microcut® *ECO*

Owner's Manual for the
H3 & H4 Drive
Paper Cutter Automation System

C&P microsystems

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

ANSI B65-3:2011 is based on CE BS EN ISO 1010-3:2002+A1:2009 for the same machinery. The Transcend Control System conforms to both of these sets of Standards.

microcut ECO® is registered trademarks of C&P Microsystems, LLC.

NOTE: Revisions occur as requests are made from operators, supervisors, and others. This manual may be incomplete or out of date. If you require assistance, please refer to the cover of this document to contact us directly by phone from 9 AM to 5 PM Pacific Standard Time or use the supplied email address. You may also want to refer to our website for immediate assistance.

microcut ECO® Owner's Manual for the H3 & H4 Drive Paper Cutter Automation System

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INTRODUCTION

Thank you for purchasing a microcut ECO® control system for your paper cutter. Having done so, you have joined tens of thousands of **microcut** users worldwide who are enjoying the benefits of computer-controlled cutting. microcut ECO® is a state-of-the-art system for controlling back gauge movement, with an intuitive, easy to use operator interface. After turning the power on and getting started, there are four basic operating methods—

- Manual operation.
- Programming new jobs.
- Reviewing existing jobs.
- Automatic operation using an existing job.

Many of the features you will find in microcut ECO® have resulted from operator's ideas 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 **microcut** the world leader in cutter automation.

> C&P Microsystems
> California, USA
> 707-776-4500
> info@microcutsystems.com
> www.microsystems.com

The microcut ECO® control system can be installed as a simple back gauge drive unit.

Requirements for installation and use:

- ☐ The machine is to conform to present safety requirements in your area.
- ☐ Supplied power is to be 100-130/200-250VAC ± 10%, 50/60 Hz.
- ☐ The installation is to be performed per the instructions included in this manual.
- ☐ All the machine's safety elements must remain intact and function correctly.
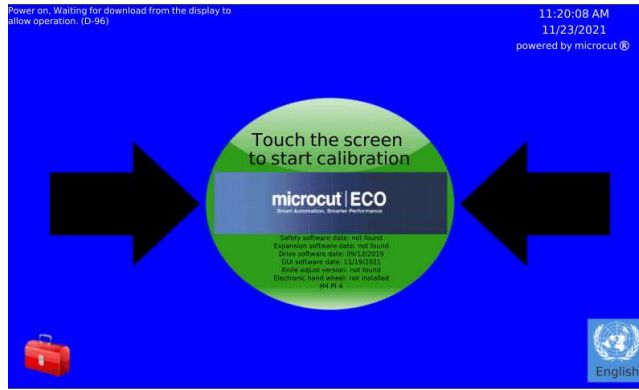- ☐ All nip, pinch, crush, or cutting zones must be properly guarded.

A paper cutter is a dangerous machine. Only properly trained and supervised personnel should operate this equipment.

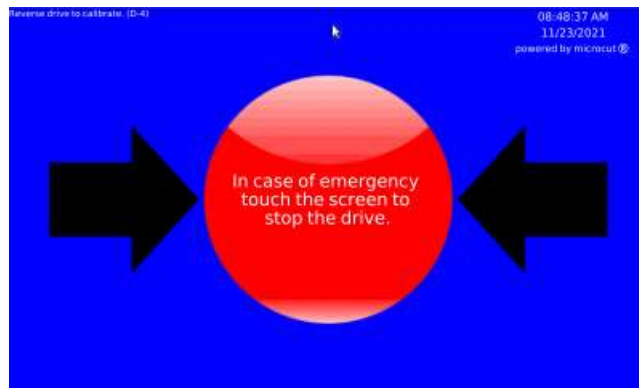### Refer to your company's Safety Procedure Manual for pertinent details.

POWER ON.

Touch the screen to start -- then

The gauge will move to the rear of the table and calibrate when it passes in front of the rear proximity sensor.
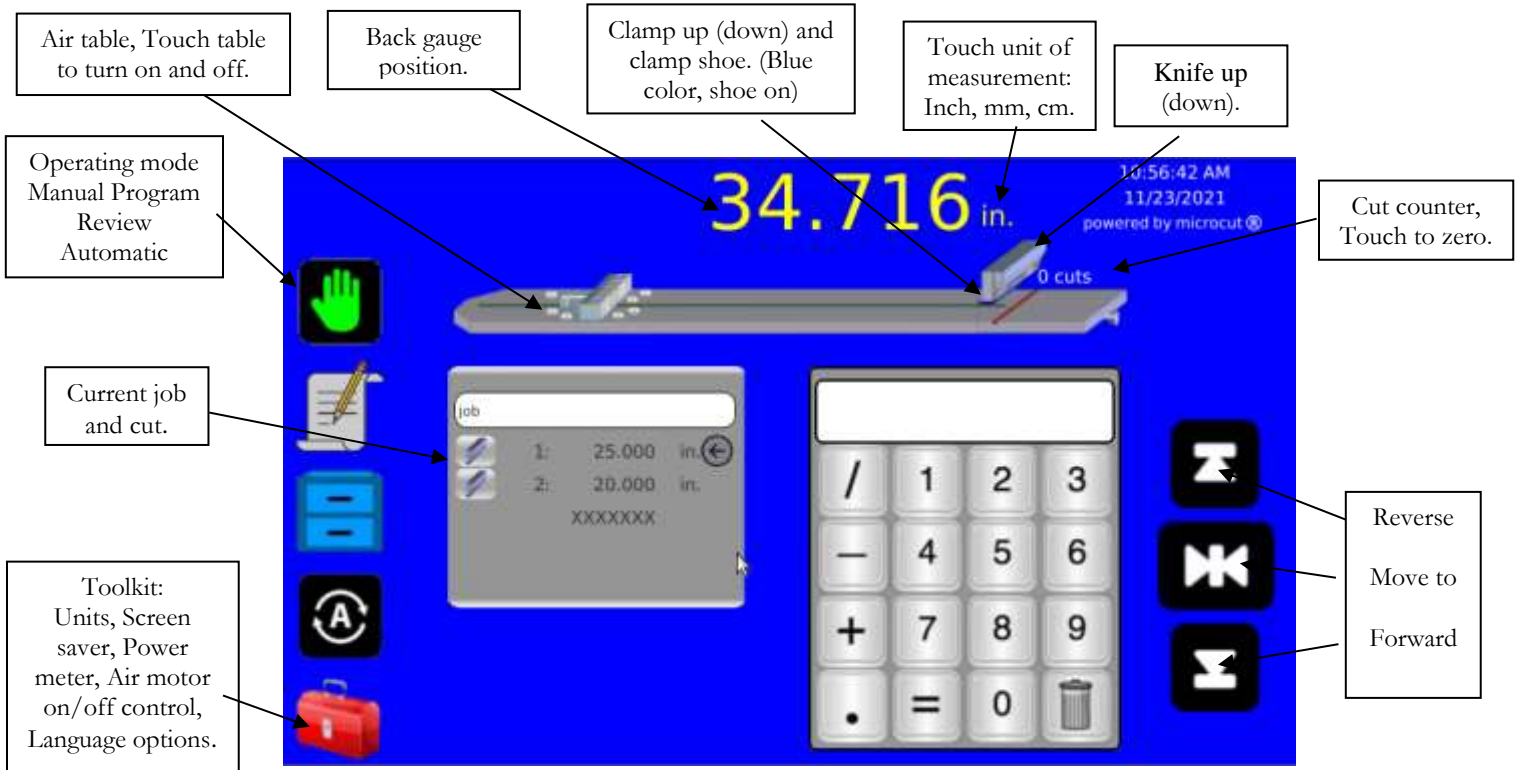

In case of emergency, touch the screen to stop the drive and reset the system. When the gauge stops at the rear, you will be in manual mode, see next page.

microcut ECO® Owner's Manual for the H3 & H4 Drive Paper Cutter Automation System

Manual mode.

Air table, Touch table to turn on and off.

Back gauge position.

Clamp up (down) and clamp shoe. (Blue color, shoe on)

Touch unit of measurement: Inch, mm, cm.

Knife up (down).

Operating mode Manual Program Review Automatic

34.716 in.

10:56:42 AM
11/23/2021
powered by microcut ®

0 cuts

Cut counter, Touch to zero.

Current job and cut.

job

1:    25.000   in.
2:    20.000   in.
      XXXXXXX

/ 1 2 3
− 4 5 6
+ 7 8 9
• = 0 🗑

Reverse

Move to

Forward

Toolkit: Units, Screen saver, Power meter, Air motor on/off control, Language options.

The **Manual** icon is touched when the operator wants to manually control the position of the back gauge for every cut.

Touching the **Forward** or **Reverse** icons will move the back gauge and turn off auto-correction. A quick tap to the key will move the back gauge .001 (inch or cm, or .01mm) and turn auto correcting back on.

Touching the calculator keys will display a number for you to move the gauge to. For fractions, key in the whole size and then add the fraction: 20.000 + 1 / 4. Touch the **Move** icon to total and move the gauge to that value or the **Equal** icon to total the value. Auto correcting will be activated when the gauge reaches position.

Touching the **Move** icon, this will move the gauge to the displayed calculator entry.
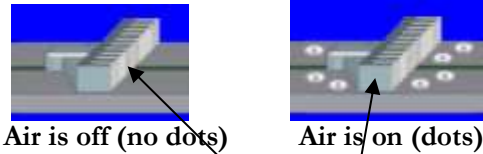
Touching the **Manual** icon from any mode to return to manual mode.

If your cutter has a retractable hand wheel with sensor installed, when you release the hand wheel the current position will become the new target and auto correction will be activated.

*SEE NEXT PAGE FOR ADDITIONAL MANUAL MODE INFORMATION.*

Air **table** (If feature is installed.)

Air is off (no dots)   **Air is on (dots)**

Touch the table area in **front** or **behind** the gauge icon to turn the air icon dots on or off.

The air will turn on for any reverse drive or push out. The air will turn off when the clamp is lowered. It is possible to program the air table after the cut but before the clamp is raised. This is useful for moving work across to the side tables. You can do this by using the air table function after a cut while holding the clamp down. The air after cut feature defaults to the off state during programming.

Front air table (If feature is installed.)

Air is off (no dots)   **Air is on (dots)**
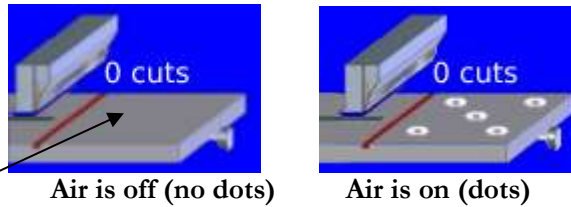
Touching the front table area will turn the front table air on or off.

![icon] Program mode.

Program mode allows you to define a set of positions for the back gauge to cycle through. To program a new job touch the ![icon] **PROGRAM** icon.

Use the shown keyboard to type in a new job number. Job numbers are limited to 30 characters.

If you leave the job number blank and touch the ![checkmark] **checkmark** icon, the computer will generate the next available job number for you.
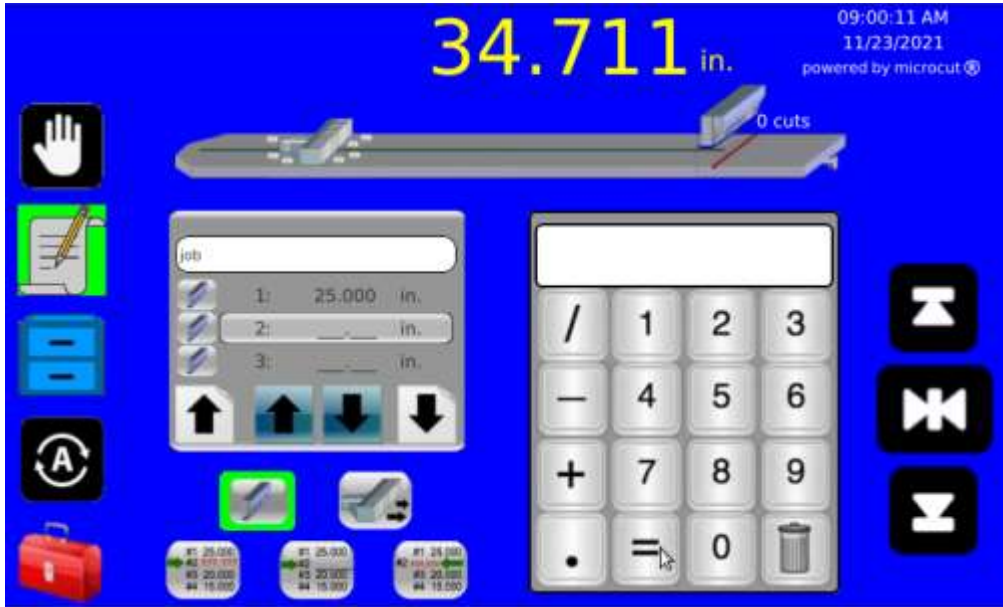
Touch the ![checkmark] **checkmark** icon when you are finished.

Touch the ![cancel] **cancel** icon, if you want to just exit this screen, without programming a job.

SEE NEXT PAGE FOR ADDITIONAL PROGRAM MODE INFORMATION.

Program mode (continued).

The above picture shows the first cut manually entered using the calculator as (cut) 1.
A cut can be entered using the calculator keypad, or the knife stroke.

The job panel will show 3 cuts, the previous cut, the current cut (highlighted by the bubble) and the next cut.

A **touched** or **enabled** icon will have a **green border**.

Touch an icon to flip enabled or disabled.

Program mode features.

Five icons below the cut listing panel.

 This icon represents that the highlighted cut number is a cut location.

 This icon represents that the highlighted cut number is a **not** cut location.

 This icon represents that the highlighted cut number is a push the stock to location.

 This icon represents that the highlighted cut number is a **not** push the stock to location.

SEE NEXT PAGE FOR ADDITIONAL PROGRAMMING INFORMATION.

 Program mode (continued).

Editing features (changing the cut.)

 This icon represents that the highlighted cut number is locked and cannot be changed.

 This icon represents that the highlighted cut number is **not** locked and **can** be changed (When touched).

 Touching this icon, causes the current cut location to be moved down one, and then you can use the calculator to type in a new cut.
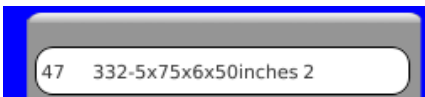
 Insert cut enabled.

 Touching this icon, will delete the current cut from its current location and all cuts below it will be moved up by one.

Renaming a job.

 Touching the job name area on the job panel, will let you rename the job.

Use the keyboard to edit the job name. Touch the **checkmark** icon to save the new job name.

Touch the **cancel** icon to exit this screen without renaming the job.

SEE NEXT PAGE FOR ADDITIONAL PROGRAMMING INFORMATION.

Program mode (continued).

Air table (If feature is installed.)

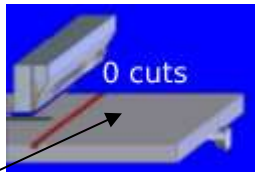**Air is off (no dots)**   **Air is on (dots)**

Touch the table area   in **front** or **behind** the gauge icon to turn the air icon dots on or off.

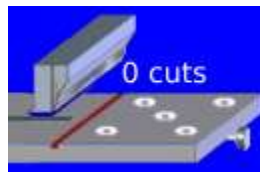The air will turn on for any reverse drive or push out. The air will turn off when the clamp is lowered.

Individual air status for the cut can be programmed. When the cut is saved, it will have the air status saved for that cut also.

It is possible to program the air table after the cut but before the clamp is raised. This is useful for moving work across to the side tables. You can do this by using the air table function after a cut while holding the clamp down. The air after cut feature defaults to the off state during programming.

Front air table (If feature is installed.)

Air is off (no dots)   **Air is on (dots)**

Touching the front table area will turn the front table air on or off.

 Review mode.

Touching the *Review* icon will change the screen to review mode. This mode enables you to select, search and delete a job.

The panel shows a list of currently programmed jobs. The pink color denotes the jobs are sorted by name.
To sort the jobs by name of date, touch the job name area for sort by job number, touch the date area to sort by date.

 Touching either icon will move the bubble selection up or down one.

 Touching either icon will move the bubble selection up or down one screen page of jobs.

 Touching this icon will delete the highlighted job.

 Touching this icon will "star" (mark) the highlighted job. This feature can be used when you want to delete more than one job.

 Touching this icon will remove the "star" (marked) from all the "starred" (marked) entries on the screen.

SEE NEXT PAGE FOR ADDITIONAL REVIEW MODE INFORMATION.

 Review mode (continued).

Search jobs (sort by job number).

 Touching this icon, will open the search by job number panel.
Please note that this assumes the sort is by job number. Job number area touched.

Use the shown keyboard to type in the job number to search for. Job numbers are limited to 30 characters.

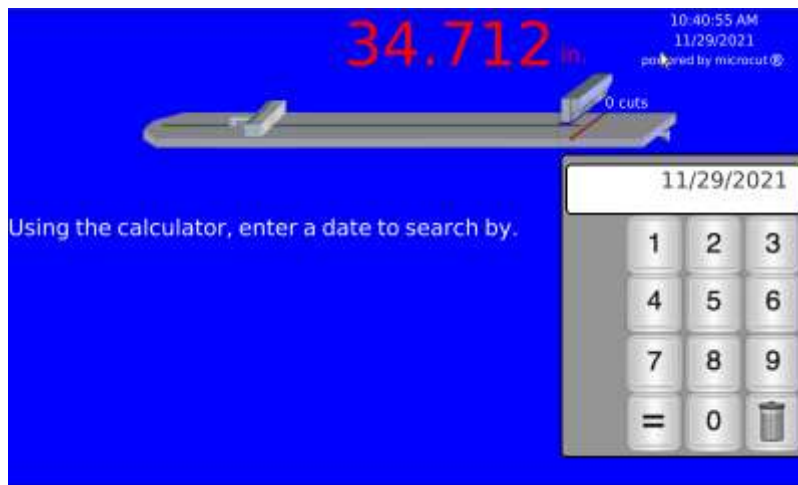Touch the *checkmark* icon when you are finished.

Touch the *cancel* icon, if you want to just exit this screen, without searching for the job.

Search jobs (sort by job date).

 Touching this icon, will open the search by job date panel.
Please note that this assumes the sort is by job date. Job date area touched.

Use the calculator keypad to enter a date.

Touch the *equal* icon to start the search.

ⒶAutomatic mode.

Automatic mode is used to allow the computer to position the back gauge correctly throughout a job.

Press the **AUTO** icon. The automatic mode screen will appear:

The above picture shows the gauge has moved to the highlighted cut position cut.
To go to the next position, cycle the knife and the clamp.

To manually go to the next position, touch the **move** icon, the highlight will move down one and the gauge will then move to that position.

The job panel will show 3 cuts, the previous cut, the cut current (highlighted by the bubble) and the next cut.

A touched or enabled icon will have a green border.

Automatic mode features. Five icons below the cut listing panel.

This icon represents that the bubbled cut number is a cut location (When touched).

This icon represents that the bubbled cut number is a **not** cut location.

This icon represents that the bubbled cut number is a push the stock to location (When touched).

This icon represents that the bubbled cut number is a **not** push the stock to location.

SEE NEXT PAGE FOR ADDITIONAL AUTOMATIC MODE INFORMATION.

Automatic mode (continued).

Editing features (**changing the cut**.)

 This icon represents that the highlighted cut number is locked and cannot be changed.

 This icon represents that the highlighted cut number is **not** locked and **can** be changed (When touched).

 Touching this icon, causes the current cut location to be moved down one, and then you can use the calculator to type in a new cut.
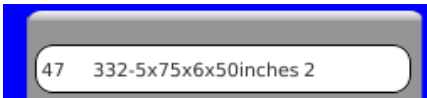
 Insert cut enabled.

 Touching this icon, will delete the current cut from its current location and all cuts below it will be moved up by one.

Renaming a job.

 Touching the job name area on the job panel, will let you rename the job.

Use the keyboard to edit the job name. Touch the **checkmark** icon to save the new job name.

Touch the **cancel** icon to exit this screen without renaming the job.

SEE NEXT PAGE FOR ADDITIONAL AUTOMATIC MODE INFORMATION.

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Automatic mode (continued).

Air table operation (If feature is installed.)

Air is off (no dots)　　　**Air is on (dots)**

Touch the table area in **front** or **behind** the gauge icon to turn the air icon dots on or off.

The air will turn on for any reverse drive or push out. The air will turn off when the clamp is lowered.
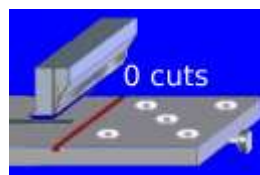
Individual air status for the cut can be programmed. When the cut is saved, it will have the air status saved for that cut also.

It is possible to program the air table after the cut but before the clamp is raised. This is useful for moving work across to the side tables. You can do this by using the air table function after a cut while holding the clamp down. The air after cut feature defaults to the off state during programming.

Front air table (If feature is installed.)

Air is off (no dots)　　　**Air is on (dots)**

Touching the front table area will turn the front table air on or off.

SENSOR ICONS ON THE SCREEN
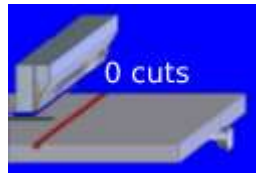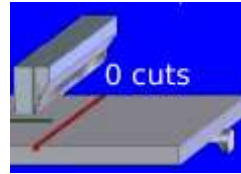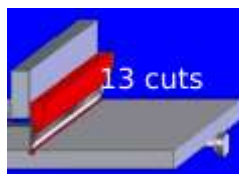
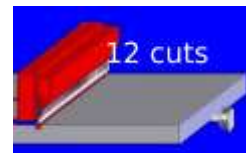|	
False clamp is attached.	False clamp is not attached.

When the false clamp (sometimes called the clamp shoe or sole plate) is attached to the clamp the minimum forward drive will be larger. When the false clamp is attached, a blue line will appear under the clamp. If a program contains positions that are smaller than the false clamp size and the false clamp is installed, an error message will occur when the back gauge is asked to go to that position.

36.461 in.

10:01:00 AM
12/06/2021
powered by microcut ®

The false clamp is attached to the Clamp, please remove it to continue.

Touch the screen to continue
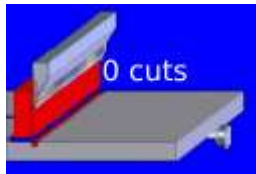
Clamp is down.	Knife is down.	Clamp and knife is down.

Operation of the clamp and knife in automatic mode will advance the controller to the next position. The back gauge motor will not move if either the clamp and/or knife are down.
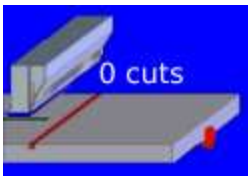
The hand wheel will turn red, if the sensor for the hand wheel is activated, by the hand wheel, when pressed in. Upon release the back gauge will auto correct to the new position.

Air table operation (If feature is installed.)

Air is off (no dots)
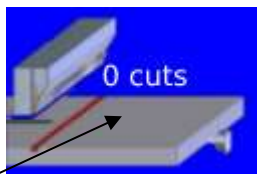

Air is on (dots)

Touch the table area in **front** or **behind** the gauge icon to turn the air icon dots on or off.

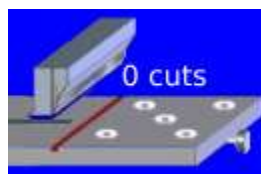The air will turn on for any reverse drive or push out. The air will turn off when the clamp is lowered.

Individual air status for the cut can be programmed. When the cut is saved, it will have the air status saved for that cut also.

It is possible to program the air table after the cut but before the clamp is raised. This is useful for moving work across to the side tables. You can do this by using the air table function after a cut while holding the clamp down. The air after cut feature defaults to the off state during programming.

Front air table (If feature is installed.)

Air is off (no dots)

Air is on (dots)

Touching the front table area will turn the front table air on or off.

There are LEDs in the drive box to indicate the sensor status as well. Each LED is labeled on the PCB and is located above its corresponding cable.

H3 Drive box

H4 Drive Box

Toolkit.

When the **_toolkit_** icon is touched, the one of the following panel(s) will appear.

If the **_English_** icon is disabled, then the **left-hand** panel will appear.

If the **_English_** icon is enabled, then the **right-hand** panel will appear.

To exit this panel, touch the **_cancel_** icon.

Touching the **_English_** will enable or disable if English will be substituted on the icon. This will hold true throughout all panels on the microcut ECO.

Touching the **_inch_** units' icon, will enable the use of inch measurement or disable the use of inch measurement.

Touching the **_cm._** units' icon, will enable the use of cm. measurement or disable the use of cm. measurement.

Touching the **_mm._** units' icon, will enable the use of mm. measurement or disable the use of mm. measurement.

Touching the **_screen saver_** icon, will enable or disable the screen saver. Once the screen saver is enabled, a number will appear in the box, or below the words. This number represent the number of minutes the **microcut ECO®**, will be idle, before going into screen saver mode. By continually touching the icon, you can increase the number of minutes. The selections are 1, 3, 5, 7, 9, 11, 13, 15, 17 and then disabled.

Touching the **_power meter_** icon, will enable or disable the power meter. If the power meter is enabled, then on the back gauge icon on the cutter table a power number will appear .

Touching the **_air motor_** icon, will turn **on** or turn **off** the air motor. This feature will depend on the air kit being installed.

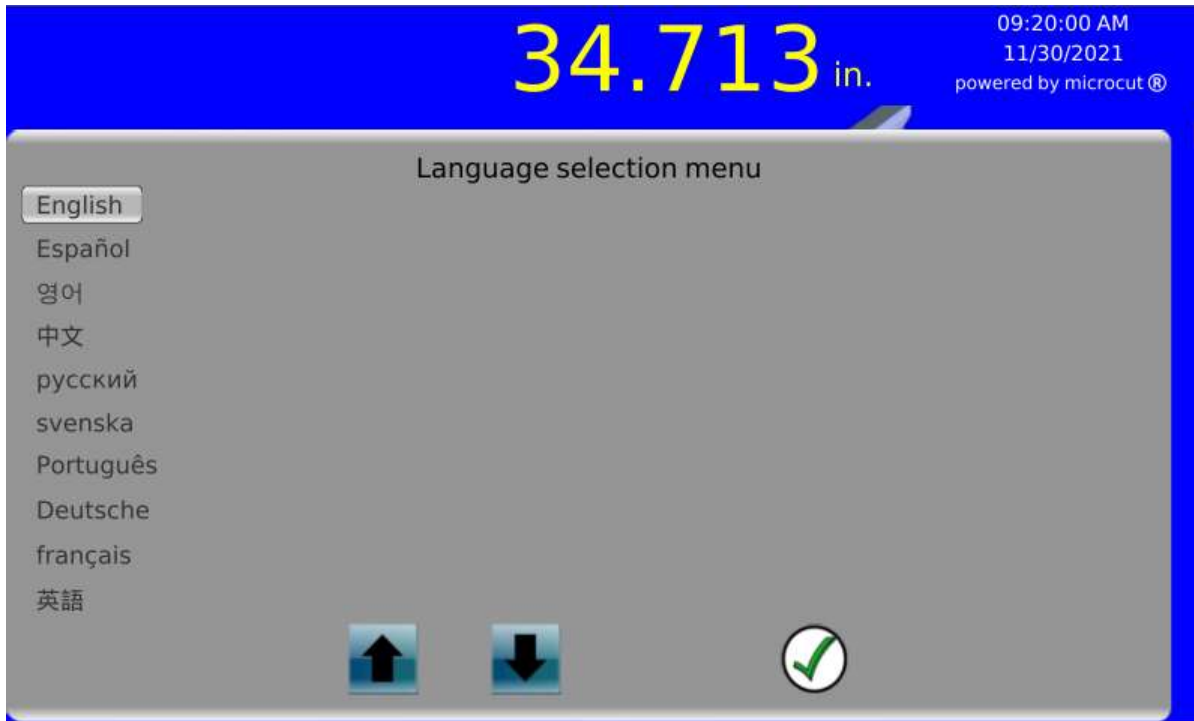*SEE NEXT PAGE FOR ADDITIONAL TOOLKIT MODE INFORMATION.*

Toolkit (continued).

 <u>Language selection</u>.

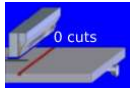Touching the *language* selection icon will show the language selection screen.

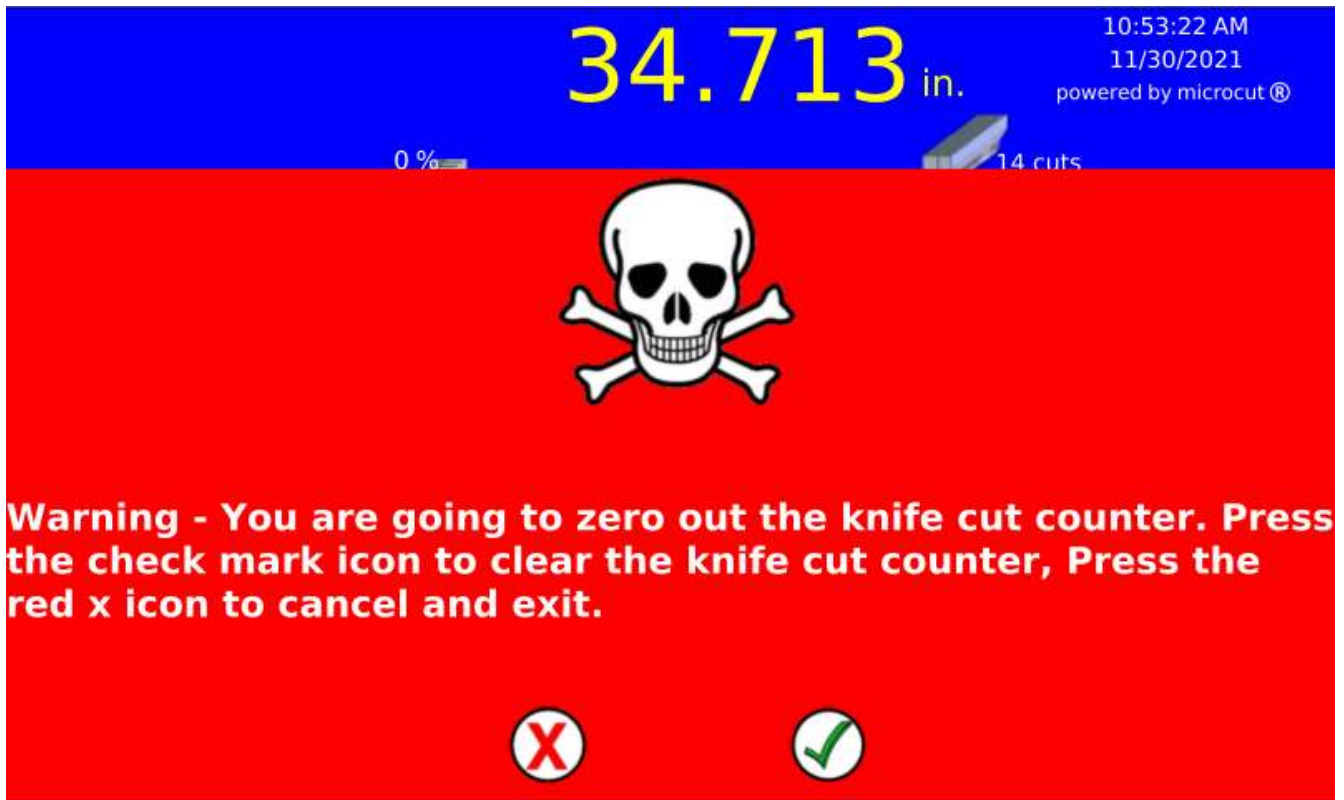Touching the *up arrow* icon will move the selection bubble up one line.

Touching the *down arrow* icon will move the selection bubble down one line.

Touching the *checkmark* icon will select the current selection bubble language.

Cut counter.

Touching the *cut counter* will bring up a warning screen.

Touch the *checkmark* icon to zero out (clear) the cut counter.

Touch the *cancel* icon to exit this screen without clearing the cut counter.

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Units of measurement selection.

Touching the units, top of the screen, to the right of the current displayed position, will toggle the units from Inches to Centimeters to Millimeters. This also relies on whether the units are enabled. (See toolkit.)
When programming a new job, the job will default to the units shown on the screen.

Touching this area will cycle from Inches to Centimeters to Millimeters and back to Inches.

microcut ECO® Owner's Manual for the H3 & H4 Drive Paper Cutter Automation System
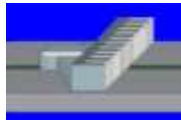
 Back gauge features.

Touching the **back gauge** on the table at the top of the screen will open the back gauge feature panel.
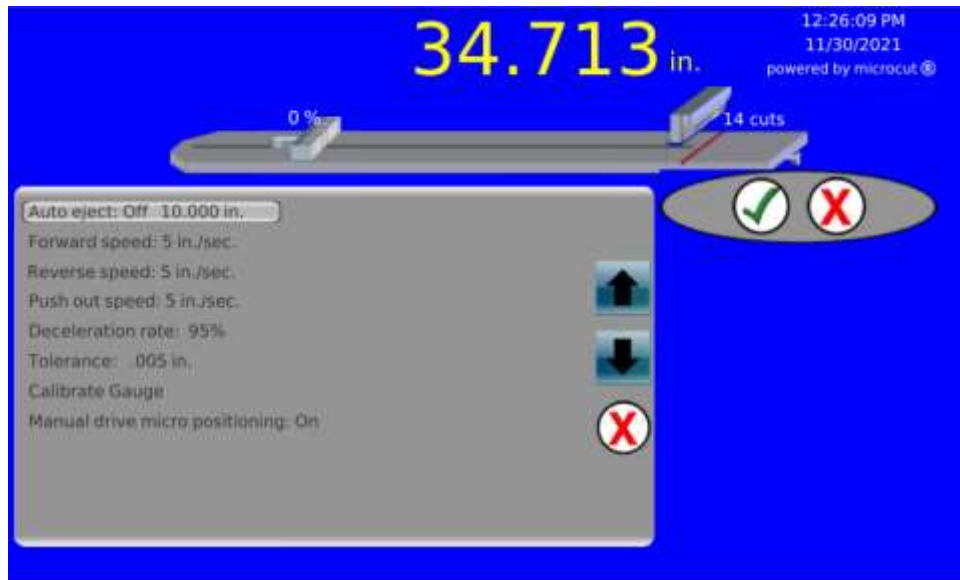
Touching the **up arrow** icon will move the selection bubble up one line.

Touching the **down arrow** icon will move the selection bubble down one line.

Touch the **cancel** icon to exit this panel.

Auto Eject: Enabling this means that when the next cut is behind the current cut, the back gauge will first push the paper to the size indicated, before going to the next cut.

On the right side of the screen, you will see .

Touch the **cancel** icon to disable **Auto Eject**.

Touch the **checkmark** icon to enable **Auto Eject**. When you do this the calculator will appear at the right side of the screen. Use the calculator to type in a new size for the back gauge to push to. Touch the **equal** icon to record the new value.

Forward speed: This is the maximum speed value that the back gauge will attempt reach going forward on your table. The maximum speed value is preset by the maximum speed number input during the setup routine.

Use the calculator to type in a new forward speed value. Touch the **equal** icon to record the new value.

SEE NEXT PAGE FOR ADDITIONAL BACK GAUGE FEATURES INFORMATION.
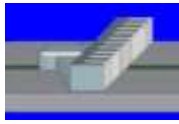
 Back gauge features (continued).

Reverse speed: This is the maximum speed value that the back gauge will attempt reach going reverse on your table. The maximum speed value is preset by the maximum speed number input during the setup routine.

Use the calculator to type in a new reverse speed value. Touch the *equal* icon to record the new value.

Push out speed: This is the maximum speed value that the back gauge will attempt reach to push the stock out on your table. The maximum speed value is preset by the maximum speed number input during the setup routine.

Use the calculator to type in a new push out speed value. Touch the *equal* icon to record the new value.

Deceleration rate: This number determines how controlled the back gauge will slow into the requested position on the table. The higher the number, the more distance the back gauge will use coming into the position.

Use the calculator to type in a new deceleration value. Touch the *equal* icon to record the new value.

Calibrate Gauge: This routine is used to re zero the back gauge if you notice that you are out of calibration for some reason. The amount of difference in calibration needs to be the same for any position on the table. As an **example**, if you are cutting at 5.000 inches, and you notice that the back gauge is at 5.020 inches, then you should

verify that the 0.020 difference is the same at other points on the table. If this is the case then use the to key in the **actual back gauge mechanical position** (ignore the current position readout, this is wrong). Touch the

 equal icon to record the new value.

Manual drive micro positioning: When this feature is **ON**, then when you tap the *Forward* or *Reverse* icons, the back gauge will move .001. After the move the back gauge will enable the brake. This does not

affect normal drive, holding in the *Forward* or *Reverse* icons, without a tap will resume normal back gauge drive.

On the right side of the screen, you will see .

Touch the *cancel* icon to turn off **Manual drive micro positioning**.

Touch the *checkmark* icon to turn on **Manual drive micro positioning.**

 Factory setup and utilities.
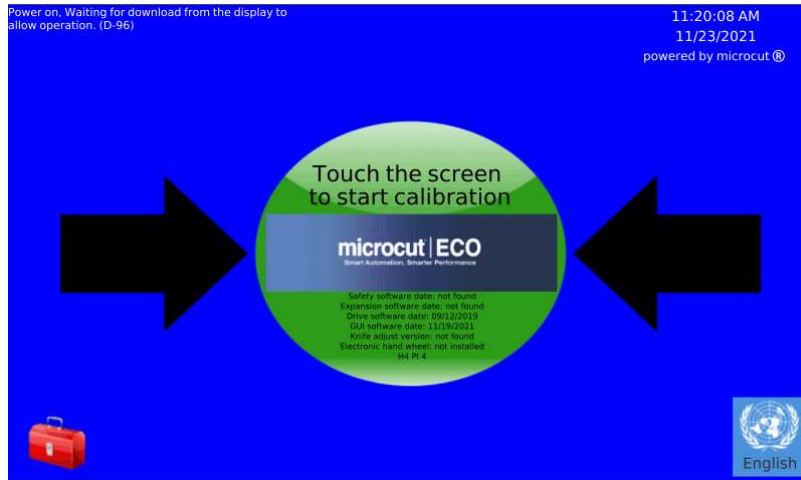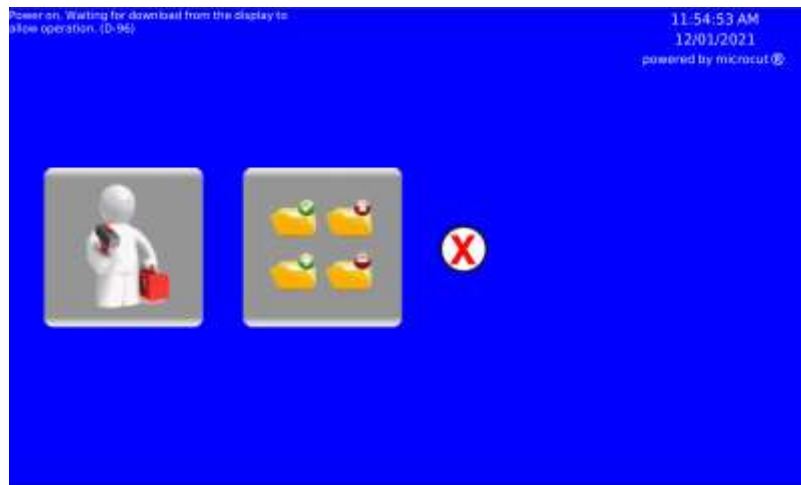
At the start screen, touch the *toolbox* icon at the lower left corner of the screen.

The factory panels will open.

Touch this panel to open the **Machine setup summary panel**. This is where you would setup and calibrate the **microcut ECO**®.

Touch this panel to open the **Utilities** panel. This is where you would install a software update and access other file utilities.

 Machine setup summary panel.

Touching the *up arrow* icon will move the selection bubble up one line.

Touching the *down arrow* icon will move the selection bubble down one line.

Touching the *magnifier* icon to open the selection bubbled line.

Touching the *right arrow* if shown, will start the **microcut ECO® calibration routine** (see page 43).

Touch the *cancel* icon to exit this panel.

 Enter/change table sizes.

Touching the *magnifier* icon on the one of the bubbled selection lines for Maximum rear table size or False clamp table size or Minimum front table size, will open the Enter/change table sizes panel.
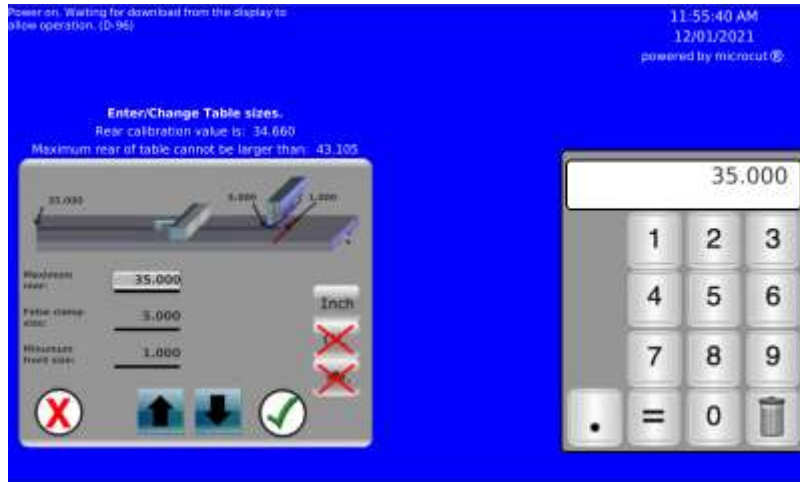

Touching the *up arrow* icon will move the selection bubble up one line.

Touching the *down arrow* icon will move the selection bubble down one line.

Touch the *checkmark* icon to exit and save the data.

Touch the *cancel* icon to exit this panel.

Touching the *inch* icon or the *centimeter* icon or the *millimeter* icon, will enable or disable the use of one of those units of measurement.

Use the calculator keypad to enter in the Maximum rear table size, False clamp table size and Minimum front table size. Touch the *equal* icon to record the new value.

Notes: The maximum rear table size cannot be larger than 37.000 in. (93.98 cm., 939.80 mm.). To make the actual calibration routine easier, the maximum rear table size and false clamp table size should be round numbers. The maximum rear table size **must** be a value larger than where the rear proximity sensor is mounted. As an example, if the rear proximity sensor is mounted roughly around 35 ¼ inch, then the maximum rear size should be 36.000 inches.

 Air control.

Touching the *magnifier* icon on the bubbled selection line, Air control, will open the air control panel.

Touching the *up arrow* icon will move the selection bubble up one line.

Touching the *down arrow* icon will move the selection bubble down one line.

Touch the *checkmark* icon to exit and save the data.

Notes: The default setting is air control for the rear table, if you have front table air and it is wired up, then choose Dual zone to enable the air table to work on the front table.

 Maximum back gauge speed.

Touching the *magnifier* icon on the bubbled selection line, Maximum back gauge speed, will open the Maximum back gauge speed panel.
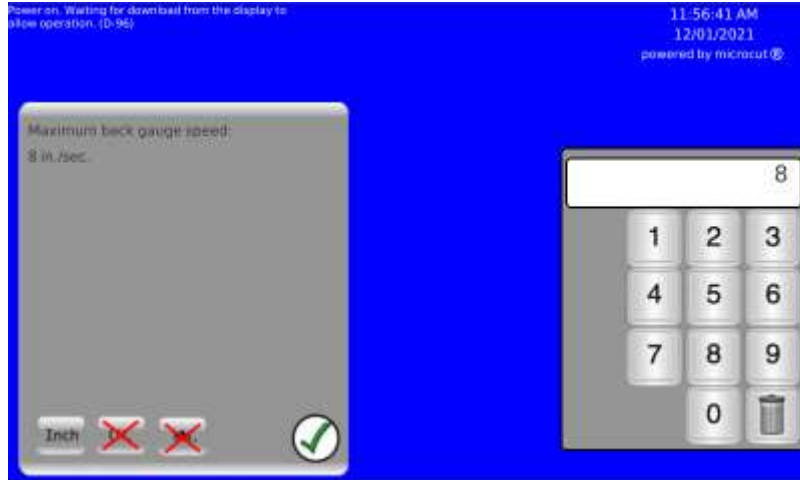
Touch the *checkmark* icon to exit and save the data.

Touching the *inch* icon or the *centimeter* icon or the *millimeter* icon, will enable or disable the use of one of those units of measurement.

Use the calculator keypad to enter in the Maximum back gauge speed.

Notes: This value is the top speed that the operator, during normal operation of the system will be limited to. Example: It the back gauge speed is set for 8, then during normal operation, the operator cannot change the speed above this number. The maximum number that can be entered here is 20.

 Adaptive settling.

(Auto correction operation)

Touching the *magnifier* icon on the bubbled selection line, Adaptive settling, will open the Adaptive settling panel.
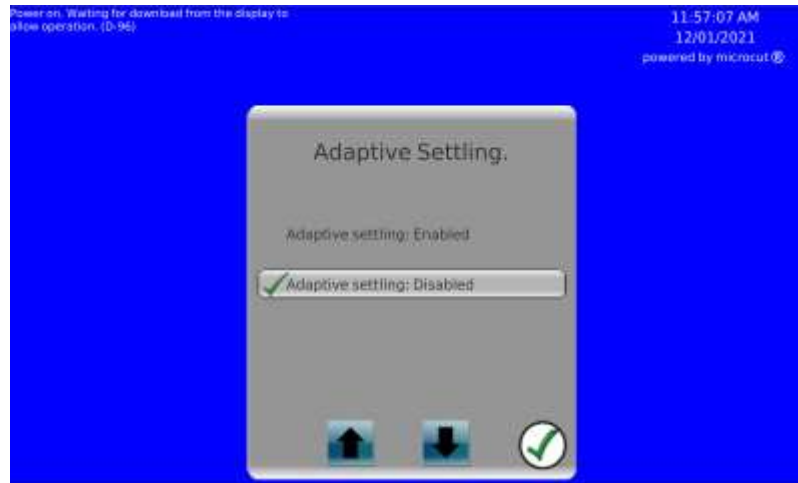
Touching the *up arrow* icon will move the selection bubble up one line.

Touching the *down arrow* icon will move the selection bubble down one line.

Touch the *checkmark* icon to exit and save the data.

Notes: This option is to combat back gauge oscillation. When adaptive settling is turned on, we will try to reach the specified target within the specified tolerance, but if we overshoot the target, we open the settling tolerance slightly. This will reset on each new target.

Drive type.

Touching the *magnifier* icon on the bubbled selection line, Drive type, will open the Drive type panel.
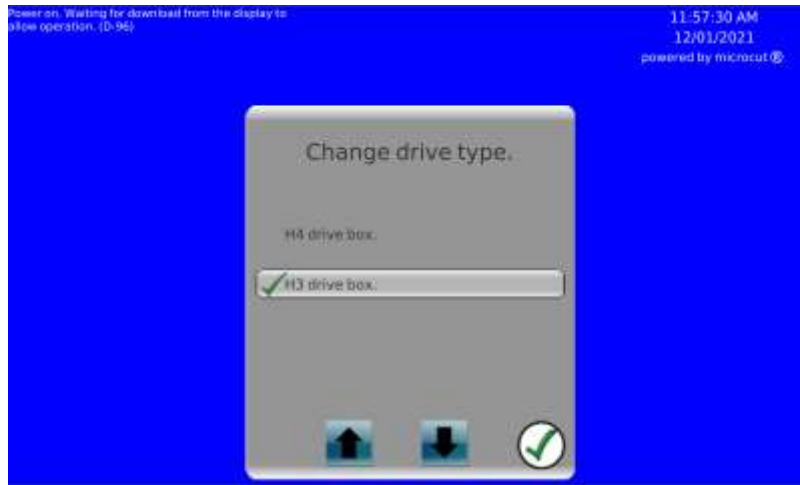
Touching the *up arrow* icon will move the selection bubble up one line.

Touching the *down arrow* icon will move the selection bubble down one line.

Touch the *checkmark* icon to exit and save the data.

Notes: On a new installation, when the computer first boots up, it will automatically identify the drive box attached, either an H3 or H4 drive box. This routine is used, if the **microcut ECO**® is moved from an H3 drive box to an H4 drive box or the reverse.

microcut ECO® Owner's Manual for the H3 & H4 Drive Paper Cutter Automation System

 microcut ECO® calibration routine.

When the values for the maximum rear, False clamp size and minimum front size are filled in, the *right arrow* icon will appear on the panel. Touching the *right arrow* icon will start the **microcut ECO®** calibration routine.

SEE NEXT PAGE FOR NEXT STEP IN THE microcut ECO® *CALIBRATION ROUTINE.*

 Motor direction test.
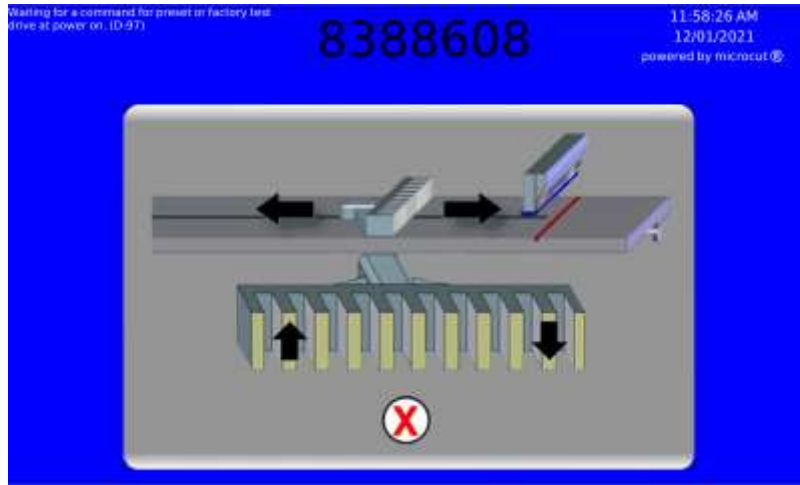
Notes: This routine tests the motor and encoder direction. Do not trust the position readout at the top of the screen, this is just informational for testing the count system and encoder. When you use the drive keys, **look** at which way the back gauge is moving on the table. The speed of the back gauge is very limited in this routine for safety, so you may need to press the forward and or the reverse keys for a longer time than normal.

Touch the *reverse back gauge* icon to move the back gauge in the reverse direction.

Touch the *forward back gauge* icon to move the back gauge in the forward direction.

Touch the cancel icon to exit this panel.

SEE NEXT PAGE FOR NEXT STEP IN THE microcut ECO® *CALIBRATION ROUTINE.*

Motor direction test (continued).

When the back gauge has moved a number of encoder turns, the following screen will appear.
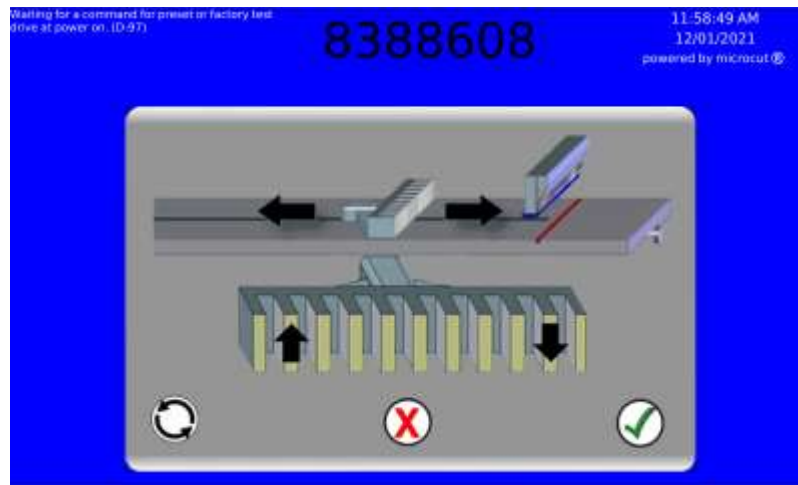
If the back gauge moved in the wrong direction to the press of the forward or reverse key, then touch the **change motor direction** icon. This will tell the computer to change the motor direction and the following screen will appear.

When this done, the original motor direction test screen will re appear, and you will need to retest and verify that the motor direction is okay.

SEE NEXT PAGE FOR NEXT STEP IN THE microcut ECO® *CALIBRATION ROUTINE.*

 Motor direction test (continued).
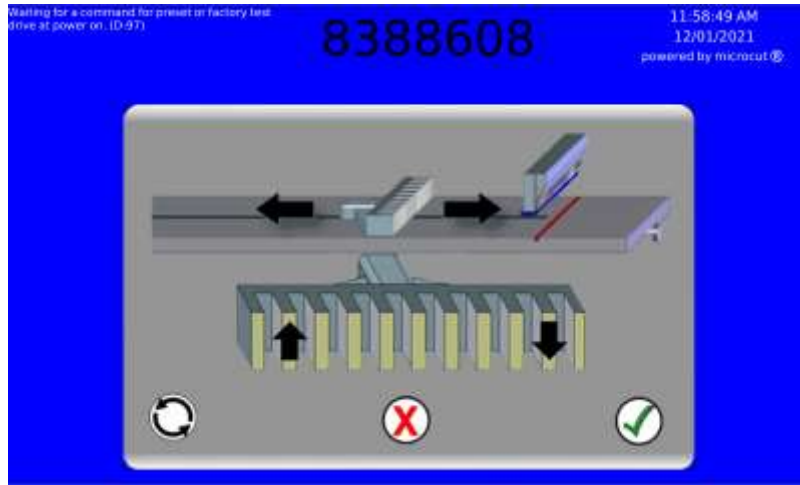
When you have verified the motor direction, touch the *checkmark* icon to go the next step. If the computer see's the wrong direction on the encoder count, you will see the following screen.

When this done, the original motor direction test screen will re appear, and you will need to retest and verify that the encoder direction is okay.

 Motor direction test (continued).

If both the motor direction and encoder direction has tested okay, then the following screen will appear.
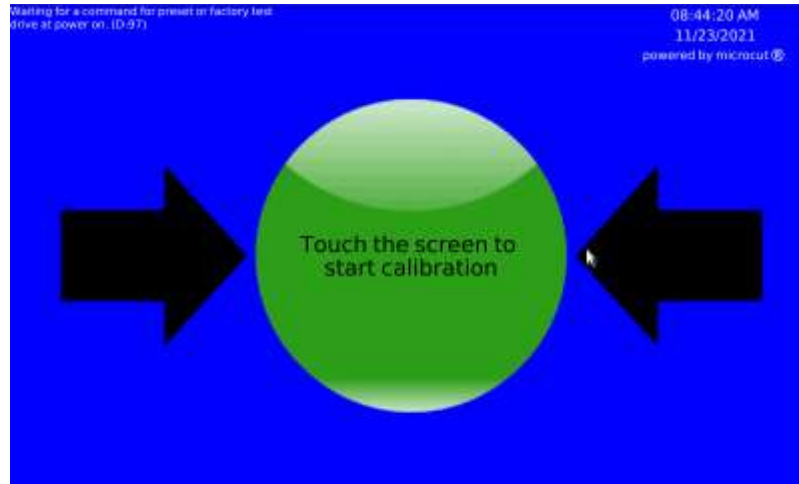
Touch the screen to start the back gauge motor drive.
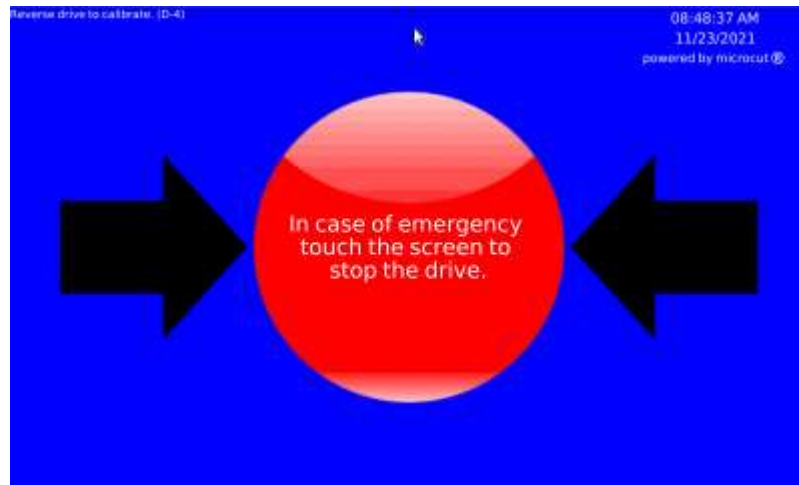
The back gauge will move to the rear of table and stop when it reaches the rear proximity sensor.

 Rear reference value.
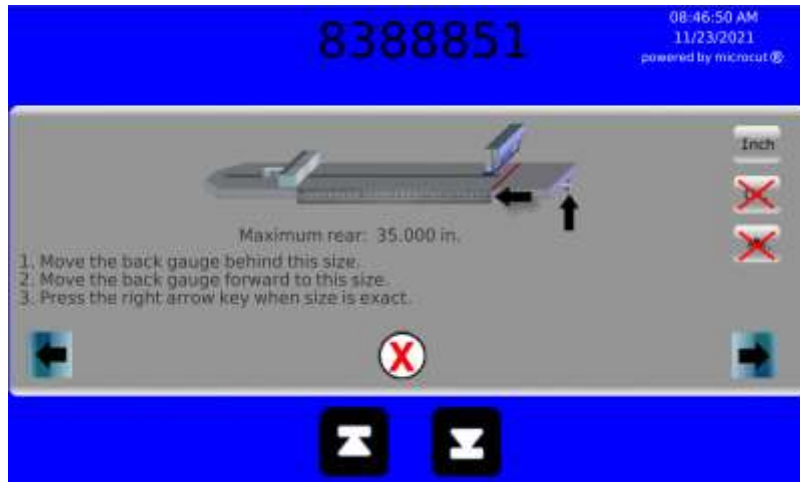
The computer is now asking you to physically move, using the hand wheel, the back gauge to the maximum rear size. This is the size you keyed in, earlier in the machine setup summary screen. Use a tape measure to measure where the back gauge is to the cut line and verify that this is the maximum rear value.

Touching the *inch* icon or the *centimeter* icon or the *millimeter* icon, will enable or disable the use of one of those units of measurement.

Touch the *left arrow* icon if you want to go back to the previous step.

Touch the *right arrow* icon when you have verified the back gauge is at the maximum rear reference value, to proceed to the next step.

Touch the *forward* icon to move the back gauge forward.

Touch the *reverse* icon to move the back gauge reverse.

Touch the *cancel* icon to exit this panel.

SEE NEXT PAGE FOR NEXT STEP IN THE microcut ECO® *CALIBRATION ROUTINE.*

 Front reference value.

The computer is now asking you to physically move, using the *forward drive* icon, to move the back gauge down the table to the false clamp value. This is the size you keyed in, earlier in the machine setup summary screen. Use a tape measure to measure where the back gauge is to the cut line and verify that this is the false clamp value.

Touch the *left arrow* icon if you want to go back to the previous step.

Touch the *right arrow* icon when you have verified the back gauge is at the false clamp value, to exit the **microcut ECO**® calibration routine. You are finished, the next screen you will see is the normal start up screen.

Touch the *forward* icon to move the back gauge forward.

Touch the *reverse* icon to move the back gauge reverse.

Touch the *cancel* icon to exit this panel.

STATUS NUMBERS FROM THE DRIVE COMPUTER

The computers track all operations of the machine and send reports to the display constantly. Individual sensors are also monitored and displayed near the top of the screen. LEDs on the H4 CPU PCB allow you to perform additional evaluations. The following table lists error numbers (shown in both decimal value and hexadecimal value) sent from the H4 Drive to the Display and their corresponding messages.

Status	Drive computer conditions
Non-Fatal Errors…	
00 (00 Hex)	Steady state, no commands being performed.
01, 02, 03 (same in Hex)	Manual drive, micro-positioning drive, and automatic drive respectively.
04 (04 Hex)	In preset drive routine … calibration at power on.
06 (06 Hex)	In factory reverse drive test … only when the drive key is pressed.
16 (10 Hex)	Checking the safety curtain … full Control Systems only.
96 (60 Hex)	Power on … Waiting for download from the display to allow operation.
97 (61 Hex)	Waiting for a command for preset or factory test drive at power on.
99 (63 Hex)	In factory forward drive test … only when the drive key is pressed.
128 (80 Hex)	Target lost … the current requested position is beyond the table size. This can occur if the gauge is hand wheeled beyond the programmed table limits or if it is in front of the clamp shoe and the clamp shoe is removed from its holder (or the sensor for the clamp shoe is unstable).
129 (81 Hex)	No motion seen. This occurs if the motor fails to move, the encoder does not report the movement, or if the speed drops to less than 75% from the maximum speed achieved (unless the braking period has begun). Check for binding in the back gauge carriage and thrust bearings at either end.
138 (8A Hex)	The heat sink on the drive box is too hot to continue driving. The system will wait for the heat sink to cool down before operation can continue. The machine may need to be cleaned and lubricated, or the back gauge speed may be set too high. If lubrication is not performed or the speed reduced, another error is likely to occur. On machines with acme screws generally 6 to 8 inches per second (15 to 20 cm per second) is a maximum speed, in some cases less. Anything beyond that may bind the screw and the bearings and result in possible machine damage as well as higher energy use without increased speed.
140 (8C Hex)	An E-Stop has been released. Check all E Stops and make corrections.
Fatal Errors…	
177 (B1 Hex)	Communication time out error with the Safety CPUs … full Control Systems only. Turn power off and restart. If this happens frequently check VAC power supply and inspect all cables and components for damage that could cause shorting.
181 (B5 Hex)	No motion during the preset forward drive. If there is motion then check for correct direction and inspect the encoder connections (mechanical and electrical). The encoder signals can be seen in the Drive Box where the encoder plugs in (J110). The A and B LEDs should alternate from on/on to on/off, off/off, off/on and so forth as the encoder is very slowly rotated. If there is no motion then check the drive motor connections (mechanical and electrical). Make sure the brake is releasing during drive. Make sure there is not a mechanical problem with the machine. Unplug the motor cable at the Drive Box and check the outer pins for about 4 ohms of resistance across the motor.
182 (B6 Hex)	Position sense error. Too much forward drive without releasing the position sense. Check the connections to the sensor.
183 (B7 Hex)	No motion at preset reverse drive. See 181 (B5 Hex) above.
184 (B8 Hex)	Zero set missing after position sense. Too many counts without the zero set.
185 (B9 Hex)	Reverse drive is counting forward during preset drive testing. Go through the Set Up Routine.
186 (BA Hex)	No motion at start up reverse test. See 181 (B5 Hex) above.
188 (BC Hex)	Forward drive is counting reverse during preset drive testing. Go through the Set Up Routine.
189 (BD Hex)	No motion at start up forward test. See 181 (B5 Hex) above.
191 (BF Hex)	Duplicated data on last zero set position value lost … Drive CPU lost internal data. This indicates a major power disruption. If this happens frequently check VAC power supply and inspect all cables and components for damage that could cause shorting.
192 (C0 Hex)	Position unknown … too many counts without an encoder zero set. Check the electrical connections to the encoder. Replace the encoder (and cable) if the problem persists.
193 (C1 Hex)	UART time out error—too long without communication from the display. Shut the power off and restart. If this happens frequently check VAC power supply and inspect all cables and components for damage that could cause shorting.

LEDs can be seen on the H4 Boards when the cover is removed.

SPECIFICATIONS/LIMITATIONS

Main System Power Input:

    Up to 550 VAC, 50/60 Hz.

    KVA based upon main and air motors.

    Disconnect, wiring, and main / air motor contactors with trips to match requirements.

Drive Box (computer control) Power Input:

    Auto adaptive 100 to 250 ± 10% VAC, 50/60 Hz, 1 KVA.

    If voltage for 3 phase motors is higher then a neutral line or transformer will be required.

    Actual power used is based on size of back gauge drive motor and machine loads.

Back Gauge Motor Output:

    0 to 180 VDC (PWM controlled, peak voltage based upon DC bus created from AC input).

        NOTE: Voltage readings will vary based upon meters used and methods employed.

Back Gauge Motor Type:

    180 VDC permanent magnet type up to 3 KVA.

    Frame size can vary based upon mounting requirements.

    RPM can vary based upon full speed requirements.

    Power can vary based upon load requirements.

Sensors:

    Mechanical or P type two wire proximity.

Encoder:

    Incremental type.

    5 VDC to 30 VDC input dependent upon termination at Drive Box.

    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.

Auxiliary I/O:

    Refer to details in Owner's Manuals.

Display:

    Unregulated input from 12 to 28 VDC with RS-232 interface from / to Drive Box.

Climatic Considerations:

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

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

        Relative humidity per Class 3K3: 5% to 85%, $1g/m^3$ to $25g/m^3$.

        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%, $1g/m^3$ to $29g/m^3$.

        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 $60g/m^3$.

            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

microcut ECO® Owner's Manual for the H3 & H4 Drive Paper Cutter Automation System

CE DECLARATION OF INCORPORATION

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

- **microcut**® in all forms – Track, JR, BASIC, COLOR WS, PLUS WS, and OEM flat panel designs
- Expansion Board added to H3 drive unit for additional I/O
- B65 and Transcend full paper cutter control systems
- KPM (Knife Position Monitor) module
- AKS (Auto Knife Set) system for auto setting knife height
- Transcend Control System in all forms (simple gauge control through full machine control with adaptors)

that have been 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 full machine controls include a Type III two-hand control for high pressure clamping and cutting with performance level up to a PL_e per ISO 13851:2002 Ed 1, cyclically tested safety curtain inputs, and a 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:

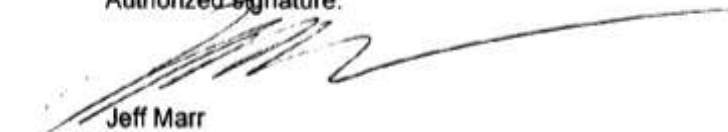| Standard	Description
2006/42/EC 2nd Edition	Guide to application of the Machinery Directive.
BS EN 1010-3:2002+A1:2009	Safety of machinery. Cutting machines.
B65-3:2011 (ISO 12643-3:2010)	Graphic technology. Safety requirements.
BS EN ISO 12100:2010	General principles of design. Risk assessment and 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 control 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 to not 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 scheduled basis or to force completion of the testing before continued use of the machine is allowed.

Incorporation of the above product(s) does (do) 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@microcutsystems.com.

Authorized signature:

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