Serial Numbers 032425 & Up

TECHNICAL SERVICE AND PARTS MANUAL

TITAN 200
PAPER CUTTING MACHINE

Sold and Serviced by

The Challenge Machinery Company
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ChallengeMachinery.com

F.200-CT
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1.0 Introduction

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

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

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

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

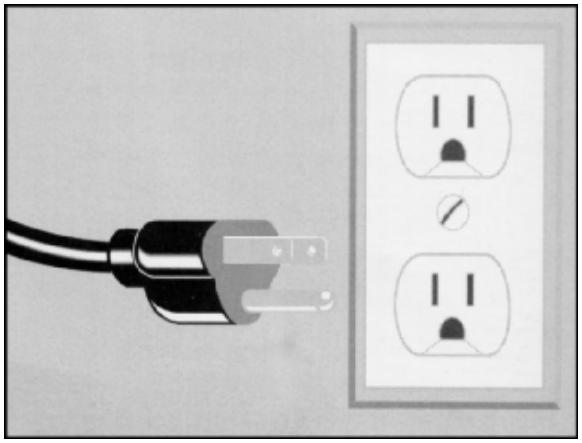


Figure 1 - Main Power Disconnect

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

⚠ 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 (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.
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.
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 pcboard; 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 +/- .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**
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 OR Front Guard**	**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).

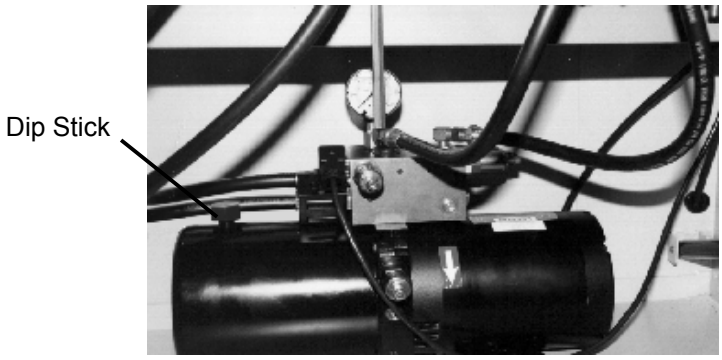


Figure 2

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.

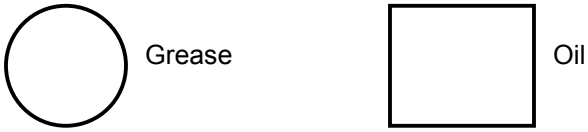
3.5.1 Recommended Hydraulic Oils

⚠ 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 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 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.



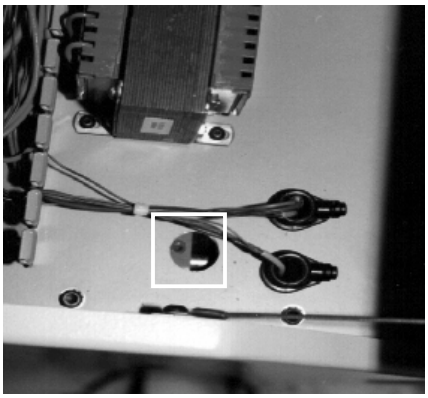


Figure 3 – Knife Bar Link – L.H. Side, Upper

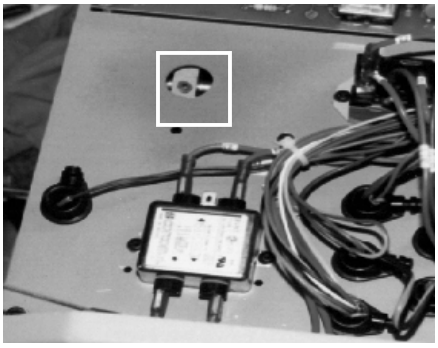


Figure 4 – Knife Bar Link – R.H. Side, Upper

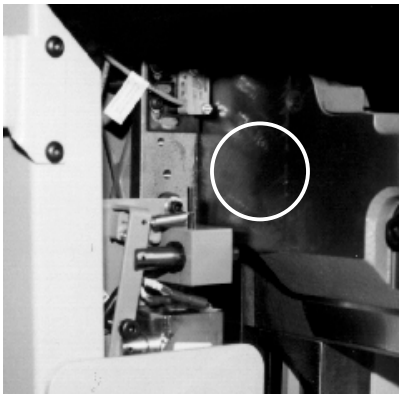


Figure 5 – Knife Bar

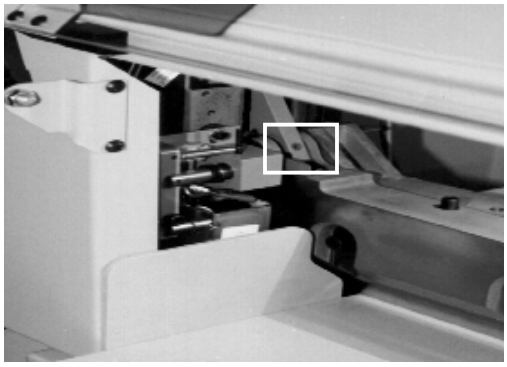


Figure 6 – Knife Bar Link – L.H. Side, Lower

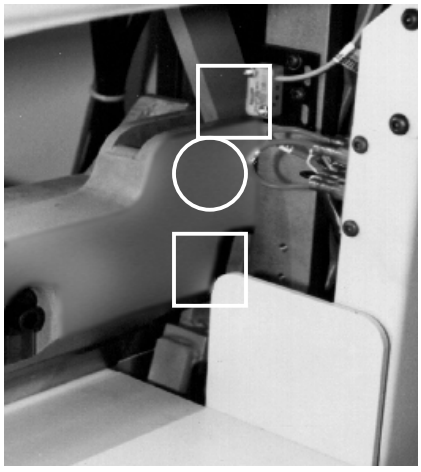
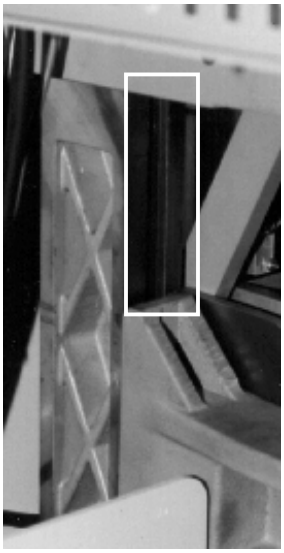


Figure 7 – Knife Bar Link – R.S., Lower

Knife Bar
Knife Cylinder Bracket, Upper



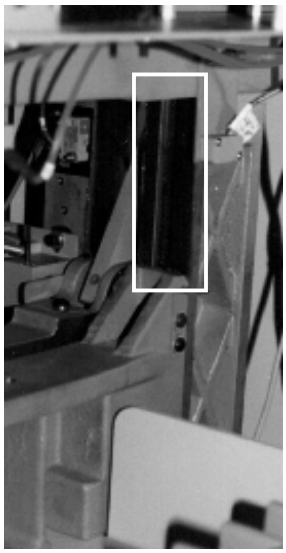


Figure 8 & Figure 9 –Clamp Guides

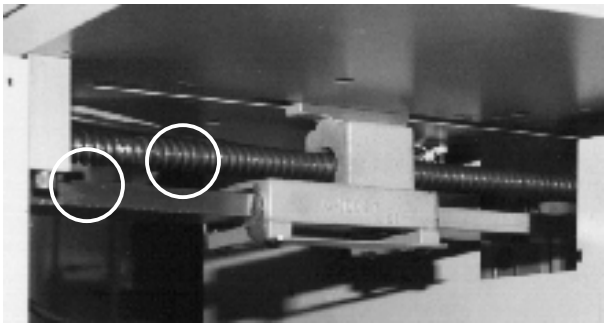


Figure 10 – Leadscrew and Backgauge Guide

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

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

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, loosen the screws that attach the electric eye brackets to the table extensions. Adjust until the green and yellow lights are on solid as described above and tighten screws.

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, next page).

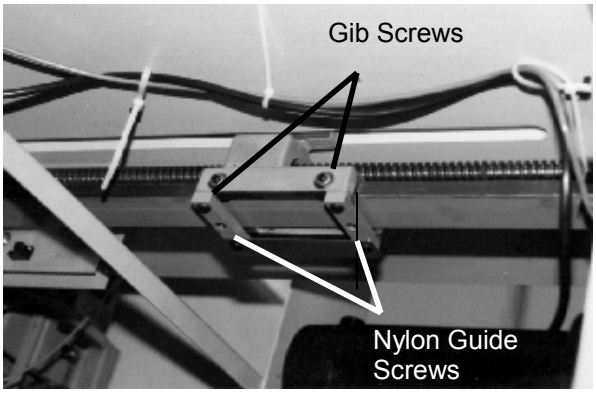


Figure 11

5. Tighten the bottom, nylon guide screws until they just touch the guide. Do not overtighten 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

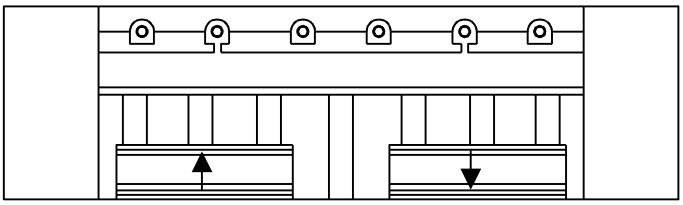


Figure 12

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).

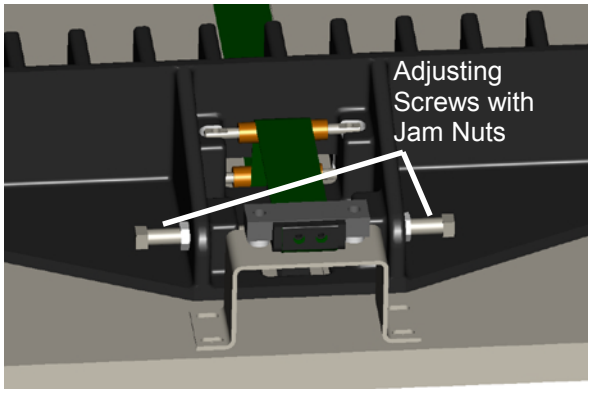


Figure 13

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 200 Operator manual) to make sure it is accurate.

3.7.4 Clamp Pressure Adjustment

Adjust the clamp pressure reducer (Figure 14) to the desired setting. It is factory preset at 800 psi. Read the gauge with the clamp down and as the knife begins to move down. Loosen the jam nut on the valve stem. With an allen wrench, turn the stem clockwise to increase pressure and counter-clockwise to decrease pressure.

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

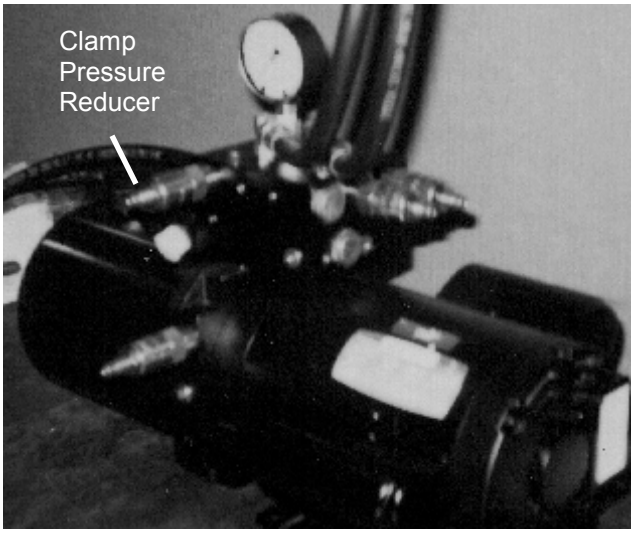


Figure 14

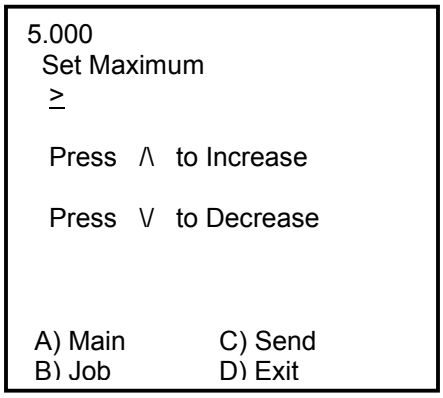
⚠ CAUTION DO NOT set the clamp pressure below 400 psi. Severe lacerations or dismemberment could result! The knife and clamp system loses sequence at settings below 400 psi and the knife could come down before the clamp.

3.7.4.1 Optional Electronic Clamp Pressure Control Adjustment

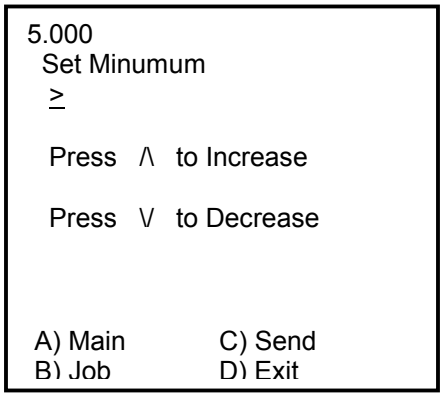
The electronic clamping control option allows the convenience of changing the clamp pressure at the control console. The pressure is controlled by use of the up and down arrow keys, 0 being the lowest - 15 the highest; and is indicated in the upper right hand corner of the display.

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 paragraph). Enter the Maintenance Mode and choose Diagnostic. Then choose Clamp Adjust, and the screen on the following page should be displayed:



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 right hand pressure gauge. 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 shown next:



Perform a cut cycle. After the clamp has contacted the table and while the knife bar is coming down, read the pressure on the right hand pressure gauge. 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.

3.8 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 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

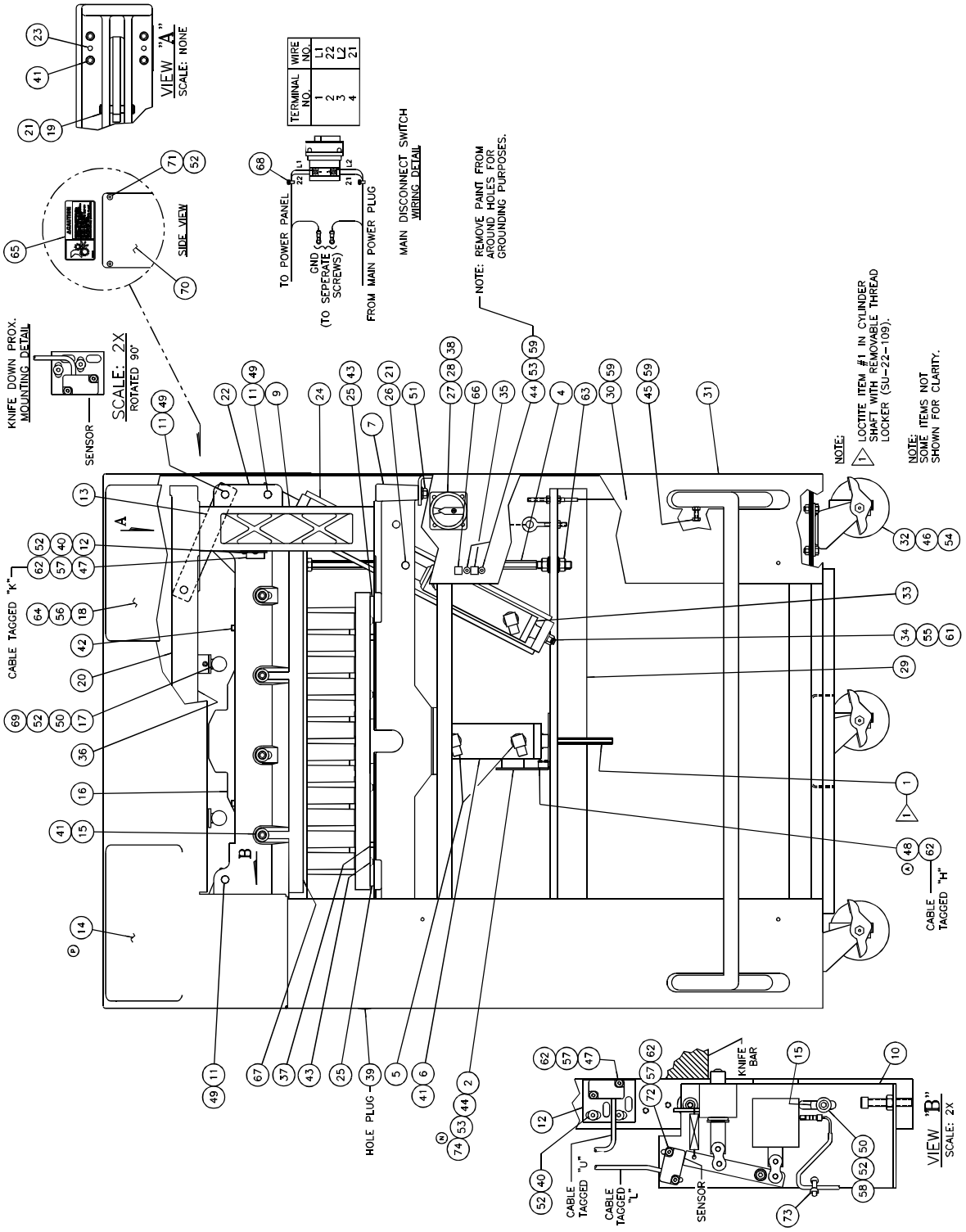
1. The machine's exterior should be cleaned with a non-abrasive water based detergent applied to a damp cloth.

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

4.0 Schematics & Parts Lists

4.1 Main Assembly – Front View

43000 Sht. 1 of 4, Rev. H



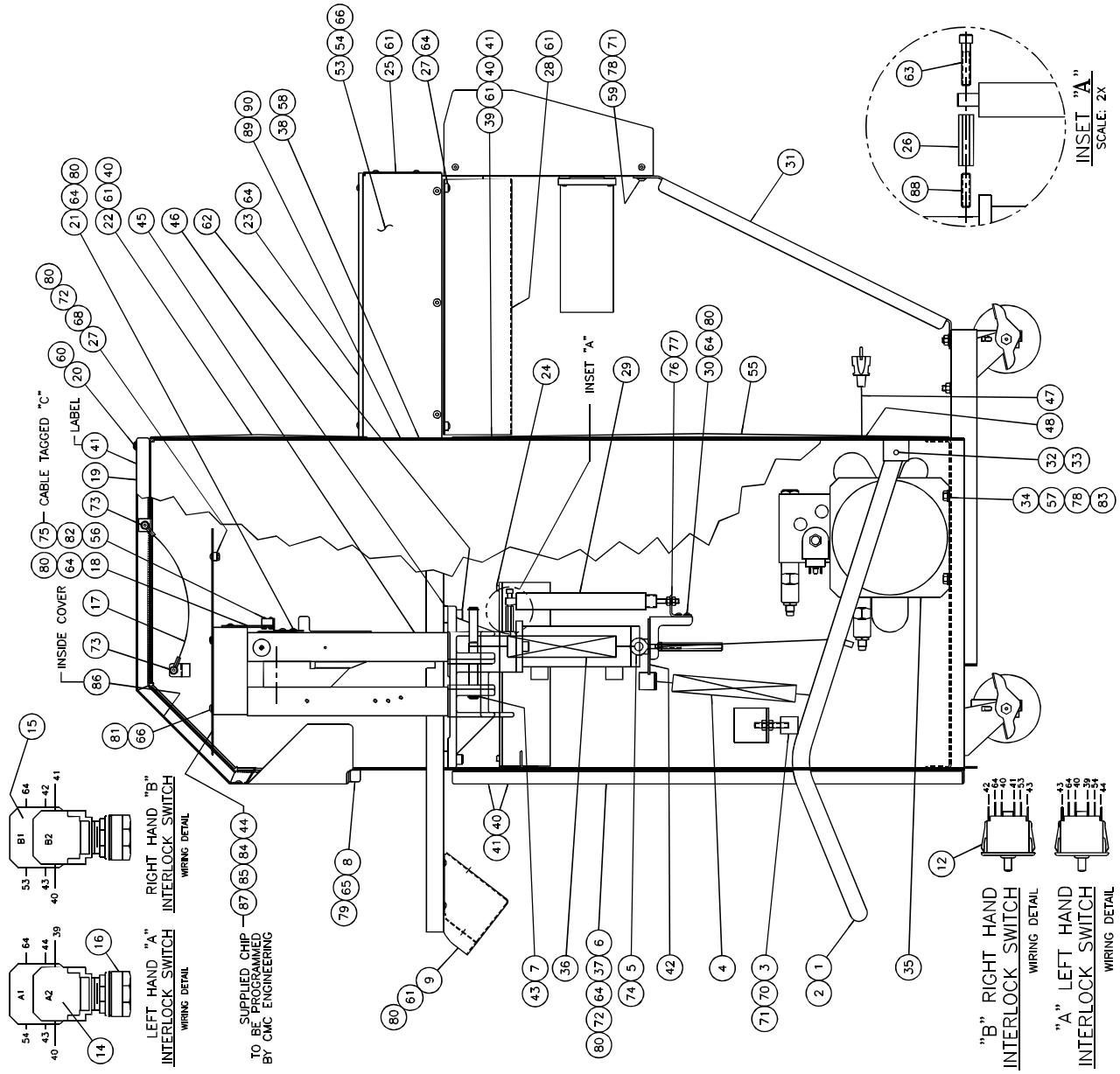
Main Assembly – Front View – 43000 Sht. 1 of 4, Rev. H

NO.	PART NO.	DESCRIPTION OF ACCESSORIES	QTY
1	43074	ROD - CLAMP CYLINDER	1
2	41033	BRACKET - HYD. UP PROX.	1
3			
4	10082	CLAMP ROD ASM	2
5	H-237-4	ELBOW - 90° PIPE TO TUBE	4
6	H-211-1	CYLINDER - CLAMP	1
7	10001-1	BASE	1
8			
9	10002-2	GUIDE - FRONT	2
10	41120-3	KNIFE LATCH ASSEMBLY	1
11	10010	PIN	3
12	41008	BRACKET - KNIFE DOWN PROX.	2
13	10008	LINK - KNIFE BAR	2
14	43003-1	WARNING PANEL	1
15	8815	WASHER - KNIFE BOLT	6
16	10004-3	CLAMP	1
17	EE-2779	LINE LIGHT ASSEMBLY	2
18	EE-3035	CONSOLE ASM. - CONTROL	1
19	10009	PIN - KNIFE LINK	2
20	10007-2	ARCH	1
21	S-1193-50	RETAINING RING - 1/2	6
22	10003	KNIFEBAR	1
23	H-21S-250-1000	PIN - 1/4 x 1" ROLL	8
24	AA-10018	BRACKET - CYLINDER	1
25	43056	SPACER - TABLE	2
26	10064	PIN - KNIFE CYLINDER	1
27	E-2465	SWITCH FACE - MAIN DISCONNECT	1
28	E-2464-1	SWITCH - MAIN DISCONNECT	1
29	43030	PULLDOWN - CLAMP	1
30	43077	CABLE - FOOT PEDAL	2
31	43008-1	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	S-1781-42	LABEL - GROUND SYMBOL	1
36	S-2015	TAPE - REFLECTIVE ALUMINUM	13"
37	H-6633-718	PIN - #7 TAPER	2

NO.	PART NO.	DESCRIPTION OF ACCESSORIES	QTY
38	E-2796	TERMINAL PROTECTION - MAIN DISCONNECT SW.	2
39	E-2196	PLUG - HOLE	2
40	H-6910-102404	SCREW - #10-24 x 1/2 BUTTON HEAD	4
41	H-6918-608	SCREW - 3/8-16 x 1" SOCKET HEAD	22
42	H-6938-632	SCREW - 3/8-16 x 2" CUP POINT SET	2
43	H-6909-506	SCREW - 5/16-18 x 3/4 FLAT HEAD	4
44	H-6910-403	SCREW - 1/4-20 x 3/8 BUTTON HEAD	4
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	6
51	H-6894-606	SCREW - 3/8-16 x 3/4 WHIZ LOCK	4
52	H-7324-#10	WASHER - #10 INTERNAL TOOTH	14
53	H-7324-8	WASHER - 1/4 INTERNAL TOOTH	4
54	H-7327-10	WASHER - 5/16 MEDIUM LOCK	12
55	H-7327-12	WASHER - 3/8 MEDIUM LOCK	1
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)	8
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	S-1781-16	LABEL - CAUTION	1
66	S-1781-45	LABEL - "PE" PROTECTED EARTH	1
67	A-10034	KNIFE	1
68	S-1694	TIE WRAP - WIRE	2
69	E-967-1	BULB - LINE LIGHT	REF.
70	43080	COVER - KNIFEBAR ACCESS	1
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

4.2 Main Assembly – Right Side View

43000 Sht. 2 of 4, Rev. N



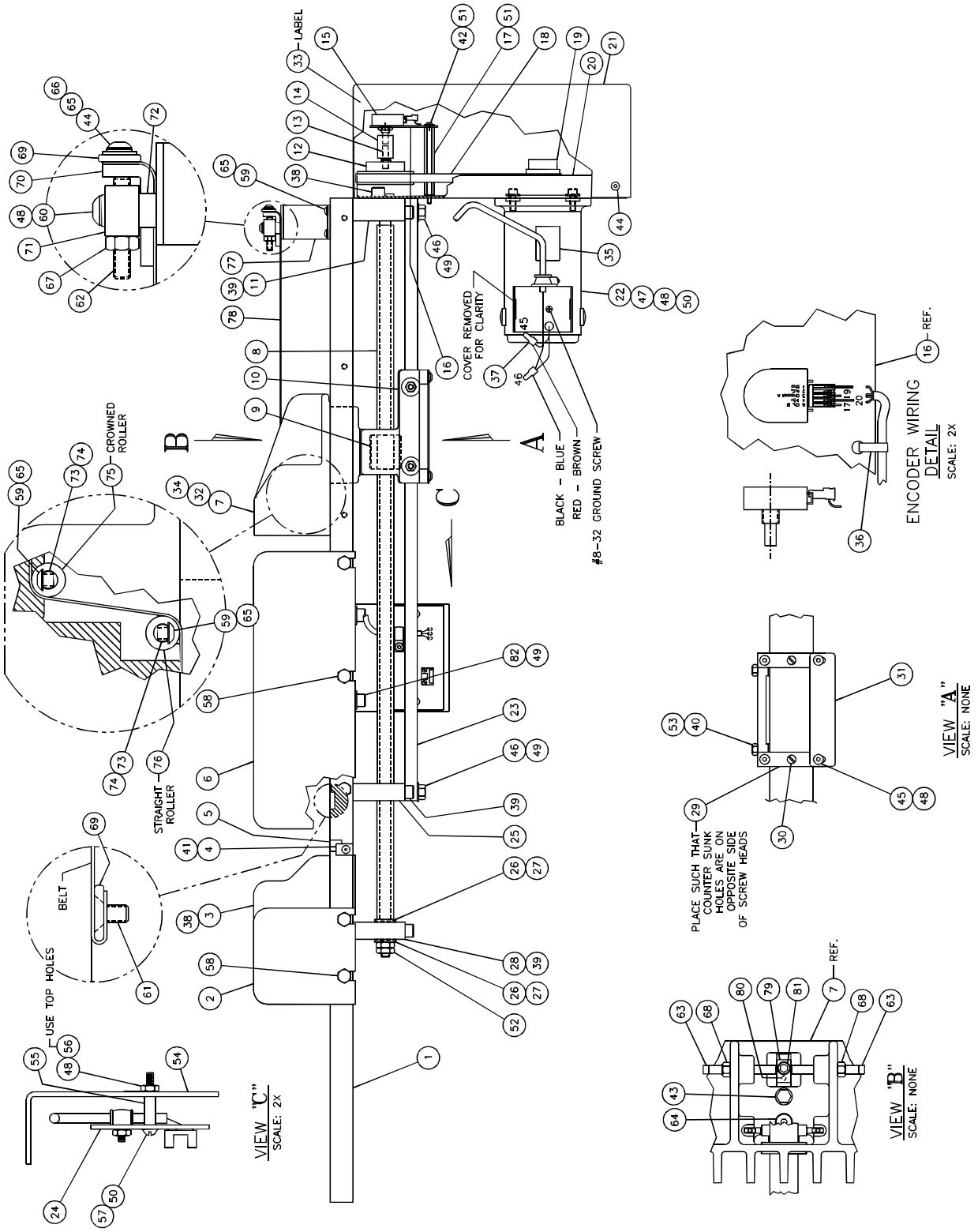
Main Assembly – Right Side View – 43000 Sht. 2 of 4, Rev. N

NO.	PART NO.	DESCRIPTION OF ACCESSORIES	QTY
1	43022	PEDAL – FOOT	1
2	43021	TAPE – ABRASIVE	20"
3	40016-3	MOUNT – VIBRATION	2
4	47136-4	SPRING – PEDAL RETURN	2
5	S-1884	EYEBOLT – 1/4	2
6	43043	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	2
10			
11			
12	E-2457-6	SWITCH – COVER INTERLOCK	2
13			
14	E-1839-9	CONTACT BLOCK – SWITCH, (1) N.O.	REF
15	E-1839-10	CONTACT BLOCK – SWITCH, (2) N.O.	REF
16	E-2074	SWITCH BODY WITH BUTTON	REF
17	43040	CABLE – TOP COVER	2
18	43033	BRACKET – CLAMP UP PROX.	1
19	43007-1	COVER – TOP	1
20	H-7321-4	WASHER – 1/4 DIA. SAE PLAIN	2
21	43034	ACTUATOR – CLAMP UP PROX.	1
22	43041	COVER – REAR STAND (TOP)	1
23	43049	COVER – REAR TABLE	1
24	S-1694-1	CABLE TIE	2
25	43050	COVER – TABLE BACKGAUGE	1
26	E-1152-68	STAND OFF 1-1/2"	1
27	S-1694-2	CABLE TIE – #10	4
28	43042	COVER – LEADSCREW	1
29	43073	DAMPER ASSEMBLY	1
30	43061	BRACKET – CLAMP DAMPER	1
31	43035	SUPPORT – TABLE	1
32	43023	PIN – FOOT PEDAL	2
33	43024	HAIRPIN COTTER	2
34	A-10042	NUT	4
35	H-477-2	HYDRAULIC POWER UNIT – 208/230 V 50 HZ	1
	H-477-1	HYDRAULIC POWER UNIT – 208/230 V 60 HZ	
36	47136-3	SPRING – CLAMP RETURN	2
37	E-1152-61	STANDOFF – 3/4	4
38	41130	SPECIFICATION PLATE	1
39	43065	COVER – REAR MACHINE	2
40	S-1781-16	LABEL – CRUSH CAUTION	3
41	S-1781-11	LABEL – SHOCK CAUTION	3
42	43076	ACTUATOR – HYDRAULIC UP PROX.	1
43	47086	PIN – BELLCRANK	2
44	EE-2765-1	POWER PANEL ASSEMBLY	1
45	10002-3	GUIDE – REAR CLAMP	2
46	20075-9	SPACER	4
47	EE-2778	POWER CORD ASSEMBLY – 230 VOLT 60 HZ.	1
	EE-2778-1	POWER CORD ASSEMBLY – 50 HZ.	
	EE-2778-2	POWER CORD ASSEMBLY – 120 VOLT	
48	S-1350-16	BUSHING – STRAIN RELIEF	1

NO.	PART NO.	DESCRIPTION OF ACCESSORIES	QTY
49			
50			
51			
52			
53	43047	BRACKET – REAR TABLE COVER RH	1
54	43048	BRACKET – REAR TABLE COVER LH	1
55	43044	COVER – REAR STAND	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	H-6924-004	SCREW – #0 x 1/4 ROUND HEAD DRIVE	2
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	22
62	H-6918-608	SCREW – 3/8-16 x 1" SOCKET HEAD	4
63	H-6918-410	SCREW – 1/4-20 X 1-1/4 SOC. HEAD	1
64	H-6910-102404	SCREW – #10-24 x 1/2 BUTTON HEAD	16
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			
68	H-6910-102406	SCREW – #10-24 x 3/4 BUTTON HEAD	2
69			
70	H-6938-532	SCREW – 5/16-18 x 2" SOCKET SET	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	2
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
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	14
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" (208-230V ONLY)	1
	E-2330-3	FUSE – 2A T, METRIC "F1" (120V ONLY)	1
85	E-1075-10SB	FUSE – 10A T, "F4 & F7" (208-230V ONLY)	2
	E-1075-15SB	FUSE – 15A T, "F4 & F7" (120V ONLY)	2
86	S-1781-54	LABEL – INTERCONNECTION DIAGRAM	1
87	EE-1766-41	EPROM – PROGRAMMABLE	1
88	H-6938-416	SCREW – 1/4-20 X 1" SOC SET	1
89	5177-3	LABEL – UL LISTING	1
90	5177-4	LABEL – UL/CSA LISTING	1
91	E-1214-63	CONNECTOR – 1/4" NON – INS RING	1

4.3 Main Assembly – Table Asm. View

43000 Sht. 3 of 4, Rev. K



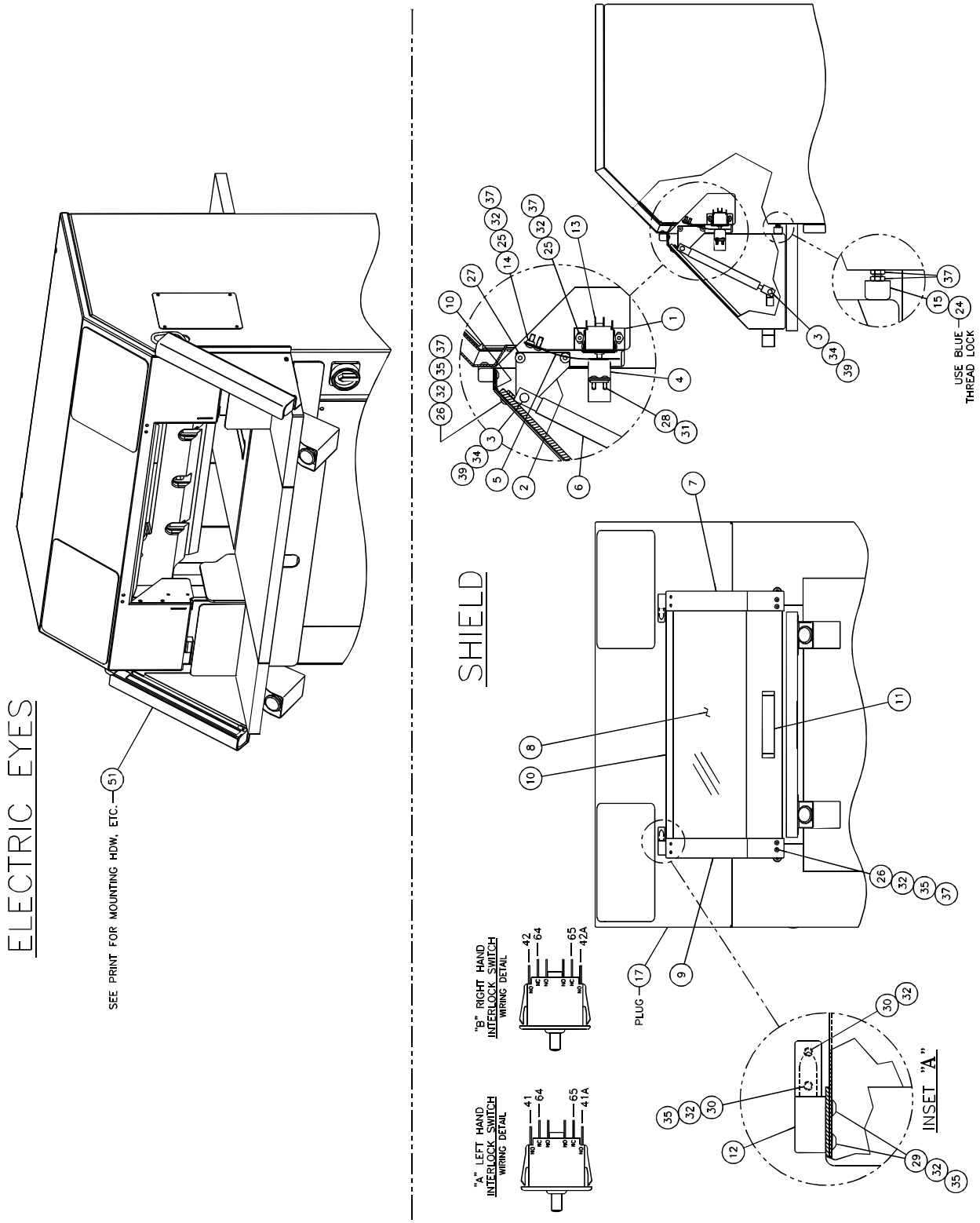
Main Assembly – Table Asm. View – 43000 Sht. 3 of 4, Rev. K

NO.	PART NO.	DESCRIPTION OF ACCESSORIES	QTY
1	10025-2	TABLE	1
2	43057	RH SIDEGUIDE - FRONT	1
3	43058	LH SIDEGUIDE - FRONT	1
4	5-6-27B	STOP - CUT STICK	2
5	4166	CUT STICK	1
6	43059-1	SIDEGUIDE - REAR	2
7	10031	BACKGAUGE	1
8	43004	LEADSCREW	1
9	43005	NUT	1
10	10027-1	BRACKET - BACKGAGE	1
11	43068	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	10028-2	GUIDE - BACKGAGE BRACKET	1
24	EE-1688-1	PRESETTER ASSEMBLY	REF.
25	10026-5	PILLOW BLOCK - MIDDLE	1
26	S-1295-3	WASHER - THRUST	4
27	S-1300-2	BEARING - THRUST	2
28	43069	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	6
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	2
39	H-6918-622	SCREW - 3/8-16 x 2-3/4 SOCKET HEAD	6
40	H-6974-416	SCREW - 1/4-28 x 1" BRASS TIP SET	2
41	H-6909-83204	SCREW - #8-32 x 1/2 FLAT HEAD	2

NO.	PART NO.	DESCRIPTION OF ACCESSORIES	QTY
42	H-6910-83203	SCREW - #8-32 x 3/8 BUTTON HEAD	2
43	H-6894-606	SCREW - 3/8-16 x 3/4 WHIZ LOCK	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-6428-4	NUT - 1/4-28 HEX JAM	2
54	10040-1	BRACKET - PRESET	1
55	E-1152-12	SPACER	2
56	H-6424-4	NUT - 1/4-20 HEX JAM	2
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	10
59	H-6910-102404	SCREW - #10-24 X 1/2 BUT HD	8
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-6931-624	SCREW - 3/8-16 X 3" SQUARE HD. SET	2
64	H-5254-804	SCREW - 1/2 X 1/2 SOC SHOULDER	1
65	H-7324-#10	WASHER - #10 INT TOOTH	10
66	H-7321-#10	WASHER - #10 PLAIN	2
67	H-6424-4	NUT - 1/4-20 HEX JAM	2
68	H-6424-6	NUT - 3/8-16 HEX JAM	2
69	43103	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	43104	BELT	1
79	43107	BACKGAGE BLOCK	1
80	H-21S-187-0750	ROLL PIN - 3/16 X 3/4	1
81	H-6918-616	SCREW - 3/8-16 X 2" SOC HEAD CAP	1
82	H-6918-605	SCREW - 3/8-16 x 5/8 SOCKET HEAD	2

4.4 Main Assembly – Tilt Shield / Electric Eyes

43000 Sht. 4 of 4, Rev. C



Main Assembly – 43000 Sht. 4 of 4, Rev. C

NO.	PART NO.	DESCRIPTION OF ACCESSORIES	QTY
1	43045	BRACKET – RH COVER SWITCH	1
	43078	BRACKET – LH COVER SWITCH	1
2	43064	BRACKET – RH COVER CYLINDER	1
	43046	BRACKET – LH COVER CYLINDER	1
3	41055	BALL STUD	4
4	43051	ACTUATOR	2
5	43075	STRAP – SWITCHES	2
6	43001	CYLINDER	2
7	43039	FRONT COVER ASM – RH SIDE	1
8	43036-1	WINDOW – TILT COVER	1
9	43038	FRONT COVER ASM – LH SIDE	1
10	43106	SHIELD BRACKET	1
11	56657	HANDLE WITH HARDWARE	1
12	41007	HINGE	2
13	E-2457-6	SWITCH – HOOD INTERLOCK	REF
14	S-1694-2	TYRAP – #10	2
15	A-11074	RUBBER BUMPER	2
16	E-1152-93	SPACER	2
17	E-2196-13	HOLE PLUG	2

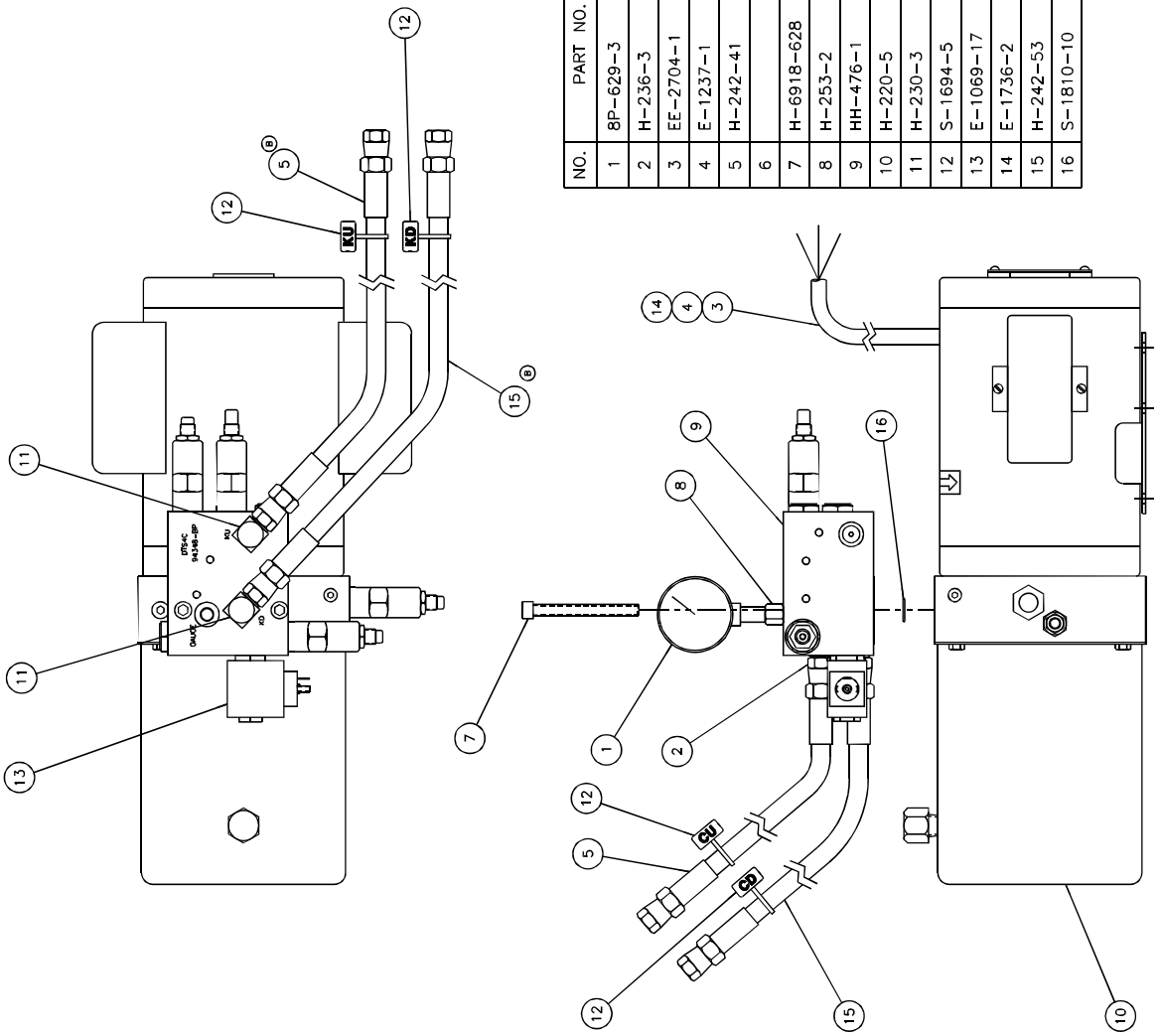
NO.	PART NO.	DESCRIPTION OF ACCESSORIES	QTY
51	K-3030	KIT – ELEC. EYES	1
52			
53			
54			
55			

NO.	PART NO.	DESCRIPTION OF ACCESSORIES	QTY
24	H-6910-102408	SCREW – #10-24 X 1" BUT HD SOC	2
25	H-6910-102404	SCREW – #10-24 X 1/2 BUT HD SOC	8
26	H-6910-102406	SCREW – #10-24 X 3/4 BUT HD SOC	8
27	H-6910-404	SCREW – 1/4-20 X 3/8 BUT HD SOC	4
28	H-6888-83204	SCREW – #8-32 X 1/2 TAMPER PROOF	4
29	H-6920-103204	SCREW – #10-32 X 1/2 BUT HD SOC	4
30	H-6920-103203	SCREW – #10-32 X 3/8 BUT HD SOC	4
31	H-7324-#8	WASHER – #8 INT. TOOTH	4
32	H-7324-#10	WASHER – #10 INT. TOOTH	24
33			
34	H-7327-10	WASHER – 5/16 MED. LOCK	4
35	H-7321-#10	WASHER – #10 PLAIN	14
36			
37	H-6423-#10	NUT – #10-24 HEX	16
38			
39	H-6423-5	NUT – 5/16-18 HEX	4
40			

4.5 Hydraulic Power Unit – 60 Hz

H-477-1, Rev. B

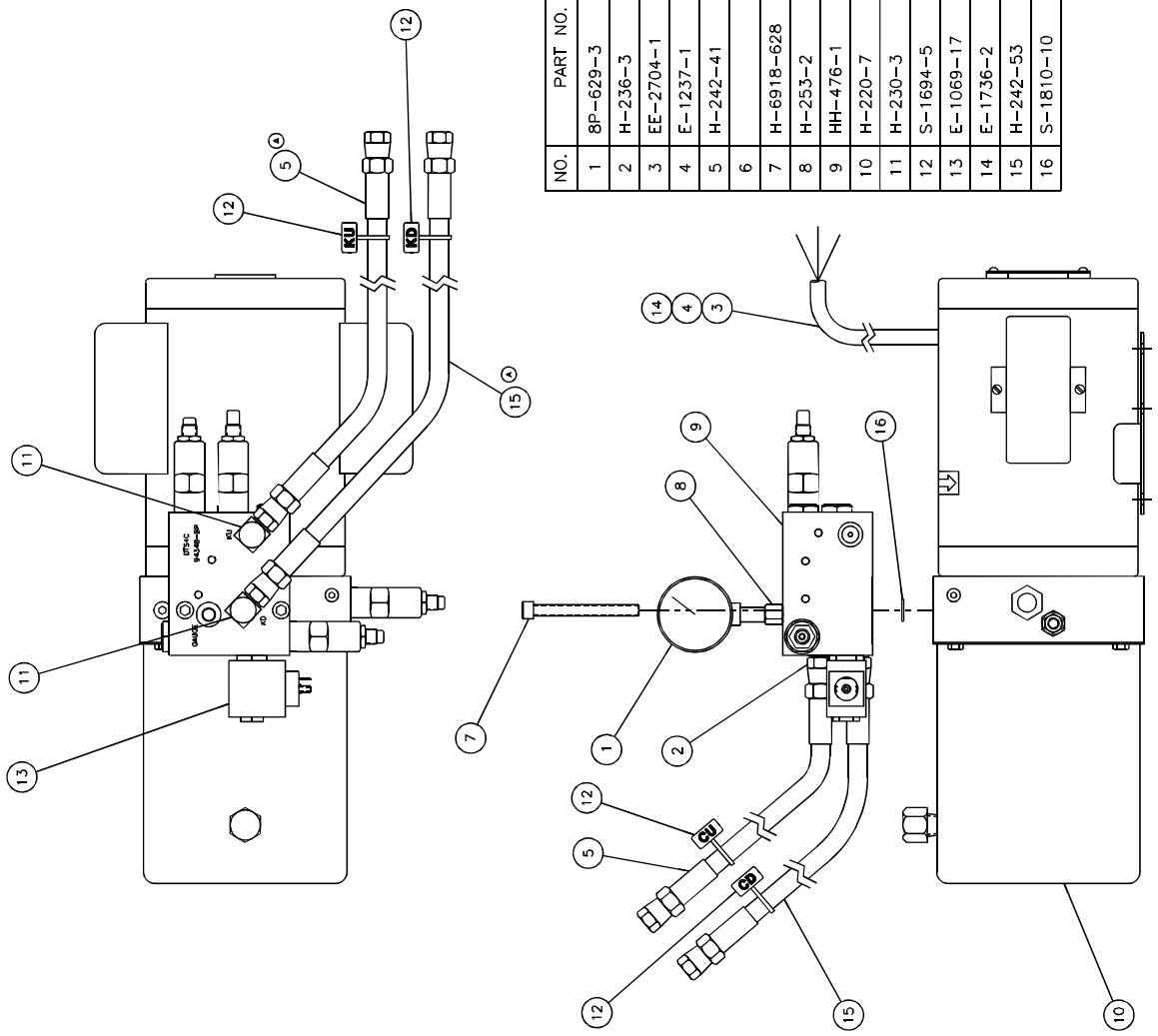
NO.	PART NO.	DESCRIPTION OF ACCESSORIES	QTY
1	8P-629-3	GAUGE	1
2	H-236-3	ADAPTER, 9/16-18 'O' RING TO 9/16-18 TUBE	2
3	EE-2704-1	CORD ASSEMBLY - HYD. MOTOR	1
4	E-1237-1	WIRE NUT	2
5	H-242-41	HYDRAULIC HOSE ASM., 25" LONG (KU & CU)	2
6			
7	H-6918-628	3/8-16 X 3-1/2 SOCKET HD CAP SCREW	2
8	H-253-2	ADAPTER	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



4.6 Hydraulic Power Unit – 50 Hz

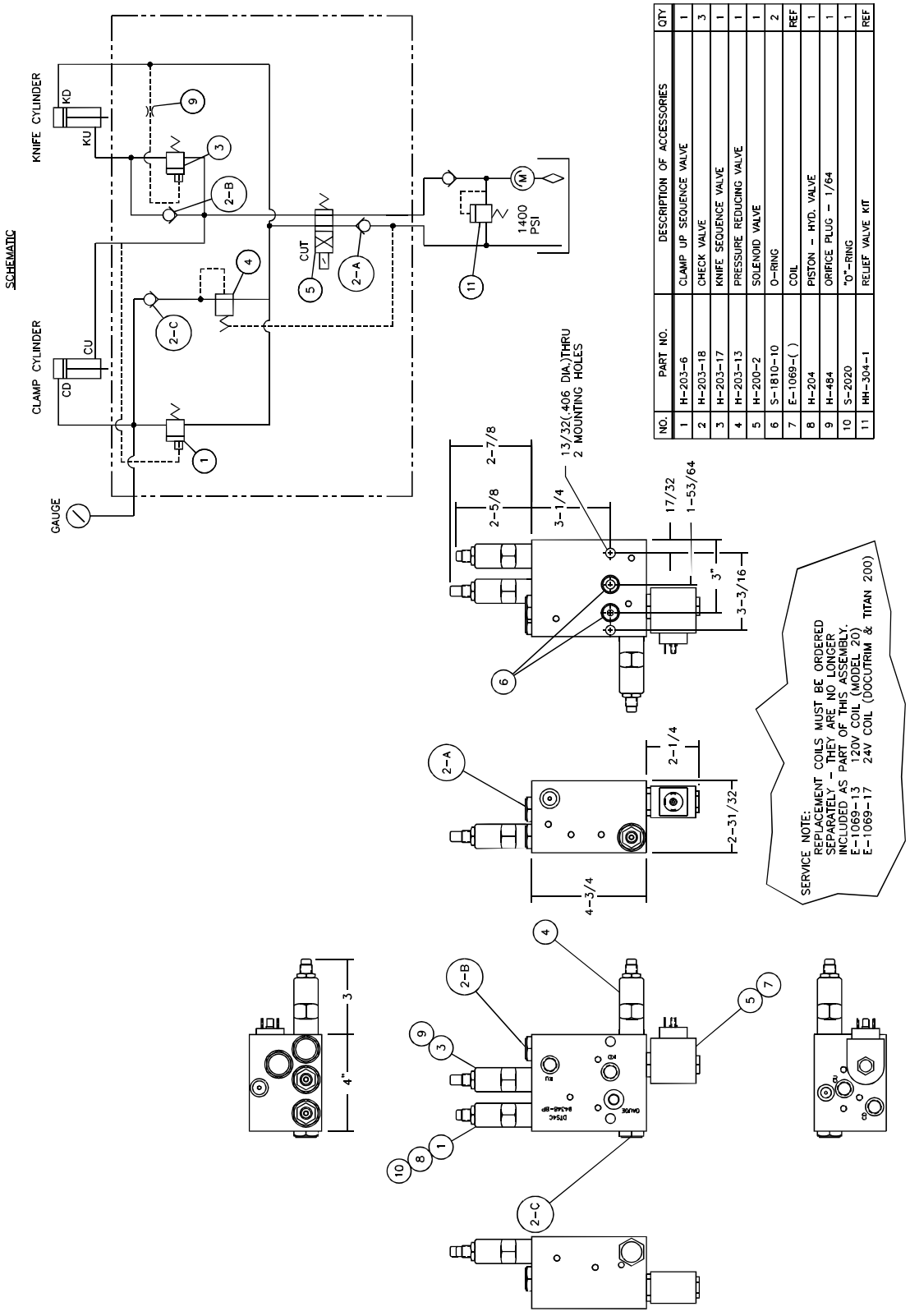
H-477-2, Rev. A

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-253-2	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



4.7 Hydraulic Manifold Assembly & Schematic

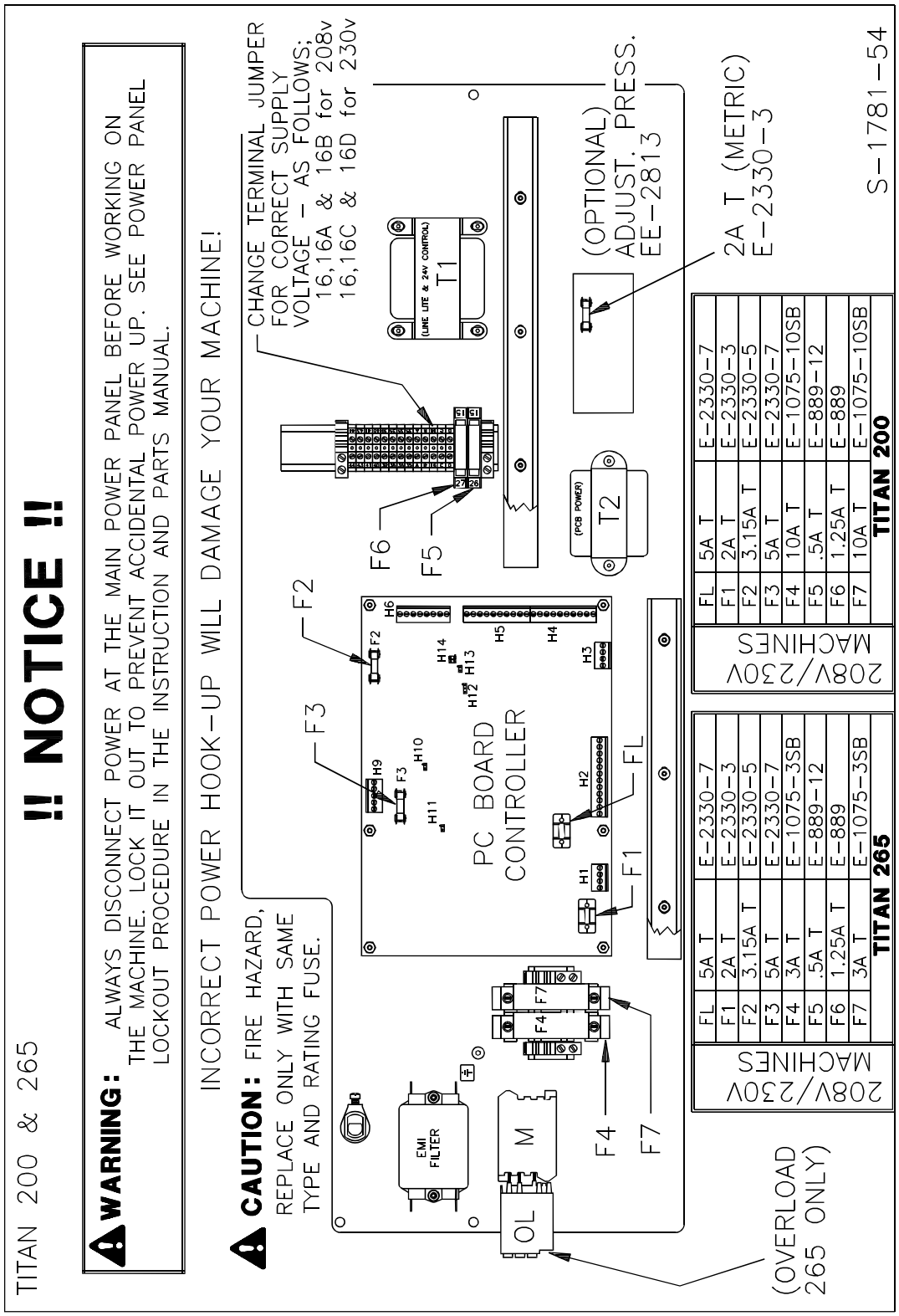
HH-476-1



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

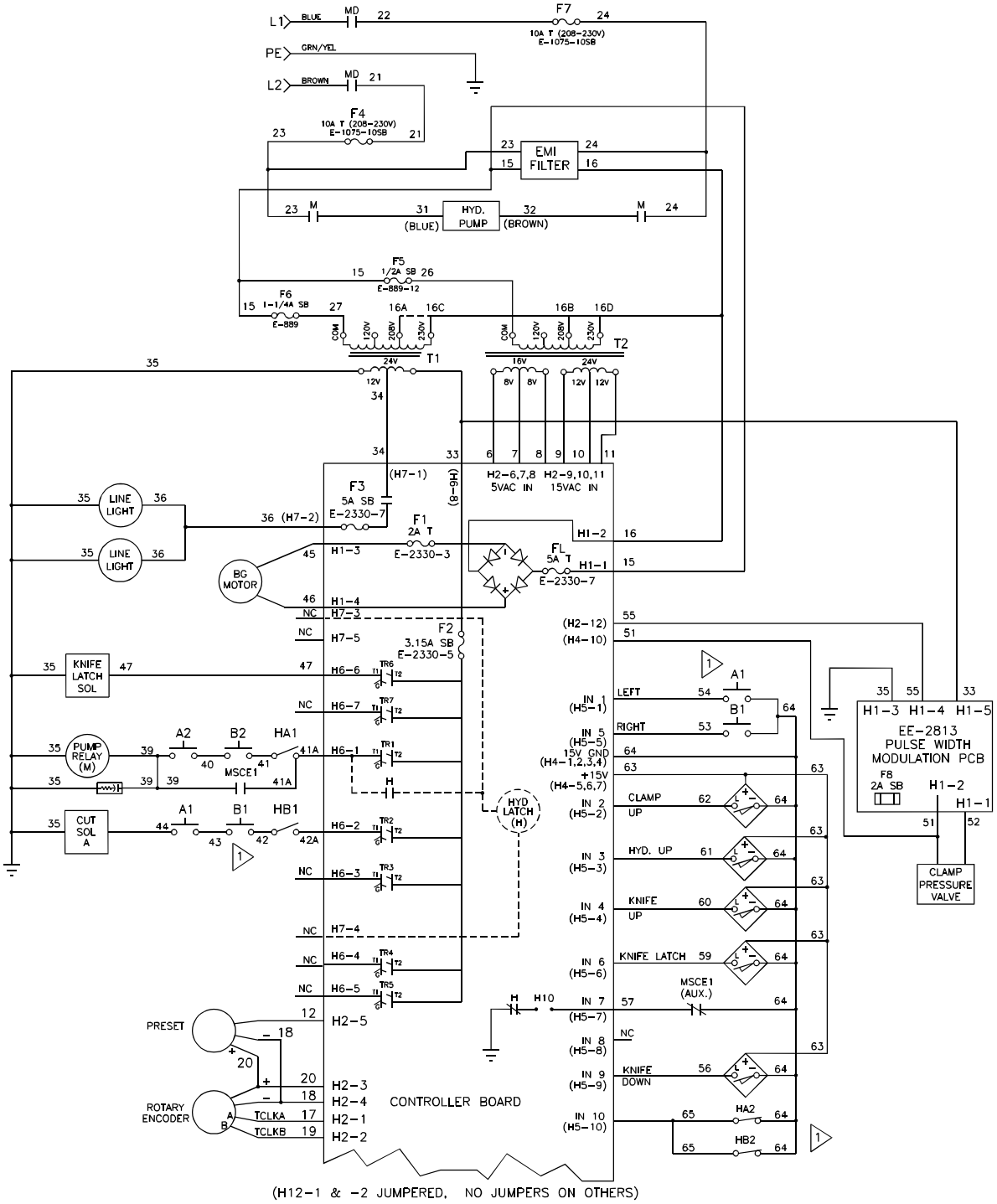
4.8 Power Panel Label

S-1781-54, Rev. C



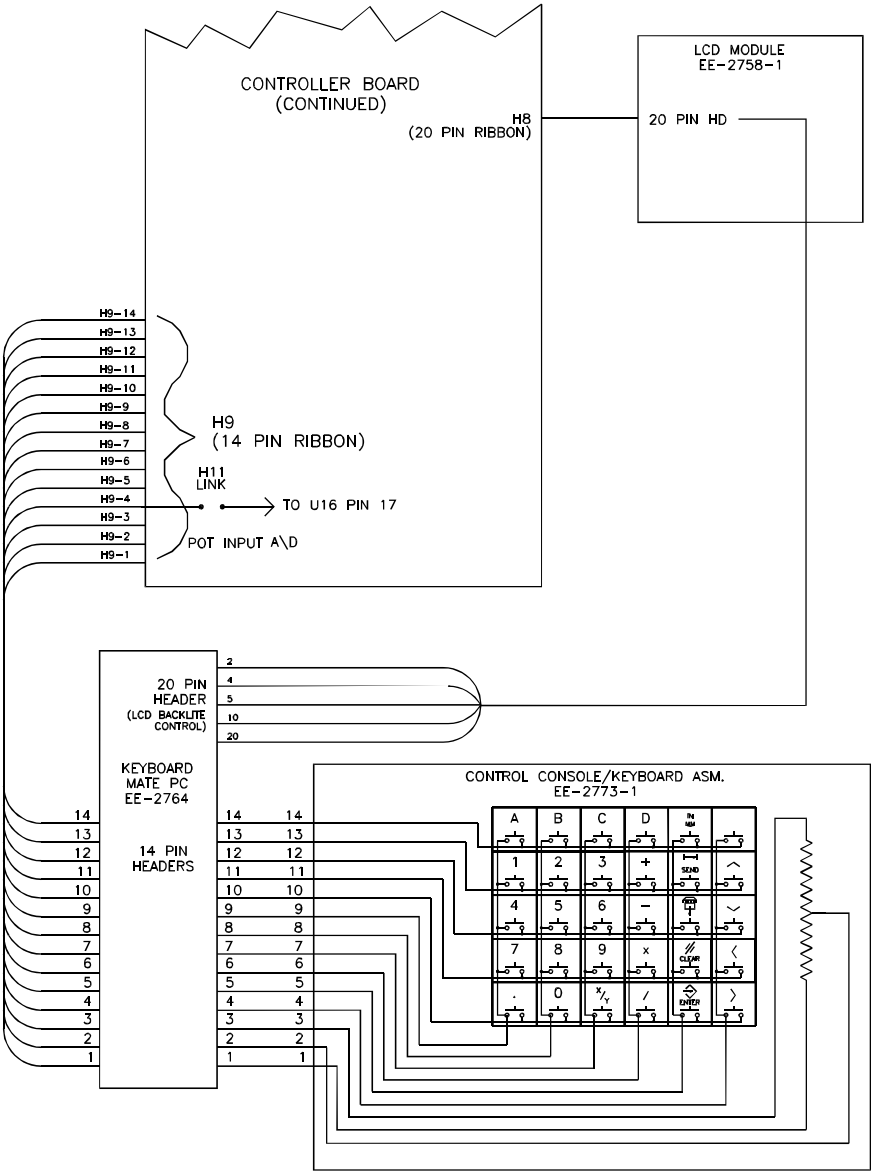
4.9 Electrical Schematic – Tilt Shield Machines

E-2771-2, Rev. B



Electrical Schematic – Tilt Shield Machines, Continued

E-2771-2, Rev. B



SPECIAL TERMINAL BLOCK INSTRUCTIONS

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

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

1 NOTE: FOR MACHINES WITH 2 HAND CUT BUTTON CONTROL AND HOOD CONTROL – USE EE-1766-53-XX SOFTWARE.

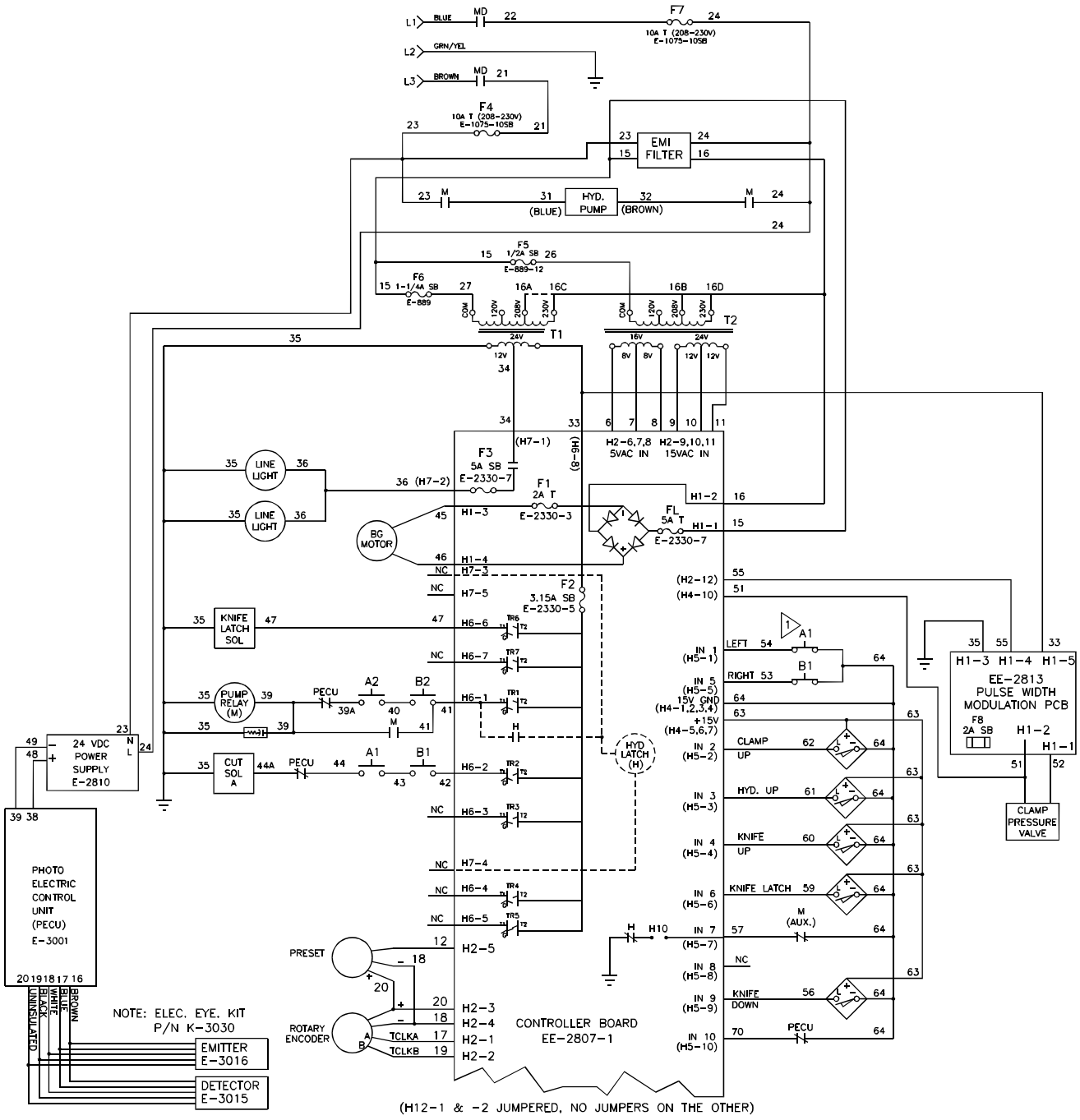
SCHEMATIC SHOWS SWITCHES IN POSITION OF THE HOOD OPEN AND CUT BUTTONS NOT DEPRESSED.

NOTE: THE PULSE WIDTH P.C. BOARD (EE-2813) AND THE CLAMP PRESSURE PROXIMITY SWITCH ARE OPTIONAL AND ARE SHOWN FOR REF. ONLY.

SERVICE NOTE: THE LINKS ON "H10" AND "H11" MUST BE REMOVED FOR THIS BOARD TO BE USED FOR REPAIRS FOR OLD EE-2762 BOARDS.

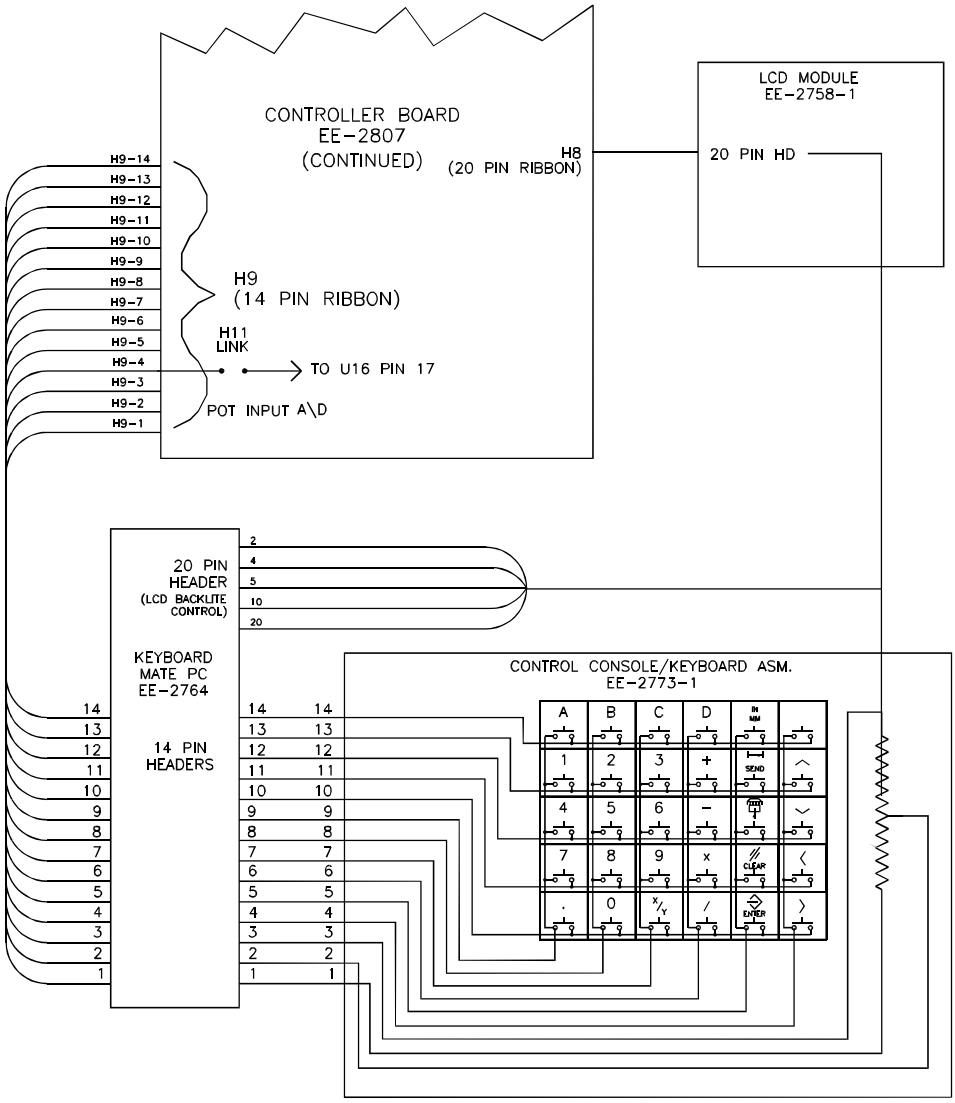
4.10 Electrical Schematic – Electric Eye Machines

E-2771-1, Rev. F



Electrical Schematic – Electric Eye Machines, Continued

E-2771-1, Rev. F



NOTE: SCHEMATIC IS SHOWN IN MACHINE READY STATE.

SPECIAL TERMINAL BLOCK INSTRUCTIONS

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

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

1 NOTE: FOR MACHINES WITH HOOD CONTROL – SWITCHES CONNECTED TO INPUTS 1 & 5 ARE NORMALLY CLOSED AND USE EE–1766–41–XX SOFTWARE.

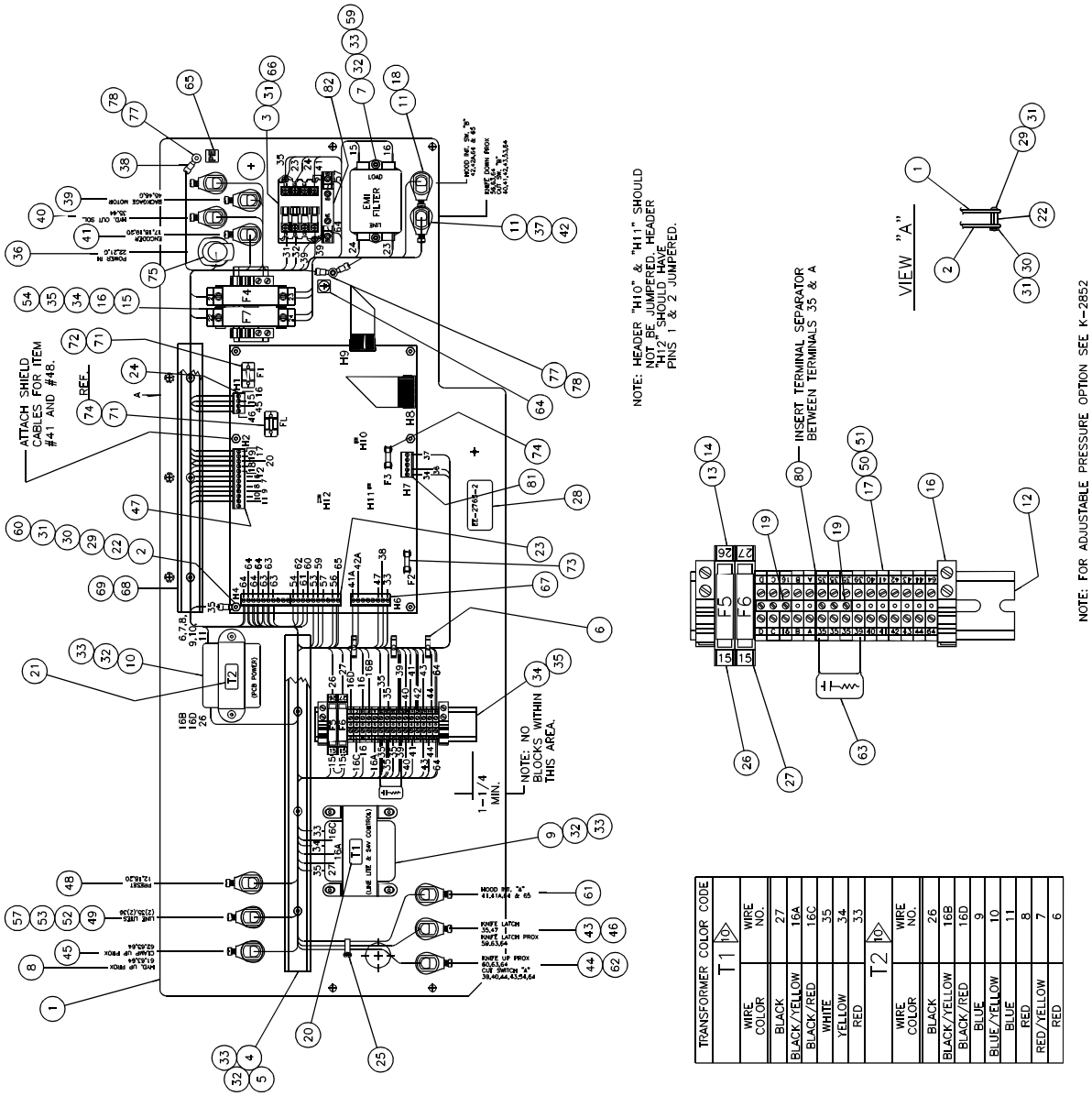
FOR MACHINES WITH 2 HAND CUT BUTTON CONTROL – SWITCHES CONNECTED TO INPUTS 1 & 5 ARE NORMALLY OPEN AND USE EE–1766–50–XX SOFTWARE.

NOTE: THE PULSE WIDTH P.C. BOARD (EE–2813) AND THE CLAMP PRESSURE PROXIMITY SWITCH ARE OPTIONAL AND ARE SHOWN FOR REF. ONLY.

SERVICE NOTE: THE LINKS ON "H10" AND "H11" MUST BE REMOVED FOR THIS BOARD TO BE USED FOR REPAIRS FOR OLD EE–2762 BOARDS.

4.11 Power Panel Assembly

EE-2765-1, Rev. F



TRANSFORMER COLOR CODE				
T1				
WIRE COLOR	WIRE NO.			
BLACK	27			
BLACK/YELLOW	16A			
BLACK/RED	16C			
WHITE	35			
YELLOW	34			
RED	33			
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 – EE-2765-1, Rev. F

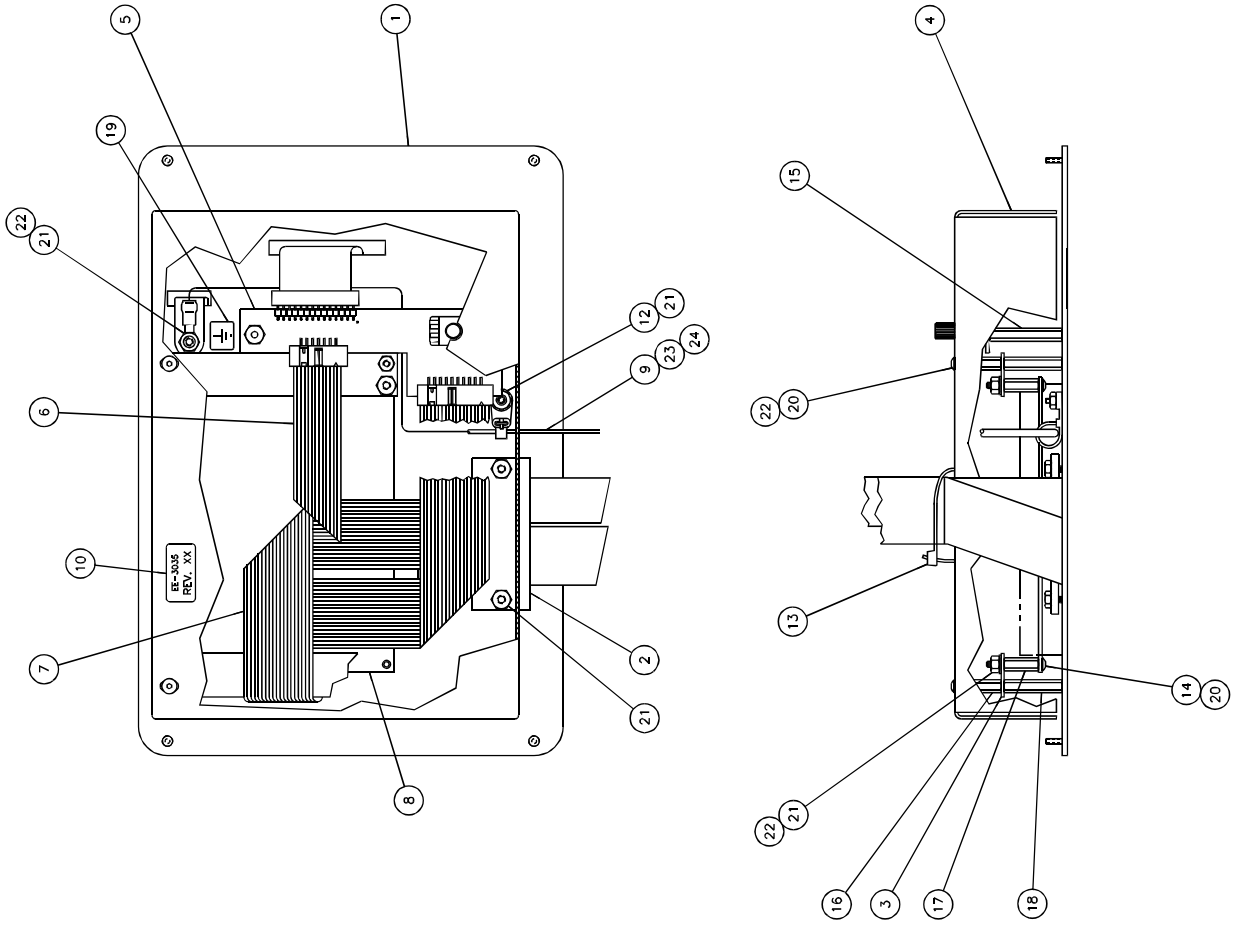
NO.	PART NO.	DESCRIPTION OF ACCESSORIES	QTY
1	43006-1	PANEL - ELECTRICAL	1
2	EE-2807-1	P.C.B. ASSEMBLY - CONTROLLER	1
3	E-2805	STARTER - CONTACTOR	1
4	E-1429-14	WIRE DUCT - 13-1/2" LONG	1
5	E-2719-14	COVER - WIRE DUCT, 13-1/2" LONG	1
6	E-2186-8	WIRE SADDLE, LOCKING TOP	3
7	E-2730-3	FILTER - EMI, PANEL 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	12
12	E-1977-18	RAIL - TERMINAL BLOCK, 6-1/2 LONG	1
13	E-1974-2	FUSE BLOCK - TERMINAL MOUNT, GLASS FUSE	2
14	E-1890	FUSE HOLDER - GLASS FUSE	2
15	E-1974-5	FUSE HOLDER - RAIL MOUNT, MIDGET	2
16	E-2070-1	END BRACKET - TERMINAL BLOCK	4
17	E-2068-8	TERMINAL BLOCK - THROUGH, #10 GA.	15
18	EE-2902	CABLE ASSEMBLY - HOOD INTERLOCK "B" (RH)	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-1152-24	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	4
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	6
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	EE-2766	CABLE ASSEMBLY - MAIN DISCONNECT SWITCH	1
37	EE-2774	CABLE ASSEMBLY - INTERLOCK SWITCH "B"	1
38	E-1214-63	CONNECTOR-1/4" NON-INS RING	REF
39	EE-2768	CABLE ASSEMBLY - BACKGAGE MOTOR	1
40	EE-2769	CABLE ASSEMBLY - CUT SOLENOID	1
41	EE-2534-1	CABLE ASSEMBLY - ENCODER	1
42	EE-2770-3	PROXIMITY SWITCH ASSEMBLY - KNIFE DOWN	1

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 37" LONG, WIRE #35	2
50	E-1356-132	LABEL - TERMINAL BLOCK	1
51	E-1356-131	LABEL - TERMINAL BLOCK	1
52	E-709-R	WIRE - #18GA. RED MTW 42" LONG, WIRE #36	1
53	E-709-R	WIRE - #18GA. RED MTW 36" LONG, WIRE #36	1
54	E-1977-3	RAIL - TERMINAL BLOCK, 3" LONG	1
55	E-849-R	WIRE - #16 GA. RED MTW	AS NEEDED
56	E-709-R	WIRE - #18 GA. RED MTW	AS NEEDED
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-2901-1	CABLE ASSEMBLY - HOOD INT. SWITCH "A"	1
62	EE-2774-1	CABLE ASSEMBLY - INTERLOCK SWITCH "A"	1
63	E-1736-3	QUENCHARC	1
64	S-1781-42	LABEL - GROUND	1
65	S-1781-45	LABEL - "PE" PROTECTED EARTH	1
66	H-6910-63205	SCREW - #6-32 X 5/8" BUT HD	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	AS NEEDED
71	E-2373	FUSE HOLDER COVER - METRIC	2
72	E-2330-3	FUSE - 2A SLO-BLO, GLASS METRIC (F1)	1
73	E-2330-5	FUSE - 3.15A SLO-BLO, GLASS METRIC (F2)	1
74	E-2330-7	FUSE - 5A SLO-BLO, GLASS METRIC (F3)	1
75	S-1350-5	STRAIN RELIEF - CABLE	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-2066-5	CONNECTOR - PLUG IN PCB TERM. 5 POLE	1
82	E-2376-4	CONTACTOR - AUX. (1) N.O. (1) N.C.)	1

4.12 Control Console Assembly

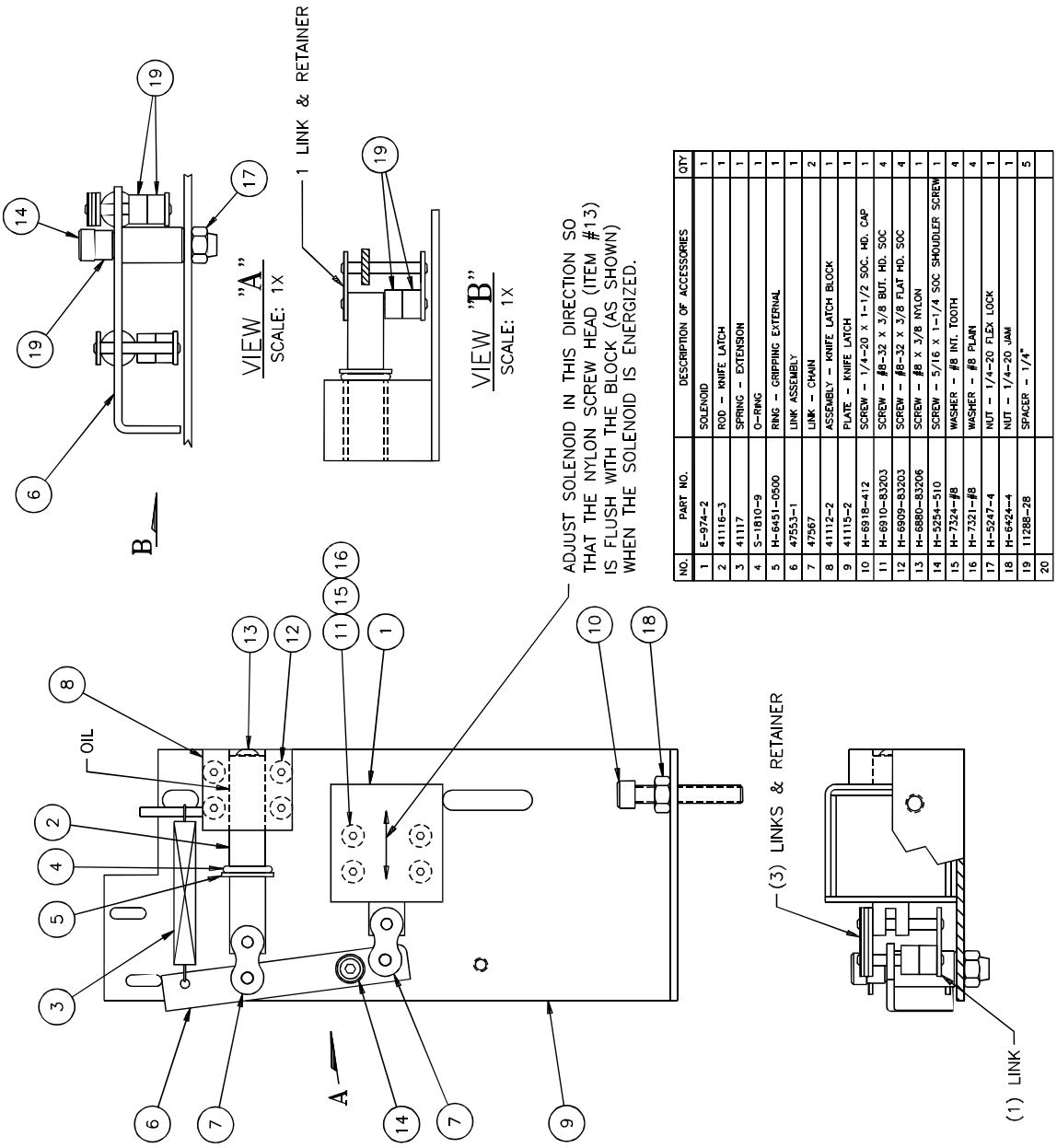
EE-3035, Rev. A

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	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-2758-1	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-1694-2	TYRAP - #10	1
13	S-1694-1	TY-WRAP	1
14	S-1864-3	NYLON WASHER	4
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-1781-42	LABEL - GROUND SYMBOL	1
20	H-6910-63202	SCREW - #6-32 X 1/4 BUT. HD. SOC.	8
21	H-6423-#6	NUT - #6-32 HEX	10
22	H-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 Knife Latch Assembly

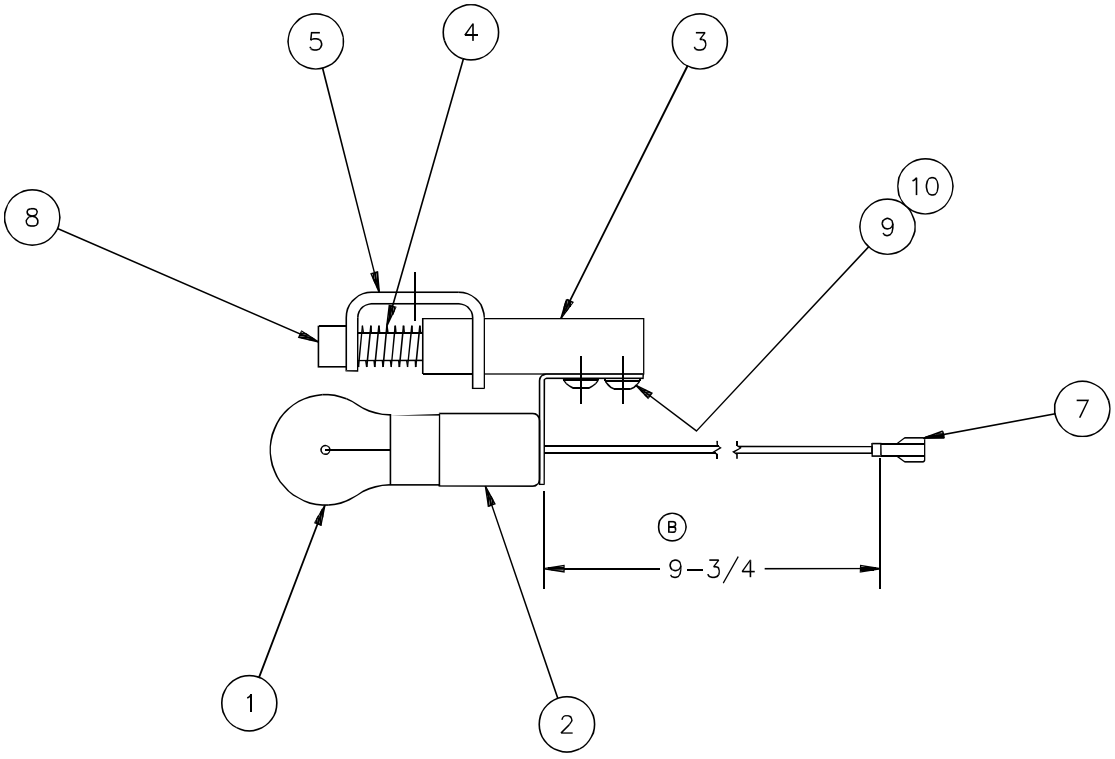
41120-3, Rev. A



NO.	PART NO.	DESCRIPTION OF ACCESSORIES	QTY
1	E-974-2	SOLENOID	1
2	41116-3	ROD - KNIFE LATCH	1
3	41117	SPRING - EXTENSION	1
4	S-1810-9	O-RING	1
5	H-6451-0500	RING - GRIPPING EXTERNAL	1
6	47553-1	LINK ASSEMBLY	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 SHOULDER 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
20			

4.14 Line Light Assembly

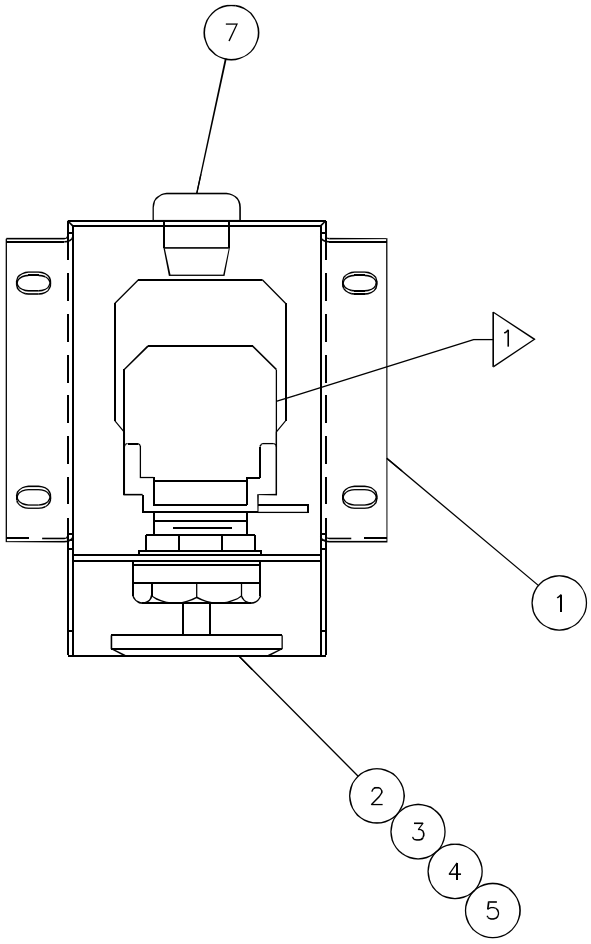
EE-2779, Rev. B



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

4.15 Cut Button Assembly

EE-2851-3 Rev. A



NO.	PART NO.	DESCRIPTION OF ACCESSORIES	QTY
1	16566-1	BOX - PUSHBUTTON	1
2	E-2074-7	SWITCH BODY - PUSHBUTTON, GREEN	1
3	E-1839-9	CONTACT BLOCK - (1) N.O., SWITCH	1
4	E-1839-10	CONTACT BLOCK - (2) N.O., SWITCH	1
5	16520	ANTI-ROTATION RING	1
6			
7	S-1350-13	STRAIN RELIEF - CABLE	1

NOTES:

1. WHEN SNAPPING THE CONTACT BLOCKS INTO THE SUPPLIED HOLDERS BE SURE THAT THE CONTACT IS MOUNTED SO THAT IT'S PLUNGER IS ON THE INSIDE OF THE HOLDER.

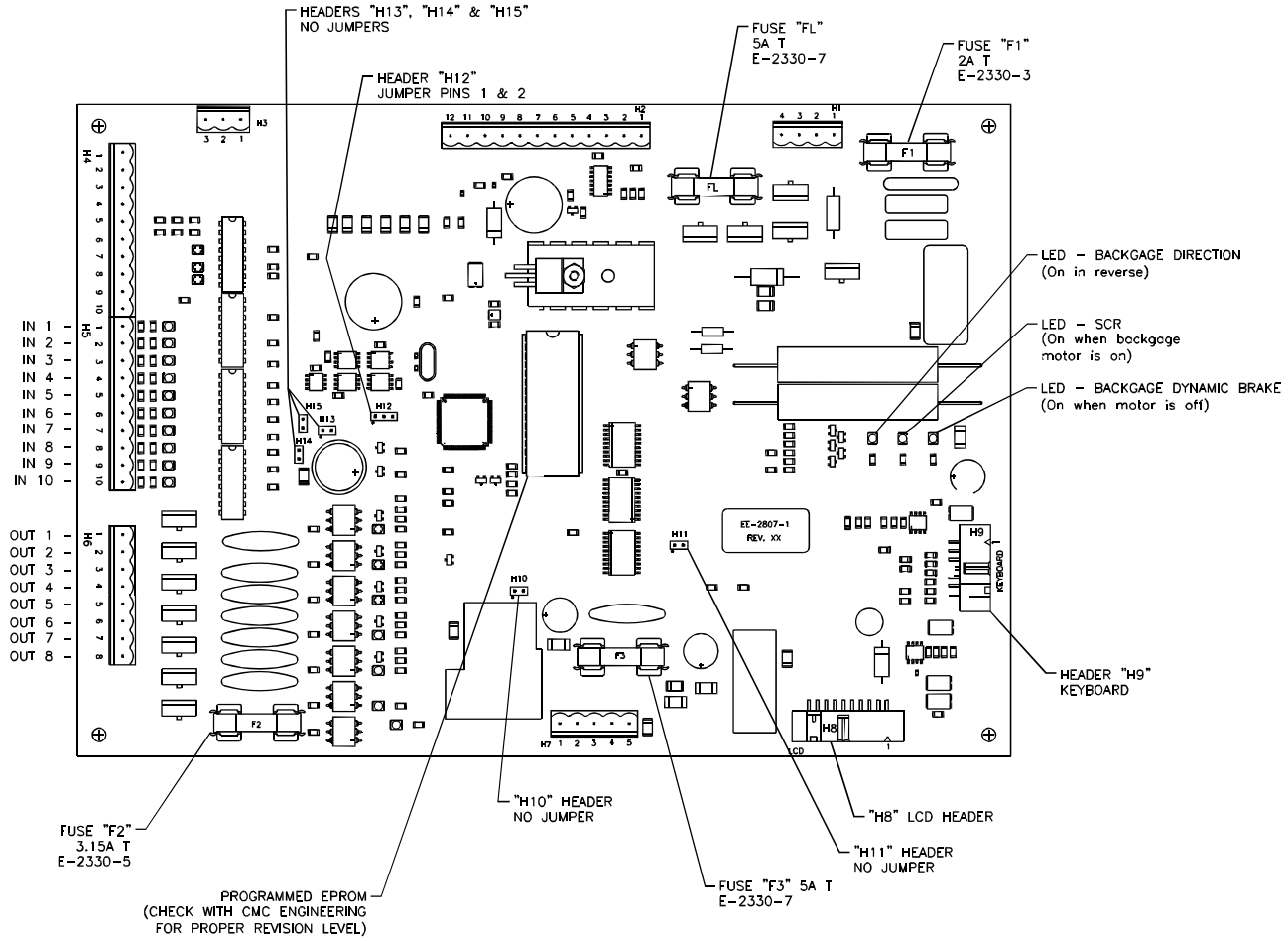
4.16 Fuse Value and Function

Location	Fuse Value/Type	Circuit	Transformer/Voltage	Dimension
F1	2A-T	Backgauge Motor	230 VAC	5mm x 20mm
F2	3.15A-T	Pcb output	T1.Secondary	5mm x 20mm
F3	5A-T	Line Lights	12 VDC	5mm x 20mm
F4	10A-T	Main – Hot	230 VAC	13/32” x 1-1/2”
F5	.5A-T	5V-logic, preset, encoder/15v-prox.	T2 Primary	¼” x 1-1/4”
F6	1.25A-T	12v, 24v Pcb outputs	T1 Primary	¼” x 1-1/4”
F7	10A-T	Main – Neutral	230 VAC	13/32” x 1-1/2”
FL	5A-T	Backgauge Motor	230 VAC	5mm x 20mm

T = Time Delay Fuse

4.17 Control P.C. Assembly

EE-2807-1



INPUTS

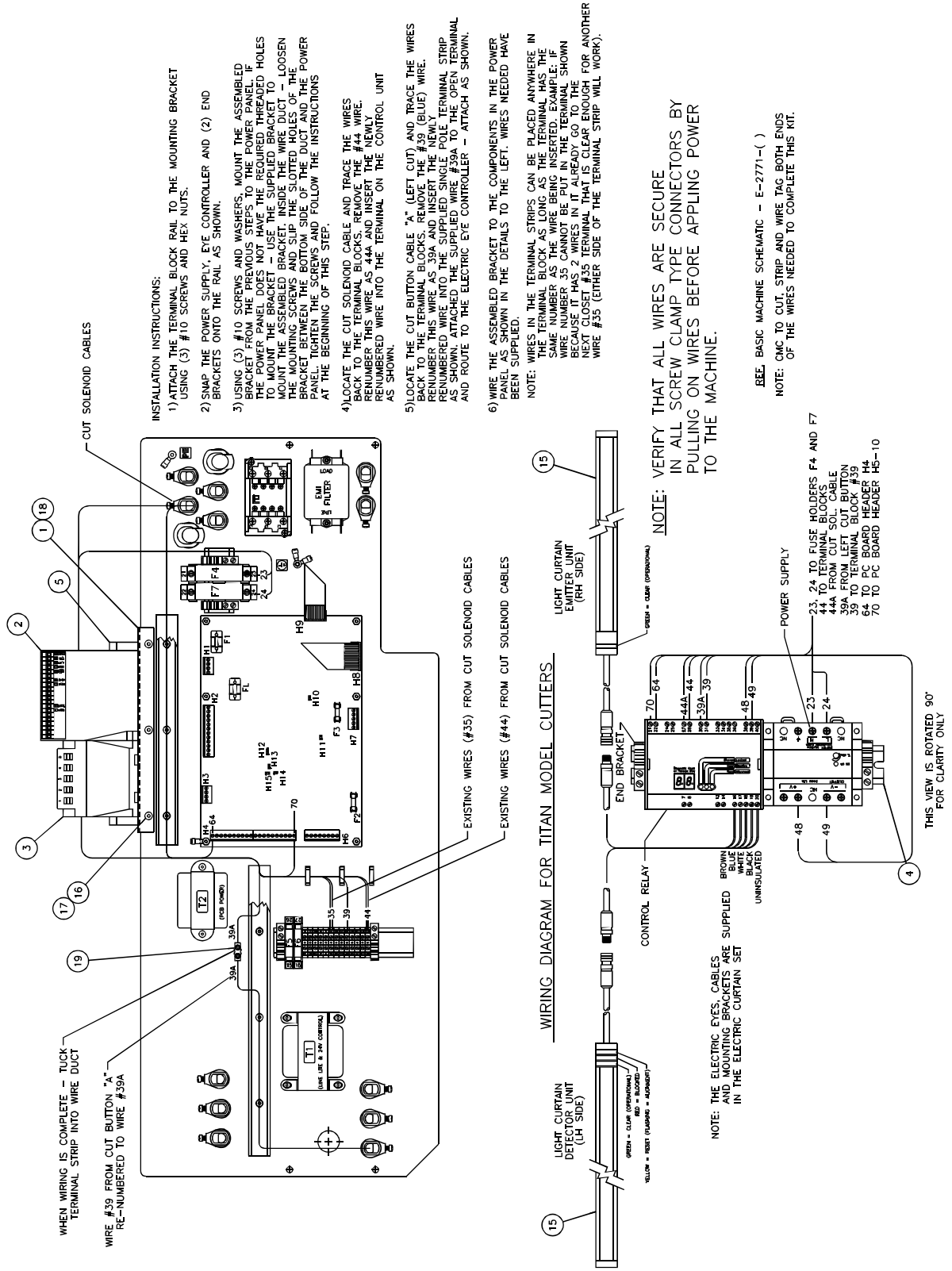
	DESCRIPTION	IDLE STATUS
IN1:	Left Cut Switch	Off when switch is pressed
IN2:	Clamp Up Limit	On when clamp is up
IN3:	Hyd. Cylinder Up Limit	On when hyd. are up
IN4:	Knife Up Limit	On when knife is up
IN5:	Right Cut Switch	Off when switch is pressed
IN6:	Knife Latch Switch	On w/pin under knife bar
IN7	Pump Relay	On when pump is running
IN8:	PECU	On when elec. eyes are blocked
IN9:	Knife Down Limit	Off when knife is down
IN10:	Not Used	–

OUTPUTS

	DESCRIPTION	IDLE STATUS
OUT1:	Hydraulic Motor	On when motor is running
OUT2:	Cut Solenoids	Off except for downword motion
OUT3:	Not Used	–
OUT4:	Unload Solenoid	Off when clamp is up
OUT5:	Not Used	–
OUT6:	Knife Latch Solenoid	Off when knife is up
OUT7	Not Used	–

4.18 Electric Eye Assembly

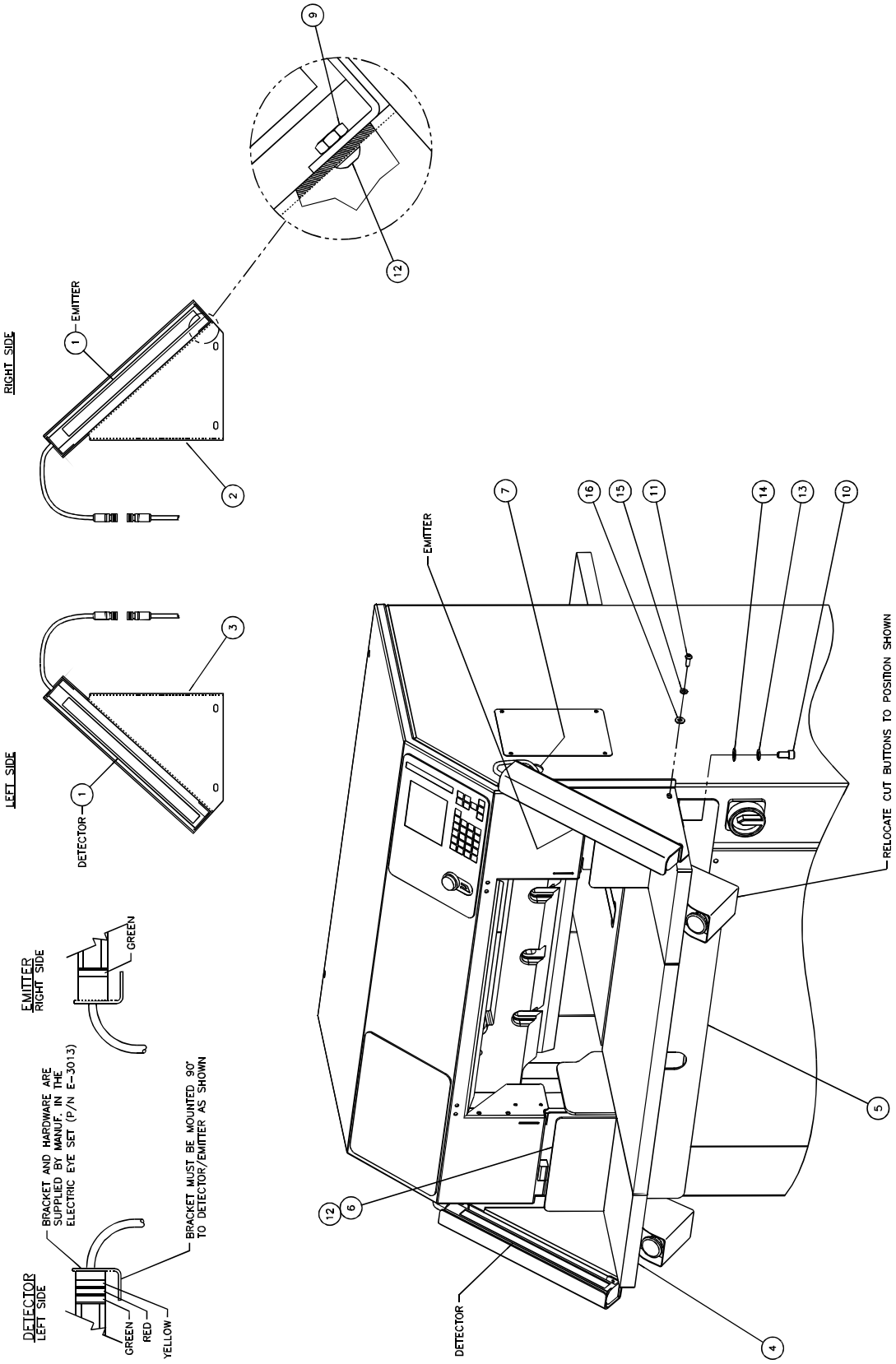
K-3030 Sheet 1, Rev. B



Electric Eye Assembly – K-3030 Sheet 1, Rev. B

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-1977-15	RAIL – TERMINAL BLOCK, 9" LONG	1
5	E-2070-1	END BRACKET – TERMINAL BLOCK	2
6	E-702-R	WIRE – #14GA. RED MTW 29" LONG (#23)	1
7	E-702-R	WIRE – #14GA. RED MTW 29" LONG (#24)	1
8	E-709-R	WIRE – #18GA. RED MTW 21" LONG (#70)	1
9	E-709-R	WIRE – #18GA. RED MTW 25" LONG (#64)	1
10	E-709-R	WIRE – #18GA. RED MTW 24" LONG (#44)	2
11	E-849-R	WIRE – #16 GA. RED MTW 21" LONG (#48)	1
12	E-849-R	WIRE – #16 GA. RED MTW 25" LONG (#49)	1
13	E-709-R	WIRE – #18 GA. RED MTW 22" LONG (#39A)	1
14	E-709-R	WIRE – #18 GA. RED MTW 22" LONG (#39)	1
15	E-3014	ELECTRIC CURTAIN SET – 12" TITAN 200 ONLY	1
16	H-7324-#10	WASHER – #10 INT. TOOTHLOCK	6
17	H-6910-102404	SCREW – #10-24 X 1/2" BUT HD	6
18	S-1694-2	TYRAP – WIRE	2
19	E-2626	TERMINAL STRIP – SINGLE POLE	1

Electric Eye Assembly – K-3030 Sheet 2, Rev. A

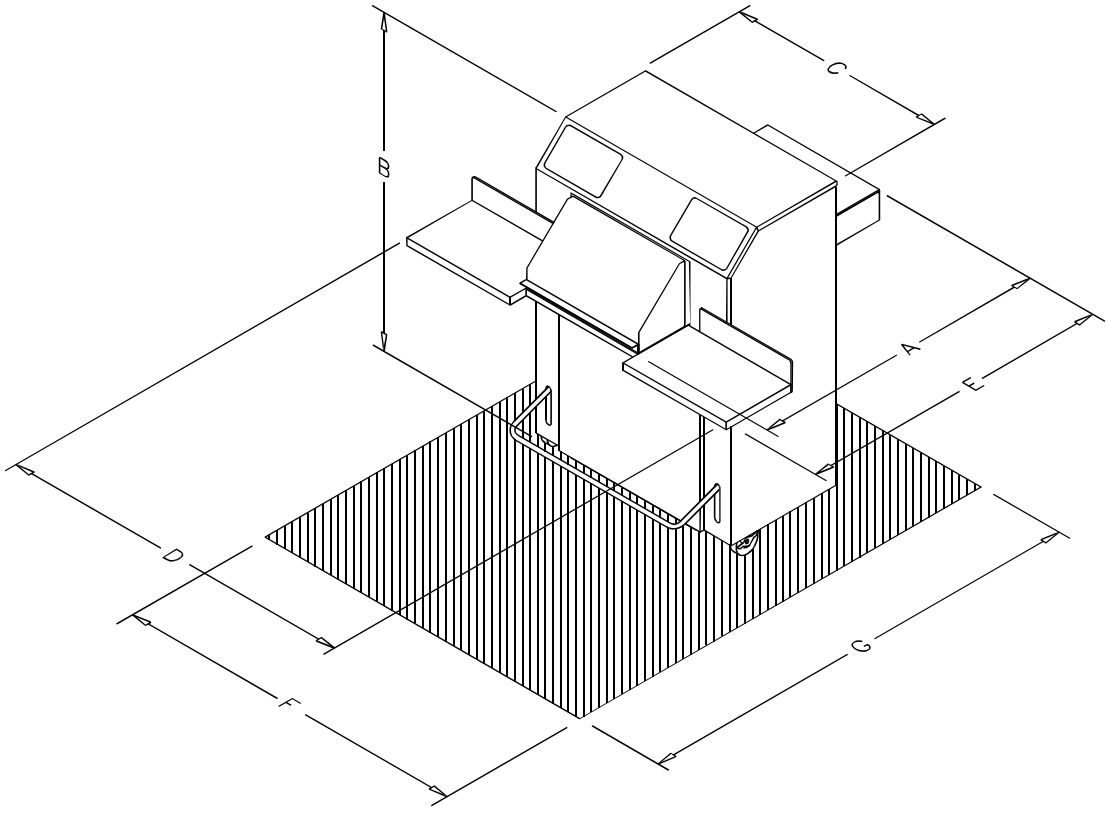


Electric Eye Assembly – K-3030 Sheet 2, Rev. A

NO.	PART NO.	DESCRIPTION OF ACCESSORIES	QTY
1	E-3014	ELEC. EYE CURTAIN SET – 12"	REF
2	43096	ELEC EYE BRACKET, RH	1
3	43097	ELEC EYE BRACKET, LH	1
4	43094	TABLE EXTENSION	2
5	43098	SUPPORT – TABLE EXTENSIONS	1
6	43095	BACK PLATE	2
7	E-1172-23	STRAIN RELIEF	2
8			
9	H-6423-#10	NUT – #10-24 HEX KEP	4
10	H-6918-606	SCREW – 3/8-16 X 3/4 SOC HD	10
11	H-6910-406	SCREW – 1/4-20 X 3/4 BUT HD	4
12	H-6910-102404	SCREW – #10-24 X 1/2 BUT HD	8
13	H-7327-12	WASHER – 3/8 MED. LOCK	10
14	H-7321-6	WASHER – 3/8 PLAIN	10
15	H-7327-8	WASHER – 1/4 MED. LOCK	4
16	H-7321-4	WASHER – 1/4 PLAIN	4
17			
18			
19			
20			

4.19 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

NOTES

5.0 Safety Systems Test

Machine manufacturer CHALLENGE Model TITAN 200

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