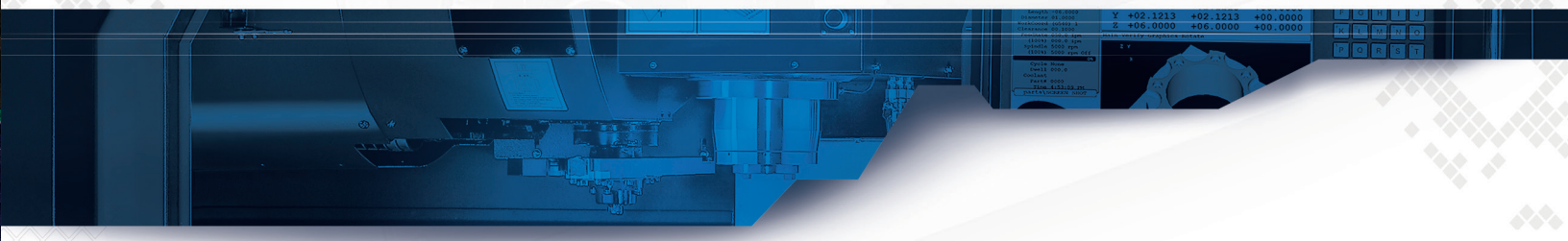
820-B

MILLING AND TURNING CONTROL

DESIGNED FOR THE OPERATOR



MILLTRONICS USA®

LET'S INVENT

PERFORMANCE & SPECIFICATIONS

Essentials

Processor	Intel Pentium
Instruction Set	32-bit

Performance

Number of Cores	1
Processor Base Frequency	1.8 GHz

Memory

Data Storage	1 GB
System Memory Installed	2 GB

Graphics

GPU Core Speed	400 MHz
Memory	XXXXXXXXXXXXXXXXX

Operating System

Primary OS	Linux
Real Time Extension	RT Linux

The new Milltronics 9000 CNC control is Windows® based and features a 15" color

Display

Size	12"
Resolution	800x600
Backlight Type	LCD

Operator Panel

Keypad Type	Membrane keys with metal clickers
Data Transfer	USB ports with Ethernet connectivity

Programming Features

Trig Help Features

- Arc & Line Intersection Find
- Tangent Line & Arc Functions
- 3 Point Arc Generation
- Line Extend Back
- Cartesian & Polar Coordinates
- Corner Chamfering & Rounding

Single Page Auto-Routines

- Bolt Pattern, Drill, Tap & Bore Cycles
- Text Engraving on Arc or Line
- Thread Milling Cycle
- Circular Framing Cycle
- Rectangular Framing Cycle
- Polygon Framing Cycle
- Circular Pocket Cycle
- Rectangular Pocket Cycle
- Polygon Pocket Cycle
- Slot Cycle
- Facing Cycle
- Grooving with Chamfers (Turning Only)
- Multiple Pass Threading (Turning Only)

Turning Only Manual Mode Functions

- Turning
- Teach Programming
- Handwheel for Cutting Taper
- Handwheel for Cutting Concave or Convex Radius
- Joystick Feed Control (ML Series Only)

Turning Only Canned Cycles

- Turning Cycles
- Drill, Tap & Bore Cycles
  - -Peck Drilling Cycle
  - - Chip Breaker Cycle
  - - Rigid Tap Cycle
  - - Bore Cycles
  - - Drill with Dwell Cycle
- Threading Cycles
  - - Multiple Lead Threading
  - - Multiple Pass Thread Repair*
  - - Thread Chasing
- Facing/Cutoff Cycles
- Grooving Cycles

Conversational Programming

- DXF & IGES File Import
- Math Function Input Fields
- Macro Variable Programming
- Speed & Feed Calculator
- Prompting Help Screens
- Cut/Copy and Paste
- Custom Conversational Screens (Milling Only)

G&M Code Programming

- Macro Programming
- MDI
- EIA / ISO Code (Fanuc™) Compatibility
- Custom Macro B
- Search and Replace
- Cut/Copy and Paste
- Handwheel Command

Set-Up Features

- Automatic Tool Setting Program*
- Single Button Tool / Fixture Offset Entry
- 60 Milling Work Coordinates (Milling Only)
- 6 Turning Work Coordinates (Turning Only)
- Continuous & Incremental Axis Jog
- Electronic Handwheel(s)
- Optional Probe & Tool Setter*
- 199 Milling Tool Diameter Length & Wear Offsets (Milling Only)
- 99 Turning Tool Offsets (Turning Only)
- DRO Measure
- Safe Zone
- Hot Keys

Edit Features

- Background Editing
- Cut, Copy, Paste & Move Editing
- Handwheel through Text
- Overwrite & Insert
- Global Find & Replace
- Printout a Program (FastCAM)

Programming Features

- Concurrent Programming
- Cutter Compensation
- Inch / Metric
- Mirror, Scale & Rotate
- Dwell
- Subprogram Call, Looping & Nesting

Run & Verify Features

- Handwheel Run
- Dry Run
- Block Skip, Optional Stop, Programmable Stop & Single Block
- Program Halt & Resume
- Estimated Cycle Time
- 10%, 100% & Variable Rapid Override Select
- Spindle Load Meter
- Fine Tune Feed & Spindle Override
- Machine Status Light
- Programmable Air, Mist & Coolant*
- Multiple Mid Program Start Options (Milling Only)
- Mill Away / Jog Away (Milling Only)
- Tool Load Monitoring (Milling Only)
- Tool Breakage Detection with Optional Tool Setter (Milling Only)

Display Features

- 3D Part & Wire Frame Tool Path Graphics
- Color Graphics – Tool Path & Part Profile
- Solid Model Graphics
- Wireframe over Solids
- Transparent Graphics
- Customizable DRO
- User Definable Image Display Window
- User Selectable Graphics in all Planes
- Graphical Tool Representation

Control Features

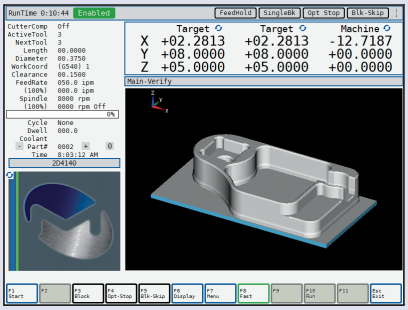
- 2000 Blocks/Second High Speed Processor
- Absolute / Incremental
- 2 GB Solid State Memory
- 1 GB Ram Memory
- 10 MB Text Editing with Cut, Copy, Move, Search & Replace
- Ball Screw Pitch Error Correction
- True S Curve Acceleration & Jerk Correction
- Feed Forward Error Correction
- Full Language Error Messages
- Backlash Compensation
- Linear, Circular and Interpolation
- Feed per Revolution
- Feed per Minute
- Custom I/O Screens
- Auxiliary Keyboard Port
- Networking
- Calculator
- Service Diagnostics
- Parts Counter
- Program/Parameter (Edit Key)
- Remote Diagnostics
- Rigid Tapping
- Selectable Corner Accuracy
- Selectable Languages
- Handwheel Scroll Through Menus
- 12˝ Color LCD Display
- Automatic Homing
- Two USB Ports
- Hour Meter*
- Optional Four & Five Axis Simultaneous (Milling Only)
- Inverse Time (Milling Only)
- Surface Finish Selection (SFS) (Milling Only)

Machine Features

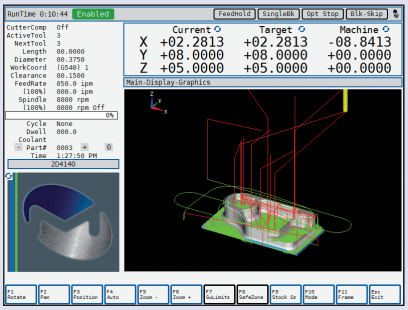
- Feed per Minute
- Rigid Tapping
- Electronic Orient Hold
- Spindle RPM Limit
- Door Switch
- Auto Lubrication System
- Turning Only Features:
  - - Constant Surface Speed
  - - Feed per Revolution
  - - Tool Setter*
  - - Automatic Turret*
  - - Bar Feed Interface*
  - - Hydraulic Chuck*
  - - Hydraulic Tailstock*
  - - Parts Catcher (SL Series Only)
  - - Chuck Guard Switch (ML Series Only)

**Optional feature*

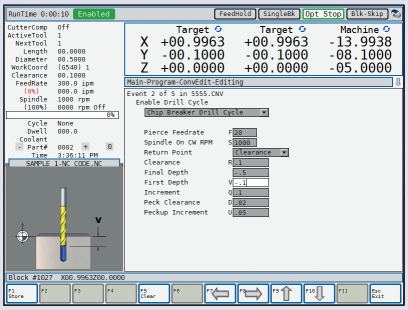
8200-B CNC Control



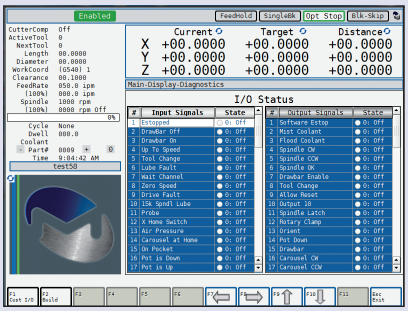
3D Solid Model Graphics



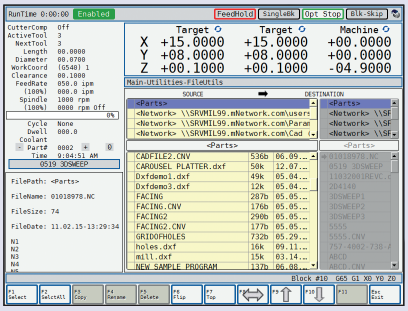
Solid Model with Tool Path Overlay



Context Sensitive Help Screen



Diagnostic Display IO Status



File Utility Screen

ABOUT THE 8200-B CONTROL

The heart of our success is our long history of control development. The Milltronics CNC control blends ease of use with features and performance demanded by the most sophisticated workshops. New operators can be quickly trained and productive in little time with the Conversational programming, on screen help, intuitive menus, color graphics, prompted tool setting routines and more. A unique and powerful “Trig Help” feature eliminates the need for shop floor calculations. Sophisticated workshops will welcome networking capability, large program storage, USB port, DXF import, probing cycles and industry standard G & M code format. The 8200-B Series CNC is our standard high-speed milling and turning control. It’s a PC-based control which allows for advanced processing speeds that are imperative for high speed and multi-axis machining.

A FRONT PANEL DESIGNED FOR THE OPERATOR

An operator will spend thousands of hours working with the front panel of any CNC. This is why we have designed our front panel around an oversized high resolution LCD color screen. Machine function buttons such as flood, mist and spindle lluminate when selected. In fact, buttons that require operator response, such as Cycle Start, flash as needed to prompt the operator through the task at hand.

CONVERSATIONAL PROGRAMMING

A menu based question and answer format prompts the operator through program creation. While G and M codes are retained, in most applications there is no need to utilize them. Conversational programming is not only quick and easy, it is extremely powerful. In fact, many operations available with conversational programming are nearly impossible to duplicate with G and M code programming. The simple task of incrementing a tool to depth with G and M codes usually involves complex looping of subprograms or many redundant commands. With conversational programming this task is reduced to simple statements where only the cut increment and depths need to be entered.

DUAL PROCESSOR CONTROL UTILIZES LATEST COMPUTER TECHNOLOGY

The Milltronics control takes advantage of a PC based Pentium processor to handle the operator interface and a robust 32 bit Motorola processor to handle the motion control. Because Milltronics controls are based on a PC platform, flexible data storage of 1 GB, networking and communications are possible.

TEXT PROGRAMMING COMPATIBILITY

The Milltronics control accepts the G and M codes recognized as industry tandard. If you currently program in code, utilize a CAD CAM system, or are considering adding a CAD CAM system in the future, you can rest assured that compatibility will not be an issue. A full word processor style editor is utilized on all CNC controls and offers helpful features such as search, search and replace, cut, copy and move.

ACCURACY

Milltronics CNC control utilizes a complex “Feed Forward” error correction algorithm that reduces inaccuracy caused by corner rounding and following error without compromising speed. This is an essential ingredient for performing high speed milling.

HANDWHEEL CONTROLLED PROGRAM EXECUTION

This useful feature allows an operator to take total control of machine movement and run programs with confidence. With this feature enabled, program movement only occurs while the handwheel is being turned; stop turning the handwheel and machine movement stops immediately. The faster the handwheel is turned the faster the feedrate. Ask any experienced CNC operator if they have ever crashed a machine and the answer most likely will be yes. With this feature an operator can avoid crashes and safely work near rotating lathe chucks or expensive fixtures.

CONCURRENT PROGRAMMING AND MORE

Maximize productivity by programming while the machine is in operation. Create new programs, modify existing programs, or edit the program in operation, all while the machine is cutting. Editing of tool and fixture offsets, copying of programs to/ from USB or the network while the machine is cutting is all possible.

ADVANCED TRIGONOMETRY ASSIST

“Trig Help” as we call it, is much more than a calculator. It is a concept where the programmer can use the CNC’s computing power to calculate arc start and end points without the need for trigonometry. The programmer only needs to estimate the end point of the line or arc and the CNC connects the geometry to the nearest intersection on its own. There is no need to have exact intersection calculations.

MANUAL OPERATION / TEACH MODE

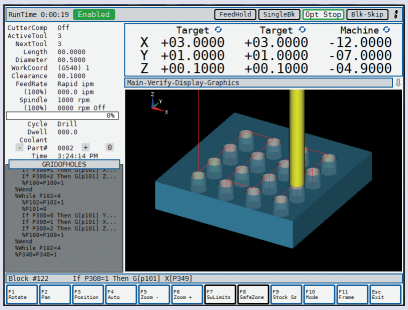
The Milltronics control on ML series lathes fills the void between manual engine lathes and difficult to use CNC turning centers. Operation in full manual, simple MDI and fully automatic operation is standard. For full manual operation a conveniently located remote panel places the necessary controls at the operators’ fingertips. Single operations that cannot be made by simply turning handwheels, such as tapers, radii and threading, can be made quickly and easily with conversationally prompted MDI screens. Typically teach systems only allow manual machine movements to be entered into a program. These systems are highly restrictive in that it is impossible to cut threads, radii and tapers by simply turning a handwheel. The Milltronics control allows not only manual moves to be entered directly into a program, but also a series of conversationally prompted MDI events including threading, tapers and arcs.

UNIQUE GRAPHICS BASED MID PROGRAM START FEATURE

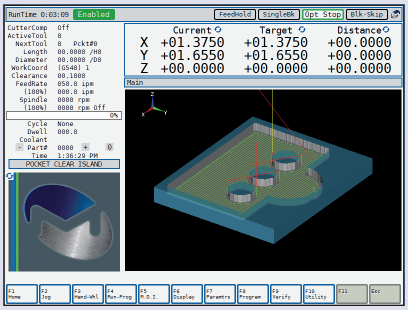
Starting in the middle of a program is often one of the more challenging tasks facing a CNC operator. Milltronics has solved this problem with a unique process where the operator can verify a program graphically up to the point where starting is desired and then simply switch over to the Run mode. This ensures that modal codes are executed completely and in sequence.

FULL COLOR GRAPHICS WITH SOLID MODEL

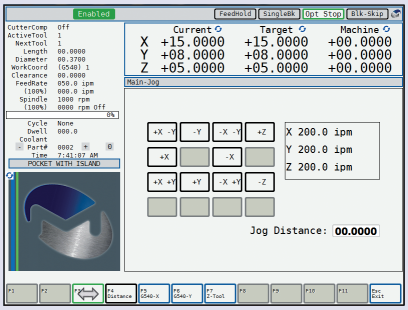
Full color graphics allow verification of tool path and part profile prior to program execution. Zoom in/out, rotate or window on detail for a clearer view. Unlike graphic systems on other CNC controls the Milltronics graphics are intertwined with the motion control system of the machine. This provides synchronized display between the graphics and machine movement and guarantees that there will be no discrepancy between what is seen on screen and what the machine actually does.intersection on its own. There is no need to have exact intersection calculations.



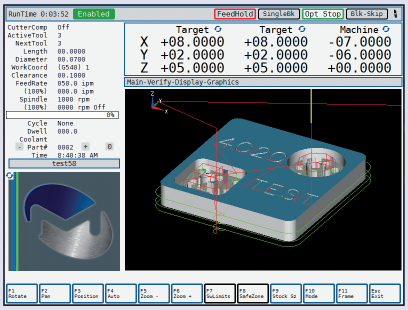
Grid of Holes



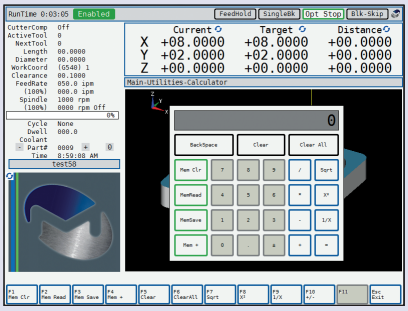
Irregular Pocket Clearing with Islands



Jog Screen



Lettering Cycles



Numeric Calculator

Milling Highlights

TOOL OFFSET PROBING

A table mounted probe allows tool radius and length offsets to be set quickly and consistently. Probe can be used in-process to determine tool breakage.

WORKPIECE PROBING

The workpiece probing option aids in repeat setup of difficult parts. It provides the ability to automatically set and correct work coordinates, tool offsets, rotation angle and more after inspection of a fixtured part.parameters of the thread. The control will then calculate the correct position required to cut the thread.

Turning Highlights

C AXIS AND LIVE TOOLING

Milltronics 8200-B control offers conversational programming with live tooling. Eliminate secondary operations by milling flats and keyways on turned parts, and by performing bolt hole and other hole-pattern operations in the same setup.

C-AXIS

The C-axis option makes internal broaching possible with the ability to position and lock the chuck during the broaching operation. This option is availble when accompanied by live tooling.

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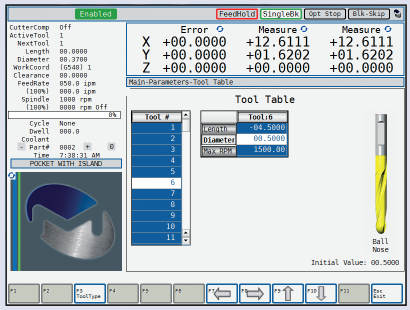
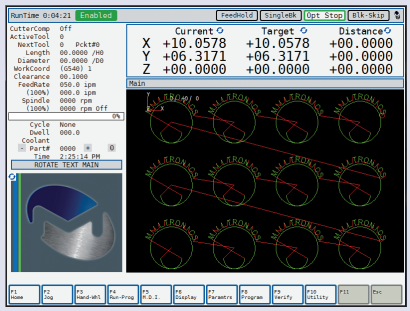
THREAD REPAIR

The thread chase cycle on Milltronics' 8200-B allows a user to chase a damaged thread with a single pass. Simply position the tool into the thread and assign the parameters of the thread. The control will then calculate the correct position required to cut the thread.

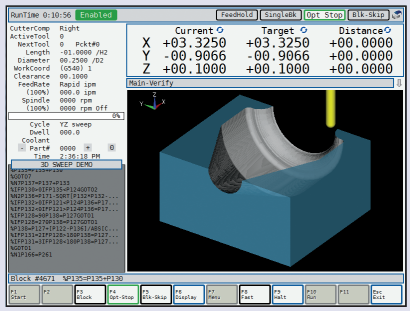
The optional thread repair cycle can assist with more elaborate thread repairs that require multiple passes and change depths on straight or tapered threads. Similar to the thread chase cycle, once the tool is positioned into the thread with the handwheel, the control will guide the user to get the desired thread. This cycle is commonly used by many oil pipe repair companies.



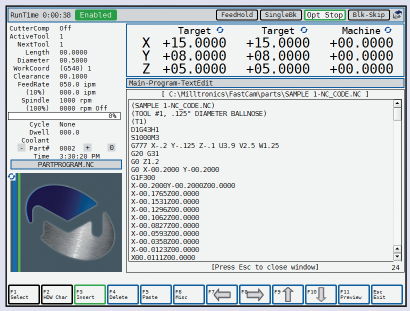
Tool Type Display



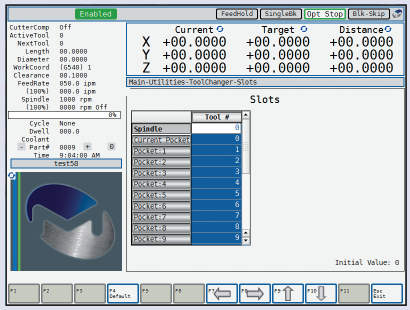
Sub-Program Loops for Pattern Repeat Cycles



Sweep Pocket Clearing Cycles



Text Editor



Tool Changer Slot Table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