Champion 370 TC 37" Programmable Paper Cutter

Instruction Manual

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CHAMPION 370 TC

Instruction and Parts Manual

Serial Numbers:
13338 through 15999,
370-C-150000 and up

Sold and Serviced by

The Challenge Machinery Company
6125 Norton Center Drive
Norton Shores, MI 49441-6081 USA

ChallengeMachinery.com

F.370-C
December 2018

1.0 Introduction

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.

⚠ CAUTION SAFETY ALERT! This symbol means **CAUTION: 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 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 your machine and return it 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 Machinery Company • Attn.: Service Department • 6125 Norton Center Drive • Norton Shores • MI 49441-6081

CHALLENGE MODEL	SERIAL NUMBER	
ATTN	COMPANY	
ADDRESS		
CITY	STATE/PROVINCE	ZIP
PHONE	DATE INSTALLED	
DEALER NAME & CITY		

*** WARRANTY INFORMATION ***

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

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

TABLE OF CONTENTS

2.0 Safety

2.1 Precautions

- This machine is designed for one-person operation. Never operate the machine with more than one person.
- Safe use of this machine is the responsibility of the operator. Use good judgment and common sense when working with and around this machine.
- Read and understand all instructions thoroughly before using the machine. If questions remain, contact the dealer from which you purchased this machine. Failure to understand the operating instructions may result in personal injury.
- Only trained and authorized people should operate this machine.
- Do not alter safety guards or devices. They are for your protection. Severe personal injury may result.
- Disconnect power before cleaning or performing maintenance. See Section 2.2 Power Lockout Procedure.
- Observe all caution labels on this machine.
- 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.
- 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!**
- Never ship machine with the knife installed.

2.2 Power Lockout Procedure

For maximum safety when making adjustments or repairs to your machine, be sure to lock out the main power control switch to which the machine is connected. The switch should be moved to the OFF position and a padlock placed in the loop. The person servicing the machine should hold the key.

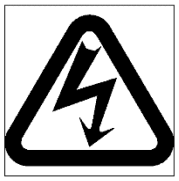
Figure 1

2.3 Warning Label Definitions

The following warning labels are found at various locations on your machine. Read and understand the meaning of each symbol. If a label is lost from the machine, it should be replaced. The item number and location of each label can be found in Section 13.

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.



SHOCK HAZARD

Disconnect power before removing cover. Replace cover before operation.

!OJO!

⚠ CAUTION This Este simbolo de alerta de seguridad significa ¡ OJO ! - INSTRUCCIONES DE SEGURIDADPERSONAL. 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 adjustes 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 estranos 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.

3.0 Packing List

PART NO.	DESCRIPTION OF ACCESSORIES BASIC MACHINE	QTY
Extension Side Tables:		
16026	36" Steel Side Table (LH)	1
16027	36" Steel Side Table (RH)	1
49147	Side Table Back Plate (LH)	1
49080	Side Table Back Plate (RH)	1
A-8495	Side Table Support (LH)	1
A-8496	Side Table Support (RH)	1
H-6913-606	Side Table Bolts (4 shipped installed)	4
H-6913-608	Side Table Supports and Back Plates	10
H-6913-818	Side Table Support Adjustment Bolts	2
H-6424-8	Side Table Supports, Jam Nuts	2
H-6424-6	Side Table Hex Nuts	10
H-7327-12	Side Table Back Plate - lockwashers	14
H-7321-6	Side Table Back Plate - fl washer	14
49012	False Clamp Plate (Shipped Installed)	1
49055	Knife	2
H-6918-608	Knife Bolts	9
8815	Knife Washers, Used on knifes and Side Tables	17
4173	Cutting Sticks (1 Installed)	4
A-12608-6	Jogging Aid	1
Tool Kit (P/N K-49000)		
49226	Knife Lifter Assembly	1
5064	Cut Stick Puller	1
W-178	5/16 Ratcheting Box Wrench	1
W-164	Hex "T" Wrench	1
W-158	5/16 Open End Wrench	1
W-141	1/8" Hex Wrench, Long Arm	1
W-137	5/32" Hex Wrench	1

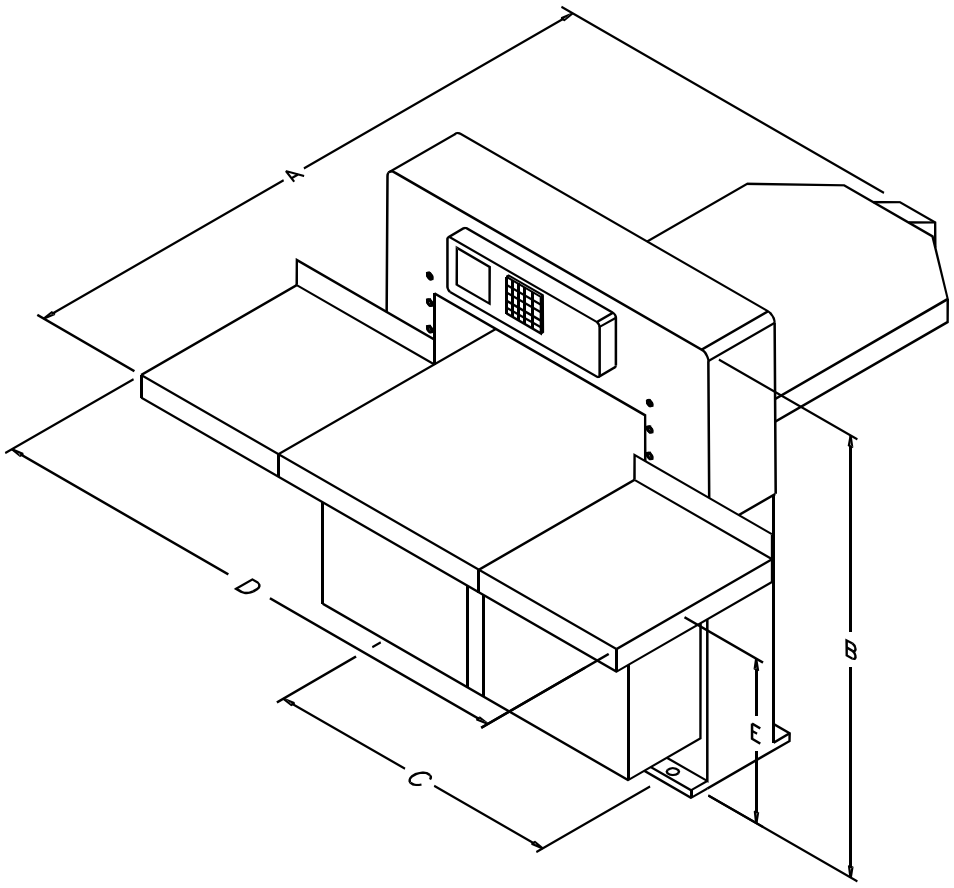
4.0 Specifications

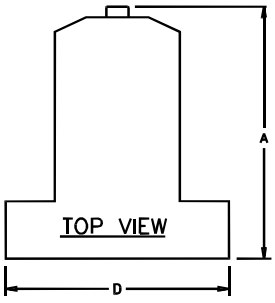
Description	Inch Units	Metric Units
Cutting Width	37”	94.0 cm
Clamp Opening w/o False Clamp Plate w/ False Clamp Plate	 5-1/8” 4-7/8”	 13.0 cm 12.4 cm
Clamping Force	2000-6900 lbs.	8896 – 30693 N
Minimum Cut – Standard	¾”	1.9 cm
- w/ False Clamp Plate	2-5/8”	6.7 cm
Table Space Front: (std.) Back:	 25” 40”	 63.5 cm 101.6 cm
Dimensions		
Table Height	36”	91.4 cm
Overall Height	60”	152.4 cm
Overall Length	86 ¼”	219 cm
Overall Width	48 ½”	123 cm
w/ Side Tables	109”	276.9 cm
w/o Side Tables	63 ¼”	160.7 cm
Approx. Net Weight	3750 lbs	1701 kg
Approx. Shipping Weight	4200 lbs	1905 kg
Will pass through door:		
Assembled	63 ½”	162 cm
Table/treadle out	35”	89 cm
Electrical		
Standard: 10 HP, 3 Phase, 60 Hz AC; 208/230V ± 10% @ 38A *or* 460V ± 10% @ 16.5A		
TC series has 4000 cuts on 99 channels. Minimum space between cut positions is 0.005” or 0.1mm. Repeat positioning accuracy is 0.003” or 0.05mm.		

Electric Eyes:
- Response time < 68 ms
- Object detection capability – 12 mm

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

5.0 Footprint





STANDARD SIDE TABLES

		CHAMPION 305		CHAMPION 370	
Symbol	Specification	Inch	cm	Inch	cm
A	Overall Length	69.5	176.5	86.25	219.1
B	Overall Height	58.5	149	60.0	152.4
C	Mounting-Front	41.5	105	60.25	153
D	Overall Width	78.5	200	109.0	276.9
E	Floor to Table	36.5	93	36.0	91.4
	Net Weight	2550lb	1159kg	3750lb	1701kg

6.0 Installation & Setup

6.1 Inspecting Shipment

This machine has been carefully packed to prevent damage during shipment. However, claims for damage or loss are the responsibility of the recipient. Inspect all shipments as soon as they are received. If there is any noticeable damage, note it on the freight bill. Visual and/or hidden damage must be reported to the claims department of the carrier within 15 days. Contact your dealer if you need any assistance. Check the contents of the box against the packing list on page 8. Make sure there are no missing items.

6.2 Uncrating

This machine is lagged to a wood skid and covered with a triple-walled corrugated container. Loosen the flaps of the carton where they are attached to the skid. When loose, the carton can be lifted straight up. Remove the side tables and accessory box, which are also attached to the skid. Place the cutter/skid about where the machine will be positioned and remove the lag screws from the skid.

Remove the lower shipping block holding the counter weight up. It is secured in place with a lag screw and washers. Remove the upper shipping block, which is also secured in place with a lag screw and washers. If the upper wood block cannot be removed because the knife bar is in the way, wait until the machine is powered up for the first time and remove the upper wood block when the knife bar has been raised under power.

Make sure that both of the rollers, for the counter weight, are riding on the guide shaft. It is possible that during shipping, one may have moved off of the shaft. The rollers are located on the top and bottom of the counter weight. The counter weight is located inside the left front enclosure door behind the clamp cylinder. Make sure if the machine is ever reshipped the counter weight is blocked up so that there is slack in the counter weight chain and the counter weight does not bounce. The counter weight should be blocked/ held up with a wood 2x4 piece of lumber 11-5/8” long. This block needs to be secured in place with a lag screw and washers as shown in figure 2, page 12.

Remove the shipping block securing the paper deflector. This shipping block is wedged between the bottom of the paper deflector assembly and the mounting pin for the paper deflector extension spring. The shipping block is held in place by a cable tie. The cable tie and shipping block are accessible through the left arch access hole by removing the left arch end cover (Figure 3), page 12. If the machine is ever reshipped, a 1” X 2” piece of lumber (actual size 3/4” X 1-1/2”) 17” long should be wedged in between the paper deflector assembly and the mounting pin for the paper deflector extension spring as it was when shipped from the factory.

Before the machine can be run for the first time, the 3/4 NPT plug in the reservoir needs to be replaced with the breather cap, see section 6.8 Hydraulic Check on page 17.

Save the packing materials.

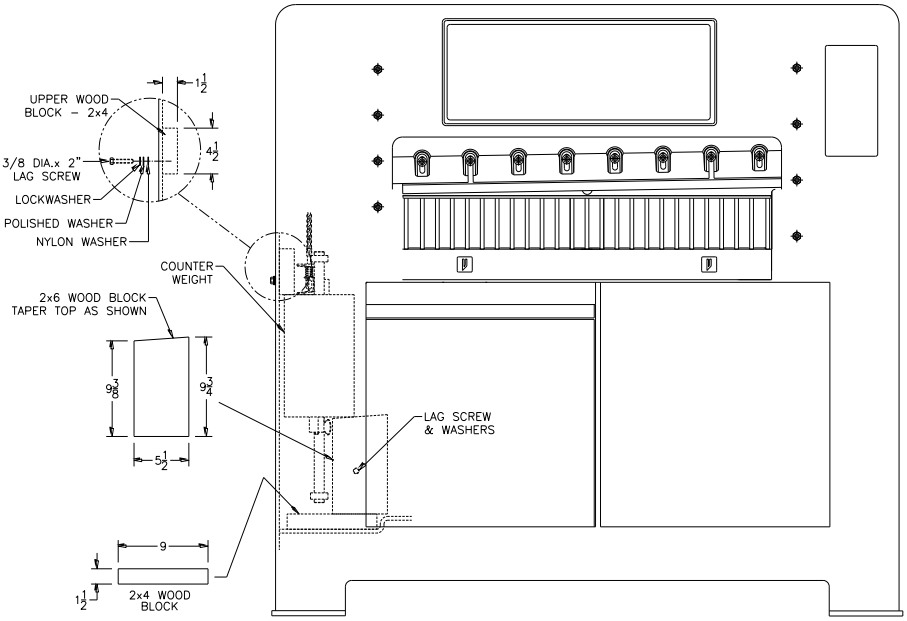


Figure 2

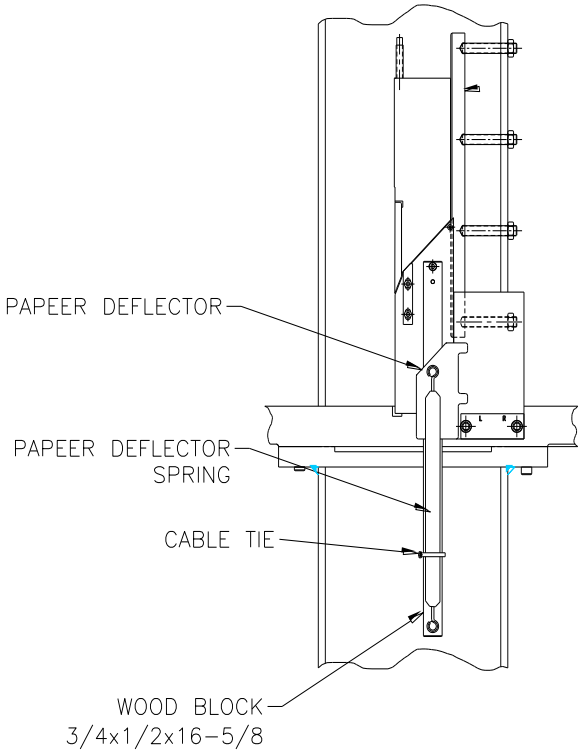


Figure 3

6.3 Re-Crating and Shipping

Save the packing materials and braces. All packing blocks and hardware should be saved or reproduced in order to ship the machine again. If the machine is not repacked as it came from the factory, damage will result when trucked.

- Remove the knife before shipping.
- Brace the back-end of the table to the skid using a 2x4.
- Use a skid larger than the outer tip-to-tip dimensions of the machine.
- Block the counter-weight according to page 12, Figure 2 and 3
- Remove the hydraulic breather cap and plug with a ¾ NPT plug.
- Always lift and transport from the front of the machine. The carton has lifting instructions, so it must be placed properly on the skid.

Challenge is not responsible for an improperly packed machine. The skid and packing materials are available for purchase from Challenge.

6.4 Lifting Instructions

Professional riggers should do unpacking, handling, and positioning. If handling or unpacking is a problem, your dealer or a local trucking facility should be able to supply or recommend a qualified rigger. This 3750-lb/1701-kg machine should be moved with experienced people and the proper equipment. Do not risk personal injury or damage by attempting to move machinery with makeshift equipment or inadequate manpower.

Lifting straps may also be used to lift the machine by placing the straps around the front and rear of the table. When straps are used in this way, wood blocks must be placed beside the lead screw to prevent damage, (Figure 4). A bent lead screw will cause the backgauge to bind. The lead screw cover must also be removed. Do not strap around the lead screw cover.

Figure 4

The backgauge should be positioned all the way to the front of the table and straps placed as close the machine body as possible. Gently lift the cutter, remove the skid and carefully place the cutter on the floor.

6.5 Cleaning

Wipe down the table and bare metal surfaces with a non-flammable solvent such as CRC or blanket wash. The table surface is cast iron and will rust if left unprotected. Coat the table with a non-abrasive wax. A Cutter Care Kit, p/n 16077, with cleaner and wax, is available thru your Authorized Challenge Dealer. The protective film on the console may be removed. Never clean console with petroleum based solvents. Damage will result. See also Cleaning under Maintenance Guide on page 37.

6.6 Assembly: Standard

Unless otherwise specified, the only items that have been disassembled for shipping are the extension side tables. To assemble the table extensions, follow the procedure below.

NOTE: Assembled side tables are awkward and heavy. Use two people to attach the side tables.

1. Install the side table supports. Each support is attached to the frame with two (2) bolts and washers. (Mounting bolts are shipped installed in the frame - remove them to install supports.)

2. Thread the 1/2-13 hex nut, packed with the machine, onto the 1/2-13 X 2-1/4 hex bolt. Screw the bolt into the nut welded on the table support.

3. Assemble the side table backs to the table surfaces. The extension table bolts and hex nuts are packed inside the tool kit box. Tables are installed with the clearance hole for the knife gib adjusting screws towards the middle of the cutter. Make sure the right hand side table back plate is bolted onto the right hand side table, and the left hand side table back plate is bolted onto the left hand side table.

4. Have one person hold the assembled side table in position while the other aligns the holes and threads the mounting bolts with washers. (Mounting bolts are shipped installed in the side of table- remove them to install tables.)

5. Use a 9/16" socket and extension to lightly tighten the mounting bolts, then tap the extension table up or down with a rubber mallet until it is flush with the main table. Run a straight edge or sheet of paper over the seam to check the fit. Make sure your stock will not catch on the seam.

6. Locate the leveling bolt that was threaded into the welded nut on the table support in step 2. You may have to loosen the mounting bolts a little to allow enough play to level the table. When the extension tables are leveled and the surface joints even, tighten the mounting bolts securely. Make sure the 1/2-13 hex nut, threaded on the leveling bolt in step 2, is tightened to prevent the leveling bolt from loosening.

7. The tables are powder coated and need only be wiped down with a dry cloth. DO NOT apply solvents or abrasive cleaners to extension table surfaces. They may cause discoloration or scratches.

6.7 Assembly: Table Out

If your cutter has been shipped knocked-down, it is even more important to have a rigger or qualified personnel with the right equipment to position and assemble your cutter.

Your cutter will arrive in two crates. One contains the arch/base assembly. The second, accessory box contains the parts, accessories, and table. Reassemble as follows:

1. Remove the crate from the arch/base assembly.

2. Remove the accessories from the accessory box.

3. Lift the table out of the accessory box. *NOTE:* Be careful not to damage or bend the lead screw or backgauge drive motor assembly. Use wood blocks beside the screw if straps are used (Figure 4 on page 13).

4. Remove the rear arch cover assembly.

5. Insert the table from the rear of the machine, through the arch. The table is located using two special taper pins through holes on the rear table mounting pads.

6. After locating the table, install the eight (8) table bolts. Seat the taper pins and tighten the bolts.

7. Attach the front and rear side guides. Install the table end cover. Install the rear table polycarbonate cover to the table end cover and side guides.

8. Install the paper deflector through the access point inside the front enclosure, under the table. Depress the deflector with your thumb while installing the assembly to clear the knife bar, (Figure 5). Attach with two 3/8-16 x 1" socket head cap screws.

Figure 5

One socket screw must be installed from inside the arch. Remove the side guard plate for access. Both bolts should have shake proof lock washers.

9. Mount the cut button cable assembly to the underside of the table.

10. Mount the main power disconnect switch to the underside of the table.

11. Fasten one end of the encoder cable, chain carrier to the frame of the machine. Route the carrier chain through the cutout in the table brace. Fasten it to the backgauge carrier. Install a strain relief cable tie to the backgauge carrier to secure the encoder cable. Plug the encoder cable into the encoder. (Figure 6, page 16)

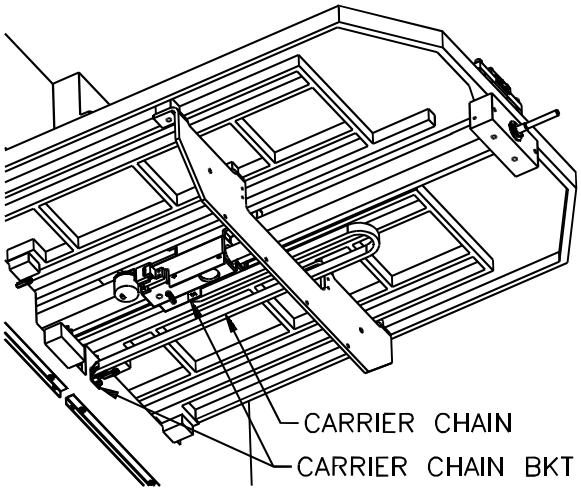


Figure 6

12. Install the forward and rearward lead screw covers using eight 1/4-20 x ½" button head cap screws, eight ¼" flat washers, and eight ¼" internal tooth lock washers.

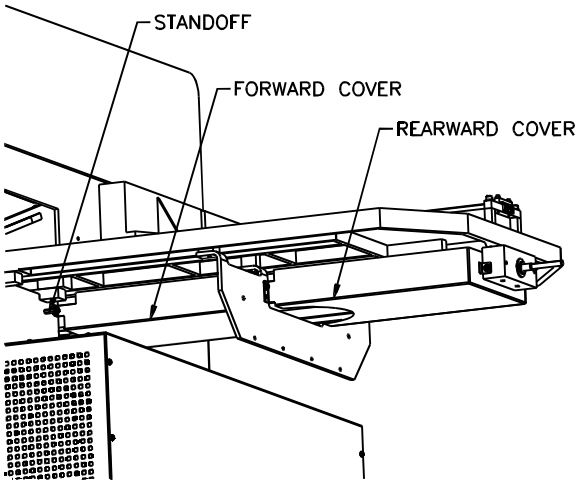


Figure 7

13. Reconnect the backgauge motor cable. From the table, the cable runs through the strain relief bushing into the motor housing, (figure 8, page 17). Attach the wires according to the wiring schematic in the back of this manual for the machine model you have.

Figure 8

14. Connect the tube from the blower to the plastic connector attached to the air channel cover on the bottom of the table if required. Reconnect the wires to the air blower and solenoid according to the wiring diagram for the machine model you have.

15. Open each electric eye end-cover. Mount the electric eyes to the machine as shown in Figure 9. The end-covers are oriented toward the outside of the machine. Connect each electric eye, leaving the connectors inside the electric eye cases. Replace the end-covers.

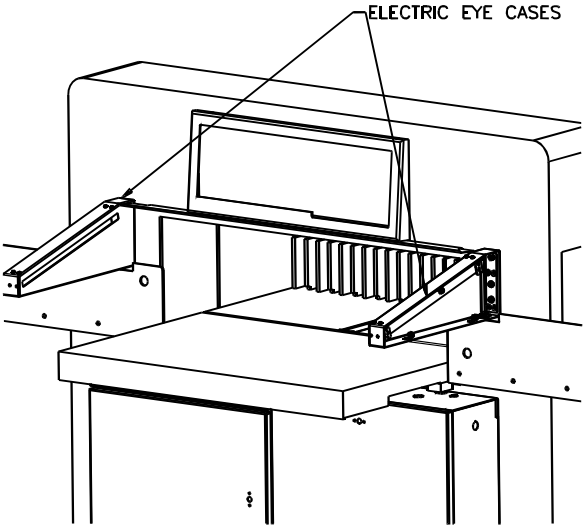


Figure 9

6.8 Hydraulic Check

When the machine is shipped, the breather cap should be replaced with a 3/4 NPT plug. This is how the machine is shipped from the factory. Before the machine can be run for the first time the NPT plug needs to be replaced with the breather cap. Access the plug behind the small cover on the hydraulic power unit cover behind the machine.

The hydraulic reservoir is filled with 15 gallons of grade #46 hydraulic oil at the factory. The fluid level should be checked before operation, and periodically during normal operation. The reservoir is located behind the cutter, beneath the table (). The hydraulic tank has a breather cap that can be removed for changing the oil and checking the oil level. The reservoir should be kept full at all times. Fill the reservoir so that the oil level is 3/4" below the top of the inside of the hydraulic tank.

NOTE: DO NOT OVERFILL. Overfilling may cause leakage when the machine is hot.

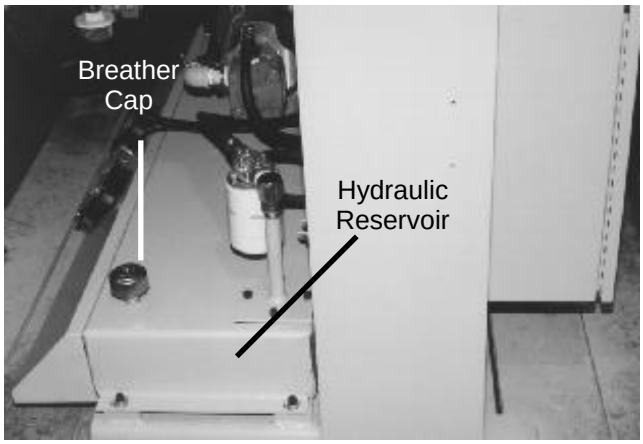


Figure 10

6.9 Power Hook-Up

⚠ CAUTION SHOCK HAZARD! Always disconnect power at main power panel before working on the cutter. Lock it out to prevent accidental power up. See Power Lockout Procedure (page 5).

For satisfactory operation, be sure that your cutter is wired for the correct phase and voltage and has adequate power. The correct electrical specifications for your machine are shown on the serial plate. Check the machine serial plate before connecting the power. For future reference, transfer this information to the front cover of this manual.

Watch Setup Voltage- Inadequate power to the cutter can be a major source of problems. Too many machines on the same circuit will reduce the power to each machine. Inadequate voltage will frequently cause overheating, loss of power, and in extreme cases, failure to operate. Test your voltage when the shop is at actual working levels. Challenge recommends a dedicated line with a lockable disconnect to provide adequate power for this machine.

Important: You must have an adequate size circuit and heavy enough wiring for this machine. The circuit size should be a minimum of 20% greater than the amperage rating on the machine nameplate. If a wire is run over 75 feet (23 meters), the next size wire should be used. Check local electrical codes.

Electrical Specifications for Champion 370 cutters:

	Volts	Amps	Circuit Size	Wire Size	Metric Wire
3 Phase:	460 V	11.5	16.5 A	#12 AWG	4mm sq.
	230V	25	38	#8	10mm sq.
	208V	25	38	#8	10mm sq.

6.10 Three Phase Hook-Up

The power source is connected to the cutter through the bottom of the power panel (right hand side). A main power control switch and power cord providing the machine with power is the responsibility of the customer and should be set in accordance with the local electrical code.

1. *DISCONNECT AND LOCK OUT THE POWER* (See Power Lockout procedure, page 5)

2. Thread the power cord through a conduit connector into the power panel.

3. Fasten the ground lead to the ground terminal lug (Figure 11).

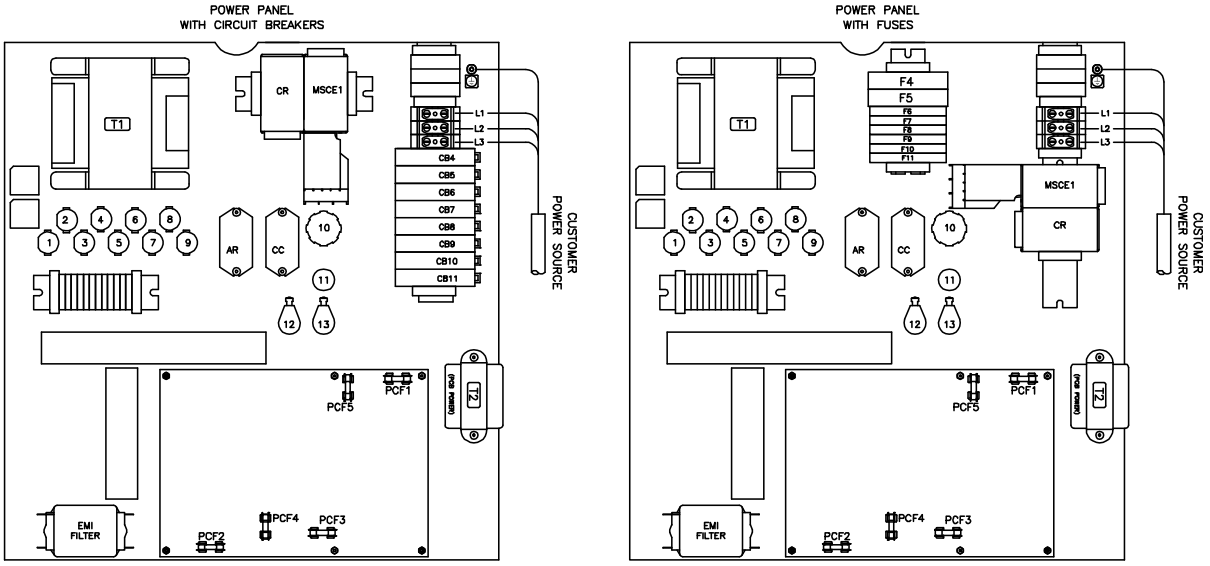


Figure 11

4. Fasten the three power leads to the three terminals of the main power terminal block- L1, L2, & L3.

5. Close the electrical panel doors and latch them. Unlock the main panel and turn on the power. Turn on the main power disconnect switch located on the front face of the table.

6. Press both cut buttons simultaneously to activate the motor and check to make sure it is turning the same direction as the arrow on the motor casing.

If it isn't, disconnect the power and exchange any two leads (L1, L2 or L3) of the power cord as in Figure 12, page 20. The motor will now turn the correct direction.

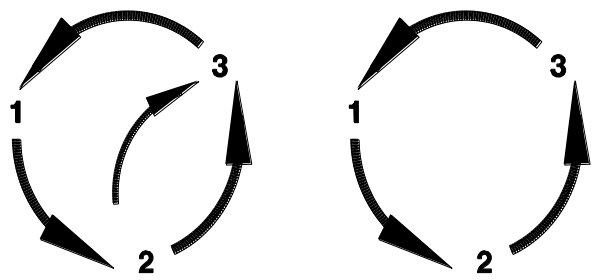


Figure 12

6.11 False Clamp Plate

⚠ CAUTION ALWAYS disconnect the power and LOCK IT OUT before installing or removing the false clamp plate. NEVER attempt to install or remove the false clamp plate while the machine is running. Remove all tools and stand clear when reconnecting power.

To prevent marking on pressure sensitive jobs, a false clamp plate has been included (installed) with your machine. This plate attaches to the bottom of the clamp. It is secured from the front of the cutter with three set screws that clamp against the mounting rods on the false clamp plate.

1. ***DISCONNECT THE POWER AND LOCK IT OUT*** (See Power Lock-Out Procedure, page 5)

2. Position the false clamp plate under the clamp. The locator pegs should be positioned to the rear of the cutter and are set into holes in the bottom of the clamp.

3. With a 1/8" Allen wrench, back off the setscrews in front of the clamp and raise the plate up to the bottom of the clamp. It may be necessary to bring the clamp down slightly with the foot pedal in order to access the far left setscrew. Raise the false clamp plate evenly or it will have a tendency to bind. When the plate has been raised into position and is flush with the bottom of the clamp, tighten the setscrews to hold the plate in position.

4. Make sure that all tools have been taken off the cutter table, reconnect the power, and turn on the power.

NOTE: The cutter cannot make cuts smaller than 2-5/8" (66.7 mm) with the false clamp plate installed.

7.0 Operation

IMPORTANT: DO NOT ATTEMPT TO OPERATE YOUR CUTTER UNTIL YOU HAVE THOROUGHLY READ AND UNDERSTAND ALL OF THE INSTRUCTIONS FOUND IN THE OPERATOR AND INSTRUCTION MANUALS INCLUDED WITH YOUR CUTTER. CALL YOUR AUTHORIZED CHALLENGE DEALER IF YOU STILL HAVE ANY QUESTIONS.

Complete operating instructions for all TC Model paper cutters can be found in the TC Touch Screen Control Operating Instructions manual that was included with your machine (Figure 2). If you do not have a copy, or to download the latest version, visit: www.challengemachinery.com/support.

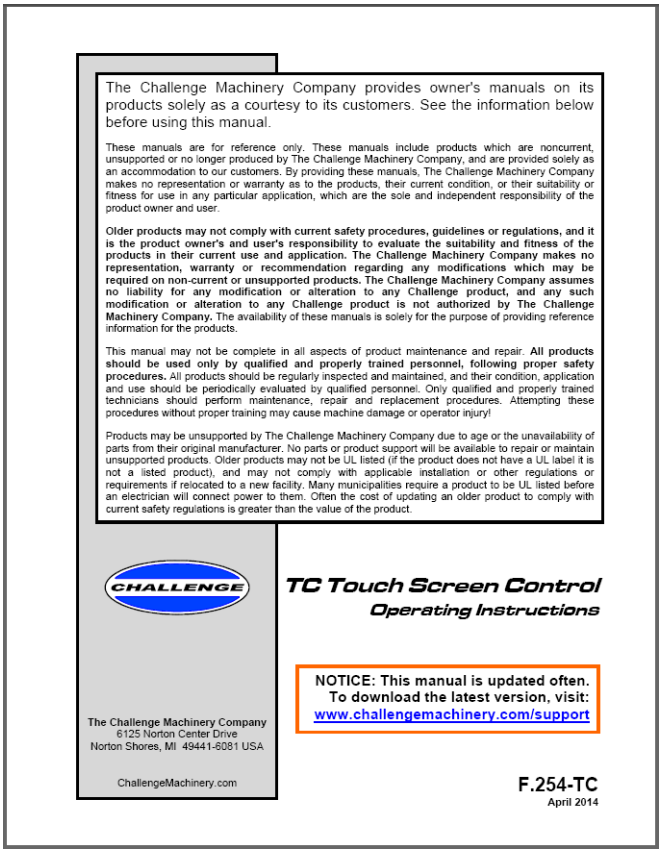


Figure 2

NOTES

8.0 Maintenance Guide

⚠ 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.

8.1 Routine Maintenance/Adjustments

8.1.1 Knife Care

CAUTION **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.

- Make sure the knife lifter is properly installed, see instructions following.
- Keep handling of unprotected knives to an absolute minimum.
- Clear off the cutter table before removing knife.
- Have a scabbard on the cutter table and insert the knife immediately.
- Warn people of any unprotected knife.
- Knife changing is a **ONE PERSON OPERATION**. Having more than one person changing knives increases hazard.

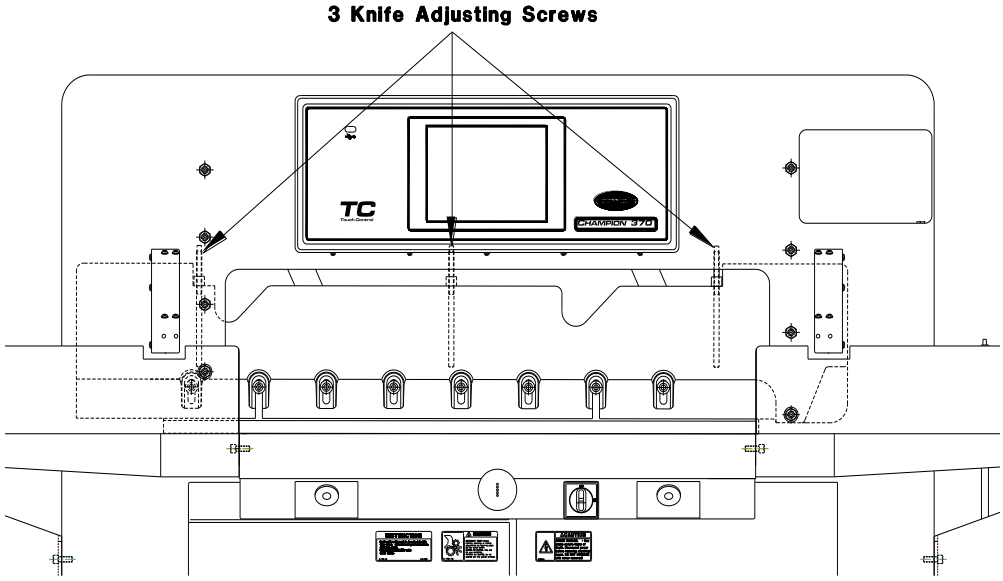


Figure 15

Figure 16

8.1.2 Knife Change

The knife changing equipment shown in Figure 16 is included in the cutter tool kit. The following instructions show how to remove and install a new or re-sharpened knife. Read through these instructions AT LEAST ONCE before attempting to actually change or install any blades.

8.1.2.1 Knife Removal

1. Clear the cutter table. Place chipboard directly under the knife to prevent nicking if the blade hits the table.

2. Go to the MAINTENANCE screen and choose KNIFE ADJUST. Choose KNIFE DOWN, then press and hold the cut buttons to send the knife to the down position.

3. ***DISCONNECT THE POWER AND LOCK IT OUT!*** (See Power Lockout procedure, page 5.)

4. Back off the three (3) knife adjusting screws on the top of the knife bar, (Figure 15 on page 25), as far as they will go (counterclockwise). A new knife will cut deeper than a knife that has been ground several times. If the adjusting screws are not backed off, damage will result to the new knife, paper deflector and/or the cutting stick.

5. Remove the right-most knife bolt. This bolt will not be accessible after the knife bar is raised.

6. Unlock and reconnect the power then raise the knife bar.

7. ***DISCONNECT THE POWER AND LOCK IT OUT!*** (See Power Lockout procedure, page 5.)

8. Remove the bolts in the two slotted holes of the knife bar and replace them with the knife lifter assembly. Tighten the lifters enough to hold the blade in place. Remove the remaining bolts (Figure 17 on page 27).

Figure 17

9. Clear the table and put the empty knife scabbard on the table.

10. Grasp the knife lifter assembly firmly while turning counterclockwise to release the knife from the knife bar. Slowly lower the knife down and to the right. Bring the left side out first and put the blade in the scabbard immediately.

11. Send the dull knife to the grinder.

8.1.2.2 Knife Installation

1. Lower the knife bar.

2. Lock the paper deflector down by switching the hold down lever to the locked position (Fig. 18).

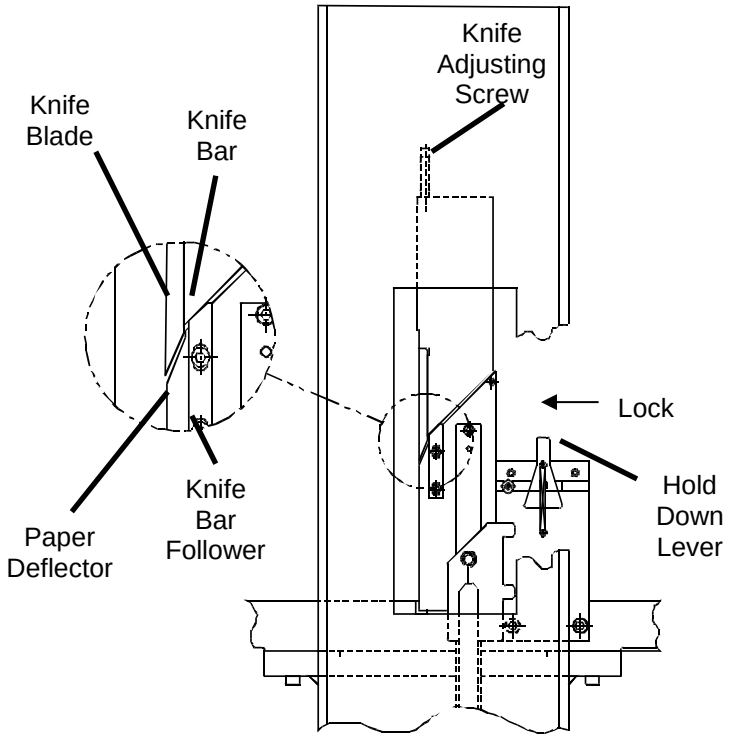


Figure 18

3. Raise the knife bar.

4. ***DISCONNECT THE POWER AND LOCK IT OUT!*** (See Power Lockout procedure, page 5.)

5. Use the cutting stick puller to remove the cutting stick. Turn the cutting stick to a new surface.

6. Clear the cutter table and extension tables. Place chipboard directly under the knife to prevent nicking if the blade hits the table.

7. Check to make sure that all three (3) of the knife adjusting screws have been backed out, see step 3 of Knife Removal section 8.1.2.1 on page 25.

8. Place the knife scabbard on the cutter table.

9. Remove the knife retainer screws holding the knife in the knife scabbard. Insert the knife lifters into the knife bolt holes on the knife (use the lowest holes) corresponding to the slots in the knife bar. Turn the threaded portion of knife lifters into the threaded holes in the knife until they contact the scabbard, then back off 1-1/2 turns.

10. Grasp the knife lifters, lift the blade, and insert the blade into the knife bar slot. Slowly guide the blade into the cutter right end first, then bring the left end in parallel to the knife bar. Raise the knife into the knife bar slot as high as it will go. Tighten the lifters to hold the knife.

NOTE: If the blade will not go in, either the lifters are screwed into the blade too far or the blade is not centered over the table, and the end of the blade is hitting the end stop in the knife bar

11. Insert the rest of the knife bolts and washers, snug tighten them, but don't tighten completely. Be sure all bolts have washers. The correct washers are important for proper bolt clearances!

12. Replace the knife lifters with bolts and snug tighten.

13. Place a few sheets of paper across the table to cover the cutting stick.

NOTE: Before the knife bar is run down make sure the following is checked:

    a. The (3) knife adjusting screws have been backed off completely.

    b. The knife blade is raised as high as it can go in the knife bar over the entire length of the blade.

    c. The paper deflector is locked down.

14. Unlock and turn the power on.

15. Lower the knife bar.

16. ***DISCONNECT THE POWER AND LOCK IT OUT!*** (See Power Lockout procedure, page 5.)

17. Turn the knife adjusting screws down, a little at a time, until the blade cuts through the paper evenly, over the entire length of the cut stick. Be sure the blade is parallel to the cutting stick, or one end may cut deeper than the other, causing uneven wear on the cut stick.

NOTE: When the knife is adjusted so it just cuts through the last piece of paper on the table evenly over the entire length of the cut stick, it is a good idea to turn each knife adjusting screw 1/4 turn tighter (clockwise). This can eliminate the need to readjust the knife after the very sharpest edge of the blade has worn off.

18. Tighten all the bolts.

19. Turn power on and send the knife to the "UP" position.

20. Make a test cut through a full lift of stock. Make minor adjustments by loosening the bolts and repeating steps 15 through 20.

NOTE: If the knife ends cut but the middle does not, you could have dips or uneven spots in either the knife or the cutting stick. These can be eliminated to some extent by laying 1/2" (13mm) wide strips of paper beneath the cutting stick to shim it up.

8.1.3 Cut Quality

Assuming the proper bevel angle has been chosen for the material being cut, cut quality depends upon blade sharpness and surface finish. Three cut characteristics can indicate a blade needs sharpening:

1. Burnishing appears on cut face of lift.
2. The cut does not appear straight when viewed from the top.
3. The profile of the cut (side view) does not appear to be perpendicular to the table.

Other signs that a knife needs sharpening are:

- The machine seems to strain while cutting. This strain can be heard in the hydraulic motor.

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

8.1.4 Bevel Angle

The most appropriate bevel angle depends upon four factors.

1. The length of time desired between sharpening
2. Physical properties of the stock being cut (hardness, impurities, density)
3. Power output of machine
4. Amount of clamp pressure applied

1. Length of Time Between Sharpening
Under identical cutting conditions, knives with larger bevel angles will require sharpening less frequently than knives with smaller bevel angles. There is more material supporting the cutting edge of larger bevel angles.

2. **Physical Properties of Stock**
In general a smaller bevel achieves a better quality cut. Hard, dense, and impure papers, however, will dull a small angle bevel quickly. Impurities may put nicks on the cutting edge. As a result, cut quality is lost quickly, and knives require sharpening often. Therefore, a larger angle bevel should be chosen for such materials. Soft materials can be cut with small angle bevels without adversely affecting sharpening frequency.

3. **Power Output of Machine**
As the bevel angle increases, more power is required to push the knife through stock. If a bevel angle is too large for a machine, the machine may take excessive wear-and-tear and may stall part way through the cut cycle. Although the knife will require sharpening less often, the machine may incur costly damage.

4. **Amount of Clamp Pressure Applied**
As clamp pressure increases, the pile density increases. As discussed in 2, above, more dense materials are harder to cut. This presents a dilemma. Higher clamping pressures are used to reduce draw when cutting with large angle bevels. While higher bevel angles increase the lifetime of the knife, high pressure clamping increases the material’s density and detracts from knife life. As a result, a compromise must be made between knife life and cut quality.

8.1.5 Helpful Suggestions

- If your shop is large enough to purchase more than one set of knives, the following suggestions may be helpful. A set consists of 3 knives, one in the machine, one back up, and one at the grinder.

- If you cut a variety of stocks (easy and hard to cut), purchase two sets of knives. One set should be beveled at around 21^0 and the other around 23^0.

- Use the smaller angle bevel to cut softer stocks at lower clamping pressures. Begin by cutting the most pure, easy to cut stocks. As the knife dulls, begin cutting the less pure of the softer stocks.

- Use the larger bevel to cut harder more dense stocks at higher clamping pressures. Begin by cutting the softer and most pure of the hard stocks. Then move to cutting the harder and less pure of the hard stocks.

The following suggestions apply to those who can support only one set of knives. The bevel angle on the knives shipped with your machine was chosen for its versatility. It is not the ideal angle for every material, but these suggestions may improve the cut quality for those materials being cut with an inappropriate bevel:

- First, cut the softest, most pure stocks at lower clamping pressures.
- Move to the harder, more pure stocks at higher pressures. You may also need to reduce pile heights.
- Softer, impure stocks are next, followed by the hard impure stocks.

Following these guidelines will decrease the frequency of knife sharpening while maintaining a quality cut as long as possible.

Suggestions for all:

- If the machine seems to strain and cut quality is still good, reduce the pile height. You may also carefully apply glycerin to the bevel when cutting hard, coated stocks. 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.
- If the machine seems to strain and cut quality becomes unacceptable, the knife should be changed.
- Typical bevel angles vary from 26^0 to 19^0. The most appropriate general-purpose bevel angle (23^0) was chosen for your machine. If your most common applications warrant a different angle, careful thought should be given before making the investment.

8.1.6 Knife Tips

- To prevent corrosion you received your knife 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.

8.2 Lubrication

A clean, lubricated machine will cut more accurately, run longer, with less downtime, and fewer repairs.

Schedule lubrication maintenance early in the day. This allows the lubricants to work into the machine. Lubrication at the end of the day allows the lubricants to run off without any benefit to the machine. Clean off old, dirty excess grease. Wipe accumulated dust off valves, hoses, and connections. Built up dust increases operating temperatures and causes premature wear of all hydraulic components.

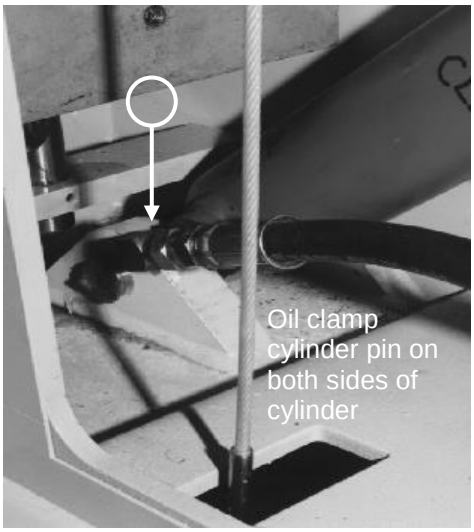
Oil and Grease Points **WEEKLY**.

Run the knife down and **Lock Out the Power**, see Power Lockout Procedure, page 5. All moving parts require lubrication. Remove all panel covers and look for all oil locations (marked with red paint). Make sure oil holes are not plugged and lubricate with a 30 weight oil. See the photos below for critical locations (not all locations are illustrated here). Notice that some are oil locations and some are grease points. Wipe off old and excess grease. Use a National Lubricating Grease Institute No. 2 consistency, extreme pressure grease.

Make sure to inspect the counter-weight chain, both connecting links, and the c-shaped channel for wear. If excessive wear is noticed, replace parts immediately. Be sure to oil the counter weight chain.

⚠ CAUTION Replace all guards. Never operate cutter with any guards removed.

GREASE  OIL 



While lubricating, check pin locks to make sure they are in place and secure (Figure 19) there are a total of six. The bell crank pins do not require lubrication.

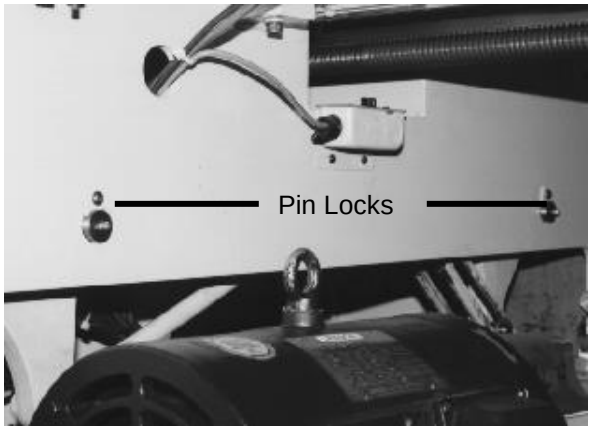


Figure 19

8.3 Hydraulic System

The Champion Series Cutters have both hydraulic cutting and hydraulic clamping operation. The cutter is powered by an electric motor coupled directly to a hydraulic pump. The pump has a fixed flow rate output of 10.5 GPM at 1800 PSI (max. system relief setting) at 1800 RPM.

A hydraulic cylinder powers the clamp. When the cut buttons are depressed, this cylinder pushes on a bell crank and brings the clamp down (or brings the clamp up to full hydraulic pressure if the manual foot clamp is down). A hydraulic cylinder connected directly to the knife bar also powers the cut. The knife sequence valve generates 1600 PSI of backpressure throughout the system to maintain full clamp pressure during the cut. One big advantage of the hydraulic system is the immediate return of the knife when the cut buttons are released. Instead of stopping in place, the knife immediately returns to the upper position.

The hydraulic fluid should be changed **YEARLY** or EVERY 1000 HOURS of operation.

The oil filter (Challenge part H-227-1) should be changed yearly or whenever any repairs are made to the hydraulic system.
NOTE: Failure to change the oil when needed can damage the seals in the clamp and knife cylinders as well as the manifold.

Refill the tank with 15 gallons of an ISO (International Standards Organization) Viscosity Grade 46, rust, oxidation, and foam inhibiting hydraulic oil. **NOTE: NEVER use Automatic Transmission Oil or Brake Fluid as a substitute for the correct hydraulic fluid**. Dangerous operation conditions could result.

Check the level of the Hydraulic Reservoir WEEKLY or whenever the machine sounds like it is laboring (this could be due to low oil level).

8.3.1 Recommended Oils

Use only ISO (International Standards Organization) Viscosity Grade 46, rust, oxidation, and foam inhibiting, non-detergent hydraulic oil. **Oils other than the recommended type will cause seals, cups, and O-rings to deteriorate.** The proper hydraulic oil can be purchased in 5 gallon containers from your authorized Challenge Dealer using the Challenge part number: **S-1991-3**.

8.3.2 Oil Change

Before beginning, you will need (3) empty five gallon buckets, an oil pan, and a transfer pump. If oil is hot, wait until it cools.

1. DISCONNECT THE POWER AND LOCK IT OUT! (See Power Lock-out Procedure, page 5)

2. Remove the hydraulic breather cap (see Figure 30). Access the breather behind a cover plate on the hydraulic power unit cover.

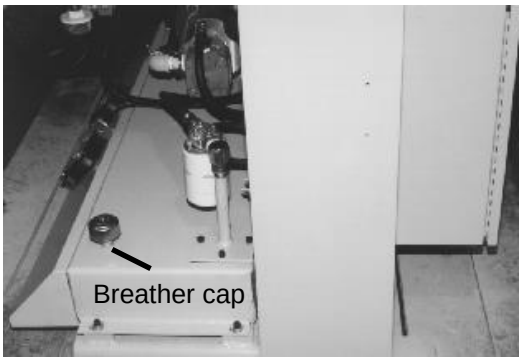


Figure 30

3. Place the suction line of the transfer pump into the breather cap hole. Place the pressure line of the transfer pump into an empty five-gallon pail.

4. Turn on the transfer pump and fill the pail. Repeat until tank is empty.

5. Replace the oil filter. Place a thin film of new hydraulic oil on the seal of the new filter to insure a proper seal. Firmly hand-tighten the filter onto the filter head.

6. Fill the tank with recommended fluid until the level is 3/4" below the top of the inside of the tank.

NOTE: DO NOT OVERFILL. Overfilling may cause leakage when the hydraulic fluid is hot.

7. Reinstall the breather cap.

8. Before turning on the machine, make sure all hydraulic hose fittings are tight. Make sure the oil filter has been firmly hand tightened to the filter head.

9. Unlock and turn on the main power to the machine. Turn on the hydraulic motor by pressing both cut buttons once. Inspect the hydraulic system for leaks. If leaks are found, turn off main power to the machine and tighten any leaking fittings.

10. Repeat step 9 as necessary.

8.4 Line Light Adjustment

The line light comes on whenever main power is turned to the ON position. The light from each of two bulbs reaches the table after passing between the knife and clamp, (Figure 21).

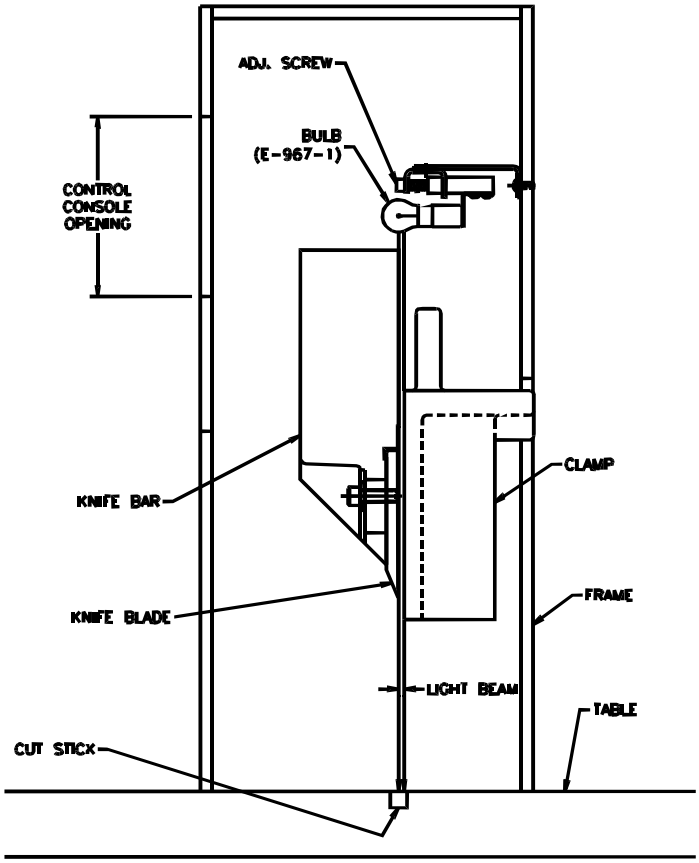


Figure 21

Each light is focused with an adjusting screw mounted on the line light bracket, behind the console.

1. Tilt the console down by removing the two screws at the top.
2. Place a wide sheet of paper on the cut stick to view the line.
3. Using a 3/16” hex wrench, turn one of the adjusting screws until you see a 1/16-1/8” beam.
4. Similarly, turn the adjustment screw of the other bulb until one, continuous beam is seen across the cut stick.

8.4.1 Line Light Bulb Replacement:

1. ***DISCONNECT THE POWER AND LOCK IT OUT!*** (See Power Lock-out procedure, page 5)
2. Tilt the console down.
3. Remove the old bulb by lightly pushing bulb into the socket and turning it counterclockwise.

⚠ CAUTION If the bulb is still hot, allow a few minutes to cool before changing.

4. Insert the new bulb into the socket and twist clockwise until the bulb locks into place.

5. Reattach the console.

6. Unlock and turn the power ON.

7. If necessary, adjust the line as above.

8.5 Cleaning

HYDRAULICS

1. The hydraulic fans and tank should be wiped off weekly to maintain maximum cooling of the tank and hydraulic oil.

2. The hydraulic manifold and fittings should be wiped off weekly.

TABLE

1. The dust should be wiped from the air blower inlet screen on a weekly basis. This will insure unrestrained flow into the blower and maximum flow out of the air jets.

2. The front table should be cleaned periodically to remove rust and wax buildup. This should be done using cleaners provided in the optional cutter care kit. (p/n 16077) Do not clean extension tables with these cleaners. Damage to their finish will result.

3. The extension tables should be cleaned either with a dry or damp cloth or a mild water based detergent.

4. The rear table cover may be cleaned with glass cleaner or a mild, water based detergent applied to a damp cloth. Some petroleum-based solvents may damage the Plexiglas cover.

CONSOLE

- The console should be cleaned with a mild water based detergent applied to a damp cloth or paper towel. Petroleum based solvents will damage the console.

MACHINE FRAME

1. The machine frame should be cleaned with a mild, water based detergent applied to a damp cloth.

2. Always be careful when cleaning around safety warning labels. Use limited amounts of cleaners in those areas.

8.6 Table Conditioning

The table of a paper cutter requires periodic maintenance to remove surface oxidation. Polishing is also required to provide a smooth surface for paper to move freely. The frequency of this maintenance will be determined by a number of factors. Among these are the humidity, environmental dust, handprints, liquid spills, and type of paper stock. We recommend the use of the **Challenge Cutter Care Kit P/N 16077** for of your table care needs.

To prepare a new machine's table, follow the procedure below:

1. Remove the rust-protective coating from the table with a solvent.
2. Remove all solvent residue from the table with a dry cloth. Continue until the cloth shows no sign of residue.
3. Apply a light coating of an SAE 10-weight non-detergent motor oil or equivalent to the table and allow it to penetrate for at least one hour.
4. Remove all excess oil from the table with paper toweling (not cloth) until the paper towel you are using shows no sign of oil.
5. Apply a paste wax (Challenge P/N 16078) to the table to seal the pores of the metal.
6. Note: Do not use a wax that contains a cleaning compound on the table. The cleaner contains microscopic abrasive particles that will cause wear between the table and the bottom of the backgauge. A silicone spray (Challenge P/N 16079) will show the same type of wear as the cleaner if the excess silicone is not removed. If the excess is not removed, the silicone spray has a substance that holds the silicone to the surface it is sprayed on that causes a black, gummy build-up under the backgauge. If a silicone spray is used, paper toweling must be used to remove the excess to prevent this wear and build-up.

To clean surface oxidation from a table, follow the procedure below:

1. Spray "Rust-B-Gone" (Challenge P/N 16080) on the table and allow it to dissolve the rust. Then remove it with paper toweling. Or, pour a small quantity of SAE 10-weight motor oil onto the table. Using a Scotch-Brite Pad or a 400 grit sand paper, polish the table following the "grain" of the metal until all oxidation is removed to your satisfaction.
2. Remove all of the oil from the table until the cloth you are using shows no sign of residue.
3. Apply a light coating of an SAE 10-weight non-detergent motor oil or equivalent to the table and allow it to penetrate for at least one hour.
4. Remove all excess oil from the table with paper toweling (not cloth) until the paper towel you are using shows no sign of oil.
5. Apply a paste wax (Challenge P/N 16078) to the table to seal the pores of the metal.
6. Note: Do not use a wax that contains a cleaning compound on the table. The cleaner contains microscopic abrasive particles that will cause wear between the table and the bottom of the backgauge. A silicone spray (Challenge P/N 16079) will show the same type of wear as the cleaner if the excess silicone is not removed. If the excess is not removed, the silicone spray has a substance that holds the silicone to the surface it is sprayed on that causes a black, gummy build-up under the backgauge. If a silicone spray is used, paper toweling must be used to remove the excess to prevent this wear and build-up.

8.7 Maintenance Adjustments

8.7.1 Squaring the Backgauge

To test the backgauge for squareness, place a small lift of paper against the left side of the backgauge (but not against the side guide) and make a cut.

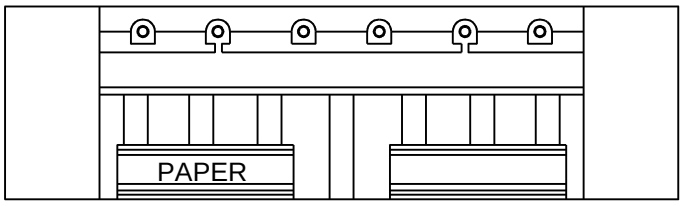


Figure 22

Now, leave the backgauge in the same position, flip the lift over and against the right side of the backgauge (but not against the side guide). Make another cut to see if any of the stock will trim off. Run two checks, one starting on the left and moving to the right, the other, moving from the right to the left. Trim in either sequence indicates the backgauge is out of square.

1. As machine wears, make sure the backgauge gibs are set properly first (see Backgauge Gibs), then follow steps 2 through 5.

NOTE: Gib adjustment is not necessary on initial machine setup because they have been adjusted at the factory.

2. DISCONNECT THE POWER AND LOCK IT OUT! (See Power Lockout procedure, page 5.)

3. Remove the rear table cover.

4. Loosen backgauge-locking screw (smaller head). Loosen the jam nuts on the backgauge squaring screws (see Figure).

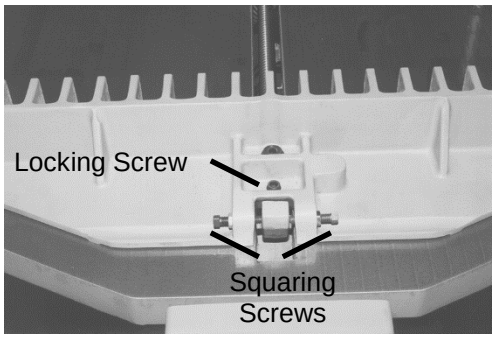


Figure 23

5. Back off the squaring screw on the side that the trim occurred and tighten the other. Make sure both screws are snug.

NOTE: If 1/8” of stock was trimmed off when checking for squareness, turning the proper squaring screw about one revolution will correct the problem. This relationship is constant, so turning the squaring screw 1/2 revolution will make up for about 1/16” of stock trimmed.

6. Replace the rear table cover. Unlock and reconnect the power.

7. Make another test. Continue to adjust and test until no trim occurs when testing in either sequence (steps 2 through 7).

8. ***DISCONNECT THE POWER AND LOCK IT OUT!*** (See Power Lockout Procedure, page 5)

9. Remove the rear table cover.

10. Tighten the jam nuts and lock screw.

11. Replace the rear table cover. Unlock and reconnect the power.

12. Check the backgauge for squareness.

8.7.2 Backgauge Gibs

If you are having trouble keeping the backgauge square, check for backgauge side play. Position the backgauge approximately 2" (50-55mm) from the rear of the table and turn off power.

Remove the rear table cover. From the back, hold each end of the backgauge and try pulling one end while pushing the other to rock it side to side (Figure 24. If there is noticeable side-to-side play in the backgauge, the gibs will need adjusting. Check for play at various positions on the table.

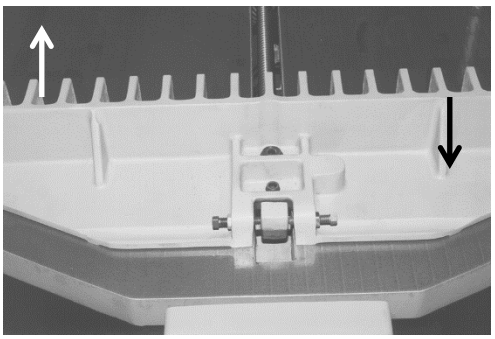


Figure 24

NOTE: There will be some front to rear movement between the backgauge nut and screw.

The backgauge has two gibs that ride on a iron rail underneath the table, (Figure 25). These are adjusted with setscrews that are held in position with jam nuts.

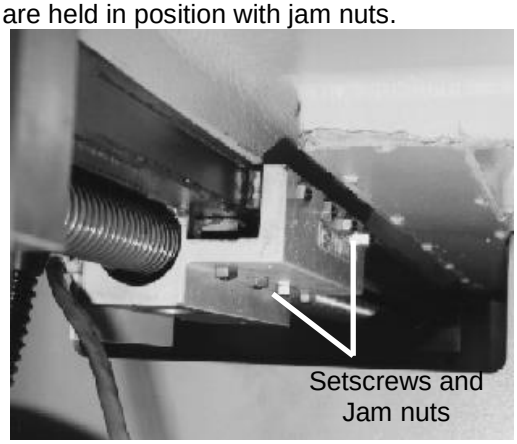


Figure 25

To adjust:

1. Run the backgauge back to 23” (600mm).
2. ***DISCONNECT THE POWER AND LOCK IT OUT!*** (See Power Lockout procedure, page 5.)
3. Remove the rear table cover.
4. Always adjust the side gib first. Loosen all jam nuts and adjusting screws then tighten the front and rear screws.
5. Pull each end of the backgauge and try to rock it side to side as before to check for play.
6. Continue to adjust these two screws until there is no play.
7. Lock the screws in place with the jam nuts.
8. Snug up the middle two screws and lock in place with the jam nuts.
9. Snug up the bottom gib adjusting screws finger tight and lock in place with the jam nuts.
10. Replace the rear table cover. Unlock and reconnect the power.
11. Run the backgauge back and forth to make sure it does not bind. Readjust if necessary.
12. Check the backgauge squareness.

8.7.3 Backgauge Drive Belt Adjustment

If the backgauge motor runs but the backgauge does not move, or slips, the belt may need adjustment, (Figure 26).

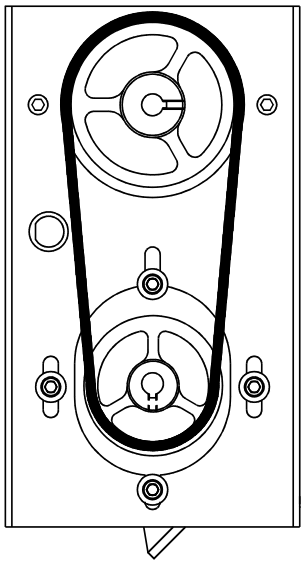


Figure 26 – Backgauge Drive Belt

To adjust the belt:

1. ***DISCONNECT THE POWER AND LOCK IT OUT!*** (See Power Lockout Procedure, page 5.)
2. Remove the drive belt cover guard at the rear of the table.
3. Loosen the four socket head screws holding the motor to the mounting plate.
4. Slide the motor down to put more tension on the belt, or lift it up to reduce tension for removing belt.
5. If belt cannot be tightened, replace with a new belt.
6. Adjust the tension of the belt so that there is a 1/2”-3/4” (10mm) flex remaining and tighten the mounting plate socket screws.
7. Replace the belt guard cover. Unlock and reconnect the power to the machine.

8.7.4 Lead Screw Adjustment Nuts

If play is noted in the forward pillow block and thrust bearings, take up the play in the adjustment nuts by:

1. ***DISCONNECT THE POWER AND LOCK IT OUT!*** (See Power Lockout procedure, page 5.)
2. Remove the drive belt cover guard at the rear of the table.
3. Loosening the lead screw jam nuts, (Figure 27).

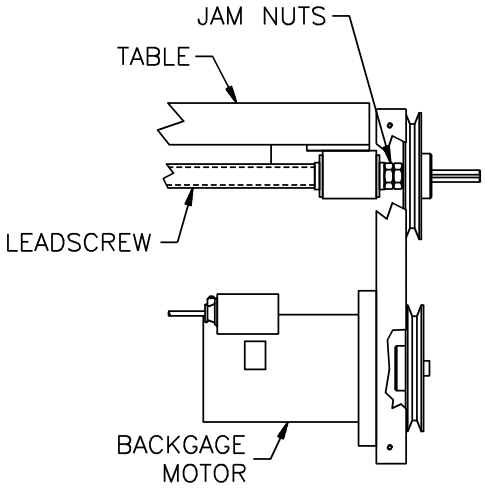


Figure 27 – Jam Nut Location

4. Snug up the inner nut to eliminate any play.
5. Tighten the nuts against each other.
6. Check the socket head bolts in the pillow block to make sure they are also tight.
7. Replace the belt guard cover. Unlock and reconnect the power to the machine.
8. Check the accuracy; it may need to be reset.

8.7.5 Clamp Cylinder

If the clamp piston bottoms in the cylinder before the clamp makes contact with the table, or if the clamp does not make full travel on the up stroke, the clamp cylinder may need adjustment. The clamp cylinder is located inside the frame, behind the left front enclosure door.

To adjust:

1. ***DISCONNECT THE POWER AND LOCK IT OUT!*** (See Power Lockout procedure, page 5.)
2. Loosen the jam nut.
3. Use the flats on the clamp cylinder shaft to turn the shaft into or out of the clevis as required, (Figure 28).

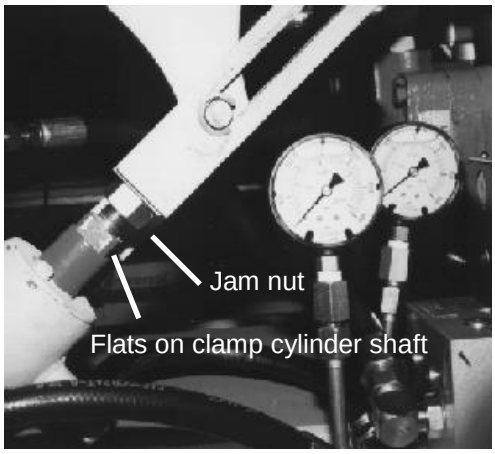


Figure 28

4. Retighten the jam nut securely.
5. Close the front enclosure door.
6. Unlock and reconnect the power to the machine.

8.7.6 Clamp Parallel Rod

If the clamp is not parallel with the table:

1. ***DISCONNECT THE POWER AND LOCK IT OUT!*** (See Power Lockout procedure, page 5.)
2. Loosen the jam nuts on each end of the clamp connecting rod, (Figure 29).

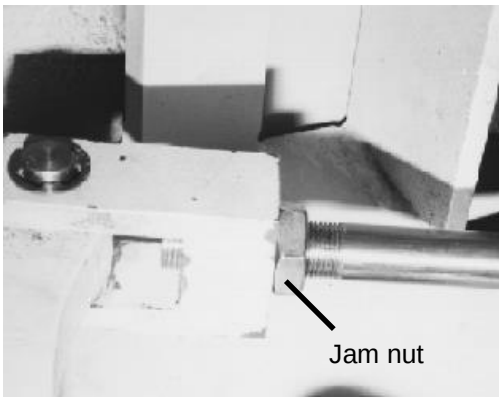


Figure 29

NOTE: One of the jam nuts has left hand threads.

3. Using the flats on the end exposed, turn the connecting rod and align the clamp with the table. If a single sheet is placed under each end of the clamp and manually clamped, a level clamp will not allow either sheet to be pulled out.

4. Retighten the jam nuts securely.

5. Unlock and reconnect the power to the machine.

8.7.7 Knife Bar Gibs

The knife bar gibs are two plates on either side of the arch that guide and hold the knife as it cuts. If adjusted too tight the knife may not come down, or the gibs and knife bar could be damaged due to scoring. If too loose, you could get uneven or inaccurate cuts.

There are four socket setscrews with jam nuts on each side of the arch that adjust the gibs, (Figure 30). These should be adjusted only with the knife bar directly behind the bolts being tightened.

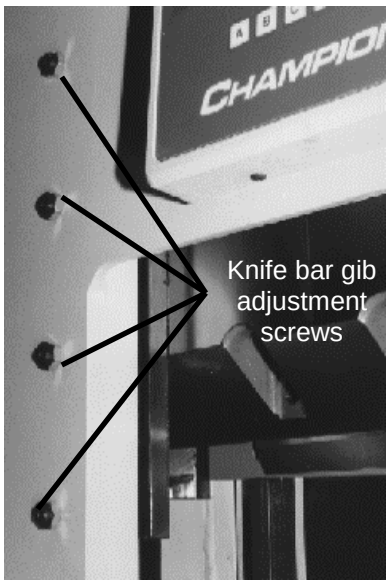


Figure 30

To adjust:

1. Lower the knife bar in Knife Adjust Mode.
2. ***DISCONNECT THE POWER AND LOCK IT OUT!*** (See Power Lockout procedure, page 5.)
3. Loosen all (8) jam nuts on the gib adjusting screws and back the screws out 1/2 turn.
4. Adjust lower (4) screws until snug - not tight to eliminate the air gap between the knife bar and gib. While holding the adjusting screws tighten those (4) jam nuts.
5. Unlock and reconnect the power to the machine, then raise the knife bar.
6. ***DISCONNECT THE POWER AND LOCK IT OUT!*** (See Power Lockout procedure, page 5.)
7. Adjust the upper (4) screws the same way the lower (4) were adjusted. Tighten the jam nuts.
8. Turn the power back on and cycle the knife several times. Recheck the gibs (repeat steps 1-7 as necessary).
9. Don't over-tighten the gibs; this can score the knife bar.
10. If the knife bar and gets scored, remove only the burrs by scraping and then sanding smooth. Deep scores need not be removed.

8.7.8 Knife Cylinder Adjustment

The cylinder shaft is threaded into the clevis to adjust the position of the knife bar. When properly adjusted, the distance from the bottom of the knife bar, to the table with the knife bar in the down position should measure 1" (25.4 mm), (Figure 31).

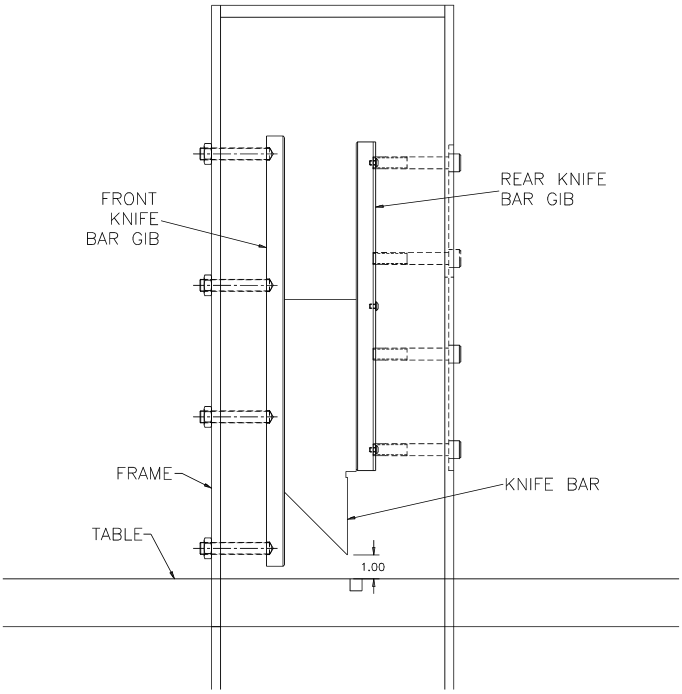


Figure 31

To adjust:

1. Remove the knife as described the operator's manual.
2. Enter Knife Adjust Mode and lower the knife.
3. ***DISCONNECT THE POWER AND LOCK IT OUT!*** (See Power Lockout procedure, page 5.)
4. Remove all covers and guards blocking access to the knife bar clevis (Figure 32).

Figure 32

5. Loosen the knife bar clevis jam nut.
6. Loosen the setscrew on the collar mounted on the rod (Figure 34). Slide the collar down the shaft to the top of the cylinder. This collar is used to actuate the knife up and down proximity switches.

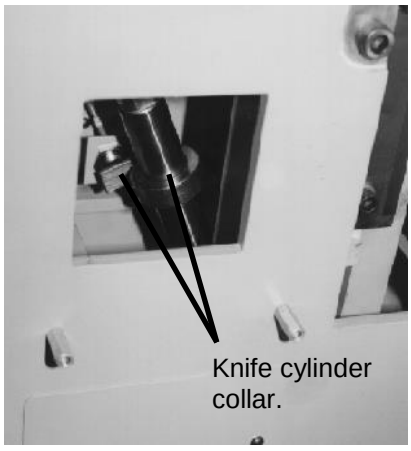


Figure 34

7. Using the 1" flats on the knife cylinder rod, rotate the cylinder rod to move the knife bar up or down to the required height.

8. Lock the jam nut securely in place.

9. Readjust the collar. See section 8.10.1.1 Knife Up/Down Limit Switches on page 49.

⚠ CAUTION CRUSH HAZARD! Knife and clamp will return to the up position when the power is turned on and the cut buttons are pressed for the first time. Keep hands and tools away.

10. Replace all covers and guards.

11. Install the knife; see section as described in the operator's manual.

12. Unlock and reconnect power to the machine. Allow the machine to run for a few minutes to work the air out of the hydraulic system.

8.8 Hydraulic Valve 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. Disconnect the power and lock it out, (see Safety Precautions, page 5), whenever working on the machine unless the directions specifically require the machine to be powered.

For initial setup, adjust the valves in the following order:

1) Main System Relief Valve- 1800 PSI
2) Knife Down Sequence Valve- 1600 PSI
3) Clamp Up Sequence Valve- Adjust Visually
4) Electronic Clamp Control Valve- 1400max/400min PSI
5) Knife Flow Control Valve- See adjustment on page.

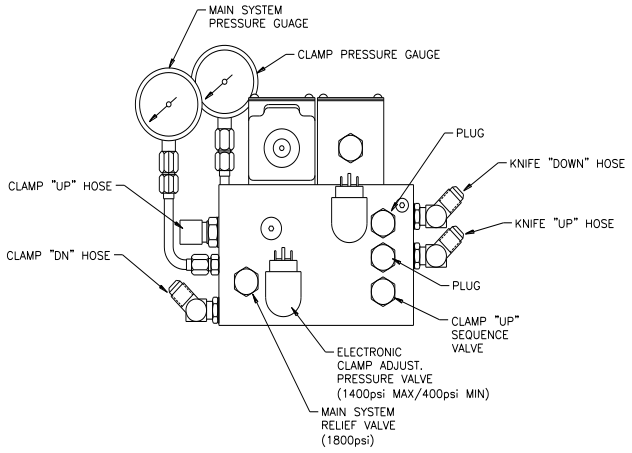


Figure 34

NOTE: Pressure settings fluctuate with oil temperature. **Set pressures when the oil is hot.**

8.8.1 Main System Relief Valve

This valve maintains the overall hydraulic pressure for the entire system. Factory setting: 1800 PSI.

Check Procedure:

1. Open the left access door on front of the cutter.

2. Turn the power on and, with a small stack of paper under the clamp, make a cut to hold the knife down on the cutting stick. Read the pressure off the main system pressure gauge (front gauge) while the knife is down. If the gauge does not read 1800 PSI, an adjustment is needed. You may need to send knife down in maintenance mode to read the gauge more easily.

To Adjust:

1. Loosen the lock nut on the relief valve. Use an Allen wrench to turn the adjusting screw. Turn clockwise to increase pressure, counterclockwise, to decrease pressure.

⚠ CAUTION PINCH POINT—It will require two people to perform the following adjustment. One holds the cut buttons in and the other adjusts the valve screw. Be extremely careful to keep hands and tools away from moving parts. The only thing that has to be handled is the adjusting wrench! A possible pinch point exists between the clamp parallel rod and the top of the valve solenoids. Do not place hands or tools in this area if the machine is to be cycled.

2. Make a cut and hold the buttons in or go to knife down adjustment in maintenance mode to cycle the hydraulics. While reading the main system gauge, adjust the valve screw until you have the correct pressure.

3. Tighten the lock nut while holding the hex wrench in place.

4. Proceed to readjust the other valves.

8.8.2 Knife Down Sequence Valve

This valve controls the clamp and knife sequence. It keeps the knife up until after the clamp has made contact. It is mounted on the knife cylinder. Factory Setting: 1600 PSI.

NOTE: Main System Pressure must be set at 1800 PSI before making this adjustment.

Check Procedure:

1. Open the left access door on front of the cutter.

2. Press the cut buttons while reading the pressure on the main system pressure gauge (front gauge). The gauge should read approximately 1600 PSI as the knife is moving down (when bottomed, the gauge will jump to 1800 PSI showing the Main System Relief Pressure previously set).

3. If correct, proceed to check the remaining valves.

To adjust:

1. Loosen the lock nut.

2. Make a cut and hold the buttons in. While reading the main system gauge, adjust the valve until you have the correct pressure. Clockwise to increase, counterclockwise to decrease.

NOTE: The knife should not move until the clamp contacts the stock. If it does, you must increase the pressure.

3. Tighten the lock nut while holding the hex wrench in place.

4. Proceed to readjust the other valves.

8.8.3 Clamp Up Sequence Valve

(See Figure 33 on page 46)

This valve maintains clamp pressure so the clamp remains down until the knife has stopped in the up position. Factory setting: 800-1100 PSI.

Check Procedure:

1. Open the left access door of the cutter.

2. Press the cut buttons, and while reading the pressure on the main gauge (front gauge), release them. The gauge should read between 800-1100 PSI as the clamp is going up. There should be no clamp movement until the knife is stopped in the up position.

3. If correct, proceed to check the remaining valves.

To Adjust:

1. Remove the protective cap and loosen the lock nut on the clamp up sequence valve.

2. Make a cut and release the buttons. Read the main gauge as the clamp is returning. Adjust the valve for a reading of 800-1100 PSI.

3. Tighten the lock nut while holding the hex wrench in place and replace the protective cap.

4. Proceed to check the other valves.

8.8.4 Electronic Clamp Control Valve. (see the TC Operations Manual for further instructions)

8.9 Fuses (Skip this section if your machine has Circuit Breakers)

⚠ CAUTION FIRE HAZARD. Replace only with same type and rating fuse.

The Champions each have a set of fuses. The fuses are located inside the main power box, (Figure 35). Check the label inside the cover for correct ratings for these fuses. Labels are reproduced with the drawings at the back of this manual in case those on the cover may be damaged or illegible.

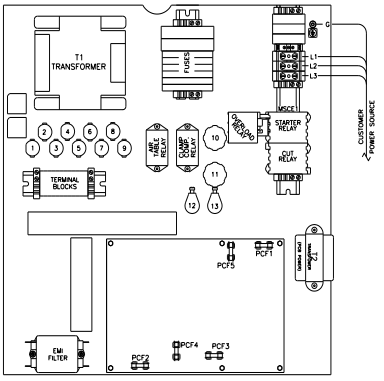


Figure 35

8.10 Limit Switches

⚠ CAUTION These 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.

Challenge Champion cutters incorporate proximity switches to detect stages of operation. These types of switches have no moving parts and are more reliable than contact switches.

NOTE: Adjust the switches in the following order:

1. **Knife Up/Down Limit Switch**
2. **Hydraulic Up Limit Switch**
3. **Clamp Up Limit Switch**

⚠ CAUTION **CRUSH HAZARD!** When the limit switch is actuated, the clamp will return to the up position. Keep hands and tools clear.

8.10.1.1 Knife Up/Down Limit Switch

The knife up and knife down limit switches are mounted on separate brackets. An indicator light on the switch body comes on when the switch is actuated (proximity switches must be within 1/8" (3.2mm) to actuate). One collar activates both the up and down limit switches during the respective stages of operation.

To adjust:

1. Lower the knife bar. See section 2.12.4 Knife Adjust for directions on how to lower the knife bar.

2. ***DISCONNECT THE POWER AND LOCK IT OUT!*** (See Power Lockout procedure, page 5.)

3. Remove covers and guards blocking access to the limit switches.

4. Loosen the setscrew holding the collar in place on the knife cylinder shaft.

5. Move the collar (see Figure 36) until it is centered on the diameter of the proximity switch (limit switch). Tighten the setscrew in the collar to hold it in place. The distance between the collar and the proximity switch should be no more than 1/8" (3.2mm) of an inch.

6. Replace all covers and guards.

7. Unlock and reconnect the power to the machine.

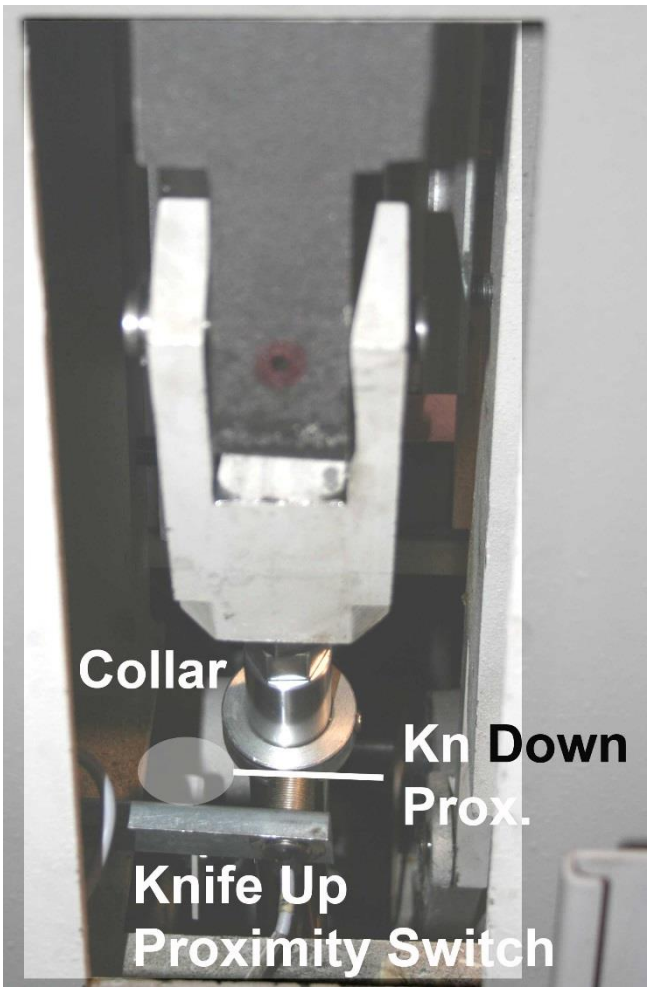


Figure 36

8.10.1.2 Hydraulic Up Limit Switch

This switch is mounted on the left, rear leg at the base of the frame (Figure 37). An indicator light on the switch body comes on when the switch is actuated (proximity switches must be within 1/8" (3.2mm) to actuate). The switch senses the extension of the clamp cylinder at the top of its stroke. This stops hydraulic power to the clamp and knife. If the switch is not properly set, the knife and clamp cylinders will be under constant load (indicated by excessive heat and noise).

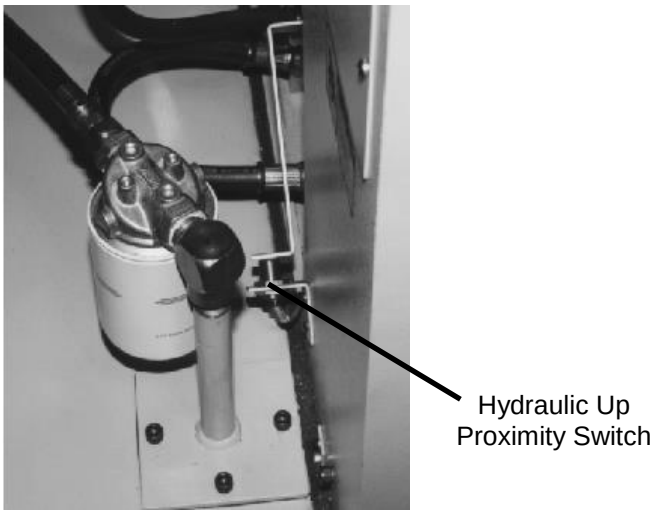


Figure 37

To adjust:

1. Make sure the clamp has returned to the upper position as far as it can go.
2. ***DISCONNECT THE POWER AND LOCK IT OUT!*** (See Power Lockout procedure, page 5.)
3. Loosen both lock nuts and adjust the switch until the indicator light on the switch lights up.
4. Unlock and reconnect the power to the machine.
5. Turn on the machine and press the cut buttons once to start the hydraulic motor.
6. Press the cut buttons to cycle the clamp and check clamp position.

8.10.1.3 Clamp Up Limit Switch

This switch is mounted inside the rear of the arch casting, (Figure 38). An indicator light on the switch body comes on when the switch is actuated (proximity switches must be within 1/8" (3.2mm) to actuate). The clamp trips it when the clamp moves to the up position. This switch prevents backgauge movement if the clamp is not up. It also diverts the air from the table when the clamp is down to prevent the stock from moving during a cut.

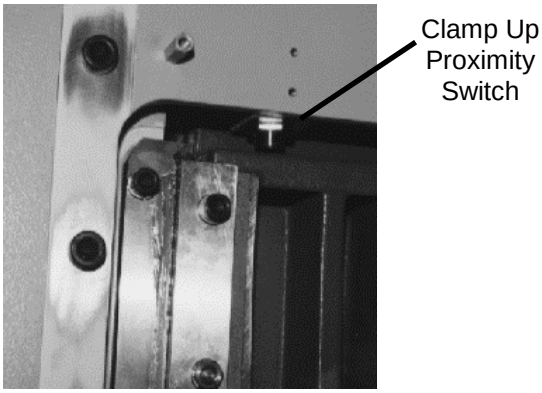


Figure 38

To adjust:

1. Make sure the clamp has returned to the upper position as far as it can go.
2. ***DISCONNECT THE POWER AND LOCK IT OUT!*** (See Power Lockout procedure, page 5.)
3. Loosen both lock nuts and adjust the switch until the indicator light on the switch lights up.
4. Unlock and reconnect the power to the machine.
5. Turn on the machine and press the cut buttons once to start the hydraulic motor.
6. Press the cut buttons to cycle the clamp and check clamp position.

9.0 Troubleshooting

⚠ CAUTION Never work on this machine with the power on unless the instructions say the machine power must be on. Lock the power off at the wall disconnect switch. See Power Lockout Procedure, page 5.

WON'T START

1. Fuse blown/circuit breakers tripped
2. Starter defective
3. Loose plug or wire
4. Cut button defective
5. Check error codes

CUT BUTTONS PUSHED- MACHINE SHUTS OFF

1. Knife and clamp are out of sequence. Turn off power and turn back on.
2 Check clamp and knife up limit switches.
3. When cutting a full pile, the clamp up limit switch does not break contact, either adjust limit switch or cut down on pile height.
4. Defective circuit board

CUT BUTTONS ACTIVATED- WON'T CUT

1. A cut button is defective.
2. Motor wired wrong, going in opposite direction of the arrow sticker on the motor
3. Counter Balance valve on the knife cylinder is defective
4. Counter Balance valve pressure is set too high
5. Either down solenoid in valves inoperative
6. Knife up limit switch is not properly adjusted
7. Defective circuit board
8. Electric eyes are being tripped

ERRATIC OPERATION- POWER LOSS

1. Low hydraulic oil level
2. Debris in relief valve
3. Defective pump
4. Oil bypassing clamp cylinder seals

CLAMP WON'T OPERATE

1. Bind in linkage or gibs
2. Clamp pressure reducer valve set too low
3. High pressure solenoid defective
4. Relief valve defective
5. Clamp return spring defective

CLAMP WON'T HOLD PRESSURE

1. Clamp cylinder seals worn
2. Pressure valve setting too low
3. Clamp not parallel to table

CLAMP WON'T BOTTOM

1. Clamp cylinder out of adjustment
2. Clamp return spring broken or out of adjustment

CLAMP NOT PARALLEL TO TABLE

1. The clamp connecting rod is out of adjustment.

CONCAVE CUTTING- ENDS WIDE, CENTER NARROW
1. Excessive moisture at edges of paper
2. More ink on edges of lift

CONCAVE CUTTING- VARIATION OF TOP AND BOTTOM
1. Soft stock not firmly clamped
2. Knife dull or ground incorrectly
3. Knife bar gibs loose
4. Air in stock when clamped pulls away from backgauge
5. Clamp not parallel to table

INCONSISTENT STOPPING OF KINFE IN UP POSITION
1. Bind in knife linkage or gibs
2. Up sequence valve not properly adjusted
3. Knife links worn

HESITATION OF KNIFE
1. Dull knife
2. Seals worn in knife or clamp cylinder
3. Defective pilot check on knife cylinder
4. Knife links worn

KNIFE WON'T RETURN
1. Defective high-pressure valve
2. Directional valve(s) stuck in
3. Up sequence pressure too low

CLAMP WON'T RETURN
1. Up sequence pressure too high
2. Bind in clamp linkage or gibs
3. Clamp not parallel to table

KNIFE DRIFTS DOWN
1. Knife bar gibs out of adjustment
2. Defective pilot check on knife cylinder
3. Defective seals in knife cylinder
4. Knife latch out of adjustment

KNIFE STOPS IN STOCK
1. Knife dull
2. Relief valve defective
3. Pressure control valve clogged or defective
4. Knife cylinder seals worn
5. Clamp cylinder seals worn
6. Motor stalling due to low voltage or too small wire to machine

NOISY AND SLUGGISH HYDRAULIC SYSTEM
1. Cylinder seals worn on clamp or knife
2. Low on hydraulic fluid
3. Worn spline coupling in motor/pump

INACCURATE CUTTING
1. Backgauge not square
2. Knife bar has play- tighten gibs
3. Backgauge gibs loose
4. Dull knife (See Knives section in the Operator's Manual)

5. Clamp not parallel to table
6. Accuracy not set correctly

BACKGAUGE SPEED ERRATIC
1. Oil on pulley belt
2. Belt/pulley loose

BACKGAUGE MOVEMENT ERRATIC
1. Backgauge gibs loose or binding on table way (rail under table)
2. Backgauge nut binding on lead-screw, screw bent or dirty
3. Problem with electrical drive component
4. Defective circuit board

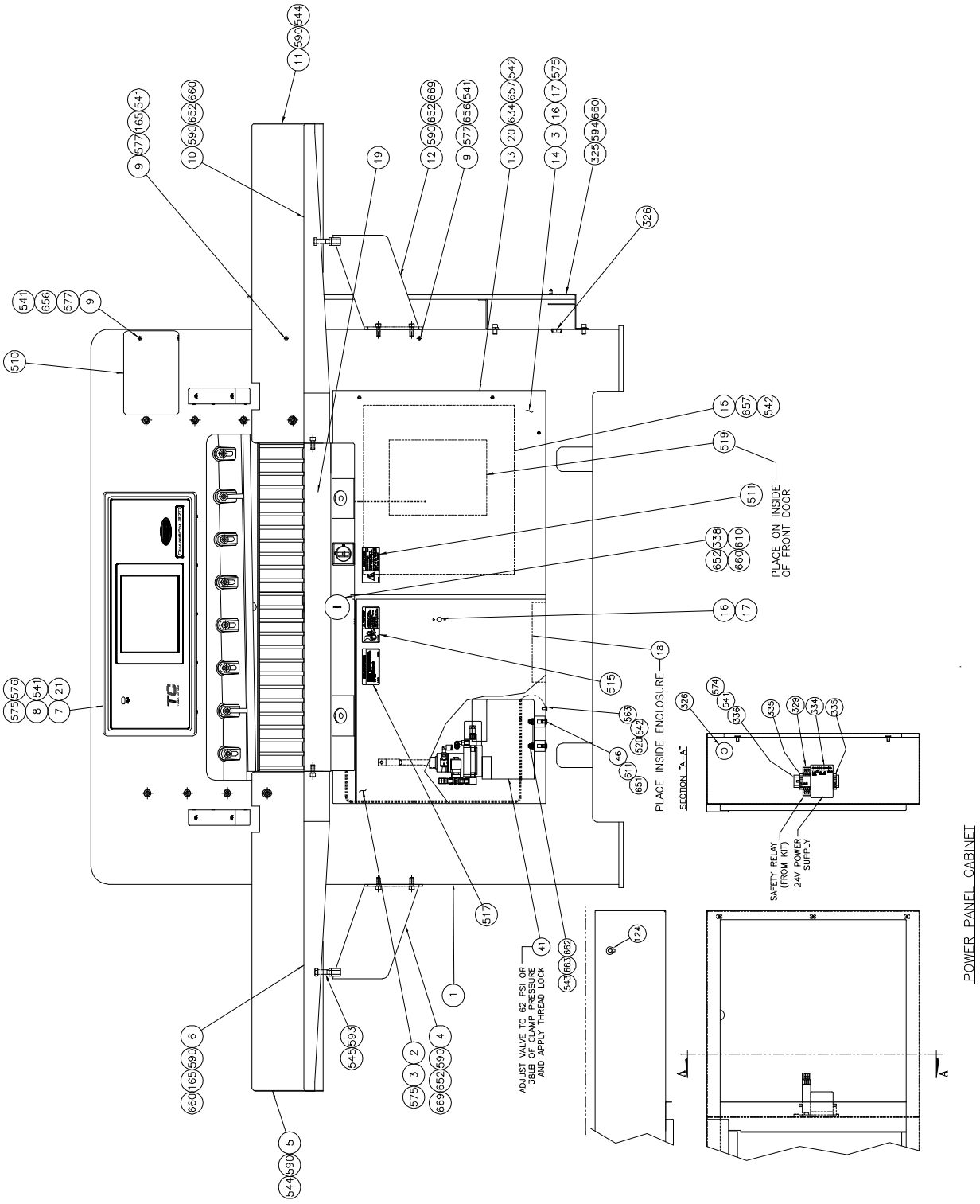
DRAWING OF STOCK
1. Dull knife
2. Low clamp pressure
3. Hydraulic fluid low
4. Air in lift- reduce pile height
5. Clamp not parallel to table

SLOW KNIFE
1. Defective seals in clamp cylinder
2. Defective Counter Balance valve on knife cylinder
3. Pump not achieving full pressure
4. Main system or clamp pressure reducer bypassing fluid

10.0 MAIN ASSEMBLIES

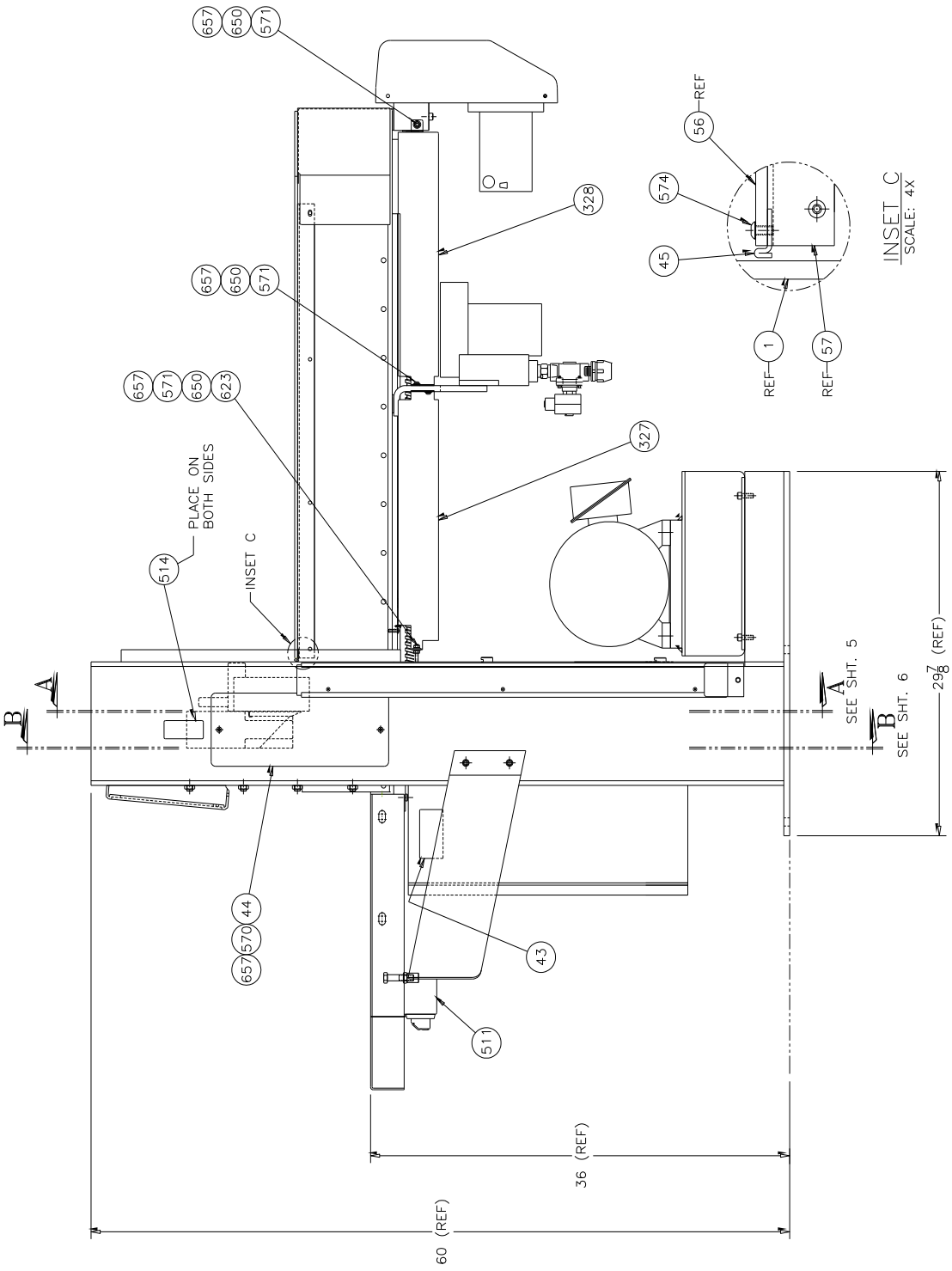
10.1 Main Assembly – Front view

49300 Sh't. 1 Rev. A



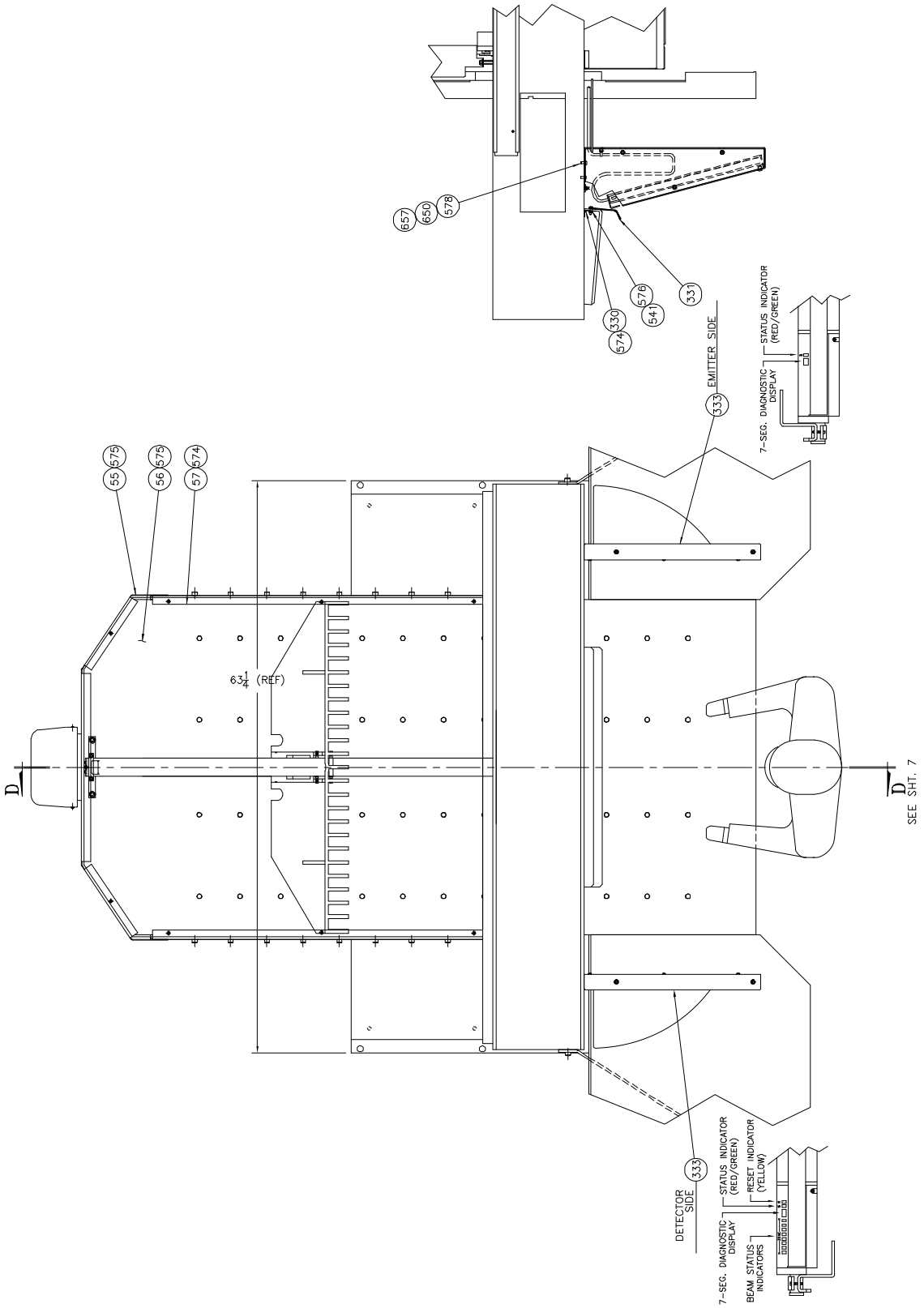
10.2 Main Assembly – Side View

49300 Sh't. 2 Rev. A



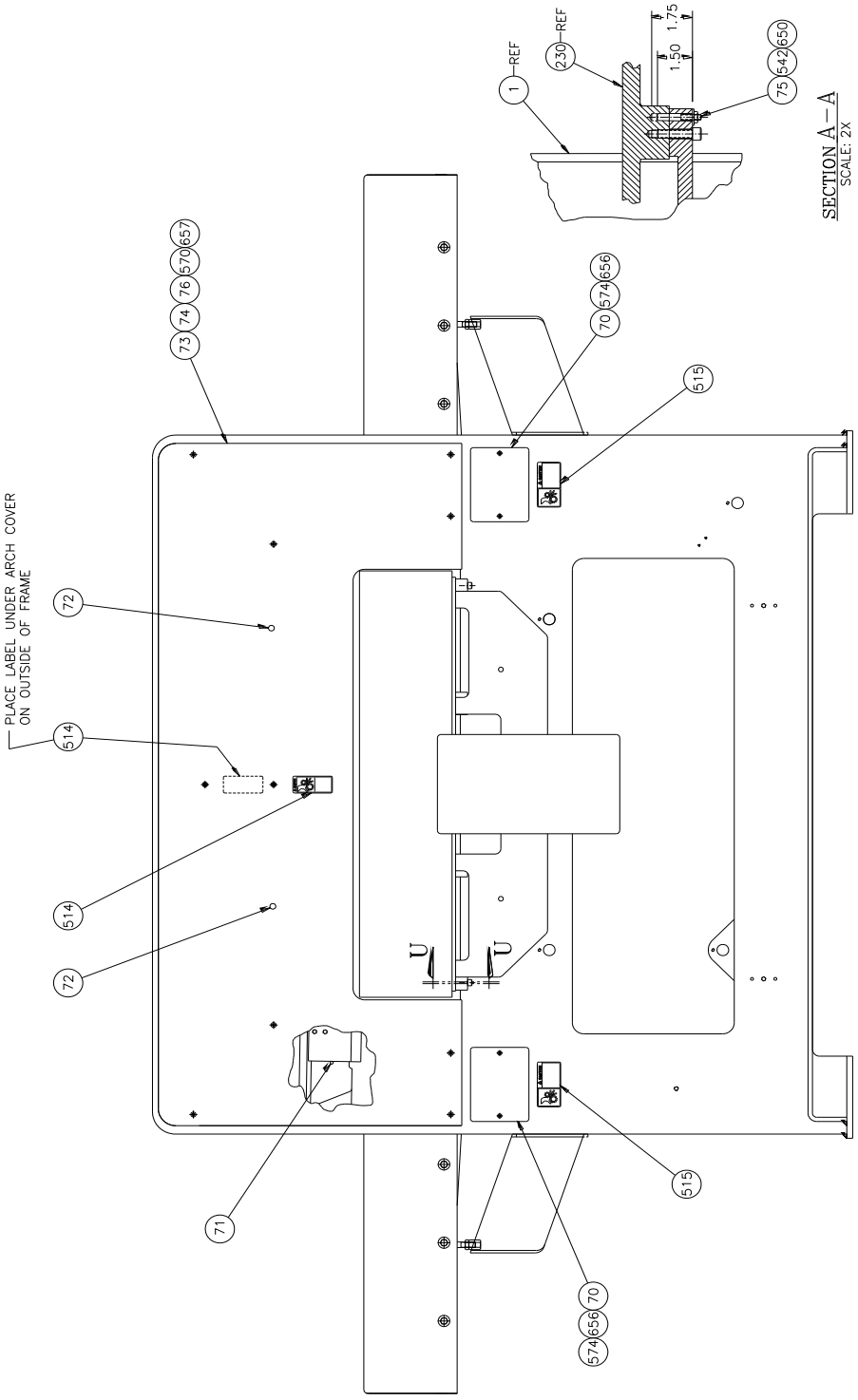
10.3 Main Assembly – Top View

49300 Sh't. 3 Rev. A



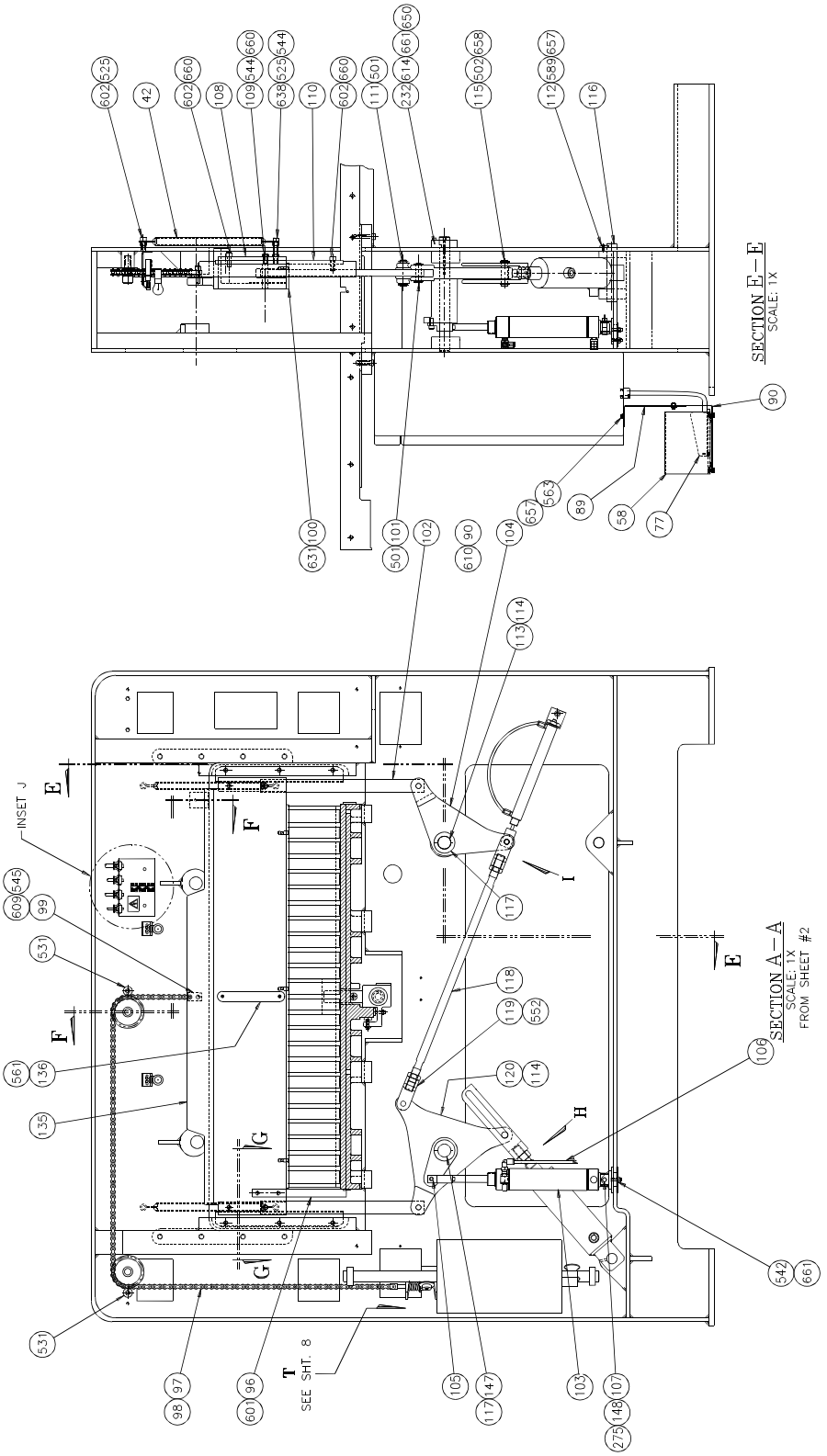
10.4 Main Assembly – Rear View

49300 Sh't. 4 Rev. A

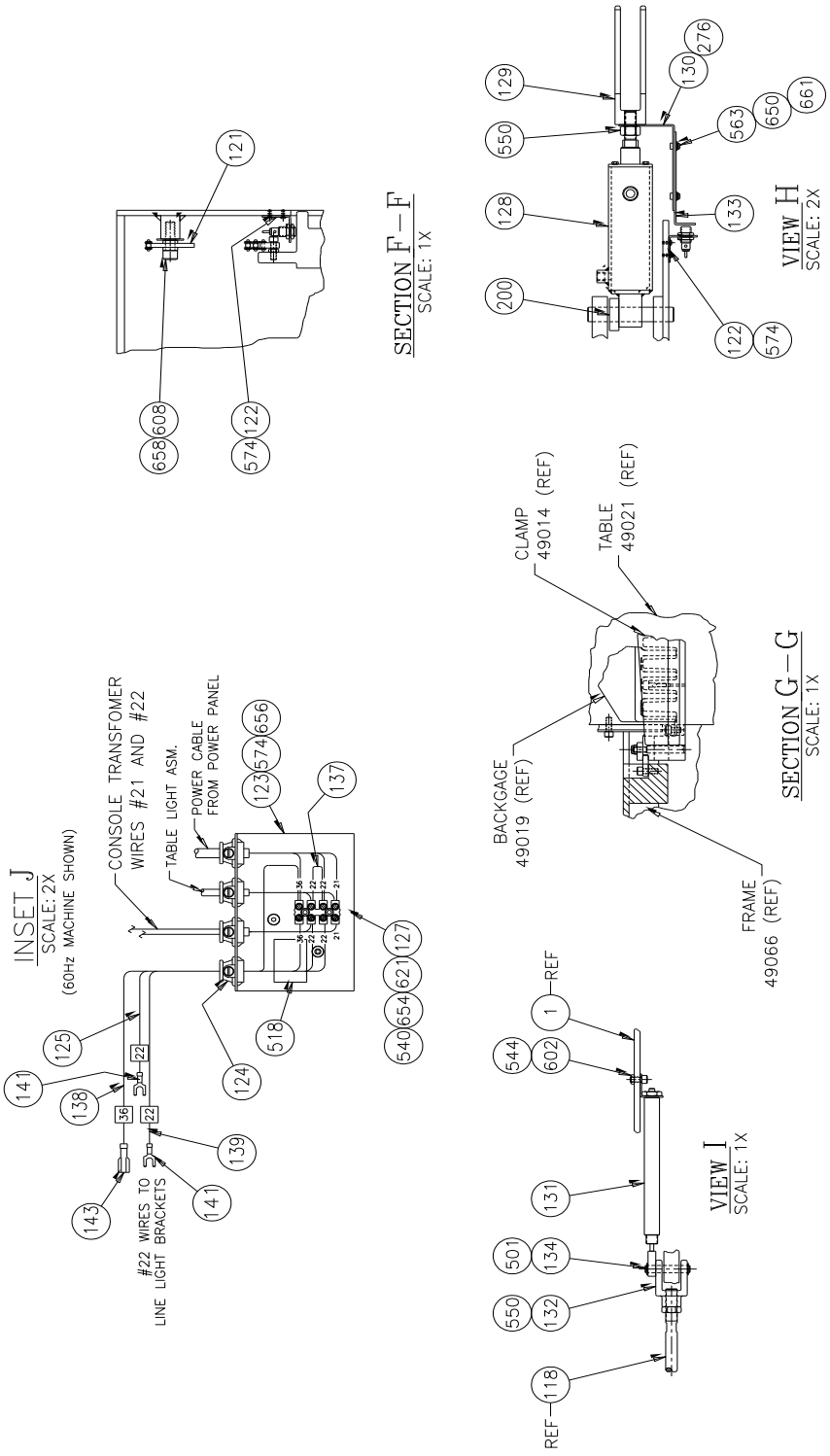


10.5 Main Assembly – Clamp

49300 Sh't. 5 Rev. A

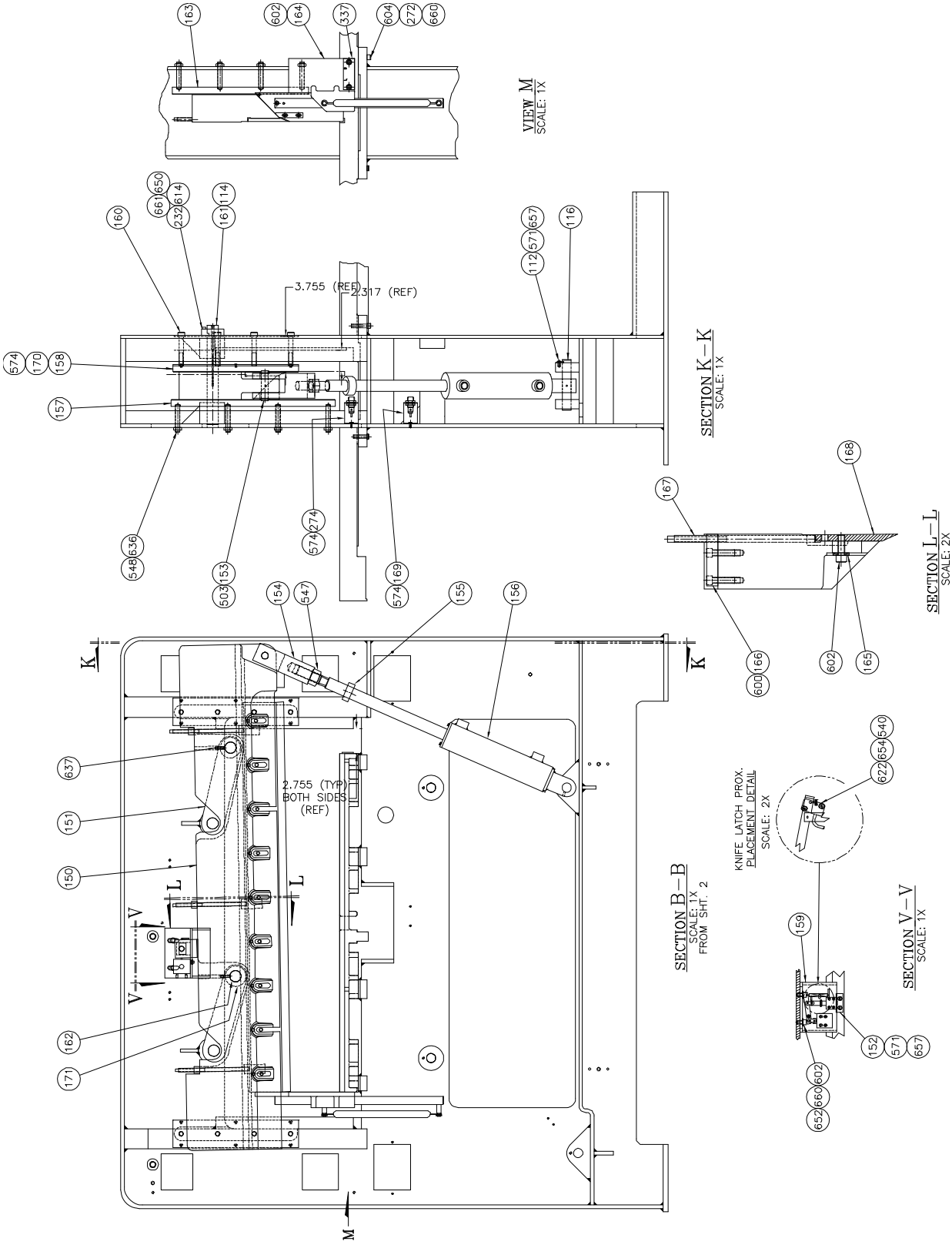


Main Assembly – Clamp – 49300 Sh't. 5 Rev. A (cont'd.)



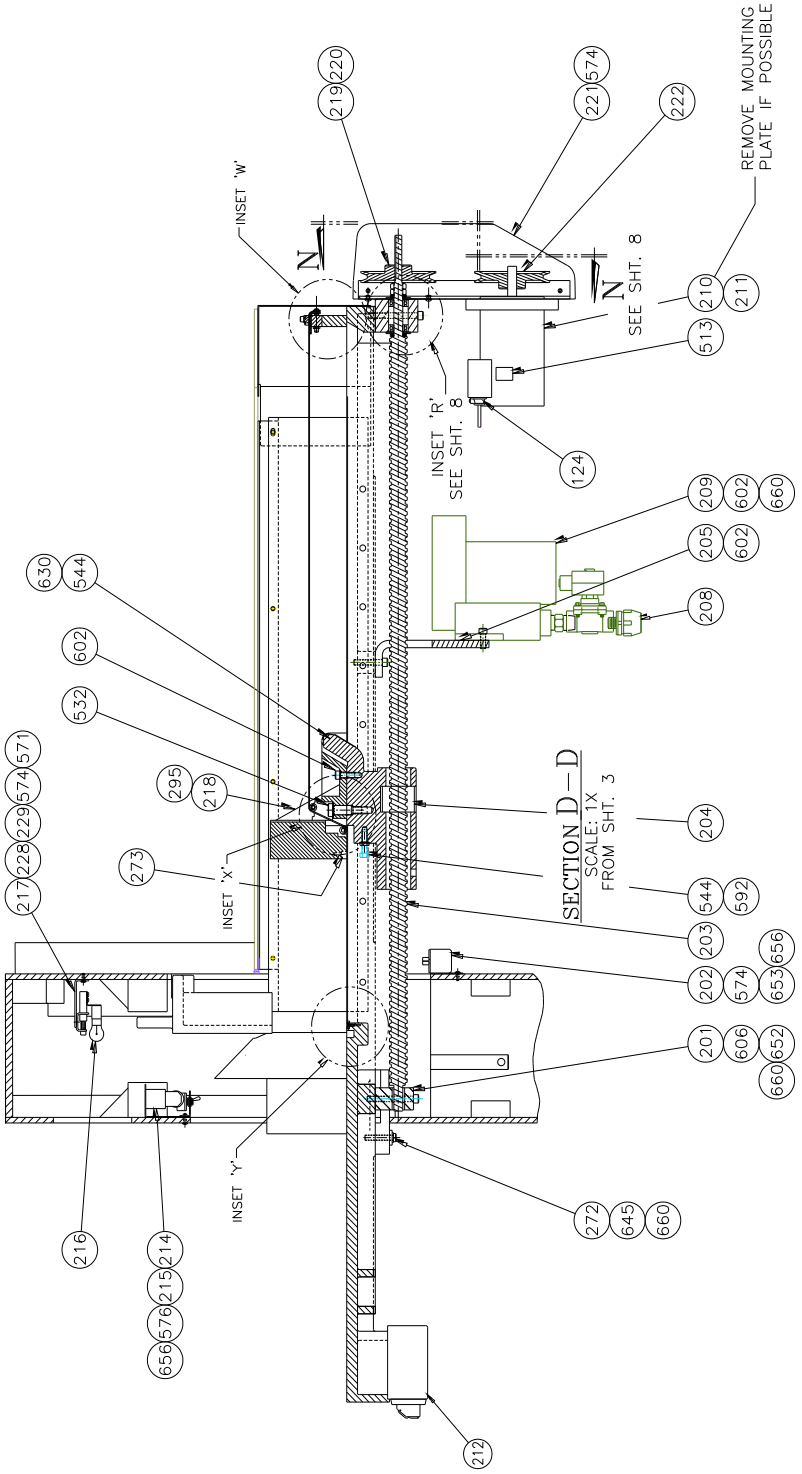
10.6 Main Assembly – Knife

49300 Sh't. 6 Rev. A

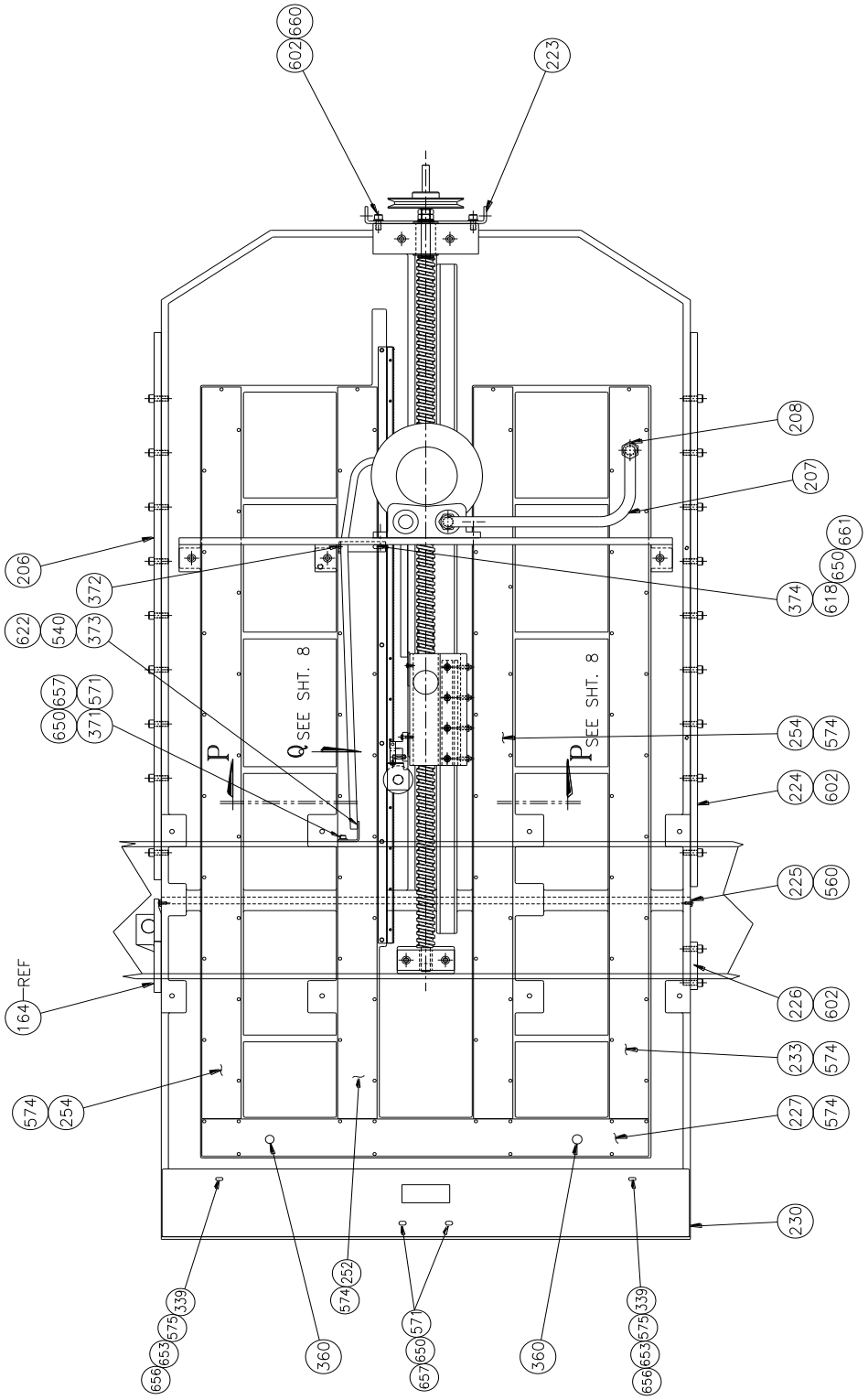


10.7 Main Assembly – Table

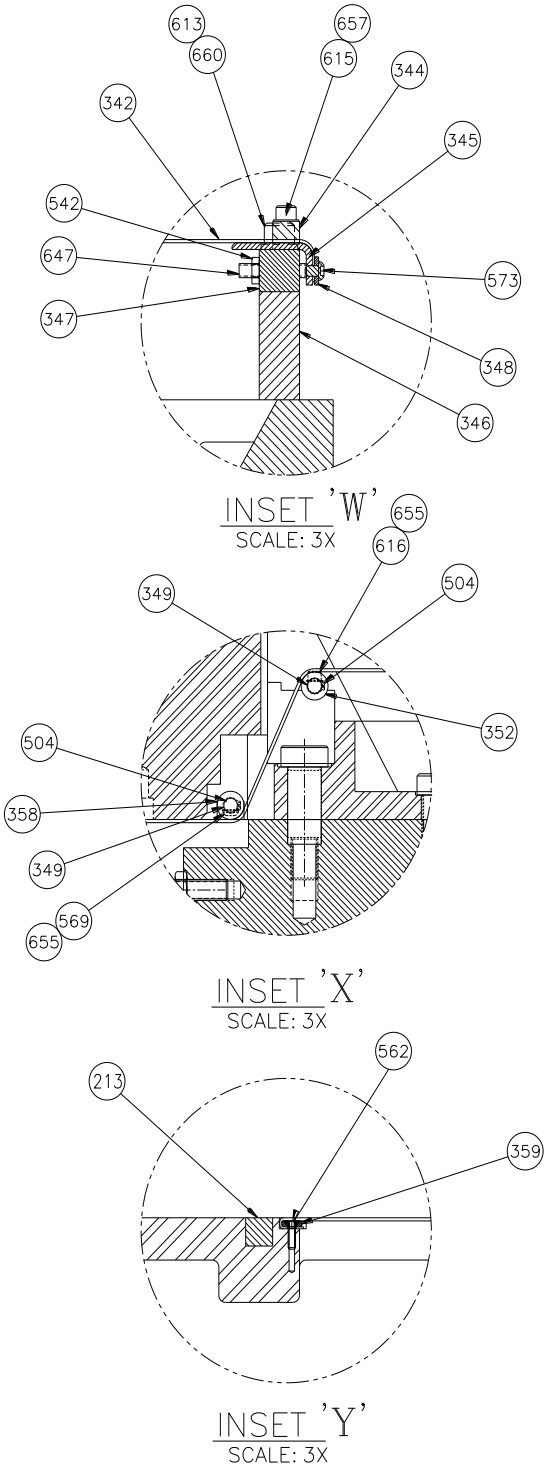
49300 Sh't. 7 Rev. A



Main Assembly – Table – 49300 Sh't. 7 Rev. A (cont'd.)

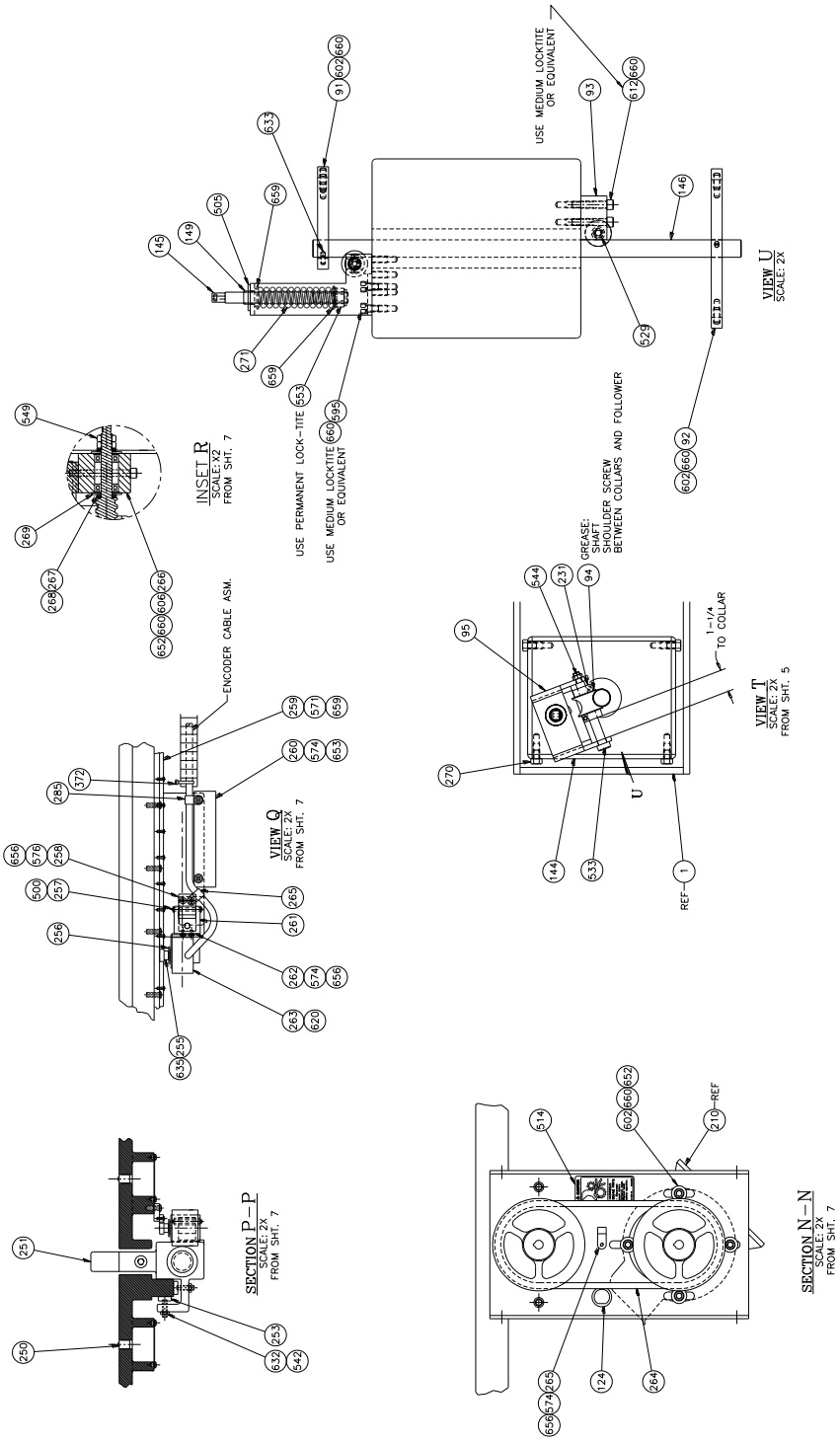


Main Assembly – Table – 49300 Sh't. 7 Rev. A (cont'd.)



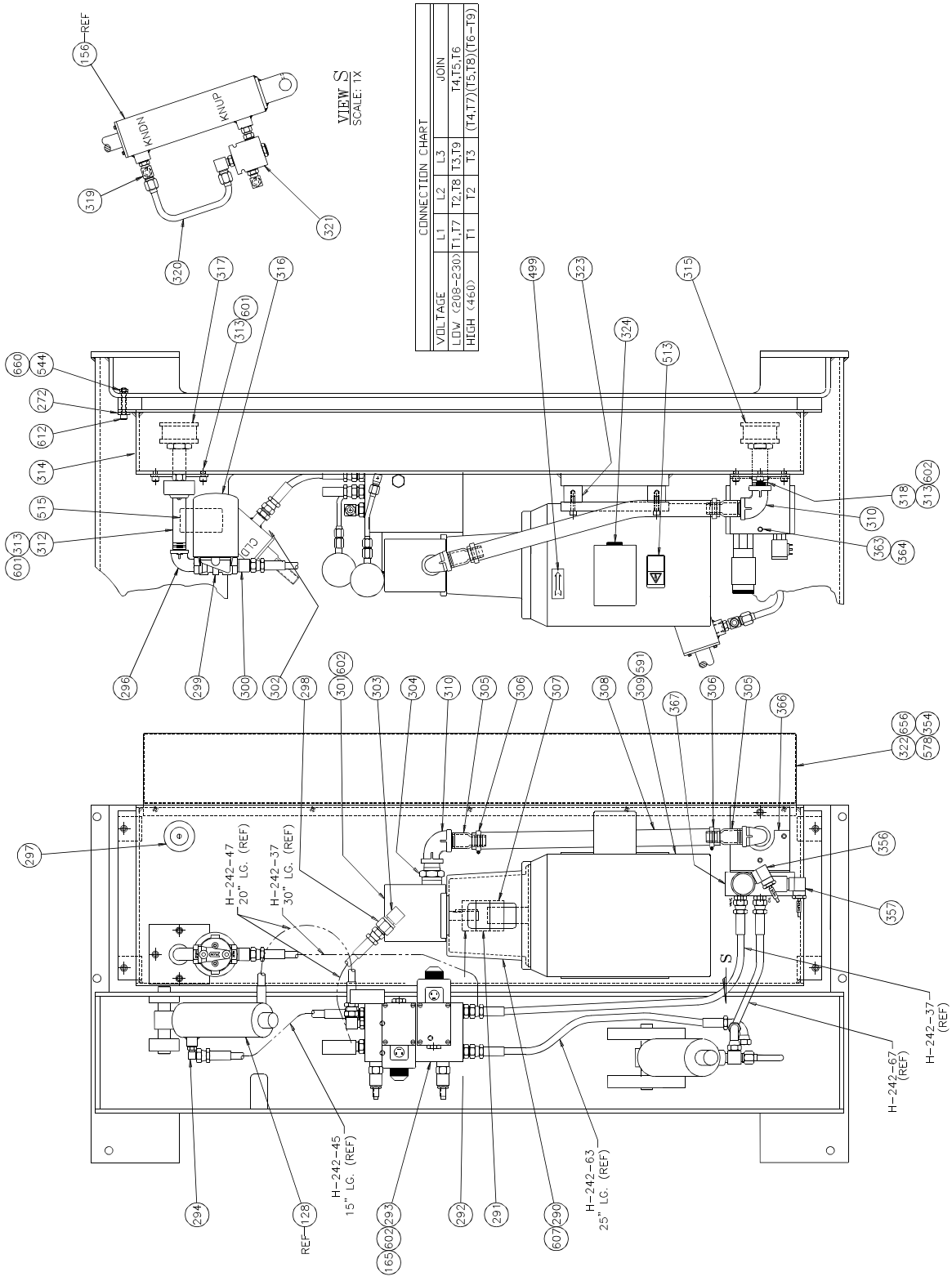
10.8 Main Assembly – Table

49300 Sh't. 8 Rev. A



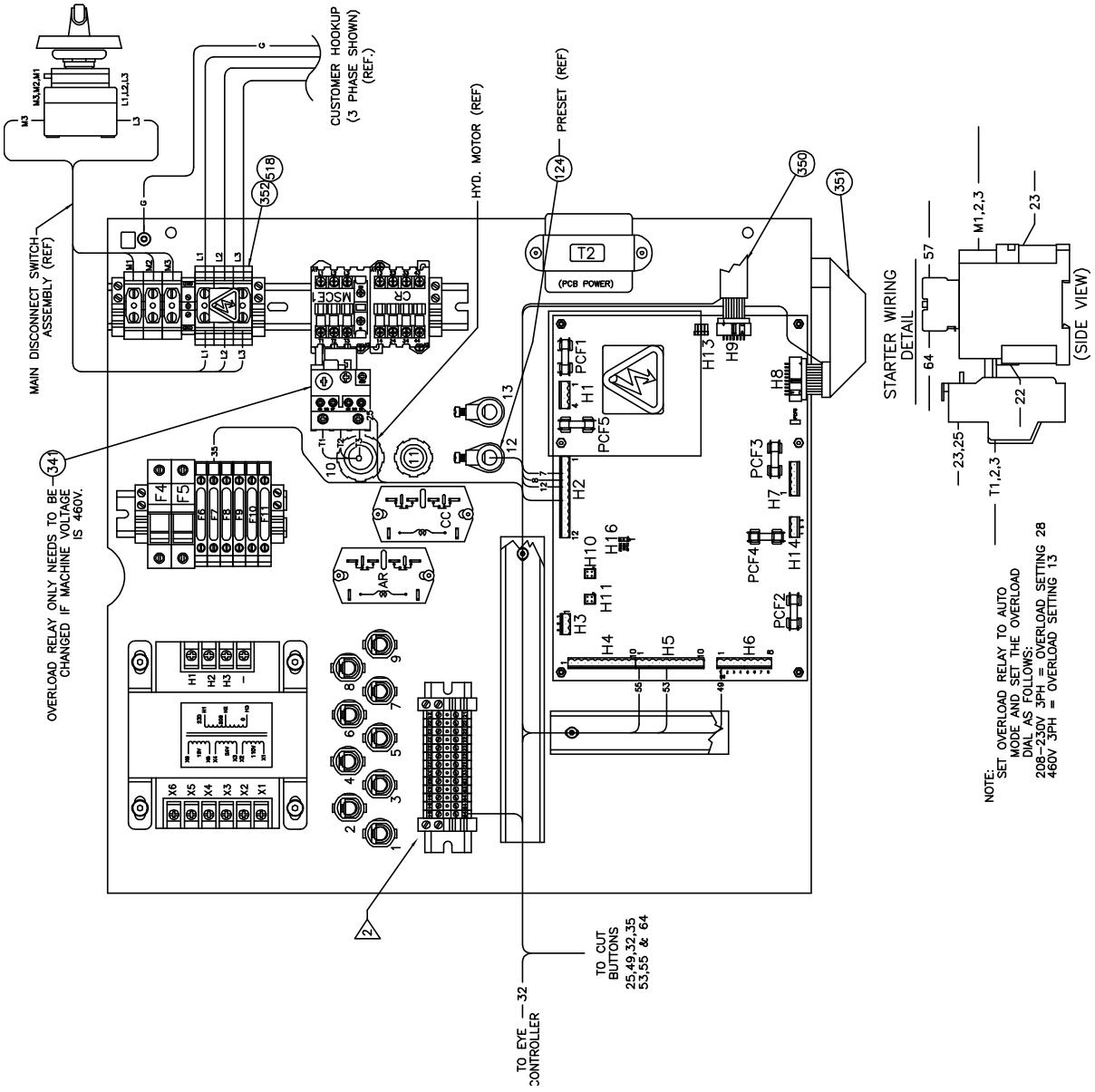
10.9 Main Assembly – Hydraulics

49300 Sh't. 9 Rev. A



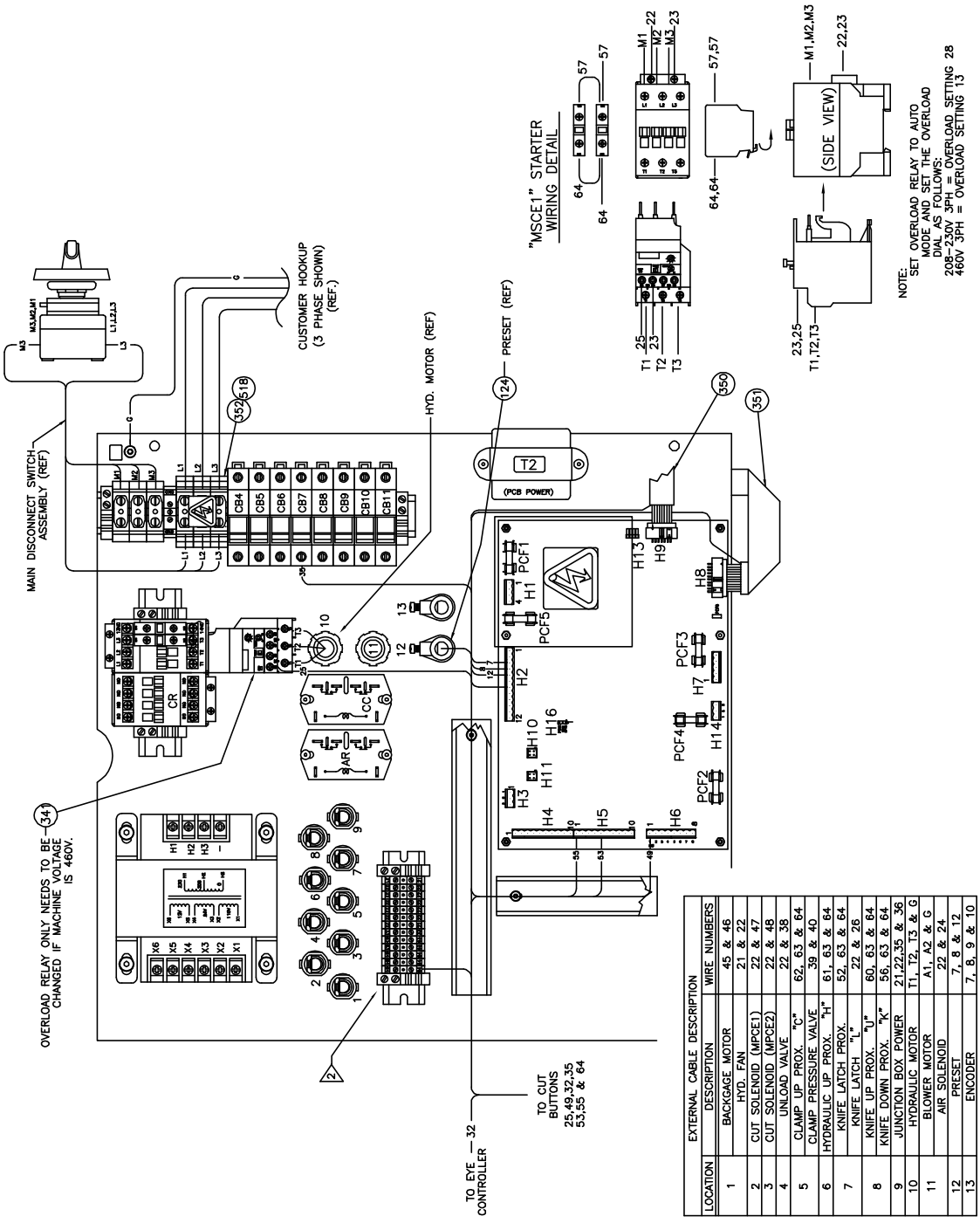
10.10 Main Assembly - Final Asm Wiring (w/Fuses)

49300 Sheet 10 Rev. A



10.11 Main Assembly - Final Asm Wiring (w/Circuit Breakers)

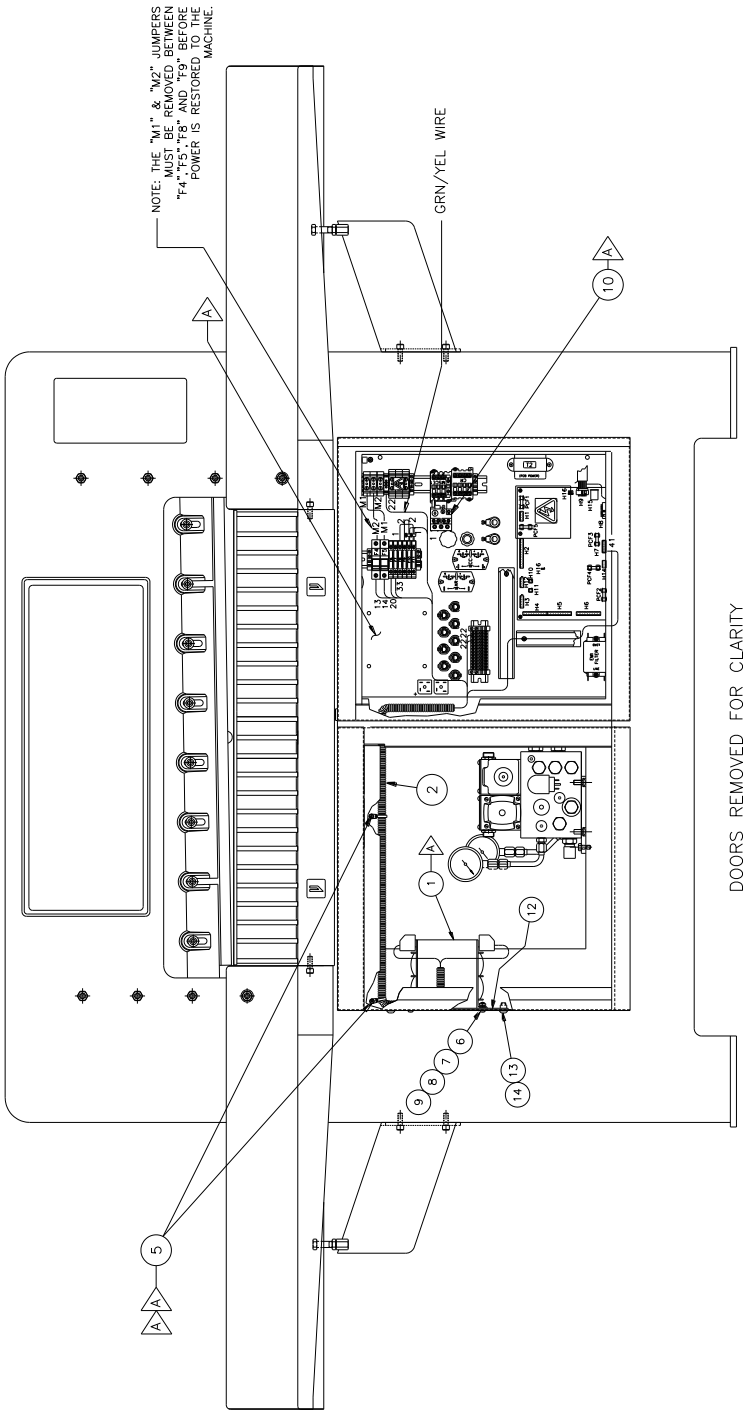
49300 Sh't. 10 Rev. B



LOCATION	EXTERNAL CABLE DESCRIPTION	
	DESCRIPTION	WIRE NUMBERS
1	BACKGAGE MOTOR	45 & 46
	HYD. FAN	21 & 22
2	CUT SOLENOID (MPCE1)	22 & 47
3	CUT SOLENOID (MPCE2)	22 & 48
4	UNLOAD VALVE	22 & 38
5	CLAMP UP PROX. "C"	62, 63 & 64
	CLAMP PRESSURE VALVE	39 & 40
6	HYDRAULIC UP PROX. "H"	61, 63 & 64
7	KNIFE LATCH PROX.	52, 63 & 64
	KNIFE LATCH "L"	22 & 26
8	KNIFE UP PROX. "U"	60, 63 & 64
	KNIFE DOWN PROX. "K"	56, 63 & 64
9	JUNCTION BOX POWER	21,22,35 & 36
10	HYDRAULIC MOTOR	T1, T2, T3 & G
11	BLOWER MOTOR	A1, A2 & G
	AIR SOLENOID	22 & 24
12	PRESET	7, 8 & 12
13	ENCODER	7, 8, 9 & 10

10.12 Main Assembly – 380/415/460 Wiring – (w/Fuses)

49300 Sh't. 11 rev. A



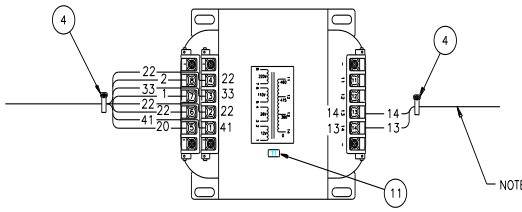
Main Assembly – 380/415/460 Wiring – w/Fuses 49300 Sh't. 11 rev.A (cont'd.)

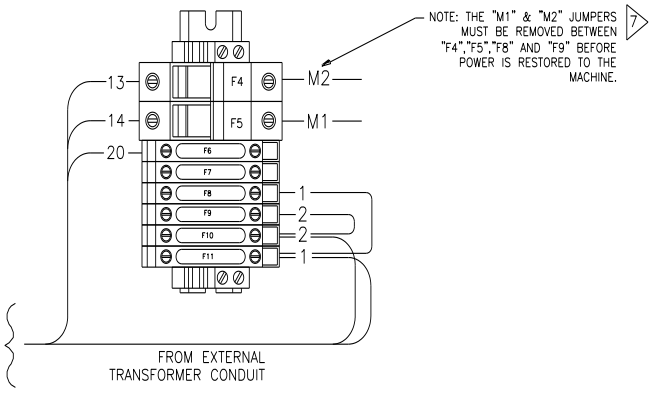
NO.	PART NO.	DESCRIPTION OF ACCESSORIES	QTY
1	E-1089-42	TRANSFORMER – 380/415/460V PRIMARY	1
2	EE-2871-1	CONDUIT ASSEMBLY – EXT. TRANSFORMER	1
3	S-1781-11	LABEL – EURO SHOCK W/TEXT (NOT SHOWN)	1
4	S-1694	TYRAP	10
5	S-1694-3	TYRAP – SCREW MOUNTED	2
6	H-6910-406	SCREW – 1/4-20 X 5/8" BUT HD SOC CAP	4
7	H-7324-8	WASHER – 1/4" INT. TOOTHLOCK	4
8	H-7321-4	WASHER – 1/4" SAE FLAT	4
9	H-6423-4	NUT – 1/4-20 HEX	4
10	E-2441-11	RELAY – OVERLOAD, 13A TO 19A (460V)	1
	E-2441-13	RELAY – OVERLOAD, 7.5A TO 11A (380/415V)	
11	E-1584-51	LABEL – TRANSFORMER, "T1"	1
12	47648	REINFORCEMENT PLATE – TRANSFORMER	1
13	H-6910-604	SCREW – 3/8-16 X 1/2" BUT HD SOC CAP	4
14	H-7324-12	WASHER – 3/8" EXT. TOOTHLOCK	4

TRANSFORMER WIRING DETAIL

SCALE: 2X

CAUTION: DETAIL SHOWN BELOW IS FOR REF. ONLY
ALWAYS FOLLOW THE LABEL MOUNTED ON THE TRANSFORMER
AND DOUBLE CHECK WIRING BEFORE POWERING UP THE MACHINE.





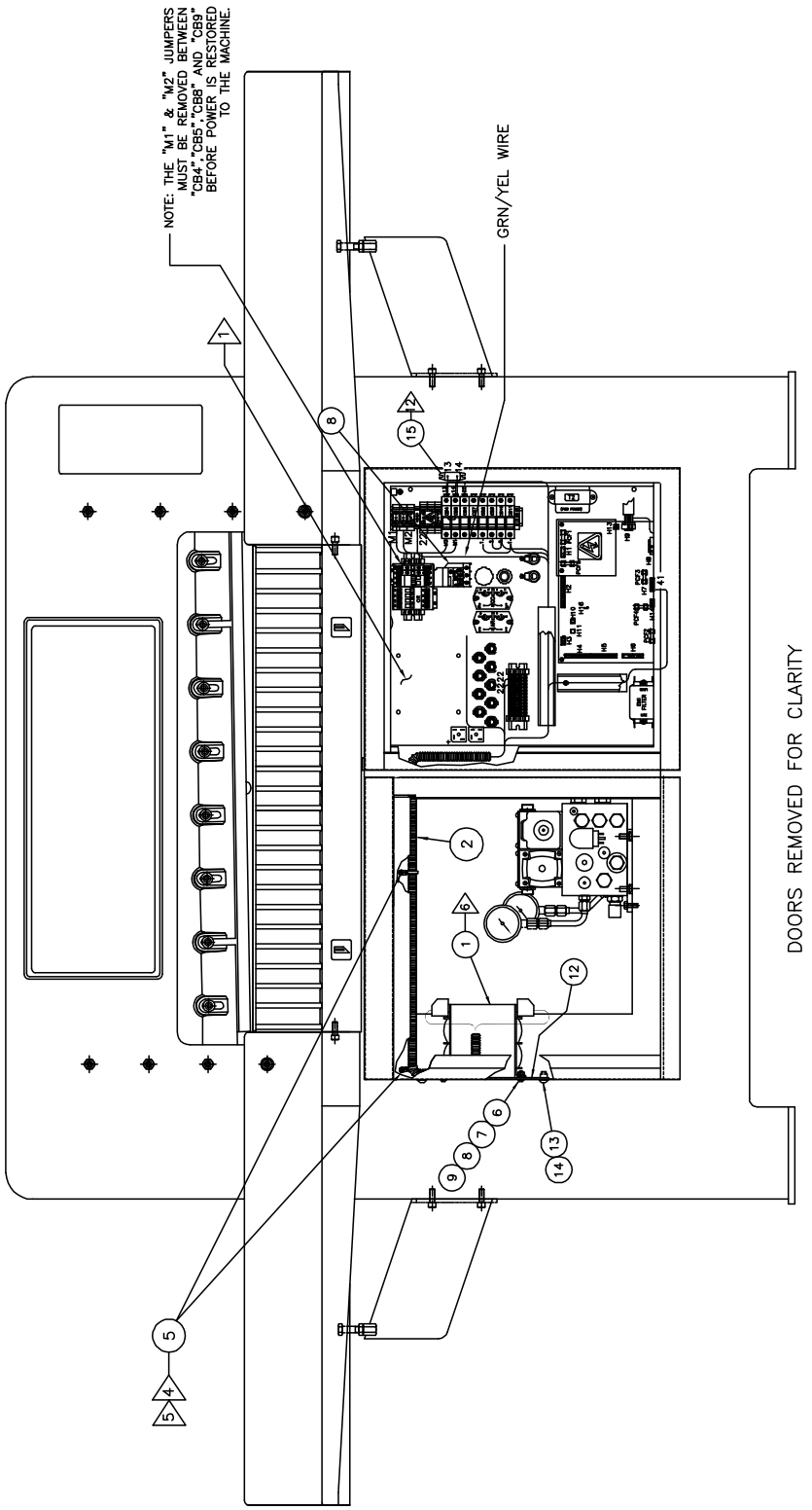
INSTRUCTIONS;

1. REMOVE THE EXISTING TRANSFORMER AND ALL OF THE CORRESPONDING WIRES FROM THE POWER PANEL.
2. MOUNT THE TRANSFORMER REINFORCEMENT PLATE (ITEM #12) TO THE UPPER LEFT SIDE OF THE FRONT ENCLOSURE (HYD SIDE). MOUNT THE NEW TRANSFORMER (ITEM #1) TO THE REINFORCEMENT PLATE.
3. INSTALL THE SUPPLIED ELECTRICAL SHOCK LABEL (ITEM #3) NEAR THE DOOR LOCK ON THE OUTSIDE OF THE LEFT SIDE DOOR.
4. INSTALL THE (2) SCREW MOUNT TYRAPS AS SHOWN IN THE DETAIL. IT MAY BE NECESSARY TO BACK THE STUDS OUT SLIGHTLY TO ALLOW TYRAP MOUNTING.
5. SECURE THE CONDUIT ASSEMBLY WITH THE (2) TYRAPS (INSTALLED IN STEP 4). (INSERT ONE END OF THE CONDUIT THROUGH THE HOLE IN THE WALL BETWEEN THE ENCLOSURES. THE END NEAR THE TRANSFORMER SHOULD BE INSTALLED SO IT IS HANGING ABOUT 2" FROM THE BOTTOM OF THE ENCLOSURE.
6. USING THE TRANSFORMER WIRING DETAIL – INSTALL THE WIRES TO THE NEW TRANSFORMER.
7. REMOVE THE "M1" & "M2" JUMPERS FROM "F8, F9, F10 AND F11" – SAVE FOR LATER USE.
8. INSTALL THE WIRES FROM THE CONDUIT ASSEMBLY TO THE APPROPRIATE LOCATIONS IN THE POWER PANEL AS SHOWN.
   WIRE #13 FROM CONDUIT TO FUSE "F4"
   WIRE #14 FROM CONDUIT TO FUSE "F5"
   WIRE #20 FROM CONDUIT TO FUSE "F6"
   WIRE #1 FROM CONDUIT TO FUSE "F11"
   WIRE #2 FROM CONDUIT TO FUSE "F10"
9. USING "M" JUMPERS REMOVED EARLIER – RE-LABEL EACH JUMPER TO A "1" AND A "2" AND JUMPER FUSES "F8 & F11" TOGETHER AND "F9 & F10" TOGETHER.
10. REWIRE THE HYDRAULIC MOTOR FOR THE APPROPRIATE VOLTAGE (USE THE MANUFACTURERS WIRING DIAGRAM ON MOTOR)
11. REPLACE THE EXISTING OVERLOAD RELAY WITH THE SUPPLIED OVERLOAD RELAY (ITEM #10)

NOTE: SET THE OVERLOAD RELAY TO AUTO MODE AND THE DIAL AS FOLLOWS:
380V 3PH = OVERLOAD SETTING 10
415V 3PH = OVERLOAD SETTING 10
460V 3PH = OVERLOAD SETTING 13

10.13 Main Assembly – 380/415/460V Wiring (w/Circuit Breakers)

49300 Sheet 11 Rev. B



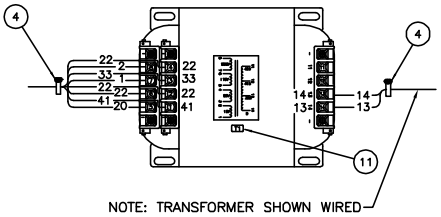
Main Assembly – 380/415/460V Wiring w/Circuit Breakers – (cont)

NO.	PART NO.	DESCRIPTION OF ACCESSORIES	QTY
1	E-1089-42	TRANSFORMER – 380/415/460V PRIMARY	1
2	EE-2871-1	CONDUIT ASSEMBLY – EXT. TRANSFORMER	1
3	S-1781-11	LABEL – EURO SHOCK W/TEXT (NOT SHOWN)	1
4	S-1694	TYRAP	10
5	S-1694-3	TYRAP – SCREW MOUNTED	2
6	H-6910-406	SCREW – 1/4-20 X 5/8" BUT HD SOC CAP	4
7	H-7324-8	WASHER – 1/4" INT. TOOTHLOCK	4
8	H-7321-4	WASHER – 1/4" SAE FLAT	4
9	H-6423-4	NUT – 1/4-20 HEX	4
10	E-2441-11	RELAY – OVERLOAD, 13A TO 19A (460V)	1
	E-2441-13	RELAY – OVERLOAD, 7.5A TO 11A (380/415V)	
11	E-1584-51	LABEL – TRANSFORMER, "T1"	1
12	47648	REINFORCEMENT PLATE – TRANSFORMER	1
13	H-6910-606	SCREW – 3/8-16 X 3/4" BUT HD SOC CAP	4
14	H-7324-12	WASHER – 3/8" EXT. TOOTHLOCK	4
15	E-1736-5	QUENCH-ARC – PANEL MOUNT, 500V RATING	1

TRANSFORMER WIRING DETAIL

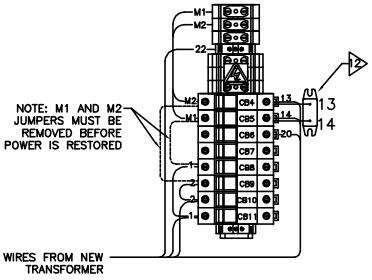
SCALE: 2X

CAUTION: DETAIL SHOWN BELOW IS FOR REF. ONLY
ALWAYS FOLLOW THE LABEL MOUNTED ON THE TRANSFORMER
AND DOUBLE CHECK WIRING BEFORE POWERING UP THE MACHINE.



NOTE: TRANSFORMER SHOWN WIRED FOR 380V – CHECK TO MAKE SURE THE TRANSFORMER IS WIRED FOR THE CORRECT SUPPLY VOLTAGE.

WIRING DETAIL



NOTE: M1 AND M2 JUMPERS MUST BE REMOVED BEFORE POWER IS RESTORED

WIRES FROM NEW TRANSFORMER

INSTRUCTIONS;

1> REMOVE THE EXISTING TRANSFORMER AND ALL OF THE CORRESPONDING WIRES FROM THE POWER PANEL.

2) MOUNT THE TRANSFORMER REINFORCEMENT PLATE (ITEM #12) TO THE UPPER LEFT SIDE OF THE FRONT ENCLOSURE (HYD SIDE). MOUNT THE NEW TRANSFORMER (ITEM #1) TO THE REINFORCEMENT PLATE.

3) INSTALL THE SUPPLIED ELECTRICAL SHOCK LABEL (ITEM #3) NEAR THE DOOR LOCK ON THE OUTSIDE OF THE LEFT SIDE DOOR.

4> INSTALL THE (2) SCREW MOUNT TYRAPS AS SHOWN IN THE DETAIL. IT MAY BE NECESSARY TO BACK THE STUDS OUT SLIGHTLY TO ALLOW TYRAP MOUNTING.

5> SECURE THE CONDUIT ASSEMBLY WITH THE (2) TYRAPS (INSTALLED IN STEP 4). (INSERT ONE END OF THE CONDUIT THROUGH THE HOLE IN THE WALL BETWEEN THE ENCLOSURES. THE END NEAR THE TRANSFORMER SHOULD BE INSTALLED SO IT IS HANGING ABOUT 2" FROM THE BOTTOM OF THE ENCLOSURE.

6> USING THE TRANSFORMER WIRING DETAIL – INSTALL THE WIRES TO THE NEW TRANSFORMER.

7> REMOVE THE "M1" & "M2" JUMPERS FROM CIRCUIT BREAKERS "CB8, CB9 CB10 AND CB11" – SAVE FOR LATER USE.

8) INSTALL THE WIRES FROM THE CONDUIT ASSEMBLY TO THE APPROPRIATE LOCATIONS IN THE POWER PANEL AS SHOWN.
WIRE #13 FROM CONDUIT TO CIRCUIT BREAKER "CB4"
WIRE #14 FROM CONDUIT TO CIRCUIT BREAKER "CB5"
WIRE #20 FROM CONDUIT TO CIRCUIT BREAKER "CB6"
WIRE #1 FROM CONDUIT TO CIRCUIT BREAKER "CB11"
WIRE #2 FROM CONDUIT TO CIRCUIT BREAKER "CB10"

9) USING "M" JUMPERS REMOVED EARLIER – RE-LABEL EACH JUMPER TO A "1" AND A "2" AND JUMPER CIRCUIT BREAKERS "CB8 & CB11" TOGETHER AND "CB9 & CB10" TOGETHER.

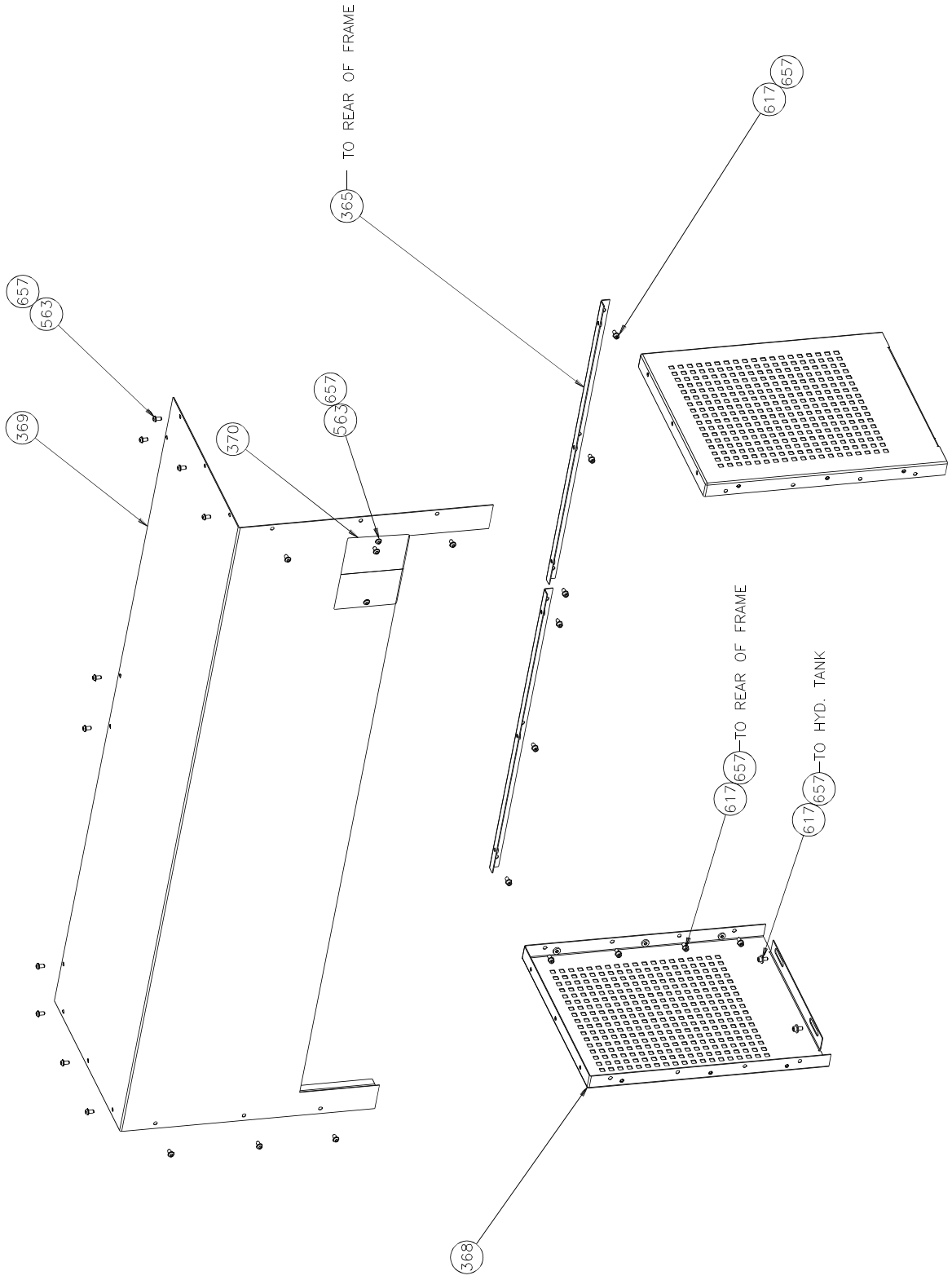
10) REWIRE THE HYDRAULIC MOTOR FOR THE APPROPRIATE VOLTAGE (USE THE MANUFACTURERS WIRING DIAGRAM ON MOTOR)

11> REPLACE THE EXISTING OVERLOAD RELAY WITH THE SUPPLIED OVERLOAD RELAY (ITEM #10)
SET THE OVERLOAD RELAY TO AUTO MODE AND THE DIAL AS FOLLOWS:
380V & 415V 3PH = OVERLOAD SETTING 10
460V 3PH = OVERLOAD SETTING 8

12> REMOVE THE EXISTING QUENCHARC FROM CIRCUIT BREAKERS 'CB4 & CB5". INSERT ONE NEW QUENCHARC WIRE BACK INTO CB4 AND THE OTHER WIRE INTO CB5 – AS SHOWN. WHEN ALL THE WIRING IS COMPLETE USE THE SUPPLIED TYRAPS TO SECURE THE QUENCHARC TO THE NEARBY WIRES TO KEEP IT IN PLACE.

10.14 Main Assembly – Hydraulic Cover

49300 Sh't. 12 rev. A



10.15 Main Assembly- Parts List

49300 Sh't. 13 Rev.M

NO.	PART NO.	DESCRIPTION OF ACCESSORIES	SHT	QTY
1	49086	FRAME – MACHINED	1	1
2	47173–1	L.H. DOOR ASM.	1	1
3	47163	GASKET	1	6
4	A–8495	TABLE EXTENSION SUPPORT L.H.	1	1
5	49147	36" SIDE TABLE BACK PLATE L.H.	1	1
6	16026	EXTENSION TABLE – L.H.	1	1
7	EE–3456–1	CONTROL CONSOLE ASM. – TC	1	1
8	49068	CONSOLE BRACKET	1	2
9	S–1694–2	TIE – CABLE #10	1	3
10	16027	EXTENSION TABLE – R.H.	1	1
11	49080	36" SIDE TABLE BACK PLATE R.H.	1	1
12	A–8496	TABLE EXTENSION SUPPORT R.H.	1	1
13	47033–3	FRONT ENCLOSURE ASM.	1	1
14	49093	R.H. DOOR ASM.	1	1
15	EE–3479–1	PANEL ASM. – POWER. 370TC	1	1
16	47101	FRONT ENCLOSURE LATCH	1	2
17	11145–1	BLIND RIVET – 3/16	1	4
18	K–49000	TOOL KIT	1	1
19	S–1781–216	LABEL – FRONT OF TABLE	1	1
20	E–2196–11	PLUG – HOLE	1	2
21	16047	HINGE	1	1
41	47645–1	COMPRESSOR ASM. – S/N _____ & BELOW	1	1
	47645–2	COMPRESSOR ASM. – S/N _____ & ABOVE	1	
42	49112	SPRING	5	2
43	41130	SERIAL PLATE	2	1
44	49088	COVER – ARCH END	2	3
45	49082	SUPPORT – BACKGAGE SHIELD	2	1
46	40016–8	VIBRATION ABSORBER	1	4
47				
55	49064	COVER – REAR TABLE	3	1
56	49081	SHIELD – BACKGAUGE	3	1
57	49072	BRACKET – BACKGAUGE SHIELD	3	2
58	E–1719	FOOT SWITCH GUARD	5	1
70	49110	ACCESS COVER	4	3
71	H–5246–406	DOWEL PIN – 1/4 X 3/4	4	1
72	E–2196–6	PLUG – HOLE	4	2
73	49085	ARCH COVER	4	1
74	E–1152–103	STANDOFF – 1/4–20 MALE TO 1/4–20 FEMALE	4	10
75	44055	PIN – SPECIAL TAPER	4	2
76	7032–M	PLASTIC TRIM – 12. FEET	4	1
77	EE–3007	FOOT SWITCH ASSEMBLY	5	1
89	47646	FOOT SWITCH BRACKET	5	1
90	47647	FOOT SWITCH BRACKET	5	1
91	49133	SUPPORT BAR – COUNTER WEIGHT	8	1
92	49134	SUPPORT BAR – COUNTER WEIGHT	8	1
93	49135	MOUNTING BLOCK	8	1
94	49136	FOLLOWER – COUNTER WEIGHT SHAFT	8	2
95	49212	SPRING RETAINER	8	1
96	49007	PAPER GUIDE	5	1
97	49132	CHAIN – ROLLER	5	1
98	20017	LINK – MASTER	5	2
99	49140	CONNECTING LINK – COUNTER WEIGHT	5	1
100	49012	FALSE CLAMP PLATE WELDMENT	5	1
101	49043	PIN – BELLCRANK / TIE ROD (⌀.5000)	5	1
102	49008	CLAMP PULL DOWN BAR	5	2
103	49244–1	AIR CYLINDER ASSEMBLY	5	1
104	49002–2	BELLCRANK ASM– RIGHT HAND	6	1
105	49247	SCREW– 5/16–24 X 3/4 SPECIAL	5	1
106	P–303	1/4" VINYL TUBING	5	11"
107	43023–5	3/8 CLEVIS PIN WITH HAIRPIN	5	1
108	49009	GIB – CLAMP GUIDE	5	2
109	49010	STUD – CLAMP PULL DOWN BAR (⌀.5000)	5	2
110	49006	BAR – CLAMP GUIDE	5	2
111	49037	PIN – BELLCRANK / PULL DOWN BAR (.5000)	5	2
112	8835	PIN, KEEPER	5	2
113	49190	PIN – BELLCRANK (⌀1.2500)	5	1

NO.	PART NO.	DESCRIPTION OF ACCESSORIES	SHT	QTY
114	S–1725–2	GREASE FITTING	5	1
115	49045	PIN – BELLCRANK / CYLINDER CLEVIS (⌀.6250)	5	1
116	49036	PIN – CYLINDER (⌀1.000)	5,6	2
117	A–10081–3	COLLAR– CLAMP	5	2
118	49011	TIE ROD – BELLCRANK	5	1
119	49078	CLEVIS – BELLCRANK / TIE ROD L.H.	5	1
120	49001–2	BELLCRANK ASM– LEFT HAND	5	1
121	20008	SPROCKET	5	2
122	49125	PROX. BRACKET – CLAMP	5	2
123	47195	BRACKET – ARCH JUNCTION	5	1
124	S–1350–16	BUSHING	–	9
125	E–709–R	WIRE – #18 GA. RED MTW 22" LONG (#22)	5	1
126	A–10081–11	COLLAR – CLAMP	5,6	4
127	E–2626–4	TERMINAL BLOCK – 4 POLE	5	1
128	H–499	CYLINDER – CLAMP	5	1
129	49005	CLEVIS – CLAMP CYLINDER	5	1
130	49103	PROXIMITY ACTUATOR BRACKET	5	1
131	49109	DAMPER ASM.	5	1
132	49142	CLEVIS – BELLCRANK / TIE ROD R.H.	5	1
133	49104	PROXIMITY ACTUATOR – CLAMP CYL. DOWN	5	1
134	49030	PIN – BELLCRANK / TIEROD R.H. (⌀.5000)	5	1
135	49014	CLAMP	5	1
136	49047	CLAMP WEAR STRIP	5	1
137	E–709–R	WIRE – #18 GA. RED MTW 3" LONG (#22)	5	1
138	E–709–R	WIRE – #18 GA. RED MTW 20" LONG (#36)	5	1
139	E–709–R	WIRE – #18 GA. RED MTW 6" LONG (#22)	5	1
140				
141	E–1214–4	CONNECTOR – #8 INS. LOCKING FORK (16–22)	5	2
142				
143	E–1214–54	CONNECTOR – 1/4" FULLY INS. MALE QUICK DISC.	5	1
144	49138	COUNTER WEIGHT	8	1
145	49213	CONNECTING LINK – COUNTER WEIGHT	8	1
146	49153	SHAFT – COUNTER WEIGHT	8	1
147	49191	PIN – BELLCRANK (⌀1.2500)	5	1
148	49240	CYLINDER MOUNTING BRACKET– BOTTOM	5	1
149	A–10257–17	BEARING– 5/8	8	1
150	49053	KNIFE BAR	6	1
151	49219	LINK ASSEMBLY– KNIFE BAR	6	2
152	49187	KNIFE LATCH BRACKET	6	1
153	49032	PIN – KNIFE CLEVIS (⌀.7500)	6	1
154	49077	CLEVIS – KNIFE CYLINDER	6	1
155	A–10644–8	COLLAR	6	1
156	H–500–1	KNIFE CYLINDER	6	1
157	49051	GIB – KNIFE BAR – FRONT R.H.	6	1
158	49124	GIB – KNIFE BAR – REAR	6	2
159	49228–1	KNIFE LATCH ASSEMBLY	6	1
160	49122	SCREW – REAR KNIFE GIB DEPTH	6	8
161	49035	PIN – KNIFE LINK / FRAME (⌀1.2500)	6	2
162	49033	PIN – KNIFE LINK / KNIFE BAR (⌀1.2500)	6	2
163	49128	GIB – KNIFE BAR – FRONT L.H.	6	1
164	49115	PAPER DEFLECTOR	6	1
165	8815	WASHER – KNIFE BAR SCREW	–	16
166	49144	BRACKET – KNIFE ADJUSTING SCREW	6	3
167	49145	KNIFE ADJUSTING SCREW	6	3
168	49055	KNIFE	6	2
169	49097	PROX BRACKET – KNIFE	6	1
170	49123	LOCATOR PLATE – REAR GIB	6	2
171	49158	SHIM – WASHER	6	4
200	A–10081–5	COLLAR– 1" TWO PIECE	5	1
201	49098	FRONT PILLOW BLOCK ASM.	7	1
202	EE–3464	PRESET PROX. ASM. W/BRACKET	7	1
203	49027	LEADSCREW	7	1
204	49041	NUT – LEADSCREW	7	1
205	49026	TABLE BRACE	7	1
206	49023	PAPER GUIDE – REAR TABLE – R.H.	7	1
207	E–2189–2	TUBING – CORRUGATED, FLEXIBLE 3/4" X 32" LONG	7	1

NO.	PART NO.	DESCRIPTION OF ACCESSORIES	SHT	QTY
208	E–2191–2	PLASTIC LIQUID TIGHT CONNECTOR	7	2
209	49083	BLOWER ASSEMBLY	7	1
210	E–1600–149	MOTOR	7	1
211	E–1237–1	WIRE NUT – YELLOW	7	2
212	EE–3383	CUT BUTTON ASM.	7	1
212	EE–3383–1	TOUCH BUTTON ASM.	7	1
213	4173	CUT STICK	7	4
214	EE–2140–11	TABLE LIGHT ASM.	7	1
215	S–845	LIGHT – TABLE	7	1
216	E–967–1	LAMP – LINE LIGHT	7	2
217	EE–2779	LINE LIGHT ASM.	7	1
218	49019	BACKGAUGE (S/N 15999 & BELOW)	7	1
	49019–1	BACKGAUGE (S/N [ ]–151000 & UP)	7	1
219	A–12616–1	PULLEY – DRIVEN	7	1
220	20266–6123	KEY – 1/8 SQ	7	1
221	47055	COVER – BACKGAUGE DRIVE	7	1
222	13927–1	PULLEY – DRIVE	7	1
223	47054	BACKGAUGE MOTOR BRACKET	7	1
224	49039	PAPER GUIDE – REAR TABLE – L.H.	7	1
225	S–6–27B	STOP – CUT STICK	7	2
226	49022	PAPER GUIDE – FRONT TABLE – R.H.	7	1
227	49074	AIR CHANNEL COVER – SHORT	7	1
228	EE–2779–1	LINE LIGHT ASM.	7	2
229	49129	LINE LIGHT BRACKET	7	2
230	49021	TABLE	7	1
231	A–10081–2	COLLAR– 1/2	8	2
232	49217	COLLAR– PIN RETAINING	5,6	4
233	49169	AIR CHANNEL COVER	7	1
234	47269	.030 UHMW TAPE – 3/8" WIDE	7	42"
250	P–207–2	AIR JET	8	48
251	49034	BACKGAUGE NUT	8	1
252	49084	AIR CHANNEL COVER	8	1
253	49046	GIB – BACKGAUGE CARRIER	8	2
254	49073	AIR CHANNEL COVER – LONG	8	2
255	47053–4	COUPLING – FLEXIBLE, 1/4" ID	7	1
256	E–2468–3	ENCODER	7	1
257	49263	ENCODER BRACKET	7	1
258	E–1152–40	STANDOFF	7	2
259				
260	49090	TRIGGER – PRE–SETTER	8	1
261				
262				
263				
264	47536	V–BELT	8	1
265	E–968–2	CLIP – WIRE	7,8	4
266	49099	PILLOW BLOCK ASM. – REAR	8	1
267	S–1300–4	NEEDLE THRUST BEARING	8	2
268	S–1295–8	THRUST WASHER	8	4
269	47503	WASHER – PILLOW BLOCK	8	2
270	H–6881–606	BOLT – 3/8–16 X 3/8 NYLON HEX HD.	8	4
271	49214	SPRING– COUNTER WEIGHT	8	1

10.16 Main Assembly- Parts List

49300 Sh't. 14 Rev. B

NO.	PART NO.	DESCRIPTION OF ACCESSORIES	SHT	QTY
351	EE-2855-17	CABLE ASSEMBLY - SHIELDED RIBBON 20 COND.	10,11	1
352	47588	CROWNED PULLEY	7	1
353	EE-2846	WIRE ASSEMBLY - EURO STARTER	11	1
354	E-1369-5	COVER - JUNCTION BOX	9	1
355	E-2805-6	STARTER (EURO CUTTER ONLY)	11	1
356	EE-2906	CABLE ASSEMBLY - SOLENOID (VALVE)	9	REF
357	EE-2906-1	CABLE ASSEMBLY - SWITCH	9	REF
358	47601	STRAIGHT PULLEY	7	1
359	47587	BELT CLAMP	7	1
360	H-6650-6	PLUG - PLASTIC NPT	7	2
361	H-242-37	HOSE - HYDRAULIC, 30" LONG	9	REF
362	H-242-67	HOSE - HYDRAULIC, 22" LONG	9	REF
363	H-6913-606	BOLT - 3/8-16 X 3/4 HEX HD	9	2
364	H-7327-12	WASHER - 3/8 LOCKWASHER	9	2
365	49164	MOTOR GUARD BRACKET	13	2
366	49193	BRACKET - VALVE	9	1
367	49195	VALVE ASSEMBLY - KNIFE FLOW CONTROL	9	1
368	49163	MOTOR GUARD- SIDE	13	2
369	49165	MOTOR GUARD	13	1
370	49215	BREATHER ACCESS COVER	13	1

NO.	PART NO.	DESCRIPTION OF ACCESSORIES	SHT	QTY
272	49172	HARDENED WASHER - EXTRA THICK	6,7	8
273	10065	STEEL FLOATING FINGER (S/N 15999 & BELOW)	7	10
	60204	NYLON FLOATING FINGER (S/N [ ]-151000 & UP)	7	24
274	49222	KNIFE UP PROX BRACKET	7	1
275	49241	CYLINDER MOUNTING BRACKET- TOP	5	1
276	H-215-125-0500	ROLL PIN - 1/8 DIA. X 1/2	5	1
290	49146	C-FACE MOTOR / PUMP ADAPTER	9	1
291	49151	BUNA-N SPIDER	9	1
292	49152-1	SPIDER COUPLING 3/4 DIA. BORE	9	1
293	H-512-1	MANIFOLD ASM.	9	1
294	H-230-6	ELBOW - O-RING TO TUBE (849-FSO-8x6)	9	2
295	SU-32-106	VAPOR CAPSULE	7	2
296	H-5511-12	ELBOW - STREET 90° - 3/4 NPT TO 3/4 NPT	9	1
297	H-287-2	BREATHER	9	1
298	H-514-10x8	TUBE REDUCER - #10 TO #08 (2406-10-8-NWO)	9	1
299	H-226-1	FILTER HEAD	9	1
300	H-515-8x12	ADAPTER - TUBE TO NPT (848-FS-8x12)	9	1
	H-513	PUMP - V20 7 GPM (PART # V20-1P7S-1D)	9	1
301	49192	PUMP - V20 8 GPM (FOR 50 Hz MACHINE)	9	1
303	H-230-9	ELBOW - O-RING TO TUBE (849-FSO-10x12)	9	1
304	H-256-3	PIPE ADAPTER- 1-1/4 TO 1, NPT (24SA-20x16)	9	1
305	H-491	HOSE BARB - ZINGA	9	2
306	H-489	HOSE CLAMP	9	2
307	49152-2	SPIDER COUPLING - 1-3/8 DIA. BORE	9	1
308	H-242-62	HOSE - 1" I.D. X 22" LOW PRESSURE	9	1
309	E-1600-138	LEESON MOTOR 10 HP (PART # 150172)	9	1
310	H-5510-16	ELBOW 90° - 1" NPT TO 1" NPT	9	2
312	49111	PLATE - RESEVOIR COVER	9	1
313	49075	GASKET	9	2
314	49141	HYDRAULIC RESERVOIR	9	1
315	H-238-4	STRAINER	9	1
316	H-227-1	FILTER	9	1
317	H-338	DIFFUSER - RETURN LINE	9	1
318	49069	PLATE - RESERVOIR COVER	9	1
319	H-435-1	TEE - O-RING TO TUBE TO TUBE (851-FSO-8x8)	9	1
320	H-510-1	TUBE ASM. - #8 TUBE TO #8 TUBE	9	1
321	H-509-1	COUNTER BALANCE VALVE ASM.	9	1
322	49155	COOLING FAN ASM.	9	1
323	40016-5	MOUNT - VIBRATION	9	4
324	E-2873	BUSHING - REDUCER, CONDUIT	9	1
325	49206	FALSE CLAMP PLATE SHEATH ASM.	1	1
326	E-1172-15	BUSHING	1	2
327	49208	LEADSCREW COVER- FORWARD	2	1
328	49207	LEADSCREW COVER- REARWARD	2	1
329	E-3336	CONTROLLER - ELECTRIC EYE	1	1
330	16047	HINGE	3	1
331				
332				
333	EE-3339	ASM. - CONTROLLER/EYE	3	1
334	E-2810	POWER SUPPLY - 24V OUTPUT	1	1
335	E-2070-1	END BRACKET - TERMINAL BLOCK	1	2
336	E-1977-23	RAIL - TERMINAL BLOCK, 5" LONG	1	1
337	49223	BACKER PLATE	06	1
338	49249	BACKGAUGE CONTROL ASSEMBLY	1	1
339	49255-1	STAND-OFF - #10-24 X 2-3/4	7	2
340				
	E-2441-18	OVERLOAD RELAY - 13A TO 16A (460V)	10	1
341	E-2441-20	OVERLOAD RELAY - 7.6A TO 10A (380/415)	10	1
342	49199	SLOT CLOSURE BELT	7	1
344	47593	HOLD DOWN BLOCK	7	1
345	47604	TENSION BRACKET	7	1
346	49197	RETAINER SUPPORT BLOCK	7	2
347	49198	RETAINER CROSS SUPPORT	7	1
348	47598	BELT RETAINER	7	1
349	47597	PIN- PULLEY	7	2
350	EE-2855-18	CABLE ASSEMBLY - SHIELDED RIBBON 14 COND.	10,11	1

10.17 Main Assembly- Parts List

49300 Sh't. 15 Rev. E

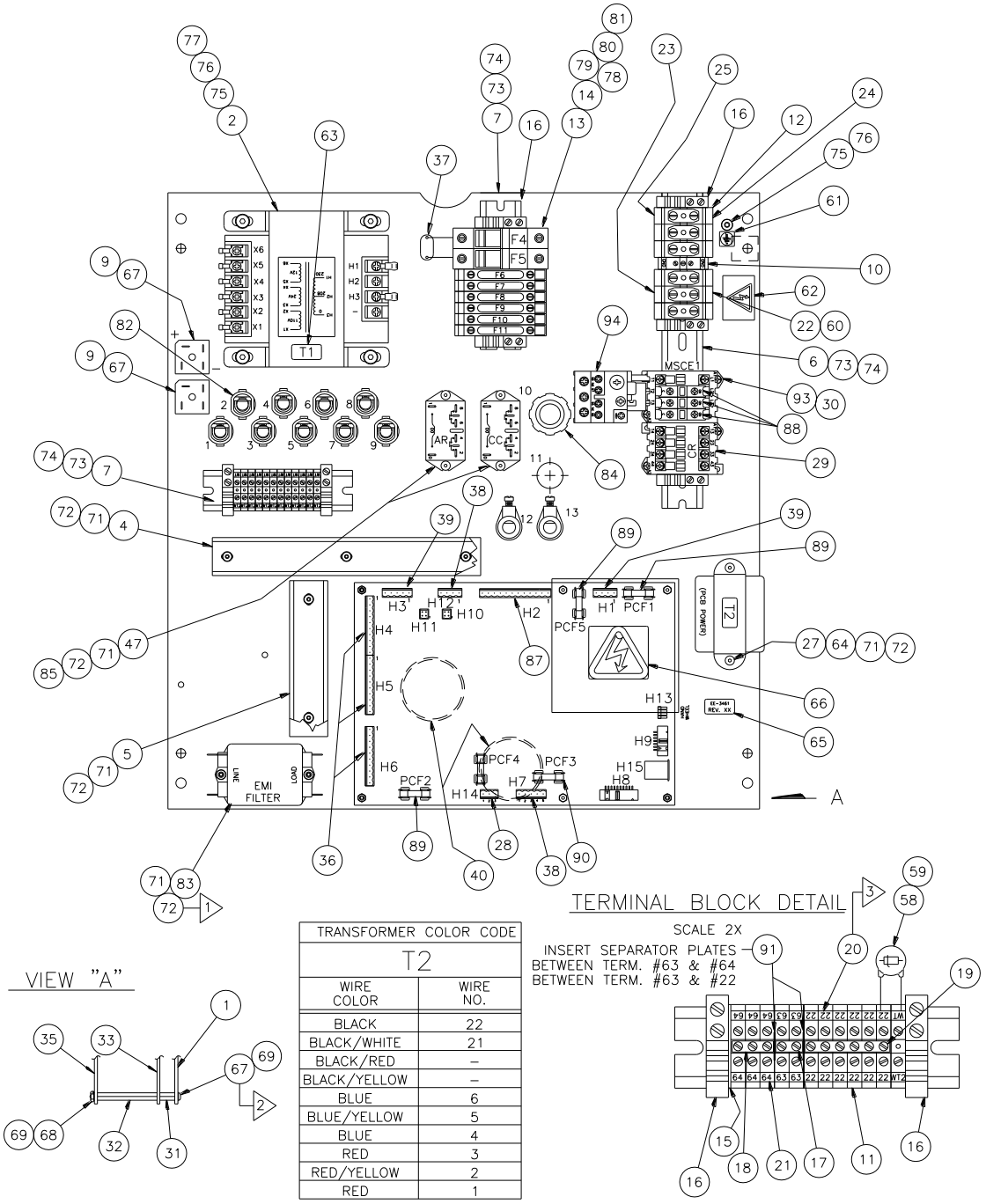
NO.	PART NO.	DESCRIPTION OF ACCESSORIES	SHT	QTY
499	S-1106	LABEL - RED ARROW	9	1
500				
501	S-1193-50	ERING - 1/2	5	8
502	S-1073-62	RETAINING RING- 5/8 EXTERNAL	5,6	2
503	S-1193-75	ERING - 3/4	6	2
504	S-1073-25	RETAINING RING- 1/4 EXTERNAL	7	4
505	H-6450-75	RETAINING RING- 3/4 PUSH-ON	8	1
506	H-5246-406	DOWEL - PIN 1/4 X 3/4	7	1
510	S-1781-116	LABEL	1	1
511	S-1781-11	LABEL - SHOCK HAZARD	1,2	2
513	S-1781-12	LABEL - ELECTRICAL SHOCK HAZARD	7,9	4
514	S-1781-15	LABEL	2,4,8	5
515	S-1781-16	LABEL - CRUSH HAZARD	1,4,9	5
517	S-1781-25	LABEL - INSTRUCTION	1	1
518	S-1781-50	LABEL - SHOCK HAZARD "EURO"	-	4
519	S-1781-230	LABEL - POWER CONNECTION PROCEDURE	1	1
520	S-1781-42	LABEL- GROUND	1	1
525	H-5247-6	FLEX LOCK NUT - 3/8-16	8	3
529	H-5254-810	SHOULDER SCREW - 1/2 DIA. X 1-1/4 SOC. HD.	8	1
530	H-5254-608	SHOULDER SCREW - 3/8 DIA. X 1 SOC. HD.	2,8	2
531	H-5254-822	SHOULDER SCREW - 1/2 X 2-3/4 SOC. HD.	5	2
532	H-5254-1010	SHOULDER SCREW - 5/8 X 1-1/4 SOC. HD.	7	1
533	H-5254-830	SHOULDER SCREW - 1/2 X 3-3/4 SOC. HD.	8	1
540	H-6423-#4	NUT - #4-40 HEX KEP	5,6	5
541	H-6423-#10	NUT - #10-24 HEX KEP	1	19
542	H-6423-4	NUT - 1/4-20 HEX KEP	1,4,8	25
543	H-6417-5	NUT- 5/16-18 HEX	1	4
544	H-6424-6	NUT - 3/8-16 HEX JAM	-	24
545	H-6424-8	NUT - 1/2-13 HEX JAM	5	1
546	H-6423-#6	NUT - #6-32 HEX KEP	7	2
547	H-6427-16	NUT - 1-14 HEX	6	1
548	H-6428-8	NUT - 1/2-20 HEX JAM	1,6	10
549	H-6428-10	NUT - 5/8-18 HEX JAM	8	2
550	H-6428-12	NUT - 3/4-16 HEX JAM	5	2
551				
552	H-6434-12	NUT - 3/4-16 L.H. HEX	5	1
553	H-6442-10	NUT- 5/8-11 HEX NYLOC	8	1
560	H-6909-83203	SCREW - #8-32 X 3/8 FLT. HD.	7	2
561	H-6897-102403	SCREW - #10-24 X 3/8 NYLOC F.H.S.C.	5	2
562	H-6909-63204	SCREW- #6-32 X 1/2 FLAT HD	13	2
563	H-6910-404	SCREW- 1/4-20 X 1/2 BHC	-	29
569	H-6910-83204	SCREW- #8-32 X 1/2 BHC	7	2
570	H-6910-403	SCREW - 1/4-20 X 3/8 BUTT. HD.	2,4	12
571	H-6910-404	SCREW - 1/4-20 X 1/2 BUTT. HD.	-	23
573	H-6910-102402	SCREW- #10-24 X 1/4 BHC	7	2
574	H-6910-102403	SCREW - #10-24 X 3/8 BUTT. HD.	-	135
575	H-6910-102404	SCREW- #10-24 X 1/2 BUTT. HD.	1,3,7	20
576	H-6910-102406	SCREW - #10-24 X 3/4 BUTT. HD.	7,8	14
577	H-6910-102408	SCREW - #10-24 X 1 BUTT. HD.	1	3
578	H-6910-406	SCREW - 1/4-20 X 3/4 BUTT HD.	3,9	11
579	H-6910-404SS	SCREW- 1/4-20 X 1/2 BHC STAINLESS	3	8
590	H-6913-608	BOLT - 3/8-16 X 1 HEX HD.	1	12
591	H-6913-610	BOLT - 3/8-16 X 1-1/4 HEX HD.	9	4
592	H-6913-612	BOLT - 3/8-16 X 1-1/2 HEX HD.	7	1
593	H-6913-818	BOLT - 1/2-13 X 2-1/4 HEX HD.	1	2
594	H-6913-606	BOLT - 3/8-16 X 3/4 HEX HD	1	2
595	H-6911-606	SCREW- 3/8-16 X 3/4 GRADE 8 HEX	8	2

NO.	PART NO.	DESCRIPTION OF ACCESSORIES	SHT	QTY
600	H-6918-508	SCREW - 5/16-18 X 1 SHCS	6	6
601	H-6918-605	SCREW - 3/8-16 X 5/8 SHCS	5,9	7
602	H-6918-608	SCREW - 3/8-16 X 1 SHCS	-	69
603	H-6918-610	SCREW - 3/8-16 X 1-1/4 SHCS	5,9	4
604	H-6918-612	SCREW - 3/8-16 X 1-1/2 SHCS	6,7	4
605	H-6918-616	SCREW - 3/8-16 X 2 SHCS	5	4
606	H-6918-628	SCREW - 3/8-16 X 3-1/2	7,8	2
607	H-6918-806	SCREW - 1/2-13 X 3/4 SHCS	9	4
608	H-6918-1016	SCREW - 5/8-11 X 2 SHCS	5	2
609	H-6918-810	SCREW - 1/2-13 X 1-1/4 SHCS	5	1
610	H-6910-604	SCREW- 3/8-16 X 1/2 BHC	1	2
611	H-6910-504	SCREW- 5/16-18 X 1/2 BHC	1	4
612	H-6918-620	SCREW - 3/8-16 X 2-1/4 SHCS	8	8
613	H-6918-624	SCREW- 3/8-16 X 3" SHC	7	2
614	H-6918-410	SCREW- 1/4-20 X 1-1/4 SHC	5,6	8
615	H-6918-408	SCREW- 1/4-20 X 1" SHC	7	2
616	H-6918-83204	SCREW- #8-32 X 1/2 SHC	7	2
617	H-6918-404	SCREW- 1/4-20 X 1/2 SHC	13	18
618	H-6918-405	SCREW- 1/4-20 X 5/8 SHC	7	4
619	H-6918-63204	SCREW- #6-32 X 1/2 SHC	7	2
620	H-6921-44004	SCREW - #4-40 X 1/4 FILL. HD.	8	4
621	H-6922-44012	SCREW - #4-40 X 3/4 FLAT HD.	5	2
622	H-6918-44008	SCREW - #4-40 X 1 SHC	6	3
623	H-6938-440	SET SCREW- 1/4-20 X 2-1/2 KNURL PT	2	2
630	H-6931-614	SET SCREW - 3/8-16 X 1-3/4 SQ. HD.	7	2
631	H-6938-404	SET SCREW - 1/4-20 X 1/4 KNURL PT.	5,8	5
632	H-6938-420	SET SCREW - 1/4-20 X 1-1/4 KNURL PT.	8	8
633	H-6938-408	SET SCREW - 1/4-20 X 1/2 KNURL PT.	8	1
634	H-6940-416	SET SCREW - 1/4-20 X 1 FLT. PT.	1	6
635				
636	H-6970-848	SET SCREW - 1/2-20 X 3 OVAL PT.	6	8
637	H-6975-404	SET SCREW - 1/4-20 X 1/2 NYLOC CUP PT.	6	4
638	H-6931-618	SET SCREW - 3/8-16 X 2-1/4 SQ HD.	5	1
637	H-6931-618	SET SCREW - 3/8-16 X 2-1/4 SQ. HD.	5	2
645	H-6979-616	SCREW - 3/8-16 X 2 LOW HD. SOC. CAP	7	4
646	H-6940-412	SET SCREW- 1/4-20 X 3/4 FLAT PT	3	2
647	H-6940-420	SET SCREW- 1/4-20 X 1-1/4 FLAT PT	7	1
650	H-7321-4	WASHER - 1/4 PLAIN	-	30
651	H-7324-10	WASHER- 5/16 INTERNAL TOOTH	1	4
652	H-7321-6	WASHER - 3/8 PLAIN	-	15
653	H-7321-#10	WASHER - #10 PLAIN	7,8	9
654	H-7324-#4	WASHER - #4 INT. TOOTH	5,6	4
655	H-7324-#8	WASHER- #8 INT. TOOTH	7	4
656	H-7324-#10	WASHER - #10 INT. TOOTH	-	36
657	H-7324-8	WASHER - 1/4 INT. TOOTH	-	96
658	H-7324-20	WASHER - 5/8 INT. TOOTH	5	2
659	H-7321-10	WASHER- 5/8 PLAIN	8	2
660	H-7327-12	WASHER - 3/8 LOCK	-	64
661	H-7327-8	WASHER- 1/4 MED LOCK	5,6,7	16
662	H-7321-5	WASHER- 5/16 SAE FLAT	1	4
663	H-7327-10	WASHER- 5/16 MEDIUM LOCK	1	4
664	H-7321-#6	WASHER - #6 PLAIN	7	2

11.0 ELECTRICAL AND SCHEMATICS

11.1 Power Panel Assembly – 208/230V 3ph w/Fuses

EE-3479 SH'T 1 REV. H



TRANSFORMER COLOR CODE	
T2	
WIRE COLOR	WIRE NO.
BLACK	22
BLACK/WHITE	21
BLACK/RED	–
BLACK/YELLOW	–
BLUE	6
BLUE/YELLOW	5
BLUE	4
RED	3
RED/YELLOW	2
RED	1

Power Panel Asm. – 208/230V 3ph w/Fuses EE-3479 SH'T 1H (cont'd)

NO.	PART NO.	DESCRIPTION OF ACCESSORIES	QTY
1	47512	PANEL - POWER	1
2	E-1089-41	TRANSFORMER - 208-230V "T1"	1
3	EE-3210	CABLE ASM. CLAMP COMPRESSOR JUMPER	REF
4	E-1429-17	WIRE DUCT & COVER - 9" LONG	1
5	E-1429-18	WIRE DUCT & COVER - 5-1/4" LONG	1
6	E-1977-21	RAIL - TERMINAL - 10" LONG	1
7	E-1977-23	RAIL - TERMINAL - 5" LONG	2
8	EE-3079-1	WIRES - CUT LIST	1
9	E-1143	BRIDGE RECTIFIER - PANEL MOUNT	2
10	E-2068-3	TERMINAL BLOCK - GROUNDING	1
11	E-2068-8	TERMINAL BLOCK - #10 AWG.	12
12	E-2068-7	TERMINAL BLOCK - 3 AWG.	6
13	E-1974-10	TERMINAL BLOCK - FUSEHOLDER, MIDGET	2
14	E-1974-9	TERMINAL BLOCK - FUSEHOLDER, GLASS	6
15	E-2069-3	END PLATE	1
16	E-2070-1	END BRACKET	7
17	E-2507-2	FIXED BRIDGE - 2 POLE	1
18	E-2507-3	FIXED BRIDGE - 3 POLE	1
19	E-2507-6	FIXED BRIDGE - 6 POLE	1
20	E-1356-147	MARKING STRIP - TERMINAL BLOCK	1
21	E-1356-148	MARKING STRIP - TERMINAL BLOCK	1
22	E-1356-71	MARKING STRIP - TERMINAL BLOCK	1
23	E-1356-122	MARKING STRIP - TERMINAL BLOCK	1
24	E-1356-118	MARKING STRIP - TERMINAL BLOCK	1
25	E-1356-119	MARKING STRIP - TERMINAL BLOCK	1
26	E-1453-6	TUBING - SHRINK, 1/8" DIA. 1" LONG	1
27	E-2742-5	TRANSFORMER - 120/230V , 16/24V SC. "T2"	1
28	E-2066-3	PLUG CONNECTOR - 3 PIN (H14)	1
29	E-2403-10	CONTACTOR - RELAY (CR)	1
30			
31	E-1152-56	STAND-OFF - 1/2" LONG	6
32	E-1152-43	STAND-OFF - 2" LONG	2
33	EE-3432-2	P.C.B. ASM. - I/O BOARD	1
34	EE-2820-8	PROX. ASSEMBLY - FALSE CLAMP PLATE "F"	1
35	47157-7	P.C.B. COVER - CLEAR	1
36	E-2066-10	PLUG CONNECTOR - P.C.B. 10 PIN (H4,5 & 6)	3
37	E-1736-2	QUENCHARC - WIRE LEADS	1
38	E-2066-5	PLUG CONNECTOR - P.C.B. 5 PIN (H3 & 7)	2

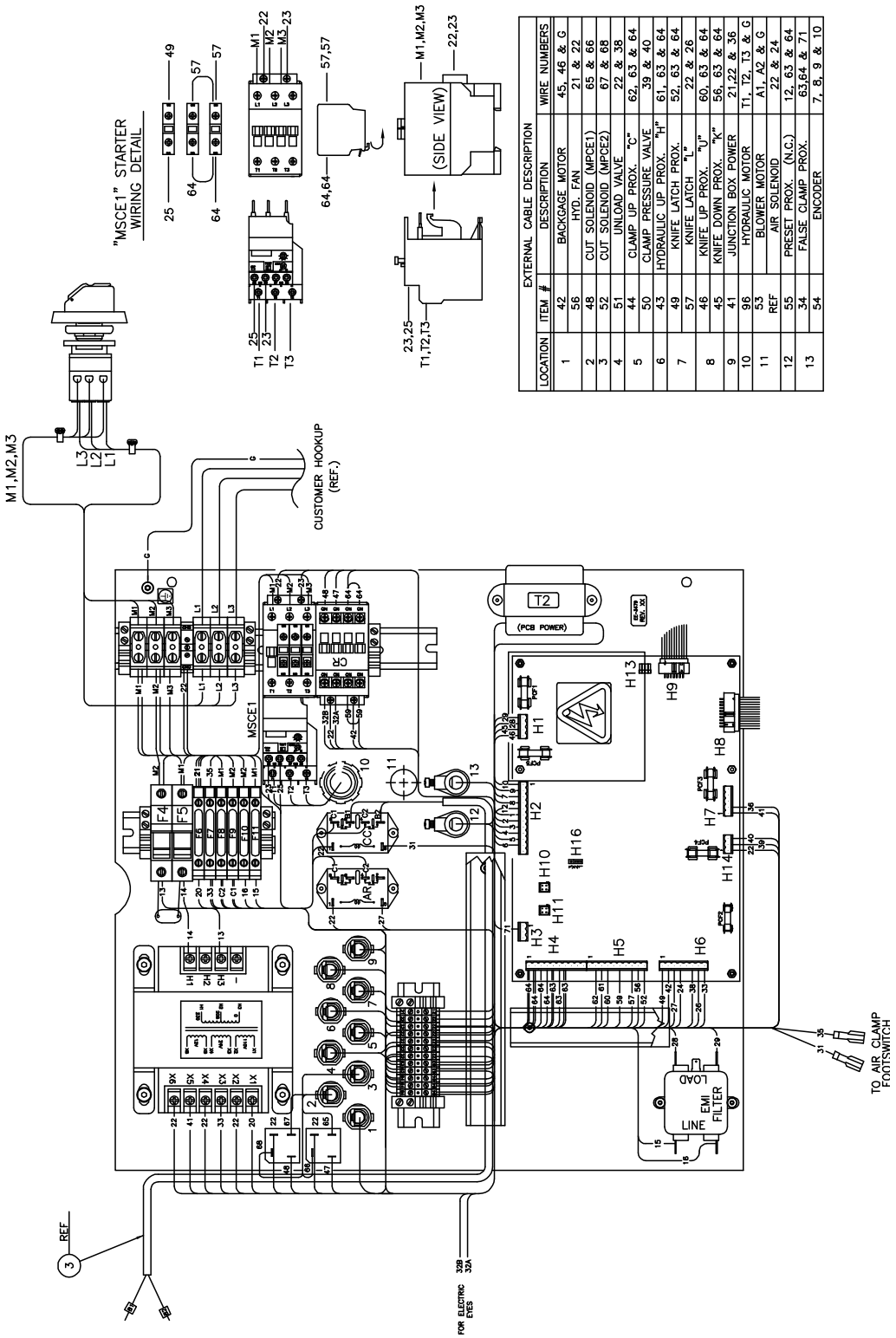
Power Panel Asm. – 208/230V 3ph w/Fuses EE-3479 SH'T 1 (cont'd)

NO.	PART NO.	DESCRIPTION OF ACCESSORIES	QTY
39	E-2066-4	PLUG CONNECTOR - P.C.B. 4 PIN (H1 & 12)	2
40	E-2196-21	HOLE PLUG - 2" DIA	2
41	EE-2834	CABLE ASM. - JUNCTION BOX	1
42	EE-2833	CABLE ASM. - BACKGAGE MOTOR	1
43	EE-2820	PROX. ASSEMBLY - HYDRAULIC UP "H"	1
44	EE-2820-1	PROX. ASSEMBLY - CLAMP UP "C"	1
45	EE-2820-6	PROX. ASSEMBLY - KNIFE DOWN "K"	1
46	EE-2820-3	PROX. ASSEMBLY - KNIFE UP "U"	1
47	E-2232-2	RELAY - AIR BLOWER (AR)/ CLAMP COMPRESS.	2
48	EE-2821-8	CABLE ASM. - CUT SOLENOID"A" (MSCE1)	1
49	EE-2842	PROX. ASSEMBLY - KNIFE LATCH	1
50	EE-2821-3	CABLE ASM. - ADJUST. PRESS. SOLENOID "P"	1
51	EE-2821-2	CABLE ASM. - UNLOAD VALVE SOLENOID "U"	1
52	EE-2821-9	CABLE ASM. - CUT SOLENOID "B" (MSCE2)	1
53	EE-2884	CONDUIT ASSEMBLY - BLOWER/AIR SOL.	1
54	EE-3564	CABLE ASSEMBLY - ENCODER	1
55	EE-3464-1	PRESET. ASSEMBLY - CONTROL	1
56	EE-2825	CABLE ASSEMBLY - HYD. FAN	1
57	EE-2843	CABLE ASSEMBLY - KNIFE LATCH	1
58	E-1377	VARISTOR - SUPRESSOR, MOV	1
59	E-1453-3	SHRINK TUBING - 1" LONG	2
60	E-2752-2	COVER - TERMINAL BLOCK	3
61	S-1781-197	LABEL - GROUND SYMBOL, PRIMARY	1
62	S-1781-50	LABEL - EURO ELECT. SHOCK	1
63	E-1584-51	LABEL - TRANSFORMER, "T1"	1
64	E-1584-52	LABEL - TRANSFORMER, "T2"	1
65	E-1584-( )	LABEL - ASM. NO./REV. LEVEL	1
66	S-1781-35	LABEL - CAUTION, ELEC. DANGER	1
67	H-6910-83204	SCREW, #8-32NC X 1/2" BUT HD CAP	2
68	H-6910-63203	SCREW, #6-32NC X 3/8" BUT HD CAP	6
69	H-6423-#6	NUT, #6-32NC HEX	6
70	H-7324-#6	WASHER, #6 INT. TOOTH	14
71	H-6910-83203	SCREW, #8-32NC X 3/8" BUT HD CAP	13
72	H-7324-#8	WASHER, #8 INT. TOOTH	13
73	H-6910-102403	SCREW, #10-24NC X 3/8" BUT HD CAP	8
74	H-7324-#10	WASHER, #10 INT. TOOTH	8
75	H-6910-403	SCREW, 1/4-20NC X 3/8" BUT HD CAP	5
76	H-7324-8	WASHER, 1/4 INT. TOOTH	5

Power Panel Asm. – 208/230V 3ph w/Fuses EE-3479 SH'T 1 (cont'd)

NO.	PART NO.	DESCRIPTION OF ACCESSORIES	QTY
77	H-7319-4	WASHER, 1/4 USS FLAT	4
78	E-2308	FUSE - 3.2A SB MIDGET, "F4","F5"	2
79	E-889-35	FUSE - 1AMP SLO-BLO GLASS, "F6"	1
80	E-889-9	FUSE - 8AMP SLO-BLO GLASS, "F7" (60HZ)	1
80	E-889-37	FUSE - 12AMP SLO-BLO GLASS, "F7" (50HZ)	1
81	E-889-5	FUSE - 4AMP SB GLASS, "F8","F9","10","11"	4
82	S-1350-16	STRAIN RELIEF - CABLE	11
83	E-2730-3	FILTER - EMI/EFI, PANEL MOUNT	1
84	EE-2836	CONDUIT ASM. - HYDRAULIC MOTOR, 3 PHASE	1
85	H-7321-#8	WASHER -#8 FLAT	4
86	S-1694	TY-WRAP - CABLE (NOT SHOWN)	10
87	E-2066-12	PLUG CONNECTOR - P.C.B. 12 PIN (H2)	1
88	E-2376-6	AUXILIARY CONTACT - N.O.	3
89			
90			
91	E-2864	SEPARATOR PLATE - TERMINAL BLOCK	2
92			
93	E-2805-7	STARTER - 3 PHASE	1
94	E-2441-19	RELAY - OVERLOAD, 3 PHASE (24A TO 29A)	1
95			
96	E-2066-8	PLUG CONNECTOR – PCB 8 PIN (H6)	1
97	EE-3460	CABLE ASSEMBLY – 'CAN' (LONG) (NOT SHOWN)	1
98	EE-1888-24	IC – PROGRAMMED (USES E-2056-13)	1

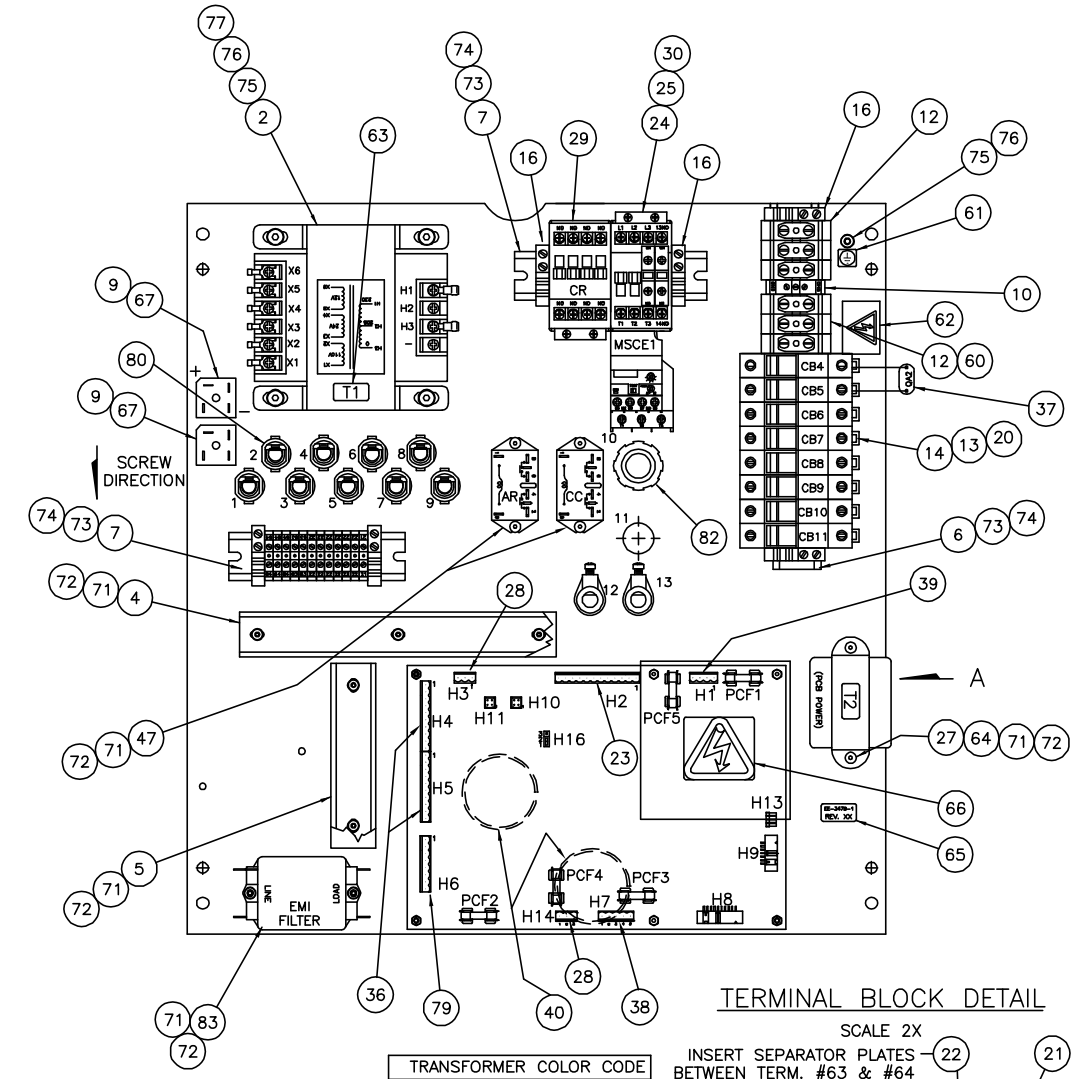
Power Panel Asm. – 208/230V 3ph w/Fuses EE-3479 SH'T 2 REV. H



EXTERNAL CABLE DESCRIPTION			
LOCATION	ITEM #	DESCRIPTION	WIRE NUMBERS
1	42	BACKGAGE MOTOR	45, 46 & G
	56	HYD. FAN	21 & 22
2	48	CUT SOLENOID (MPCE1)	65 & 66
3	52	CUT SOLENOID (MPCE2)	67 & 68
4	51	UNLOAD VALVE	22 & 38
5	44	CLAMP UP PROX. "C"	62, 63 & 64
	50	CLAMP PRESSURE VALVE	39 & 40
6	43	HYDRAULIC UP PROX. "H"	61, 63 & 64
7	49	KNIFE LATCH PROX. "L"	52, 63 & 64
	57	KNIFE LATCH PROX. "L"	22 & 26
8	46	KNIFE UP PROX. "U"	60, 63 & 64
	45	KNIFE DOWN PROX. "K"	56, 63 & 64
9	41	JUNCTION BOX POWER	21,22 & 36
10	96	HYDRAULIC MOTOR	T1, T2, T3 & G
11	53	BLOWER MOTOR	A1, A2 & G
	REF	AIR SOLENOID	22 & 24
12	55	PRESET PROX. (N.C.)	12, 63 & 64
13	34	FALSE CLAMP PROX.	63,64 & 71
	54	ENCODER	7, 8, 9 & 10

11.2 Power Panel Assembly – 208/230V 3ph w/Circuit Breakers

EE-3479-1 Sheet 1 Rev. A



TRANSFORMER COLOR CODE	
T2	
WIRE COLOR	WIRE NO.
BLACK	22
BLACK/WHITE	21
BLACK/RED	–
BLACK/YELLOW	–
BLUE	6
BLUE/YELLOW	5
BLUE	4
RED	3
RED/YELLOW	2
RED	1

Power Panel Asm. – 208/230V 3ph w/Circuit Breakers EE-3479-1 SH'T 1 (cont'd)

NO.	PART NO.	DESCRIPTION OF ACCESSORIES	QTY
1	47512-1	PANEL - POWER	1
2	E-1089-41	TRANSFORMER - 208-230V "T1"	1
3	EE-3210	CABLE ASM. CLAMP COMPRESSOR JUMPER	REF
4	E-1429-17	WIRE DUCT & COVER - 9" LONG	1
5	E-1429-18	WIRE DUCT & COVER - 5-1/4" LONG	1
6	E-1977-16	RAIL - TERMINAL - 10-5/8" LONG	1
7	E-1977-23	RAIL - TERMINAL - 5" LONG	2
8	EE-3079-1	WIRES - CUT LIST	1
9	E-1143	BRIDGE RECTIFIER - PANEL MOUNT	2
10	E-2068-3	TERMINAL BLOCK - GROUNDING	1
11	E-2068-8	TERMINAL BLOCK - #10 AWG.	12
12	E-2068-7	TERMINAL BLOCK - 3 AWG.	6
13	E-3264-1	CIRCUIT BREAKER - 1A (CB6)	1
14	E-3264-5	CIRCUIT BREAKER - 4A (CB4,5,8,9,10 & 11)	6
15	E-2069-3	END PLATE	1
16	E-2070-1	END BRACKET	6
17	E-2507-2	FIXED BRIDGE - 2 POLE	1
18	E-2507-3	FIXED BRIDGE - 3 POLE	1
19	E-2507-6	FIXED BRIDGE - 6 POLE	1
	E-3264-9	CIRCUIT BREAKER - 8A (CB7) (60HZ ONLY)	
20	E-3264-14	CIRCUIT BREAKER - 12A (CB7) (50HZ ONLY)	1
21	E-1356-( )	MARKING STRIP - TERMINAL BLOCK	2
22	E-2864	SEPARATOR PLATE - TERMINAL BLOCK	2
23	E-2066-12	PLUG CONNECTOR - P.C.B. 12 PIN (H2)	1 1
24	E-2376-6	AUXILIARY CONTACT - N.O.	2
25	E-2441-19	RELAY - OVERLOAD, 3 PHASE (24A TO 29A)	1 1
26	E-1453-6	TUBING - SHRINK, 1/8" DIA. 1" LONG	1
27	E-2742-5	TRANSFORMER - 120/230V , 16/24V SC. "T2"	1
28	E-2066-3	PLUG CONNECTOR - 3 PIN (H3 & H14)	2
29	E-2403-10	CONTACTOR - RELAY (CR)	1
30	E-2805-7	STARTER - 3 PHASE	1
31	E-1152-56	STAND-OFF - 1/2" LONG	6
32	E-1152-43	STAND-OFF - 2" LONG	2
33	EE-3432-2	P.C.B. ASM. - I/O BOARD	1
34	EE-2820-8	PROX. ASSEMBLY - FALSE CLAMP PLATE "F"	1
35	47157-7	P.C.B. COVER - CLEAR	1
36	E-2066-10	PLUG CONNECTOR - P.C.B. 10 PIN (H4 & 5)	2
37	E-1736-2	QUENCHARC - WIRE LEADS	1

Power Panel Asm. – 208/230V 3ph w/Circuit Breakers EE-3479-1 SH'T 1 (cont'd)

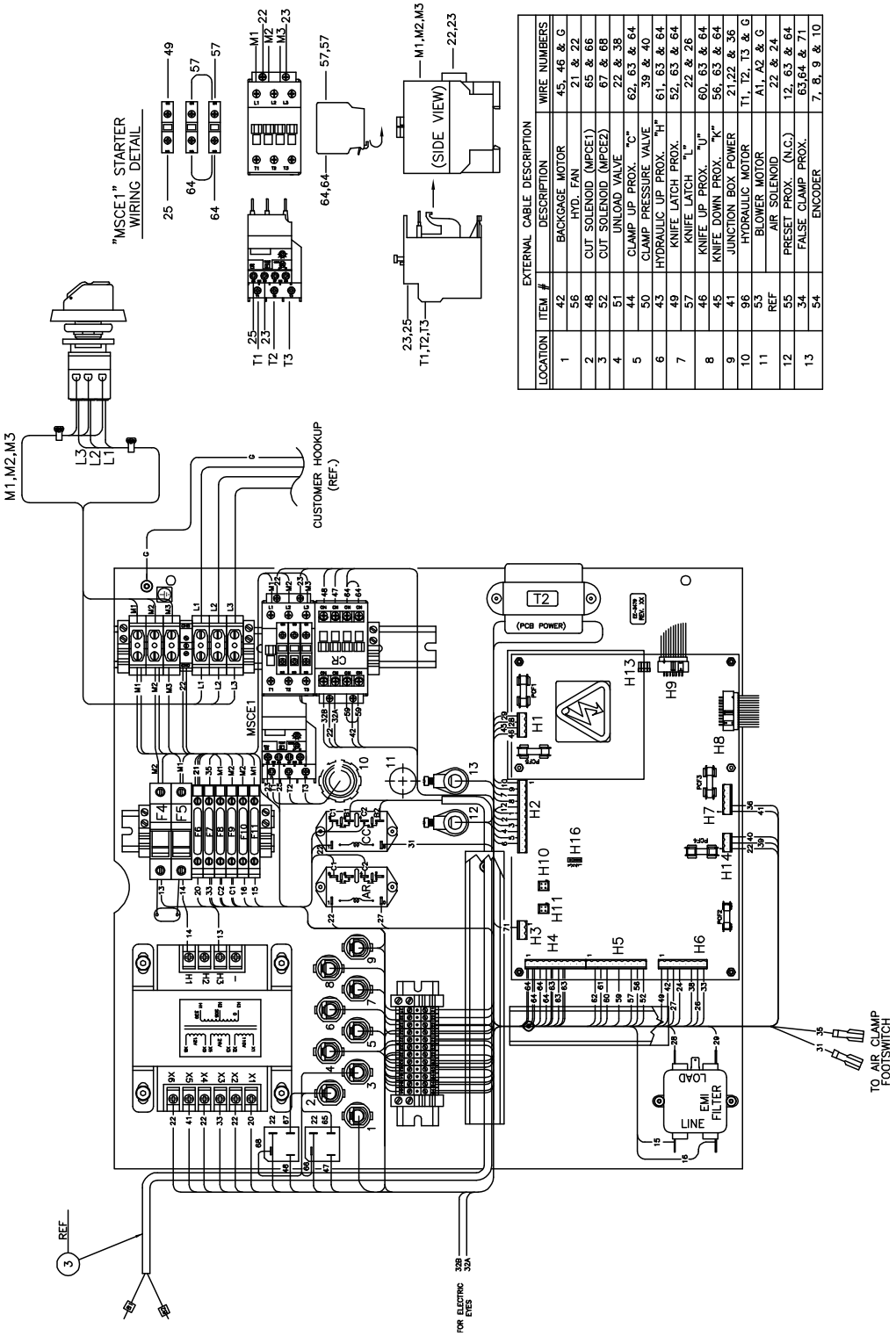
NO.	PART NO.	DESCRIPTION OF ACCESSORIES	QTY
38	E-2066-5	PLUG CONNECTOR - P.C.B. 5 PIN (H7)	1
39	E-2066-4	PLUG CONNECTOR - P.C.B. 4 PIN (H1)	1
40	E-2196-21	HOLE PLUG - 2" DIA	2
41	EE-2834	CABLE ASM. - JUNCTION BOX	1
42	EE-2833	CABLE ASM. - BACKGAGE MOTOR	1
43	EE-2820	PROX. ASSEMBLY - HYDRAULIC UP "H"	1
44	EE-2820-1	PROX. ASSEMBLY - CLAMP UP "C"	1
45	EE-2820-6	PROX. ASSEMBLY - KNIFE DOWN "K"	1
46	EE-2820-3	PROX. ASSEMBLY - KNIFE UP "U"	1
47	E-2232-2	RELAY - AIR BLOWER (AR)/ CLAMP COMPRESS.	2
48	EE-2821-8	CABLE ASM. - CUT SOLENOID"A" (MSCE1)	1
49	EE-2842	PROX. ASSEMBLY - KNIFE LATCH	1
50	EE-2821-3	CABLE ASM. - ADJUST. PRESS. SOLENOID "P"	1
51	EE-2821-2	CABLE ASM. - UNLOAD VALVE SOLENOID "U"	1
52	EE-2821-9	CABLE ASM. - CUT SOLENOID "B" (MSCE2)	1
53	EE-2884	CONDUIT ASSEMBLY - BLOWER/AIR SOL.	1
54	EE-3564	CABLE ASSEMBLY - ENCODER	1
55	EE-3464-1	PRESET. ASSEMBLY - PROX. W/ BRACKET	1
56	EE-2825	CABLE ASSEMBLY - HYD. FAN	1
57	EE-2843	CABLE ASSEMBLY - KNIFE LATCH	1
58	E-1377	VARISTOR - SUPRESSOR, MOV	1
59	E-1453-3	SHRINK TUBING - 1" LONG	2
60	E-2752-2	COVER - TERMINAL BLOCK	3
61	S-1781-197	LABEL - GROUND SYMBOL, PRIMARY	1
62	S-1781-50	LABEL - EURO ELECT. SHOCK	1
63	E-1584-51	LABEL - TRANSFORMER, "T1"	1
64	E-1584-52	LABEL - TRANSFORMER, "T2"	1
65	E-1584-( )	LABEL - ASM. NO./REV. LEVEL	1
66	S-1781-35	LABEL - CAUTION, ELEC. DANGER	1
67	H-6910-83204	SCREW, #8-32NC X 1/2" BUT HD CAP	2
68	H-6910-63203	SCREW, #6-32NC X 3/8" BUT HD CAP	6
69	H-6423-#6	NUT, #6-32NC HEX	6
70	H-7324-#6	WASHER, #6 INT. TOOTH	14
71	H-6910-83203	SCREW, #8-32NC X 3/8" BUT HD CAP	13
72	H-7324-#8	WASHER, #8 INT. TOOTH	13
73	H-6910-102403	SCREW, #10-24NC X 3/8" BUT HD CAP	8
74	H-7324-#10	WASHER, #10 INT. TOOTH	8

Power Panel Asm. – 208/230V 3ph w/Circuit Breakers EE-3479-1 SH'T 1 (cont'd)

NO.	PART NO.	DESCRIPTION OF ACCESSORIES	QTY
75	H-6910-403	SCREW, 1/4-20NC X 3/8" BUT HD CAP	5
76	H-7324-8	WASHER, 1/4 INT. TOOTH	5
77	H-7319-4	WASHER, 1/4 USS FLAT	4
78	EE-3460	CABLE ASSEMBLY - 'CAN' (LONG) (NOT SHOWN)	1
79	E-2066-8	PLUG CONNECTOR - P.C.B. 8 PIN (H6)	1 1
80	S-1350-16	STRAIN RELIEF - CABLE	11
81	E-2730-3	FILTER - EMI/EFI, PANEL MOUNT	1
82	EE-2836	CONDUIT ASM. - HYDRAULIC MOTOR, 3 PHASE	1
83	H-7321-#8	WASHER -#8 FLAT	4
84	S-1694	TY-WRAP - CABLE (NOT SHOWN)	10

11.3 Power Panel Asm. – 208/230V 3ph w/Circuit Breakers

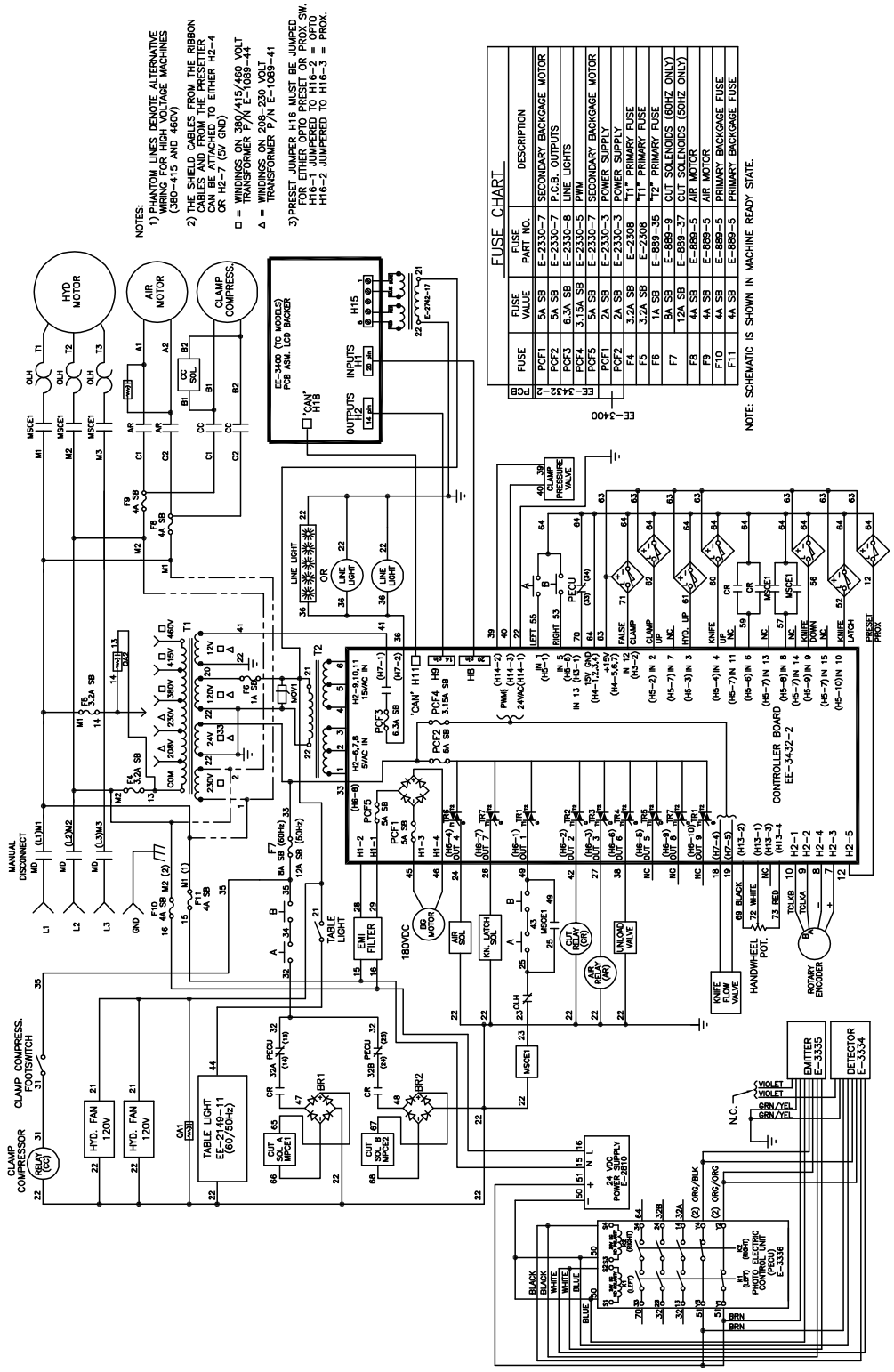
EE-3479-1 SH'T 2 Rev A



EXTERNAL CABLE DESCRIPTION			
LOCATION	ITEM #	DESCRIPTION	WIRE NUMBERS
1	42	BACKGAGE MOTOR	45, 46 & G
	56	HYD. FAN	21 & 22
2	48	CUT SOLENOID (MPCE1)	65 & 66
3	52	CUT SOLENOID (MPCE2)	67 & 68
4	51	UNLOAD VALVE	22 & 38
5	44	CLAMP UP PROX. "C"	62, 63 & 64
	50	CLAMP PRESSURE VALVE	39 & 40
6	43	HYDRAULIC UP PROX. "H"	61, 63 & 64
7	49	KNIFE LATCH PROX.	52, 63 & 64
	57	KNIFE LATCH "L"	22 & 26
8	46	KNIFE UP PROX. "U"	60, 63 & 64
	45	KNIFE DOWN PROX. "K"	56, 63 & 64
9	41	JUNCTION BOX POWER	21,22 & 36
10	96	HYDRAULIC MOTOR	T1, T2, T3 & G
11	53	BLOWER MOTOR	A1, A2 & G
	REF	AIR SOLENOID	22 & 24
12	55	PRESET PROX. (N.C.)	12, 63 & 64
13	34	FALSE CLAMP PROX.	63,64 & 71
	54	ENCODER	7, 8, 9 & 10

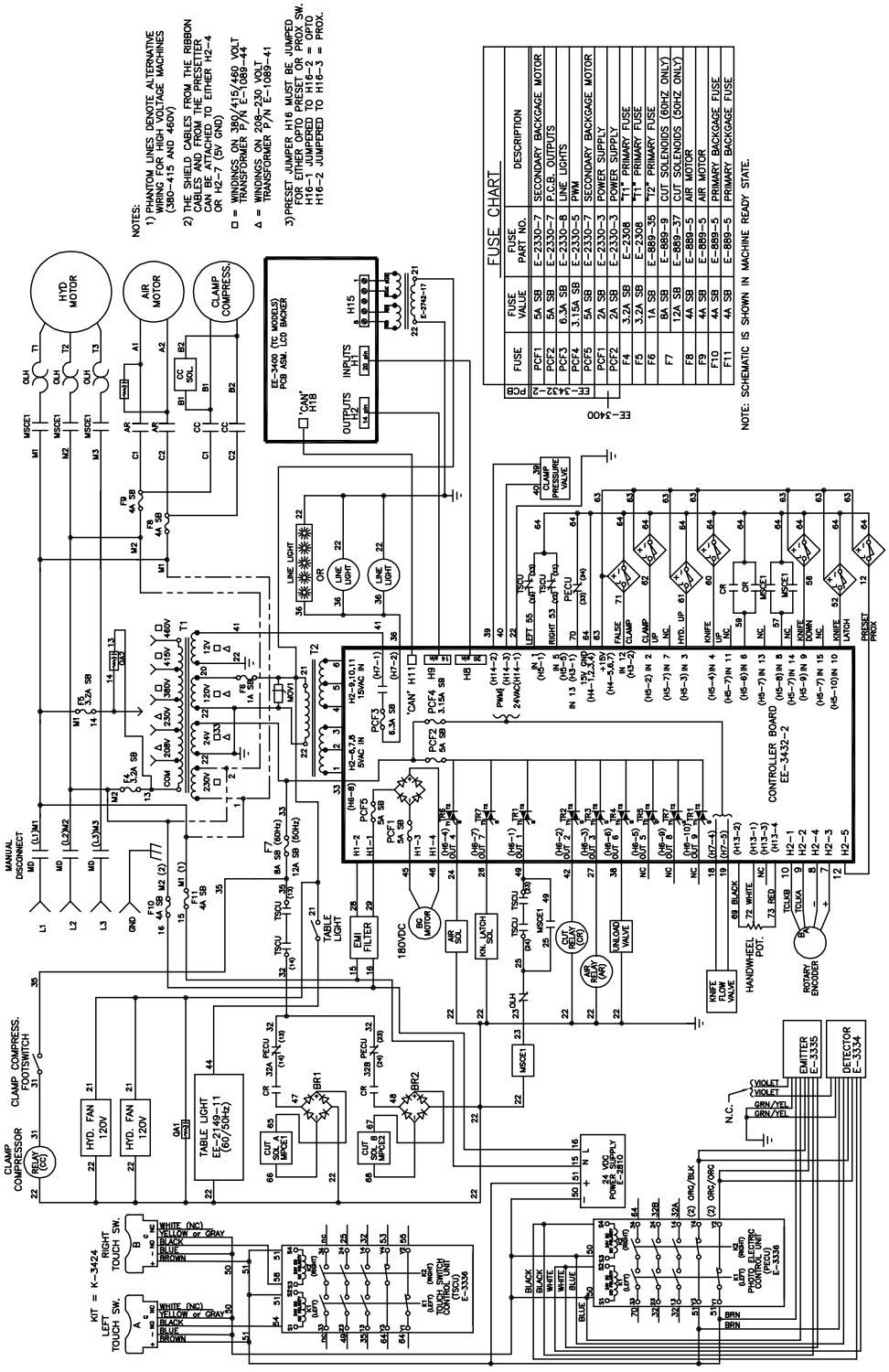
11.4 Basic Machine Schematic – TC, Standard Cut and Fuses

E-3462 rev.D



11.5 Basic Machine Schematic – TC, Touch Switches and Fuses

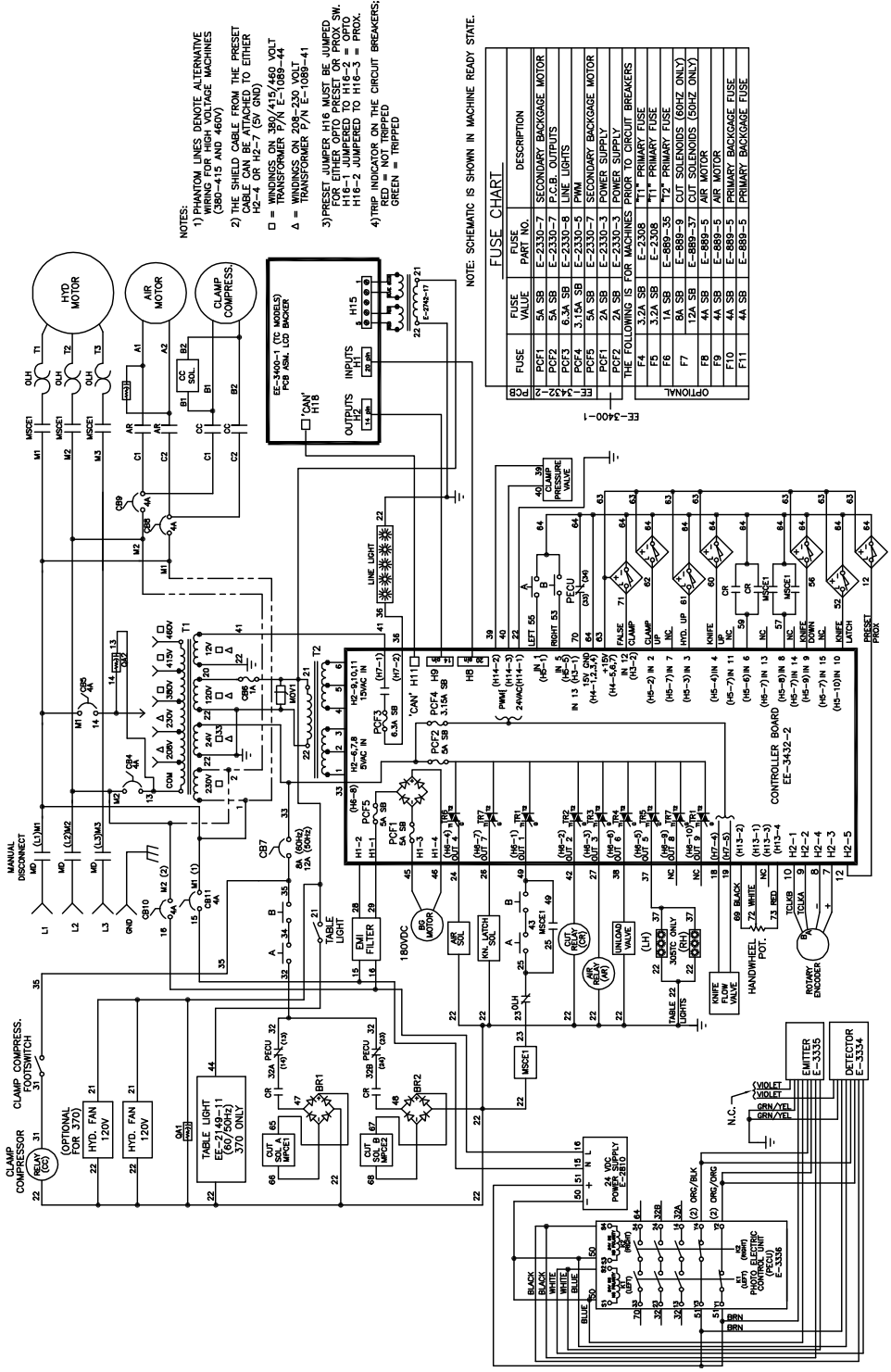
E-3462 Rev. D



FUSE CHART				
PCB	FUSE	FUSE VALUE	FUSE PART NO.	DESCRIPTION
EE-3432	PCF1	5A SB	E-2330-7	SECONDARY BACKGAGE MOTOR
	PCF2	5A SB	E-2330-7	P.C.B. OUTPUTS
	PCF3	6.3A SB	E-2330-8	LINE LIGHTS
	PCF4	3.15A SB	E-2330-5	PWM
	PCF5	5A SB	E-2330-7	SECONDARY BACKGAGE MOTOR
	PCF1	2A SB	E-2330-3	POWER SUPPLY
	PCF2	2A SB	E-2330-3	POWER SUPPLY
	F4	3.2A SB	E-2308	T1* PRIMARY FUSE
	F5	3.2A SB	E-2308	T1* PRIMARY FUSE
	F6	1A SB	E-889-35	T2* PRIMARY FUSE
	F7	8A SB	E-889-9	CUT SOLENOIDS (60HZ ONLY)
		12A SB	E-889-37	CUT SOLENOIDS (50HZ ONLY)
	F8	4A SB	E-889-5	AIR MOTOR
	F9	4A SB	E-889-5	AIR MOTOR
	F10	4A SB	E-889-5	PRIMARY BACKGAGE FUSE
	F11	4A SB	E-889-5	PRIMARY BACKGAGE FUSE

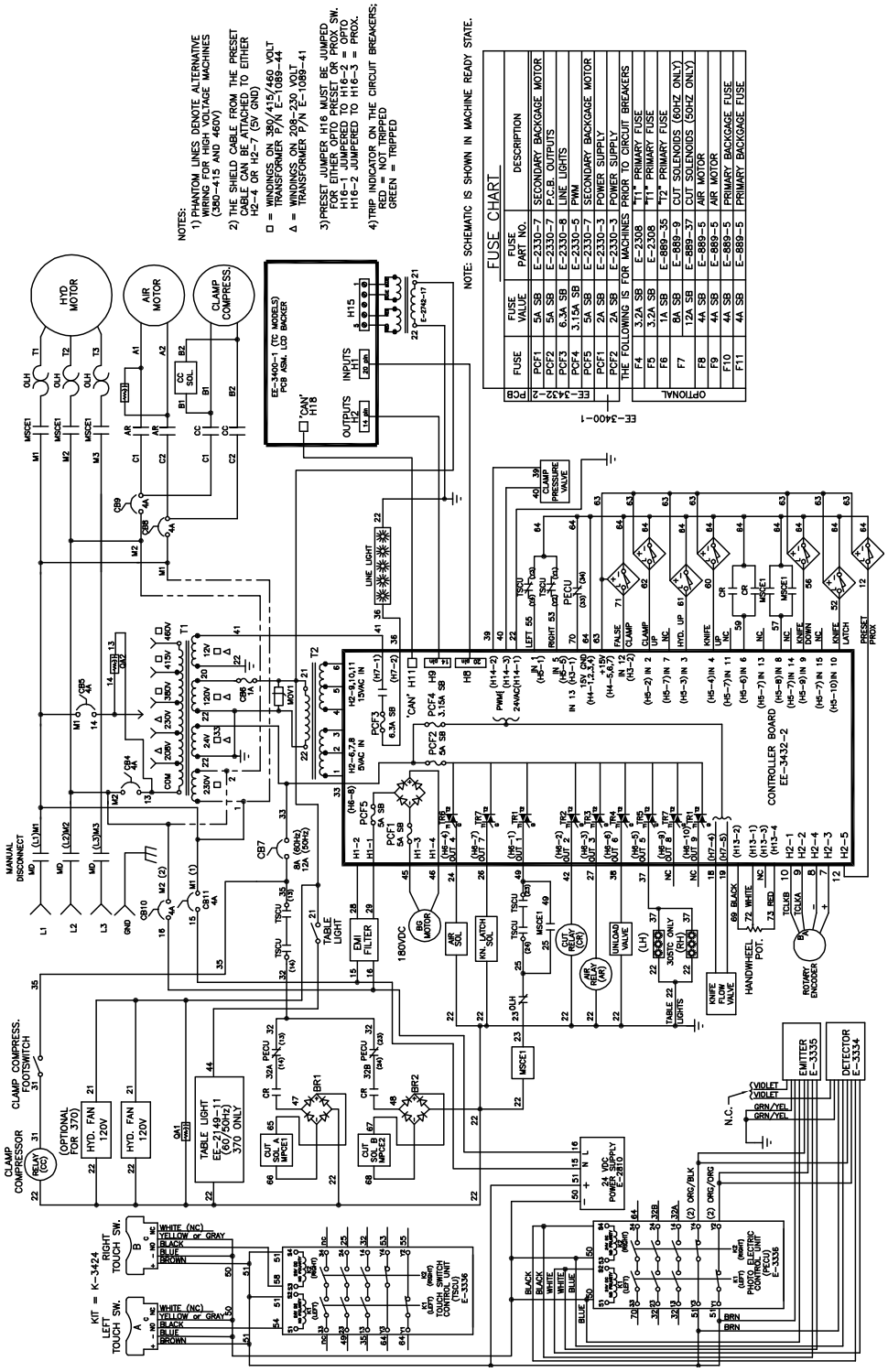
11.6 Basic Machine Schematic – TC, Standard Cut and Circuit Breakers

E-3462-1 Rev A



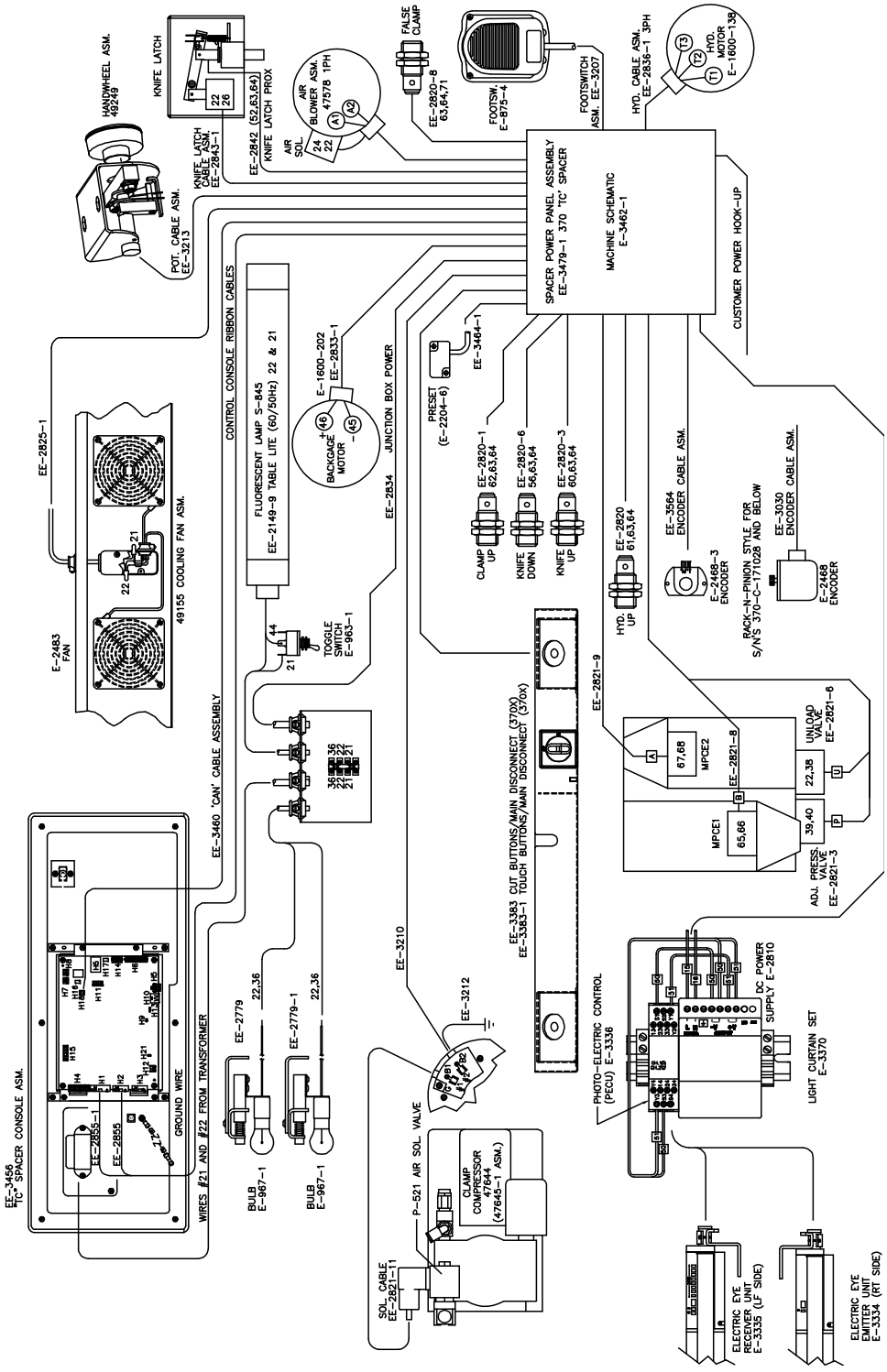
11.7 Basic Machine Schematic – TC, Touch Switches and Circuit Breakers

E-3462-1 Rev. A



11.8 Interconnection Diagram – TC Spacer

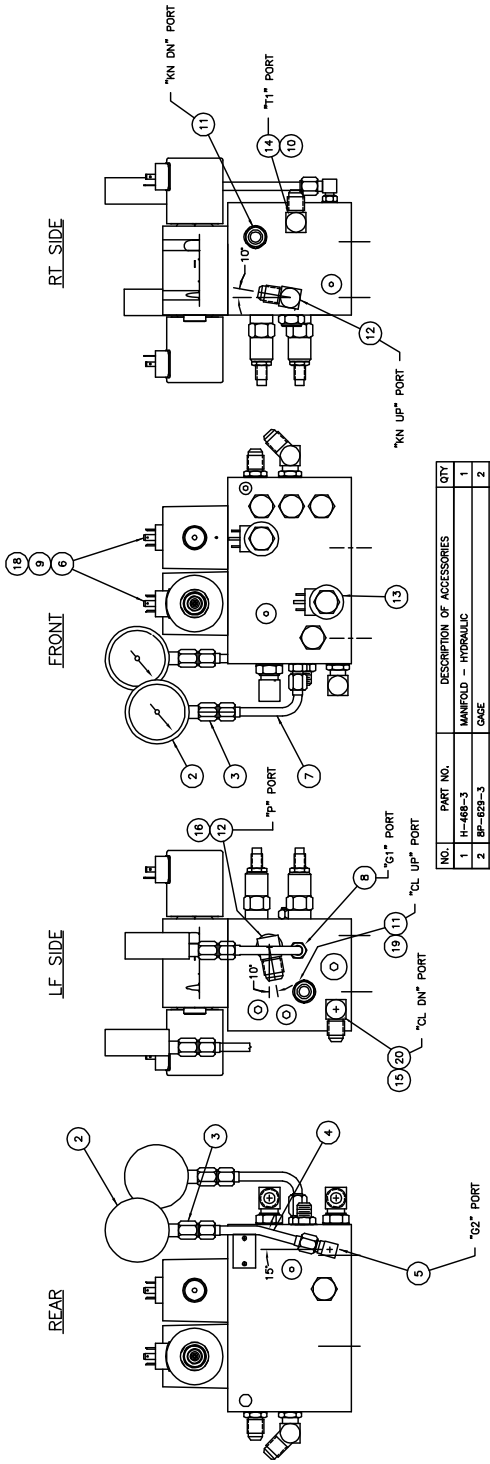
E-3463-1 rev.A



12.0 Hydraulics

12.1 Hydraulic Manifold Assembly

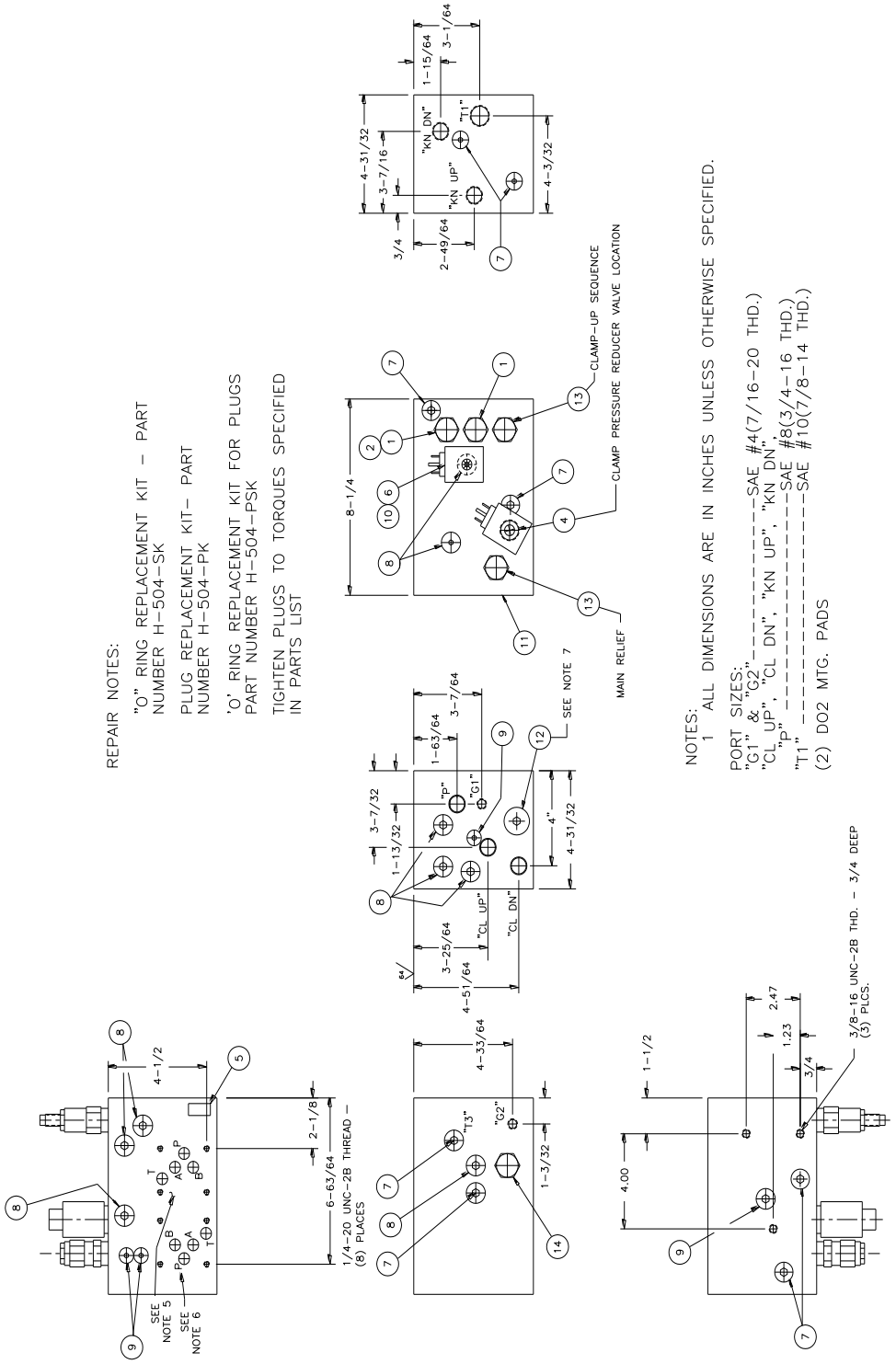
H-512-1 Rev. C



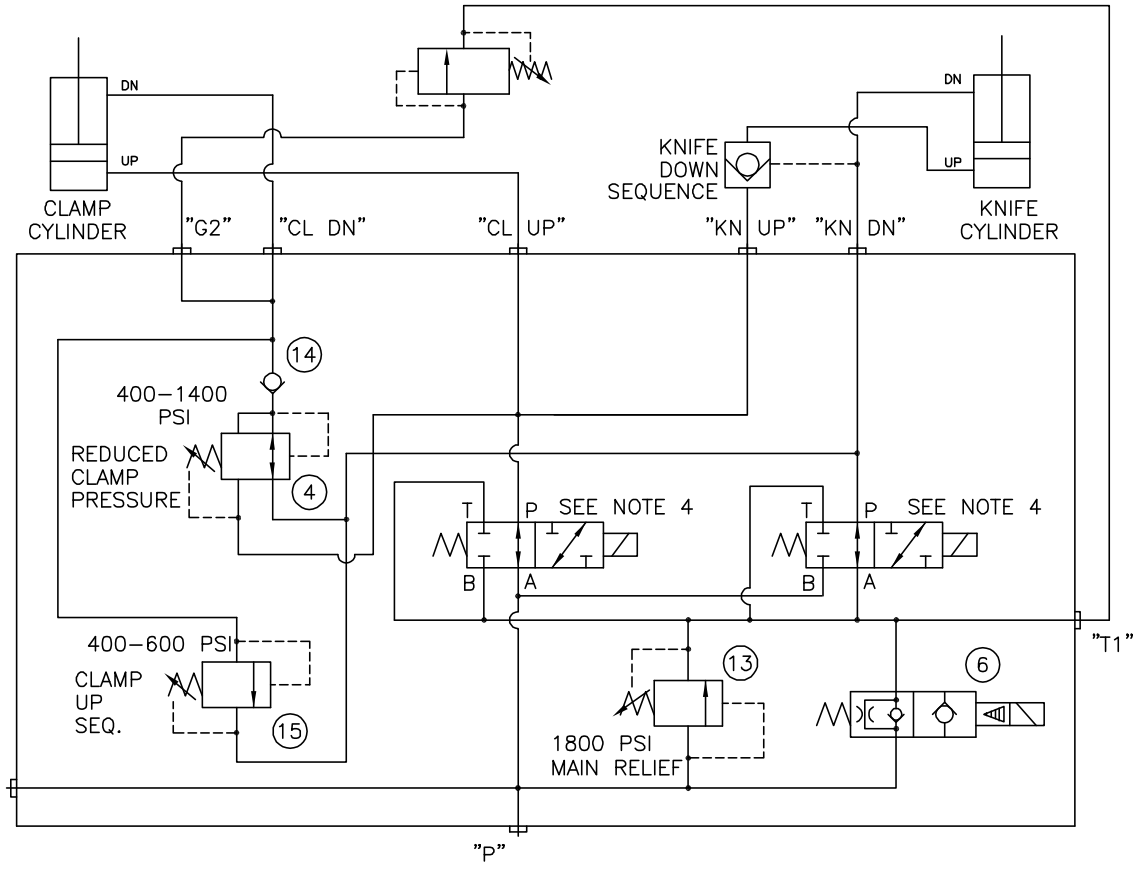
NO.	PART NO.	DESCRIPTION OF ACCESSORIES	QTY
1	H-468-3	MANIFOLD - HYDRAULIC	1
2	8P-629-3	GAGE	2
3	H-253-2	ADAPTER - PIPE TO TUBE	2
4	H-425-1	TUBE ASSEMBLY - "G2" PORT	1
5	H-230	ELBOW - 'O' RING TO TUBE	1
6	H-8918-414	1/4-20 X 1-3/4" SOCKET HD. CAP SCREW	8
7	H-329	TUBE ASSEMBLY - "G1" PORT	1
8	H-236-5	ADAPTER - 'O' RING TO TUBE	1
9	H-557	VALVE - 4 WAY (24 VDC)	2
10	H-230-8	ELBOW - 90°, 'O' RING TO TUBE	1
11	H-236-4	STRAIGHT ADAPTER - 'O' RING TO TUBE	2
12	H-272-3	ELBOW - 45° 'O' RING TO TUBE	2
13	H-203-33	VALVE- PRESSURE REDUCING	1
14	H-242-37	HOSE ASM. - JIC TO JIC X 30"	1
15	H-242-85	HOSE ASM. - JIC TO JIC LONG 90° X 37"	1
16	H-242-86	HOSE ASM. - JIC TO JIC X 33"	1
17	H-242-63	HOSE ASM. - STRAIGHT JIC TO 90° JIC X 25"	1
18	7329-4	WASHER - 1/4 HIGH COLLAR LOCK	8
19	H-242-64	HOSE ASM. - JIC TO JIC 90° X 25"	1
20	H-230-4	ELBOW - 90° SAE 'O' RING TO TUBE	1

12.2 Hydraulic Manifold

H-468-3 REV. C



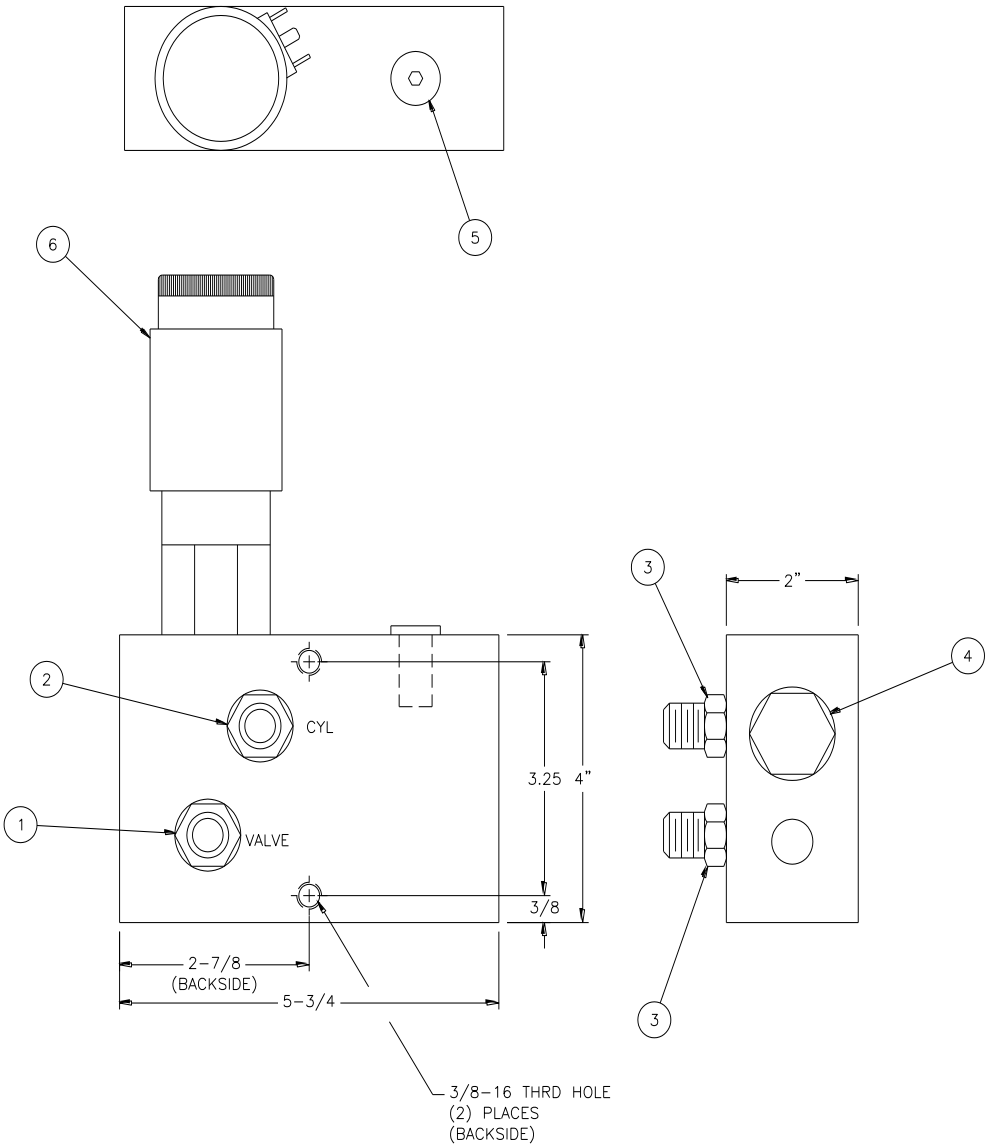
Hydraulic Schematic/Parts List – H-468-3 Rev. C (cont)



NO.	CMC PART NO.	MFR. PART NO.	DESCRIPTION OF ACCESSORIES	QTY
1	H–427–4	121–10T	PLUG – SAE	2
2	H–427	121–2T	PLUG – SAE	1
3				
4	5136	PRV2–10–K–0–20	PRESSURE REDUCING VALVE– MANUAL (MAN. B.G.)	REF.
	H–203–41	EPRV3–10–15–0–00	PRESSURE REDUCING VALVE– ELECTRICAL (TC)	1
5	N/P	20297	NAMEPLATE	1
6	E–1069–26	60191–24G	REPLACEMENT COIL 265	1
	E–1069–17	265555	COIL (24 VAC) 305–370	1
7	H–427–5	121–6T	SAE PLUG (220 IN–LB TORQUE)	8
8	H–427–2	121–5T	**SAE PLUG** (180 IN–LB TORQUE)	9
9	H–427	121–2T	**SAE PLUG** (35 IN–LB TORQUE)	4
10	H–563	–24D–G PFCV–10–N–0–16–0–0	PROPORTIONAL FLOW VALVE 265	1
	H–200–3	SV5–10–0–0–00	CARTRIDGE VALVE 305–370	1
11	N/P	41112	VALVE MANIFOLD	1
12	H–427–3	121–8T	SAE PLUG (550 IN–LB TORQUE)	2
13	H–203–26	RV5–10–S–0–20	RELIEF VALVE	1
14	H–203–38	CV3–10–P–0–010	CHECK VALVE – 10 PSI	1
15	H–203–43	RV10–26A–0–N–15	RELIEF VALVE	1

12.3 Hydraulic Pressure Switch Assembly

49195 Rev. “B”

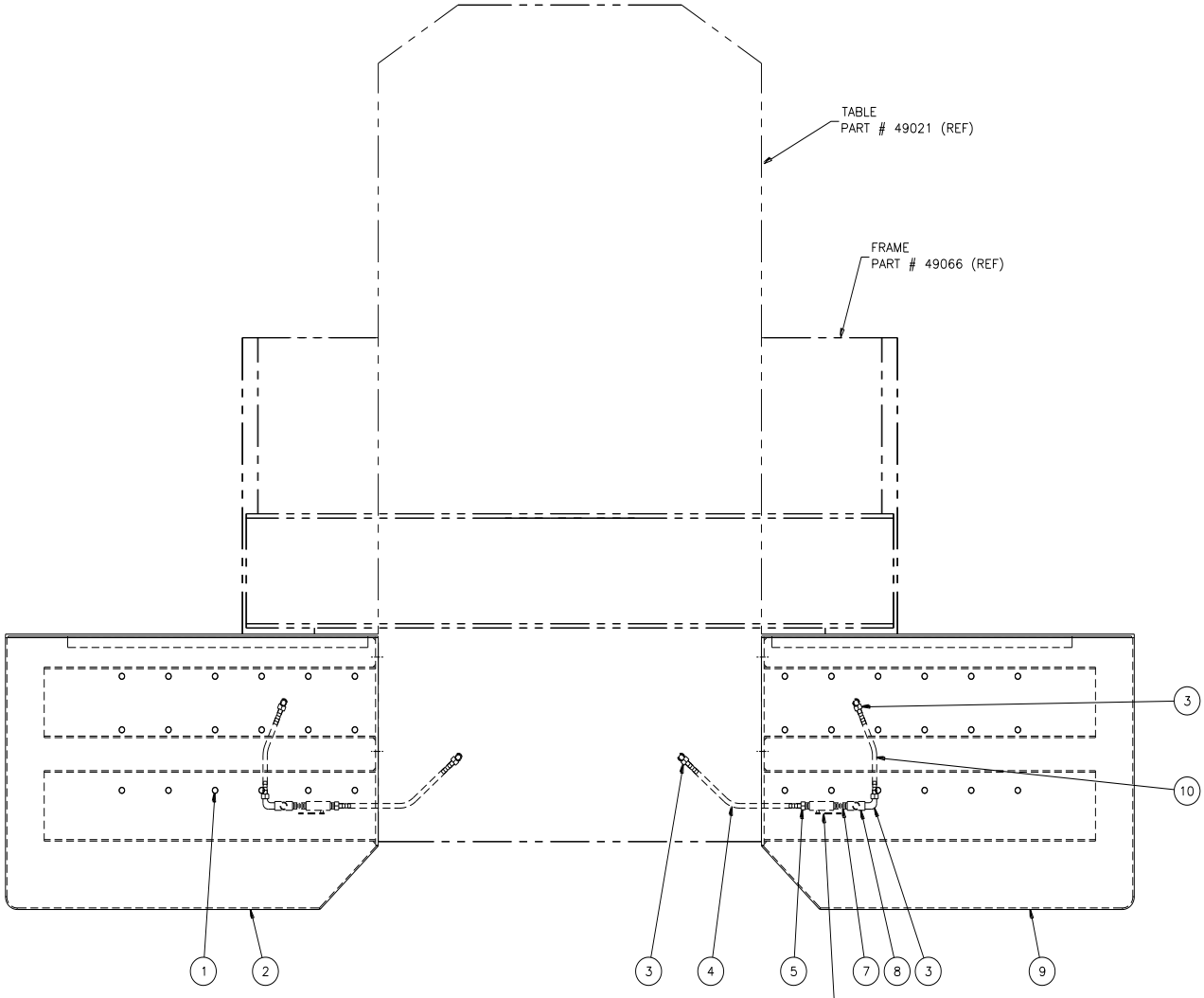


NO.	PART NO.	DESCRIPTION OF ACCESSORIES	QTY
1	H-242-37	HOSE – HYDRAULIC, 30” LONG (NOT SHOWN)	1
2	H-242-67	HOSE – HYDRAULIC, 22” LONG (NOT SHOWN)	1
3	H-236-4	NIPPLE – MALE, 3/4-16	2
4	H-203-18	VALVE – CHECK (VICKERS CV-3-10-65)	1
5	H-427-5	PLUG- SAE (121-6T) 9/16-18 ORB	1
6	H-203-35	VALVE – KNIFE FLOW CONTROL	1

13.0 SUB-ASSEMBLIES

13.1 Air Extension Table (Option)

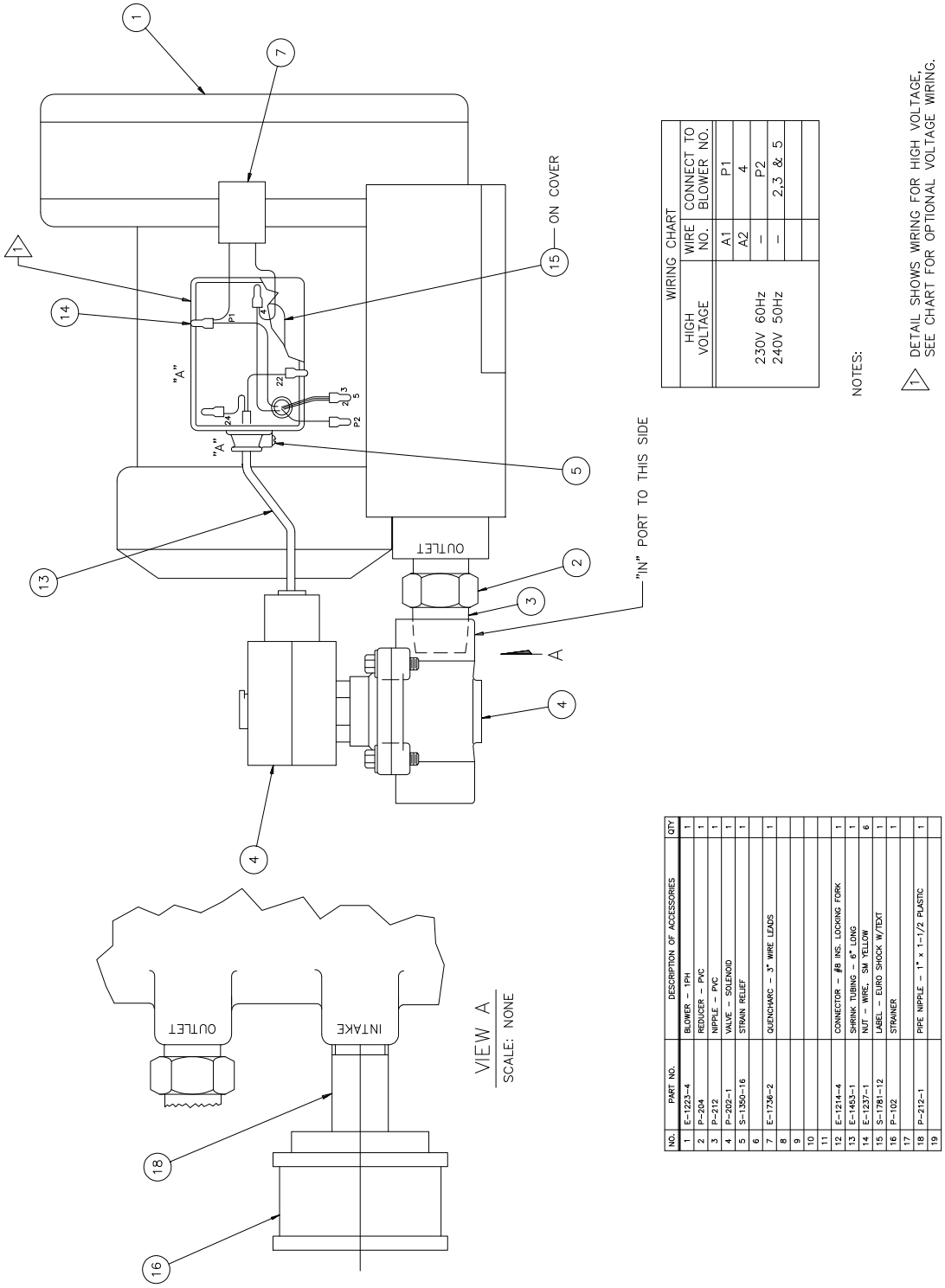
49157 Rev. A



NO.	PART NO.	DESCRIPTION OF ACCESSORIES	QTY
1	P-207-1	AIR JET	36
2	16028	TABLE EXTENSION L. H.	1
3	P-205	ELBOW, 90° (3/8 NPT- 1/2 I.D. TUBE) PLASTIC	6
4	P-240-3	1/2 I.D. X 3/32 WALL NYLON TUBE X 16" LONG	2
5	P-210	HOSE BARB - 3/8 NPT TO 1/2 I.D. TUBE	2
6	S-1921	BALL VALVE	2
7	H-6405-1-608	3/8 NPT CLOSE NIPPLE X 1" LONG	4
8	H-277-1	TEE - 3/8 PIPE INTERNAL	2
9	16029	TABLE EXTENSION R. H.	1
10	P-240-3	1/2 I.D. X 3/32 WALL NYLON TUBE X 12" LONG	2

13.2 Air Table Blower Assembly – Single Phase

49083 Rev. D



WIRING CHART		
HIGH VOLTAGE	WIRE NO.	CONNECT TO BLOWER NO.
230V 60Hz 240V 50Hz	A1	P1
	A2	4
	—	P2
	—	2,3 & 5

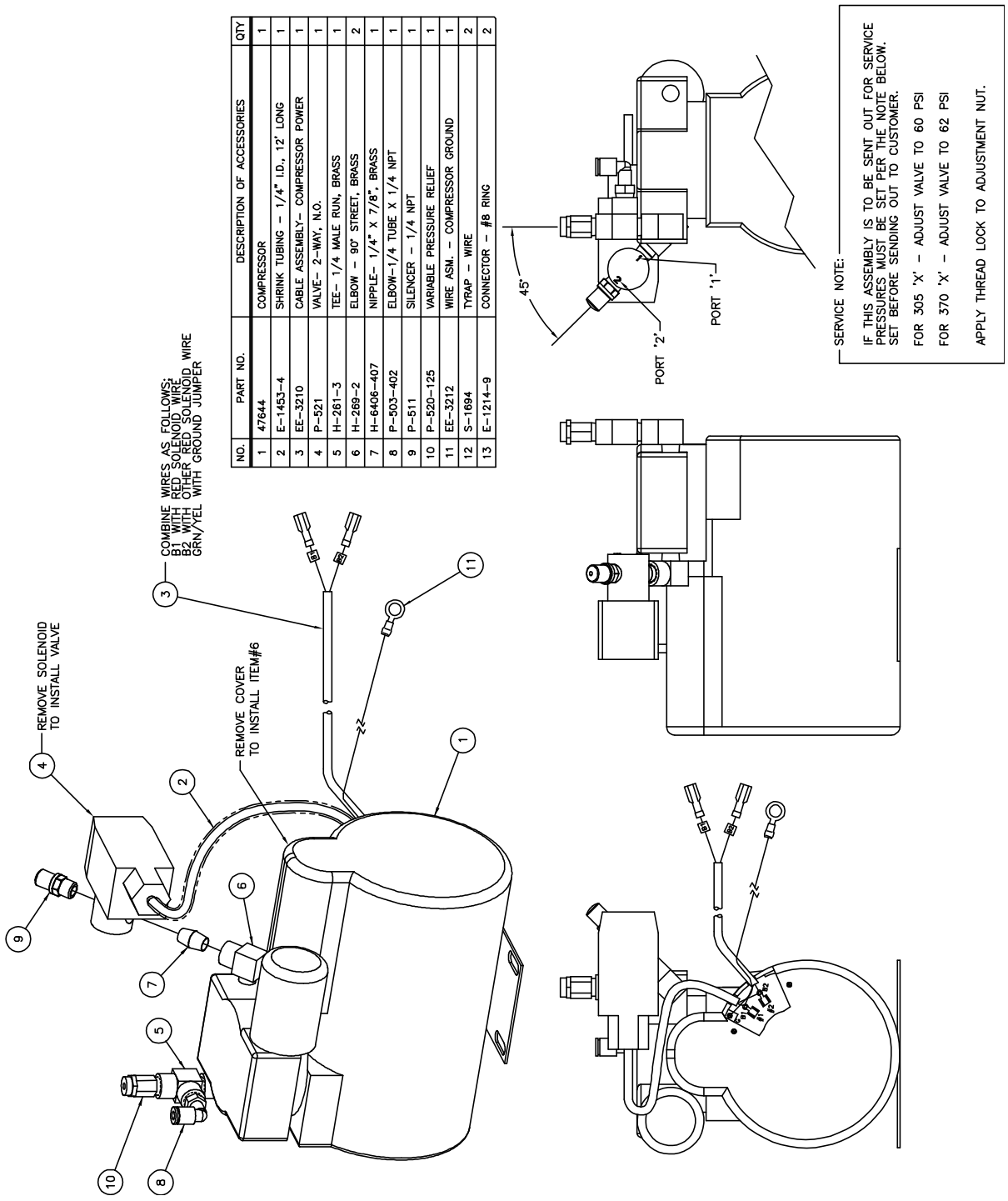
NOTES:

1. DETAIL SHOWS WIRING FOR HIGH VOLTAGE, SEE CHART FOR OPTIONAL VOLTAGE WIRING.

NO.	PART NO.	DESCRIPTION OF ACCESSORIES	QTY
1	E-1223-4	BLOWER – 1PH	1
2	P-204	REDUCER – PVC	1
3	P-212	NIPPLE – PVC	1
4	P-202-1	VALVE – SOLENOID	1
5	S-1350-16	STRAIN RELIEF	1
6			
7	E-1736-2	QUENCHARC – 3" WIRE LEADS	1
8			
9			
10			
11			
12	E-1214-4	CONNECTOR – #8 INS. LOCKING FORK	1
13	E-1453-1	SHRINK TUBING – 6" LONG	1
14	E-1237-1	NUT – WIRE, SM YELLOW	6
15	S-1781-12	LABEL – EURO SHOCK W/TEXT	1
16	P-102	STRAINER	1
17			
18	P-212-1	PIPE NIPPLE – 1" x 1-1/2 PLASTIC	1
19			

13.3 Clamp Compressor Assembly

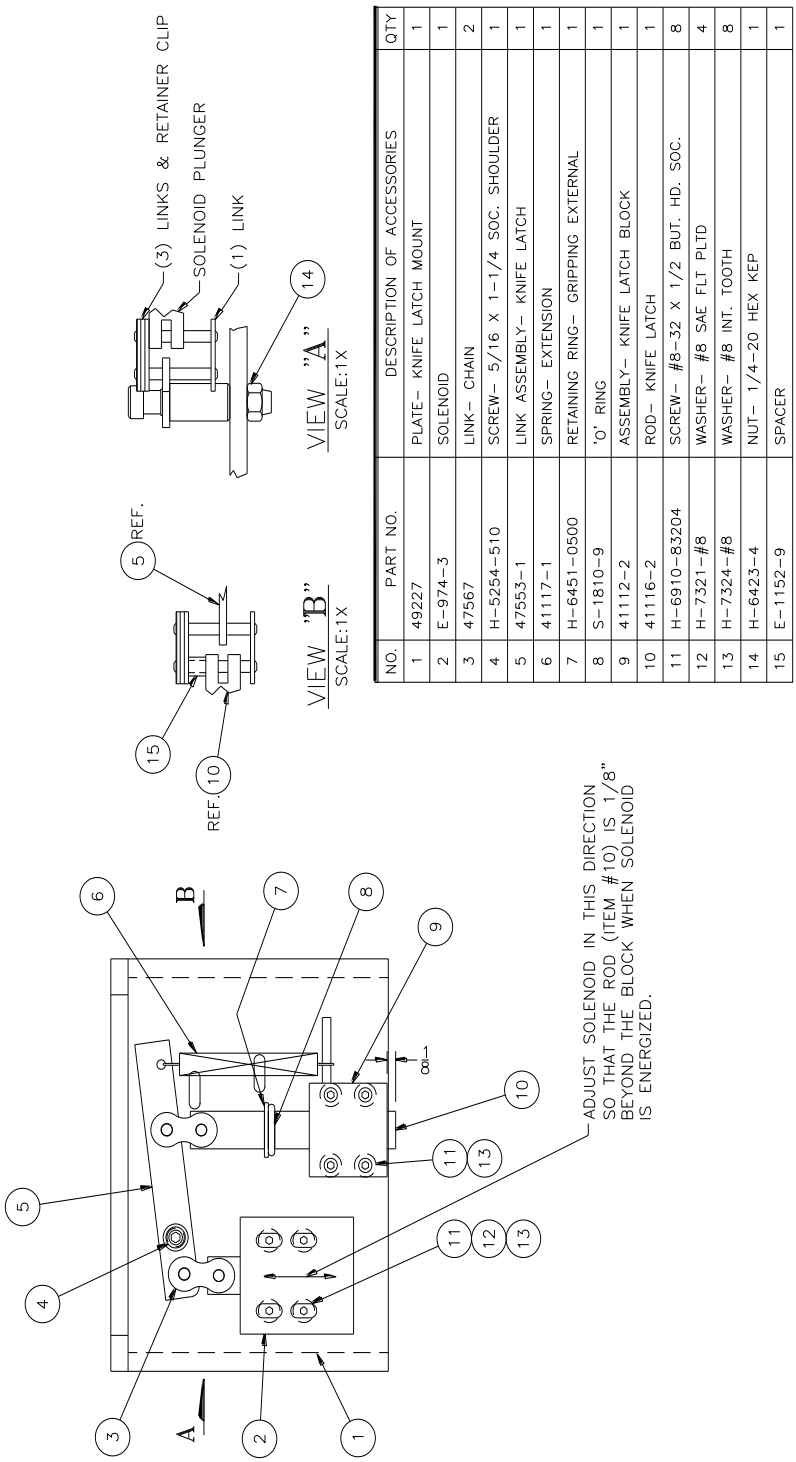
47645-1 Rev.F



NO.	PART NO.	DESCRIPTION OF ACCESSORIES	QTY
1	47644	COMPRESSOR	1
2	E-1453-4	SHRINK TUBING - 1/4" I.D., 12' LONG	1
3	EE-3210	CABLE ASSEMBLY- COMPRESSOR POWER	1
4	P-521	VALVE- 2-WAY, N.O.	1
5	H-261-3	TEE- 1/4 MALE RUN, BRASS	1
6	H-269-2	ELBOW - 90° STREET, BRASS	2
7	H-6406-407	NIPPLE- 1/4" X 7/8", BRASS	1
8	P-503-402	ELBOW-1/4 TUBE X 1/4 NPT	1
9	P-511	SILENCER - 1/4 NPT	1
10	P-520-125	VARIABLE PRESSURE RELIEF	1
11	EE-3212	WIRE ASM. - COMPRESSOR GROUND	1
12	S-1694	TYRAP - WIRE	2
13	E-1214-9	CONNECTOR - #8 RING	2

13.4 Knife Latch Assembly

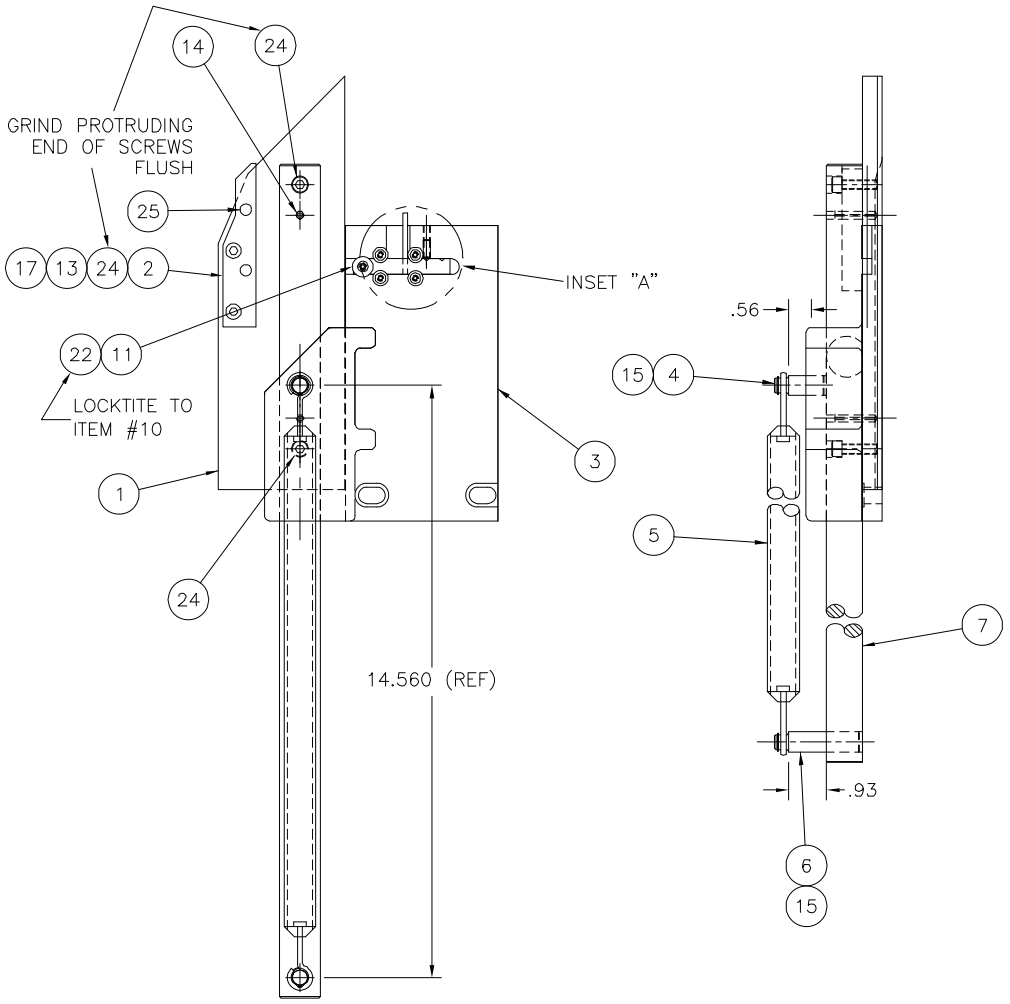
49228-1 Rev. "B"

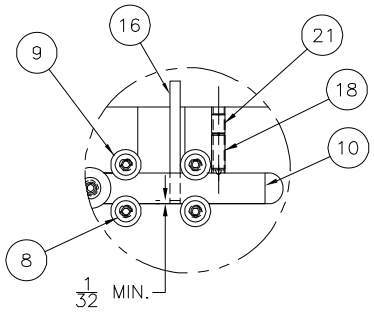


NO.	PART NO.	DESCRIPTION OF ACCESSORIES	QTY
1	49227	PLATE- KNIFE LATCH MOUNT	1
2	E-974-3	SOLENOID	1
3	47567	LINK- CHAIN	2
4	H-5254-510	SCREW- 5/16 X 1-1/4 SOC. SHOULDER	1
5	47553-1	LINK ASSEMBLY- KNIFE LATCH	1
6	41117-1	SPRING- EXTENSION	1
7	H-6451-0500	RETAINING RING- GRIPPING EXTERNAL	1
8	S-1810-9	'O' RING	1
9	41112-2	ASSEMBLY- KNIFE LATCH BLOCK	1
10	41116-2	ROD- KNIFE LATCH	1
11	H-6910-83204	SCREW- #8-32 X 1/2 BUT. HD. SOC.	8
12	H-7321-#8	WASHER- #8 SAE FLT PLTD	4
13	H-7324-#8	WASHER- #8 INT. TOOTH	8
14	H-6423-4	NUT- 1/4-20 HEX KEP	1
15	E-1152-9	SPACER	1

13.5 Paper Deflector Assembly

49115 Rev. H



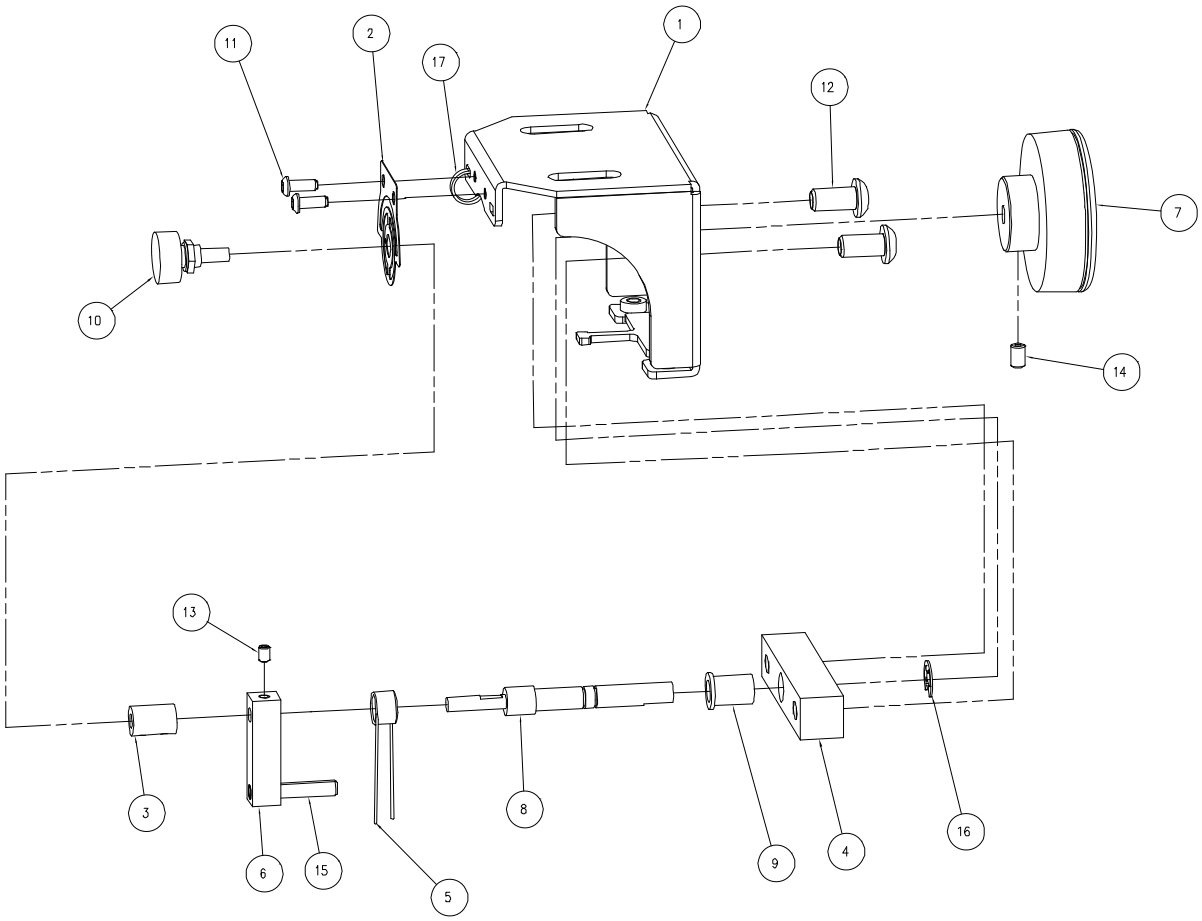


INSET "A"
SCALE: 2X

NO.	PART NO.	DESCRIPTION OF ACCESSORIES	QTY
1	49114	PAPER DEFLECTOR	1
2	49117	KNIFE BAR FOLLOWER	1
3	49113-1	PAPER DEFLECTOR GUIDE	1
4	49119	PIN – PAPER DEFLECTOR SPRING MOUNT	1
5	49112	SPRING – PAPER DEFLECTOR	1
6	48118	PIN – PAPER DEFLECTOR SPRING MOUNT	1
7	49116	SHAFT – PAPER DEFLECTOR	1
8	H-6910-63202	SCREW – #6-32 X 1/4 BUT	4
9	H-7321-#6	WASHER – #6 PLATED	4
10	49184-1	HOLD DOWN BLOCK	1
11	49185	BEARING	1
12			
13	H-7324-8	WASHER – 1/4 INT. TOOTH	2
14	H-21S-187-1000	3/16 X 1 ROLL PIN	2
15	S-1073-37	3/8 – RET. RING	2
16	H-5246-212	PIN – 1/8 X 1-1/2 DOWEL	1
17	H-7321-4	WASHER – 1/4 PLAIN	2
18	S-2021-1	PLUNGER – SPRING	1
19			
20			
21	H-6938-83204	SCREW – #8-32 X 1/4 SOC SET	1
22	H-6910-102403	SCREW – #10-24 X 3/8 BUTT HD.	1
23			
24	H-6918-408	SCREW – 1/4-20 X 1 SHCS	4
25	H-21S-250-0500	1/4 X 1/2 ROLL PIN	1

13.6 Backgauge Control Assembly

49249 Rev."J"



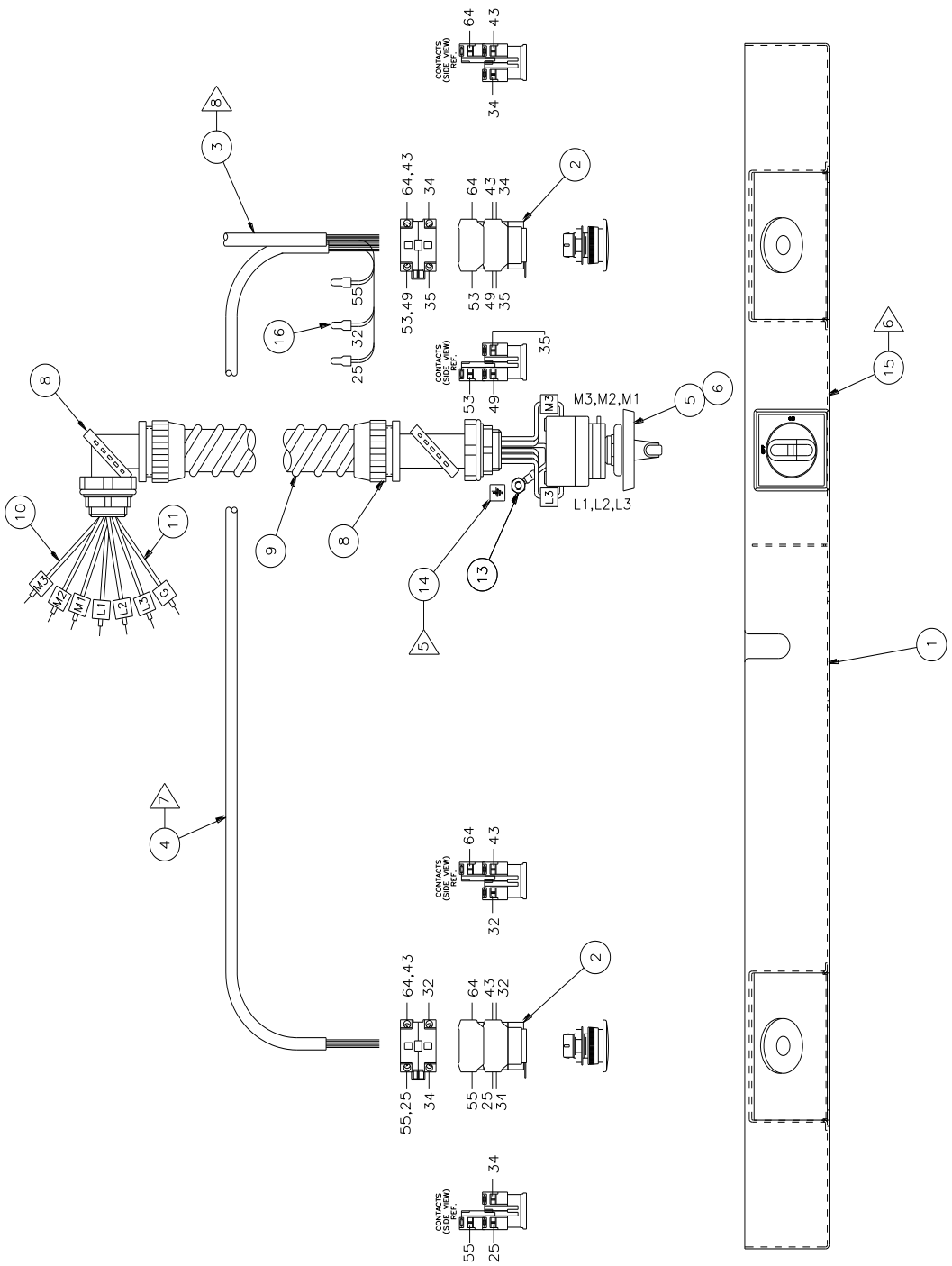
NO.	PART NO.	DESCRIPTION OF ACCESSORIES	QTY
1	49248-1	BACKGAUGE CONTROL BRACKET	1
2	49261	ENCODER MOUNTING BRACKET	1
3	56676-1	COUPLING	1
4	63210-1	FRONT PILLOW BLOCK	1
5	63213	TORSION SPRING	1
6	63214	ACTUATOR	1
7	63218	KNOB	1
8	63221	CONTROL KNOB SHAFT	1
9	EE-3213	POTENTIOMETER	1
10	H-6423-#10	NUT - #10-24 HEX KEP	2
11	H-6910-102404	SCREW - #10-24 X 1/2 BUTTON HEAD CAP	2
12	H-6910-606	SCREW - 3/8-16 X 3/4 BUTTON HEAD CAP	2
13	H-6940-102404	SCREW - #10-24 X 1/4 FLAT SOC SET	1
14	H-6940-406	SCREW - 1/4-20 X 3/8 FLAT SOC SET	1
15	H-21S-250-1500	ROLL PIN - 1/4 X 1-1/2	1
16	S-1193-37	E-RING - 3/8"	1
17	S-1694	TYRAP	1

NOTES

13.7 Controls Asm. – Cut Switch/Main Disconnect

EE-3383 Rev.”D”

(STANDARD)



Controls Asm. – Cut Switch/Main Disc. – EE-3383 Rev."D" (Cont)

NOTES:

1) STRIP WIRE INSULATION BACK 1/4" BOTH ENDS.

2) WIRE TAG ALL WIRES AS SHOWN – BOTH ENDS.

3 ATTACH THE SWITCH FACE TO THE SWITCH BOX USING THE SUPPLIED LOCK WASHER

4 ATTACH WIRE #L1 TO SWITCH TERM. #L1
ATTACH WIRE #L2 TO SWITCH TERM. #L2
ATTACH WIRE #L3 TO SWITCH TERM. #L3
ATTACH WIRE #M1 TO SWITCH TERM #T1
ATTACH WIRE #M2 TO SWITCH TERM #T2
ATTACH WIRE #M3 TO SWITCH TERM #T3

5 PLACE LABEL ON THE INSIDE OF BOX, BOTTOM BY THE GROUND STUD.

6 PLACE LABEL ON THE OUTSIDE OF BOX, BOTTOM BY THE MAIN DISCONNECT SWITCH.

7 STRIP CABLE JACKET BACK 4" – BOTH ENDS. SEE CHART #1 FOR WIRE COLORS & NUMBERS.

8 STRIP CABLE JACKET BACK 4" ON SWITCH END AND 16" ON THE OTHER END. SEE CHART #2 FOR WIRE COLORS & NUMBERS. CUT OFF GREEN WIRE – BOTH ENDS.

CHART #1
ITEM #4

WIRE NO.	COLOR
64	BLUE
55	WHITE
43	ORANGE
34	GREEN
32	BLACK
25	RED

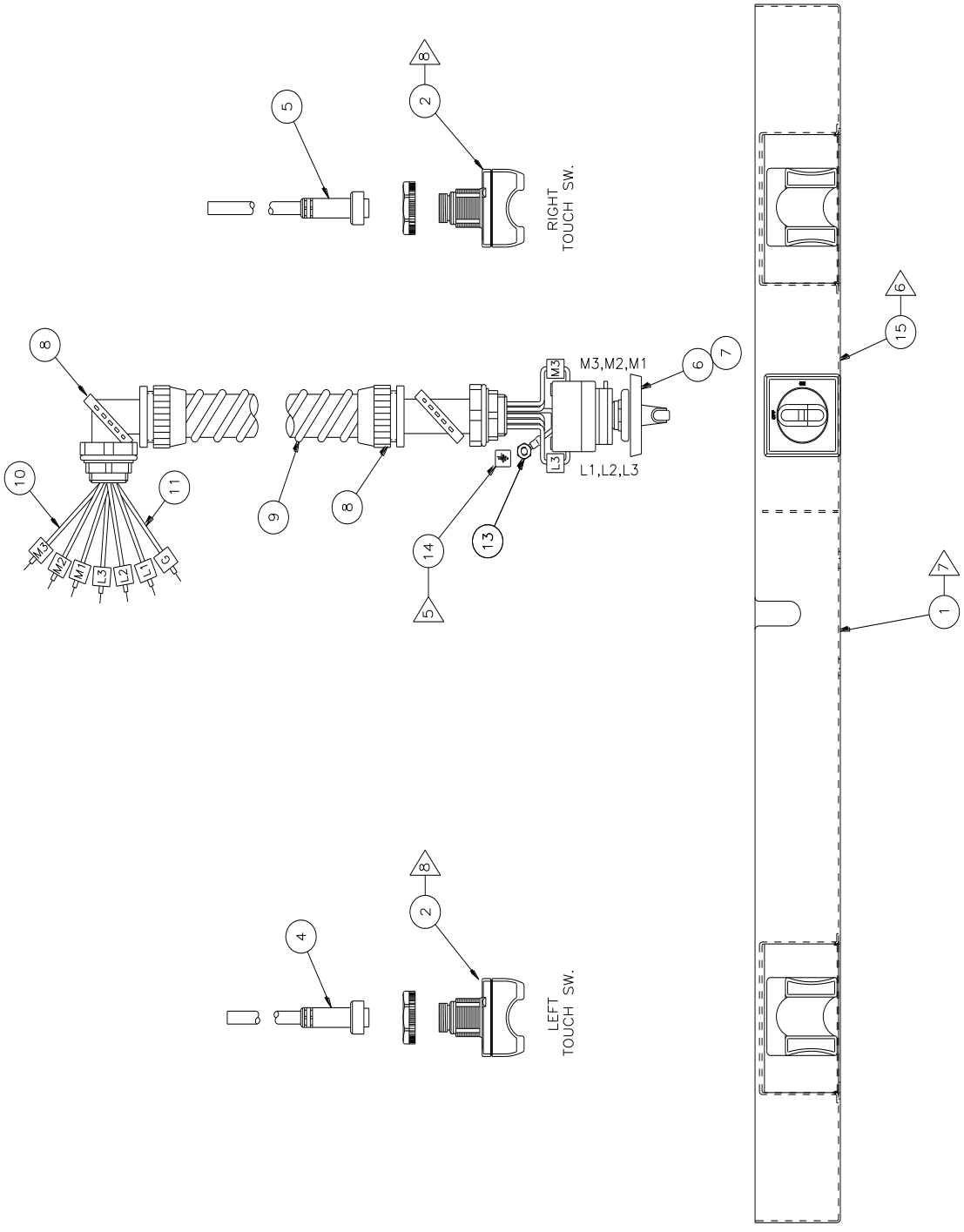
CHART #2
ITEM #3

WIRE NO.	COLOR
64	BLUE
55	WHITE
53	YELLOW
49	BROWN
35	ORANGE
32	BLACK
25	RED

NO.	PART NO.	DESCRIPTION OF ACCESSORIES	QTY
1	49253	CONTROL BOX ASSEMBLY – 370X	1
2	E–3127–4	PUSHBUTTON SWITCH – MUSHROOM, 3 N.O.	2
3	E–2078–3	CABLE – #18GA. 8 COND. 49" LONG	1
4	E–2078	CABLE – #18GA. 6 COND. 38" LONG	1
5	E–3082	SWITCH – MAIN DISCONNECT (BODY)	1
6	E–3083	SWITCH FACE – MAIN DISCONNECT	1
7			
8	E–2190–2	3/4" CONDUIT CONNECTOR – 90°	2
9	E–2189–2	CONDUIT – PLASTIC, 18" LONG	1
10	E–1213–B	WIRE – #10 GA. BLACK MTW 38" LONG	6
11	E–2743–1	WIRE – #14 GA. GRN/YEL TEW 38" LONG	1
12	E–1214–64	CONNECTOR – 1/4" RING (16–14GA)	1
13	H–6423–4	NUT – 1/4–20 HEX	1
14	S–1781–42	LABEL – GROUND SYMBOL, SECONDARY	1
15	S–1781–11	LABEL – ELECTRIC SHOCK	1
16	E–1237–6	WIRE NUT – BLUE	3

13.8 Controls Asm. – Touch Switch/Main Disconnect (Optional)

EE-3383-1 rev."A" Sheet 1



Controls Asm. – Touch Switch/Main Disc. – (Cont)
EE-3383-1 Rev "A" Sheet 1

NOTES:

1) STRIP WIRE INSULATION BACK 1/4" BOTH ENDS.

2) WIRE TAG ALL WIRES AS SHOWN – BOTH ENDS.

3 ATTACH THE SWITCH FACE TO THE SWITCH BOX USING THE SUPPLIED LOCK WASHER

4 ATTACH WIRE #L1 TO SWITCH TERM. #L1
ATTACH WIRE #L2 TO SWITCH TERM. #L2
ATTACH WIRE #L3 TO SWITCH TERM. #L3
ATTACH WIRE #M1 TO SWITCH TERM #T1
ATTACH WIRE #M2 TO SWITCH TERM #T2
ATTACH WIRE #M3 TO SWITCH TERM #T3
ATTACH ITEM #12 TO GREEN WIRE (SWITCH END) AND THEN ATTACH THE GREEN WIRE TO THE STUD INSIDE OF BOX

5 PLACE LABEL ON THE INSIDE OF BOX, BOTTOM BY THE GROUND STUD.

6 PLACE LABEL ON THE OUTSIDE OF BOX, BOTTOM BY THE MAIN DISCONNECT SWITCH.

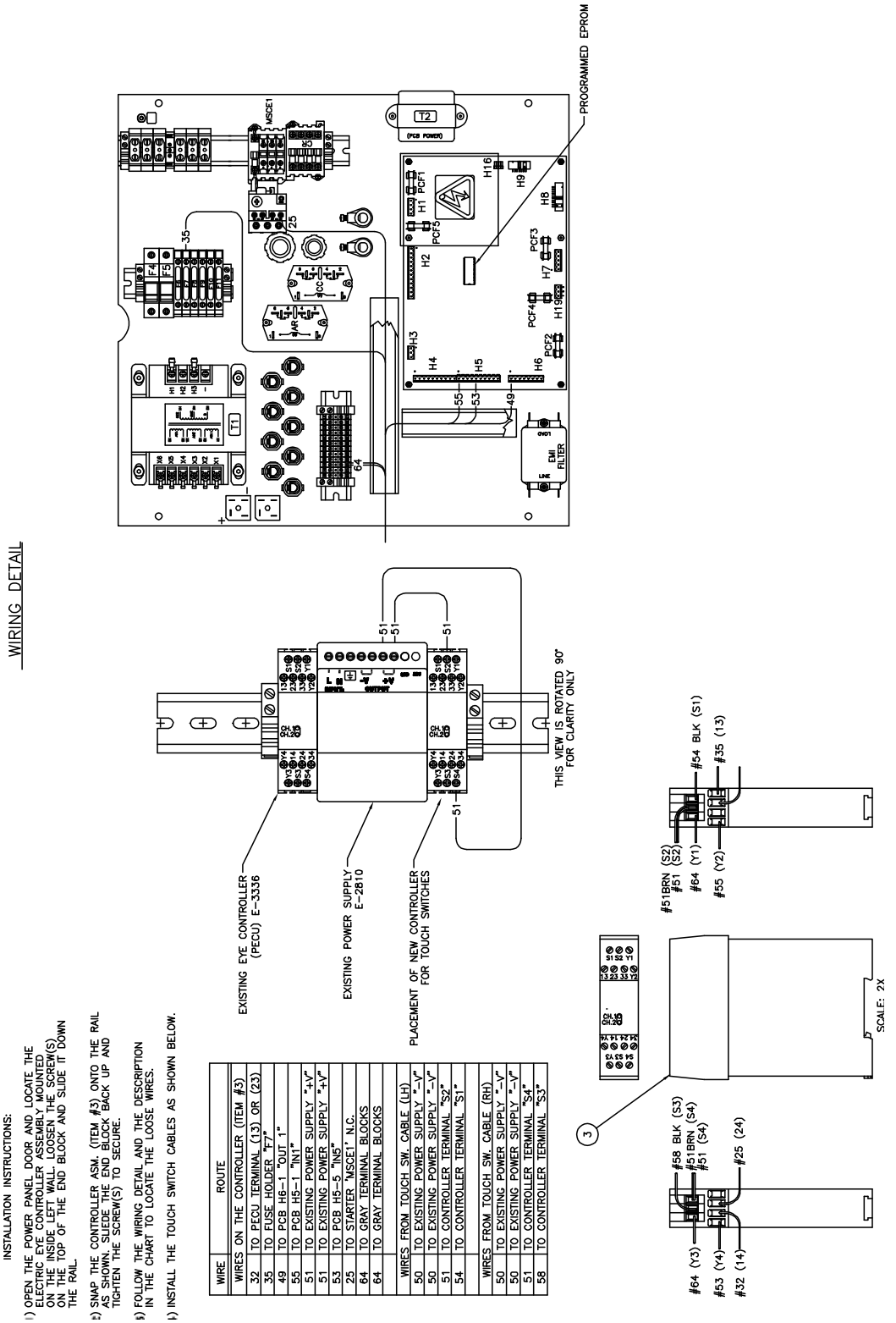
7 OPEN THE TWO CUT BUTTON SWITCH HOLES TO 1–3/16" DIA.

8 INSTALL SWITCHES SO THAT THE SWITCH INDICATOR LIGHTS ARE FACING UP TOWARDS THE OPERATOR WHEN THE BOX IS INSTALLED ON THE MACHINE.

NO.	PART NO.	DESCRIPTION OF ACCESSORIES	QTY
1	49253	CONTROL BOX ASSEMBLY – 370X	1
2	E–3347	SWITCH – ERGO TOUCH	2
3	EE–3350–2	CONTROLLER – ASM. – TOUCH SWITCH	1
4	EE–3348–2	CABLE ASM. – TOUCH SWITCH, LH	1
5	EE–3349–2	CABLE ASM. – TOUCH SWITCH, RH	1
6	E–3083	SWITCH FACE – MAIN DISCONNECT	1
7	E–3082	SWITCH – MAIN DISCONNECT (BODY)	1
8	E–2190–2	3/4" CONDUIT CONNECTOR – 90°	2
9	E–2189–2	CONDUIT – PLASTIC, 18" LONG	1
10	E–1213–B	WIRE – #10 GA. BLACK MTW 38" LONG	6
11	E–2743–1	WIRE – #14 GA. GRN/YEL TEW 38" LONG	1
12	E–1214–64	CONNECTOR – 1/4" RING (16–14GA)	1
13	H–6423–4	NUT – 1/4–20 HEX	1
14	S–1781–42	LABEL – GROUND SYMBOL, SECONDARY	1
15	S–1781–11	LABEL – ELECTRIC SHOCK	1

13.9 Controls Assembly – Touch Switch/Main Disconnect w/Fuses

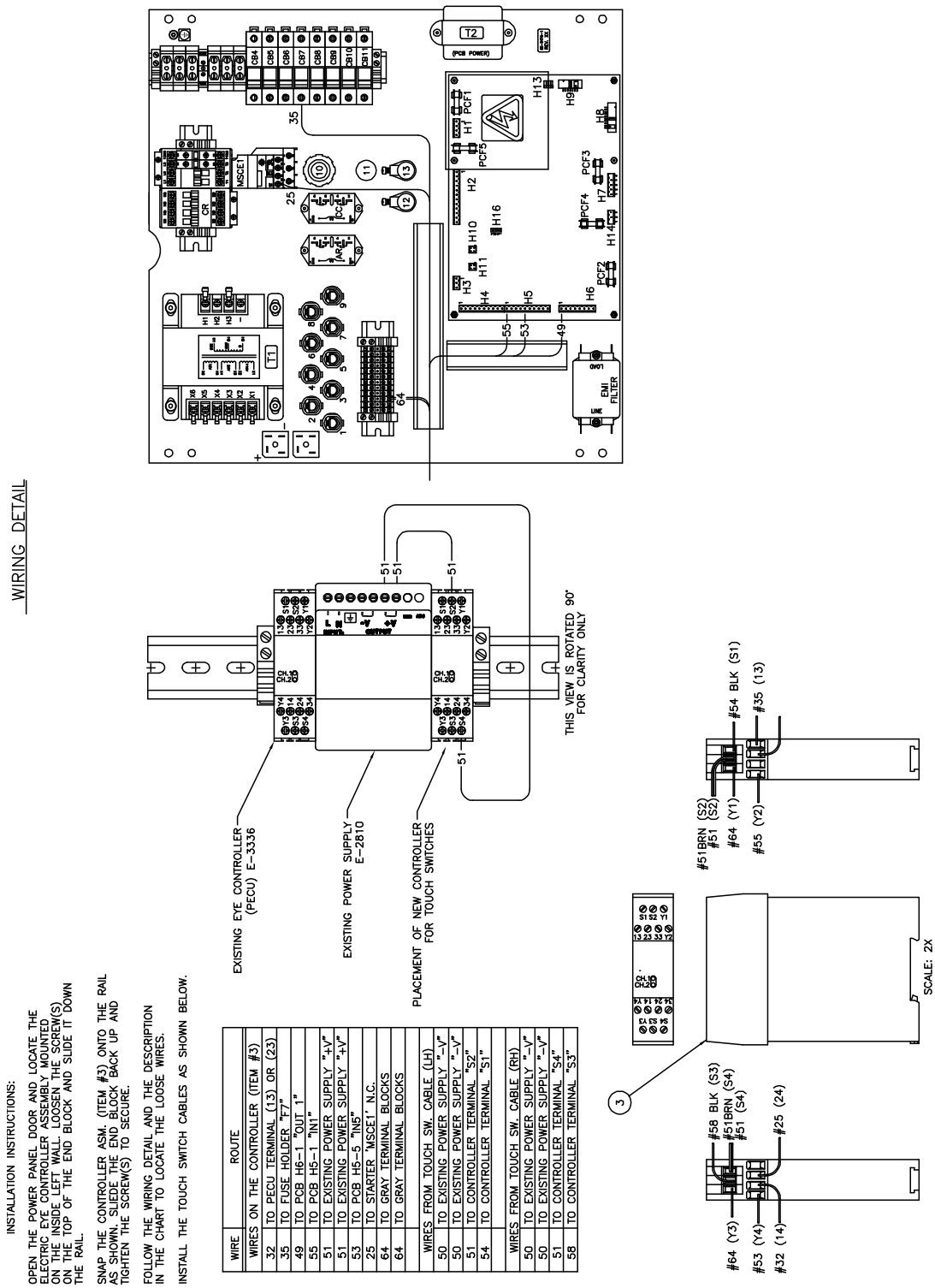
EE-3383-1 Rev."A" Sheet 2



WIRE	ROUTE
WIRES ON THE CONTROLLER (ITEM #3)	
32	TO PECU TERMINAL (13) OR (23)
35	TO FUSE HOLDER "F7"
49	TO PCB H6-1 "OUT 1"
55	TO PCB H5-1 "IN1"
51	TO EXISTING POWER SUPPLY "+V"
51	TO EXISTING POWER SUPPLY "+V"
53	TO PCB H5-5 "IN5"
25	TO STARTER "MSCE1" N.C.
64	TO GRAY TERMINAL BLOCKS
64	TO GRAY TERMINAL BLOCKS
WIRES FROM TOUCH SW. CABLE (LH)	
50	TO EXISTING POWER SUPPLY "-V"
50	TO EXISTING POWER SUPPLY "-V"
51	TO CONTROLLER TERMINAL "S2"
54	TO CONTROLLER TERMINAL "S1"
WIRES FROM TOUCH SW. CABLE (RH)	
50	TO EXISTING POWER SUPPLY "-V"
50	TO EXISTING POWER SUPPLY "-V"
51	TO CONTROLLER TERMINAL "S4"
58	TO CONTROLLER TERMINAL "S3"

13.10 Control Assembly – Touch Switch/Main Disconnect w/Circuit Breakers

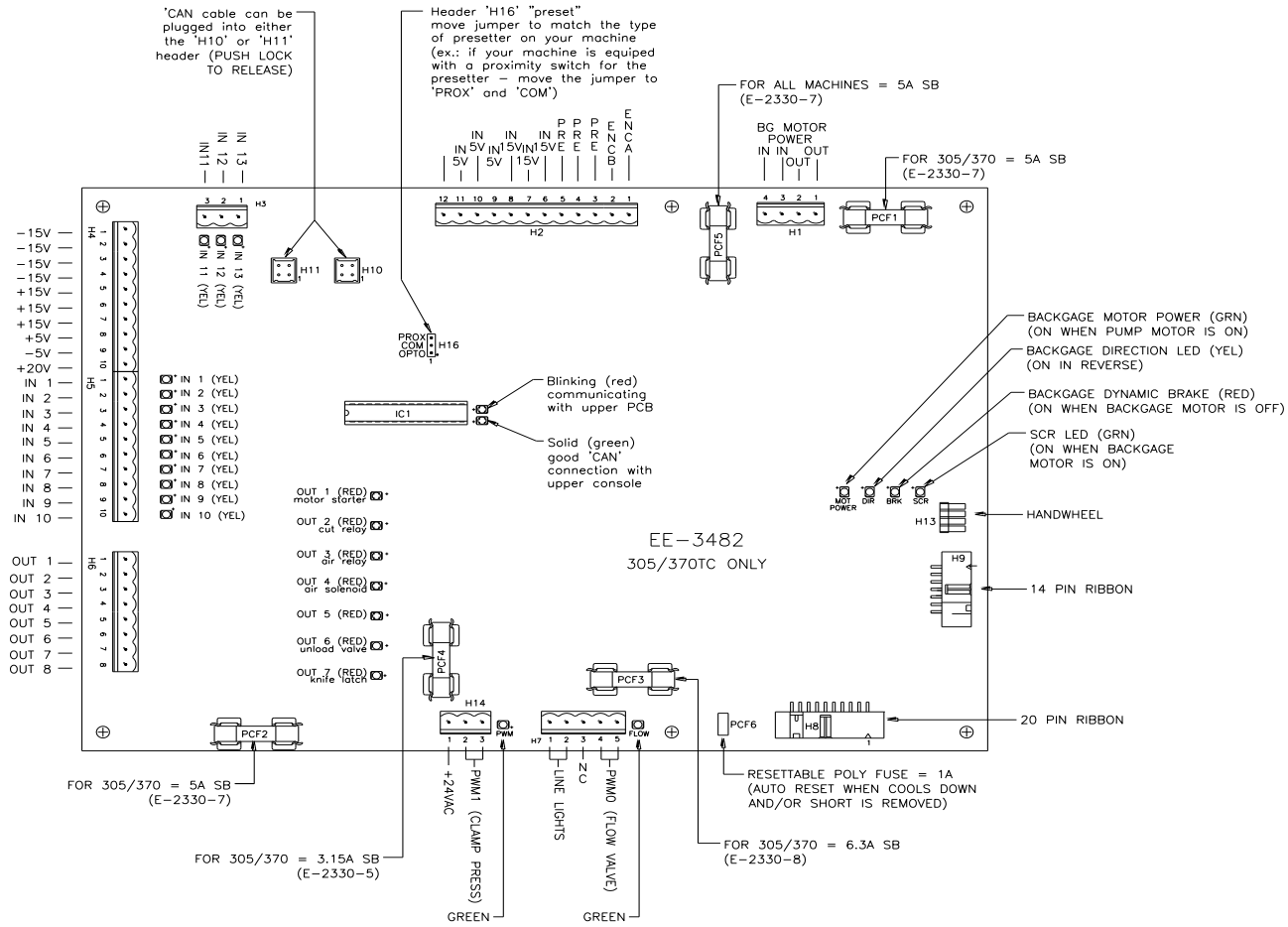
EE-3383-1 Rev. "A" Sheet 2



13.11 TC Power Panel PCB Troubleshooting

EE-3432-2

The following is a description of the various diagnostic LED's in the power panel. These lights are indicators used to show input and output status.



DESCRIPTION – INPUTS
IN 1: Left Cut Switch
IN 2: Clamp Up Limit
IN 3: Hyd. Cylinder Up Limit
IN 4: Knife Up Limit
IN 5: Right Cut Switch
IN 6: Cut Relay N.O. Contacts
IN 7: Pressure Switch
IN 8: MSCE1 (motor starter)
IN 9: Knife Down Limit
IN 10: Knife Latch
IN 11: not used
IN 12: False Clamp Switch
IN 13: Safety Eyes (PECU)
IN 14: not used
IN 15: not used

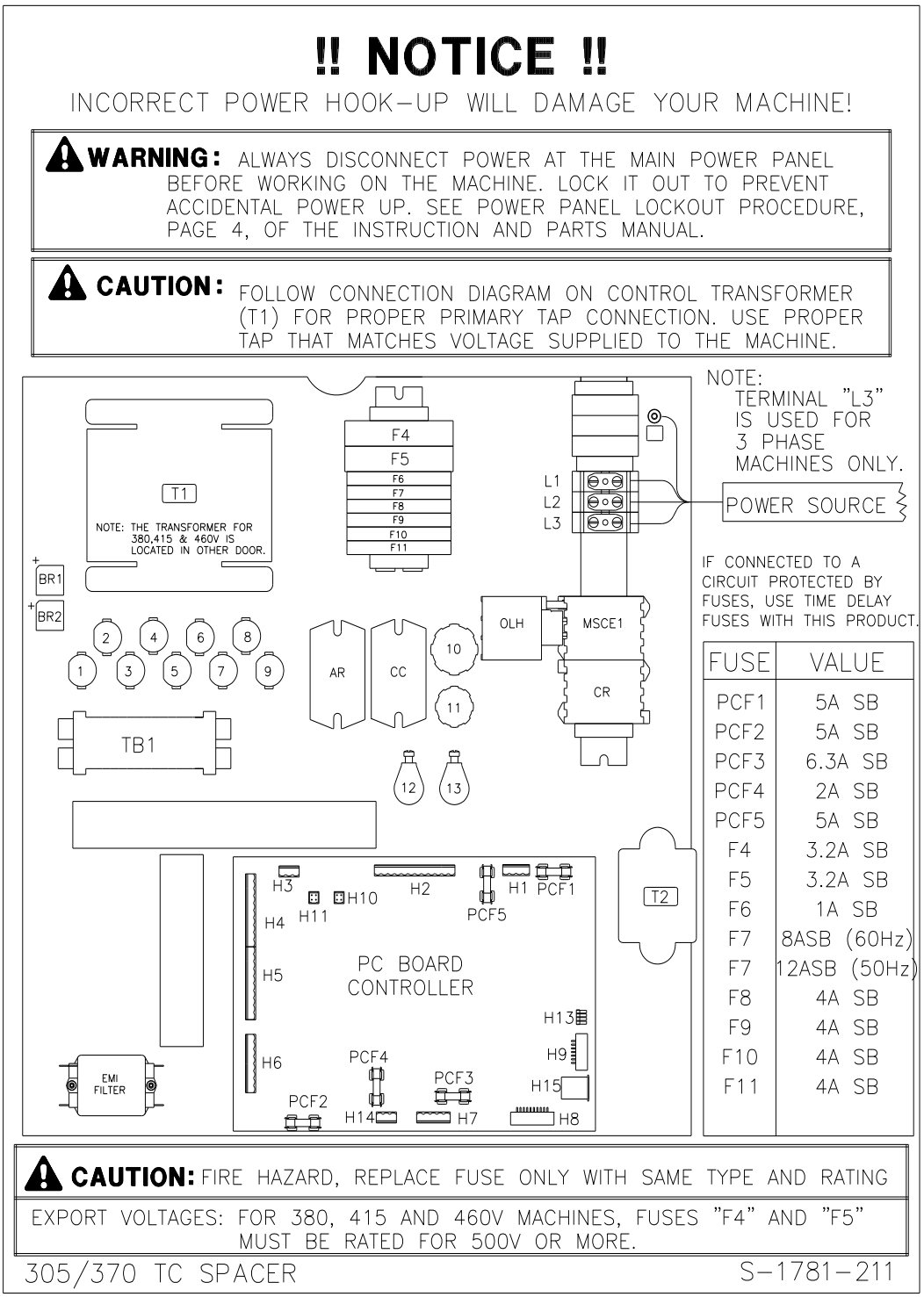
DESCRIPTION – OUTPUTS
OUT 1: Pump Motor Starter
OUT 2: Cut Relay "CR"
OUT 3: Air Relay "AR"
OUT 4: Air Solenoid
OUT 5:
OUT 6: Unload Valve
OUT 7: Knife Latch Solenoid

DESCRIPTION – FUSES
PCF1: BACKGAGE MOTOR
PCF2: OUTPUTS
PCF3: LINE LIGHTS
PCF4: PWM2 (FLOW VALVE)
PCF5: BACKGAGE MOTOR
PCF6: SEC. PWM0 PROTECTION

NOTES

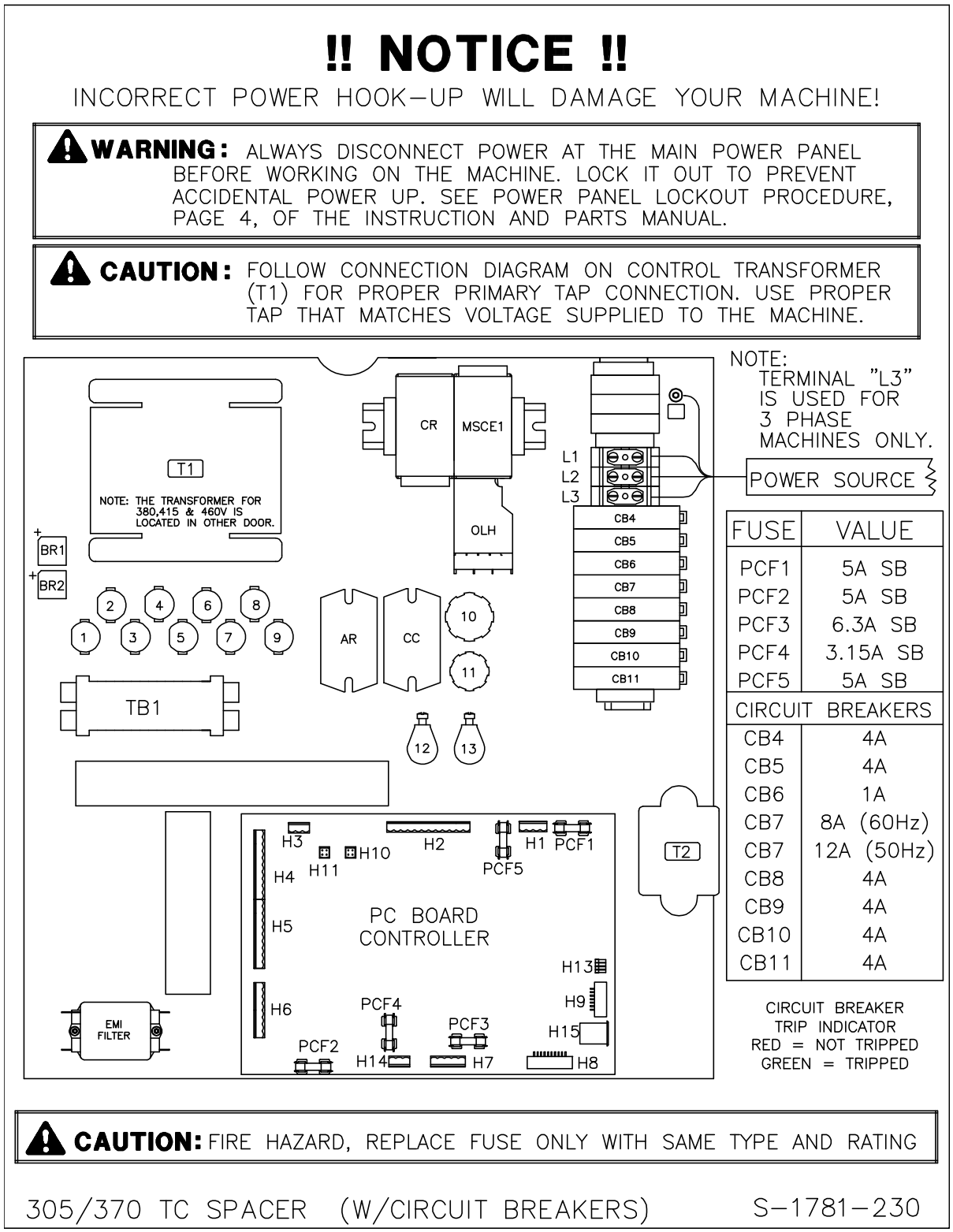
13.12 Label – Power Panel Connection Procedure w/Fuses

S-1781-211 Rev. A



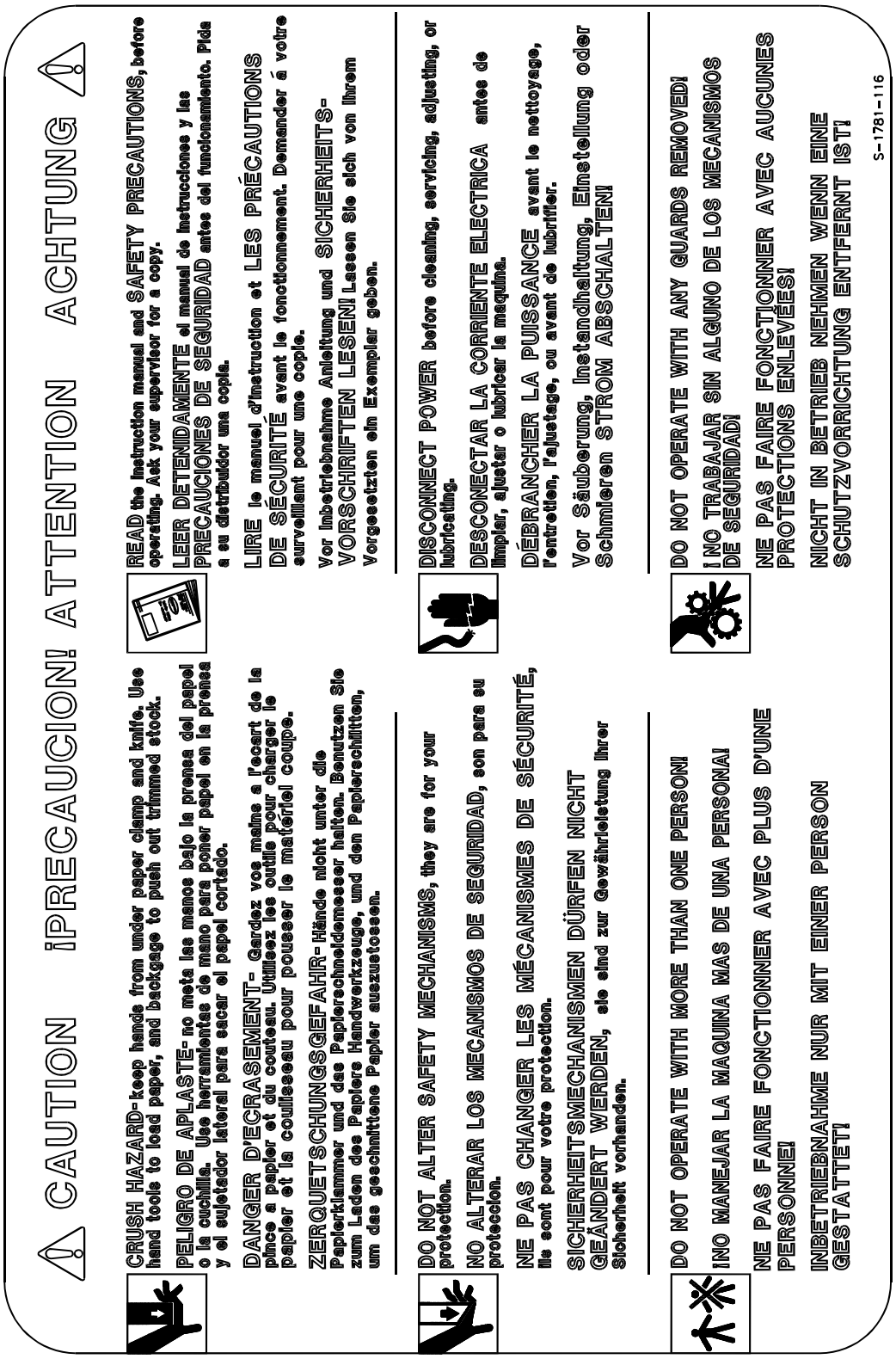
13.13 Label – Power Connection Procedure w/Circuit Breakers

S-1781-230 Rev."A"



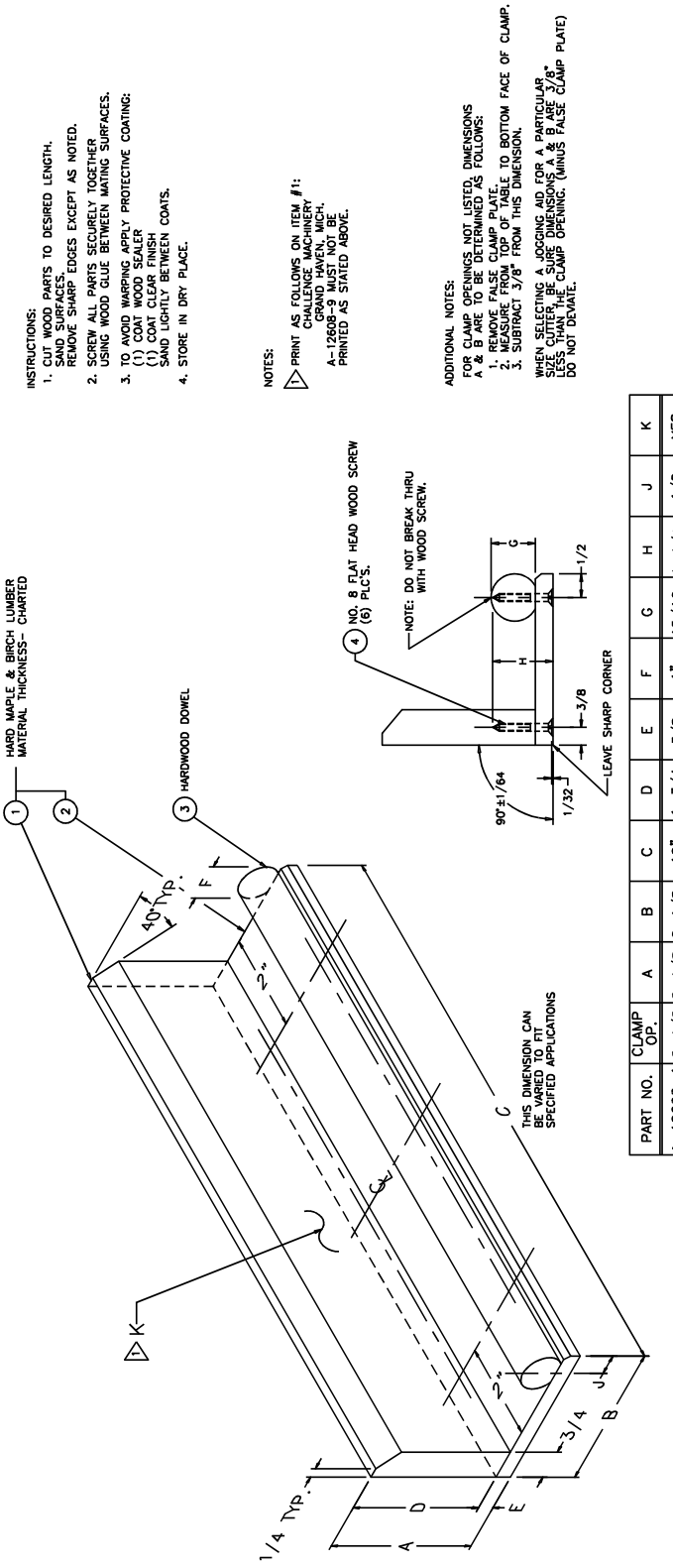
13.14 Warning Label

S-1781-116



13.15 Jogging Aid Construction Guide

A-12608-( ), Rev. "D"



PART NO.	CLAMP OP.	A	B	C	D	E	F	G	H	J	K
A-12608-1	2-1/2	2-1/8	2-1/8	12"	1-3/4	3/8	1"	15/16	1-1/4	1/2	YES
A-12608-2	3-1/4	2-7/8	2-7/8	12"	2-1/2	3/8	1"	15/16	1-1/4	1/2	YES
A-12608-3	3-1/2	3-1/8	3-1/8	12"	2-3/4	3/8	1"	15/16	1-1/4	1/2	YES
A-12608-4	4"	3-5/8	3-5/8	12"	3-1/4	3/8	1"	15/16	1-1/4	1/2	YES
A-12608-5	4-1/2	4-1/8	4-1/8	14"	3-3/8	3/4	1-1/4	1-3/16	1-3/4	2"	YES
A-12608-6	5"	4-5/8	4-5/8	14"	3-7/8	3/4	1-1/4	1-3/16	1-3/4	2"	YES
A-12608-7	5-1/2	5-1/8	5-1/8	14"	4-3/8	3/4	1-1/4	1-3/16	1-3/4	2"	YES
A-12608-8	6"	5-5/8	5-5/8	14"	4-7/8	3/4	1-1/4	1-3/16	1-3/4	2"	YES
A-12608-9	3-1/4	2-7/8	2-7/8	12"	2-1/2	3/8	1"	15/16	1-1/4	1/2	NO

14.0 Safety System Tests

Machine manufacturer __CHALLENGE__ Model ______________

Serial Number ___________________

Frequency of test: **THESE TESTS SHOULD BE PERFORMED AT THE BEGINNING OF EACH WORK DAY.**

Turn on the cutter and start the hydraulic motor (see operator's manual for instructions). Enable the electric eye safety system.

Test #1: Using a 12 mm wide test piece, check the object detection capability of the electric eye system. Do this by waving the test piece throughout the electric eye beam area. The steady green and steady orange lights on the emitter side (RH) should change to steady red and flashing orange.

Test #2: Press both cut buttons to begin a cut cycle. During the downward motion of the knife or clamp, lean into the path of the electric eye beams. The downward motion of the knife and clamp should stop immediately, and the knife and clamp should return to the "up" position.

If the machine fails either test, DO NOT use machine. Repair or adjustment is necessary.

Please enter date and initials for both tests (make copies of this form if necessary).

Date ______ ______ ______ ______ ______ ______ ______ ______ ______ ______ ______

Test 1 ______ ______ ______ ______ ______ ______ ______ ______ ______ ______ ______

Test 2 ______ ______ ______ ______ ______ ______ ______ ______ ______ ______ ______

Date ______ ______ ______ ______ ______ ______ ______ ______ ______ ______ ______

Test 1 ______ ______ ______ ______ ______ ______ ______ ______ ______ ______ ______

Test 2 ______ ______ ______ ______ ______ ______ ______ ______ ______ ______ ______

Date ______ ______ ______ ______ ______ ______ ______ ______ ______ ______ ______

Test 1 ______ ______ ______ ______ ______ ______ ______ ______ ______ ______ ______

Test 2 ______ ______ ______ ______ ______ ______ ______ ______ ______ ______ ______

Repairs	Initials of Repairer	Date
____	________	_____________
____	________	_____________
____	________	_____________
____	________	_____________
____	________	_____________
____	________	_____________
____	________	_____________

NOTES

F.370-C

December 2018