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CHALLENGE

TITAN 200

Technical Service and Parts Manual

Serial Numbers:
113597 through 159999,
200-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.200-FT
October 2017

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 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.

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.

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!**

2.2 Power Lockout Procedure

For maximum safety while making adjustments or repairs to your machine, disconnect power to the machine. Disconnect the power plug from its socket.

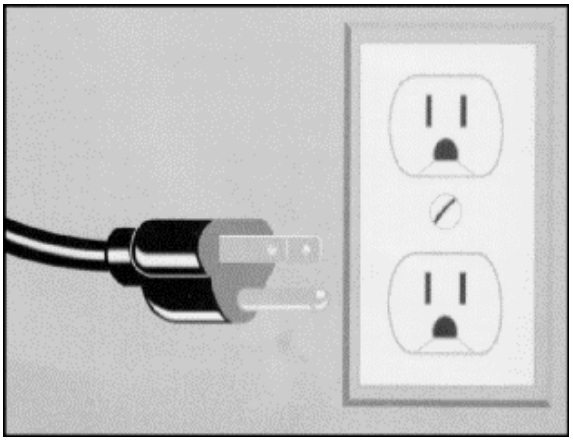


Figure 1 - Main Power Disconnect

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.

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.

SHOCK HAZARD

Disconnect power before removing cover. Replace cover before operation.

SINGLE OPERATOR

Do not operate with more than one person.

3.0 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: Parts with the express understanding that they are to replace parts found missing or no longer serviceable on equipment designed and/or manufactured at 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 product is not authorized by The Challenge Machinery Company. Any modification or alteration of any Challenge product will void any remaining warranty.

3.1 Troubleshooting

WON'T START
Fuse Blown/circuit breaker tripped
Power cord disconnected.
Main power switch not turned on.

BACKGAUGE DISPLAY INACCURATE
Preset circuit board malfunction.
Encoder malfunction.
Main circuit board malfunction.

BACKGAUGE DISPLAY INACCURATE - BY CONSTANT AMOUNT
Backgauge needs accuracy adjustment.
Preset board malfunction.

CUT BUTTONS PUSHED - WON'T CUT
Check error codes (page 9).
Obstruction between electric eyes (if equipped).
Guard open (if equipped).
Guard hasn't been opened since last cut (if equipped).
Hydraulic fluid low.
Main relief valve setting off.
Sequence pressure set wrong.
Cut button defective.
Motor relay defective.
Knife latch solenoid defective.
Knife down coil defective.
Defective directional valve.
Cylinder disconnected from cylinder bracket.
Knife bar dirty or dry, lubricate knife guideways.
Contaminants in hydraulic system.

CLAMP STARTS UP BEFORE KNIFE IS UP
Clamp Up Sequence Valve setting incorrect/defective.

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

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

ERRATIC OPERATION-POWER LOSS
Hydraulic fluid low.
Contaminants in hydraulic system.
Oil bypassing piston in cylinder .
Voltage supply is low.

KNIFE DRIFTS DOWN
Knife latch not engaging or damaged.

KNIFE HESITATES OR STALLS
Dull knife.
Main relief valve setting off.

Paper clamped too tight - lower clamp pressure reducer setting.
Cylinder seals worn - leaking pressure.
Hydraulic fluid low.
Voltage supply is low.

KNIFE STARTS DOWN BEFORE CLAMP REACHES TABLE
Knife down sequence valve setting incorrect.
Clamp pressure set too low.

KNIFE WON'T RETURN UP
Solenoid defective.
Limit switch out of adjustment.
Cylinder disconnected from bracket.
Sequence valve misadjusted.

PUMP-MOTOR WON'T SHUT OFF
Knife/Clamp Up Limit switch not activated - readjust.
Motor relay contacts welded.

3.2 Description of Error Messages

Message	Description	Test
Backgauge Failure	Backgauge doesn't move	Mechanical bind; encoder failure; main pc board; blown fuse/circuit breaker tripped
Backgauge at Limit	Backgauge is all the way forward or backward	
Checksum Error	Bad program chip	Replace EEPROM
Clamp Up Failure	Clamp failed to return to up position within 7 seconds	Clamp up sequence valve; solenoid (cut) valve
Clamp Down Failure	Clamp failed to come down	Solenoid valves; low voltage, low pressure
Clamp or Knife Down	Clamp or knife stayed down	No main pressure; stuck solenoid valve
DATA IS OUT OF RANGE	The number is outside the limits of the machine	Informational error
Motor Starter Failure 1	Motor starter was OFF when it should have been ON	Defective motor contact switch
Motor Starter Failure 0	Motor starter was ON when it should have been OFF	Defective motor contact switch
Knife Latch Failure 1	Latch prox. ON when it should have been OFF	Loose solenoid wire; mechanical bind; knife up prox. Switch out of adjustment; defective prox. Switch
Knife Latch Failure 0	Latch prox. OFF when it should have been ON	
Knife Down Failure	Knife failed to come down within 4 seconds	Low main pressure; low voltage; knife down sequence valve
Knife Up Failure	Knife failed to return within 1.17 seconds	Mechanical bind; solenoid (cut) valve
Knife at Both Limits	Knife up and down prox. Switches are on at the same time	Prox. Switches; broken knife bar components

Message	Description	Test
Lubricate Machine	Lubricate machine alarm	Have machine lubricated
Memory Failed	A memory error occurred during test	
Encoder wires 9 & 10 are reversed	Should only occur during initial assembly otherwise is an encoder error	Replace encoder
Memory Locked	Tried to change a locked channel	
Next Channel Locked	Tried to link two channels together and the linked channel is locked	
Number Outside of Limit	Selected cut position beyond limits of machine	Operator error; false clamp limit
Positioning Error	Backgauge failed to move to programmed position within +/- .oo5	Mechanical bind; encoder failure; main pcboard; leadscrew thrust washers loose; gibs loose
Remove Obstruction	Obstruction is blocking electric eyes, or electric eyes are not functioning properly	Remove obstruction, check alignment of eyes, check all electric eye connections
Result is Negative	When a math operation yields a negative number	
Send Cancelled	Console key was pressed while backgauge was moving	Operator error; key board failure
Sequence Error	Timing error in either up or down cycled	Low main pressure; any sequence valve
Sharpen Knife	Sharpen knife alarm	Have knife sharpened
Shorted Key Error	Console Key shorted	Operator error; defective keyboard

** If error codes cannot be reset by depressing the clear key, the power will have to be turned OFF and ON**

3.3 Sensor Data Abbreviations

Abbreviations	Standby	Description	Location
LEFTCUT	0	Left Cut Button	Lower front of table
RGHTCUT	0	Right Cut Button	Lower front of table
KNFLAT	0	Knife Latch Proximity Switch	Left side of cutter opening
HYDLAT	1	Motor Starter Relay Status	Right side of power panel
KNFDWN	1	Knife Down Proximity Switch	Inside of cutter opening, right side
PRESET	0	Preset Sensor	Rear of cutter, under left side of table
CUTSOL	0	Cut Valve	Solenoid Valve on left side of manifold
UNLOAD	0	Unload Valve	Solenoid Valve* (not in use yet)
KNLATSOL	0	Knife Latch Solenoid	Inside of cutter opening, left side
CLAMPUP	1	Clamp up Proximity Switch	Inside rear of cutter opening, left side

HYDUP	1	Hyd. Clamp Up Proximity	At bottom of clamp cylinder
KNFUP	1	Knife Up Proximity Switch	Inside of cutter opening, left side
CUTBTN	0	Cut Button	On display console
EYES / GUARD	1	Electric Eyes OR Front Guard	In front of cutter opening.
HYDMOT	0	Hydraulic Motor Relay Output	Top right side of main pcb
N.C.	0	No Connection	
LTLINE	0	Line Light Output	Inside rear cutter opening, left side
CBTNLIT	0	Cut Button Light	In display console

3.4 Routine Maintenance

⚠ CAUTION DISCONNECT POWER before making any adjustments or lubricating. See page 5, SAFETY PRECAUTIONS, for Power Lockout Procedure.

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

3.4.1 Weekly

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

Hardware— Remove the lower front panel cover, rear panel cover, and top hood to check all nuts and bolts for tightness. Loose hardware is the cause of most component wear and in the electrical area could cause short circuits and/or shock.

Hydraulic Fluid— Low fluid level causes excessive heat and wear on the system. Check the fluid level as described in section 3.5 below.

Oil and Grease— See section 3.6

3.4.2 Monthly

Backgauge Squaring— See section 3.7.3

3.4.3 Yearly

Change Hydraulic Fluid— See section 3.5

3.5 Checking/Changing the Hydraulic Fluid

The hydraulic fluid level should be checked weekly. To check, remove the lower rear cover and unscrew the cap on top of the tank (Figure 2).

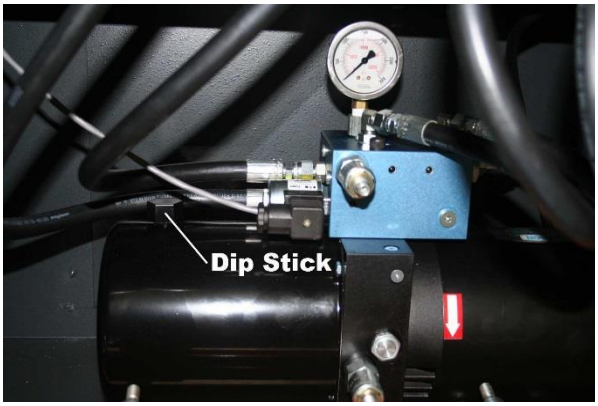


Figure 2

Fluid level should be at 1/8" from the end of the dip stick (check with dip stick cap screwed in). Add fluid if necessary but avoid overfilling as this could cause leakage when hot. Replace the rear panel when finished.

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

Empty the hydraulic tank and refill with 1 gallon of International Standards Organization Viscosity Grade 100 (ISO VG 100) rust, oxidation, and foam inhibiting hydraulic fluid (Challenge part no.: **S-1991**).

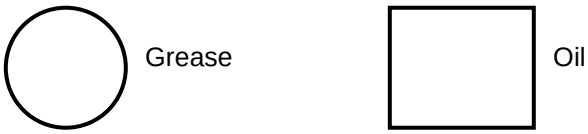
NOTE: NEVER use automatic transmission fluid or brake fluid as a substitute for the correct hydraulic fluid.

3.5.1 Recommended Hydraulic Oils

⚠ CAUTION Use an ISO VG 100 Hydraulic Fluid equivalent only. Oils other than the recommended type will cause seals and O-rings to deteriorate. Unsafe operating conditions will result.

3.6 Oil and Grease

Turn the power off and disconnect the power cord. Open the front guard (if equipped) and open the top hood for access. Parts requiring oiling are marked with red paint. See figures Figure 3 through Figure 10 starting on page 13 for oil and grease locations. Figure 3 through Figure 5 require the knife and clamp be in the up position. Figure 6 through Figure 10 require the knife and clamp be down. Wipe off any old or excess grease. Use any brand-name type of grease or light oil to lubricate. It may be necessary to use the supplied grease brush to access some locations. Note: the lead screw may be lubricated with grease or oil. Oil has a tendency to run off and must be lubricated more frequently; grease tends to collect paper dust and must be cleaned off periodically.



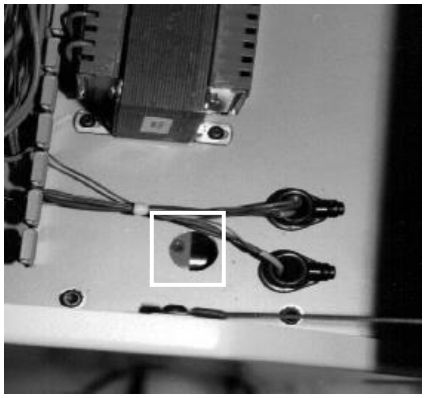


Figure 3– Knife Bar Link– L.H. Side, Upper

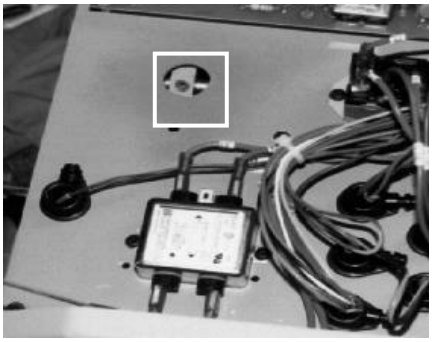


Figure 4– Knife Bar Link– R.H. Side, Upper

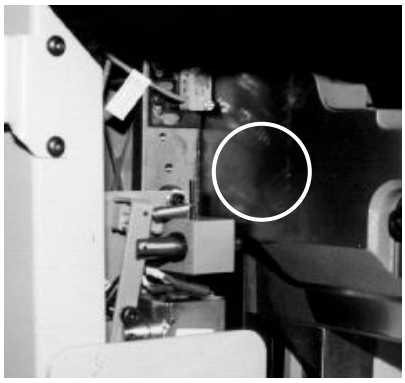


Figure 5– Knife Bar

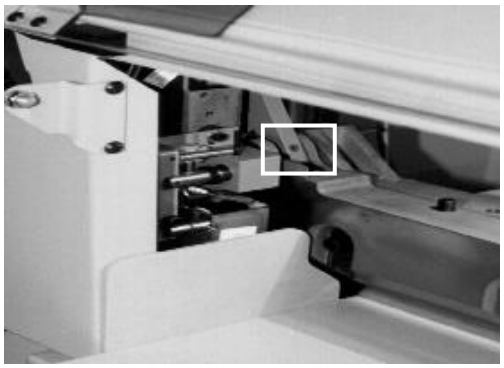


Figure 6– Knife Bar Link– L.H. Side, Lower

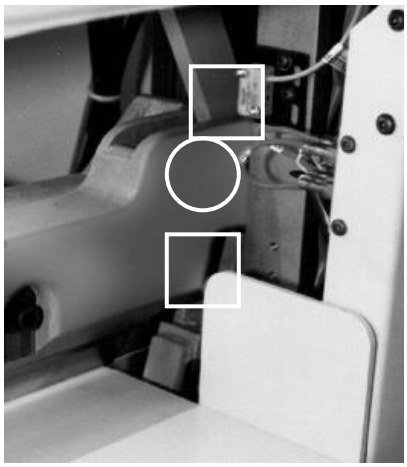


Figure 7– Knife Bar Link– R.S., Lower

Knife Bar
Knife Cylinder Bracket, Upper

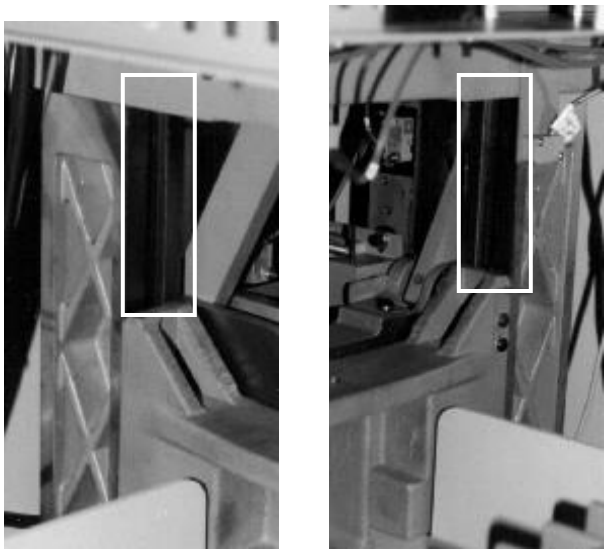


Figure 8 & Figure 9 –Clamp Guides

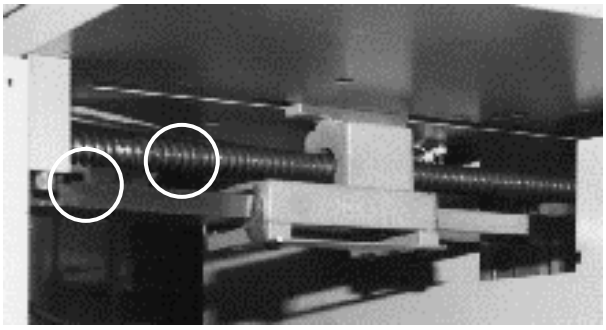


Figure 10 – Lead Screw and Backgauge Guide

3.7 Adjustments

⚠ CAUTION Several of the following tests require the machine to be operational for checking and adjusting. Be very careful that tools and other people are clear of moving parts and that the cutter is not accidentally operated while adjustments are being made. Whenever working on the machine, disconnect the power and lock it out (see SAFETY PRECAUTIONS, page 5) unless the directions specifically require the machine to be powered.

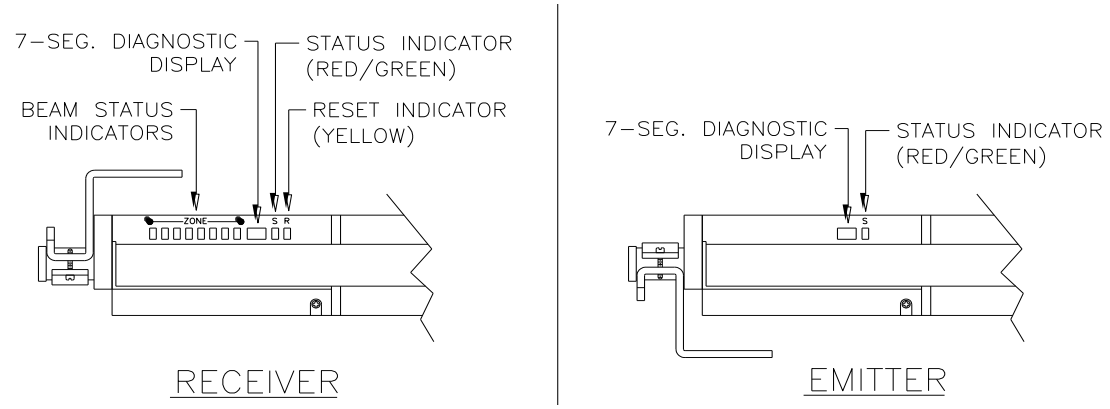
3.7.1 Electric Eye Alignment

If your machine is equipped with electric eyes, the alignment can be checked as follows:

Switch on power and make sure there are no obstructions between the electric eyes.

- On the Receiver - If the “beam status” and the “Status Indicator” are all green, the Eyes are aligned and working properly. If any of these lights are red then the Eyes are blocked or mis-aligned.
- On the Emitter - If the “Status Indicator” is green the Emitter unit is working properly. If the “Status Indicator” light is red then the Emitter unit is faulty and must be replaced.

If alignment is necessary, loosen the screws that attach the electric eye brackets to the table extensions. Adjust until the “Beam Status” and the Status Indicator” are green then tighten the screws.



3.7.2 Backgauge Gib Adjustments

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

To Adjust:

1. Send the backgauge near the rear of the table.
2. Switch off power and disconnect the power cord.
3. Remove the lead screw cover under the table.
4. Loosen the two side gib screws and the bottom nylon guide screws (Figure 11).

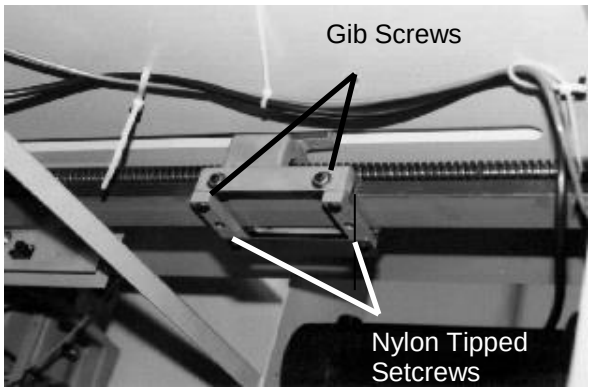


Figure 11

5. Tighten the bottom, nylon guide screws until they just touch the guide. Reapply medium strength thread locker if necessary. Do not over-tighten, or they could cause the backgauge to bind.
6. Similarly, turn the side gib screws in until they just touch the guide. Lock in position with the jam nuts.
7. Run the backgauge back and forth the length of the table using the backgauge glide control. Check for any binding. Readjust if necessary.

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

3.7.3 Squaring the Backgauge

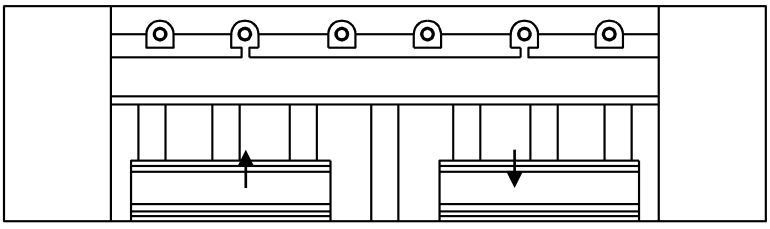


Figure 12

To test if the backgauge is square, place a small lift of paper against the left side of the backgauge (but not against the side guide) and make a cut. Now, leave the backgauge in the same position, flip the lift over and push it against the right side of the backgauge (but not against the side guide). Make another cut to see if any of the paper will trim off. Run two checks, one starting on the left and moving to the right; the other, moving from the right to the left. If paper is trimmed in either sequence, the backgauge is out of square.

1. Make sure the backgauge gibs are set properly (see section 3.7.2).

   NOTE: Gib adjustments are not necessary on initial machine set-up as gibs have been adjusted at the factory.

2. Remove the rear table cover.

3. Loosen the jam nuts on the backgauge adjusting screws (Figure 13).

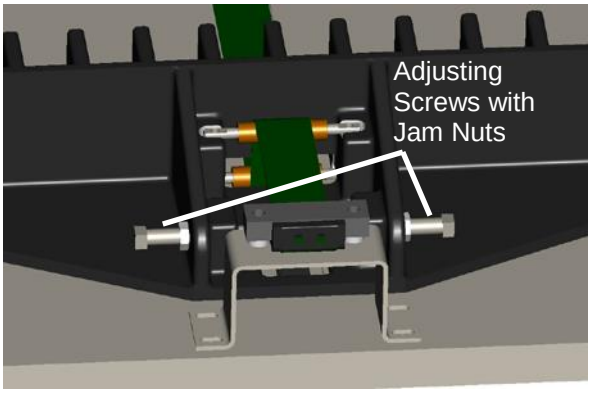


Figure 13

4. Back off the adjusting screw on the side that the trim occurred and tighten the other.

5. With the squaring screws tight, make another test. Continue to adjust and test until no trim occurs when testing either sequence.

6. Reinstall the rear table cover.

Note: Once the backgauge is square, restore power to the machine and check the backgauge accuracy (see the Titan 200 Operator manual) to make sure it is accurate.

3.7.4 Proximity Switches

Proximity switches are used to inform the computer of the up and down positions of the knife and clamp. They do not determine the stopping positions of the knife and clamp, and therefore rarely need to be adjusted. However, if a proximity switch is not sensing the knife or clamp position correctly, it may need adjustment.

To check if the four proximity switches are sensing correctly, go to Maintenance Mode and select Diagnostic. Then select Sensor Data, and a list of abbreviations for several inputs and outputs will be listed, along with their status (0 for open, 1 for closed). The four proximity switches should have the following status during the various knife and clamp positions:

	Knife Up Clamp Up	Knife Up Clamp Down (Manually)	Knife Up Clamp Down (Hydraulically)	Knife *Moving* Down Clamp Down	Knife Down Clamp Down
Knfdwn	1	1	1	1	0
Clampup	1	0	0	0	0
Knfup	1	1	1	0	0
Hydup	1	1	0	0	0

If any of the four proximity switches has a status of 0 when it should be 1, adjust the switch as described below:

3.7.4.1 Knife Down Proximity Switch (Knfdwn)

Make sure the clamp and knife are in the up position. Turn the power switch off and disconnect the power cord. Remove the top front cover.

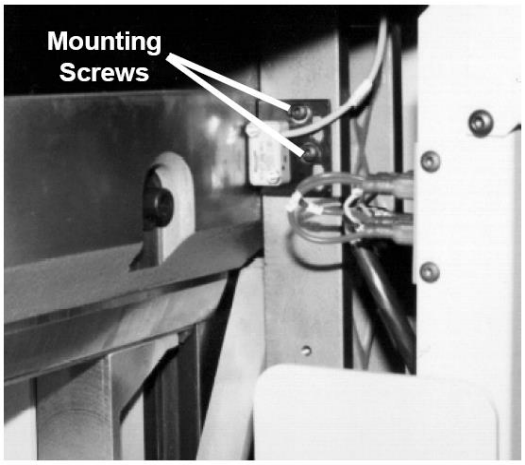


Figure 14

Adjust the knife down proximity switch (Figure 14) by loosening the two mounting screws and sliding the switch closer to the knife bar. The gap between the proximity switch and the knife bar should be 1/32” to 1/16” (0.5 to 1.5 mm). No vertical adjustment is necessary.

3.7.4.2 Clamp Up Proximity Switch (Clampup)

Make sure the clamp and knife are in the up position. Turn the power switch off and disconnect the power cord. Remove the top front cover and the upper rear cover.

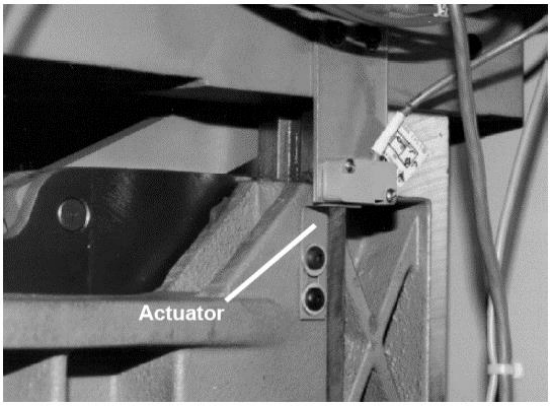


Figure 15

Adjust the clamp up proximity switch by loosening the two actuator mounting screws (Figure 15) and sliding the actuator up or down. The gap between the actuator and the proximity switch should be 1/32” to 1/16” (0.5 to 1.5 mm).

3.7.4.3 Knife Up Proximity Switch (Knfup)

Make sure the clamp and knife are in the up position. Turn the power switch off and disconnect the power cord. Remove the top front cover.

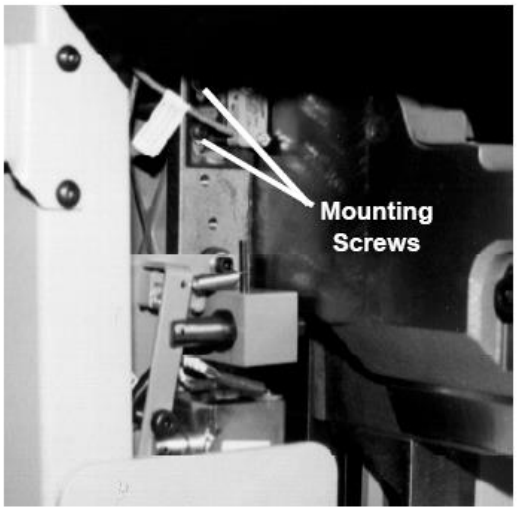


Figure 16

Adjust the knife up proximity switch (Figure 16) by loosening the two mounting screws and sliding the actuator up or down. The switch should be adjusted such that it senses the knife bar at the very top of its stroke only. The gap between the switch and the knife bar should be 1/32” to 1/16” (0.5 to 1.5 mm).

3.7.4.4 Hydraulic Clamp Up Proximity Switch (Hydup)

Make sure the clamp and knife are in the up position. Turn the power switch off and disconnect the power cord. Remove the lower front panel.

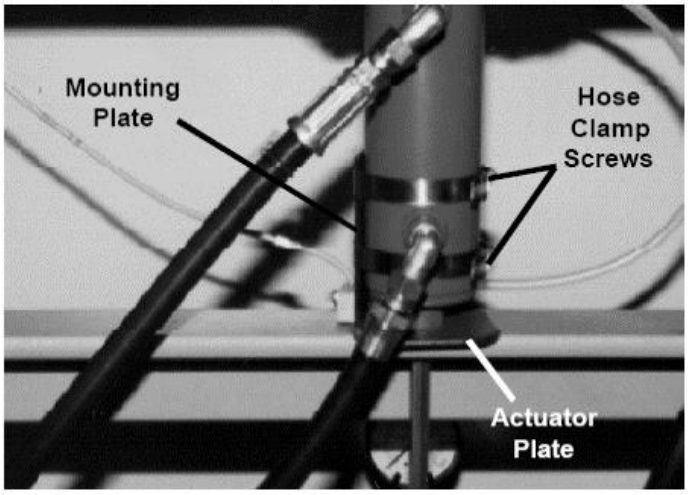


Figure 17

Adjust the hydraulic clamp up proximity switch (Figure 17) by loosening the two hose clamp screws and sliding the switch plate up or down. The gap between the switch and the actuator plate should be 1/32” to 1/16” (0.5 to 1.5 mm).

3.7.5 Hydraulic Adjustments

Pressure Settings:

1. Main System Relief Pressure — 1,400 psi.
2. Knife Down Sequence Pressure — 900 psi.
3. Clamp/Knife up Sequence Pressure — 600 psi.
4. Clamp Pressure Reducer — 400-800 psi.

Notes:

- To access hydraulic gauges and valves, remove the lower front cover.
- To adjust valves, loosen hex jam nut, then make adjustments by turning the adjusting screw with a hex wrench.
- On all valves, turning in (clockwise) increases pressure; out (counter-clockwise) decreases pressure.

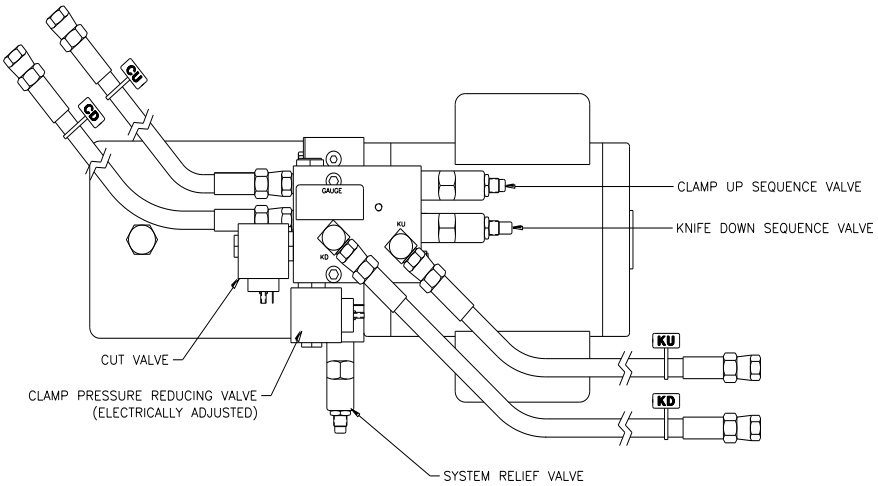


Figure 18

1. TURN CLAMP PRESSURE REDUCER VALVE ALL THE WAY IN (Or, if you have the optional electronic clamp pressure control valve, enter Maintenance Mode and chose Knife Adjust, Knife Down). This will close the clamp pressure reducer valve which will allow you to read the main system and knife down pressures in steps 2 and 3 below.

2. MAIN SYSTEM RELIEF PRESSURE: Use the Knife Down command in Maintenance Mode to send the knife and clamp down. Read the pressure on the gauge when the knife is bottomed on the table. Adjust the main system relief valve (Figure 18) to obtain a reading of 1,400 psi. It may be necessary to send the knife down several times.

3. KNIFE DOWN SEQUENCE PRESSURE: Begin a cut cycle and read the knife sequence pressure as the knife is traveling down. The pressure should read 900 psi. If necessary, adjust the knife sequence valve (Figure 18) to obtain the proper reading.

4. CLAMP UP SEQUENCE PRESSURE: Activate a cut cycle and visually inspect the motion of the knife and clamp. The clamp should not lift off the table until the knife is all the way up. If it does, increase the sequence pressure by adjusting the clamp up sequence valve (Figure 18).

5. CLAMP PRESSURE: Once the above adjustments have been made, be sure to adjust the clamp pressure back to 800 psi, or to any desired setting between 400 and 800 psi. Adjust the clamp pressure as follows, depending on which clamp pressure control your machine has:

   a) MANUALLY-ADJUSTED CLAMP PRESSURE CONTROL – (S/N 133838 and Below): Start a cut cycle and read the pressure on the gauge after the clamp has contacted the table. Adjust the clamp pressure reducer (Figure 18) to the desired setting between 400 and 800 psi.

   b) ELECTRONIC CLAMP PRESSURE CONTROL: - (S/N 133839 and Above) The clamp pressure is adjusted remotely from the console with the up and down arrow keys. It is shown in the upper left corner of the display, on a scale of 0 to 15, with 0 being the lightest pressure and 15 the highest.

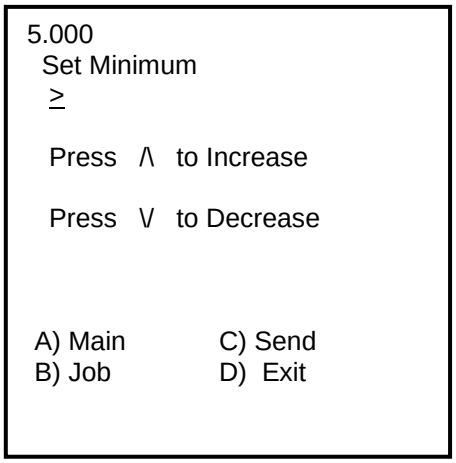
      NOTE: To turn the electronic clamp control option on or off, enter the Maintenance Mode and choose Diagnostic. Then choose Electric Clamp and select “ON” or “OFF”.

      To adjust the actual clamp pressure maximum and minimum, first make sure the Electric Clamp option is set to “ON” (see above). Enter the Maintenance Mode and choose Diagnostic. Then choose Clamp Adjust, and the following screen should be displayed:

```
5.000
 Set Maximum
 >

 Press  /\  to Increase

 Press  \/  to Decrease


A) Main          C) Send
B) Job           D) Exit
```

      Now perform a cut cycle. After the clamp has contacted the table and while the knife bar is coming down, read the pressure on the clamp pressure gauge (Figure 18). It should read 800 psi. If it does not, correct by using the up and down arrow keys. When finished, press soft-key “D” to exit and go to the minimum pressure set up screen as shown next:

< graphic next page >



Perform a cut cycle. After the clamp has contacted the table and while the knife is coming down, read the pressure on the clamp pressure gauge (Figure 18). It should read 400 psi. If it does not, correct by using the up and down arrow keys. When finished, press soft-key “C” to return to Send Mode, or soft-key “D” to return to Diagnostics.

3.8 Cleaning

Before cleaning inside machine, turn off and lockout power, page 5.

Hydraulics

1. The vent fan should be wiped off weekly to maintain maximum cooling of the hydraulic system.

2. The hydraulic manifold, fittings, and hoses should be wiped off weekly to maintain maximum cooling. Remove then replace panels as necessary.

Table

1. The front table should be wiped down periodically. Use a non-abrasive cleaner along with a protective wax.

2. The rear table cover and front guard (if equipped) may be cleaned with glass cleaner or a mild water based detergent. Some petroleum-based solvents may damage the plexiglass.

Console

1. 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 Exterior

1. The machine’s exterior should be cleaned with a non-abrasive water based detergent applied to a damp cloth.

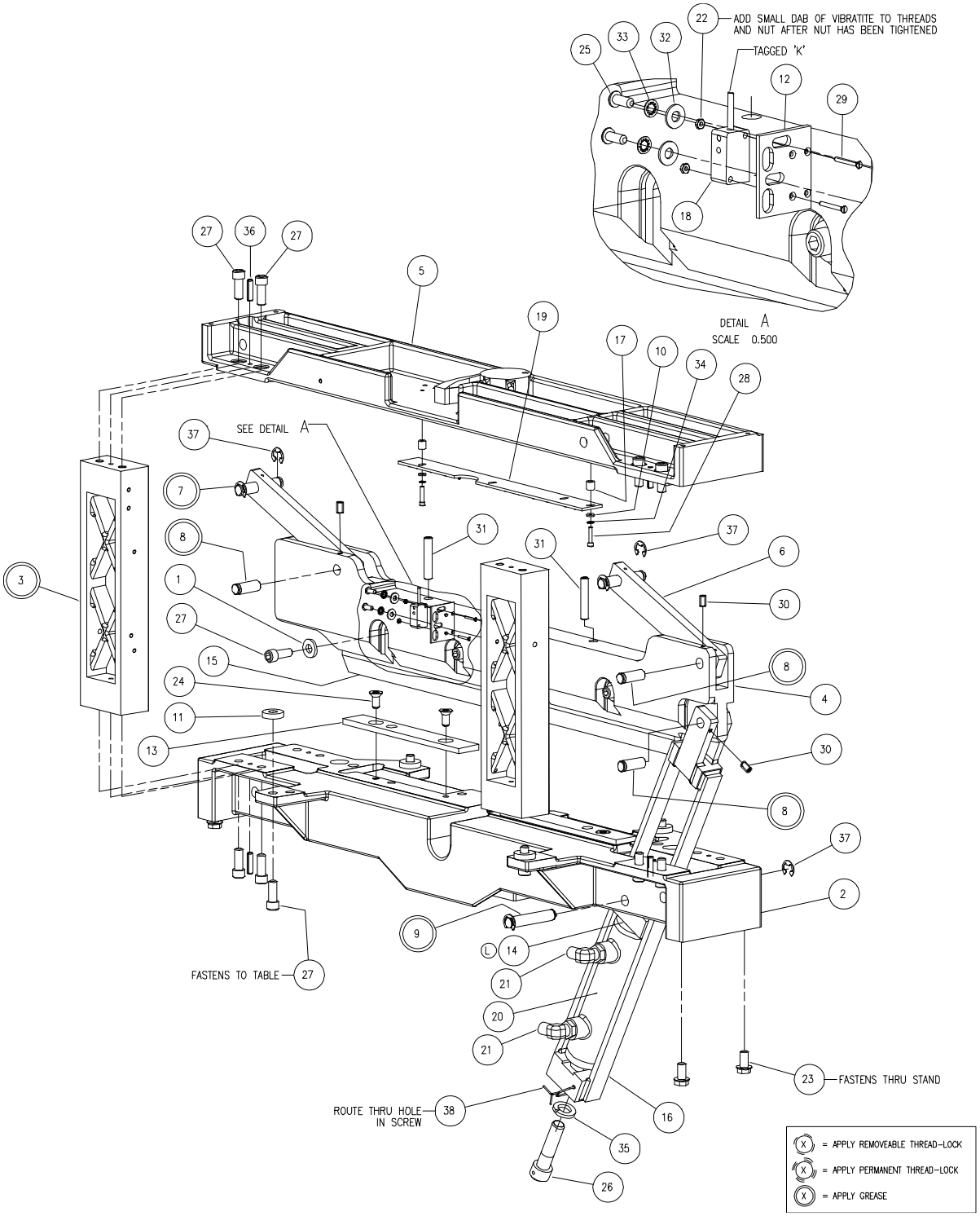
2. Always be careful when cleaning around safety warning labels. Use limited amounts of cleaners in those areas.

NOTES

4.0 Schematics & Parts Lists

4.1 Main Assembly– Knife

71000 Sht. 1



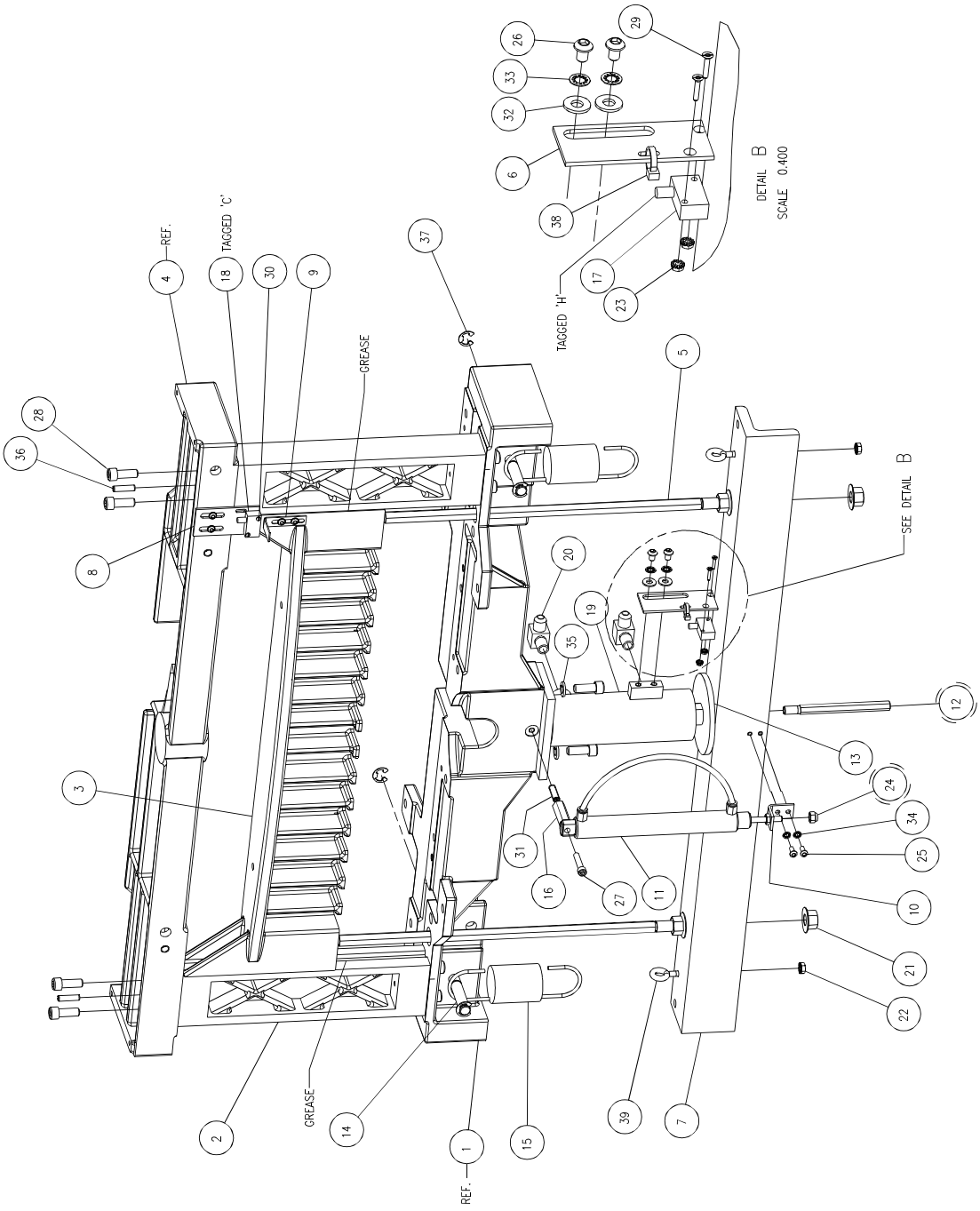
Main Assembly- Knife

71000 Sht. 1

NO.	PART NO.	DESCRIPTION	QTY
1	8815	WASHER - 3/8 HEAVY	4
2	10001-1	BASE	1
3	10002-2	FRONT GUIDE	2
4	10003	KNIFE BAR	1
5	10007-2	ARCH	1
6	10008	LINK- KNIFE BAR	2
7	10009	PIN- LINK	2
8	10010	PIN- KNIFE BAR	3
9	10064	PIN -- STRAIGHT ROD END	1
10	11288-7	WASHER/SPACER	2
11	20075-9	SHIM	4
12	41008	BRACKET- PROX, KNIFE DOWN	1
13	43056	SPACER- TABLE	2
14	71008	CYL. SPACER BLOCK	1
15	A-10034	KNIFE	1
16	AA-10018-1	CYLINDER BRACKET WELDMENT	1
17	E-1152-73	STANDOFF	2
18	EE-2770-4	PROX. ASM.- KNIFE UP LIMIT	REF
19	EE-3081-2	BOARD	1
20	H-210-3	KNIFE CYL, NPT PORTS (S/N 14xxxxx & BELOW)	1
	H-210-4	KNIFE CYL, O-RING PORTS (S/N 14xxxxx & ABOVE)	
21	H-237-4	ELBOW- NPT TO TUBE (S/N 14xxxxx & BELOW)	2
	H-230-3	ELBOW- ORING TO TUBE (S/N 14xxxxx & ABOVE)	
22	H-6417-#2	NUT - #2-56 HEX	2
23	H-6894-606	SCREW - 3/8-16 X 3/4 WHIZ LOCK	4
24	H-6909-506	SCREW - 5/16-18 X 3/4" FLAT HEAD CAP	4
25	H-6910-102404	SCREW - #10-24 X 1/2 BUTTON HEAD CAP	2
26	H-6918-1020HH	SCREW - 5/8-11 X 2-1/2 SOC HEAD - HOLE IN HEAD	1
27	H-6918-608	SCREW - 3/8-16 X 1 SOCKET HEAD CAP	16
28	H-6918-83206	SCREW - #8-32 X 3/4 SOCKET HEAD CAP	2
29	H-6922-25612	SCREW - #2-56 X 3/4 FLAT HEAD CAP	2
30	H-6938-102408	SCREW - #10-24 X 1/2 CUP SOC SET	3
31	H-6940-632	SCREW - 3/8-16 X 2 FLAT SOC SET	2
32	H-7321-#10	WASHER - #10 SAE PLAIN	2
33	H-7324-#10	WASHER - #10 INT TOOTH	2
34	H-7324-#8	WASHER - #8 INT TOOTH	2
35	H-7327-20	WASHER - 5/8 MEDIUM LOCK	1
36	H-21S-250-1000	ROLL PIN - 1/4 X 1	4
37	S-1193-50	E-RING - 1/2"	6
38	S-2024	SAFETY WIRE	1

4.2 Main Assembly- Clamp

71000 Sht. 2



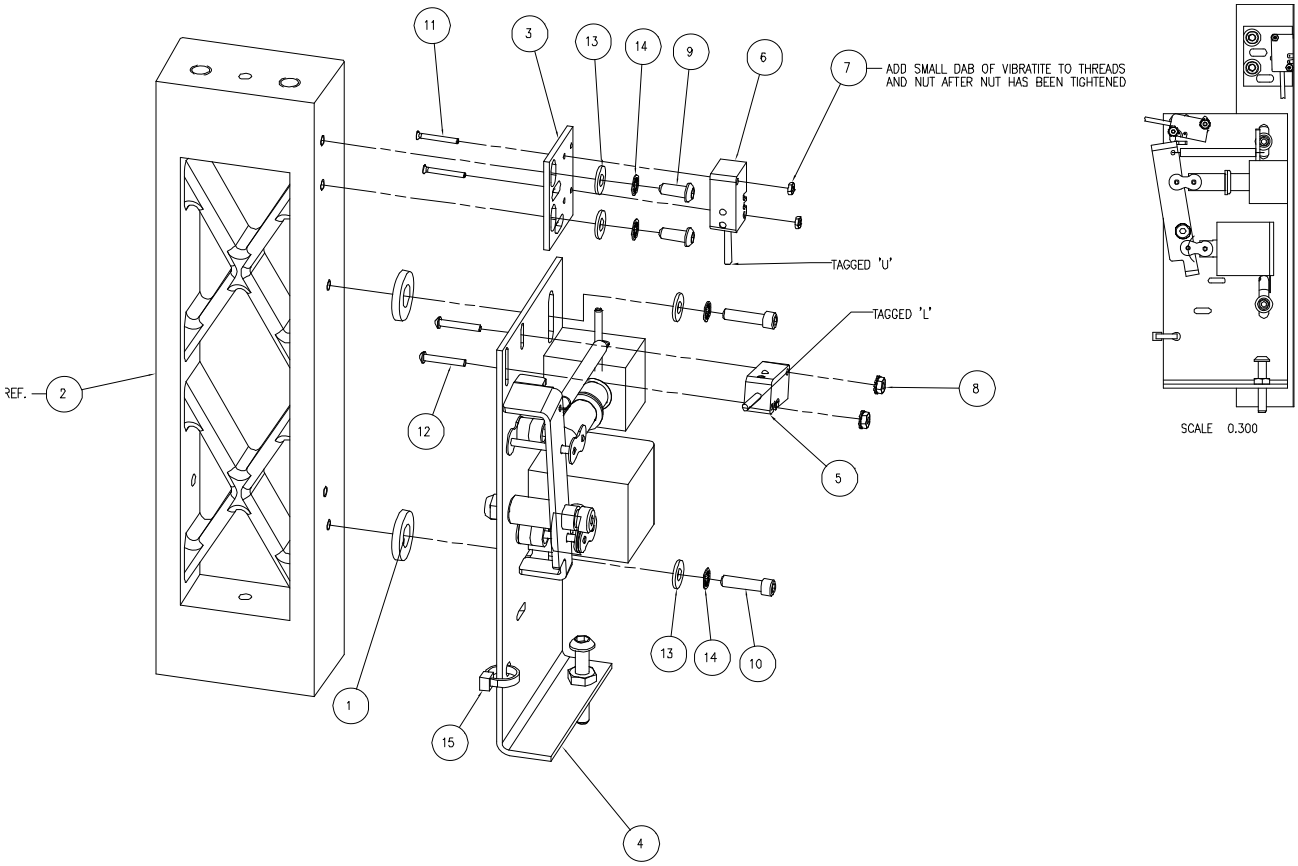
Main Assembly- Clamp

71000 Sht. 2

NO.	PART NO.	DESCRIPTION	QTY
1	10001-1	BASE	1
2	10002-3	REAR GUIDE	2
3	10004-3	CLAMP	1
4	10007-2	ARCH	1
5	10075-1	ROD- CLAMP	2
6	41033	BRACKET- CLAMP UP	1
7	43030	PULLDOWN- FOOT PEDAL	1
8	43033	BRACKET- CLAMP UP PROX.	1
9	43034	ACTUATOR- CLAMP UP	1
10	43061	BRACKET- DAMPER	1
11	43073	DAMPER ASSEMBLY	1
12	43074	ROD - CLAMP CYLINDER	1
13	43076	ACTUATOR - HYDRAULIC UP PROX.	1
14	47086	PIN- BELL CRANK	2
15	47136-3	EXTENSION SPRING	2
16	E-1152-68	STANDOFF	1
17	EE-2770-1	PROX. ASM.- HYDRAULIC UP	1
18	EE-2770-2	PROX. ASM.- CLAMP UP LIMIT	1
19	H-211-1	CLAMP CYL, NPT PORTS (S/N 14xxxxx & BELOW)	1
	H-211-3	CLAMP CYL, O-RING PORTS (S/N 14xxxxx & ABOVE)	
20	H-237-4	ELBOW- NPT TO TUBE (S/N 14xxxxx & BELOW)	2
	H-230-3	ELBOW- ORING TO TUBE (S/N 14xxxxx & ABOVE)	
21	H-6414-8	NUT - 1/2-13 WHIZ LOCK	4
22	H-6423-4	NUT - 1/4-20 HEX KEP	2
23	H-6423-N4	NUT - #4-40 HEX KEP	2
24	H-6443-4	NUT - 1/4-20 UNF FLEX LOCK	1
25	H-6910-102404	SCREW - #10-24 X 1/2 BUTTON HEAD CAP	6
26	H-6910-403	SCREW - 1/4-20 X 3/8 BUTTON HEAD CAP	2
27	H-6918-410	SCREW - 1/4-20 X 1-1/4 SOCKET HEAD CAP	1
28	H-6918-608	SCREW - 3/8-16 X 1 SOCKET HEAD CAP	10
29	H-6922-44010	SCREW - #4-40 X 5/8 FLAT HEAD CAP	2
30	H-6923-44012	SCREW - #4-40 X 3/4 ROUND HD MACH	2
31	H-6938-416	SCREW - 1/4-20 X 1 CUP SOC SET	1
32	H-7321-4	WASHER - 1/4 SAE PLAIN	2
33	H-7324-8	WASHER - 1/4 INT TOOTH	2
34	H-7324-#10	WASHER - #10 INT TOOTH	6
35	H-7327-12	WASHER - 3/8 MEDIUM LOCK	2
36	H-21S-250-1000	ROLL PIN - 1/4 X 1	4
37	S-1193-50	E-RING - 1/2"	4
38	S-1694	TYRAP	1
39	S-1884	EYE BOLT W/ NUT	2

4.3 Main Assembly- Knife Latch

71000 Sht. 3

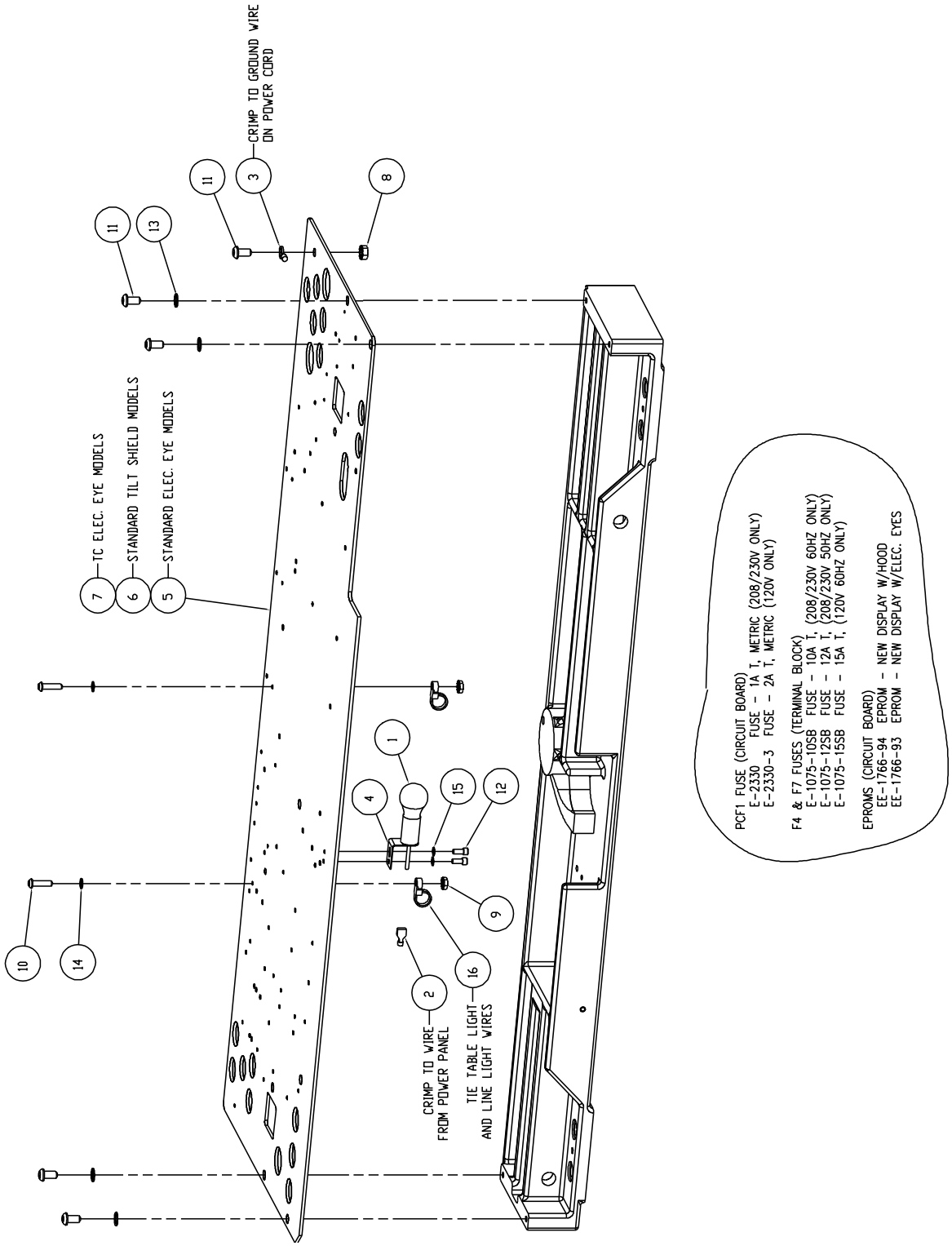


NO.	PART NO.	DESCRIPTION	QTY
1	8815	WASHER - KNIFE SCREWS	2
2	10002-2	FRONT GUIDE	1
3	41008	BRACKET- PROX, KNIFE DOWN	1
4	41120-4	ASSEMBLY- KNIFE LATCH	1
5	EE-2770	PROX. ASM.- KNIFE LATCH	1
6	EE-2770-4	PROX. ASM.- KNIFE UP LIMIT	1
7	H-6417-N2	NUT - #2-56 HEX	2
8	H-6423-N4	NUT - #4-40 HEX KEP	2
9	H-6910-102404	SCREW - #10-24 X 1/2 BUTTON HEAD CAP	2
10	H-6918-102406	SCREW - #10-24 X 3/4 SOCKET HEAD CAP	2
11	H-6922-25612	SCREW - #2-56 X 3/4 FLAT HEAD CAP	2
12	H-6923-44012	SCREW - #4-40 X 3/4 ROUND HD MACH	2
13	H-7321-N10	WASHER - #10 SAE PLAIN	4
14	H-7324-N10	WASHER - #10 INT TOOTH	4
15	S-1694	TYRAP	1

NOTES

4.4 Main Assembly- Power Panel

71000 Sht. 4



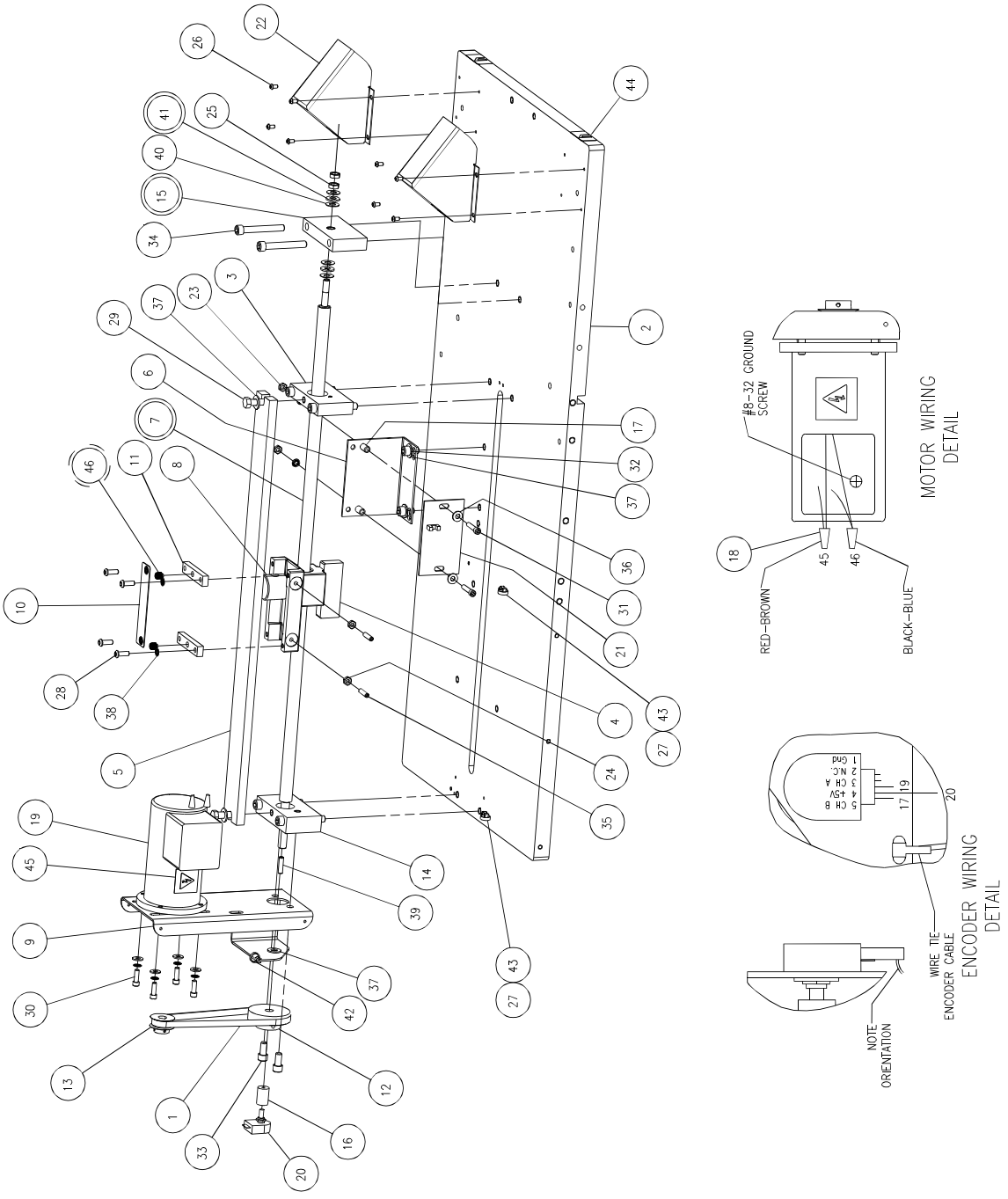
Main Assembly- Power Panel

71000 Sht 4

NO.	PART NO.	DESCRIPTION	QTY
1	10007-2	ARCH	1
2	E-967-1	LIGHT BULB	1
3	E-1214-47	CONNECTOR - WIRE	1
4	E-1214-63	CONNECTOR - #10-RING	1
5	E-1260-1	SOCKET - LINE LIGHT	1
6	EE-2765-7	POWER PANEL	1
7	H-6423-4	NUT - 1/4-20 HEX KEP	1
8	H-6423-#10	NUT - #10-24 HEX KEP	2
9	H-6910-102406	SCREW - #10-24 X 3/4 BUTTON HEAD CAP	2
10	H-6910-404	SCREW - 1/4-20 X 1/2 BUTTON HEAD CAP	5
11	H-6918-83203	SCREW - #8-32 X 3/8 SOCKET HEAD CAP	2
12	H-7324-8	WASHER - 1/4 INT TOOTH	4
13	H-7324-#10	WASHER - #10 INT TOOTH	2
14	H-7324-#8	WASHER - #8 INT TOOTH	2
15	S-1694-2	TYRAP - #10	2

4.5 Main Assembly- Lead Screw

71000 Sht. 5
Serial Numbers 123692 and Below



Main Assembly- Lead Screw

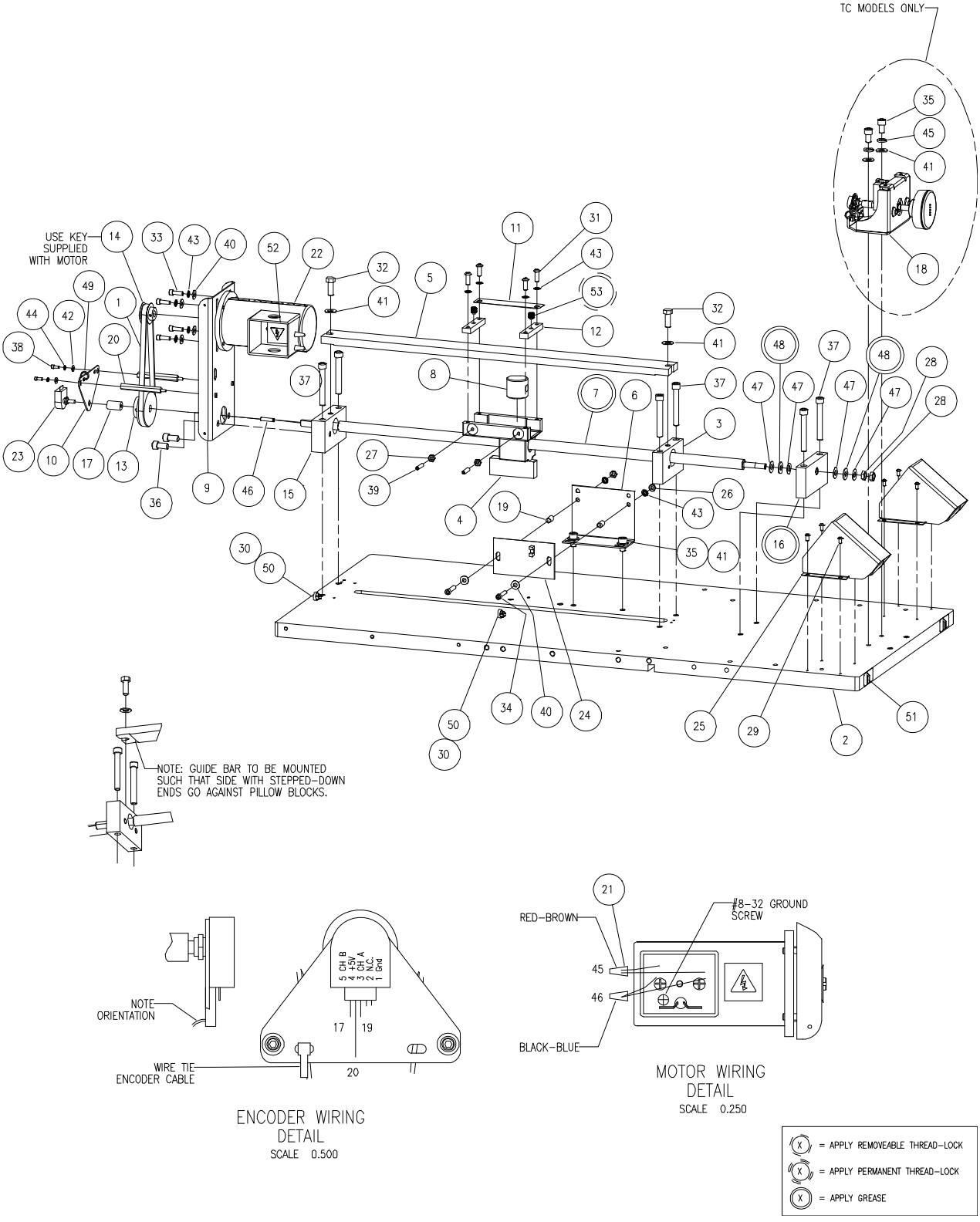
71000 Sht. 5

Serial Numbers 123692 and Below

NO.	PART NO.	DESCRIPTION	QTY
1	7954	TIMING BELT- 200XL037	1
2	10025-2	TABLE	1
3	10026-5	PILLOW BLOCK- MIDDLE	1
4	10027-1	BACKGAUGE CARRIER	1
5	10028-2	GUIDE- BACKGAUGE BRACKET	1
6	10040-1	BRACKET- PRESET	1
7	43004-1	LEADSCREW- TITAN 200	1
8	43005-1	NUT- LEADSCREW	1
9	43027-2	BRACKET- MOTOR MOUNT	1
10	43032	WAND- PRESET	1
11	43060	STRAP	2
12	43062	PULLEY- LEADSCREW	1
13	43063	PULLEY- TIMING	1
14	43068	REAR PILLOW BLOCK ASSEMBLY	1
15	43069	PILLOW BLOCK ASM- FRONT	1
16	47053	COUPLING	1
17	E-1152-12	STANDOFF	2
18	E-1237-6	WIRE NUT - RED	2
19	E-1600-166	MOTOR- 180VDC	1
20	E-2467	ENCODER	1
21	EE-1688-1	PCB ASM- PRESET	1
22	EE-2851-3	BUTTON ASM. - CUT	2
23	H-6424-4	NUT - 1/4-20 HEX JAM	2
24	H-6428-4	NUT - 1/4-28 HEX JAM	2
25	H-6428-6	NUT - 3/8-24 HEX JAM	2
26	H-6910-102403	SCREW - #10-24 X 3/8 BUTTON HEAD CAP	8
27	H-6910-102404	SCREW - #10-24 X 1/2 BUTTON HEAD CAP	2
28	H-6910-406	SCREW - 1/4-20 X 3/4 BUTTON HEAD CAP	4
29	H-6913-608	SCREW - 3/8-16 X 1 HEX HEAD CAP	2
30	H-6918-406	SCREW - 1/4-20 X 3/4 SOCKET HEAD CAP	4
31	H-6918-410	SCREW - 1/4-20 X 1-1/4 SOCKET HEAD CAP	2
32	H-6918-605	SCREW - 3/8-16 X 5/8 SOCKET HEAD CAP	2
33	H-6918-606	SCREW - 3/8-16 X 3/4 SOCKET HEAD CAP	2
34	H-6918-622	SCREW - 3/8-16 X 2-3/4 SOCKET HEAD CAP	6
35	H-6974-416	SCREW - 1/4-28 X 1 BRASS TIP SET	2
36	H-7321-4	WASHER - 1/4 SAE PLAIN	6
37	H-7321-6	WASHER - 3/8 SAE PLAIN	5
38	H-7324-8	WASHER - 1/4 INT TOOTH	10
39	H-21S-250-1000	ROLL PIN - 1/4 X 1	1
40	S-1295-3	THRUST WASHER	4
41	S-1300-2	THRUST BEARING	2
42	S-1694	TYRAP	1
43	S-1694-2	TYRAP - #10	2
44	S-1781-115	LABEL	2
45	S-1781-50	LABEL - ELECTRIC SHOCK	1
46	S-1944-1	SCREW- NYLON TIP	2

4.6 Main Assembly- Lead Screw

71000 Sht. 5
Serial Numbers 123693 and Above



Main Assembly- Lead Screw

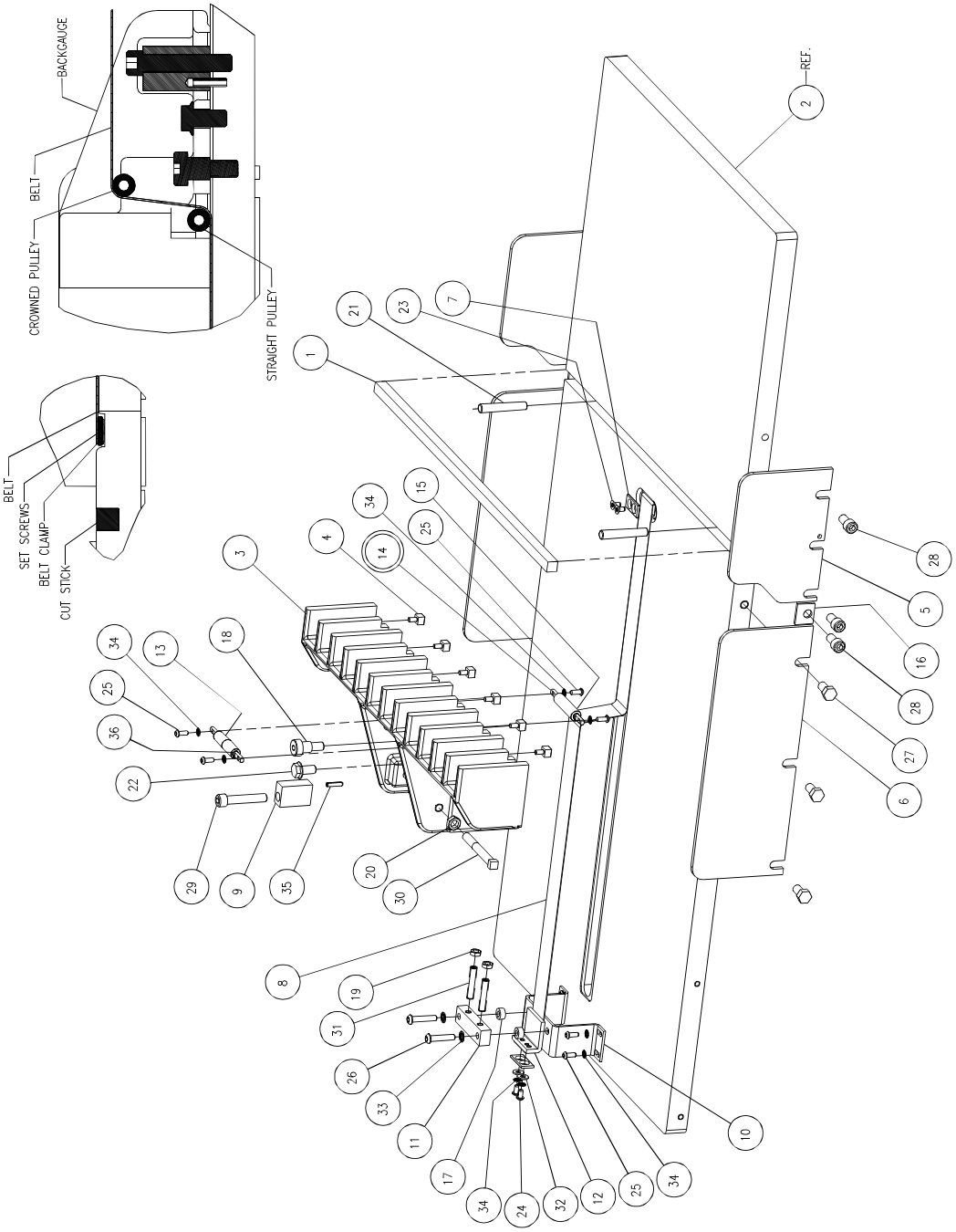
71000 Sht. 5

Serial Numbers 123693 and Above

NO.	PART NO.	DESCRIPTION	QTY
1	7954	TIMING BELT- 200XL037	1
2	10025-2	TABLE	1
3	10026-5	PILLOW BLOCK- MIDDLE	1
4	10027-1	BACKGAUGE CARRIER	1
5	10028-2	GUIDE- BACKGAUGE BRACKET	1
6	10040-1	BRACKET- PRESET	1
7	43004-1	LEADSCREW- TITAN 200	1
8	43005-1	NUT- LEADSCREW	1
9	43027-2	BRACKET- MOTOR MOUNT	1
10	43029	PLATE- ENCODER MOUNT	1
11	43032	WAND- PRESET	1
12	43060	STRAP	2
13	43062	PULLEY- LEADSCREW	1
14	43063	PULLEY- TIMING	1
15	43068	REAR PILLOW BLOCK ASSEMBLY	1
16	43069	PILLOW BLOCK ASM- FRONT	1
17	47053	COUPLING	1
18	49249	BACKGAUGE CONTROL ASSEMBLY	1
19	E-1152-12	STANDOFF	2
20	E-1152-60	STANDOFF	2
21	E-1237-6	WIRE NUT - BLUE	2
22	E-1600-166	MOTOR- 180VDC	1
23	E-2467	ENCODER	1
24	EE-1688-1	PCB ASM- PRESET	1
25	EE-2851-3	BUTTON ASM. - CUT	2
26	H-6424-4	NUT - 1/4-20 HEX JAM	2
27	H-6428-4	NUT - 1/4-28 HEX JAM	2
28	H-6428-6	NUT - 3/8-24 HEX JAM	2
29	H-6910-102403	SCREW - #10-24 X 3/8 BUTTON HEAD CAP	8
30	H-6910-102404	SCREW - #10-24 X 1/2 BUTTON HEAD CAP	2
31	H-6910-406	SCREW - 1/4-20 X 3/4 BUTTON HEAD CAP	4
32	H-6913-608	SCREW - 3/8-16 X 1 HEX HEAD CAP	2
33	H-6918-406	SCREW - 1/4-20 X 3/4 SOCKET HEAD CAP	4
34	H-6918-410	SCREW - 1/4-20 X 1-1/4 SOCKET HEAD CAP	2
35	H-6918-605	SCREW - 3/8-16 X 5/8 SOCKET HEAD CAP	4
36	H-6918-606	SCREW - 3/8-16 X 3/4 SOCKET HEAD CAP	2
37	H-6918-622	SCREW - 3/8-16 X 2-3/4 SOCKET HEAD CAP	6
38	H-6918-83203	SCREW - #8-32 X 3/8 SOCKET HEAD CAP	2
39	H-6974-416	SCREW - 1/4-28 X 1 BRASS TIP SET	2
40	H-7321-4	WASHER - 1/4 SAE PLAIN	6
41	H-7321-6	WASHER - 3/8 SAE PLAIN	6
42	H-7321-#8	WASHER - #8 SAE PLAIN	2
43	H-7324-8	WASHER - 1/4 INT TOOTH	10
44	H-7324-#8	WASHER - #8 INT TOOTH	2
45	H-7327-12	WASHER - 3/8 MEDIUM LOCK	2
46	H-21S-250-1000	ROLL PIN - 1/4 X 1	1
47	S-1295-3	THRUST WASHER	4
48	S-1300-2	THRUST BEARING	2
49	S-1694	TYRAP	1
50	S-1694-2	TYRAP - #10	2
51	S-1781-115	LABEL	2
52	S-1781-50	LABEL - ELECTRIC SHOCK	1
53	S-1944-1	SCREW- NYLON TIP	2

4.7 Main Assembly- Backgauge

71000 Sht. 6



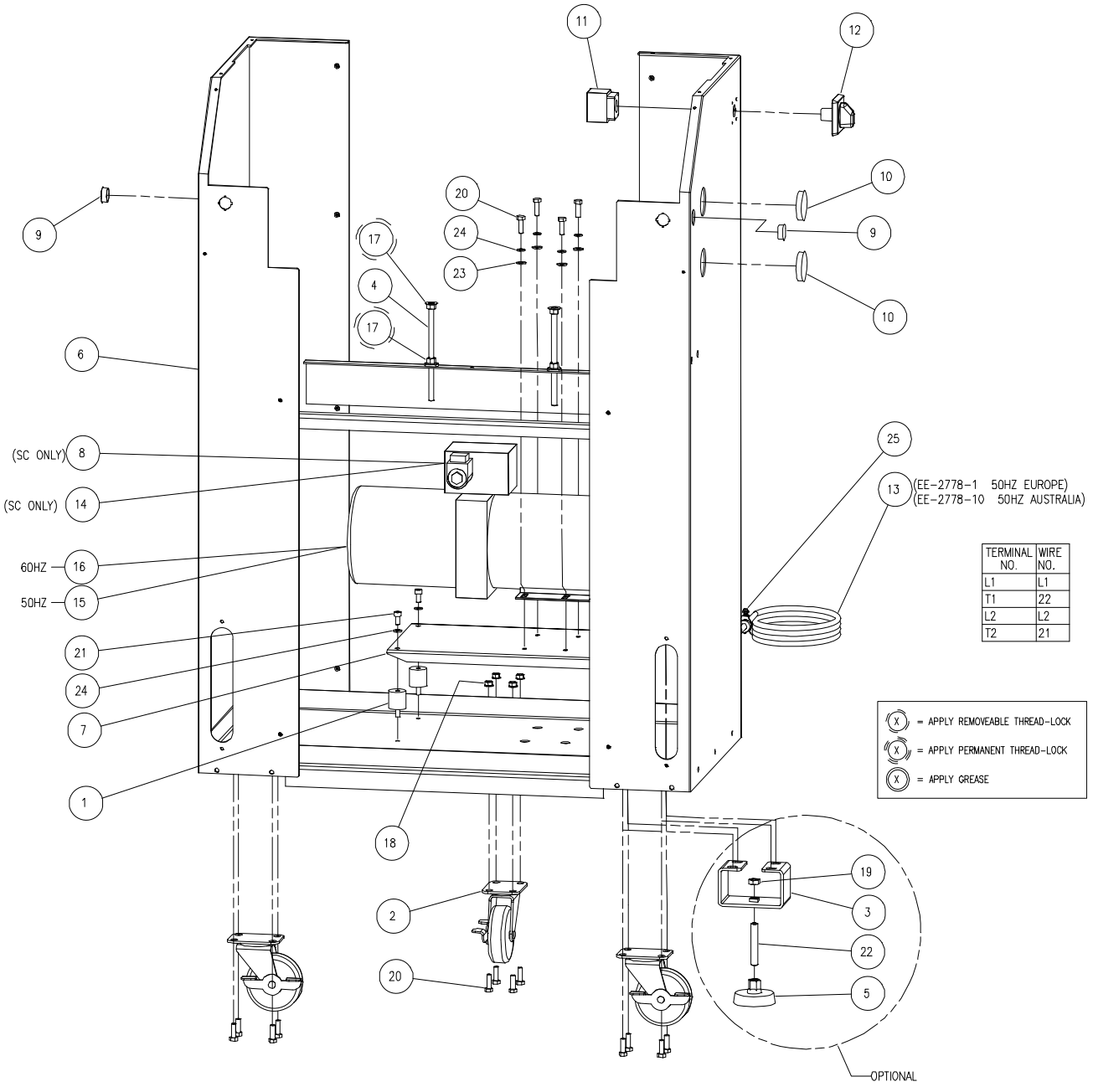
Main Assembly- Backgauge

71000 Sht. 6

NO.	PART NO.	DESCRIPTION	QTY
1	4166	PLASTIC CUTTING STICK	1
2	10025-2	TABLE	1
3	10031-1	BACKGAGE	1
4	10065	PIN- BACKGAGE	6
5	43058	SIDE GUIDE - FRONT	2
6	43059-1	SIDE GUIDE - REAR	2
7	43103	BELT CLAMP	2
8	43104	BELT - SLOT CLOSURE	1
9	43107	BACKGAUGE BLOCK	1
10	44155	BRACKET - BELT	1
11	44156	BELT ADJ. BLOCK	1
12	44157	BRACKET - BELT MOUNTING	1
13	47588	CROWNED PULLEY	1
14	47597	PIN- PULLEY	2
15	47601	STRAIGHT PULLEY	1
16	47630	CUT STICK STOP	2
17	E-1152-93	STANDOFF	2
18	H-5254-804	SCREW - 1/2 X 1/2 SHSS	1
19	H-6424-4	NUT - 1/4-20 HEX JAM	2
20	H-6424-6	NUT - 3/8-16 HEX JAM	2
21	H-6633-718	PIN- TAPER, #7 X 2-1/4	2
22	H-6894-606	SCREW - 3/8-16 X 3/4 WHIZ LOCK	1
23	H-6909-102403	SCREW - #10-24 X 3/8" FLAT HEAD CAP	2
24	H-6910-102403	SCREW - #10-24 X 3/8 BUTTON HEAD CAP	2
25	H-6910-102404	SCREW - #10-24 X 1/2 BUTTON HEAD CAP	8
26	H-6910-410	SCREW - 1/4-20 X 1-1/4 BUTTON HEAD CAP	2
27	H-6913-606	SCREW - 3/8-16 X 3/4 HEX HEAD CAP	6
28	H-6918-606	SCREW - 3/8-16 X 3/4 SOCKET HEAD CAP	6
29	H-6918-616	SCREW - 3/8-16 X 2 SOCKET HEAD CAP	1
30	H-6931-624	SCREW - 3/8-16 X 3 SQUARE HEAD SET	2
31	H-6938-424	SCREW - 1/4-20 X 1-1/2 CUP SOC SET	2
32	H-7321-#10	WASHER - #10 SAE PLAIN	2
33	H-7324-8	WASHER - 1/4 INT TOOTH	2
34	H-7324-#10	WASHER - #10 INT TOOTH	10
35	H-21S-187-0750	ROLL PIN - 3/16 X 3/4	1
36	S-1073-25	RETAINING RING	4

4.8 Main Assembly- Stand

71000 Sht. 7



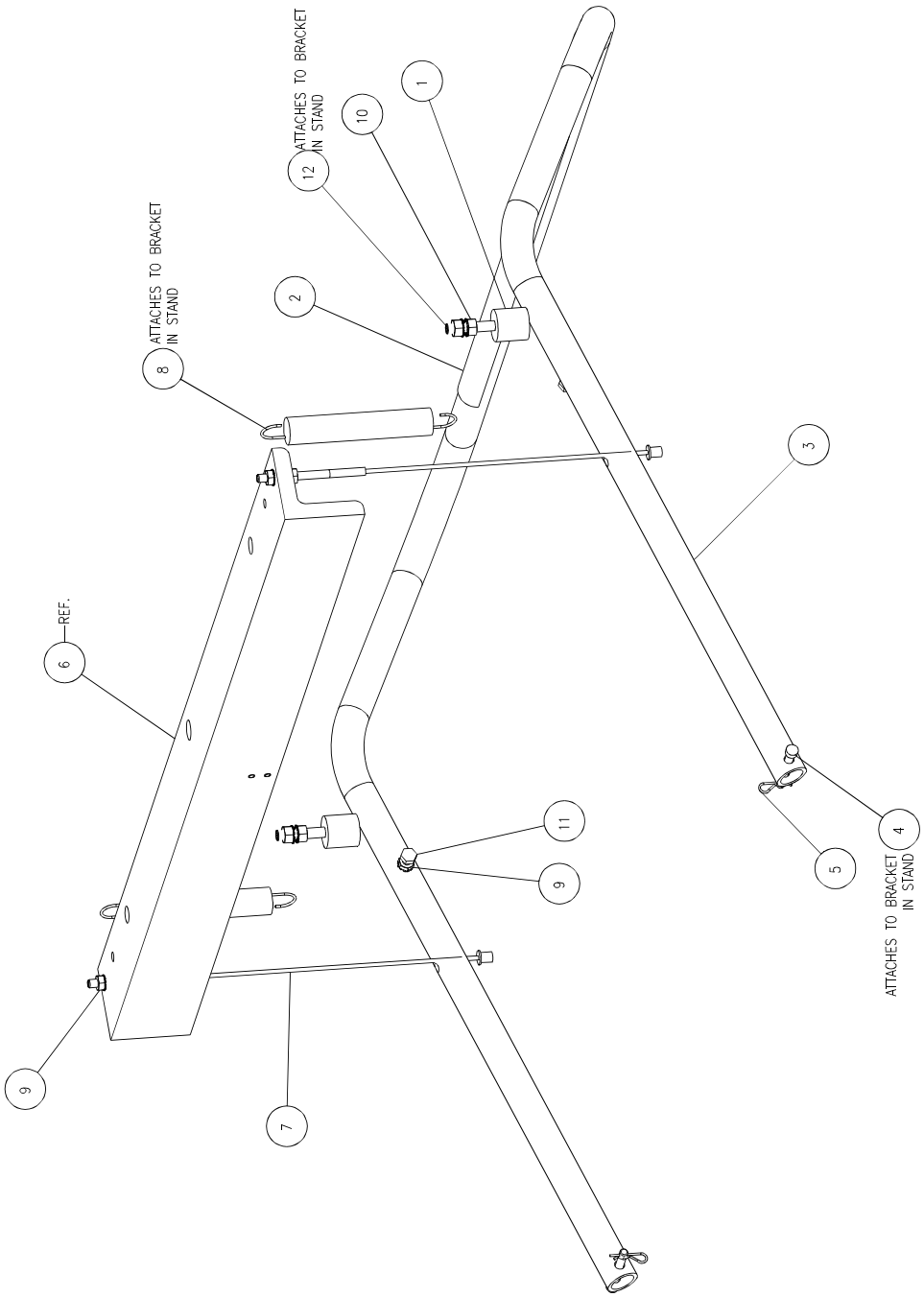
Main Assembly- Stand

71000 Sht. 7

NO.	PART NO.	DESCRIPTION OF ACCESSORIES	QTY
1	40016-8	MOUNT - VIBRATION	4
2	41014	SWIVEL CASTER WITH BRAKE	3
3	42057-1	FOOT BRACKET	OPT
4	44084	JACKSCREW - TABLE	2
5	51036	FOOT	OPT
6	70100	STAND WELDMENT - TITAN 200	1
7	71009	HYD. UNIT MOUNTING PLATE	1
8	E-1069-19	24V DC COIL	1
9	E-2196-13	HOLE PLUG	2
10	E-2196-21	HOLE PLUG	2
11	E-3082	SWITCH - MAIN DISCONNECT	1
12	E-3083	SWITCH FACE - MAIN DISCONNECT	1
13	EE-2778	POWER CORD - 230V 60HZ	1
14	H-203-33	PRESSURE REDUCING VALVE (ELECTRICAL)	1
15	H-477-10	HYDRAULIC POWER UNIT- 208/230V 50HZ	1
16	H-477-9	HYDRAULIC POWER UNIT- 208/230V 60HZ	1
17	H-6414-6	NUT - 3/8-16 WHIZ LOCK	4
18	H-6423-5	NUT - 5/16-18 HEX KEP	12
19	H-6424-8	NUT - 1/2-13 HEX JAM	OPT
20	H-6913-508	SCREW - 5/16-18 X 1 HEX HEAD CAP	16
21	H-6918-505	SCREW - 5/16-18 X 5/8 SOCKET HEAD CAP	4
22	H-6938-848	SCREW - 1/2-13 X 3 CUP SOC SET	OPT
23	H-7321-5	WASHER - 5/16 SAE PLAIN	4
24	H-7327-10	WASHER - 5/16 MEDIUM LOCK	8
25	S-1350-16	STRAIN RELIEF BUSHING	1
26	S-1694-1	TYRAP	2

4.9 Main Assembly- Foot Pedal

71000 Sht. 8



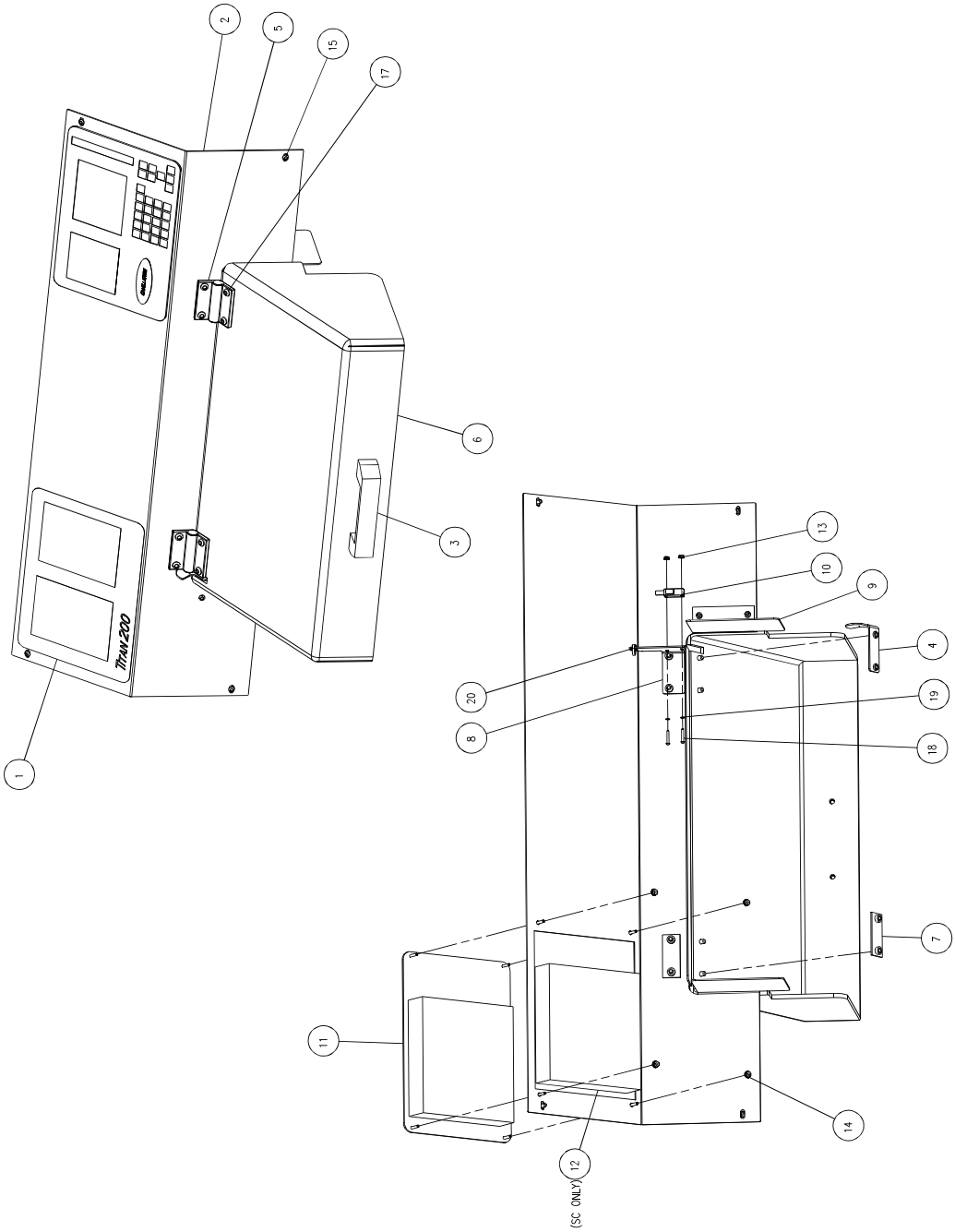
Main Assembly- Foot Pedal

71000 Sht. 8

NO.	PART NO.	DESCRIPTION	QTY
1	40016-3	MOUNT- VIBRATION	2
2	43021	TAPE, ANTI-SKID	1
3	43022	PEDAL	1
4	43023	CLEVIS PIN	2
5	43024	HAIRPIN COTTER	2
6	43030	PULLDOWN- FOOT PEDAL	1
7	43077	CABLE- FOOT PEDAL	2
8	47136-4	EXTENSION SPRING	2
9	H-6423-4	NUT - 1/4-20 HEX KEP	6
10	H-6423-5	NUT - 5/16-18 HEX KEP	4
11	H-6913-406	SCREW - 1/4-20 X 3/4 HEX HEAD CAP	2
12	H-6938-532	SCREW - 5/16-18 X 2 CUP SOC SET	2

4.10 Main Assembly- Tilt Shield

71000 Sht. 9



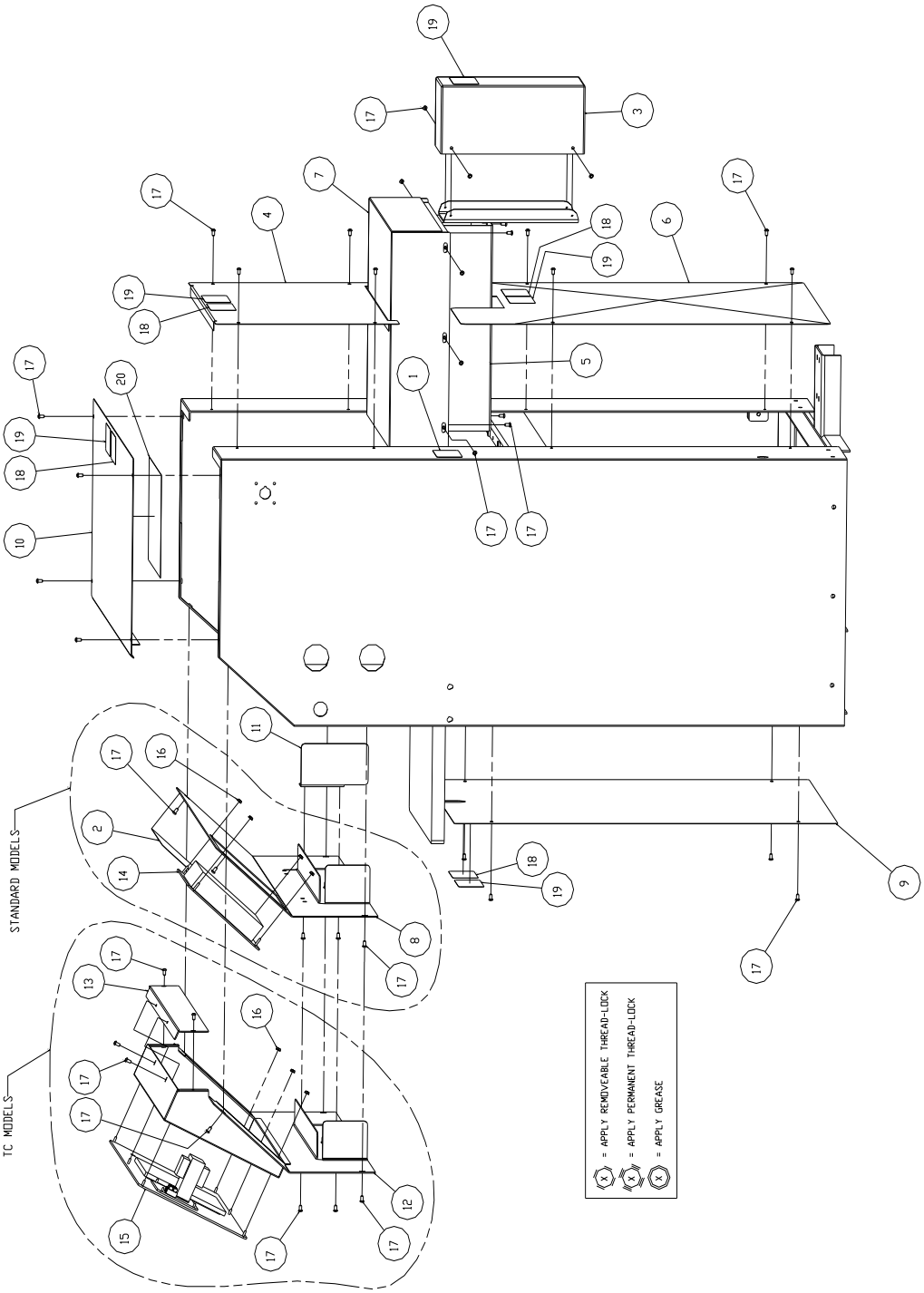
Main Assembly- Tilt Shield

71000 Sht. 9

NO.	PART NO.	DESCRIPTION	QTY
1	43003-1	LABEL- CONSOLE WARNING	1
2	43114	BEVELED COVER	1
3	56657	HANDLE W/ HDW	1
4	70016	SWITCH ACTUATOR	1
5	70018	POSITIONING HINGE MH14-122	2
6	70019	SHIELD	1
7	70020	HINGE BACKER	2
8	70021	INTERLOCK SWITCH BRACKET	1
9	70030	KNIFE LATCH GUARD	1
10	E-866-9	POSITIVE ACTION MICROSWITCH	1
11	EE-3035-2	PANEL - CONTROL CONSOLE	1
12	EE-3208-1	PANEL - CONTROL CONSOLE (SC ONLY)	1
13	H-6423-#4	NUT - #4-40 HEX KEP	2
14	H-6423-#6	NUT - #6-32 HEX KEP	4
15	H-6910-102403	SCREW - #10-24 X 3/8 BUTTON HEAD CAP	4
16	H-6910-102404	SCREW - #10-24 X 1/2 BUTTON HEAD CAP	2
17	H-6910-406	SCREW - 1/4-20 X 3/4 BUTTON HEAD CAP	8
18	H-6923-44012	SCREW - #4-40 X 3/4 ROUND HD MACH	2
19	H-7324-#4	WASHER - #4 INT TOOTH	2
20	S-1694	TYRAP	1

4.11 Main Assembly- Covers

71000 Sht. 11 rev.L



Main Assembly- Covers

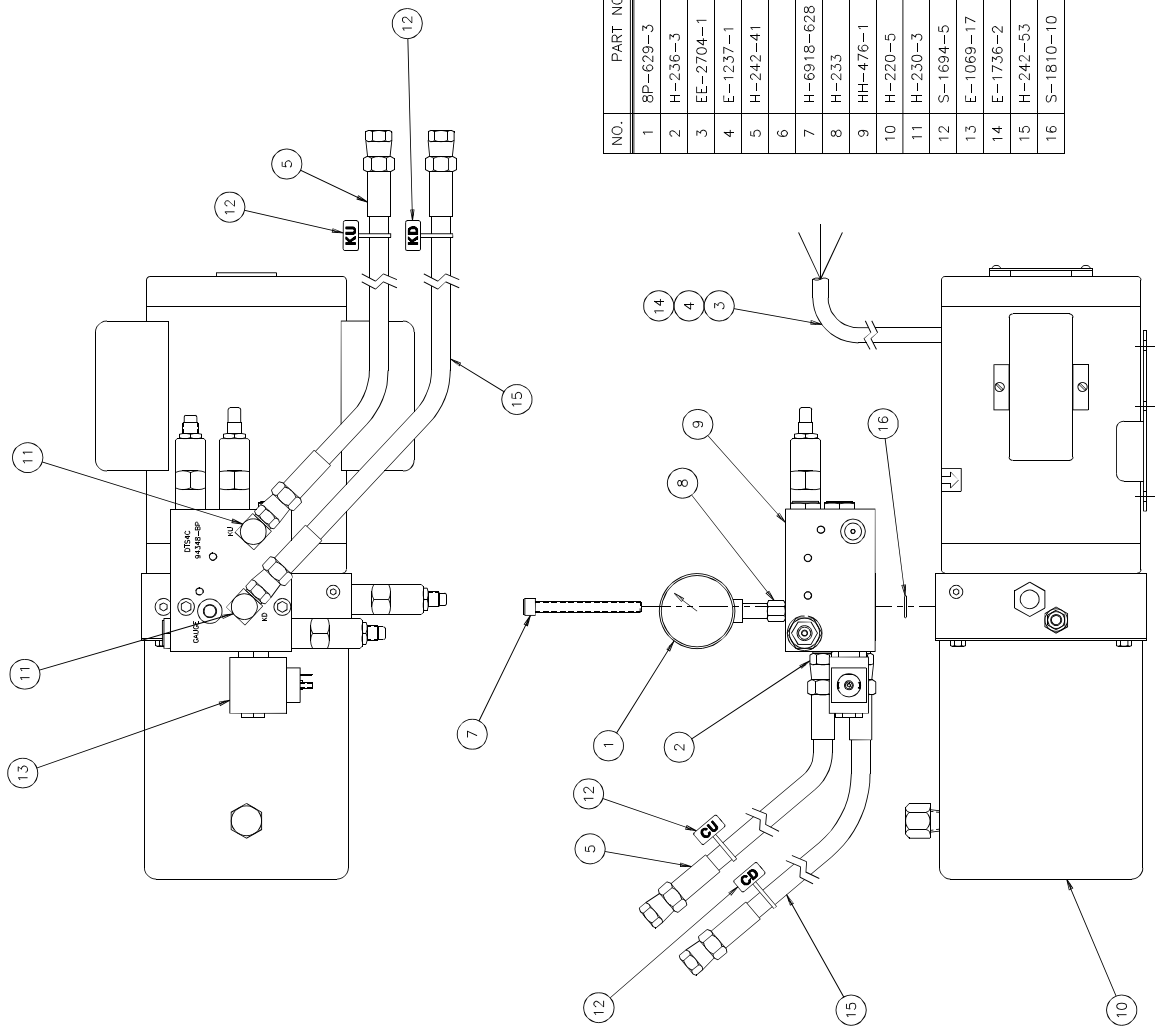
71000 Sht. 10

NO.	PART NO.	DESCRIPTION	QTY
1	41130	LABEL - SERIAL NUMBER	1
2	43003-1	LABEL- CONSOLE WARNING	1
3	43028-1	COVER - BACKGAUGE DRIVE	1
4	43041-2	COVER- REAR STAND (TOP)	1
5	43042	COVER- LEADSCREW	1
6	43044-1	COVER- REAR STAND	1
7	43113	BACKGAUGE COVER - TITAN 200	1
8	43114	BEVELED COVER	1
9	70022	LOWER FRONT COVER	1
10	70023-1	TOP COVER	1
11	70030	KNIFE LATCH GUARD	1
12	71005	WELDMENT - 200 TC CONSOLE HOOD	1
13	71006	COVER - TC CONSOLE BACK	1
14	EE-3035-2	PANEL - CONTROL CONSOLE	1
15	EE-3456-3	CONSOLE ASM - 200 TC	1
16	H-6423-N6	NUT - #6-32 HEX KEP	10
17	H-6910-102403	SCREW - #10-24 X 3/8 BUTTON HEAD CAP	46
18	S-1781-11	LABEL- SHOCK HAZARD	4
19	S-1781-16	LABEL- CRUSH HAZARD	5
20	S-1781-205	LABEL – INTERCONNECTION, FUSES	1
21	S-1781-237	LABEL – INTERCONNECTION, CB’S	1

4.12 Hydraulic Power Unit – 60 Hz

(MANUAL ADJUSTED VALVE)
H-477-1, Rev. B (SERIAL #133842 AND BELOW)

NO.	PART NO.	DESCRIPTION OF ACCESSORIES	QTY
1	8P-629-3	GAUGE	1
2	H-236-3	ADAPTER, 9/16-18 'O' RING TO 9/16-18 TUBE	2
3	EE-2704-1	CORD ASSEMBLY - HYD. MOTOR	1
4	E-1237-1	WIRE NUT	2
5	H-242-41	HYDRAULIC HOSE ASM., 25" LONG (KU & CU)	2
6			
7	H-6918-628	3/8-16 X 3-1/2 SOCKET HD CAP SCREW	2
8	H-233	ADAPTER	1
9	HH-476-1	MANIFOLD ASSEMBLY	1
10	H-220-5	HYDRAULIC POWER UNIT (60 HZ)	1
11	H-230-3	ELBOW - 9/16-18 "O" RING TO 9/16-18 TUBE	2
12	S-1694-5	TYRAP - IDENTIFICATION	4
13	E-1069-17	COIL - 24V	1
14	E-1736-2	QUENCH ARC	1
15	H-242-53	HYDRAULIC HOSE ASSEMBLY, 35" LONG (KD & CD)	2
16	S-1810-10	O-RING	2

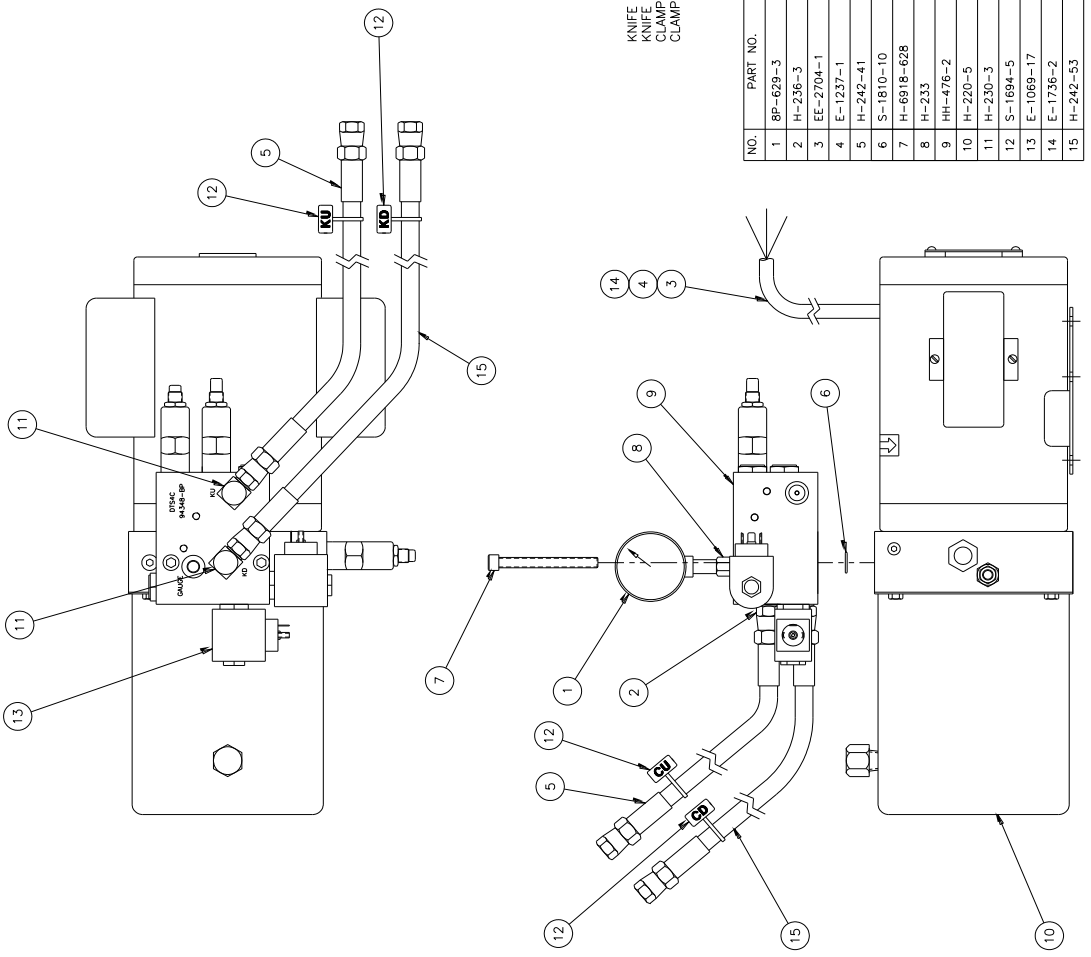


4.13 Hydraulic Power Unit – 60 Hz

(ELECTRICALLY ADJUSTED VALVE)
H-477-9, Rev. A (SERIAL #133843 AND UP)

KNIFE UP HOSE: KU
KNIFE DOWN HOSE: KD
CLAMP UP HOSE: CU
CLAMP DOWN HOSE: CD

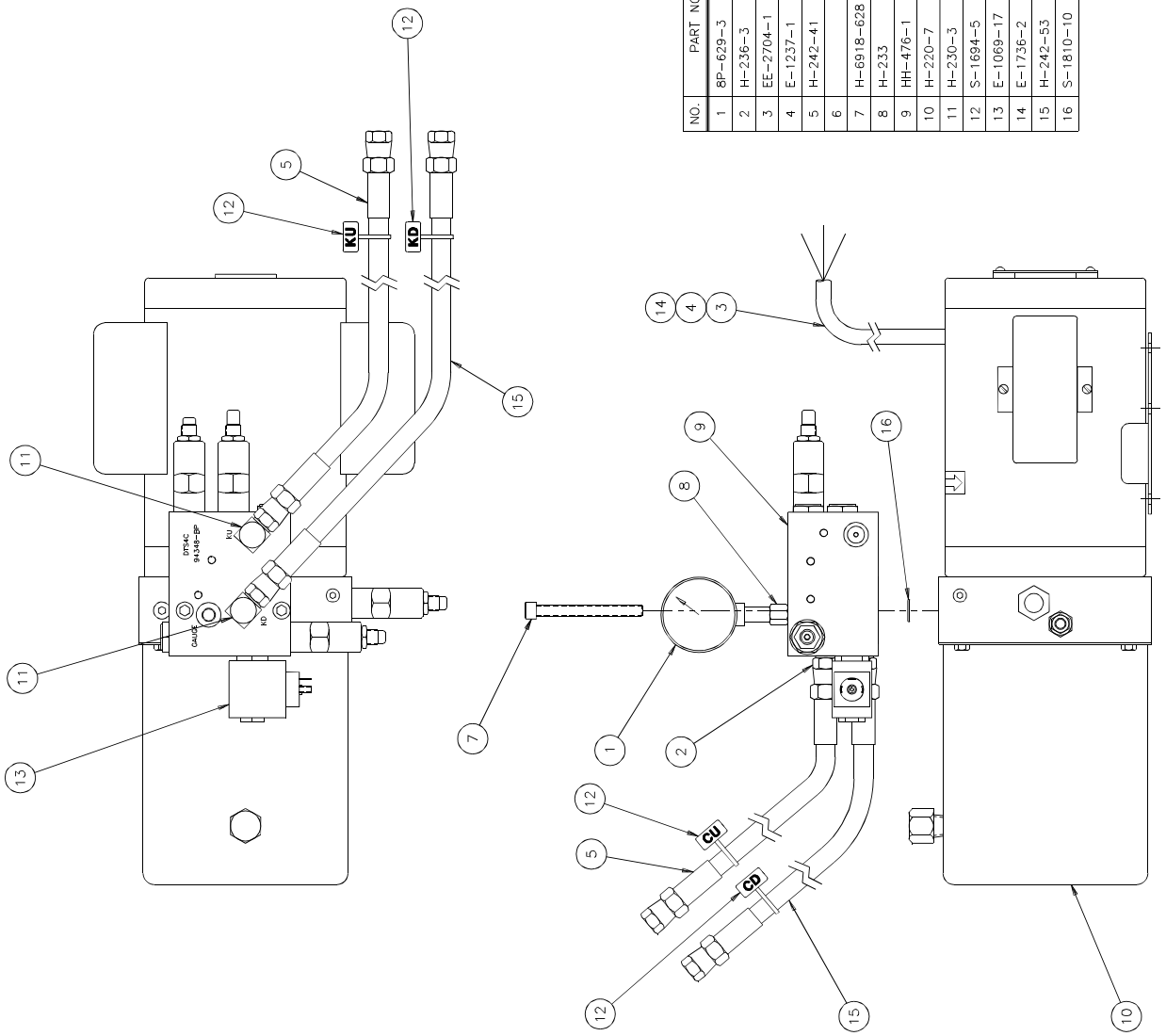
NO.	PART NO.	DESCRIPTION OF ACCESSORIES	QTY
1	8P-629-3	GAUGE	1
2	H-236-3	ADAPTER, 9/16-18 "O" RING TO 9/16-18 TUBE	2
3	EE-2704-1	CORD ASSEMBLY - HYD. MOTOR	1
4	E-1237-1	WIRE NUT	2
5	H-242-41	HYDRAULIC HOSE ASM., 25" LONG (KU & CU)	2
6	S-1810-10	O-RING	2
7	H-6918-628	3/8-16 X 3-1/2 SOCKET HD CAP SCREW	2
8	H-233	ADAPTER	1
9	HH-476-2	MANIFOLD ASSEMBLY W/ELEC. PRES. ADJUST.	1
10	H-220-5	HYDRAULIC POWER UNIT (60 HZ)	1
11	H-230-3	ELBOW - 9/16-18 "O" RING TO 9/16-18 TUBE	2
12	S-1694-5	TYRAP - IDENTIFICATION	4
13	E-1069-17	COIL - 24V	1
14	E-1736-2	QUENCH ARC	1
15	H-242-53	HYDRAULIC HOSE ASSEMBLY, 35" LONG (KD & CD)	2



4.14 Hydraulic Power Unit – 50 Hz

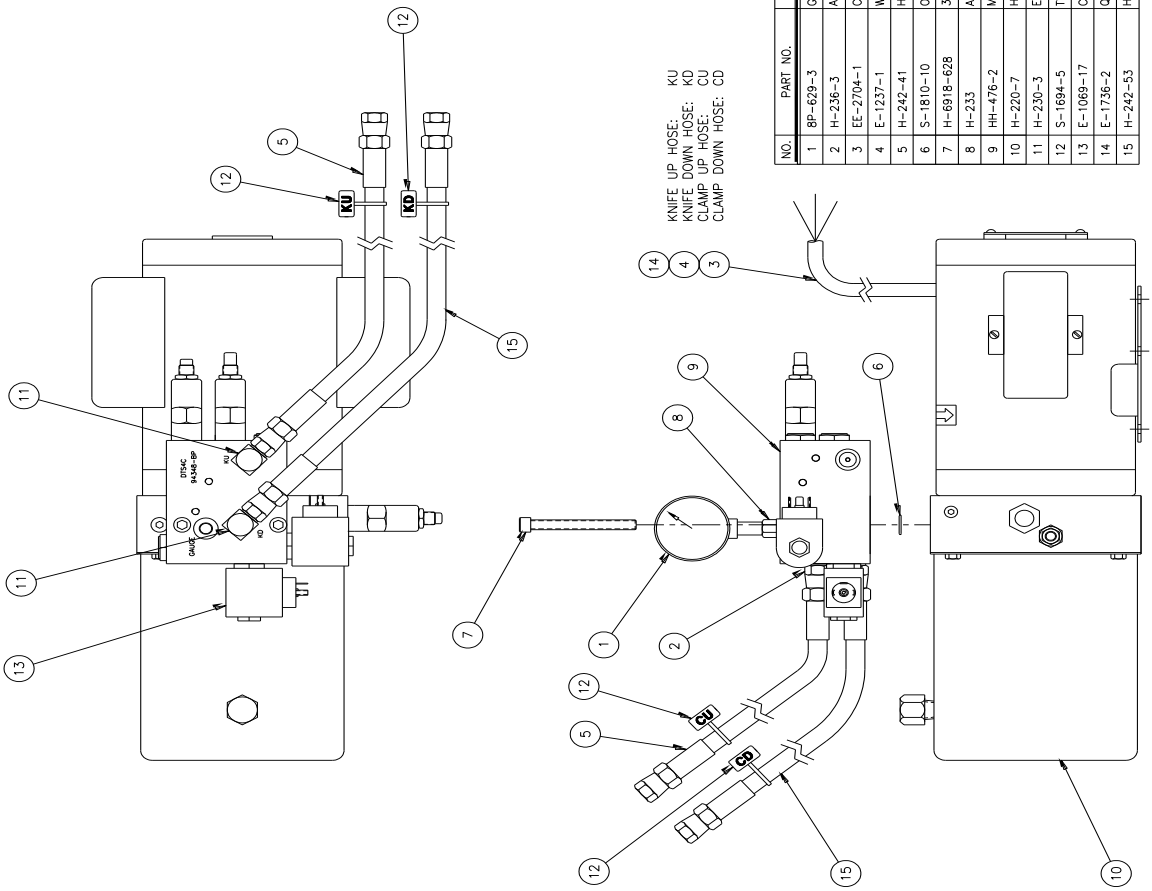
H-477-2, Rev. A (SERIAL #133842 AND BELOW)

NO.	PART NO.	DESCRIPTION OF ACCESSORIES	QTY
1	8P-629-3	GAUGE	1
2	H-236-3	ADAPTER, 9/16-18 'O' RING TO 9/16-18 TUBE	2
3	EE-2704-1	CORD ASSEMBLY - HYD. MOTOR	1
4	E-1237-1	WIRE NUT	2
5	H-242-41	HYDRAULIC HOSE ASM., 25" LONG (KU & CU)	2
6			
7	H-6918-628	3/8-16 X 3-1/2 SOCKET HD CAP SCREW	2
8	H-233	ADAPTER	1
9	HH-476-1	MANIFOLD ASSEMBLY	1
10	H-220-7	HYDRAULIC POWER UNIT (50HZ)	1
11	H-230-3	ELBOW - 9/16-18 "O" RING TO 9/16-18 TUBE	2
12	S-1694-5	TYRAP - IDENTIFICATION	4
13	E-1069-17	COIL - 24V	1
14	E-1736-2	QUENCH ARC	1
15	H-242-53	HYDRAULIC HOSE ASSEMBLY, 35" LONG (KD & CD)	2
16	S-1810-10	O-RING	2



4.15 Hydraulic Power Unit – 50 Hz

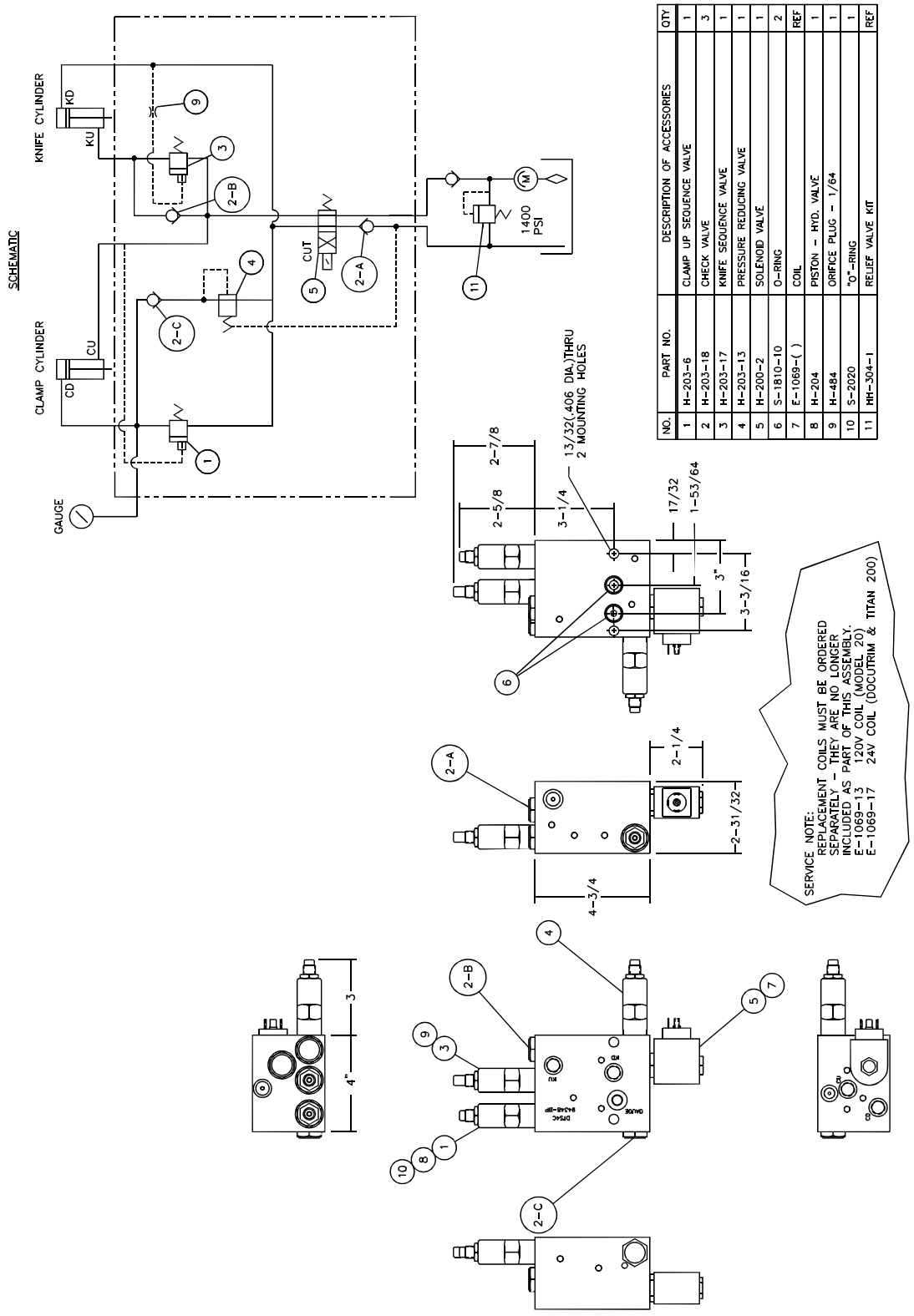
H-477-10, Rev. A (SERIAL #133843 AND UP)



NO.	PART NO.	DESCRIPTION OF ACCESSORIES	QTY
1	BP-629-3	GAUGE	1
2	H-236-3	ADAPTER, 9/16-18 'O' RING TO 9/16-18 TUBE	2
3	EE-2704-1	CORD ASSEMBLY - HYD. MOTOR	1
4	E-1237-1	WIRE NUT	2
5	H-242-41	HYDRAULIC HOSE ASM., 25" LONG (KU & CU)	2
6	S-1810-10	O-RING	2
7	H-6918-628	3/8-16 X 3-1/2 SOCKET HD CAP SCREW	2
8	H-233	ADAPTER	1
9	HH-476-2	MANIFOLD ASSEMBLY W/ELEC. PRES. ADJUST.	1
10	H-220-7	HYDRAULIC POWER UNIT (50 HZ)	1
11	H-230-3	ELBOW - 9/16-18 "O" RING TO 9/16-18 TUBE	2
12	S-1694-5	TYRAP - IDENTIFICATION	4
13	E-1069-17	COIL - 24V	1
14	E-1736-2	QUENCH ARC	1
15	H-242-53	HYDRAULIC HOSE ASSEMBLY, 35" LONG (KD & CD)	2

4.16 Hydraulic Manifold Assembly & Schematic

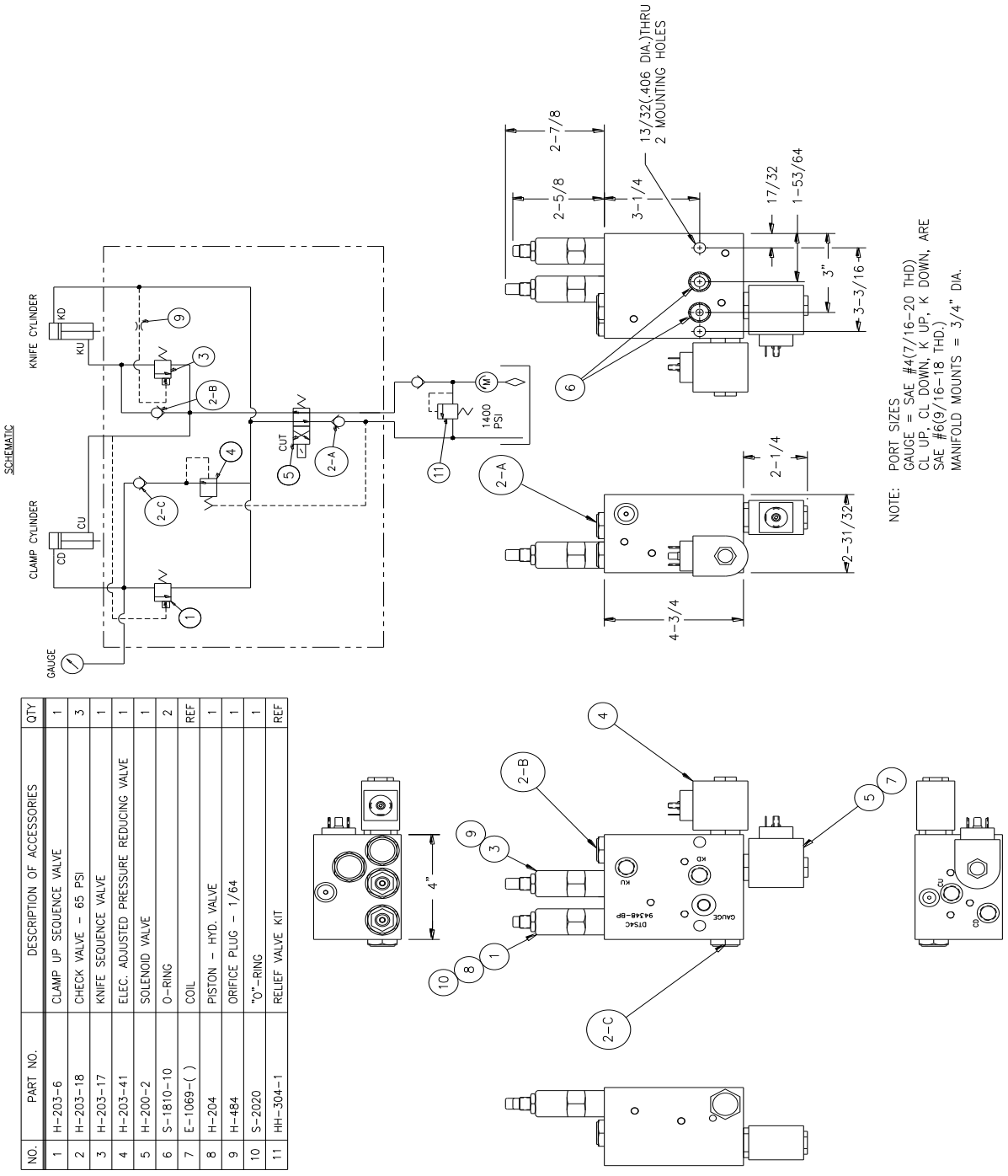
HH-476-1, Rev. A (SERIAL #133842 AND BELOW)
(With Manual Adjusted Pressure Valve – Standard)



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

4.17 Hydraulic Manifold Assembly & Schematic

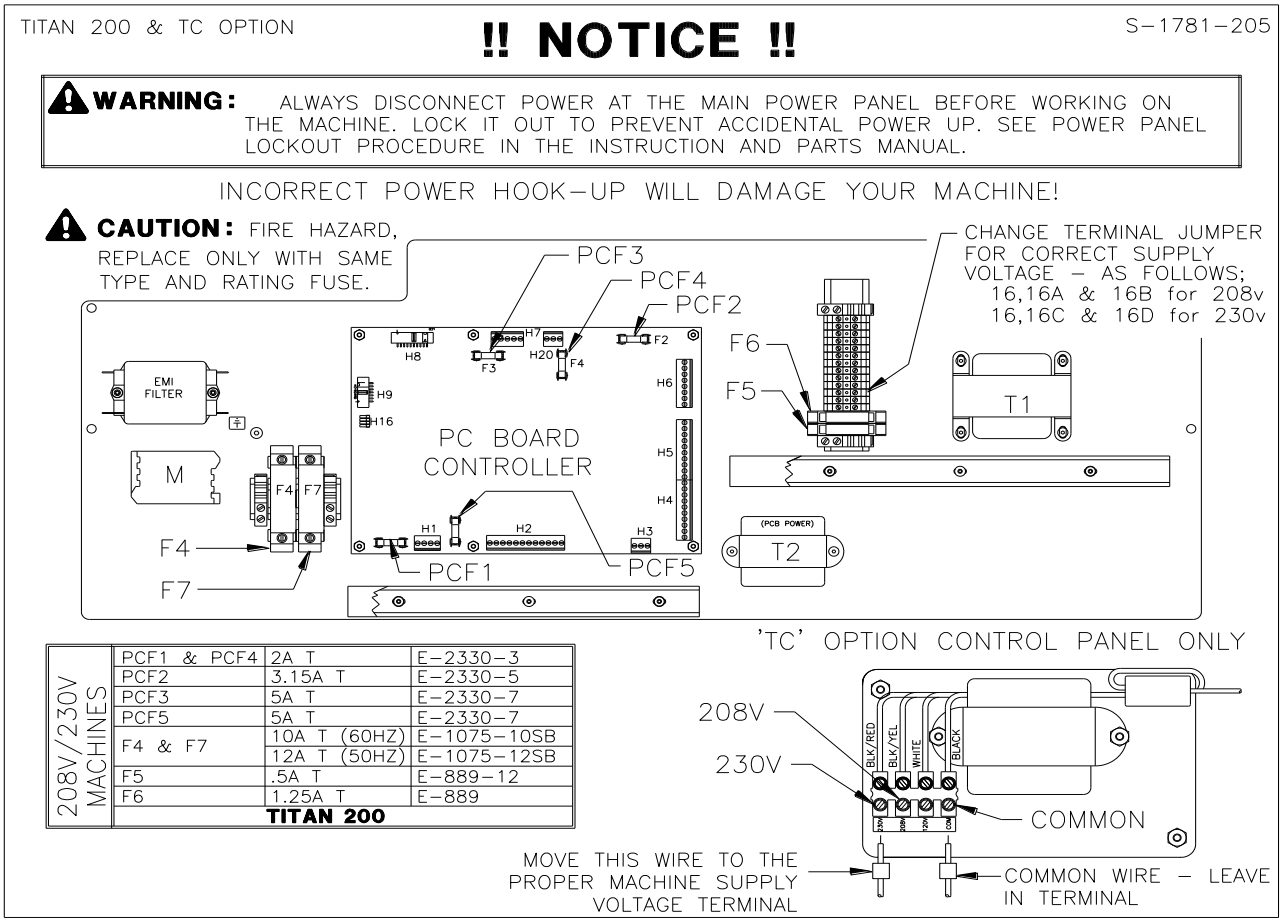
HH-476-2, Rev. A (SERIAL #133843 AND UP)
(With Electrical Adjusted Pressure Valve - Standard)



NO.	PART NO.	DESCRIPTION OF ACCESSORIES	QTY
1	H-203-6	CLAMP UP SEQUENCE VALVE	1
2	H-203-18	CHECK VALVE - 65 PSI	3
3	H-203-17	KNIFE SEQUENCE VALVE	1
4	H-203-41	ELEC. ADJUSTED PRESSURE REDUCING VALVE	1
5	H-200-2	SOLENOID VALVE	1
6	S-1810-10	O-RING	2
7	E-1069-( )	COIL	REF
8	H-204	PISTON - HYD. VALVE	1
9	H-484	ORIFICE PLUG - 1/64	1
10	S-2020	"O"-RING	1
11	HH-304-1	RELIEF VALVE KIT	REF

4.18 Power Panel Label – Standard and TC w/Fuses

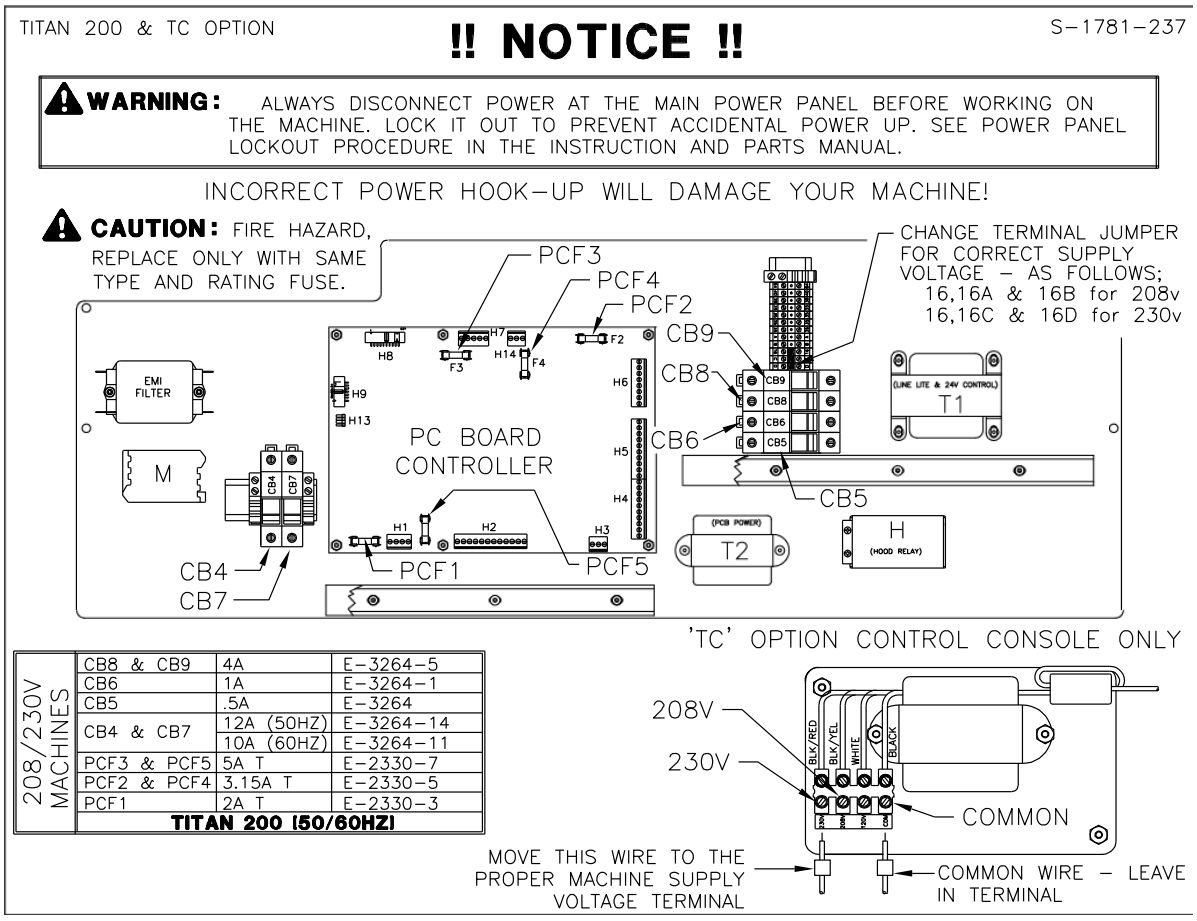
S-1781-205



208V/230V MACHINES			
	PCF1 & PCF4	2A T	E–2330–3
	PCF2	3.15A T	E–2330–5
	PCF3	5A T	E–2330–7
	PCF5	5A T	E–2330–7
	F4 & F7	10A T (60HZ)	E–1075–10SB
		12A T (50HZ)	E–1075–12SB
	F5	.5A T	E–889–12
	F6	1.25A T	E–889
	TITAN 200		

4.19 Power Panel Label – Standard and TC w/Circuit Breakers

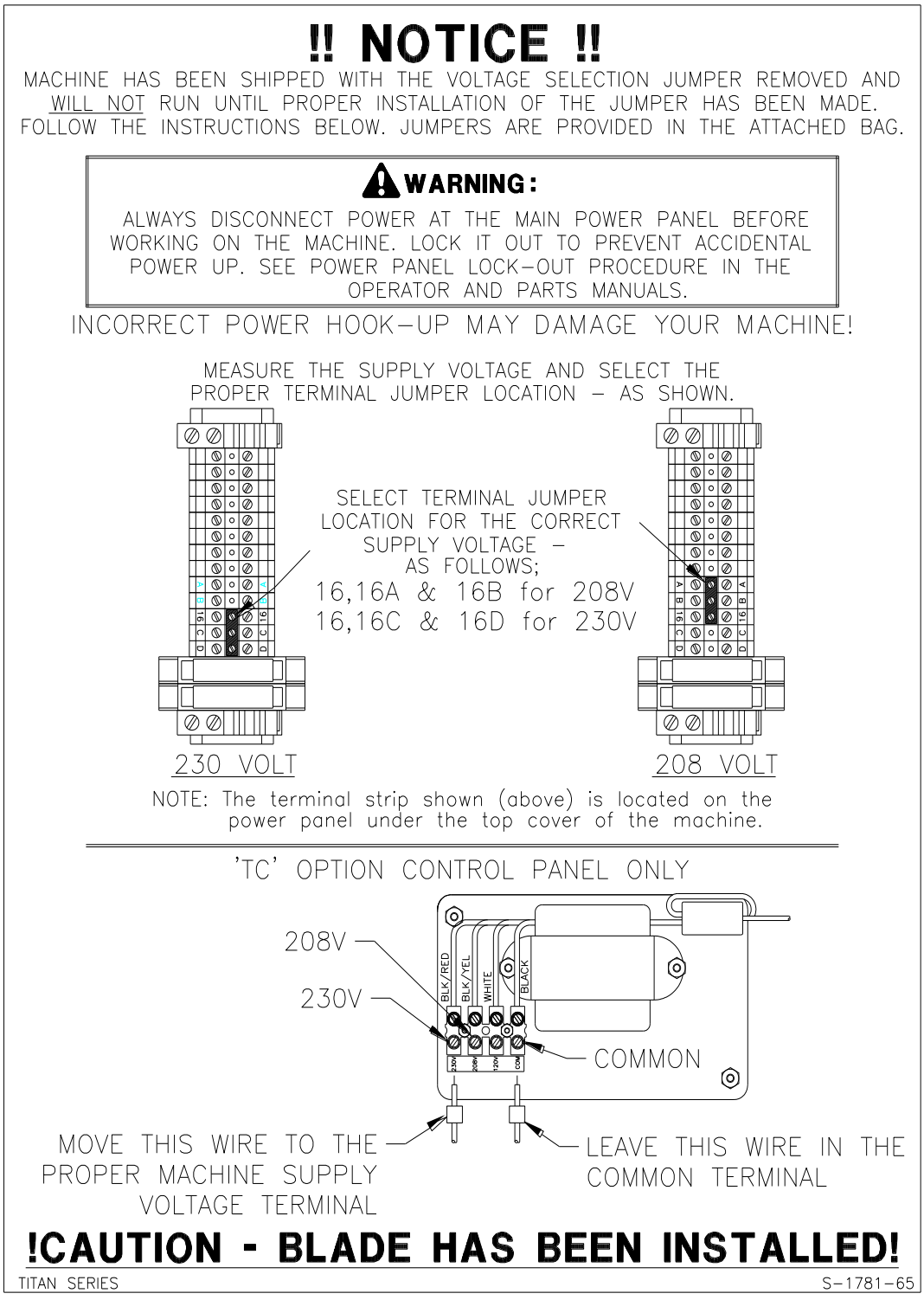
S-1781-237



208/230V MACHINES	CB8 & CB9	4A	E–3264–5
	CB6	1A	E–3264–1
	CB5	.5A	E–3264
	CB4 & CB7	12A (50HZ)	E–3264–14
		10A (60HZ)	E–3264–11
	PCF3 & PCF5	5A T	E–2330–7
	PCF2 & PCF4	3.15A T	E–2330–5
	PCF1	2A T	E–2330–3
	TITAN 200 (50/60HZ)		

4.20 Power Connection Procedure Label

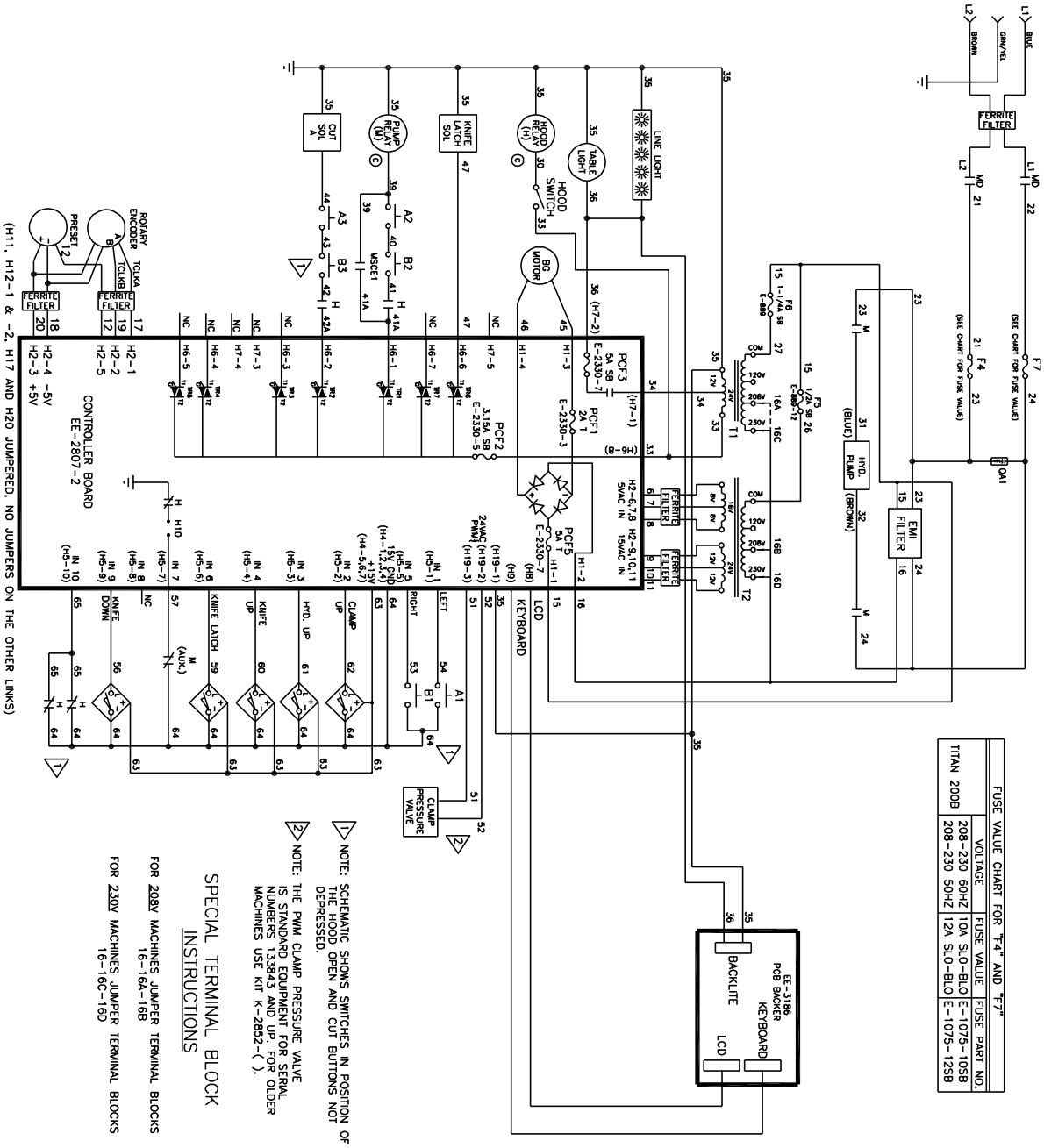
S-1781-65



NOTES

4.21 Schematic – Basic Machine, Standard w/Tilt Shield Option

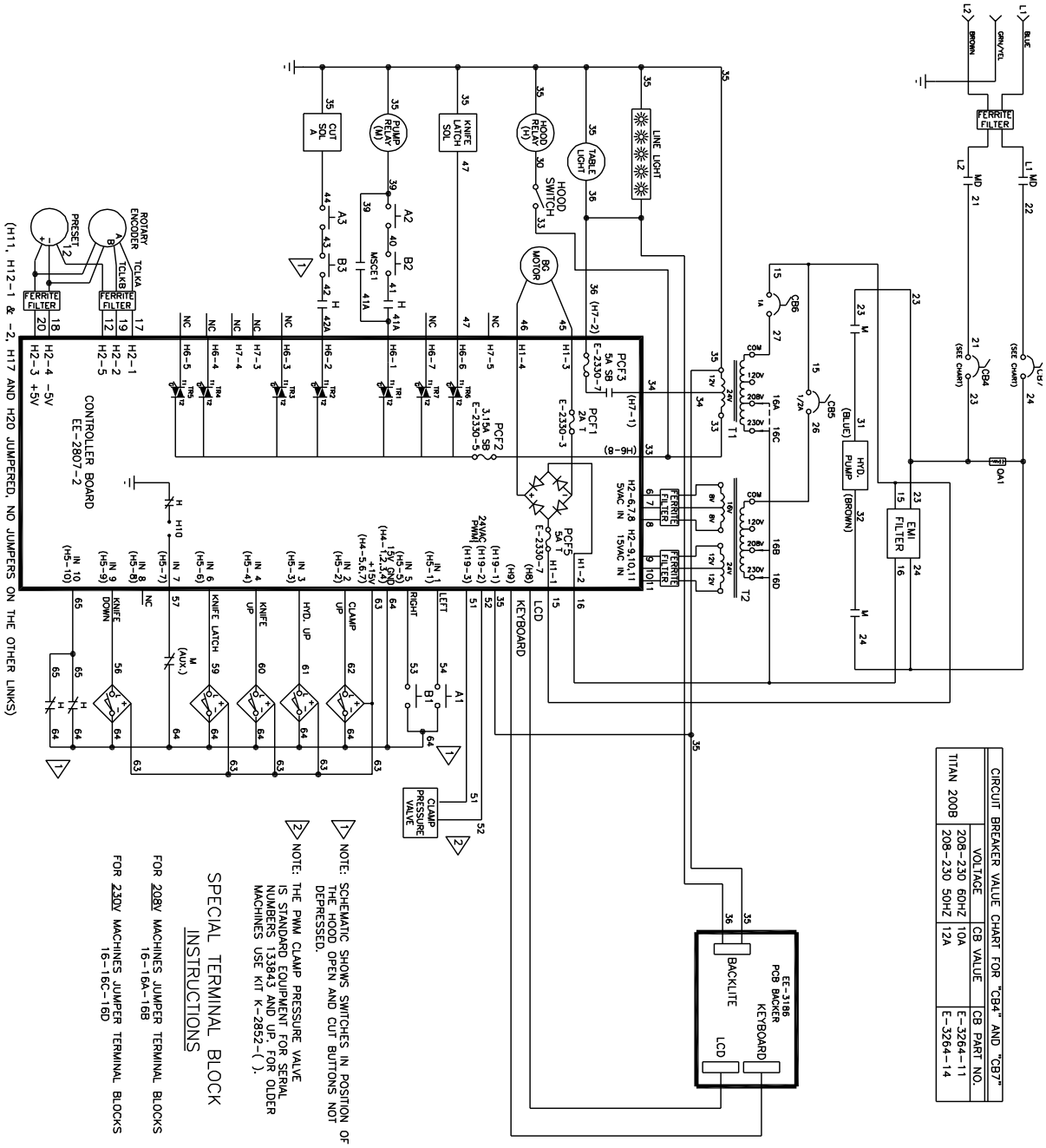
E-2771-10 Rev. "C" with Fuses



FUSE VALUE CHART FOR "F4" AND "F7"			
TITAN 200B	VOLTAGE	FUSE VALUE	FUSE PART NO.
	208-230 60HZ	10A SLO-BLO	E-1075-10SB
	208-230 50HZ	12A SLO-BLO	E-1075-12SB

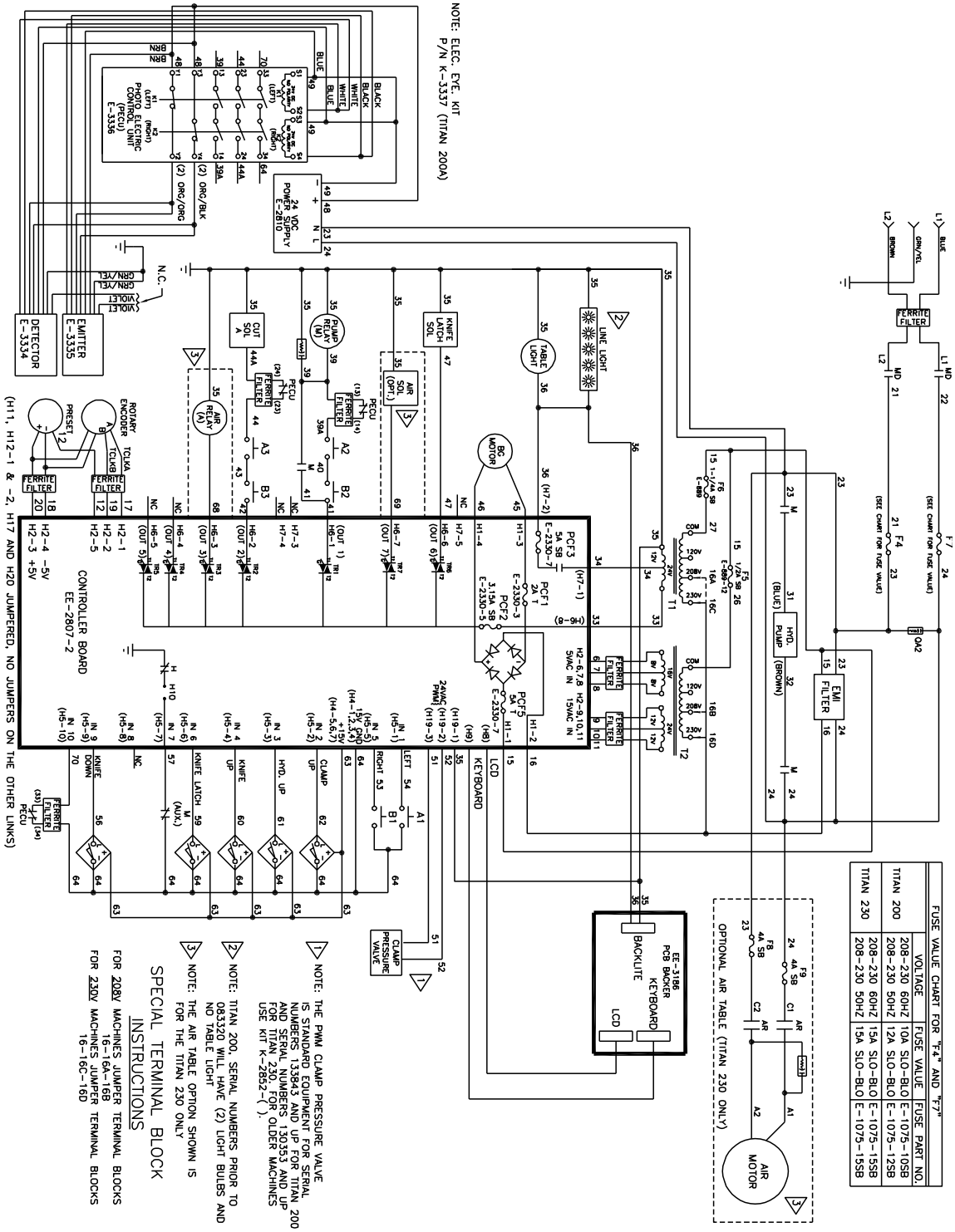
4.22 Schematic – Basic Machine, Standard w/Tilt Shield Option

E-2771-13 Rev. ”A” with Circuit Breakers



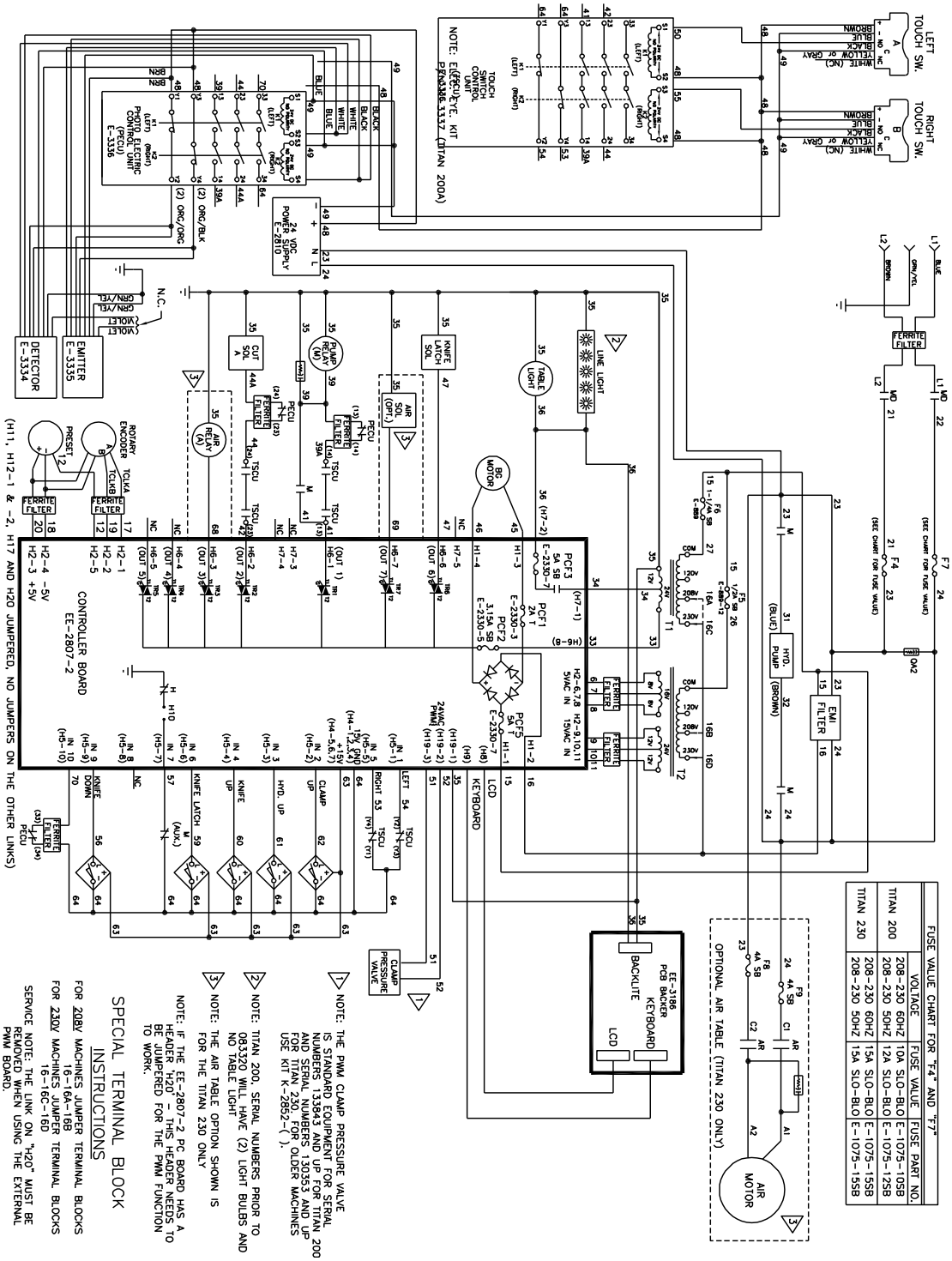
4.23 Schematic – Basic Machine, Standard cut Switches w/Electric Eyes

E-2771-8 Rev. "B" with Fuses



4.24 Schematic – Basic Machine, Ergo cut switches w/Electric Eyes

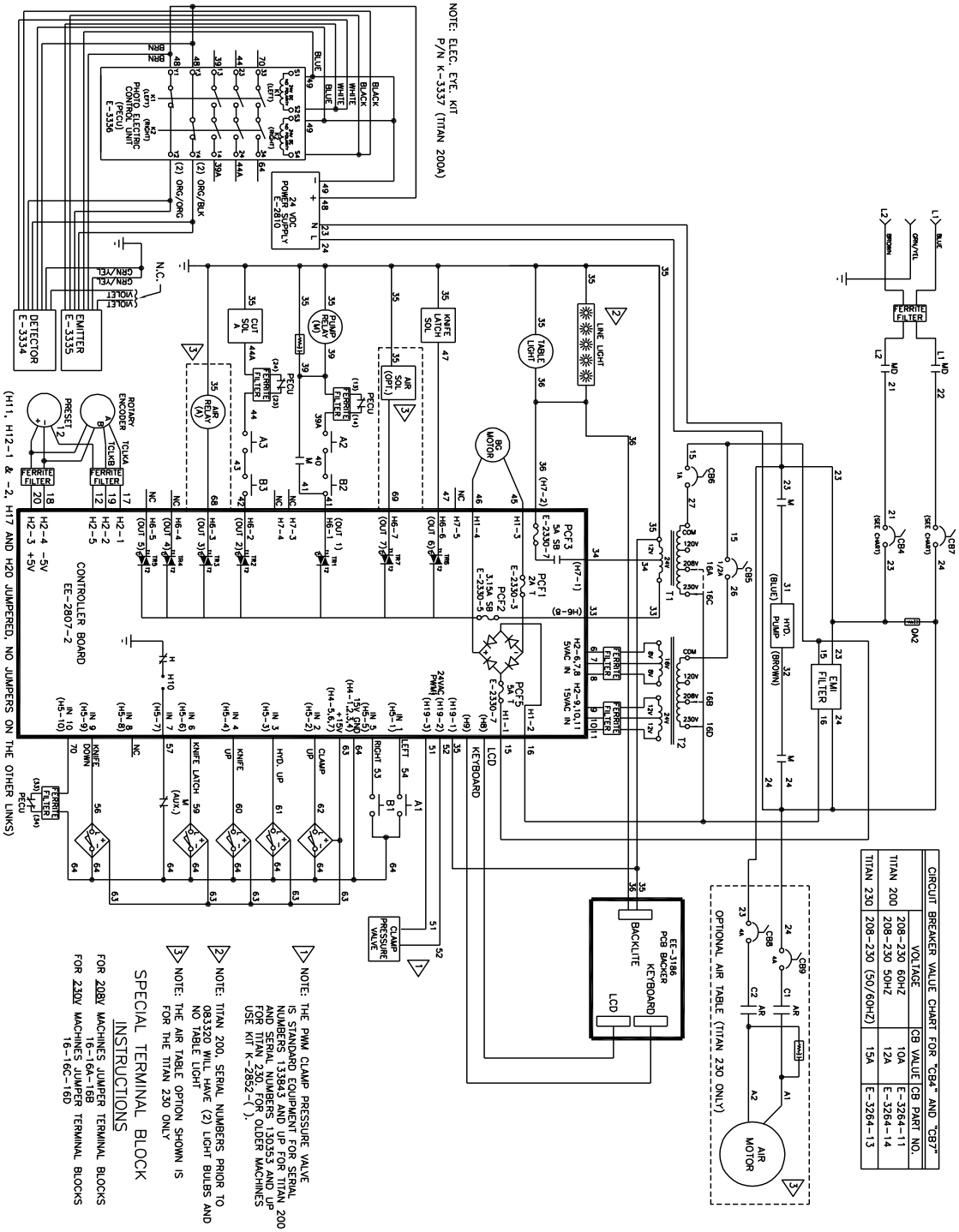
E-2771-8 Rev. "B" with Fuses



FUSE VALUE CHART FOR "F4" AND "F7"			
	VOLTAGE	FUSE VALUE	FUSE PART NO.
TITAN 200	208-230 60HZ	10A SLO-BLO	E-1075-10SB
	208-230 50HZ	12A SLO-BLO	E-1075-12SB
TITAN 230	208-230 60HZ	15A SLO-BLO	E-1075-15SB
	208-230 50HZ	15A SLO-BLO	E-1075-15SB

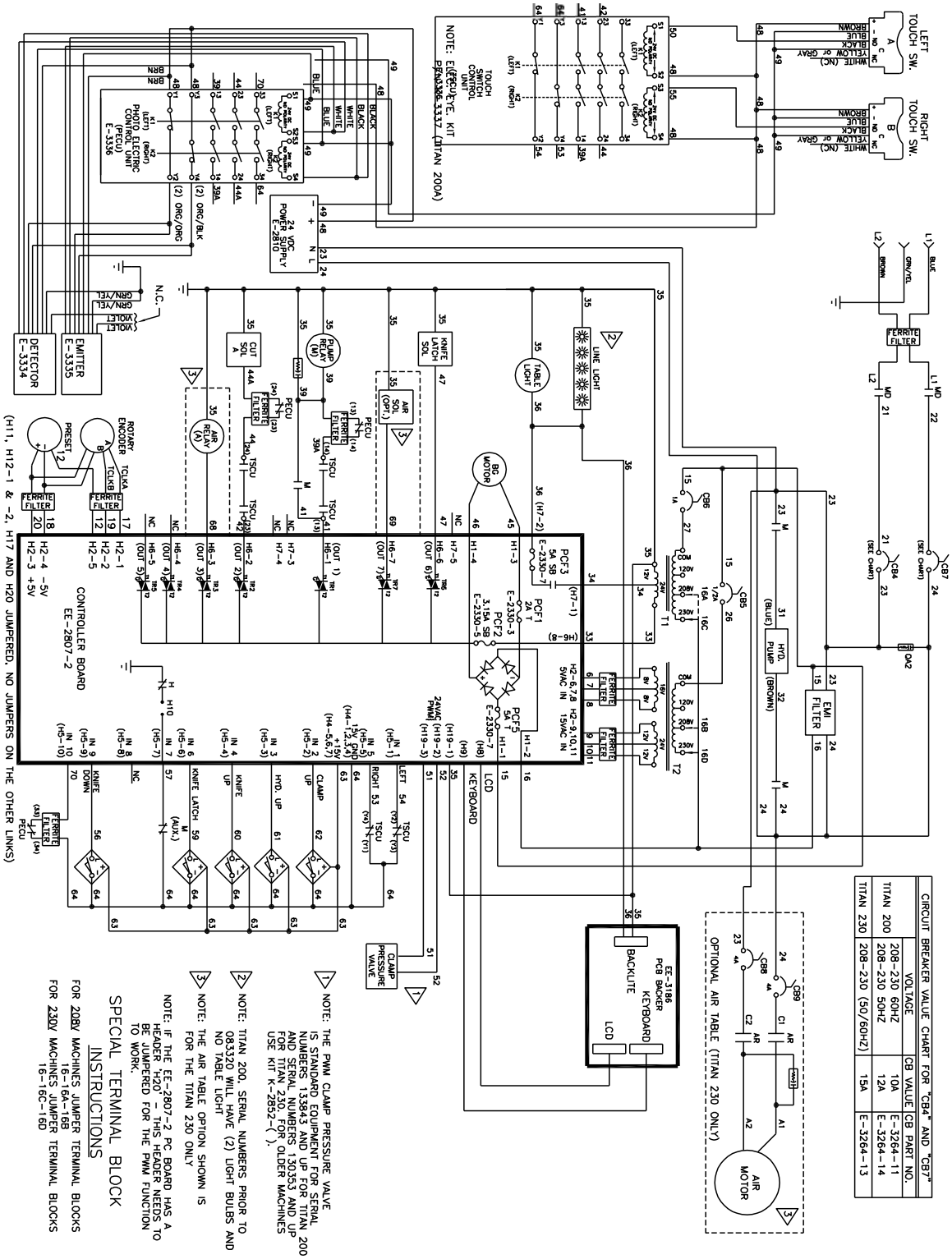
4.25 Schematic – Basic Machine, Standard cut Switches w/Electric Eyes

E-2771-12 Rev. “A” with Circuit Breakers



4.26 Schematic – Basic Machine, Ergo cut switches w/Electric Eyes

E-2771-12 Rev. "A" with Circuit Breakers



CIRCUIT BREAKER VALUE CHART FOR "CB4" AND "CB7"			
	VOLTAGE	CB VALUE	CB PART NO.
TITAN 200	208-230 60HZ	10A	E-3264-11
	208-230 50HZ	12A	E-3264-14
TITAN 230	208-230 (50/60HZ)	15A	E-3264-13

NOTE: THE PWM CLAMP PRESSURE VALVE IS STANDARD EQUIPMENT FOR SERIAL NUMBERS 133845 AND UP FOR TITAN 200 AND SERIAL NUMBERS 130353 AND UP FOR TITAN 230. FOR OLDER MACHINES USE KIT K-2852-( ).

NOTE: TITAN 200 SERIAL NUMBERS PRIOR TO 083320 WILL HAVE (2) LIGHT BULBS AND NO TABLE LIGHT

NOTE: THE AIR TABLE OPTION SHOWN IS FOR THE TITAN 230 ONLY

NOTE: IF THE EE-2807-2 PC BOARD HAS A HEADER "H20" – THIS HEADER NEEDS TO BE JUMPERED FOR THE PWM FUNCTION TO WORK.

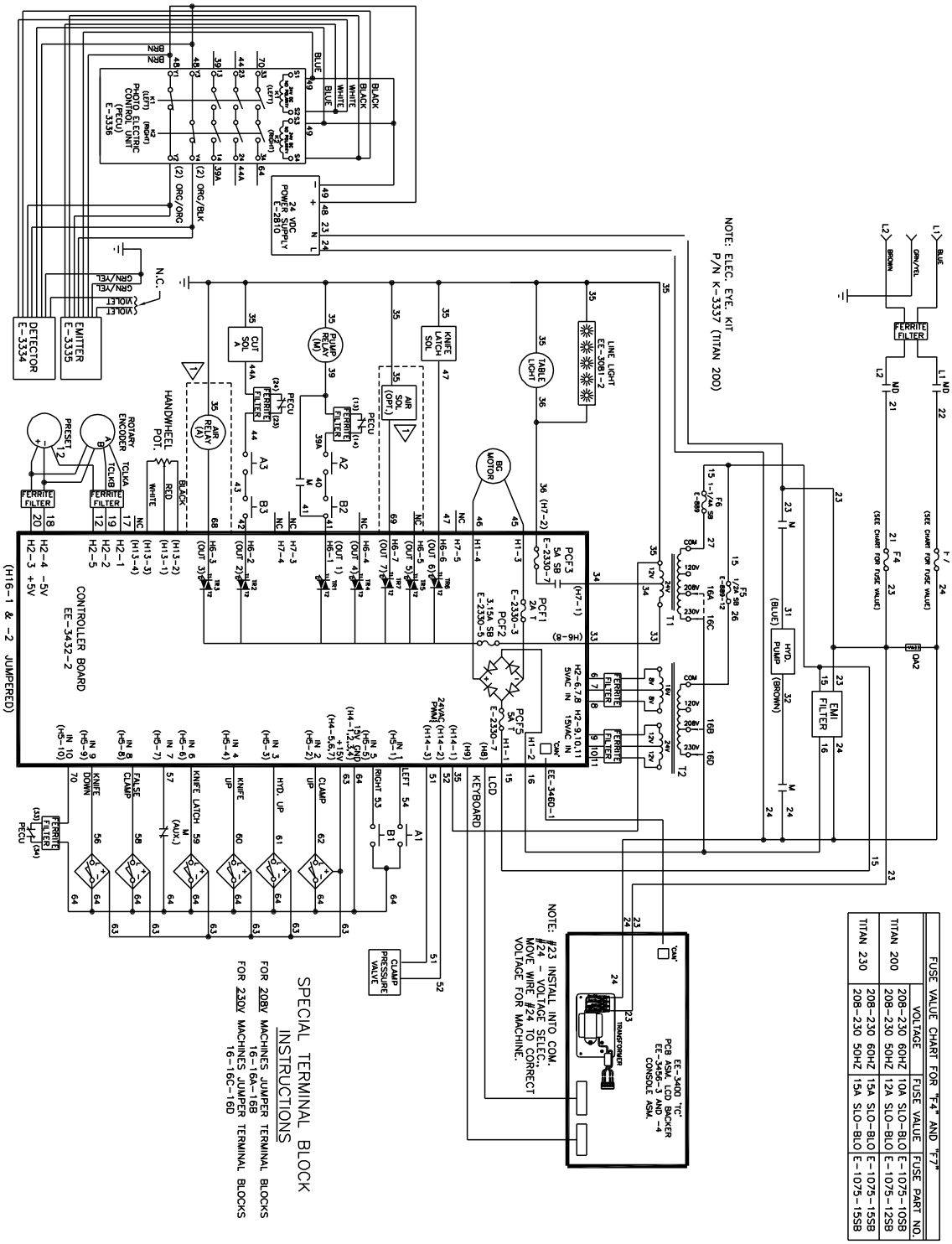
SPECIAL TERMINAL BLOCK INSTRUCTIONS

FOR 208V MACHINES JUMPER TERMINAL BLOCKS 16-16A-16B

FOR 230V MACHINES JUMPER TERMINAL BLOCKS 16-16C-16D

4.27 Schematic – Basic Machine, Touch Control 'TC' Option, Standard cut Switches (w/fuses)

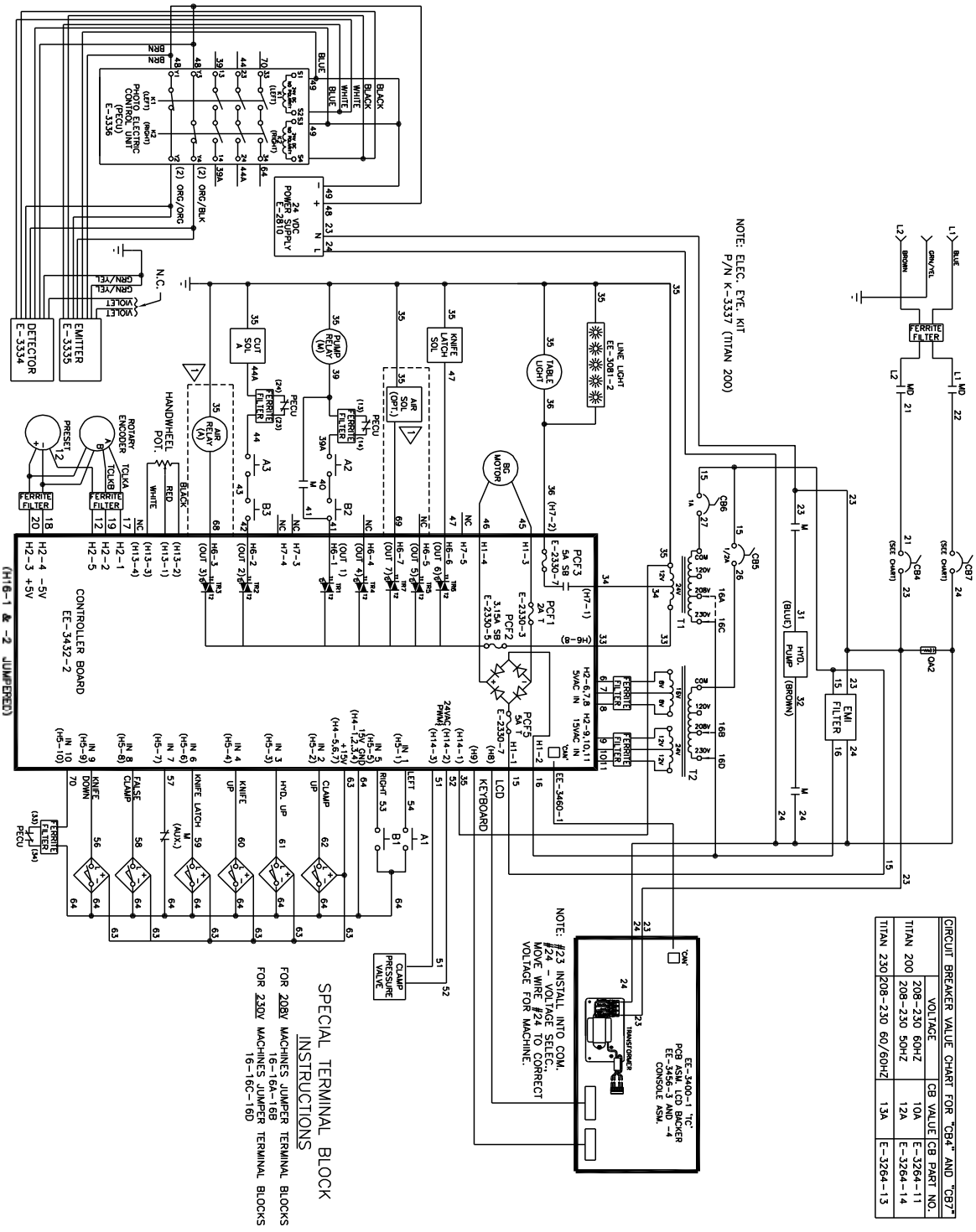
E-3483 Rev. "A" – (Serial numbers 133834 and above ONLY)



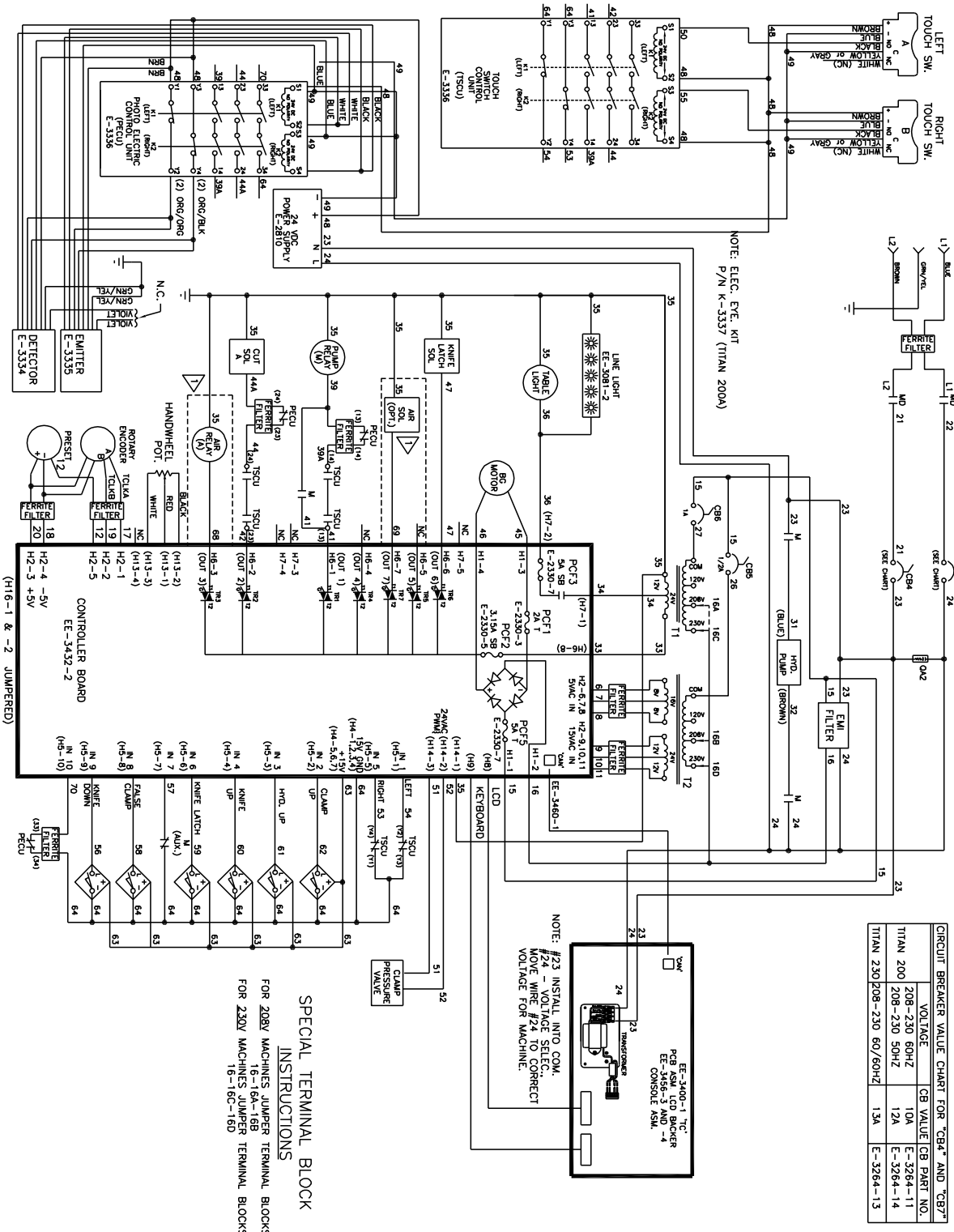
FUSE VALUE CHART FOR "F4" AND "F7"			
	VOLTAGE	FUSE VALUE	FUSE PART NO.
TITAN 200	208-230 60HZ	10A SLO-BLO	E-1075-10SB
	208-230 50HZ	12A SLO-BLO	E-1075-12SB
TITAN 230	208-230 60HZ	15A SLO-BLO	E-1075-15SB
	208-230 50HZ	15A SLO-BLO	E-1075-15SB

4.28 Schematic – Basic Machine, Touch Control 'TC' Option, Standard cut Switches (w/circuit breakers)

E-3483-1 Rev. "A" – (Serial numbers 133834 and above ONLY)



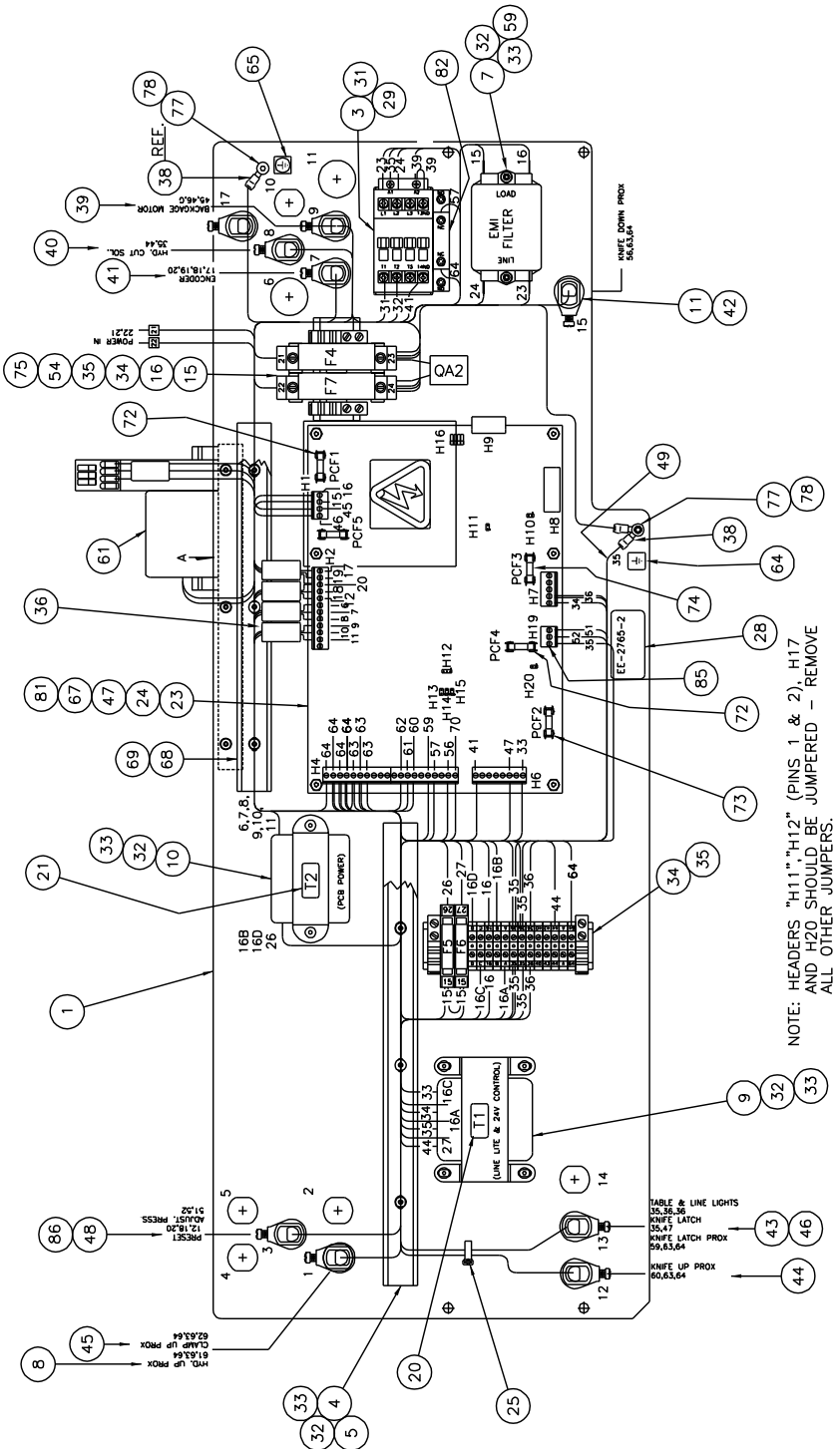
4.29 Schematic – Basic Machine, Touch Control 'TC' Option, Ergo cut Switches (w/circuit breakers)



NOTES

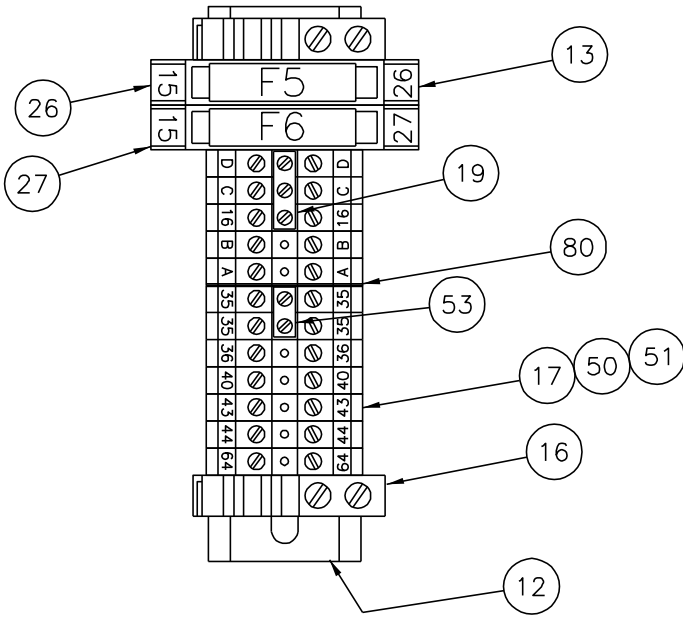
4.30 Power Panel Assembly – Standard cut Switches w/Electric Eyes and fuses

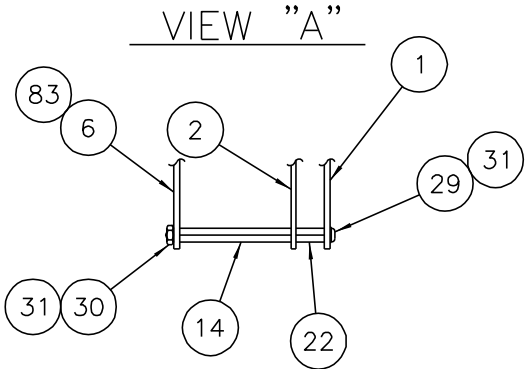
EE-2765-2 Rev. "Z" - Two hand control with electric eyes



Power Panel Assembly (cont.)

TRANSFORMER COLOR CODE	
T1	
WIRE COLOR	WIRE NO.
BLACK	27
BLACK/YELLOW	16A
BLACK/RED	16C
WHITE	35
YELLOW	34
RED	33
GREEN	–
T2	
WIRE COLOR	WIRE NO.
BLACK	26
BLACK/YELLOW	16B
BLACK/RED	16D
BLUE	9
BLUE/YELLOW	10
BLUE	11
RED	8
RED/YELLOW	7
RED	6





Power Panel Assembly (cont.)

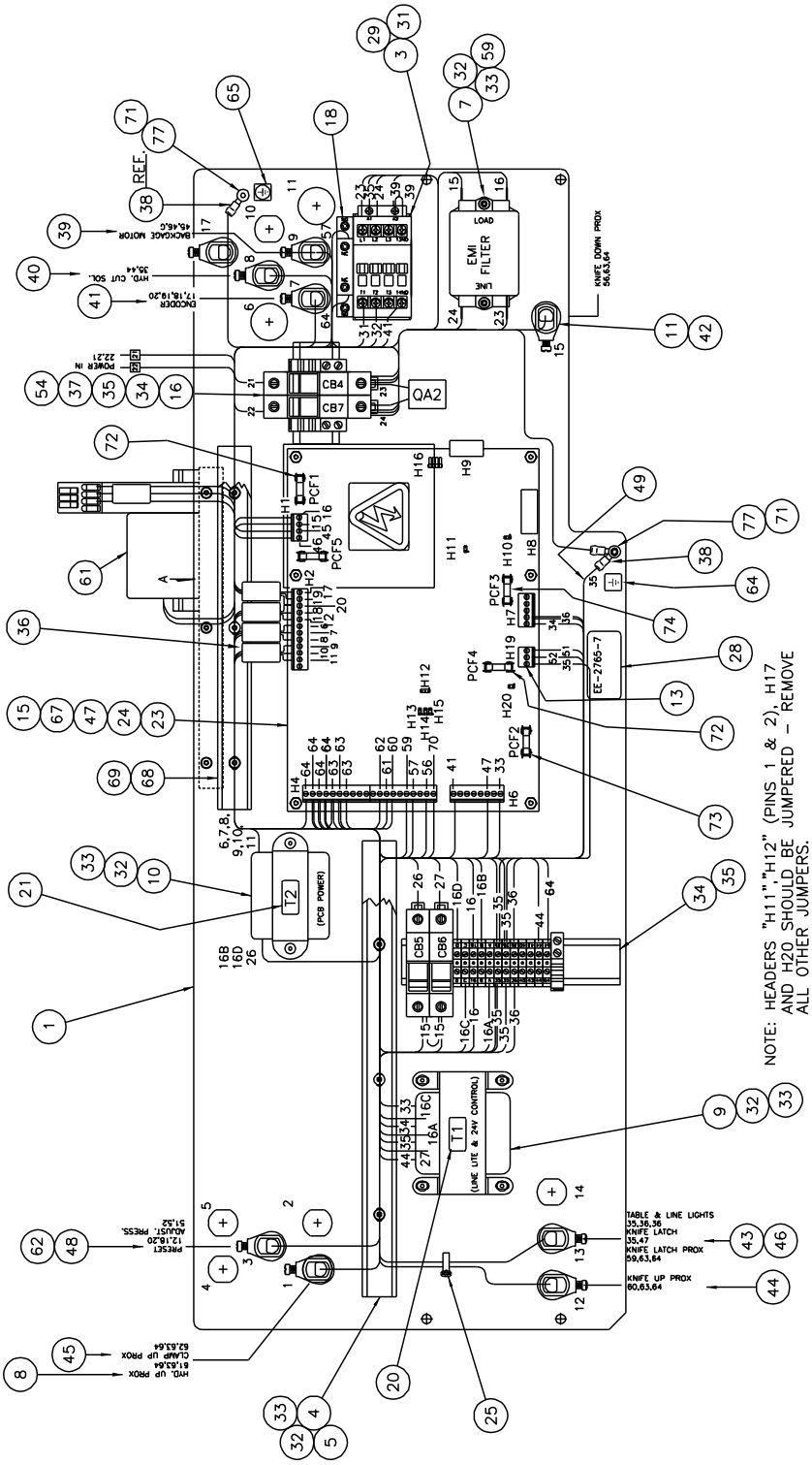
NO.	PART NO.	DESCRIPTION OF ACCESSORIES	QTY
1	43006-2	PANEL - ELECTRICAL	1
2	EE-2807-2	P.C.B. ASSEMBLY - CONTROLLER	1
3	E-2805-6	STARTER - CONTACTOR	1
4	E-1429-14	WIRE DUCT - 13-1/2" LONG	1
5	E-2719-14	COVER - WIRE DUCT, 13-1/2" LONG	1
6	47157-7	P.C.B. COVER - CLEAR	1
7	E-2730-3	FILTER - EMI, PANEL MOUNT	1
8	EE-2770-1	PROXIMITY ASSEMBLY - HYDRUALIC UP	1
9	E-2742-6	TRANSFORMER - 120/208/230V, 12/24V SEC.	1
10	E-2742-5	TRANSFORMER - 120/230V PRIM., 16/24V SEC.	1
11	S-1350-16	STRAIN RELIEF - CABLE	11
12	E-1977-18	RAIL - TERMINAL BLOCK, 6-1/2 LONG	1
13	E-1974-9	FUSE BLOCK - TERMINAL MOUNT, GLASS FUSE	2
14	E-1152-43	STAND-OFF - 2" LONG, #6-32 THR'D	2
15	E-1974-10	FUSE HOLDER - RAIL MOUNT, MIDGET	2
16	E-2070-1	END BRACKET - TERMINAL BLOCK	4
17	E-2068-8	TERMINAL BLOCK - THROUGH, #10 GA.	12
18			
19	E-2507-3	FIXED BRIDGE - TERMINAL BLOCK - 3 POLE	1
20	E-1584-51	LABEL - TRANSFORMER, "T1"	1
21	E-1584-52	LABEL - TRANSFORMER, "T2"	1
22	E-1152-56	STAND-OFF - 1/2" LONG, #6-32 THR'D	6
23	E-2066-10	CONNECTOR - PLUG IN PCB TERMINAL BLOCK	2
24	E-2066-4	CONNECTOR - PLUG IN PCB TERMINAL BLOCK	1
25	S-1694	CABLE TIE	7
26	E-889-12	FUSE - GLASS, 1/2A T "F5"	1
27	E-889	FUSE - GLASS, 1-1/4A T "F6"	1
28	E-1584-( )	LABEL - PART NUMBER/ REVISION LEVEL	1
29	H-6910-63203	SCREW - #6-32 X 3/8" BUT HD	8
30	H-6423-#6	NUT - #6-32 HEX	6
31	H-7324-#6	WASHER - #6 INT. TOOTHLOCK	14
32	H-6910-83204	SCREW - #8-32 X 1/2" BUT	14
33	H-7324-#8	WASHER - #8 INT. TOOTHLOCK	14
34	H-6910-102403	SCREW - #10-24 X 3/8" BUT HD	4
35	H-7324-#10	WASHER - #10 INT. TOOTHLOCK	4
36	E-2756-3	FILTER – FERRITE CORE	4
37			
38	E-1214-63	CONNECTOR-1/4" NON-INS RING	1
39	EE-3106	CABLE ASSEMBLY - BACKGAGE MOTOR	1
40	EE-2769-19	CABLE ASSEMBLY - CUT SOLENOID	1
41	EE-3105	CABLE ASSEMBLY - ENCODER	1
42	EE-2770-3	PROXIMITY SWITCH ASSEMBLY - KNIFE DOWN	1

Power Panel Assembly (cont.)

NO.	PART NO.	DESCRIPTION OF ACCESSORIES	QTY
43	EE-2770	PROX. SWITCH ASSEMBLY - KNIFE LATCH	1
44	EE-2770-4	PROX. SWITCH ASSEMBLY - KNIFE UP	1
45	EE-2770-2	PROXIMITY SWITCH ASSEMBLY - CLAMP UP	1
46	EE-2775	CABLE ASSEMBLY - KNIFE LATCH	1
47	E-2066-12	CONNECTOR - PLUG-IN PCB TERM. BLOCK	1
48	EE-1688-1	CABLE ASSEMBLY - PRESET	1
49	E-2743	WIRE - #18GA. GRN/YEL MTW 14" LONG	1
50	E-1356-131	LABEL - TERMINAL BLOCK	1
51	E-1356-132	LABEL - TERMINAL BLOCK	1
52	E-1163-10	WIRE - #20GA. BLK HOOK-UP, 144” TOTAL	1
53	E-2507-2	FIXED BRIDGE - TERMINAL BLOCK - 2 POLE	1
54	E-1977-3	RAIL - TERMINAL BLOCK, 3" LONG	1
55	E-849-R	WIRE - #16 GA. RED MTW, 118” TOTAL	1
56	E-709-R	WIRE - #18 GA. RED MTW, 418” TOTAL	1
57	E-1214-9	CONNECTOR - #8 INS. RING	1
58	E-1214-54	CONNECTOR - 1/4" FULLY INS. MALE Q.D.	3
59	E-1214-49	CONNECTOR - 1/4" FULLY INS. FEMALE Q.D.	4
60	E-1214-4	CONNECTOR - #8 INS. LOCKING FORK	16
61	EE-3359	ASSEMBLY – ELEC. EYES	1
64	S-1781-42	LABEL – GROUND SYMBOL, SECONDARY	1
65	S-1781-197	LABEL – GROUND SYMBOL, PRIMARY	1
67	E-2066-8	CONNECTOR - PLUG IN PCB TERMINAL BLOCK	1
68	E-1429-15	WIRE DUCT - 10-3/4" LONG	1
69	E-2719-15	COVER - WIRE DUCT, 10-3/4" LONG	1
70	E-702-R	WIRE - #14 GA. RED MTW, 62” TOTAL	1
72	E-2330-3	FUSE - 2A SLO-BLO, GLASS METRIC (PCF1 & 4)	2
73	E-2330-5	FUSE - 3.15A SLO-BLO, GLASS METRIC (PCF2)	1
74	E-2330-7	FUSE - 5A SLO-BLO, GLASS METRIC (PCF3)	1
75	E-1736-2	QUENCHARC (QA2)	1
76	E-1453-6	SHRINK TUBING - 1/8" DIA., 1" LONG	2
77	H-6910-404	SCREW - 1/4-20 X 1/2 BUT HD CAP	2
78	H-7324-8	WASHER - 1/4" INT. TOOTHLOCK	2
80	E-2864	SEPARATOR PLATE - TERMINAL BLOCK	1
81	E-2066-5	CONNECTOR - PLUG IN PCB TERM. 5 POLE	1
82	E-2376-8	CONTACTOR - AUX. (1) N.O. (1) N.C.)	1
83	S-1781-35	LABEL - CAUTION, ELECTRICAL SHOCK	1
85	E-2066-3	HEADER – 3 POS (PHOENIX)	1
86	EE-2769-3	CABLE ASSEMBLY – ADJUST. PRESS. SOL.	1
87	K-3548	KIT – CUT BUTTONS, STANDARD	REF
88	K-3346	KIT – CUT BUTTONS, ERGO	REF

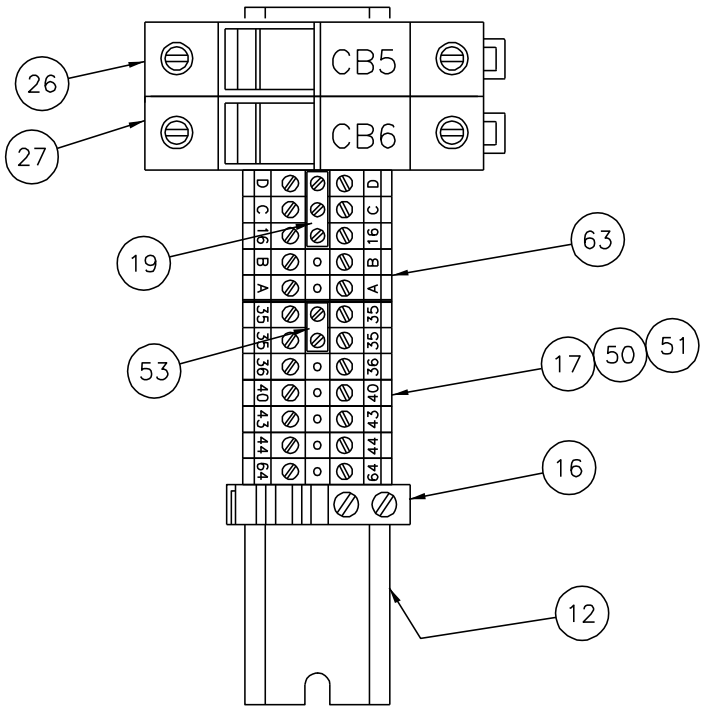
4.31 Power Panel Assembly – Standard cut Switches w/Electric Eyes and circuit breakers

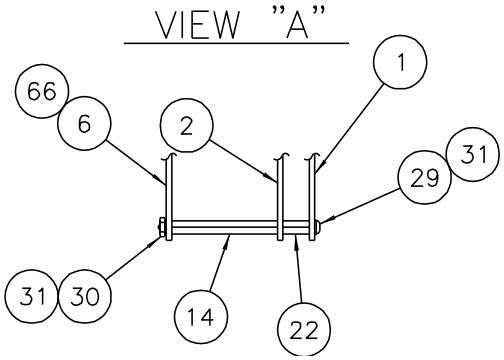
EE-2765-7 Rev. “A” - Two hand control with electric eyes



Power Panel Assembly (cont.)

TRANSFORMER COLOR CODE	
T1	
WIRE COLOR	WIRE NO.
BLACK	27
BLACK/YELLOW	16A
BLACK/RED	16C
WHITE	35
YELLOW	34
RED	33
GREEN	–
T2	
WIRE COLOR	WIRE NO.
BLACK	26
BLACK/YELLOW	16B
BLACK/RED	16D
BLUE	9
BLUE/YELLOW	10
BLUE	11
RED	8
RED/YELLOW	7
RED	6





Power Panel Assembly (cont.)

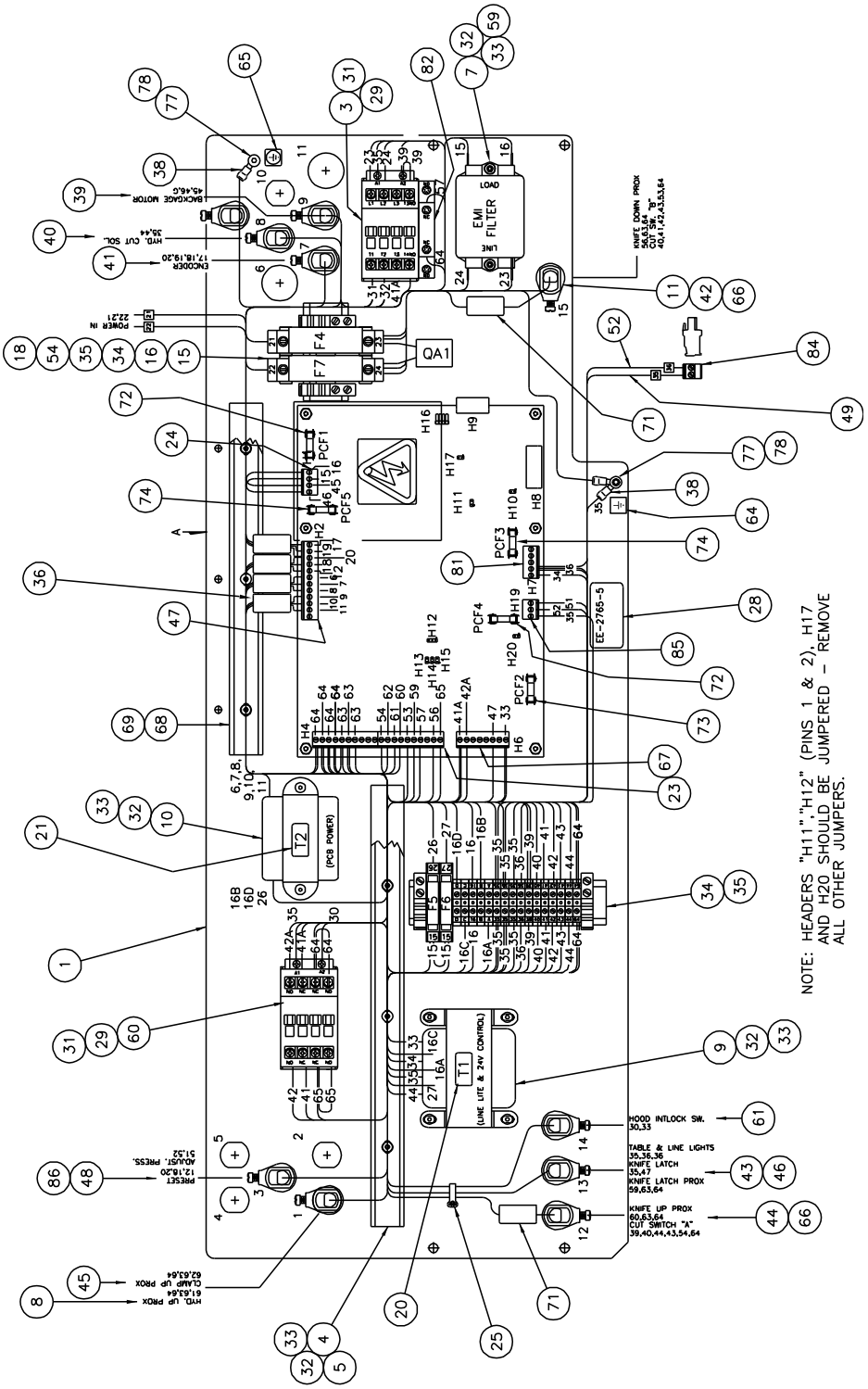
NO.	PART NO.	DESCRIPTION OF ACCESSORIES	QTY
1	43006-2	PANEL - ELECTRICAL	1
2	EE-2807-2	P.C.B. ASSEMBLY - CONTROLLER	1
3	E-2805-6	STARTER - CONTACTOR (AF16Z-30-10-21)	1
4	E-1429-14	WIRE DUCT - 13-1/2" LONG	1
5	E-2719-14	COVER - WIRE DUCT, 13-1/2" LONG	1
6	47157-7	P.C.B. COVER - CLEAR	1
7	E-2730-3	FILTER - EMI, PANEL MOUNT	1
8	EE-2770-1	PROXIMITY ASSEMBLY - HYDRUALIC UP	1
9	E-2742-6	TRANSFORMER - 120/208/230V, 12/24V SEC.	1
10	E-2742-5	TRANSFORMER - 120/230V PRIM., 16/24V SEC.	1
11	S-1350-16	STRAIN RELIEF - CABLE	11
12	E-1977-18	RAIL - TERMINAL BLOCK, 6-1/2" LONG	1
13	E-2066-3	HEADER - 3 POS (PHOENIX)	1
14	E-1152-43	STAND-OFF - 2" LONG, #6-32 THR'D	2
15	E-2066-5	CONNECTOR - PLUG IN PCB TERM. 5 POLE	1
16	E-2070-1	END BRACKET - TERMINAL BLOCK	3
17	E-2068-8	TERMINAL BLOCK - THROUGH, #10 GA.	12
18	E-2376-8	CONTACTOR - AUX. (1) N.O. (1) N.C.)	1
19	E-2507-3	FIXED BRIDGE - TERMINAL BLOCK - 3 POLE	1
20	E-1584-51	LABEL - TRANSFORMER, "T1"	1
21	E-1584-52	LABEL - TRANSFORMER, "T2"	1
22	E-1152-56	STAND-OFF - 1/2" LONG, #6-32 THR'D	6
23	E-2066-10	CONNECTOR - PLUG IN PCB TERMINAL BLOCK	2
24	E-2066-4	CONNECTOR - PLUG IN PCB TERMINAL BLOCK	1
25	S-1694	CABLE TIE	7
26	E-3264	CIRCUIT BREAKER - 1/2A (CB5)	1
27	E-3264-1	CIRCUIT BREAKER - 1A (CB6)	1
28	E-1584-( )	LABEL - PART NUMBER/ REVISION LEVEL	1
29	H-6910-63203	SCREW - #6-32 X 3/8" BUT HD	8
30	H-6423-#6	NUT - #6-32 HEX	6
31	H-7324-#6	WASHER - #6 INT. TOOTHLOCK	14
32	H-6910-83204	SCREW - #8-32 X 1/2" BUT	14
33	H-7324-#8	WASHER - #8 INT. TOOTHLOCK	14
34	H-6910-102403	SCREW - #10-24 X 3/8" BUT HD	4
35	H-7324-#10	WASHER - #10 INT. TOOTHLOCK	4
36	E-2756-3	FILTER - FERRITE CORE	4
37	E-3264-11	CIRCUIT BREAKER - 10A (CB4 & 7)	1
38	E-1214-63	CONNECTOR-1/4" NON-INS RING	1
39	EE-3106	CABLE ASSEMBLY - BACKGAGE MOTOR	1
40	EE-2769-19	CABLE ASSEMBLY - CUT SOLENOID	1

Power Panel Assembly (cont.)

NO.	PART NO.	DESCRIPTION OF ACCESSORIES	QTY
41	EE-3105	CABLE ASSEMBLY - ENCODER	1
42	EE-2770-3	PROXIMITY SWITCH ASSEMBLY - KNIFE DOWN	1
43	EE-2770	PROXIMITY SWITCH ASSEMBLY - KNIFE LATCH	1
44	EE-2770-4	PROXIMITY SWITCH ASSEMBLY - KNIFE UP	1
45	EE-2770-2	PROXIMITY SWITCH ASSEMBLY - CLAMP UP	1
46	EE-2775	CABLE ASSEMBLY - KNIFE LATCH	1
47	E-2066-12	CONNECTOR - PLUG-IN PCB TERM. BLOCK	1
48	EE-1688-1	CABLE ASSEMBLY - PRESET	1
49	E-2743	WIRE - #18 GA. GRN/YEL MTW 14" TOTAL	1
50	E-1356-131	LABEL - TERMINAL BLOCK	1
51	E-1356-132	LABEL - TERMINAL BLOCK	1
52	E-1163-10	WIRE - #20 GA. BLACK MTW 144" TOTAL	1
53	E-2507-2	FIXED BRIDGE - TERMINAL BLOCK - 2 POLE	1
54	E-1977-3	RAIL - TERMINAL BLOCK, 3" LONG	1
55	E-849-R	WIRE - #16 GA. RED MTW 118" TOTAL	1
56	E-709-R	WIRE - #18 GA. RED MTW 418" TOTAL	1
57	E-1214-9	CONNECTOR - #8 INS. RING	1
58	E-1214-54	CONNECTOR - 1/4" FULLY INS. MALE Q.D.	3
59	E-1214-49	CONNECTOR - 1/4" FULLY INS. FEMALE Q.D.	4
60	E-1214-4	CONNECTOR - #8 INS. LOCKING FORK	16
61	EE-3359	ASSEMBLY - ELECT. EYE	1
62	EE-2769-3	CABLE ASSEMBLY - ADJUST. PRESS SOL.	1
63	E-2864	SEPARATOR PLATE - TERMINAL BLOCK	1
64	S-1781-42	LABEL - GROUND SYMBOL, SECONDARY	1
65	S-1781-197	LABEL - GROUND SYMBOL, PRIMARY	1
66	S-1781-35	LABEL - CAUTION, ELECTRICAL SHOCK	1
67	E-2066-8	CONNECTOR - PLUG IN PCB TERMINAL BLOCK	1
68	E-1429-15	WIRE DUCT - 10-3/4" LONG	1
69	E-2719-15	COVER - WIRE DUCT, 10-3/4" LONG	1
70	E-702-R	WIRE - #14 GA. RED MTW 62" TOTAL	1
71	H-7324-8	WASHER - 1/4" INT. TOOTHLOCK	2
72	E-2330-3	FUSE - 2A SB, GLASS METRIC (PCF1 & PCF4)	2
73	E-2330-5	FUSE - 3.15A SLO-BLO, GLASS METRIC (PCF2)	1
74	E-2330-7	FUSE - 5A SLO-BLO, GLASS METRIC (PCF3)	1
75	E-1736-2	QUENCHARC (QA2)	1
76	E-1453-6	SHRINK TUBING - 1/8" DIA., 1" LONG	2
77	H-6910-404	SCREW - 1/4-20 X 1/2 BUT HD CAP	2
78	K-3548	KIT - CUT BUTTONS, STANDARD	REF
79	K-3346	KIT- CUT BUTTONS, ERGO	REF

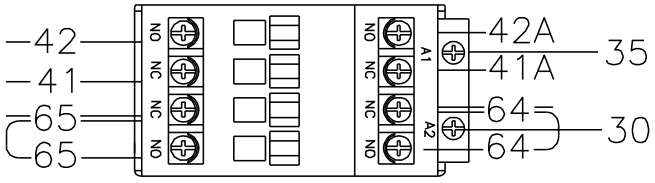
4.32 Power Panel Assembly – Standard Cut Switches w/Tilt Shield and Fuses

EE-2765-5 Rev. “H” - Two hand control with tilt shield

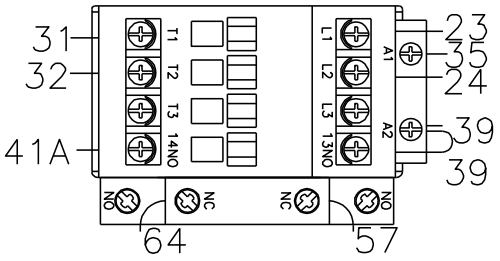


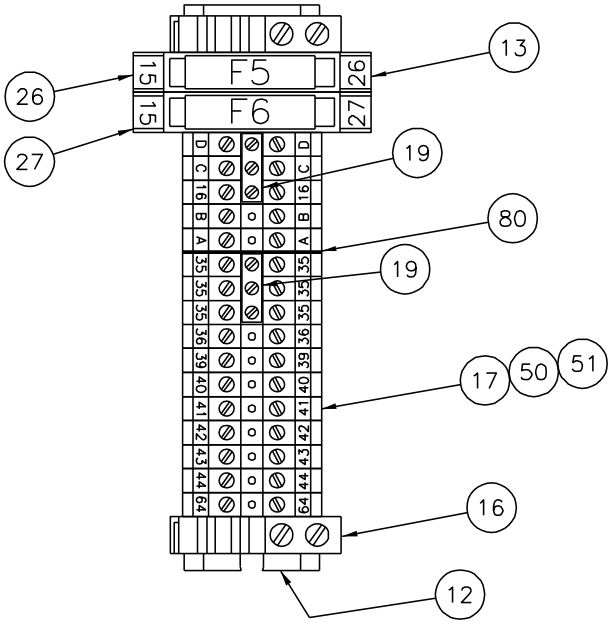
Power Panel Assembly (cont.)

TILT SHIELD RELAY DETAIL
SCALE: 2X

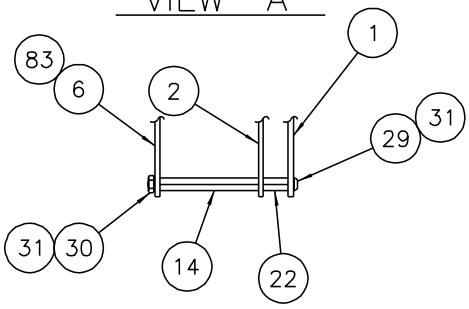


MOTOR STARTER DETAIL
SCALE: 2X





VIEW "A"



TRANSFORMER COLOR CODE T1	
WIRE COLOR	WIRE NO.
BLACK	27
BLACK/YELLOW	16A
BLACK/RED	16C
WHITE	35
YELLOW	34
RED	33
GREEN	–

TRANSFORMER COLOR CODE T2	
WIRE COLOR	WIRE NO.
BLACK	26
BLACK/YELLOW	16B
BLACK/RED	16D
BLUE	9
BLUE/YELLOW	10
BLUE	11
RED	8
RED/YELLOW	7
RED	6

Power Panel Assembly (cont.)

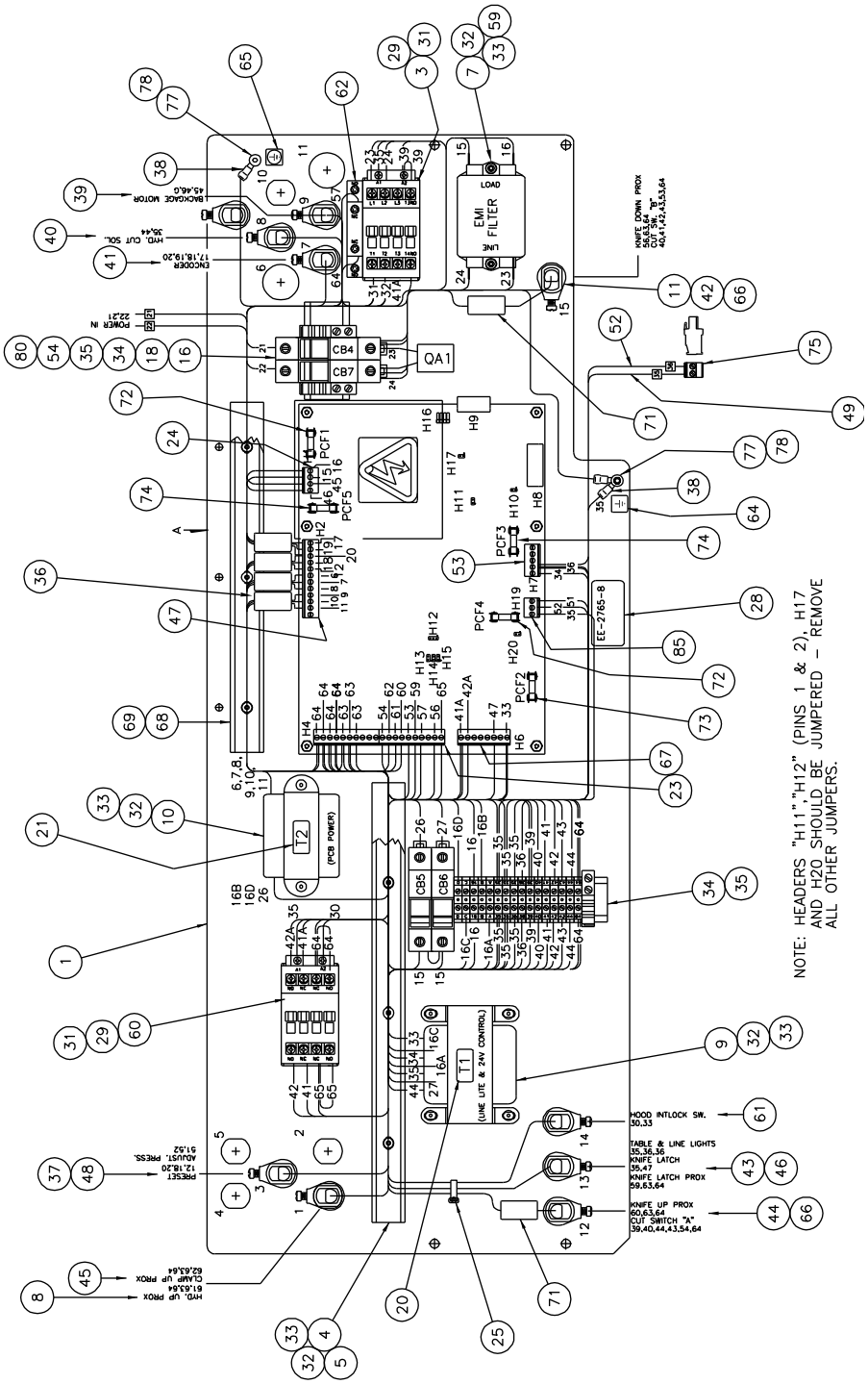
NO.	PART NO.	DESCRIPTION OF ACCESSORIES	QTY
1	43006-2	PANEL - ELECTRICAL	1
2	EE-2807-2	P.C.B. ASSEMBLY - CONTROLLER	1
3	E-2805-6	STARTER - CONTACTOR	1
4	E-1429-14	WIRE DUCT - 13-1/2" LONG	1
5	E-2719-14	COVER - WIRE DUCT, 13-1/2" LONG	1
6	47157-7	P.C.B. COVER - CLEAR	1
7	E-2730-3	FILTER - EMI, PANEL MOUNT	1
8	EE-2770-1	PROXIMITY ASSEMBLY - HYDRUALIC UP	1
9	E-2742-6	TRANSFORMER - 120/208/230V, 12/24V SEC.	1
10	E-2742-5	TRANSFORMER - 120/230V PRIM., 16/24V SEC.	1
11	S-1350-16	STRAIN RELIEF - CABLE	11
12	E-1977-13	RAIL - TERMINAL BLOCK, 6" LONG	1
13	E-1974-9	FUSE BLOCK - TERMINAL MOUNT, GLASS FUSE	2
14	E-1152-43	STAND-OFF - 2" LONG, #6-32 THR'D	2
15	E-1974-10	FUSE HOLDER - RAIL MOUNT, MIDGET	2
16	E-2070-1	END BRACKET - TERMINAL BLOCK	4
17	E-2068-8	TERMINAL BLOCK - THROUGH, #10 GA.	16
18	E-1736-2	QUENCHARC - WIRE LEADS (QA1)	2
19	E-2507-3	FIXED BRIDGE - TERMINAL BLOCK - 3 POLE	2
20	E-1584-51	LABEL - TRANSFORMER, "T1"	1
21	E-1584-52	LABEL - TRANSFORMER, "T2"	1
22	E-1152-56	STAND-OFF - 1/2" LONG, #6-32 THR'D	6
23	E-2066-10	CONNECTOR - PLUG IN PCB TERMINAL BLOCK	2
24	E-2066-4	CONNECTOR - PLUG IN PCB TERMINAL BLOCK	1
25	S-1694	CABLE TIE	7
26	E-889-12	FUSE - GLASS, 1/2A T "F5"	1
27	E-889	FUSE - GLASS, 1-1/4A T "F6"	1
28	E-1584-( )	LABEL - PART NUMBER/ REVISION LEVEL	1
29	H-6910-63203	SCREW - #6-32 X 3/8" BUT HD	10
30	H-6423-#6	NUT - #6-32 HEX	6
31	H-7324-#6	WASHER - #6 INT. TOOTHLOCK	16
32	H-6910-83204	SCREW - #8-32 X 1/2" BUT	14
33	H-7324-#8	WASHER - #8 INT. TOOTHLOCK	14
34	H-6910-102403	SCREW - #10-24 X 3/8" BUT HD	4
35	H-7324-#10	WASHER - #10 INT. TOOTHLOCK	4
36	E-2756-3	FILTER - FERRITE CORE	4
37			
38	E-1214-64	CONNECTOR-1/4" NON-INS RING	1
39	EE-3106	CABLE ASSEMBLY - BACKGAGE MOTOR	1
40	EE-2769	CABLE ASSEMBLY - CUT SOLENOID	1
41	EE-3105	CABLE ASSEMBLY - ENCODER	1
42	EE-2770-3	PROXIMITY SWITCH ASSEMBLY - KNIFE DOWN	1
43	EE-2770	PROXIMITY SWITCH ASSEMBLY - KNIFE LATCH	1

Power Panel Assembly (cont.)

NO.	PART NO.	DESCRIPTION OF ACCESSORIES	QTY
44	EE-2770-4	PROXIMITY SWITCH ASSEMBLY - KNIFE UP	1
45	EE-2770-2	PROXIMITY SWITCH ASSEMBLY - CLAMP UP	1
46	EE-2775	CABLE ASSEMBLY - KNIFE LATCH	1
47	E-2066-12	CONNECTOR - PLUG-IN PCB TERM. BLOCK	1
48	EE-1688-1	CABLE ASSEMBLY - PRESET	1
49	E-2743	WIRE - #18GA. GRN/YEL MTW 14" LONG	1
50	E-1356-131	LABEL - TERMINAL BLOCK	1
51	E-1356-132	LABEL - TERMINAL BLOCK	1
52	E-1214-4	CONNECTOR - #8 INS. LOCKING FORK	17
53			
54	E-1977-3	RAIL - TERMINAL BLOCK, 3" LONG	1
55	E-849-R	WIRE - #16 GA. RED MTW 121" TOTAL	1
56	E-709-R	WIRE - #18 GA. RED MTW 466" TOTAL	1
57	E-1214-9	CONNECTOR - #8 INS. RING	1
58	E-1214-54	CONNECTOR - 1/4" FULLY INS. MALE Q.D.	3
59	E-1214-49	CONNECTOR - 1/4" FULLY INS. FEMALE Q.D.	4
60	E-2403-11	RELAY - CONTACTOR (24VAC COIL)	1
61	EE-3436	CABLE ASSEMBLY - SHIELD SWITCH	1
62			
63			
64	S-1781-42	LABEL - GROUND SYMBOL, SECONDARY	1
65	S-1781-197	LABEL - GROUND SYMBOL, PRIMARY	1
66	K-3548	KIT - CUT SWITCH ASSEMBLY	1
67	E-2066-8	CONNECTOR - PLUG IN PCB TERMINAL BLOCK	1
68	E-1429-15	WIRE DUCT - 10-3/4" LONG	1
69	E-2719-15	COVER - WIRE DUCT, 10-3/4" LONG	1
70	E-702-R	WIRE - #14 GA. RED MTW 62" TOTAL	1
71	E-2756-6	FILTER - FERRITE CORE	2
72	E-2330-3	FUSE - 2A SB, GLASS METRIC (PCF1&4)	2
73	E-2330-5	FUSE - 3.15A SLO-BLO, GLASS METRIC (PCF2)	1
74	E-2330-7	FUSE - 5A SLO-BLO, GLASS METRIC (PCF3)	1
75			
76	E-1453-6	SHRINK TUBING - 1/8" DIA., 1" LONG	2
77	H-6910-404	SCREW - 1/4-20 X 1/2 BUT HD CAP	2
78	H-7324-8	WASHER - 1/4" INT. TOOTHLOCK	2
79	E-1599-11	IC - 32 PIN PACKAGE (BLANK)	1
80	E-2864	SEPARATOR PLATE - TERMINAL BLOCK	1
81	E-2066-5	CONNECTOR - PLUG IN PCB TERM. 5 POLE	1
82	E-2376-8	CONTACTOR - AUX. (1) N.O. (1) N.C.)	1
83	S-1781-35	LABEL - CAUTION, ELECTRICAL SHOCK	1
84	E-2066-2	HEADER - 2 POS (PHOENIX)	1
85	E-2066-3	HEADER - 3 POS (PHOENIX)	1
86	EE-2769-3	CABLE ASSEMBLY - ADJUST. PRESS SOL.	1

4.33 Power Panel Assembly – Standard Cut Switches w/Tilt Shield and circuit breakers

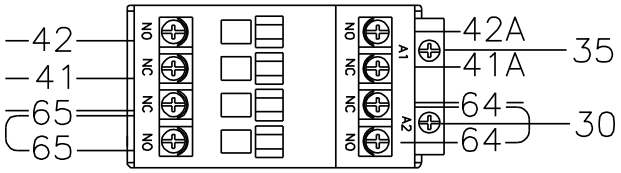
EE-2765-8 Rev. “A” - Two hand control with tilt shield



Power Panel Assembly (cont.)

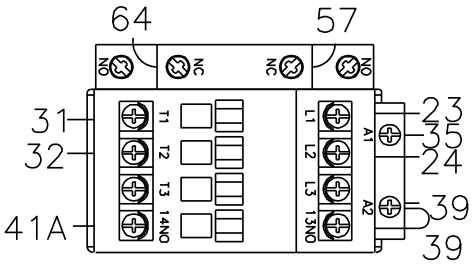
TILT SHIELD RELAY DETAIL

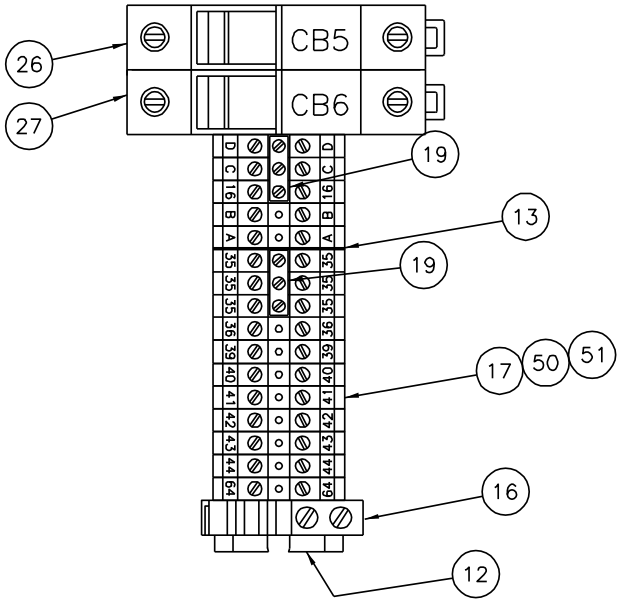
SCALE: 2X



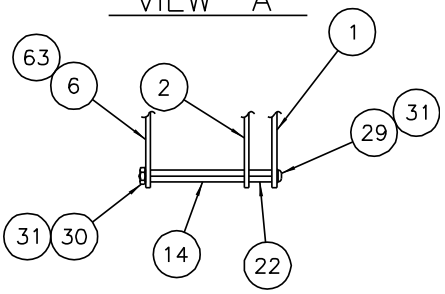
MOTOR STARTER DETAIL

SCALE: 2X





VIEW "A"



TRANSFORMER COLOR CODE T1	
WIRE COLOR	WIRE NO.
BLACK	27
BLACK/YELLOW	16A
BLACK/RED	16C
WHITE	35
YELLOW	34
RED	33
GREEN	–

TRANSFORMER COLOR CODE T2	
WIRE COLOR	WIRE NO.
BLACK	26
BLACK/YELLOW	16B
BLACK/RED	16D
BLUE	9
BLUE/YELLOW	10
BLUE	11
RED	8
RED/YELLOW	7
RED	6

Power Panel Assembly (cont.)

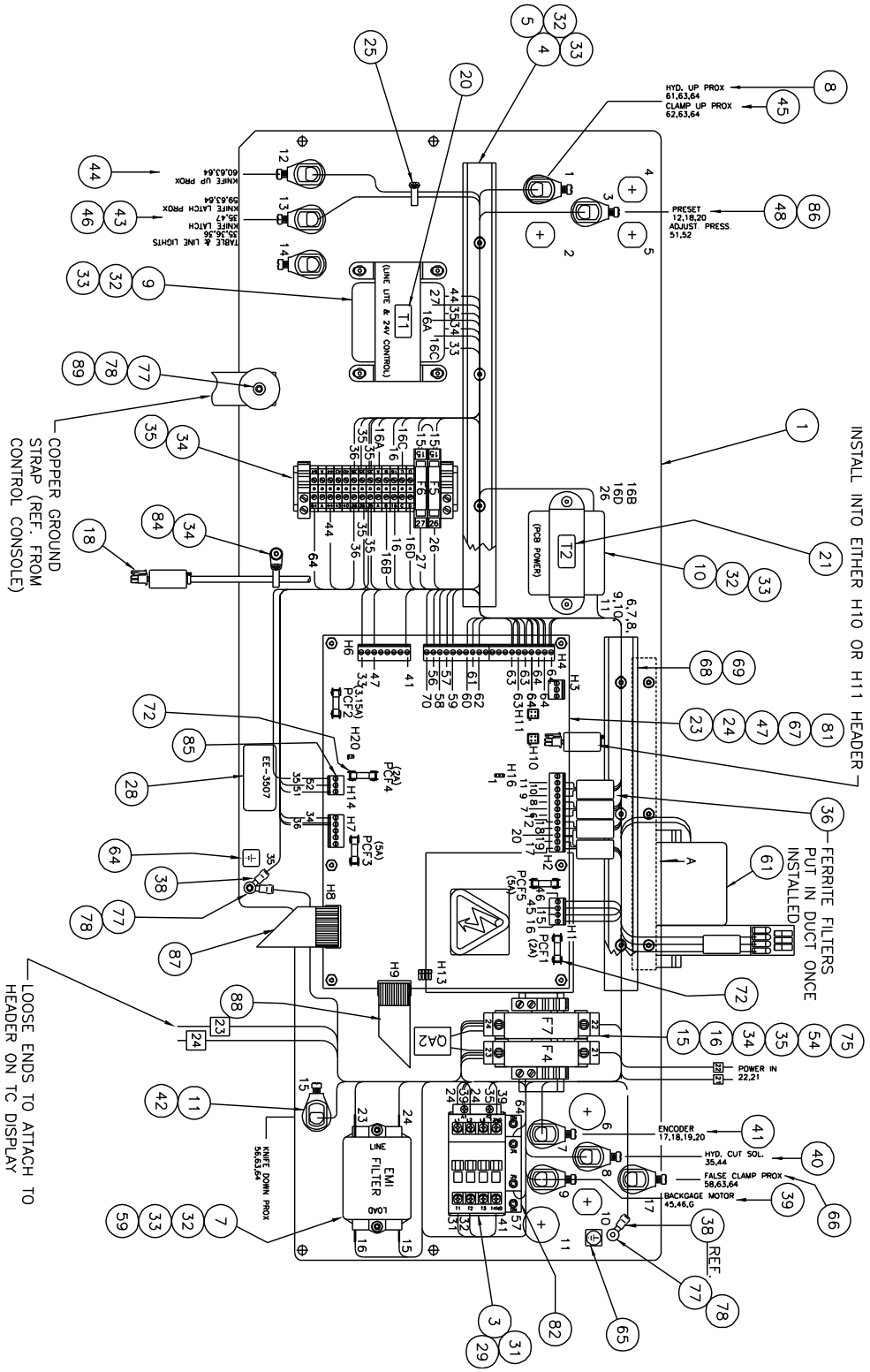
NO.	PART NO.	DESCRIPTION OF ACCESSORIES	QTY
1	43006-2	PANEL - ELECTRICAL	1
2	EE-2807-2	P.C.B. ASSEMBLY - CONTROLLER	1
3	E-2805-6	STARTER - CONTACTOR	1
4	E-1429-14	WIRE DUCT - 13-1/2" LONG	1
5	E-2719-14	COVER - WIRE DUCT, 13-1/2" LONG	1
6	47157-7	P.C.B. COVER - CLEAR	1
7	E-2730-3	FILTER - EMI, PANEL MOUNT	1
8	EE-2770-1	PROXIMITY ASSEMBLY - HYDRUALIC UP	1
9	E-2742-6	TRANSFORMER - 120/208/230V, 12/24V SEC.	1
10	E-2742-5	TRANSFORMER - 120/230V PRIM., 16/24V SEC.	1
11	S-1350-16	STRAIN RELIEF - CABLE	11
12	E-1977-13	RAIL - TERMINAL BLOCK, 6" LONG	1
13	E-2864	SEPARATOR PLATE - TERMINAL BLOCK	1
14	E-1152-43	STAND-OFF - 2" LONG, #6-32 THR'D	2
15	E-1599-11	IC - 32 PIN PACKAGE (BLANK)	1
16	E-2070-1	END BRACKET - TERMINAL BLOCK	3
17	E-2068-8	TERMINAL BLOCK - THROUGH, #10 GA.	16
18	E-1736-2	QUENCHARC - WIRE LEADS (QA1)	1
19	E-2507-3	FIXED BRIDGE - TERMINAL BLOCK - 3 POLE	2
20	E-1584-51	LABEL - TRANSFORMER, "T1"	1
21	E-1584-52	LABEL - TRANSFORMER, "T2"	1
22	E-1152-56	STAND-OFF - 1/2" LONG, #6-32 THR'D	6
23	E-2066-10	CONNECTOR - PLUG IN PCB TERMINAL BLOCK	2
24	E-2066-4	CONNECTOR - PLUG IN PCB TERMINAL BLOCK	1
25	S-1694	CABLE TIE	7
26	E-3264	CIRCUIT BREAKER - 1/2A (CB5)	1
27	E-3264-1	CIRCUIT BREAKER - 1A (CB6)	1
28	E-1584-( )	LABEL - PART NUMBER/ REVISION LEVEL	1
29	H-6910-63203	SCREW - #6-32 X 3/8" BUT HD	10
30	H-6423-#6	NUT - #6-32 HEX	6
31	H-7324-#6	WASHER - #6 INT. TOOTHLOCK	16
32	H-6910-83204	SCREW - #8-32 X 1/2" BUT	14
33	H-7324-#8	WASHER - #8 INT. TOOTHLOCK	14
34	H-6910-102403	SCREW - #10-24 X 3/8" BUT HD	4
35	H-7324-#10	WASHER - #10 INT. TOOTHLOCK	4
36	E-2756-3	FILTER - FERRITE CORE	4
37	EE-2769-3	CABLE ASSEMBLY - ADJUST. PRESS SOL.	1
38	E-1214-64	CONNECTOR-1/4" NON-INS RING	1
39	EE-3106	CABLE ASSEMBLY - BACKGAGE MOTOR	1
40	EE-2769	CABLE ASSEMBLY - CUT SOLENOID	1

Power Panel Assembly (cont.)

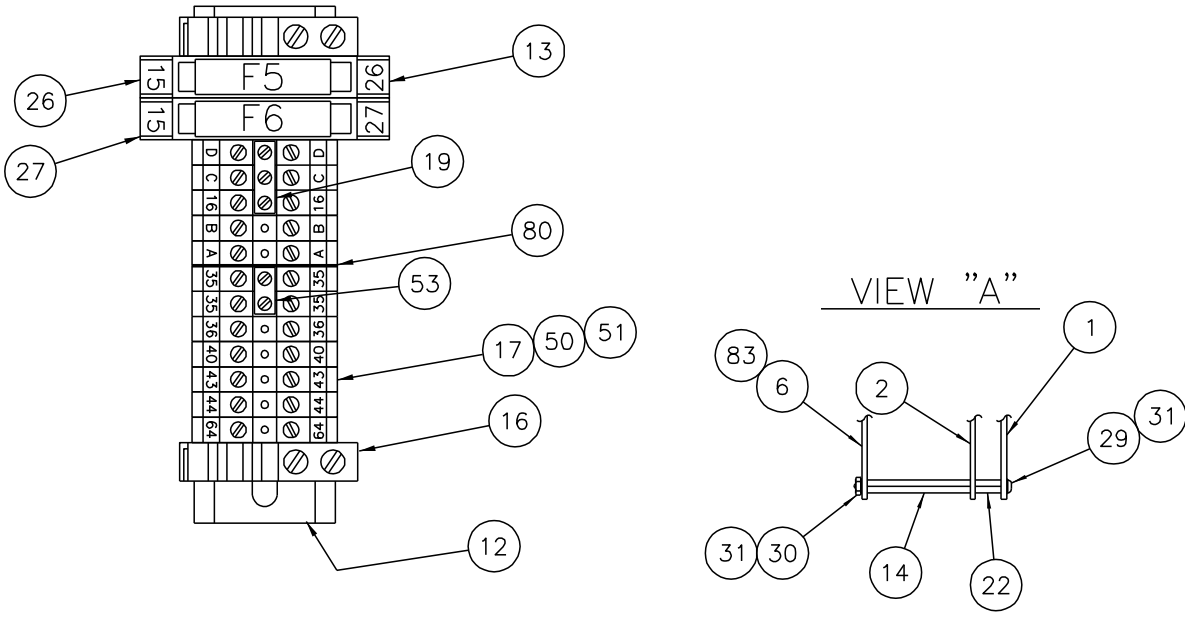
NO.	PART NO.	DESCRIPTION OF ACCESSORIES	QTY
41	EE-3105	CABLE ASSEMBLY - ENCODER	1
42	EE-2770-3	PROXIMITY SWITCH ASSEMBLY - KNIFE DOWN	1
43	EE-2770	PROXIMITY SWITCH ASSEMBLY - KNIFE LATCH	1
44	EE-2770-4	PROXIMITY SWITCH ASSEMBLY - KNIFE UP	1
45	EE-2770-2	PROXIMITY SWITCH ASSEMBLY - CLAMP UP	1
46	EE-2775	CABLE ASSEMBLY - KNIFE LATCH	1
47	E-2066-12	CONNECTOR - PLUG-IN PCB TERM. BLOCK	1
48	EE-1688-1	CABLE ASSEMBLY - PRESET	1
49	E-2743	WIRE - #18GA. GRN/YEL MTW 14" LONG	1
50	E-1356-131	LABEL - TERMINAL BLOCK	1
51	E-1356-132	LABEL - TERMINAL BLOCK	1
52	E-1214-4	CONNECTOR - #8 INS. LOCKING FORK	17
53	E-2066-5	CONNECTOR - PLUG IN PCB TERM. 5 POLE	1
54	E-1977-3	RAIL - TERMINAL BLOCK, 3" LONG	1
55	E-849-R	WIRE - #16 GA. RED MTW 121" TOTAL	1
56	E-709-R	WIRE - #18 GA. RED MTW 466" TOTAL	1
57	E-1214-9	CONNECTOR - #8 INS. RING	1
58	E-1214-54	CONNECTOR - 1/4" FULLY INS. MALE Q.D.	3
59	E-1214-49	CONNECTOR - 1/4" FULLY INS. FEMALE Q.D.	4
60	E-2403-11	RELAY - CONTACTOR (24VAC/DC COIL)	1
61	EE-3436	CABLE ASSEMBLY - SHIELD SWITCH	1
62	E-2376-8	CONTACTOR - AUX. (1) N.O. (1) N.C.)	1
63	S-1781-35	LABEL - CAUTION, ELECTRICAL SHOCK	1
64	S-1781-42	LABEL - GROUND SYMBOL, SECONDARY	1
65	S-1781-197	LABEL - GROUND SYMBOL, PRIMARY	1
66	K-3548	CUT SWITCH ASSEMBLY	1
67	E-2066-8	CONNECTOR - PLUG IN PCB TERMINAL BLOCK	1
68	E-1429-15	WIRE DUCT - 10-3/4" LONG	1
69	E-2719-15	COVER - WIRE DUCT, 10-3/4" LONG	1
70	E-702-R	WIRE - #14 GA. RED MTW 62" TOTAL	1
71	E-2756-6	FILTER - FERRITE CORE	2
72	E-2330-3	FUSE - 2A SB, GLASS METRIC (PCF1&4)	2
73	E-2330-5	FUSE - 3.15A SLO-BLO, GLASS METRIC (PCF2)	1
74	E-2330-7	FUSE - 5A SLO-BLO, GLASS METRIC (PCF3)	1
75	E-2066-2	HEADER - 2 POS (PHOENIX)	1
76	E-1453-6	SHRINK TUBING - 1/8" DIA., 1" LONG	2
77	H-6910-404	SCREW - 1/4-20 X 1/2 BUT HD CAP	2
78	H-7324-8	WASHER - 1/4" INT. TOOTHLOCK	2
79	E-2066-3	HEADER - 3 POS (PHOENIX)	1
80	E-3264-11	CIRCUIT BREAKER - 10A (CB4 & CB7)	2

4.34 Power Panel Assembly – Standard cut Switches w/TC Option

EE-3507 Rev. "B" TC Power panel assembly with fuses



TC Power Panel Assembly (cont.)



TRANSFORMER COLOR CODE	
T1	
WIRE COLOR	WIRE NO.
BLACK	27
BLACK/YELLOW	16A
BLACK/RED	16C
WHITE	35
YELLOW	34
RED	33
GREEN	–
T2	
WIRE COLOR	WIRE NO.
BLACK	26
BLACK/YELLOW	16B
BLACK/RED	16D
BLUE	9
BLUE/YELLOW	10
BLUE	11
RED	8
RED/YELLOW	7
RED	6

TC Power Panel Assembly (cont.)

NO.	PART NO.	DESCRIPTION OF ACCESSORIES	QTY
1	43006-2	PANEL - ELECTRICAL	1
2	EE-3432-2	P.C.B. ASSEMBLY - TC I/O	1
3	E-2805-6	STARTER - CONTACTOR	1
4	E-1429-14	WIRE DUCT - 13-1/2" LONG	1
5	E-2719-14	COVER - WIRE DUCT, 13-1/2" LONG	1
6	47157-7	P.C.B. COVER - CLEAR	1
7	E-2730-3	FILTER - EMI, PANEL MOUNT	1
8	EE-2770-1	PROXIMITY ASSEMBLY - HYDRUALIC UP	1
9	E-2742-6	TRANSFORMER - 120/208/230V, 12/24V SEC.	1
10	E-2742-5	TRANSFORMER - 120/230V PRIM., 16/24V SEC.	1
11	S-1350-16	STRAIN RELIEF - CABLE	10
12	E-1977-18	RAIL - TERMINAL BLOCK, 6-1/2" LONG	1
13	E-1974-9	FUSE BLOCK - TERMINAL MOUNT, GLASS FUSE	2
14	E-1152-43	STAND-OFF - 2" LONG, #6-32 THR'D	2
15	E-1974-10	FUSE HOLDER - RAIL MOUNT, MIDGET	2
16	E-2070-1	END BRACKET - TERMINAL BLOCK	4
17	E-2068-8	TERMINAL BLOCK - THROUGH, #10 GA.	12
18	EE-3460-1	CABLE ASSEMBLY - 'CAN ' PLUG	1
19	E-2507-3	FIXED BRIDGE - TERMINAL BLOCK - 3 POLE	1
20	E-1584-51	LABEL - TRANSFORMER, "T1"	1
21	E-1584-52	LABEL - TRANSFORMER, "T2"	1
22	E-1152-56	STAND-OFF - 1/2" LONG, #6-32 THR'D	6
23	E-2066-10	CONNECTOR - PLUG IN PCB TERMINAL BLOCK	2
24	E-2066-4	CONNECTOR - PLUG IN PCB TERMINAL BLOCK	1
25	S-1694	CABLE TIE	7
26	E-889-12	FUSE - GLASS, 1/2A T "F5"	1
27	E-889	FUSE - GLASS, 1-1/4A T "F6"	1
28	E-1584-( )	LABEL - PART NUMBER/ REVISION LEVEL	1
29	H-6910-63203	SCREW - #6-32 X 3/8" BUT HD	8
30	H-6423-#6	NUT - #6-32 HEX	6
31	H-7324-#6	WASHER - #6 INT. TOOTHLOCK	14
32	H-6910-83204	SCREW - #8-32 X 1/2" BUT	14
33	H-7324-#8	WASHER - #8 INT. TOOTHLOCK	14
34	H-6910-102403	SCREW - #10-24 X 3/8" BUT HD	4
35	H-7324-#10	WASHER - #10 INT. TOOTHLOCK	4
36	E-2756-3	FILTER - FERRITE CORE	4
37			
38	E-1214-63	CONNECTOR-1/4" NON-INS RING	1
39	EE-3106	CABLE ASSEMBLY - BACKGAGE MOTOR	1
40	EE-2769-19	CABLE ASSEMBLY - CUT SOLENOID	1

TC Power Panel Assembly (cont.)

NO.	PART NO.	DESCRIPTION OF ACCESSORIES	QTY
41	EE-3105	CABLE ASSEMBLY - ENCODER	1
42	EE-2770-3	PROXIMITY SWITCH ASSEMBLY - KNIFE DOWN	1
43	EE-2770	PROXIMITY SWITCH ASSEMBLY - KNIFE LATCH	1
44	EE-2770-4	PROXIMITY SWITCH ASSEMBLY - KNIFE UP	1
45	EE-2770-2	PROXIMITY SWITCH ASSEMBLY - CLAMP UP	1
46	EE-2775	CABLE ASSEMBLY - KNIFE LATCH	1
47	E-2066-12	CONNECTOR - PLUG-IN PCB TERM. BLOCK	1
48	EE-1688-1	CABLE ASSEMBLY - PRESET	1
49	E-2743	WIRE - #18 GA. GRN/YEL MTW 14" TOTAL	1
50	E-1356-131	LABEL - TERMINAL BLOCK	1
51	E-1356-132	LABEL - TERMINAL BLOCK	1
52	E-1163-10	WIRE - #20 GA. BLACK MTW 125" TOTAL	1
53	E-2507-2	FIXED BRIDGE - TERMINAL BLOCK - 2 POLE	1
54	E-1977-3	RAIL - TERMINAL BLOCK, 3" LONG	1
55	E-849-R	WIRE - #16 GA. RED MTW 186" TOTAL	1
56	E-709-R	WIRE - #18 GA. RED MTW 302" TOTAL	1
57	E-1214-9	CONNECTOR - #8 INS. RING	1
58	E-1214-54	CONNECTOR - 1/4" FULLY INS. MALE Q.D.	3
59	E-1214-49	CONNECTOR - 1/4" FULLY INS. FEMALE Q.D.	4
60	E-1214-4	CONNECTOR - #8 INS. LOCKING FORK	16
61	EE-3359	ASSEMBLY - ELECT. EYE	1
62			
63			
64	S-1781-42	LABEL - GROUND SYMBOL, SECONDARY	1
65	S-1781-197	LABEL - GROUND SYMBOL, PRIMARY	1
66	EE-2770-7	PROXIMITY ASSEMBLY - FALSE CLAMP "F"	1
67	E-2066-8	CONNECTOR - PLUG IN PCB TERMINAL BLOCK	1
68	E-1429-15	WIRE DUCT - 10-3/4" LONG	1
69	E-2719-15	COVER - WIRE DUCT, 10-3/4" LONG	1
70	E-702-R	WIRE - #14 GA. RED MTW 38" TOTAL	1
71			
72	E-2330-3	FUSE - 2A SB, GLASS METRIC (PCF1 & PCF4)	2
73			
74			
75	E-1736-2	QUENCHARC (QA2)	1
76	E-1453-6	SHRINK TUBING - 1/8" DIA., 1" LONG	2
77	H-6910-404	SCREW - 1/4-20 X 1/2 BUT HD CAP	3
78	H-7324-8	WASHER - 1/4" INT. TOOTHLOCK	3
79			

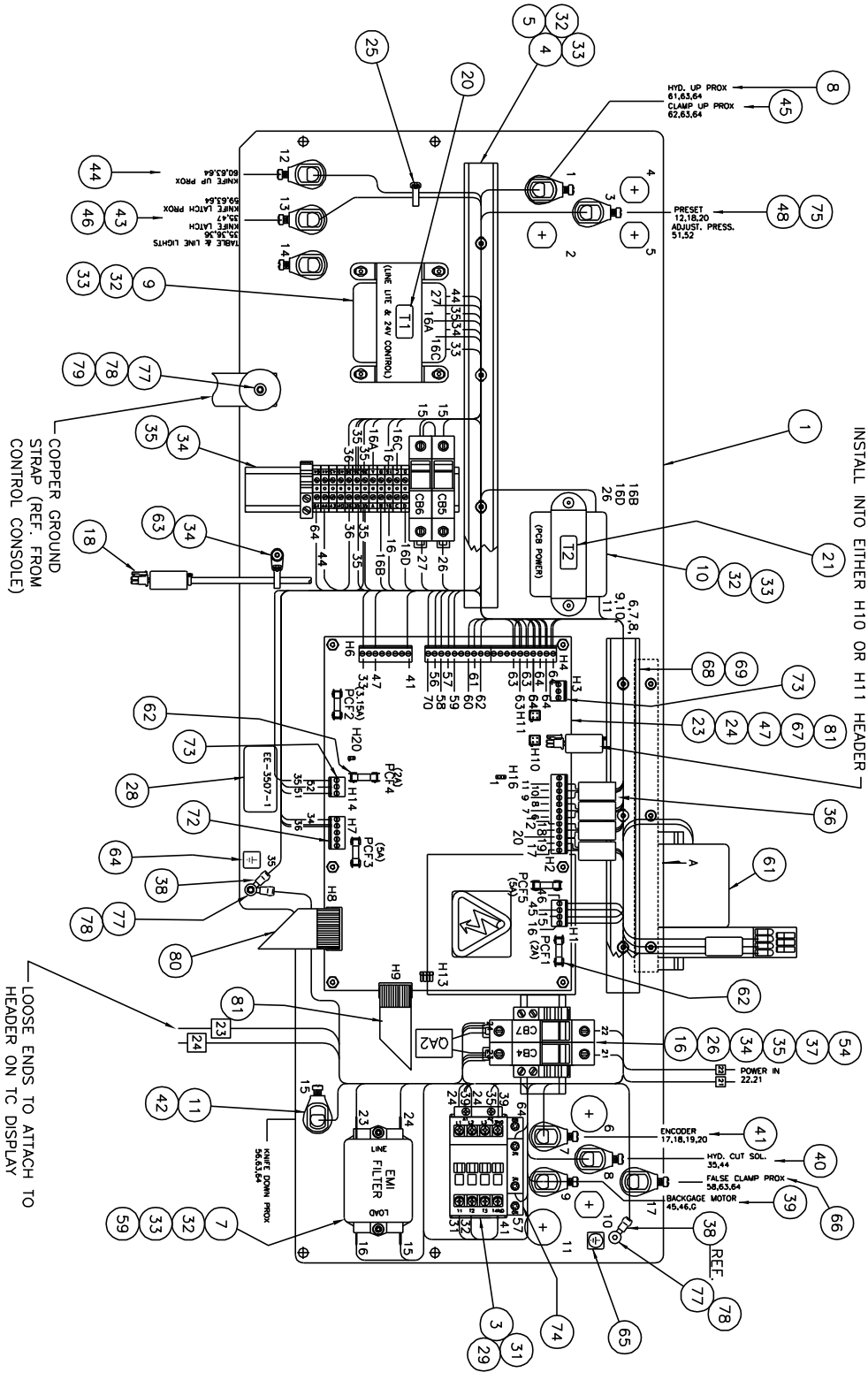
TC Power Panel Assembly (cont.)

NO.	PART NO.	DESCRIPTION OF ACCESSORIES	QTY
80	E-2864	SEPARATOR PLATE - TERMINAL BLOCK	1
81	E-2066-5	CONNECTOR - PLUG IN PCB TERM. 5 POLE	1
82	E-2376-8	CONTACTOR - AUX. (1) N.O. (1) N.C.)	1
83	S-1781-35	LABEL - CAUTION, ELECTRICAL SHOCK	1
84	S-1694-2	CABLE TIE - #10 SCREW MOUNT	1
85	E-2066-3	CONNECTOR - PLUG IN PCB TERM. 3 POLE	2
86	EE-2769-3	CABLE ASSEMBLY - ADJUST. PRESS SOL.	1
87	EE-2855-15	CABLE ASSEMBLY - RIBBON, 20 PIN	REF
88	EE-2855-16	CABLE ASSEMBLY - RIBBON, 14 PIN	REF
89	H-6993-510	WASHER - 5/16 X 1-1/4 FENDER	1
90	K-3548-1	KIT - CUT BUTTONS, STANDARD 200TC	REF
91	K-3346-3	KIT- CUT BUTTONS, ERGO	REF

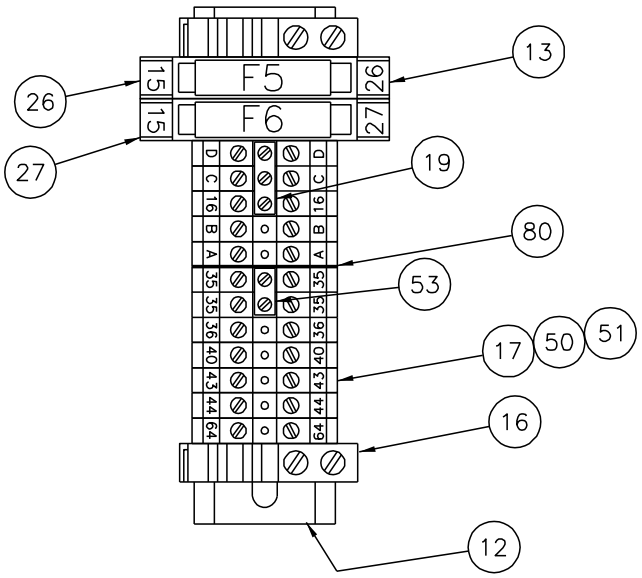
NOTES

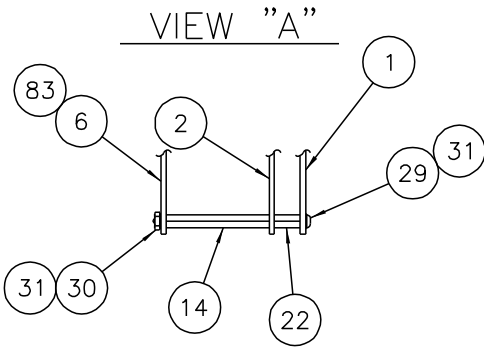
4.35 Power Panel Assembly – Standard cut Switches w/TC Option

EE-3507-1 Rev. "B" TC Power panel assembly with circuit breakers



TC Power Panel Assembly (cont.)





TRANSFORMER COLOR CODE	
T1	
WIRE COLOR	WIRE NO.
BLACK	27
BLACK/YELLOW	16A
BLACK/RED	16C
WHITE	35
YELLOW	34
RED	33
GREEN	–
T2	
WIRE COLOR	WIRE NO.
BLACK	26
BLACK/YELLOW	16B
BLACK/RED	16D
BLUE	9
BLUE/YELLOW	10
BLUE	11
RED	8
RED/YELLOW	7
RED	6

TC Power Panel Assembly (cont.)

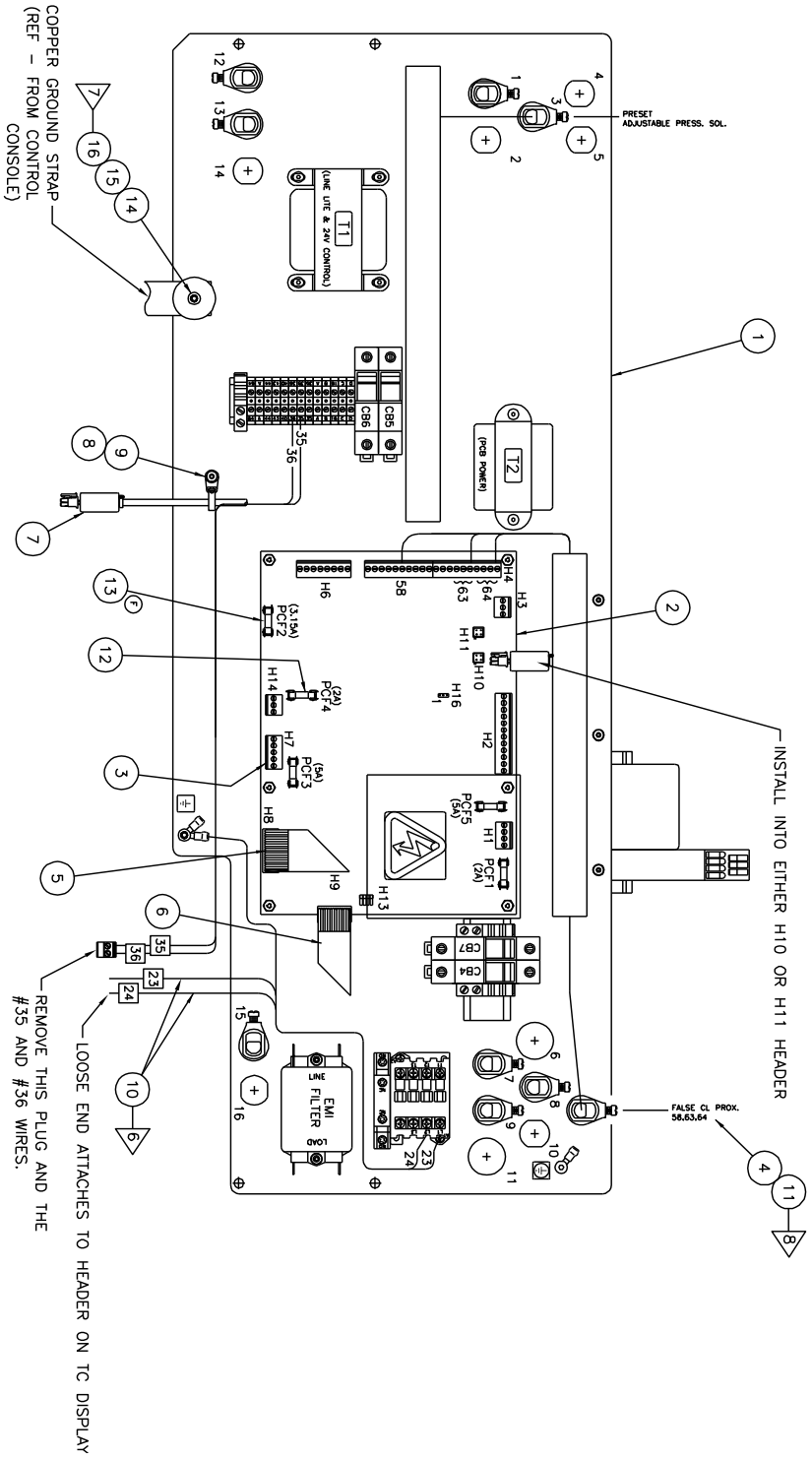
NO.	PART NO.	DESCRIPTION OF ACCESSORIES	QTY
1	43006-2	PANEL - ELECTRICAL	1
2	EE-3432-2	P.C.B. ASSEMBLY - TC I/O	1
3	E-2805-6	STARTER - CONTACTOR	1
4	E-1429-14	WIRE DUCT - 13-1/2" LONG	1
5	E-2719-14	COVER - WIRE DUCT, 13-1/2" LONG	1
6	47157-7	P.C.B. COVER - CLEAR	1
7	E-2730-3	FILTER - EMI, PANEL MOUNT	1
8	EE-2770-1	PROXIMITY ASSEMBLY - HYDRUALIC UP	1
9	E-2742-6	TRANSFORMER - 120/208/230V, 12/24V SEC.	1
10	E-2742-5	TRANSFORMER - 120/230V PRIM., 16/24V SEC.	1
11	S-1350-16	STRAIN RELIEF - CABLE	10
12	E-1977-18	RAIL - TERMINAL BLOCK, 6-1/2" LONG	1
13	E-3462	CIRCUIT BREAKER - 1/2A (CB5)	1
14	E-1152-43	STAND-OFF - 2" LONG, #6-32 THR'D	2
15	E-3462-1	CIRCUIT BREAKER - 1A (CB6)	1
16	E-2070-1	END BRACKET - TERMINAL BLOCK	4
17	E-2068-8	TERMINAL BLOCK - THROUGH, #10 GA.	12
18	EE-3460-1	CABLE ASSEMBLY - 'CAN ' PLUG	1
19	E-2507-3	FIXED BRIDGE - TERMINAL BLOCK - 3 POLE	1
20	E-1584-51	LABEL - TRANSFORMER, "T1"	1
21	E-1584-52	LABEL - TRANSFORMER, "T2"	1
22	E-1152-56	STAND-OFF - 1/2" LONG, #6-32 THR'D	6
23	E-2066-10	CONNECTOR - PLUG IN PCB TERMINAL BLOCK	2
24	E-2066-4	CONNECTOR - PLUG IN PCB TERMINAL BLOCK	1
25	S-1694	CABLE TIE	7
26	E-3264-13	CIRCUIT BREAKER - 13A (CB4 & 7) 50/60HZ	2
27	E-2864	SEPARATOR PLATE - TERMINAL BLOCK	1
28	E-1584-( )	LABEL - PART NUMBER/ REVISION LEVEL	1
29	H-6910-63203	SCREW - #6-32 X 3/8" BUT HD	8
30	H-6423-#6	NUT - #6-32 HEX	6
31	H-7324-#6	WASHER - #6 INT. TOOTHLOCK	14
32	H-6910-83204	SCREW - #8-32 X 1/2" BUT	14
33	H-7324-#8	WASHER - #8 INT. TOOTHLOCK	14
34	H-6910-102403	SCREW - #10-24 X 3/8" BUT HD	4
35	H-7324-#10	WASHER - #10 INT. TOOTHLOCK	4
36	E-2756-3	FILTER - FERRITE CORE	4
37	E-1736-2	QUENCHARC (QA2)	1
38	E-1214-63	CONNECTOR-1/4" NON-INS RING	1
39	EE-3106	CABLE ASSEMBLY - BACKGAGE MOTOR	1
40	EE-2769-19	CABLE ASSEMBLY - CUT SOLENOID	1

TC Power Panel Assembly (cont.)

NO.	PART NO.	DESCRIPTION OF ACCESSORIES	QTY
41	EE-3105	CABLE ASSEMBLY - ENCODER	1
42	EE-2770-3	PROXIMITY SWITCH ASSEMBLY - KNIFE DOWN	1
43	EE-2770	PROXIMITY SWITCH ASSEMBLY - KNIFE LATCH	1
44	EE-2770-4	PROXIMITY SWITCH ASSEMBLY - KNIFE UP	1
45	EE-2770-2	PROXIMITY SWITCH ASSEMBLY - CLAMP UP	1
46	EE-2775	CABLE ASSEMBLY - KNIFE LATCH	1
47	E-2066-12	CONNECTOR - PLUG-IN PCB TERM. BLOCK	1
48	EE-1688-1	CABLE ASSEMBLY - PRESET	1
49	E-2743	WIRE - #18 GA. GRN/YEL MTW 14" TOTAL	1
50	E-1356-131	LABEL - TERMINAL BLOCK	1
51	E-1356-132	LABEL - TERMINAL BLOCK	1
52	E-1163-10	WIRE - #20 GA. BLACK MTW 125" TOTAL	1
53	E-2507-2	FIXED BRIDGE - TERMINAL BLOCK - 2 POLE	1
54	E-1977-3	RAIL - TERMINAL BLOCK, 3" LONG	1
55	E-849-R	WIRE - #16 GA. RED MTW 186" TOTAL	1
56	E-709-R	WIRE - #18 GA. RED MTW 302" TOTAL	1
57	E-1214-9	CONNECTOR - #8 INS. RING	1
58	E-1214-54	CONNECTOR - 1/4" FULLY INS. MALE Q.D.	3
59	E-1214-49	CONNECTOR - 1/4" FULLY INS. FEMALE Q.D.	4
60	E-1214-4	CONNECTOR - #8 INS. LOCKING FORK	16
61	EE-3359	ASSEMBLY - ELECT. EYE	1
62	E-2330-3	FUSE - 2A SB, GLASS METRIC (PCF1 & PCF4)	2
63	S-1694-2	CABLE TIE - #10 SCREW MOUNT	1
64	S-1781-42	LABEL - GROUND SYMBOL, SECONDARY	1
65	S-1781-197	LABEL - GROUND SYMBOL, PRIMARY	1
66	EE-2770-7	PROXIMITY ASSEMBLY - FALSE CLAMP "F"	1
67	E-2066-8	CONNECTOR - PLUG IN PCB TERMINAL BLOCK	1
68	E-1429-15	WIRE DUCT - 10-3/4" LONG	1
69	E-2719-15	COVER - WIRE DUCT, 10-3/4" LONG	1
70	E-702-R	WIRE - #14 GA. RED MTW 38" TOTAL	1
71	S-1781-35	LABEL - CAUTION, ELECTRICAL SHOCK	1
72	E-2066-5	CONNECTOR - PLUG IN PCB TERM. 5 POLE	1
73	E-2066-3	CONNECTOR - PLUG IN PCB TERM. 3 POLE	2
74	E-2376-8	CONTACTOR - AUX. (1) N.O. (1) N.C.)	1
75	EE-2769-3	CABLE ASSEMBLY - ADJUST. PRESS SOL.	1
76	E-1453-6	SHRINK TUBING - 1/8" DIA., 1" LONG	2
77	H-6910-404	SCREW - 1/4-20 X 1/2 BUT HD CAP	3
78	H-7324-8	WASHER - 1/4" INT. TOOTHLOCK	3
79	H-6993-510	WASHER - 5/16 X 1-1/4 FENDER	1
80	EE-2855-15	CABLE ASSEMBLY - RIBBON, 20 PIN	REF

4.36 KIT – Field Up-grade – 'TC' Option

EE-3475 Rev. "J" - Two hand control with elec. Eyes (TC Option)



Kit – Field Up-Grade – (TC) Option (cont.)

NOTES:

1) REMOVE THE MAIN PC BOARD (EE-2807-2) AND REPLACE WITH ITEM #2.

2) ALL OF THE WIRED PLUGS PLUG INTO THE SAME SPOT ON THE NEW PCB AS THEY DID ON THE OLD PCB.

3) TRANSFER ALL OF THE OLD FUSES TO THE SAME LOCATIONS ON THE NEW BOARD EXCEPT FOR FUSES "PCF2" AND "PCF4" – REPLACE THESE TWO FUSES WITH THE NEW SUPPLIED FUSES ITEMS #13 & #14.

4) PLUG ITEM #7 (CAN PLUG) INTO HEADER #10 OR #11 – CABLE TIE TO THE PANEL AS SHOWN AND HANG OFF THE FRONT OF THE PANEL.

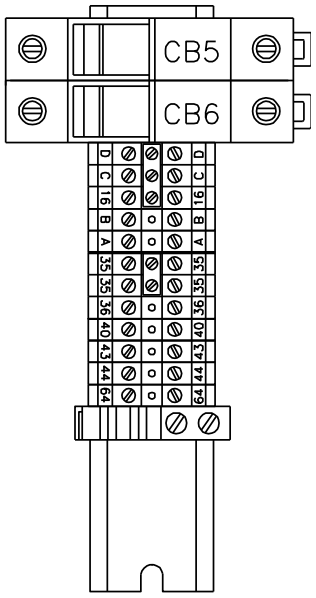
5) MOVE THE JUMPER ON HEADER #16 SO THAT PINS 1 AND 2 ARE JUMPED.

6 STRIP BACK THE WIRE INSULATION 1/4", EACH END.
WIRE TAG ONE WIRE #23 AND INSERT INTO FUSE HOLDER F4 OR THE STARTER TERMINAL 'L1'.
WIRE TAG THE OTHER WIRE #24 AND INSERT INTO FUSE HOLDER F7 OR THE STARTER TERMINAL 'L2'.

7 DO NOT TIGTHEN THE SCREW UNTIL THE GROUND STRAP FROM THE CONTROL CONSOLE IS INSTALLED.

8 SNAP THE SUPPLIED STRAIN RELIEF (ITEM #12) INTO THE OPEN HOLE ON THE UPPER RIGHT HAND CORNER OF THE POWER PANEL – AS SHOWN.
INSTALL THE FALSE CLAMP PROX. ASM. (ITEM #4) UP THRU THE BOTTOM OF THE STRAIN RELIEF AND THEN ROUTE THE LOOSE WIRES AS FOLLOWS;
WIRE #58 TO PCB HEADER 'H5-8'
WIRE #64 TO PCB HEADER 'H4' PINS 1 THRU 4
WIRE #63 TO PCB HEADER 'H4' PINS 5 THRU 8

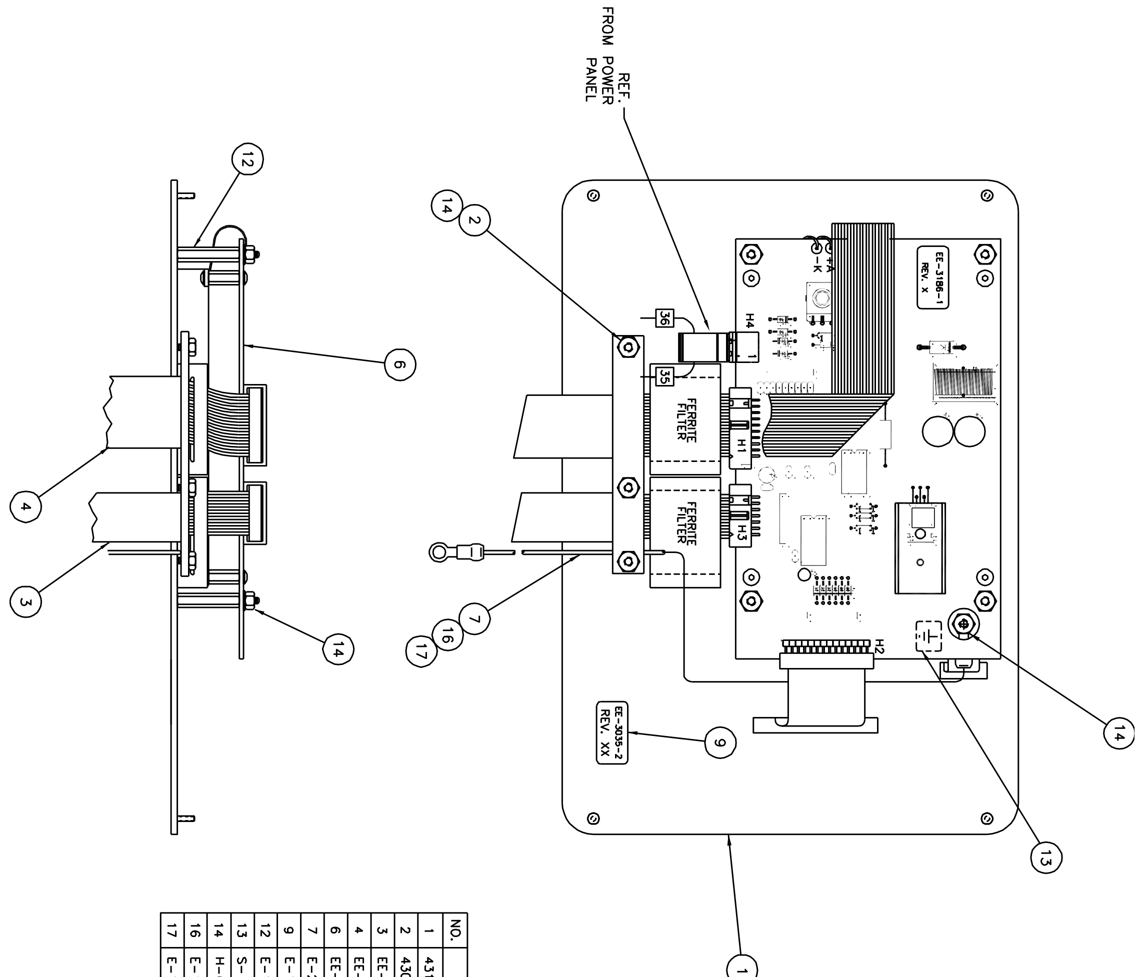
EE-2765-7
W/ELEC. EYES



NO.	PART NO.	DESCRIPTION OF ACCESSORIES	QTY
1	EE-2765-2 or 7	PANEL ASSEMBLY – ELECTRICAL W/EYES	ref
2	EE-3432-2	P.C.B. ASSEMBLY – TC I/O	1
3	E-2066-5	CONNECTOR – PLUG IN PCB TERM. 5 POLE	1
4	EE-2770-7	PROX. ASSEMBLY – FALSE CLAMP "F"	1
5	EE-2855-15	CABLE ASSEMBLY – RIBBON, 20 PIN	REF
6	EE-2855-16	CABLE ASSEMBLY – RIBBON, 14 PIN	REF
7	EE-3460-1	CABLE ASSEMBLY – 'CAN ' PLUG	1
8	H-6910-102403	SCREW – #10-24 X 3/8" BUT HD	1
9	S-1694-2	CABLE TIE – SCREW DOWN	1
10	E-849-R	WIRE – #16GA. RED MTW 34" LONG	2
11	S-1350-16	STRAIN RELIEF – CABLE	1
12	E-2330-3	FUSE – 2A SB METRIC (PCF4)	1
13	E-2330-7	FUSE – 3.15A SB METRIC (PCF2)	1
14	H-6910-404	SCREW – 1/4-20 X 1/2 BUT HD CAP	1
15	H-7423-8	WASHER – 1/4 INT. TOOTHLOCK	1
16	H-6993-510	WASHER – 5/16 X 1-1/4 FENDER	1
17	E-3483-1	SCHEMATIC – BASIC MACH. – TC (PRINT ONLY)	1
18	EE-3475	INSTRUCTIONS (PRINT ONLY)	1

4.37 Control Console Assembly – Backlit Display

EE-3035-2 Rev. "G - Standard"

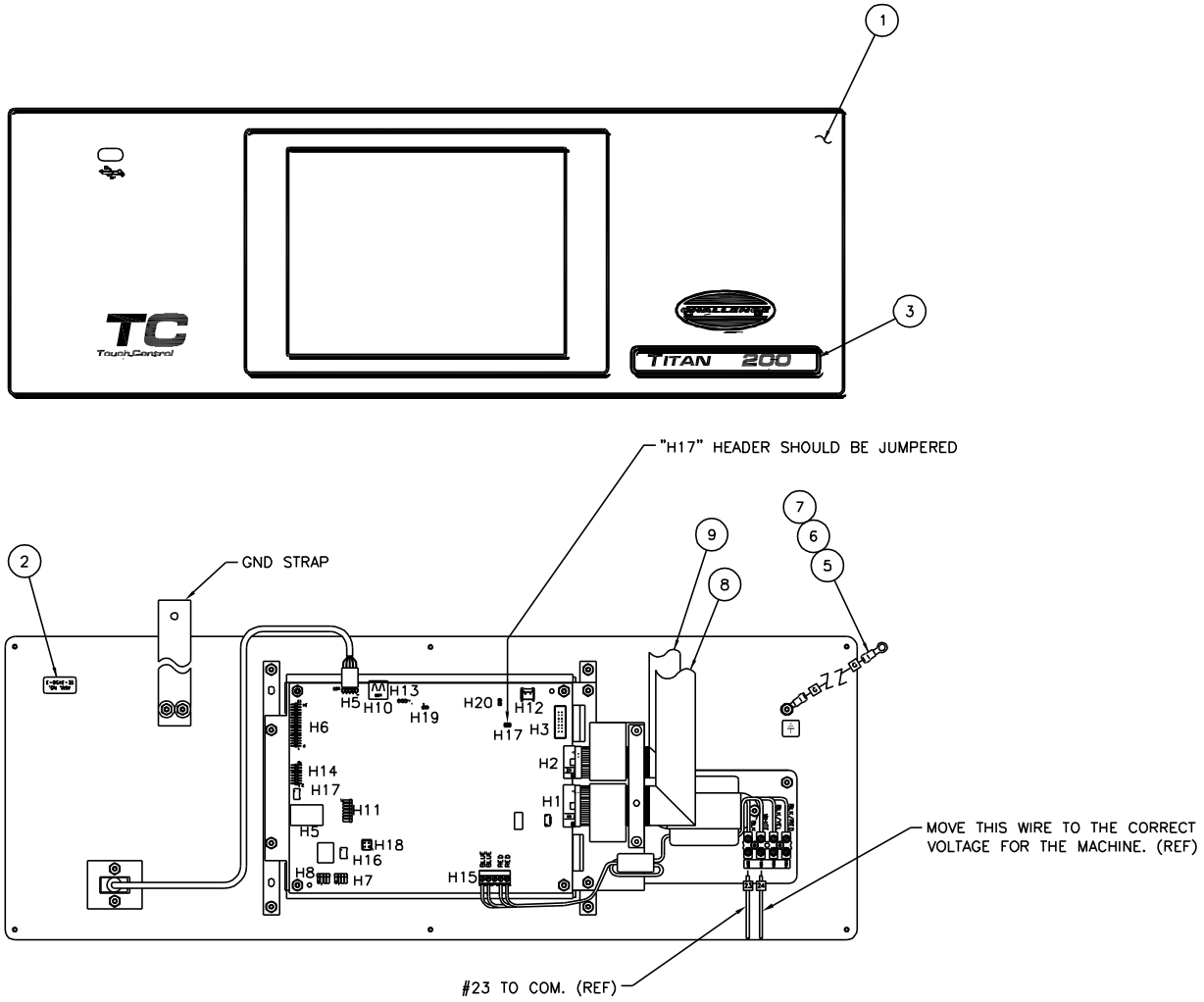


HOLD HIDDEN KEY
USE RIGHT ARROW TO LIGHTEN
USE LEFT ARROW TO DARKEN

NO.	PART NO.	DESCRIPTION OF ACCESSORIES	QTY
1	43102	PANEL – CONTROL CONSOLE	1
2	43066	STRAIN RELIEF – RIBBON CABLE	1
3	EE-2855-12	RIBBON CABLE ASM. – KEYPAD, 14 COND.	1
4	EE-2855-24	RIBBON CABLE ASM. – DISPLAY, 20 COND.	1
6	EE-3439-1	PCB BACKER ASM. – LCD DISPLAY	1
7	E-2743	WIRE – #18 GA. GRN/YEL EURO GND. 22" LONG	1
9	E-1584-( )	LABEL – ASM. NO./REV. LEVEL	1
12	E-1152-58	STAND-OFF – 1" LONG	4
13	S-1781-42	LABEL – GROUND SYMBOL	1
14	H-6423-#6	NUT – #6-32 HEX	4
16	E-1214-10	CONNECTOR – #6 INS. RING (14-18 GA)	1
17	E-1214-64	CONNECTOR – 1/4" NON-INS. RING	1

4.38 Control Console Assembly – Touch Control 'TC'

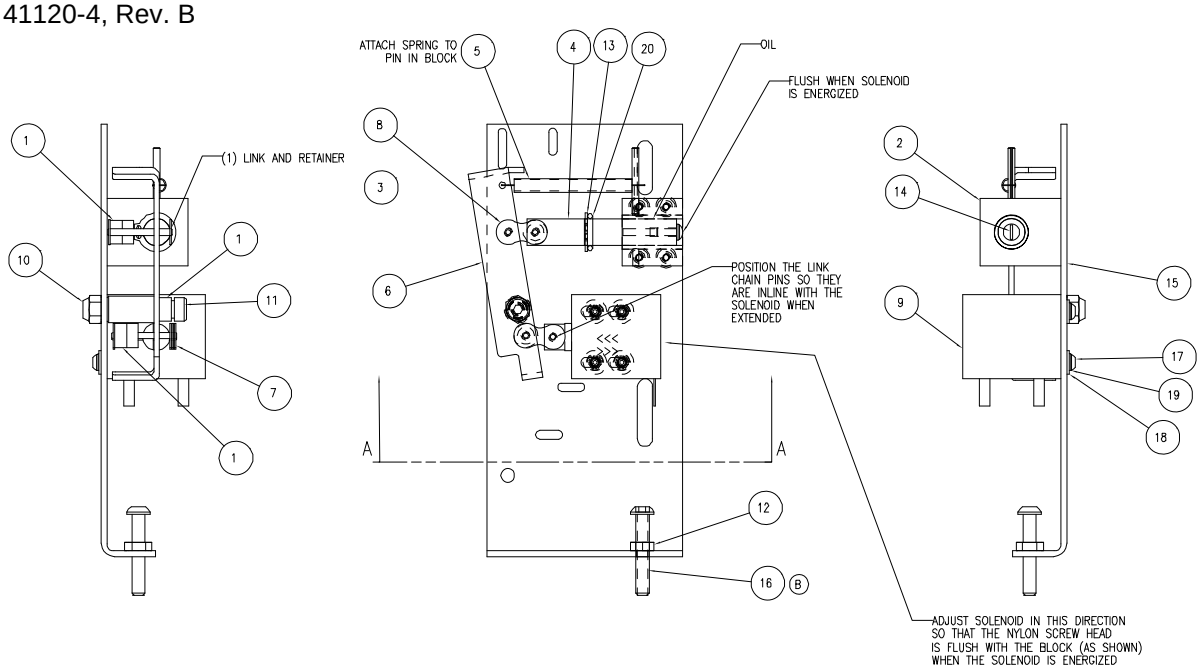
EE-3456-3 Rev. "D" - Optional

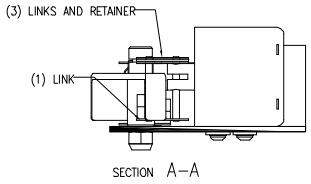


NO.	PART NO.	DESCRIPTION OF ACCESSORIES	QTY
1	EE-3471	PANEL ASM. – FRONT CONTROL, TC	1
2	E-1584-( )	LABEL – ASM. NO./REV. LEVEL	1
3	47701-4	TC PANEL INSERT – TITAN 200B	1
4			
5	E-2743	WIRE – #18 GA. YEL/GREEN MTW 27" LONG	1
6	E-1214-2	CONNECTOR – #6 INS. RING	1
7	E-1214-64	CONNECTOR – 1/4" NON- INS. RING	1
8	EE-2855-15	RIBBON CABLE ASM. – 20 POS.	1
9	EE-2855-16	RIBBON CABLE ASM. – 14 POS.	1

4.39 Knife Latch Assembly

41120-4, Rev. B

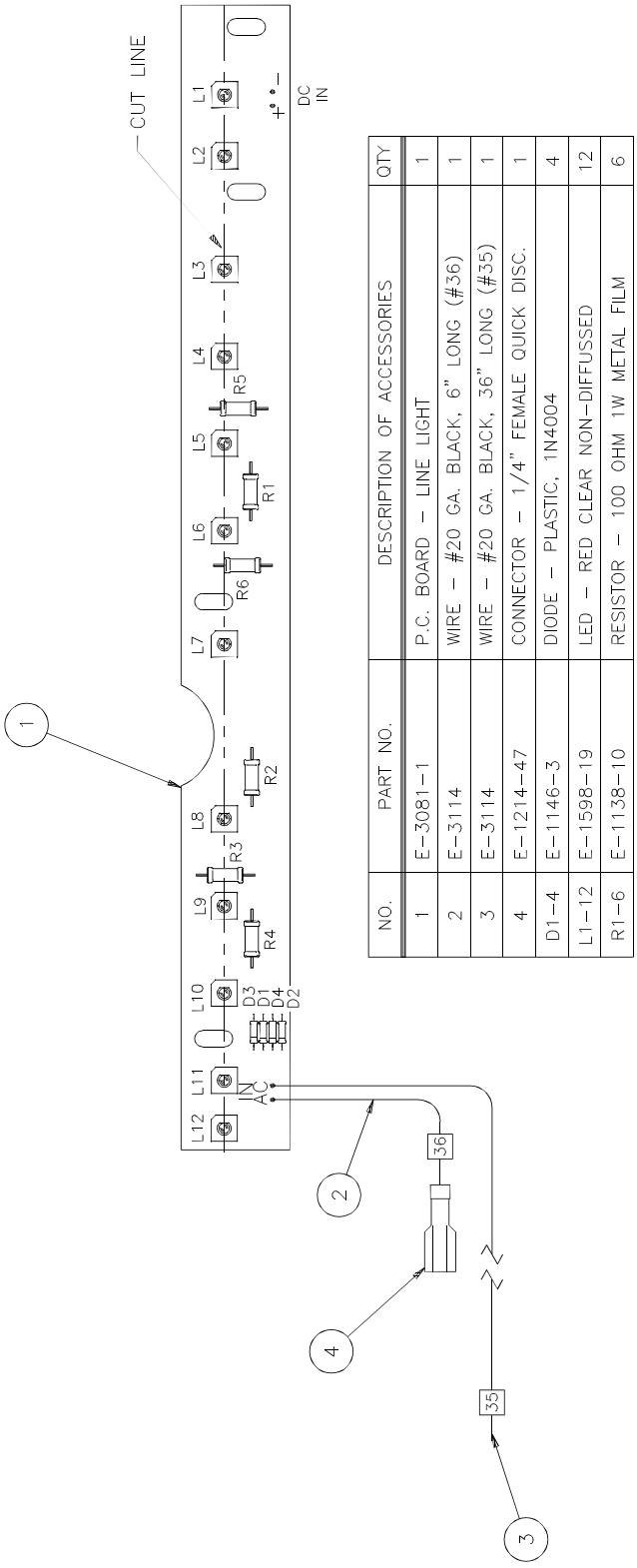




NO.	PART NO.	DESCRIPTION	QTY
1	11288-28	WASHER/SPACER	5
2	41112-2	ASSEMBLY - KNIFE LATCH BLOCK	1
3	41115-2	PLATE- KNIFE LATCH	1
4	41116-3	ROD- KNIFE LATCH	1
5	41117-1	SPRING - EXTENSION	1
6	47553-2	LINK ASSEMBLY- KNIFE LATCH	1
7	47567	LINK - CHAIN	1
8	47567	LINK - CHAIN	1
9	E-974-3	SOLENOID	1
10	H-5247-4	NUT - 1/4-20 FLEX LOCK	1
11	H-5254-510	SCREW - 5/16 X 1-1/4 SHSS	1
12	H-6424-4	NUT - 1/4-20 HEX JAM	1
13	H-6451-0500	RING - EXTERNAL GRIPPING	1
14	H-6880-83206	SCREW - #8-32 X 3/8 NYLON ROUND HD MACH	1
15	H-6909-83203	SCREW - #8-32 X 3/8" FLAT HEAD CAP	4
16	H-6910-412	SCREW - 1/4-20 X 1-1/2 BUTTON HEAD CAP	1
17	H-6910-83203	SCREW - #8-32 X 3/8 BUTTON HEAD CAP	4
18	H-7321-N8	WASHER - #8 SAE PLAIN	4
19	H-7324-N8	WASHER - #8 INT TOOTH	4
20	S-1810-9	O-RING	1

4.40 Line Light Assembly – LED's

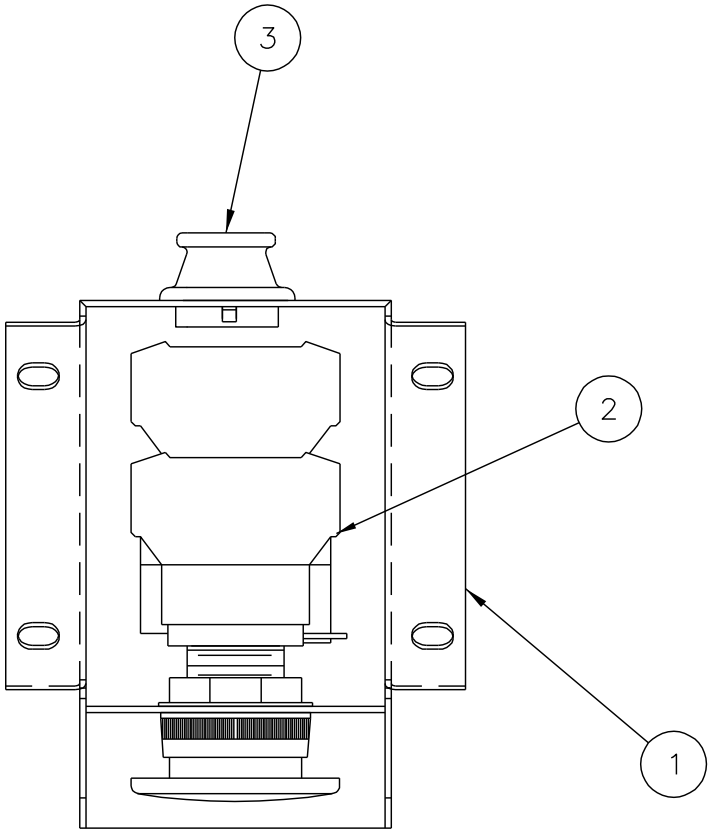
EE-3081-1 Rev. "C"



NO.	PART NO.	DESCRIPTION OF ACCESSORIES	QTY
1	E-3081-1	P.C. BOARD – LINE LIGHT	1
2	E-3114	WIRE – #20 GA. BLACK, 6" LONG (#36)	1
3	E-3114	WIRE – #20 GA. BLACK, 36" LONG (#35)	1
4	E-1214-47	CONNECTOR – 1/4" FEMALE QUICK DISC.	1
D1-4	E-1146-3	DIODE – PLASTIC, 1N4004	4
L1-12	E-1598-19	LED – RED CLEAR NON-DIFFUSSED	12
R1-6	E-1138-10	RESISTOR – 100 OHM 1W METAL FILM	6

4.41 Cut Button Assembly

EE-2851-3 Rev. “F



NO.	PART NO.	DESCRIPTION OF ACCESSORIES	QTY
1	16566-1	BOX - PUSHBUTTON	1
2	E-3127-4	SWITCH - MUSHROOM PUSHBUTTON	1
3	S-1350-16	STRAIN RELIEF - CABLE	1

4.42 Fuse Value and Function

LOCATIONS	FUSE VALUE/TYPE	CIRCUIT	CMC FUSE P/N	FUSE DIMENSION
PCF1	2A T	Secondary Backgage Motor	E-2330-3	5mm X 20mm
PCF2	3.15A T	PCB Output	E-2330-7	5mm X 20mm
PCF3	5A T	Line Lights	E-2330-5	5mm X 20mm
PCF4	2A T	PWM Controls	E-1075-10SB	13/32 X 1-1/2
F4	10A T	Main Hot	E-2330-7	5mm X 20mm
PCF5	5A T	Secondary Backage Motor	E-889-7	1/4 X 1-1/4
F5	1/2A T	T1 Primary	E-889-12	1/4 X 1-1/4
F6	1-1/4A T	T2 Primary	E-889	1/4 X 1-1/4
F7	10A T	Main Neutral	E-1075-10SB	13/32 X 1-1/2

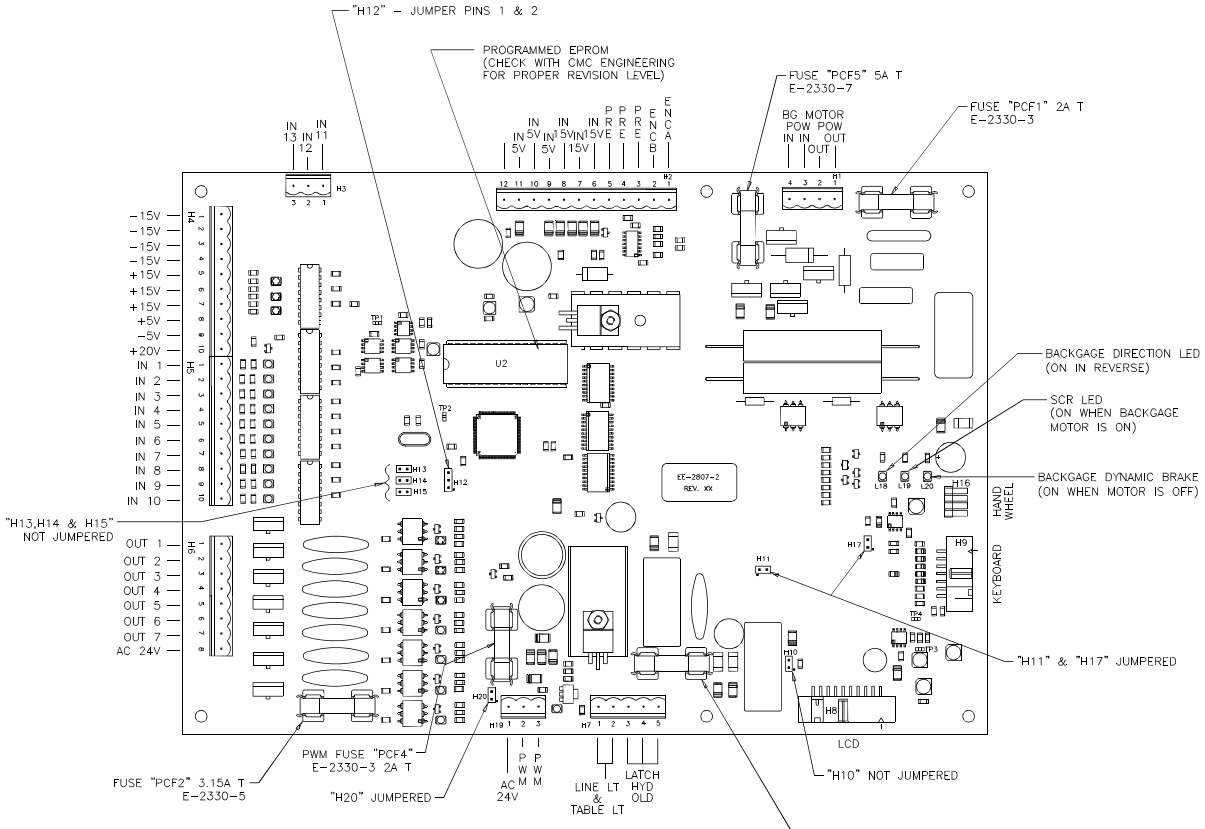
T = TIME DELAY

Fuse and Circuit Breaker Values and Functions

LOCATIONS	VALUE/TYPE	CIRCUIT	CMC FUSE or CIRCUIT BREAKER P/N	FUSE DIMENSION
PCF1	2A T	Secondary Backgage Motor	E-2330-3	5mm X 20mm
PCF2	3.15A T	PCB Output	E-2330-7	5mm X 20mm
PCF3	5A T	Line Lights	E-2330-5	5mm X 20mm
PCF4	2A T	PWM Controls	E-1075-10SB	13/32 X 1-1/2
CB4	10A	Main Hot 60HZ Only	E-3264-11	-
CB4	12A	Main Hot 50HZ Only	E-3264-14	-
PCF5	5A T	Secondary Backage Motor	E-889-7	1/4 X 1-1/4
CB5	1/2A	T1 Primary	E-3264	-
CB6	1A	T2 Primary	E-3264-1	-
CB7	10A	Main Neutral - 60HZ Only	E-3264-11	-
CB7	12A	Main Neutral - 50HZ Only	E-3264-14	-

4.43 Control P.C. Assembly – Standard Machines

EE-2807-2 Rev. "F"



NOTE: PCF4 FUSE IS ONLY ON BOARD WHEN UTILIZING THE PWM FEATURE (OPTION)

* IC CHIPS MUST BE ORDERED SEPARATELY

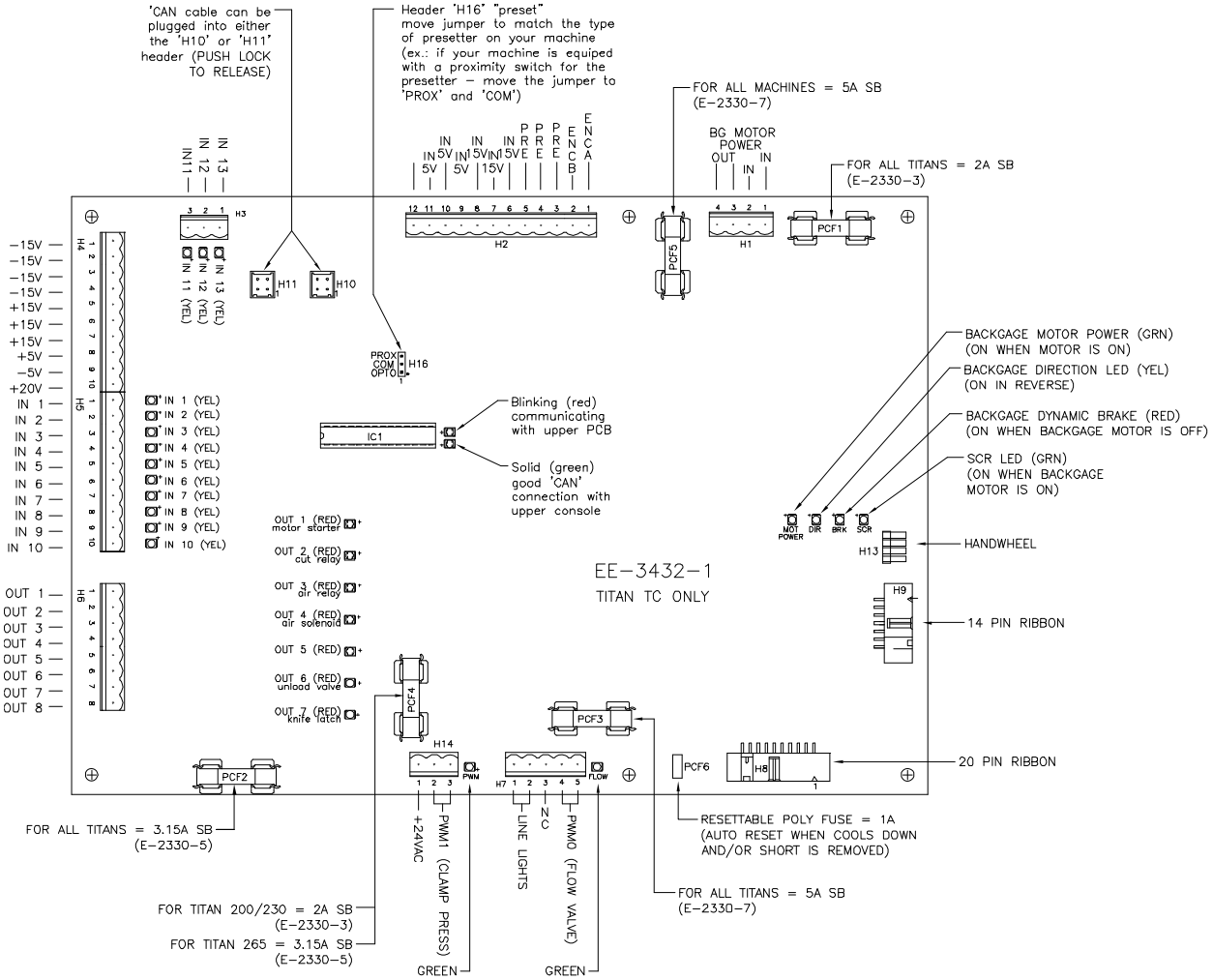
* IC CHIPS; EE-1766-93 FOR TITAN 200 CUTTER W/EYES
EE-1766-94 FOR TITAN 200 CUTTER W/SHIELD

DESCRIPTION
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: Knife Latch
IN 7: Pump Motor – N.C.
IN 8: Not Used
IN 9: Knife Down Limit
IN 10: Photo Electric Control Unit

DESCRIPTION
OUT 1: Pump Motor Starter
OUT 2: Cut Relay "A"
OUT 3: Not Used
OUT 4: Not Used
OUT 5: Not Used
OUT 6: Knife Latch Solenoid
OUT 7: Not Used

4.44 Control P.C. Assembly – TC Machines

EE-3432-2



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: Knife Latch
IN 7: MSCE1 (motor starter)
IN 8: False Clamp Switch
IN 9: Knife Down Limit
IN 10: Safety Eyes (PECU)
IN 11: not used
IN 12: not used
IN 13: not used
IN 14: not used
IN 15: not used

DESCRIPTION – OUTPUTS
OUT 1: Pump Motor Starter
OUT 2: Cut Solenoid 'A'
OUT 3: Air Relay "AR"
OUT 4: not used
OUT 5: not used (Titan 230 & 200) Cut Sol. 'B' (Titan 265)
OUT 6: Knife Latch
OUT 7: Air Solenoid

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

4.45 Electric Eye Assembly

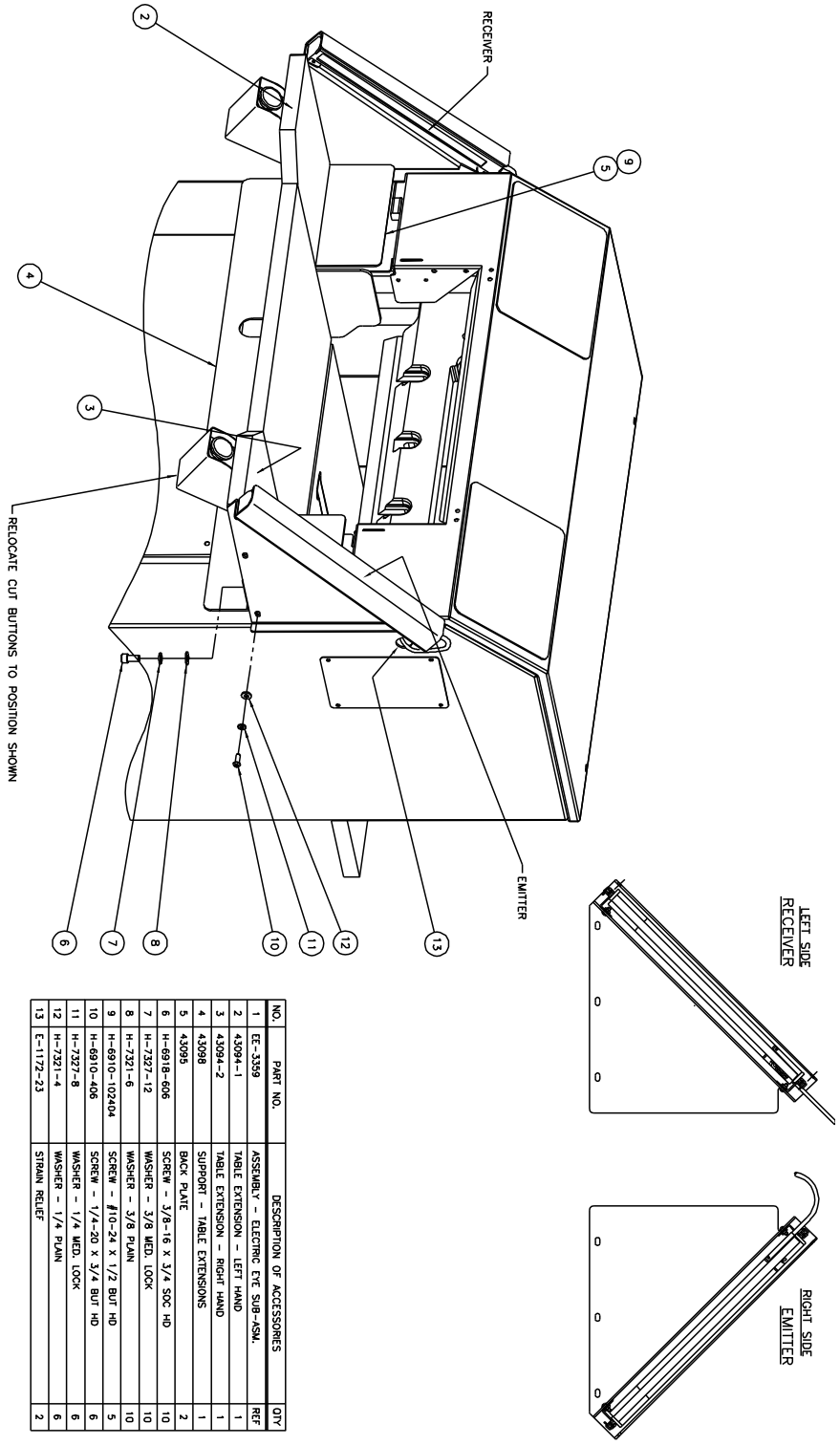
K-3337 Sheet 1, Rev. C

WIRES FROM ELECTRIC EYE CABLES (SHOWN FOR REF. ONLY)	
WIRE NO.	WHERE USED
BLACK	EYE CONTROLLER - S4 (BOTH)
WHITE	EYE CONTROLLER - S2 (BOTH)
BROWN	EYE CONTROLLER - Y1(+) EYE CONTROLLER - Y3(+)
ORANGE	EYE CONTROLLER - Y2 (BOTH)
ORG/BLK	EYE CONTROLLER - Y4 (BOTH)
VIOLET	NOT USED (WIRE NUT TOGETHER)
BLUE	EYE CONTROLLER - S1(-) EYE CONTROLLER - S3(-)
GRN/YEL	MACHINE GND (ATTACH TO BRACKET MOUNTING SCREW) (1) E-1214-49

NO.	PART NO.	DESCRIPTION OF ACCESSORIES	QTY
1	EE-3359	ASSEMBLY - ELECTRIC EYE SUB-ASM	1
2			
3	H-6910-102404	SCREW - #10-24 X 1/2" BUT HD	3
4	E-1237-6	WIRE NUT - BLUE	1
5	S-1694-2	TYRAP - WIRE	2
6	E-2626	TERMINAL STRIP - SINGLE POLE	1
7	EE-1766-62	IC-PROGRAMMED EPROM (S/N 032425-083330)	1
8	F.668-H	INSTRUCTION SHEET - EPROM REPLACEMENT	1

Electric Eye Assembly

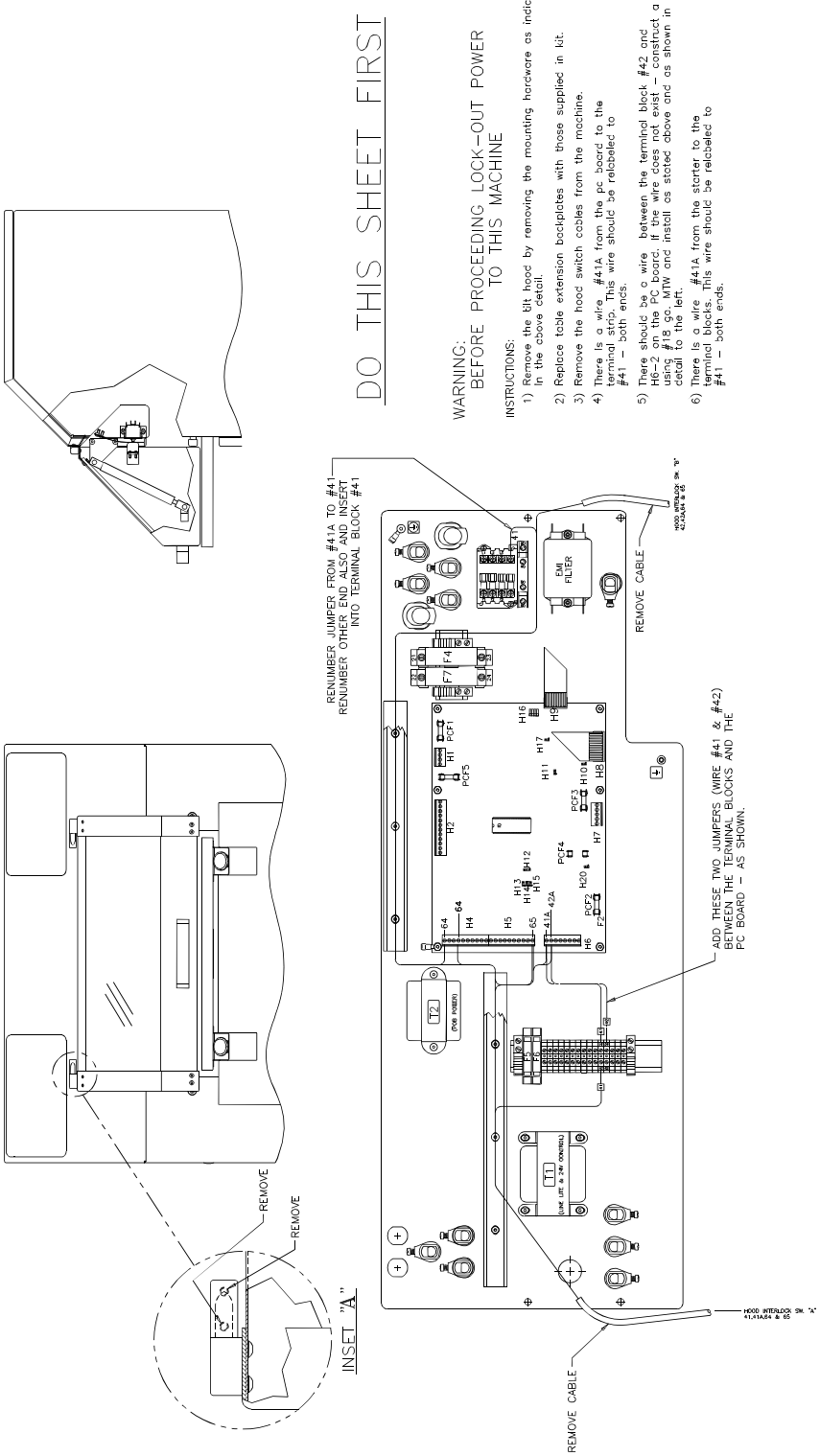
K-3337 Sheet 2, Rev. “C”



NO.	PART NO.	DESCRIPTION OF ACCESSORIES	QTY
1	EE-3359	ASSEMBLY - ELECTRIC EYE SUB-ASM.	REF
2	43094-1	TABLE EXTENSION - LEFT HAND	1
3	43094-2	TABLE EXTENSION - RIGHT HAND	1
4	43098	SUPPORT - TABLE EXTENSIONS	1
5	43095	BACK PLATE	2
6	H-6918-606	SCREW - 3/8-16 X 3/4 SOC HD	10
7	H-7327-12	WASHER - 3/8 MED. LOCK	10
8	H-7321-6	WASHER - 3/8 PLAIN	10
9	H-6910-102404	SCREW - #10-24 X 1/2 BUT HD	5
10	H-6910-406	SCREW - 1/4-20 X 3/4 BUT HD	6
11	H-7327-8	WASHER - 1/4 MED. LOCK	6
12	H-7321-4	WASHER - 1/4 PLAIN	6
13	E-1172-23	STRAIN RELIEF	2

Electric Eye Assembly

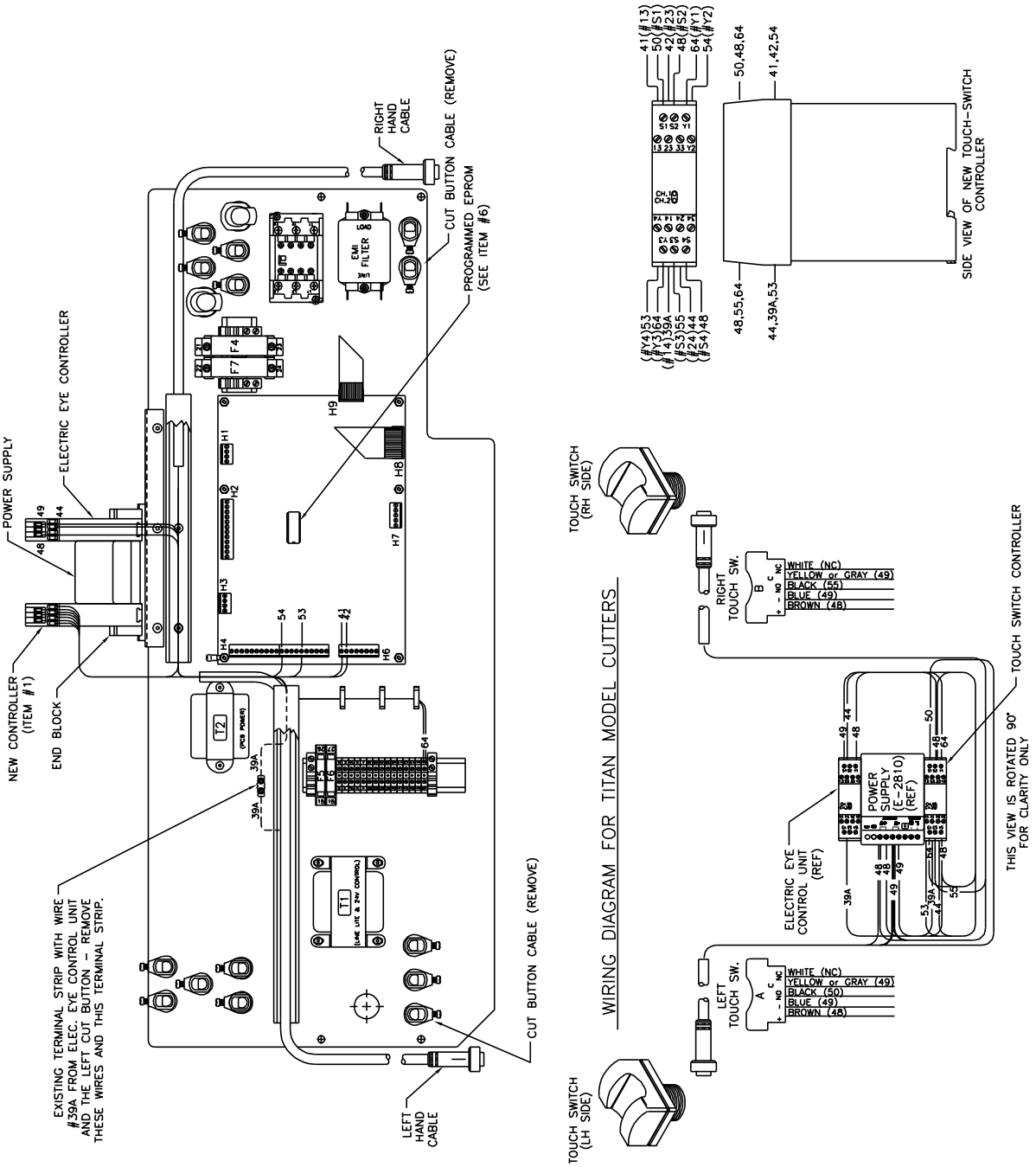
K-3337 Sheet 3, Rev. “C”



NOTES

4.46 Ergo-Touch Switch Option

K-3346 Sheet 1, Rev. "D"



Ergo-Touch Switch Option – Installation Instructions

K-3346 Sheet 1, Rev. “D”

INSTALLATION INSTRUCTIONS:

1) Remove all power from the machine. Follow the "Power Lock–Out Procedure" found in the manual.

2) Remove the two screws on the top of the machine that secure the top cover – Keep these screws to resecure the cover later.

3) Remove the four screws that secure the rear upper cover – Keep these screws to resecure the cover later.

4) On the rear of the machine – Locate the electric eye controller and power supply that is mounted, hanging off the power panel. Add the supplied terminal rail (item #3) next to the existing rail using the supplied hardware (items #13 and #14). Snap the touch–switch controller (item #1) (the end that has 'S1,S2 and Y1 is up) onto the new rail and lock it in place using the terminal end block (item #5).

5) Remove the old cut switches by removing the four screws on each box – save the screws to attach the new Touch–Switch bracket later. In the power panel follow each of the old cut switch cables and un–wire each wire from it's terminal. Pull the switches and cables out.

6) Follow the details to the left and below to run the wires from the new controller assembly to their proper locations.

7) Follow sheet 2 to mount the new Touch Switch mounting bracket. use the screws that previousely mounted the cut switches to mount your new bracket.

8) There are two cables with plugs hanging off of the new Touch Switch controller. Each cable is marked for the left and right switches. Run these cables down the side of the power panel and drop down each side of the machine. See sheet 2 for routing directions to the Touch Switch bracket. Use the supplied tyraps to secure the cables to the power panel and away from all moving parts.

9) The new switch brackets have two holes for mounting the switches. Select the hole that is the most comfortable for the operator, mount the switches. Use the supplied (2) hole plugs to cover the un–used holes.

10) Plug the cables into the new Touch Switches.

11) If this machine has the "TC" option installed, skip step #12.

12) The software for this machine needs to be changed – replace the existing programmed eprom with the supplied programmed eprom (item #6). See item #12 "reference guide for chip replacement" for instructions.

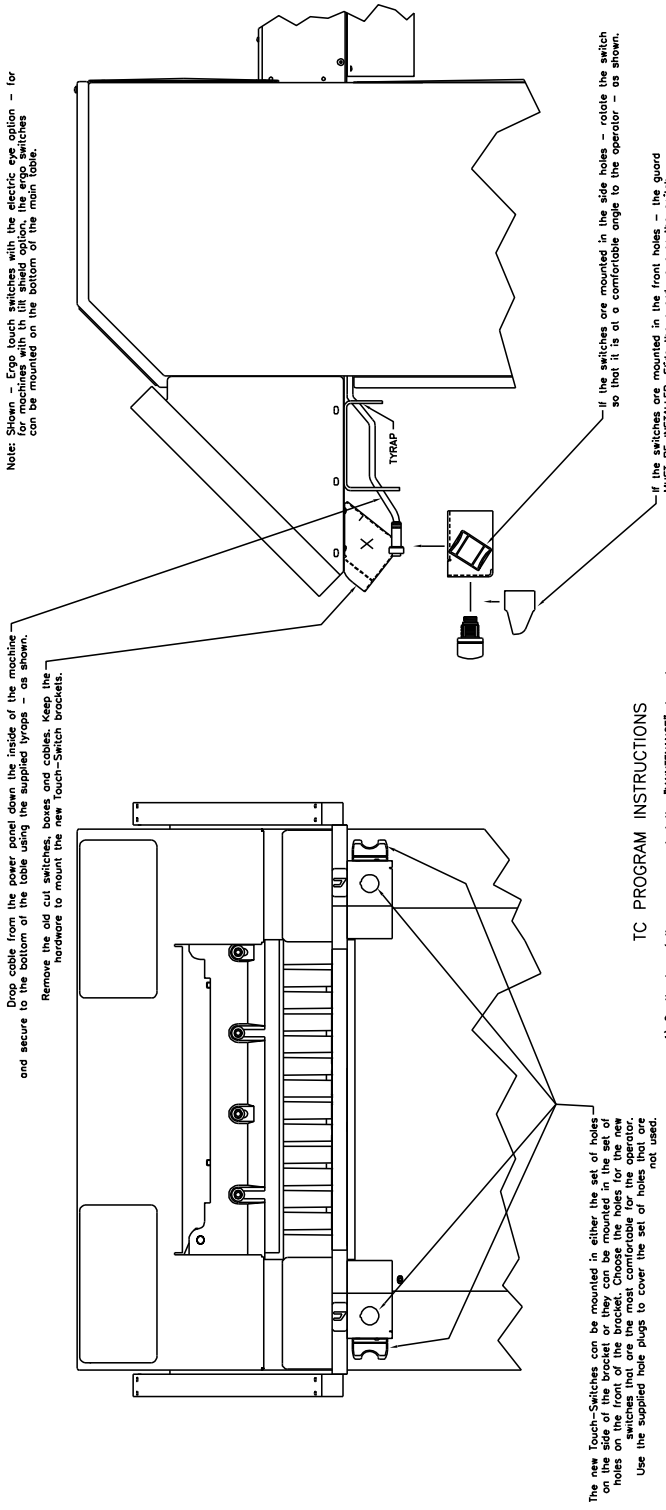
13) Replace all covers. Restore power to the machine.

14) If this machine has the "TC" option installed, the machine needs to be informed of the cut switch type change. Follow the supplied instructions on sheet two.

NO.	PART NO.	DESCRIPTION OF ACCESSORIES	QTY
1	EE–3350	CONTROLLER ASSEMBLY – TOUCH SWITCH	1
2	E–3347	TOUCH SWITCH	2
3	E–1977–6	RAIL – TERMINAL, 4–1/4" LONG	1
4	S–1694–2	TYRAP – WIRE	12
5	E–2070–1	END BLOCK – TERMINAL	1
6	EE–1766–116	IC–PROGRAMMED EPROM (W/EYES & TOUCH)	1
7	E–2196–16	HOLE PLUG – 1–3/16" DIA.	2
8	42065	BRACKET – TOUCH SWITCH MOUNTING – R.H.	1
9	42066	BRACKET – TOUCH SWITCH MOUNTING – L.H.	1
10	E–2771–8	SCHEMATIC – BASIC MACHINE (PRINT ONLY)	1
11	F.668–H	REFERENCE GUIDE – IC REPLACEMENT	1
12	K–3346	INSTRUCTION SHEET – PRINTS ONLY	1

Ergo-Touch Switch Option – Installation Instructions

K-3346 Sheet 2

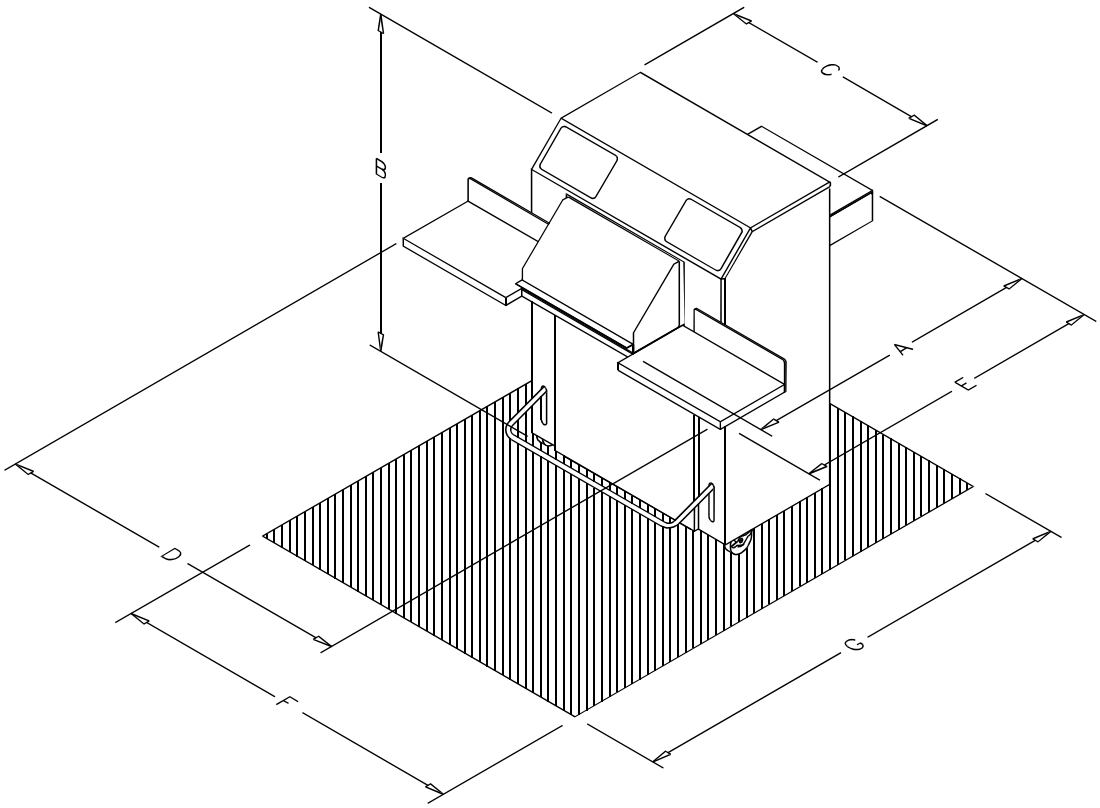


TC PROGRAM INSTRUCTIONS

1) On the top of the screen – select the "MAINTENANCE" drop down menu
2) Select 'SETUP'
3) Select 'SERVICE INFO'
4) In the service screen touch the box under 'ENABLE TABS' and enter the numbers 6125
5) Enter
6) On the top of the screen – select the 'OPTIONS & UPDATES' drop down menu.
7) Locate the 'CUTBUTTON TYPE' and select 'LIGHT TOUCH'.
8) Touch the 'SAVE AND EXIT' button at the bottom right of the screen. The machine now knows that it has Ergo Touch Switches.

4.47 Titan 200 Floor Plan

43000-FP



Symbol	Inch	cm
A	49.0	124
B	53.0	135
C	36.0	91
D	58.0	147
E	53.0	135
F	58.0	147
G	74.0	188
Net Wt.	755 lb	342 kg

MACHINE DIMENSIONS: AxBxC

MACHINE DIMENSIONS WITH SIDE TABLE EXTENTIONS: DxBxE

OPERATING AREA: FxG

OVERALL MAINTENANCE AREA: FxG

4.48 Safety Systems Test

Machine manufacturer CHALLENGE Model TITAN 200C

Serial Number _____

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

Turn the power on and press CLEAR to preset the backgauge. Make sure the knife and clamp are in the up position (if they are not, follow the instructions in this manual to send them up).

Machines with Front Guards:

Test #1: With the front guard open, press the cut buttons. Nothing should happen. If the knife and/or clamp come down with the front guard open, do not use the machine. Repair or adjustment is needed.

Test #2: Close the front guard and press the cut buttons. While the clamp or knife is coming down, open the front guard. The knife and clamp should immediately return to the up position. If they do not, do not use the machine. Repair or adjustment is needed.

Machines with Electric Eyes:

Test #1: Wave a test object 12mm in diameter between the electric eye beams. The indicator lights should indicate the eyes are blocked. If they do not, do not use the machine. Repair or adjustment is needed.

Test #2: If machine equipped with electric eyes, while making a cut, lean into the electric eye beams. The knife and clamp should immediately return to the up position. If they do not, do not use the machine. Repair or adjustment is needed.

Please enter date and initials for both tests.

Date ______ ______ ______ ______ ______ ______ ______ ______ ______ ______ ______
Test 1 ______ ______ ______ ______ ______ ______ ______ ______ ______ ______ ______
Test 2 ______ ______ ______ ______ ______ ______ ______ ______ ______ ______ ______

Date ______ ______ ______ ______ ______ ______ ______ ______ ______ ______ ______
Test 1 ______ ______ ______ ______ ______ ______ ______ ______ ______ ______ ______
Test 2 ______ ______ ______ ______ ______ ______ ______ ______ ______ ______ ______

Date ______ ______ ______ ______ ______ ______ ______ ______ ______ ______ ______
Test 1 ______ ______ ______ ______ ______ ______ ______ ______ ______ ______ ______
Test 2 ______ ______ ______ ______ ______ ______ ______ ______ ______ ______ ______

Date ______ ______ ______ ______ ______ ______ ______ ______ ______ ______ ______
Test 1 ______ ______ ______ ______ ______ ______ ______ ______ ______ ______ ______
Test 2 ______ ______ ______ ______ ______ ______ ______ ______ ______ ______ ______

Date ______ ______ ______ ______ ______ ______ ______ ______ ______ ______ ______
Test 1 ______ ______ ______ ______ ______ ______ ______ ______ ______ ______ ______
Test 2 ______ ______ ______ ______ ______ ______ ______ ______ ______ ______ ______

Repairs	Initials of Repairer	Date

F.200-FT

October 2017