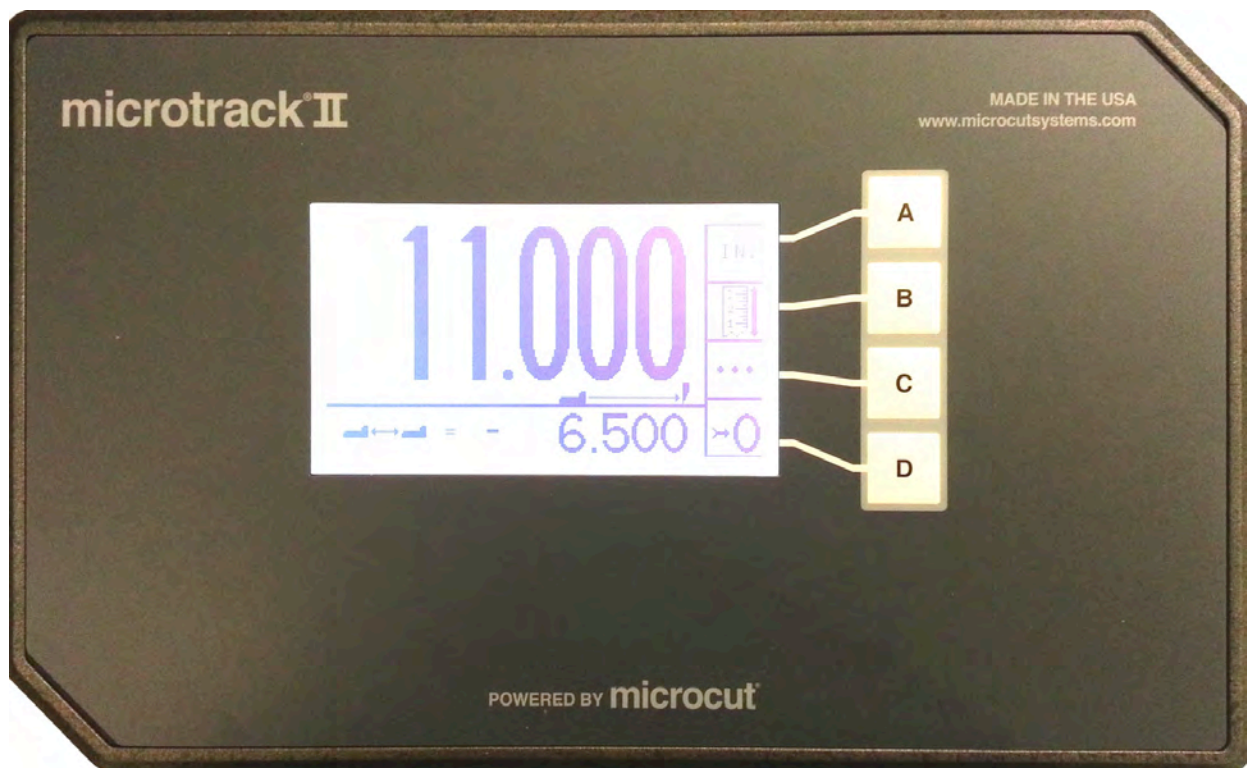


microtrack II[®]

Owner's Manual



microcut[®]

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C&P microsystems

Date of installation	
Installed by	
Machine manufacturer	
Machine model	
Machine size	
Machine serial number	
microtrack serial number	
Extras	
Notes	

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NOTE – Revisions occur as requests are made from operators, supervisors, and others. This manual may be incomplete. Refer to our website referenced on the cover sheet for updated material.

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While **microtrack** is designed specifically to fit on guillotine type paper cutting machines, it may be installed on a wide variety of machines that require position information. The system can show negative positions as well as positive. The lower part of the display can be used for displacement information or for defining an origin to work from. This document is written toward the paper cutter application but covers other options as well. You may have an application beyond our sight. Please contact us directly if you have special needs, ideas, or questions.

INTRODUCTION

Thank you for purchasing a **microtrack** position indication system for your paper cutter. Having done so, you have joined tens of thousands of **microtrack** and **microcut** users worldwide who are enjoying the benefits of computer controlled cutting. **microtrack** is a state of the art system for indicating back gauge position with an intuitive, easy to use operator interface.

The **microtrack** consists of –

- A display console to interface with the operator.
- An encoder to indicate back gauge movement to the display.
- A plug in power supply for the display.
- Brackets, hardware, and cables for installation.
- This Owner's Manual.

After turning the power on you merely position the back gauge to close to an exact inch (or cm, or mm, or sun), use the middle push buttons to indicate this position on the display, and press the top (calibrate) button. **microtrack** will automatically adjust the position during the first revolution of the shaft encoder so that it is exact. The large numbers at the top indicate the current back gauge position. The smaller numbers at the bottom indicate the distance moved. And the right side of the display defines the operating button functions for: Fine calibration, Zero the distance moved, and Select the units of measurement. The buttons will change function depending upon the operation selected.

Many of the features you will find in **microtrack** have resulted from ideas from operators, owners, dealers, and service people throughout the world. If you have any suggestions, we encourage your input. Where possible, we will make the revisions and update your unit. Our special thanks to all who have helped make **microtrack** and **microcut** the world leader in cutter automation.

Requirements for installation and use include but may not be limited to –

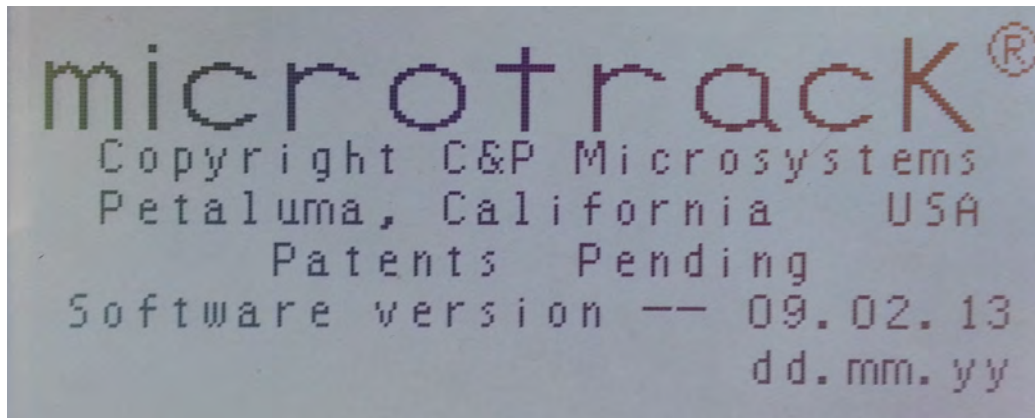
- The machine is to conform to present safety requirements in your area.
- Primary power is to be 110/220 \pm 10% VAC, 50/60 Hz. Check the rating on the supplied power supply.
- Supply output power to the display can be VAC or VDC from 12 to 24 \pm 10%
- The installation is to be performed per the instructions included in this manual.
- All of the machine's safety elements must remain intact and correctly functional. Any guards that are removed to perform the installation must be re-attached in an appropriate manner.
- All nip, pinch, crush, or cutting zones must be properly guarded.
- A paper cutter can be a dangerous machine. Only properly trained and supervised personnel should operate this equipment.

NOTES FOR APPLICATIONS THAT REQUIRE NEGATIVE MEASUREMENTS –

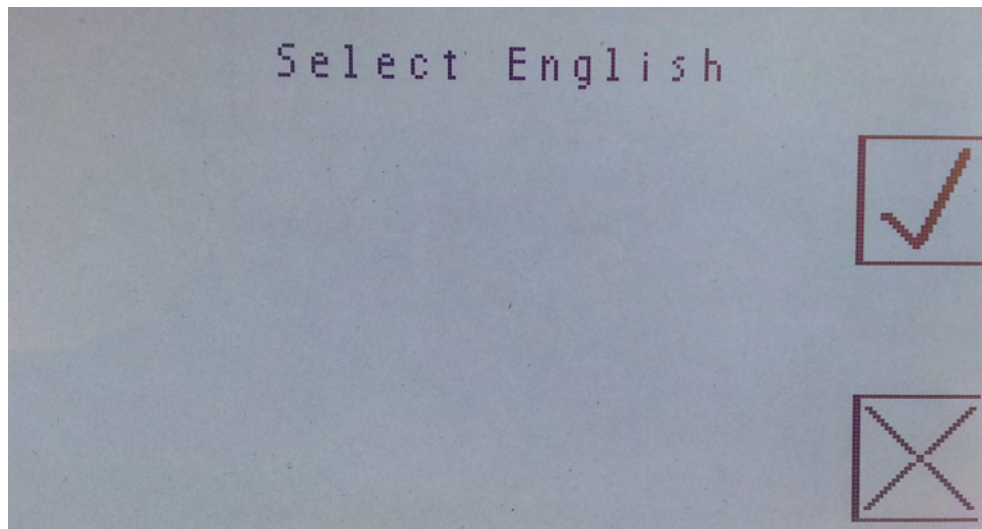
- **microtrack** will allow negative numbers to be shown as well as positive. This allows the system to operate on saws, mills, and other applications where measurements may want to be tracked in both positive and negative values.
- Negative position numbers convert to a smaller font with a “-” sign in front. The smaller font is intended to minimize errors in readings when flipping between positive and negative.
- All reference values must be entered as positive numbers. The system will not allow negative entries. This includes the reference positions in the Set up Routine and the initial calibration value after power on.
- Fine calibration adjustments can be made in either positive or negative readings.
- The bottom of the display is used for showing displacement. This could also be used for applications requiring motion in either direction from a set or variably defined origin.

POWER ON

The ON/OFF switch is located on the right side of the display console near the bottom. At power on the screen will indicate the date of the software in your system –



After four seconds this screen will automatically change to the Language Selection screen –



The first language shown is the last one selected. Press the **X** button for a different language or press the **CHECK** button to accept the one displayed.

The memory chip will be checked to make sure the values for operating on this machine are valid. If there is a problem with the data in the memory this will be indicated on the screen and the Set Up Routine will be forced (see Error Messages and Set Up Routine later in this document). The memory is erased before shipping so that the system will force you to complete the Set Up Routine. Without the Set Up Routine, **microtrack** does not know what type of machine it is installed on and cannot display the correct position. Defaulting to the Set Up Routine at the very first power on is normal.

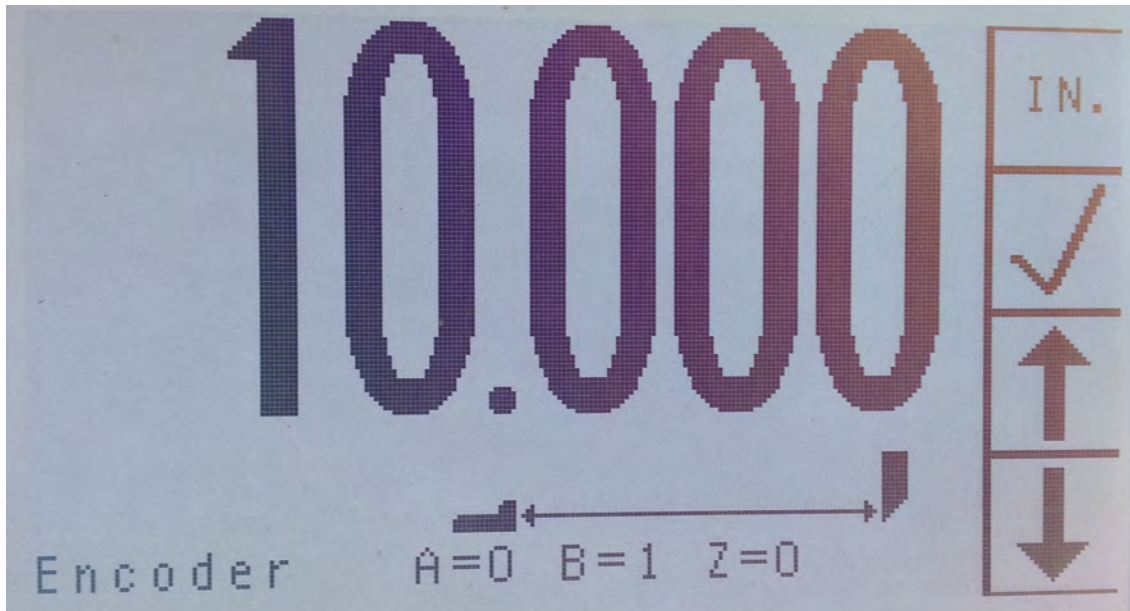
If everything is OK then the Calibration Screen (next page) will appear.

NOTES –

- Language is used to indicate errors that may occur. Language is not required for the basic operation of the system. Prompt translations can be verified by pressing the lower button while holding in the top button at the Language Selection screen. Tap any button to scroll down the list. If your language is not available, please translate from this list and supply this information to C&P Microsystems. We will do our best to add this to the system and update your unit at no charge. Line lengths should not exceed 30 characters.

POWER ON CALIBRATION

At power on **microtrack** does not know where the back gauge is. The screen after the Language Selection screen is for the calibration –



At the Calibration screen –

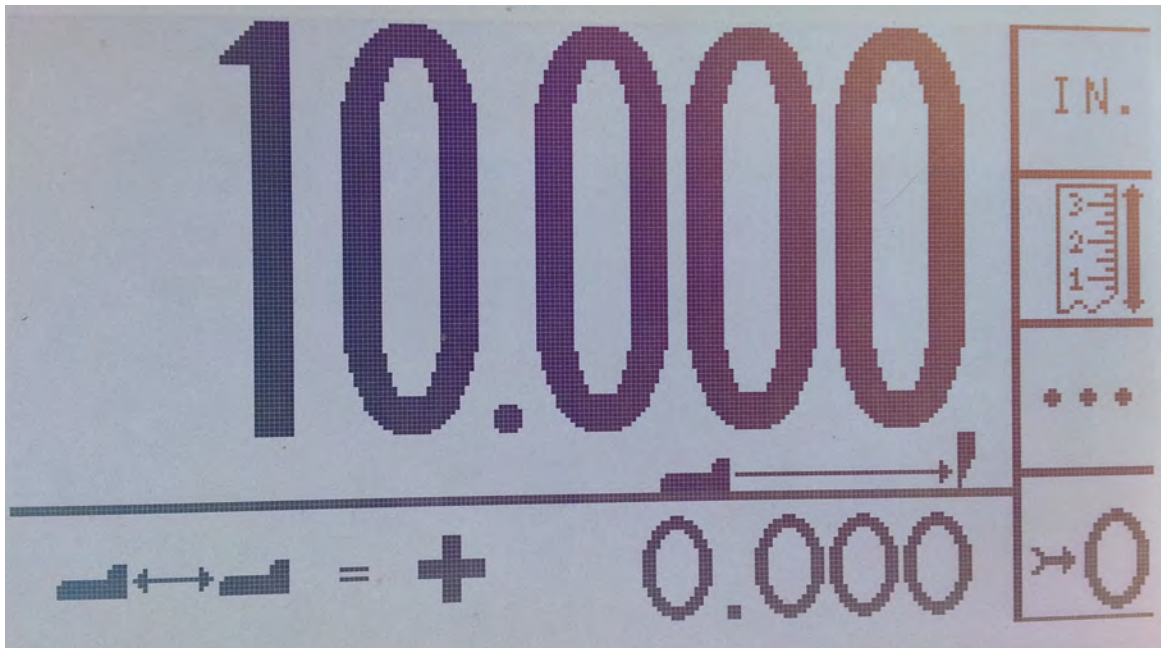
- Use the **TOP** button to select the units of measurement (inch, cm, mm, or sun).
- Move the back gauge to close to an exact number of the selected units. See NOTE below.
- Use the **ARROW** buttons to adjust the number in the display to the position the back gauge is at. To make large adjustments, hold these buttons in and they will repeat more and more quickly.
- Press the **CHECK** button to accept this position.

NOTES –

- **microtrack** will auto correct the position value with every turn of the shaft encoder. The calibration value you use should be as accurate as possible but does not need to be exact. Simply move the gauge a small distance after the calibrate key is pressed and the position will be exact.
- The encoder signals are shown on this screen to allow diagnosis should a mechanical or electrical connection (or the encoder) fail. The A and B signals should flip from 00 to 01 to 11 to 10 to 00 when moving in one direction and in the opposite order if the direction is changed. The Z (zero set that occurs once per turn of the encoder) signal will change from 0 to 1 or 1 to 0 each time the zero set is seen.

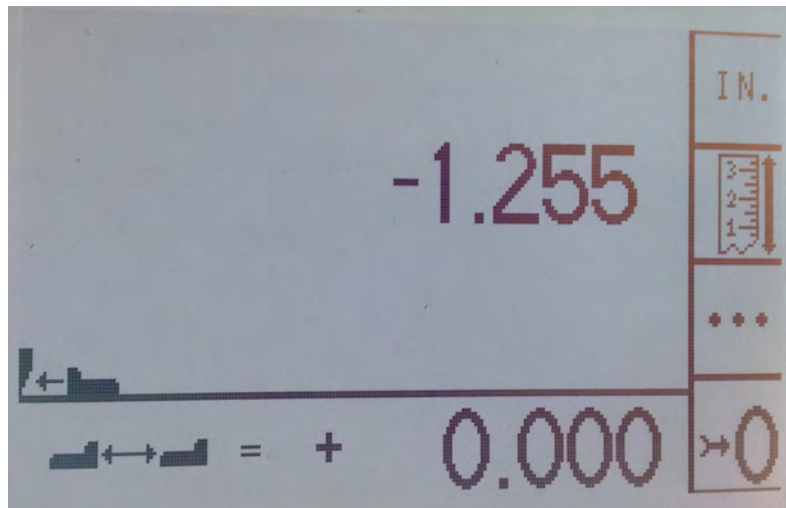
STANDARD OPERATION

After calibration the Operating screen will appear. This screen indicates the back gauge position, the units of measurement being used, and the push button operations –



The top number shows the absolute position of the back gauge.

The lower number shows the distance that the back gauge has moved. Press the $\rightarrow 0$ button to 0 the distance moved. This will allow you to move the gauge an exact amount without doing math.



The gauge icon below the position moves back and forth relative to this position. The system scales the gauge position from left (max rear which is the Set Up Routine rear reference value) to the right (0). If you have an application (saw, mill, lathe) that goes beyond 0 (negative numbers), when this occurs the gauge icon will flip to face in the opposite direction and the knife and arrow will be to the left side of the display.

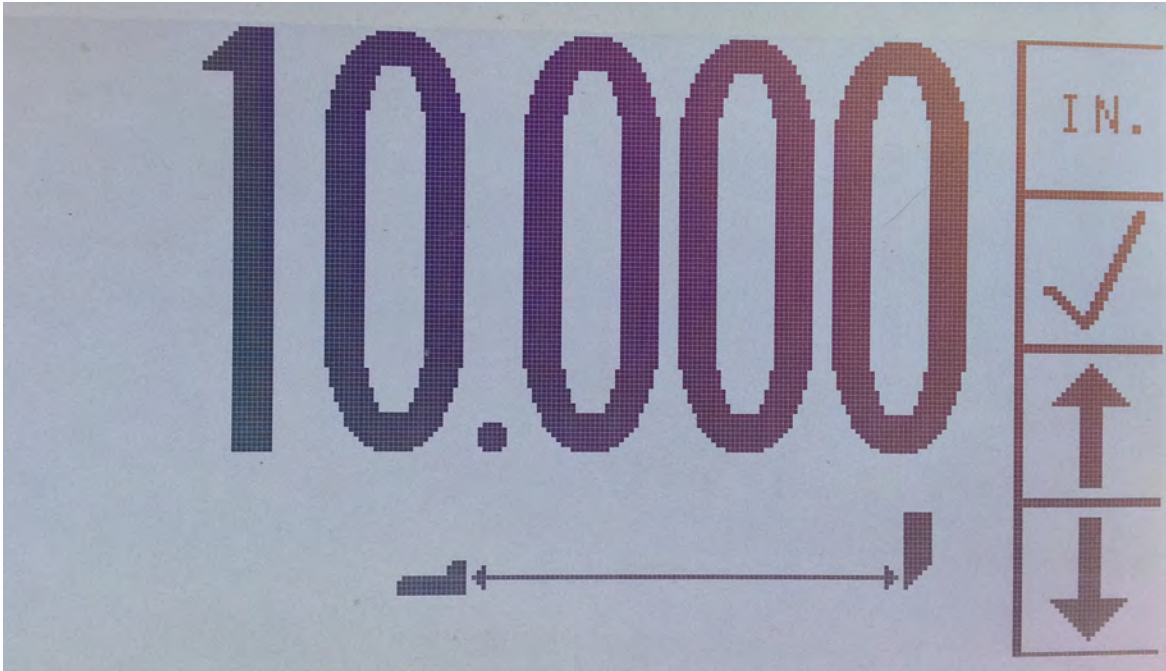
Press the **TOP** button to change the units of measurement (cycles from inches to cm to mm to sun and back to inches).

Press the **RULER** button to make fine adjustments to the calibration (see the next page).

Press the **...** button to enter other operating modes (Program and Automatic – see later in this document).

FINE CALIBRATION

The Fine Calibration Routine is used to make adjustments to the back gauge position. From Standard Operation press the second button from the top. The screen will shift to –



At this screen –

- Press the **ARROW** buttons to move the displayed value up or down. To make large adjustments, hold these buttons in and they will repeat more and more quickly.
- Press the top button to change the units of measurement.
- Press the **CHECK** button when the display agrees with the back gauge position. This will save the new value.

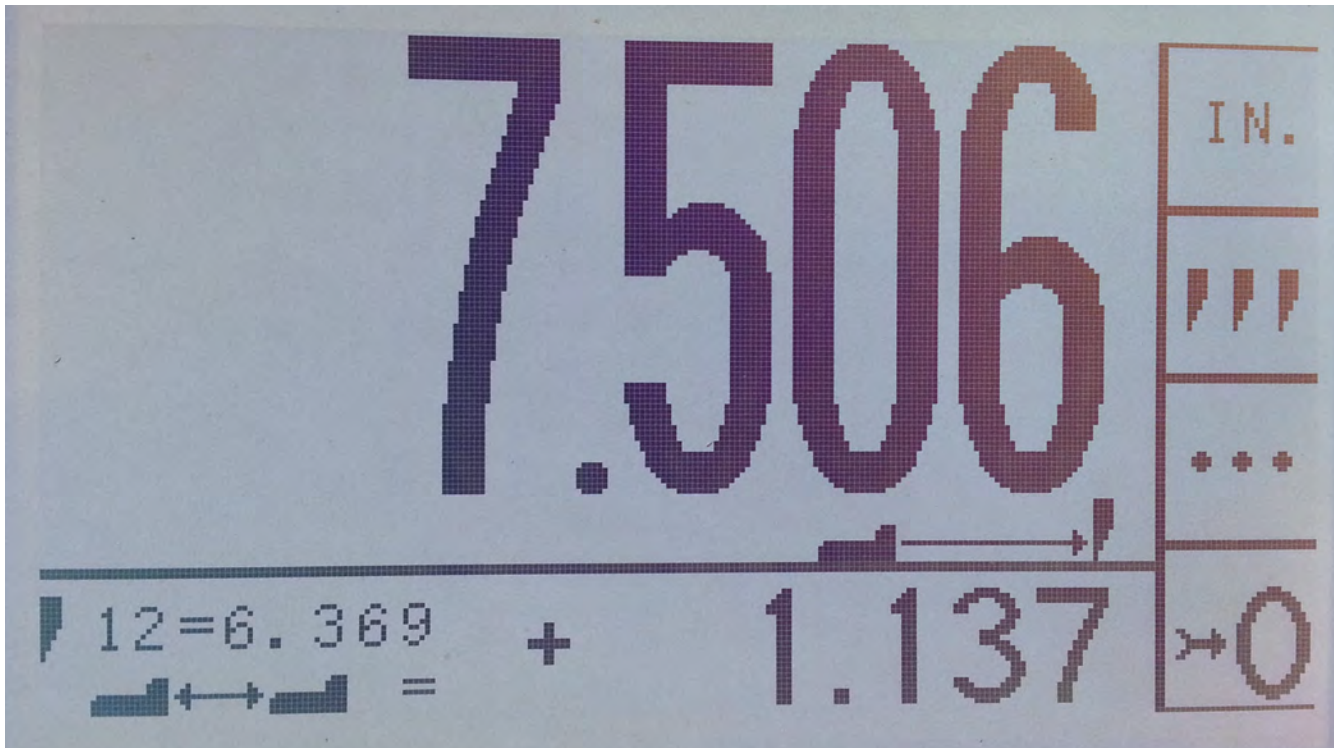
NOTES –

- **microtrack** measures the position of the encoder and thus the lead screw. Always approach a location from the rear to eliminate backlash.
- Accuracy can suffer if the encoder sprockets are loose or if there are mechanical problems.
- Accuracy is dependent upon the encoder pitch calculated in the Set Up Routine. If the reference positions used were not accurate, the system will not count one for one with the back gauge movement. In this case you will be able to calibrate at one point, but the error in the position will increase as you move away from this point.

PROGRAM OPERATION

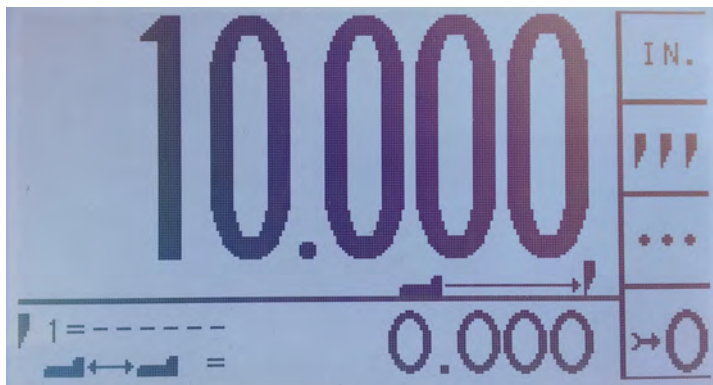
There is room for one job of up to 50 cuts in the job memory. Press the . . . key from the standard operating mode and the second key down will appear as three knives. This signifies that you are in PROGRAM operation and are ready to make cuts. The cut number in the lower left corner will indicate the first cut on the last programmed job. Press the . . . key again to use this job in AUTOMATIC operation (see next page) or follow the instructions below to program a new job –

- Move the gauge into position and press the second key down to enter this value (or if you have the optional cut sensor installed you can simply make the cut).
- The cut number in the lower left corner of the display will show the last cut that has been programmed.
- Continue to do this until all cuts have been made. Press the . . . key to go to AUTOMATIC operation (see the next page).



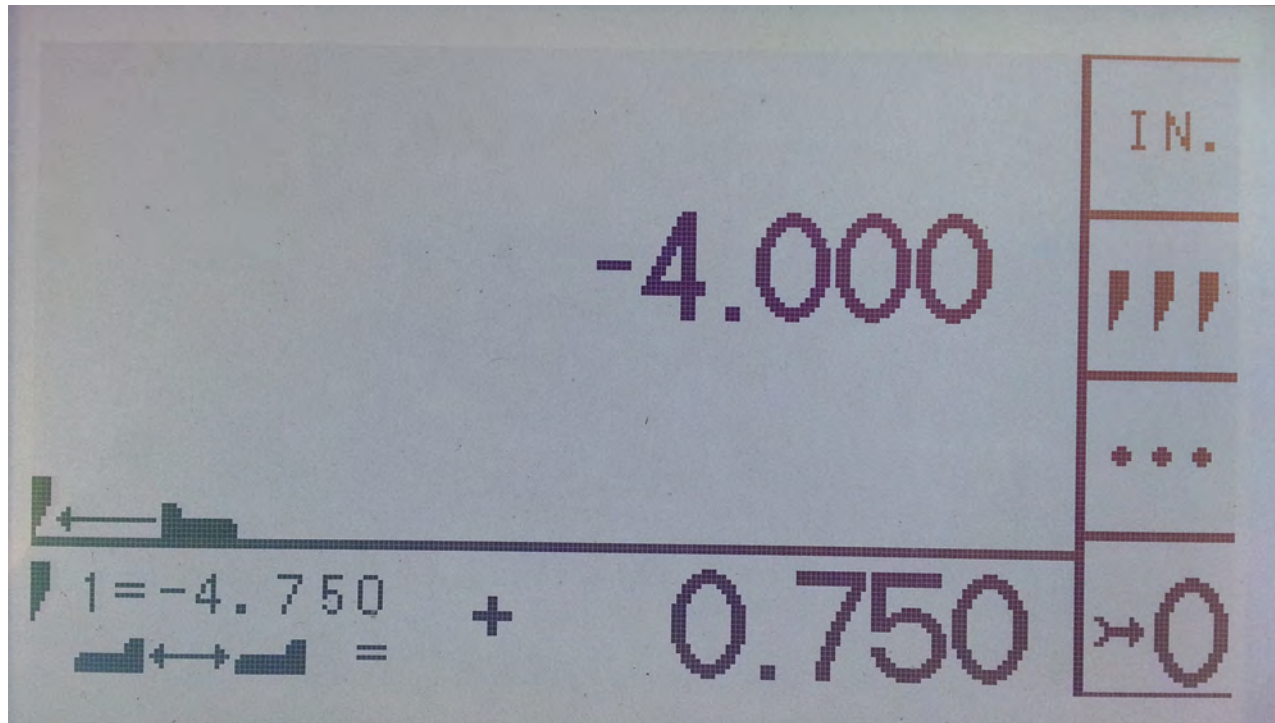
NOTES –

- The previous job will erase as soon as you enter the first cut.
- To use the existing job press the . . . key to proceed directly to Automatic Mode (see next page).
- Programming can be done in both positive and (in machine tool and saw installations) negative values.



If there is no programmed job in memory then the target information will be dashes. If this is the case the . . . key will move you back to the STANDARD operating mode.

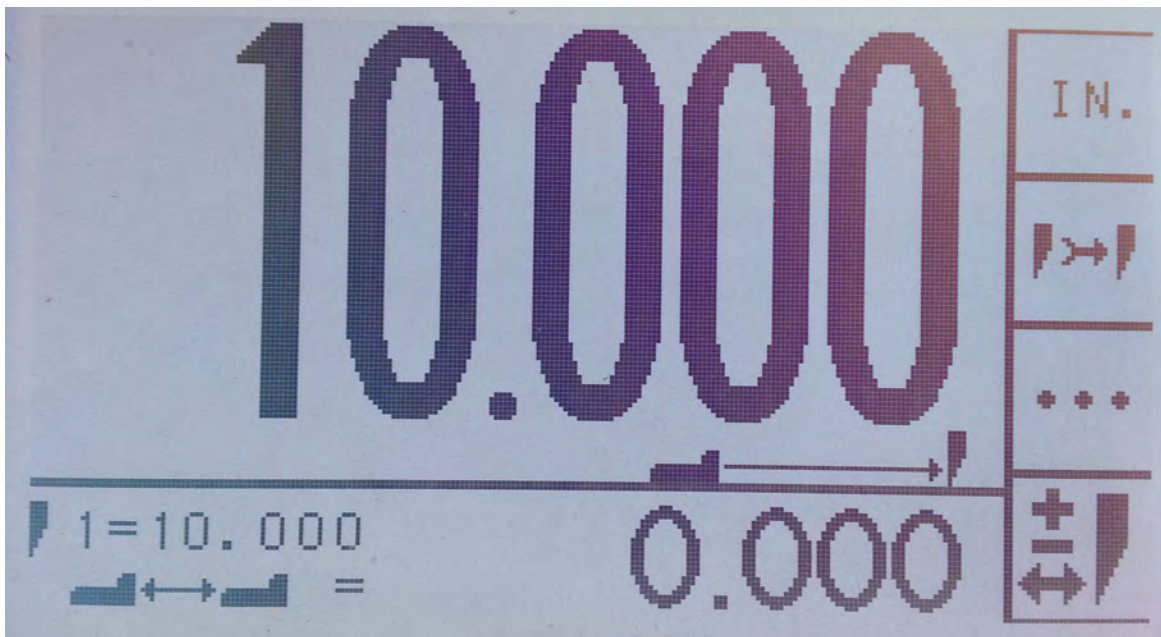
Negative numbers can be programmed as well as positive numbers –



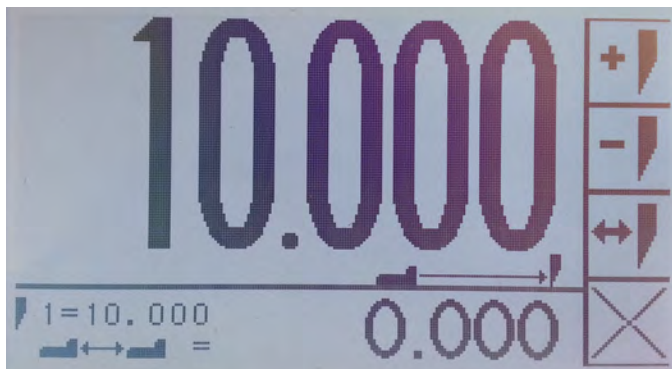
AUTOMATIC OPERATION

There is room for one job of up to 50 cuts in the job memory. Press the . . . key from PROGRAM mode and the second key down will appear as a cut to cut icon. This signifies that you are in AUTOMATIC operation. If PROGRAM was used to enter new cuts then that job will be loaded. If no new cuts were programmed then the last programmed job remains in memory.

- The cut number in the lower left of the display will indicate the programmed location.
- The lower number to the right of this will indicate the distance to move the gauge to be in position. NOTE: This number is the error in the position. A + sign indicates that the gauge is too far back. A – sign indicates that it is too far forward.
- When you have made your cut press the second key down to advance to the next value (or if you have the optional cut sensor installed you can simply make the cut).
- The cut number in the lower left corner of the display will increment indicating the next cut has been loaded.
- Continue to do this until all cuts have been made.
- The job will return to cut 1 after the last cut is made.
- Press the . . . key to return to STANDARD Operation.



Press the bottom key to enter the Editing mode to insert (in front of the current cut), delete, or modify a cut position –



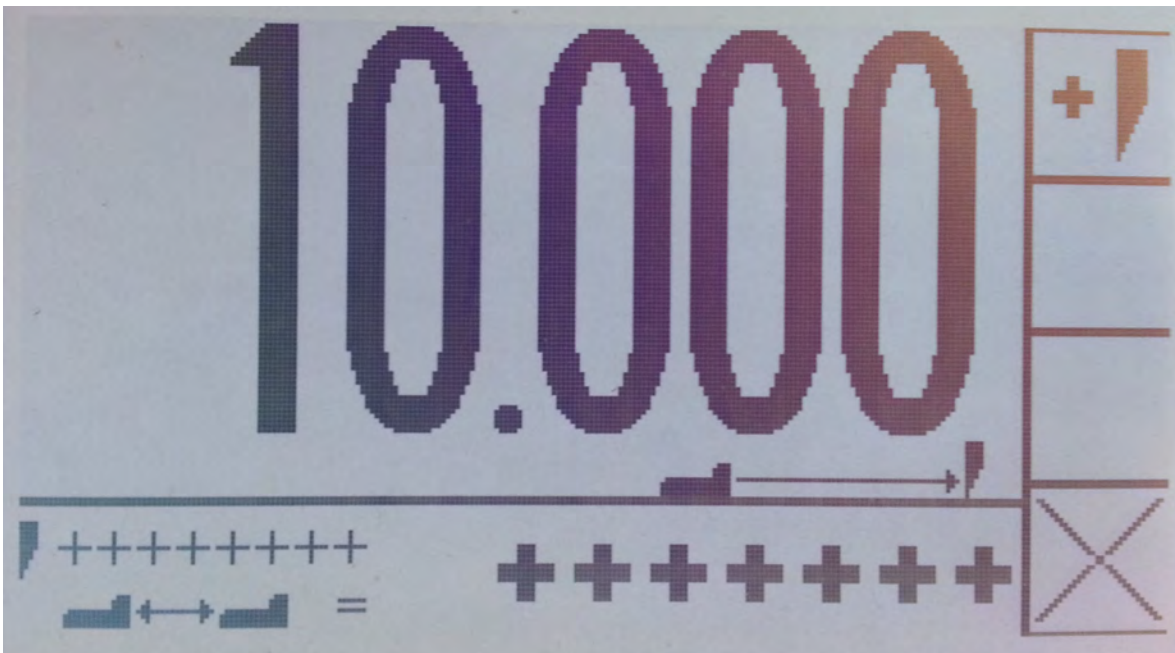
Program editing is only done with the keys. Operating the knife will not adjust the cut position. To insert a cut move the gauge to the location to insert and press the top button. To delete the displayed cut press the second key down. To change a cut, move the back gauge to the desired location and press the third key down. Press the bottom key to exit without changes.

If all 50 available cut locations are programmed the Insert Cut option will not appear.

When you come to the end of the job the display will change to + signs –



Press the second button down to move to cut 1 or press the bottom button to insert a cut –



NOTES –

- Insert will not operate if you have 50 cuts already programmed into the job.
- The options for delete and change cut will not appear at the end of the job since these are not available.
- If you delete all of the cuts the unit will enter STANDARD operation.

ERROR MESSAGES

The control system is constantly checking to make sure that everything is correct during operation. If anything appears to be wrong, a message will appear on the screen –

1 - Missing encoder zero set!!

The encoder supplies 2000 counts per revolution. It also supplies a zero set pulse once per revolution. We live in an industrial environment. Electrical disturbances may cause some of the counts to be missed. The **microtrack** computer will automatically correct to compensate for missed counts. To do this, the computer must see the zero set occur within a few counts of plus or minus 2000 in order to auto-correct the position. If too many counts are seen without a zero set pulse within this range then the system will shut off and a restart will be required. Check all connections carefully. See the NOTE at the bottom of this section.

2 - Mirrored zero value error!

The “last zero set” value is tracked and used to calculate the current position. Accuracy here is critical. The last zero set position value is mirrored in the computer for safety. This value is verified 1000 times a second. If the values do not agree then the system will shut off and a restart will be required. Check the power supply and connections. See the NOTE at the bottom of this section.

3 - Units error!!!

At power on the memory is checked for being valid. The units information must have one and only one unit selected. If this is not the case then this error will appear and the Set Up Routine will be forced. If this occurs more than once there may be a problem with the memory chip.

4 - Encoder pitch is too small

Occurs at power on – The memory is checked for being valid when power is applied. The encoder pitch in cm is saved in the memory. There must be at least one encoder pulse per .001 cm. If this is not the case then this error will appear and the Set Up Routine will be forced. If this occurs more than once there may be a problem with the memory chip.

Occurs in the Set Up Routine – This error will occur in the Set Up Routine if there was not at least one counting pulse per .001 cm when the front reference position is entered. Details will be displayed on the screen indicating the position and count values for the references as well as the total motion seen. The encoder supplies 2000 counts per revolution, so the gauge should not move more than 2.000 cm per turn of the encoder. Refer to the Installation and Set Up Routine sections of this document for more information.

5 - Encoder pitches not equal!

At power on the memory is checked for being valid. The encoder pitches (turns per inch, cm, mm, and sun) are saved in the memory. These must all be correct relative to each other. If this is not the case then this error will appear and the Set Up Routine will be forced. If this occurs more than once there may be a problem with the memory chip.

6 - Incorrect Preset value!!

At power on the memory is checked for being valid. The calibration (preset) value is calculated from valid locations for the zero set signals that occur once per encoder revolution. If these values are inconsistent this error will appear and the Set Up Routine will be forced. If this occurs more than once there may be a problem with the memory chip.

CONTINUED ON NEXT PAGE....

7 - No motion seen!!

This error will appear in the Set Up Routine if there was no motion between the rear reference position and the front reference position. You will be re-directed to the rear reference to enter new values. Check the A, B, and Z values in the bottom of the display as the encoder is moved to make sure that they are operating correctly. Check all connections, electrical and mechanical. See the NOTE at the bottom of this section. Refer to the Installation and Set Up Routine sections of this document for more information.

8 - Memory has been erased!!

Prior to shipping systems, the memory is erased to force the Set Up Routine after the mechanical installation is completed. This is the message that will appear. If this occurs more than once there may be a problem with the memory chip.

9 – No more program memory!!

There is room for one job of up to 50 cuts in the job memory. If you try to enter more than 50 cuts this message will appear. Press any key to continue.

Set Up Routine is being forced

This message will appear to warn you that the Set Up Routine is being entered. The screen will clear after a few seconds.

Note on connections – No connection is good. Some connections are better than others but none are good. With power off unplug and plug in all connectors several times to improve connections. Avoid sprays and cleaners that might compromise the plastic components.

INSTALLATION BASICS

The **microtrack** installation is basically mechanical. It involves mounting the display console and the shaft encoder (that signals back gauge movement to the computer), plugging in the encoder and a power supply to the display, and then going through the Set Up Routine so the computer understands the machine it is installed on.

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 can be easily modified, and can be adapted for almost any requirement. Installation variables include the encoder sprockets. Both a 12 tooth and a 24 tooth sprocket with set screw are supplied for the encoder to allow a wide range of lead screw pitches. If the lead screw diameter is known at the time of shipment, the lead screw sprocket will be bored to the proper dimension. Otherwise, it may be necessary to have the sprocket bored to size locally. Check the sprocket before beginning the installation. If it must be bored, take care of this NOW to avoid unnecessary delays later. In the case of metal sprockets, you may wish to cut the sprocket in half after boring to allow for an easier installation. Otherwise drill and tap the hub for a set screw.

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 correctly.

INSTALLATION STEPS

You will perform the following mechanical steps, using the tools listed under each task, during the installation –

- Determine and mark all drilling locations...
 - Slide T square with level
 - Pencil
 - Punch
- Drill all holes...
 - Paper and rags to cover machine surfaces
 - Pilot and #7 high speed drill bits (this will vary if you use metric bolts)
 - Electric hand drill with extension cord
- Tap all holes...
 - 1/4-20 tap (this will vary if you use metric bolts)
 - Tap handle (ratchet type is convenient)
 - Tapping fluid for safe tapping, although a machinist will tell you not to use this on cast iron
- Clean the machine...
 - Brush
 - Rags
 - Magnet
- Bolt and secure all parts to the machine...
 - 7/16 wrench, hex wrench, and common screw driver for encoder and sprocket mounting
 - Hex wrench for display mounting
- Route the cables using ty-straps as necessary...
 - Side cut pliers

You may wish to adapt the above tool list per your preferences.

THE DISPLAY CONSOLE

The display console is the operator's interface with the system –



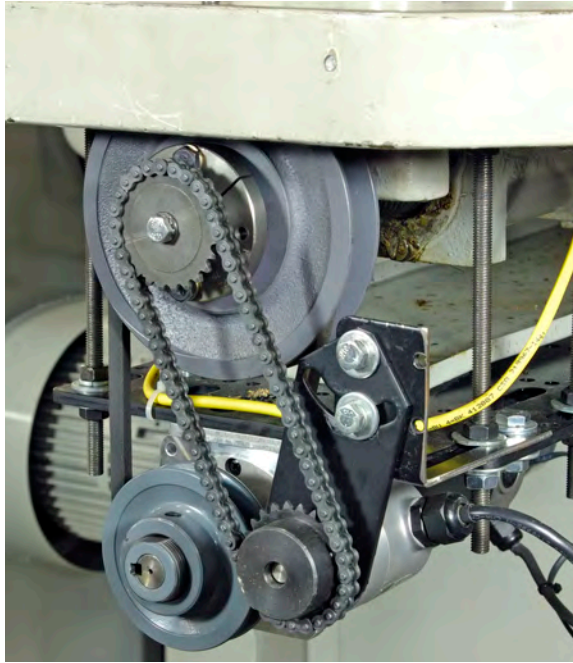
Shown above is an example of a **PLUS WS** display. The same mounting applies to the **microtrack**.

1. The display console should mount on the front of the cutter near the operator. The display rod can mount to the left or the right. This is secured with the Panavise mounting bracket. Attach this bracket to the machine based upon operator preference. You will need to drill 3 holes and tap them for the bolts you are using (1/4-20 are supplied).
2. Make sure the ON/OFF switch at the lower right side of the box is in the OFF position.
3. Route the supplied power transformer from the display console to a convenient outlet.

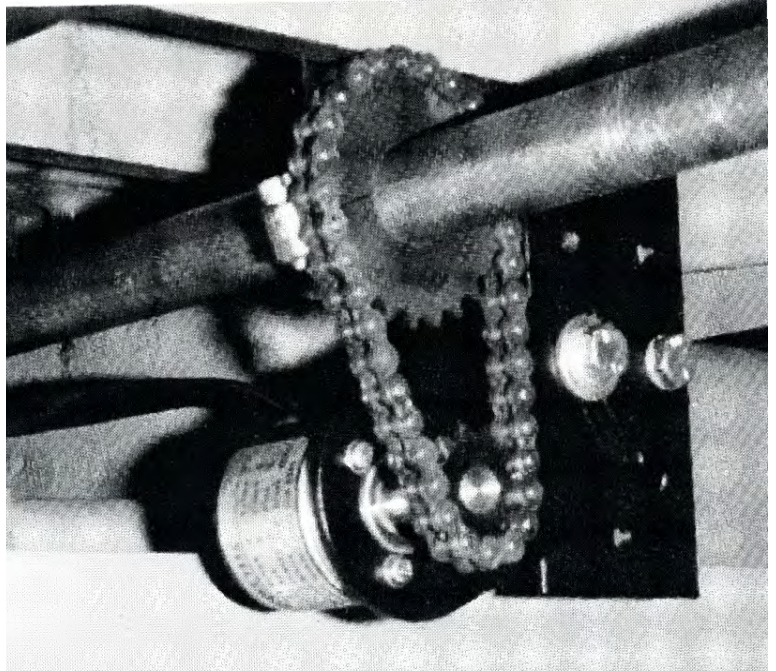
NOTE: If you are using your own supply this should be anywhere from 12 to 24 volts, VAC or VDC. Polarity is not important.

THE SHAFT ENCODER

The shaft encoder sends pulses to the drive to indicate back gauge position –



Rear mounting option with set screw



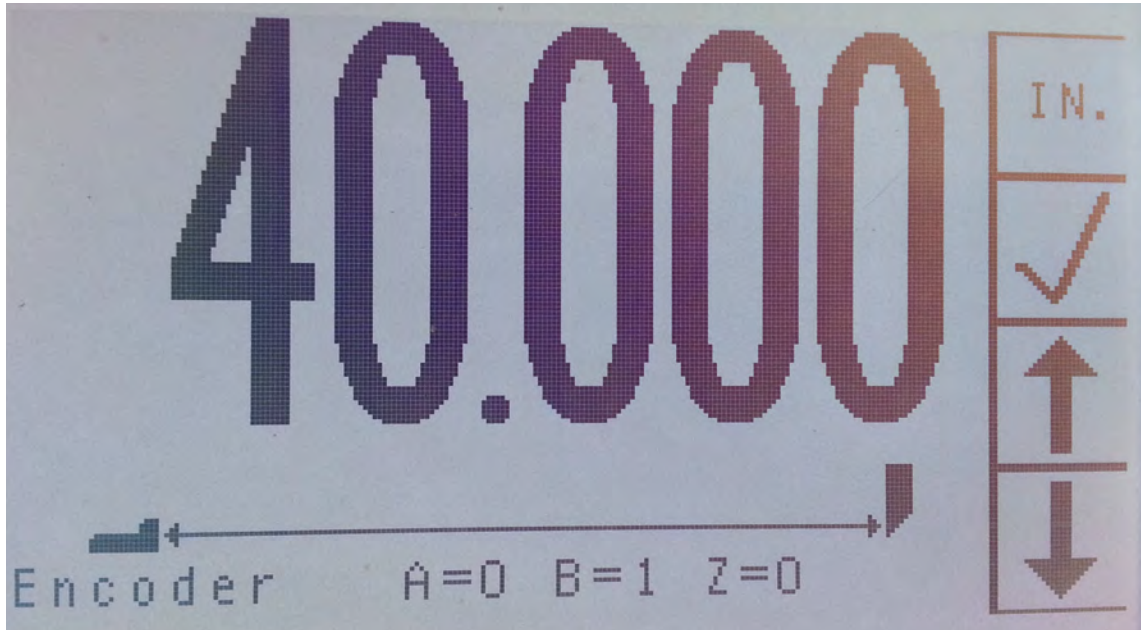
Front mounting option with split sprocket

1. Use the shaft encoder mounting brackets supplied to mount the shaft encoder near the lead screw.
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 back gauge movement.
3. Clamp the sprocket to the lead screw with the hose clamp so that it aligns with the encoder sprocket. Depending upon the machine, the sprocket may need to be bored and possibly 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 tight. The chain can be split and snapped back together to allow for any required length.
5. Route the encoder cable from the display taking care to not get the connector dirty. Plug the cable into the encoder.

SET UP ROUTINE

All **microtrack** units must be told what type of machine they have been installed on before they can operate properly. This routine only needs to be done once. The information is stored in memory and is verified at any power on. If the memory was erased (prior to installation) or an error exists the Set Up Routine will be forced.

Turn the switch on the lower right side of the display to the ON position. Select the language to be used. If the system does not have the machine parameters installed yet it will force the Set Up Routine –



You can also force the Set Up Routine by pressing and holding **ALL** four buttons at power on until the display indicates the memory is being cleared. Do this if **microtrack** is being moved to a different machine. After the screen clears you may select your desired language. The Set Up Routine will be entered. At the first screen –

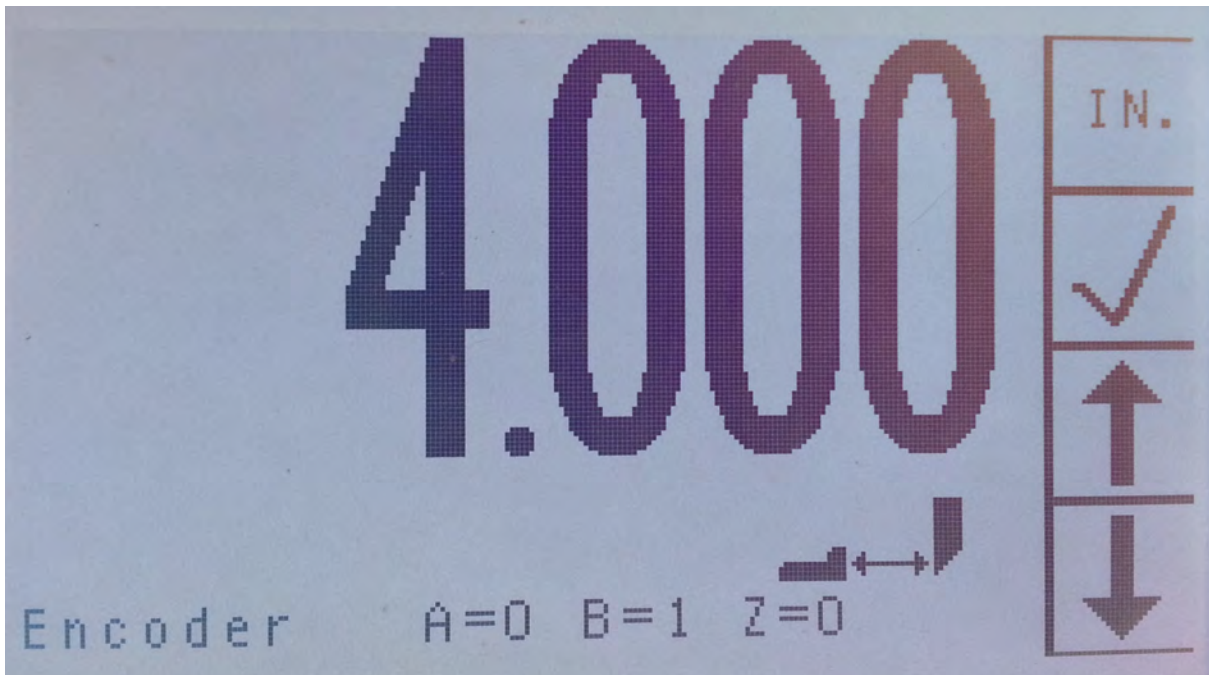
- Press the **TOP** button to select the units of measurement.
- Move the gauge to the **largest** exact number of units possible (but not more than 255 inch/cm/sun or 2550 mm).
- Press the **ARROW** buttons to adjust the display value to be the same as the back gauge position. To make large adjustments, hold these buttons in and they will repeat more and more quickly.
- Press the **CHECK** button to enter the value and advance to the next screen.

NOTES –

- The Set Up Routine requires that a rear and a front reference position be entered so the computer can calculate the distance the back gauge moves relative to the turns that the encoder makes, also referred to as the encoder pitch. It is very important that the distance traveled between the references be as exact as possible so that the pitch is accurate. HINT: If your machine has a set lead screw pitch (i.e. the back gauge moves exactly one inch, a half inch, 1 cm, etc. per turn of the screw), then use the units of that pitch and put a mark from the hand wheel (or lead screw pulley) to the table at the rear reference location. Then make sure these marks align before entering the front reference.
- The mm values scroll by 10s, not 1s. The reference must be an exact number of 10s of mm.
- The maximum rear reference the screen will accept is 255 inch/cm/sun (or 2550 mm). During operation the display can go as high as 999.999 inch/cm/sun (or 9999.99 mm).
- The relative back gauge icon will be full left for any position equal to or larger than the rear reference.
- The encoder signals are shown on these screens to allow diagnosis should a mechanical or electrical connection (or the encoder) fail. The A and B signals should flip from 00 to 01 to 11 to 10 to 00 when moving in one direction and in the opposite order if the direction is changed. The Z (zero set that occurs once per turn of the encoder) signal changes from 0 to 1 or 1 to 0 each time the zero set is seen.

CONTINUED ON NEXT PAGE....

After the Rear Reference is entered another screen will appear requesting a Front Reference –



At this screen –

- Move the gauge to the smallest exact number of units possible.
- Press the **ARROW** buttons to adjust the display value to be the same as the back gauge position. To make large adjustments, hold these buttons in and they will repeat more and more quickly.
- Press the **CHECK** button to enter the value and complete the Set Up Routine.

NOTES –

- Even though the **UNITS** button is shown, this key will not operate at this step.
- By entering reference values at the extremes of the machine we minimize accrued pitch error should one of these positions be a bit inaccurate. Nonetheless, accurate positioning of the back gauge as the reference positions are entered should be paid attention to.
- When the front reference is entered the computer will check for motion and a valid encoder pitch. Refer to Errors 4 and 7 in the Error Messages section of this manual. We require at least one encoder pulse per .001 cm of travel. The encoder gives 2000 counts per revolution, so we must have *at least* a full turn of the encoder for every 2.000 cm of back gauge motion. Change the encoder sprocket if necessary to get better gearing. If problems persist please copy the reference positions you have entered AND the number values for each position as they appear on the screen during the error message and then contact us directly for assistance. Use the phone number or e-mail address at the bottom of the cover of this document.

SPECIFICATIONS/LIMITATIONS

Primary power supply input: 110/220 \pm 10% VAC, 50/60 Hz, 1KVA.

Input to the display: 12 to 24 VAC or VDC \pm 10% (2 watts used, supply to be 5 watts minimum)

NOTE: A wall plug-in type transformer is supplied. Any supply meeting the display input requirements is acceptable. It is advised that the power output rating be no less than 5 watts.

Encoder:

Incremental type

5VDC

500 windows with A and B outputs

Zero pulse (either normally high or normally low acceptable, gated or not)

Open collector or driven is acceptable.

Climatic considerations:

Operation (weather protected control rooms or equipment rooms not fully air conditioned)—

Temperature per Class 3K3— +5C to +40C.

Relative humidity per Class 3K3— 5% to 85%, 1g/m³ to 25g/m³.

No condensation or formation of ice.

Air pressure per Class 3K3— 86 kPa to 106 kPa.

Storage—

Temperature per Class 1K4— -25C to +55C.

Relative humidity per Class 1K3— 5% to 95%, 1g/m³ to 29g/m³.

Air pressure per Class 1K4— 86 kPa to 106 kPa.

Transportation—

Temperature per Class 2K3— -25C to +70C.

Relative humidity per Class 2K3— to 95%, to 60g/m³.

Maximum RH based on—

Unit slowly increases temperature by 40C.

Unit moves directly from temperatures between -25C and 30C.

Unit moves directly from temperatures between 70C and 15C.

Brief light condensation is acceptable.

Air pressure per Class 2K3—70 kPa to 106 kPa.

CE DECLARATION OF INCORPORATION

C&P Microsystems, Petaluma, California, USA declares under its own responsibility that the following products:

- **microcut®** in all forms – JR, BASIC, PLUS WS, and OEM flat panel designs.
- Expansion Board added to H3 drive unit for additional I/O.
- B65 full paper cutter control system.
- KPM (Knife Position Monitor) module.
- AKS (Auto Knife Set) board for auto setting knife height.

manufactured during and after December 2009 under an ISO9001 based Quality Assurance Program are intended to be incorporated into machinery without changing that machinery's basic function and when properly installed will comply with all relevant CE Harmonized Standards in affect as of 1 January 2012. Safety functions of the B65 dual channel safety system include a Type III two-hand control for high pressure clamping and cutting with performance level up to a PL_a per ISO 13851:2002 Ed 1, cyclically tested safety curtain inputs, and 1 KHz full monitoring of all critical circuits with automatic fault shut down.

Specific standards that were used in the design of the above products include:

Standard	Description
2006/42/EC 2 nd Edition	Guide to application of the Machinery Directive.
BS EN 1010-3:2002+A1:2009	Safety of machinery. Cutting machines.
B65-3:2011 (ISO 12643-3:2010)	Graphic Technology. Safety requirements.
BS EN ISO 12100:2010	General principles for design. Risk assessment and reduction.
BS EN ISO 13849-1:2008	Safety related parts of control systems. General principles.
BS EN ISO 13849-2:2008	Safety related parts of control systems. Validation.
BS EN ISO 13850:2008	Emergency stop. Principles for design.
ISO 13851:2002 Ed 1	Two hand control devices. Functional aspects and design principles.
BS EN ISO 14121-1:2007	Safety of machinery. Risk assessment. Principles.
ISO/TR 14121-2:2007 Ed 1	Safety of machinery. Risk assessment. Practical guidance and examples.
BS EN 60204-1:2006+A1:2009	Electrical equipment of machines. General requirements.
BS EN 61508-1:2010	Functional safety of electrical/electronic controls. General requirements Part 1.
BS EN 61508-2:2010	Functional safety of electrical/electronic controls. General requirements Part 2.
BS EN 61508-3:2010	Functional safety of electrical/electronic controls. Software requirements.
ANSI/UL 508C-2008	Standard for Power Conversion Equipment

For B65 systems incorporating multiple controls VAC power should be supplied via a transformer per BS EN 60204-1:2006+A1:2009 Section 9.1.1. Where the Neutral line is used follow measures detailed in IEC 60364-4-43 Section 431.2.2. Proper power connection, VAC input overcurrent protection, and lock out is the responsibility of the installer.

While inputs and outputs are checked regularly to insure correct operation, certain combinations of redundant hydraulic valves and actuators may not be checked so as not to diminish machine operation. While these redundant items are considered to be reliable, scheduled verification is advised. In these cases it will be necessary to perform scheduled Proofing Tests. Routines are included in the control system to allow these tests to be performed without modifications to the system. Where deemed necessary, details of methods and intervals need to be defined and included as a part of the Machine Manual. These can also be defined within the control to warn the operator of these requirements on a timely basis or to force completion of the testing before continued use of the machine is allowed.

Incorporation of the above product does not assure CE approval. Certification of the machine and documentation as a whole is required for such approval.

C&P Microsystems recommends that all installation procedures contained in our documentation be followed. Refer to the C&P microsystems Specification Sheet for specific environmental, power, and other informational details. Technical assistance for all matters is available at info@cp-microsystems.

Authorized signature:



Jeff Marr
 President of C&P Microsystems
 January 1, 2012

NOTES

31 January 2013 – First revision.

20 February 2013 – microtrack II; company logo changed on front cover; grid removed from Table of Contents page; “Leave existing guards on the machine” in Introduction; small changes to Power On page including moving the “Memory erased before shipping” from the NOTES into the body of text; adjustments to Program and Automatic Operation pages; added “on” before “cast iron” in Installation Basics page; added “inch/cm/sun” in three places on first page of Set Up Routine; and incorporated STANDARD operation if not in PROGRAM or AUTOMATIC.

4 March 2013 – Added blank page before Introduction to align other pages. Added a second page to Program Operation for the same reason. Small fixes to key designations on the Fine Calibration page.

25 March 2013 – Set Up Routine entered by pressing ALL four keys at power on. New language selection screen with CHECK key in the second position rather than at the top.