CNC Masters: Reference Guide

CNC MILLING: CNC SUPRA Mill®

CNC (Computer Numerically Controlled) Bridgeport-Type Knee Milling Center

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I. Features

- 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.
- Full 3 Axis or optional 4 Axis coordinated motion control. True Interpolation!
- Tool Height Compensation with Automatic Quill Retraction for easy R8 cullet tool change
- 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 tool path 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 software 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 software 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 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

I. Features continued...

- 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.
- Tech Support step-by-step trouble shooting and walk-through process by email or phone support Monday-Friday PST
- Easy to repair, replace parts, and maintain unlike costly servo systems which need to be serviced.
- Free Master Software Updates upon request
- Your choice in 2 HP Spindle Motor 8 speeds, or 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

II. Specifications

Machine Specifications:

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 VAC or 240 VAC with variable speed
Spindle motor	3 hp variable speed or 2 hp 1Ø, 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.

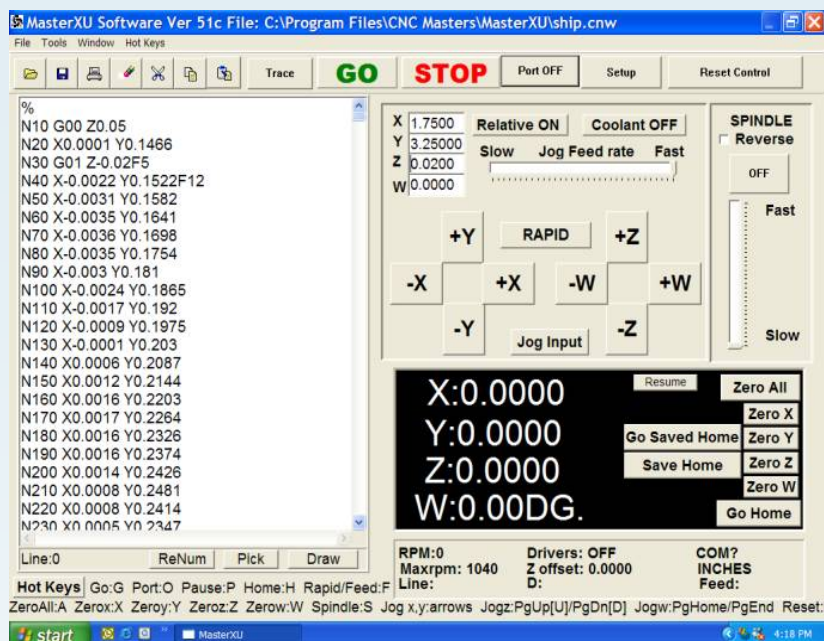## III. Master Software

The CNC 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 USB port 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 Jr. or the CNC Supra can do this operation with minimal supervision. (Top right: Procedure Screenshot)

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." 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 tool-path 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 tool path.
- Go Home--recounts its steps back to your Zero position
- Saved Home Positioning--never lose your Zero position again when machining the same part

USE the CNC Jr. or the CNC SUPRA with POPULAR CAD-CAM SOFTWARES!

IV. And More

PLEASE VISIT OUR WEBSITE

HTTP://WWW.CNCMASTERS.COM

FOR MORE INFORMATION:

- G-CODES & M-CODES
- PROGRAM SAMPLES
- CAD-CAM SOFTWARE
- COMPUTER VARIABLE SPINDLE CONTROL
- FOURTH AXIS CNC CONTROL
- HANDHELD REMOTE CONTROL PENDENT
- ACCESSORIES
- WARRANTY
- TERMS & CONDITIONS
- PRICING AND SHIPPING QUOTES

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