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.

---

GMS is a division of Golden Gate Microsystems, Inc.  
**microcut®** and GMS® are registered trademarks of Golden Gate Microsystems, Inc.

THIS DOCUMENT CONTAINS PROPRIETARY INFORMATION THAT IS PROTECTED BY COPYRIGHT. ALL RIGHTS ARE RESERVED. NO PART OF THIS DOCUMENT MAY BE PHOTOCOPIED, REPRODUCED, OR TRANSLATED TO ANOTHER LANGUAGE WITHOUT THE PRIOR WRITTEN CONSENT OF GMS. ALL SPECIFICATIONS ARE SUBJECT TO CHANGE WITHOUT NOTIFICATION. GMS ASSUMES NO LIABILITY FOR OMISSIONS IN THIS DOCUMENT OR FROM THE USE OR MISUSE RESULTING FROM INFORMATION CONTAINED WITHIN.
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.
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
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.

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.
**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.
**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.

**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.
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.
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.

★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★
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).

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.
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.
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.*
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—**

<table>
<thead>
<tr>
<th>9999’s down to 1111’s</th>
<th>Power on operation, preparing for auto-calibration routine</th>
</tr>
</thead>
<tbody>
<tr>
<td>*****→→→→→→→→→→→→→</td>
<td>Data is being sent from the display to the H-Drive</td>
</tr>
</tbody>
</table>
| ←←←←←←←←←←←←← ←←← ←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←←→
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

Change cut is enabled

Label entry, enter first cut

Label entry, enter number of label rows on this side

Label entry, enter label size on this side

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.

Non fatal error--press any key to continue.

Fatal error--turn power off and check.
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 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.

CONTINUED ON NEXT PAGE…..

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 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.
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

CONTINUED ON NEXT PAGE.....
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 ENERIZES A RELAY WHEN THE AIR MOTOR IS OFF
AIR MOTOR IS TURNED ON AFTER CALIBRATION.
AIRSOLENOID ENERIZES 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 ENERIZES A RELAY TO ENGAGE SIDE LOADING
LOAD CONTROL OPERATES AFTER THE GAUGE IS COMMANDED TO DRIVE TO ANY LOAD POINT AND HAS DONE SO.
OUT ENABLE ENERIZES A RELAY TO ENABLE KNIFE OPERATION
OUT ENABLE RELEASES RELAY AT LAMPS, PUSH OUTS, CLEVER END, OF JOB, REVIEW MODE, AND SOME OTHER AREAS.

CONTINUED ON NEXT PAGE.....
D37 CONNECTOR FOR OEM APPLICATIONS

JUMPERS INCLUDED ON THIS CONNECTOR TO BYPASS SENSORS FOR RETROFIT APPLICATIONS

CURTAIN DISCHARGE KNIFE

SHEAR BOLTS DISABLE KNIFE OPERATION

AND STOP MAIN MOTOR

COLLINS DISCHARGE KNIFE AND MAIN MOTOR

AUTO TRIM TABLE DISABLES GAUGE MOTOR

PIN IN IS STILL VARIOUSLY

MACHINE DISCHARGES EFLIP WHEN RELEASED

THE NEW POSITION IS THE NEW TARGET

DROP GAUGE PREVENTS BACKGAGE DRIVE

AND CAN BE USED FOR AUTO AUTOMATION

AFTER SIDE LOAD

LEFT SIDE OF D37 CONNECTOR—— —— RIGHT SIDE OF D37 CONNECTOR

SEE FIRST SCHEMATIC

FOR WIRING OPTIONS

AUXILIARY CONTROLS FOR OEM APPLICATIONS

INJECTIONS

0 TO 10 VDC OUTPUT FOR OEM APPLICATIONS

AUXILIARY INPUTS FOR OEM APPLICATIONS

M/D責UE D37 CONNECTOR

CASE = SHIELD

CLAMP ENABLE

AUTO KNIFE ENABLE

AUTO KNIFE OPERATE

MAIN MOTOR ENABLE

AUTO TRIM ENABLE

SAFE BRAKE

AUXILIARY 1

AUXILIARY 2

SAFETY CURTAIN + EFLIP

GUARD 8 OR IF 12 VDC

POWER

0 TO 10 VDC OUTPUT FOR CLAMP PRESSURE

GND

GND

ANALOG SENSE 0 +

ANALOG SENSE 1 -

ANALOG SENSE 0 +

ANALOG SENSE 1 -
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:


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).