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Supplement to Microrouter CNC Machine User's Manual - New Models, Features & Components.

About this Supplement.

Disclaimer	Due to nature of hardware developments, be aware that specifications and features of this product can change without notice. No liability can be accepted by Denford Limited for loss, damage or injury caused by any errors in, or omissions from, the information supplied in this supplement. This supplement should be used as an addition to your Microrouter CNC Machine User's Manual. This supplement should not be used as a machine operating manual in its own right.
Screenshots	Please note that any screenshots and photographs are used for explanation purposes only.
Language	This supplement is written using European English.
Contact	Any comments regarding this supplement should be referred to the following e-mail address: customerservices@denford.co.uk
Supplement Content	This supplement outlines the new models, features and components fitted to the Microrouter series of CNC machines. Information regarding any new components fitted to your particular Microrouter model should be used in place of the documentation contained in the main Microrouter CNC Machine User's Manual.

Update - Model Variations

Two Microrouter models are available:



Microrouter Standard Model.

The Microrouter Standard model is a compact three axis CNC router, suitable for all levels of education and training. Built to industrial standards, the speed of the router makes it the ideal choice for prototyping in most woods, plastics, foams and modelling waxes.



Microrouter Pro Model.

The Microrouter Pro model incorporates 5Amp axis drives, making it faster and more powerful than the 2Amp drive equipped Standard model.

The pro model was specifically designed to meet the demand for rapid machining of components. This is particularly important when undertaking 3D machining of Pro/DESKTOP or ArtCAM models or when producing a large number of models within limited timescales.

In all other operating respects, the Pro is identical to the Standard version.

Update - Specification Variations

Date Specification Variations

Pre April 2002	Microrouter electronics are supplied in a separate black control box.
April 2002	Microrouter electronics are now integrated into the right end of the main machine cabinet, replacing the need for a separate control box.
May 2002	The DenStep motion control card is replaced by the NextStep version.
May 2002	A new spindle drive board is fitted (containing no spindle status LEDs or on-board fuses).
June 2002	Microrouter Pro model released, offering 5Amp drives compared to the Microrouter Standard model 2Amp drives.

The codes listed in the table below describe the controller / drive configuration for:

- Machine identity, printed on your electrical inspection plate.
- Configuration of the Denford Virtual Reality CNC Milling control software.

Code Machine Drive Configuration

Router V3	Microrouter Standard Model - DenStep controller and 2Amp drives.
Router NS V4	Microrouter Standard Model - NextStep controller and 2Amp drives.
Router NS V4 Pro	Microrouter Pro Model - NextStep controller and 5Amp drives.

Update - Spindle Drive Board

Replaces...

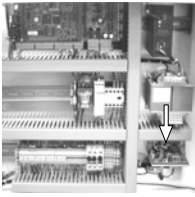


...any references to the spindle drive board in the main Microrouter CNC Machine User's Manual (page 65).

Location



Look in the bottom right corner of the electrical panel.



Microrouter Standard panel shown above.

Warning



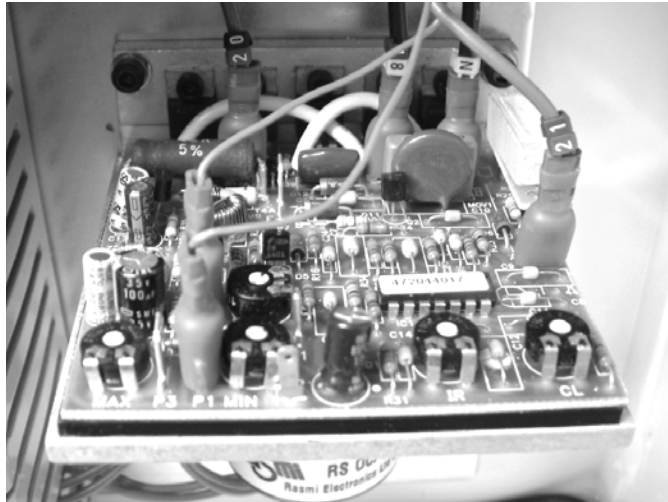
Never attempt to access the electronic hardware systems of the machine with the mains power switched ON.

Note that hazardous voltages can still exist immediately after switching off the power.

If the machine has previously been switched on, wait at least 5 minutes before attempting to open the electrical panel access plate.

The components on the spindle drive board control the motor for the programmable spindle. A different type of spindle drive board is fitted to all Microrouter models manufactured after May 2002. This version of the board does not contain any drive status LEDs or on-board fuses.

The board is located in the bottom right corner of the electrical panel, mounted horizontally.

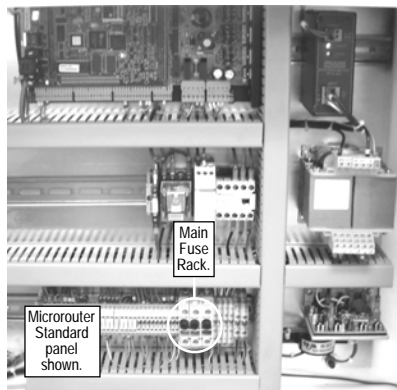


Spindle Drive Troubleshooting.

Check the validity of the following:

- 1) Check the spindle drive fuse, labelled F1, on the main fuse rack.
- 2) Check the control circuit fuse, labelled F2 on a Microrouter Standard model or F3 on a Microrouter Pro model.

In addition, refer to the electrical schematic diagrams.



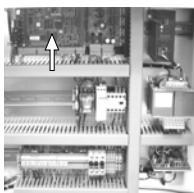
Update - NextStep Motion Control Board

Replaces...

...any references to the DenStep controller in the main Microrouter CNC Machine User's Manual (page 64).

Location

Look in the top left corner of the electrical panel.



Microrouter Standard panel shown above.

Warning



Never attempt to access the electronic hardware systems of the machine with the mains power switched ON.

Note that hazardous voltages can still exist immediately after switching off the power.

If the machine has previously been switched on, wait at least 5 minutes before attempting to open the electrical panel access plate.

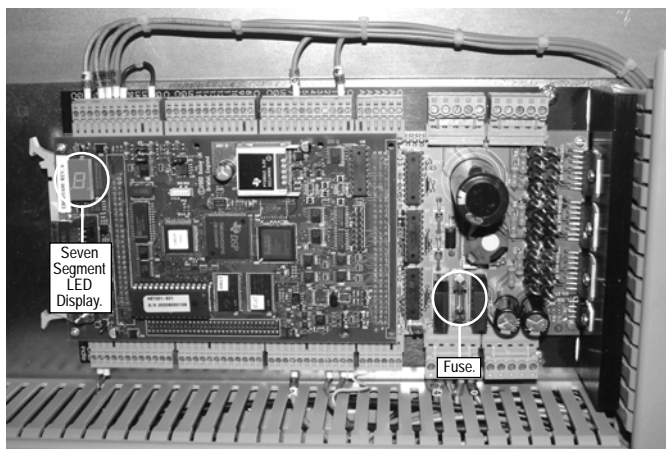
The NextStep motion control board is fitted to Microrouter models manufactured after May 2002.

Machines fitted with the NextStep controller can be identified by the "NS" suffix added to the machine name, printed on the machine electrical inspection plate.

On Microrouter Standard models, it processes the step and direction signals, which are then passed through the integrated 2Amp drive units to the appropriate axis motor.

On Microrouter Pro models, it processes the step and direction signals, which are then passed to the separately fitted 5Amp drive units used to control the three machine axes.

The NextStep motion control board is mounted in the top left corner of the electrical panel.



Motion Control & Axis Drive Troubleshooting.




Check the validity of the following:

- 1) Check the emergency stop button is not depressed.
- 2) On Microrouter Standard models, check the axis drive control fuse, mounted on the NextStep board (shown above).


On Microrouter Pro models, check the axis drive transformer input fuse - labelled F2, the axis drive control fuse - labelled F3 and the axis drive transformer output fuse - labelled F5. All fuses are mounted on the main fuse rack (shown on the previous page).

In addition, refer to the electrical schematic diagrams for specific fuse details and labelling.

Update - NextStep Motion Control Board

Replaces...   

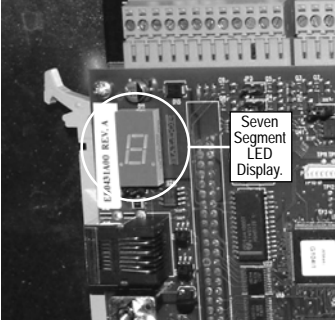
...any references to the DenStep controller in the main Microrouter CNC Machine User's Manual (page 64).

Location   

Look on the left side of the NextStep motion control board.



Microrouter Standard panel shown above.



LED Status and Fault Display.
The LED display is mounted on the left side of the NextStep motion control board.

Display.	Meaning.
5	Stop asserted.

Errors are all shown with a flashing dot.

A full listing of fault display codes can be obtained from Denford Limited, if required.

Update - Microrouter Pro Specification

Standard Equipment:

- Microrouter CNC machine - Pro version.
- Quick release interchangeable laminate trimmer.
- CNC machine control operating software.
- Installation, maintenance and instruction manuals.
- Set of maintenance tools and spare parts list.
- Machine commissioning and basic instruction.
- Worklight.
- Dust collection system (vacuum not included).
- Machine operation training (UK Only).

Extra Equipment:

- CAD/CAM software and manuals.
- Desk-top tutor and programming software.
- Courseware and project books.
- Various tooling packages.
- Training packages.
- Additional offline programming software.
- Machine work bench.
- Video conferencing system.
- PC & PC workstation.
- Vacuum table.
- Vacuum for dust collection.
- Additional work holding systems.

Safety Features:

- Manual operation, totally enclosed, interlocked, safety guard door.
- Emergency stop button.
- Toolpath graphics to verify part programs prior to machining.
- Automatic tool retraction & spindle stop for tool changing.

Mechanical Details:

- Accepts A3 sized material.
- Travel X axis 550mm (21 1/2").
- Travel Y axis 270mm (10 1/2").
- Travel Z axis 80mm (3 1/4").

Dimensions:

- Total Machine width 1356mm (54 3/8").
- Machine height 700mm (27 1/2").
- Machine depth 745mm (29 3/8").

Weights:

- Machine weight 150 KG (330 lb).

Electrical Details:

- Mains supply required:
 - 220/240Volts, 50Hz, 8Amps.
 - 110/115Volts, 60Hz, 15Amps.
- Spindle motor: 1.1kW, 1.5HP, 5.0 AMP.
- Spindle Speeds: 0 - 23,500RPM.
- Axis stepper motors: 200 steps/rev.

Performance:




- Rapid traverse rate up to 5000mm/min (197in./min).
- 3D profiling up to 4500mm/min (177in./min).

Replaces...







...any references to the Microrouter Standard specification in the main Microrouter CNC Machine User's Manual (page 70).

Update - Microrouter Pro Electronics

Replaces...   

...any references to the machine electronics in the main Microrouter CNC Machine User's Manual (pages 62 to 65).

Warning   

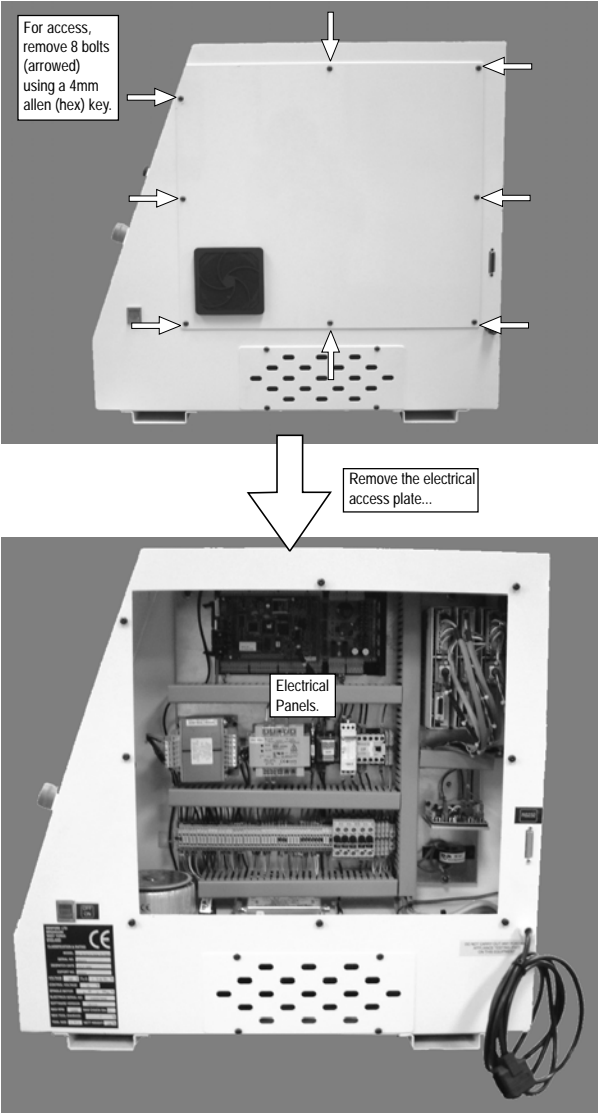


Never attempt to access the electronic hardware systems of the machine with the mains power switched ON.

Note that hazardous voltages can still exist immediately after switching off the power.

If the machine has previously been switched on, wait at least 5 minutes before attempting to open the electrical panel access plate.

The Microrouter Pro electronics are located in the right end of the machine. Using a 4mm allen (hex) key, remove the eight bolts, then withdraw the cover plate, to gain access to the electrical panel, as shown below.



Update - Microrouter Pro Electrical Panel Layout

Replaces...

...any references to the machine electronics in the main Microrouter CNC Machine User's Manual (pages 62 to 65).

Note

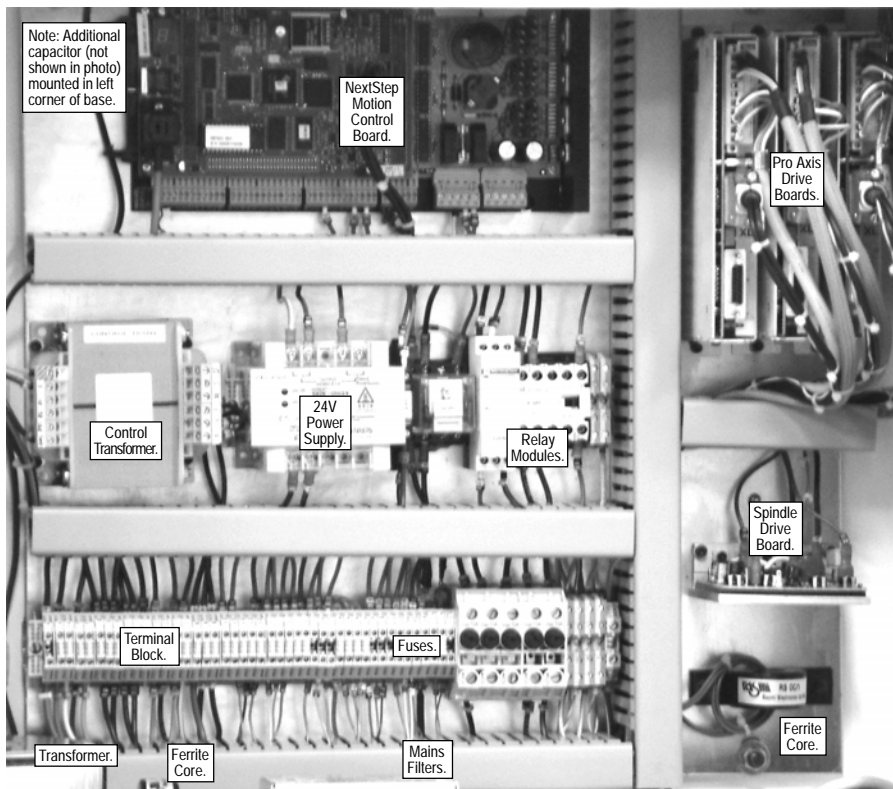
The Electrical Diagrams for your Microrouter Pro are not included in this manual. They are either stored in a folder attached to the inside of the cover plate or delivered separately in the standard equipment box supplied with your machine. Further electrical schematics are available on request.

The photo below labels all important areas on the Microrouter Pro electrical panel.

Please note that the layout of your electrical panel may differ from the photo, depending on components and options fitted to your Microrouter Pro.

Before commencing any work, refer to the schematic diagram of the electrical panel, delivered separately in the standard equipment box supplied with your machine.

Microrouter Pro Electrical Panel Layout.



Update - Microrouter Pro Axis Drive Boards

Replaces...



...any references to the machine electronics in the main Microrouter CNC Machine User's Manual (pages 62 to 65).

A block of shielded 5Amp Pro axis drive boards are fitted in the right top corner of the electrical panel. They control the three machine axes, receiving step and direction signals from the NextStep controller card. From left to right, the three boards correspond to the X, Y and Z axes, as shown below.



Motion Control & Axis Drive Troubleshooting.

Check the validity of the following:

- 1) Check the emergency stop button is not depressed.
- 2) Check the axis drive transformer input fuse - labelled F2, the axis drive control fuse - labelled F3 and the axis drive transformer output fuse - labelled F5. All fuses are mounted on the main fuse rack (shown on the previous page).

In addition, refer to the electrical schematic diagrams for specific fuse details and labelling.

Notes

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Notes

Document: microrouter update.p65