BIG JOE Manufacturing Company
7225 NORTH KOSTNER AVENUE • LINCOLNWOOD, IL 60646



# SUPPLEMENT
# BEST BUY MODEL
# PDI-20-T12

Table 1. Serial Number Effectivity

| TRUCK MODEL | SERIAL NUMBERS |
|---|---|
| PDI Equipped With New:<br>Transistor Controller 907200-01 | 370719, 371610,<br>371622 TO 371748,<br>371751, 371752, 371755, 371774, 371777, 371781,<br>371785 TO 371803,<br>371833 AND HIGHER |
| PDI Equipped With New:<br>Gel Cell Batteries 003216,<br>Gel Cell Battery Charger 004987 | 372448 AND HIGHER |

## 1. GENERAL

**NOTE:** Refer to Document 243 for Best Buy Model PDI-20-T12 with serial numbers not listed in Table 1.

This document supplements the basic PDI Manual No. 901355 and provides additional operating, safety and maintenance information.

**Refer to Supplement 220 for additional information on the Steering Control Arm and Supplement 349 for additional information of the Transistor Controller Part Number 907200-01.**

Additional standard equipment of the platform, strobe light, a lowering buzzer, an emergency lowering valve, a keyswitch, an emergency power disconnect, a safety belt, and a self-retracting lifeline.

**IMPORTANT**

**Ultra-deep discharging of brand new batteries should be avoided for at least 15 cycles.**

**These batteries have a superior deep cycle life. However, to dramatically extend battery life, ultra-deep discharge should be avoided. The shallower the average discharge, the longer the life.**

**If the batteries are continually undercharged, performance is reduced and life is shortened.**

**THESE BATTERIES ARE MAINTENANCE-FREE. ANY ATTEMPT TO OPEN THE BATTERY WILL VOID WARRANTY.**

## 2. SAFETY PRECAUTIONS

The following safety precautions must be adhered to at all times.

- All warnings and instructions must be read and understood before using the equipment.
- Equipment must not be altered in any way.
- Equipment must be inspected by a qualified person on a regular basis.
- Be certain that required restraining means such as safety belts, lifelines, and chains are properly used.
- Safety belt buckles must be visually inspected to assure proper and secure connection before use.
- The self retracting lifeline should be attached to the back Dee ring only on the safety belt.
- Replace any safety belt or life line that sustains permanent deformation or is otherwise damaged.
- Be certain that the lifting mechanism is operating smoothly throughout its entire lift height, both empty and loaded.
- Be sure that mast is vertical--do not operate on a side slope.
- Be sure the platform is not tilted forward or rearward when elevated.
- Be sure the truck has a firm and level footing.
- Before personnel are elevated, mark area with cones or other devices to warn of work by elevated personnel.
- Avoid overhead wires and obstructions.
- Personnel are to remain on the platform floor. Use of railings, planks, ladders, etc., on the platform for purpose of achieving additional reach or height is prohibited.
- Personnel and equipment on the platform must not exceed the available space.
- Lower platform to floor level for personnel to enter and exit. Do not climb on any part of the truck in attempting to enter and exit.

## 3. CONTROLS AND INDICATORS

**Steering Control Head of the truck is covered in Supplement 220 and the Transistor Controller Part Number 907200-01 is covered in Supplement 349.**

Gel Cell Battery charger is covered in this supplement DOC 355 Rev A.

A remote lift, lower and stop switch is located on the platform as shown in Figure 1. An emergency power disconnect, keyswitch and an emergency lowering valve are located on the rear of the truck as shown in Figure 1.

## 4. OPERATING PROCEDURES

**WARNING:** Understand truck limitations and operate the truck in a safe manner so as not to cause injury to personnel. Safeguard pedestrians at all times. Be sure you have read and understand the Safety Precautions listed in paragraph 2.

Users shall comply with all requirements indicated in applicable OSHA Standards and current edition of A.N.S.I. B56.1 Part II. By following these requirements and the requirements in this supplement you will get many years of safe, dependable service from your Big Joe lift truck.

The basic operation of the truck is covered in the PDI Manual No. 901355. Steering Control Head operation of the truck is covered in Supplement 220 and **the Transistor Controller Part Number 907200-01 is covered in Supplement 349**. Refer to the Miller®[1] Equipment manual supplied with this truck for information on the proper use, safety precautions and maintenance procedures applicable to the Safety Belt. Refer to the DBI/SALA®[2] Operation and Maintenance manual supplied with this truck for information on the proper use, safety precautions and maintenance procedures applicable to the Self Retracting Lifeline. Prior to operating the truck a check of safety items should be performed to insure the operating integrity of these items.

[1] Miller® is a registered trademark of Miller Equipment, Franklin PA.

[2] DBI/SALA® is a registered trademark of DBI/SALA, Red Wing, MN.

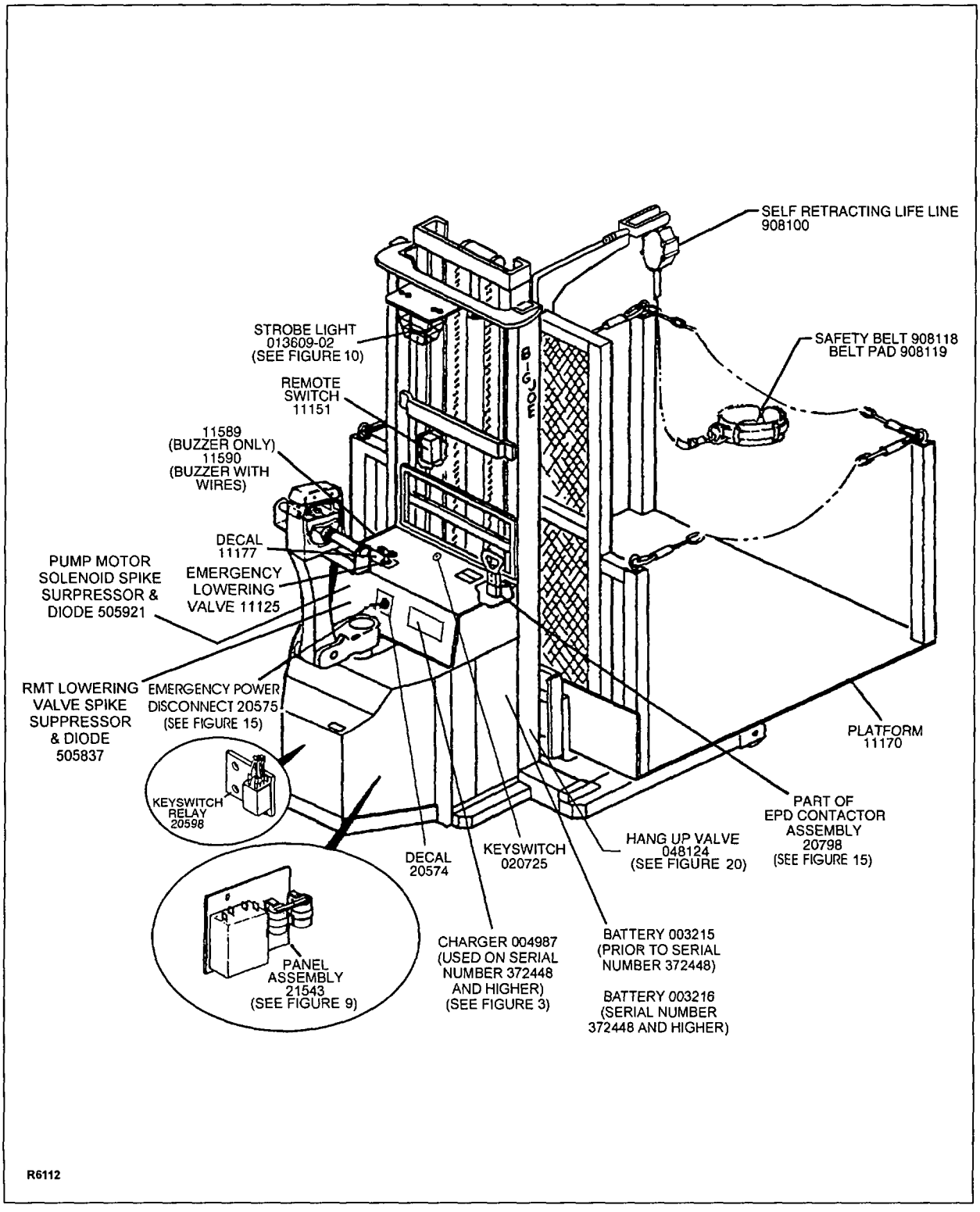



**Figure 1. Location of Special Items**

### 4.1. Safety Check

The following safety checks should be made at least once each day to verify operation of safety devices. Also perform the daily checks in the basic PDI Manual No. 901355, paragraph 2-3. If any malfunctions are found, do not use the truck until repairs are made.

1. Verify that platform chains are present and functional.
2. Verify that the flashing red light operates when the keyswitch is engaged.
3. Verify that buzzer sounds when the DOWN button on the platform is pressed.
4. Verify that the safety belt and self-retracting lifeline are present, installed with locking carabiner (when applicable), and functioning properly.
5. Verify that the travel defeat switch disables the steering arm when the platform is raised.
6. Verify that the emergency lowering valve is functioning properly.

**WARNING:** Do not operate with platform railing chains missing or not functioning.

### 4.2. Load Rating

Trucks are designed to handle loads up to 650 pounds at a 19" load center. Loads include personnel. Always carry loads as far back as possible on the platform. Refer to basic PDI Manual No. 901355, paragraph 2-2 and Figure 2-1.

**WARNING:** Exceeding the load rating specified above can cause the truck to tip resulting in possible injury.

### 4.3. Special Operating Information (Figure 1)

1. When the truck power is disconnected by the battery disconnect, the Emergency Power Disconnect (EPD) will automatically disengage. To reset, connect the battery and momentarily press the EPD Engagement switch. If the EPD does not operate refer to paragraph 6.10.

**NOTE:** If the EPD will not reset, there may be another electrical open or loose connection.

2. The keyswitch should be turned to the off position and the key removed when the truck is left unattended. Turning off the keyswitch reduces battery discharge.
3. A travel defeat switch completely disables the steering arm when the platform is raised.
4. The platform can be raised and lowered using the remote switch box located on the platform.
5. When the platform is lowered, a buzzer will sound.
6. The emergency lowering valve can be used to lower the platform when conditions require it's use.
7. If the platform hangs up on a shelf or obstruction during lowering, a hang-up valve will stop the cylinder from lowering further. Raise the platform to eliminate the hang-up contact before moving truck to clear obstruction.

## 5. PLANNED MAINTENANCE

Refer to the basic PDI Manual No. 901355 Chapter 3 for basic planned maintenance procedures. Table 2 indicates additional planned maintenance tasks which should be performed on a quarterly basis. These maintenance procedures should be performed only by qualified service personnel.

**Trucks Serial Number 372448 And Higher:** Refer to battery charging in this supplement.

**Table 2. VISUAL CHECKS**

| ITEM | PROCEDURE |
|---|---|
| Check all fluids and lubrication points. | Refer to PDI manual paragraph 3-4 |
| Check lift chains | Check for damage and adjustment. If adjustment is necessary refer to PDI manual Chapter 8 |
| Check sheaves and bearings. | Check for damage or binding. |
| Check cable in pivot tube. | Check for excessive wear around spring tube assembly and where cable exits pivot tube. |
| Check brake linkage and pads for wear. | Refer to PDI manual Chapter 6 to replace worn linkage or pads. |
| Check lift cylinder for leakage. | Raise cylinder to fully elevated position. Disconnect drain line and observe amount of oil coming from cylinder fitting. If more than a couple of drops of oil is forced out of gland, change packing as described in PDI manual paragraph 9-7.2 Replace nut (11, Figure 12-21, PDI manual) with new nut part number 800293. |
| Check hydraulic system filter and breather. | Replace if dirty. |

## 6. MAINTENANCE

Refer to the basic PDI Manual No. 901355 for all general service information. Refer to Figure 1 for the location and identification of items not listed in the basic manual.

### 6.1. Battery Part Number 003215 (Prior to Serial Number 372448)

These are Maintenance Free Batteries. Any attempt to open the battery will void the warranty.

**Ultra-deep discharging of brand new batteries should be avoided for at least 15 cycles.** To dramatically extend battery life, ultra-deep discharge should be avoided. The shallower the average discharge, the longer the battery life.

#### 6.1.1. Charging Batteries (Prior to Serial Number 372448)

Refer to the basic PDI Manual No. 901355.

### 6.2. Battery Part Number 003216 (Serial Number 372448 And Higher)

These Gel Cell Batteries are maintenance-free. Any attempt to open the battery will void the warranty.

**Ultra-deep discharging of brand new batteries should be avoided for at least 15 cycles.** To dramatically extend battery life, ultra-deep discharge should be avoided. The shallower the average discharge, the longer the battery life.

#### 6.2.1. Charging Batteries (Serial Number 372448 And Higher)

Charging requirements will vary depending on depth of discharge and temperature. Follow safety rules when placing a battery on charge.

Proceed as follows:

1. Park truck at charging station with platform lowered and key switch off.
2. Check the condition of the AC cord, the battery connector and battery cables. If there are any cuts in the cable, any exposed wires, loose plugs or connectors, DO NOT attempt to charge the batteries. Contact appropriate personnel for repairs to be made.
3. Disconnect the batteries from the truck and connect batteries to the charger. Make sure connectors are mated properly.
4. Connect the AC cord to the truck and then plug into the 120 Volt AC power supply.
5. The battery charger is fully automatic and will cycle automatically (depending on amount of charge needed). Charge status can be observed as follows (Refer to Figure 2):

   a. The top three LED's indicate charger status. At start of charge the RED (Charge) LED will be ON indicating the batteries are connected and charging. After the batteries charge to approximately 80% the Yellow LED comes ON. After a time (1 hour minimum) the Green LED comes ON indicating battery ready.

      NOTE: The battery charger includes an override timer which terminates the charge if the cycle does not complete after 18 hours of charging. This time-out condition is indicated by the green LED flashing off and on, and it indicates a fault condition which should be investigated. This will occur if the charger cannot raise the battery voltage to the preset voltage limit. Possible causes indicate a battery fault, a charger fault, low AC power supply voltage, or excessive discharge. The override timer can be reset by switching the AC power to the charger off.

   b. The lower four red LED's indicate current flow. Normally at start of charge, if the batteries are discharged, all four red LEDs will be on indicating maximum 25A charge current. As the batteries charge the current drops and the LEDs go OFF as the current drops to 20A, 15A, 10A and 5A respectively.

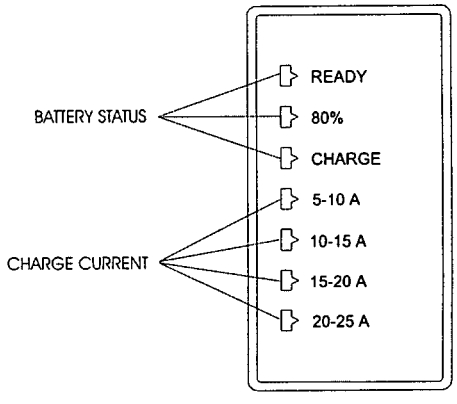



**Figure 2. Charge Indicator**

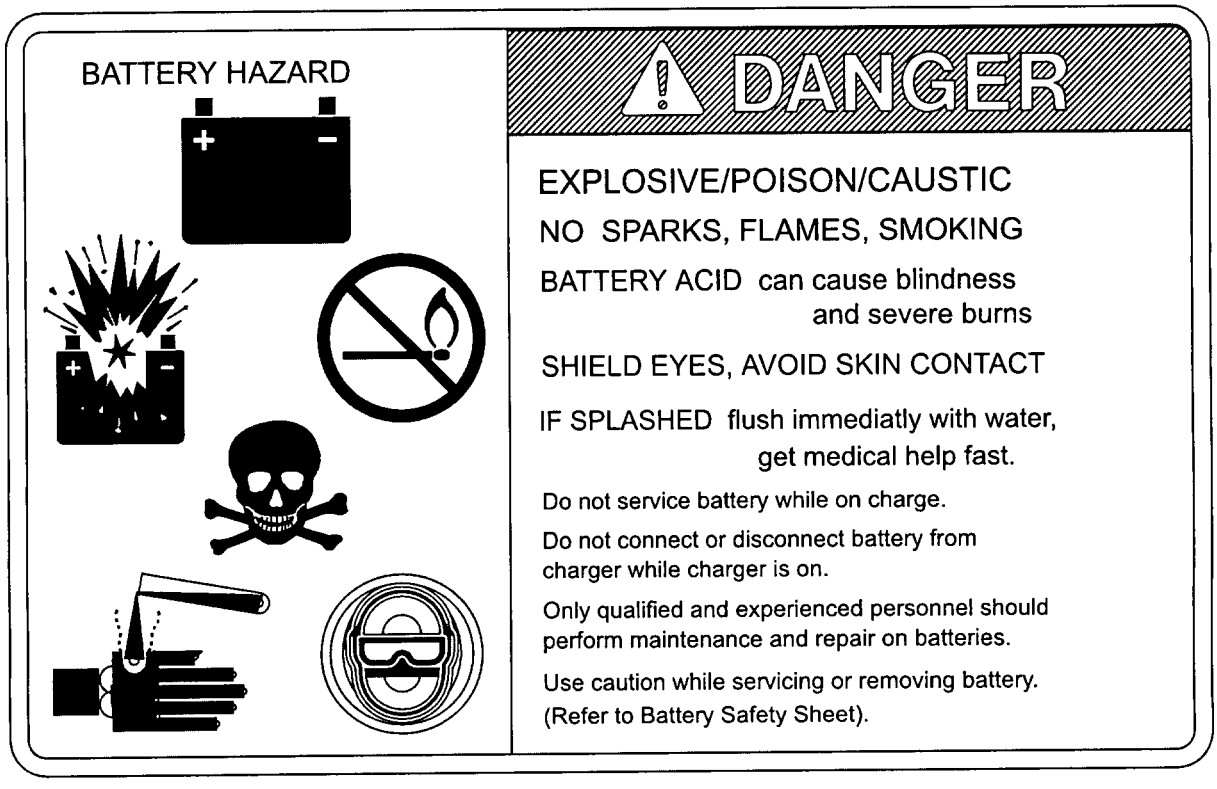
### 6.2.2. Removing Batteries from Charger

1. The Green "READY" LED stays on until the charger is unplugged from AC outlet.
2. Disconnect AC plug from the power supply and then remove it from the truck.
3. Disconnect the batteries from the charger and connect the batteries to the truck. Make sure connectors are mated properly.

### 6.3. Electrical System

Refer to the basic PDI Manual No. 901355 for all general service information. Refer to Supplements 220 for general information for the Steering Control Head. Refer to Supplement 349 for general service information for the Curtis Controller Model 1207A.

Refer to Figure 6 thru Figure 9 in this document for the wiring diagram and electrical schematic of truck.



### 6.4. Battery Charger (Serial Number 372448 And Higher)

The 004987 battery charger is located inside the cover in front of the steering arm as shown in Figure 1. Refer to Figure 3 for disassembly and part number information.

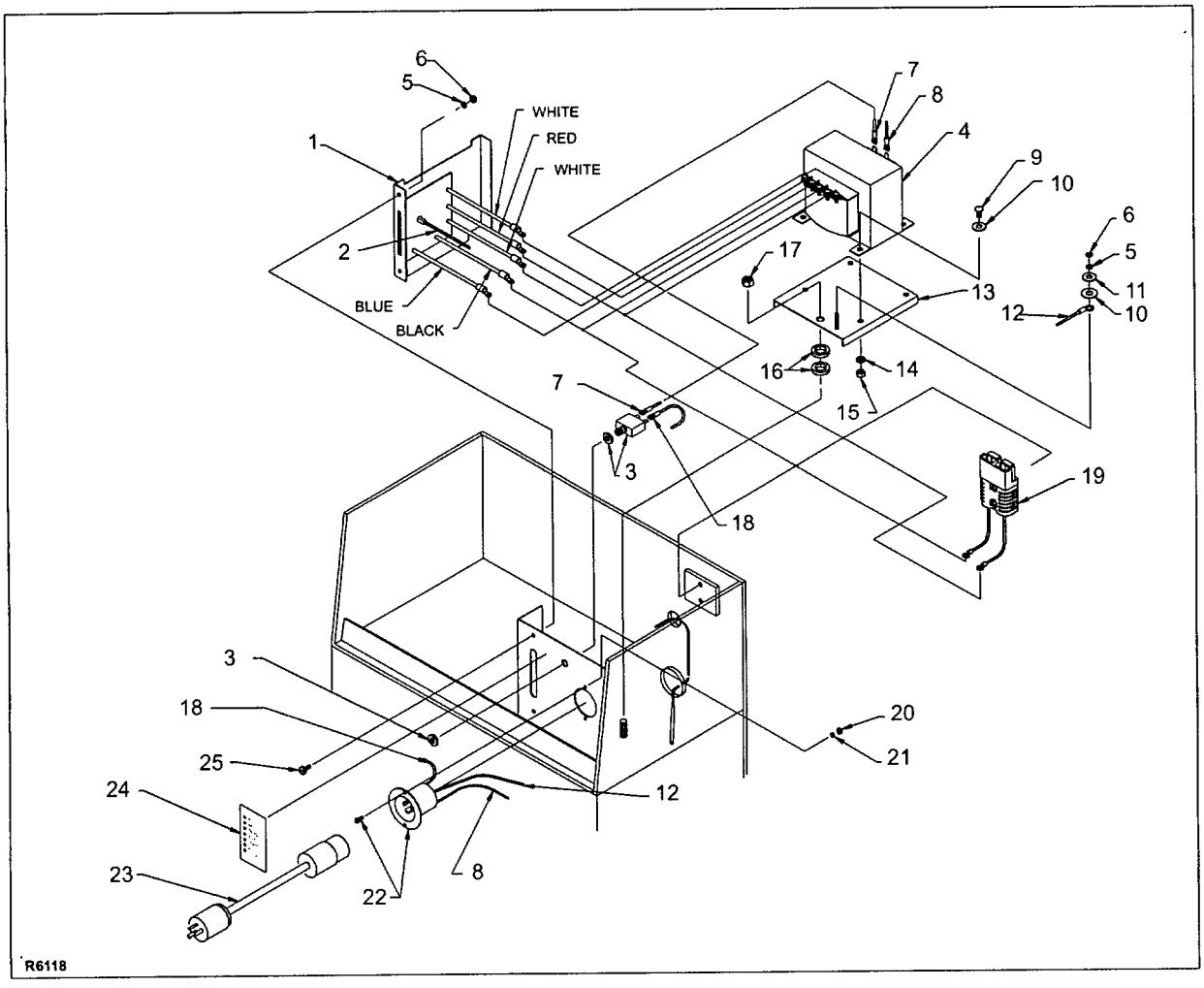



**Figure 3. Battery Charger**

| INDEX NO. | PART NO. | PART NAME | NO. REQ. |
|---|---|---|---|
| — | 004987 | CHARGER KIT-24V, 25 AMP | 1 |
| 1 | 904075 | . PCB ASSY WITH HEATSINK | 1 |
| 2 | 904074 | . . THERMISTOR | 1 |
| 3 | 003403 | . CIRCUIT BREAKER-AUTO RESET | 1 |
| 4 | 904076 | . TRANSFORMER | 1 |
| 5 | 077208 | WASHER-LOCK, SPLIT, #12 | 3 |
| 6 | 059416 | NUT-HEX, 10-32 | 3 |
| 7 | 023238-25 | WIRE ASSEMBLY | 1 |
| 8 | 505676-03 | WIRE ASSEMBLY | 1 |
| 9 | 070476 | SCREW-PH RD HD, 1/4-20 X 1/2 | 4 |
| 10 | 077031 | WASHER, 5/16 X 3/4 X 16 GA | 5 |
| 11 | 077032 | WASHER, 3/16 X 1/2 X 13 GA | 1 |
| 12 | 023238-27 | WIRE ASSEMBLY | 1 |

| INDEX NO. | PART NO. | PART NAME | NO. REQ. |
|---|---|---|---|
| 13 | 505992 | BRACKET, CHARGER | 1 |
| 14 | 077209 | WASHER-LOCK, SPLIT, 1/4 | 4 |
| 15 | 077421 | NUT-HEX, 1/4-20 | 4 |
| 16 | 077064 | WASHER, 0.641 X 1.062 X 7 GA | 2 |
| 17 | 059429 | NUT-HEX, 3/8-16 | 1 |
| 18 | 026238-26 | WIRE ASSEMBLY | 1 |
| 19 | 506178 | CONNECTOR ASSY - CHARGER | 1 |
| 20 | 059412 | NUT - HEX, 6-32 | 2 |
| 21 | 077204 | WASHER - LOCK, SPLIT, #6 | 2 |
| 22 | 005461 | CONNECTOR - INLET, FLANGED | 1 |
| 23 | 505853 | CORD ASSY - EXTENSION, 120V | 1 |
| 24 | 056681 | DECAL - CHARGER, LED | 1 |
| 25 | 071376 | SCREW - PH TR HD, 10-32 X 1/2 | 2 |

### 6.5. Battery Charger Troubleshooting

Refer to Figure 5 for part identification. Be sure the batteries are connected to the charger and the AC cord is connected to 120 VAC power supply.

#### 6.5.1. Dip Switch Setting (Figure 4)

The DIP switch on the Printed Circuit Board (PCB) must be set for Gel Cell Batteries. Check that switch 1 is be ON and switch 2 is be OFF.

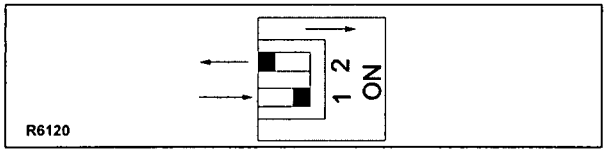



**Figure 4. Dip Switch Settings**

#### 6.5.2. Thermistor

There is a temperature sensing thermistor plugged into a 2-pin socket marked THERM on the PCB. Check that this is firmly connected or the battery voltage control will not work properly.

#### 6.5.3. Circuit Breaker Testing

Using a multimeter set to measure 120 VAC, check each side of the circuit breaker to ground. If 120 VAC was not indicated on both sides, replace the circuit breaker.

#### 6.5.4. Power Transformer Testing

The two 0.250" tabs on the primary side of the transformer and the five #10 screw lugs on the secondary side. Test the transformer as follows:

1. Using a multimeter set to measure at least 120 VAC, verify that AC Power supply 120V 60Hz input is present at the transformer primary terminals. If 120 VAC was not indicated, check the circuit breaker and wiring.
2. Using a multimeter set to measure at least 50 VAC, verify the transformer secondary terminals as follows:
   a. Verify 25 VAC from blue wire to each white wire.
   b. Verify 50 VAC from the white wire to white wire.
   c. If these voltages were not indicated, replace the transformer.

#### 6.5.5. Circuit Board Testing

The circuit board has a built in diagnostic test at power-up.

1. Switch the AC supply OFF and then ON, watching the 3 upper LEDs on the PCB. The 3 LEDs should light briefly in sequence Green-Yellow-Red when power is applied. This indicates the transformer is OK and that power is getting to the PCB.
2. If the battery DC is connected to the charger correctly, the Red LED should come ON immediately after this test sequence.
3. If the Green-Yellow-Red LED test sequence does not show at power-up, or if it cycles constantly Green-Yellow-Red, the PCB assembly should be replaced.
4. If the Red or Yellow charging LED does not stay ON after the test sequence, check that the batteries are connected to the charger.
5. Using a multimeter set to measure at least 30 VDC, verify DC Voltage from Black to Red wire is as follows:
   a. If the Red charging LED is on and the Yellow charging LED is off, voltage from black to red wire should be at least 24 VDC.
   b. If the Red and Yellow charging LEDs are on, voltage should be 29 ±1 VDC.
   c. If there is no Voltage, check the wiring and connections from the charger to the battery terminals. Battery Voltage must be correct polarity and more than 1 Volt to commence charging.

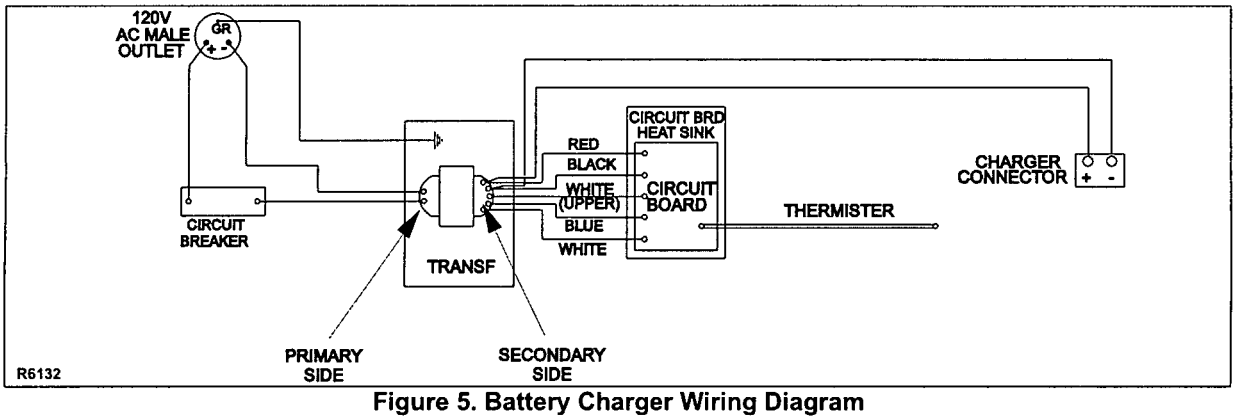



**Figure 5. Battery Charger Wiring Diagram**

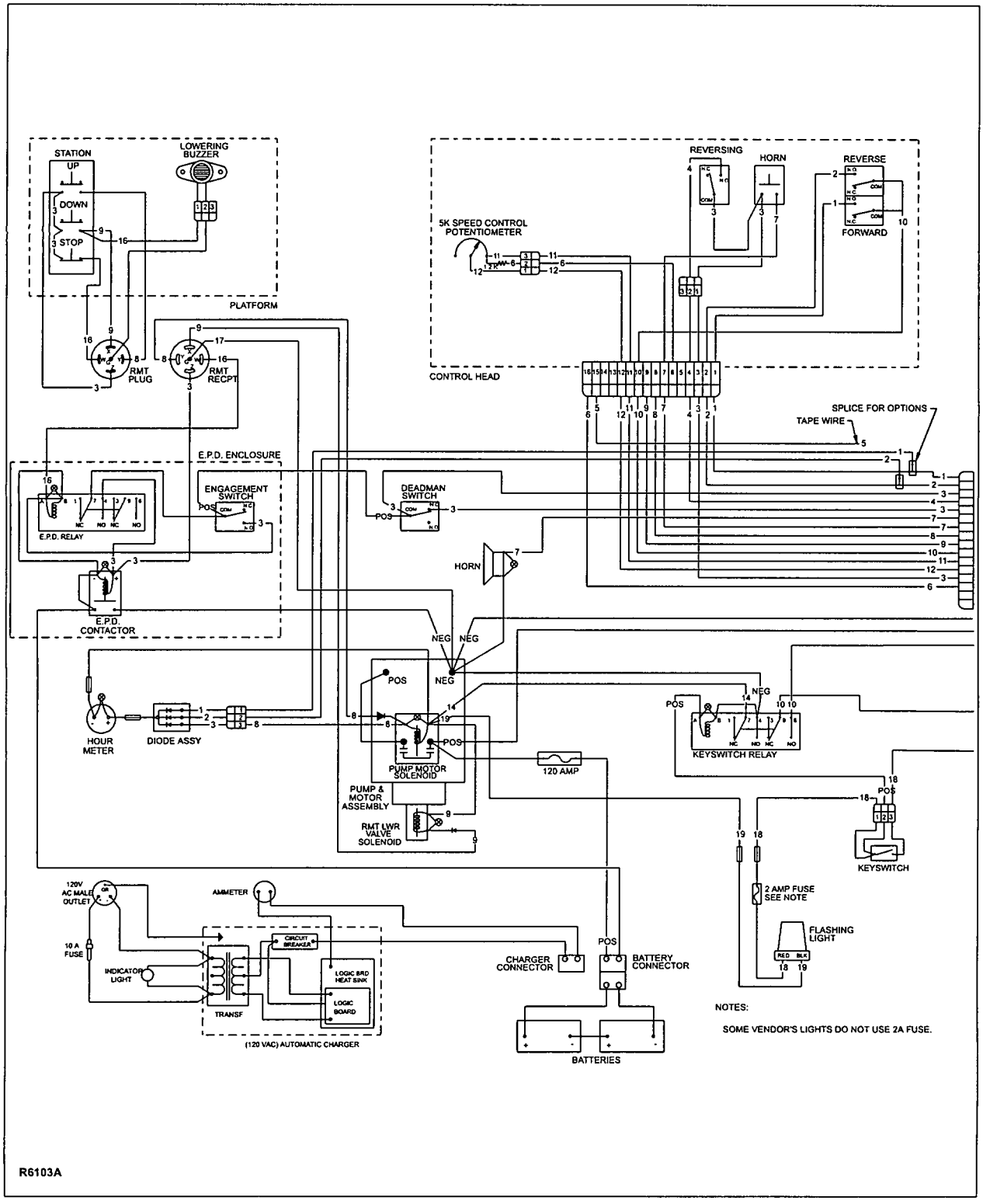



**Figure 6. Wiring Diagram Prior to Serial Number 372448 (Sheet 1)**

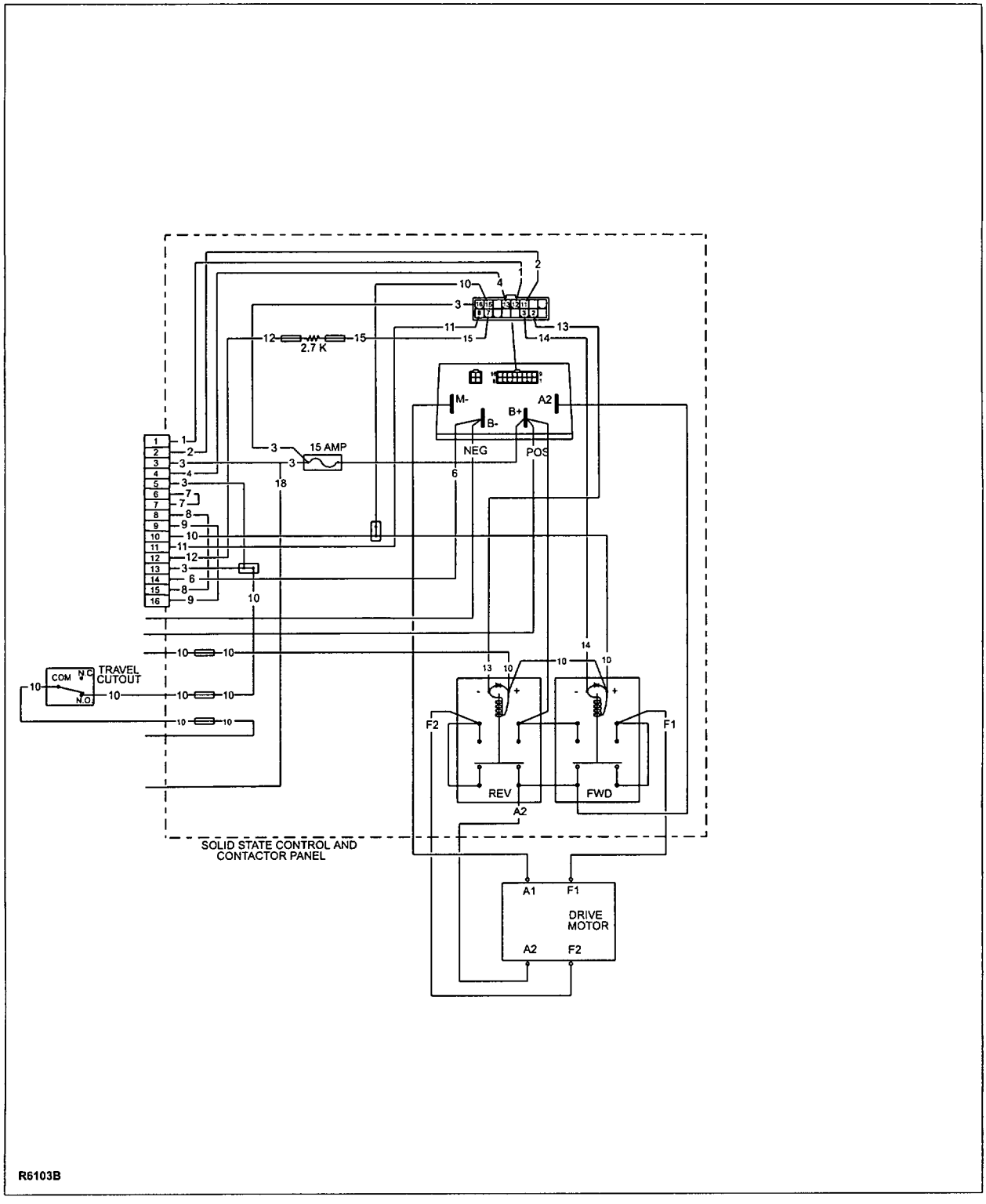



**Figure 6. Wiring Diagram Prior to Serial Number 372448 (Sheet 2)**

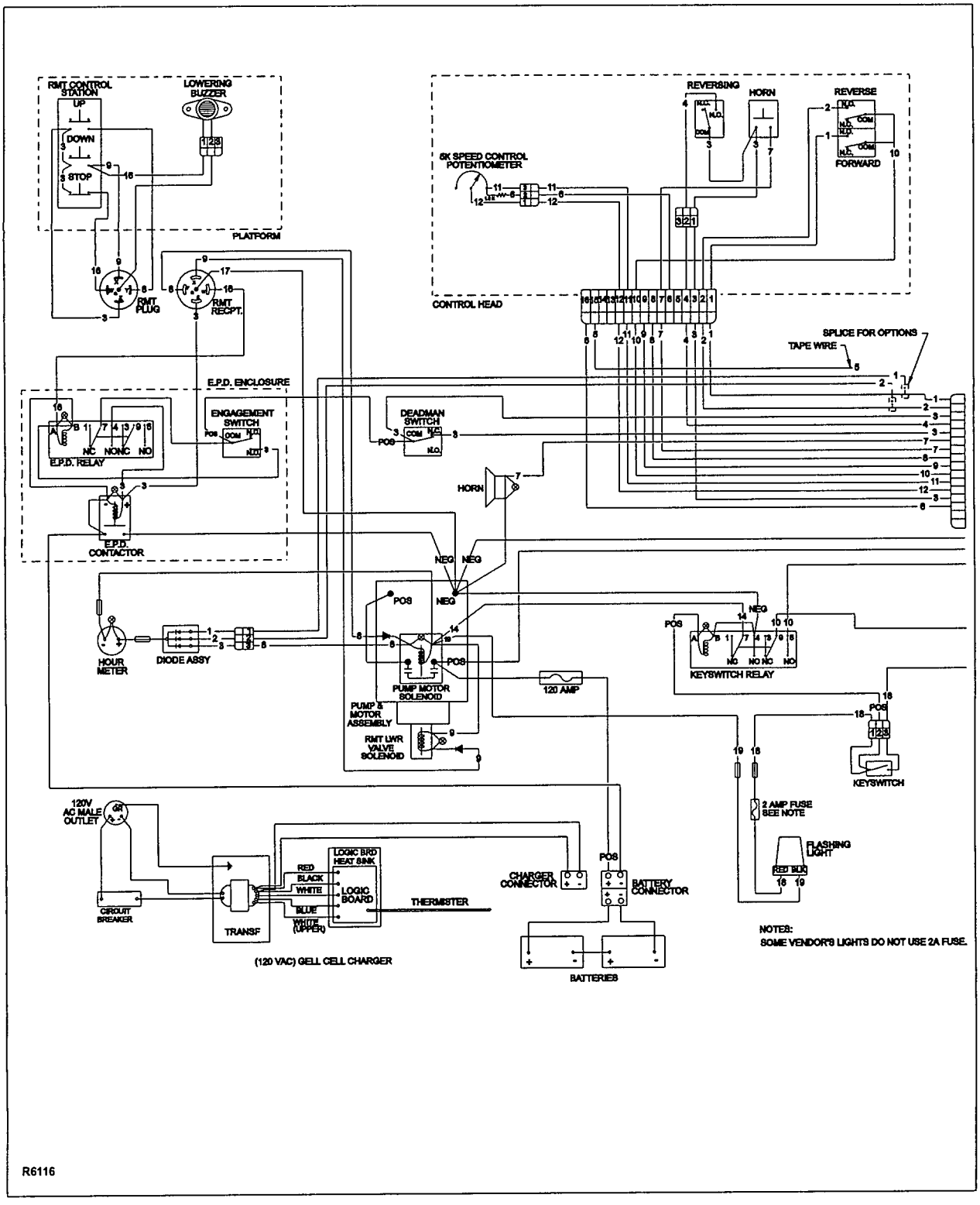



**Figure 7. Wiring Diagram Serial Number 372448 And Higher (Sheet 1)**

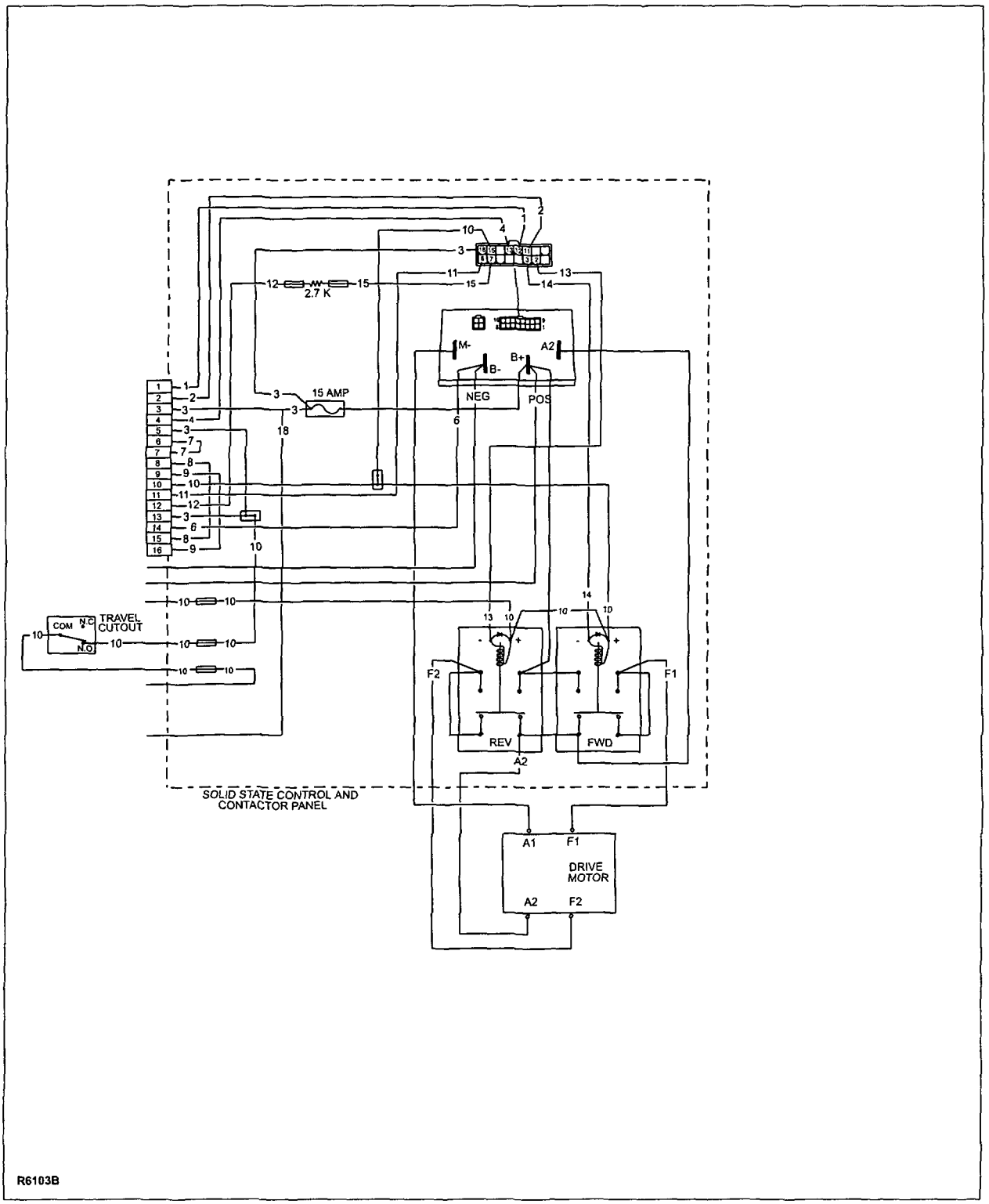
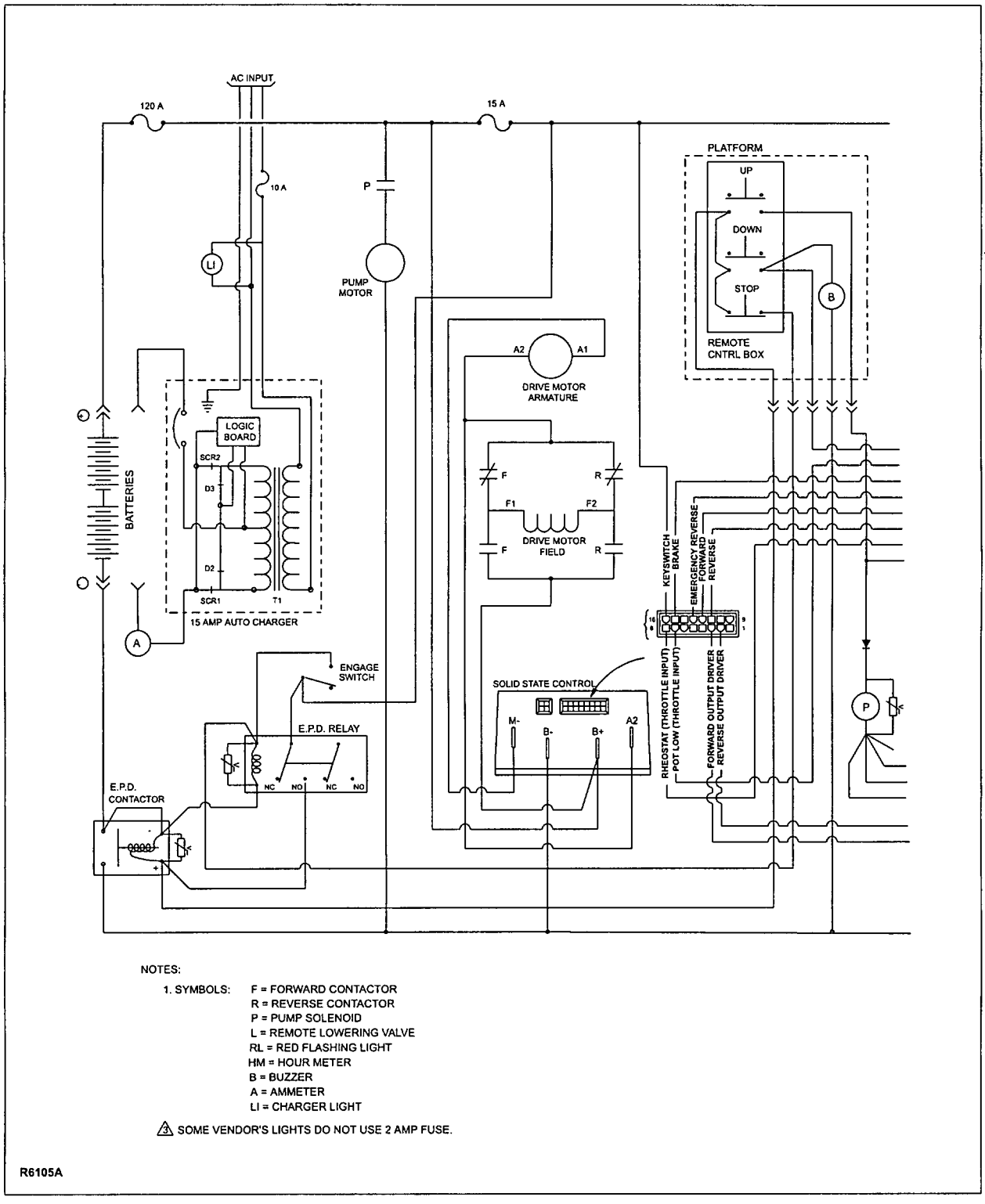



**Figure 7. Wiring Diagram Serial Number 372448 And Higher (Sheet 2)**




NOTES:

1. SYMBOLS:
   - F = FORWARD CONTACTOR
   - R = REVERSE CONTACTOR
   - P = PUMP SOLENOID
   - L = REMOTE LOWERING VALVE
   - RL = RED FLASHING LIGHT
   - HM = HOUR METER
   - B = BUZZER
   - A = AMMETER
   - LI = CHARGER LIGHT

3 SOME VENDOR'S LIGHTS DO NOT USE 2 AMP FUSE.

R6105A

**Figure 8. Electrical Schematic Prior to Serial Number 372448 (Sheet 1)**

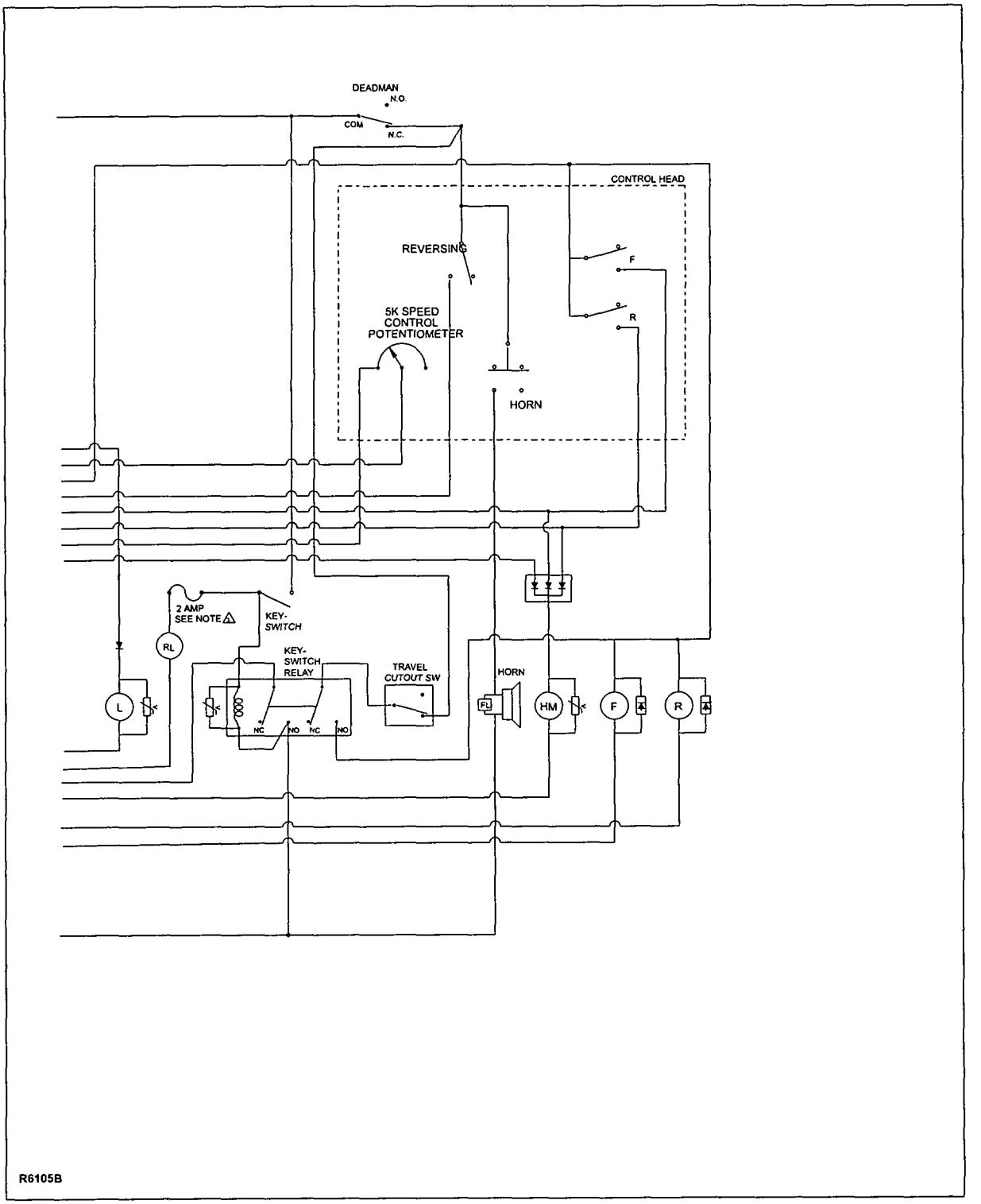



**Figure 8. Electrical Schematic Prior to Serial Number 372448 (Sheet 2)**

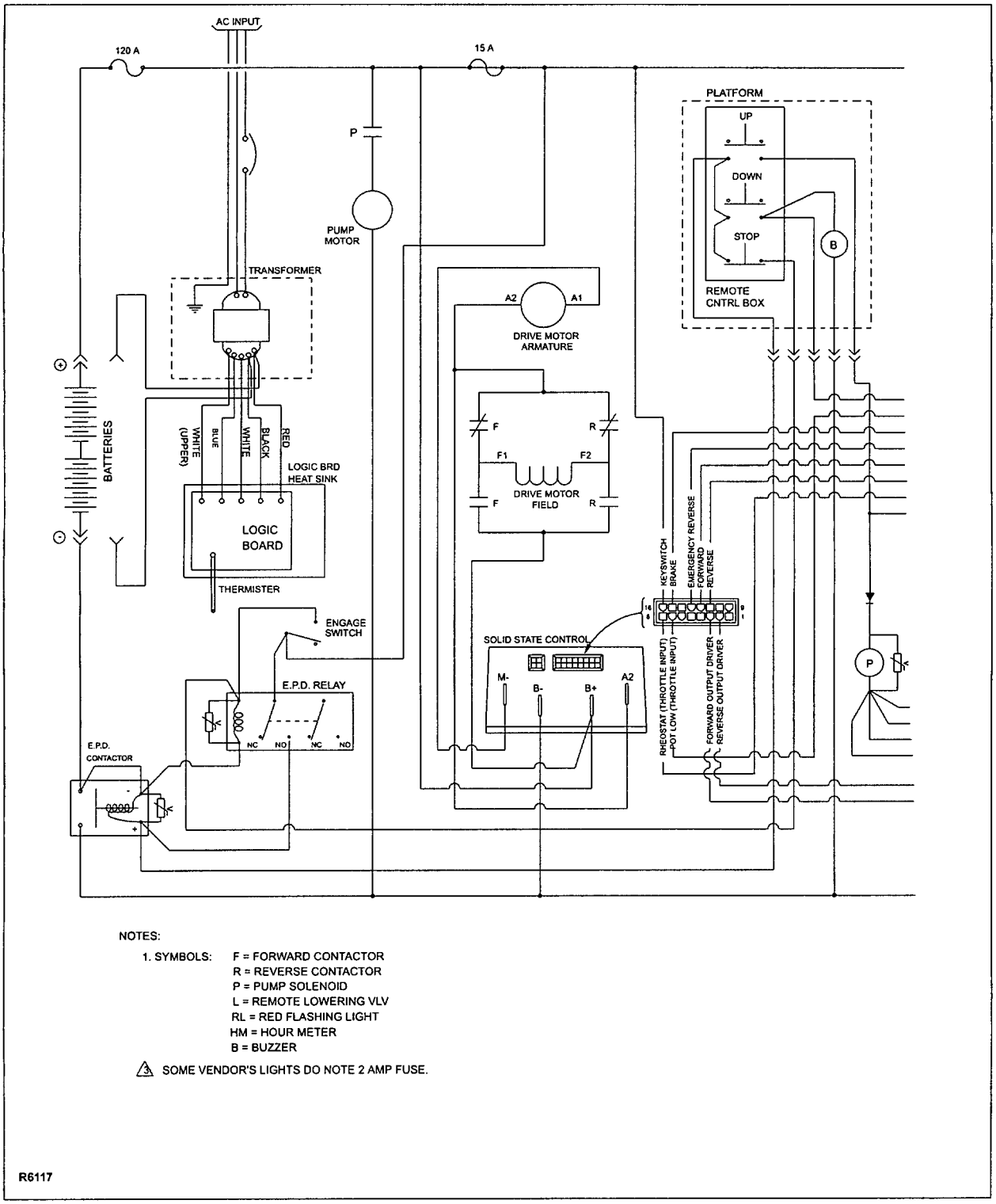



**Figure 9. Electrical Schematic Serial Number 372448 And Higher (Sheet 1)**

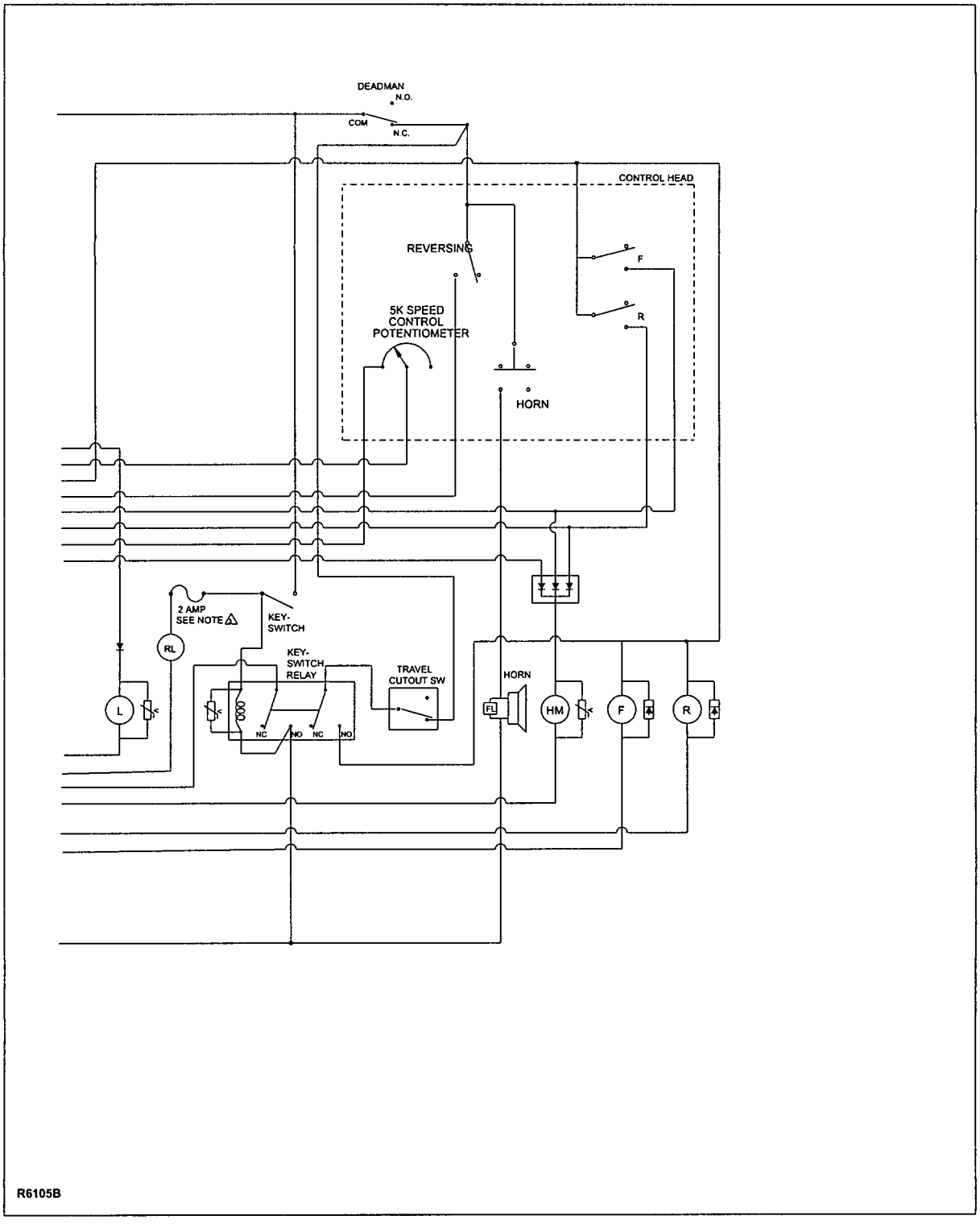



**Figure 9. Electrical Schematic Serial Number 372448 And Higher (Sheet 2)**

### 6.6. Electrical Control Panel

The 21543 electrical control panel is located inside the cover below the steering arm as shown in Figure 1. Refer to Figure 10 for disassembly and part number information.

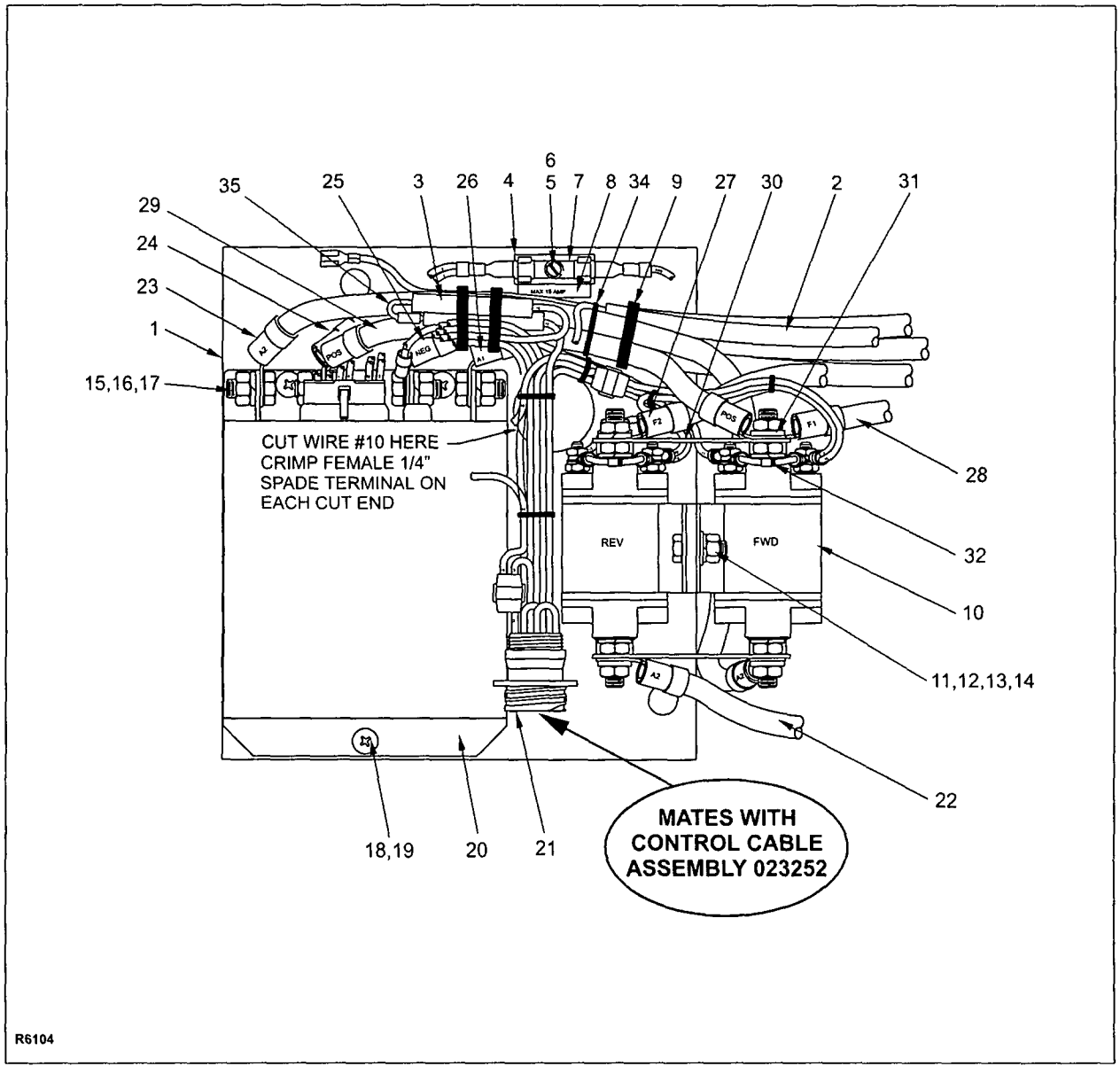



**Figure 10. Transistor Electrical Panel Assy.**

| INDEX NO. | PART NO. | PART NAME | NO. REQ. |
|---|---|---|---|
| | 21543 | PANEL ASSY-ELEC, TRANSISTOR | 1 |
| 1 | 505876 | . BACK PANEL ASSY | 1 |
| 2 | 505877 | . CABLE ASSY - TRAVEL CUT OUT | 1 |
| 3 | 005422 | . CONNECTOR, IN-LINE | 3 |
| 4 | 008904 | . FUSEHOLDER | 1 |
| 5 | 068177 | . SCREW-RH HD, 5-140 X 3/8 | 1 |
| 6 | 077203 | . WASHER-LOCK, SPLIT, #5 | 1 |
| 7 | 008910 | . FUSE, 15 AMP | 1 |
| 8 | 056504 | . DECAL, FUSE, 15 A | 1 |
| 9 | 056113 | . WIRE TIE - 8" LONG | 3 |
| 10 | 005667 | . CONTACTOR - DIRECTIONAL, SOLENOID, 24V | 2 |
| 11 | 063477 | . SCREW, HX HD, 1/4-20 X 5/8 | 2 |
| 12 | 077030 | . WASHER-FLAT, #10 | 2 |
| 13 | 077209 | . WASHER - LOCK, SPLIT, 1/4 | 2 |
| 14 | 059421 | . NUT - HEX, 5/16-20 | 2 |
| 15 | 063552 | . SCREW, HX HD, 5/16-18 X 5/8 | 4 |
| 16 | 077210 | . WASHER - LOCK, SPLIT, 5/8 | 4 |
| 17 | 059426 | . NUT-HEX, 5/16-18 | 4 |
| 18 | 071376 | . SCREW-TRUS HD, #10-32 X 1/2 | 3 |

| INDEX NO. | PART NO. | PART NAME | NO. REQ. |
|---|---|---|---|
| 19 | 077207 | . WASHER - LOCK, SPLIT, #10 | 3 |
| 20 | 907200-01 | . CONTROLLER - SPEED, 24V | 1 |
| 21 | 023251 | . HARNESS ASY - WIRE, PANEL | 1 |
| 22 | 5046411-40 | . CABLE ASY - REV CONTACTOR TO DRIVE MOTOR A2 | 1 |
| 23 | 504611-43 | . CABLE ASY - FWR CONTACTOR TO XSTR CONTROL A2 | 1 |
| 24 | 504611-38 | . CABLE ASY - XSTR CONTROL B+ TO PUMP SOL POS | 1 |
| 25 | 504611-37 | . CABLE ASY - XSTR CONTROL B- TO PUMP MOTOR NEG | 1 |
| 26 | 504611-27 | . CABLE ASY - XSTR CONTROL M- TO DRIVE MOTOR A1 | 1 |
| 27 | 504611-41 | . CABLE ASY - REV CONTACTOR TO DRIVE MOTOR F2 | 1 |
| 28 | 504611-41 | . CABLE ASY - FWD CONTACTOR TO DRIVE MOTOR F1 | 1 |
| 29 | 504611-42 | . CABLE ASY - FWD CONTACTOR TO XSTR CONTROL B+ | 1 |
| 30 | 403828 | . BUS BAR | 2 |
| 31 | 403548 | . BUS BAR | 2 |
| 32 | 055996 | . DIODE ASY - CONTACTOR | 2 |
| 33 | 021204 | . TERMINAL - SLIDE CLIP, 1/4 | 2 |
| 34 | 056111 | . TIE - WIRE, NYLON, 4" LG | 4 |
| 35 | 21548 | . RESISTOR ASSY - 2700 OHMS | 1 |

### 6.7. Flashing Red Light

The Flashing Red Light is located on the Mast as shown in Figure 1.

Refer to Figure 11 and Figure 12 for part number and wiring information. Older flashing lights have a bulb with two clips (See Insert A) and a fuse. Newer flashing lights have a bulb with one clip (See Insert B) and do not use the fuse.

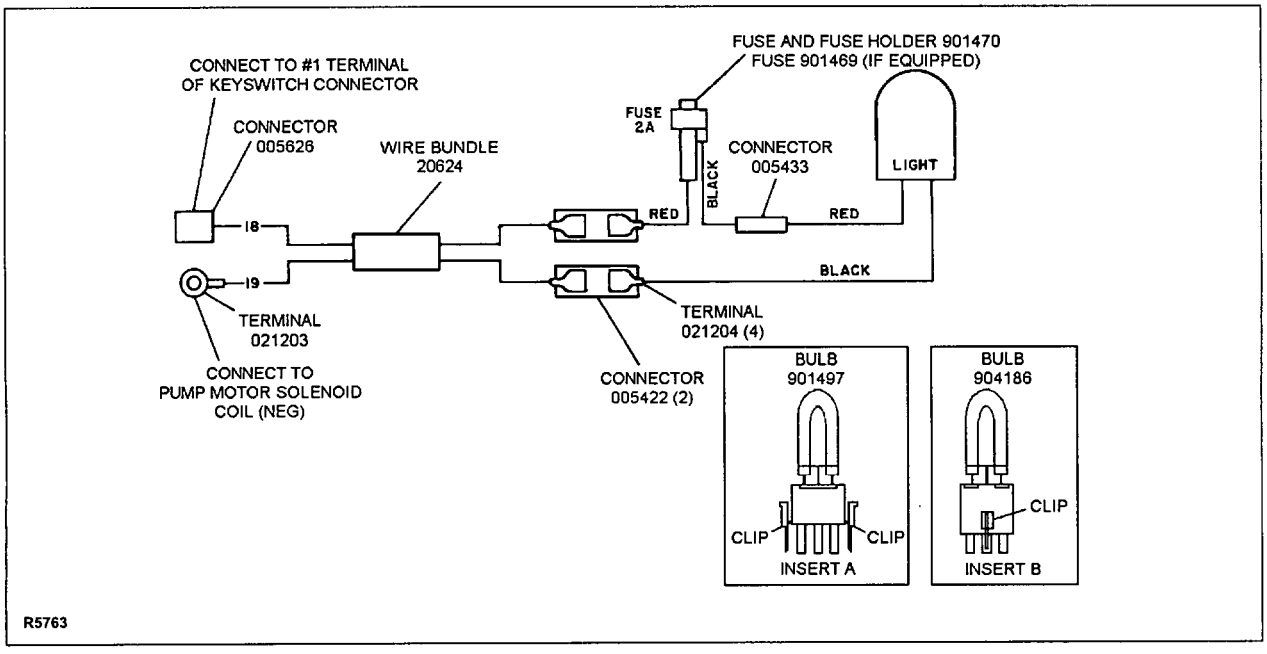



**Figure 11. Flashing Light Wiring Diagram**

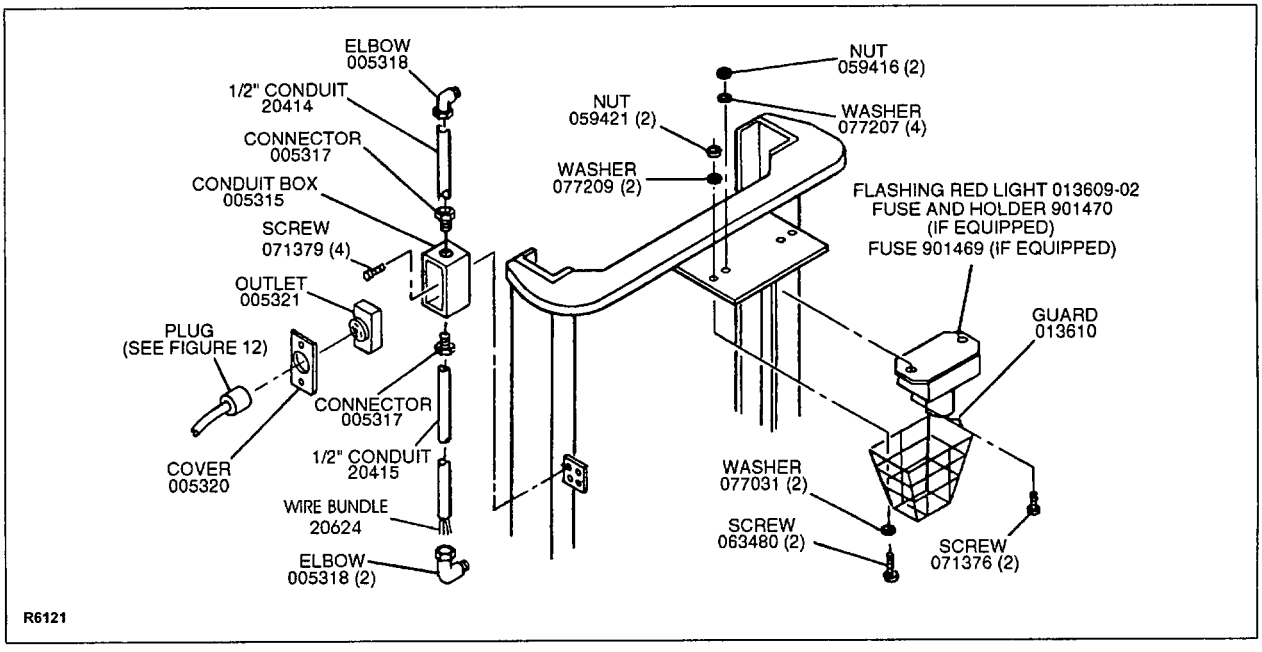



**Figure 12. Flashing Red Light and Remote Control Conduit**

### 6.8. Platform Remote Control Box

The Remote Control UP DOWN STOP push-button switch box assy 11151 is located on the Platform as shown in Figure 1.

Refer to Figure 12 and Figure 13 for part number and wiring information.

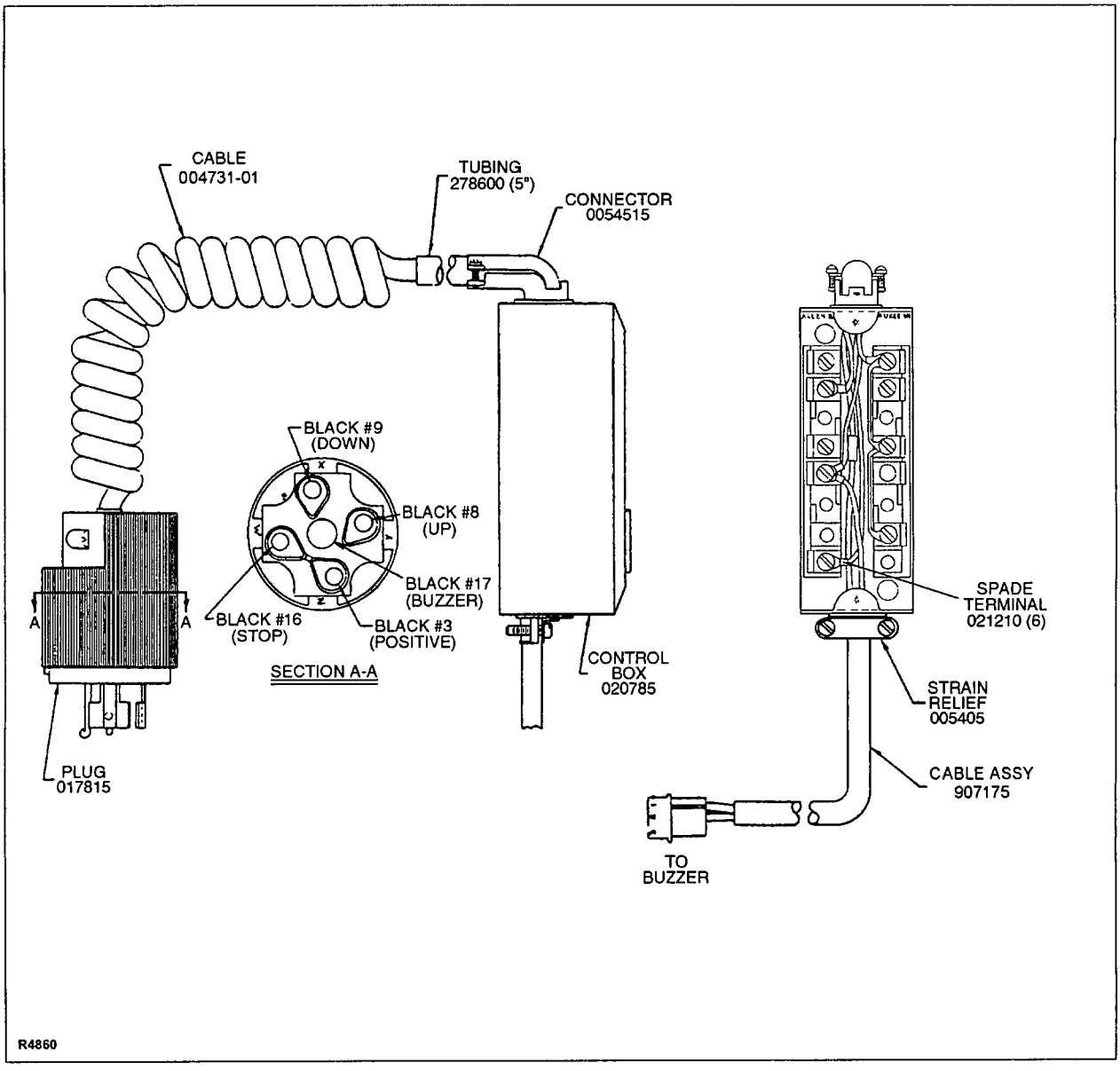



**Figure 13. Remote Control Box**

### 6.9. Platform Buzzer

The platform lowering buzzer housing is located near the front lower edge of the platform as shown in Figure 1. Refer to Figure 13 and Figure 14 for part number information.

#### 6.9.1. Spike Suppressor & Diode Assy

The 505837 suppressor and diode assembly is located on remote lowering valve solenoid which is mounted on the bottom of the hydraulic pump as shown in Figure 15.

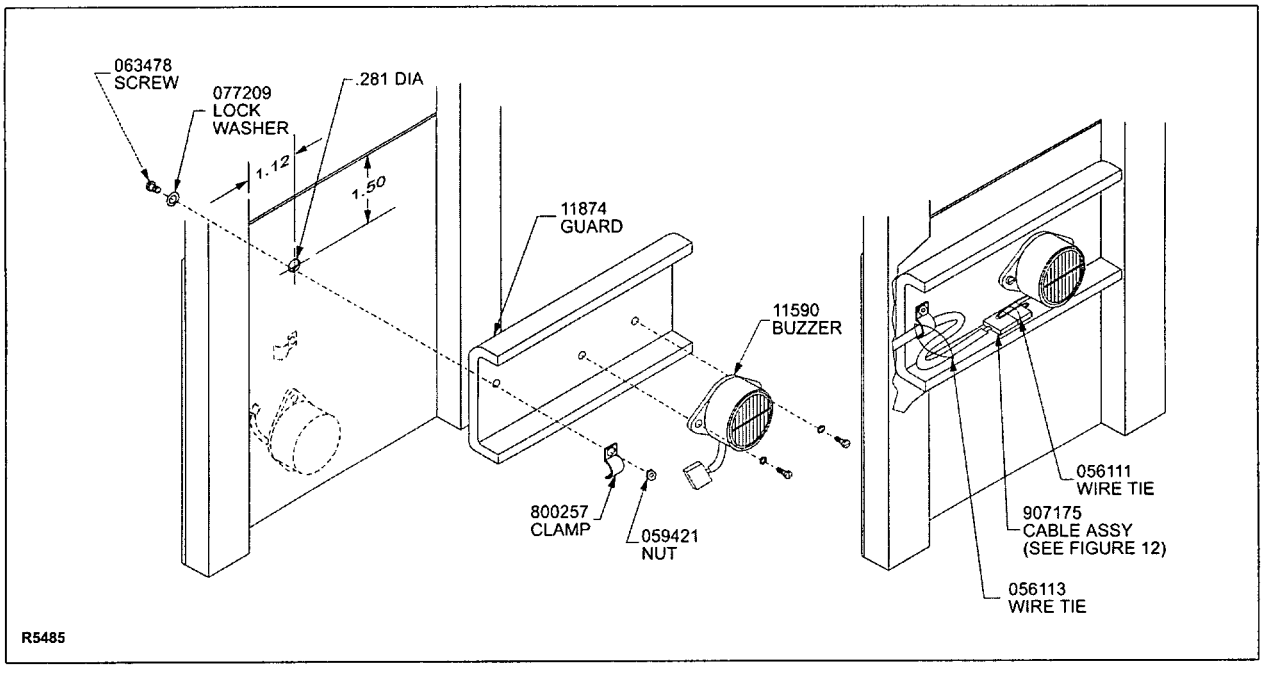



**Figure 14. Buzzer and Housing**

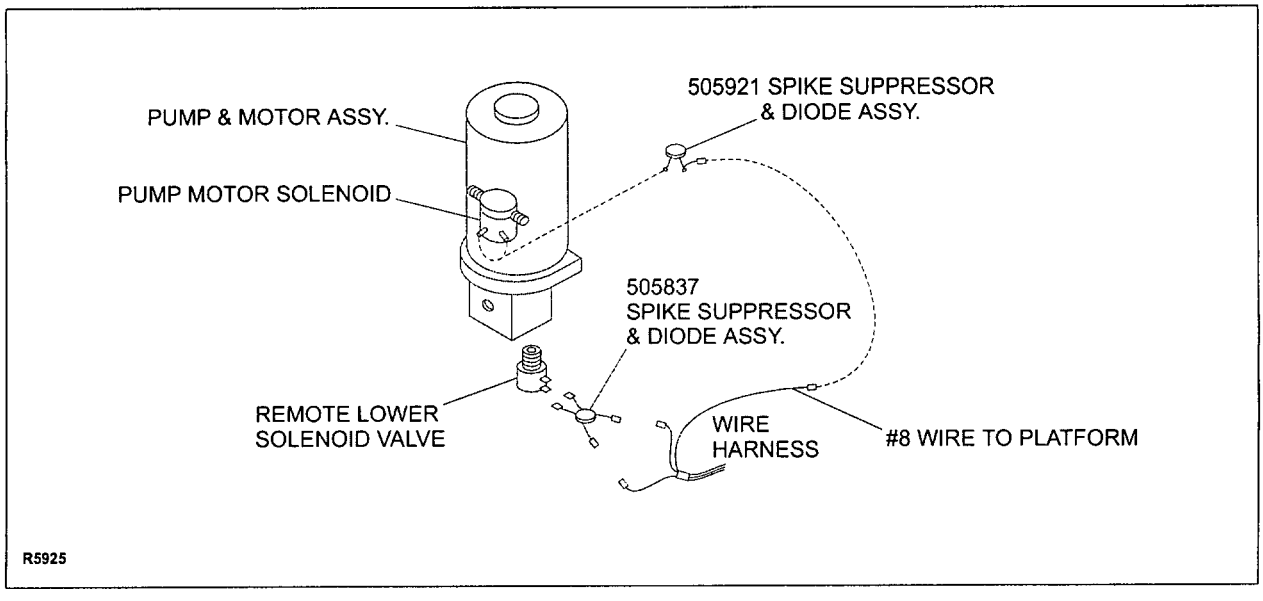



**Figure 15. Spike Suppressor & Diode Assys.**

### 6.10. Emergency Power Disconnect

The emergency power disconnect is located in front of the steering arm as shown in Figure 1. Refer to Figure 16 for part number information. Refer to Figure 17 for disassembly and part number information for the complete emergency power disconnect. Refer to Figure 18 for disassembly and part number information of the contactor.

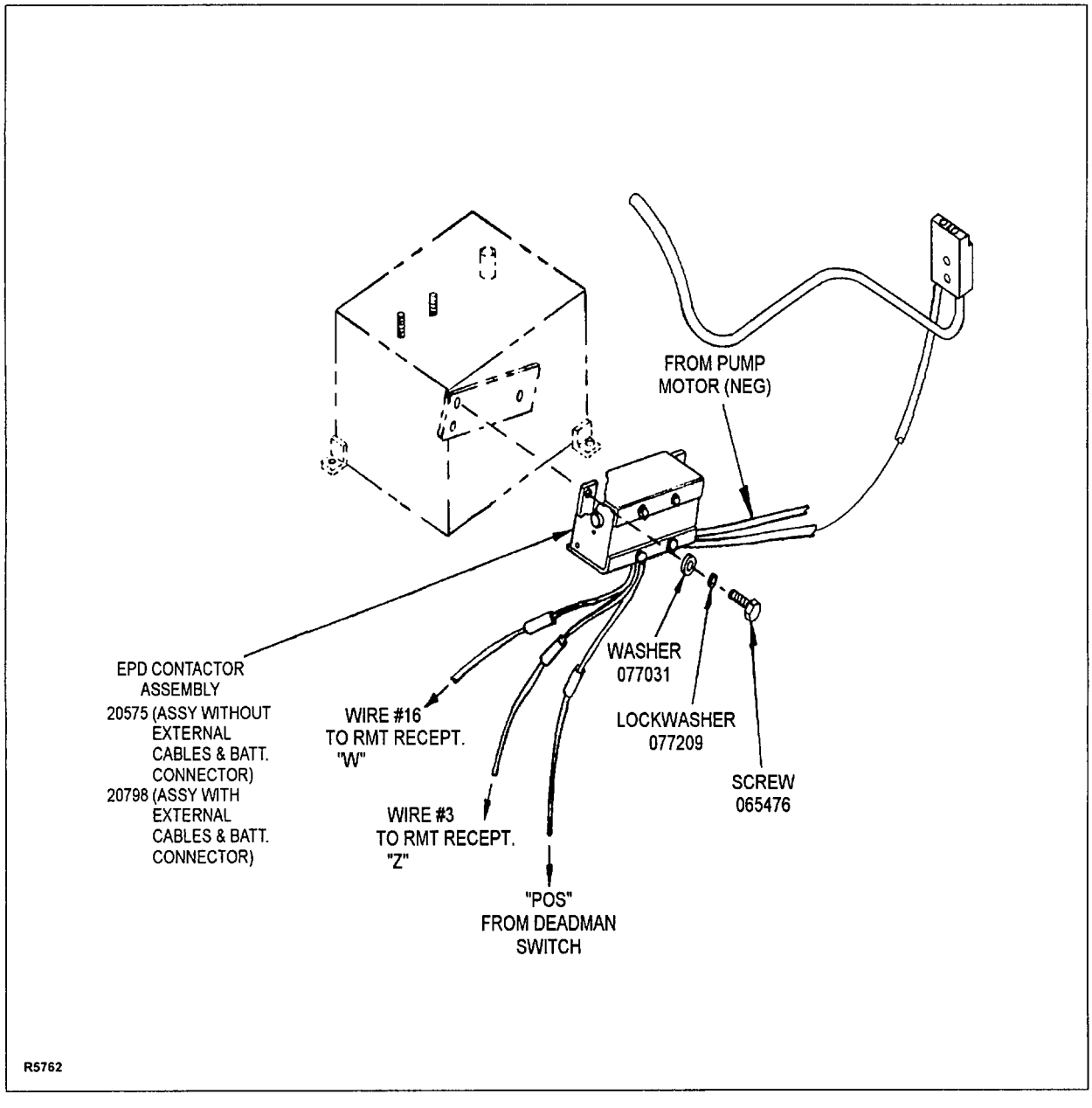



**Figure 16. Emergency Power Disconnect**

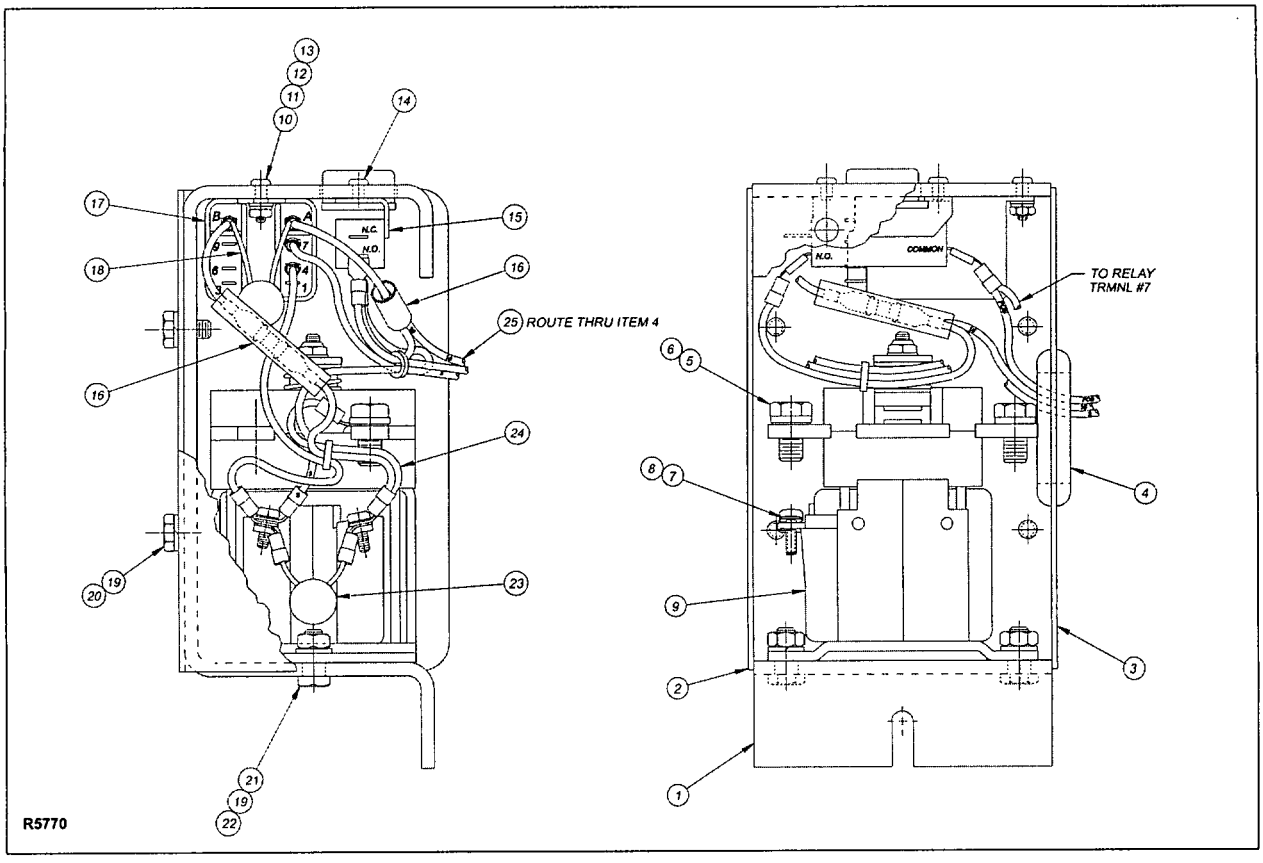



**Figure 17. Emergency Power Disconnect**

| INDEX NO. | PART NO. | PART NAME | NO. REQ. |
|---|---|---|---|
| | 20798 | CONTACTOR ASSY-EPD (WITH EXTERNAL CABLES & BATTERY CONNECTOR - SEE FIGURE 10) | 1 |
| | 20575 | . CONTACTOR ASSY-EPD (WITHOUT EXTERNAL CABLES & BATTERY CONNECTOR) | 1 |
| 1 | 20554 | . . BRACKET-MTG, CONTACTOR, EPD | 1 |
| 2 | 20555 | . . COVER-LH, MTG BRACKET | 1 |
| 3 | 20556 | . . COVER-RH, MTG BRACKET | 1 |
| 4 | 057511 | . . GROMMET, 1-1/2 ID | 1 |
| 5 | 077210 | . . WASHER-LOCK, SPLIT, 5/16 | 3 |
| 6 | 067440 | . . SCREW, HEX HD | 3 |
| 7 | 077205 | . . WASHER-LOCK, SPLIT, #8 | 2 |
| 8 | 067425 | . . SCREW | 2 |
| 9 | 903176 | . . CONTACTOR | 1 |

| INDEX NO. | PART NO. | PART NAME | NO. REQ. |
|---|---|---|---|
| 10 | 059412 | . . NUT-HEX, 6-32 | 2 |
| 11 | 077204 | . . WASHER-LOCK, SPLIT, #6 | 2 |
| 12 | 077007 | . . WASHER | 2 |
| 13 | 067416 | . . SCREW-PAN HD, #6-32 X 1/2 | 2 |
| 14 | 067415 | . . SCREW-PAN HD, #6-32 X 1/4 | 2 |
| 15 | 020698 | . . SWITCH-PUSHBUTTON, RED | 1 |
| 16 | 005422 | . . CONNECTOR-INLINE, INSUL | 2 |
| 17 | 018409-02 | . . RELAY-MOUNT, FLANGE, 24V | 1 |
| 18 | 505321 | . . SUPPRESSOR ASSY | 1 |
| 19 | 077209 | . . WASHER-LOCK, SPLIT, 1/4 | 6 |
| 20 | 065476 | . . SCREW-HEX HD, 1/4-20 X 1/2 | 4 |
| 21 | 059421 | . . NUT-HEX, 1/4-20 | 2 |
| 22 | 063477 | . . SCREW-HEX HD, 1/4-20 X 5/8 GR 5 | 2 |
| 23 | 504097 | . . SUPPRESSOR ASSY-SPIKE | 1 |
| 24 | 20578 | . . CABLE | 1 |
| 25 | 20570 | . . CABLE | 1 |

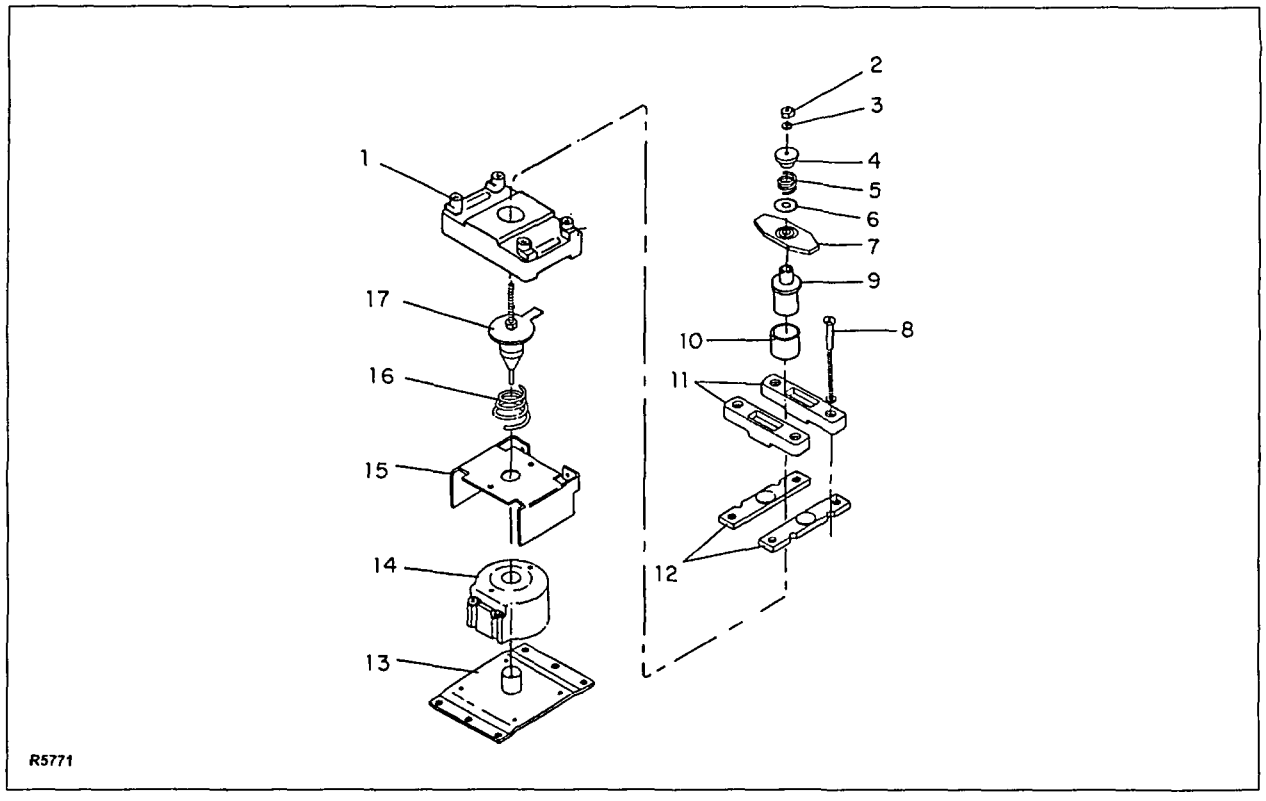



**Figure 18. Contactor**

| INDEX NO. | PART NO. | PART NAME | NO. REQ. |
|---|---|---|---|
| | 903176 | CONTACTOR | 1 |
| 1 | 903206 | . BUS BASE | 2 |
| 2 | — | . NUT | 1 |
| 3 | — | . WASHER | 1 |
| 4 | 903705 | . TIP SPRING RETAINER | 1 |
| 5 | 903106 | . SPRING, MOVABLE (GOLD) | 1 |
| 6 | 903166 | . SPRING SEAT | 1 |
| 7 | 903182 | . MOVABLE TIP ASSEMBLY | 1 |
| 8 | — | . MOUNTING SCREW | 4 |

| INDEX NO. | PART NO. | PART NAME | NO. REQ. |
|---|---|---|---|
| 9 | 903169 | . MOVABLE TIP CARRIER | 1 |
| 10 | 903172 | . PLUNGER BUSHING | 1 |
| 11 | 903208 | . CONTACT SPACER | 2 |
| 12 | 903179 | . BUS ASSEMBLY | 2 |
| 13 | 903180 | . MAGNET BASE ASSEMBLY | 1 |
| 14 | 903174 | . COIL | 1 |
| 15 | — | . MAGNET FRAME | 1 |
| 16 | 903178 | . RETURN SPRING | 1 |
| 17 | 903181 | . ARMATURE ASSEMBLY | 1 |

### 6.10.1. Emergency Power Disconnect Circuit Operation

The Emergency Power Disconnect (EPD) is designed to remove operating power from the truck quickly in an emergency. The circuit is shown in Figure 19. To apply power to the lift truck the Engagement switch must be pressed momentarily. To remove power quickly either the battery must be disconnected or the STOP button on the Remote Control switch box must be pressed momentarily. Circuit operation is as follows.

The negative side of the battery is connected to the following three points.

- One side of the EPD contactor coil which is deenergized at this time.
- One contact on the deenergized EPD contactor.
- One side of the EPD relay coil which is deenergized at this time.

The positive side of the battery is connected through the 120 Amp fuse then through the 15 Amp fuse to the common contact on the EPD Engagement switch. Initially both the EPD relay and the EPD Contactor are deenergized and the lift truck is inoperative.

When the EPD Engagement switch is pressed momentarily the positive battery voltage is applied through the switch to terminal A on the EPD relay. Since Terminal B is connected to the negative side of the battery, the relay is energized and contacts 4 and 7 close. This completes a circuit from the 15 Amp fuse through closed contacts 7 and 4 of the EPD relay to the (+) side of the EPD Contactor coil. The (-) side of the coil is connected to the negative side of the battery and the contactor energizes connecting battery negative to the pump motor where it is distributed to the other truck electrical circuits.

A holding circuit must be provided to keep the EPD relay and EPD Contactor energized, otherwise when the EPD Engagement switch is released these circuits would deenergize again opening the EPD contactor and deactivating the lift truck circuits. The STOP switch on the remote control provides this holding circuit. Note that when the EPD Relay contacts 4 and 7 close applying voltage to the EPD contactor coil, this voltage is also applied to one side of the STOP switch. The voltage passes through the normally closed contacts of the STOP switch and is applied to EPD relay terminal A. Now when the EPD Engagement switch is released a complete circuit to the EPD relay still exists keeping the relay energized. This path is now from battery positive through the 120 Amp fuse, through the 15 Amp fuse, through EPD relay contacts 7 and 4, through the closed STOP switch, to terminal A on the EPD relay. This keeps the EPD Contactor energized maintaining battery negative to the truck circuits.

When the STOP switch is pressed, the circuit to EPD Relay terminal A is opened and the EPD relay is deenergized, EPD Relay contacts 7 and 4 open and remove battery voltage from the EPD contactor, deenergizing the contactor. With EPD Relay contacts 7 and 4 open voltage is also removed from the STOP switch circuit. Thus when the STOP switch is released the EPD Relay and Contactor remain deenergized.

Pressing the STOP switch is the normal way of deenergizing the truck and setting the EPD to its initial condition with the EPD contactor open. Disconnecting the battery will also cause the EPD circuit to be deenergized and returned to its initial state.

Remember that the EPD circuit is energized initially by pressing the EPD Engagement switch momentarily and is held in the activated state by the holding circuit through the STOP switch.

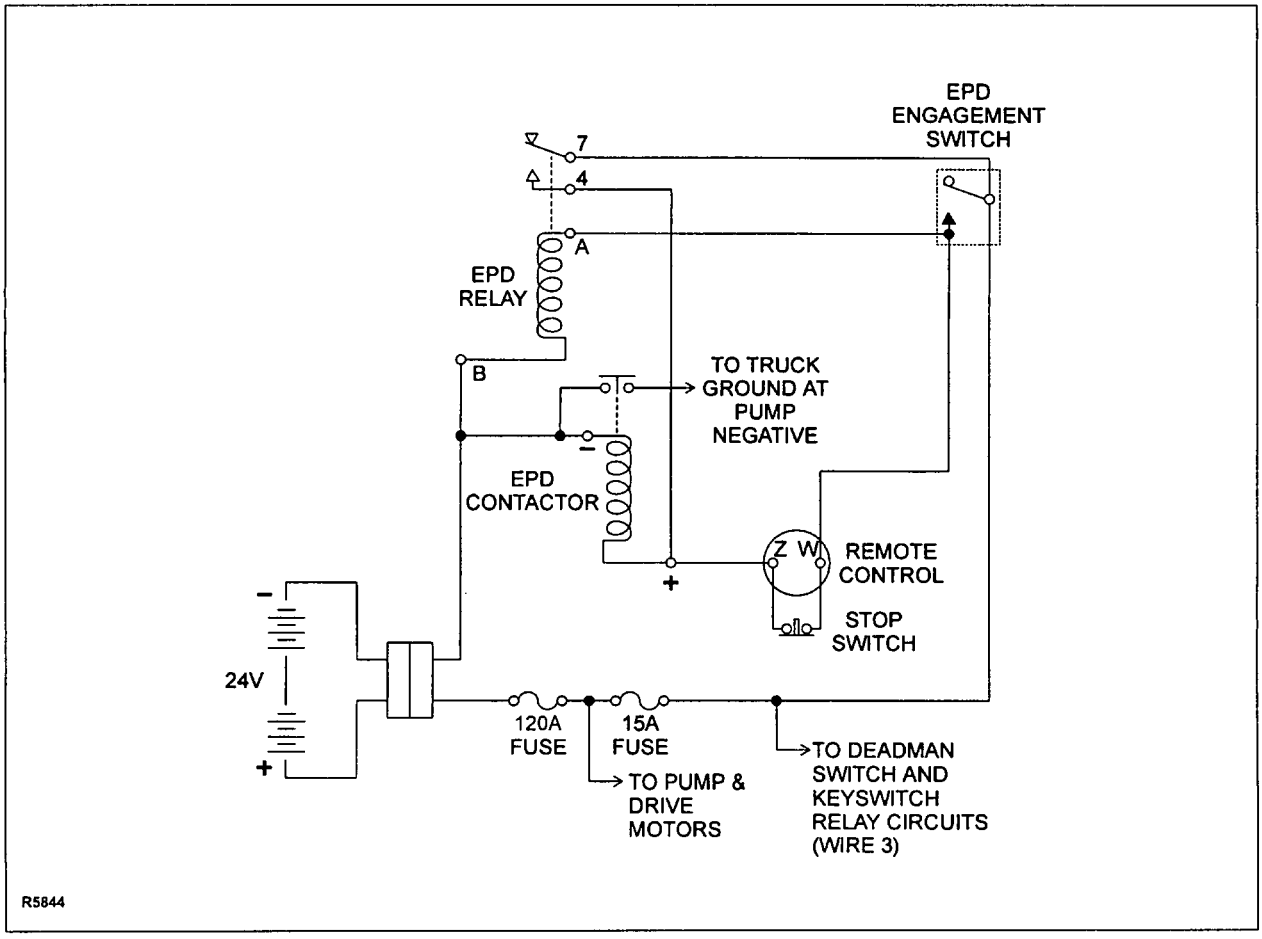



**Figure 19. Simplified Emergency Power Disconnect Circuit**

### 6.10.2. Emergency Power Disconnect Troubleshooting

Before trying to troubleshoot the EPD circuitry, read the Emergency Power Disconnect Circuit Operation, paragraph 6.10.1. Understanding the general overall function and operation will simplify isolating faults. The following troubleshooting information is based on using a multimeter set to measure DC voltage on a scale appropriate for measuring 24 Volts.

1. If the Emergency Power Disconnect will not engage, use the logic flow diagram, Figure 20, to isolate the faulty component
2. If the Emergency Power Disconnect does not disconnect when the STOP button is pressed, it will usually be a short in the STOP switch circuit or a faulty EPD contactor.
3. If the EPD Contactor does not open when the battery is disconnected, the EPD contactor should be replaced. You can check to see if the contactor is open as follows:
   a. Disconnect the battery from the truck.
   b. Set multimeter to measure continuity (low resistance).
   c. Connect multimeter across the EPD Contactor contacts (not the coil) and measure the resistance. If resistance is near "0" resistance the contactor contacts are not open and the contactor is faulty.

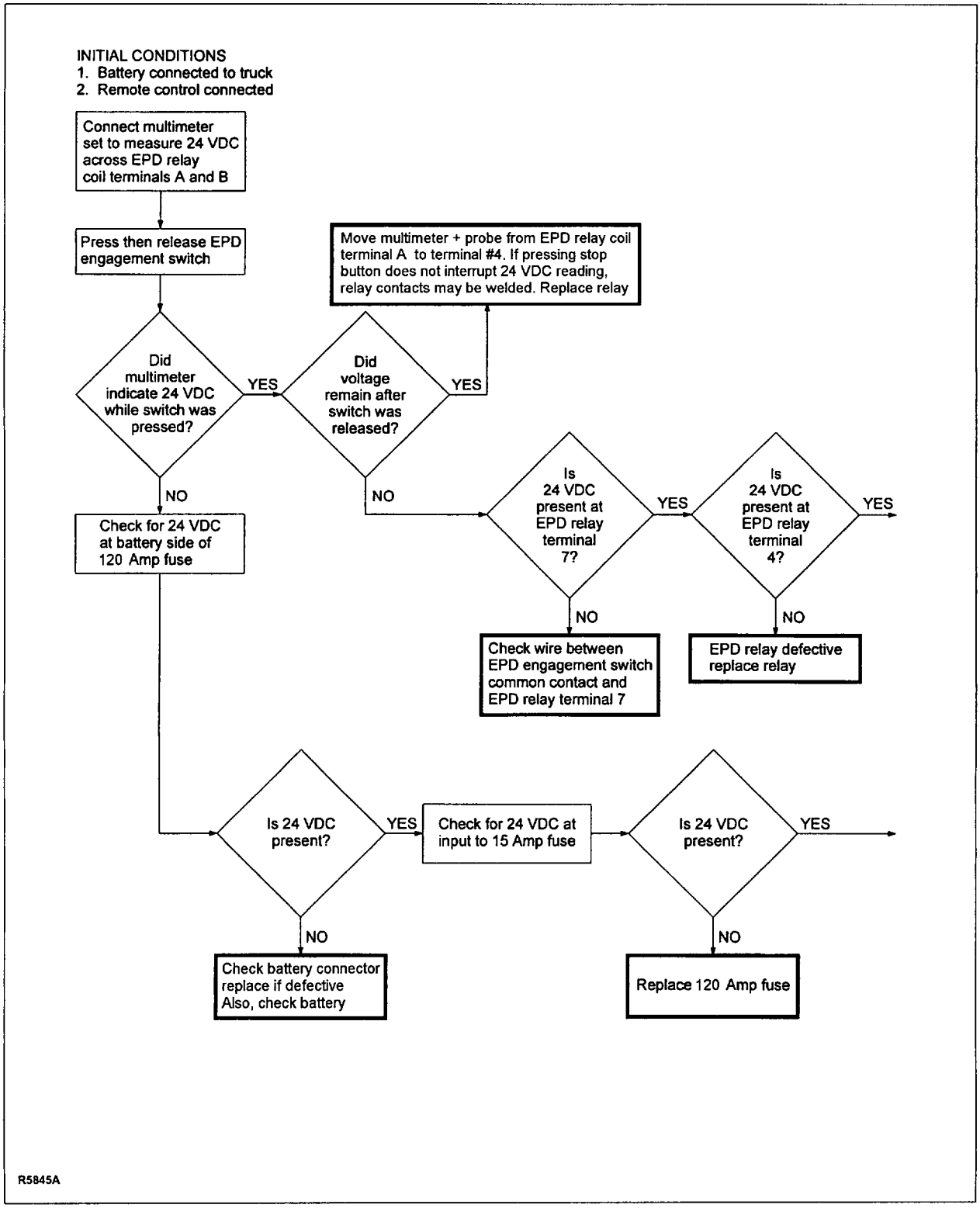



**Figure 20. Emergency Power Disconnect Troubleshooting Chart (Sheet 1)**

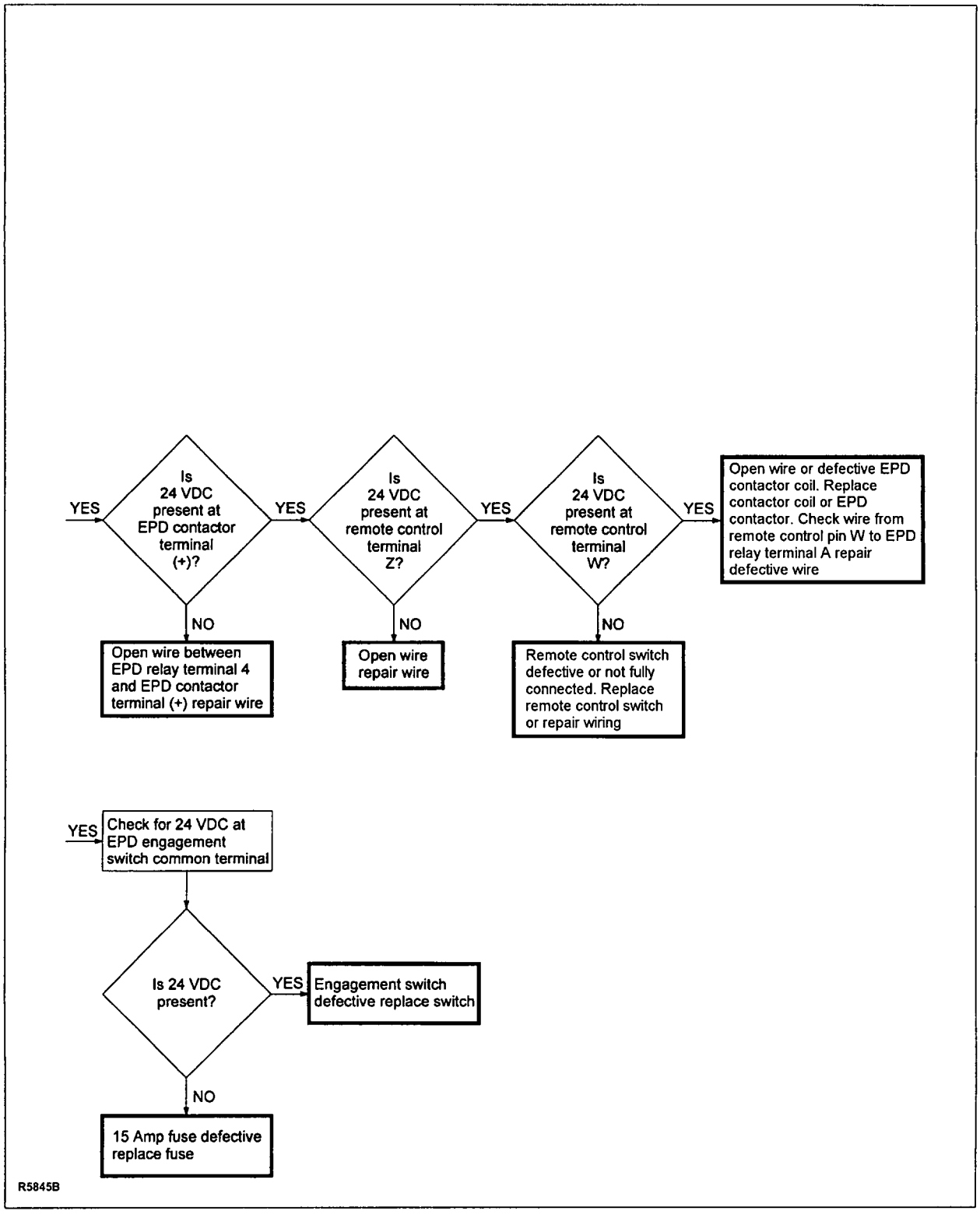



**Figure 20. Emergency Power Disconnect Troubleshooting Chart (Sheet 2)**

### 6.11. Hydraulic System

Refer to the basic PDI Manual No. 901355 for general hydraulic service information. Refer to Figure 21 in this document for the emergency lower valve.

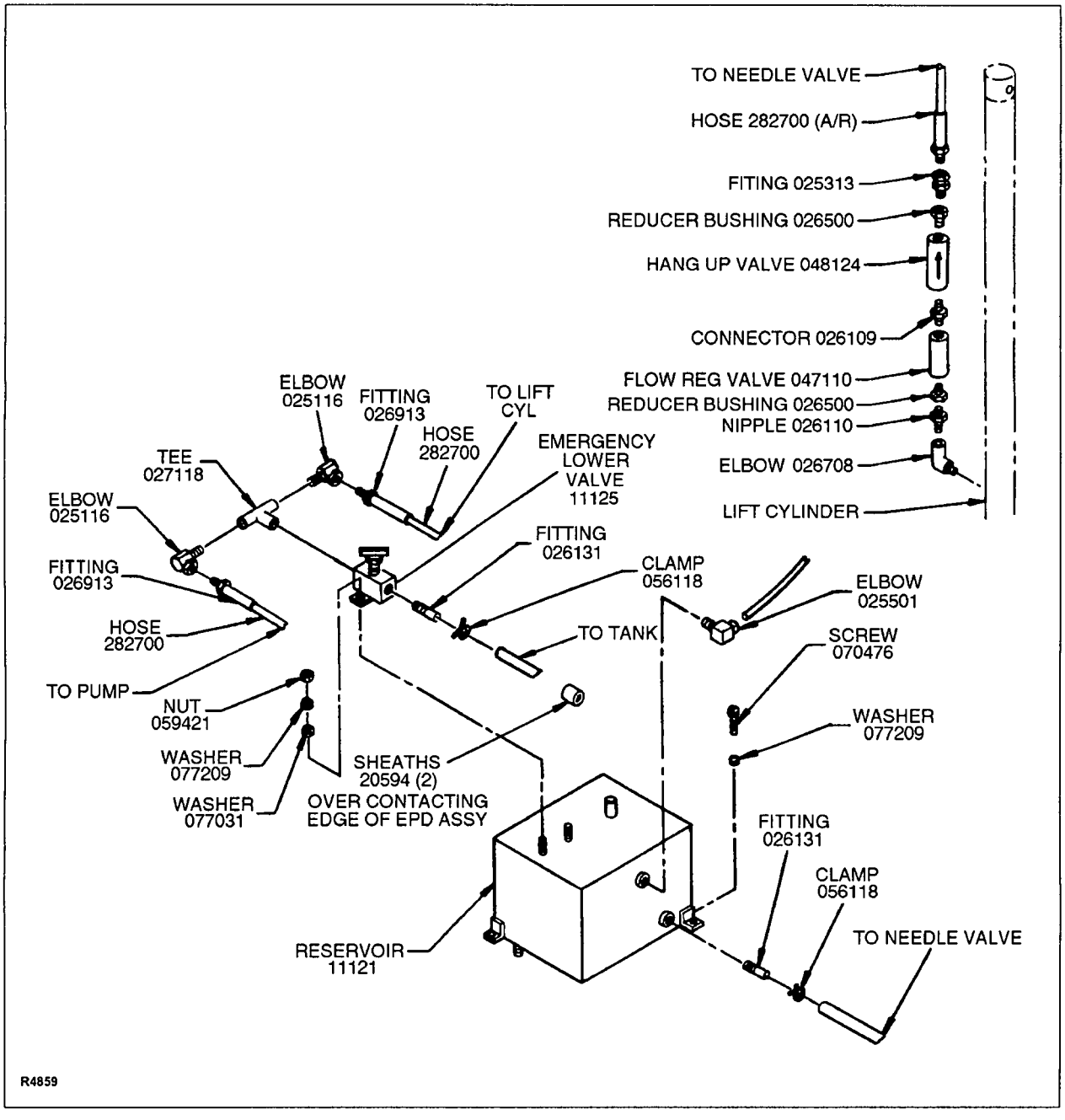



**Figure 21. Emergency Lower Valve**

### 6.12. Platform

The complete platform is shown in Figure 22.

### 6.13. Platform Chain Replacement (Figure 22)

Replacement chain is supplied in a 10' bulk length sufficient to replace all three platform chains. Count the number of links on the old chain and mark a length of new chain at that same number. Connect a rope snap to end of new chain with a cold shut formed closed. Temporarily connect the second rope snap to the marked length of new chain using a cold shut. Connect the rope snaps to the platform posts and measure the lowest part of the chain to the platform. If the connected chain hangs lower than 36" a link must be removed. Move the open cold shut one link, reconnect the chain and measure again. When the chain no longer hangs below 36", cut the chain and form the second cold shut to permanently connect chain end and rope snap.

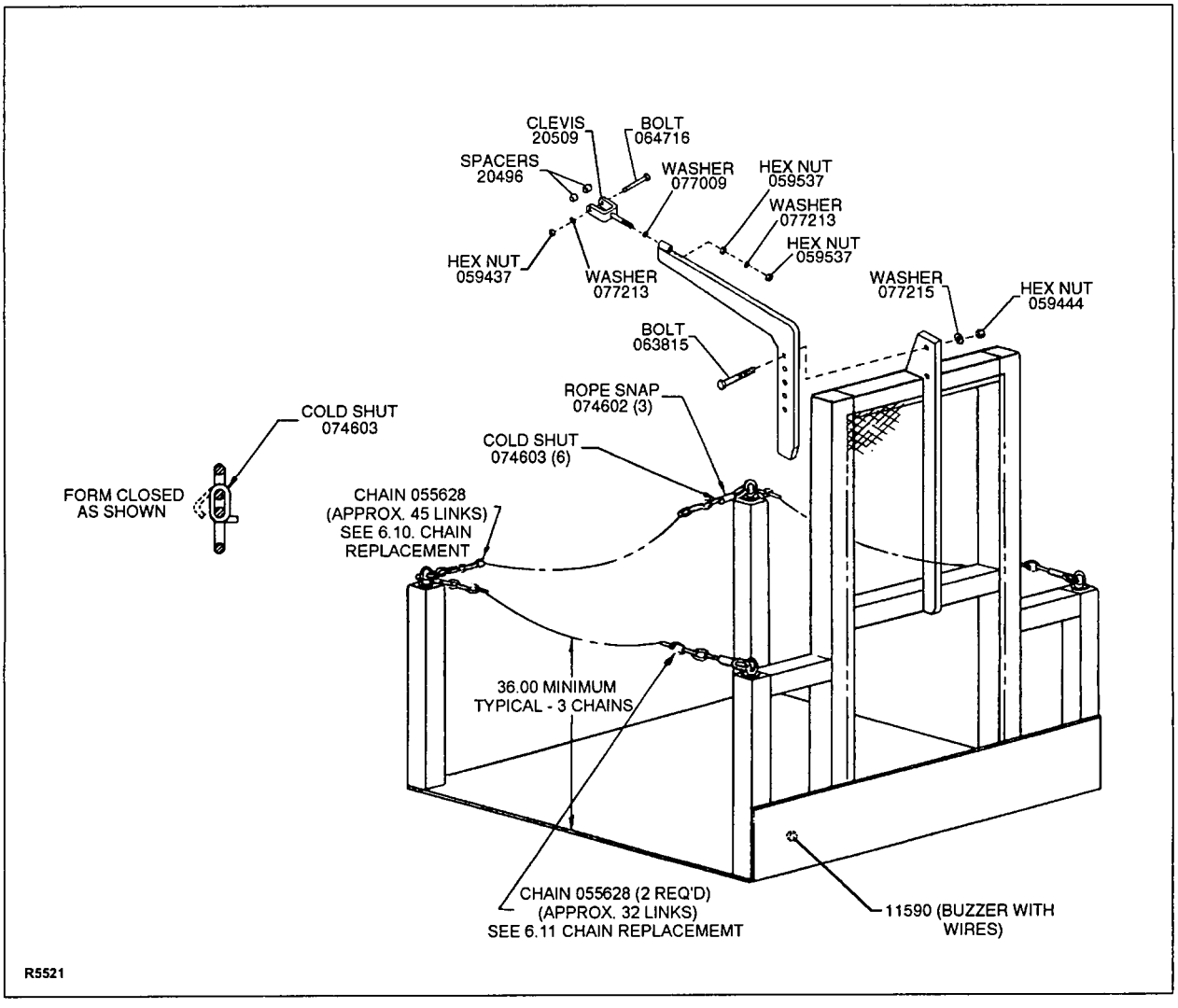



**Figure 22. Platform**