

microtrack[®]

Owner's Manual



C&P microsystems

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Edition 4

Introduction

Thank you for purchasing a **microtrack** control system for your paper cutter. Having done so, you have joined over 20,000 **microcut** family users worldwide who are enjoying the benefits of computer-controlled cutting. There are four basic operations—

- Turning the power on and getting started.
- Manual operation.
- Programming and reviewing jobs.
- Automatic operation.

microtrack can be installed on any type of guillotine paper cutter that uses a leadscrew for backgauge movement. Other methods of backgauge movement, such as chain or cable drive, cannot assure the accuracy. In these cases it is suggested that either a leadscrew kit be installed or that the machine be replaced.

microtrack is not intended to control the knife or the clamp on the paper cutter. *Anything* dealing with the clamp or knife is *not* to be tampered with or adjusted during the installation or operation of **microtrack**. *Any* alteration to the knife or clamp safeties, circuits, or operation, or *any* installation technique that compromises the safety of anyone working on or around the machine is STRICTLY FORBIDDEN. **Guarding may need to be altered or added** to offer proper protection when **microcut** parts and assemblies are added to the machine. *Never* operate the machine until *all* guarding is complete. *All* moving parts and hazards must be covered in such a way as to prevent accidental contact of *any* sort. Any nip, draw-in, crush, or shearing hazard must be evaluated and eliminated.

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Installation Basics

The **microtrack** installation is basically mechanical. It involves mounting the display console; the shaft encoder to signal backgauge movement to the computer; a cut sensing switch; and a power supply. All cables are plug-in type.

The following text gives a conceptual approach toward the installation. Use this manual to learn what each component must do. Mount each component in the fashion best suited to fulfill its purpose.

microtrack is a retrofit system so every installation is unique. Install the components for function as well as fit. The brackets are designed with extra holes and slots. They are easily modified, and can be adapted for almost any requirement. The major installation variable is the encoder sprockets. If the leadscrew diameter is known at the time of shipment, the leadscrew sprocket will be bored to the proper dimension. Otherwise, it may be necessary to have the sprocket bored to size. Check the sprocket before beginning the installation. If it must be bored, take care of this NOW to avoid unnecessary delays later. Cut the sprocket in half to allow easier installation.

Every display console is identical regardless of machine type. A setup routine is resident in the computer to allow simple adaptation to any machine. This routine *must* be completed on every installation in order for **microtrack** to know the machine it is installed on and to operate safely and correctly.

Inspect the machine to insure all operations are correct. Fix problems now, not later.

Guide and Tool List

You may want to adapt this list. The procedures are listed in their order of execution, as well as the tools required to proceed. An installation will be faster if all tasks in a given section are completed before starting the next.

DETERMINE ALL DRILLING LOCATIONS—Mark all holes that will be drilled to complete mounting of ALL components, including holes to secure ty strap brackets, at the same time.

- Slide T square with level
- Pencil

DRILL ALL HOLES—Protect the machine from drill shavings, then drill all holes necessary to mount all components. Use the pilot drill for all holes before increasing drill size to save time. Be careful not to drill any hole too large as the drill size is increased.

- Paper and rags to cover machine surfaces
- Pilot, #7 high speed drill bits
- Electric hand drill
- Extension cord

TAP ALL HOLES—Complete all threads for all of the components.

- 1/4-20 tap
- Tap handle (ratchet type is convenient)
- Tapping fluid

CLEAN THE MACHINE—Clean the machine to prevent future damage.

- Brush
- Rags
- Magnet

BOLT AND SECURE ALL PARTS TO THE MACHINE--

- 7/16 wrench and socket
- Phillips screw driver

ROUTE THE CABLES—Complete wiring of all components. Use ty straps to secure the wiring.

- Side cut pliers
- Wire strippers
- Screwdrivers

Mechanical Installation

Display Console—The display console is the operator's interface with the system.

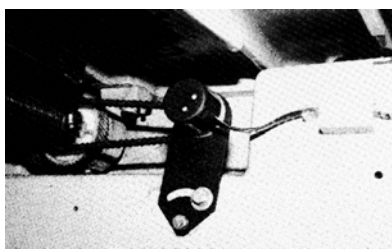
1. The display console should mount on the front of the cutter near the operator. The display mounts to the supplied bracket, or can be Velcro taped directly onto the machine.
2. Drill and tap the appropriate holes and mount the display so that it is secure.

Shaft Encoder—The shaft encoder sends pulses to the drive to indicate backgauge position.

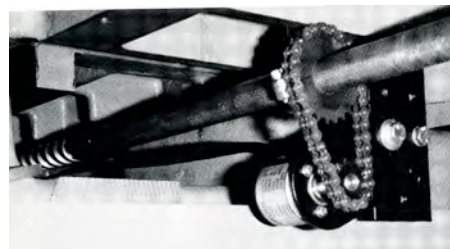
1. Use the shaft encoder mounting brackets supplied to mount the shaft encoder near the leadscrew.
2. Install a sprocket on the encoder shaft that will allow it to turn at least two, but not more than four turns for one inch (25 mm) of backgauge movement.
3. Clamp the sprocket to the leadscrew with the hose clamp so that it aligns with the encoder sprocket. Depending upon the machine, the sprocket may need to be bored, or cut in half. It is easier to assure that the sprocket faces align if the chain is wrapped around the sprocket while the hose clamp is tightened. Insure the clamp does not interfere with the chain.
4. Install the chain on the sprockets, making sure both sprocket faces are aligned. Adjust the chain tension so that it is snug but not too tight.



Polar rear mounting



Polar behind housing

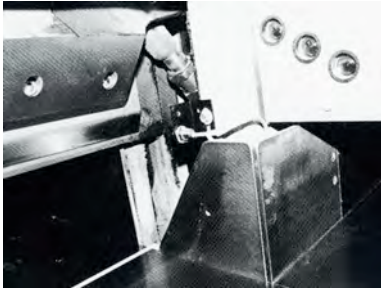


Typical front mounting

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Cut Sensor—This supplies ground to pin 5 when the knife is up.

1. Mount this sensor to the side of the opening in front of the knife bar so that it is tripped near the bottom of the knife stroke.
2. This sensor must be tripped for at least 1/4 second during the knife cycle to register a cut.
3. This sensor must only be tripped once per knife stroke. Beware the double-tripping effect that holes, lips, and bolt heads can cause.



Power supply—This supplies 12VDC power to operate the system.

1. Plug this into any convenient wall outlet of the appropriate voltage.

Wiring and Power

Use the ty straps and ty strap mounting bases to secure all cables appropriately.

It is easiest to plug the cables into the display console if the cover is first removed. This can be done by unscrewing the four Phillips screws (2 on each side) from the console and lifting the cover off.

Plug the six pin cable into the cut sensor. Route the cable along the desired route and plug it into the display console.

Plug the eight pin cable into the encoder. Route the cable along the desired route and plug it into the display console.

Route the power cable to the display console. Plug it in.

Leave the cover off until after the setup routine is completed. You will need to access the small switch on the front of the unit. If you place the cover back into position on the display you will need a small pin to activate this switch.

Final Check

Insure that—

- The machine is fully cleaned from the installation.
- All parts are securely mounted to the machine.
- The encoder chain is aligned.
- The encoder sprocket clamp does not interfere with the chain or machine.
- All cables are secure and clear of all machine operations.
- All machine operations are functioning properly.

Review the machine for any areas that could create hazards such as pinch points or exposed parts. Guard as appropriate. **Guarding may need to be altered or added** to offer proper protection when **microtrack** parts and assemblies are added to the machine. *Never* operate the machine until *all* guarding is complete. *All* moving parts and hazards must be covered in such a way as to prevent accidental contact of *any* sort. Any nip, draw-in, crush, or shearing hazard must be evaluated and eliminated.

Show the operator the installation, making sure he is comfortable with all mounting locations. The set up routine (next page) **must** be completed to allow correct operation. It is a good idea to go through this routine with the operator so that he is familiar with the approach.

Setup Routine

All **microtrack** units must be told what type of machine they have been installed on before they can operate properly. A resident setup routine exists to allow this to be done easily. At initial power on—

1. Depress and hold <CALIBRATE> by pushing a straightened paper clip into the small hole on the front of the **microtrack** panel. Switch the power on. Release <CALIBRATE>.

NOTE -- <CALIBRATE> can be pushed anytime before the software version screen completes.

2. The display will change intensity. When the desired brightness appears, press <CALIBRATE>.
3. The display will flash .000 in, then .00 in, then .000 cm, .00 cm, .00 mm, .0 mm, .00 sun, .000 sun, and back to inches. When the units you desire appear in the display press <CALIBRATE>.
4. The display will flash 320.000 *units*. If this is too big for your machine, tap <PROGRAM> until an appropriate value is shown. Move the gauge to EXACTLY the displayed value. Press <CALIBRATE>.
5. The display will flash a new value. Move the gauge to EXACTLY this value. Press <CALIBRATE>. NOTE: This value will only be accepted after the computer has seen adequate motion from the shaft encoder. If there is a problem at this step check the encoder and encoder cable for good electrical and mechanical connections. Unplug the cable and plug it back in several times at each end to help clean the contacts.

NOTE -- The reference positions are used by the computer to calculate the leadscrew pitch. These must be exact in order to allow the computer to know (and display) the true position.

6. The display will show .000 (or .00 for mm), and then start counting up slowly (it will eventually return to 0). This represents the precision that will be required in automatic operation before the CUT READY indicator will operate. Press <CALIBRATE> when the required settling accuracy is shown on the display.

NOTE -- If the accuracy is too fine, it will be difficult to position the gauge during automatic operation.

The leadscrew pitch and calibration value will be calculated automatically. The system is ready for use.

Operation

Supply power to the system. The software versions will appear on the screen and certain tests will be performed. The display will then show a blinking number. Move the gauge to this position and press ANY KEY.

NOTE -- *If the gauge is off slightly, **micro track** will calibrate exactly with the first full shaft encoder revolution.*

MANUAL OPERATION -- Press <**MANUAL**>. The display will show the true position.

PROGRAMMING OPERATION -- Press <**PROGRAM**>. Knife symbols will show in the middle of the line. Move the gauge to the first cut value. Operate the knife. Continue this procedure until all cuts are entered. <**PROGRAM**> can be used to review the job, allowing cuts to be changed.

NOTE -- *Once a job is programmed, it will remain in memory (even with power off) until a new job is programmed over the old one.*

AUTOMATIC OPERATION -- Press <**AUTOMATIC**>. The display will show the correct position briefly and then the distance to the correct position. Move the gauge in the direction of the arrows until *s appear in the display. <**PROGRAM**> can be used to step through the job.

ADJUSTING STOP VALUES -- Move the gauge to the correct position (*s in display). Move the gauge out of position until knives appear in the display (about 3/4 inch -- 2 cm). Position the gauge correctly and operate the knife.

microtrack constantly checks for errors or mistakes. If a problem is seen a message with a numbers and Xs may appear on the screen. These errors are—

- 0—The zero index pulse from the encoder is not working at all. Check the connections by unplugging the power line and then unplug and plug in the cable at the encoder and the display console several times. It may be necessary to replace the encoder.
- 1—The zero index pulse from the shaft encoder was missed. Check the connections by unplugging the power line and then unplug and plug in the cable at the encoder and the display console several times.
- 2—The zero index pulse from the shaft encoder is incorrect. Check the connections. Make sure the encoder is turning between 2 and 4 turns per inch (2.5 cm).
- 3—An error has occurred in the memory. You may need to go back through the set up routine.

DECLARATION BY THE MANUFACTURER
(Directive 89/392/EEC, Art. 4.2 and Annex II, sub B)

C&P Microsystems, CA, USA herewith declares that the product covered by this instruction manual is intended to be incorporated into machinery or to be assembled with other machinery to constitute machinery covered by Directive 89/392/EEC, as amended and that the following (parts/clauses of) harmonized standards and national technical standards have been applied:

EN 50082-2: 1995 “Electromagnetic Compatibility – Generic Immunity Standard, Part 2: Industrial Environment”

CISPR 22: “Limits and Methods of Measurement of Radio Interference Characteristics of Information Technology Equipment”

FCC Part 15 stating: “This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.”

FCC warning stating: “Changes or modification not expressly approved by the party responsible for compliance could void the user’s authority to operate this equipment.”

ISO/IEC Guide 25 in the category of “Electrical (EMC)”, including in its scope the EMC standard AS/NZ 3548 under the authority of the A2LA and NATA laboratory accreditation agreement.

Class A warning requirement that “This is a class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

The Japanese standard for “Voluntary Control Council for Interference (VCCI) by Data Processing Equipment and Electronic Office Machines, Technical Requirements” which is technically equivalent to CISPR 22 (1993).