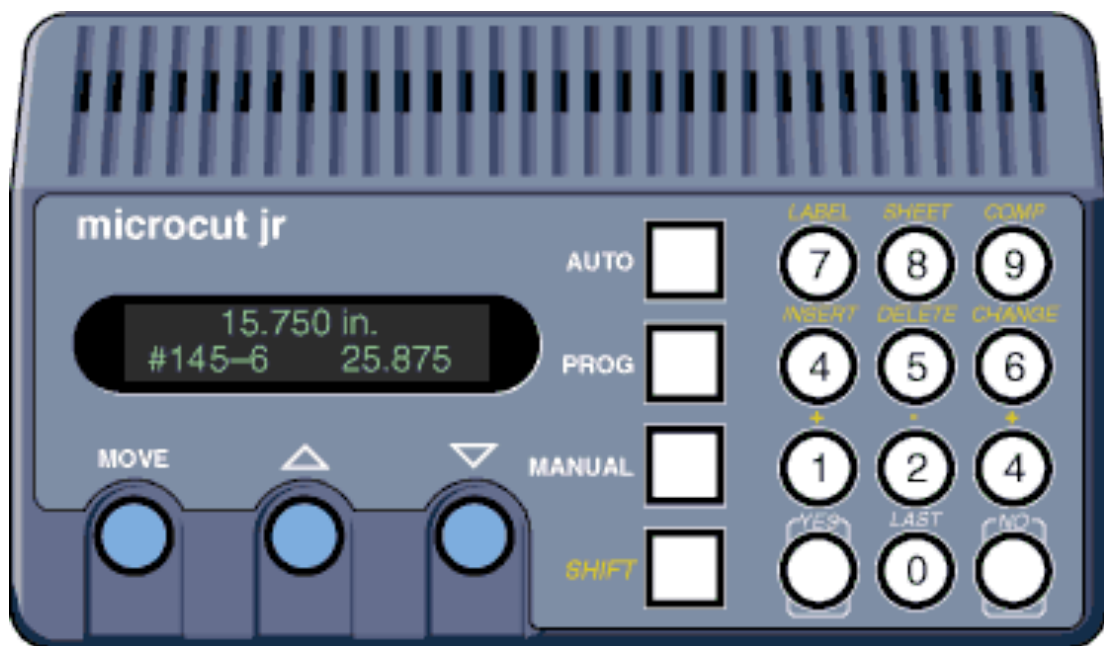


microcut jr.®

Cutter Automation System

Owner's Manual



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Edition 3

Introduction

Thank you for purchasing a **microcut** control system for your paper cutter. Having done so, you have joined over 15,000 **microcut** users worldwide who are enjoying the benefits of computer-controlled cutting. **microcut** is a state of the art system for controlling backgauge movement, with an intuitive, easy to use operator interface. **microcut** features room for over 2,000 cuts, divided into as many as 999 jobs. There are four basic operations—

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

Many of the features you will find in **microcut** 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.

microcut 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 or positioning speed. In these cases it is suggested that either a leadscrew kit be installed or that the machine be replaced.

microcut 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 **microcut**. *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 **microcut** installation is basically mechanical. It involves mounting the display console; the H-drive box; the DC motor to drive the backgauge; the shaft encoder to signal backgauge movement to the computer; and four sensing switches to inform the computer of the machine status (clamp, knife, clamp shoe, and position). All low voltage cables are plug-in type. Wiring is required for the power and motor.

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.

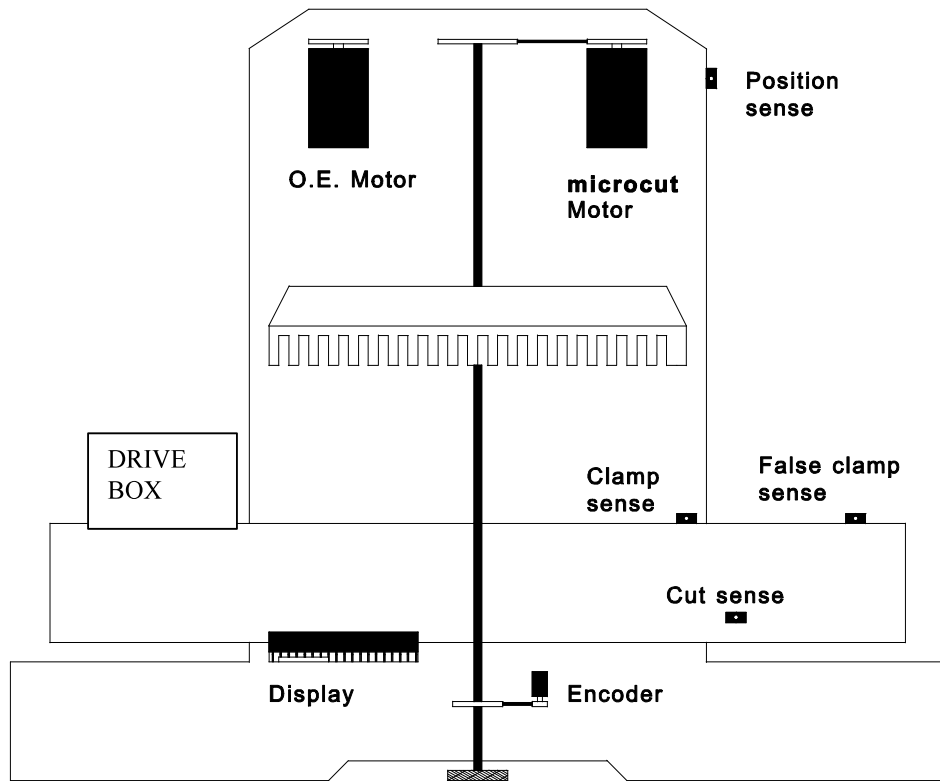
microcut is a retrofit system so every installation is unique. Install the components for function as well as fit. The brackets are designed with extra holes and slots. They are easily modified, and can be adapted for almost any requirement. Installation variables include the encoder sprockets, pulley (Schneider cutters have a flat belt drive), and motor size. 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 **microcut** to know the machine it is installed on and to operate safely and correctly.

Hints—

1. Inspect the machine to insure all operations are correct. Fix problems now, not later.
2. The boxes are packed to facilitate the installation. The installation will be easier if the parts are not mixed up.
 - **Box 1** contains the backgauge drive motor.
 - **Box 2** contains the motor drive, encoder, sensors, and various brackets.
 - **Box 3** contains the encoder sprockets, manual, display, and mounting bracket.
3. Use the thinnest drive belt possible to minimize belt flex around the pulley.
4. Do not over-tighten the backgauge. If there are nylon gliders supporting the backgauge keep them *loose* to minimize leadscrew flex.
5. Use only one belt per pulley. Multiple belts on any pulley will cause slower settling.
6. The H-drive servo control unit works best when the belt is fairly tight. This is in contrast with the older SCR drives that preferred a very loose belt.
7. Wire the display to the H-Drive, the H-Drive to line power, and hold the MANUAL key at power on to access demonstration mode. Let the operator learn the system while the installation is occurring.

Installation Diagram



Top View

Part locations are for reference purposes only. Every installation will be unique. Mount components for function and form, not necessarily to mimic this diagram.

On some paper cutters, it is not always possible to find space to mount a second motor. It may be necessary to remove the original motor and install the **microcut** motor in the original equipment space. If this is the case, completely insulate any bare wires, label all wires, and pack all mounting hardware with the original motor to facilitate reinstallation of the motor in the event **microcut** is moved to another machine at a later date. The installer should document how the original motor should be refitted. Some machines interlock with the drive motor. The knife and clamp will not operate if the motor is removed. In this case mount the motor on a cross leg or other convenient location and make sure if the pulley turns it is properly guarded.

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, 5/16" high speed drill bits
- Electric hand drill
- Extension cord

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

- 1/4-20, 3/8-16 taps
- 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, 9/16 wrenches and sockets
- Phillips screw driver
- Hacksaw to saw off excess threaded rod

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 rod pivot bracket in box 3. Jr and standard units can also mount directly against the cutter.
2. Drill and tap the appropriate holes and mount the display so that it is secure.



microcut jr



microcut standard



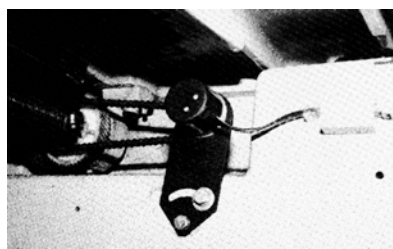
microcut+

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

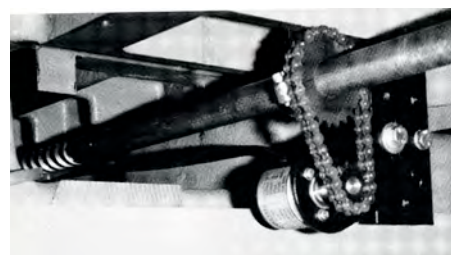
1. Use the shaft encoder mounting brackets supplied to mount the shaft encoder near the leadscrew.
2. Install a sprocket on the encoder shaft that will allow it to turn at least two, but not more than four turns for one inch (25 mm) of backgauge movement.
3. Clamp the sprocket to the leadscrew with the 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

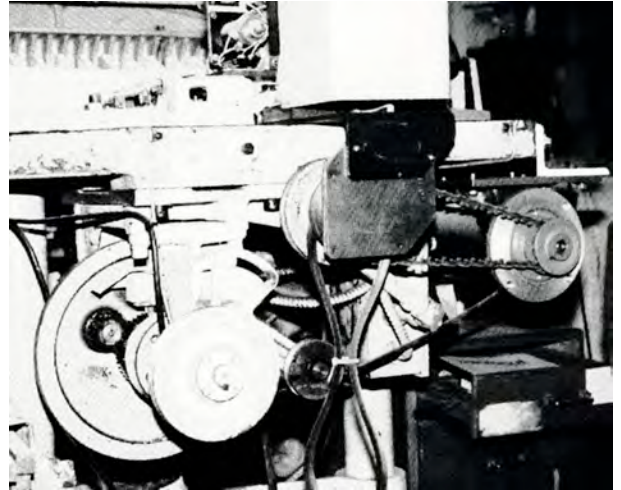
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DC Drive Motor—The motor turns the leadscrew.

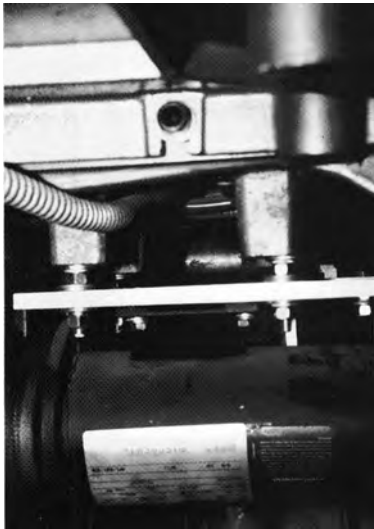
1. The motor **must** turn at least three, but not more than six times for each inch (25 mm) of backgauge movement. An adjustable pulley and a fixed one are supplied to insure that this can be achieved on most machines.
2. If possible mount the motor so that it lines up with the existing leadscrew drive pulley. In many cases the same belt can be used for the new motor as was used for the original equipment drive. If the motor mounting method does not isolate the original drive system, other means will be required.
3. If **microcut** is ordered for a Schneider cutter a one inch wide cog belt pulley will be included with the kit to drive with the original flat belt. If the original motor is removed make sure wires are labeled and taped.
4. On some cutters the brake will have to be disabled and the drive clutch enabled to allow proper operation.



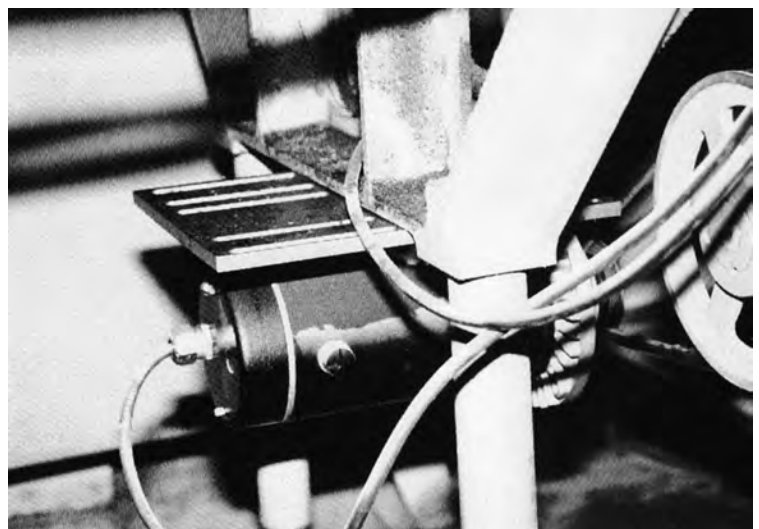
Polar



Harris



Wohlenberg



Lawson

CONTINUED ON NEXT PAGE.....

Proximity Sensors—These allow the system to know what the cutter is doing. Each sensor is labeled and must be installed according to its designation. Use any combination of brackets and hardware to install each sensor securely to the machine according to the following criteria:

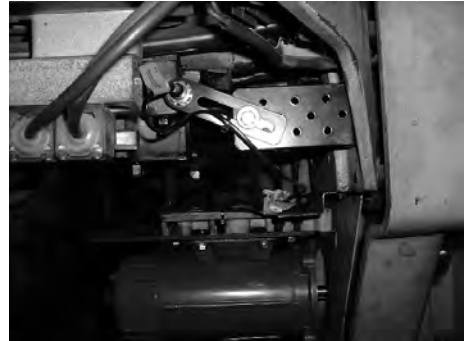
Position Sensor—supplies ground to pin 3 when the gauge is not near the rear of the table.

1. Move the backgauge to its rearmost position.
2. Mount the position sense so that it will be tripped by the gauge one or two inch (25 to 50 mm) before the backgauge reaches the maximum mechanical rear position.
3. Do not mount the position sensor so far forward that the backgauge may move behind it and allow the sensor to become "untripped" as the gauge is moved to the extreme rear.
4. Do not mount the rear position sensor more than ten full encoder revolutions from the mechanical rear of the cutter.
5. Use the supplied trip plate if the cutter is heavily painted or if the surface to be sensed is not flat.



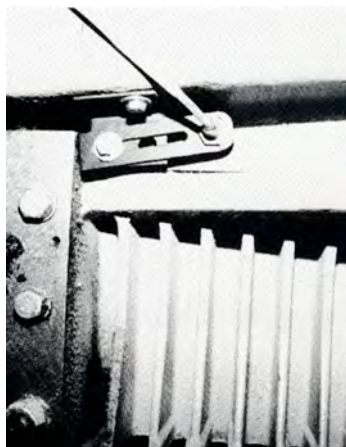
Above table

Under table



Clamp Up Sensor—supplies ground to pin 4 when the clamp is full up.

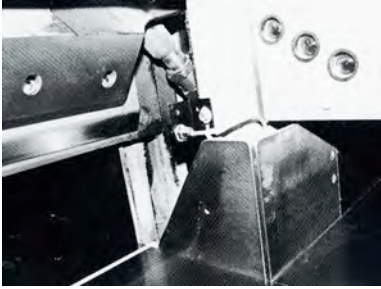
1. Mount this sensor so that it is tripped only when the clamp is in its full up position. Horizontal mounting of the sensor barrel prevents complications that can arise due to hydraulic sag.
2. Use the supplied trip plate if the cutter is heavily painted or if the surface to be sensed is not flat.



CONTINUED ON NEXT PAGE.....

Cut Sensor—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.



Clamp Shoe Sensor—supplies ground to pin 6 when the clamp shoe is in the holder.

1. Mount this sensor so that it is tripped when the clamp shoe (false clamp or sole plate) is resting in its holder. If there is no clamp shoe holder, use the multi-angled brackets supplied to create one.



NOTE: The electrical purpose of each sensor is supplied in case the sensor is replaced with a different type of a switch. When the sensor is not supplying ground it presents an open circuit. With the cable pointing up and the tab facing you, pin 1 is to the left. The wiring at pin 1 is 12VDC and pin 2 is ground. Pins 3 to 6 are the signal lines from each sensor as defined in the installation instructions.

Drive Box—The drive box drives the gauge motor and acts as a junction box for the wiring.

1. Install this in a central location to all of the other parts. Make sure the cables will reach all of the components. Avoid mounting this box on a moving panel. Keep this box in the open to allow maximum cooling. Ideally the fins will be vertical to insure optimal cooling.



Wiring and Power

Be sure that the original equipment backgauge motor cannot drive the leadscrew. Be certain that the original equipment backgauge brake will not energize during motor drive. If a clutch needs to be locked on (electrically or mechanically) to allow the **microcut** motor to drive, do this now. If any modifications are made completely insulate any bare wires, label all wires, and pack all original parts that were removed. To facilitate reinstallation of the original drive system in the event **microcut** is moved to another machine at a later date, the installer should document how the original motor should be refitted. Check the machine for operation in case any of the above modifications may have affected operation.

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

Four 6 pin cables are supplied in various lengths for the proximity sensors. In-line connectors are supplied for larger machines that may require longer runs using multiple cables. Plug a cable into a sensor. Route the cable along the desired route and plug it into the drive box. The four sensors may be plugged into the four receptacles in any order. Repeat the procedure for each sensor.

Two 8 pin cables are supplied in different lengths. Select the desired length cable. An in-line connector is supplied for larger machines that may require a longer run using both cables. Plug the cable into the encoder. Route the cable along the desired route and plug it into the drive box.

Plug the round cable into the display console. Route the cable along the desired route and plug it into the drive box.

Connect the motor cable (male terminal plug) to the motor using the connectors supplied. ***The earth (frame) wire should only be connected if the motor is not electrically attached to the machine.*** Route the cable along the desired route and plug it into the drive box.

microcut is equipped with an air table control line (relay not supplied). Refer to the schematic pages at the back of this manual for details.

Connect the power cable (female terminal plug) to any 85 to 250 VAC source. The center of the plug (yellow wire with green tracer) is the earth connection. The other two lines are for the power. Check the plug to make sure this is correct. Plug the cable into the drive box.

Final Check

Insure that—

- The machine is fully cleaned from the installation.
- All parts are securely mounted to the machine.
- The motor pulley is secure.
- The motor drive belt is correctly aligned.
- 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. Remember **microcut 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 **microcut**. *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.

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 and can select the correct machine sizes and operating parameters.

Setup Routine

All **microcut** 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 press the **9** key during the number countdown to enter the set up routine. The following set of icons will appear. Follow the instructions for each—

++++ Memory test ++++
→ number

Memory test is in process to verify all combinations of data.
Please wait. The number represents the location being tested.

?????? 1 = Inch
2 = cm 3 = mm 4 = sun

Press **1, 2, 3, or 4** to select the units of measurement.

*****→→→→→→→→→
→→→→→→→→→→//

Data is being sent from the display to the H-Drive.
Please wait while communications between computers is established.

*****←←←←←←←←←
←←←←←←←←← ← //

Data is being sent from the H-Drive to the display.
Please wait while communications between computers is established.

↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑
????????????????????

Use **DRIVE** keys to verify motor drive direction.
Watch the gauge as you press either ARROW key. Press YES if the gauge is moving the direction of the pressed arrow. Press NO if the direction is wrong.

Reverse motor leads!!!
↑↓ -<O>-

Motor direction is wrong, turn off the power and invert the wires.
If the direction is wrong, turn power off and switch the motor wires
If direction is correct, press the YES key. The system will check the count direction and will either repeat the direction test or continue.

>>>AUTO<<<

Press **AUTO** to allow the gauge to mock calibrate.
The gauge will be moved to the rear of the cutter automatically to calibrate.

~~~~~  
????????????????????

AC power check at start up.  
Please wait while the AC power is verified.

↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑  
????????????????????

Reverse drive check at power on.  
Please wait while the reverse drive is verified.

↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓  
????????????????????

Forward drive check at power on.  
Please wait while forward drive is verified.

↑↓↑↓↑????????↑↓↑↓↑  
Numbers

Calibration drive at power on.  
Please wait. The numbers represent encoder counts, not position.

CONTINUED ON NEXT PAGE.....

.000 in. (or cm, mm, sun)

Enter an exact rear reference position

????????????????????

Gauge must be at the **exact** value keyed in to assure accuracy.

.000 in. (or cm, mm, sun)  
↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓

Drive/move the gauge to the front and enter the front reference position.  
Gauge must be at the **exact** value keyed in to assure accuracy.

▲▲▲▲: in. (or cm, mm, sun)

Enter the maximum rear position.  
Keyed in numbers will show in the lower line.

-----: in. (or cm, mm, sun)

Enter the clamp shoe (false paper clamp) size.  
Keyed in numbers will show in the lower line.

▼▼▼▼: in. (or cm, mm, sun)

Enter the minimum front position.  
Keyed in numbers will show in the lower line.

in. (or cm, mm, sun) / sec  
????????????????

Enter the desired speed (limited by table size).

+ - 0.000

Use **NUMBERS** and **YES** to enter the tolerance\*.

→ → → ?

Press **YES** or **NO** for auto push out before reverse drive in auto mode.

NOTE: For OEM applications with fixed pitch leadscrews the order of events will be different. After the setup routine is complete the system will automatically re-start.

\* The tolerance allows the display to settle on a position. Almost all mechanical systems contain a certain amount of flex or vibration. If the tolerance is too small, any flex or vibration will cause the current position display to flutter between numbers. Generally the tolerance is set to .003 inches (.007 cm), although tighter tolerances can be selected. To insure the display is stable, the drive control will re-correct the gauge anytime that the error is more than half of the tolerance setting. A .003 setting will yield actual accuracy to .0015 inches (.004 cm). Larger tolerances allow faster positioning and faster cutting.

# Getting Started

Make sure everyone is clear of the machine and that all guards are in place. Supply power to the system. The software versions will appear on the screen and certain tests will be performed. The display will show all 9's, then 8's, and continue to countdown to 1's. At that time the system will—

1. Check the circuits and if everything is OK continue automatically. If there are any errors **microcut** will display the problems with an error message so that they can be corrected. Refer to the error section of this manual for details. If there are errors in the memory the SET UP routine will be forced. Refer to the set up section of this manual.
2. Request that you press **AUTO** to let the system calibrate. When you press **AUTO** the backgauge direction will be tested and then be driven slowly to the rear of the cutter to calibrate. NOTE: If **microcut** is already at the rear of the table it will move the backgauge forward before going back.

**microcut** is now ready to use.

**microcut** has been designed with two basic key groups for operator control. These groups are—

**NUMBER**—used for entering position information or for moving the backgauge.

**MODE**—for selecting manual, program, review, or automatic operation.

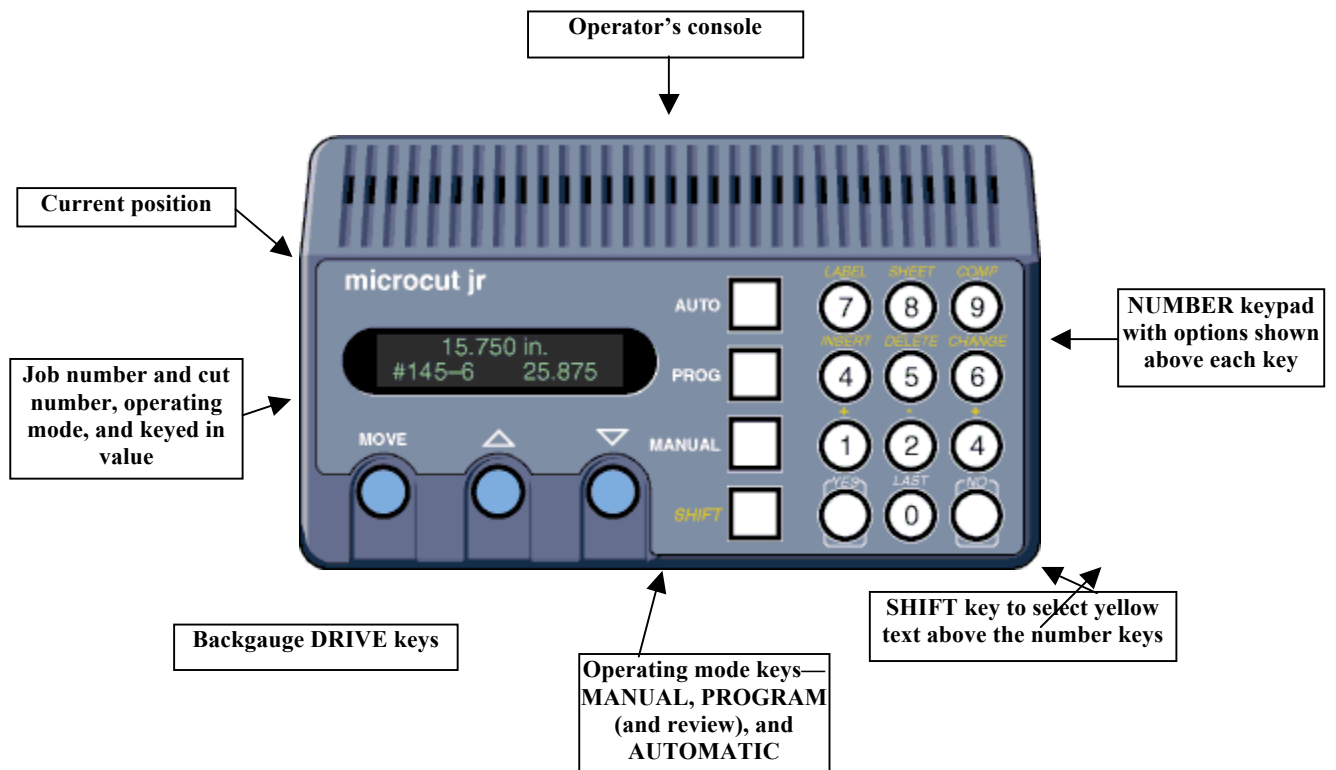
A **SHIFT** key selects the features listed above the number keys. Access these by holding the **SHIFT** key down before pressing the corresponding **NUMBER** key.



# The Screen

In normal operation the top line of the screen shows the current backgauge position. The left side of the second line will show the selected job (dashes if no job is selected) and the cut number of the job that was last used. The center will show the operating mode. The right side will show the keyed in position value.

*Any time a buzzer pulses, the display will show a message that you should read. Refer to ERROR MESSAGES later in this manual.*



# ICONS

Various ICONS will be shown on the screen to inform you of the operating status and help guide you through the various routines. Question marks represent tests in process or that information must be entered to continue.

## START UP—

|                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>9999's down to 1111's</p> <p>*****→→→→→→→→→→<br/>→→→→→→→→→→→///</p> <p>*****←←←←←←←←←←<br/>←←←←←←←←←← ← ← ///</p> <p>&gt;&gt;&gt;AUTO&lt;&lt;&lt;</p> <p>~~~~~<br/>????????????????????</p> <p>↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑<br/>????????????????????</p> <p>↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓<br/>????????????????????</p> <p>↑↓↑↓↑????????↑↓↑↓↑<br/>Numbers</p> | <p>Power on operation, preparing for auto-calibration routine</p> <p>Data is being sent from the display to the H-Drive</p> <p>Data is being sent from the H-Drive to the display</p> <p>Press the AUTO key to allow the gauge to calibrate.</p> <p>H-Drive AC power check at start up</p> <p>Reverse drive check at power on</p> <p>Forward drive check at power on</p> <p>Calibration drive at power on (The numbers represent encoder counts, not position)</p> |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

These icons will be located in the left corner of the lower line

|                                           |                                                                                                                                      |
|-------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------|
| <p>#</p> <p>-&gt;&gt;&gt;</p> <p>-+++</p> | <p>Precedes the programmed job number (dashes if there is no job)</p> <p>The programmed location is a push out</p> <p>End of job</p> |
|-------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------|

CONTINUED ON NEXT PAGE.....

## OPERATION—

These icons will be located in the middle of the lower line

|     |                                                             |
|-----|-------------------------------------------------------------|
| ➔▼← | Moving to keyed in location                                 |
| ▼▼▼ | Program mode of operation                                   |
| ⊙^⊙ | Review mode (eyes and a nose)                               |
| ▼➔▼ | Automatic mode in position moving cut to cut                |
| X▼X | Change cut is enabled                                       |
| A = | Label entry, enter first cut                                |
| B = | Label entry, enter number of label rows on this side        |
| C = | Label entry, enter label size on this side                  |
| D = | Label entry, enter trim size on this side                   |
| ↑ = | Sheet divide, enter sheet size on this side                 |
| ÷ = | Sheet divide, enter number to divide sheet by               |
| ▼↑▼ | Lay compensate is enabled to adjust all forward moving cuts |

ERRORS—See error section of this manual for more information on these messages.

EEEEEEEEEEEEEEEEEEEE Non fatal error--press any key to continue.

XXXXXXXXXXXXXXXXXXXX Fatal error--turn power off and check.

# Features

## **OPERATING MODES:**

Four basic operating modes are available: **MANUAL** for basic drive operations, **PROGRAM** to create new jobs, **REVIEW** to look up old jobs, and **AUTOMATIC** to sequence position to position as described by a selected job.

## **BACKGAUGE MOVEMENT:**

Press **FORWARD** or **REVERSE** to move the backgauge slowly at first, faster with time. To move to a specific position, use **NUMBERS** and **+**, **-**, **/** to display the target value and press **MOVE**. In the case of the **FORWARD** or **REVERSE** keys, auto correction will remain off allowing the hand wheel to be used. Auto correction will engage after any move to a specific location (automatic operation or with **MOVE**).

## **AIR CONTROL:**

Press **+** and then **YES** to enable the air. Press **-** and then **YES** to disable the air. If this is done in **PROGRAM**, **REVIEW**, or **AUTOMATIC** modes the air status will be saved with the cut. The air table will then switch on and off automatically when using the job. It is also possible to program the air status for after the cut while the clamp is still in the down position. To do this in automatic mode, hold the clamp down with the foot treadle, cycle the knife, and then press **+** or **-** followed by the **YES** key. The air after cut status defaults to the off position during programming to prevent small labels from being displaced after the cut. If a larger sheet is in front of the knife after the cut, and the air table is needed to move it, then turn the air after cut on. **NOTE:** In auto mode the air will be forced on for any reverse or push out drive request.

Note: Actual control of the air table requires optional hardware.

# Manual Mode

MANUAL is the basic operating mode. Press **FORWARD** or **REVERSE** to move the back gauge slowly at first, faster with time. To move to a specific position, use **NUMBERS** and **+**, **-**, **/** to display the target value and press **MOVE**. In the case of the **FORWARD** or **REVERSE** keys, auto correction will remain off allowing the hand wheel to be used. Auto correction will engage after any move to a specific location (**MOVE** key).

**FEATURES IN MANUAL MODE**—**microcut jr** can adjust units of measurement, speed, and backgauge calibration from the manual mode of operation.

Units of measurement—Press **SHIFT NO** to access the UNITS selection screen. Make your selection with the number keys.

Auto push out—Press **YES** to enable this, **NO** to disable. This will force a push out after a cut in automatic mode if the next target is in back of the current one. Press **3, 1, 7, 5** before selecting the auto push to access the speed and tolerance settings. Too high a speed may cause undue wear on the machine. Set the speed to your own needs. There is no advantage to increase speed if you are not waiting for the unit to position. Tighter tolerances require more cautious (slower) settling routines.

Back gauge calibration—Enter the units selection screen but **DO NOT** select the units. Instead press **LAST** to back up into the calibration screen. Use the drive keys to move the backgauge. Use the knife to cut some paper. Use the number keys to enter the correct value. **NOTE:** The adjustment to the gauge position must be within certain tolerances so that upon the next power on calibration the preset value is within ten encoder turns of the maximum rear of the machine. If the number you try to enter does not allow this, a screen will appear showing the allowable range of numbers you can enter. The buzzer will sound on and off. Press any key to continue.

# Program Mode

Program mode is used to define a series of targets so **microcut** can operate in automatic mode. These stops (and pushes) can proceed without limitations of direction or motion. Press **PROGRAM**. Use **NUMBERS** to enter the desired job number. If the number is already programmed, eyes and a nose will appear in the center of the bottom line indicating you are reviewing the job. If you do not care what number you use, simply press **YES** with no number shown and the computer will find the lowest available number for you. To select the last job you used simply press **LAST**.

Programming can be done by pressing **NUMBERS** to display the desired position and **YES** to record it, or by moving the back gauge and cycling the knife. The **+**, **-**, **/** keys can be used to enter fractions or blind program from the previously programmed position. Press **YES** or **LAST** to scroll up and down the job to make adjustments or corrections.

Once programming is completed, press **AUTOMATIC** and **microcut** will drive the backgauge to the displayed position. Once in automatic mode, the back gauge will move to the next position after each cut, or whenever **MOVE** is pressed.

## FEATURES IN PROGRAM MODE

Several features are available to help create the job and facilitate easier cutting. To select a feature press the corresponding key--

**SHIFT NO** to change the units of measurement.

**SHIFT-YES** to enter a push out instead of a cut.

**LAST** to back up in a job. Pressing this key at the first location will back you around to the end of the job.

**+ - /** to allow addition or subtraction of numbers as well as entering fractions. If you do not key in a number before using the calculator feature, the last cut position will be used (blind programming). If you press **+** without any numbers after it the air control will go on. If you press **-** without any numbers after it the air control will go off.

**INSERT** to open a space in memory to add a cut.

**DELETE** to delete the cut shown on the screen.

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**CHANGE CUT** to allow an already programmed cut to be modified. Once a position is programmed, it is

protected against change unless this feature is enabled.

**LABEL** to program cut values for a step and repeat sequence. An *A* will appear requesting the sheet size.

Key this value in , move the gauge and cut it in, or leave it blank so the computer can automatically calculate the value later. A *B* will appear. Key in the number of rows of labels you have on the side being programmed. A *C* will appear. Key in the size of the label. A *D* will appear for the trim size. If there is spare paper after the labels are cut and the first cut was programmed, a number will appear representing the required trim to use the entire sheet. Select this value or key in your own. All required stops will be programmed.

**SHEET** to calculate stop values that will cut the sheet into equal sizes. A double ended arrow will appear requesting the sheet size. This can be keyed in or entered with the knife stroke. A bar with 2 dots (divide sign) will appear asking for how many pieces into which the parent sheet should be divided. Key in the number. All required stops will be programmed.

**COMP** feature is active in automatic mode only.





# Review Mode

Review mode is used to select an existing series of targets so **microcut** can operate in automatic mode. Press **PROGRAM**. Use **NUMBERS** to enter the desired job number. If the number is already programmed, eyes and a nose will appear in the center of the bottom line indicating you are reviewing the job. To review all jobs chronologically, continue to press **PROGRAM**. To select the last job you used simply press **LAST**.

Review the individual cuts by pressing **YES** or **LAST**. Modifications can be made in the same way as you would use in the **PROGRAM** mode.

Press **AUTOMATIC** and **microcut** will drive the backgauge to the displayed position. Once in automatic mode, the back gauge will move to the next position after each cut, or whenever **MOVE** is pressed.

# Automatic Mode

While in automatic operation **microcut** will read programmed locations from job memory and position the backgauge sequentially from one value to the next as the knife is cycled, **MOVE** is pressed, or the location is reached (push out).

Program a new job or select a previously programmed number. Press **AUTOMATIC**. **microcut** will move to the displayed value.

Press **YES** or **LAST** to move the display to a previous or future value. After one second of stable display the backgauge will move to the displayed position.

Press **MANUAL** to exit automatic mode. Press **AUTOMATIC** to go back to automatic mode at the same place you exited.

## FEATURES IN AUTOMATIC MODE

The same features available in program mode are also in automatic mode with the addition of—

**COMP** will adjust all forward moving cuts (up to the end of the job) by an equal amount. Move the gauge with the drive keys to disable auto-correction. Fine position the gauge with the hand wheel to the correct location. Make the cut. All forward moving cuts will be adjusted by the same amount to adjust for errors in layout or stretch during printing. The lay comp value can also be entered with the keyboard.

The lay comp feature allows an operator to program a label job with the convenience of the label mode regardless of the quality of the layout. On the first lift use the lay comp feature to adjust each trim out. All finished label sizes will be maintained but each trim will be adjusted.

# Error Messages

There are two types of error messages in the **microcut**. Minor errors are those that have EEEE's shown across the top of the display. These can be recovered from by pressing any key. Major errors have XXXX's across the screen. In these cases pressing any key will initiate a full reset with re-calibration. In either case, refer to the number on the bottom line to evaluate the problem.

## MINOR ERRORS FROM THE DISPLAY

- 27 Clamp shoe size is less than minimum front size; set up routine is required
- 26 Clamp shoe size is greater than 10 inches; set up routine is required
- 25 Maximum rear is less than 10 inches; set up routine is required
- 24 Maximum rear is too big; set up routine is required
- 23 Sun (Japanese) pitch does not agree with cm pitch; set up routine is required
- 22 Inch pitch does not agree with cm pitch; set up routine is required
- 21 Pitch is too great; encoder is turning 10 or more turns per inch; set up routine is required
- 12 Cut stroke occurred during drive to position
- 11 Keyed-in number cannot be zero
- 10 Keyed-in number is too small
- 9 Keyed-in number is too big
- 8 Target value is too far back
- 7 Target value is too far forward
- 6 Position sensor is tripped (set up routine after memory test when sensors are checked)
- 5 Memory failure in set up routine (duplicated data does not match)
- 4 There is not enough space to insert a cut
- 3 Memory is too full to add this label (or sheet divide) routine
- 2 Duplicated memory error at start up
- 1 Memory retention error at start up (by passed by pressing any key but not fixed)

## MINOR ERRORS FROM THE H-DRIVE

- b4 AC power sense not operating for motor drive
- 89 Check the D37 and 5 pin connectors on the drive box for looseness.
- 88 Too many drive motor overcurrents; speed is being lowered
- 87 Overcurrent on drive motor; check for binding in back gauge
- 81 No motion seen during motor drive
- 80 Target lost at H-Drive; requested target is beyond the limits of the table

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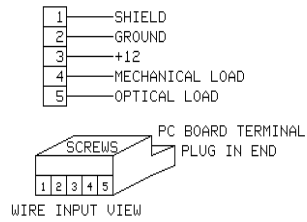
### **MAJOR ERRORS FROM THE DISPLAY**

- 00 Watchdog reset at the display due to power problems; the computer has gotten entirely lost
- 01 Pressed key during start up calibration drive has caused immediate shut down

### **MAJOR ERRORS FROM THE H-DRIVE**

- c0 Too many shaft encoder counts without a zero set
- bf Duplicated shaft encoder zero set value has been lost
- be Impaired drive at forward test during start up
- bd No motion at start up on the forward drive test
- bb Impaired drive at reverse test during start up
- ba No motion at start up on the reverse drive test
- b9 Reverse drive is forward during the start up drive test
- b8 Shaft encoder zero set missing after position sense tripped on start up
- b7 No motion at start up preset reverse drive
- b6 Position sense error
- b5 No motion (or backwards) at start up drive; check motor; go through set up routine
- b0 Watchdog reset at the H-drive due to power problems; the computer has gotten entirely lost

## 5 PIN CONNECTOR FOR LOADING EQUIPMENT

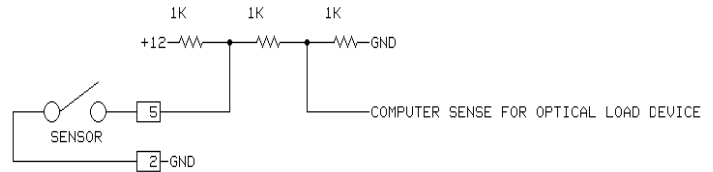
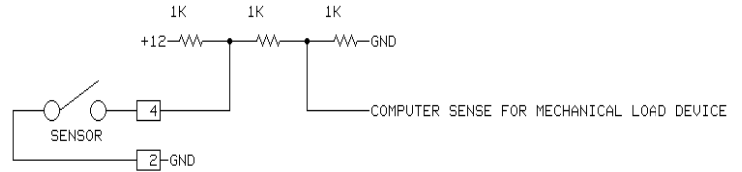


### DEFINITIONS

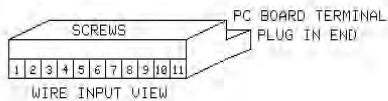
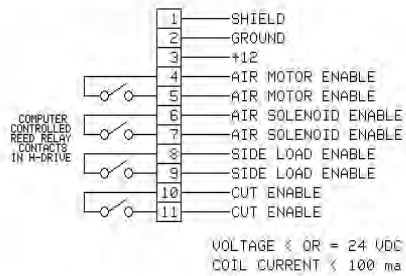
MECHANICAL LOAD SENSE MUST SUPPLY A GROUND PATH TO ENABLE THE BACK GAUGE TO DRIVE.

OPTICAL LOAD SENSE MUST SUPPLY A GROUND PATH TO ENABLE THE BACK GAUGE TO DRIVE.

IF AUTO ADVANCE AFTER LOAD IS ENABLED, THEN WHEN EITHER SENSOR TRIPS OFF GROUND AND THEN BOTH RETURN TO GROUND THE GAUGE WILL AUTOMATICALLY ADVANCE TO THE NEXT POSITION.



## 11 PIN CONNECTOR CONTROL LINE WIRING OPTIONS



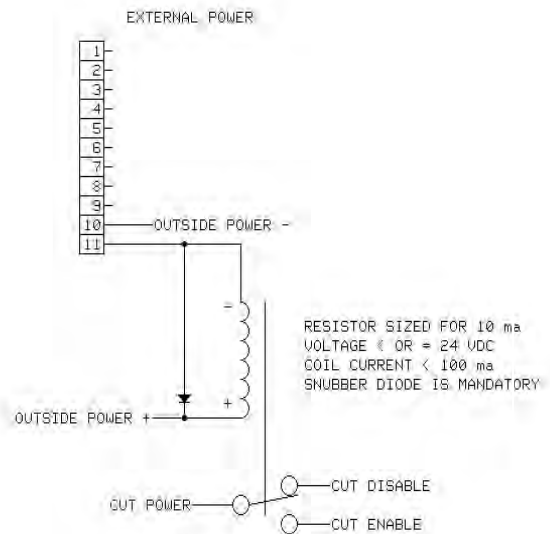
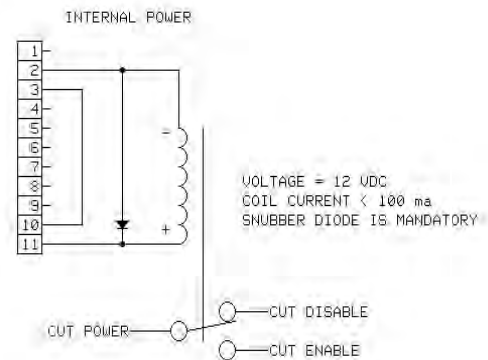
### DEFINITIONS

AIR MOTOR ENERGIZES A RELAY WHEN THE AIR MOTOR IS OFF  
 AIR MOTOR IS TURNED ON AFTER CALIBRATION.

AIR TABLE ENERGIZES A RELAY WHEN THE SOLENOID IS ON  
 AIR SOLENOID IS CONTROLLED FROM THE KEYBOARD OR WITH THE CLAMP SENSE. IF THE CLAMP IS DOWN > 2 SECONDS THE AIR COMES BACK ON.

SIDE LOAD ENERGIZES A RELAY TO ENGAGE SIDE LOADING  
 LOAD CONTROL OPERATES AFTER THE GAUGE IS COMMANDED TO DRIVE TO ANY LOAD POINT AND HAS DONE SO.

CUT ENABLE ENERGIZES A RELAY TO ENABLE KNIFE OPERATION  
 CUT ENABLE RELEASES RELAY AT LOADS, PUSH OUTS, CLAMP ONLY, END OF JOB, REVIEW MODE, AND SOME OTHER AREAS.

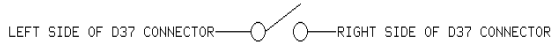


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# D37 CONNECTOR FOR OEM APPLICATIONS

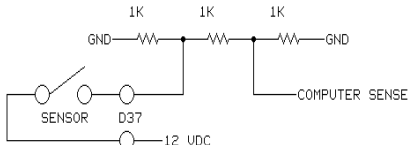
JUMPERS INCLUDED ON THIS CONNECTOR TO BYPASS SENSORS FOR RETROFIT APPLICATIONS

- CURTAIN DISABLES KNIFE
- SHEAR BOLTS DISABLE KNIFE OPERATION AND STOP MAIN MOTOR
- COVERS DISABLE KNIFE AND MAIN MOTOR
- AUTO TRIM TABLE DISABLES GAUGE MOTOR
- PIN IN IS STILL UNDEFINED
- HANDWHEEL DISABLES DRIVE, WHEN RELEASED THE NEW POSITION IS THE NEW TARGET
- DROP GAUGE PREVENTS BACKGAUGE DRIVE AND CAN BE USED FOR AUTO ADVANCE AFTER SIDE LOAD



SEE FIRST SCHEMATIC FOR WIRING OPTIONS

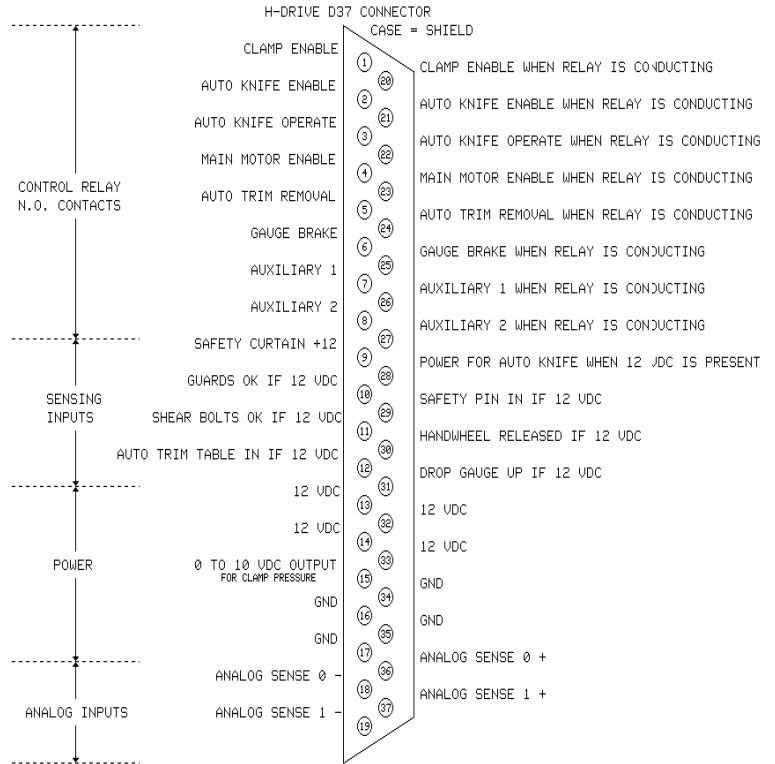
## AUXILIARY CONTROLS FOR OEM APPLICATIONS



AUXILIARY SENSORS FOR OEM APPLICATIONS

0 TO 10 VDC OUTPUT FOR OEM APPLICATIONS

ANALOG INPUTS FOR OEM APPLICATIONS





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

GMS, 30 Golden Gate Drive, San Rafael, 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).