors on the X, Y, & Z which saves your home/zero position as the first line of your program. This feature allows you to quickly return to the home position on any program without having to manually zero your three axes again.
- Limit Switches on all end of travel of X, Y, & Z which kills movement of the axis before crashing at either end of each axis.
- Full 3 Axis or optional 4 Axis coordinated motion control on bi-polar motors--far superior over uni-polar technology when it comes to torque and power. True Interpolation!
- Tool Height Compensation with Automatic Quill Retraction for easy R8 collet tool change
- Cutter Diameter Compensation with easy tool diameter setup on the Master Software
- Run your tool path from any line on your program
- Easy to Use Jogging Features and Feed Control
- Jog-Input Command automatically writes each line of your toolpath as you manually jog each axis by pc mouse, keyboard, or the optional hand held remote control joystick to save as a program for repeat use.
- Software Power Feed capabilities on X, Y, Z, and W with one click of the pc mouse for exact relative driving distance.
- Hooks up to your PC, comes pre-built from the factory
- Runs files from popular CAD-CAM softwares that produce standard G-Codes such as Mastercam, Surfcam, etc to machine and engrave intricate and detailed parts at your command
- Load DXF and IGES files from graphic programs such as CorelDraw into CAM softwares to machine or engrave detailed parts from scanned images
- Digital Read Out Display of your X, Y, Z, (and optional W) counters on your computer screen in INCHES or METRIC using your PC mouse, keyboard, or our optional Hand Held Remote Control.
- Easily build a file of commands such as drilling operations to machine simple parts without the need to learn or use a CAD-CAM program
- Can add a power feed on the knee lift, engraving attachment, fourth axis, computer control coolant assembly for the machine's built-in tank, and quick tool change, from our line of accessories to the CNC Supra Mill
- Optional "Computer" Controlled Variable Spindle Speed, save time without having to change the belt, and program your spindle's speed in the Master Software. It also allows you to disengage power from the axis motors to allow for manual machining while still retaining computer control of the spindle. (Runs on single-phase 240 vac.)
- Pre-engineered for you when it comes to pitch and resolution. No additional parameters set-up required. Display resolution is 0.0001 micro-stepping travel.

- Since this is not a complicated servo system, you do not need to tune up anything for optimum performance. Our design uses a micro-stepping system "already" pre-designed for optimum performance.
- Easy user-friendly setup for any beginner or experienced machinist. Easy to learn and operate. See our testimonials.
- Comes with Tool Box, front and rear chip guard, and a One-Shot Lubing System on the mill's table ways and X & Y ball screws.
- Backed up by our CNC MASTERS ONE YEAR WARRANTY or extend it for 2 more years.
- Unlimited "life-long" operational Tech Support step-by-step trouble shooting and walk-through process by email or phone support Monday-Friday PST during normal business hours.
- Unlimited "life-long" operational Tech Support also is transferable to new owners of previously owned CNC MASTERS CNC machinery.
- Easy to repair, replace parts, and maintain unlike costly servo systems that need to be serviced.
- Free Master Software Updates upon request
- 3 HP computer controlled variable spindle speed, save time without having to change the belt, and program your spindle's speed in the Master Software through g-codes, simple English commands, or on/off with your PC mouse. It also allows you to disengage power from the axis motors to allow for manual machining while still retaining computer control of the spindle.
- Discounted Prices for Existing Customers of CNC MASTERS

### THE CNC SUPRA VERTICAL KNEE-TYPE MILLING MACHINE CONSISTS OF

- Super Strong Column and Base
- Low Maintenance Machine
- Large Chromed Diameter Quill
- Spindle Head is internally cooled
- High Precision Class 7 Spindle Bearings
- X, Y, Z Zero-Backlash Ball Screws with Pre-Loaded Ball Nuts
- X, Y, Size 34 Micro-Stepping Motors at 1500 in/oz of torque with Hand Wheels
- Z, Size 34 Micro-Stepping Motor at 1200 in/oz of torque with Hand Wheel
- Step pulley 16 speeds belt adjustment with variable spindle speed computer control
- High-grade cast iron frame
- Dovetail guide ways
- Ground table t-slots
- Hardened & ground ways
- Hardened & ground table
- Tilting & rotating head
- Built-In Coolant Column Base (Computer Control Pump, Hose, and Flex Nozzle mounted to the side of quill--optional accessory)
- Built-In One-Shot Lube

### CNC SUPRA MACHINE SPECS

Table Size	9" x 49"
Table T-slot size	5/8" x 3"
Longitudinal X Travel	34"
Forward/Back Cross Y Travel	11.5"
Quill Z Travel	4.5"
Vertical Travel Knee Lift Up/Down	16"
Ram Travel	12"
Spindle taper	R8

Head swivel RH/LH	90°/90°
Head tilting F/B	45°/45°
Ram turret swivel	360°
Power	220-240VAC 1Ø
Spindle motor	3 HP variable speed or 2 HP, 8 speeds
Spindle speeds type	step pulley
Spindle speeds (rpm)	up to 5600 with Variable Spindle Speed Computer Control including on/off
	90-2800 for 8 speeds
Net weight	2600 lbs
Machine Height	86" (65" with head upside down)
Machine Width (Front to Back)	70"
Machine Length	67"

## TOLERANCES:

Accuracy is +/- 0.003" in 12" (+/- 0.00025 per inch)

Repeatability is within 0.0005"

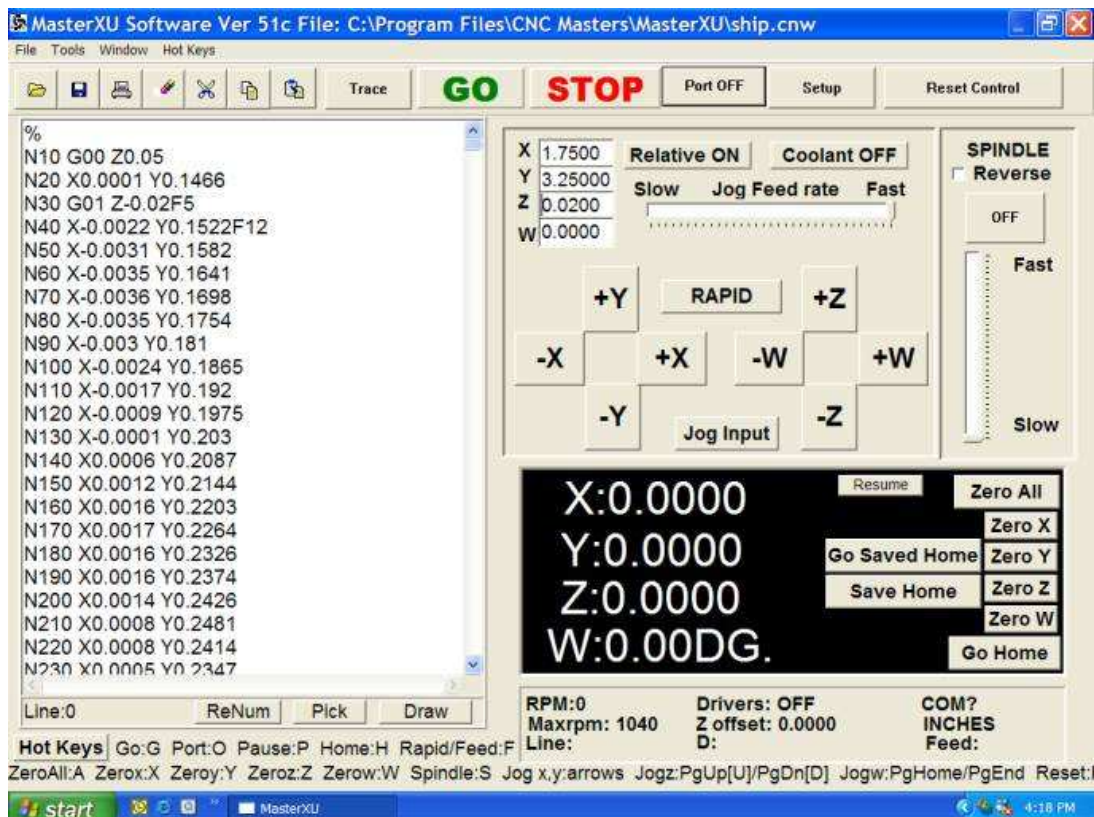
Resolution is 0.0002" of linear motion on the X, Y, and Z.

## THE CNC CONTROL UNIT

The CNC Control Unit is a microcomputer based micro-stepper motor driver with 4D interpolation capabilities. It accepts motion commands from your host computer through a standard USB port. The Control Unit can drive up to 4 motors. The Control Unit is mounted directly on the side of your CNC Supra Mill out of your workspace unlike other models that require a separate table. Other optional outputs are the coolant, and spindle controls. The power requirements are 5 amperes at 115VAC.

Upon request for international orders, we will convert the VAC on the Control Unit to meet 220-240VAC standards at no extra charge!

## THE CNC MASTER SOFTWARE



The CNC MASTERS Control Unit is controlled by the user friendly MASTER software which runs on any IBM-AT compatible computer with at least 500Mhz and Windows VISTA or XP. It communicates with the CNC Control Unit through the USB port that is the standard in computer communication. The MASTER software features a main windows panel interface that will allow the novice user of a CNC Mill to easily control the program and the machining of parts.

The Master software runs standard G-code files from other CAD-CAM software such as SmartCam, SurfCam, etc. The Master software also features its own programming language. It uses plain English words, like “Move, Absolute, Incremental, Repeat, Rapid, Feed, Spindle on, etc.,” which are all self-explanatory. These commands are conveniently picked from the pull-down menus and placed on the main screen editor ready for the user to complete. You can easily build a file of commands to machine simple parts without the need to learn or use a CAD-CAM program! For example, you need a number of steel pieces drilled with 100 holes, each of 1/2” dia. by 1” deep at 0.600 centers. With a simple program, the CNC Supra can do this operation with minimal supervision. The program will look like this:

#### PROGRAM SAMPLE:

```
001 ABSOLUTE
002 MOVE X0 Y0 Z0
003 SPINDLE ON FORWARD SPEED 400 RPM
004 COOLANT ON
005 INCREMENTAL
006 CALL ROW 10 TIMES
007 SPINDLE OFF
008 COOLANT OFF
009 MOVE X0 Y0 Z0
010 END /MAIN PROGRAM
011 ROW /BEGIN SUBPROGRAM
011 MOVE Y-0.6
012 CALL DRILL_COLUMN 10 TIMES
013 END /ROW SUBPROGRAM
014 DRILL_COLUMN /BEGIN SUBPROGRAM
015 MOVE X.6
```

016 FEED 1.0 /INCHES PER MINUTE

017 MOVE Z-1.1

018 RAPID

019 MOVE Z1.1

020 END /DRILL CALL

The ability of the MASTER software to run and repeat “subprograms” with a single command line is a very powerful feature that will save the user considerable manual input and easily program custom “canned cycles” such as large DRILLING REPEATABLE FILES that can be written with just a few lines. Verifying a new program can be easily done with the “trace” facility. In this mode you can step a program one line at a time and check the XYZ position counters, which serves as your DRO, against the blueprint of the part, or you can activate the “Draw file” command to see a graphic display of your file before you machine the part.

#### OTHER MASTER SOFTWARE FEATURES:

- Tool Height Compensation with Auto Quill Retraction for easy R8 Collet change out
- Relative driving of any precise distance with one click +/- on the chosen axis
- Go From Line Command--allows the user to start his toolpath from any line on his program
- Beep End Program--a beeping sound from the computer to notify the user that the job is done
- Peck Drilling Cycle
- Mirror Command--runs the opposite direction of the written toolpath.
- Go Home--recounts its steps back to your Zero position
- Saved Home Positioning--never lose your Zero position again when machining the same part
- Pre-Set--allows you to begin machining at any given value on the X Y Z counters other than zero
- Tool Radius Offsets
- Intuitive Interface with axis jog buttons placed in the viewpoint of the cutter to avoid confusion of direction

#### ***USE the CNC SUPRA with POPULAR CAD-CAM SOFTWARE PACKAGES!***

With the included G-CODES FILE INTERPRETER, the MASTER software can run files generated by many advanced CAM software packages, like BOBCAD-CAM or VisualMill which uses solids and surface machining technology. Or, use others like MASTERCAM, SURFCAM, RHINO, ARTCAM etc. All you need to do is setup your post-processor to match the CNC Supra, and you will be able to machine the most complex surface program that your machining requires. The maximum file size will be controlled by the storage space available on the hard drive of the host computer. With the MASTER editor you can create, edit, load, or mix G-codes with the MASTER command language.

#### THE MASTER SOFTWARE SUPPORTS THESE STANDARD G-CODES AND M-CODES

- G00 = Position (Fast speed)
- G01 = Linear interpolation (Feed speed)
- G02 = Circular interpolation (CW)

Format: X\_\_Y\_\_I\_\_J\_\_ I,J are relative distance from start to center. Incremental Z can be added for helical designs.

G03 = Circular interpolation (CCW)

G17 = Cancels G60 Command

G40 = Tool Radius compensation off

G41 = Tool Radius compensation left

G42 = Tool Radius compensation right

G60 = Switch data from Y to W \* radius factor

G70 = Input in inches

G71 = Input in millimeters

G80 = Cancel Peck Drilling Cycle

G83 = Peck Drilling Cycle, Format: X\_\_\_\_Y\_\_\_\_Z\_\_\_\_R\_\_\_\_Q\_\_\_\_P\_\_\_\_F\_\_\_\_

G90 = Absolute move (Modal)

G91 = Relative move (Modal)

G98 = Return to initial point in canned cycle

G99 = Return to R point in canned cycle

M00 = Stop

M02 = End routine

M03 = Spindle on

M04 = Spindle off

M06 = Spindle reverse

M08 = Coolant on

M09 = Coolant off

M30 = End program



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## CNC SUPRA Vertical Knee-type Milling Machine

All components and accessories on the CNC SUPRA Mill are individually tested and the entire milling center is tested for quality assurance before shipment. The CNC Supra Milling Center is backed up by our ONE YEAR LIMITED WARRANTY! Tech Support by email at [sales@cncmasters.com](mailto:sales@cncmasters.com) or phone (626) 812-8300 is available during normal business hours Monday through Friday, PST. See below for details.

### ONE-YEAR WARRANTY

Our CNC SUPRA, and all other products that CNC Masters sells will be backed by our one year limited warranty, covering defects in electronic components, materials, and workmanship. Our technical support will be available to answer any questions during installation and setup of your CNC Milling machine or retrofit kit to ensure your satisfaction. For tech support, we can be reached at (626) 812-8300 during working hours PST, or email us: [sales@cncmasters.com](mailto:sales@cncmasters.com). Tech Support by email will ensure you a step-by-step process of troubleshooting any problem you may encounter, and we will walk you through the process to solve your tech needs for any of our CNC Mills. Please see our Terms and Conditions of Sale before placing an order.

Extended Two-Year Warranty is also available.

For questions, request for quote, or to place an order, please email us or call our toll free number:

1-877-CNC-8895.

Current prices and packages deals are listed online by visiting our website: [www.cncmasters.com](http://www.cncmasters.com). Be sure to check out the VIDEO DEMO on the CNC Supra Mill during your visit of our site!

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