

microcut[®]

Please Note:

The following product manual is presented in its original form. The contact information included may be outdated. Please use the current contact information below.

Thank you.

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 **microsystems**

microcut +[®] owner's manual

GMS

GRAPHIC MACHINERY & SYSTEMS A DIVISION OF GOLDEN GATE MICROSYSTEMS, INC.

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GRAPHIC MACHINERY & SYSTEMS
A DIVISION OF GOLDEN GATE MICROSYSTEMS, INC.

Dear Valued Customer:

Thank you for purchasing **microcut jr®**. As part of a user base that numbers in the thousands worldwide, you will soon begin enjoying the benefits of **microcut jr®** and experience, first hand, why we are the leader in the field of cutter automation.

We would ask, before installing **microcut jr®**, that you take a few moments to review the following points with your Authorized Dealer. In so doing, you will insure that **microcut jr®** is a safe and productive addition to your operation for many years to come.

microcut jr® SHOULD NEVER BE INSTALLED ON A CUTTER THAT DOES NOT MEET EXISTING SAFETY STANDARDS. These standards include, but are not limited to, two hand start and hold for knife activation, and a latching device for the knife when at the top of its cycle. If you have any questions, seek expert opinion before installing **microcut jr®**.

microcut jr® includes its own DC drive motor. IT IS IMPORTANT THAT MOTORS AND PULLEYS BE PROPERLY GUARDED. The addition of the **microcut jr®** motor may require the modification of an existing guard or its replacement. UNDER NO CIRCUMSTANCES SHOULD **microcut jr®** BE USED WITH AN UNGUARDED MOTOR PULLEY. Affix the warning label enclosed with the red V-link belt on the cutter under the guard to discourage improper operation if the guard is ever removed.

SOME SAFETY CONSIDERATIONS--

1. Adequate waste disposal must be supplied so that material will not build up and impair the operator's mobility.
2. The paper cutter should be placed away from distractions--water coolers, break room, main passages, traffic, open doors, ...
3. The floor should be able to support the weight of the paper cutter in a level position without excessive vibration.
4. The paper cutter must have enough space around it to allow the operator access for lubrication and maintenance. Space should be supplied for storage of tools, lubricants, spare knives, cutting sticks, and other equipment.
5. Rails should be placed around the machine to prevent unauthorized or incidental entry into the cutter work area.

For additional information on safety, please contact your local safety authority.

Sincerely,

Wayne T. Smith
Vice President, Engineering & Operations

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microcut +[®] IS A REGISTERED TRADE MARK OF GOLDEN GATE MICROSYSTEMS

microcut +[®] SERIAL NUMBER _____

MACHINE DESCRIPTION _____

INSTALLED BY _____

DATE _____

HOW TO USE THIS MANUAL

This manual contains important information for the operation of the **microcut +^o** automatic backgauge control system. Please take the time to read it thoroughly. While certain sections may not apply to your job requirements, a complete knowledge of the system will assist in everyday operation. If there are any questions at any time, please contact--

Golden Gate Microsystems
San Rafael, California, USA
Phone: 415-457-7500
FAX: 415-457-1694

This manual is organized into the following main areas--

INSTALLATION--to be used as a guide to install **microcut +^o** on any machine.

OPERATION--to be referenced for everyday use of **microcut +^o**.

microfacts^o--to assist in the use of the resident management system.

cutternet^o--to explain the interface to a personal computer for organizing **microfacts^o** data and jobs.

SERVICE--to be consulted if questions or problems arise.

Where a key on the display is to be pressed, the value of that key is bracketed and in bold text. For instance, the number 1 key would be **<1>**.

Use the **TABLE OF CONTENTS** to locate the proper page for your specific needs.

INTRODUCTION

The **microcut +[®]** automatic backgauge control system is intended to increase both the quality and quantity of production of your machine, while reducing the demands placed on the operator. Several methods of programming cutting sequences are available. Each program is assigned a job number so that it can be recalled easily whenever required. Automatic operation can then commence. Memory is automatically divided for the number of cuts on each specific job. There are no memory allocation demands placed on the operator.

microcut +[®] is a computer controlled motor drive positioning system. There are built-in power limiting factors so that mechanical damage is not likely to occur in the event that proper lubrication schedules are missed. This is intended for machine safety BUT IS NOT a substitute for proper maintenance. **microcut +[®]** is not intended to correctly drive a machine which is bound. The handwheel should turn easily with one hand. If two hands are required to turn the handwheel, then the leadscrew, gibbs, and backgauge should be closely inspected and adjustments should be made BEFORE operating **microcut +[®]**.

NOTICES:

The addition of **microcut +[®]** may require modification to existing guards or addition of new ones. DO NOT operate **microcut +[®]** until guards are installed so that accidental contact to any moving object is prevented. Providing proper guarding and insuring that this guarding is installed is the responsibility of the owner and not of the manufacturer or distributor of **microcut +[®]**.

The addition of **microcut +[®]** will enhance the operation of your cutter. Due to the extra productivity, maintenance may be required more frequently. This is the responsibility of the owner and not of the manufacturer or distributor of **microcut +[®]**.

microcut +[®] will increase production. It may be necessary to alter waste disposal methods to maintain safe operating conditions.

microcut +[®] is intended for operation of the backgauge only. Any alterations to any part(s) of the machine are the sole responsibility of the owner.

microcut +[®] is not intended to be used on any machine which does not meet proper safety requirements. This includes but is not limited to two hand start and two hand hold for the knife operation and a safety latch to hold the knife in position at the top of the stroke.

While reasonable efforts have been taken in the preparation of this manual to assure its accuracy, the manufacturer and distributor assume no liability resulting from any errors or omissions in this manual, or from the use of the information contained herein.

Specifications and software are subject to change without notice.

INSTALLATION

microcut +[®] can be installed on any type of guillotine paper cutter. Installation is easiest on machines which use a leadscrew for the movement of the backgauge. Other methods of backgauge movement such as chain or cable drive can not assure the accuracy of **microcut +[®]** and it is suggested that either a leadscrew kit be installed or the machine be replaced.

microcut +[®] IS NOT INTENDED TO CONTROL THE KNIFE OR THE CLAMP ON THE PAPER CUTTER. ANYTHING DEALING WITH THE CLAMP AND KNIFE IS NOT TO BE TAMPERED WITH OR ADJUSTED DURING THE INSTALLATION OR OPERATION OF **microcut +[®]**. ANY ALTERATIONS TO THE KNIFE OR CLAMP SAFETIES, CIRCUITS, AND OPERATION, OR ANY INSTALLATION TECHNIQUE WHICH COMPROMISES THE SAFETY OF ANYONE WORKING ON OR AROUND THE MACHINE IS STRICTLY FORBIDDEN.

microcut +[®] CONSISTS OF PARTS AND ASSEMBLIES WHICH ARE ADDED TO THE MACHINE. GUARDING MAY NEED TO BE ALTERED OR ADDED TO OFFER PROPER PROTECTION. THIS MUST BE DONE BEFORE **microcut +[®]** IS OPERATED. DO NOT 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.

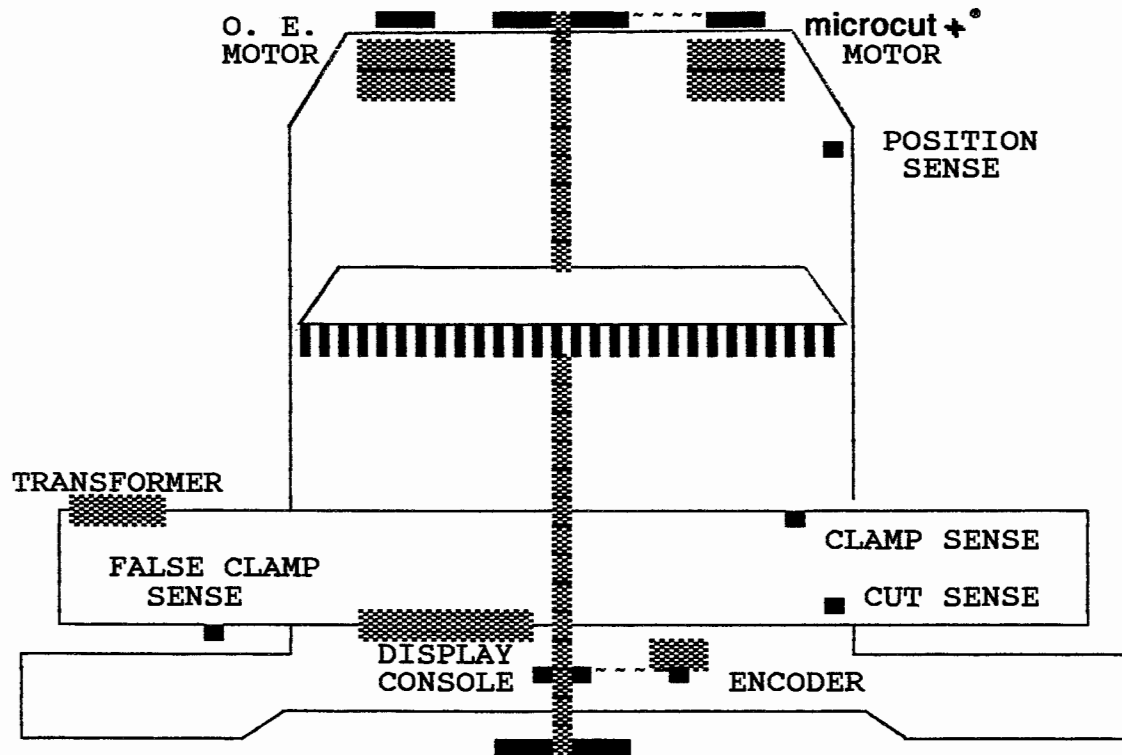
The installation is basically mechanical. It involves mounting the display console which houses all of the electronic controls, the DC motor to drive the backgauge, the shaft encoder to signal backgauge movement to the computer, four sensing switches to inform the computer of the machine status (clamp, knife, false clamp, and position), and a transformer which allows the 3 phase machine power to be used to power the computers and motor drive. The cables are plug in type. Several photos are included at the back of this manual. Refer to these for assistance in mounting techniques. **microcut +[®]** is a retrofit system, so every installation is unique. Install the components for function as well as fit. The brackets are designed with many extra holes and slots. They are easily modified, and can be adapted for almost any requirement.

Every display console is identical regardless of machine type. A brief SET UP ROUTINE is resident in the computer to allow simple adaptation to any machine. This routine must be done in order for **microcut +[®]** to know the machine it is installed on and to operate properly!!! Instructions for this routine are at the end of the INSTALLATION section of this manual.

The only difference in packing for **microcut +[®]** is the encoder sprocket set (see SHAFT ENCODER) and a cogged pulley for flat belt drive applications such as that found on many Schneider cutters. If the machine 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. Have the sprocket cut in half to allow easier installation.

THE INSTALLATION DIAGRAM

NOTE - Position of the parts is for visualization 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 motor to facilitate reinstallation of the motor in the event **microcut +** is moved to another machine at a later date. Make notations in this manual under **MAINTENANCE AND OE CONTROLS** to explain how the motor should be refitted.

RECOMMENDED TOOL LIST

Every installer will want to modify this list. This is only a guide. The tools are listed in order of use. In general, the installation will be much smoother if you organize your tasks to allow you to use the tools in a given category to completion before starting to use the tools listed in the next category.

FOR DETERMINING ALL microcut +[®] PART DRILLING LOCATIONS

Slide T square with level
Pencil

Purpose--Mark all holes that will be drilled to complete mounting of ALL components. Mark holes to secure ty strap brackets at the same time.

FOR DRILLING ALL HOLES FOR ALL PARTS AT ONE TIME

Paper and rags to cover machine surfaces
Pilot, #35, #21, #7, 21/64" high speed drill bits
Electric hand drill
Extension cord

Purpose--Protect machine and drill all holes for all components. Use pilot for all holes before increasing drill size to save time. Be careful not to drill too large in any hole as you work up in the drill sizes.

FOR TAPPING ALL HOLES FOR ALL PARTS AT ONE TIME

6-32, 10-32, 1/4-20, 3/8-16 taps
Tap handles (ratchet type are nice)
Tapping fluid

Purpose--Complete all threads for all of the components.

FOR CLEANING ALL METAL FILINGS OFF OF THE MACHINE

Brush
Rags

Purpose--Clean the machine to prevent future damage.

FOR BOLTING AND SECURING ALL microcut +[®] PARTS TO THE MACHINE

7/16, 1/2, 9/16 wrenches and sockets
Crescent wrench
Hacksaw to saw off excess threaded rod

Purpose--Complete mounting of all components.

FOR CUTTING THE TY STRAPS AFTER ROUTING THE CABLES

7/8 inch hole punch for transformer AC input wiring
Common and Phillips screw drivers
Side cut pliers

Purpose--Complete wiring of all components. Trim off excess from ty straps.

DRILL BIT:	# 35	# 21	# 7	1/4"	21/64"***
TAP SIZE:	6-32	10-32	1/4-20	5/16-18	3/8-16

***This drill (according to the charts) should actually be a 5/16" value, but the extra 1/64" makes tapping much easier.

INSTALLATION NOTES

microcut +^o is a retrofit system for many different types of machines. All installations will vary. This text is designed to give a conceptual approach towards the installation. Use this manual to learn what each component must do. Then mount the component so that it is best suited to fulfill its purpose.

The boxes are packed to facilitate the installation. The installation will be easier if you do not mix up the parts. For the sake of reference, box 1 contains the backgauge drive motor, box 2 contains the transformer, encoder, prox sensors, and various brackets, and box 3 contains the encoder sprockets, the Owner's manual, the display console mounting bracket, and the display console.

Use the cleaning pads to thoroughly clean any surfaces before the double sided tape is applied. Make sure the tape (if used) is secure.

PERFORMANCE--

- A. Adjustable V-link belt is included in the **microcut +^o** kit to simplify measuring for a new belt (if needed). This belt can stretch and cause problems after installation. It can also cause "cogging" which results in poor positioning performance. If this belt is used it should be considered temporary only.
- B. **ADJUST THE MOTOR DRIVE BELT SO THAT IT IS LOOSE.** Some cutters have small bearings and too much tension on the drive belt can eventually cause mechanical problems.
- C. Thick drive belts (B size) slow down positioning. Use an A sectional belt or thinner if possible. Ideally the belt would be a fractional horse power variety.
- D. Do not overtorque the backgauge gibbs, and if there are nylon glider plugs in the backgauge, make sure they are not tight against the table.
- E. **USE ONE BELT PER PULLEY ONLY.** Multiple belts on any pulley will cause slower settling to the target position.
- F. **DO NOT USE GREASE ON THE LEADSCREW MECHANISM. GREASE ATTRACTS ABRASIVE DIRT AND ACTS AS AN INCONSISTENT CUSHION AGAINST THE BACKGAUGE PREVENTING PROPER CUTTING PRECISION. USE A LIGHT MACHINE OIL ONLY ON THE LEADSCREW. OIL THE LEADSCREW DAILY.**

Everything safely possible has been done to make the installation of **microcut +^o** easy. With proper care, it has been shown that installations can be simple and call backs for repairs and make-rights few. Please report any problems or suggestions to the factory:

Golden Gate Microsystems
Phone: USA 415-457-7500
FAX: USA 415-457-1694

This includes but is not excluded to: packing; parts supplied; design and quality of parts and assemblies; and anything else that may affect your ability to install and use this product in a productive professional manner.

THE MECHANICAL INSTALLATION

THE DISPLAY CONSOLE

This is installed to allow operator use. The display console should mount on the front or top of the cutter near the operator. Use the brackets supplied to create a firm mount so that the display console will be convenient to the operator. Drill and tap the appropriate holes and mount the display so that it is secure. Take care not to scratch the console if the swivel bracket is removed to facilitate mounting.

THE SHAFT ENCODER

This gives pulses to indicate backgauge movement to the computer. Use the shaft encoder plates supplied to mount the shaft encoder near the leadscrew. Mount a sprocket to the encoder shaft that will allow it to turn between 2 and 4 turns for one inch (25 mm) of backgauge movement. Clamp the sprocket to the leadscrew to align with the encoder (depending upon the machine, the sprocket may require boring, and if appropriate, sawing in half). Install the chain to the sprockets making sure all faces are aligned. Adjust the chain tension so that it is snug but not too tight.

NOTE – *It is easier to assure that the sprocket faces align if the chain is wrapped around the sprocket while the hose clamp is tightened.*

THE DC DRIVE MOTOR

This allows computer control of the backgauge movement. The motor should turn between 3 and 6 times per one inch (25 mm) of backgauge movement. If possible, mount the **microcut +** 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. Then only one drive system can be attached to the leadscrew at a time. If the mounting method does not isolate the original drive, other means will be required. Keep the drive belt **LOOSE** to insure smoothest operation. The link belt supplied is intended to make a sample belt to use to measure for a permanent fractional horsepower belt. **DO NOT USE THE LINK BELT AS A PERMANENT DRIVE BELT.**

If **microcut +** is ordered for a Schneider cutter, it will include a one inch wide cogged belt pulley. This allows **microcut +** to drive with the original flat belt. The original motor will need to be removed. Make sure all the wires are labeled and taped. The brake will have to be disabled and the drive clutch enabled to allow proper operation. This can often be done by flipping the wires between the clutch and brake. The motor plate may need to be spaced down slightly to avoid conflict with the original equipment backgauge drive control panel.

Other cutters may also require that the brake be disabled (Polar--remove the wires going to the brake at the junction block under the back of the table, Harris--remove the magnetic spacer control fuse, Lawson--label, remove, and tape the wires, ...) or the drive clutch enabled (Lawson--jumper the OE reverse drive key). Make sure that all wires are properly insulated. Mechanical methods may be preferred over electrical for locking clutches or disabling brakes.

THE ISOLATION TRANSFORMER

This insures reliable operation when **microcut +** is wired directly to the 3 phase power at the machine. Install this near the machine power inlet or the 3 phase switched power contacts so that the AC INPUT cable will reach the connection point (refer to **WIRING AND POWER**). The board that the transformer is shipped on works well as a template to mark the holes. Wiring will be discussed later.

CONTINUED ON NEXT PAGE

THE PROXIMITY SENSORS

microcut + uses proximity sensors for determining the status of the machine it is installed upon. Each sensor has a label indicating its purpose. The sensors must be installed according to their designation. An LED in the barrel indicates when the sensor is tripped (by the presence of any metal plate within 2 mm--.1 inch--of the circular face).

There are mounting brackets for each sensor. The multi-angled brackets can be used to create a "tray" to hold the false clamp plate to trip that sensor when the plate is removed from the clamp. Trip plates are supplied for the POSITION and CLAMP sensors. Use these if the cutter is heavily painted or if the surface is not flat. Use any combination of brackets, hardware, and double sided tape to install each sensor securely to the machine according to:

POSITION SENSE (allows automatic calibration of the machine)--

Move the backgauge to its rearmost position. Mount the position sense so that it will be tripped by the gauge at least one inch (25 mm) before this point, but will not "untrip" as the gauge is moved to the extreme rear.

CLAMP UP SENSE (limits drive if the clamp is NOT full up)--

Mount this sensor so that it is tripped only when the clamp is in its full up position. Beware of hydraulic sag and soft return clamps which may cause adjustment problems. Horizontal mounting of the sensor barrel is generally preferred to vertical.

CUT SENSE (senses knife cycling for PROGRAM and AUTOMATIC MODES)--

Mount this sensor to the side of the opening in front of the knife bar so that it is tripped ONLY ONCE near the bottom of the knife stroke. This sense must be tripped for at least 1/4 second.

FALSE CLAMP SENSE (adjusts the minimum backgauge drive position)--

Mount this sensor so that it is tripped when the false clamp is set in its holder (removed from the machine). If there is no false clamp holder, use the multi-angled brackets supplied to create one.

The proximity sensor behavior and cabling specifications are--

The sensors conduct to ground (LED is on) whenever...

POSITION SENSE--the gauge is not near the rear of the machine.

CLAMP UP SENSE--the clamp is in the full up position.

CUT SENSE--the knife is at the top of its stroke.

FALSE CLAMP SENSE--the false clamp is in its holder.

The connectors are wired as:

Pin 1 is the DC voltage to power the proximity sensors.

Pin 2 is the ground.

Pin 3 is the signal line for the position sense.

Pin 4 is the signal line for the clamp up sense.

Pin 5 is the signal line for the cut sense.

Pin 6 is the signal line for the false clamp sense.

NOTE -- Pin 1 is defined as the wire that plugs in closest to the display side of the console. The cables are color coded.

WIRING AND POWER

Be sure that the original equipment backgauge brake will not energize. If a clutch needs to be locked on (electrically or mechanically) to allow the microcut \dagger motor to drive, do this now. Make appropriate notations in the ORIGINAL CONTROLS section of this manual.

Complete connections into the back of the display console according to the following--

Shaft encoder and sensors

Complete the connections to the display console for the shaft encoder and sensors. The four sensing switches are wired in such a way that they can install in any order (see previous page--bottom). Use the extension blocks and cable lengths as required.

Isolation transformer

Plug the 2 pin (12 VDC) and the 5 pin (110 VAC power and motor cable) connectors into the display console. Wire the motor cable into the DC motor. If a green wire exists on your motor, it is case ground, NOT a power connection. Connect the green wire from the motor cable to the green wire from the motor (with the wire nut supplied) OR to the case of the motor (use the crimp connector supplied). The black and white wires from the motor cable connect to the A1 and A2 wires from the motor. The polarity of these wires does not matter. Later (in the SET UP ROUTINE) the computer will determine this automatically.

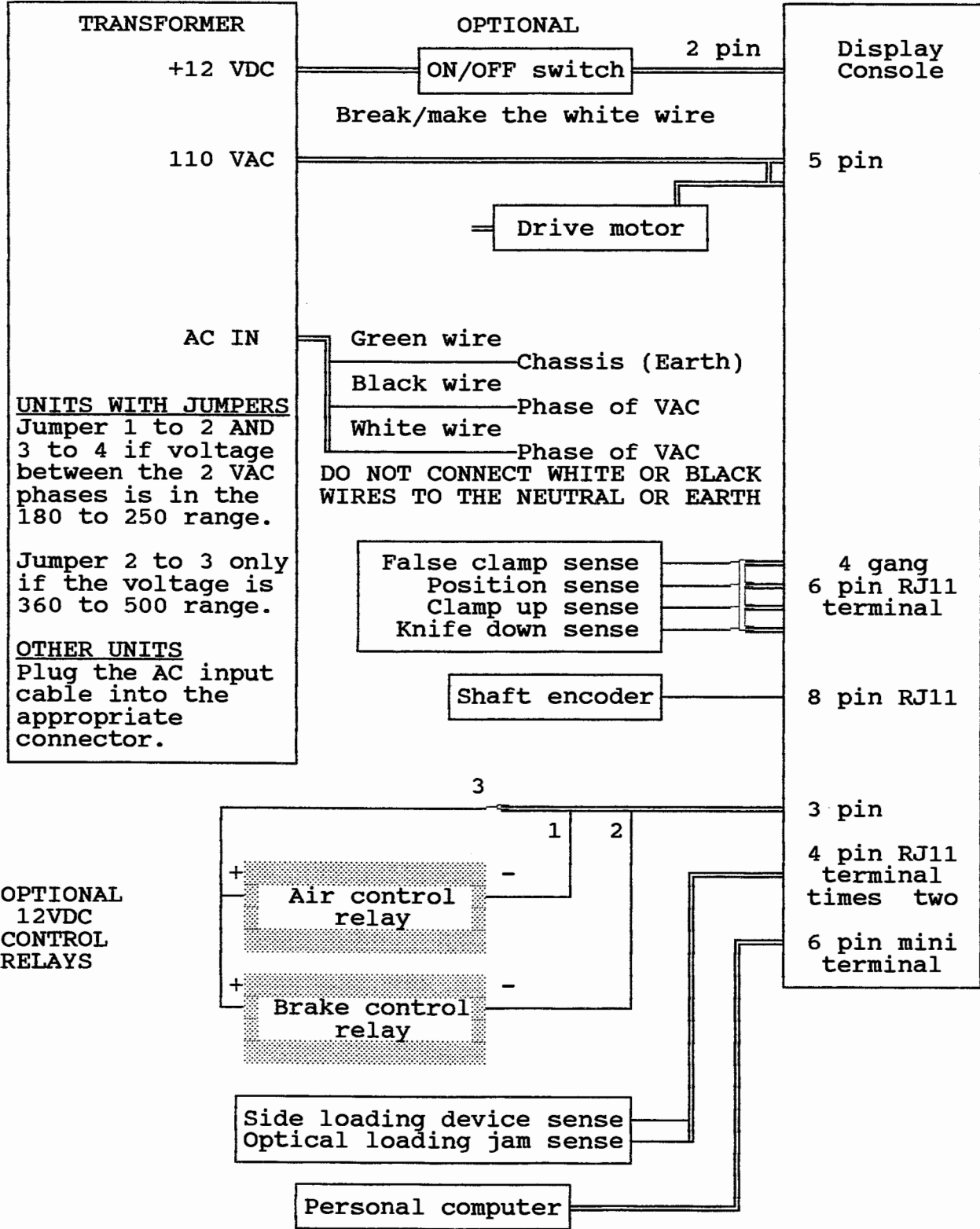
Check the 3 phase AC voltage into the machine's power panel. Check the terminal block on the side of the transformer to insure it is wired for the correct voltage range. Insure that the power in the main power panel is OFF. Wire the AC input (primary) side of the transformer to two legs of the switched 3 phase power. The green wire is for EARTH ground, the other two wires are the VAC power connections. USE TWO PHASES OF THE THREE PHASE POWER. DO NOT USE SINGLE PHASE POWER. SINGLE PHASE POWER MAY CHANGE FREQUENCY DURING HIGH CURRENT REQUIREMENTS AND CAUSE POOR MOTOR DRIVE PERFORMANCE. microcut \dagger will switch on and off with the machine. If a separate ON/OFF switch is desired, this can be placed in line with the 12 VDC cable (the 2 pin connector discussed above).

NOTE – With pin 1 on the numeric keypad side of the display, the 12 VDC line is wired with ground at pin 1 and 12 VDC at pin 2. The 110 VAC/motor connector is wired with 110 hot at pin 1, 110 neutral (connected to case ground/Earth) at pin 2, Earth at pin 3, and the motor lines at pins 4 and 5. For desktop demonstration purposes, any 12 VDC supply capable of at least 2500 ma can be used. A protection diode on the PC board prevents damage in the event of reverse polarity connection. The connection must be of proper polarity before microcut \dagger can be powered on. If a 110 VAC source other than the transformer must be used, it is imperative that this NOT be from a single leg of a WYE (STAR or 4 WIRE) transformer. This type of power can cause frequency fluctuation with resultant failure. The circuit breaker should be a 10 amp slow blow matching appropriate overload curves. The transformer supplied eliminates the possibility of problems when wired correctly across TWO phases of the VAC power to the machine. The transformer must be used or all warranties, expressed or implied, will be void. Consult Golden Gate Microsystems for more information.

Cleaning up

Use the spiral wrap to enclose the cables exiting the display console. Use the ty straps and ty strap mounting bases to secure all cables appropriately. Make sure that none of the cables can be damaged by moving parts of the machine.

WIRING DIAGRAM



OPTIONAL CONTROL LINES

microcut +^o contains control lines which can be used to activate relays. These should be 12 VDC coils requiring no more than 250 ma for operation. Mount the relay(s) inside the original equipment control panel. The contacts can then be wired to control various operations on the machine. Check current requirements of the circuit being controlled to specify the contact current rating. The coils of the DC relays should be wired into the extra display terminal--

Pin 1 = Air control.

Pin 2 = Brake control.

Pin 3 = Coil + voltage.

Pin 4 = Ground reference for an outside power source.

Pins 5, 6 and 7 = Original equipment operations (AKO, AKE, CD).

NOTE -- Pin 1 is the pin which is FARTHEST to the sensor cable inputs. On some units, the terminal strip will contain only the first three connections.

LINE DEFINITIONS:

AIR CONTROL (pin 1)--

Activates a relay (to disable the air table) whenever microcut +^o is commanding high speed forward drive or when the clamp is lowered.

BRAKE CONTROL (pin 2)--

Activates a relay only when backgauge drive is requested. If this line is used to control a relay coil the relay will relax to operate an original equipment electric backgauge brake (through the normally closed contacts of the relay) whenever drive is not being requested. A bypass switch on the brake line may be desired to allow the operator to move the gauge by hand.

Golden Gate Microsystems offers an optional relay board assembly for installing the control lines if you do not wish to supply your own.

OPTIONAL SIDE LOADING KIT

microcut + contains two additional sensing inputs to be incorporated on machines which load the stock from the rear (side). These are the **OPTICAL** and the **MECHANICAL** senses. The **OPTICAL** sense prevents backgauge drive if the stock is not fully into (or out of) the loading area. This must be an optical type of device (through style light beam or reflective type light beam). The **MECHANICAL** sense can be a snap action two position switch, a proximity type sensor, or a set of unused contacts in the loading equipment control panel. Two 4 pin RJ11 terminals can be found on the back side of the display console for wiring purposes. These are connected identically so that the cables are interchangeable. The wiring is:

- Pin 1 is the VDC for the sensor power (where required).
- Pin 2 is the ground and the current return path for the sensor.
- Pin 3 is the sense input for the **OPTICAL** sense.
- Pin 4 is the sense input for the **MECHANICAL** sense.

Connection between the sense input and the ground (Pin 2) is required for backgauge drive. Wire the sensors so that they will conduct from the input to ground only when there is nothing blocking the loading area (**OPTICAL**) and when the loading device is clear of the backgauge (**MECHANICAL**).

Go to the **CONFIGURATION** screen at **STEP 2** of the **SET UP ROUTINE** to define these sensors as installed or not. When side loading is **ON**, **microcut +** will move the backgauge to the maximum rear of the machine to allow side loading at the end of any job while in **AUTOMATIC** mode. If either one or both of these sensors is installed, auto advance may be set to **ON** and **microcut +** will then move the gauge to the first programmed stop after the load is complete.

Golden Gate Microsystems stocks a variety of switches, sensors, cables, and brackets for a variety of loading systems. Consult your dealer for more information. These devices can also be self sourced if preferred.

SET UP ROUTINE

Every microcut +^o display is identical regardless of the machine it is installed upon. There is a resident SET UP ROUTINE which allows calibration to any machine. This routine must be completed after installation before proper operation can begin. Use the <CURSOR>, <YES>, and <NO> keys to make selections and enter information on each of the screens.

1. Switch the power on (see next page). Select the SET UP ROUTINE option when given the choice. The MEMORY screen will appear. You can test the job memory (this will not affect the memory contents) and/or erase the job memory while at this screen. Erase the memory if this is a new installation. Proceed to the bottom line and press <YES> to continue to the next screen.
2. The CONFIGURATION screen will appear. Use <YES> and <NO> to define the installation. Use <NUMBERS> to define the machine sizes. Use the microfacts^o management code while that line is highlighted to enter the microfacts^o configuration screen to enter operator codes, change the time/date, or activate various parts of the microfacts^o management system. Proceed to the bottom line and press <YES> to continue to the next screen.
3. The STATUS screen will appear. Make sure that the first 5 lines show either YES or NOT INSTALLED. Turn the handwheel slowly and make sure that the encoder A and B lines operate ON and OFF independently of each other. Make sure that the zero set operates once per revolution of the encoder. Press <YES> to continue to the next screen.
4. The DRIVE DIRECTION TEST screen will appear. Use <FORWARD> and <REVERSE> to check to drive direction. Press <NO> if the direction is wrong and try again. Press <YES> when the drive direction is correct. microcut +^o will ask if everyone is clear of the machine. Check this. Press <YES> when no one is in the way of any of the moving parts of the machine. microcut +^o will drive the backgauge back and forth briefly to verify motor drive before it drives to the rear of the machine to calibrate. IT IS IMPERATIVE THAT THE POSITION SWITCH IS ADJUSTED PROPERLY FOR THE GAUGE TO STOP BEFORE HITTING THE REAR OF THE MACHINE. If the backgauge bumps into the rear, press <ANY KEY> to return to the top of the power on sequence of questions. Check the LED indicator on the sensor and adjust as necessary. Begin the SET UP ROUTINE over again. NOTE: If the LED is working properly, one of the cables to the other sensors may be defective (internally shorted). Check and replace as necessary.
5. When the backgauge has reached the rear of the machine the REFERENCE VALUES screen will appear. Select the units you will be calibrating with. Turn the handwheel until the backgauge is at an exact unit value. Press <NUMBERS> to display the position of the backgauge. Press <YES>. Move the backgauge by pressing <FORWARD> until the gauge is within 10 inches of the knife. Turn the handwheel until the backgauge is at an exact unit value. Use <NUMBERS> and <YES> to enter the value. microcut +^o will automatically calculate the leadscrew pitch (used to determine amount of backgauge movement) and the preset value (for calibration after power has been off).
6. The PARAMETERS 1 screen will appear. Respond to each option with <YES> or <NO>. Refer to the OPERATION section of this manual for more details. Proceed to the bottom line and press <YES> to continue to the next screen. The PARAMETERS 2 screen will appear. Use <NUMBERS>, <YES>, and <NO> to complete each section. Refer to the OPERATION section of this manual for more details. Proceed to the bottom line and press <YES> to complete the SET UP ROUTINE.

When microcut +^o has all of the operating information required, it will flow into MANUAL OPERATION and is ready to use.

OPERATION--GETTING STARTED

microcut +[®] can be used to manually drive the backgauge to position, key in a desired location and let the computer position the backgauge, or program a series of stop points (and push outs) so that a sequence (job) can be run automatically repeatedly. The jobs can be modified to correct for errors or make changes. Jobs are saved in memory so that they can be recalled when needed again.

The keys on the **microcut +[®]** display have been carefully labeled and all operations are fully prompted to guide an operator. The display consists of four major areas. In normal operation, the top area shows the current backgauge position. The second area is referred to as the DATA BAR and contains the job title and description, the memory status, the knife change information, and the current date and time. The third area shows the current job data on the left side and the options available on the right side. The bottom area shows the current operating mode on the left side (MANUAL, PROGRAM, REVIEW, AUTOMATIC) and the keyed in position on the right side. Several options have been built into **microcut +[®]**. These are accessible by pressing <CURSOR KEYS> to make your choices. Where appropriate, new screens will pop up or additional information will be displayed.

A screen saver is built into **microcut +[®]**. The screen saver is activated if there is no key or knife activity for a programmed amount of time (defined in the PARAMETERS 2 screen--see previous page, paragraph 6). The screen will flash when the screen saver is active. Normal operation will begin as soon as <ANY KEY> is pressed.

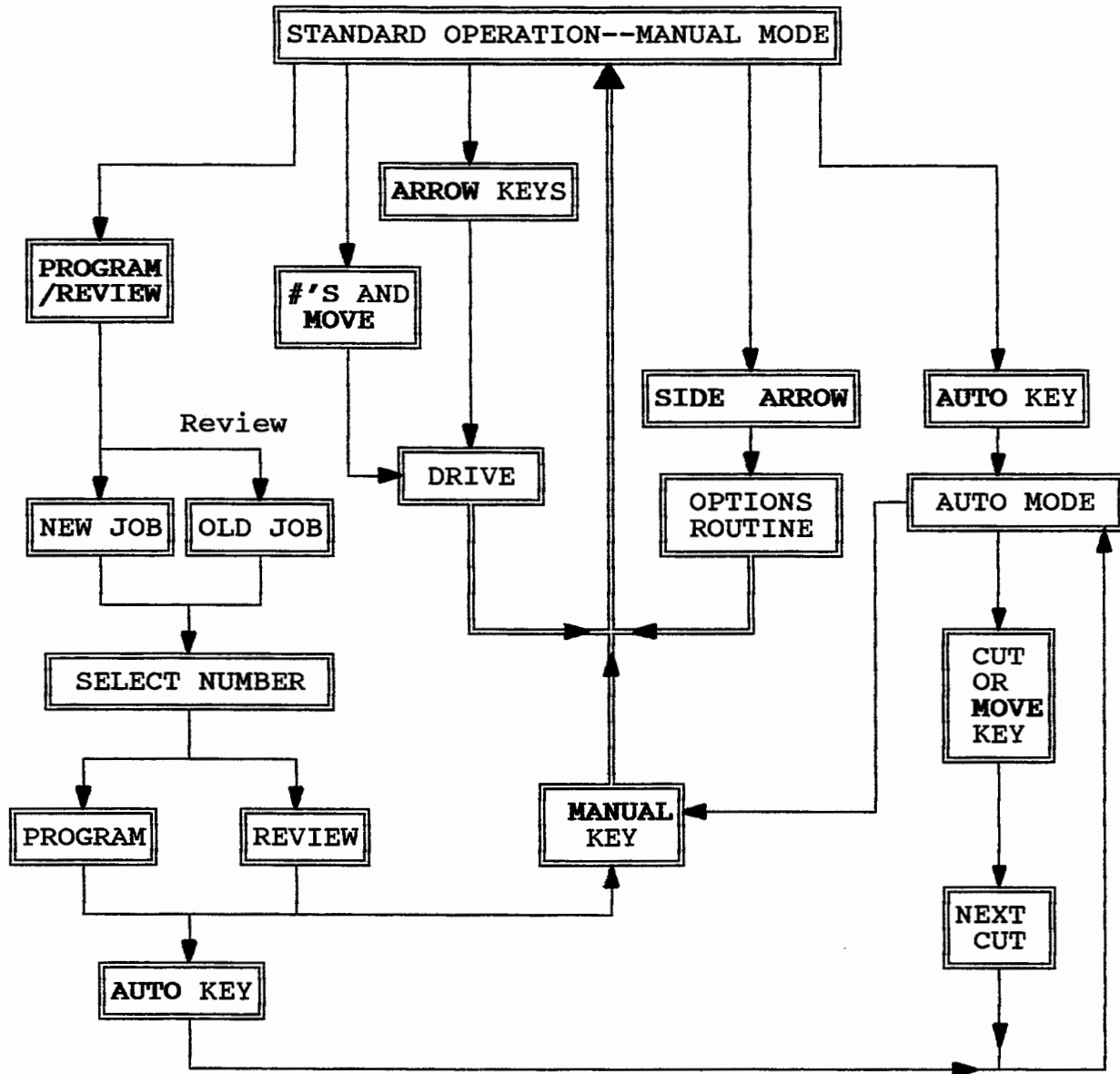
GETTING STARTED--

1. Switch the power on to the machine.
2. If **microcut +[®]** is fitted with more than one language, you will need to select the language you would like to use. **microcut +[®]** will briefly display a copyright message.
3. When the display reads ARE ALL THE GUARDS IN PLACE? and AFTER the guards have been inspected to make sure that the machine can be operated safely, press <YES>.
4. The display will read HAS DAILY LUBRICATION BEEN PERFORMED? The leadscrew should be lubricated with a light machine oil and any fluid levels and routine cleaning should be performed on the machine at this time. Press <YES> when appropriate.
5. The display will read IS EVERYONE CLEAR OF THE MACHINE? LOOK around the machine to make sure that no one is near any of the moving parts and that nothing has been left on the table surface which could be damaged. Press <YES> to continue or press <SIDE ARROW> to select DEMONSTRATION or SET UP operations.
6. **microcut +[®]** will test the motor drive (a brief move back and forth) and then move the backgauge slowly to the rear of the cutter to calibrate. The display will show the correct position and MANUAL MODE when **microcut +[®]** is ready. Note that if the backgauge is already at the rear of the machine, it will start by driving the backgauge forward a distance first. If an immediate stop is required, press <ANY KEY>. This will then require starting over again from STEP 2.

NOTE -- If the gauge drives to the rear and stops without calibrating, check to see if the position sense has operated properly. Press <ANY KEY> to stop the backgauge drive. Check the light on the POSITION SENSE at the rear of the machine. Adjust the position sensor if necessary (the LED should go out when the gauge trips the sensor). Return to STEP 3.

OPERATIONAL FLOW CHART

The following flow chart briefly outlines the standard operating procedure of **microcut +^o**. It is hardly complete. Please refer to the TABLE OF CONTENTS for sections of this manual which deal with the specifics.



MANUAL DRIVE OPERATION

Press **<MANUAL>**. In **MANUAL MODE** the upper line of the display will show the actual backgauge position. Press **<UNITS>** to change between inches, metric, and Japanese sun.

SLOW FORWARD DRIVE

Tap **<BLUE UP ARROW>** and then press and hold **<BLUE DOWN ARROW>**.

OR...

Press **<BLUE DOWN ARROW>**, release it for less than 1/2 second, and press and hold **<BLUE DOWN ARROW>** again.

OR...

Lower the clamp briefly while pressing **<BLUE DOWN ARROW>**.

SLOW REVERSE DRIVE

Press **<BLUE UP ARROW>**, release it for less than 1/2 second, and press and hold **<BLUE UP ARROW>** again.

FAST DRIVE

Press and hold **<BLUE UP or BLUE DOWN ARROW>** as desired. The drive keys must be released for at least 1/2 second before high speed is allowed.

SEMI-AUTOMATIC DRIVE OPERATION

This routine can be used to move the backgauge to a keyed in position. Enter the position to which you wish the backgauge to move with **<NUMBERS>**, **<+>**, **<->**, and **<Divide>**. Press **<MOVE>**. To move a pre-determined distance, press **<NO>** (clear the lower line of the display) and then press **<+>** or **<->** before using **<NUMBERS>**. Then press **<MOVE>**.

MANUAL MODE OPTIONS

microcut + contains several user selectable features. These are contained in a single operation area referred to as **MANUAL OPTIONS**. Press **<MANUAL>**. Press **<SIDE ARROW CURSOR>**. Use the **<UP or DOWN ARROW CURSORS>** to select the option desired. The options are:

CHANGE LANGUAGE (or OPERATOR if **microfacts** is active)

This allows a new language to be selected (or a new operator to log in). If only one language is installed, then this will show the **COPYRIGHT** screen briefly instead.

SYSTEM PARAMETERS

This allows the following items to be adjusted:

1. **UNITS ENABLED**--select what units can (or can not) be used.
2. **DECIMAL ENTRY**--allows whole numbers only OR decimal number entry.
3. **ALL DIGITS**--allows the last digit in the display to be blanked or not.
4. **REVERSE DRIVE WITH CLAMP DOWN**--allows machines with protected handwheels to drive backwards with the clamp lowered.
5. **SELF-REPOSITIONING**--selects if the gauge will correct when knocked out of position or not.
6. **TRUE SIZE**--determines if the true size or the programmed size will be displayed in **AUTOMATIC** mode.
7. **SIDE LOADING**--drives the gauge to the max rear value at the end of the job in **AUTOMATIC** mode if on to allow stock to be loaded.
8. **AUTO ADVANCE**--moves the gauge to the first cut after side load is complete if on.
9. **AUTO EJECT**--forces forward movement of the gauge after a cut if reverse drive is required. The amount of forward movement can be programmed if this feature is on.

If the service code is entered at the bottom line, a second screen (**PARAMETERS 2**) appears. This screen allows changes to:

1. **FAST SPEED**--sets the maximum speed that the backgauge will obtain. Generally about 1/6th of the length of the machine.
2. **SLOW SPEED**--sets the **MANUAL** slow speed drive value. Generally about .5 inches per second.
3. **MANUAL ACCELERATION**--determines how fast speed will be gained in **MANUAL** operation. Generally 1% to give the operator better control.
4. **AUTO ACCELERATION**--determines how fast speed will be gained in **AUTOMATIC** operation. Generally 99% to let the computer get to the target as fast as possible.
5. **BACKLASH**--defines the distance the gauge will move behind a target if reverse drive is needed. Generally between .05 and .15 inches depending upon the mechanical condition of the machine.
6. **SETTLING TOLERANCE**--sets the accuracy of the positioning system. Lower values give higher accuracy but slower positioning. Generally set to .002 inches on most machines. Some machines with sticky screws or a lot of flex may require higher tolerances.
7. **POWER METER**--shows the amount of available power being used as the backgauge is being driven. If this reaches and holds at 100% frequently, oil the leadscrew and check for mechanical problems. Reduce the speed if necessary.

If the service code is entered at the bottom line, a third screen (**CONFIGURATION**) appears. This allows the sensor installation definitions and table sizes to be adjusted. **microfacts** can be accessed from this screen to make any required adjustments as well. If **microfacts** is active, this access point is required to change the time clock.

MAINTENANCE LOG

This shows (and allow changes to) the dates that maintenance was last performed. Backgauge calibration is also accessed from this screen. A **STATUS** screen is available from this screen to examine the operation of all of the components involved with **microcut +**. If **microfacts** is disabled, a change time option is also offered at this screen. Refer to the previous paragraph for changing the time if **microfacts** is active.

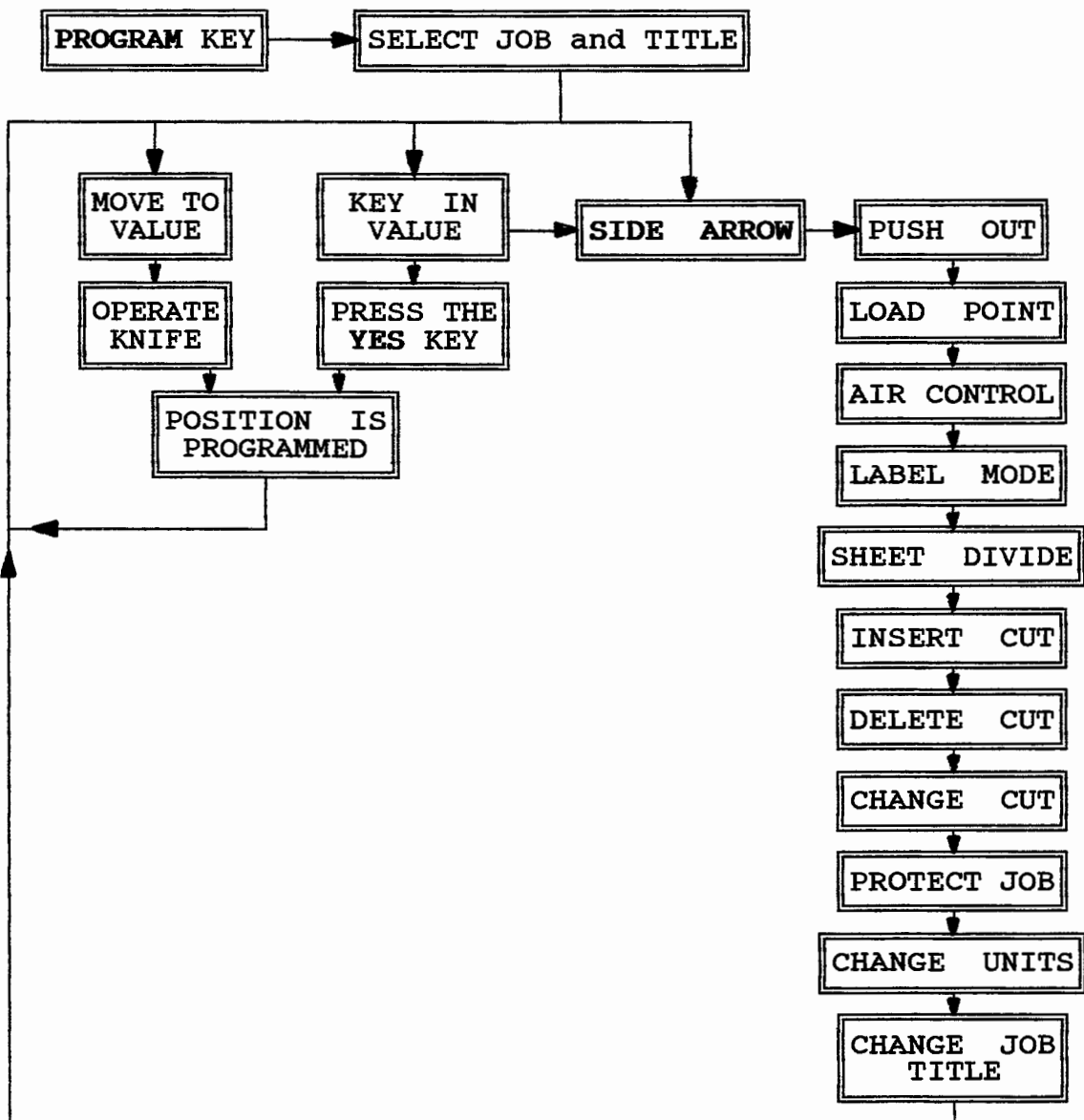
CHANGE UNITS

This allows the units of measurement to be changed to a different (if enabled) unit. The units included with **microcut +** are inches, fractional inches, cm, mm, and Japanese sun. If a unit you desire can not be displayed, refer to **SYSTEM PARAMETERS**, number 1, above.

PROGRAMMING A JOB

The PROGRAM MODE is used to program a series of stop points and commands into microcut +[®] so that it can operate in AUTOMATIC MODE. These stop points and commands can proceed without limitations of direction or motion. Press <PROGRAM>.

Outlined below is a flow chart showing the various programming options. Subsequent pages offer specific programming examples.



PROGRAM MODE OPTIONS

microcut +^o contains several options which can be accessed in PROGRAM MODE. Press <SIDE ARROW CURSOR> to access these options. Press <UP or DOWN ARROW CURSOR> to make your choice. Choices include:

1. Stock push.
Moves the gauge to a value and continue without the knife stroke.
2. Jog/load.
Positions the gauge without advancing a cut number.
3. Air control.
Programs air to be either standard control or off for entire cut.
4. Labels.
Programs stop values for a step and repeat sequence.
5. Sheet divide.
Divides a sheet into equal sizes.
6. Insert.
Adds a cut in front of the one shown on the display.
7. Delete.
Removes the cut that is shown on the display.
8. Change cut.
Adjusts the stop location.
9. Job protect*.
To prevent unauthorized modification or erasure of special jobs.
10. Change units.
Shifts to the next allowed unit of measurement.
11. Change job number.
Modifies the currently assigned value.

* Protection is re-enabled anytime MANUAL MODE is commenced. To access any of the OPTION features, the operator access code will need to be entered first. If the access codes are inactive (see microfacts^o configuration) then a special code will need to be used instead. Refer to REVIEW mode for more details.

PROGRAMMING A JOB WITH THE KEYS

1. Enter the PROGRAM MODE by pushing <PROGRAM>.
2. Use <CURSORS>, <NUMBERS>, and <YES> to select a title (number) and description for the job you are about to program. This will allow you to call the job up for AUTOMATIC MODE operation later.
3. The display will now show the current backgauge position, the assigned job number, and Cut #1. Use the <NUMBER> and <CALCULATOR> keys to display the position at which you wish to make your first cut. After doing so, press <YES>. The display will now show Cut #2. Continue entering the position of each subsequent cut, pressing <YES> after each entry.
4. After completing the last forward cut, many operators prefer the backgauge to push the stock forward to ease the handling of the stock and eliminate the need to reach under the knife and clamp. microcut +[®] features an automatic eject option which can be enabled or disabled in the MANUAL OPTIONS ROUTINE. Assuming this option has been turned on, anytime microcut +[®] sees a cut and must drive backwards to get to the next position, it will push the stock forward first. To otherwise program a stock eject, use the <NUMBER> keys to display the position to push to and press <SIDE ARROW>. The first choice is PUSH. Press <YES> to enter the position as a push.
5. Once programming is completed, press <AUTOMATIC> and microcut +[®] will drive the backgauge to the displayed cut position. Once in AUTOMATIC MODE, the backgauge will move to the next position automatically after each cut.

PROGRAMMING A JOB BY MAKING CUTS

1. Enter the PROGRAM MODE by pushing <PROGRAM>.
2. Use <CURSORS>, <NUMBERS>, and <YES> to select a title (number) and description for the job you are about to program. This will allow you to call the job up for AUTOMATIC MODE operation later.
3. The display will now show the current backgauge position, the assigned job number, and Cut #1. Move the backgauge to the first cut position. Position your stock and operate the knife. The display will now show Cut #2. Continue this procedure to enter all of the cut values.
4. After completing the last forward cut, many operators prefer the backgauge to push the stock forward to ease the handling of the stock and eliminate the need to reach under the knife and clamp. microcut +[®] features an automatic eject option which can be enabled or disabled in the MANUAL OPTIONS ROUTINE. Assuming this option has been turned on, anytime microcut +[®] sees a cut and must drive backwards to get to the next position, it will push the stock forward first. To otherwise program a stock eject, use the <NUMBER> keys to display the position to push to and press <SIDE ARROW>. The first choice is PUSH. Press <YES> to enter the position as a push.
5. Once programming is completed, press <AUTOMATIC> and microcut +[®] will drive the backgauge to the displayed cut position. Once in AUTOMATIC MODE, the backgauge will move to the next position automatically after each cut.

PROGRAMMING A LABEL CUTTING JOB

1. Enter the PROGRAM MODE by pushing <PROGRAM> .
2. Use <CURSORS>, <NUMBERS>, and <YES> to select a title (number) and description for the job you are about to program. This will allow you to call the job up for AUTOMATIC MODE operation later.
3. The display will now show the current backgauge position, the assigned job number, and Cut #1. Press <SIDE ARROW> and select LABELS. You will now be prompted by the screen to enter certain values. In sequence, they are:
 - A. FIRST CUT (IF KNOWN) IS: Use <NUMBERS> to display the first cut value and press <YES> or move the backgauge to the correct value and operate the knife. If this value is not known (or you do not want to calculate it), leave this blank and continue to the next step.
 - B. NUMBER OF LABELS IS: Use <NUMBERS> to display the number of labels to be programmed. Press <YES> . If the entire side is the same sized label (and trim), and you do not wish to count the number, and you entered the sheet size in STEP A, press 99 here. microcut +^o will stop programming as soon as it reaches the minimum front value.
 - C. LABEL SIZE IS: Use <NUMBERS> to display the size of the label. Press <YES> .
 - D. TRIM SIZE (IF ANY) IS: Use <NUMBERS> to display the trim size. Press <YES> . If no trim exists, leave this blank.
 - E. KEEP THE FIRST CUT? Press <YES> if the first cut value should be saved. Press <NO> if the sheet is already trimmed to its starting size and the first cut is not needed.
4. After completing the last forward cut, many operators prefer the backgauge to push the stock forward to ease the handling of the stock and eliminate the need to reach under the knife and clamp. microcut +^o features an automatic eject option which can be enabled or disabled in the MANUAL OPTIONS ROUTINE. Assuming this option has been turned on, anytime microcut +^o sees a cut and must drive backwards to get to the next position, it will push the stock forward first. To otherwise program a stock eject, use the <NUMBER> keys to display the position to push to and press <SIDE ARROW> . The first choice is PUSH. Press <YES> to enter the position as a push.
5. Once programming is completed, press <AUTOMATIC> and microcut +^o will drive the backgauge to the displayed cut position. Once in AUTOMATIC MODE, the backgauge will move to the next position automatically after each cut.

PROGRAMMING A SHEET DIVIDE

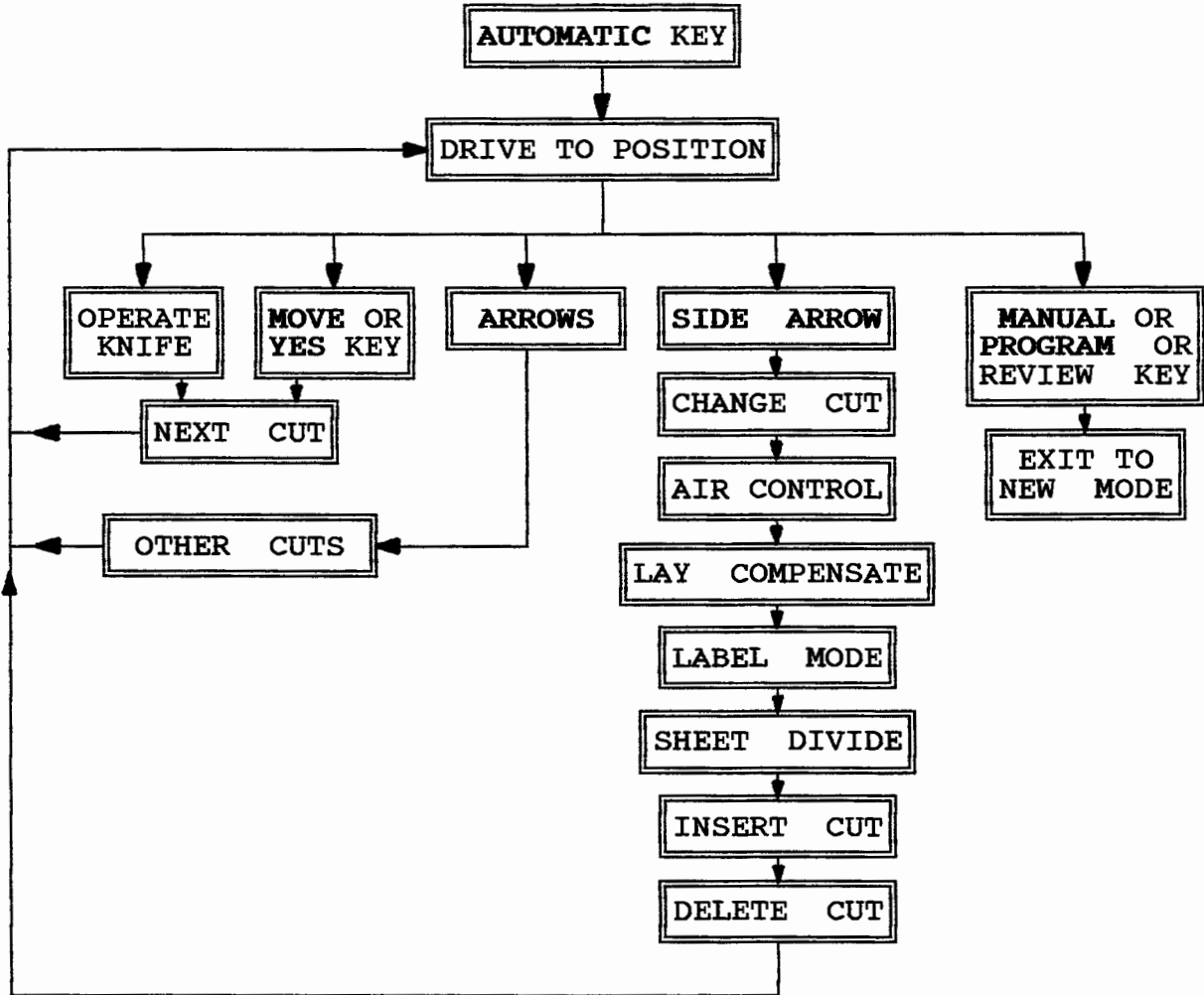
1. Enter the PROGRAM MODE by pushing <PROGRAM>.
2. Use <CURSORS>, <NUMBERS>, and <YES> to select a title (number) and description for the job you are about to program. This will allow you to call the job up for AUTOMATIC MODE operation later.
3. The display will now show the current backgauge position, the assigned job number, and Cut #1. Press <SIDE ARROW> and select SHEET DIVIDE. You will now be prompted by the screen to enter certain values. In sequence, they are:
 - A. SIZE OF SHEET IS Use <NUMBERS> to display the first cut value and press <YES> or move the backgauge to the correct value and operate the knife.
 - B. DIVIDE SHEET BY: Use <NUMBERS> to display the number of pieces to divide the sheet into. Press <YES>.
 - C. BACKTRIM SHEET? Press <YES> if the first cut value should be saved. Press <NO> if the sheet is already trimmed to its starting size and the first cut is not needed.
4. After completing the last forward cut, many operators prefer the backgauge to push the stock forward to ease the handling of the stock and eliminate the need to reach under the knife and clamp. microcut +^o features an automatic eject option which can be enabled or disabled in the MANUAL OPTIONS ROUTINE. Assuming this option has been turned on, anytime microcut +^o sees a cut and must drive backwards to get to the next position, it will push the stock forward first. To otherwise program a stock eject, use the <NUMBER> keys to display the position to push to and press <SIDE ARROW>. The first choice is PUSH. Press <YES> to enter the position as a push.
5. Once programming is completed, press <AUTOMATIC> and microcut +^o will drive the backgauge to the displayed cut position. Once in AUTOMATIC MODE, the backgauge will move to the next position automatically after each cut.

REVIEWING AN OLD JOB

1. Enter the REVIEW MODE by pushing **< REVIEW >**.
 2. Use the **< UP and DOWN ARROWS >** to highlight the desired job. Use the **< SIDE ARROW >** to select the PRINT JOB or DELETE JOB options. If the paper runs out while printing a job, it will be necessary to insert a new roll. Remove the two screws on the top of the display console and hinge the front cover down. Remove the old roll and insert a new one. Feed the paper down along the front side of the unit into the printer. Press the **< PAPER FEED >** key located on the main PC board behind the printer cable to feed the paper through the printer. Carefully lift the front cover and guide it into position with the console. Replace the screws on the top of the console.
 3. The display will now show the current backgauge position, the assigned job number, and the programmed information. The job can be modified by using the **< SIDE ARROW >**. The same options are available in REVIEW MODE as are in the PROGRAM MODE.
- * To modify a job which has been "protected" a code must be entered first to gain access to the PROGRAM OPTIONS ROUTINE. This code is the four digit operator access code (if access codes were ON when the job was protected) or 2984 (code 00 if the access codes were OFF). Operator access codes can be viewed from the microfacts[®] configuration screen if necessary.

AUTOMATIC OPERATION

In AUTOMATIC MODE microcut +^o will position the backgauge according to job memory. Before entering AUTOMATIC MODE, select the desired job number (or program a new one). Make sure that the desired job and starting cut number are displayed in the third line of the prompting display. Press <AUTOMATIC>.



AUTOMATIC MODE OPTIONS

microcut +^o contains several options which can be accessed while operating in AUTOMATIC MODE. Press <OPTIONS> to access these features. Press <OPTIONS> to advance through the selections. Options which are offered include:

1. **Change cut.**
Adjusts the stop location. This can be done for this lift only or permanently. In permanent mode, sub-options will appear for push to, jog/loading point, change units, and exit cut change operation.
2. **Air control.**
Programs air to be either standard control or off for entire cut.
3. **Lay comp (compensate).**
Adjusts all forward moving stop values up to the END JOB. This can be done for this lift only or permanently.
4. **Labels.**
Programs stop values for a step and repeat sequence.
5. **Sheet divide.**
Divides a sheet into equal sizes.
6. **Insert.**
Adds a cut in front of the one shown on the display.
7. **Delete.**
Removes the cut that is shown on the display.

THE microfacts[®] MANAGEMENT SYSTEM

microfacts[®] is an operator transparent real time based management system which tracks time spent on different cutting jobs. This is intended to aid in job costing, job estimating, security (preventing unauthorized use of the machine), and general tracking. Up to 12 different 4 digit operator codes can be designated along with a single 4 digit management code. Data can then be dumped to a personal computer (PC) in the form of an ASCII text code which can then be adapted to whatever management evaluation system may be desired. Different elements of the **microfacts[®]** system can be enabled (or disabled) allowing the user to tailor it to specific needs. Options include:

1. System disabled. There is no need to verify time or sign in (with an operator access code) at power on.
2. Access codes only on. To gain entrance to **microcut +[®]** at power on IT IS necessary to sign in with a legitimate operator access code.
3. Access codes, and management system on. To gain entrance to **microcut +[®]** at power on IT IS necessary to sign in with a legitimate operator access code. **microcut +[®]** will store real time data.
4. Access codes, management system, and idle time are on. To gain entrance to **microcut +[®]** at power on IT IS necessary to sign in with a legitimate operator access code. **microcut +[®]** will store real time data for timely printouts. An idle time is assigned from 1 to 99 minutes and if **microcut +[®]** does not sense any use in that time period the operator will have to respond to a selection screen explaining why the idle time occurred.

microfacts[®] data is accessible through the **microfacts[®]** CONFIGURATION screen. This screen is reached from the bottom of the standard CONFIGURATION screen, which is gotten to from either the SET UP ROUTINE or the SYSTEM PARAMETERS screen in MANUAL operation (see those sections of this manual). Use the <CURSOR> keys to highlight the management line. Use the <NUMBER> and <YES> keys to enter the management access code. The following features can be adjusted from this screen:

OPERATOR ACCESS CODES--

Operator access codes are four digit numbers which (if enabled) must be used to gain access to **microcut +[®]**. They can be used for tracking operator procedures (**microfacts[®]** on) or to control who can operate the machine. The operator access codes associated with **microfacts[®]** can be enabled or disabled. Respond appropriately when the cursor is positioned at that selection. If the codes are enabled, then the <NUMBER> keys can be used to adjust the 12 operator codes. If the codes are disabled, **microfacts[®]** and idle time will also be disabled.

MANAGEMENT ACCESS CODE--

A management access code must be used to access the **microfacts[®]** CONFIGURATION screen. Any four digit number can be programmed. Use <NUMBERS> and <YES> to enter your desired number. The universal code that is permanently programmed can always be used if you forget your code.

IDLE TIME--

Idle time is the amount of time which **microcut +[®]** will allow (with no keys hit and no knife operation) before it requires an explanation from the operator in regard to why nothing has been happening. Answers the operator may give include:

- Job approval
- Shift change--requires new operator to log in
- Wait for stock
- Knife change
- Lunch
- Break
- Cutter down
- Maintenance

TIME AND DATE--

Use <CURSORS>, <NUMBERS>, and <YES> to enter the correct time, date and format for the real time clock.

cutternet[®] PERSONAL COMPUTER INTERFACE

cutternet[®] can interface any **microcut +[®]** system to an IBM (or compatible) personal computer. It is hoped that this will help prevent bottlenecks in the bindery and allow true performance and profitability to be realized. This system is designed with the realization that different shops may require different features. It can be used in a number of different ways. If there are methods which you will require that do not seem to be in this package, please contact our engineers at:

Golden Gate Microsystems
30 Golden Gate Drive
San Rafael, CA USA 94901

Phone: 415-457-7500
FAX: 415-457-1694

We will be happy to investigate your needs and add features as possible. There may be some instances where **cutternet[®]** needs to be integrated into an existing management system. This manual contains information on the file and data organization for **cutternet[®]**. If interface is required, it may be necessary to contact the engineers for your existing management system for assistance.

cutternet[®] will, when installed, allow enhanced operation from both the standpoint of **microfacts[®]** operation and job programming, storage, and adjustment.

microfacts[®] enhancements:

1. **microfacts[®]** can be polled during operation to evaluate job status to estimate when a customer's cutting job will be completed. Lifts run as well as time spent cutting the job can be seen.
2. Operating data can be stored and evaluated over a period of time with respect to date(s), operator(s), machine(s), job number(s), and idle time to help evaluate efficiency, productivity, and job costs.
3. Data can be "written" to screen (monitor) or to a printer attached to the computer.
4. The data can be manipulated to work on different management systems to better integrate it to the operation of the entire company.

microcut +[®] enhancements:

1. Jobs can be stored on floppy or hard disk at the computer dramatically increasing the job storage.
2. A copy of each job can accompany the customer time data information stored by **microfacts[®]**.
3. Jobs can be created or modified as necessary at the computer terminal to adjust for layout changes BEFORE the operator receives the job at the cutter.
4. Jobs can be swapped between machines through the computer interface.
5. Jobs can be created from STEP & REPEAT machines or CAMERAS_® which have onboard programming systems. These can then be massaged into **microcut +[®]** job file formats and directly loaded to the **microcut +[®]** display console even before the operator receives the material to cut.

REQUIREMENTS AND INSTALLING THE SOFTWARE

The personal computer interface needs the following in order to operate:

1. An IBM compatible computer with--
 - a. At least 640KB of on board memory.
 - b. A hard disk to hold the program and data.
 - c. DOS operating software.
 - d. A serial port (RS-232).
 - e. A printer if hard copies are desired.
 - f. A floppy disk drive for down loading the software (specify drive size).
2. Interconnect cabling between the personal computer and any **microcut +**® s that are to be monitored--see **ELECTRICAL HOOKUP**.
3. Signal line boosters (repeaters) if the lines need to go long distances--see **ELECTRICAL HOOKUP**.

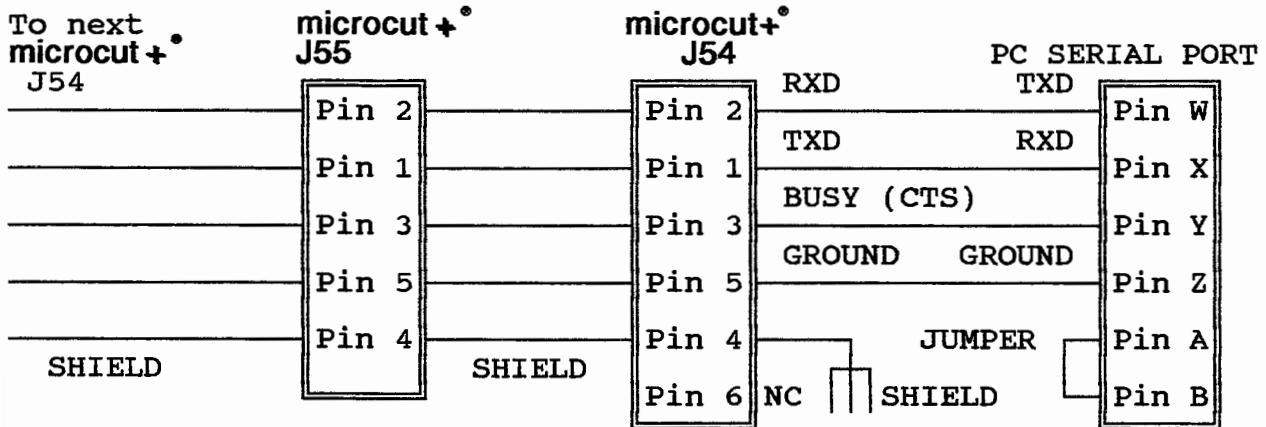
INSTALLING THE SOFTWARE

1. Power up the personal computer and go to the DOS command line.
2. Insert the **microcut +**® PC INTERFACE floppy disk into the drive on the computer.
3. Type either A: or B: depending upon the drive configuration. Then press ENTER.
4. Type **INSTALL** and then press the ENTER key.

The necessary programs will be installed onto your hard disk under a directory titled C:\CUTRNET. The titles of the programs are CUTRNET.EXE and JOBS.EXE. **cutternet**® will automatically create new directories and sub-directories for data as required.

ELECTRICAL HOOKUP

Four conductor 18 AWG shielded cable is recommended for connecting the PC to the **microcut +** (s). Consult the information below for the required connector at the PC serial port. The EARTH should be connected to the shield at one end of the cable only to avoid potential ground loops.



Computer serial ports come in two versions--9 pins and 25 pins. Refer to the following chart for the proper pin designations for your application:

PIN LETTER	9 PIN CONNECTOR NUMBER	25 PIN CONNECTOR NUMBER
W	3	2
X	2	3
Y	7	4
Z	5	7
A	4	6
B	6	20

The RS-232 drivers used in **microcut +** can run 9600 baud over a line distance of 100 feet (30 meters). If the cable must be longer than this it will probably be necessary to place a "repeater" in the line to boost signal strength or poor data reception may occur. These are available from most computer stores. Any brand that is compatible with an RS-232 line is acceptable. Follow the manufacturer's instructions for attaching these devices. If there is a question about whether you require a repeater, try the system. If data transmission errors occur, then install the repeater(s).

A switch box can be used to select one **microcut +** or another. Alternatively, it may be easier to dedicate a small portable computer to **cutternet** and move the computer from one **microcut +** to another. It will be assumed that the switch box is used to simplify the discussion on the following pages.

POLLING AND SAVING microfacts[®] DATA

Use the switch box to select the correct microcut +[®] for polling data. From the main menu:

<p>microcut +[®] PC Interface System</p> <ul style="list-style-type: none">1: microfacts[®] data2: microcut +[®] jobs3: Utilities4: Exit <p>Press a number for your selection</p>

Press the NUMBER 1 key. The screen will show:

<p>microfacts[®] Data Menu</p> <ul style="list-style-type: none">1: Get data from microcut +[®]2: Review data stored from microcut +[®]3: Previous menu <p>Press a number for your selection</p>

Press the NUMBER 1 key. The screen will ask you to select a machine number from the list (so that the data can be stored in the correct file). Use the NUMBER keys and ENTER. Data will be transferred automatically. When the transmission is complete the data will be converted and added to the subdirectory of the microcut +[®] ID polled. This data will also be deleted from the microfacts[®] memory at the microcut +[®] display. Each time a unit is polled the data is added to the appropriate FACTS.DAT file. This file can be shrunken in size by using options provided in the UTILITY menu.

NOTE: If a machine code is not present you may press the INSERT key to add the missing machine ID.

SETTING FILTERS AND VIEWING/PRINTING DATA

From the main menu:

<p>microcut +^o PC Interface System</p> <p>1: microfacts^o data 2: microcut +^o jobs 3: Utilities 4: Exit</p> <p>Press a number for your selection</p>
--

Press the NUMBER 1 key. The screen will show:

<p>microfacts^o Data Menu</p> <p>1: Get data from microcut +^o 2: Review data stored from microcut +^o 3: Previous menu</p> <p>Press a number for your selection</p>

Press the NUMBER 2 key. The screen will show:

microfacts^o Data Review		
Filter options	Status	Options
Begin date.....From:	01/01/90	Show data to screen
End date.....To:	11/28/90	Print data
Operator code:	ALL	
microcut +^o identification:	ALL	
Job number:	ALL	
Idle time only:	NO	
		Key definitions
ENTER to record new date value		UP ARROW to move highlight up
0 - 9 to use as date values		DOWN ARROW to move highlight
down		
DEL to clear date value		ESC to exit
O for Options menu		

The display will show filter options for sorting the time data. The filters are initially in the ALL DATA state. If data is viewed in this manner, then all data will be displayed. Use the UP and/or DOWN ARROW keys to move the highlight to any filter setting. A help screen will appear at the bottom of each filter setting to advise you of the operating keys on the computer and how to use them. Use the ENTER key to record the new filter. Press the LETTER O key to move the highlight to the OPTIONS side of the screen. On this side you may choose to print or display the data. Press the ESC key to exit back to main menu.

Example filter setting: You may wish to know how long it took for operator 3333 to cut job number 12345 between August 1 and September 1 and if he took any breaks.

microfacts® Data Review		
Filter options	Status	Options
Begin date.....From:	08/01/90	Show data to screen
End date.....To:	09/01/90	Print data
Operator code:	3333	
microcut +® identification:	ALL	
Job number:	12345	
Idle time only:	NO	
		Key definitions
ENTER to record new date value	0 - 9 to use as date values	UP ARROW to move highlight up
down	DEL to clear date value	DOWN ARROW to move highlight
O for Options menu		ESC to exit

Filter options:

- 1) Date
This selects the range of dates you wish to review.
- 2) Operator code
This allows data for just a single operator to be shown.
- 3) microcut +® Identification
This allows data for just one machine to be shown.
- 4) Job Number
This allows data for a single job to be shown.
- 5) Idle time only
This allows data for idle time only to be shown.

VIEWING/PRINTING DATA--Data can be either viewed on the CRT screen or loaded to a printer. In each case the option for "All data requested" or "Summary of data requested" will be offered. The second choice (summary only) will skip over the details and show the final tallies. See the next page for examples.

PROGRAMMING WITH cutternet[®]

Proceed to the PROGRAMMING OPTIONS menu (press 2 at the main menu). The screen will ask you to select a machine number from the list (so that the data can be stored in the correct file). Use the NUMBER keys and ENTER. If a machine code is not present you may press the INSERT key to add the missing machine ID. The screen will show:

<p style="text-align: center;">Programming options</p> <ol style="list-style-type: none">1. Program a new job2. Review an old job3. Get all jobs from microcut + °4. Previous menu <p style="text-align: center;">Press a number for your select</p>

Press the NUMBER 1 key for a new job, the NUMBER 2 key for an old job, or the NUMBER 3 key to poll jobs from the microcut + ° that you are currently connected to. The screen will ask you to select a machine number from the list (so that the data can be retrieved from or stored to the correct file). Program and review are the same on the PC as they are with microcut + °. Refer to other sections in this manual for assistance. Selection 3 will automatically retrieve all data from microcut + ° and store it in the appropriate machine file.

To send a job to microcut + °, select the review option. There is an extra line in the review screen which allows the job to be sent to whatever microcut + ° is currently connected to the computer. Select this option. The transfer is completed automatically.

NOTE: If a machine code is not present you may press the INSERT key to add the missing machine ID.

UTILITIES

cutternet® contains a UTILITIES section so that files can be modified when required. Since time data can take up large amounts of memory, it is recommended that occasionally, the time management files be trimmed depending upon your application.

Proceed to the UTILITIES menu (press 3 at the main menu). The screen will show:

<p style="text-align: center;">microcut +® PC Interface Utilities Menu</p> <ol style="list-style-type: none">1: Set up microcut +® ID's2: Setup initial units file3: Delete selective portions of microfacts® file4: Write delimited microfacts® text file5: Previous menu <p style="text-align: center;">Press a number for your selection</p>

SELECTION 1:

Press the number 1. The screen will allow you to enter descriptions for each machine the **microcut +** is installed upon. Use the NUMBER and LETTER keys to display each machine. Press ENTER to record each machine. This will allow you to store job data from each machine in designated files. Jobs can be loaded between machines using the computer as the interface.

SELECTION 2:

Press the number 2 key to adjust the default units for a specific directory. The screen will show the **microcut +** ID selection directory. Make your selection. After you select the **microcut +** ID you will then see the following screen:

<p style="text-align: center;">Current primary units to work with is</p> <ol style="list-style-type: none">1. Inches2. Centimeters3. Millimeters4. Sun <p style="text-align: center;">Choose a number to select new units</p>
--

Press 1, 2, 3, or 4 to make your selection. The units can be changed during job programming. This options allows you to select the default units to prevent mistakes in units for general applications.

SELECTION 3:

Press the number 3 key. The screen will show (for example):

microfacts [®] Selective Deletion of Data		
Filter options	Status	Options
Delete from this date: 01/01/90to this date: 11/29/90		Delete data
Delete these Operator's: ALL		
microfacts [®] file ID: ALL		
Delete this Job number: ALL		
Delete idle time only: NO		
		Key definitions
ENTER to record new date value		UP ARROW to move highlight up
0 - 9 to use as date values down		DOWN ARROW to move highlight down
DEL to clear date value		ESC to exit
O for Options menu		

Use the UP or DOWN ARROW to move the highlight. Use the NUMBER keys where appropriate. Press the ENTER key to record the filter data. Each time data is downloaded into the facts file, it is appended at the end of the file. At some point in time you will find that the file has grown large enough to become cumbersome to view or print. This utility allows you to shrink the size of the file by deleting selected information depending on how the filters are set. The filters work with each other. Example: To delete all jobs from operator number 2222 between August 1 and September 1, the screen would look like this:

microfacts [®] Selective Deletion of Data		
Filter options	Status	Options
Delete from this date: 08/01/90to this date: 09/01/90		Delete data
Delete these Operator's: 2222		
microfacts [®] file ID: ALL		
Delete this Job number: ALL		
Delete idle time only: NO		
		Key definitions
ENTER to record new date value		UP ARROW to move highlight up
0 - 9 to use as date values down		DOWN ARROW to move highlight down
DEL to clear date value		ESC to exit
O for Options menu		

Filter Options:

- 1) Date--Select data between these dates to delete.
- 2) Operator's--Delete a selected operator from the file or all operators from the file.
- 3) microfacts[®] File ID--Go into ID directory and delete facts file data or choose one directory only.
- 4) Job number--Delete only one selected job from facts file or all jobs from facts file.
- 5) Idle time only--Delete idle time only from all facts files.

SELECTION 4:

Press the number 4 key at the microcut +[®] PC Interface Utilities Menu to gain direct access to the microfacts[®] file data. The screen will first show the microcut +[®] ID selection directory. Each microcut +[®] ID has an individual microfacts[®] file which is delimited ASCII text readable by programs such as DBASE.

Please refer to the file format section in this manual for more information about how the file is organized.

DATA FORMATS

microcut +^o condenses the **microfacts^o** real time data in its own unique manner. When stored in the personal computer, all data is converted to ASCII text data delimited by (") and (,) in between the fields. If **microfacts** data is to be merged with a different management system it will be necessary to convert the data to the required format for evaluation. Someone familiar with the software package of your management system will need to be consulted for assistance. The **microfacts** data format is as follows:

"Field 1", "Field 2", "Field 3", ... "Field 6", Carriage return; Next data line...End of data where--

Field 1 is the mode of operation--always has data
(2 characters in length)

- > > = Operator log in
- 01 = Manual mode
- 02 = Program new job mode
- 03 = Review job mode
- 04 = Automatic mode
- 05 = Job approval (idle time)
- 06 = Shift change (idle time)
- 07 = Wait for stock (idle time)
- 08 = Knife change (idle time)
- 09 = Lunch (idle time)
- 0: = Break (idle time)
- 0; = Cutter down (idle time)
- 0< = Maintenance (idle time)
- 0= = Memory full
- 99 = Log out of operator

Field 2 is the Operator code--blanks unless > > at Field 1 (operator log in)--(4 characters in length)

Field 3 is hours, :, minutes, :, and seconds (time)--always has data--(8 characters in length)

Field 4 is month, /, date, /, and year--data at log in and log out only--(8 characters in length)

Field 5 is the job number being used--blanks only if LAST JOB was deleted--(6 characters in length)

Field 6 is number of lifts run in AUTOMATIC mode--(4 characters in length)

microcut +^o job data is condensed in its own unique manner. If data is to be used with/from different systems it will be necessary to convert the data to the required format. Someone familiar with the software package of your other systems will probably need to be consulted for assistance. The job data format is as follows:

First byte = > > for begin job flag

Next eight bytes = ASCII value of job title

Next 20 bytes = job description

Cuts = four bytes formatted as:

Byte 1 = type of data where

- bit 0 = Inch display if set
- bit 1 = Fractional display if set
- bit 2 = Cm display if set
- bit 3 = Mm display if set
- bit 4 = Sun display if set (traditional Japanese measuring unit equal to 3.03 cm).
- bit 5 = Air off for full cut if set.
- bit 6 = Push value if set.
- bit 7 = Jog/loading point if set.

Byte 2 = Dense packed BCD of 100's and 10's of units

Byte 3 = Dense packed BCD of 1's and .1's of units

Byte 4 = Dense packed BCD of .01's and .001's of units

Note that the .001's value is 0 if the last digit is turned off.

End of job = #Offh

Origination date in the PC memory = day, day, month, month, year, year

Last revision date in the PC memory = day, day, month, month, year, year

cutternet[®] PROBLEMS AND DIAGNOSIS

1. When machine codes are called up, one (or more) always show unavailable.
 - a. Power is off to that **microcut +**.
 - b. The RS-232 cable is not connected properly (or adequately).
 - c. The particular code(s) is (are) not programmed into a **microcut +** that is on line.
2. Data is interrupted during transmission.
 - a. Power to that **microcut +** was turned off.
 - b. The line losses are too great for proper operation. Line boosters need to be installed (see ELECTRICAL HOOKUP).
3. Response from **microcut +** is sluggish.
 - a. **microcut +** is being used in a non-interrupt mode and is sharing time between the operator and the computer.
4. Job(s) can not be located.
 - a. Job(s) is (are) stored under a different directory.
 - b. Job(s) was (were) not saved.
 - c. Job(s) was (were) deleted.
5. Printer does not respond.
 - a. No data is available for transmission--check the data and filter status. View the data on the screen to insure data exists.
 - b. The printer is not on. Check the power cable and switch.
 - c. The printer is not attached to the computer. Check cables carefully. Does the printer operate if the PRINT SCREEN key is pressed?
6. Job(s) is (are) not loaded to **microcut +**.
 - a. Wrong **microcut +** was selected for the data dump.
 - b. **microcut +** code registered OFF at the selection screen (see 1 above).
 - c. There was not enough memory in **microcut +** for the data transfer (an error would be shown on the computer screen).
7. Device time out error appears on screen.
 - a. There is a problem in the communications line to the **microcut +** or printer. Check the lines carefully for bad connections or a wiring error.

Golden Gate Microsystems supplies phone consultation during our normal work hours of 8:30 AM to 5:00 PM Pacific Coast Time from Monday to Friday excluding holidays. We will do all that is possible to assist over the phone lines. Please have your OWNER'S MANUAL at hand AND the serial number of your unit before calling.

Golden Gate Microsystems
30 Golden Gate Drive
San Rafael, California, USA 94901
Phone: 415-457-7500
FAX: 415-457-1694

MAINTENANCE AND OE CONTROLS

microcut +^o has been designed to be virtually maintenance free. However, connections can cause problems in any electrical circuit. To avoid problems with connections, it is advised that once a year a "tune up" be performed:

1. With power off, unplug the connectors at the back of the display console and plug them back in to clean any dirt that may have settled.
2. Check all wiring for any nicks or cuts.

Motor brushes should be checked every 5000 hours of operation. Replace as appropriate. Clean the motor of carbon dust as required. Disconnect all power sources before working on the motor.

Occasionally check all of the component mounts for looseness.

USE OF ORIGINAL EQUIPMENT CONTROLS--

microcut +^o uses its own drive motor. To insure that this does not conflict with the original equipment drive sometimes it is necessary to remove drive belts or fuses (for electric backgauge brakes) or add switches (to activate drive clutches). **ANY ALTERATIONS TO THE PAPER CUTTER TO ACCOMMODATE **microcut +^o** INVOLVE THE BACKGAUGE DRIVE ONLY. NO ALTERATION TO ANY OTHER PART OF THE MACHINE IS ALLOWED. THE ORIGINAL EQUIPMENT SWITCHES ARE NOT TO BE USED WHEN INSTALLING **microcut +^o**. THIS SHOULD MAKE RETURNING TO THE ORIGINAL CONTROLS FAIRLY STRAIGHT FORWARD. IN SOME CASES THE ORIGINAL MOTOR MAY HAVE TO BE RE-MOUNTED.**

Follow the instructions written below by the installer to convert the machine back to its original equipment drive:

- 1.
- 2.
- 3.
- 4.
- 5.
- 6.

SERVICE AND TROUBLESHOOTING

microcut +^o is designed to be very easy to service and maintain. In general, complications in the computer should be attacked by turning the power off and back on to see if things straighten out automatically. If this occurs frequently (more than once a year, excluding thunder storms), the AC power should be checked. Refer to the WIRING section in this manual. Connections on the display console or electrical problems within the machine itself could also be at fault. Plug all connectors in and out a few times to make sure they are clean. Refer to the MAINTENANCE section in this manual.

During thunderstorms or in the event of some severe electrical disturbance, it is possible for any computer to "lose track" of itself. If such a failure occurs, turning the power off and then back on should correct it.

BASIC TROUBLESHOOTING--

The microcut +^o display console houses one printed circuit board, the keypad, the printer, the CRT, and a small power supply for the CRT. In general, these parts are not user serviceable. The display console has been designed with a universal mount and plug-in connecting cables so that it is very easy to remove and exchange. This would be the procedure for any serious problems in the computer.

There are, however, a number of problems that can be taken care of by the operator/service person. The following contains titles of possible problems and steps to take if a problem does exist.

1. microcut +^o WILL NOT SWITCH ON:

- a. The power switch on the machine is not on.
- b. The wall circuit breaker has been turned off or is tripped.
- c. There is a blown fuse somewhere in the supply line. Replace.

2. microcut +^o DEFAULTS INTO SET UP ROUTINE.

- a. Memory has been contaminated. Go through the SET UP ROUTINE to correct this.

NOTE - If this occurs frequently, perform MAINTENANCE to make sure all cables and connections are secure. If this does not cure the problem replace the memory chip inside the unit.

3. NO BACKGAUGE DRIVE.

- a. The motor belt or pulley is loose.
- b. Check for a mechanical bind--oil the leadscrew or increase the motor torque.
- c. The motor brushes are bad. Examine them for wear.

4. microcut +^o DOES NOT COUNT ONE FOR ONE WITH THE TABLE:

- a. The reference values used in the SET UP ROUTINE were not exact.
- b. The shaft encoder or the leadscrew sprocket is loose. Check for tightness. Mark the sprockets at a mechanical reference point and run the backgauge back and forth. Check the markings at the same reference point for alignment.

5. IMPROPER OR ERRATIC COUNTING (BACKGAUGE POSITION).

- a. The shaft encoder cable has failed. Check the cable for bad connections. Replace if necessary.

NOTE – *Cable connections can fail due to contamination. Keep the cable ends away from dirt and oil (etc.) when they are not connected. Sometimes a connection problem here can be cured just by removing the connector and putting it back on. The sliding action of the pins can help self clean them. It is a good idea to insert and remove the cables a few times at the time of installation. Refer to the section titled MAINTENANCE in this manual.*

6. microcut +° TENDS TO SUFFER COUNT FAILURES.

- a. Connection problem. See previous paragraph (5).
- b. The shaft encoder is failing. Replace the shaft encoder.

7. THERE IS IRRELEVANT DATA IN THE MEMORY.

- a. The memory was not erased at the time of installation. Enter the SET UP ROUTINE and erase the job memory.

8. OUT OF MEMORY.

- a. Memory was not erased at the time of installation. Enter the SET UP ROUTINE and erase all of the job memory.
- b. All of the job memory space has been used. Delete unused jobs as desired or enter the SET UP ROUTINE and erase all of the job memory.

9. CUT READY INDICATORS FLICKERS ON AND OFF

- a. The settling tolerances are set at too small a value. Refer to MANUAL OPTIONS.
- b. When you move the handwheel and then release it, it should not move backwards. If it does, then there is a mechanical elasticity causing a problem called flexback. Check for belt problems, mechanical bind, over-tightened nylon plugs in the backgauge, mis-adjusted gibbs or compensating nuts, etc.

10. CUT IS NOT RECOGNIZED.

- a. The cut sensing switch is out of adjustment. Adjust the switch as necessary.

11. SCREEN IS WRONG BRIGHTNESS.

- a. Remove the cover plate on the rear of the display console. Locate the brightness adjusting knob at the center rear of the cathode ray tube control circuit board. Adjust this carefully being careful not to touch ANY of the electronic parts or the back of the tube.

TESTING THE KEYBOARD

microcut +^o contains a full **KEYBOARD TEST ROUTINE** available immediately at power on. This should be used if any key is suspect (either of not operating or of being stuck).

Turn the power off. Wait a few seconds. Press and hold **<YES>**. Turn the power on. The **KEYBOARD TEST ROUTINE** is entered automatically. This routine will exit as soon as there is no key pressed. To check the keys, press another key and release **<YES>**. Whenever a key is activated the value of that key will show in the display until the key is released.

If a key is stuck the display will show the value of the stuck key.

NOTE -- **microcut +^o** will default to the **KEYBOARD TEST ROUTINE** when power is turned on if **<YES>** is stuck in.

PROMPT ERROR MESSAGE LIST

microcut +^o spacer systems have several prompts to tell the operator of existing or pending error conditions. The following alphabetical list is a synopsis of most of the codes from these units. Refer to other areas of this manual for additional information.

110 VAC POWER ERROR

The 110 VAC power from the transformer is not being seen at the display console. This may be due to a tripped circuit breaker (push in the white button on the transformer to reset it) or a poor connection at the input on the display (TURN THE POWER OFF and remove the cover and inspect the 5 pin connector carefully).

AC POWER DETECTION ERROR

The 110 VAC power from the transformer is not being seen at the display console. This may be due to a tripped circuit breaker (push in the white button on the transformer to reset it) or a poor connection at the input on the display (TURN THE POWER OFF and remove the cover and inspect the 5 pin connector carefully).

CANNOT BE ZERO

The fraction when using the calculator keys cannot have zero in the denominator.

CLAMP DOWN

The clamp sensing switch is not tripped properly. This may be due to a mechanical problem with the clamp or the switch or there may be a connection problem between the switch and microcut +^o.

CLAMP SENSE ERROR

During knife operation--the clamp switch has not operated. Check the pile height of the stock being cut with reference to the trip point of the switch. Adjust if necessary.

CORRECT POSITION UNKNOWN

The position tracking system has detected an error which it can not recover from. The correct position can not be guaranteed. It will be necessary to turn the power off and restart.

CPU TIME OUT ERROR

Too much time has gone by without proper operation from the computer. The system is being shut down for a restart.

DIVIDE CANNOT BE ZERO

The division value when using the SHEET DIVIE routine cannot be zero. Type in the correct value to continue.

DRIVE ERROR!

The gauge has moved in the wrong direction for too long. Try again or go through the SET UP ROUTINE.

INVALID CODE

The operator access code that was entered is incorrect. Make sure that your code is valid and try again.

JOB NUMBER USED

The new job that has been manually selected is already programmed. It will be necessary to choose a different number or erase this number before programming.

KNIFE DOWN

microcut +^o will show this display whenever the cut sensor indicates the knife is in the down position.

LABEL SIZE CANNOT BE ZERO

The label value in the LABEL programming mode must be a value greater than zero. Type in the correct value to continue.

MECHANICAL PADDLE ERROR

The paddle sense shows that the paddle is in the way of the backgauge during a motor drive request. Check the paddle and correct.

MEMORY ERROR--YOU HAVE RUN OUT OF CUT LOCATIONS

microcut +^o does not have enough unused job memory available to program the number of stops requested in either the LABEL or DIVIDE SHEET ROUTINE.

microfacts^oCONTAMINATED

A data error has been detected in the management memory. Refer to the instructions on the screen for correct action.

NO MOTION SEEN

microcut +^o has not detected any motion during a period of time when the backgauge should have been moving. This may be due to either a drive or a counting error. If the backgauge moves a bit and then stops, microcut +^o is not seeing the motion and has a counting problem. If no motion occurs then microcut +^o is suffering from a drive error.

NOT ENOUGH MEMORY AVAILABLE

microcut +^o does not have enough unused job memory available to program the number of stops requested in either the LABEL or DIVIDE SHEET ROUTINE.

NUMBER OF LABELS CANNOT BE ZERO

The number of labels in the LABEL programming mode must be greater than zero. Type in the correct value to continue.

NUMBER TOO BIG

The sum of numbers when using the calculator keys is larger than the maximum allowed value (maximum rear value usually, twice the maximum rear value in LABEL or SHEET DIVIDE ROUTINE).

NUMBER TOO SMALL

The result of a subtraction is less than zero or the position to MOVE to is less than the physical table limit (see TOO FAR FORWARD).

OPTICAL LOADING SENSE ERROR

The optical sense shows that the stock is not fully loaded into the machine during a motor drive request. Check the paddle and correct.

PC INTERRUPTION FOR cutternet®--PLEASE WAIT

A request is being made to transfer information. Please wait until the transfer can be completed.

POSITION SWITCH ERROR

microcut +[®] has sensed that the position sense has been tripped for much too long a distance moving forward. Note that this error will occur during calibration (when power is first turned on) if microcut +[®] has to move forward more than a few inches to get off of the position switch. In some cases the position sense may trip several inches before the rear of the table (although this is not the preferred manner of installation). If this is the case then turn the power off and restart normally. If this sense were not in microcut +[®] and an error (bad connection) occurred from the position switch, microcut +[®] could run the backgauge into the front of the cutter. This check prevents that from happening if such a failure occurs.

POWER INTERRUPTION ERROR

At least a part of the duplicated memory inside the CPU does not match. Apparently power has been disturbed in a way which has affected the computer. It will be necessary to turn the power off for at least 15 seconds before continuing.

PRINTER NOT RESPONDING

The printer is not operating correctly. Check to make sure that there is paper in the printer. Replace the roll of paper if necessary. Check the cables attaching to the printer carefully for poor connections.

SENSE STATUS ERROR

SET UP ROUTINE--The first five lines in the center section of the screen must show YES or NOT INSTALLED before you can continue. The CONFIGURATION screen will appear next if the error involved a sense which may not necessarily be installed. Otherwise the STATUS screen will appear.

SHEET SIZE CANNOT BE ZERO

The sheet size in the SHEET DIVIDE routine must be greater than zero. Type in the correct value to continue.

SHEET SIZE IS TOO LARGE

The sheet size in the SHEET DIVIDE routine is larger than the machine. Note that the keyed in size can be up to twice the maximum size of the machine while in this routine. This is to accommodate the case where a sheet is to be divided in half and the first cut is not kept (total sheet size). However, if the first cut is kept (or you select divide by 3 or more), the size may be too large. Type in the correct data to continue.

!!!TARGET VALUE LOST!!!

At least one of microcut +[®]'s internal data backup registers does not agree with the others in regards to the position which microcut +[®] is supposed to drive to. microcut +[®] performs its operations in several areas at the same time in order to compare results--if electrical disturbances occur which prevent the results from being equal, microcut +[®] halts operation with this error prompt. This safety gives assurance that microcut +[®] will not make errors in positioning. If this message occurs often check the microcut +[®] power supply line very carefully.

THE MASTER CPU HAS NOT POWERED ON PROPERLY

A failure in the main CPU on the PC board has been detected. Turn power off. Wait at least 15 seconds. Turn power back on. Service may be required.

TOO FAR BACK

The position that was requested is beyond the physical limits of the table. **microcut +^o** limits the prompt display to realistic values as the number keys are pressed (if the resulting number is larger than the maximum rear it blanks the leading digit). However in the **CALCULATOR**, **LABEL**, and **SHEET DIVIDE ROUTINES** **microcut +^o** temporarily allows values to twice the maximum rear. However, if the final result calculated is larger than the maximum rear value this prompt will show. If a cut is made in the **PROGRAM MODE** that is behind the maximum rear value (entered in the **SET UP ROUTINE**) this error will appear.

TOO FAR FORWARD

The position that was requested is beyond the physical limits of the table.

ZERO SET ERROR

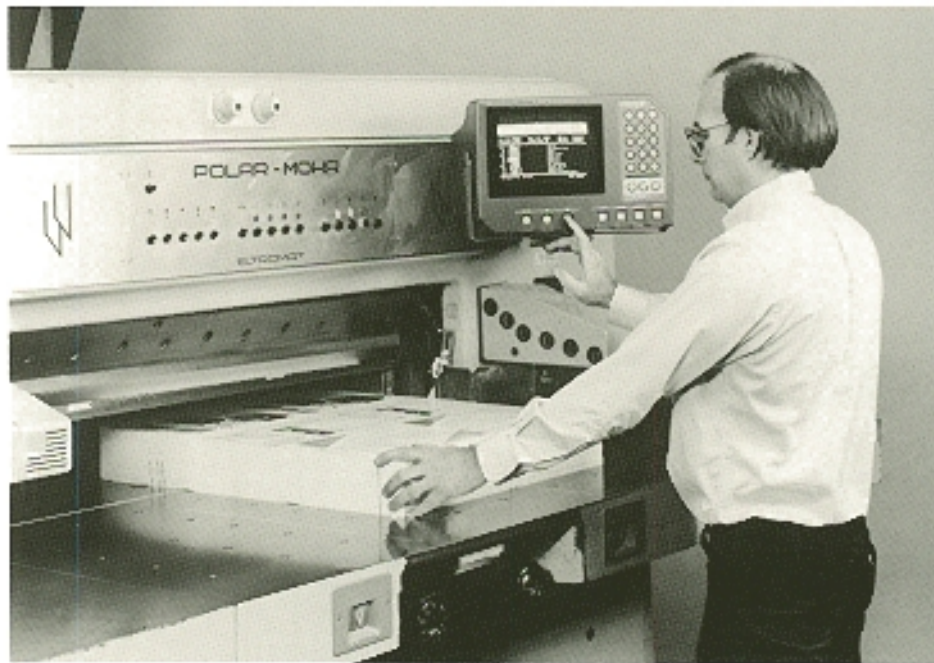
microcut +^o has diagnosed an error in counting. Check the connection between the display console and the shaft encoder. Turn the power off and restart **microcut +^o**. Refer to other parts of this manual for assistance.

SAMPLE PHOTOS OF INSTALLATIONS

The following pages are supplied to assist in visualizing possible mounting techniques for the parts required in the installation. They are in no way complete. There are many other methods which can be used for mounting each device. Every machine is different. Use these photos for assistance, but mount the components for fit and function according to the constraints of the machine in question.



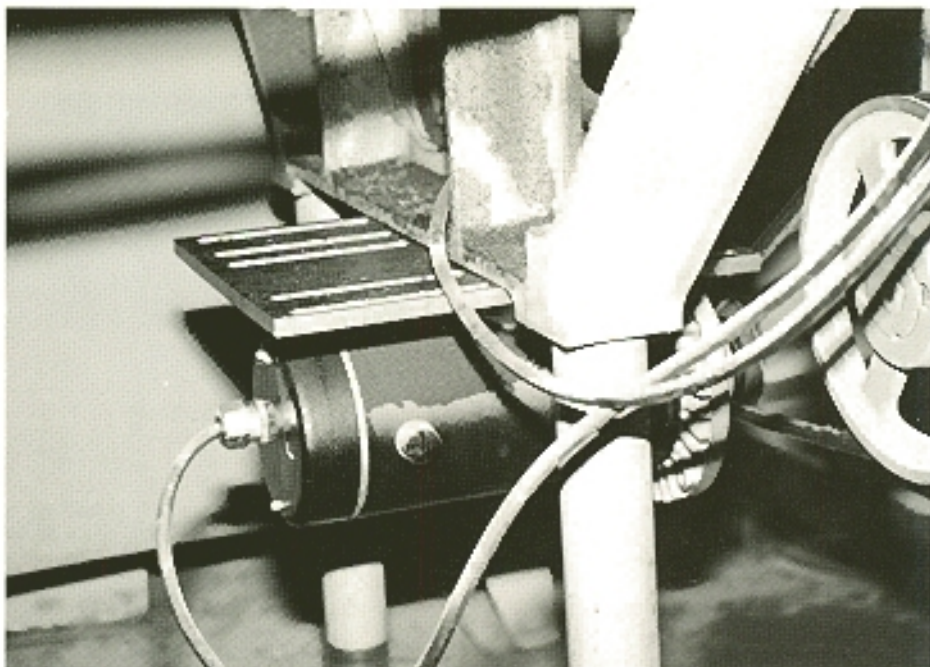
Sample display mountings on various types of paper cutters. The displays can be flush mounted, or extended from the machine with the Panavise mounting bracket supplied in the top of Box 2.



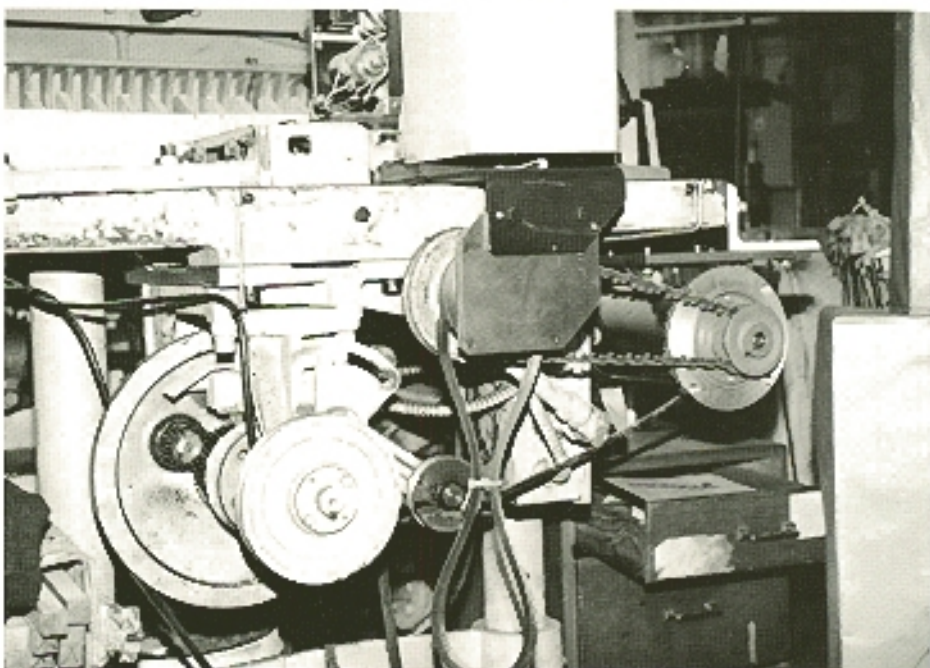
Additional examples of various display mountings.



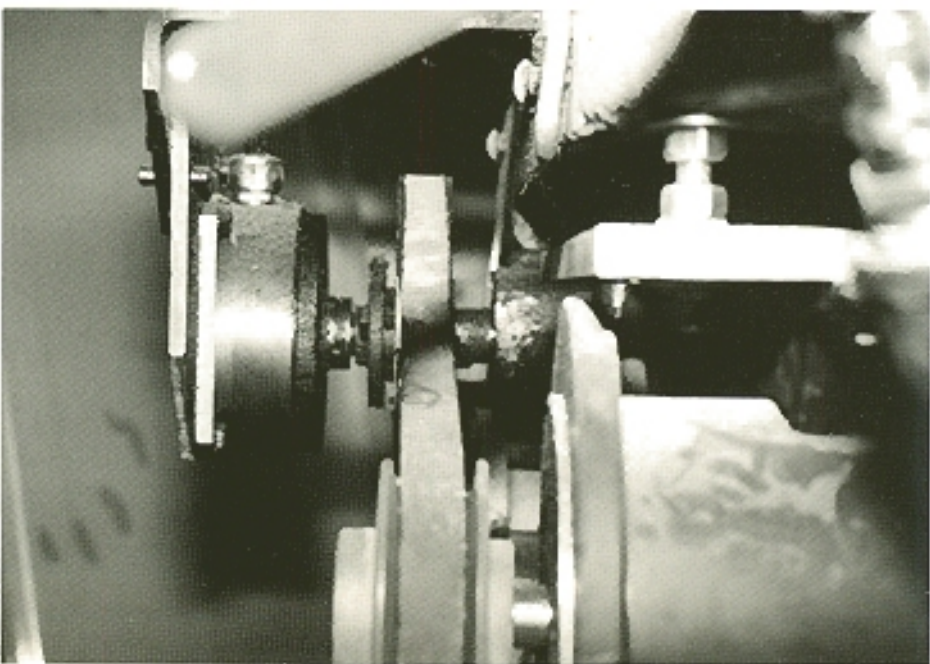
Motor mounting on a Lawson Pacemaker II. Original motor V-belt is used. The gearbox acts as a reducer to insure an adequate motor turns ratio. The high speed clutch is typically locked on by electrically engaging the original equipment reverse button. The max rear value must be less than the position the original rear limit switch is tripped or the clutch will drop out and drive will be defeated.



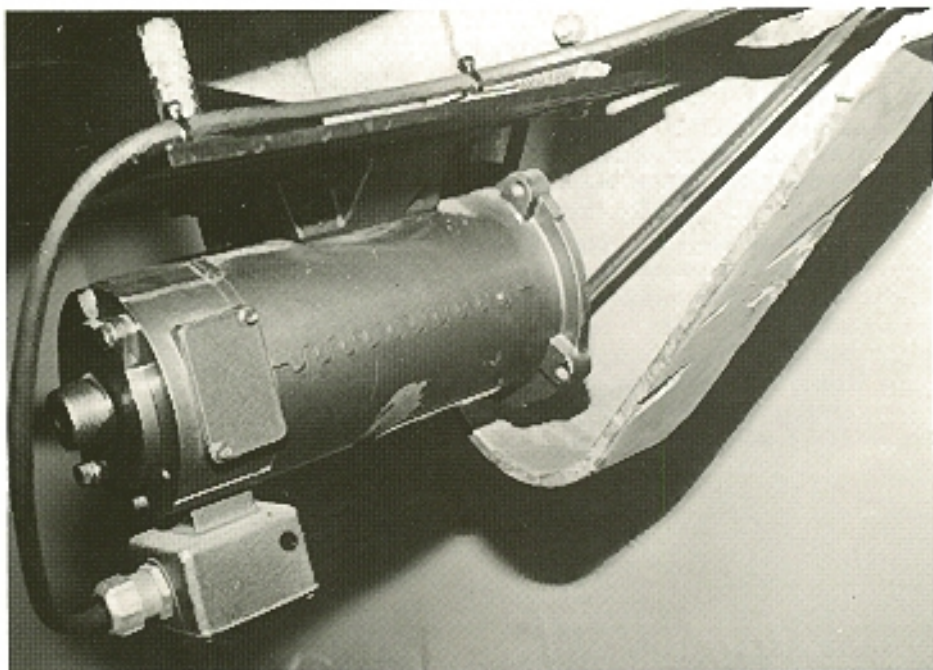
Typical motor mounting on a later series Harris (Seybold) paper cutter. The link belt is intended for belt sizing only. The idler pulley can be used to help tension the belt. An "A" sectional belt performs better than the thicker "B" belt that is normally found on the cutter.



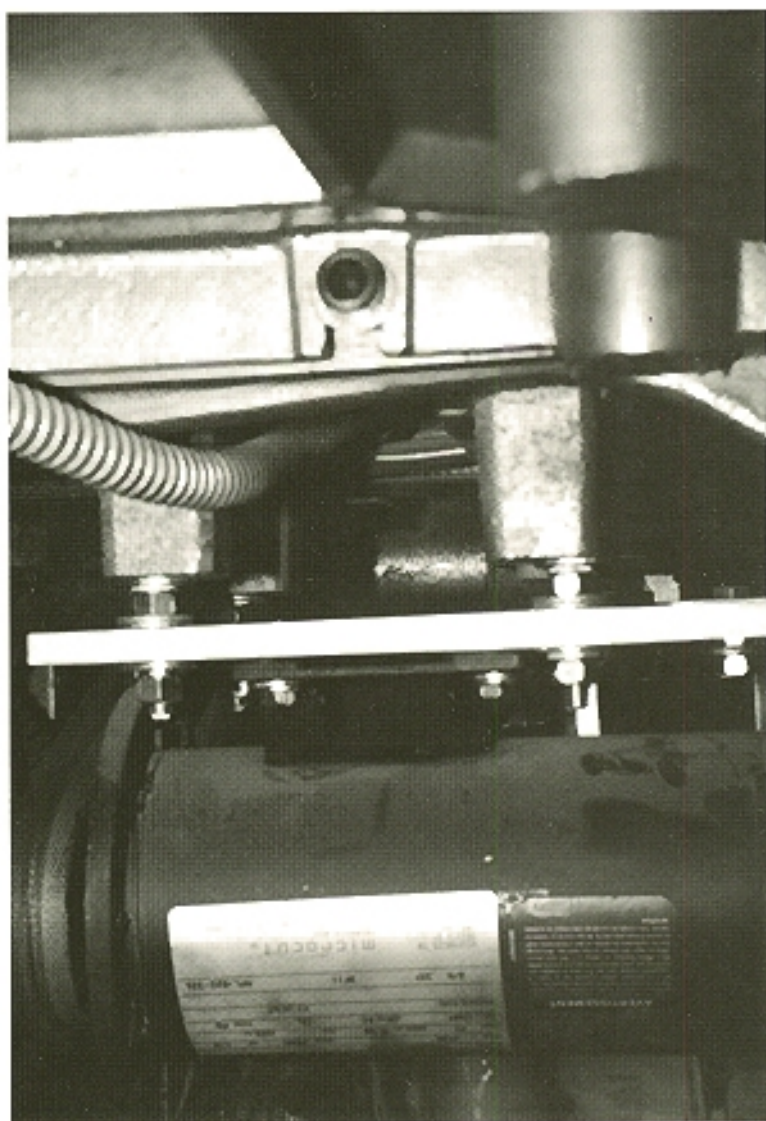
Motor mounting using the 3/8-16 threaded rod to secure the mounting plate under the cutter table bed.

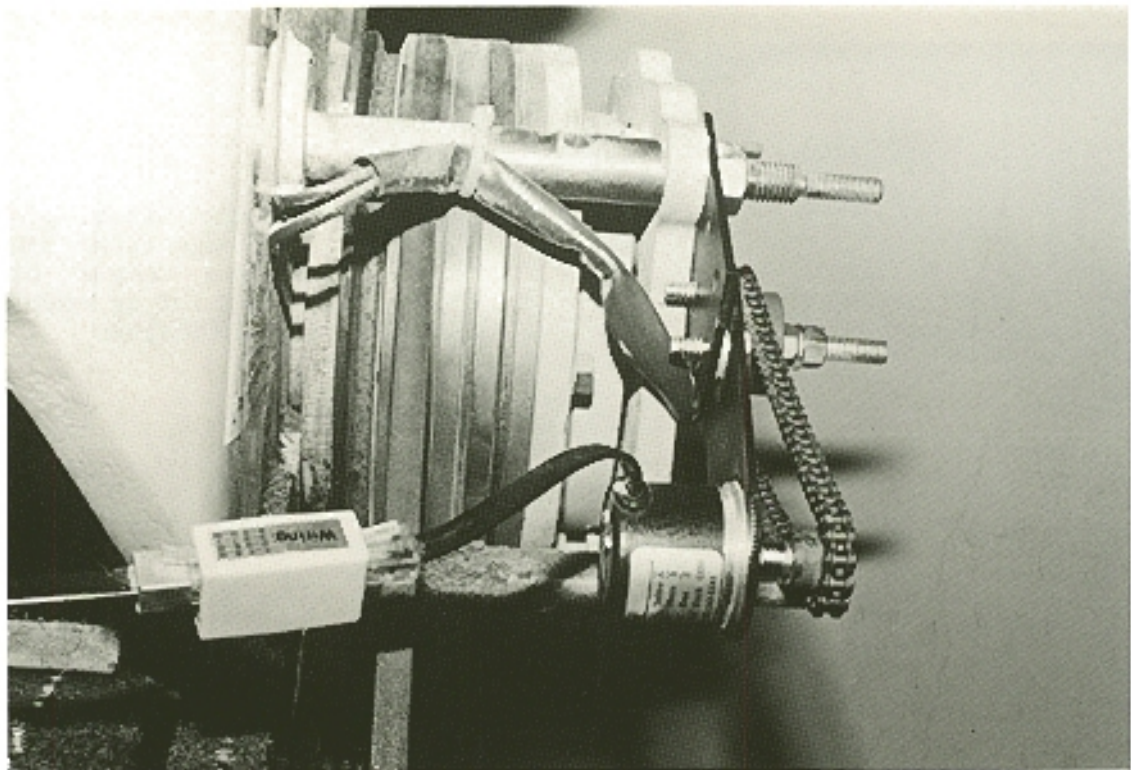


Polar motor mounting using a single angle bracket for additional support.

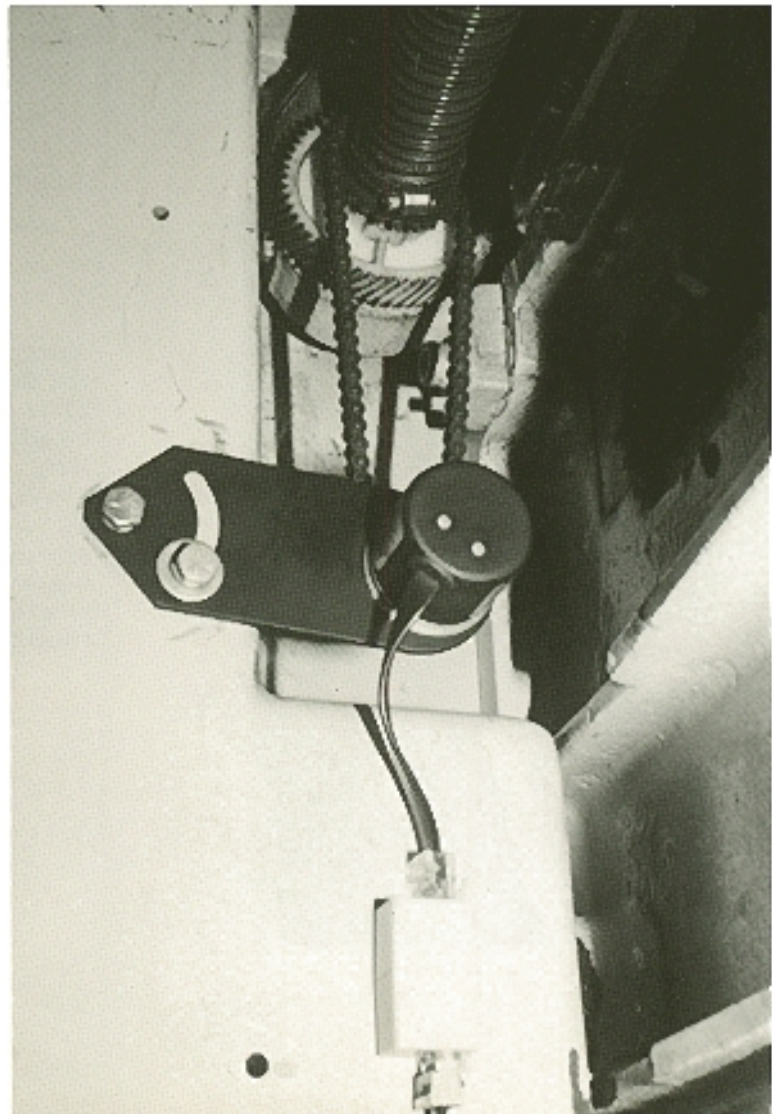


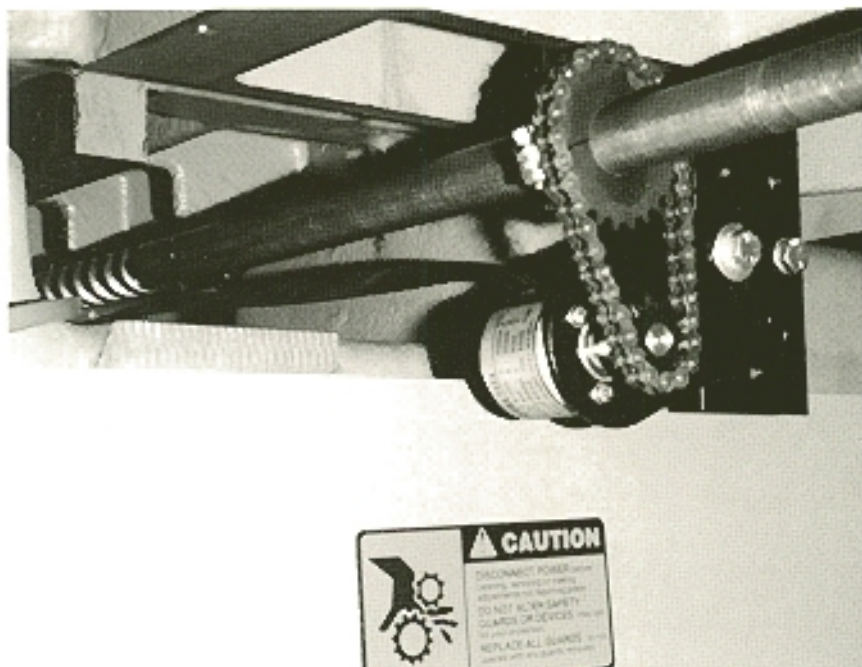
Schneider (with flat belt drive) motor mounting. Motor plate mounts to OE bosses with threaded rod on spacers (hex nuts) to insure clearance under original backgauge drive control switch housing. The clutch must be locked on and the brake off. This can usually be accomplished by swapping the wires to the brake and clutch. Use caution!!!



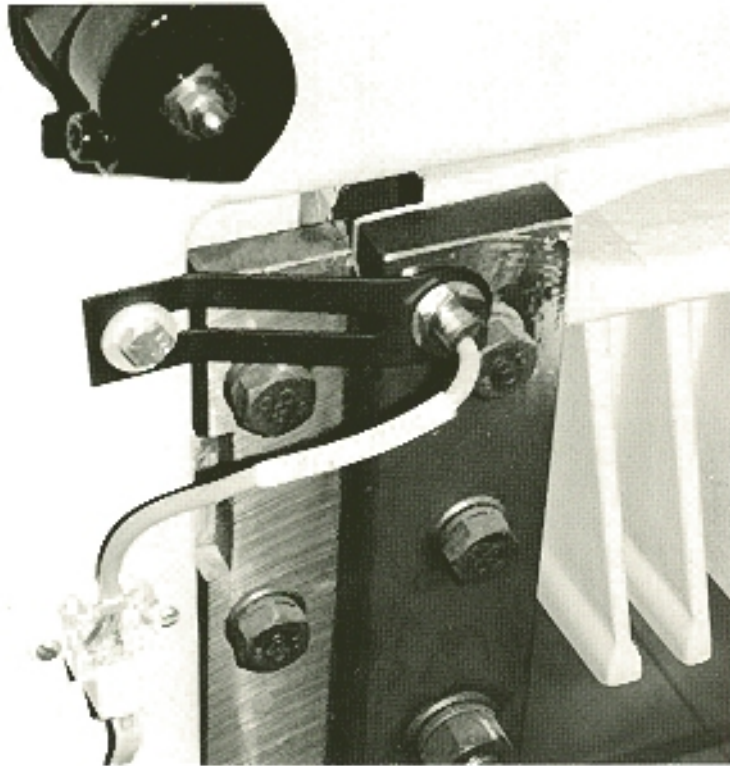


Typical encoder mounting on a Polar cutter (top). This method eliminates the need for any drilling. The 3/8-16 threaded rod is used to extend the leadscrew and mount the sprocket. Some sprocket wobble occurs using this method and a new guard needs to be made for the back of the cutter. It may be better on some Polars to examine the leadscrew to determine if the sprocket can be bored and placed directly onto the leadscrew under the table (right). Care must be taken to avoid back gauge interference and assure proper alignment. Note that in this case the swing bracket was spaced out from the casting with flat washers.



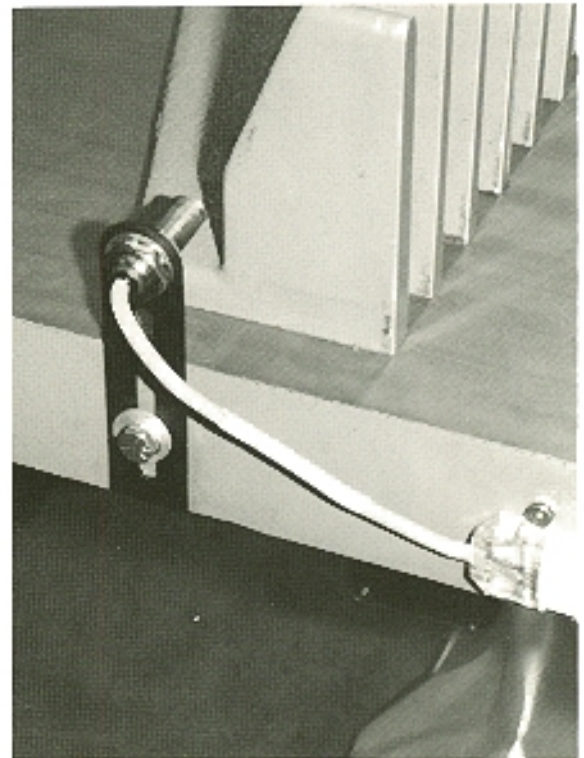
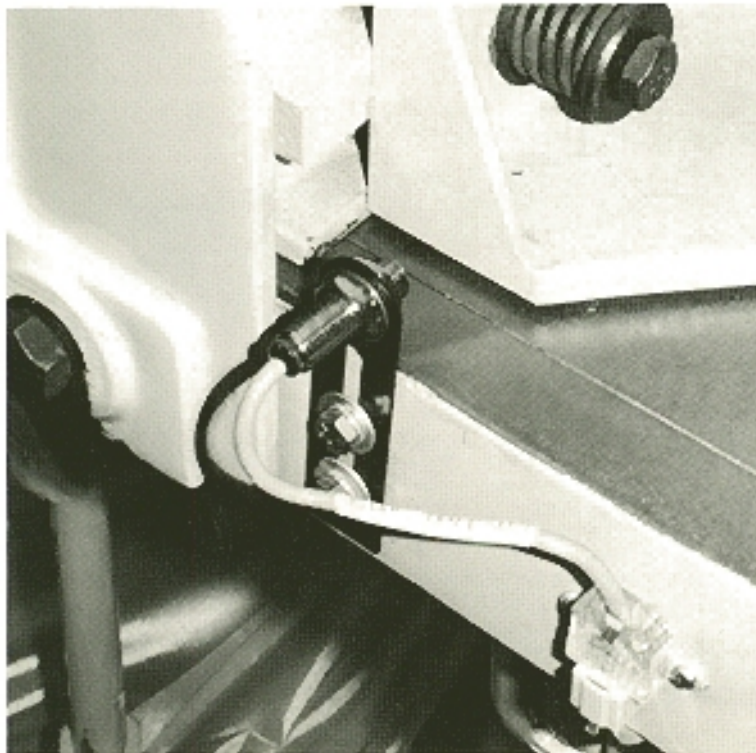


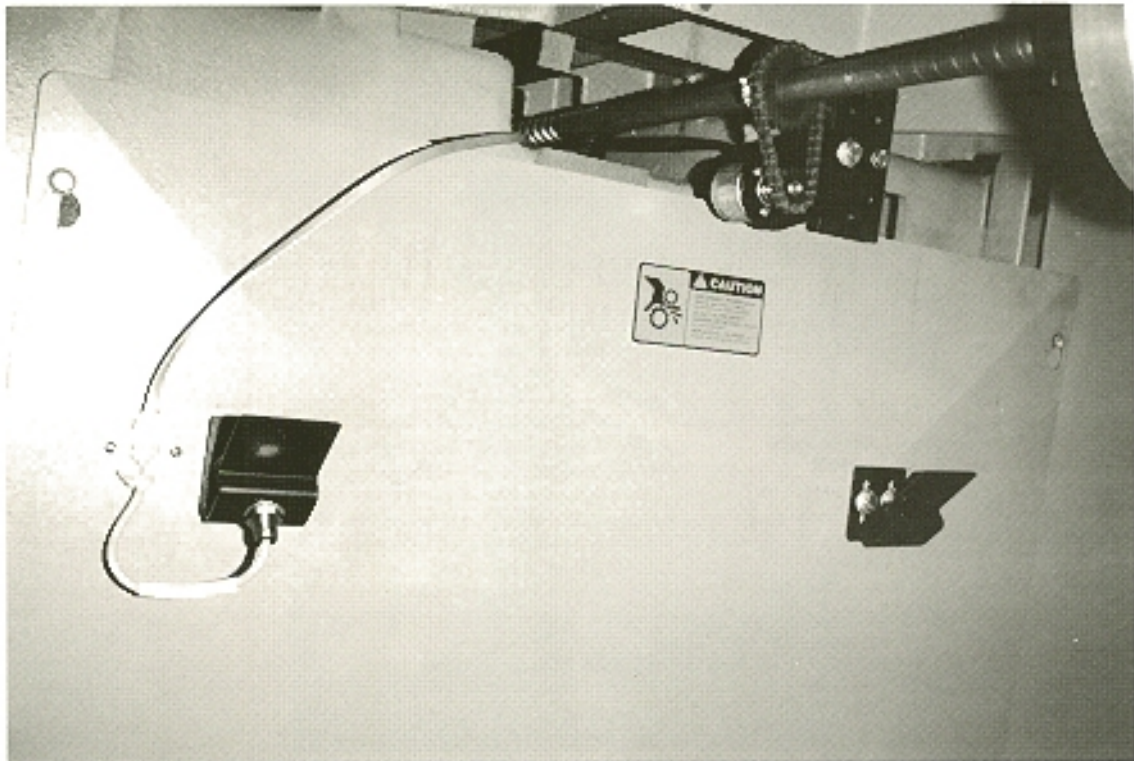
Normally the cut sensor is mounted in the throat of the cutter using the angle plate and/or the slotted plate. It would be adjusted so that the knife bar would "trip" the sensor when the knife was towards the bottom of the stroke. This picture shows an alternative cut sensing mount on a Polar cutter. The bracket is bent to create proper clearances. Caution must be used when routing the cable.



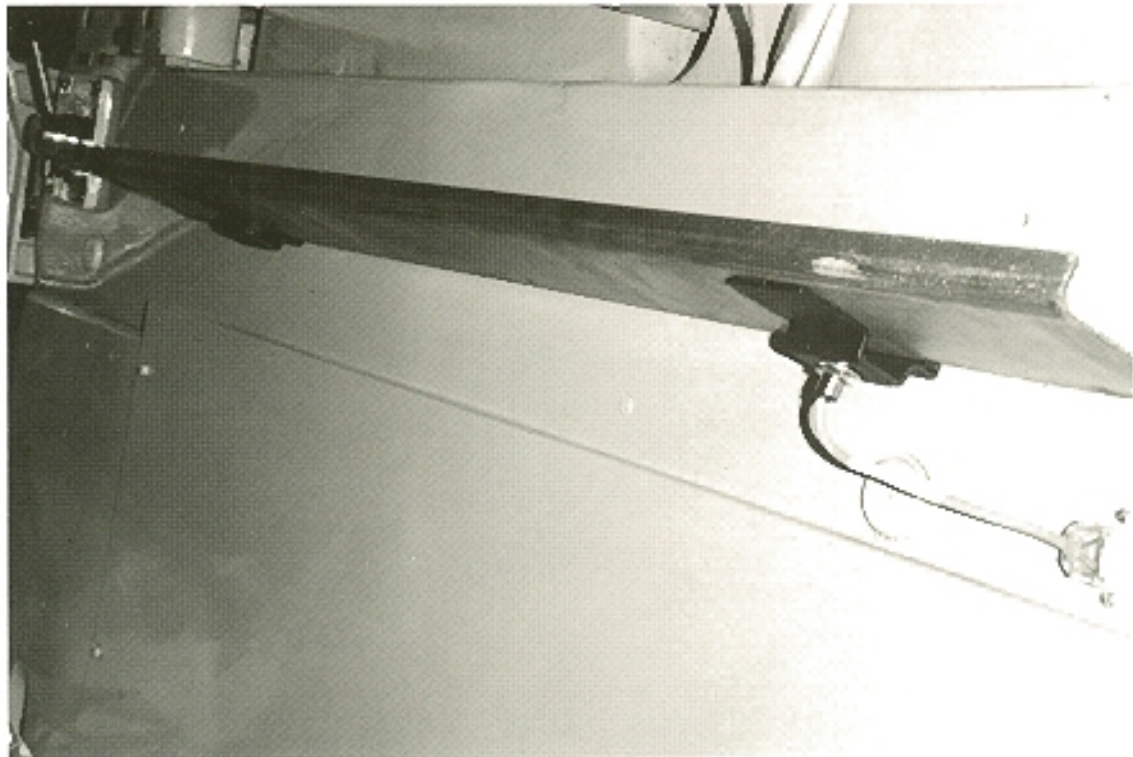
Clamp sense mount in horizontal position prevents clamp over travel damage to the sensor. This also allows early trip adjustment in case the soft return on the clamp is excessively sluggish at the top of the stroke. Brackets can be bent to position.

Position sense allows automatic calibration when power is applied. This can mount above or below the table. The sensor should 'trip' at least one inch before the maximum rear travel of the gauge to allow the encoder zero set to enable calibration. Be careful to insure that the sensor does not 'untrip' when the gauge is moved to the full rear of the machine. If the surfaces are heavily painted, it may be necessary to scrape away the paint or use the flat trip plate supplied in the packing box.

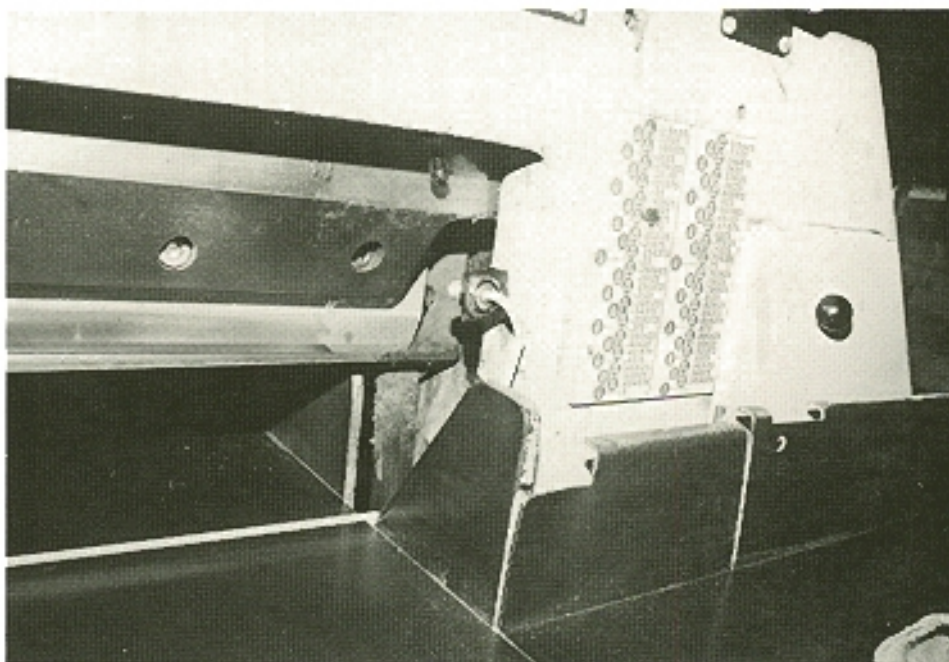
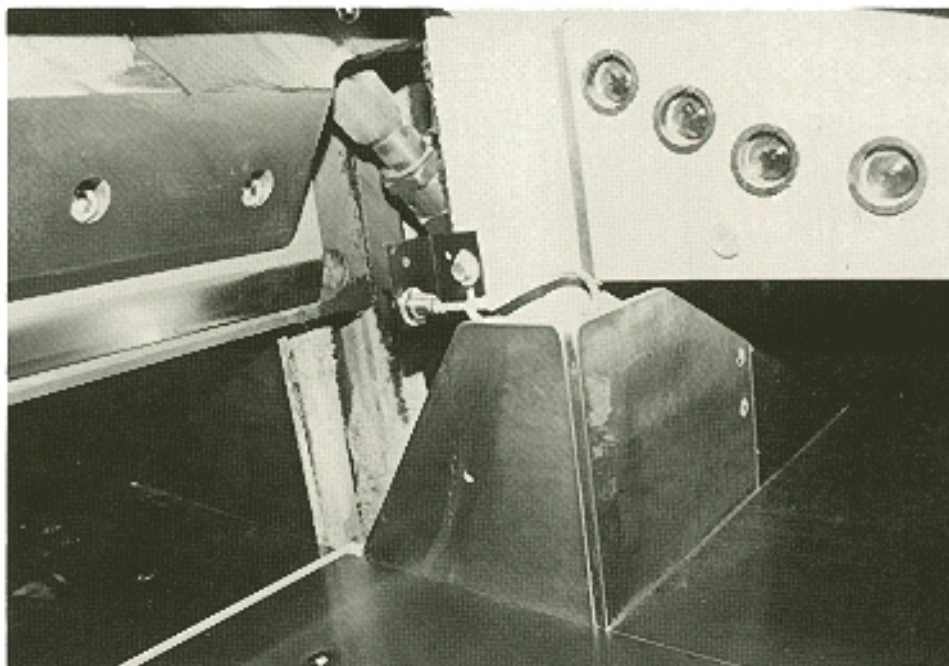




The brackets supplied can be used for the false paper clamp tray. The sensor can be installed into either bracket. When the false paper clamp is removed from the clamp and placed in the tray, the circuit is completed to allow MICRO CUT to drive the backgauge to the very front of the machine. If the circuit is not completed (the LED in the sensor will be off), the backgauge can only be driven to the programmed false clamp position.



More cut sense mounts. This seems to be the simplest, most foolproof method, in that the knife bar moves slowly and consistently and allows for simple adjustment.



Examples of clamp sensor mounts. Note the various methods of using the brackets. In the one case, a trip bolt has been added to the clamp linkage to allow lower mounting of the sensor.

