$10.00

SAFETY ALERT

This safety alert symbol means CAUTION OR WARNING-PERSONAL SAFETY INSTRUCTION. Personal injury may result if safety precautions are not carefully read before attempting to operate or repair this machine. See SAFETY PRECAUTIONS, page 4.

- This machine is designed for **ONE PERSON OPERATION ONLY!**
- Always **DISCONNECT THE POWER** before working on this machine.
- **DO NOT OPERATE WITH ANY GUARDS REMOVED!** Replace all guards before operating.
- **CRUSH HAZARD** - Keep hands from under paper clamp! Use Jogging Aid, page 13.

SERIAL NO -

VOLTAGE -

PHASE -

AMPS -

HZ (CYCLES) -

INSPECTED -

MODEL -

MODEL 20 PAPER CUTTERS

This manual covers the following serial numbers:
Power Clamp Models 3252 & up,
Hand Clamp Models 3292 & up.

ALWAYS GIVE THE SERIAL NUMBER OF YOUR MACHINE WHEN WRITING.

Sold and serviced by

THE CHALLENGE MACHINERY COMPANY

1433 Fulton / Grand Haven, Michigan 49417-1594 U.S.A. / Fax: 616-842-6511 / Telex: 228409 / Phone: 616-842-8300

INTRODUCTION

WELCOME to the family of Challenge® users. Challenge has been developing and manufacturing Graphics Arts Equipment for over 100 years and is today one of the world's leading producers and distributors of Paper Cutters, Paper Drills and Bindery Equipment.

THE CHALLENGE REPUTATION is important to you as a user for the continuous, ready availability of parts and service.

THIS MANUAL covers *both* the Hand Clamp and Power Clamp models and is designed to help you get the most from your Challenge equipment. Keep this manual in a safe, convenient place for quick reference by operators and service personnel.

A SAFETY ALERT! This symbol means, **CAUTION OR WARNING: Personal safety instructions!** Pay special attention to the instructions in bold type. Personal injury may result if the precautions are not read and followed.

READ THIS MANUAL BEFORE OPERATING! Follow precautions and instructions given and you should have years of trouble-free operation. If after reading the manual questions still remain, contact your Authorized Challenge Dealer or the Challenge Service Department. For the dealer nearest you or for service questions, call (800) 866-7800; in Michigan, call (616) 842-8300.

FOR PARTS OR SERVICE contact the Authorized Challenge Dealer from whom you purchased your machine. Use the illustrations and parts lists at the back of this manual to identify the correct parts needed. **Always give the SERIAL NUMBER and MODEL** of your machine to insure that the correct parts are sent as soon as possible.

Take a few moments right now and **RECORD YOUR MACHINE SERIAL NUMBER** in the space provided on the front cover of this manual. Also be sure to fill out the warranty card accompanying this manual and return it **DIRECT TO CHALLENGE.**

If you bought a used machine, it is important to have the following information on record at Challenge. Copy this page, fill in the information and send it care of: The Challenge Service Department, 1433 Fulton St., Grand Haven, MI 49417. Phone (616) 842-8300.

CHALLENGE MODEL SERIAL NUMBER
ATTN _____ COMPANY _____
_____
ADDRESS
CITY STATE ZIP
PHONE DATE INSTALLED
DEALER'S NAME AND CITY _____

LIMITED WARRANTY

This equipment is guaranteed to be free from defects in workmanship or material for a period of ***one year*** *from the date of installation, except components purchased by Challenge which carry the manufacturer's warranty.*

We will repair or replace, at our option, any equipment proving defective, not caused by accident, misuse or improper maintenance, if returned to our factory, transportation charges prepaid. This ***warranty does not include the cost of labor*** *to replace defective components. Check the purchase agreement from your Dealer for a statement of labor warranty.*

Should you find anything wrong, contact the dealer from whom the equipment was purchased. Challenge will not be responsible for any charges incurred without its specific written authorization.

PACKING LIST - STANDARD ITEMS

Qty.	Part Description	Part No.
1	Knife	**A-10034**
4	Knife Bolts, 3/8 - 16 x 1"	H-6918-608
4	Knife Washers, Special	8815
3	Cutting Stick (in addition to one installed in machine)	4166
1	Instruction and Parts Manual	
1	Jogging Aid	A-12608-2
1	Tool Kit	20-2150
	1-Cutting Stick Puller	5064
	2- Knife Lifters	S-1245-5
	1 - 3/16" Allen Wrench	W-130
	1 - 5/32" Allen Wrench	W -137
	1 - 5/16" Hex Wrench	W-164
	1 - 9/16 x $^{1}/_{2}$" Wrench	W-170
	2 - 12 amp slo-blo fuses	E-1075-12SB

OPTIONAL ITEMS

Part Description	Part No.
False Clamp Plate	AA-10061
Backgage Book Guides	5-7-M361
Cutting Sticks (in addition to one installed in machine)	4166
Optional Tool Kit	20-2150-1
1 - 3/16" Allen Wrench	W-130
1 - 5/16" Allen Wrench	W-131
1 - $^{7}/_{3}$2" Allen Wrench	W-134
1 - 3/32" Allen Wrench	W-154
1 - Cutting Stick Puller	5064
5 - 12 amp slo-blo Fuse	E-1075-12SB

SPECIFICATIONS - MODEL 20

Cut Width	20"
Minimum Cut*	1/2"
Clamp Opening	3-1/4"
Table Space	Front: 16"
	Back: 20"
Table Height	35"
Overall Height	53-1/2"
Overall Length**	48-1/4"
Overall Width	36-1/2"
Net. Weight (approx.)	530 lbs.
Shipping Weight (approx.)	650 lbs.
Electrical: Motor with Hydraulic Unit	3/4 HP, 110V

* With False Clamp Plate attached, minimum cut is 1-7/8"
** With Table out, can be fit through 32" door.

TABLE OF CONTENTS

SAFETY PRECAUTIONS

(A This safety alert symbol means CAUTION - PERSONAL SAFETY INSTRUCTION. Read the instruction because It has to do with safety. Failure to comply with the following) instructions may result In personal injury.

- **This machine Is designed and safeguarded for ONE PERSON operation. NEVER operate the cutter with more than one person.**
- **Safety Is the responsibility of the user of this machine. Use good judgement and common sense when working with and around this machine.**
- **READ and understand all instructions thoroughly before using the cutter. If questions still remain, call your Authorized Challenge Dealer - fingers and hands are too valuable to risk experimentation.**
- **Only trained and authorized persons should operate the cutter.**
- **DO NOT ALTER SAFETY MECHANISMS, they are for your protection and should not be altered or removed. Severe lacerations or dismemberment could result.**
- **DISCONNECT POWER before cleaning, lubricating, servicing or making adjustments not requiring power. Turn the key to the off position and disconnect the power plug, see Disconnect Procedure below.**
- **Lock the cutter and remove the key when not in use, see Power page 12.**
- **Be sure the cutter is properly grounded, Power Hookup, page 7.**
- ***Be* sure there Is sufficient power to operate the cutter properly, page 7.**
- ***Observe* all caution plates mounted on this cutter, page 12.**
- **Keep foreign objects off table and away from cutter blade.**
- **BE EXTREMELY CAREFUL when handling and changing the cutter knife. Severe lacerations or dismemberment could result from careless handling procedures, see page 8.**
- **Keep the floor around the cutter free of trim, debris, oil and grease.**
- **When replacing hydraulic parts, loosen the connections slowly to release pressure. Never loosen connections with the machine running.**
- **if the cutter sounds or operates unusually, turn it off and consult the troubleshooting section of this manual, page 16. If the problem cannot be corrected have it checked by a qualified service person.**
- **CRUSH HAZARD, keep hand and fingers from under the clamp when clamping paper. Use Jogging Aid to load stock, and use Backgage to push stock out before unloading. DO NOT REACH UNDER THE KNIFE AND CLAMP AREA!**

CAUTION - POWER DISCONNECT PROCEDURE

For maximum safety when making adjustments or repairs to your machine, be sure to disconnect the power cord. In addition, the machine switch should be turned to the OFF position and the keys should be held by the person servicing the machine.

(fig. 1)

OJO !

Este simbolo de alerta de seguridad slgnlflca OJO ! - INSTRUCCIONES DE SEGURIDAD PERSONAL. Lea las instrucclones porque se refleren a su seguridad personal. Fall de obedecer las Instrucclones que siguen podrla resultar en leslones corporales.

- **Esta maquina, junto con sus mecanismos de seguridad, este disenada para ser manejada por UNA SOLA PERSONA a la vez. Jamas debe ser manejada por mas de una persona at mismo tiempo.**
- **La seguridad es la responsabilidad del operarlo que usa esta maquina.**
- **LEA DETENIDAMENTE el manual de Instrucciones y las PRECAUCIONES DE SEGURIDAD antes de poner a funcionar la cortadora. Pidale a su supervisor una copla.**
- **El manejo de la guillotina debe estar exclusivamente a cargo de personal entrenado y autorizado para ello.**
- **NO MODIFIQUE LOS MECANISMOS DE SEGURIDAD, estan ahl para su proteccion no deben ni modificarse ni quitarse.**
- **DESCONECTE LA CORRIENTE ELECTRICA antes de proceder a hacerle servicio de limpleza, engrasar, o de hacer adjustes que no requieren corriente. Trabe el interruptor en la posiclon OFF (apagado); yea "Procedimiento para cortar la corriente electrlca" al pie de esta pagina.**
- **Eche Have a la guillotina y quite la llave cuando la maquina no esta en operaclon; yea "Corriente electrica".**
- **Asegurese de que la guillotina este debidamente a tierra. Vea "Conexlon de la fuerza electrica," pagina 7.**
- **Verifique el voltaje y asegurese de que este sea suficlente para el debido funcionamiento de la**
- **Preste atencion a todas las placas con advertencias instaladas en esta guillotina.**
- **No permita que objetos estranos esten en la mesa o cerca de la cuchilla cortadora.**
- **TENGA SUMO CUIDADO at tocar y cambiar la cuchilla. Herldas severas y hasta desmembramiento pueden resultar del manejo sin cuidado o negligente.**
- **El suelo alrededor de la guillotina debe mantenerse despejado y libre de recortes, desperdicios, aceite y grasa.**
- **Al haber la necesidad de reemplazar partes hidraulicas, at lob todas las conexiones poco a poco para dejar escapar la presion. Jamas debe aflojarse conexiones mientras la maquina este andando.**

  Si la guillotine empezara a sonar o trabajar diferentemente a lo acostumbrado, desconectela y consulte la secclon "Troubleshooting" (Reparador) de este manual. SI no es posible corregir el problema, flame a su serviclo autorizado para que le examinen la maquina.

  PELIGRO DE MACHUQUE - Mantenga manos y dedos fuera de la agarradera mientras sujeta el papel. Use el calibrador trasero y su rueda de mano para empujar el papel coded°. NO PONGA SUS MANOS BAJOLA CUCHILLA 0 AREA DE LA AGARRADERA.
- **NO OPERE SIN LAS GUARDAS PROTECTORAS!**

0J0! PRECAUCION - Como proceder para desconectar la corriente electrica.

Para maxima seguridad durante ajustes y reparaciones de su maquina, verifique bien que el interruptor principal de control de corriente al cual la maquina esta conectada, este desconectado. El interruptor deba ser puesto en la posicion "OFF" (desconectado) y se debe poner un candado en la anilla. La Have del candado debe ser guardada por la persona que estara efectuando los trabajos de servicio o de reparacion en la guillotina.

Desconecte la corriente electrica antes de proceder a hacer cualquier ajuste o reparacion o de efectuar el engrase on cualquier maquina.

INSTALLATION & SETUP

UNCRATING

Your cutter has been carefully packaged to prevent damage during shipping. Inspect all shipments as soon as they are received. Note any damage on the freight bill and notify the claims department of the carrier within 15 days. All claims for damage are the responsibility of the receiver, so remember to inspect promptly. Check the contents of the crate against the packing list at the front of this manual.

The Model 20 weighs approximately 530 lbs./231 kg. DO NOT risk personal injury or damage by attempting to move machinery with makeshift equipment or inadequate manpower. This machine is shipped on a wooden skid and enclosed in a protective, corrugated top. The skid is designed to allow the machine to be rolled off without any special lifting equipment. The machine is held in place by two, 2x4 braces lag bolted to the skid. All accessories are shipped in a separate box which is also fastened to the skid.

Remove the carton by removing the nails or staples holding it to the skid and lift it straight up over the cutter, fig.2. If you don't have the ceiling clearance to do this, carefully slit the carton down the side and then unwrap it from around the cutter.

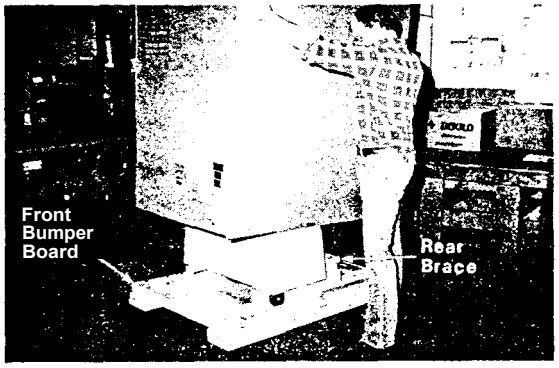
Remove the accessory box. Remove the lag bolts from the front bumper board and pry it off the skid.

Now, remove the two, 2x4 braces holding the cutter in place. The rear brace is located across the lower rear deck of the cutter, fig.. 2. The front brace is inside the cutter housing, fig.3, and is accessed by removing the front panel.

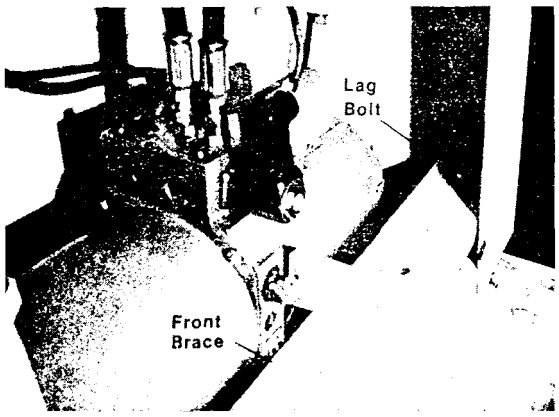
Carefully **PUSH or PULL** the cutter off the riser blocks until it drops onto its front casters, fig.4. Be careful not to allow it to tip over onto its face. **DO NOT LIFT ON THE TABLE!** Lifting on the table could knock it out of tolerance, resulting in inaccurate cutting. Roll the cutter off the skid the rest of the way. Be careful the cutter doesn't flip over onto its face as it is rolled off the edge of the skid.

NOTE: If using a fork truck to position cutter, the front panel must be removed to prevent damage, fig.5.

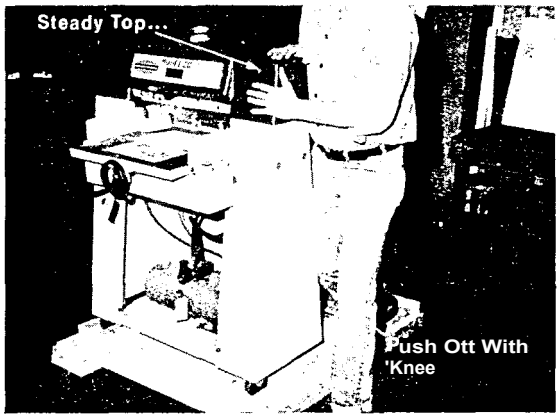
The cutter may now be rolled into position. The Model 20 cutter will fit through a standard 36-$^{1}/_{2}$" door without removing the table. You will have to angle it into the doorway and pull it through with two people, fig.6.



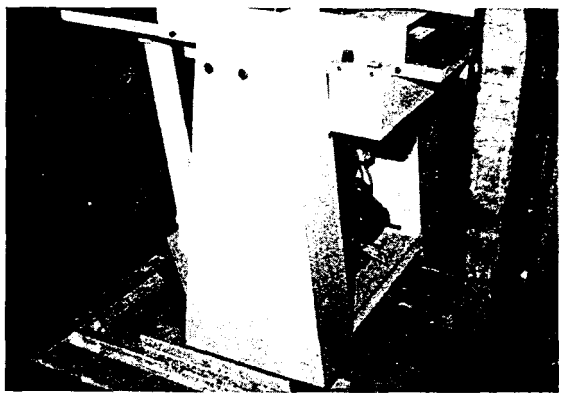
(fig. 2)



(fig. 3)

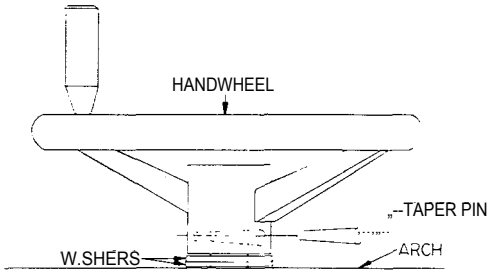


(fig. 4)

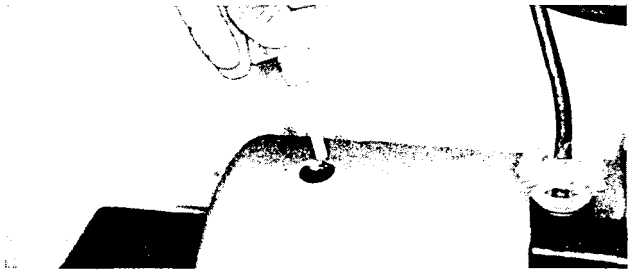


(fig. 5)

(fig. 6)



(Ill. 1)



(fig. 7)

(fig. 8)

HANDWHEEL INSTALLATION - HAND CLAMP MODEL

To prevent damage to the Handwheel Assembly during transit, your Model 20 Cutter has been shipped with the handwheel removed.

To install, simply remove the taper pin from the clamp screw (see ill. 1). Install the handwheel to align the tapered holes, and reinstall the taper pin.

Note: The holes in the clamp screw and handwheel are tapered so be sure they are aligned properly and pin is inserted from correct side.

CLEANING

After unpacking, wipe down all machine panels and clean the table surface.

HYDRAULIC CHECK

The hydraulic reservoir holds 4 quarts (1 gallon) of hydraulic fluid. It is filled with Rykon 100 hydraulic fluid at the factory but should be checked before operation and once a week under normal cutting loads. A cross reference chart is provided in the Maintenance section. Remove the front panel cover and unscrew the hydraulic plug on top of the tank, fig.7. Fluid level should be within 1/8" of end of dip stick (check with dip stick cap screwed in). Top off if necessary but avoid overfilling as this could cause leakage when hot. Replace the front panel.

POWER HOOK-UP

It is the customer's responsibility to provide a properly grounded, 110 volt, 15 amp, 3-prong receptacle that meets power requirements and all local electrical codes. Hire a qualified electrician to install one if your location is not so equipped.

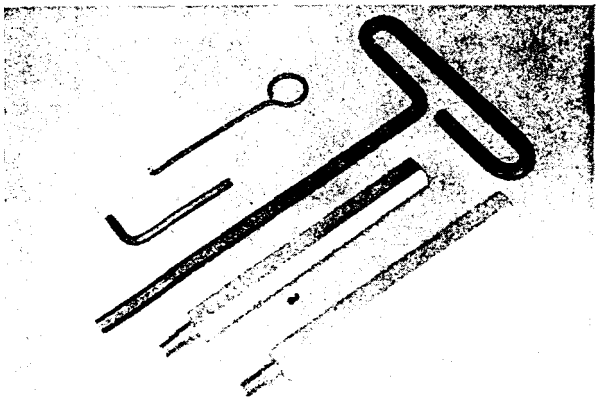
CAUTION: NEVER CUT THE GROUND LUG OFF of a 3-prong plug to fit a 2-prong socket! You run the risk of electrical shock which could cause personal injury or death.

Connect the power cord into a grounded, 3-prong receptacle only!

KNIFE INSTALLATION/CHANGING

A CAUTION: Changing knives can be very dangerous unless safety precautions are observed and extreme care is taken when handling knives.

- **Make sure knife lifters are properly installed, see instructions following.**
- **Keep handling of unprotected knives to an absolute minimum.**
- **Clear off cutter table and *side* tables before removing knife.**
- **Have scabbard on cutter table and insert knife immediately.**
- **Warn people of any unprotected knife.**
- **Knife changing Is a ONE PERSON OPERATION. Having more than one person trying to change knives invites accidents.**



(fig.9)

The knife changing equipment shown, f ig .9, is included in the cutter tool kit. In addition, you will need a standard blade end screwdriver. The following instructions show how to remove and install a new or sharpened knife. Read through these instructions AT LEAST ONCE before attempting to actually change or install any blades.

Knife removal:

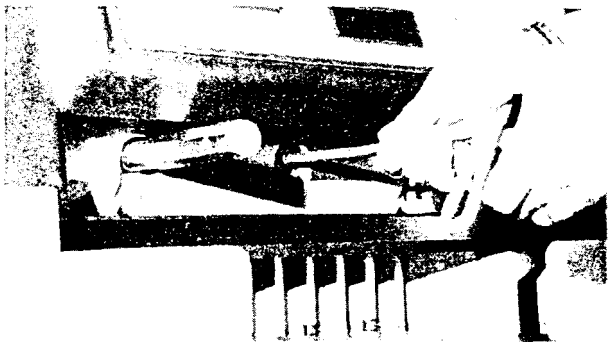
1. Turn the key to the ADJ position and run the knife down by pressing the cut buttons. In the ADJ position, the knife will come down and stay down until the key is returned to the RUN position.

A CAUTION: When returning the knife to the up position after using ADJ, DAMAGE TO THE KNIFE LATCH MAY RESULT If the key is turned to RUN and back to OFF before the knife Is all the way up. Turn the key from ADJ to RUN and WAIT for the knife to return to the up position. Do not turn the key to OFF until the knife has come to rest In the up position. A damaged knife latch could allow the knife to drift down, exposing the blade edge below the clamp. Severe lacerations could result.

(fig.10)

2. Back off the knife adjusting screws on top of the knife bar, fig.1 O. A new knife will cut deeper than one that has been ground several times. Failure to back off the screws could damage the knife and/or the cutting stick.
3. Raise the knife by turning the key to the RUN position. (See CAUTION in step #1 above).
4. Remove the key and disconnect the machine power cord to prevent accidental power-up while servicing the cutter.

A CAUTION: ALWAYS pull the plug itself, NEVER pull on the cord when connecting the plug. Cord fatigue and electrical shock could *result!* (See fig. 8.)

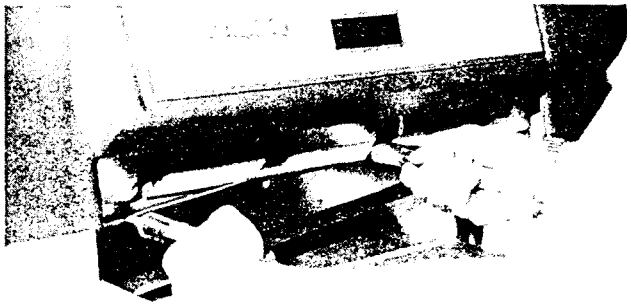


(fig.11)

5. Remove the knife bolts from the two slotted knife bar holes and replace with the Knife Lifters, fig.11. Tighten the lifters to hold the knife in place and remove the remaining knife bolts.

6. Clear the table surfaces and place the empty knife scabbard on the table. Remove the scabbard's knife retaining screws.

CAUTION: Knives are heavy and still very sharp! Be careful to keep the edge away from your body and keep other people out of the area while handling the blade. Severe lacerations or dismemberment could result from careless handling procedures.



(4.12)

7. Grasp the knife lifters firmly and, at the same time, turn them counterclockwise to release the knife from the knife bar. Lower the left end first, then lower the right end as you shift the knife sideways to the left, fig.12. Bring the right end of the knife around the knife bar guide frame. Maneuver the right end into the space between the guide frame and the shroud as the left end is brought clear of the left guide frame. Move the knife to the right then bring the knife out of the cutter, left end first. Put the blade in the scabbard immediately and secure the knife retainer screws.

Knife installation:

1. Remove the dull blade and place the new blade on the cutter table.

2. Remove the left retainer screw from the new blade and put the knife lifters in the new blade using the lowest set of holes (screw the lifters all the way in and then back them out 3/4 turn).

3. Remove the other scabbard retainer screw.

4. Double checkto make sure the knife adjusting screws have been backed out all the way (step #2, Knife removal). Lift the blade and insert it into the knife bar slot. Guide the blade, right edge first, into the space between the shroud and the knife bar guide frames,

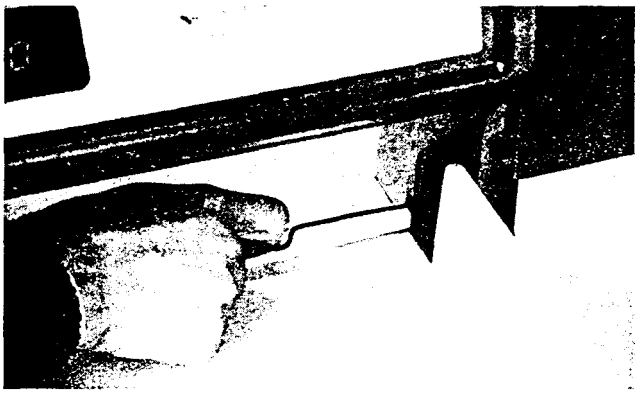
(fig.13)

fig.13. Tip to clear the table side guides, fig. 14, then move the left end of the blade into the knife bar slot dropping the left end, fig. 12, as the right end is brought around the right knife bar guide frame and up into the knife bar slot. Raise the knife into the knife **bar** slot as high as it will go and tighten the lifters.

(fig.14)

NOTE: If the blade will not go in, either the lifters are screwed into the blade too far, or the end of the blade is hitting the cylinder bracket at the right end of the knife slot, drop the left end as in fig.1 2 when inserting the knife.

5. Insert the knife bolts with washers and snug to hold the knife, but don't tighten them yet.



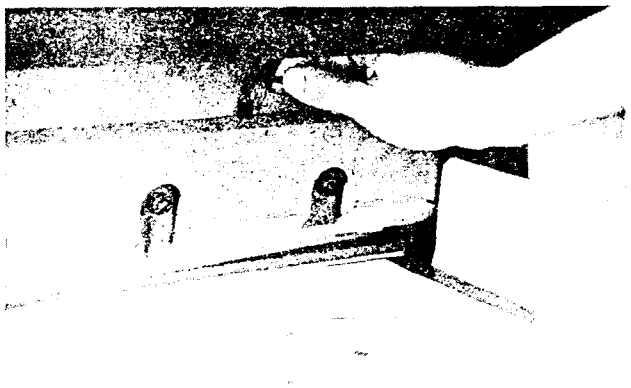
(flg.15)

6. Remove the knife lifters one at a time and replace with bolts and washers, see fig. 11.

7. Pull the cutting stick, fig. 15, and turn it to a new surface. Cover the stick end-to-end with a sheet of paper.

8. Plug in the power cord and replace the key.

9. Turn the key to the ADJ position and press the cut buttons to bring the knife all the way down (see NOTE, step #1, Knife removal). **TURN THE KEY OFF AND REMOVE IT!**



(fig. 16)

10. Now, turn the knife adjusters down evenly, a little at a time until the knife cuts through the paper the length of the cutting stick, fig. 16. Turning the screws down evenly prevents uneven wear on the knife and cutting stick.

11. Replace the key and raise the knife by turning the key to the RUN position. Turn the key off and remove it.

12. Tighten all knife bolts securely.

13. Make a test cut through a full lift of paper and make minor adjustments if necessary by repeating steps 7 through 12. **NOTE:** If the knife ends cut but the middle doesn't, you could have dips or uneven spots in the knife and/or cutting stick. These can be eliminated by placing 1/2" strips of paper in the table slot beneath the cutting stick to shim it.

14. Send the dull knife to the knife grinder and you are ready to go. If you sharpen or hone your own knives, request a copy of Challenge's "Knife Grinding Instructions", F. 52-A.

NOTE: A busy shop should have at least three knives. One in the machine, one as a spare and the other at the grinders being sharpened. Spare knives can be purchased from your Authorized Challenge Dealer.

PRESETTING/BACKGAGE POSITION READOUT

RESET — Whenever the power to the cutter has been off, the Backgage Position Readout will have to be reset. To reset the readout, bring the backgage forward through the presetter (5 inches). The presetter coordinates the backgage and the backgage position encoder every time it passes forward through the five inch presetter position. The cutter is now ready for operation.

REZERO — If the backgage position readout does not match the actual measurement between the knife and the backgage, the cutter must be rezeroed. This inaccuracy usually occurs due to rough handling during shipment.

The accuracy can be checked by cutting and comparing two sheets of paper.

NOTE: The backgage should be squared before attempting to rezero the cutter (see Adjustments for squaring procedure).

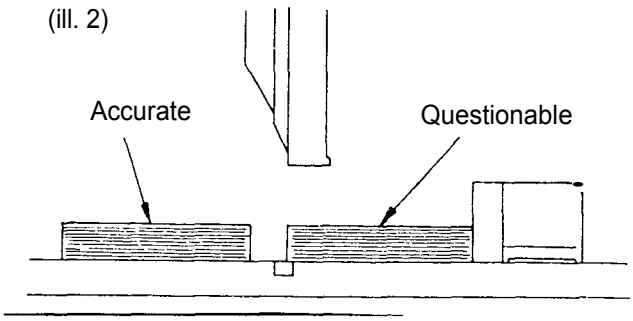
Procedure

1. Place a 1/4 to 1/2" lift of 8-1/2 x 11" paper against the center of the backgage.

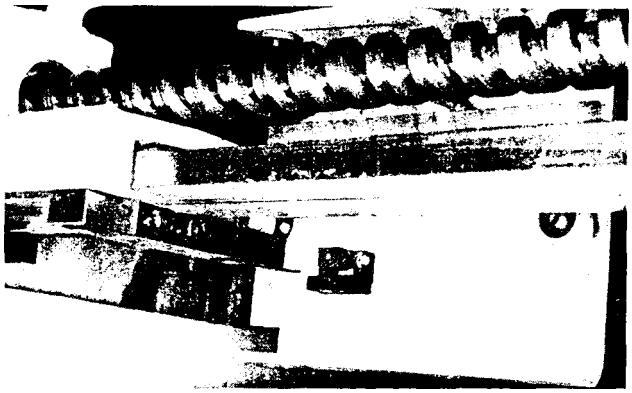
2. Using the backgage position readout, bring the lift up to the 10" position and make a cut. Move the backgage up to 5" and make another cut.

3. Take a sheet from the center of each lift and compare them to each other. The encoder system in your cutter will space accurately **between** cuts (your 10" and 5" cuts) whether the overall accuracy is correct or not.(111.2)

(ill. 2)

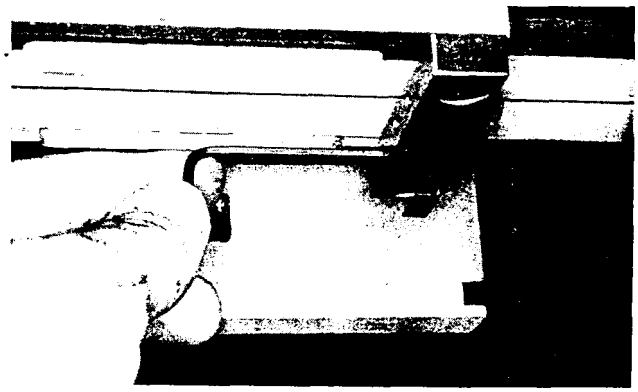


The stack of paper between the 10" and 5" cuts will be a true 5", but the paper left against the backgage will not if the backgage position indicator is off, ill. 2.



(fig. 17)

4. If the backgage position readout is off, you will have to adjust the presetter wand attached to the bottom of the backgage, fig. 17.



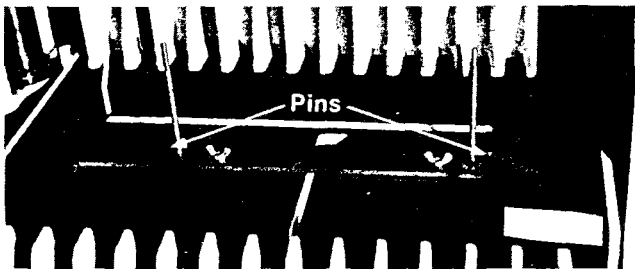
(fig. 18)

5. The leading edge of the presetter wand is what activates the presetter sensors as the backgage, moving forward, passes the wand between them. A set screw beneath the wand allows for adjustment, fig. 18. If tests show the backgage measurement to be short, bring the wand forward by turning the screw out (counterclockwise). If the measurement was long, turn the screw in (clockwise) to move the wand back.

6. Runthe backgage back, then bring it forward through the 5" presetter again and make another test. Continue to adjust and preset until your test sheets match.

FALSE CLAMP PLATE (OPTIONAL)

To prevent marking on pressure sensitive jobs, a False Clamp Plate is available as an optional item for your machine. This plate attaches to the bottom of the clamp. It is secured with wing nuts on studs that pass through the top of the clamp.



(fig. 19)

To install:

1. Turn the key to the OFF position AND REMOVE IT.

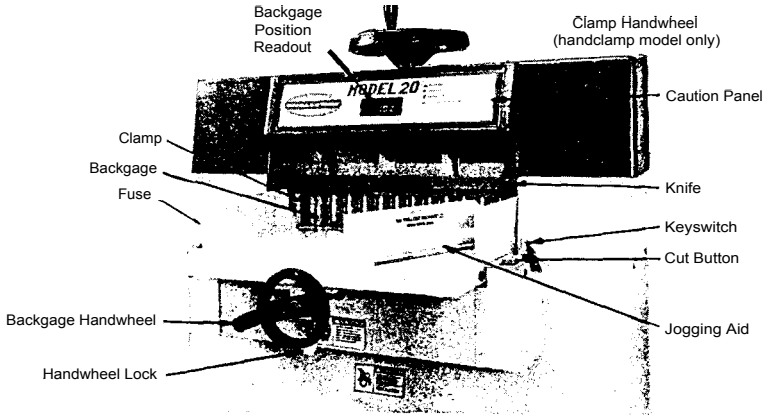
2. From the rear of the cutter, position the false clamp plate, fig. 19. The locator pins insert into holes in the bottom front of the clamp.

3. Hold the plate in position and secure with the wing nuts.

NOTE: Minimum cut with the False Clamp Plate attached is 1-3/4"

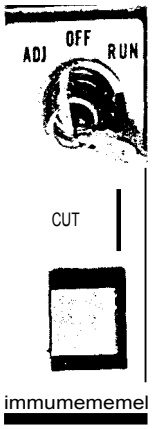
IMPORTANT: DO NOT ATTEMPT TO OPERATE THE CUTTER UNTIL YOU HAVE THOROUGHLY READ AND UNDERSTAND THE REST OF THIS MANUAL. CALL YOUR AUTHORIZED CHALLENGE DEALER IF YOU STILL HAVE ANY QUESTIONS.

OPERATING CONTROLS (fig. 20)



(fig. 20)

POWER — KEYSWITCH



(fig. 21)

The hydraulic action is activated by a three-position keyswitch. Removing the key prevents unauthorized use of the cutter.

OFF Position — Disconnects power to the hydraulic unit and the optional table Key removal prevents unauthor- _ed use by rendering cut buttons inactive. The backgage display will remain on.

RUN Position — For normal cutting operation. Activates cut buttons so motor/ pump engages to make a cut when cut buttons are pressed.

ADJ (adjust) Position — Used for servicing purposes only. Knife **remains** down for setting a new or newly ground knife to the cutting stick. When the key is turned to the RUN position, the knife will come back up **automatically.**

A CAUTION: When returning the knife to the up position after using ADJ, DAMAGE TO THE KNIFE LATCH MAY RESULT if the key is turned to RUN and back to OFF before the knife is all the way up. Turn the key from ADJ to RUN and WAIT for the knife to return to the up position. Do not turn the key to OFF until the knife has come to rest in the up position. A damaged knife latch could allow the knife to drift down exposing he blade edge below the clamp. Severe lacera- . .ions could result.

CUT BUTTONS

With the key in the RUN position, cut buttons must be pressed simultaneously (within 1/2 second of each other) to bring the knife down. Releasing either or both of the buttons at any time during a cut returns the knife to the up position. This feature helps eliminate or minimize stock spoilage due to mispositioning.

With the key in the ADJ position, the knife remains down forservicing purposes. (See **CAUTION** above). The knife does not return up when the buttons are released but stays in the lowered position. When the key is returned to the RUN position, the knife will return up.

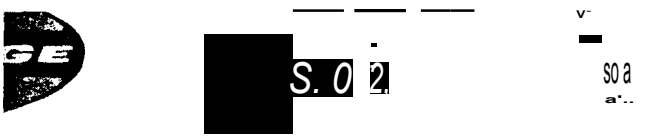
PAPER CLAMP

The clamp holds stock securely for cutting. On the power clamp, the clamp pressure is adjustable for cutting pressure sensitive stock.

Optional False Clamp Plate can be installed to prevent marking stock.

BACKGAGE

The handwheel operated leadscrew moves the backgage to position stock for cutting. The backgage position is shown by a lighted L.E.D. display. The backgage



(fig. 22)

should always be brought up to the cut position from the rear to eliminate any slack in the leadscrew/backgage

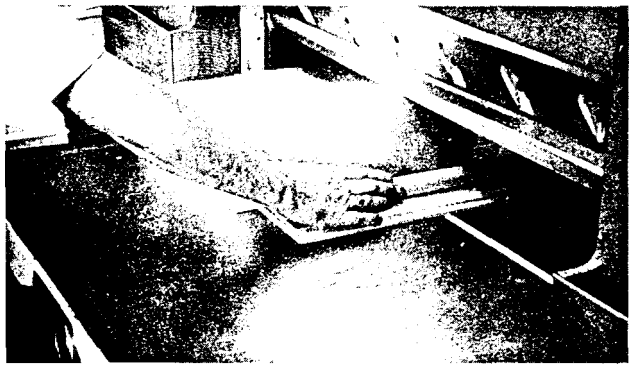
hardware. An indicator light in the upper right hand corner of the display warns of backwards motion of the backgage. This light should always be off when cutting.

BACKGAGE HANDWHEEL LOCK

The keylock holds the backgage in position for repeated cuts and to prevent backgage motion when jogging and cutting.

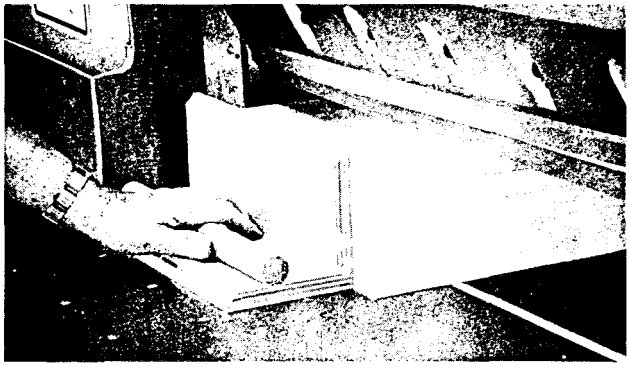
JOGGING AID

A Jogging Aid is now included with every Challenge cutter as standard equipment. Use of this handtool allows the operator to load and align stock without the **need** to place hands or arms under the knife or clamp.



(fig. 23)

Bring the backgage forward and lock it in position so your stock is beyond the knife and clamp. Load your stock against the side and backgage using the Jogging Aid, fig. 23.



(fig. 24)

Release the backgage and move it back to cutting position. Use the Jogging Aid, fig. 24, to push the stock against the backgage for cutting. Use the backgage handwheel to push trimmed stock out beyond the knife and clamp before unloading.

OPERATING TIPS

- Carefully lay out each sheet before you start cutting. Find the best cut pattern to give you the most pieces out of the sheet. If the sheet will be folded, be sure grain of the paper is running in the same direction as the fold or you will get a rough edge on the fold.

- If an accurate cut is necessary for close registerwork, you MUST have a sharp blade in the cutter. A dull blade will pull or draw the stock and cause uneven cutting. In creased clamp pressure will not eliminate draw caused by a dull knife.

- Clamping pressure varies from stock to stock. The general rule is that you should have enough pressure to hold the stock securely but not so much that it marks the surface of the paper excessively. Excessive pressure causes pile distortion and inaccurate cuts.

- To make stock slide as easily as possible on the cutter table, wash the table down with non-offset powder or with a silicone/rust preventative.

- Mark the gripper edge and the guide edge of printed stock and make sure the first cuts are with these guide edges against the backgage.

- Measure printed stock to check for shrinkage or expansion of the paper from humidity. You may have to disregard the printed cut lines and make your own.

- When cutting narrow (1" or less) strips, place lifts of equal height on both sides of the table to prevent uneven wear of clamp guides.

KNIFE CARE TIPS

I .

ADANGER: Knives are heavy and very sharp, even after use. Be careful to keep the edge away from your body and to keep people out of the area while handling the blade. ALWAYS Store knives in a Knife Holder Scabbard when not in use to prevent damage to the knife and to prevent personal injury. Failure to follow safety procedures could result In severe lacerations or dismemberment.

- CHALLENGE cutters are supplied with knives beveled at 23 degrees with a minimum of a #32 micro finish. This bevel is designed to be used in the average print shop with a variety of paper types. If your cutting needs are special, it may be helpful to send samples of your material to The Challenge Machinery Company for testing and recommendations.

- It is important to ALWAYS have a SHARP knife! This is the only way to minimize draw. A sharp knife is essential for accurate cutting. It reduces machine wear and extends the life of your machine.

- Frequent light grinding of knives is recommended. This practice saves time needed to set the knife to the cutting stick, it keeps the knife in good condition, prolonging its life and avoids trouble caused by dull knives and inaccurate cuts.

- Several signs indicate the need for a knife change. The appearance of the cut, the sound of the knife as it cuts through the stock, draw of the stock when cutting, and the presence of a burnishing on the face of the cut.

- A busy shop should have at least three (3) knives so one can be in the cutter, one in reserve in case a blade becomes damaged or nicked, while the other is out for sharpening. It is always wise to have extra knives in reserve in case a blade becomes damaged or the knife sharpener gets too busy to get your blade out soon enough.

- ALWAYS keep knives in a Knife Holder when not in use, to prevent damage to the knife and for safety's sake.

- If possible, schedule cutting to get the most out of each blade. Start out with easy-to-cut papers like bonds, then hard coated papers followed by chipboard. If chipboard is cut first, you may find yourself changing the knife after your first cutting job since chip-board can contain metal particles and wood chips that can ruin the edge with one cut.

- To make the cutting of hard coated papers easier, try this. Tie a rag around the end of a stick and dip it in a can of glycerine. Rub the rag on the knife bevel and it will lubricate the knife without staining the paper or messing up the printed material.

- When changing the knife, the new blade may be coated with light oil to prevent rusting. This should be wiped off - CAREFULLY! Be sure to back off the knife adjusters before installing the new knife. A new knife may cut deeper than an old one that has been ground several times and it could damage the knife, cutting stick or the cutter if set too deep.

- The practice of honing new knives by the operator before installing them is usually not required and is very dangerous! Most knife sharpening companies will automatically hone the knife before sending it back to you. If they don't, ask them to. It's better to let the professionals do it than to risk cutting yourself. If you insist on sharpening or honing your own knives, request a copy of CHALLENGE's, "Knife Grinding Instructions", F. 52-A.

TROUBLESHOOTING

WON'T START
Fuse blown.
Power cord disconnected.
_Start switch not turned to RUN or defective.
`efective cut button.
.ieplacement cut button wired incorrectly, see Wiring Diagram.
Defective cut module.

B.G. DISPLAY INACCURATE
Encoder disk slipping.
Leadscrew slack not taken up. (Approach cut position from rear; adjust Leadscrew Collar.)
Preset circuit board malfunction.
Encoder circuit board malfunction.
Display circuit board malfunction.

B.G. DISPLAY INACCURATE -
BY CONSTANT AMOUNT
Preset backgage (pass forward through 5" position).
Rezero backgage (presetter wand adjustment).

B.G. DISPLAY MISSING SEGMENTS OR DIGIT
Defective display circuit board (EE-1675-1).

B.G. MOVES WHEN JOGGING PAPER
Tighten thumbscrew.
Approach cut position from rear. (Remove leadscrew slack; adjust leadscrew collar.)
Adjust backgage guide screw.

dUTTONS PUSHED - WON'T CUT
Power cord disconnected.
Key not turned on.
Hydraulic fluid low.
Main Relief valve setting off.
Sequence pressure set wrong.
Buttons defective.
Replacement cut button wired wrong. (Check wiring orientation, see Wiring Diagram.
Cut module defective.
Triac defective.
Knife latch solenoid defective.
Knife down coil defective.
Cylinder or hose(s) leaking.
Cylinder disconnected from cylinder bracket.
Knife dirty or dry, lubricate knife guideways.

CLAMP STARTS UP BEFORE KNIFE IS UP
(POWER CLAMP MODEL)
Knife Up Sequence Valve setting incorrect.

CONCAVE CUTTING - ENDS WIDE,
CENTER NARROW
Excessive moisture at edges of paper.

CONCAVE CUTTING - VARIATION FROM
TOP TO BOTTOM
Soft stock not firmly clamped.
Knife dull or incorrectly ground.

ERRATIC OPERATION - POWER LOSS
Hydraulic fluid low.
Dirt in hydraulic system.
Cylinder or hoses leaking.

INCONSISTENT STOPPING OF CLAMP IN
THE UP POSITION
(POWER CLAMP MODEL)
Clamp up limit switch out of adjustment.
Clamp up limit switch actuator loose.
Cylinder leaking or disconnected from cylinder bracket.

KNIFE DRIFTS DOWN
Knife latch not engaging or damaged.
Knife cylinder seals worn.

KNIFE HESITATES OR STALLS
Dull knife.
Main relief valve setting off.
Stock clamped too tight - lower clamp pressure reducer setting
Cylinder seals worn leaking pressure.
Hydraulic fluid low.

KNIFE STARTS DOWN BEFORE CLAMP
REACHES TABLE
(POWER CLAMP MODEL)
Knife down sequence valve setting incorrect.

KNIFE WON'T RETURN UP
Keyswitch in the ADJ position.
Solenoid defective.
Limit switch out of adjustment.
Cylinder disconnected from bracket.

KNIFE WON'T STAY DOWN WITH KEY
AT ADJ
Clamp Up limit switch defective.

PUMP-MOTOR WON'T SHUT OFF
Knife/Clamp Up Limit switch not activated readjust.
Limit switch defective.
Triac defective. (See Electrical Panel)

CAUTION: DISCONNECT POWER before making any adjustments or lubricating. See page 4, SAFETY PRECAUTIONS, for Power Lockout Procedure.

Place this machine on your plant maintenance schedule. A clean, lubricated machine will run longer, smoother, cut more accurately, with less downtime and fewer costly repairs. Schedule lubrication both early in the day and early in the week. This allows the lubricants to work into the machine. Lubrication at the end of the day or week allows the lubricants to run off without any benefit to the machine. The following guidelines will help you set up a regular maintenance schedule:

WEEKLY

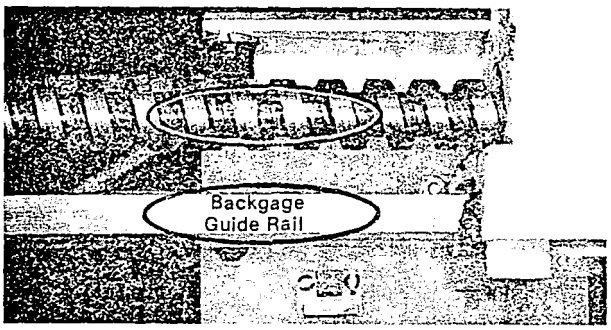
Clean - Clean off old, dirty excess grease. Remove the front panel cover and clean accumulated dust off valves, hoses and connections. Built-up dust increases operating temperatures which causes premature wear to all hydraulic components.

Hardware - Remove front panel cover, electrical panel cover, shroud and chrome blanks to check all nuts and bolts for tightness. Loose hardware is the cause of most component wear and in the electrical area could cause short circuits and/or shock.

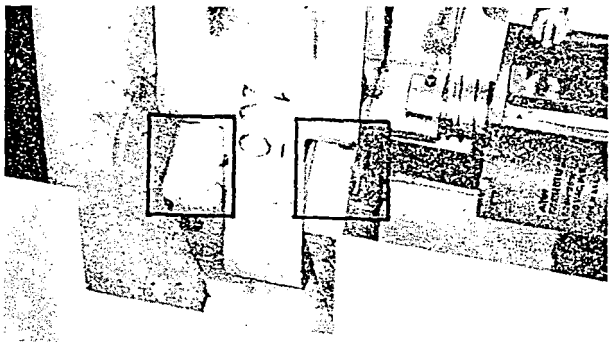
Hydraulic Fluid - The hydraulic reservoir holds 4 quarts (1 gallon) of hydraulic fluid. Low fluid level causes excessive heat and wear on the system. Fluid level should be maintained within 1/8" of end of dip stick (check with dip stick cap screwed in). Top off if necessary but avoid overfilling as this could cause leakage when hot. Use only the recommended fluid type in the cross reference chart at the end of this section.

Oil and Grease - Lock the knife down by turning the key to the ADJ position and pressing the cut buttons until the knife is bottomed. Turn the key off and remove it. Disconnect the power cord. Remove the front panel and shroud cover halves for access. Parts requiring oiling are marked with red paint. See photos, figs. 25 - 30, for additional oil and grease locations. Wipe off any old or excess grease. Use any brand-name type of grease or light oil to lubricate. Note: leadscrew may be lubricated with grease or oil. Oil has a tendency to run off and must be lubricated more frequently; grease tends to collect paper dust and must be cleaned off periodically.

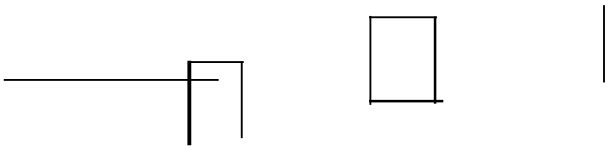
GEAa OIL



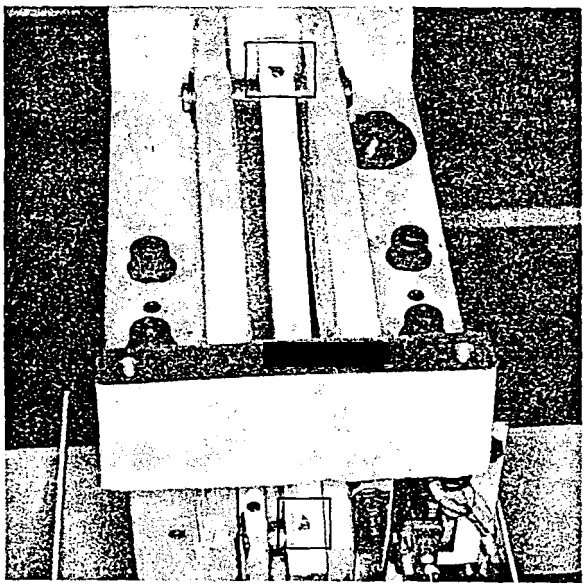
(fig. 25)



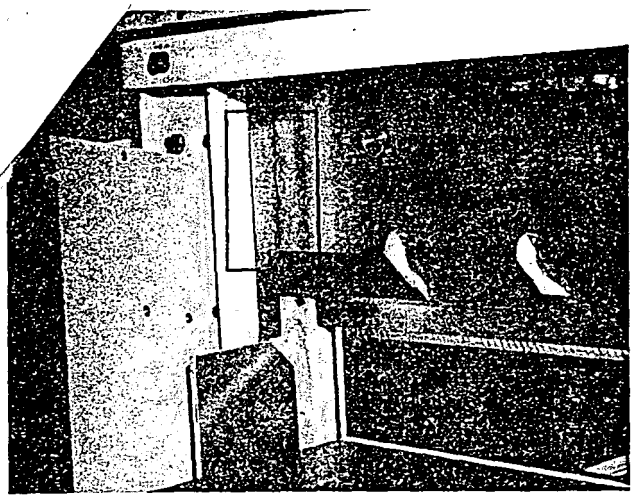
(fig.26) Cylinder Bracket Pins, Upper...



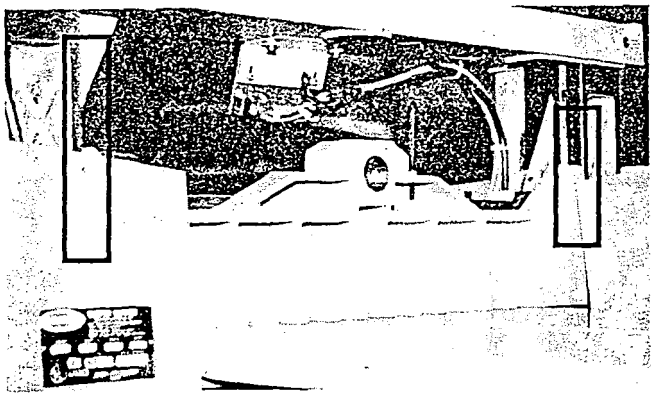
(fig.27) ...and Lower (both ends)



(fig. 28) Knife Links (both ends)



Knife Bar Guideways (fig. 29)



Clamp Guides (fig. 30)

MONTHLY

Leadscrew Collar - Check for slack in handwheel, see page 20.

Limit Switch Adjustment - see page 20.

Backgage Squaring - see page 19.

YEARLY

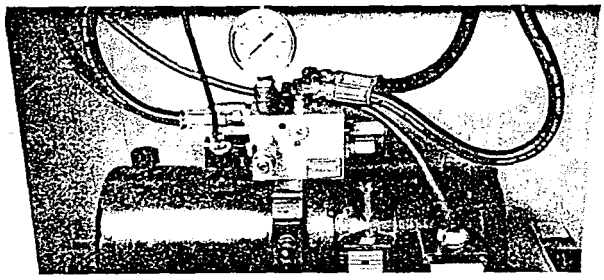
Hydraulic Fluid - Drain the hydraulic tank and refill with 1 gallon of Rykon No. 100 or equivalent (see chart).

HYDRAULIC SYSTEM

The Challenge Model 20 Cutter has a hydraulic cutting action. The Power Clamp model also has hydraulic clamping. The system is powered by an electric motor coupled directly to a hydraulic pump. The motor and pump run only when the cut buttons activated. The Model 20 has a gear type pump \ -di a fixed output of 1.5 gallons-per-minute at 1200 psi at 1725 RPM.

The biggest advantage of the hydraulic system is safety. The knife immediately returns to the up position should either or both of the cut buttons be released at any time during a cut cycle.

The hydraulicfluid should be checked weekly and changed **AT LEAST ONCE-A-YEAR** or after every 1000 hours of operation. **NOTE:** Failure to change oil when needed can damage seals in the knife and clamp cylinders.



(fig. 31)

Refill the tank with **1** gallon of International Standards Organization Viscosity Grade 100 (ISO VG 100) rust, oxidation and foam inhibiting hydraulic fluid.

NOTE: NEVER use automatic transmission fluid or brake fluid as a substitute for the correct hydraulic fluid. A table of various manufacturers and their equivalents is listed below.

RECOMMENDED OILS

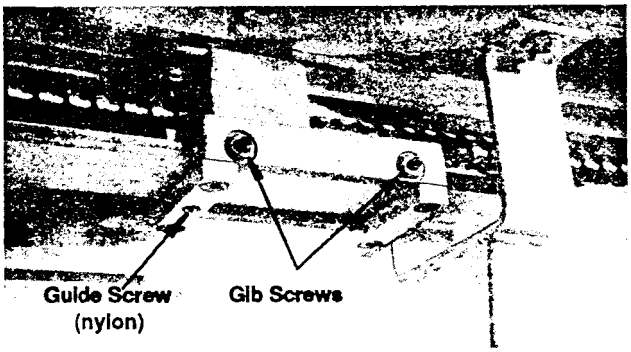
CAUTION: Use one of the recommended oils or an ISO VG 100 Hydraulic Fluid equivalent only. Oils other than the recommended type will cause seals and 0-rings to deteriorate. Unsafe operating conditions will result.

Oil Name	Distributor
Rykon No. 100	AMOCO
Duro AW Oil 465	Arco
AW Machine Oil 100	Chevron
Pacemaker XD No. 100	Citgo
Super Hydraulic 100	Conoco
Nuto H-100	Exxon
Harmony 100 AW	Gulf
HO 2A Hydraulic Oil	Lubriplate
DTE NO. 18	Mobil
Pennzoil AW 100	Pennzoil
Magnus A Oil 215	Phillips
Tellus 100	Shell
Energol HLP 100	Sohio
Industron 100	Std. Oil Indiana/Boron
Sunvis 851 WR	Sun Oil Co.
Rando HD 100	Texaco
Unax AW 100	Union Oil Co.

CAUTION: Several of the following tests require the machine to *be* operational for checking and adjusting. Be very careful that tools and other people are clear of moving parts and that the cutter is not accidentally operated while adjustments are being made. Whenever working on the machine, disconnect the power and lock it out (see SAFETY PRECAUTIONS, page 4) unless the directions specifically require the machine to be powered.

BACKGAGE GIB ADJUSTMENTS

If the backgage does not stay squared or jumps up and down when jogging paper against it, the backgage guide screws are probably loose or worn.



(fig. 32)

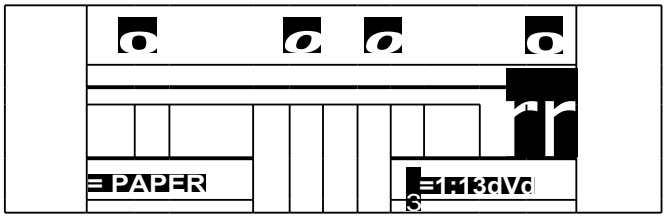
To Adjust:

1. Run the backgage to the front of the table (0-5").
2. Loosen the two side gib screws and the bottom nylon guide screw, fig. 32.
3. Tighten the bottom, nylon guide screw until it is snug. Do not overtighten or it could cause the handwheel to bind.
4. Turn the side gib screws in and snug these also. Lock in position with the jam nuts.
5. Run the backgage back and forth the length of the table and check for any binding. Readjust if necessary.

NOTE: Adjusting screws should be tightened to hold the backgage square against the guide rail. Excessive tightening will cause the handwheel to turn hard (bind) and cause premature wear of all components.

SQUARING THE BACKGAGE

To test if the backgage is square, place a small lift of paper against the left guide and the backgage and make a cut...

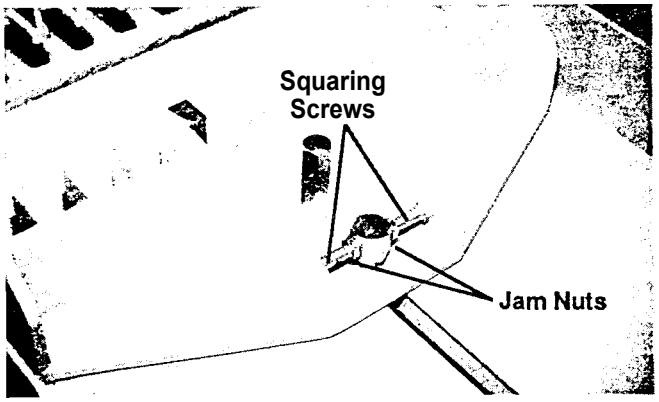


(ill. 3)

...now, leaving the backgage locked in the same position, flip the lift over and against the right guide and backgage. Make another cut to see if any of the stock will trim off. Run two checks, one starting on the left and moving to the right, The other, moving from the right to the left. Trim in either sequence indicates the backgage is out of square.

1. As machine wears, make sure the backgage gibs are set properly first (see Backgage Gibs under the Adjustments section), then follow steps 2 through 5.

NOTE: This is not necessary on initial machine setup as gibs have been adjusted at the factory.



(fig. 33)

2. Loosen the jam nuts on the backgage squaring screws, fig. 33.
3. Turn in the squaring screw on the side that the trim occurred and back the other out slightly.
4. Snug the screws up and make another test. Continue to adjust and test until no trim occurs when testing in either sequence.
5. Tighten the squaring screws and set the jam nuts.

ENCODER WHEEL

If the backgage position display continues to be Oaccurate even though it has been preset and zeroed, it may be due to the encoder wheel lipping on the leadscrew.

(fig. 34)

1. Turn the key to OFF and remove it. Disconnect the power.

2. Remove the electrical panel cover below the table.

3. Locate the encoder disk, fig. 34. Make sure the disk is centered between the circuit board sensors and tighten the disk wheel set screw.

   Replace the electrical panel cover.

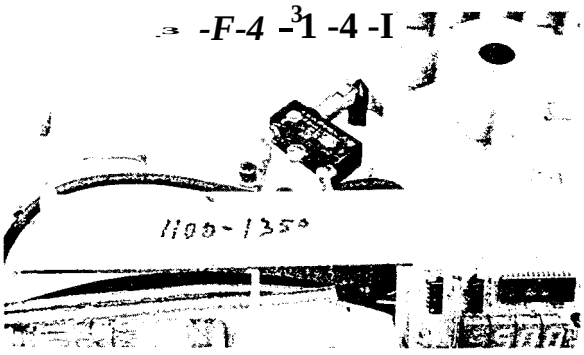
CLAMP UP/KNIFE UP LIMIT SWITCH

The Up Limit Switch operates identically on both the hand clamp and power clamp model cutters. It is actuated off the knife on the hand clamp model and the clamp on the power clamp model. When the knife and clamp reach their full up position the limit switch is actuated, shutting off the hydraulic pump.

The up limit switch should be adjusted as follows:

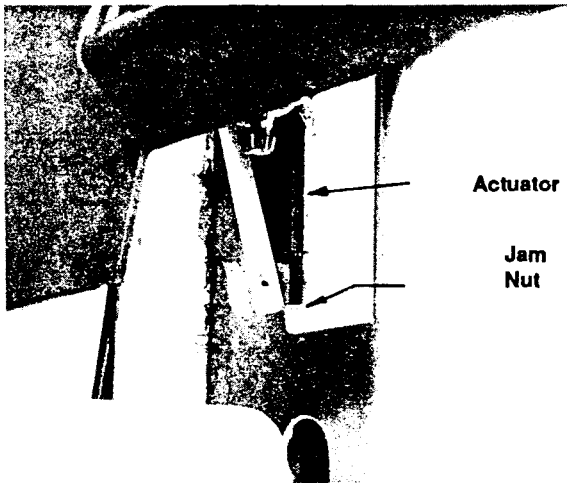
1. With the knife/clamp in the up position, disconnect the power.

2. Remove the front cover shroud.



(fig. 35)

3. Loosen the limit switch bracket mounting screws and align the switch roller with the actuator, fig. 35. Retighten the screws.



(fig. 36)

4. Loosen the actuator jam nut and turn the actuator down (clockwise) away from the limit switch, fig. 36.

5. Slowly raise the actuator (counterclockwise) to contact the limit switch. Raise until the switch 'clicks'.

6. While holding the actuator with a wrench, retighten the jam nut.

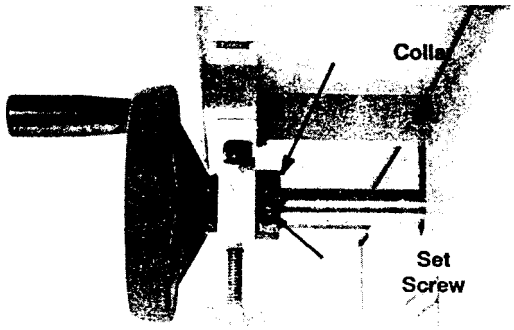
7. Reconnect the power and test run. With the knife and clamp up, the knife edge should never be exposed. If this is the case, loosen the actuator jam nut and lowerthe actuator slightly. Retighten the jam nut and test run again.

CAUTION: Knife edge must not be exposed when knife and clamp are in the up position. Severe lacerations could result. Readjust limit switch as above.

8. Turn the key off and replace the shroud. Do not operate with any guards or covers removed.

LEADSCREW COLLAR

Take the slack out of the backgage/Leadscrew combination by turning the backgage handwheel clockwise to move the backgage forward a little then lock the backgage lock screw.

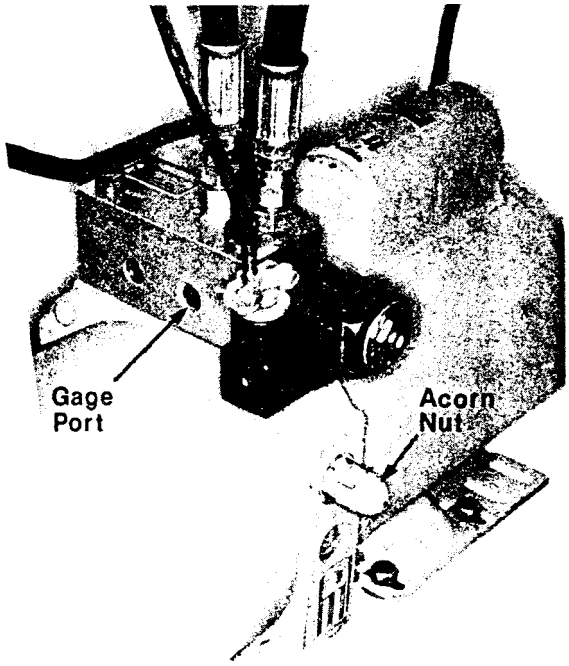


(fig. 37)

Loosen the set screw in the backgage leadscrew collar and push it up tight to the forward pillow block, fig. 37. Retighten the set screw.

HYDRAULIC VALVE ADJUSTMENT - HAND CLAMP MODEL

There is only one valve adjustment on the Model 20 Hand Clamp Cutter. To make the adjustment you will need a hydraulic gauge with a 1/4-18 N.P.T. male fitting. The gauge should read to at least 1500 psi.



(fig. 38)

To adjust:

1. Remove the front panel cover below the table.
2. Remove the plug (takes a 1/4" Allen wrench) from the front port, marked "G", on the left side of the hydraulic manifold. Insert the gauge here, fig. 38.
3. Turn the key to the RUN position and press the cut buttons. Read the gauge with the knife held in the down position. It should be set for 1200 psi.
4. To reset the pressure, remove the acorn nut* on the front of the motor-pump housing, fig. 38. Loosen the lock nut underneath. With a standard screwdriver, turn the valve in (clockwise) to increase pressure, out (counterclockwise) to decrease pressure. Make another cut and recheck the reading.
5. Tighten the valve lock nut and replace the acorn nut.
6. Remove the gauge assembly and replace the plug.
7. Replace the front panel cover.

***NOTE:** Some machines may have an alternate valve similar to that shown in figure 39 on the following page. It has a protective cap instead of an acorn nut. Use a 5/16" Allen wrench to remove the cap - a small amount of hydraulic fluid may leak out. Then use a 1/4" Allen wrench to make the adjustment.

HYDRAULIC VALVE ADJUSTMENTS - POWER CLAMP MODEL

Settings:

Knife Down Sequence Pressure — 1000 psi.

2. Main System Relief Pressure — 1200 psi.
3. Clamp/Knife Up Sequence Pressure — visual check only.
4. Clamp Pressure Reducer — 400-800 psi.

Procedure:

1. Remove front cover panel.

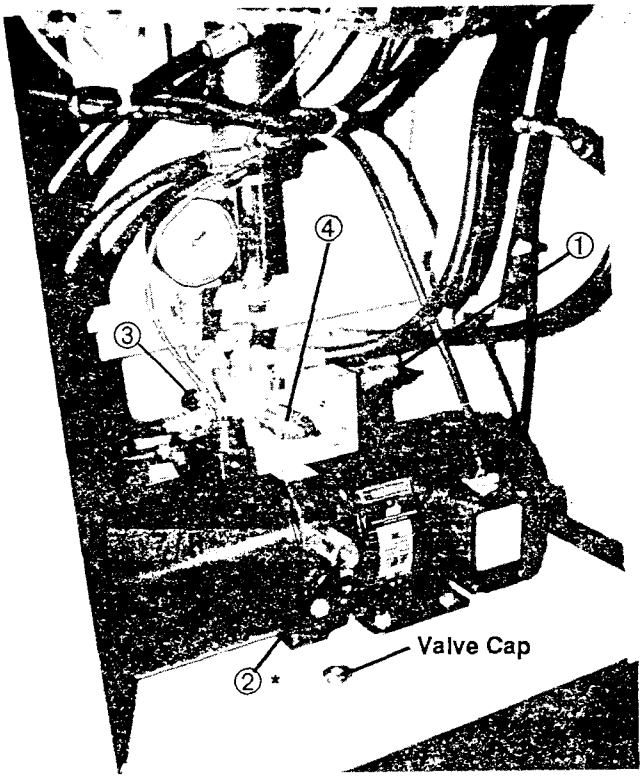
2. Turn the clamp pressure reducer valve, item 0 fig. 39, all the way in (clockwise).

3. Remove the cover of the main system relief valve* 0, fig. 39 (takes a 5/16" Allen wrench. A small amount of hydraulic fluid will leak out when the cover is removed - this is normal.) Make a cut and read the pressure off the gauge with the buttons held in and the knife bottomed on the table. Use a 1/4" Allen wrench to adjust this valve if necessary to obtain a 1200 psi reading. Replace the valve cover when setting has been obtained.

   NOTE: Some machines may have an alternate valve which requires removal of an acorn nut similar to the one shown in fig. 38, page 21. Remove the nut and adjust the valve with a screwdriver.

4. Press the cut buttons. Read the pressure from the gauge as the knife is traveling down. Do not hold the buttons down at the end of the stroke (knife bottomed), as the motor will stall. The pressure for the knife sequence valve 0 should read 1000 psi." If necessary, adjust this valve to obtain a reading of 1000 psi.

5. The clamp up sequence valve © is factory set so that the clamp stays down until after the knife has gone all the way up. This is a visual check, no pressure readings are required. If an adjustment is required, turn the valve counterclockwise all the way out, then turn back in until the clamp remains on the table and the knife is all the way up.



(fig. 39)

6. Adjust the clamp pressure reducer 0, on the front of the manifold, to the desired setting. Factory preset at 800 psi. Read the gauge with the clamp down and as the knife begins to move.

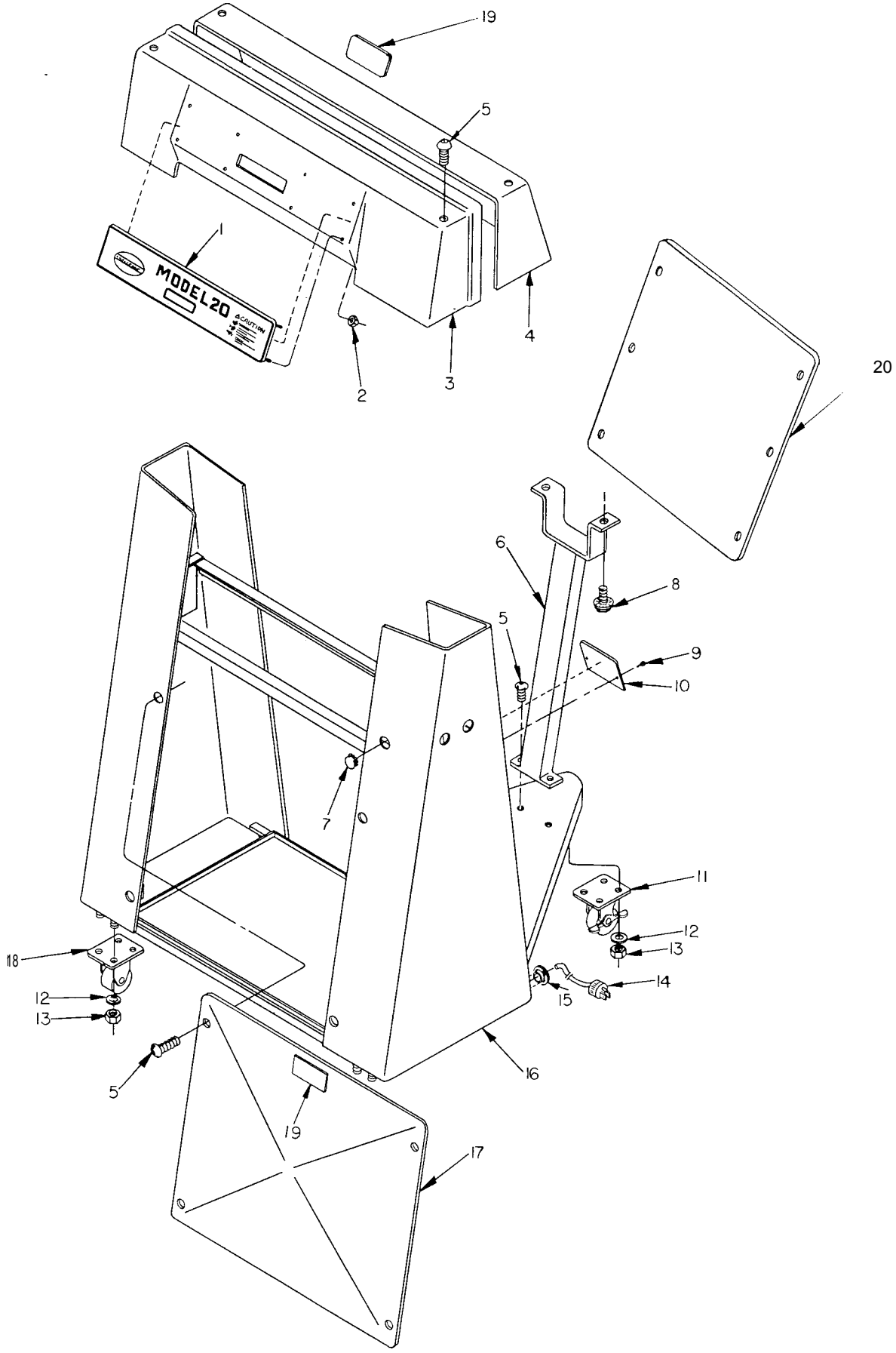
CAUTION: DO NOT set the clamp pressure below 400 psi. Severe lacerations or dismemberment could result! The knife and clamp system loses sequence at settings below 400 psi. and the knife could come down before the

When cutting pressure sensitive stock, you may want to reduce the clamping pressure **(400 psi minimum)** to prevent marking the stock.

NOTE: Do not increase pressure to compensate for draw, make sure you have a sharp knife installed. Maximum pressure setting is 800 psi.

STAND ASSEMBLY

Ref. No.	Part No.	Part Name	Qty.
1.	A-10017-1	Nameplate	1
2.	H-6423-#10	#10-24 N.C. Hex Nut	8
3.	A-10053	Shroud — Front (Hand Clamp)	1
	A-10053-1	Shroud — Front (Power Clamp)	1
4.	A-10054	Shroud — Rear ((Hand Clamp)	1
	A-10054-1	Shroud — Rear (Power Clamp)	1
5.	H-6910-404	1/4- 20 N.C. x 1/2" Butt. **Hd.** Soc. Cap Scr.	18
6.	AA-10058	Support Assembly —Table	1
7.	E-1445-1	3/4" Snap-in Blank	6
8.	H-6894-606	3/8-16 x 3/4" Whiz Lock Screw	2
9.	H-6924-004	#0 x 1/4" Rd. Hd. Drive Screw	2
10.	S-1236-12	Serial No. Plate	1
11.	A-10056	Swivel Caster	1
12.	H-7324-10	5/16" Int. Tooth Lockwasher	12
13.	H-6424-5	5/16 - 18 Hex Jam Nut	12
14.	EE-1743	Power Cord Assembly	1 ref.
15.	S-1350-2	Strain Relief Bushing	1
16.	A-10052-1	Stand Assembly	1
17.	10055	Front Cover	1
18.	A-10057	Caster	2
19.	S-1781-16	Caution Label.	3
20.	10055-1	Rear Cover	1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BASE & CLAMP ASSEMBLY
COMMON PARTS

Ref. No.	Part No.	Part Name	Qty.
1.	10001-1	Base	1
2.	H-215-250-1000	1/4 Dia. x 1" Roll Pin	8
3.	H-6918-608	3/8-16 x 1" Soc. Hd. Cap Screw	20
4.	10002-2	Guide-Front	2
5.	AA-10061	False Clamp Plate Assembly	1
6.	EE-1753	Display Assembly	1
	EE-1675-1	Display Only	1 ref.
7.	EE-1733-1	Cord Assembly	1 ref.
8.	10066	Bracket - Display Mounting	1 ref.
9.	H-6923-44012	#4-40 x 3/4" Rd. Hd. Mach. Screw	2 ref.
10.	H-7320-#4	#4 Fiber Washer	2 ref.
11.	E-1152-11	Spacer	2 ref.
12.	H-7321-#4	**#4** Standard Washer	2 ref.
13.	H-6423-#4	#4-40 Hex Nut	2 ref.
14.	H-6918-403	1/4-20 x 3/8' Soc. Hd. Cap Screw	2
15.	H-7330-8	1/4" Ext. Tooth Lockwasher	2
16.	H-7321-4	1/4" *** Flat Washer	2
17.	S-1694-1	Tyrap	2
18.	10007-1	Arch .	ref.
19.	10002-3	Guide-Rear	2
20.	H-6425-4	1/4-20 N.C. Wing Nut (Optional)	2
21.	10004-1	Clamp	1
22.	10005-1	Deflector	1
23.	H-6894-606	3/8-16 x 3/4" Whiz Lock Screw	4

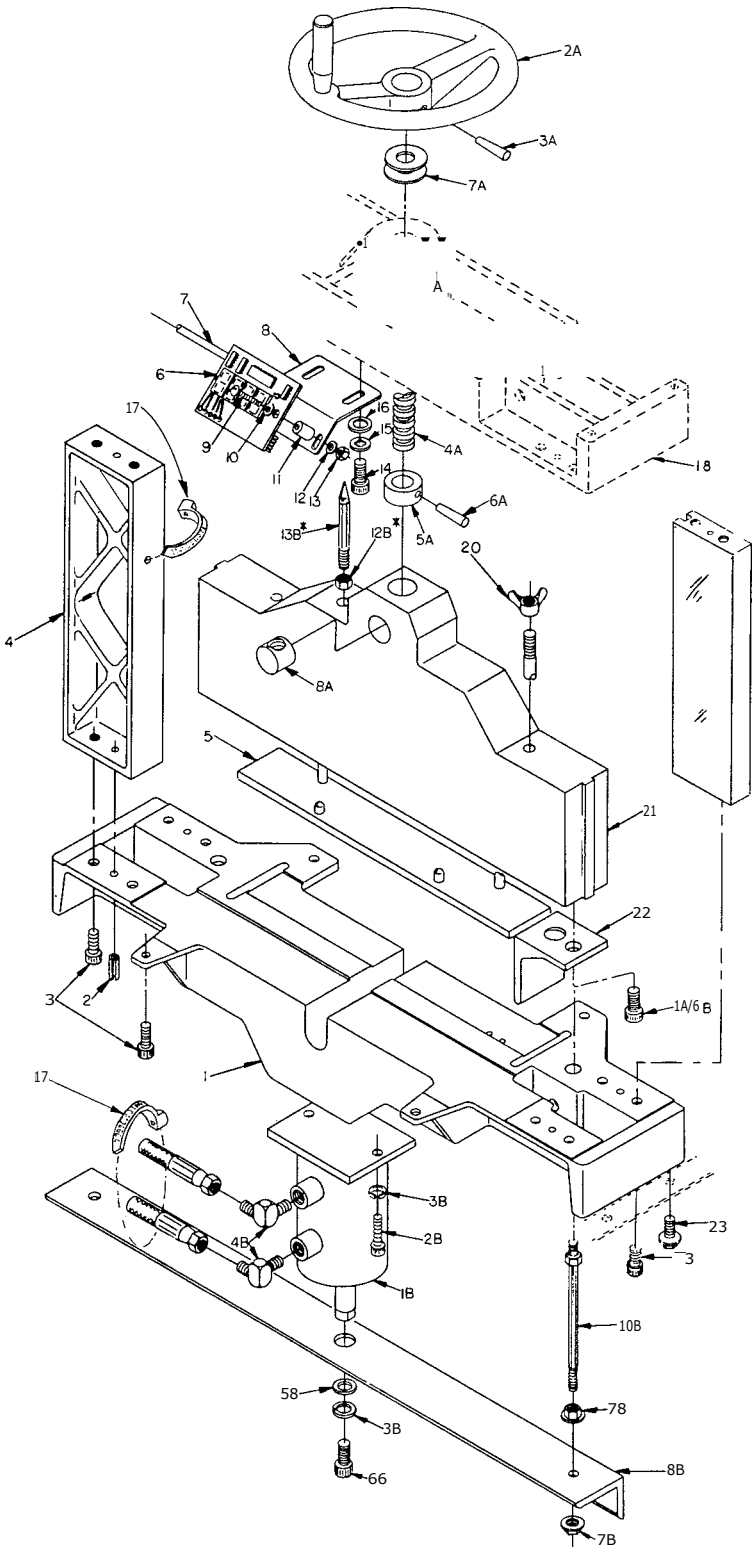
HAND CLAMP MODEL ONLY

1A.	H-6918-808	1/2-13 x 1" Soc. Hd. Cap Screw	4
2A.	AA-10011	Clamp Hancfwheel Assembly	1
	A-10012	Hand Wheel Only	1
3A.	H-6633-314	#3 x 1-3/4" Taper Pin	1
4A.	10013	Screw-Clamp	1
5A.	10014	Collar	1
6A.	H-6634-312	#3 x 1-1/2" Taper Pin	1
7A.	5-1295-4	Thrust Washer	2
8A.	6035	Clamp Nut	1

POWER CLAMP MODEL ONLY

1B.	H-211	Hydraulic Cylinder	1
	HH-299-2	Seal Kit	1
2B.	H-6918-608	3/8-16 x 1" Soc. Hd. Cap Screw	2
3B.	H-7327-12	3/8" Medium Lockwasher	3
4B.	H-241-13	Adapter, Pipe (Ext.) to Hose	2
58.	H-7321-6	3/8" Standard Washer	1
6B.	H-6918-610	3/8-16x 1-1/4" Soc. Hd. Cap Screw	1
7B.	H-6414-8	1/2-13 N.C. Whiz-Lock Nut	4
8B.	10076	Clamp Bar	1
9B.	H-6918-808	1/2-13 x 1" Soc. Hd. Screw	2
10B.	10082	Clamp Rod Asm.	2
1213.	H-6424-4	1/4-20 Hex Jam Nut	1
*13B.	8881	Actuator	1

Actuator position shown for Power Clamp Model. See Arch/Knife Assembly for Hand Clamp actuator location.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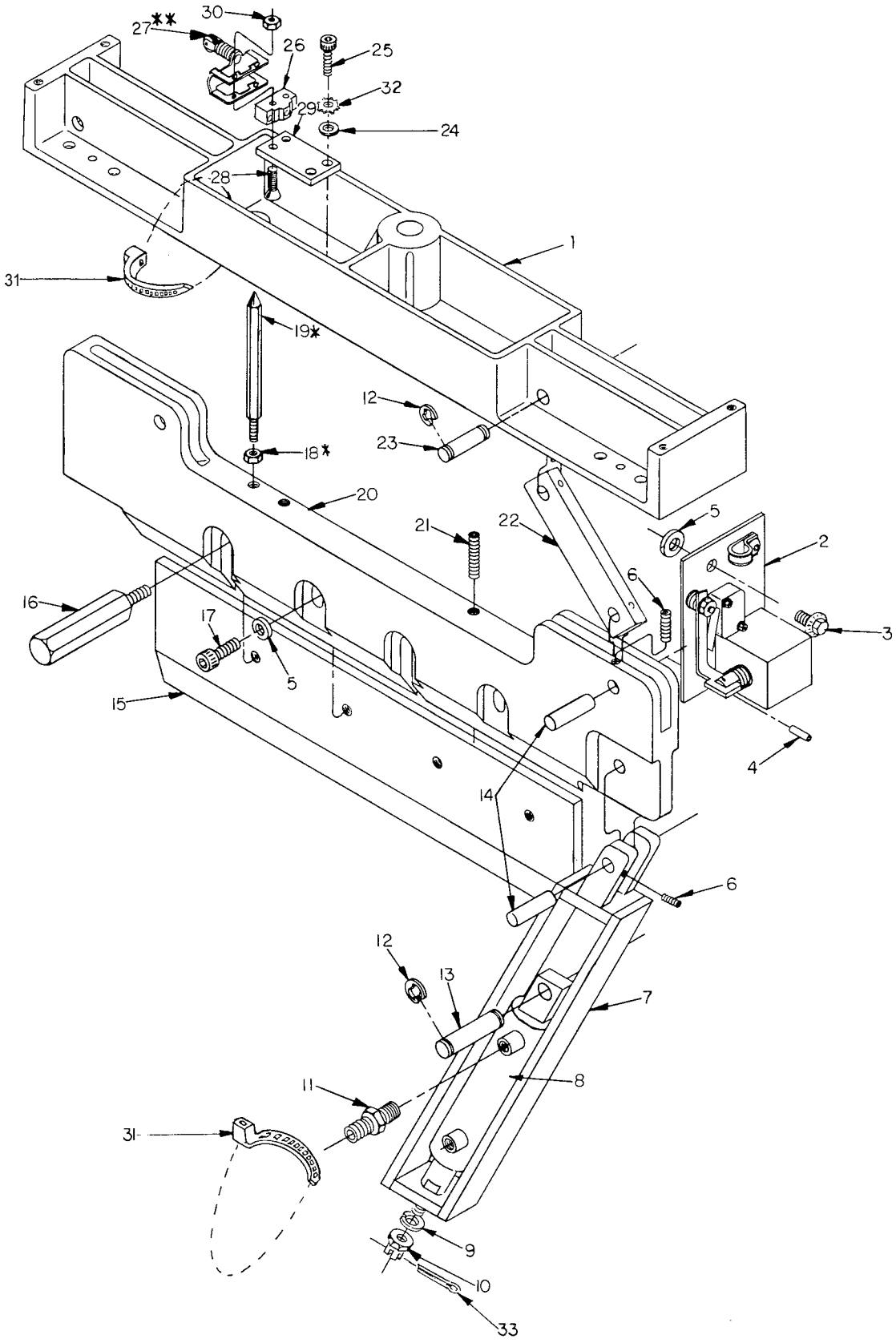
ARCH/KNIFE ASSEMBLY

Ref No.	Part No.	Part Name	Qty.
1.	10007-1	Arch	1
2.	EE-1754-2	Knife Bar Latch Assembly	1
3.	H-6894-405	1/4-20 x 5/8" Whiz-Lock Screw	1
4.	H-215-125-0750	1/8 Dia. x 3/4' Roll Pin	1
5.	8815	Washer	5
6.	H-6938-102408	#10-24 x 1/2" Cup Pt. Soc. Set Screw	3
7.	AA-10018	Bracket Cylinder	1
8.	H-210-1	Hydraulic Cylinder	1
	HH-299-19	Seal Kit	1 ref.
9.	H-7327-12	3/8" Medium Lockwasher	1
10.	H-6410-6	3/8-24" Slotted Hex Nut	1
11.	H-241-13	Adapter - Pipe to Tube	2
12.	S-1193-50	1/2" Retaining Ring	6
13.	10064	Pin	1
14.	10010	Pin	3
15.	A-10034	Knife	1
16.	S-1245-5	Knife Lifter (in Tool Kit	2
17.	H-6918-608	3/8-16 x 1' Soc. Hd. Cap Screw	4
*18.	H-6424-4	1/4-20 Hex Jam Nut	1
*19.	8881	Actuator	1
20.	10003	Knife Bar	1
21.	H-6938-632	3/8-16 x 2" Cup Pt. Soc. Set Screw	2
22.	10008	Link-Knife Bar	2
23.	10009	Pin-Link	2
24.	H-7321-4	1/4' Std. Washer	2
25.	H-6918-404	1/4-20 x 1/2" Soc. Hd. Cap Screw	2
**26.	EE-1740-2	Limit Switch Assembly	1
	E-2053	Switch (Only	1 ref.
27.	D-2054	Actuator..	1 ref.
28.	H-6922-63220	#6-32 x 1-1/4 Flat Hd. Mach. Screw	2 ref.
29.	10024	Bracket	1 ref.
30.	H-6423-#6	#6-32 Hex Nut	2 ref.
31.	S-1694-1	Tyrap	2
32.	H-7330-8	1/4 Ext. Tooth Lockwasher	2
33.	H-6631-308	3/32x 1" Cotter Pin	1

* Actuator position shown for Hand Clamp Model. See Base/Clamp Assembly for Power Clamp Actuator location.

** Up Limit Switch orientation shown for Hand Clamp Model. Switch is rotated to trip off actuator located on clamp for Power Clamp Model.

*** Insert: Backgage Drive Assembly Drawing - 1 Page**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BACKGAGE DRIVE ASSEMBLY

Ref. No.	Part No.	Part Name	Qty.
1.	10025	Table	1
2.	H-6910-606	3/8-16 x 3/4" Butt. Hd. Soc. Cap Screw	5
3.	H-6918-606	3/8-16 x 3/4" Soc. Hd. Cap Screw	6
4.	10029	Side Guide - L.H. Front	1
5.	10030	Side Guide	3
6.	H-6913-612	3/8-16 x 1-1/2" Hex Screw	2
7.	H-7322-6	3/8" Polished Washer	3
8.	10031	Backgage	1
9.	10065	Pin - Backgage	6
10.	4166	Cut Stick	1
11.	EE-1749	PRESETTER ASSEMBLY	1
12.	10040	Bracket - Preset	1 ref.
13.	EE-1688	P.C. Board Assembly - Preset	1 ref.
14.	H-6423-4	1/4-20 N.C. Hex Nut	2 ref.
15.	H-7324-8	1/4" Int.Tooth Lockwasher	2 ref.
16.	E-1152-12	Spacer	2 ref.
17.	H-7321-4	1/4" Standard Washer	2 ref.
18.	H-6923-420	1/4-20 x 1-1/4" Rd. Hd. Mach. Screw	2 ref.
19.	10026-4	Pillow Block	2
20.	5-6-27-B	Stop-Cut Stick	2
21.	H-6909-83203	#8-32 x 3/8" Flat Hd. Soc. Cap Screw	2
22.	10028-2	Guide - Backgage Bracket	1
23.	8826	Backgage Nut	1
24.	10027-1	Backgage Bracket	1
25.	10037-1	Screw, Backgage	1
26.	H-6918-102403	#10-24x3/8" Soc. Hd. Cap Screw	2
27.	8641	Wand - Preset	1
28.	10033	Strap - Preset Wand	1
29	H-6909-406	1/4-20 x 3/4" Flat Hd. Soc. Cap Screw	4
30.	H-6968-102408	#10-24 x 1/2" Cup Pt. Soc. Set Screw (Ny-Lok	1
31.	S-1944-1	Screw	1
32.	10032	Strap	1
33	10039	Bracket - Encoder Mtg	1
34	E-1152-11	Spacer	3
35.	H-6918-406	1/4-20 x 3/4" Soc. Hd. Cap Screw	3
36.	EE-1676	P.C. Board Assembly - Encoder	1
37.	A-8865	Disc Assembly - Encoder	1
38	H-6964-403	1/4-20 x 3/16" Brass Tip Soc. Set Screw	1 ref.
39.	A-10081	Collar	1
40.	H-6915-406	1/4-28 N.F. x 3/4" Soc. Hd. Cap Screw	1 ref.
41.	S-653-1	Thumbscrew	1
42.	A-10038	Handwheel - Backgage	1
43.	10026-3	Pillow Block - Center	1
44.	H-6918-608	3/8-16 x 1" Soc. Hd. Cap Screw	8
45.	H-6913-608	3/8-16 x 1" Hex Hd. Cap Screw	2
46.	H-6974-412	1/4-28 x 3/4" Brass Tip Soc. Set Screw	2
47.	H-6928-4	1/4-28 N.F. Hex Nut	2
48.	H-6423-#10	#10-24 Hex Nut	1
49.	H-6918-102406	#10-24 x 3/4 Soc. Hd. Cap Scr.	1
50.	S-1699-1	Tape-Teflon (1.25 ft.)	
51.	H-7327-12	3/8" Med. Lockwasher	1
52.	30012	Screw-Locking	1
53.	H-7324-12	3/8" Int. Tooth Lockwasher	3
54	30011	Screw-Adjusting	1
55.	H-6424-6	3/8-16 Hex Nut	2

HYDRAULIC PACKAGE

POWER CLAMP MODEL
(H-317)

Ref. No.	Part No.	Part Name	Qty.
1.	HH-220-3	Hydraulic Power Unit..	1
	HH-304-1	Relief Valve Kit	ref.
2.	A-10042	Nut- Power Unit	**4**
3.	H-7321-5	5/16" Standard Washer	**4**
4.	H-7327-10	5/16" Med. Lockwasher	**4**
5.	H-6913-508	5/16-18 x 1" Hex Hd. Cap Screw	**4**
6.	E-1237-1	Wire Nut	2
7.	H-287	Breather Cap	1
8.	HH-245	Manifold Assembly	1
	HH-292-3	Kit - Manifold Seals	1 ref.
9.	H-203-13	Valve - Pressure Reducer	1 ref.
10.	H-200-2	Cartridge Valve - Only	1 ref.
	E-1069-13	Coil -Only	1 ref.
11.	H-328	Tube Assembly	1
12	H-242-15	Hydraulic Hose Assembly	3
13.	8P-629-3	Gage	1
14.	H-242-16	Hydraulic Hose Assembly	1
15.	H-236-3	Adapter	2
16.	H-6918-628	3/8-16 x 3-1/2" Soc. Hd. Cap Screw	2
17.	H-253-2	Adapter	1
18.	H-230	Elbow (9/16-180' Ring to 9/16-18 Tube)	1
19.	H-230-3	Elbow (9/16-180 Ring to 9/16-18 Tube)	2
20.			
21.	H-203-16	Valve, Relief	1
22.	H-203-18	Check Valve	3
23.	H-203-17	Valve, Sequence	1
24.	S-1810-10	'0' Ring (3/4" Dia.)	2

HAND CLAMP MODEL
(H-316)

Ref. No.	Part No.	Part Name	Qty.
1.	H-220-3	Hydraulic Power Unit	1
	HH-304-1	Relief Valve Kit	ref.
2.	A-10042	Nut- Power Pack	4
3.	H-7321-5	5/16" Standard Washer	4
4.	E-1237-1	Wire Nut	2
5.	H-287	Breather Cap	1
6.	E-1069-13	Coil Only	1 ref.
	H-200-2	Cartridge Valve Only	1 ref.
7.	H-6918-620	3/8-16 x 2-$^{1}/_{2}$" Soc. Hd. Cap Screw	2
8.	H-242-15	Hydraulic Hose	2
9.	H-236-3	Adapter - SAE '0' Ring to Tube	2
10.	HH-223	Manifold Assembly	1
	HH-292-2	Kit - Manifold Seals	1 ref.
11.	S-1810-10'	0' Ring	2
12.	H-6913-508	5/16-18x 1" Hex Hd. Cap Screw	4
13.	H-7327-10	5/16' Med. Lockwasher	4

REPAIR KITS- HYDRAULIC POWER UNIT (BOTH MODELS)

HH-302	Pump Kit
HH-303	Load Check Valve Kit
HH-304-1	Relief Valve Kit
H-305	Coupling, Pump to Motor
H-288	Reservoir
S-1810-37	Tank '0' Ring
E-1600-62	Electric Motor
H-238-2	Strainer

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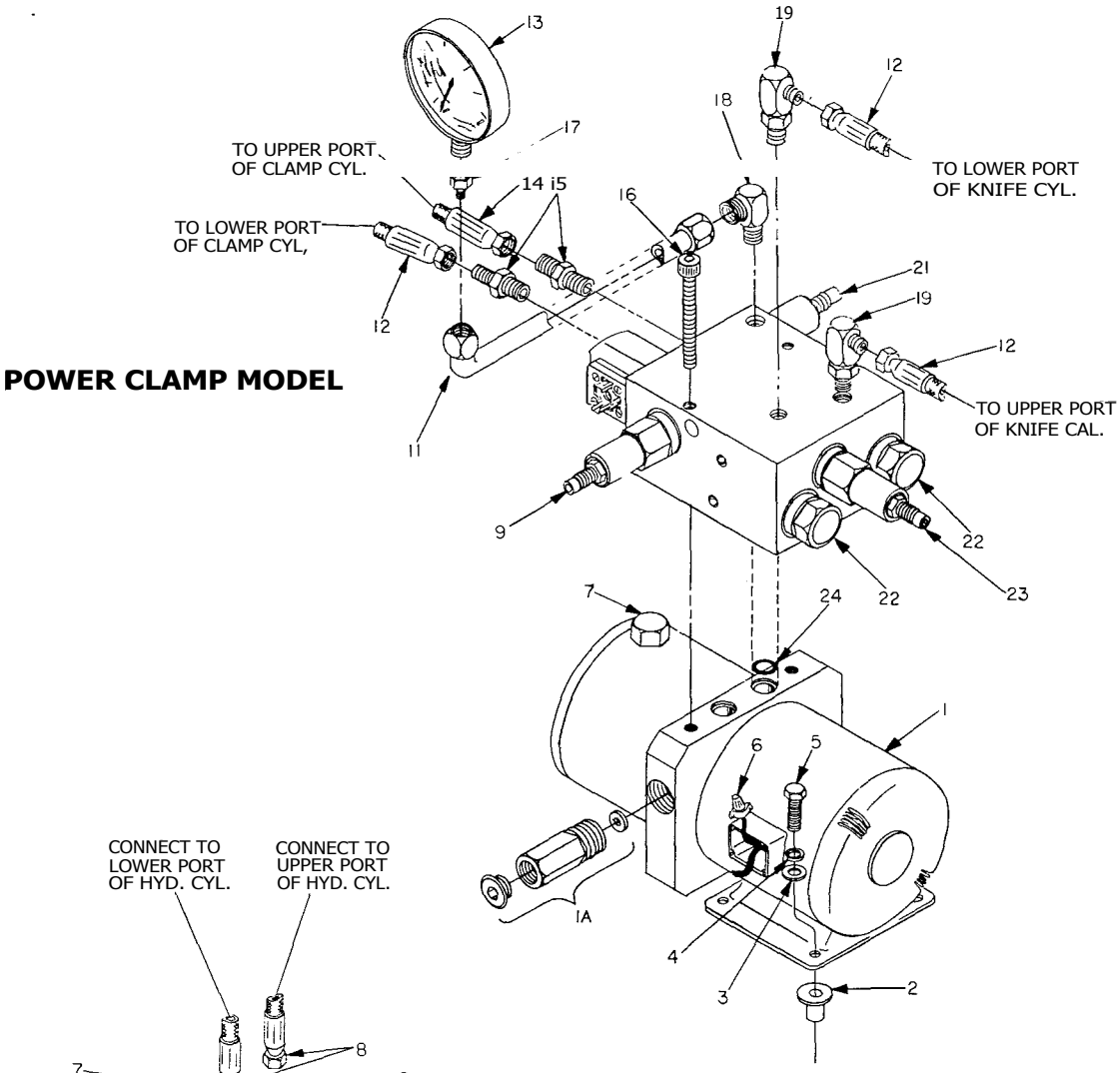
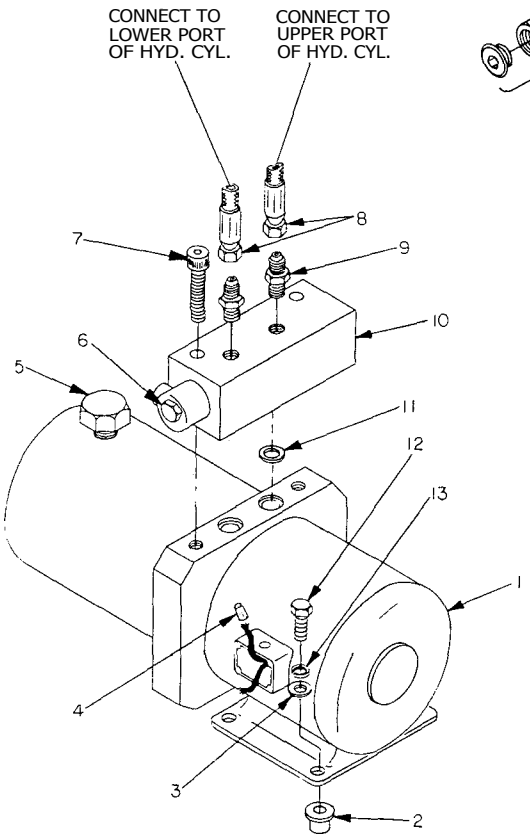
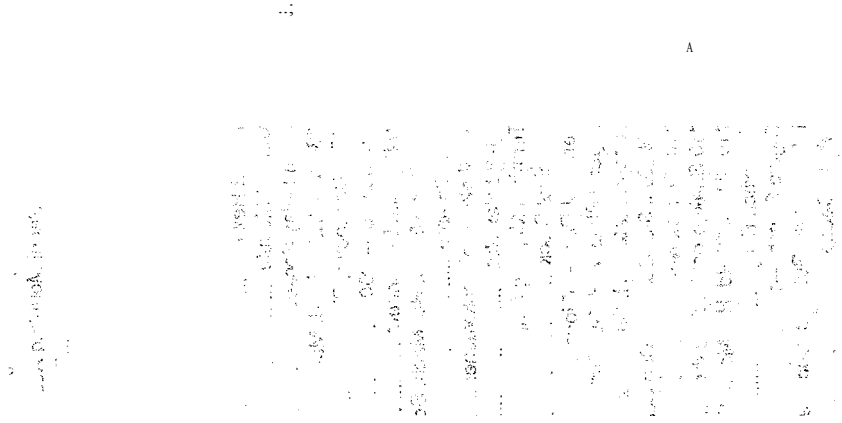


POWER CLAMP MODEL



HAND CLAMP MODEL



ELECTRICAL PANEL ASSEMBLY
EE-1738-2 SHEET 1

Ref No.	Part No.	Part Name	Qty.
1.	EE-1746-1	Electrical Cover Assembly	1
2.	EE-1745	Electric Panel Mounting Assembly	1
3.	E-1045-9	Pushbutton (green)	2
4.	E-530-10	Fuse Holder	1
	E-1075-12SB	Fuse, 12 amp Slo-blow	1
5.	E-1172-9	Bushing, Plastic Snap-in	2
6.	H-6923-83204	#8-3 2x 1/4" Rd. Hd. Mach. Screw	4
7.	E-1623-1	Transformer	1
8.	H-7324-#8	#8 Shakeproof Lockwasher	6
9.	H-6423-#8	#8-32 Hex Nut	6
10.	E-1440	Control Module	1
11.	E-1243	8 Pin Relay Socket	1
12.	H-6923-83208	#8-32 x 1/2" **Rd.** Hd. Mach. Screw	2
13.	E-1366-2	Wire Connector, Plastic	5
14.	E-1736	Quencharc - 200 V	1
15.	E-1214-33	1/4" Quick Disconnect	2
16.	H-6923-63206	#6-32 x $^{3}/_{8}$" Rd. Hd. Mach. Screw	2
17.	E-1735	Triac 25 amp	1
18.	H-7324-#6	#6 Shakeproof Lockwasher	2
19.	H-6423-#6	#6-32 Hex Nut	2
20.	E-1356-23	Terminal Marking Strip	1
21.	E-1270	Terminal Block	4
22.	E-1271-5	Terminal Rail -5" long	1
23.	10048	Legend Plate, R.H. Cut Button	1
	10049	Legend Plate, L.H. Cut Button	1
24.	H-6918-403	1/4- 20 x 3/8" Soc. Hd. Cap Screw	**4**
25.	H-6423-#10	#10- 24 Hex Nut	1
26.	H-7324-#10	#10 Shakeproof Lockwasher	1
27.	H-6923-102406	#10- 24 x 3/8" Rd. Hd. Mach. Screw	1
28.	E-1694-2	Keyswitch Body	1
29.	E-1737-1	Toggle Switch -1PDT	1
30.	H-6910-403	1/4- 20 x 3/8" Butt. Hd. Soc. Cap Screw	4
31.	S1781-11	Label - Caution	1

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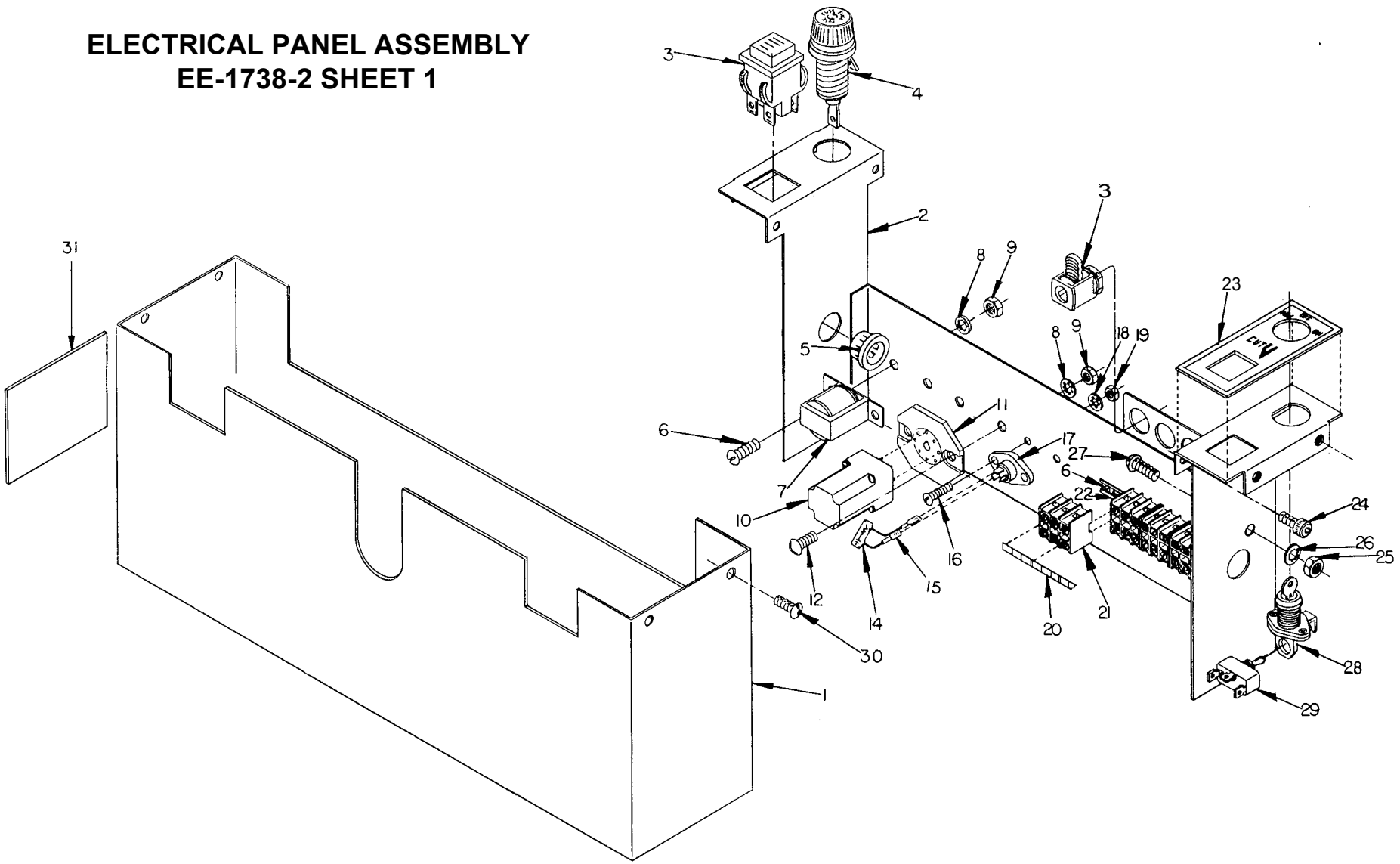
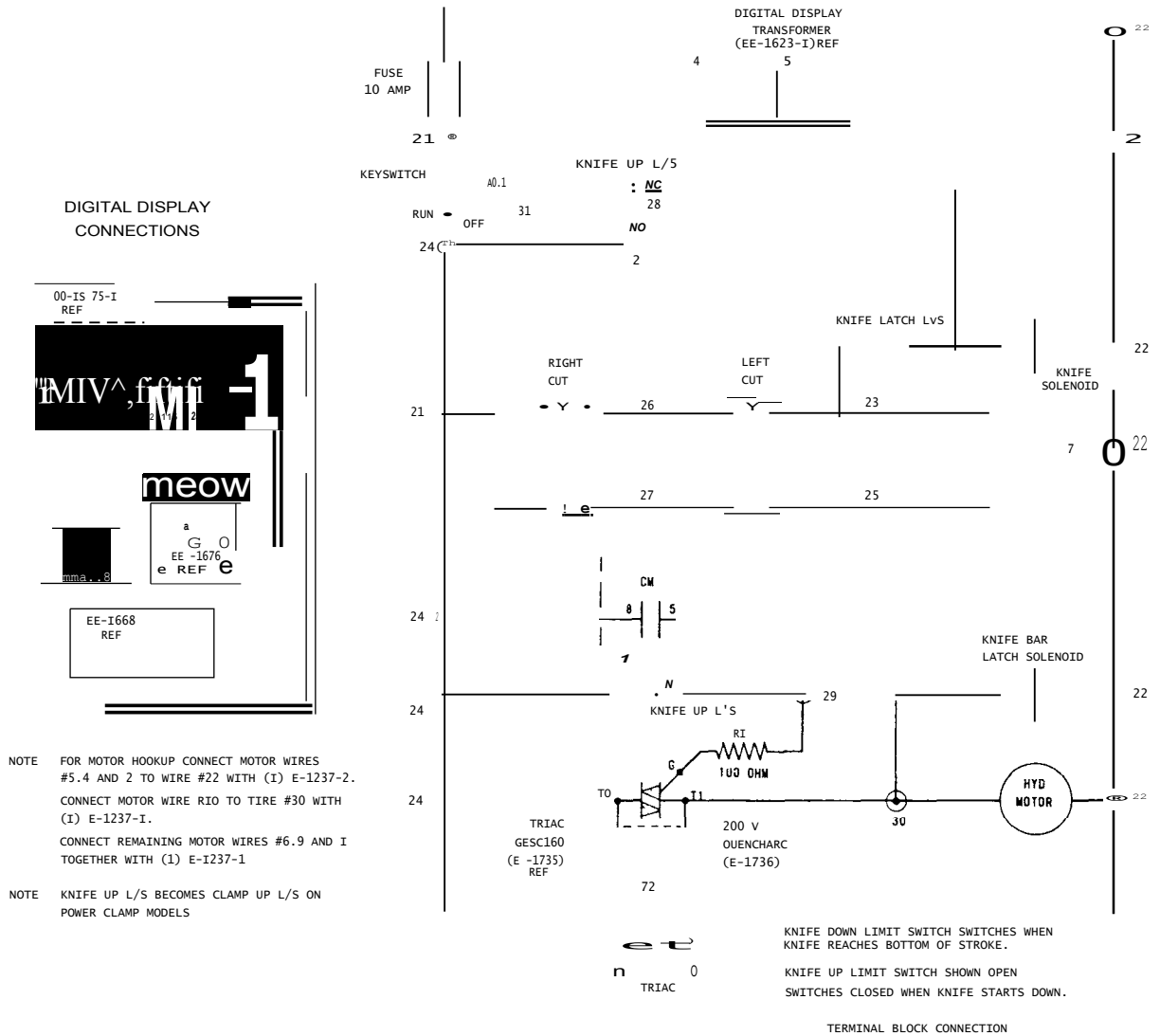
ELECTRICAL PANEL ASSEMBLY
EE-1738-2 SHEET 1



BASIC MACHINE SCHEMATIC
EE-1756-2 (110 V)



NOTE FOR MOTOR HOOKUP CONNECT MOTOR WIRES #5.4 AND 2 TO WIRE #22 WITH (I) E-1237-2.

CONNECT MOTOR WIRE RIO TO TIRE #30 WITH (I) E-1237-I.

CONNECT REMAINING MOTOR WIRES #6.9 AND I TOGETHER WITH (1) E-I237-1

NOTE KNIFE UP L/S BECOMES CLAMP UP L/S ON POWER CLAMP MODELS

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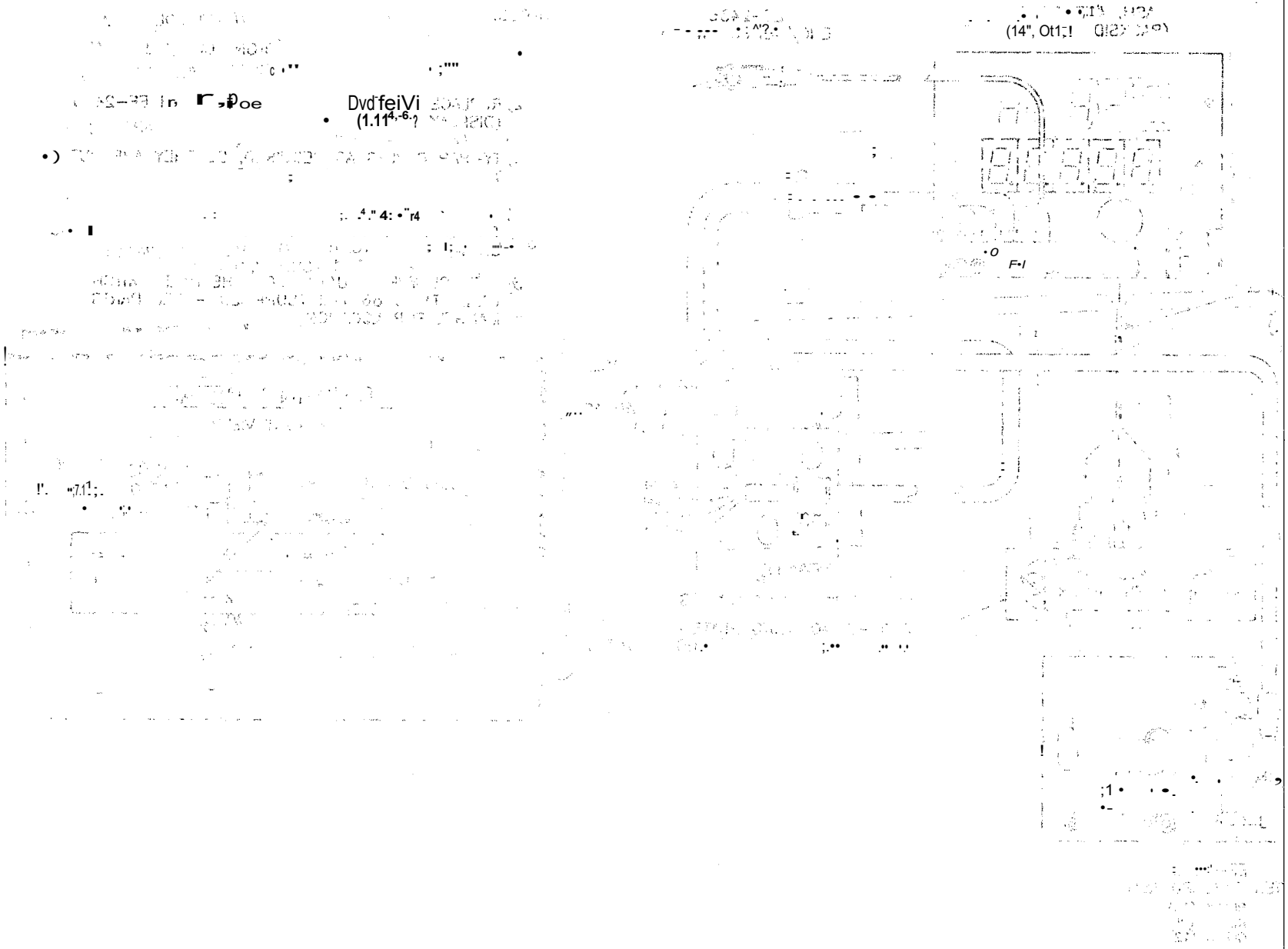
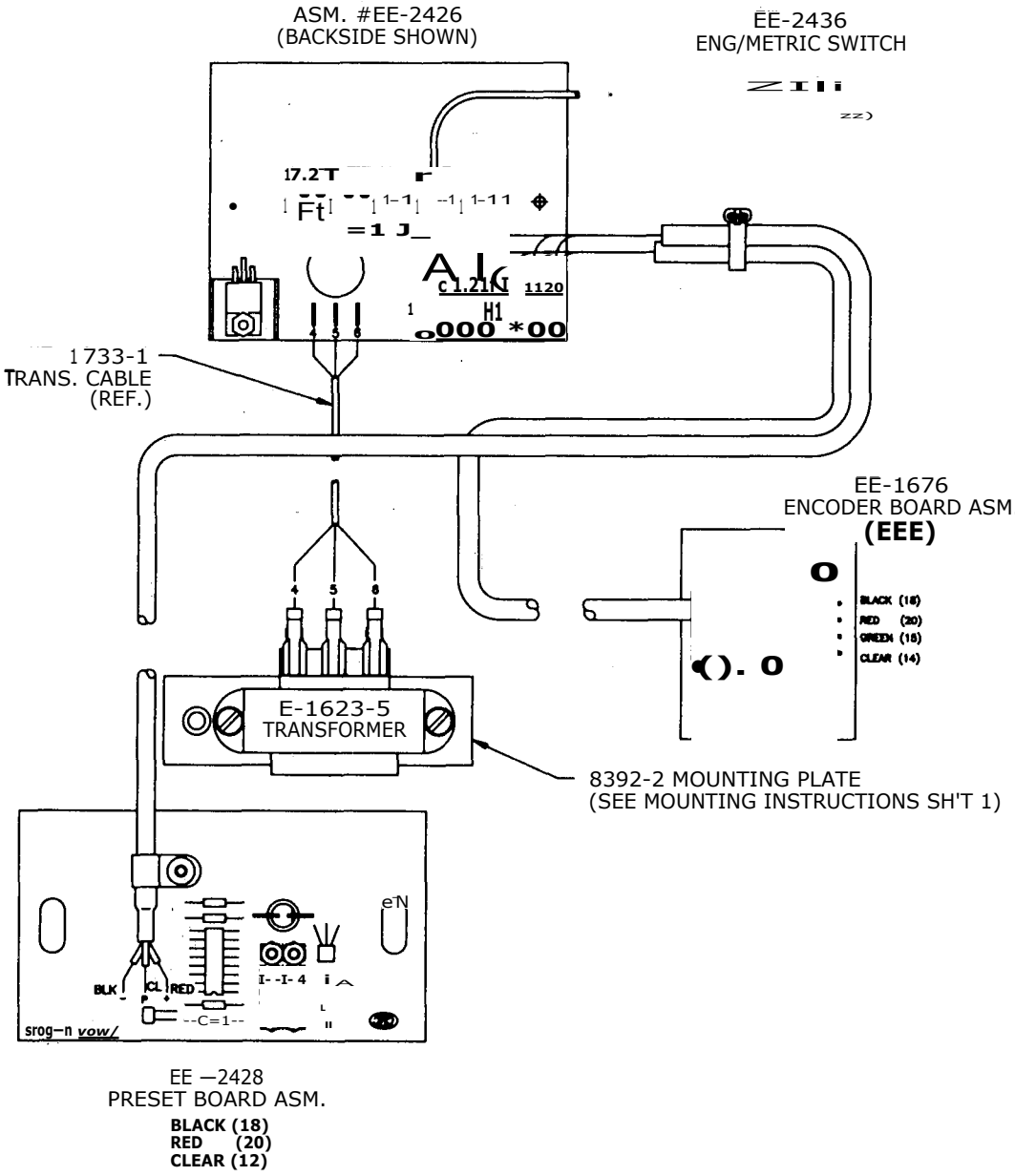


ENGLISH/METRIC CONVERSION OPTION
Interconnection Diagram AA-10095-1



NOTES:

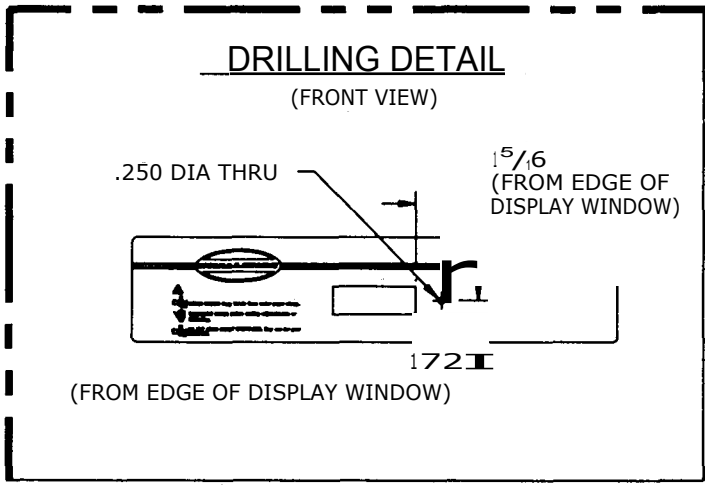
1) DRILL .250 DIA. HOLE IN FRONT CONSOLE — AS SHOWN (SEE DRILL DETAIL)

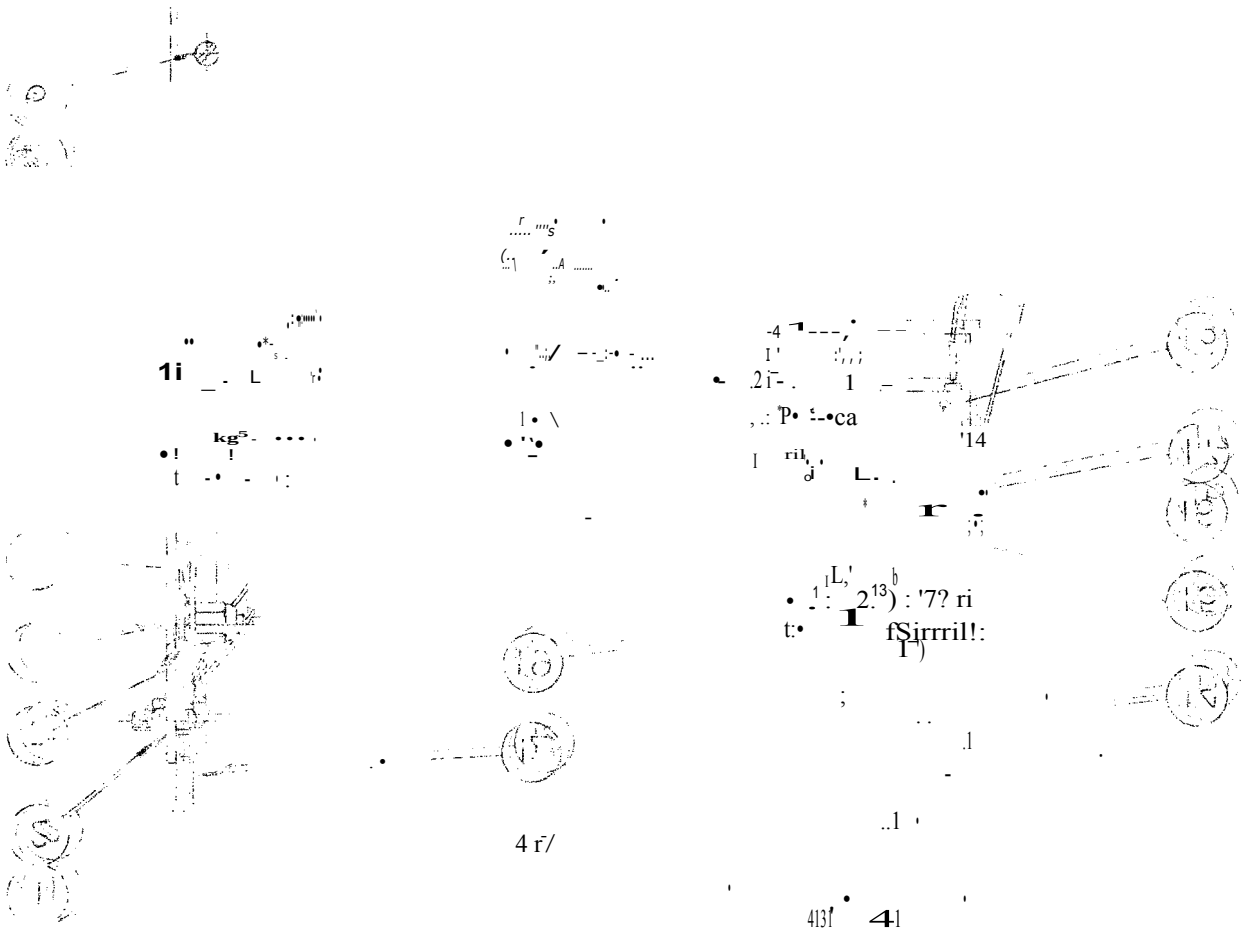
2) REPLACE EXISTING DISPLAY BOARD WITH EE-2426 (DISPLAY BOARD)

3) TY—RAP CABLES AS REQUIRED, SO THEY ARE OUT OF THE WAY OF ALL MOVING PARTS.

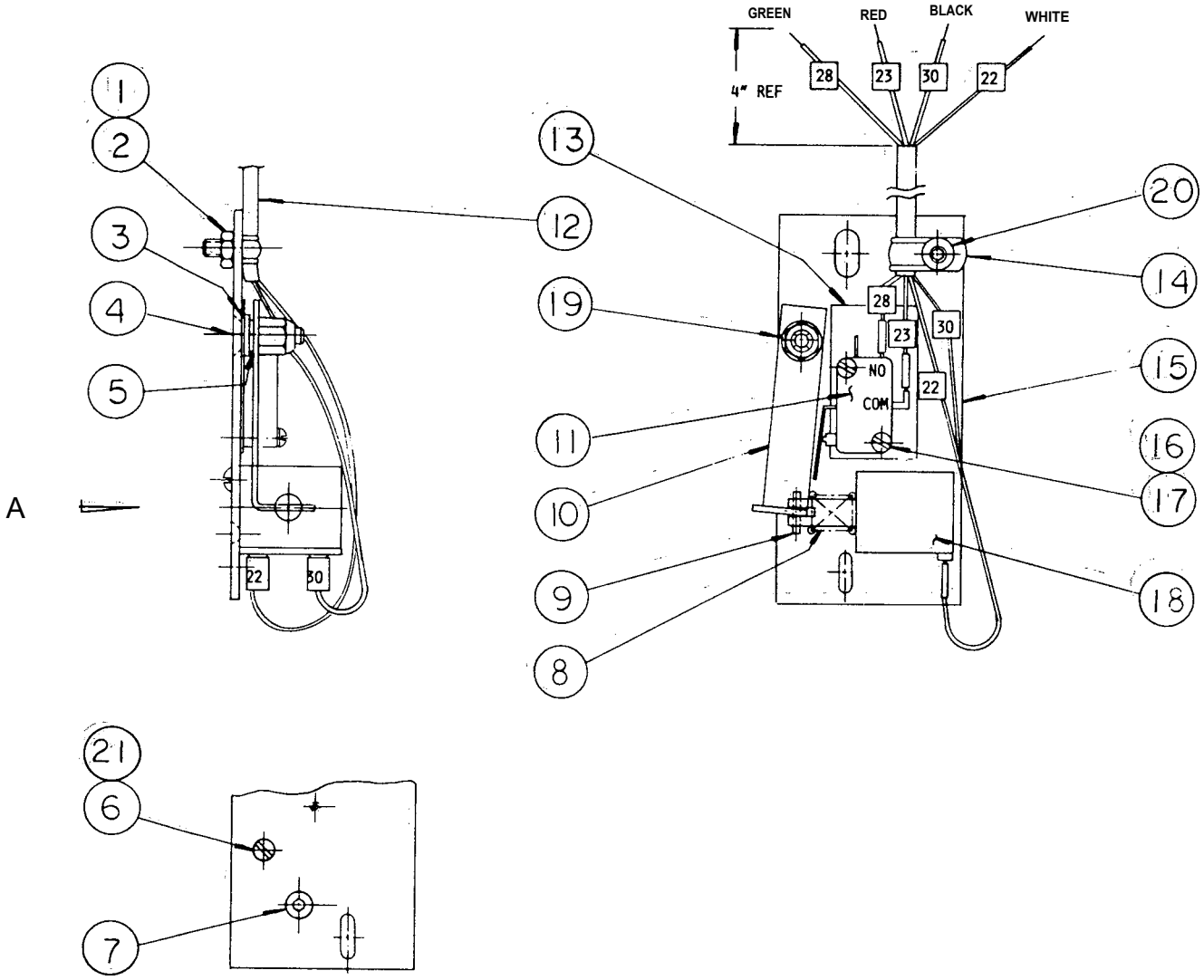
4) USE EXISTING ENCODER BOARD (EE-1676) AND TRANSFORMER CABLE (EE-1733-1) — HOOK UP AS SHOWN.

5) REPLACE THE ACTUATOR FOR THE HALL SWITCH (PRESET) TO 8641-1 (SUPPLIED — SEE PARTS MANUEL FOR LOCATION).

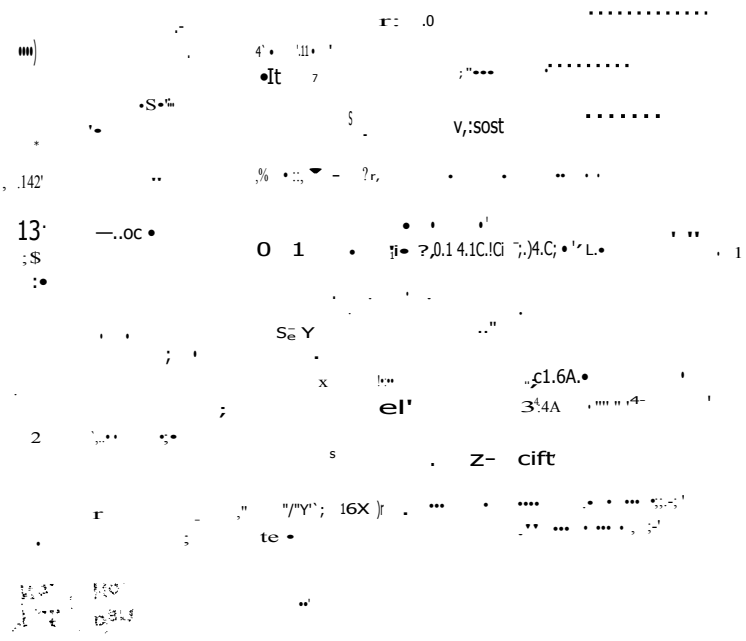




KNIFE BAR LATCH ASSEMBLY
EE-1754-2



VIEW A



KNIFE BAR LATCH ASSEMBLY
EE-1754-2

Ref. No.	Part No.	Part Name	Qty.
1.	H-7324-#10	#10 Int. Tooth Lockwasher	1
2.	H-6423-#10	#10-24 Hex Nut	1
3.	H-7322-#10	#10 Polished Washer	1
4.	H-6909-102405	#10-24 x 5/8" Flat Hd. Soc. Cap Screw	1
5.	A-10070-1	Spacer, Latch	1
6.	H-6923-63204	#6-32 x 1/4" Rd. Hd. Mach. Screw	1
7.	H-6909-63202	#6-32 x 1/4" Flat Hd. Mach. Screw	1
8.	A-10069	Spring	1
9.	H-21S-093-0500	3/32 x 1/2" Sel-Lok Pin	1
10.	10068-1	Latch	1
11.	E-866-4	Micro Switch	1
12.	EE-1751-1	Knife Bar Latch - Solenoid Cord Asm	1
13.	E-1755	Insulator	1
14.	E-968-3	Cable - Clamp	1
15.	10067-2	Bracket - Latch	1
16.	H-7324-#4	#4 Int. Tooth Lockwasher	2
17.	H-6923-44010	#4-40 x 5/8" Rd. Hd. Mach. Screw	2
18.	E-1752-3	Solenoid - 120 Vac	1
19.	H-5247-1024	#10-24 Flex Locknut	1
20.	H-6910-102404	#10-24 x 1/2" Button Hd. Soc. Cap Screw	1
21.	H-7324-#6	#6 Int. Tooth Lockwasher	1