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Products may be unsupported by The Challenge Machinery Company due to age or the unavailability of parts from their original manufacturer. No parts or product support will be available to repair or maintain unsupported products. Older products may not be UL listed (if the product does not have a UL label it is not a listed product), and may not comply with applicable installation or other regulations or requirements if relocated to a new facility. Many municipalities require a product to be UL listed before an electrician will connect power to them. Often the cost of updating an older product to comply with current safety regulations is greater than the value of the product.

Power Clamp S/N 3252 & Up
Hand Clamp S/N 3292 & Up

INSTRUCTION AND PARTS MANUAL



The Challenge Machinery Company
1433 Fulton Avenue
Grand Haven, MI 49417-1594 USA

ChallengeMachinery.com

MODEL 20 **PAPER CUTTING** **MACHINE** **POWER CLAMP &** **HAND CLAMP Models**

Sold and Serviced by

F. 058-B

SEPT. 2000

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 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.



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.

FOR PARTS AND 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 minutes right now to **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 Avenue, Grand Haven, MI 49417-1594.

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

WARRANTY INFORMATION

PLEASE REVIEW THE WARRANTY SHEET!

It is **very important** that you read and understand the conditions outlined in the Warranty Information Sheet. It is in an envelope attached to the outside of the shipping container.

The Warranty Information Sheet must be filled out completely, returned, and be **ON-FILE** at **THE CHALLENGE MACHINERY COMPANY** in order for the warranty to be issued for this machine.

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SPECIFICATIONS

Cutting Dimensions

Cutting Width	20" (50.8 cm)
Minimum Cut*	1/2" (13 mm)
Clamp Opening	3 1/4" (8.3 cm)
Table Space	
Front:	16" (41 cm)
Back:	20" (51 cm)

Machine Dimensions

Table Height	35" (89 cm)
Overall Height	47-1/2" (121 cm)
Overall Length	48-1/4" (123 cm)
Overall Width	35-1/2" (90 cm)
Net Weight (Approximate)	550 lbs (250 kg)
Shipping Weight (Approximate)	650 lbs (295 kg)

Electrical

Standard	- 120 Volts (±10%)/12 Amps, 1 Phase, 60 Hz, AC. Service size 15 Amps
Optional	- 220 Volts (±10%)/12 Amps, 1 Phase, 60 Hz, AC. Service size 15 Amps
Optional	- 220 Volts (±10%)/12 Amps, 1 Phase, 50 Hz, AC. Service size 15 Amps

*With false clamp plate attached, minimum cut is 1-7/8" (48 mm).

**With table removed, can be fit through a 32" (81.3 cm) door opening.

Challenge reserves the right to make changes to any product or specification without notice and without incurring responsibility to existing units.

PACKING LIST

Part No.	Description	Qty.
A-10034	Knife	1
4166	Cutting Stick (in addition to one installed in machine)	3
F.058-B	Instruction and Parts Manual	1
A-12608-2	Jogging Aid	1
20-2150	Tool Kit	1
H-6918-608	Knife Bolts, 3/8 - 16 x 1"	4
8815	Knife Washers, Special	4
5064	Cutting Stick Puller	1
S-1245-5	Knife Lifters	2
W-130	3/16" Allen Wrench	1
W-137	5/32" Allen Wrench	1
W-164	5/16" Hex 'T' Wrench	1
W-170	9/16 x 1/2" Wrench	1
E-1075-12SB	12 amp slo-blo fuse	1

OPTIONAL ITEMS

Part No.	Description	Qty.
AA-10061	False Clamp Plate	
5-7-M361	Backgauge Book Guides	
4166	Cutting Sticks	
AA-10095-1	Inch/Metric Conversion Kit	
20-2150-1	Optional Tool Kit	
8815	Knife Washers, Special	6
H-6918-608	Knife Bolts, 3/8-16 x 1"	6
W-131	5/16" Allen Wrench	1
W-134	7/32" Allen Wrench	1
W-154	3/32" Allen Wrench	1
W-170	1/2" x 9/16" Wrench	1
5064	Cutting Stick Puller	1
E-1075-12SB	12 Amp slo-blo fuse (120 V)	5

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**NOTICE: UNSUPPORTED PRODUCT!
NO TECHNICAL SUPPORT AVAILABLE!
NO REPAIR PARTS AVAILABLE!**

SAFETY PRECAUTIONS

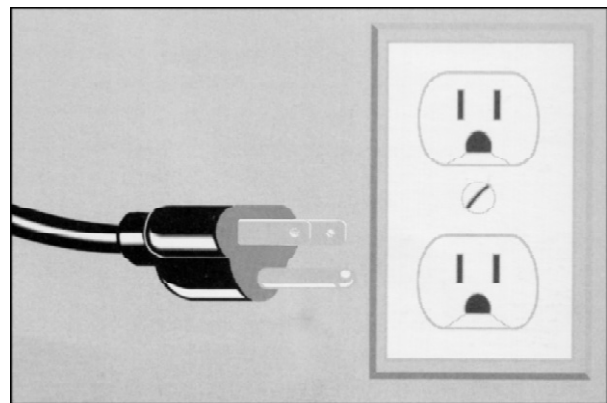


This safety symbol means **CAUTION/WARNING - PERSONAL SAFETY INSTRUCTION**. Read the instructions because it has to do with safety. Failure to comply with the following instructions may result in personal injury.

- 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 main disconnect switch to the off position and disconnect the power plug, see Disconnect Procedure below.
- Be sure the cutter is properly grounded.
- Be sure there is sufficient power to operate the cutter properly.
- Observe all caution plates mounted on this cutter.
- 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. Dispose of worn out knives properly.
- 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. 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 paper, and use the backgauge to push paper out before unloading. **DO NOT REACH UNDER THE KNIFE AND CLAMP AREA!**

CAUTION: POWER LOCK-OUT PROCEDURE

For maximum safety and to prevent unauthorized use, turn the power switch to the off position and disconnect the power /power cord whenever adjusting, lubricating, or making repairs to the machine.



(fig. 1)

¡OJO!



This Este simbolo de alerta de seguridad significa ¡ OJO ! - INSTRUCCIONES DE SEGURIDAD PERSONAL. Lea las instrucciones porque se refieren a su seguridad personal. Fall de obedecer las instrucciones que siguen podria resultar en lesiones corporales.

- Esta maquina, junto con sus mecanismos de seguridad, esta disenada para ser manejada por **UNA SOLA PERSONA** a la vez. Jamas debe ser manejada por mas de una persona al mismo tiempo.
- La seguridad es la responsabilidad del operario 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 copia.
- El manejo de la guillotina debe estar exclusivamente a cargo de personal entrenado y autorizado para ello.
- **NO MODIFIQUE LOS MECANISMOS DE SEGURIDAD**, estan ahi para su proteccion no deben ni modificarse ni quitarse.
- **DESCONECTE LA CORRIENTE ELECTRICA** antes de proceder a hacerle servicio de limpieza, engrasar, o de hacer ajustes que no requieren corriente. Trabe el interruptor en la posicion OFF (apagado); vea “Procedimiento para cortar la corriente electrica” al pie de esta pagina.
- Eche llave a la guillotina y quite la llave cuando la maquina no esta en operacion; vea “Corriente electrica”.
- Asegurese de que la guillotina este debidamente a tierra. Vea “Conexion de la fuerza electrica”.
- Verifique el voltaje y asegurese de que este sea suficiente para el debido funcionamiento de la guillotina.
- Preste atencion a todas las placas con advertencias instaladas en esta guillotina.
- No permita que objetos extraños esten en la mesa o cerca de la cuchilla cortadora.
- **TENGA SUMO CUIDADO** al tocar y cambiar la cuchilla. Heridas 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, afloje todas las conexiones poco a poco para dejar escapar la presion. Jamas debe aflojarse conexiones mientras la maquina este andando.
- Si la guillotina empezara a sonar o trabajar diferentemente a lo acostumbrado, desconectela y consulte la seccion “Troubleshooting” (Reparador) de este manual. Si no es posible corregir el problema, llame a su servicio 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 cortado. **NO PONGA SUS MANOS BAJOLA CUCHILLA O AREA DE LA AGARRADERA.**
- **NO OPERE SIN LAS GUARDAS PROTECTORAS!**

¡ OJO ! 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 llave 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 en cualquier maquina.

WARNING LABEL DEFINITIONS



SINGLE OPERATOR

Do not operate with more than one person.



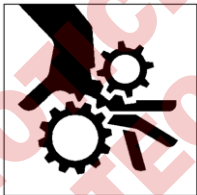
SHOCK HAZARD

Disconnect power before removing cover. Replace cover before operation.



SHOCK HAZARD

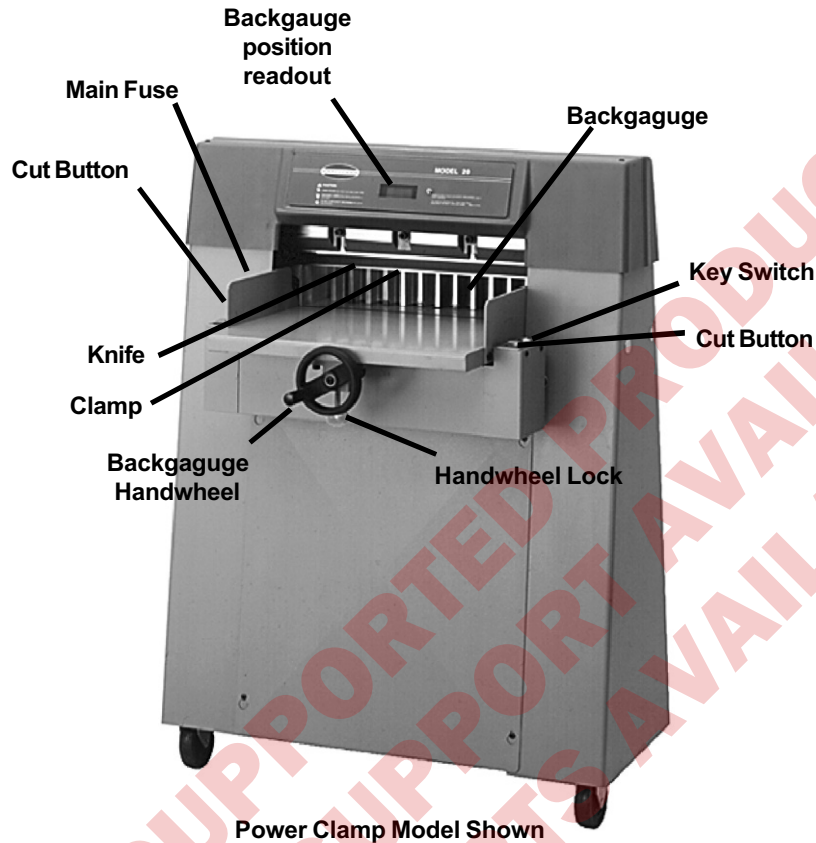
Disconnect power before removing cover. Replace cover before operation.



HAZARDOUS AREA

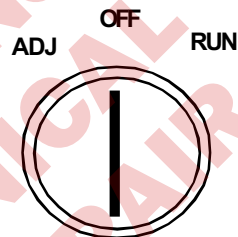
Disconnect power before cleaning, servicing, or making adjustments not requiring power. Do not alter safety guards or devices, they are for your protection. Replace all guards, do not operate with any guards removed.

OPERATING CONTROLS



Power - Keyswitch

The machine is activated by turning the key to the RUN or ADJ position. Removing the key prevents unauthorized use of the cutter.



OFF Position

Disconnects power to the hydraulic unit. Key removal prevents unauthorized use by rendering the cut buttons inactive. The backgauge 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 Position

The Adjust position is used to stop the knife and clamp in the down position. With the key is in the ADJ position, depress and hold the cut buttons, the machine will make a cut cycle. When the knife is on the table, release the

cut buttons and the machine will shut off. Turn the key to OFF. This is used to adjust the cutting depth of the knife. **CAUTION!** When the key is turned to the RUN position, the knife and clamp will **automatically** return to the up position.



CAUTION: When running the knife to the up position after using ADJ, **DAMAGE TO THE 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. A damaged knife latch could allow the knife to drift down exposing the blade edge below the clamp. Severe lacerations could result.

Cut Buttons

With the key in the RUN position, the cut buttons must be depressed 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

and clamp to the up position. this feature helps eliminate or minimize stock spoilage due to mispositioning.

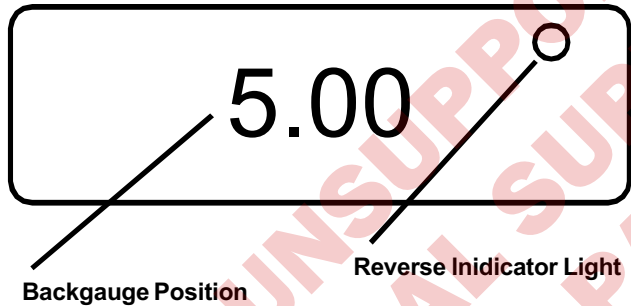
Paper Clamp

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

An optional false clamp plate can be installed to prevent marking stock.

Backgauge

The handwheel operated leadscrew moves the backgauge to position stock for cutting. The backgauge position is shown by a lighted L.E.D. display. The backgauge should always be brought forward to the cut position to eliminate any slack in the leadscrew/backgauge components. An indicator light in the upper right hand of the display warns of backwards motion of the backgauge. The light should always be off when cutting. See illustration below.



Backgauge Handwheel Lock

The thumb screw under the handwheel locks the backgauge in position. Use to prevent the backgauge from moving when jogging and doing repeat cuts. Turn c.c.w. until snug to lock, turn c.w. to unlock.

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 550 lbs (250kg). 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 machine is secured to the skid with a 2x4 brace at the rear of the skid and with lag bolts on the inside of the stand. The tool kit is packed inside of the machine; the knife and cut sticks are fastened to the rear of the skid.

Remove the carton by removing the nails or staples holding it to the skid and lift it straight up over the cutter. 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 lag screws from the brace across the rear of the skid. Remove the lower front cover of the cutter and remove the two lag screws inside of the stand. With the front cover still off, the cutter can now be lifted off the skid with a fork truck

Cleaning

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

Maneuvering the Cutter

The Model 20 cutter will fit through a standard 36 1/2" (93 cm) doorway. The machine will have to be angled through the doorway to fit. To maneuver the machine thru a 32" (81cm) door you have two options: Tilting machine on it's side, or removing the table.

1. To maneuver the cutter through a 32" doorway, remove the rear table support. (fig. 1)



CAUTION: This procedure should not be attempted by one person. Personal injury or damage to the machine could result. The cutter weighs approximately 550lbs/kg. Use the appropriate personnel.

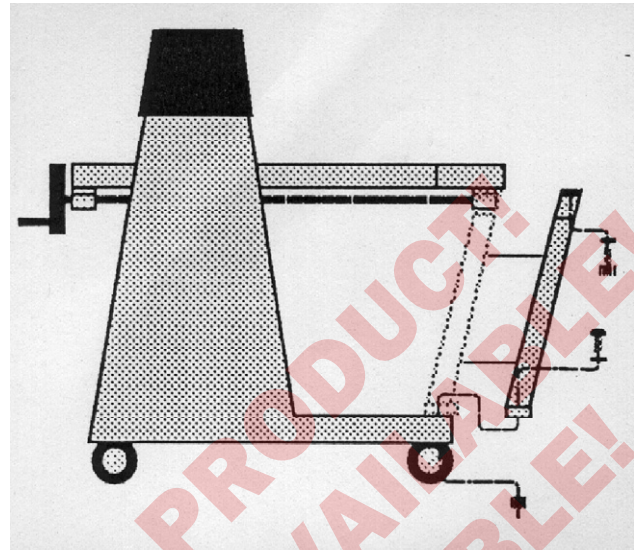


fig. 1

2. Place the cutter on a appropriate size dolly and tilt the cutter towards the right. (fig.2) NOTE: to prevent hydraulic fluid leakage, the cutter must only be tilted to the right (when facing the cutter from the operators position.)

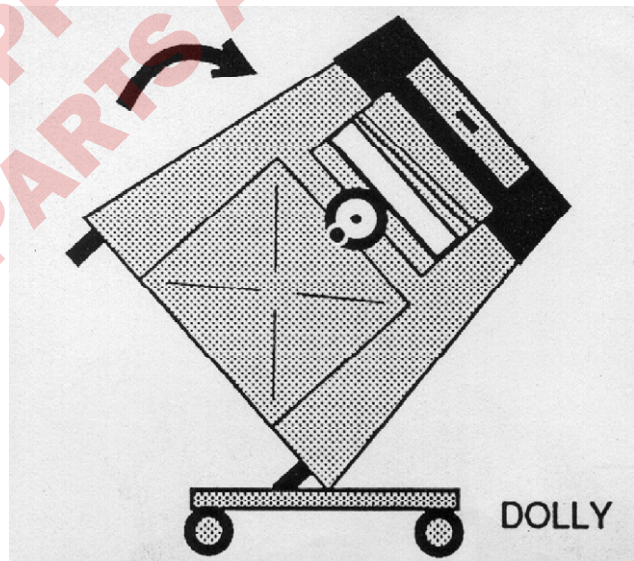


fig. 2

3. Pivot the cutter through the doorway. (fig. 3) NOTE: Care should be taken so none of the components under the table are damaged.

4. Right the cutter and replace the table brace.

5. Remove the front cover and inspect the hydraulic area for any leakage. Clean immediately if necessary and replace the front cover.

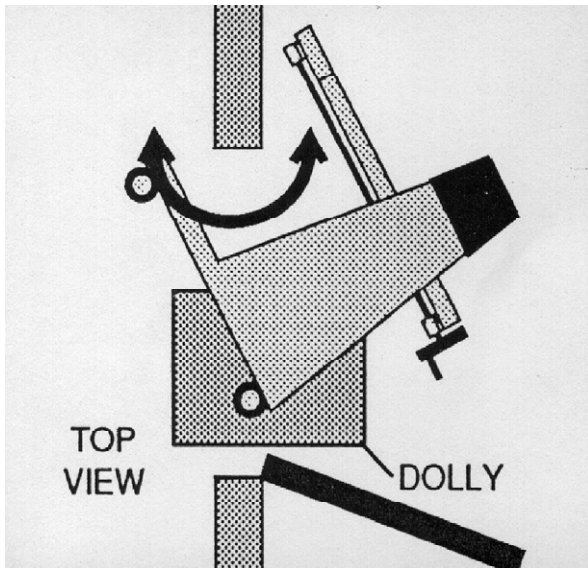


fig 3

Removing the Table:

Make sure the knife and clamp are in the “up” position. Turn off the machine and unplug the power cord. Remove the knife blade if installed.

Remove the rear table support leg, the lower back panel, and the lower front cover of the machine. Remove the electrical box cover from under the front of the table. (fig. 4)

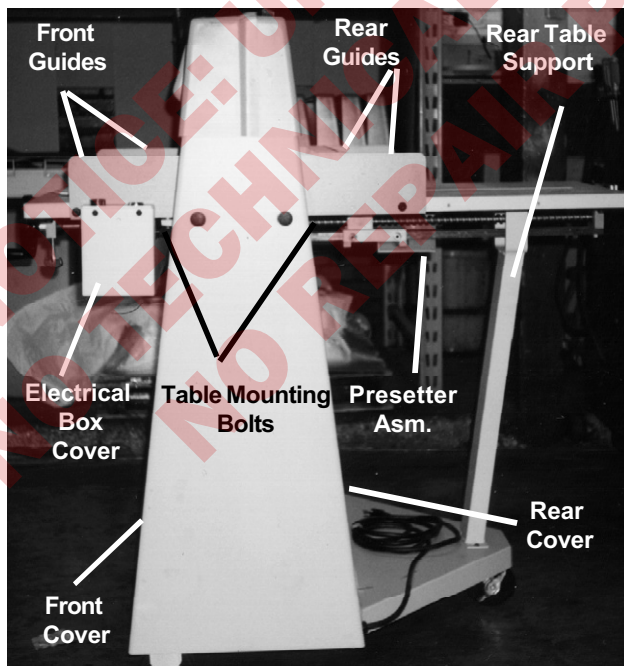


fig. 4

Locate the four bolts that mount the electrical panel to the table and remove them; let the panel hang down.

(fig. 5) The encoder board can now be removed from under the front of the table. (Be careful not to bend the encoder disc, fig. 6.)

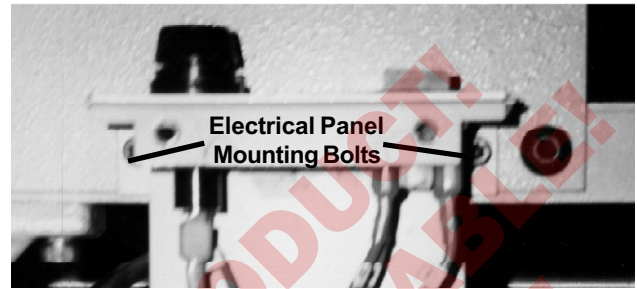


fig. 5

Remove the presetter assembly found under the left rear side of the table. (fig. 4, Let the encoder and presetter hang down out of the way.) Remove the front and rear side guides. (fig. 4) Run the backgauge to the rear of the table, and remove the front pillow block mounting screws. While holding the pillow block, turn the hand wheel counter-clockwise until the lead screw is free of the backgauge nut, then remove it. (fig. 6)

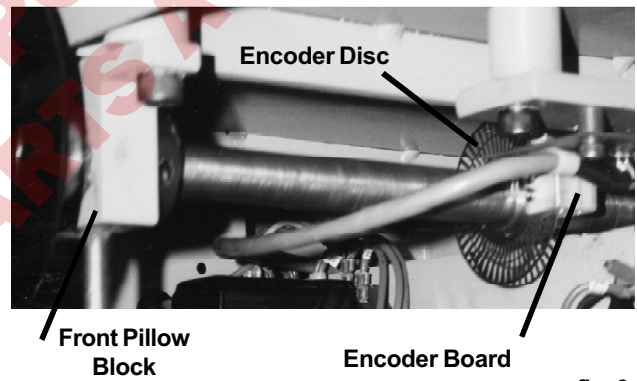


fig. 6

Next, remove the cut stick from the table using the cut stick removal tool, remove the two cut stick stops and tap out the two taper pins (that are in the cutting stick slot) from the bottom of the base. (fig. 7, Note: taper pins are only found in machines s/n PC 4922 and above.)

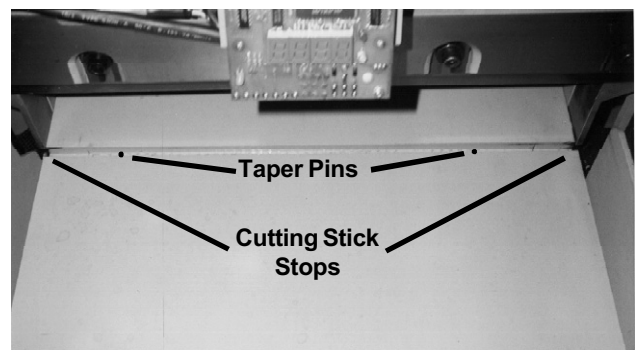


fig. 7

Remove the two rear screws that mount the table to the base. (fig. 4) Only remove the two front screws when you have someone supporting the rear of the table. **NOTE:** the table assembly is very heavy and requires at least two people to remove. Pull the table out from the back of the machine. Locate the four round spacers that were between the table and the base - you will need them later for mounting the table.

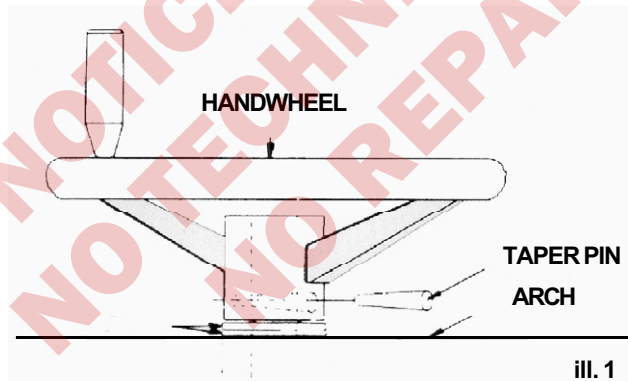
Reattaching the Table

Set the table in position. Lift up the table from the front and set the front two spacers in place. Then start the front two socket head screws. Then lift the table from the rear and set the rear two spacers in place. Start the two rear socket head screws. Replace the two taper pins, seat with a punch and hammer, then tighten all four screws. Attach the right and left side guides, the presetter board assembly (fig. 4 pg. 11), the encoder (fig's. 6 pg. 11), and all guards and panels. Once the table is installed, the backgauge accuracy and squariness will have to be readjusted. To do this, see the "Operator Controls/Maintenance Mode/Parameters/Accuracy in this manual.

Handwheel Installation - Hand Clamp Model

To prevent damage to the handwheel assembly during transit, your cutter has been shipped with the handwheel removed. To install, simply remove the taper pin from the clamp screw (ill. 1). Install the handwheel to align the tapered holes and reinstall the taper pin.

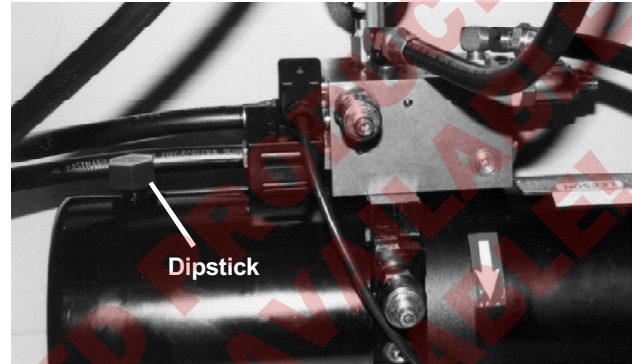
NOTE: The holes in the clamp screw and handwheel are tapered, so be sure they are aligned properly and the pin is inserted from the correct side.



Hydraulic Check

The hydraulic reservoir holds 1 gallon (3.8 liters) 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 operating conditions.

A cross reference chart is provided in the Maintenance section. Remove the front panel cover and locate the dipstick on top of the hydraulic reservoir. (fig. 8). The fluid level should be within 1/8" (3.17mm) of the end of the dipstick (check with the dipstick cap screwed in). Top off if necessary, but avoid overfilling, as this could result in leakage when hot. Replace the front panel.



(fig. 8)

Power Hook-Up

It is the customer's responsibility to provide a properly grounded, 115volt, 15amp, 3 prong recepticle that meets power requirements and all local electrical codes. On the optional 220 volt 50/60Hz machines, it is up to the customer to supply the correct 220volt, 15amp, 3 prong plug and recepticle. Hire a qualified electrician to install one if your location is not so equipped.

Connect the power cord to a grounded, 3-prong recepticle only!



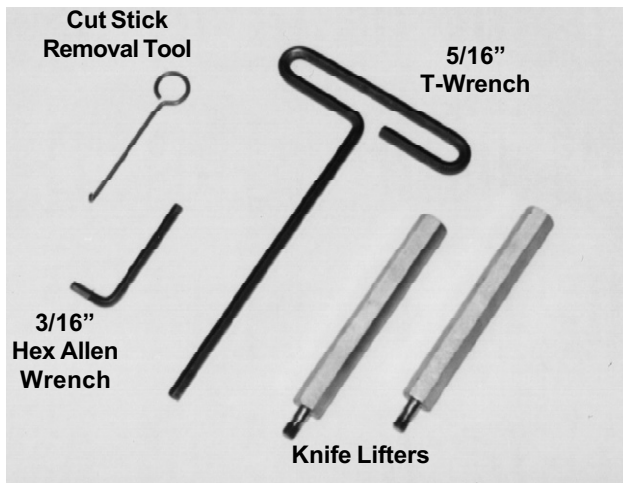
CAUTION: NEVER CUT THE GROUND LUG OFF of a 3-prong plug to fit a 2-prong socket! You run the risk of electrical shock which could cause personal injury or death.

Knife Installation/Changing

The knife changing equipment shown in fig. 9, is included in the cutter tool kit. The following instructions show how to remove and install a new or resharpened knife. Read through these instructions AT LEAST ONCE before attempting to actually change or install any blades.

Knife Removal

1. Make sure the knife and clamp are in the "up" position. Turn the key switch to the ADJ position and depress both cut buttons to bring the clamp and knife down. When the key is in the ADJ position the clamp knife will stay down until the key is returned to the run position.



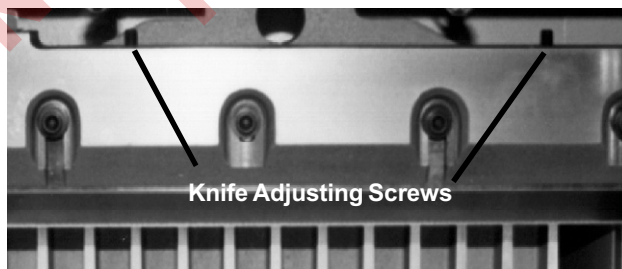
(fig. 9)



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 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.

2. Back off the knife adjusting screws on top of the knife bar several turns (fig. 10). 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.



(fig. 10)

3. Raise the clamp and knife by turning the key to the run position. (See CAUTION below.)



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 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. **Sever lacerations could result.**

4. Remove the key and disconnect the machine power cord to prevent accidental power-up while servicing the cutter.



CAUTION: **ALWAYS** pull the plug itself, **NEVER** pull on the cord to disconnect the power. **Cord fatigue and electrical shock could result!**

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.



(fig. 11)



CAUTION: Knives are heavy and always very sharp! Be sure 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.**

7. Grasp the knife lifters firmly and, at the same time, turn them counterclockwise until the knife is just released from the knife bar. Lower the left end first, then lower the right end as you shift the knife sideways to the left. 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 with the knife retainer screws. (fig.12)



fig. 12

Knife Installation

1. Make sure the knife bar and clamp are in the up position. If they are not, turn on the power to raise them.
2. Turn off the machine, remove the key, and unplug the power cord.
3. Pull out the cutting stick using the cut stick removal tool and turn it to a new surface. If the cutting stick is not level or flush with the table, 1/2" strips of paper can be placed in the table slot under the cutting stick to shim it.
4. Remove the left hand screw that retains the knife to the scabbard, and replace it with a knife lifter. Screw the lifter all the way in and then back it out 3/4 turn.
5. Remove the other scabbard retainer screw and repeat the above procedure.
6. Double check to 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. Tip to clear the table side guides, then move the left end of the blade into the knife bar slot dropping the left end as the right end is brought around the right knife bar guideframe 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.

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

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. In this case, drop the left end when inserting the knife.

8. Remove the knife lifters one at a time and replace with bolts and washers.

9. Place a few sheets of paper over the cut stick, covering the stick end-to-end.

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

11. Turn the key to the to the ADJ position and press the cut buttons to bring the knife all the way down. **TURN THE KEY OFF AND REMOVE IT!**

13. Turn the knife adjusters down evenly, a little at a time, until the knife cuts through the bottom sheet of paper the entire length of the cutting stick (fig. 13). Turning the screws down evenly prevents uneven wear on the knife and cutting stick.

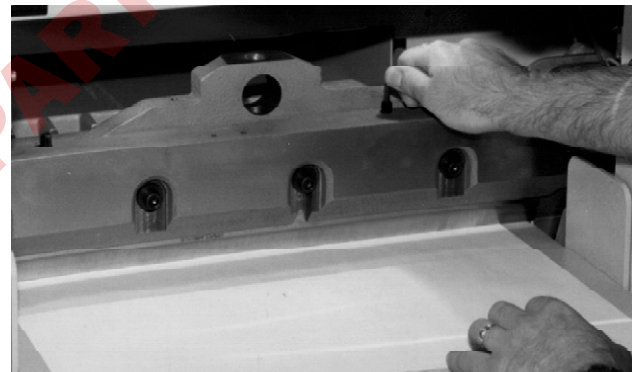


fig. 13

14. Replace the key and raise the knife by turning the key to the RUN position.

15. Tighten all knife bolts securely.

16. Make a test cut through a full lift of paper and make minor adjust as needed by repeating steps 11 though 15. **NOTE:** If the ends cut but the middle doesn't, you could have dips or uneven spots in the knife and or cut sticks. These can be eliminated by placing 1/2" strips of paper in the table slot beneath the cutting stick to shim it.

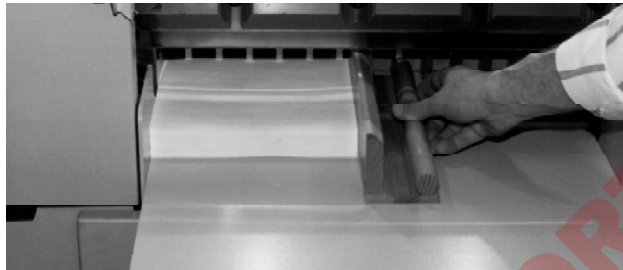
17. Send the dull knife to a grinder. Do not attempt to

sharpen your own knives! See the knife tips section to determine the knife bevel that best meets your requirements.

Jogging Aid

A jogging aid is included as standard equipment with the Model 20. This tool allows the operator to load and align paper without the need to place hands or arms under the knife or clamp.

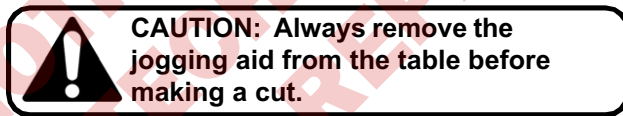
To use, load the paper against the side and backgauge using the jogging aid (fig's. 14 & 15). Remove the jogging aid from the table and make the cut.



(fig.14)



(fig. 15)



CAUTION: Always remove the jogging aid from the table before making a cut.

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.

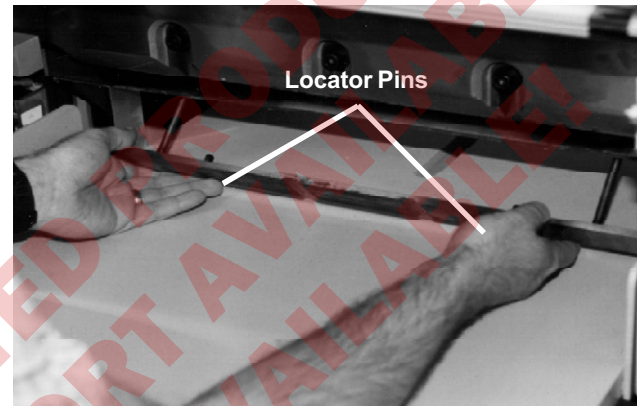
To install:

1. Make sure the knife and clamp are in the up position. If they are not, turn the keyswitch to the RUN position, the knife and clamp will return up automatically.

2. Turn the key off and remove it. Disconnect the power cord.

3. Slide the false clamp plate under the knife and clamp, (fig. 16). Slide the plate up into position with the locator pins toward the front of the machine. The locator pins insert into holes in the bottom front of the clamp.

4. Hold the plate in position and secure with the wing nuts provided.



(fig. 16)

NOTE: The minimum cut with the false clamp plate attached is 1-3/4"

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 register work, you **MUST** have a sharp blade in the cutter. A dull blade will pull or draw the paper and cause uneven cutting. Increased clamp pressure will not eliminate draw caused by a dull knife.

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

Mark the gripper edge and the guide edge of printed paper and make sure the first cuts are with these guide edges against the backgauge.

Measure printed paper 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 strips (1" or less), place lifts of equal height on opposite sides of the table to prevent wear of the clamp guides.

KNIFE TIPS



CAUTION: ! KNIFE SAFETY !

Knives are **DANGEROUS!!!** They are heavy and very sharp, even after use. Keep the edge away from your body and keep the area clear of others when handling knives. Never touch the cutting edge! To prevent personal injury and damage to the knife, always keep knives in their holders with screws tightened. You are aware of the dangers, but others may not be. Never attempt to hone, polish, or service the knife in any way. Failure to follow safety procedures may result in severe lacerations or dismemberment.

Knife Blade Life

Knife blade life, or the time between sharpenings, can be affected by many factors. One important factor is the type of paper being cut. Abrasive paper, such as recycled paper, soft paper such as newsprint paper, and bound books can all significantly shorten knife blade life. Also, if the knife depth is set too deep, the knife will cut too deep into the cutting stick and can dull the knife blade.

A knife can last anywhere between 2,000 and 5,000 cuts before it needs to be sharpened. Cutting soft paper (such as newsprint paper) or paper with high post-consumer recycled content can cause the knife to need sharpening after only 2,000 to 3,000 cuts. Cutting pure paper, such as bond paper with no recycled content, or hard paper can allow the knife to be used for as many as 5,000 cuts before it needs to be sharpened. In all cases, the operator should continually check the quality of the cut to determine when the knife blade needs to be sharpened. Some characteristics that indicate a blade needs sharpening are:

- The knife hesitates or stalls while making a cut.
- The sheets are not all cut to the same length (usually the top few sheets are longer than the rest of the sheets - this is sometimes called "draw").
- Cut marks appear on the cut face of the paper.
- The profile of the cut (side view) is not perpendicular to the table.
- The cut does not appear straight when viewed from the top.

-
-
- The knife makes a “rougher” sound as it passes through paper.
 - Nicks are visible on the cutting edge of the knife.

Cutting Stick

A worn cutting stick can affect the cut quality of the bottom sheets. When this happens, the cut stick can be rotated. Usually, the stick should be rotated one or two times between knife sharpenings.

There are 8 possible cut stick positions. The stick can be rotated 4 times, then turned end to end, and rotated 4 times again.

Bevel Angle

Challenge recommends that bevel angles for the Model 20 knives be in the range of 21° to 23°. In general, a 21° bevel angle will provide a better cut quality when cutting soft paper (such as newsprint), recycled paper, or bound books. However, 21° angle knives can become dull sooner than 23° knives, which results in shorter knife blade life. A knife with a 23° bevel angle, on the other hand, will not dull as easily, and can provide satisfactory results when cutting most types of paper. The knife shipped with the Model 20 from the factory have a bevel angle of 23°.

Helpful Suggestions

- If your shop is large enough to purchase more than one set of knives, have one set beveled at 21° and the other at 23°. Note: A set consists of 3 knives: one in the machine, one as a back up, and one at the grinder.
- If the machine seems to strain but the cut quality is still good, reduce the pile height. You may also carefully apply glycerin to the bevel when cutting hard, coated paper. Tie a cloth to the end of a stick; dip the stick in glycerin, and apply. Never apply by hand! In lieu of glycerin you may lightly rub white bar soap along the bevel. Lubrication will prolong the life of your machine and reduce maintenance.

Knife Care

- To prevent corrosion, knives are coated with light oil. It should be REMOVED WITH CARE.
- While removing or installing a knife, be careful not to allow the edge to bump against the machine. Nicks will result.

- If a knife bolt is damaged, replace it.
- Always keep knife bolts securely tightened.
- Always use the heavy duty knife bolt washers provided by Challenge. Failure to do so could result in scratching or marring of the clamp face.
- Store knives in a dry environment to prevent corrosion.
- Never attempt to service a knife in any way. Dispose of worn out knives properly.

NOTES

**NOTICE: UNSUPPORTED PRODUCT!
NO TECHNICAL SUPPORT AVAILABLE!
NO REPAIR PARTS AVAILABLE!**

NOTICE

The instructions on the following pages are for the use of trained service personnel only!

Attempting to perform repair and replacement procedures without proper training may cause machine damage or operator injury!

PARTS CUSTOMERS: The Challenge Machinery Company provides parts with the express understanding that they are to replace parts found missing or no longer serviceable on equipment designed and/or manufactured by Challenge. The Challenge Machinery Company assumes no liability for any modification or alteration to any Challenge products, and any such modification or alteration to any Challenge products is not authorized by The Challenge Machinery Company. Any modification or alteration of any Challenge product will void any remaining warranty.

TROUBLESHOOTING

WON'T START

Fuse Blown.
Power cord disconnected.
Start switch defective or not turned to RUN .
Defective cut button.
Defective cut module.

BACKGAUGE DISPLAY INACCURATE

Preset circuit board malfunction.
Encoder malfunction.
Encoder disk loose.
Leadscrew slack not taken up. (Approach cut position from rear.)
Adjust leadscrew collar.
Display board malfunction

BACKGAUGE DISPLAY INACCURATE - BY CONSTANT AMOUNT

Backgauge needs accuracy adjustment.
Presetter malfunction.

BACKGAUGE DISPLAY MISSING SEGMENTS OR DIGITS

Display circuit board is defective

BACKGAUGE MOVES WHEN JOGGING PAPER

Tighten thumbscrew.
Approach cut position from the rear.
Adjust leadscrew collar to remove any play in the leadscrew.
Adjust backgauge guide screw.

CUT BUTTON PUSHED - WON'T CUT

Hydraulic fluid low.
Main relief valve setting off.
Sequence pressure set wrong.
Cut button is defective.
Cut module is defective. p/n (E-1440)
Triac is defective (See Electrical Schematic)
Knife latch solenoid defective.
Knife down coil defective.
Cylinder or hose(s) leaking.
Cylinder disconnected from cylinder bracket.
Knife bar dirty or dry, lubricate knife guideways.
Dirt in hydraulic system.
Power cord disconnected.
Key is not turned on.

CLAMP STARTS UP BEFORE KNIFE IS UP

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 paper not firmly clamped.
Knife dull or incorrectly grounded.

ERRATIC OPERATION-POWER LOSS

Hydraulic fluid low.
Dirt in hydraulic system.
Cylinder or hoses leaking.
Voltage supply is low.

INCONSISTENT STOPPING OF THE CLAMP IN THE UP POSITION

Clamp up limit switch is out of adjustment.
Clamp up limit switch actuator is loose.
Clamp cylinder leaking or disconnected from cylinder bracket.

KNIFE DRIFTS DOWN

Knife latch not engaging or damaged.
Knife cylinder seals are worn.

KNIFE HESITATES OR STALLS

Dull knife.
Main relief valve setting off.
Paper clamped too tight - lower clamp pressure reducer setting.
Cylinder seals worn - leaking pressure.
Hydraulic fluid low.
Voltage supply is low.

KNIFE STARTS DOWN BEFORE CLAMP REACHES TABLE

Knife down sequence valve setting incorrect.

KNIFE WON'T RETURN UP

Solenoid defective.
Limit switch out of adjustment.
Cylinder disconnected from bracket.
Key switch is in the ADJ position.

KNIFE WON'T STAY DOWN WITH KEY AT ADJ POSITION

Clamp up limit switch is defective.

PUMP-MOTOR WON'T SHUT OFF

Knife/Clamp Up Limit switch not activated - readjust.
Limit switch is defective.
Triac is defective. (See Electrical Schematic)

MAINTENANCE

 **CAUTION: DISCONNECT POWER** before making any adjustments or lubricating. See page 7, **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:

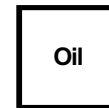
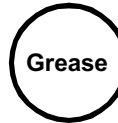
WEEKLY

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, rear panel cover, and top hood 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 — Turn the key off and disconnect the power cord. Parts requiring oiling are marked with red paint. See fig's. 17 - 23 for additional oil and grease locations. Figures 17, 21, 22, 23 require the knife and clamp be in the up position. Figures 18, 19, require the knife and clamp be down. Wipe off any old or excess grease. Use any brand-name type of grease or light oil to lubricate. It may be necessary to use the supplied grease brush to access some locations. Note: the 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



Knife Bar Gideways - Both Sides

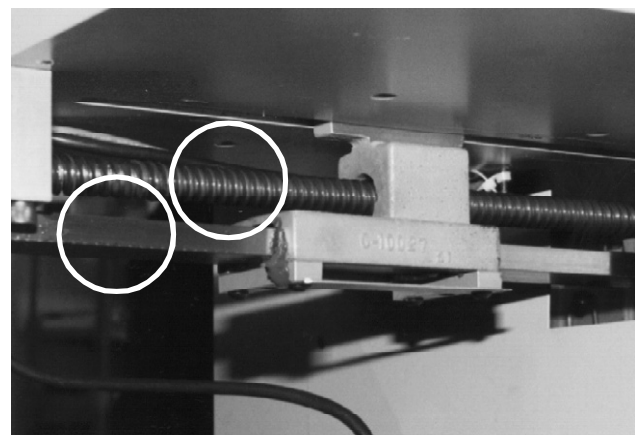
(fig. 17)



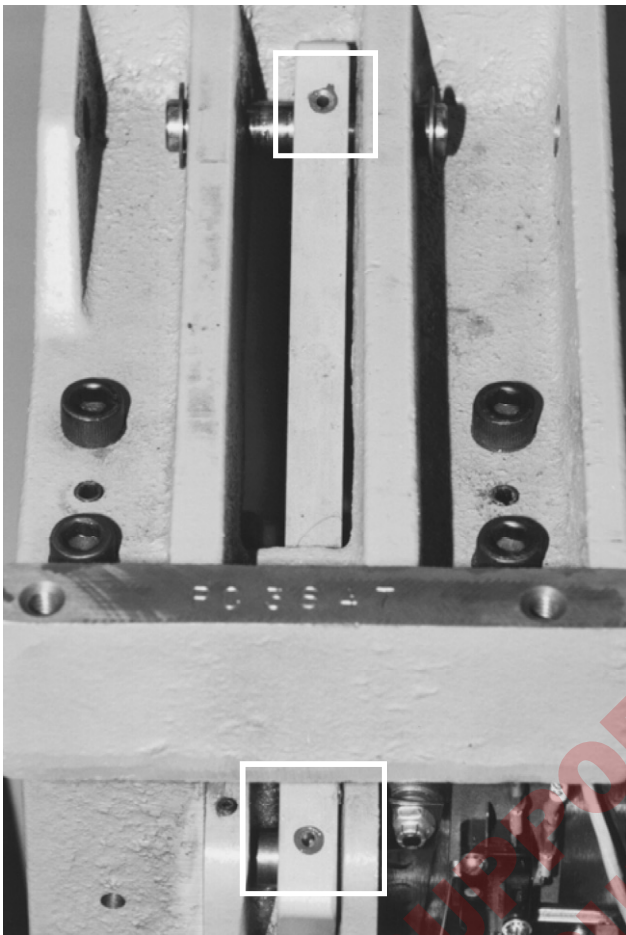
Clamp Guide (fig. 18)



Clamp Guide (fig. 19)



Leadscrew and Backgauge Guide (fig. 20)



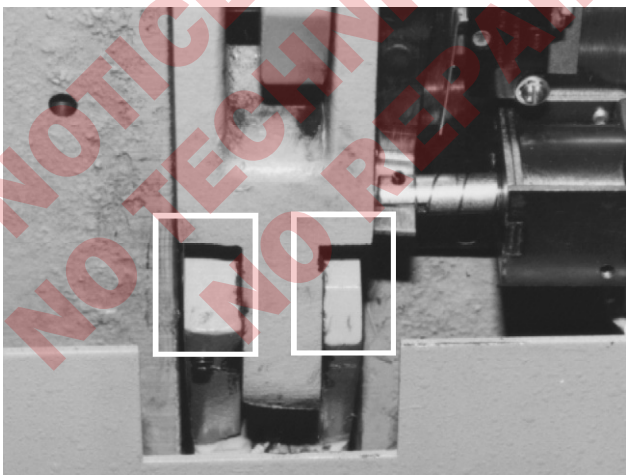
Knife Bar Links - (Both Ends)

(fig. 21)



Cylinder Bracket Pins, Lower

(fig. 23)



Cylinder Bracket Pins, Upper

(fig. 22)

MONTHLY

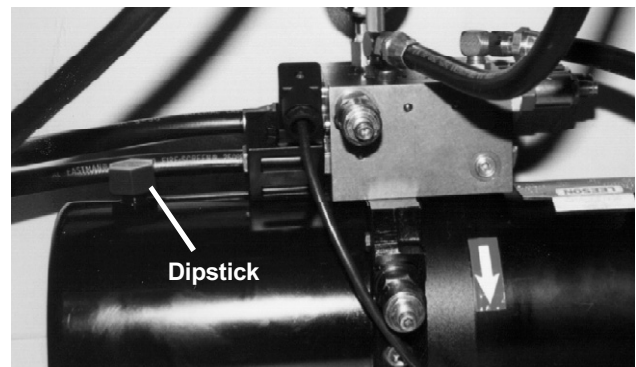
Limit Switch Adjustment — See pg. 28.

Backgauge Squaring — See pg. 26.

Leadscrew Collar Check for slack in handwheel, see page 26.

YEARLY

Hydraulic Fluid — The hydraulic fluid should be checked weekly and changed **AT LEAST ONCE-A-YEAR** or after every 1,000 hours of operation. **NOTE:** Failure to change oil when needed can damage seals in the cylinders, pump, and valves.



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



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 O-rings to deteriorate. Unsafe operating conditions will result.

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

<u>Oil Name</u>	<u>Distributor</u>
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.

ADJUSTMENTS



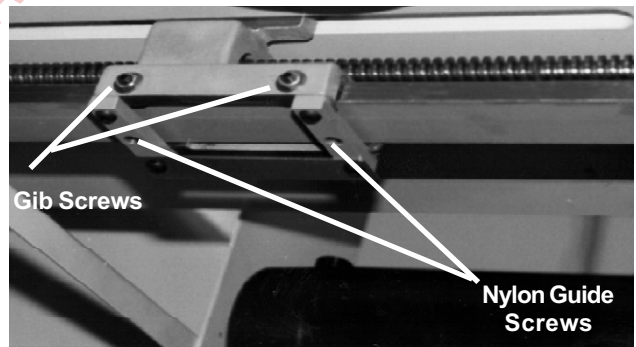
CAUTION: Several of the following tests require the machine to be operational for checking and adjusting. Be very careful that tools and other people are clear of moving parts and that the cutter is not accidentally operated while adjustments are being made. Whenever working on the machine, disconnect the power and lock it out (see SAFETY PRECAUTIONS, page 7) unless the directions specifically require the machine to be powered.

Backgauge Gib Adjustments

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

To Adjust:

1. Move the backgauge near the rear of the table.
2. Turn off the power and disconnect the power cord.
3. Loosen the two side gib screws and the bottom nylon guide screws (fig. 24).



(fig. 24)

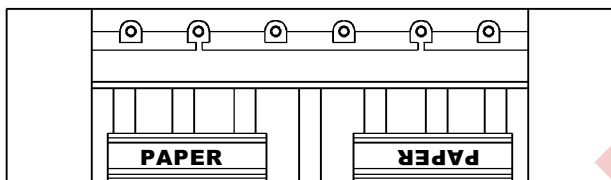
4. Tighten the bottom, nylon guide screws until they just touch the guide. Do not overtighten or they could cause the backgauge to bind.
5. Similarly, turn the side gib screws in until they just touch the guide. Lock in position with the jam nuts.
6. Run the backgauge back and forth the length of the table using the backgauge handwheel. Check for any binding. Readjust if necessary.

cont....

NOTE: The screws should be tightened to hold the backgauge square against the guide rail. Excessive tightening will cause the backgauge to bind and cause premature wear of all components.

Squaring the Backgauge

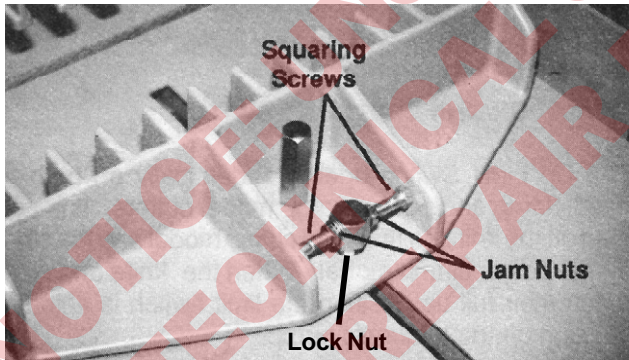
To test if the backgauge is square, place a small lift of paper against the left end of the backgauge, lock the backgauge in position, and make a cut. Now, flip the lift over and place it against the right end of the backgauge. (The stack should not be against either side guide.) Make another cut to see if any of the paper 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. If paper is trimmed in either sequence, the backgauge is out of square. (fig. 26)



(fig. 26)

1. As machine wears, make sure the backgauge gibs are set properly first (see Backgauge Gibs under the Adjustments section).

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

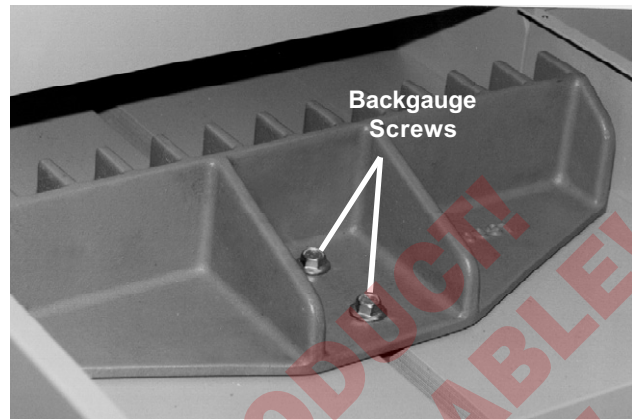


(fig. 27)

2. Your machine will have one of the following methods for fastening and squaring the backgauge.

3. If your backgauge resembles fig. 27, loosen the jam nuts on the backgauge squaring screws and the lock nut.

4. Turn in the squaring screw on the side that the trim occurred and back the other out slightly. Repeat the trimming test above until neither side trims. After squaring, tighten the jam nuts and the lock nut.

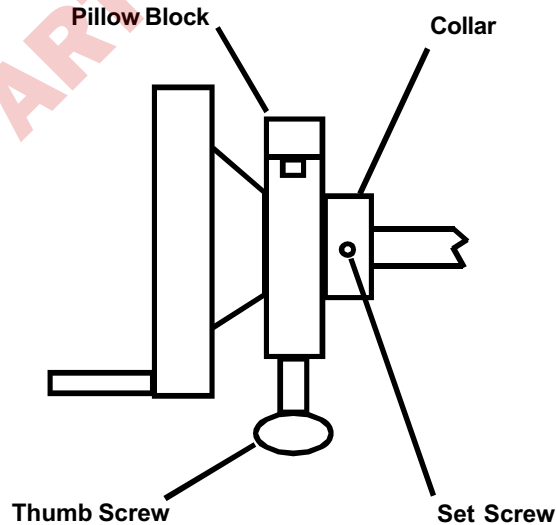


(fig. 28)

5. If your backgauge resembles fig. 28, repeat the procedure in fig. 26. To adjust, slightly loosen the backgauge screws and tap the backgauge on the end to square. Square the backgauge, hold it in place, and tighten the two screws.

Note: Once the backgauge is square, restore power to the machine and check the backgauge accuracy (see the "Accuracy Adjust" section of this manual) to make sure it is accurate.

Leadscrew Collar



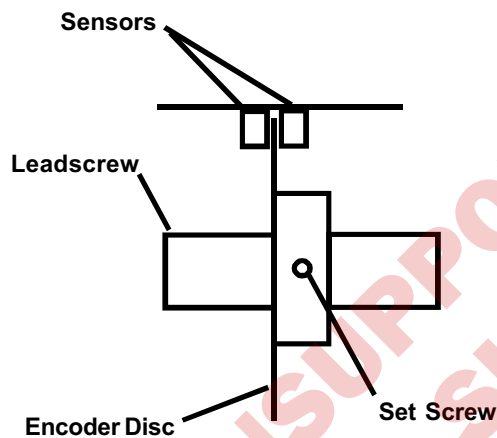
(fig. 29)

Play in the backgauge leadscrew can cause inaccuracies in cutting. To remove: Turn the backgauge handwheel clock-wise a little, then lock the backgauge thumb screw. Loosen the collar setscrew and push the collar up tight against the pillow block. Retighten the setscrew.

Encoder Disc

If the backgauge position display continues to be inaccurate even though it has been preset and rezeroed, it may be due to the encoder disc slipping on the leadscrew. To check:

1. Turn the key to the off position and remove it. Disconnect the power cord.
2. Remove the electrical power panel cover below the table.
3. Locate the encoder disc assembly, fig 30. make sure the disc blade is located in the center of the sensors on the circuit board and that the setscrew in the collar of the disc is tight.



(fig. 30)

Presetting/Backgauge Position Readout

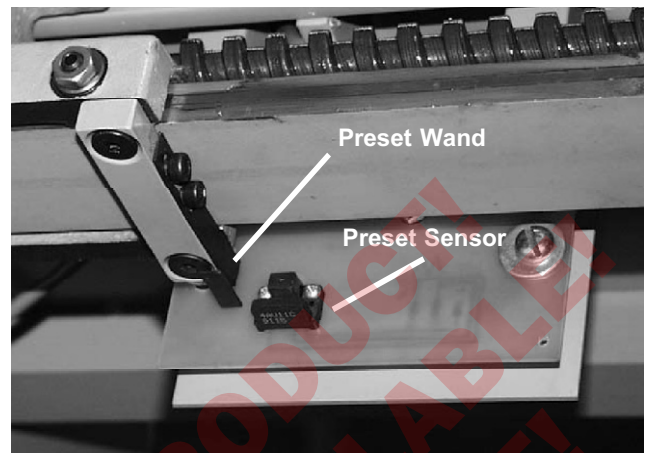
Reset - Whenever the power to the cutter has been off, the Backgauge Position Readout will have to be reset. To reset the readout, bring the backgauge forward through the presetter (5 inches). the presetter coordinates the backgauge and the backgauge position every time it passes forward through the five inch presetter position. (fig. 31)

Accuracy - If the backgauge position readout does not match the actual measurement between the knife and the backgauge, the accuracy must be reset. The accuracy can be checked by the following procedure:

NOTE: The backgauge should be squared before attempting to adjust the accuracy. (See squaring the backgauge, pg. 26.)

Procedure

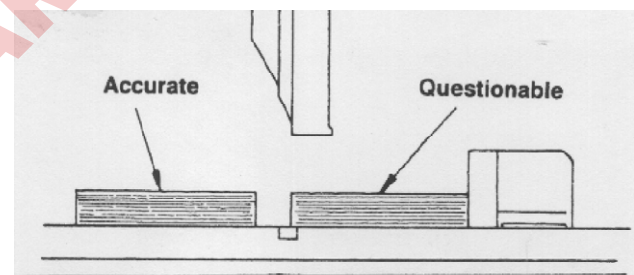
1. Place a 1/4 to 1/2" lift of 8 1/2 x 11 " paper against the center of the backgauge.



(fig. 32)

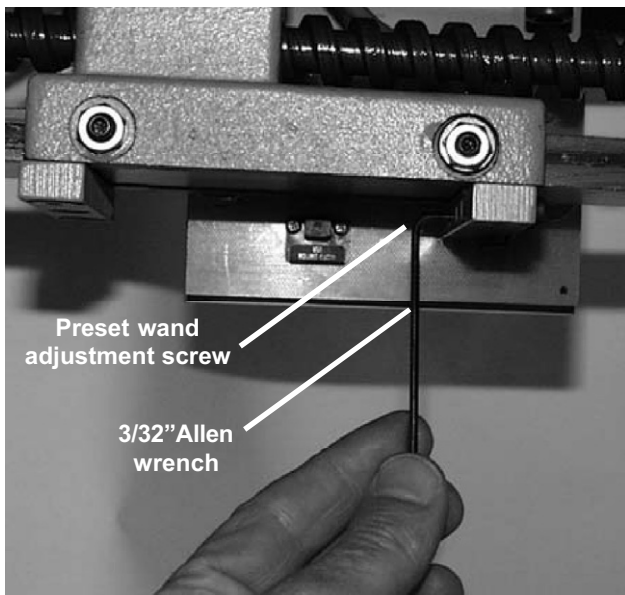
2. Using the backgauge position readout, bring the lift up to the 10" position and make a cut. Move the backgauge up to 5" and make another cut.
3. Take a sheet from the center of each lift and compare them to each other. The encoder system in your cutter will space accurately between cuts (your 10" and 5" cuts) whether the overall accuracy is correct or not.

The stack of paper between the 10" and 5" will be a true 5", but the paper left against the backgauge will not be if the backgauge position is inaccurate.



(fig. 33)

4. If the backgauge accuracy is off you will have to adjust the presetter wand attached to the bottom of the backgauge.
5. The leading edge of the presetter wand is what activates the preset sensors as the backgauge, moving forward, passes through. A 3/32" allen wrench is needed to turn the set screw behind the wand for adjustment, pg.28, fig 34. If tests show the backgauge measurement to be short, bring the wand forward by turning the screw out (counterclockwise). If the measurement is long, turn the screw in, (clockwise) to move the wand back.
6. Run the backgauge back then bring it forward through the 5" presetter again and make another test. Continue to adjust and preset until your test sheets are equal.



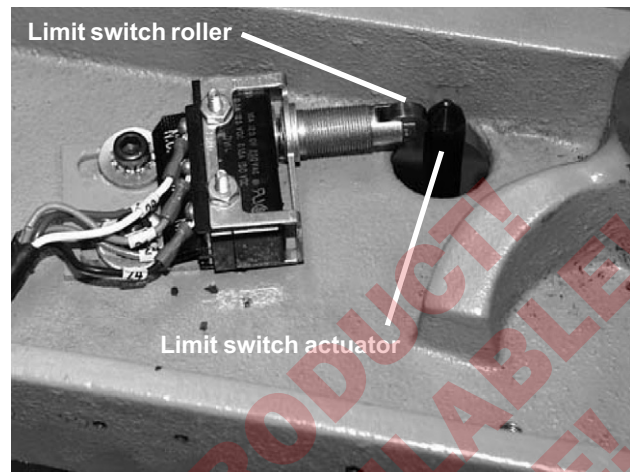
(fig. 34)

Clamp Up/Knife Up Limit Switch Adjustment

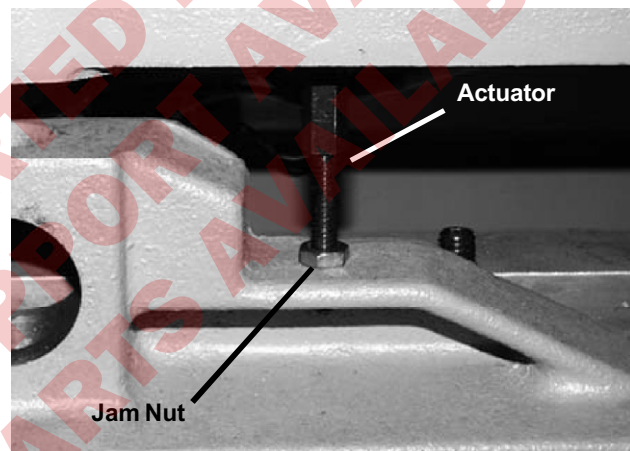
The up limit switch operates identically on both the hand clamp and the power clamp models. It is actuated off the knife on the hand clamp model and off of the clamp on the power clamp model. When the knife and clamp reach their full up position, the limit switch is actuated, shutting off the hydraulic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

The up limit switch should be adjusted as follows:

1. Cycle the machine so that the knife and the clamp are in the full up position. Remove the key and disconnect the power.
2. Remove the front cover shroud.
3. Loosen the limit switch bracket mounting screws and align the switch roller with the actuator, fig. 35.
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) until the limit switch "clicks". Then move the actuator up another 1/8".
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 lower the actuator slightly. Retighten the jam nut and test run again.



(fig. 35)



(fig. 36)

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



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

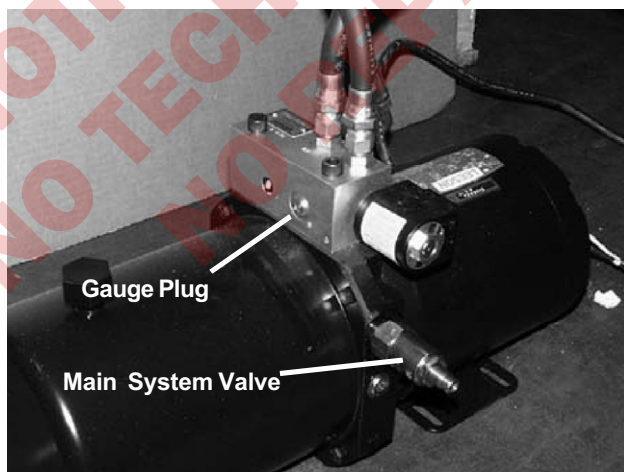
Hydraulic Valve Adjustments - Manual Clamp

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

To adjust:

1. Turn the key to the OFF position and remove power to the machine. Remove the front panel cover below the table.
2. Remove the plug from the front port marked "G" on the left side of the hydraulic manifold. Insert the gauge in that port.
3. Reconnect the power to the machine, turn the key to the run position and depress the cut buttons. Read the gauge with the knife held in the down position. It should be set for 1200 psi.
4. To adjust the pressure, remove the cap or acorn nut* on the valve on the front of the pump housing, fig 37. Loosen the lock nut underneath. With a standard screwdriver, or allen wrench, (depending on valve style) turn the valve in (clockwise) to increase, or out (counter-clockwise) to decrease pressure, until 1200 psi is obtained.
5. Tighten the valve lock nut and replace the acorn nut.
6. Turn the key to the OFF position, remove power to the machine. Remove the pressure gauge and replace the plug.
7. Replace the front panel cover.

*NOTE: Some machines may have an alternate valve similar to that shown in fig. 37. Some may have a cap that is removed with an allen wrench or some may have an adjustable stem with a jam nut to lock it in position. They all will adjust in the same manner in (clockwise) to increase pressure, out (counter-clockwise) to decrease pressure.



(fig. 37)

Hydraulic Valve Adjustments - Power Clamp

Due to constant improvements the Model 20" hydraulics you may have one of the following manifolds:

Gold anodized (s/n 3252 - 4657) (fig.38, pg. 30) with these valve settings:

1. Main System Pressure - 1200 psi.
2. Knife Down Sequence - 900 - 1000 psi.
3. Clamp Up Sequence Pressure - 500 - 600 psi.
4. Clamp Down Pressure - 400 - 800 psi.

Black/or Clear Anodized (s/n 4658 - 4749) (fig. 39, pg. 30) with these valve settings:

1. Main System Pressure - 1200 -1400 psi.
2. Knife Down Sequence Preasure - 800 - 900 psi.
3. Clamp Up Sequence Pressure - 500 - 600 psi.
4. Clamp Down Pressure - 400 - 800 psi.

Blue Anodized (s/n 4750 and up) (fig. 39, pg. 30) with these valve settings:

1. Main System Pressure - 1200 -1300 psi.
2. Knife Down Sequence - 900 psi.
3. Clamp Up Sequence Pressure - 500 - 600 psi.
4. Clamp Down Pressure - 400 - 800 psi.

Procedure:

Main System Pressure

1. Remove the front cover panel.
2. Loosen the jam nut on the valve stem and turn the clamp pressure reducing valve (item #4) all the way in. (clockwise).
3. Depending on valve style*, remove the cap or loosen the jam nut on the main system relief valve (item #1). Make a cut and read the pressure gauge with the buttons held in and the knife bottomed on the table. Adjust if necessary to the required pressure depending on manifold color.
Lock valve in position and replace cap or cover.

*NOTE: Some machines may have an alternate valve similar to that shown in fig. 37. Some may have a cap that is removed with an allen wrench or some may have an adjustable stem with a jam nut to lock it in position. They all will adjust in the same manner in (clockwise) to increase pressure, out (counter-clockwise) to decrease pressure.

Knife Down Sequence

1. With the clamp pressure reducer valve still turned in, Make a cut and read the pressure gauge has the knife is coming down. The gauge should show 800 - 1000psi depending on the manifold color. Adjust if necessary, (item #2) clockwise to increase, counter-clockwise to decrease.

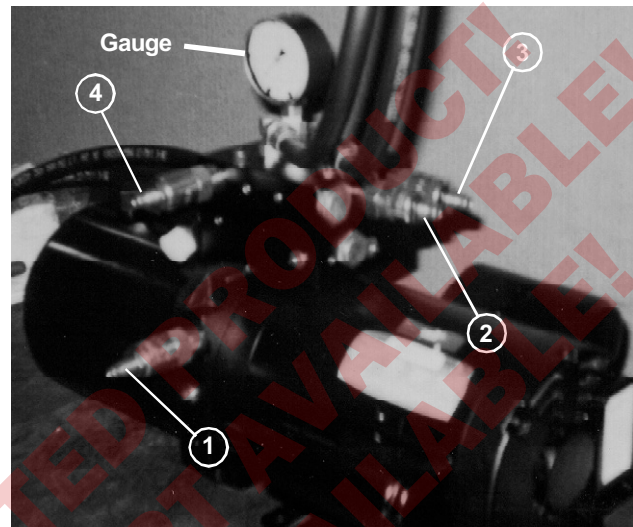
Clamp Up Sequence

1. The clamp up sequence valve (item # 3) keeps the clamp on the table until the knife has reached its full up position. This valve is located on the back of the gold manifold; and is located on the right hand side of all others. Make a cut cycle and read the pressure gauge has the clamp is going up. The pressure should be between 500 - 600 psi. Adjust if necessary. (clockwise increases, counter-clockwise decreases.)

Clamp Down Pressure

The clamp pressure reducer valve (item #4) is located on the front of the manifold and controls the clamp down pressure. This pressure can be set from 400 - 800 psi depending on the type stock you are cutting. (clockwise increases, counter-clockwise decreases.) The general rule is that you should have enough pressure to hold the paper securely but not so much that it marks the

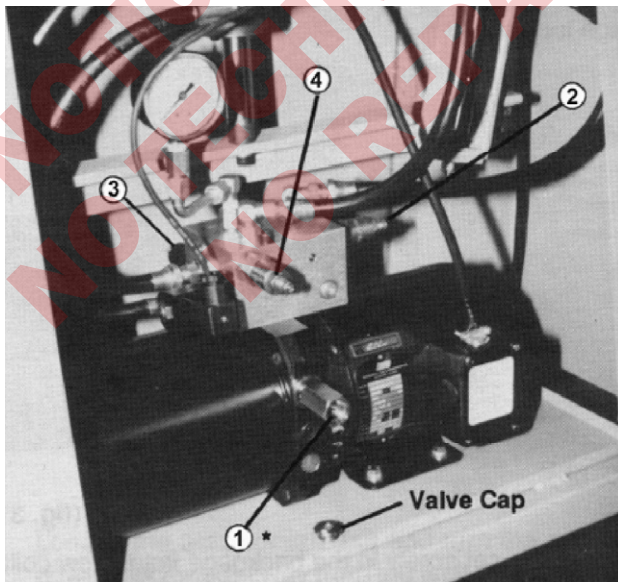
surface of the paper excessively. Excessive pressure causes pile distortion and inaccurate cuts. (Increasing clamp pressure will not eliminate draw caused by a dull knife).



(fig. 39)



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 clamp.

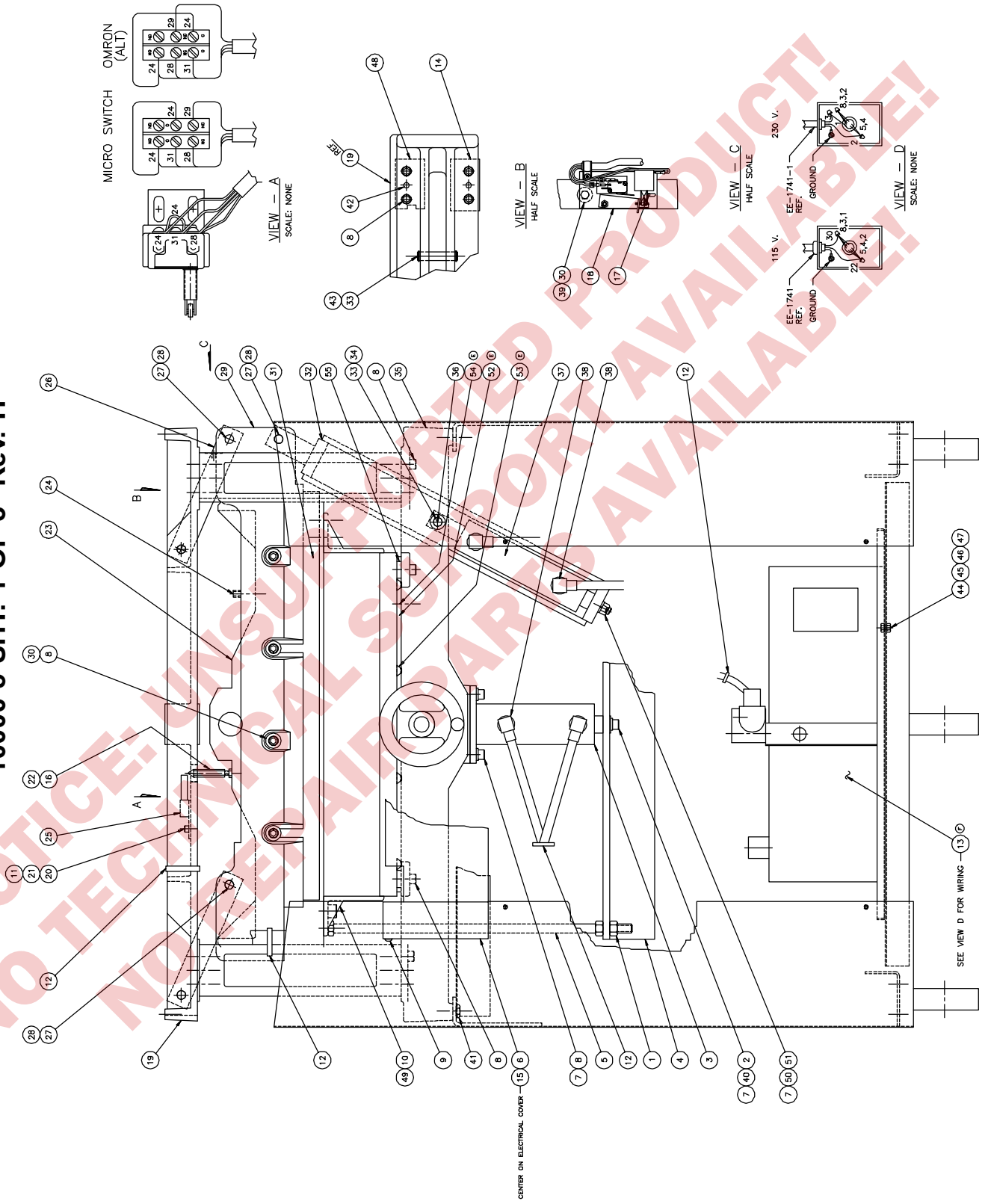


(fig 38)

NOTES

**NOTICE: UNSUPPORTED PRODUCT!
NO TECHNICAL SUPPORT AVAILABLE!
NO REPAIR PARTS AVAILABLE!**

MAIN ASSEMBLY - FRONT VIEW 10000-5 SHT. 1 OF 3 Rev. H



MAIN ASSEMBLY - FRONT VIEW 10000-5 SHT. 1 OF 3 Rev. H

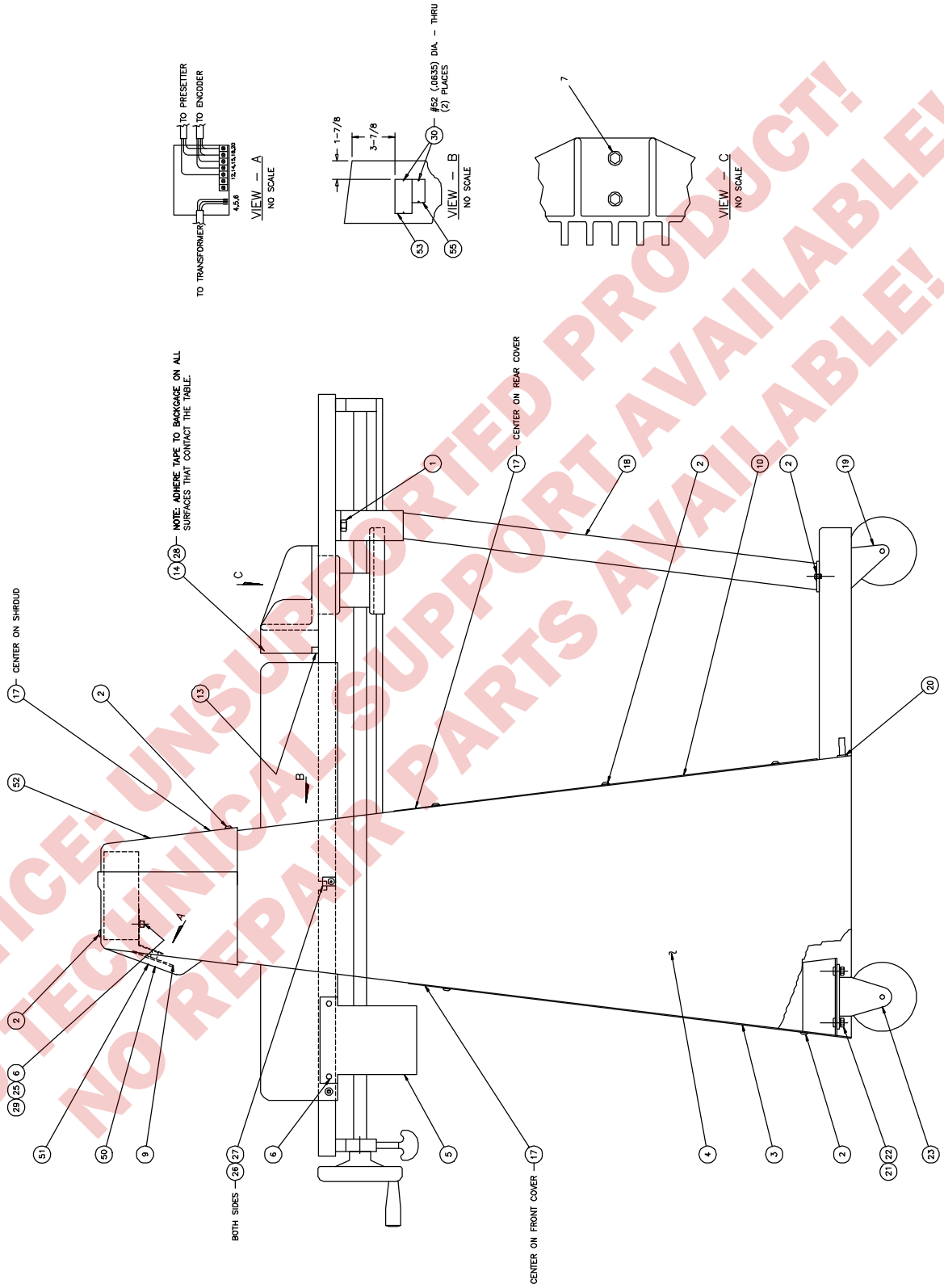
NO.	PART NO.	DESCRIPTION OF ACCESSORIES	QTY
1	H-6414-8	1/2-13 WHIZ LOCK NUT	4
2	H-7321-6	3/8 STANDARD WASHER	1
3	H-211-1	HYDRAULIC CYLINDER	1
4	10076	CLAMP BAR	1
5	10082	CLAMP ROD	2
6	EE-1746-2	COVER ASSEMBLY - ELECTRICAL	1
7	H-7327-12	3/8 MEDIUM LOCKWASHER	4
8	H-6918-608	3/8-16 X 1" SOCKET HD CAP SCREW	26
9	H-6910-403	1/4-20 X 3/8 BUTTON HD CAP SCREW	4
10	10005-1	DEFLECTOR	2
11	H-7330-8	1/4 EXTERNAL TOOTH LOCKWASHER	2
12	S-1694-1	TYRAP	4
13	H-317-4	HYDRAULIC POWER UNIT KIT	1
14	H-317-5	HYDRAULIC KIT (POWER CLAMP 50 HZ)	1
14	10002-2	GUIDE - FRONT	2
15	S-1781-11	LABEL - CAUTION	1
16	H-6424-4	1/4-20 STANDARD HEX NUT	1
17	H-215-125-0750	1/8 X 3/4 ROLL PIN	1
18	EE-1754-3	KNIFE BAR LATCH ASSEMBLY	1
19	10007-1	ARCH	1
20	H-7321-4	1/4 STANDARD WASHER	2
21	H-6918-404	1/4-20 X 1/2 SOCKET HD CAP SCREW	2
22	8881	ACTUATOR - LIMIT SWITCH	1
23	10004-1	CLAMP	1
24	H-6938-632	3/8-16 X 2" CUP POINT SOC. SET SCREW	2
25	EE-1740-2	LIMIT SWITCH ASSEMBLY	1
26	10008	LINK - KNIFE BAR	2
27	10010	PIN - KNIFE BAR	3

NO.	PART NO.	DESCRIPTION OF ACCESSORIES	QTY
28	H-6938-102408	#10-24 X 1/2 CUP POINT SOCKET SET SCREW	3
29	10003	KNIFE BAR	1
30	8815	WASHER	5
31	A-10034	KNIFE	1
32	AA-10018	BRACKET - CYLINDER	1
33	S-1193-50	1/2 RETAINING RING	6
34	10064	PIN	1
35	10001-1	BASE	1
36	E-2198-11	BLANK - SNAP-IN, PLASTIC	6
37	H-210-1	HYDRAULIC CYLINDER	1
38	H-237-4	ELBOW - PIPE TO TUBE	4
39	H-6894-405	1/4-20 X 5/8 WHIZ LOCK SCREW	1
40	H-6918-610	3/8-16 X 1-1/4 SOCKET HD CAP SCREW	1
41	H-6894-606	3/8-16 X 3/4 WHIZ LOCK SCREW	4
42	H-215-250-1000	1/4 X 1" ROLL PIN	8
43	10009	PIN - LINK	2
44	A-10042	NUT - POWER PACK	4
45	H-6913-508	5/16-18 X 1" HEX HD CAP SCREW	4
46	H-7327-10	5/16 MEDIUM LOCKWASHER	4
47	H-7321-5	5/16 STANDARD WASHER	4
48	10002-3	GUIDE - REAR	2
49	H-6918-808	1/2-13 X 1" SOCKET HD CAP SCREW	2
50	H-6410-6	3/8-24 HEX SLOTTED NUT	1
51	H-6631-308	3/32 X 1" COTTER PIN	1
52	43056	SPACER - TABLE	2
53	H-6909-506	5/16-18 X 3/4 FLAT HEAD CAP SCREW	4
54	H-6633-718	#7 X 2-1/4 TAPER PIN	2
55	20075-9	SPACER	4

STANDARD EQUIPMENT (NOT SHOWN)

PART NO.	DESCRIPTION OF ACCESSORIES	QTY
W-170	9/16 X 1/2 WRENCH	1
W-164	5/16 HEX "I" WRENCH	1
W-137	5/32 HEX WRENCH	1
W-130	3/16 ALLEN WRENCH	1
S-1245-5	KNIFE LIFTER	2
E-1075-12SB	MIDGET FUSE (12 AMP)	2
4166	CUT STICK	3
B-2152	BOX	1
5064	CUT STICK HOOK	1

MAIN ASSEMBLY - SIDE VIEW 10000-5 SHT. 2 OF 3 Rev. G



**MAIN ASSEMBLY - SIDE VIEW
10000-5 SHT. 2 OF 3 Rev. G**

STANDARD CHALLENGE PARTS

NO.	PART NO.	DESCRIPTION OF ACCESSORIES	QTY
1	H-6894-606	3/8-16 X 3/4 WHIZ LOCK SCREW	2
2	H-6910-404	1/4-20 X 1/2 BUTTON HD CAP SCREW	18
3	10055	COVER - FRONT	1
4	A-10052-1	STAND	1
5	EE-1738-4	ELECTRICAL PANEL ASSEMBLY - 120V OPTION	1
5	EE-1738-5	ELECTRICAL PANEL ASSEMBLY - 220V OPTION	1
6	H-6918-403	1/4-20 X 3/8 SOCKET HD CAP SCREW	6
7	H-6894-606	SCREW - 3/8-16 X 3/4 WHIZ LOCK	2
8			
9	EE-1753	DISPLAY ASSEMBLY	1
10	10055-1	COVER - REAR	1
11			
12			
13	10065	PIN - BACKGAGE	6
14	10031	BACKGAGE	1
15			
16			
17	S-1781-16	LABEL - CAUTION	3
18	AA-10058-1	SUPPORT ASSEMBLY	1
19	A-10056	CASTER - SWIVEL	1
20	S-1350-2	STRAIN RELIEF BUSHING	1
21	H-7324-10	5/16 INTERNAL TOOTH LOCKWASHER	12
22	H-6424-5	5/16-18 HEX JAM NUT	12
23	A-10057	CASTER	2
24			
25	H-7350-8	1/4 EXTERNAL TOOTH LOCKWASHER	2
26	5-6-27B	STOP - CUT STICK	2
27	H-6909-83204	#8-32 X 1/2 FLAT HD CAP SCREW	2
28	S-1699-1	TAPE - TEFLON (1.25 FEET)	1
29	H-7321-4	1/4 USS FLAT WASHER	2
30	H-6924-004	#0 X 1/4 RD HD DRIVE SCREW	2

NO.	PART NO.	DESCRIPTION OF ACCESSORIES	QTY
50	A-10017-1	NAMEPLATE	1
51	A-10053-1	SHROUD - FRONT	1
52	A-10054-1	SHROUD - REAR	1
53	S-1236-12	SERIAL NUMBER PLATE	1
54	A-12608-2	JOGGING AID (NOT SHOWN)	1

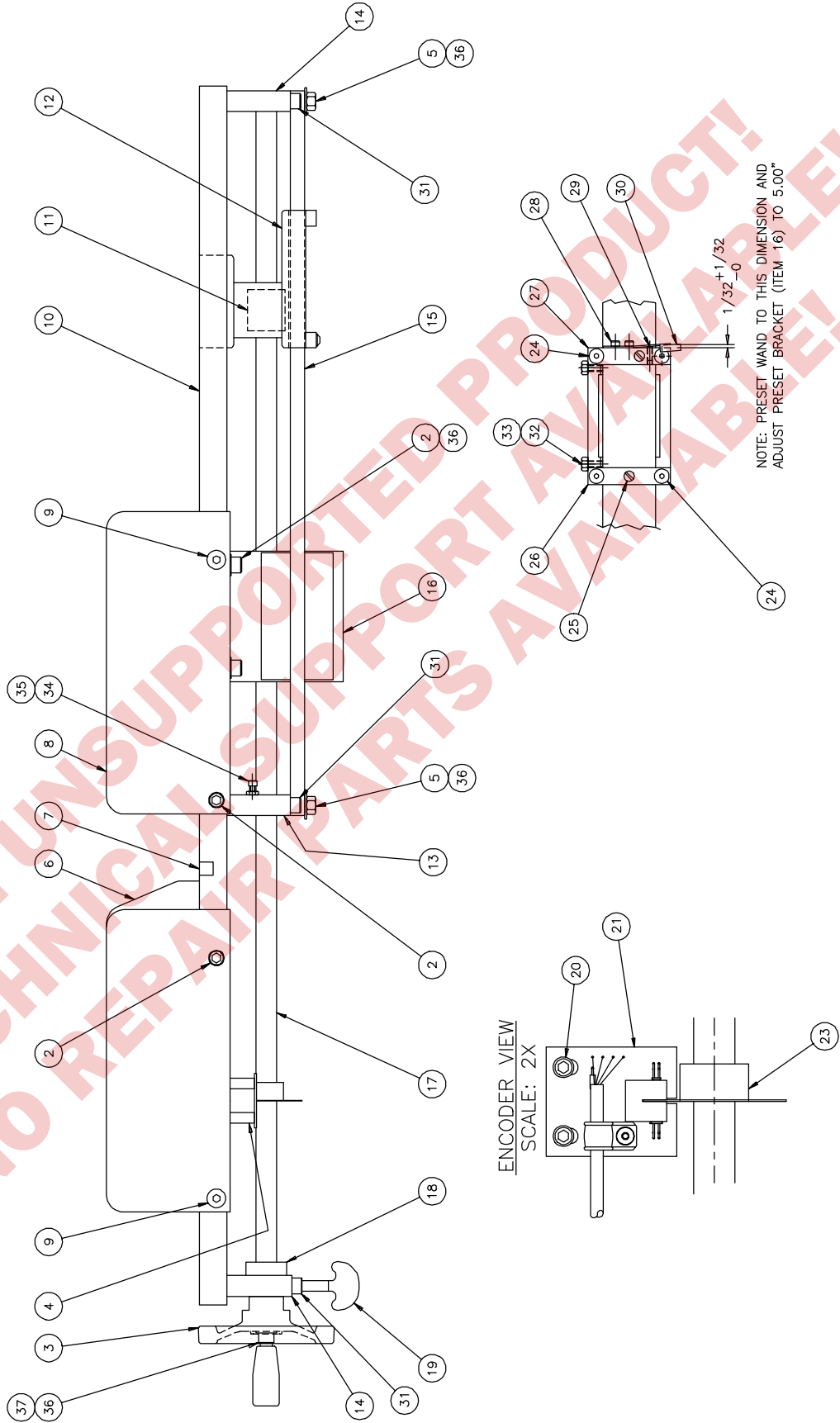
NOTICE: UNSUPPORTED PRODUCT!
NO TECHNICAL SUPPORT AVAILABLE!
NO TECHNICAL PARTS AVAILABLE!

MAIN ASSEMBLY - TABLE VIEW ALUMINUM TABLE

10000-5 SHT. 3 OF 3 Rev. J

S/N 4339 - 4363

S/N 4524 and Above



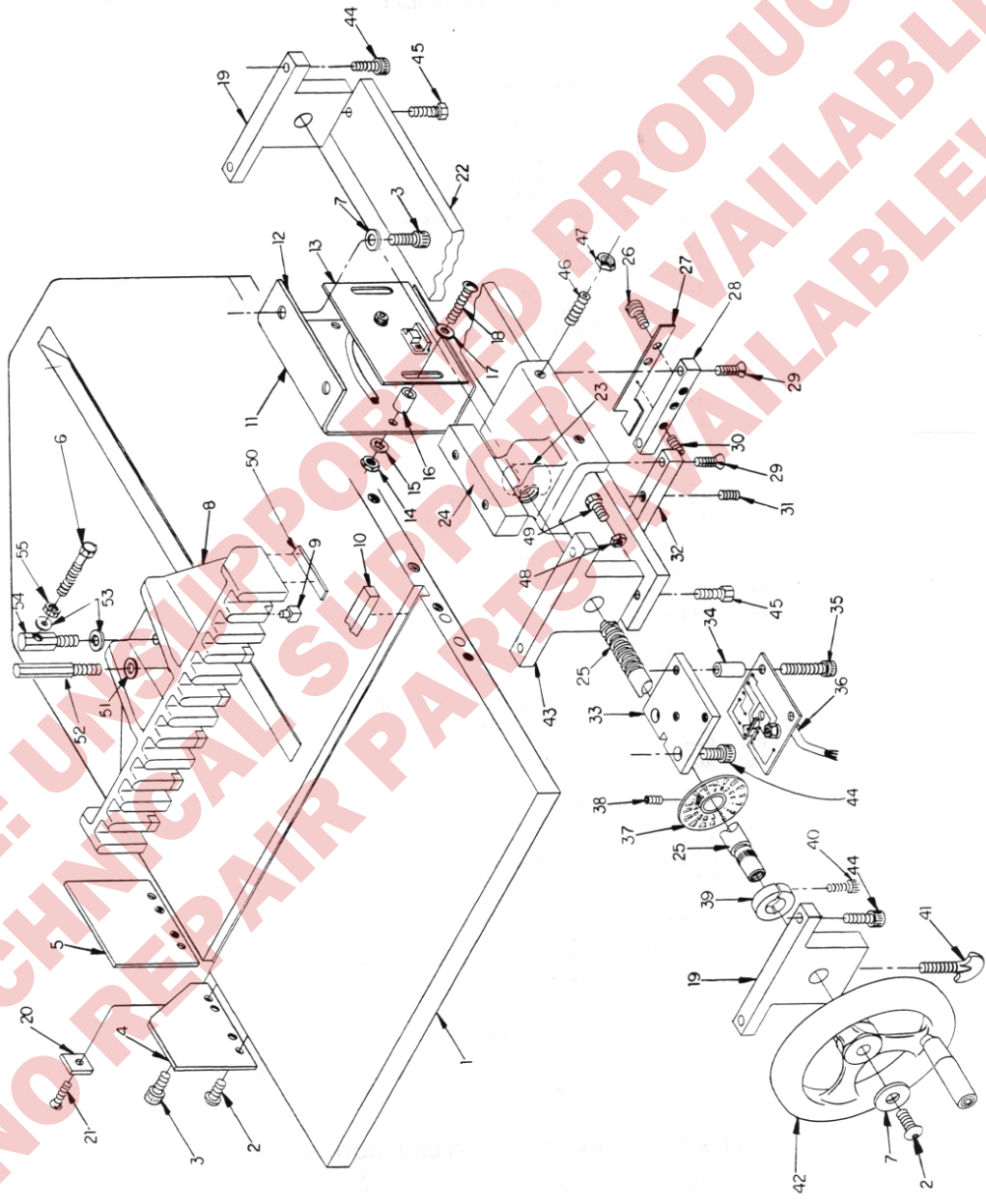
MAIN ASSEMBLY - TABLE VIEW
10000-5 SHT. 3 OF 3 Rev. J
S/N 4339 - 4363
S/N 4524 and Above

NO.	PART NO.	DESCRIPTION OF ACCESSORIES	QTY
1			
2	H-6918-606	3/8-16 X 3/4 SOCKET HD CAP SCREW	6
3	A-10038-1	HANDWHEEL - BACKGAGE	1
4	E-1152-51	SPACER, 1" LONG	3
5	H-6913-608	3/8-16 X 1" HEX HD CAP SCREW	2
6	10029	SIDE GUIDE - L.H. FRONT	1
7	4166	CUT STICK	1
8	10030	SIDE GUIDE	3
9	H-6910-606	3/8-16 X 3/4 BUTTON HD SOC CAP SCREW	4
10	10025-1	TABLE	1
11	8826	BACKGAGE NUT	1
12	10027-1	BRACKET - BACKGAGE	1
13	10026-5	PILLOW BLOCK - MIDDLE	1
14	10026-6	PILLOW BLOCK	2
15	10028-2	GUIDE - BRACKET BACKGAGE	1
16	EE-1749-1	PRESETTER ASSEMBLY	1
17	10037-1	LEADSCREW	1
18	A-10081	COLLAR - CLAMPING	1
19	S-653-1	THUMBSCREW	1
20	H-6918-405	1/4-20 X 1/2 SOCKET HD CAP SCREW	2
21	EE-1676-2	ENCODER BOARD ASSEMBLY	1
22			
23	A-8865	DISC ASSEMBLY	1
24	H-6909-406	1/4-20 X 3/4 FLAT HD SOC CAP SCREW	4
25	S-1944-1	SCREW	2
26	43060	STRAP	1
27	10033	STRAP - PRESET	1
28	H-6918-102403	#10-24 X 3/8 SOCKET HD CAP SCREW	2
29	H-6968-102408	#10-24 x 1/2 CUP PT SOC SET SCREW (NYLOK)	1
30	8641	WAND - PRESET	1
31	H-6918-622	3/8-16 X 2-3/4 SOCKET HD CAP SCREW	6
32	H-6974-412	1/4-28 NF X 3/4 BRASS TIP SOC SET SCR	2
33	H-6428-4	1/4-28 NF HEX JAM NUT	2
34	H-6918-102406	#10-24 X 3/4 SOCKET HD CAP SCREW	1
35	H-6423-#10	#10-24 HEX NUT	1
36	H-7321-6	3/8 USS FLAT WASHER	5
37	H-6918-612	3/8-16 X 1-1/4 SOC. HD. CAP SCREW	1

MAIN ASSEMBLY - TABLE VIEW (STEEL TABLE)

S/N 4338 and Below

S/N 4364 - 4523



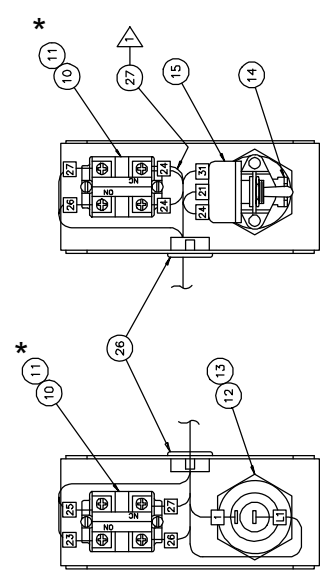
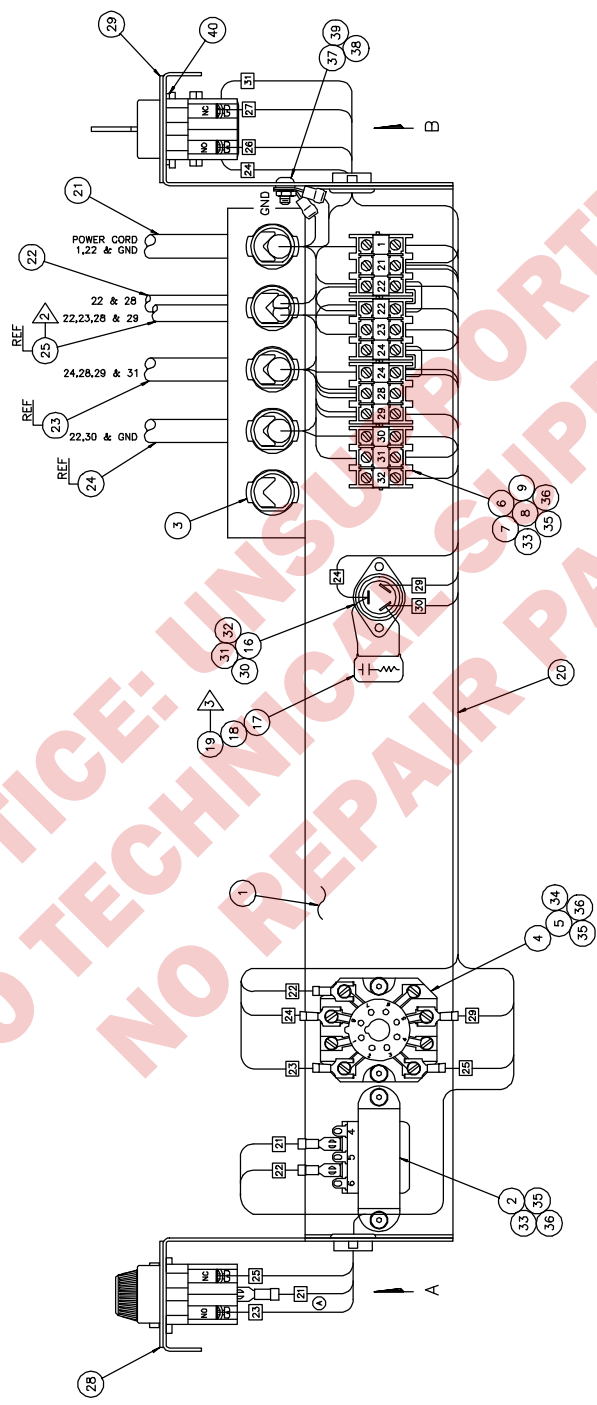
MAIN ASSEMBLY - TABLE VIEW
S/N 4338 and Below
S/N 4364 - 4523

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

* Note: No longer available. Use 10025-1 and 16 pcs. of P/N 20075-9 shim.

POWER PANEL ASSEMBLY - 120VOLT EE-1738-4

- NOTES:
- 1 STRIP WIRE INSULATION BACK 1/4" BOTH ENDS. (SEE WIRING DETAIL)
 - 2 CHANGE WIRE NUMBER 30 TO NUMBER 29 IN THE KNIFE BAR LATCH ASSEMBLY (ITEM NUMBER 25).
 - 3 INSULATE THE QUENCHARC LEADS (ITEM #17) WITH THE SHRINKING TUBING (ITEM #18). QUICK DISCONNECTS (ITEM #16).



NOTICE: UNSUPPORTED PRODUCT!
NO TECHNICAL SUPPORT AVAILABLE!
NO REPAIR PARTS AVAILABLE!

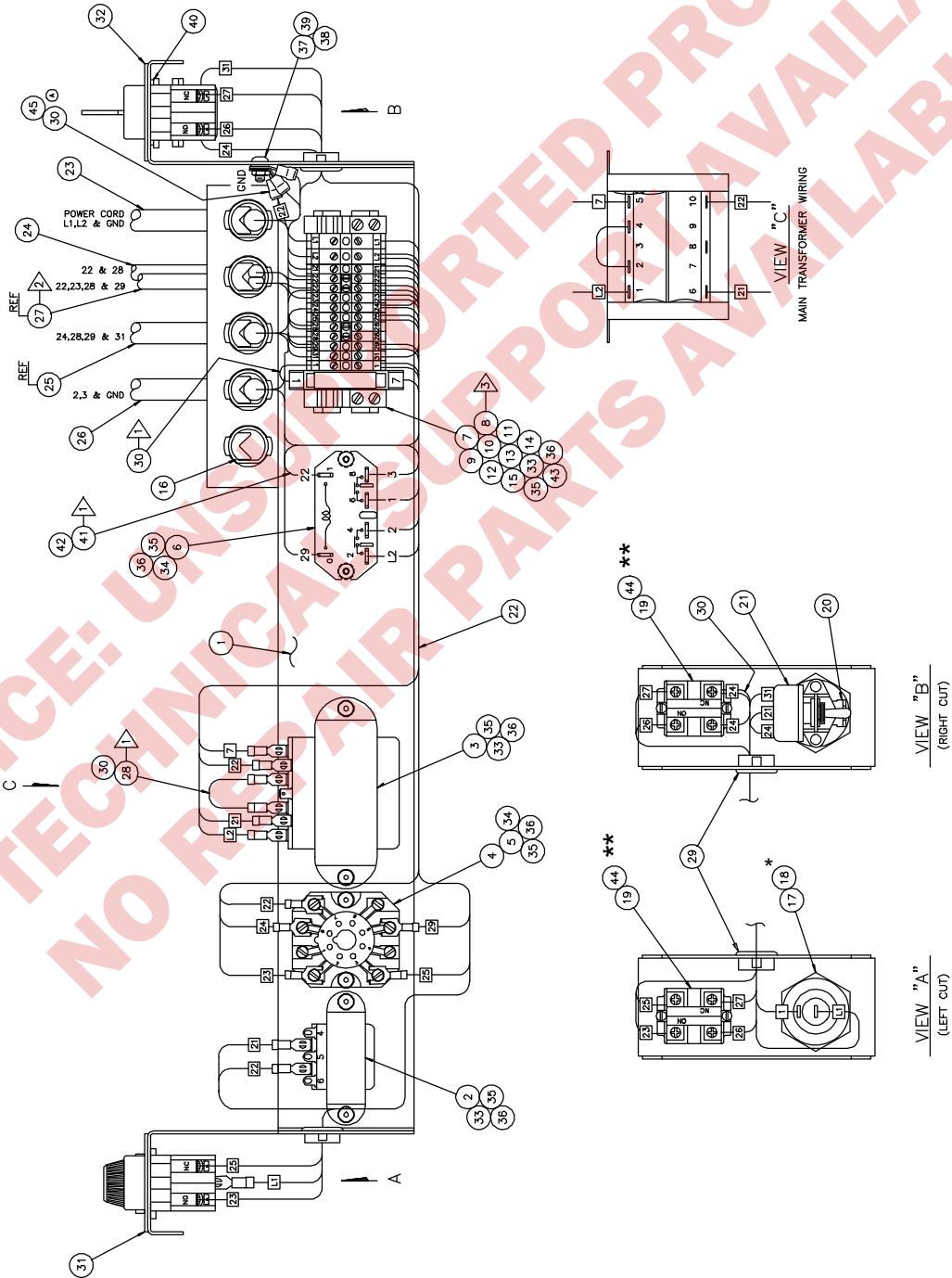
POWER PANEL ASSEMBLY - 120VOLT EE-1738-4

NO.	PART NO.	DESCRIPTION OF ACCESSORIES	QTY
1	EE-1745-2	ASSEMBLY - POWER PANEL	1
2	E-1623-1	TRANSFORMER - 16V CT	1
3	S-1350-16	STRAIN RELIEF - CABLE	5
4	E-1243	SOCKET - 8 PIN RELAY	1
5	E-1440	CONTROL MODULE - 8 PIN (NOT SHOWN)	1
6	E-1271-5	RAIL - TERMINAL, 5" LONG	1
7	E-1270	BLOCK - FEED THROUGH TERM., 3 POLE	4
8	E-1355-1	JUMPER, BUSS BAR, 2 POS	2
9	E-1356-23	MARKING STRIP	1
* 10	E-2627	PUSHBUTTON - CUT (GREEN)	2
11	E-1839-11	CONTACT BLOCK - (1) NO (1)NC	2
12	E-530-10	FUSEHOLDER	1
13	E-1075-12SB	FUSE - 12 AMP SLO-BLO	1
14	E-1694-2	KEYSWITCH BODY	1
15	E-1737-1	SWTCH - TOGGLE	1
16	E-1735	TRIAC - 25 AMP	1
17	E-1736	QUENCHARC - 200V	1
18	E-1214-33	CONNECTOR, 1/4" INSULATED QUICK DISCONNECT	2
19	E-1453-3	SHRINK TUBING - 1/2" LONG	2
20	EE-1734-3	WIRE ASSEMBLY - POWER PANEL	1
21	EE-1743	CABLE ASSEMBLY - POWER CORD	1
22	EE-1739	CABLE ASSEMBLY - SOLENOID	1
23	EE-1740-2	CABLE ASSEMBLY - KNIFE UP LIMIT	REF
24	EE-1741	CABLE ASSMEBLY - MOTOR	REF
25	EE-1754-2	CABLE ASSMEBLY - KNIFE BAR LATCH	REF
26	E-1172-9	BUSHING - SNAP-IN	2
27	E-849-R	WIRE, #16 GA. RED MTW 4" LONG	1
28	10049-3	PLATE - LEGEND (L.H.)	1
29	10048-1	PLATE - LEGEND (R.H.)	1
30	H-6910-63203	SCREW, #6-32 X 3/8 BUTT HD	2
31	H-7324-#6	LOCKWASHER, #6 SHAKEPROOF	2
32	H-6423-#6	NUT, #6 HEX	2
33	H-6910-83202	SCREW, #8-32 X 1/4 BUT HD	4
34	H-6910-83204	SCREW, #8-32 X 1/2 BUT HD	2
35	H-7324-#8	WASHER, #8 SHAKEPROOF LOCK	6
36	H-6423-#8	NUT, #8-32 HEX	6
37	H-6910-102403	SCREW, #10-24 X 3/8 BUT HD	1
38	H-7324-#10	LOCKWASHER, #10 SHAKEPROOF	1
39	H-6423-#10	NUT, #10 HEX	1
40	H-7324-28	WASHER, 7/8 INT. TOOTH LOCK	1

* **NOTE:** When replacing this switch on machines below s/n PC 4080, please use p/n E-1045-9 only.

POWER PANEL ASSEMBLY - 230VOLT EE-1738-5

- NOTES:
- △ STRIP WIRE INSULATION BACK 1/4" BOTH ENDS. (SEE WIRING DETAIL)
 - △ CHANGE WIRE NUMBER 30 TO NUMBER 29 IN THE KNIFE BAR LATCH ASM. (ITEM NUMBER 27).
 - △ USE BRADY TAGS TO LABEL FUSE BLOCK (ITEM #8) - AS SHOWN.
 - △ ITEM #30 (4" LONG WIRE LEAD) TO BE ROUTED FROM GROUND SCREW TO TERMINAL BLOCK #22.



POWER PANEL ASSEMBLY - 230VOLT EE-1738-5

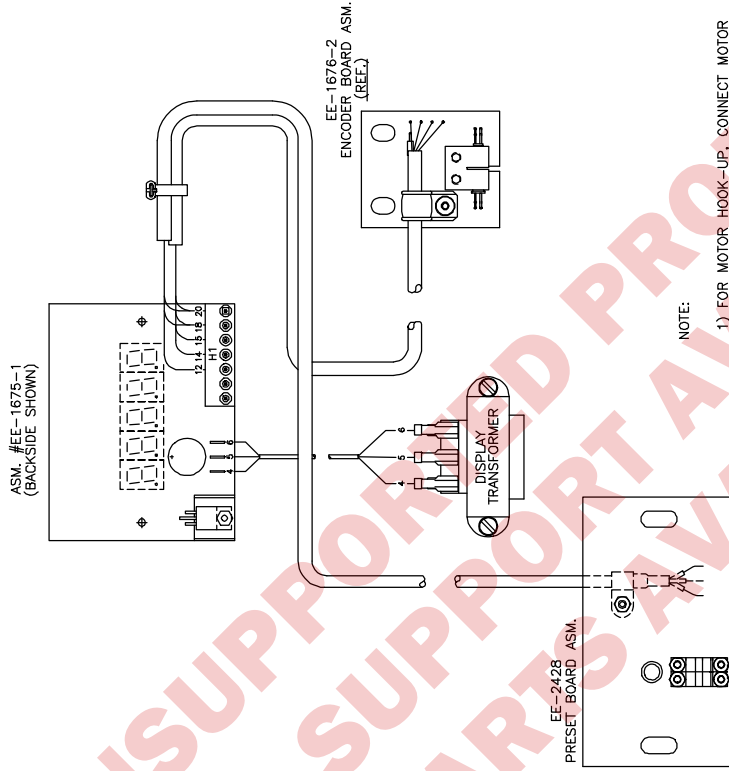
NO.	PART NO.	DESCRIPTION OF ACCESSORIES	QTY
1	EE-1745-2	ASSEMBLY - POWER PANEL	1
2	E-1623-5	TRANSFORMER - SINGLE PRIMARY - 115V	1
3	E-2292-1	TRANSFORMER - DUAL PRIMARY - 115/230V	1
4	E-1243	SOCKET - 8 PIN RELAY	1
5	E-1440	CONTROL MODULE - 8 PIN (NOT SHOWN)	1
6	E-2232-3	RELAY - POWER	1
7	E-1977-6	RAIL - TERMINAL 4-1/4" LONG	1
8	E-1974-2	BLOCK - FUSE BODY	1
9	E-1890	BLOCK - FUSE HOLDER	1
10	E-2070-1	BLOCK - END BRACKET	2
11	E-2068-4	BLOCK - FEED THROUGH TERM.	11
12	E-2068-5	BLOCK - FEED THROUGH TERM.	2
13	E-2071-2	JUMPER, BUSS BAR, 2 POS	2
14	E-1356-66	MARKING STRIP	1
15	E-1356-67	MARKING STRIP	1
16	S-1350-16	STRAIN RELIEF - CABLE	5
17	E-530-10	FUSEHOLDER	1
* 18	E-1075-12SB	FUSE - 12 AMP SLO-BLO	1
** 19	E-2627	PUSHBUTTON - CUT (GREEN)	2
20	E-1694-2	KEYSWITCH BODY	1
21	E-1737-1	SWITCH - TOGGLE	1
22	EE-2361-1	WIRE ASSEMBLY - POWER PANEL	1
23	EE-2440	CABLE ASSEMBLY - POWER CORD	1
24	EE-1739	CABLE ASSEMBLY - SOLENOID	1
25	EE-1740-2	CABLE ASSEMBLY - KNIFE UP LIMIT	REF
26	EE-1741-1	CABLE ASSMEBLY - MOTOR	REF
27	EE-1754-2	CABLE ASSMEBLY - KNIFE BAR LATCH	REF
28	E-1214-18	CONNECTOR - .187 QUICK DISCONNECT	2
29	E-1172-9	BUSHING - SNAP-IN	2
30	E-849-R	WIRE, #16 GA. RED MTW 4" LONG	4
31	10049-3	PLATE - LEGEND (L.H.)	1
32	10048-1	PLATE - LEGEND (R.H.)	1
33	H-6910-83202	SCREW, #8-32 X 1/4 BUTT HD	6
34	H-6910-83204	SCREW, #8-32 X 1/2 BUT HD	4
35	H-7324-#8	LOCKWASHER, #8 SHAKEPROOF	10
36	H-6423-#8	NUT, #8 HEX	10
37	H-6910-102403	SCREW, #10-24 X 3/8 BUT HD	1
38	H-7324-#10	LOCKWASHER, #10 SHAKEPROOF	1
39	H-6423-#10	NUT, #10 HEX	1
40	H-7324-28	WASHER, 7/8 INT. TOOTH LOCK	1
41	E-849-R	WIRE, #16 GA. RED MTW 10" LONG	1
42	E-1214-19	CONNECTOR, 1/4" INSULATED QUICK DISCONNECT	1
43	E-889-12	FUSE, 1/2A SLO-BLO	1
44	E-1839-11	CONTACT BLOCK - (1) NO (1)NC	2
45	E-1214-48	CONNECTOR - #10 INS. RING	1

*NOTE: On machines below s/n PC-4935, item #18 fuse is an 7amp slo-blo, p/n E-1075-7SB.

** NOTE: When replacing this switch on machines below s/n PC 4080, please use p/n E-1045-9 only.

120 VOLT MACHINE SCHEMATIC E-1756-2

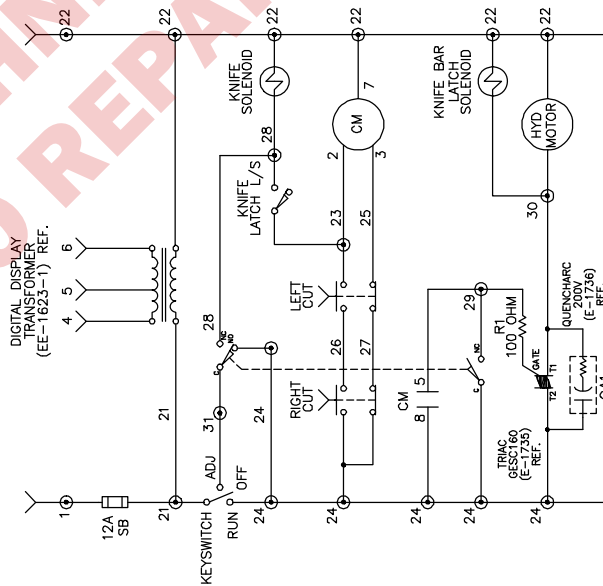
INTERCONNECTION DIAGRAM



NOTE:

- 1) FOR MOTOR HOOK-UP, CONNECT MOTOR WIRES #2, 4 AND 5 TO WIRE #22 WITH (1) E-1237-2 WIRE NUT.
CONNECT MOTOR WIRE #10 TO WIRE #30 WITH (1) E-1237-1 WIRE NUT.
CONNECT MOTOR WIRES #1, 8 AND 9 TOGETHER WITH (1) E-1237-1 WIRE NUT.
- 2) KNIFE UP L/S BECOMES CLAMP UP ON POWER CLAMP MODELS

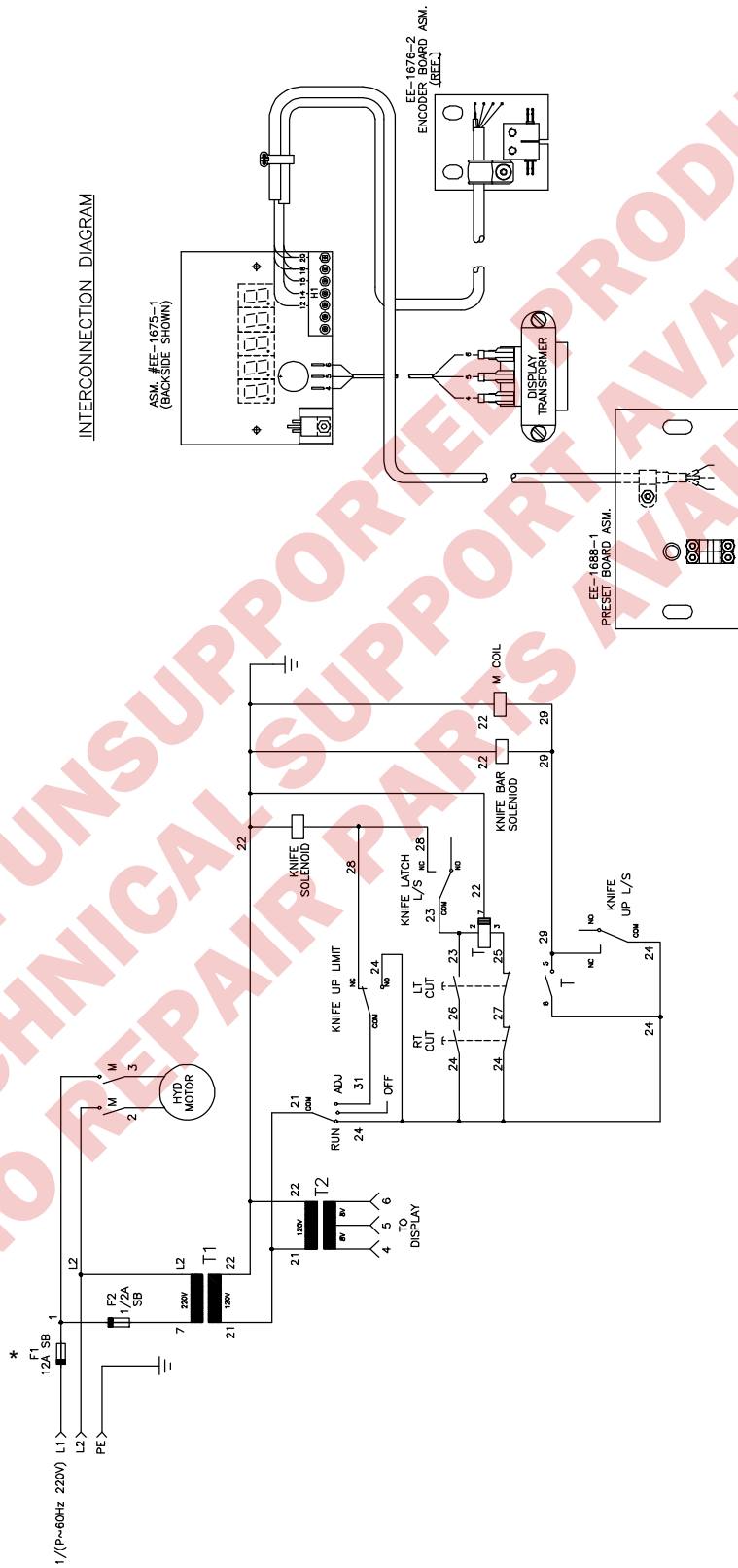
SCHEMATIC



NOTE:

- 1) KNIFE DOWN LIMIT SWITCH CLOSURES WHEN THE KNIFE REACHES THE BOTTOM OF THE STROKE.
- 2) KNIFE UP LIMIT SWITCH SHOWN OPEN SWITCH CLOSURES WHEN THE KNIFE STARTS DOWN.
- 3) ⊙ = TERMINAL BLOCK CONNECTION.

230 VAC MACHINE SCHEMATIC E-2367



***NOTE:** On machines below s/n PC-4935, the F1 fuse is an 7amp slo-blo, p/n E-1075-7SB.

HYDRAULIC SEQUENCE OF OPERATION

HYDRAULIC SEQUENCE OF OPERATION

- A. Cut module is energized providing power to the hydraulic motor.
- B. Energize the CUT Solenoid.
(Knife and Clamp are sent down).
- C. De-energize the CUT Solenoid.
(Knife and Clamp are sent up).

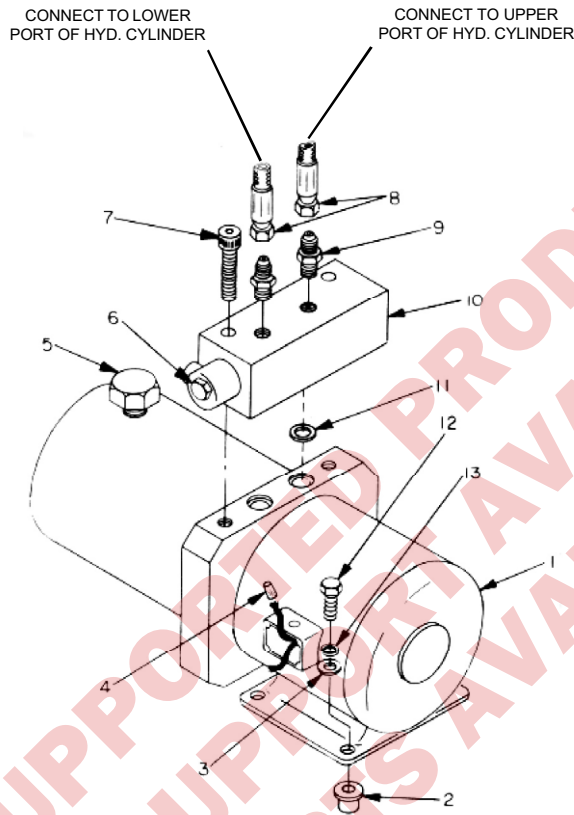
HYDRAULIC SCHEMATIC REFERENCES DRAWING NUMBER: H-317-()

With the key in the ON position, depress both cut buttons; the electronics sense that both the clamp and knife are up and the knife latch is pulled in, the CUT solenoid will be energized.

When the CUT solenoid is energized, oil will flow freely to the knife down (KD) cylinder port and through the pressure reducing valve to the clamp down cylinder port (CD). Since oil is restricted by the knife sequence valve and blocked by a check valve, the knife will stay up, and the clamp will start down. When the clamp stops downward motion, the system pressure will rise. Pressure in the clamp down line will level off to the setting of the pressure reducing valve. The system pressure will continue to rise until the knife sequence pressure valve opens allowing the knife to come down. The knife will continue down until the cylinder reaches the extreme of its travel. System pressure will increase until the main system relief valve trips. At this time, the cut buttons should be released de-energizing the CUT solenoid.

With the CUT solenoid de-energized, oil flow is directed to the knife up cylinder port (KU) and the clamp up cylinder port (CU). Since the clamp down port (CD) is blocked by a check valve and the clamp up sequence valve, the clamp will stay down while the knife goes up. When the knife reaches the up extreme, system pressure builds until the clamp up sequence valve opens and allows the clamp to go up. System pressure will increase until the main system relief valve trips. At this time, the electronics will sense that the knife and clamp are up, and de-energize the pump.

HAND CLAMP HYDRAULICS H-316



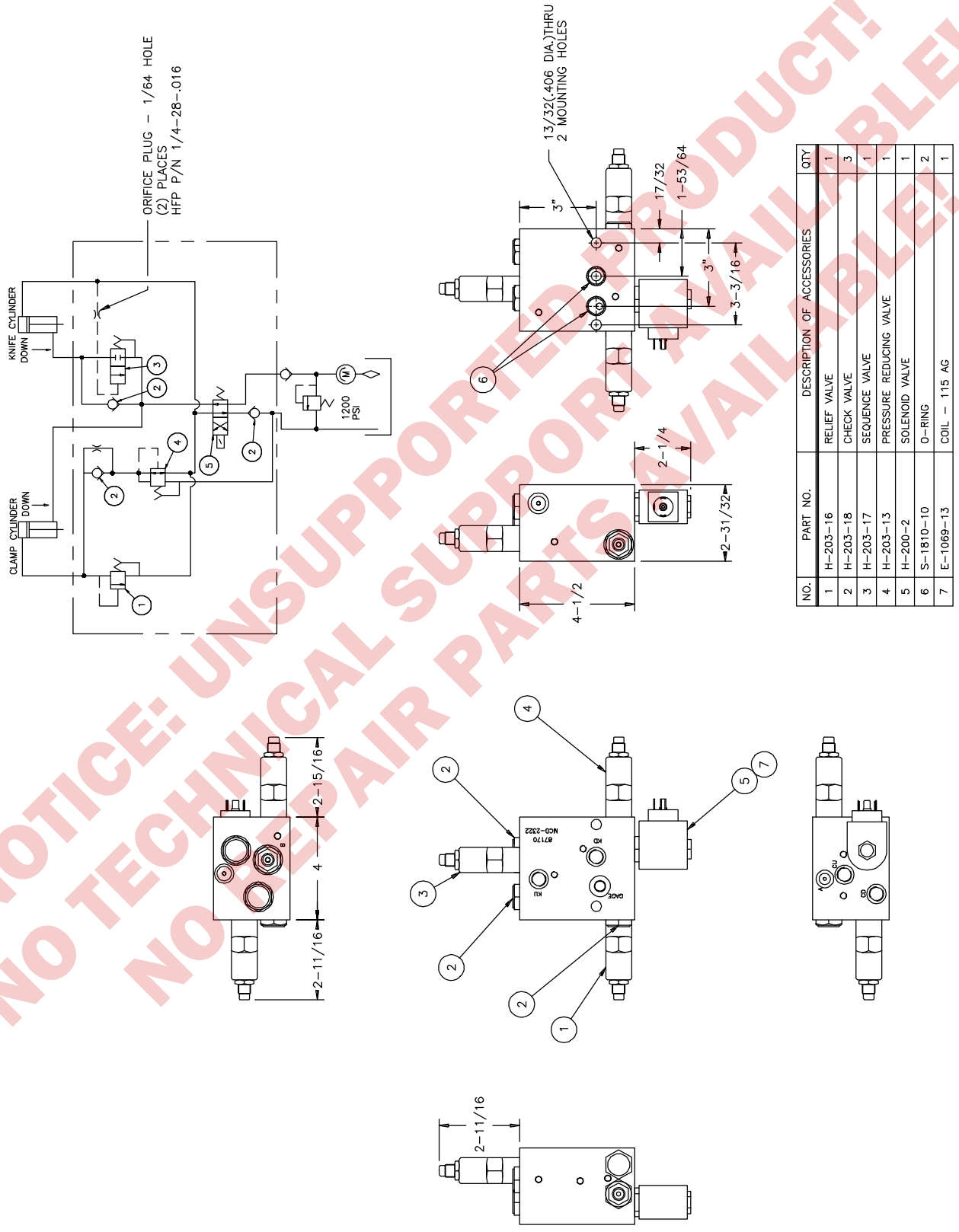
**HAND CLAMP MODEL
(H-316)**

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 'O' Ring to Tube	2
10.	HH-223	Manifold Assembly	1
	HH-292-2	Kit - Manifold Seals	1 ref.
11.	S-1810-10'	O' Ring	2
12.	H-6913-508	5/16-18 x 1" Hex Hd. Cap Screw	4
13.	H-7327-10	5/16" Med. Lockwasher	4

REPAIR KITS - HYDRAULIC POWER UNIT

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 'O' Ring
E-1600-62	Electric Motor
H-238-2	Strainer

HYDRAULIC MANIFOLD HH-245 GOLD ANODIZED (S/N 3252 - 4657)



NOTICE: UNSUPPORTED SUPPORTS AVAILABLE!
NO REPAIR PARTS AVAILABLE!

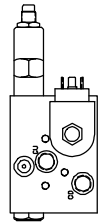
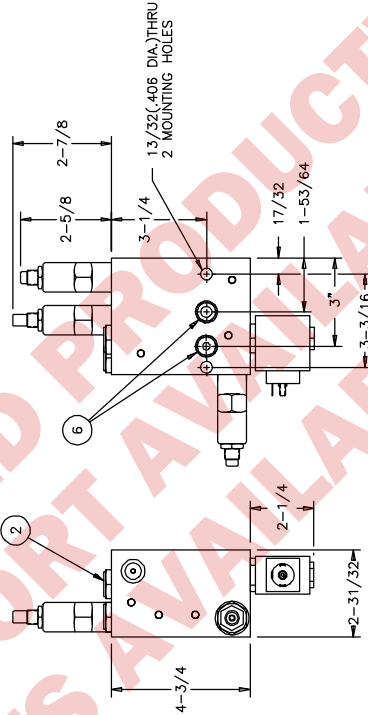
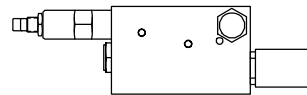
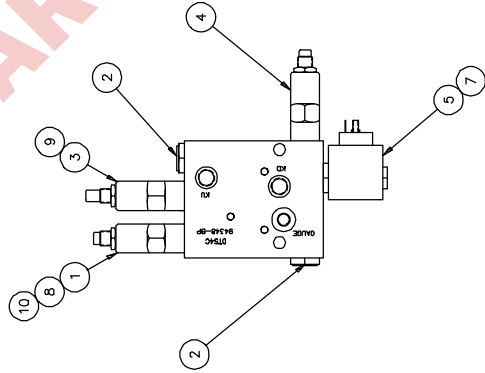
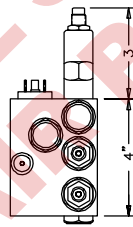
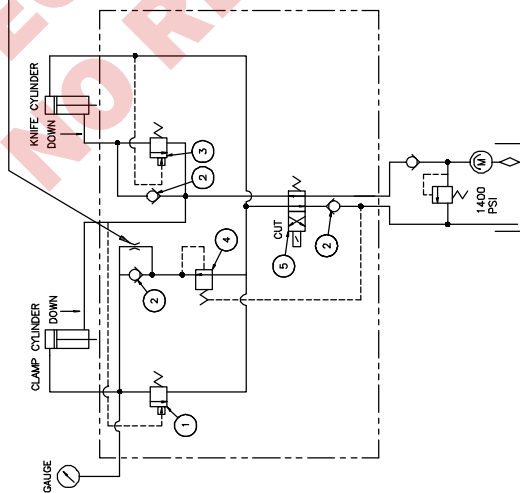
HYDRAULIC MANIFOLD HH-476 BLACK/CLEAR ANODIZED (S/N 4658-4749)

NO.	PART NO.	DESCRIPTION OF ACCESSORIES	QTY.
*	1 H-203-6	CLAMP UP SEQUENCE VALVE	1
*	2 H-203-18	CHECK VALVE	3
*	3 H-203-31	KNIFE SEQUENCE VALVE	1
*	4 H-203-13	PRESSURE REDUCING VALVE	1
*	5 H-200-2	SOLENOID VALVE	1
*	6 S-1810-10	O-RING	2
	7 E-1069-()	COIL	REF
	8 H-204	PISTON - HYD. VALVE	1
	9 H-204-1	PISTON - HYD. VALVE	1
	10 S-2020	O-RING	1

NOTE (REF.):
* = PARTS SUPPLIED IN THE K-41091-2 KIT

SERVICE NOTE:
REPLACEMENT COILS MUST BE ORDERED SEPARATELY - THEY ARE NO LONGER INCLUDED AS PART OF THIS ASSEMBLY. E-1069-13 120V COIL (MODEL 20)

ORIFICE PLUG - 1/64 HOLE
HFP P/N 1/4-28-.016

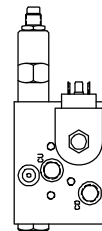
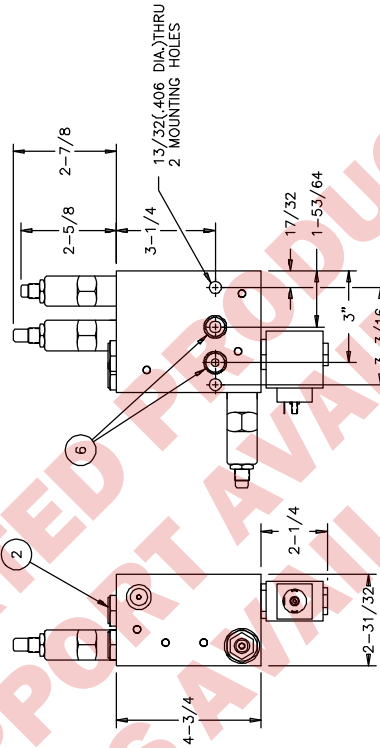
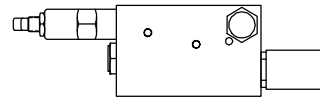
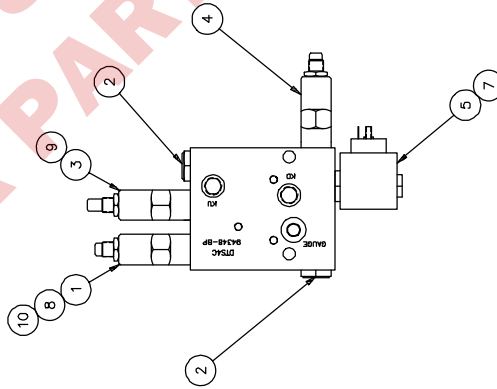
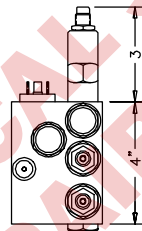
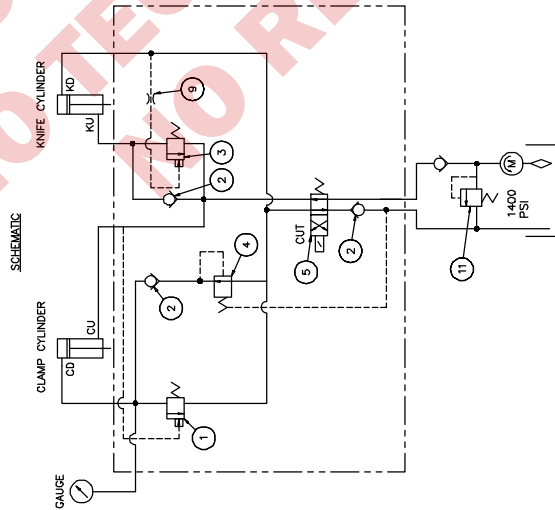


HYDRAULIC MANIFOLD HH-476-1 BLUE ANODIZED (S/N 4750 AND UP)

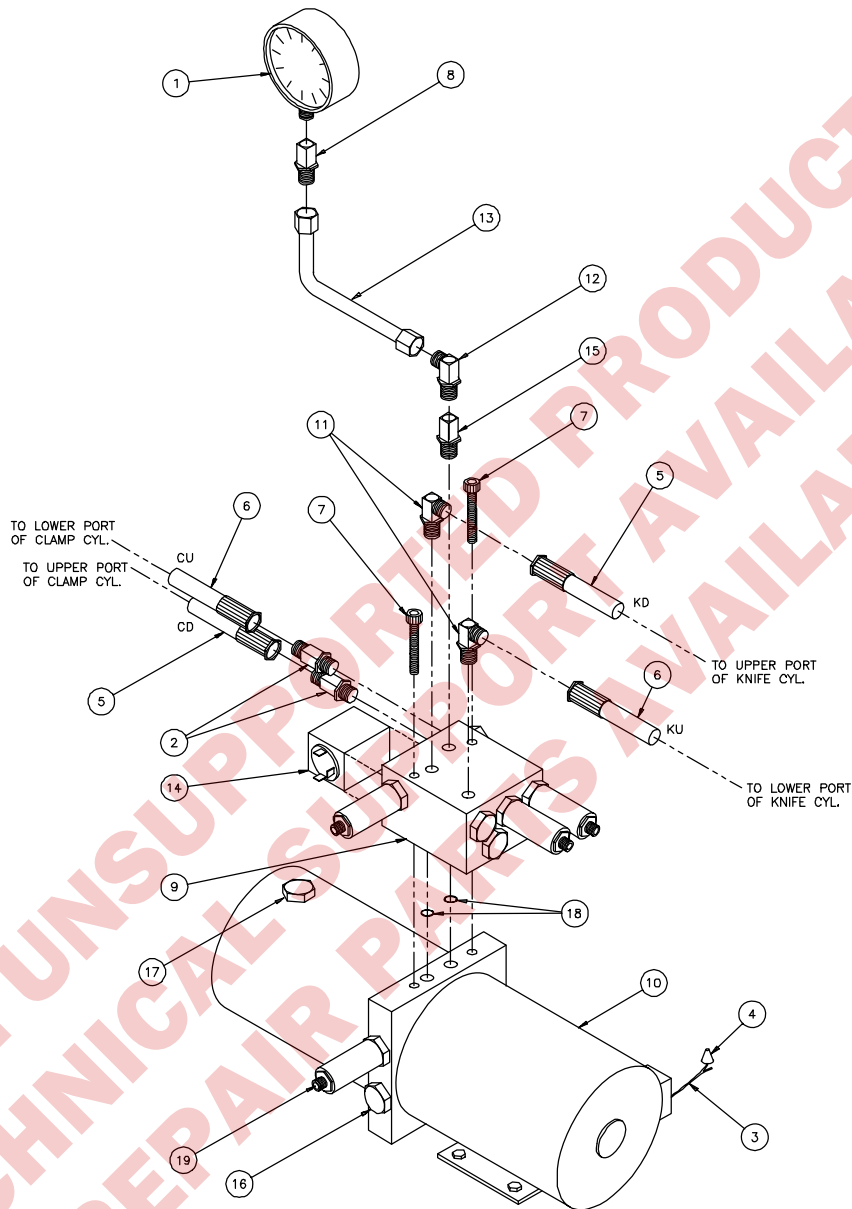
NO.	PART NO.	DESCRIPTION OF ACCESSORIES	QTY
*	H-203-6	CLAMP UP SEQUENCE VALVE	1
*	H-203-18	CHECK VALVE	3
*	H-203-17	KNIFE SEQUENCE VALVE	1
*	H-203-13	PRESSURE REDUCING VALVE	1
*	H-200-2	SOLENOID VALVE	1
*	S-1810-10	O-RING	2
*	E-1069-(-)	COIL	REF
	H-204	PISTON - HYD. VALVE	1
	H-484	ORIFICE PLUG - 1/64	1
	S-2020	"O"-RING	1
	HH-304-1	RELIEF VALVE KIT	REF

NOTE (REF.):
* = PARTS SUPPLIED IN THE K-41091-2 KIT

SERVICE NOTE:
REPLACEMENT COILS MUST BE ORDERED SEPARATELY - THEY ARE NO LONGER INCLUDED AS PART OF THIS ASSEMBLY.
E-1069-13 120V COIL (MODEL 20)



HYDRAULIC UNIT ASSEMBLY H-317-()



Common parts list; for complete list see pgs. 52, 53.

16	H-521	CHECK VALVE - USED IN H-317-4 & UP	1
17	H-287	BREATHER CAP	1
*	S-1810-10	O-RING 3/4" O.D. * SEE NOTE BELOW	2
19	HH-304-1	RELIEF VALVE KIT	1
	H-203-22	RELIEF VALVE - CARTRIDGE ONLY	REF
	H-522	ORFICE DISK	REF

*** NOTE:** Some machines are equipped with S-1810-10 o-rings and some are equipped with S-1810-15 7/8" O.D. o-rings. For replacement, measure your existing o-rings.

H-317 (120 VOLT, 60HZ)

NO.	PART NO.	DESCRIPTION OF ACCESSORIES	QTY
1	8P-629-3	GAGE	1
2	H-236-3	ADAPTER, 9/16-18 'O' RING TO 9/16-18 TUBE	2
3	EE-1741	MOTOR CORD ASSEMBLY	1
4	E-1237-1	WIRE NUT	2
5	H-242-16	HYDRAULIC HOSE ASSEMBLY	1
6	H-242-15	HYDRAULIC HOSE ASSEMBLY	3
7	H-6918-628	3/8-16 X 3-1/2 SOCKET HD CAP SCREW	2
8	H-253-2	ADAPTER	1
9	HH-245	MANIFOLD ASSEMBLY	1
10	H-220-3	HYDRAULIC POWER UNIT	1
11	H-230-3	ELBOW - 9/16-18 "O" RING TO 9/16-18 TUBE	2
12	H-230	ELBOW	1
13	H-329	TUBE ASSEMBLY	1

H-317-1 (230 VOLT, 50 HZ)

NO.	PART NO.	DESCRIPTION OF ACCESSORIES	QTY
1	8P-629-3	GAGE	1
2	H-236-3	ADAPTER, 9/16-18 'O' RING TO 9/16-18 TUBE	2
3	EE-1741	MOTOR CORD ASSEMBLY	1
4	E-1237-1	WIRE NUT	2
5	H-242-16	HYDRAULIC HOSE ASSEMBLY	1
6	H-242-15	HYDRAULIC HOSE ASSEMBLY	3
7	H-6918-628	3/8-16 X 3-1/2 SOCKET HD CAP SCREW	2
8	H-253-2	ADAPTER	1
9	HH-245	MANIFOLD ASSEMBLY	1
10	H-220-2	HYDRAULIC POWER UNIT	1
11	H-230-3	ELBOW - 9/16-18 "O" RING TO 9/16-18 TUBE	2
12	H-230	ELBOW	1
13	H-329	TUBE ASSEMBLY	1

H-317-2 (120 VOLT, 60HZ)

NO.	PART NO.	DESCRIPTION OF ACCESSORIES	QTY
1	8P-629-3	GAGE	1
2	H-236-3	ADAPTER, 9/16-18 'O' RING TO 9/16-18 TUBE	2
3	EE-1741	MOTOR CORD ASSEMBLY	1
4	E-1237-1	WIRE NUT	2
5	H-242-41	HYDRAULIC HOSE ASSEMBLY - (KN DN, CL DN)	2
6	H-242-52	HYDRAULIC HOSE ASSEMBLY - (KN UP, CL UP)	2
7	H-6918-628	3/8-16 X 3-1/2 SOCKET HD CAP SCREW	2
8	H-253-2	ADAPTER	1
9	HH-476-1	MANIFOLD ASSEMBLY	1
10	H-220-3	HYDRAULIC POWER UNIT	1
11	H-230-3	ELBOW - 9/16-18 "O" RING TO 9/16-18 TUBE	2
12	H-230	ELBOW	1
13	H-329	TUBE ASSEMBLY	1
14	E-1069-13	COIL - 120V	1

H-317- 3 (230 VOLT, 50 HZ)

NO.	PART NO.	DESCRIPTION OF ACCESSORIES	QTY
1	8P-629-3	GAGE	1
2	H-236-3	ADAPTER, 9/16-18 'O' RING TO 9/16-18 TUBE	2
3	EE-1741-1	MOTOR CORD ASSEMBLY	1
4	E-1237-1	WIRE NUT	2
5	H-242-41	HYDRAULIC HOSE ASSEMBLY - (KN DN, CL DN)	2
6	H-242-52	HYDRAULIC HOSE ASSEMBLY - (KN UP, CL UP)	2
7	H-6918-628	3/8-16 X 3-1/2 SOCKET HD CAP SCREW	2
8	H-253-2	ADAPTER	1
9	HH-476-1	MANIFOLD ASSEMBLY	1
10	H-220-4	HYDRAULIC POWER UNIT	1
11	H-230-3	ELBOW - 9/16-18 "O" RING TO 9/16-18 TUBE	2
12	H-230	ELBOW	1
13	H-329	TUBE ASSEMBLY	1
14	E-1069-13	COIL - 120V	1

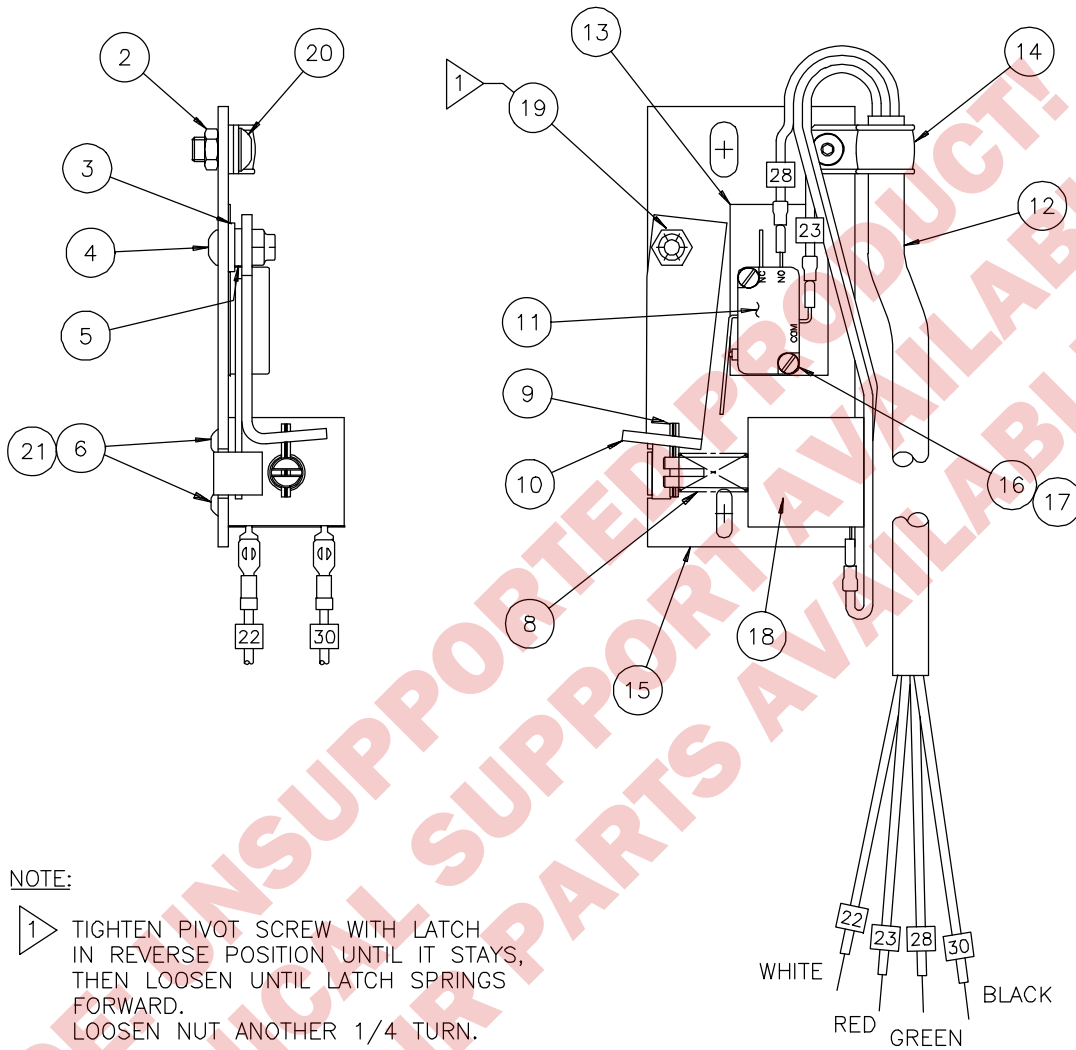
H-317- 4 (120 VOLT, 60 HZ)

NO.	PART NO.	DESCRIPTION OF ACCESSORIES	QTY
1	8P-629-3	GAGE	1
2	H-236-3	ADAPTER, 9/16-18 'O' RING TO 9/16-18 TUBE	2
3	EE-1741	MOTOR CORD ASSEMBLY	1
4	E-1237-1	WIRE NUT	2
5	H-242-41	HYDRAULIC HOSE ASSEMBLY - (KN DN, CL DN)	2
6	H-242-52	HYDRAULIC HOSE ASSEMBLY - (KN UP, CL UP)	2
7	H-6918-628	3/8-16 X 3-1/2 SOCKET HD CAP SCREW	2
8	H-253-2	ADAPTER	1
9	HH-476-1	MANIFOLD ASSEMBLY	1
10	H-220-6	HYDRAULIC POWER UNIT	1
11	H-230-3	ELBOW - 9/16-18 "O" RING TO 9/16-18 TUBE	2
12	H-230	ELBOW	1
13	H-329	TUBE ASSEMBLY	1
14	E-1069-13	COIL - 120V	1

H-317- 5 (230 VOLT, 50/60 HZ)

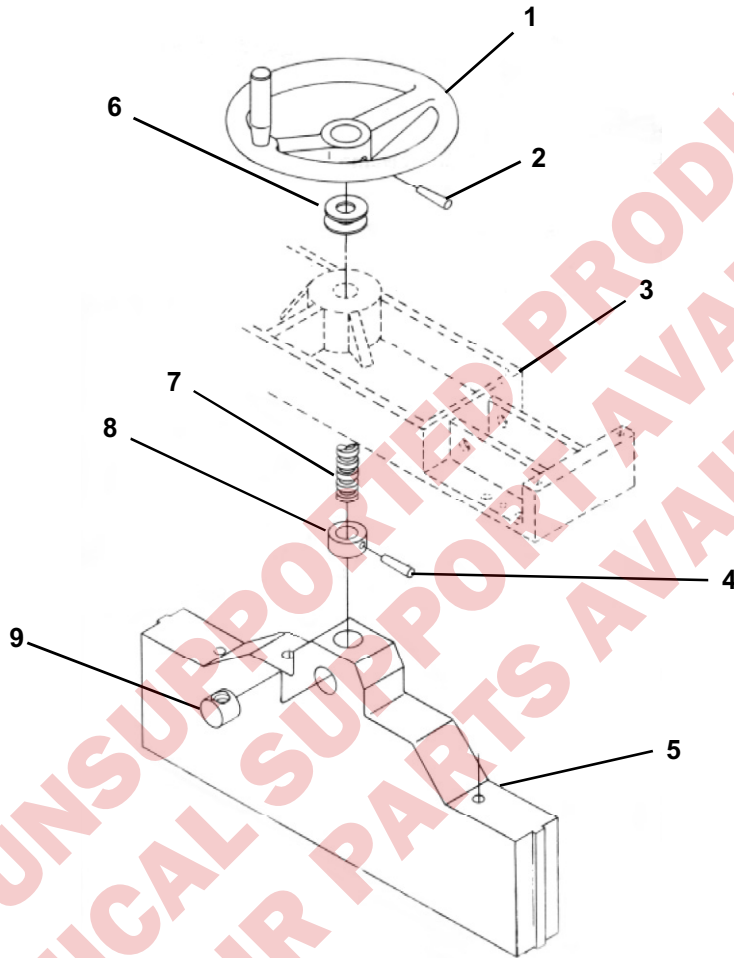
NO.	PART NO.	DESCRIPTION OF ACCESSORIES	QTY
1	8P-629-3	GAGE	1
2	H-236-3	ADAPTER, 9/16-18 'O' RING TO 9/16-18 TUBE	2
3	EE-1741	MOTOR CORD ASSEMBLY	1
4	E-1237-1	WIRE NUT	2
5	H-242-41	HYDRAULIC HOSE ASSEMBLY - (KN DN, CL DN)	2
6	H-242-52	HYDRAULIC HOSE ASSEMBLY - (KN UP, CL UP)	2
7	H-6918-628	3/8-16 X 3-1/2 SOCKET HD CAP SCREW	2
8	H-253-2	ADAPTER	1
9	HH-476-1	MANIFOLD ASSEMBLY	1
10	H-220-5	HYDRAULIC POWER UNIT	1
11	H-230-3	ELBOW - 9/16-18 "O" RING TO 9/16-18 TUBE	2
12	H-230	ELBOW	1
13	H-329	TUBE ASSEMBLY	1
14	E-1069-13	COIL - 120V	1

KNIFE BAR LATCH ASSEMBLY EE-1754-3



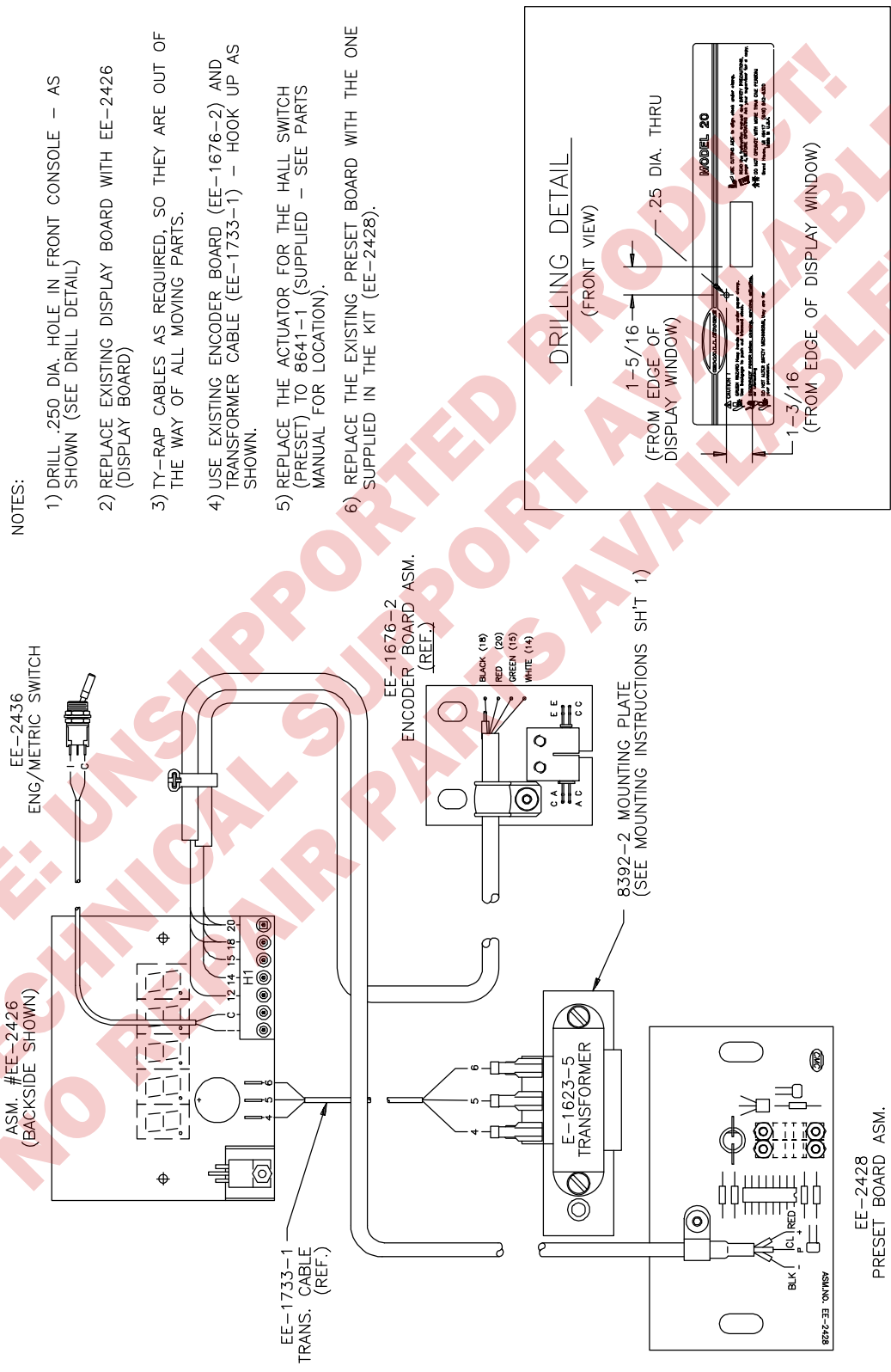
NO.	PART NO.	DESCRIPTION OF ACCESSORIES	QTY
2	H-6423-#10	NUT, #10-24 HEX	1
3	H-7322-#10	WASHER, #10 POLISHED	1
4	H-6910-102405	SCREW, #10-24 X 5/8 BUT HD SOC CAP	1
5	A-10070-1	SPACER - LATCH	1
6	H-6910-63202	SCREW, #6-32 X 1/4 BUT. HD.	2
7			
8	A-10069-2	SPRING	1
9	H-21S-093-0750	PIN, 3/32 X 3/4 SEL-LOCK	1
10	10085-1	LATCH	1
11	E-866-4	MICRO-SWITCH	1
12	EE-1751-1	CABLE ASSEMBLY - KNIFE BAR LATCH/SOLENOID	1
13	E-1755	INSULATOR	1
14	E-968-3	CABLE CLAMP	1
15	10087-1	BRACKET ASSEMBLY - KNIFE LATCH	1
16	H-7324-#4	WASHER, #4 INT. TOOTHLOCK	2
17	H-6923-44010	SCREW, #4-40 X 5/8 RD HD MACH	2
18	E-1752-3	SOLENOID - 120V AC	1
19	H-5247-1024	NUT, #10-24 FLEX LOCKNUT	1
20	H-6910-102404	SCREW, #10-24 X 1/2 BUT HD SOC CAP	1
21	H-7324-#6	WASHER, #6 INT. TOOTHLOCK	2

20" HAND CLAMP ASSEMBLY



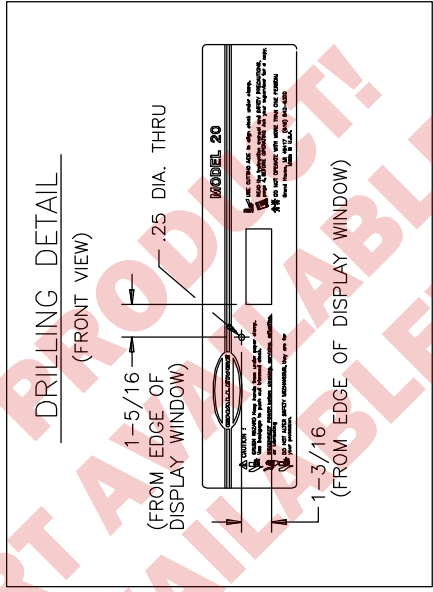
NO.	PART NO.	DESCRIPTION OF ACCESSORIES	QTY
1	AA-10011	CLAMP HANDWHEEL ASM.	1
	A-10012	HANDWHEEL ONLY	1
2	H-6633-314	#3-1 3/4" TAPER PIN	1
3	10007-2	ARCH	1
4	H-6634-312	#3-1 1/2" TAPER PIN	1
5	10004-2	CLAMP	1
6	S-1295-4	THRUST WASHER	2
7	10013	CLAMP-SCREW	1
8	10014	COLLAR	1
9	6035	CLAMP NUT	1

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-1676-2) 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 MANUAL FOR LOCATION).
- 6) REPLACE THE EXISTING PRESET BOARD WITH THE ONE SUPPLIED IN THE KIT (EE-2428).



ENGLISH/METRIC CONVERSION OPTION

AA-10095-1

THIS KIT IS FOR FACTORY INSTALLATION ON THE MODEL 20 CUTTER

THE KIT CONSISTS OF THE FOLLOWING COMPONENTS:

- | | | |
|-----|--------------|---|
| (1) | EE-2426 | P.C.B. ASM. - POSITION DISPLAY |
| (1) | EE-2428 | P.C.B. ASM. - PRESETTER |
| (1) | EE-2436 | CABLE ASM. - ENGLISH/METRIC SWITCH |
| (1) | E-1623-5 | TRANSFORMER |
| (1) | 8641-1 | ACTUATOR - HALL SWITCH |
| (1) | 8392-2 | MOUNTING PLATE - TRANSFORMER |
| (2) | H-6922-83224 | SCREW, #8-32 X 1-1/2 FLAT HD |
| (2) | H-7324-#8 | WASHERS, #8 SHAKEPROOF |
| (2) | S-1694-1 | TY-RAP |
| (1) | AA-10095-1 | SH'T 2 KIT - INTERCONNECTION DIAGRAM (DRAWING ONLY) |

NOTE: WHEN CHANGING THE TRANSFORMER SAVE THE EXISTING HARDWARE TO USE LATER. MOUNT THE TRANSFORMER MOUNTING PLATE IN THE EXISTING HOLES USING THE FLAT HEAD SCREWS (2), THE WASHERS (2) AND THE (2) OLD NUTS. THEN MOUNT THE NEW TRANSFORMER TO THE PLATE USING THE OLD SCREWS AND WASHERS.

INSTALLATION



CAUTION: SHOCK HAZARD! Disconnect the power before performing any modifications. Make sure all guards and covers are replaced before operating the machine. DO NOT OPERATE THE MACHINE WITH ANY COVERS REMOVED!

1. Remove the existing Preset Circuit board from the housing underneath the back of the table.(pg.xx,) Replace the board with the new one included with this kit using the existing hardware. Route the cable under the table, up the inside of the side frame to the display board. Disconnect and remove the old preset cable. Secure the new cable with tyrap provided in the kit so the cables are clear of any moving parts. Do not connect the new cable until the new display board has been installed.

2. Replace the actuator (pgxx) on the rear of the backgauge underneath the table with the new one provided in the kit. Carefully move the backgauge up to the preset board and make sure the actuator passes through the sensors with out striking them. Reposition the preset board if necessary. When the kit installation is complete, all guards replaced and the power is reconnected, you will have to recalibrate the backgauge position. Follow the Presetting/Backgauge Position readout instructions on pg xx.

3. Remove the existing display circuit board (pg, . xx) and replace with the new one provided. Reconnect the wiring as shown in the Interconnection Diagram on the opposite page.

4. Drill a 1/4" hole in the nameplate as shown in the drilling detail opposite page. Install the Eng/Metric switch in the hole and connect to the display board.

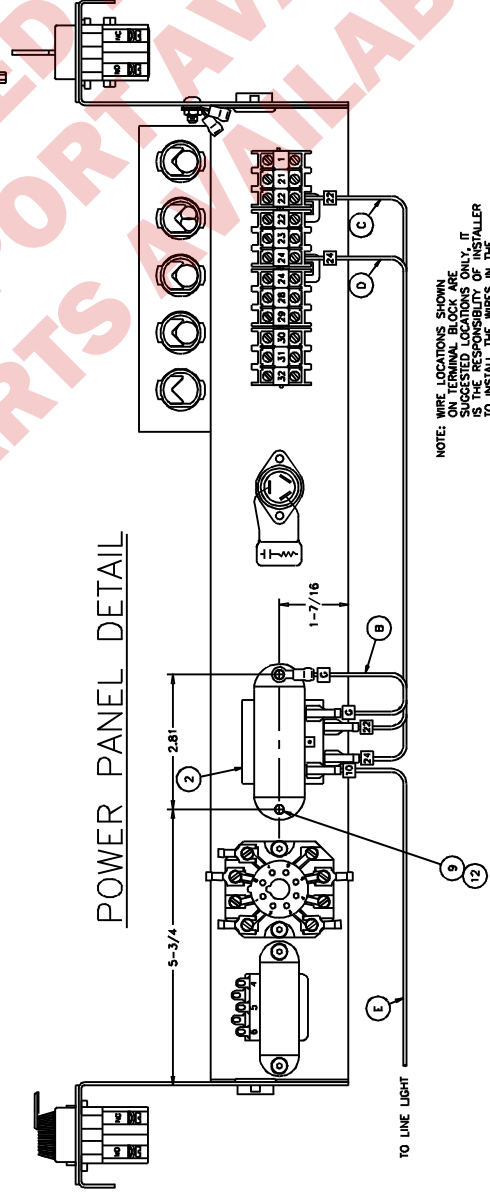
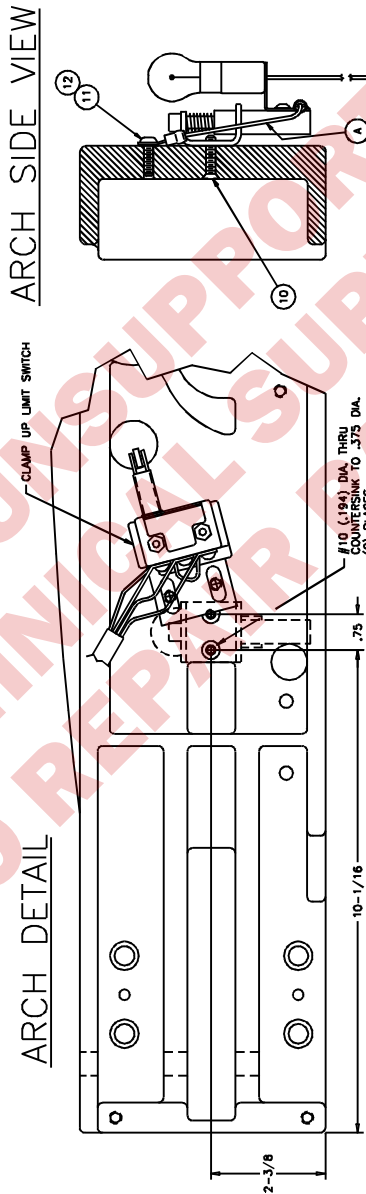
5. Replace the old transformer (pg.xx) with the new one provided in the kit. The mounting plate provided attaches to the electrical panel first. Attach it with the flat head screws and the shakeproof washers from the kit and the existing nuts, which held the old transformer.

NOTE: The encoder board shown on the Interconnection Diagram is for reference only. The conversion uses the existing encoder board without modification.

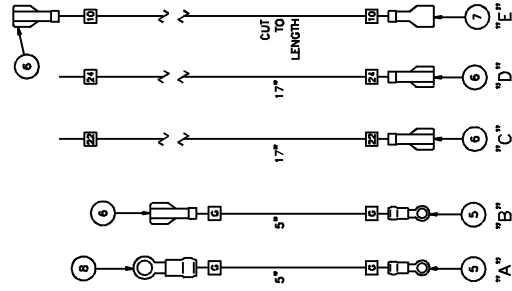
OPERATION

With this option, the Model 20 will show the backgauge position in either inches or centimeters. To change from one mode of measurement to the other, flip the toggle switch mounted to the right of the backgauge display. Next, you must run the backgauge through the 5"/12.70 cm presetter position. This coordinates the display in the measurement

LINE LIGHT KIT INSTALLATION INSTRUCTIONS K-2932 SHEET 1



NOTE: WIRE LOCATIONS SHOWN ARE SUGGESTED LOCATIONS ONLY. IT IS THE RESPONSIBILITY OF THE INSTALLER TO INSTALL THE WIRES IN THE CORRECT CHANNELLED TERMINAL WITH MAXIMUM TWO WIRES PER TERMINAL.



NO.	PART NO.	DESCRIPTION OF ACCESSORIES	QTY.
1	EC-2778	LIGHT ASSEMBLY - LINE	1
2	E-1023-11	TRANSFORMER - 120V PRL/ 12V SEC. ● & DA	1
3	E-709-R	WIRE - #18 GA. RED MTR 120" LONG	1
4	E-2743	WIRE - #18 GA. GREEN/YELLOW MTR 10" LONG	2
5	E-1214-9	CONNECTOR - #8 INS. RING	4
6	E-1214-30	CONNECTOR - 3/16 FULLY INS. QUICK DISC.	4
7	E-1214-54	CONNECTOR - FULLY INS. MALE TAB	1
8	E-1214-84	CONNECTOR - NON-INS. 1/4" RING	1
9	H-6923-83206	SCREW - #8-32 X 3/8 RD HD	2
10	H-6916-83206	SCREW - #8-32 X 3/8 FLT HD SOC CAP	2
11	H-6810-403	SCREW - 1/4-20 X 3/8 BUT HD SOC CAP	1
12	H-7324-8	WASHER - 1/4 INT. TOOTHLOCK	1
13	H-6423-#8	NUT, #8-32 HEX WITH LOCKWASHER	2
14	S-1684	TE-WRAP (NOT SHOWN)	6
15	H8 10	BRADY TAG - #10 (2 STRIPS)	1
16	H8 22	BRADY TAG - #22 (2 STRIPS)	1
17	H8 24	BRADY TAG - #24 (2 STRIPS)	1
18	H8 0	BRADY TAG - #8 (4 STRIPS)	1
19	K-2832	KIT INSTRUCTIONS (SHEET 1 & 2 - PRINT ONLY)	1

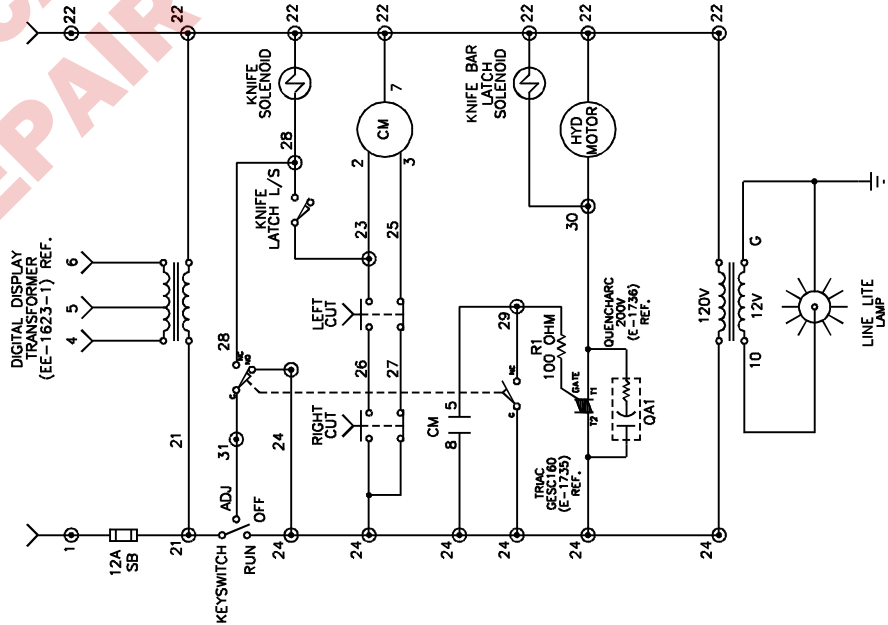
LINE LIGHT KIT INSTALLATION INSTRUCTIONS

K-2932 SHEET 2

INSTALLATION INSTRUCTIONS

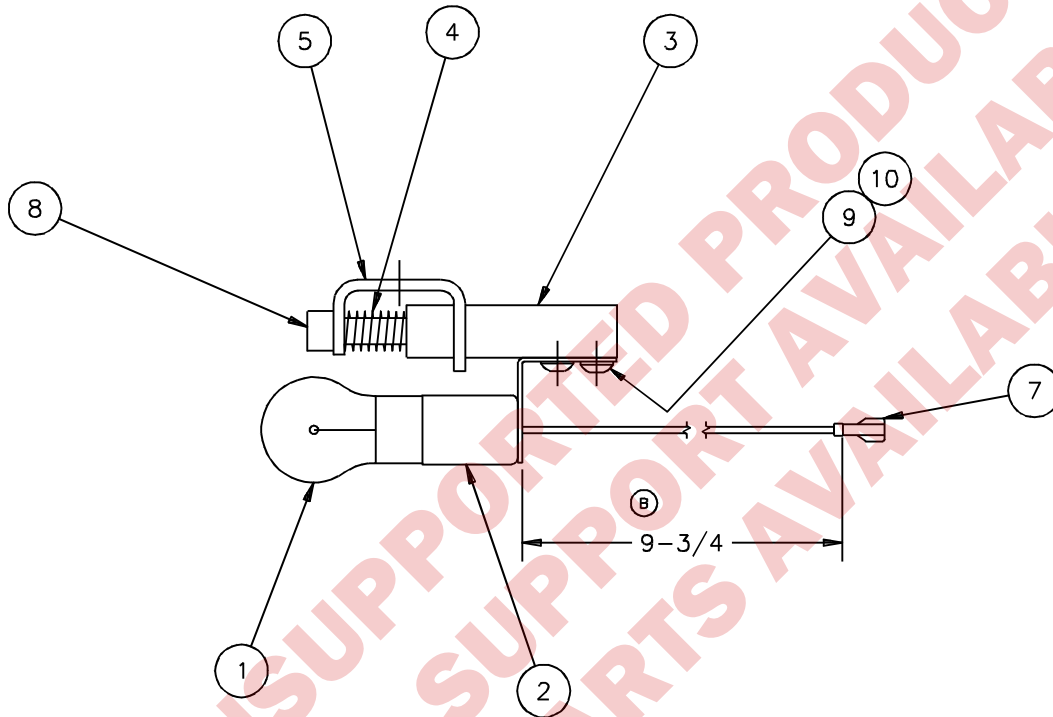
- 1) REMOVE POWER FROM MACHINE - LOCK IT OUT.
- 2) Remove the arch shroud (2 pieces) and the power panel cover. Set aside - to be re-installed before power is put to machine.
- 3) Remove the two screws that attach the clamp up limit switch to the arch. Move the switch out of the way (leave the switch wired - just hang it over the edge of the machine).
- 4) Prepare the arch for drilling - Using the dimensions from sheet 1, locate and mark the holes to be drilled in the arch. Before drilling, cover the top of the knife bar and the top of the clamp to keep them free of falling debris. (Warning: metal chips that might fall between the knife and clamp can cause serious damage to the machine, take extra care to cover completely before drilling). Drill holes per arch detail on sheet 1.
- 5) Cut the supplied green wire in half. Strip the wire insulation back 1/4" on both ends for both wires. Install connectors on both wires as shown in wiring details "A" & "B" on sheet 1. To install ground wire "A", remove one screw on the line light bracket and install the end that has the smaller of the two ring terminals. The other end is attached to the arch by using an unused 1/4"-20 threaded hole under the clamp up limit switch (see arch side detail). The second ground wire "B" is installed on the new transformer - see step 9 below and the power panel detail on sheet 1.
- 6) Using the supplied flat head screws, attach the line light to the bottom of the arch.
- 7) In the arch, reattach the clamp up limit switch. To attach the switch for proper function, install the switch with it's screws (removed earlier) loosely, slide the switch towards the actuator pin until you hear the switch click (actuate). Once the switch clicks tighten the screws that hold it to the arch.
- 8) Using the dimensions on sheet 1, locate and drill the two mounting holes in the power panel for the new transformer.
- 9) Mount the supplied transformer to the power panel using the supplied #8-32 round head screws and the #8-32 hex nuts. Note that the ground wire from the transformer is attached to one of the transformers mounting screws. See power panel detail on sheet 1.
- 10) Locate the red #18 ga. wire. Cut two wires to 17" long. Strip the insulation back 1/4" on both ends. Attach one supplied 3/16" quick disconnect to one end of each wire. Label each wire with the proper supplied wire tag and wire as shown in the power panel detail on sheet one. (See wire details "C" & "D" on sheet 1)
- 11) Taking the rest of the #18 ga. wire strip the insulation back 1/4" on one end and attach the supplied male tag wire tag this end as #10. Plug the male tag into the connector on the line light. Route the wire back to the power panel, use the supplied wire ties to tie the wire to existing cables on the way to the power panel to keep the wire from getting into any areas with moving parts.
- 12) When the wire from the line light is routed neatly to the power panel, cut off the excess (it needs to be long enough to connect to the transformer in the power panel - see power panel detail on sheet 1). Strip the wire insulation back 1/4" and attach the supplied 3/16" quick disconnect. (See the power panel wiring detail on sheet 1)
- 13) Re-install all the covers that were removed earlier and apply power.
- 14) Installed properly, the line light should go on and off with the keyswitch.

SCHEMATIC



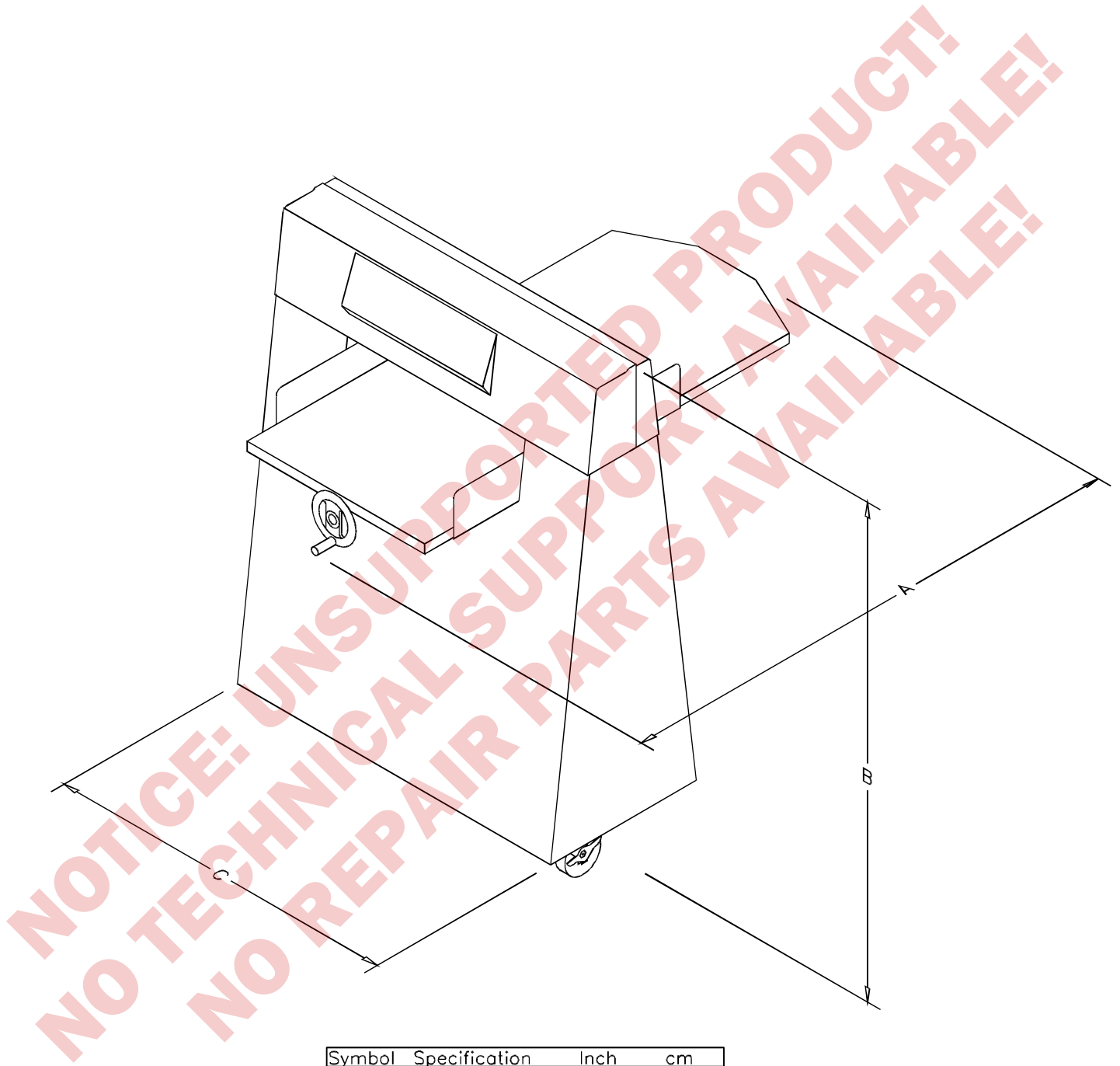
NOTE:  = TERMINAL BLOCK CONNECTION.

**LINE LIGHT ASSEMBLY
EE-2779**



NO.	PART NO.	DESCRIPTION OF ACCESSORIES	QTY
1	E-967-1	LAMP - LINE LIGHT	1
2	E-1260-1	SOCKET - LINE LIGHT	1
3	9127-1	SUPPORT - LINE LIGHT	1
4	35048-13	SPRING	1
5	9126-2	BRACKET - LINE LIGHT	1
6			
7	E-1214-47	CONNECTOR - FEM. FULLY INS. QUICK DISC.	1
8	H-6918-410	SCREW - 1/4-20 X 1-1/4 SOC. HD. CAP	1
9	H-6910-83203	SCREW - #8-32NC X 3/8" BUT HD CAP	2
10	H-7324-#8	WASHER - #8 INTERNAL TOOTH	2

**MODEL 20 FLOOR PLAN
10000-5FP**



Symbol	Specification	Inch	cm
A	Overall Length	48.2	123
B	Overall Height	47.5	121
C	Overall Width	35.5	89
	Net Weight	550 lb	250 kg

**NOTICE: UNSUPPORTED PRODUCT!
NO TECHNICAL SUPPORT AVAILABLE!
NO REPAIR PARTS AVAILABLE!**

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