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Serial Numbers 070001 to 120248

# **TECHNICAL SERVICE AND PARTS MANUAL**



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## ***TITAN 230*** ***PAPER CUTTING*** ***MACHINE***

*Sold and Serviced by*

**F.230-T**  
May 2013

# 1.0 Introduction

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



**SAFETY ALERT!** This symbol means **CAUTION: 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.

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## 2.0 Safety

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### 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, be sure to disconnect power to the machine. Disconnect the power plug from its socket

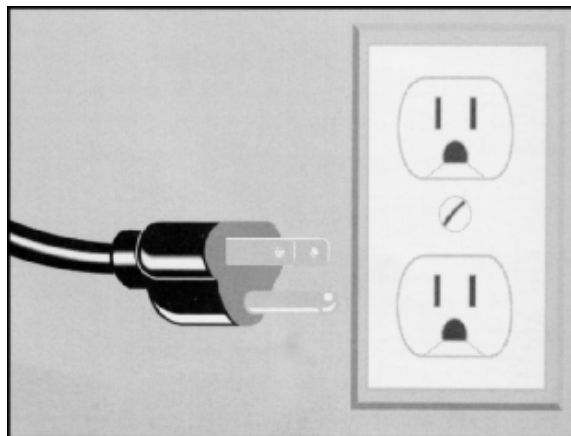
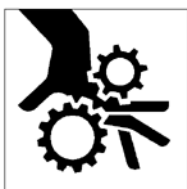


Figure 1 - Main Power Disconnect

## 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

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# 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.  
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.  
Presetter malfunction.

### **CUT BUTTONS PUSHED - WON'T CUT**

Check error codes (page 8).  
Obstruction between electric eyes.  
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.  
Dirt 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 grounded.

### **ERRATIC OPERATION-POWER LOSS**

Hydraulic fluid low.  
Dirt 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.



### 3.0 Maintenance Guide

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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 pboard; blown fuse
Backgauge at Limit	Backgauge is all the way forward or backward	
Cheksum 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 +/- .005	Mechanical bind; encoder failure; main pboard; 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
HYDMOT R	*1	Motor Starter Relay Status	Right side of power panel
KNFDWN	1	Knife Down Proximity Switch	Inside of cutter opening, right side
PRESET	1	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	0	Knife Up Proximity Switch	Inside of cutter opening, left side
CUTBTN	0	Cut Button	On display console
EYES / GUARD	1	Electric Eyes	In front of cutter opening.
HYDMOT O	0	Hydraulic Motor Relay Output	Top right side of main pcb
N.C.	0	No Connection	
LTLINE	1	Line Light Output	Inside rear cutter opening, left side
CBTNLIT	0	Cut Button Light	In display console

\*On when pump is running.

## 3.4 Routine Maintenance

**⚠ CAUTION** DISCONNECT POWER before making any adjustments or lubricating. See page 4, 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).

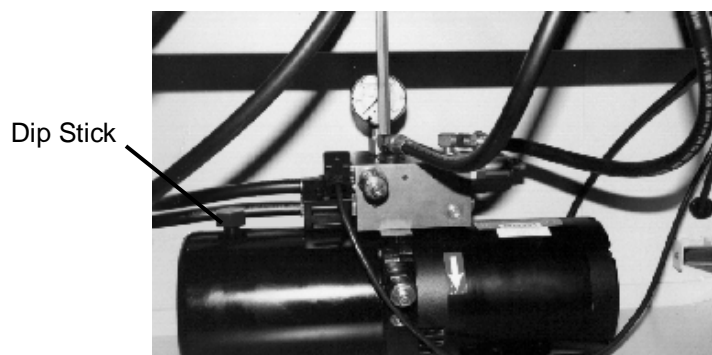


Figure 2

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. A table of various manufacturers and their equivalents is listed below.

### 3.5.1 Recommended Hydraulic Oils

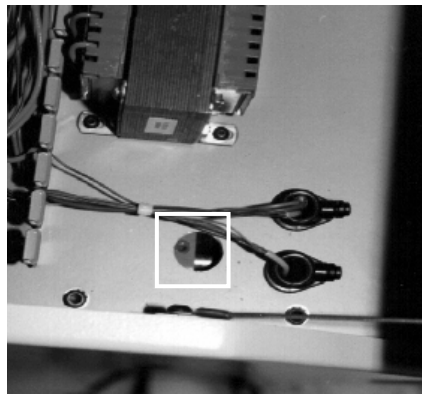
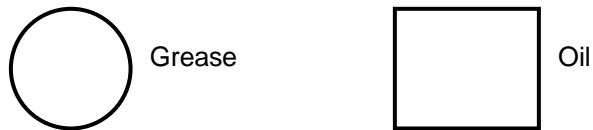


**CAUTION** Use one of the recommended oils or an ISO VG 100 Hydraulic Fluid equivalent only. Oils other than the recommended type will cause seals and O-rings to deteriorate. Unsafe operating conditions will result.

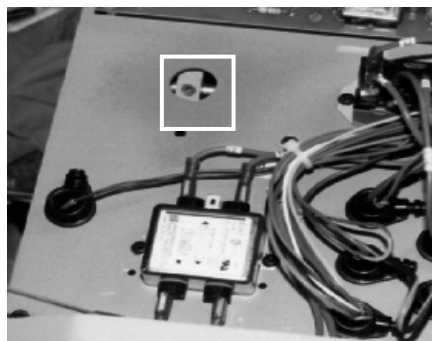
Oil Name	Distributor
Rykon No. 100	AMOCO
Duro AW Oil 465	Arco
AW Machine Oil 100	Chevron
Pacemaker XD No. 100	Citgo
Super Hydraulic 100	Conoco
Nuto H-100	Exxon
Harmony 100 AW	Gulf
HO 2A Hydraulic Oil	Lubriplate
DTE No. 18	Mobil
Pennzoil AW 100	Pennzoil
Magnus A Oil 215	Phillips
Tellus 100	Shell
Energol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

### 3.6 Oil and Grease

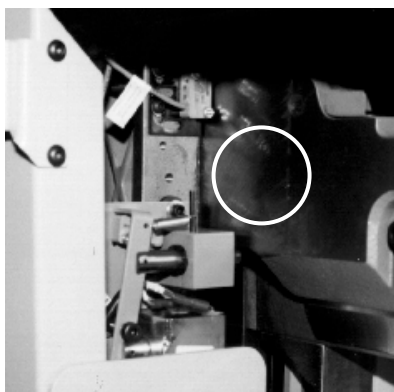
Turn the power off and disconnect the power cord. Open the top hood for access. Parts requiring oiling are marked with red paint. See figures Figure 3 through Figure 10 starting on page 12 for oil and grease locations. Figure 3 through Figure 5 require the knife and clamp be in the up position. Figure 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 leadscrew may be lubricated with grease or oil. Oil has a tendency to run off and must be lubricated more frequently; grease tends to collect paper dust and must be cleaned off periodically.



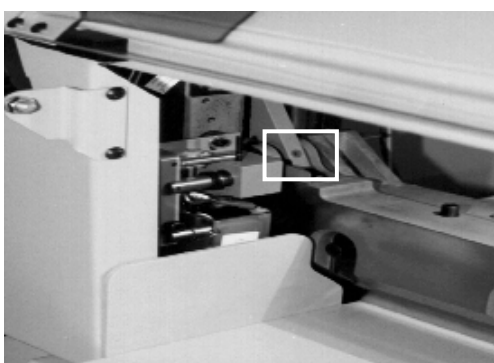
**Figure 3 – Knife Bar Link – L.H. Side, Upper**



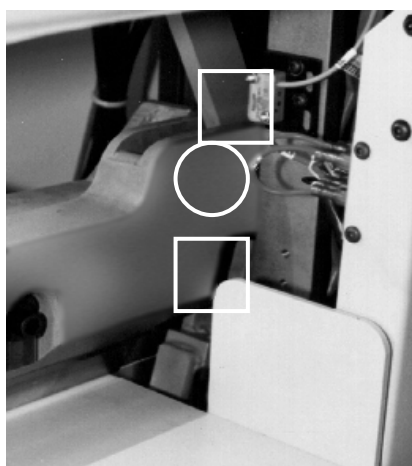
**Figure 4 – Knife Bar Link – R.H. Side, Upper**



**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

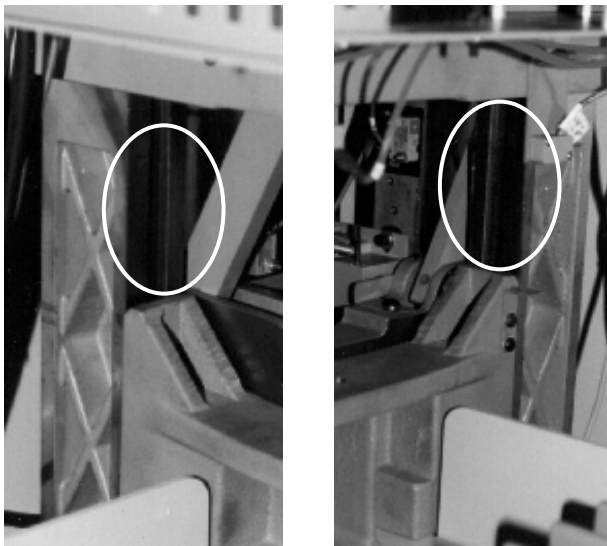


Figure 8 & Figure 9 –Clamp Guides

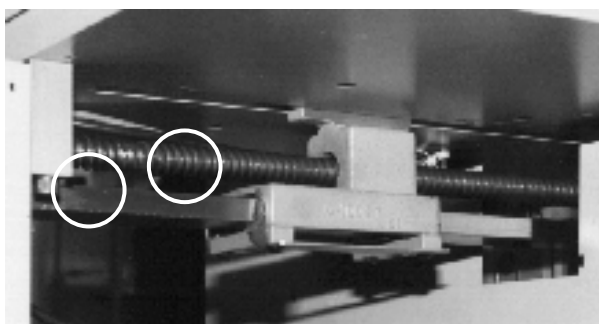


Figure 10 – Leadscrew and Backgauge Guide

### 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 4) unless the directions specifically require the machine to be powered.

#### 3.7.1 Electric Eye Alignment

Turn on the power switch, and make sure there are no obstructions between the electric eyes.

- If the green and yellow lights on the electric eyes are on solid, then the eyes are in proper alignment.
- If the red light is on and the yellow light is off or flashing, then the eyes either blocked or not aligned properly.

If alignment is necessary, make sure power is disconnected from the machine and open the top hood. Slightly loosen the electric eye mounting screws from inside the machine. Adjust so that the bottom

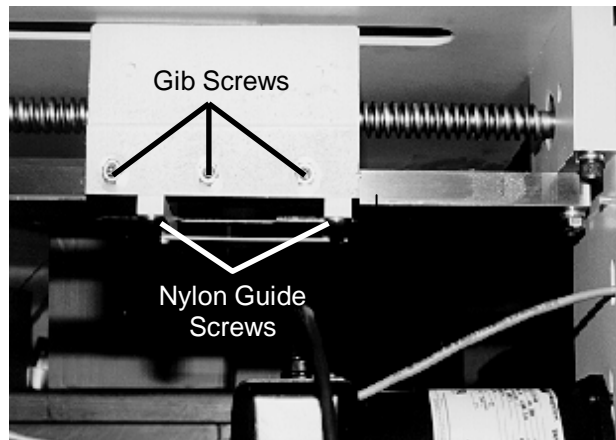
surface of the electric eye housings are as parallel as possible to the table. Tighten mounting screws and recheck alignment as described above.

### 3.7.2 Backgauge Gib Adjustments

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

To Adjust:

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



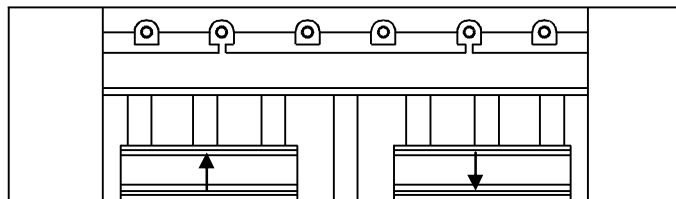
**Figure 11**

5. Tighten the bottom, nylon guide screws until they just touch the guide. 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



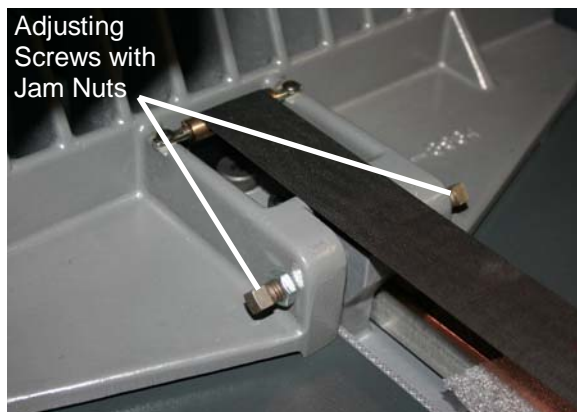
**Figure 12**

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 plexiglass 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. Replace the rear plexiglass table cover.

Note: Once the backgauge is square, restore power to the machine and check the backgauge accuracy (see the Titan 230 Operator manual) to make sure it is accurate.

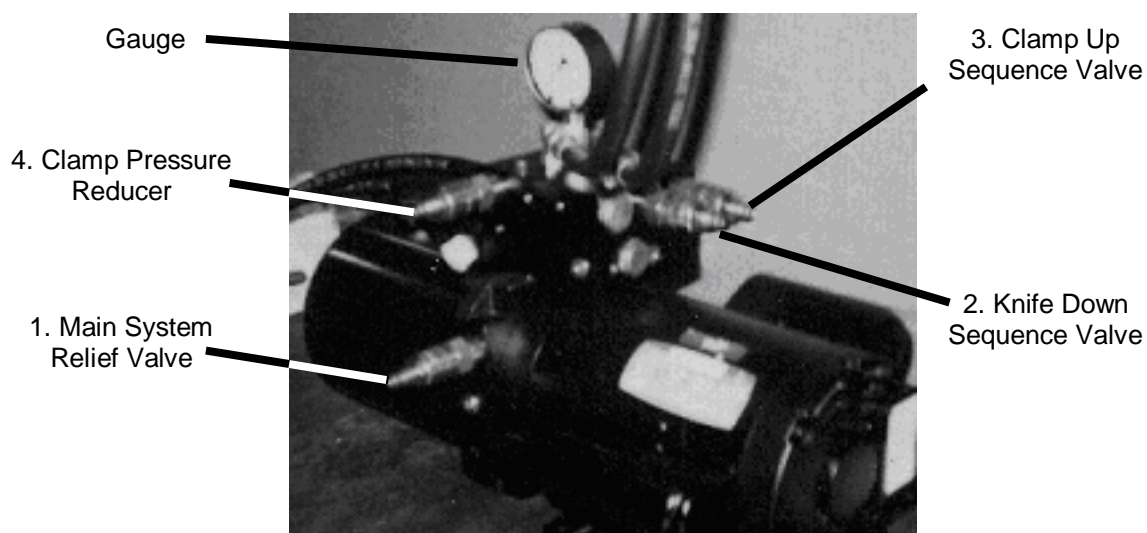
### 3.7.4 Hydraulic Adjustments

#### Pressure Settings:

1. Main System Relief Pressure — 1,300 psi. — Then in 1-1/2 turns.
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 panel.
- To adjust valves, loosen hex jam nut, then make adjustments by turning the adjusting screw with an allen wrench.
- On all valves, turning in (clockwise) increases pressure; out (counter-clockwise) decreases pressure.



**Figure 14**

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 14) to obtain a reading of 1,300 psi, then continue to turn in an additional 1-1/2 turns. 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 14) 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 14).
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:** Start a cut cycle and read the pressure on the gauge after the clamp has contacted the table. Adjust the clamp pressure reducer (Figure 14) to the desired setting between 400 and 800 psi.
  - b) **OPTIONAL ELECTRONIC CLAMP PRESSURE CONTROL:** 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 v 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 14). 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:

5.000

Set Minimum

≥

Press  $\wedge$  to Increase

Press  $\vee$  to Decrease

A) Main

B) Job

C) Send

D) Exit

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 14). It should read 400 p.s.i. 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.

### 3.7.5 Line Light Adjustment

1. Place a wide sheet of paper on the cut stick to view the line light.
2. Using a 9/64" hex allen wrench, loosen the three line light mounting screws.
3. Slide the line light board forward or backward until you see a 1/16-1/8" beam.
4. Tighten the three screws.

## 3.8 Cleaning

Before cleaning inside machine, turn off and lockout power, page 4.

### 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 may be cleaned with glass cleaner or a mild water based detergent. Some petroleum-based solvents may damage the plexiglass.

### 3.0 Maintenance Guide

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#### 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.

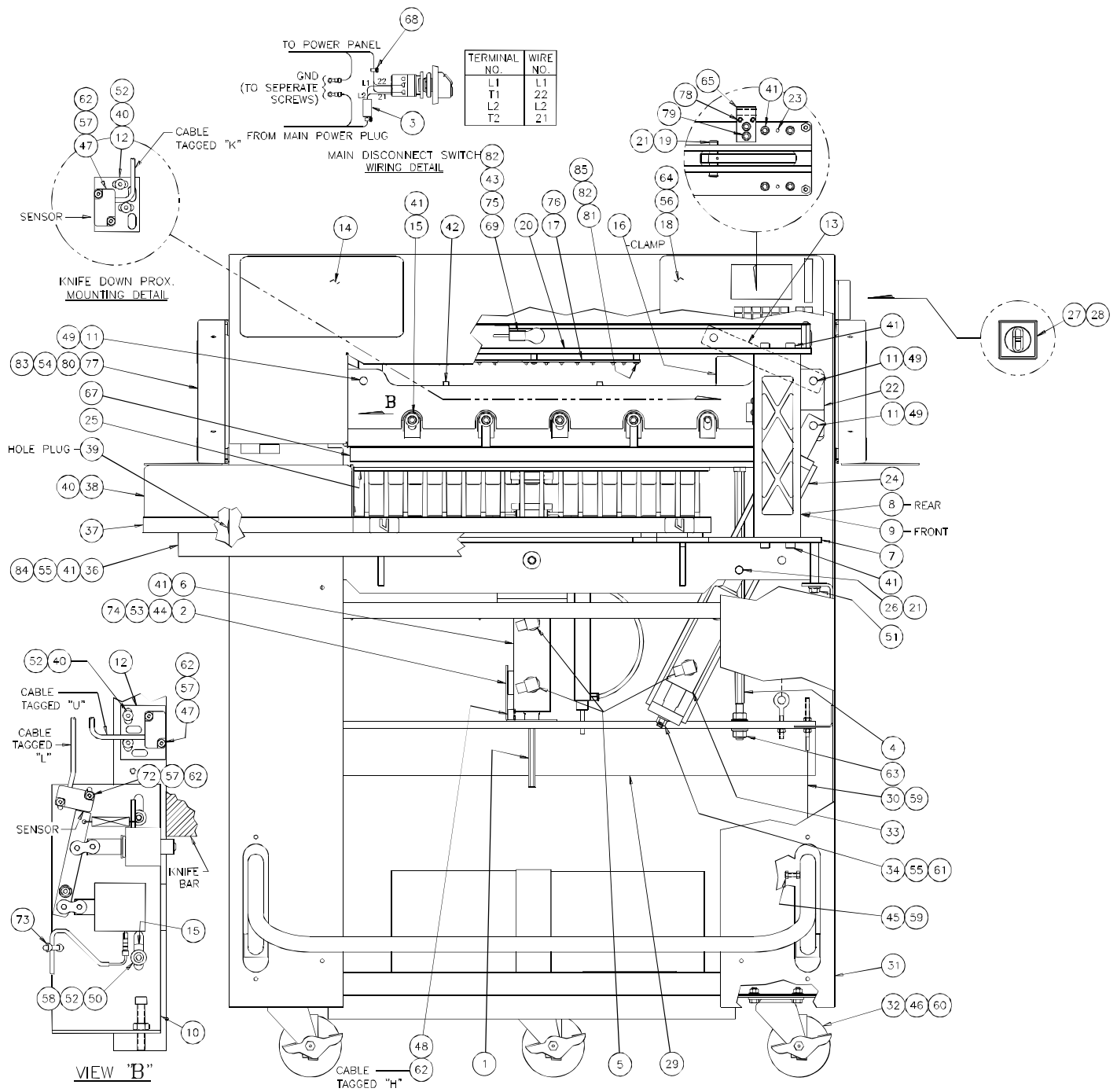
#### Machine Exterior

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

#### 4.1 Main Assembly – Front View

42000 Sht. 1 Rev. "G"



**Main Assembly – Front View**

42000 SHT 1 of 5 Rev. G

NO.	PART NO.	DESCRIPTION OF ACCESSORIES	QTY
1	43074	ROD - CLAMP CYLINDER	1
2	41033	BRACKET - HYD. UP PROX.	1
3	E-2756-6	EMI FILTER - FERRITE CORE	1
4	10082	CLAMP ROD ASM	2
5	H-237-4	ELBOW - 90° PIPE TO TUBE	4
6	H-211-1	CYLINDER - CLAMP	1
7	42040	BASE (S/N 080048 & BELOW)	1
7	42004	BASE (S/N 080049 & ABOVE)	1
8	10002-3	GUIDE - REAR, CLAMP	2
9	10002-2	GUIDE - FRONT	2
10	41120-4	KNIFE LATCH ASSEMBLY	1
11	10010	PIN	3
12	41008	BRACKET - KNIFE DOWN PROX.	2
13	10008	LINK - KNIFE BAR	2
14	S-1781-169	WARNING PANEL	1
15	8815	WASHER - KNIFE BOLT	6
16	42003	CLAMP	1
17	EE-3081-1	LINE LIGHT ASSEMBLY	1
18	EE-3035-1	CONSOLE ASM. - CONT. (S/N 080074 & BELOW)	1
18	EE-3035-2	CONSOLE ASM. - CONT. (S/N 080075 & ABOVE)	1
18	EE-3208-1	CONSOLE ASM. - CONT. (SC OPTION)	1
19	10009	PIN - KNIFE LINK	2
20	42030	ARCH (S/N 080048 & BELOW)	1
20	42005	ARCH (S/N 080049 & ABOVE)	1
21	S-1193-50	RETAINING RING - 1/2	6
22	42002	KNIFE BAR	1
23	H-21S-250-1000	PIN - 1/4 x 1" ROLL	8
24	AA-10018	BRACKET - CYLINDER	1
25	42013	FALSE CLAMP PLATE	1
26	10064	PIN - KNIFE CYLINDER	1
27	E-3083	SWITCH FACE - MAIN DISCONNECT	1
28	E-3082	SWITCH - MAIN DISCONNECT	1
29	42010	PULLDOWN - CLAMP	1
30	43077	CABLE - FOOT PEDAL	2
31	42100	STAND ASSEMBLY	1
32	41014	CASTER - SWIVEL W/ BRAKE	3
33	H-210-1	CYLINDER - KNIFE	1
34	H-6631-308	PIN - 3/32 x 1" COTTER	1
35			
36	42028	SIDE TABLE SUPPORT	2
37	44158	SIDE TABLE	2
38	42026	BACK PLATE - SIDE TABLE	2
39	E-2196	PLUG - HOLE	2
40	H-6910-102404	SCREW - #10-24 x 1/2 BUTTON HEAD	10



#### 4.0 Schematics & Parts Lists

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##### Main Assembly – Front View

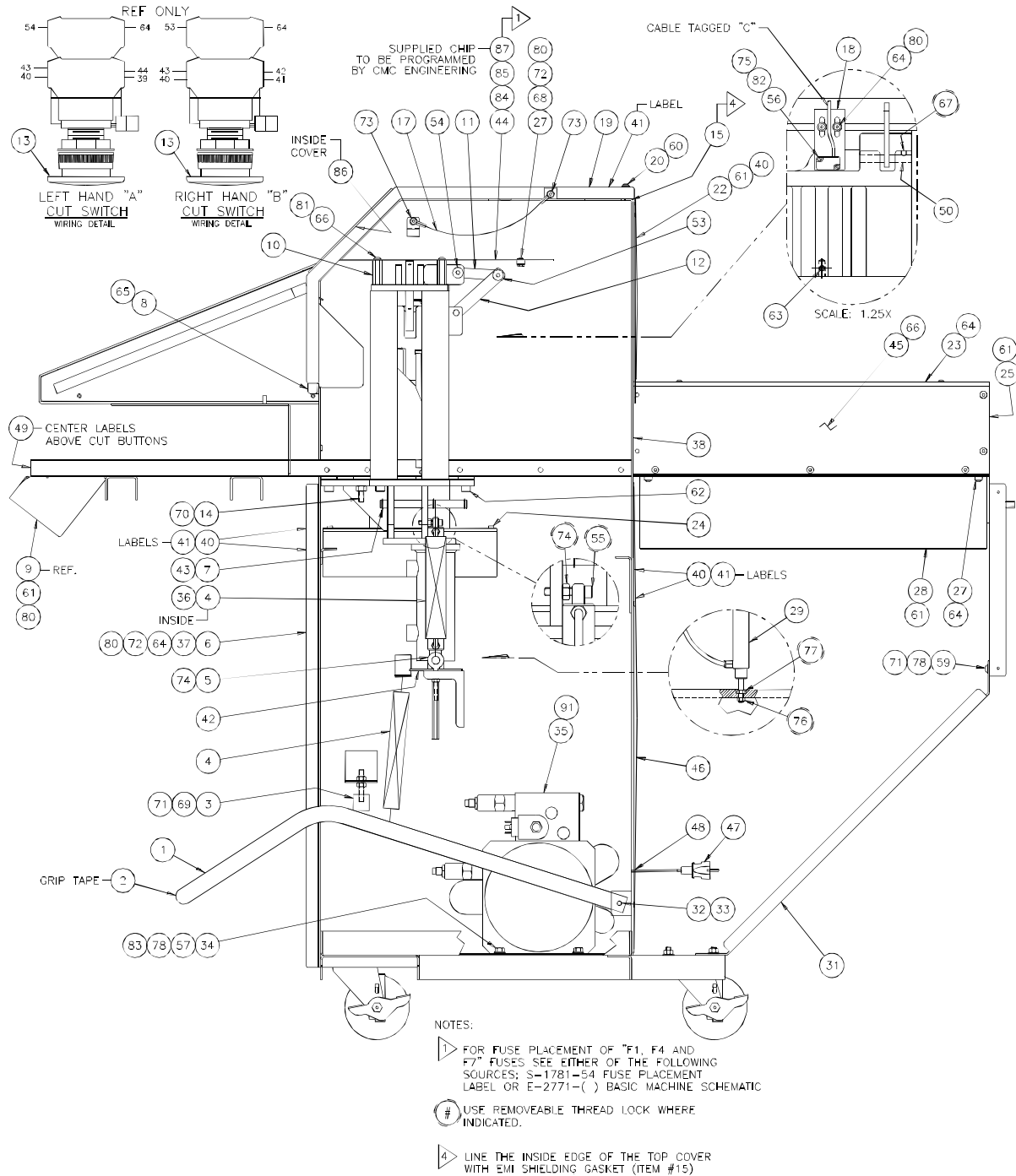
42000 SHT 1 of 5 Rev. G

NO.	PART NO.	DESCRIPTION OF ACCESSORIES	QTY
41	H-6918-608	SCREW - 3/8-16 x 1" SOCKET HEAD	38
42	H-6938-632	SCREW - 3/8-16 x 2" CUP POINT SET	2
43	H-6918-412	SCREW - #8-32 X 3/8	2
44	H-6910-403	SCREW - 1/4-20 x 3/8 BUTTON HEAD	2
45	H-6913-406	SCREW - 1/4-20 x 3/4 HEX HEAD	2
46	H-6913-508	SCREW - 5/16-18 x 1" HEX HEAD	12
47	H-6922-44012	SCREW - #4-40 x 3/4 FLAT HEAD	4
48	H-6922-44010	SCREW - #4-40 X 5/8 FLAT HEAD	2
49	H-6938-102408	SCREW - #10-24 x 1/2 CUP POINT SET	3
50	H-6918-102406	SCREW - #10-24 x 3/4 SOCKET HEAD	2
51	H-6894-606	SCREW - 3/8-16 x 3/4 WHIZ LOCK	4
52	H-7324-#10	WASHER - #10 INTERNAL TOOTH	10
53	H-7324-8	WASHER - 1/4 INTERNAL TOOTH	2
54	H-7327-10	WASHER - 5/16 MEDIUM LOCK	20
55	H-7327-12	WASHER - 3/8 MEDIUM LOCK	13
56	H-7324-#6	WASHER - #6 INTERNAL TOOTH	4
57	H-7324 #4	WASHER - #4 INTERNAL TOOTH	6
58	H-7321-#10	WASHER - #10 PLAIN	2
59	H-6423-4	NUT - 1/4-20 HEX (KEP STYLE)	6
60	H-6423-5	NUT - 5/16-18 HEX (KEP STYLE)	12
61	H-6410-6	NUT - 3/8-16 SLOTTED	1
62	H-6423-#4	NUT - #4-40 HEX (KEP STYLE)	8
63	H-6414-8	NUT - 1/2-13 WHIZ LOCK	4
64	H-6423-#6	NUT - #6-32 HEX (KEP STYLE)	4
65	42056	CLAMP LEVELING BLOCK (S/N 080049 & ABOVE)	2
66			
67	42007	KNIFE	1
68	S-1694	TIE WRAP - WIRE	2
69	E-1260-1	LIGHT SOCKET	1
70			
71	H-6910-102404	SCREW- #10-24 X 1/2 BUTTON HD.	4
72	H-6923-44012	SCREW - #4-40 x 3/4 RD HEAD	2
73	S-1694	TYRAP	-
74	H-7321-4	WASHER - 1/4 PLAIN	2
75	E-967-1	BULB	1
76	E-1152-73	SPACER - 3/8" LONG	3
77	EE-3362	ELECTRIC EYE ASSEMBLY	REF
78	H-6938-512	SCREW - 5/16-18 X 3/4 SOC SET	4
79	H-6918-610	SCREW - 3/8-16 X 1-1/4 SOC HEAD	4
80	H-6913-506	SCREW - 5/16-18 X 3/4	8
81	H-6918-83206	SCREW - #8-32 X 3/4 SOC HEAD	3
82	H-7324-#8	WASHER - #8 INT TOOTH	6
83	H-7321-5	WASHER - 5/16 PLAIN	8
84	H-7321-6	WASHER - 3/8 PLAIN	12
85	11288-7	WASHER - 3/8" DIA. NYLON	3

## NOTES

## 4.2 Main Assembly – Right Side View

42000 Sht. 2 Rev. "E"



**Main Assembly – Right Side View**

42000 SHT 2 of 5 Rev. E

NO.	PART NO.	DESCRIPTION OF ACCESSORIES	QTY
1	42009	PEDAL - FOOT	1
2	43021	TAPE - ABRASIVE	26"
3	40016-3	MOUNT - VIBRATION	2
4	47136-4	SPRING - PEDAL RETURN	4
5	S-1884	EYEBOLT - 1/4	2
6	42021	COVER - FRONT STAND	1
7	S-1193-50	RETAINING RING - 1/2 EXTERNAL	4
8	41007	HINGE	2
9	EE-2851-3	SWITCH ASSEMBLY - CUT	REF
10	E-1152-68	STAND OFF	5
11	42016	TORSION BAR	REF
12	42017	LINK	2
13	E-3127-4	GRN MUSHROOMHEAD SW. W/CONTACT BLOCKS	REF
14	44055	TAPER PIN	2
15	E-3340	GASKET - EMI, 48" LONG	2
16			
17	43040	CABLE - TOP COVER	2
18	43033	BRACKET - CLAMP UP PROX.	1
19	42020	COVER - TOP	1
20	H-7321-4	WASHER - 1/4 DIA. SAE PLAIN	2
21			
22	42022-1	COVER - REAR STAND (TOP)	1
23	42011	COVER - REAR TABLE	1
24	S-1694-1	CABLE TIE	2
25	42023	COVER - TABLE REAR	1
26			
27	S-1694-2	CABLE TIE - #10	4
28	44045	COVER - LEADSCREW	1
29	43073	DAMPER ASSEMBLY	1
30			
31	42029	SUPPORT - TABLE	1
32	43023	PIN - FOOT PEDAL	2
33	43024	HAIRPIN COTTER	2
34	A-10042	NUT	4
35	H-477-7	HYDRAULIC POWER UNIT - 208/230 V 50 HZ	1
35	H-477-6	HYDRAULIC POWER UNIT - 208/230 V 60 HZ	1
36	47136-12	SPRING - CLAMP RETURN	2
37	E-1152-61	STANDOFF - 3/4	4
38	41130	SPECIFICATION PLATE	1
39			
40	S-1781-16	LABEL - CRUSH CAUTION	3

## 4.0 Schematics & Parts Lists

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### Main Assembly – Right Side View

42000 SHT 2 of 5 Rev. E

NO.	PART NO.	DESCRIPTION OF ACCESSORIES	QTY
41	S-1781-11	LABEL - SHOCK CAUTION	3
42	43076	ACTUATOR - HYDRAULIC UP PROX.	1
43	47086	PIN - BELLCRANK	2
44	EE-2765-4	PANEL ASSEMBLY - ELECTRICAL	1
45	42027	COVER - REAR TABLE SIDE	2
46	42025	COVER - REAR STAND	1
47	EE-2778	POWER CORD ASSEMBLY - 230 VOLT 60 HZ.	1
47	EE-2778-1	POWER CORD ASSEMBLY - 50 HZ. (EUROPE)	1
47	EE-2778-10	POWER CORD ASSEMBLY - 50 HZ. (AUSTRALIA)	1
48	S-1350-16	BUSHING - STRAIN RELIEF	1
49	S-1781-115	LABEL - CUT BUTTON	2
50	H-5246-618	DOWEL PIN - 3/8 X 2-1/4	2
51			
52			
53	H-5254-606	SCREW - 3/8x3/4 SHOULDER	2
54	H-5254-608	SCREW - 3/8x1 SHLDR (S/N 080048 & BELOW)	2
	H-5254-616	SCREW - 3/8x2 SHLDR (S/N 080049 & UP)	
55	H-6918-410	SCREW - 1/4-20 x 1-1/4 SOC HEAD	1
56	H-6923-44012	SCREW - #4-40 x 3/4 ROUND HEAD	2
57	H-6913-508	SCREW - 5/16-18 x 1" HEX HEAD	4
58			
59	H-6910-506	SCREW - 5/16-18 x 3/4 BUTTON HEAD	2
60	H-6910-410	SCREW - 1/4-20 x 1-1/4 BUTTON HEAD	2
61	H-6910-102403	SCREW - #10-24 x 3/8 BUTTON HEAD	18
62	H-6918-610	SCREW - 3/8-16 x 1-1/4 SOCKET HEAD	4
63	H-6951-406	SCREW - 1/4-20 X 3/8 SOC SET NYLOC	3
64	H-6910-102404	SCREW - #10-24 x 1/2 BUTTON HEAD	12
65	H-6920-103204	SCREW - #10-32 x 1/2 BUTTON HEAD	8
66	H-6910-404	SCREW - 1/4-20 x 1/2 BUTTON HEAD	10
67	H-6938-404	SCREW - 1/4-20 x 1/4 CUP SOC SET	2
68	H-6910-102406	SCREW - #10-24 x 3/4 BUTTON HEAD	2
69	H-6938-532	SCREW - 5/16-18 x 2" SOCKET SET	2
70	H-6423-6	NUT - 3/8-16 HEX	2
71	H-6423-5	NUT - 5/16-18 HEX	6
72	H-6423-#10	NUT - #10-24 HEX	6
73	H-5247-1024	NUT - #10-24 FLEX-LOCK	4
74	H-6423-4	NUT - 1/4-20 HEX	3
75	H-6423-#4	NUT - #4-40 HEX	2
76	H-6443-4	NUT - 1/4-28 FLEX-LOCK	1
77	H-6428-4	NUT - 1/4-28 HEX JAM	1

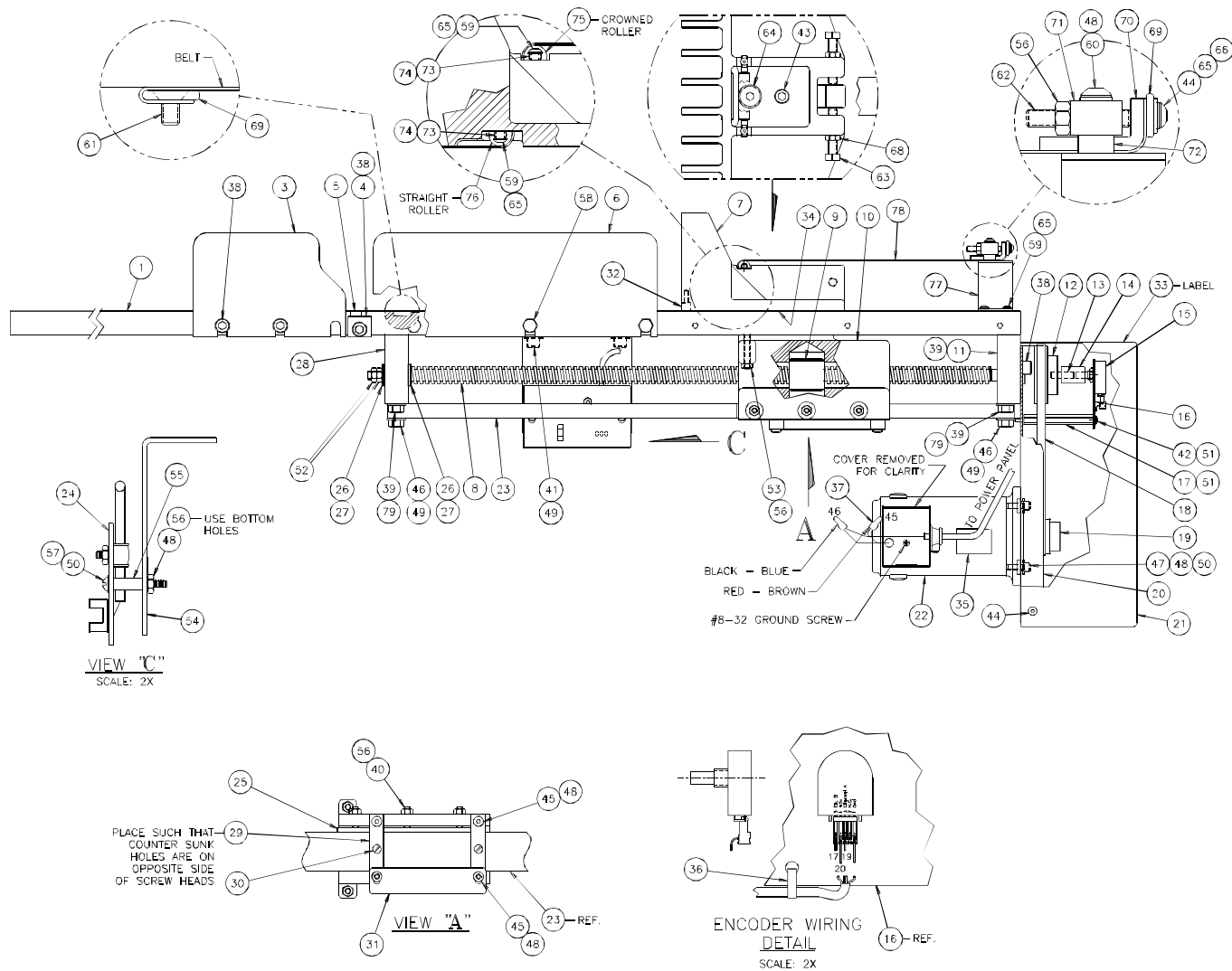
**Main Assembly – Right Side View**

42000 SHT 2 of 5 Rev. E

NO.	PART NO.	DESCRIPTION OF ACCESSORIES	QTY
78	H-7327-10	WASHER - 5/16 MEDIUM LOCK	6
79	H-7321-#10	WASHER - #10 PLAIN	14
80	H-7324-#10	WASHER - #10 INTERNAL TOOTH	10
81	H-7324-8	WASHER - 1/4 INTERNAL TOOTH	4
82	H-7324-#4	WASHER - #4 INTERNAL TOOTH	2
83	H-7321-5	WASHER - 5/16 PLAIN	4
84	E-2330	FUSE - 1A T, METRIC "F1"	1
85	E-1075-10SB	FUSE - 10A T, "F4 & F7" (200 230V 60Hz)	2
85	E-1075-12SB	FUSE - 12A T, "F4 & F7" (200 230V 50Hz)	2
85	E-1075-15SB	FUSE - 15A T, "F4 & F7" (230 230V 60/50Hz)	2
86	S-1781-168	LABEL - INTERCON. DIAGRAM (SERIAL COM. OPT)	1
86	S-1781-174	LABEL - INTERCON. DIAGRAM W/O AIR	1
86	S-1781-191	LABEL - INTERCON. DIAGRAM W/AIR	1
87	EE-1766-41	EPROM - PROGRAMMABLE (NON- BK LIT DISPLAY)	1
87	EE-1766-92	EPROM - PROGRAMMABLE ( BK LIT DISPLAY)	1
88			
89			
90			
91	E-1214-63	CONNECTOR - 1/4" NON - INS RING 1	

## 4.3 Main Assembly – Table Asm. View

42000 Sht. 3



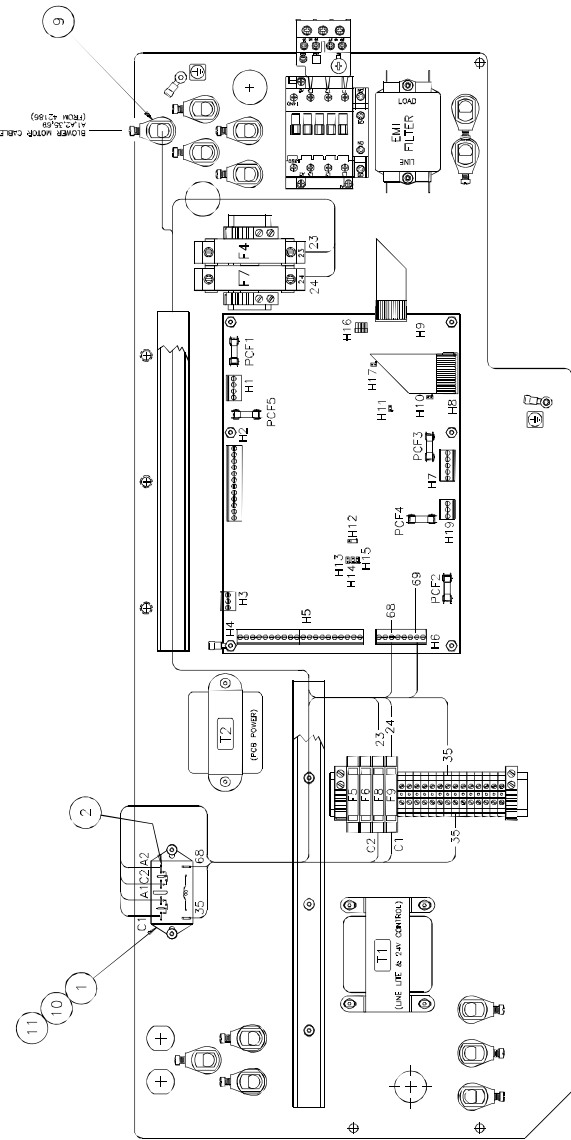
NO.	PART NO.	DESCRIPTION OF ACCESSORIES	QTY
1	42001	TABLE	1
2			
3	43058	SIDEGUIDE - FRONT	2
4	47630	STOP - CUT STICK	2
5	42008	CUT STICK	1
6	43059-1	SIDEGUIDE - REAR	2
7	42006	BACKGAUGE	1
8	42019	LEADSCREW (S/N 080048 & BELOW)	1
	42019-1	LEADSCREW (S/N 080049 & ABOVE)	
9	43005	NUT	1
10	44006	BRACKET - BACKGAGE	1
11	44068	REAR PILLOW BLOCK ASSEMBLY	1
12	43062	PULLEY - LEADSCREW	1
13	H-21S-250-1000	PIN - 1/4 x 1" ROLL	1
14	47053	COUPLING - ENCODER DRIVE	1
15	E-2467	ENCODER	1
16	43029	PLATE - ENCODER MOUNT	1
17	E-1152-60	STANDOFF - 3"	2
18	7954	BELT - TIMING	1
19	43063	PULLEY - MOTOR	1
20	43027	BRACKET - MOTOR MOUNT	1
21	43028	COVER - BACKGAGE DRIVE	1
22	E-1600-166	MOTOR - 180 VOLT D.C. (230 V MACHINES)	1
23	42037	GUIDE - BACKGAGE (S/N 080048 & BELOW)	1
	42037-1	GUIDE - BACKGAGE (S/N 080049 & ABOVE)	
24	EE-1688-1	PRESETTER ASSEMBLY	REF.
25	44069-1	GIB - BACKGAUGE BRACKET	1
26	S-1295-3	WASHER - THRUST	4
27	S-1300-2	BEARING - THRUST	2
28	44067	FRONT PILLOW BLOCK ASSEMBLY	1
29	43060	STRAP	2
30	S-1944-1	SCREW - NYLON	2
31	43032	WAND - PRESET	1
32	10065	PIN - BACKGAUGE	10
33	S-1781-16	LABEL - CAUTION	1
34	47264	POLYETHYLENE TAPE	22"
35	S-1781-50	LABEL - ELECTRICAL SHOCK	1
36	S-1694-1	TYRAP	1
37	E-1237-6	WIRE NUT	2
38	H-6918-606	SCREW - 3/8-16 x 3/4 SOCKET HEAD	8
39	H-6913-628	SCREW - 3/8-16 x 3-1/2 HEX HEAD	4
40	H-6953-416	SCREW - 1/4-20 X 1" OVAL PT. SOC SET	3
41	H-6918-605	SCREW - 3/8-16 x 5/8 SOCKET HEAD	2

NO.	PART NO.	DESCRIPTION OF ACCESSORIES	QTY
42	H-6910-83203	SCREW - #8-32 x 3/8 BUTTON HEAD	2
43	H-6918-610	SCREW - 3/8-16 X 1-1/4 SOC HEAD	1
44	H-6910-102403	SCREW - #10-24 x 3/8 BUTTON HEAD	6
45	H-6910-406	SCREW - 1/4-20 x 3/4 BUTTON HEAD	4
46	H-6913-608	SCREW - 3/8-16 x 1" HEX HEAD	2
47	H-6918-406	SCREW - 1/4-20 x 3/4 SOCKET HEAD	4
48	H-7324-8	WASHER - 1/4 INT. TOOTH	12
49	H-7319-6	WASHER - 3/8 PLAIN	4
50	H-7321-4	WASHER - 1/4 PLAIN	6
51	H-7324-#8	WASHER - #8 INT. TOOTH	4
52	H-6428-6	NUT - 3/8-24 HEX JAM	2
53	H-6940-424	SCREW - 1/4-20 X 1-1/2 FLAT SET	2
54	10040-1	BRACKET - PRESET	1
55	E-1152-12	SPACER	2
56	H-6424-4	NUT - 1/4-20 HEX JAM	9
57	H-6918-410	SCREW - 1/4-20 X 1-1/4 SOC CAP	2
58	H-6913-606	SCREW - 3/8-16 x 3/4 HEX HEAD	6
59	H-6910-102404	SCREW - #10-24 X 1/2 BUT HD	4
60	H-6910-410	SCREW - 1/4-20 X 1-1/4 BUT HD	2
61	H-6909-102403	SCREW - #10-24 X 3/8 FLT HD	2
62	H-6938-424	SCREW - 1/4-20 X 1-1/2 SOC SET	2
63	H-6931-614	SCREW - 3/8-16 X 1-3/4 SQUARE HD. SET	2
64	H-5254-1008	SCREW - 5/8 X 1" SOC SHOULDER	1
65	H-7324-#10	WASHER - #10 INT TOOTH	6
66	H-7321-#10	WASHER - #10 PLAIN	2
67			
68	H-6424-6	NUT - 3/8-16 HEX JAM	2
69	44153	BELT CLAMP	2
70	44157	BRACKET - BELT ADJ.	1
71	44156	BELT ADJUSTMENT BLOCK	1
72	E-1152-93	SPACER	2
73	47597	PIN - PULLEY	2
74	S-1073-25	RETAINING RING - 1/4 EXTERNAL	4
75	47588	CROWNED PULLEY	1
76	47601	STRAIGHT PULLEY	1
77	44155	BRACKET - BELT	1
78	42036	BELT	1
79	H-7327-12	WASHER - 3/8 MED. LOCK	4
80			
81			
82			

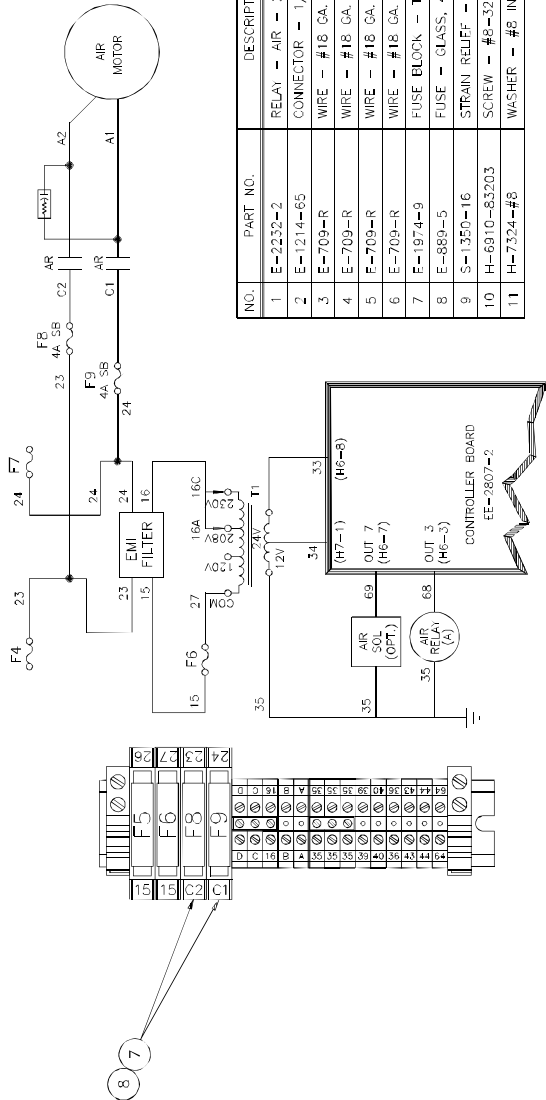


4.4 Main Assembly – Blower Option - Electrical

42000 Sht. 4 Rev. "A"



SCHEMATIC  
OPTIONAL AIR TABLE

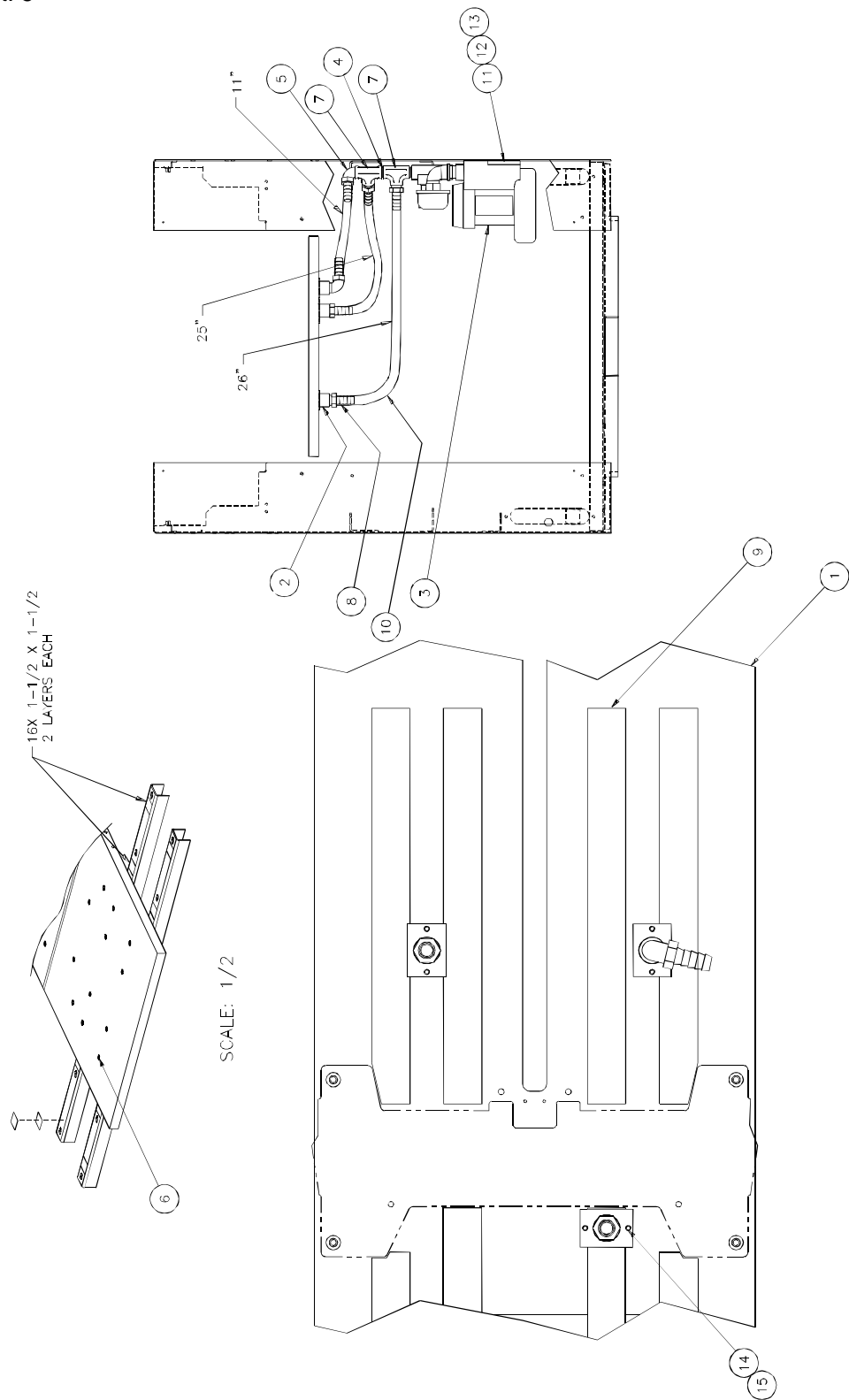


NO.	PART NO.	DESCRIPTION OF ACCESSORIES	QTY
1	E-2232-2	RELAY - AIR - 24V COIL	1
2	E-1214-65	CONNECTOR - 1/4" FULLY INS. FEMALE Q.D.	4
3	E-709-R	WIRE - #18 GA. RED. 36" LONG (#21 & 22)	2
4	E-709-R	WIRE - #18 GA. RED. 10" LONG (#C1 & C2)	2
5	E-709-R	WIRE - #18 GA. RED. 13" LONG (#35)	1
6	E-709-R	WIRE - #18 GA. RED. 23" LONG (#68)	1
7	E-1974-9	FUSE BLOCK - TERMINAL MOUNT, GLASS FUSE	2
8	E-889-5	FUSE - GLASS, 4A T *FB & F9	2
9	S-1350-16	STRAIN RELIEF - CABLE	1
10	H-6910-83203	SCREW - #8-32 X 3/8 BUT HD SOC CAP	2
11	H-7324-#8	WASHER - #8 INT TOOTH-LOCK	2

## NOTES

4.5 Main Assembly – Air Table

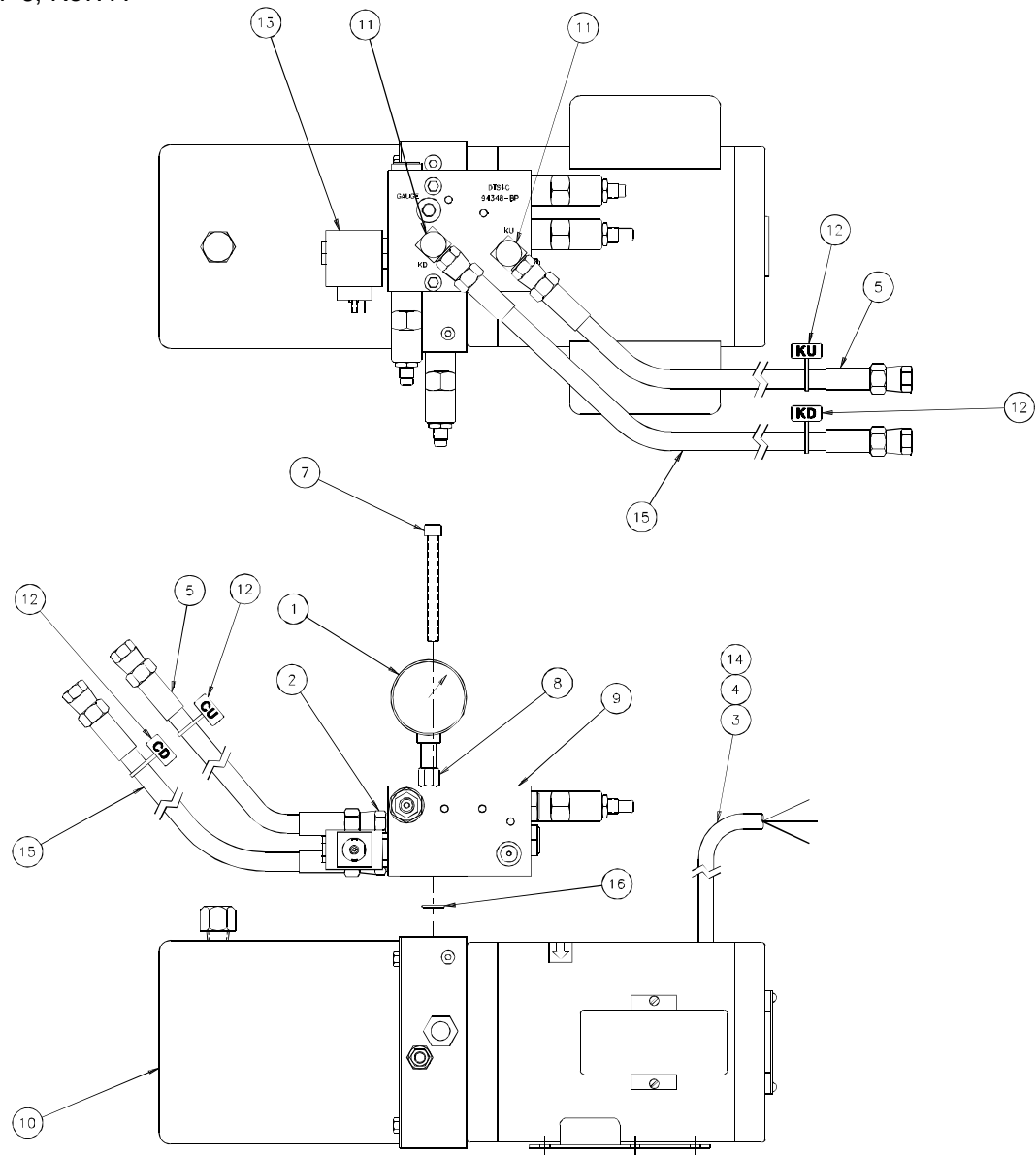
42000 Sht. 5



NO.	PART NO.	DESCRIPTION OF ACCESSORIES	QTY
1	42001-1	TITAN 230 AIR TABLE	1
2	42060	FLANGE- 3/4 NPT	3
3	44186	BLOWER ASSEMBLY	1
4	H-6405-1212	NIPPLE- 3/4 CLOSE	1
5	P-205-10	INSERT- 90° ELBOW- 3/4 NPT X 3/4 TUBE	2
6	P-207-2	AIR JET	28
7	P-209	TEE- 3/4 NPT (PVC)	2
8	P-210-11	INSERT- 3/4 NPT X 3/4 TUBE	4
9	S-2015-1	TAPE- ALUMINUM	333"
10	P-275	3/4 HOSE- REINFORCED PVC	6'
11	H-6910-610	SCREW- 3/8-16 X 1-1/4 BHC	2
12	H-7327-12	WASHER- 3/8 MED LOCK	2
13	H-6423-6	NUT- 3/8-16 HEX	2
14	H-6918-404	SCREW- 1/4-20 X 1/2 SHC	6
15	H-7327-8	WASHER- 1/4 MED LOCK	6

4.6 Hydraulic Power Unit – 60 Hz

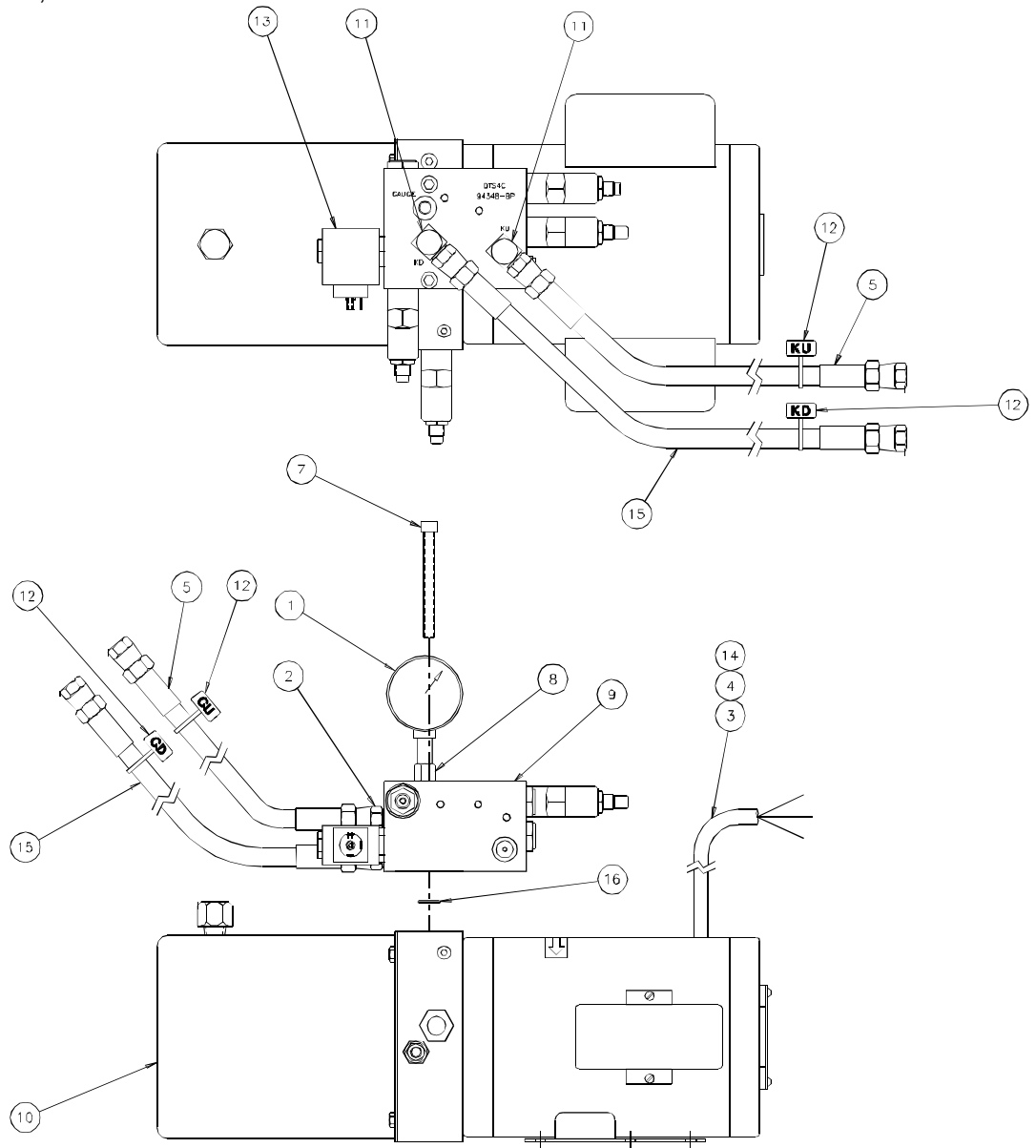
H-477-6, Rev. A



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			
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-220-8	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-1610-10	O-RING	2

## 4.7 Hydraulic Power Unit – 50 Hz

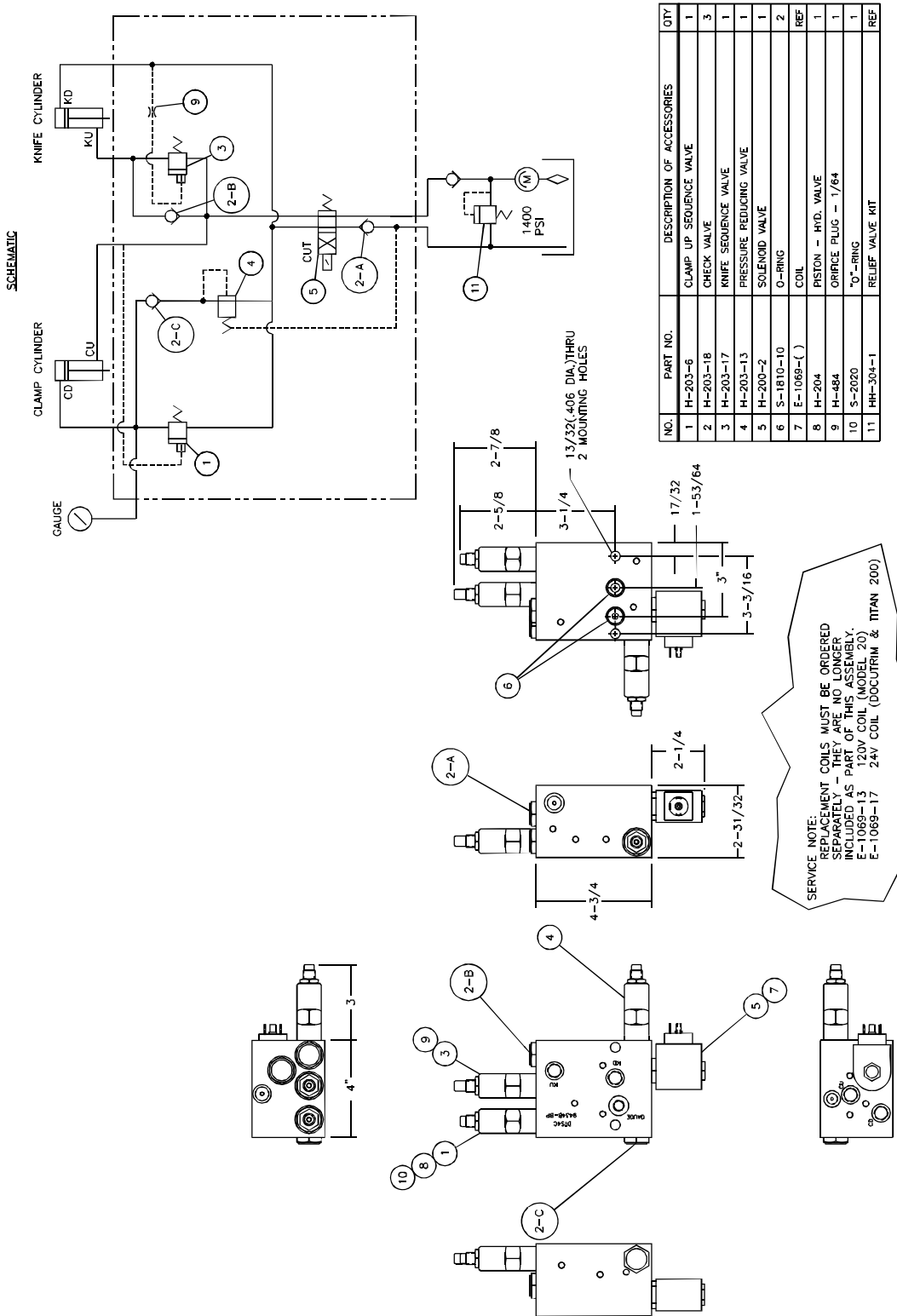
H-477-7, Rev. A



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			
7	H-6918-028	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-220-9	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

## 4.8 Hydraulic Manifold Assembly & Schematic

HH-476-1

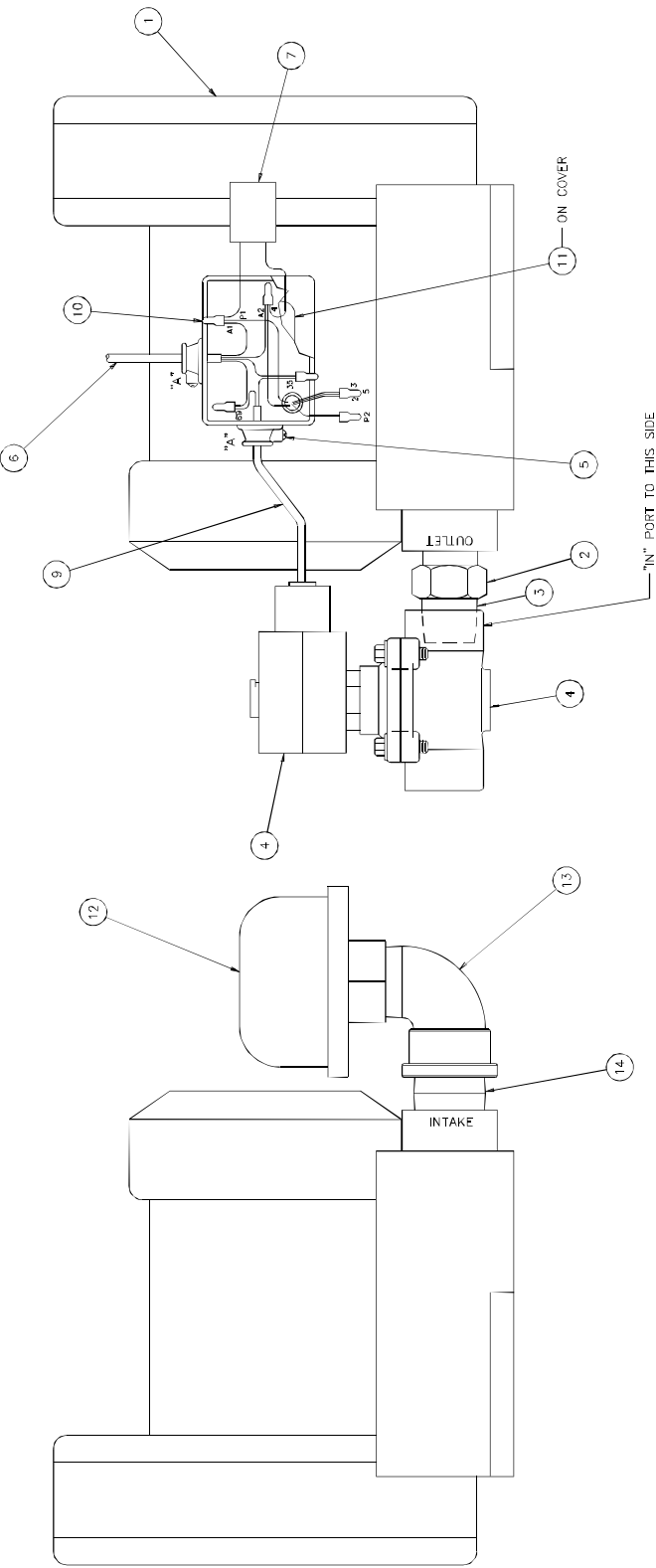


## NOTES



4.9 Blower Assembly

44186, Rev. B

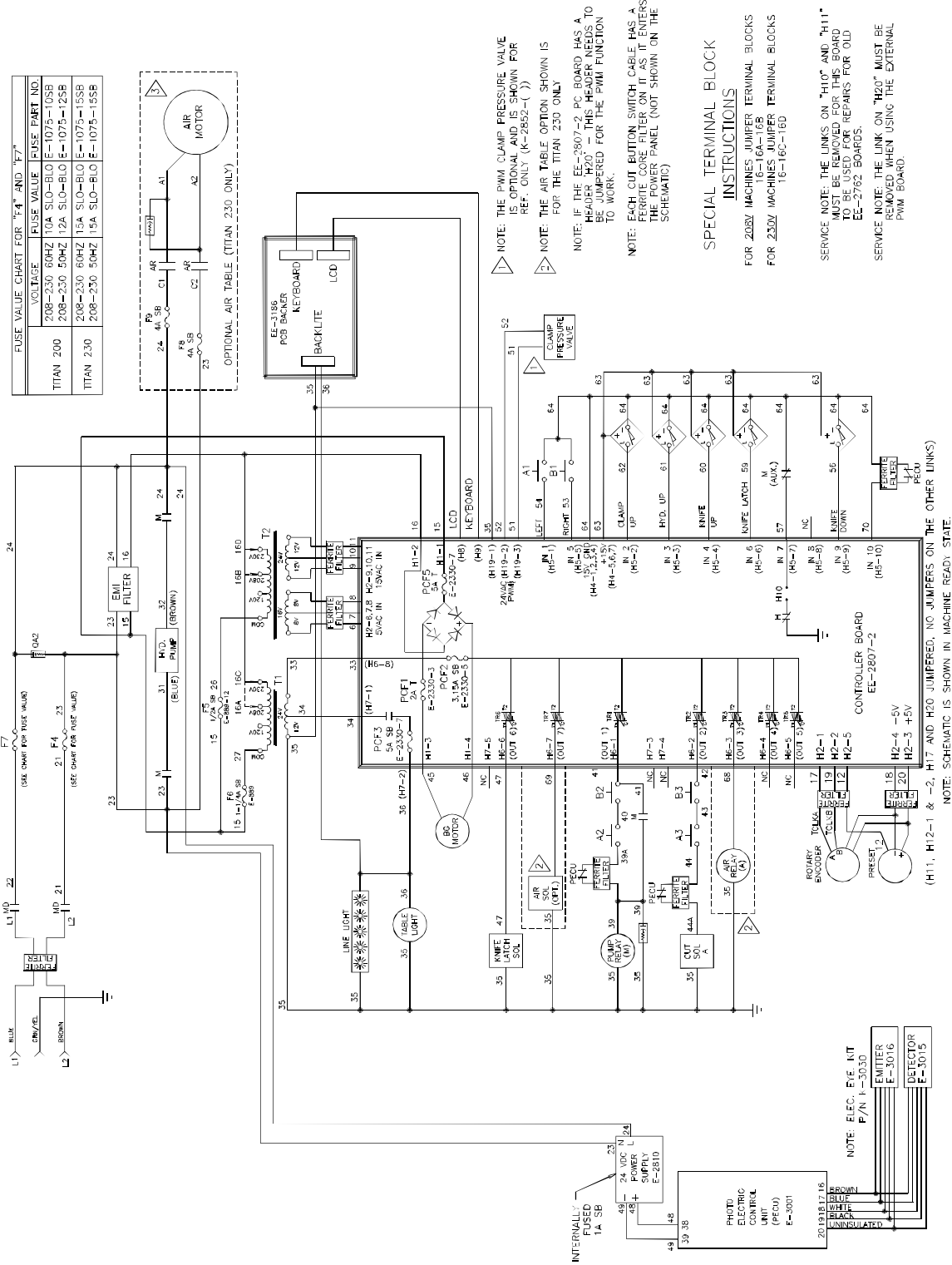


NO.	PART NO.	DESCRIPTION OF ACCESSORIES	QTY
1	E-1223-4	BLOWER - 1PH	1
2	P-204	REDUCER - PVC	1
3	H-6405-1212	NIPPLE - STEEL	1
4	P-202-1	VALVE - SOLENOID	1
5	S-1350-16	STRAIN RELIEF	2
6	E-748	CABLE - #18 GA. 4 COND. 88" LONG	1
7	E-1736-2	QUENCHARC - 3" WIRE LEADS	1
8	E-1214-4	CONNECTOR - #8 INS. LOCKING FORK	1
9	E-1453-1	SHRINK TUBING - 6" LONG	1
10	E-1237-1	NUT - WIRE, SM YELLOW	6
11	S-1781-12	LABEL - EURO SHOCK W/TEXT	1
12	P-102	STRAINER	1
13	P-214	ELBOW - 90° STREET NPT, NYLON	1
14	P-212-1	PIPE NIPPLE - 1" x 1-1/2 PLASTIC	1
15	E-1214-49	CONNECTOR - 1/4" FULLY INS. QUICK DISC.	2

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

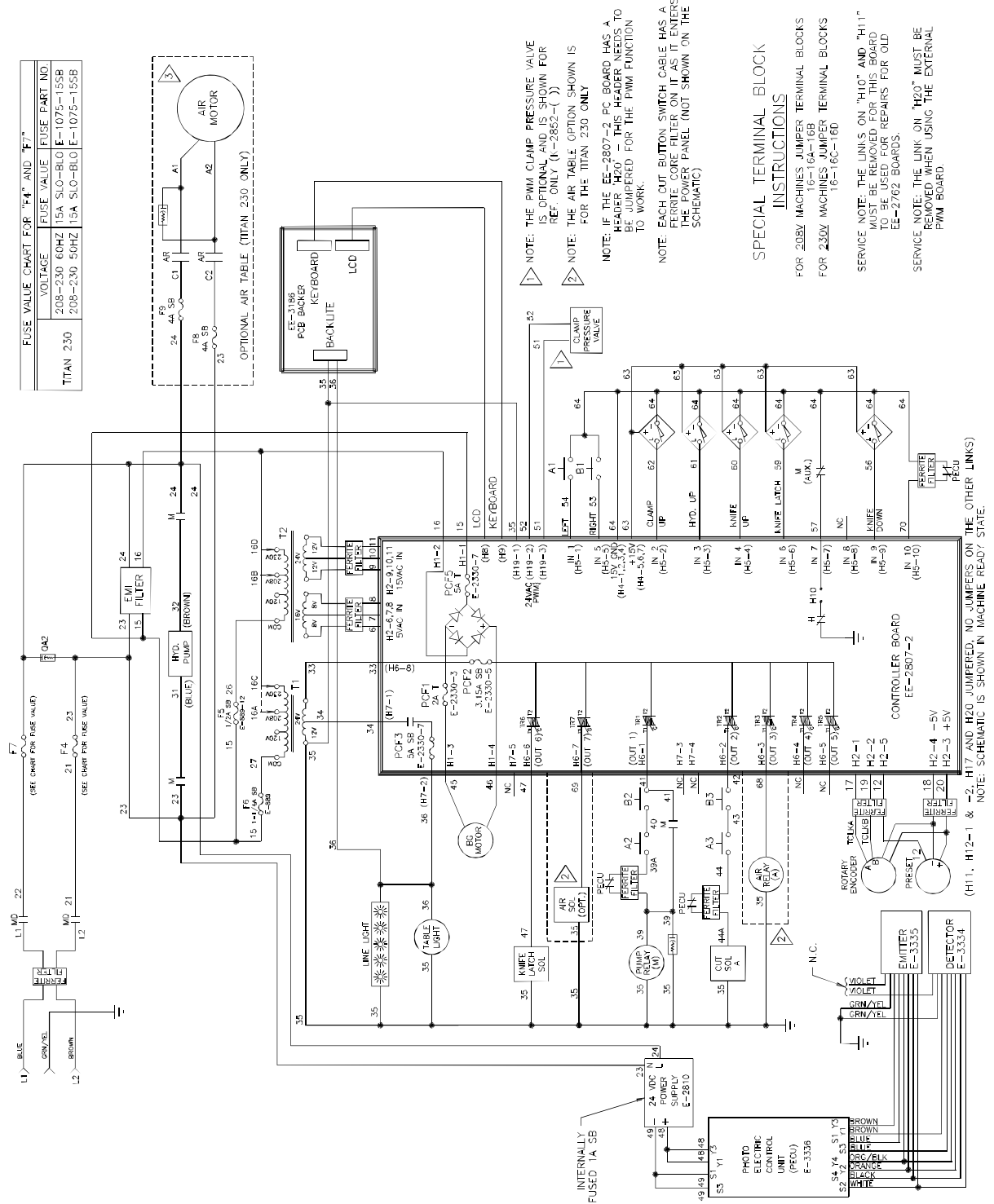
4.10 Electrical Schematic – Basic Machine

E-2771-6, Rev. C (Serial Numbers 103478 and below)



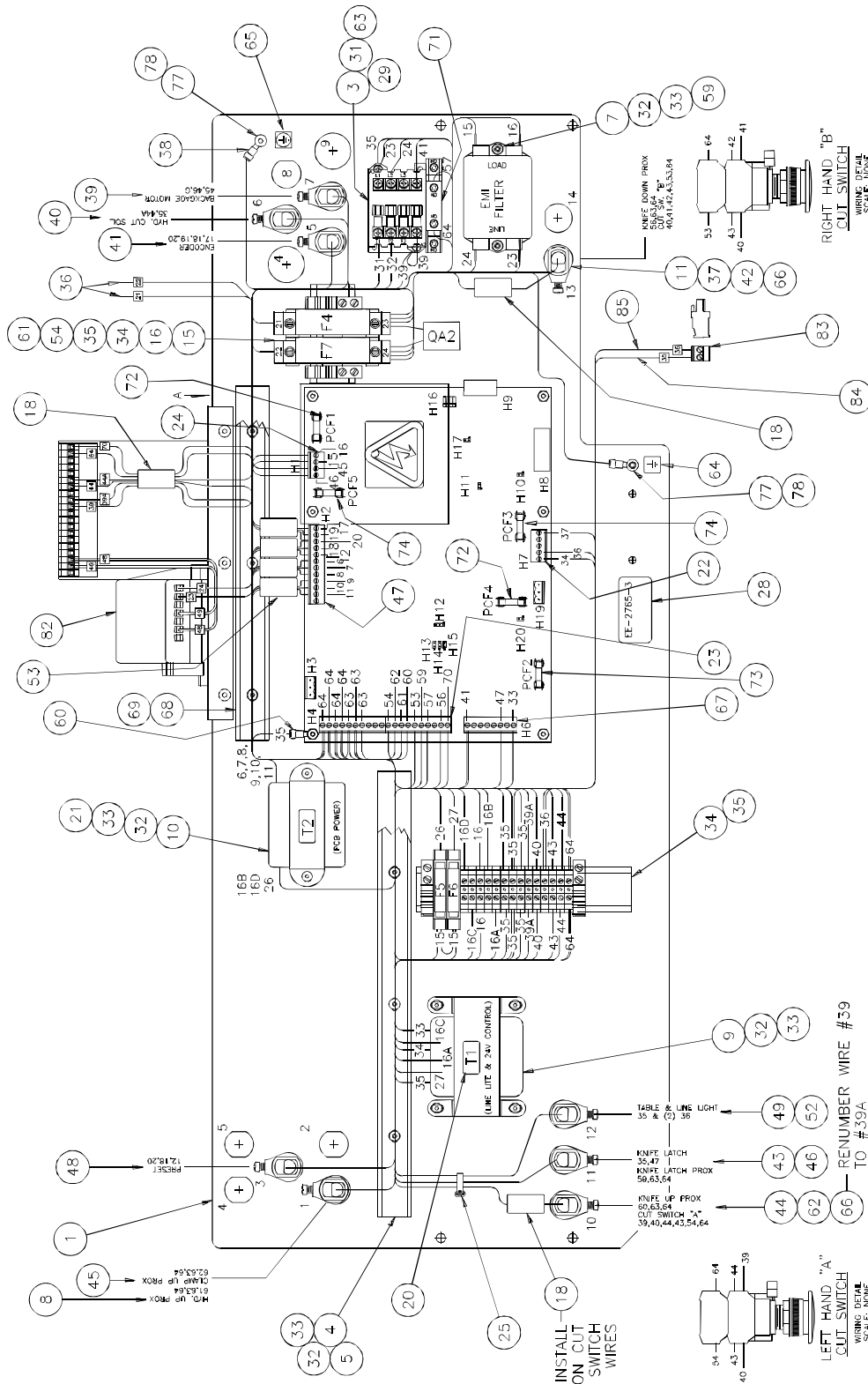
## Electrical Schematic – Basic Machine

E-2771-8 Rev. "A" (Serial Numbers 103479 and Up)



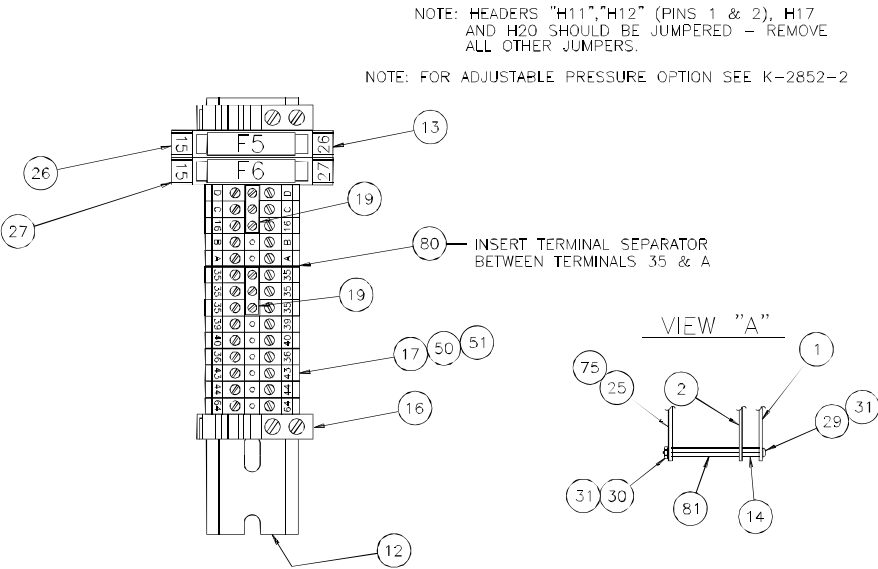
## 4.11 Power Panel Assembly

EE-2765-3, Rev. F (Serial Numbers 100188 and below)



Power Panel Assembly – EE-2765-3, Rev. F

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.

EE-2765-3 Rev. "F"

NO.	PART NO.	DESCRIPTION OF ACCESSORIES	QTY
1	43006-1	PANEL - ELECTRICAL	1
2	EE-2807-2	P.C.B. ASSEMBLY - CONTROLLER	1
3	E-2805	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	S-1694	CABLE TIE	7
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	9
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-1152-56	STAND-OFF - 1/2" LONG, #6-32 THR'D	6
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.	14
18	E-2756-6	FILTER - FERRITE CORE	3
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-2066-5	CONNECTOR - PLUG IN PCB TERM. 5 POLE	1
23	E-2066-10	CONNECTOR - PLUG IN PCB TERMINAL BLOCK	2
24	E-2066-4	CONNECTOR - PLUG IN PCB TERMINAL BLOCK	1
25	47157-7	P.C.B. COVER - CLEAR	1
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-702-B	WIRE - #14 GA. BLACK MTW 12" LONG	2
37	EE-2774	CABLE ASSEMBLY - CUT SWITCH "B"	1
38	E-1214-63	CONNECTOR-1/4" NON-INS RING	REF
39	EE-3106	CABLE ASSEMBLY - BACKGAGE MOTOR	1
40	EE-2769-15	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.

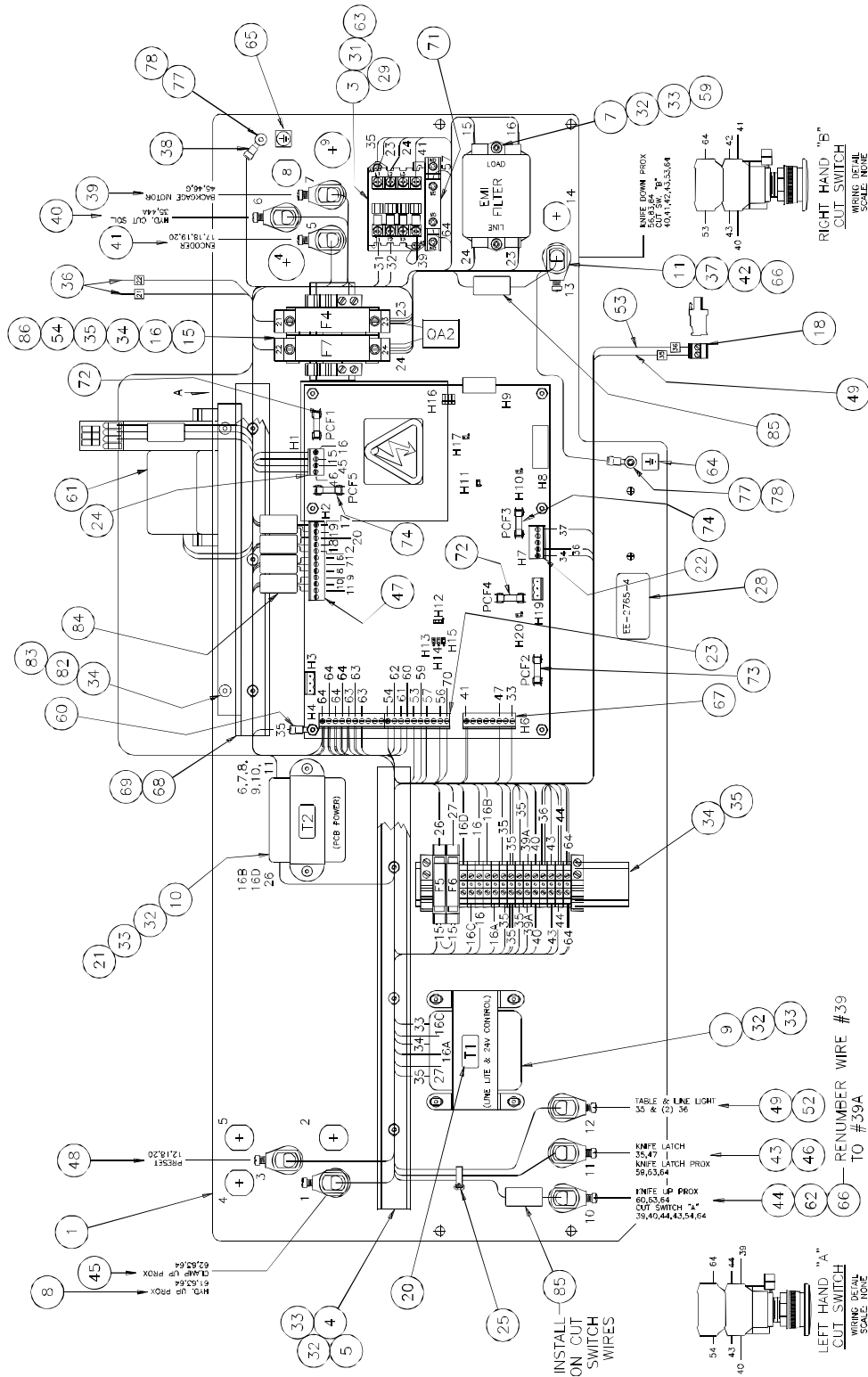
EE-2765-3 Rev. "F"

NO.	PART NO.	DESCRIPTION OF ACCESSORIES	QTY
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-709-R	WIRE - #18GA. RED MTW 30" LONG, WIRE #35	1
50	E-1356-( )	LABEL - TERMINAL BLOCK	1
51	E-1356-( )	LABEL - TERMINAL BLOCK	1
52	E-709-R	WIRE - #18GA. RED MTW 36" LONG, WIRE #36	2
53	E-2756-3	FILTER - FERRITE CORE	4
54	E-1977-3	RAIL - TERMINAL BLOCK, 3" LONG	1
55	E-849-R	WIRE - #16 GA. RED MTW	A/N
56	E-709-R	WIRE - #18 GA. RED MTW	A/N
57	E-1214-9	CONNECTOR - #8 INS. RING	2
58	E-1214-54	CONNECTOR - 1/4" FULLY INS. MALE Q.D.	2
59	E-1214-49	CONNECTOR - 1/4" FULLY INS. FEMALE Q.D.	4
60	E-1214-36	CONNECTOR - #6 INS. RING	1
61	E-1736-2	QUENCHARC (QA2)	1
62	EE-2774-1	CABLE ASSEMBLY - CUT SWITCH "A"	1
63	E-1736-4	QUENCHARC - RELAY MOUNT	1
64	S-1781-42	LABEL - GROUND SYMBOL, SECONDARY	1
65	S-1781-197	LABEL - GROUND SYMBOL, PRIMARY	1
66	EE-2851-3	CUT SWITCH ASSEMBLY	2
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	A/N
71	E-2376-4	CONTACTOR - AUX. (1) N.O. (1) N.C.)	1
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	S-1781-35	LABEL - CAUTION, ELECTRICAL SHOCK	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-1599-11	IC - 32 PIN PACKAGE (BLANK)	1
80	E-2864	SEPARATOR PLATE - TERMINAL BLOCK	1
81	E-1152-43	STAND-OFF - 2" LONG HEX	2
82	EE-3142-1	KIT - ELECTRIC SAFETY EYES (16")	1
83	E-2066-2	HEADER - 2 POS (PHEONIX)	1
84	E-709-R	WIRE - #18 GA. RED MTW 30" LONG (#35)	1
85	E-709-R	WIRE - #18 GA. RED MTW 30" LONG (#36)	1



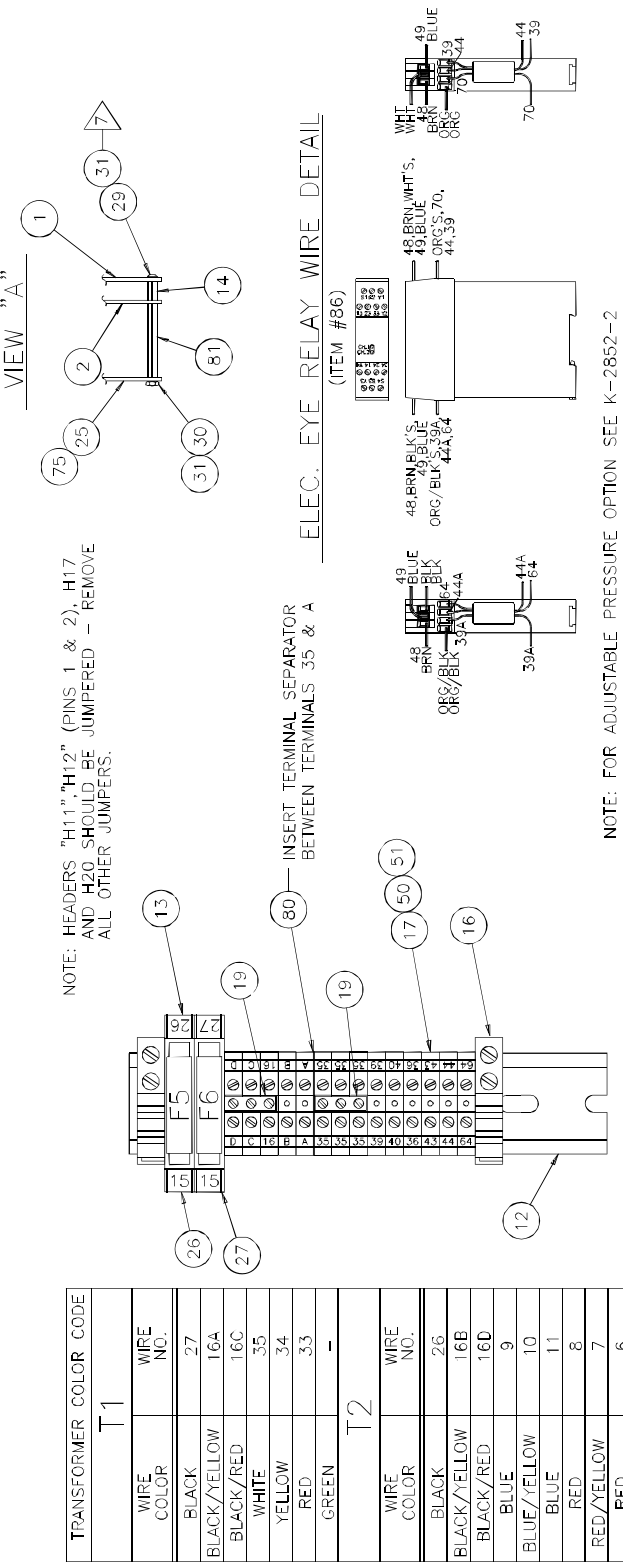
# Power Panel Assembly

EE-2765-4 Rev."A" (Serial Numbers 100189 and Up)



# Power Panel Assembly

EE-2765-4 Rev."A" cont.



## Power Panel Assembly – Cont.

EE-2765-4 Rev. "A"

NO.	PART NO.	DESCRIPTION OF ACCESSORIES	QTY
1	43006-1	PANEL - ELECTRICAL	1
2	EE-2807-2	P.C.B. ASSEMBLY - CONTROLLER	1
3	E-2805	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	S-1694	CABLE TIE	7
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	9
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-1152-56	STAND-OFF - 1/2" LONG, #6-32 THR'D	6
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.	14
18	E-2066-2	CONNECTOR - PLUG IN PCB TERM. 2 POLE	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-2066-5	CONNECTOR - PLUG IN PCB TERM. 5 POLE	1
23	E-2066-10	CONNECTOR - PLUG IN PCB TERM. 10 POLE	2
24	E-2066-4	CONNECTOR - PLUG IN PCB TERM. 4 POLE	1
25	47157-7	P.C.B. COVER - CLEAR	1
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-702-B	WIRE - #14 GA. BLACK MTW 12" LONG	2
37	EE-2774	CABLE ASSEMBLY - CUT SWITCH "B"	1
38	E-1214-63	CONNECTOR-1/4" NON-INS RING	REF
39	EE-3106	CABLE ASSEMBLY - BACKGAGE MOTOR	1
40	EE-2769-15	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

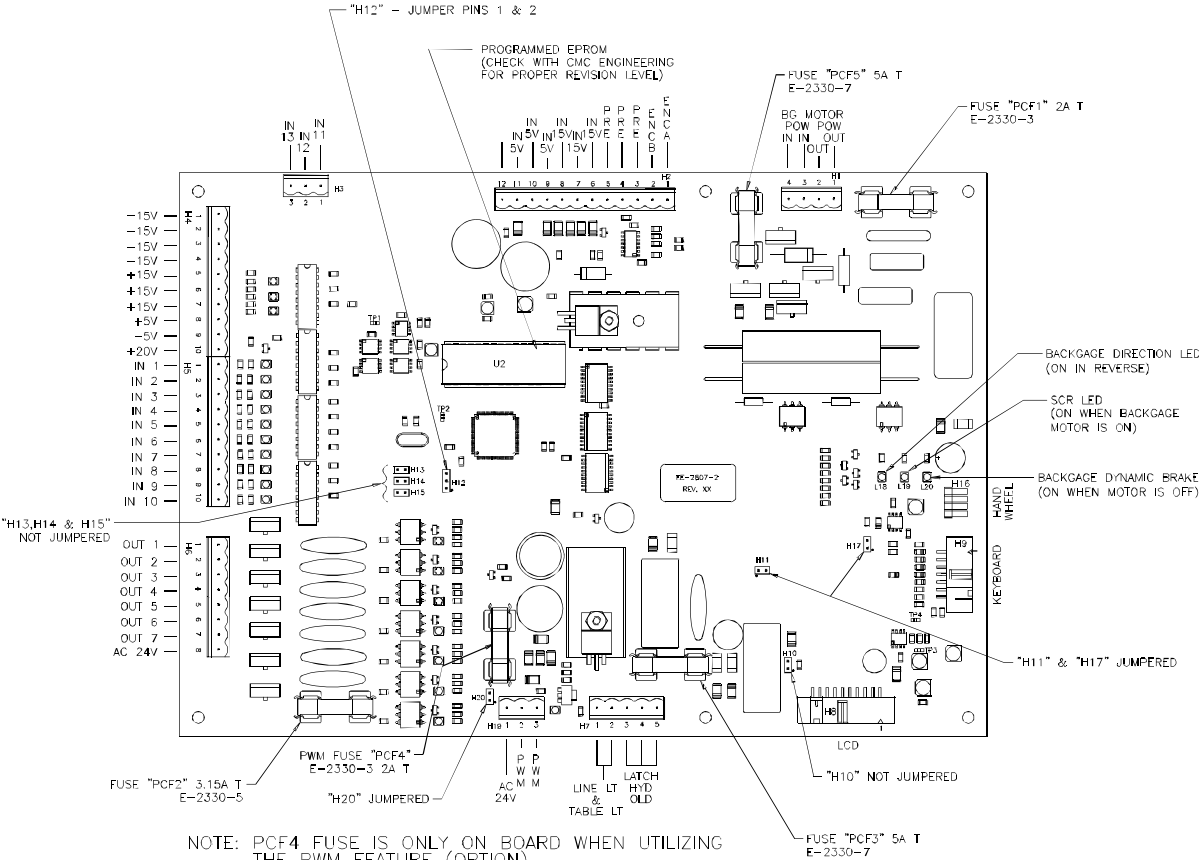
## Power Panel Assembly – Cont.

EE-2765-4 Rev. "A"

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-709-R	WIRE - #18GA. RED MTW 30" LONG, WIRE #35	2
50	E-1356-( )	LABEL - TERMINAL BLOCK	1
51	E-1356-( )	LABEL - TERMINAL BLOCK	1
52	E-709-R	WIRE - #18GA. RED MTW 36" LONG, WIRE #36	2
53	E-709-R	WIRE - #18 GA. RED MTW 30" LONG (#36)	1
54	E-1977-3	RAIL - TERMINAL BLOCK, 3" LONG	1
55	E-849-R	WIRE - #16 GA. RED MTW	A/N
56	E-709-R	WIRE - #18 GA. RED MTW	A/N
57	E-1214-9	CONNECTOR - #8 INS. RING	2
58	E-1214-54	CONNECTOR - 1/4" FULLY INS. MALE Q.D.	2
59	E-1214-49	CONNECTOR - 1/4" FULLY INS. FEMALE Q.D.	4
60	E-1214-36	CONNECTOR - #6 INS. RING	1
61	EE-3362	KIT - ELECTRIC SAFETY EYES (16")	1
62	EE-2774-1	CABLE ASSEMBLY - CUT SWITCH "A"	1
63	E-1736-4	QUENCHARC - RELAY MOUNT	1
64	S-1781-42	LABEL - GROUND SYMBOL, SECONDARY	1
65	S-1781-197	LABEL - GROUND SYMBOL, PRIMARY	1
66	EE-2851-3	CUT SWITCH ASSEMBLY	2
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	A/N
71	E-2376-4	CONTACTOR - AUX. (1) N.O. (1) N.C.)	1
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	S-1781-35	LABEL - CAUTION, ELECTRICAL SHOCK	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-1599-11	IC - 32 PIN PACKAGE (BLANK)	1
80	E-2864	SEPARATOR PLATE - TERMINAL BLOCK	1
81	E-1152-43	STAND-OFF - 2" LONG HEX	2
82	H-6423-#10	NUT - #10-24 HEX (KEP)	2
83	H-7321-#10	WASHER - #10 FLAT	2
84	E-2756-3	FILTER - FERRITE CORE	4
85	E-2756-6	FILTER - FERRITE CORE	2
86	E-1736-2	QUENCHARC (QA2)	1

4.12 Control P.C. Assembly

EE-2807-2 Rev. D



NOTE: PCF4 FUSE IS ONLY ON BOARD WHEN UTILIZING THE PWM FEATURE (OPTION)  
\* IC CHIPS MUST BE ORDERED SEPARATELY  
\* IC CHIPS; EE-1766-82 FOR TITAN 230 CUTTER, SPACER

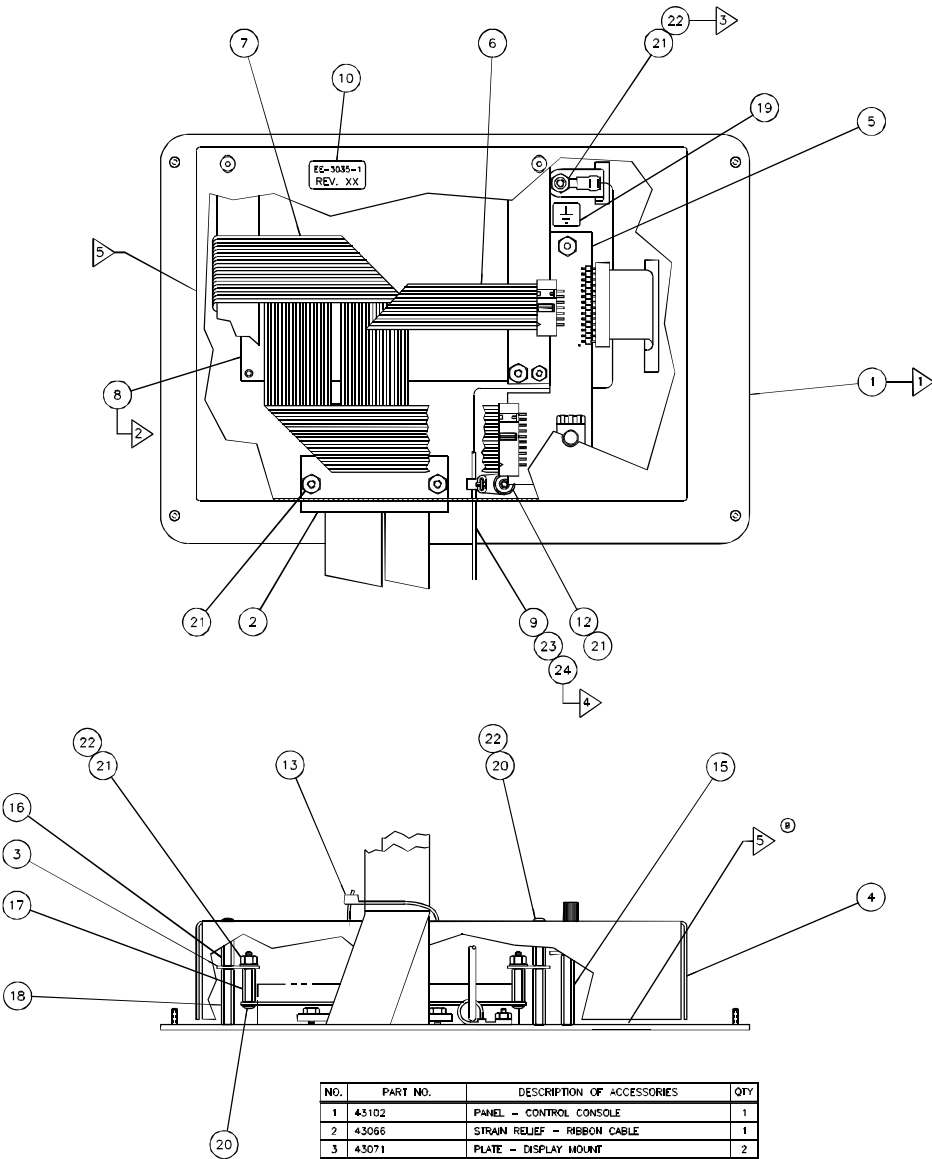
DESCRIPTION
IN 1: Left Cut Switch
IN 2: Clamp Up Limit
IN 3: Hyd. Cylinder Up Limit
IN 4: Knife Up Limit
IN 5: Right Cut Switch
IN 6: Knife Latch
IN 7: Pump Motor - N.C.
IN 8: Not Used
IN 9: Knife Down Limit
IN 10: Photo Electric Control Unit

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

## NOTES

4.13 Control Console Assembly – Non-Back Lit Display

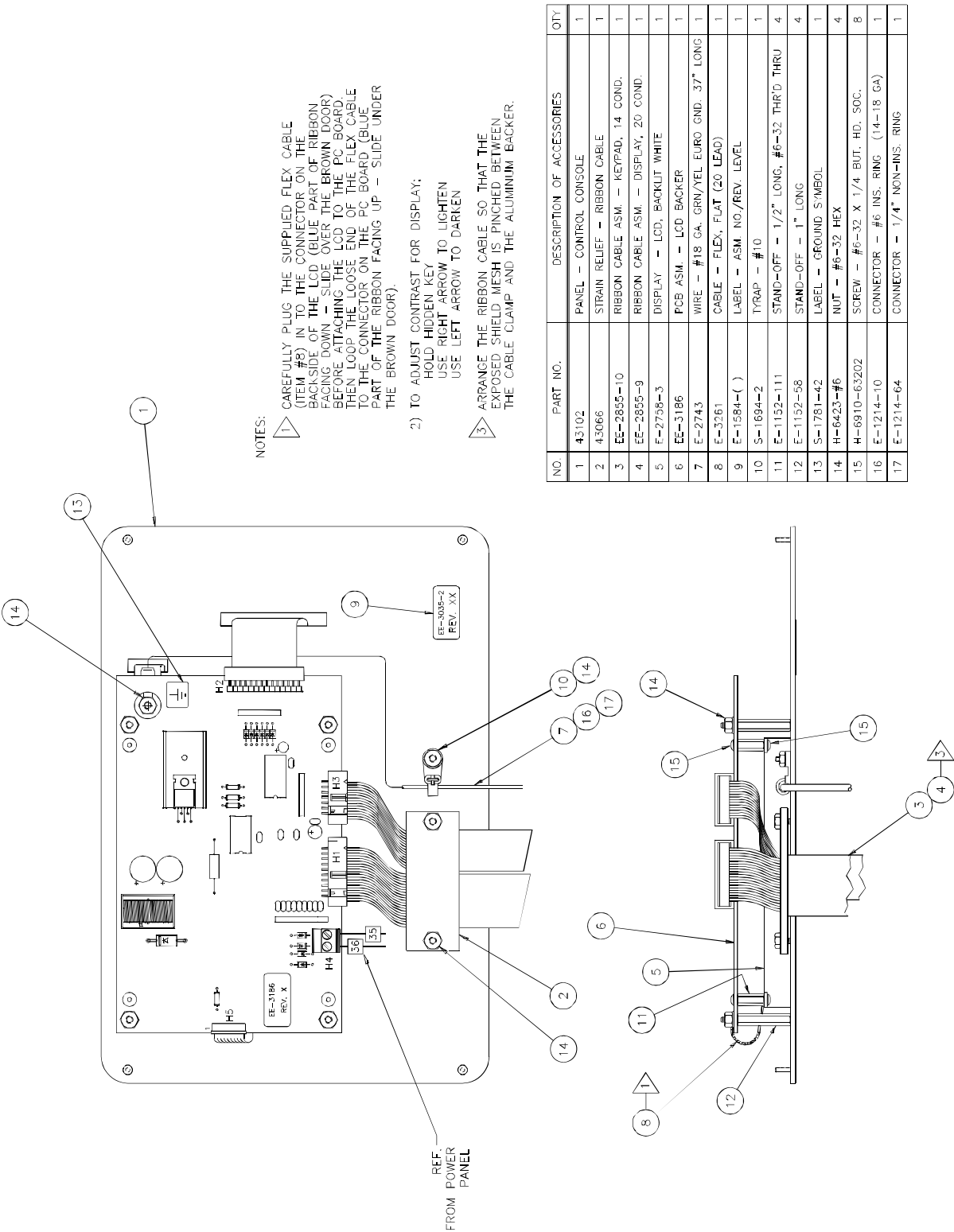
EE-3035-1, Rev. B (Serial Numbers 080074 and Below)



NO.	PART NO.	DESCRIPTION OF ACCESSORIES	QTY
1	43102	PANEL - CONTROL CONSOLE	1
2	43066	STRAIN RELIEF - RIBBON CABLE	1
3	43071	PLATE - DISPLAY MOUNT	2
4	43067	COVER - CONTROL PANEL	1
5	EE-2764-1	PCB ASSEMBLY - KEYBOARD MATE	1
6	EE-2855-3	RIBBON CABLE ASM. - KEYPAD, 14 COND.	1
7	EE-2855-2	RIBBON CABLE ASM. - DISPLAY, 20 COND.	1
8	EE-2758-4	DISPLAY ASSEMBLY - LCD	1
9	E-2743	WIRE - #18 GA. GRN/YEL. EURO GND. 37" LONG	1
10	E-1584-( )	LABEL - ASM. NO./REV. LEVEL	1
11			
12	S-1894-2	TYRAP - #10	1
13	S-1694-1	TY-WRAP	1
14			
15	E-1152-59	STAND-OFF - 1-1/4" LONG	2
16	E-1152-57	STAND-OFF - 3/4" LONG	4
17	E-1152-63	STAND-OFF - 19/32" LONG	4
18	E-1152-58	STAND-OFF - 1" LONG	4
19	S-1761-42	LABEL - GROUND SYMBOL	1
20	M-6910-63202	SCREW - #6-32 X 1/4 BUT. HD. SOC.	8
21	M-6423-#6	NUT - #6-32 HEX	10
22	M-7324-#6	WASHER - #6 INT. TOOTH	11
23	E-1214-10	CONNECTOR - #6 INS. RING (14-18 GA)	1
24	E-1214-64	CONNECTOR - 1/4" NON-INS. RING	1

4.13.1 Control Console Assembly – Back Lit Display

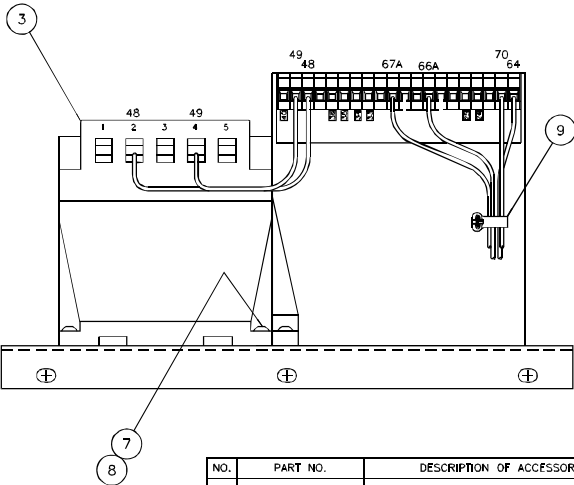
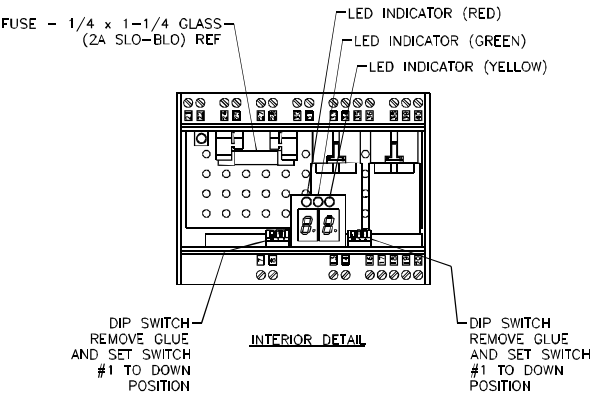
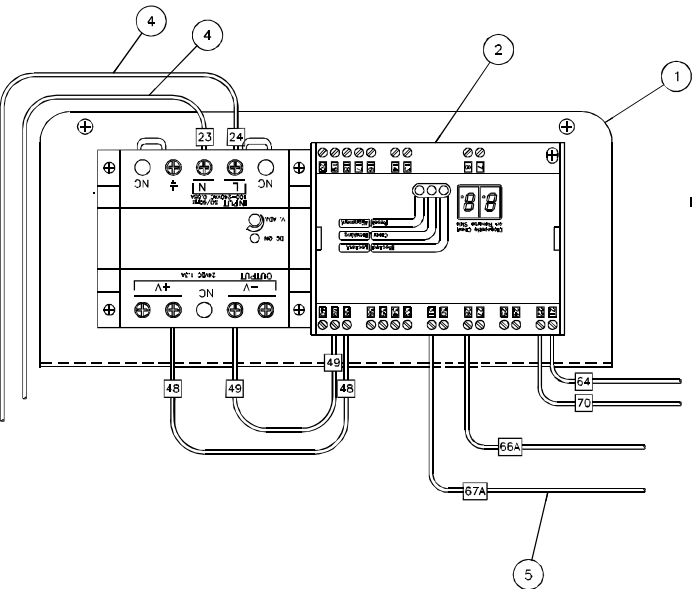
EE-3035-2 Rev."A" (Serial Number 080075 and Up)





4.14 Electric Eye Assembly

EE-3142-1 Sheet 1, Rev. A (For S/N's 100188 and Below)



RELAY WIRE DETAIL

- NOTE:
- 1) CUT WIRE (ITEMS #4 & #5) TO LENGTHS SHOWN IN THE CHART BELOW.
  - 2) STRIP THE WIRE INSULATION BACK 1/4 - BOTH ENDS.
  - 3) WIRE TAG EACH WIRE AS SHOWN IN THE CHART - BOTH ENDS.

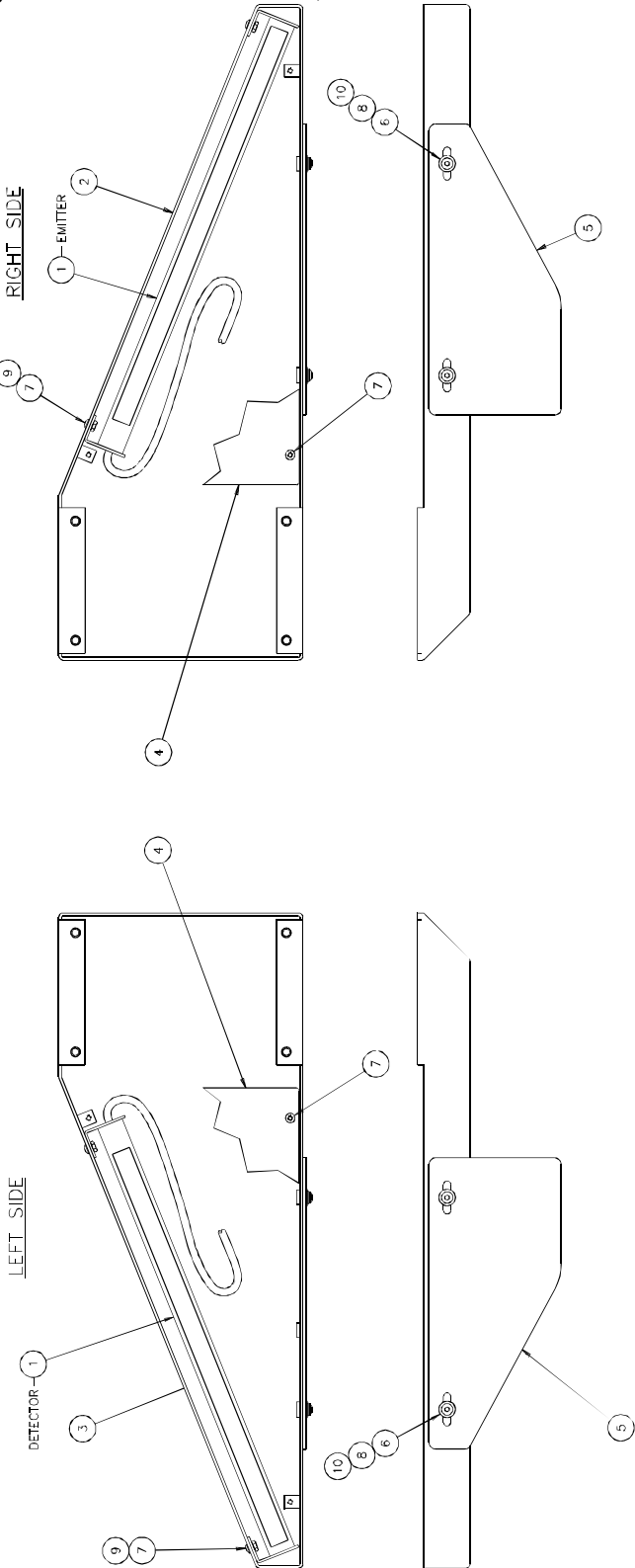
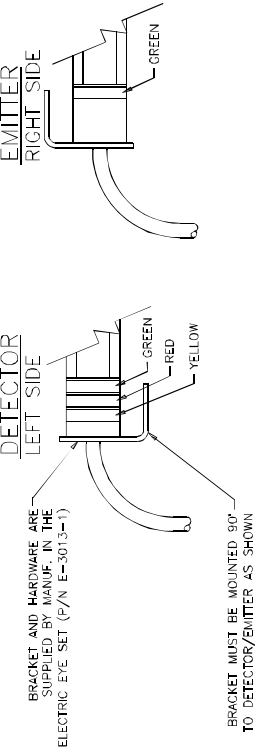
WIRE NO.	WIRE GA.	CUT LENGTH	WHERE USED
23	14	29"	POWER SUPPLY TERM. "N"
24	14	29"	POWER SUPPLY TERM. "L"
66A	18	28"	RELAY TERM. #28
67A	18	28"	RELAY TERM. #31
48	18	15"	RELAY TERM. #38
49	18	15"	RELAY TERM. #39
64	18	27"	RELAY TERM. #21
70	18	23"	RELAY TERM. #22

NOTE: FOR 3PH 208/230V MACHINES - WIRE NUMBER 23 WILL BE #21 AND WIRE NUMBER 24 WILL BE #22.

NO.	PART NO.	DESCRIPTION OF ACCESSORIES	QTY
1	43100	BRACKET - CONTROLLER MOUNT	1
2	E-3001	RELAY - SAFETY OUTPUT (BANNER)	REF
3	E-2810	POWER SUPPLY - 24V OUTPUT	1
4	E-702-R	WIRE - #14GA. RED MTW 64" TOTAL	1
5	E-709-R	WIRE - #18GA. RED MTW 87" TOTAL	1
6	E-3013-1	ELECTRIC CURTAIN SET - 16"	1
7	H-6423-#6	NUT - #6-32 HEX (KEP STYLE)	6
8	H-6910-63205	SCREW - #6-32X5/8" BUT HD	6
9	S-1694	TYRAP - WIRE	1

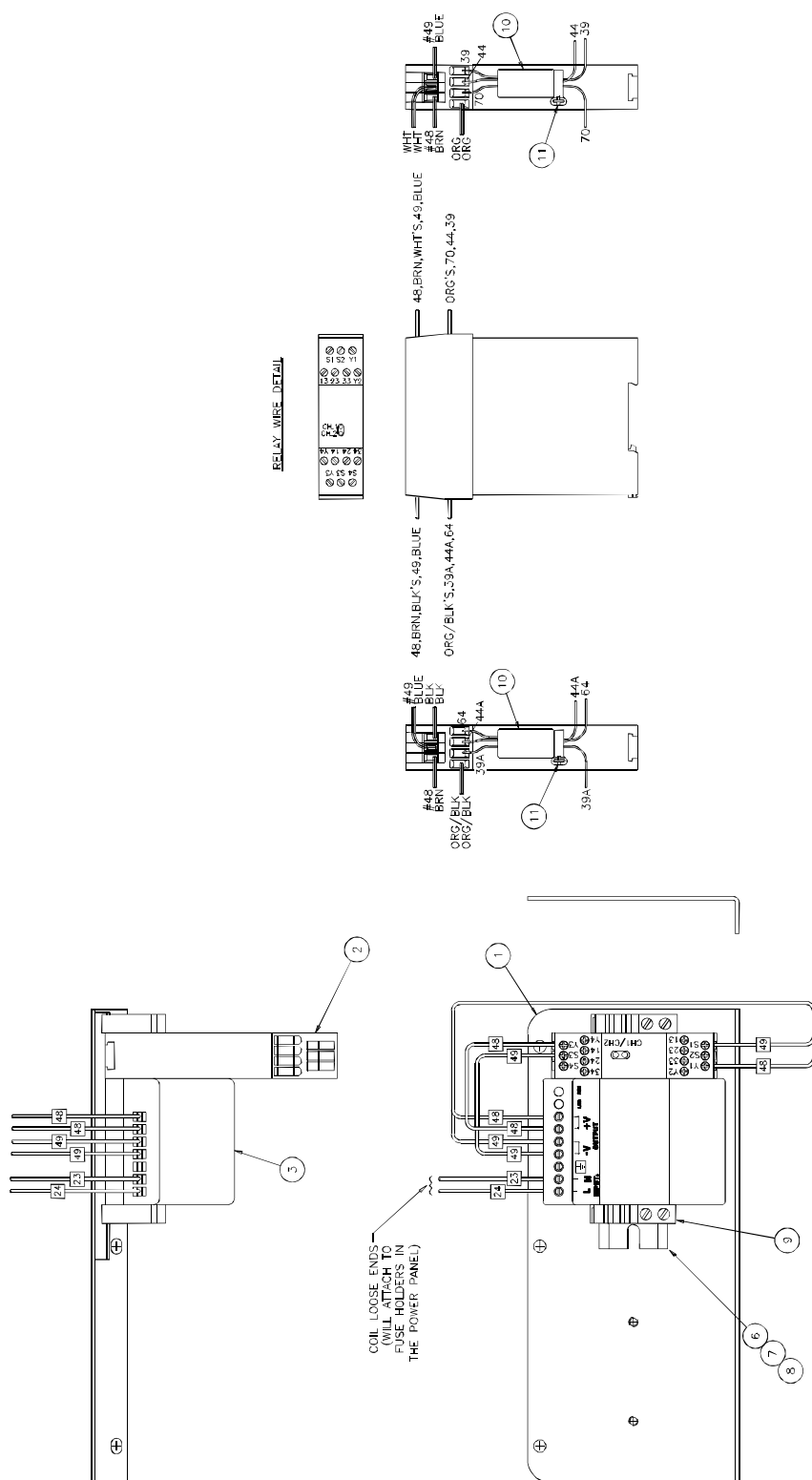
Electric Eye Assembly – EE-3142-1 Sheet 2, Rev. B

NO.	PART NO.	DESCRIPTION OF ACCESSORIES	QTY
1	E-3013-1	ELEC. EYE CURTAIN SET – 16"	REF
2	44173	HOUSING – ELEC EYE, RH	1
3	44172	HOUSING – ELEC EYE, LH	1
4	44174	ELEC EYE COVER	2
5	42055	SHIELD – TABLE	2
6	H-6910-404	SCREW – 1/4-20 X 1/2 BUT HEAD	4
7	H-6910-102404	SCREW – #10-24 X 1/2 BUT HEAD	10
8	H-7324-8	WASHER – 1/4 INT TOOTH	4
9	H-6423-#10	NUT – #10-24 HEX NIP	4
10	H-7321-4	WASHER – 1/4 PLAIN	4



# Electric Eye Assembly

EE-3362 Rev."A" (For S/N's 100189 and Up)



QTY	DESCRIPTION OF ACCESSORIES	PART NO.	NO.
1	BRACKET - CONTROLLER MOUNT	4-3100-1	1
1	RELAY - SAFETY OUTPUT (BANNER)	E-3336	2
1	POWER SUPPLY = 24V OUTPUT	E-2810	3
1	WIRE - #20GA. BLACK MOW-UP 95' TOTAL	E-1163-B	4
1	WIRE - #18GA. RED MOW-UP 144' TOTAL	E-709-R	5
1	RAIL - TERMINAL, 5" LONG	E-1977-23	6
1	SCREW - #10-24 x 1/2" BUT HD	H-6910-102404	7
2	WASHER - #10 INT. TOTHLOCK	H-7324-#10	8
2	END BRACKET - TERMINAL BLOCK	E-2070-1	9
2	FILTER - FERRITE CORE	E-2756-3	10
2	TY-RAP	S-1694	11

WIRE NO.	WIRE GA.	CUT LENGTH	WHERE USED
23	18	26"	POWER SUPPLY TERM. "N" TO "F2" FUSE HOLDER (PRINL)
24	18	26"	POWER SUPPLY TERM. "L" TO "F2" FUSE HOLDER (PRINL)
49	20	24"	FROM POWER SUPPLY -V TO EYE CONTROLLER S1
49	20	6"	FROM POWER SUPPLY -V TO EYE CONTROLLER S3
48	20	23"	FROM POWER SUPPLY -V TO EYE CONTROLLER Y1
48	20	6"	FROM POWER SUPPLY -V TO EYE CONTROLLER Y3
44	18	25"	EYE CONTROLLER TERM. #24 - HANG LOOSE
44A	18	25"	EYE CONTROLLER TERM. #24 - HANG LOOSE
39	18	21"	EYE CONTROLLER TERM. #34 - HANG LOOSE
39A	18	21"	EYE CONTROLLER TERM. #33 - HANG LOOSE
70	20	18"	EYE CONTROLLER TERM. #14 - HANG LOOSE
64	20	18"	EYE CONTROLLER TERM. #13 - HANG LOOSE

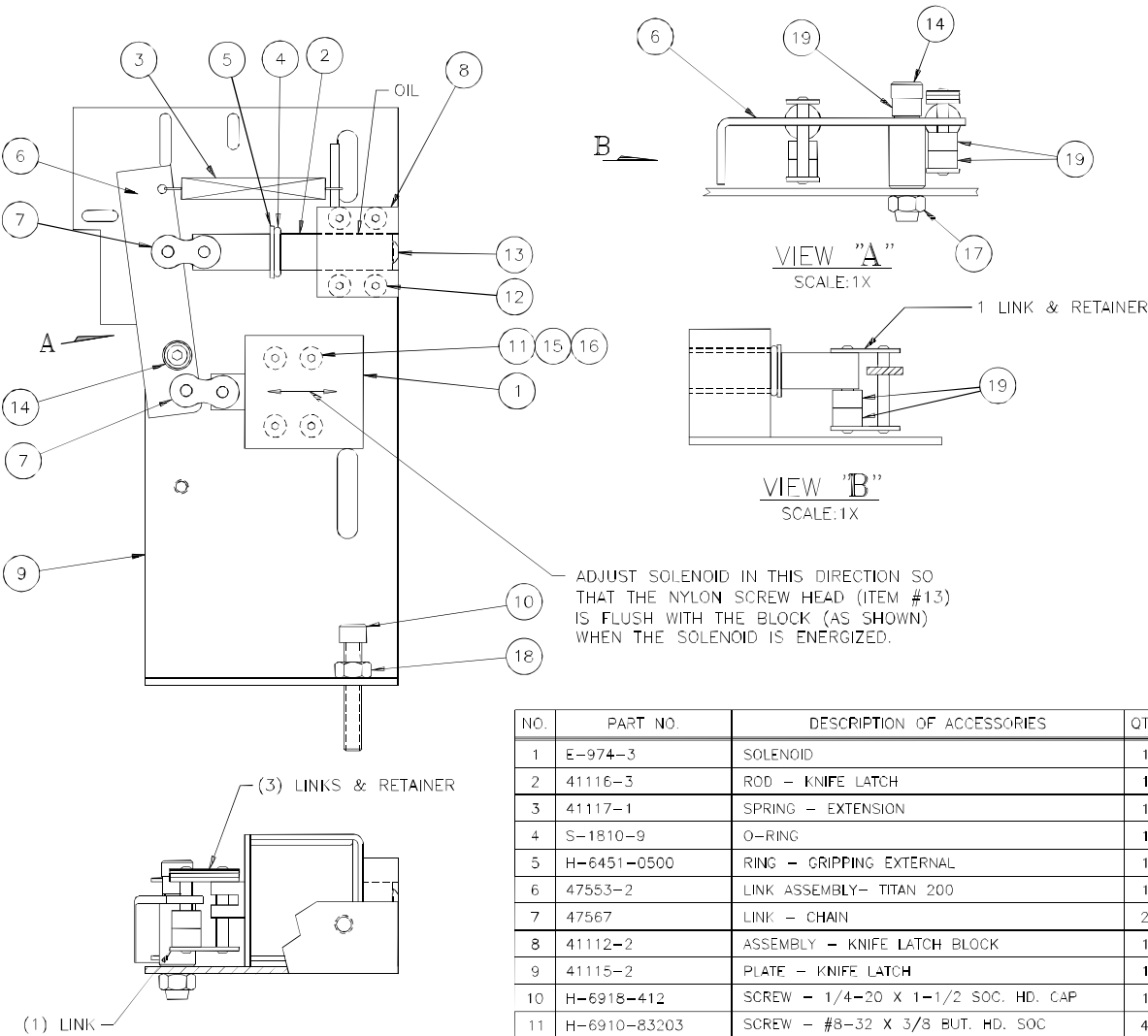
WIRES FROM ELECTRIC EYE CABLES (SHOWN FOR REF. ONLY)	WHERE USED
WIRE NO.	
BLACK	EYE CONTROLLER - S4 (BOTH)
WHITE	EYE CONTROLLER - S2 (BOTH)
BROWN	EYE CONTROLLER - Y1 or Y3 (+)
ORANGE	EYE CONTROLLER - Y2 (BOTH)
GREEN/YELK	EYE CONTROLLER - Y4 (BOTH)
PURPLE	NOT USED (WIRE NUT TOGETHER)
BLUE	EYE CONTROLLER - S1 or S3 (-)
CORNFLEK	MACHINE GROUND

- NOTES:
- 1) THE MOUNTING BRACKET COMPONENTS FOR THE LEFT AND RIGHT EYES ARE IDENTICAL. THE DIMENSIONS SHOWN ABOVE MOUNT THE ANGLE BRACKET WITH THREE SLOTS INTO THE RIGHT AND LEFT HAND SIDE OF THE MOUNTING BRACKET ON EACH END FOR BOTH THE LEFT AND RIGHT SIDES)
- 2) TIGHTEN THE PLUGGABLE CABLE BACK TO - \* ONE AND STRIP THE CABLE JACKET BACK 1/8". STRIP THE INSULATION BACK 1/4". EACH WIRE. DO NOT WIRE TAG - INSULATE THE WIRE WITH TAPE OR ELECTRICAL TAPE. INSERT THESE PLUGS INTO THE HOLES AND SECURE WITH TWO SUPPLIED SCREWS ON THE PLUG END.
- 3) SCREW THE END BRACKET ONTO EACH END OF THE EYES. THE SCREENS ARE SUPPLIED WITH THE BRACKETS.
- 4) SET THE EYES INTO THE MACHINE MOUNTING BRACKETS AND LOCK AND LOCK BY INSTALLING THE SUPPLIED CLAMPS. ACCESS TO THE SCREWS ARE THRU THE TWO HOLES ON THE BOTTOM OF THE MACHINE MOUNTING BRACKETS. DO NOT TIGHTEN THE CLAMP UNTIL THE NEXT STEP)
- 5) USING A STRAIGHT EDGE - MAKE SURE THAT EACH EYE IS SQUARE WITH THE FRONT OF THE BRACKET - ONCE THIS IS DONE FINISH TIGHTENING THE CLAMP SCREWS.
- 6) THE EYES WILL BE WIRED INTO THE RELAY AT FINAL ASSEMBLY



4.15 Knife Latch Assembly

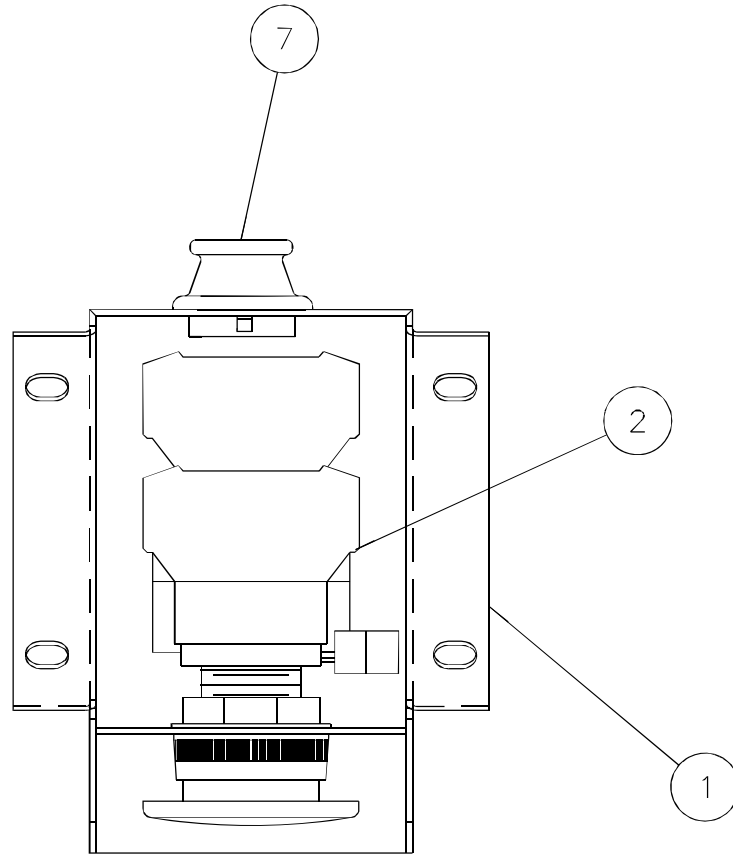
41120-4, Rev. A



NO.	PART NO.	DESCRIPTION OF ACCESSORIES	QTY
1	E-974-3	SOLENOID	1
2	41116-3	ROD - KNIFE LATCH	1
3	41117-1	SPRING - EXTENSION	1
4	S-1810-9	O-RING	1
5	H-6451-0500	RING - GRIPPING EXTERNAL	1
6	47553-2	LINK ASSEMBLY- TITAN 200	1
7	47567	LINK - CHAIN	2
8	41112-2	ASSEMBLY - KNIFE LATCH BLOCK	1
9	41115-2	PLATE - KNIFE LATCH	1
10	H-6918-412	SCREW - 1/4-20 X 1-1/2 SOC. HD. CAP	1
11	H-6910-83203	SCREW - #8-32 X 3/8 BUT. HD. SOC	4
12	H-6909-83203	SCREW - #8-32 X 3/8 FLAT HD. SOC	4
13	H-6880-83206	SCREW - #8 X 3/8 NYLON	1
14	H-5254-510	SCREW - 5/16 X 1-1/4 SOC SHOUDLER SCREW	1
15	H-7324-#8	WASHER - #8 INT. TOOTH	4
16	H-7321-#8	WASHER - #8 PLAIN	4
17	H-5247-4	NUT - 1/4-20 FLEX LOCK	1
18	H-6424-4	NUT - 1/4-20 JAM	1
19	11288-28	SPACER - 1/4"	5

## 4.16 Cut Button Assembly

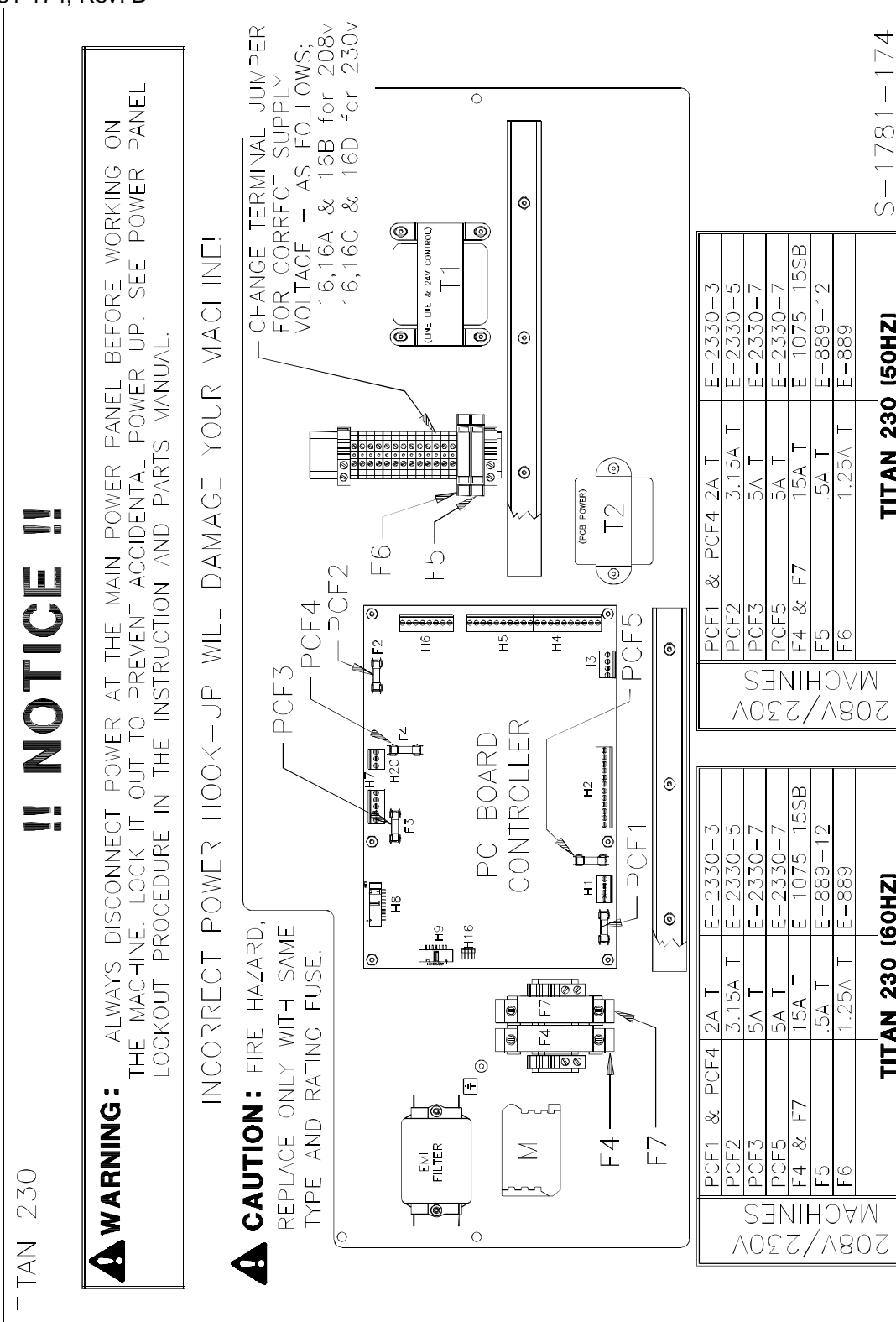
EE-2851-3 Rev. D



NO.	PART NO.	DESCRIPTION OF ACCESSORIES	QTY
1	16566-1	BOX - PUSHBUTTON	1
2	E-3127-4	SWITCH - MUSHROOM PUSHBUTTON, GREEN	1
3			
4			
5			
6			
7	S-1350-16	STRAIN RELIEF - CABLE	1

#### 4.17 Power Panel Label

S-1781-174, Rev. B



## NOTES



## 4.0 Schematics & Parts Lists

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### Safety Systems Test

Machine manufacturer CHALLENGE Model TITAN 230

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).

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: 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
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
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