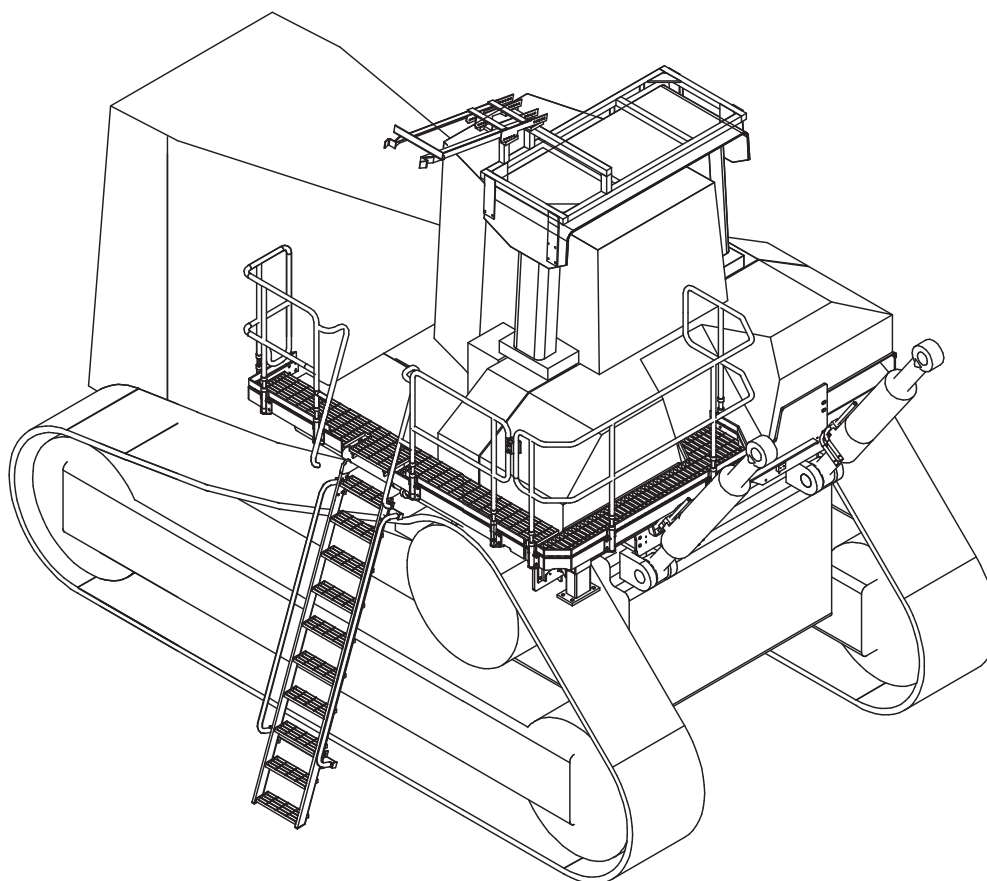


# FOLDING LADDER

## Manual for Cat D11R Dozer Half Rear Walkway

Includes HARNESS MASTER ELECTRICAL WIRING DETAILS AND DIAGRAMS.



Model No.PSA-D11R-FL  
Serial No.:LD11-001 to LD11-021  
Date Manufactured: Feb. 2003 to date

# FOLDING LADDER

## Caterpillar D11R Dozer (Half Rear Walkway)



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## Caterpillar D11R Dozer



### **Section 1 Installation and Mounting Instructions**

See Drawing 21-985 (Page 4)

#### **NOTE**

**Follow all on-site/Mine lifting and safety procedures when installing Power Step Landings to Dozer.**

#### **PROCEDURE**

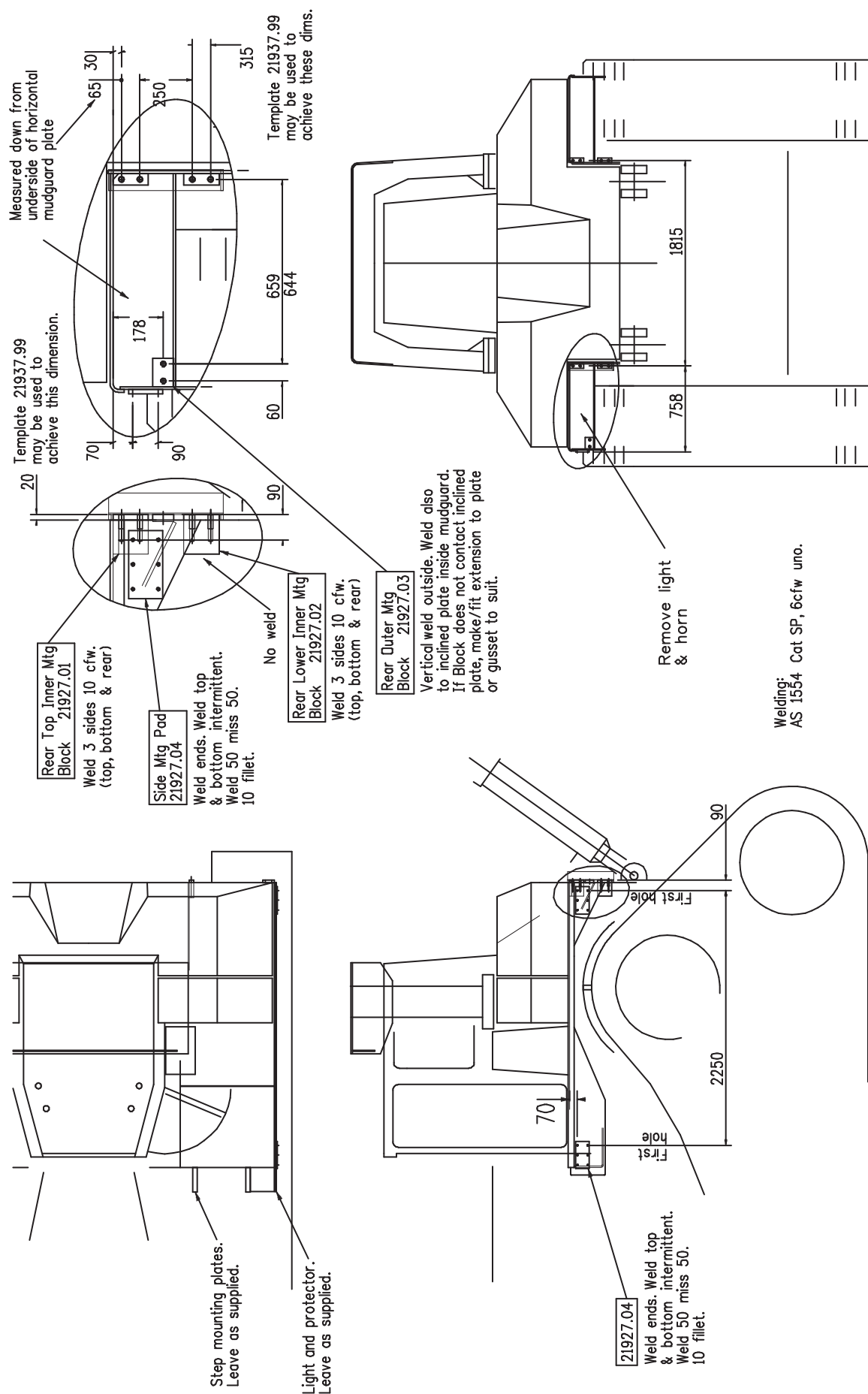
- 1 Remove grille plates from the rear of both mudguards.  
Remove the light and/or horn from the rear of the left-side mudguard.  
Draw out wiring for future re-use.
- 2 Weld the Mounting Pads to the rear of the mudguards, in the corners made by the mudguard top plate and vertical inner plate, and in the corner made by the rolled outer edge of the mudguard top plate. All the rear mounting pads fit hard against the folded rear mudguard infill. All these mounting pads have bevelled edges to clear existing welds in the corners.
- 3 Measure forward from the back surfaces of the rear mounting pads and down from the top surface of the mudguard decks to locate the side mounting pads. Weld these mounting pads in position.

# FOLDING LADDER

## Caterpillar D11R Dozer



### Installation and Mounting Instructions 21-985



# FOLDING LADDER

## Caterpillar D11R Dozer



### Installation and Mounting Instructions

See Drawings Page 6 and 7

### PROCEDURE

1. Fit Mounting Blocks per Drg **21-985**
2. Per View 2, Spreader Plate: Fit Spreader Plate **22 937** to rear mounting blocks. Use Washer Plates and washers under bolt heads - ensure maximum engagement of bolt threads in blind threaded holes. Washer Plates not shown in most Views in this drawing.
3. Fit Isolator Brackets: **21 930** (See View A).  
Fit Side Landing Beam **22 970** with Ladder Shaft and Drive already assembled, supported by Isolators.
4. Fit Ladder. Using Spacers (within Actuator Cylinder Mounting **21 954**), adjust drive so gears are not loaded when ladder is lowered.  
Clamp PROP Mtg Beams in position shown in View 1 and mount PROP **21 945**  
Adjust position so that, with PROP attached to Isolators ladder gear drive is not loaded when ladder is fully raised. Attach PROP System Mounting Frame **21 987** atop cabin, on ROPS unless similar is already fitted by customer.  
Weld Beams to Frame, 6cfw where visible from above
5. Per Drawings Complete Assembly and PROP System.
6. Fit Rear Walkway. Fit Handrails.

### NOTES.

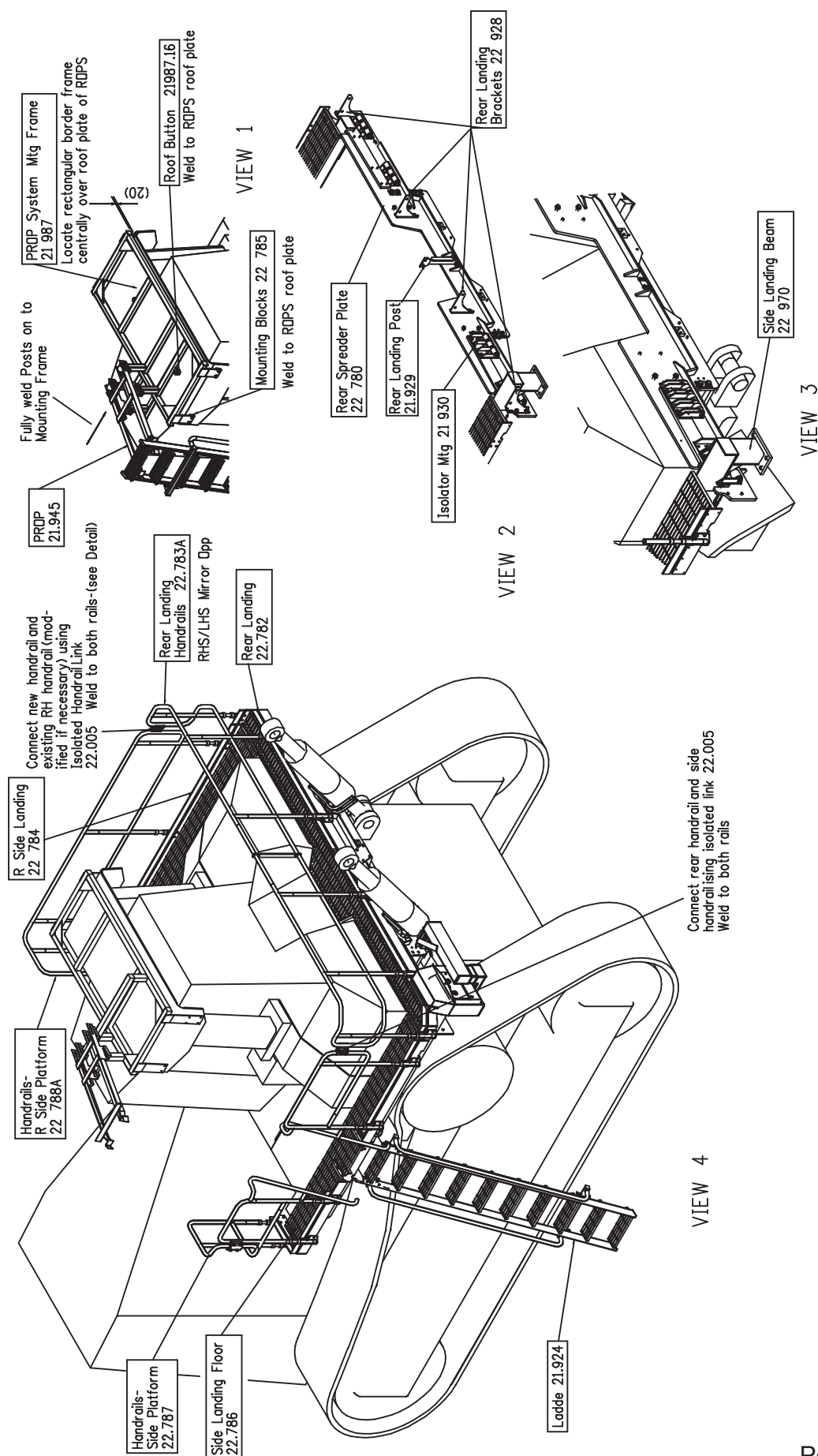
The drive, ladder stops and/or PROP system are to be adjusted so that in both the Ladder Up (Travel) position and Ladder Down (Climb) position, the actuator gears and cylinder are not loaded.

# FOLDING LADDER

## Caterpillar D11R Dozer



### Section 1 Installation Instruction Drawings - 21.986 Page 1

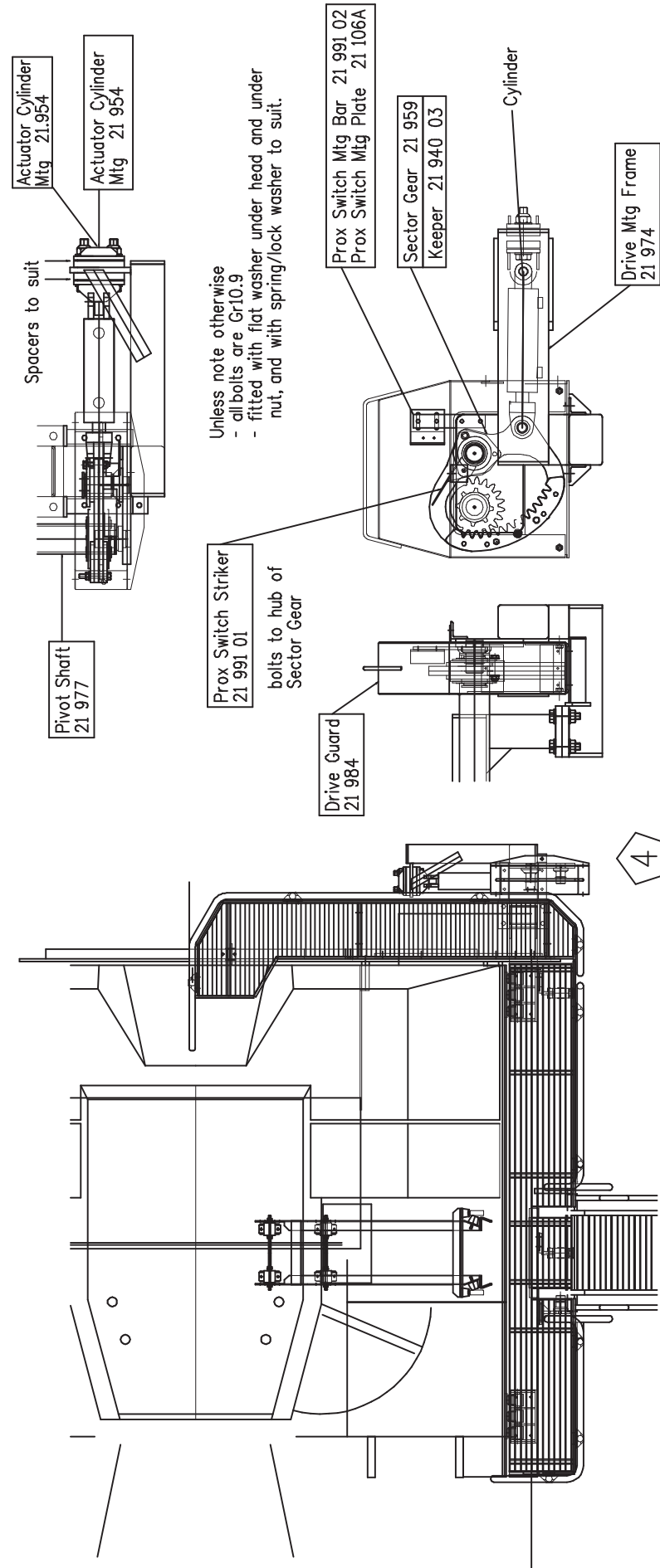


# FOLDING LADDER

## Caterpillar D11R Dozer



### Section 1 Installation Instruction Drawings - 21.986 Page 2



DRIVE ARRANGEMENT

# FOLDING LADDER

## Caterpillar D11R Dozer



### Section 1 Installation and Mounting Instructions (cont.)

#### Maintenance Notes

#### **NOTE**

**Follow all on-site/Mine lifting and safety procedures when installing Power Step Landings to Dozer.**

#### **WARNING**

Raising the POWER STEP Landing by external means can create a vacuum in the hydraulic cylinder and create the opportunity to allow air into the hydraulic system, defeating the inherent safety features of the POWER STEP.

This must be avoided, to maintain safe operation of the POWER STEP.

In instances where the use of external means to raise the landing must be used, please follow the following instructions:

Loosen hard plumbed hydraulic lines on cylinder side of lock valve on cylinder.

Raise landing by available means.

Note: Make necessary arrangements to collect displaced oil, and be aware that air enters the piston side of the cylinder as landing is raised.

Lock in raised position.

Re-tighten hydraulic fittings.

**SECURE THE LANDING IN THE RAISED POSITION, MECHANICALLY, CHAIN & TAGOUT THE POWER STEP**

To recommission the POWER STEP:

Loosen hydraulic fittings on cylinder side of lock valve.

Note: Collect displaced oil.

Lower landing to lowest position, using alternate safety approved means, fully retracting cylinder. Ensure all personnel are clear of step radius.

Operate electrical control switch to purge air from the hydraulic line systems, lock valve and cylinder.

Tighten the hydraulic fittings either side of lock valve to restriction fitting.

Cycle step unloaded several times to purge all air from hydraulic system.

The Power Step will not operate correctly if there is any air in the hydraulic circuit (due to the incorrect operation of the lock valve).



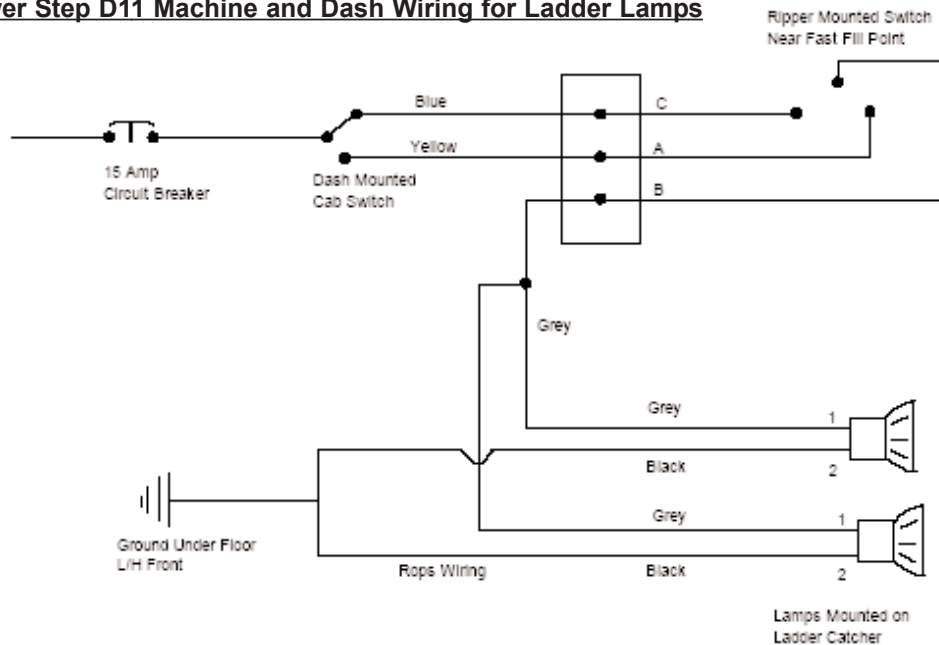
# FOLDING LADDER

## Caterpillar D11R Dozer

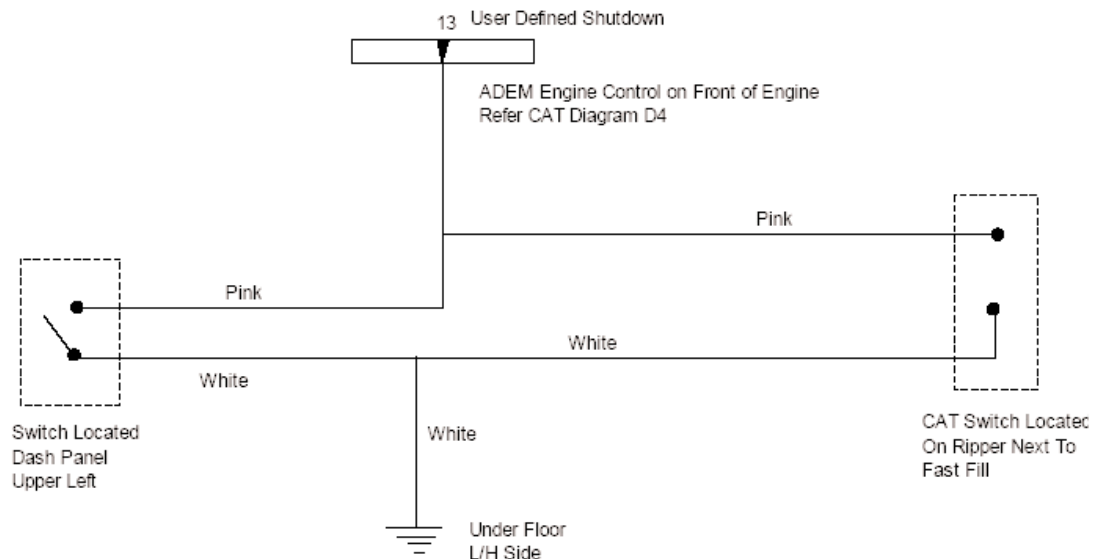


### Electrical System - Wiring Diagram Page 1

#### Power Step D11 Machine and Dash Wiring for Ladder Lamps



#### Power Step D11 Shutdown Circuit

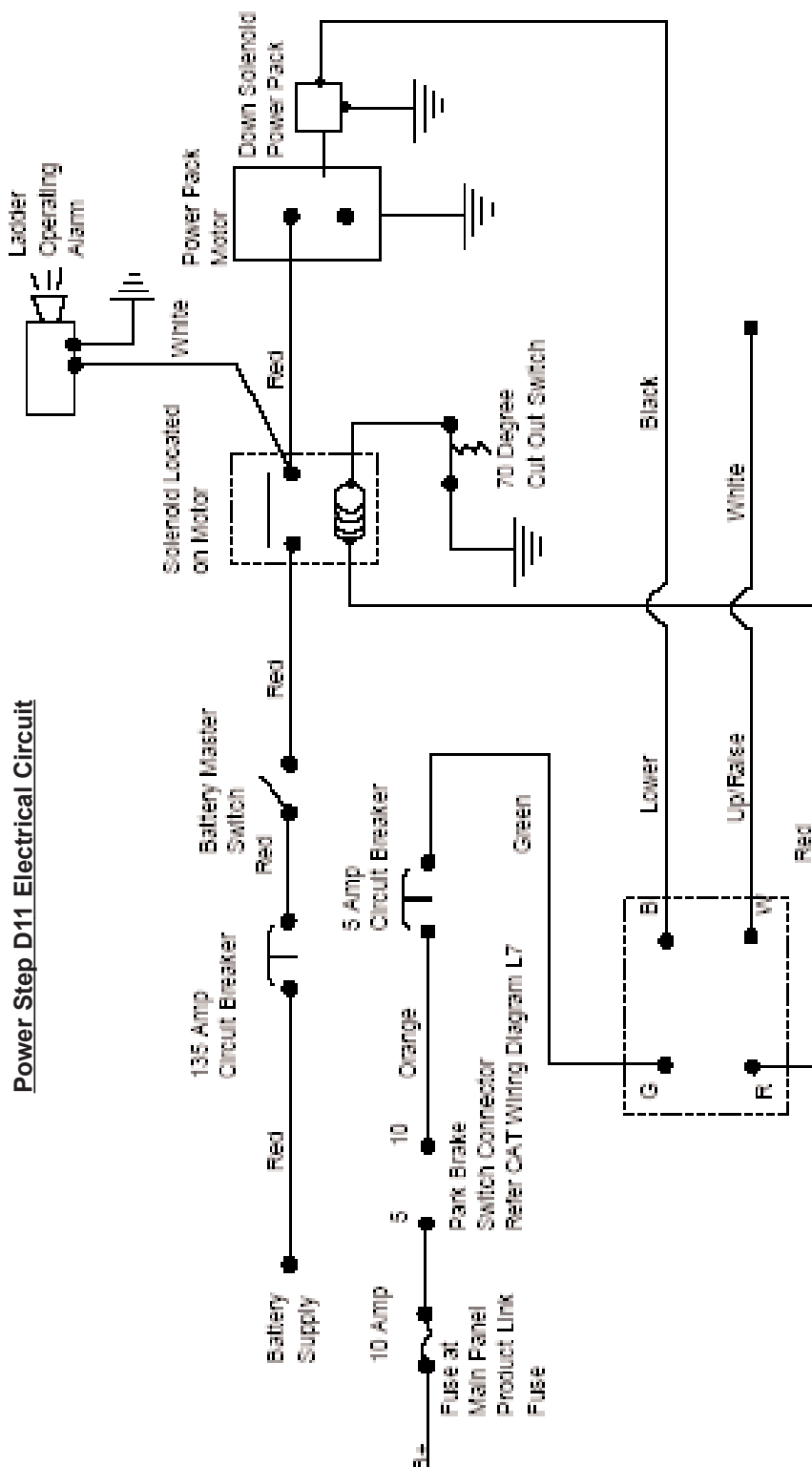


# FOLDING LADDER

## Caterpillar D11R Dozer



### Electrical System - Wiring Diagram Page 2



# **FOLDING LADDER**

## **Caterpillar D11R Dozer**



### **Section 3 Recommended Maintenance Procedure**

#### **Daily**

**Visually check ladder and structure for damage, loose components, handrails, etc.**

**Check for hydraulic oil leaks from hydraulic cylinders, plumbing and hoses.**

**Notify the appropriate supervisor for any observed damage or malfunction.**

#### **500 Hours**

Grease the nipples on the rotation shaft and sector gears.

Check main mounting bolts for torque.

Check hydraulic oil level in power pack and top up as necessary. (Ladder in raised position).

Top up using same hydraulic oil as used in hydraulics of machine.  
Thoroughly check all electrical wiring for damage, replace as necessary.

**Repeat daily check as above**

#### **5000 Hours**

Change hydraulic oil in tank of hydraulic power pack (5.0 litres)

It is recommended that the same hydraulic oil be used in the power pack as the hydraulics of the machine.

Grease 4 grease nipples on rotation shaft and sector gears, all of these are accessible with the ladder lowered, and accessed from under the ladder.

Check and inspect all main bolts on ladder system.  
Retorque if required.

**Repeat daily check as above**

# FOLDING LADDER

## Caterpillar D11R Dozer



### Section 4 Operating Procedure

#### **To Lower Ladder (from the machine)**

Position machine in a level, safe area, away from the work face, whenever possible.

Apply park brake and lower engine speed to idle.

Check that the area below the Ladder Access System is clear of people and obstacles, and lower ladder by operating the two position electrical switch adjacent to the ladder, to the down position by pressing the switch down.

Hold the switch in the down position until ladder is fully lowered.

If the Dozer is parked on uneven ground, the bottom of the ladder may touch the ground before the ladder is in the fully lowered position.

Should this occur, descend the ladder with caution.

#### **To Raise Ladder**

Ascend the ladder onto the landing of the Dozer.

Ensure the area around the ladder is clear of people and standing to the side, clear of the area the handrails and ladder raises into, operate the electrical switch to the raise position (up).

Hold the switch in the up position until the ladder is in the fully raised position.

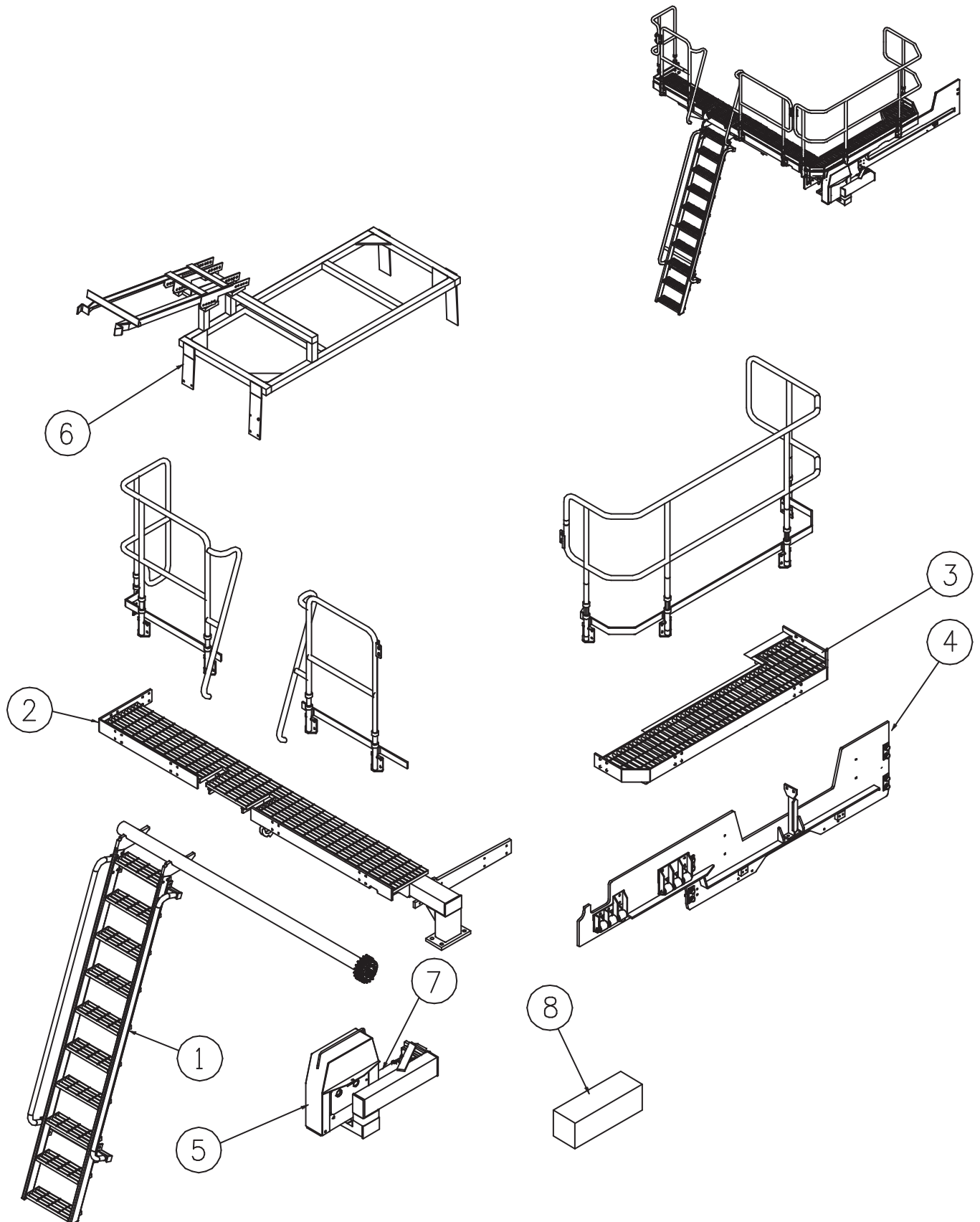
The ladder is now raised and stored.

# FOLDING LADDER

## Caterpillar D11R Dozer



### Section 5 Assembly Complete

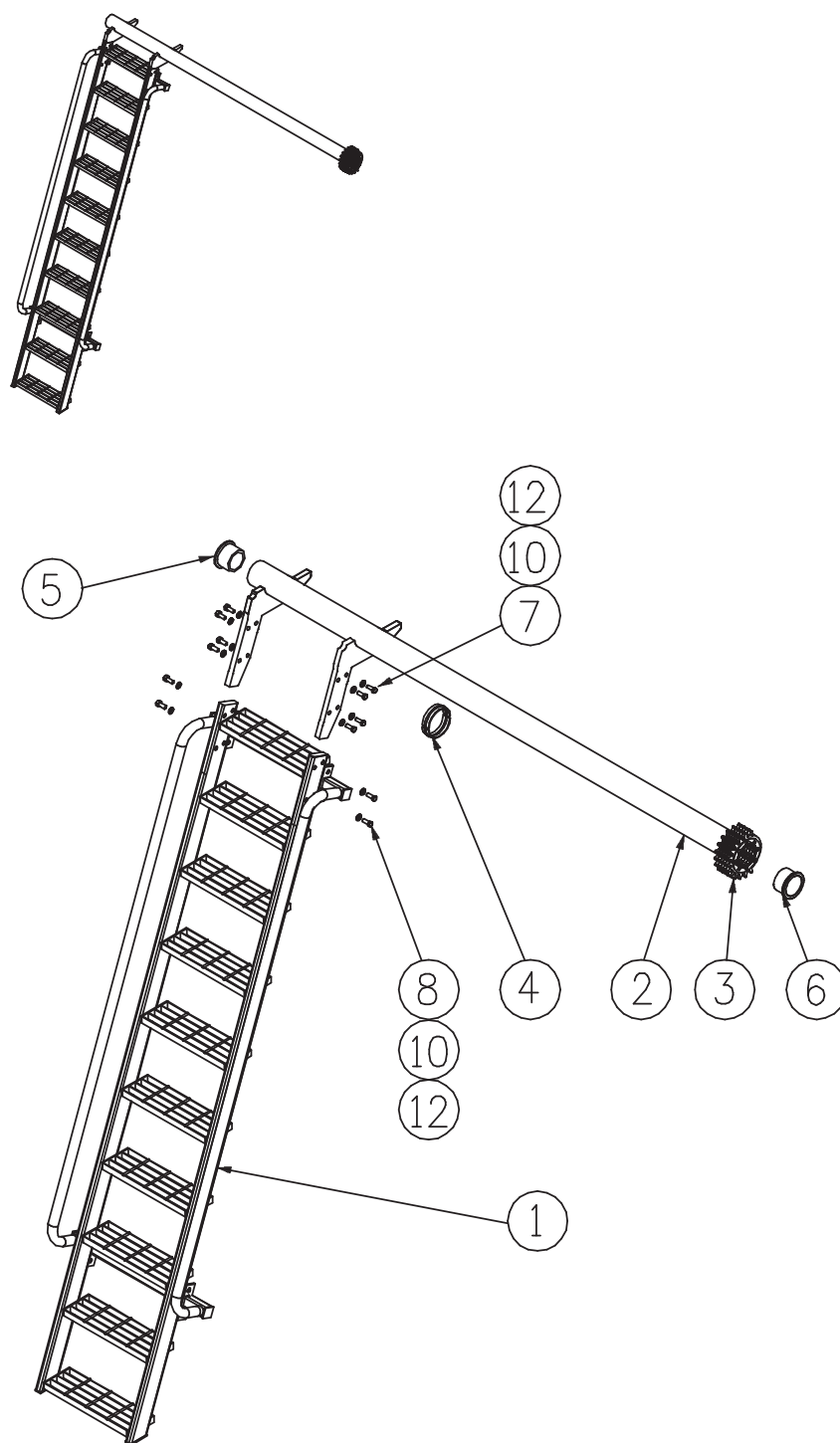


# FOLDING LADDER

## Caterpillar D11R Dozer



### Section 5-1 Ladder Assembly



# FOLDING LADDER

## Caterpillar D11R Dozer



### Section 5-1 Ladder Assembly

See Drawing Page 14

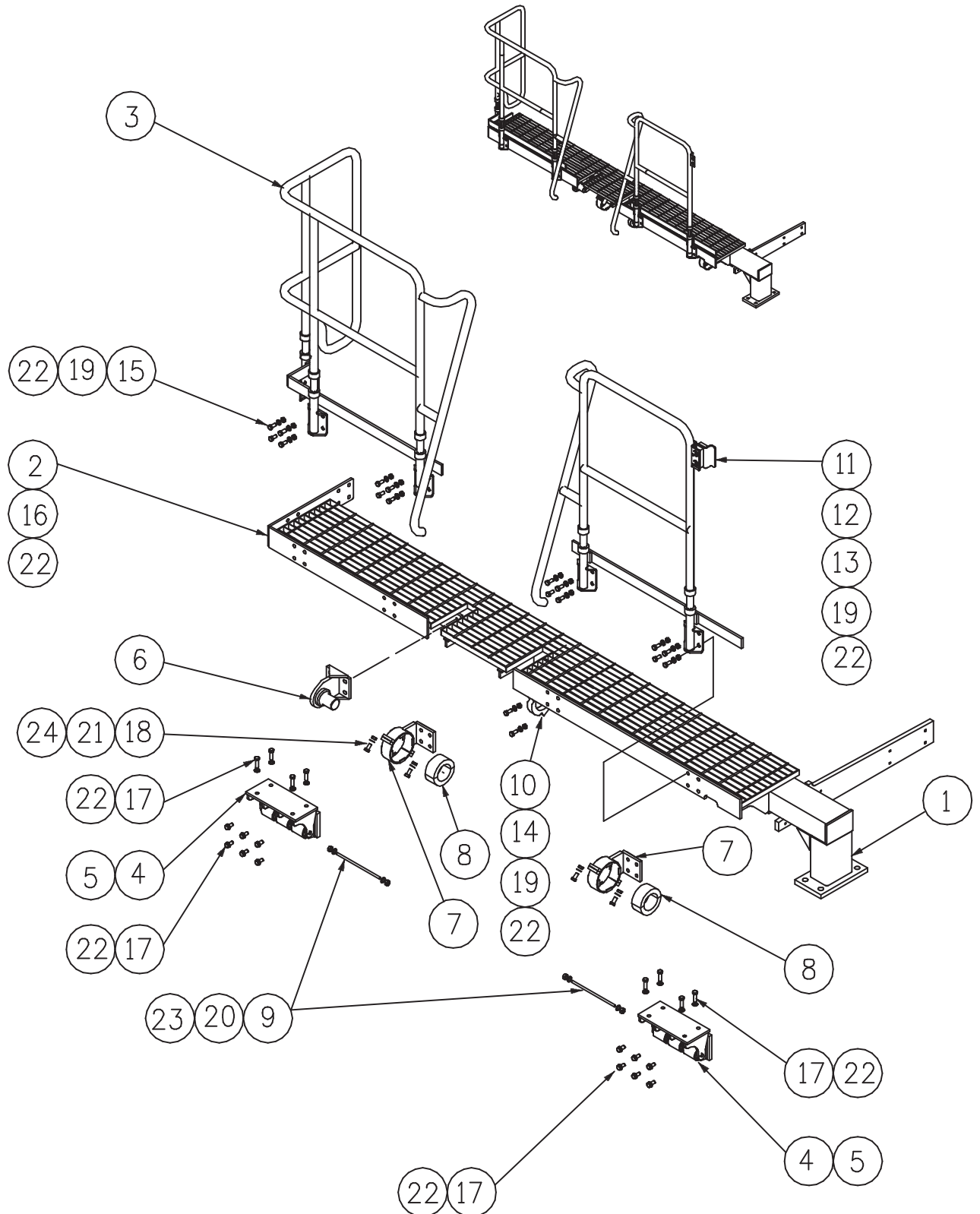
| Item | Part No.    | Part Name                             | Qty |  |  |
|------|-------------|---------------------------------------|-----|--|--|
| 1    | PS-21924    | LADDER & HANDRAIL FABRICATION         | 1   |  |  |
| 2    | PS-21977    | ROTATION SHAFT                        | 1   |  |  |
| 3    | PS-21958    | PINION ASSEMBLY                       | 1   |  |  |
| 4    | PS-21926-01 | LADDER SHAFT PIVOT BUSH-MIDDLE        | 1   |  |  |
| 5    | PS-21926-02 | LADDER SHAFT PIVOT BUSH-NON DRIVE END | 1   |  |  |
| 6    | PS-21926-03 | LADDER SHAFT PIVOT BUSH- DRIVE END    | 1   |  |  |
| 7    | CPS-M12X50  | BOLT-M12 x 50                         | 8   |  |  |
| 8    | CPS-M12X20  | BOLT-M12 x 20                         | 8   |  |  |
| 9    | CPS-M12NZP  | NUT-M12                               | 8   |  |  |
| 10   | CPS-M8NZP   | WASHER-M12                            | 8   |  |  |

# FOLDING LADDER

## Caterpillar D11R Dozer



### Section 5-2 Landing Assembly LHS.





# FOLDING LADDER

## Caterpillar D11R Dozer



### Section 5-2 Landing Assembly LHS.

See Drawing Page 16

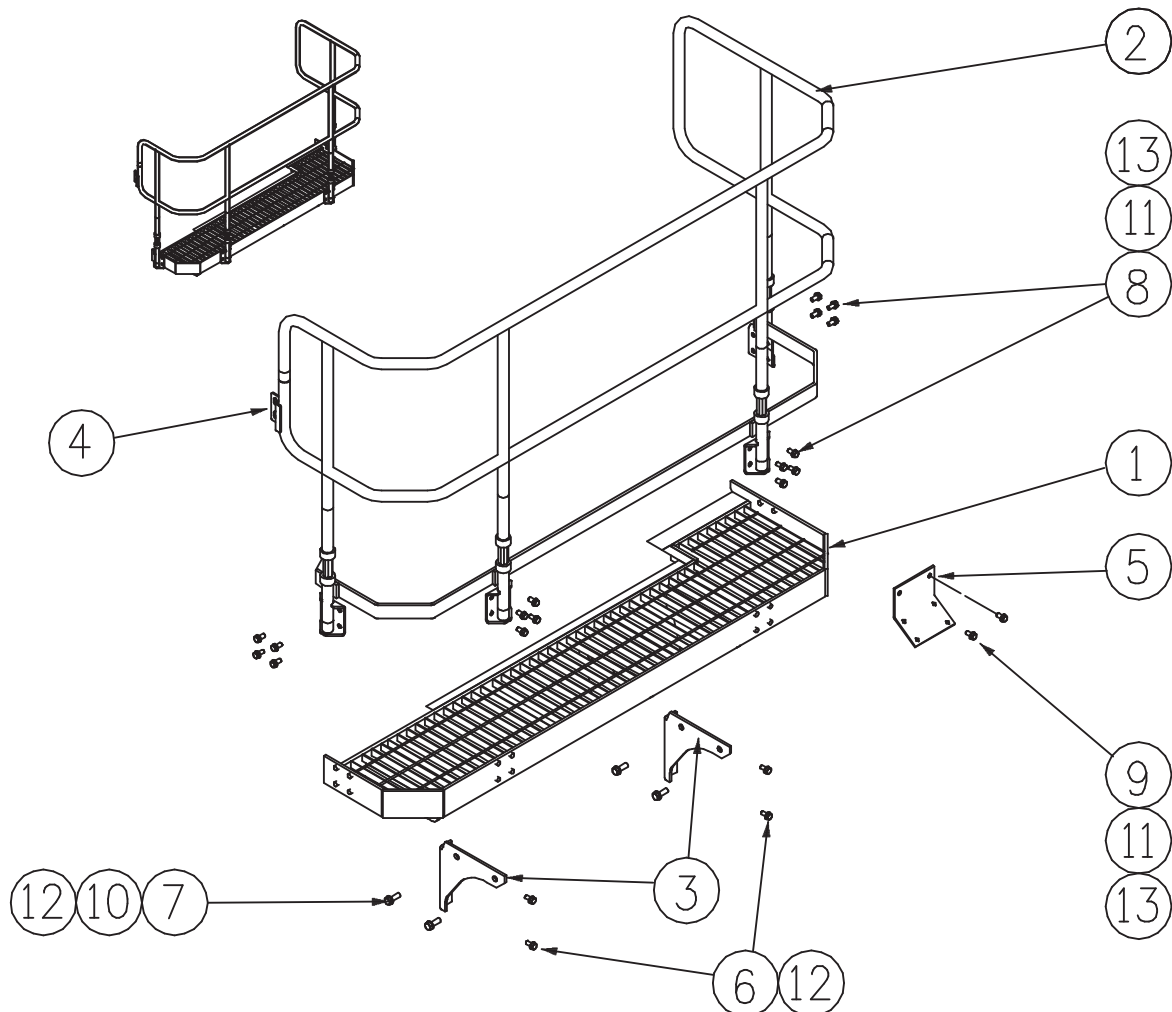
| Item | Part No.       | Part Name                 | Qty |  |  |
|------|----------------|---------------------------|-----|--|--|
| 1    | PS-21970       | LANDING BEAM              | 1   |  |  |
| 2    | PS-21982       | LANDING FLOOR             | 1   |  |  |
| 3    | PS-21983       | HANDRAIL                  | 1   |  |  |
| 4    | PS-21932       | ISOLATOR PIN BRACKETS     | 2   |  |  |
| 5    | PS-21930       | ISOLATOR MOUNTINGS        | 6   |  |  |
| 6    | PS-21976       | FRONT PIVOT PIN BRACKET   | 1   |  |  |
| 7    | PS-21941-02    | ANTI VIBRATION BEARING    | 2   |  |  |
| 8    | PS-21941-06    | RUBBER BUSH               | 2   |  |  |
| 9    | PS-21933       | ISOLATOR BUSH PIN         | 2   |  |  |
| 10   | PS-21925       | MIDDLE BEARING MOUNTING   | 1   |  |  |
| 11   | PS-22005-01    | ANGLE BRACKET             | 2   |  |  |
| 12   | PS-22005-03/02 | ISOLATOR RUBBER/CLAMP     | 2   |  |  |
| 13   | CPS-M12X85ZP   | BOLT-M12 x 85             | 2   |  |  |
| 14   | CPS-M12X65ZP   | BOLT-SOCKET HEAD-M12 x 65 | 2   |  |  |
| 15   | CPS-M12X40ZP   | BOLT-M12 x 40             | 20  |  |  |
| 16   | CPS-M12X30ZP   | BOLT-M12 x 30             | 6   |  |  |
| 17   | CPS-M12X25ZP   | BOLT-M12 x 25             | 20  |  |  |
| 18   | CPS-M8X35ZP    | BOLT-M8 x 35              | 8   |  |  |
| 19   | CPS-M12NZP     | NUT-M12                   | 20  |  |  |
| 20   | CPS-1/2"NN     | NUT-NYLOC-1/2"UNC         | 4   |  |  |
| 21   | CPS-M8NN       | NUT-NYLOC-M8              | 8   |  |  |
| 22   | CPS-M12WH      | WASHER-HARDENED-M12       | 54  |  |  |
| 23   | CPS-1/2"WH     | WASHER-HARDENED-1/2"      | 4   |  |  |
| 24   | CPS-M8WH       | WASHER-HARDENED-M8        | 8   |  |  |

# FOLDING LADDER

## Caterpillar D11R Dozer



### Section 5-3 Landing Assembly Rear



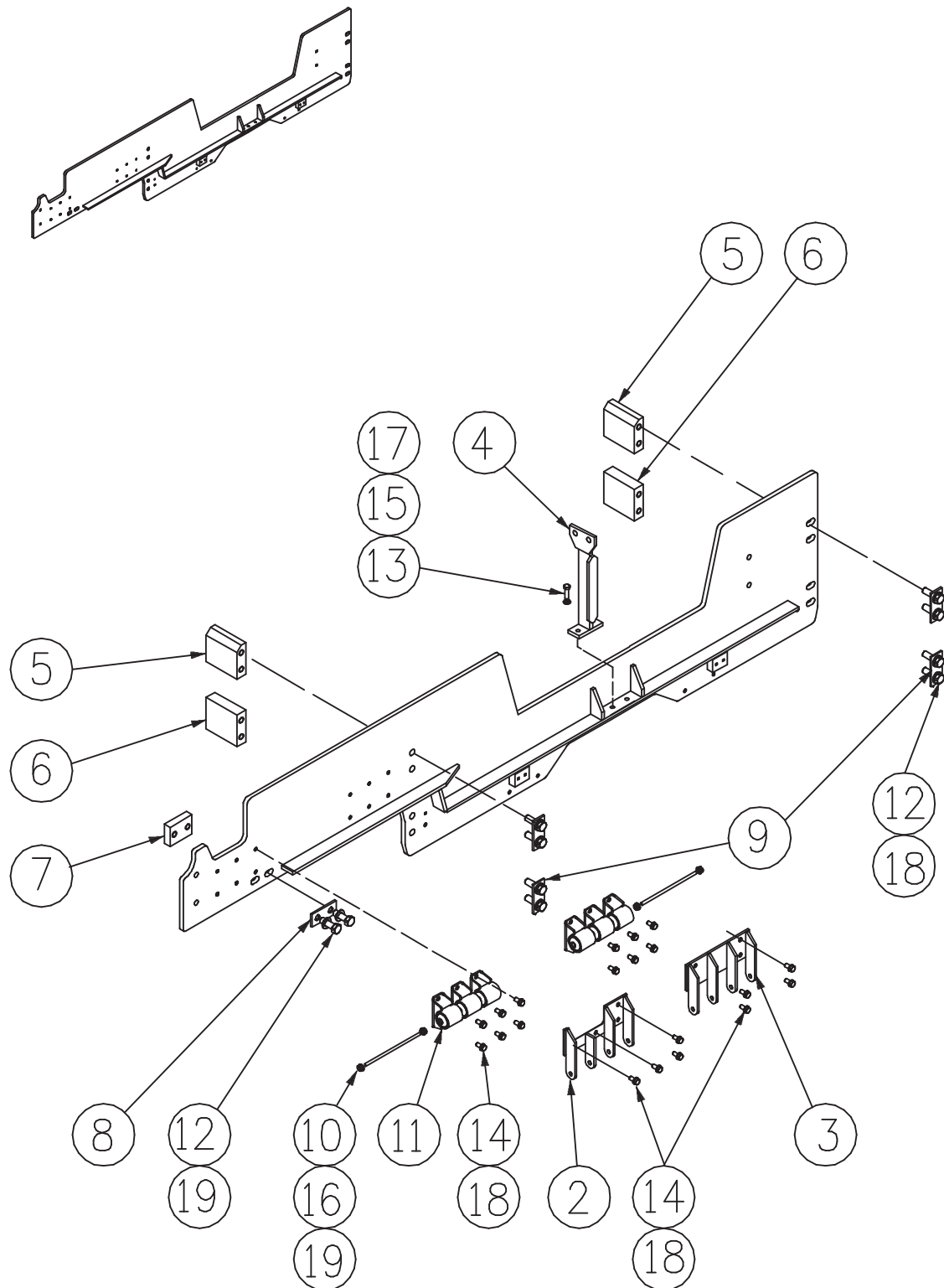
| Item | Part No.    | Part Name             | Qty |  |  |
|------|-------------|-----------------------|-----|--|--|
| 1    | PS-21935    | LANDING ASSEMBLY-REAR | 1   |  |  |
| 2    | PS-21936    | HANDRAILS- REAR       | 1   |  |  |
| 3    | PS-21928    | REAR LANDING BRACKET  | 2   |  |  |
| 4    | PS-22005-01 | ANGLE BRACKET         | 1   |  |  |
| 5    | PS-21990    | RIPPER LIGHT BRACKET  | 1   |  |  |
| 6    | PS-M16X50ZP | BOLT-M16 x 50         | 6   |  |  |
| 7    | PS-M16X30ZP | BOLT-M16 x 30         | 4   |  |  |
| 8    | PS-M12X40ZP | BOLT-M12 x 40         | 16  |  |  |
| 9    | PS-M12X30ZP | BOLT-M12 x 30         | 2   |  |  |
| 10   | CPS-M16NZIP | NUT-M16               | 6   |  |  |
| 11   | CPS-M12NZIP | NUT-M12               | 18  |  |  |
| 12   | CPS-M16WH   | WASHER-HARDENED-M16   | 10  |  |  |
| 13   | CPS-M12WH   | WASHER-HARDENED-M12   | 18  |  |  |

# FOLDING LADDER

## Caterpillar D11R Dozer



### Section 5-4 Spreader Assembly



# FOLDING LADDER

## Caterpillar D11R Dozer



### Section 5-4 Spreader Assembly

See Drawing Page 19

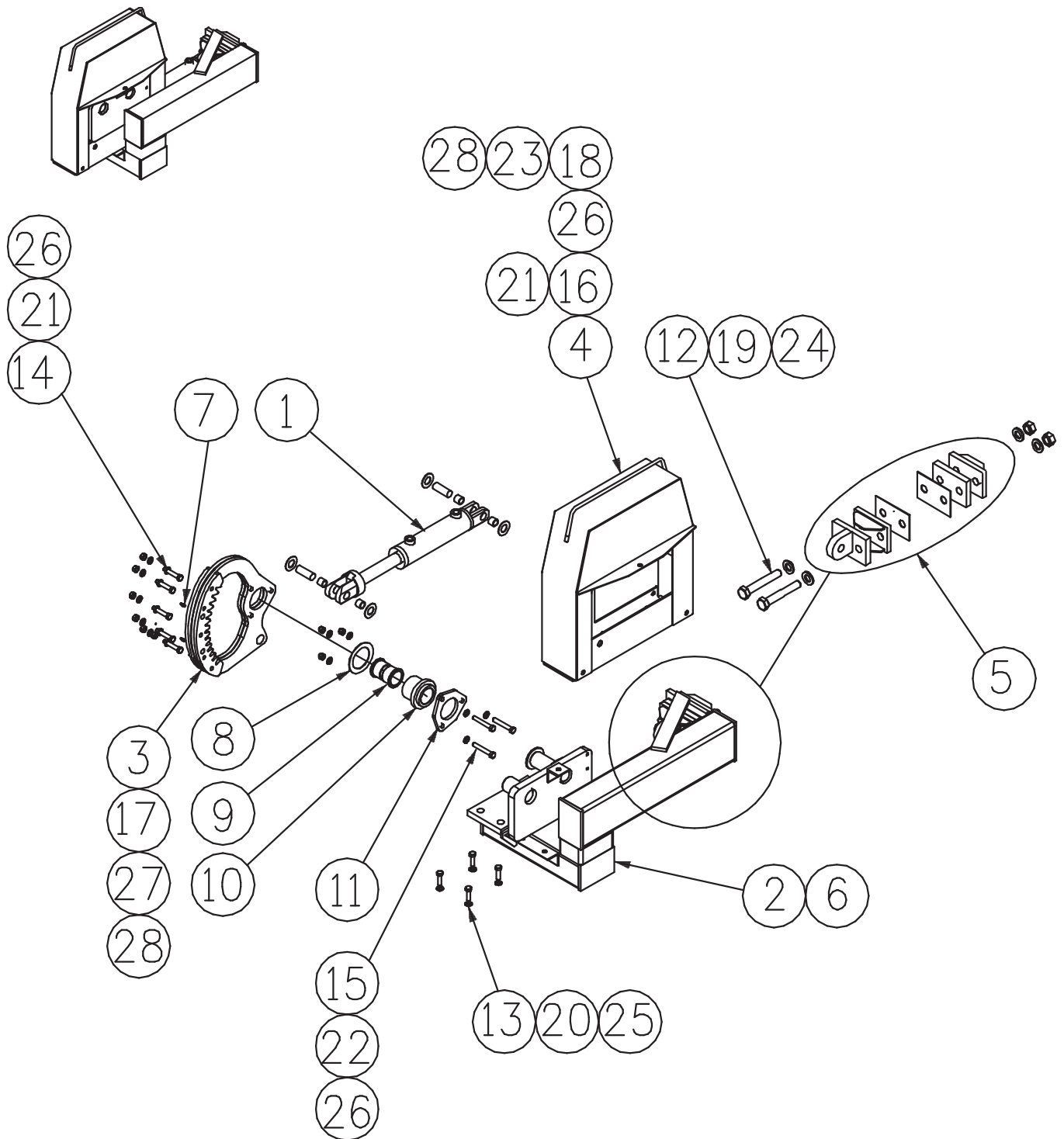
| Item | Part No.     | Part Name                       | Qty |  |  |
|------|--------------|---------------------------------|-----|--|--|
| 1    | PS-21937     | SPREADER                        | 1   |  |  |
| 2    | PS-21931 98  | ISOLATOR PIN BRACKET-OUTER LEFT | 1   |  |  |
| 3    | PS-21931 99  | ISOLATOR PIN BRACKET-INNER      | 1   |  |  |
| 4    | PS-21929     | REAR LANDING POST               | 1   |  |  |
| 5    | PS-22785 01  | REAR TOP INNER MOUNTING BLOCK   | 2   |  |  |
| 6    | PS-22785 02  | REAR LOWER INNER MOUNTING BLOCK | 2   |  |  |
| 7    | PS-22785 03  | REAR OUTER MOUNTING BLOCK       | 1   |  |  |
| 8    | PS-22785 06  | WASHER PLATES                   | 1   |  |  |
| 9    | PS-22933 05  | WASHER PLATES                   | 4   |  |  |
| 10   | PS-22933     | ISOLATOR BUSH PIN               | 2   |  |  |
| 11   | PS-21930     | ISOLATOR MOUNTING               | 6   |  |  |
| 12   | CPS-M20X60ZP | BOLT-M20 x 60                   | 10  |  |  |
| 13   | CPS-M12X40ZP | BOLT-M12 x 40                   | 2   |  |  |
| 14   | CPS-M12X25ZP | BOLT-M12 x 25                   | 20  |  |  |
| 15   | CPS-M12NZP   | NUT-M12                         | 2   |  |  |
| 16   | CPS-1/2"NN   | NUT-NYLOC-1/2" UNC              | 4   |  |  |
| 17   | CPS-M20WH    | WASHER-HARDENED-M20             | 10  |  |  |
| 18   | CPS-M12WH    | WASHER-HARDENED-M12             | 22  |  |  |
| 19   | CPS-1/2"WH   | WASHER-HARDENED-1/2"            | 4   |  |  |

# FOLDING LADDER

## Caterpillar D11R Dozer



### Section 5-5 Drive Unit Assembly



# FOLDING LADDER

## Caterpillar D11R Dozer



### Section 5-5 Drive Unit Assembly

See Drawing Page 21 & 7

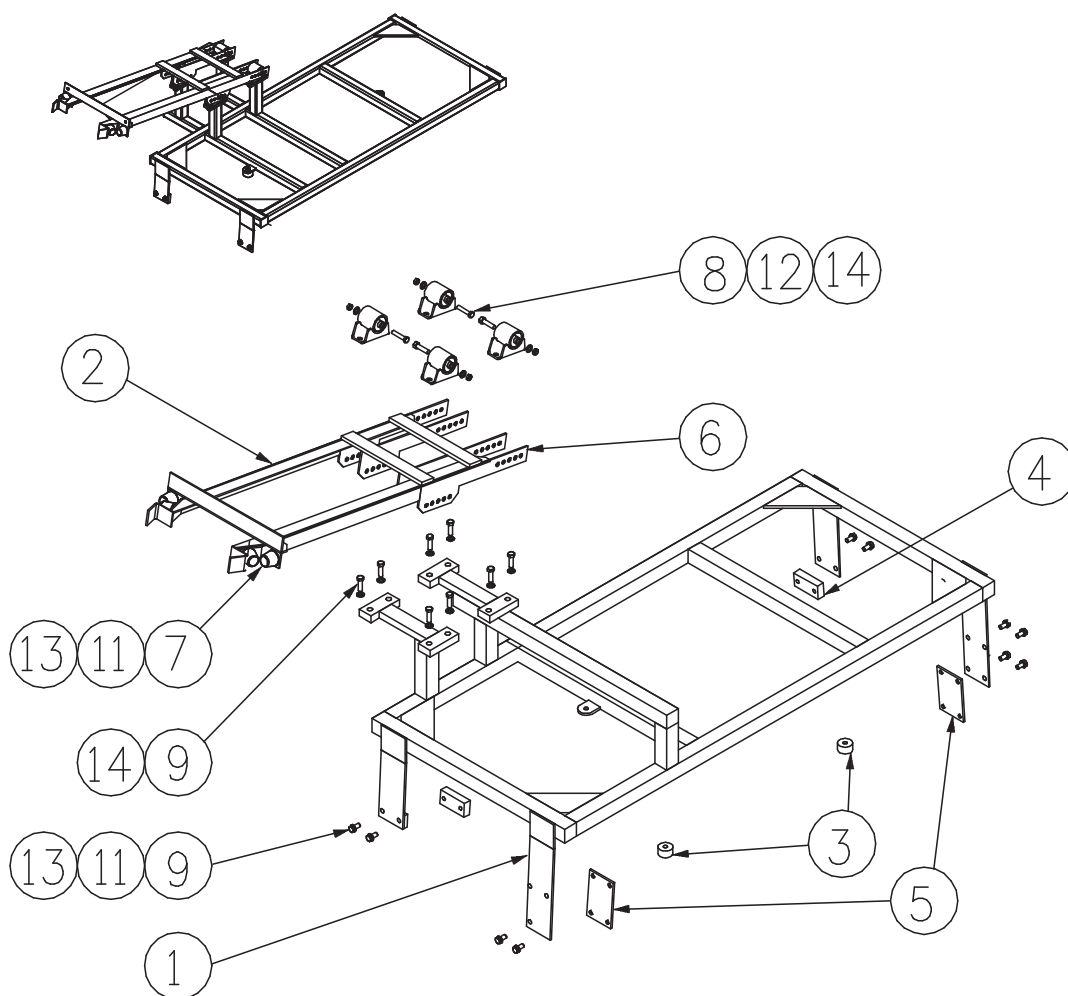
| Item | Part No.     | Part Name                       | Qty |  |  |
|------|--------------|---------------------------------|-----|--|--|
| 1    | PS-63014     | HYDRAULIC CYLINDER              | 1   |  |  |
| 2    | PS-21974     | DRIVE MOUNTING FRAME            | 1   |  |  |
| 3    | PS-21959     | SECTOR GEAR                     | 1   |  |  |
| 4    | PS-21984     | DRIVE GUARD                     | 1   |  |  |
| 5    | PS-21954     | ACTUATOR CYL. MOUNTING ASSEMBLY | 1   |  |  |
| 6    | PS-21991     | PROXIMITY SWITCH PLATES         | 1   |  |  |
| 7    | PS-61006-2   | GREASE NIPPLE M6 STR.           | 2   |  |  |
| 8    | PS-21940-03  | PIVOT PIN KEEPER PLATE          | 1   |  |  |
| 9    | PS-21959-09  | SECTOR GEAR BUSH                | 2   |  |  |
| 10   | PS-21959-08  | SECTOR GEAR HUB                 | 1   |  |  |
| 11   | PS-21959-05  | CLAMP RING                      | 1   |  |  |
| 12   | PS-M24X150ZP | BOLT-M24 x 150                  | 2   |  |  |
| 13   | CPS-20X65ZP  | BOLT-M20 x 65                   | 4   |  |  |
| 14   | CPS-M12X80ZP | BOLT-M12 x 80                   | 5   |  |  |
| 15   | CPS-M12X65ZP | BOLT-M12 x 65                   | 3   |  |  |
| 16   | CPS-M12X25ZP | BOLT-M12 x 25                   | 9   |  |  |
| 17   | CPS-M10X15ZP | BOLT-M10 x 15                   | 4   |  |  |
| 18   | CPS-M5X15ZP  | BOLT-M5 x 15                    | 6   |  |  |
| 19   | PS-M24XNN    | NUT-NYLOC-M24                   | 2   |  |  |
| 20   | PS-M20NZP    | NUT-M20                         | 4   |  |  |
| 21   | CPS-M12NZP   | NUT-M12                         | 9   |  |  |
| 22   | CPS-M12NN    | NUT-NYLOC-M12                   | 3   |  |  |
| 23   | CPS-M5NN     | NUT-NYLOC-M5                    | 6   |  |  |
| 24   | CPS-M24WH    | WASHER-HARDENED-M24             | 2   |  |  |
| 25   | CPS-M20WH    | WASHER-HARDENED-M20             | 4   |  |  |
| 26   | CPS-M12WH    | WASHER-HARDENED-M12             | 17  |  |  |
| 27   | CPS-M10WH    | WASHER-HARDENED-M10             | 4   |  |  |
| 28   | CPS-M5WH     | WASHER-HARDENED-M5              | 6   |  |  |

# FOLDING LADDER

## Caterpillar D11R Dozer



### Section 5-6 PROP Assembly



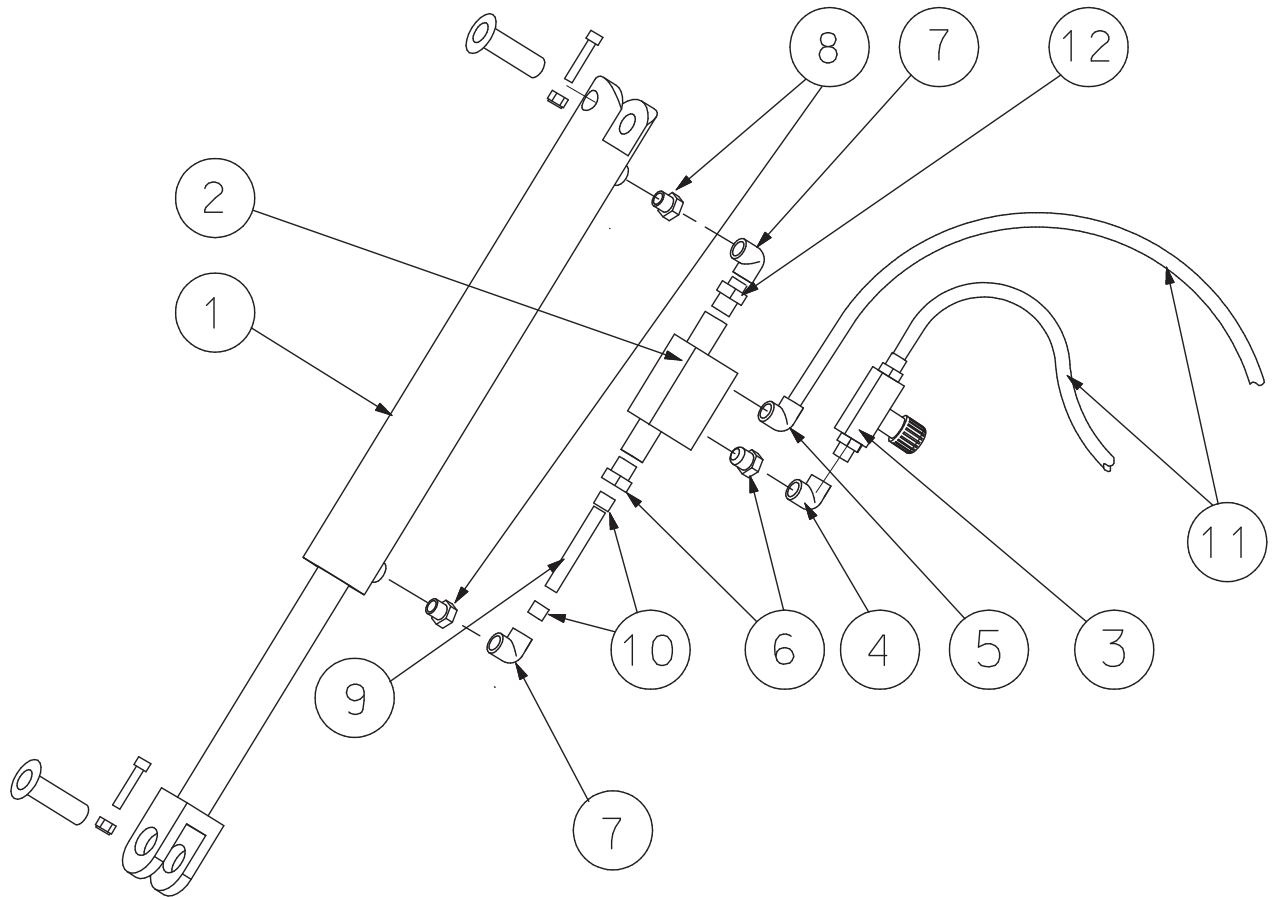
| Item | Part No.     | Part Name                | Qty |  |  |
|------|--------------|--------------------------|-----|--|--|
| 1    | PS-21987     | PROP MOUNTING FRAME      | 1   |  |  |
| 2    | PS-21945     | PROP                     | 1   |  |  |
| 3    | PS-21987-16  | ROOF BUTTON              | 2   |  |  |
| 4    | PS-21987-14  | BOLTING PAD              | 2   |  |  |
| 5    | PS-21987-13  | SPACER                   | 2   |  |  |
| 6    | PS-21930     | ISOLATOR MOUNTING        | 4   |  |  |
| 7    | PS-40003     | BUFFER                   | 4   |  |  |
| 8    | CPS-1/2"UNC  | ISOLATOR PIN 1/2" x 4.5" | 4   |  |  |
| 9    | CPS-M12X50ZP | BOLT-M12 x 50            | 8   |  |  |
| 10   | CPS-M12X25ZP | BOLT-M12 x 25            | 14  |  |  |
| 11   | CPS-M12NZP   | NUT-M12                  | 14  |  |  |
| 12   | CPS-1/2"NN   | NUT-NYLOC-1/2" UNC       | 4   |  |  |
| 13   | CPSM12WH     | WASHER-HARDENED-M12      | 22  |  |  |
| 14   | CPS-1/2"WH   | WASHER-HARDENED-1/2"     | 4   |  |  |

# FOLDING LADDER

## Caterpillar D11R Dozer



### Section 5-7 Hydraulic Cylinder



| Item | Part No.      | Part Name                                  | Qty |  |  |
|------|---------------|--|-----|--|--|
| 1    | PS-63014      | HYDRAULIC CYLINDER                         | 1   |  |  |
| -    | PS-63011K     | SEAL KIT (NOT SHOWN)                       | 1   |  |  |
| 2    | PS-63201      | VALVE - PILOT OPERATED LOCKING             | 1   |  |  |
| 3    | PS-63202      | FLOW CONTROL VALVE                         | 1   |  |  |
| 4    | PS-61159      | FITTING - ELBOW-9/16" JIC                  | 1   |  |  |
| 5    | PS-61154      | FITTING - ELBOW- O RING 1/4BSPPx9/16" JIC  | 1   |  |  |
| 6    | PS-61157      | FITTING - O RING 1/4BSPPx 9/16" JIC        | 2   |  |  |
| 7    | PS-61158-0.30 | FITTING - 0.030" RESTRICTION 90 DEG        | 2   |  |  |
| 8    | PS61163       | REDUCER JIC x BSPP                         | 2   |  |  |
| 9    | PS-61161      | TUBE                                       | 1   |  |  |
| 10   | PS-60047      | FERRULES                                   | 2   |  |  |
| 11   | PS-60051-2.8  | HOSE- HYDR. (9/6" JIC SWIVEL FITTING 2.8M) | 2   |  |  |
| 12   | PS-61145      | FITTING 9/16 JIC SWIVEL                    | 1   |  |  |



# FOLDING LADDER

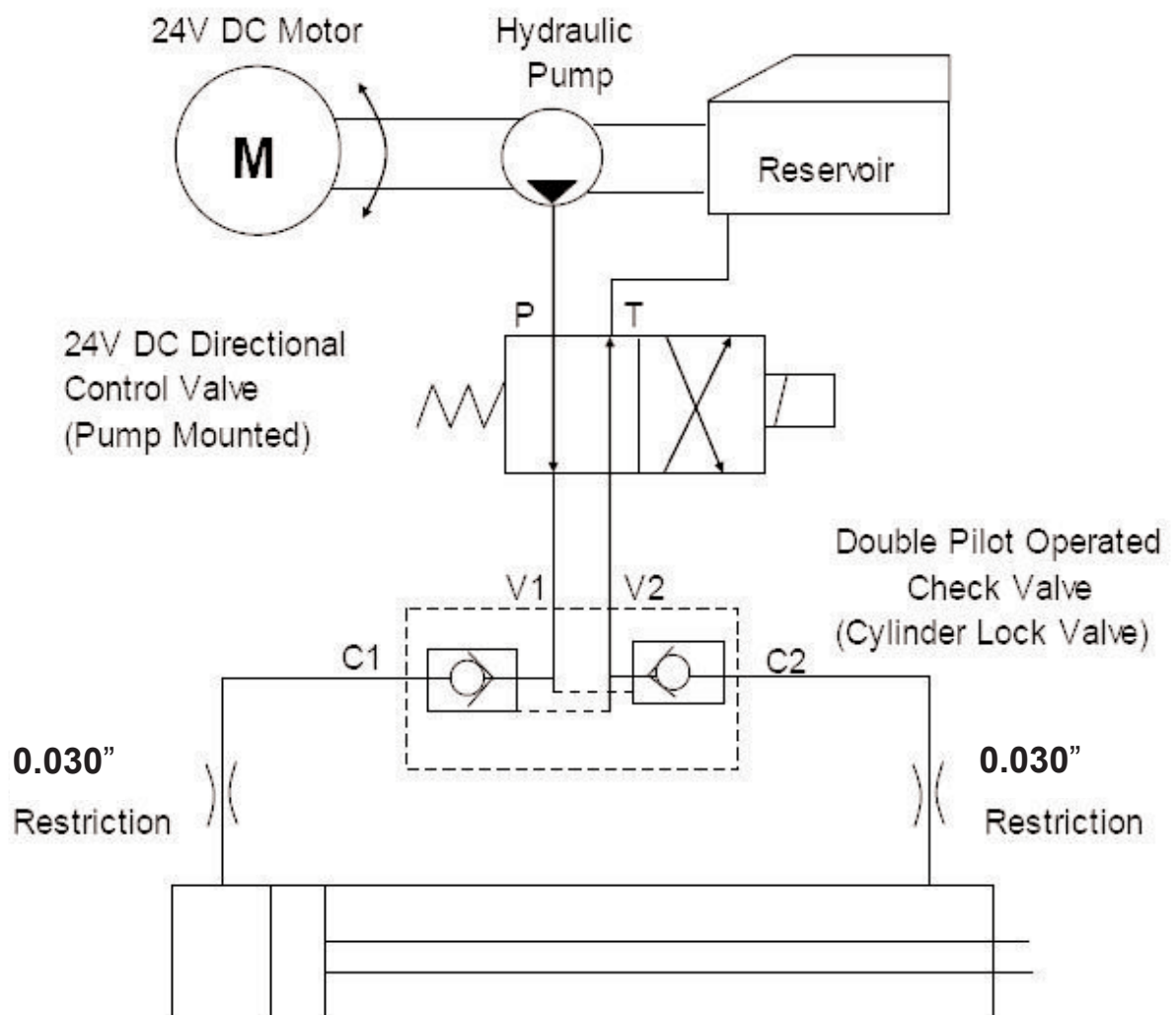
## Caterpillar D11R Dozer



### Section 5-7 Hydraulic Cylinder

See also Drawing page 24

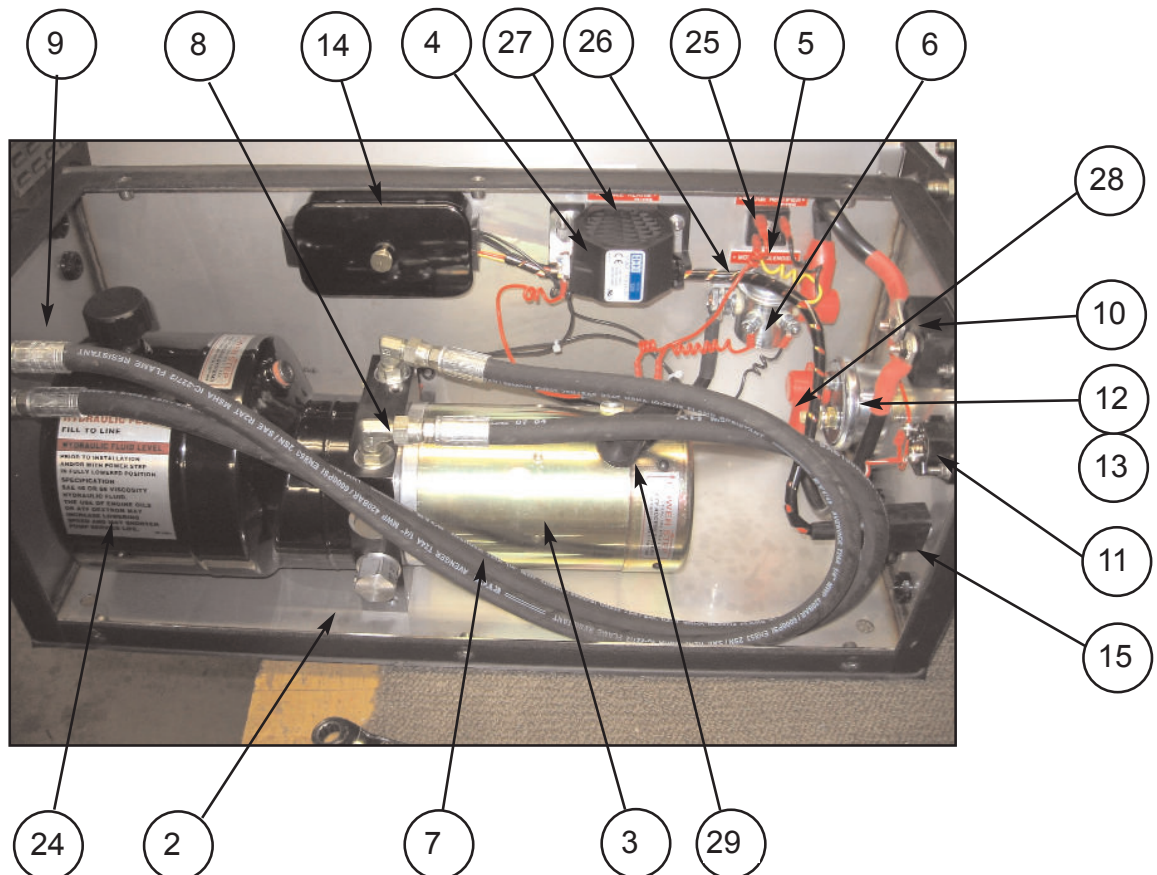
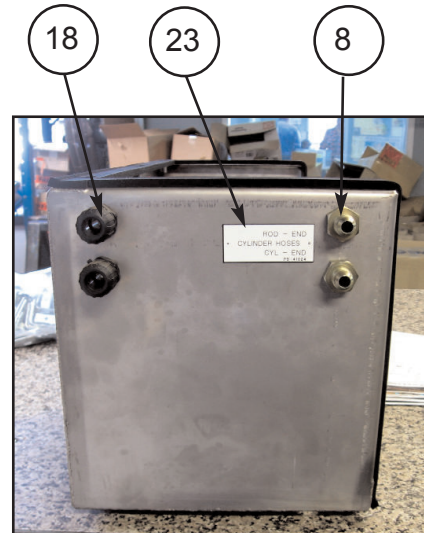
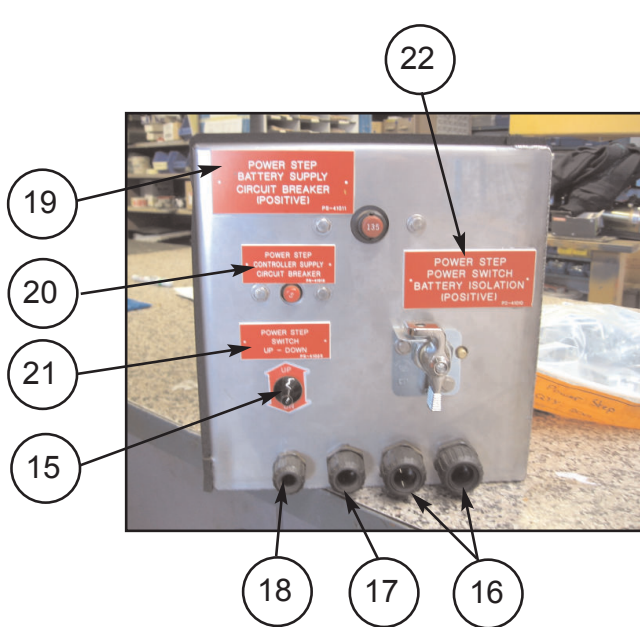
Double Acting Hydraulic System with  
directional Control Valve and Cylinder  
Lock Valve



# FOLDING LADDER Caterpillar D11R Dozer



## Section 5-8 Power Pack



# FOLDING LADDER

## Caterpillar D11R Dozer



### Section 5-8 Power Pack

See Photos Page 26.

| Item | Part No.       | Part Name                              | Qty |  |  |
|------|----------------|--|-----|--|--|
| 1    | PS-80103A-SS   | POWER PACK ASSEMBLY (Incl. Items.2-11) | 1   |  |  |
| 2    | PS-21107SS     | MOTOR ENCLOSURE- SEALED ST/ST          | 1   |  |  |
| 3    | PS-80103A      | POWER PACK                             | 1   |  |  |
| 4    | PS-75024       | AUDIBLE ALARM                          | 1   |  |  |
| 5    | PS-84214       | BRIDGE RECTIFIER                       | 1   |  |  |
| 6    | PS-82402       | SOLENOID                               | 1   |  |  |
| 7    | PS-60050-900MM | HYDR. HOSES 9/16"JIC STRAIGHT SWIVEL   | 2   |  |  |
| 8    | PS-61152       | HYDRAULIC FITTING                      | 2   |  |  |
| 9    | PS-61177       | HYDRAULIC FITTING                      | 2   |  |  |
| 10   | PS-84213       | 135A CIRCUIT BREAKER                   | 1   |  |  |
| 11   | PS-84212       | 5A CIRCUIT BREAKER                     | 1   |  |  |
| 12   | PS-84303       | ISOLATION SWITCH                       | 1   |  |  |
| 13   | PS-84303-B     | ISOLATION SWITCH BRACKET               | 1   |  |  |
| 14   | PS-1712080     | SEALED WIRING BOX                      | 1   |  |  |
| 15   | PS-73012       | TOGGLE SWITCH KIT                      | 1   |  |  |
| 16   | CPS-CAB20M20   | WIRE HARNESS GLAND                     | 2   |  |  |
| 17   | CPS-CAB16M20   | WIRE HARNESS GLAND                     | 1   |  |  |
| 18   | CPS-CAB12M16   | WIRE HARNESS GLAND                     | 3   |  |  |
| 19   | PS-41011       | DECAL ELECTRICAL- 135Amp CB            | 1   |  |  |
| 20   | PS-41012       | DECAL ELECTRICAL-5 Amp CB              | 1   |  |  |
| 21   | PS-41023       | DECAL ELECTRICAL-Up/Down Switch        | 1   |  |  |
| 22   | PS-41010       | DECAL ELECTRICAL- Isolation S/W        | 1   |  |  |
| 23   | PS-41024       | DECAL HYDRA-HOSES                      | 1   |  |  |
| 24   | PS-41041       | DECAL OIL TANK                         | 1   |  |  |
| 25   | PS-41019       | DECAL SOLENOID                         | 1   |  |  |
| 26   | PS-41017       | DECAL BRIDGE RECTIFIER                 | 1   |  |  |
| 27   | PS-41018       | DECAL ALARM                            | 1   |  |  |
| 28   | PS-73010       | RUBBER BOOT RED                        | 3   |  |  |
| 29   | PS-73009       | RUBBER BOOT BLACK                      | 1   |  |  |

# FOLDING STAIRWAY

## Caterpillar D11R Dozer

### Access System Electrical Overview



The Power Step electrical control system has been designed to cater for every conceivable circumstance in the mining industry.

The system has been built to withstand all the environmental issues normally associated with mining and some additional features not yet seen on any current systems.

These features include:

- 1) Universal application wiring system. The one wiring system has been designed to adapt to any machine with any site requirement.
- 2) All system switches are illuminated for clear visibility in darkness.
- 3) The system incorporates a park brake release option which, in most cases, can utilise the original park brake system pressure switch to control the ladder system. This feeds a signalback which can be plugged into the OEM harness to tell the machines' original system the park brake status.
- 4) The system has an optional boarding light option which can be operated from inside the cab or at ground level (optional), the boarding ladder circuit is controlled by an adjustable timer set to approximately three minutes, the operator need only press either of the momentary boarding light switches once, to activate the timer. The lights will illuminate for three minutes or until the park brake is released which also turns the lights off. The boarding lights will not activate if the park brake is released (if the park brake option is used).
- 5) The system will raise the ladder automatically when the park brake is released and will not allow the ladder to be lowered if the park brake is released (if the park brake option is used).
- 6) The system will only sound the cabin alarm when the park brake is released and the ladder is not fully home (if the park brake option is used).
- 7) The system will automatically raise the ladder should it creep down over a period of time while the machine is in service while the park brake is released (if the park brake option is used).
- 8) The system is designed with a dual tone alarm (external) which will be mounted on the rear of the box. This can be extended to mount anywhere else on the machine using the optional extension cables. The system has a pre-movement tone and an actual movement tone. When the up button, down button or park brake is released the premovement alarm will sound for three seconds to warn personnel in the vicinity that the ladder is about to move, then when the ladder actually moves it changes tone until the ladder has completed its movement stroke.
- 9) If the ladder becomes stuck mid way or, a hydraulic hose fails, the alarm will continue to sound until the power is switched off, but the hydraulic motor will only run for one minute on the motor protection timer. The motor protection timer prevents the hydraulic motor from running to destruction should the ladder not reach its top or bottom stroke for whatever reason.

# FOLDING STAIRWAY

## Caterpillar D11R Dozer



### Access System Electrical Overview (cont.)

- 10) Once the ladder has been raised and reached its top proximity switch the hydraulic motor will run for an additional three seconds to ensure it is fully stowed.
- 11) This system also features optional locks which are for any electric or electric over hydraulic function which may need to be locked out to prevent damage to the ladder system (i.e.) swing and/or travel on excavators. This can be used with or without the park brake system. The system has N.O. and N.C. options and can be used easily integrated into any system to inhibit swing/travel until the ladder is fully raised.
- 12) This system also features an optional door proximity switch; this switch if used, is designed to prevent the ladder from being raised if the cab door is ajar. It is a N.O. proximity thus; if this option is not used the bypass plug must be fitted. If the cab door is accidentally opened whilst the ladder is being raised, it will stop and then continue once the cab door is closed again.
- 13) Motion delay can be inhibited by removing Diode 6 to inhibit the delay in the upward direction. Diode 7 can be removed to inhibit the delay in the downward direction.
- 14) Mounted in the optional Boarding Lamp Switch Housing is an additional lower button, this is to enable the operator to operate the down function from an alternative position, one or more of these stations can be used.
- 15) Should the park brake system not be used, a by-pass plug must be fitted otherwise the alarm in the cab will not operate. In this condition the alarm in the cab will operate whenever the step is not fully home (up). We recommend during shutdowns or extended periods of time when the machine is to be worked on with the ladder down, the system be isolated.
- 16) The system must have both the up (top) and down (bottom) Proximity Switches used.
- 17) The timers are all set for different functions and must not be interchanged.
- 18) The circuit breakers used are called alternative function circuit breakers which mean if they "trip out" on over current the supply must be cut and then re-applied to re-set them - turn the system off and then back on.
- 19) The kit is supplied with a 120 amp Circuit Breaker/Bracket Assembly. We recommend taking the power supply from the isolated side of the battery isolator (If positive is isolated) or the battery itself. The circuit breaker should be mounted as close to the battery positive terminal as possible, using the cable lug covers for all exposed connections and a minimum of 3AWG/3B+S battery cable. Larger cable is recommended on a long cable run. Suitable cable protection and cable restraints should be used in accordance with normal good practice.



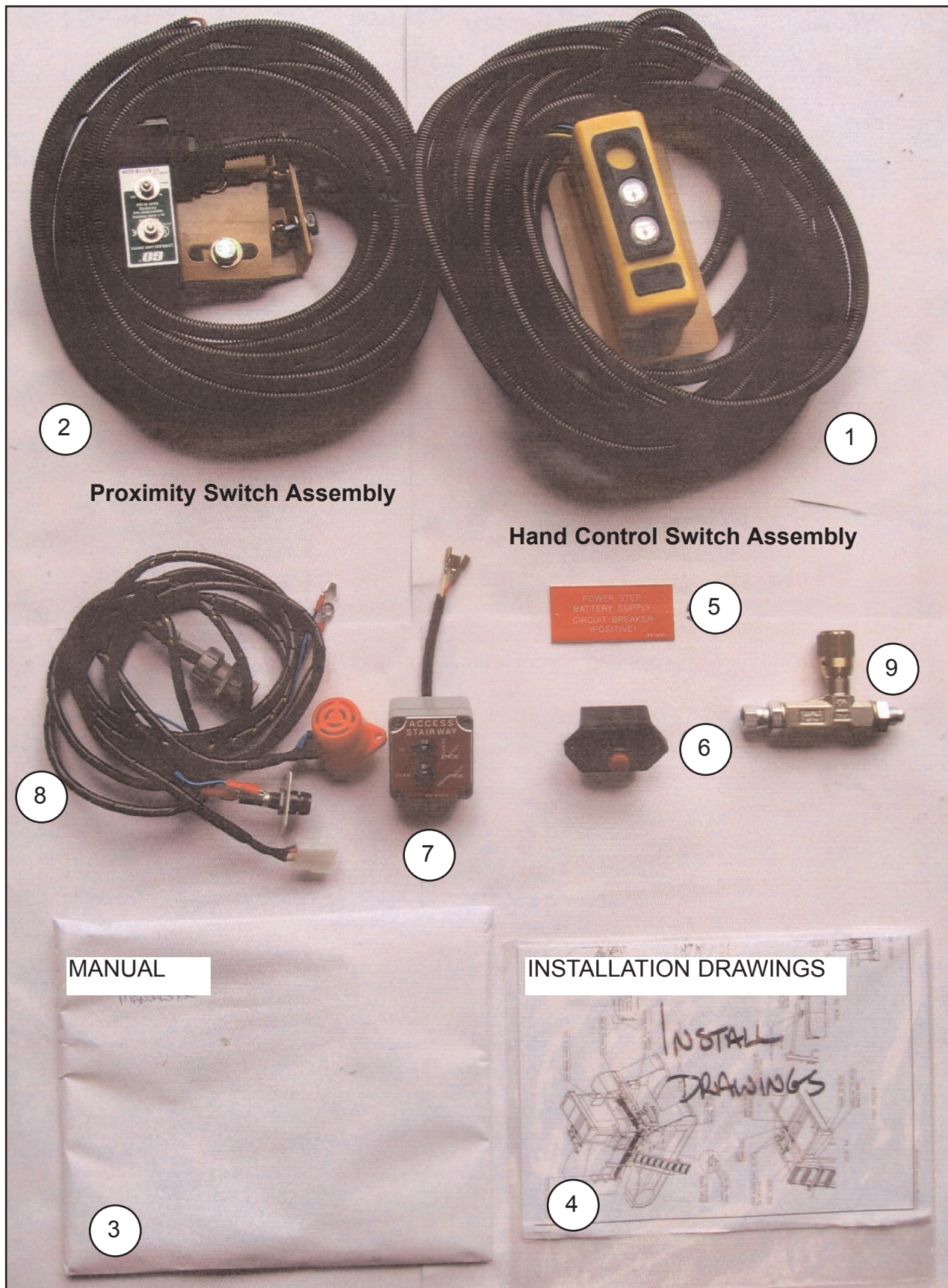
# FOLDING LADDER

## Caterpillar D11R Dozer



### Section 5-9 Electrical Controls

Refer also Wiring Drawings Page 9 & 10.



# FOLDING LADDER

## Caterpillar D11R Dozer



### Section 5-9 Electrical Controls

Refer also Wiring Drawings Page 9 &10.

See Photos Page 30.

| Item | Part No.      | Part Name                           | Qty |  |  |
|------|---------------|-------------------------------------|-----|--|--|
| 1    | PS-73013      | HAND CONTROL SWITCH ASSEMBLY        | 1   |  |  |
| -    | PS-73013B     | BRACKET                             | 1   |  |  |
| -    | PS-73005      | HARNESS                             | 1   |  |  |
|      |               |                                     | 1   |  |  |
| 2    | PS-75430      | PROXIMITY SWITCH ASSEMBLY           | 1   |  |  |
| -    | PS-75430A     | BRACKET                             | 1   |  |  |
| -    | PS-75430B     | BRACKET                             | 1   |  |  |
| -    | PS-75402      | HARNESS                             | 1   |  |  |
| 3    | -             | MANUALS                             | 1   |  |  |
| 4    | -             | INSTALLATION DRAWINGS               | -   |  |  |
| 5    | PS-41011      | DECAL FOR 135A CIRCUIT BREAKER      | 1   |  |  |
| 6    | PS-84213      | 135A CIRCUIT BREAKER                | 1   |  |  |
| 7    | PS-76001      | CONTROL BOX                         | 1   |  |  |
| 8    | PS-77003      | CONTROL BOX HARNESS                 | 1   |  |  |
| 9    | PS-63202      | FLOW CONTROL VALVE                  | 1   |  |  |
| 10   | PS-60051-2.8M | HYDRAULIC HOSES                     | 1   |  |  |
| 11   | PS-21107-SS   | ENCLOSURE-ST. STEEL(for Power Pack) | 1   |  |  |

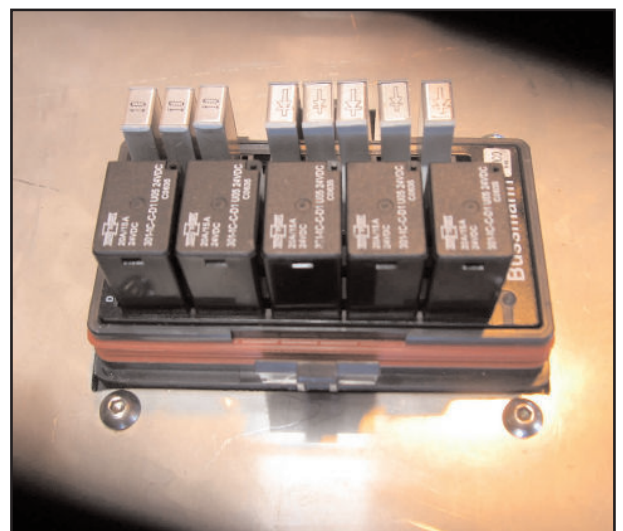


# FOLDING STAIRWAY

## Caterpillar D11R Dozer



### Section 5-9 Electrical Controls (Cont.)



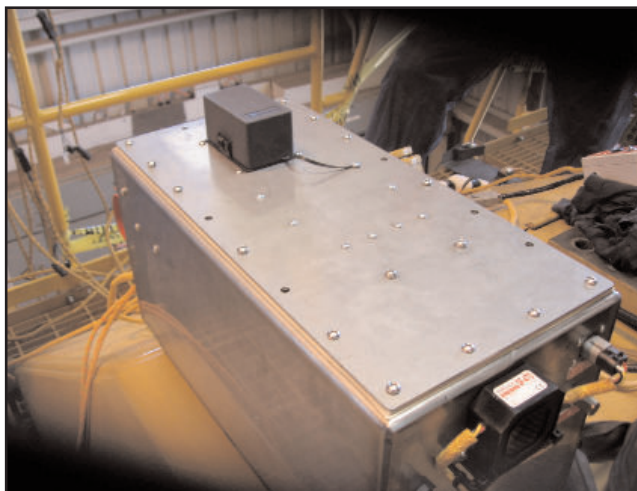
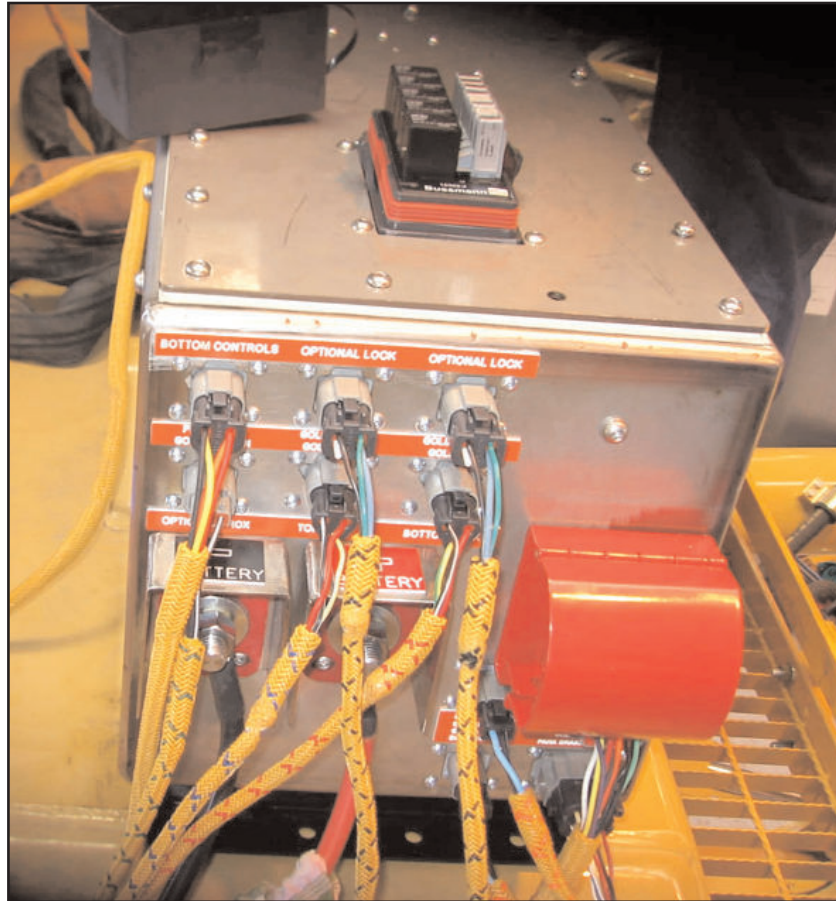


# FOLDING STAIRWAY

## Caterpillar D11R Dozer



### Section 5-9 Electrical Controls (Cont.)

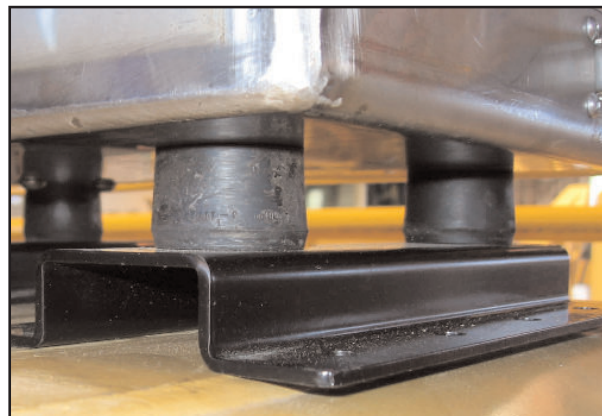
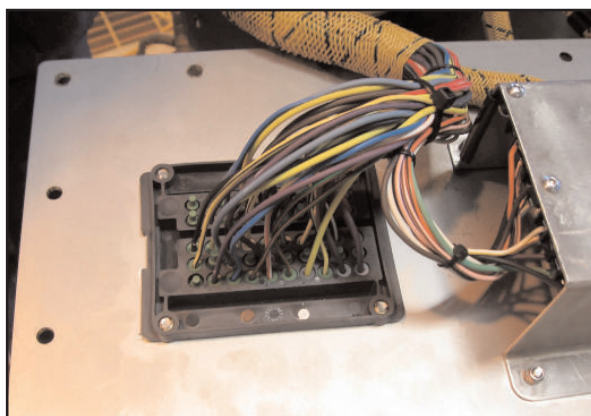
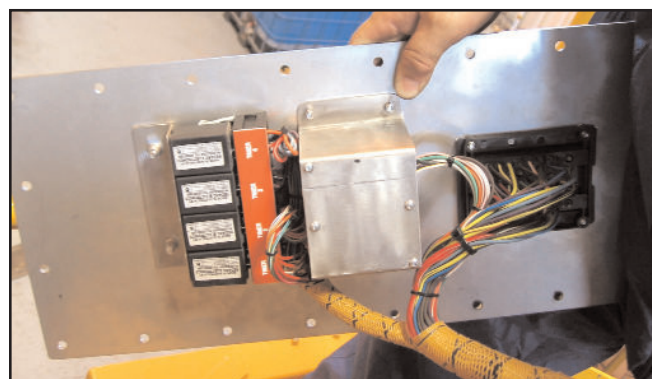
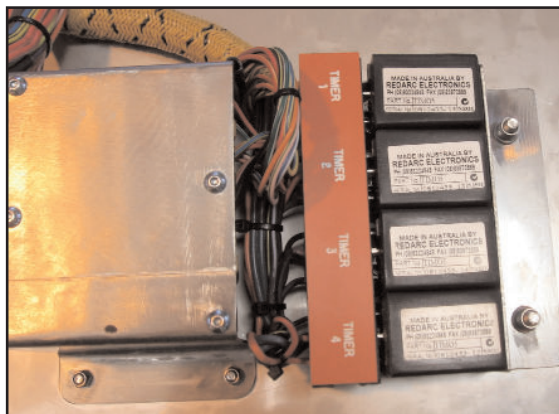


# FOLDING STAIRWAY

## Caterpillar D11R Dozer

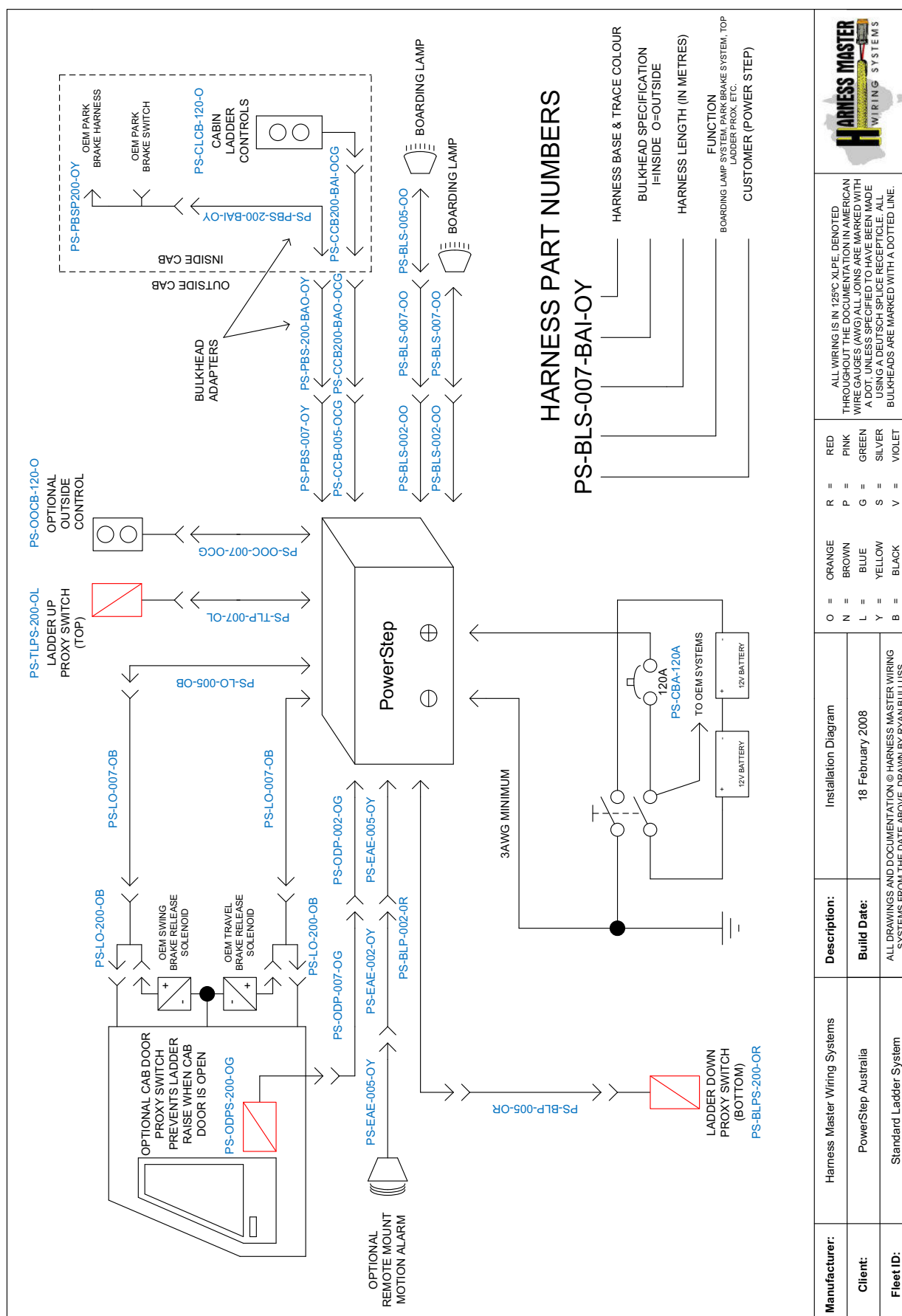


### Section 5-9 Electrical Controls (Cont.)



**POWER STEP**  
(AUSTRALIA) PTY. LTD.

## Section 5-9 Controls Installation Diagram





# FOLDING STAIRWAY

## Caterpillar D11R Dozer



### Section 5-10 Bill of Materials

|    |                                |                                 |      |
|----|--------------------------------|---------------------------------|------|
| 1  | PS001 KEVI 2080                | Box Part 1                      | 1    |
| 2  | PS002 KEVI 2081                | Box Part 2                      |      |
| 3  | PS005 rev 1                    | Box Lid                         | 1    |
| 4  | KEVI 2094                      | Motor Cradle                    | 1    |
| 5  | KEVI 2092                      | Buss Bar (Long)                 | 1    |
| 6  | KEVI 2093                      | Buss Bar short                  | 1    |
| 7  | KEVI 2073                      | Powder coated mount 3mm M/S     | 3    |
| 8  | 9W 4361                        | Rubber Mount                    | 6    |
| 9  | 0161CZ114F                     | 'U' Bolt                        | 1    |
| 10 | KEVI 2072                      | C/Breaker Mount                 | 1    |
| 11 | 521-967                        | 'U' Bolt Nut M10 S/Steel        | 2    |
| 12 | 08-SDL120                      | C/Breaker 120A                  | 1    |
| 13 | W-B-M10                        | Weld on Buttons                 | 4    |
| 14 | PS004 KEVI 2077                | Relay Retainer                  | 1    |
| 15 | PS003 KEVI 2078                | Cab enclosure mount             | 1    |
| 16 | PS006 KEVI 2079                | Stencil                         | 1    |
| 17 | KEVI 2023                      | Through Bolts Shroud            | 2    |
| 18 |                                | Engraving Material              |      |
| 19 | 120x80x55                      | Enclosure cabin                 | 1    |
| 20 |                                | Resistor 1K                     | 2    |
| 21 | S0930                          | Red LED mom push button         | 1    |
| 22 | S0933                          | Blue LED mom push button        | 3    |
| 23 | S6121                          | Sonar                           | 1    |
| 24 | DF470                          | External Alarm                  | 1    |
| 25 | 09488-00620                    | Nut Serts Ali (M6)              | 44   |
| 26 | E2EX10E2                       | Proximity Sw U/P/DN             | 2    |
| 27 | MWS 11                         | Lid Seal                        | 1.6m |
| 28 | 15303-4-0-4                    | Fuse Board Assy                 | 1    |
| 29 | TBA                            | Fuse Board Screws               | 4    |
| 30 | 21210                          | Bussman 10A C/Breaker           | 2    |
| 31 | 21220                          | Bussman 20A C/Breaker           | 1    |
| 32 | 22903-6V                       | Bussman Diode                   | 6    |
| 33 | TIM05                          | Timer TI                        | 4    |
| 34 | V23333Z1001A008-E              | Relay Base                      | 5    |
| 35 | 131207024                      | Bussman style Relay             | 5    |
| 36 | 301-1C-C-D1 U05<br>24VDC C0635 | Alternative Bussman style relay |      |
| 37 | KEVI 2074                      | Proximity Brackets              | 2    |
| 38 | 12110845                       | Fuse board terminal             | 50   |
| 39 | 12015323                       | Wire Seal                       | 50   |
| 40 | KM 24 B                        | Solenoid 24V C/Duty             | 1    |
| 41 |                                | Hydraulic Kit                   | 1    |
| 42 |                                | 'P' Clamps                      | 10   |
| 43 | SY2965-Red                     | Battery Cable Boot positive     | 5    |
| 44 | SY2965-BLK                     | Battery Cable Boot negative     | 3    |
| 45 | 171-821                        | Bulkhead Screws                 | 44   |
| 46 | 521-923                        | Bulkhead Nuts                   | 44   |
| 47 | LY4N 24vdc                     | 4 Pole Relay                    | 2    |

# FOLDING STAIRWAY

## Caterpillar D11R Dozer



### Section 5-10 Bill of Materials

|    |                                  |   |         |
|----|----------------------------------|---|---------|
| 48 | PTF 14AE                         | 4 Pole Relay Base   | 2       |
| 49 | 5935                             | Tri-colour LED  | 1       |
| 50 | Yet to Design & Allocate Part No | Relay mounting plate  | 1       |
| 51 | HM PSIH                          | Internal wiring harness   | 1       |
| 52 | PYC-A1                           | Relay Clips   | 2 pairs |
| 53 | 521-967                          | 3/8 UNC Stainless Nyloc   | 6       |
| 54 | 9S – 8752                        | 3/8 UNC Oil   | 6       |
| 55 | 183-8632                         | Stainless M4x10 Dome hex capscrew                                   | 60      |
| 56 | 521-923                          | Stainless Nyloc Nuts M4   | 60      |
| 57 | 521-939                          | Stainless Nyloc Nuts M5   |         |
| 58 | 183-8660                         | Stainless M5x10 Dome Lead Cap Screws                                | 12      |
| 59 | 183-8698                         | Stainless M5 x 16 Dome Lead Cap Screws                              | 12      |
| 60 | 183-8727                         | Stainless M6 x 16 Dome Lead Cap Screws                              | 50      |
| 61 | 183-8733                         | Stainless M6 x 20 Dome Lead Cap Screws                              | 10      |
| 62 | 521-945                          | Stainless M6 x Nyloc nuts   | 12      |
| 63 | 527-381                          | M4 Stainless washers  | 120     |
| 64 | 527-397                          | M5 Stainless washers  | 20      |
| 65 | 527-404                          | M6 Stainless washers  | 60      |
| 66 | 249-429                          | RS Components Sonar currently used                                  |         |
| 67 | PS-IBWH-00-0B                    | Inside Cab Harness optional Boarding light Switch Control Enclosure | 1       |
| 68 | A22L-GG                          | Green illuminated push button                                       | 1       |
| 69 | A22L-GA                          | Blue illuminated push button  | 1       |
| 70 | 1722-00                          | Lamp Holder + colour  | 2       |
| 71 | A22-10                           | N.O. Contacts   | 2       |
| 72 |                                  | Gland M16   | 1       |
| 73 | A22-24AGA/9BA                    | Green LED Globe insert  | 1       |
| 74 | A22-24AAA/9BA                    | Blue LED Globe insert   | 1       |
| 75 | HM                               | Engraved logo   | 1       |
| 76 | PS003 KEVI2079                   | Stainless steel bracket   | 1       |
| 77 | KEVI 2022                        | Through bolt shroud   | 2       |
| 78 | PS-EAE-005-OY                    | External Alarm EXT. (5m – yellow)                                   |         |
| 79 | PS-PBS-002-OY                    | Park Brake System loom (2m – yellow)                                |         |
| 80 | PS-PBS-005-OY                    | Park Brake System loom (5m yellow)                                  |         |
| 81 | PS-PBS-007-OY                    | Park Brake System loom (7m yellow) *                                |         |
| 82 | PS-PBS-200-OY                    | Park Brake System Loom ADP (200 – yellow)                           |         |
| 83 | PS-PBS-200-BAO-OY                | 'P' Brake Bulkhead Adaptor (200 – yellow)                           |         |
| 84 | PS-PBS-200-BAI-OY                | 'P' Brake Bulkhead ADP. (200 yellow)                                |         |
| 85 | PS-ODPS-200-OG                   | Optional Door Prox. Sensor (200 – Green)                            |         |
| 86 | PS-CBA-120 A-O                   | Circuit Breaker Assembly – 120A                                     |         |
| 87 | PS-OOCB-120-O                    | Outside operational control box                                     |         |
| 88 | PS-PBS-BP-O                      | Park Brake System Bypass plug                                       |         |
| 89 | PS-ODP-BP-O                      | Optional Door Prox. Plug Bypass                                     |         |
| 90 | PS-CLCB-120-O                    | Cabin ladder control box  |         |
| 91 | PS-BLSA-280-O'O'                 | Boarding lamp system Ext. Alarm (280 – Orange)                      |         |
| 92 | PS-TLPS-200-OL                   | Top Ladder Proximity Sensor (200 – Blue)                            |         |
| 93 | PS-BLPS-200-OR                   | Bottom Ladder Proximity Sensor (200 – Red)                          |         |



# FOLDING STAIRWAY

## Caterpillar D11R Dozer



### Section 5-10 Bill of Materials

|     |                                |  |  |
|-----|--------------------------------|--|--|
| 94  | PS-BLS-200-O'O'                | Boarding lamp system (Adaptor Link)                |  |
| 95  | PS-ODP002-OG                   | Optional Door Prox. Loom CAT gold/green (2m)       |  |
| 96  | PS-ODP-005-OG                  | Optional Door Prox. Loom (5m)                      |  |
| 97  | PS-ODP-007-OG                  | Optional Door Prox. Loom (7m)                      |  |
| 98  | PS-TLP-002-OL                  | Top Ladder Prox. Loom (2m – Blue)                  |  |
| 99  | PS-TLP-005-OL                  | Top Ladder Prox. Loom (5m – Blue)                  |  |
| 100 | PS-TLP-007-OL                  | Top Ladder Prox. Loom (7m – Blue)                  |  |
| 101 | PS-BLP-002-OR                  | Bottom Ladder Prox. Loom (2m – Red)                |  |
| 102 | PS-BLP-005-OR                  | Bottom Ladder Prox. Loom (5m – Red)                |  |
| 103 | PS-BLP-007-OR                  | Bottom Ladder Prox. Loom (7m – Red)                |  |
| 104 | PS-LO-002-OB                   | Lockout Loom (2m – Black)                          |  |
| 105 | PS-LO-005-OB                   | Lockout Loom (5m – Black)                          |  |
| 106 | PS-LO-007-OB                   | Lockout Loom (7m – Black)                          |  |
| 107 | PS-LO-200-OB                   | Lockout Loom Adaptor (200 – Black)                 |  |
| 108 | PS-OOC-002-OCG                 | Outside optional control (2m Cat Gold)             |  |
| 109 | PS-OOC-005-OCG                 | Outside optional control (5m Cat Gold)             |  |
| 110 | PS-OOC-007-OCG                 | Outside optional control (7m Cat Gold)             |  |
| 111 | PS-BLS-002-O'O'                | Boarding Lamp System (2m – Orange)                 |  |
| 112 | PS-BLS-005-O'O'                | Boarding Lamp System (5m – Orange)                 |  |
| 113 | PS-BLS-007-O'O'                | Boarding Lamp System (7m – Orange)                 |  |
| 114 | HMBC-B-25-240-0812-90-1B+S (3) | Length 240 Black                                   |  |
| 115 | HMBC-R-25-150-0812-90-1B+S(3)  | Length 150 Red                                     |  |
| 116 | PS-CCB-002-OCG                 | Cabinet Control Box Extention (2m – Cat Gold)      |  |
| 117 | PS-CCB-005-OCG                 | Cabinet Control Box Extention (5m – Cat Gold)      |  |
| 118 | PS-CCB-007-OCG                 | Cabinet Control Box Extention (7m – Cat Gold)      |  |
| 119 | PS-CCB-200-BAO-OCG             | Cabinet Control Box Bulkhead ADP. (200 – Cat Gold) |  |
| 120 | PS-CCB-200-BAI-OCG             | Cabinet Control Box Bulkhead ADP. (200 – Cat Gold) |  |
| 121 | PS-EAE-002-OY                  | External Alarm Ext. (2m – yellow)                  |  |

### HARNESS MASTER BATTERY CABLES

## HMBC-R25-400-1010-00-1

